

BUCKHORN MEDICAL OFFICE BUILDING



Senior Thesis

Technical Assignment I

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Executive Summary

In December of 2007, Geisinger Health System put out a Request For Proposal (RFP) to several construction managers regarding a new project planned for the Bloomsburg, PA, area. Due to Geisinger's increasing size as the leading healthcare provider in northeastern Pennsylvania, Geisinger began to draft plans for a new medical office building to take over the electronic document management process as well as serve as a place for patients to dispute and file claims. The job was planned as a design-bid-build and was proposed as a Guaranteed Maximum Price (GMP) for a CM-At-Risk. Alexander Building Construction was placed on a short list due to their previous work with Geisinger, which included the newly completed LEED Gold Certified Gray's Woods project located just outside of State College, PA. Alexander proposed a GMP of \$11.7 million and won the contract. Alexander quickly brought a project team together and had the first CM kickoff meeting on January 15, 2008.

The site is very large, measuring 530,299 SF and holds nearly 17% of the \$/SF of the total project; however, the large site enables the construction team to work efficiently without the need for complicated site logistics. Spread footings support the structural steel for the building. The footings for the building are placed using traditional, reusable plywood formwork and will be poured by direct chute and then mechanically vibrated. The building exterior is comprised of a metal panel system that covers the entire building façade. Masonry is only used to construct the fire-rated stairwells and elevator shaft. The mechanical system of the building is an all-air system with individual water source heat pumps located in the plenum space above the open office areas. The building's power system distributes 480Y/277V power throughout the building and steps down to 208Y/120V using 8 transformers located throughout the building. A 125kW diesel emergency backup generator is located outside the building and provides temporary power in the chance of an emergency.

The site plan is fairly uncomplicated. Most of the basic utilities are tapped off of Route 42 and run underground up the main entrance road; this includes an 8" fire protection line, and a 4" domestic water main. Telecommunications lines, a Single-Mode fiber-optic line, and a gas main run in from the southwest corner and around the perimeter of the site.

All subcontracts will be held by the construction manager except that of the architect. There is no owner representative due to Geisinger's long-standing work in construction projects. The construction manager, specifically the superintendent, will run the day-to-day management of the project, and the owner will release the payments.

Project Schedule Summary

**See Appendix A for actual project schedule*

Foundations

The Buckhorn Medical Office Building sits on typical 12'x12' spread footings that are 2'-4" deep. These foundations were placed on center of 30'x30' bays for the majority of the building layout. Connecting the perimeter spread footings is a 1'-1 ½" strip footing. Due to a good geotechnical report and good soil bearing capacities on the site, no deep foundations were required for construction.

Structure

The Buckhorn Medical Office Building is based on a basic steel framing structure. Once footings were poured and set, the erection crew brought a crane onto the site and began to set the columns on the foundations. The crews worked in a counterclockwise manner starting at the southeast corner to set the columns. Once columns were in place, crews worked from west to east placing the girders. Once all of the girders were in place, the crews began putting in typical W18X35 beams, while a second crew began placing the composite decking. Once the decking for the second floor was in place, the crews repeated the steel erection process for the third floor and the roof.

After the metal decking was laid on the second floor, the concrete subcontractor began pouring the slab-on-grade. The concrete subcontractor then followed the steel erector up through the building pouring the slabs once the metal decking was secured in place and proper overhead protection was in place.

After the metal decking was secured and the concrete for the deck slabs was poured, the mason came on the site and laid the 12" CMU block walls for the two stair towers and the elevator shaft. These walls rise the entire height of the building for fire rating.

Finishes

As soon as the building was fully enclosed, the drywall subcontractor arrived and began working down from the third floor to the first floor. Once the drywall contractor was finished with a floor, paint and carpet subcontractors moved through that floor. After the drywall contractor was finished with the drywall, he moved back up to the third floor and began working back down installing 2'x4' Acoustical Ceiling Tile (ACT). Once a floor was finished with construction and cleaned, furniture was moved in and cubicles were installed in all of the open office spaces.

Building Systems Summary

Building Systems Summary		
Yes	No	Work Scope
	x	Demolition Required?
x		Structural Steel Frame
x		Cast-in-Place Concrete
x		Mechanical System
x		Electrical System
	x	Masonry
x		Curtain Wall
	x	Support of Excavation

Table 1: Building Systems Summary

Structural Steel Frame

The structural system of the Buckhorn Medical Office Building is structural steel. The floor system is a 1.5-inch 20 gauge composite deck with 2.5 inches of normal weight concrete topping. The decking is reinforced with 6x6 W2.1xW2.1 WWF. The total floor thickness is 4 inches. The roof construction consists of 1.5-inch, 20 gauge, Type "B" metal roof decking with 2 layers of 2-inch rigid insulation installed with staggered joints. On top of the rigid insulation is a fully adhered Sur-Weld (TPO) roof membrane. The roof's 30 PSF snow load is supported mainly by 24K5 K-Series joists with W21x50 girders along the north and south elevations and W18x35 girders along the east and west elevations. Throughout the main building typical W18x35 beams sit on W24x76 girders. Typical W10x39 columns are placed in 30'x30' bays across the entire building footprint. W10x68 columns are used at the elevator shafts and stairwells. Located along the northern and southern elevations, two types of x-bracing are used. Two HSS4x4x3/8 AESS cross brace on all three floors (2 per floor) along the north and south elevations in one bay.



Figure 1: Steel erection

Two 4x4x1/2 angles cross brace on all three floors along the north and south elevations in one bay as well. The entrance canopy is supported by three C12x20.7 girders and six W12x19 beams.

The crane being used for all steel placement is a Kobelco CK850-III hydraulic crawler crane with a maximum lift capacity of 75 tons and a max boom length of 200 feet. The crane starts by placing all of the columns and then works from west to east placing all of the girders and then again placing all of the beams. Due to the low total height of the building (43'-0") there are no logistical issues placing any pieces of steel with the provided crane. No additional overhead protection is necessary due to the size of the site during crane picks.

Cast-in-Place Concrete

Most of the cast-in-place concrete is used in the pouring of the spread footings. 12'x12'x2'-4" spread footings are placed at 30'x30' bays. The exterior walls are supported by 3' strip footings with a 1' foundation wall on top of it that connects the perimeter spread footings. All foundation concrete is 3000 PSI with 5% air entraining and a 4-inch slump. Reusable plywood forms and 2x4s are used for all foundation formwork. The slab-on-grade consists of a 5-inch concrete slab with



Figure 2: Concrete foundation formwork

6x6W2.9xW2.9 WWF over compacted 2A sub-base over a 10 mil vapor barrier. The second and third floors also have a concrete slab poured on a 1.5-inch 20 gauge composite deck. All slab concrete is 3500 PSI with a 4-inch slump. All foundations are placed by direct chute from the truck, and all decks are placed by pump. All foundations are then mechanically vibrated to ensure proper aggregate and air settlement.

Mechanical System

The mechanical system of the Buckhorn Medical Office Building is a water-cooled heat pump system. On each floor there are approximately nine 950 CFM water-cooled heat pumps located above the ceiling spaced throughout the open office areas. On each floor, there are three mechanical rooms that each contain two 2000 CFM heat pumps. On the roof, there are four roof top energy recovery heat pump



Figure 3: Gas-fired boilers located in main mechanical room

units that produce 22,000 CFM combined.

The main mechanical room, located in the northwest corner of the building, houses three 880 MBH gas-fired boilers as well as four 600 GPM closed-coupled circulating pumps that service the building's heat pumps and cooling tower. The cooling tower, located just outside of the mechanical room, produces 600 GPM. Located between the circulating pumps and the cooling tower is a 600 GPM, 215 plate, 2,291.71 SF plate and frame heat exchanger. The heating and cooling for the building is distributed almost 100% all air from the individual heat pumps and roof top units. Each unit is also connected to a cold water supply and return from the main cooling tower.

Electrical System

The Buckhorn Medical Office Building gets its power from two 5-inch concrete encased PVC Schedule 40 conduits that enter the site from the southwest. The power is stepped down to 480Y/277V in a transformer installed and provided by PPL outside the building. The lines run underground into the main electrical room and main switchboard located in the northwest corner of the building. The power is then run through the building at 480Y/277V and is stepped down to 208Y/120V using eight transformers. Most of the lighting is powered by 277V and is not stepped down from the initial transformer. There are 26 panelboards located throughout the building for receptacles, lighting, and other various pieces of equipment. A 125 kVA, 480Y/277V diesel generator is located in a weatherproof, sound attenuating outdoor enclosure with an eight-hour fuel tank next to the main transformer. This generator serves to power approximately 1-in-12 light fixtures in open office areas and at least one light fixture in individual offices and other confined spaces. There are also two panelboards powered by the emergency generator. These panelboards purely supply power to the emergency lighting.

Masonry

There is no exterior masonry used in the construction of the Buckhorn Medical Office Building. The only masonry used is in the construction of the two stair towers and the elevator shaft. For these areas, 12" CMU is used with three #6 vertical bars located in each corner. CMU is used in these shafts in order to achieve a minimum 5-hour fire protection rating. The masonry for these shafts begins once all structural steel is in place and metal decking is laid.



Figure 4: Elevator shaft 12" CMU walls

Curtain Wall

The entire façade of the Buckhorn Medical Office Building is composed of an aluminum metal panel curtain wall system. There are four different panel patterns used around the building with the majority of the exterior being wrapped in a corrugated VR-Classic metal panel in 12' sections. Along the front decorative façade and along the first story of the building, there is a 4'x4' metal panel that is used interspersed with 4'x4' windows as well as some storefront glazing. Along the north and south facades there are sections of a 1'x2' metal panel placed in a vertical manner for accent purposes. The curtain wall composition contains an exterior metal panel of varying thickness, followed by a 1-inch insulating board, then an air space and a sheet of 1/2-inch plywood. Inside of the plywood is a 6-inch metal stud frame with batt insulation and finally an interior 5/8-inch sheet of gypsum board. This is the predominant system for the entire exterior of the building. See the figure below for the multiple types of metal panel finish.



Figure 5: Various metal panels in curtain wall system

Project Cost Evaluation

Actual Building Construction Cost (CC) and CC/Square Foot (SF)

SQUARE FOOT COST ANALYSIS			
PROJECT TITLE:		Geisinger Health System - Buckhorn Office Building	
DESCRIPTION:		3 story building	
MOB SF:		83,245	
NOTES:		Site area is 543,299 SF (or 12.47 acres). The total sitework cost / site area = \$3.60/SF. *elevators and *carpet supplied/installed by owner. SF Analysis does not include: Testing & Inspection, Window Treatment, Office Furniture, Testing & Balancing, Commissioning, Voice/Data Install, Building Permit.	
		<u>\$ TOTAL</u>	<u>\$/SF</u>
STRUCTURAL			
Cast-In-Place Concrete		720,715	\$7.65
Precast Concrete		0	\$0.00
Structural Steel		1,335,233	\$14.17
Misc. Metals		61,860	\$0.66
	Sub-Total	2,117,808	\$22.47
ROOFING/WATERPROOFING			
Roofing		198,910	\$2.11
Sealants & Firestopping		48,125	\$0.51
Rough Carpentry (In studs/drywall.)		0	\$0.00
	Sub-Total	247,035	\$2.62
EXTERIOR WALL			
Aluminum Curtainwall/Windows		222,144	\$2.36
Overhead Coiling Doors		0	\$0.00
Metal Panels		632,644	\$6.71
Exterior Framing		204,480	\$2.17
	Sub-Total	1,059,268	\$11.24
PARTITIONS			
Interior Studs, Drywall		401,702	\$4.26
Masonry & Stone - Interior		106,928	\$1.13
	Sub-Total	508,630	\$5.40
FINISHES			
Acoustical Ceilings		156,699	\$1.66
Doors, Frames, Finish Hardware (Includes install)		193,950	\$2.06
Painting & Wall Covering		84,735	\$0.90
Ceramic Tile & Marble		73,740	\$0.78
Flooring		102,030	\$1.08
Flooring - *Owner supplied.		195,120	\$2.07
Specialties		41,327	\$0.44
Casework		21,000	\$0.22
Finish Carpentry (In studs/drywall)		0	\$0.00
	Sub-Total	868,601	\$9.22
ELEVATORS			
Elevators (2 Hydraulic, *Owner Purchased)		161,368	\$1.71
	Sub-Total	161,368	\$1.71
MECHANICAL			
HVAC & Plumbing		1,763,522	\$18.71
	Sub-Total	1,763,522	\$18.71
FIRE PROTECTION			
Sprinklers		143,235	\$1.52
	Sub-Total	143,235	\$1.52
ELECTRICAL			
Electrical		1,440,693	\$15.29
	Sub-Total	1,440,693	\$15.29
OVERHEAD			
General Conditions		957,522	\$10.16
Temp. Heat / Winter Protection		79,627	\$0.84
	Sub-Total	1,037,149	\$11.00
	GRAND TOTAL:	\$9,347,309	\$99.18

Table 2: Building Construction Cost / SF

Project Cost Evaluation

Total Project Costs (TC) and TC/Square Foot (SF)

SQUARE FOOT COST ANALYSIS			
PROJECT TITLE: Geisinger Health System - Buckhorn Office Building DESCRIPTION: 3 story building + sitework. MOB SF: 83,245 NOTES: Site area is 543,299 SF (or 12.47 acres). The total sitework cost / site area = \$3.60/SF. (The sitework cost below is divided by the building square footage.) The grand total cost/SF is based on the 3/20/09 Forecast Budget cost plus *elevators and *carpet supplied/installed by owner. SF Analysis does not include: Testing & Inspection, Window Treatment, Office Furniture, Testing & Balancing, Commissioning, Voice/Data Install, Building Permit.			
	\$ TOTAL		\$/SF
SITWORK			
Demolition	0		\$0.00
Temporary Provisions	0		\$0.00
Sitework - General	1,504,955		\$15.97
Compaction Grouting	360,019		\$3.82
Landscaping	90,671		\$0.96
Sub-total	1,955,645		\$20.75
STRUCTURAL			
Cast-In-Place Concrete	720,715		\$7.65
Precast Concrete	0		\$0.00
Structural Steel	1,335,233		\$14.17
Misc. Metals	61,860		\$0.66
Sub-Total	2,117,808		\$22.47
ROOFING/WATERPROOFING			
Roofing	198,910		\$2.11
Sealants & Firestopping	48,125		\$0.51
Rough Carpentry (In studs/drywall.)	0		\$0.00
Sub-Total	247,035		\$2.62
EXTERIOR WALL			
Aluminum Curtainwall/Windows	222,144		\$2.36
Overhead Coiling Doors	0		\$0.00
Metal Panels	632,644		\$6.71
Exterior Framing	204,480		\$2.17
Sub-Total	1,059,268		\$11.24
PARTITIONS			
Interior Studs, Drywall	401,702		\$4.26
Masonry & Stone - Interior	106,928		\$1.13
Sub-Total	508,630		\$5.40
FINISHES			
Acoustical Ceilings	156,699		\$1.66
Doors, Frames, Finish Hardware (Includes inst	193,950		\$2.06
Painting & Wall Covering	84,735		\$0.90
Ceramic Tile & Marble	73,740		\$0.78
Flooring	102,030		\$1.08
Flooring - *Owner supplied.	195,120		\$2.07
Specialties	41,327		\$0.44
Casework	21,000		\$0.22
Finish Carpentry (In studs/drywall)	0		\$0.00
Sub-Total	868,601		\$9.22
ELEVATORS			
Elevators (2 Hydraulic, *Owner Purchased)	161,368		\$1.71
Sub-Total	161,368		\$1.71
MECHANICAL			
HVAC & Plumbing	1,763,522		\$18.71
Sub-Total	1,763,522		\$18.71
FIRE PROTECTION			
Sprinklers	143,235		\$1.52
Sub-Total	143,235		\$1.52
ELECTRICAL			
Electrical	1,440,693		\$15.29
Sub-Total	1,440,693		\$15.29
OVERHEAD			
General Conditions	957,522		\$10.16
Temp. Heat / Winter Protection	79,627		\$0.84
Sub-Total	1,037,149		\$11.00
FEE, ETC.			
Bond	0		\$0.00
Liability Insurance	85,416		\$0.91
Fee	278,995		\$2.96
Bldg. Permit	0		\$0.00
Bldrs. Risk Insurance	0		\$0.00
Business Privilege Tax	0		\$0.00
Gross Receipts Tax	12,527		\$0.13
Design Fees	0		\$0.00
Sub-Total	376,938		\$4.00
GRAND TOTAL:	\$11,679,892		\$123.93

Table 3: Total Project Cost / SF

Project Cost Evaluation

Building Systems Costs (BSC) and BSC/Square Foot (SF)

SQUARE FOOT COST ANALYSIS			
PROJECT TITLE:		Geisinger Health System - Buckhorn Office Building	
DESCRIPTION:		3 story building	
MOB SF:		83,245	
NOTES:		Estimate only includes major building systems: Structural, Exterior Curtain Wall, Mechanical, and Electrical	
		\$ TOTAL	\$/SF
STRUCTURAL			
Cast-In-Place Concrete		720,715	\$7.65
Structural Steel		1,335,233	\$14.17
Misc. Metals		61,860	\$0.66
	Sub-Total	2,117,808	\$22.47
EXTERIOR WALL			
Aluminum Curtainwall/Windows		222,144	\$2.36
Metal Panels		632,644	\$6.71
Exterior Framing		204,480	\$2.17
	Sub-Total	1,059,268	\$11.24
MECHANICAL			
HVAC & Plumbing		1,763,522	\$18.71
	Sub-Total	1,763,522	\$18.71
ELECTRICAL			
Electrical		1,440,693	\$15.29
	Sub-Total	1,440,693	\$15.29
GRAND TOTAL:		\$6,381,291	\$67.71

Table 4: Building Systems Cost / SF

Project Cost Evaluation

D4Cost Parametric Estimate

For the parametric estimate using *D4Cost* estimating software, the Scott County Justice Center was used as a model for the initial comparison. The Scott County Justice Center was built between September 1997 and December 1998 and is located in St. Paul, Minnesota. This building provided a fairly accurate estimate for the parametric model because of several comparable construction methods and materials compared to the Buckhorn Medical Office Building. The table below shows some of the basic building statistics that are very similar:

D4Cost Building Comparison		
Statistic	Scott County Justice Center	Buckhorn Medical Office Building
Building SF	78,360	83,245
No. Floors	3	3
Project Height	48'	43'
1st Floor Height	16'	14'-2"
1st Floor Size	31,497	28,164
Site SF	113,000	543,299
Building Use	Civic/Gov.	Office
Foundation	Concrete Spread Footings	Concrete Spread Footings
Exterior Walls	Masonry	Aluminum Metal Panel
Interior Walls	Gypsum	Gypsum
Roof Type	Membrane	Membrane
Floor Type	Carpet/Tile	Carpet/Tile
Project Type	New Construction	New Construction

Table 5: D4Cost vs. Buckhorn Medical Office Building

From this base model, time, location, building size, floor height, and site size multipliers were applied to achieve a parametric model for the Buckhorn Medical Office Building. These adjusted numbers were extremely close, and resulted in a projected estimate within \$100,000 of the actual building costs. The breakdown was slightly different however, with the model building being slightly more expensive in construction of the building, but significantly less expensive in site work due to having almost 430,000 SF less site than the Buckhorn Medical Office Building. A complete breakdown of the *D4Cost* Statement of Probable Costs is available in Appendix B.

Project Cost Evaluation

RS Means Square Foot Estimate

*See Appendix C for actual RS Means data

Buckhorn Medical Office Building Square Foot Analysis		
Source:	RS Means 2009 Pg. 176-177 M.460 Office, 2-4 Story	Ext. Wall Type: Glass & Metal Curtain Wall Frame: Steel Frame Story Height: 14.33'
Area:	83,245 SF	
Perimeter:	726 LF	
Initial Square Foot Calculation:		
		Cost (\$/SF)
Above 80,000 SF		\$162.99
Cost Adjustments:		
Perimeter Adjustment		\$0.25
Story Height Adjustment		\$0.97
	Adjusted Base cost Per Square Foot:	\$164.21
Base Building Cost:	\$164.21 x 83,245 =	\$13,669,661.45
Basement Cost:	none	\$0.00
	Total Cost:	\$13,669,661.45
RS Means Additions:		
Directory Boards, Aluminum, glass covered 36"x24"		\$675.00
Elevators, Hydraulic passenger, 2 stops 3500# (Qty. 2)		\$139,600.00
Smoke Detectors, Ceiling Type (Qty. 66)		\$12,342.00
TV Antenna, Master system, 12 outlet		\$315.00
	Total Cost:	\$13,822,593.45
Multipliers		
Location (Williamsport)	Value:	0.85
	Total Square Foot Estimate for Building:	\$11,749,204.43

Table 6: RS Means Square Foot Estimate

Project Cost Evaluation

Comparison of Cost Evaluation Methods

After comparing the two major estimates, *D4Cost* and RS Means, to the actual cost of the project provided by the construction manager, it is conclusive to say that the estimate is accurate. The *D4Cost* and the RS Means estimates both proved to be about \$100,000 higher than the actual cost of the project. The errors in the RS Means estimate can be taken into account based on inaccuracies due to building size. The model building for “M.460 Office Building, 2-4 story,” only provides total square footage up to 80,000 SF. The Buckhorn Medical Office Building is 83,245 SF and thus linear extrapolation is needed to provide accurate data beyond what is available within the given limits. The *D4Cost* estimate was also high, and this can be attributed to an increase in site work by nearly 430,000 SF compared to the original model used for comparison. This resulted in using a larger \$/SF number for sitework than what was actually established during construction of the Buckhorn Medical Office Building. A table below shows the cost comparisons of the different methods of cost evaluation.

Comparison of Cost Evaluation Methods		
Method of Evaluation	Total Cost (\$)	Cost(\$)/SF
Total Actual Project Cost	\$11,679,892	\$123.93
D4Cost Parametric Estimate	\$11,717,628	\$123.31
RS Means SF Estimate	\$11,749,204	\$124.67
Average Cost	\$11,715,575	\$123.97

Table 7: All Cost Evaluation Methods Compared

Site Plan of Existing Conditions

Location and Site Conditions

**See Appendix D for actual site plan*

The site of the Buckhorn Medical Office Building sits on nearly 12.5 acres in Hemlock Township just north of Bloomsburg, PA. The site is located on the western side of the existing Route 42 and immediately across the street from the recently constructed Columbia Mall. The nearest intersection is with Route 42 also known as Mall Boulevard. The site is adjacent to the existing Cracker Barrel.



Figure 6: Satellite image courtesy of Google

Site Conditions

The site for this project is believed to have been recently prepared by cutting the south end of the site and placing fill along the north end of the project site. The fill was reported to have been placed and compacted for the most part. The site contains exposed soils with minor vegetative growth generally provided to control erosion.

The soils appear to have been placed in a manner that suggests a compacted fill. Geotechnical borings encountered both: sinkholes that were filled with soils and sinkholes that were still open voids. The site appears to contain soils that can be reasonably modified to support a shallow foundation system. Also, the existing site soils contain more than 30% fines. Such soils can become problematic with elevated moistures, but no problems have been encountered. These figures and observations were found in the geotechnical report supplied by Borton-Lawson.



Figure 7: Beginning of excavation phase

Existing Utilities

Existing utilities run parallel with Route 42 underground and branch off of the main lines up the main driveway. These utilities include a 4" domestic water line and an 8" fire service line. The gas main and telecommunication lines run from a tap located in the southeast corner of the property and run parallel to the property line around the parking lot.



Figure 8: Shutoff valves to 4" domestic main and 8" fire protection line

Temporary Provisions

The site is laid out in a manner where only one access road is used for all traffic. Traffic flow moves delivery vehicles through the steel shakeout and materials storage areas and loops back around to the main entrance. The subcontractor parking area is located in the large lot east of the main building. Job trailers for the construction manager and MEP subcontractors are located north east of the building. Parking, traffic, and materials storage are not a problem due to a large site. Route 42 is considered a highway and no sidewalks, overhead protection, or pedestrian traffic control is necessary.

Local Conditions

Methods of Construction

The Buckhorn Medical Office Building is located in Northeastern Pennsylvania just outside of Bloomsburg in Hemlock Township. The preferred method of construction in the area is steel frame construction for most office buildings, schools, churches, etc. Precast construction is used as well, but it is typically found in more industrial applications such as warehouses and parking garages. Due to the nature of the location, no extra design precautions or safety factors are required for seismic or hurricane loads; however, there are extra design considerations made for excessive snow loading. Bloomsburg averages approximately 33”/year, which is 8” more than the average US city. These figures were provided by accuweather.com.



Figure 9: Steel frame construction

Recycling Programs

Bloomsburg has an excellent track record with its recycling program that has been in place for nearly 11 years. The town has been a recipient of the “PA Waste Watcher Award” for the past ten years due to its dedication to recycling, reusing, and reducing waste in its community. The town currently recycles all types of glass, cans, newspaper, and plastic.

Recycling pickup is bi-monthly for residents and weekly for commercial businesses. More information can be found in Appendix E.



Figure 10: On-site recycling program

Soil/Subsurface Water Condition

The native soil types are mostly derived from residual and contain varying percentages of clay, silt, sand and gravel. The native soils are silty to clayey sands with gravel and sandy clayey silts. The silts and clays perform mostly as a plastic. The clays have a Plasticity Index (PI) of 11% and liquid limits (LL) of 34%. The samples tested from the geotechnical report showed more than 30% finer than the #200 sieve. Moisture contents in the area vary between 8.8% and 66.3%.

From the geotechnical report's test borings data, there is no groundwater directly under the building footprint; however, there is groundwater located along the northwest end of the property. The geotechnical report suggests that after heavy rains, there will be seepage into the site soils, especially during the spring months. It is also likely for perched groundwater pockets to develop above the clayey and silt soils, which would be within the construction depths. No groundwater has been encountered thus far in the construction process.



Figure 11: Excavation of foundations

Client Information

The owner of the Buckhorn Medical Office Building is Geisinger Health System. Founded in 1915, Geisinger Health System provides more than two million people in 38 counties in Pennsylvania complete health care. The Geisinger Health System is a nationally-recognized model for quality health service delivery, has been listed in *Best Hospitals in America*, and its physicians have been listed in *The Best Doctors in America*. Its primary care facility is the Geisinger Medical Center (GMC) located in Danville, with two other hospitals in Wilkes-Barre, Geisinger Wyoming Valley (GWV), and Geisinger South Wilkes-Barre. There are numerous Geisinger clinics throughout northeastern Pennsylvania in Wilkes-Barre, Pittston, Wyoming, Scranton, Dallas, Plains, Kingston, and other surrounding cities and towns.

GEISINGER

Geisinger is also known for its electronic health record. The system has been in place for more than 10 years, and it provides patients the ability to view their records, electronically communicate with their caregivers, and research various medical topics through links to trusted medical information on the Internet. There are two main purposes of the new Buckhorn Medical Office Building. The first purpose is to provide a place where patients can discuss insurance disputes, medical records, and bills. The second purpose is to create a high-speed data transfer facility. Being an industry leader in electronic health recording, Geisinger is creating a facility that will have the capability to scan nearly 100,000 images a day and transmit that data back to its main servers located in Danville, PA over a fiber-optic line. These images include everything from MRI scans to billing records. There will be a dedicated team running this electronic document management process on a daily basis out of the new office building.



Figure 12: Geisinger Medical Center - Danville, PA

Geisinger is not a new client in the field of construction. In 2009 alone, Geisinger is expanding its employee parking with a five-story, 600-vehicle parking garage, building two 30,000 SF medical office buildings, and one 80,000 SF medical office building. Geisinger uses its own in-house construction and facilities management team, and therefore works directly with the architect and

construction manager on a day-to-day basis. Geisinger expects quality workmanship and an OSHA approved site and working conditions. Because Geisinger is using this building for electronic document control, they are highly involved in the telecommunications phase of construction. A brand new single-mode fiber optic line has been laid from Geisinger's central servers in Danville to Bloomsburg. This new line will enable high-speed data transfer directly between the two offices. Geisinger's other concern with the project's construction is its LEED certification. Geisinger started a new initiative in 2008 to move into green building. Last year, Geisinger opened the first LEED Gold Certified medical building in Pennsylvania, and only the seventh in the country. Since then, every Geisinger building has met the standards for at least LEED Certified. The Buckhorn Medical Office Building is striving for LEED Silver Certification, and Geisinger has played a large role in the green construction process. From choosing recycled materials for finishes, to implementing sustainable design features, Geisinger has been an active owner throughout the entire construction process.

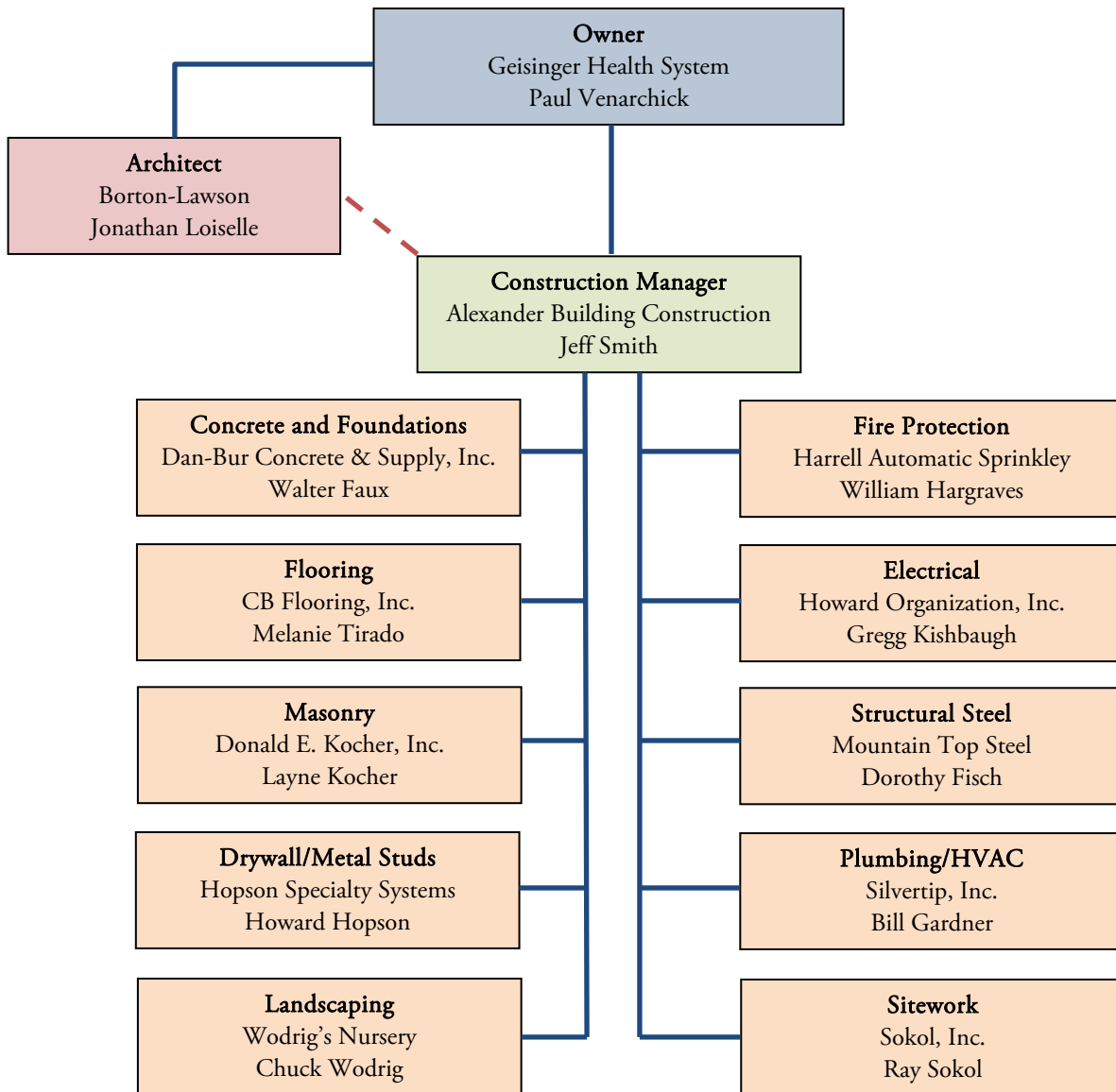


Figure 13: Gray's Woods - LEED Gold Certified

Although all projects have a specific schedule, Geisinger has some flexibility with its exact opening date. Geisinger is bringing employees from several other branches across the northeast to work in the new building, and therefore schedule is not as much of a concern as cost and meeting LEED standards are. As an owner, Geisinger is most concerned with how the new building will affect their workers. Geisinger plans to move all of its workers into the building in three phases over the course of three days (1 phase per floor, per day). Geisinger has stated that it is essential that the transition period is as short as possible. Geisinger is also concerned with employee comfort, from the amenities in the employee cafeteria to the office furniture in each cubicle. Because nearly all of the employees will be transferring from another office, Geisinger is concerned with site logistics, traffic patterns, and parking availability for the first few months after opening. Asking employees to commute up to an hour each way can be daunting, and Geisinger wants to ensure that employees find the new facilities as accommodating as possible.

Project Delivery System

The Buckhorn Medical Office Building is being delivered as a design-bid-build method with a CM-At-Risk. The contract is a very typical Guaranteed Maximum Price (GMP) job where the construction manager, Alexander Building Construction, holds the contracts for all of the subcontractors. The architect, Borton-Lawson Engineering and Architecture, was hired directly by the owner, Geisinger Health System, and works with the construction manager but is not legally bound to them. The construction manager runs the day-to-day management of the project and the owner will release the payments on a monthly basis. Below is an organizational chart of the project staff.



The structure of the organizational chart shows that a solid blue line denotes a legal contract that binds the two parties. This is the case for all of the subcontractors with regard to Alexander, the construction manager. A dashed red line denotes a close relationship, as seen between the architect and the construction manager; however, there is no legal tie between the two parties. It should also be noted that although this is a GMP with a CM-At-Risk, there is no owner representative. Geisinger has a specific construction and facilities management division that is responsible for all of the company's capital projects.

Because Geisinger does a lot of construction in the northeast Pennsylvania area, they provide a list of pre-approved subcontractors for the construction manager. This list is continually updated by Geisinger, and the construction manager is required to first choose subcontractors from the pre-approved list for bidding. If the construction manager deems that no subcontractor is fit for the job, they are allowed to submit a subcontractor for Geisinger to approve. Each of the major bid packages uses a closed bidding system. Subcontracts are awarded based on value of bid and not purely on lowest cost. Being a private building contract, the construction manager is not required to use the lowest bid, and Geisinger is heavily involved in the subcontractor selection process.

As the construction manager, Alexander Building Construction uses a typical insurance coverage policy. Alexander holds a \$1 million general liability, \$1 million automobile liability, \$10 million umbrella policy, and \$500,000 worker's compensation policy. For the project, the construction manager is not required to furnish bonds according to Section 8.3.1 of the *Standard Form of Agreement Between Owner and Construction Manager*. More information can be found in Appendix F.

Staffing Plan

The staffing for this project is very similar to many of Alexander's construction projects. Alexander's typical organizational staff chart works in a fairly hierarchal manner where a senior project manager oversees the total project but is not fully immersed in the day-to-day activities. The senior project manager plays a large role in the procurement and preconstruction phases, but manages multiple projects in the construction phase.

The project manager is responsible for the sum of the entire project, but personally oversees the financial records as well as the schedule of the project. The project manager works closely with the senior project manager regarding budget and schedule. Since the Buckhorn Medical Office Building is not an overly large project, therefore the project manager works on several projects at one time.

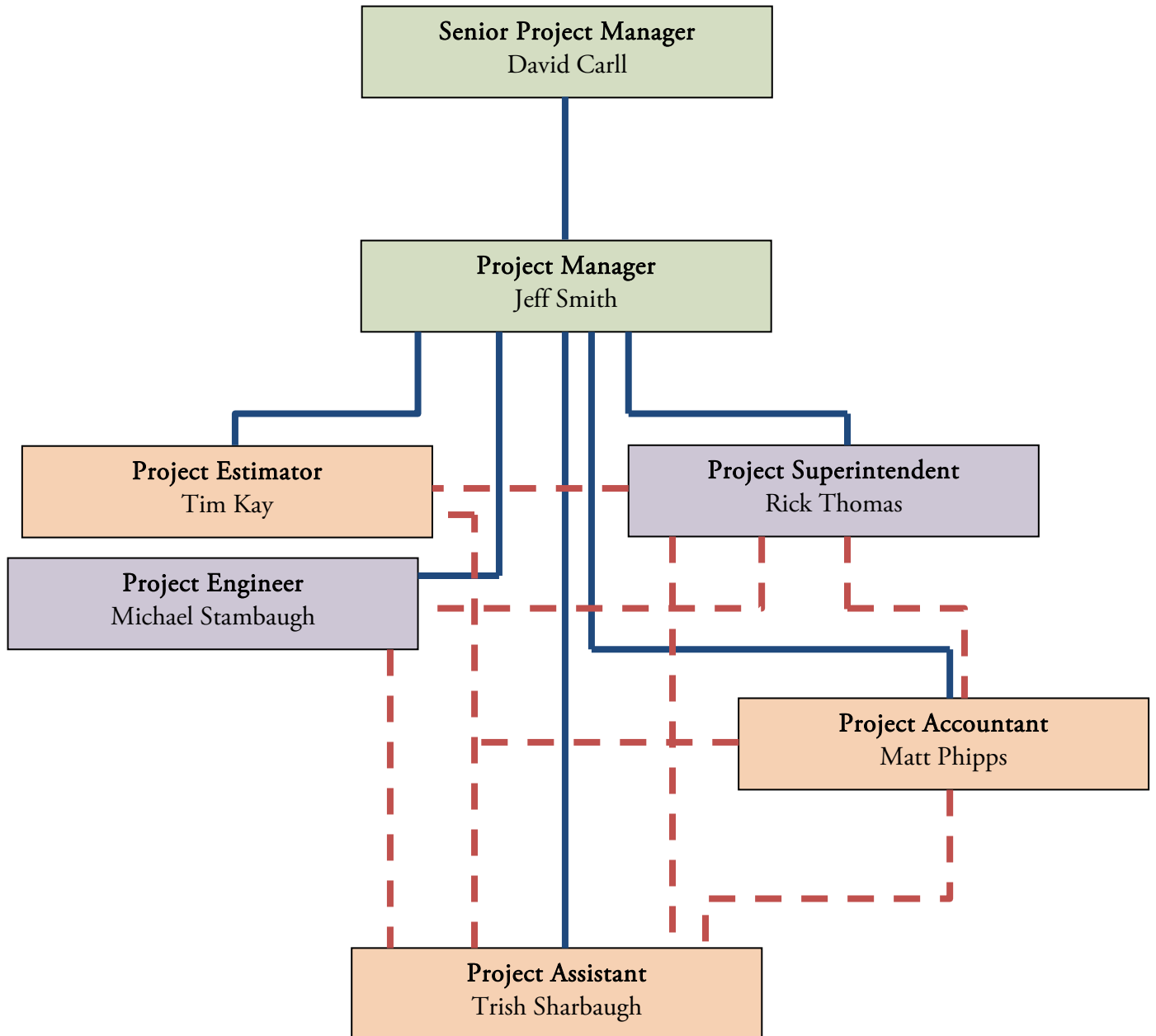
The project engineer is assigned specifically to one job and is responsible for day-to-day construction responsibilities and is on-site 90% of the time during the construction process. The project engineer is responsible for processing submittals and RFIs as well as checking shop drawings. The project engineer works closely with the project manager to solve problems that may arise on the site.

The superintendent reports to the project manager and spends 95% of his time on-site. He is responsible for maintaining the schedule, plan construction sequencing and phasing, and manage subcontractor issues that may arise. He works closely with the project engineer to solve field issues.

Working out of the main office, there is a project estimator, a project accountant, and a project assistant. These people play a large role in the preconstruction and procurement phases of the project. The project estimator and project accountant work closely with the project manager and superintendent to clarify scopes-of-work and bid packages. The project estimator is in-charge of the initial quantity take-offs and works closely with the project accountant to develop bid packages. The project accountant processes monthly payment applications and requisitions. The project accountant is also in-charge of paying subcontractors. The project accountant works closely with the project manager. The project assistant helps process paperwork including insurance forms, O&M manuals, and expense reports. The project assistant works with all members of the project team. An organizational chart is provided on the following page.

Staffing Plan

Organizational Chart



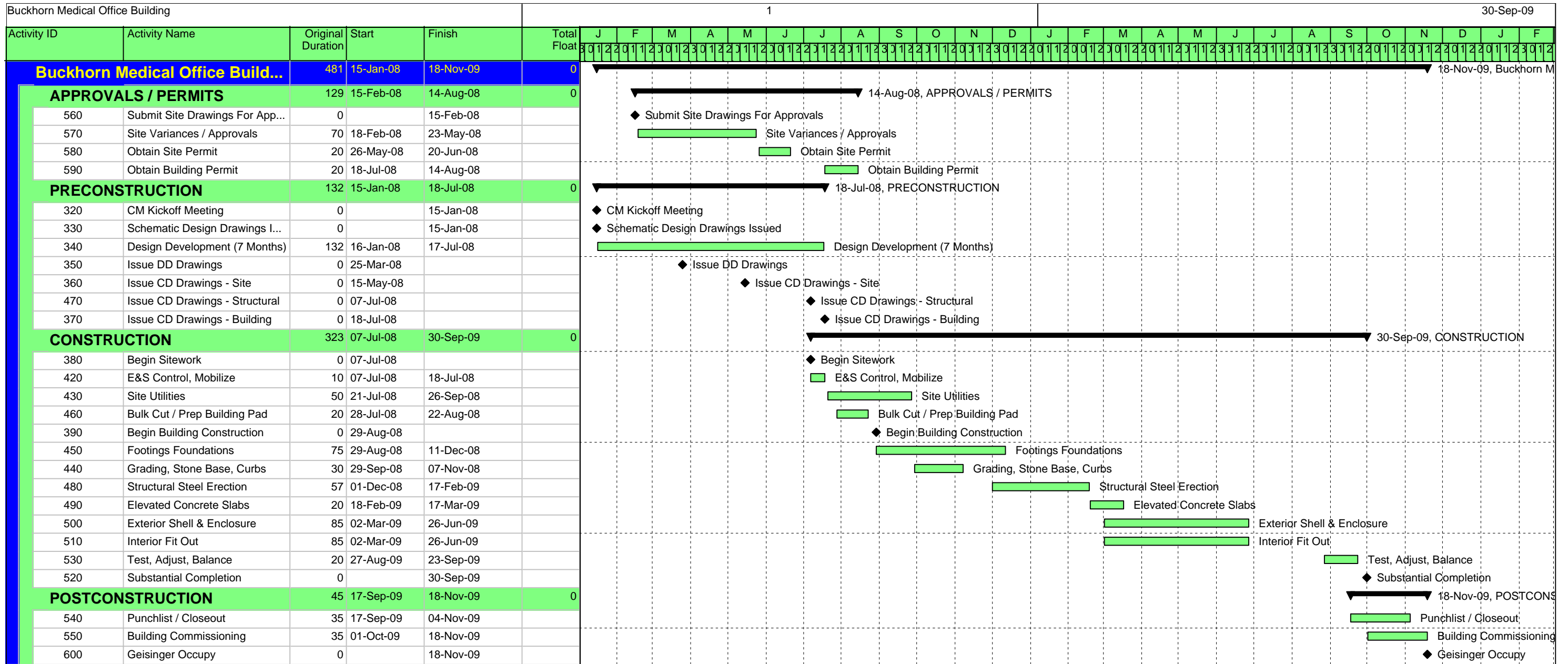
The organizational staff chart shows the relationships between the various members of the construction management project team. The solid blue lines represent direct relationships between co-workers. The person on the lower end of a solid blue line directly reports to the person above them. Although all members communicate with each other during the course of a project, dashed red lines show lines of strong communication and cohesion, but not necessarily hierarchy. The boxes are also color-coded based on amount of time spent in the field. Orange boxes represent little or no time in the field; this includes the project assistant, project accountant, and project estimator. The blue boxes represent some time in field; this would mean weekly or bi-weekly site visits to attend project meetings and includes the project manager and senior project manager. Lastly, the purple boxes represent most or all the time spent in the field; this includes the project engineer and the superintendent. While some of Alexander's larger projects may include multiple project engineers, an assistant superintendent, or a carpenter foreman, the size of the Buckhorn Medical Office Building project does not demand any of these additional roles. The boxes are also stacked by responsibility and in turn, salary; with the senior project manager being at the top of the organizational chart.

Appendix Index

- A. Project Schedule
- B. *D4Cost* Parametric Estimate
- C. RS Means Estimate Data
- D. Site Layout Plan
- E. Bloomsburg Recycling Program
- F. Insurance & Bonding Contracts

APPENDIX A

Project Schedule



■ Actual Work
 ■ Critical Remaining Work
 Summary
■ Remaining Work
 ◆ Milestone

APPENDIX B

D4Cost Parametric Estimate

Statement of Probable Cost

Buckhorn Medical Office Building - Nov 2009 - PA - Williamsport

Prepared By: Shane Boyer AE Senior Thesis 305 E. Prospect Ave. State College, PA 16801 7176496808 Fax: Building Sq. Size: 83245 Bid Date: 1/14/2009 No. of floors: 3 No. of buildings: 1 Project Height: 42.5 1st Floor Height: 10 1st Floor Size: 28164	Prepared For: Dr. Christopher Magent Penn State AE Department Faculty 104 Engineering Unit A University Park, PA 16802 Fax: Site Sq. Size: 543299 Building use: Office Foundation: CON Exterior Walls: MET Interior Walls: GYP Roof Type: MEM Floor Type: CAR Project Type: NEW
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Division		Percent	Sq. Cost	Amount
01	General Requirements	14.29	17.17	1,429,616
	General Conditions	9.71	11.67	971,423
	Temp. Heat/Winter Protection	0.82	0.99	82,346
	Fee	3.76	4.51	375,847
03	Concrete	7.16	8.60	715,720
	Cast-In-Place Concrete	7.16	8.60	715,720
05	Metals	24.19	29.06	2,419,421
	Structural Steel	13.05	15.68	1,305,250
	Misc. Metals	0.65	0.78	64,891
	Exterior Wall System	10.49	12.60	1,049,280
06	Partitions	5.10	6.12	509,730
	Interior Studs, Drywall, Masonry St one Int.	5.10	6.12	509,730
07	Thermal & Moisture Protection	2.41	2.90	241,035
	Roofing, Sealants & Firestopping	2.41	2.90	241,035
09	Finishes	8.65	10.40	865,621
	Finishes	8.65	10.40	865,621
14	Conveying Systems	1.60	1.93	160,497
	Elevators	1.60	1.93	160,497
15	Mechanical	20.22	24.29	2,021,957
	HVAC & Plumbing	18.74	22.52	1,874,611
	Fire Protection	1.47	1.77	147,346
16	Electrical	16.38	19.68	1,638,233
	Electrical	16.38	19.68	1,638,233
Total Building Costs		100.00	120.15	10,001,830
02	Site Work	100.00	3.16	1,715,798
	Site Work	100.00	3.16	1,715,798
Total Non-Building Costs		100.00	3.16	1,715,798
Total Project Costs		--	--	11,717,628

APPENDIX C

RS Means Estimate Data



Costs per square foot of floor area

Exterior Wall	S.F. Area	2500	3000	3500	4000	4500	5000	5500	6000	
	L.F. Perimeter	220	260	310	360	410	460	510	560	
Face Brick with Concrete Block Back-up	Wood Joists	235.30	204.45	186.75	174.45	168.05	155.30	149.05	145.90	143.35
	Steel Joists	243.30	212.45	194.70	182.45	176.00	163.20	157.05	153.90	151.35
Glass and Metal Curtain Wall	Steel Frame	286.85	246.25	222.90	206.20	197.50	180.15	171.60	167.25	163.75
	R/Cont. Frame	279.85	239.75	216.70	200.15	191.55	174.30	165.85	161.55	158.05
Wood Siding	Wood Frame	188.10	165.95	150.35	145.00	140.50	131.85	127.80	125.65	124.00
Brick Veneer	Wood Frame	210.80	182.75	166.65	155.60	149.80	138.40	132.90	130.00	127.80
Perimeter Adj., Add or Deduct	Per 100 L.F.	36.85	23.05	15.40	11.55	9.20	5.25	3.70	2.85	2.30
Story Hgt. Adj., Add or Deduct	Per 1 Ft.	6.00	4.40	3.55	2.80	2.45	1.70	1.35	1.15	1.00

For Basement, add \$ 33.65 per square foot of basement area

The above costs were calculated using the basic specifications shown on the facing page. These costs should be adjusted where necessary for design alternatives and owner's requirements. Reported completed project costs, for this type of structure, range from \$ 66.30 to \$ 256.80 per S.F.

Common additives

Description	Unit	\$ Cost	Description	Unit	\$ Cost
Clock System			Smoke Detectors		
20 room	Each	16,000	Ceiling type	Each	187
50 room	Each	39,100	Duct type	Each	480
Closed Circuit Surveillance, One station			Sound System		
Camera and monitor	Each	1850	Amplifier, 250 watts	Each	2350
For additional camera stations, add	Each	1000	Speaker, ceiling or wall	Each	191
Directory Boards, Plastic, glass covered			Trumpet	Each	365
30" x 20"	Each	595	TV Antenna, Master system, 12 outlet	Outlet	315
36" x 48"	Each	1450	30 outlet	Outlet	203
Aluminum, 24" x 18"	Each	600	100 outlet	Outlet	194
36" x 24"	Each	675			
48" x 32"	Each	980			
48" x 60"	Each	2025			
Elevators, Hydraulic passenger, 2 stops					
1500# capacity	Each	62,800			
2500# capacity	Each	66,300			
3500# capacity	Each	69,800			
Additional stop, add	Each	7825			
Emergency Lighting, 25 watt, battery operated					
Lead battery	Each	282			
Nickel cadmium	Each	805			

Model costs calculated for a 3 story building with 12' story height and 20,000 square feet of floor area

Office, 2-4 Story

A. SUBSTRUCTURE							
1010	Standard Foundations	Poured concrete; strip and spread footings	S.F. Ground	7.35	2.45		
1020	Special Foundations	N/A	-	-	-		
1030	Slab on Grade	4" reinforced concrete with vapor barrier and granular base	S.F. Slab	4.74	1.58	4.4%	
2010	Basement Excavation	Site preparation for slab and trench for foundation wall and footing	S.F. Ground	.17	.06		
2020	Basement Walls	4' foundation wall	L.F. Wall	74	1.64		
B. SUPERSTRUCTURE							
B10 Superstructure							
1010	Floor Construction	Open web steel joists, slab form, concrete, columns	S.F. Floor	19.79	13.19		
1020	Roof Construction	Metal deck, open web steel joists, columns	S.F. Roof	8.43	2.81	12.2%	
B20 Exterior Enclosure							
2010	Exterior Walls	Face brick with concrete block backup	80% of wall	S.F. Wall	30.84	15.99	
2020	Exterior Windows	Aluminum outward projecting	20% of wall	Each	696	3.93	15.8%
2030	Exterior Doors	Aluminum and glass, hollow metal	Each	2987	.90		
B30 Roofing							
3010	Roof Coverings	Built-up tar and gravel with flashing; perlite/EPS composite	S.F. Roof	6.33	2.11		
3020	Roof Openings	N/A	-	-	-	1.6%	
C. INTERIORS							
1010	Partitions	Gypsum board on metal studs	20 S.F. Floor/L.F. Partition	S.F. Partition	9.43	3.77	
1020	Interior Doors	Single leaf hollow metal	Each	875	4.38		
1030	Fittings	Toilet partitions	S.F. Floor	1.10	1.10		
2010	Stair Construction	Concrete filled metal pan	Flight	15,800	5.53	22.7%	
3010	Wall Finishes	60% vinyl wall covering, 40% paint	S.F. Surface	1.34	1.07		
3020	Floor Finishes	60% carpet, 30% vinyl composition tile, 10% ceramic tile	S.F. Floor	7.62	7.62		
3030	Ceiling Finishes	Mineral fiber tile on concealed zee bars	S.F. Ceiling	6.36	6.36		
D. SERVICES							
D10 Conveying							
1010	Elevators & Lifts	Two hydraulic passenger elevator	Each	117,500	11.75	8.0%	
1020	Escalators & Moving Walks	N/A	-	-	-		
D20 Plumbing							
2010	Plumbing Fixtures	Toilet and service fixtures, supply and drainage	1 Fixture/1320 S.F. Floor	Each	3775	2.86	
2020	Domestic Water Distribution	Gas fired water heater	S.F. Floor	.38	.38	2.8%	
2040	Rain Water Drainage	Roof drains	S.F. Roof	1.53	.51		
D30 HVAC							
3010	Energy Supply	N/A	-	-	-		
3020	Heat Generating Systems	Included in D3050	-	-	-		
3030	Cooling Generating Systems	N/A	-	-	-		
3050	Terminal & Package Units	Multizone unit gas heating, electric cooling	S.F. Floor	15.50	15.50	11.8%	
3090	Other HVAC Sys. & Equipment	N/A	-	-	-		
D40 Fire Protection							
4010	Sprinklers	Wet pipe sprinkler system	S.F. Floor	2.96	2.96	2.8%	
4020	Standpipes	Standpipes and hose systems	S.F. Floor	.72	.72		
D50 Electrical							
5010	Electrical Service/Distribution	1000 ampere service, panel board and feeders	S.F. Floor	4.55	4.55		
5020	Lighting & Branch Wiring	High efficiency fluorescent fixtures, receptacles, switches, A.C. and misc. power	S.F. Floor	11.20	11.20	17.0%	
5030	Communications & Security	Addressable alarm systems, internet and phone wiring, and emergency lighting	S.F. Floor	6.42	6.42		
5090	Other Electrical Systems	Emergency generator, 7.5 kW, uninterruptible power supply	S.F. Floor	.22	.22		
E. EQUIPMENT & FURNISHINGS							
1010	Commercial Equipment	N/A	-	-	-		
1020	Institutional Equipment	N/A	-	-	-		
1030	Vehicular Equipment	N/A	-	-	-	0.0%	
1090	Other Equipment	N/A	-	-	-		
F. SPECIAL CONSTRUCTION							
1020	Integrated Construction	N/A	-	-	-		
1040	Special Facilities	N/A	-	-	-	0.0%	
G. BUILDING SITEWORK N/A							
				Sub-Total	131.58	100%	
CONTRACTOR FEES (General Requirements: 10%, Overhead: 5%, Profit: 10%)				25%	32.91		
ARCHITECT FEES				7%	11.51		
				Total Building Cost			

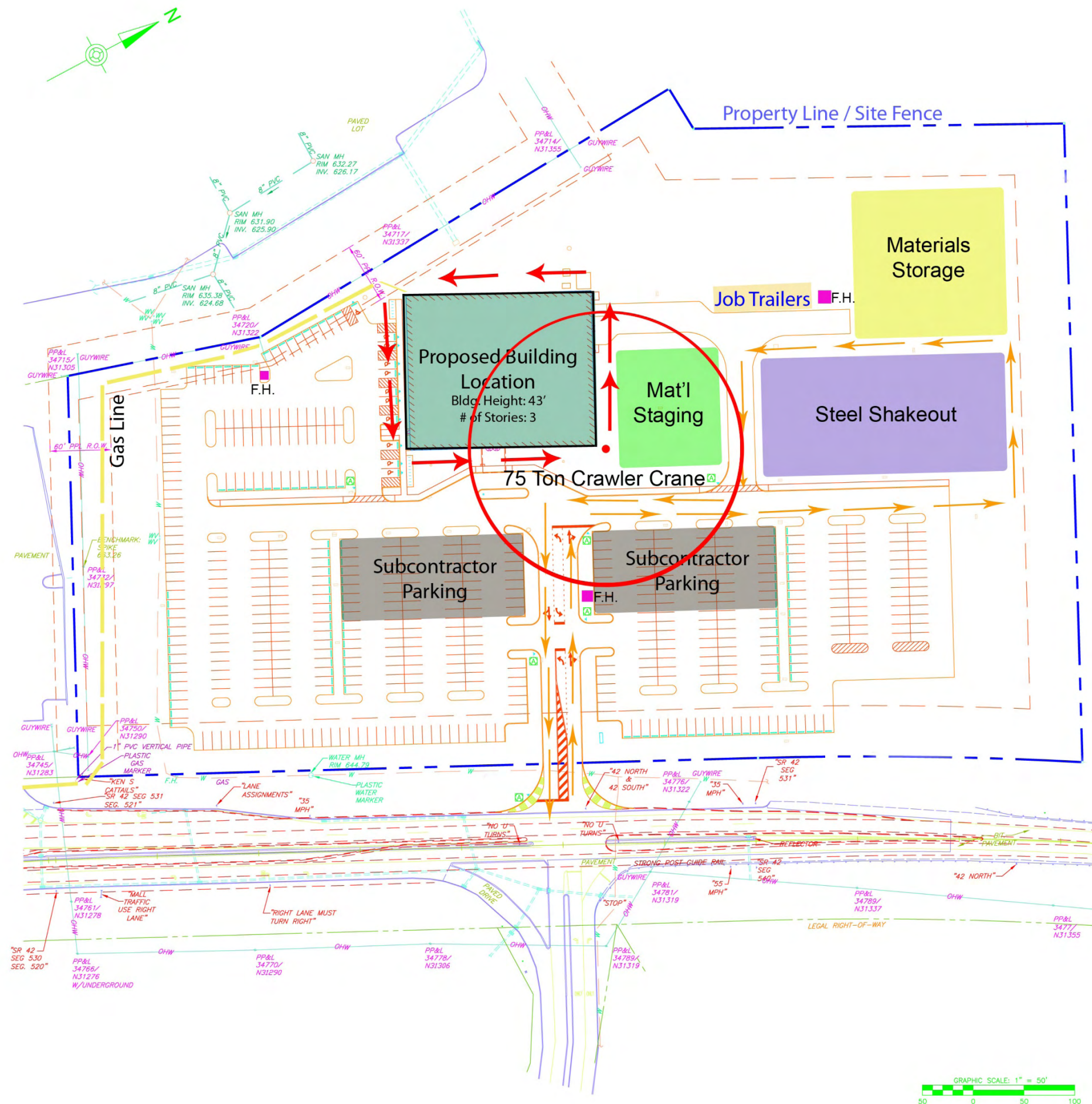
Location Factors

STATE/ZIP	CITY	Residential	Commercial
NORTH DAKOTA (CONT'D)			
586	Dickinson	.76	.84
587	Minot	.81	.87
588	Williston	.76	.83
OHIO			
430-432	Columbus	.93	.93
433	Marion	.89	.89
434-436	Toledo	1.00	.98
437-438	Zanesville	.88	.89
439	Steubenville	.93	.93
440	Lorain	.98	.96
441	Cleveland	1.01	1.00
442-443	Akron	.98	.96
444-445	Youngstown	.95	.94
446-447	Canton	.93	.92
448-449	Mansfield	.93	.92
450	Hamilton	.92	.91
451-452	Cincinnati	.92	.92
453-454	Dayton	.91	.91
455	Springfield	.92	.91
456	Chillicothe	.94	.93
457	Athens	.87	.88
458	Lima	.90	.92
OKLAHOMA			
730-731	Oklahoma City	.79	.83
734	Ardmore	.78	.81
735	Lawton	.80	.83
736	Clinton	.76	.81
737	Enid	.76	.82
738	Woodward	.76	.80
739	Guymon	.67	.69
740-741	Tulsa	.77	.80
743	Miami	.81	.82
744	Muskogee	.71	.74
745	McAlester	.73	.77
746	Ponca City	.77	.80
747	Durant	.77	.80
748	Shawnee	.73	.80
749	Poteau	.77	.81
OREGON			
970-972	Portland	1.00	1.01
973	Salem	.98	1.00
974	Eugene	.99	1.00
975	Medford	.98	1.00
976	Klamath Falls	.98	1.00
977	Bend	1.00	1.00
978	Pendleton	.98	.97
979	Vale	.97	.92
PENNSYLVANIA			
150-152	Pittsburgh	.96	.98
153	Washington	.93	.96
154	Uniontown	.90	.95
155	Bedford	.87	.93
156	Greensburg	.93	.96
157	Indiana	.90	.95
158	Dubois	.89	.95
159	Johnstown	.89	.94
160	Butler	.91	.94
161	New Castle	.91	.93
162	Kittanning	.93	.95
163	Oil City	.89	.92
164-165	Erie	.93	.93
166	Altoona	.87	.92
167	Bradford	.89	.93
168	State College	.90	.93
169	Wellsboro	.90	.94
170-171	Harrisburg	.94	.96
172	Chambersburg	.89	.93
173-174	York	.91	.95
175-176	Lancaster	.91	.92
177	Williamsport	.85	.88
178	Sunbury	.91	.94
179	Pottsville	.91	.93
180	Lehigh Valley	1.01	1.02
181	Allentown	1.03	1.01
182	Hazleton	.90	.94
183	Stroudsburg	.91	.97
184-185	Scranton	.95	.97
186-187	Wilkes-Barre	.92	.94
188	Montrose	.90	.94
189	Doylestown	1.05	1.05

STATE/ZIP	CITY	Residential	Commercial
PENNSYLVANIA (CONT'D)			
190-191	Philadelphia	1.16	1.13
193	Westchester	1.10	1.07
194	Norristown	1.09	1.09
195-196	Reading	.97	.98
PUERTO RICO			
009	San Juan	.75	.80
RHODE ISLAND			
028	Newport	1.06	1.03
029	Providence	1.06	1.03
SOUTH CAROLINA			
290-292	Columbia	.84	.80
293	Spartanburg	.84	.78
294	Charleston	.87	.83
295	Florence	.80	.78
296	Greenville	.83	.78
297	Rock Hill	.82	.77
298	Aiken	.97	.86
299	Beaufort	.82	.76
SOUTH DAKOTA			
570-571	Sioux Falls	.79	.83
572	Watertown	.75	.80
573	Mitchell	.77	.80
574	Aberdeen	.77	.82
575	Pierre	.77	.81
576	Mobridge	.75	.80
577	Rapid City	.78	.82
TENNESSEE			
370-372	Nashville	.84	.88
373-374	Chattanooga	.75	.81
375,380-381	Memphis	.81	.86
376	Johnson City	.70	.80
377-379	Knoxville	.72	.79
382	McKenzie	.72	.80
383	Jackson	.70	.78
384	Columbia	.71	.79
385	Cookeville	.71	.81
TEXAS			
750	McKinney	.73	.79
751	Waxahachie	.74	.80
752-753	Dallas	.83	.85
754	Greenville	.68	.73
755	Texarkana	.72	.78
756	Longview	.67	.74
757	Tyler	.73	.80
758	Palestine	.66	.72
759	Lufkin	.70	.74
760-761	Fort Worth	.81	.82
762	Denton	.75	.77
763	Wichita Falls	.78	.80
764	Eastland	.71	.73
765	Temple	.74	.76
766-767	Waco	.76	.81
768	Brownwood	.68	.73
769	San Angelo	.71	.76
770-772	Houston	.85	.88
773	Huntsville	.68	.73
774	Wharton	.69	.76
775	Galveston	.83	.86
776-777	Beaumont	.80	.82
778	Bryan	.73	.82
779	Victoria	.73	.77
780	Laredo	.72	.77
781-782	San Antonio	.80	.83
783-784	Corpus Christi	.77	.78
785	McAllen	.75	.76
786-787	Austin	.79	.81
788	Del Rio	.66	.70
789	Giddings	.69	.72
790-791	Amarillo	.76	.81
792	Childress	.74	.77
793-794	Lubbock	.74	.80
795-796	Abilene	.74	.78
797	Midland	.75	.78
798-799,885	El Paso	.73	.78
UTAH			
840-841	Salt Lake City	.81	.88
842,844	Ogden	.78	.85
843	Logan	.79	.86

APPENDIX D

Site Layout Plan



Borton Lawson

Engineering/Architecture

www.borton-lawson.com

Northeast Pennsylvania

613 Baltimore Drive

Suite 300

Wilkes-Barre, PA 18702-7903

Voice: 570-821-1999

Fax: 570-821-1990

Site Layout Plan

Geisinger

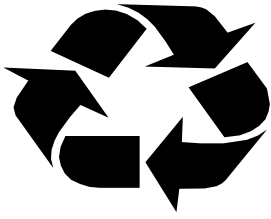
Buckhorn Medical
Office Building

Project No. 2007-2246-02

C1.02

APPENDIX E

Bloomsburg Recycling Program



BLOOMSBURG'S RECYCLING REPORT

VOLUME 17, ISSUE 17

SUMMER 2008

Curbside Recycling in Bloomsburg

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WEBSITE:
www.bloomsburgpa.org

Recycling is collected twice a month from every home in Town. Check the mailing label to see what Area you are in. **Area 1** is collected the first and third Monday of each month, **Area 2** is the first and third Tuesday, **Area 3** is the first and third Wednesday, **Area 4** is the second and fourth Monday and **Area 5** is the second and fourth Tuesday of each month. If you need a collection calendar call the Recycling Center or download a copy off the Recycling page of the Town's website.

How to prepare items for recycling: All bottles, jars and cans should be rinsed clean to remove any food residue. Lids should be removed and labels may remain on. It is important to keep collected items separated. Glass must be separated by color and metal cans should be separated by tin and aluminum. Newspapers are accepted with the glossy inserts. Remember to place items out early as the collections begin at 7:30am.

Recycling is mandatory in the Town of Bloomsburg for all residents, businesses, schools, offices, multi-family housing properties and organizers of special events.

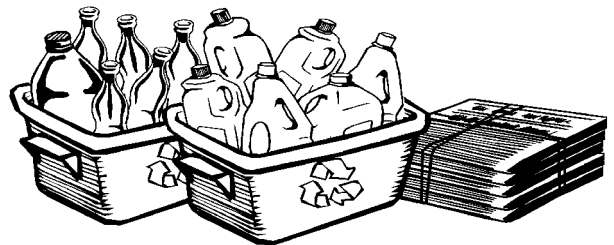
Special collections for **magazine and catalogs only** will be done the last week of September. On Monday, September 29th Areas 1, 2 & 3 will be collected and Areas 4 & 5 will be picked up on Tuesday, September 30th.

"RECYCLE WITH US"

Confidential Paper Shredding

On Saturday March 31, 2008 the Recycling Center held its first ever free shredding day event for household files, old bills and other confidential papers. The event was well received with a total of 1,425 pounds collected and shredded. In comparison, the amount of office paper dropped off on an average day is about two hundred pounds. If you missed this one, take note, the next Shred-It Day will be on Saturday, August 9th.

Paper documents will be accepted for shredding. For more details check out the recycling page of the Town's website.



BLOOMSBURG RECYCLING CENTER

ANNOUNCES

SHRED-IT DAY

SATURDAY AUGUST 9, 2008

9:00am until 12:00pm

Shredding is for Paper Files Only
No Disks, Photos, Tapes or Other Materials Accepted
For Households Only Not Businesses

Bloomsburg Recycling wins Cocoa-Cola/NRC Bin Grant

Bloomsburg Recycling was one of seventy-five recipients chosen out of one thousand one hundred applicants from across the country. The grant winners included twenty-three (23) colleges and universities, twenty-one (21) municipalities and other local government entities, six (6) K-12 schools, ten (10) non-profit organizations and additional community groups and Native American tribes from 40 states across the country. A complete list of winners is available at www.bingrant.org.

The Coca-Cola/National Recycling Bin Grant Program supports local community



recycling programs by providing selected grant recipients with containers for the collection of beverage container recyclables in public areas.

Bloomsburg Recycling applied for bins to assist in the collection of beverage containers at the Bloomsburg Fair and all events held on the fair grounds throughout the year. The Town will receive fifteen (15) soda bottle shaped bins to increase the amount of recyclables collected at special events.

The next grant cycle will open soon in the fall of 2008.

Who Can Apply? The grant program is open to governments, civic organizations, schools, non-profit groups and for-profit companies.

How Does it Work? There are six different bin types to choose from. The application is filled out online and winners will be announced on America Recycles Day. Bins have been awarded for use in parks, schools, offices and special events. Details are available at www.bingrant.org.

An Award winning program for the tenth time



In recognition of the development of a special event recycling program. The first year of placing bins at the fair netted over one ton of bottles and cans recycled and diverted from a landfill.



In recognition of Composting Facility, Curbside Recycling, Drop-Off Recycling, Special Collections, Materials Processing and Recycling Education. Award highlighted the creation of a permanent electronic recycling drop-off program.



Outstanding Achievement in Public Education and Materials Processing. Articles were placed in Press Enterprises first edition "How to Guide", Progress Edition and special phone book listing and a series of America Recycles Day ads.



In recognition of curbside recycling, drop-off recycling, education, material recovery facility and composting facility. A curbside collection calendar filled with information on composting, recycling collection, special collections and drop-off recycling information in annual outreach.



Outstanding Achievement in Materials Processing. A confidential paper shredding program brought 63,000 additional pounds of recycling.



Awarded for Recycling Education, Collection, Processing Markets, Processing Materials. Initial distribution of curbside collection bins proves very effective in recycling collection.



Outstanding Achievement in Recycling, Public Education and Materials Processing. Competing in the US Mayors Association Aluminum Can Challenge brought heightened awareness of Recycling.



Recognizing Composting, Curbside, Recycling Education and Drop-off Recycling programs. Educational brochures about curbside collection, leaf collection and composting, multi-family housing and commercial businesses distributed to residents, businesses and landlords.



Recognition of Curbside Recycling, Drop Off Recycling, Special Collections, Materials Processing, Recycling Education and Multiple Year Award Winner. Bloomsburg was one of only five multiple year recipients honored.



Awarded for Outstanding achievement in the following categories, Curbside, Materials/Recovery, Education, Drop-off, and Composting. Winner in the inaugural Waste Watcher Award in recognition of a program that excels in meeting the state waste diversion through recycling more than 25% of the waste generated.

COMPOST SITE

The compost site is open from the first Wednesday in April until the Wednesday prior to Thanksgiving.

ACCEPTABLE MATERIALS: Leave; yard/garden waste and tree limbs less than 4 inches diameter and 6 feet in length.

Town residents may pick up finished compost while supplies last. This rich soil additive is great for planting. Also available is wood mulch. Loading is the responsibility of the resident.

COMPOST SITE HOURS
WEDNESDAYS 4PM-7PM
SATURDAYS 8AM-12PM
APRIL—OCTOBER
DUE TO DAYLIGHT
SAVINGS NOVEMBER
WEDNESDAY HOURS
CHANGE TO 2PM TO 5PM



CURBSIDE LEAF COLLECTION BEGINS OCTOBER 20th Leaves are vacuumed on the same side of the street as the Town street sweeper schedule. Look for the street sweeping signs on your street. Simply rake the leaves to the curb. Be careful not to rake up rocks, bricks or trash that may damage vacuuming equipment.



AT THE RECYCLING CENTER

The Recycling Center at 901 Patterson Drive accepts the following materials for drop-off during regular hours.

CLEAR, BROWN, & GREEN GLASS — separate by color.

STEEL & ALUMINUM CANS — separated by metal type.

NEWSPAPER— including all ads and inserts, must keep dry.

PLASTIC BOTTLES #1 & 2 — includes all soda, juice, milk and laundry bottles. Check for the number in the chasing arrows.

CORRUGATED CARDBOARD — boxes that have a layer of ridges.

MAGAZINES & CATALOGS

OFFICE PAPER — lined or unlined shredded or whole.

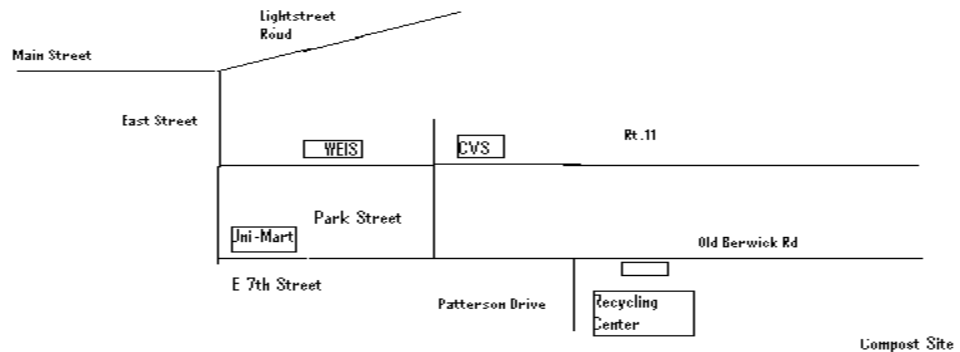
HARDCOVER, PAPERBACK AND PHONE BOOKS

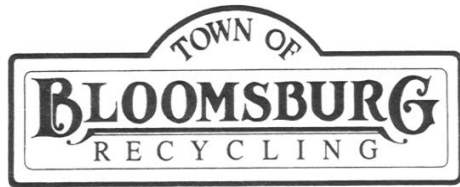
COMPUTERS AND ALL PERIPHERALS

CENTER HOURS
MONDAY 7AM-3:30PM
TUESDAY 7AM-3:30PM
WEDNESDAY 7AM-5PM
THURSDAY 7AM-3:30PM
FRIDAY 7AM-3PM
2ND & 4TH SATURDAY
9AM-1PM

DIRECTIONS TO CENTER

From Main Street follow Rt.11, turn right onto East Street. Go to the third red light and turn left onto E. 7th Street. The Center is 1/2 mile ahead on the right behind Whitmoyer's Car Detailer (formerly Walt's Best Gas Station).





PRSRT STD
U.S. Postage
PAID
Bloomsburg, PA
Permit No. 51

301 E. Second Street
Bloomsburg, PA 17815

POSTAL PATRON



Printed on recycled paper

CURBSIDE RECYCLING COLLECTION

Area 1 First & Third Monday
Area 2 First & Third Tuesday
Area 3 First & third Wednesday

Area 4 Second & Fourth Monday
Area 5 Second & Fourth Tuesday

CHECK THE LABEL FOR
YOUR AREA



	<u>ACCEPTABLE</u>	<u>NOT ACCEPTABLE</u>
Glass	clear, green, & brown Bottles and jars *separate by color	broken glass, window pane, light bulbs, drinking glasses or dishes
Cans	steel (food cans) aluminum (beverage cans) *separate aluminum from steel	foil, pie tins, aerosol cans, pots, pans or scrap metal
Newspaper	newsprint, inserts and ads *bundle and keep dry	magazines or junk mail
Plastic	#1 and #2 plastic bottles (soda, milk, detergent, etc.)	all other plastic containers yogurt cups, margarine tubs, plastic bags

APPENDIX F

Insurance & Bonding Contracts

ACORD™ CERTIFICATE OF LIABILITY INSURANCE		DATE (MM/DD/YYYY) 8/6/2008
PRODUCER The Graham Company The Graham Building 1 Penn Square West Philadelphia, PA 19102	(215) 567-6300	THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.
INSURED Alexander Building Construction, LLC 315 Vaughn Street Harrisburg, PA 17110-		
		INSURERS AFFORDING COVERAGE
		NAIC #
		INSURER A: Zurich-American Insurance Company 16535
		INSURER B: American Guarantee & Liability Ins. Co. 26247
		INSURER C:
		INSURER D:
		INSURER E:

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR	ADD'L LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS
A		GENERAL LIABILITY <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PROJECT <input type="checkbox"/> LOC	GLO937644004	9/30/2007	9/30/2008	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 300,000 MED EXP (Any one person) \$ 10,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000
A		AUTOMOBILE LIABILITY <input type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> HIRED AUTOS <input checked="" type="checkbox"/> NON-OWNED AUTOS	BAP937644104	9/30/2007	9/30/2008	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$
		GARAGE LIABILITY <input type="checkbox"/> ANY AUTO				AUTO ONLY - EA ACCIDENT \$ OTHER THAN AUTO ONLY: EA ACC \$ AGG \$
B		EXCESS/UMBRELLA LIABILITY <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> CLAIMS MADE DEDUCTIBLE RETENTION \$	AUC591710502	9/30/2007	9/30/2008	EACH OCCURRENCE \$ 10,000,000 AGGREGATE \$ 10,000,000
A		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? If yes, describe under SPECIAL PROVISIONS below	WC937644204	9/30/2007	9/30/2008	<input checked="" type="checkbox"/> WC STATUTORY LIMITS <input type="checkbox"/> OTHER E.L. EACH ACCIDENT \$ 500,000 E.L. DISEASE - EA EMPLOYEE \$ 500,000 E.L. DISEASE - POLICY LIMIT \$ 500,000
		OTHER				

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS

See attached page.

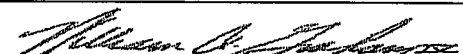
CERTIFICATE HOLDER

Geisinger Health System
 100 N. Academy Avenue
 Danville, PA 17822-

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL 0 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE



IMPORTANT

If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

DISCLAIMER

The Certificate of Insurance on the reverse side of this form does not constitute a contract between the issuing insurer(s), authorized representative or producer, and the certificate holder, nor does it affirmatively or negatively amend, extend or alter the coverage afforded by the policies listed thereon.

DESCRIPTION OF OPERATIONS -

Alexander Building Construction, LLC
315 Vaughn Street
Harrisburg, PA 17110-

Geisinger Health System
100 N. Academy Avenue
Danville, PA 17822-

Re: Geisinger - Buckhorn Office Building
Job 408105

Certificate Holder is added as an additional insured on the General Liability and Umbrella Policies if required by written contract and insured on the Automobile Liability with respect to work performed by the Named Insured.

Prior to loss and if required by written contract, Waiver of Subrogation is provided on all liability policies (except Workers' Compensation) if favor of the Additional Insureds.

AIA[®] Document A131[™] CMc – 2003 and AGC Document 566

Standard Form of Agreement Between Owner and Construction Manager
where the Construction Manager is also the Constructor; and where the Basis of Payment is the Cost of the Work plus a Fee and there is no Guarantee of Cost.

AGREEMENT

made as of the 14th day of January in the year of Two Thousand and Eight
(In words, indicate day, month and year)

BETWEEN the Owner:
(Name and address)

Geisinger Health System
100 N. Academy Avenue
Danville, PA 17822

and the Construction Manager:
(Name and address)

Alexander Building Construction, LLC
315 Vaughn Street
Harrisburg, PA 17110

The Project is:
(Name, address and brief description)

Buckhorn Office Building
Bloomsburg, Pennsylvania

Construction of an 81,000 sf. office building and associated sitework.

The Architect is:
(Name and address)

Borton Lawson Architecture
613 Baltimore Drive, Suite 300
Wilkes-Barre, PA 18702-7903

The Owner and Construction Manager agree as set forth below.

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

The 1997 Edition of AIA Document A201, General Conditions of the Contract for Construction, is referred to herein. This Agreement requires modification if other general conditions are utilized.

§ 3.4 LEGAL REQUIREMENTS

The Owner shall determine and advise the Architect and Construction Manager of any special legal requirements relating specifically to the Project which differ from those generally applicable to construction in the jurisdiction of the Project. The Owner shall furnish such legal services as are necessary to provide the information and services required under Section 3.1.

ARTICLE 4 COMPENSATION AND PAYMENTS FOR PRECONSTRUCTION PHASE SERVICES

The Owner shall compensate and make payments to the Construction Manager for Preconstruction Phase services as follows:

§ 4.1 COMPENSATION

§ 4.1.1 For the services described in Sections 2.1 and 2.2, the Construction Manager's compensation shall be calculated as follows:

* Stipulated lump sum of \$120,000.00 to be billed each month in eight (8) equal amounts at the end of each month commencing with January 2008.

(State basis of compensation, whether a stipulated sum, multiple of Direct Personnel Expense, actual cost, etc. Include a statement of reimbursable cost items as applicable.)

§ 4.1.2 Compensation for Preconstruction Phase Services shall be equitably adjusted if such services extend beyond September 30, 2008, or if the originally contemplated scope of services is significantly modified.

§ 4.1.3 If compensation is based on a multiple of Direct Personnel Expense, Direct Personnel Expense is defined as the direct salaries of the Construction Manager's personnel engaged in the Project and the portion of the cost of their mandatory and customary contributions and benefits related thereto, such as employment taxes and other statutory employee benefits, insurance, sick leave, holidays, vacations, pensions and similar contributions and benefits.

§ 4.2 PAYMENTS

§ 4.2.1 Payments shall be made monthly following presentation of the Construction Manager's invoice and, where applicable, shall be in proportion to services performed.

§ 4.2.2 Payments are due and payable twenty (20) days from the date the Construction Manager's invoice is received by the Owner. Amounts unpaid after the date on which payment is due shall bear interest at the rate entered below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

(Insert rate of interest agreed upon.) zero percent (0%)

(Paragraph deleted)

ARTICLE 5 COMPENSATION FOR CONSTRUCTION PHASE SERVICES

The Owner shall compensate the Construction Manager for Construction Phase services as follows:

§ 5.1 COMPENSATION

§ 5.1.1 For the Construction Manager's performance of the Work as described in Section 2.3, the Owner shall pay the Construction Manager in current funds the Contract Sum consisting of the Cost of the Work as defined in Article 6 and the Construction Manager's Fee determined as follows:

5.1.1.1 Fee shall be 2.5% of the actual cost of the Work, based on the project description on page 1. Fee shall be equitable adjusted in the event that the original project scope is revised.

5.1.1.2 Fees on all net additive changes in the Work (Change Orders) shall be 2.50%. No reduction in the fee shall be taken on net credit Change Orders.

§ 7.2 FINAL PAYMENT

§ 7.2.1 Final payment shall be made by the Owner to the Construction Manager when (1) the Contract has been fully performed by the Construction Manager, except for the Construction Manager's responsibility to correct nonconforming Work, as provided in Section 12.2.2 of A201™-1997, and to satisfy other requirements, if any, which necessarily survive final payment; (2) a final Application for Payment and a final accounting for the Cost of the Work have been submitted by the Construction Manager and reviewed by the Owner's accountants; and (3) a final Certificate for Payment has then been issued by the Architect. Such final payment shall be made by the Owner not more than 30 days after the issuance of the Architect's final Certificate for Payment, or as follows:

§ 7.2.2 The amount of the final payment shall be calculated as follows:

- .1 Take the sum of the Cost of the Work substantiated by the Construction Manager's final accounting and the Construction Manager's Fee.
- .2 Subtract amounts, if any, for which the Architect withholds, in whole or in part, a final Certificate for Payment as provided in Section 9.5.1 of A201™-1997 or other provisions of the Contract Documents.
- .3 Subtract the aggregate of previous payments made by the Owner.

If the aggregate of previous payments made by the Owner exceeds the amount due the Construction Manager, the Construction Manager shall reimburse the difference to the Owner.

§ 7.2.3 The Owner's accountants will review and report in writing on the Construction Manager's final accounting within 30 days after delivery of the final accounting to the Architect by the Construction Manager. Based upon such Cost of the Work as the Owner's accountants report to be substantiated by the Construction Manager's final accounting, and provided the other conditions of Section 7.2.1 have been met, the Architect will, within seven days after receipt of the written report of the Owner's accountants, either issue to the Owner a final Certificate for Payment with a copy to the Construction Manager or notify the Construction Manager and Owner in writing of the Architect's reasons for withholding a certificate as provided in Section 9.5.1 of A201™-1997. The time periods stated in this Section 7.2 supersede those stated in Section 9.4.1 of A201™-1997.

§ 7.2.4 If the Owner's accountants report the Cost of the Work as substantiated by the Construction Manager's final accounting to be less than claimed by the Construction Manager, the Construction Manager shall be entitled to proceed in accordance with Article 9 without a further decision of the Architect. Unless agreed to otherwise, a demand for mediation or arbitration of the disputed amount shall be made by the Construction Manager within 60 days after the Construction Manager's receipt of a copy of the Architect's final Certificate for Payment. Failure to make such demand within this 60-day period shall result in the substantiated amount reported by the Owner's accountants becoming binding on the Construction Manager. Pending a final resolution of the disputed amount, the Owner shall pay the Construction Manager the amount certified in the Architect's final Certificate for Payment.

§ 7.2.5 If, subsequent to final payment and at the Owner's request, the Construction Manager incurs costs described in Section 6.1 and not excluded by Section 6.2 (1) to correct nonconforming Work or (2) arising from the resolution of disputes, the Owner shall reimburse the Construction Manager such costs and the Construction Manager's Fee, if any, related thereto on the same basis as if such costs had been incurred prior to final payment.

ARTICLE 8 INSURANCE AND BONDS

§ 8.1 INSURANCE REQUIRED OF THE CONSTRUCTION MANAGER

During both phases of the Project, the Construction Manager shall purchase and maintain insurance as set forth in Section 11.1 of A201™-1997. Such insurance shall be written for not less than the following limits, or greater if required by law:

§ 8.1.1 Workers' Compensation and Employers' Liability meeting statutory limits mandated by state and federal laws. If (1) limits in excess of those required by statute are to be provided, or (2) the employer is not statutorily bound to obtain such insurance coverage or (3) additional coverages are required, additional coverages and limits for such insurance shall be as follows:

§ 8.1.2 Commercial General Liability, including coverage for Premises-Operations, Independent Contractors' Protective, Products-Completed Operations, Contractual Liability, Personal Injury, and Broad Form Property Damage (including coverage for Explosion, Collapse and Underground hazards):

\$2,000,000 Each Occurrence
\$5,000,000 General Aggregate
\$2,000,000 Personal and Advertising Injury
\$5,000,000 Products-Completed Operations Aggregate

- .1 The policy shall be endorsed to have the General Aggregate apply to this Project only.
- .2 Products and Completed Operations insurance shall be maintained for a minimum period of at least two (2) year(s) after the date of Substantial Completion.
- .3 The Contractual Liability insurance shall include coverage sufficient to meet the obligations in A201™-1997 under Section 3.18.

§ 8.1.3 Automobile Liability (owned, non-owned and hired vehicles) for bodily injury and property damage:
\$1,000,000 Each Accident

§ 8.1.4 Other coverage:

- (a) Umbrella Excess Liability coverage over the primary insurance or retention: \$10,000,000.
- (b) The Construction Manager's general liability, auto liability and excess/umbrella policies should include waivers of subrogation (excluding Pennsylvania Workers' Compensation), and shall list the Owner as additional insured.
- (c) Insurer shall have a AM Best Rating of B+ or better. A certificate of insurance evidencing this required coverage shall be issued. In addition, this insurance shall not be non-renewed, cancelled, or materially changed or allowed to expire without at least thirty (30) days advance written notice to the Owner's Representative.
- (d) If the Contract involves asbestos abatement, subcontractors' insurance coverages shall be specifically reviewed.

(If Umbrella Excess Liability coverage is required over the primary insurance or retention, insert the coverage limits. Commercial General Liability and Automobile Liability limits may be attained by individual policies or by a combination of primary policies and Umbrella and/or Excess Liability policies. If Project Management Protective Liability Insurance is to be provided, state the limits here.)

§ 8.2 INSURANCE REQUIRED OF THE OWNER

During both phases of the Project, the Owner shall purchase and maintain liability and property insurance, including waivers of subrogation, as set forth in Sections 11.2 and 11.4 of A201™-1997. Such insurance shall be written for not less than the following limits, or greater if required by law:

Evidence of required coverage shall be provided to the Construction Manager prior to the start of construction.

§ 8.2.1 Property Insurance:

Deductible Per Occurrence
Aggregate Deductible

§ 8.2.2 Boiler and Machinery insurance with a limit of:
(If not a blanket policy, list the objects to be insured.)

§ 8.3 PERFORMANCE BOND AND PAYMENT BOND

§ 8.3.1 The Construction Manager shall not furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder.

§ 8.3.2 (Paragraph deleted)