

WestEnd25

# WestEnd25

1229-1231 25St. NW

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## Technical Assignment I: Construction Project Management



**Executive Summary:**

Technical Assignment I covers the construction management method for which WestEnd25 is being constructed. This report includes a summary schedule of the project which highlights the major phases of the project. Descriptions of the building systems found in this report explain the design and the construction of these systems. Two estimates, a parametric and a square foot, have been run in comparison to the actual project budgets. The results of these estimates are significantly different, but these differences are analyzed. A site utilization plan illustrates the layout of the site including pedestrian routes, delivery entrances and laydown areas. WestEnd25 is located in Washington D.C. and the local conditions of which the project team must deal with during the project have been described. Similarly, the owner of the project has a critical impact on the project. The owner of WestEnd25 is experienced in real estate development and their influence on the project has also been explained. All these issues affect the overall project delivery system which has also been visually shown with the staffing plan to illustrate how the project hierarchy is illustrated.

WestEnd25 involves the conversion of two existing office buildings to a connected residential rental apartments. The project will add four post-tensioned concrete stories to the top of the existing buildings, and will fully connect the two buildings which stand on an existing two-story underground parking garage. WestEnd25 will be marketed as luxury apartments that include a rooftop pool, fitness center and a resident lounge. The architecture of WestEnd25 is combination of a principal façade comprised of glass and metal curtain wall with the alley facades containing masonry and punched windows. Vornado, the owner hired Shalom Baranes Associates as the architects to design WestEnd25 and hired James G. Davis to develop a budget and then to construct WestEnd25. The cost of construction is \$67,241,381 with a total project cost of \$75,881,149 and will be complete at the end of 2009. At the completion of the project WestEnd25 will provide 323,380 square feet of luxury living space for the area that stands 110 feet tall.

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**A. Project Schedule Summary:**

Mobilization for WestEnd25 began in late February. It is important to note that the existing site contains two separate office buildings and work activities are sequenced such that the north building is followed by the south building. Demolition of existing exterior façade and interior down to structural frame immediately begun and lasted until early June. This demolition also includes duration for slab cuts of existing concrete structure for slab extensions and infill. Work on the superstructure is sequenced by floors and starts with the first floor and continues to the roof/penthouse. For the first through the sixth floor the superstructure work includes installing supporting steel, F/R/P of the slab infills and slab extension for the existing structure.

Interestingly, due to the slow non-repetitive nature of installing the supporting steel multiple locations compared to the F/R/P of an entire floor the durations per floor are about equivalent from existing structure to the added structure. The completion of the superstructure is scheduled for 11/24/08.

The façade of WestEnd25 is comprised of what is termed alley wrap and park wrap. The alley wrap is a brick veneer with metal stud backing and the park wrap is a curtain wall façade. For the durations per each floor the alley wrap is approximately 5 weeks per floor and the park wrap is approximately two weeks per floor. These durations spread across each floor leads to a milestone date of watertight building on 9/1/09.

The elevators begin to be installed in mid-January of 2009 and will assume the responsibility of transporting labor and material as of 5/28/09. To accomplish this elevators are being installed such that there will be one operational in the north building and one operational in the south building. The remaining duration of the elevators will be used to install the remaining elevators, but will not be used by construction personnel when completed.

An important room of WestEnd25 is apartment 213 because that is the mock-up. Therefore, the activities of the mock-up are highlighted with their own line item. Similarly, the first floor is to be delivered and occupied earlier than the rest of the building and therefore it is also a separate line item.

The flow from the north building to the south building continues to MEP rough-in and finishes. The finishes of WestEnd25 averages a duration of about 90 days per floor but can be overlapped with subsequent floors and sequenced such that trades flow up the building completing the interior finishes by 12/10/09. As previously mentioned the finishes of the first floor will be completed by 8/15/09 for turnover to owner and occupancy by 9/1/09. Substantial completion for the rest of the building will be 12/24/09. A summary schedule is located in Appendix C. Starting at one building an establishing a flow of trades is effective towards overall project sequencing. The separation of key line items is appropriate for tracking completion.

**B. Building Systems Summary:**

Yes	No	Work Scope	Information
X		Demolition	See B.I. below.
	X	Structural Steel Frame	The only location of structural steel is located in the garage and first floor. The steel in the garage was part of the original building structural system. But, the steel members have been added to support the added on the first floor to support the additional loads of the building. The typical size of these beams is W 14 x 176.
X		Cast in Place Concrete	See B.II. below.
	X	Precast Concrete	There is no precast concrete being installed in WestEnd25. It was only removed from the original building. The precast from the existing building is part of the strategy to get credits for
X		Mechanical System	See B.III. below.
X		Electrical System	See B.IV. below.
X		Masonry	See B.V. below.
X		Curtain Wall	See B.VI. below.
	X	Support of Excavation	N/A

**B.I. Demolition:**

There are several areas of demolition. These areas include demolition of the exterior precast exterior façade, interior down to structural concrete, including MEP. Furthermore, the original courtyard and penthouse were demolished for the addition of floors. During the MEP layout it was determined to demolish parts of the floors that contained a two way waffle slab for less complicated MEP coordination.



Figure 1: Illustration of demolition on WestEnd25

### B.II. Cast-in-Place Concrete:

The existing structure of WestEnd25 consists of conventionally reinforced two way concrete slabs with varies sections of waffle slabs. The typical slab thickness of the existing structure is 7.5". The project's additional four floors and six connection slabs are post-tensioned concrete. The typical slab thickness of the connection slabs is also 7.5" but the typical thickness of the additional floors is 6". The column grid of 20' by 20' is maintained throughout WestEnd25. Concrete will be placed via crane and bucket. The crane is located in a central position of the site, the courtyard, and concrete deliveries will come from 25<sup>th</sup> St. NW, visual representation can be seen with the site utilization plan in Appendix B. The formwork will be traditional timber formwork and pour samples will be collected to ashore concrete reaches designed strength.

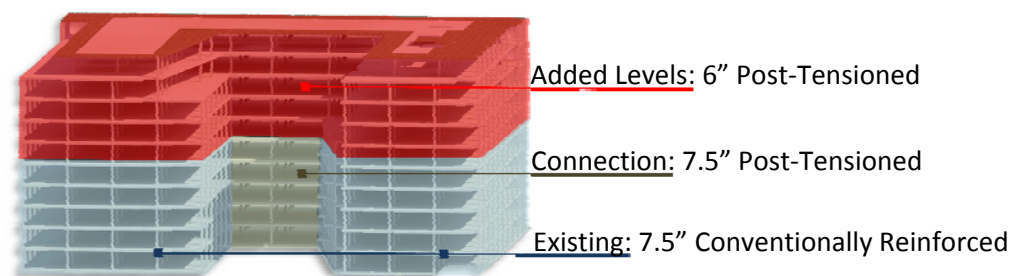


Figure 2: Highlights areas of Cast-in-Place Concrete

### B.III. Mechanical System:

The apartments of WestEnd25 are conditioned by water cooled heat pump units. These units are self contained floor mounted horizontal packages with heating and cooling capabilities for each apartment. This allows for multiple independent conditioned zones. To complete the mechanical system there are four natural gas boilers to warm the condensing water during the peak heating periods and there is also a cooling tower to dissipate the heat energy from the condenser water during periods of high cooling demand. Basic considerations for this type of system are the low installation cost and the independent conditioning flexibility. Also, include as part of the public conditioning system are two enthalpy wheels that transfer heat from exhaust air and outdoor air depending on loads. Therefore, outdoor air is pre-cooled or pre-heated with exhaust air form the conditioned zones.

### B.IV. Electrical System:

The power for WestEnd25 is being supplied by a main feed of 3 phase 2,500 Amp service is received from the Potomac Electric Power Company, PEPCO, from 25<sup>th</sup> street PEPCO. The main power is coming from underneath 25<sup>th</sup> street. There were two existing power vaults for each of the existing buildings. The vault at 1229 carries the 3 phase 460 voltage supply and the vault at 1231 carries the 3 phase 208 voltage supply. The switchgear rooms are located on the west side of the first level basement and distribute lines up to the first floor down the corridors to the risers on the east side of the building.

From the risers power is distributed to every apartment on each floor and each apartment is metered individually.

#### B.V. Masonry:

The façade facing the allies surrounding WestEnd25 is called alley wrap. The ally wrap of WestEnd25 comprises about 75% of the exterior façade. This alley wrap is a brick cavity wall with metal stud backing. A hydraulic mast climbing scaffold system will be used for the façade. The construction of the brick façade consist of face brick, concave mortar joint, airspace, masonry ties, rigid insulation, exterior gypsum board, vapor barrier and metal framing.



Figure 3: Hydraulic Mast Climbing Scaffold System for Masonry Installation

#### B.VI. Curtain Wall:

The façade facing 25<sup>th</sup> St NW and the entrance courtyard is called the park wrap. The park wrap comprises about 25% of the exterior façade. The park wrap is a curtain wall is a panelized system that is installed from the interior of the building. Glazing is 1" thick insulating glass fabricated from two sheets of .25" thick low-E on #2 surface tempered glass with a .5" air space. Frames and accenting metal panels are aluminum composite material. The metal panels are fabricated with a polyethylene core and two thick aluminum skins one of with contains an anodized grey finish.

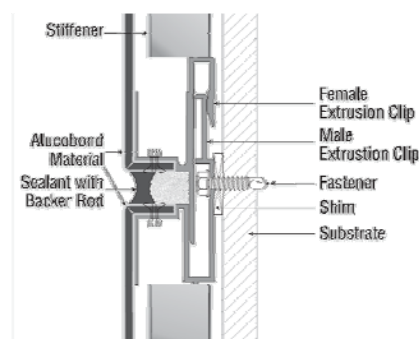


Figure 4: Detail of Metal Panel on Curtain Wall

**C. Project Cost Evaluation:**

The construction cost of WestEnd25 is \$67,241,381 at \$207.93 per square foot. The total project cost is \$75,881,149 at \$234.65 per square foot. The cost of the mechanical and plumbing is \$13,297,200. The cost of the electrical system is \$8,564,043. The cost of the structural system is \$7,604,447. Further cost break down is given in Table 1 of Appendix A.

To calculate a parametric estimate the estimating software D4 Cost 2002 was used. The smart averaging feature was used with similar residential building to calculate the estimate. The D4 estimate produced a calculation of \$41,879,106, which is considerably lower. Large differences can be found in the cost of the building systems, specifically the mechanical and electrical. The actual mechanical and electrical costs are nearly two and half times more expensive than what D4 estimated. The D4 estimate is also low because the façade type of the averaged buildings did not include curtain wall. With approximately 25% of the exterior façade curtain wall the actual cost of doors and windows is approximately five times the cost that D4 estimated. The results of D4 Cost 2002 are located in Table 2 of Appendix A.

To calculate a square foot estimate the R.S. Means Square Foot Cost Estimate<sup>1</sup> was used. Initially, the estimate was taken from M.030 an 8-24 story apartment building, with and assumed exterior wall of face brick and concrete block back up. This is the wrong exterior façade type and the estimate calculated was \$59,977,000. To obtain a more accurate number another estimate from M.360 an 8-24 story hotel was calculated. This calculation was done for two types of exterior façade option, a face brick on steel studs and glass and metal curtain walls. Both of these wall types are found on WestEnd25. The results of the face brick estimates is \$54,740,000 and the results of the glass curtain wall estimate is \$60,896,000. Approximating that the brick façade encloses 75% of the building and the curtain wall encloses 25% of the building the combined estimate calculating the percentages is found to be \$56,279,000. Common additives were not included into the estimate. The results of these estimates can be found in Tables 3-6 of Appendix A.

In conclusion, the building envelope of WestEnd25 contains several different materials and construction types. Therefore, accurate estimates utilizing broad averaging such as D4 Cost 2002 and R.S. Means Square Foot do not account for these variations. For example, the façade is composed of face brick and curtain wall but the above estimates make it difficult to account for both systems. Furthermore, the roof of WestEnd25 is complex and contains multiple finishes. The roof includes many unique features including, a rooftop pool, paved terraces, and vegetation. The cost estimating applications applied above do not account for these added features. Furthermore, these cost estimating fail to update prices to the current price escalation. For example, since 2002 the price of oil prices has more than tripled from an average cost of \$27.22 per barrel to \$98.66 per barrel.<sup>2</sup> This would easily account for the large discrepancies between D4 Cost 2002 and actually prices for building systems such as mechanical, electrical and the glass curtain wall.

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<sup>1</sup> R.S. Means Square Foot Costs. 30<sup>th</sup> Annual Edition. Kingston: Reed Construction Data, Inc., 2008

<sup>2</sup> Historical Crude Oil Prices, InflationData.com. 2008. <http://inflationdata.com>



**D. Site Plan of Existing Conditions:**

Access to the site will be from 25<sup>th</sup> St NW. All deliveries will enter on the south end of the site and exit the north end of the site. A Peiner SK 315 tower crane with a reach of 200 feet with a max load of 8,300 lbs. will be located in the central courtyard and will primarily be used for placing concrete. The courtyard will also serve as a laydown area. Another laydown area exists on the east side of the site. The sidewalk adjacent to the site will be closed to pedestrians and the parking lane on the east side of 25<sup>th</sup> St NW will also be closed for the duration of construction. Temporary pedestrian crosswalks have been established. Furthermore, flag persons will be used to direct traffic when deliveries are expected and when there is heavy traffic during the mornings. The utilities for WestEnd25 run from under 25<sup>th</sup> St NW and tie-in at two locations. There is one location for the north building and one location for the south building. The neighboring building to the south is also the property of the owner and will be renovated in the future, the building to the north is a residential building and the building to the east is an office building. Across 25<sup>th</sup> St NW is a public park with a softball field, soccer and lacrosse nets. This space will not be used for any storage. The footprint of WestEnd25 extends to the alley on the north and south sides. There is overhead protection along the alleys to protect vehicles entering other building's parking garages during demolition and construction. WestEnd25 will utilize two material hoists. The material hoists will be located on the courtyard side of both the north and south buildings and will be the primary source of vertical transportation until elevators are installed, see section A for date. There are two dumpsters on site which have a tipping fee of \$385 per pull. An illustration of the site utilization plan can be found in Appendix B. The important features shown in this plan are:

- Utilities
- Delivery Entrance/Exit
- Pedestrian Paths
- Laydown Location
- Crane Location
- Field Office Location
- Surrounding Buildings

The site plan found in Appendix B and described above is an effective use of the existing conditions of the site. Due to the congested nature of the project in a city environment it is crucial to adequately plan. Planning of deliveries and site traffic is especially important. The plan at WestEnd25 provides easy entrance and exits for deliveries with no turn-arounds. Also, proper care has been taken to ensure the safety of pedestrian who might not be fully aware of the dangers of a construction site.

**E. Local Conditions:**

Washington D.C. was established in 1791 with nearly 8,000 residents. Today, Washington D.C. is a multi-cultured city with a population of about 575,000 residents. The preferred method of construction in the Washington D.C. area is concrete, specifically post tensioned concrete slab. Post tensioned concrete allows for greater floor to ceiling heights while minimizing the total height of the building. This is important because Washington, D.C. has an ordinance restricting the height of private buildings to 135 feet. The climate of Washington D.C. is one of four distinct seasons. The seasons of concern during construction are summer and winter. The summer's days are often hot, average temperature in the upper 80's, and humid which often leads to evening thunderstorms. The winter days are cold, average temperature in the low 30's.<sup>3</sup> Two important considerations of weather are safety and design. The climate of Washington D.C. is such that there numerous freeze/thaw cycles transitioning into and out of the winter season. These conditions create situations where dew point control and moisture barrier installation location is critical for condensation control and the prevention of mold.

WestEnd25 rests on bedrock and has a foundation system of spread footing. Because of the essence of this project is adding on to an existing structure is little excavation needed. Extra footings were installed to carry the additional loads of the building.

Due to the down turn of the American economy there are less construction projects in the metropolitan area of Washington D.C. Therefore, subcontractors have fewer projects to spread their personal so the labor on the job of WestEnd25 is well experienced. There is no parking on site for tradesmen, supervisors or visitors of WestEnd25 during the construction phases. Nevertheless, Washington D.C. offers several pay parking options as well as public transportation option in close proximity to the site. In order increase work space WestEnd25 has permission to extend the site out the parking lane of 25<sup>th</sup> St NW; however a fee must be paid for lost revenues. Additionally, one lane of traffic must be open for traffic at all times. Also, there is a construction noise restriction that prohibits work from 4:00pm to 7:00am. There will only be one dumpster for WestEnd25 with a tipping fee of \$375 per dumpster pull, which also includes LEED services of material being separated and documented.



<sup>3</sup>Monthly Averages for Washington D.C. The Weather Channel Interactive, Inc. 2008  
<http://www.weather.com/outlook/homeandgarden/garden/wxclimatology/monthly/graph>

**F. Client Information:**

The owner of WestEnd25 is Vornado – Charles E. Smith a division of Vornado Realty Trust and is well established in the Washington D.C. area. Vornado is an experienced and well financed realty developer. According to U.S. Securities and Exchange Commission documents the 1229 and 1231 office buildings owned by the Buena of National Affairs were purchased by Vornado for \$71 million dollars.<sup>4</sup> To finance WestEnd25 Vornado took out a contract loan for \$ 104 million, according to Joseph Macnow of Vornado Realty Trust.<sup>5</sup> The purpose of WestEnd25 is to provide apartment housing for the NW quadrant of Washington D.C. and specifically apartments for the students of George Washington University. The GMP has been negotiated between James G. Davis and Vornado to \$76 million. Because of Vornado's financial plan to house students of George Washington University WestEnd25 will be delivered in two phases, the first turned over in August 2009 and the second at the end of December 2009. This will allow for tenants to occupy WestEnd25 for the fall 2009 semester.

**G. Project Delivery System:**

Initially, Vornado entered into contract with the design professionals to design WestEnd25. The general contractor was brought on board to develop preliminary budgets and to make sure the architects were designing within the owner's budget. The role of the general contractor evolved into a providing construction services with a negotiated GMP. The owner – general contractor agreement is an AIA A111-1997, standard form agreement with a negotiated guaranteed maximum price. Furthermore, both the owner and general contractor have entered into the agreement as a single purpose entity, LLC. The purpose of this is to protect the liability of the larger responsible firm from a lawsuit. These entities have no assets and contract employees for services. To assure the quality construction and compliance with contract price the general contractor provides a limited construction guaranty from the parent company. The general contractor is responsible for procuring worker's compensation, builder's risk insurance, commercial general liability insurance, commercial automobile liability insurance, pollution liability insurance and excess liability insurance. Furthermore, the general contractor is responsible that subcontractors obtain worker's compensation insurance, employer's liability insurance, general liability insurance, excess liability insurance, and automobile liability insurances. The owner is not requiring a bond from the general contractor but is requiring bonds from all subcontractors with contracts over \$100,000 and all building envelope subcontractors. An organizational chart detailing the project delivery system is located in Appendix D.

Clearly there is an established relationship between the owner and the general contractor. Because of this, in conjunction with both parties vast experience this delivery seems reasonable and appropriate for this project.

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<sup>4</sup> Exhibit 10.1 Psa for 1229-1231 25<sup>th</sup> St, 2/17/06. <http://www.secinfo.com/dF1e.v5.d.htm>

<sup>5</sup> Macnow, Joseph. Vornado Realty Trust. Reuters Business Wire. Feb28, 2008.

<http://www.reuters.com/article/pressRelease/idUS178195+28-Feb-2008+BW20080228>

**H. Staffing Plan:**

At the top of the general contractor's staffing plan is the Project Executive, Tom Gnecco. Tom's responsibility is to oversee the project performance and provide conceptual planning and value engineering. Under the Project Executive the staffing plan is separated into a project management team and a site supervision staff. The supervisor of the project management team is the Senior Project Manager, Peter Ege. Peter is responsible for the management of schedule and budget while coordinating with the senior superintendent. Under the Senior Project Manager are two Project Managers. Gabe Thompson is only assigned to WestEnd25 only for the purchase phase and was responsible for purchasing and procurements. The other project manager, Diana Shirey, is assigned to the project for the entire duration of the project. Diana is in charge of procurements, cost control, maintaining open and daily communication with the site and fostering teamwork. Under Diana are the Project Coordinator and Assistant Project Managers who are responsible for overseeing and managing various aspects of the project. The overseer of the site supervision staff is the senior superintendent, Frank Whorton. Frank is in charge of coordinating field operations, job-site safety, field reporting, quality control, and reviewing design details for construction. Overseen by the Senior Superintendent are the Project Superintendents, Tim Trumbull and Randy Guertler, and Layout Engineer Jim Black. Tim is in charge of the field operations and quality control of the structure, façade, utilities, and sitework. Randy is in charge of the field operations and quality control of MEP and finishes. All of which also have an assistant to help with their duties. An organizational chart of the staffing plan is located in Appendix E.

## Appendix A: Project Cost Tables

Overall Building		
Building Construction Costs	\$67,241,381	\$207.93
Total:	\$67,241,381	\$207.93
Overall Project		
Owner's Project Cost	\$75,881,149	\$234.65
Total:	\$75,881,149	\$234.65
Building System	Cost	Cost Per SF (323,380 SF)
Structural		
Concrete	\$5,622,364	\$17.39
Steel	\$1,982,083	\$6.13
Total:	\$7,604,447	\$23.52
Glazing		
Glazing	\$11,132,951	\$34.43
Total:	\$11,132,951	\$34.43
Finishes		
Drywall	\$5,356,540	\$16.56
Ceramic Tile	\$1,750,777	\$5.41
Paint	\$1,223,796	\$3.78
Flooring	\$1,046,858	\$3.24
Total:	\$9,377,971	\$29.00
Mechanical		
HVAC/Plumbing	\$12,350,000	\$38.19
Sprinkler	\$909,400	\$2.81
Total:	\$13,259,400	\$41.00
Electrical		
Electrical	\$7,435,850	\$22.99
Total:	\$7,435,850	\$22.99

Table A-A1: Building Systems Costs

Parametric Cost Estimate				
Code	Division Name	%	Sq. Cost	Projected
00	Bidding Requirements	7.66	\$10.02	\$3,205,953
01	General Requirements	6.98	\$9.14	\$2,925,247
02	Site Work	3.70	\$4.84	\$1,547,573
03	Concrete	23.29	\$30.48	\$9,752,676
04	Masonry	2.23	\$2.92	\$935,090
05	Metals	2.77	\$3.63	\$1,161,149
06	Wood & Plastics	3.03	\$3.97	\$1,268,983
07	Thermal & Moisture Protection	13.44	\$17.59	\$5,628,806
08	Doors & Windows	5.30	\$6.93	\$2,217,511
09	Finishes	6.33	\$8.29	\$2,651,775
10	Specialties	0.95	\$1.24	\$396,278
11	Equipment	1.33	\$1.74	\$556,691
12	Furnishings	0.17	\$0.22	\$70,370
14	Conveying Systems	3.20	\$4.19	\$1,341,438
15	Mechanical	11.54	\$15.10	\$4,831,606
16	Electrical	8.09	\$10.59	\$3,387,957
	<b>Total Building Costs</b>	<b>100.00</b>	<b>\$130.87</b>	<b>\$41,879,106</b>

Table 2 A-A: Parametric Cost Estimate



WestEnd25 Square Foot Building Estimate			
Year:	<u>2008</u>	Model #	<u>M.360</u>
Pages:	<u>154-155</u>	Ext. Wall Type:	<u>Glass &amp; Metal Curtain Wall</u>
Area:	<u>323380</u>	Frame:	<u>R/Conc. Frame</u>
Perimeter:	<u>1010</u>	Story Height:	<u>10</u>
The Area fall between: <u>243000</u> and <u>346000</u> Base Cost per Square Foot: <u>\$158.90</u>			
Cost Adjustment Type: <u>Perimeter Adj.</u>		Per SF Adj.	<u>\$8.39</u>
Cost Adjustment Type: _____		Per SF Adj.	_____
Adjusted Base cost Per Square Foot:			<u>\$167.29</u>
Base Building Cost:	<u>\$167.29</u>	x	<u>323380</u> = <u>\$54,098,078.51</u>
Basement Cost:	<u>\$30.85</u>	x	<u>68490</u> = <u>\$2,112,916.50</u>
Total Cost:			<u>\$56,210,995.01</u>
Multiplier Type: <u>Location (Washington D.C.)</u>		Value:	<u>0.96</u>
Allowances:			
Addition:	<u>none</u>	Amount:	_____
Addition:	<u>none</u>	Amount:	_____
Total Square Foot Estimate for Building:			<u>\$53,962,555.21</u>
Contractors Fee	<u>10%</u>		<u>\$5,396,255.52</u>
Designer's Fee	<u>7%</u>		<u>\$3,777,378.86</u>
Total Cost of Building:			<u>\$52,048,000</u>

Table 3 A-A: R.S. Means SF Estimate using Glass & Metal Curtain Wall Hotel Model



WestEnd25 Square Foot Building Estimate			
Year:	<b>2008</b>	Model #	<b>M.360</b>
Pages:	<b>154-155</b>	Ext. Wall Type:	<b>Face Brick Veneer</b>
Area:	<b>323380</b>	Frame:	<b>R/Conc. Frame</b>
Perimeter:	<b>1010</b>	Story Height:	<b>10</b>
The Area fall between:		<b>243000</b>	and <b>346000</b>
Base Cost per Square Foot:		<b>\$141.30</b>	
Cost Adjustment Type:	<b>Perimeter Adj.</b>	Per SF Adj.	<b>\$8.39</b>
Cost Adjustment Type:		Per SF Adj.	
Adjusted Base cost Per Square Foot:		<b>\$149.69</b>	
Base Building Cost:	<b>\$149.69</b>	x	<b>323380</b> = <b>\$48,406,590.51</b>
Basement Cost:	<b>\$30.85</b>	x	<b>68490</b> = <b>\$2,112,916.50</b>
Total Cost:			<b>\$50,519,507.01</b>
Multiplier Type:	<b>Location (Washington D.C.)</b>	Value:	<b>0.96</b>
Allowances:			
Addition:	<b>none</b>	Amount:	
Addition:	<b>none</b>	Amount:	
Total Square Foot Estimate for Building:			<b>\$48,498,726.73</b>
Contractors Fee	<b>10%</b>		<b>\$4,849,872.67</b>
Designer's Fee	<b>7%</b>		<b>\$3,394,910.87</b>
Total Cost of Building:			<b>\$56,743,510</b>

Table 4 A-A: R.S. Means SF Estimate using Brick Veneer Model

WestEnd25 Square Foot Building Estimate	
Curtain Wall	
25% Façade	\$ 15,224,000
Face Brick	
75% Facade	\$ 41,055,000
Total:	\$ 56,279,000

Table 5 A-A: Combination Summary Cost Estimate



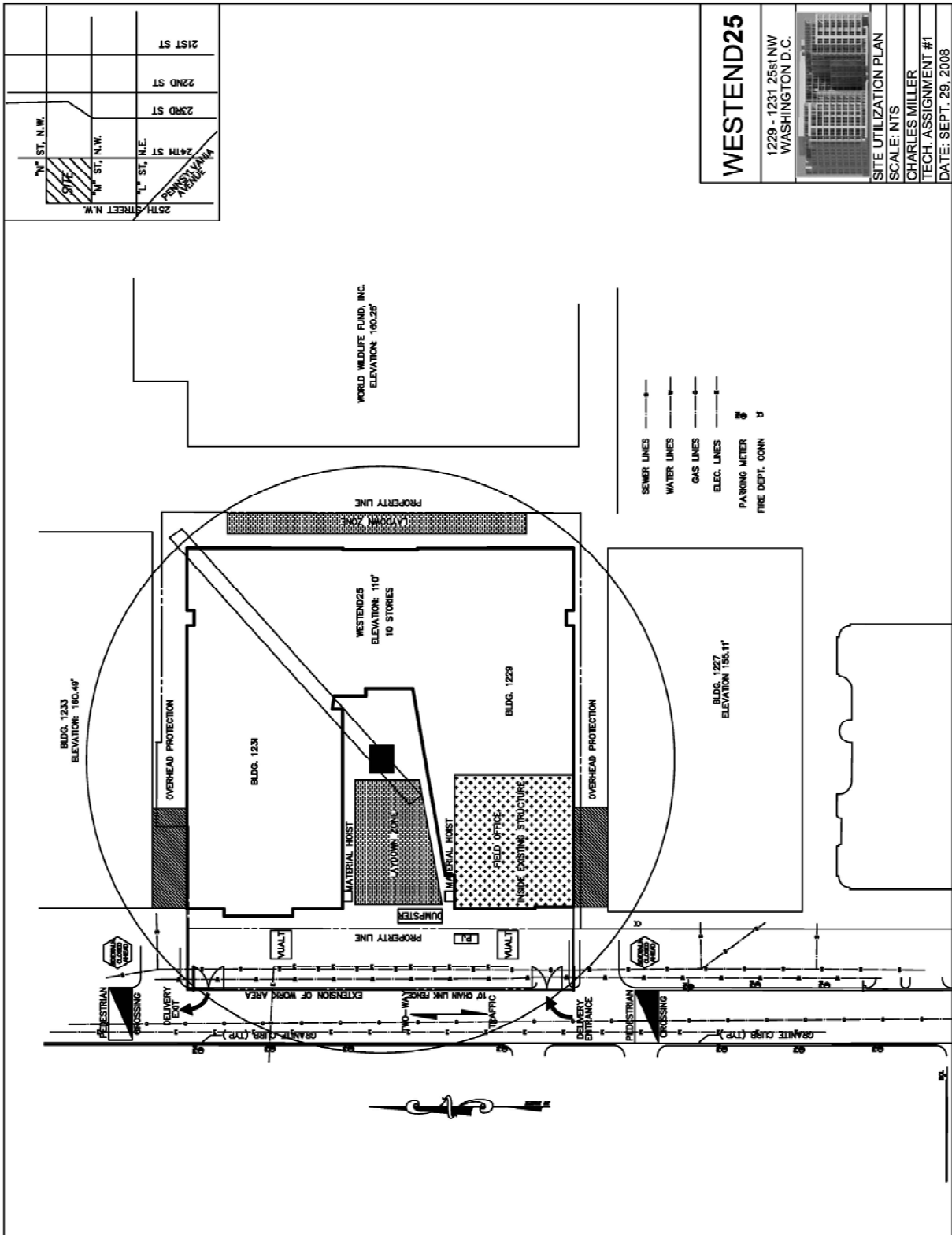


WestEnd25 Square Foot Building Estimate			
Year:	<u>2008</u>	Model #	<u>M.030</u>
Pages:	<u>82-82</u>	Ext. Wall Type:	<u>Face Brick w/ Conc. Backup</u>
Area:	<u>323380</u>	Frame:	<u>R/Conc. Frame</u>
Perimeter:	<u>1010</u>	Story Height:	<u>10</u>
The Area fall between: <u>275000</u> and <u>400000</u>			
Base Cost per Square Foot: <u>\$160.40</u>			
Cost Adjustment Type:	<u>Perimeter Adj.</u>	Per SF Adj.	<u>\$8.39</u>
Cost Adjustment Type:	<u></u>	Per SF Adj.	<u></u>
Adjusted Base cost Per Square Foot:			<u>\$168.79</u>
Base Building Cost:	<u>\$168.79</u>	x	<u>323380</u> = <u>\$54,583,148.51</u>
Basement Cost:	<u>\$31.15</u>	x	<u>68490</u> = <u>\$2,133,463.50</u>
Total Cost:			<u>\$56,716,612.01</u>
Multiplier Type:	<u>Location (Washington D.C.)</u>	Value:	<u>0.96</u>
Allowances:			
Addition:	<u>none</u>	Amount:	<u></u>
Addition:	<u>none</u>	Amount:	<u></u>
Total Square Foot Estimate for Building:			<u>\$54,447,947.53</u>
Contractors Fee	<u>10%</u>		<u>\$5,444,794.75</u>
Designer's Fee	<u>7%</u>		<u>\$3,811,356.33</u>
Total Cost of Building:			<u>\$63,704,099</u>

Table 6 A-A: R.S. Means SF Estimate using Apartment Face Brick Model



Appendix B: Site Plan



Appendix C: Summary Schedule

SUMMARY SCHEDULE												
ID	Task Name	Duration	Start	Finish	Half 1, 2007	Half 2, 2007	Half 1, 2008	Half 2, 2008	Half 1, 2009	Half 2, 2009	Half 1, 2	
					F M A M J J A S O N D	F M A M J J A S O N D	F M A M J J A S O N D	F M A M J J A S O N D	F M A M J J A S O N D	F M A M J J A S O N D	F M A M J J A S O N D	
1	Begin Project	0 days	Thu 3/1/07	Thu 3/1/07	■ 3/1							
2	Design Development	108 days	Thu 3/1/07	Mon 7/30/07								
3	Procurement	309 days	Mon 4/2/07	Thu 6/5/08								
4	Construction Documents	219 days	Wed 5/30/07	Mon 3/31/08								
5	Construction	472 days	Wed 2/20/08	Thu 12/10/09								
6	Demolition	74 days	Wed 2/20/08	Mon 6/2/08								
7	Towercrane	158 days	Mon 5/19/08	Wed 12/24/08								
8	Superstructure	147 days	Fri 5/2/08	Mon 11/24/08								
9	Garage Restoration	185 days	Tue 5/27/08	Mon 2/9/09								
10	Topping Out	0 days	Mon 11/24/08	Mon 11/24/08			■ 11/24					
11	Mock-Up	104 days	Tue 6/3/08	Fri 10/24/08								
12	Rough-in	155 days	Fri 7/25/08	Thu 2/26/09								
13	Utilities	184 days	Mon 7/28/08	Thu 4/6/09								
14	Permanent Power	0 days	Thu 4/9/09	Thu 4/9/09				■ 4/9				
15	Facade	267 days	Mon 8/25/08	Tue 9/1/09								
16	First Floor	191 days	Fri 11/21/08	Sat 8/15/09								
17	Roof	64 days	Mon 11/24/08	Thu 2/19/09								
18	Elevators	157 days	Mon 1/12/09	Tue 9/18/09								
19	Watertight	0 days	Tue 9/1/09	Tue 9/1/09					■ 9/1			
20	Cert. of Occupancy - Ready to I	0 days	Tue 9/1/09	Tue 9/1/09					■ 9/1			
21	Finishes	186 days	Thu 3/26/09	Thu 12/10/09								
22	Sitework	67 days	Tue 5/26/09	Wed 8/26/09								
23	Substantial Completion	0 days	Thu 12/24/09	Thu 12/24/09							■ 12/24	

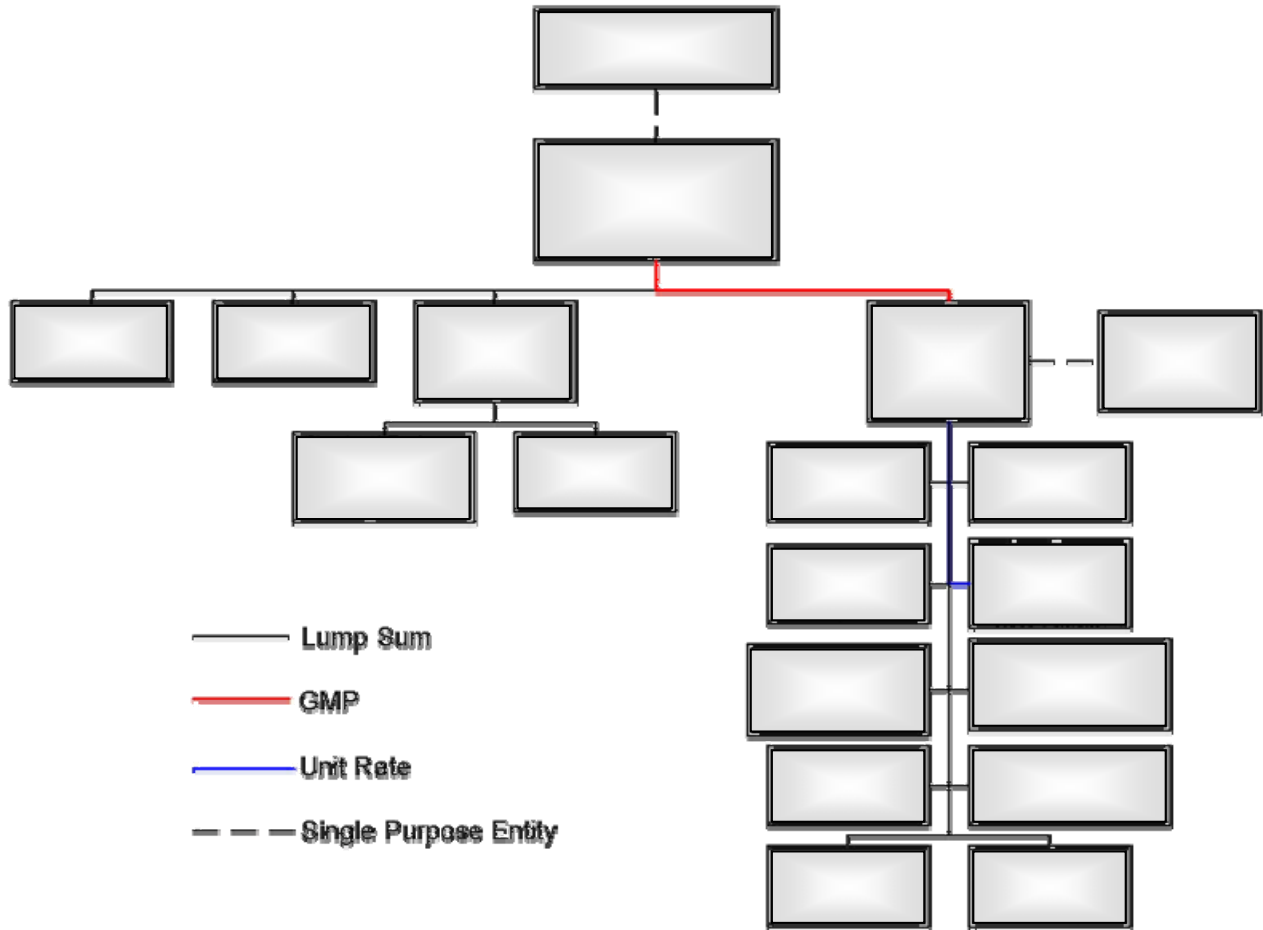
DATE: 9/29/08

WESTEND25  
1229-1231 25th ST. NW  
WASHINGTON D.C.

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Appendix D: Project Organizational Chart



Appendix E: Staffing Organizational Chart

