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Sunnyvale Plaza

Mid-Atlantic Region, United States

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Technical Assignment #2

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Executive Summary

The conception of Sunnyvale Plaza took place in 1999 with the need for a convention headquarters in the Mid-Atlantic city. After many complications, on September 24, 2007 the proposal was accepted and design began. Ground was broken on November 10, 2010. A detailed schedule was developed to analyze the unique top-down construction method utilized on the project. This was most important for the lengthy excavation process that was necessary. A summary short interval production schedule was also developed to review the hotel room finishes phase.

A detailed structural estimate was established for the entire structural system. This was important to ensure accuracy during the takeoff due to the unique nature of the underground structural system. This yielded an estimate of $47 million, which is approximately 29% less than the square foot structural estimate.

The assemblies MEP estimate also yielded a lower value than produced from the square foot estimate. Due to the large difference between each system cost within the square foot estimate, the costs were expected to be lower for some of the more inflated systems. An average system cost was determined to better understand the difference between the actual construction cost, the square foot estimate, and the assemblies estimate.

Project site layouts were developed for three different phases of construction. These phases included the excavation of the slurry wall and substructure, the superstructure installation, and the finishes phase. These three phases were crucial for site coordination due to the complexity of the below-grade construction and the limited site area. Another area of interest was the temporary closing of the east street during the concourse excavation and construction.

The general conditions estimate yielded a more expensive field personnel cost due to the complexity of the project and need for a more extensive project team. Other items that were evaluated include office trailer usage, temporary utility needs, and commissioning. This evaluation was important to assess the savings involved in any major schedule changes.

There were several constructability challenges during different construction phases. The most primary concerns included the unique top-down excavation process and the concourse excavation and construction. This construction phase needed extra attention concerning the east street and underground utilities in the area. The top-down excavation also prolonged the schedule extensively. Other concerns included existing buildings within the project site, lead time for the statue construction, and the limited space within the project site.

A LEED evaluation was produced for the sustainability strategies utilized on the project. Great care was taken in the selection of regional and recycled products as well as optimizing energy performance within the building. It was also fairly easy to acquire points for alternative transportation due to the location of the project. Other sustainability priorities included materials and resources, indoor environmental quality, and water efficiency.

TABLE OF CONTENTS

Executive Summary ..... **i**

Table of Contents ..... **ii**

Project Schedule **1**

Detailed Structural Estimate **4**

Assemblies MEP Estimate 5

Site Layout Planning **6**

General Conditions Estimate **7**

Constructability Challenges 9

LEED Evaluation **11**

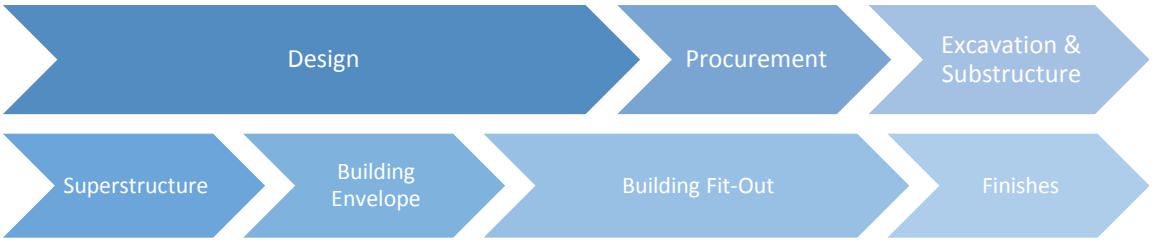
Project Schedule – *See Appendix A for detailed schedule*

OVERVIEW

The concept for Sunnyvale Plaza came in 1999 with a proposal to construct a convention headquarters neighboring the city's convention center. Initial estimates proposed that the hotel would cost roughly $200 million, which would need to be reduced by about $30 million in order to be profitable. A proposal from a nearby hotel to expand into a convention headquarters was also vying for approval, but was later rejected due to a risk of poor revenue production. The September 11th attacks on the United States caused a substantial economic downturn that postponed the awarding of the proposal until late October of 2002. Economists alleged that the initial financing proposal was controversial in that it would lower sales tax revenue within the area. In April of 2004, the city council began debating on whether or not to consider building the headquarters on a different site. On December 3, 2004, the council voted in favor of continuing the plan to build on the original site. On August 22, 2005, the Plumbers Union Building was sold to the developer to obtain more of the property to develop. In June of 2006 the first financing package was approved by the council and in February of 2007 private financing came together to complete the proposal. On September 24, 2007, after several reconsiderations for the size of the hotel to reduce financing, the developer signed an agreement to jointly finance the hotel. Ground was finally broken on November 10, 2010 and construction began.

Phase	Start Date	End Date	Duration
Design	11/1/2008	3/27/2013	1149
Procurement	12/26/2012	8/16/2013	168
Excavation & Substructure	3/25/2013	7/15/2013	81
Superstructure	4/2/2013	7/15/2013	75
Building Envelope	2/22/2013	11/13/2013	189
Building Fit-Out	8/1/2012	3/12/2014	421
Finishes	2/4/2013	3/17/2014	291

Table 1: Project Schedule Summary



BUILDING CONSTRUCTION

Design & Preconstruction

The official Request For Proposal was released in April of 2001, for a 1,100-room convention headquarters hotel. The original design created 1,500 rooms. After various attempts to gather funding, the hotel design was scaled back from the original design to 1,150 rooms. Sunnyvale released details of the design in October of 2008. The design was submitted to the National Capital Planning Commission late in 2008 and approved early in February of 2009.

Excavation & Substructure

Ground was broken on November 10, 2010 for Sunnyvale Plaza. Due to the more complicated excavation process, construction was expected to be extended by an entire year. Each below-grade slab was poured on-grade, then excavated underneath. This process was done one level at a time down to the bottom level. Utilizing this unique method made it possible to excavate to such a large depth below the street. A slurry wall construction was also used to secure the subgrade levels. The perimeter of the building was excavated, reinforced, and poured first. This slurry wall created a suitable shoring method and a secure subgrade exterior support system.

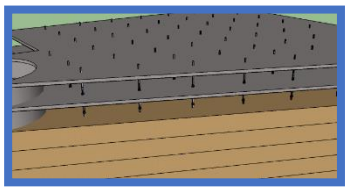


Figure 1: Excavation of Level M1

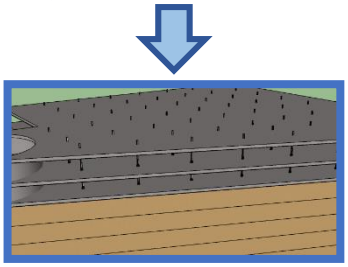


Figure 2: Level M1 Slab-On-Grade

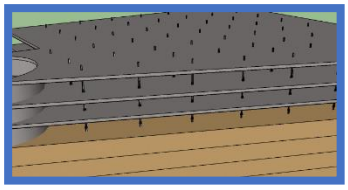


Figure 3: Excavation of Level M2

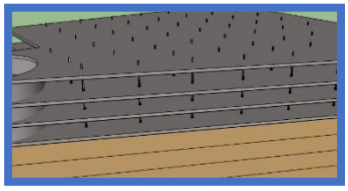


Figure 4: Level M2 Slab-On-Grade

Superstructure

The superstructure utilizes pre-cast columns and beams with a steel composite deck. Utilizing pre-cast assembly methods created a faster erection process for the above-grade structure. The entire above grade structure took about four months to complete. The structural frame was broken into two towers, North and South.

Building Envelope

The first phase of the building envelope began late in February of 2013. While this side of the curtain wall began early, the other sides did not begin until April. The first phase was the North Elevation, followed by the West Elevation, East Elevation, and South Elevation. The procedure for the envelope construction began with the installation of the exterior frame and punch windows. Once the frame was secured, the primary curtain wall components were installed. These consisted of hundreds of metal panels and windows. Each elevation of the curtain wall consisted of a duration of about 100 - 150 workdays.

Building Fit-Out

The primary mechanical and electrical chases are located within the four corners of the building. Neighboring the elevator areas are telecom/data and mechanical/electrical rooms. These rooms are used to house Panelboards and vertical shafts for ducts and mass conduit runs.

Finishes

As a 4-star hotel, it was important to have a high standard of quality for the finishes of each hotel room. A short interval production schedule was utilized to maintain a consistent movement of finishing construction throughout each floor. It was beneficial to utilize SIPS due to the high amount of consistent process that were needed to finish each floor.

SHORT INTERVAL PRODUCTION SCHEDULE - SIPS

The use of a Short Interval Production Schedule was very important for this type of project. A SIPS is a detailed schedule that focuses on a day-to-day or weekly construction process. It is utilized for a process that is very repetitive and consistent throughout the entire progression. With over 1,000 hotel suites that are identical throughout the entire building, Sunnyvale Plaza is a prime situation to utilize this type of schedule. A separate SIPS was developed for the guestrooms and core corridors for all of the floors above-grade. The SIPS utilized for the guestrooms incorporate all portions of the typical hotel suite on a five day interval per section of each tower. Each floor is separated into two phases, North Tower and South Tower, and within each tower there are four more detailed phases. Each phase makes up approximately 14 hotel suites. As each phase in a tower is completed, the contracting team moves to the next phase and continues to the next floor.

It is important to maintain consistent movement throughout the guestrooms on each floor. Due to the high capacity of the short interval production schedule, if one team falls behind, the entire schedule can be delayed. This can cause a great constructability challenge for the entire finishes phase of the project. By utilizing a short interval production schedule, completion of each phase can be more closely monitored to ensure that the schedule is on-time.

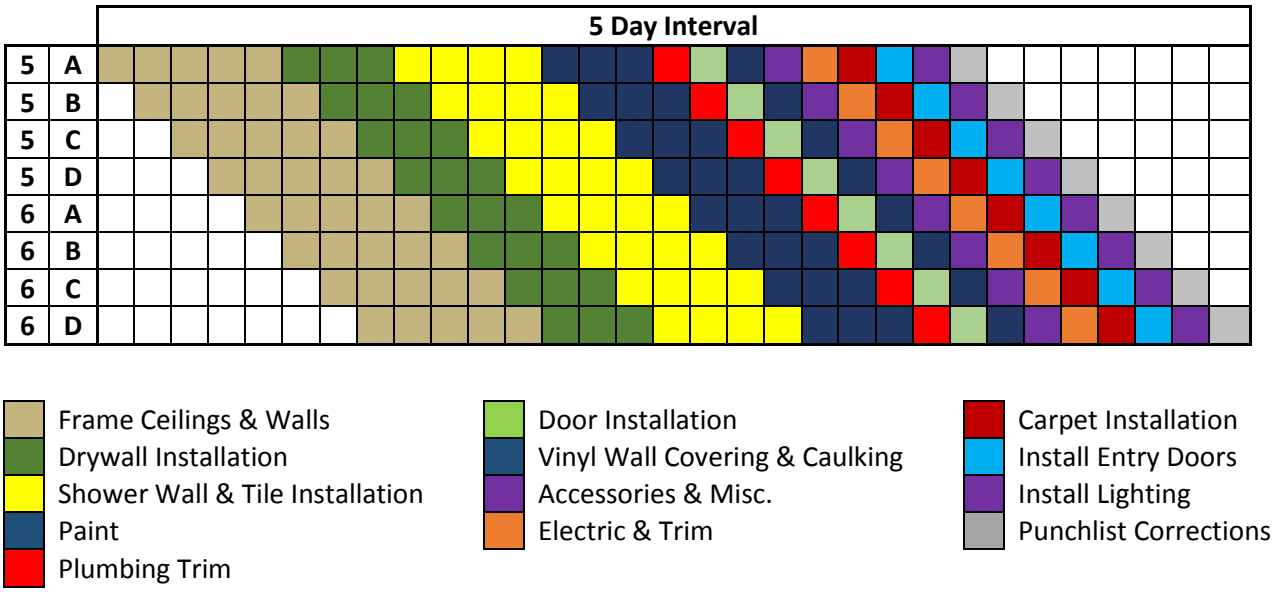


Figure 5: SIPS Summary Schedule

Detailed Structural Systems Estimate – *See Appendix B for detailed takeoff*

OVERVIEW

The structural system of Sunnyvale Plaza differs between the substructure and superstructure. The below-grade structure consists of steel columns and a slurry wall construction. The superstructure is made up of all concrete construction and steel deck. The substructure is unique in that it is also connected to the neighboring convention center. This created a complicated condition for working underneath an active street. The complete structural system was estimated to cost about $47 million using a detailed structural estimate method. The total cost for the structural system using RS Means Square Foot Analysis was estimated at $66 million. This detailed estimate is approximately 29% less than the square foot approximation. This can be due to and value engineering utilized to succeed on such a complicated project. Reed Construction Data RS Means Online was utilized to estimate the structural components. The following descriptions define the breakdown of each structural system.

Structural Item		Cost	Breakdown
Total Structural Cost	$	47,000,000.00	-
Steel Construction	$	8,400,000.00	18%
Atrium Construction	$	1,240,000.00	3%
Slurry Wall Construction	$	9,800,000.00	21%
Concrete Structural System	$	27,000,000.00	57%

Table 2: Structural Estimate Breakdown

SUBSTRUCTURE

The substructure began with a slurry wall construction around the entire perimeter. This acted as the exterior structural support and as shoring while the rest of the site was excavated. The slurry wall was composed of 4000 psi concrete with local aggregate, sand, and Portland cement. Column boring was then utilized to create shafts for the steel columns to be placed. The slurry wall construction accounted for approximately $9.8 million. Once the columns were set, concrete was poured within the boreholes to encase the steel. The encasements were also reinforced with rebar. Natural formwork played a major role in the concrete pouring for all substructure components. The steel columns were composed of wide flange W14 columns that ranged from 90 to 398 lbs per linear foot. There are also two W14x665 columns located near the two primary elevator shafts. The complete steel substructure costs accounted for roughly $8.4 million and about 18% of the entire structural cost.

The concourse also created a difficult structural process wherein the slurry walls and street needed to be temporarily secured while the openings were created. There were various underground utilities that needed to be relocated due to the concourse construction. These utilities were temporarily supported while the concourse area was excavated, then rerouted closer to the street.

SUPERSTRUCTURE

The superstructure utilizes concrete precast columns and beams with a composite deck. The columns were set on a typical grid throughout most of the above-grade structure. The large opening of the atrium was unique in that the amount of structural space was very small throughout each side. Within the upper levels, there was not actually much space aside from hotel rooms and corridors. This made it very difficult to fit some columns within intersections and elevator lobbies. The concrete columns range from 16x16 columns to a 44x48 column. The concrete beams range from 12x12 beams to two 50x66 beams. Typical reinforcing is located within each column and beam. The concrete structural system cost was roughly $27 million which accounted for about 57% of the overall structural estimate.

The atrium skylight was a unique part of the superstructure. Several large triangular steel trusses span the atrium from the north corridor to the south corridor. These trusses are the structural support for the skylight frame. The steel trusses were a substantial part of the steel construction because the only other major steel utilized in the building was the below-grade structure.

Assemblies MEP Estimate – *See Appendix C for detailed takeoff*

OVERVIEW

The assemblies MEP estimate was assessed using Reed Construction RSMeans Data. The estimated cost for the mechanical, electrical, and plumbing system totaled $78,200,105. This cost is translated to approximately $104 per square foot. This is substantially lower than the RSMeans construction costs breakdown. Analysis of this cost breakdown yields several possibilities for error.

The construction cost breakdown for the plumbing system was extensively higher than the other building systems. This is believed to be inaccurate as it is roughly double the cost of any other system. Calculating an average building systems cost for the other systems yields a cost of roughly $43 million per building system.

Another source of error originates from the lack of options available within RSMeans Data. This made it difficult to choose the exact components that make up the mechanical and electrical system. Components that were similar were chosen for any components that were not available. Certain components were substantially different and needed to be extrapolated to make up for the extensive size difference. This limited data can create various errors throughout the entire estimate that in-turn add up to a substantial difference for each building system.

Assemblies Item	Overall Cost	Percentage of Cost
Mechanical System	$ 38,858,400.00	50%
Electrical System	$ 13,685,365.00	18%
Plumbing System	$ 16,932,960.00	22%
Total Assemblies Cost	$ 78,200,105.00	
Cost / S.F.	$ 103.99	

Table 3: MEP Estimate Breakdown

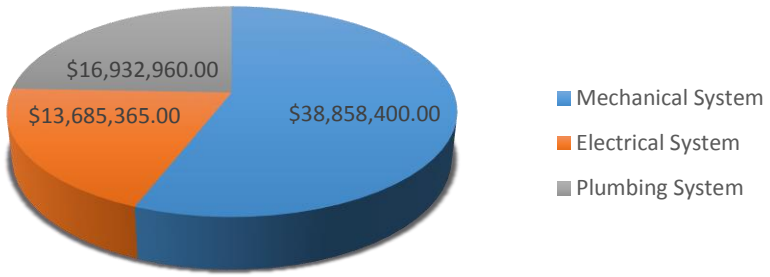


Figure 6: MEP Estimate Breakdown

Site Layout Planning – *See Appendix D for detailed site plans*

EXCAVATION – SLURRY WALL

One of the most difficult phases of construction was the slurry wall installation and excavation. Due to the high complicity for this phase, the construction was extended an entire year longer than initially intended. Before this phase, the site preparation and mobilization took place. The project trailers are located on a neighboring parking lot just north of the project site. The north gate will be utilized for entrance from the project trailers, and it is important to ensure a safe traverse across the active street. Due to the tight project site, the primary material laydown areas are located just north of the PEPCO Substation. At this point in the construction process, there are two existing buildings that are located within the project site. It is crucial to maintain a safe excavation process considering the load that is on the soil within close proximity of the excavation. The street east of the project site will also be excavated while the underground utilities are temporarily supported. Some utilities will also be moved due to the concourse construction.

Holes will be left in each slab as they are poured on-grade, then excavated underneath. A protection barrier is placed underneath each slab to tear down once the excavation is completed. This protects the bottom of the slab from any dirt or debris during excavation. Cranes and hoists located near each of the major slab openings are used to excavate through the openings. Once there is sufficient room, larger equipment is lowered into the sub-grade levels to excavate across the entire slab. This process will be continued through the same holes on each below-grade level.

SUPERSTRUCTURE

Once the substructure is completed and the primary substructure is in place, the slabs can be used to store material. The primary material laydown will still be located north of the PEPCO Substation and a secondary material laydown area will open on the east side of the project site. Both the north and south side of the project site will now be used for material delivery via trucks. The Plumbers Union Building will now be connected to the new structure, and considered a part of the building. Dumpsters are also located on the northeast corner of the project site. The east street will still be closed during this phase of construction for structural completion. A temporary platform will be placed so that the area can be utilized during this phase. A concrete placement area is also created near the north entrance of the project site.

FINISHES

As the finishing phase begins, site cleanup must begin. Landscaping and exterior construction will start to take place and the surrounding areas must be available. Material laydown will default to the area north of the PEPCO Substation. The fence on the east street can now be moved back to the sidewalk, which will open the street to more traffic. This also creates a situation in which materials can fall into the street. More caution needs to be taken while working on the east side to ensure that no materials or debris are dropped.

General Conditions Estimate – *See Appendix E for detailed takeoff*

OVERVIEW

The general conditions estimate was created utilizing a general project team format for the general contractor and conditions represented by the construction process. The general conditions estimate includes the field personnel on the project team, all temporary utilities utilized on the jobsite, insurance, scheduling, and other contingencies. Reed Construction Data RS Means Online was utilized to estimate the general conditions components.

MAJOR EXPENSES

Field Personnel

The general contractor utilizes a unique project team. This project team consists of two field engineers and three office engineers. There are also numerous levels of superintendents which include area superintendents, project superintendents, and general superintendents. The project also included project engineers, project managers, and executive project managers. Employing such an extensive project team

was necessary due to the complexity and size of the project. This produced a much larger field personnel cost.

Field Personnel: $ 8,750,000

Office Trailers

A minimal amount of trailers were utilized for the project team. The available area around the building perimeter was very small, and did not allow any room for office trailers. Therefore, trailers were staged on a neighboring parking lot and had minimal space to take advantage of. This produced a lower cost in office trailer use.

Office Trailers: $ 18,000

Temporary Utilities

The most extensive part of the temporary utilities was the power needed for the entire project and to light the entire building. All 22 floors were being utilized at the same time and needed temporary lighting. The temporary utilities included three tower cranes, one near each corner of the building. Other temporary utilities consist of restrooms, heating for two winters, fences, and waste management.

Temporary Utilities: $ 1,006,911

Commissioning

Commissioning is a very important part of any complicated project today. Measurement and Verification was a crucial portion of the final schedule and generated a substantial cost towards the general conditions estimate.

Commissioning: $ 1,250,000

Due to the high general conditions costs, any schedule delays can result in substantially more loss. Just one week of extra work can cost up to $30,000. Therefore it is inherent that the project schedule is maintained and closely controlled to reflect the completion date.

Constructability Challenges

TOP – DOWN EXCAVATION

One of the most difficult phases of the construction process is the excavation and construction of the seven sub-grade levels. The project team determined that the only way to excavate the 100 feet below grade was to utilize a top-down construction method. This method consisted of pouring the top level as a slab-on-grade, with some sections of the slab missing. The level below that slab would then be excavated through the holes that were left. Once the entire level was excavated, a new slab-on-grade was poured. This process was continued for all seven below-grade levels.

Figure 7: Top-Down Excavation

The top-down excavation took an extensive amount of time. The excavation process used small machines and hoists to excavate through the holes, then larger machines were lowered into the ground to help excavate more. The mining of dirt under each slab was a difficult process and was a substantial part of the construction schedule. I look forward to utilizing this phase of the construction process as an in-depth analysis for a future report.

CONCOURSE CONSTRUCTION / EXCAVATION

As a major hotel within the city center, it was a priority to create a relationship with the neighboring convention center. An underground concourse was designed to connect the below-grade levels of the hotel, levels which consisted of grand ballrooms and junior ballrooms, to the parking deck of the convention center. This concourse created a substantial amount of construction due to the pair of slurry walls and underground utilities that ran between the two sites.

Both the new hotel and the neighboring convention center utilize a slurry wall construction method. Thus, the construction team needs to temporarily brace the slurry walls while demolition part of them to make room for the entrances. Once the openings are created, new slurry wall parts will be formed around new steel columns.

EXISTING BUILDINGS ON-SITE

There are two existing buildings within the site of the new hotel. The larger of the two is a PEPCO Substation that is independent of the construction process and will be closely monitored. There are strict separation requirements for the allowable openings between the PEPCO Substation and the new building. At the shortest interval, the new structure will only be five inches from the PEPCO Substation and will naturally look as if they are one complete building. Certainly, this makes for a very tight and difficult construction area and needs to be carefully monitored to ensure that neither building is damaged.

The smaller building is a Plumber's Union Building, which will be stripped and renovated to be incorporated into the new hotel. The Plumber's Union Building is an eleven story brick building that will be utilized to house roughly seven hotel suites on each floor and a fitness center.

Figure 8: Plumbers Union Building

STATUE LEAD TIME

Another schedule concern is the lead time for the unique sculpture being delivered. The sculpture was designed by Rodney Carroll of Baltimore who is nationally recognized for large-scale sculptures. The piece is a five story high steel sculpture that was reassembled nearby and lifted with a helicopter into the atrium of the hotel. The delivery of the sculpture created a restriction to finishing the atrium skylight. Since it needed to be flown into the hotel the skylight could not be finished, or even substantially started, to allow an opening for the entire sculpture piece. Lead time for the sculpture completion plays a very important role in maintaining the schedule for the rest of the project.

Figure 9: Statue Lift

VERY TIGHT PROJECT SITE

It is also very important to ensure that the surrounding buildings and community are safe from the construction process. The project site is located within a small city center block with major streets being utilized around it. It is important to ensure safety of pedestrian traffic that is around the perimeter of the building. During the finishing phases of the construction process, the East street fence can be moved back to allow more traffic flow. This creates more hazard from falling objects due to the hotel being so close to the street. It is important to ensure that appropriate safety measurements are taken to create a safe working environment.

Leading Industry Practice Evaluation – See Appendix F for LEED Scorecard

LEED EVALUATION

All project stakeholders were motivated to consider pursuing a LEED certification for Sunnyvale Plaza. The project team initially estimated to receive a total of 36 points towards a LEED certification. This will earn a LEED Silver certification. The project team also five other points as possibilities to be later defined. This is typically a strategy to ensure successful completion of the expected number of points. If the extra points are also earned, Sunnyvale Plaza will be LEED Gold certified. The most heavily grossed sections of the LEED point system were Sustainable Sites and Indoor Environmental Quality.

Sustainable sites requirements consisted primarily of alternative transportation. This was very easy to achieve due to the fact that the project site is located within a dense city center. Public transportation was already implemented within the area of the project site. Bicycle storage and changing rooms were also provided within the hotel to allow for non-vehicular transportation to and from the area. The parking garage design implemented a low-emitting, fuel-efficient, vehicle parking area. This rewarded environmentally friendly vehicle users with a more desirable parking space. The parking deck was also designed to provide sufficient parking capacity for the overall hotel capacity. The project team is also projecting to be awarded points for development density within a community. This is due to the project site being located within a dense city instead of being located on the edge of a city, thus creating expansion. The design of the roof for Sunnyvale Plaza is projected to earn several points towards sustainable sites. A vast majority of the roof consists of the atrium skylight, while a smaller portion of the rooftop terrace is covered with garden area. This earns points towards heat island effect for having no roof and a vegetated roof. Stormwater design also played a role in creating sustainable site.

The project team expects to earn four points under the water efficiency category. Water efficient landscaping plays a major role in this category. The landscape watering needs are reduced by at least 50% due to the majority of the landscape being sidewalk. The landscape was also designed to survive without

any artificial irrigation. The design will also reduce the water use by at least 30%, earning another water efficiency point.

Another seven points are expected within the Energy and Atmosphere category. These points are primarily earned through the optimizing energy performance requirement. Five of the seven points are earned by having at least 17.5% of the overall structure consist of an existing building renovation. The other two points are earned by utilizing enhanced commissioning. Measurement and verification of the buildings systems will also be completed towards the end of the construction phase. Green power was considered for Sunnyvale Plaza, and has been listed as a possible point.

The materials and resources category play an important role in the construction process. Several points are earned by monitoring construction waste, recycled content, and regional materials. At least 75% of the construction waste is diverted from standard disposal methods and at least 10% of construction waste is recycled. Construction waste management and recycled content is a difficult component for this specific project due to the small project site. There is very limited spaced surrounding the building perimeter, therefore it is difficult to maintain various dumpsters and recycling containers for all of the materials. Regional content is primarily earned through masonry construction within the hotel.

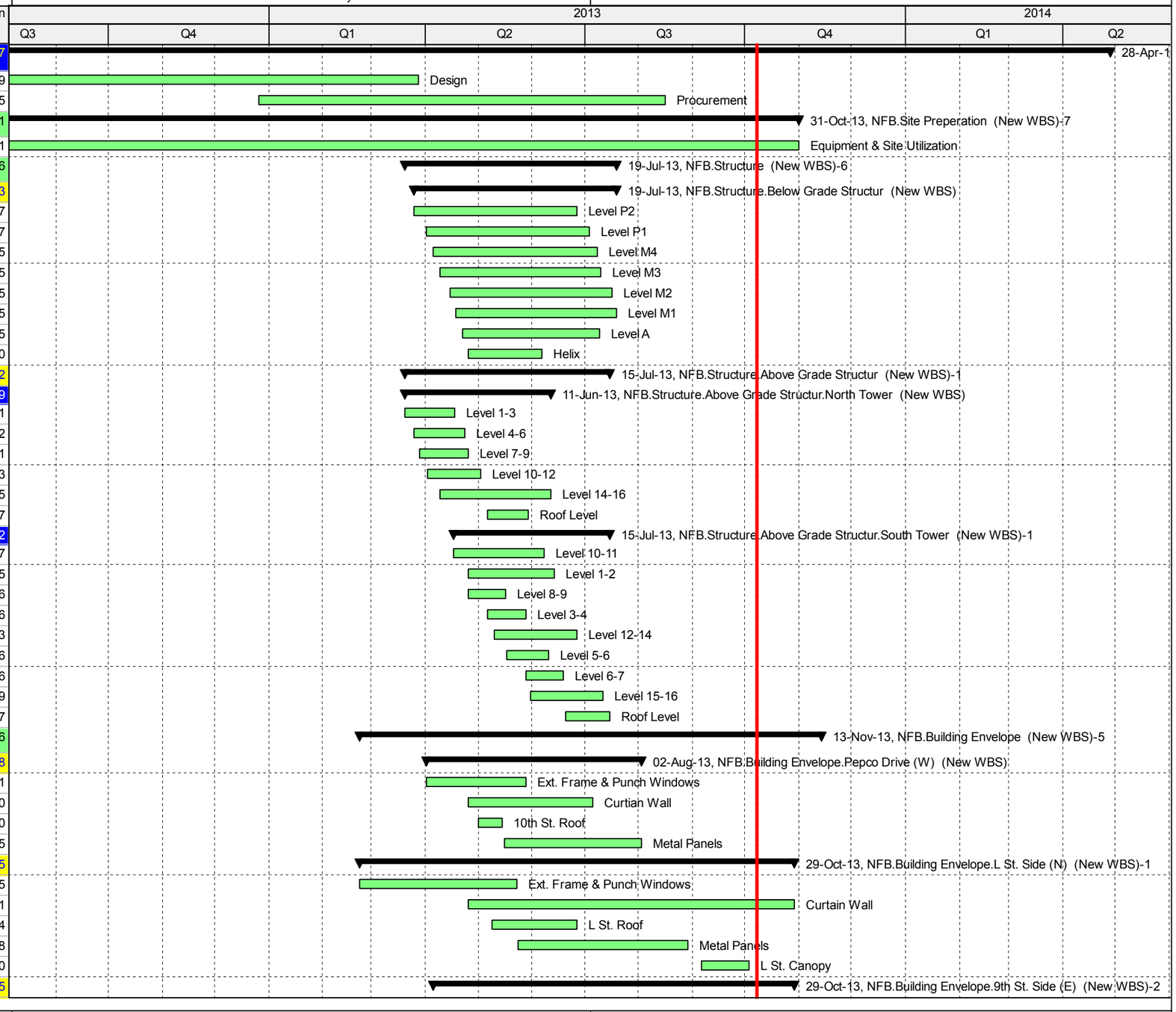
Indoor environmental quality is a crucial aspect of the hotel design. The primary goal of the hotel manager is to ensure the highest quality experience for every customer that stays at Sunnyvale Plaza. Warranting a high quality indoor environment will benefit in creating a more enjoyable atmosphere and experience for the costumer. Points are earned within the indoor air quality category by monitoring the outdoor air delivery and the thermal comfort of the hotel. The indoor air quality will also be monitored throughout the entire construction process to ensure that no harmful components are released within the building. The project team is also expecting to earn five points within the innovation and design process category, one of which is due to employing a LEED Accredited Professional as a major stakeholder on the project.

I believe that the choices made were fulfilling and efficient for the project. Pursuing other points within each category would have been more costly and disadvantageous. The most necessary factors were pursued to the fullest extent. Features comprising of alternative transportation and water efficiency will be most beneficial to the efficiency of the building and the satisfaction of the customer.

Appendix A:

Detailed Project Schedule

#	Activity Name	Start	Finish	Original Duration
1	**NFB Sunnyvale Plaza**	03-Nov-08	28-Apr-14	1407
2	Design	03-Nov-08	27-Mar-13	1129
3	Procurement	26-Dec-12	16-Aug-13	165
4	**NFB.Site Preperation (New**	11-Jul-11	31-Oct-13	591
5	Equipment & Site Utilization	11-Jul-11	31-Oct-13	591
6	**NFB.Structure (New WBS)**	20-Mar-13	19-Jul-13	86
7	**NFB.Structure.Below Grade Str**	25-Mar-13	19-Jul-13	83
8	Level P2	25-Mar-13	26-Jun-13	67
9	Level P1	01-Apr-13	03-Jul-13	67
10	Level M4	05-Apr-13	08-Jul-13	65
11	Level M3	09-Apr-13	10-Jul-13	65
12	Level M2	15-Apr-13	16-Jul-13	65
13	Level M1	18-Apr-13	19-Jul-13	65
14	Level A	22-Apr-13	09-Jul-13	55
15	Helix	25-Apr-13	06-Jun-13	30
16	**NFB.Structure.Above Grade Str**	20-Mar-13	15-Jul-13	82
17	**NFB.Structure.Above Grade Str**	20-Mar-13	11-Jun-13	59
18	Level 1-3	20-Mar-13	17-Apr-13	21
19	Level 4-6	25-Mar-13	23-Apr-13	22
20	Level 7-9	28-Mar-13	25-Apr-13	21
21	Level 10-12	02-Apr-13	02-May-13	23
22	Level 14-16	09-Apr-13	11-Jun-13	45
23	Roof Level	06-May-13	29-May-13	17
24	**NFB.Structure.Above Grade Str**	17-Apr-13	15-Jul-13	62
25	Level 10-11	17-Apr-13	07-Jun-13	37
26	Level 1-2	25-Apr-13	13-Jun-13	35
27	Level 8-9	25-Apr-13	16-May-13	16
28	Level 3-4	06-May-13	28-May-13	16
29	Level 12-14	10-May-13	26-Jun-13	33
30	Level 5-6	17-May-13	10-Jun-13	16
31	Level 6-7	28-May-13	18-Jun-13	16
32	Level 15-16	31-May-13	11-Jul-13	29
33	Roof Level	20-Jun-13	15-Jul-13	17
34	**NFB.Building Envelope (N**	22-Feb-13	13-Nov-13	186
35	**NFB.Building Envelope.Pepco D**	01-Apr-13	02-Aug-13	88
36	Ext. Frame & Punch Windows	01-Apr-13	28-May-13	41
37	Curtian Wall	25-Apr-13	05-Jul-13	50
38	10th St. Roof	01-May-13	14-May-13	10
39	Metal Panels	16-May-13	02-Aug-13	55
40	**NFB.Building Envelope.L St. Sid**	22-Feb-13	29-Oct-13	175
41	Ext. Frame & Punch Windows	22-Feb-13	23-May-13	65
42	Curtain Wall	25-Apr-13	29-Oct-13	131
43	L St. Roof	09-May-13	26-Jun-13	34
44	Metal Panels	24-May-13	29-Aug-13	68
45	L St. Canopy	06-Sep-13	03-Oct-13	20
46	**NFB.Building Envelope.9th St. S**	05-Apr-13	29-Oct-13	145



Actual Level of Effort | Remaining Work | Milestone
Actual Work | Critical Remaining Work | summary

TASK filter: All Activities

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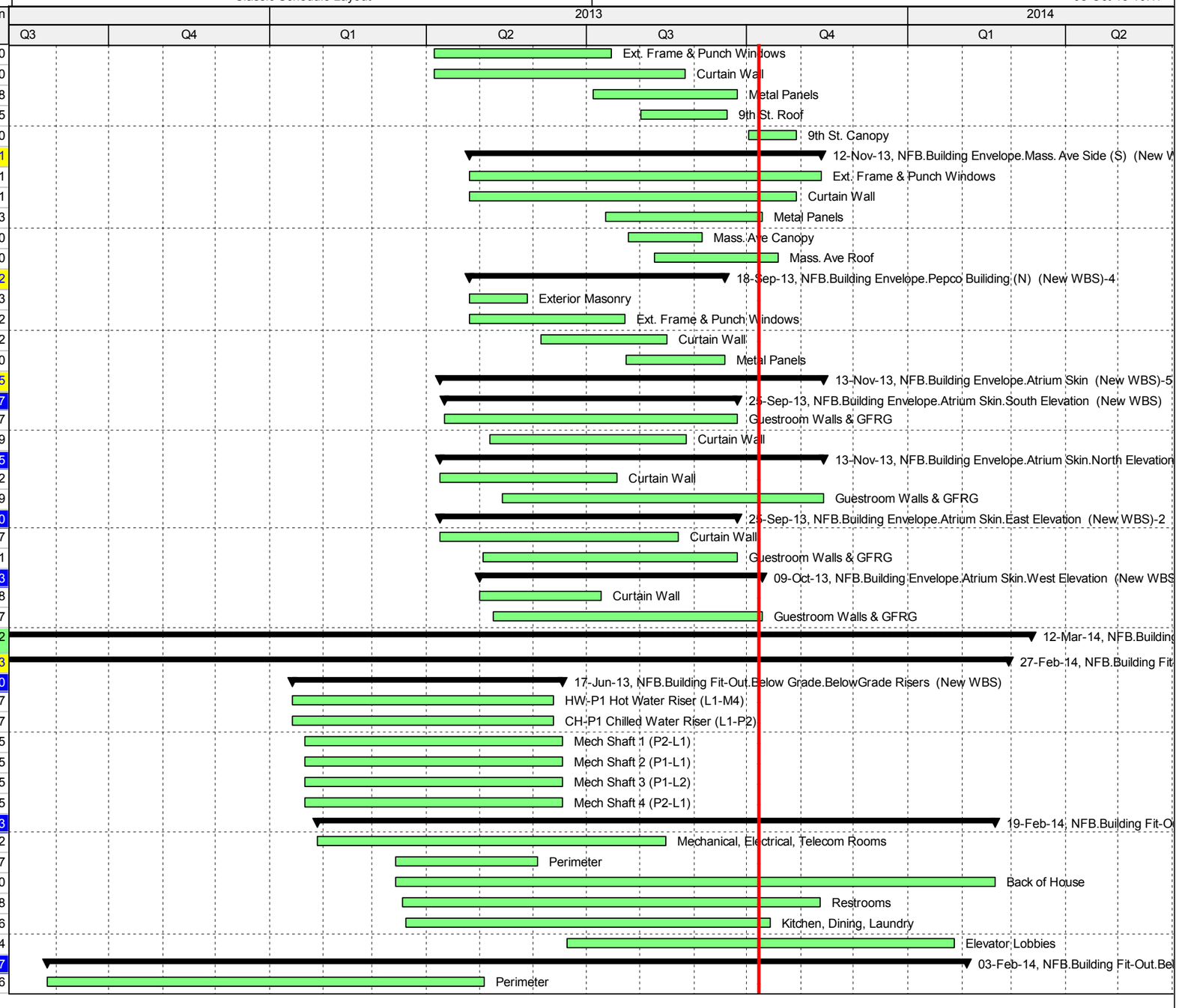
#	Activity Name	Start	Finish	Original Duration
47	Ext. Frame & Punch Windows	05-Apr-13	15-Jul-13	70
48	Curtain Wall	05-Apr-13	26-Aug-13	100
49	Metal Panels	05-Jul-13	25-Sep-13	58
50	9th St. Roof	01-Aug-13	19-Sep-13	35
51	9th St. Canopy	02-Oct-13	29-Oct-13	20
52	**NFB.Building Envelope.Mass. A**	25-Apr-13	12-Nov-13	141
53	Ext. Frame & Punch Windows	25-Apr-13	12-Nov-13	141
54	Curtain Wall	25-Apr-13	29-Oct-13	131
55	Metal Panels	12-Jul-13	09-Oct-13	63
56	Mass. Ave Canopy	25-Jul-13	05-Sep-13	30
57	Mass. Ave Roof	09-Aug-13	18-Oct-13	50
58	**NFB.Building Envelope.Pepco E**	25-Apr-13	18-Sep-13	102
59	Exterior Masonry	25-Apr-13	28-May-13	23
60	Ext. Frame & Punch Windows	25-Apr-13	23-Jul-13	62
61	Curtain Wall	05-Jun-13	16-Aug-13	52
62	Metal Panels	24-Jul-13	18-Sep-13	40
63	**NFB.Building Envelope.Atrium S**	08-Apr-13	13-Nov-13	155
64	**NFB.Building Envelope.Atrium**	11-Apr-13	25-Sep-13	117
65	Guestroom Walls & GFRG	11-Apr-13	25-Sep-13	117
66	Curtain Wall	07-May-13	27-Aug-13	79
67	**NFB.Building Envelope.Atrium**	08-Apr-13	13-Nov-13	155
68	Curtain Wall	08-Apr-13	18-Jul-13	72
69	Guestroom Walls & GFRG	14-May-13	13-Nov-13	129
70	**NFB.Building Envelope.Atrium**	08-Apr-13	25-Sep-13	120
71	Curtain Wall	08-Apr-13	22-Aug-13	97
72	Guestroom Walls & GFRG	03-May-13	25-Sep-13	101
73	**NFB.Building Envelope.Atrium**	01-May-13	09-Oct-13	113
74	Curtain Wall	01-May-13	09-Jul-13	48
75	Guestroom Walls & GFRG	09-May-13	09-Oct-13	107
76	**NFB.Building Fit-Out (New**	01-Aug-12	12-Mar-14	412
77	**NFB.Building Fit-Out.Below Gra**	01-Aug-12	27-Feb-14	403
78	**NFB.Building Fit-Out.Below Gr**	14-Jan-13	17-Jun-13	110
79	HW-P1 Hot Water Riser (L1-M	14-Jan-13	12-Jun-13	107
80	CH-P1 Chilled Water Riser (L1	14-Jan-13	12-Jun-13	107
81	Mech Shaft 1 (P2-L1)	21-Jan-13	17-Jun-13	105
82	Mech Shaft 2 (P1-L1)	21-Jan-13	17-Jun-13	105
83	Mech Shaft 3 (P1-L2)	21-Jan-13	17-Jun-13	105
84	Mech Shaft 4 (P2-L1)	21-Jan-13	17-Jun-13	105
85	**NFB.Building Fit-Out.Below Gr**	28-Jan-13	19-Feb-14	273
86	Mechanical, Electrical, Telecom	28-Jan-13	15-Aug-13	142
87	Perimeter	14-Mar-13	03-Jun-13	57
88	Back of House	14-Mar-13	19-Feb-14	240
89	Restrooms	18-Mar-13	11-Nov-13	168
90	Kitchen, Dining, Laundry	20-Mar-13	14-Oct-13	146
91	Elevator Lobbies	20-Jun-13	27-Jan-14	154
92	**NFB.Building Fit-Out.Below Gr**	27-Aug-12	03-Feb-14	367
93	Perimeter	27-Aug-12	03-May-13	176



Actual Level of Effort | Actual Work | Remaining Work | Critical Remaining Work | Milestone | summary

TASK filter: All Activities

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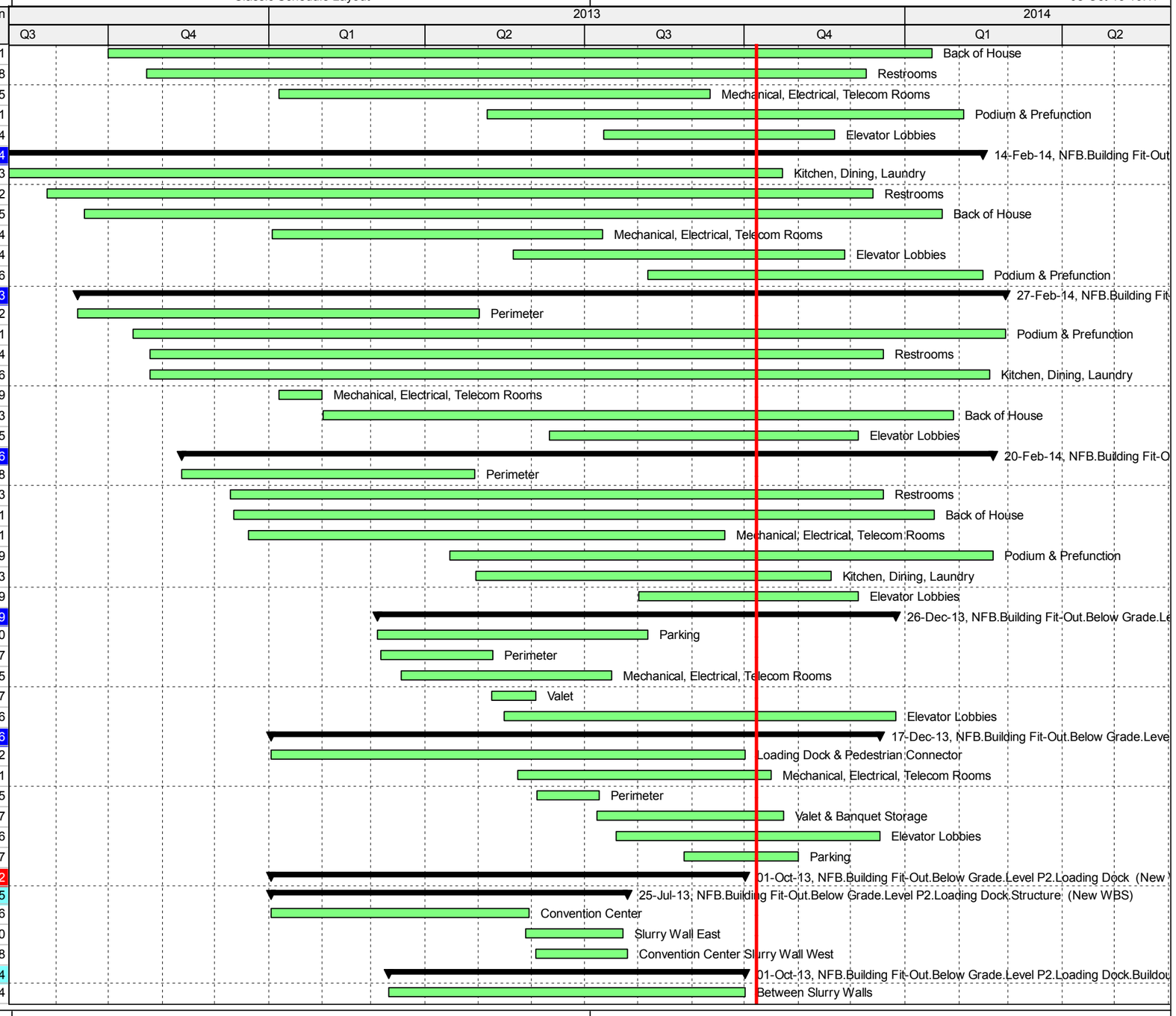
#	Activity Name	Start	Finish	Original Duration
94	Back of House	01-Oct-12	16-Jan-14	331
95	Restrooms	23-Oct-12	09-Dec-13	288
96	Mechanical, Electrical, Telecom	07-Jan-13	11-Sep-13	175
97	Podium & Prefunction	06-May-13	03-Feb-14	191
98	Elevator Lobbies	12-Jul-13	21-Nov-13	94
99	NFB.Building Fit-Out.Below Gr	01-Aug-12	14-Feb-14	394
100	Kitchen, Dining, Laundry	01-Aug-12	22-Oct-13	313
101	Restrooms	27-Aug-12	13-Dec-13	332
102	Back of House	17-Sep-12	22-Jan-14	345
103	Mechanical, Electrical, Telecom	03-Jan-13	11-Jul-13	134
104	Elevator Lobbies	21-May-13	27-Nov-13	134
105	Podium & Prefunction	06-Aug-13	14-Feb-14	136
106	NFB.Building Fit-Out.Below Gr	13-Sep-12	27-Feb-14	373
107	Perimeter	13-Sep-12	01-May-13	162
108	Podium & Prefunction	15-Oct-12	27-Feb-14	351
109	Restrooms	25-Oct-12	19-Dec-13	294
110	Kitchen, Dining, Laundry	25-Oct-12	18-Feb-14	336
111	Mechanical, Electrical, Telecom	07-Jan-13	31-Jan-13	19
112	Back of House	01-Feb-13	28-Jan-14	253
113	Elevator Lobbies	11-Jun-13	05-Dec-13	125
114	NFB.Building Fit-Out.Below Gr	12-Nov-12	20-Feb-14	326
115	Perimeter	12-Nov-12	29-Apr-13	118
116	Restrooms	10-Dec-12	19-Dec-13	263
117	Back of House	12-Dec-12	17-Jan-14	281
118	Mechanical, Electrical, Telecom	20-Dec-12	19-Sep-13	191
119	Podium & Prefunction	15-Apr-13	20-Feb-14	219
120	Kitchen, Dining, Laundry	30-Apr-13	19-Nov-13	143
121	Elevator Lobbies	01-Aug-13	05-Dec-13	89
122	NFB.Building Fit-Out.Below Gr	04-Mar-13	26-Dec-13	209
123	Parking	04-Mar-13	06-Aug-13	110
124	Perimeter	06-Mar-13	09-May-13	47
125	Mechanical, Electrical, Telecom	18-Mar-13	16-Jul-13	85
126	Valet	09-May-13	03-Jun-13	17
127	Elevator Lobbies	16-May-13	26-Dec-13	156
128	NFB.Building Fit-Out.Below Gr	02-Jan-13	17-Dec-13	246
129	Loading Dock & Pedestrian Cor	02-Jan-13	01-Oct-13	192
130	Mechanical, Electrical, Telecom	24-May-13	16-Oct-13	101
131	Perimeter	04-Jun-13	09-Jul-13	25
132	Valet & Banquet Storage	08-Jul-13	23-Oct-13	77
133	Elevator Lobbies	19-Jul-13	17-Dec-13	106
134	Parking	27-Aug-13	31-Oct-13	47
135	NFB.Building Fit-Out.Below	02-Jan-13	01-Oct-13	192
136	NFB.Building Fit-Out.Belc	02-Jan-13	25-Jul-13	145
137	Convention Center	02-Jan-13	30-May-13	106
138	Slurry Wall East	28-May-13	23-Jul-13	40
139	Convention Center Slurry	03-Jun-13	25-Jul-13	38
140	NFB.Building Fit-Out.Belc	11-Mar-13	01-Oct-13	144
141	Between Slurry Walls	11-Mar-13	01-Oct-13	144



Actual Level of Effort | Actual Work | Remaining Work | Critical Remaining Work | Milestone | summary

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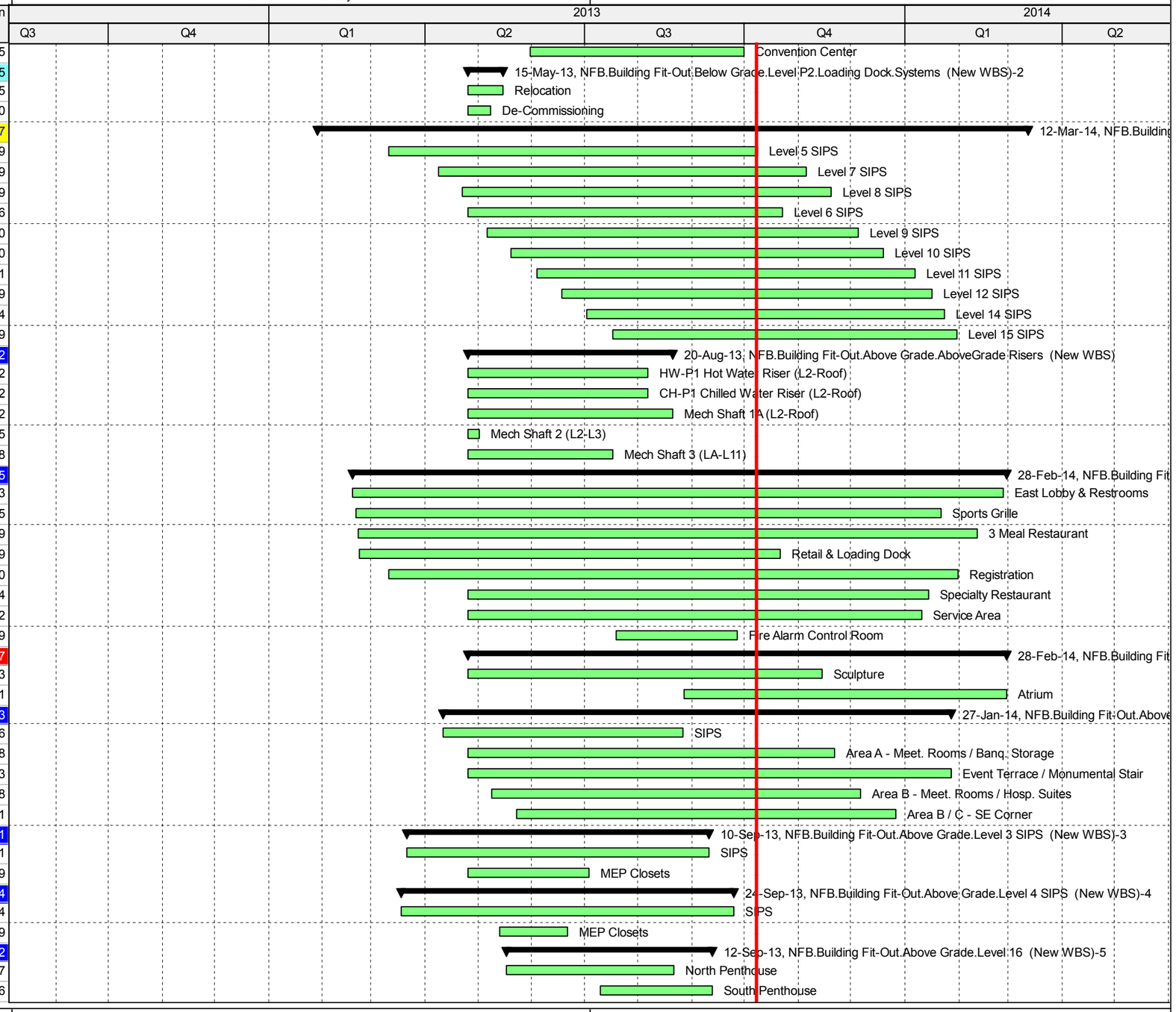
#	Activity Name	Start	Finish	Original Duration
142	Convention Center	31-May-13	30-Sep-13	85
143	NFB.Building Fit-Out.Belc	25-Apr-13	15-May-13	15
144	Relocation	25-Apr-13	15-May-13	15
145	De-Commissioning	25-Apr-13	08-May-13	10
146	NFB.Building Fit-Out.Above Gra	29-Jan-13	12-Mar-14	287
147	Level 5 SIPS	11-Mar-13	08-Oct-13	149
148	Level 7 SIPS	08-Apr-13	05-Nov-13	149
149	Level 8 SIPS	22-Apr-13	19-Nov-13	149
150	Level 6 SIPS	25-Apr-13	22-Oct-13	126
151	Level 9 SIPS	06-May-13	05-Dec-13	150
152	Level 10 SIPS	20-May-13	19-Dec-13	150
153	Level 11 SIPS	04-Jun-13	06-Jan-14	151
154	Level 12 SIPS	18-Jun-13	16-Jan-14	149
155	Level 14 SIPS	02-Jul-13	23-Jan-14	144
156	Level 15 SIPS	17-Jul-13	30-Jan-14	139
157	NFB.Building Fit-Out.Above Gr	25-Apr-13	20-Aug-13	82
158	HW-P1 Hot Water Riser (L2-R	25-Apr-13	06-Aug-13	72
159	CH-P1 Chilled Water Riser (L2	25-Apr-13	06-Aug-13	72
160	Mech Shaft 1A (L2-Roof)	25-Apr-13	20-Aug-13	82
161	Mech Shaft 2 (L2-L3)	25-Apr-13	01-May-13	5
162	Mech Shaft 3 (LA-L11)	25-Apr-13	17-Jul-13	58
163	NFB.Building Fit-Out.Above Gr	18-Feb-13	28-Feb-14	265
164	East Lobby & Restrooms	18-Feb-13	26-Feb-14	263
165	Sports Grille	20-Feb-13	21-Jan-14	235
166	3 Meal Restaurant	21-Feb-13	11-Feb-14	249
167	Retail & Loading Dock	22-Feb-13	21-Oct-13	169
168	Registration	11-Mar-13	31-Jan-14	230
169	Specialty Restaurant	25-Apr-13	14-Jan-14	184
170	Service Area	25-Apr-13	10-Jan-14	182
171	Fire Alarm Control Room	19-Jul-13	26-Sep-13	49
172	NFB.Building Fit-Out.Above	25-Apr-13	28-Feb-14	217
173	Sculpture	25-Apr-13	14-Nov-13	143
174	Atrium	27-Aug-13	28-Feb-14	131
175	NFB.Building Fit-Out.Above Gr	11-Apr-13	27-Jan-14	203
176	SIPS	11-Apr-13	26-Aug-13	96
177	Area A - Meet. Rooms / Banq. S	25-Apr-13	21-Nov-13	148
178	Event Terrace / Monumental St	25-Apr-13	27-Jan-14	193
179	Area B - Meet. Rooms / Hosp. S	09-May-13	06-Dec-13	148
180	Area B / C - SE Corner	23-May-13	26-Dec-13	151
181	NFB.Building Fit-Out.Above Gr	21-Mar-13	10-Sep-13	121
182	SIPS	21-Mar-13	10-Sep-13	121
183	MEP Closets	25-Apr-13	03-Jul-13	49
184	NFB.Building Fit-Out.Above Gr	18-Mar-13	24-Sep-13	134
185	SIPS	18-Mar-13	24-Sep-13	134
186	MEP Closets	13-May-13	21-Jun-13	29
187	NFB.Building Fit-Out.Above Gr	17-May-13	12-Sep-13	82
188	North Penthouse	17-May-13	21-Aug-13	67
189	South Penthouse	10-Jul-13	12-Sep-13	46



Actual Level of Effort | Remaining Work | Milestone
Actual Work | Critical Remaining Work | summary

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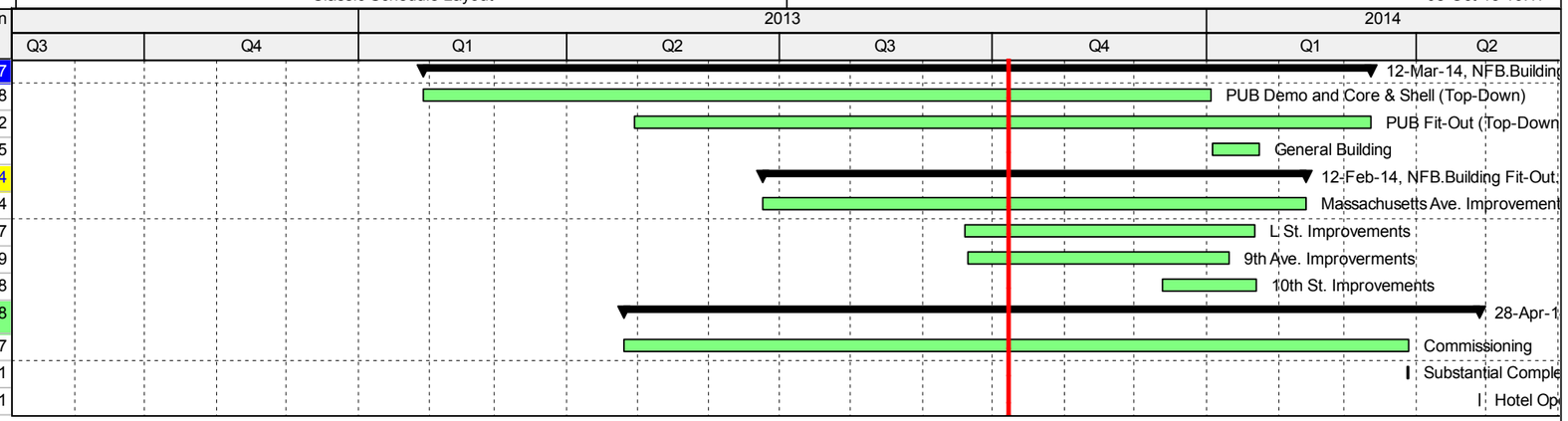
#	Activity Name	Start	Finish	Original Duration
190	NFB.Building Fit-Out.Above Gr	29-Jan-13	12-Mar-14	287
191	PUB Demo and Core & Shell (T	29-Jan-13	02-Jan-14	238
192	PUB Fit-Out (Top-Down)	30-Apr-13	12-Mar-14	222
193	General Building	03-Jan-14*	23-Jan-14	15
194	NFB.Building Fit-Out.Site Work	24-Jun-13	12-Feb-14	164
195	Massachusetts Ave. Improvements	24-Jun-13	12-Feb-14	164
196	L St. Improvements	19-Sep-13	21-Jan-14	87
197	9th Ave. Improverments	20-Sep-13	10-Jan-14	79
198	10th St. Improvements	13-Dec-13	22-Jan-14	28
199	NFB.Commissioning (New	25-Apr-13	28-Apr-14	258
200	Commissioning	25-Apr-13	28-Mar-14	237
201	Substantial Completion	28-Mar-14*	28-Mar-14	1
202	Hotel Open	28-Apr-14	28-Apr-14	1



Actual Level of Effort | Actual Work | Remaining Work | Critical Remaining Work | Milestone | summary

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SIPS Area Phasing	
Sunnyvale Plaza	
Mid-Atlantic Region	Tech #2
Nathan Braskey	10/16/13

Appendix B:

Detailed Structural Estimate

Nathan Braskey

Witheld
Witheld, Witheld
Date: 01-Oct-13

Structural Estimate
Year 2013 Quarter 3
Unit Detail Report

Prepared By:
Nathan Braskey
Penn State University

LineNumber	Description	Quantity	Unit	Total Incl. O&P	Ext. Total Incl. O&P
Division 03 Concrete					
032105750100	Splice rebar, standard, self-aligning type, taper threaded, #4 bars	30,000.00	Ea.	$17.11	$513,300.00
032105750305	Splice rebar, standard, self-aligning type, taper threaded, #9 bars	30,000.00	Ea.	$67.64	$2,029,200.00
033053401400	Structural concrete, in place, column (4000 psi), round, less than 2% reinforcing, 24" diameter, includes forms(4 uses), Grade 60 rebar, concrete (Portland cement Type I), placing and finishing	60.00	C.Y.	$613.24	$36,794.40
033053401900	Structural concrete, in place, elevated slab (4000 psi), flat slab with drop panels, 125 psf superimposed load, 20' span, includes forms(4 uses), Grade 60 rebar, concrete (Portland cement Type I), placing and finishing	13,000.00	C.Y.	$698.68	$9,082,840.00
033105350300	Structural concrete, ready mix, normal weight, 4000 psi, includes local aggregate, sand, Portland cement (Type I) and water, delivered, excludes all additives and treatments	64,000.00	C.Y.	$137.31	$8,787,840.00
033105350400	Structural concrete, ready mix, regular weight, 5000 psi, includes local aggregate, sand, Portland cement (Type I) and water, delivered, excludes all additives and treatments	13,000.00	C.Y.	$145.89	$1,896,570.00
033105350411	Structural concrete, ready mix, normal weight, 6000 PSI, includes local aggregate, sand, Portland cement (Type I) and water, delivered, excludes all additives and treatments	22,000.00	C.Y.	$165.51	$3,641,220.00
033105350412	Structural concrete, ready mix, normal weight, 8000 PSI, includes local aggregate, sand, Portland cement (Type I) and water, delivered, excludes all additives and treatments	18,000.00	C.Y.	$270.95	$4,877,100.00
033105350412	Structural concrete, ready mix, normal weight, 8000 PSI, includes local aggregate, sand, Portland cement (Type I) and water, delivered, excludes all additives and treatments	10,000.00	C.Y.	$270.95	$2,709,500.00
034105101400	Precast beam, rectangular, 30' span, 12" x 36", includes material only	300.00	Ea.	$5,662.79	$1,698,837.00
034105101450	Precast beam, rectangular, 30' span, 18" x 44", includes material only	150.00	Ea.	$6,798.52	$1,019,778.00
034105101500	Precast beam, rectangular, 30' span, 24" x 52", includes material only	100.00	Ea.	$8,225.37	$822,537.00
Division 03 Concrete Subtotal					**$37,115,516.40**

LineNumber	Description	Quantity	Unit	Total Incl. O&P	Ext. Total Incl. O&P
Division 05 Metals					
051223177350	Column, structural, 2-tier, W14x74, A992 steel, incl shop primer, splice plates, bolts	1,280.00	L.F.	$128.16	$164,044.80
051223177400	Column, structural, 2-tier, W14x120, A992 steel, incl shop primer, splice plates, bolts	3,433.00	L.F.	$204.62	$702,460.46
051223177450	Column, structural, 2-tier, W14x176, A992 steel, incl shop primer, splice plates, bolts	2,234.00	L.F.	$296.95	$663,386.30
051223700200	Stressed skin steel roof & ceiling system, structural, double panel arched roof, spans to 300'	32,000.00	S.F.	$38.78	$1,240,960.00
052123508000	Trusses, WT chords, 40-ton job lots, shop fabricated, incl shop primer	0.00	Ton	$6,966.55	$0.00
053113505200	Metal floor decking, steel, non-cellular, composite, galvanized, 2" D, 22 gauge	1,900,000.00	S.F.	$2.98	$5,662,000.00
Division 05 Metals Subtotal					**$8,432,851.56**
Division 1B					
1B	Precast beam, rectangular, 30' span, 36x50	10.00	Ea.	$8,600.00	$86,000.00
Division 1B Subtotal					**$86,000.00**
Division 1S					
1S	Structural Steel Column - W14x193, W14x211, W14x233, W14x257, W14x283	3,053.00	L.F.	$308.00	$940,324.00
Division 1S Subtotal					**$940,324.00**
Division 2B					
2B	Precast beam, rectangular, 30' span, 48x48	5.00	Ea.	$8,870.00	$44,350.00
Division 2B Subtotal					**$44,350.00**
Division 2S					
2S	Structural Steel Columns - W14x311, W14x342, W14x370, W14x398	633.00	L.F.	$310.00	$196,230.00
Division 2S Subtotal					**$196,230.00**
Division 3B					
3B	Precast beam, rectangular, 30' span, 50x66	2.00	Ea.	$9,250.00	$18,500.00
Division 3B Subtotal					**$18,500.00**
Division 3S					
3S	Structural Steel Columns - W14x665	159.00	L.F.	$310.00	$49,290.00
Division 3S Subtotal					**$49,290.00**

Steel Column Takeoff

Location	W14x109	W14x120	W14x132	W14x145	W14x159	W14x176	W14x193	W14x211	W14x233	W14x257	W14x283	W14x311	W14x342	W14x90	W14x99	Grand Total
B.1-10.7	58		25													83
B.9-1.4	58	25														83
B.9-10			58		25											83
B.9-2			58	25												83
B.9-3			58	25												83
B.9-4						58		25								83
B.9-5						58		25								83
B.9-6						58		25								83
B.9-7						58		25								83
B.9-8						58		25								83
B.9-9					58	25										83
B-1.5	25													58		83
B-10									25							25
B-2				58	25											83
B-3				58	25											83
B-4				58	25											83
B-5				58	25											83
B-6				58	25											83
B-7				58	25											83
B-8				58	25											83
B-9									58							58
C.4-10.2							58		25							83
C.5-8.8										58	25					83
C.7-1.4		57		35												92
C.7-1.9		57	35													92
C.7-5				57		25										82
C.7-6							55		25							80
C.7-7					57		25									82
C.7-8						57	25									82
C-11						58	25									83
D.3-1.4		59.5		35												94.5
D.3-7				57		25										82
D.3-8						57		25								82
D.5-10.2								57		25						82
D.5-8.9										57	25					82
D-11						56		25								81
E-11						57		25								82
F-11							57	25								82
G.5-11	25													52		77
G-11							60		25							85
H.2-10.1					55.5		35									90.5
H.2-11			52		25											77
MA-M10												49	25			74
MA-M11								49	25							74
MA-M12								49	25							74
MA-M13					49	25										74
MA-M9.1												49	25			74
MF-M18	34														58.5	92.5
MG.8-M16.7														90.5		90.5
MG.8-M8.2														90.5		90.5
MG-M18	34														58.5	92.5
Grand Total	**234**	**198.5**	**286**	**640**	**444.5**	**675**	**340**	**380**	**208**	**140**	**50**	**98**	**50**	**291**	**117**	**4152**

Steel Column Takeoff

Location	W14x109	W14x120	W14x132	W14x145	W14x159	W14x176	W14x193	W14x211	W14x233	W14x257	W14x283	W14x342	W14x370	W14x90	W14x99	Grand Total
MA-M14							49	25								74
MA-M15								49		25						74
MA-M15.9												49	25			74
MA-M8.3														84.5		84.5
MB-M10														28		28
MB-M11														28		28
MB-M12.1	15													43.5		58.5
MB-M12.9														43		43
MB-M14														12.5		12.5
MB-M15														12.5		12.5
MB-M15.9		43														43
MB-M16.6						60			25							85
MB-M8.3			94.5													94.5
MB-M9.1		58.5														58.5
MC-M10														29		29
MC-M11														29		29
MC-M12.1														28.5	30	58.5
MC-M12.9														52.5		52.5
MC-M14														22		22
MC-M15														22		22
MC-M15.9		52.5														52.5
MC-M16.6					57.5		35									92.5
MC-M8.3						65.5			35							100.5
MC-M9.1		59.5														59.5
MD-M10														29		29
MD-M11														29		29
MD-M12.1														29.5	30	59.5
MD-M12.9														52.5		52.5
MD-M14														22		22
MD-M15														22		22
MD-M15.9		52.5														52.5
MD-M16.6						58.5			34							92.5
MD-M8.3				55.5			35									90.5
MD-M9.1		59.5														59.5
ME-M10														22		22
ME-M11														22		22
ME-M12.1														52.5		52.5
ME-M12.9														52.5		52.5
ME-M14														22		22
ME-M15														22		22
ME-M16.6									51.5		34					85.5
ME-M8.3							84.5									84.5
ME-M9.1		52.5														52.5
ME-ME15.9		52.5														52.5
MF-M17.5			58.5			34										92.5
Grand Total	**15**	**430.5**	**153**	**55.5**	**57.5**	**218**	**203.5**	**74**	**145.5**	**25**	**34**	**49**	**25**	**812**	**60**	**2357.5**

Steel Column Takeoff

Location	W14x109	W14x120	W14x132	W14x145	W14x159	W14x176	W14x193	W14x211	W14x233	W14x257	W14x283	W14x311	W14x342	W14x398	W14x665	Grand Total
MF-M7					95											95
MF-M7.8	61		34													95
MG-M10												79.5				79.5
MG-M11													34	46		80
MG-M12											46		34			80
MG-M13											47	34				81
MG-M14													34	47		81
MG-M15											46	34				80
MG-M15.9															79.5	79.5
MG-M16.6							45.5	34								79.5
MG-M17.5		56.5		34												90.5
MG-M7								58	34							92
MG-M7.8		59		34												93
MG-M8.3									77							77
MG-M9.1															79.5	79.5
MH-M10				56.5			34									90.5
MH-M11									35		75.5					110.5
MH-M12				56.5			34									90.5
MH-M13				56.5			34									90.5
MH-M14									35		75.5					110.5
MH-M15				57.5			34									91.5
MH-M16									56.5		34					90.5
MH-M17.3					56.5			34								90.5
MH-M18			57.5	34												91.5
MH-M7.6						58	34									92
MH-M9								62		34						96
MJ-M10						51					34					85
MJ-M11						50				34						84
MJ-M12						50				34						84
MJ-M13						50					34					84
MJ-M14						50				34						84
MJ-M15						50					34					84
MJ-M16									51				34			85
MJ-M17.3					56.5					34						90.5
MJ-M18			56.5			34										90.5
MJ-M7.6						58				34						92
MJ-M9								55.5				34				89.5
RE-R3						57		25								82
RE-R4					57		25									82
RG-R4						49		25								74
Grand Total	**61**	**115.5**	**148**	**329**	**265**	**557**	**240.5**	**293.5**	**288.5**	**204**	**426**	**181.5**	**136**	**93**	**159**	**3497.5**

Concrete Beam Takeoff

Row Labels	12					14		16	18		20		23	24						36	48	Grand Total
	12	14	16	18	30	18	81	24	24	42	18	32	46	24	30	36	40	46	51	30	48	
01B01										70												70
01B02										70												70
01B03																		102				102
01B04																		102				102
01B05															67							67
01B06													98									98
01B07																		102				102
01B08														53								53
01B09														53								53
01B10														53								53
01B11														53								53
01B12														53								53
01B13														53								53
01B14														53								53
01B15									40													40
01B16									40													40
01B17															67							67
01B18														53								53
01B19														53								53
01B20														53								53
01B21															67							67
01B22																			113			113
01B23																			113			113
01B24														53								53
01B25							105															105
01B26							105															105
01B27																					213	213
01B28																					213	213
01B29																					213	213
01B30																				100		100
01B31																	89					89
02B1				20																		20
02B10								36														36
02B11								36														36
02B12								36														36
02B13								36														36
02B14								36														36
02B15			36																			36
02B16								36														36
02B17																80						80
02B18		16																				16
02B19				20																		20
02B2			18																			18
02B20						23																23
02B21						23																23
02B22								36														36
02B23				20																		20
02B24			18																			18
02B25			18																			18
02B26				20																		20
02B27			18																			18
02B28		16																				16
02B29		16																				16
02B3		16																				16
02B30		16																				16
02B31		16																				16
02B32				20																		20
02B33												59										59
02B34												59										59
02B35											33											33
02B36					33																	33
02B37		16																				16
02B38					33																	33
02B39	13																					13
Grand Total	**13**	**109**	**107**	**100**	**67**	**47**	**210**	**249**	**80**	**140**	**33**	**119**	**98**	**587**	**200**	**80**	**89**	**307**	**227**	**100**	**640**	**3600**

Concrete Beam Takeoff

Row Labels	12						14		16		18		20	24	Grand Total
	14	16	18	20	24	30	18	24	18	24	18	24	24	24	
02B4		18													18
02B40					27										27
02B41		18													18
02B42					27										27
02B43			20												20
02B44													44		44
02B45													44		44
02B46													44		44
02B5														53	53
02B50										36					36
02B51										36					36
02B52										36					36
02B53										36					36
02B54					27										27
02B55					27										27
02B56								31							31
02B57								31							31
02B58			20												20
02B59			20												20
02B6			20												20
02B7								31							31
02B8													44		44
02B9					27										27
03B1											30				30
03B10		18													18
03B11		18													18
03B12		18													18
03B13		18													18
03B14		18													18
03B16			20												20
03B17							23								23
03B18					27										27
03B19	16														16
03B2											30				30
03B20			20												20
03B21					27										27
03B3											30				30
03B4											30				30
03B5		18													18
03B6									27						27
03B7			20												20
03B8								31							31
03B9		18													18
04B1						33									33
09B1			20												20
10B1			20												20
10B2		18													18
10B3												40			40
10B4												40			40
10B5							23								23
11B1			20												20
11B2			20												20
11B3			20												20
11B4			20												20
12B1			20												20
12B2		18													18
14B1		18													18
14B2		18													18
14B3		18													18
14B4		18													18
14B5		18													18
14B7				22											22
14B8				22											22
15B1		18													18
Grand Total	**16**	**302**	**280**	**44**	**187**	**33**	**47**	**124**	**27**	**142**	**120**	**80**	**178**	**53**	**1633**

Concrete Beam Takeoff

	8	12							14							16	18		21	24					36	Grand Total
Row Labels	16	14	16	18	21	30	37	47	12	18	24	30	47	63	63	40	45	47	18	24	25	37	47	24	
15B2			18																						18
15B3			18																						18
15B4			18																						18
15B5			18																						18
15B6			18																						18
16B10													61												61
16B11													61												61
16B12													61												61
16B13													61												61
16B17											31														31
16B18			18																						18
16B19					23																				23
16B2			18																						18
16B20																					56				56
16B21											31														31
16B22			18																						18
16B23																							104		104
16B24																			91						91
16B25														82											82
16B25A														82											82
16B26														82											82
16B27														82											82
16B27A														82											82
16B28															93										93
16B29														82											82
16B3			18																						18
16B30														82											82
16B31														82											82
16B32							41																		41
16B33							41																		41
16B34							41																		41
16B35								52																	52
16B36								52																	52
16B37																			91						91
16B38										23															23
16B39		16																							16
16B40					23																				23
16B41				20																					20
16B42	12																								12
16B43									16																16
16B44																			40						40
16B45												39													39
16B46																67									67
16B5		16																							16
16B6				20																					20
16B7					23																				23
16B9													61												61
MB1						33																			33
MB2						33																			33
MB3						33																			33
MB4						33																			33
PHB1																								80	80
PHB12											31														31
PHB13											31														31
PHB14											31														31
PHB2																								80	80
PHB22																	75								75
PHB23																				53					53
PHB24																				53					53
PHB25																				53					53
PHB26																				53					53
PHB27																						82			82
PHB3																								80	80
PHB31																				53					53
Grand Total	**12**	**31**	**160**	**40**	**70**	**133**	**123**	**104**	**16**	**23**	**156**	**39**	**305**	**653**	**93**	**67**	**75**	**183**	**40**	**267**	**56**	**82**	**104**	**240**	**3072**

Concrete Beam Takeoff

Row Labels	8 24	12 14	16	18	24	42	79	83	97	18 24	45	20 24	24	37	45	53	36 60	72	50 66	Grand Total
PHB32											75									75
PHB33											75									75
PHB34											75									75
PHB35											75									75
PHB36											75									75
PHB37											75									75
PHB38													53							53
PHB40					27															27
PHB42												44								44
PHB43						47														47
PHB44														82						82
PHB45							88													88
PHB46						47														47
PHB49															100					100
PHB50																118				118
PHB51			18																	18
PHB52					27															27
PHB53		16																		16
PHB54				20																20
PHB55									108											108
PHB56								92												92
TB1				20																20
TB10			18																	18
TB11				20																20
TB12				20																20
TB13				20																20
TB14				20																20
TB15				20																20
TB16				20																20
TB17				20																20
TB18	18																			18
TB19		16																		16
TB2				20																20
TB20				20																20
TB21		16																		16
TB22		16																		16
TB23			18																	18
TB24			18																	18
TB25		16																		16
TB26		16																		16
TB27				20																20
TB28		16																		16
TB29				20																20
TB3				20																20
TB30		16																		16
TB31		16																		16
TB32		16																		16
TB33				20																20
TB34				20																20
TB35				20																20
TB36				20																20
TB37										40										40
TB38		16																		16
TB4		16																		16
TB5		16																		16
TB6		16																		16
TB7		16																		16
TB8		16																		16
TB9			18																	18
TG101																			306	306
TG102																		240		240
TG104																	200			200
TG105																			306	306
TG106																		240		240
Grand Total	**18**	**249**	**89**	**360**	**53**	**93**	**88**	**92**	**108**	**40**	**450**	**44**	**53**	**82**	**100**	**118**	**200**	**480**	**611**	**3329**

Concrete Column Takeoff

	16	18		20		28		30	44	Grand Total
Row Labels	**16**	**18**	**20**	**18**	**28**	**20**	**30**	**28**	**40**	
1-RA		41								41
1-RB		41								41
B.1-10.8					220					220
B.1-11.9					220					220
B.9-1					254			26		280
B.9-1.4					289					289
B.9-10					289					289
B.9-10.7	8									8
B.9-2					289					289
B.9-3					289					289
B.9-4					289					289
B.9-5					289					289
B.9-6					289					289
B.9-7					289					289
B.9-8					289					289
B.9-9					289					289
B-1				22	225			26		273
B-1.5				22	237					259
B-10				22	237					259
B-2				22	237					259
B-3				22	237					259
B-4				22	237					259
B-5				22	237					259
B-6				22	237					259
B-7				22	237					259
B-8				22	237					259
B-9				22	237					259
C.7-1					271					271
C.7-1.4					289					289
C.7-2 / C.7-1.9					289					289
C.7-3					271					271
C.7-4					271					271
C.7-5					289					289
C.7-6					289					289
C.7-7					289					289
C.7-8					289					289
C-11						271				271
C-12			174							174
D.3-1					271					271
D.3-1.4					289					289
D.3-2					289					289
D.3-3					289					289
D.3-4					289					289
D.3-5					289					289
D.3-6					289					289
D.3-7					289					289
D.3-8					52	237				289
D-11						271				271
D-12			174							174
E-11			152			35				187
E-12			22			237				259
F-11			152			35				187
F-12			22			237				259
G-11			152			35				187
G-12			22			237				259
H.2-10.1						271				271
H-11						271				271
H-12			174							174
J-11						35	355			390
J-12						220			54	274
Grand Total	**8**	**82**	**1047**	**244**	**11062**	**2390**	**355**	**52**	**54**	**15294**

Concrete Column Takeoff

Row Labels	20 14	18	20	28	28 20	Grand Total
J-9.9					271	271
M10-MF				289		289
M10-MG	9			271		280
M10-MG.7				35		35
M10-MH				237		237
M10-MJ				220		220
M11-MF				289		289
M11-MG	9			271		280
M11-MG.7				17		17
M11-MH				220		220
M11-MJ				220		220
M12-MF				289		289
M12-MG	9			271		280
M12-MG.7				17		17
M12-MH				220		220
M12-MJ				220		220
M13-MF				289		289
M13-MG	9			271		280
M13-MG.7				17		17
M13-MH				220		220
M13-MJ				220		220
M14-MF				289		289
M14-MG	9			271		280
M14-MG.7				17		17
M14-MH				220		220
M14-MJ				220		220
M15-MF				289		289
M15-MG	9			271		280
M15-MG.7				17		17
M15-MH				237		237
M15-MJ				220		220
M16.7-MF				289		289
M16.7-MG	9			271		280
M16-MF				289		289
M16-MG	9			271		280
M16-MG.7				35		35
M16-MH				237		237
M16-MJ				220		220
M17.5-MF		174		17		192
M17.5-MG	9			271		280
M17-MG.7				237		237
M17-MH				237		237
M17-MJ				185		185
M18-MF		174				174
M18-MG				271		271
M18-MG.7				237		237
M18-MH				237		237
M18-MJ				185		185
M19-MF		56				56
M19-MG				271		271
M19-MG.7				52		52
M19-MH				237		237
M19-MJ				185		185
M3-E.9				237		237
M3-MJ				220		220
M4-E.9				237		237
M4-MH				237		237
M4-MJ				220		220
M5-MG.3			169			169
M5-MH				237		237
Grand Total	**78**	**404**	**169**	**11769**	**271**	**12691**

Concrete Column Takeoff

	12		16	18	20					28	Grand Total
Row Labels	**12**	**25**	**16**	**18**	**14**	**18**	**28**	**36**	**48**	**20**	
M5-MJ							220				220
M6-MF						174					174
M6-MG							271				271
M6-MH							237				237
M6-MJ							220				220
M7.1-E.8				41							41
M7.3-MF						174					174
M7.3-MG							271				271
M7.6-MH									121		121
M7.6-MJ							71				71
M7.8-E.8				41							41
M7.8-ME				41							41
M7.8-MF								91			91
M7-MF						174					174
M7-MG							271				271
M7-MG.7							237				237
M7-MH							237				237
M7-MJ							220				220
M8.2-MF							289				289
M8.2-MG							289				289
M8-MG.7							237				237
M8-MH							237				237
M9-MF							289				289
M9-MG					9		271				280
M9-MG.7							35				35
M9-MH							237				237
M9-MJ							220				220
ME-9.9			92								92
R.4-9.9			8								8
R1-ME										271	271
R1-RA		9								271	281
R1-RB		9								271	281
R1-RC		9								271	281
R1-RD		9								271	281
R2-ME										271	271
R2-RA										271	271
R2-RB										271	271
R2-RC										271	271
R2-RD										271	271
R3-ME										271	271
R3-RE										271	271
R3-RG										271	271
R3-RJ										271	271
R3-RL										271	271
R3-RN										271	271
R4-ME		9								271	281
R4-RE		9								271	281
R4-RF		9									9
R4-RG		9					237			35	281
R4-RH		9									9
R4-RJ		9					237			35	281
R4-RK		9									9
R4-RL		9					237			35	281
R4-RM		9									9
R4-RN		9								271	281
R4-RP		9								271	281
RP.3-9.9			8								8
S12LP	18										18
Grand Total	**18**	**139**	**108**	**123**	**9**	**523**	**5066**	**91**	**121**	**5531**	**11730**

Concrete Column Encasement Takeoff

	23	24		26	Grand Total
Row Labels	23	24	28	26	
B.1-10.7			149		149
B.9-1.4			149		149
B.9-10			149		149
B.9-2			149		149
B.9-3			149		149
B.9-4			149		149
B.9-5			149		149
B.9-6			149		149
B.9-7			149		149
B.9-8			149		149
B.9-9			149		149
B-1.5	118				118
B-10			149		149
B-2			149		149
B-3			149		149
B-4			149		149
B-5			149		149
B-6			149		149
B-7			149		149
B-8			149		149
B-9			149		149
C.4-10.2				150	150
C.5-8.8				150	150
C.7-1.4			174		174
C-.7-1.9			174		174
C.7-5			149		149
C.7-6			149		149
C.7-7			149		149
C.7-8			149		149
C-11			149		149
D.3-1.4			174		174
D.3-7			149		149
D.3-8			149		149
D.5-10.2				150	150
D.5-8.9				150	150
D-11			149		149
E-11			149		149
F-11			149		149
G.5-11		128			128
G-11			149		149
H.2-10.1			174		174
Grand Total	**118**	**128**	**5326**	**601**	**6173**

Concrete Column Encasement Takeoff

	24		26	28	Grand Total
Row Labels	24	28	26	28	
H.2-11	128				128
MA-M10				145	145
MA-M11				145	145
MA-M12				145	145
MA-M13				145	145
MA-M14				145	145
MA-M15				145	145
MA-M15.9				145	145
MA-M8.3				174	174
MA-M9.1				145	145
MB-M10	21				21
MB-M11	21				21
MB-M12.1	64				64
MB-M12.9	64				64
MB-M14	21				21
MB-M15	21				21
MB-M15.9	64				64
MB-M16.6			150		150
MB-M8.3	149				149
MB-M9.1	64				64
MC-M10	43				43
MC-M11	43				43
MC-M12.1	85				85
MC-M12.9	85				85
MC-M14	43				43
MC-M15	43				43
MC-M15.9	85				85
MC-M16.6			175		175
MC-M8.3			175		175
MC-M9.1	85				85
MD-M10	43				43
MD-M11	43				43
MD-M12.1	85				85
MD-M12.9	85				85
MD-M14	43				43
MD-M15	43				43
MD-M8.3			175		175
MD-M9.1	85				85
RE-R3		149			149
RE-R4		149			149
RG-R4				174	174
Grand Total	**1557**	**299**	**676**	**1510**	**4042**

Slurry Wall Steel Deck Takeoff

Slurry Wall Volume		
Perimeter	167	Feet
Perimeter	1667	Feet
Total Perimeter	1833	Feet
Width	8	Feet
Area	13750	Sq. Ft.
Depth	124	Feet
Volume		
	1705000	Feet
	63148	Yards

Steel Deck Area	
Level	**Area**
P2	95000
P1	95000
M4	95000
M3	95000
M2	95000
M1	95000
A	95000
1	83,000
2	75000
3	75000
4	75000
5	75000
6	75000
7	75000
8	75000
9	75000
10	75000
11	75000
12	75000
13	75000
14	75000
15	75000
16	75000
Total:	1873000
Cubic Feet	312166.6667
Cubic Yards	11561.73

Appendix C:

Assemblies MEP Estimate

Nathan Braskey

Date: 07-Oct-13

Assemblies MEP Estimate
Year 2013 Quarter 3
Assembly Detail Report

Prepared By:
John Smith
PSU

Assembly Number			Description	Quantity	Unit	Total Incl. O&P	Ext. Total Incl. O&P
A Substructure							
A10000000000			Strip footings	8.00	S.F.	$0.00	$0.00
A Substructure Subtotal							**$0.00**
D Services							
D20202502260			Gas fired water heater, commercial, 100< F rise, 600 MBH input, 576 GPH	30.00	Ea.	$28,350.00	$850,500.00
D20402102040			Roof drain, DWV PVC, 4" diam, diam, 10' high	14.00	Ea.	$1,325.00	$18,550.00
D20402102080			Roof drain, DWV PVC, 4" diam, for each additional foot add	215.00	Ea.	$34.65	$7,449.75
D20908101400			Copper tubing, hard temper, solder, type K, 4" diameter	66,140.00	L.F.	$164.00	$10,846,960.00
D30105101880			Apartment building heating system, fin tube radiation, forced hot water, 30,000 SF area,300,000 CF vol	752,000.00	S.F.	$8.07	$6,068,640.00
D30106842560			Solar passive heating, direct gain, 2'-6" x 5', double glazed window, one panel wide	3,200.00	Ea.	$1,110.00	$3,552,000.00
D30201041560			Large heating systems, electric boilers, hydronic, 223,300 SF, 3,600 KW, 12,283 MBH, 14 floors	752,000.00	S.F.	$8.36	$6,286,720.00
D30301154400			Packaged chiller, water cooled, with fan coil unit, schools and colleges, 4,000 SF, 15.33 ton	752,000.00	S.F.	$20.90	$15,716,800.00
D30501704000			Splt sys, air cooled condensing unit, schools and colleges, 1,000 SF, 3.83 ton	752,000.00	S.F.	$9.62	$7,234,240.00
D50102400560			Switchgear installation, incl switchboard, panels & circuit breaker, 277/480 V, 1000 A	9.00	Ea.	$30,475.00	$274,275.00
D50102400620			Switchgear installation, incl switchboard, panels & circuit breaker, 277/480 V, 2000 A	2.00	Ea.	$51,975.00	$103,950.00
D50102503020			Panelboard, 4 wire w/conductor & conduit, NQOD, 120/208 V, 400 A, 10 stories, 75' horizontal	2.20		$32,700.00	$71,940.00
D50201150200			Receptacle systems, underfloor duct, 5' on center, low density	752,000.00	S.F.	$10.07	$7,572,640.00
D50202080640			Fluorescent fixtures, type A, 23 fixtures per 1600 SF	752,000.00	S.F.	$7.53	$5,662,560.00
D Services Subtotal							**$64,267,224.75**
F Special Construction							
F10405100100			Special construction, tanks, steel, ground level, 100,000 gal	23.00	Ea.	$226,500.00	$5,209,500.00
F Special Construction Subtota							**$5,209,500.00**

Plumbing Assemblies Takeoff

Level	Restrooms	Water Closets	Sinks	Showers	Drains	Urinals
P2	1	1	1	-	1	-
P1	8	53	35	1	16	10
M4	3	22	15	1	8	4
M3	6	49	32	1	18	10
M2	5	24	16	1	10	4
M1	2	10	8	9	4	2
A	7	27	19	3	10	11
1	5	20	14	3	6	3
2	45	45	45	45	-	-
3	104	104	104	104	-	-
4	111	111	111	111	-	-
5	104	104	104	104	-	-
6	111	111	111	111	-	-
7	111	111	111	111	-	-
8	111	111	111	111	-	-
9	111	111	111	111	-	-
10	104	104	104	104	-	-
11	104	104	104	104	-	-
12	104	104	104	104	-	-
14	104	104	104	104	-	-
15	104	104	104	104	-	-

Level	Vertical Runs	Height	Vertical Pipe	Horizontal Pipe	Total Linear Feet
P2	100	12.5	1250	200	1450
P1	100	12.5	1250	200	1450
M4	100	12.5	1250	600	1850
M3	200	10	2000	700	2700
M2	200	12.5	2500	750	3250
M1	150	12.5	1875	500	2375
A	150	10	1500	500	2000
1	450	10	4500	900	5400
2	450	10	4500	400	4900
3	330	8.5	2805	300	3105
4	330	9	2970	300	3270
5	330	8.5	2805	300	3105
6	330	8.5	2805	300	3105
7	330	9	2970	300	3270
8	330	8.5	2805	300	3105
9	330	8.5	2805	300	3105
10	330	9	2970	300	3270
11	330	8.5	2805	300	3105
12	330	8.5	2805	300	3105
14	330	9	2970	300	3270
15	250	9	2250	200	2450
16	200	12.5	2500	1000	3500
Total	**5980**	**219.5**	**56890**	**9250**	**66140**

Plumbing Assemblies Takeoff

Level	Fixtures	Sq. Ft.	Fixture / Sq. Ft.	1000	1600	2000	3000	4000
P2	150	50000	0.003	3	5	6	9	12
P1	150	50000	0.003	3	5	6	9	12
M4	353	21500	0.016	16	26	33	49	66
M3	353	21500	0.016	16	26	33	49	66
M2	353	21500	0.016	16	26	33	49	66
M1	353	21500	0.016	16	26	33	49	66
A	353	21500	0.016	16	26	33	49	66
1	150	30000	0.005	5	8	10	15	20
2	150	30000	0.005	5	8	10	15	20
3	280	30000	0.009	9	15	19	28	37
4	280	30000	0.009	9	15	19	28	37
5	280	30000	0.009	9	15	19	28	37
6	280	30000	0.009	9	15	19	28	37
7	280	30000	0.009	9	15	19	28	37
8	280	30000	0.009	9	15	19	28	37
9	280	30000	0.009	9	15	19	28	37
10	280	30000	0.009	9	15	19	28	37
11	280	30000	0.009	9	15	19	28	37
12	280	30000	0.009	9	15	19	28	37
14	280	30000	0.009	9	15	19	28	37
15	280	30000	0.009	9	15	19	28	37
16	280	30000	0.009	9	15	19	28	37
Total	**6005**	**657500**	**0.219**	**10**	**16**	**20**	**30**	**40**

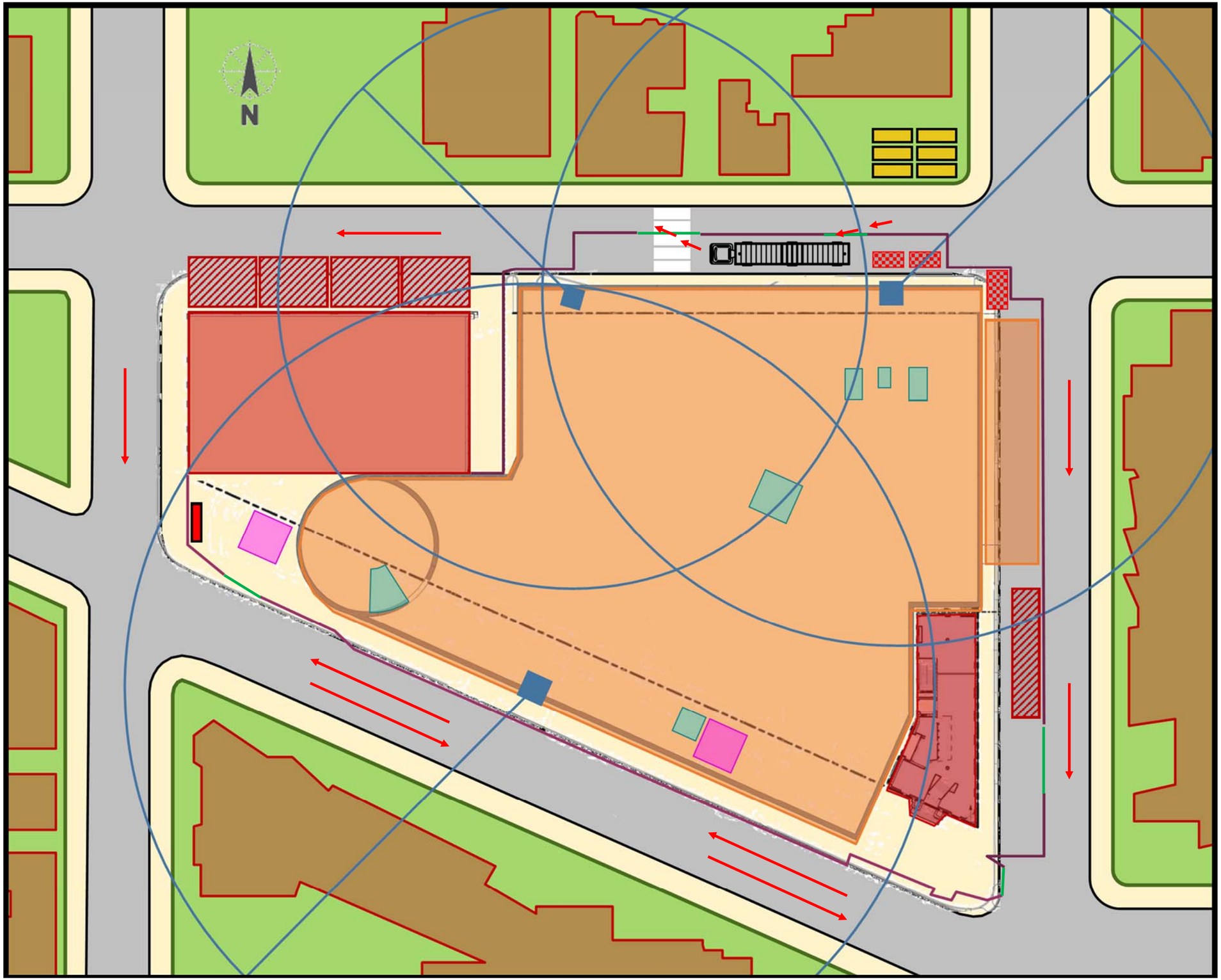
Appendix D:

Detailed Site Layout Planning

Legend

- Excavation Area
- Existing Buildings
- Grass
- Sidewalk
- Street
- Laydown Area
- Dumpster
- Concrete Placement Area
- Trailer
- Slab Opening
- Material Hoist
- Temporary Restroom
- Fence
- Gate Opening
- Traffic Flow
- Truck Delivery
- Tower Crane

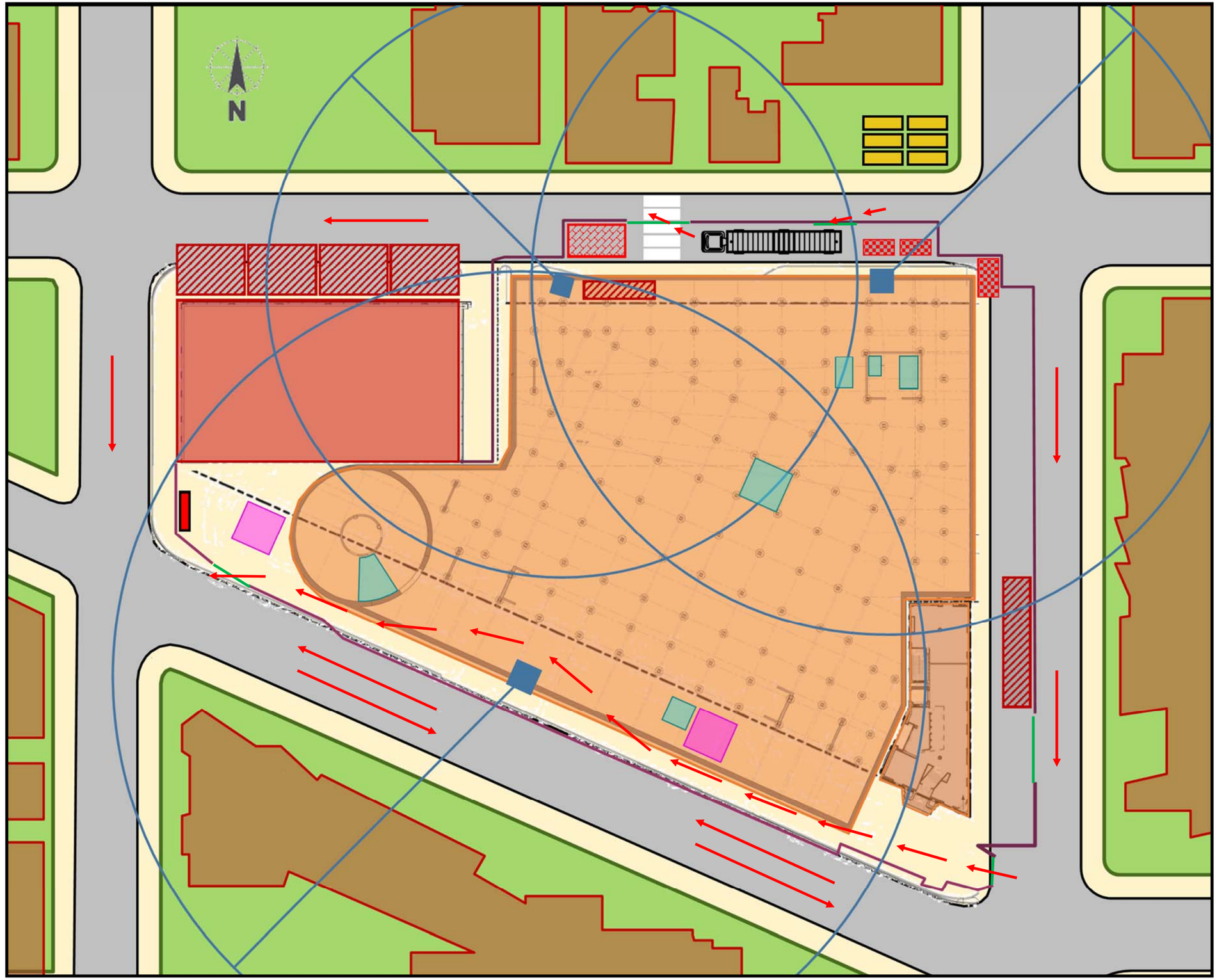
Slurry Wall - Excavation	
Sunnyvale Plaza	
Mid-Atlantic Region	Tech #2
Nathan Braskey	10/16/13



Legend

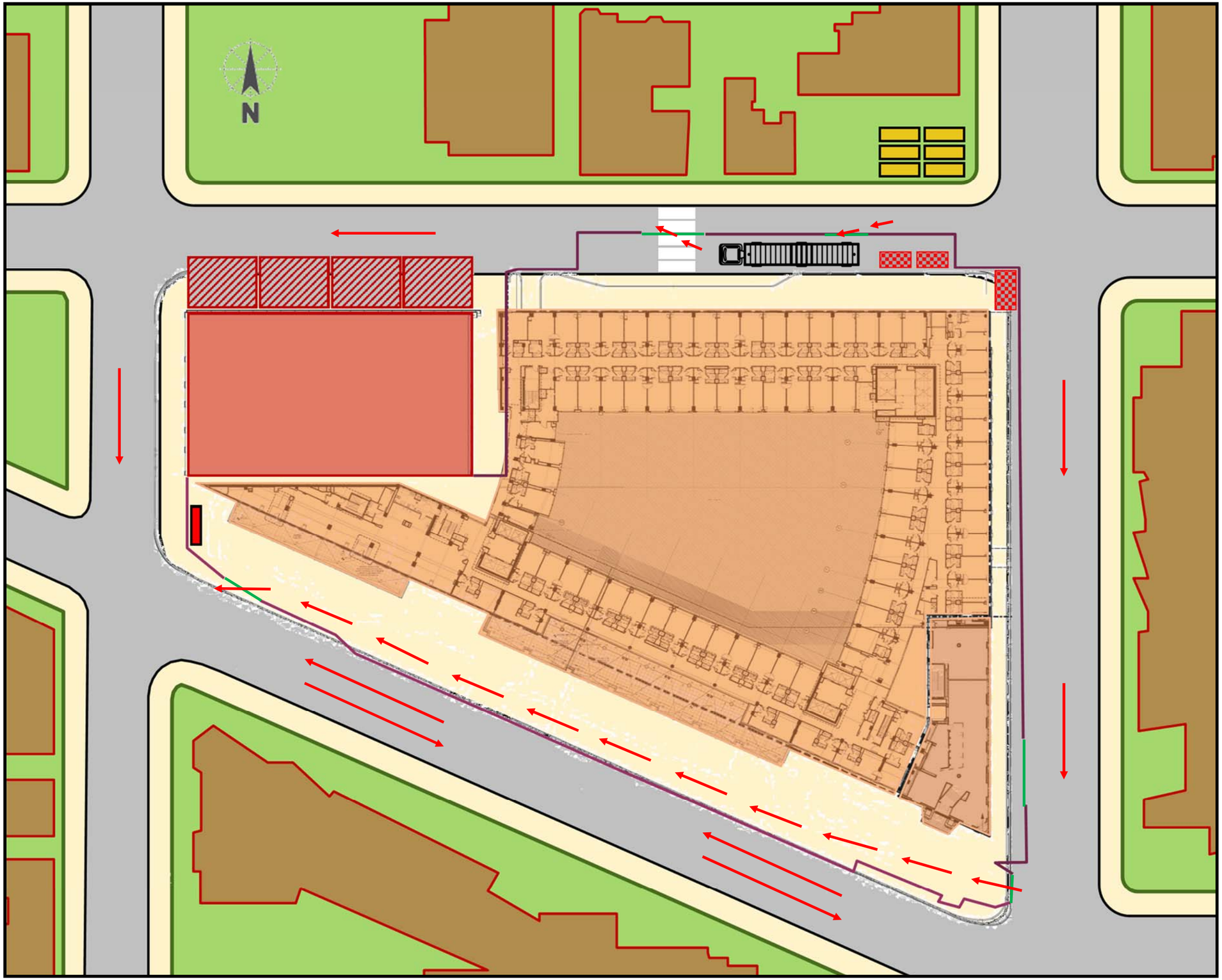
- Building Area
- Existing Buildings
- Grass
- Sidewalk
- Street
- Laydown Area
- Dumpster
- Concrete Placement Area
- Trailer
- Slab Opening
- Material Hoist
- Temporary Restroom
- Fence
- Gate Opening
- Traffic Flow
- Truck Delivery
- Tower Crane

Superstructure	
Sunnyvale Plaza	
Mid-Atlantic Region	Tech #2
Nathan Braskey	10/16/13



Legend

- Building Area
- Existing Buildings
- Grass
- Sidewalk
- Street
- Laydown Area
- Dumpster
- Concrete Placement Area
- Trailer
- Slab Opening
- Material Hoist
- Temporary Restroom
- Fence
- Gate Opening
- Traffic Flow
- Truck Delivery
- Tower Crane



Finishes	
Sunnyvale Plaza	
Mid-Atlantic Region	Tech #2
Nathan Braskey	10/16/13

Appendix E:

General Conditions Estimate

Nathan Braskey

Date: 08-Oct-13

General Conditions Estimate
Year 2013 Quarter 3
Unit Detail Report

Prepared By:
John Smith
PSU

LineNumber	Description	Quantity	Unit	Total Incl. O&P	Ext. Total Incl. O&P
Division 01 General Requirements					
013113200120	Field personnel, field engineer, average	950.00	Week	$2,050.00	$1,947,500.00
013113200140	Field personnel, field engineer, maximum	190.00	Week	$2,325.00	$441,750.00
013113200180	Field personnel, project manager, minimum	190.00	Week	$2,900.00	$551,000.00
013113200200	Field personnel, project manager, average	190.00	Week	$3,350.00	$636,500.00
013113200220	Field personnel, project manager, maximum	190.00	Week	$3,825.00	$726,750.00
013113200240	Field personnel, superintendent, minimum	190.00	Week	$2,825.00	$536,750.00
013113200260	Field personnel, superintendent, average	190.00	Week	$3,100.00	$589,000.00
013113200280	Field personnel, superintendent, maximum	190.00	Week	$3,550.00	$674,500.00
015113800100	Temporary Heat, per week, 12 hours per day, incl. fuel and operation	342.00	CSF Flr	$36.20	$12,380.40
015113800450	Temporary Power, for temp lighting only, 23.6 KWH/month	342.00	CSF Flr	$3.63	$1,241.46
015113800650	Temporary Utilities, power for job duration, incl. elevator, etc, max	342.00	CSF Flr	$121.00	$41,382.00
015213200550	Office Trailer, furnished, rent per month, 50' x 12', excl. hookups	48.00	Ea.	$375.00	$18,000.00
015433406410	Rent toilet portable chemical, Incl. Hourly Oper. Cost.	48.00	Month	$222.42	$10,676.16
015433600500	Rent tower crane, static, 130' high, 106' jib, 6200 lb capacity at 400 fpm, Excl. Hourly Oper. Cost.	48.00	Month	$18,150.00	$871,200.00
015626500100	Temporary Fencing, chain link, 6' high, 11 ga	1,400.00	L.F.	$5.76	$8,064.00
015813500020	Project signs, sign, high intensity reflectorized, buy, excl. posts	250.00	S.F.	$37.50	$9,375.00
017413200050	Cleaning up, cleanup of floor area, continuous, per day, during construction	752.00	M.S.F.	$46.00	$34,592.00
Division 01 General Requirements Subtotal					**$7,110,661.02**

General Conditions Takeoff

Item	Qauntity	Unit	Cost / Unit	Total Cost
Field Personnel				
Operations Manager	190	Weeks	$ 3,825.00	$ 726,750.00
Executive Project Manager	190	Weeks	$ 3,350.00	$ 636,500.00
Project Manager	190	Weeks	$ 2,900.00	$ 551,000.00
Project Engineer	190	Weeks	$ 2,325.00	$ 441,750.00
Office Engineer (3)	570	Weeks	$ 2,050.00	$ 1,168,500.00
General Superintendent	190	Weeks	$ 3,550.00	$ 674,500.00
Project Superintendent	190	Weeks	$ 3,100.00	$ 589,000.00
Area Superintendent	190	Weeks	$ 2,825.00	$ 536,750.00
Field Engineer (2)	380	Weeks	$ 2,050.00	$ 779,000.00
Temporary Utilities				
Power	342	CSF / Flr	$ 124.63	$ 42,623.46
Restrooms	48	Months	$ 222.42	$ 10,676.16
Heat	342	CSF / Flr	$ 36.20	$ 12,380.40
Trailer	48	Months	$ 375.00	$ 18,000.00
Crane (3)	48	Months	$ 18,150.00	$ 871,200.00
Fencing	1400	L.F.	$ 5.76	$ 8,064.00
Project Signs	250	S.F.	$ 37.50	$ 9,375.00
Waste Management	752	M.S.F.	$ 46.00	$ 34,592.00
Subtotal				**$ 7,110,661.02**
Measurement & Verification	0.25%	%	$ 500,000,000	$ 1,250,000.00
Insurance				
Builder's Risk	0.50%	%	$ 500,000,000	$ 2,500,000.00
General Liability	0.50%	%	$ 500,000,000	$ 2,500,000.00
Payment & Performance Bond	0.75%	%	$ 500,000,000	$ 3,750,000.00
Scheduling	0.05%	%	$ 500,000,000	$ 250,000.00
Miscellaneous Contingency	1.0%	%	$ 500,000,000	$ 5,000,000.00
Total Cost				**$ 22,360,661.02**

Appendix F:

Project LEED Scorecard

LEED for New Construction v2.2
Registered Project Checklist

Project Name: Sunnyvale Plaza
Project Address:

Yes	?	No			
9		**5**	**Sustainable Sites**		**14** Points
Y			Prereq 1	**Construction Activity Pollution Prevention**	Required
1			Credit 1	**Site Selection**	1
1			Credit 2	**Development Density & Community Connectivity**	1
		1	Credit 3	**Brownfield Redevelopment**	1
1			Credit 4.1	**Alternative Transportation**, Public Transportation Access	1
1			Credit 4.2	**Alternative Transportation**, Bicycle Storage & Changing Rooms	1
1			Credit 4.3	**Alternative Transportation**, Low-Emitting & Fuel-Efficient Vehicles	1
1			Credit 4.4	**Alternative Transportation**, Parking Capacity	1
		1	Credit 5.1	**Site Development,** Protect or Restore Habitat	1
		1	Credit 5.2	**Site Development,** Maximize Open Space	1
1			Credit 6.1	**Stormwater Design,** Quantity Control	1
		1	Credit 6.2	**Stormwater Design,** Quality Control	1
1			Credit 7.1	**Heat Island Effect,** Non-Roof	1
1			Credit 7.2	**Heat Island Effect,** Roof	1
		1	Credit 8	**Light Pollution Reduction**	1

Yes	?	No			
4		**1**	**Water Efficiency**		**5** Points
1			Credit 1.1	**Water Efficient Landscaping**, Reduce by 50%	1
1			Credit 1.2	**Water Efficient Landscaping**, No Potable Use or No Irrigation	1
		1	Credit 2	**Innovative Wastewater Technologies**	1
1			Credit 3.1	**Water Use Reduction**, 20% Reduction	1
1			Credit 3.2	**Water Use Reduction**, 30% Reduction	1

7	**1**	**9**	**Energy & Atmosphere**		**17** Points
Y			Prereq 1	**Fundamental Commissioning of the Building Energy Systems**	Required
Y			Prereq 2	**Minimum Energy Performance**	Required
Y			Prereq 3	**Fundamental Refrigerant Management**	Required

***Note for EAc1**: All LEED for New Construction projects registered after June 26th, 2007 are required to achieve at least two (2) points under EAc1.

5		5	Credit 1	**Optimize Energy Performance**	1 to 10
				10.5% New Buildings or 3.5% Existing Building Renovations	1
				14% New Buildings or 7% Existing Building Renovations	2
				17.5% New Buildings or 10.5% Existing Building Renovations	3
				21% New Buildings or 14% Existing Building Renovations	4
				5 24.5% New Buildings or 17.5% Existing Building Renovations	5
				28% New Buildings or 21% Existing Building Renovations	6
				31.5% New Buildings or 24.5% Existing Building Renovations	7
				35% New Buildings or 28% Existing Building Renovations	8
				38.5% New Buildings or 31.5% Existing Building Renovations	9
				42% New Buildings or 35% Existing Building Renovations	10
		3	Credit 2	**On-Site Renewable Energy**	1 to 3
				2.5% Renewable Energy	1
				7.5% Renewable Energy	2
				12.5% Renewable Energy	3
1			Credit 3	**Enhanced Commissioning**	1
		1	Credit 4	**Enhanced Refrigerant Management**	1
1			Credit 5	**Measurement & Verification**	1
	1		Credit 6	**Green Power**	1

continued…

Yes	?	No			
4	2	7	**Materials & Resources**		**13** Points
Y			Prereq 1	**Storage & Collection of Recyclables**	Required
		1	Credit 1.1	**Building Reuse**, Maintain 75% of Existing Walls, Floors & Roof	1
		1	Credit 1.2	**Building Reuse**, Maintain 100% of Existing Walls, Floors & Roof	1
		1	Credit 1.3	**Building Reuse**, Maintain 50% of Interior Non-Structural Elements	1
1			Credit 2.1	**Construction Waste Management**, Divert 50% from Disposal	1
1			Credit 2.2	**Construction Waste Management**, Divert 75% from Disposal	1
		1	Credit 3.1	**Materials Reuse**, 5%	1
		1	Credit 3.2	**Materials Reuse**,10%	1
1			Credit 4.1	**Recycled Content**, 10% (post-consumer + ½ pre-consumer)	1
	1		Credit 4.2	**Recycled Content**, 20% (post-consumer + ½ pre-consumer)	1
1			Credit 5.1	**Regional Materials**, 10% Extracted, Processed & Manufactured Regio	1
	1		Credit 5.2	**Regional Materials**, 20% Extracted, Processed & Manufactured Regio	1
		1	Credit 6	**Rapidly Renewable Materials**	1
		1	Credit 7	**Certified Wood**	1
Yes	?	No			
7	2	6	**Indoor Environmental Quality**		**15** Points
Y			Prereq 1	**Minimum IAQ Performance**	Required
Y			Prereq 2	**Environmental Tobacco Smoke** (ETS) **Control**	Required
1			Credit 1	**Outdoor Air Delivery Monitoring**	1
		1	Credit 2	**Increased Ventilation**	1
1			Credit 3.1	**Construction IAQ Management Plan**, During Construction	1
		1	Credit 3.2	**Construction IAQ Management Plan**, Before Occupancy	1
1			Credit 4.1	**Low-Emitting Materials**, Adhesives & Sealants	1
1			Credit 4.2	**Low-Emitting Materials**, Paints & Coatings	1
1			Credit 4.3	**Low-Emitting Materials**, Carpet Systems	1
	1		Credit 4.4	**Low-Emitting Materials**, Composite Wood & Agrifiber Products	1
1			Credit 5	**Indoor Chemical & Pollutant Source Control**	1
		1	Credit 6.1	**Controllability of Systems**, Lighting	1
		1	Credit 6.2	**Controllability of Systems**, Thermal Comfort	1
1			Credit 7.1	**Thermal Comfort**, Design	1
	1		Credit 7.2	**Thermal Comfort**, Verification	1
		1	Credit 8.1	**Daylight & Views**, Daylight 75% of Spaces	1
		1	Credit 8.2	**Daylight & Views**, Views for 90% of Spaces	1
Yes	?	No			
5			**Innovation & Design Process**		**5** Points
1			Credit 1.1	**Innovation in Design**: Provide Specific Title	1
1			Credit 1.2	**Innovation in Design**: Provide Specific Title	1
1			Credit 1.3	**Innovation in Design**: Provide Specific Title	1
1			Credit 1.4	**Innovation in Design**: Provide Specific Title	1
1			Credit 2	**LEED® Accredited Professional**	1
Yes	?	No			
36	5	28	**Project Totals** (pre-certification estimates)		**69** Points

Certified: 26-32 points, **Silver:** 33-38 points, **Gold:** 39-51 points, **Platinum:** 52-69 pc