

2010

**GLOBAL VASCULAR INSTITUTE
BUFFALO, NY**

Madison Smith
CONSTRUCTION MANAGEMENT
Dr. Riley



TECHNICAL ASSIGNMENT TWO



TECHNICAL ASSIGNMENT TWO

MADISON SMITH – CM

EXECUTIVE SUMMARY

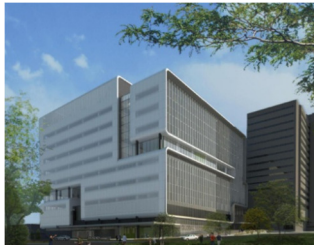
Technical Assignment Two is designed to document the existing conditions of the Global Vascular Institute site in further detail. The Global Vascular Institute (GVI) project consists of three major construction structures. These include the main core building, a link between the new GVI building and the existing Buffalo General Hospital, and an addition to the adjacent central plant. The core building of this project is to be 10 stories and 450,000 SF of new construction. The link is 4 stories and 14735 SF and the central plant is 2 stories and 8627 SF. The difficulty of this project is that it is located at the center of Buffalo, NY, a highly dense urban area. This new construction is occurring in the medical section of the city, right across the street from a major hospital (Buffalo General Hospital) so all surrounding facilities must remain open and functional throughout the construction process.

Major criteria that were assessed in this assignment include a detailed project schedule, site layout plans, a detailed structural systems estimate, a general conditions estimate, and critical industry issues discussed at the 2010 PACE Roundtable. The detailed project schedule is a breakdown of the schedule of the project that depicts the sequencing of trades as work progresses through the building. The site layout plans include an excavation plan and a superstructure plan which depict the key features of the site during that phase of construction. The detailed structural system estimate was performed for the structural steel and concrete used in all three components of the projects. The general conditions estimate consists of the projected costs for supervision/personnel, construction facilities/equipment, temporary utilities and other miscellaneous project costs. Lastly, a summary of the critical issues discussed at the 2010 PACE Roundtable is included in the report.



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Detailed Project Schedule

*See APPENDIX A for the Detailed Project Schedule.

The Global Vascular Institute project consists of three major components which include the main GVI core building, the link between the GVI core and the existing Buffalo General Hospital, and additions to the adjacent central power plant. All three of these components are sequenced to be constructed at the same time. The schedule in APPENDIX A is broken down so that each of the three components individual schedules is separated from the others. The central plant schedule is then broken down further into three sections for each of the addition areas of the building. All major milestones of the project are shown in Table 1.

The first phase of the project was to demolish the existing 4 story community mental health clinic that was on the core building site. This phase was completed prior to the approval from the City of Buffalo and the State of New York to perform the new construction of GVI. With the site cleared and receiving the notice to proceed on July 7, 2009, the next major phase was excavation work. This was scheduled to begin in September 2009 and to be completed by November 2009. Additional excavation for the central plant utility tunnel was set to begin in February 2010 and take only 4 days to complete. Foundation work was planned to begin during the excavation phase and continue till February 2010. This consists of piles, piles caps, grade beams. The foundation work for the central plant though would not begin until January 2010.

The first major milestone after the notice to proceed was to mobilize the crane for the erection of steel on January 11, 2010 with the process of the superstructure construction being scheduled to top off in July 2010. During this phase, enclosure work began in July with the milestone of a dry building to be accomplished in November 2010. Rough-In and finish work began in June and will continue until May 2011. After testing/balance and the punch lists being performed from September 2011 to October 2011, substantial completion and turnover of the sub-basement to level three of the building is set for October 2011. This is required by the owner so that operations between GVI and Buffalo General Hospital can begin to be coordinated. Turnover and Occupancy of the building is set for December 2011. See Appendix A for the Project Summary Schedule.

MILESTONE	DATE
Notice to Proceed	7/7/2009
Top Out	7/13/2010
Building Dry	11/30/2010
Substantial Completion (1 st)	10/17/2011
Substantial Completion (Final)	12/12/2011

Table 1: Lists of Milestones and Dates



SITE LAYOUT PLANNING

*See APPENDIX B for the Site Layout Plans



Figure 1: Google Map Image of GVI Site and Surrounding Area

The site for the Global Vascular Institute is located at the center of multiple medical facilities in downtown Buffalo, NY, as shown above in Figure 2. GVI is located directly north of the existing Buffalo General Hospital. Part of the construction of the GVI project is to create a 4 story link between the existing and new structure. The project is also two blocks north of the Roswell Park Cancer Institute which is a cancer research facility. Directly east of the GVI site is the Central Power Plant which supplies power to Buffalo General Hospital and will also supply power to GVI. Adjacent to the Central Plant and across the street (Ellicott St.) to the west of the GVI site are parking areas that are available to use during the construction of the project.



EXCAVATION SITE LAYOUT

Due to all of the nearby existing structures, the size of the available space on the site is limited. All of the trailers are located along the edges of the site so that they are easily accessible to the trades. The excavation will proceed from the South-West corner of the site to the North-East corner. This will allow less congestion and increased flow through the site since the trucks will be entering the site from the west and exiting to the East. The soil stockpile is located near the exit as well so that the equipment performing the excavation can follow the flow pattern of the site and will not block the entrance. Additional material storage is located in the South-East corner so that it is easily accessible to all three of the structures of the project and remains out of the way of the equipment. See Appendix B for *Excavation Phase Site Plan*.

SUPERSTRUCTURE SITE LAYOUT

Due to the limited open space of the site, the most beneficial location for the tower crane is to have it located along the East side of the building. This will allow the crane to reach the entire core building area and the link building area. The trailers will remain in the same location as those of the excavation phase, but just of different trades. The soil stockpile space will be replaced by steel shakeout due to that space being the largest open space available on the site. Additional material storage will remain in the same location as in the excavation phase since it is centrally located between the three components. See Appendix B for *Superstructure Phase Site Plan*.

CONTRACTOR LAYOUT CRITIQUE

The layouts shown in Appendix B are both similar to the actual layouts used by the contractors with the exception of a few small changes. One space that was required to remain the same during the duration of the construction of the project was the open space for the owner. This space was required so that the owner could utilize it for their needs. One difference between the actual excavation plan and the excavation plan shown in Appendix B is that the actual plan had additional soil stockpile space located in some of the space occupied by dumpsters. This was changed in the Appendix B plan because it would be easier just to have all of the soil in one place. Overall, the site layouts plans used by the contractors meet the needs of the site and the trades to its fullest potential. Everything is laid out so that it is easily accessible, there is steady flow across the site so that congestion is limited, and with the materials located between all three components, there is no disturbing the other structures during construction.



DETAILED STRUCTURAL SYSTEMS ESTIMATE

*See APPENDIX C for the complete Structural System Estimate.

The superstructure of the Global Vascular Institute is primarily structural steel columns and beams with composite decking. The foundations are mostly composed of cast-in-place concrete. A typical bay in each of the three structures (core building, link, and central plant) was broken down and takeoffs were performed. Figure 2a, 2b, and 2c below show the location of the typical bay used for each takeoff and estimate.

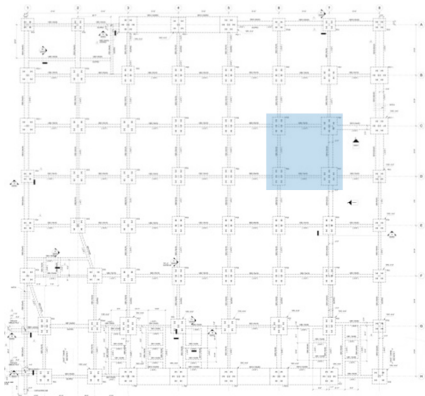


Figure 2a: Core Building Typical Bay

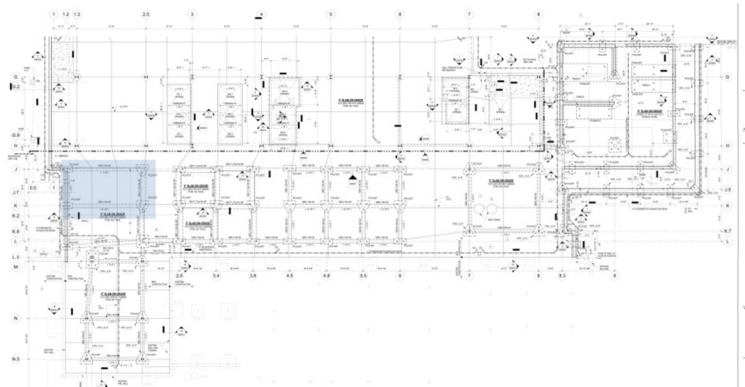


Figure 2b: Link Typical Bay

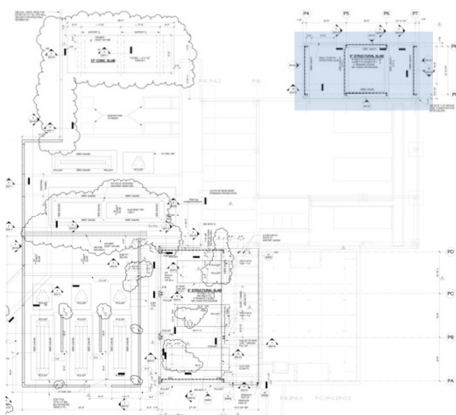


Figure 2c: Central Plant Typical Bay

Table 2 shows a cost breakdown of the superstructure based on CSI Masterformat groupings. A more detailed breakdown is available in Appendix C. The takeoffs in Appendix C are broken down by each building and then by material. All of the costs for materials, labor, equipment, and total O&P were obtained from RS Means 2010 Building Construction Cost Data. The construction of the superstructure occurred during the 2010 year so a time modification was not necessary. The SF of each typical bay and the overall SF of the building were used to extrapolate the total cost of the building.



COST BREAKDOWN SUMMARY	
COMPONENT	COST
031100 – Concrete Formwork	\$248651.47
032100 – Concrete Reinforcing Steel	\$140766.69
033000 – Cast-In-Place Concrete	\$3434796.64
051223 – Steel Columns	\$7607438.25
051223 – Steel Beams	\$31327652.85
053133 – Steel Decking	\$1159912.96
TOTAL:	\$44,845,175.95

Table 2: Cost Breakdown Summary

Some of the assumptions used with RS Means to determine the pricing for each item include:

- All formwork was one use.
- The cost of formwork and rebar for the pile caps is included in the cost of the concrete.
- Not all steel column and beam sizing were listed in RS Means so the next closest size member costs were used.



GENERAL CONDITIONS ESTIMATE

***See APPENDIX D for the complete General Conditions Estimate.**

Table 3 shows a summary of the line items of the general conditions estimate for the Global Vascular Institute. This summary is an approximation and does not reflect the actual costs of the general conditions agreed upon by Turner Construction Company.

LINE ITEM	UNIT	UNIT RATE	QUANTITY	TOTAL COST
Construction Manager Personnel	MONTH	\$78,474.07	27	\$2,118,800.00
Temporary Facilities	MONTH	\$6,887.04	27	\$185,950.00
Temporary Utilities	MONTH	\$7,020.74	27	\$189,560.00
Miscellaneous Costs	MONTH	\$7,620.37	27	\$205,750.00
			TOTAL:	\$2,700,060.00

Table 3: General Conditions Estimate Summary

The general conditions estimate was broken down into four main categories which include, Construction Manager Personnel, Temporary Facilities, Temporary Utilities, and Miscellaneous Costs. **Construction Manager Personnel** includes the major players involved on the project from Turner Construction Company (construction manager). The **Temporary Facilities** consist of items such as the jobsite trailer, site fence, mobile phones, dumpsters, and signage. These are all items that are necessary for the construction management team to be able to work on and complete the project on time at the project site. The **Temporary Utilities** are the items that are necessary for functionality of the site. This includes items such as IT/Network service, power installation and consumption, and potable water. Lastly, the **Miscellaneous Costs** account for all other items that do not fall into any of the other categories. This would be things such as progress photographs, document reproduction, and travel expenses.

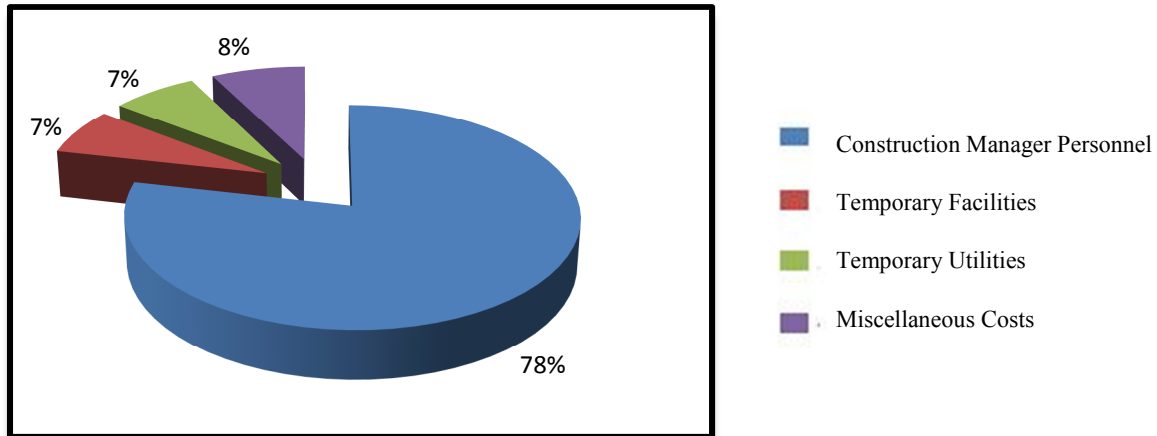


Figure 3: General Conditions Breakdown by Percent

Figure 3 depicts the breakdown of general conditions costs based on percentage. This shows that the vast majority, 78%, of the general conditions costs are from the construction manager personnel staffing costs.

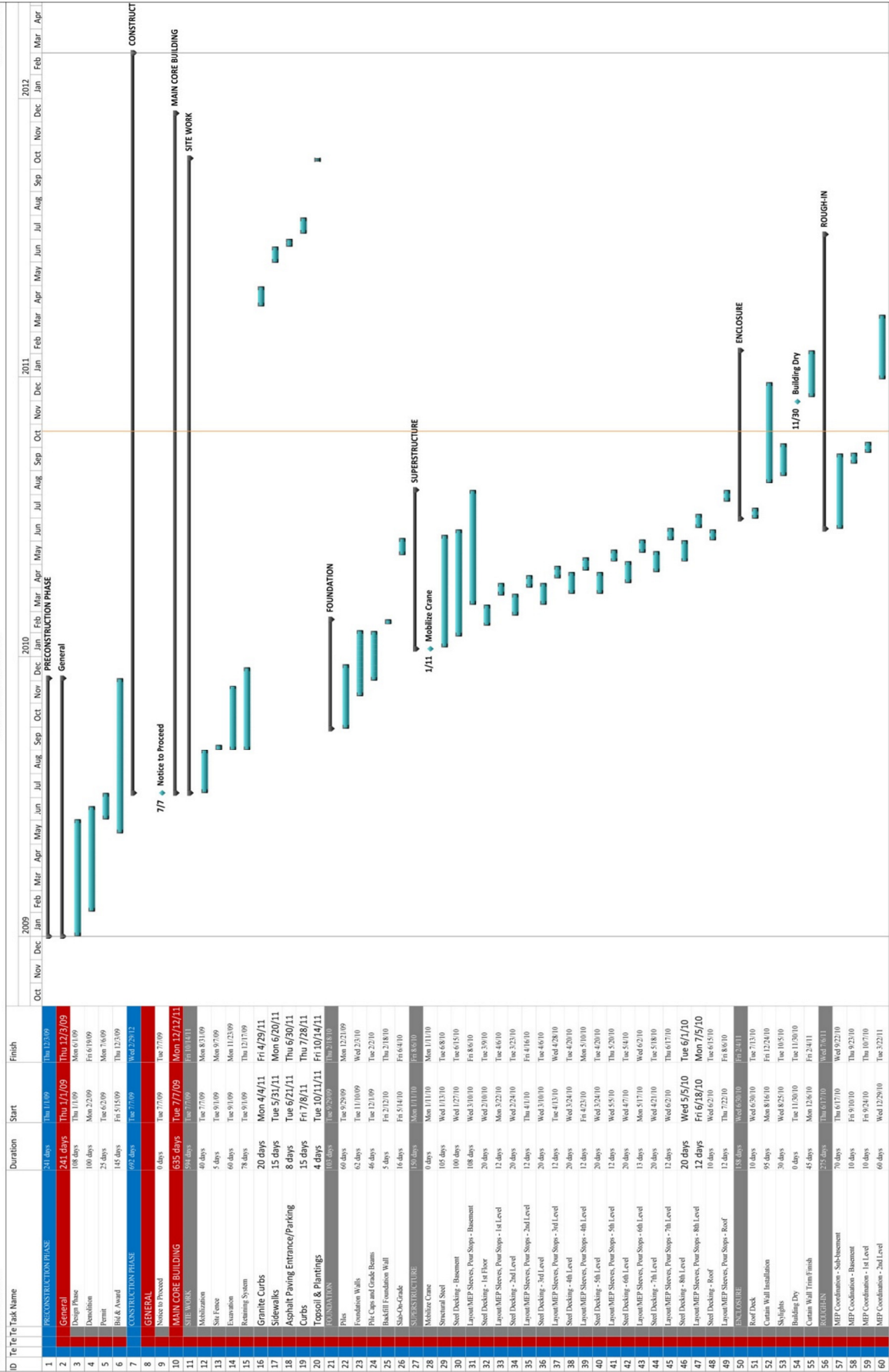


CRITICAL INDUSTRY ISSUES

The Critical Industry Issues will be updated after the 2010 PACE Roundtable on October 28, 2010.



APPENDIX A: PROJECT SUMMARY SCHEDULE



Task Split Milestone

Project: Detailed Schedule Date: Sat 10/23/10

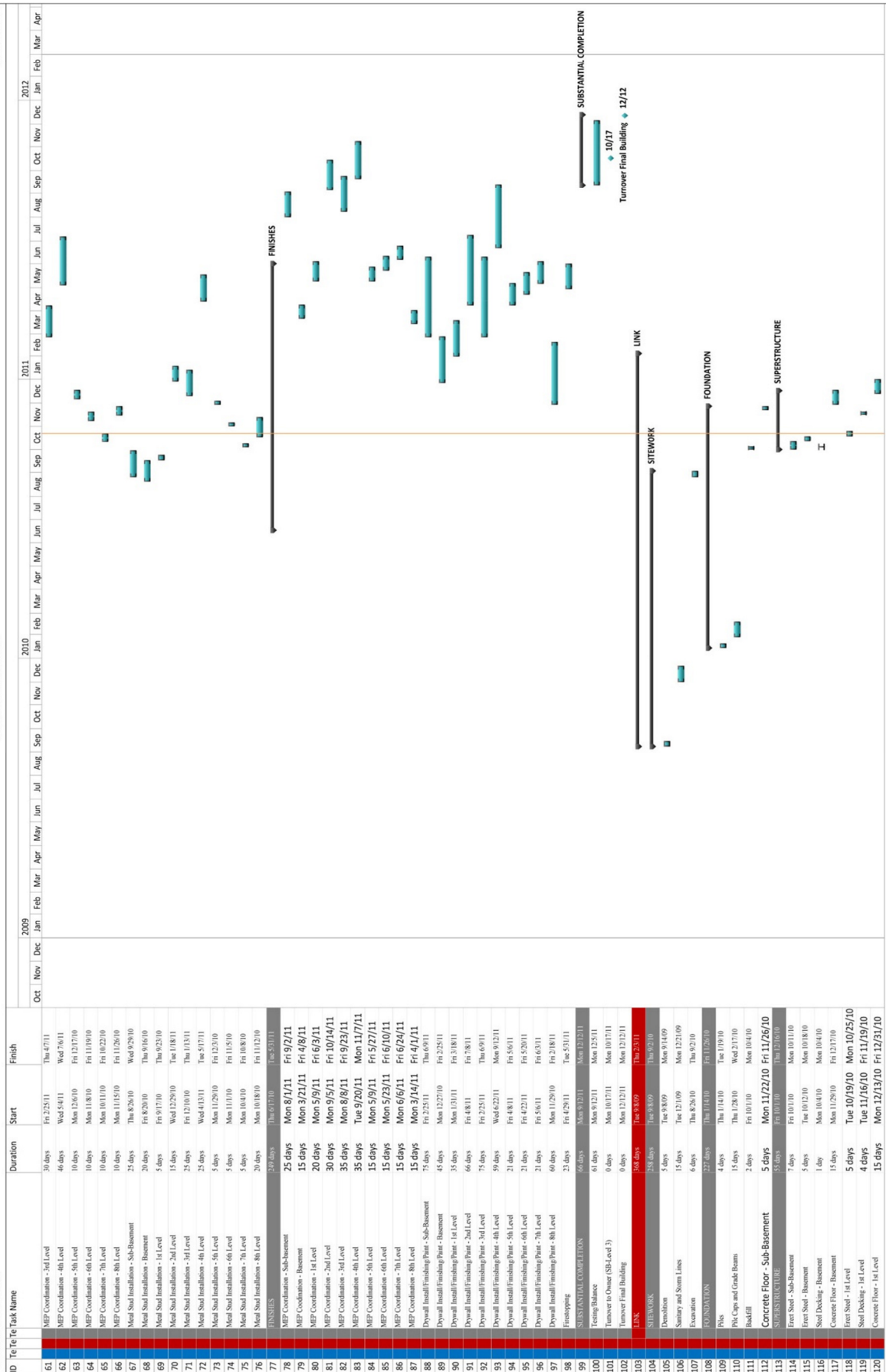
Summary Project Summary External Tasks

External Milestone Inactive Task Inactive Milestone

Inactive Summary Manual Task Duration-only

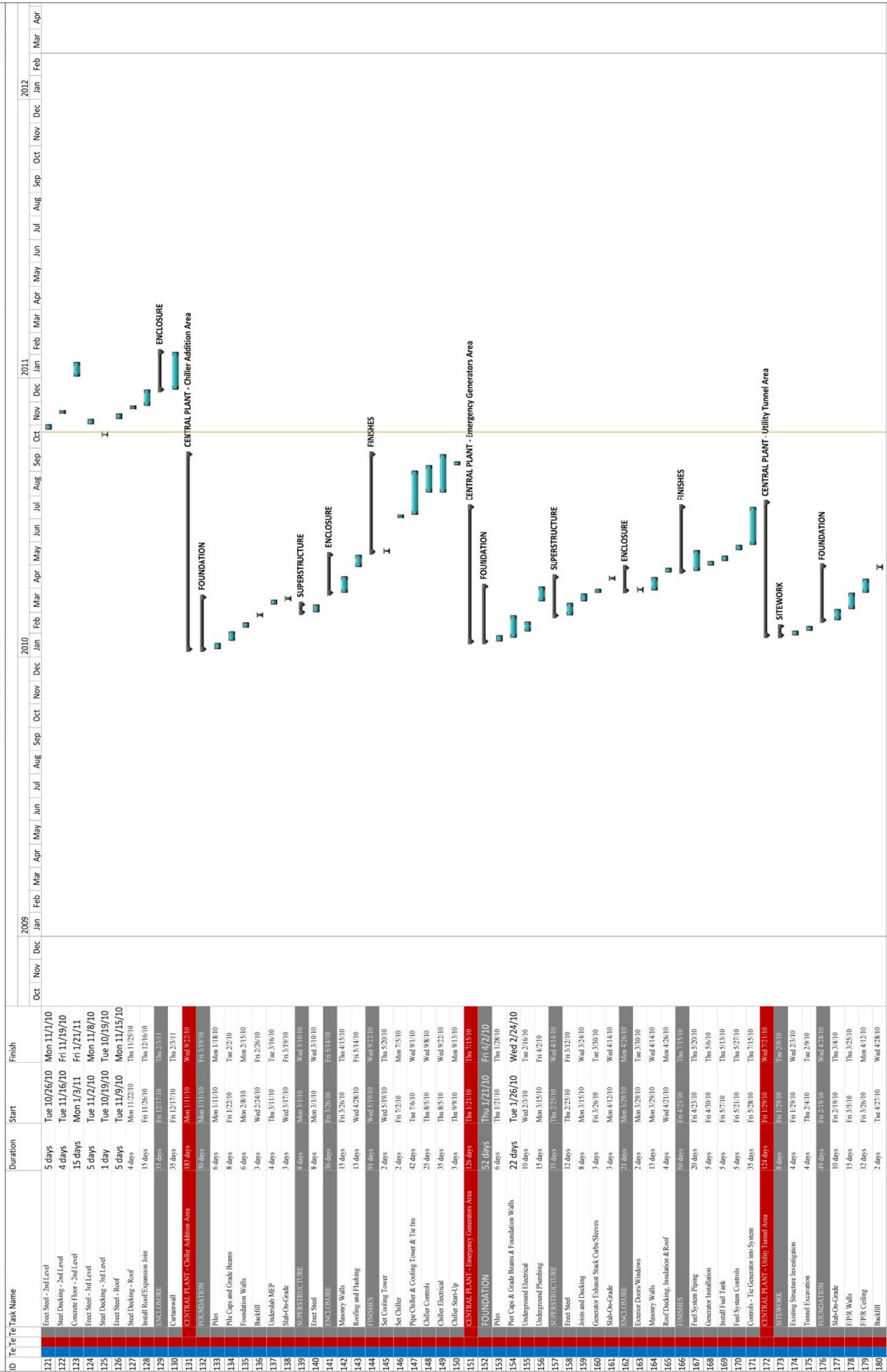
Manual Summary Rollup Manual Summary Start-only

Finish-only Deadline Progress



Project: Detailed Schedule
Date: Sat 10/23/10

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



Project: Detailed Schedule
Date: Sat 10/23/10

Task: Task
Split: Split
Milestone: Milestone

Summary: Summary
Project Summary: Project Summary
External Tasks: External Tasks

External Milestone: External Milestone
Inactive Task: Inactive Task
Inactive Summary: Inactive Summary

Manual Summary Rollup: Manual Summary Rollup
Manual Summary: Manual Summary
Manual Task: Manual Task
Start-only: Start-only
Duration-only: Duration-only

Finish-only: Finish-only
Deadline: Deadline
Progress: Progress

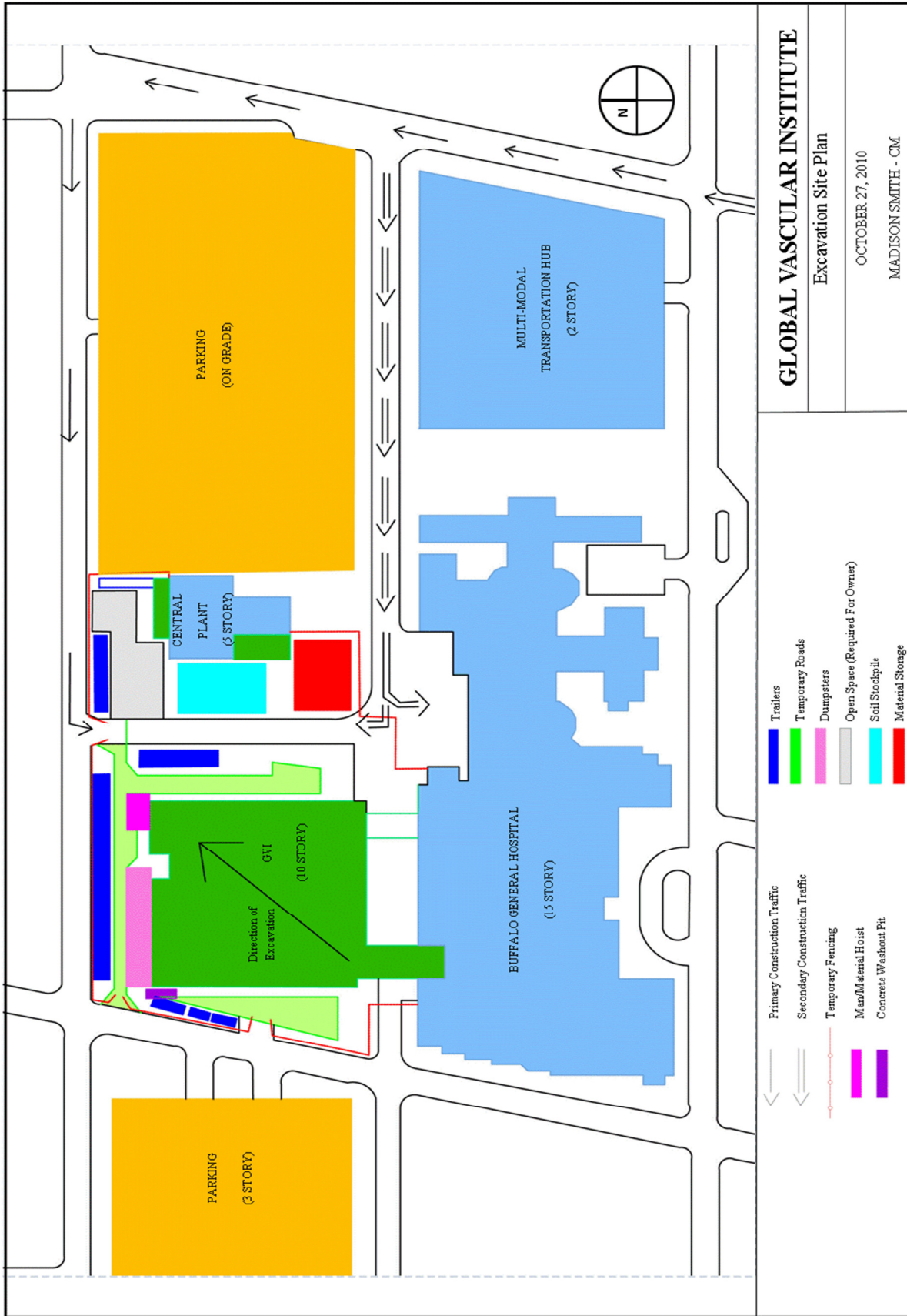
TECHNICAL ASSIGNMENT #1		GLOBAL VASCULAR INSTITUTE												MADISON SMITH											
ID	Task Name	Start	Finish	2009			2010			2011			2012												
				Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr			
181	FINISHES	Thu 4/29/10	Wed 7/7/10																						
182	Release MEP	Thu 4/29/10	Wed 7/7/10																						
183	Shutdown Reconnect MEP Feeds	Thu 7/8/10	Wed 7/21/10																						

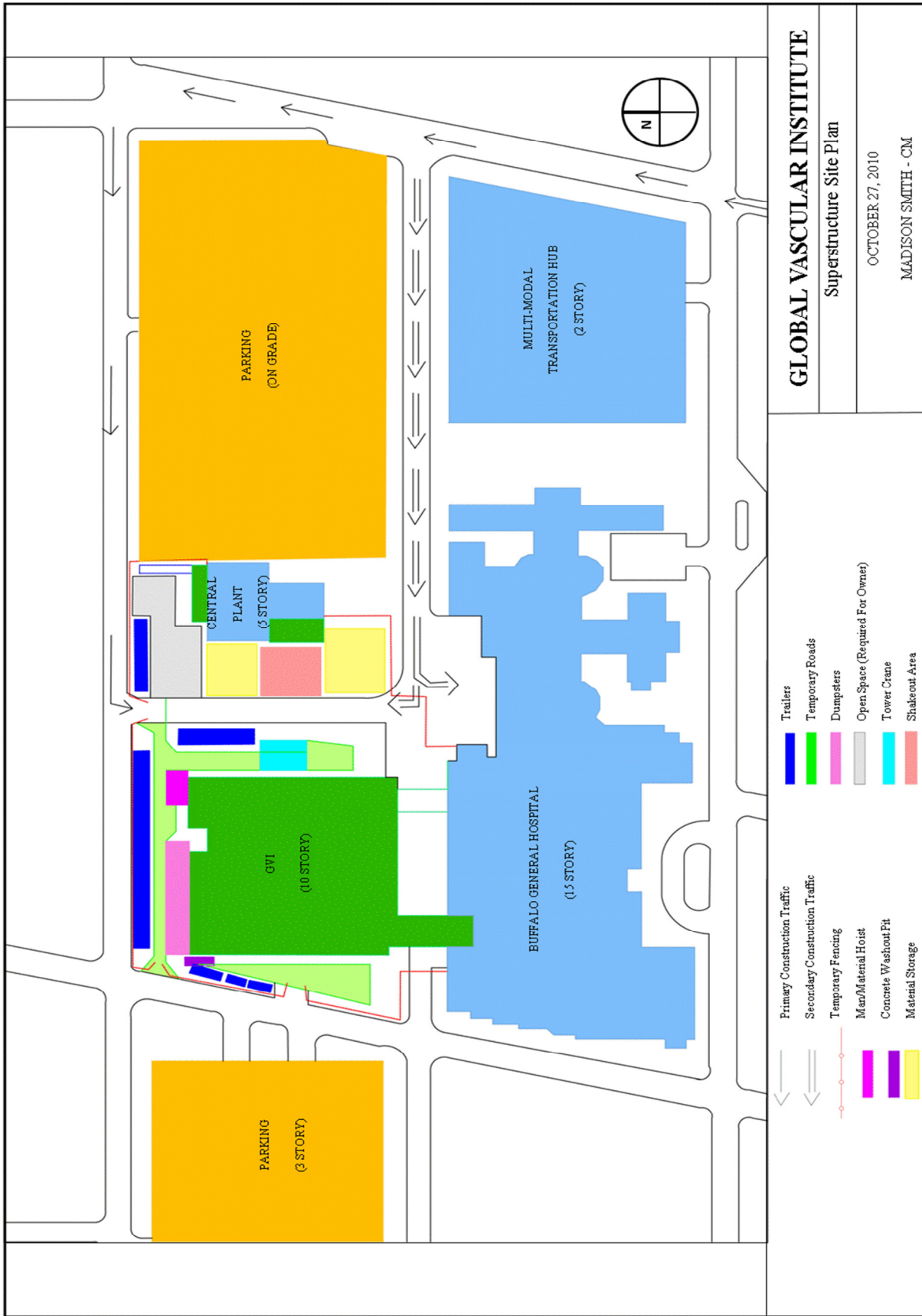
Task	Summary	External Milestone	Inactive Summary	Manual Summary Rollup	Finish-only
Split	Project Summary	Inactive Task	Manual Task	Manual Summary	Deadline
Milestone	External Tasks	Inactive Milestone	Duration-only	Start-only	Progress

Project: Detailed Schedule
Date: Sat 10/23/10



APPENDIX B: SITE LAYOUT PLANS



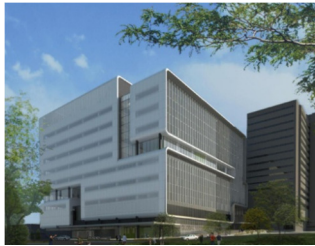


GLOBAL VASCULAR INSTITUTE

Superstructure Site Plan

OCTOBER 27, 2010

MADISON SMITH - CM



APPENDIX C: DETAILED STRUCTURAL SYSTEM ESTIMATE



GLOBAL VASULAR INSTITUTE BUFFALO, NY

October 27, 2010

TAKE-OFFS CORE BUILDING

PILE CAPS									
ID	QUANTITY	WIDTH (FT)	LENGTH (FT)	DEPTH (FT)	REBAR TYPE	REBAR QUANTITY	REBAR WEIGHT	CONCRETE (CY)	REBAR TOTAL WEIGHT (LBS)
PC6	3	7.75	11.00	4.33	11.00	22.00	5.313	41.01	3287.42
PC7	1	10.167	11.00	5.00	11.00	21.00	5.313	20.71	1180.83
TOTAL:									4468.25

GRADE BEAMS									
ID	WIDTH (FT)	LENGTH (FT)	DEPTH (FT)	REBAR TYPE	REBAR QUANTITY	REBAR WEIGHT	CONCRETE (CY)	REBAR TOTAL WEIGHT (LBS)	
GB2	1.5	94.5	1.5	6.00	6	1.50	7.88	850.5	
GB10	2.83	31.5	2.5	6.00	14	1.50	8.25	661.5	
TOTAL:									1512.00

SLAB-ON-GRADE (24 LBS/CY BLENDED STEEL/POLYPROPYLENE FIBERS)					
WIDTH (FT)	LENGTH (FT)	THICKNESS	AREA (SF)	CONCRETE (CY)	REBAR TOTAL WEIGHT (LBS)
31.5	31.5	0.4167	992.25	15.31	367.53
TOTAL:					367.53

COLUMNS										
ID	SPLICE 1	LENGTH (FT)	SPLICE 2	LENGTH (FT)	SPLICE 3	LENGTH (FT)	SPLICE 4	LENGTH (FT)	SPLICE 5	LENGTH (FT)
D-6	W14x257	41.38	W14x193	36.00	W14x145	36.00	W14x109	36.00	W14x68	34.50
D-7	W14x283	41.38	W14x211	36.00	W14x159	36.00	W14x120	36.00	W14x82	34.50
E-6	W14x257	41.38	W14x193	36.00	W14x145	36.00	W14x109	36.00	W14x68	34.50
E-7	W14x283	41.38	W14x211	36.00	W14x159	36.00	W14x120	36.00	W14x82	34.50

BEAMS				
ID	QUANTITY	UNIT	TYPE	LENGTH (FT)
BASEMENT	4	LF	W21x44	31.50
BASEMENT	1	LF	W27x84	31.50
BASEMENT	1	LF	W27x76	31.50
LEVEL ONE	5	LF	W16x31	31.50
LEVEL ONE	2	LF	W21x44	31.50
LEVEL TWO	4	LF	W18x40	31.50
LEVEL TWO	2	LF	W24x76	31.50
LEVEL THREE	4	LF	W33x118	31.50
LEVEL THREE	2	LF	W36x135	31.50
LEVEL FOUR	4	LF	W21x44	31.50
LEVEL FOUR	2	LF	W24x84	31.50
LEVEL FIVE	4	LF	W27x84	31.50
LEVEL FIVE	2	LF	W30x108	31.50
LEVEL SIX	4	LF	W27x84	31.50
LEVEL SIX	2	LF	W30x108	31.50
LEVEL SEVEN	4	LF	W21x44	31.50
LEVEL SEVEN	1	LF	W24x84	31.50
LEVEL SEVEN	1	LF	W36x135	31.50
LEVEL EIGHT	1	LF	W24x62	31.50
LEVEL EIGHT	2	LF	W21x44	31.50
LEVEL EIGHT	2	LF	W27x84	31.50
LEVEL EIGHT	1	LF	W33x118	31.50
LEVEL EIGHT	2	LF	W8x10	10.50
LEVEL NINE	1	LF	W27x84	31.50
ROOF	6	LF	W16x31	31.50
ROOF	2	LF	W24x76	31.50

METAL DECK (3000PSI)					
ID	DECK TYPE	UNIT	AREA (SF)	THICKNESS (FT)	CONCRETE (CY)
FD01	3"	SF	7938	0.625	183.75
FD02	3"	SF	992.25	0.625	22.97
RD01	1 1/2"	SF	992.25	0	0.00
TOTAL:					206.72

LINK

PILE CAPS									
ID	QUANTITY	WIDTH (FT)	LENGTH (FT)	DEPTH (FT)	REBAR TYPE	REBAR QUANTITY	REBAR WEIGHT	CONCRETE (CY)	REBAR TOTAL WEIGHT (LBS)
PC3-6IT	2	5.50	5.167	2.83	6.00	5.00	1.50	5.96	82.5
PC2-6IT	2	5.50	2.50	3.33	7.00	8.00	2.04	3.39	179.872
TOTAL:									262.372

GRADE BEAMS									
ID	WIDTH (FT)	LENGTH (FT)	DEPTH (FT)	REBAR TYPE	REBAR QUANTITY	REBAR WEIGHT	CONCRETE (CY)	REBAR TOTAL WEIGHT (LBS)	
GB2	1.50	35.08	1.50	6.00	6.00	1.50	2.92	315.72	
GB16	2.50	16.5	3.00	8.00	8.00	2.67	4.58	352.44	
GB17	1.00	51.58	1.50	8.00	4.00	2.67	2.87	550.87	
TOTAL:									10.37

SLAB-ON-GRADE (24 LBS/CY BLENDED STEEL/POLYPROPYLENE FIBERS)					
WIDTH (FT)	LENGTH (FT)	THICKNESS	AREA (SF)	CONCRETE (CY)	REBAR TOTAL WEIGHT (LBS)
31.5	35.08	0.67	1105.02	27.42	658.10
TOTAL:					658.10

COLUMNS		
ID	SPLICE 1	LENGTH (FT)
J-1.2	HSS 16x45.16	45
J-1.2	HSS 16x45.16	63
J-2.4	HSS 16x45.16	63



GLOBAL VASCULAR INSTITUTE BUFFALO, NY

October 27, 2010

J72.4	HSS 16x45.16	63
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BEAMS					
ID	QUANTITY	UNIT	TYPE	LENGTH (FT)	
BASEMENT	2	LF	W21x155	35.08	
BASEMENT	1	LF	W24x62	35.08	
BASEMENT	3	LF	W14x22	10.50	
LEVEL ONE	1	LF	W10x12	21.00	
LEVEL ONE	1	LF	W14x22	21.00	
LEVEL ONE	2	LF	W16x36	10.50	
LEVEL ONE	1	LF	W16x26	31.50	
LEVEL TWO	1	LF	W10x12	21.00	
LEVEL TWO	1	LF	W16x31	31.50	
LEVEL TWO	1	LF	W14x22	21.00	
LEVEL TWO	1	LF	W16x36	10.50	
LEVEL THREE	3	LF	W10x12	5.00	
LEVEL THREE	1	LF	W36x150	26.25	
LEVEL THREE	2	LF	W27x84	26.25	
LEVEL THREE	1	LF	W27x94	26.25	
LEVEL THREE	3	LF	W16x26	10.50	
LEVEL FOUR	1	LF	W27x84	31.50	
LEVEL FOUR	1	LF	W30x99	31.50	
LEVEL FOUR	3	LF	W21x48	21.00	
LEVEL FOUR	1	LF	W21x44	21.00	
LEVEL FOUR	1	LF	W30x90	21.00	
LEVEL FOUR	1	LF	W27x84	21.00	
LEVEL FOUR	2	LF	W14x22	10.50	
LEVEL FOUR	2	LF	W10x12	5.00	
METAL DECK (3000PSI)					
ID	DECK TYPE	UNIT	AREA (SF)	THICKNESS (FT)	CONCRETE (CY)
FD01	3"	SF	2976.75	0.625	68.91
RD01	1 1/2"	SF	992.25	0	0.00
TOTAL:			3969		68.91

CENTRAL PLANT									
PILE CAPS									
ID	QUANTITY	WIDTH (FT)	LENGTH (FT)	DEPTH (FT)	REBAR TYPE	REBAR QUANTITY	REBAR WEIGHT	CONCRETE (CY)	REBAR TOTAL WEIGHT (LBS)
PC3-20T	8	5.5	5.167	2.5	7	3	2.04	21.05	89.76
TOTAL:								21.05	89.76

GRADE BEAMS									
ID	WIDTH (FT)	LENGTH (FT)	DEPTH (FT)	REBAR TYPE	REBAR QUANTITY	REBAR WEIGHT	CONCRETE (CY)	REBAR TOTAL WEIGHT (LBS)	
GB53	2.00	49.59	3.00	8	6	2.67	11.02	794.35	
GB58	1.00	48.59	1.00	7	2	2.04	1.84	202.31	
GB60	2.00	86.67	6.00	8	8	2.67	38.52	1851.27	
TOTAL:								51.38	2847.93

SLAB-ON-GRADE (#7@12"O.C. & #4@12"O.C.)					
WIDTH (FT)	LENGTH (FT)	THICKNESS (FT)	AREA (SF)	CONCRETE (CY)	REBAR TOTAL WEIGHT (LBS)
21.67	49.58	0.67	1074.40	26.66	367.88
TOTAL:				26.66	367.88

COLUMNS		
ID	SPLICE 1	LENGTH (FT)
P4-PL	W12x58	47
P4-PM	W12x58	45
P5-PL	W12x58	47
P5-PM	W12x58	45
P6-PL	W12x58	47
P6-PM	W12x58	45
P7-PL	W12x58	47
P7-PM	W12x58	45

BEAMS					
ID	QUANTITY	UNIT	TYPE	LENGTH (FT)	
ROOF	2	LF	W18x35	21.67	
ROOF	4	LF	W18x35	18.67	
ROOF	2	LF	W18x35	13.25	
ROOF	7	LF	W16x26	21.67	
METAL DECK (3000PSI)					
ID	DECK TYPE	UNIT	AREA (SF)	THICKNESS (FT)	CONCRETE (CY)
RD01	1 1/2"	SF	992.25	0	0.00
TOTAL:			992.25		0.00



GLOBAL VASULAR INSTITUTE BUFFALO, NY

October 27, 2010

CORE PRICING									
DESCRIPTION	QUANTITY	UNIT	BARE MATERIAL	BARE LABOR	BARE EQUIPMENT	BARE TOTAL	TOTAL O&P	TOTAL COST	
FORMWORK									
GRADE BEAMS	441.00	SFCA	\$ 2.30	\$ 3.67	\$ -	\$ 2,632.77	\$ 8.20	\$ 3,616.20	
SLAB-ON-GRADE	0.926	SFCA	\$ 0.27	\$ 2.10	\$ -	\$ 2.19	\$ 3.54	\$ 3.28	
ELEVATED SLABS	0.926	SFCA	\$ 0.12	\$ 2.52	\$ -	\$ 2.44	\$ 4.02	\$ 3.72	
							TOTAL:	\$	3,623.20
							ADJUSTED TOTAL:	\$	164,312.15
REBAR									
GRADE BEAMS	0.76	TONS	\$ 800.00	\$ 935.00	\$ -	\$ 1,311.66	\$ 2,375.00	\$ 1,795.50	
SLAB-ON-GRADE	0.18	TONS	\$ 760.00	\$ 650.00	\$ -	\$ 259.11	\$ 1,875.00	\$ 344.56	
							TOTAL:	\$	2,140.06
							ADJUSTED TOTAL:	\$	97,051.67
CONCRETE									
PILE CAPS	61.73	CY	\$ 140.00	\$ 59.50	\$ 0.40	\$ 12,338.88	\$ 246.00	\$ 15,184.42	
GRADE BEAMS	16.13	CY	\$ 290.00	\$ 450.00	\$ 41.50	\$ 12,604.94	\$ 1,075.00	\$ 17,338.85	
SLAB-ON-GRADE	15.31	CY	\$ 113.00	\$ 39.50	\$ 0.33	\$ 2,340.40	\$ 186.00	\$ 2,848.35	
ELEVATED SLABS	5581.41	SF	\$ 1.96	\$ 0.79	\$ 0.29	\$ 16,967.48	\$ 3.67	\$ 20,483.76	
							TOTAL:	\$	55,855.39
							ADJUSTED TOTAL:	\$	2,533,041.77
COLUMNS									
W14x257	82.75	LF	\$ 149.00	\$ 3.68	\$ 2.25	\$ 12,820.46	\$ 172.00	\$ 14,233.00	
W14x283	82.75	LF	\$ 149.00	\$ 3.68	\$ 2.25	\$ 12,820.46	\$ 172.00	\$ 14,233.00	
W14x193	72.00	LF	\$ 149.00	\$ 3.68	\$ 2.25	\$ 11,154.96	\$ 172.00	\$ 12,384.00	
W14x211	72.00	LF	\$ 149.00	\$ 3.68	\$ 2.25	\$ 11,154.96	\$ 172.00	\$ 12,384.00	
W14x145	72.00	LF	\$ 149.00	\$ 3.68	\$ 2.25	\$ 11,154.96	\$ 172.00	\$ 12,384.00	
W14x159	72.00	LF	\$ 149.00	\$ 3.68	\$ 2.25	\$ 11,154.96	\$ 172.00	\$ 12,384.00	
W14x109	72.00	LF	\$ 149.00	\$ 3.68	\$ 2.25	\$ 11,154.96	\$ 172.00	\$ 12,384.00	
W14x120	72.00	LF	\$ 149.00	\$ 3.68	\$ 2.25	\$ 11,154.96	\$ 172.00	\$ 12,384.00	
W14x68	69.00	LF	\$ 91.50	\$ 3.49	\$ 2.13	\$ 6,701.28	\$ 109.00	\$ 7,521.00	
W14x82	69.00	LF	\$ 111.00	\$ 3.58	\$ 2.19	\$ 8,057.13	\$ 131.00	\$ 9,039.00	
							TOTAL:	\$	119,330.00
							ADJUSTED TOTAL:	\$	5,411,615.50
BEAMS									
W21x44	2856.00	LF	\$ 54.50	\$ 3.60	\$ 1.63	\$ 170,588.88	\$ 68.00	\$ 194,208.00	
W27x84	2079.00	LF	\$ 104.00	\$ 3.22	\$ 1.45	\$ 225,924.93	\$ 121.00	\$ 251,559.00	
W27x76	31.50	LF	\$ 104.00	\$ 3.22	\$ 1.45	\$ 3,423.11	\$ 121.00	\$ 3,811.50	
W16x31	1039.50	LF	\$ 38.50	\$ 2.95	\$ 1.80	\$ 44,958.38	\$ 49.00	\$ 50,935.50	
W18x40	126.00	LF	\$ 43.50	\$ 3.99	\$ 1.80	\$ 6,210.54	\$ 56.50	\$ 7,119.00	
W24x76	252.00	LF	\$ 94.00	\$ 3.45	\$ 1.56	\$ 24,950.52	\$ 111.00	\$ 27,972.00	
W33x118	315.00	LF	\$ 146.00	\$ 3.26	\$ 1.47	\$ 47,479.95	\$ 168.00	\$ 52,920.00	
W36x135	189.00	LF	\$ 167.00	\$ 3.28	\$ 1.48	\$ 32,462.64	\$ 191.00	\$ 36,099.00	
W24x84	189.00	LF	\$ 104.00	\$ 3.55	\$ 1.60	\$ 20,629.35	\$ 136.00	\$ 25,704.00	
W30x108	63.00	LF	\$ 134.00	\$ 3.19	\$ 1.44	\$ 8,733.69	\$ 154.00	\$ 9,702.00	
W24x62	66.58	LF	\$ 76.50	\$ 3.45	\$ 1.56	\$ 5,426.94	\$ 92.00	\$ 6,125.36	
W8x10	21	LF	\$ 12.40	\$ 4.42	\$ 2.70	\$ 409.92	\$ 24.00	\$ 504.00	
							TOTAL:	\$	666,659.36
							ADJUSTED TOTAL:	\$	30,233,001.98
METAL DECKING									
FD01	7938.63	SF	\$ 2.00	\$ 0.55	\$ 0.04	\$ 20,561.04	\$ 4.03	\$ 31,992.66	
FD02	992.25	SF	\$ 2.00	\$ 0.55	\$ 0.04	\$ 2,569.93	\$ 4.03	\$ 3,998.77	
RD01	992.25	SF	\$ 2.00	\$ 0.55	\$ 0.04	\$ 2,569.93	\$ 4.03	\$ 3,998.77	
							TOTAL:	\$	39,990.19
							TOTAL:	\$	887,598.20
							BUILDING ADJUSTED TOTAL:	\$	40,252,578.34
LINK PRICING									
DESCRIPTION	QUANTITY	UNIT	BARE MATERIAL	BARE LABOR	BARE EQUIPMENT	BARE TOTAL	TOTAL O&P	TOTAL COST	
FORMWORK									



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GRADE BEAMS	337.5	SFCA	\$	2.30	\$	3.67	\$	-	\$	2,014.88	\$	8.20	\$	2,767.50
SLAB-ON-GRADE	1.6	SFCA	\$	0.27	\$	2.10	\$	-	\$	3.79	\$	3.54	\$	5.66
ELEVATED SLABS	1.6	SFCA	\$	0.12	\$	2.52	\$	-	\$	4.22	\$	4.02	\$	6.43
TOTAL:													\$	2,779.60
ADJUSTED TOTAL:													\$	41,277.00

REBAR														
GRADE BEAMS	0.13	TONS	\$	800.00	\$	935.00	\$	-	\$	227.61	\$	2,375.00	\$	311.57
SLAB-ON-GRADE	0.33	TONS	\$	760.00	\$	650.00	\$	-	\$	463.96	\$	1,875.00	\$	616.97
TOTAL:													\$	928.54
ADJUSTED TOTAL:													\$	13,788.76

CONCRETE														
PILE CAPS	9.35	CY	\$	140.00	\$	59.50	\$	0.40	\$	1,868.87	\$	246.00	\$	2,299.86
GRADE BEAMS	10.37	CY	\$	290.00	\$	450.00	\$	41.50	\$	8,105.89	\$	1,075.00	\$	11,150.14
SLAB-ON-GRADE	27.42	CY	\$	113.00	\$	39.50	\$	0.33	\$	4,190.73	\$	186.00	\$	5,100.28
ELEVATED SLABS	1860.47	SF	\$	1.96	\$	0.79	\$	0.29	\$	5,655.83	\$	3.67	\$	6,827.92
TOTAL:													\$	25,378.20
ADJUSTED TOTAL:													\$	376,866.28

COLUMNS														
HSS 16x4x5.16	234.00	LF	\$	405.00	\$	45.00	\$	32.00	\$	112,788.00	\$	557.50	\$	130,455.00
TOTAL:													\$	130,455.00
ADJUSTED TOTAL:													\$	1,937,256.75

BEAMS														
W21x155	70.16	LF	\$	151.00	\$	3.83	\$	1.73	\$	10,984.25	\$	175.00	\$	12,278.00
W24x62	35.08	LF	\$	76.50	\$	3.45	\$	1.56	\$	2,859.37	\$	92.00	\$	3,227.36
W14x62	94.50	LF	\$	91.50	\$	3.49	\$	2.13	\$	9,177.84	\$	109.00	\$	10,300.50
W10x12	67.00	LF	\$	14.85	\$	4.42	\$	2.70	\$	1,471.99	\$	27.00	\$	1,809.00
W16x36	31.50	LF	\$	38.50	\$	2.95	\$	1.80	\$	1,362.38	\$	49.00	\$	1,543.50
W16x26	63.00	LF	\$	32.00	\$	2.65	\$	1.62	\$	2,285.01	\$	42.00	\$	2,646.00
W16x31	31.50	LF	\$	38.50	\$	2.95	\$	1.80	\$	1,362.38	\$	49.00	\$	1,543.50
W36x150	26.25	LF	\$	186.00	\$	3.28	\$	1.48	\$	5,007.45	\$	211.00	\$	5,538.75
W27x84	105.00	LF	\$	104.00	\$	3.22	\$	1.45	\$	11,410.35	\$	121.00	\$	12,705.00
W27x94	26.25	LF	\$	116.00	\$	3.22	\$	1.45	\$	3,167.59	\$	135.00	\$	3,543.75
W30x99	31.50	LF	\$	123.00	\$	3.19	\$	1.44	\$	4,020.35	\$	142.00	\$	4,473.00
W21x48	63	LF	\$	62.00	\$	3.60	\$	1.63	\$	4,235.49	\$	76.00	\$	4,788.00
W21x44	21	LF	\$	54.50	\$	3.60	\$	1.63	\$	1,254.33	\$	68.00	\$	1,428.00
W30x90	21	LF	\$	123.00	\$	3.19	\$	1.44	\$	2,680.23	\$	142.00	\$	2,982.00
TOTAL:													\$	68,806.36
ADJUSTED TOTAL:													\$	1,021,774.45

METAL DECKING														
FD01	2976.75	SF	\$	2.00	\$	0.55	\$	0.04	\$	7,709.78	\$	4.03	\$	11,996.30
RD01	992.25	SF	\$	2.00	\$	0.55	\$	0.04	\$	2,569.93	\$	4.03	\$	3,998.77
TOTAL:													\$	15,995.07
ADJUSTED TOTAL:													\$	237,526.79
TOTAL:													\$	244,342.76
BUILDING ADJUSTED TOTAL:													\$	3,628,490.03

CENTRAL PLANT PRICING

DESCRIPTION	QUANTITY	UNIT	BARE MATERIAL	BARE LABOR	BARE EQUIPMENT	BARE TOTAL	TOTAL O&P	TOTAL COST	
FORMWORK									
GRADE BEAMS	652.16	SFCA	\$	2.30	\$	3.67	\$	5,347.71	
SLAB-ON-GRADE	1.98	SFCA	\$	0.27	\$	2.10	\$	7.01	
ELEVATED SLABS	1.98	SFCA	\$	0.12	\$	2.52	\$	7.96	
TOTAL:								\$	5,362.68
ADJUSTED TOTAL:								\$	43,062.33
REBAR									
GRADE BEAMS	1.42	TONS	\$	800.00	\$	935.00	\$	3,381.92	
SLAB-ON-GRADE	0.18	TONS	\$	760.00	\$	650.00	\$	344.89	
TOTAL:								\$	3,726.81
ADJUSTED TOTAL:								\$	29,926.26
CONCRETE									



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PILE CAPS	21.05	CY	\$	140.00	\$	59.50	\$	0.40	\$	4,208.04	\$	246.00	\$	5,178.48
GRADE BEAMS	51.38	CY	\$	290.00	\$	450.00	\$	41.50	\$	40,149.85	\$	1,075.00	\$	55,228.52
SLAB-ON-GRADE	26.66	CY	\$	113.00	\$	39.50	\$	0.33	\$	4,074.60	\$	186.00	\$	4,958.95
TOTAL:													\$	65,365.95
ADJUSTED TOTAL:													\$	524,888.59
COLUMNS														
W12x58	368.00	LF	\$	72.00	\$	3.54	\$	2.16	\$	28,593.60	\$	87.50	\$	32,200.00
TOTAL:													\$	32,200.00
ADJUSTED TOTAL:													\$	258,566.00
BEAMS														
W18x35	144.52	LF	\$	43.50	\$	3.99	\$	1.80	\$	7,123.39	\$	56.50	\$	8,165.38
W16x26	21.67	LF	\$	32.00	\$	2.65	\$	1.62	\$	785.97	\$	42.00	\$	910.14
TOTAL:													\$	9,075.52
ADJUSTED TOTAL:													\$	72,876.43
METAL DECKING														
RD01	1075.00	SF	\$	2.00	\$	0.55	\$	0.04	\$	2,784.25	\$	4.03	\$	4,332.25
TOTAL:													\$	4,332.25
ADJUSTED TOTAL:													\$	34,787.97
TOTAL:													\$	120,063.21
BUILDING ADJUSTED TOTAL:													\$	964,107.58
TOTAL ESTIMATE:													\$	44,845,175.95



APPENDIX D: GENERAL CONDITIONS ESTIMATE



GLOBAL VASULAR INSTITUTE BUFFALO, NY

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GENERAL CONDITIONS ESTIMATE

ITEM	UNIT	UNIT RATE	QUANTITY	TOTAL COST
CONSTRUCTION MANAGER PERSONNEL				
Senior Project Manager	WK	\$ 3,000.00	120	\$ 360,000.00
Project Manager	WK	\$ 2,700.00	120	\$ 324,000.00
Project Engineer	WK	\$ 1,900.00	108	\$ 205,200.00
Assistant Engineer	WK	\$ 1,200.00	108	\$ 129,600.00
Safety Manager	WK	\$ 150.00	108	\$ 16,200.00
Senior Superintendent	WK	\$ 4,000.00	110	\$ 440,000.00
Assistant Superintendent	WK	\$ 1,900.00	100	\$ 190,000.00
Assistant Superintendent	WK	\$ 1,900.00	52	\$ 98,800.00
Assistant Superintendent	WK	\$ 1,900.00	52	\$ 98,800.00
Assistant Superintendent	WK	\$ 1,900.00	52	\$ 98,800.00
MEP Superintendent	WK	\$ 2,200.00	52	\$ 114,400.00
Estimating Expenses	LS	\$ 43,000.00	1	\$ 43,000.00
TOTAL:				\$ 2,118,800.00
TEMPORARY FACILITIES				
Field Office Trailer Set-up	LS	\$ 2,200.00	1	\$ 2,200.00
Field Office Trailer Rental	MTH	\$ 500.00	27	\$ 13,500.00
Field Office Trailer Removal	LS	\$ 2,400.00	1	\$ 2,400.00
Construction Site Fence	MTH	\$ 625.00	27	\$ 16,875.00
Survey/Layout Equipment	MTH	\$ 225.00	27	\$ 6,075.00
Gang Box	MTH	\$ 55.00	27	\$ 1,485.00
Tools/Equipment	MTH	\$ 675.00	27	\$ 18,225.00
Clean-up Equipment	WK	\$ 30.00	96	\$ 2,880.00
Fire Extinguishers	MTH	\$ 80.00	27	\$ 2,160.00
Field Copier/Fax/Printer	MTH	\$ 400.00	27	\$ 10,800.00
Computer/LAN Equipment	MTH	\$ 2,500.00	27	\$ 67,500.00
Mobile Phones	MTH	\$ 350.00	27	\$ 9,450.00
Personal Protective Equipment	MTH	\$ 100.00	27	\$ 2,700.00
Signage	LS	\$ 2,700.00	1	\$ 2,700.00
Dumpsters	MTH	\$ 1,000.00	27	\$ 27,000.00
TOTAL:				\$ 185,950.00
TEMPORARY UTILITIES				
Field IT/Network Set-up	LS	\$ 4,500.00	1	\$ 4,500.00
Field Telephone Hook-up	LS	\$ 1,700.00	1	\$ 1,700.00
Field Telephone Service	MTH	\$ 100.00	27	\$ 2,700.00
Temporary Power Installation	LS	\$ 14,500.00	1	\$ 14,500.00
Temporary Power Consumption	MTH	\$ 5,000.00	27	\$ 135,000.00
Temporary Water/Sanitary Supply	LS	\$ 2,000.00	1	\$ 2,000.00
Temporary Toilets	MTH	\$ 1,000.00	27	\$ 27,000.00
Potable Water	MTH	\$ 80.00	27	\$ 2,160.00
TOTAL:				\$ 189,560.00
MISCELLANEOUS COSTS				
Progress Photographs	MTH	\$ 400.00	27	\$ 10,800.00
Document Reproduction	LS	\$ 37,000.00	1	\$ 37,000.00
Travel Expenses (Staff Vehicles)	MTH	\$ 4,000.00	27	\$ 108,000.00
Delivery/Shipping Expenses	MTH	\$ 350.00	27	\$ 9,450.00
Clean-up Expenses	WK	\$ 500.00	27	\$ 13,500.00
Misc. Field Expenses	MTH	\$ 1,000.00	27	\$ 27,000.00
TOTAL:				\$ 205,750.00
SUMMARY				
Construction Manager Personnel	MTH	\$ 78,474.07	27	\$ 2,118,800.00
Temporary Facilities	MTH	\$ 6,887.04	27	\$ 185,950.00
Temporary Utilities	MTH	\$ 7,020.74	27	\$ 189,560.00
Miscellaneous Costs	MTH	\$ 7,620.37	27	\$ 205,750.00
TOTAL:				\$ 2,700,060.00