



Technical Report 2

The Woodley

PSUAE

The Pennsylvania State University
Department of Architectural
Engineering
Construction Management Option

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EXECUTIVE SUMMARY

The following technical report investigates the construction of The Woodley, an \$85 million dollar 8-story luxury apartment building located in Woodley Park, Northwest Washington, DC. This report includes a detailed project schedule, detailed structural estimate, assemblies exterior skin estimate, general conditions estimate, site utilization planning, constructability challenges and LEED evaluation.

The detailed project schedule made up of approximately 200 activities breaks down the building's scope of work by trade and provides an appropriate amount of detail so sequencing can be examined through CPM scheduling methods through its creation on Primavera P6 scheduling software. The project start date is June 16, 2011 and is scheduled to finish on March 14, 2014 at substantial completion, resulting in 701 working day total project duration or approximately 23 months.

A detailed structural systems estimate was calculated for the buildings cast-in-place concrete structure which included the building foundation, below-grade structure and above-grade structure. The total cost of the detailed estimate was calculated at \$8,767,623 compared to the Tech Report 1 square foot estimate at \$11,413,310. However, with the addition of the cost for excluded items that were not incorporated into the detailed estimate's quantity takeoff, the total cost for the building's structural system is \$10,844,659 at \$ 25.76 per SF, 4.98% lower than the square foot estimates \$27.11 per SF. The additional cost of this excluded work was determined with Clark quantities and pricing.

In addition to the detailed structural systems estimate, an assemblies estimate was also performed for the building's exterior skin, including: brick, limestone and cast stone veneer wall systems, roof covering, windows and doors. The assemblies estimate using both actual Clark cost and RS Means cost data resulted in a total cost of \$5,446,028 at a cost per square foot of \$36.93, whereas, the actual total Clark cost for the entire building enclosure was \$6,987,523 at \$47.39 per SF. This variance in cost per square foot was a result of RS Means lower pricing for the wall types present on the building's exterior and the rooftop slate shingles.

The general conditions estimate for the Woodley was calculated to be \$5,132,335 resulting in a monthly cost of \$205,293, based on a 25 month construction schedule. The most costly out of the four sections broken down from the estimate was project personnel at 58%, followed by safety & cleanup at 22%, administrative costs at 13% and insurance and miscellaneous costs making up the remaining 7%.

Site utilization plans within this technical report provide logistical visuals for Phase 1 and 2 of The Woodley's construction, including demolition of an existing parking garage and construction of a vehicular/pedestrian tunnel, excavation, structure construction and enclosure/finishes/site work construction. Constructability challenges faced by Clark Construction the project's general contractor are also examined which included exterior skin construction and sequencing, humidity control for interior finish trades, and south egress demolition and construction phasing.

Lastly, a LEED Evaluation was provided for the MR and IEQ credits Clark Construction was responsible for managing and earning towards the project's anticipated LEED Silver Certification.

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DETAILED PROJECT SCHEDULE

The detailed project schedule produced for the construction of The Woodley was created using Primavera P6 scheduling software and can be referenced in Appendix A. This schedule is broken down by trade and details the work performed by each respected trade. The schedule is made up of approximately 200 activities and milestones starting with support of excavation and ending with substantial completion. It should be noted that this schedule only represents Phase 2, the residential construction of The Woodley and does not incorporate Phase 1 of the Woodley's construction which included demolition of the existing parking garage and the construction of a vehicular/pedestrian tunnel connecting to existing Marriot Wardman hotel. Phase 2 of construction started on June 16, 2011 and is expected to finish on March 14, 2014 resulting in a total project duration of 701 working days or approximately 23 months. The amount of detail incorporated into this schedule allows for sequencing of different trades and activities performed to be visualized and comprehended without expanding out into a fully developed master project schedule. Table 1 below gives a compiled overview of major phases and milestones of the project. Following Table 1, major trades such as the building's concrete structure, exterior skin and unit build-out are further investigated to examine activities driving the schedule.

Table 1. Detailed Project Schedule Overview

DETAILED SCHEDULE OVERVIEW			
Phase	Start Date	Finish Date	Duration Days
MS - NTP	16-Jun-11	-	
Support of Excavation	16-Jun-11	02-Dec-11	119
Above & Below Grade Structure	05-Dec-11	06-Mar-13	332
MS – Structure Top out	15-Jan-13	-	0
Exterior Skin	15-Nov-12	11-Nov-13	252
MS - Watertight	19-Jul-13	-	
MEP Installations	09-Oct-12	02-May-13	145
Unit Build-out	21-Jan-13	07-Feb-14	270
Lobby & Corridor Build-out	11-Oct-12	14-Mar-14	364
MS – Substantial Completion	14-Mar-14	-	
Full Project	16-Jun-11	14-Mar-14	701

Above-Grade Structure

The building's superstructure is entirely made of cast-in-place concrete and two way post-tensioned concrete slabs, with except to the penthouse roof trusses. Concrete formwork, reinforcement, pours and finishing drove the project schedule as a critical activity. Because concrete pours started on succeeding floors once half of the preceding floor was finished the critical activity for each floor was the completion of shear walls and columns connecting to the above floor, which allowed that next floor to initiate its frame pour. The below Table 2 shows the start and end dates of each floor leading up to the completion of the entire building's concrete structure at top out on January 15, 2013, with an average floor being turned over in an average of approximately three weeks or 22 days. Overall, along with unit and lobby/corridor build out the entire concrete structure made up the bulk of the schedule's duration with a total duration of 332 days.

Table 2. Detailed Above-Grade Structure Overview

Detailed Above-Grade Structure Overview			
Floor	Start Date	End Date	Duration
Ground	29-Aug-12	17-Oct-12	35
2 nd	03-Oct-12	29-Oct-12	19
3 rd	16-Oct-12	08-Nov-12	18
4 th	26-Oct-12	26-Nov-12	21
5 th	07-Nov-12	06-Dec-12	21
6 th	19-Nov-12	19-Dec-12	22
7 th	03-Dec-12	02-Jan-13	21
8 th	13-Dec-12	15-Jan-13	22
Average			22

Exterior Skin

To achieve the building's watertight milestone the exterior skin trades were on the project schedules critical path. Exterior sheathing, flashing and window installation all drove the project schedule in anticipation of finishing trades starting in June of 2013. Consequently, until windows and balcony doors/closures were installed exterior masonry could not start which turned out to be a lagging activity throughout construction, which is typical for the intricate and slow masonry construction of the building's brick, limestone and cast stone façade. Installation of the FRACO hydraulic lift scaffolding and swing stages were also a critical path items which had to be finished before exterior masonry could start.

Unit Build-out

As with any residential apartment building project interior unit build out trades and floor turnover was on the schedule's critical path to achieve owner approval and meet punchlist deadlines. Unit build out started on January 21, 2013 and was completed by February 7, 2014 taking a total of 270 days. Having MEP rough-ins on schedule with inspections and finishing drywall was critical to the work flow of finish trades such as finish carpentry, millwork, tile and paint, which all fell under the schedule's critical path due to their finish start relationship dependence upon each other.

DETAILED STRUCTURAL SYSTEMS ESTIMATE

Foundation

The building foundation's footings for both the P3 and P2 levels were taken off in cubic yards of concrete based on the provided Clark pricing of \$270 per cubic yard, which included reinforcement. Foundation walls for both the P3 and P2 levels were taken off in square feet based on Clark's pricing per square foot, including reinforcement and wall height. The resulting detailed estimate for the building's foundation was calculated at \$1,473,382, approximately 14% lower than Clark's estimated value at \$1,716,820. This variance can mainly be contributed to the exclusion of the South Egress structure's foundation.

Below-Grade Structure

The below grade structure's detailed estimate included the P3, P2, P1 and P1 Mezzanine levels. Clark cost data was utilized for slab on grade, shear walls, concrete stairs and supported slabs. Reinforcement was included in Clark's cost data, as well as concrete beams and drop panels for the cost per square foot for supported slabs. The total cost for the below grade structure was calculated at \$1,563,717, approximately 16% lower than the Clark estimated value at \$1,868,433. This difference in cost can be contributed to the assumption that the entire P2 levels floor was slab on grade, when in actuality some portions are of a different slab type and the exclusion of the South Egress retaining wall, tunnel and stair tower in this exercise's quantity take-off.

Above-Grade Structure

For the above grade structure a typical floor take-off was performed using the buildings 3rd Floor including the supported slab, shear walls and concrete stairs. The supported slab square footage includes all reinforcement, beams and columns for a 7 ½ in. thick 5000 psi NW two way post-tensioned concrete slab; likewise, 12" shear wall square footage also includes reinforcement as well. Clark pricing was used for the supported slab and shear walls per square foot and concrete stairs by flight. Once this total cost per typical floor was calculated it was then extrapolated 9 times to price the buildings 9 floors and roof level. The per floor total cost for structural concrete calculated at \$636,725, resulting in a total above grade structural concrete total cost of \$5,730,525, 1.5% higher than Clark's priced value of \$5,646,149. This minor variance in cost can be accounted for due to differences in the amount of mechanical duct openings on each floor slab and the higher floor to floor column height associated with the buildings eighth floor as well as the differences in slab types per floor. The table below shows the pricing breakdown for the used typical floor and then its extrapolated total value for the entire above grade concrete structure.

Detailed vs. Square Foot Structural Estimate Cost Comparison

The below Table 3 detailed structural estimate breakdown shows a total cost and square foot cost comparison between the detailed structural estimate performed for this exercise at \$8,767,623 and the Tech Report 1 square foot estimate at \$11,413,310. However, with the addition of the cost for excluded items that were not taken-off the total cost for the building's structural system is \$10,844,659 at \$ 25.76 per SF, 4.98% lower than the square foot estimates \$27.11 per SF. The additional cost of this excluded work was determined with Clark quantities and pricing. Below Table 3 a list of this excluded work from the quantity take-off is shown. Besides the potential causes for variance in cost noted in the above descriptions of the above-grade, below-grade and foundation estimates, the 4.98% lower total cost calculated relative the Tech 1 Report square foot estimate can be contributed to differences between the Clark pricing used for this detailed estimate and RS Means 2013 cost data used for the square foot estimate.

Table 3. Detailed Structural Estimate Breakdown

DETAILED STRUCTURAL ESTIMATE BREAKDOWN			
Item	Detailed Estimate	Detailed Estimate (w/ excluded work)	Tech 1 Square Foot Estimate
Above Grade Structure	\$5,730,525	\$6,876,376	\$6,792,000
Below Grade Structure	\$1,563,716	\$2,251,463	\$2,556,180
Foundation	\$1,473,382	\$1,716,820	\$1,716,820
Total	\$8,767,623	\$10,844,659	\$11,065,000
SF	421,000	421,000	421,000
Cost/SF	\$20.83	\$25.76	\$26.28

Exclusions from Quantity Takeoff:

- All concrete sitework including courtyard and infinity swimming pool
- South Egress and Tunnel
- Light Gauge trusses at Penthouse Roof
- Concrete fills, curbs, and pads
- Slab topping
- Concrete Ramp walls
- Concrete Plaza slab

ASSEMBLIES EXTERIOR SKIN ESTIMATE

An assemblies estimate for the building's exterior skin system was performed as a comparison tool to the square estimate breakdown performed in Technical Report and to achieve a higher level of accuracy. However, because the square foot cost from Tech 1 for enclosure varied by such a high degree from the actual cost per square foot, this exercise rather shows the a comparison between what RS Means 2014 Assemblies cost data yielded and the actual cost breakdown priced by Clark for the same assemblies. Therefore, both the RS Means pricing and Clark pricing for cost per square foot used a total exterior skin area of 147,450 SF. The assemblies estimate for the building's enclosure included masonry and stone veneer wall systems, roof systems, windows and doors. RS means was only used for masonry veneer wall system costs, which could be somewhat accurately matched to actual brick, limestone and cast stone wall types present throughout the building's exterior.

The assemblies estimate using both actual Clark cost and RS Means cost data resulted in a total cost of \$5,446,028 at a cost per square foot of \$36.93, whereas, the actual total Clark cost for the entire building enclosure was \$6,987,523 at \$47.39 per SF. This resulting variance is due to lower RS Means projected costs per square foot for the brick, limestone and cast stone veneer wall systems, as well as, slate shingles which came in particular low at \$8.49/SF relative to the cost of the faux slate actually used at \$30/SF.

Table 4 below displays the above breakdown and the entire assemblies estimate can be referenced in Appendix C.1.

Table 4. Exterior Skin Assemblies Estimate Summary

Exterior Skin Assemblies Estimate Summary		
Item	Assemblies Total Cost	Actual Clark Cost
Total Cost	\$5,446,028	\$6,987,523
Cost/SF	\$36.93	\$47.39

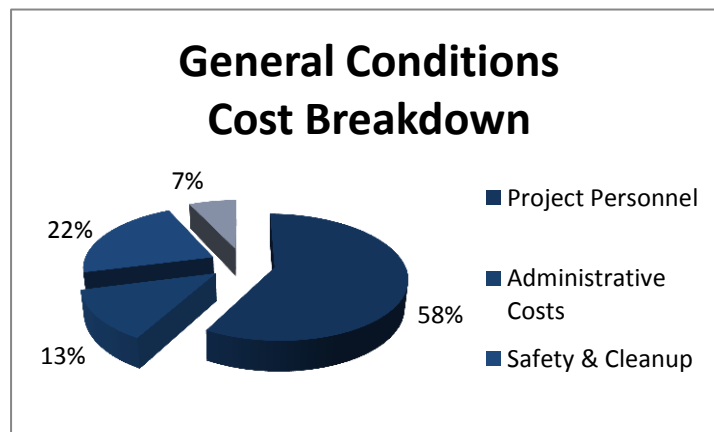
GENERAL CONDITIONS ESTIMATE

The general conditions estimate performed for the Woodley is a representation of the operational costs of the jobsite for the general contractor Clark Construction. This general conditions estimate and its division breakdown can be seen in Appendix C.2. This estimate included supervision and project management personnel, field engineering, administrative facilities and supplies, safety, cleanup, insurance and other miscellaneous costs. These categories were broken down into four main sections: project personnel, including all supervision and project management costs, administrative costs, including field engineering and administrative facilities/supplies, safety and cleanup, and insurance and miscellaneous costs.

Table 5. General Conditions Summary

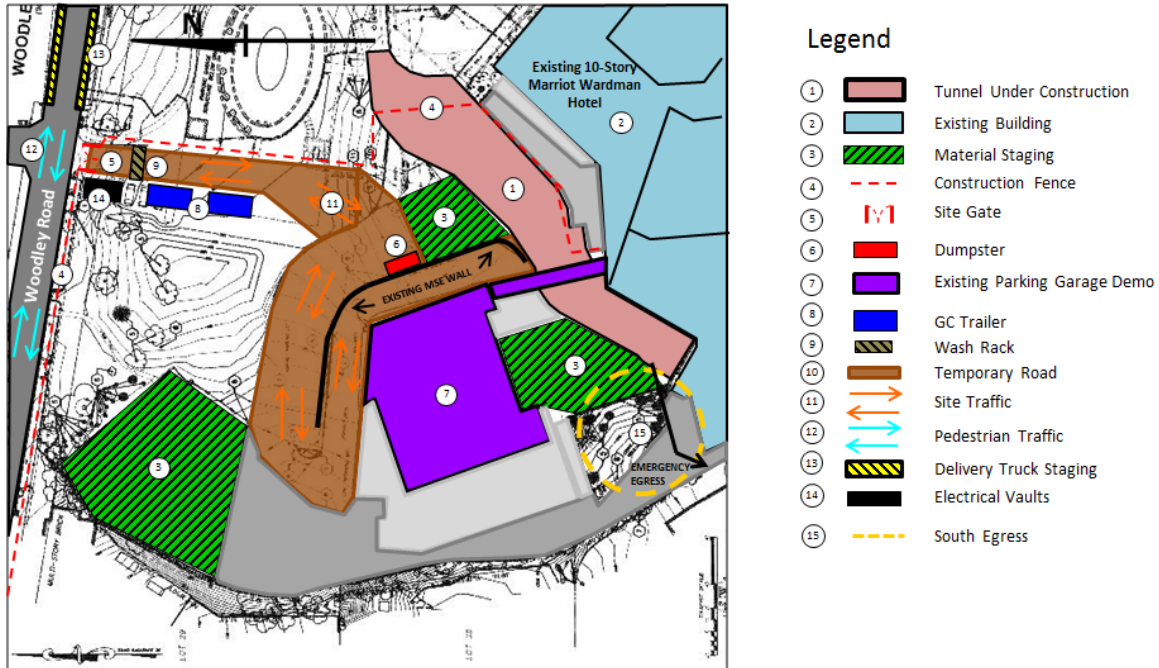
General Conditions Summary		
Section	Total Cost (\$)	Cost per Month
Project Personnel	2,969,333	118,773
Administrative Costs	660,292	26,412
Safety & Cleanup	1,151,693	46,068
Insurance & Misc. Costs	358,018	14,321,
TOTAL	5,132,336	205,293

Table 4 above shows the general conditions estimate summary for the four main sections noted above which resulted in a total cost of \$5,132,335 for the project, 6.1% of the negotiated GMP contract value for the project at \$84,583,082. Based on this total cost and a 25 month construction schedule a \$205,293 per month cost resulted. A combination of 2013 RS Means Construction Cost Data and actual known costs were used to price the items included in the general conditions estimate. The most costly out of the four sections broken down from the estimate was project personnel at 58%, followed by safety & cleanup at 22%, administrative costs at 13% and insurance and miscellaneous costs making up the remaining 7%. This cost breakdown is shown below in Figure 1.



SITE UTILIZATION PLANNING

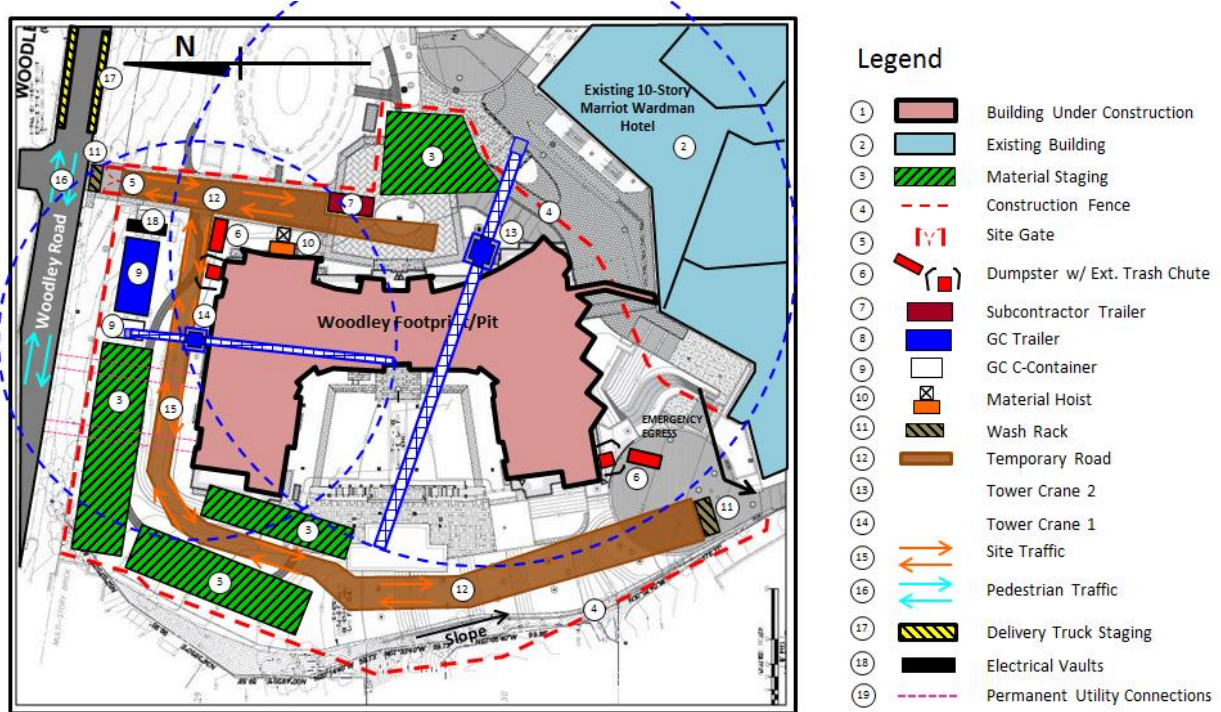
All site utilization plans show below can be referenced in Appendix D in full 11"x17" size.



<p>The Woodley Woodley Park NW Washington, DC</p>	<p>Site Utilization Plan Phase 1 – Demolition/ Tunnel</p>	 	<p>Kevin Kroener Construction Option 9/29/2013</p>
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Demolition and Tunnel Construction

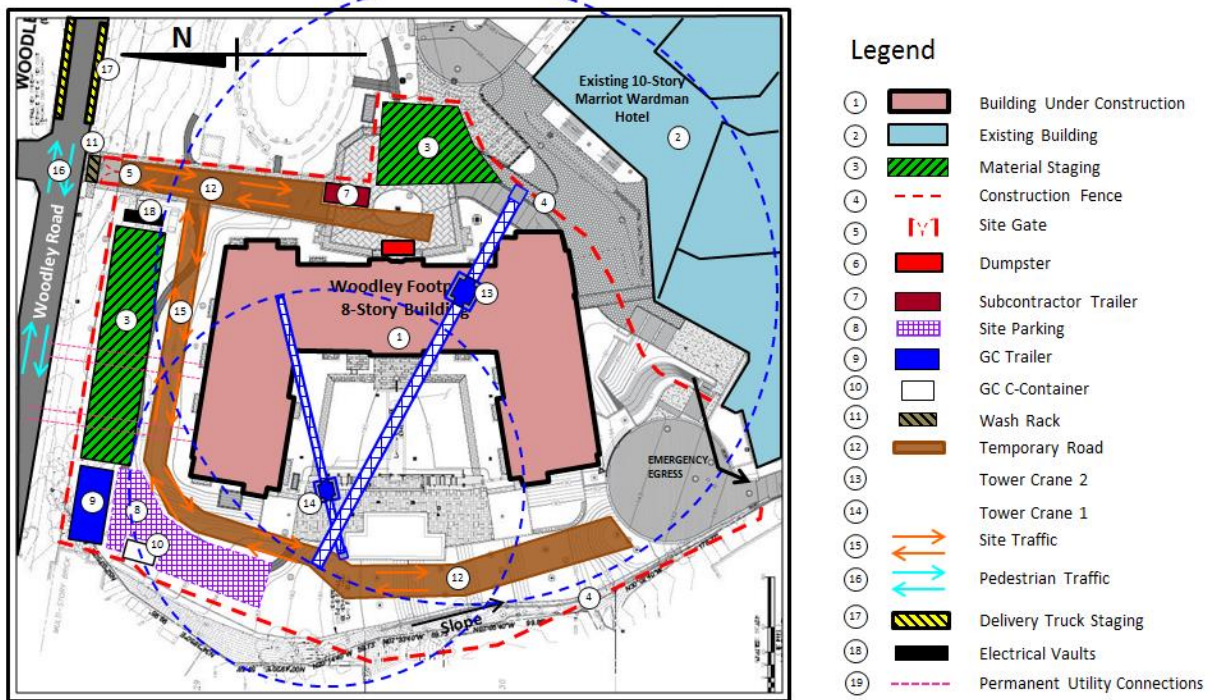
Phase 1 of the Woodley’s construction included the demolition of the site’s existing parking garage and lot and the construction of an underground tunnel connecting to adjacent the Marriot Wardman Hotel. The proposed site utilization plan uses much of the existing site’s space for material staging, which in addition to material storage was also used for mobilization of heavy construction equipment and movement of demolished debris. It should be noted that the location of the South Egress required emergency egress for the Marriot throughout the entirety of both phases of construction. Due to emergency egress being required the existing Spanish Steps in this location of the site were not demolished during Phase 1, whose demolition of phased out during Phase 2. Clark’s two field offices were located just beyond the site entrance along the temporary road built.



<p>The Woodley Woodley Park NW Washington, DC</p>	<p>Site Utilization Plan Phase 2 Residential – Excavation</p>	 	<p>Kevin Kroener Construction Option 9/29/2013</p>
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Excavation

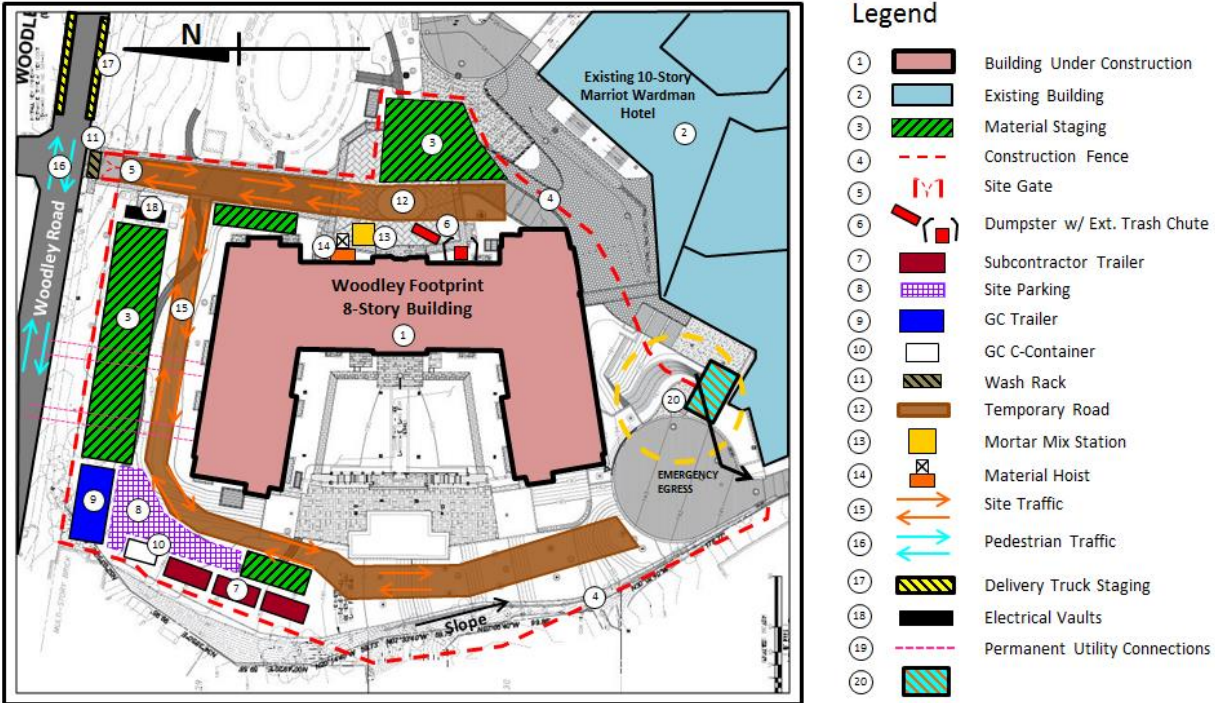
With demolition complete excavation required a new temporary site road that allowed site traffic throughout the east and north ends of the site down to the west end leading to the South Egress. Wash racks were placed at both the site gate entrance and down at the South Egress to eliminate dirt and debris from reaching public streets. Dumpsters were placed at both the Northeast and Southeast corners of the buildings pit. Material staging was also moved with Clark Concrete utilizing the staging area at the east end of the site and the remaining excavation trades at the Northwestern end of the site. Two Clark tower cranes were also mobilized and installed during excavation. Tower Crane 1, the smaller of the two, was a 163 foot high Liebherr 200HC model crane with a 197 foot jib and 67 foot counter jib counterweighted at 23,920 lbs with a 149 foot hook height and 120 foot hook radius. The larger Tower Crane 2 was a 225 foot high Peiner SK 415-20 model crane with a 230 foot jib and 73 foot counter jib counterweighted at 54,675 lbs with a 215 foot hook height and 213 foot hook radius. Clark’s two field offices during Phase 1 were moved from their original location and reduced to one located next to material staging along the west temporary site road. The site’s construction fence was built upon during excavation to continue from the Northwest corner extent of the site footprint down along the Woodley Park property line to the South Egress.



<p>The Woodley Woodley Park NW Washington, DC</p>	<p>Site Utilization Plan Phase 2 Residential – Structure</p>	 	<p>Kevin Kroener Construction Option 9/29/2013</p>
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Residential Construction – Structure

With the Woodley’s excavation complete, Clark’s larger Tower Crane 2 was moved to the base of the pit for Clark Concrete’s construction of the building’s concrete foundation and superstructure. Tower Crane 2’s footing was integrated with the building’s permanent spread footing for column 013. The smaller Clark Tower Crane 1 was also moved to the west courtyard. All crane design and specification was performed by Clark Concrete, with service loads for the integrated footing of Tower Crane 2 at the spread footing of column 013 being provided by the structural engineer of record, SK&A Structural Engineers, PLLC. Clark’s field office moved from its location during excavation to the Northwest corner of the site where a Clark C-container was also brought on site for the addition of arrival Clark Labor crews on site. Site parking, although limited, was also located in the Northwest corner of the site next to the Clark field office. Clark Concrete’s trailer still remained at the eastern end of the site with closer access to their material staging.



<p>The Woodley Woodley Park NW Washington, DC</p>	<p>Site Utilization Plan Phase 2 Residential – Skin/Finishes/Site</p>	 	<p>Kevin Kroener Construction Option 9/29/2013</p>
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Residential Construction – Skin/Finishes/Site

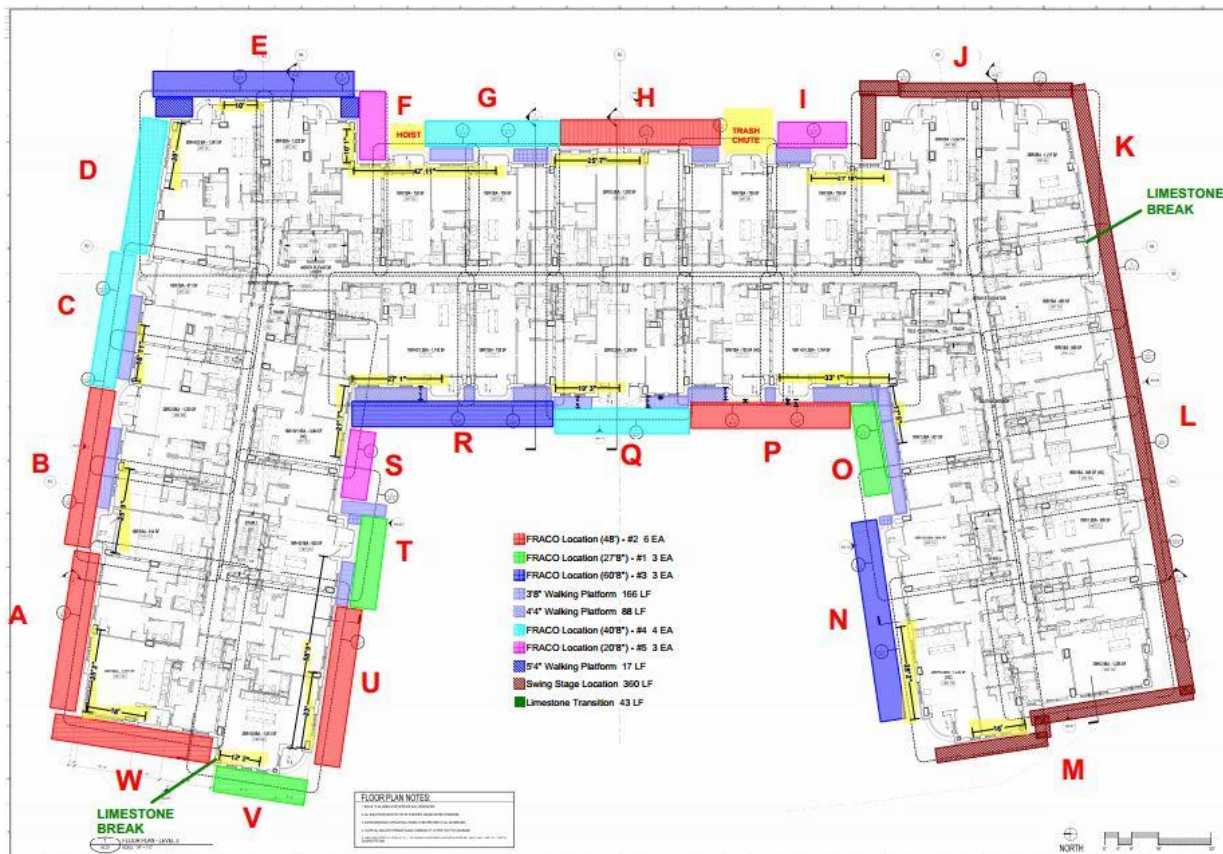
With the Woodley topped out the two Clark tower cranes were removed and an exterior trash chute and material hoist were installed on the building’s east elevation. With masonry, MEP, and finish trades starting new subcontractor trailers were placed adjacent to the Clark field office at the Northwest corner of the site in back of the on-site parking. Due to tight site constraints all staging for delivery trucks has to take place on Woodley Road before entering the site. Due to this congestion on Woodley Road and the lack of space for delivery trucks at the eastern end of the site, delivery scheduling to be of the utmost importance. Down at the South Egress of the site there still remained the not yet demolished Spanish Steps connecting to the existing Marriott Wardman Hotel at the topping out of the building’s superstructure. Emergency egress for the Marriot had to be maintained throughout the entirety of construction, both Phase 1 and 2, which required the demolition of the Spanish Steps and construction of the tunnel, retaining wall and stair tower to all be phased, which is further explained in the next section concerning constructability challenges.

CONSTRUCTABILITY CHALLENGES

1. Exterior Skin Construction Sequencing

With the Woodley’s exterior skin construction calling for brick, cast stone and limestone masonry Clark had to meet the challenge of driving the schedule for exterior construction, which was anticipated to be a lagging activity throughout its start and completion. It was also vital to push exterior skin construction with interior finishes starting on the building’s first floor in June 2013 only two months after the start of installing exterior skin masonry on the courtyard elevations in April. Clark’s original plan to sequence the work by elevation was changed to floor to floor sequencing scheme to accelerate the schedule with interior finishes starting once window and sheathing installation was completed. To achieve this floor to floor sequencing Clark installed FRACO mast climbing work platforms for the North, East and West elevations to allow mason’s to install the exterior skin on any ready floor based on the sequencing plan. FRACO’s also allowed for brick and stone installation to run concurrently in different elevation and floor locations which are denoted in the scaffold sequencing plan in Figure 2 below. Clark also pre-stocked brick pallets within the interior units of the building to accelerate installation and help to combat the high demand for use of the material hoist being used for masonry, MEP and framing material supply.

Figure 2



2. Humidity Control for Interior Finish Trades

As noted in the prior constructability challenge interior finishes started before the building's exterior masonry facade was complete. Not only was the exterior skin not fully constructed but the building was also not air tight at the start of interior unit finishes due the continual use of the site's material hoist and trash chute into August 2013. Controlling relative humidity is absolutely crucial when installing finish carpentry such as crown molding, trim and other millwork. During the very warm and humid summer months in the Washington, DC area, controlling the relative humidity inside the building became an issue when maintaining quality control for finishes. The early start to interior finishes on the building's first floor in June 2013 allowed Clark to jumpstart mock-ups and pre-punch list activities, so it was imperative to maintain quality when installing finish carpentry to not delay other finishing trades such as paint, tile and appliances. Clark's solution to controlling the inside relative humidity of the building was installing eight temporary dehumidifiers on every floor. This solution worked efficiently until dehumidifiers started leaking due to either malfunctioning or damage from laborers, which only served to compound the problem of moisture control. Clark's second solution was installing four temporary A/C units on each floor, which produced much better results for humidity control as well as aiding in temperature control from a safety standpoint. The temporary A/C units helped to lower the overall temperature inside the building which also started to become an issue with the extremely warm weather the project experienced that summer of 2013. Figure 3 below shows the dehumidifier and temporary AC unit models serviced to Clark by Rankin.

Figure 3



3. South Egress Demolition and Construction Phasing

Throughout the entirety of demolition and construction Clark had to maintain emergency egress for the existing tunnel connecting to the Wardman Marriot Hotel at the South Egress. This resulted in a phasing challenge to demolish the existing Spanish Stairs and the build out of the lower existing tunnel. The solution was to phase the work in two tiers, the demolition of the upper portion of the Spanish Stairs and temporary platform in the first tier and then the lower stairs and existing tunnel construction in the second tier, all while maintaining emergency egress. In July of 2012 the upper portion of the stairs was demolished and a platform was built over the lower stairs to accommodate the require egress and to allow the lower section of the stairs to be demolished. Meanwhile, excavation began at the existing tunnel connecting to the Marriot and Clark foundations installed lagging boards and tiebacks. In September 2012, with the demolition of the upper portion of the Spanish Stairs completed in August, the demolition of the lower stairs commenced and a new platform was built to maintain emergency egress, while excavation work continued for the existing tunnel. With the entire Spanish Stairs demolished work to waterproof the existing tunnel and install bituthene on exposed below grade concrete walls started in October of 2012. By March 2013 the footings for the South Egress serpentine retaining wall were installed and the retaining wall and stair tower structure work continued into June of 2013. Figure 5 and 6 show the Spanish Steps at the South Egress before and during its demolition.

Figure 5. Before Demo



Figure 6. During Demo



LEED EVALUATION

JGB Companies had a target goal of LEED Silver Certification for the Woodley. Working with architect Cooper Carry, lighting consultant Domingo, MEP Engineer Integral and Clark Construction the general contractor they proposed a total of 40 anticipated points through sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, and innovation and design process credits. At 40 anticipated certified LEED points The Woodley came well within the goal of Silver Certification (33 to 38 points) and actually well within the Gold Certification range of 39 to 51 points. The following analysis only considers the requirements and strategies for projected credits Clark Construction was responsible for achieving. This evaluation analyzes the proposed Clark MR and IEQ credits and also provides the option to earning 3 more credits towards Gold Certification for a total of 43 certification points through Materials Reuse MR Credits 3.1 and 3.2 and Certified Wood MR Credit 7.

The Woodley's project scorecard based on LEED v2.2 for New Construction and Major Renovations can be referenced in Appendix E.

Anticipated Credits

Construction Waste Management – MR Credits 2.1 and 2.2

Recycled Content – MR Credits 4.1 and 4.2

Regional Materials – MR Credits 5.1 and 5.2

Indoor Air Quality - IEQ Credits 3.1 and 3.2

Low-Emitting Materials – IEQ Credits 4.1, 4.2, 4.3 and 4.4

Additional Possible Credits

Materials Reuse – MR Credits 3.1 and 3.2

Requirement – Use salvaged, refurbished or reused materials, the sum of which constitutes at least 5% or 10%, based on cost, of the total value of materials on the project. The minimum percentage materials reused for each point threshold is as follows:

Reused Materials	Points
5%	1
10%	2

Mechanical, electrical and plumbing components and specialty items such as elevators and equipment cannot be included in this calculation. Include only materials permanently installed in the project.

Furniture may be included if it is included consistently in MR Credit 3: Materials Reuse through MR Credit 7: Certified Wood.

Proposed Strategy – Cooper Carry and Clark will coordinate through the submittal process to identify possible implementation of salvaged, refurbished or reused materials when approving products for construction. Materials such as courtyard stone, swing and pocket doors and tile are possible candidates for use of reused products, as long as both Cooper Carry and Clark maintain the high quality and luxury design intended for the Woodley’s finishes.

Certified Wood – MR Credit 7

Requirement - Use a minimum of 50% (based on cost) of wood-based materials and products that are certified in accordance with the Forest Stewardship Council’s principles and criteria, for wood building components. These components include at a minimum, structural framing and general dimensional framing, flooring, sub-flooring, wood doors and finishes. Include only materials permanently installed in the project. Wood products purchased for temporary use on the project (e.g., formwork, bracing, scaffolding, sidewalk protection, and guard rails) may be included in the calculation at the project team’s discretion. If any such materials are included, all such materials must be included in the calculation. If such materials are purchased for use on multiple projects, the applicant may include these materials for only one project, at its discretion. Furniture may be included if it is included consistently in MR Credits 3, Materials Reuse, through MR Credit 7, Certified Wood.

Proposed Strategy – Likewise to the strategy proposed for MR Credits 3.1 and 3.2, Cooper Carry and Clark should coordinate through the submittal and approval process to identify wood materials that are certified in accordance with the FCS that can be installed. Possible materials to consider would be the building’s wood flooring, swing and pocket doors, millwork and finish carpentry and the rooftop pergola timber.

APPENDIX A

Detailed Schedule

The Woodley			Classic Schedule Layout												2013												2014			08-Oct-13 22:50																						
#	Activity Name	Original Duration	Start	Finish	2011												2012												2013												2014											
					Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr													
1	RESIDENTIAL The Woodley	701	16-Jun-11	14-Mar-14	[Summary bar]																																															
2	RESIDENTIAL.1 Design	0			[Summary bar]																																															
3	RESIDENTIAL.2 PHASE 1 - Demo and Tunnel	0			[Summary bar]																																															
4	RESIDENTIAL.3 PHASE 2 - Residential Building	701	16-Jun-11	14-Mar-14	[Summary bar]																																															
5	RESIDENTIAL.3.1 Construction	701	16-Jun-11	14-Mar-14	[Summary bar]																																															
6	RESIDENTIAL.3.1.1 Support of Excavation	119	16-Jun-11	02-Dec-11	02-Dec-11, RESIDENTIAL.3.1.1 Support of Excavation																																															
7	RESIDENTIAL.3.1.1.1 No FLOOR OR LEVEL	119	16-Jun-11	02-Dec-11	02-Dec-11, RESIDENTIAL.3.1.1.1 No FLOOR OR LEVEL																																															
8	RESIDENTIAL.3.1.1.1.1 No LOCATION	119	16-Jun-11	02-Dec-11	02-Dec-11, RESIDENTIAL.3.1.1.1.1 No LOCATION																																															
9	Prepare SOE	2	16-Jun-11	17-Jun-11	I Prepare SOE																																															
10	Review & Approve/Price and Purchase SOE Dwgs for Perr	94	22-Jul-11	02-Dec-11	Review & Approve/Price and Purchase SOE Dwgs for Permit and JBG Approval																																															
11	RESIDENTIAL.3.1.2 Below Grade Structure	200	05-Dec-11	14-Sep-12	14-Sep-12, RESIDENTIAL.3.1.2 Below Grade Structure																																															
12	RESIDENTIAL.3.1.2.1 Site	98	05-Dec-11	20-Apr-12	20-Apr-12, RESIDENTIAL.3.1.2.1 Site																																															
13	RESIDENTIAL.3.1.2.1.1 All Locations	98	05-Dec-11	20-Apr-12	20-Apr-12, RESIDENTIAL.3.1.2.1.1 All Locations																																															
14	Install Sediment & Erosion Control/Bridge @ Elect. Vaults	10	05-Dec-11	16-Dec-11	Install Sediment & Erosion Control/Bridge @ Elect. Vaults																																															
15	Demo for access along West Side	6	16-Dec-11	23-Dec-11	Demo for access along West Side																																															
16	Establish access road @ North Side	3	28-Dec-11	30-Dec-11	Establish access road @ North Side																																															
17	Demo/Precut/Drill Piles East Side	29	03-Jan-12	10-Feb-12	Demo/Precut/Drill Piles East Side																																															
18	Demo MSE Wall/Balance Garage/Foundation Walls	32	24-Jan-12	07-Mar-12	Demo MSE Wall/Balance Garage/Foundation Walls																																															
19	Excavate/Lag/Install tiebacks on East Side to 1st Tier	19	24-Jan-12	17-Feb-12	Excavate/Lag/Install tiebacks on East Side to 1st Tier																																															
20	Excavate/Lag/Install tiebacks on East Side to 2nd Tier	23	17-Feb-12	20-Mar-12	Excavate/Lag/Install tiebacks on East Side to 2nd Tier																																															
21	Excavate to Subgrade for Concrete Start	36	02-Mar-12	20-Apr-12	Excavate to Subgrade for Concrete Start																																															
22	RESIDENTIAL.3.1.2.2 Crane Set-UP	31	18-Apr-12	31-May-12	31-May-12, RESIDENTIAL.3.1.2.2 Crane Set-UP																																															
23	RESIDENTIAL.3.1.2.2.1 Area 1	31	18-Apr-12	31-May-12	31-May-12, RESIDENTIAL.3.1.2.2.1 Area 1																																															
24	FRP Crane Pad/Erect Crane #2	9	18-Apr-12	30-Apr-12	FRP Crane Pad/Erect Crane #2																																															
25	FRP Crane Pad/Erect Crane #1	22	01-May-12	31-May-12	FRP Crane Pad/Erect Crane #1																																															
26	RESIDENTIAL.3.1.2.3 Parking P3 and P2	79	01-May-12	21-Aug-12	21-Aug-12, RESIDENTIAL.3.1.2.3 Parking P3 and P2																																															
27	RESIDENTIAL.3.1.2.3.1 All Locations	79	01-May-12	21-Aug-12	21-Aug-12, RESIDENTIAL.3.1.2.3.1 All Locations																																															
28	FRP Footings/Gradebeams/Walls & Columns	79	01-May-12	21-Aug-12	FRP Footings/Gradebeams/Walls & Columns																																															
29	Underslab MEP	39	23-May-12	18-Jul-12	Underslab MEP																																															
30	Backfill	26	08-Jun-12	16-Jul-12	Backfill																																															
31	Framed Slab Pour - Frame/Rebar	12	02-Jul-12	18-Jul-12	Framed Slab Pour - Frame/Rebar																																															
32	FRP Slab on Grade	14	12-Jul-12	31-Jul-12	FRP Slab on Grade																																															
33	Framed Slab Pour - Cast Slab/Strip	14	12-Jul-12	31-Jul-12	Framed Slab Pour - Cast Slab/Strip																																															
34	RESIDENTIAL.3.1.2.4 Parking P1 and P1 Mezzanine	46	12-Jul-12	14-Sep-12	14-Sep-12, RESIDENTIAL.3.1.2.4 Parking P1 and P1 Mezzanine																																															
35	RESIDENTIAL.3.1.2.4.1 All Locations	46	12-Jul-12	14-Sep-12	14-Sep-12, RESIDENTIAL.3.1.2.4.1 All Locations																																															
36	Frame Pour	35	12-Jul-12	29-Aug-12	Frame Pour																																															
37	Rebar Pour	32	19-Jul-12	31-Aug-12	Rebar Pour																																															
38	Cast Slab Pour	31	23-Jul-12	04-Sep-12	Cast Slab Pour																																															
39	Strip Pour	33	31-Jul-12	14-Sep-12	Strip Pour																																															
40	P1 Walls & Columns to P1 Mezzanine/P1M Walls & Columr	23	07-Aug-12	07-Sep-12	P1 Walls & Columns to P1 Mezzanine/P1M Walls & Columns to 1st Flr.																																															
41	RESIDENTIAL.3.1.3 Above Grade Structure	132	29-Aug-12	06-Mar-13	06-Mar-13, RESIDENTIAL.3.1.3 Above Grade Structure																																															
42	RESIDENTIAL.3.1.3.1 Ground Floor	35	29-Aug-12	17-Oct-12	17-Oct-12, RESIDENTIAL.3.1.3.1 Ground Floor																																															
43	RESIDENTIAL.3.1.3.1.1 All Locations	35	29-Aug-12	17-Oct-12	17-Oct-12, RESIDENTIAL.3.1.3.1.1 All Locations																																															
44	Frame Pour	24	29-Aug-12	02-Oct-12	Frame Pour																																															
45	Rebar & PT Pour	21	06-Sep-12	04-Oct-12	Rebar & PT Pour																																															
46	Cast Slab Pour	20	10-Sep-12	05-Oct-12	Cast Slab Pour																																															
47	Strip Pour	22	18-Sep-12	17-Oct-12	Strip Pour																																															
48	Walls & Columns to 2nd Floor	14	20-Sep-12	09-Oct-12	Walls & Columns to 2nd Floor																																															

█ Actual Level of Effort █ Remaining Work █ Critical Remaining Work █ Actual Work
◆ Milestone ◆ Milestone ▶ summary

#	Activity Name	Original Duration	Start	Finish	2011												2012												2013												2014			
					Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr					
49	RESIDENTIAL.3.1.3.2 2nd Floor	19	03-Oct-12	29-Oct-12																									▼ 29-Oct-12, RESIDENTIAL.3.1.3.2 2nd Floor															
50	RESIDENTIAL.3.1.3.2.1 All Locations	19	03-Oct-12	29-Oct-12																									▼ 29-Oct-12, RESIDENTIAL.3.1.3.2.1 All Locations															
51	Frame Pour	10	03-Oct-12	16-Oct-12																									■ Frame Pour															
52	Rebar & PT Pour	8	09-Oct-12	18-Oct-12																									■ Rebar & PT Pour															
53	Cast Slab Pour	7	11-Oct-12	19-Oct-12																									■ Cast Slab Pour															
54	Walls & Columns to 3rd Floor	8	15-Oct-12	24-Oct-12																									■ Walls & Columns to 3rd Floor															
55	Stress PT Cables Pour	7	16-Oct-12	24-Oct-12																									■ Stress PT Cables Pour															
56	Strip Pour	8	18-Oct-12	29-Oct-12																									■ Strip Pour															
57	RESIDENTIAL.3.1.3.3 3rd Floor	18	16-Oct-12	08-Nov-12																									▼ 08-Nov-12, RESIDENTIAL.3.1.3.3 3rd Floor															
58	RESIDENTIAL.3.1.3.3.1 All Locations	18	16-Oct-12	08-Nov-12																									▼ 08-Nov-12, RESIDENTIAL.3.1.3.3.1 All Locations															
59	Frame Pour	9	16-Oct-12	26-Oct-12																									■ Frame Pour															
60	Rebar & PT Pour	7	22-Oct-12	30-Oct-12																									■ Rebar & PT Pour															
61	Cast Slab Pour	6	24-Oct-12	31-Oct-12																									■ Cast Slab Pour															
62	Walls & Columns to 3rd Floor	8	25-Oct-12	05-Nov-12																									■ Walls & Columns to 3rd Floor															
63	Stress PT Cables Pour	6	29-Oct-12	05-Nov-12																									■ Stress PT Cables Pour															
64	Strip Pour	8	30-Oct-12	08-Nov-12																									■ Strip Pour															
65	RESIDENTIAL.3.1.3.4 4th Floor	21	26-Oct-12	26-Nov-12																									▼ 26-Nov-12, RESIDENTIAL.3.1.3.4 4th Floor															
66	RESIDENTIAL.3.1.3.4.1 All Locations	21	26-Oct-12	26-Nov-12																									▼ 26-Nov-12, RESIDENTIAL.3.1.3.4.1 All Locations															
67	Frame Pour	9	26-Oct-12	07-Nov-12																									■ Frame Pour															
68	Rebar & PT Pour	7	01-Nov-12	09-Nov-12																									■ Rebar & PT Pour															
69	Cast Slab Pour	6	05-Nov-12	12-Nov-12																									■ Cast Slab Pour															
70	Walls & Columns to 5th Floor	8	06-Nov-12	15-Nov-12																									■ Walls & Columns to 5th Floor															
71	Stress PT Cables Pour	6	08-Nov-12	15-Nov-12																									■ Stress PT Cables Pour															
72	Strip Pour	11	09-Nov-12	26-Nov-12																									■ Strip Pour															
73	RESIDENTIAL.3.1.3.5 5th Floor	21	07-Nov-12	06-Dec-12																									▼ 06-Dec-12, RESIDENTIAL.3.1.3.5 5th Floor															
74	RESIDENTIAL.3.1.3.5.1 All Locations	21	07-Nov-12	06-Dec-12																									▼ 06-Dec-12, RESIDENTIAL.3.1.3.5.1 All Locations															
75	Frame Pour	9	07-Nov-12	19-Nov-12																									■ Frame Pour															
76	Rebar & PT Pour	7	13-Nov-12	21-Nov-12																									■ Rebar & PT Pour															
77	Cast Slab Pour	7	15-Nov-12	26-Nov-12																									■ Cast Slab Pour															
78	Walls & Columns to 4th Floor	9	16-Nov-12	29-Nov-12																									■ Walls & Columns to 4th Floor															
79	Stress PT Cables Pour	7	20-Nov-12	29-Nov-12																									■ Stress PT Cables Pour															
80	Strip Pour	11	21-Nov-12	06-Dec-12																									■ Strip Pour															
81	RESIDENTIAL.3.1.3.6 6th Floor	22	19-Nov-12	19-Dec-12																									▼ 19-Dec-12, RESIDENTIAL.3.1.3.6 6th Floor															
82	RESIDENTIAL.3.1.3.6.1 All Locations	22	19-Nov-12	19-Dec-12																									▼ 19-Dec-12, RESIDENTIAL.3.1.3.6.1 All Locations															
83	Frame Pour	10	19-Nov-12	03-Dec-12																									■ Frame Pour															
84	Rebar & PT Pour	7	27-Nov-12	05-Dec-12																									■ Rebar & PT Pour															
85	Cast Slab Pour	6	29-Nov-12	06-Dec-12																									■ Cast Slab Pour															
86	Walls & Columns to 7th Floor	8	30-Nov-12	11-Dec-12																									■ Walls & Columns to 7th Floor															
87	Stress PT Cables Pour	6	04-Dec-12	11-Dec-12																									■ Stress PT Cables Pour															
88	Strip Pour	9	07-Dec-12	19-Dec-12																									■ Strip Pour															
89	RESIDENTIAL.3.1.3.7 7th Floor	21	03-Dec-12	02-Jan-13																									▼ 02-Jan-13, RESIDENTIAL.3.1.3.7 7th Floor															
90	RESIDENTIAL.3.1.3.7.1 All Locations	21	03-Dec-12	02-Jan-13																									▼ 02-Jan-13, RESIDENTIAL.3.1.3.7.1 All Locations															
91	Frame Pour	9	03-Dec-12	13-Dec-12																									■ Frame Pour															
92	Rebar & PT Pour	7	07-Dec-12	17-Dec-12																									■ Rebar & PT Pour															
93	Cast Slab Pour	6	11-Dec-12	18-Dec-12																									■ Cast Slab Pour															
94	Walls & Columns to 5th Floor	8	12-Dec-12	21-Dec-12																									■ Walls & Columns to 5th Floor															
95	Stress PT Cables Pour	6	14-Dec-12	21-Dec-12																									■ Stress PT Cables Pour															
96	Strip Pour	8	20-Dec-12	02-Jan-13																									■ Strip Pour															

#	Activity Name	Original Duration	Start	Finish	2011												2012												2013												2014											
					Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec					
194	Set Switchgear/Fire Pump/Pool Equip.	34	05-Nov-12	21-Dec-12																																																
195	Install unit heaters	2	04-Dec-12	05-Dec-12																																																
196	Buildout Electrical Room	21	14-Dec-12	15-Jan-13																																																
197	RESIDENTIAL.3.1.5.2 Ground Floor	49	29-Nov-12	07-Feb-13																																																
198	RESIDENTIAL.3.1.5.2.1 Core & Shell	49	29-Nov-12	07-Feb-13																																																
199	Install plumbing/sprinkler/duct risers	10	29-Nov-12	12-Dec-12																																																
200	Install sprinkler/duct mains & branches	21	13-Dec-12	14-Jan-13																																																
201	Frame/MEP Rough-in/Hang/Finish/Paint Set Equip. for telec	18	15-Jan-13	07-Feb-13																																																
202	RESIDENTIAL.3.1.5.3 2nd Floor	49	29-Nov-12	07-Feb-13																																																
203	RESIDENTIAL.3.1.5.3.1 Core & Shell	49	29-Nov-12	07-Feb-13																																																
204	Install plumbing/sprinkler/duct risers	10	29-Nov-12	12-Dec-12																																																
205	Install sprinkler/duct mains & branches	21	13-Dec-12	14-Jan-13																																																
206	Frame/MEP Rough-in/Hang/Finish/Paint Set Equip. for telec	18	15-Jan-13	07-Feb-13																																																
207	RESIDENTIAL.3.1.5.4 3rd Floor	54	13-Dec-12	28-Feb-13																																																
208	RESIDENTIAL.3.1.5.4.1 Core & Shell	54	13-Dec-12	28-Feb-13																																																
209	Install plumbing/sprinkler/duct risers	11	13-Dec-12	28-Dec-12																																																
210	Install sprinkler/duct mains & branches	43	31-Dec-12	28-Feb-13																																																
211	Frame/MEP Rough-in/Hang/Finish/Paint Set Equip. for telec	18	29-Jan-13	21-Feb-13																																																
212	RESIDENTIAL.3.1.5.5 4th Floor	48	31-Dec-12	07-Mar-13																																																
213	RESIDENTIAL.3.1.5.5.1 Core & Shell	48	31-Dec-12	07-Mar-13																																																
214	Install plumbing/sprinkler/duct risers	10	31-Dec-12	14-Jan-13																																																
215	Install sprinkler/duct mains & branches	20	15-Jan-13	11-Feb-13																																																
216	Frame/MEP Rough-in/Hang/Finish/Paint Set Equip. for telec	18	12-Feb-13	07-Mar-13																																																
217	RESIDENTIAL.3.1.5.6 5th Floor	48	15-Jan-13	21-Mar-13																																																
218	RESIDENTIAL.3.1.5.6.1 Core & Shell	48	15-Jan-13	21-Mar-13																																																
219	Install plumbing/sprinkler/duct risers	10	15-Jan-13	28-Jan-13																																																
220	Install sprinkler/duct mains & branches	20	29-Jan-13	25-Feb-13																																																
221	Frame/MEP Rough-in/Hang/Finish/Paint Set Equip. for telec	18	26-Feb-13	21-Mar-13																																																
222	RESIDENTIAL.3.1.5.7 6th Floor	48	29-Jan-13	04-Apr-13																																																
223	RESIDENTIAL.3.1.5.7.1 Core & Shell	48	29-Jan-13	04-Apr-13																																																
224	Install plumbing/sprinkler/duct risers	10	29-Jan-13	11-Feb-13																																																
225	Install sprinkler/duct mains & branches	20	12-Feb-13	11-Mar-13																																																
226	Frame/MEP Rough-in/Hang/Finish/Paint Set Equip. for telec	18	12-Mar-13	04-Apr-13																																																
227	RESIDENTIAL.3.1.5.8 7th Floor	48	12-Feb-13	18-Apr-13																																																
228	RESIDENTIAL.3.1.5.8.1 Core & Shell	48	12-Feb-13	18-Apr-13																																																
229	Install plumbing/sprinkler/duct risers	10	12-Feb-13	25-Feb-13																																																
230	Install sprinkler/duct mains & branches	20	26-Feb-13	25-Mar-13																																																
231	Frame/MEP Rough-in/Hang/Finish/Paint Set Equip. for telec	18	26-Mar-13	18-Apr-13																																																
232	RESIDENTIAL.3.1.5.9 8th Floor	48	26-Feb-13	02-May-13																																																
233	RESIDENTIAL.3.1.5.9.1 Core & Shell	48	26-Feb-13	02-May-13																																																
234	Install plumbing/sprinkler/duct risers	10	26-Feb-13	11-Mar-13																																																
235	Install sprinkler/duct mains & branches	20	12-Mar-13	08-Apr-13																																																
236	Frame/MEP Rough-in/Hang/Finish/Paint Set Equip. for telec	18	09-Apr-13	02-May-13																																																
237	RESIDENTIAL.3.1.6 Elevator Installation	157	22-Jan-13	30-Aug-13																																																
238	RESIDENTIAL.3.1.6.1 All Floors/Levels/Elevations	157	22-Jan-13	30-Aug-13																																																
239	RESIDENTIAL.3.1.6.1.1 Elevators A,B,C,D and E	157	22-Jan-13	30-Aug-13																																																
240	Installation	157	22-Jan-13	30-Aug-13																																																
241	Pointup shaft & install sprinkler/fire	90	18-Apr-13	23-Aug-13																																																
242	Test & inspect for temp use	8	09-May-13	20-May-13																																																

#	Activity Name	Original Duration	Start	Finish	2011												2012												2013												2014											
					Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec					
243	RESIDENTIAL.3.1.7 Unit Buildout	270	21-Jan-13	07-Feb-14																																																
244	RESIDENTIAL.3.1.7.1 All Floors	270	21-Jan-13	07-Feb-14																																																
245	RESIDENTIAL.3.1.7.1.1 Unit Buildout	270	21-Jan-13	07-Feb-14																																																
246	Above Ceiling Rough-in	70	21-Jan-13	26-Apr-13																																																
247	Frame walls	81	04-Mar-13	25-Jun-13																																																
248	Frame/Drywall Ceilings	81	11-Mar-13	02-Jul-13																																																
249	Electrical/Plumbing/Refridg Rough-in Walls	86	18-Mar-13	17-Jul-13																																																
250	Rough-in Sprinkler	81	01-Apr-13	24-Jul-13																																																
251	Set light fixtures	81	15-Apr-13	07-Aug-13																																																
252	Wall & Ceiling Inspections	76	29-Apr-13	14-Aug-13																																																
253	Install and inspect insulation	82	08-May-13	03-Sep-13																																																
254	Hang partion/ceiling drywall	85	23-May-13	23-Sep-13																																																
255	Finish wall & ceiling drywall	80	14-Jun-13	07-Oct-13																																																
256	Prep & finish exposed ceilings	80	21-Jun-13	14-Oct-13																																																
257	Set door frames	5	28-Jun-13	05-Jul-13																																																
258	Prime/paint walls and ceilings	75	08-Jul-13	21-Oct-13																																																
259	Hang doors, hardware	75	10-Jul-13	23-Oct-13																																																
260	Trim Out and HU A/C Units	75	15-Jul-13	28-Oct-13																																																
261	Install Cabinets/Floor & wall tile	80	18-Jul-13	07-Nov-13																																																
262	Set Countertops/Plmb fixtures & A/C Units	82	23-Jul-13	14-Nov-13																																																
263	Electical Trimout	75	08-Aug-13	21-Nov-13																																																
264	Finish Paint	75	08-Aug-13	21-Nov-13																																																
265	Set & Hookup Appliances	75	12-Aug-13	25-Nov-13																																																
266	Install Window Shades	76	15-Aug-13	02-Dec-13																																																
267	Point Up and final paint	74	21-Aug-13	04-Dec-13																																																
268	Rough Clean	76	26-Aug-13	11-Dec-13																																																
269	Clark Punchlist	81	03-Sep-13	26-Dec-13																																																
270	Owner Punchlist	82	17-Sep-13	10-Jan-14																																																
271	Wood flooring & shoe molding	82	01-Oct-13	24-Jan-14																																																
272	Touch-up & final clean	77	15-Oct-13*	31-Jan-14																																																
273	Owner Wood Flooring Punchlist	25	06-Jan-14*	07-Feb-14																																																
274	RESIDENTIAL.3.1.8 Lobby/Corridor Buildout	364	11-Oct-12	14-Mar-14																																																
275	RESIDENTIAL.3.1.8.1 All Parking Levels and Floors	364	11-Oct-12	14-Mar-14																																																
276	RESIDENTIAL.3.1.8.1.1 Buildout	364	11-Oct-12	14-Mar-14																																																
277	Layout/Erect CMU Walls	110	11-Oct-12	18-Mar-13																																																
278	Set Masonry Door Frames	28	15-Oct-12	21-Nov-12																																																
279	Install framing/furring/hang & finish drywall @ elevator lobb	178	05-Nov-12	17-Jul-13																																																
280	Install light fixtures/supply and exhaust fans	38	14-Nov-12	09-Jan-13																																																
281	Hang/Finish Drywall	116	08-May-13	21-Oct-13																																																
282	Prime & Paint Walls & Ceilings	116	15-May-13	28-Oct-13																																																
283	Swing Doors	2	22-May-13	23-May-13																																																
284	Paint & Seal Floors	111	22-May-13	28-Oct-13																																																
285	Final Paint Walls & Ceilings	124	30-May-13	21-Nov-13																																																
286	Install Stripping/Door Hardware	14	04-Jun-13	21-Jun-13																																																
287	Mechanical/Electrical Trim-out	36	04-Jun-13	24-Jul-13																																																
288	Install signage/floor	7	04-Jun-13	12-Jun-13																																																
289	Punchlist	197	07-Jun-13	14-Mar-14																																																
290	Final Clean	177	14-Jun-13	21-Feb-14																																																

█ Actual Level of Effort █ Remaining Work █ Critical Remaining Work █ Actual Work
◆ Milestone ▶ summary

APPENDIX B

Detailed Structural Estimate Quantity Takeoff

Above Grade Structure				
Typical Floor (3rd Floor)	Quantity	Unit	Cost/Unit	Cost/Flr.
Supported Slab	35950	SF	\$17.25	\$620,138
Shear Wall	145	SF	\$27.50	\$3,988
Concrete Stairs	2	flight	\$6,300.00	\$12,600
			Subtotal	\$636,725
	Quantity	Unit	Cost/Unit	Total Cost
Total Structure	9	Floors	\$636,725.00	\$5,730,525
Clark Total				\$5,646,149
				-1.49%

Below Grade Structure				
P3	Quantity	Unit	Cost/Unit	Cost/Flr.
SOG	8106	SF	\$6.50	\$52,689
Shear Wall	80	SF	\$27.50	\$2,200
Concrete Stairs	1	flight	\$6,300.00	\$6,300
			Subtotal	\$61,189
P2				
SOG	54944	SF	\$6.50	\$357,136
Shear Walls	146	SF	\$27.50	\$4,015
Concrete Stairs	2	flight	\$6,300.00	\$12,600
			Subtotal	\$373,751
P1				
Supported Slab	53530	SF	\$18.00	\$963,540
Shear Walls	149	SF	\$27.50	\$4,098
Concrete Stairs	2	flight	\$6,300.00	\$12,600
			Subtotal	\$980,238
P1 Mezzanine				
Supported Slab	7378	SF	\$18.00	\$132,804
Shear Walls	114	SF	\$27.50	\$3,135
Concrete Stairs	2	flight	\$6,300.00	\$12,600
			Subtotal	\$148,539

Item	Total Cost
Total Structure	\$1,563,717
Clark Total	\$1,868,433
	16.31%

APPENDIX C.1

Assemblies Exterior

Skin Estimate

Exterior Skin Envelope Assemblies Estimate						
Item	Unit	Quantity	RS Means Cost/Unit	Actual Cost/Unit	Assembly Total Cost	Actual Cost
Masonry/Stone						
Brick Standard Running Bond	SF	76225	\$23.70	\$35.00	\$1,806,532.50	\$2,667,875.00
Cast Stone	SF	751	\$47.00	\$45.00	\$35,297.00	\$33,795.00
Limestone	SF	15283	\$55.25	\$90.00	\$844,385.75	\$1,375,470.00
Subtotal					\$2,686,215.25	\$4,077,140.00
Roof						
Slate Shingles	SF	7000	\$8.49	\$30.00	\$59,430.00	\$210,000.00
Subtotal					\$59,430.00	\$210,000.00
Windows						
Aluminum-Clad Wood Double Hung Windows	SF	25479		\$69.00	\$178,051.00	\$1,758,051.00
Subtotal					\$1,758,051.00	\$1,758,051.00
Doors						
Aluminum-Clad Wood and Glass Doors	SF	13628		\$69.00	\$940,332.00	\$940,332.00
Hollow Metal Doors	leaf	2		\$1,000.00	\$2,000.00	\$2,000.00
Subtotal					\$942,332.00	\$942,332.00
Total Cost					\$5,446,028.25	\$6,987,523.00

APPENDIX C.2

General Conditions

Estimate

SUPERVISION/PROJECT MANAGEMENT					
Scheduling	1	Job Cost	1	0.04%	\$33,833
Supervision	1	Week	100	\$15,025	\$1,502,500
Project Executive	1	Week	100	\$2,565	\$256,500
Project Management	1	Week	100	\$10,560	\$1,056,000
Jobsite Secretary	1	Week	100	\$425	\$42,500
MEP Coordinator	1	Week	100	\$710	\$71,000
SUBTOTAL					\$2,962,333
FIELD ENGINEERING					
Engineering Instruments/Supplies	1	Ea.	1	\$335,164.00	\$335,164
SUBTOTAL					\$335,164
ADMINISTRATIVE FACILITIES AND SUPPLIES					
Contractor Office set-Up and Rental	2	Month	25	\$386.00	\$19,300
Security Equipment	1	Ea.	1546	\$23.10	\$35,713
Pest Control	1	Ea.	750	\$36.80	\$27,600
Personal Computers	1	Ea.	1	\$96,665.00	\$96,665
Telephone-Setup (from IT Estimate)	1	Ea.	1	\$19,000.00	\$19,000
Jobsite Sheds	6	Month	25	\$74.00	\$11,100
Drawings and Specifications	10	Month	25	\$75.00	\$18,750
Motor Vehicle Expenses	1	Month	25	\$3,280.00	\$82,000
Travel Expenses	1	Ea.	1	\$15,000.00	\$15,000
SUBTOTAL					\$325,128
SAFETY					
Jod Safety Expenses	1	Ea.	1	\$90,450.00	\$90,450
Backrails and Opening Covers	1	LF	1000	\$28.47	\$28,470
Safety Inspector	1	Ea.	100	\$1,270.00	\$127,000
SUBTOTAL					\$245,920
CLEANUP					
Periodic Cleanup	1	M.S.F.	421	\$325.25	\$136,930
Dumpster Service	1	Loads	350	\$450.00	\$157,500
Fences/Barricades	1	LF	7500	\$20.30	\$152,250
Rainwater Pumping	1	Ea.	1	\$5,000.00	\$5,000
Misc. Tools & Equipment	1	Ea.	1	\$20,000.00	\$20,000
Monthly Electric Bill	1	Ea.	25	\$15,500.00	\$387,500
Temporary Heat	1	CSF Floor	297	\$59.15	\$17,568
Temporary Tiolets	6	Month	25	\$183.00	\$27,450
Construction Water	1	Month	25	\$63.00	\$1,575
SUBTOTAL					\$905,773

MISCELLANEOUS					
Cost Engineering	1	Ea.	1	\$31,778.00	\$31,778
Purchasing	1	Ea.	1	\$75,000.00	\$75,000
SUBTOTAL					\$106,778
INSURANCE					
Excess Liability Insurnace	1	Ea.	1	\$251,240.00	\$251,240
SUBTOTAL					\$251,240
JOB TOTAL					\$5,132,336

APPENDIX D

Site Utilization Plans

APPENDIX E

LEED Scorecard



LEED v2.2 for New Construction and Major Renovations

Project Scorecard
 Project Name: Wardman West
 Project Address: 2600 Woodley Rd, Washington, D.C. 20008



COOPER CARRY
 THE CENTER FOR CONNECTIVE ARCHITECTURE

37	6	26	Possible Points: 69
Certified 26 to 32 points			Silver 33 to 39 points
Gold 40 to 51 points			Platinum 52 to 69

9 1 4 Sustainable Sites Possible Points: 14

Y	P	N	Q/C	Design Credit / Construction Credit	Responsible for Documentation	Status with MRG
			C	Prereq 1 Construction Activity Pollution Prevention	Req'd	Clark Construction
1	0	0	D	Credit 1 Site Selection	1	AMT
1	0	0	D	Credit 2 Development Density and Community Connectivity	1	CC
1	0	0	D	Credit 3 Brownfield Redevelopment	1	CC
1	0	0	D	Credit 4.1 Alternative Transportation - Public Transportation Access	1	CC
1	0	0	D	Credit 4.2 Alternative Transportation - Bicycle Storage and Changing Rooms	1	CC
1	0	0	D	Credit 4.3 Alternative Transportation - Low-Emitting and Fuel-Efficient Vehicles	1	CC
0	1	0	D	Credit 4.4 Alternative Transportation - Parking Capacity	1	CC
0	1	0	C	Credit 5.1 Site Development - Protect or Restore Habitat	1	MVLA
1	0	0	D	Credit 5.2 Site Development - Maximize Open Space	1	AMT
0	1	0	D	Credit 6.1 Stormwater Design - Quantity Control	1	CC
0	1	0	D	Credit 6.2 Stormwater Design - Quality Control	1	CC
1	0	0	C	Credit 7.1 Heat Island Effect - Non-roof	1	CC
1	0	0	D	Credit 7.2 Heat Island Effect - Roof	1	CC
0	1	0	D	Credit 8 Light Pollution Reduction	1	Domingo Gonzalez

3 0 2 Water Efficiency Possible Points: 5

Y	P	N	Q/C	Design Credit / Construction Credit	Responsible for Documentation	Status with MRG
1	0	0	D	Credit 1.1 Water Efficient Landscaping - Reduce by 50%	1	MVLA
0	0	1	D	Credit 1.2 Water Efficient Landscaping - No Potable Water Use or No Irrigation	1	CC
0	0	1	D	Credit 2 Innovative Wastewater Technologies	1	CC
1	0	0	D	Credit 3.1 Water Use Reduction - 20% Reduction	1	Integral
1	0	0	D	Credit 3.2 Water Use Reduction - 30% Reduction	1	Integral

6 0 11 Energy and Atmosphere Possible Points: 17

Y	P	N	Q/C	Design Credit / Construction Credit	Responsible for Documentation	Status with MRG
			C	Prereq 1 Fundamental Commissioning of Building Energy Systems	Req'd	CPM Scheduling
			D	Prereq 2 Minimum Energy Performance	Req'd	Integral
			D	Prereq 3 Fundamental Refrigerant Management	Req'd	Integral
1	0	0	D	Credit 1.1 Optimize Energy Performance - 10.5% New / 3.5% Existing Renovations	1	Integral
1	0	0	D	Credit 1.2 Optimize Energy Performance - 14% New / 7% Existing Renovations	1	Integral
1	0	0	D	Credit 1.3 Optimize Energy Performance - 17.5% New / 10.5% Existing Renovations	1	Integral
0	1	0	D	Credit 1.4 Optimize Energy Performance - 21% New / 14% Existing Renovations	1	Integral
0	1	0	D	Credit 1.5 Optimize Energy Performance - 24.5% New / 17.5% Existing Renovations	1	Integral
0	1	0	D	Credit 1.6 Optimize Energy Performance - 28% New / 21% Existing Renovations	1	Integral
0	1	0	D	Credit 1.7 Optimize Energy Performance - 31.5% New / 24.5% Existing Renovations	1	Integral
0	1	0	D	Credit 1.8 Optimize Energy Performance - 35% New / 28% Existing Renovations	1	Integral
0	1	0	D	Credit 1.9 Optimize Energy Performance - 38.5% New / 31.5% Existing Renovations	1	Integral
0	1	0	D	Credit 1.10 Optimize Energy Performance - 42% New / 35% Existing Renovations	1	Integral
0	1	0	D	Credit 2.1 On-Site Renewable Energy - 1.5% Renewable Energy	1	CC
0	1	0	D	Credit 2.2 On-Site Renewable Energy - 2.5% Renewable Energy	1	CC
0	1	0	D	Credit 2.3 On-Site Renewable Energy - 3.5% Renewable Energy	1	CC
1	0	0	C	Credit 3 Enhanced Commissioning	1	IBG / CPM Scheduling
1	0	0	C	Credit 4 Enhanced Refrigerant Management	1	Integral
0	1	0	C	Credit 5 Measurement and Verification	1	CC
1	0	0	C	Credit 6 Green Power	1	Integral

6 0 7 Materials and Resources Possible Points: 13

Y	P	N	Q/C	Design Credit / Construction Credit	Responsible for Documentation	Status with MRG
			D	Prereq 1 Storage and Collection of Recyclables	Req'd	CC
0	0	1	C	Credit 1.1 Building Reuse - Maintain 75% of Existing Walls, Floors, and Roof	1	CC
0	0	1	C	Credit 1.2 Building Reuse - Maintain 85% of Existing Walls, Floors and Roof	1	CC
0	0	1	C	Credit 1.3 Building Reuse - Maintain 95% of Interior Non-Structural Elements	1	CC
1	0	0	C	Credit 2.1 Construction Waste Management - Divert 50% from Disposal	1	Clark Construction
1	0	0	C	Credit 2.2 Construction Waste Management - Divert 75% from Disposal	1	Clark Construction
0	0	1	C	Credit 3.1 Materials Reuse - 5%	1	CC
0	0	1	C	Credit 3.2 Materials Reuse - 10%	1	CC
1	0	0	C	Credit 4.1 Recycled Content - 10% (post-consumer + 1/3 pre-consumer)	1	Clark Construction
1	0	0	C	Credit 4.2 Recycled Content - 20% (post-consumer + 1/3 pre-consumer)	1	Clark Construction
1	0	0	C	Credit 5.1 Regional Materials - 30% Extracted, Processed & Manufactured	1	Clark Construction
1	0	0	C	Credit 5.2 Regional Materials - 20% Extracted, Processed & Manufactured	1	Clark Construction
0	0	1	C	Credit 6 Rapidly Renewable Materials	1	CC
0	0	1	C	Credit 7 Certified Wood	1	CC

9 4 2 Indoor Environmental Quality Possible Points: 15

Y	P	N	Q/C	Design Credit / Construction Credit	Responsible for Documentation	Status with MRG
			D	Prereq 1 Minimum Indoor Air Quality Performance	Req'd	Integral
			D	Prereq 2 Environmental Tobacco Smoke (ETS) Control	Req'd	CC
1	0	0	D	Credit 1 Outdoor Air Delivery Monitoring	1	Integral
0	0	1	D	Credit 2 Increased Ventilation	1	CC
1	0	0	C	Credit 3.1 Construction IAQ Management Plan - During Construction	1	Clark Construction
1	0	0	C	Credit 3.2 Construction IAQ Management Plan - Before Occupancy	1	Clark Construction
1	0	0	C	Credit 4.1 Low-Emitting Materials - Adhesives and Sealants	1	Clark Construction
1	0	0	C	Credit 4.2 Low-Emitting Materials - Paints and Coatings	1	Clark Construction
1	0	0	C	Credit 4.3 Low-Emitting Materials - Carpet Systems	1	Clark Construction
0	1	0	C	Credit 4.4 Low-Emitting Materials - Composite Wood and Agrifiber Products	1	Clark Construction
0	0	1	D	Credit 5 Indoor Chemical and Pollutant Source Control	1	CC
1	0	0	D	Credit 6.1 Controllability of Systems - Lighting	1	Domingo
1	0	0	D	Credit 6.2 Controllability of Systems - Thermal Comfort	1	Integral
1	0	0	D	Credit 7.1 Thermal Comfort - Design	1	Integral
1	0	0	D	Credit 7.2 Thermal Comfort - Verification	1	CC
0	1	0	D	Credit 8.1 Daylight and Views - Daylight 75% of Spaces	1	CC
0	1	0	D	Credit 8.2 Daylight and Views - Views for 90% of Spaces	1	CC

4 1 0 Innovation and Design Process Possible Points: 5

Y	P	N	Q/C	Design Credit / Construction Credit	Responsible for Documentation	Status with MRG
1	0	0	D/C	Credit 1.1 Provide Specific Title	1	CC
1	0	0	D/C	Credit 1.2 Provide Specific Title	1	Domingo
0	1	0	D/C	Credit 1.3 Green Power Exemplary Performance	1	IBG
0	1	0	D/C	Credit 1.4 Green Education	1	IBG
1	0	0	D/C	Credit 2 LEED Accredited Professional	1	CC

37	6	26	Total	Anticipated Points: 40
Certified 26 to 32 points			Silver 33 to 39 points	Gold 40 to 51 points
			Platinum 52 to 69	