Pershing Hill Elementary School

Fort Meade, MD

Technical Report 1

Construction Project Management

October 5, 2009

Mitchell Reiners

Faculty Consultant: Dr. Magent

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Executive Summary

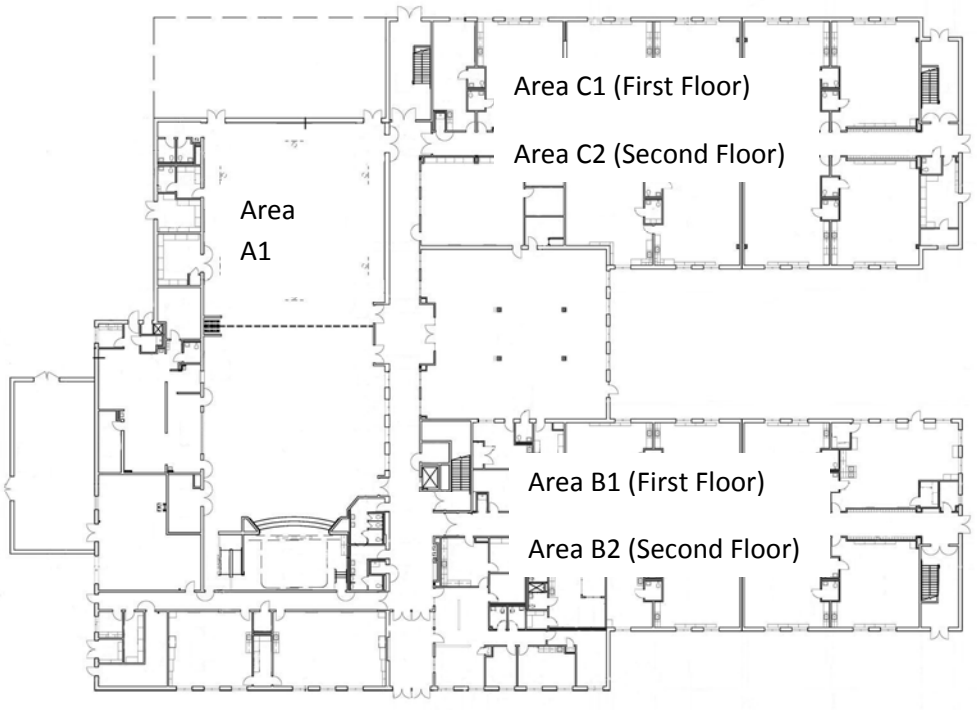
Pershing Hill Elementary School Replacement Project is the replacement of the existing school, which was built in 1960, and a consolidation with West Meade Elementary School at the same site. The state rated capacity of the existing school was 297 students, and the state rated capacity of the new school will be 733 students. The total costs to the owner are $15.1 million, and the construction costs are $13.3 million. Demolition of the existing school started on September 2, 2009 and substantial completion is scheduled for February 2011 with occupancy in August.

The project is being delivered using the multiple-prime approach, which is required for public projects, with Jacobs acting at the construction manager. The owner holds 15 lump sum contracts with the specialty contractors, in addition to the contracts with the architect and construction manager. Pershing Hill Elementary School is located entirely within an US army base (Fort Meade), which results in additional challenges.

During construction, the students from Pershing Hill ES will be relocated to Meade Heights ES. Because of this, and the amount of time between substantial completion and occupancy, there are no joint, dual, or phased occupancy requirements on this site.

Project Schedule Summary

A summary of the project schedule is located in Appendix A. The reinforced concrete footings will be poured in area B first, followed by area A and area C last. By sequencing the foundations in this manner, the contractor will be able to start on one part of the building and progress to the other side. The structural and finish sequences will follow the sequence A1, B1, C1, B2, C2 where the first floor is completed before work starts on the second floor. This also means that once one contractor is finished in area A, the next contractor can start. Since Area A is the largest, there is little chance that they will "catch up" while the previous contractor is working in areas B and C. A graphic display of the various sections of the building is shown below.



Building Systems Summary

Yes	No	Work Scope
X		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

Demolition

Demolition of the existing building was required, as the new school will be built on the same site. The existing building contained hazardous materials including lead paint, mercury in the thermostats, and asbestos between the face brick and CMU walls. The abatement was performed by the abatement prime contractor, Delaware Cornerstone Builders, and the other demolition by the demolition prime contractor, Pleasants Construction.

Structural Steel Frame

A composite slab is used where the second floor slab is 3” thick normal weight concrete reinforced with welded wire fabric over galvanized form deck. W16X26 joists are used in areas B and C with W10x15 joists used along the corridors on the second floor and 18KCS2 joists are used with W5X16 joists to support the roof. The roof deck is 1 ½” type ‘B’ galvanized metal

roof deck. Seven different sizes of HSS shaped columns are used. Erection of the structural steel will begin in area A, followed by areas B and C.

Cast in Place Concrete

The foundation system on this project is cast in place concrete. The slab on grade is typically 5” thick concrete reinforced with welded wire fabric over a vapor barrier and 4” of washed gravel, however it is 6” thick concrete at the mechanical room. The top of the footings typically lie 2’ below the slab. The footings are reinforced and vary widely in size (from 11 to 99 sqft in area), but only vary between 1’ and 1’-6” in thickness. The concrete on this project typically must have a compressive strength of 3000psi at 28 days, but all concrete exposed to weather must have 4500psi and be air entrained.

Precast Concrete

No large amounts of precast concrete are used on this project.

Mechanical System

The building is divided into 11 zones in which the temperature can be controlled. The mechanical room is located on the first floor, adjacent to the cafeteria. The mechanical system included 2 boilers, 46 fan coil units, 6 ductless split system units, 6 rooftop air handling units and 2 rooftop air handling units with energy recovery. All rooftop air handling units run on 480V-3 phase power.

Electrical System

The electrical system includes both 277/480V and 120/208V distribution. Both are three phase with four wires. There is an electrical room located on the first floor across the hall from the mechanical room, and four other electrical closets throughout the building. The main

switchboard carries a connected load of 1592.7 KVA and a demand load of 1276.7 KVA. An emergency intercom is available in each classroom.

There are 52 different lighting fixture types on this project. Most are 277 volt; however there are also some that run on 120 volts. Fluorescent fixtures are primarily used, but there are also HID, incandescent, and LED lights used for specific purposes. All interior lighting must comply with local codes and zoning requirements as well as NFPA 70 and NFPA 101.

Masonry

The concrete masonry shall have a minimum compressive strength of 1900 psi on the net area, and the brick shall have a minimum compressive strength of 3350 psi on the net area. Temporary scaffolding is used during the installation of the masonry. Masonry piers with vertical reinforcement are used which vary in size from 8”x16” to 19”x32” All piers are 100% solid (either solid block, or hollow block filled with 3000 psi grout).

Support of Excavation

Where possible the sides of the excavation will be sloped; however, where that is not possible excavation must be supported by shoring and bracing. Two sediment basins are used to collect water runoff from the site, and to prevent intrusion of water into the excavated areas. Following completion of the building, the western basin will be filled and paved over to form part of the loop where parents can drop off the students and the eastern basin will become part of the baseball diamond.

Curtain Wall

No large area of curtain wall is used on this project.

Project Cost Evaluation

The construction costs of Pershing Hill Elementary School totaled $13.3 million. For the 87,160 sqft building, this represents a cost of $153.11 per square foot. The total project costs totaled $15.1 million, representing a cost of $173.25 per square foot.

The parametric estimate performed using *D4Cost* estimated the cost of the building to be $11,800,087. This is lower than the actual cost by just over 10%, but does not contain demolition and abatement of the existing building. The *D4Cost* information can be found in Appendix B. The *D4Cost* estimate was based on Carlin Springs Elementary School, which was designed by the same architectural firm (Grimm and Parker) had a similar size (88,521 sqft) and also was two stories.

The total cost for the mechanical and plumbing bid package was $2,821,000 which corresponds to a cost of $32.37 per square foot. The total cost for the electrical bid package was $1,479,900 which corresponds to a cost of $16.98 per square foot. The total cost of the concrete bid package was $612,350 the total cost of the masonry bid package was $1,752,099 and the total cost of the steel bid package was $ 853,200. Combined, this gives the total cost of the structural system to be $3,217,649 which corresponds to a cost of $36.92 per square foot.

Using the RS Means 2009 data in Appendix C, it is possible to perform a square foot estimate for this building. The building is categorized as face brick with concrete block back up with steel frame. However, the building size is 87,160 sqft and RS Means only goes up to 65,000 sqft for elementary schools. Therefore it is necessary to extrapolate to obtain a square foot cost.

Since the average cost per square foot for a building like Pershing Hill Elementary School that is 60,000 sqft is $166.35 and the average cost per square foot for a building that is 65,000 sqft is $165.65 linear extrapolation leads to the conclusion that an 87,160 sqft building would cost $162.55 per square foot (before perimeter, height, or location adjustments).

The perimeter of Pershing Hill Elementary School is 1294 linear feet. It is possible to extrapolate the perimeter of the "base" building and the associated perimeter adjustment, but doing such would give a much larger perimeter adjustment than is appropriate, since the change in the perimeter adjustment is not linear. It is conservative to use the numbers from the 65,000 sqft building (which is the largest size recorded for elementary schools). Using them, the perimeter adjustment is found to reduce the cost by $13.30 per square foot. The height adjustment is much simpler; since Pershing Hill Elementary School has a 13 feet story height (where the base building has a 15 feet story height) the cost of the building is reduced by $2.90 per square foot.

With these adjustments taken into account, the cost of Pershing Hill Elementary School is estimated at $146.35 per square foot which corresponds to $12,755,866. $18,675 is added to that cost for common additives that are not included in the base building (for Pershing Hill Elementary School, this included a flagpole, kitchen cooler, food warmer, freezer, and the sound system). The costs of these additives are also found in RS Means, below the cost per square foot. When the location factor for its part of Maryland (.93) is taken into account this gives a final estimate of $11,880,323. This number is very close to the *D4Cost* estimate, which is expected, and is still lower than the actual construction costs.

These estimates are likely lower than the actual cost due to the special features of the building. Some of these features are purely decorative (such as the curved aluminum canopy and decorative brick) and others (such as the energy recovery units) add to the initial cost but lower the energy consumption of the building. Since *D4Cost* and RS Means only address upfront cost it can make these latter features seem less economical, while they can potentially save much more than their initial cost over the building's life cycle. Another possible contributor is that this is a prevailing wage job, which regulates the rate of pay for the prime contractors and establishes a minimum amount they need to pay their employees.

Site Plan of Existing Conditions

The site plans used by the contractors during the various phases of construction can be found in Appendix D. These plans were used to develop a site layout drawing for the temporary facilities on my own version of the site plan which can be found in Appendix E. The only neighboring structures are one story single family housing units for military members stationed at Ft. Meade.

Local Conditions

Pershing Hill Elementary School is located entirely within an US army base (Fort Meade). This results in challenges: for access for personnel, materials and equipment; coordinating with permitting authorities, as well as the authorities which have jurisdiction at the county level; and meeting additional contract requirements (e.g. in the event of a base lockdown). Anne Arundel County is very concerned with possible storm water runoff from construction sites. As such, two sediment control ponds are installed which will collect and trap the runoff.

The soil at this site is primarily brown silty sand near the surface and extending to 30 feet below the surface. Beneath the sand is brown elastic silt, lean clay, and fat clay. The bearing capacity of the site was found to be 2,500 psf during the test borings. Because of this, relatively deep fill will be required for the building support and significant settlement is expected in the northern portion of the building (leading to the recommendation of settlement plates at two locations and a waiting period prior to footing installation). The water table for this site was found at depths of 8 to 27 ft below grade, and generally dips down towards the North and East. Earthwork was recommended to be done between May and November to minimize problems with the weather and on-site soils. The contractors were advised that the eastern end of the site was used as a ‘burn pit’ about 50 years ago. However, no evidence of any burn pit was encountered during the geotechnical investigation.

The Anne Arundel County Millersville Landfill & Resource Recovery Facility is the only Anne Arundel facility equipped to accept payment, so if the waste shipment contains any debris which disposal needs to be paid for, it must be taken there. There is an annual service charge in

the amount of $275 in addition to the charge for the disposal. Solid waste costs $75 per load, while large, unusually difficult to handle items (including concrete) costs $200 per ton. The landfill does accept construction debris; however the county urges that material to be taken to private landfills. As such, it is preferable to hire a private company to handle garbage disposal on this project.

Client Information

The owner of this project is Anne Arundel County Public Schools. Pershing Hill Elementary was originally constructed in 1960 and serves elementary students from kindergarten through the fifth grade. This replacement project will replace the original school, and consolidate it with West Meade Elementary School at the same site. The state rated capacity of the existing school was 297 students, and the state rated capacity of the new school will be 733 students. However, West Meade Elementary School (which is consolidating with Pershing Hill Elementary School at the site) is projected to have 359 students this year and also serves pre-kindergarten students. During construction, the students from Pershing Hill ES will be relocated to Meade Heights ES. Because of this, there are no joint or dual occupancy requirements on this site, but it is still necessary to finish before the 2011-2012 school year starts.

Cost, schedule, quality and safety are all important to the owner. Because it is a public project, cost is very important and procuring additional funds can be difficult and time consuming if construction is over budget. Currently the project has appropriated $13,743,000 towards engineering, construction, and project support, of an approved $34,369,000 ($27 million of which is designated for construction), so there appears to be little risk of running over budget. Quality is also very important, due to the long period of time the building will likely be in use (the existing school was used for almost 50 years). Schedule is possibly the most flexible of the four main criteria for this project; currently substantial completion is scheduled for February 2011, but the school isn't scheduled for occupancy until August of 2011. The original schedule called for occupancy by August of 2010 with contract closeout in October of that year. The data from the csr found at http://www.aacps.org/planning/csr.pdf can also be found in Appendix F.

Project Delivery System

Pershing Hill Elementary School is being delivered using a traditional design-bid-build approach with a multiple prime contract structure in which Jacobs Facilities, Inc. is acting as the construction manager. Because it is a public school project, the multiple prime approach is mandated by law. An organizational chart showing the key project team members is shown in Appendix G with their role followed by organization, and the name of the key contact at the bottom. Lump sum contracts are shown with a solid black line, and key communication lines are shown with a solid red line. Because it was impractical to include all specialty contractors, a table listing them is shown in Appendix H.

All of the contracts are lump sum, and are held between the owner and the contractor. The specialty contractors won their contracts in a public bid, where the contract is awarded to the lowest qualified (defined as a company that has been in business for at least three years, and has completed at least three jobs of similar size and scope) bidder. The engineering contractors work as consultants to the architect, and the architect holds their contracts. The construction manager (Jacobs) and architect (Grimm and Parker) were chosen under professional service contracts. In this role, they make a presentation to the Anne Arundel County Public School Board every five years; if they are successful, they will be awarded a group of construction contracts over the next five year period.

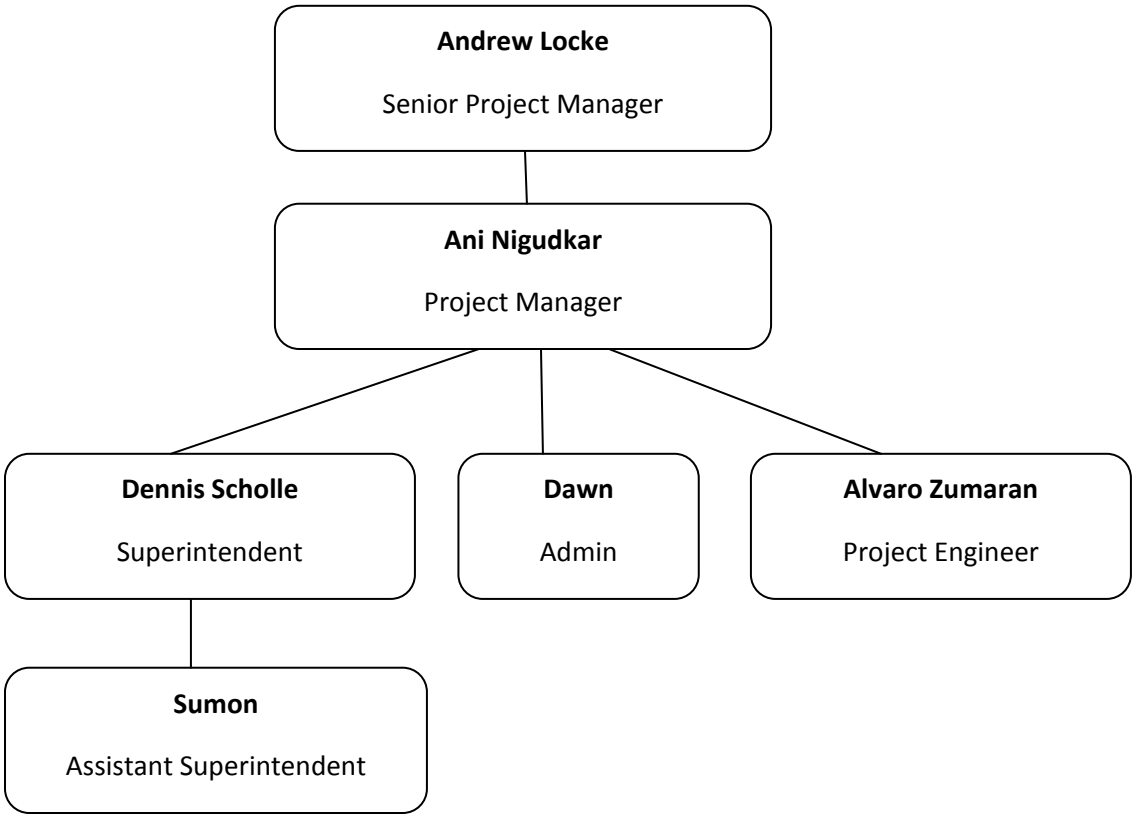
Jacobs acts as the construction manager, and while they do not hold any of the subcontractor's contracts they are required to organize the work and perform the other functions delegated to the owner under standard AIA contracts. In this capacity they must stay in constant

communication with the specialty contractors., architect, and owner. The specialty contractors are required to obtain performance bonds as well as insurance for general, automotive, and excess liability. They are also required to provide warranties for their work for at least a year following substantial completion.

The multiple-prime delivery system is appropriate for this project because it is required by law. The lump sum contracts are a good choice, as they give the owner a good idea of the final costs early (giving them time to procure the necessary funds; and possibly cancel or postpone construction if they cannot achieve funding) but require the construction documents to be complete before bidding starts. This makes it impossible to fast-track a project such as Pershing Hill Elementary School, but minimizes variance between the expected and final cost of the project. This could be taken as evidence that the budget is more important to the owner then the schedule.

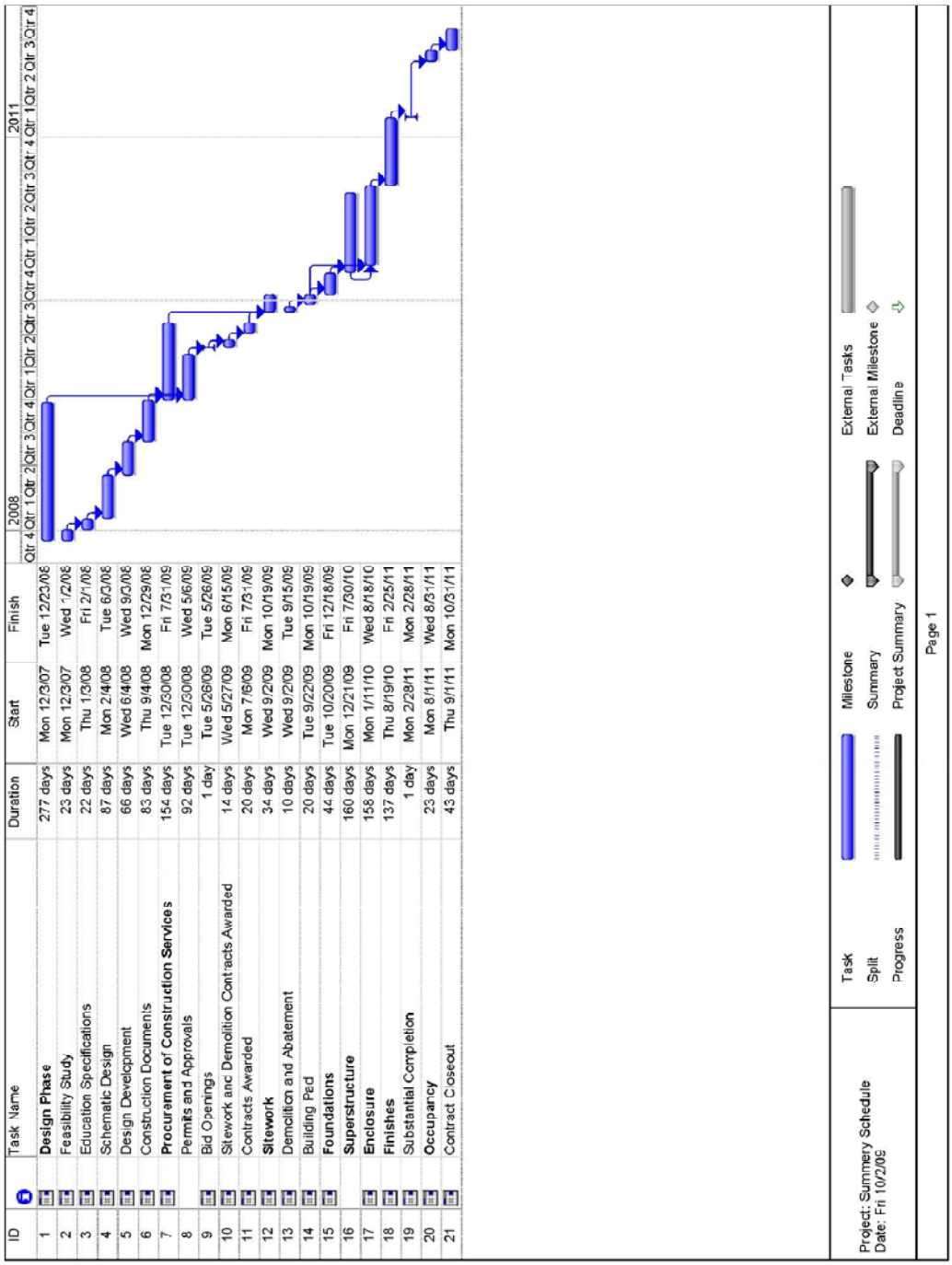
Staffing Plan

The Senior Project Manager for Jacobs Facilities is Andrew Locke, the Project Manager is Ani Nigudkar. Dawn is the On-Site Admin, Alvaro Zumaran is the Project Engineer. Dennis Scholle is the Superintendent, and Sumon is the assistant Superintendent. This is visually described below:



Appendix A

Summary Project Schedule



Appendix B

D4Cost Estimate

Thursday, October 1, 2009

Statement of Probable Cost

Pershing Hill ES - Jul 2009 - MD - Other

Prepared By:	Grimm + Parker Architects 1355 Beverly Road Ste 105 McLean, VA 22101 Fax:	Prepared For:	, Fax:
Building Sq. Size:	87160	Site Sq. Size:	1449210
Bid Date:	7/31/2009	Building use:	Educational
No. of floors:	2	Foundation:	CON
No. of buildings:	1	Exterior Walls:	MAS
Project Height:	43	Interior Walls:	GYP
1st Floor Height:	14	Roof Type:	BUP
1st Floor Size:	56340	Floor Type:	CON
		Project Type:	NEW

Division		Percent	Sq. Cost	Amount
00	**Bidding Requirements**	**4.08**	**4.86**	**423,346**
	Bonds & Certificates	1.41	1.67	145,981
	General Conditions	2.67	3.18	277,365
01	**General Requirements**	**4.83**	**5.75**	**501,517**
	Allowances	4.21	5.01	437,002
	Coordination	0.05	0.05	4,709
	Construction Facilities & Temporary Controls	0.08	0.09	8,005
	Materials & Equipment	0.36	0.43	37,673
	Maintenance	0.14	0.16	14,127
03	**Concrete**	**3.99**	**4.75**	**414,399**
	Concrete	3.45	4.11	357,890
	Precast	0.54	0.65	56,509
04	**Masonry**	**15.88**	**18.91**	**1,648,177**
	Masonry	15.88	18.91	1,648,177
05	**Metals**	**9.12**	**10.86**	**946,524**
	Metals	8.08	9.62	838,216
	Fabricatios	1.00	1.19	103,600
	Expansion Control	0.05	0.05	4,709
06	**Wood & Plastics**	**1.81**	**2.16**	**188,363**
	Rough Carpentry	0.91	1.08	94,182
	Finish Carpentry	0.91	1.08	94,182
07	**Thermal & Moisture Protection**	**7.41**	**8.82**	**768,992**
	Damproofing	0.01	0.02	1,413
	Manufactured Roofing & Siding	4.99	5.94	517,998
	Membrane Roofing	2.27	2.70	235,454
	Joint Sealers	0.14	0.16	14,127
08	**Doors & Windows**	**7.41**	**8.83**	**769,463**
	Doors & Windows	1.72	2.05	178,945
	Special Doors	0.20	0.24	20,720
	Entrances & Storefronts	4.54	5.40	470,908
	Special Windows	0.95	1.13	98,891
09	**Finishes**	**10.80**	**12.86**	**1,120,760**
	Finishes	4.99	5.94	517,998
	Tile	0.45	0.54	47,091
	Terrazzo	0.68	0.81	70,636
	Acoustical Treatment	1.81	2.16	188,363
	Wood Flooring	0.32	0.38	32,964
	Relilient Flooring	0.86	1.03	89,472
	Carpet	0.86	1.03	89,472
	Special Flooring	0.14	0.16	14,127
	Painting	0.68	0.81	70,636
10	**Specialties**	**1.58**	**1.88**	**163,876**
	Visual Display Board	0.50	0.59	51,800

	Compartments & Cubicles	0.00	0.01	471
	Louvers & Vents	0.01	0.01	942
	Flagpoles	0.14	0.16	14,127
	Identifying Devices	0.18	0.22	18,836
	Lockers	0.32	0.38	32,964
	Fire Protection Specialties	0.02	0.03	2,355
	Operable Partitions	0.05	0.06	5,651
	Storage Shelving	0.05	0.05	4,709
	Toilet & Bath Accessories	0.31	0.37	32,022
11	**Equipment**	**1.68**	**2.00**	**174,236**
	Theatre & Stage	0.15	0.17	15,069
	Instrumental	0.15	0.18	16,011
	Audio-Visual	0.11	0.13	11,302
	Food Service	0.91	1.08	94,182
	Residential	0.02	0.02	1,884
	Athletic, Recreational & Therapeutic	0.34	0.41	35,789
12	**Furnishings**	**2.88**	**3.43**	**298,555**
	Manufactured Casework	2.77	3.30	287,254
	Furniture & Accessories	0.11	0.13	11,302
14	**Conveying Systems**	**0.36**	**0.43**	**37,673**
	Elevators	0.36	0.43	37,673
15	**Mechanical**	**16.83**	**20.04**	**1,746,502**
	Mechanical	16.83	20.04	1,746,502
16	**Electrical**	**11.34**	**13.51**	**1,177,269**
	Electrical	11.34	13.51	1,177,269
Total Building Costs		**100.00**	**119.09**	**10,379,653**
02	**Site Work**	**100.00**	**0.98**	**1,420,435**
	Site Preperation	0.24	0.00	3,348
	Earthwork	21.89	0.21	310,870
	Paving & Surfacing	24.75	0.24	351,522
	Utility Piping Materials	35.35	0.35	502,174
	Site Improvement	7.14	0.07	101,391
	Landscaping	10.64	0.10	151,130
Total Non-Building Costs		**100.00**	**0.98**	**1,420,435**
Total Project Costs		--	--	**11,800,087**

Building Division Notes

Pershing Hill ES - Jul 2009 - MD - Other

Concrete	Formwork, reinforcement, accessories, cast-in-place, curing.
Masonry	Masonry & grout, accessories, unit.
Metals	Structural framing, joists, decking.
Doors & Windows	Metal doors & frames, wood & plastic doors, door opening assemblies.
Finishes	Metal support systems, lath & plaster, gypsum board.
Mechanical	Basic materials & methods, insulation, fire protection, plumbing, HVAC, heat generation, refrigeration, heat transfer, air distribution, controls, testing, adjusting & balancing.
Electrical	Basic materials & methods, power generation - built-up systems, medium voltage distribution, lighting, special systems, communications, electric resistance heating, controls, testing.

Project Notes

Pershing Hill ES - Jul 2009 - MD - Other

Estimate Based On Case: EU000527 - Education & Training Building
Location: DE - Wilmington
Date: Mar 1997
Building Size: 85,000

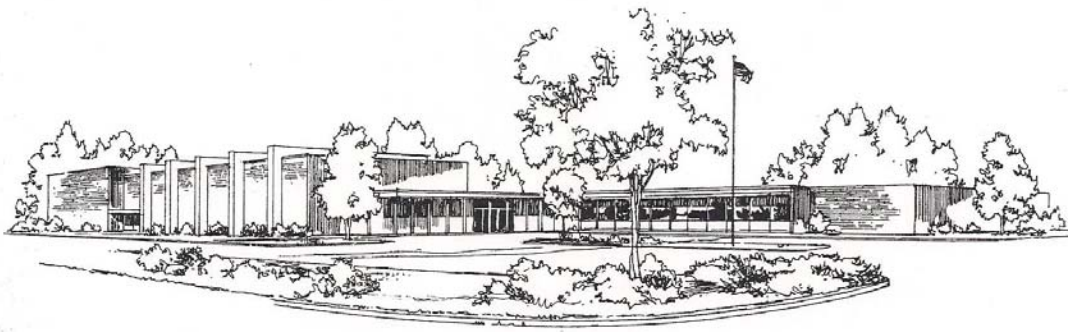
Estimate Based On Case: EU030522 - Carlin Springs Elementary School
Location: VA - Arlington
Date: Apr 2000
Building Size: 88,521

* Arlington, Virginia
* Construction Period June 2000 to September 2001.

Appendix C

RS Means Data

COMMERCIAL/INDUSTRIAL/INSTITUTIONAL | **M.560** | **School, Elementary**



Costs per square foot of floor area

Exterior Wall	S.F. Area	25000	30000	35000	40000	45000	50000	55000	60000	65000
	L.F. Perimeter	900	1050	1200	1350	1510	1650	1800	1970	2100
Face Brick with Concrete Block Back-up	Steel Frame	171.80	170.15	168.90	168.05	167.60	166.80	166.35	166.35	165.65
	Bearing Walls	163.25	161.60	160.40	159.55	159.10	158.30	157.85	157.85	157.15
Stucco on Concrete Block	Steel Frame	164.50	163.00	161.95	161.25	160.80	160.10	159.75	159.70	159.10
	Bearing Walls	155.95	154.50	153.45	152.70	152.25	151.60	151.25	151.25	150.65
Decorative Concrete Block	Steel Frame	164.45	162.95	161.85	161.10	160.65	159.95	159.55	159.55	158.95
	Bearing Walls	160.40	158.95	157.80	157.05	156.60	155.95	155.55	155.55	154.90
Perimeter Adj., Add or Deduct	Per 100 L.F.	4.30	3.55	3.05	2.70	2.40	2.20	1.95	1.80	1.65
Story Hgt. Adj., Add or Deduct	Per 1 Ft.	1.55	1.50	1.50	1.45	1.45	1.45	1.45	1.50	1.45

***For Basement**, add $24.20 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 $78.90 to $200.65 per S.F.

Common additives

Description	Unit	$ Cost
Bleachers, Telescoping, manual		
To 15 tier	Seat	115 - 160
16-20 tier	Seat	235 - 288
21-30 tier	Seat	249 - 300
For power operation, add	Seat	45.50 - 71.50
Carrels Hardwood	Each	660 - 990
Clock System		
20 room	Each	16,000
50 room	Each	39,100
Emergency Lighting, 25 watt, battery operated		
Lead battery	Each	282
Nickel cadmium	Each	805
Flagpoles, Complete		
Aluminum, 20' high	Each	1650
40' high	Each	3475
Fiberglass, 23' high	Each	1775
39'-5" high	Each	3325
Kitchen Equipment		
Broiler	Each	4025
Cooler, 6 ft. long, reach-in	Each	4925

Description	Unit	$ Cost
Kitchen Equipment, cont.		
Dishwasher, 10-12 racks per hr.	Each	4950
Food warmer, counter, 1.2 KW	Each	735
Freezer, 44 C.F., reach-in	Each	3725
Ice cube maker, 50 lb. per day	Each	1750
Range with 1 oven	Each	2700
Lockers, Steel, single tier, 60" to 72"	Opening	191 - 310
2 tier, 60" to 72" total	Opening	107 - 141
5 tier, box lockers	Opening	65 - 83.50
Locker bench, lam. maple top only	L.F.	21
Pedestals, steel pipe	Each	63.50
Seating		
Auditorium chair, all veneer	Each	238
Veneer back, padded seat	Each	288
Upholstered, spring seat	Each	277
Classroom, movable chair & desk	Set	65 - 120
Lecture hall, pedestal type	Each	227 - 680
Sound System		
Amplifier, 250 watts	Each	2350
Speaker, ceiling or wall	Each	191
Trumpet	Each	365

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Important: See the Reference Section for Location Factors

Model costs calculated for a 1 story building with 15′ story height and 45,000 square feet of floor area

School, Elementary

				Unit	Unit Cost	Cost Per S.F.	% Of Sub-Total
A. SUBSTRUCTURE							
1010	Standard Foundations	Poured concrete; strip and spread footings		S.F. Ground	5.03	5.03	
1020	Special Foundations	N/A		–	–	–	
1030	Slab on Grade	4" reinforced concrete with vapor barrier and granular base		S.F. Slab	4.74	4.74	12.1%
2010	Basement Excavation	Site preparation for slab and trench for foundation wall and footing		S.F. Ground	.17	.17	
2020	Basement Walls	4′ foundation wall		L.F. Wall	78	4.45	
B. SHELL							
	B10 Superstructure						
1010	Floor Construction	N/A		–	–	–	
1020	Roof Construction	Metal deck on open web steel joists		S.F. Roof	5.19	5.19	4.4 %
	B20 Exterior Enclosure						
2010	Exterior Walls	Face brick with concrete block backup	*70% of wall*	S.F. Wall	30.85	10.87	
2020	Exterior Windows	Steel outward projecting	*25% of wall*	Each	696	4.57	13.5%
2030	Exterior Doors	Metal and glass	*5% of wall*	Each	3215	.57	
	B30 Roofing						
3010	Roof Coverings	Single-ply membrane with flashing; polyisocyanurate insulation		S.F. Roof	7.78	7.78	
3020	Roof Openings	N/A		–	–	–	6.5%
C. INTERIORS							
1010	Partitions	Concrete block	*20 S.F. Floor/L.F. Partition*	S.F. Partition	8.76	4.38	
1020	Interior Doors	Single leaf kalamein fire doors	*700 S.F. Floor/Door*	Each	875	1.25	
1030	Fittings	Toilet partitions		S.F. Floor	2.03	2.03	
2010	Stair Construction	N/A		–	–	–	
3010	Wall Finishes	75% paint, 15% glazed coating, 10% ceramic tile		S.F. Surface	4.08	4.08	21.0%
3020	Floor Finishes	65% vinyl composition tile, 25% carpet, 10% terrazzo		S.F. Floor	6.87	6.87	
3030	Ceiling Finishes	Mineral fiber tile on concealed zee bars		S.F. Ceiling	6.38	6.38	
D. SERVICES							
	D10 Conveying						
1010	Elevators & Lifts	N/A		–	–	–	
1020	Escalators & Moving Walks	N/A		–	–	–	0.0 %
	D20 Plumbing						
2010	Plumbing Fixtures	Kitchen, bathroom and service fixtures, supply and drainage	*1 Fixture/625 S.F. Floor*	Each	6394	10.23	
2020	Domestic Water Distribution	Gas fired water heater		S.F. Floor	.48	.48	9.8%
2040	Rain Water Drainage	Roof drains		S.F. Roof	1	1	
	D30 HVAC						
3010	Energy Supply	Oil fired hot water, wall fin radiation		S.F. Floor	8.73	8.73	
3020	Heat Generating Systems	N/A		–	–	–	
3030	Cooling Generating Systems	N/A		–	–	–	17.9%
3050	Terminal & Package Units	Split systems with air cooled condensing units		S.F. Floor	12.60	12.60	
3090	Other HVAC Sys. & Equipment	N/A		–	–	–	
	D40 Fire Protection						
4010	Sprinklers	Sprinklers, light hazard		S.F. Floor	2.33	2.33	
4020	Standpipes	Standpipe		S.F. Floor	.30	.30	2.2%
	D50 Electrical						
5010	Electrical Service/Distribution	800 ampere service, panel board and feeders		S.F. Floor	1.41	1.41	
5020	Lighting & Branch Wiring	High efficiency fluorescent fixtures, receptacles, switches, A.C. and misc. power		S.F. Floor	9.91	9.91	
5030	Communications & Security	Addressable alarm systems, internet wiring, communications systems and emergency lighting		S.F. Floor	3.37	3.37	12.4%
5090	Other Electrical Systems	Emergency generator, 15 kW		S.F. Floor	.08	.08	
E. EQUIPMENT & FURNISHINGS							
1010	Commercial Equipment	N/A		–	–	–	
1020	Institutional Equipment	Chalkboards		S.F. Floor	.13	.13	
1030	Vehicular Equipment	N/A		–	–	–	0.1 %
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	118.93	**100%**
	CONTRACTOR FEES (General Requirements: 10%, Overhead: 5%, Profit: 10%)				25%	29.76	
	ARCHITECT FEES				7%	10.41	
					Total Building Cost	**159.10**	

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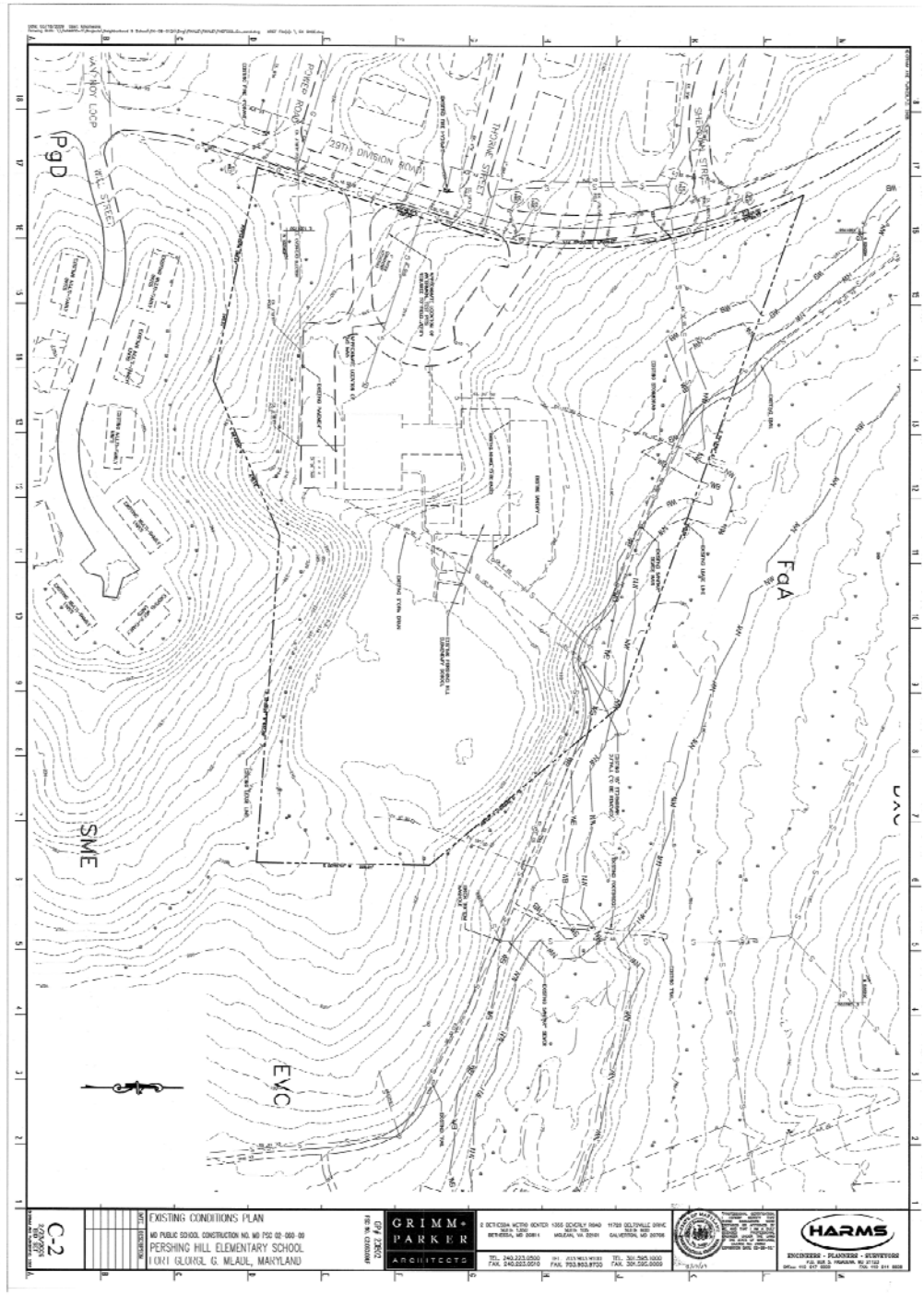
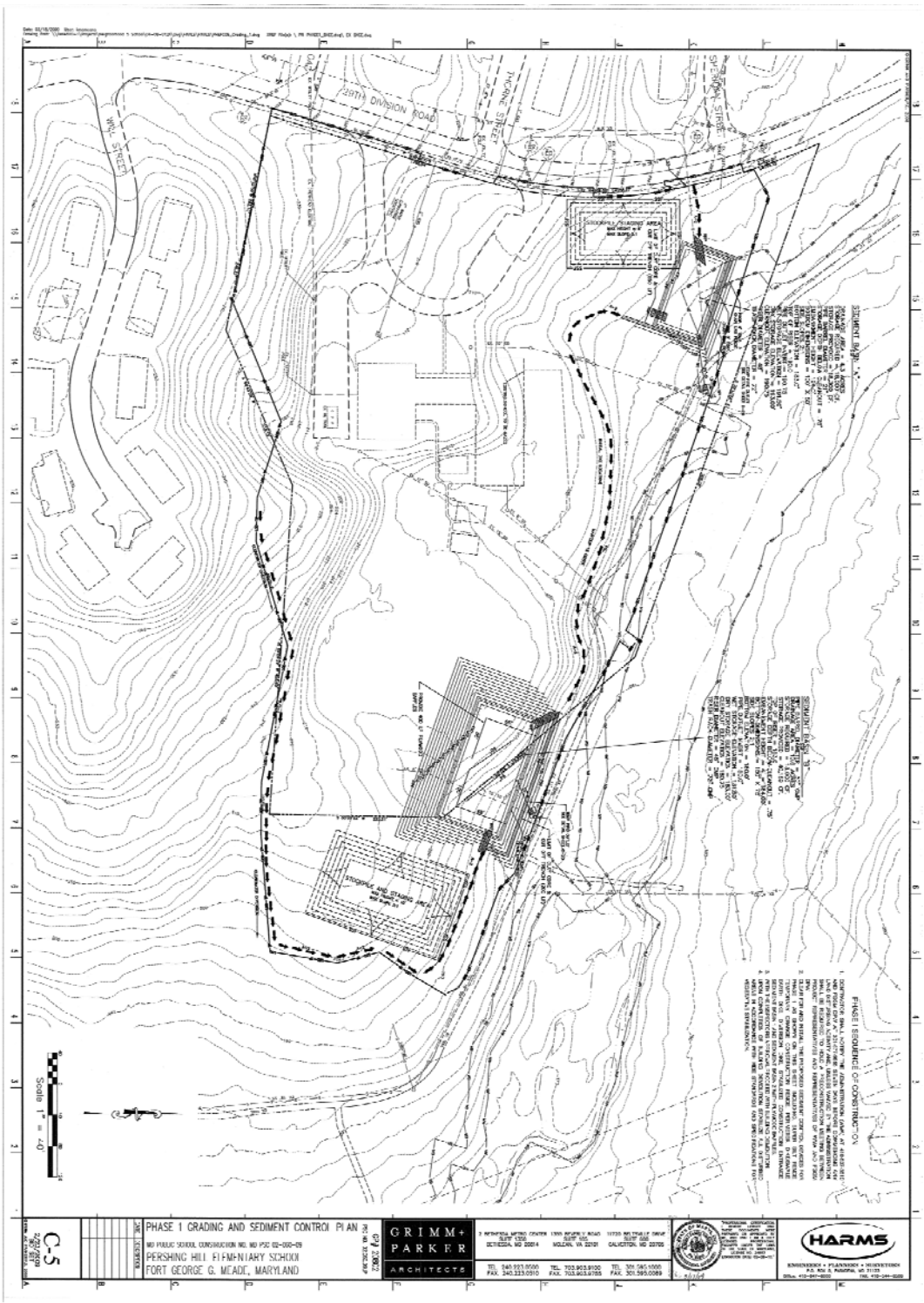
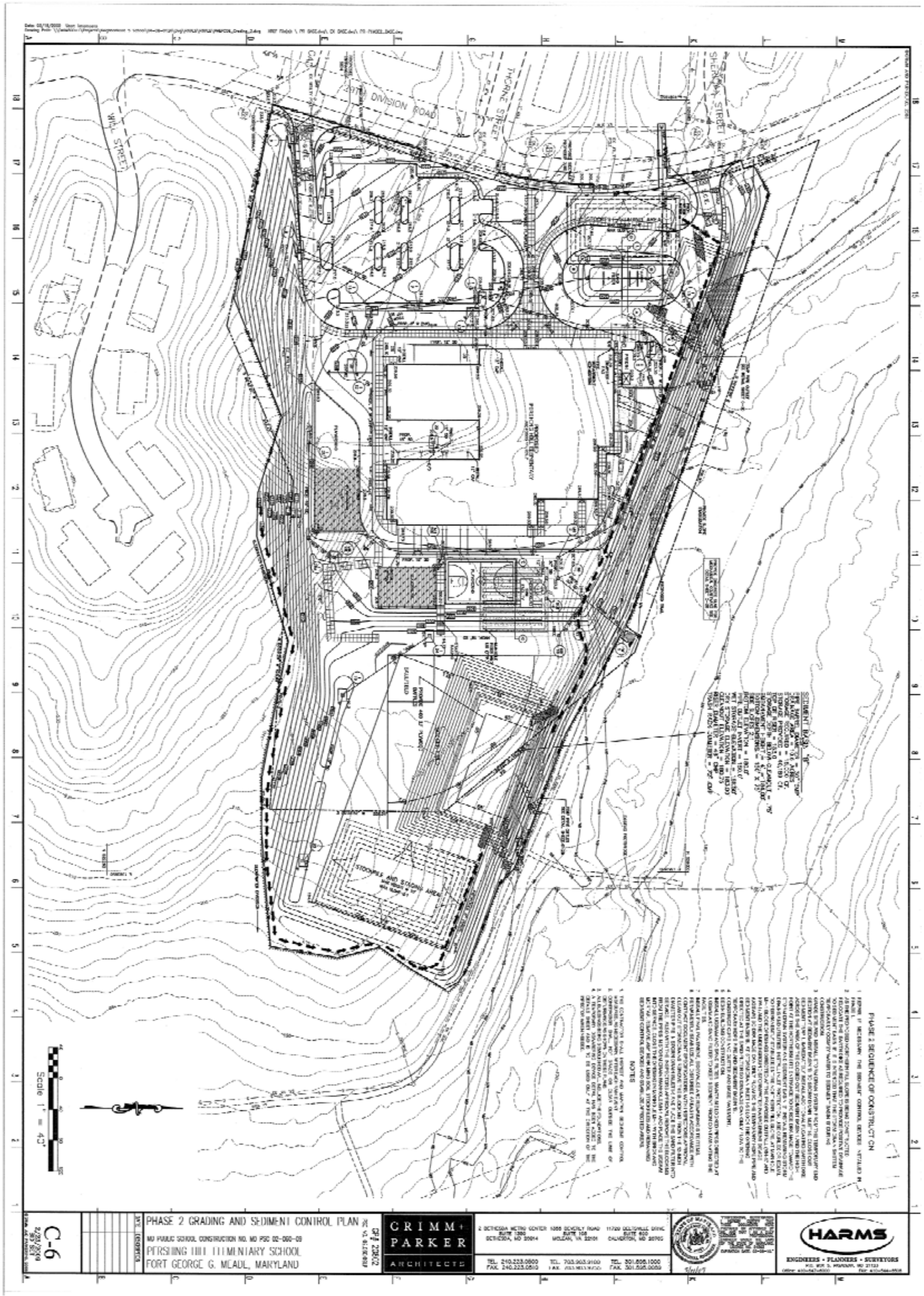
Appendix D

Site Plans used by Contractor

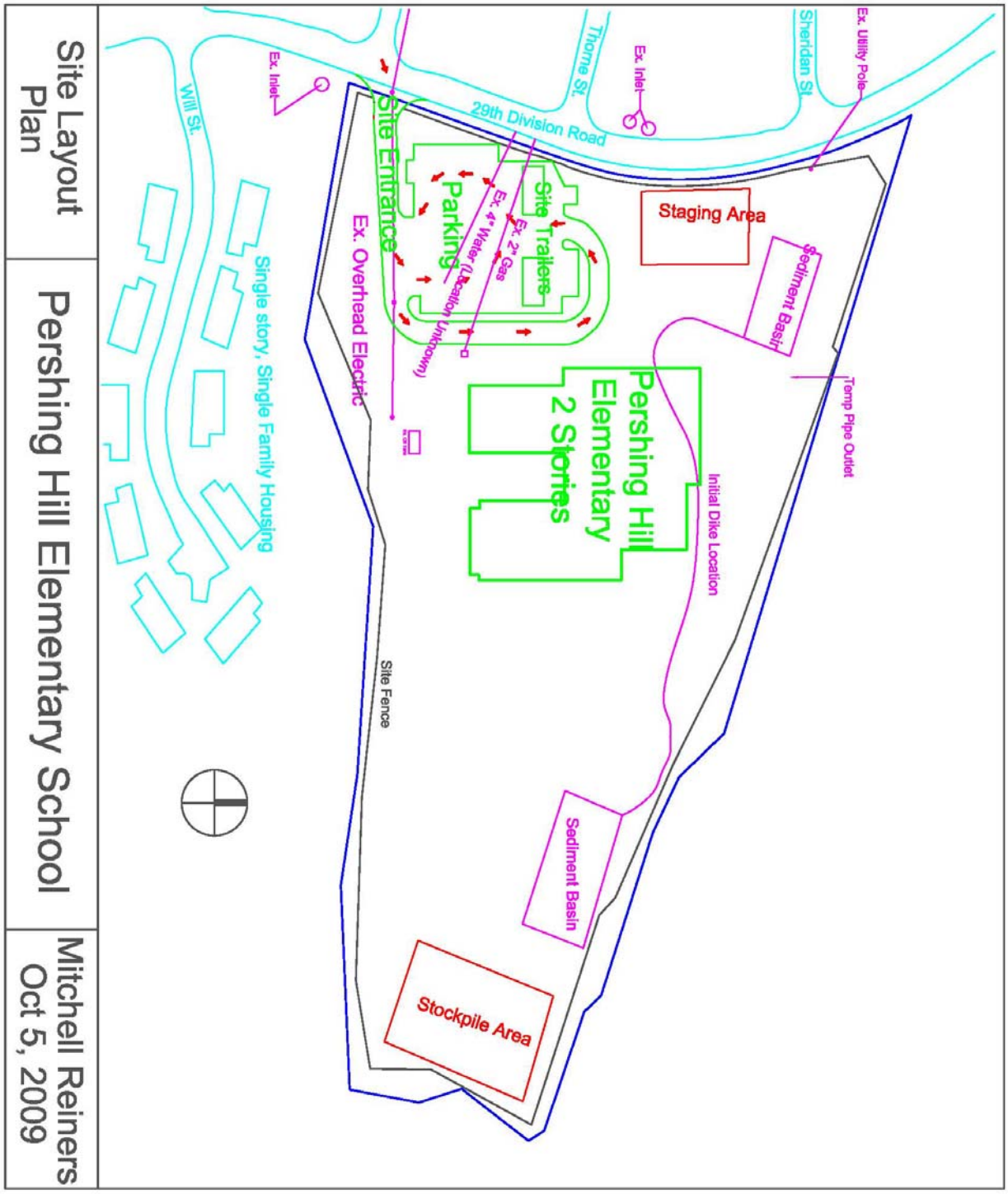



EARTH DIVISION ROAD
WAL STREET
SEDIMENT BASIN "A"
SEDIMENT BASIN "B"
STOCKPILE AND STAGING AREA
PHASE I SEQUENCE OF CONSTRUCTION
Scale 1" = 40'
C-5
PHASE 1 GRADING AND SEDIMENT CONTROL PLAN
MD PUBLIC SCHOOL CONSTRUCTION NO. MD P32 02-050-09
PERSHING HILL ELEMENTARY SCHOOL
FORT GEORGE G. MEADE, MARYLAND
GRIMM+ PARKER
ARCHITECTS
HARMS


PHASE 2 GRADING AND SEDIMENT CONTROL PLAN
MD PUBLIC SCHOOL CONSTRUCTION NO. MD PSC 02-060-09
PERSHING HILL ELEMENTARY SCHOOL
FORT GEORGE G. MEADE, MARYLAND
C-6
GRIMM + PARKER
ARCHITECTS
HARMS
ENGINEERS • PLANNERS • SURVEYORS
Scale 1" = 43'
PHASE 2 SEQUENCE OF CONSTRUCTION
NOTES
SEDIMENT BASIN "B"
STOCKPILE AND STAGING AREA
WILL STREET
29TH DIVISION ROAD
THORNE STREET
SHERIDAN STREET

Appendix E

Site Layout Drawing



Appendix F

CSR Data from AACPS.org

Pershing Hill ES - Replacement

Administrative Data	
Architect:	Grimm and Parker
General Contractor:	Construction Manager: Jacobs Facilities
Phase of Work:	Construction

Bulletin Board

Vital Statistics	Before	After
State Rated Capacity	297	733
Gross Square Footage	39,200	82,771

Scope of Work

Replacement school consolidating Pershing Hill ES and West Meade ES at this site.

Current Status

Abatement and Demolition Bid Package and separate Construction Bid Package were advertised on April 1, 2009. Bids opened May 26, 2009. Construction started June 15, 2009. School has been relocated to Meade Heights ES. Abatement begins July 6, 2009.

Area of Concern

MDE permit approval pending.

Project Schedule	Original Schedule	Current Schedule	Actual
Education Specifications	Jan-08	Jan-08	Feb-08
Feasibility Study	Dec-07	Dec-07	Dec-07
Schematic Design	May-08	May-08	May-08
Design Development	Aug-08	Aug-08	Aug-08
Construction Documents	Oct-08	Dec-08	Dec-08
Permits and Approvals	Dec-08	Apr-09	
Bid Opening	Feb-09	May-09	May-09
Start Construction	Mar-09	Jun-09	Jun-09
Occupancy	Aug-10	Aug-11	
Contract Closeout	Oct-10	Oct-11	

Fiscal Data	Approved BoE Program	Approved AACo Program	Current Appropriation	Encumbered
Plans & Engineering	$2,392,000	$2,392,000	$2,392,000	$ 1,081,168
Construction	27,293,000	27,293,000	10,917,200	0
FF&E	2,515,000	2,515,000	0	0
Project Support	2,169,000	2,169,000	433,800	982
Total	$34,369,000	$34,369,000	$13,743,000	$1,082,150

Change Order Summary	Cost	Remarks
Construction Related		
User Request		
Total		

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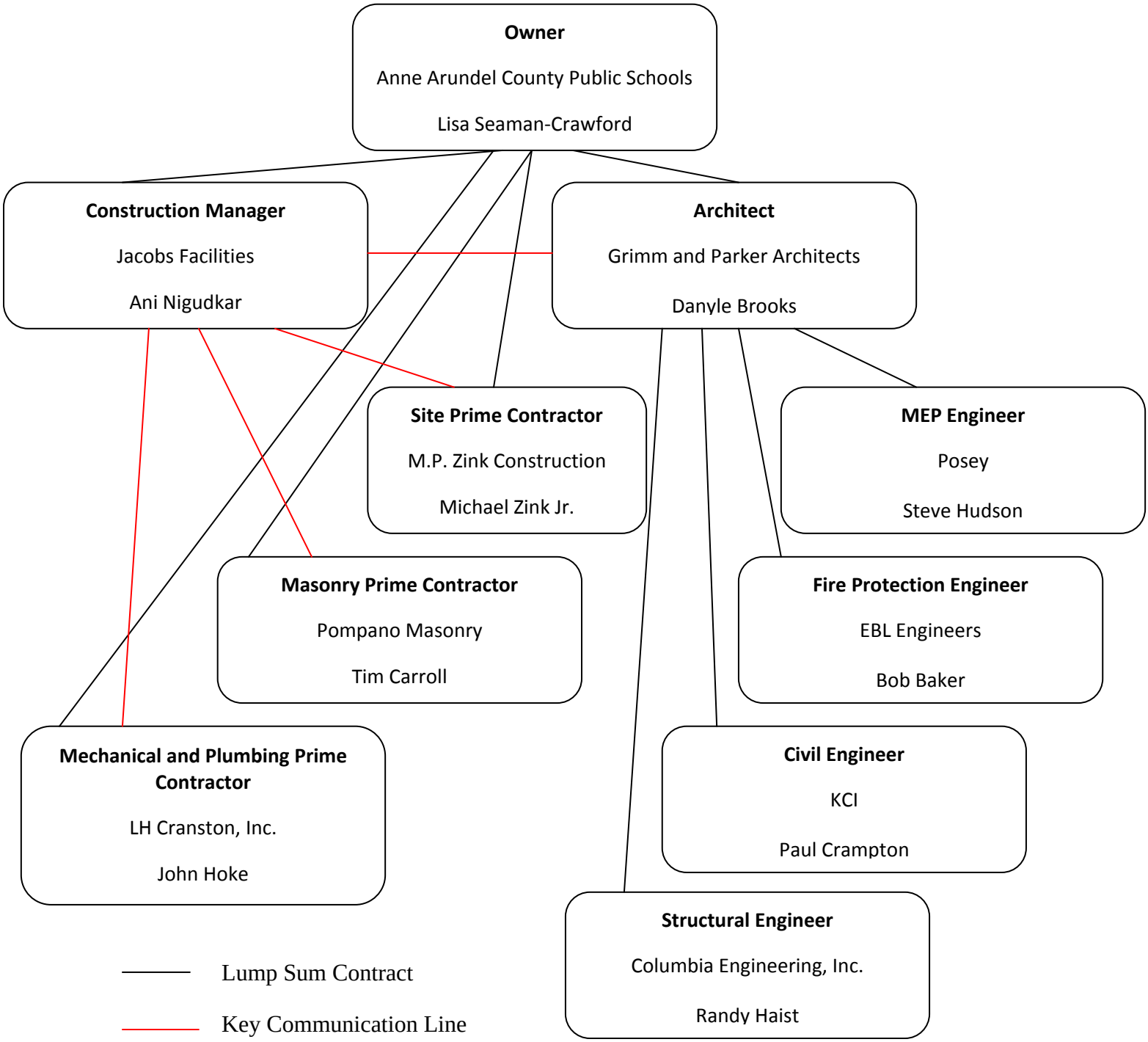
Appendix G

Project Organizational Chart



Appendix H

List of Specialty Contractors

Role	Company	Key Contact
Site Prime Contractor	M. P. Zink Construction	Michael Zink Jr.
Abatement Prime Contractor	Delaware Cornerstone Builders	KC Goel
Demolition Prime Contractor	Pleasants Construction	Mark Czarniak
Concrete Prime Contractor	Canyon Contracting	Tom Hall
Masonry Prime Contractor	Pompano Masonry	Tim Carroll
Steel Prime Contractor	Kinsley Manufacturing	Justin Hess
General Works Prime Contractor	Hancock & Albanese, Inc.	Mark Nolan
Roofing Prime Contractor	J&K Roofing	Dominic
Windows Prime Contractor	Spear Window	Donny Eckert
Kitchen Equipment Prime Contractor	Singer Equipment	Mark Woolcock
Casework Prime Contractor	Steel Products	Ed Joholske
Structural Wiring Prime Contractor	Wire Solutions	Brandon Weaver
Mechanical & Plumbing Prime Contractor	LH Cranston, Inc.	John Hoke
Fire Protection Prime Contractor	Kennedy Fire Protection	Rick Pensinger
Electrical Prime Contractor	Key Systems Electrical	Gary Rhinehart