Abe Vogel - CM Dr. Riley October 31, 2005



# TECH #2: COST & METHODS ANALYSIS

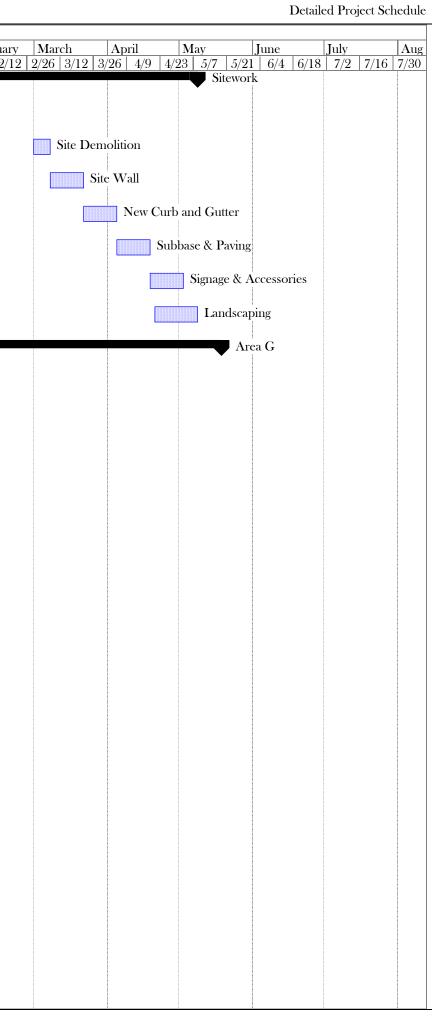
#### Executive Summary

This technical Assignment contains analysis of the cost and construction method used on the Frederick Memorial Hospital Renovation and Additions. A detail project schedule has been determined showing all pertinent activities occurring during construction. The project has been phased to be finished from the top down for infection control purposes. A site layout plan for the structure phase is presented. An assemblies Estimate for the building façade has been calculated using **RS** Means Assemblies Cost Data 2005. A detailed structural systems estimate has been calculated using **RS** Means Construction Cost Data 2005. Finally, a general conditions estimate is shown demonstrating project staffing costs and monthly costs incurred by the construction manager during the renovation of the hospital.

# Detailed Project Schedule

The detailed project schedule is shown for the hospital addition and renovation on the following pages. The project is scheduled so that trades move through the spaces from the top floor down. This is essential for infection control. It ensures that no contractors are moving through a finished space to get to one under construction.

ID [	Task Name	Duration	Start	Finish	2006
					ne July August September October November December January February
	Sitework	222 days	7/1/05	5/8/06	6/5 6/19 7/3 7/17 7/31 8/14 8/28 9/11 9/25 10/9 10/23 11/6 11/20 12/4 12/18 1/1 1/15 1/29 2/1
1	UG Storm & Sanitary	20 days	7/1/05	7/28/05	UG Storm & Sanitary
2	Site Demolition	5 days	3/1/06	3/7/06	
3	Site Wall	10 days	3/8/06	3/21/06	
4	New Curb and Gutter	10 days	3/22/06	4/4/06	
5	Subbase & Paving	10 days	4/5/06	4/18/06	
6	Signage & Accessories	10 days	4/19/06	5/2/06	
7	Landscaping	12 days	4/21/06	5/8/06	
	Area G	214 days	7/25/05	5/18/06	
	Demolition	37 days	7/25/05	9/13/05	Demolition
8	Ceiling Demo	5 days	7/25/05	7/29/05	Ceiling Demo
9	Negative Air Systems & Temp. Water	10 days	7/25/05	8/5/05	Negative Air Systems & Temp. Water
10	Interior Demo	25 days	8/4/05	9/7/05	Interior Demo
11	Courtyard Demo & Excavation	25 days	8/1/05	9/2/05	Courtyard Demo & Excavation
12	Structural Demolition	14 days	8/1/05	8/18/05	Structural Demolition
13	Window Removal	10 days	8/31/05	9/13/05	Window Removal
	Structure	52 days	8/26/05	11/7/05	Structure
14	Underslab Electrical/Piping	18 days	8/26/05	9/20/05	Underslab Electrical/Piping
15	Courtyard Footings, 1st Column Lift	5 days	9/9/05	9/15/05	Courtyard Footings, 1st Column Lift
16	Courtyard SOG	5 days	9/20/05	9/26/05	Courtyard SOG
17	FRP 1st Floor Slab	6 days	9/27/05	10/4/05	FRP 1st Floor Slab
18	FRP 2nd Floor Columns & Slab	8 days	10/5/05	10/14/05	FRP 2nd Floor Columns & Slab
19	FRP 3rd Floor Columns & Slab	8 days	10/17/05	10/26/05	FRP 3rd Floor Columns & Slab
20	FRP 4th Floor Columns & Slab	8 days	10/27/05	11/7/05	FRP 4th Floor Columns & Slab
21	Bridge Footings and Piers	6 days	9/7/05	9/14/05	Bridge Footings and Piers
22	Bridge Structural Steel/Deck	15 days	9/19/05	10/7/05	Bridge Structural Steel/Deck
23	Connector Bridge Concrete	5 days	10/10/05	10/14/05	Connector Bridge Concrete
24	New Entrance Footings/Piers	7 days	9/7/05	9/15/05	New Entrance Footings/Piers



Frederick Memorial Hospital, Phase 4 Additions and Renovations ID Task Name Duration Finish Start 2006 September October November December January Februa July ne August  $6/5 \quad 6/19 \quad 7/3 \quad 7/17 \quad 7/31 \quad 8/14 \quad 8/28 \quad 9/11 \quad 9/25 \quad 10/9 \quad 10/23 \quad 11/6 \quad 11/20 \quad 12/4 \quad 12/18 \quad 1/1 \quad 1/15 \quad 1/29 \quad 2/16 \quad 10/23 \quad$ 25 9 days 9/16/05 9/28/05 New Entrance CMU Foundation Wall & SOG New Entrance CMU Foundation Wall & SOG 9/29/05 10/5/05 26 New Entrance Canopy Framing 5 days New Entrance Canopy Framing 27 10/17/05 10/26/05 Fireproofing 8 days Fireproofing 12/19/05 Enclosure 79 days 8/31/05 Enclosure 28 Bridge Framing & Sheathing 10 days 10/17/05 10/28/05 Bridge Framing & Sheathing 29 North Excavation 5 days 8/31/05 9/6/05 North Excavation 30 North Exterior Demo & New Brick Veneer 11 days 9/7/05 9/21/05 North Exterior Demo & New Brick Veneer 31 East Excavation 9/7/05 9/13/05 East Excavation 5 days 32 East Exterior Demo & New Brick Veneer 11 days 9/22/05 10/6/05 East Exterior Demo & New Brick Veneer South Exterior Demo & New Brick Veneer 33 South Exterior Demo & New Brick Veneer 11 days 10/7/05 10/21/05 34 Connector Bridge Brick Veneer 11 days 10/31/05 11/14/05 Connector Bridge Brick Veneer 35 Entrance Canopy Soffit/Fascia 8 days 10/24/05 11/2/05Entrance Canopy Soffit/Fascia 36 Exterior Windows/Storefront 20 days 10/18/05 11/14/05 Exterior Windows/Storefront 37 5 days 11/15/05 11/21/05 Set Roof Equipment Set Roof Equipment 20 days 11/22/05 12/19/05 Roofing 38 Roofing 10/17/05 4th Floor Interior 4th Floor Interior Rough-In 59 days 1/5/06 39 10/17/05 10/21/05 Partition Layout Partition Layout 5 days 10/24/05 11/4/05 Above Ceiling Plumbing (Gravity) Above Ceiling Plumbing (Gravity) 10 days 40 41 Above Ceiling HVAC 4 days 11/7/0511/10/05 Above Ceiling HVAC Above Ceiling Piping (Pressure) 42 Above Ceiling Piping (Pressure) 4 days 11/11/05 11/16/05 43 Above Ceiling Electrical & Pull Wire 8 days 11/17/05 11/28/05 Above Ceiling Electrical & Pull Win 44 Fire Protection 11/29/05 12/5/05 Fire Protection 5 days 12/8/05 45 Set Door Frames 3 days 12/6/05 Set Door Frames Partition Framing **Partition Framing** 5 days 12/9/05 12/15/05 46 47 In-Wall MEP 12/16/05 12/22/05 In-Wall MEP 5 days48 Mechanical & Plumbing Insulation 6 days 12/20/05 12/27/05 Mechanical & Plumbir 49 Frame Bulkheads & Drywall Ceilings 12/28/05 1/3/06 Frame Bulkheads & 5 days

50

Hang One Side Drywall

3 days

12/23/05

12/27/05

								Detail	ed Project	Schedule
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_	Frame	Bulkher	]s & Dr	ywall Ceilings						
				yman Ceiniigs						
Ī	Hang One	Side Dr	ywall							

ID	Task Name	Duration	Start	Finish								1	2006	
					ne	July	August	September	C Octob	per No	vember	December	January	February
51	Wall Close-in Inspections	2 days	12/28/05	12/29/05		7/3 7/17	7/31   8/14	8/28   9/11	9/25   10	)/9  10/23  1	1/6  11/2	20  12/4  12/18	Wall Close-	in Inspection
52	Second Side Drywall & Tape/Finish	5 days	12/30/05	1/5/06	-							[	Second S	Side Drywall
	4th Floor Interior Finishes	43 days	1/6/06	3/7/06	-								$\mathbf{\nabla}$	
53	Prime Paint/1st Coat	3 days	1/6/06	1/10/06	-								Prime	Paint/1st Co
54	Ceiling Grid	3 days	1/11/06	1/13/06	-								Ceilin	ng Grid
55	Light Fixtures	5 days	1/16/06	1/20/06	-									ght Fixtures
56	Registers, Grilles, & Diffusers	5 days	1/23/06	1/27/06	-									Registers, (
57	Sprinkler Drops/Heads	3 days	1/23/06	1/25/06	-									Sprinkler D
58	Above Ceiling Inspection	1 day	1/30/06	1/30/06	-									Above Ce
59	Ceiling Close-In	3 days	1/31/06	2/2/06	-									Ceiling
60	Flooring	7 days	2/3/06	2/13/06	-									Flo
61	Millwork	3 days	2/14/06	2/16/06	-									M
62	Plumbing Fixtures	3 days	2/17/06	2/21/06	-									
63	Doors & Hardware	2 days	2/22/06	2/23/06	-									
64	Final Paint	3 days	2/24/06	2/28/06	-									
65	Architectural Trim	3 days	3/1/06	3/3/06	-									
66	MEP Trim	3 days	3/1/06	3/3/06	-									
67	Final Paint in Corridors & Touch-Up	2 days	3/6/06	3/7/06	-									
	3rd Floor Interior Rough-In	63 days	10/27/05	1/23/06	-									3rd Floor I
68	Partition Layout	5 days	10/27/05	11/2/05	-					Pa	artition L	ayout		
69	Above Ceiling Plumbing (Gravity)	5 days	11/7/05	11/11/05							Above	Ceiling Plum	bing (Gravity)	
70	Above Ceiling HVAC	5 days	11/14/05	11/18/05							Abo	ove Ceiling H	VAC	
71	Above Ceiling Piping (Pressure)	4 days	11/21/05	11/24/05							A	Above Ceiling	Piping (Press	sure)
72	Above Ceiling Electrical & Pull Wire	11 days	11/29/05	12/13/05							[	Above	e Ceiling Elec	trical & Pull
73	Fire Protection	5 days	12/14/05	12/20/05								Fir	e Protection	
74	Set Door Frames	3 days	12/21/05	12/23/05								So So	et Door Fran	nes
75	Partition Framing	5 days	12/26/05	12/30/05									Partition Fr	aming
76	In-Wall MEP	5 days	1/2/06	1/6/06	-								In-Wall	MEP

#### Frederick Memorial Hospital, Phase 4 Additions and Renovations

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ler Dro	ps/Heads					
we Ceili	ng Inspection					
iling Clo	ose-In					
Floor	ing					
Mill	work					
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I	Doors & Hard	ware				
	Final Paint					
	Architectur	al Trim				
	<b>MEP</b> Trim					
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oor Inte	erior Rough-Ir	1				
D 11 M	7*					
z Pull W	lire					

Frederick Memorial Hospital, Phase 4 Additions and Renovations

ID 7	Fask Name	Duration	Start	Finish											2006	
					ne	July	A	lugust	Septemb	ber (	October	Nove	ember	December	January	February
77	Mechanical & Plumbing Insulation	6 days	1/9/06	1/16/06	6/5 6/1	9   7/3   7/	/17   7/	/31   8/14	8/28 9/11	1 9/2	5   10/9   1	10/23 11	/6  11/20	0 12/4 12/18	1/1 1/1 M	<u>5   1/29   2/1</u> echanical & 1
,,,	Mechanical et l'humonig insulation	0 days	1/5/00	1/10/00												
78	Frame Bulkheads & Drywall Ceilings	5 days	1/17/06	1/23/06	-											Frame Bulk
79	Hang One Side Drywall	3 days	1/9/06	1/11/06	-										<b>H</b> an	g One Side I
80	Wall Close-in Inspections	2 days	1/12/06	1/13/06	-										Wa	ll Close-in Ir
81	Second Side Drywall & Tape/Finish	5 days	1/16/06	1/20/06	-											Second Side
	3rd Floor Interior Finishes	51 days	1/24/06	4/4/06	-											
82	Prime Paint/1st Coat	3 days	1/24/06	1/26/06	-											Prime Pai
83	Ceiling Grid	3 days	1/27/06	1/31/06	-											Ceiling
84	Light Fixtures	5 days	2/1/06	2/7/06	-											Light
85	Registers, Grilles, & Diffusers	5 days	2/8/06	2/14/06	-											R
86	Sprinkler Drops/Heads	3 days	2/8/06	2/10/06	-											Spr
87	Above Ceiling Inspection	1 day	2/13/06	2/13/06	-											A
88	Ceiling Close-In	3 days	2/15/06	2/17/06	-											
89	Flooring	10 days	2/20/06	3/3/06	-											
90	Millwork	3 days	3/6/06	3/8/06	-											
91	Plumbing Fixtures	3 days	3/9/06	3/13/06	-											
92	Doors & Hardware	4 days	3/14/06	3/17/06	-											
93	Final Paint	3 days	3/20/06	3/22/06	-											
94	Architectural Trim	3 days	3/23/06	3/27/06	-											
95	MEP Trim	5 days	3/23/06	3/29/06	-											
96	Final Paint in Corridors & Touch-Up	4 days	3/30/06	4/4/06	-											
	2nd Floor Interior Rough-In	72 days	11/3/05	2/10/06	-											<b>2</b> 1
97	Partition Layout	5 days	11/3/05	11/9/05	-								Partition	Layout		
98	Above Ceiling Plumbing (Gravity)	7 days	11/14/05	11/22/05	-								Ab	oove Ceiling F	lumbing ((	Gravity)
99	Above Ceiling HVAC	10 days	11/23/05	12/6/05	-									Above Ce	eiling HVA	C
100	Above Ceiling Piping (Pressure)	6 days	11/30/05	12/7/05	-									Above Co	eiling Pipin	g (Pressure)
101	Above Ceiling Electrical & Pull Wire	11 days	12/14/05	12/28/05	-										Above Cei	ling Electrica
102	Fire Protection	5 days	12/29/05	1/4/06	-										Fire Pro	otection

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Dry	wall					
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		🛡 3rd Floor	r Interior Finis	shes		
unt/1	st Coat					
g Gri	d					
ht Fi	xtures					
Regis	sters, Grilles, 8	x Diffusers				
orink	ler Drops/Hea	ads				
Abov	e Ceiling Insp	ection				
Cei	ling Close-In					
	Flooring					
	Millwork					
		ing Fixtures				
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ID Task Name Duration Finish 2006 Start September October November December Februa January July August ne 6/5 6/19 7/3 7/17 7/31 8/14 8/28 9/11 9/25 10/9 10/23 11/6 11/20 12/4 12/18 1/1 1/15 1/29 2/ Set Door Frames 3 days 1/5/06 1/9/06 Set Door Frame 103 1/10/06 1/16/06 104 **Partition Framing** 5 daysPartition Fran In-Wall MEP 1/17/06 1/23/06 105 5 daysIn-Wall M Mechanical & Plumbing Insulation 1/24/06 2/2/06 106 8 days Mech 107 Frame Bulkheads & Drywall Ceilings 5 days2/3/06 2/9/06 Fra 1/24/06 1/26/06 108 Hang One Side Drywall 3 days Hang Or 109 Wall Close-in Inspections 2 days 1/27/06 1/30/06 Wall C 110 Second Side Drywall & Tape/Finish 9 days 1/31/06 2/10/06 2nd Floor Interior Finishes 55 days 2/13/06 4/28/06 Prime Paint/1st Coat 2/13/06 2/15/06 111 3 days 112 Ceiling Grid 3 days 2/16/06 2/20/06 113 Light Fixtures 5 days2/21/06 2/27/06 3/6/06 114 Registers, Grilles, & Diffusers 5 days2/28/06 115 Sprinkler Drops/Heads 3 days 2/28/06 3/2/06 116 Above Ceiling Inspection 1 day 3/3/06 3/3/06 117 Ceiling Close-In 3/7/06 3/9/06 3 days 118 Flooring 13 days 3/9/06 3/27/06 119 Millwork 3/28/06 3/30/06 3 days 120 **Plumbing Fixtures** 3 days 3/31/06 4/4/06 Doors & Hardware 4/5/06 4/12/06 121 6 days 122 Final Paint 3 days 4/13/06 4/17/06 Architectural Trim 123 3 days 4/18/06 4/20/06 MEP Trim 4/18/06 4/24/06 124 5 days4/28/06 125Final Paint in Corridors & Touch-Up 4 days 4/25/06 1st Floor Interior Rough-In 77 days 11/10/05 2/24/06 Partition Layout 126 Partition Layout 5 days 11/10/05 11/16/05 127 12/6/05 Above Ceiling Plumbing (Gravit Above Ceiling Plumbing (Gravity) 9 days 11/24/05

12/20/05

12/7/05

10 days

Frederick Memorial Hospital, Phase 4 Additions and Renovations

Above Ceiling HVAC

128

Above Ceiling HVAC

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ry 12 2	March 2/26   3/12   3/	April /26 4/9 4/2	May 23   5/7   5/21	June 6/4 6/18	July 7/2 7/16	Aug 7/20	
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ning							
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econd	l Side Drywall	& Tape/Finis	sh				
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			2nd Floor In	nterior Finish	es		
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					ne J	$\frac{1}{7/3}$	7/17	August 7/31 8/14	September 8/28 9/11 9	October   /2.5   10/9   10	November )/23  11/6  11/2	December 20 12/4 12/18	January 3 1/1 1/15	February
129	Above Ceiling Piping (Pressure)	8 days	12/21/05	12/30/05		1/0	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	7,01   0,11	0/20 0/11 0		///////////////////////////////////////		Above Ceilir	ng Piping (F
130	Above Ceiling Electrical & Pull Wire	11 days	12/29/05	1/12/06									Above	Ceiling Ele
131	Fire Protection	5 days	1/5/06	1/11/06									Fire Pr	otection
132	Set Door Frames	3 days	1/12/06	1/16/06									Set I	Door Frame
133	Partition Framing	5 days	1/17/06	1/23/06									P	artition Fra
134	In-Wall MEP	5 days	1/24/06	1/30/06										In-Wall N
135	Mechanical & Plumbing Insulation	8 days	2/3/06	2/14/06										Me
136	Frame Bulkheads & Drywall Ceilings	5 days	2/15/06	2/21/06										
137	Hang One Side Drywall	3 days	1/31/06	2/2/06										Hang O
138	Wall Close-in Inspections	2 days	2/3/06	2/6/06										Wall (
139	Second Side Drywall & Tape/Finish	10 days	2/13/06	2/24/06										
	1st Floor Interior Finishes	56 days	2/27/06	5/15/06										l
140	Prime Paint/1st Coat	3 days	2/27/06	3/1/06										
141	Ceiling Grid	3 days	3/2/06	3/6/06										
142	Light Fixtures	5 days	3/7/06	3/13/06										
143	Registers, Grilles, & Diffusers	5 days	3/14/06	3/20/06										
144	Sprinkler Drops/Heads	3 days	3/14/06	3/16/06										
145	Above Ceiling Inspection	1 day	3/21/06	3/21/06										
146	Ceiling Close-In	3 days	3/22/06	3/24/06										
147	Flooring	12 days	3/28/06	4/12/06										
148	Millwork	3 days	4/13/06	4/17/06										
149	Plumbing Fixtures	3 days	4/18/06	4/20/06										
150	Doors & Hardware	6 days	4/21/06	4/28/06										
151	Final Paint	3 days	5/1/06	5/3/06										
152	Architectural Trim	3 days	5/4/06	5/8/06										
153	MEP Trim	5 days	5/4/06	5/10/06										
154	Final Paint in Corridors & Touch-Up	3 days	5/11/06	5/15/06										
	Basement Interior Rough-In	86 days	11/17/05	3/16/06										

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mes							
Frami	ng						
ll MF	P						
Mecł	nanical & Plun	nbing Insulatio	on				
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One	Side Drywall						
ll Clo	ose-in Inspecti	ons					
	Second Side D	rywall & Tap	e/F	inish			
				1st H	loor Interior	Finishes	
	Prime Paint/	/1st Coat		•			
	Ceiling Gi	rid					
	Light F						
		isters, Grilles,	&	Diffusers			
		kler Drops/H					
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	Base	ement Interio	r R				•
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ID Task Name Duration Start Finish 2006 September October November December January Februa July August ne 6/5 6/19 7/3 7/17 7/31 8/14 8/28 9/11 9/25 10/9 10/23 11/6 11/20 12/4 12/18 1/1 1/15 1/29 2/ 155 5 days 11/17/05 11/23/05 Partition Layout Partition Layout 4 days 12/15/05 12/20/05 Above Ceiling Plumbing ( 156Above Ceiling Plumbing (Gravity) Above Ceiling HVAC 12/21/05 12/27/05 Above Ceiling HVAC 157 5 days 158 Above Ceiling Piping (Pressure) 1/2/06 1/6/06 Above Ceiling Pip 5 days159Above Ceiling Electrical & Pull Wire 8 days 1/13/06 1/24/06 Above Ce 1/25/06 1/31/06 160 Fire Protection 5 days Fire Pr 161 Set Door Frames 3 days 2/1/06 2/3/06 Set D 162 **Partition Framing** 5 days 2/6/06 2/10/06 Pa In-Wall MEP 2/13/06 2/15/06 163 3 days 2/16/06 2/27/06 164 Mechanical & Plumbing Insulation 8 days 165 Frame Bulkheads & Drywall Ceilings 5 days2/28/06 3/6/06 166 Hang One Side Drywall 3 days 3/7/06 3/9/06 3/13/06 167 Wall Close-in Inspections 2 days 3/10/06 168 Second Side Drywall & Tape/Finish 3 days 3/14/06 3/16/06 **Basement Floor Interior Finishes** 34 days 3/17/06 5/3/06 Prime Paint/1st Coat 3/20/06 169 3/17/06 2 days 170 Ceiling Grid 2 days 3/21/06 3/22/06 Light Fixtures 3/23/06 3/27/06 171 3 days 172 Registers, Grilles, & Diffusers 3 days 3/28/06 3/30/06 Sprinkler Drops/Heads 3/30/06 173 3 days 3/28/06 174Above Ceiling Inspection 1 day 3/31/06 3/31/06 175 Ceiling Close-In 2 days 4/3/06 4/4/06 176 4/13/06 4/17/06 Flooring 3 days Millwork 4/18/06 177 1 day 4/18/06 178 **Plumbing Fixtures** 2 days 4/21/06 4/24/06 4/25/06 179 Doors & Hardware 1 day 4/25/06 4/27/06 180 Final Paint 2 days 4/26/06 5/1/06 181 Architectural Trim 2 days 4/28/06

Frederick Memorial Hospital, Phase 4 Additions and Renovations

ry 12	March 2/26   3/12   3/	April /26   4/9   4/2	May 23   5/7	5/21	June 6/4	6/18	July 7/2	7/16	Aug 7/30
12   1				10/21	0/1	0/10		1/10	.,
(Grav	vity)								
	Pressure)	11							
	Electrical & P	ull Wire							
rotec	tion Frames								
	on Framing Vall MEP								
111- v	Mechanical 8	y Plumbing Ir	sulation						
		lkheads & Di							
L		ne Side Dryw							
	- Wall C	lose-in Inspe	ctions						
	Secoi	nd Side Dryw	all & Taj	pe/Fin	ish				
			<b>B</b> ase	ement	Floor l	Interio	r Finis	hes	
	Prir	me Paint/1st (	Coat						
	Ce	iling Grid							
	[]	Light Fixtures							
		Registers, G	rilles, & I	Diffus	ers				
		Sprinkler Di	rops/Hea	ads					
		Above Ceili	ng Inspe	ction					
		Ceiling Cl	ose-In						
		Floc	oring						
		[ Mill	work						
		F	lumbing	; Fixtu	res				
			Doors &		ware				
			Final Pa		175.				
			Archit	ectura	l Trim				

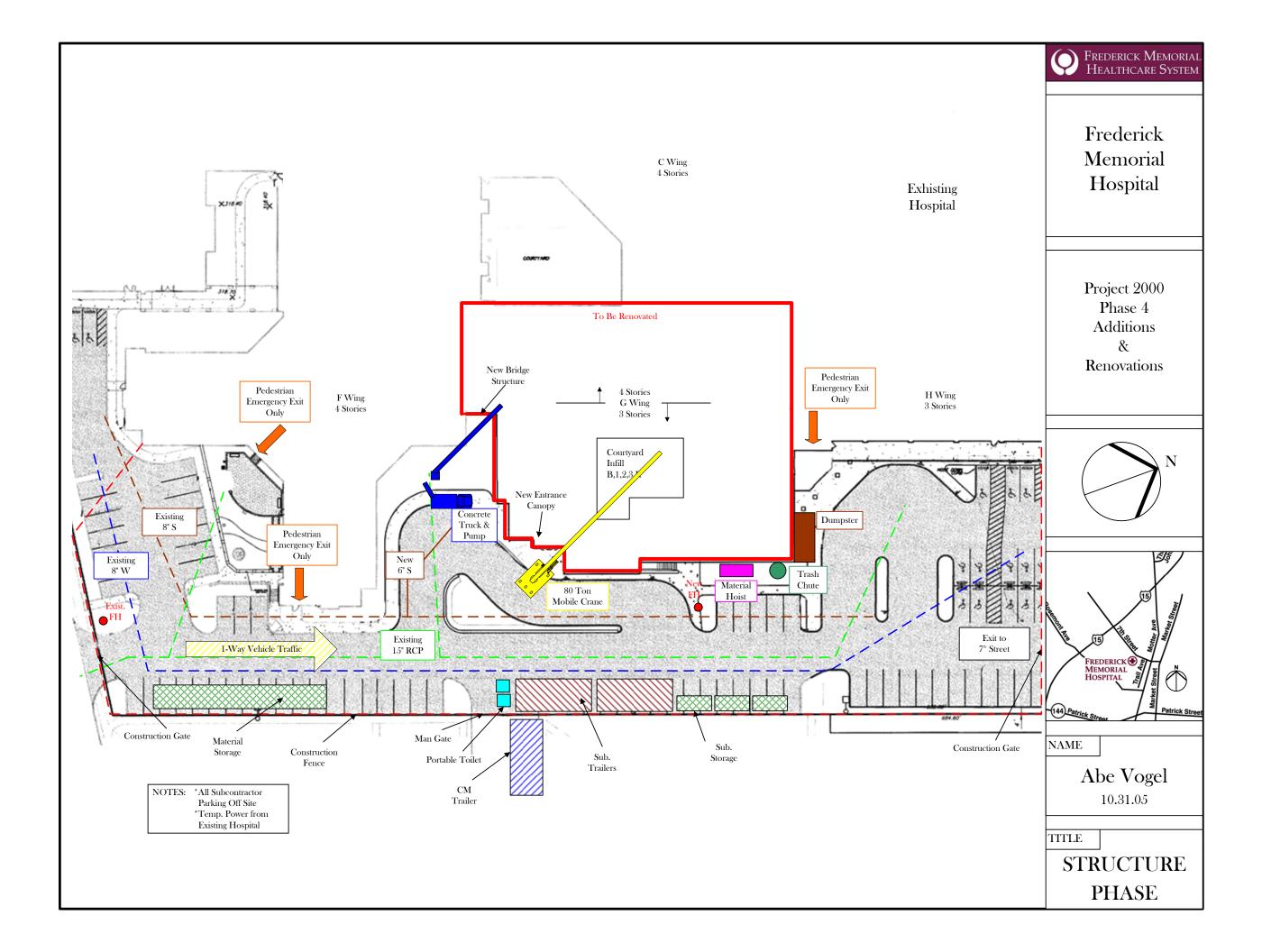
**Detailed Project Schedule** 

ID	Task Name	Duration	Start	Finish									2006	
					ne	July		August	September	October	November	December	January	February
100		9.1	4/00/00	<u> </u>	6/5 6/19	9   7/3	7/17	7/31 8/14	8/28 9/11 9	9/25   10/9  1	0/23 11/6 11/2	20 12/4 12/18	<u>  1/1   1/15</u>	1/29 2/19
182	MEP Trim	3 days	4/28/06	5/2/06										
183	Final Paint in Corridors & Touch-Up	1 day	5/3/06	5/3/06	-									
	Final Clean-Up/Punchlist/Commissioning	50 days	3/10/06	5/18/06	-									
184	Air/Water Balance	8 days	3/31/06	4/11/06	-									
185	Incomplete Work Lists & Repairs	30 days	3/10/06	4/20/06	-									
186	A/E/O Punchlist	30 days	3/21/06	5/1/06	-									
187	Punchlist Repairs	15 days	4/25/06	5/15/06	-									
188	Substantial Completion	0 days	5/15/06	5/15/06	-									
189	Final Clean-Up	3 days	5/16/06	5/18/06	-									
	Area H	83 days	8/31/05	12/23/05	-			ļ					Area H	
190	4th Floor Selective Demo	5 days	8/31/05	9/6/05	-				4th Floo	r Selective D	emo			
191	4th Floor Alcove Construction	10 days	10/10/05	10/21/05	-					4	th Floor Alcove	Construction		
192	4th Floor Finishes	10 days	10/24/05	11/4/05	-						4th Floor	Finishes		
193	3rd Floor Selective Demo	5 days	9/7/05	9/13/05	-				3rd F	loor Selectiv	e Demo			
194	3rd Floor Alcove Construction	10 days	10/24/05	11/4/05	-						3rd Floor	Alcove Consti	ruction	
195	3rd Floor Finishes	10 days	11/7/05	11/18/05	-						3rd	Floor Finishe	S	
196	Incomplete Work Lists & Repairs	10 days	11/21/05	12/2/05	-							Incomplete	Work Lists	& Repairs
197	A/E/O Punchlist	2 days	12/5/05	12/6/05	-							A/E/O Pu	ınchlist	
198	Punchlist Repairs	10 days	12/7/05	12/20/05	-							Pu	nchlist <b>R</b> epair	s
199	Area H Substantial Completion	0 days	12/20/05	12/20/05	-							12/20 <b>•</b> An	rea H Substar	ntial Compl
200	Final Clean-Up	3 days	12/21/05	12/23/05	-							Fi	nal Clean-Up	)

				Detaile	ed Project Sche	edule
ry	March	April	May	June	July	Aug
12 2		26 4/9 4/2	23 5/7 5/21	6/4 6/18		7/30
			MEP Trim			
			Final Paint	in Corridors &	& Touch-Up	
			Fin	al Clean-Up/l	Punchlist/Com	miss
		Air/Wa	ater Balance			
		Inc	omplete Worl	k Lists & Rep	airs	
			A/E/O Punc	hlist		
			Punch	list Repairs		
			5/15 🔶 Subst	tantial Compl	etion	
			<b>Fina</b> l	Clean-Up		
5						
pleti	on					

#### Site Layout Planning

The site plan for the structure phase is shown on the following page. The crane used is an 80 ton mobile crane. Concrete trucks and all other vehicles enter from the south and travel one-way through the site. There is limited on site parking for subcontractors; all crews must park in public parking off site because of an existing agreement between the neighborhood and the hospital regarding contractor parking. There is no need for temporary power as it is supplied through the existing hospital.



# Assemblies Estimate

An assemblies estimate had been prepared for the building façade. The estimate includes the brick veneer, windows, and doors. For this estimate all windows were assumed to be the same size. All pricing information was obtained from **RS** Means Assemblies Cost Data 2005 and includes overhead and profit. Take off notes shown in the appendix.

Item	Assemblies #	Qua	ntity	Unit Price	Cost
Brick Veneer, 4" standard brick with					
polystyrene cavity insulation	B2010-1020	15,772	SF	26.8 /SF	\$422,690
Sliding entrance door, 5'x7' with electric					
opener	<b>B</b> 2030-8200	2	EA	7650 /EA	\$15,300
Aluminum sliding windows, insulated					
glass 9'x5'	<b>B</b> 2020-7750	87	EA	1058 /EA	\$92,046
Location Modifier - Hagerstown				0.89	-\$58,304
Estimate Total					

• Cost per SF - \$33.61/SF

### Detailed Structural Systems Estimate

Due to the size of the project a detailed estimate was done for the entire building rather than just a typical bay. Included in the structural system are the courtyard infill structure, the new canopy structure, and the new bridge structure. The estimate is broken down by foundation, substructure, and superstructure. Cost data was obtained from **RS** Means Construction Cost Data 2005. Takeoff notes are shown in the appendix.

Phase	CSI	Description	Qua	ntity	Unit 1	Price	Cost
Foundations	03110	Formwork for Spread Footings	623	SF	7.15	/SF	\$4,454
		Formwork for Continuous					
	03110	Footings	816	SF	6.85	/SF	\$5,590
	03210	Rebar for Spread Footings	2	Tons	1800	/Tons	\$3,600
	03210	Rebar for Continuous Footings	2	Tons	1800	/Tons	\$3,600
	03310	Concrete for Spread Footings, 5000 PSI	87	CY	123.5	/CY	\$10,745
	03310	Concrete for Continuous Footings, 5000 PSI	43	CY	123.5	/CY	\$5,311
Substructure	03310	5" Slab on Grade, 5000 PSI, hand placed	46	CY	229.35	/CY	\$10,550
	04810	12" CMU Foundation Walls	500	SF	10.35	/SF	\$5,175
Superstructure	03110	Plywood Forming System for Columns	1330	SF	7.7	/SF	\$10,241
	03110	Plywood Forming System for 2- Way Flat Plate with Drops	8712	SF	10.45	/SF	\$91,040
	03150	Shoring System for 2-Way Flat Plate with Drops	7480	SF	1.02	/SF	\$7,630
	03210	Reinforcing Steel for 2-Way Flat Plate with Drops	25	Tons	1625	/Tons	\$40,625
	03210	Reinforcing Steel for Columns	4	Tons	2200	/Tons	\$8,800
	03310	3" Concrete fill for Floor Deck	17	CY	125	/CY	\$2,125
	03310	5000 PSI Placed with Crane, for Flat Plates and Columns	252	CY	137.5	/CY	\$34,650
	03350	Machine Trowel Finish 2-Way Flat Plates	7480	SF	0.7	/SF	\$5,236
	05120	Steel Framing	19	Tons	2675	/Tons	\$50,825
	05310	16 Ga 3" Floor Deck	1845	SF	3.93	/SF	\$7,251
	05310	18 Ga 3" Roof Deck	2175	SF	3.12	/SF	\$6,786
Location Modifier - Hagerstown 0.89						-\$34,566	
		Estimate Total					\$279,667

• Cost per GSF - \$3.29

#### General Conditions Estimate

The general conditions estimate includes project staffing costs and monthly costs incurred by the construction manager during the renovation of the hospital. Cost data was obtained from Barton Malow, the construction manager on the project. Home office overhead is not included in the estimate. A project staffing plan presenting the number of hours worked by each of the personnel is shown prior to the general conditions estimate. Even though the project is scheduled for substantial completion in May, the team works into July with project closeout.

Personnel	Start Date	End Date	Hours per week
Project Manager	7/1/05	4/30/06	40
	5/1/06	5/31/06	30
	6/1/06	6/30/06	20
	7/1/06	7/31/06	12
Project Engineer	7/1/05	6/30/06	40
	7/1/06	7/31/06	30
Superintendent	7/1/05	4/30/06	40
	5/1/06	6/30/06	30
	7/1/06	7/31/06	20
Saturday Super.	8/1/05	3/31/06	8
MEP Coordinator	9/1/05	5/31/06	8
	6/1/06	6/30/06	4
Office Manager	7/1/05	5/31/06	40
Field Accountant	7/1/05	5/31/06	8
	6/1/06	6/30/06	4
	7/1/06	7/31/06	2
Safety Director	8/1/05	2/28/06	2

Item	Unit Cost/Hr	Time (Hrs)	Cost
Project Manager	\$52	1852	\$96,304
Project Engineer	\$36	2046	\$73,656
Superintendent	\$65	2210	\$143,650
MEP Coordinator	\$89	330	\$29,370
Office Manager	\$21	1780	\$37,380
Safety Director	\$50	62	\$3,100
	Unit Cost/Wk	Time (Wks)	Cost
Trailer Setup	\$3,000	LS	\$3,000
Trailer Rental	\$175	44	\$7,700
Final Clean-Up	\$225	44	\$9,900
Rubbish Removal	\$450	44	\$19,800
Temporary Fence	\$175	44	\$7,700
Job Signs	\$3,000	LS	\$3,000
Telephone	\$90	44	\$3,960
Office Supplies	\$250	44	\$11,000
Safety Supplies	\$4,000	LS	\$4,000
Bond Premiums	\$26,000	LS	\$26,000
Liability Insurance	\$17,500	LS	\$17,500
Computers	\$10,500	LS	\$10,500
Hoist Set-Up	\$10,000	LS	\$10,000
Hoist Rental	\$500	44	\$22,000
Travel Expenses	\$400	44	\$17,600
Temporary Utilities	\$175	44	\$7,700
Es	\$564,820		

• Cost per week - \$12,837