



**Milestone Business Park
Building #4
Germantown, Maryland**

Kristen M Hlopick

Construction Management

Dr. Riley

Technical Assignment II

November 2, 2007



Technical Assignment II

Table of Contents

Executive Summary	Page 2
A. Detailed Project Schedule	Page 3
B. Site Layout Planning	Page 4
C. Assemblies Estimate	Page 5
D. Detailed Structural Systems Estimate	Page 6
E. General Conditions Estimate	Page 7
Appendix A: Detailed Construction Schedule	Page 8
Appendix B: Steel Sequencing Plan	Page 13
Appendix C: Site Layout Plan – Steel Erection Phase	Page 15
Appendix D: Detailed Concrete Estimate	Page 19
Appendix E: Detailed Steel Estimate	Page 21
Appendix F: Detailed General Conditions Estimate	Page 25



Executive Summary

The intention of this document is to provide a detailed analysis of how the project is being executed. A detailed construction schedule shows phasing and sequencing of foundation, structural steel and brick façade. Minimal interior work is included due to Milestone Building #4 being a core and shell building. Along with these items, the schedule shows preconstruction, inspections and closeout activities. A site layout plan for the steel erection phase is included to show optimum utilization of the site. Delivery paths, layout and crane placements are shown. A detailed estimate is included for the building envelope, structural system and general conditions.

Construction for Milestone Building #4 commences on September 14, 2007 and reaches substantial completion on October 21, 2008. A large delay in schedule happened at the very beginning due to delays in obtaining a building permit. A more in depth report of the schedule is discussed in the next section.

An assemblies estimate was performed on the building envelope. This estimate is broken down into its components; façade, roofing, windows and doors. A total cost was calculated with values provided by *RSM* and is estimated at \$7.2 million. A detailed structural estimate included foundation, steel and decks. Using *RSM*, this was estimated to be \$2 million.



Detailed Project Schedule

For the full detailed construction schedule, see Appendix A.

Milestone Building #4 is the second of three phase and third of five buildings in the Business Park. Included in phase II is the construction of Building #4 along with the addition of asphalt parking lot. The detailed construction schedule consists of the construction of Building #4 only.

Foundation

The foundation of Building #4 primarily consists of spread footing, a few grade beams and CMU foundation walls.

Activity	Start Date	Finish Date
Ex., FRP C-10 and B-10	9/17/2007	9/20/2007
Ex., FRP C-9 and C-7.2	9/18/2007	9/20/2007
Ex., FRP B-7.2	9/18/2007	9/20/2007
Ex., FRP C-5.8 and B-5.8	9/20/2007	9/25/2007
Ex., FRP 12-Line F-12 thru A-12	9/21/2007	9/28/2007
Ex., FRP C-3 and B-3	9/24/2007	9/26/2007
Ex., FRP F-Line F-12 thru F-1	9/25/2007	10/2/2007
FRP Grade Beam C-10 and B-10	9/26/2007	9/28/2007
FRP Grade Beam C-9 to C-7.2	9/26/2007	10/1/2007
Ex., FRP D-Line D-9 thru D-4	10/1/2007	10/5/2007
FRP Piers at C-3 and B-3	10/2/2007	10/4/2007
Ex., FRP 1-Line F-1 thru A-1	10/4/2007	10/9/2007
Ex., FRP Balance of Interior	10/9/2007	10/15/2007
FRP SOG, Pour 1	11/9/2007	11/14/2007
FRP SOG, Pour 2	11/14/2007	11/19/2007
Ex., FRP A-Line A-12 thru A-1	10/16/2007	10/22/2007

Structural

Steel will be erected by a mobile crane in four phases; south (floors 1-3), north (floors 1-3), south (floors 4-6, roof), north (floors 4-6, roof). Please see attached drawing in Appendix B for sequencing. Once steel has erected, decking and concrete will follow. Concrete will be placed with a pump and each floor will have two pours. Upon completion of all elevated slabs and roof, roof will be sealed and closed in.



Activity	Start Date	Finish Date
Erect Steel - I	11/21/2007	12/13/2007
Erect Steel - II	12/14/2007	1/7/2008
FRP 2nd Floor Pours 1 & 2	12/19/2007	1/21/2008
FRP 3rd Floor Pours 1 & 2	12/21/2007	1/23/2008
Erect Steel - III	1/8/2008	1/28/2008
Erect Steel - IV	1/29/2008	2/18/2008
FRP 4th Floor Pours 1 & 2	1/29/2008	3/3/2008
FRP 5th Floor Pours 1 & 2	1/31/2008	3/5/2008
FRP 6th Floor Pours 1 & 2	2/4/2008	3/7/2008
FRP Penthouse	3/10/2008	3/13/2008

Building Envelope

The masonry and windows will be installed by elevation; south, west, north, east.

Activity	Start Date	Finish Date
Install Masonry - Elev. A	3/31/2008	4/23/2008
Install Masonry - Elev. B	4/14/2008	5/16/2008
Install Masonry - Elev. D	4/18/2008	6/20/2008
Install Windows - Elev. A	4/25/2008	5/15/2008
Install Masonry - Elev. C	5/5/2008	5/28/2008
Install Windows - Elev. B	5/19/2008	6/13/2008
Install Windows - Elev. C	5/29/2008	6/18/2008
Install Windows - Elev. D	6/23/2008	7/18/2008

Site Layout Plan

For a detailed Site Layout Plan – Steel Erection Phase, see Appendix C.

The contractor trailers are located at the front entrance to the site. This location was chosen for two reasons, existing transformer for easy hook-up and ability to coordinate deliveries. Once the trailers have been placed, all deliveries were moved through the back entrance to lessen any disruption to other traffic and building occupants.

There is plenty of room on site for laydown, storage and parking. The one way traffic pattern (as shown on Site Utilization Plan in Appendix C) allows for easy flow of traffic. Milestone Business Drive will remain open, but will have temporary gated closures for large deliveries. If this becomes a problem for traffic control and noise to the building occupants, the delivery trucks have room to turn around west of the site. The crane will pick steel off the truck and place in staging areas. When concrete is being placed, two gates in the fence will open to allow the



concrete trucks to drive up to the building and exit without turning around. A large gravel parking lot is temporary construction at the northwest corner of the site. Construction personnel can enter the lot through the main road; Milestone Business Drive. Also located in the parking lot are dumpsters, recycling bins and portable toilets, which is an easy location for trash removal.

Assemblies Estimate

An assemblies estimate for the building envelope was computed using *RSMMeans Assemblies2007*. The quantities were taken from the elevations and using the data collected, this provided a total cost of the assembly. The unit price for each assembly includes material and labor.

Item	Quantity	Unit	Unit Price	Total
Façade				
4" Masonry Veneer	35,475	SF	\$21.00	\$744,975.00
4" CMU Veneer	3,111	SF	\$20.05	\$62,375.55
2" Metal Panel	26,513	SF	\$5.36	\$142,109.68
Roof				
Single Ply Membrane	37,186	SF	\$2.71	\$100,774.06
Windows				
Glazing	214,692	SF	\$28.50	\$6,118,722.00
Aluminum Doors				
7'x3'	2	EA	\$2,245.00	\$4,490.00
8'x3'	9	EA	\$2,345.00	\$21,105.00
Total				\$7,194,551.29

Façade

Milestone Building #4 is comprised primarily of a 4" masonry veneer. There is also an accented 4" CMU veneer and a metal panel roof screen that houses the penthouse and rooftop units.

- Assumptions:
- 4" standard brick veneer, running bond
 - 22 gauge wall ties
 - Shelf angle, flashing, mortar net, plywood sheathing
 - 3 ½" fiberglass insulation
 - 20 gauge, 3 5/8" metal studs @ 16" o.c.



Roof

The roof assembly consists of fully adhered white TPO membrane over 4" rigid polyisocyanurate insulation on 1 ½" metal deck.

Assumptions: PIB, 100 mils, fully adhered with contact cement

Windows

Milestone Building #4 incorporates double pained insulated fixed window into the façade.

Assumptions: All windows have aluminum frames.
1" thick, double glazed, ¼" float
Clear and colorless

Doors

Glass doors with aluminum frames are used.

Assumptions: Doors do not have transom
Narrow Stile
Panic Hardware is included

Detailed Structural Estimate

Structural Estimate Summary

Element	Cost
Beams	\$994,699
Columns	\$189,375
Bracing	\$114,265
Decking	\$437,039
Foundation	\$188,553
Concrete Slab	\$110,006
Total	\$2,033,937

Unit prices were provided by *RSMMeans Building Costs2007*. Quantities were taken from plans.

Concrete

For a detailed concrete estimate, see Appendix D.

Assumptions: Material, labor and equipment is included.
Rebar, placing and finishing are not included.



If exact slab thicknesses weren't provided in *RSMMeans*, interpolation was used to calculate unit price.
 Decking for elevated slabs is included in steel estimate.

Steel

For a detailed steel estimate, see Appendix E.

Assumptions: Material, labor and equipment is included.
 Lengths and quantities of each shape were added together to provide a single length.
 HSS shapes, base plates, anchor bolts and sheer studs are not included.
 Concrete from elevated slabs is included in concrete estimate.

General Conditions Estimate

General Conditions	
Supervision - Administrative	\$389,375
Office Management and Clerks	\$5,180
Engineering	\$149,800
Clean Up	\$59,379
Safety Construction	\$19,000
Temporary Facilities and Utilities	\$5,600
Temporary Construction Utilities	\$28,600
Field Office Operation	\$27,700
Security and Fire Protection	\$13,950
Medical	\$500
Hauling, Transportation	\$27,125
Equipment Repairs	\$14,100
Small Tools and Expendables	\$2,500
Taxes, Permits and Licenses	\$9,243
Total	\$752,052

The table above shows a summary of the general conditions estimate. Staffing and personnel constitute over 50% of the general conditions. The price/unit is based on current industry costs provided by Buch Construction, Inc. A change order for \$71,742 is pending for a two month permit delay.



Appendix A

Detailed Construction Schedule

Milestone Building #4

ID	Task Name	Duration	Start	Finish	5, '07		Jun 17, '07			Aug 19, '07		Oct 21, '07		Dec 23, '07		Feb 24, '08		Apr 27, '08		Jun 29, '08		Aug 31, '08		Nov 2, '08		Jan 4, '09		Mar 8, '09		May 10
					S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T
54	Shoot and Inspect Studs - Section 4	3 days	Tue 2/19/08	Thu 2/21/08																										
55	Set Elev. Equipment into Mechancial Room	1 day	Tue 2/19/08	Tue 2/19/08																										
56	Set Roof Drain Bodies	4 days	Tue 2/19/08	Fri 2/22/08																										
57	Install Roof Curbs - Mechanical	3 days	Tue 2/19/08	Thu 2/21/08																										
58	Set Cooling Tower	2 days	Fri 2/22/08	Mon 2/25/08																										
59	Install Tieback Supports - Roof	5 days	Tue 2/26/08	Mon 3/3/08																										
60	Frame, Sheath - Screen Wall Roof	10 days	Tue 2/26/08	Mon 3/10/08																										
61	FRP Penthouse	4 days	Mon 3/10/08	Thu 3/13/08																										
62	Erect Material Hoist	3 days	Mon 3/10/08	Wed 3/12/08																										
63	Mobilization - Drywall	1 day	Mon 3/10/08	Mon 3/10/08																										
64	Install EIFS - Screen Wall Roof and Penthouse	26 days	Tue 3/11/08	Tue 4/15/08																										
65	Layout Walls - Floors 1-6 and Penthouse	49 days	Tue 3/11/08	Fri 5/16/08																										
66	Layout Equipment Pads and Curbs	1 day	Thu 3/13/08	Thu 3/13/08																										
67	Install Temporary Power for Material Hoist	1 day	Thu 3/13/08	Thu 3/13/08																										
68	Layout Equipment Pad and Curbs	1 day	Thu 3/13/08	Thu 3/13/08																										
69	Frame, Sheath, Moisture Barrier, Masonry Walls - South	8 days	Fri 3/14/08	Tue 3/25/08																										
70	Set SCU's - Floors 1-6 and Penthouse	1 day	Mon 3/17/08	Mon 3/17/08																										
71	Spray Fireproofing - Floors 1-6 and Penthouse	48 days	Tue 3/18/08	Thu 5/22/08																										
72	Set Penthouse Pumps	2 days	Thu 3/20/08	Fri 3/21/08																										
73	Ductwork - Floors 1-6	46 days	Thu 3/20/08	Thu 5/22/08																										
74	Install Duct - Floors 1-6 and Penthouse	54 days	Mon 3/24/08	Thu 6/5/08																										
75	Penthouse Piping	10 days	Mon 3/24/08	Fri 4/4/08																										
76	Frame, Sheath, Moisture Barrier, Masonry Walls - West	13 days	Wed 3/26/08	Fri 4/11/08																										
77	Layout - Masonry	2 days	Thu 3/27/08	Fri 3/28/08																										
78	Install Carriers and Plumbing Rough In - Floors 1-6	46 days	Thu 3/27/08	Thu 5/29/08																										
79	Install and Washdown Masonry - South	18 days	Mon 3/31/08	Wed 4/23/08																										
80	Install Sprinkler System	61 days	Tue 4/1/08	Tue 6/24/08																										
81	Install CMU Loading Dock/General Area	5 days	Thu 4/3/08	Wed 4/9/08																										
82	Install Roof - Main Roof	10 days	Fri 4/4/08	Thu 4/17/08																										
83	Install and Washdown Masonry - West	25 days	Mon 4/14/08	Fri 5/16/08																										
84	Frame, Sheath, Moisture Barrier, Masonry Walls - North	8 days	Mon 4/14/08	Wed 4/23/08																										
85	Install and Washdown Masonry - East	25 days	Fri 4/18/08	Thu 5/22/08																										
86	Install Wood Blocking at Exterior Wall -South	3 days	Mon 4/21/08	Wed 4/23/08																										
87	Install Metal Flashing and Caps - South	3 days	Thu 4/24/08	Mon 4/28/08																										
88	Mobilization - Windows	1 day	Thu 4/24/08	Thu 4/24/08																										
89	Caulk Masonry Joints - South	3 days	Thu 4/24/08	Mon 4/28/08																										
90	Frame, Sheath, Moisture Barrier, Masonry Walls - East	13 days	Thu 4/24/08	Mon 5/12/08																										
91	Install and Caulk Windows - South	20 days	Fri 4/25/08	Thu 5/22/08																										
92	Install and Washdown Masonry - North	18 days	Mon 5/5/08	Wed 5/28/08																										
93	Install Brick Loading Dock/General Area	6 days	Tue 5/6/08	Tue 5/13/08																										
94	Install Roof - Penthouse	5 days	Thu 5/8/08	Wed 5/14/08																										
95	Set Fire Pump and Jockey Pump	2 days	Thu 5/8/08	Fri 5/9/08																										
96	Install Wood Blocking at Exterior Wall - West	3 days	Mon 5/12/08	Wed 5/14/08																										
97	Power to Fire Pump and Jockey Pump	3 days	Mon 5/12/08	Wed 5/14/08																										
98	Loading Dock Ramp Concrete	5 days	Wed 5/14/08	Tue 5/20/08																										
99	Washdown Loading Dock/General Area	2 days	Wed 5/14/08	Thu 5/15/08																										
100	Install Metal Flashing and Caps - West	3 days	Thu 5/15/08	Mon 5/19/08																										
101	Frame and Install GWB Elevator Shaft 3 Sides	20 days	Thu 5/15/08	Wed 6/11/08																										
102	Fire Pump Flow Test	1 day	Thu 5/15/08	Thu 5/15/08																										
103	Sprinkler Final Inspection	1 day	Fri 5/16/08	Fri 5/16/08																										
104	Install and Caulk Windows - West	25 days	Mon 5/19/08	Fri 6/20/08																										
105	Caulk Masonry Joints - West	3 days	Mon 5/19/08	Wed 5/21/08																										
106	Vanity and Toilet Partition Support Steel - Floors 1-6	44 days	Tue 5/20/08	Fri 7/18/08																										

Project: Project1
Date: Fri 11/2/07

Task Progress Summary External Tasks Deadline

Split Milestone Project Summary External Milestone

Milestone Building #4

ID	Task Name	Duration	Start	Finish	5, '07	Jun 17, '07	Aug 19, '07	Oct 21, '07	Dec 23, '07	Feb 24, '08	Apr 27, '08	Jun 29, '08	Aug 31, '08	Nov 2, '08	Jan 4, '09	Mar 8, '09	May 10
					S	M	T	W	T	F	S	S	M	T	W	T	F
107	Frame Walls and Ceiling - Floors 1-6 and Penthouse	66 days	Tue 5/20/08	Tue 8/19/08													
108	Plumbing Rough In - Penthouse	5 days	Wed 5/21/08	Tue 5/27/08													
109	Install Ceramic Tile in RR - Floors 1-6	10 days	Thu 5/22/08	Wed 6/4/08													
110	Rough In Electrical - Floors 1-6 and Penthouse	61 days	Thu 5/22/08	Thu 8/14/08													
111	Set Generator	1 day	Fri 5/23/08	Fri 5/23/08													
112	Install Wood Blocking at Exterior Wall - North	3 days	Mon 5/26/08	Wed 5/28/08													
113	Set Switchgear	5 days	Tue 5/27/08	Mon 6/2/08													
114	Electrical Close In Inspection - Penthouse	1 day	Wed 5/28/08	Wed 5/28/08													
115	FRP Stairs Near B-1 ext	3 days	Thu 5/29/08	Mon 6/2/08													
116	Install Metal Flashing and Caps - North	3 days	Thu 5/29/08	Mon 6/2/08													
117	Install and Caulk Windows - North	20 days	Thu 5/29/08	Wed 6/25/08													
118	Caulk Masonry Joints - North	3 days	Thu 5/29/08	Mon 6/2/08													
119	Framing Close-in Inspection - Penthouse	1 day	Thu 5/29/08	Thu 5/29/08													
120	Electrical Close In Inspection - 1st Floor	1 day	Thu 5/29/08	Thu 5/29/08													
121	Plumbing Wall Close-in Inspection - Floors 1-6	3 days	Fri 5/30/08	Tue 6/3/08													
122	Install Mirrors - Floors 1-6	58 days	Mon 6/2/08	Wed 8/20/08													
123	Vanity Tops - Floors 1-6	44 days	Tue 6/3/08	Fri 8/1/08													
124	TPF Inspection	1 day	Tue 6/3/08	Tue 6/3/08													
125	Power to Elevator Equipment	3 days	Wed 6/4/08	Fri 6/6/08													
126	Install Sprinkler Mains - Penthouse	6 days	Fri 6/6/08	Fri 6/13/08													
127	Plumbing Fixtures - Floors 1-6	47 days	Fri 6/6/08	Mon 8/11/08													
128	Mobilization - Elevator	2 days	Tue 6/10/08	Wed 6/11/08													
129	Set Elev. Mechanical Room Equipment for Installation	10 days	Tue 6/10/08	Mon 6/23/08													
130	Set and Pipe In House Pump	3 days	Tue 6/10/08	Thu 6/12/08													
131	Framing Close-in Inspection - 1st Floor	1 day	Thu 6/12/08	Thu 6/12/08													
132	Pipe Out Sprinkler Room	1 day	Fri 6/13/08	Fri 6/13/08													
133	HVAC Systems Operational	0 days	Fri 6/13/08	Fri 6/13/08													
134	Install Wood Blocking at Exterior Wall - East	3 days	Mon 6/16/08	Wed 6/18/08													
135	Install Sprinkler Branch and Heads - Penthouse	6 days	Mon 6/16/08	Mon 6/23/08													
136	Install Decorated Painted Steel Rails	10 days	Thu 6/19/08	Wed 7/2/08													
137	Electrical Close In Inspection - 2nd Floor	1 day	Thu 6/19/08	Thu 6/19/08													
138	Grilles and Diffusers - Floors 1-6	50 days	Thu 6/19/08	Wed 8/27/08													
139	Framing Close-in Inspection - 2nd Floor	1 day	Fri 6/20/08	Fri 6/20/08													
140	Install and Caulk Windows - East	25 days	Mon 6/23/08	Fri 7/25/08													
141	Caulk Masonry Joints - East	3 days	Mon 6/23/08	Wed 6/25/08													
142	Install Aluminum Louvers	5 days	Mon 6/23/08	Fri 6/27/08													
143	Rough In Electrical - Lobby	19 days	Mon 6/23/08	Thu 7/17/08													
144	Install Rails and Shaft - Elevator	20 days	Tue 6/24/08	Mon 7/21/08													
145	Blinds - Floors 1-6	59 days	Fri 6/27/08	Wed 9/17/08													
146	Install Electrical Trim -Floors 1-6 and Penthouse	59 days	Fri 6/27/08	Wed 9/17/08													
147	Install Doors Frames and Hardware - Floors 1-6	37 days	Fri 6/27/08	Mon 8/18/08													
148	Caulk Louvers	2 days	Mon 6/30/08	Tue 7/1/08													
149	Set Fixtures/Trim/Connect - Floors 1-6	45 days	Tue 7/1/08	Mon 9/1/08													
150	Install Metal Flashing and Caps - East	3 days	Thu 7/3/08	Mon 7/7/08													
151	Electrical Close In Inspection - 3rd Floor	1 day	Thu 7/3/08	Thu 7/3/08													
152	Framing Close-in Inspection - 3rd Floor	1 day	Mon 7/7/08	Mon 7/7/08													
153	Final Cleaning - All Floors, Penthouse and Lobby	69 days	Tue 7/8/08	Fri 10/10/08													
154	Install Metal Flashing and Caps - Penthouse	1 day	Wed 7/9/08	Wed 7/9/08													
155	Hang and Finish GWB - Floors 1-6	30 days	Wed 7/9/08	Tue 8/19/08													
156	Install Platforms - Elevator	20 days	Wed 7/9/08	Tue 8/5/08													
157	Install Millwork	25 days	Thu 7/10/08	Wed 8/13/08													
158	Wall and Ceiling Inspection - Lobby	2 days	Thu 7/10/08	Fri 7/11/08													
159	Electrical Close In Inspection - 4th Floor	1 day	Fri 7/18/08	Fri 7/18/08													

Project: Project1
 Date: Fri 11/2/07

Task Progress Summary
 Split Milestone Project Summary External Tasks Deadline
 External Milestone

Milestone Building #4

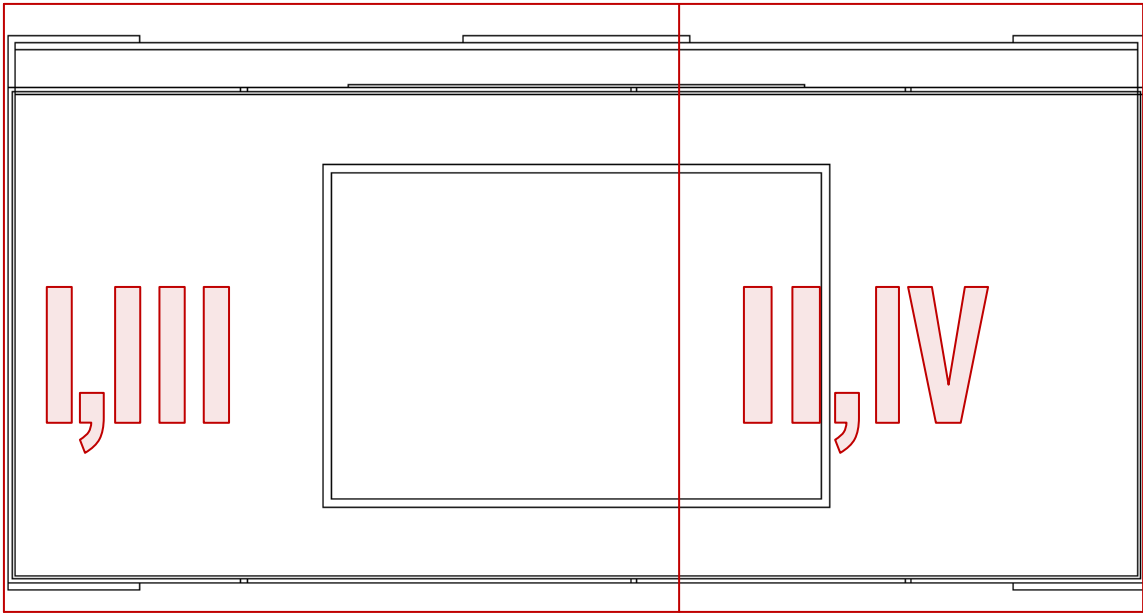
ID	Task Name	Duration	Start	Finish	5, '07		Jun 17, '07			Aug 19, '07		Oct 21, '07		Dec 23, '07		Feb 24, '08		Apr 27, '08		Jun 29, '08		Aug 31, '08		Nov 2, '08		Jan 4, '09		Mar 8, '09		May 10
					S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T
160	Framing Close-in Inspection - 4th Floor	1 day	Mon 7/21/08	Mon 7/21/08																										
161	Install Roof - 3rd Floor Ledge	5 days	Tue 7/22/08	Mon 7/28/08																										
162	Install Sedemint Controls - Phase 2	5 days	Fri 7/25/08	Thu 7/31/08																										
163	Vestibule Glass Walls and Doors	15 days	Fri 7/25/08	Thu 8/14/08																										
164	Insulation - Floors 1-6	30 days	Tue 7/29/08	Mon 9/8/08																										
165	Dismantle Material Hoist	3 days	Thu 7/31/08	Mon 8/4/08																										
166	Install Site Utilities - Phase 2	20 days	Fri 8/1/08	Thu 8/28/08																										
167	Set Stone Floor Lobby	20 days	Fri 8/1/08	Thu 8/28/08																										
168	Electrical Close In Inspection - 5th Floor	1 day	Fri 8/1/08	Fri 8/1/08																										
169	Framing Close-in Inspection - 5th Floor	1 day	Mon 8/4/08	Mon 8/4/08																										
170	Erect Spandrel Support Steel - Material Hoist	6 days	Tue 8/5/08	Tue 8/12/08																										
171	Install/Set Frames - Doors 1-6	10 days	Wed 8/6/08	Tue 8/19/08																										
172	Install Toilet Partitions and Assc. - Floors 1-6	5 days	Tue 8/12/08	Mon 8/18/08																										
173	Frame, Sheath, Moisture Barrier, Masonry Walls - Material Hoist	5 days	Wed 8/13/08	Tue 8/19/08																										
174	Electrical Close In Inspection - 6th Floor	1 day	Fri 8/15/08	Fri 8/15/08																										
175	Framing Close-in Inspection - 6th Floor	1 day	Mon 8/18/08	Mon 8/18/08																										
176	Install and Washdown Masonry - Material Hoist	9 days	Wed 8/20/08	Mon 9/1/08																										
177	Build Cabs - Elevator	15 days	Wed 8/20/08	Tue 9/9/08																										
178	Build Glass Entry	10 days	Fri 8/22/08	Thu 9/4/08																										
179	Prime and Paint - Floors 1-6	24 days	Fri 8/22/08	Wed 9/24/08																										
180	Install and Caulk Windows - Material Hoist	5 days	Thu 9/4/08	Wed 9/10/08																										
181	Install Doors - Elevator	10 days	Wed 9/10/08	Tue 9/23/08																										
182	Install F/A Annunciator Panel into Wall	2 days	Tue 9/16/08	Wed 9/17/08																										
183	Install Building Directory	2 days	Tue 9/16/08	Wed 9/17/08																										
184	Power to Elevator Sump Pump	2 days	Wed 9/17/08	Thu 9/18/08																										
185	Install and Pipe In Elevator Sump Pump	2 days	Thu 9/18/08	Fri 9/19/08																										
186	Final Plumbing Inspection	1 day	Tue 9/23/08	Tue 9/23/08																										
187	Final Electrical Inspection	1 day	Wed 9/24/08	Wed 9/24/08																										
188	Test and Adjust Cars	10 days	Wed 9/24/08	Tue 10/7/08																										
189	Montgomery County Fire Inspection	3 days	Thu 9/25/08	Mon 9/29/08																										
190	MEP Commissioning	10 days	Tue 10/7/08	Mon 10/20/08																										
191	Provide Operator for Shaft Point Up Work	3 days	Wed 10/8/08	Fri 10/10/08																										
192	QEI Elevator Inspection	1 day	Mon 10/13/08	Mon 10/13/08																										
193	Final State Inspection - Elevator	1 day	Tue 10/14/08	Tue 10/14/08																										
194	Building Final Inspection	2 days	Wed 10/15/08	Thu 10/16/08																										
195	C of O From County	3 days	Thu 10/16/08	Mon 10/20/08																										
196	Substantial Completion and Turnover	0 days	Tue 10/21/08	Tue 10/21/08																										
197	Contractual Completion	0 days	Fri 11/21/08	Fri 11/21/08																										

Project: Project1 Date: Fri 11/2/07	Task	Progress	Summary	External Tasks	Deadline
	Split	Milestone	Project Summary	External Milestone	



Appendix B

Building Sequencing



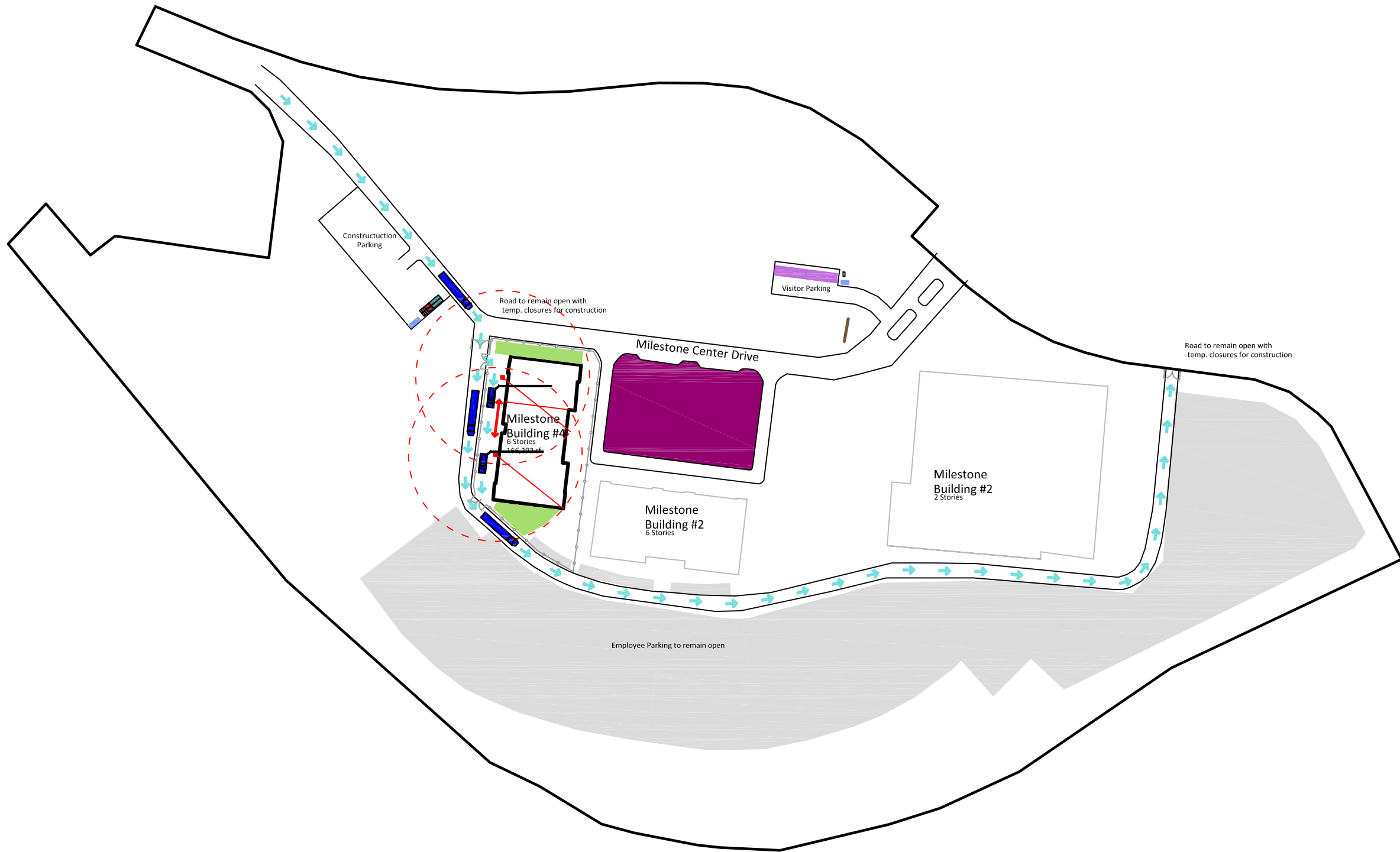
BUILDING PLAN



Appendix C

Site Layout Plan – Steel Erection Phase

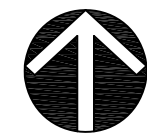
Milestone Buisness Park
 Building #4
 Germantown, MD



Revisions

Site Utilization

Steel
 Erection



Legend

Concrete Trucks	Delivery Path	Portable Toilets
Construction Parking	Delivery Trucks	Property Line
Courtyard	Dumpsters	Recycle Bins
Crane	Fence	SEA Trailers
Crane Path	Parking	Steel Staging

Constructuon Parking

Road to remain open with temp. closures for construction

Crane; II, IV

Milestone Center Di

Milestone Building #4

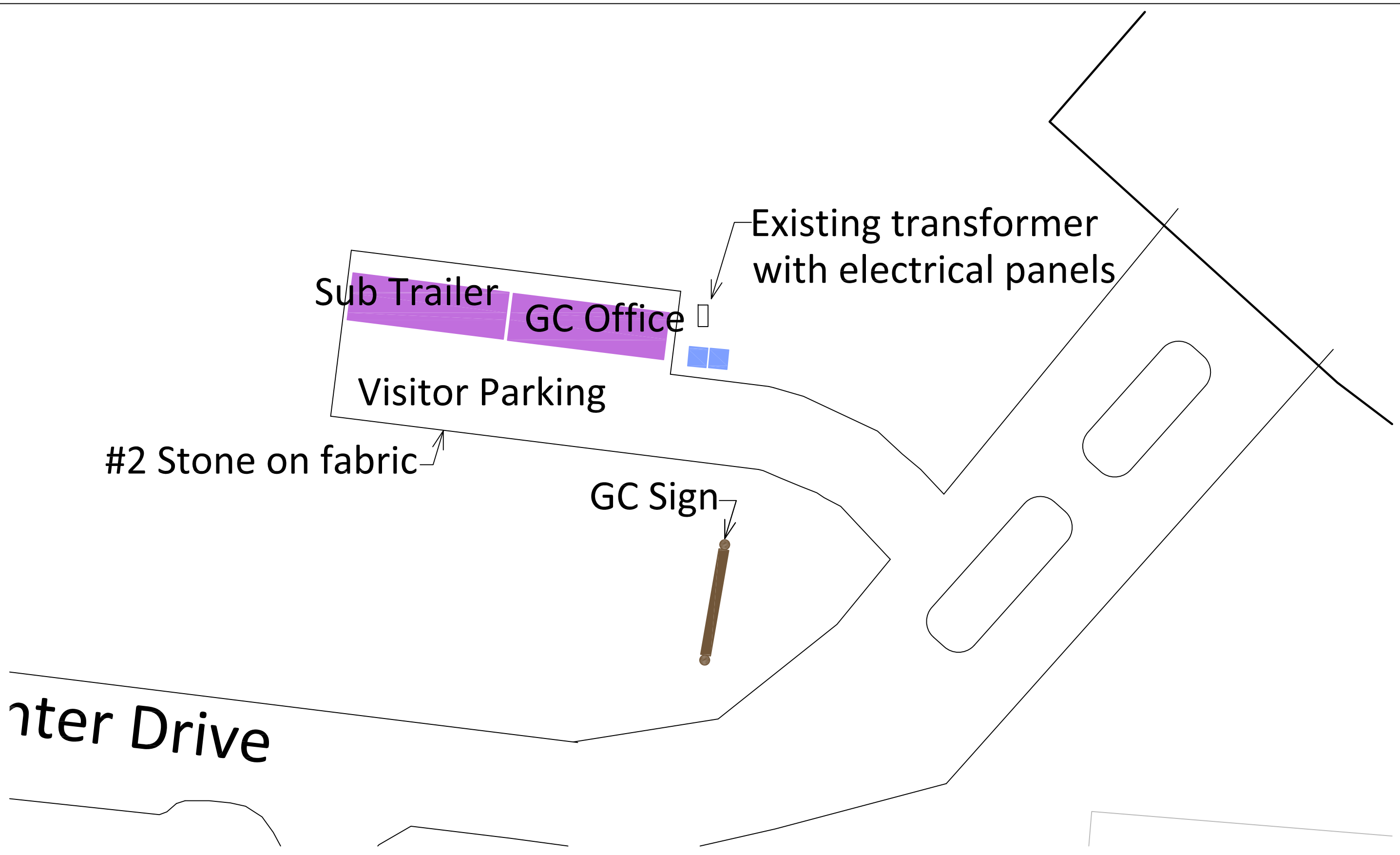
Crane; I, III

Milestone Building #2
6 Stories

Legend

Concrete Trucks	Delivery Path	Portable Toilets
Construction Parking	Delivery Trucks	Property Line
Courtyard	Dumpsters	Recycle Bins
Crane	Fence	SEA Trailers
Crane Path	Parking	Steel Staging





#2 Stone on fabric

Existing transformer with electrical panels

Sub Trailer GC Office

Visitor Parking

GC Sign

Center Drive

Revisions

Site Utilization

GC Office & Trailers

Legend

Concrete Trucks	Delivery Path	Portable Toilets
Construction Parking	Delivery Trucks	Property Line
Courtyard	Dumpsters	Recycle Bins
Crane	Fence	SEA Trailers
Crane Path	Parking	Steel Staging



Appendix D
Detailed Concrete Estimate



Concrete

Item	Size	Volume (CY)	Quantity	Total Volume (CY)	Concrete (\$/CY)	Placing (\$/CY)	Cost (\$)
F1	5'x5'x1'3"	1.27	4	5.08	\$230.83	\$13.11	\$1,239.22
F2	7'x7'x1'6"	2.72	8	21.76	\$230.83	\$13.11	\$5,308.13
F3	10'x10'x2'	7.41	4	29.64	\$230.83	\$13.11	\$7,230.38
F4	11'6"x11'6"x2'4"	11.43	11	125.73	\$230.83	\$13.11	\$30,670.58
F5	12'6"x12'6"x2'4"	13.5	12	162.00	\$230.83	\$13.11	\$39,518.28
F6	13'6"x13'6"x2'6"	16.88	6	101.28	\$230.83	\$13.11	\$24,706.24
F7	17'x17'x3'2"	34.79	1	34.79	\$230.83	\$13.11	\$8,486.67
F8	18'6"x18'6"x3'4"	42.25	6	253.50	\$230.83	\$13.11	\$61,838.79
Subtotal				733.78			\$178,998.29
Spread Footing	465'6"x2'x1'	34.48	1	34.48	\$230.83	\$13.11	\$8,411.05
Subtotal				34.48			\$8,411.05
Grade Beam	36'x2'x1'	2.67	1	2.67	\$230.83	\$10.48	\$644.30
Grade Beam	28'x2'x1'	2.07	1	2.07	\$230.83	\$10.48	\$499.51
Subtotal				4.74			\$1,143.81
Slab on Grade	121'x248'x5"	463.09	1	436.09	\$165.34	\$14.30	\$78,339.21
Slab on Deck	121'x248'x3-1/4"	301.01	2	602.02	\$2.04	\$20.45	\$13,539.43
Slab on Deck	108'x248'x3-1/4"	268.67	3	806.01	\$2.04	\$20.45	\$18,127.16
Subtotal				1844.12			\$110,005.80
Total				2617.12			\$298,558.96



Appendix E

Detailed Steel Estimate



Beams

Member	Total Length (LF)	Weight (Tons)	Unit Price (\$/LF)	Total Cost (\$)
W 6x26	13	0.17	\$30.52	\$396.76
W 8x24	50			
W 10x12	14	0.08	\$21.02	\$294.28
W 10x15	80	0.60	\$24.67	\$1,973.60
W 12x14	485.83	3.40	\$21.39	\$10,391.90
W 12x40	32.75	0.66	\$36.11	\$1,182.60
W 14x22	166	1.83	\$35.45	\$5,884.70
W 16x26	2914	37.88	\$35.41	\$103,184.74
W 16x31	50	0.78	\$41.84	\$2,092.00
W 18x35	2175	38.06	\$47.80	\$103,965.00
W 21x44	8250	181.50	\$57.79	\$476,767.50
W 21x50	1810	45.25	\$65.29	\$118,174.90
W 21x62	162.5	5.04	\$79.91	\$12,985.38
W 21x93	35	1.63	\$118.09	\$4,133.15
W 24x55	1960	53.90	\$71.09	\$139,336.40
W 24x62	40	1.24	\$79.59	\$3,183.60
W 24x68	50	1.70	\$87.09	\$4,354.50
W 27x84	60	2.52	\$106.28	\$6,376.80
Total				
		376.23		\$994,677.81

Decking

Item	Size	Area (SF)	Quantity	Total Area (SF)	Unit Price (\$/SF)	Cost (\$)
Metal Decking	121'x248'x3"	30,008	2	60,016	\$2.82	\$169,245.12
Metal Decking	108'x248'x3"	26,784	3	80,352	\$2.82	\$226,592.64
Roof Decking	108" x248" x1-1/2"	26,784	1	26,784	\$1.46	\$39,104.64
Roof Decking	27'8" x51'11" x1-1/2"	1,436	1	1,436	\$1.46	\$2,097.09
Total				168,588		\$437,039.49



Columns

Member	Total Length (LF)	Weight (Tons)	Unit Price (\$/LF)	Total Cost (\$)
W 10x33	999.33	16.49	47.11	\$47,078.58
W 10x39	106.67	2.08	54.52	\$5,815.48
W 10x45	320.00	7.20	61.74	\$19,756.80
W 10x49	454.67	11.14	66.61	\$30,285.37
W 10x54	80.00	2.16	72.70	\$5,816.00
W 10x60	134.67	4.04	80.02	\$10,776.05
W 10x68	180.00	6.12	89.77	\$16,158.60
W 10x77	322.67	12.42	100.74	\$32,505.47
W 10x88	101.00	4.44	114.14	\$11,528.14
W 10x112	67.33	3.77	143.39	\$9,654.88
Total				
		69.87		\$189,375.38



Braces

Member	Total Length (LF)	Weight (Tons)	Unit Price (\$/LF)	Total Cost (\$)
W 12x44	50.00	1.10	\$58.36	\$2,918.00
W 12x50	90.67	2.27	\$65.72	\$5,958.64
W 12x53	22.67	0.60	\$69.40	\$1,573.09
W 12x58	94.67	2.75	\$75.22	\$7,120.85
W 12x62	175.00	5.43	\$80.33	\$14,057.75
W 12x65	53.33	1.73	\$84.17	\$4,489.04
W 12x72	80.00	2.88	\$93.11	\$7,448.80
W 12x79	26.67	1.05	\$101.51	\$2,706.97
W 12x87	53.33	2.32	\$111.11	\$5,925.83
W 12x93	32.50	1.51	\$118.31	\$3,845.08
W 12x106	33.67	1.78	\$133.91	\$4,508.35
W 12x120	33.67	2.02	\$150.71	\$5,073.95
W 12x136	67.33	4.58	\$169.91	\$11,440.72
W 16x26	25.00	0.33	\$35.41	\$885.25
W 18x35	325.00	5.69	\$47.80	\$15,535.00
W 21x50	50.00	1.25	\$65.29	\$3,264.50
W 21x106	67.33	3.57	\$133.28	\$8,974.14
W 21x136	37.33	2.54	\$170.42	\$6,361.78
W 24x68	25.00	0.85	\$87.09	\$2,177.25
Total				
		44.24		\$114,264.98



Appendix F

Detailed General Conditions Estimate



General Conditions

Item	Qty	Labor	Material	Time	Labor	Material	Total
		Rate	Rate				
Supervision - Administrative							
Construction Manager	0.25 EA	\$11,250		14 MOS	\$39,375		\$39,375
Project Manager	1.00 EA	\$10,000		14 MOS	\$140,000		\$140,000
Superintendent	1.00 EA	\$8,900		14 MOS	\$124,600		\$124,600
Assistant Superintendent	1.00 EA	\$6,100		14 MOS	\$85,400		\$85,400
Office Management and Clerks							
Safety Inspector	0.10 EA	\$3,700		14 MOS	\$5,180		\$5,180
Engineering							
Office and Project Engineers	1.00 EA	\$6,500		14 MOS	\$91,000		\$91,000
Facility Laborer	1.00 EA	\$4,200		14 MOS	\$58,800		\$58,800
Clean Up							
Trash Bin Rent and Haul	75 TR		\$450	1		\$33,750	\$33,750
Trash Chutes, Hoppers	1 LS		\$7,000	1		\$7,000	\$7,000
Final Cleanup and Move Out	166292 SF		\$0.10	1		\$16,629	\$16,629
Clean Glass and Metal	1 LS		\$2,000	1		\$2,000	\$2,000
Safety Construction							
Safety Rail & Barricade Bldg Edges	1000 LF	\$10	\$2	1	\$10,000	\$1,500	\$11,500
Entrance OH Protection	1 LS		\$1,000	1		\$1,000	\$1,000
Ladders and Stairs	1 LS		\$6,000	1		\$6,000	\$6,000
Hardhats, Protective Gear	1 LS		\$500	1		\$500	\$500
Temporary Facilities and Utilities							
Job Office	1 EA		\$400	14 MOS		\$5,600	\$5,600
Temporary Construction Utilities							
Electrical Power Consumption							
Months - Start	1 LS		\$500	4 MOS		\$2,000	\$2,000
Months - Next	1 LS		\$750	4 MOS		\$3,000	\$3,000
Months - Next	1 LS		\$1,500	2 MOS		\$3,000	\$3,000
Months -----	1 LS		\$4,000	2 MOS		\$8,000	\$8,000
Water Consumption	1 EA		\$50	14 MOS		\$700	\$700
Water Ice and Cups	1 LS		\$100	14 MOS		\$1,400	\$1,400
Sanitary Facilities - Rental	6 EA		\$125	14 MOS		\$10,500	\$10,500



General Conditions (continued)

Item	Qty	Labor		Material		Labor	Material	Total
		Rate	Rate	Time				
Field Office Operation								
General Office Supplies	1 LS		\$200	14 MOS			\$2,800	\$2,800
Engineering Supplies	1 LS		\$2,000	1			\$2,000	\$2,000
Telephone	1 LS		\$600	14 MOS			\$8,400	\$8,400
Postage and Express	1 LS		\$400	14 MOS			\$5,600	\$5,600
Blueprinting and Photostats	1 LS		\$5,000	1			\$5,000	\$5,000
Progress Photo	1 EA		\$100	14 MOS			\$1,400	\$1,400
Job Signs	1 LS		\$2,500	1			\$2,500	\$2,500
Security and Fire Protection								
Security Fence and Gates	1 LS		\$12,000	1			\$12,000	\$12,000
Fire Protection - Extinguishers	30 EA		\$65	1			\$1,950	\$1,950
Medical								
First Aid Materials and Supplies	1 LS		\$500	1			\$500	\$500
Hauling, Transportation								
Autos	1.25 EA		\$550	14 MOS			\$9,625	\$9,625
Pickup Trucks	1.00 EA		\$550	14 MOS			\$7,700	\$7,700
Trucks (1 Ton and Over)	1.00 EA		\$700	14 MOS			\$9,800	\$9,800
Equipment Repairs								
Repairs - Outside	3 SET		\$500	1			\$1,500	\$1,500
Fuel, Oil and Grease	3 SET		\$300	14 MOS			\$12,600	\$12,600
Small Tools and Expendables								
Misc. Hand Tools	1 LS		\$2,500	1			\$2,500	\$2,500
Subtotal								
							\$554,355	\$102,579
Taxes, Permits and Licenses								
Sales Tax							\$188,454 @ 5%	\$9,243
Total								
								\$666,177