# 1. TABLE OF CONTENTS

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This feasibility study was conducted for Montgomery County Public Schools (MCPS) by The Lukmire Partnership Architects. Arcola Elementary School is located at 1820 Franwall Avenue, Silver Spring, Maryland 20902. The work was performed under the direction of the MCPS Department of Facilities Management’s Division of Construction.

FEASIBILITY STUDY PARTICIPANTS:

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Wendy Smith  Arcola ES Staff  Peter Walderhaug  Neighbor
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Melissa Robbins  Arcola ES Teacher  Hillary Sprayregen  Neighbor
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Kathleen Ager  Arcola ES Teacher
Kimberly Bryant  Arcola ES Teacher
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Katie McKnight  Arcola ES Teacher
Linda Kosah  Arcola ES Teacher
Monica Taylor  Arcola ES Teacher
Mikel Brown  Arcola ES Teacher
Stacy Frank  Neighbor
Bernard Greene  Neighbor
Jon Moser  Neighbor
Tina Moser  Neighbor
Jesse Arbogast  Neighbor
3. EXECUTIVE SUMMARY

A. PURPOSE

The purpose of this feasibility study is to explore design alternatives and related costs for an addition to Arcola Elementary School. Two design alternatives are analyzed in response to the Educational Specification, objectives of the school and community, physical limitations of the existing building and site, and applicable codes and regulations. A preferred option as chosen by the Feasibility Study participants is designated as Option 1.

B. HISTORY

Arcola Elementary School is located at 1820 Franwall Avenue, Silver Spring, Maryland 20902. The school was originally constructed in 2007. Student enrollment during the 2010 - 2011 school year was 618 and the capacity is 502. The existing structure is 85,469 square feet. There are 75 existing parking spaces. The existing site is 5 acres and an adjacent 5-acre parcel owned by MNCPPC is used as the school’s playing fields.

C. METHODOLOGY

An evaluation of the existing school was conducted by the design team of architects and engineers to understand the potentials and constraints of the school in order to plan an addition, complying with the Educational Specifications and Summary of Space Requirements, dated February 23, 2011. The methodology employed included a review of all available data and drawings related to the existing school and site, visits to the site, and meetings with the Feasibility Study participants and MCPS staff. The design team developed multiple options illustrating expansion options and narrowed the choices based on the objectives of the Educational Specifications, impacts on school operation, physical limitation of the school and implications of construction phasing.

D. SUMMARY

Arcola Elementary School has both a one story and two-story portion. The existing structure is constructed of non-combustible materials and is sprinklered. Exterior walls and interior partitions are primarily masonry. The structural system consists of steel framing with steel roof joists, elevated concrete slabs on metal deck and concrete floor slabs on grade. The site topography varies from an elevation of 402.00 at the north east corner of the site to 378.00 at the south west corner of the site, a 24’ difference. The bus loop is accessed from Channing Drive and the parent drop-off loop is accessed from Franwall Avenue. Currently, the site accommodates 75 parking spaces. All of the options include an additional 8 spaces located in the existing bus loop. Existing play fields will remain as is, however, the existing hard
3. EXECUTIVE SUMMARY

play area will be reduced in size slightly to accommodate the addition. Storm water management improvements and modifications will be required to accommodate the expanded building and revised site conditions.

Two options that meet the program requirements, along with their corresponding cost estimates, are presented in the Description of this Study.

E. COMMON DESIGN ELEMENTS

Both options have the following common elements:
- Adherence to the MCPS educational specifications
- Existing softball fields are to remain
- Hard play area will be reduced slightly
- Additional parking spaces will be added to the existing bus loop

F. UNIQUE ELEMENTS OF OPTION 1:

- This option has three added classrooms and one small group instruction room on the first floor.
- This option has two added classrooms, one dual purpose room and one small group instruction room on the second floor.
- This option requires windows on the south wall of the “Linkages for Learning” space to be infilled.

Option 1 – Site 543,000
Building 2,547,000
Total $ 3,090,000
3. EXECUTIVE SUMMARY

G. UNIQUE ELEMENTS OF OPTION 2:

- This option is three stories tall and requires the addition of an elevator.
- This option has three added classrooms on the first floor.
- This option has two added classrooms and one dual purpose room on the second floor.
- This option has two small group instruction rooms on the third floor.

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3. EXECUTIVE SUMMARY

H. COMPARATIVE ANALYSIS

Option 1 - New construction
First Floor = 5,149 SF
Option 1 - Renovation
First Floor - 800 SF

Option 2 - New Construction
First Floor = 4,807 SF
Option 2 - Renovation
First Floor - 800 SF

Option 1 - New Construction
Second Floor = 5,149 SF

Option 2 - New Construction
Second Floor = 4,679 SF

Total New Construction = 10,298 SF

Existing Building
First Floor = 33,650 SF
Second Floor = 51,819 SF
Total Building Area = 85,469 SF

Option 2 - New Construction
Third Floor = 2,506 SF

Total New Construction = 11,992 SF

OPTION 1
First Floor = 5,149 SF
Second Floor = 5,149 SF
Total Building Area = 95,767 SF

Option 2
First Floor = 4,807 SF
Second Floor = 4,679 SF
Third Floor = 2,506 SF
Total Building Area = 97,461 SF
3. EXECUTIVE SUMMARY

I. CONCLUSIONS AND RECOMMENDATIONS

Both of the options evaluated have the ability to resolve the programmatic deficiencies of the existing school, however, Option 2 requires 3 floors, a new elevator and isolates the two small group instruction rooms on the third floor. In accordance with the consensus of the Feasibility Study participants and MCPS staff, it is recommended that Option 1, as depicted herein, and its associated site improvements, be implemented. The overall function of the building and site is improved and all MCPS Program Requirements are fulfilled.
3. EXECUTIVE SUMMARY

J. SUMMARY TABLE AND COST COMPARISON - OPTIONS 1 AND 2

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PDF/FEASIBILITY STUDY COST OUTLINE (000's)

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4. PROJECT SCOPE AND METHODOLOGY

A. SCOPE AND INTENT

The purpose of this Feasibility Study is to evaluate alternates for the addition to Arcola Elementary School in order to provide Montgomery County Public Schools with sufficient data to determine the necessary scheduling and funding. Cost estimates for each option have been developed as a basis for comparison in the evaluation process. The Lukmire Partnership was selected to conduct the study.

The student enrollment during the 2010-2011 school year in grades Kindergarten to 5 was 618 and the capacity is 502. The addition will increase the capacity to 694. The existing one and two story structure is 85,469 square feet on a site of 5 acres.

The design team’s scope of work included an evaluation of the existing school and site with respect to the requirements of the Educational Specification and applicable codes and regulations. The objective of the evaluation was to determine the feasibility of adding space to the existing school and preparing design alternatives to provide a learning environment that is conductive to the instructional philosophy, visions and goals of the school and the community. In addition to collecting and reviewing available data, the Design Team participated in progress review meetings at the school with the school administration, MCPS staff and community representatives. As each design alternative was presented and reviewed by the Feasibility Study participants, comments were recorded and alternative schemes revised accordingly. The final approved options are presented herein with Option 1 recommended as the preferred scheme.

B. METHODOLOGY

This Feasibility Study was developed with the following methodology:

- Review of available data and drawings of the existing school and site
- Kick-off meeting with members of the Feasibility Study participants
- Identification of the needs, goals and objectives of the school as well as a review of the Educational Specifications
- Development of Design Options
- Four progress meetings with the Feasibility Study participants, which included members of the school staff, the PTA, the Community and MCPS staff.
- Modifications of design options as a response to review comments
- Designation of Option 1 as the preferred scheme by the Feasibility Study participants.
5. DESCRIPTION OF GOALS AND OBJECTIVES

The following are the primary goals and objectives established by the Principal, staff and the Feasibility Study participants to be addressed by the A/E design team and MCPS staff:

A. SITE GOALS AND OBJECTIVES

The modifications to the site shall:
- Add 8 parking spaces to the site.
- Expand the existing stormwater management system to accommodate the new impervious area associated with the building addition and the new parking.
- Do not encroach on the existing MNCPPC land.
- Provide sound attenuation walls at the existing generator to address neighborhood complaints about noise.
- Fix an area of sidewalk at the front of the building that currently holds water and is a slipping hazard in the winter.
- Examine the loading area and create a permanent place for the trash and recycling containers so that the two parking spaces they currently occupy can be freed up for use by cars.

B. BUILDING GOALS AND OBJECTIVES

The addition shall:
- Add five classrooms, one dual purpose room and 2 small group instruction rooms.
- Assure that the design of the addition fits with the architectural design of the existing building.
- Ensure that the construction can be safely phased while school remains in operation.
- Provide flexibility to create grade level classroom groupings.
- Provide an appropriate HVAC system.
- Address the issue of snow and ice at the front entry canopies.
- Address the issue of glare from some of the lights at the rear of the building.
6. EXISTING CONDITIONS

Vicinity Map
6. EXISTING CONDITIONS

Existing Site Plan
6. EXISTING CONDITIONS

Existing First Floor Plan
6. EXISTING CONDITIONS

Existing Second Floor Plan
6. EXISTING CONDITIONS

A. GENERAL
Arcola Elementary School is located at 1820 Franwall Avenue, Silver Spring, Maryland 20902. The existing site is 5 acres.

B. EXISTING SITE
The Arcola Elementary School facility is situated on a 217,800 square foot (5.0 Acre) lot, Parcel P-813, at 1820 Franwall Avenue, Silver Spring, Maryland within Election District 13. The property is found on ADC Map book grid 5286-C3 and has a tax account number of 00954285. The site is zoned R-90 and is bounded on the north by the 50-foot Franwall Avenue right-of-way, to the west by the 60-foot Channing Drive right-of-way, to the south by M-NCPPC owned parkland and to the east by detached single-family residential properties. Based on the current Montgomery County Zoning Ordinance, dimensional regulations for the property include the following:

- Street setback – 30’
- Side setback – 8’
- Sum of Sides – 25’
- Rear setback – 25’
- Maximum Site Building Coverage – 30%

The zoning ordinance will also require any site improvements to adhere to the landscaping, screening, and lighting requirements associated with the parking lot.

There are two right-of-ways that border the site, both of which permit vehicular access to the school. Franwall Avenue is a 50-foot right-of-way that runs along the northern boundary of the site and allows access to the main parking lot, loading docks and the student drop-off area. This right-of-way contains a two-lane road with sidewalks and street trees along both sides. Channing Drive is a 60-foot right-of-way that flanks the western edge of the property and provides access to the existing bus-loop. This right-of-way consists of a two-lane road with sidewalks and street trees along both sides as well. The pavement in both streets is in good shape and appears to be free from substantial cracking.
6. EXISTING CONDITIONS

C. EXISTING BUILDING
Arcola Elementary School has both a one story kindergarten wing and a two-story classroom wing. The existing structure is constructed of non-combustible materials and is sprinklered. Exterior walls and interior partitions are primarily masonry. The structural system consists of steel framing with steel roof joists, elevated concrete slabs on metal deck and concrete floor slabs on grade.

D. EXISTING HEATING VENTILATION AND AIR CONDITIONING SYSTEMS
The existing HVAC System is a boiler/tower closed loop water source heat pump system, supplying water to multiple vertical floor mounted water source heat pumps that serve the classrooms. Water temperatures in the closed loop is maintained at a minimum of 60°F and a maximum of 90°F. The closed loop recirculation pump is furnished with a variable frequency drive to reduce water flow at partial load conditions. The minimum loop water temperature is maintained by three condensing gas fired hot water boilers, Fulton Model PHW – 1400 each rated at 1200 MBH output. A plate type heat exchanger separates the closed loop from the open condenser loop. The condenser loop consists of two pumps (one is stand-by) and a cooling tower located on the roof. Classroom ventilation is provided by roof mounted water cooled dedicated outside air units (DOAS). Controls are DDC. All equipment dates to 2006 and is in good operating condition.

E. EXISTING PLUMBING SYSTEMS
The 6” combined fire/domestic water supply enters the building in the sprinkler room. The 6-inch water service splits in the sprinkler room into a 3-inch domestic service and a 6-inch fire line. Domestic water is distributed from this point to the plumbing fixtures located throughout the building. Medium pressure (2 psig) gas service enters the building at the lower level mechanical equipment room. There is a gas-fired water heater located in the main mechanical room that supplies hot water to the facility. A recirculating pump is located in the main mechanical room to assure hot water is available at all of the fixtures in a timely manner. There is a 6-inch sanitary sewer that exits at the north side of the building. There are multiple storm water exits that leave the building on the west, east and north sides of the facility. The plumbing fixtures are in good condition.

F. EXISTING FIRE PROTECTION SYSTEM
The building is protected by an automatic sprinkler system. There are three sprinkler zones; one for each floor and one for the Gym. The zone, flow and tamper switches for each floor are located in the sprinkler room.
6. EXISTING CONDITIONS

G. EXISTING ELECTRICAL POWER DISTRIBUTION SYSTEM
The incoming underground electrical service to the 1600 Amp, 277/480 Volt, 3 phase - 4 wire switchboard located in the ground floor electrical room comes from a pad-mounted PEPCO transformer located at the NE corner of the existing school. The switchboard serves 277/480V Panelboards located throughout the school. Step down transformers and panelboards are provided to serve the 120/208V equipment. A 55 KW, 277/480V – 3 phase natural gas-fired emergency generator provides emergency power. All equipment dates from the 2006 construction and is in good operating condition.

H. EXISTING LIGHTING
Lighting fixtures in the classrooms utilize pendant direct/indirect fluorescent fixtures equipped with T8 fluorescent lamps and electronic ballasts. Each classroom is provided with double switching. The row of fixtures in front of the classroom are switched separately. Fixtures in the corridors are recessed 2’ x 4’ lensed fluorescent fixtures equipped with T8 fluorescent lamps. Each classroom has 1-recessed downlight connected to emergency circuit. Lighting for the proposed addition will be the same.

I. EXISTING FIRE ALARM
The fire alarm system is addressable initiation (manual pull stations and flow switches) and notification (horn/strobe combination) devices. Each classroom has a ceiling mounted combination horn strobe device. The system is in good operating order and shall be extended for the proposed addition.

J. EXISTING PA/CLOCKS/TELEPHONES AND COMMUNICATION SYSTEMS
2-PA speaker and call back switch are installed in each classroom. PA speakers are provided in the corridors. The system is from the 2007 construction and the system shall be extended for the proposed addition.

K. EXISTING CATV SYSTEM
The existing CATV system service will be extended into new areas. New coaxial cables and TV outlet will be provided in each classroom.
7. DESCRIPTION OF OPTIONS

A. GENERAL
Two conceptual options have been developed in response to the MCPS Educational Specifications and goals of the Feasibility Study participants. Option 1 proposes a two story classroom addition and option two proposes a three story classroom addition.

It is anticipated that site improvements will be required to include ESD (Environmental Site Design) to the maximum extent practicable in order to treat all areas inside the limits of disturbance. After all ESD efforts are exhausted and the site has still not been able to reach a hydrologic state of “woods in good condition,” then structural practices may be permitted as determined by Montgomery County Department of Permitting Services. Potential ESD stormwater management practices for the site include both micro-scale practices and alternative surfaces. Micro-scale facilities could include the utilization of bioswales and micro-bioretention facilities around the parking areas. Alternative surfaces would include a vegetative roof on any building addition in order to partially treat the impervious roof area as well as permeable pavements. Permeable pavements would be utilized wherever new parking and drive aisles are proposed, except in areas of heavy loading, such as fire lanes, bus loops and areas of significant fill.

B. PROPOSED HVAC SYSTEM
The new proposed classroom addition will be served by vertical water source heat pumps similar to those currently used to serve the existing classrooms. These units will be located in mechanical closets with ducted overhead supply and return air ductwork and diffusers.

The existing water source heat pumps are supplied water from a closed water source heat pump piping loop. The existing system, consisting of pumps, boiler, cooling tower, heat exchanger and main closed loop distribution piping, has the capacity to serve the planned addition with minor alterations. The existing 2” water source piping located above the first floor ceiling at the end of the classroom wing (NE corner) will need to be replaced with three inch pipes to serve the proposed addition. The differential pressure sensor that controls the variable speed drive on the main distribution pump will also need to be relocated to the addition.

The ventilation for the existing classrooms is provided by roof mounted water cooled dedicated ventilation heat pumps (DOAS). The existing units do not have the capacity to serve the addition. A new roof mounted air cooled dedicated ventilation unit heat pump with an energy recovery wheel will serve the addition. The unit will be self-contained air cooled. The unit will provide the code required ventilation.
7. DESCRIPTION OF OPTIONS

Automatic temperature controls will be Direct Digital (DDC). The controls will be integrated to the existing temperature control system.

C. PROPOSED ELECTRICAL SYSTEM

The existing 1600 Amp 277/480V, 3 Phase – 4 wire electrical service to the facility will be retained. The estimated increased load resulting from the addition will increase the maximum electrical draw to just over 200 Amps, well within the capacity limits of the current 1600 Amp service.

The Electrical Systems for the classroom addition will be designed in accordance with MCPS Standards. The installation shall be designed in accordance with the National Electrical Code, all local codes and utility company requirements.

Lighting fixtures in the classrooms will utilize pendant direct/indirect fluorescent fixtures equipped with T8 fluorescent lamps and electronic ballasts. Each classroom will receive a ceiling mounted occupancy sensor and double switching. The row of fixtures in front of the classroom will be switched separately. Fixtures in the corridors will utilize recessed 2’x2’ or 2’x4’ fluorescent fixtures equipped with T8 fluorescent lamps. Every fourth fixture in the corridor will be connected to emergency circuit. Also, each classroom will have 1-recessed downlight connected to emergency circuit. Down lights where required will be fluorescent ‘P’ type. All lighting will be in compliance with latest MCPS requirements.

Existing fire alarm systems shall be extended to the proposed addition.

1-PA speaker and call back switch will be installed in each classroom. Additional PA speakers will be provided in the new corridors. New circuits (home runs) will run to existing PA consoled in the main office.

Raceways and provisions for voice, data and video cabling will be provided to accommodate program functions and room configurations. All video head-end distribution equipment will be located in the main telecommunications room. Provisions for interactive white boards will be included. Provision for wireless nodes for laptop computers will be added to data system.
7. DESCRIPTION OF OPTIONS

D. OPTION 1 - DESCRIPTION

Option 1 consists of a two-story addition to the west end of the school. The first floor contains three classrooms, one small group instruction room and required storage, restroom and mechanical spaces. This option is built tight up against the “Linkages for Learning” space which will mean that the windows on the south side of that space will need to be infilled and new windows cut into the west side of that space to maintain access to daylight. The second floor contains two class rooms, one dual purpose room and a small group instruction area as well as required storage restroom and mechanical spaces. Both floors are connected to the existing circulation system with a short corridor running perpendicular to the existing main corridor. A new stair will be constructed at the end of the new corridor to allow egress and to prevent a dead end corridor situation.

OPTION 1 - ADVANTAGES
This option is only two stories in height and for that reason allows more flexibility in scheduling classes as grade levels can, for the most part, be kept on the same floor.

This option does not require an elevator

OPTION 1 - DISADVANTAGES

This option is built tight up against the Linkages for Learning space and therefore requires modifications to the existing windows in that space.
7. DESCRIPTION OF OPTIONS

Proposed Site Plan
Option 1
7. DESCRIPTION OF OPTIONS

Proposed First Floor Plan
Option 1
7. DESCRIPTION OF OPTIONS

Proposed Second Floor Plan
Option 1
Rendering # 1 (View from the Southwest)
Option 1
7. DESCRIPTION OF OPTIONS

Rendering # 2 (Birds Eye View from the Southeast)
Option 1
7. DESCRIPTION OF OPTIONS

Rendering # 3 (West Elevation)
Option 1
7. DESCRIPTION OF OPTIONS

Rendering # 4 (View from the Northwest)
Option 1
7. DESCRIPTION OF OPTIONS

E.  OPTION 2 - DESCRIPTION

Option 2 consists of a three story addition to the west end of the school. The first floor contains three classrooms and required storage, restroom and mechanical spaces. This option is held back from the south wall of the Linkages for learning space and honors the 3 windows on the south façade so a minimum amount of renovation needs to happen to the exterior walls. The second floor contains two classrooms, one dual purpose room as well as required storage restroom and mechanical spaces. The third floor contains the 2 small group instruction spaces and supporting mechanical and restroom spaces. The three floors are connected to the existing circulation system with a short corridor running perpendicular to the existing main corridor. The existing stair that currently leads to the roof access area is utilized for walking access to the new third floor A new stair will be constructed at the end of the new corridor to allow egress and to prevent a dead end corridor situation. Additionally an elevator will be required to allow accessible access to the new third floor.

OPTION 2 - ADVANTAGES

This option is a little better aesthetically because it is not jammed up tight against the Linkages for Learning space.

OPTION 2 - DISADVANTAGES

This option is three stories in height and therefore presents scheduling challenges since the small group instruction rooms are isolated on the third floor.

This option requires an elevator which adds significant cost to the project
Proposed Site Plan
Option 2
7. DESCRIPTION OF OPTIONS

Proposed First Floor Plan
Option 2
7. DESCRIPTION OF OPTIONS

Proposed Second Floor Plan
Option 2

Legend
- Existing Classrooms
- Existing Circulation
- New Classrooms
- New Circulation
7. DESCRIPTION OF OPTIONS

Proposed Third Floor Plan
Option 2
7. DESCRIPTION OF OPTIONS

Rendering # 1 (View from the Southwest)
Option 2
Rendering # 2 (Bird’s eye view from the Southeast)
Option 2
7. DESCRIPTION OF OPTIONS

Rendering # 3 (West Elevation)
Option 2
7. DESCRIPTION OF OPTIONS

Rendering # 4 (View from the Northwest)
Option 2
F. ADDITIONAL ISSUES

**Soundproofing at the Generator**

The existing generator is only enclosed by a chain link fence. There were numerous complaints by neighborhood residents that when the generator runs during power outages or when it exercises itself periodically the noise transmitted across the playing fields to neighboring houses is difficult to bear. At other facilities the design team has had success with building acoustical walls around generators or HVAC units to mitigate the sound. We would propose an enclosure that would consist of steel columns and beams bolted to the existing concrete slab. These columns and beams would then be fitted with acoustical panels consisting of a 4” thick galvanized steel housing filled with a weatherproof, acoustically absorbent material. Panels similar to this are manufactured by Kinetics Noise Control, Inc. and are shown below. The inside of the enclosure must remain as shown below but the outside can be covered with a material (brick, EIFS, etc.) that more closely matches the aesthetics of the school.

![Existing Generator](image1.png)

![Example of noise control panels](image2.png)
7. DESCRIPTION OF OPTIONS

Sidewalk Drainage
There is a small area on the concrete sidewalk directly in front of the bike rack and main office that holds water and does not drain. In the winter this water freezes and becomes a hazard for people walking through the area. We would propose that the sidewalk be cut and a small site drain be installed flush with the surface of the lowest point of the concrete and be piped to a lower point on the lawn where it can spill harmlessly and mitigate the slipping issue.

Front Canopies
The front canopies of the building shed snow and ice and causes hazardous conditions for students. The design team suggests that snow guards, gutters and downspouts be added so that snow and ice are held in place until they have a chance to melt and drain into the gutters and downspouts.

Trash / Recycling
Currently the trash and recycling dumpsters are taking up two parking spaces near the loading and delivery area on the east side of the building. With every parking space being precious the design team suggests that the drive aisle of the loading dock area be modified to accommodate these dumpsters outside of the limits of the parking lot. This will free up 2 much needed spaces for use by staff or visitors.

Light shading
Some of the neighbors complained that the building mounted lights on the rear of the school spilled deeply onto the site and were a nuisance at night. While security is an issue and we must continue to assure the play areas behind the school are lit we suggest that light shades be installed on the offending fixtures so that the play area is lit but the fixtures do not spill so deeply on the site and annoy the neighbors.

The cost estimate in this feasibility study is based on current construction market conditions for both building and site. The estimates will be revised to reflect current market conditions and prevailing construction costs when the project is included in the Capital Improvements Program Request for architectural and construction funding.
## 8. PROPOSED IMPLEMENTATION SCHEDULE

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<td>ADVERTISE FOR BID</td>
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<tr>
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<td>CONSTRUCTION</td>
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<tr>
<td>OCCUPANCY</td>
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</tbody>
</table>
9. APPENDICES

Appendix A – Space Allocation Summary

Appendix B – Educational Specifications

Appendix C – Project Photographs
# Arcola Elementary School Addition
## Square Foot Summary

When this project is complete, the following spaces are to be provided:
Capacity after modernization will be 694.

<table>
<thead>
<tr>
<th>Facility</th>
<th>#</th>
<th>Description</th>
<th>Net Sq. Ft.</th>
<th>Total Net Sq. Ft.</th>
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</thead>
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<tr>
<td>Classrooms</td>
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<td></td>
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<tr>
<td>Grades 1-5</td>
<td>5</td>
<td>Includes 150 s.f. storage</td>
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<td>4500</td>
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<td>Dual purpose Room</td>
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<td></td>
<td>1000</td>
<td>1000</td>
</tr>
<tr>
<td>Small Group Instruction Room</td>
<td>2</td>
<td></td>
<td>450</td>
<td>900</td>
</tr>
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<td><strong>Total</strong></td>
<td>6</td>
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<td></td>
<td><strong>6400</strong></td>
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</table>

Updated on February 23, 2011
APPENDIX B - Education Specifications

Introduction

☐ This document describes the facilities that are needed for the Arcola Elementary School Addition educational program. The descriptions provide the architect with important guidelines and will be used by staff representatives when reviewing drawings for the facility.

☐ The program capacity for this school will be 694 with a master-planned (core) capacity for 640.

☐ The educational specifications are divided into three sections.

- The first section, the space summary, lists the type of spaces and square footage required when the project is complete.
- The second section describes the general design, location, and specific requirements for each type of space in accordance with Montgomery County Public Schools (MCPS) standards.
- The third section identifies any additional program requirements for the school that were identified by the Facility Study participants.

☐ The architect should show the location for relocatable classrooms, should they be required in the future. These units should be sited in a location where it will not cause conflict with the constructability of a future addition. The necessary utility connections, i.e. electrical power, fire alarm, public address, and data should be provided near the future location of relocatable classrooms.

☐ The architect will provide a space summary comparison between the programmed space requirements and the proposed after each phase of the project including but not limited to the feasibility study, schematic design, design development, and final design phase.

☐ For all new schools and modernizations, the project will be designed for LEED Silver certification by the United States Green Building Council (USBGC) under the LEED for Schools guidelines. If this project is a classroom addition, the certification requirement applies only if the addition doubles the existing building footprint. If this project is a building renovation, the certification requirement applies only if the renovation alters more than fifty percent of the existing building gross floor area.
APPENDIX B - Education Specifications

General Planning Considerations
In the general planning of this building, special consideration is to be given to the following comments and instructions:

☐ The architect is expected to be compliant with all national, state and local fire safety, life safety, and health code regulations and to follow applicable rules of the State Interagency Committee on School Construction.

☐ The building is to be accessible to the disabled within the meaning of the latest edition of the Americans with Disabilities Act and to conform to all the latest requirements of the Americans with Disabilities Act Accessibility Guidelines (ADAAG) as published by the U.S. Architectural and Transportation Barriers Compliance Board. (The regulation can be found at http://www.access-board.gov/adaag/html/adaag.htm. In addition to the ADAAG, the Maryland Accessibility Code (COMAR.05.02.02) revised in 2002 also is required for public schools. (The regulation can be found at http://mdcodes.umbc.edu/dhcd2/Title05.pdf)

☐ The facility is to reflect an appealing visual, acoustic, and thermal environment and is to be properly furnished and equipped. Well-chosen colors and textures are to be used. Lighting must meet current standards and provide adequate levels.

☐ High quality materials are to be used in the construction. The architect should refer to the MCPS Design Guidelines.

☐ The first impression of a building is important. The main entrance to the school should have a clear and inviting identity, and the entrance area should be designed and landscaped to emphasize its importance. A covered walkway from the bus loading area to the front door is desirable. The design of the main lobby area needs to convey a feeling of warmth and welcome. The inclusion of a lighted showcase in which children's work can be displayed is recommended.

☐ The design of the building and grounds must provide for a secure environment for students and staff. Isolated areas should be minimized and natural surveillance encouraged by eliminating visual barriers.

☐ For security purposes, all doors into classrooms, conference rooms, offices etc. must have a sidelight window with shades.

☐ Water coolers should be provided throughout the school.

☐ Every teaching station, support space, and core area must be wired for computer, CCTV, and telephone, along with adequate electrical supply in compliance with Maryland State design guidelines for Technology in Schools and the MCPS Office of the Chief Technology Office (OCTO) guidelines. Facilities must be adaptable to accommodate rapid development in high technology and its equipment since educational program and organization in this field are dynamic. Space and power supply must be flexible to meet these changing needs.

☐ Core spaces such as the cafeteria, gymnasiums, and instructional media center should be easily accessible for community use and secure from the rest of the building after school hours.
APPENDIX B - Education Specifications

☐ An MCPS-designed alarm system will provide security for this facility. The architect will provide for this system in consultation with the Division of Construction staff.

☐ Building code requirements call for less than fifty percent of interior corridor space to be used for displaying flammable materials. Display areas can be provided by a 5’ x 5’ bulletin board per classroom or an equivalent amount of space in a larger area. Please refer to the Division of Construction for specific standards.

☐ Students should have ADA compliant access to the play areas from the multipurpose room. Play areas are to be protected from any vehicular traffic. Unobstructed supervision of play areas from one central area is desirable.

☐ The school is to be air-conditioned except for the gymnasium and kitchen. Careful placement of glass is required to avoid excess heat gain in occupied areas.

☐ Some windows must be operable in each space in the building. Transmission of radiation through windows into various portions of the plant is to be considered in relation to heating and ventilating and in relation to planning the building for air conditioning. All instructional spaces should have windows, preferably exterior windows. If the design does not permit exterior windows, windows onto corridors should be provided.

☐ Zoning the plant for heating and air-conditioning should be related to after-hours use of various areas such as offices, gymnasium, multipurpose room, and the instructional media center. Appropriate location of parking, corridor barriers, and toilet rooms is necessary for after-hours use. Some classrooms nearby the multipurpose room should be zoned for after hour use as well.

☐ The architect should refer to MSDE’s 2006 Classroom Acoustic Guidelines to address the acoustical qualities for classrooms. In addition, the architect should refer to American National Standard, Acoustical Performance Criteria, Design Requirements, and Guidelines for Schools (ANSI S12.60-2002) for additional information.

☐ Noise and distracting sounds are to be minimized. In areas such as the multipurpose room and classrooms, which may be used for meetings and adult education, the sound of operating fans for ventilation should not interfere with instruction.

☐ Adult restrooms should be provided in accordance with the latest code requirements. Adult restrooms in elementary schools will be unisex.

☐ Spaces that serve no real educational function, such as corridors, should be limited while at the same time assuring an easy to supervise and smooth flow of pupil traffic to and from the instructional media center, multipurpose room, gymnasium, specialized centers, and support rooms.

☐ Carpets should be limited to the principal’s office, assistant principal’s office and conference room in the administration suite and the main reading room of the instructional media center.
APPENDIX B - Education Specifications

☐ All instructional, resource, or office spaces that students may occupy should be designed with either a sidelight or glass panel in the door and must be able to be supervised from the corridor or an adjacent space. Doors should be provided between classrooms whenever possible, however, expensive folding walls should be carefully considered as they are rarely utilized.

☐ The classrooms should be designed to accommodate various size groups. Each classroom should be readily adaptable for group work, various presentation formats, and should have maximum connectivity to outside resources.

☐ The shape of the classroom and the design of built-in features and storage areas should provide optimum net usable floor area. Elongated rooms and features that protrude into floor area, limiting flexibility, are to be discouraged. Rectangular shaped classrooms are preferred.

☐ Metal adjustable shelving is to be provided in all building storage closets.

☐ All plan reviews will be coordinated through the Division of Construction.

☐ Special consideration must be given to energy conservation including total life-cycle costs. The current Maryland State Department of General Service (DGS) requirements will be applied as design criteria. Life-cycle cost accounting in accordance with DGS criteria is required.
APPENDIX B - Education Specifications

Description of Facilities
Please refer to the summary of spaces in the front of this document for the square foot requirements for each space described below. Square-foot allocations should be considered the standard to be followed, although minor deviations are permitted.

Standard Classroom

☐ Each room must have an open classroom area with moveable furniture.

☐ 150 square feet of casework storage is needed in the classroom.

☐ The computers should not be located next to a whiteboard where magnets might damage the hardware and software. Glare from the windows on the computer screens should also be eliminated as much as possible. Security for the computers should be planned in consultation with the MCPS Division of Construction (DOC). Computer/technology wiring must be in accordance with DOC/MSDE/OSTA standards.

☐ Every classroom must have computer outlets for 5 student workstations and 1 teacher workstation. The building information and communications distribution system and other aspects of the building design must comply with the latest edition of MSDE Maryland Public School Standards for Telecommunications Distribution System.

☐ Approximately 30 to 35 linear feet of magnetic white board and 20 to 24 linear feet of tackboard, both with tack strips and map rails above the boards, should be installed in each classroom. White boards should be located so as to reduce glare. Tack strip is needed on all available walls. The architect should refer to the DOC construction standards for the main teaching wall layout.

☐ Thirty built-in individual compartments in the wardrobe area for storing student personal property are required. The architect should refer to the DOC construction standards for a typical cubby design for grades K-1 and grades 2-5. Lockers in the hallway may be used in place of the classroom cubbies.

☐ If lockers are designed for storing individual student property, the architect should design the facility with 700 lockers if the core capacity is 640 and 815 lockers if the core capacity is 740.

☐ All classrooms should be equipped with a handicapped accessible sink with drinking bubbler.

☐ A storage area is needed to hold at least two science kits (approximate 27" x 17" x 12" each) and one math kit in each classroom.

☐ General storage space must be built in and must accommodate 24- by 36-inch paper and a 4-drawer file cabinet. Each classroom must include 48 linear feet of built-in adjustable shelving.
A small lockable teacher's wardrobe must be provided, as per DOC construction standards.

Designated shelf space, not near a window, for an aquarium/terrarium with nearby electrical outlet, is desirable.

Each classroom should be equipped with window blinds. The specifications for the window blinds will be provided by DOC.

Each classroom should be equipped with a retractable projection screen (7’ x 7’). The projection screen should not be mounted near any emergency lighting tracks. All areas of the screen should be illuminated and readable when the lights are dimmed.

Electrical and data outlets should be provided in the ceiling for a ceiling mounted LCD projector.

Battery operated clocks will be installed. The clock should not be mounted behind the projection screen.

Shelving or cabinetry should be provided in every teaching station for the VCR and television. A school may choose to place the television and VCR on a cart. Appropriate CCTV receptacles and a duplex outlet should be provided nearby for the operation of the TV and VCR. Placement of the TV should be to maximize student viewing and not be unduly influenced by exterior or interior extraneous light.

A school may consider reducing the size of each classroom to create small break-out rooms in the school. The number and design of these breakout rooms may be determined by school and MCPS staff.
APPENDIX B - Education Specifications

Dual Purpose Room

☐ This room should be designed to accommodate both art and music activities in the school but with less detail than the regular art and music rooms.

☐ Some acoustical treatment should be provided in the room.

☐ One sink for student use should be provided along with some countertop area.

☐ No kiln area is needed and less shelving than described in the art room is to be provided. The exact details of the design should be discussed with the school staff and community.
Site Requirements

The following information is to be used as a guideline if the addition disturbs any of the existing site amenities.

Physical Education Instructional Site Requirements

☐ The site should be designed to provide a clear view of all play areas and to facilitate supervision from one location.

☐ Protective fencing may need to be provided near heavily wooded areas, busy streets, steep hills, parking lots and turnaround areas.

☐ Metal drains/grates should not be located in the playing fields and paved play.

☐ Paved areas and fields must be as level as possible. Water should not collect on paved areas

☐ The items described below are for a school with a site meeting the 12-acre requirement. At schools with smaller sites, the architect is to work with MCPS staff, including the Physical Education Curriculum Coordinator, Safety Director, and school staff to determine layout of the play areas. The outdoor physical educational instructional space should not be compromised for playground equipment.

Softball Fields

☐ Two softball fields should be provided with the following design requirements:

☐ 250' radius, with a soccer field superimposed should be provided if possible. See below for the soccer field dimensions.

☐ The site size will determine the number and dimension of the softball fields.

☐ Softball fields should have metal benches protected by fencing for each team's use.

☐ The fencing and benches should not interfere with soccer field usage.

☐ The softball backstops (2) shall be in diagonal corners of the field or in corners on the same side. See diagram in Architect's Guide provided by Division of Construction.

☐ Softball infields are not skinned for elementary schools. However, one field may be skinned if it does not significantly impact the soccer playing area.
APPENDIX B - Education Specifications

Soccer

☐ The site size will determine the size of the soccer fields. The elementary school size soccer field is 150'x240' however the minimum size field should be 105' x 180'.

☐ No permanent goals or temporary goals should be installed on the soccer fields.

Paved Play Areas

☐ Two paved areas, 80' x 100' should be provided if the site permits. On small sites, one paved play area

☐ If located adjacent to one another, a grassy strip of at least 20' should be between the two paved areas.

☐ One area should have four basketball goals with appropriate striping (see diagram in Architect's Guide available from the Division of Construction).

☐ A second area, designated for primary use, shall be striped according to drawings provided in the Architect's Guide available from the Division of Construction.

Kindergarten Paved Play Area

☐ A third paved area, at least 40’x 60’ but preferably 80’ x 100’, is needed for the Kindergarten students.

☐ This area needs to be located adjacent to the Kindergarten playground (mulched) area and close to the other paved play areas.

☐ This area requires a fence around it or adequate separation from the other paved play areas.

☐ The area will be striped according to drawings provided in the Architect's Guide available from the Division of Construction.

Playground Equipment Areas (mulched areas)

☐ One or two areas shall be provided near the playing fields and large paved play area for playground equipment. Each area should be approximately 40’x40’. The size and shape of the play area will be developed during the design process in consultation with MCPS staff.

☐ The area shall be level, bare ground, unseeded, and no sod. MCPS will provide equipment dimensions for these areas.

☐ An underground drainage system must be provided.
The loose-fill surfacing material (engineered wood fiber) must meet ADA requirements. A border must be provided to contain the filler. The surfacing materials must meet or exceed safety specifications for shock absorbing qualities as outlined by US CPSC.

**Kindergarten Play Area (mulched area)**

A mulched kindergarten play area of 40' x 60' should be located adjacent to the kindergarten paved play area described in the physical education section for playground equipment. The size and shape of the play area will be developed during the design process in consultation with MCPS staff.

The area shall be level bare ground, unseeded, and no sod. MCPS will provide equipment dimensions for this area.

Protective fencing should enclose the area.

An underground drainage system must be provided.

The loose-fill surfacing material (engineered wood fiber) must meet ADA requirements. A border must be provided to contain the filler. The surfacing materials must meet or exceed safety specifications for shock absorbing qualities as outlined by US CPSC.
APPENDIX B - Education Specifications

Site Requirements

☐ 12 useable acres for new schools is ideal. More than 12 acres may be needed due to terrain or for environmental protection requirements.

☐ Other considerations include road access, ability to extend sewer, water and other utilities, good topography, compatible adjacent land use.

☐ The site should be designed to provide a clear view of all play areas and to facilitate supervision from one location.

☐ A minimum of 80 parking spaces should be designed initially for a school with regular staffing allocations, with future expansion possible. At schools with class-size reduction, 100 parking spaces should be provided.

☐ Protective fencing may need to be provided near heavily wooded areas, busy streets, steep hills, parking lots and turnaround areas.

☐ Metal drains/grates should not be located in the playing fields, paved play areas and mulched playground equipment areas.

☐ Paved areas and fields must be as level as possible. Water should not collect on paved areas or in mulched areas.

☐ Playground equipment areas should not be located at the bottom of hills unless a provision is made to channel water away from the equipment areas.

Driveway and Service Drive

☐ The driveway must be 24' wide, 50' radius for turnaround, for buses, with a separate entrance and exit or turnaround is required.

☐ Bus traffic should be separated from car traffic at all times, when possible. Bus loading zones should be able to accommodate the entire student body.

☐ All driveways must be arranged so that children do not cross them to get to the play areas. Access to the Head Start and future day care areas must be considered.

☐ Pedestrian access to the school facilities should be designed to make the best use of community rights-of-way and should not require students to cross in loading-zone areas.

☐ The design must follow ADAAG 4.1.2(5)c, which stipulates that when a passenger loading zone is provided, a portion of it shall comply with ADAAG 4.6.6. At a minimum, the established car loop for passenger drop off should not interfere with the accessible parking spaces.

☐ Driveway aprons are to be perpendicular to the centerline of the street; and if there is an intersecting street on the opposite side from the proposed driveways, the driveway apron is to line up with the intersecting street.
The grade of the driveways shall not exceed eight percent and should provide for a minimum centerline radius of 50 feet to provide adequate turning space for buses.

A service drive 15' wide with an adequate turnaround is required to service the kitchen, boiler room, and general delivery area.

Where necessary, oil filler pipes, with adequate overflow pipes, are to be easily accessible for a tractor-trailer.

**Landscaping**

Planting should include screen planting and other planting needed for erosion control.

Existing plant stock, if on site, is to be evaluated for use and protected accordingly.

Landscaping to support energy conservation and to relate the building to the site with aesthetic appeal must be included.

Planting areas along sidewalks and wooded and flowered areas are to be situated to enable the physical education program to be carried on without undue disturbance to the classrooms.

Provision for outdoor watering must be included.

The landscaping plan should include areas for outdoors environmental education programs.

Areas should be identified where plowed snow could easily be piled.
APPENDIX C - Project Photographs