GOUVERNEUR HEALTHCARE SERVICES

227 MADISON STREET, NEW YORK, NY, 10002

TECHNICAL ASSIGNMENT II

ALEX D DESPOTOVICH | CONSTRUCTION MANAGEMENT

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EXECUTIVE SUMMARY

The purpose of Technical Report II is to analyze various aspects of construction to the Gouverneur Healthcare Services facility, including a detailed project schedule, detailed structural estimate, general conditions estimate, LEED evaluation, and Building Information Modeling use evaluation. These analyses will further an understanding of the key features of the project that effect overall project execution.

The Gouverneur Healthcare Services facility is undergoing a major modernization that includes a complete renovation of the existing thirteen story building, existing mechanical infrastructure upgrades, and addition to the existing facility. The facility will remain active during the six phases of construction, beginning construction on January 30, 2009 with a projected project substantial completion date of December 30, 2013. The phasing and critical turnover milestones are presented through a project schedule description, project summary schedule and detailed project schedule.

Included in this report are two detailed estimates for both the structural system and general conditions for the project. The detailed estimate concluded a total cost of $6,942,582; total volume of concrete of 3,376 cubic yards; total reinforcing steel of 65 tons; and total steel member weight of 1,115 tons. The general conditions estimate concluded a total cost of $18,022,753.56 and a monthly cost of $300,379. Additionally, the total estimated project management staffing cost is $6,127,250 for Hunter Roberts Construction Group based on a 60 month, preconstruction through construction duration.

Although the Gouverneur Healthcare Services project is not pursuing a LEED certification or implementing BIM throughout design and construction, an analysis was performed to determine the benefits if they had been pursued or implemented. After completing a LEED scorecard, it was determined that the current design would result in 32 points which would not achieve a LEED certification. However, possible points that can be achieved with minimal effort and cost to the overall budget were recorded and resulted in an additional 24 points which would make the project eligible for a LEED Silver certification. The study of Building Information Modeling analyzes the benefits of the project in delivering safer, more efficient construction, better understand the potential uses of BIM, and how it could be used to achieve specific project goals.

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PROJECT SUMMARY SCHEDULE

From architectural design and preconstruction services to final project substantial completion, the Gouverneur Healthcare Services facility will serve as a four year project. During that time, the facility will receive a complete renovation of the existing building, existing mechanical infrastructure upgrades, and a new five story building and eight story "bump out" of additional space to the existing building. Throughout the entire project, the healthcare facility will remain fully operationally for staff and patients. In order to prevent disruption to the staff and patients, the construction of the facility will occur in six different phases allowing certain floors to be turned over in order to proceed with demolition and renovation services on other floors.

Please refer to Figure 1 and Figure 2 to establish the difference between the new and existing building. Additionally, please note for the new building, the podium is considered floors 1-6 and the tower is considered floors 7-13. These titles will be referenced in the project summary schedule, detailed project schedule, and throughout this technical report.

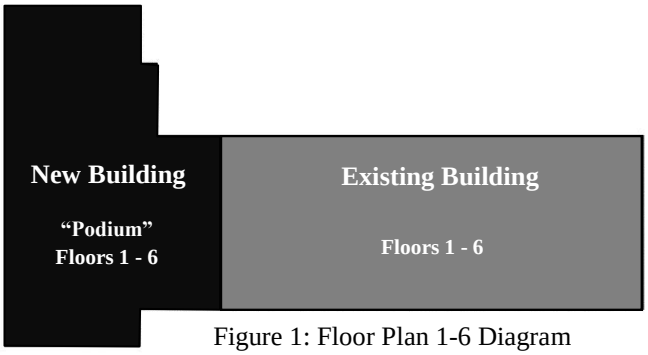


Figure 1: Floor Plan 1-6 Diagram

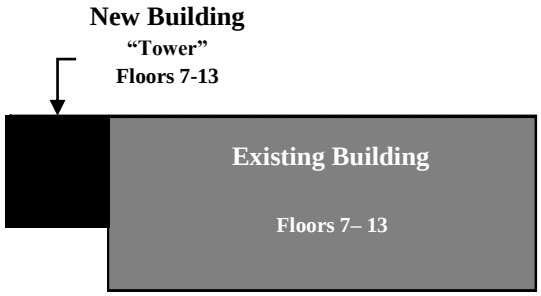


Figure 2: Floor Plan 7-13 Diagram

The detailed project schedule for the Gouverneur Healthcare Services project is located in Appendix A. The project schedule is organized into two major categories, New Building Construction and Existing Building Construction. The New Building Construction category features a detailed schedule for the foundation, structural steel, concrete, curtain wall, and interior phases of construction. The Existing Building Construction category features a detailed schedule for the demolition and interior renovation phases of construction. The interior phases of construction for both categories are organized by floor and depicts five major phases of construction including Demolition of Existing Interior; MEP Systems Overhead and Rough-In;

Interior Wall and Ceiling Framing; Interior Wall, Ceiling, and Floor Finishes; and MEP Installation. The major items included in the interior phases of demolition, renovation, and new construction can be seen below for each category.

DEMOLITION OF EXISTING INTERIOR:

- General Demolition
- General Abatement
- MEP Systems Demolition
- Existing Window Demolition

MEP SYSTEMS OVERHEAD AND ROUGH-IN:

- Install Overhead Ductwork
- Install Overhead Plumbing
- Install Overhead Sprinkler
- Install Overhead Electrical
- Rough-In Electrical
- Rough-In Plumbing
- Insulate/Inspect Plumbing
- Pull and Terminate Telecom/Security Cables

INTERIOR WALL AND CEILING FRAMING:

- Layout
- Install Top Track
- Install Framing and Doors
- Install Black Iron
- Install Ceiling Grid

INTERIOR WALL, CEILING, AND FLOOR FINISHES:

- Install Sheet Rock (Walls and Ceilings)
- Tape Coats on Walls
- Polish Sheet Rock Walls
- Apply Coats of Paint
- Install Casework

MEP INSTALLATION:

- Install Ceiling HVAC Drops
- Install Electrical Box Drops
- Install Sprinkler Drops
- Install Electrical Switches/Outlets
- Install Plumbing Fixtures
- Install Control Devices
- Install Ceiling Lights
- Install Fire Alarm Components

To efficiently depict the project schedule, the two main categories are broken down by floor to allow for one to understand the various phases of construction. This will further an understanding for how Hunter Roberts Construction Group is working closely with the owner to

efficiently deliver construction while maintaining an active healthcare facility. Table 1 highlights the major dates of construction by activity and floor.

TABLE 1: PROJECT SCHEDULE SUMMARY CHART

Phase	New Building Construction		Existing Demolition and Renovation	
	Start Date	Finish Date	Start Date	Finish Date
Foundations	1-30-2009	8-21-2009	-	-
Structural Steel	8-8-2009	12-15-2009	-	-
Superstructure Concrete	8-31-2009	12-15-2009	-	-
Curtain Wall	11-16-2009	5-17-2010	-	-
1st Floor Work	11-2-2009	9-1-2011	8-10-2012	5-22-2013
2nd Floor Work	12-7-2009	8-22-2011	10-26-2011	7-26-2012
3rd Floor Work	1-4-2010	8-22-2011	10-26-2011	7-26-2012
4th Floor Work	2-1-2010	9-2-2011	10-26-2011	7-26-2012
5th Floor Work	3-4-2010	8-29-2011	1-5-2011	6-25-2012
6th Floor Work	4-27-2010	11-16-2011	4-6-2011	6-25-2012
7th Floor Work	5-19-2011	11-30-2011	9-21-2011	6-25-2012
8th Floor Work	6-2-2010	12-14-2011	9-21-2011	10-10-2012
9th Floor Work	6-7-2010	12-30-2011	7-11-2012	4-10-2013
10th Floor Work	6-10-2010	1-13-2012	10-25-2011	10-8-2013
11th Floor Work	6-16-2010	1-20-2012	4-25-2013	12-30-2013
12th Floor Work	6-22-2010	9-6-2011	-	-
13th Floor Work	7-1-2010	9-6-2011	9/24/2009	9/6/2011
MEP Modernization	-	-	2-26-2010	13-30-2011

Note that the 12th floor of the existing building does not have dates listed for demolition and renovation. This is due to the fact that this floor was previously demolished and renovated prior to the current project. For a further breakdown of the values that were determined, please see Appendix A. Appendix A features two Gantt bar schedules to help further an understanding of the durations and phasing of construction for each floor of the new and existing building construction.

- Gantt Bar Schedule 1: Summary Project Schedule
- Gantt Bar Schedule 2: Detailed Project Schedule

DETAILED STRUCTURAL ESTIMATE

The structural system of the new podium and tower for the Gouverneur Healthcare Services facility is comprised of a concrete foundation that supports a structural steel with concrete on metal decking superstructure system. In order to accurately estimate the structural system designed to support the new building, a detailed takeoff was performed on the foundations and a typical bay takeoff was performed and extrapolated to represent quantities for the superstructure systems. This estimate includes quantity takeoffs and costs involving the following items:

CONCRETE:

- Foundation Pile Caps
- Foundation Piers
- Foundation Walls and Footers
- Foundation Grade Beams
- Foundation Slab-on-Grade
- Elevated Slabs

STRUCTURAL STEEL:

- Driven Steel Piles
- Structural Steel Columns
- Structural Steel Beams
- Metal Decking
- Base Plates and Anchor Bolts
- Reinforcing Steel

The determined costs for the structural system estimate were produced using material, labor, and equipment costs from RS Means Building Construction Cost Data 2011 and were adjusted with the New York, NY location factor of 133%. All comparisons made include total cost with project overhead and profit because the values provided by Hunter Roberts Construction Group include project overhead and profit. Table 2 shows a summary breakdown of the divisions that make up the total value of the structural system estimate.

TABLE 2: SUMMARY OF RS MEANS 2011 DIVISION COST BREAKDOWN

CSI Division	Total Cost	Total Cost Incl O&P
03.11 Concrete Forming	$ 397,058.46	$ 558,466.40
03.21 Reinforcing Steel	$ 106,400.45	$ 142,397.00
03.22 Welded Wire Fabric Reinforcing	$ 47,915.53	$ 66,579.67
03.30 Cast-In-Place Concrete	$ 723,694.52	$ 907,472.87
05.05 Common Work Results for Metals	$ 1,745.00	$ 2,325.00
05.12 Structural Steel Framing	$ 2,661,387.17	$ 2,999,154.78
05.31 Steel Decking	$ 325,707.57	$ 395,486.70
31.62 Driven Piles	$ 118,779.00	$ 148,104.00
Total Superstructure Cost	$ 4,382,687.70	$ 5,219,986.42
Total Superstructure Cost with New York, NY Location Factor of 133%	$ 5,828,974.64	$ 6,942,581.94

Table 3 shows a summary breakdown of the quantity of materials that make up the total value of the system estimate.

TABLE 3: SUMMARY OF RS MEANS 2011 DIVISION MATERIAL BREAKDOWN

CSI Division	Unit	Quantity
03.11 Concrete Forming	SFCA	49622.50
03.21 Reinforcing Steel	Ton	65.11
03.22 Welded Wire Fabric Reinforcing	CSF	1091.47
03.30 Cast-In-Place Concrete	CY	3375.55
05.05 Common Work Results for Metals	Set	50.00
05.12 Structural Steel Framing	LF	25715.18
	Ton	1114.82
05.31 Steel Decking	SF	112116.00
31.62 Driven Piles	VLF	5100.00

In the process of quantifying a cost for the structural steel system for the building, a detailed estimate was performed for a typical bay of the system followed by an extrapolation to determine values for the entire structure. For the Gouverneur Healthcare Services building, two typical bays were chosen for analysis due to the fact floors 1-6 "podium" and floor 7-13 "tower" feature different types of bays to support the building. Below, Diagram 1 and Diagram 2 feature the typical bays there were used to determine overall material quantities and total costs for the structural system.

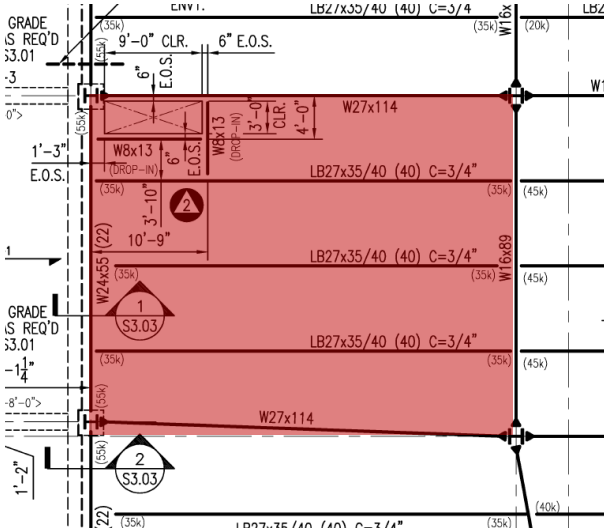


Diagram 1: Typical Bay Floors 1-6 "Podium"

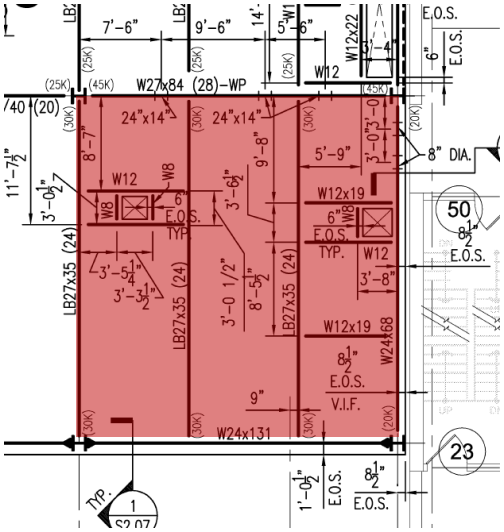


Diagram 2: Typical Bay Floors 7-13 "Tower"

Table 4 and Diagram 3 show a comparison between estimated costs versus actual project costs broken down by scope of work.

TABLE 4: ACTUAL VERSUS ESTIMATED COST COMPARISON

Scope of Work	Actual Cost	Cost/SF	Estimated Cost	Cost/SF
Foundations and Excavation	$ 7,533,000.00	$ 69.02	$ 1,761,100.48	$ 16.14
Superstructure Concrete	$ 1,099,000.00	$ 10.07	$ 663,516.04	$ 6.08
Structural Steel System	$ 6,958,000.00	$ 63.75	$ 4,517,965.42	$ 41.39
Total	$ 15,590,000.00	$ 142.83	$ 6,942,581.94	$ 63.61

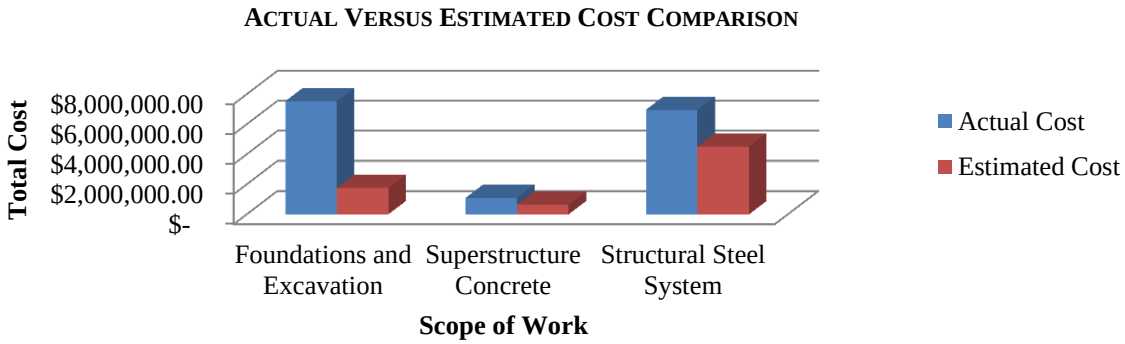


Diagram 3: Cost Comparison Bar Chart

For the most part, the estimated costs are comparable to those of the actual costs for the project. As with any estimates however, there are always sources of error that may explain the differences in costs. In general, it is difficult to compare the estimated versus actual costs for a project of the type and magnitude. The Gouverneur Healthcare Services project consists of both new construction and existing demolition and renovation. A source of error may be due to the fact that the full scope of work for foundations, superstructure concrete, and structural steel is not definitively known. The detailed estimate that was produced is strictly based off of new construction even though the actual costs may contain work for the existing building which was not accounted for in the estimate. Some major sources of error are listed below:

- John Civetta & Sons Inc. and D & B Cousins Construction Corporation are contracted as a joint venture for responsibility of excavation and foundation work. The only cost available for comparison is the total contract value for both excavation and foundations;

however, quantities and estimates were produced based strictly on material, labor, and equipment for foundations.

- AG Construction is contracted to perform all work involving superstructure concrete for both the new building and existing building. The actual cost shown contains a scope of work that includes new and existing concrete work.
- Weir Welding Company Inc. is contracted to fabricate and install all work involving the structural steel system for the building. The estimated cost does not include bolts, connections, and welding involved for connecting steel members.

For a further breakdown of the values that were determined, please see Appendix B. Appendix B features a variety of tables that show in detail how all quantities of materials and costs were determined to produce final estimate values.

- Table 11: Structural Estimate RS Means 2011 Division Breakdown
- Table 12: Steel Pile Detailed Takeoff
- Table 13: Foundation Pier Takeoff
- Table 14: Foundation Pile Cap Takeoff
- Table 15: Cellar Foundation Wall Detailed Takeoff
- Table 16: Cellar Foundation Slab Detailed Takeoff
- Table 17: Grade Beam Takeoff
- Table 18: Typical Bay Takeoff
- Table 19: Typical Bay Steel Takeoff Extrapolation
- Table 20: Miscellaneous Item Takeoff

GENERAL CONDITIONS ESTIMATE

The total estimated cost for the general conditions for the Gouverneur Healthcare Services project is $18,022,753.56 and costs about $300,379 per month. The determined costs for the structural system estimate were produced using material, labor, and equipment costs from RS Means Building Construction Cost Data 2011 and were adjusted with the New York, NY location factor of 133%. Table 5 shows a summary breakdown of the divisions that make up the total value of the general conditions estimate. This general conditions estimate was produced from the perspective of Hunter Roberts Construction Group serving as the Construction Management Agency. All comparisons made include total cost with project overhead and profit because the provided values from Hunter Roberts Construction Group include project overhead and profit. Additionally, all values determined that were percentage based were multiplied by the actual total building construction cost of $157,445,805.

TABLE 5: SUMMARY OF RS MEANS 2011 DIVISION COST BREAKDOWN

CSI Division	Total Cost	Total Cost Incl O&P
01.31 Project Management and Coordination	$ 4,001,660.00	$ 6,505,119.93
01.32 Construction Progress Documentation	$ 20,750.00	$ 70,233.74
01.41 Regulatory Requirements	$ -	$ 3,148,916.10
01.51 Temporary Utilities	$ 507,661.95	$ 606,352.56
01.52 Construction Facilities	$ 32,520.00	$ 35,725.00
01.54 Construction Aids	$ 1,225.00	$ 1,350.00
01.56 Temporary Barricades and Enclosures	$ 96,762.95	$ 105,925.75
01.58 Project Identification	$ 26,500.00	$ 29,500.00
01.71 Examination and Preparation	$ 25,084.50	$ 37,800.00
01.71 Cleaning and Waste Management	$ 1,156,932.92	$ 2,208,335.42
01.91 Commissioning	$ -	$ 787,229.03
02.21 Surveying	$ 9,703.40	$ 14,455.00
Total	$ 5,878,800.72	$ 13,550,942.52
Total General Conditions Cost with New York, NY Location Factor of 133%	$ 7,818,804.95	$ 18,022,753.56

The general conditions estimate and actual project general conditions are based on a total project duration of 60 months starting with preconstruction planning and design to final project substantial completion. Table 6 shows a comparison between estimated costs versus actual project costs.

TABLE 6: ACTUAL VERSUS ESTIMATED COST COMPARISON

Category	Actual Cost	Cost/Month	Estimated Cost	Cost/Month
General Conditions	$ 17,947,366.00	$ 299,122.77	$ 18,022,753.56	$ 300,379.23

Upon completion of the general conditions estimate for the Gouverneur Healthcare Services project, it is apparent that the owner is exposed to substantial costs for any major delays in construction. This will be a very helpful tool in future studies on schedule acceleration because there will an opportunity for substantial savings to the owner if a few weeks or even months can be saved during the life of the project.

For a further breakdown of the values that were determined, please see Appendix C. Appendix C features two tables that show in detail how all quantities and costs were determined.

- Table 21: General Conditions RS Means 2011 Division Breakdown
- Table 22: General Conditions Construction Management Staffing Plan

LEED EVALUATION

The Gouverneur Healthcare Services project will not be putting forth efforts to achieve any level of LEED certifications. The study has been rated based actual green implementations to the design, as well as possible points that can be achieved with minimal effort and cost to the overall budget and are strictly based on the students' opinion. Throughout this analysis, "LEED 2009 for New Construction and Major Renovations" was used as a reference to better understand how points can be achieved through the LEED system and the efforts that are involved to do so.

Table 7 shows the results of the LEED evaluation based on current design implementations and additional points that can be achieved with minimal effort. In Table 7, "yes" means that the current design can achieve points with no additional effort, "possible" means that additional points can be achieved with minimal to moderate effort and cost, and "no" means the current project design will not achieve points nor is it felt that these credits would be worth the effort or money based on owner needs.

TABLE 7: LEED SCORECARD SUMMARY

Category	Points		
	Yes	Possible	Combined
Sustainable Sites	16	2	18
Water Efficiency	0	5	5
Energy and Atmosphere	4	3	9
Materials and Resources	0	8	8
Indoor Environmental Quality	12	3	15
Innovation and Design Process	0	1	1
Regional Priority	0	2	2
Total	32	24	56
LEED Certification	None	None	Silver

With the current implemented design and construction efforts, this study shows that the project would not achieve a LEED certification. However, based on additional possible points with minimal effort and cost to the budget, this study shows that design and construction efforts could result in a LEED Silver certification. For a full breakdown of the LEED scorecard, please see Appendix D.

SUSTAINABLE SITES

Due to the project location, many points in the sustainable sites category of the LEED system can be achieved with none to minimal effort to altering the design. Site location promotes high

usage of public transportation with multiple bus stops and subway stations located within a quarter mile walking distance. Additionally, the site is located in a very dense community population that promotes community connectivity by containing at least 10 of the LEED approved basic services within a half mile radius to the site. Possible points can be achieved through efficient storm water design due to the fact that New York City code requires buildings to control the amount of storm water released into the city's system.

WATER EFFICIENCY

Due to the high volume of plumbing required to meet hospital demands, there is an opportunity to obtain credits for innovative wastewater technologies and water use reduction by incorporating water conserving fixtures in the design throughout the new and existing structure. A simple change to the design can have a dramatic effect on the amount of water reduction the facility can achieve.

ENERGY AND ATMOSPHERE

Being that this project has made no efforts to achieve any level of LEED certification, it would be very difficult to achieve points in this category without putting forth a large amount of money and effort to updating the MEP systems. However, since the project scope of work includes a full modernization of the existing infrastructure, all of the new equipment that will be installed throughout both the new and existing building will be energy efficient. Because of this, it is believed that up to three points can be achieved with the current implemented design for optimized energy performance. Additionally, because of the building usage type, an enhanced commissioning program was incorporated to ensure that all equipment throughout the building is operating as efficiently as possible to support various spaces. Through the process of demolition of existing conditions, all existing equipment that contained chlorofluorocarbon based refrigerants were safely removed and replaced with equipment that minimize or eliminate the emission of compounds that contribute to ozone depletion and climate change.

MATERIAL AND RESOURCES

The existing building of the Gouverneur Healthcare Services facility will undergo a complete interior demolition, and will therefore not be able to receive any points for building reuse. However, being that thirteen stories of interior space are being demolished, there is a big opportunity for the project to gain points for recycling or salvaging material from demolition and

possibly reusing those materials as recycled content. Due to the location of the project, there is definitely an opportunity to use a reasonable percentage of regional materials in the design of the project. Lastly, there is a large quantity of wood furniture that is used throughout the spaces of the facility that could potentially use rapidly renewable materials and certified wood.

INDOOR ENVIRONMENTAL QUALITY

Due to the facility type, the design for indoor environmental air quality is very important not only for the end product, but also during construction due to the fact that the existing facility will remain active during new and existing building construction. The comfort of both the staff and patients of the healthcare facility was set as a very high priority during design. This ultimately led to much emphasis on user friendly system controls, a thermally comforting design, and a connection between indoor and outdoor spaces by providing daylight and views into regularly occupied areas of the building, as stated and required in "LEED 2009 for New Construction and Major Renovations".

INNOVATION AND DESIGN PROCESS

This category does not directly apply to the Gouverneur Healthcare Services project. However, if the owner had decided achieving a LEED certification was a priority, it would definitely have been possible to assign a LEED Accredited Professional to the construction management team.

REGIONAL PRIORITY CREDITS

Refer to Table 8 for points that can be obtained based on the following project parameters.

SEARCH PARAMETERS

- Country: United States
- Zip Code: 10002
- Rating System: LEED 2009 for New Construction

TABLE 8: REGIONAL PRIORITY CREDITS

Credit ID	Options	Threshold/Path	Applicable
EAc1	Option 1	40% New / 36% Existing	No
EAc2	-	1% Renewable Energy	No
MRc1.1	-	Building Reuse: 55%	No
SSc5.1	-	-	No
SSc6.1	-	-	Possible
WEc2	-	-	Possible

BUILDING INFORMATION MODELING USE EVALUATION

The Gouverneur Healthcare Services project will not be implementing Building Information Modeling methods during the design, construction, and facility management process. This study will identify areas where the use of Building Information Modeling would possibly benefit the project in delivering safer and more efficient construction and are strictly based on the students' opinion. Throughout this analysis, the "BIM Project Execution Planning Guide" was used as a reference to better understand the potential uses of BIM and how it could be used to achieve specific project goals.

Table 9 shows a list of project goals that could benefit the project and potential BIM uses that could be implemented achieve those goals based on a priority level from low to high.

TABLE 9: BIM GOALS AND USES

Priority High/Medium/Low	Goal Desciption	Potential BIM Uses
High	Identify potential and critical space and time conflicts associated with phasing of construction while maintaining an active healthcare facility	Site Utilization Planning
Medium	Decrease layout error and increase communication between office and field personnel	3D Control and Planning
High	Reduce and eliminate conflicts in the field, particularly concerning the high volume of MEP equipment to be installed	3D Coordination
Medium	Increase the efficiency of field productivity and decrease construction time	Design Reviews, 3D Coordination
High	Track progress of construction and create a better understanding of the phasing to the owner and project participants during all six phases of construction	4D Modeling
Medium	Create model to aid in future 3D coordination for future renovations and expansions	Record Modeling
High	Provide owner with different design options and alternatives	Design Reviews, Design Authoring, Engineering Analysis
Medium	Track costs associated with design changes and alternatives	Cost Estimation
Medium	Accurately model existing conditions in preparation for renovation design and construction	Existing Conditions Modeling

Upon completion of determining BIM goals that would be beneficial to implement, a BIM Use Analysis was performed and can be seen in Appendix E of this report. The purpose of this analysis was to determine which BIM uses would be most beneficial to the contractors,

construction manager, designers, and owner and rank them based on priority to each party. The analysis resulted in six definitive BIM uses that could assist the overall project team in delivering a more efficient method of design and construction and one possible use depending on the preference of the owner. The BIM uses that were determined include the following.

SITE UTILIZATION PLANNING

Site utilization planning would assist the project team greatly in determining site logistics during the various phases of construction. Being that the facility will stay active during construction, site utilization planning will help identify how the site is being utilized, especially due to the very tight site conditions that are associated with working in the New York City region. Additionally, the first phase turns over the new building to the owner which completely changes the site logistics of the job. From that point on, all construction occurs in the existing building. Site utilization planning will greatly help in the organization of site logistics after major phases and floors are turned over to the owner and further an understanding to both the project team and owner to how space will be utilized while considering the safety of the workers, hospital staff, patients of the facility, and pedestrians.

3D COORDINATION

Due to the high volume of MEP work that is being installed, 3D coordination would greatly assist in reducing conflicts between major system components. The ceiling space in this facility is very limited, yet must accommodate a large volume of ductwork, conduit, plumbing, and other MEP systems. 3D coordination could reduce or even eliminate conflicts in the field which could potentially increase productivity, decrease construction cost, and decrease construction time. It also has the potential to greatly reduce the number of Requests for Information to architect and MEP engineers by working through conflicts prior to installation. Additionally, 3D coordination serves as a great tool for visualizing the systems that are to be installed, which is especially beneficial to the subcontractors that are actually performing the work. Depending on the owners needs for an existing conditions model, 3D coordination would be very helpful during the modernization of the existing MEP infrastructure, especially in the mechanical penthouse where major system components are being replaced.

4D MODELING

As previously stated in Site Utilization Planning, understanding the phasing of the schedule is key to the success of this project. 4D modeling can serve as a great tool for delivering that understanding to owner and other parties involved in the project by identifying the critical path of the project. It could also serve as a great tool for understanding which floors are being demolished, renovated, finished, and turned over for occupancy. Prior to bidding a job, 4D modeling would serve as a great tool in a proposal for delivering a project of this magnitude and complexity.

ENGINEERING ANALYSIS

The Gouverneur Healthcare Services facility will be undergoing a major modernization of the MEP infrastructure of the existing building, as well as designing additional MEP systems to support the new addition of the building. In the process of designing these systems, it would be most beneficial to the owner for the design team to put forth efforts in analyzing efficient or energy efficient designs possible to support building operations. The ultimate result of these engineering analyses could potentially save the owner money not only in design and construction, but in the future as well. Additionally, it's very important that the MEP systems incorporated in the building's design are as energy efficient as possible and provide its users with the upmost comfort possible.

COST ESTIMATION

Incorporating cost estimation in the BIM process will allow the team to quickly determine costs involving various items of the project. This is particularly important for efficiently managing the costs of the project while working under a public city agency such as the Dormitory Authority for the State of New York. Cost estimation allows the project team to provide the owner with cost estimations for design alternatives in a more efficiently manner. This will assist in saving the estimator time by providing takeoffs automatically and allowing them to focus on other, higher priority issues.

DESIGN AUTHORING

The design authoring aspect of BIM is very important in successfully delivering a project using BIM methods. Many of the other uses that were selected to implement BIM on this project incorporate the results of design authoring which ultimately results in a 3D model of the design. A project team could use the results of design authoring to further an understanding of the components of the project including system properties and quantities; costs; and schedules.

Table 10 shows the primary BIM uses that could be utilized on the Gouverneur Healthcare Services project during the phase of design and construction that they would be most beneficial.

TABLE 10: BIM USES

X	Plan	X	Design	X	Construct	X	Operate
	Programming	X	Design Authoring	X	Site Utilization Planning		Building Maintenance Scheduling
	Site Analysis		Design Reviews		Construction System Design		Building System Analysis
		X	3D Coordination	X	3D Coordination		Asset Management
		X	Structural Analysis		Digital Fabrication		Space Management / Tracking
		X	Lighting Analysis		3D Control and Planning		Disaster Planning
		X	Energy Analysis	X	Record Modeling	X	Record Modeling
		X	Mechanical Analysis				
			Other Engineering Analysis				
			Sustainability (LEED) Evaluation				
			Code Validation				
X	Phase Planning (4D Modeling)	X	Phase Planning (4D Modeling)	X	Phase Planning (4D Modeling)		Phase Planning (4D Modeling)
X	Cost Estimation	X	Cost Estimation	X	Cost Estimation		Cost Estimation
	Existing Conditions Modeling		Existing Conditions Modeling		Existing Conditions Modeling		Existing Conditions Modeling

Upon completion of the BIM use analysis, a Level One Process Map was developed to further an understanding of the overall BIM process, identify lines of communication between all parties, and define each party's tasks that will be implemented throughout the BIM collaboration process. The Level One Process Map elaborates on the BIM uses located in Table 10 above and

determines whether they will be implemented during schematic design, design development, construction documents, and operations. This step is an overview of the process prior to completing a use specific Level Two Process Map, which could possibly serve as an analysis for future thesis studies. The Level One Process Map can be found in Appendix E of this report.

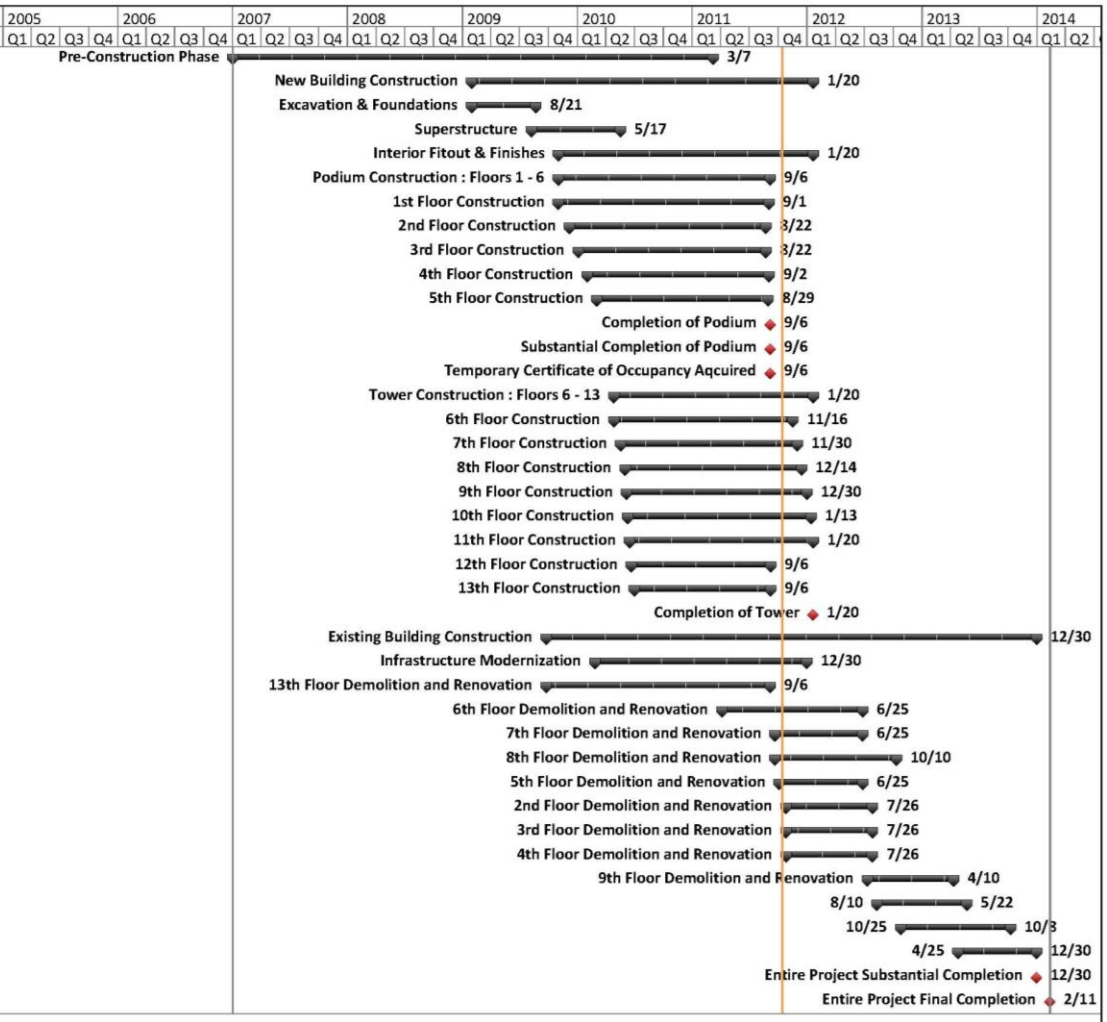
Overall, this study has concluded that BIM methods of delivery could greatly increase the efficiency of design, construction, and facility management for the project. For the Gouverneur Healthcare Services project, understanding the phasing of construction between new building and existing building construction is key to the success for the project team. Due to this, much emphasis was put forth on furthering an understanding of the site logistics and site utilization of the site during different phases of construction, as well as the major milestones and critical of the schedule during the four year duration project. BIM also has the potential to play a huge role in construction efficiency through the use of 3D coordination for the high volume of MEP equipment to be installed in the building. The use of BIM methods of construction could result in cost savings to the owner by preventing clashes in the field, increasing construction efficiency, and determining the most energy efficient systems to implement in the design that have the fastest return on investment. Concluding, the Gouverneur Healthcare Services building could greatly benefit through the use of BIM methods, particularly concerning the complex phases of construction, tight site conditions, and high volume of MEP equipment. The use of BIM could result in cost savings to the owner and fast return on investment by providing the opportunity to deliver design and construction more efficiently than traditional methods.

APPENDIX A

DETAILED PROJECT SCHEDULE

GOUVERNEUR HEALTHCARE SERVICES SUMMARY SCHEDULE

ID	Task Name	Duration	Start	Finish
1	**Pre-Construction Phase**	**1090 days**	**Tue 1/2/07**	**Mon 3/7/11**
4	**New Building Construction**	**776 days**	**Fri 1/30/09**	**Fri 1/20/12**
5	**Excavation & Foundations**	**146 days**	**Fri 1/30/09**	**Fri 8/21/09**
13	**Superstructure**	**201 days**	**Sat 8/8/09**	**Mon 5/17/10**
39	**Interior Fitout & Finishes**	**580 days**	**Mon 11/2/09**	**Fri 1/20/12**
40	**Podium Construction : Floors 1 - 6**	**481 days**	**Mon 11/2/09**	**Tue 9/6/11**
41	**1st Floor Construction**	**479 days**	**Mon 11/2/09**	**Thu 9/1/11**
46	**2nd Floor Construction**	**446 days**	**Mon 12/7/09**	**Mon 8/22/11**
51	**3rd Floor Construction**	**426 days**	**Mon 1/4/10**	**Mon 8/22/11**
56	**4th Floor Construction**	**415 days**	**Mon 2/1/10**	**Fri 9/2/11**
61	**5th Floor Construction**	**388 days**	**Thu 3/4/10**	**Mon 8/29/11**
66	**Completion of Podium**	**0 days**	**Tue 9/6/11**	**Tue 9/6/11**
67	Substantial Completion of Podium	0 days	Tue 9/6/11	Tue 9/6/11
68	Temporary Certificate of Occupancy Aqcuired	0 days	Tue 9/6/11	Tue 9/6/11
69	**Tower Construction : Floors 6 - 13**	**454 days**	**Tue 4/27/10**	**Fri 1/20/12**
70	**6th Floor Construction**	**407 days**	**Tue 4/27/10**	**Wed 11/16/11**
75	**7th Floor Construction**	**401 days**	**Wed 5/19/10**	**Wed 11/30/11**
80	**8th Floor Construction**	**401 days**	**Wed 6/2/10**	**Wed 12/14/11**
85	**9th Floor Construction**	**410 days**	**Mon 6/7/10**	**Fri 12/30/11**
90	**10th Floor Construction**	**417 days**	**Thu 6/10/10**	**Fri 1/13/12**
95	**11th Floor Construction**	**418 days**	**Wed 6/16/10**	**Fri 1/20/12**
100	**12th Floor Construction**	**316 days**	**Tue 6/22/10**	**Tue 9/6/11**
106	**13th Floor Construction**	**309 days**	**Thu 7/1/10**	**Tue 9/6/11**
112	**Completion of Tower**	**0 days**	**Fri 1/20/12**	**Fri 1/20/12**
114	**Existing Building Construction**	**1113 days**	**Thu 9/24/09**	**Mon 12/30/13**
115	**Infrastructure Modernization**	**481 days**	**Fri 2/26/10**	**Fri 12/30/11**
122	**13th Floor Demolition and Renovation**	**508 days**	**Thu 9/24/09**	**Tue 9/6/11**
132	**6th Floor Demolition and Renovation**	**319 days**	**Wed 4/6/11**	**Mon 6/25/12**
141	**7th Floor Demolition and Renovation**	**199 days**	**Wed 9/21/11**	**Mon 6/25/12**
150	**8th Floor Demolition and Renovation**	**276 days**	**Wed 9/21/11**	**Wed 10/10/12**
159	**5th Floor Demolition and Renovation**	**189 days**	**Wed 10/5/11**	**Mon 6/25/12**
168	**2nd Floor Demolition and Renovation**	**197 days**	**Wed 10/26/11**	**Thu 7/26/12**
177	**3rd Floor Demolition and Renovation**	**197 days**	**Wed 10/26/11**	**Thu 7/26/12**
186	**4th Floor Demolition and Renovation**	**197 days**	**Wed 10/26/11**	**Thu 7/26/12**
195	**9th Floor Demolition and Renovation**	**196 days**	**Wed 7/11/12**	**Wed 4/10/13**
204	**1st Floor Demolition and Renovation**	**204 days**	**Fri 8/10/12**	**Wed 5/22/13**
213	**10th Floor Demolition and Renovation**	**249 days**	**Thu 10/25/12**	**Tue 10/8/13**
222	**11th Floor Demolition and Renovation**	**178 days**	**Thu 4/25/13**	**Mon 12/30/13**
231	**Entire Project Substantial Completion**	**0 days**	**Mon 12/30/13**	**Mon 12/30/13**
232	**Entire Project Final Completion**	**0 days**	**Tue 2/11/14**	**Tue 2/11/14**



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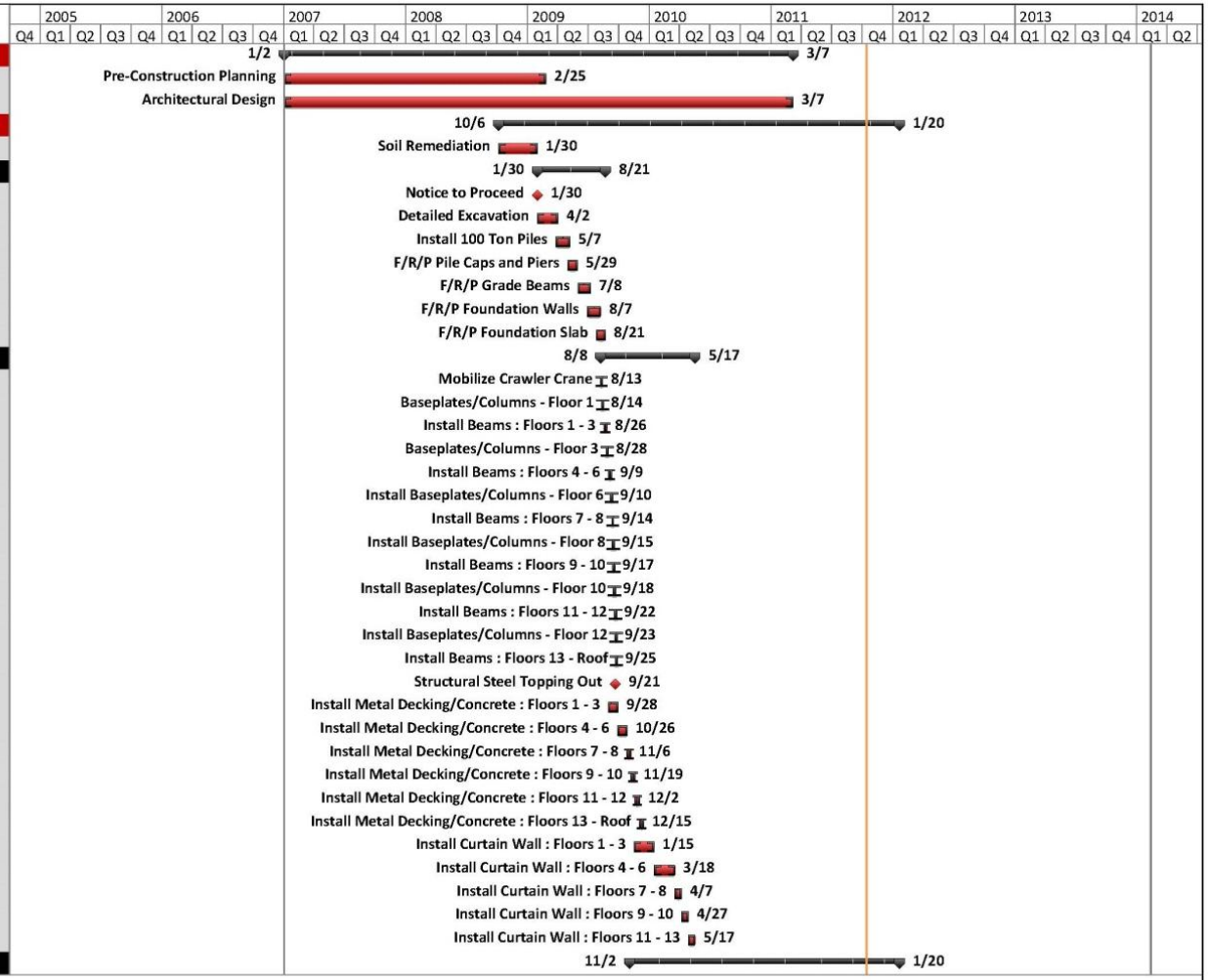
Task	Project Summary	Inactive Milestone	Manual Summary Rollup	Deadline
Split	External Tasks	Inactive Summary	Manual Summary	Progress
Milestone	External Milestone	Manual Task	Start-only	
Summary	Inactive Task	Duration-only	Finish-only	

Appendix A

GOUVERNEUR HEALTHCARE SERVICES DETAILED SCHEDULE

ID	Task Name	Duration	Start
1	**Pre-Construction Phase**	**1090 days**	**Tue 1/2/07**
2	Pre-Construction Planning	562 days	Tue 1/2/07
3	Architectural Design	1090 days	Tue 1/2/07
4	**New Building Construction**	**860 days**	**Mon 10/6/08**
5	Soil Remediation	85 days	Mon 10/6/08
6	**Excavation & Foundations**	**146 days**	**Fri 1/30/09**
7	Notice to Proceed	0 days	Fri 1/30/09
8	Detailed Excavation	45 days	Fri 1/30/09
9	Install 100 Ton Piles	30 days	Fri 3/27/09
10	F/R/P Pile Caps and Piers	21 days	Fri 5/1/09
11	F/R/P Grade Beams	28 days	Mon 6/1/09
12	F/R/P Foundation Walls	30 days	Mon 6/29/09
13	F/R/P Foundation Slab	21 days	Sun 7/26/09
14	**Superstructure**	**201 days**	**Sat 8/8/09**
15	Mobilize Crawler Crane	5 days	Sat 8/8/09
16	Baseplates/Columns - Floor 1	2 days	Thu 8/13/09
17	Install Beams : Floors 1 - 3	8 days	Mon 8/17/09
18	Baseplates/Columns - Floor 3	2 days	Thu 8/27/09
19	Install Beams : Floors 4 - 6	8 days	Mon 8/31/09
20	Install Baseplates/Columns - Floor 6	1 day	Thu 9/10/09
21	Install Beams : Floors 7 - 8	2 days	Fri 9/11/09
22	Install Baseplates/Columns - Floor 8	1 day	Tue 9/15/09
23	Install Beams : Floors 9 - 10	2 days	Wed 9/16/09
24	Install Baseplates/Columns - Floor 10	1 day	Fri 9/18/09
25	Install Beams : Floors 11 - 12	2 days	Mon 9/21/09
26	Install Baseplates/Columns - Floor 12	1 day	Wed 9/23/09
27	Install Beams : Floors 13 - Roof	2 days	Thu 9/24/09
28	Structural Steel Topping Out	0 days	Mon 9/21/09
29	Install Metal Decking/Concrete : Floors 1 - 3	21 days	Mon 8/31/09
30	Install Metal Decking/Concrete : Floors 4 - 6	21 days	Mon 9/28/09
31	Install Metal Decking/Concrete : Floors 7 - 8	10 days	Mon 10/26/09
32	Install Metal Decking/Concrete : Floors 9 - 10	10 days	Fri 11/6/09
33	Install Metal Decking/Concrete : Floors 11 - 12	10 days	Thu 11/19/09
34	Install Metal Decking/Concrete : Floors 13 - Roof	10 days	Wed 12/2/09
35	Install Curtain Wall : Floors 1 - 3	45 days	Mon 11/16/09
36	Install Curtain Wall : Floors 4 - 6	45 days	Sat 1/16/10
37	Install Curtain Wall : Floors 7 - 8	14 days	Fri 3/19/10
38	Install Curtain Wall : Floors 9 - 10	14 days	Thu 4/8/10
39	Install Curtain Wall : Floors 11 - 13	14 days	Wed 4/28/10
40	**Interior Fitout & Finishes**	**580 days**	**Mon 11/2/09**



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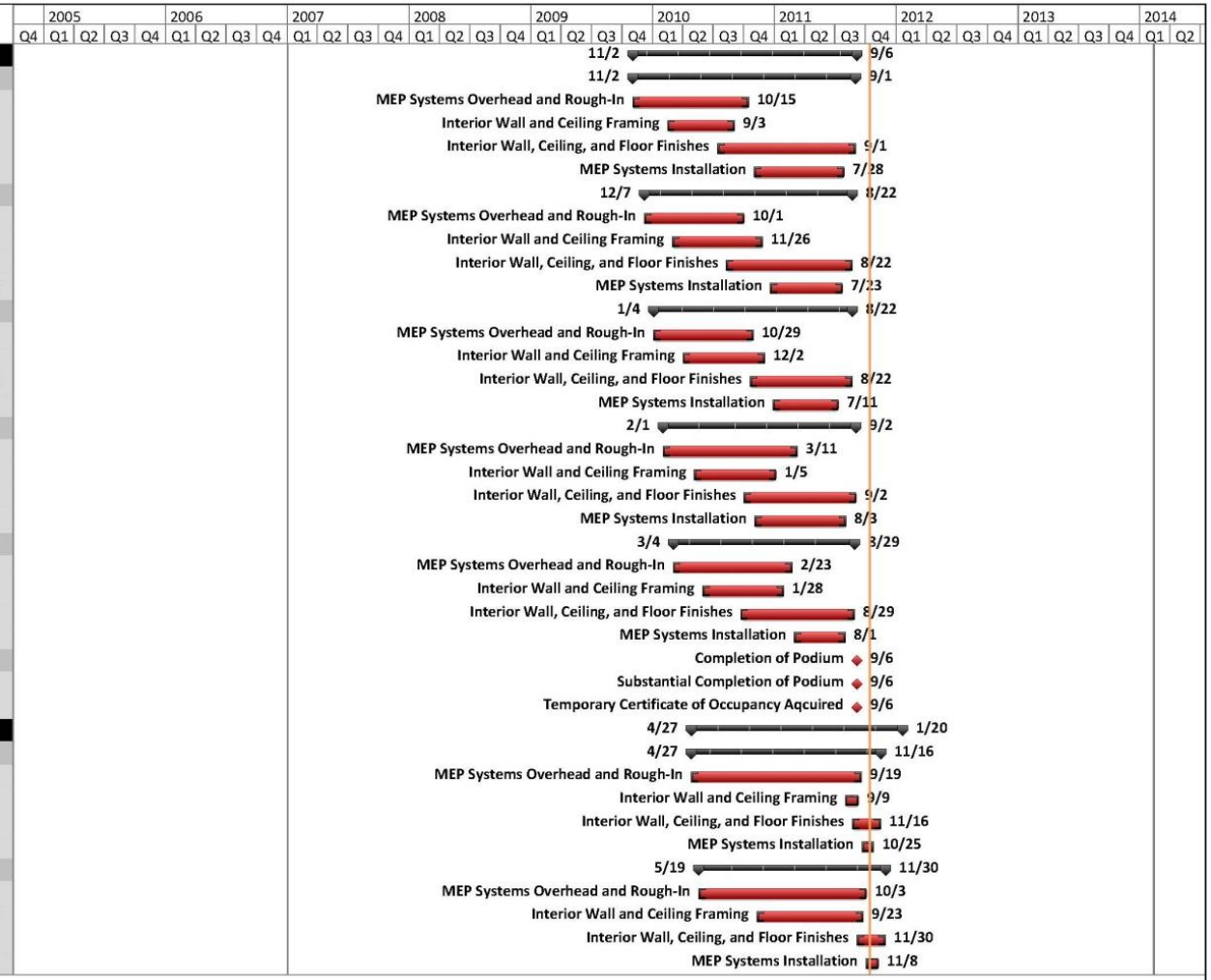
ID	Task Name	Duration	Start
41	**Podium Construction : Floors 1 - 6**	**481 days**	**Mon 11/2/09**
42	**1st Floor Construction**	**479 days**	**Mon 11/2/09**
43	MEP Systems Overhead and Rough-In	250 days	Mon 11/2/09
44	Interior Wall and Ceiling Framing	145 days	Mon 2/15/10
45	Interior Wall, Ceiling, and Floor Finishes	296 days	Thu 7/15/10
46	MEP Systems Installation	193 days	Tue 11/2/10
47	**2nd Floor Construction**	**446 days**	**Mon 12/7/09**
48	MEP Systems Overhead and Rough-In	215 days	Mon 12/7/09
49	Interior Wall and Ceiling Framing	195 days	Mon 3/1/10
50	Interior Wall, Ceiling, and Floor Finishes	270 days	Tue 8/10/10
51	MEP Systems Installation	156 days	Mon 12/20/10
52	**3rd Floor Construction**	**426 days**	**Mon 1/4/10**
53	MEP Systems Overhead and Rough-In	215 days	Mon 1/4/10
54	Interior Wall and Ceiling Framing	175 days	Fri 4/2/10
55	Interior Wall, Ceiling, and Floor Finishes	219 days	Wed 10/20/10
56	MEP Systems Installation	140 days	Tue 12/28/10
57	**4th Floor Construction**	**415 days**	**Mon 2/1/10**
58	MEP Systems Overhead and Rough-In	290 days	Mon 2/1/10
59	Interior Wall and Ceiling Framing	175 days	Thu 5/6/10
60	Interior Wall, Ceiling, and Floor Finishes	241 days	Sat 10/2/10
61	MEP Systems Installation	196 days	Wed 11/3/10
62	**5th Floor Construction**	**388 days**	**Thu 3/4/10**
63	MEP Systems Overhead and Rough-In	255 days	Thu 3/4/10
64	Interior Wall and Ceiling Framing	175 days	Mon 5/31/10
65	Interior Wall, Ceiling, and Floor Finishes	244 days	Wed 9/22/10
66	MEP Systems Installation	109 days	Wed 3/2/11
67	**Completion of Podium**	**0 days**	**Tue 9/6/11**
68	Substantial Completion of Podium	0 days	Tue 9/6/11
69	Temporary Certificate of Occupancy Aqcuired	0 days	Tue 9/6/11
70	**Tower Construction : Floors 6 - 13**	**454 days**	**Tue 4/27/10**
71	**6th Floor Construction**	**407 days**	**Tue 4/27/10**
72	MEP Systems Overhead and Rough-In	365 days	Tue 4/27/10
73	Interior Wall and Ceiling Framing	29 days	Tue 8/2/11
74	Interior Wall, Ceiling, and Floor Finishes	62 days	Tue 8/23/11
75	MEP Systems Installation	25 days	Wed 9/21/11
76	**7th Floor Construction**	**401 days**	**Wed 5/19/10**
77	MEP Systems Overhead and Rough-In	359 days	Wed 5/19/10
78	Interior Wall and Ceiling Framing	228 days	Wed 11/10/10
79	Interior Wall, Ceiling, and Floor Finishes	62 days	Tue 9/6/11
80	MEP Systems Installation	27 days	Mon 10/3/11



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Task	Project Summary	Inactive Milestone	Manual Summary Rollup	Deadline
Split	External Tasks	Inactive Summary	Manual Summary	Progress
Milestone	External Milestone	Manual Task	Start-only	
Summary	Inactive Task	Duration-only	Finish-only	

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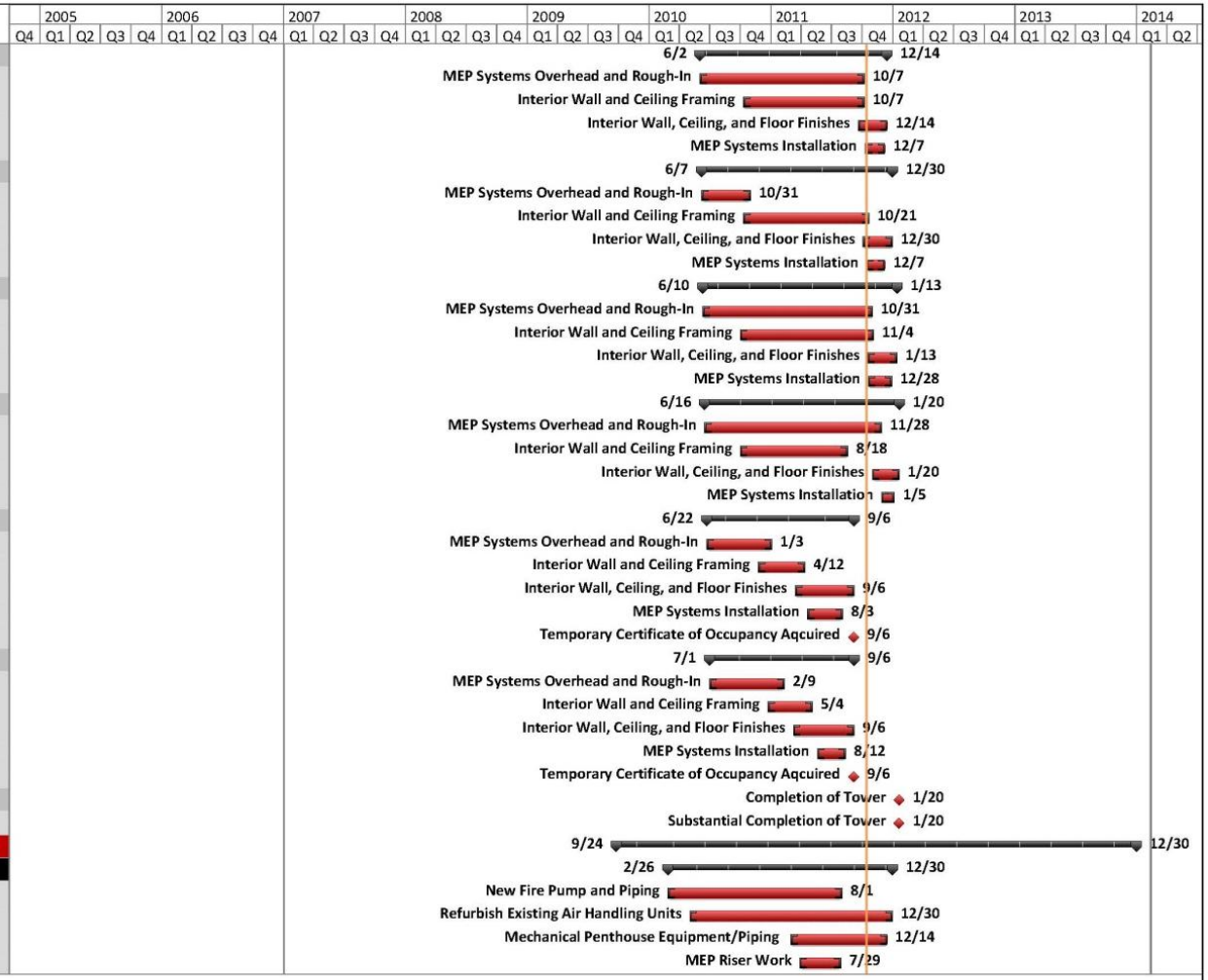
ID	Task Name	Duration	Start
81	**8th Floor Construction**	**401 days**	**Wed 6/2/10**
82	MEP Systems Overhead and Rough-In	353 days	Wed 6/2/10
83	Interior Wall and Ceiling Framing	261 days	Sun 10/10/10
84	Interior Wall, Ceiling, and Floor Finishes	62 days	Tue 9/20/11
85	MEP Systems Installation	43 days	Mon 10/10/11
86	**9th Floor Construction**	**410 days**	**Mon 6/7/10**
87	MEP Systems Overhead and Rough-In	106 days	Mon 6/7/10
88	Interior Wall and Ceiling Framing	271 days	Sun 10/10/10
89	Interior Wall, Ceiling, and Floor Finishes	64 days	Tue 10/4/11
90	MEP Systems Installation	39 days	Fri 10/14/11
91	**10th Floor Construction**	**417 days**	**Thu 6/10/10**
92	MEP Systems Overhead and Rough-In	363 days	Thu 6/10/10
93	Interior Wall and Ceiling Framing	286 days	Fri 10/1/10
94	Interior Wall, Ceiling, and Floor Finishes	64 days	Tue 10/18/11
95	MEP Systems Installation	50 days	Thu 10/20/11
96	**11th Floor Construction**	**418 days**	**Wed 6/16/10**
97	MEP Systems Overhead and Rough-In	379 days	Wed 6/16/10
98	Interior Wall and Ceiling Framing	230 days	Fri 10/1/10
99	Interior Wall, Ceiling, and Floor Finishes	59 days	Tue 11/1/11
100	MEP Systems Installation	29 days	Mon 11/28/11
101	**12th Floor Construction**	**316 days**	**Tue 6/22/10**
102	MEP Systems Overhead and Rough-In	140 days	Tue 6/22/10
103	Interior Wall and Ceiling Framing	100 days	Wed 11/24/10
104	Interior Wall, Ceiling, and Floor Finishes	126 days	Tue 3/15/11
105	MEP Systems Installation	76 days	Wed 4/20/11
106	Temporary Certificate of Occupancy Aqcuired	0 days	Tue 9/6/11
107	**13th Floor Construction**	**309 days**	**Thu 7/1/10**
108	MEP Systems Overhead and Rough-In	160 days	Thu 7/1/10
109	Interior Wall and Ceiling Framing	95 days	Thu 12/23/10
110	Interior Wall, Ceiling, and Floor Finishes	130 days	Wed 3/9/11
111	MEP Systems Installation	61 days	Fri 5/20/11
112	Temporary Certificate of Occupancy Aqcuired	0 days	Tue 9/6/11
113	**Completion of Tower**	**0 days**	**Fri 1/20/12**
114	Substantial Completion of Tower	0 days	Fri 1/20/12
115	**Existing Building Construction**	**1113 days**	**Thu 9/24/09**
116	**Infrastructure Modernization**	**481 days**	**Fri 2/26/10**
117	New Fire Pump and Piping	372 days	Fri 2/26/10
118	Refurbish Existing Air Handling Units	435 days	Mon 5/3/10
119	Mechanical Penthouse Equipment/Piping	207 days	Tue 3/1/11
120	MEP Riser Work	90 days	Mon 3/28/11



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Split	External Tasks	Inactive Summary	Manual Summary	Progress
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Summary	Inactive Task	Duration-only	Finish-only	

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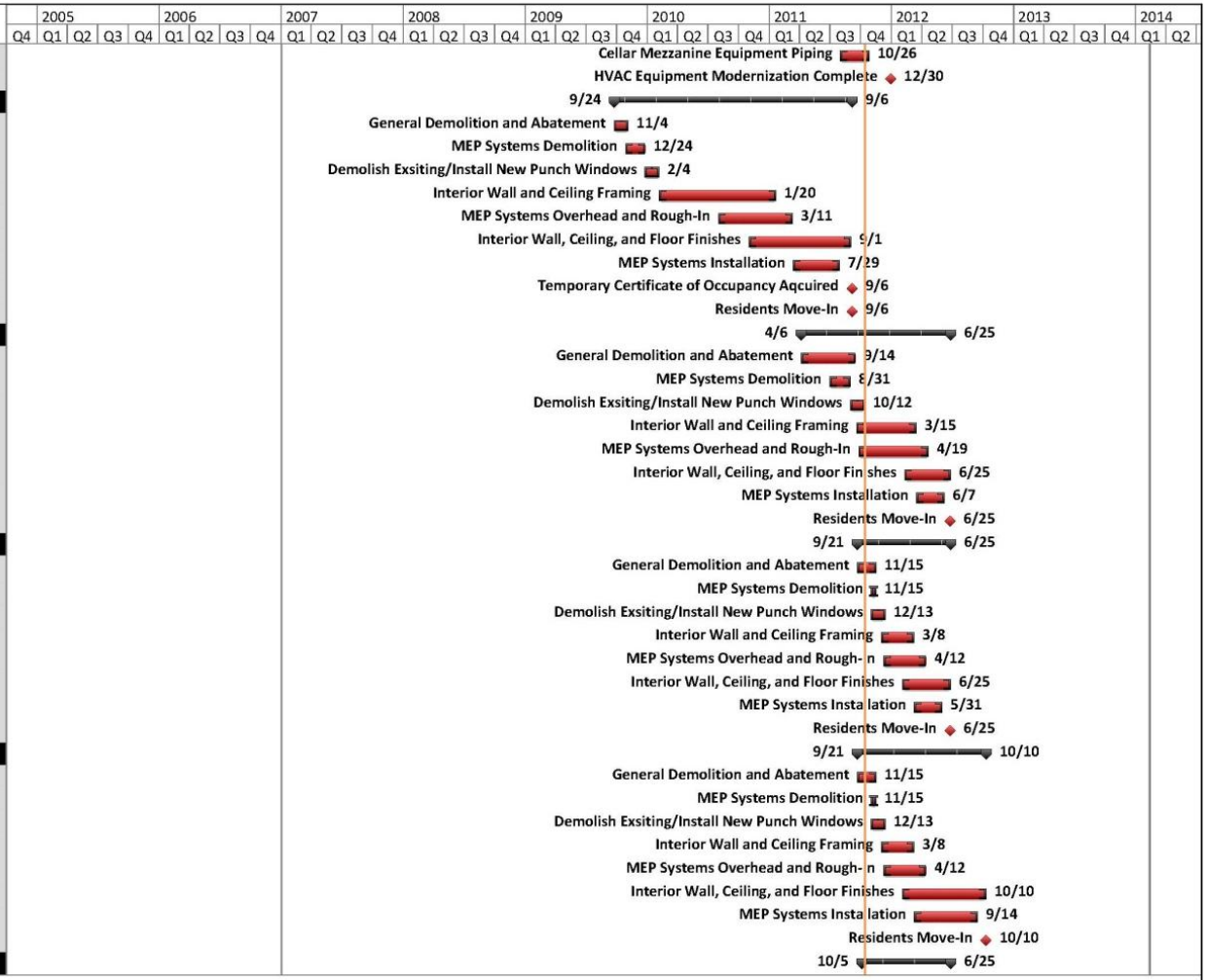
ID	Task Name	Duration	Start
121	Cellar Mezzanine Equipment Piping	63 days	Mon 8/1/11
122	HVAC Equipment Modernization Complete	0 days	Fri 12/30/11
123	**13th Floor Demolition and Renovation**	**508 days**	**Thu 9/24/09**
124	General Demolition and Abatement	30 days	Thu 9/24/09
125	MEP Systems Demolition	42 days	Wed 10/28/09
126	Demolish Exsiting/Install New Punch Windows	30 days	Fri 12/25/09
127	Interior Wall and Ceiling Framing	250 days	Fri 2/5/10
128	MEP Systems Overhead and Rough-In	160 days	Mon 8/2/10
129	Interior Wall, Ceiling, and Floor Finishes	219 days	Mon 11/1/10
130	MEP Systems Installation	100 days	Mon 3/14/11
131	Temporary Certificate of Occupancy Aqcuired	0 days	Tue 9/6/11
132	Residents Move-In	0 days	Tue 9/6/11
133	**6th Floor Demolition and Renovation**	**319 days**	**Wed 4/6/11**
134	General Demolition and Abatement	116 days	Wed 4/6/11
135	MEP Systems Demolition	44 days	Fri 7/1/11
136	Demolish Exsiting/Install New Punch Windows	30 days	Thu 9/1/11
137	Interior Wall and Ceiling Framing	129 days	Mon 9/19/11
138	MEP Systems Overhead and Rough-In	149 days	Mon 9/26/11
139	Interior Wall, Ceiling, and Floor Finishes	97 days	Fri 2/10/12
140	MEP Systems Installation	60 days	Fri 3/16/12
141	Residents Move-In	0 days	Mon 6/25/12
142	**7th Floor Demolition and Renovation**	**199 days**	**Wed 9/21/11**
143	General Demolition and Abatement	40 days	Wed 9/21/11
144	MEP Systems Demolition	10 days	Wed 11/2/11
145	Demolish Exsiting/Install New Punch Windows	30 days	Wed 11/2/11
146	Interior Wall and Ceiling Framing	70 days	Fri 12/2/11
147	MEP Systems Overhead and Rough-In	90 days	Fri 12/9/11
148	Interior Wall, Ceiling, and Floor Finishes	102 days	Fri 2/3/12
149	MEP Systems Installation	60 days	Fri 3/9/12
150	Residents Move-In	0 days	Mon 6/25/12
151	**8th Floor Demolition and Renovation**	**276 days**	**Wed 9/21/11**
152	General Demolition and Abatement	40 days	Wed 9/21/11
153	MEP Systems Demolition	10 days	Wed 11/2/11
154	Demolish Exsiting/Install New Punch Windows	30 days	Wed 11/2/11
155	Interior Wall and Ceiling Framing	70 days	Fri 12/2/11
156	MEP Systems Overhead and Rough-In	90 days	Fri 12/9/11
157	Interior Wall, Ceiling, and Floor Finishes	179 days	Fri 2/3/12
158	MEP Systems Installation	136 days	Fri 3/9/12
159	Residents Move-In	0 days	Wed 10/10/12
160	**5th Floor Demolition and Renovation**	**189 days**	**Wed 10/5/11**



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Split	External Tasks	Inactive Summary	Manual Summary	Progress
Milestone	External Milestone	Manual Task	Start-only	
Summary	Inactive Task	Duration-only	Finish-only	

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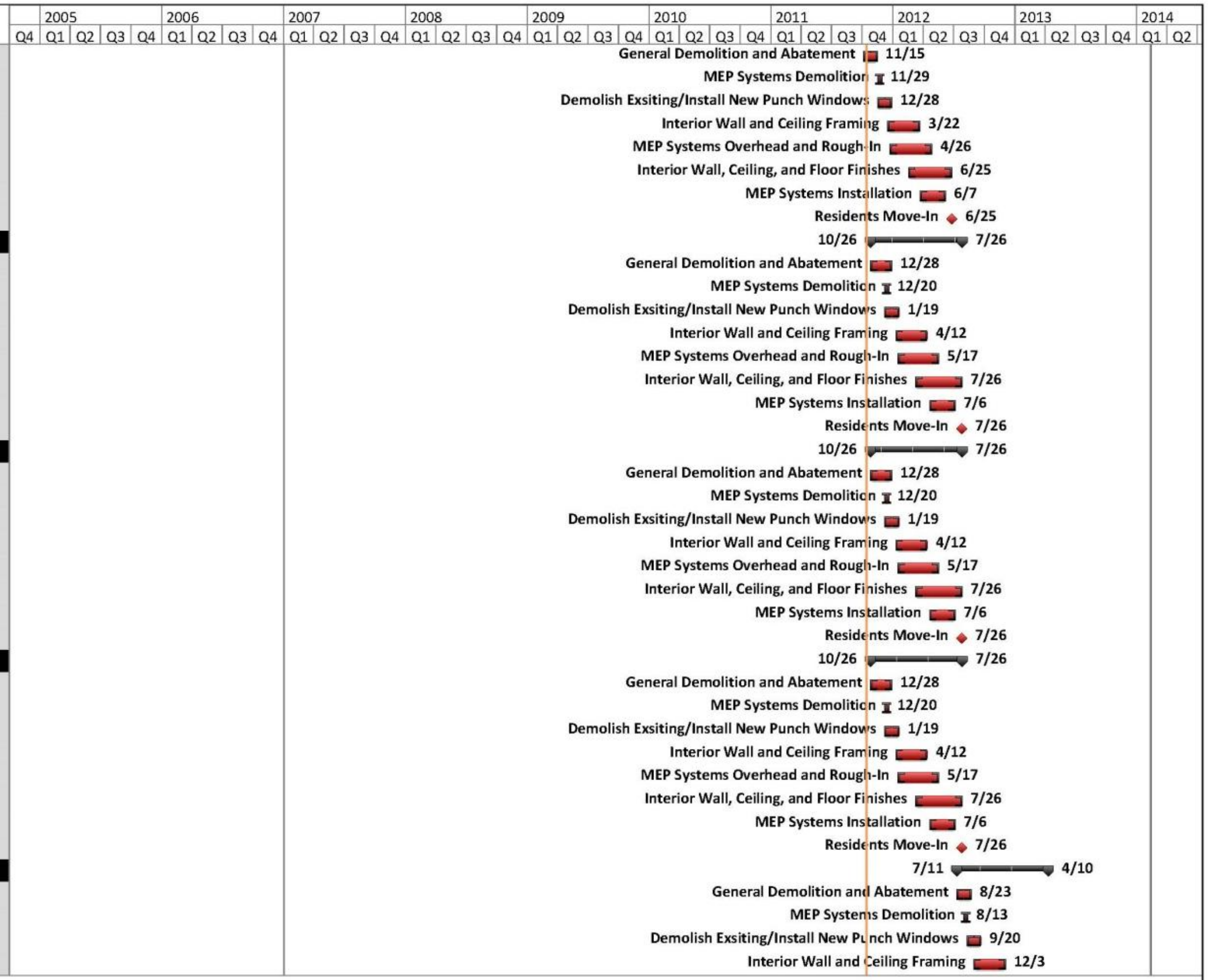
ID	Task Name	Duration	Start
161	General Demolition and Abatement	30 days	Wed 10/5/11
162	MEP Systems Demolition	10 days	Wed 11/16/11
163	Demolish Exsiting/Install New Punch Windows	31 days	Wed 11/16/11
164	Interior Wall and Ceiling Framing	70 days	Fri 12/16/11
165	MEP Systems Overhead and Rough-In	90 days	Fri 12/23/11
166	Interior Wall, Ceiling, and Floor Finishes	92 days	Fri 2/17/12
167	MEP Systems Installation	55 days	Fri 3/23/12
168	Residents Move-In	0 days	Mon 6/25/12
169	**2nd Floor Demolition and Renovation**	**197 days**	**Wed 10/26/11**
170	General Demolition and Abatement	46 days	Wed 10/26/11
171	MEP Systems Demolition	10 days	Wed 12/7/11
172	Demolish Exsiting/Install New Punch Windows	32 days	Wed 12/7/11
173	Interior Wall and Ceiling Framing	68 days	Tue 1/10/12
174	MEP Systems Overhead and Rough-In	89 days	Mon 1/16/12
175	Interior Wall, Ceiling, and Floor Finishes	100 days	Fri 3/9/12
176	MEP Systems Installation	56 days	Fri 4/20/12
177	Residents Move-In	0 days	Thu 7/26/12
178	**3rd Floor Demolition and Renovation**	**197 days**	**Wed 10/26/11**
179	General Demolition and Abatement	46 days	Wed 10/26/11
180	MEP Systems Demolition	10 days	Wed 12/7/11
181	Demolish Exsiting/Install New Punch Windows	32 days	Wed 12/7/11
182	Interior Wall and Ceiling Framing	68 days	Tue 1/10/12
183	MEP Systems Overhead and Rough-In	89 days	Mon 1/16/12
184	Interior Wall, Ceiling, and Floor Finishes	100 days	Fri 3/9/12
185	MEP Systems Installation	56 days	Fri 4/20/12
186	Residents Move-In	0 days	Thu 7/26/12
187	**4th Floor Demolition and Renovation**	**197 days**	**Wed 10/26/11**
188	General Demolition and Abatement	46 days	Wed 10/26/11
189	MEP Systems Demolition	10 days	Wed 12/7/11
190	Demolish Exsiting/Install New Punch Windows	32 days	Wed 12/7/11
191	Interior Wall and Ceiling Framing	68 days	Tue 1/10/12
192	MEP Systems Overhead and Rough-In	89 days	Mon 1/16/12
193	Interior Wall, Ceiling, and Floor Finishes	100 days	Fri 3/9/12
194	MEP Systems Installation	56 days	Fri 4/20/12
195	Residents Move-In	0 days	Thu 7/26/12
196	**9th Floor Demolition and Renovation**	**196 days**	**Wed 7/11/12**
197	General Demolition and Abatement	32 days	Wed 7/11/12
198	MEP Systems Demolition	10 days	Tue 7/31/12
199	Demolish Exsiting/Install New Punch Windows	30 days	Fri 8/10/12
200	Interior Wall and Ceiling Framing	68 days	Thu 8/30/12



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Task	Project Summary	Inactive Milestone	Manual Summary Rollup	Deadline
Split	External Tasks	Inactive Summary	Manual Summary	Progress
Milestone	External Milestone	Manual Task	Start-only	
Summary	Inactive Task	Duration-only	Finish-only	

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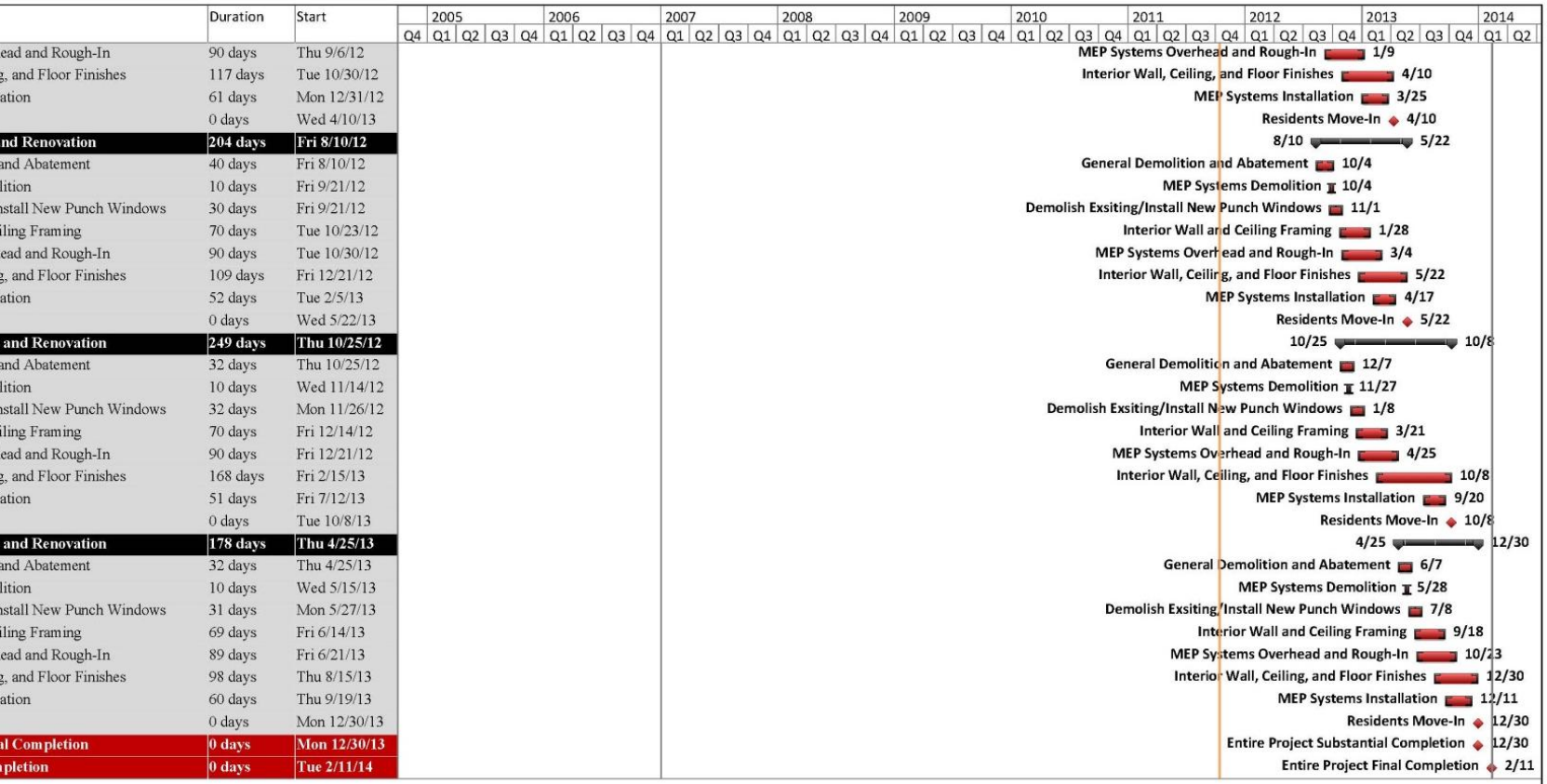
ID	Task Name	Duration	Start
201	MEP Systems Overhead and Rough-In	90 days	Thu 9/6/12
202	Interior Wall, Ceiling, and Floor Finishes	117 days	Tue 10/30/12
203	MEP Systems Installation	61 days	Mon 12/31/12
204	Residents Move-In	0 days	Wed 4/10/13
205	**1st Floor Demolition and Renovation**	**204 days**	**Fri 8/10/12**
206	General Demolition and Abatement	40 days	Fri 8/10/12
207	MEP Systems Demolition	10 days	Fri 9/21/12
208	Demolish Exsiting/Install New Punch Windows	30 days	Fri 9/21/12
209	Interior Wall and Ceiling Framing	70 days	Tue 10/23/12
210	MEP Systems Overhead and Rough-In	90 days	Tue 10/30/12
211	Interior Wall, Ceiling, and Floor Finishes	109 days	Fri 12/21/12
212	MEP Systems Installation	52 days	Tue 2/5/13
213	Residents Move-In	0 days	Wed 5/22/13
214	**10th Floor Demolition and Renovation**	**249 days**	**Thu 10/25/12**
215	General Demolition and Abatement	32 days	Thu 10/25/12
216	MEP Systems Demolition	10 days	Wed 11/14/12
217	Demolish Exsiting/Install New Punch Windows	32 days	Mon 11/26/12
218	Interior Wall and Ceiling Framing	70 days	Fri 12/14/12
219	MEP Systems Overhead and Rough-In	90 days	Fri 12/21/12
220	Interior Wall, Ceiling, and Floor Finishes	168 days	Fri 2/15/13
221	MEP Systems Installation	51 days	Fri 7/12/13
222	Residents Move-In	0 days	Tue 10/8/13
223	**11th Floor Demolition and Renovation**	**178 days**	**Thu 4/25/13**
224	General Demolition and Abatement	32 days	Thu 4/25/13
225	MEP Systems Demolition	10 days	Wed 5/15/13
226	Demolish Exsiting/Install New Punch Windows	31 days	Mon 5/27/13
227	Interior Wall and Ceiling Framing	69 days	Fri 6/14/13
228	MEP Systems Overhead and Rough-In	89 days	Fri 6/21/13
229	Interior Wall, Ceiling, and Floor Finishes	98 days	Thu 8/15/13
230	MEP Systems Installation	60 days	Thu 9/19/13
231	Residents Move-In	0 days	Mon 12/30/13
232	**Entire Project Substantial Completion**	**0 days**	**Mon 12/30/13**
233	**Entire Project Final Completion**	**0 days**	**Tue 2/11/14**



Gouverneur Healthcare Services
Alex Despotovich
October 19, 2011

Task	Project Summary	Inactive Milestone	Manual Summary Rollup	Deadline
Split	External Tasks	Inactive Summary	Manual Summary	Progress
Milestone	External Milestone	Manual Task	Start-only	
Summary	Inactive Task	Duration-only	Finish-only	

Appendix A

APPENDIX B

DETAILED STRUCTURAL ESTIMATE

GOUVERNEUR HEALTHCARE SERVICES DETAILED STRUCTURAL ESTIMATE

TABLE 11: STRUCTURAL ESTIMATE RS MEANS 2011 DIVISION BREAKDOWN

CSI Division	Item	Unit	2011 RS Means Costs					Quantity	Total Project Cost	
			Material	Labor	Equipment	Total	Total Incl O&P		Total Cost	Total Cost Incl O&P
Division 3 - Concrete										
03.11 Concrete Forming										
03.11.13.25.6500	Columns, 24"x24" columns, 1 use	SFCA	$ 2.43	$ 6.90	$ -	$ 9.33	$ 13.20	547	$ 5,103.51	$ 7,220.40
03.11.13.35.7000	Edge forms to 6" high, on elevated slab, 4 use	LF	$ 0.17	$ 2.62	$ -	$ 2.79	$ 4.20	1319	$ 3,680.01	$ 5,539.80
03.11.13.45.3000	Pile cap, square or rectangular, job-built plywood, 1 use	SFCA	$ 2.33	$ 4.51	$ -	$ 6.84	$ 9.45	2661	$ 18,201.24	$ 25,146.45
03.11.13.50.0020	Grade beam, job-built plywood, 1 use	SFCA	$ 2.37	$ 3.80	$ -	$ 6.17	$ 8.45	19840	$ 122,412.80	$ 167,648.00
03.11.13.65.2000	Slab on grade, curb forms, wood, 6" to 12" high, on grade, 1 use	SFCA	$ 1.80	$ 6.10	$ -	$ 7.90	$ 11.35	360	$ 2,844.00	$ 4,086.00
03.11.13.85.2000	Walls, job-built playwood, over 8' to 16' high, 1 use	SFCA	$ 2.38	$ 7.20	$ -	$ 9.58	$ 13.65	25555	$ 244,816.90	$ 348,825.75
03.21 Reinforcing Steel										
03.21.10.60.0100	Reinforcing in place, beams & girders, #8 to #18	Ton	$ 900.00	$ 970.00	$ -	$ 1,870.00	$ 2,550.00	21.48	$ 40,167.60	$ 54,774.00
03.21.10.60.0200	Reinforcing in place, columns, #8 to #18	Ton	$ 900.00	$ 1,025.00	$ -	$ 1,925.00	$ 2,650.00	7.33	$ 14,110.25	$ 19,424.50
03.21.10.60.0500	Reinforcing in place, footings, #8 to #18	Ton	$ 810.00	$ 430.00	$ -	$ 1,240.00	$ 1,575.00	9.32	$ 11,556.80	$ 14,679.00
03.21.10.60.0600	Reinforcing in place, slab on grade, #3 to #7	Ton	$ 855.00	$ 675.00	$ -	$ 1,530.00	$ 2,025.00	22.52	$ 34,455.60	$ 45,603.00
03.21.10.60.0700	Reinforcing in place, walls, #3 to #7	Ton	$ 855.00	$ 515.00	$ -	$ 1,370.00	$ 1,775.00	4.46	$ 6,110.20	$ 7,916.50
03.22 Welded Wire Fabric Reinforcing										
03.22.05.50.00	Sheets, 6X6 -W2.1x2.1 (8x8) 30 lb. per C.S.F.	CSF	$ 18.90	$ 25.00	$ -	$ 43.90	$ 61.00	1091.47	$ 47,915.53	$ 66,579.67
03.30 Cast-In-Place Concrete										
03.30.53.40.0900	Columns, 24"x24", minimum reinforcing	CY	$ 221.00	$ 365.00	$ 32.50	$ 618.50	$ 845.00	46.05	$ 28,481.93	$ 38,912.25
03.30.53.40.3200	Elevated slabs, including finish, regular concrete, 6" slab	SF	$ 1.96	$ 0.92	$ 0.34	$ 3.20	$ 3.91	109147	$ 349,270.40	$ 426,764.77
03.30.53.40.3825	Footings, spread, 1 CY to 5 CY	CY	$ 185.00	$ 108.00	$ 0.55	$ 293.55	$ 370.00	515.03	$ 151,187.06	$ 190,561.10
03.30.53.40.4350	Wall, free-standing, 15" thick, 12' high	CY	$ 140.00	$ 167.00	$ 14.90	$ 321.90	$ 425.00	473.23	$ 152,332.74	$ 201,122.75
03.30.53.40.4900	Slab on grade, including finish, 12" thick	SF	$ 3.88	$ 1.02	$ 0.01	$ 4.91	$ 5.80	8640	$ 42,422.40	$ 50,112.00
Division 3 - Concrete Total									$ 1,275,068.96	$ 1,674,915.94
Division 5 - Metals										
05.05 Common Work Results for Metals										
05.05.23.05.0350	Anchor Bolt, L-type, inculding hex nut & washer, 1" diameter x 12" long	Set	$ 16.75	$ 18.15	$ -	$ 34.90	$ 46.50	50	$ 1,745.00	$ 2,325.00
05.12 Structural Steel Framing										
05.12.23.17.7350	Column, W Shape, A992 steel, 2 tier, W14x74	LF	$ 91.50	$ 2.70	$ 1.65	$ 95.85	$ 107.00	830.47	$ 79,600.55	$ 88,860.29
05.12.23.17.7400	Column, W Shape, A992 steel, 2 tier, W14x120	LF	$ 149.00	$ 2.76	$ 1.69	$ 153.45	$ 170.00	283.46	$ 43,496.94	$ 48,188.20
05.12.23.17.7450	Column, W Shape, A992 steel, 2 tier, W14x176	LF	$ 218.00	$ 2.91	$ 1.78	$ 222.69	$ 247.00	3341.88	$ 744,203.26	$ 825,444.36
05.12.23.65.0500	Plates, For connections & stiffener plates, 1" thick (40.8 lb./S.F.)	SF	$ 46.00	$ -	$ -	$ 46.00	$ 50.50	168.06	$ 7,730.76	$ 8,487.03
05.12.23.75.4900	Beam, W Shape, A992 steel, W24x55	LF	$ 68.00	$ 3.45	$ 1.56	$ 73.01	$ 82.50	1993.1	$ 145,516.23	$ 164,430.75
05.12.23.75.5300	Beam, W Shape, A992 steel, W24x68	LF	$ 84.00	$ 3.45	$ 1.56	$ 89.01	$ 100.00	710.45	$ 63,237.15	$ 71,045.00
05.12.23.75.5780	Beam, W Shape, A992 steel, W24x146	LF	$ 181.00	$ 3.65	$ 1.65	$ 186.30	$ 207.00	668.96	$ 124,627.25	$ 138,474.72
05.12.23.75.5800	Beam, W Shape, A992 steel, W27x84	LF	$ 104.00	$ 3.22	$ 1.45	$ 108.67	$ 121.00	668.96	$ 72,695.88	$ 80,944.16
05.12.23.75.5920	Beam, W Shape, A992 steel, W27x114	LF	$ 141.00	$ 3.33	$ 1.51	$ 145.84	$ 162.00	5204.21	$ 758,981.99	$ 843,082.02
05.12.23.77.4700	Castellated beams, light sections, to 50#/L.F., maximum	Ton	$ 2,600.00	$ 380.00	$ 232.00	$ 3,212.00	$ 3,775.00	193.43	$ 621,297.16	$ 730,198.25
05.31 Steel Decking										

05.31.13.50.550	Non-cellular composite decking, galvanized, 2" deep, 16 gauge	SF	$ 2.37	$ 0.49	$ 0.03	$ 2.89	$ 3.51	109147	$ 315,434.83	$ 383,105.97
05.31.23.50.3400	Steel Roof Decking, 3" deep, 18 gauge, under 50 squares	SF	$ 2.94	$ 0.49	$ 0.03	$ 3.46	$ 4.17	2969	$ 10,272.74	$ 12,380.73
Division 5 - Metals Total									$ 2,988,839.74	$ 3,396,966.48
Division 31 - Earthwork										
31.62 Driven Piles										
31.62..16.13.0190	Steel piles, round, concrete filled, 12" tip, 120 ton capacity, 30' depth	VLF	$ 16.30	$ 4.19	$ 2.80	$ 23.29	$ 29.04	5100	$ 118,779.00	$ 148,104.00
Division 31 - Earthwork Total									$ 118,779.00	$ 148,104.00
Total Superstructure Cost									$ 4,382,687.70	$ 5,219,986.42
Total Superstructure Cost with New York, NY Location Factor of 133%									$ 5,828,974.64	$ 6,942,581.94

GOUVERNEUR HEALTHCARE SERVICES FOUNDATIONS TAKEOFF

TABLE 12: STEEL PILE DETAILED TAKEOFF

Type	Length (ft)	Tip Diameter (in)	Capacity (ton)	Quantity	Total Length (ft)
DP1	30.00	12.75	100.00	170.00	5100.00

TABLE 13: FOUNDATION PIER TAKEOFF

	Concrete					Reinforcing Steel								Formwork	
						Vertical Bar (ft)				Stirrup Bar (ft)					
Type	Width (ft)	Length (ft)	Height (ft)	Quantity	Total C.Y.	Quantity	Type	Total Length	Weight/LF	Stirrup Type	Stirrup Length	Weight/Lf	Total Weight (ton)	# of Sides	SFCA
Cellar Level															
P1	2.00	2.00	10.50	1.00	1.56	16.00	#8	168.00	2.67	#3 @ 12" O.C.	84.00	0.38	0.24	4.00	84.00
P2	2.33	2.33	10.25	6.00	12.40	16.00	#9	984.00	3.40	#4 @ 12" O.C.	669.67	0.67	1.90	4.00	95.67
P3	2.50	2.50	12.50	3.00	8.68	20.00	#9	750.00	3.40	#4 @ 12" O.C.	468.75	0.67	1.43	4.00	125.00
P5	1.67	2.00	9.00	1.00	1.11	12.00	#8	108.00	2.67	#3 @ 12" O.C.	60.00	0.38	0.16	4.00	66.00
P6	1.50	1.83	9.00	1.00	0.92	12.00	#7	108.00	2.04	#3 @ 12" O.C.	49.50	0.38	0.12	4.00	60.00
	Total				24.67	Total							3.84	Total	430.67
First Floor Level															
P2	2.33	2.33	5.50	3.00	3.33	16.00	#9	264.00	3.40	#4 @ 12" O.C.	179.67	0.67	0.51	4.00	51.33
P3	2.50	2.50	6.50	12.00	18.06	20.00	#9	1560.00	3.40	#4 @ 12" O.C.	975.00	0.67	2.98	4.00	65.00
	Total				21.38	Total							3.49	Total	116.33

TABLE 14: FOUNDATION PILE CAP TAKEOFF

	Concrete					Reinforcing Steel									Formwork	
						Top Bar (ft)				Bottom Bar (ft)						
Type	Width (ft)	Length (ft)	Height (ft)	Quantity	Total C.Y.	Quantity	Type	Total Length	Weight/LF	Quantity	Type	Total Length	Weight/Lf	Total Weight (ton)	# of Sides	SFCA
Cellar Level																
PC-2	8.00	3.75	3.50	1.00	3.89	6.00	#8	48.00	2.67	6.00	#4	22.50	0.67	0.07	4.00	82.25
PC-3	7.50	3.75	8.00	2.00	16.67	8.00	#8	120.00	2.67	8.00	#8	60.00	2.67	0.24	4.00	180.00
PC-4	8.00	4.00	8.00	2.00	18.96	8.00	#9	128.00	3.40	8.00	#9	64.00	3.40	0.33	4.00	192.00
PC-5	9.83	4.42	9.83	2.00	31.61	15.00	#8	294.90	2.67	15.00	#8	132.50	2.67	0.57	4.00	280.09
PC-6	12.50	5.50	8.00	3.00	61.11	12.00	#9	450.00	3.40	18.00	#9	297.00	3.40	1.27	4.00	288.00
PC-7	12.50	5.00	11.50	4.00	106.48	14.00	#9	700.00	3.40	14.00	#9	280.00	3.40	1.67	4.00	402.50
PC-8	12.50	5.00	11.50	1.00	26.62	14.00	#10	175.00	4.30	14.00	#10	70.00	4.30	0.53	4.00	402.50
PC-10	12.50	5.75	12.50	5.00	166.38	19.00	#9	1187.50	3.40	19.00	#9	546.25	3.40	2.95	4.00	456.25
	Total				431.72	Total								7.62	Total	2283.59
First Floor Level																
PC - 1	3.50	3.50	3.33	4.00	6.05	6.00	#6	84.00	1.50	6.00	#6	84.00	1.50	0.13	4.00	46.67
PC - 2	8.00	3.50	3.75	11.00	42.78	6.00	#8	528.00	2.67	6.00	#4	528.00	0.67	0.88	4.00	86.25
PC - 3	7.50	8.00	3.75	3.00	25.00	8.00	#8	180.00	2.67	8.00	#8	180.00	2.67	0.48	4.00	116.25
PC - 4	8.00	8.00	4.00	1.00	9.48	8.00	#9	64.00	3.40	8.00	#9	64.00	3.40	0.22	4.00	128.00
	Total				83.31	Total								1.71	Total	377.17

TABLE 15: CELLAR FOUNDATION WALL DETAILED TAKEOFF

	Concrete				Reinforcing Steel									Formwork	
					Top/Bottom Bar (ft)				Horiztonal Bar (ft)						
Type	Width (ft)	Height (ft)	Length (ft)	Total C.Y.	Quantity	Type	Total Length	Weight/LF	Quantity	Type	Total Length	Weight/Lf	Total Weight (ton)	# of Sides	SFCA
1.00	1.33	20.50	360.00	363.53	6.00	#7	2160.00	2.04	2.00	#5 @ 12" O.C.	720.00	1.04	2.58	2.00	19630.80
2.00	1.33	8.50	262.00	109.70	6.00	#7	1572.00	2.04	2.00	#5 @ 12" O.C.	524.00	1.04	1.88	2.00	5923.82
	Total			473.23	Total								4.46	Total	25554.62

TABLE 16: CELLAR FOUNDATION SLAB DETAILED TAKEOFF

	Concrete				Reinforcing Steel									Formwork	
					Top Bar (ft)				Bottom Bar (ft)						
Type	Width (ft)	Height (ft)	Length (ft)	Total C.Y.	Quantity	Type	Total Length	Weight/LF	Quantity	Type	Total Length	Weight/Lf	Total Weight (ton)	# of Sides	SFCA
					12" O.C.	#7	8100.00	2.04							
2-Way	90.00	1.00	90.00	300.00	265.00	#7	3355.00	2.04	12" O.C.	#8	8100.00	2.67	22.52	4.00	360.00
	Total			300.00	Total								22.52	Total	360.00

TABLE 17: GRADE BEAM TAKEOFF

	Concrete					Reinforcing Steel								Formwork	
						Top/Bottom Bar (ft)				Stirrup Bar (ft)					
Type	Width (ft)	Height (ft)	Length (ft)	Quantity	Total C.Y.	Quantity	Type	Total Length	Weight/LF	Stirrup Type	Stirrup Length	Weight/Lf	Total Weight (ton)	# of Sides	SFCA
Cellar Level															
SGB-1	2.50	13.33	29.33	1.00	36.20	28.00	#10	821.24	4.30	#4 @ 12" O.C.	1954.84	0.67	2.42	2.00	1954.84
SGB-2	1.92	18.83	28.83	1.00	38.60	24.00	#9	691.92	3.40	#4 @ 12" O.C.	2084.62	0.67	1.87	2.00	2084.62
SGB-3	3.33	11.25	28.83	1.00	40.00	24.00	#9	691.92	3.40	#4 @ 8" O.C.	2160.09	0.67	1.90	2.00	2160.09
SGB-4	2.00	9.25	21.00	2.00	28.78	8.00	#8	336.00	2.67	#4 @ 16" O.C.	1554.00	0.67	0.97	2.00	777.00
SGB-6	1.33	10.25	21.00	2.00	21.21	8.00	#8	336.00	2.67	#4 @ 12" O.C.	1145.13	0.67	0.83	2.00	572.57
SGB-7	2.00	11.33	21.00	1.00	17.62	8.00	#9	168.00	3.40	#4 @ 12" O.C.	951.72	0.67	0.60	2.00	951.72
SGB-8	2.00	11.25	30.00	1.00	25.00	10.00	#9	300.00	3.40	#4 @ 12" O.C.	1350.00	0.67	0.96	2.00	1350.00
SGB-8A	2.00	12.25	29.25	1.00	26.54	10.00	#9	292.50	3.40	#4 @ 12" O.C.	1433.25	0.67	0.98	2.00	1433.25
	Total				233.96	Total							10.53	Total	11284.08
First Floor Level															
GB-1	1.50	4.00	60.00	1.00	13.33	6.00	#8	360.00	2.67	#4 @ 12" O.C.	720.00	0.67	0.72	2.00	720.00
GB-2	1.33	3.67	90.00	1.00	16.27	12.00	#8	1080.00	2.67	#4 @ 12" O.C.	878.60	0.67	1.74	2.00	878.60
GB-3	1.50	4.50	80.00	1.00	20.00	10.00	#9	800.00	3.40	#4 @ 12" O.C.	1080.00	0.67	1.72	2.00	1080.00
GB-5	1.33	7.08	94.00	1.00	32.78	8.00	#8	752.00	2.67	#4 @ 12" O.C.	1770.28	0.67	1.60	2.00	1770.28
GB-6	1.50	3.67	60.00	1.00	12.23	8.00	#8	480.00	2.67	#4 @ 12" O.C.	660.60	0.67	0.86	2.00	660.60
GB-7	2.50	3.50	30.00	1.00	9.72	16.00	#8	480.00	2.67	#4 @ 12" O.C.	525.00	0.67	0.82	2.00	525.00
GB-8	2.50	4.00	30.00	1.00	11.11	10.00	#8	300.00	2.67	#4 @ 8" O.C.	600.00	0.67	0.60	2.00	600.00
GB-9	1.17	3.00	164.00	1.00	21.32	6.00	#7	984.00	2.04	#4 @ 12" O.C.	1151.28	0.67	1.39	2.00	1151.28
GB-10	1.33	4.00	110.00	1.00	21.67	6.00	#9	660.00	3.40	#4 @ 12" O.C.	1170.40	0.67	1.51	2.00	1170.40
	Total				158.45	Total							10.95	Total	8556.16

GOUVERNEUR HEALTHCARE SERVICES TYPICAL BAY STRUCTURAL TAKEOFF

TABLE 18: TYPICAL BAY TAKEOFF

Concrete Slab			Steel											
			Reinforcement		Metal Decking		Beams				Columns			
Total S.F.	Height (ft)	Total C.Y.	Type	Total C.S.F.	Type	Total S.F.	Type	Quantity	Total Length (ft)	Weight (ton)	Type	Quantity	Total Height (ft)	Weight (ton)
Floors 1-6 "Podium"														
							LB 27x40	3.00	117.50	2.35	W14x159	1.00	12.50	0.99
							W27x114	2.00	78.33	4.47	W14x99	1.00	12.50	0.62
					2" 16 Gage Galvanized		W16x89	1.00	31.25	1.39	W14x159	1.00	12.50	0.99
1200.00	0.35	15.74	6X6 -W2.1x2.1 WWF	12.00	Composite Deck	1200.00	W 24x55	1.00	30.00	0.83	W14x257	1.00	12.50	1.61
Total		15.74	Total	12.00	Total	1200.00	Total		257.08	9.03	Total		50.00	4.21
Total/S.F.		0.0131	Total/S.F.	0.0100	Total/S.F.	1.0000	Total/S.F.		0.2142	0.0075	Total/S.F.		0.0417	0.0035
Floors 7-13 "Tower"														
							LB27x35	3	93.99	1.64	W14x120	1.00	12.50	0.75
							W24x68	1	31.33	1.07	W14x211	1.00	12.50	1.32
							W24x131	1	29.5	1.93	W14x193	1.00	12.50	1.21
916.5	0.35	11.88	6X6 -W2.1x2.1 WWF	91.65	2" 16 Gage Galvanized Composite Deck	916.5	W27x84	1	29.5	1.24	W14x193	1.00	12.50	1.21
Total		11.88	Total	91.65	Total	916.5	Total		184.32	5.88	Total		50.00	4.48
Total/S.F.		0.0130	Total/S.F.	0.1000	Total/S.F.	1.0000	Total/S.F.		0.2011	0.0064	Total/S.F.		0.0546	0.0049

TABLE 19: TYPICAL BAY STEEL TAKEOFF EXTRAPOLATION

	Beams						Columns					
Total Bay S.F.	Type	Quantity	Total Length (ft)	Length/S.F.	Total Building SF	Total Adjusted Length	Type	Quantity	Total Height (ft)	Length/S.F.	Total Building SF	Total Adjusted Length
Floors 1-6 "Podium"												
	LB27x40	3.00	117.50	0.10	79724	7806.31	W14x159	1.00	12.50	0.010	79724	830.46
	W27x114	2.00	78.33	0.07	79724	5204.21	W14x99	1.00	12.50	0.010	79724	830.46
	W16x89	1.00	31.25	0.03	79724	2076.15	W14x159	1.00	12.50	0.010	79724	830.46
1200	W 24x55	1.00	30.00	0.03	79724	1993.10	W14x257	1.00	12.50	0.010	79724	830.46
Floors 7-13 "Tower"												
	LB27x35	3	93.99	0.10	20783	2131.36	W14x120	1.00	12.50	0.014	20783	283.46
	W24x68	1	31.33	0.03	20783	710.45	W14x211	1.00	12.50	0.014	20783	283.46
	W24x131	1	29.5	0.03	20783	668.96	W14x193	1.00	12.50	0.014	20783	283.46
916.5	W27x84	1	29.5	0.03	20783	668.96	W14x193	1.00	12.50	0.014	20783	283.56

TABLE 20: MISCELLANEOUS ITEM TAKEOFF

Base Plates					Anchor Bolts		Edge Forms		
Type	Plate S.F.	Quantity	Thickness	Total S.F.	Type	Quantity	Perimeter (ft)	Height (ft)	Total S.F.
22x22	3.36	50	1"	168.06	L-Type 1" Diameter by 12" long	200	1319	0.5	659.5

APPENDIX C

GENERAL CONDITIONS ESTIMATE

GOUVERNEUR HEALTHCARE SERVICES GENERAL CONDITIONS ESTIMATE

TABLE 21: GENERAL CONDITIONS RS MEANS 2011 DIVISION BREAKDOWN

CSI Division	Item	Unit	2011 RS Means Costs					Quantity	Total Project Cost	
			Material	Labor	Equipment	Total	Total Incl O&P		Total Cost	Total Incl O&P
Division 1 - General Requirements										
01.31 Project Management and Coordination										
Total Project Construction Management Staffing Cost									$ 4,001,660.00	$ 6,127,250.00
See Appendix C, page 36 for Breakdown of Project Staffing Costs										
01.31.13.30.0020	Building risk insurance, minimum	Job	$ -	$ -	$ -	$ -	0.24%	$ 157,445,805.00	$ -	$ 377,869.93
01.32 Construction Progress Documentation										
01.32.13.50.0650	Rule of thumb, CPM scheduling, Large job ($50 mil +)	Job	$ -	$ -	$ -	$ -	0.03%	$ 157,445,805.00	$ -	$ 47,233.74
01.32.33.50.0200	Photographs, 8"x10", 4 shots, 2 prints each, in color	Set	$ 415.00	$ -	$ -	$ 415.00	$ 460.00	50.00	$ 20,750.00	$ 23,000.00
01.41 Regulatory Requirements										
01.41.26.50.0100	Permits, minimum	Job	$ -	$ -	$ -	$ -	2%	$ 157,445,805.00	$ -	$ 3,148,916.10
01.51 Temporary Utilities										
01.51.13.80.0100	Heat, incl. fuel and operation, per week, 12 hrs. per day	CSF	$ 27.50	$ 3.55	$ -	$ 31.05	$ 36.00	4456.10	$ 138,361.91	$ 160,419.60
01.51.13.80.0360	Lighting, inlc. service lamps, wiring & outlets, maximum	CSF	$ 5.80	$ 23.50	$ -	$ 29.30	$ 41.50	4456.10	$ 130,563.73	$ 184,928.15
01.51.13.80.0430	Power for temp lighting only, per month, average/month 11.8 KWH	CSF	$ -	$ -	$ -	$ 0.92	$ 1.01	4456.10	$ 4,099.61	$ 4,500.66
01.51.13.80.0600	Power for job duration inlc elevator, etc., minimum	CSF	$ -	$ -	$ -	$ 47.00	$ 51.50	4456.10	$ 209,436.70	$ 229,489.15
01.51.13.80.1000	Temporary toilets, rent portable toilet chemical per month	Each	$ 0.11	$ 18.65	$ 56.00	$ 168.00	$ 180.10	150.00	$ 25,200.00	$ 27,015.00
01.52 Construction Facilities										
01.52.13.20.0250	Trailers, furnished, no hookups, 20'x8', rent per month	Month	$ 146.00	$ -	$ -	$ 146.00	$ 160.00	45.00	$ 6,570.00	$ 7,200.00
01.52.13.40.0100	Office equipment rental average	Month	$ 200.00	$ -	$ -	$ 200.00	$ 220.00	50.00	$ 10,000.00	$ 11,000.00
01.52.13.40.0120	Office supplies, average	Month	$ 86.00	$ -	$ -	$ 86.00	$ 94.50	50.00	$ 4,300.00	$ 4,725.00
01.52.13.40.0140	Telephone bill; average bill/month incl. long distance	Month	$ 81.00	$ -	$ -	$ 81.00	$ 89.00	50.00	$ 4,050.00	$ 4,450.00
01.52.13.40.0160	Lights & HVAC	Month	$ 152.00	$ -	$ -	$ 152.00	$ 167.00	50.00	$ 7,600.00	$ 8,350.00
01.54 Construction Aids										
01.54.09.60.6220	Safety supplies and first aid kits	Month	$ 24.50	$ -	$ -	$ 24.50	$ 27.00	50.00	$ 1,225.00	$ 1,350.00
01.56 Temporary Barricades and Enclosures										
01.56.23.10.0150	Barricades, 5' high, 3 rail at 2"x8" movable	LF	$ 4.10	$ 23.00	$ -	$ 27.10	$ 39.50	600.00	$ 23,700.00	$ 23,700.00
01.56.26.50.0100	Temporary fencing, chain link, 11 ga, 6' high	LF	$ 5.30	$ 1.83	$ -	$ 7.13	$ 8.65	815.00	$ 5,810.95	$ 7,049.75
01.56.29.50.2400	Sidewalk protection, 2"x12" plank, 2 uses, 5/8" thick	SF	$ 0.35	$ 0.53	$ -	$ 0.88	$ 1.19	5400.00	$ 4,752.00	$ 6,426.00
01.56.32.50.0020	Watchman, service, monthly basis, uniformed person, minimum	HR	$ -	$ -	$ -	$ 25.00	$ 27.50	2500.00	$ 62,500.00	$ 68,750.00
01.58 Project Identification										
01.58.13.50.0020	Signs, high intensity reflectorized, no posts, buy	SF	$ 26.50	$ -	$ -	$ 26.50	$ 29.50	1000.00	$ 26,500.00	$ 29,500.00
01.71 Examination and Preparation										
01.71.23.13.1200	Construction layout for building, trenching or pipe laying, 3 persons crew	Day	$ -	$ 1,125.00	$ 69.50	$ 1,194.50	$ 1,800.00	21.00	$ 25,084.50	$ 37,800.00
01.71 Cleaning and Waste Management										
01.74.13.20.0020	Cleaning, after job completion, allow, minimum	Job	$ -	$ -	$ -	$ -	0.30%	$ 157,445,805.00	$ -	$ 472,337.42

01.74.13.20.0050	Cleanup of floor area, continuous, per day, during construction	MSF	$ 1.70	$ 25.50	$ 1.79	$ 28.99	$ 43.50	39908.00	$ 1,156,932.92	$ 1,735,998.00
1.91 Commissioning										
01.91.13.50.0200	Enhanced building commissioning, minimum	%	$ -	$ -	$ -	$ -	0.5%	$ 157,445,805.00	$ -	$ 787,229.03
Division 1 - General Requirements Total Cost									$ 5,869,097.32	$ 13,536,487.52
Division 2 - Existing Conditions										
02.21 Surveying										
02.21.13.09.0020	Topographical surveying, conventional, minimum	Acre	$ 18.20	$ 340.00	$ 21.00	$ 379.20	$ 565.00	7	$ 2,654.40	$ 3,955.00
02.21.13.13.0320	Boundary and survey markers, lot location and lines, large quantities, average	Acre	$ 51.50	$ 900.00	$ 55.50	$ 1,007.00	$ 1,500.00	7	$ 7,049.00	$ 10,500.00
Division 2 - Existing Conditions Total Cost									$ 9,703.40	$ 14,455.00
Total General Conditions Cost									$ 5,878,800.72	$ 13,550,942.52
Total General Conditions Cost with New York, NY Location Factor of 133%									$ 7,818,804.95	$ 18,022,753.56

TABLE 22: GENERAL CONDITIONS CONSTRUCTION MANAGEMENT STAFFING PLAN

Name	CSI Division	Position	Unit	2011 RS Means Costs			Duration	Total Project Cost	
				Labor	Total	Total Incl O&P		Total Cost	Total Cost Incl O&P
Division 1 - General Requirements									
Project Executive									
James Palace	01.31.13.20.0220	Project manager, maximum - Project Executive	Week	$ 2,375.00	$ 2,375.00	$ 3,650.00	283.00	$ 672,125.00	$ 1,032,950.00
Project Management									
Fred Castellbueno	01.31.13.20.0200	Project manager, average - Project Manager	Week	$ 2,075.00	$ 2,075.00	$ 3,175.00	87.00	$ 180,525.00	$ 276,225.00
Michael Creighton	01.31.13.20.0200	Project manager, average - Project Manager	Week	$ 2,075.00	$ 2,075.00	$ 3,175.00	144.00	$ 298,800.00	$ 457,200.00
Michele Koslab	01.31.13.20.0180	Project manager, minimum - Assistant Project Management	Week	$ 1,800.00	$ 1,800.00	$ 2,750.00	270.00	$ 486,000.00	$ 742,500.00
Dina Lay	01.31.13.20.0180	Project manager, minimum - Assistant Project Management	Week	$ 1,800.00	$ 1,800.00	$ 2,750.00	78.00	$ 140,400.00	$ 214,500.00
Julia Drake	01.31.13.20.0180	Project manager, minimum - Assistant Project Management	Week	$ 1,800.00	$ 1,800.00	$ 2,750.00	187.00	$ 336,600.00	$ 514,250.00
George Rodriguez	01.31.13.20.0180	Project manager, minimum - Assistant Project Management	Week	$ 1,800.00	$ 1,800.00	$ 2,750.00	178.00	$ 320,400.00	$ 489,500.00
Uros Skoko	01.31.13.20.0290	Timeskeeper, average - Estimator	Week	$ 1,130.00	$ 1,130.00	$ 1,725.00	127.00	$ 143,510.00	$ 219,075.00
Joey Engracia	01.31.13.20.0290	Timeskeeper, average - Estimator	Week	$ 1,130.00	$ 1,130.00	$ 1,725.00	135.00	$ 152,550.00	$ 232,875.00
Jenishia Laureano	01.31.13.20.0020	Clerk, average - Executive Administrator	Week	$ 410.00	$ 410.00	$ 630.00	200.00	$ 82,000.00	$ 126,000.00
Superintendents									
Joseph Murray	01.31.13.20.0280	Superintendent, maximum - Lead Superintendent	Week	$ 2,200.00	$ 2,200.00	$ 3,375.00	194.00	$ 426,800.00	$ 654,750.00
Craig Burst	01.31.13.20.0260	Superintendent, average - Superintendent	Week	$ 1,925.00	$ 1,925.00	$ 2,950.00	190.00	$ 365,750.00	$ 560,500.00
Thomas Voustas	01.31.13.20.0260	Superintendent, average - Superintendent	Week	$ 1,925.00	$ 1,925.00	$ 2,950.00	174.00	$ 334,950.00	$ 513,300.00
Marcus Caamano	01.31.13.20.0240	Superintendent, minimum - Assistant Superintendent	Week	$ 1,750.00	$ 1,750.00	$ 2,675.00	35.00	$ 61,250.00	$ 93,625.00
Total Project Staffing Cost								$ 4,001,660.00	$ 6,127,250.00
Total Project Staffing Cost with New York, NY Location Factor of 133%								$ 5,322,207.80	$ 8,149,242.50

APPENDIX D

LEED EVALUATION SCORECARD

LEED EVALUATION SCORECARD

				LEED 2009 for New Construction and Major Renovations		
				Project Checklist		
				Project Name: Gouverneur Healthcare Services	Date: October 19, 2011	
16	**2**	**8**		**Sustainable Sites**	Possible Points:	**26**
Y	P	N	d/C			
Y			C	Prereq 1	Construction Activity Pollution Prevention	
0	**0**	**1**	d	Credit 1	Site Selection	1
5	**0**	**0**	d	Credit 2	Development Density and Community Connectivity	5
1	**0**	**0**	d	Credit 3	Brownfield Redevelopment	1
6	**0**	**0**	d	Credit 4.1	Alternative Transportation—Public Transportation Access	6
1	**0**	**0**	d	Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	1
0	**0**	**3**	d	Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles	3
2	**0**	**0**	d	Credit 4.4	Alternative Transportation—Parking Capacity	2
0	**0**	**1**	C	Credit 5.1	Site Development—Protect or Restore Habitat	1
0	**0**	**1**	d	Credit 5.2	Site Development—Maximize Open Space	1
0	**1**	**0**	d	Credit 6.1	Stormwater Design—Quantity Control	1
0	**1**	**0**	d	Credit 6.2	Stormwater Design—Quality Control	1
0	**0**	**1**	C	Credit 7.1	Heat Island Effect—Non-roof	1
0	**0**	**1**	d	Credit 7.2	Heat Island Effect—Roof	1
1	**0**	**0**	d	Credit 8	Light Pollution Reduction	1
0	**5**	**5**		**Water Efficiency**	Possible Points:	**10**
Y	P	N				
Y			d	Prereq 1	Water Use Reduction—20% Reduction	
0	**0**	**4**	d	Credit 1	Water Efficient Landscaping	2 to 4
					0 Reduce by 50%	2
					0 No Potable Water Use or Irrigation	4
0	**2**	**0**	d	Credit 2	Innovative Wastewater Technologies	2
0	**3**	**1**	d	Credit 3	Water Use Reduction	2 to 4
					0 Reduce by 30%	2
					3 Reduce by 35%	3
					0 Reduce by 40%	4
4	**3**	**28**		**Energy and Atmosphere**	Possible Points:	**35**
Y	P	N				
Y			C	Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			d	Prereq 2	Minimum Energy Performance	
Y			d	Prereq 3	Fundamental Refrigerant Management	
0	**3**	**16**	d	Credit 1	Optimize Energy Performance	1 to 19
					0 Improve by 12% for New Buildings or 8% for Existing Building Renovations	1
					0 Improve by 14% for New Buildings or 10% for Existing Building Renovations	2
					3 Improve by 16% for New Buildings or 12% for Existing Building Renovations	3
					0 Improve by 18% for New Buildings or 14% for Existing Building Renovations	4
					0 Improve by 20% for New Buildings or 16% for Existing Building Renovations	5

					0	Improve by 22% for New Buildings or 18% for Existing Building Renovations	6
					0	Improve by 24% for New Buildings or 20% for Existing Building Renovations	7
					0	Improve by 26% for New Buildings or 22% for Existing Building Renovations	8
					0	Improve by 28% for New Buildings or 24% for Existing Building Renovations	9
					0	Improve by 30% for New Buildings or 26% for Existing Building Renovations	10
					0	Improve by 32% for New Buildings or 28% for Existing Building Renovations	11
					0	Improve by 34% for New Buildings or 30% for Existing Building Renovations	12
					0	Improve by 36% for New Buildings or 32% for Existing Building Renovations	13
					0	Improve by 38% for New Buildings or 34% for Existing Building Renovations	14
					0	Improve by 40% for New Buildings or 36% for Existing Building Renovations	15
					0	Improve by 42% for New Buildings or 38% for Existing Building Renovations	16
					0	Improve by 44% for New Buildings or 40% for Existing Building Renovations	17
					0	Improve by 46% for New Buildings or 42% for Existing Building Renovations	18
					0	Improve by 48%+ for New Buildings or 44%+ for Existing Building Renovations	19
0	0	7	d	Credit 2	On-Site Renewable Energy		1 to 7
					0	1% Renewable Energy	1
					0	3% Renewable Energy	2
					0	5% Renewable Energy	3
					0	7% Renewable Energy	4
					0	9% Renewable Energy	5
					0	11% Renewable Energy	6
					0	13% Renewable Energy	7
2	0	0	C	Credit 3	Enhanced Commissioning		2
2	0	0	d	Credit 4	Enhanced Refrigerant Management		2
0	0	3	C	Credit 5	Measurement and Verification		3
0	0	2	C	Credit 6	Green Power		2
0	**8**	**6**		**Materials and Resources**		**Possible Points:**	**14**
Y	P	N					
Y			d	Prereq 1	Storage and Collection of Recyclables		
0	0	3	C	Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof		1 to 3
					0	Reuse 55%	1
					0	Reuse 75%	2
					0	Reuse 95%	3
0	0	1	C	Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements		1
0	2	0	C	Credit 2	Construction Waste Management		1 to 2
					0	50% Recycled or Salvaged	1
					2	75% Recycled or Salvaged	2
0	1	1	C	Credit 3	Materials Reuse		1 to 2
					1	Reuse 5%	1
					0	Reuse 10%	2
0	1	1	C	Credit 4	Recycled Content		1 to 2
					1	10% of Content	1

					0	20% of Content	2
0	2	0	C	Credit 5	Regional Materials		1 to 2
					0	10% of Materials	1
					2	20% of Materials	2
0	1	0	C	Credit 6	Rapidly Renewable Materials		1
0	1	0	C	Credit 7	Certified Wood		1
12	**3**	**0**		**Indoor Environmental Quality**		Possible Points:	**15**
Y	P	N					
Y			d	Prereq 1	Minimum Indoor Air Quality Performance		
Y			d	Prereq 2	Environmental Tobacco Smoke (ETS) Control		
0	1	0	d	Credit 1	Outdoor Air Delivery Monitoring		1
0	1	0	d	Credit 2	Increased Ventilation		1
1	0	0	C	Credit 3.1	Construction IAQ Management Plan—During Construction		1
1	0	0	C	Credit 3.2	Construction IAQ Management Plan—Before Occupancy		1
1	0	0	C	Credit 4.1	Low-Emitting Materials—Adhesives and Sealants		1
1	0	0	C	Credit 4.2	Low-Emitting Materials—Paints and Coatings		1
1	0	0	C	Credit 4.3	Low-Emitting Materials—Flooring Systems		1
1	0	0	C	Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products		1
0	1	0	d	Credit 5	Indoor Chemical and Pollutant Source Control		1
1	0	0	d	Credit 6.1	Controllability of Systems—Lighting		1
1	0	0	d	Credit 6.2	Controllability of Systems—Thermal Comfort		1
1	0	0	d	Credit 7.1	Thermal Comfort—Design		1
1	0	0	d	Credit 7.2	Thermal Comfort—Verification		1
1	0	0	d	Credit 8.1	Daylight and Views—Daylight		1
1	0	0	d	Credit 8.2	Daylight and Views—Views		1
0	**1**	**5**		**Innovation and Design Process**		Possible Points:	**6**
Y	P	N					
0	0	1	d/C	Credit 1.1	Innovation in Design: Specific Title		1
0	0	1	d/C	Credit 1.2	Innovation in Design: Specific Title		1
0	0	1	d/C	Credit 1.3	Innovation in Design: Specific Title		1
0	0	1	d/C	Credit 1.4	Innovation in Design: Specific Title		1
0	0	1	d/C	Credit 1.5	Innovation in Design: Specific Title		1
0	1	0	d/C	Credit 2	LEED Accredited Professional		1
0	**2**	**2**		**Regional Priority Credits**		Possible Points:	**4**
Y	P	N					
0	1	0	d/C	Credit 1.1	Regional Priority: SSc6.1		1
0	1	0	d/C	Credit 1.2	Regional Priority: WEc2		1
0	0	1	d/C	Credit 1.3	Regional Priority: Specific Credit		1
0	0	1	d/C	Credit 1.4	Regional Priority: Specific Credit		1
32	24	54		**Total**		Possible Points:	**110**

Certified 40 to 49 points Silver 50 to 59 points Gold 60 to 79 points Platinum 80 to 110

APPENDIX E

BUILDING INFORMATION MODELING USE LIST AND PROCESS MAP

GOUVERNEUR HEALTHCARE SERVICES BIM USE ANALYSIS

TABLE 23: BIM USE ANALYSIS

BIM Use	Value to Project	Responsible Party	Value to Responsible Party	Capability Rating			Additional Resources / Competencies Required to Implement	Notes	Proceed with Use
	High / Med / Low		High / Med / Low	Scale 1-3 (1 = Low)					YES / NO / MAYBE
				Resources	Competency	Experience			
Site Utilization Planning	High	Contractor	High	2	3	3	-	Important for phasing of construction with active facility	**Yes**
		CM	High	3	3	3	-		
		Owner	High	2	2	2	-		
3D Coordination	High	CM	High	3	3	3	Coordination software required	Important for high volume of MEP equipment	**Yes**
		Contractor/Subs	High	2	2	2	Need training on latest software		
		Architect	Medium	2	3	2	Coordination software required		
		MEP Engineer	High	3	3	3	-		
		Structural Engineer	Medium	3	3	3	-		
Design Reviews	Medium	Architect	Low	2	2	2	-	Reviews are based on 3D design model	**No**
		-	-	-	-	-	-		
		-	-	-	-	-	-		
4D Modeling	High	Contractor	High	2	2	1	Need training on latest software	Important for phasing of construction with active facility	**Yes**
		CM	High	3	3	3	-		
		-	-	-	-	-	-		

Record Modeling	Medium	CM	Medium	2	2	2	Requires training and software	For permitting and future renovations and/or expansions	**Maybe**
		Owner	High	1	2	1	Requires training and software		
		Architect	Medium	3	3	3	-		
Engineering Analysis	High	Architect	Medium	2	2	2	-	For state-of-the-art healthcare equipment	**Yes**
		MEP Engineer	High	3	3	3	-		
		Structural Engineer	Medium	2	3	3	-		
Cost Estimation	Medium	CM	High	2	3	3	-	Efficiently monitor costs of project	**Yes**
		Contractor	Medium	2	2	2	-		
		-	-	-	-	-	-		
Existing Conditions Modeling	Medium	Owner	Medium	1	1	1	Provide existing drawings	Assist with 3D coordination of MEP in existing structure and site planning	**No**
		Architect	Low	2	2	2	-		
		CM	High				Training in 3D scanning tools		
Design Authoring	High	Architect	High	3	3	3	-	-	**Yes**
		MEP Engineer	High	3	3	3	-	-	
		Structural Engineer	Medium	3	3	3	-	-	

GOUVERNEUR HEALTHCARE SERVICES BIM LEVEL ONE PROCESS MAP