AE 481W

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Matthew Dabrowski
Construction Management
Consultant: Dr. Chris Magent

[Rydal Park Medical Center Addition]
[Rydal, Pennsylvania]

[TECHNICAL ASSIGNMENT 1]

[The following report presents a technical summary of the Rydal Park Medical Center Addition. Within this assignment an in depth discussion of the medical addition will be discussed through the exploration of the major building systems, cost analysis, construction schedule, project team organization and existing site conditions.]

Rydal Park Medical Center Addition

Project Information:

Function : Institutional Care
Building Cost : $28 Million
Size : 142,862 Square Feet
Dates of Construction : Sept 09' - March 11'
Delivery Method : CM @ Risk, Design-Bid-Build W/ Negociated GMP

Project Team:

Owner : Presby's Inspired Life
Developers : Greenbrier Developers, Inc.
Architect : Stewart-Conners PLLC
Construction Manager : The Whiting-Turner Contracting Co.
Structural Engineer : WK Dickson & Co.
MEP Engineer : Moore Engineering

Architecture:

- Aesthetics intended to invoke sense of residential community living at a location where seniors may receive skilled elderly nursing care.
- 5 story structure will include:
  - two floors of parking garage space
  - two floors of skilled nursing care
  - one floor of critical memory support
- Façade will implement a stone veneer system and spray applied stucco as well as curtain window wall & Pella windows to match the existing medical facility

Structural:

Foundation :
- Helical geo-pier stone column foundation system will provide support under spread footers

Superstructure :
- Post-tension two-way concrete system
- Reinforced concrete columns
- Reinforced masonry mass shear Walls (gravity system), located mainly at stairtowers, utilized as the lateral system

Roof Sturcutre :
- Non-composite roof deck mainly supported by K-series joists and severl intermediate wide flange beams between columns

MEP Systems:

- Four pipe air/water HVAC system:
  - three fan coil units (400 - 1200 CFM)
  - Eight AHU's (630 - 3770 CFM)
  - Four energy recovery units (first floor)
- Building power supplied by PECO:
  - 15 KW Switchgear to stepdown power
  - 208/120V 3 Phase 4 wire wire System
  - 350 KW Emergency Generator (first floor)
- Combination dry and wet pipe fire supression system

Conceptual Sketch

Matthew James Dabrowski
Architectural Engineering | Construction Management
http://www.engr.psu.edu/ae/thesis/portfolios/2010/mjd5060

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Executive Summary

Presby's Inspired Life develops and manages continuing care communities that provide an opportunity for senior citizens to live their lives within a relaxing residential surrounding while retaining peace of mind that if any health emergency were to arise, assistance would be immediately available. This location, Rydal Park, is a continuing care retirement community where seniors begin living at homes that are cozy cottages and as their conditions progress (if any exists), they will eventually move into the medical facility at the center of the campus. This medical facility closely resembles what one would find at a luxury hotel, but with the added necessity of being equipped for medical emergencies.

This Medical Center Addition is located in Jenkintown, directly north of Philadelphia, at the Rydal Park Campus. This five story structure will contain a 55,000 SF double level parking garage and will house 90,000 SF of resident rooms as well as public living spaces, administrative/medical offices and several kitchens. Presby's Inspired Life realized that their primary medical facility was rapidly running out of space and the need for this addition was deemed necessary. Not only is the existing medical facility running out of resident rooms, but at the same time, it's design does not properly care for seniors with dementia. The new facility has been designed with no dead-end hallways and incorporates special "care boxes" outside each room so that memory impaired residents have a location to place memorabilia in the event that they become lost.

This technical report will analyze the project schedule, major building systems, project cost, site plan, and existing/local conditions of the Medical Center Addition. After the technical building information has been laid out, a profile of the client will analyze why and how the need for this building came about. To conclude, a discussion regarding the project delivery method, and the staffing plan utilized by Whiting-Turner Contracting will wrap up the report.

Upon completion of this report, several components regarding the design and construction have generated interest and questions to consider for potential thesis research. An in-depth analysis of the schedule and phasing coordination will be required to produce a well delivered product. Also, considering that this building is not going to be LEED certified, an analysis should be produced to discover potential sustainable features that could be incorporated to improve energy efficiency. Finally, one last potential research topic could focus on the design of the building and how it affects dementia afflicted residents.

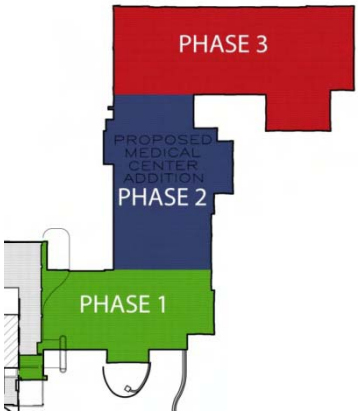
[***Figure 1***. Aerial View of the Medical Center Addition]

Project Schedule Summary

Stewart-Conners Architects, PLLC was hired in early 2008 by Presby's Inspired Life to develop the design for this addition. On April 4th 2008, the designers held a charrette session, along with the development team, to create several conceptual elevations which eventually resulted with the desired aesthetics. By the beginning of the third quarter of 2008, The Whiting-Turner Contracting Co. was awarded the preconstruction and construction management services for this project. At this point, the design and plans were only at the 50% design development stage. From this point on, Greenbrier Developers (nationally recognized retirement community developer firm) along with Stewart-Conners and Whiting-Turner have been working closely to secure financing, finalize the design, and develop the GMP.

Besides this Medical Center Addition, Presby's Inspired Life is also purchasing an additional $14 million dollars of renovation work at one of their apartment complexes, as well as the existing medical facility and will also be building a new Marketing Center, containing apartment showrooms. The estimated cost for all of this construction is beyond what Presby's thought they could manage resulting in a temporary project halt late in the fourth quarter of 2008. Throughout 2009 Whiting-Turner has been working closely with Stewart-Conners to bring the project back under budget. Currently, project financing has been explicitly confirmed for Monday October 5th, 2009 which is when Presby's has given the Notice to Proceed to Whiting-Turner Contracting.

Now that a firm breaking ground date of October 26th, 2009 has been set, Whiting-Turner expects to have utilities relocated and the foundation complete ready begin the superstructure by the end of December 2009. The largest project milestone will be completing the post tension concrete structure. Discussions held with both the structural engineer and concrete subcontractor indicated at least 105 days to complete placing all of the concrete. Once the water-tight building milestone is met, September 20th 2009, the interior work will be completed within six months. Substantial completion will occur approximately by March 2011 along with a completed punchlist and final construction issues resolved by early April 2011.



[***Figure 2***. Construction Sequence]

In order to construct this addition in an orderly and timely fashion, the building will be built in three phases, per floor, as seen in the figure above. Completing the work within Phase 1 region will be extremely important to Presby's Inspired life due to the close proximity to the active medical facility at the south west corner. Debris and air contaminants must be closely monitored since the residents and patients within the current facility may have medical conditions that are extremely sensitive to dirty and polluted air.

The Project Summary Schedule can be found within **Appendix A**.

Building Systems Summary

Work Scope	YES	NO
Demolition Required	X	
Structural Steel Frame	X	
Cast in Place Concrete	X	
Precast Concrete		X
Mechanical System	X	
Electrical System	X	
Masonry	X	
Curtain Wall	X	
Support of Excavation		X

[Table 1. Building Systems Checklist**]**

Demolition

This medical center will be built on top of an existing asphalt parking lot. One of the benefits of this demolition is that the stone and asphalt can be recycled for the helical stone column foundation system (GeoPiers). This recycling effort will help the demolition and foundation subcontractors save money due to reduced aggregate purchasing and delivery fees.

In order to attach this addition to the existing medical center, a small portion of the eastern-most façade will be removed. The demolition will affect five floors, penetrating into approximately three rooms on each floor, ultimately disturbing a total of 3325 square feet of building space. There are no known hazardous materials located within this space. The bulk of the demolition involves the removal of masonry block wall, several steel columns, interior framing, the exterior stone veneer, and multiple windows. A seven inch expansion joint will be utilized on the second through fourth floors to join the addition with the existing structure. The expansion joint will not be utilized at the ground and first floors but rather the exterior walls (of the new facility) will be built about a foot away from the existing facility. To accommodate this design, new exterior doors will be simply added to the existing facility.

Structural Steel Frame

The roof structure will be the only building component utilizing structural steel. Intermediate wide flange beams will be placed between the concrete columns and K-series joists will span between the WF beams. While pricing and bidding this project, it was discovered that the fireproofing in the existing building (where the two buildings meet), must be reapplied to bring the existing fireproofing up to current code standards.

Cast-in-Place Concrete

Due to the low floor-to-floor heights as well as the parking garage requirement, the best option for this structure was post-tension concrete. The existing medical facility has two levels with floors-to-floor heights as low as 11'-4" which makes utilizing structural steel extremely difficult and expensive. With the proposed post tensioned concrete structure, 8" slab thicknesses have been achieved. The tendons used to place compression into the slabs range from 2" to 9" with a designed load capacity between 18 KLF to 34 KLF. As seen in *Figure 2 (pg. 5)*, concrete pours will follow a three phase pattern per floor. Cast-in-place concrete will be used for the spread footings, columns, floor slabs, and to fill the CMU foundation walls. Given that the superstructure is almost entirely comprised of concrete, it will be critical to select a concrete subcontractor

that has a high level of experience with the different concrete applications being employed within this addition.

Mechanical System

Three mechanical rooms have been located on both the second and third floors, with each room spread out in an effort to reduce long duct runs. One air handling unit will be located within each region of the phasing sequence (Figure 2, pg. 5) enabling a less complex MEP coordination effort between phases. An efficient HVAC design has been developed to ensure that each mechanical room only serves the adjacent regions of that wing. The fourth floor does not house any HVAC equipment and is consequently served from the equipment in the floors below. Moore Engineering has designed a four-pipe air/water system which allows for improved temperature control and adjustment for each individual resident room as well as general public or office regions. Three fan coil units, eight air handling units, and four energy recovery units are some of the types of mechanical components that have placed throughout this building's design.

Due to the dual nature of this building, a combination dry and wet pipe fire suppression system will be installed. The lower two floors will utilize a dry pipe suppression system given that these regions are parking garage space exposed to exterior temperatures. The upper three floors will utilize an instant wet pipe system due to the nature of the residents living within this facility requiring immediate protection if an emergency were to arise.

Electrical System

PECO Power, an electric and natural gas utility subsidiary of Exelon Corporation, will be the main provider of electrical energy for the Medical Center Addition. Three new PECO 1000KCM conductors will be brought into this facility and combined with campus' spare electrical feeds; three 500KCM conductors (plus one #3/0 ground) as well as three #2 conductors (plus one #2 ground). Each of these three power service feeds will be enclosed within five inch conduits. The new PECO service will be brought into a 1200A breaker which will then combine with the other two services at a 15KV Fused Switchgear. The primary transformer, located within the unit substation, has been sized to 1000KVA. A three phase, four wire system will be utilized at a 208/120V primary/secondary power setup. Located on the first floor is a 350KW emergency generator which will support the medical utilities in the event of a power outage.

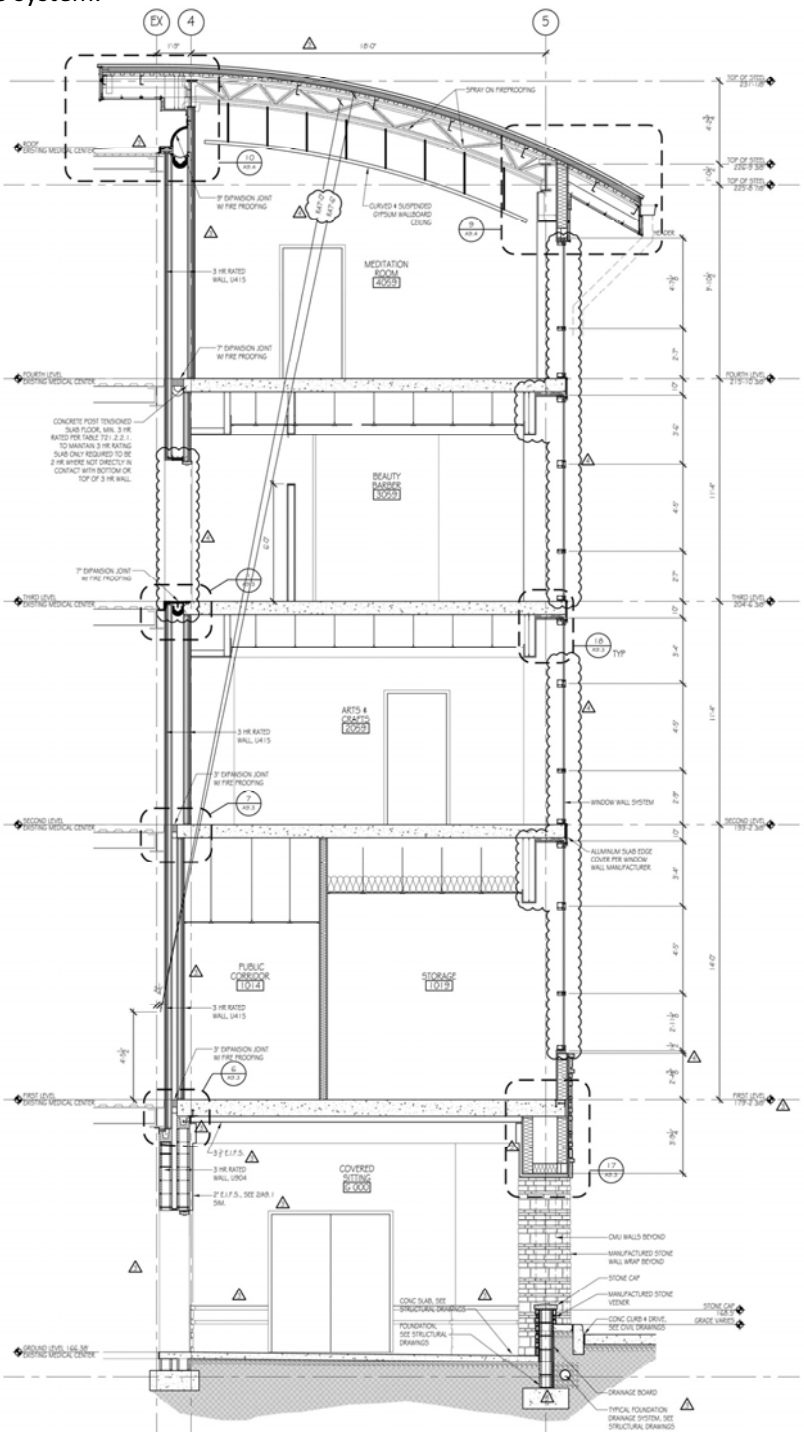
Masonry

Concrete masonry units will be utilized primarily at the ground level and at the mass shear walls (primarily stairwells). Eight inch CMU shear walls, designed as both the gravity and lateral systems, will provide most of the resistance to lateral forces and movement. In order to provide the residential aesthetics, while keeping costs down, a manufactured stone veneer system was selected for the exterior walls at the ground and first floor levels. Openings within the first two levels of parking garage space will utilize manufactured stone caps and sills that will match the selected stone veneer system. Two manufacturers of stone veneer systems currently being considered by the architect and owner include Quality Stone® and El Dorado Stone®.

Curtain Wall

The glazing system will utilize a combination of Oldcastle Glass®, YKK AP America® and Pella® Windows. The aluminum framed storefront glazing will be the Vistawall system from Oldcastle Glass®. YKK AP America's® YWW system will be used for the glazed window wall system. Both of these large glazing systems occur in

grand public areas providing fantastic views of the campus' rich landscaping. Given that Pella® windows are normally utilized within residential applications, Pella® fiberglass sliding windows will be utilized within all of the resident rooms, in order to promote the desired aesthetic appearance. It is the intent of the designers to introduce as much sunlight into the facility as possible, which has been proven to aid in the prevention of illnesses and recovery of severe medical operations. The upper three floors have exterior walls enclosed with a stucco finished EFIS system.



[Figure *3*. Building Section - Displaying Several Building Envelop Systems**]**

Project Cost Evaluation

The following estimate values are based on the work and research performed by The Whiting-Turner Contracting Company. Per request of Whiting-Turner, some of the figures have been altered or rounded and are not completely indicative of the actual cost of the systems.

Floor	Area (Square Feet)	Regional Area (Square Feet)	
Ground	23750	-	
First	30628	54378	Parking Garage
Second	31600	-	
Third	31600	-	
Fourth	25284	88484	Livable Area
Total	**142,862**		

[Table *2*. Building Area Summary**]**

Building System	Actual Cost	Cost / SF	% of Building
Concrete	$4,690,000	32.83 $/SF	20.52
Thermal & Moisture	$1,480,000	10.36 $/SF	6.47
Openings	$1,100,000	7.70 $/SF	4.81
Finishes	$4,560,000	31.92 $/SF	19.95
Conveying System	230,000	1.62 $/SF	1.01
Plumbing	$1,680,000	11.76 $/SF	7.35
Mechanical	$1,950,000	13.65 $/SF	8.53
Electrical	$2,880,000	20.16 $/SF	12.60
Earthwork	$960,000	6.72 $/SF	4.20

[Table *3*. Building Systems Cost Estimate (Selective Systems – Bid Package Value**]**

Breakdown Type	Actual Cost	Cost / SF
Building Cost (without general requirements)	$22,210,000	155.00 $/SF
Construction Cost (with general requirements)	$22,860,000	160.00 $/SF
Total Project Cost	$26,590,000	186.00 $/SF

[Table *4*. Actual Project Cost Breakdown**]**

R.S. Means Square Foot Estimate

Due to the nature of this project, half parking garage and half nursing home, utilizing square foot estimating methods required meshing multiple cost outcomes. In order to fully utilize RS Means' data, all available applicable options were analyzed to develop an accurate RS Means square foot cost. This involved looking at both an assisted senior living facility as well as a nursing home for the livable area. As for the parking garage space, a two-story partially below grade concrete structure as well as a five-story above ground parking garage structure were both acquired. The following data does not include contractor overhead & profit, architectural fees, user fees or any other such addition costs. This estimate was performed to purely analyze the building cost associated with the delivery this Medical Center Addition.

For the estimates below, the following adjustments were made and applied to the building cost:

Location: Philadelphia
Date: Year 2009, Quarter 3
Labor Type: Open Shop (Merit Shop, the addition is outside the city limits of Philadelphia)
Story Height: 11'-5" (Adjusted from the standard 10'-0")
Perimeter: 1290 LF (Adjusted from the standard 800)

Building Type	Assisted Senior Living	Nursing Home
Construction Type	Brick Veneer on Block / Bearing Wall	Stucco on Concrete Block / Steel Joists
Area (SF)	31,600	57,500
Perimeter (LF)	1,290	1,290
Stories Count	1 (RSM Locked)	2 (RSM Locked)
Additive Costs (Total)	$40,309.43	$464,395.15
Beds	N / A	$209,627
Elevators	N / A	$137,496
Emergency Lighting	N / A	$7,715
Intercom System	N / A	$3,039
Kitchen Equipment	$13,082	$69,432
Laundry Equipment	$9,527	$9,527
Nurses Call System	$17,700	$27,098
TV Master System	N / A	$458
Total Building Cost	$4,373,000	$7,346,000
Cost per SF	**138.39 $/SF**	**127.76 $/SF**

[Table *5*. Living Space (Floors 2-4) RS Means Estimate**]**

Building Type	Parking Garage	Parking Garage
Construction Type	Under/Aboveground Reinforced Concrete with R/Concrete Frame	Aboveground Reinforced Concrete with Reinforced Concrete Frame
Area (SF)	54,378	150,000
Perimeter (LF)	1,290	1,290
Stories Count	2 (RSM Locked)	5 (RSM Locked)
Story Height (Ft)	14	14
Additive Costs (Total)	$254,789.45	$254,789.45
Elevators	$137,496	$137,496
Barrier Gate	$11,885.55	$11,885.55
Attendant Booth	$12,136.30	$12,136.30
Fee Computer	$44,834.10	$44,834.10
Ticket Spitter	$22,266.60	$22,266.60
Painted Parking Stalls	$1,243.00	$1,243.00
Parking Barriers	$23,413.30	$23,413.30
Traffic Signs	$1,514.60	$1,514.60
Total Building Cost	$4,614,000	$6,433,500
Cost per SF	**84.85 $/SF**	**42.89 $/SF**

[Table *6*. Parking Garage (Ground and First Floors) RS Means Estimate**]**

Since identical project conditions could not be met with the available RS Means data, (locked to a max perimeter, story count, etc.) the truly meaningful number is the cost per square feet, not the total building cost. Meshing the resulting data suggests a cost per square foot somewhere within the ranges of 130 - 140 $/SF (for livable space), and 40 - 85 $/SF (for the parking garage). Applying this range to the actual building square footage produces an estimated value between 13.6 and 16.9 million dollars (comparable to actual value of $22.2 million). This range was developed by summing both the respective minimum and maximum cost per square foot for each region.

Region	Floors G-1		Floors 2-4		Building Cost (Floors G-4)
Region SF	54,378		88,484		
Minimum $ / SF	42.89		127.76		
Final Minimum Cost	$2,332,272.42	+	$11,304,715.85	=	**$13,636,988.26**
Maximum $ / SF	84.85		138.39		
Final Maximum Cost	$4,613,973.30	+	$12,245300.76	=	**$16,859,274.06**

[Table *7*. RS Means Estimate Summary**]**

D4 Cost Square Foot Estimate

Building Type	Total Building Cost	Sq. Ft. Cost
Nursing Home	$13,123,520	148.32 $/SF
PT Parking Garage	$3,139,935	57.74 $/SF
Total	$16,263,455	113.84 $/SF

[Table *8*. D4 Cost Analysis Building Estimate**]**

Building System	Nursing Home Cost	Sq. Ft. Cost	Parking Garage Cost	Sq. St. Cost
Concrete	$1,278,003	14.44 $/SF	$1,115,876	20.52 $/SF
Finishes	$2,682,586	30.32 $/SF	$13,798	0.25 $/SF
Elevators	$29,777	0.34 $/SF	$23,002	0.42 $/SF
Mechanical	$2,668,324	30.16 $/SF	$42,520	0.78 $/SF
Electrical	$1,402,791	15.85 $/SF	$291,234	5.36 $/SF

[Table *9*. D4 Cost Selective Building Systems Summary**]**

Final Cost Estimate Analysis and Conclusions

While performing the two additional estimates, the total project cost was not considered due to the uniqueness of design fees, general conditions, contingencies, etc. and the inability of cost software to anticipate these values. Given this reason, the following discussion will only analyze estimated costs associated with just the ***building value*** of a medical center addition with a parking garage.

Upon final collection of several RS Means and D4 Cost estimates, the resulting data (on average), was approximately 25% below the actual building cost. When performing the estimates, the first sign that these estimates would be inaccurate was that standard nursing homes and assisted living facilities (at least the case studies found within RS Means and D4 Cost) were locked at either one or two floors. On top of that, there

were no similar case studies to select with a nursing home construction type that sits on top of a post-tension concrete parking garage structure.

After analyzing the results from RS Means and D4 Cost, it became apparent that several major building systems did not match the actual estimate value submitted from subcontractors to Whiting-Turner within the current market. These systems included concrete, finishes, conveying systems, and electrical. It was hypothesized prior to performing the RS Means and D4 estimates that the values for the concrete package would be lower than the actual cost. This was realized since it is uncommon to construct an assisted living facility above two stories let alone with a post-tension concrete superstructure. Presby's Inspired Life places a lot of consideration in high-end finishes, which explain the difference from the actual cost to the D4 finishes package value. D4 also did extremely poor when estimating the conveying systems (approx. $30,000 compared to the actual value of $230,000). The following table summarizes the general building costs in order to provide a simple side-by-side comparison.

Estimate Type	Total Building Cost	Total Sf. Ft. Cost
Actual	$22,210,000	155.46 $/SF
RS Means	$16,859,274.06	118.01 $/SF
D4 Cost	$16,263,455	113.84 $/SF

[Table *10*. Final Side-by-Side Estimate Summary**]**

Upon completion of cost analysis section of this technical assignment, it was observed that software programs and estimating methods are meant to create a ballpark building value. In order to produce an accurate estimate, historical data must be utilized in conjunction with a potential subcontractor's input. Discussion with a subcontractor can provide excellent insight into current market conditions which is something that estimating software cannot perform.

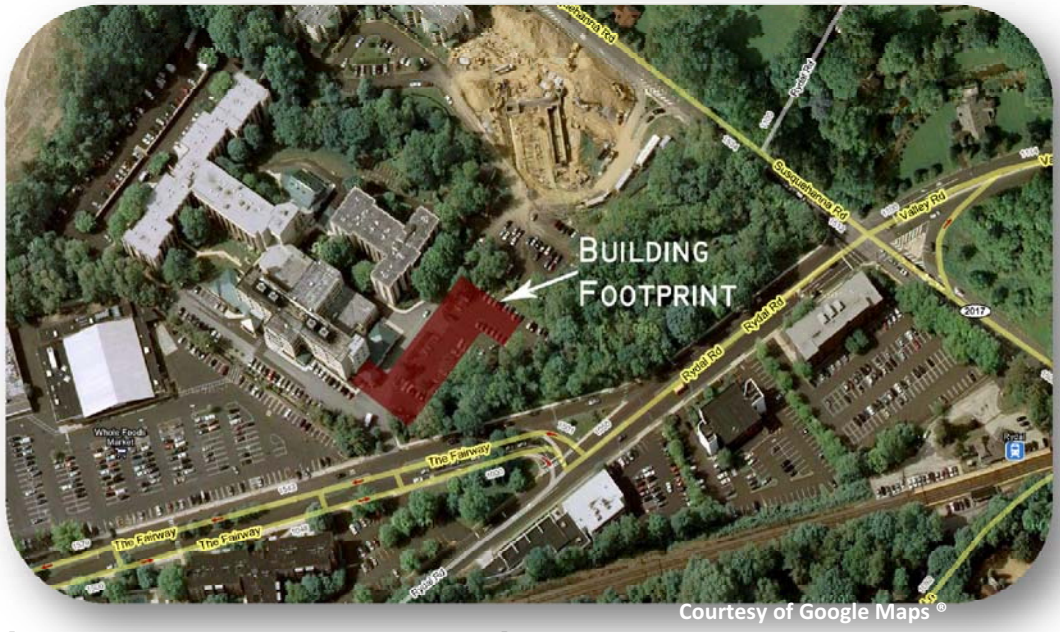
Estimate References:

RS Means data collected from 'RS Means Cost Works® 2009 Software'

D4Cost data collected from '2002 D4Cost Version 9.4'

All supporting estimate reports can be found within **APPENDIX B**.

Local Conditions and Site Plan



[***Figure 4***. Local Site Conditions Aerial View]

Rydal Park is located approximately 10 miles directly north of Philadelphia within a woodland suburban region. The construction site will be relatively tight but will not be restricted by buildings on all sides. To ensure the safety of the campus residents, the entire west end of the campus will be enclosed within screened panelized fencing for the duration of construction period. Entrance gates will only permit authorized personnel in an effort to reduce the close proximity of any wandering non-construction pedestrians. The earliest work, demolition, will require closing several rooms at the west end of the existing medical facility. A large number of utilities currently run through the southern end of the site and will require extensive relocation efforts. Please note that two larger, more detailed, site plans can be located within **Appendix C**. Within the detailed site plan (found on the last page of this report) the existing utilities, pedestrian access regions, equipment paths and construction limits can be located.

During construction, two primary gates will be utilized for site entry. A gate on the northern end of the side will be located extremely close to the trailers and construction personnel parking lot. Entry to this northern region will be via Susquehanna Road, which runs along the northern side of the Rydal Park Campus. Another gate will be located at the south end of the site which will be mainly utilized for deliveries coming off of The Fairway street. The close proximity of this street to the southern gate will promote faster deliveries and reduce driver confusion. A third, gate will be located at the middle of the side which will allow construction personnel to utilize Rydal Park's cafeteria and other available amenities.

JJ Earth Engineering Incorporated, the geotechnical engineer, performed site soil analysis which found the water table to be between 4.5' and 9'. The resulting data collected within the building footprint, reviled soil comprised of 'variable fill materials, loose to medium dense residual soils and decomposed to highly weathered rock'. Due to this soil type, shallow foundations cannot be utilized unless the soil is reinforced with some type of caisson or pile. The recommended foundation system, by JJ Earth, is a rammed aggregate pier (GeoPier) which consists of stone columns supporting high capacity spread and strip footings.

Client Profile

Presby's Inspired Life's main mission is to provide 'exceptional communities and care for individuals representing a broad range of backgrounds, physical abilities and economic circumstances'. Currently, Presby's has more than 2,600 senior residents as well as 25 communities located within or around the greater Philadelphia region. Due to the close proximity to a metropolitan region, most seniors are able to stay well connected with the rest of their families. One of the primary goals of Presby's is to recognize 'Life in All Its Fullness'. In order to meet this mission and goal, the communities have been designed around scenic locations near ponds, lakes, brooks and woodland regions. This goal extends into the architecture as most of the homes that residents live in, are woodland cottages surrounded with rich landscaping.

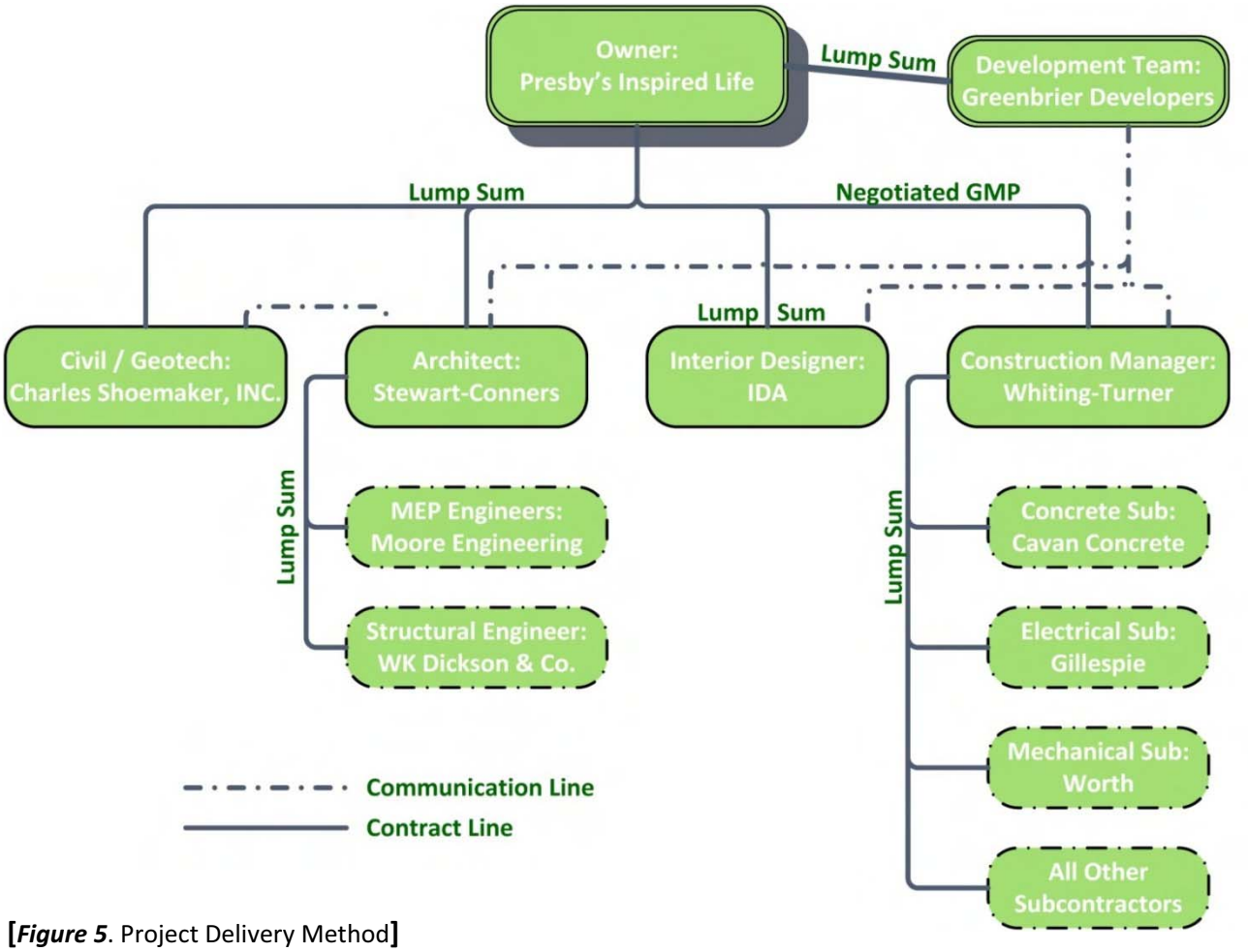
Rydal Park is one of Presby's largest campuses at approximately 20 acres. It is located within a woodland suburban region containing cottages, luxury apartments, and assisted-living quarters accompanied with many amenities such as indoor pools, a woodworking center, nearby train stations, lavish landscaping and many other services. At the heart of the campus is the Main Medical Center which houses the assisted-living quarters. This medical center is where residents with the most critical conditions are located, which allows for the most immediate response in the event that a medical emergency would arise. Patients with Alzheimer's and dementia related conditions have been increasingly admitted to this facility, but the current medical center does not have a plan layout that positively addresses these conditions. In an effort to address this matter, as well as increase the skilled nursing staff, Presby's Inspired Life has decided work with Stewart-Conners Architects to develop a design solely based at tackling this issue.

The resulting solution was a Medical Center Addition which at the same time addressed the owners concern of insufficient campus parking. Stewart-Conners had the task of eliminating the typical 'institutional' aesthetic appearance, while provide a fresh design. This intent with this design is to create an attractive billboard for the continuing care community, since it is located directly next to a street with relatively constant traffic.

Mr. Garry Hennis, the Chief Operating Officer and Executive Vice President for Presby's, is relatively unfamiliar with the building design and construction process and therefore hired Greenbrier Development. Greenbrier is one of the leading national development firms when it comes to continuing care retirement communities. Garry Hennis gave most of his decision power to Greenbrier development with the expectation of streamlining the process in order to have a rapid delivery. On top of an expedited schedule, Mr. Hennis has focused his efforts on keeping the project under budget and ensuring that the campus residents do not experience compromised safety and security during the construction process. The primary decisions that Mr. Hennis approves is regarding any finish materials affecting both minimal and overall aesthetics of the facility.

The general owner concerns (cost, schedule, quality and safety) are all issues that Whiting-Turner must properly address to ensure a successful project delivery and a satisfied customer. Currently the architect and CM are continuing to process the building in search of value engineering idea and any components than can be eliminated from the scope. Of the four general owner concerns, Mr. Hennis has placed a high level of importance to campus safety and building cost. Upon project completion, Mr. Hennis expects the project to be completed under budget due the early arrival of the CM to the design process.

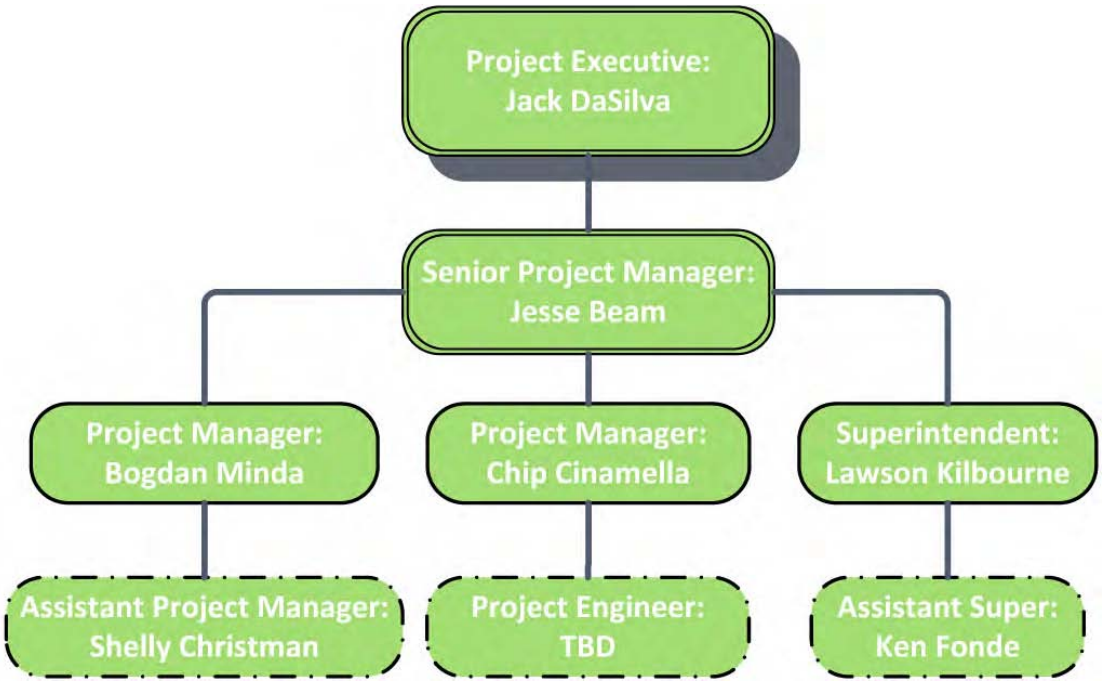
Project Team Organizational Chart



[***Figure 5***. Project Delivery Method]

Due to Presby's relative inexperience with the design and construction process, Greenbrier development was hired as the agent and representative to manage this process, resulting with the delivery method seen above. Stewart-Conners is the preferred architect for Presby's and was immediately brought on board following the developer. The owner received most of the input with how to proceed from the developer and architect. It was decided to bring the construction manger on at the 50% design development stage to assist with constructability issues and to perform preconstruction services. Under this delivery method, the owner holds the major consultant contracts, while architect holds most of the design consultant contracts (MEP, structural, landscape, food service). One unique point to notice is that the interior designer (Interior Design Associates, IDA) is contracted directly to the owner and not to the architect. Both the architect and owner have declined to comment as to why this was done, but speculation from discussions held in meetings points to utilizing IDA as estimate verification to Division 9 (finishes), WT's materials cost estimate. Market conditions created an extremely pricy finishes package for this project which shocked the owner, creating skepticism. As this delivery system manifested, it produced a negotiated design-bid-build but in reality could be classified as a CM Selection-design-negotiate-build delivery system. Subcontractors were invited to bid the project as 'Merit Shop' (both union and non-union) and selection was based on a 'Best Value' system, not necessarily lowest price.

Whiting-Turner Staffing Plan



[***Figure 6***. Whiting-Turner Staffing Plan]

Whiting-Turner Contracting is a large national firm with approximately 29 remote offices acting as individual business groups. The Allentown Pennsylvania office is the business group spearheading this project along with Jack DaSilva as the divisional vice president of this group. At any given moment, Mr. DaSilva may be managing between 3-10 projects as well as dealing with numerous clients, depending on the state of the economy and AEC industry. Mr. DaSilva is involved with about 5-10% of the discussions and meetings regarding this project, and has appointed Jesse Beam as the Senior PM for this project. Mr. Beam has ultimately been the individual responsible for the successful forward progress with this project as he communicates with head architect and developer on a daily basis. Upon Whiting-Turner's mobilization to the Rydal Campus, Mr. Beam will be assigned to the project as part-time and will hand over main day-to-day project management duties to Chip Cinamella.

Mr. Cinamella's field team will consist of Bogdan Minda, Lawson Kilbourne, Shelly Christman and Ken Fonde. Once the project starts gearing up (concrete structure to begin January 2010) it will be determined by either Mr. DaSilva or Mr. Beam whether an additional project engineer is deemed necessary and/or hired. It will be the responsibility of Bogdan Minda and Shelly Christman to ensure the project is staying on budget, on schedule, is coordinated properly and all other site management activities. Lawson Kilbourne and Ken Fonde will be sharing the responsibility of site safety/security, subcontractor interaction/progress, as well as all other field related duties.

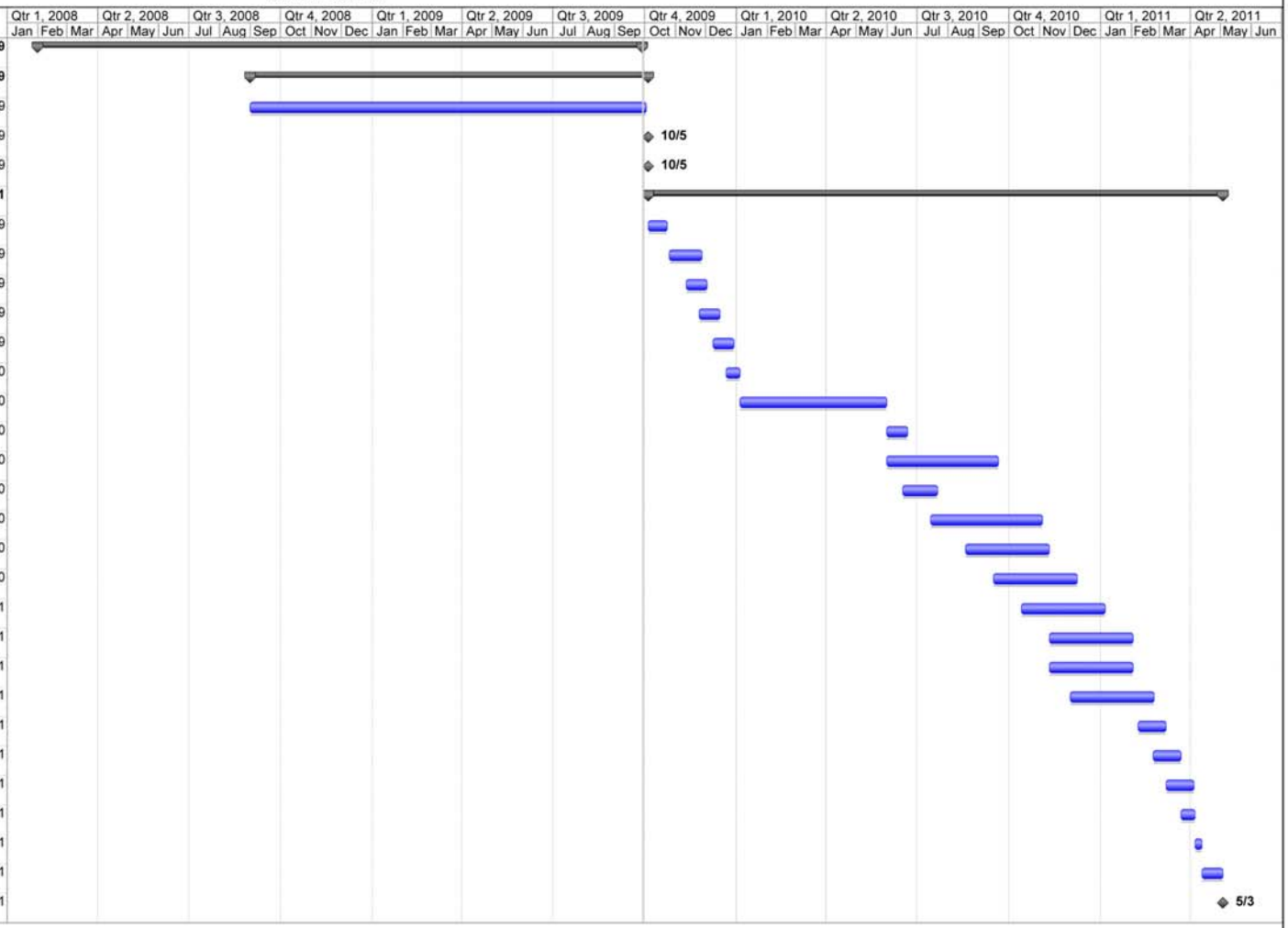
[APPENDIX A]

Project Schedule Summary

AE 481W: Tech 1 Assignment

Matthew Dabrowski

ID	Task Name	Duration	Start	Finish
1	**Architectural Design and Planning**	**432 days**	**Fri 2/1/08**	**Mon 9/28/09**
3	**Preconstruction**	**285 days**	**Mon 9/1/08**	**Mon 10/5/09**
4	Estimaiting and Procurement	285 days	Mon 9/1/08	Fri 10/2/09
5	Finance Closing	0 days	Mon 10/5/09	Mon 10/5/09
6	Project Notice to Proceed	0 days	Mon 10/5/09	Mon 10/5/09
7	**Construction**	**412 days**	**Mon 10/5/09**	**Tue 5/3/11**
8	Mobilize / Sediment & Erosion Control	15 days	Mon 10/5/09	Fri 10/23/09
9	Relocate Utilities / Prep Site	25 days	Mon 10/26/09	Fri 11/27/09
10	Install GeoPiers	15 days	Thu 11/12/09	Wed 12/2/09
11	Place Footings	15 days	Wed 11/25/09	Tue 12/15/09
12	Underslab Utilities	15 days	Wed 12/9/09	Tue 12/29/09
13	Slab-on-grade Prep / Pour	10 days	Tue 12/22/09	Mon 1/4/10
14	Structural Concrete Frame	105 days	Tue 1/5/10	Mon 5/31/10
15	Roof Structure	15 days	Tue 6/1/10	Mon 6/21/10
16	Exterior Framing & Builiding Skin	80 days	Tue 6/1/10	Mon 9/20/10
17	Roofing	25 days	Thu 6/17/10	Wed 7/21/10
18	MEP Plenum Work	80 days	Thu 7/15/10	Wed 11/3/10
19	Frame Partitions & GWB Ceilings	60 days	Thu 8/19/10	Wed 11/10/10
20	MEP Partition Rough-ins	60 days	Thu 9/16/10	Wed 12/8/10
21	Drywall, GWB Ceilings & Finishes	60 days	Thu 10/14/10	Wed 1/5/11
22	Lay-in Ceiling Grid & Fixtures / Devices	60 days	Thu 11/11/10	Wed 2/2/11
23	Painting / Wallcoverings	60 days	Thu 11/11/10	Wed 2/2/11
24	Floorcoverings	60 days	Thu 12/2/10	Wed 2/23/11
25	Specialties / Trim-Out	20 days	Tue 2/8/11	Mon 3/7/11
26	Start-Up / Commissioning	20 days	Wed 2/23/11	Tue 3/22/11
27	Develop / Correct Punchlist	20 days	Tue 3/8/11	Mon 4/4/11
28	Final Inspections / C.O.	10 days	Wed 3/23/11	Tue 4/5/11
29	Owner's FFE	5 days	Wed 4/6/11	Tue 4/12/11
30	Move In	15 days	Wed 4/13/11	Tue 5/3/11
31	Finish	0 days	Tue 5/3/11	Tue 5/3/11



Project: Project Schedule Summary
Date: Tue 9/29/09

Task | Progress | Summary | External Tasks | Deadline
Split | Milestone | Project Summary | External Milestone

Rydal Park Campus Repositioning:
Medical Center Addition

[APPENDIX B]

Supporting RS Means and D4 Cost Data

RS Means Sqaure Foot Cost Estimate Report

Estimate Name:	**Nursing Home Rydal**
	Philadelphia
	PA
Building Type:	**Nursing Home with Stucco on Concrete Block / Steel Joists**
Location:	PHILADELPHIA, PA
Stories Count (L.F.):	**2.00**
Stories Height	**11.50**
Floor Area (S.F.):	**57,500.00**
LaborType	**Open Shop**
Basement Included:	No
Data Release:	**Year 2009 Quarter 3**
Cost Per Square Foot	**$127.76**
Total Building Cost	**$7,346,000**

Costs are derived from a building model with basic components. Scope differences and market conditions can cause costs to vary significantly.

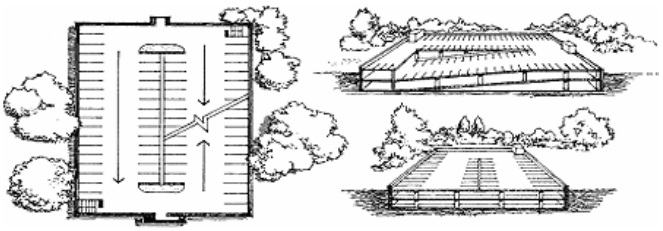
		% of Total	Cost Per SF	Cost
A Substructure		**4.4%**	**5.66**	**$325,500**
A1010	**Standard Foundations**		**0.91**	**$52,500**
	Strip footing, concrete, reinforced, load 11.1 KLF, soil bearing capacity 6 KSF, 12" deep x 24" wide			
A1030	**Slab on Grade**		**2.51**	**$144,500**
	Slab on grade, 4" thick, non industrial, reinforced			
A2010	**Basement Excavation**		**0.16**	**$9,000**
	Excavate and fill, 10,000 SF, 4' deep, sand gravel, or common earth, on site storage			
A2020	**Basement Walls**		**2.08**	**$119,500**
	Foundation wall, CIP, 4' wall height, direct chute, .099 CY/LF, 4.8 PLF, 8" thick			
B Shell		**26.0%**	**33.18**	**$1,908,000**
B1010	**Floor Construction**		**12.65**	**$727,500**
	Floor, concrete, slab form, open web bar joist @ 2' OC, on W beam and column, 25'x25' bay, 32" deep, 125 PSF sup			
	Floor, concrete, slab form, open web bar joist @ 2' OC, on W beam and column, 25'x25' bay, 32" deep, 125 PSF sup			
	Fireproofing, gypsum board, fire rated, 2 layer, 1" thick, 10" steel column, 3 hour rating, 17 PLF			
B1020	**Roof Construction**		**5.23**	**$301,000**
	Floor, steel joists, beams, 1.5" 22 ga metal deck, on columns, 25'x25' bay, 20" deep, 40 PSF superimposed load, 60			
	Floor, steel joists, beams, 1.5" 22 ga metal deck, on columns, 25'x25' bay, 20" deep, 40 PSF superimposed load, 60			
B2010	**Exterior Walls**		**8.30**	**$477,000**
	Stucco, 3 coat, self furring metal lath 3.4 Lb/SY, on regular CMU, 12" x 8" x 16"			
B2020	**Exterior Windows**		**3.01**	**$173,000**
	Windows, aluminum, sliding, insulated glass, 5' x 3'			
B2030	**Exterior Doors**		**0.46**	**$26,500**
	Door, aluminum & glass, with transom, narrow stile, double door, hardware, 6'-0" x 10'-0" opening			
	Door, birch, solid core, single door, hinged, 3'-0" x 7'-0" opening			
B3010	**Roof Coverings**		**3.51**	**$202,000**
	Roofing, asphalt flood coat, gravel, base sheet, 3 plies 15# asphalt felt, mopped			
	Insulation, rigid, roof deck, composite with 2" EPS, 1" perlite			
	Roof edges, aluminum, duranodic, .050" thick, 6" face			

		% of Total	Cost Per SF	Cost
	Gutters, box, aluminum, .027" thick, 5", enameled finish			
	Downspout, aluminum, rectangular, 2" x 3", embossed mill finish, .020" thick			
	Gravel stop, aluminum, extruded, 4", mill finish, .050" thick			
B3020	**Roof Openings**		**0.02**	**$1,000**
	Roof hatch, with curb, 1" fiberglass insulation, 2'-6" x 3'-0", galvanized steel, 165 lbs			
C Interiors		**23.6%**	**30.17**	**$1,734,500**
C1010	**Partitions**		**8.61**	**$495,000**
	Metal partition, 5/8"fire rated gypsum board face, 5/8"fire rated gypsum board base, 3-5/8" @ 24", same opposite fa			
	1/2" fire ratedgypsum board, taped & finished, painted on metal furring			
C1020	**Interior Doors**		**7.43**	**$427,500**
	Door, single leaf, wood frame, 3'-0" x 7'-0" x 1-3/8", birch, solid core			
C2010	**Stair Construction**		**2.50**	**$143,500**
	Stairs, steel, cement filled metal pan & picket rail, 16 risers, with landing			
C3010	**Wall Finishes**		**3.50**	**$201,000**
	Painting, interior on plaster and drywall, walls & ceilings, roller work, primer & 2 coats			
	Vinyl wall covering, fabric back, medium weight			
	Ceramic tile, thin set, 4-1/4" x 4-1/4"			
C3020	**Floor Finishes**		**3.71**	**$213,500**
	Vinyl, composition tile, maximum			
	Tile, ceramic natural clay			
C3030	**Ceiling Finishes**		**4.42**	**$254,000**
	Gypsum board ceilings, 1/2" fire rated gypsum board, painted and textured finish, 7/8"resilient channel furring, 24" O			
D Services		**41.5%**	**53.06**	**$3,051,000**
D1010	**Elevators and Lifts**		**6.33**	**$364,000**
	2 - Hydraulic, passenger elevator, 3500 lb, 2 floors, 100 FPM			
	Hydraulic hospital elevator, 4000 lb., 125 FPM			
D2010	**Plumbing Fixtures**		**12.52**	**$720,000**
	Water closet, vitreous china, tank type, 1 piece low profile			
	Urinal, vitreous china, stall type			
	Lavatory w/trim, wall hung, PE on CI, 19" x 17"			
	Kitchen sink w/trim, countertop, stainless steel, 44" x 22" triple bowl			
	Laundry sink w/trim, PE on CI, black iron frame, 48" x 21" double compartment			
	Service sink w/trim, PE on CI, corner floor, wall hung w/rim guard, 22" x 18"			
	Bathtub, recessed, PE on CI, mat bottom, 5'-6" long			
	Shower, stall, baked enamel, terrazzo receptor, 36" square			
	Water cooler, electric, wall hung, wheelchair type, 7.5 GPH			
D2020	**Domestic Water Distribution**		**0.54**	**$31,000**
	Oil fired water heater, commercial, 100< F rise, 140 gal., 255 MBH input, 247 GPH			
D2040	**Rain Water Drainage**		**0.13**	**$7,500**
	Roof drain, CI, soil,single hub, 5" diam, 10' high			
	Roof drain, CI, soil,single hub, 5" diam, for each additional foot add			
D3010	**Energy Supply**		**7.87**	**$452,500**
	Apartment building heating system, fin tube radiation, forced hot water, 20,000 SF area,200,000 CF vol			
D3050	**Terminal & Package Units**		**7.87**	**$452,500**
	Split system, air cooled condensing unit, medical centers, 20,000 SF, 46.66 ton			
D4010	**Sprinklers**		**5.22**	**$300,000**
	Wet pipe sprinkler systems, steel, light hazard, 1 floor, 10,000 SF			
	Wet pipe sprinkler systems, steel, light hazard, each additional floor, 10,000 SF			
D5010	**Electrical Service/Distribution**		**0.91**	**$52,500**
	Service installation, includes breakers, metering, 20' conduit & wire, 3 phase, 4 wire, 120/208 V, 800 A			

		% of Total	Cost Per SF	Cost
	Feeder installation 600 V, including RGS conduit and XHHW wire, 800 A			
	Switchgear installation, incl switchboard, panels & circuit breaker, 800 A			
D5020	**Lighting and Branch Wiring**		**10.43**	**$599,500**
	Receptacles incl plate, box, conduit, wire, 10 per 1000 SF, 1.2 watts per SF			
	Wall switches, 2.0 per 1000 SF			
	Miscellaneous power, 1 watt			
	Central air conditioning power, 4 watts			
	Motor installation, three phase, 200 V, 15 HP motor size			
	Incandescent fixtures recess mounted, type A, 2 watt per SF, 16 FC, 12 fixtures per 1000 SF			
D5030	**Communications and Security**		**0.78**	**$45,000**
	Communication and alarm systems, fire detection, non-addressable, 25 detectors, includes outlets, boxes, conduit a			
D5090	**Other Electrical Systems**		**0.46**	**$26,500**
	Generator sets, w/battery, charger, muffler and transfer switch, gas/gasoline operated, 3 phase, 4 wire, 277/480 V, 1			
E Equipment & Furnishings		**4.5%**	**5.69**	**$327,000**
E1090	**Other Equipment**		**5.69**	**$327,000**
	2 - T.V. SYSTEMS, VHF reception & distribution, 30 outlets			
	76 - Nurse call systems, single bedside call station			
	5 - Laundry equipment, washer, residential, 4 cycle, average			
	5 - Laundry equipment, dryers, gas-fired residential, 16 lb capacity, average			
	2 - Range, commercial kitchen equipment, restaurant type, 6 burners & 1 standard oven, 36" wide			
	5 - Food warmer, commercial kitchen equipment, counter, 1.2KW			
	5 - Dishwasher, commercial kitchen equipment, 10 to 12 racks per hour			
	3 - Cooler, commercial kitchen equipment, reach-in, beverage, 6' long			
	3 - Coffee urn, commercial kitchen equipment, twin, 6 gallon			
	3 - Broiler, commercial kitchen equipment, without oven, standard			
	1 - Intercommunication master station, 25 station capacity			
	25 - Emergency lighting units, lead battery operated, twin sealed beam light, 25 W, 6 V each			
	76 - Hospital furniture, beds, manual, maximum			
F Special Construction		**0.0%**	**0.00**	**$0**
G Building Sitework		**0.0%**	**0.00**	**$0**
Sub Total		**100%**	**$127.76**	**$7,346,000**
Contractor's Overhead & Profit		**0.0%**	**$0.00**	**$0**
Architectural Fees		**0.0%**	**$0.00**	**$0**
User Fees		**0.0%**	**$0.00**	**$0**
Total Building Cost			**$127.76**	**$7,346,000**

RS Means Sqaure Foot Cost Estimate Report

Estimate Name:	**Parking Garage 2 Stories**
	Philadelphia
	PA
Building Type:	**Garage, Underground Parking with Reinforced Concrete / R/Conc. Frame**
Location:	PHILADELPHIA, PA
Stories Count (L.F.):	**2.00**
Stories Height	**14.00**
Floor Area (S.F.):	**54,378.00**
LaborType	**Open Shop**
Basement Included:	No
Data Release:	**Year 2009 Quarter 3**
Cost Per Square Foot	**$84.85**
Total Building Cost	**$4,614,000**



Costs are derived from a building model with basic components. Scope differences and market conditions can cause costs to vary significantly.

		% of Total	Cost Per SF	Cost
A Substructure		**26.6%**	**22.58**	**$1,228,000**
A1010	**Standard Foundations**		**13.76**	**$748,000**
	Strip footing, concrete, reinforced, load 11.1 KLF, soil bearing capacity 6 KSF, 12" deep x 24" wide			
	Spread footings, 3000 PSI concrete, load 200K, soil bearing capacity 3 KSF, 8' -6" square x 20" deep			
	Spread footings, 3000 PSI concrete, load 300K, soil bearing capacity 3 KSF, 10' - 6" square x 25" deep			
	Foundation dampproofing, asphalt with fibers, 1/8" thick, 8' high			
A1030	**Slab on Grade**		**3.29**	**$179,000**
	Slab on grade, 5" thick, light industrial, reinforced			
A2010	**Basement Excavation**		**5.54**	**$301,000**
	Excavate and fill, 30,000 SF, 16' deep, sand, gravel, or common earth, off site storage			
B Shell		**52.3%**	**44.39**	**$2,414,000**
B1010	**Floor Construction**		**14.10**	**$766,500**
	Cast-in-place concrete column, 28", square, tied, minimum reinforcing, 1000K load, 10'-14' story height, 740 lbs/LF,			
	Cast-in-place concrete beam and slab, 9" slab, one way, 26" column, 35'x35' bay, 200 PSF superimposed load, 355			
	Floor, metal deck, 18 ga, 2" deep, concrete slab, 10' span, 4" deep, 125 PSF superimposed load, 165 PSF total load			
B1020	**Roof Construction**		**13.03**	**$708,500**
	Floor, concrete, beam and slab, 35'x35' bay, 40 PSF superimposed load, 26" deep beam, 9" slab, 209 PSF total loac			
B2010	**Exterior Walls**		**14.73**	**$801,000**
	Concrete wall, reinforced, 8' high, 8" thick, plain finish, 4000 PSI			
B2030	**Exterior Doors**		**0.17**	**$9,000**
	Door, aluminum & glass, with transom, black finish, double door, hardware, 6'-0" x 10'-0" opening			
	Door, steel 18 gauge, hollow metal, 1 door with frame, no label, 3'-0" x 7'-0" opening			
B3010	**Roof Coverings**		**2.37**	**$129,000**
	Vinyl and neoprene membrane traffic deck			
C Interiors		**2.7%**	**2.27**	**$123,500**
C1010	**Partitions**		**1.59**	**$86,500**
	Concrere block (CMU) partition, light weight, hollow, 8" thick, no finish			
	8" concrete block partition			

		% of Total	Cost Per SF	Cost
C1020	**Interior Doors**		**0.13**	**$7,000**
	Door, single leaf, kd steel frame, hollow metal, commercial quality, flush, 3'-0" x 7'-0" x 1-3/8"			
C2010	**Stair Construction**		**0.36**	**$19,500**
	Stairs, CIP concrete, w/landing, 16 risers, with nosing			
C3010	**Wall Finishes**		**0.19**	**$10,500**
	Painting, masonry or concrete, latex, brushwork, primer & 2 coats			
D Services		**15.4%**	**13.09**	**$712,000**
D1010	**Elevators and Lifts**		**4.07**	**$221,500**
	2 - Hydraulic, passenger elevator, 3500 lb, 2 floors, 100 FPM			
	Hydraulic passenger elevator, 2500 lb., 2 floor, 125 FPM			
D2010	**Plumbing Fixtures**		**0.06**	**$3,000**
	Water closet, vitreous china, bowl only with flush valve, floor mount			
	Lavatory w/trim, wall hung, PE on CI, 19" x 17"			
D2020	**Domestic Water Distribution**		**0.10**	**$5,500**
	Electric water heater, commercial, 100< F rise, 50 gallon tank, 9 KW 37 GPH			
D2040	**Rain Water Drainage**		**1.21**	**$66,000**
	Roof drain, steel galv sch 40 threaded, 3" diam piping, 10' high			
	Roof drain, steel galv sch 40 threaded, 3" diam piping, for each additional foot add			
D3050	**Terminal & Package Units**		**0.14**	**$7,500**
	16000 CFM, 5 HP vane axial fan			
D4010	**Sprinklers**		**3.48**	**$189,000**
	Dry pipe sprinkler systems, steel, ordinary hazard, 1 floor, 50,000 SF			
	Dry pipe sprinkler systems, steel, ordinary hazard, each additional floor, 50,000 SF			
D4020	**Standpipes**		**0.13**	**$7,000**
	Dry standpipe risers, class III, steel, black, sch 40, 4" diam pipe, 1 floor			
	Dry standpipe risers, class III, steel, black, sch 40, 4" diam pipe, additional floors			
D5010	**Electrical Service/Distribution**		**0.13**	**$7,000**
	Service installation, includes breakers, metering, 20' conduit & wire, 3 phase, 4 wire, 120/208 V, 200 A			
	Feeder installation 600 V, including RGS conduit and XHHW wire, 200 A			
	Switchgear installation, incl switchboard, panels & circuit breaker, 400 A			
D5020	**Lighting and Branch Wiring**		**3.58**	**$194,500**
	Receptacles incl plate, box, conduit, wire, 2.5 per 1000 SF, .3 watts per SF			
	Miscellaneous power, to .5 watts			
	Fluorescent fixtures recess mounted in ceiling, 0.8 watt per SF, 20 FC, 5 fixtures @32 watt per 1000 SF			
D5030	**Communications and Security**		**0.15**	**$8,000**
	Communication and alarm systems, fire detection, addressable, 12 detectors, includes outlets, boxes, conduit and w			
	Fire alarm command center, addressable without voice			
D5090	**Other Electrical Systems**		**0.06**	**$3,000**
	Generator sets, w/battery, charger, muffler and transfer switch, gas/gasoline operated, 3 phase, 4 wire, 277/480 V, 1			
E Equipment & Furnishings		**3.0%**	**2.51**	**$136,500**
E1030	**Vehicular Equipment**		**0.35**	**$19,000**
	Architectural equipment, parking equipment, automatic gates, 8 FT arm, 1 way			
	Architectural equipment, parking equipment, booth for attendant, economy			
	Architectural equipment, parking equipment, ticket printer/dispenser, rate computing			
E1090	**Other Equipment**		**2.16**	**$117,500**
	20 - Signs, guide and directional signs, high intensity, 12" x 18", excludes posts			
	110 - Precast concrete parking bumpers, wheel stops, precast concrete, 6" x 10" x 6' - 0", 2 dowels per each			
	2400 - Wood parking bumpers, timber with saddles, treated type, for cars, 4" x 4"			
	110 - Pavement markings, parking stall, paint, white, 4" wide			
	3 - Parking equipment, ticket spitter with time/date stamp, standard			

	% of Total	Cost Per SF	Cost
3 - Parking equipment, fee computer			
1 - Parking equipment, cashier booth, average			
3 - Parking gates, barrier gate with programmable controller			
F Special Construction	**0.0%**	**0.00**	**$0**
G Building Sitework	**0.0%**	**0.00**	**$0**
Sub Total	**100%**	**$84.85**	**$4,614,000**
Contractor's Overhead & Profit	**0.0%**	**$0.00**	**$0**
Architectural Fees	**0.0%**	**$0.00**	**$0**
User Fees	**0.0%**	**$0.00**	**$0**
Total Building Cost		**$84.85**	**$4,614,000**

D4 Cost Analysis for a Nursing Home Facility

Code	Division Name	%	Sq. Cost	Projected
00	**Bidding Requirements**	**8.64**	**12.82**	**1,134,254**
	General Requirements	6.99	10.36	916875.82
	Contingency	0.18	0.27	23909.92
	Permits/Insurance/Bonds	1.47	2.19	193468.34
03	**Concrete**	**9.74**	**14.44**	**1,278,003**
	Cast-In-Place	9.74	14.44	1278002.88
04	**Masonry**	**2.51**	**3.73**	**329,998**
	Masonry	2.51	3.73	329997.62
05	**Metals**	**4.98**	**7.38**	**653,016**
	Structural Steel	4.98	7.38	653015.77
06	**Wood & Plastics**	**5.46**	**8.09**	**715,926**
	Rough Carpentry	5.46	8.09	715926.35
07	**Thermal & Moisture Protection**	**6.02**	**8.93**	**790,218**
	Waterproofing/Dampproofing	0.24	0.35	30967.86
	Roofing & Sheet Metal	2.88	4.27	377593.54
	Caulking & Sealants	0.12	0.17	15388.52
	EIFS	2.68	3.97	351346.11
	Sprayed Fireproofing	0.11	0.17	14921.48
08	**Doors & Windows**	**4.91**	**7.28**	**644,126**
	Hollow Metal	1.61	2.38	210948.16
	Glass, Glazing, SF	3.30	4.90	433177.65
09	**Finishes**	**20.44**	**30.32**	**2,682,586**
	Plaster/Stucco	1.17	1.74	153885.22
	Metal Studs/Drywall	14.17	21.01	1859002.67
	Hard Tile	0.26	0.39	34260.24
	Resilient Flooring	2.13	3.16	279734.09
	Special Flooring	0.01	0.01	710.18
	Painting/VWC	2.71	4.01	354993.19
10	**Specialties**	**0.96**	**1.42**	**125,414**
	Specialties	0.96	1.42	125414.14
11	**Equipment**	**1.01**	**1.50**	**132,389**
	Equipment	0.02	0.03	3077.70
	Food Service	0.99	1.46	129311.29
12	**Furnishings**	**4.09**	**6.07**	**536,699**
	Casework & Millwork	4.09	6.07	536699.32
14	**Conveying Systems**	**0.23**	**0.34**	**29,777**
	Conveying Systems	0.23	0.34	29776.79
15	**Mechanical**	**20.33**	**30.16**	**2,668,324**
	Mechanical	20.33	30.16	2668324.27
16	**Electrical**	**10.69**	**15.85**	**1,402,791**
	Electrical	10.69	15.85	1402790.71
	Total Building Costs	**100.00**	**148.32**	**13,123,520**

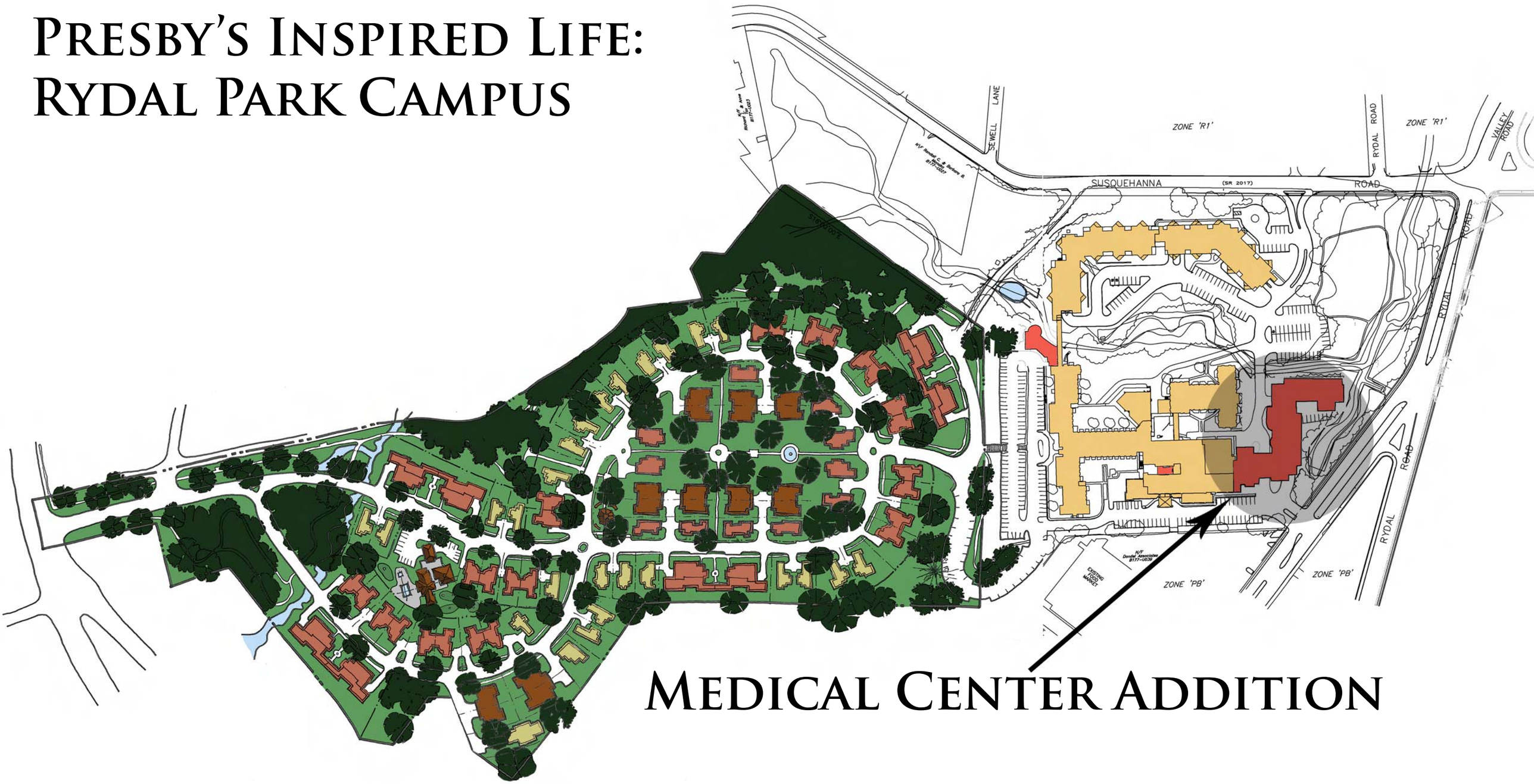
D4 Cost Analysis for a Parking Garage Structure

Code	Division Name	%	Sq. Cost	Projected
01	**General Requirements**	**21.91**	**12.65**	**687,839**
	Builder's Risk Insurance	0.35	0.20	10844.78
	Civil Engineering	0.42	0.24	13285.86
	Environmental Remediation	3.49	2.02	109709.20
	Fees	10.03	5.79	315065.58
	General Conditions	5.86	3.38	183881.82
	Geo Tech Engineering	0.20	0.12	6382.30
	Inspection & Testing	1.55	0.90	48669.89
03	**Concrete**	**35.54**	**20.52**	**1,115,876**
	Concrete	35.54	20.52	1115876.08
04	**Masonry**	**13.58**	**7.84**	**426,343**
	Masonry	13.58	7.84	426342.88
05	**Metals**	**8.40**	**4.85**	**263,810**
	Metals	8.40	4.85	263810.36
06	**Wood & Plastics**	**4.70**	**2.71**	**147,464**
	Carpentry	4.70	2.71	147464.36
07	**Thermal & Moisture Protection**	**1.31**	**0.76**	**41,242**
	Roofing	1.31	0.76	41241.52
09	**Finishes**	**0.44**	**0.25**	**13,798**
	Upgrade Special Finish	0.27	0.15	8336.12
	Upgrade Special Flooring	0.17	0.10	5461.51
10	**Specialties**	**0.83**	**0.48**	**25,987**
	Fire Protection	0.55	0.32	17413.21
	Signs	0.27	0.16	8573.62
11	**Equipment**	**1.83**	**1.06**	**57,540**
	Parking Control Equipment	1.83	1.06	57539.51
13	**Special Construction**	**0.10**	**0.06**	**3,280**
	Screen Wall	0.10	0.06	3280.07
14	**Conveying Systems**	**0.73**	**0.42**	**23,002**
	Elevator	0.73	0.42	23001.97
15	**Mechanical**	**1.35**	**0.78**	**42,520**
	HVAC	1.35	0.78	42520.36
16	**Electrical**	**9.28**	**5.36**	**291,234**
	Electric	7.70	4.45	241915.71
	Electrical Service	1.57	0.91	49318.40
	Total Building Costs	**100.00**	**57.74**	**3,139,935**

[APPENDIX C]

General Overall Site Plan and Existing Utilities

Presby's Inspired Life: Rydal Park Campus



CONSTRUCTION PARKING

PRIMARY ENTRANCE GATES

SITE TRAILER

BROOKSIDE BUILDING 5 STORIES

POOL I STORY

MEDICAL CENTER ADDITION 5 STORIES

SECONDARY GATE

DINING I STORY

EXISTING MEDICAL CENTER 5 STORIES

DELIVERY GATES

RYDAL ROAD

THE FAIRWAY

FH

FH

FH

FENCE

WATER

SAN SWR

ELEC

GAS

CATV

STM SWR

LEGEND

- Medical Center Addition (building of thesis focus)
- Existing Buildings at Rydal Park
- Pedestrian Paths / Access Locations
- Vehicle / Equipment Access Paths
- Fire Hydrants
- Fence — Construction Fence / Site Limits
- (Utility) — (Utility) Written Into Linetype

RYDAL PARK CONTINUING CARE RETIREMENT COMMUNITY : : MEDICAL CENTER ADDITION

RYDAL, PENNSYLVANIA

GENERAL EXISTING CONDITIONS AND SITE UTILITIES PLAN

DRAWN BY:
MATT DABROWSKI

DATE:
10/05/2009

1 OVERALL CAMPUS PLAN
SCALE: N.T.S.

PLAN NORTH

NORTH