Buckhorn Medical Office Building

Senior Thesis

Technical Assignment II

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Executive Summary

The Buckhorn Medical Office Building was scheduled to move forward with construction with the first kick-off meeting in January 2008. The site layout and closure plans allowed for approximately three months of time while procurement of permits and approvals took place. Alexander Building Construction received its building permit on August 25, 2008, and broke ground the same day. The crews worked on excavating the site for approximately two months and then began to pour foundations. Once foundations were complete around the second week of November, steel erection began. The steel topped out on December 16, 2008. Once the steel was in-place, crews began work on the exterior enclosure as well as the interior fit-out. The crews worked from the third floor down to the first floor in a general flow of trades with ductwork moving first. The building was completely enclosed by the beginning of April, and Alexander met a substantial completion milestone on August 4, 2009. The commissioning process occurred the month of September while Alexander worked on punchlist and closeout items. Alexander is currently in the process of turning the building over to Geisinger Health System.

This technical report contains site plans for various phases of the construction sequence including existing site, excavation, superstructure, exterior enclosure, and project completion. A 3D Revit models was used to portray different phases of work.

The structural system of the building costs was just over $2 million. This accounts for structural concrete and structural steel. A detailed structural takeoff was performed using the Revit model for steel lengths, sizes, and quantities. The Revit model was also used to takeoff the quantities of cubic yards of concrete in the slab on grade as well as the elevated slabs. Metal decking square-foot takeoffs were obtained from the model as well. Structural concrete foundation takeoffs were based on drawings and specifications provided by the architect. Quantity takeoffs were then formed into a detailed estimate using *RS Means 2009 Facilities Construction Costs Data*. The detailed structural estimate was approximately $1.79 million. This estimate is a little low, but that low number can be attributed to several small items that were neglected from the estimate.

The general conditions estimate was broken into two parts – preconstruction/bidding phase and construction phase. Each phase broke down staffing costs as well as other basic general conditions items. The estimate is based off of the actual cost data used by Alexander during the duration of the project. The estimate is then adjusted for profit, bonding, insurance, etc. The total estimate was just over $1 million.

The final section of this document is a summary of events from the PACE Roundtable discussion conference, and a detailed analysis of the BIM breakout group's questions, comments, and thoughts.

Detailed Project Schedule

**See Appendix A for detailed project schedule*

Summary of Schedule

The detailed schedule provided in this section is based off of Alexander Building Construction's actual schedule used for the Buckhorn project. The project began in the design phase as early as December 2007, and the first kick-off meeting was on January 17, 2008. After the first meeting was in place, Alexander worked closely with the owner, Geisinger Health System, to begin the procurement process. Over the next several months, Alexander worked with the architect to develop sitework and building schematic designs as well as the sitework land development plan. Through the summer of 2008, Alexander applied for and received all of the necessary permits to begin construction. While this was in place, Alexander also developed the bid packages for structural steel and sitework. Alexander obtained the final building permit on August 25, 2008, and broke ground the same day. Once the majority of the building footprint excavation was complete, Alexander began pouring the foundations for the footings. This activity took place from October 1, 2008 to November 11, 2008. Although the crews were not provided with ideal weather conditions for pouring the concrete during this part of the construction schedule, they did not face any inclement weather conditions, such as snow, that could have caused a delay in schedule. The foundations crew worked from West to East, with steel erection beginning on October 29, 2008. The steel erection crew followed the foundations crew setting the columns. Once all of the structural steel was in place, concrete crews came back to the site on November 17th, 2008, and placed the second and third floor elevated slabs while the plumbing crew began work on the underslab work required for the slab-on-grade. Once the third floor was poured and cured, the interior trades were able to begin work starting on the third floor and working down to the first floor. On July 6th, 2009, Alexander began the punchlist and closeout process. Once the majority of the punchlist items were complete, the building was commissioned. The building was considered substantially complete on August 4, 2009, and punchlist and closeout items were complete by August 21, 2009.

Figure 1: Foundations being place along the south wall

Construction Sequence:

In general, the construction process moved from the west to the east for all trades. This path was used for excavation, foundations, steel, and roofing. Because of the relatively small size of the building, the project did not use multiple sequences or phases. Once the entire superstructure was in place, the mechanical trades worked down from the third floor to the first floor with the ductwork subcontractor leading and the carpet contractor finishing the sequence. Below is the basic path that the trades followed relative to the project site.

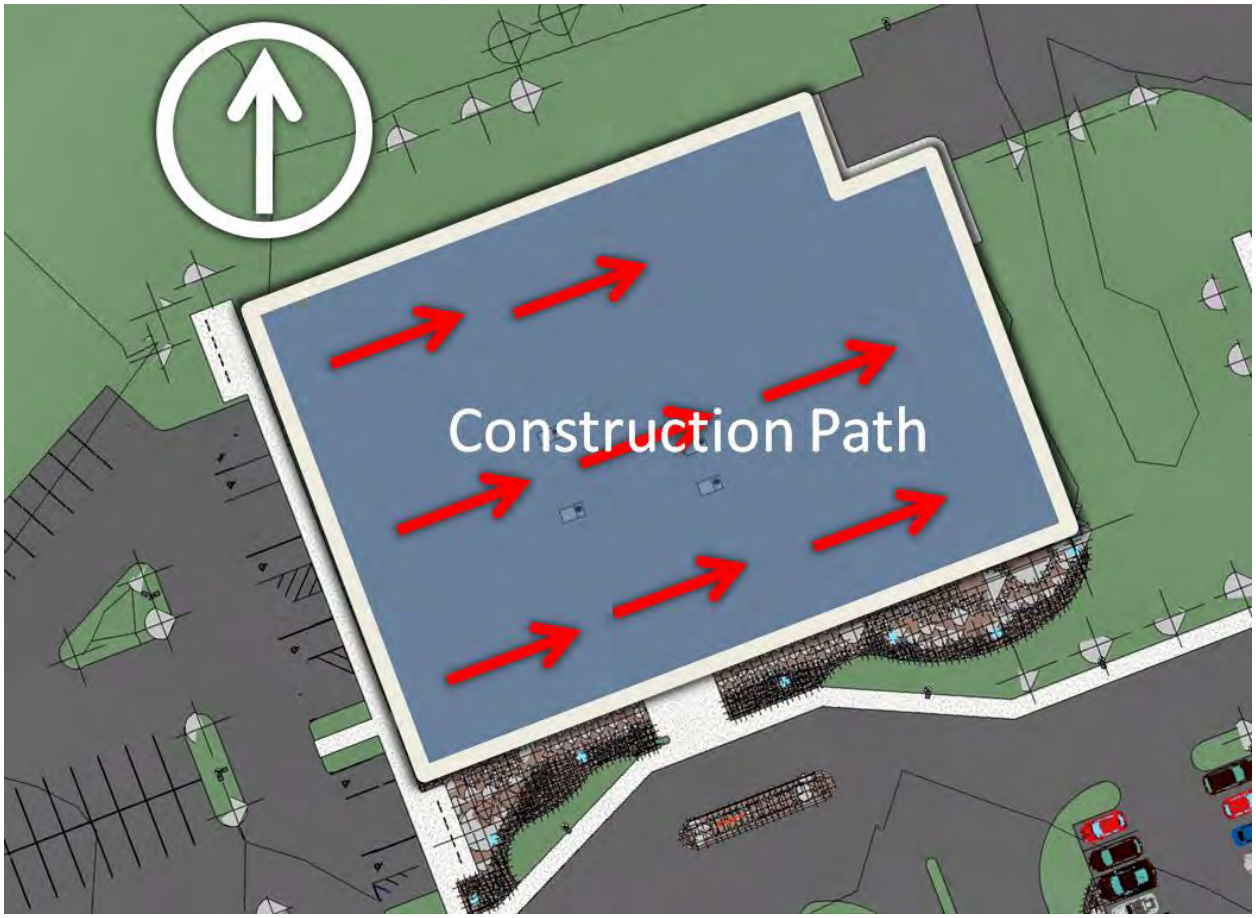


Figure 2: Basic sequencing of work. Picture based on Revit model

Site Layout Planning

**See Appendix B for site layout plans*

Summary of Site Layout Plans

In general, all traffic enters the site via Route 42 to the south of the site. This construction entrance will be used as the permanent entrance once construction is complete. The job trailers will be located east of the building footprint and north of the future parking lot. This location was selected because they will not need to be moved until the end of the project. The main dumpsters will be located on the southwest corner of the parking lot. This will provide easy access for the waste management company to replace the dumpsters without affecting the jobsite. The main staging and layout areas will be located along the west end of the parking lot where there is ample storage space without affecting the work path directly around the building. The single crawler crane will start from the southwest corner and work clockwise to the northeast around the building footprint. The main locations of the crawler crane are noted as separate cranes on the site plan. The storage containers will be located near the rest of the main lay down area. Overall, the site is not very difficult from a logistics standpoint due to the fact that the building is being constructed on a site nearly 16 times as large as the building footprint. There is plenty of room to move around the site and complete the construction as planned.

Evaluation of Contractor's Layout Plan:

There was no actual site logistics plan created by the construction manager for this project. The superintendent put some sketches together on-site during the mobilization stages of the project, but nothing formal was ever put in place. This was mostly due to the abundance of space for storage, phasing, and laydown. The only major concern by the superintendent was to get a waring course of pavement down as soon as the major site excavation was complete in order to reduce erosion, provide storage space, and provide site parking. Because of the large site, this early paving process was not a logistical concern for the construction manager and all trades were able to work around the paving contractor.

Detailed Structural Systems Estimate

**See Appendix C for detailed structural estimate*

As per the table below, the majority of the structural system cost is based on material. Most of that material cost is steel. The takeoff of the structural system estimate comes directly from the Revit model and therefore is considered accurate. For the steel system, Revit does an excellent job in quantifying each piece of steel used in the building and its exact length and size. The material, labor, and equipment costs are taken from *RS Means 2009 Facilities Construction Costs Data*. For the concrete system, the volume of concrete for the footings and foundations were calculated based on the structural plans. Square-foot and volume calculations for the slab on grade and elevated slabs come directly from the Revit model. Rebar sizing and spacing was based on column, pier, and footing schedules located on the structural plans.

Assumptions:

- Use location factor for Williamsport, PA = 0.88
- Concrete CY calculations do not subtract out the volume for rebar
- Rebar was assumed to run the length of the wall, footing, or slab (unless dimensioned)
- The 2nd and 3rd floors were considered approximately the same in terms of square foot dimension.
- 2-use formwork was utilized
- Direct chute placement was utilized for foundations and slab on grade concrete placement. Pump placement was utilized for elevated slabs.

Structural Material, Labor, and Equipment Totals			
Steel			
Summary	***Cost Per Square Foot($/SF)***	***Total Cost($)***	***Percentage(%)***
Material Total	$12.02	$1,000,479.74	55.91
Labor Total	$0.86	$71,637.11	4.00
Equipment Total	$0.39	$32,172.46	1.80
	$13.27	$1,104,289.31	61.71
Concrete			
Summary	***Cost Per Square Foot($/SF)***	***Total Cost($)***	***Percentage(%)***
Material Total	$5.47	$454,983.53	25.42
Labor Total	$1.52	$126,122.73	7.05
Equipment Total	$0.11	$9,288.03	0.52
	$7.09	$590,394.29	32.99
Subtotals	$20.36	$1,694,683.59	94.70
Adjusted for Location (0.88)	$17.91	$1,491,321.56	83.33
Design Contingency (1.5%)	$0.31	$25,420.25	1.42
Escalation Contingency (3.5%)	$0.71	$59,313.93	3.31
Insurance (3%)	$0.61	$50,840.51	2.84
Bonds (2%)	$0.41	$33,893.67	1.89
Overhead & Profit (10%)	$2.04	$169,468.36	9.47
Total Structural Estimate:	**$21.50**	**$1,789,585.00**	**100.00**

Table 1: Material, Labor, & Equipment Totals

By looking at the table above, it is clear to see that materials accounted for the majority of the cost of the two structural systems. It is also clear that the steel system accounted for a significantly larger portion of the total cost of the project; however, this was expected seeing as concrete was not used for any structural elements in the building other than slabs and foundations. It should also be noted that the concrete and structural steel systems square-foot costs account for nearly 22% of the total building cost (excluding sitework).

Structural System Estimate Comparison					
Item	***Unit Cost***	***Actual Cost***	***Estimated Cost***	***Difference***	***% Difference***
Concrete System	$270.36/CY	$720,715	$623,456	-$97,259	-13.49
Steel System	3,324.38/TON	$1,335,233	$1,166,129.00	-$169,104	-12.66
Structural System Total		$2,055,948	$1,789,585	-$266,363	-12.96

Table 2: Actual vs. Estimated Costs Comparison

The above table displays a representation of unit cost of the concrete and steel systems used in the project. The table also shows a comparison of the actual cost and the estimated costs found using *RS Means 2009 Facilities Construction Costs Data.* Both steel and concrete estimates came in around 13% under the actual costs of construction; however, this can be attributed to several factors.

Actual costs included labor, materials, and time for items such as: anchor bolts, welding, and plumbing/squaring for steel, as well as ad-mixtures, curing compounds, finishing techniques, rebar chairs, and rebar ties for concrete. With the addition of these additional costs, the estimated costs of both systems are fairly close and can be considered accurate based on the drawings and specifications provided by the architect.

General Conditions Estimate

**See Appendix D for detailed general conditions estimate*

The general conditions estimate was broken down into two phases – a preconstruction services phase and a construction phase. The preconstruction phase included preconstruction as well as the bidding/buyout phase and was comprised almost entirely of staffing costs associated with preconstruction. Preconstruction was scheduled with a duration of 30 weeks and totaled $136,000. The construction phase consisted of not only staffing costs, but also other miscellaneous reimbursables such as job signage, field trailers, temporary utilities, office supplies, and printing charges. The estimate went even further to break down which of the reimbursables were included in subcontractor bid packages. The construction phase was scheduled with a duration of 65 weeks and totaled $892,540. The following table shows a summary for costs associated with the two main phases of the general conditions estimate. The summary estimate also includes adjustments for location, design contingency, escalation contingency, insurance, bonding, overhead and profit – all of which were not included in the general conditions estimate, but were individual line items on the actual project estimate.

General Conditions Summary		
Phase	***Cost ($)***	***Cost/SF ($/SF)***
Preconstruction	$93,230	1.12
Bidding/Buyout	$42,770	0.51
Construction	$892,540	10.72
	$1,028,540	12.36
Adjusted for Location (0.88)	$905,115	10.87
Design Contingency (1.5%)	$13,576.73	0.16
Escalation Contingency (3.5%)	$31,679.03	0.38
Insurance (3%)	$27,153.46	0.33
Bonds (2%)	$18,102.30	0.22
Overhead & Profit (10%)	$90,511.52	1.09
Total General Conditions Estimate:	$1,086,138	13.05

Critical Industry Issues

The PACE Seminar had several components, but the main part of the day consisted of breakout groups that were focused on three of the industry's leading topics of interest, and they were:

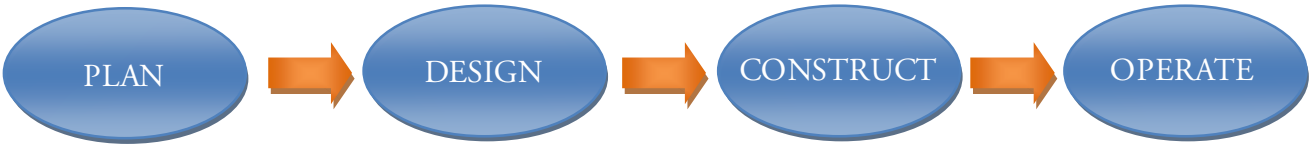
1. Energy and the Construction Industry – How changing green building energy performance requirements will affect future projects

2. Business and Networking – Expanding your circles, relationships and opportunities

3. BIM Executive Planning – Putting BIM to work.

Based on my experience this past summer working for Alexander Building Construction, I had a strong desire to attend the BIM Executive Planning session. Last summer I created a 3D model of the Buckhorn Office Building using Revit Architecture and Revit MEP. The owner, Geisinger Health System, had requested that a "BIM Model" be turned over as part of the As-Built drawings, and Alexander asked me to create the model. This was Alexander's first step into the BIM/3D modeling world, and they created a BIM taskforce to try to understand how they, as a construction management company, could utilize a 3D model.

The first breakout session that I attended during the PACE Roundtable hit exactly upon the topic that Alexander was interested in, and that was, "How to implement and actively use a 3D model in a BIM atmosphere." The moderator of the discussion group was Craig Dubler, a Ph.D. candidate studying under Dr. Messner. Craig, along with several other graduate students had recently developed a BIM Execution Planning Guide, which was designed to help companies learn how to effectively turn a 3D model into a BIM model. The main theory of the BIM Execution Guide consisted of four steps and they were:



Craig went through these four steps and explained, in more detail, how the BIM Execution Guide implements these four strategies to increase productivity and usefulness of 3D models with construction management companies. After Craig gave a brief explanation of the BIM Execution Guide, he opened the floor for general questions about BIM and how it can/should be implemented

in the construction industry. One personal opened up the discussion with a very obvious comment, but a very factual statement, "The biggest limitation of BIM is having users that are able to manipulate the model and *actually* use it." Nearly everyone in the room agreed on this statement because it is basically true; the current industry technology is ahead of the knowledge of the people that are intended to use it. This lead to another comment from an older gentleman in the room that explained that there is an intimidation factor caused by technology and that is keeping many older people in the industry from embracing BIM.

From this point, the discussion turned more towards the design application of BIM and 3D modeling software. Dr. Messner, who was present in the breakout group, spoke about Revit and where it stands in the current industry market of BIM design tools. He explained that although Revit is currently being implemented for many architectural design applications, the available library of families, or individual pieces of equipment, for Revit MEP are lacking, and it is causing industry professionals to turn to other pieces of software that are not compatible with Revit Architecture. At this comment, another person brought up the subject of Navisworks. This sparked a lot of interest and generated Craig to speak on what Navisworks does as a side note. He explained that Navisworks is a software package designed by Autodesk to bring several 3D models together for analysis. He gave an example of how the construction manager might have an architectural model from the architect, a mechanical ductwork and piping model, a plumbing model, a fire protection model, and an electrical conduit model, and how he can run clash-detection simulations, create schedule sequencing simulations, as well as a host of other things.

The introduction of the idea of subcontractors providing a model sparked some more discussion regarding ownership of the model and design specifications. Some of the important questions that were raised included:

- *Where does the architect's modeling scope end and the subcontractor's scope begin?*

- *What kind of detail do you want/need based on project size and complexity?*

- *Who pays for BIM? Owners? Architects? Construction Managers? Subcontractors?*

These questions were somewhat rhetorical in the fact that there is no right or wrong answer at this stage. Several people in the room, from construction managers to subcontractors, gave valid, yet perhaps slightly biased, answers to these questions, but I think it is something that is still being processed by the industry as a whole.

In the second breakout session, I returned to the BIM Executive Planning room where we first reviewed some of the major issues that were presented in the first session. We revisited the idea of "Who is responsible for BIM?" This lead to someone asking, "What is the owner's role in BIM?" This was the question that I had really been waiting to hear because this was the exact situation I had faced earlier this summer with Alexander. I posed the question, "Does an owner know what exactly they even *want*?" I directed this question towards the construction managers and general

contractors in the room that have been actively using BIM already. I really wanted to know how they involved the owner in the BIM process, as well as how/what they turned over to the owner as a deliverable upon completion of the project. I received several answers explaining that some contractors just hand over a disk with a model on it as an As-Built, while others provide owner training to further use the model for maintenance and facilities operations in the future. Jerry Shaheen, with Gilbane, used the Dickinson Law School as a prime of example of a recent project he completed regarding turning over a BIM model for Penn State. He explained that right now it is still a case-by-case basis as to what the owner wants, but with an experienced owner like Penn State, there were a specific set of BIM deliverable requirements.

One person brought up the question of legality, and it was answered that, "…[the model] can't be legally binding yet because there is no code to base a standard off of yet, but many architects are using the term 'standard of care'…" The idea of "standard of care" means that the model can be used as a form of working documents, but the 2D drawings are still legally binding. The idea of "standard of care" then brought up the question of quality control. One person asked, "Who is responsible for the checks and balances?" This question was tossed around several times throughout both session and it comes back to the main idea first stated as, "Who is responsible for the model?" I think this is one of the core issues that is holding companies back from entering this market.

The second breakout session ended with some discussion as to the future of BIM and 3D modeling in the construction industry. Several people agreed that significant research shows that effectively used BIM increases productivity, reduces errors in the field, and reduces cost on projects. Many people also agreed that BIM is becoming a standard service instead of an additional service on construction projects. Many people also related BIM to what LEED was five years ago. People see BIM as a new technology that is here to stay, and the faster that we can embrace it and learn to use it effectively, the faster we will see progress and evolution

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C. Detailed Structural Estimate

D. General Conditions Estimate

APPENDIX A

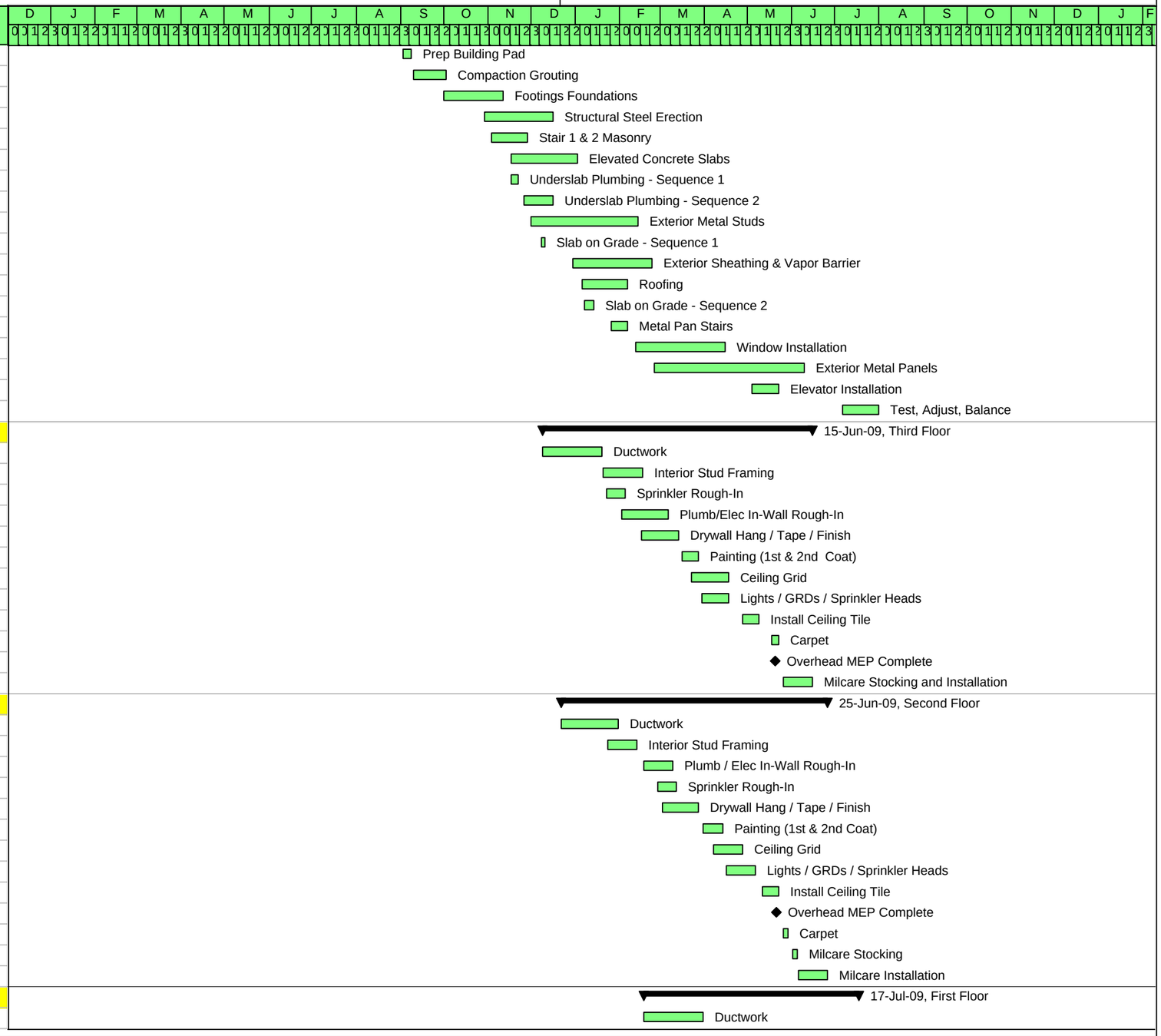
Detailed Project Schedule

Activity ID	Activity Name	Original Duration	Start	Finish
BUCKHORN OFFICE BUILDING		486	10-Dec-07	19-Oct-09
Approvals / Permits		240	27-Feb-08	27-Jan-09
		240	27-Feb-08	27-Jan-09
A1000	NPDES/DEP Approvals	100	27-Feb-08	15-Jul-08
A1010	HOP Procurement	220	26-Mar-08	27-Jan-09
A1020	Submit Site Drawings to TWP For LDP	0		18-Apr-08
A1030	County and Twp Review and Comment Peri...	30	21-Apr-08	30-May-08
A1040	Receive and Address Plan Review Comme...	15	02-Jun-08	20-Jun-08
A1050	Submit Revised Drawings to Twp for Approval	1	17-Jun-08	17-Jun-08
A1060	Receive Prelin/Final LDP Approval	1	08-Jul-08	08-Jul-08
A1070	Obtain Building Permit	30	25-Aug-08	03-Oct-08
A1080	Obtain Footing/Fndn Permit	3	25-Aug-08	27-Aug-08
Preconstruction		278	10-Dec-07	31-Dec-08
		278	10-Dec-07	31-Dec-08
A1090	Sitework Schematic Design	54	10-Dec-07	21-Feb-08
A1100	Building Schematic Design	45	14-Jan-08	14-Mar-08
A1110	CM Kickoff Meeting	0	17-Jan-08	
A1120	Sitework Land Development Preparation	40	14-Feb-08	09-Apr-08
A1130	Building Schematic Design Dwgs. Issued	0		04-Apr-08
A1140	Schematic Design Estimate	14	07-Apr-08	24-Apr-08
A1150	Building Design Development	25	25-Apr-08	29-May-08
A1160	Issue CD Drawings - Structural Steel	0	16-May-08	
A1170	Steel Contractor Procurement	25	16-May-08	19-Jun-08
A1180	Sitework Construction Documents	30	16-May-08	26-Jun-08
A1190	Issue Building DD Drawings	0	30-May-08	
A1200	Design Development Estimate	15	30-May-08	19-Jun-08
A1210	Issue CD Drawings - Site	0	13-Jun-08	
A1220	Sitework Contractor Procurement	20	13-Jun-08	10-Jul-08
A1230	Building Construction Documents	33	18-Jun-08	01-Aug-08
A1240	Issue CD Drawings - Building	0	05-Aug-08	
A1250	Develop Control Budget / Bidding	35	05-Aug-08	22-Sep-08
A1260	Addition Construction Documents	15	03-Oct-08	23-Oct-08
A1270	Addition Steel Drawings	15	03-Oct-08	23-Oct-08
A1280	Negotiate Addition Change Orders	30	20-Nov-08	31-Dec-08
Construction		296	13-Jun-08	31-Jul-09
Sitework		245	25-Aug-08	31-Jul-09
A1290	Begin Sitework	0	25-Aug-08	
A1300	E&S Control, Mobilize	15	25-Aug-08	12-Sep-08
A1310	Site Cut/Fill	10	01-Sep-08	12-Sep-08
A1320	Site Utilities	40	08-Sep-08	31-Oct-08
A1330	Base Course Paving	10	17-Oct-08	30-Oct-08
A1340	Grading, Stone Base, Curbs	30	18-Nov-08	29-Dec-08
A1350	Landscaping	40	21-Apr-09	15-Jun-09
A1360	Wearing Course Paving	10	20-Jul-09	31-Jul-09
General		296	13-Jun-08	31-Jul-09
A1370	Steel Shop Drawings / Approvals / Fabrication	85	13-Jun-08	09-Oct-08

Actual Work | Critical Remaining Work | Summary
Remaining Work | Milestone

TASK filter: All Activities

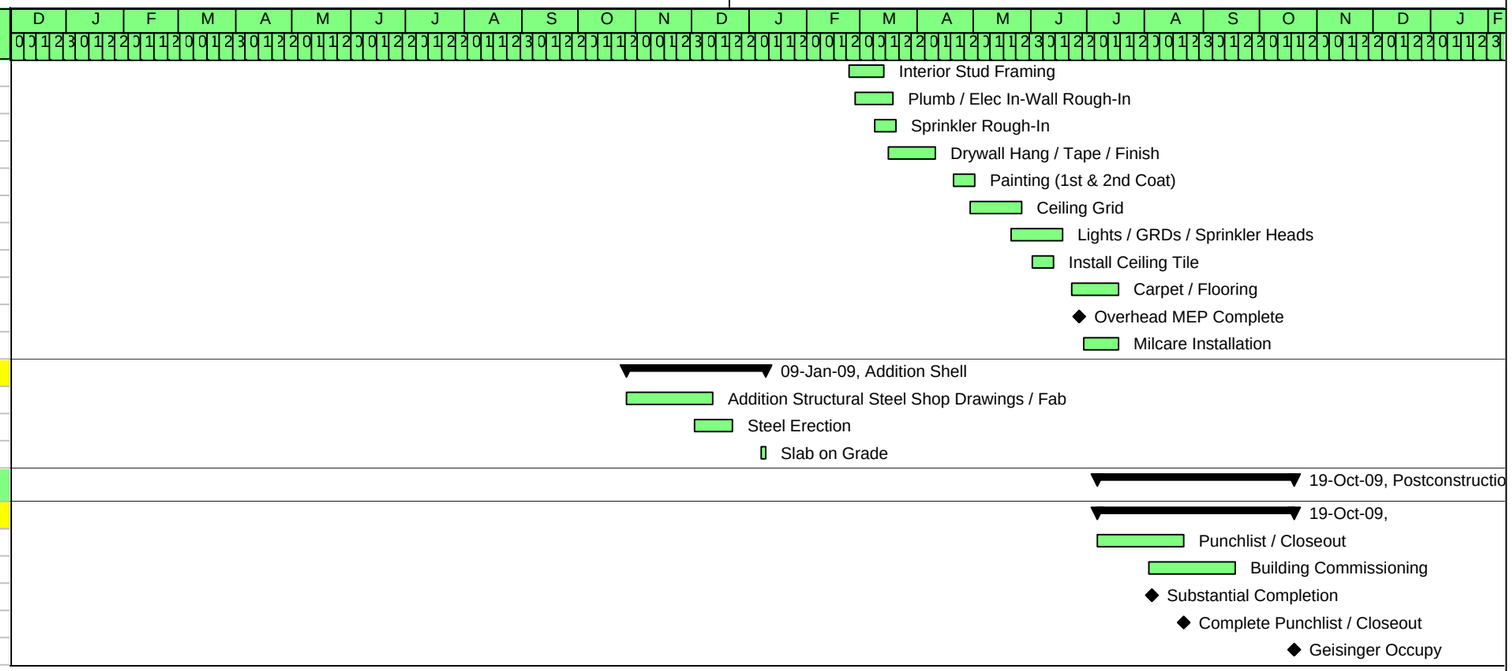
Activity ID	Activity Name	Original Duration	Start	Finish
A1380	Prep Building Pad	5	02-Sep-08	08-Sep-08
A1390	Compaction Grouting	17	10-Sep-08	02-Oct-08
A1400	Footings Foundations	30	01-Oct-08	11-Nov-08
A1410	Structural Steel Erection	35	29-Oct-08	16-Dec-08
A1420	Stair 1 & 2 Masonry	20	03-Nov-08	28-Nov-08
A1430	Elevated Concrete Slabs	35	17-Nov-08	02-Jan-09
A1440	Underslab Plumbing - Sequence 1	5	17-Nov-08	21-Nov-08
A1450	Underslab Plumbing - Sequence 2	15	26-Nov-08	16-Dec-08
A1460	Exterior Metal Studs	55	01-Dec-08	13-Feb-09
A1470	Slab on Grade - Sequence 1	3	08-Dec-08	10-Dec-08
A1480	Exterior Sheathing & Vapor Barrier	40	30-Dec-08	23-Feb-09
A1490	Roofing	25	05-Jan-09	06-Feb-09
A1500	Slab on Grade - Sequence 2	5	07-Jan-09	13-Jan-09
A1510	Metal Pan Stairs	10	26-Jan-09	06-Feb-09
A1520	Window Installation	45	12-Feb-09	15-Apr-09
A1530	Exterior Metal Panels	75	25-Feb-09	09-Jun-09
A1540	Elevator Installation	15	04-May-09	22-May-09
A1550	Test, Adjust, Balance	20	06-Jul-09	31-Jul-09
Third Floor		135	09-Dec-08	15-Jun-09
A1560	Ductwork	30	09-Dec-08	19-Jan-09
A1600	Interior Stud Framing	20	20-Jan-09	16-Feb-09
A1570	Sprinkler Rough-In	10	22-Jan-09	04-Feb-09
A1580	Plumb/Elec In-Wall Rough-In	25	02-Feb-09	06-Mar-09
A1590	Drywall Hang / Tape / Finish	20	16-Feb-09	13-Mar-09
A1610	Painting (1st & 2nd Coat)	10	16-Mar-09	27-Mar-09
A1620	Ceiling Grid	20	23-Mar-09	17-Apr-09
A1630	Lights / GRDs / Sprinkler Heads	15	30-Mar-09	17-Apr-09
A1640	Install Ceiling Tile	10	27-Apr-09	08-May-09
A1650	Carpet	5	18-May-09	22-May-09
A1660	Overhead MEP Complete	0		20-May-09
A1670	Milcare Stocking and Installation	15	26-May-09	15-Jun-09
Second Floor		134	22-Dec-08	25-Jun-09
A1680	Ductwork	30	22-Dec-08	30-Jan-09
A1690	Interior Stud Framing	15	23-Jan-09	12-Feb-09
A1700	Plumb / Elec In-Wall Rough-In	15	17-Feb-09	09-Mar-09
A1710	Sprinkler Rough-In	10	27-Feb-09	12-Mar-09
A1720	Drywall Hang / Tape / Finish	20	02-Mar-09	27-Mar-09
A1730	Painting (1st & 2nd Coat)	10	31-Mar-09	13-Apr-09
A1740	Ceiling Grid	15	07-Apr-09	27-Apr-09
A1750	Lights / GRDs / Sprinkler Heads	15	16-Apr-09	06-May-09
A1760	Install Ceiling Tile	10	11-May-09	22-May-09
A1770	Overhead MEP Complete	0		21-May-09
A1780	Carpet	4	26-May-09	29-May-09
A1790	Milcare Stocking	4	01-Jun-09	04-Jun-09
A1800	Milcare Installation	15	05-Jun-09	25-Jun-09
First Floor		109	17-Feb-09	17-Jul-09
A1810	Ductwork	30	17-Feb-09	30-Mar-09



Actual Work | Remaining Work | Critical Remaining Work | Milestone | Summary

TASK filter: All Activities

Activity ID	Activity Name	Original Duration	Start	Finish
A1820	Interior Stud Framing	15	23-Feb-09	13-Mar-09
A1830	Plumb / Elec In-Wall Rough-In	15	26-Feb-09	18-Mar-09
A1840	Sprinkler Rough-In	10	09-Mar-09	20-Mar-09
A1850	Drywall Hang / Tape / Finish	20	16-Mar-09	10-Apr-09
A1860	Painting (1st & 2nd Coat)	10	20-Apr-09	01-May-09
A1870	Ceiling Grid	20	29-Apr-09	26-May-09
A1880	Lights / GRDs / Sprinkler Heads	20	21-May-09	17-Jun-09
A1890	Install Ceiling Tile	10	01-Jun-09	12-Jun-09
A1900	Carpet / Flooring	20	22-Jun-09	17-Jul-09
A1910	Overhead MEP Complete	0		26-Jun-09
A1920	Milcare Installation	15	29-Jun-09	17-Jul-09
Addition Shell		55	27-Oct-08	09-Jan-09
A1930	Addition Structural Steel Shop Drawings / Fab	35	27-Oct-08	12-Dec-08
A1940	Steel Erection	15	02-Dec-08	22-Dec-08
A1950	Slab on Grade	3	07-Jan-09	09-Jan-09
Postconstruction		76	06-Jul-09	19-Oct-09
		76	06-Jul-09	19-Oct-09
A1960	Punchlist / Closeout	35	06-Jul-09	21-Aug-09
A1970	Building Commissioning	35	03-Aug-09	18-Sep-09
A1980	Substantial Completion	0		04-Aug-09
A1990	Complete Punchlist / Closeout	0		21-Aug-09
A2000	Geisinger Occupy	0		19-Oct-09



APPENDIX B

Site Layout Plans

Borton Lawson

Engineering/Architecture

www.borton-lawson.com

Northeast Pennsylvania

613 Baltimore Drive
Suite 300
Wilkes-Barre, PA 18702-7903

Voice: 570-821-1999
Fax: 570-821-1990

Site Layout Plan

Geisinger

Buckhorn Medical Office Building

Project No. 2007-2246-02

1/6

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Excavation Phase

Geisinger

Buckhorn Medical Office Building

Project No. 2007-2246-02

2/6

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Steel Erection Phase

Geisinger

Buckhorn Medical Office Building

Project No. 2007-2246-02

3/6

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Closeout Phase

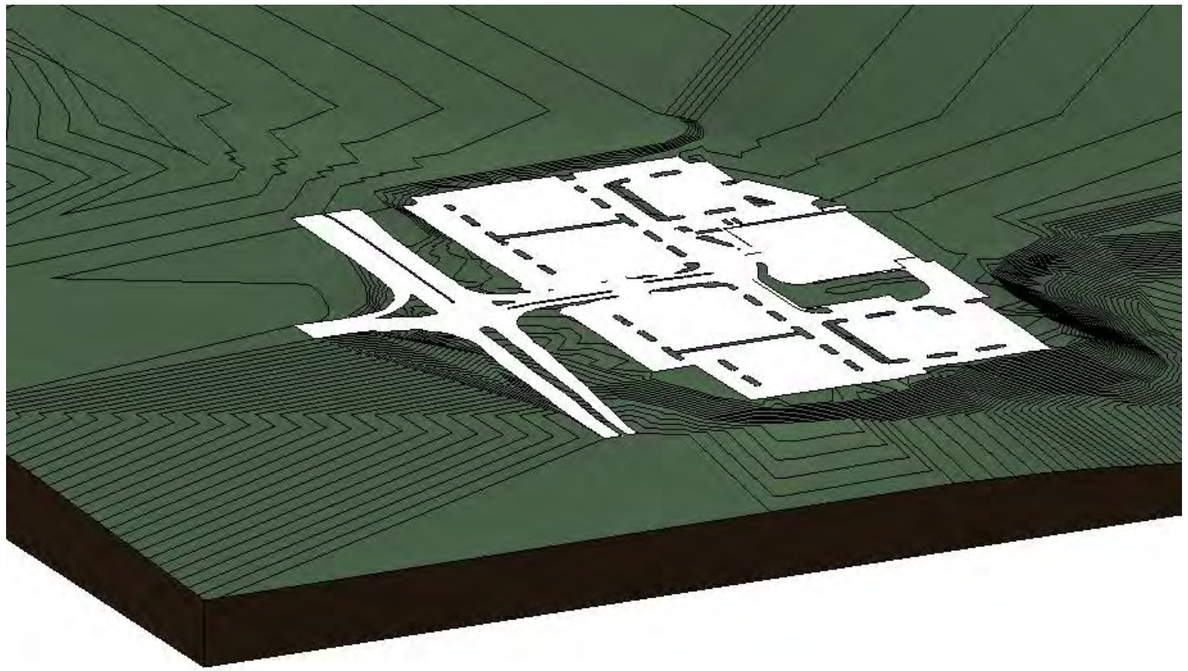
Geisinger

Buckhorn Medical Office Building

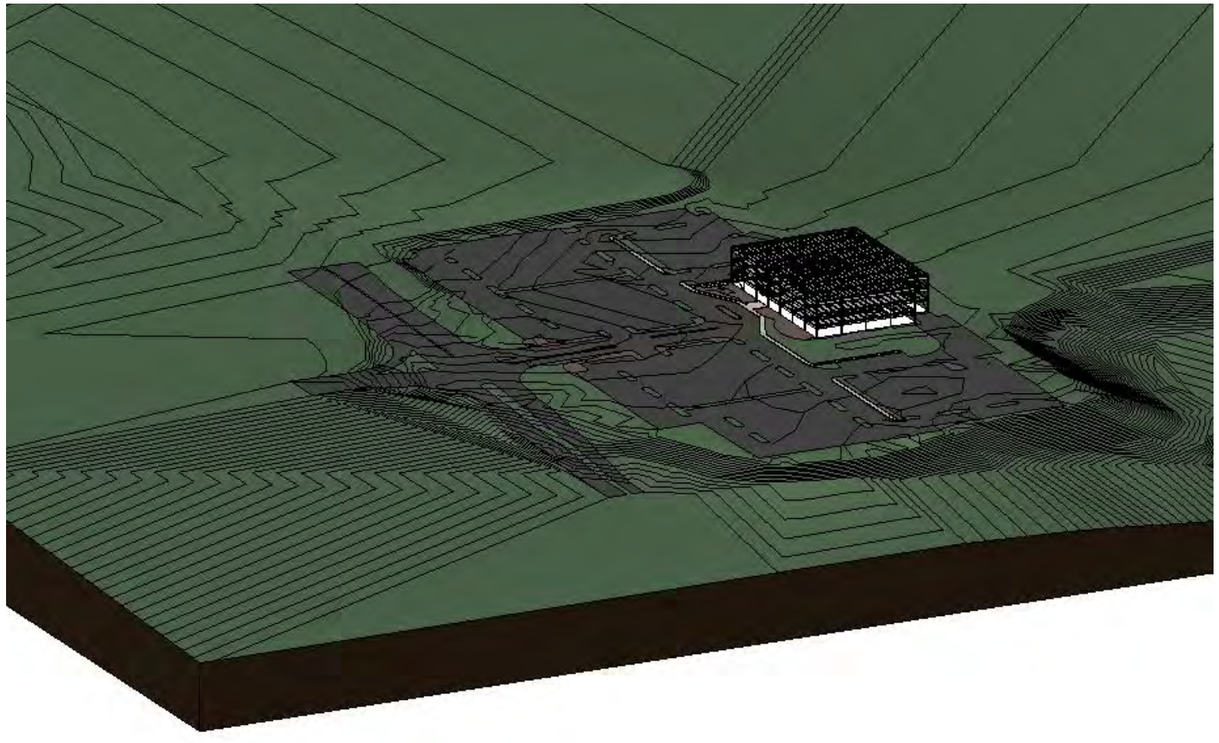
Project No. 2007-2246-02

4/6

1. **Existing Site/Proposed Site (3D)**



2. **Superstructure Phasing Plan (3D)**



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3D Phasing

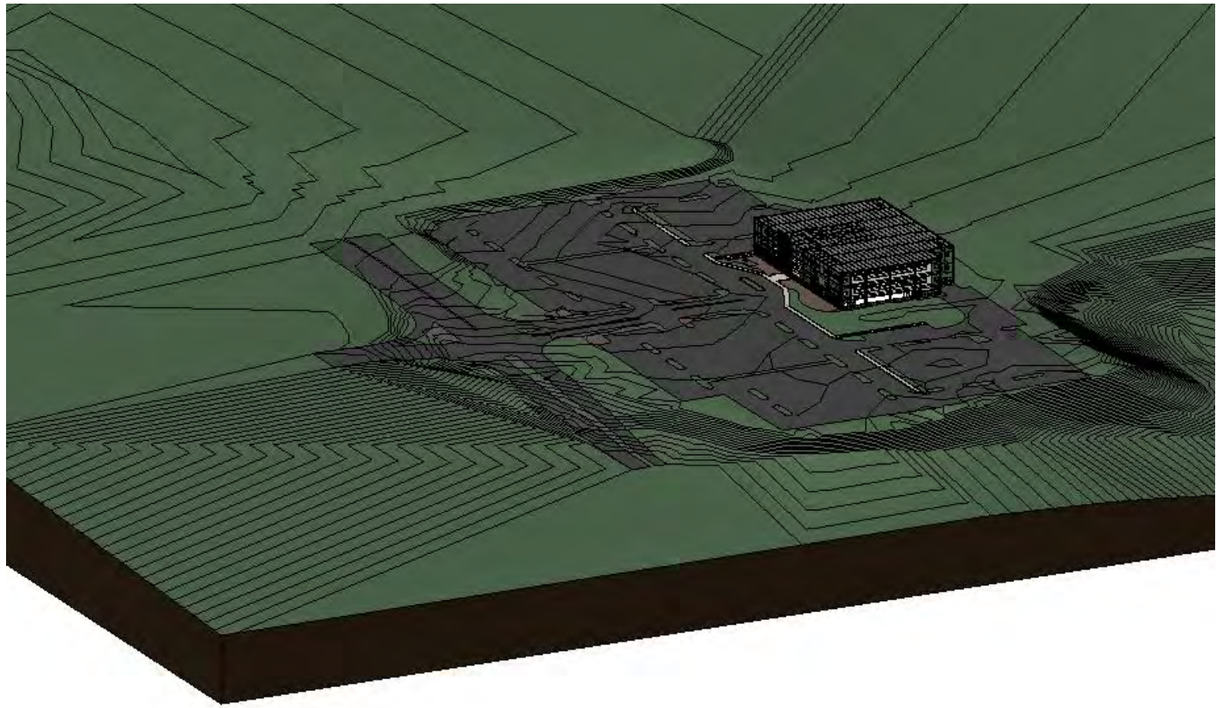
Geisinger

Buckhorn Medical Office Building

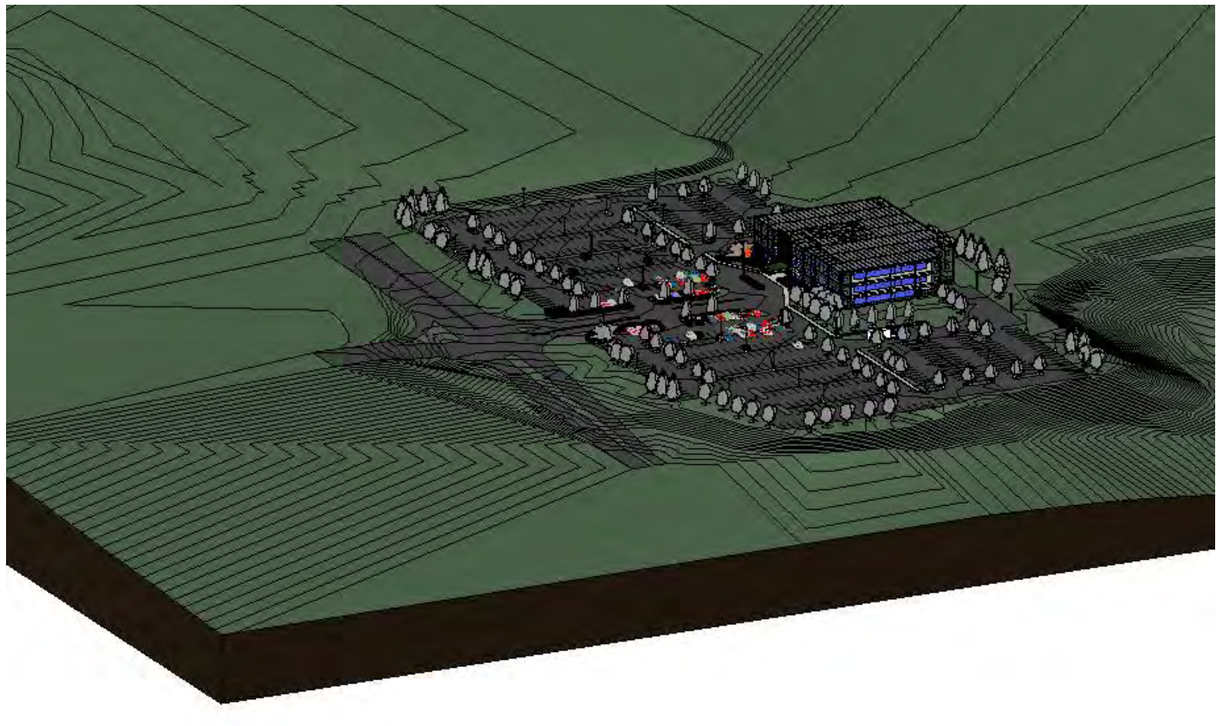
Project No. 2007-2246-02

5/6

1. **Exterior Enclosure Phasing Plan (3D)**



2. **Completed Site Plan (3D)**



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3D Phasing

Geisinger

Buckhorn Medical Office Building

Project No. 2007-2246-02

6/6

APPENDIX C

Detailed Structural Estimate

Structural Steel Estimate

Member Size	Unit	Quantity	Length (LF)	Unit Mat'l Cost	Mat'l Cost	Unit Labor Cost	Labor Cost	Unit Equipment Cost	Equipment Cost	Total Item Cost
Beams										
Wide Flange Shapes										
W8X10	LF	1	5.16146	$16.50	$85	$4.06	$21	$2.90	$15	$121
W8X10	LF	1	5.69792	$16.50	$94	$4.06	$23	$2.90	$17	$134
W8X10	LF	1	6.16146	$16.50	$102	$4.06	$25	$2.90	$18	$145
W10X12	LF	1	4.46354	$34.00	$152	$3.92	$17	$2.80	$12	$182
W10X12	LF	1	4.82813	$34.00	$164	$3.92	$19	$2.80	$14	$197
W10X12	LF	1	7.51042	$34.00	$255	$3.92	$29	$2.80	$21	$306
W12X19	LF	1	12.67188	$31.50	$399	$2.77	$35	$1.98	$25	$459
W12X19	LF	4	12.88542	$31.50	$1,624	$2.77	$143	$1.98	$102	$1,868
W12X19	LF	2	16.69792	$31.50	$1,052	$2.77	$93	$1.98	$66	$1,211
W12X19	LF	3	17.07292	$31.50	$1,613	$2.77	$142	$1.98	$101	$1,857
W12X19	LF	3	17.11458	$31.50	$1,617	$2.77	$142	$1.98	$102	$1,861
W12X19	LF	3	17.23958	$31.50	$1,629	$2.77	$143	$1.98	$102	$1,875
W12X19	LF	5	17.37500	$31.50	$2,737	$2.77	$241	$1.98	$172	$3,149
W16X26	LF	4	29.92708	$43.00	$5,147	$2.44	$292	$1.74	$208	$5,648
W16X26	LF	2	29.95833	$43.00	$2,576	$2.44	$146	$1.74	$104	$2,827
W16X26	LF	2	29.96354	$43.00	$2,577	$2.44	$146	$1.74	$104	$2,827
W16X26	LF	9	30.00000	$43.00	$11,610	$2.44	$659	$1.74	$470	$12,739
W16X26	LF	4	30.01042	$43.00	$5,162	$2.44	$293	$1.74	$209	$5,664
W16X26	LF	4	30.03646	$43.00	$5,166	$2.44	$293	$1.74	$209	$5,668
W16X26	LF	1	30.04688	$43.00	$1,292	$2.44	$73	$1.74	$52	$1,418
W18X35	LF	39	29.92708	$64.00	$74,698	$4.10	$4,785	$2.15	$2,509	$81,993
W18X35	LF	16	29.95833	$64.00	$30,677	$4.10	$1,965	$2.15	$1,031	$33,673
W18X35	LF	21	29.96354	$64.00	$40,271	$4.10	$2,580	$2.15	$1,353	$44,204
W18X35	LF	80	30.00000	$64.00	$153,600	$4.10	$9,840	$2.15	$5,160	$168,600
W18X35	LF	36	30.01042	$64.00	$69,144	$4.10	$4,430	$2.15	$2,323	$75,896
W18X35	LF	38	30.03646	$64.00	$73,049	$4.10	$4,680	$2.15	$2,454	$80,182
W18X35	LF	14	30.04688	$64.00	$26,922	$4.10	$1,725	$2.15	$904	$29,551
W21X44	LF	1	20.33854	$72.50	$1,475	$3.32	$68	$1.76	$36	$1,578
W21X44	LF	1	20.83854	$72.50	$1,511	$3.32	$69	$1.76	$37	$1,617
W21X44	LF	1	29.98958	$72.50	$2,174	$3.32	$100	$1.76	$53	$2,327
W21X44	LF	1	29.99479	$72.50	$2,175	$3.32	$100	$1.76	$53	$2,327
W21X44	LF	2	30.00000	$72.50	$4,350	$3.32	$199	$1.76	$106	$4,655
W21X50	LF	8	29.98958	$82.50	$19,793	$3.32	$797	$1.76	$422	$21,012
W21X50	LF	3	29.99479	$82.50	$7,424	$3.32	$299	$1.76	$158	$7,881
W21X50	LF	21	30.00000	$82.50	$51,975	$3.32	$2,092	$1.76	$1,109	$55,175
W21X50	LF	7	30.01563	$82.50	$17,334	$3.32	$698	$1.76	$370	$18,401
W21X57	LF	2	29.95833	$94.11	$5,639	$3.37	$202	$1.79	$107	$5,948
W21X57	LF	4	29.98958	$94.11	$11,289	$3.37	$405	$1.79	$215	$11,908
W21X57	LF	2	29.99479	$94.11	$5,646	$3.37	$202	$1.79	$107	$5,955
W21X57	LF	15	30.00000	$94.11	$42,350	$3.37	$1,518	$1.79	$805	$44,672
W21X57	LF	4	30.01563	$94.11	$11,299	$3.37	$405	$1.79	$215	$11,919
W21X57	LF	3	30.04688	$94.11	$8,483	$3.37	$304	$1.79	$161	$8,948
W21X62	LF	1	30.00000	$105.00	$3,150	$3.41	$102	$1.81	$54	$3,307
W21X62	LF	1	30.04688	$105.00	$3,155	$3.41	$102	$1.81	$54	$3,312
W24X68	LF	2	29.99479	$112.00	$6,719	$3.18	$191	$1.69	$101	$7,011
W24X68	LF	6	30.00000	$112.00	$20,160	$3.18	$572	$1.69	$304	$21,037
W24X76	LF	12	29.98958	$130.00	$46,784	$3.76	$1,353	$1.78	$641	$48,777
W24X76	LF	2	29.99479	$130.00	$7,799	$3.76	$226	$1.78	$107	$8,131
W24X76	LF	26	30.00000	$130.00	$101,400	$3.76	$2,933	$1.78	$1,388	$105,721
W24X76	LF	10	30.01563	$130.00	$39,020	$3.76	$1,129	$1.78	$534	$40,683
Joists										
K-Series										
24K5	LF	24	29.92708	$9.50	$6,823	$1.50	$1,077	$0.87	$625	$8,526
24K5	LF	24	29.95833	$9.50	$6,831	$1.50	$1,079	$0.87	$626	$8,535
24K5	LF	24	29.96354	$9.50	$6,832	$1.50	$1,079	$0.87	$626	$8,536
24K5	LF	24	30.01042	$9.50	$6,842	$1.50	$1,080	$0.87	$627	$8,549
24K5	LF	43	30.03646	$9.50	$12,270	$1.50	$1,937	$0.87	$1,124	$15,331
24K5	LF	24	30.04688	$9.50	$6,851	$1.50	$1,082	$0.87	$627	$8,560
Angles and Channels										
C-Channels										
C12X20.7	LF	1	30.00000	$28.95	$869	$72.50	$2,175	$8.29	$249	$3,292
Angles										
L4X4X1/4	LF	1	32.50000	$6.90	$224	$19.10	$621	$2.35	$76	$921
L4X4X1/4	LF	1	32.53125	$6.90	$224	$19.10	$621	$2.35	$76	$922
L4X4X1/4	LF	2	32.54427	$6.90	$449	$19.10	$1,243	$2.35	$153	$1,845

L4X4X1/4	LF	1	32.57813	$6.90	$225	$19.10	$622	$2.35	$77	$924
L4X4X1/4	LF	1	32.63281	$6.90	$225	$19.10	$623	$2.35	$77	$925
L4X4X1/4	LF	1	32.65885	$6.90	$225	$19.10	$624	$2.35	$77	$926
L4X4X1/4	LF	1	32.67708	$6.90	$225	$19.10	$624	$2.35	$77	$926
L4X4X1/4	LF	4	32.83073	$6.90	$906	$19.10	$2,508	$2.35	$309	$3,723
L4X4X1/4	LF	2	32.85156	$6.90	$453	$19.10	$1,255	$2.35	$154	$1,863
L4X4X1/4	LF	2	32.96615	$6.90	$455	$19.10	$1,259	$2.35	$155	$1,869
L4X4X1/2	LF	1	32.50000	$7.15	$232	$19.90	$647	$2.55	$83	$962
L4X4X1/2	LF	1	32.54427	$7.15	$233	$19.90	$648	$2.55	$83	$963
L4X4X1/2	LF	1	32.56250	$7.15	$233	$19.90	$648	$2.55	$83	$964
L4X4X1/2	LF	1	32.63281	$7.15	$233	$19.90	$649	$2.55	$83	$966
L4X4X1/2	LF	1	32.90104	$7.15	$235	$19.90	$655	$2.55	$84	$974
L4X4X1/2	LF	1	32.93229	$7.15	$235	$19.90	$655	$2.55	$84	$975
Columns										
Steel Tube Shapes										
HSS4X4X3/8	EA	4	32.61198	$268.00	$1,072	$49.00	$196	$40.00	$160	$1,428
HSS4X4X3/8	EA	4	32.65885	$268.00	$1,072	$49.00	$196	$40.00	$160	$1,428
HSS4X4X3/8	EA	4	32.66667	$268.00	$1,072	$49.00	$196	$40.00	$160	$1,428
HSS4X4X3/8	EA	4	32.96615	$268.00	$1,072	$49.00	$196	$40.00	$160	$1,428
HSS4X4X3/8	EA	4	33.40104	$268.00	$1,072	$49.00	$196	$40.00	$160	$1,428
Wide Flange Shapes										
W10X39	LF	23	41.66667	$77.50	$3,229	$2.36	$98	$1.69	$70	$3,398
W10X68	LF	24	41.66667	$121.00	$5,042	$2.48	$103	$1.77	$74	$5,219
Subtotal Costs					$1,000,480		$71,637		$32,172	$1,104,289.31
Adjusted for Location (0.88)										$971,774.59
Design Contingency (1.5%)										$14,576.62
Escalation Contingency (3.5%)										$34,012.11
Insurance (3%)										$29,153.24
Bonds (2%)										$19,435.49
Overhead & Profit (10%)										$97,177.46
									Total Structural Steel Cost:	**$1,166,129.51**

Structural Concrete Estimate

Spread Footings

Item	Size	Depth	Quantity	Total CY	Unit Mat'l Cost	Mat'l Cost	Unit Labor Cost	Labor Cost	Unit Equip. Cost	Equip. Cost	Total Item Cost
Normal Weight Concrete, 3000 PSI	6'-0" x 4'-0"	1'-2"	1	28	$101.00	$2,828.00					$2,828.00
Normal Weight Concrete, 3000 PSI	8'-0" x 8'-0"	1'-8"	8	31.6	$101.00	$3,191.60					$3,191.60
Normal Weight Concrete, 3000 PSI	9'-6" x 9'-6"	2'-0"	12	80.16	$101.00	$8,096.16					$8,096.16
Normal Weight Concrete, 3000 PSI	12'-0" x 12'-0"	2'-4"	27	335.88	$101.00	$33,923.88					$33,923.88

Item	Size	Depth	Quantity	Total CY	Unit Mat'l Cost	Mat'l Cost	Unit Labor Cost	Labor Cost	Unit Equip. Cost	Equip. Cost	Total Item Cost
Place Concrete Footings, Direct chute	6'-0" x 4'-0"	1'-2"	1	28			$13.20	$369.60	$0.43	$12.04	$381.64
Place Concrete Footings, Direct chute	8'-0" x 8'-0"	1'-8"	8	31.6			$13.20	$417.12	$0.43	$13.59	$430.71
Place Concrete Footings, Direct chute	9'-6" x 9'-6"	2'-0"	12	80.16			$13.20	$1,058.11	$0.43	$34.47	$1,092.58
Place Concrete Footings, Direct chute	12'-0" x 12'-0"	2'-4"	27	335.88			$13.20	$4,433.62	$0.43	$144.43	$4,578.04

Item	Size	Depth	Quantity	SFCA	Unit Mat'l Cost	Mat'l Cost	Unit Labor Cost	Labor Cost	Unit Equip. Cost	Equip. Cost	Total Item Cost
Forms in Place, plywood, 2 use	6'-0" x 4'-0"	1'-2"	1	23.33	$1.20	$28.00	$3.27	$76.29			$104.29
Forms in Place, plywood, 2 use	8'-0" x 8'-0"	1'-8"	8	426.67	$1.20	$512.00	$3.27	$1,395.21			$1,907.21
Forms in Place, plywood, 2 use	9'-6" x 9'-6"	2'-0"	12	912	$1.20	$1,094.40	$3.27	$2,982.24			$4,076.64
Forms in Place, plywood, 2 use	12'-0" x 12'-0"	2'-4"	27	3024	$1.20	$3,628.80	$3.27	$9,888.48			$13,517.28

Item	LBS/FT	Length	Quantity	LBS	Unit Mat'l Cost	Mat'l Cost	Unit Labor Cost	Labor Cost	Unit Equip. Cost	Equip. Cost	Total Item Cost
Footing #5 Rebar, A615 Grade 60	1.043	4'-0"	14	58.408	$0.81	$47.31	$0.34	$19.86			$67.17
Footing #5 Rebar, A615 Grade 60	1.043	6'-0"	10	41.72	$0.81	$33.79	$0.34	$14.18			$47.98
Footing #5 Rebar, A615 Grade 60	1.043	9'-6"	168	1664.628	$0.81	$1,348.35	$0.34	$565.97			$1,914.32
Footing #7 Rebar, A615 Grade 60	2.044	8'-0"	96	1569.792	$0.81	$1,271.53	$0.34	$533.73			$1,805.26
Footing #7 Rebar, A615 Grade 60	2.044	9'-6"	168	3262.224	$0.81	$2,642.40	$0.34	$1,109.16			$3,751.56
Footing #8 Rebar, A615 Grade 60	2.67	12'-0"	540	17301.6	$0.81	$14,014.30	$0.20	$3,460.32			$17,474.62

Piers

Item	Size	Depth	Quantity	Total CY	Unit Mat'l Cost	Mat'l Cost	Unit Labor Cost	Labor Cost	Unit Equip. Cost	Equip. Cost	Total Item Cost
Normal Weight Concrete, 3000 PSI	1'-6" x 2'-0"	2'-8"	11	3.25	$101.00	$328.25					$328.25
Normal Weight Concrete, 3000 PSI	2'-0" x 1'-6"	2'-8"	7	2.07	$101.00	$209.07					$209.07
Normal Weight Concrete, 3000 PSI	2'-0" x 2'-0"	2'-8"	10	3.94	$101.00	$397.94					$397.94
Normal Weight Concrete, 3000 PSI	4'-0" x 2'-0"	4'-4"	1	1.28	$101.00	$129.28					$129.28

Item	Size	Depth	Quantity	Total CY	Unit Mat'l Cost	Mat'l Cost	Unit Labor Cost	Labor Cost	Unit Equip. Cost	Equip. Cost	Total Item Cost
Place Concrete Footings, Direct chute	1'-6" x 2'-0"	2'-8"	11	3.25			$13.20	$42.90	$0.43	$1.40	$44.30
Place Concrete Footings, Direct chute	2'-0" x 1'-6"	2'-8"	7	2.07			$13.20	$27.32	$0.43	$0.89	$28.21
Place Concrete Footings, Direct chute	2'-0" x 2'-0"	2'-8"	10	3.94			$13.20	$52.01	$0.43	$1.69	$53.70
Place Concrete Footings, Direct chute	4'-0" x 2'-0"	4'-4"	1	1.28			$13.20	$16.90	$0.43	$0.55	$17.45

Item	Size	Depth	Quantity	SFCA	Unit Mat'l Cost	Mat'l Cost	Unit Labor Cost	Labor Cost	Unit Equip. Cost	Equip. Cost	Total Item Cost
Forms in Place, plywood, 2 use	1'-6" x 2'-0"	2'-8"	11	205.04	$1.37	$280.90	$5.60	$1,148.22			$1,429.13
Forms in Place, plywood, 2 use	2'-0" x 1'-6"	2'-8"	7	130.48	$1.37	$178.76	$5.60	$730.69			$909.45
Forms in Place, plywood, 2 use	2'-0" x 2'-0"	2'-8"	10	212.8	$1.37	$291.54	$5.60	$1,191.68			$1,483.22
Forms in Place, plywood, 2 use	4'-0" x 2'-0"	4'-4"	1	51.96	$1.03	$53.52	$5.25	$272.79			$326.31

Item	LBS/FT	Length	Quantity	LBS	Unit Mat'l Cost	Mat'l Cost	Unit Labor Cost	Labor Cost	Unit Equip. Cost	Equip. Cost	Total Item Cost
Footing #4 Rebar, A615 Grade 60	0.688	4'-4"	9	26.81	$0.81	$21.72	$0.34	$9.12			$30.83
Footing #6 Rebar, A615 Grade 60	1.502	2'-8"	300	1198.6	$0.81	$970.87	$0.34	$407.52			$1,378.39

Strip Footings

Item	Size	Depth	Length	CY	Unit Mat'l Cost	Mat'l Cost	Unit Labor Cost	Labor Cost	Unit Equip. Cost	Equip. Cost	Total Item Cost
Normal Weight Concrete, 3000 PSI	3'-0" x CONT.	12"	500'-9"	55.638889	$101.00	$5,619.53					$5,619.53

Item	Size	Depth	Length	CY	Unit Mat'l Cost	Mat'l Cost	Unit Labor Cost	Labor Cost	Unit Equip. Cost	Equip. Cost	Total Item Cost
Placing Concrete Strip Footings, Direct chute	3'-0" x CONT.	12"	500'-9"	55.638889			$13.20	$734.43	$0.43	$23.92	$758.36

Item	Size	Depth	Length	SFCA	Unit Mat'l Cost	Mat'l Cost	Unit Labor Cost	Labor Cost	Unit Equip. Cost	Equip. Cost	Total Item Cost
Continuous Wall Forms, plywood, 2 use	3'-0" x CONT.	12"	500'-9"	1001.5	$4.10	$4,106.15	$2.75	$2,754.13			$6,860.28

Item	LBS/FT	Length	Quantity	LBS	Unit Mat'l Cost	Mat'l Cost	Unit Labor Cost	Labor Cost	Unit Equip. Cost	Equip. Cost	Total Item Cost
Wall #3 Rebar, A615 Grade 60	0.376	2'-6"	250	235	$0.81	$190.35	$0.24	$56.40			$246.75
Wall #5 Rebar, A615 Grade 60	1.043	500-'9"	3	1566.85	$0.81	$1,269.15	$0.24	$376.04			$1,645.19

Foundation Walls

Item	Size	Depth	Length	CY	Unit Mat'l Cost	Mat'l Cost	Unit Labor Cost	Labor Cost	Unit Equip. Cost	Equip. Cost	Total Item Cost
Normal Weight Concrete, 3000 PSI	1'-0" x CONT.	3'-0"	500'-9"	55.64	$101.00	$5,619.64					$5,619.64

Item	Size	Depth	Length	CY	Unit Mat'l Cost	Mat'l Cost	Unit Labor Cost	Labor Cost	Unit Equip. Cost	Equip. Cost	Total Item Cost
Placing Concrete Foundation Wall, Direct chute	1'-0" x CONT.	3'-0"	500'-9"	55.64			$15.85	$881.89	$0.52	$28.93	$910.83
Item	**Size**	**Depth**	**Length**	**SFCA**	**Unit Mat'l Cost**	**Mat'l Cost**	**Unit Labor Cost**	**Labor Cost**	**Unit Equip. Cost**	**Equip. Cost**	**Total Item Cost**
Continuous Wall Forms, plywood, 2 use	1'-0" x CONT.	3'-0"	500'-9"	1001.5	$4.10	$4,106.15	$2.75	$2,754.13			$6,860.28
Item	**LBS/FT**	**Length**	**Quantity**	**LBS**	**Unit Mat'l Cost**	**Mat'l Cost**	**Unit Labor Cost**	**Labor Cost**	**Unit Equip. Cost**	**Equip. Cost**	**Total Item Cost**
Wall #4 Rebar, A615 Grade 60	0.688	4'-0"	1002	2757.5	$0.81	$2,233.58	$0.24	$661.80			$2,895.38
Wall #4 Rebar, A615 Grade 60	0.688	500'-9"	10	6445.16	$0.81	$5,220.58	$0.24	$1,546.84			$6,767.42
Slab On Grade											
Item	**Area (SF)**	**Depth**	**Quantity**	**Total CY**	**Unit Mat'l Cost**	**Mat'l Cost**	**Unit Labor Cost**	**Labor Cost**	**Unit Equip. Cost**	**Equip. Cost**	**Total Item Cost**
Normal Weight Concrete, 3500 PSI	31020	4"	1	478.725	$104.00	$49,787.40					$49,787.40
Normal Weight Concrete, 3500 PSI	40	6"	1	22.75	$104.00	$2,366.00					$2,366.00
Normal Weight Concrete, 3500 PSI	7130	7"	1	153.87	$104.00	$16,002.48					$16,002.48
Item	**Area (SF)**	**Depth**	**Quantity**	**Total CY**	**Unit Mat'l Cost**	**Mat'l Cost**	**Unit Labor Cost**	**Labor Cost**	**Unit Equip. Cost**	**Equip. Cost**	**Total Item Cost**
Placing Slab On Grade, up to 6" thick, direct chute	31020	4"	1	478.725			$14.40	$6,893.64	$0.47	$225.00	$7,118.64
Placing Slab On Grade, up to 6" thick, direct chute	40	6"	1	22.75			$14.40	$327.60	$0.47	$10.69	$338.29
Placing Slab On Grade, over 6" thick, direct chute	7130	7"	1	153.87			$9.60	$1,477.15	$0.31	$47.70	$1,524.85
Item	**Area (SF)**	**Depth**	**Quantity**	**SFCA**	**Unit Mat'l Cost**	**Mat'l Cost**	**Unit Labor Cost**	**Labor Cost**	**Unit Equip. Cost**	**Equip. Cost**	**Total Item Cost**
Curb forms, wood 6"-12" high, 2 use	31020	4"	1	478.725	$1.57	$751.60	$4.85	$2,321.82			$3,073.41
Curb forms, wood 6"-12" high, 2 use	40	6"	1	22.75	$1.57	$35.72	$4.85	$110.34			$146.06
Curb forms, wood 6"-12" high, 2 use	7130	7"	1	153.87	$1.57	$241.58	$4.85	$746.27			$987.85
Item	**Area (SF)**	**Depth**	**Quantity**	**CSF**	**Unit Mat'l Cost**	**Mat'l Cost**	**Unit Labor Cost**	**Labor Cost**	**Unit Equip. Cost**	**Equip. Cost**	**Total Item Cost**
6X6 - W2.1 x W2.1	31020	-	-	310.2	$26.50	$8,220.30	$23.00	$7,134.60			$15,354.90
6X6 - W2.1 x W2.1	40	-	-	0.4	$26.50	$10.60	$23.00	$9.20			$19.80
6X6 - W2.1 x W2.1	7130	-	-	71.3	$26.50	$1,889.45	$23.00	$1,639.90			$3,529.35
Elevated Slabs											
Item	**Area (SF)**	**Depth**	**Quantity**	**Total CY**	**Unit Mat'l Cost**	**Mat'l Cost**	**Unit Labor Cost**	**Labor Cost**	**Unit Equip. Cost**	**Equip. Cost**	**Total Item Cost**
Normal Weight Concrete, 3500 PSI - 2nd and 3rd Floors	31020	4"	2	1053.26	$104.00	$109,539.04					$109,539.04
Item	**Area (SF)**	**Depth**	**Quantity**	**Total CY**	**Unit Mat'l Cost**	**Mat'l Cost**	**Unit Labor Cost**	**Labor Cost**	**Unit Equip. Cost**	**Equip. Cost**	**Total Item Cost**
Placing elevated slab, pumped - 2nd and 3rd Floors	31020	4"	2	1053.26			$15.50	$16,325.53	$5.65	$5,950.92	$22,276.45
Item	**Area (SF)**	**Depth**	**Quantity**	**SFCA**	**Unit Mat'l Cost**	**Mat'l Cost**	**Unit Labor Cost**	**Labor Cost**	**Unit Equip. Cost**	**Equip. Cost**	**Total Item Cost**
Curb forms, wood 6"-12" high, 2 use - 2nd and 3rd Floors	31020	4"	2	603.75	$1.57	$947.89	$4.85	$2,928.19			$3,876.08
Item	**Area (SF)**	**Depth**	**Quantity**	**CSF**	**Unit Mat'l Cost**	**Mat'l Cost**	**Unit Labor Cost**	**Labor Cost**	**Unit Equip. Cost**	**Equip. Cost**	**Total Item Cost**
6X6 - W2.1 x W2.1 - 2nd and 3rd Floors	31020	4"	2	620.4	$26.50	$16,440.60	$23.00	$14,269.20			$30,709.80
Item	**Area (SF)**	**Depth**	**Quantity**	**Total SF**	**Unit Mat'l Cost**	**Mat'l Cost**	**Unit Labor Cost**	**Labor Cost**	**Unit Equip. Cost**	**Equip. Cost**	**Total Item Cost**
Composite Decking, 2" deep, 22 Gauge	31020	-	2	62040	$1.53	$94,921.20	$0.36	$22,334.40	$0.03	$1,861.20	$119,116.80
Roof Decking, 1-1/2" deep, 22 Gauge	31020	-	1	31020	$1.61	$49,942.20	$0.31	$9,616.20	$0.03	$930.60	$60,489.00
Subtotals						$454,983.53		$126,122.73		$9,288.03	$590,394.29
Adjusted for Location (0.88)											$519,546.98
Design Contingency (1.5%)											$7,793.20
Escalation Contingency (3.5%)											$18,184.14
Insurance (3%)											$15,586.41
Bonds (2%)											$10,390.94
Overhead & Profit (10%)											$51,954.70
										Total Structural Concrete Cost:	**$623,456.37**

APPENDIX D

General Conditions Estimate

GENERAL CONDITIONS BREAKDOWN - GEISINGER BUCKHORN OFFICE BUILDING

Preconstruction Services Only

Project:	**Geisinger Health System**	**Duration Pre Const.**	**30 weeks**
	Buckhorn Office Building	**Duration Const.**	**N.A.**
Location:	**Bloomsburg, PA**	**Estimated Const. Cost:**	**$11.6 MM**
Time Frames:	**Preconstruction:**	**01/08/08 thru 09/01/08 = 8 months (34 weeks)**	

Preconstruction Phase: (1/08/08 - 8/08/08)

Name	Description	Weeks	Hours/Wk	Total Hours	Unit Cost	Total Cost
Rick Seitz	Project Executive	in const. Fee			$130	$0
Rich Wille	Manager Preconstruction Services	12	8	96	$108	$10,368
Dave Carll, P.E.	Sr. Project Manager	15	16	240	$108	$25,920
Tim Kay	Civil/Architectural/Structural Estimator	12	20	240	$75	$18,000
TBD	Mechanical Estimator	8	8	64	$80	$5,120
TBD	Electrical Estimator	8	8	64	$80	$5,120
Jeff Smith	Project Manager	12	4	48	$82	$3,936
Larry McCabe, P.E.	Mech.Elec. Coordinator/LEED Overview	12	8	96	$114	$10,944
Rick Thomas	Superintendent	4	8	32	$98	$3,136
Mike Sgriccia	Project Engineer	4	8	32	$60	$1,920
Dave Carll, P.E.	Permit Expediting	by Sr. P.M.		0	$82	$0
Tina Petrie	Preconst. Assistant	12	4	48	$38	$1,824
	Travel/Mileage			miles 7,000	$0.540	$3,780
	Printing documents			ls 1	$1,000	$1,000
	Postage & courier service			ls 1	$2,162.00	$2,162
			Total Manhours =	**960**		
					Preconstruction Phase Total	**$93,230**

Bidding/Buyout Phase: (7/16/08 - 9/01/08)

Name	Description	Weeks	Hours/Wk	Total Hours	Unit Cost	Total Cost
Rick Seitz	Project Executive	in const. Fee			$130	$0
Rich Wille	Manager Preconstruction Services	6	4	24	$108	$2,592
Dave Carll, P.E.	Sr. Project Manager	6	12	72	$108	$7,776
Tim Kay	Civil/Architectural/Structural Estimator	6	8	48	$75	$3,600
TBD	Mechanical Estimator	1	8	8	$80	$640
TBD	Electrical Estimator	1	8	8	$80	$640
Jeff Smith	Project Manager	6	16	96	$82	$7,872
Rick Thomas	Superintendent	6	8	48	$98	$4,704
Mike Sgriccia	Project Engineer	6	12	72	$60	$4,320
Jeff Smith	Permit Expediting	by P.M.	8	0	$82	$0
Tina Petrie	Preconst. Assistant	6	12	72	$38	$2,736
	Travel/Mileage			miles 3,500	$0.540	$1,890
	Printing documents			ls 1	$5,000	$5,000
	Postage & courier service			ls 1	$1,000.00	$1,000
			Total Manhours =	**448**		
					Bidding/Buyout Phase Total	**$42,770**
					Grand Total	**$136,000**

GENERAL CONDITIONS BREAKDOWN - GEISINGER BUCKHORN OFFICE BUILDING

Construction Services Only

Project:	**Geisinger Health System**	**Duration Const:**	**65 Weeks**
	Buckhorn Office Building		
Location:	**Bloomsburg, PA**	**Estimated Const. Cost:**	**$11.6 MM**
Time Frames:	**Construction & Closeout:**	**08/20/2008 thru 11/18/09 = 15 months**	

Construction Phase: (08/20/08 - 11/18/09)

Name	Description	Weeks	Hours/Wk		Total Hours	Unit Cost	Total Cost
Staff Costs:							
Rick Seitz	Project Executive	in const. Fee			0	$130	$0
Steve Wilt	Manager of Operations	61	2		122	$118	$14,396
Dave Carll	Sr. Project Manager	61	8		488	$108	$52,704
Jeff Smith	Project Manager	61	20		1,220	$81	$98,820
Jeff Smith	Project Scheduler	by Proj. Mgr.			0	$81	$0
Mike Sgriccia	Project Engineer	61	40		2,440	$60	$146,400
Rick Thomas	Lead Superintendent	61	40		2,440	$97	$236,680
Larry McCabe P.E.	Mechanical/Electrical Coordinator	26	8		208	$114	$23,712
To Be Determined	Project Intern (summer 2009)	10	40		400	$25	$10,000
To Be Determined	Project Accountant	61	16		976	$50	$48,800
To Be Determined	Project Assistant	61	40		2,440	$38	$92,720
John Selkirk	Corporate Safety Director	26	4		104	$84	$8,736
	Staff Cost Escalation for 2009 & 2010				9,892	$2.71	$26,807
				Total Manhours	**10,838**		
					Construction Phase Staff Costs SubTotal		**$759,775**

Misc. Reimbursables:

Labor or Material	Description			Unit Cost	Total Cost
M	Travel/Mileage	61	1000	61,000	$0.540	$32,940
M	Hotel or Apartment Costs	15 months		15	$1,000.00	$15,000
M	Per Diem & OTS Allowance	61		65	$300.00	$19,500
M	Event/Ceremony Costs	by Owner		0	$0.00	$0
M	Dumpsters	in Gen. Trades Subcontract		0	$0.00	$0
L	Ongoing labor clean-up (L)	in Gen. Trades Subcontract		0	$0.00	$0
M	Rodent pest control	in Gen. Trades Subcontract		0	$0.00	$0
L	Misc. Temporary Protection (L)	in Gen. Trades Subcontract		0	$0.00	$0
M	Misc. Temporary Protection (M)	in Gen. Trades Subcontract		0	$0.00	$0
L	Misc. Safety Protection (L)	in Gen. Trades Subcontract		0	$0.00	$0
M	Misc. Safety Protection (M)	in Gen. Trades Subcontract		0	$0.00	$0
M	Fire extinguishers			1	$500.00	$500
M	Job signage			3	$1,000.00	$3,000
M	Temporary toilets	15 months		15	$225.00	$3,375
M	Field Office Trailer Rental (double wide)	15 months		15	$1,150.00	$17,250
L	Trailer set-up and removal	1	80	80	$40.00	$3,200
M	Trailer Furniture & Equipment Rental	15 months		15	$700.00	$10,500
M	Temp Electrical Service & Consumption	in Electrical Subcontract		0	$0.00	$0
M	Temporary Water Service & Maintenance	in Sitework Subcontract		0	$0.00	$0
M	Temp Water Service & Consumption	in Plumbing Subcontract		0	$0.00	$0
M	Telephone installation/usage	15 months		15	$500.00	$7,500
M	Temp Heat Equip. Rental	separate line item in Estimate		0	$0.00	$0
M	Temp Heat Fuel Consumption	separate line item in Estimate		0	$0.00	$0
M	Expendable small tools	15 months		15	$100.00	$1,500
M	Office supplies	15 months		15	$300.00	$4,500
M	Progress photos	use digital camera		0	$0.00	$0
M	Printing documents			1	$6,000.00	$6,000
M	Postage & courier service	15 months		15	$400.00	$6,000
M	Incidentals			1	$2,000.00	$2,000
				Construction Phase Misc. Reimbursables SubTotal		**$132,765**
				CONSTRUCTION PHASE TOTAL (includes Staff Costs and Reimbursables)		**$892,540**
				% of construction cost =		**7.69%**

Reimbursables to be included in subcontractor Bid Packages:						
Labor or Material	**Description**				**Unit Cost**	**Total Cost**
M	Dumpsters			61	$600.00	$36,600
L	Ongoing labor clean-up (L)	48	40	1,920	$30.00	$57,600
M	Rodent pest control	15	months	15	$100.00	$1,500
L	Misc. Temporary Protection (L)	4	160	640	$40.00	$0
M	Misc. Temporary Protection (M)	1	ls	1	$15,000.00	$0
M	Gas for temp heat	2	months	2	$16,000.00	$32,000
M	Temp Heaters	2	months	2	$6,000.00	$12,000
L	Misc. Safety Protection (L)	2	80	160	$40.00	$6,400
M	Misc. Safety Protection (M)	1	ls	1	$3,600.00	$3,600
M	Temp Electrical Consumption	15	months	15	$2,500.00	$37,500
M	Water consumption	15	months	15	$400.00	$6,000
	Total reimbursables to be included in subcontractor Bid Packages:					**$193,200**