

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.

Frederi	ick Memorial Hospital, Phase 4 Additions and Renovati	ations			Detailed Project Schedule
ID	Task Name	Duration	Start	Finish	2006
	1				ne July August September October November December January February March April May June July Aug 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 2/12 2/26 3/12 3/26 4/9 4/23 5/7 5/21 6/4 6/18 7/2 7/16 7/30
	Sitework	222 days	7/1/05	5/8/06	O6 Sitework
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	Site Demolition
3	•	10 days	3/8/06	3/21/06	
$4 \mid$	New Curb and Gutter	10 days	3/22/06	4/4/06	New Curb and Gutter
5	,	10 days	4/5/06	4/18/06	
6	~	10 days	4/19/06	5/2/06	
7	Landscaping	12 days	4/21/06	5/8/06	106 Landscaping
	Area G	214 days	7/25/05	5/18/06	
	Demolition	37 days	7/25/05	9/13/05	Demolition
8	Ü	5 days	7/25/05	7/29/05	
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	O5 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	_	15 days	9/19/05	10/7/05	
23	Connector Bridge Concrete	5 days	10/10/05	10/14/05	O5 Connector Bridge Concrete
24	New Entrance Footings/Piers	7 days	9/7/05	9/15/05	New Entrance Footings/Piers
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Freder	ick Memorial Hospital, Phase 4 Additions and Renovation	ns				Detailed Project Schedule
ID	Task Name	Duration	Start	Finish	July August September October November December January February	March April May June July Aug
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25	New Entrance CMU Foundation Wall & SOG	9 days	9/16/05	9/28/05	New Entrance CMU Foundation Wall & SOG	
26	New Entrance Canopy Framing	5 days	9/29/05	10/5/05	New Entrance Canopy Framing	
27	Fireproofing	8 days	10/17/05	10/26/05	Fireproofing	
	Enclosure	79 days	8/31/05	12/19/05	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	5 days	9/7/05	9/13/05	East Excavation	
32	East Exterior Demo & New Brick Veneer	11 days	9/22/05	10/6/05	East Exterior Demo & New Brick Veneer	
33	South Exterior Demo & New Brick Veneer	11 days	10/7/05	10/21/05	South Exterior Demo & New Brick Veneer	
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	11/2/05	Entrance Canopy Soffit/Fascia	
36	Exterior Windows/Storefront	20 days	10/18/05	11/14/05	Exterior Windows/Storefront	
37	Set Roof Equipment	5 days	11/15/05	11/21/05	Set Roof Equipment	
38	Roofing	20 days	11/22/05	12/19/05	Roofing	
	4th Floor Interior Rough-In	59 days	10/17/05	1/5/06	4th Floor Interior Ro	ough-In
39	Partition Layout	5 days	10/17/05	10/21/05	Partition Layout	
40	Above Ceiling Plumbing (Gravity)	10 days	10/24/05	11/4/05	Above Ceiling Plumbing (Gravity)	
41	Above Ceiling HVAC	4 days	11/7/05	11/10/05	Above Ceiling HVAC	
42	Above Ceiling Piping (Pressure)	4 days	11/11/05	11/16/05	Above Ceiling Piping (Pressure)	
43	Above Ceiling Electrical & Pull Wire	8 days	11/17/05	11/28/05	Above Ceiling Electrical & Pull Wire	
44	Fire Protection	5 days	11/29/05	12/5/05	Fire Protection	
45	Set Door Frames	3 days	12/6/05	12/8/05	Set Door Frames	
46	Partition Framing	5 days	12/9/05	12/15/05	Partition Framing	
47	In-Wall MEP	5 days	12/16/05	12/22/05	In-Wall MEP	
48	Mechanical & Plumbing Insulation	6 days	12/20/05	12/27/05	Mechanical & Plumbing Is	ısulation
49	Frame Bulkheads & Drywall Ceilings	5 days	12/28/05	1/3/06	Frame Bulkheads & D	ywall Ceilings
50	Hang One Side Drywall	3 days	12/23/05	12/27/05	Hang One Side Drywall	
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Freder	rick Memorial Hospital, Phase 4 Additions and Renovation	ons															D	Detailed Project	t Schedule
ID	Task Name	Duration	Start	Finish	ne	July	August	September	r October	November	December	2006	February	March	April	May	June	July	Aug
					6/5 6/	19 7/3 7/17	7/31 8/14	1 8/28 9/11	9/25 10/9 10)/23 11/6 11/2	20 12/4 12/18	$1/1 \mid 1/1$	5 1/29 2/12 2	2/26 3/12	3/26 4/9	4/23 5/7	5/21 6/4	6/18 7/2 7/	/16 7/30
51	Wall Close-in Inspections	2 days	12/28/05	12/29/05								Wall Close	e-in Inspections						
52	Second Side Drywall & Tape/Finish	5 days	12/30/05	1/5/06								Second	l Side Drywall &	Tape/Finis	h				
	4th Floor Interior Finishes	43 days	1/6/06	3/7/06								-		4th Fl	oor Interior I	Finishes			
53	Prime Paint/1st Coat	3 days	1/6/06	1/10/06								Prim	ne Paint/1st Coat						
54	Ceiling Grid	3 days	1/11/06	1/13/06								Cei	lling Grid						
55	Light Fixtures	5 days	1/16/06	1/20/06]	Light Fixtures						
56	Registers, Grilles, & Diffusers	5 days	1/23/06	1/27/06									Registers, Gril	lles, & Diffu	users				
57	Sprinkler Drops/Heads	3 days	1/23/06	1/25/06									Sprinkler Drop	ps/Heads					
58	Above Ceiling Inspection	1 day	1/30/06	1/30/06									Above Ceilir	ng Inspectio	on				
59	Ceiling Close-In	3 days	1/31/06	2/2/06									Ceiling Clo	se-In					
60	Flooring	7 days	2/3/06	2/13/06									Floori	ng					
61	Millwork	3 days	2/14/06	2/16/06									Milly	work					
62	Plumbing Fixtures	3 days	2/17/06	2/21/06									Plı	umbing Fixt	tures				
63	Doors & Hardware	2 days	2/22/06	2/23/06									D	oors & Ha	rdware				
64	Final Paint	3 days	2/24/06	2/28/06										Final Paint	t				
65	Architectural Trim	3 days	3/1/06	3/3/06										Architect	ural Trim				
66	MEP Trim	3 days	3/1/06	3/3/06										MEP Tri	m				
67	Final Paint in Corridors & Touch-Up	2 days	3/6/06	3/7/06										Final Pa	aint in Corrid	lors & Tou	ıch-Up		
	3rd Floor Interior Rough-In	63 days	10/27/05	1/23/06									3rd Floor Inte	rior Rough	-In				
68	Partition Layout	5 days	10/27/05	11/2/05						Partition L	ayout								
69	Above Ceiling Plumbing (Gravity)	5 days	11/7/05	11/11/05						Above	Ceiling Plumb	oing (Gravit	ty)						
70	Above Ceiling HVAC	5 days	11/14/05	11/18/05						Abo	ove Ceiling HV	VAC							
71	Above Ceiling Piping (Pressure)	4 days	11/21/05	11/24/05						I A	Above Ceiling l	Piping (Pre	essure)						
72	Above Ceiling Electrical & Pull Wire	11 days	11/29/05	12/13/05							Above	Ceiling Ele	ectrical & Pull W	ire					
73	Fire Protection	5 days	12/14/05	12/20/05							Fire	e Protection	n						
74	Set Door Frames	3 days	12/21/05	12/23/05							Se Se	et Door Fra	nmes						
7.5	Partition Framing	5 days	12/26/05	12/30/05					***************************************			Partition I	Framing						
76	In-Wall MEP	5 days	1/2/06	1/6/06								In-Wa	ll MEP						
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Freder	Frederick Memorial Hospital, Phase 4 Additions and Renovations Detailed Project Schedule										
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77	Mechanical & Plumbing Insulation	6 days	1/9/06	1/16/06	Mechanical & Plumbing Insulation						
78	Frame Bulkheads & Drywall Ceilings	5 days	1/17/06	1/23/06	Frame Bulkheads & Drywall Ceilings						
79	Hang One Side Drywall	3 days	1/9/06	1/11/06	Hang One Side Drywall						
80	Wall Close-in Inspections	2 days	1/12/06	1/13/06	Wall Close-in Inspections						
81	Second Side Drywall & Tape/Finish	5 days	1/16/06	1/20/06	Second Side Drywall & Tape/Finish						
	3rd Floor Interior Finishes	51 days	1/24/06	4/4/06	3rd Floor Interior Finishes						
82	Prime Paint/1st Coat	3 days	1/24/06	1/26/06	Prime Paint/1st Coat						
83	Ceiling Grid	3 days	1/27/06	1/31/06	Ceiling Grid						
84	Light Fixtures	5 days	2/1/06	2/7/06	Light Fixtures						
85	Registers, Grilles, & Diffusers	5 days	2/8/06	2/14/06	Registers, Grilles, & Diffusers						
86	Sprinkler Drops/Heads	3 days	2/8/06	2/10/06	Sprinkler Drops/Heads						
87	Above Ceiling Inspection	1 day	2/13/06	2/13/06	Above Ceiling Inspection						
88	Ceiling Close-In	3 days	2/15/06	2/17/06	Ceiling Close-In						
89	Flooring	10 days	2/20/06	3/3/06	Flooring						
90	Millwork	3 days	3/6/06	3/8/06	☐ Millwork						
91	Plumbing Fixtures	3 days	3/9/06	3/13/06	Plumbing Fixtures						
92	Doors & Hardware	4 days	3/14/06	3/17/06	Doors & Hardware						
93	Final Paint	3 days	3/20/06	3/22/06	Final Paint						
94	Architectural Trim	3 days	3/23/06	3/27/06	Architectural Trim						
95	MEP Trim	5 days	3/23/06	3/29/06	MEP Trim						
96	Final Paint in Corridors & Touch-Up	4 days	3/30/06	4/4/06	Final Paint in Corridors & Touch-Up						
	2nd Floor Interior Rough-In	72 days	11/3/05	2/10/06	2nd Floor Interior Rough-In						
97	Partition Layout	5 days	11/3/05	11/9/05	Partition Layout						
98		7 days	11/14/05	11/22/05	Above Ceiling Plumbing (Gravity)						
99	Above Ceiling HVAC	10 days	11/23/05	12/6/05	Above Ceiling HVAC						
100		6 days	11/30/05	12/7/05	Above Ceiling Piping (Pressure)						
101	Above Ceiling Electrical & Pull Wire	11 days	12/14/05	12/28/05	Above Ceiling Electrical & Pull Wire						
102	Fire Protection	5 days	12/29/05	1/4/06	Fire Protection						
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Freder	ick Memorial Hospital, Phase 4 Additions and Renovatio	ons			Detailed Project Sch	.edule
ID	Task Name	Duration	Start	Finish	ne July August September October November December January February March April May June July	Aug
100	0.10	9.1	1/7/06	1/0/00	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	7/30
103	Set Door Frames	3 days	1/5/06	1/9/06	06 Set Door Frames	
104	Partition Framing	5 days	1/10/06	1/16/06	Partition Framing	
105	In-Wall MEP	5 days	1/17/06	1/23/06	1n-Wall MEP	
106	Mechanical & Plumbing Insulation	8 days	1/24/06	2/2/06	Mechanical & Plumbing Insulation	
107	Frame Bulkheads & Drywall Ceilings	5 days	2/3/06	2/9/06	Frame Bulkheads & Drywall Ceilings	
108	Hang One Side Drywall	3 days	1/24/06	1/26/06	Hang One Side Drywall	
109	Wall Close-in Inspections	2 days	1/27/06	1/30/06	Wall Close-in Inspections	
110	Second Side Drywall & Tape/Finish	9 days	1/31/06	2/10/06	Second Side Drywall & Tape/Finish	
	2nd Floor Interior Finishes	55 days	2/13/06	4/28/06	2nd Floor Interior Finishes	
111	Prime Paint/1st Coat	3 days	2/13/06	2/15/06	Prime Paint/1st Coat	
112	Ceiling Grid	3 days	2/16/06	2/20/06	Ceiling Grid	
113	Light Fixtures	5 days	2/21/06	2/27/06	Light Fixtures	
114	Registers, Grilles, & Diffusers	5 days	2/28/06	3/6/06	Registers, Grilles, & Diffusers	
115	Sprinkler Drops/Heads	3 days	2/28/06	3/2/06	Sprinkler Drops/Heads	
116	Above Ceiling Inspection	1 day	3/3/06	3/3/06	06 Above Ceiling Inspection	
117	Ceiling Close-In	3 days	3/7/06	3/9/06	Ceiling Close-In	
118	Flooring	13 days	3/9/06	3/27/06	76 Flooring	
119	Millwork	3 days	3/28/06	3/30/06	06 Millwork	
120	Plumbing Fixtures	3 days	3/31/06	4/4/06	Plumbing Fixtures	
121	Doors & Hardware	6 days	4/5/06	4/12/06	Doors & Hardware	
122	Final Paint	3 days	4/13/06	4/17/06	Final Paint	
123	Architectural Trim	3 days	4/18/06	4/20/06	06 Architectural Trim	
124	MEP Trim	5 days	4/18/06	4/24/06	MEP Trim	
125	Final Paint in Corridors & Touch-Up	4 days	4/25/06	4/28/06	Final Paint in Corridors & Touch-Up	
	1st Floor Interior Rough-In	77 days	11/10/05	2/24/06	1st Floor Interior Rough-In	
126	Partition Layout	5 days	11/10/05	11/16/05	D5 Partition Layout	
127	Above Ceiling Plumbing (Gravity)	9 days	11/24/05	12/6/05	Above Ceiling Plumbing (Gravity)	
128	Above Ceiling HVAC	10 days	12/7/05	12/20/05	Above Ceiling HVAC	
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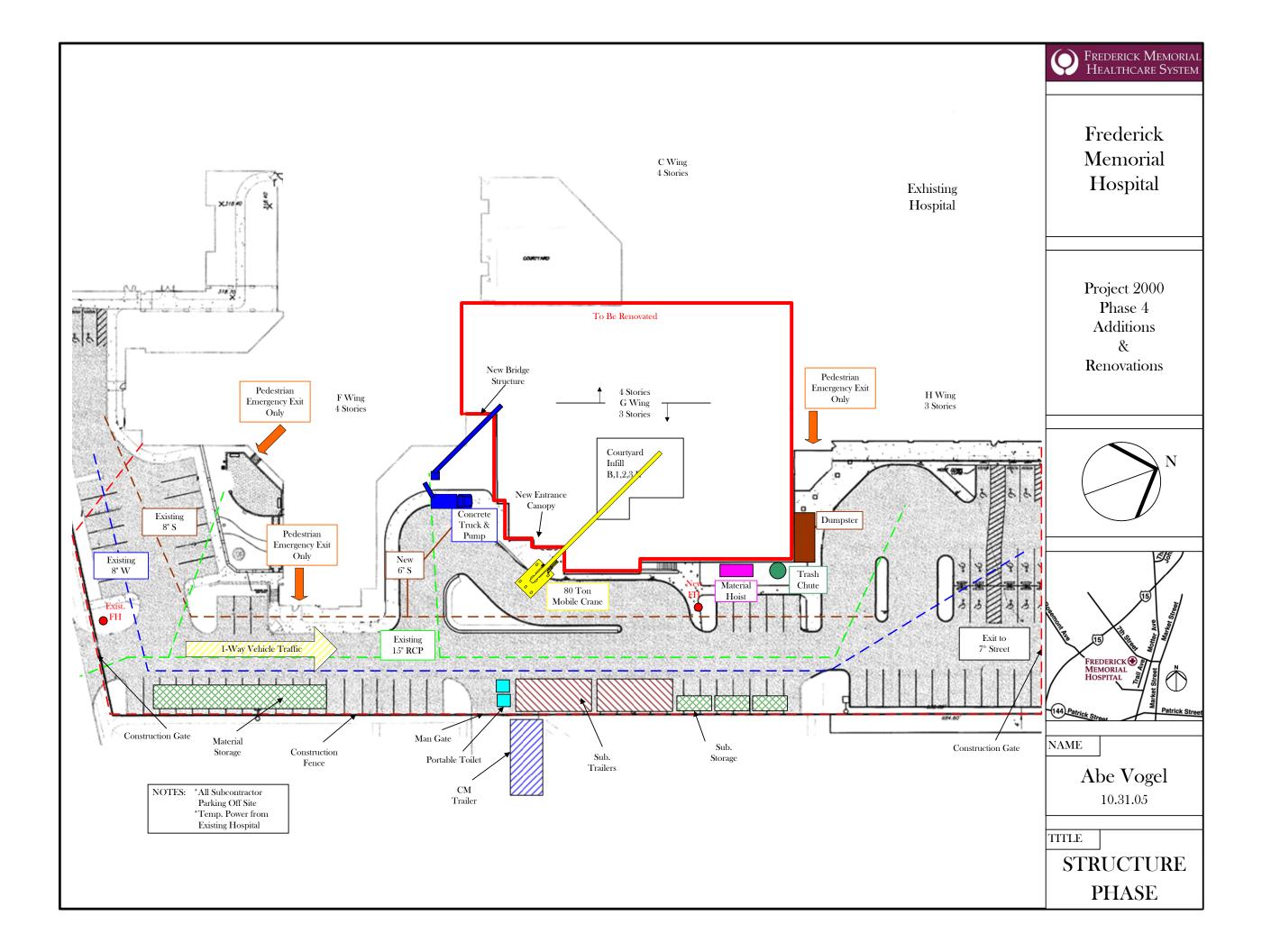
Freder	ick Memorial Hospital, Phase 4 Additions and Renova	ntions			Detailed Project Schedul	e
ID	Task Name	Duration	Start	Finish	2006	\Box
					ne July August September October November December January February March April May June July August 6/5 6/19 7/3 7/17 7/31 8/14 8/28 9/11 9/25 10/9 10/23 11/6 11/20 12/4 12/18 1/1 1/15 1/29 2/12 2/26 3/12 3/26 4/9 4/23 5/7 5/21 6/4 6/18 7/2 7/16 7/30	
129	Above Ceiling Piping (Pressure)	8 days	12/21/05	12/30/05	Above Ceiling Piping (Pressure)	
130	Above Ceiling Electrical & Pull Wire	11 days	12/29/05	1/12/06	Above Ceiling Electrical & Pull Wire	
131	Fire Protection	5 days	1/5/06	1/11/06	Fire Protection	
132	Set Door Frames	3 days	1/12/06	1/16/06	Set Door Frames	
133	Partition Framing	5 days	1/17/06	1/23/06	Partition Framing	
134	In-Wall MEP	5 days	1/24/06	1/30/06	In-Wall MEP	
135	Mechanical & Plumbing Insulation	8 days	2/3/06	2/14/06	Mechanical & Plumbing Insulation	
136	Frame Bulkheads & Drywall Ceilings	5 days	2/15/06	2/21/06	Frame Bulkheads & Drywall Ceilings	
137	Hang One Side Drywall	3 days	1/31/06	2/2/06	Hang One Side Drywall	
138	Wall Close-in Inspections	2 days	2/3/06	2/6/06	Wall Close-in Inspections	
139	Second Side Drywall & Tape/Finish	10 days	2/13/06	2/24/06	Second Side Drywall & Tape/Finish	
	1st Floor Interior Finishes	56 days	2/27/06	5/15/06	1st Floor Interior Finishes	
140	Prime Paint/1st Coat	3 days	2/27/06	3/1/06	Prime Paint/1st Coat	
141	Ceiling Grid	3 days	3/2/06	3/6/06	Ceiling Grid	
142	Light Fixtures	5 days	3/7/06	3/13/06	Light Fixtures	
143	Registers, Grilles, & Diffusers	5 days	3/14/06	3/20/06	Registers, Grilles, & Diffusers	
144	Sprinkler Drops/Heads	3 days	3/14/06	3/16/06	Sprinkler Drops/Heads	
145	Above Ceiling Inspection	1 day	3/21/06	3/21/06	Above Ceiling Inspection	
146	Ceiling Close-In	3 days	3/22/06	3/24/06	Ceiling Close-In	
147	Flooring	12 days	3/28/06	4/12/06	Flooring	
148	Millwork	3 days	4/13/06	4/17/06	Millwork	
149	Plumbing Fixtures	3 days	4/18/06	4/20/06	Plumbing Fixtures	
150	Doors & Hardware	6 days	4/21/06	4/28/06	Doors & Hardware	
151	Final Paint	3 days	5/1/06	5/3/06	Final Paint	
152	Architectural Trim	3 days	5/4/06	5/8/06	Architectural Trim	
153	MEP Trim	5 days	5/4/06	5/10/06	MEP Trim	
154	Final Paint in Corridors & Touch-Up	3 days	5/11/06	5/15/06	Final Paint in Corridors & Touch-Up	
	Basement Interior Rough-In	86 days	11/17/05	3/16/06	Basement Interior Rough-In	
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Freder	Frederick Memorial Hospital, Phase 4 Additions and Renovations Detailed Project Schedule										
ID	Task Name	Duration	Start	Finish	ne July August September October November December January February March April May June July A						
155	Partition Layout	5 days	11/17/05	11/23/05	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 2/12 2/26 3/12 3/26 4/9 4/23 5/7 5/21 6/4 6/18 7/2 7/16 7/2						
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156	Above Ceiling Plumbing (Gravity)	4 days	12/15/05	12/20/05	Above Ceiling Plumbing (Gravity)						
157	Above Ceiling HVAC	5 days	12/21/05	12/27/05	5 Above Ceiling HVAC						
158	Above Ceiling Piping (Pressure)	5 days	1/2/06	1/6/06	Above Ceiling Piping (Pressure)						
159	Above Ceiling Electrical & Pull Wire	8 days	1/13/06	1/24/06	Above Ceiling Electrical & Pull Wire						
160	Fire Protection	5 days	1/25/06	1/31/06	Fire Protection						
161	Set Door Frames	3 days	2/1/06	2/3/06	6 Set Door Frames						
162	Partition Framing	5 days	2/6/06	2/10/06	6 Partition Framing						
163	In-Wall MEP	3 days	2/13/06	2/15/06	6 In-Wall MEP						
164	Mechanical & Plumbing Insulation	8 days	2/16/06	2/27/06	Mechanical & Plumbing Insulation						
165	Frame Bulkheads & Drywall Ceilings	5 days	2/28/06	3/6/06	Frame Bulkheads & Drywall Ceilings						
166	Hang One Side Drywall	3 days	3/7/06	3/9/06	6 Hang One Side Drywall						
167	Wall Close-in Inspections	2 days	3/10/06	3/13/06	Wall Close-in Inspections						
168	Second Side Drywall & Tape/Finish	3 days	3/14/06	3/16/06	Second Side Drywall & Tape/Finish						
	Basement Floor Interior Finishes	34 days	3/17/06	5/3/06	Basement Floor Interior Finishes						
169	Prime Paint/1st Coat	2 days	3/17/06	3/20/06	Prime Paint/1st Coat						
170	Ceiling Grid	2 days	3/21/06	3/22/06	6 Ceiling Grid						
171	Light Fixtures	3 days	3/23/06	3/27/06	6 Light Fixtures						
172	Registers, Grilles, & Diffusers	3 days	3/28/06	3/30/06	Registers, Grilles, & Diffusers						
173	Sprinkler Drops/Heads	3 days	3/28/06	3/30/06	6 Sprinkler Drops/Heads						
174	Above Ceiling Inspection	1 day	3/31/06	3/31/06	6 Above Ceiling Inspection						
175	Ceiling Close-In	2 days	4/3/06	4/4/06	6 Ceiling Close-In						
176	Flooring	3 days	4/13/06	4/17/06	6 Flooring						
177	Millwork	1 day	4/18/06	4/18/06	6 Millwork						
178	Plumbing Fixtures	2 days	4/21/06	4/24/06	Plumbing Fixtures						
179	Doors & Hardware	1 day	4/25/06	4/25/06	Doors & Hardware						
180	Final Paint	2 days	4/26/06	4/27/06	6 Final Paint						
181	Architectural Trim	2 days	4/28/06	5/1/06	6 Architectural Trim						
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Frederic	ck Memorial Hospital, Phase 4 Additions and Renovatio	ons																Detailed Pr	oject Sch	edule
ID	Task Name	Duration	Start	Finish	7.1			1 0 . 1	3.7 1	I.D.	2006	F 1	11/	1	1			T 1		
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182	MEP Trim	3 days	4/28/06	5/2/06										•		MEP	Trim			
183	Final Paint in Corridors & Touch-Up	1 day	5/3/06	5/3/06	5											Final	l Paint in Co	orridors & To	uch-Up	
	Final Clean-Up/Punchlist/Commissioning	50 days	3/10/06	5/18/06	5								ı				Final Cle	ean-Up/Punc	nlist/Con	nmiss
184	Air/Water Balance	8 days	3/31/06	4/11/06	5										Air/W	Vater Bala	ance			
185	Incomplete Work Lists & Repairs	30 days	3/10/06	4/20/06	5										In	ıcomplete	te Work List	s & Repairs	•	
186	A/E/O Punchlist	30 days	3/21/06	5/1/06	5											A/E/(O Punchlist		•	
187	Punchlist Repairs	15 days	4/25/06	5/15/06	3												Punchlist R	epairs	•	
188	Substantial Completion	0 days	5/15/06	5/15/06	5											5/15	▶ Substantia	l Completion	Ţ	
189	Final Clean-Up	3 days	5/16/06	5/18/06	5												Final Clea	n-Up		
	Area H	83 days	8/31/05	12/23/05	5		-				Area H									
190	4th Floor Selective Demo	5 days	8/31/05	9/6/05	5		4	th Floor Selective 1	Demo											
191	4th Floor Alcove Construction	10 days	10/10/05	10/21/05	5				4th Floor Alc	cove C	Construction									
192	4th Floor Finishes	10 days	10/24/05	11/4/05	5				4th Flo	oor Fir	nishes									
193	3rd Floor Selective Demo	5 days	9/7/05	9/13/05	5			3rd Floor Selecti	ive Demo										•	
194	3rd Floor Alcove Construction	10 days	10/24/05	11/4/05	5				3rd Flo	oor Al	cove Construction									
195	3rd Floor Finishes	10 days	11/7/05	11/18/05	5					3rd Fl	oor Finishes									
196	Incomplete Work Lists & Repairs	10 days	11/21/05	12/2/05	5						Incomplete Work	Lists & Repa	uirs							
197	A/E/O Punchlist	2 days	12/5/05	12/6/05	5						A/E/O Punchlist								•	
198	Punchlist Repairs	10 days	12/7/05	12/20/05	5						Punchlist I	Repairs								
199	Area H Substantial Completion	0 days	12/20/05	12/20/05	5					1	2/20 Area H S	ubstantial Co	ompletion							
200	Final Clean-Up	3 days	12/21/05	12/23/05	5						Final Cle	an-Up								
					<u> </u>			<u> </u>			<u> </u>									
1																				

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 #	Quai	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	B2030-8200	2	EA	7650 /EA	\$15,300		
Aluminum sliding windows, insulated							
glass 9'x5'	B2020-7750	87	EA	1058 /EA	\$92,046		
Location Modifier - Hagerstown 0.89							
Esti	mate Total				\$530,036		

• 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								
		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	stimate Total		\$564,820

• Cost per week - \$12,837



APPENDIX

RS Means Construction Cost Data 2005:

	03110 Structural C.I.P. Forms	Unit	Bare Mat.	Bare Labor	Bare Equip.	Bare Total	Total Incl. 0&P	
410 001	O FORMS IN PLACE, COLUMNS							410
665	0 4 use	SFCA	.80	4.35		5.15	7.70	
700		0501				740	40.45	
	03110 Structural C.I.P. Forms	Unit	Bare Mat.	Bare Labor	Bare Equip.	Bare Total	Total Incl. 0&P	
420 001	FORMS IN PLACE, ELEVATED SLABS							420
200	Flat slab, drop panels, job-built plywood, to 15' high, 1 use	S.F.	4.44	3.56		8	10.45	
	03110 Structural C.I.P. Forms	Unit	Bare Mat.	Bare Labor	Bare Equip.	Bare Total	Total Incl. 0&P	
430 001	03110 Structural C.I.P. Forms FORMS IN PLACE, FOOTINGS Continuous wall, plywood, 1 use	Unit SFCA	Bare Mat.			Bare Total	0&P	430
430 001							0&P	430
430 001							0&P	430
	FORMS IN PLACE, FOOTINGS Continuous wall, plywood, 1 use	SFCA	2.31	2.76		5.07	0&P 6.85 Total Incl. 0&P	430

			03150 Concrete Accessories	Unit	Bare Mat.	Bare Labor	Bare Equip.	Bare Total	Total Incl. 0&P	
60	0 0	010	SHORES Erect and strip, by hand, horizontal members							600
		500	Reshoring	S.F.	.38	.39		.77	1.02	
		0001		0501			0.5			

			03210 Reinforcing Steel	Unit	Bare Mat.	Bare Labor	Bare Equip.	Bare Total	Total Incl. 0&P	
6	00	0010	REINFORCING IN PLACE A615 Grade 60, incl. access. labor							600
		0400	Elevated slabs, #4 to #7	Ton	850	420		1,270	1,625	
		OF CO.	F	 	700					=
			03210 Reinforcing Steel	Unit	Bare Mat.	Bare Labor	Bare Equip.	Bare Total	Total Incl. 0&P	
1	600	0010	REINFORCING IN PLACE A615 Grade 60, incl. access. labor							600
		0500	Footings, #4 to #7	Ton	760	580		1,340	1,800	
			03210 Reinforcing Steel	Unit	Bare Mat.	Bare Labor	Bare Equip.	Bare Total	Total Incl. 0&P	
1	600	0010	REINFORCING IN PLACE A615 Grade 60, incl. access. labor							600
Ш		0200	Columns #3 to #7	Lon	800	810		1.610	2 200	

	03310 Structural Concrete	Unit	Bare Mat.	Bare Labor	Bare Equip.	Bare Total	Total Incl. 0&P	
222 201	CONCRETE BEARVAIVA							220
	O CONCRETE, READY MIX Normal weight O 5000 psi	C.Y.	90			90	99	220
					*			
			I	I	Ι	I	I	
	03310 Structural Concrete	Unit	Bare Mat.	Bare Labor	Bare Equip.	Bare Total	Total Incl. 0&P	
700 001	PLACING CONCRETE and vibrating, including labor & equipment							700
	0 Footings, continuous, shallow, direct chute	C.Y.		11.20				
195	0 Pumped	C.Y.		12.25	5	17.25	24.50	J
		Г	Т	T	Т	Т	I	
	03310 Structural Concrete	Unit	Bare Mat.	Bare Labor	Bare Equip.	Bare Total	Total Incl. 0&P	
2 40 00°	10 CONCRETE IN PLACE Including forms (4 uses), reinforcing							240
	50 Slab on grade, not including finish, 4" thick	C.Y.	104	48.50	.39	152.89	192	
1.17	and it		<u>' </u>			100.00	150	
								_
	03310 Structural Concrete	Unit	Bare Mat.	Bare Labor	Bare Equip.	Bare Total	Total Incl.	
700 004							0&P	700
	PLACING CONCRETE and vibrating, including labor & equipment Slab on grade, 4" thick, direct chute	C.Y.		12.25	.44	12.69	19.3	700
			•		·		·	-
				T		I	Total Incl.	
	03310 Structural Concrete	Unit	Bare Mat.	Bare Labor	Bare Equip.	Bare Total	0&P	
	O PLACING CONCRETE and vibrating, including labor & equipment							700
560 561	Wheeled concrete dumping, add to placing costs above Walking cart, 50' haul, add	C.Y.		7.55	1.56	9.11	13.5	
562		C.Y.		10.10				٩
							Takal larat	
	03310 Structural Concrete	Unit	Bare Mat.	Bare Labor	Bare Equip.	Bare Total	Total Incl. 0&P	
700 00	10 PLACING CONCRETE and vibrating, including labor & equipment							700
140	00 Elevated slabs, less than 6" thick, pumped	C.Y.		13.10				
149 150		C.Y. C.Y.		22 11.50	10.10 4.70	32.10 16.20		
15		C.Y.		18.90				
				·				
			1	T	1	1	1	
	03310 Structural Concrete	Unit	Bare Mat.	Bare Labor	Bare Equip.	Bare Total	Total Incl.	
						I	0&P	

700 0010 PLACING CONCRETE and vibrating, including labor & equipment
1400 Elevated slabs, less than 6" thick, pumped

			03350 Concrete Finishing	Unit	Bare Mat.	Bare Labor	Bare Equip.	Bare Total	Total Incl. 0&P	
Ш	300	0010	FINISHING FLOORS Monolithic, screed finish	S.F.		.29		.29	.43	300
Ш		0250	Machine trowel	S.F.		.48		.48	.70	

		04810 Unit Masonry Assemblies	Unit	Bare Mat.	Bare Labor	Bare Equip.	Bare Total	Total Incl. 0&P	
186	0010	CONCRETE BLOCK FOUNDATION WALL C90/C145							186
	0350	12" thick	S.F.	2.51	4.97		7.48	10.35	

		05120 Structural Steel	Unit	Bare Mat.	Bare Labor	Bare Equip.	Bare Total	Total Incl. 0&P	
680	0010	STRUCTURAL STEEL PROJECTS							680
	0700	Offices, hospitals, etc., steel bearing, 1 to 2 stories	Ton	1,750	291	137	2,178	2,575	
	0800	3 to 6 stories	Ton	1,775	335	105	2,215	2,675	
		3. 45	-	4.005	0.40	407	0.070	0.700	

		05310 Steel Deck	Unit	Bare Mat.	Bare Labor	Bare Equip.	Bare Total	Total Incl. 0&P	
300	0010	METAL DECKING Steel decking							300
	5700	3" deep, galv., 22 gauge	S.F.	1.53	.39	.03	1.95	2.40	
	5800	20 gauge	S.F.	1.71	.41	.03	2.15	2.65	
	5900	18 gauge	S.F.	2.10	.43	.03	2.56	3.12	
	6000	16 gauge	S.F.	2.80	.46	.03	3.29	3.93	

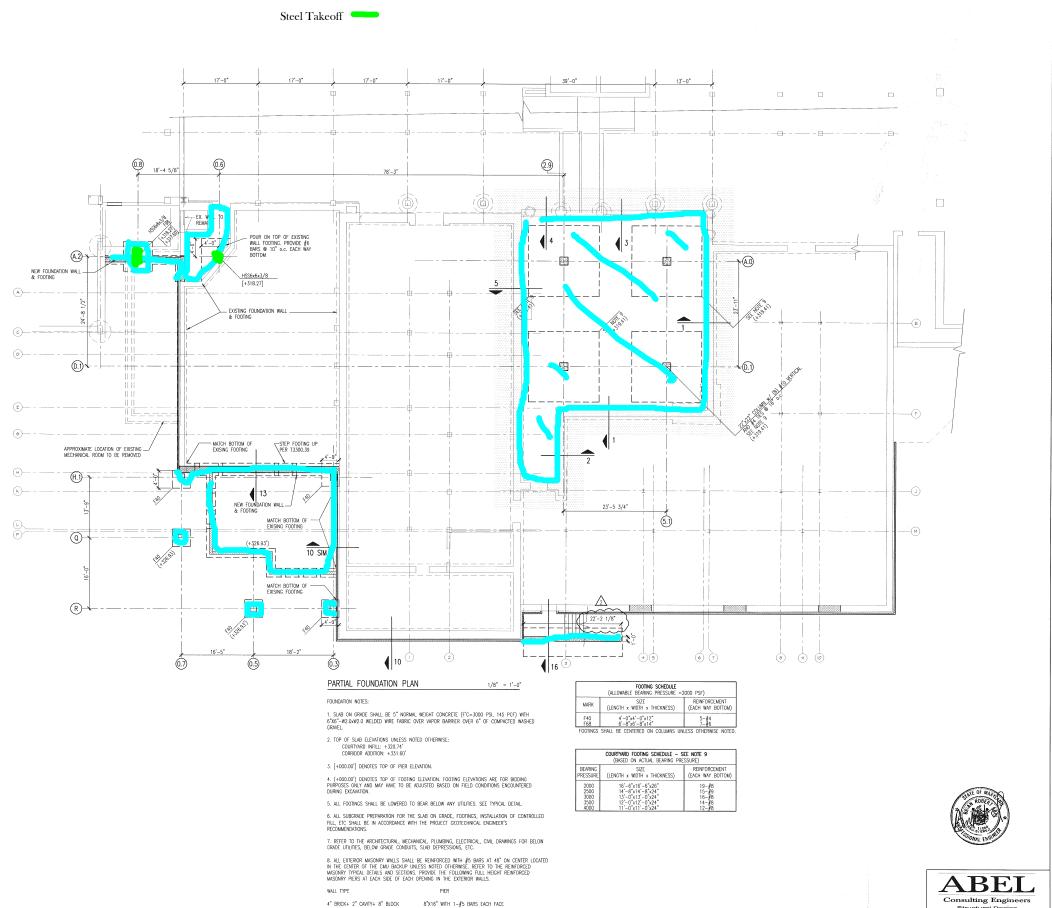
RS Means Assemblies Cost Data 2005:

		B2010 134	Brick Face	Cavity Wa	all				
		FACE BRICK	BACKUP MASONRY	TOTAL THICKNESS (IN.)	CAVITY INSULATION				
Ï	1000	Standard	4"common brick	10	polystyrene	S.F.	6.80	20	26.80
	1020				none	S.F.	6.60	19.60	26.20
	1040		6"SCR brick	12	polystyrene	S.F.	8.85	17.95	26.80

1			DESCRIPTION			UNIT	MAT.	INST.	TOTAL
	8200	sliding entrance	5' x 7' door	electric oper.	12'-0" x 7'-6"	Opng.	6,500	1,150	7,650
	8250	sliding patio	temp. glass	economy	6'-0'' x 7'-0''	Opng.	1,275	213	1,488
	8300		temp, glass	economy	12'-0" x 7'-0"	Opng.	2,225	285	2,510
	8350			premium	6'-0" x 7'-0"	Opng.	1,925	320	2,245
	8400				12'-0" x 7'-0"	Opng.	3,350	430	3,780

	B2020 106	Aluminum	Windows						
	MATERIAL	TYPE	GLAZING	SIZE	DETAIL				
6400	Aluminum	projecting	std. glass	3'-1" x 3'-2"		Ea.	234	109	343
6450				4'-5" x 5'-3"		Ea.	330	137	467
6500			insul. glass	3'-1" x 3'-2"		Ea.	281	131	412
6550				4'-5" x 5'-3"		Ea.	395	164	559
6600		sliding	std. glass	3' x 2'		Ea.	177	109	286
6650				5' x 3'		Ea.	225	121	346
6700				8' x 4'		Ea.	325	182	507
6750				9' x 5'		Ea.	490	273	763
6800			insul. glass	3' x 2'		Ea.	197	109	306
6850				5' x 3'		Ea.	315	121	436
6900				8' x 4'		Ea.	520	182	702
6950				9' x 5'		Ea.	785	273	1,058

The following pages contain the drawings used for the estimate takeoffs.



 SEE COURTYARD FOOTING SCHEDULE FOR VARYING SIZES BASED ON THE ACTUAL BEARING PRESSURE AS VERIFIED BY THE GEOTECHNICAL ENGINEER AT THE TIME OF CONSTRUCTION.

KEY:

Concrete/Reinforcing/Formwork Takeoff



FREDERICK MEMORIAL HOSPITAL
PROJECT 2000

NOELKER AND HULL ASSOCIATES, INC



ARCHITECTS
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CHAMBERSBURG, PENNSYLVANIA 17201
TELEPHONE 717 . 263 . 8464
FACSIMILE 717 . 263 . 6031

PHASE

4

ADDITIONS & RENOVATIONS



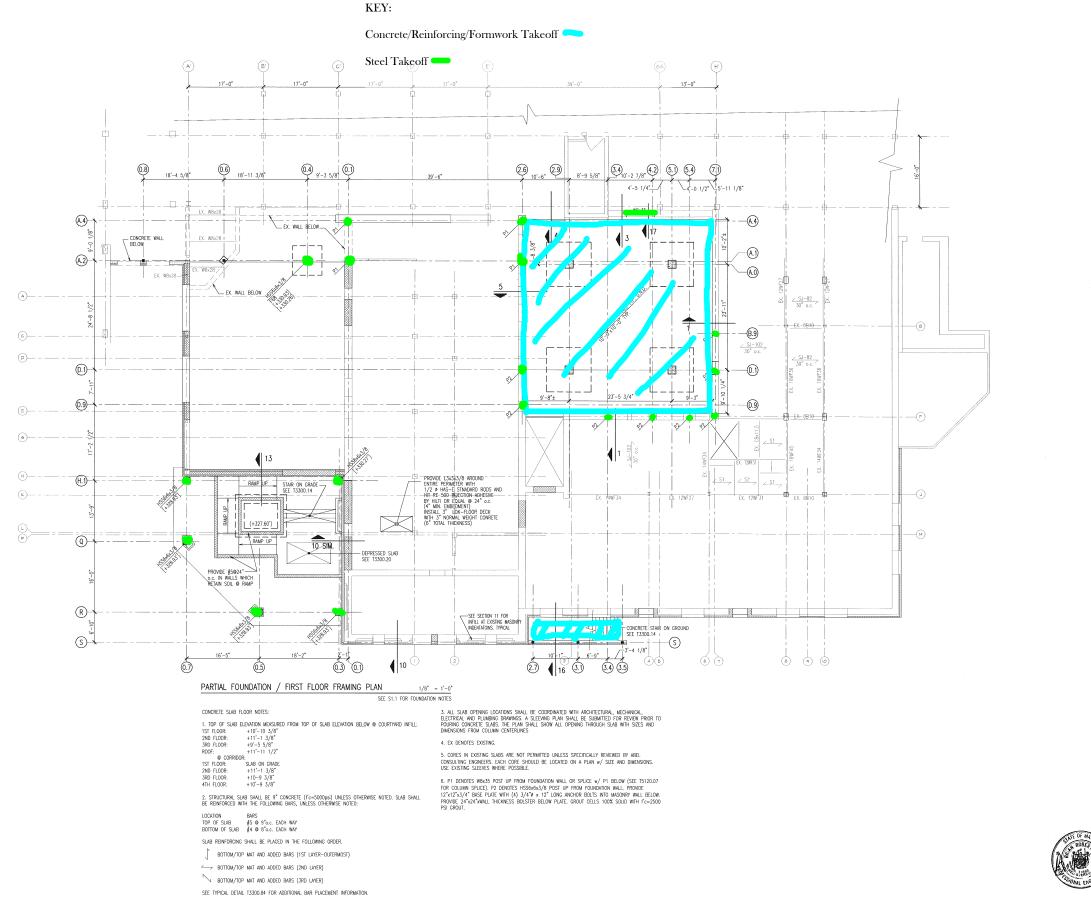




FOUNDATION PLAN

PRELIMINARY NOT FOR CONSTRUCTION	DATE. 15 JULY 2005
☐ ISSUED FOR BUILDING PERMIT	JOB NUMBER . 04167
□ PRICING	COMMISSION.
□ PACKAGE 1	
X PACKAGE 2	SCALE.
	C1 -

814 W. Diamond Ave., Sulte 360 301 258 8884
Galthersburg, Maryland 20878 Fax. 301 258 9457
Empil Info@ACEPA. net





FREDERICK MEMORIAL HOSPITAL PROJECT 2000

NOELKER AND HULL ASSOCIATES, INC

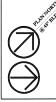


ARCHITECTS
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PHASE

4

ADDITIONS & RENOVATIONS





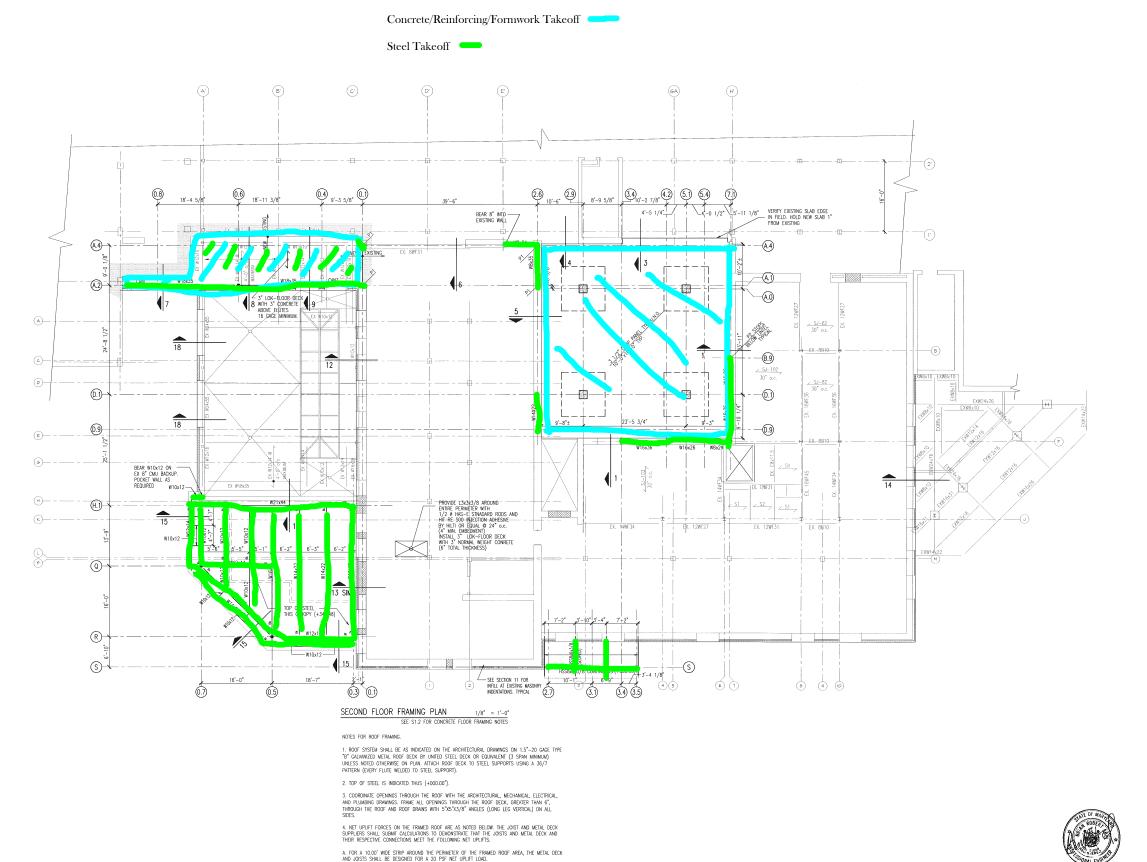


FOUNDATION PLAN FIRST FLOOR FRAMING PLAN

□ PRELIMINARY NOT FOR CONSTRUCTION	DATE. 15 JULY 2005	
☐ ISSUED FOR BUILDING PERMIT	JOB NUMBER . 04167	
□ PRICING	COMMISSION.	
□ PACKAGE 1		
X PACKAGE 2	SCALE.	
	C1 1	

EXISTING BUILDING INFORMATION IS AS NOCATED ON DESIGN DRAWINGS OF THE EXISTING BUILDING (BY OTHERS). CONTRICTOR SHALL VERITY ALL THE EXISTING INFORMATION INCESSARY FOR CONSTRUCTION AND INDITY THE REMOTIECT OF ANY DISCREPANCES. SCHEDULE FURNIS TO ALLOW THE ARCHITECT ANNIMUM OF TWO WEEKS TIME FOR COORDINATION OF DISCREPANCIES.

814 W. Diarmond Ave.. Suite 360 301 258 8884 Gailhersburg, Manyland 20878 Fax. 301 259 9457 Email Info@ACEPA.net



KEY:

B. ALL REMAINING FRAMED ROOF AREA SHALL BE DESIGNED FOR A 10 PSF NET UPLIFT LOAD.

The Same



FREDERICK MEMORIAL HOSPITAL PROJECT 2000

NOELKER AND HULL ASSOCIATES, INC



ARCHITECTS
30 WEST KING STREET
CHAMBERSBURG, PENNSYLVANIA 1
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PHASE

4

ADDITIONS & RENOVATIONS







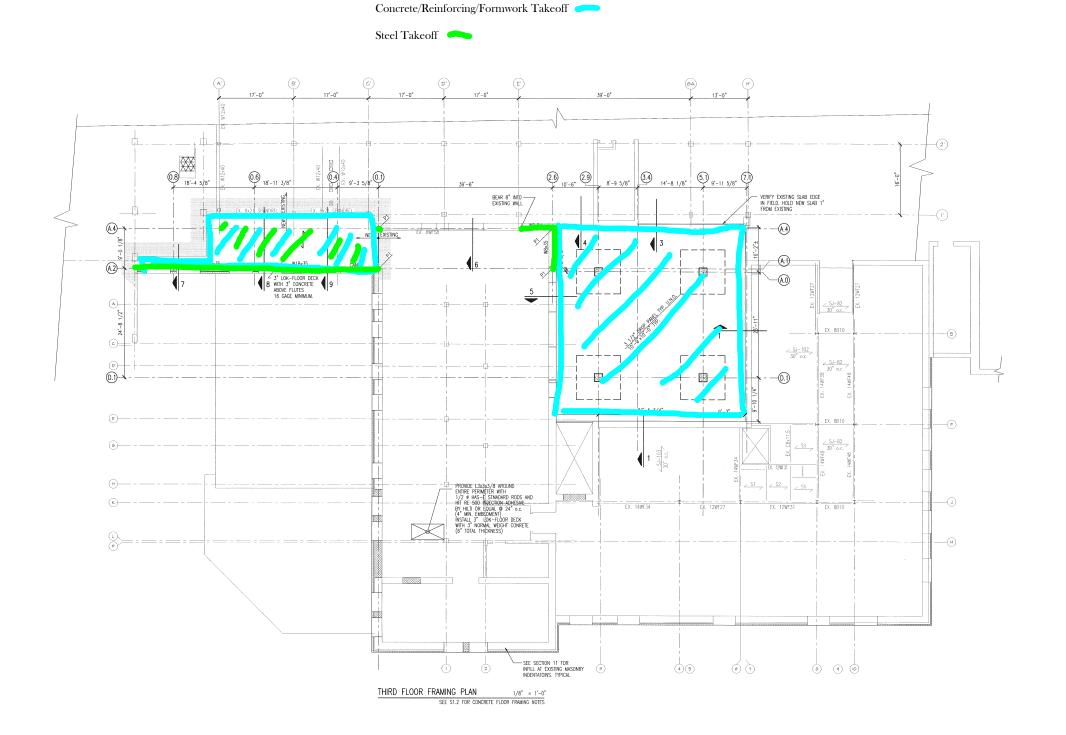
SECOND FLOOR FRAMING PLAN

□ PRELIMINARY NOT FOR CONSTRUCTION □ ISSUED FOR BUILDING PERMIT □ PRICING	JOB NUMBER: 04167
□ PACKAGE1	COMMISSION.
X PACKAGE 2	SCALE.
	S2. 1



Consulting Engineers
Structural Design

814 W. Diamond Ave. Sulb Sulphare Fox. 301 228 884
Gathenburg, Maryard 20078
Fox. 301 228 1407



KEY:



FREDERICK MEMORIAL HOSPITAL

NOELKER AND HULL ASSOCIATES, INC

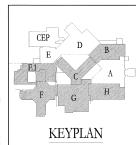
ARCHITECTS
30 WEST KING STREET
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TELEPHONE 717 . 263 . 8464
FACSIMILE 717 . 263 . 6031

PHASE

ADDITIONS & RENOVATIONS





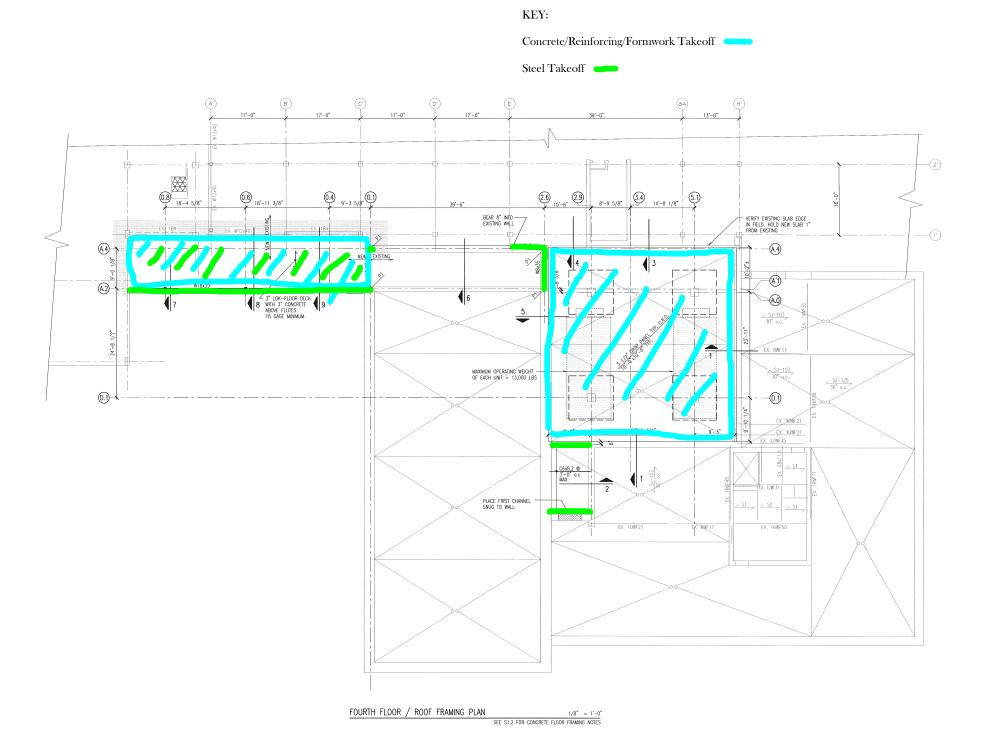


THIRD FLOOR FRAMING PLAN

PRELIMINARY NOT FOR CONSTRUCTION	DATE. 15 JULY 2005
☐ ISSUED FOR BUILDING PERMIT	JOB NUMBER . 04167
□ PRICING	COMMISSION.
□ PACKAGE 1	
X PACKAGE 2	SCALE.
	S22













FREDERICK MEMORIAL HOSPITAL PROJECT 2000

NOELKER AND HULL ASSOCIATES, INC

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PHASE

ADDITIONS & RENOVATIONS

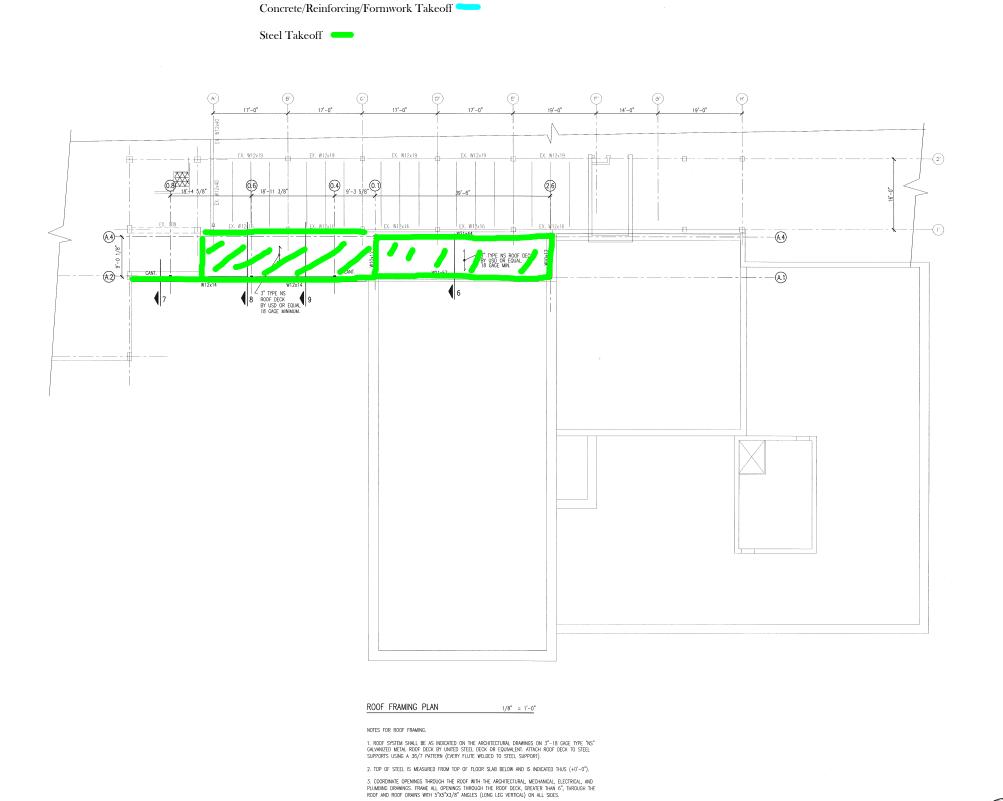






FOURTH FLOOR / ROOF FRAMING PLAN

PRELIMINARY NOT FOR CONSTRUCTION ISSUED FOR BUILDING PERMIT PRICING PACKAGE 1 V PACKAGE 2	DATE. 15 JULY 2005 JOB NUMBER. 04167 COMMISSION. SCALE.
A FAUANG 2	S2.3



4. NET UPLIET FORCES ON THE FRAMED ROOF ARE AS NOTED BELOW. THE JOST AND METAL DECK SUPPLIER SPALL SUBMIT CALCULATIONS TO DEMONSTRATE THAT THE JOSTS AND METAL DECK AND THEIR RESPECTIVE CONNECTIONS MEET THE FOLLOWING NEW LUFTIS.
A. FOR A 10.00° MIDE STRIP AROUND THE PERMITTER OF THE FRAMED ROOF AREA, THE METAL DECK AND JOSTS SHALL BE DESIGNED FOR A 20 PSF NET UPLIET LOAD.
B. ALL REMAINING FRAMED ROOF AREA SHALL BE DESIGNED FOR A 10 PSF NET UPLIET LOAD.

KEY:







FREDERICK MEMORIAL HOSPITAL PROJECT 2000

NOELKER AND HULL ASSOCIATES, INC



ARCHITECTS
30 WEST KING STREET
CHAMBERSBURG, PENNSYLVANIA 17201
TELEPHONE 717. 263. 8464
FACSIMILE 717. 263. 6031

PHASE **1**

ADDITIONS & RENOVATIONS







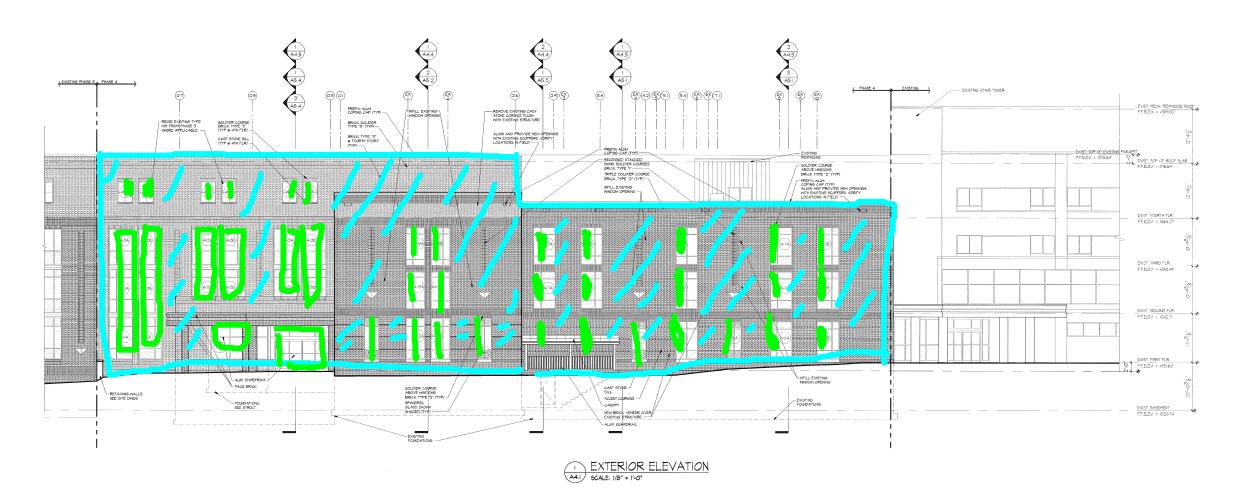
ROOF FRAMING PLAN

	PRELIMINARY NOT FOR CONSTRUCTION	DATE . 15 JULY 2005
	ISSUED FOR BUILDING PERMIT	JOB NUMBER. 04167
	PRICING	COMMISSION.
	PACKAGE 1	
N	PACKAGE 2	SCALE.
		S2 4
		$ \Im L$.

KEY:

Brick Veneer Takeoff

Window & Door Takeoff





FREDERICK MEMORIAL HOSPITAL PROJECT 2000

NOELKER AND HULL ASSOCIATES, INC

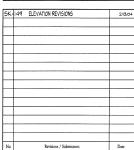


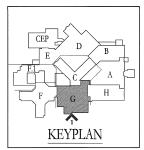
ARCHITECTS
30 WEST KING STREET
CHAMBERSBURG, PENNSYLVANIA 17201
TELEPHONE 717. 263. 8464
FACSIMILE 717. 263. 6031

PHASE

ADDITIONS & RENOVATIONS

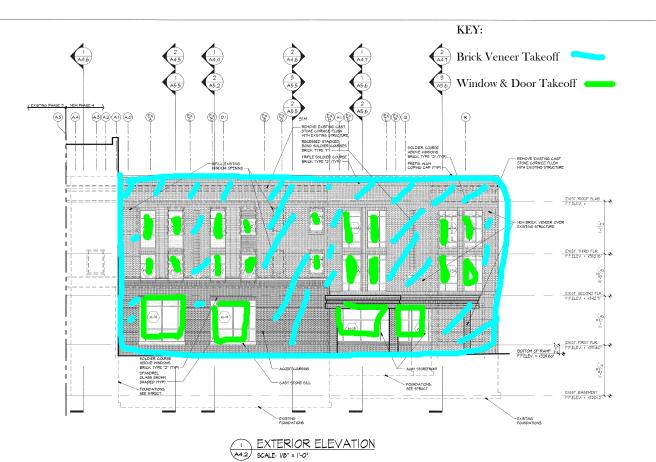


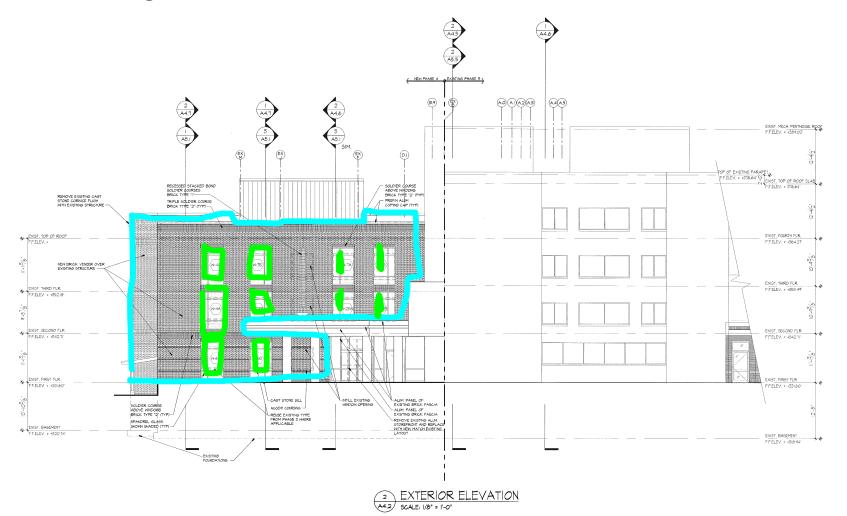




BUILDING ELEVATIONS

	A4.1	
PACKAGE 2	SCALE.	1/8" = 1'-0"
PRICING PACKAGE 1	COMMISSIO	N.
ISSUED FOR BUILDING PERMIT	JOB NUMBE	r. 04167
PRELIMINARY NOT FOR CONSTRUCTION	DATE. 15	JULY 2005







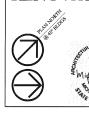


ARCHITECTS
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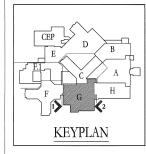
PHASE

4

ADDITIONS & RENOVATIONS







BUILDING ELEVATIONS

PACKAGE 1	SCALE.	1/8" = 1'-0"	
PRICING	COMMISSION	COMMISSION.	
ISSUED FOR BUILDING PERMIT	JOB NUMBER	. 04167	
PRELIMINARY NOT FOR CONSTRUCTION	DATE. 15]	DATE. 15 JULY 2005	

A4.2