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Tech. Assignment #2: Costs & Methods Analysis

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Executive Summary

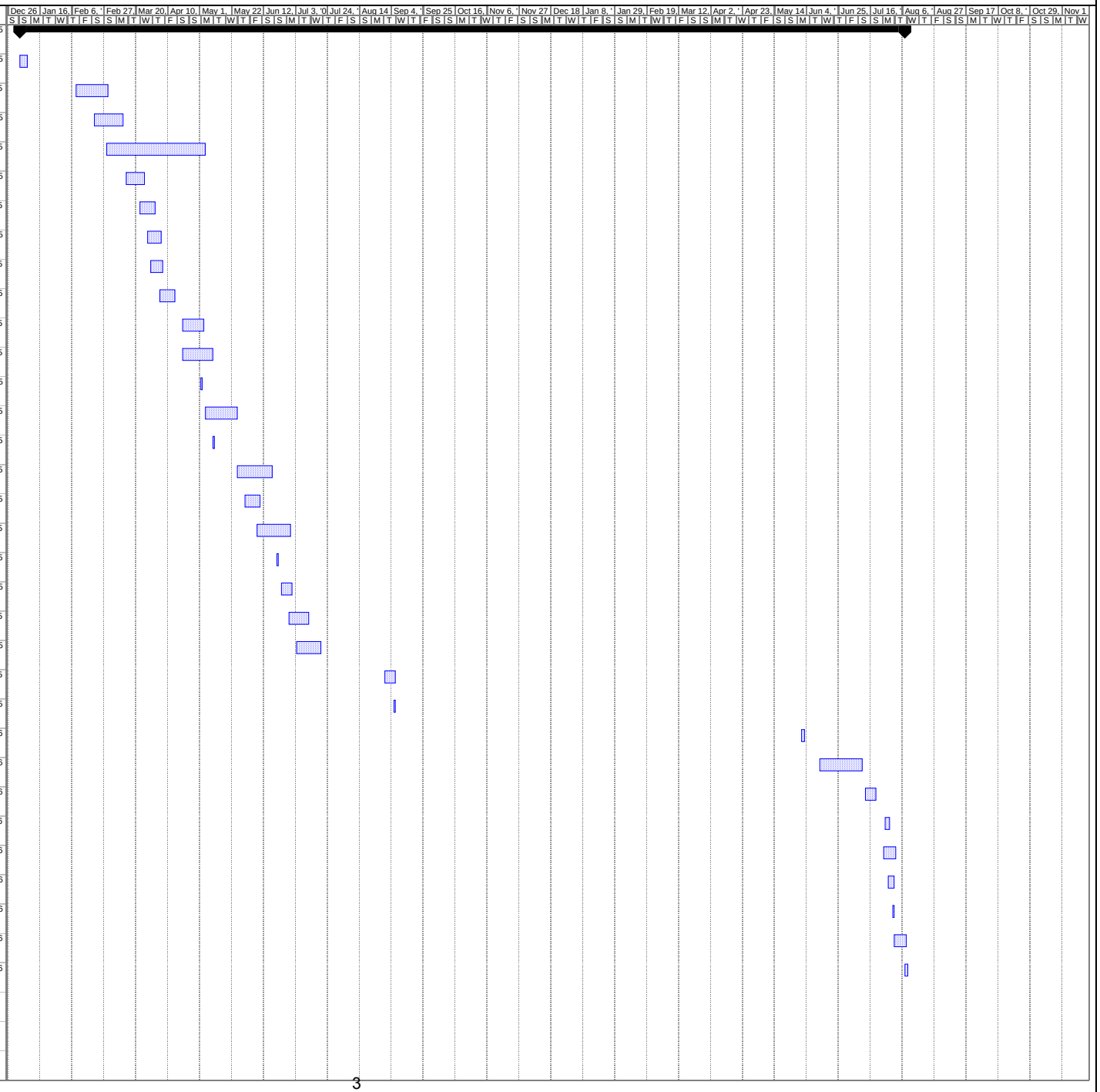
This technical assignment contains analysis of the costs and construction methods utilized on the Civista Medical Center addition and renovation project. Enclosed is a detailed project schedule, a site logistics plan for the concrete placement, an assemblies estimate for exterior enclosure materials, a detailed structural system estimate, and a general conditions estimate. The detailed project schedule provides an in-depth look at the 32-month project by highlighting important activities and their durations. The activities are organized in chronological order by site work, structure, enclosure, interior rough-ins, interior finishes, and clean-up / punchlist / commissioning. The site logistics plan is shown during the placement of concrete. The usable site area was limited due to the site size. It needed to be carefully coordinated and sequenced to prevent delays and setbacks. An assemblies estimate was performed on the exterior enclosure materials. This estimate includes the brick veneer, silicone masonry systems, curtain wall systems, and metal panel wall assemblies. A detailed structural systems estimate was compiled using RS Means Cost Works 2005. The foundation, typical floor with columns, roof and structural steel systems were all estimated. The typical floor was multiplied by four to account for three elevated slabs and the roof. The general conditions estimate was completed using the 32-month duration and unit costs. It is important to note that home office overhead was not included in the estimate.

Detailed Project Schedule

The attached Civista Medical Center detailed schedule focuses on the main addition and consists of items 197 line items. It is organized in chronological order by site work, structure, enclosure, interior rough-ins, interior finishes, and clean-up / punchlist / commissioning. Each item is listed with its duration, start and finish dates. The 32 month project begins construction February 2005 and continues through to the completion date in December 2006. All trades provided input towards scheduled activities and later agreed upon the schedule at an initial project schedule meeting. The superintendent's two-week look-ahead meetings, held weekly, were important to the success of the on time completion.

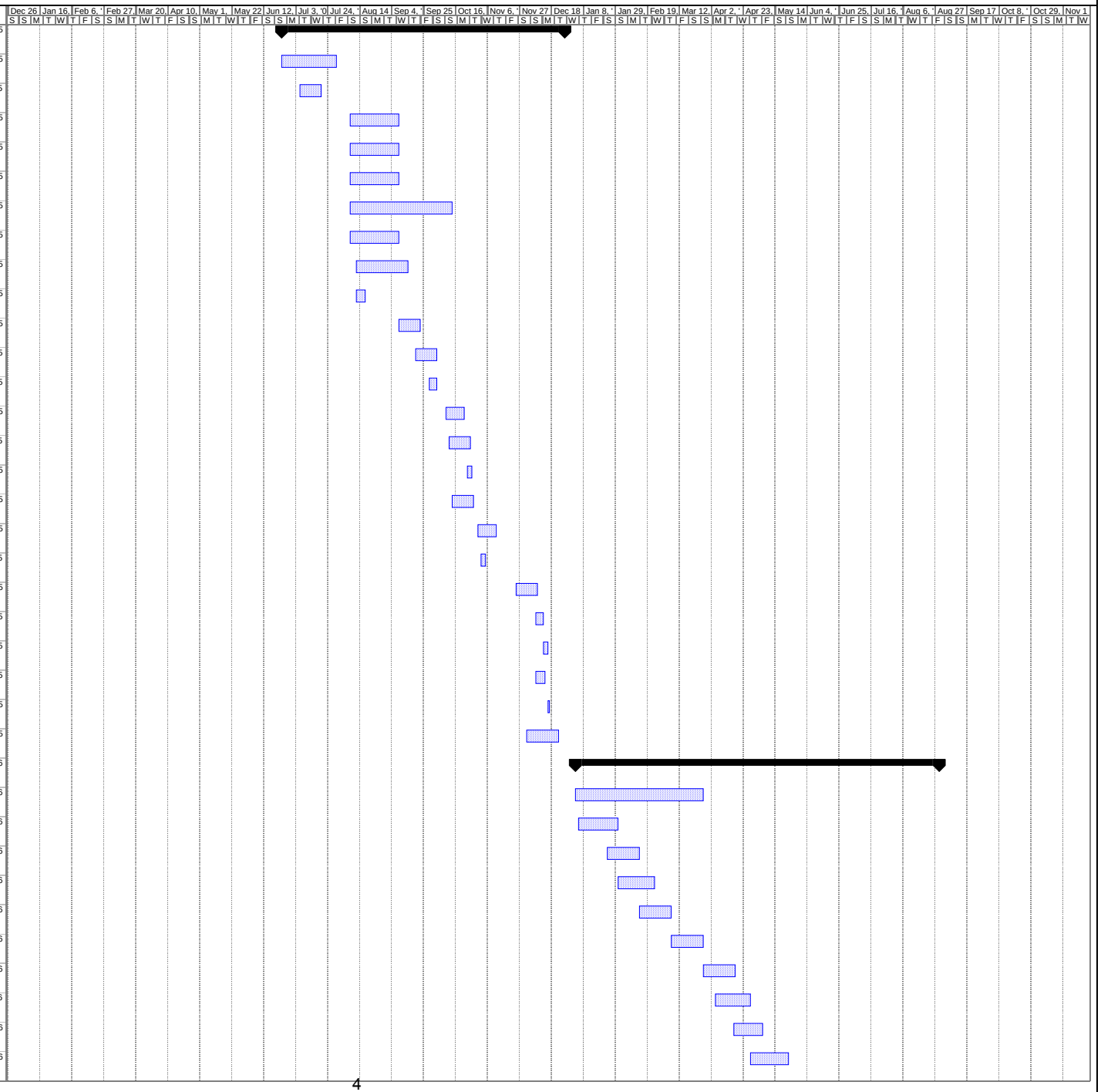
Civista Medical Center: Sitework & Main Addition Schedule

ID	Task Name	Duration	Start
1	**Sitework**	417 days	Mon 1/3/05
2	Mobilize Sitework	5 days	Mon 1/3/05
3	Install Barriers & Signage	15 days	Wed 2/9/05
4	Demo Town Hall/Police Shed	15 days	Mon 2/21/05
5	Excavation for SE SWM	47 days	Tue 3/1/05
6	Demo existing West Drive	10 days	Mon 3/14/05
7	Install Water Line at NE Parking	8 days	Wed 3/23/05
8	Install Storm Line at NE Parking	7 days	Mon 3/28/05
9	Install West Drive Waterline	6 days	Wed 3/30/05
10	Install West Drive Storm Line	8 days	Tue 4/5/05
11	Construct West Drive Mod Wall	10 days	Wed 4/20/05
12	Install West Drive Subbase / Curb & Gutter	14 days	Wed 4/20/05
13	Shift Staff Pkg to NE Temp Pkg Lot	1 day	Mon 5/2/05
14	Construct Mod Wall SE SWM	15 days	Thu 5/5/05
15	Pave West Drive	1 day	Tue 5/10/05
16	Construct Temporary ED Entrance	17 days	Thu 5/26/05
17	Form & Place CIP Retaining Wall Ftg	8 days	Tue 5/31/05
18	Form & Place CIP Retaining Wall	16 days	Wed 6/8/05
19	Shift ED Traffic to West Drive	1 day	Tue 6/21/05
20	Misc Demo in South Parking Lot	5 days	Fri 6/24/05
21	Install South Parking Sanitary Line	9 days	Wed 6/29/05
22	Install South Parking Water Line	12 days	Mon 7/4/05
23	Construct New Helipad	5 days	Wed 8/31/05
24	Shift Helipad Use	1 day	Tue 9/6/05
25	Misc Demo for South Parking	2 days	Thu 6/1/06
26	Install Subbase / Curb & Gutter at South Parking	20 days	Tue 6/13/06
27	Pave South Parking (Main Addition)	5 days	Thu 7/13/06
28	Demo SE Parking	3 days	Wed 7/26/06
29	Install Subbase / Curb & Gutter at NE Parking & Entrance	6 days	Tue 7/25/06
30	Pave NE Parking & Entrance	2 days	Fri 7/28/06
31	Shift Pkg to NE Lot	1 day	Mon 7/31/06
32	Install Subbase / Curb & Gutter at SE	6 days	Tue 8/1/06
33	Pave SE Parking	2 days	Tue 8/8/06
34			
35			
36			



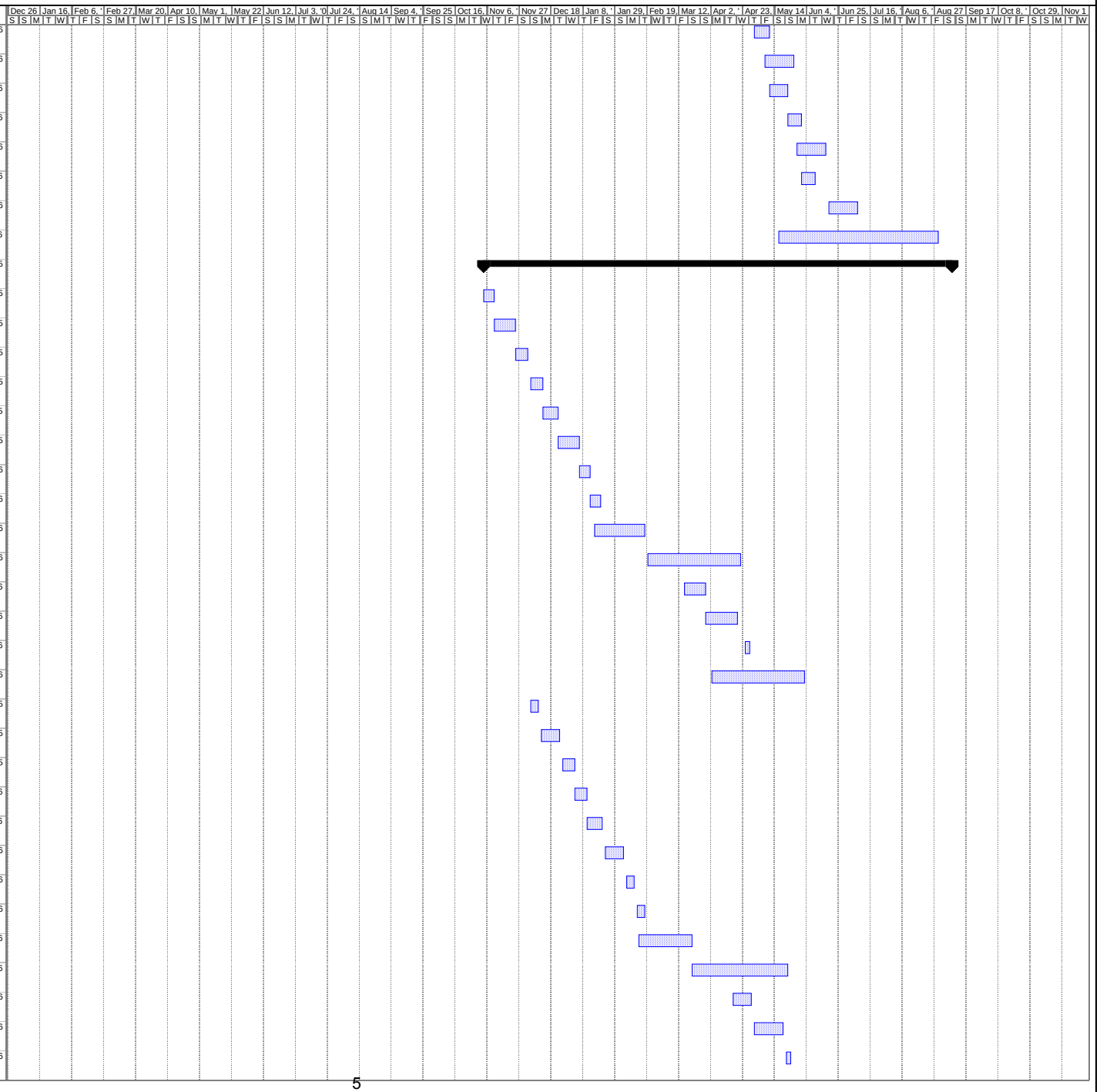
Civista Medical Center: Sitework & Main Addition Schedule

ID	Task Name	Duration	Start
37	**Structure**	133 days	Fri 6/24/05
38	Install Piles	26 days	Fri 6/24/05
39	Mob Concrete: Crane & Setup	10 days	Wed 7/6/05
40	Construct CIP (FPS) Pile Caps	25 days	Mon 8/8/05
41	Construct CIP (FPS) Grade Beams	25 days	Mon 8/8/05
42	Construct CIP (FPS) First Column Lift	25 days	Mon 8/8/05
43	Underground Plumbing Work	50 days	Mon 8/8/05
44	Underground Electrical Work	25 days	Mon 8/8/05
45	Construct CIP (FPS) Slab on Grade	25 days	Fri 8/12/05
46	Construct CIP (FPS) Wall at SOG	5 days	Fri 8/12/05
47	Construct CIP (FP) 1st Deck	10 days	Fri 9/9/05
48	Construct CIP (FP) 2nd Column Lift	10 days	Tue 9/20/05
49	Strip / Reshore 1st Deck	3 days	Thu 9/29/05
50	Construct CIP (FP) 2nd Deck	10 days	Mon 10/10/05
51	Construct CIP (FP) 3rd Column Lift	10 days	Wed 10/12/05
52	Strip / Reshore 2nd Deck	3 days	Mon 10/24/05
53	Construct CIP (FP) 3rd Deck	10 days	Fri 10/14/05
54	Construct CIP (FP) 4th Column Lift	10 days	Mon 10/31/05
55	Strip / Reshore 3rd Deck	3 days	Wed 11/2/05
56	Construct CIP (FP) 4th Deck	10 days	Fri 11/25/05
57	Construct CIP (FP) 5th Column Lift	3 days	Thu 12/8/05
58	Strip / Reshore 4th Deck	3 days	Tue 12/13/05
59	Construct CIP (FP) Elev/MR Deck	4 days	Thu 12/8/05
60	Strip / Reshore Elev/MR Deck	1 day	Fri 12/16/05
61	Strip/Remove all Reshores / Demobilize Crane	15 days	Fri 12/2/05
62	**Enclosure**	171 days	Tue 1/3/06
63	Install Steel Framing	60 days	Tue 1/3/06
64	Install Ext. Framing / Sheathing at North Face	18 days	Thu 1/5/06
65	Set Masonry at North Face	15 days	Tue 1/24/06
66	Install Ext. Framing / Sheathing at West Face	18 days	Tue 1/31/06
67	Set Masonry at West Face	15 days	Tue 2/14/06
68	Set Masonry at South Face	15 days	Tue 3/7/06
69	Set Masonry at East Face	15 days	Tue 3/28/06
70	Install Ext. Framing / Sheathing at South Face	17 days	Wed 4/5/06
71	Set Metal Panels/Winds at North Face	15 days	Mon 4/17/06
72	Install Ext. Framing / Sheathing at East Face	17 days	Fri 4/28/06



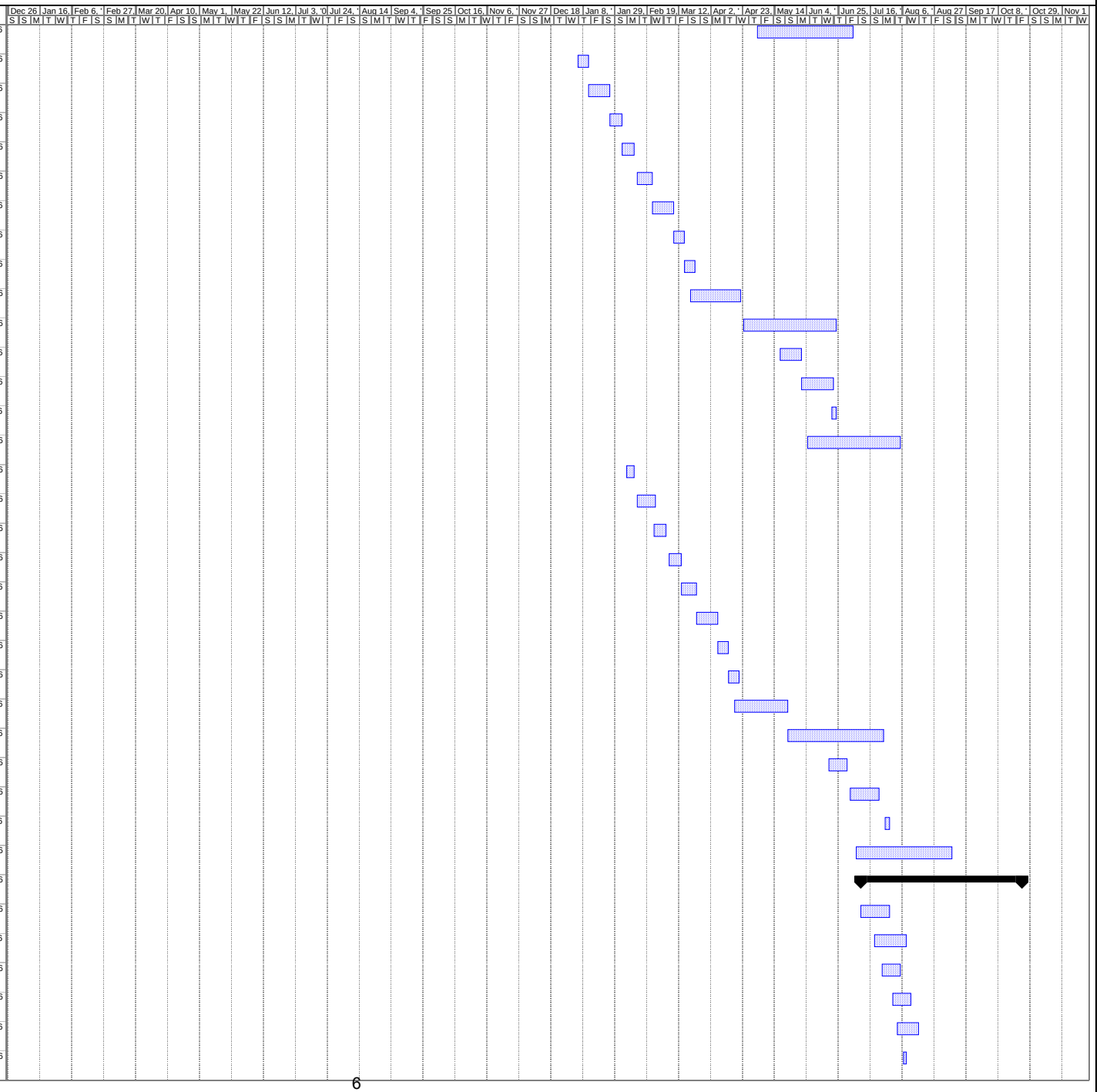
Civista Medical Center: Sitework & Main Addition Schedule

ID	Task Name	Duration	Start
73	Install Glazing Windows and Windows at North Face	8 days	Mon 5/1/06
74	Set Metal Panels/Winds at West Face	15 days	Mon 5/8/06
75	Install Glazing Windows and Windows at West Face	8 days	Thu 5/11/06
76	Install Glazing Windows and Windows at South Face	7 days	Tue 5/23/06
77	Set Metal Panels/Winds at South Face	15 days	Mon 5/29/06
78	Install Glazing Windows and Windows at East Face	7 days	Thu 6/1/06
79	Set Metal Panels/Winds at East Face	15 days	Mon 6/19/06
80	Construct Steel Conopies	75 days	Wed 5/17/06
81	**Interior Rough-Ins**	220 days	Fri 11/4/05
82	GR Partition Layout	5 days	Fri 11/4/05
83	GR Above Ceiling Plumbing (Gravity)	10 days	Fri 11/11/05
84	GR Above Ceiling HVAC	6 days	Fri 11/25/05
85	GR Above Ceiling Piping (Pressure)	6 days	Mon 12/5/05
86	GR Above Ceiling Electrical & Pull Wire	8 days	Tue 12/13/05
87	GR Above Ceiling Medical Gas	10 days	Fri 12/23/05
88	GR Fire Protection	5 days	Fri 1/6/06
89	GR Set Door Frames	5 days	Fri 1/13/06
90	GR Partition Framing	25 days	Mon 1/16/06
91	GR In-Wall MEP	45 days	Mon 2/20/06
92	GR Mechanical & Plumbing Insulation	10 days	Thu 3/16/06
93	GR Frame Bulkheads & Drywall Ceilings	15 days	Thu 3/30/06
94	GR Obtain In-Wall Inspection	3 days	Tue 4/25/06
95	GR Hang & Finish Drywall	45 days	Mon 4/3/06
96	f1 Partition Layout	5 days	Mon 12/5/05
97	f1 Above Ceiling Plumbing (Gravity)	10 days	Mon 12/12/05
98	f1 Above Ceiling HVAC	6 days	Mon 12/26/05
99	f1 Above Ceiling Piping (Pressure)	6 days	Tue 1/3/06
100	f1 Above Ceiling Electrical & Pull Wire	8 days	Wed 1/11/06
101	f1 Above Ceiling Medical Gas	10 days	Mon 1/23/06
102	f1 Fire Protection	5 days	Mon 2/6/06
103	f1 Set Door Frames	5 days	Mon 2/13/06
104	f1 Partition Framing	25 days	Tue 2/14/06
105	f1 In-Wall MEP	45 days	Tue 3/21/06
106	f1 Mechanical & Plumbing Insulation	10 days	Mon 4/17/06
107	f1 Frame Bulkheads & Drywall Ceilings	15 days	Mon 5/1/06
108	f1 Obtain In-Wall Inspection	3 days	Mon 5/22/06



Civista Medical Center: Sitework & Main Addition Schedule

ID	Task Name	Duration	Start
109	f1 Hang & Finish Drywall	45 days	Wed 5/3/06
110	f2 Partition Layout	5 days	Thu 1/5/06
111	f2 Above Ceiling Plumbing (Gravity)	10 days	Thu 1/12/06
112	f2 Above Ceiling HVAC	6 days	Thu 1/26/06
113	f2 Above Ceiling Piping (Pressure)	6 days	Fri 2/3/06
114	f2 Above Ceiling Electrical & Pull Wire	8 days	Mon 2/13/06
115	f2 Above Ceiling Medical Gas	10 days	Thu 2/23/06
116	f2 Fire Protection	5 days	Thu 3/9/06
117	f2 Set Door Frames	5 days	Thu 3/16/06
118	f2 Partition Framing	25 days	Mon 3/20/06
119	f2 In-Wall MEP	45 days	Mon 4/24/06
120	f2 Mechanical & Plumbing Insulation	10 days	Thu 5/18/06
121	f2 Frame Bulkheads & Drywall Ceilings	15 days	Thu 6/1/06
122	f2 Obtain In-Wall Inspection	3 days	Wed 6/21/06
123	f2 Hang & Finish Drywall	45 days	Mon 6/5/06
124	f3 Partition Layout	5 days	Mon 2/6/06
125	f3 Above Ceiling Plumbing (Gravity)	10 days	Mon 2/13/06
126	f3 Above Ceiling HVAC	6 days	Fri 2/24/06
127	f3 Above Ceiling Piping (Pressure)	6 days	Mon 3/6/06
128	f3 Above Ceiling Electrical & Pull Wire	8 days	Tue 3/14/06
129	f3 Above Ceiling Medical Gas	10 days	Fri 3/24/06
130	f3 Fire Protection	5 days	Fri 4/7/06
131	f3 Set Door Frames	5 days	Fri 4/14/06
132	f3 Partition Framing	25 days	Tue 4/18/06
133	f3 In-Wall MEP	45 days	Tue 5/23/06
134	f3 Mechanical & Plumbing Insulation	10 days	Mon 6/19/06
135	f3 Frame Bulkheads & Drywall Ceilings	15 days	Mon 7/3/06
136	f3 Obtain In-Wall Inspection	3 days	Wed 7/26/06
137	f3 Hang & Finish Drywall	45 days	Fri 7/7/06
138	**Interior Finishes**	76 days	Mon 7/10/06
139	GR Prime Paint	15 days	Mon 7/10/06
140	GR Ceiling Grid	15 days	Wed 7/19/06
141	GR Light Fixtures	10 days	Mon 7/24/06
142	GR Register, Grilles, & Diffusers	10 days	Mon 7/31/06
143	GR Sprinkle Heads	10 days	Thu 8/3/06
144	GR Obtain Above Ceiling Inspection	2 days	Mon 8/7/06

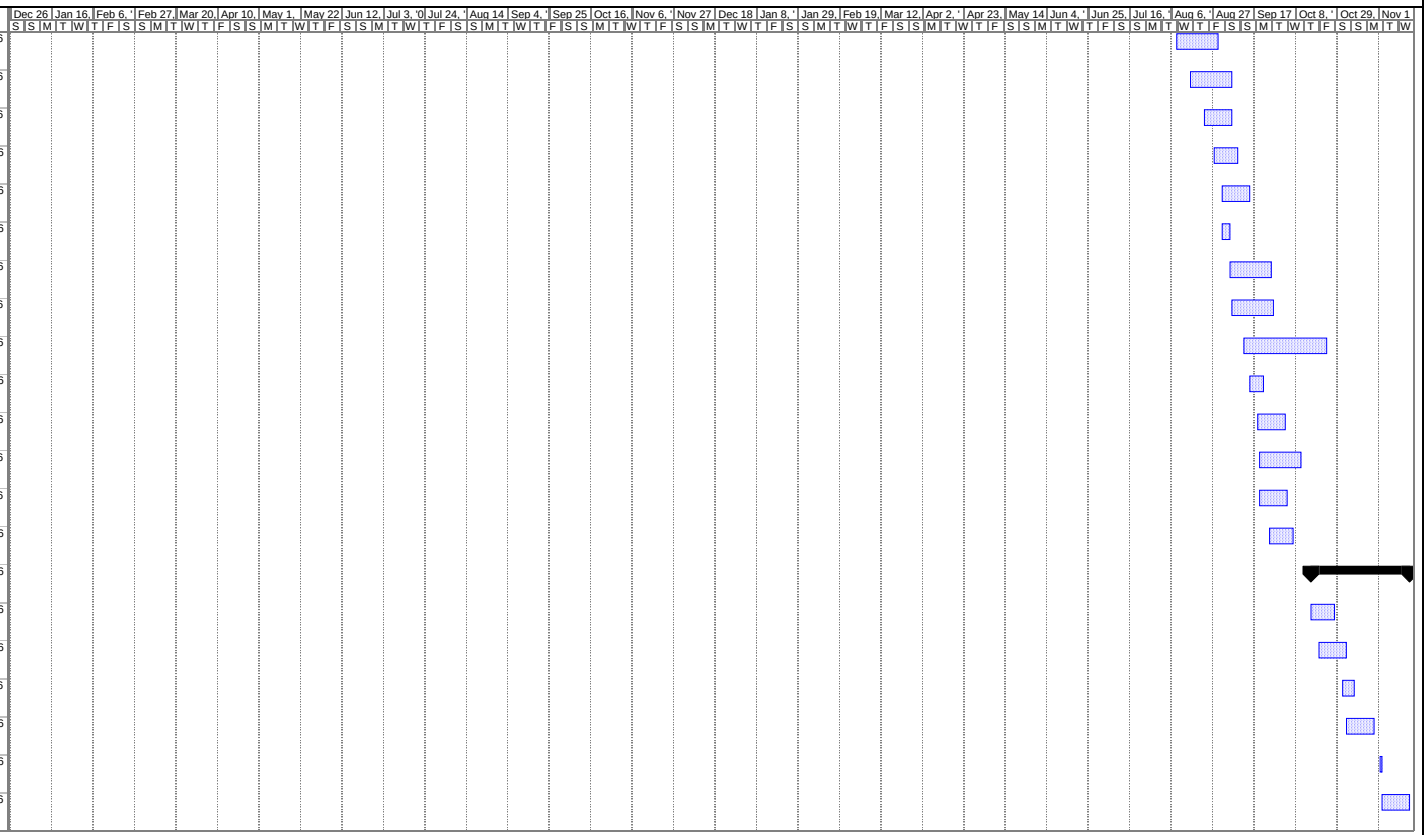


Civista Medical Center: Sitework & Main Addition Schedule

ID	Task Name	Duration	Start
145	GR Ceiling Close-In	15 days	Mon 8/7/06
146	GR Flooring	15 days	Wed 8/9/06
147	GR Casework / Specialties	30 days	Wed 8/9/06
148	GR Plumbing Fixtures	5 days	Mon 8/14/06
149	GR Doors & Hardware	10 days	Thu 8/17/06
150	GR Final Paint	15 days	Mon 8/21/06
151	GR Arch Trim	10 days	Tue 8/22/06
152	GR MEP Wall / Ceiling Devices	10 days	Thu 8/24/06
153	f1 Prime Paint	15 days	Mon 7/24/06
154	f1 Ceiling Grid	15 days	Mon 7/31/06
155	f1 Light Fixtures	10 days	Mon 8/7/06
156	f1 Register, Grilles, & Diffusers	10 days	Mon 8/14/06
157	f1 Sprinkle Heads	10 days	Thu 8/17/06
158	f1 Obtain Above Ceiling Inspection	2 days	Mon 8/21/06
159	f1 Ceiling Close-In	15 days	Mon 8/21/06
160	f1 Flooring	15 days	Wed 8/23/06
161	f1 Casework / Specialties	30 days	Wed 8/23/06
162	f1 Plumbing Fixtures	5 days	Mon 8/28/06
163	f1 Doors & Hardware	10 days	Thu 8/31/06
164	f1 Final Paint	15 days	Mon 9/4/06
165	f1 Arch Trim	10 days	Tue 9/5/06
166	f1 MEP Wall / Ceiling Devices	10 days	Thu 9/7/06
167	f2 Prime Paint	15 days	Mon 7/31/06
168	f2 Ceiling Grid	15 days	Mon 8/7/06
169	f2 Light Fixtures	10 days	Mon 8/14/06
170	f2 Register, Grilles, & Diffusers	10 days	Thu 8/17/06
171	f2 Sprinkle Heads	10 days	Mon 8/21/06
172	f2 Obtain Above Ceiling Inspection	2 days	Mon 8/21/06
173	f2 Ceiling Close-In	15 days	Wed 8/23/06
174	f2 Flooring	15 days	Mon 8/28/06
175	f2 Casework / Specialties	30 days	Mon 9/4/06
176	f2 Plumbing Fixtures	5 days	Thu 9/7/06
177	f2 Doors & Hardware	10 days	Mon 9/11/06
178	f2 Final Paint	15 days	Tue 9/12/06
179	f2 Arch Trim	10 days	Thu 9/14/06
180	f2 MEP Wall / Ceiling Devices	10 days	Mon 9/18/06

Civista Medical Center: Sitework & Main Addition Schedule

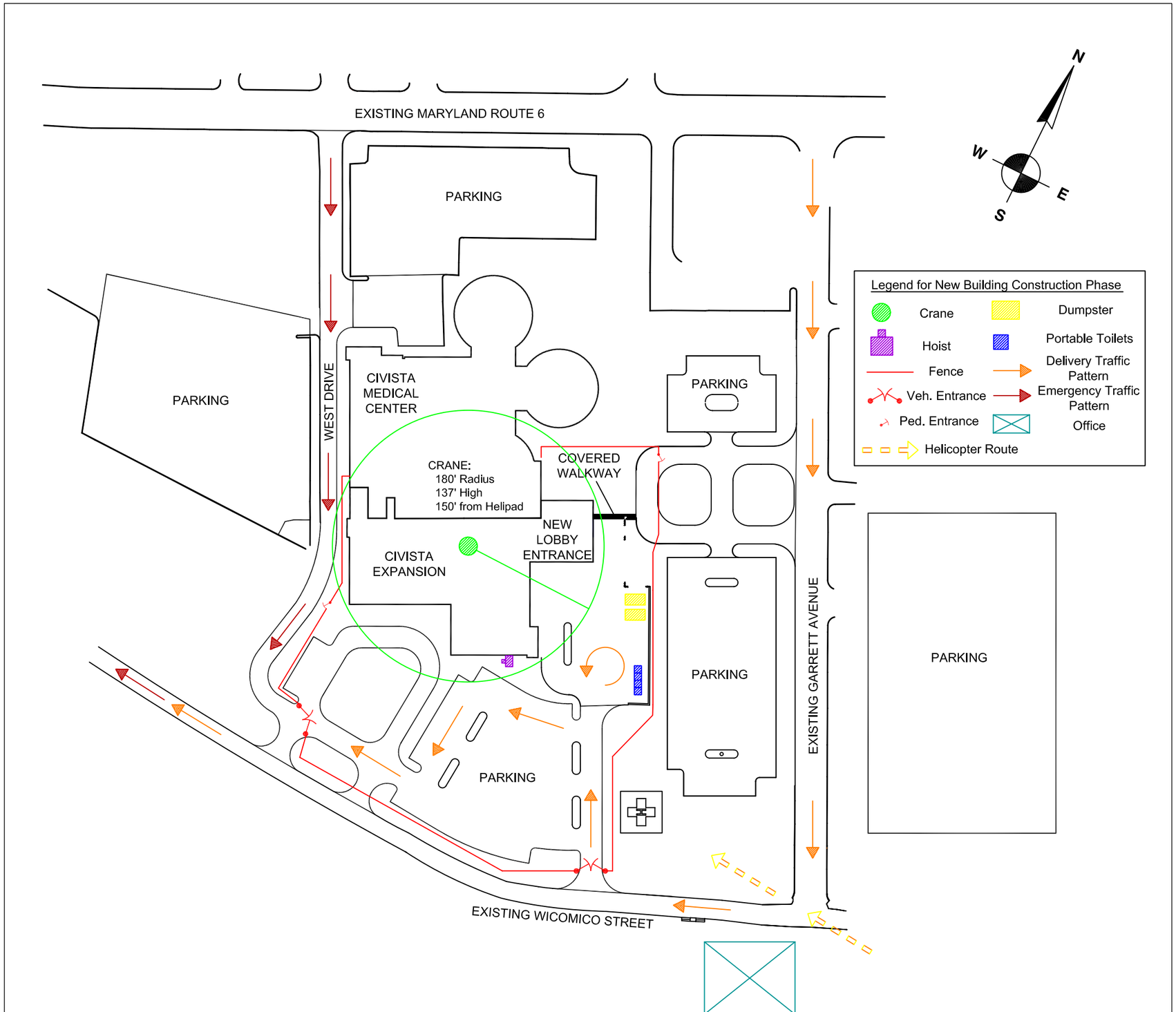
ID	Task Name	Duration	Start
181	f3 Prime Paint	15 days	Wed 8/9/06
182	f3 Ceiling Grid	15 days	Wed 8/16/06
183	f3 Light Fixtures	10 days	Wed 8/23/06
184	f3 Register, Grilles, & Diffusers	10 days	Mon 8/28/06
185	f3 Sprinkle Heads	10 days	Fri 9/1/06
186	f3 Obtain Above Ceiling Inspection	2 days	Fri 9/1/06
187	f3 Ceiling Close-In	15 days	Tue 9/5/06
188	f3 Flooring	15 days	Wed 9/6/06
189	f3 Casework / Specialties	30 days	Tue 9/12/06
190	f3 Plumbing Fixtures	5 days	Fri 9/15/06
191	f3 Doors & Hardware	10 days	Tue 9/19/06
192	f3 Final Paint	15 days	Wed 9/20/06
193	f3 Arch Trim	10 days	Wed 9/20/06
194	f3 MEP Wall / Ceiling Devices	10 days	Mon 9/25/06
195	**Clean-Up / Punchlist / Commissioning**	36 days	Mon 10/16/06
196	MEP System Start / Test / Balance	10 days	Mon 10/16/06
197	Incomplete Work Lists & Repairs	10 days	Fri 10/20/06
198	A/E/O Punchlist	4 days	Wed 11/1/06
199	Punchlist Repairs	10 days	Fri 11/3/06
200	Substantial Completion	1 day	Mon 11/20/06
201	Final Clean-Up	10 days	Tue 11/21/06



Site Layout Planning

The following site logistics plan is shown for the placement of the cast-in-place concrete at Civista Medical Center. The usable site area was limited due to the lack of site area and needed to be carefully coordinated and sequenced to prevent delays and setbacks. Access to the site rarely raised concern, even through the transportation route made its way through downtown La Plata.

A tower crane was responsible for most of the structural concrete placement. The concrete trucks had an easy route on and off the site. Once on-site they had a designated unloading area that does not disrupt the rest of the work.



CIVISTA Health

Civista Medical Center
La Plata, Maryland

2003–07 Addition & Renovation Project

Thad Maugle
Construction Management
Dr. Horman

Technical Assignment #2

SITE UTILIZATION PLAN
CIVISTA MEDICAL CENTER
TOWN OF LAPLATA

C101

Assemblies Estimate

The included assemblies estimate consists of the brick veneer, silicone masonry systems, curtain wall systems, and metal panel wall assemblies. The costs were estimated using RS Means Assemblies Cost Data. The values were measured in square feet.

The modular face brick veneer with block backup is placed on the exterior of the ground floor between the courtyard and service area. The brick veneer with steel stud backup is located on elevated levels.

Calcium silicate masonry units (SMU) are prefabricated units measuring at 11-5/8" wide x 23-5/8" long x 3-5/8" wide, located in various locations. They are lay-up masonry in all running stretching bond. The SMU's are cream colored and display a sandblasted finish.

The typical exterior curtain wall system consists of a prefabricated field glazed pressure plate type curtain wall system. It consists of 2 ½" wide by 8" deep exposed mullion aluminum framing members and caps at multistory locations. The curtain wall includes a combination of insulated vision glass and insulated spandrel glass panels. This system is located at all exterior windows except for the CICU area. The CICU will accommodate fixed aluminum window systems.

The metal wall panel assembly is a system consisting of prefabricated, non-insulated, metal panels applied to the face of structural steel stud framing and secured to the outside face of the floor slab. The material is a 4 mil composite aluminum.

Exterior Enclosures Assemblies Estimate for Civista Medical Center					
CSI #	**Description**	**Quantity**	**Units**	**Unit Price**	**Total Cost**
B2010 135 5160	Brick Veneer / Concrete Block Backup - Insulated Backup, Standard, 8" Block Backup, Styrofoam Core Fill	3,252	SF	19.25	$62,601
B2010 130 5100	Brick Veneer / Metal Stud Backup, Standard Brick, 25ga.x6" Metal Stud, 16" OC Spacing, Running Bond	7,355	SF	14.95	$109,957
	Silicate Masonry Unit / Metal Stud Backup, 11-5/8" x 23-5/8" x 3 5/8", 25ga.x6" Metal Stud, 16" OC Spacing, Running Bond	16,672	SF	22.35	$372,619
B2020 220 1400	Curtain Wall Panels, 1" Thick Units, 1/4" Floats, Clear, Field Glazed	5,614	SF	21.10	$119,000
B2020 220 3000	Curtain Wall Panels, Spandrel Glass, 1" Thick Units, 1/4" Plate Glass Insulated	2,080	SF	16.40	$35,000
	Curtain Wall Aluminum, 2-1/2" wide x 6" deep	7,694	SF	24.85	$191,196
B2010 146 1750	Metal Siding Aluminum Panel, .032" Thick, Natural, Painted	5,710	SF	5.04	$28,778
B2010 154 5000	Metal Siding Support, Wind Load 20 psf, Column Spacing 30'	5,710	SF	3.96	$22,612
		Exterior Essemblies Total Cost			**$941,763**

***Prices adjusted to location*

Detailed Structural Estimate

A detailed structural systems estimate was done using RS Means Cost Works 2005. The estimate includes concrete and reinforcements for the foundation, a typical floor with columns, and roof. The takeoffs were done assuming the typical floors were all designed exactly the same. The typical floor was multiplied by four to account for three elevated slabs and the roof. The structural steel systems at the loading dock and access bridge areas were also measured.

Concrete & Concrete Reinforcement Estimate for Civista Medical Center									
Item	**Amount**	**Units**	**Material $/Unit**	**Total Material Cost ($)**	**Labor $/Unit**	**Total Labor Cost ($)**	**Equipment $/Unit**	**Total Equipment Cost ($)**	**Total Cost ($)**
Foundation									
CIP Slab-on-Grade Concrete @ 4000psi & 5" depth	445.92	CY	112.00	49,943.04	5.10	2,274.19	0.27	120.40	52,337.63
Grade Beams @ 1'-4" wide x 2'-0" deep, 4000psi	224.85	CY	112.00	25,183.20	6.35	1,427.80	3.91	879.16	27,490.16
Piles Concrete @ 61', 16" diameter, & 70-ton Capacity, Direct Chute	866.37	CY	112.00	97,033.44	5.65	4,894.99	0.24	207.93	102,136.36
Pile Caps (Various Dimensions), Direct Chute	371.59	CY	112.00	41,618.08	3.89	1,445.49	0.21	78.03	43,141.60
Spread Footings (Various Dimensions), Direct Chute	53.89	CY	112.00	6,035.68	7.00	377.23	0.37	19.94	6,432.85
Totals	*1,962.62*			*219,813.44*		*10,419.70*		*1,305.46*	
						Total Foundation Concrete Costs			**231,538.60**
6 x 6 - W2.1 x W2.1 WWF	282.50	CSF	27.00	7,627.50	12.50	3,531.25			11,158.75
Reinforcement for Grade Beams, #8 - #18	20.10	Tons	875.00	17,587.50	258.00	5,185.80			22,773.30
Reinforcement for Piles, #8 - #18	7.26	Tons	890.00	6,461.40	287.00	2,083.62			8,545.02
Reinforcement for Pile Caps, #8 - #18	4.62	Tons	755.00	3,488.10	214.00	988.68			4,476.78
Reinforcemnet for Spread Footings, #3 - #7	0.52	Tons	800.00	416.00	370.00	192.40			608.40
Totals				*35,580.50*		*11,981.75*			*47,562.25*
						Total Foundation Reinforcement Costs			**47,562.25**
Superstructure (Typical Floor, Including Roof)									
Typical Elevated Structural Slabs @ 4000psi & 10" depth, Drop Panels @ 8"	902.60	CY	112.00	101,091.20	7.15	6,453.59	4.40	3,971.44	111,516.23
CIP Structural Beams, 4000psi, Crane Bucket	219.65	CY	112.00	24,600.80	19.00	4,173.35	11.75	2,580.89	31,355.04
CIP Columns @ 4000 psi, 24" Square, Crane Bucket	103.33	CY	112.00	11,572.96	12.45	1,286.46	7.65	790.47	13,649.89
Totals	*1,225.58*			*137,264.96*		*11,913.40*		*7,342.80*	*156,521.16*
***Three Floors & Roof -- 4 Total Levels*				*549,059.84*		*47,653.59*		*29,371.21*	*596,713.43*
						Total Superstructure Concrete Costs			**596,713.43**
Reinforcement CIP Concrete Elevated Slab, #3-#7	22.14	Tons	840.00	18,597.60	485.00	10,737.90			29,335.50
Reinforcement CIP Structural Beams, #3 - #7	4.16	Tons	840.00	3,494.40	485.00	2,017.60			5,512.00
Reinforcement CIP Structural Beams, #8 - #18	10.51	Tons	840.00	8,828.40	287.00	3,016.37			11,844.77
Reinforcement CIP Columns, #8 - #18	12.51	Tons	840.00	10,508.40	340.00	4,253.40			14,761.80
	49.32			*41,428.80*		*20,025.27*			*61,454.07*
***Three Floors & Roof -- 4 Total Levels*				*165,715.20*		*80,101.08*			*245,816.28*
						Total Superstructure Reinforcement Costs			**245,816.28**
					Total Concrete & Reinforcement Costs				**$1,121,630.56**

Structural Steel Estimate for Civista Medical Center										
Item	Length (ft)	Qty	Tons	Material $/Unit	Total Material	Labor $/Unit	Total Labor Cost ($)	Equipment $/ Unit	Total Equipment	Total Cost ($)
W6 x 15	7	1	0.053	1900	100.70	345	18.29	109	5.78	124.76
W8 x 10	3	1	0.015	1900	28.50	345	5.18	109	1.64	35.31
W8 x 10	4	2	0.04	1900	76.00	345	13.80	109	4.36	94.16
W8 x 10	6	5	0.15	1900	285.00	345	51.75	109	16.35	353.10
W8 x 10	8	6	0.24	1900	456.00	345	82.80	109	26.16	564.96
W8 x 10	9	2	0.09	1900	171.00	345	31.05	109	9.81	211.86
W8 x 10	10	30	1.5	1900	2,850.00	345	517.50	109	163.50	3,531.00
W8 x 10	12	1	0.06	1900	114.00	345	20.70	109	6.54	141.24
W8 x 13	7	2	0.091	1900	172.90	345	31.40	109	9.92	214.21
W8 x 15	2	4	0.06	1900	114.00	345	20.70	109	6.54	141.24
W8 x 15	8	4	0.24	1900	456.00	345	82.80	109	26.16	564.96
W8 x 15	10	3	0.225	1900	427.50	345	77.63	109	24.53	529.65
W8 x 15	18	1	0.135	1900	256.50	345	46.58	109	14.72	317.79
W8 x 18	2	10	0.18	1900	342.00	345	62.10	109	19.62	423.72
W8 x 18	9	1	0.081	1900	153.90	345	27.95	109	8.83	190.67
W8 x 21	2	2	0.042	1900	79.80	345	14.49	109	4.58	98.87
W10 x 12	14	7	0.588	1900	1,117.20	345	202.86	109	64.09	1,384.15
W10 x 12	17	1	0.102	1900	193.80	345	35.19	109	11.12	240.11
W10 x 12	18	1	0.108	1900	205.20	345	37.26	109	11.77	254.23
W10 x 12	22	1	0.132	1900	250.80	345	45.54	109	14.39	310.73
W10 x 33	11	2	0.363	1900	689.70	345	125.24	109	39.57	854.50
W10 x 33	16	2	0.528	1900	1,003.20	345	182.16	109	57.55	1,242.91
W12 x 14	4	8	0.224	1900	425.60	345	77.28	109	24.42	527.30
W12 x 14	8	10	0.56	1900	1,064.00	345	193.20	109	61.04	1,318.24
W12 x 14	10	4	0.28	1900	532.00	345	96.60	109	30.52	659.12
W12 x 14	11	2	0.154	1900	292.60	345	53.13	109	16.79	362.52
W12 x 14	12	1	0.084	1900	159.60	345	28.98	109	9.16	197.74
W12 x 14	15	12	1.26	1900	2,394.00	345	434.70	109	137.34	2,966.04
W12 x 14	16	3	0.336	1900	638.40	345	115.92	109	36.62	790.94
W12 x 14	18	2	0.252	1900	478.80	345	86.94	109	27.47	593.21
W12 x 14	19	11	1.463	1900	2,779.70	345	504.74	109	159.47	3,443.90
W12 x 14	20	1	0.14	1900	266.00	345	48.30	109	15.26	329.56
W12 x 16	4	3	0.096	1900	182.40	345	33.12	109	10.46	225.98
W12 x 16	10	7	0.56	1900	1,064.00	345	193.20	109	61.04	1,318.24
W12 x 16	14	6	0.672	1900	1,276.80	345	231.84	109	73.25	1,581.89
W12 x 16	16	7	0.896	1900	1,702.40	345	309.12	109	97.66	2,109.18
W12 x 16	18	4	0.576	1900	1,094.40	345	198.72	109	62.78	1,355.90
W12 x 16	20	2	0.32	1900	608.00	345	110.40	109	34.88	753.28
W12 x 16	22	4	0.704	1900	1,337.60	345	242.88	109	76.74	1,657.22
W12 x 19	8	1	0.076	1900	144.40	345	26.22	109	8.28	178.90
W12 x 19	10	4	0.38	1900	722.00	345	131.10	109	41.42	894.52
W12 x 19	12	6	0.684	1900	1,299.60	345	235.98	109	74.56	1,610.14
W12 x 19	16	4	0.608	1900	1,155.20	345	209.76	109	66.27	1,431.23
W12 x 19	17	3	0.485	1900	921.50	345	167.33	109	52.87	1,141.69
W12 x 19	18	5	0.855	1900	1,624.50	345	294.98	109	93.20	2,012.67
W12 x 19	20	2	0.38	1900	722.00	345	131.10	109	41.42	894.52
W12 x 19	22	15	3.135	1900	5,956.50	345	1,081.58	109	341.72	7,379.79
W12 x 19	24	2	0.456	1900	866.40	345	157.32	109	49.70	1,073.42
W12 x 19	26	1	0.247	1900	469.30	345	85.22	109	26.92	581.44
W12 x 22	24	1	0.264	1900	501.60	345	91.08	109	28.78	621.46
W12 x 26	24	2	0.624	1900	1,185.60	345	215.28	109	68.02	1,468.90
W14 x 22	5	1	0.055	1900	104.50	345	18.98	109	6.00	129.47
W14 x 22	11	1	0.121	1900	229.90	345	41.75	109	13.19	284.83
W14 x 22	15	6	0.99	1900	1,881.00	345	341.55	109	107.91	2,330.46
W14 x 22	16	2	0.352	1900	668.80	345	121.44	109	38.37	828.61
W14 x 22	19	6	1.254	1900	2,382.60	345	432.63	109	136.69	2,951.92
W14 x 22	22	1	0.242	1900	459.80	345	83.49	109	26.38	569.67
W14 x 22	24	1	0.264	1900	501.60	345	91.08	109	28.78	621.46
W14 x 22	26	3	0.858	1900	1,630.20	345	296.01	109	93.52	2,019.73
W14 x 22	30	1	0.33	1900	627.00	345	113.85	109	35.97	776.82
W14 x 30	10	4	0.6	1900	1,140.00	345	207.00	109	65.40	1,412.40
W14 x 36	17	1	0.306	1900	581.40	345	105.57	109	33.35	720.32

W16 x 26	8	4	0.416	1900	790.40	345	143.52	109	45.34	979.26
W16 x 26	9	4	0.468	1900	889.20	345	161.46	109	51.01	1,101.67
W16 x 26	18	1	0.234	1900	444.60	345	80.73	109	25.51	550.84
W16 x 26	22	1	0.286	1900	543.40	345	98.67	109	31.17	673.24
W16 x 26	23	2	0.598	1900	1,136.20	345	206.31	109	65.18	1,407.69
W16 x 26	24	1	0.312	1900	592.80	345	107.64	109	34.01	734.45
W16 x 26	26	2	0.676	1900	1,284.40	345	233.22	109	73.68	1,591.30
W16 x 26	28	1	0.364	1900	691.60	345	125.58	109	39.68	856.86
W16 x 26	30	2	0.78	1900	1,482.00	345	269.10	109	85.02	1,836.12
W16 x 26	34	6	2.652	1900	5,038.80	345	914.94	109	289.07	6,242.81
W16 x 26	36	1	0.468	1900	889.20	345	161.46	109	51.01	1,101.67
W16 x 31	11	1	0.171	1900	324.90	345	59.00	109	18.64	402.53
W16 x 31	18	1	0.279	1900	530.10	345	96.26	109	30.41	656.77
W16 x 31	21	1	0.326	1900	619.40	345	112.47	109	35.53	767.40
W16 x 31	30	5	2.325	1900	4,417.50	345	802.13	109	253.43	5,473.05
W16 x 31	32	8	3.968	1900	7,539.20	345	1,368.96	109	432.51	9,340.67
W16 x 36	22	1	0.396	1900	752.40	345	136.62	109	43.16	932.18
W18 x 13	2	45	0.585	1900	1,111.50	345	201.83	109	63.77	1,377.09
W18 x 35	7	1	0.123	1900	233.70	345	42.44	109	13.41	289.54
W18 x 35	11	2	0.385	1900	731.50	345	132.83	109	41.97	906.29
W18 x 35	16	3	0.84	1900	1,596.00	345	289.80	109	91.56	1,977.36
W18 x 35	17	1	0.298	1900	566.20	345	102.81	109	32.48	701.49
W18 x 35	18	1	0.315	1900	598.50	345	108.68	109	34.34	741.51
W18 x 35	19	1	0.333	1900	632.70	345	114.89	109	36.30	783.88
W18 x 35	21	2	0.735	1900	1,396.50	345	253.58	109	80.12	1,730.19
W18 x 35	41	2	1.435	1900	2,726.50	345	495.08	109	156.42	3,377.99
W18 x 40	7	1	0.14	1900	266.00	345	48.30	109	15.26	329.56
W18 x 40	24	1	0.48	1900	912.00	345	165.60	109	52.32	1,129.92
W18 x 40	30	1	0.6	1900	1,140.00	345	207.00	109	65.40	1,412.40
W18 x 40	33	1	0.66	1900	1,254.00	345	227.70	109	71.94	1,553.64
W18 x 55	36	2	1.98	1900	3,762.00	345	683.10	109	215.82	4,660.92
W21 x 44	11	1	0.242	1900	459.80	345	83.49	109	26.38	569.67
W21 x 44	17	2	0.748	1900	1,421.20	345	258.06	109	81.53	1,760.79
W21 x 44	22	1	0.484	1900	919.60	345	166.98	109	52.76	1,139.34
W21 x 44	26	4	2.288	1900	4,347.20	345	789.36	109	249.39	5,385.95
W21 x 44	34	2	1.496	1900	2,842.40	345	516.12	109	163.06	3,521.58
W21 x 50	17	2	0.85	1900	1,615.00	345	293.25	109	92.65	2,000.90
W21 x 50	25	1	0.625	1900	1,187.50	345	215.63	109	68.13	1,471.25
W21 x 50	32	1	0.8	1900	1,520.00	345	276.00	109	87.20	1,883.20
W21 x 50	34	1	0.85	1900	1,615.00	345	293.25	109	92.65	2,000.90
W21 x 62	30	1	0.93	1900	1,767.00	345	320.85	109	101.37	2,189.22
W21 x 62	32	1	0.992	1900	1,884.80	345	342.24	109	108.13	2,335.17
W21 x 73	35	2	2.555	1900	4,854.50	345	881.48	109	278.50	6,014.47
W24 x 55	4	1	0.11	1900	209.00	345	37.95	109	11.99	258.94
W24 x 55	20	1	0.55	1900	1,045.00	345	189.75	109	59.95	1,294.70
W24 x 104	30	1	1.56	1900	2,964.00	345	538.20	109	170.04	3,672.24
W27 x 84	32	1	1.344	1900	2,553.60	345	463.68	109	146.50	3,163.78
W27 x 102	18	2	1.836	1900	3,488.40	345	633.42	109	200.12	4,321.94
W27 x 114	18	2	2.052	1900	3,898.80	345	707.94	109	223.67	4,830.41
Totals			***71.106***		***135,101.40***		***24,532.57***		***7,750.55***	***167,383.52***

Columns

W8 x 31	14	20	4.34	1900	8,246.00	345	1,497.30	109	473.06	10,216.36
W8 x 31	28	4	1.736	1900	3,298.40	345	598.92	109	189.22	4,086.54
W8 x 40	14	4	1.12	1900	2,128.00	345	386.40	109	122.08	2,636.48
W10 x 88	42	1	1.848	1900	3,511.20	345	637.56	109	201.43	4,350.19
W12 x 53	28	12	8.904	1900	16,917.60	345	3,071.88	109	970.54	20,960.02
W12 x 58	28	3	2.436	1900	4,628.40	345	840.42	109	265.52	5,734.34
W12 x 65	28	4	3.64	1900	6,916.00	345	1,255.80	109	396.76	8,568.56
W12 x 120	14	10	8.4	1900	15,960.00	345	2,898.00	109	915.60	19,773.60
W12 x 120	42	1	2.52	1900	4,788.00	345	869.40	109	274.68	5,932.08
W12 x 144	14	5	5.04	1900	9,576.00	345	1,738.80	109	549.36	11,864.16
W12 x 146	14	5	5.11	1900	9,709.00	345	1,762.95	109	556.99	12,028.94
Totals			***45.094***		***85,678.60***		***15,557.43***		***4,915.25***	***106,151.28***

Total Structural Steel Costs	**$273,534.80**

General Conditions Estimate

A General Conditions Estimate was done using RS Means Cost Works 2005 and cost data reports obtained from Gilbane. It includes project staffing costs as well as unit and lump sum costs incurred by the construction manager. Gilbane's fee is only 1.5%. This could result from the estimate not including home office overhead and the fact that their on-site office was an existing house, reducing mobilization costs.

General Conditions Estimate for Construction Phase of Civista Medical Center

Category	Description	Quantity	Units	Duration	Units	Rate	Total Cost
Field Labor	Project Manager	1	Ea	32	Mo	11,500	368,000
	Assistant Project Manager	1	Ea	32	Mo	10,100	323,200
	Project Engineer	1	Ea	32	Mo	7,800	249,600
	Office Engineer	1	Ea	26	Mo	6,200	161,200
	General Superintendant	1	Ea	32	Mo	10,700	342,400
	MEP Superintendant	1	Ea	22	Mo	9,300	204,600
	Area Superintendant	1	Ea	32	Mo	8,600	275,200
		Total Field Labor Costs					**$1,924,200**
		*** Estimate Values from RS Means Cost Works*					
Site Support	**Field Office**						
	Trailor Complex	1	Ea	32	Mo		
	Security System	1	LS			2,000	2,000
	Maintenance & Repair			32	Mo	250	8,000
	Field Office Equipment						
	Copy Machine			32	Mo	1,000	32,000
	Furniture	7	Stat			2,000	4,000
	Computer Equipment			32	Mo	527	60,000
	Telephone System	7	Stat			700	4,900
	Field Office Expense						
	Drinking Water			32	Mo	80	2,560
	Construction Signage	10	Est			1,000	10,000
	Blueprinting			32	Mo	300	9,600
	First Aid Supplies	1	LS			1,500	1,500
	Postage & Shipping			32	Mo	400	12,800
	Progress Photos			32	Mo	200	6,400
	Small Tools & Supplies			32	Mo	200	6,400
	Stationary, Paper & Supplies			32	Mo	620	19,840
	Nextel Phones, Beepers			32	Mo	600	19,200
	Job Travel Expense						
	Staff Travel			32	Mo	525	16,800
	Job Vehicle / Auto Allowance			41	Mo	600	24,600
	Temporary Living Expense			18	Mo	2,600	46,800
		Total Site Support Costs					**$287,400**
Site Services	**Temporary Facilities**						
	Chemical Toilets			32	Mo	115	3,680
	Storage Trailors & Tool Rooms			32	Mo	300	9,600
	Layout / Engineering						
	Precondition Survey	1	LS			30,000	30,000
	Temporary Construction / Safety						
	First Aid Kits	10	Ea			120	1,200
	Project Fire Extinguishers	10	Est			150	1,500
	Safety Incentives	2	Est			5,000	10,000
	Temp Elevator Operator			2	Mo	14,000	28,000
	Temp Protection of Existing Roofs	1	Est			25,000	25,000
	Temp Walkways & Guard Rails	1	Est			30,000	30,000
	Trash Chutes			24	Mo	3,000	72,000
	Project Clean-Up						
	Dumpster Services			33	Mo	1,400	46,200
	Final Clean-Up	160,000	SF			0.15	24,000
	Clean Exterior Windows	71,400	SF			0.35	25,000
	Temporary Power & Sewer						
	Connection - Water & Electric	1	Est			10,000	10,000
	Water & Sewer Charges			33	Mo	450	14,850
	Electric Consumption			33	Mo	7,000	231,000
	Temp. Heat	1	Est			38,000	38,000
	Insurance / Taxes						

	General & Excess Liability	1	Calc			220,000	220,000
		Total Site Services Costs					**$820,030**
Additional Services	Temp. Utility Installation		LS			93,680	93,680
	Temp. Roads / Signage		LS			150,000	150,000
	Infection Control / LSM		LS			220,000	220,000
	Hoisting & Scaffolding		LS			180,000	180,000
		Total Additional Services Costs					**$643,680**
CM Fee	Fee @ 1.5% of Project Costs						645,000
		Total CM Fee					**$645,000**
		Total Project General Conditions					**$4,320,310**