

Technical Assignment #2

Cost and Methods Analysis

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Lancaster, PA
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Technical Assignment 2

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A. Executive Summary

This technical assignment gives a closer look at analyses of key project features that affect project execution of the 5th and 6th floor fit-out as well as the cardiac elevator addition at Lancaster General Hospital, Lancaster PA. Contained in this report you will find a detailed project schedule, site layout plan, assemblies estimate, detailed structural systems estimate and a general conditions estimate.

The first section is the detailed project schedule which lays out all the tasks of the project noting start and completion dates. The 5th and 6th floor fit-out of the Lime St. building starting on Aug. 11, 2006 with substantial completion occurring with DOH Licensure Inspection on Jan. 15, 2007. A critical part of the project is the completion of the cardiac elevator addition which will service the fit-out projects; this will start on Sep. 5, 2006 and be completed on Jan. 19, 2007. The second section is the site layout plan which shows the placement of the tower crane, material hoist, loading/unloading area, loading dock, dumpster and porta-johns. The loading/unloading area on this project is small but very important because street space is limited and the only access to the site is along a one way street that cannot be blocked due to ambulance traffic. The assemblies estimate for section three looks at the building enclosure for the cardiac elevator addition, the major components of which are the exterior insulation finish system (EIFS), fireproofing and single ply membrane roofing. A detailed structural systems estimate also focuses on the cardiac elevator addition because the 5th and 6th floor fit-out project is contained in an existing shell space. The cardiac elevator addition however is comprised of a steel frame with cast-in-place concrete over composite metal deck. In the final section of this report the general conditions for both sections of the project, 5th and 6th floor fit-out and cardiac elevator addition, are broken down in order to show the components that are included in the estimate.

B. Detailed Project Schedule

The detailed project schedule for this project is made up of six major parts general items, 5th floor, 6th floor, connecting corridors 5 & 6, cardiac elevator and site work. All of these parts are being conducted simultaneously but are broken down into separate schedules for clarity. Please find a detailed schedule attached in *Appendix A*.

Key Project Dates:

Start 5 th & 6 th Floor	August 11, 2006
Start Cardiac Elevator	September 5, 2006
Tower Crane Erection	September 20, 2006
Corridor Connection 5 th & 6 th Floor	September 5, 2006
DOH Life Safety Inspection	December 29, 2006
DOH Licensure Inspection	January 15, 2007

Shell Space:

The 5th and 6th floor fit-out project is part of hospital expansion utilizing existing space inside the hospital that was previously used as storage space.



Figure 1 – 6th Floor Shell Space

Because they will be utilizing existing shell space no structural work will be required for this part of the project, which means that work on these two floors began with floor layout and MEP rough-in. In Figure 1 you can see the open layout of the 6th floor shell space with the orange lines designating hollow metal frame wall layout. In the picture you can also see that the sprinkler lines

have already been run in a standard layout that will have to be revised after the floor layout is complete.

MEP Rough-in:

MEP rough-in on the 5th and 6th floor consisted of tying into existing



Figure 2 – 5th Floor MEP Rough-in

pipework and ductwork in the adjacent corridor as well as to new units in the mechanical room located directly outside the shell space. As can be seen in Figures 2 and 3 once floor layout and hollow metal framing is complete MEP rough-in begins with ductwork, piping and electrical conduit being placed. In figure 3 you can also see



Figure 3 – 5th Floor MEP Coordination

that there were some coordination issues with existing sprinkler piping and the ductwork that was being installed. These issues were resolved when sprinkler pipe relocation occurred. A very sensitive part of the MEP rough-in occurs when tie-ins are being made to systems located in the 4th floor ceiling plenum space because the 4th floor is occupied with patient

rooms. This requires coordination with the hospital to move patients around during tie-in operations as well as cleaning rooms after work is completed so that patients can be moved back in.

Finishes:

Finishes for all projects at the hospital are high end and are designed to tie into existing finishes in adjacent spaces. In Figure 4 you can see the wall paneling



Figure 4 – 5th Floor Patient Room Finishes



Figure 5 – 5th Floor Patient Room Rendering

that is being placed in the patient rooms on the 5th and 6th floors. This is a honey oak finish that has been selected and will be continued throughout the space and adjoining corridors. Figure 5 shows a rendering of a finished patient room and in the background you can see the finishes carrying over into the corridor with the nurse’s station. This rendering also shows the VCT flooring pattern that is being utilized in the project. The high qualities of the finishes require longer schedule durations for these phases of the project. As long as this is realized up front there should not be any negative effects on the overall project completion. This is one of the many things that should be looked at during all project

schedule developments because if not identified could cause problems later in the project.

C. Site Layout Planning

The site for this project is condensed to the small area between two existing buildings with access to the loading/unloading area coming from a one way street. Another complicating factor is the location of the helicopter landing pad for the hospital on one of the adjacent rooftop which can be seen in Figure 6.



Figure 6 - Tower Crane w/ Helicopter Pad

You can find a scaled site plan attached in *Appendix B*.

Site Layout:

Because construction personnel and material are prohibited from using the occupied areas of the hospital a material hoist is utilized for access to the spaces on the 5th and 6th floor. This makes transporting labor and materials easier but takes up valuable space in this restricted site. In Figure 7 you can see the placement of the material hoist and loading dock as well as some material storage behind the material hoist. Because the hoist traveled past occupied patient rooms on its way to the project floors hours of operation were restricted to 7am – 7pm.



Figure 7 - Material Hoist/Loading Dock

Due to the lack of space on site and since the general contractor does a large amount of work at the hospital they are allocated a large room in the basement of the hospital that has been split into a conference room and two small offices for on site personnel. For superintendent office space the mechanical rooms on the 5th and 6th floors are utilized due to their close proximity to the project space.



Figure 8 - Loading/Unloading Zone (1)



Figure 9 - Loading/Unloading Zone (2)



Figure 10 - Cardiac Elevator Addition Site

In Figures 8 & 9 you can see the loading/unloading zone that is set up just off of Lime St. which is a one way street. This tight space is made smaller by the placement of the dumpster just off the loading dock. Figure 9 shows a drywall delivery being made using a boom truck to set the drywall on the loading dock. Deliveries must be coordinated so that there is no more than one large truck making a delivery at any time because there is no staging area available.

Figures 10 & 11 show the location of the cardiac elevator addition behind the loading dock area with several elevated walkways, one on either side of the elevator. Figure 10 is a picture shows were the façade of the existing building has been removed in preparation of the elevator construction. Figure 11 shows the self climbing scaffold that was used to remove the façade. The scaffold will need to be removed for the structural phase of the elevator addition but will be brought back in for the placement of the EIFS panels.

Figure 12 shows the location of the porta-johns that are used by all construction personnel on site. The use of these facilities requires workers to travel down the material hoist taking excess time. This is not a optimum set up but do to the restricted site options for placement was limited as



Figure 11 - Self Climbing Scaffold



Figure 12 - Porta-Johns

well as the inability to use the facilities located in the hospital caused this to be the only option available.

Figure 13 and Table 1 show the tower crane and crane load chart respectively. The tower crane will be used for construction of the elevator as well as placement of air handling units. The tower crane stands 146' tall and has a swing that travels over the helicopter landing pad.

Coordination for helicopter landings is conducted via radio with the communications center advising when the crane needs to be moved out of the way and shut down for landings. This happens on average of 2-3 times a week with only one or two of those happening during normal working hours. To protect against issues at night the crane is secured to the roof of the adjacent building to stop the

crane from swinging over the helicopter pad. The limited occurrence will have limited impact on the overall project schedule so minimal time was figured into the schedule for these delays. If it were a more common situation time would need to be figured in for delays.



Figure 13 – Tower Crane

CRANE OPERATION LOAD CHART	
Distance Trolley (Ft.)	Hook Radius (Ft.)
45.9	11023 lbs.
49.2	11023 lbs.
52.4	11024 lbs.
55.7	11025 lbs.
59.0	11026 lbs.
62.3	10438 lbs.
65.6	9854 lbs.
68.8	9325 lbs.
72.1	8840 lbs.
75.4	8410 lbs.
78.7	8013 lbs.
82.0	7638 lbs.
85.2	7309 lbs.
88.5	6988 lbs.
91.8	6701 lbs.
95.1	6437 lbs.
98.4	6183 lbs.
101.6	5952 lbs.
104.9	5731 lbs.
108.2	5522 lbs.
111.5	5335 lbs.
114.8	5147 lbs.
118.0	4982 lbs.
121.3	4817 lbs.
123.0	4739 lbs.

Table 1 – Crane Load Chart

D. Assemblies Estimate

The assemblies' estimate that was developed for this section is for the building enclosure system for the cardiac elevator addition. The estimate was created using R.S. Means 2005 data. Location factors had to be taken into account in order to give an accurate depiction of costs for the region of construction. Location factors for Lancaster, Pennsylvania are .95 for materials, .88 for labor and .92 total cost. Equipment costs were taken at a direct rate from R.S. Means with the major equipment cost for this phase coming from the self climbing scaffolding shown earlier in Figure 11. A 27% O&P factor was used in calculating the total cost.

Assembly:

The assembly was broken down into the following sections.

- Exterior Insulation Finish System (EIFS)
- Fireproofing
- Single Ply Membrane Roofing
- Sheet Metal Flashing/Trim

Please find the assemblies estimate attached in *Appendix C*.

E. Detailed Structural Systems Estimate

The detailed structural systems estimate for this section was completed using the structural system for the cardiac elevator addition because the 5th and 6th floor fit-out project is inside an existing shell space requiring no structural work. The structural system estimate required a structural member takeoff that can be found along with the detailed structural systems estimate in *Appendix D*. The costs for the estimate were based on a price per unit basis.

Structural Systems Estimate Summary:

Below is a structural systems estimate summary to compliment the attached detailed structural systems estimate.

PROPOSED STRUCTURAL ESTIMATE - SUMMARY LGH CARDIAC ELEVATOR							
Description	Takeoff Quantity	Material Amount	Labor Amount	Sub Amount	Eup. Amount	Total Cost/Unit	Total Amount
CONCRETE FORMWORK							
	1,249.00 Sq.Ft.	\$4,940.00	\$11,795.00	\$0.00	\$0.00	\$13.40 /Month	\$16,735.00
REINFORCING BAR							
	4.24 Ton	\$5,965.00	\$7,540.00	\$0.00	\$0.00	\$3,185.14 /Ton	\$13,505.00
REINFORCING WIRE MESH							
	1,996.00 Sq.Ft.	\$530.00	\$415.00	\$0.00	\$0.00	\$.47 /Sq.Ft.	\$945.00
CONCRETE ACCESSORIES							
		\$1,905.00	\$2,735.00	\$0.00	\$0.00		\$4,640.00
CAST IN PLACE CONCRETE							
	210.60 Cu.Yd.	\$29,015.00	\$7,820.00	\$7,030.00	\$7,500.00	\$243.90 /Cu.Yd	\$51,365.00
MASONRY							
	535.00 Sq. Ft.	\$0.00	\$0.00	\$17,850.00	\$0.00	\$33.36 /Sq.Ft.	\$17,850.00
STRUCTURAL STEEL							
	1600.00 Sq.Ft.	\$0.00	\$0.00	\$522,600.00	\$0.00	\$326.63 /Sq.Ft.	\$522,600.00

F. General Conditions Estimate

The general conditions estimate shows all project and staffing costs associated with the coordination and running of the 5th and 6th floor fit-out and cardiac elevator addition projects. These projects are Guaranteed Maximum Price, negotiated contracts. The costs shown in the estimate do not include home office overhead. General conditions costs are meant only to show the costs directly associated with the project.

Estimate Break Down:

This break down shows the categories of the general conditions estimate that can be found in the attached *Appendix E*.







- Project Coordination
- Building Layout
- Regulatory Requirements
- Progress Schedules
- Temporary Utilities
- Temporary Construction
- Construction Aids
- Temporary Controls
- Traffic Regulation
- Contract Closeout







APPENDIX A

Detailed Project Schedule
Lancaster General Hospital
5th & 6th Floor Fit-Out
Cardiac Elevator Addition

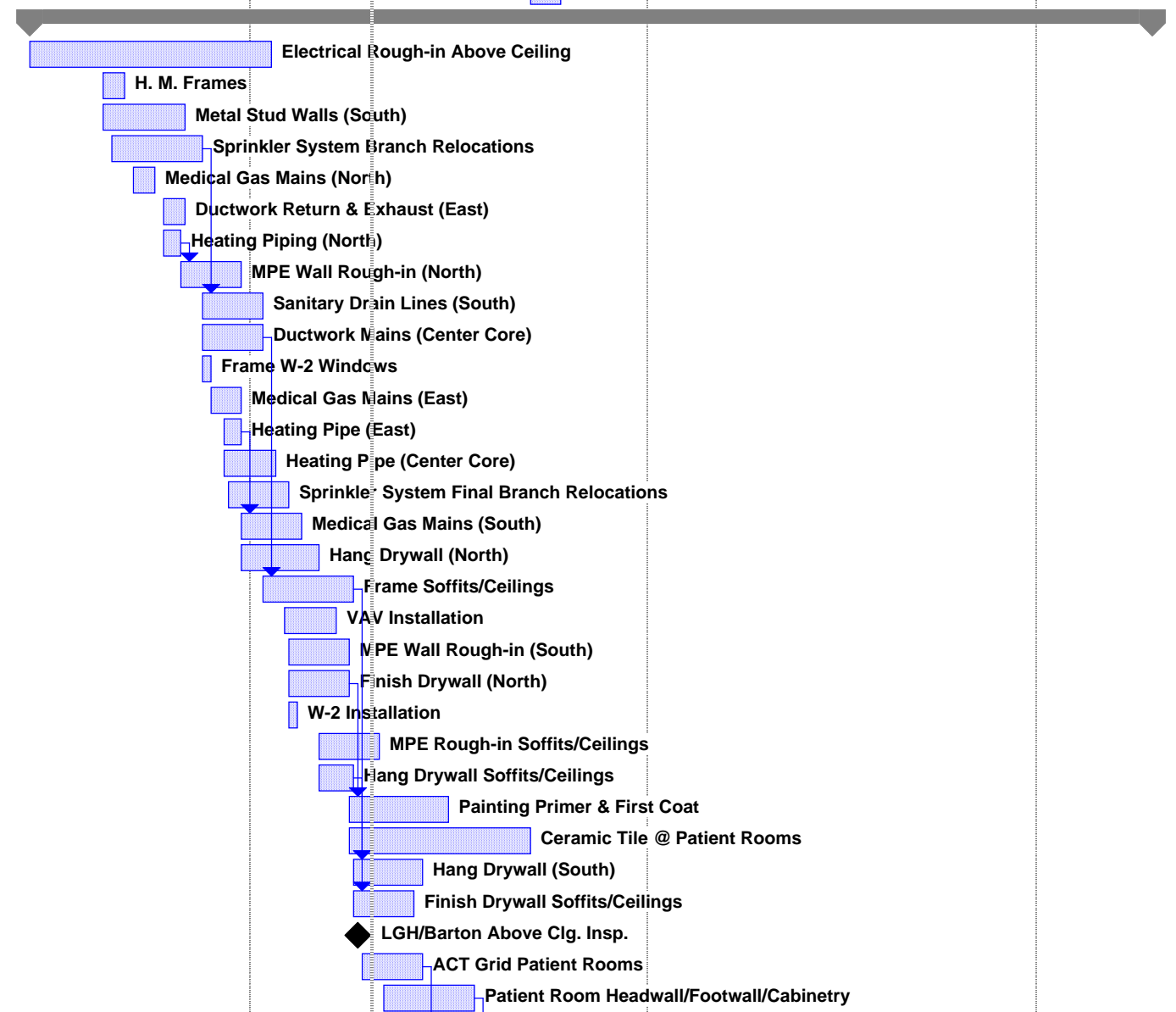
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					Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
1	General Items	11 days	Fri 12/29/06	Mon 1/15/07											
1	DOH Life Safety Inspection	0 days	Fri 12/29/06	Fri 12/29/06											
2	Plant Engineering In-Service Training	2 days	Tue 1/2/07	Wed 1/3/07											
3	DOH Licensure Inspection	0 days	Mon 1/15/07	Mon 1/15/07											
2	5th Floor	186 days	Fri 8/11/06	Fri 4/27/07											
1	Electrical Rough-in Above Ceilings	40 days	Fri 8/11/06	Thu 10/5/06											
2	Frame Soffits/Ceilings	10 days	Mon 8/28/06	Fri 9/8/06											
3	Sprinkler System Final Branch Relocations	10 days	Fri 9/1/06	Thu 9/14/06											
4	Sanitary Drain Lines 4 Lime (South&Core)	5 days	Tue 9/5/06	Mon 9/11/06											
5	Hang Drywall (North & East)	4 days	Thu 9/14/06	Tue 9/19/06											
6	MPE Rough-in Soffits/Ceilings	7 days	Fri 9/15/06	Mon 9/25/06											
7	Hang Drywall Soffits/Ceilings	4 days	Thu 9/21/06	Tue 9/26/06											
8	Finish Drywall (North & East)	7 days	Mon 9/25/06	Tue 10/3/06											
9	Hang Drywall (Center Core)	5 days	Wed 9/27/06	Tue 10/3/06											
10	Finish Drywall Soffits/Ceilings	6 days	Fri 9/29/06	Fri 10/6/06											
11	VAV Installation	5 days	Mon 10/2/06	Fri 10/6/06											
12	Painting Primer & First Coat	15 days	Wed 10/4/06	Tue 10/24/06											
13	Ceramic Tile @ Patient Rooms	10 days	Wed 10/4/06	Tue 10/17/06											
14	Finish Drywall (Center Core)	7 days	Fri 10/6/06	Mon 10/16/06											
15	Patient Room Headwall/Footwall/Cabinetry	6 days	Wed 10/18/06	Wed 10/25/06											
16	ACT Grid Patient Rooms	5 days	Thu 10/19/06	Wed 10/25/06											
17	Column Wraps	4 days	Wed 10/25/06	Mon 10/30/06											
18	LGH/Barton Above Clg. Insp.	0 days	Wed 10/25/06	Wed 10/25/06											
19	ACT Grid Center Core	5 days	Thu 10/26/06	Wed 11/1/06											
20	Casework @ Nurse Stations	5 days	Thu 10/26/06	Wed 11/1/06											
21	Flooring	18 days	Wed 10/18/06	Fri 11/10/06											
22	Wood Doors & Hardware	12 days	Thu 10/26/06	Fri 11/10/06											
23	Ceiling Tile Patient Rooms	5 days	Wed 10/25/06	Tue 10/31/06											
24	Ceramic Tile @ Nurse Stations, Corr.	10 days	Mon 10/30/06	Fri 11/10/06											
25	Light Fixtures	10 days	Tue 10/31/06	Mon 11/13/06											
26	GRD's	5 days	Tue 10/31/06	Mon 11/6/06											
27	Sprinkler Head Turn Down Patient Rooms	5 days	Tue 10/31/06	Mon 11/6/06											
28	Medical Gas Devices	2 days	Tue 10/31/06	Wed 11/1/06											
29	Electrical Devices/Finishes	15 days	Tue 10/31/06	Mon 11/20/06											
30	Corian Sinks	7 days	Tue 10/31/06	Wed 11/8/06											
31	Casework Center Core	8 days	Thu 11/2/06	Mon 11/13/06											
32	ACT Grid Corridors	5 days	Fri 11/3/06	Thu 11/9/06											
33	Sprinkler Head Turn Down Center Core	5 days	Fri 11/3/06	Thu 11/9/06											
34	Patient Room Breakaway Doors	4 days	Thu 11/9/06	Tue 11/14/06											
35	Plumbing Fixtures	5 days	Thu 11/9/06	Wed 11/15/06											
36	Corian Wall Protection	4 days	Fri 11/10/06	Wed 11/15/06											
37	Ceiling Tile Corridors and Center Core	7 days	Tue 11/14/06	Wed 11/22/06											
38	Corian Tops @ Casework	6 days	Tue 11/14/06	Tue 11/21/06											

Project: Project Schedule.mpp
 Date: Sun 10/29/06

Task  Milestone  Rolled Up Task  Rolled Up Progress  External Tasks  Group By Summary 

Progress  Summary  Rolled Up Milestone  Split  Project Summary  Deadline 

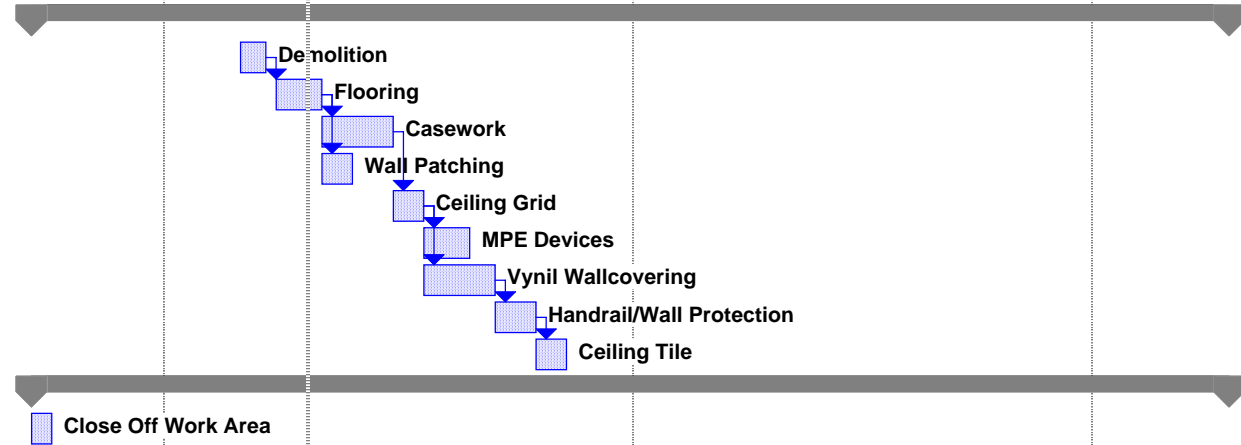
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39	Art Glass in Corridors	5 days	Tue 11/14/06	Mon 11/20/06											
40	HVAC Test & Balance	5 days	Wed 11/15/06	Tue 11/21/06											
41	Painting Final Coat Cut & Roll	5 days	Wed 11/15/06	Tue 11/21/06											
42	Toilet Accessories/Corner Guards	6 days	Thu 11/16/06	Thu 11/23/06											
43	Lockers	3 days	Tue 11/21/06	Thu 11/23/06											
44	Decorative Corridor Panels	5 days	Tue 11/21/06	Mon 11/27/06											
45	Final Cleaning	6 days	Fri 11/24/06	Fri 12/1/06											
46	Latitude Boom Installation	10 days	Mon 11/27/06	Fri 12/8/06											
47	Latitude Final Connections	6 days	Thu 11/30/06	Thu 12/7/06											
48	RTKL Punchlist Inspection 5th Floor	1 day	Mon 12/4/06	Mon 12/4/06											
49	Punchlist Rework 5th Floor	5 days	Tue 12/5/06	Mon 12/11/06											
50	6th Floor	186 days	Fri 8/11/06	Fri 4/27/07											
1	Electrical Rough-in Above Ceiling	40 days	Fri 8/11/06	Thu 10/5/06											
2	H. M. Frames	5 days	Mon 8/28/06	Fri 9/1/06											
3	Metal Stud Walls (South)	15 days	Mon 8/28/06	Fri 9/15/06											
4	Sprinkler System Branch Relocations	15 days	Wed 8/30/06	Tue 9/19/06											
5	Medical Gas Mains (North)	5 days	Mon 9/4/06	Fri 9/8/06											
6	Ductwork Return & Exhaust (East)	5 days	Mon 9/11/06	Fri 9/15/06											
7	Heating Piping (North)	4 days	Mon 9/11/06	Thu 9/14/06											
8	MPE Wall Rough-in (North)	10 days	Fri 9/15/06	Thu 9/28/06											
9	Sanitary Drain Lines (South)	10 days	Wed 9/20/06	Tue 10/3/06											
10	Ductwork Mains (Center Core)	10 days	Wed 9/20/06	Tue 10/3/06											
11	Frame W-2 Windows	2 days	Wed 9/20/06	Thu 9/21/06											
12	Medical Gas Mains (East)	5 days	Fri 9/22/06	Thu 9/28/06											
13	Heating Pipe (East)	4 days	Mon 9/25/06	Thu 9/28/06											
14	Heating Pipe (Center Core)	10 days	Mon 9/25/06	Fri 10/6/06											
15	Sprinkler System Final Branch Relocations	10 days	Tue 9/26/06	Mon 10/9/06											
16	Medical Gas Mains (South)	10 days	Fri 9/29/06	Thu 10/12/06											
17	Hang Drywall (North)	12 days	Fri 9/29/06	Mon 10/16/06											
18	Frame Soffits/Ceilings	15 days	Wed 10/4/06	Tue 10/24/06											
19	VAV Installation	10 days	Mon 10/9/06	Fri 10/20/06											
20	MPE Wall Rough-in (South)	10 days	Tue 10/10/06	Mon 10/23/06											
21	Finish Drywall (North)	10 days	Tue 10/10/06	Mon 10/23/06											
22	W-2 Installation	2 days	Tue 10/10/06	Wed 10/11/06											
23	MPE Rough-in Soffits/Ceilings	10 days	Tue 10/17/06	Mon 10/30/06											
24	Hang Drywall Soffits/Ceilings	6 days	Tue 10/17/06	Tue 10/24/06											
25	Painting Primer & First Coat	17 days	Tue 10/24/06	Wed 11/15/06											
26	Ceramic Tile @ Patient Rooms	30 days	Tue 10/24/06	Mon 12/4/06											
27	Hang Drywall (South)	12 days	Wed 10/25/06	Thu 11/9/06											
28	Finish Drywall Soffits/Ceilings	10 days	Wed 10/25/06	Tue 11/7/06											
29	LGH/Barton Above Clg. Insp.	0 days	Thu 10/26/06	Thu 10/26/06											
30	ACT Grid Patient Rooms	10 days	Fri 10/27/06	Thu 11/9/06											
31	Patient Room Headwall/Footwall/Cabinetry	15 days	Wed 11/1/06	Tue 11/21/06											



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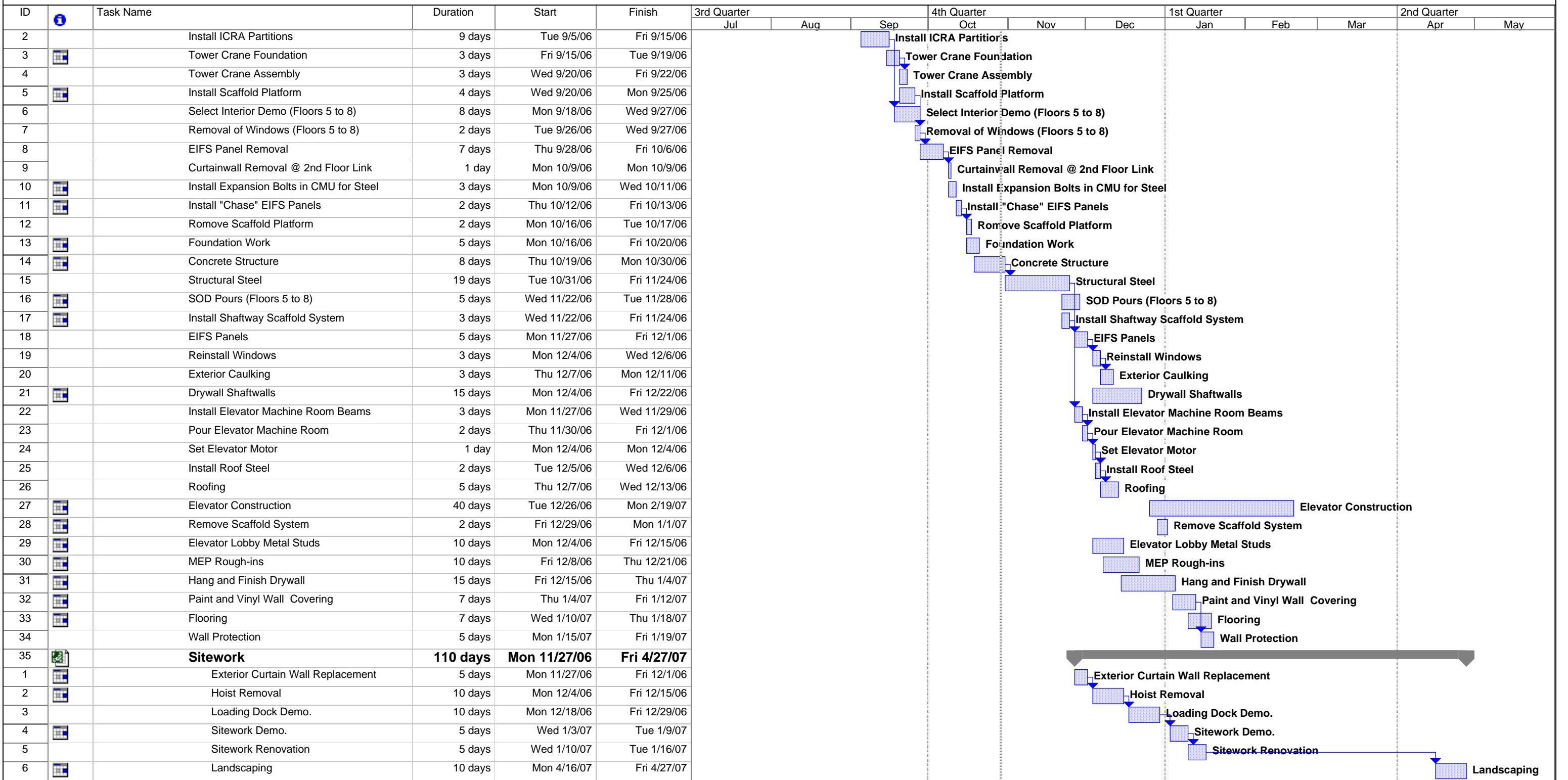
Task Milestone Rolled Up Task Rolled Up Progress External Tasks Group By Summary
 Progress Summary Rolled Up Milestone Split Project Summary Deadline

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					Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
32	Casework @ Nurse Stations	20 days	Tue 11/7/06	Mon 12/4/06											
33	Flooring	30 days	Tue 11/7/06	Mon 12/18/06											
34	Ceramic Tile @ Nurse Stations, Corr.	15 days	Thu 11/9/06	Wed 11/29/06											
35	Finish Drywall (South)	15 days	Fri 11/10/06	Thu 11/30/06											
36	ACT Grid (Center Core)	10 days	Fri 11/10/06	Thu 11/23/06											
37	Light Fixtures	20 days	Fri 11/10/06	Thu 12/7/06											
38	GRD's	10 days	Fri 11/10/06	Thu 11/23/06											
39	Sprinkler Head Turn Down Patient Rooms	10 days	Fri 11/10/06	Thu 11/23/06											
40	Decorative Corridor Panels	10 days	Tue 11/14/06	Mon 11/27/06											
41	Art Glass in Corridors	10 days	Thu 11/16/06	Wed 11/29/06											
42	Casework (Center Core)	15 days	Thu 11/16/06	Wed 12/6/06											
43	Electrical Devices/Finishes	30 days	Thu 11/16/06	Wed 12/27/06											
44	Corian Sinks	6 days	Thu 11/16/06	Thu 11/23/06											
45	Patient Room Breakaway Doors	20 days	Tue 11/21/06	Mon 12/18/06											
46	Ceiling Tile Patient Rooms	15 days	Wed 11/22/06	Tue 12/12/06											
47	Medical Gas Devices	20 days	Wed 11/22/06	Tue 12/19/06											
48	ACT Grid Corridors	15 days	Fri 11/24/06	Thu 12/14/06											
49	Sprinkler head Turn Down (Center Core)	10 days	Fri 11/24/06	Thu 12/7/06											
50	Plumbing Fixtures	12 days	Fri 11/24/06	Mon 12/11/06											
51	Painting Final Coat Cut & Roll	10 days	Mon 11/27/06	Fri 12/8/06											
52	Column Wraps	6 days	Fri 12/1/06	Fri 12/8/06											
53	Wood Doors & Hardware	20 days	Fri 12/1/06	Thu 12/28/06											
54	Corian Tops @ Casework	10 days	Thu 12/7/06	Wed 12/20/06											
55	Ceiling Tile (Corridors and Center Core)	12 days	Fri 12/8/06	Mon 12/25/06											
56	Toilet Accessories/Corner Guards	10 days	Tue 12/12/06	Mon 12/25/06											
57	Corian Wall Protection	10 days	Fri 12/15/06	Thu 12/28/06											
58	Final Cleaning	6 days	Fri 12/15/06	Fri 12/22/06											
59	Lockers	6 days	Tue 12/19/06	Tue 12/26/06											
60	HVAC Test & Balance	8 days	Tue 12/19/06	Thu 12/28/06											
61	RTKL Punchlist Inspection 6th Floor	1 day	Tue 12/26/06	Tue 12/26/06											
62	Punchlist Rework 6th Floor	5 days	Wed 12/27/06	Tue 1/2/07											
63	Connecting Corridors 5 & 6	169 days	Tue 9/5/06	Fri 4/27/07											
1	Demolition	5 days	Mon 10/16/06	Fri 10/20/06											
2	Flooring	7 days	Mon 10/23/06	Tue 10/31/06											
3	Casework	10 days	Wed 11/1/06	Tue 11/14/06											
4	Wall Patching	4 days	Wed 11/1/06	Mon 11/6/06											
5	Ceiling Grid	4 days	Wed 11/15/06	Mon 11/20/06											
6	MPE Devices	7 days	Tue 11/21/06	Wed 11/29/06											
7	Vynil Wallcovering	10 days	Tue 11/21/06	Mon 12/4/06											
8	Handrail/Wall Protection	6 days	Tue 12/5/06	Tue 12/12/06											
9	Ceiling Tile	4 days	Wed 12/13/06	Mon 12/18/06											
10	Cardiac Elevator	169 days	Tue 9/5/06	Fri 4/27/07											
1	Close Off Work Area	4 days	Tue 9/5/06	Fri 9/8/06											



Project: Project Schedule.mpp
 Date: Sun 10/29/06

Task Milestone Rolled Up Task Rolled Up Progress External Tasks Group By Summary Progress Summary Rolled Up Milestone Split Project Summary Deadline



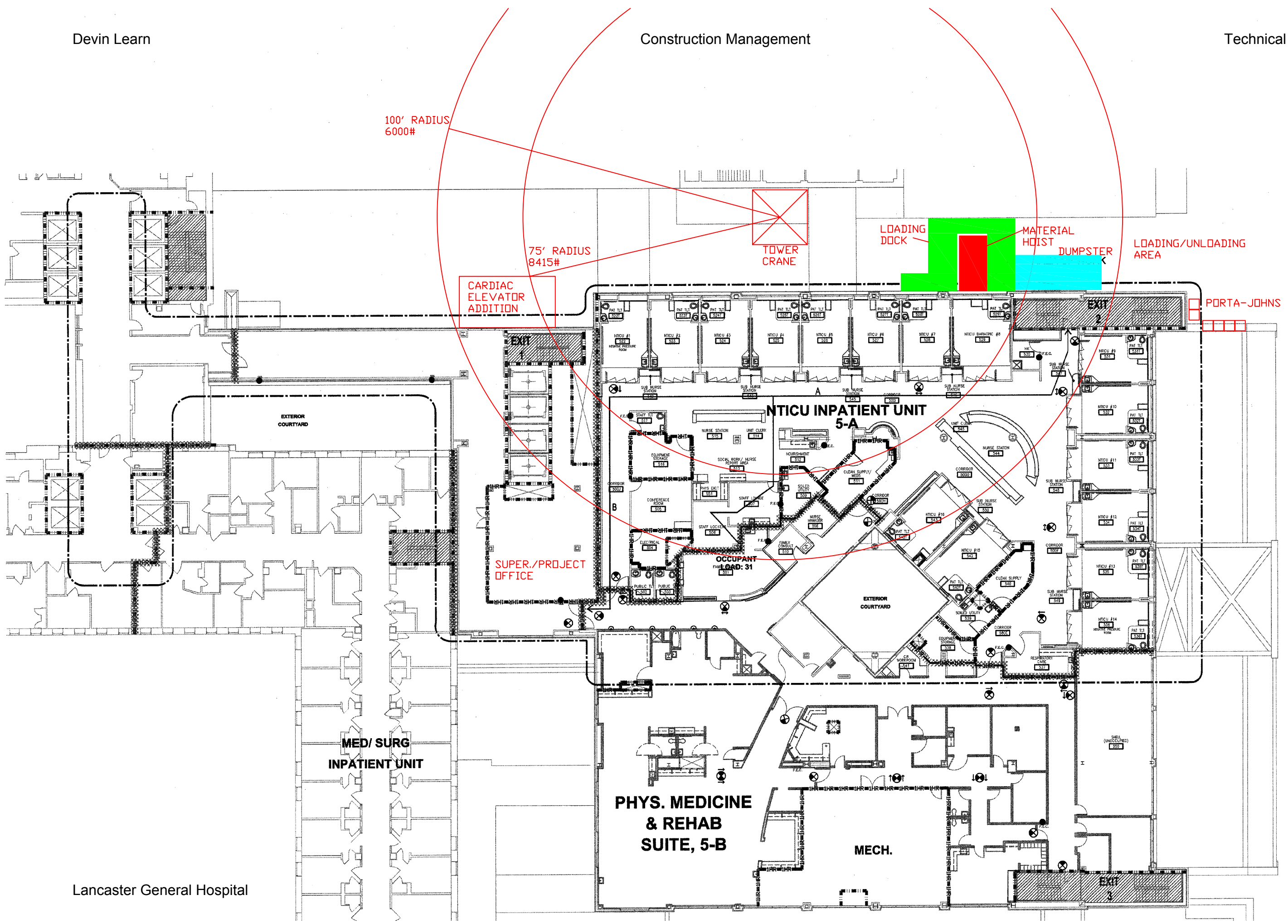
APPENDIX B

Site Layout Plan

Lancaster General Hospital

5th & 6th Floor Fit-Out

Cardiac Elevator Addition



100' RADIUS
6000#

75' RADIUS
8415#

CARDIAC
ELEVATOR
ADDITION

TOWER
CRANE

LOADING
DOCK

MATERIAL
HOIST

DUMPSTER

LOADING/UNLOADING
AREA

PORTA-JOHNs

NTICU INPATIENT UNIT
5-A

OCCUPANT
LOAD: 31

EXTERIOR
COURTYARD

EXTERIOR
COURTYARD

MED/ SURG
INPATIENT UNIT

PHYS. MEDICINE
& REHAB
SUITE, 5-B

MECH.

ONE WAY

LIME STREET

APPENDIX C
Assemblies Estimate
Lancaster General Hospital
Cardiac Elevator Addition
Building Enclosure

ASSEMBLY ESTIMATE - BUILDING ENCLOSURE								
LGH CARDIAC ELEVATOR ADDITION - PREPARED BY: DEVIN LEARN								
Phase	Description	Takeoff Qty.	Material Cost	Labor Cost	Equip. Cost	\$ Per Unit w/.92 Location Factor	27% O&P	Total Cost
7240.100	Exterior Ins./Finish System	25,000 Sq.Ft.	\$64,600.00	\$118,800.00	\$11,750.00	\$7.90 Sq.Ft.	\$10.03	\$250,750
7250.255	Fireproofing	9,500 Sq.Ft.	\$5,595.50	\$4,514.40	\$855.00	\$1.15 Sq.Ft.	\$1.48	\$14,060
7500.300	Single Ply Membrane Roofing	5.4 Sq.	\$630.00	\$194.83	\$30.51	\$156.08 Sq.	\$195.04	\$1,053
7600.200	Sheet Metal Flashing/Trim	1,800 Sq.Ft.	\$3,146.40	\$2,566.08	\$0.00	\$3.18 Sq.Ft.	\$4.41	\$7,938
Total			\$73,971.90	\$126,075.31	\$12,635.51	\$13.79 Sq.Ft.		\$273,801

APPENDIX D

Detailed Structural Estimate
Lancaster General Hospital
Cardiac Elevator Addition

PROPOSED STRUCTURAL ESTIMATE								
LGH CARDIAC ELEVATOR								
Phase	Description	Takeoff Quantity	Material Amount	Labor Amount	Sub Amount	Equip. Amount	Total Cost/Unit	Total Amount
CONCRETE FORMWORK								
3100.010	Strip Footer Formwork	142.00 Sq.Ft.	\$160.00	\$600.00			\$5.35 /Sq.Ft.	\$760.00
3100.050	Peir Cap Formwork	336.00 Sq.Ft.	\$540.00	\$1,700.00			\$6.67 /Sq.Ft.	\$2,240.00
3100.080	Foundation Pier Formwork	171.00 Sq.Ft.	\$270.00	\$1,350.00			\$9.47 /Sq.Ft.	\$1,620.00
3100.120	Elevator Wall Formwork	708.00 Sq.Ft.	\$1,200.00	\$3,000.00			\$5.93 /Sq.Ft.	\$4,200.00
3100.240	Elevated Slab Formwork	746.00 Sq.Ft.	\$2,680.00	\$4,870.00			\$10.12 /Sq.Ft.	\$7,550.00
3100.390	Frost Wall Formwork	69.00 Sq.Ft.	\$90.00	\$275.00			\$5.29 /Sq.Ft.	\$365.00
	CONCRETE FORMWORK	1,249.00 Sq.Ft.	\$4,940.00	\$11,795.00	\$0.00	\$0.00	\$13.40 /Month	\$16,735.00
REINFORCING BAR								
3210.010	Strip Footer Re-Bar	1.00 Ton	\$1,400.00	\$1,500.00			\$2,900 /Ton	\$2,900.00
3210.050	Peir Cap Re-Bar	2.50 Ton	\$3,600.00	\$4,700.00			\$3,320 /Ton	\$8,300.00
3210.080	Foundation Pier Re-Bar	0.32 Ton	\$475.00	\$750.00			\$3,828 /Ton	\$1,225.00
3210.240	Flat Plate Re-Bar	0.34 Ton	\$390.00	\$450.00			\$2,470 /Ton	\$840.00
3210.390	Frost Wall Re-Bar	0.08 Ton	\$100.00	\$140.00			\$3,000 /Ton	\$240.00
	REINFORCING BAR	4.24 Ton	\$5,965.00	\$7,540.00	\$0.00	\$0.00	\$3,185.14 /Ton	\$13,505.00
REINFORCING WIRE MESH								
3220.230	Slab on Deck Wire Mesh	1,700.00 Sq.Ft.	\$450.00	\$340.00			\$.46 /Sq.Ft.	\$790.00
3220.330	Stoop/Pad Wire Mesh	126.00 Sq.Ft.	\$35.00	\$40.00			\$.59 /Sq.Ft.	\$75.00
3220.530	Sidewalk Wire Mesh	170.00 Sq.Ft.	\$45.00	\$35.00			\$.47 /Sq.Ft.	\$80.00
	REINFORCING WIRE MESH	1,996.00 Sq.Ft.	\$530.00	\$415.00	\$0.00	\$0.00	\$.47 /Sq.Ft.	\$945.00
CONCRETE ACCESSORIES								
3250.080	Foundation Pier Accessories		\$190.00	\$140.00				\$330.00
3250.135	Misc. Concrete Accessories		\$1,050.00	\$1,600.00				\$2,650.00
3250.230	Slab on Deck Accessories		\$580.00	\$820.00				\$1,400.00
3250.240	Plate Slab Accessories		\$5.00	\$15.00				\$20.00
3250.330	Stoop/Pad Accessories		\$10.00	\$30.00				\$40.00
3250.530	Sidewalk Accessories		\$70.00	\$130.00				\$200.00
	CONCRETE ACCESSORIES		\$1,905.00	\$2,735.00	\$0.00	\$0.00		\$4,640.00
CAST IN PLACE CONCRETE								
3300.005	Concrete Bulk				\$1,375.00			\$1,375.00
3300.010	Strip Footers	11.00 Cu.Yd.	\$1,300.00	\$500.00			\$163.63 /Cu.Yd.	\$1,800.00
3300.080	Pier Foundation	68.00 Cu.Yd.	\$8,350.00	\$4,140.00	\$15.00	\$1,250.00	\$202.28 /Cu.Yd.	\$13,755.00
3300.120	Elevator Wall	16.00 Cu.Yd.	\$2,175.00	\$750.00			\$182.81 /Cu.Yd.	\$2,925.00
3300.135	Misc. Concrete	85.00 Cu.Yd.	\$10,920.00	\$1,925.00		\$1,250.00	\$165.82 /Cu.Yd.	\$14,095.00
3300.215	Elevator Slab					\$1,250.00		\$1,250.00
3300.230	Slab on Deck	24.00 Cu.Yd.	\$3,940.00		\$4,725.00	\$2,500.00	\$465.21 /Cu.Yd.	\$11,165.00
3300.240	Flat Plate Slabs		\$875.00	\$385.00	\$150.00	\$1,250.00		\$2,660.00
3300.330	Stoops/Pads	2.00 Cu.Yd.	\$525.00		\$290.00		\$407.50 /Cu.Yd.	\$815.00
3300.390	Frost Wall	2.50 Cu.Yd.	\$280.00	\$120.00			\$160 /Cu.Yd.	\$400.00
3300.510	Curb		\$10.00					\$10.00
3300.530	Sidewalk	2.10 Cu.Yd.	\$640.00		\$475.00		\$530.95 /Cu.Yd.	\$1,115.00
	CAST IN PLACE CONCRETE	210.60 Cu.Yd.	\$29,015.00	\$7,820.00	\$7,030.00	\$7,500.00	\$243.90 /Cu.Yd	\$51,365.00
MASONRY								
4200.100	Masonry Accessories	535.00 Sq.Ft.			\$17,850.00		\$33.36 /Sq.Ft.	\$17,850.00
4200.110	Brick	535.00 Sq.Ft.						\$0.00
4200.130	Precast Copings & Sills							\$0.00
4200.210	Foundation Block	535.00 Sq.Ft.						\$0.00
	MASONRY	535.00 Sq. Ft.	\$0.00	\$0.00	\$17,850.00	\$0.00	\$33.36 /Sq.Ft.	\$17,850.00
STRUCTURAL STEEL								
5100.100	Steel Fab. & Erection	47 Ton			\$470,000.00		\$10,000.00 /Ton	\$470,000.00
5100.110	Wide Flange Columns							\$0.00
5100.210	Wide Flange Beams							\$0.00
5100.220	Tube Steel Beams				\$52,600.00			\$52,600.00
5100.315	Standard Angles							\$0.00
5200.210	Steel Joists							\$0.00
5300.210	Metal Floor Decking							\$0.00
	STRUCTURAL STEEL	1600.00 Sq.Ft.	\$0.00	\$0.00	\$522,600.00	\$0.00	\$326.63 /Sq.Ft.	\$522,600.00

STRUCTURAL STEEL TAKEOFF
LGH CARDIAC ELEVATOR

Wide Flange Columns	Qty.	Length	Weight
W14 x 132	1	52'	6864#
W14 x 90	1	38'	3420#
W14 x 90	1	44'	3960#
W12 x 87	1	52'	4524#
W12 x 87	1	38'	3306#
W12 x 87	1	44'	3828#
Total	6	268'	25,902#
Wide Flange Beams	Qty.	Length	Weight
W24 x 55	1	14'	770#
W21 x 44	1	15'	660#
W16 x 26	2	15'	780#
W16 x 26	1	6'	156#
W10 x 12	9	15'	1620#
W10 x 12	4	4'	192#
W12 x 16	8	16'	2048#
W12 x 16	11	15'	2640#
W24 x 68	4	16'	4352#
W24 x 68	4	14'	3808#
W14 x 22	1	16'	352#
W14 x 22	5	15'	1650#
W14 x 22	1	12'	264#
W27 x 84	1	16'	1344#
W27 x 84	1	15'	1260#
W16 x 50	1	16'	800#
W16 x 50	1	14'	700#
Total	56	793'	23,396#
Tube Steel Beams	Qty.	Length	Weight
HSS12 x 6 x 3/8	9	15'	
HSS12 x 6 x 3/8	3	14'	
HSS12 x 6 x 3/8	2	6'	
Total	14	189'	
Steel Joists	Qty.	Length	Weight
12K1	2	16'	
10K1	1	16'	
10K1	3	14'	
Total	6	90'	
Metal Floor Decking		Area	Weight
2"-20GA. Comp. Steel Deck		1320 Sq.Ft.	3036#
1-1/2"-20GA. Galv. St. Roof Deck		360 Sq.Ft.	792#
Total		1680 Sq.Ft.	3828#

APPENDIX E

General Conditions Estimate
Lancaster General Hospital
5th & 6th Floor Fit-Out
Cardiac Elevator Addition

GENERAL CONDITIONS ESTIMATE LGH 5th & 6th FLOOR FIT-OUT								
Phase	Description	Takeoff Quantity	Material Amount	Labor Amount	Sub Amount	Equip. Amount	Total Cost/Unit	Total Amount
1000.400	Project Coordination	6 - Months		\$292,000.00		\$2,763.00	\$49,129.20 /Month	\$294,763.00
1000.540	Building Layout	6 - Months	\$3,895.00	\$42,952.00		\$1,000.00	\$7,974.50 /Month	\$47,847.00
1000.600	Regulatory Requirements	6 - Months			\$55,210.00		\$9,201.67 /Month	\$55,210.00
1300.100	Progress Schedules	6 - Months	\$5,895.00				\$982.5 /Month	\$5,895.00
1500.100	Temporary Utilities	6 - Months	\$650.00	\$6,420.00	\$3,450.00	\$6,500.00	\$2,836.67 /Month	\$17,020.00
1500.200	Temporary Construction	6 - Months	\$190.00	\$670.00		\$3,450.00	\$718.33 /Month	\$4,310.00
1500.250	Construction Aids	6 - Months	\$2,400.00	\$33,600.00	\$16,300.00	\$39,600.00	\$15,316.70 /Month	\$91,900.00
1500.600	Temporary Controls	6 - Months	\$7,050.00	\$17,530.00	\$32,000.00		\$9,430 /Month	\$56,580.00
1500.700	Traffic Regulation	6 - Months		\$42,000.00	\$13,000.00		\$9,166.67 /Month	\$55,000.00
1700.100	Contract Closeout	48,592 Sq.Ft.	\$300.00	\$10,250.00	\$12,600.00		\$.48 /Sq.Ft.	\$23,150.00
	GENERAL CONDITIONS		\$20,380.00	\$445,422.00	\$132,560.00	\$53,313.00	\$108,613 /Month	\$651,675.00

GENERAL CONDITIONS ESTIMATE			ELEVATOR				LGH CARDIAC	
Phase	Description	Takeoff Quantity	Material Amount	Labor Amount	Sub Amount	Equip. Amount	Total Cost/Unit	Total Amount
1000.400	Project Coordination	5 - Months		\$75,250.00			\$15,150 /Month	\$75,250.00
1300.100	Progress Schedules	5 - Months	\$2,680.00				\$536 /Month	\$2,680.00
1400.100	Testing & Inspections	5 - Months	\$25.00	\$1,310.00	\$2,135.00	\$842.00	\$862.40 /Month	\$4,312.00
1500.100	Temporary Utilities	5 - Months		\$11,413.00		\$4,267.00	\$3,136 /Month	\$15,680.00
1500.250	Construction Aids	5 - Months			\$31,215.00	\$725.00	\$6,388 /Month	\$31,940.00
1500.300	Barriers & Enclosures	5 - Months	\$1,246.00	\$3,812.00		\$417.00	\$1,095 /Month	\$5,475.00
1500.400	Security	5 - Months	\$3,768.00	\$645.00			\$882.60 /Month	\$4,413.00
1500.600	Temporary Controls	5 - Months	\$2,422.00	\$7,800.00	\$9,770.00	\$300.00	\$4,58.40 /Month	\$20,292.00
1500.700	Traffic Regulations	5 - Months			\$180.00		\$36 /Month	\$180.00
1700.100	Contract Closeout	1,600 Sq.Ft.	\$600.00	\$6,354.00	\$2,555.00		\$5.94 /Sq.Ft.	\$9,509.00
	GENERAL CONDITIONS	5.00 Months	\$10,741.00	\$106,584.00	\$45,855.00	\$6,551.00	\$33,946.20 /Month	\$169,731.00