REDLAND TECHNOLOGY CENTER

540 Gaither Road, Rockville, MD

Shawn Pepple
Construction Management

Technical Assignment #2
October 24, 2008
Dr. Messner

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2.1 EXECUTIVE SUMMARY

This technical report has been put together to familiarize the reader to the Redland Tech Center project in Rockville, MD. This tech report includes a detailed project schedule, site layout plans for each major phase of construction, a detailed structural systems estimate, a general conditions estimate, and a summary of the 2008 PACE Roundtable Conference.

Construction work on the Redland Tech Project started December 12, 2007 and will continue until the substantial completion date of May 29, 2009. The structural steel topped out June 18, 2008. The project is scheduled to be watertight by November 12, 2008.

Construction work at the Redland Tech project can be broken in to four phases: excavation, steel erection, precast erection, and interior finishes. Site logistics are important for this project. With three buildings being constructed in close proximity to each other, activities on one building usually affects the other two buildings. Traffic flows, both vehicular and pedestrian, have to be monitored carefully. The construction site is next door to an occupied office building whose tenants share the same parking lot and access roads.

The detailed structural system estimate includes all structural members, both substructure and superstructure. There are 781 structural steel members in Building 2 weighing 1,138 tons. 4,966 cy concrete are needed to pour the foundations and slabs in Building 2. The total structural system estimated cost is $5,147,000, which results in a cost of $24.48/sf.

General conditions cost for the project is $3,631,709, which is 6.9% of the total project cost.

The Energy and Economy breakout session at the 2008 PACE Roundtable Conference covered several very interesting topics. Timing of final steel design in the mill order process is the topic that peaked my interest most. New emerging technologies to improve the energy efficiencies of buildings are also something I would be interested in pursuing in my thesis.

2.2 DETAILED PROJECT SCHEDULE

Design on Redland Tech Center Building 2 started April 23, 2007, and substantial completion for the project is planned for May 29, 2009, for a total duration of just over 25 months. Please see the complete detailed schedule for Building 2 in **Appendix A**. For a condensed version of the detailed schedule, please see *Figure 1* below.

ID	Task Name	Duration	Start	Finish
1	Preconstruction	172 days	Mon 4/23/07	Tue 12/18/07
7	Site Work	354 days	Wed 12/12/07	Mon 4/20/09
12	Structural Steel	77 days	Tue 3/4/08	Wed 6/18/08
29	Concrete	136 days	Thu 1/10/08	Thu 7/17/08
53	Façade	92 days	Tue 7/8/08	Wed 11/12/08
75	Roof	56 days	Mon 8/4/08	Mon 10/20/08
78	Mechanical	253 days	Thu 5/29/08	Mon 5/18/09
86	1st Floor Interior Work	225 days	Mon 5/19/08	Fri 3/27/09
105	2nd Floor Interior Work	150 days	Mon 6/9/08	Fri 1/2/09
123	3rd Floor Interior Work	150 days	Mon 6/23/08	Fri 1/16/09
141	4th Floor Interior Work	150 days	Mon 7/7/08	Fri 1/30/09
159	5th Floor Interior Work	150 days	Mon 7/21/08	Fri 2/13/09
177	6th Floor Interior Work	150 days	Mon 8/4/08	Fri 2/27/09
195	7th Floor Interior Work	150 days	Mon 8/18/08	Fri 3/13/09
213	8th Floor Interior Work	150 days	Mon 9/1/08	Fri 3/27/09
231	9th Floor Interior Work	150 days	Mon 9/15/08	Fri 4/10/09
249	Closeout	55 days	Mon 3/16/09	Fri 5/29/09

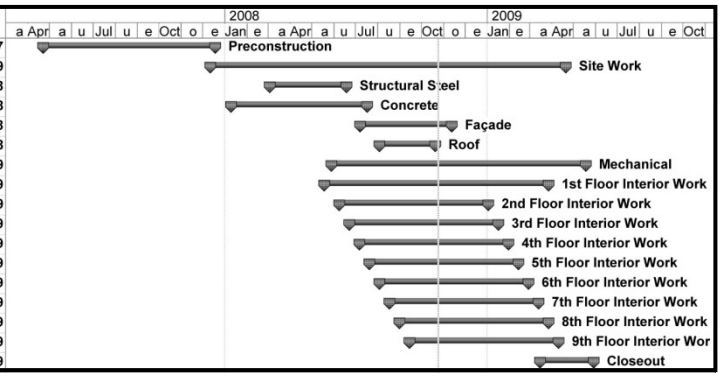


Figure 1 – Redland Tech Center Building 2 Project Schedule Overview

Key completion dates of the Building 2 schedule are as follows:

Foundations Complete	February 28, 2008
Steel Structure Topped Out	June 18, 2008
Elevated Slab Complete	July 17, 2008
Precast Façade Topped Out	October 9, 2008
Roofing Complete	October 20, 2008
Window Installation Complete	November 12, 2008
Building Watertight	November 12, 2008
Mechanical Systems Complete	May 18, 2009
Elevators Complete	May 18, 2009
Substantial Completion & C. of O.	May 29, 2009

2.3 SITE LAYOUT PLANNING

The construction of the Redland Tech Center complex can be broken into 4 main phases of work: excavation, steel erection, precast erection, and interior finishes.

Excavation

Excavation in the Building 2 and 3 footprints was limited to scraping topsoil off the site, approximately 3' deep. Excavation of Building 2 was done from North to South towards the parking garage. Excavation of Building 3 was done from East to West towards the parking garage. All spoils were moved to the Southeast corner of the project site and stockpiled. Different types of soil were kept separately in the stockpile area in order to ease backfilling the foundations of the buildings and bringing the site up to final grade with good topsoil. The parking garage area, which was excavated down approximately 15' from initial grade, was excavated from South to North by a hydraulic excavator and dump trucks. An earthen ramp was used to drive the construction vehicles in and out of the excavated pit at the Southeast corner of the pit. The sides of the excavation were sloped at 45 degrees to maintain a safe work environment for the construction workers. See Excavation Phase Site Plan below.

Steel Erection

Erection of Building 2 started on March 4, 2008, one month before erection of Building 3 was started. The buildings were erected simultaneously by two 200-ton crawler cranes. As shown on the Steel Erection Phase Site Plan, see below, Building 2 was erected with the crane on the East side of Building 2 and Building 3 was erected with the crane on the South side of Building 3. The cranes would pick the steel off the delivery trucks and place the members in the steel laydown area until that member was needed for erection. Building 2 was erected in 16 sequences and Building 3 was erected in 10 sequences. Each sequence was roughly 50 pieces, 3 bays in the long direction of the buildings, and two stories high.

Precast Erection

Precast erection on the Redland Tech Center consists of two distinct parts: architectural precast concrete for the façade of Building 2 and 3 and structural precast concrete for the stand alone parking garage. Two 50-ton mobile truck cranes, one for each office building, were used to erect the façade precast. These cranes worked in a clockwise direction around the buildings with 3 stories of precast façade erected in each pass. Delivery trucks would enter the site and drive around the buildings to the cranes to be picked directly off the trucks and anchored to the buildings. The precast garage was erected by a 250-ton crawler crane from North to South. The

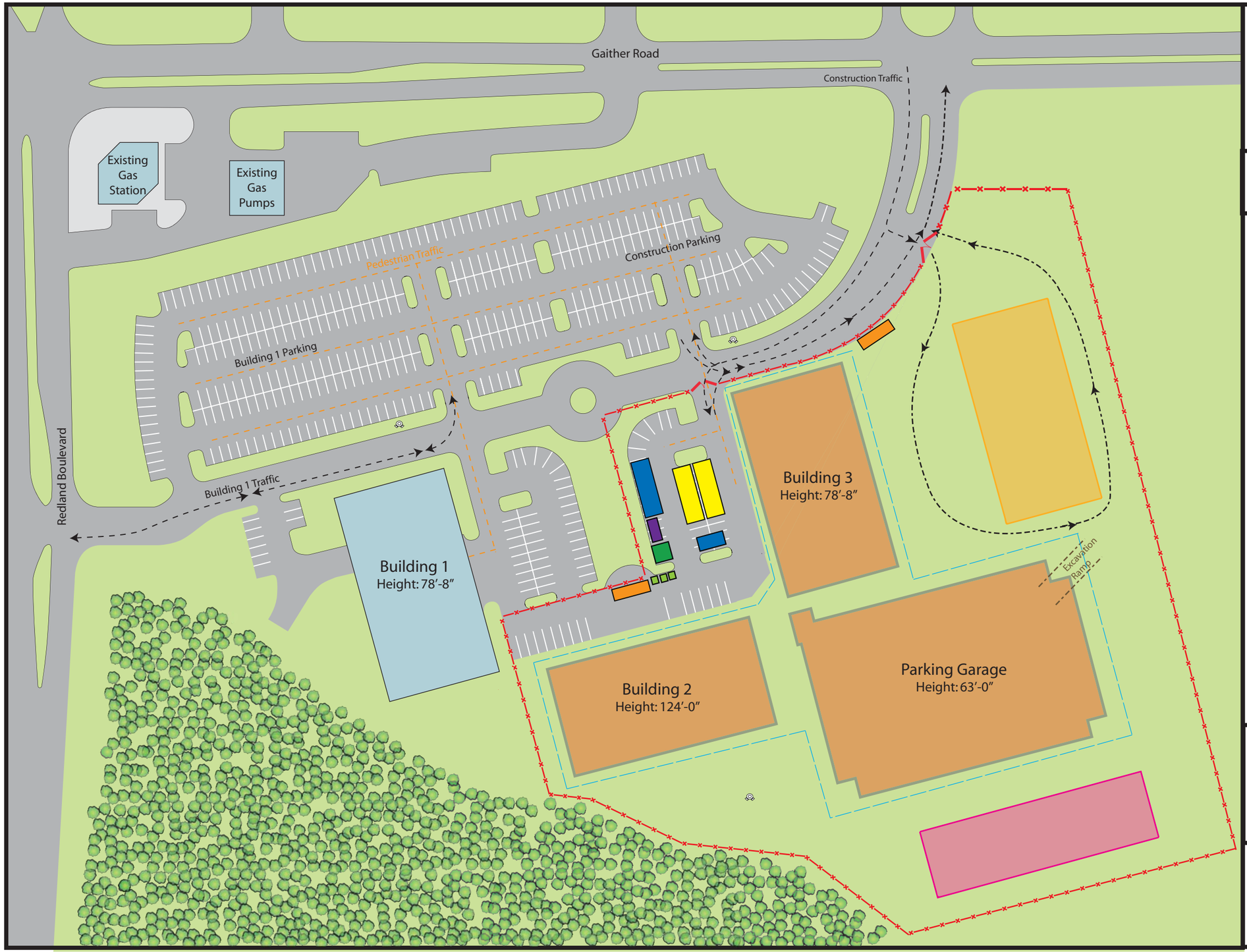
crane, erected one full height bay at a time. Like the façade precast, delivery trucks hauling structural precast would drive around the parking garage to the crane and have the members directly set. If delivery trucks arrived at the site before the members were needed, the trailers were unhooked in the precast staging area until that member was needed. See below for the Precast Erection Phase Site Plan.

Interior Finishes

During the interior finish construction phase of the project, one trash chute with a dumpster is to be installed for each building to allow construction waste to be removed from the buildings. There will not be a material hoist used on the project. Clark is planning to protect the elevators from damage and use them as hoists to move construction material throughout the buildings. See below for the Interior Finishes Phase Site Plan.

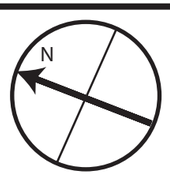
Redland Technology Center

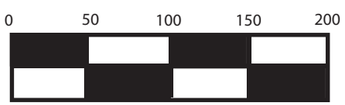
Excavation Phase Site Plan



Legend

1. Construction Fence/Limits
2. Construction Entrance & Gate
3. Fire Hydrant
4. Existing Building
5. Soil Stockpile
6. Excavation Boundary
7. Subcontractor Trailers
8. GC Trailers
9. Tool Trailer
10. Generator
11. Dumpster
12. Portable Toilet
13. Equipment Storage





Redland Technology Center

Steel Erection Phase Site Plan

Gaither Road

Construction Traffic

Existing Gas Station

Existing Gas Pumps

Pedestrian Traffic

Construction Parking

Building 1 Parking

Redland Boulevard

Building 1 Traffic

Building 1
Height: 78′-8″

Building 2
Height: 124′-0″

Building 3
Height: 78′-8″

200-ton Crawler Crane
Max Pick: 18-ton @ 120′ Raidus, Elev. 140′

200-ton Crawler Crane
Max Pick: 18-ton @ 120′ Raidus, Elev. 140′

Parking Garage
Height: 63′-0″

Legend

1. Construction Fence/Limits
2. Construction Entrance & Gate
3. Fire Hydrant
4. Existing Building
5. Steel Laydown Area
6. Soil Stockpile
7. Subcontractor Trailers
8. GC Trailers
9. Tool Trailer
10. Generator
11. Dumpster
12. Portable Toilet
13. Storage

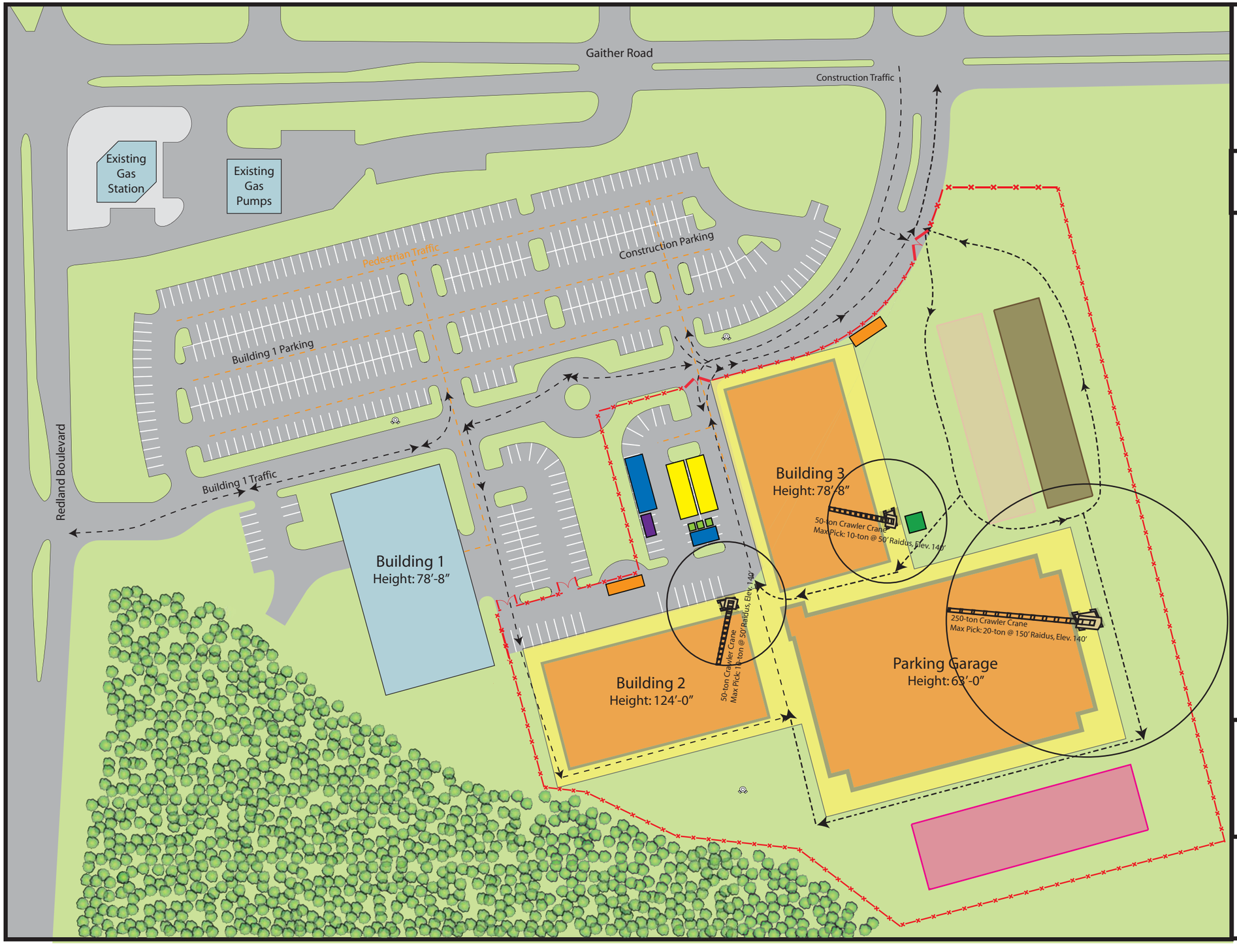
N

0 50 100 150 200

Scale: 1″=100′

Redland Technology Center

Precast Erection Phase Site Plan



Legend

1. Construction Fence/Limits
2. Construction Entrance & Gate
3. Fire Hydrant
4. Existing Building
5. Steel Laydown Area
6. Soil Stockpile
7. Subcontractor Trailers
8. GC Trailers
9. Tool Trailer
10. Temporary Power/Transformer
11. Dumpster
12. Portable Toilet
13. Storage
14. Precast Staging Area

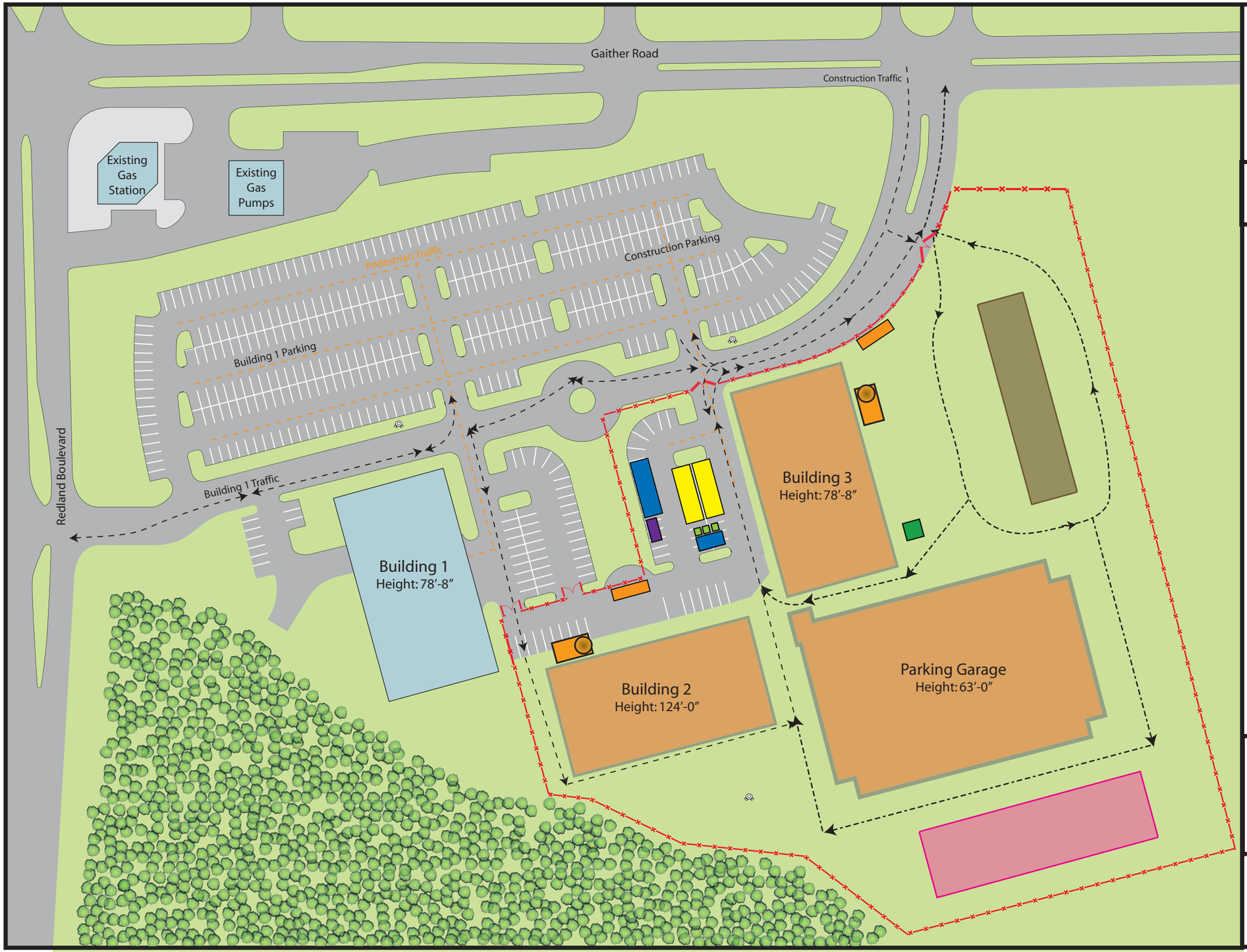
N

0 50 100 150 200

Scale: 1"=100'

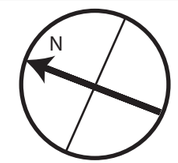
Redland Technology Center

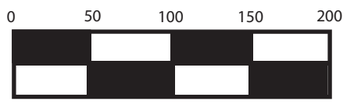
Interior Finishes Phase Site Plan



Legend

1. Construction Fence/Limits
2. Construction Entrance & Gate
3. Fire Hydrant
4. Existing Building
5. Storage
6. Soil Stockpile
7. Subcontractor Trailers
8. GC Trailers
9. Tool Trailer
10. Temporary Power/Transformer
11. Dumpster
12. Portable Toilet





2.4 Detailed Structural Systems Estimate

A detailed structural estimate was performed for Redland Tech Center Building 2. The results are shown below. Takeoff notes can be found in **Appendix B**. R.S. Means was used for the cost information. Costs were adjusted for the project location and timeframe of the project.

There are 781 members that make up the structural steel system of Building 2. This includes all beams, columns, and wind bracing members. Total tonnage for the structure is 1,138 tons. There are 210,609 sf of metal deck and 232,233 sf of WWF on the project.

Steel Cost						
Material	**Quantity**	**Unit**	**Material Cost**	**Labor Cost**	**Equipment Cost**	**Total**
Structural Steel	1,138	tons	$2,747,018.20	$559,213.20	$170,950.36	$3,477,181.76
Metal Deck	210,609	sf	$360,141.39	$109,516.68	$8,424.36	$478,082.43
WWF	232,233	csf	$40,780.11	$51,648.62	$0.00	$92,428.73
					Total Steel Cost	**$4,047,692.92**

There are 4,966 cy of concrete used to construct Building 2, with 1,155 cy used for the caissons and grade beams and 3,811 cy used for the slabs.

Concrete Cost					
Material	**Volume (cy)**	**Material Cost**	**Labor Cost**	**Equipment Cost**	**Total**
Caissons	828	$83,022.20	$16,517.99	$41,144.36	$140,684.56
Grade Beams	327	$76,486.45	$12,214.65	$131.34	$88,832.45
Slab on Grade	334	$51,387.03	$3,205.29	$185.07	$54,777.39
Elevated Deck	3477	$758,967.25	$35,900.98	$20,420.81	$815,289.04
				Total Concrete Cost	**$1,099,583.43**

Total Cost				
Material	**Material Cost**	**Labor Cost**	**Equipment Cost**	**Total**
Steel	$3,147,939.70	$720,378.50	$179,374.72	$4,047,692.92
Concrete	$969,862.94	$67,838.92	$61,881.58	$1,099,583.43
Totals	**$4,117,802.64**	**$788,217.42**	**$241,256.30**	**$5,147,276.35**

Total structural system cost for Redland Tech Center Building 2 is $5,147,276.35. The structural system cost is $24.48/sf. The result of this estimate is in the normal expected range of cost per square foot for construction.

2.5 General Conditions Estimate

A general conditions estimate was prepared for the Redland Tech Center. This GC estimate includes any applicable items that are used directly by the project team and construction crew but does not include Clark's home office over head. Some typical general conditions items, such as temporary roads, heat, and electric have been included in the subcontractor contracts. This estimate is based on the current 18 month construction schedule. If alterations are made to the duration of the schedule, this estimate can easily be altered to reflect either a shorter schedule and therefore a lower general conditions cost or a longer schedule and a higher general conditions cost.

In *Figure 2* below, the main categories of the general conditions estimate have been outlined. See **Appendix C** for the detailed general conditions estimate.

Description	Cost
Staffing	$1,645,949
Administrative Facilities and Supplies	$374,807
Safety	$160,650
Cleanup	$182,000
Jobsite Work Requirements	$267,200
Permitting	$4,200
Bonds and Insurance	$996,903
Total General Conditions Cost	**$3,631,709**

Figure 2 – General Conditions Estimate Overview

Staffing costs account for the majority of general conditions cost. The durations and weekly work hours for each Clark employee are detailed in the general conditions estimate. Clark only pays for the fence and trailer permits directly; all other necessary permits are paid for by the owner.

2.6 CRITICAL INDUSTRY ISSUES

For my breakout session, I selected to attend the Energy and Economy session. This topic seemed most pertinent to our environment today because the current economic downturn will affect everyone in the construction industry over the next few years and only the best prepared will survive unscathed.

Volatility and cost escalation of materials prices remains a major challenge of every construction company. Global forces have prices fluctuating to the point construction companies cannot predict costs for any length of time in the future. Contractors must reduce their exposure to risk by procuring subs and materials soon after receiving a contract with an owner for a project.

Owners have more interest in reducing life-cycle costs and energy efficiency than in the past. New technologies not previously seen in this country may become feasible due to higher energy costs. Technologies from Europe and Japan, where energy costs are higher, could be brought to the United States. Designers are placing more emphasis on controls design than in the past. Ensuring that building systems are operating as efficient as possible can save lots of money without new technology being invented.

New rebates from the government are able to offset high purchase costs of renewable power generators such as photovoltaic panels or wind power.

Good and bad market sectors were talked about. Sectors such as data centers, federal work, education, and renovation are thought to be safe markets to currently be in. The market for condos and office buildings are thought to be virtually nonexistent in the next few years.

It was recommended by the industry members that students really try to find companies who are willing to invest in their employees. While they might not be as busy as usual, a good company will retain its good employees and train them in new experiences. This will allow the company to hit the ground running whenever the market comes back.

I was surprised how positive the industry members were about the current economic situation. It seemed they really believed their company had the right strategy to get through the tough times. There is a cyclical nature to construction and most industry members were in this same circumstance in the past.

For my thesis, a good topic that would apply to my project would be the timing of steel design and ordering steel from the mill. If the designer can release a design earlier than typically done, would it save money? Would this help control cost escalation? One idea brought up in the

session was the question of what point in the steel design process does the extra time it takes to perfect the design cost more than releasing the steel mill order and getting the steel at a cheaper price. Also, I may want to look at new technologies that can improve the energy efficiency of buildings.

The below contacts may be able to help me with these ideas:

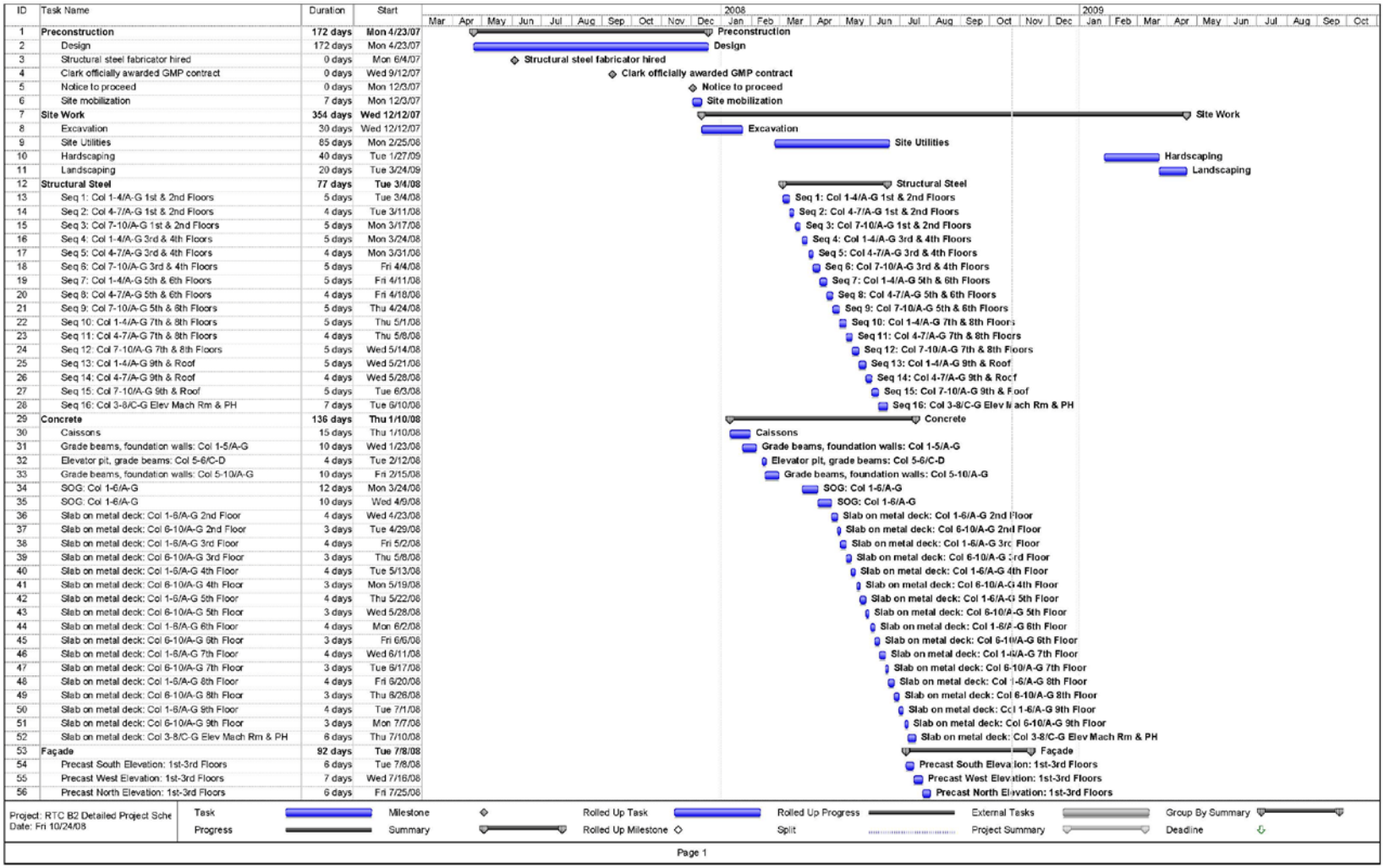
Mr. Stan Carlat
Hensel Phelps

Dr. Mark Konchar
Balfour Beatty Construction

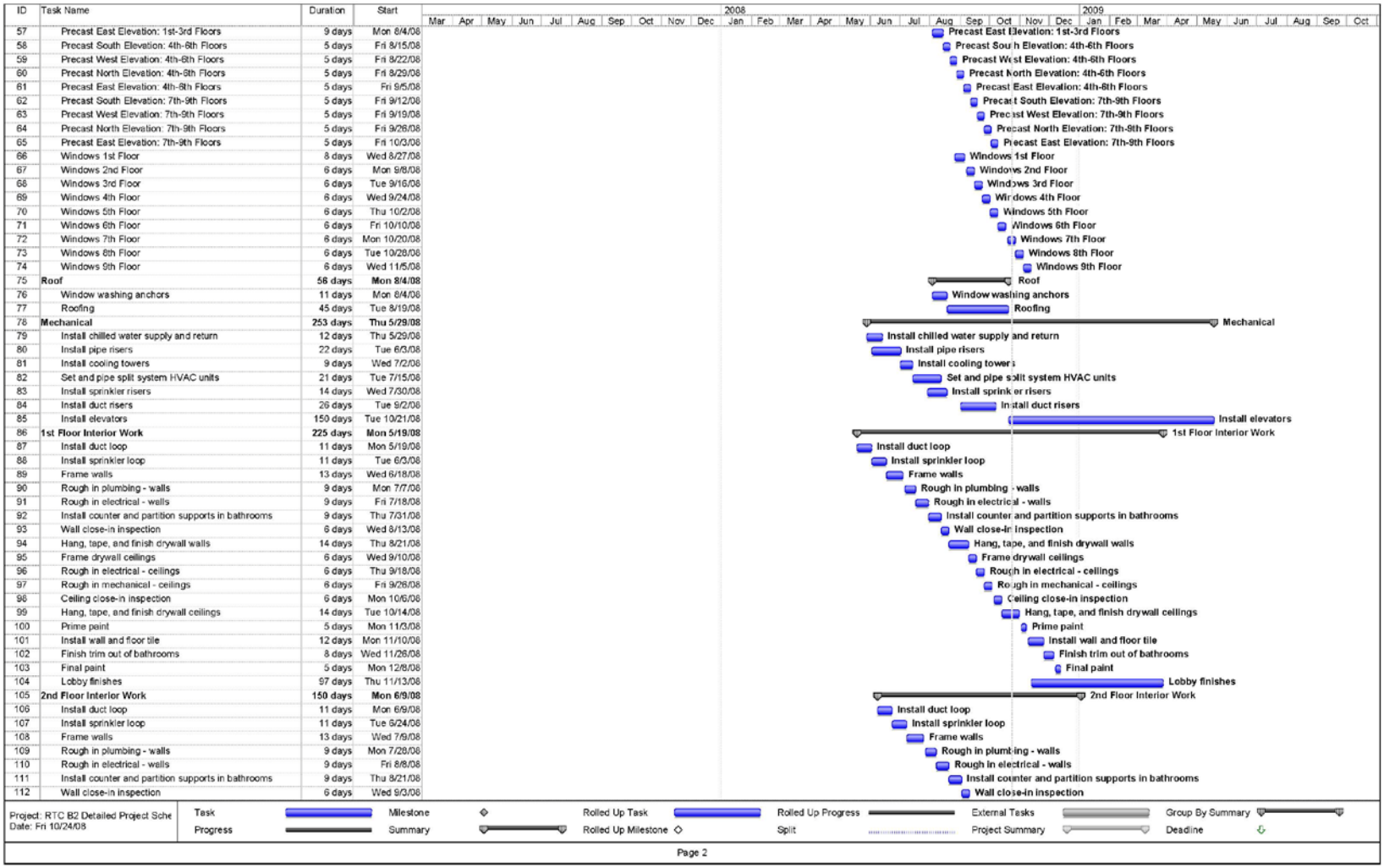
Mr. Raj Vora
Southland Industries

Mr. Charles Tomasco
Truland Systems Corporation

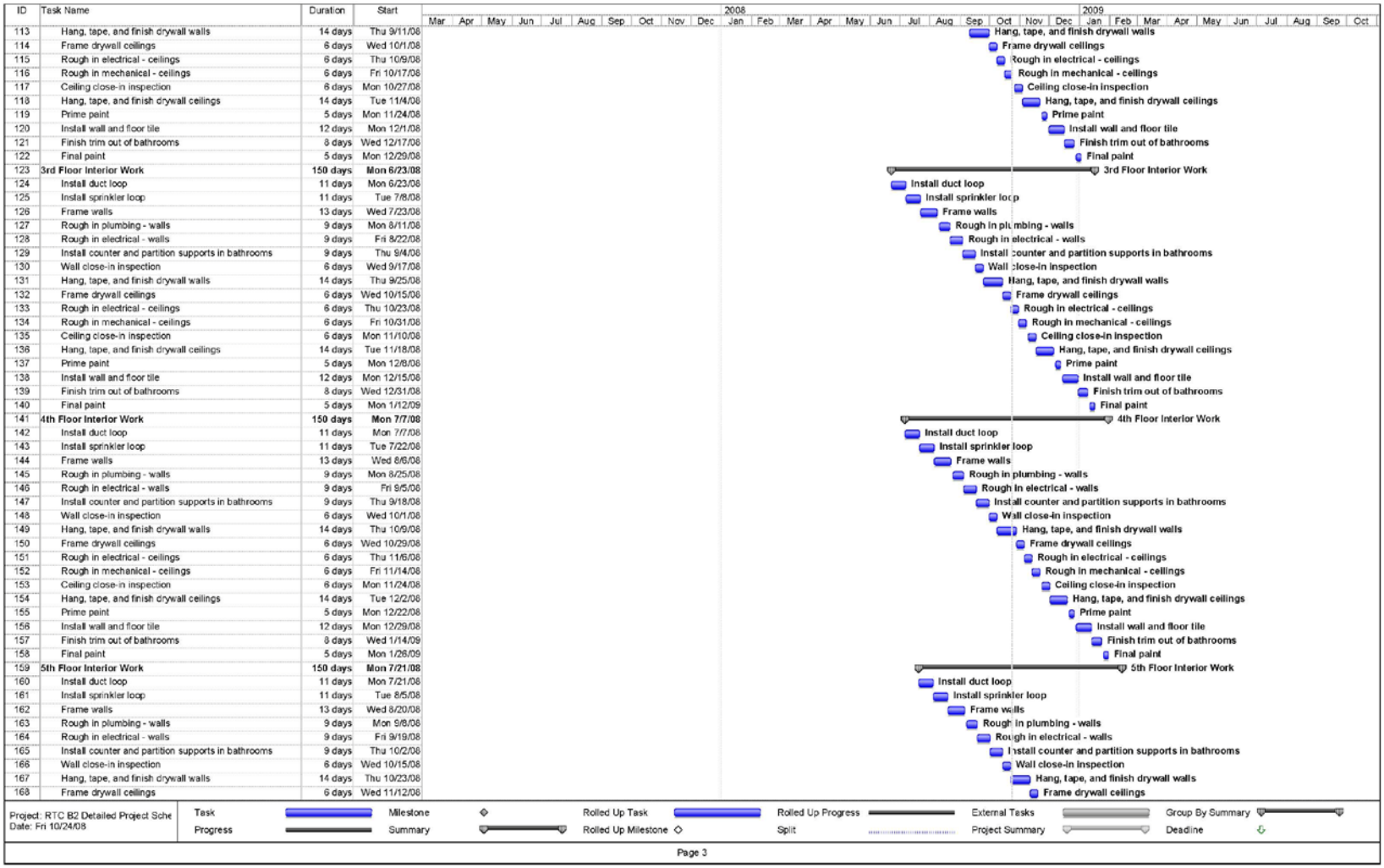
APPENDIX A – DETAILED PROJECT SCHEDULE



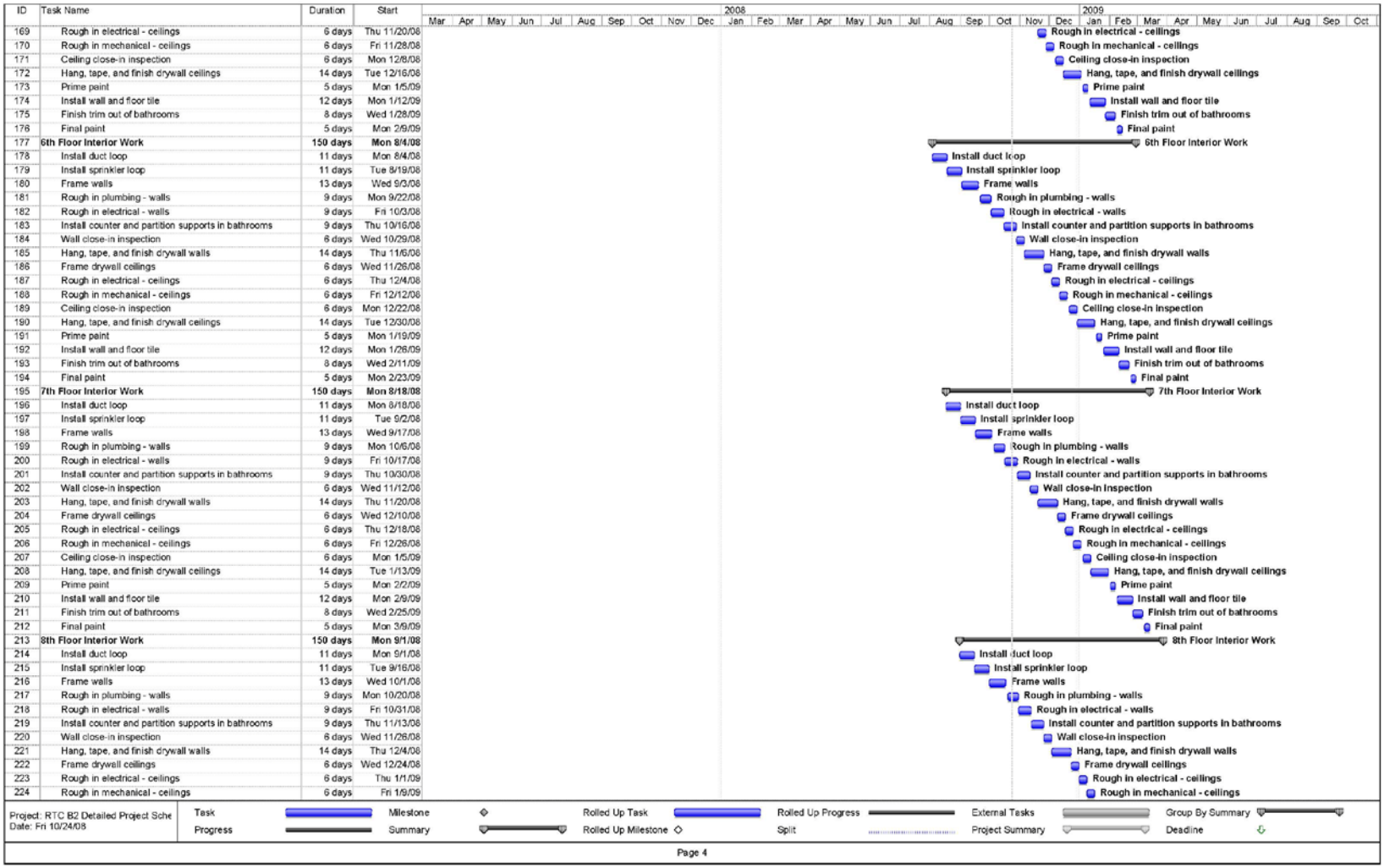
ID	Task Name	Duration	Start
1	**Preconstruction**	**172 days**	**Mon 4/23/07**
2	Design	172 days	Mon 4/23/07
3	Structural steel fabricator hired	0 days	Mon 6/4/07
4	Clark officially awarded GMP contract	0 days	Wed 9/12/07
5	Notice to proceed	0 days	Mon 12/3/07
6	Site mobilization	7 days	Mon 12/3/07
7	**Site Work**	**354 days**	**Wed 12/12/07**
8	Excavation	30 days	Wed 12/12/07
9	Site Utilities	85 days	Mon 2/25/08
10	Hardscaping	40 days	Tue 1/27/09
11	Landscaping	20 days	Tue 3/24/09
12	**Structural Steel**	**77 days**	**Tue 3/4/08**
13	Seq 1: Col 1-4/A-G 1st & 2nd Floors	5 days	Tue 3/4/08
14	Seq 2: Col 4-7/A-G 1st & 2nd Floors	4 days	Tue 3/11/08
15	Seq 3: Col 7-10/A-G 1st & 2nd Floors	5 days	Mon 3/17/08
16	Seq 4: Col 1-4/A-G 3rd & 4th Floors	5 days	Mon 3/24/08
17	Seq 5: Col 4-7/A-G 3rd & 4th Floors	4 days	Mon 3/31/08
18	Seq 6: Col 7-10/A-G 3rd & 4th Floors	5 days	Fri 4/4/08
19	Seq 7: Col 1-4/A-G 5th & 6th Floors	5 days	Fri 4/11/08
20	Seq 8: Col 4-7/A-G 5th & 6th Floors	4 days	Fri 4/18/08
21	Seq 9: Col 7-10/A-G 5th & 6th Floors	5 days	Thu 4/24/08
22	Seq 10: Col 1-4/A-G 7th & 8th Floors	5 days	Thu 5/1/08
23	Seq 11: Col 4-7/A-G 7th & 8th Floors	4 days	Thu 5/8/08
24	Seq 12: Col 7-10/A-G 7th & 8th Floors	5 days	Wed 5/14/08
25	Seq 13: Col 1-4/A-G 9th & Roof	5 days	Wed 5/21/08
26	Seq 14: Col 4-7/A-G 9th & Roof	4 days	Wed 5/28/08
27	Seq 15: Col 7-10/A-G 9th & Roof	5 days	Tue 6/3/08
28	Seq 16: Col 3-8/C-G Elev Mach Rm & PH	7 days	Tue 6/10/08
29	**Concrete**	**136 days**	**Thu 1/10/08**
30	Caissons	15 days	Thu 1/10/08
31	Grade beams, foundation walls: Col 1-5/A-G	10 days	Wed 1/23/08
32	Elevator pit, grade beams: Col 5-6/C-D	4 days	Tue 2/12/08
33	Grade beams, foundation walls: Col 5-10/A-G	10 days	Fri 2/15/08
34	SOG: Col 1-6/A-G	12 days	Mon 3/24/08
35	SOG: Col 1-6/A-G	10 days	Wed 4/9/08
36	Slab on metal deck: Col 1-6/A-G 2nd Floor	4 days	Wed 4/23/08
37	Slab on metal deck: Col 6-10/A-G 2nd Floor	3 days	Tue 4/29/08
38	Slab on metal deck: Col 1-6/A-G 3rd Floor	4 days	Fri 5/2/08
39	Slab on metal deck: Col 6-10/A-G 3rd Floor	3 days	Thu 5/8/08
40	Slab on metal deck: Col 1-6/A-G 4th Floor	4 days	Tue 5/13/08
41	Slab on metal deck: Col 6-10/A-G 4th Floor	3 days	Mon 5/19/08
42	Slab on metal deck: Col 1-6/A-G 5th Floor	4 days	Thu 5/22/08
43	Slab on metal deck: Col 6-10/A-G 5th Floor	3 days	Wed 5/28/08
44	Slab on metal deck: Col 1-6/A-G 6th Floor	4 days	Mon 6/2/08
45	Slab on metal deck: Col 6-10/A-G 6th Floor	3 days	Fri 6/6/08
46	Slab on metal deck: Col 1-6/A-G 7th Floor	4 days	Wed 6/11/08
47	Slab on metal deck: Col 6-10/A-G 7th Floor	3 days	Tue 6/17/08
48	Slab on metal deck: Col 1-6/A-G 8th Floor	4 days	Fri 6/20/08
49	Slab on metal deck: Col 6-10/A-G 8th Floor	3 days	Thu 6/26/08
50	Slab on metal deck: Col 1-6/A-G 9th Floor	4 days	Tue 7/1/08
51	Slab on metal deck: Col 6-10/A-G 9th Floor	3 days	Mon 7/7/08
52	Slab on metal deck: Col 3-8/C-G Elev Mach Rm & PH	6 days	Thu 7/10/08
53	**Façade**	**92 days**	**Tue 7/8/08**
54	Precast South Elevation: 1st-3rd Floors	6 days	Tue 7/8/08
55	Precast West Elevation: 1st-3rd Floors	7 days	Wed 7/16/08
56	Precast North Elevation: 1st-3rd Floors	6 days	Fri 7/25/08



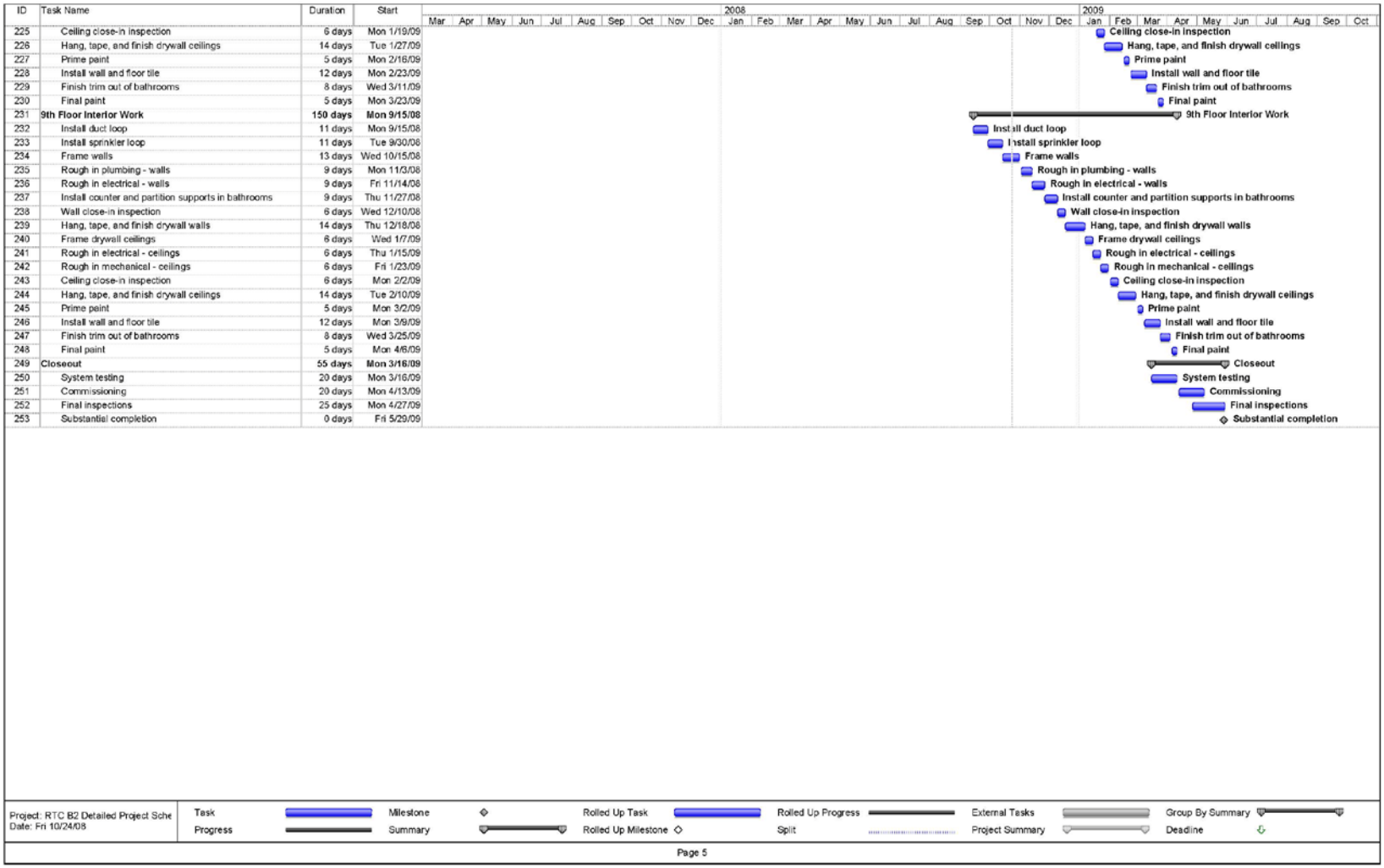
ID	Task Name	Duration	Start
57	Precast East Elevation: 1st-3rd Floors	9 days	Mon 8/4/08
58	Precast South Elevation: 4th-6th Floors	5 days	Fri 8/15/08
59	Precast West Elevation: 4th-6th Floors	5 days	Fri 8/22/08
60	Precast North Elevation: 4th-6th Floors	5 days	Fri 8/29/08
61	Precast East Elevation: 4th-6th Floors	5 days	Fri 9/5/08
62	Precast South Elevation: 7th-9th Floors	5 days	Fri 9/12/08
63	Precast West Elevation: 7th-9th Floors	5 days	Fri 9/19/08
64	Precast North Elevation: 7th-9th Floors	5 days	Fri 9/26/08
65	Precast East Elevation: 7th-9th Floors	5 days	Fri 10/3/08
66	Windows 1st Floor	8 days	Wed 8/27/08
67	Windows 2nd Floor	6 days	Mon 9/8/08
68	Windows 3rd Floor	6 days	Tue 9/16/08
69	Windows 4th Floor	6 days	Wed 9/24/08
70	Windows 5th Floor	6 days	Thu 10/2/08
71	Windows 6th Floor	6 days	Fri 10/10/08
72	Windows 7th Floor	6 days	Mon 10/20/08
73	Windows 8th Floor	6 days	Tue 10/28/08
74	Windows 9th Floor	6 days	Wed 11/5/08
75	**Roof**	**56 days**	**Mon 8/4/08**
76	Window washing anchors	11 days	Mon 8/4/08
77	Roofing	45 days	Tue 8/19/08
78	**Mechanical**	**253 days**	**Thu 5/29/08**
79	Install chilled water supply and return	12 days	Thu 5/29/08
80	Install pipe risers	22 days	Tue 6/3/08
81	Install cooling towers	9 days	Wed 7/2/08
82	Set and pipe split system HVAC units	21 days	Tue 7/15/08
83	Install sprinkler risers	14 days	Wed 7/30/08
84	Install duct risers	26 days	Tue 9/2/08
85	Install elevators	150 days	Tue 10/21/08
86	**1st Floor Interior Work**	**225 days**	**Mon 5/19/08**
87	Install duct loop	11 days	Mon 5/19/08
88	Install sprinkler loop	11 days	Tue 6/3/08
89	Frame walls	13 days	Wed 6/18/08
90	Rough in plumbing - walls	9 days	Mon 7/7/08
91	Rough in electrical - walls	9 days	Fri 7/18/08
92	Install counter and partition supports in bathrooms	9 days	Thu 7/31/08
93	Wall close-in inspection	6 days	Wed 8/13/08
94	Hang, tape, and finish drywall walls	14 days	Thu 8/21/08
95	Frame drywall ceilings	6 days	Wed 9/10/08
96	Rough in electrical - ceilings	6 days	Thu 9/18/08
97	Rough in mechanical - ceilings	6 days	Fri 9/26/08
98	Ceiling close-in inspection	6 days	Mon 10/6/08
99	Hang, tape, and finish drywall ceilings	14 days	Tue 10/14/08
100	Prime paint	5 days	Mon 11/3/08
101	Install wall and floor tile	12 days	Mon 11/10/08
102	Finish trim out of bathrooms	8 days	Wed 11/26/08
103	Final paint	5 days	Mon 12/8/08
104	Lobby finishes	97 days	Thu 11/13/08
105	**2nd Floor Interior Work**	**150 days**	**Mon 6/9/08**
106	Install duct loop	11 days	Mon 6/9/08
107	Install sprinkler loop	11 days	Tue 6/24/08
108	Frame walls	13 days	Wed 7/9/08
109	Rough in plumbing - walls	9 days	Mon 7/28/08
110	Rough in electrical - walls	9 days	Fri 8/8/08
111	Install counter and partition supports in bathrooms	9 days	Thu 8/21/08
112	Wall close-in inspection	6 days	Wed 9/3/08



ID	Task Name	Duration	Start
113	Hang, tape, and finish drywall walls	14 days	Thu 9/11/08
114	Frame drywall ceilings	6 days	Wed 10/1/08
115	Rough in electrical - ceilings	6 days	Thu 10/9/08
116	Rough in mechanical - ceilings	6 days	Fri 10/17/08
117	Ceiling close-in inspection	6 days	Mon 10/27/08
118	Hang, tape, and finish drywall ceilings	14 days	Tue 11/4/08
119	Prime paint	5 days	Mon 11/24/08
120	Install wall and floor tile	12 days	Mon 12/1/08
121	Finish trim out of bathrooms	8 days	Wed 12/17/08
122	Final paint	5 days	Mon 12/29/08
123	**3rd Floor Interior Work**	**150 days**	**Mon 6/23/08**
124	Install duct loop	11 days	Mon 6/23/08
125	Install sprinkler loop	11 days	Tue 7/8/08
126	Frame walls	13 days	Wed 7/23/08
127	Rough in plumbing - walls	9 days	Mon 8/11/08
128	Rough in electrical - walls	9 days	Fri 8/22/08
129	Install counter and partition supports in bathrooms	9 days	Thu 9/4/08
130	Wall close-in inspection	6 days	Wed 9/17/08
131	Hang, tape, and finish drywall walls	14 days	Thu 9/25/08
132	Frame drywall ceilings	6 days	Wed 10/15/08
133	Rough in electrical - ceilings	6 days	Thu 10/23/08
134	Rough in mechanical - ceilings	6 days	Fri 10/31/08
135	Ceiling close-in inspection	6 days	Mon 11/10/08
136	Hang, tape, and finish drywall ceilings	14 days	Tue 11/18/08
137	Prime paint	5 days	Mon 12/8/08
138	Install wall and floor tile	12 days	Mon 12/15/08
139	Finish trim out of bathrooms	8 days	Wed 12/31/08
140	Final paint	5 days	Mon 1/12/09
141	**4th Floor Interior Work**	**150 days**	**Mon 7/7/08**
142	Install duct loop	11 days	Mon 7/7/08
143	Install sprinkler loop	11 days	Tue 7/22/08
144	Frame walls	13 days	Wed 8/6/08
145	Rough in plumbing - walls	9 days	Mon 8/25/08
146	Rough in electrical - walls	9 days	Fri 9/5/08
147	Install counter and partition supports in bathrooms	9 days	Thu 9/18/08
148	Wall close-in inspection	6 days	Wed 10/1/08
149	Hang, tape, and finish drywall walls	14 days	Thu 10/9/08
150	Frame drywall ceilings	6 days	Wed 10/29/08
151	Rough in electrical - ceilings	6 days	Thu 11/6/08
152	Rough in mechanical - ceilings	6 days	Fri 11/14/08
153	Ceiling close-in inspection	6 days	Mon 11/24/08
154	Hang, tape, and finish drywall ceilings	14 days	Tue 12/2/08
155	Prime paint	5 days	Mon 12/22/08
156	Install wall and floor tile	12 days	Mon 12/29/08
157	Finish trim out of bathrooms	8 days	Wed 1/14/09
158	Final paint	5 days	Mon 1/26/09
159	**5th Floor Interior Work**	**150 days**	**Mon 7/21/08**
160	Install duct loop	11 days	Mon 7/21/08
161	Install sprinkler loop	11 days	Tue 8/5/08
162	Frame walls	13 days	Wed 8/20/08
163	Rough in plumbing - walls	9 days	Mon 9/8/08
164	Rough in electrical - walls	9 days	Fri 9/19/08
165	Install counter and partition supports in bathrooms	9 days	Thu 10/2/08
166	Wall close-in inspection	6 days	Wed 10/15/08
167	Hang, tape, and finish drywall walls	14 days	Thu 10/23/08
168	Frame drywall ceilings	6 days	Wed 11/12/08



ID	Task Name	Duration	Start
169	Rough in electrical - ceilings	6 days	Thu 11/20/08
170	Rough in mechanical - ceilings	6 days	Fri 11/28/08
171	Ceiling close-in inspection	6 days	Mon 12/8/08
172	Hang, tape, and finish drywall ceilings	14 days	Tue 12/16/08
173	Prime paint	5 days	Mon 1/5/09
174	Install wall and floor tile	12 days	Mon 1/12/09
175	Finish trim out of bathrooms	8 days	Wed 1/28/09
176	Final paint	5 days	Mon 2/9/09
177	**6th Floor Interior Work**	**150 days**	**Mon 8/4/08**
178	Install duct loop	11 days	Mon 8/4/08
179	Install sprinkler loop	11 days	Tue 8/19/08
180	Frame walls	13 days	Wed 9/3/08
181	Rough in plumbing - walls	9 days	Mon 9/22/08
182	Rough in electrical - walls	9 days	Fri 10/3/08
183	Install counter and partition supports in bathrooms	9 days	Thu 10/16/08
184	Wall close-in inspection	6 days	Wed 10/29/08
185	Hang, tape, and finish drywall walls	14 days	Thu 11/6/08
186	Frame drywall ceilings	6 days	Wed 11/26/08
187	Rough in electrical - ceilings	6 days	Thu 12/4/08
188	Rough in mechanical - ceilings	6 days	Fri 12/12/08
189	Ceiling close-in inspection	6 days	Mon 12/22/08
190	Hang, tape, and finish drywall ceilings	14 days	Tue 12/30/08
191	Prime paint	5 days	Mon 1/19/09
192	Install wall and floor tile	12 days	Mon 1/26/09
193	Finish trim out of bathrooms	8 days	Wed 2/11/09
194	Final paint	5 days	Mon 2/23/09
195	**7th Floor Interior Work**	**150 days**	**Mon 8/18/08**
196	Install duct loop	11 days	Mon 8/18/08
197	Install sprinkler loop	11 days	Tue 9/2/08
198	Frame walls	13 days	Wed 9/17/08
199	Rough in plumbing - walls	9 days	Mon 10/6/08
200	Rough in electrical - walls	9 days	Fri 10/17/08
201	Install counter and partition supports in bathrooms	9 days	Thu 10/30/08
202	Wall close-in inspection	6 days	Wed 11/12/08
203	Hang, tape, and finish drywall walls	14 days	Thu 11/20/08
204	Frame drywall ceilings	6 days	Wed 12/10/08
205	Rough in electrical - ceilings	6 days	Thu 12/18/08
206	Rough in mechanical - ceilings	6 days	Fri 12/26/08
207	Ceiling close-in inspection	6 days	Mon 1/5/09
208	Hang, tape, and finish drywall ceilings	14 days	Tue 1/13/09
209	Prime paint	5 days	Mon 2/2/09
210	Install wall and floor tile	12 days	Mon 2/9/09
211	Finish trim out of bathrooms	8 days	Wed 2/25/09
212	Final paint	5 days	Mon 3/9/09
213	**8th Floor Interior Work**	**150 days**	**Mon 9/1/08**
214	Install duct loop	11 days	Mon 9/1/08
215	Install sprinkler loop	11 days	Tue 9/16/08
216	Frame walls	13 days	Wed 10/1/08
217	Rough in plumbing - walls	9 days	Mon 10/20/08
218	Rough in electrical - walls	9 days	Fri 10/31/08
219	Install counter and partition supports in bathrooms	9 days	Thu 11/13/08
220	Wall close-in inspection	6 days	Wed 11/26/08
221	Hang, tape, and finish drywall walls	14 days	Thu 12/4/08
222	Frame drywall ceilings	6 days	Wed 12/24/08
223	Rough in electrical - ceilings	6 days	Thu 1/1/09
224	Rough in mechanical - ceilings	6 days	Fri 1/9/09



ID	Task Name	Duration	Start
225	Ceiling close-in inspection	6 days	Mon 1/19/09
226	Hang, tape, and finish drywall ceilings	14 days	Tue 1/27/09
227	Prime paint	5 days	Mon 2/16/09
228	Install wall and floor tile	12 days	Mon 2/23/09
229	Finish trim out of bathrooms	8 days	Wed 3/11/09
230	Final paint	5 days	Mon 3/23/09
231	**9th Floor Interior Work**	**150 days**	**Mon 9/15/08**
232	Install duct loop	11 days	Mon 9/15/08
233	Install sprinkler loop	11 days	Tue 9/30/08
234	Frame walls	13 days	Wed 10/15/08
235	Rough in plumbing - walls	9 days	Mon 11/3/08
236	Rough in electrical - walls	9 days	Fri 11/14/08
237	Install counter and partition supports in bathrooms	9 days	Thu 11/27/08
238	Wall close-in inspection	6 days	Wed 12/10/08
239	Hang, tape, and finish drywall walls	14 days	Thu 12/18/08
240	Frame drywall ceilings	6 days	Wed 1/7/09
241	Rough in electrical - ceilings	6 days	Thu 1/15/09
242	Rough in mechanical - ceilings	6 days	Fri 1/23/09
243	Ceiling close-in inspection	6 days	Mon 2/2/09
244	Hang, tape, and finish drywall ceilings	14 days	Tue 2/10/09
245	Prime paint	5 days	Mon 3/2/09
246	Install wall and floor tile	12 days	Mon 3/9/09
247	Finish trim out of bathrooms	8 days	Wed 3/25/09
248	Final paint	5 days	Mon 4/6/09
249	**Closeout**	**55 days**	**Mon 3/16/09**
250	System testing	20 days	Mon 3/16/09
251	Commissioning	20 days	Mon 4/13/09
252	Final inspections	25 days	Mon 4/27/09
253	Substantial completion	0 days	Fri 5/29/09

APPENDIX B – STRUCTURAL SYSTEM TAKEOFF NOTES

Steel Takeoff Notes

Each Typ. Floor Beams				
Shape	**Quantity**	**Wt/lf**	**Length (ft)**	**Weight (tons)**
C10x15.3	2	15.3	10	0.15
C12x20.7	1	207	30	3.11
HSS8x4x5/16	3	23	10	0.35
W8x10	2	10	3.5	0.04
	12	10	10	0.60
W12x14	2	14	3	0.04
	2	14	5	0.07
	18	14	10	1.26
W12x19	6	19	4.5	0.26
	4	19	7	0.27
	4	19	11.5	0.44
W12x26	4	26	4.5	0.23
	2	26	7.5	0.20
	2	26	10	0.26
	4	26	11.5	0.60
W14x22	2	22	10	0.22
W16x26	2	26	7.5	0.20
	3	26	30	1.17
W16x31	15	31	30	6.98
W18x35	2	35	10	0.35
	2	35	13.5	0.47
	2	35	15	0.53
	8	35	30	4.20
W21x44	6	44	30	3.96
	40	44	39.5	34.76
W21x50	4	50	30	3.00
W24x55	6	55	30	4.95
W24x62	2	62	31	1.92
W24x76	10	75	30	11.25
W27x84	2	84	30	2.52
W30x99	2	99	10	0.99
	2	99	29.5	2.92
	Subtotal per Floor			**88.24**
	Subtotal for Typ. Floors			**705.89**

Main Roof Beams				
Shape	**Quantity**	**Wt/lf**	**Length (ft)**	**Weight (tons)**
C10x5.3	2	5.3	10	0.05
C12x30	2	30	30	0.90
W8x10	2	10	4	0.04
	14	10	10	0.70
	12	10	13	0.78
W10x12	28	12	10	1.68
W12x14	2	14	5	0.07
	22	14	10	1.54
W12x16	8	16	13	0.83
W12x19	2	19	10	0.19
	6	19	11.5	0.66
W12x26	4	26	5	0.26
	2	26	7.5	0.20
	6	26	10	0.78
W12x50	2	50	30	1.50
W14x22	6	22	10	0.66
W16x26	4	26	15	0.78
	6	26	30	2.34
W16x31	2	31	30	0.93
W18x35	8	35	30	4.20
W18x40	2	40	30	1.20
	26	40	39.5	20.54
W21x44	4	44	30	2.64
W21x50	4	50	30	3.00
W21x144	8	144	39.5	22.75
W24x55	6	55	30	4.95
W24x62	2	62	30	1.86
W24x68	2	68	39.5	2.69
W27x94	4	94	30	5.64
W30x108	4	108	30	6.48
	2	108	41	4.43
W30x116	2	116	31	3.60
			Subtotal	**98.86**

PH Roof Beams				
Shape	**Quantity**	**Wt/lf**	**Length (ft)**	**Weight (tons)**
C12x25	2	25	30	0.75
HSS12x6x1/2	1	56	5	0.14
HSS12x8x3/8	1	48	15	0.36
HSS12x12x3/16	1	30	15	0.23
	4	30	20	1.20
HSS12x12x3/8	2	58	20	1.16
	2	58	30	1.74
HSS16x12x3/8	1	68	30	1.02
	1	68	30	1.02
HSS20x12x1/2	1	103	30	1.55
W8x10	1	10	4	0.02
	9	10	5	0.23
	5	10	10	0.25
W10x33	1	33	27	0.45
W12x14	3	14	6	0.13
	25	14	10	1.75
	4	14	12	0.34
	4	14	15	0.42
	1	14	19	0.13
W12x19	3	19	6	0.17
	3	19	10	0.29
W12x26	4	26	10	0.52
	2	26	36	0.94
W14x22	7	22	10	0.77
W16x26	1	26	30	0.39
W16x31	2	31	10	0.31
	3	31	30	1.40
W18x35	1	35	30	0.53
	6	35	39.5	4.15
W18x40	2	40	10	0.40
	14	40	30	8.40
W21x44	3	44	30	1.98
	2	44	39.5	1.74
W24x68	2	68	39.5	2.69
W36x150	2	150	30	4.50
W36x160	1	160	30	2.40
W36x170	1	170	30	2.55
			Subtotal	**46.97**

Columns 1st-2nd Floors				
Shape	**Quantity**	**Wt/lf**	**Length (ft)**	**Weight (tons)**
W14x68	2	68	18	1.22
W14x82	2	82	18	1.48
W14x99	2	99	18	1.78
W14x109	4	109	18	3.92
W14x120	6	120	18	6.48
W14x132	4	132	18	4.75
W14x193	5	193	18	8.69
W14x211	2	211	18	3.80
W14x233	4	233	18	8.39
W14x257	1	257	18	2.31
W14x311	2	311	18	5.60
			Subtotal	**48.42**

Columns 1st-4th Floors				
Shape	**Quantity**	**Wt/lf**	**Length (ft)**	**Weight (tons)**
W14x90	2	90	45.5	4.10
W14x145	2	145	45.5	6.60
			Subtotal	**10.69**

Columns 2nd-4th Floors				
Shape	**Quantity**	**Wt/lf**	**Length (ft)**	**Weight (tons)**
W14x61	4	61	26.67	3.25
W14x90	4	90	26.67	4.80
W14x99	6	99	26.67	7.92
W14x109	6	109	26.67	8.72
W14x159	2	159	26.67	4.24
W14x176	5	176	26.67	11.73
W14x193	3	193	26.67	7.72
W14x211	3	211	26.67	8.44
W14x257	1	257	26.67	3.43
			Subtotal	**60.26**

Columns 4th-6th Floors				
Shape	**Quantity**	**Wt/lf**	**Length (ft)**	**Weight (tons)**
W14x48	2	48	26.67	1.28
W14x53	4	53	26.67	2.83
W14x82	4	82	26.67	4.37
W14x90	14	90	26.67	16.80
W14x120	2	120	26.67	3.20
W14x132	3	132	26.67	5.28
W14x145	2	145	26.67	3.87
W14x159	4	159	26.67	8.48
W14x176	2	176	26.67	4.69
W14x193	1	193	26.67	2.57
			Subtotal	**53.38**

Columns 6th-8th Floors				
Shape	**Quantity**	**Wt/lf**	**Length (ft)**	**Weight (tons)**
W14x43	4	43	26.67	2.29
W14x48	3	48	26.67	1.92
W14x61	8	61	26.67	6.51
W14x68	4	68	26.67	3.63
W14x74	2	74	26.67	1.97
W14x82	2	82	26.67	2.19
W14x90	3	90	26.67	3.60
W14x99	3	99	26.67	3.96
W14x109	1	109	26.67	1.45
W14x120	4	120	26.67	6.40
W14x159	3	159	26.67	6.36
			Subtotal	**40.29**

Columns 8th Floor-Main Roof				
Shape	**Quantity**	**Wt/lf**	**Length (ft)**	**Weight (tons)**
W14x43	14	43	23.67	7.12
W14x48	2	48	23.67	1.14
W14x53	2	53	26.67	1.41
W14x61	2	61	23.67	1.44
W14x61	5	61	26.67	4.07
W14x68	2	28	23.67	0.66
W14x74	1	74	26.67	0.99
W14x82	1	82	26.67	1.09
W14x90	4	90	26.67	4.80
W14x99	1	99	26.67	1.32
W14x99	1	99	26.67	1.32
W14x132	3	132	26.67	5.28
			Subtotal	**30.65**

Columns Main-PH Roofs				
Shape	**Quantity**	**Wt/lf**	**Length (ft)**	**Weight (tons)**
W14x43	4	43	15	1.29
W14x48	2	48	15	0.72
W14x53	6	53	15	2.39
W14x61	4	61	15	1.83
W14x68	2	68	15	1.02
			Subtotal	**7.25**

Wind Bracing				
Shape	**Quantity**	**Wt/lf**	**Length (ft)**	**Weight (tons)**
HSS12.750x0.375	27	50	28	18.90
	2	50	24	1.20
	1	50	36	0.90
	36	50	16	14.40
			Subtotal	**35.40**

Total Structural Steel Tonnage = 1,138 tons

Total Structural Steel Members = 781

Metal Deck	
Floor	**Area (sf)**
Floor 2-9 (22,576 sf ea.typ.)	180,608
Main Roof Deck	15,151
Penthouse	7,425
Penthouse Roof Deck	7,425
Total Area	**210,609**

WWF	
Floor	**Area (sf)**
Slab on Grade	21624
Floor 2-9 (22,576 sf ea.typ.)	180,608
Main Roof Deck	15,151
Penthouse	7,425
Penthouse Roof Deck	7,425
Total Area	**232,233**

Concrete

Caissons						
Size (in)	**Depth (avg ft)**	**Quantity**	**Material Cost**	**Labor Cost**	**Equipment Cost**	**Total**
30	30	8	$5,454.43	$1,985.23	$4,944.67	$12,384.34
42	30	6	$8,332.45	$1,992.31	$4,976.53	$15,301.30
48	30	10	$17,423.88	$3,738.24	$9,352.68	$30,514.80
54	30	8	$17,818.94	$3,157.68	$7,850.30	$28,826.93
60	30	3	$8,135.98	$1,245.73	$3,080.86	$12,462.57
66	30	3	$9,977.49	$1,323.25	$3,273.08	$14,573.83
78	30	8	$15,879.02	$3,075.55	$7,666.22	$26,620.80
					Total Caisson Cost	**$140,684.56**

Grade Beams							
Size	**Length**	**Quantity**	**Volume (cy)**	**Material Cost**	**Labor Cost**	**Equipment Cost**	**Total**
12x24	10	4	2.96	$692.27	$110.55	$1.19	$804.01
12x67	30	2	12.41	$2,898.87	$462.94	$4.98	$3,366.78
12x67	10	1	2.07	$483.14	$77.16	$0.83	$561.13
16x30	7.5	2	1.85	$432.67	$69.10	$0.74	$502.51
16x34	15	1	2.10	$490.36	$78.31	$0.84	$569.51
16x34	30	2	8.40	$1,961.42	$313.23	$3.37	$2,278.02
16x46	30	1	5.68	$1,326.84	$211.89	$2.28	$1,541.02
18x26	30	8	28.89	$6,749.60	$1,077.89	$11.59	$7,839.08
18x30	10	1	1.39	$324.50	$51.82	$0.56	$376.88
24x30	30	4	22.22	$5,192.00	$829.15	$8.92	$6,030.06
24x30	10	1	1.85	$432.67	$69.10	$0.74	$502.51
24x36	30	1	6.67	$1,557.60	$248.74	$2.67	$1,809.02
25x67	30	2	25.85	$6,039.31	$964.46	$10.37	$7,014.13
35x67	30	1	18.09	$4,227.51	$675.12	$7.26	$4,909.89
36x30	30	7	58.33	$13,629.00	$2,176.51	$23.40	$15,828.91
36x67	30	5	93.06	$21,741.50	$3,472.05	$37.33	$25,250.89
48x48	30	2	35.56	$8,307.20	$1,326.63	$14.26	$9,648.10
						Total Grade Beam Cost	**$88,832.45**

Slab on Grade						
Area (sf)	**Thickness (in)**	**Volume (cy)**	**Material Cost**	**Labor Cost**	**Equipment Cost**	**Total**
21624	5	333.70	$51,387.03	$3,205.29	$185.07	**$54,777.40**

Elevated Deck							
Floor	**Area (sf)**	**Thickness (in)**	**Volume (cy)**	**Material Cost**	**Labor Cost**	**Equipment Cost**	**Total**
Floor 2	22,306	6	413.07	$90,164.32	$4,264.99	$2,802.71	$97,232.02
Floor 3-9 (22,576 sf ea. typ.)	158,032	6	2926.52	$638,789.93	$30,216.30	$16,827.48	$685,833.71
Penthouse	7,425	6	137.50	$30,013.01	$1,419.69	$790.63	$32,223.32
					Total Elevated Deck Cost		**$815,289.05**

APPENDIX C – GENERAL CONDITIONS ESTIMATE

Redland Tech Center General Conditions Estimate				
Description	**Quantity**	**Unit**	**Unit Price**	**Total**
Supervision/Project Management				
Sr. Vice President (3hrs/wk)	77	WK	$263	$20,213
Project Executive (6hrs/wk)	77	WK	$450	$34,650
Sr. Project Manager (40hrs/wk)	77	WK	$2,325	$179,025
Sr. Superintendent (40hrs/wk)	77	WK	$2,150	$165,550
Asst. Superintendent (40hrs/wk)	77	WK	$1,900	$146,300
Field Office Manager (5hrs/wk)	77	WK	$50	$3,850
2-Project Engineer (40hrs/wk)	77	WK	$2,800	$431,200
2-Office Engineer (40hrs/wk)	77	WK	$2,200	$338,800
Safety Manager (15hrs/wk)	77	WK	$759	$58,472
Senior Field Engineer (40hrs/wk)	36	WK	$1,450	$52,200
Field Engineer Apprentice (40hrs/wk)	36	WK	$965	$34,740
Labor Foreman (40hrs/wk)	77	WK	$1,350	$103,950
Laborer/Safety Carpenter	30	WK	$1,000	$30,000
Scheduler (4hrs/wk)	55	WK	$800	$44,000
MEP Coordinator (10hrs/wk)	6	WK	$500	$3,000
			Subtotal	**$1,645,949**
Administrative Facilities and Supplies				
Contractor's Office Set-Up	1	EA	$12,100	$12,100
Security Equipment Installation	1	EA	$5,000	$5,000
Field Office	18	MTH	$700	$12,600
PM Office	18	MTH	$700	$12,600
Job Office Expenses	18	MTH	$2,000	$36,000
Jobsite Messenger Service	18	MTH	$100	$1,800
Furniture	18	MTH	$200	$3,600
Copy Machine	18	MTH	$950	$17,100
Personal Computers	18	MTH	$875	$15,750
Printers	18	MTH	$90	$1,620
Local Area Network/Data	18	MTH	$2,000	$36,000
Scheduling Software	1	EA	$5,500	$5,500
Telephone- Setup	1	EA	$6,397	$6,397
Monthly Telephone Bills	18	MTH	$650	$11,700
Cell Phone Bills	18	MTH	$1,200	$21,600
Jobsite Sheds	18	MTH	$800	$14,400
Drawings and Specifications	18	MTH	$1,200	$21,600
Photographs	18	MTH	$75	$1,350

Motor Vehicle Expenses (Monthly Rental)	18	MTH	$2,000	$36,000
Motor Vehicle Expenses (Gas/Maint)	18	MTH	$1,600	$28,800
Postage and Shipping	18	MTH	$2,000	$36,000
Travel Expenses	18	MTH	$500	$9,000
As-Built Drawings	1	EA	$6,000	$6,000
Engineering Instruments/Supplies	10	MTH	$2,229	$22,290
			Subtotal	**$374,807**
Safety				
Job Safety Expenses	18	MTH	$8,000	$144,000
Safety Materials	18	MTH	$650	$11,700
Fire Protection	18	MTH	$275	$4,950
			Subtotal	**$160,650**
Cleanup				
Periodic Cleanup	18	MTH	$9,000	$162,000
Final Clean-Up	1	LS	$20,000	$20,000
Dumpster Service (w/ drywall)				$0
Trash Chute (w/ rough carpentry)				$0
			Subtotal	**$182,000**
Jobsite Work Requirements				
Fences/Barricades	18	MTH	$2,500	$45,000
Signage	1	LS	$4,000	$4,000
Covered Building Entrances	4	EA	$2,700	$10,800
Protect Existing Conditions	1	LS	$40,000	$40,000
Misc. Tools & Equipment	18	MTH	$350	$6,300
Drinking Water	18	MTH	$600	$10,800
Protect Floors & Walls	1	LS	$7,000	$7,000
Patch FP	1	LS	$1,000	$1,000
Plaster/Drywall Patch	1	LS	$5,000	$5,000
Temporary Elevator-Protect/Refurbish	1	LS	$12,000	$12,000
Replace Broken Glass	1	LS	$5,000	$5,000
100 kw Diesel Generator (for construction trailer)	10	MTH	$1,200	$12,000
Fuel/Oil (for construction trailer generator)	10	MTH	$6,000	$60,000
Monthly Electric Bill (for construction trailer)	8	MTH	$300	$2,400
Fuel/Oil (misc.)	18	MTH	$250	$4,500
Temporary Toilets	18	MTH	$1,100	$19,800
Skid Steer	18	MTH	$1,200	$21,600
Temporary Electric (for construction activities, w/ electrical)				$0
Temporary Heat (w/ subs)				$0
Access Road (w/ excavation)				$0

Temporary Parking Lots (w/ excavation)				$0
			Subtotal	**$267,200**
Permitting				
Fence Permit	1	EA	$3,000	$3,000
Trailer Permit	2	EA	$600	$1,200
Building Permit and others (by owner)				$0
			Subtotal	**$4,200**
Bonds and Insurance				
Subgaurd (surety bond-1% of subcontracts value)	1	LS	$496,103	$496,103
Builder's Risk and Excess Umbrella Liability Insurance	1	LS	$470,000	$470,000
Automotive Insurance	77	MTH	$400	$30,800
			Subtotal	**$996,903**
Total General Conditions Cost				**$3,631,709**