FEASIBILITY STUDY
BURNING TREE ELEMENTARY SCHOOL

MONTGOMERY COUNTY PUBLIC SCHOOLS

tca|architects

18 August 2025

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INTRODUCTION

1

BOARD OF EDUCATION

15 W. Gude Drive, Suite 100 Rockville, MD 20850

This report has been written for the following Montgomery County Board of Education Members:

President	Julie Yang
Vice President	Grace Rivera-Oven
Members	Karla Silvestre Rita Montoya Brenda Wolff Laura Stewart Natalie Zimmerman Anuva Maloo
Superintendent of Schools	Dr. Thomas W. Taylor
Chief of District Operations	Adnan Mamoon

PROJECT TEAM

OWNER
MONTGOMERY COUNTY PUBLIC SCHOOLS

Director	Julie Morris
Planner	Erika Dworkin
Project Manager	Ryan Litzinger
Assistant Project Manager	Doris Diaz
Capital Budget and Projects Manager	Donald J. Connelly

ARCHITECT
TCA ARCHITECTS

Principal	Robyn Toth AIA
Project Manager	Lori Emard
Assistant Project Manager	Alex Peña

CIVIL ENGINEER
CLARK | AZAR

Vice President	Jason Azar
Project Manager	Lexie Refosco

STRUCTURAL ENGINEER
MORABITO CONSULTANTS

Principal	Nick Morabito

MEP ENGINEER
JAMES POSEY ASSOCIATES

Vice President	Mike Sherren
Vice President	Patrick Marquez
Electrical Engineer	Austin Heidelbaugh

FOOD SERVICE CONSULTANT
NYIKOS GARCIA FOODSERVICE DESIGN

Principal	Jay Garcia
Project Manager	Anthony Long

COST ESTIMATOR
FORELLA GROUP

Principal	Peter Forella
Cost Estimator	Natalie Angelelli

FEASIBILITY STUDY PARTICIPANTS

Daniel Ruiz	Community Member
Jillian Storms, AIA	Exec Director, MD State Dept of Ed. Office
Darcy Buckley	of School Facilities
Douglas Stephens	Montgomery Parks
Henry Coppola	Montgomery Parks
Matthew Harper	Montgomery Parks
Adam Bossi	Montgomery Parks
Atul Sharma	Montgomery Planning
Carlos Pazmino	Montgomery Planning
Cashielle Nelson	Montgomery Planning
Elza Hisel-McCoy	Montgomery Planning
Paul Mortensen	Montgomery Planning
Stephanie Dickel	Montgomery Planning
Tsaiquan Gatling	Montgomery Planning
Abhinav Rampuria	Montgomery Planning
Alissa Peruzzini	Parent/Guardian
Amir Mokhtari	Parent/Guardian
Aneesha Sherman	Parent/Guardian
Brian Kapatkin	Parent/Guardian
Carrie Worn	Parent/Guardian
Christine Escamilla	Parent/Guardian
Debra Audus	Parent/Guardian
Elizabeth Stark	Parent/Guardian
Elsa	Parent/Guardian
Elyssa Tanenbaum	Parent/Guardian
Erin Katz	Parent/Guardian
Jessica Henderson	Parent/Guardian
Jessica Kasenetz	Parent/Guardian
Johnny Harris	Parent/Guardian
Julia Galletto	Parent/Guardian
Julie Schuman	Parent/Guardian
Kara Feldman	Parent/Guardian
Karen Reddish	Parent/Guardian
Katie Harb	Parent/Guardian
Khamika	Parent/Guardian
Kim Richards	Parent/Guardian
Kris Cronin	Parent/Guardian
Kyle Ginzl	Parent/Guardian
Lindsay Harris	Parent/Guardian
Liz	Parent/Guardian
Lorraine Wilson	Parent/Guardian
Lyndsy Paulson	Parent/Guardian
Marcela Cruz	Parent/Guardian
Melissa Armstrong	Parent/Guardian
Mikell Rice	Parent/Guardian
Nabilah Siddiquee	Parent/Guardian
Polson Kanneth	Parent/Guardian
Rana Rassipour	Parent/Guardian
Saima Song	Parent/Guardian
Sarika Parasuraman	Parent/Guardian
Sebastian Schmidt	Parent/Guardian
Shilpa Shah	Parent/Guardian
Sriram Gollapalli	Parent/Guardian
Stacey Shapiro	Parent/Guardian
Steve Lieberman	Parent/Guardian
Svetlana Fishman	Parent/Guardian
Yasha Toufanian	Parent/Guardian
Zach Lipso	Parent/Guardian
Jo Anne Murray	Parent/Guardian
Amanda Luzi	School Facilities Architect for MSDE
Amanda Updegrove	Staff
Catherine Black	Staff
Cathy Stoll	Staff
Coleen	Staff
Danielle Cohn	Staff
Felice Grossman	Staff
Heather Whitby	Staff
Jenna Boule	Staff
Jennifer Redden	Staff
Juliette Schank	Staff
Kate Bubser	Staff
Katherine A Bubser	Staff
Miranda Steinbeck	Staff
Pamela Merritt	Staff
Patrick Byrne	Staff

EXECUTIVE SUMMARY

2

PROJECT INTRODUCTION

The current layout and design of Burning Tree Elementary School no longer fully meets the needs of the school community and presents significant challenges for students, staff, visitors, and neighborhood residents. To further explore these issues, this study will look at both the school and the site to determine what approach would be best suited for the school's future needs.

Burning Tree Elementary School shares a site entrance and parking lot with the Burning Tree Local Park, which has caused the site to be congested with limited capacity to safely and efficiently accommodate all modes of school transportation and lacks a true car loop that allows for drop off by the main entrance. In addition, parking is very limited, with close to 40% of the total parking being taken up by the local park.

Public transportation to the school relies on six (6) general education school buses and eight (8) special education school buses. Most of the buses line up for student drop-off and pick-up at the main entrance with queues extending onto Maryknoll Avenue, which blocks off exit and entrance access to the adjacent parking lot which serves both the school and Burning Tree Local Park.

Parents must drop off and pick up students along Beech Tree Road as the site lacks a dedicated on-site car loop near the main entrance. The street-side activity overlaps with bus traffic and complicates circulation.

Pedestrian access is also constrained. Students who walk to school must navigate through vehicle queues, with seven marked crosswalks—four along Beech Tree Road and Maryknoll Avenue and three along Beech Tree Road and Winterberry Lane. There is only one active crossing guard who monitors the primary crosswalk along Maryknoll Avenue.

The building systems at Burning Tree Elementary School have not undergone major renovation in over fifteen years. The roof, HVAC systems, and plumbing infrastructure are all nearing the end of their service life and will soon require full replacement.

The building's interior layout utilizes a split-level system for classrooms. While an elevator is installed, there are no corridors that connect the classrooms. Any person with a disability would be required to travel between classrooms to get to their final destination. This is inefficient and poses a significant challenge to ADA accessibility. In addition, many of the spaces do not meet the standards of ADA (i.e. bathrooms without grab bars, sinks without proper clearances, etc).

Throughout the years, the school has gone through many renovations to meet the educational specification of its time. Today, the school does not meet all the current requirements for Montgomery County's Educational Specifications. In addition to that, the school has a sizable special education population.

In contrast, a renewed, renovated, or rebuilt elementary school facility would be designed to support a future focused learning environment. It would feature:

- State-of-the-art technology and digital infrastructure
- Efficient lighting and power distribution
- A high-performance building envelope
- Improved acoustics, daylighting, and indoor environmental quality
- Geothermal renewable energy systems (Approach 4 only)

Concept plans for four approaches have been created to explore alternative solutions to updating the school and providing the community with what is needed to extend the school's life span. These approaches will also look into various site strategies that look into resolving the vehicular and bus circulation and developing a safer route for all modes of transportation.

PROJECT HISTORY

Burning Tree Elementary School, located at 7900 Beech Tree Road approximately one (1) mile from the intersection of Route 495 and Route 190, was originally constructed in 1958 on a 6-acre site. Additions completed in 1959, 1991, and 2007 have expanded the school to its current size of 68,119 square feet. Today, the school serves approximately 492 students in grades Kindergarten through 5.

However, both the interior and exterior of the facility face significant challenges, including congestion, capacity, current safety standards, elevation changes, and noncompliance with current ADA accessibility standards. These limitations hinder the school's ability to support evolving instructional methods, accommodate projected student population growth, and meet the needs of community-based programs.

The existing school facility is undersized relative to current student enrollment and does not align with the space requirements outlined in Montgomery County's current educational specifications. Most instructional and support spaces fall short in both size and functionality. Additionally, the shared parking lot and entrance with Burning Tree Local Park present ongoing challenges related to limited parking availability, traffic congestion, and pedestrian safety concerns.

As a result, Montgomery County Public Schools initiated a Feasibility Study to explore four potential approaches to address the facility and programmatic needs of the Bethesda community. The study will evaluate options including a renewal of the existing building, a light renovation, a major renovation with an addition, and a complete replacement of the school.

PROJECT INFORMATION

Current Enrollment:	492 students
Current capacity of Burning Tree Elementary School:	389 students
Projected Enrollment:	504 students
Proposed Capacity:	612 students
Existing Building Site	6.79 acres
Existing Building Square Footage	68,119 gsf
Proposed GSF	80,396 gsf

METHODOLOGY

Burning Tree Elementary School building, site, drawings, reports and past feasibility studies were evaluated by the design team to assess the existing condition of the facility. Meetings were held with school staff to understand operational concerns and to further understand how the community uses the existing building and site.

Four project approaches were developed by the design team, reviewed by MCPS and the community, revised and ultimately provided to the cost estimator to provide the costs associated with each approach for comparison. The four approaches are as follows:

Approach 1 - Renewal

Goal: Improve the building systems and finishes throughout the existing school to last at least another 30 years.

Approach 2 - ADA Upgrades and Light Renovations

Goal: Improve ADA accessibility throughout the building and site. This approach requires the construction of a small addition to provide accessibility to all classrooms without needing to circulate through other occupied spaces.

Approach 3 - Major Renovations and Addition

Goal: To preserve 50% of the existing building, provide the school with an addition that meets the school's capacity needs and improve site circulation. After evaluating the challenges of the many floor elevations within the existing building and the grading on the site, it was determined that 50% of the existing building could not be preserved. This approach would address all items from Approaches 1 and 2, in addition to bringing all spaces up to the current Educational Specifications.

Approach 4 - Replacement School

Goal: to provide a replacement school, which would implement a new compact high-performance school that would blend with the neighborhood. This approach separates the bus and car circulation, allowing for safer pedestrian foot traffic. All spaces in the replacement school would meet the current education specifications for Montgomery County and would ensure that ADA accessibility standards are met.

The information presented in this report is based on the following:

- Analysis of the existing Burning Tree Elementary School. The design team conducted a thorough visual evaluation of the existing building.
- Review of existing construction documents for the original building and the 1958, 1991, and 2007 additions as provided by the MCPS.
- Analysis of existing site features including, but not limited to, the utilities, site access, play fields, and the connection to the Burning Tree Local Park.
- Development of four approaches that focus on a renewal of the existing school, light renovations, major renovations with an addition, and a replacement school.

This report incorporates information from the following sources and evaluative efforts:

- Visual site analysis of the existing school during in-person visits.
- Review of construction documents for the original 1958 building, as well as the 1991 and 2007 additions and renovations.
- Study of vicinity maps, existing road networks, zoning regulations, and adjacent land uses.
- Site evaluations based on utility infrastructure, site topography, vehicular access, and availability of stormwater and sanitary systems.
- Feedback from community engagement sessions, including verbal input and written survey results.
- Planning and review meetings with the design team, external consultants, and representatives from Montgomery County Public Schools, including Montgomery Parks and Montgomery Planning.
- Preliminary cost estimates for site development and construction, informed by multiple conceptual design approaches.

This analysis provides the foundation for comparing the viability of each proposed design and informing the selection of the optimal approach for the future Burning Tree Elementary School.

COMMUNITY ENGAGEMENT

Community engagement played a vital role in shaping the direction and priorities of the Burning Tree Elementary School Feasibility Study. Montgomery County Public Schools and the design team created multiple opportunities for stakeholder input, ensuring the voices of families, educators, students, and community members were meaningfully incorporated into the planning process.

Three community meetings were held in Spring 2025 to present project goals, share initial findings, and gather feedback on potential design options. These forums allowed participants to express their needs, concerns, and aspirations for the addition and renovations to the existing elementary school or for the replacement elementary school. Key issues raised included ADA compliance, traffic safety during student drop-off and pick-up, the need for increased learning spaces, and the need for updated building systems.

To broaden outreach, the project team also distributed surveys to collect additional community input. The responses offered valuable insight into the many challenges the current school faces including the spatial and safety concerns during a code red emergency drill and a severe weather drill.

Community feedback directly informed key planning decisions, resulting in design priorities such as improved ADA accessibility, site circulation, enlarged spaces, enhanced safety features, and the improved learning environments. As the project moves into the design and construction phases, continued transparency and open communication will be essential to ensure the renovations, addition or replacement Burning Tree Elementary School becomes a lasting source of pride and partnership for the Bethesda community.

1. Stakeholder Involvement:

Input was gathered from a wide range of community members, including parents, students, teachers, staff, alumni, and local leaders. A series of community meetings, site visits, and surveys provided opportunities for individuals to voice concerns, share ideas, and help shape the vision for the new school.

2. Maintaining the School Culture:

Many participants emphasized the importance of preserving the cultural identity of Burning Tree Elementary School. Feedback highlighted the need to retain the kid-friendly community feel and allow for features such as murals and the school mascot statue found at the center of the school to remain as important elements in the new design.

3. Priorities Identified by the Community:

Through surveys and discussions, recurring priorities emerged, including:

- Improved ADA accessibility.
- Upgraded building systems (mechanical, electrical, and plumbing).
- Safe and efficient traffic circulation and student drop-off/pick-up zones.
- A separation in parking zones between the school and the local park.
- Expanded instructional space and modern learning environments.

4. Responsive Planning:

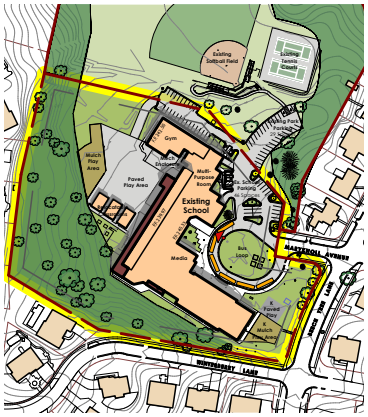
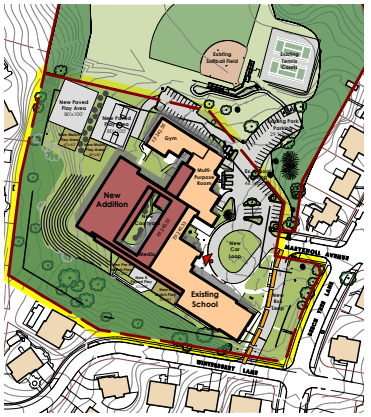
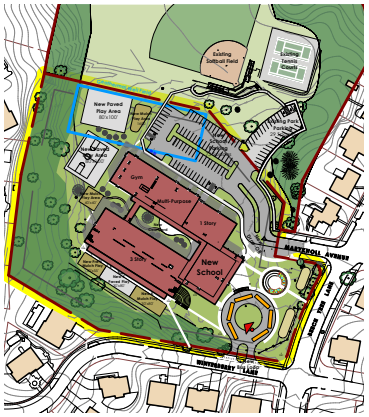
The design team integrated community feedback into site and building concepts, including upgrades to ADA accessibility, upgrades to building systems, and planning for future growth. Options were evaluated not just for educational function, but for how well they serve the broader community now and in the future.

5. Ongoing Communication:

Montgomery County Public Schools and the design team will continue engaging the community throughout the planning, design, and construction phases to ensure transparency, build trust, and keep stakeholders informed and involved as the project progresses The success of this project depends not only on its design and functionality, but also on how well it reflects the values, identity, and aspirations of the people it serves. Community engagement will remain a guiding principle through completion and beyond.

OVERVIEW OF APPROACHES

Area of Existing Building:
68,119 GSF

	APPROACH 1:	APPROACH 2:	APPROACH 3:	APPROACH 4:
				
	RENEWAL	ADA RENOVATIONS	ADDITIONS AND RENOVATIONS	REPLACEMENT SCHOOL
Total Parking Spaces:	**75**	**75**	**75**	**102**
Area of Demolition:	0 GSF	- 94 GSF	- 25,660 GSF	- 68,119 GSF
Area of Addition:	0 GSF	± 8,500 GSF	± 43,660 GSF	± 80,396 GSF
Area of Renovation:	68,119 GSF	7,865 GSF	42, 459 GSF	0 GSF
Total Building :	**68,119 GSF**	**± 76,525 GSF**	**± 86,119 GSF**	**± 80,396 GSF**
Construction Duration:	**24 Months**	**24 Months**	**24 Months**	**24 Months**
Sustainable Certification Level:	**N/A**	**N/A**	**2 Green Globes**	**2 Green Globes**
Energy Use Index:	**68 kBtu/ft²**	**57 kBtu/ft²**	**35 kBtu/ft²**	**25 kBtu/ft²**
Building Construction Costs:	[redacted]	[redacted]	[redacted]	[redacted]
Site Construction Costs:	[redacted]	[redacted]	[redacted]	[redacted]
Additional Construction Costs:	[redacted]	[redacted]	[redacted]	[redacted]
Costs Outside of Cost of Construction:	[redacted]	[redacted]	[redacted]	[redacted]
Total Construction Cost:	[redacted]	[redacted]	[redacted]	[redacted]
30-Year Life Cycle Cost Analysis	[redacted]	[redacted]	[redacted]	[redacted]

RECOMMENDATION

Following a comprehensive evaluation of all potential options, the project team presents **Approach 4 – Replacement School** as the solution for Burning Tree Elementary School. This recommendation is based on planning priorities established by Montgomery County Public Schools and shaped by meaningful feedback from community stakeholders.

Approach 4 offers the following significant benefits to the Burning Tree ES community:

Full ADA Accessibility:

Ensures accessible routes throughout the entire building and site. (Note: Approach 1, does not address accessibility and Approach 3 would meet minimum code compliance but not go beyond it.)

High-Performance Design:

Applies modern energy-efficient design strategies to the entire facility.

Compact Floor Plan:

Supports energy efficiency, allows more flexibility in site planning, and minimizes environmental impact.

Purpose-Built Spaces:

Every space is designed for its intended use, unlike renovation approaches that rely on repurposing existing areas.

Strategic Design

The design includes dedicated space for the Learning Center, ensuring it meets program needs and supports student success.

Flexibility

The design allows for future adaptability as curriculum and program needs evolve.

Enhanced Daylighting and Views:

Maximizes access to natural light and exterior views in all occupied areas.

Improved Internal Circulation:

Provides the most efficient corridor layout, enhancing navigation and reducing travel time within the school.

Safe and Separate Circulation:

Completely separates bus traffic from car drop-off and pick-up areas, improving on-site safety.

Expanded Parking:

Offers the greatest number of dedicated parking spaces for the school community, separate from Burning Tree Local Park.

Community-Oriented Outdoor Space:

Introduces a pedestrian plaza at the front of the school, creating an exterior gathering space and a safe, vehicle-free pedestrian route for students.

Pathway to Net Zero Energy:

Enables the design team to target an Energy Use Intensity (EUI) below 25, supporting the goal of Net Zero Energy in the most cost-effective way. This is the only approach that can incorporate a geothermal system.

Long-Term Operational Savings:

Results in lower energy and maintenance costs over the lifespan of the school compared to renovation options.

Educational Opportunity:

Positions the high-performance building itself as a teaching tool to promote energy literacy among students, staff, and the broader community.

Sustainability Certification:

Achieves Two Green Globes certification. In contrast, Approaches 1 and 2 offer limited opportunities to significantly improve the school's sustainability.

Approach 4 not only meets the current and future needs of the Burning Tree Elementary School community but also supports broader goals of educational excellence, environmental stewardship, and community well-being.

PROJECT SCOPE, OBJECTIVES AND GOALS 3

PLANNING GOALS

- Create flexible and collaborative learning environments throughout the building that can accommodate changing educational programs and various size groups.
- Ensure that the building is fully accessible and meets COMAR and ADA guidelines.
- Improve circulation within the building to improve transitions and hallway supervision.
- Increase the amount of natural daylighting and exterior views in occupied spaces.
- Reduce the amount of noise and distracting sounds throughout the building to avoid interference with instruction by implementing sound-absorptive finishes and ensure that the building meets MSDE and ANSI guidelines for acoustical performance.
- Make core spaces such as the cafeteria and gymnasium accessible to the community and secure them from the rest of the school for use after school hours.
- Ensure the safety and comfort of all students, faculty, school staff and visitors, using the MCPS-designed alarm system and other methods such as Crime Prevention Through Environmental Design (CPTED) strategies.
- Provide sustainable infrastructure and building systems in accordance with the current Department of General Service Requirements to reduce energy and water use, reduce operational costs, and generate long-term financial savings for MCPS.

DESIGN CONSIDERATIONS

The space analysis describes the facilities that are needed for the Burning Tree Elementary School educational program for Grades Pre-K through 5.

- The existing school has a current capacity of 389 students. The approaches for Burning Tree Elementary School will be designed for a projected enrollment of 504 students, with a capacity for 612 students and a core capacity of 640 students.
- The adjacent Burning Tree Local Park shares the school's entrance, exit, and parking lot. This causes traffic in this area to be heavily congested, particularly during drop-off and pick-up times. Vehicular circulation has been looked at to determine if a separated bus drop-off / pick-up area from the car drop-off / pick-up area is warranted.
- The site has a wide variety of grade changes throughout.
- The school does not meet the current requirements set by the proposed Educational Specifications for Montgomery County Public Schools.
- The design should support flexible and collaborative learning environments and provide work spaces throughout the building.
- Classrooms should be designed to accommodate various group sizes, with adaptable layouts that support group work, multiple presentation formats, and strong connectivity to external resources, while maintaining a rectangular shape and incorporating built-in elements that maximize usable floor area, avoiding elongated configurations or intrusive features that limit flexibility.
- To support long-term instructional flexibility, large special use spaces—such as those intended for general music or multipurpose labs—should be planned so they can be easily reconfigured, either partially or entirely, for different types of instruction in the future.
- All teaching stations, support spaces, and core areas must be wired for computers and VOIP telephones, with sufficient electrical supply in accordance with Maryland State design guidelines and MCPS technology standards, and must be designed with adaptable space and power infrastructure to accommodate the evolving demands of high technology and educational innovation.

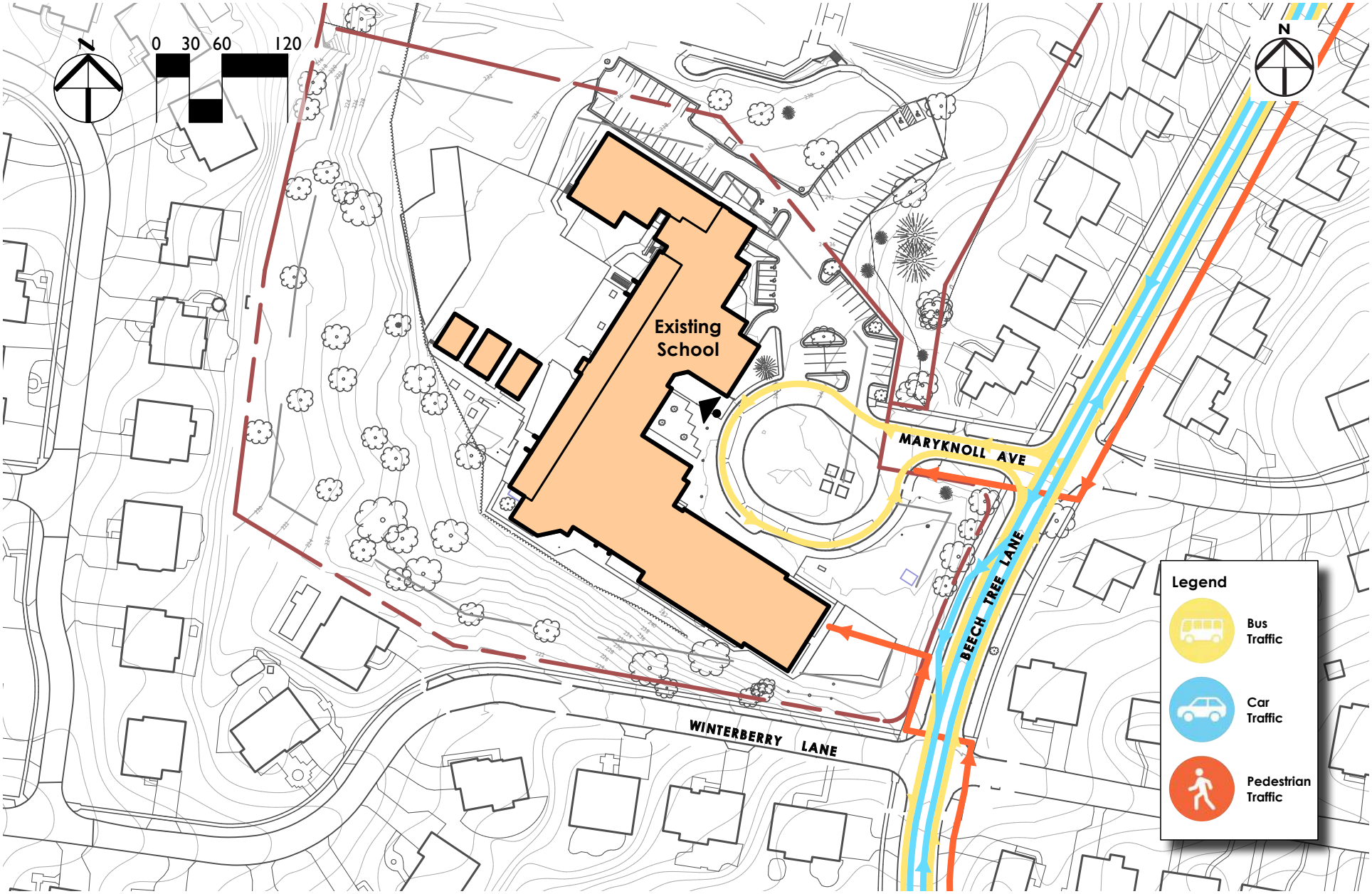
EXISTING CONDITIONS

4

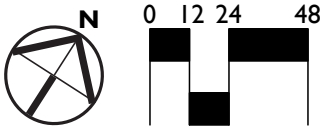
VICINITY MAP - BETHESDA, MARYLAND

EXISTING SITE PLAN

EXISTING SITE CIRCULATION



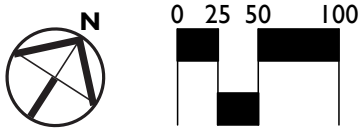
HISTORY OF CONSTRUCTION



	1958	Original School opened	18,267 gsf
	1959	Addition was constructed	19,775 gsf
	1991	Full Renovation and Addition project	22,806 gsf
	2002	TIMS project was complete	
	2007	Gymnasium is constructed	7,271 gsf
	2011	Roof replacement	
	2012	Playground replacement	
	2015	Fire Alarm Upgrade	
	2016	Roof top and fan coil units are replaced	
	2019	Computer Lab Room Modifications	
	2020	Security Vestibule Renovation	
Total Square Footage of Burning Tree ES			68,119 gsf

REDACTED

EXISTING FLOOR PLANS



LEGEND

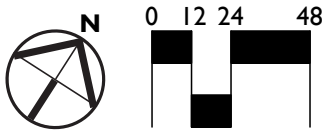
- Classrooms
- Media Center, PE, Multi-Purpose & Kitchen
- Administration
- Music & Arts
- Instructional Support
- Building Support

REDACTED

LOWER LEVEL **MAIN LEVEL** **UPPER LEVEL**

FLOOR PLANS

EXISTING FLOOR PLANS



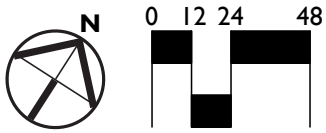
LEGEND

- Classrooms
- Media Center, PE, Multi-Purpose & Kitchen
- Administration
- Music & Arts
- Instructional Support
- Building Support

REDACTED

LOWER LEVEL

EXISTING FLOOR PLANS



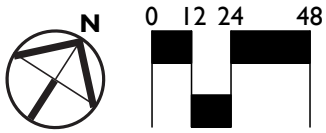
LEGEND

- Classrooms
- Media Center, PE, Multi-Purpose & Kitchen
- Administration
- Music & Arts
- Instructional Support
- Building Support

REDACTED

MAIN LEVEL

EXISTING FLOOR PLANS



LEGEND

- Classrooms
- Media Center, PE, Multi-Purpose & Kitchen
- Administration
- Music & Arts
- Instructional Support
- Building Support

REDACTED

UPPER LEVEL

APPROACH 1: RENEWAL

APPROACH 1 - SUMMARY:
RENEWAL

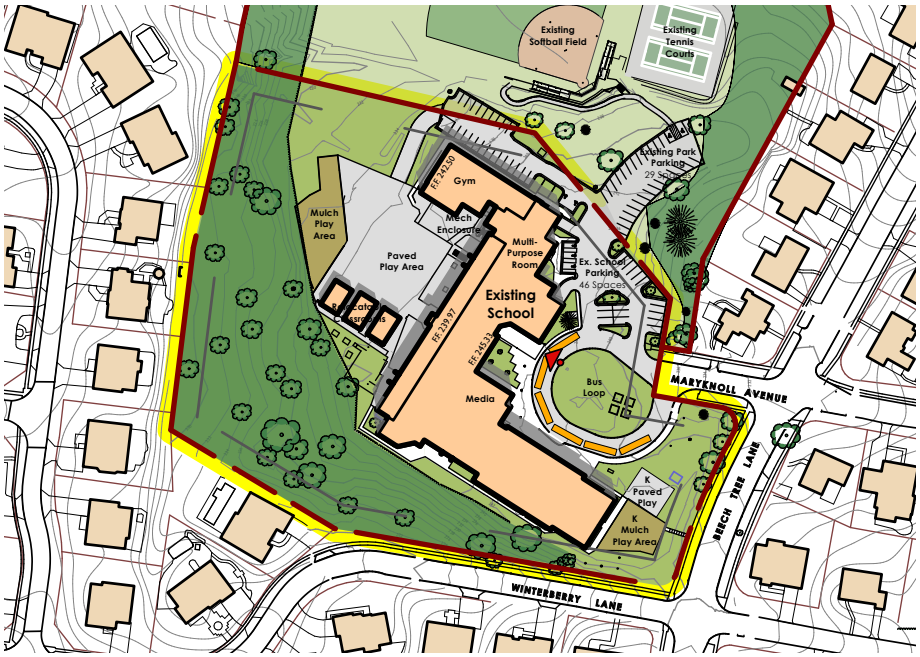
CONSTRUCTION COST ESTIMATE: [redacted]

GROSS SQUARE FOOTAGE

EXISTING BUILDING:	68,119 GSF
AREA OF DEMOLITION:	0 GSF
AREA OF ADDITION:	0 GSF
TOTAL AREA OF BUILDING:	68,119 GSF

PARKING TABULATION

SCHOOL STANDARD SPACES:	41	PARK STANDARD SPACES:	27
SCHOOL HANDICAP SPACES:	5	PARK HANDICAP SPACES:	2
TOTAL SCHOOL PARKING SPACES:	46	TOTAL PARK PARKING SPACES:	29
TOTAL PARKING SPACES:			75



SUMMARY:

- The existing elementary school will remain in place with minimal renovation to interior spaces.
- The renewal will include replacing all existing systems in kind and cosmetic upgrades (i.e. flooring, paint, new windows, new doors, new roof, etc).
- No site work will be conducted.
- ADA accessibility will not be addressed.

OPPORTUNITIES:

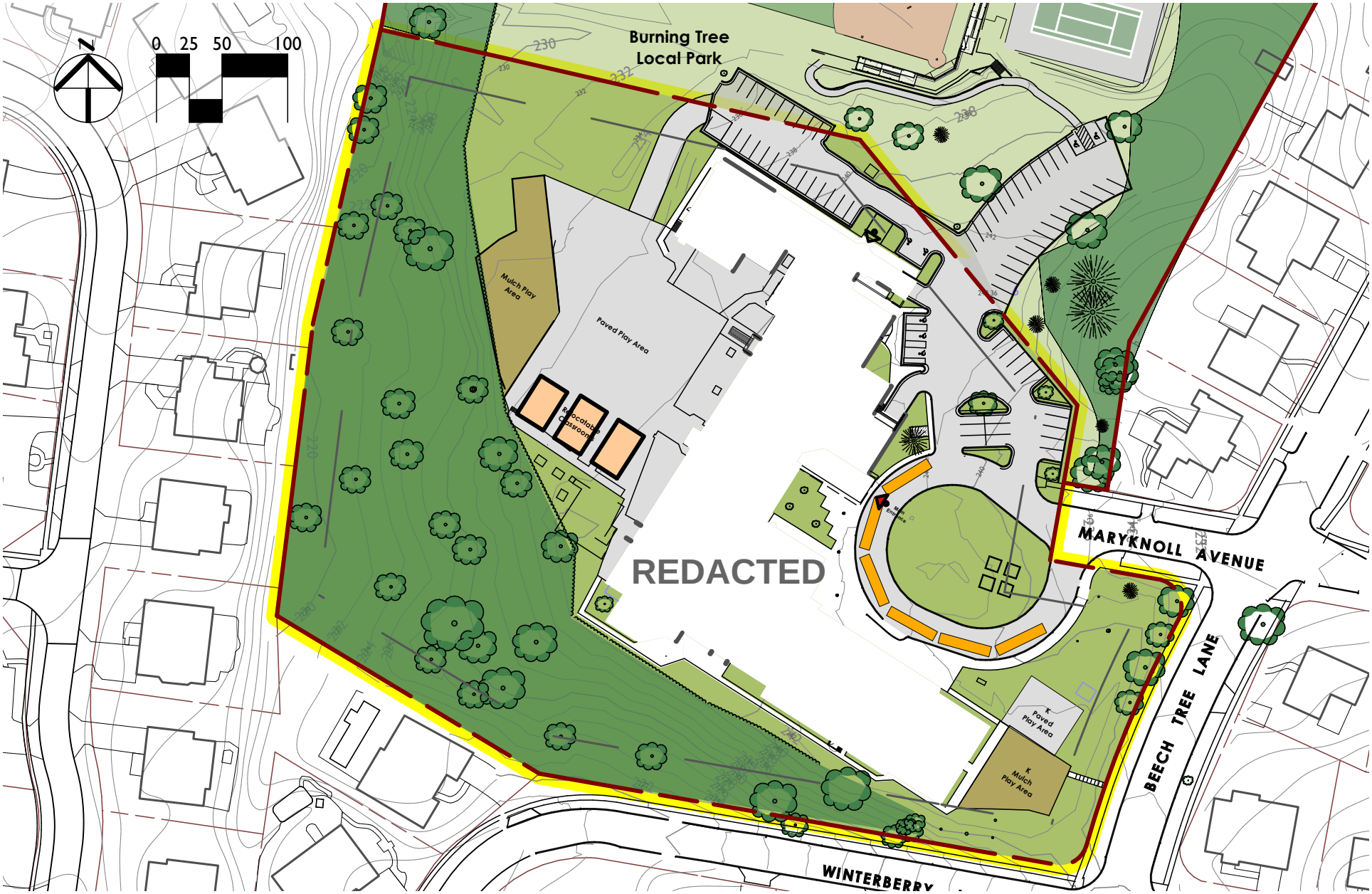
- Many of the systemic problems (mechanical, electrical, and plumbing) would be resolved, allowing the staff to have better teaching environments within the existing envelope of the school.
- With the work being minimal, the time frame of construction would be shorter, which would mean less time of displacement.

CHALLENGES:

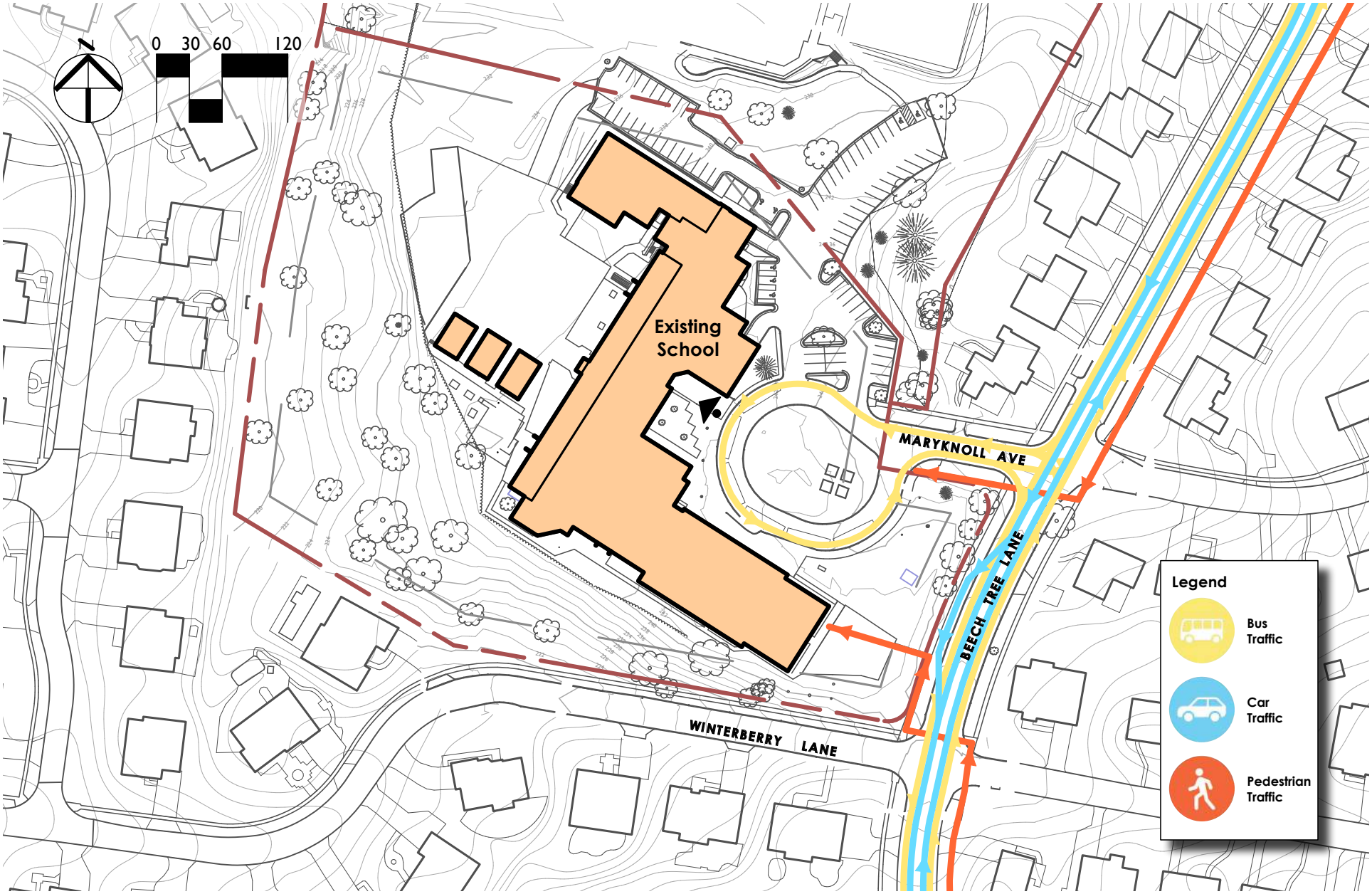
- None of the areas both inside and outside of the building will improve handicap accessibility, which is one of the schools' most crucial issues.
- These changes would not address nor fully meet the school's capacity needs, code compliance needs, and the educational specification needs for Montgomery County Public Schools.
- With the site not changing, the traffic pattern will remain the same. This will continue to cause backup on Beech Tree Lane and Winterberry Lane. and pedestrian safety is not being addressed.
- The relocatable classrooms would remain on site.

APPROACH 1 - SITE PLAN

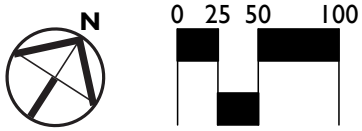
APPROACH 1 - PROGRAMMING DIAGRAM



APPROACH 1 - SITE CIRCULATION



APPROACH 1 - FLOOR PLANS



LEGEND

- Classrooms
- Media Center, PE, Multi-Purpose & Kitchen
- Administration
- Music & Arts
- Instructional Support
- Building Support

REDACTED

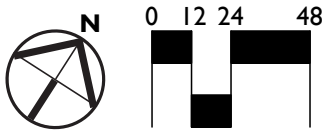
LOWER LEVEL

MAIN LEVEL

UPPER LEVEL

FLOOR PLANS

APPROACH 1 - LOWER LEVEL FLOOR PLAN



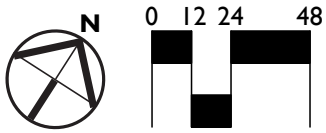
LEGEND

- Classrooms
- Media Center, PE, Multi-Purpose & Kitchen
- Administration
- Music & Arts
- Instructional Support
- Building Support

REDACTED

LOWER LEVEL

APPROACH 1 - MAIN LEVEL FLOOR PLAN



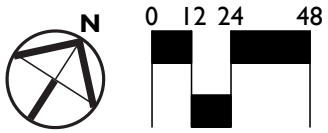
LEGEND

- Classrooms
- Media Center, PE, Multi-Purpose & Kitchen
- Administration
- Music & Arts
- Instructional Support
- Building Support

REDACTED

MAIN LEVEL

APPROACH 1 - UPPER LEVEL FLOOR PLAN



LEGEND

- Classrooms
- Media Center, PE, Multi-Purpose & Kitchen
- Administration
- Music & Arts
- Instructional Support
- Building Support

REDACTED

UPPER LEVEL

APPROACH 1 - SPACE ANALYSIS

Burning Tree Elementary School Space Analysis	ED Spec MCPS Elementary School			Approach 1 Comparison to Ed Spec		Approach 1 Burning Tree Elementary School		
	Area(s)	SF	Total Net	SF	%	Area(s)	SF	Total Net
General Classrooms			**33,150**	**-7,830**	-24%			**25,320**
Pre-Kindergarten (incl. 250 sf of storage)	2	1,200	2,400	-2,400	-100%	0	0	0
Kindergarten (incl. 250 sf of storage) (incl. toilet)	4	1,200	4,800	1,585	33%	5	1,277	6,385
Standard (incl. 150 sf of storage)	19	850	16,150	-5,345	-33%	12	900	10,805
Special Education Learning Center (incl. 150 sf of storage)	7	850	5,950	-440	-7%	6	918	5,510
Art (incl. 250 sf of storage)	1	1,200	1,200	-175	-15%	1	1,025	1,025
Music (incl. 250 sf of storage)	1	1,200	1,200	-170	-14%	1	1,030	1,030
Instrumental Music Room (incl. stor)	1	450	450	115	26%	1	565	565
Dual Purpose Room	1	1,000	1,000	-1,000	-100%	0	0	0
Support Rooms			**3,335**	**50**	1%			**3,385**
Large Instructional Support Room	1	550	550	45	8%	1	595	595
Small Instructional Support Room	2	425	850	-110	-13%	2	370	740
Speech/Language Room	1	250	250	40	16%	1	290	290
Therapy/Support Room	1	250	250	510	204%	1	760	760
Special Education Support	2	250	500	-365	-73%	1	135	135
Personal Care Room	1	100	100	-100	-100%	0	0	0
Conference Room	1	275	275	-275	-100%	0	0	0
Testing Room	1	140	140	10	7%	1	150	150
Support Staff Offices	3	140	420	295	70%	3	238	715
Library Media Center			**2,875**	**-200**	-7%			**2,675**
Learning Environment	1	2,100	2,100	-370	-18%	1	1,730	1,730
Work and Production Area	1	475	475	-105	-22%	1	370	370
LMC Storage Room	1	300	300	275	92%	1	575	575
Physical Education			**4,430**	**20**	0%			**4,450**
Gymnasium	1	3700	3,700	0	0%	1	3,700	3,700
Office	1	140	140	15	11%	1	155	155
Storage	1	250	250	-5	-2%	1	245	245
Storage	2	100	200	0	0%	1	200	200
Outside Storage	1	140	140	10	7%	1	150	150
Multipurpose Room			**4,135**	**-860**	-21%			**3,275**
Multipurpose Room	1	3200	3,200	-830	-26%	1	2,370	2,370
Chair Storage	1	180	180	-120	-67%	1	60	60
Table Storage	1	180	180	-180	-100%	0	0	0
Platform	1	450	450	-55	-12%	1	395	395
Before/After Care Prep Area	1	25	25	-25	-100%	0	0	0
Before/After Care Storage	1	100	100	350	350%	1	450	450

APPROACH 1 - SPACE ANALYSIS (CONTINUED)

Burning Tree Elementary School Space Analysis	ED Spec MCPS Elementary School			Approach 1 Comparison to Ed Spec		Approach 1 Burning Tree Elementary School		
	Area(s)	SF	Total Net	SF	%	Area(s)	SF	Total Net
Kitchen			**1,372**	**-337**	-25%			**1,035**
Serving Area	1	300	300	585	195%	1	885	885
Walk-in Cooler/Freezer (included in Serving Area)	1	155	155	-155	-100%	1	0	0
Dry Storage	1	192	192	-72	-38%	1	120	120
Office	1	100	100	-100	-100%	0	0	0
Toilet Room	1	70	70	-40	-57%	1	30	30
Preparation Area (included in Serving Area)	1	555	555	-555	-100%	1	0	0
Administration			**1,765**	**-455**	-26%			**1,310**
General Office	1	500	500	-275	-55%	1	225	225
Workroom	1	300	300	10	3%	1	310	310
Principal's Office (incl. 50 sf toilet room)	1	250	250	-10	-4%	1	240	240
Assistant Principal's Office	1	140	140	-140	-100%	0	0	0
Conference Room	1	275	275	0	0%	1	275	275
Storage	1	100	100	-15	-15%	1	85	85
Record Room	1	75	75	30	40%	1	105	105
Toilet Room	1	50	50	20	40%	1	70	70
Remote Workroom	1	75	75	-75	-100%	0	0	0
Counseling Suite			**320**	**-95**	-30%			**225**
Counselor's Office	1	160	160	65	41%	1	225	225
Itinerant Staff Office	1	160	160	-160	-100%	0	0	0
Staff Development Area			**600**	**-100**	-17%			**500**
Staff Development Office	1	100	100	125	125%	1	225	225
Reading Specialist Office	1	100	100	-100	-100%	0	0	0
Training/Conference Room	1	400	400	-125	-31%	1	275	275
Health Services Suite			**710**	**-290**	-41%			**420**
Waiting Area	1	100	100	-20	-20%	1	80	80
Treatment/Medication Area	1	120	120	15	13%	1	135	135
Office/Health Assessment Room	1	100	100	-100	-100%	0	0	0
Health Assessment/Isolation Room	1	100	100	-100	-100%	0	0	0
Rest Area	1	200	200	-60	-30%	1	140	140
Toilet Room	1	50	50	-15	-30%	1	35	35
Storage Room	1	40	40	-10	-25%	1	30	30

APPROACH 1 - SPACE ANALYSIS (CONTINUED)

Burning Tree Elementary School Space Analysis	ED Spec MCPS Elementary School			Approach 1 Comparison to Ed Spec		Approach 1 Burning Tree Elementary School		
	Area(s)	SF	Total Net	SF	%	Area(s)	SF	Total Net
Staff Area			**750**	**-115**	-15%			**635**
Staff Lounge (incl. 2 ex. toilet rooms)	1	650	650	-40	-6%	1	610	610
Privacy Room	2	50	100	-75	-75%	1	25	25
Building Service Facilities			**1,885**	**-647**	-34%			**1,238**
Building Services Office	1	140	140	15	11%	1	155	155
Locker/Shower Area	1	150	150	-100	-67%	1	50	50
Compactor/Trash Room	1	150	150	30	20%	1	180	180
General Storage and Receiving	1	550	550	-360	-65%	1	190	190
General Storage	3	240	720	-367	-51%	1	353	353
Building Services Outdoor Storage	1	175	175	135	77%	2	155	310
Building Support Spaces			**600**	**-600**	-100%			**0**
Book Storage	1	200	200	-200	-100%	0	0	0
PTA Storage	1	100	100	-100	-100%	0	0	0
Telecommunication Closet (MDF)	1	150	150	-150	-100%	0	0	0
Telecommunication Closet (IDF)	3	50	150	-150	-100%	0	0	0

Gross Area Grand Total Summary	ED Spec MCPS Elementary School	Approach 1 Comparison to Ed Spec	Approach 1 Burning Tree Elementary School
Total Net Sq. Ft.	**56,477**	**-12,009**	**44,468**
Gross Area Factor (Walls, Circulation, Toil, Mech/Elec, Struct, Shafts,...)	**24,204**	**-553**	**23,651**
Efficiency Factor %	70%		65%
Gross Area Grand Total	**80,681**	**-12562**	**68,119**

CIVIL DESIGN NARRATIVE

PROPOSED SITE ASSESSMENT

There will be minimal site upgrades included in Approach 1. The only site work proposed for this approach is what's necessary to support new mechanical, electrical, and plumbing systems. Site items that are non-compliant with ADA will not be addressed with this Approach.

SEDIMENT AND EROSION CONTROL

Any project over 5,000 sf of disturbance will need to receive approval of the erosion and sediment control plan from Montgomery County DPS. Plans should conform to the 2011 Standards and Specifications for Soil Erosion and Sediment Control from Maryland Department of the Environment. It is anticipated that any major project will need to include a sediment trap or sediment basin with a connection to the public storm drain system. All projects will also require a stabilized construction entrance, inlet protection, silt or super silt fence, stockpile areas, concrete washouts, and permanent stabilization.

SITE DEMOLITION

Existing site features located within the proposed building footprint or modifications to existing site items will require demolition.

GRADING

The site should be designed to have a balance between cut and fill to limit the amount of export or import for the site. All grass areas should be stabilized with sod.

FORESTATION

The project will not be clearing any forest. Large trees near the public sidewalk or along residential properties should be maintained when possible. The property will need to go through a forest conservation exemption or a full forest conservation plan depending on the amount of work being proposed. All work will be reviewed by the Maryland National Capital Park and Planning Commission.

SITE IMPROVEMENTS

Any pavement shall meet the following requirements:

- Sidewalk shall be concrete (4,500 psi). Sidewalks shall be 5' wide and 4" deep with WWF 6x6 and a 4" stone base.
- All curb and gutter shall be concrete (4,500 psi).
- All heavy duty concrete (4,500 psi) for ADA spaces or vehicular pavement shall be 8" thick with WWF 4x4 and 4" GAB.
- Asphalt pavement shall be 6" thick (2" asphalt surface course and 4" asphalt base course) with a 6" GAB.
- Heavy duty asphalt pavement for the bus loop, loading dock, or construction access shall be 6" thick (2" asphalt surface course and 4" asphalt base course) with an 8" GAB.
- All pavement shall be over an approved subgrade.

PROPOSED SITE UTILITIES

- Water – The waterline for the site shall be upgraded to an 8" DIP to serve the sprinkler system, hydrants, and domestic demand for the building. This will require a new water meter vault with easement. The existing waterline will require a service connection abandonment. The new line will require a new service connection.
- Sanitary Sewer – The existing sanitary sewer should be reused if possible. If a new line is necessary, a new line should be connected to the line in Beech Tree Road.
- Gas – The existing line should be reused if able. Otherwise a new line will need to be coordinated with Washington Gas
- Electric – The existing electric should be maintained if possible. If a new electric main is needed, the locations should be closest to the new transformer to limit the amount of new electric main that will be needed. All work to be coordinated with PEPCO.

- Stormwater Management – All new work will need to meet Montgomery County SWM requirements. The site will need to meet the County's ESD requirements. It is assumed that a combination of pervious pavement, micro-bioretentions, and other ESD practices will be needed. If ESD cannot be met, Chapter 3 or structural practices can be considered.
- Storm Drainage – New drainage infrastructure will need to be constructed to meet the proposed grades of the new building and site features. The new storm drain system will connect to the existing drainage system within Beech Tree Road.

ATHLETIC FIELDS, ATHLETIC COURTS, AND PLAY AREAS

The existing fields and courts will be maintained if possible. If any of the courts or play spaces are removed with the new work, an effort should be made to group the paved play area and playground together. Access to the Burning Tree Local Park amenities shall be kept open in all Approaches.

ARCHITECTURAL DESIGN NARRATIVE

Approach 1 proposes to retain all existing spaces while focusing on replacing building systems in kind. Of the four proposed options, this approach has the least impact on the current structure of Burning Tree Elementary School. However, it does not address the school's capacity constraints, code compliance issues, or the educational specification requirements established by Montgomery County Public Schools.

Key components of this approach include:

- Cosmetic upgrades to all interior spaces, including new flooring, paint, windows, and doors.
- Replacement of all major building systems, including plumbing, electrical, and mechanical systems, along with a new chiller, boiler, and generator.
- Installation of a new roofing system.
- No significant reconfiguration of the floor plan; while minor wall adjustments may occur, classroom locations and sizes will remain unchanged.
- No improvements to site accessibility; earthwork and site infrastructure will remain as-is.
- Handicap accessibility will not be improved, either in the building or on the site.

The construction for Approach 1 will require a full temporary relocation of students and staff to a holding school. The building will not be occupied during construction, which is anticipated to last approximately 12 months.

STRUCTURAL DESIGN NARRATIVE

This option is for the replacement of deficient buildings systems.

Under this option, the existing roof structure will need to be analyzed to support the new roof top unit equipment. New mechanical pads will need to be provided for any new floor-mounted equipment. Supplement reinforcing will be required at the existing floor and roof framing for any floor penetrations. Supplemental steel will be required at all wall openings through the existing masonry walls.

MEP GENERAL DESIGN NARRATIVE

Project Approach 1 - Renewal - includes selective improvements recommended to maintain ongoing operation of Burning Tree Elementary School. This approach does not provide modifications and/or additions to the school's current floor plan. Mechanical, electrical, plumbing, fire-protection, communications, and electronic safety and security improvements included within the scope of this renewal are summarized within this section.

MECHANICAL DESIGN NARRATIVE

HEATING WATER INFRASTRUCTURE SYSTEMS

Replacement of the existing heating water boilers, boiler room chilled/heating water piping, air separator, and expansion tank will be provided under Approach 1. The existing two-pipe chilled/heating water distribution pumps will be maintained, with the new chilled/heating water piping systems connected to the existing pumps. Additionally, a two-pipe chilled/heating water arrangement will be maintained for the school under Approach 1, as reuse of the existing two-pipe HVAC equipment installed during the 2016 HVAC systemic renovation (such as fan coil units) is recommended.

Production of heating water for the two-pipe chilled/heating water distribution system will be accomplished by two gas-fired condensing type boilers located within the lower level boiler room area. Combustion air will be ducted directly from the outdoors to each boiler, with a dedicated flue extending from each boiler and terminating at the school's roof level. In addition to the new boilers and the existing chilled/heating water distribution pumps, all boiler room chilled/heating water piping will be replaced. Boiler room piping accessories including an air separator, an expansion tank, and a make-up water piping assembly will also be replaced under Approach 1, with all replacement components located within the boiler room.

CHILLED WATER INFRASTRUCTURE SYSTEMS

Replacement of the existing air-cooled chiller will be provided under Approach 1. A single air-cooled scroll-type replacement chiller is recommended, with the new chiller positioned at grade in a similar location as the school's existing chiller. The capacity of the replacement chiller will be sized to support the school's current HVAC system cooling requirements and is anticipated to be similar in capacity or slightly less than the existing 120-ton chiller. The existing outdoor chilled water piping will be reused and connected to the new air-cooled chiller and the new boiler room chilled/heating water piping.

BUILDING CHILLED/HEATING WATER PIPING SYSTEMS

In-kind replacement of the existing two-pipe chilled/heating water piping mains located throughout the school will be provided under Approach 1. New piping systems will be similar in size to those that currently exist and will be provided with new piping supports, piping insulation, and shut-off valves throughout the school. Piping materials will include Tyle L copper with solder joints for piping systems 2-inches and smaller, and schedule 40 black steel with welded or flanged joints for piping systems 2.5-inches and larger. New piping systems will connect to the existing HVAC equipment branch piping at fan coil units and other HVAC systems that were replaced during the 2016 HVAC systemic renovation.

HVAC SYSTEMS

HVAC systems throughout the school will generally remain as currently installed under Approach 1, excluding the gymnasium and gymnasium lobby HVAC systems, the multi-purpose room HVAC system, the kitchen HVAC system, and miscellaneous heating-only equipment (unit heaters and convectors) located throughout the school. These HVAC systems will be replaced under Approach 1 and are described in more detail below. Rebalancing (both air and water) and retro-commissioning of all existing HVAC equipment is recommended under Approach 1.

Gymnasium Area: Replacement of the existing H&V unit and associated supply and return ductwork serving the gymnasium is recommended. A new packaged single-zone rooftop heat pump unit with air-source heat pump unit-type heating and cooling, hot-gas reheat coil for humidity control, enthalpy wheel for pre-conditioning outdoor air, and either an auxiliary gas-

fired furnace or hot water heating coil for low ambient heating and defrost operation is recommended for both space conditioning and ventilation. The gymnasium's existing supply and return ductwork will be removed, with new ductwork provided throughout. The use of double-wall supply ductwork is recommended for the gymnasium since air-conditioning will be provided. The new rooftop air-source heat pump unit will be located at the roof of the gymnasium lobby and will potentially impact the required location of the new gymnasium lobby rooftop unit described below.

Gymnasium Lobby Area: Replacement of the existing packaged DX rooftop unit serving the gymnasium lobby is recommended. A new packaged single-zone rooftop heat pump unit with air-source heat pump unit-type heating and cooling, hot-gas reheat coil for humidity control, enthalpy wheel for pre-conditioning outdoor air, and either an auxiliary gas-fired furnace or hot water heating coil for low ambient heating and defrost operation is recommended for both space conditioning and ventilation. The existing above-ceiling supply and return ductwork will be modified to accommodate the new rooftop heat pump unit location. The existing supply and return ductwork mains, associated branch ductwork, and air devices will be reused to the greatest extent possible.

Multi-purpose Room and Stage Areas: Replacement of the existing packaged DX rooftop unit with gas-fired heating serving the multipurpose room and stage areas is recommended. A new packaged single-zone rooftop heat pump unit with air-source heat pump unit-type heating and cooling, hot-gas reheat coil for humidity control, enthalpy wheel for pre-conditioning outdoor air, and either an auxiliary gas-fired furnace or hot water heating coil for low ambient heating and defrost operation is recommended for both space conditioning and ventilation. Minimum outdoor air requirements for the replacement equipment will account for both the areas served and any make-up air requirements associated with the new kitchen equipment. The existing above-ceiling supply and return ductwork will be modified to accommodate the new rooftop heat pump unit location and its associated equipment connection requirements. The existing supply and return ductwork mains, associated branch ductwork, and air devices will be reused to the greatest extent possible.

Kitchen Area: Modifications to the existing kitchen area exhaust fan system is anticipated to accommodate the new kitchen equipment. The use of a Type II kitchen exhaust hood is anticipated. While this hood will require a new rooftop exhaust fan, the use of a dedicated make-up air unit is not anticipated. New transfer ductwork and transfer grilles extending between the kitchen and adjacent multi-purpose room are anticipated. In addition, the replacement of the existing two-pipe fan coil unit with a new DX cooling / hot water heating type fan coil unit is recommended.

Miscellaneous Heating-Only Equipment: Replacement of the existing heating-only HVAC equipment located throughout the school is recommended under Approach 1. This includes replacement of the existing cabinet unit heaters, propeller unit heaters, and heating water convectors. Replacement equipment will be sized to accommodate a 140-degree F design heating water supply temperature and provided new with new DDC-based electronic control components.

AUTOMATIC TEMPERATURE CONTROL (ATC) SYSTEMS

The school's existing StruxureWare DDC system with BACnet protocol will be maintained under Approach 1, with the existing DDC system and associated system graphics modified and/or expanded to accommodate the new heating water infrastructure, chilled water infrastructure, and HVAC system components described previously.

PLUMBING DESIGN NARRATIVE

DOMESTIC WATER PIPING

The existing combination fire/water service serving Burning Tree Elementary School will be maintained as currently installed under Approach 1, including all piping components located within the school's water service room. The remaining domestic water piping systems located throughout the school will be replaced in-kind under Approach 1, including all above-ceiling and in-wall cold water piping, hot water piping, and hot water return piping. New piping systems will be similar in size to those that currently exist and will be provided with new piping supports, piping insulation, and shut-off valves throughout. Hot water circulation piping will be expanded throughout the

school to meet current energy code requirements. All domestic water piping systems will be constructed of Type L copper, with soldered joints provided for piping 2-inches in diameter and smaller and brazed joints provided on piping 2.5-inches in diameter and larger.

DOMESTIC HOT WATER EQUIPMENT

Replacement of the existing domestic water heater should be considered under Approach 1, given the amount of domestic hot water work being provided for the school under this project option. If replaced, a pair of electric-resistance type water heaters are recommended, with the new water heaters located within the lower level boiler room. If not replaced, the existing gas-fired water heater is anticipated to have approximately 5-years of service remaining when the project is complete.

A new master thermostatic mixing valve, expansion tank, and domestic water circulation pump will be provided under Approach 1, with the new circulation pump sized to meet the school's increased domestic hot water recirculation requirements.

NATURAL GAS SERVICE

Modifications to the existing 2-inch incoming natural gas service, associated rotary meter, and building gas piping mains are not anticipated under Approach 1. Selective modifications to the existing gas piping systems are anticipated for the new boiler equipment.

SANITARY WASTE AND VENT PIPING

In-kind replacement of the existing above-grade sanitary waste and vent piping is recommended under Approach 1. New sanitary waste and vent piping systems will be constructed of solid core polyvinyl chloride (PVC). Reuse of the existing under-slab piping is generally anticipated. Under-slab piping should be scoped during design to ensure that no blockages or other deficiencies exist that would prevent proper flow through this piping. Any deficiencies identified during scoping should be remediated through pipe snaking or selective piping replacement.

STORM WATER PIPING

Above-grade storm water piping and accessories (such as roof drains and cleanouts) will be replaced to accommodate the new roof being provided under Approach 1. In addition, new secondary overflow roof drains, wall-mounted overflow termination nozzles, and associated overflow storm water piping will be provided to accommodate the new roof. New storm water piping systems will be constructed of solid core PVC. Reuse of the existing under-slab piping is generally anticipated. Under-slab piping should be scoped during design to ensure that no blockages or other deficiencies exist that would prevent proper flow through this piping. Any deficiencies identified during scoping should be remediated through pipe snaking or selective piping replacement.

PLUMBING FIXTURES

Replacement of the existing plumbing fixtures throughout the school is included under Approach 1, given the amount of domestic water piping work being performed and the presence of lead at select plumbing fixtures. Institutional grade replacement plumbing fixtures will be provided and include floor-mounted water closets utilizing 1.28 gallon per flush valves, pint flush (0.125 gallon per flush) wall-hung urinals, and wall-hung lavatories with hot and cold water faucets with low flow aerators. All wall-mounted fixtures will be supported from fixture carriers. All new plumbing fixtures will be ADA compliant.

ELECTRICAL DESIGN NARRATIVE

Replacement of the existing 277/480V 2000A main switchboard will be provided under Approach 1. The switchboard can be replaced in kind with a new 2000A switchboard. Approach 1 does not conflict with the existing Pepco electrical service. Therefore, the existing Pepco electrical service can be maintained during the switchboard replacement. The remaining electrical distribution system, including existing equipment and conduit feeders, will remain intact and not require additional modification downstream of the switchboard under Approach 1. Existing feeders between the replaced

main switchboard and the existing distribution equipment will need to be intercepted in the main electrical room, spliced, and extended as required.

Under Approach 1, emergency power will continue to be provided by the existing 100 KW generator installed in 2019. The existing life safety and standby power distribution equipment will remain and normal power will need to be reconnected to the new main switchboard. Similar to the normal power feeders between the new main switchboard and existing normal power distribution equipment detailed above, feeders between the new main switchboard and existing emergency power distribution equipment will need to be intercepted, spliced, and extended as required.

LIGHTING

Under Approach 1, lighting controls in offices, classrooms, and multi-occupant spaces will be upgraded to meet MCPS standards. This includes replacing existing line voltage controls with lighting relay controllers to control low-voltage lighting control stations, occupancy sensors, and dimming capability. Emergency lighting will be automatically switched ON during a power outage.

In addition to the updated lighting controls, replacement of the metal halide lamps located in the existing gymnasium and building exterior should be considered under Approach 1, given the amount of lighting controls work being performed to the lighting system. The metal halide lamps will be replaced with similar LED high bay and linear wall mounted luminaires. Existing LED luminaires in the building will remain and be reused.

FIRE PROTECTION DESIGN NARRATIVE

SPRINKLER SYSTEM

The school's existing sprinkler system, including both sprinkler piping and associated sprinkler heads, will remain as currently installed under Approach 1. Selective modifications and/or replacement of branch sprinkler piping and associated sprinkler heads may be required to accommodate the proposed HVAC scope of work described previously. However, the overall extent of this sprinkler work is anticipated to be very limited.

FIRE DETECTION AND ALARM SYSTEM

The school's existing fire detection and alarm system, including initiating and notification devices, will remain as currently installed under Approach 1. Selective modifications may be required in relation to the proposed HVAC scope of work described previously.

COMMUNICATIONS DESIGN NARRATIVE

DATA AND VOICE COMMUNICATIONS SYSTEMS

Modifications to the existing data and voice communications systems are not anticipated under Approach 1. Additional IDF rooms are not anticipated to be necessary, and the existing rack should be substantial for scope of work expected under Approach 1.

INTERCOM AND SOUND SYSTEMS

Modifications to the existing intercommunications/public address system is not anticipated under Approach 1.

INSTRUCTIONAL/CLASSROOM TECHNOLOGY

Modifications to the existing instructional/classroom technology is not anticipated under Approach 1.

ELECTRONIC SAFETY AND SECURITY SYSTEMS

Modifications to the existing electronic safety and security systems are not anticipated under Approach 1.

KITCHEN DESIGN NARRATIVE

GENERAL DESCRIPTION:

The facility will have existing equipment replaced in kind to be equipped with new commercial-grade appliances that meet current N.S.F. requirements and installed in accordance with local governing health codes. All countertops and work surfaces will be of durable stainless-steel and mounted on legs or swivel casters to promote sanitation and ease of cleaning. Likewise, shelving inside the walk-in cooler/freezer will be installed with casters to aid in re-stocking of food supplies.

SPATIAL DESCRIPTION:

The overall foodservice equipment and functional work areas to be replaced in kind are as follows:

- Walk-in cooler/freezer
- Serving line
- 3-Compt sink
- Worktables
- Hood
- Shelving
- Mop sink
- Hand sink
- Convection oven

APPROACH 1 - ENERGY MODEL

Energy Use Index: 68 kBtu/ft^2

IES INTEGRATED ENVIRONMENTAL SOLUTIONS

Energy Model Output Report

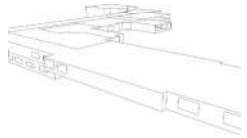
Project:	Burning Tree ES - Approach 1
Address:	7900 Beech Tree Rd, Bethesda, MD 20817
Climate File:	Baltimore_TMY2.fwt
Simulation:	BTES - Approach 1.aps

Design Team:	JPA
Energy Analyst:	JPA
Owner:	MCPS
Conditioned Area (ft²):	61900.5332

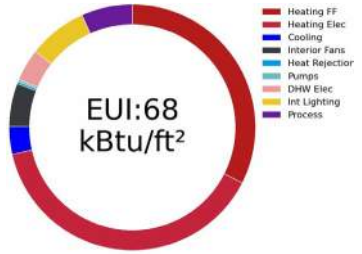
Annual Energy Consumption (kBtu/ft²/year) & CO2 KgCO2/ft²/yr

Energy End Use	Site Energy	Source Energy	CO2 Emissions
Heating Fossil Fuel	22.3	25.1	1.4
Heating Electricity	26.8	42.3	1.2
Space Cooling	2.5	3.5	0.1
Fans Interior	3.9	6.1	0.2
Heat Rejection	0.2	0.2	0.0
Pumps	0.2	0.4	0.0
DHW Fossil Fuel	0.0	0.0	0.0
DHW Electricity	2.9	4.4	0.1
Interior Lighting	5.3	8.0	0.2
Exterior Lighting	0.0	0.0	0.0
Receptacle	0.0	0.0	0.0
Data Center	0.0	0.0	0.0
Cooking Fossil Fuel	0.0	0.0	0.0
Cooking Electricity	0.0	0.0	0.0
Elevators & Escalators	0.0	0.0	0.0
Refrigeration	0.0	0.0	0.0
Process	4.6	7.1	0.2
TOTAL (ex renewables)	68	97	3

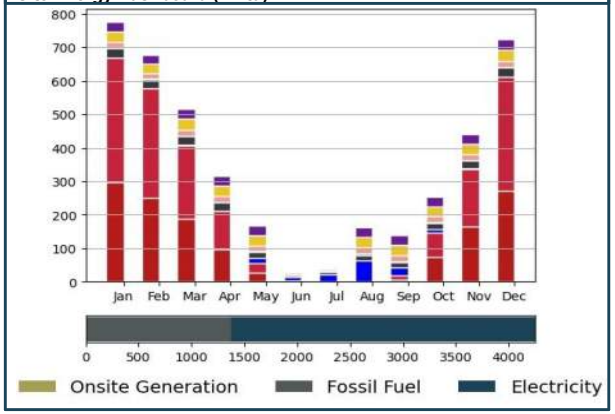
Project Viewer - 3D Model



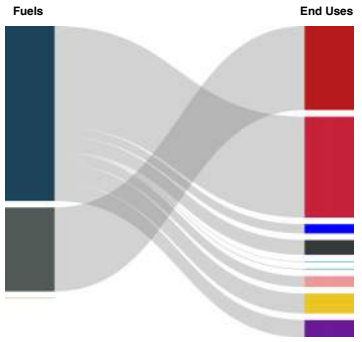
Site Energy Use Intensity



Site Energy Dashboard (MBtu)



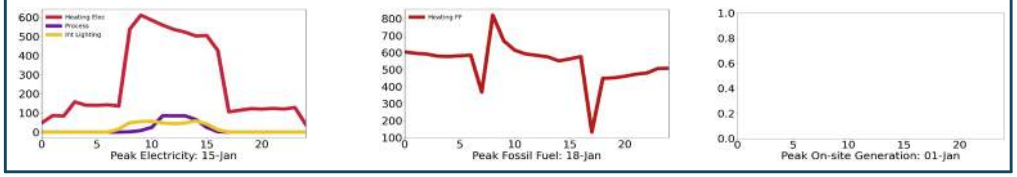
Site Energy Flows – Sankey Diagram



Annual Fuel Costs and Peak Demands

Fuels	Cost ($)	Peak Day	Peak Time	Peak Demand
Electricity	134,590.00	15-Jan	11:00	737.3 kW
Fossil Fuel	19,577.00	18-Jan	8:00	820.5 kBtu/h
Total	154,167.00	15-Jan	11:00	

Peak Energy Sources for Electricity (kW), Fossil Fuel (kBtu/h) and Onsite Power Generation (kW): Top 3 Contributors



APPROACH 1 - MAINTENANCE AND OPERATIONAL COSTS

MAINTENANCE AND OPERATION COST ESTIMATE — APPROACH 1

A. OPERATION

	Systems	Quantity	Units	Total Cost
1	Two-pipe Chilled/Heating Water System	38664	SQUARE FOOT	[redacted]
2	Four-pipe Chilled Water and Heating Water System	0	SQUARE FOOT	
3	Heat Pump System	0	SQUARE FOOT	
4	Condenser Water System	0	TON	
	Total Service Cost			[redacted]

B. MAINTENANCE - REPAIR

	Equipment	Quantity	Total Cost
1	Boiler, Gas: Repair boiler, gas, 2000 MBH	2	[redacted]
2	Chiller, Air Cooled, Reciprocating; Repair air cooled chiller, 100 ton	1	
3	Air Cooled Condenser; Repair condenser, air cooled, 20 ton	7	
4	Fan Coil, DX Air Conditioner, Cooling Only; Repair fan coil, DX 3 ton	62	
5	Multi-Zone Air Conditioner; Repair multi-zone rooftop unit, 40 ton	4	
6	Single Zone Variable Volume; Repair single zone variable volume, 20 ton	3	
7			
8			
9			
10			
	Subtotal		$47,958

C. MAINTENANCE - FILTERS

	Equipment	Quantity	Total Cost
1	Particulate Air Filtration, Supported Type, 1"	62	[redacted]
2	Particulate Air Filtration, Supported Type, 2"	14	
3	Particulate Air Filtration, Supported Type, 4"	7	
4	Particulate Air Filtration, Supported Type, 12"	0	
	Subtotal		[redacted]

D. MAINTENANCE - PREVENTATIVE MAINTENANCE

	Equipment	Quantity	Total Cost
1	Boiler, Hot Water, Oil/Gas/Comb.	2	[redacted]
2	Chiller, Recip., Air Cooled	1	
3	Condensing Unit, Air Cooled	3	
4	Condensing Unit, Air Cooled	4	
[redacted]	Air Handling Unit	[redacted]	
[redacted]	Air Handling Unit	[redacted]	
7	Fan Coil Unit	62	
8	Pump, Centifugal	4	
[redacted]	Controls	[redacted]	
10			
	Subtotal		[redacted]
	Total Maintenance Cost		[redacted]

APPROACH 1 - ONE TIME OPERATIONS COSTS ESTIMATE [redacted]

A. EXISTING[1]

Estimated Remaining Equipment Life	7 Yrs
Below the Line Costs Multiplier[2,3]	
Subtotal HVAC Equipment Cost	
Total HVAC Equipment Cost	
Single Payment (P/F) Present Worth	

B. RENOVATION

Estimated Equipment Life	16 Yrs
Below the Line Costs Multiplier[2,3]	
Subtotal HVAC Cost[2]	
Total HVAC Cost	
Subtotal HVAC Equipment Cost[2]	
Total HVAC Equipment Cost	
Single Payment (P/F) Present Worth	

C. ADDITION

Estimated Equipment Life	16 Yrs
Below the Line Costs Multiplier[2,3]	
Subtotal HVAC Cost[2]	
Total HVAC Cost	
Subtotal HVAC Equipment Cost[2]	
Total HVAC Equipment Cost	
Single Payment (P/F) Present Worth	

D. NEW CONSTRUCTION

Estimated Equipment Life	16 Yrs
Below the Line Costs Multiplier[2,3]	
Subtotal HVAC Cost[2]	
Total HVAC Cost	
Subtotal HVAC Equipment Cost[2]	
Total HVAC Equipment Cost	
Single Payment (P/F) Present Worth	
Total Cost	

Notes:
1. HVAC equipment not replaced as part of scope of work
2. Values from or calculated based on cost estimate
3. Below the Line Costs include general conditions, overhead & profit, bonds & insurance, prevailing wage requirement, design contingency, and esclation

APPROACH 2:
ADA UPGRADES AND LIGHT RENOVATIONS

6

APPROACH 2 - SUMMARY:
LIGHT RENOVATIONS AND ADDITIONS

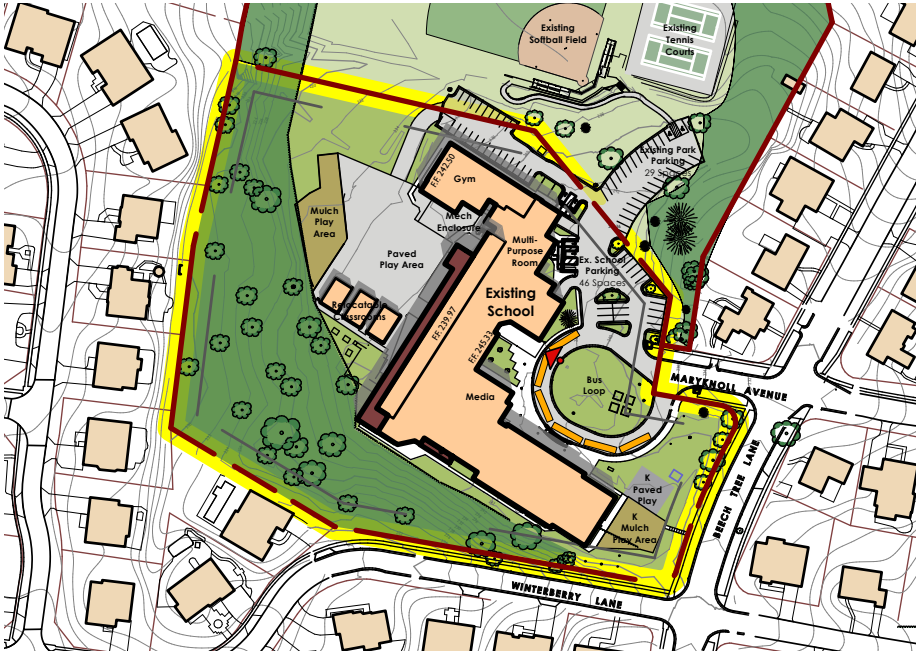
CONSTRUCTION COST ESTIMATE: [redacted]

GROSS SQUARE FOOTAGE

EXISTING BUILDING:	68,119 GSF
AREA OF DEMOLITION:	-94 GSF
AREA OF ADDITION:	± 8,500 GSF
TOTAL AREA OF BUILDING:	± 76,525 GSF

PARKING TABULATION

SCHOOL STANDARD SPACES:	41	PARK STANDARD SPACES:	27
SCHOOL HANDICAP SPACES:	5	PARK HANDICAP SPACES:	2
TOTAL SCHOOL PARKING SPACES:	46	TOTAL PARK PARKING SPACES:	29
TOTAL PARKING SPACES:			75



SUMMARY:

- The existing elementary school will remain in place with ADA accessibility issues being fully addressed both on site and inside the building with light renovations to the existing spaces and an accessible corridor addition.
- This approach will include replacing a minimal amount of the existing systems in kind and will only include cosmetic upgrades (i.e. flooring, paint, new windows, new doors, new roof, etc) to the areas of renovation.
- Site work is minimal and will focus on providing accessible routes to the building entry points, providing separation between the bus and the car circulation, and updating the handicap parking spots.

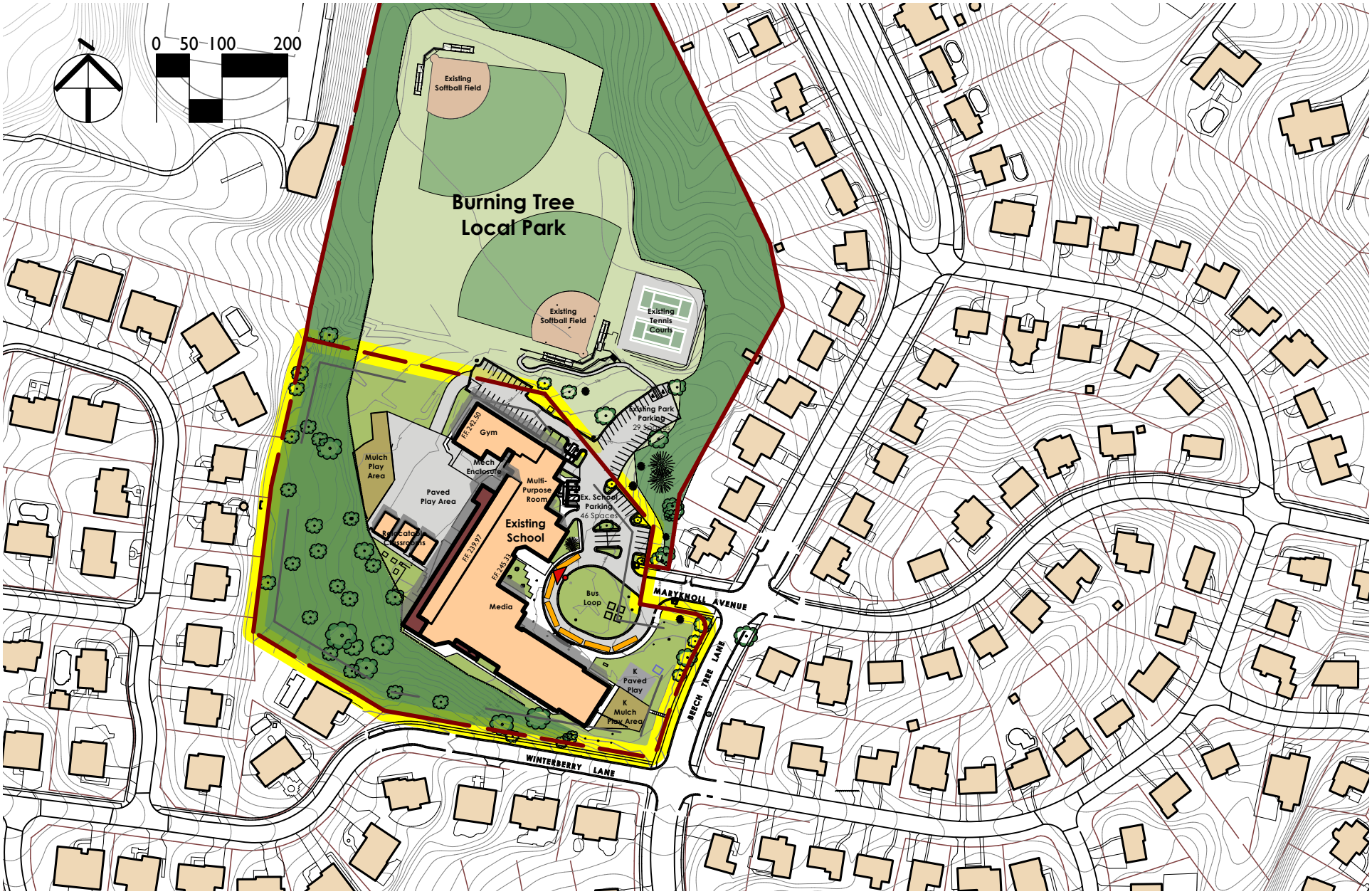
OPPORTUNITIES:

- The building would meet the minimum ADA accessibility requirements without demolishing much of the existing site.
- This the most cost-effective approach.
- All hardware would be updated to be ADA accessible (including, but not limited to closers, handrails, bathroom grab bars, etc.).

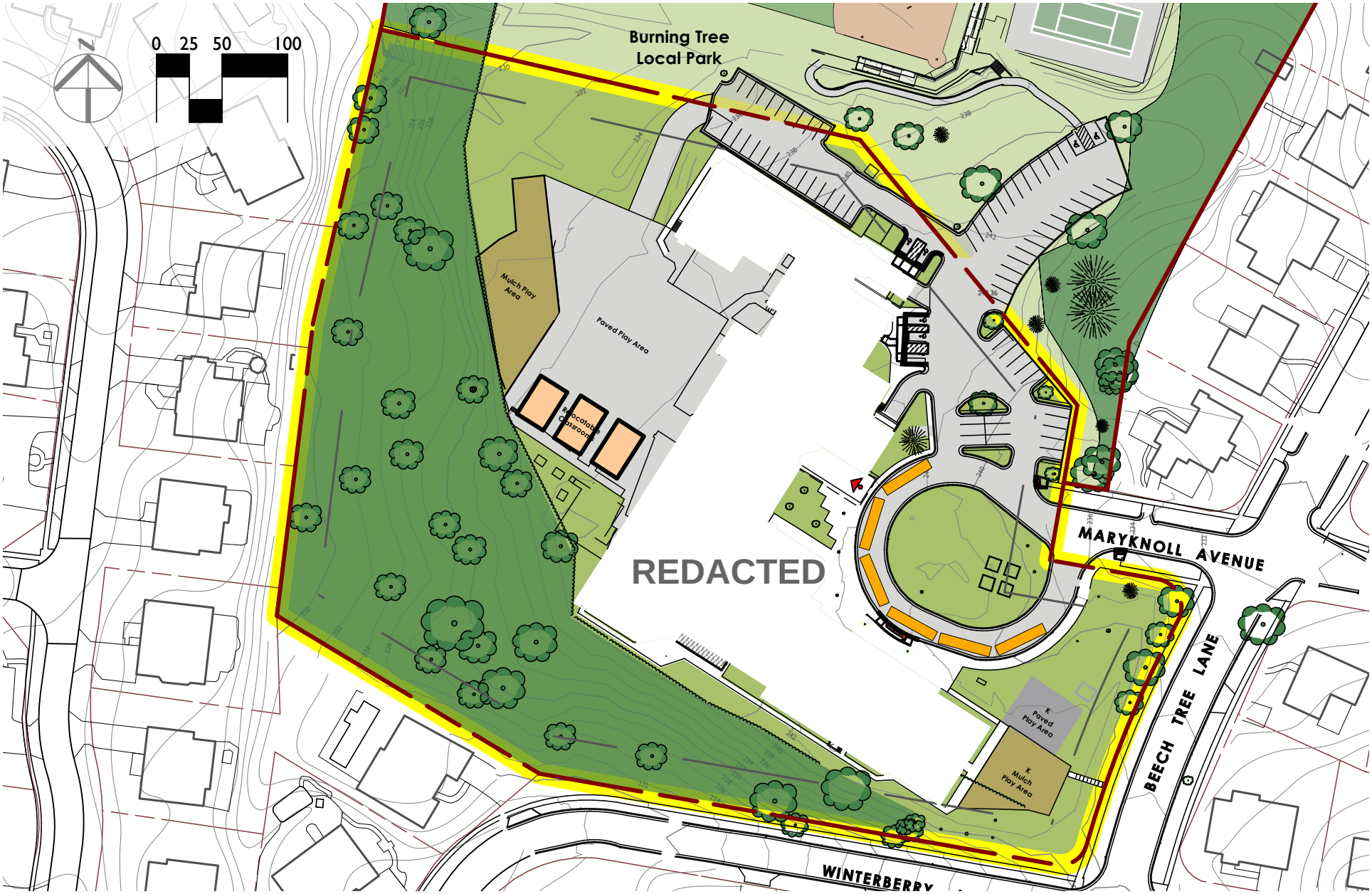
CHALLENGES:

- The school's capacity needs would not be addressed.
- This approach will not bring the entire school up to current code standards.
- The programmatic spaces required by the education specifications for Montgomery County Public Schools would not be fully met and would require another renovation and/or addition in the future.
- Minimal site changes will result in the traffic pattern remaining the same. and continuing to cause backups on Beech Tree Lane and Winterberry Lane.
- Systemic (mechanical, electrical, plumbing) issues found within the existing school would not be fixed as the systems throughout the building will not be updated.
- The relocatable classrooms would remain on site.

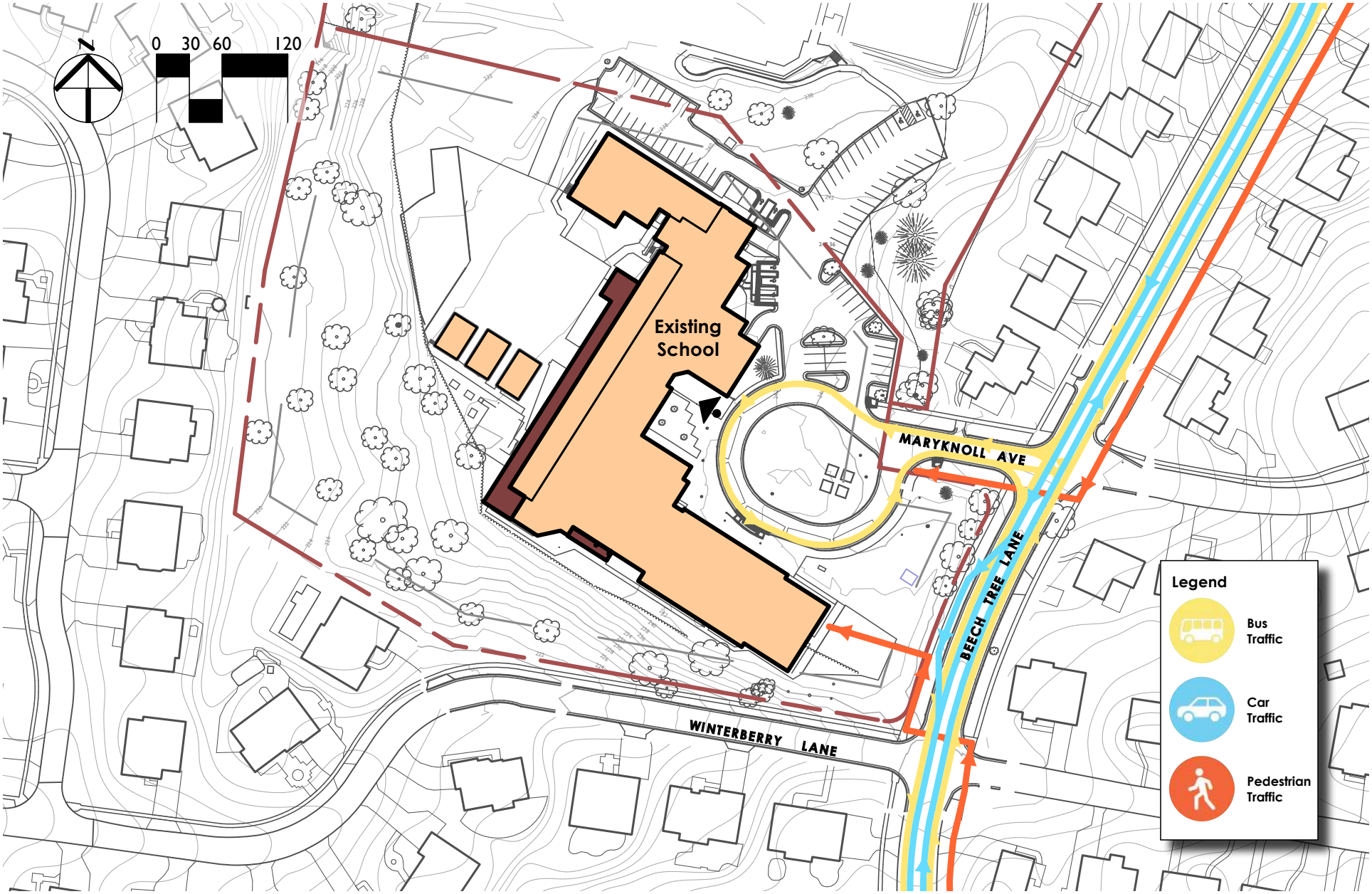
APPROACH 2 - SITE PLAN



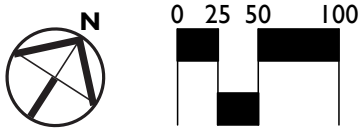
APPROACH 2 - PROGRAMMING DIAGRAM



APPROACH 2 - SITE CIRCULATION



APPROACH 2 - FLOOR PLANS



LEGEND

- Classrooms
- Media Center, PE, Multi-Purpose & Kitchen
- Administration
- Music & Arts
- Instructional Support
- Building Support

REDACTED

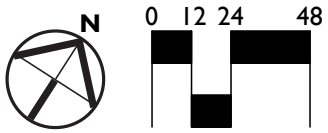
LOWER LEVEL

MAIN LEVEL

UPPER LEVEL

FLOOR PLANS

APPROACH 2 - LOWER LEVEL FLOOR PLAN



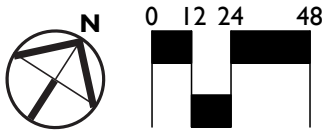
LEGEND

- Classrooms
- Media Center, PE, Multi-Purpose & Kitchen
- Administration
- Music & Arts
- Instructional Support
- Building Support

REDACTED

LOWER LEVEL

APPROACH 2 - MAIN LEVEL FLOOR PLAN



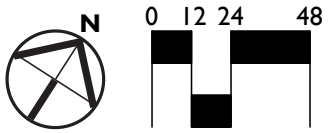
LEGEND

- Classrooms
- Media Center, PE, Multi-Purpose & Kitchen
- Administration
- Music & Arts
- Instructional Support
- Building Support

REDACTED

MAIN LEVEL

APPROACH 2 - UPPER LEVEL FLOOR PLAN



LEGEND

- Classrooms
- Media Center, PE, Multi-Purpose & Kitchen
- Administration
- Music & Arts
- Instructional Support
- Building Support

REDACTED

UPPER LEVEL

APPROACH 2 - SPACE ANALYSIS

Burning Tree Elementary School Space Analysis	ED Spec MCPS Elementary School			Approach 2 Comparison to Ed Spec		Approach 2 Burning Tree Elementary School		
	Area(s)	SF	Total Net	SF	%	Area(s)	SF	Total Net
General Classrooms			**33,150**	**-7,830**	-24%			**25,320**
Pre-Kindergarten (incl. 250 sf of storage)	2	1,200	2,400	-2,400	-100%	0	0	0
Kindergarten (incl. 250 sf of storage) (incl. toilet)	4	1,200	4,800	1,585	33%	5	1,277	6,385
Standard (incl. 150 sf of storage)	19	850	16,150	-5,345	-33%	12	900	10,805
Special Education Learning Center (incl. 150 sf of storage)	7	850	5,950	-440	-7%	6	918	5,510
Art (incl. 250 sf of storage)	1	1,200	1,200	-175	-15%	1	1,025	1,025
Music (incl. 250 sf of storage)	1	1,200	1,200	-170	-14%	1	1,030	1,030
Instrumental Music Room (incl. stor)	1	450	450	115	26%	1	565	565
Dual Purpose Room	1	1,000	1,000	-1,000	-100%	0	0	0
Support Rooms			**3,335**	**50**	1%			**3,385**
Large Instructional Support Room	1	550	550	45	8%	1	595	595
Small Instructional Support Room	2	425	850	-110	-13%	2	370	740
Speech/Language Room	1	250	250	40	16%	1	290	290
Therapy/Support Room	1	250	250	510	204%	1	760	760
Special Education Support	2	250	500	-365	-73%	1	135	135
Personal Care Room	1	100	100	-100	-100%	0	0	0
Conference Room	1	275	275	-275	-100%	0	0	0
Testing Room	1	140	140	10	7%	1	150	150
Support Staff Offices	3	140	420	295	70%	3	238	715
Library Media Center			**2,875**	**-200**	-7%			**2,675**
Learning Environment	1	2,100	2,100	-370	-18%	1	1,730	1,730
Work and Production Area	1	475	475	-105	-22%	1	370	370
LMC Storage Room	1	300	300	275	92%	1	575	575
Physical Education			**4,430**	**20**	0%			**4,450**
Gymnasium	1	3700	3,700	0	0%	1	3,700	3,700
Office	1	140	140	15	11%	1	155	155
Storage	1	250	250	-5	-2%	1	245	245
Storage	2	100	200	0	0%	1	200	200
Outside Storage	1	140	140	10	7%	1	150	150
Multipurpose Room			**4,135**	**-860**	-21%			**3,275**
Multipurpose Room	1	3200	3,200	-830	-26%	1	2,370	2,370
Chair Storage	1	180	180	-120	-67%	1	60	60
Table Storage	1	180	180	-180	-100%	0	0	0
Platform	1	450	450	-55	-12%	1	395	395
Before/After Care Prep Area	1	25	25	-25	-100%	0	0	0
Before/After Care Storage	1	100	100	350	350%	1	450	450

APPROACH 2 - SPACE ANALYSIS (CONTINUED)

Burning Tree Elementary School Space Analysis	ED Spec MCPS Elementary School			Approach 2 Comparison to Ed Spec		Approach 2 Burning Tree Elementary School		
	Area(s)	SF	Total Net	SF	%	Area(s)	SF	Total Net
Kitchen			**1,372**	**-337**	**-25%**			**1,035**
Serving Area	1	300	300	585	195%	1	885	885
Walk-in Cooler/Freezer (included in Serving Area)	1	155	155	-155	-100%	1	0	0
Dry Storage	1	192	192	-72	-38%	1	120	120
Office	1	100	100	-100	-100%	0	0	0
Toilet Room	1	70	70	-40	-57%	1	30	30
Preparation Area (included in Serving Area)	1	555	555	-555	-100%	1	0	0
Administration			**1,765**	**-455**	**-26%**			**1,310**
General Office	1	500	500	-275	-55%	1	225	225
Workroom	1	300	300	10	3%	1	310	310
Principal's Office (incl. 50 sf toilet room)	1	250	250	-10	-4%	1	240	240
Assistant Principal's Office	1	140	140	-140	-100%	0	0	0
Conference Room	1	275	275	0	0%	1	275	275
Storage	1	100	100	-15	-15%	1	85	85
Record Room	1	75	75	30	40%	1	105	105
Toilet Room	1	50	50	20	40%	1	70	70
Remote Workroom	1	75	75	-75	-100%	0	0	0
Counseling Suite			**320**	**-95**	**-30%**			**225**
Counselor's Office	1	160	160	65	41%	1	225	225
Itinerant Staff Office	1	160	160	-160	-100%	0	0	0
Staff Development Area			**600**	**-100**	**-17%**			**500**
Staff Development Office	1	100	100	125	125%	1	225	225
Reading Specialist Office	1	100	100	-100	-100%	0	0	0
Training/Conference Room	1	400	400	-125	-31%	1	275	275
Health Services Suite			**710**	**-290**	**-41%**			**420**
Waiting Area	1	100	100	-20	-20%	1	80	80
Treatment/Medication Area	1	120	120	15	13%	1	135	135
Office/Health Assessment Room	1	100	100	-100	-100%	0	0	0
Health Assessment/Isolation Room	1	100	100	-100	-100%	0	0	0
Rest Area	1	200	200	-60	-30%	1	140	140
Toilet Room	1	50	50	-15	-30%	1	35	35
Storage Room	1	40	40	-10	-25%	1	30	30

APPROACH 2 - SPACE ANALYSIS (CONTINUED)

Burning Tree Elementary School Space Analysis	ED Spec MCPS Elementary School			Approach 2 Comparison to Ed Spec		Approach 2 Burning Tree Elementary School		
	Area(s)	SF	Total Net	SF	%	Area(s)	SF	Total Net
Staff Area			**750**	**-115**	-15%			**635**
Staff Lounge (incl. 2 ex. toilet rooms)	1	650	650	-40	-6%	1	610	610
Privacy Room	2	50	100	-75	-75%	1	25	25
Building Service Facilities			**1,885**	**-647**	-34%			**1,238**
Building Services Office	1	140	140	15	11%	1	155	155
Locker/Shower Area	1	150	150	-100	-67%	1	50	50
Compactor/Trash Room	1	150	150	30	20%	1	180	180
General Storage and Receiving	1	550	550	-360	-65%	1	190	190
General Storage	3	240	720	-367	-51%	1	353	353
Building Services Outdoor Storage	1	175	175	135	77%	2	155	310
Building Support Spaces			**600**	**-600**	-100%			**0**
Book Storage	1	200	200	-200	-100%	0	0	0
PTA Storage	1	100	100	-100	-100%	0	0	0
Telecommunication Closet (MDF)	1	150	150	-150	-100%	0	0	0
Telecommunication Closet (IDF)	3	50	150	-150	-100%	0	0	0

Gross Area Grand Total Summary	ED Spec MCPS Elementary School	Approach 2 Comparison to Ed Spec	Approach 2 Burning Tree Elementary School
Total Net Sq. Ft.	**56,477**	**-12,009**	**44,468**
Gross Area Factor (Walls, Circulation, Toil, Mech/Elec, Struct, Shafts,...)	**24,204**	**7,853**	**32,057**
Efficiency Factor %	70%		58%
Gross Area Grand Total	**80,681**	**-4156**	**76,525**

CIVIL DESIGN NARRATIVE

PROPOSED SITE ASSESSMENT

Approach 2 includes minor site upgrades to provide accessible routes to the building, accessible parking spots, an upgraded ADA-accessible bus drop-off, and a small second-story addition to improve internal circulation.

SEDIMENT AND EROSION CONTROL

Any project over 5,000 sf of disturbance will need to receive approval of the erosion and sediment control plan from Montgomery County DPS. Plans should conform to the 2011 Standards and Specifications for Soil Erosion and Sediment Control from Maryland Department of the Environment. It is anticipated that any major project will need to include a sediment trap or sediment basin with a connection to the public storm drain system. All projects will also require a stabilized construction entrance, inlet protection, silt or super silt fence, stockpile areas, concrete washouts, and permanent stabilization.

SITE DEMOLITION

Minimal site demolition is required for Approach 2. The existing sidewalk and parking spaces near the loading dock, existing curb ramps on site, and the existing bus drop off curb ramp would all be demolished and replaced with ADA-compliant features, consistent with MCPS standards.

GRADING

The site should be designed to have a balance between cut and fill to limit the amount of export or import for the site. All grass areas should be stabilized with sod.

FORESTATION

The project will not be clearing any forest. Large trees near the public sidewalk or along residential properties should be maintained when possible. The property will need to go through a forest conservation exemption or a full forest conservation plan depending on the amount of work being proposed. All work will be reviewed by the Maryland National Capital Park and Planning Commission.

SITE IMPROVEMENTS

Any pavement shall meet the following requirements:

- Sidewalk shall be concrete (4,500 psi). Sidewalks shall be 5' wide and 4" deep with WWF 6x6 and a 4" stone base.
- All curb and gutter shall be concrete (4,500 psi).
- All heavy duty concrete (4,500 psi) for ADA spaces or vehicular pavement shall be 8" thick with WWF 4x4 and 4" GAB.
- Asphalt pavement shall be 6" thick (2" asphalt surface course and 4" asphalt base course) with a 6" GAB.
- Heavy duty asphalt pavement for the bus loop, loading dock, or construction access shall be 6" thick (2" asphalt surface course and 4" asphalt base course) with an 8" GAB.
- All pavement shall be over an approved subgrade.

PROPOSED SITE UTILITIES

- Water – The waterline for the site shall be upgraded to an 8" DIP to serve the sprinkler system, hydrants, and domestic demand for the building. This will require a new water meter vault with easement. The existing waterline will require a service connection abandonment. The new line will require a new service connection.
- Sanitary Sewer – The existing sanitary sewer should be reused if possible. If a new line is necessary, a new line should be connected to the line in Beech Tree Road.
- Gas – The existing line should be reused if able. Otherwise a new line will need to be coordinated with Washington Gas
- Electric – The existing electric should be maintained if possible. If a new electric main is needed, the locations should be closest to the new transformer to limit the amount of new electric main that will be needed. All work to be coordinated with PEPCO.
- Stormwater Management – All new work will need to meet Montgomery County SWM requirements. The site will need to meet the County's ESD requirements. It is assumed that a combination of pervious pavement, micro-bioretentions, and other ESD practices will be needed. If ESD cannot be met, Chapter 3 or structural practices can be considered.

- Storm Drainage – New drainage infrastructure will need to be constructed to meet the proposed grades of the new building and site features. The new storm drain system will connect to the existing drainage system within Beech Tree Road.

ATHLETIC FIELDS, ATHLETIC COURTS, AND PLAY AREAS

The existing fields and courts will be maintained if possible. If any of the courts or play spaces are removed with the new work, an effort should be made to group the paved play area and playground together. Access to the Burning Tree Local Park amenities shall be kept open in all Approaches.

ARCHITECTURAL DESIGN NARRATIVE

Approach 2 focuses on fully addressing accessibility deficiencies both inside and outside the building. While this approach brings the existing facility into full ADA compliance, it does not address the school's enrollment capacity or fulfill the educational specification requirements established by Montgomery County Public Schools.

Key features of this approach include:

- Full ADA compliance for all site and building access routes. The site plan includes accessible paths to the building entries and the provision of code-compliant ADA parking spaces.
- No changes to the existing vehicular circulation; bus and car traffic will not be separated.
- Renovation of all non-accessible spaces within the building to meet ADA requirements.
- A small addition will be constructed to provide accessible circulation between split-level classrooms.
- The main office and health suite will be reconfigured to meet accessibility standards.
- All door hardware, handrails, bathroom grab bars, and other accessibility features will be replaced or upgraded to comply with current codes.
- Signage throughout the building will be replaced with braille and tactile code-compliant signage.
- Non-compliant casework will be replaced to meet ADA height, clearance, and operability standards.

Construction for Approach 2 will require a full temporary relocation of students and staff. The building will be unoccupied during construction, which is expected to take approximately 12–18 months.

STRUCTURAL DESIGN NARRATIVE

This option is for the replacement of deficient buildings systems and small addition to provide ADA access to the classrooms.

Under this option, the existing roof structure will need to be analyzed to support the new roof top unit equipment. New mechanical pads will need to be provided for any new floor-mounted equipment. Supplement reinforcing will be required at the existing floor and roof framing for any floor penetrations. Supplemental steel will be required at all wall openings through the existing masonry walls.

The new ADA addition will be outside of the classroom wing. The first floor will be a 4" concrete slab on grade and the foundations are anticipated to be spread footings designed using an allowable bearing capacity of 6000 psf (to be verified by geotechnical engineer). The second floor shall be constructed using a composite steel beam floor system or conventional steel bar joists supporting concrete filled metal deck. The roof framing shall consist of conventional steel bar joists supporting 1 ½" x 22-gauge galvanized metal roof deck. The exterior walls will be 8" masonry backup filled with #5 at 24" o/c with 3000 psi grout. The building stability will be achieved by either masonry shear walls and/or steel moment frames. A 2" expansion joint will be provided between the new ADA addition and existing school. Sustainability requirements will specify recycled content for structural steel and concrete and will mandate suppliers to support the project achieving Green Globes certification.

MEP GENERAL DESIGN NARRATIVE

Project Approach 2 – ADA Upgrades and Light Renovations - includes selective renovations and a two-story building addition designed to improve ADA access throughout Burning Tree Elementary School. Mechanical, electrical, plumbing, fire-protection, communications, and electronic safety and security improvements included within the scope of these ADA upgrades and light renovations are summarized within this section.

MECHANICAL DESIGN NARRATIVE

HEATING WATER INFRASTRUCTURE SYSTEMS

Modifications to or replacement of the school's existing heating water infrastructure systems (such as the existing gas-fired boilers) are not included under Approach 2.

CHILLED WATER INFRASTRUCTURE SYSTEMS

Modifications to or replacement of the school's existing chilled water infrastructure systems (such as the existing air-cooled chiller) are not included under Approach 2.

BUILDING CHILLED/HEATING WATER PIPING SYSTEMS

Modifications to or replacement of the school's existing two-pipe chilled/heating water piping mains located throughout the school are not included under Approach 2.

HVAC SYSTEMS

HVAC systems throughout the school will generally remain as currently installed under Approach 2. Approach 2 includes selective modifications to the existing perimeter classroom HVAC systems to accommodate the new two-story building addition. In addition, select modifications to the existing HVAC systems serving the administration and health suite areas will be required to accommodate the proposed floor plan modifications. Finally, new HVAC systems will be provided to support the proposed two-story building addition. These items are described in more detail below:

Northwest and Southwest Perimeter Classroom Areas: The proposed two-story building addition will enclose the existing northwest and southwest perimeter classrooms at both floor levels, transforming these existing perimeter classrooms into interior classrooms. Interior classrooms generally require year-round cooling, while the existing two-pipe chilled/heating fan coil units currently serving these classrooms are only capable of providing cooling seasonally when the chilled water is available. Therefore, the installation of supplemental DX cooling is recommended for these areas. To accomplish this supplemental DX cooling, the installation of an air-cooled VRF system is recommended. A single ceiling-cassette type indoor VRF terminal unit will be provided within each classroom, with refrigerant piping extending to a series of new air-cooled condensing units located at the roof. With this approach, the existing two-pipe fan coil units will remain as the primary heating and cooling source for each classroom. However, the VRF system will supplement the existing fan coil units during periods when either chilled water or heating water is not available, improving the overall occupant thermal comfort within these classroom areas.

Administration and Health Suite Areas: The existing indoor VRF terminals, associated refrigerant piping, DOAS conditioned air ductwork, and DOAS exhaust air ductwork will be selectively modified and/or replaced to accommodate the proposed administration and health suite floor plan modifications.

Two-Story Building Addition Areas: A series of packaged single-zone rooftop heat pump units with air-source heat pump unit-type heating and cooling, hot-gas reheat coils for humidity control, enthalpy wheels for pre-conditioning outdoor air, and either auxiliary gas-fired furnaces or hot water heating coils for low ambient heating and defrost operation are recommended for space conditioning and ventilation within the two-story building addition. New above-ceiling supply and return ductwork will extend from each rooftop heat pump unit and serve air devices located throughout both floor levels of the proposed addition.

AUTOMATIC TEMPERATURE CONTROL (ATC) SYSTEMS

The school's existing StruxureWare DDC system with BACnet protocol will be maintained under Approach 2, with the existing DDC system and associated system graphics modified and/or expanded to accommodate the new HVAC system components described previously.

PLUMBING DESIGN NARRATIVE

DOMESTIC WATER PIPING

The existing combination fire/water service serving Burning Tree Elementary School will be maintained as currently installed under Approach 2, including all piping components located within the school's water service room. In addition, the existing domestic water piping systems located throughout the school will also be maintained as currently installed under Approach 2, unless modifications to these piping systems are required to support the scope of the project's ADA improvements. This includes the existing cold water piping, hot water piping, and hot water return piping. For building areas where ADA improvements and/or new plumbing fixtures are required, new branch domestic water piping systems will be provided. All new domestic water piping will be constructed of Type L copper, with soldered joints provided for piping 2-inches in diameter and smaller and brazed joints provided on piping 2.5-inches in diameter and larger.

DOMESTIC HOT WATER EQUIPMENT

The existing gas-fired water heater and associated domestic hot water circulation pump located within the lower level boiler room will be maintained as currently installed under Approach 2. Replacement of the existing circulation pump may be considered if the existing pump cannot support the increased hot water recirculation demands of the new ADA compliant plumbing fixtures.

NATURAL GAS SERVICE

Modifications to the existing 2-inch incoming natural gas service, associated rotary meter, and building gas piping mains are not anticipated under Approach 1. Selective modifications to the existing gas piping systems are anticipated for the new rooftop air-source heat pump units serving the proposed two-story building addition. New natural gas piping will be constructed of schedule 40 black steel.

SANITARY WASTE AND VENT PIPING

Like the domestic water piping systems, the existing sanitary waste and vent piping systems located throughout the school will also be maintained as currently installed under Approach 2, unless modifications are required to support the scope of the project's ADA improvements. For building areas where ADA improvements and/or new plumbing fixtures are required, new branch sanitary waste and vent piping systems will be provided, with solid core PVC piping utilized at these locations. In addition, the existing under-slab piping serving any replaced fixtures should be scoped during design to ensure that no blockages or other deficiencies exist that would prevent proper flow through this piping. Any deficiencies identified during scoping should be remediated through pipe snaking or selective piping replacement.

STORM WATER PIPING

The existing storm water piping systems located throughout the school will be maintained as currently installed under Approach 2,

PLUMBING FIXTURES

Replacement of the existing plumbing fixtures will be provided as required for ADA compliance. In addition, any plumbing fixture where the presence of lead was detected is recommended for replacement. Institutional grade replacement plumbing fixtures will be provided and include floor-mounted water closets utilizing 1.28 gallon per flush valves, pint flush (0.125 gallon per flush) wall-hung urinals, and wall-hung lavatories with hot and cold water faucets with low flow aerators. All wall-mounted fixtures will be supported from fixture carriers. All new plumbing fixtures will be ADA compliant.

ELECTRICAL DESIGN NARRATIVE

POWER DISTRIBUTION AND GENERATOR POWER

Modifications to or replacement of the school's existing normal and emergency power distribution systems (such as the existing switchboard and generator) are not included under Approach 2.

LIGHTING

The school's existing lighting system, including lighting controls, will generally remain as currently installed under Approach 2. Selective modifications may be required to accommodate the proposed administration and health suite floor plan renovations, and the ADA restroom floor plan modifications. However, the overall extent of work associated to the existing lighting system is anticipated to be limited.

New lensed type recessed LED luminaires will be provided in the proposed two-story addition. Lighting controls will include occupancy sensors to automatically turn OFF lighting in a space when unoccupied. Emergency lighting will be automatically switched ON during a power outage.

Exterior building-mounted perimeter security lighting will be full cut-off utilizing LED light sources.

Lighting levels will be designed in accordance with the recommendations of the Illuminating Engineering Society of North America (IESNA). Lighting controls will meet the requirements of ASHRAE Standard 90.1-2022. The lighting power density will not exceed 0.70 watts per square foot per Table 9.5.1 of ASHRAE Standard 90.1-2022.

FIRE PROTECTION DESIGN NARRATIVE

SPRINKLER SYSTEM

The school's existing sprinkler system, including both sprinkler piping and associated sprinkler heads, will generally remain as currently installed under Approach 2. Selective modifications and/or replacement of branch sprinkler piping and associated sprinkler heads may be required to accommodate the proposed administration and health suite floor plan renovations, required ADA restroom floor plan modifications, and the HVAC scope of work described previously. However, the overall extent of this sprinkler work is anticipated to be limited.

New sprinkler piping for the proposed two story-addition will extend from the school's existing fire main, with a new zone valve assembly provided for each floor level of the addition.

FIRE DETECTION AND ALARM SYSTEM

The school's existing fire detection and alarm system, including initiating and notification devices, will generally remain as currently installed under Approach 2. The existing Silent Knight fire alarm control panel will be utilized and will serve selective modifications required to accommodate the proposed administration and health suite floor plan renovations, ADA restroom floor plan modifications, and the HVAC scope of work described previously. However, the overall extent of work associated to the fire detection and alarm system is anticipated to be limited.

New fire detection and alarm devices for the proposed two-story addition will be provided to meet code requirements. Ceiling-mounted fire alarm combination speaker/strobe devices will be installed in the new corridors and stairwell. Notification appliance circuit (NAC) power extender panels will be provided where needed for speaker/strobe devices. Strobe spacing and locations will be per NFPA and ADA requirements for corridors. Candela minimum required light output intensity will be indicated on the drawings.

COMMUNICATIONS DESIGN NARRATIVE

DATA AND VOICE COMMUNICATIONS SYSTEMS

Modifications to or replacement of the school's existing data and voice communications systems are not included under Approach 2. Additional wireless access points will need to be provided in new corridors and building exterior where required. Additional IDF rooms are not anticipated to be necessary, and the existing rack should be substantial for scope of work expected under Approach 2.

INTERCOM AND SOUND SYSTEMS

Intercommunications/public address system devices will be provided throughout the two-story addition proposed under Approach 2. This will include speakers in the corridors. The existing Rauland Telecenter intercom head-end console in the main office will upgraded to increase the capacity for the new spaces. Exterior building-mounted speakers will be provided where required.

INSTRUCTIONAL/CLASSROOM TECHNOLOGY

Modifications to or replacement of the school's existing instructional/ classroom technology is not included under Approach 2.

ELECTRONIC SAFETY AND SECURITY SYSTEMS

The existing Napco intrusion detection system will be expanded for the proposed two-story addition under Approach 2. Intrusion detection devices will include motion detectors/sensors and door contacts. Door access control system card readers will be provided where required by MCPS. Video surveillance equipment will include dome cameras in the corridors and building exterior where required.

KITCHEN DESIGN NARRATIVE

The kitchen will remain as-is in Approach 2 and will not have equipment or finishes replaced in kind as this approach is strictly focused on ADA renovations.

APPROACH 2 - ENERGY MODEL

Energy Use Index: 57 kBtu/ft²

IES INTEGRATED ENVIRONMENTAL SOLUTIONS

Energy Model Output Report

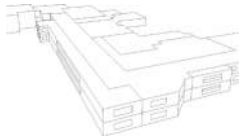
Project:	Burning Tree ES - Approach 2
Address:	7900 Beech Tree Rd, Bethesda, MD 20817
Climate File:	Baltimore_TMY2.fwt
Simulation:	BTES - Approach 2.aps

Design Team:	JPA
Energy Analyst:	JPA
Owner:	MCP
Conditioned Area (ft²):	70477.9191

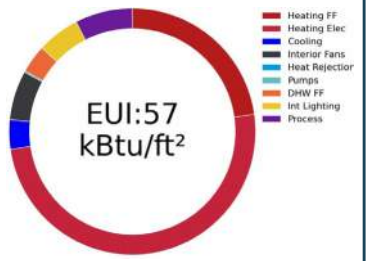
Annual Energy Consumption (kBtu/ft²/year) & CO2 KgCO2/ft²/yr

Energy End Use	Site Energy	Source Energy	CO2 Emissions
Heating Fossil Fuel	13.0	14.7	0.8
Heating Electricity	28.5	44.9	1.3
Space Cooling	2.2	3.2	0.1
Fans Interior	3.7	5.7	0.2
Heat Rejection	0.1	0.2	0.0
Pumps	0.0	0.1	0.0
DHW Fossil Fuel	2.1	2.4	0.1
DHW Electricity	0.0	0.0	0.0
Interior Lighting	3.2	4.9	0.1
Exterior Lighting	0.0	0.0	0.0
Receptacle	0.0	0.0	0.0
Data Center	0.0	0.0	0.0
Cooking Fossil Fuel	0.0	0.0	0.0
Cooking Electricity	0.0	0.0	0.0
Elevators & Escalators	0.0	0.0	0.0
Refrigeration	0.0	0.0	0.0
Process	4.3	6.6	0.2
TOTAL (ex renewables)	57	82	2

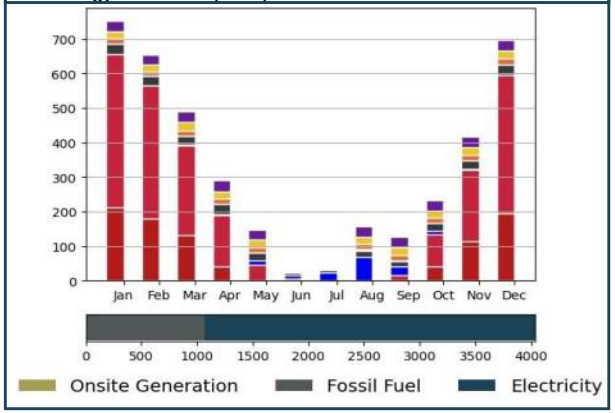
Project Viewer - 3D Model



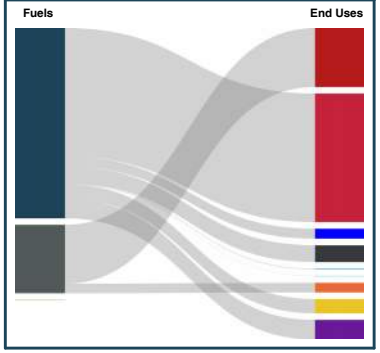
Site Energy Use Intensity



Site Energy Dashboard (MBtu)



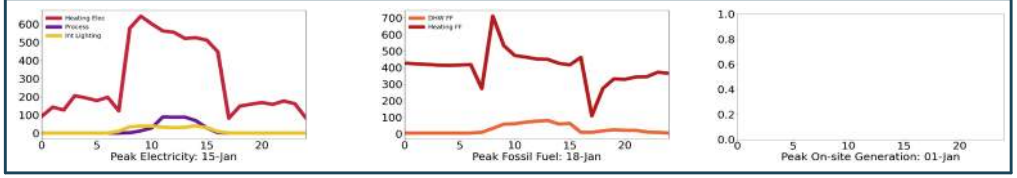
Site Energy Flows – Sankey Diagram



Annual Fuel Costs and Peak Demands

Fuels	Cost ($)	Peak Day	Peak Time	Peak Demand
Electricity	139,199.00	15-Jan	9:00	719.7 kW
Fossil Fuel	15,166.00	18-Jan	8:00	744.2 kBtu/h
Total	154,365.00	15-Jan	9:00	

Peak Energy Sources for Electricity (kW), Fossil Fuel (kBtu/h) and Onsite Power Generation (kW): Top 3 Contributors



APPROACH 2 - MAINTENANCE AND OPERATIONAL COSTS

MAINTENANCE AND OPERATION COST ESTIMATE — APPROACH 2

A. OPERATION

	Systems	Quantity	Units	Total Cost
1	Two-pipe Chilled/Heating Water System	38664	SQUARE FOOT	[redacted]
2	Four-pipe Chilled Water and Heating Water System	0	SQUARE FOOT	
3	Heat Pump System	0	SQUARE FOOT	
4	Condenser Water System	0	TON	
	Total Service Cost			[redacted]

B. MAINTENANCE - REPAIR

	Equipment	Quantity	Total Cost
1	Boiler, Gas: Repair boiler, gas, 2000 MBH	2	[redacted]
2	Chiller, Air Cooled, Reciprocating; Repair air cooled chiller, 100 ton	1	
3	Air Cooled Condenser; Repair condenser, air cooled, 20 ton	8	
4	Fan Coil, DX Air Conditioner, Cooling Only; Repair fan coil, DX 3 ton	71	
5	Multi-Zone Air Conditioner; Repair multi-zone rooftop unit, 40 ton	4	
6	Single Zone Variable Volume; Repair single zone variable volume, 20 ton	4	
7			
8			
9			
10			
	Subtotal		[redacted]

C. MAINTENANCE - FILTERS

	Equipment	Quantity	Total Cost
1	Particulate Air Filtration, Supported Type, 1"	71	[redacted]
2	Particulate Air Filtration, Supported Type, 2"	16	
3	Particulate Air Filtration, Supported Type, 4"	8	
4	Particulate Air Filtration, Supported Type, 12"	0	
	Subtotal		[redacted]

D. MAINTENANCE - PREVENTATIVE MAINTENANCE

	Equipment	Quantity	Total Cost
1	Boiler, Hot Water, Oil/Gas/Comb.	2	[redacted]
2	Chiller, Recip., Air Cooled	1	
[redacted]	Condensing Unit, Air Cooled	[redacted]	
4	Condensing Unit, Air Cooled	4	
[redacted]	Air Handling Unit	[redacted]	
6	Air Handling Unit	4	
7	Fan Coil Unit	71	
8	Pump, Centifugal	4	
9	Controls	1	
10			
	Subtotal		[redacted]
	Total Maintenance Cost		[redacted]

APPROACH 2 - ONE TIME OPERATIONS COSTS ESTIMATE

A. EXISTING[1]

Estimated Remaining Equipment Life	0 Yrs
Below the Line Costs Multiplier[2,3]	[redacted]
Subtotal HVAC Equipment Cost	[redacted]
Total HVAC Equipment Cost	[redacted]
Single Payment (P/F) Present Worth	[redacted]

B. RENOVATION

Estimated Equipment Life	16 Yrs
Below the Line Costs Multiplier[2,3]	1.59
Subtotal HVAC Cost[2]	[redacted]
Total HVAC Cost	[redacted]
Subtotal HVAC Equipment Cost[2]	[redacted]
Total HVAC Equipment Cost	[redacted]
Single Payment (P/F) Present Worth	[redacted]

C. ADDITION

Estimated Equipment Life	16 Yrs
Below the Line Costs Multiplier[2,3]	1.59
Subtotal HVAC Cost[2]	[redacted]
Total HVAC Cost	[redacted]
Subtotal HVAC Equipment Cost[2]	[redacted]
Total HVAC Equipment Cost	[redacted]
Single Payment (P/F) Present Worth	[redacted]

D. NEW CONSTRUCTION

Estimated Equipment Life	16 Yrs
Below the Line Costs Multiplier[2,3]	0.00
Subtotal HVAC Cost[2]	[redacted]
Total HVAC Cost	[redacted]
Subtotal HVAC Equipment Cost[2]	[redacted]
Total HVAC Equipment Cost	[redacted]
Single Payment (P/F) Present Worth	[redacted]

Total Cost [redacted]

Notes:
1. HVAC equipment not replaced as part of scope of work
2. Values from or calculated based on cost estimate
3. Below the Line Costs include general conditions, overhead & profit, bonds & insurance, prevailing wage requirement, design contingency, and esclation

APPROACH 3:
MAJOR RENOVATIONS AND ADDITIONS

7

APPROACH 3 - SUMMARY:
MAJOR RENOVATIONS AND ADDITIONS

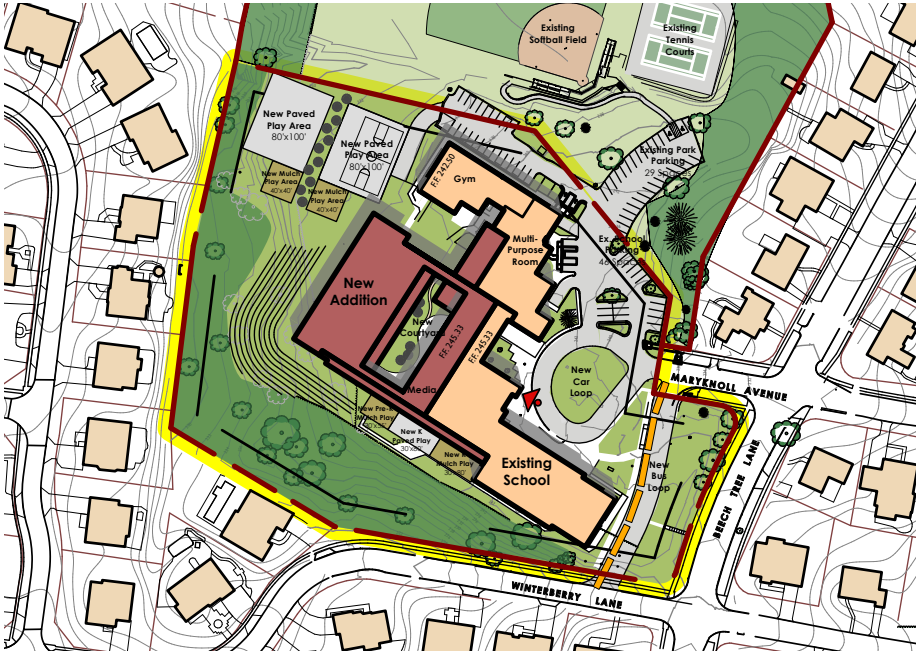
CONSTRUCTION COST ESTIMATE: [redacted]

GROSS SQUARE FOOTAGE

EXISTING BUILDING:	68,119 GSF
AREA OF DEMOLITION:	-25,660 GSF
AREA OF ADDITION:	± 43,660 GSF
TOTAL AREA OF BUILDING:	± 86,119 GSF

PARKING TABULATION

SCHOOL STANDARD SPACES:	41	PARK STANDARD SPACES:	27
SCHOOL HANDICAP SPACES:	5	PARK HANDICAP SPACES:	2
TOTAL SCHOOL PARKING SPACES:	46	TOTAL PARK PARKING SPACES:	29
TOTAL PARKING SPACES:			75



SUMMARY:

- This approach will retain at least 50% of the existing building footprint and will increase the building by approximately 18,000 sf.
- Interior spaces are to be reconfigured along with the new addition to conform to the current Montgomery County Public Schools Specifications.
- ADA accessibility issues being fully addressed both on site and inside the building with major renovations to the existing spaces.
- This approach will include replacing all existing systems in kind and cosmetic upgrades (i.e. flooring, paint, new windows, new doors, new roof, etc).
- The site would include a new traffic pattern to allow for separation between bus and car circulation by adding a new bus loop and utilizing the existing bus loop as a car loop.

OPPORTUNITIES:

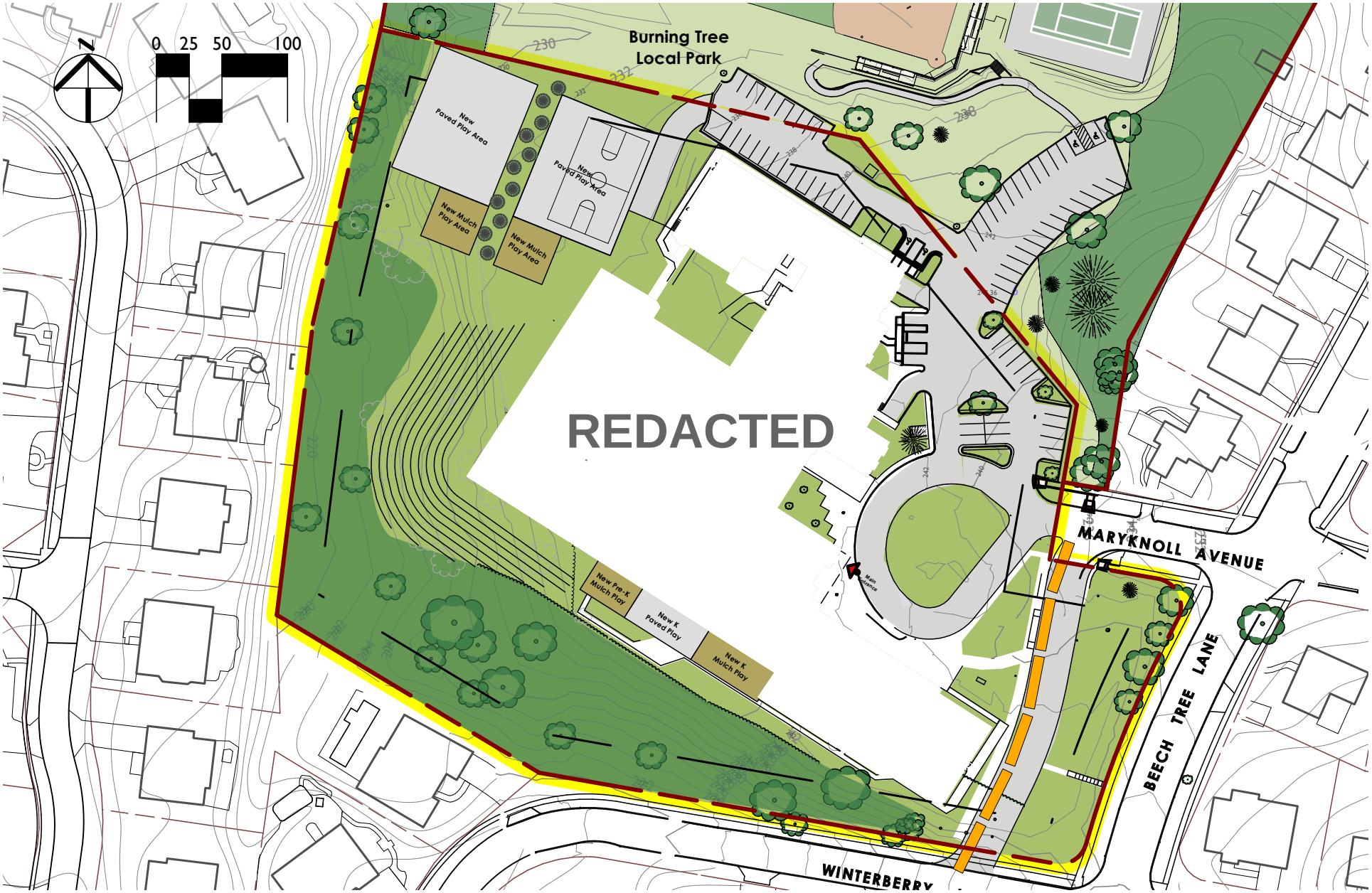
- Many of the systemic problems (mechanical, electrical, and plumbing) would be resolved, allowing the staff to have better teaching environments within the existing envelope of the school.
- The building would meet the ADA accessibility requirements.
- This approach would also address the school's capacity needs and code compliancy needs.
- The relocatable classrooms would be removed because of the available capacity in this approach.

CHALLENGES:

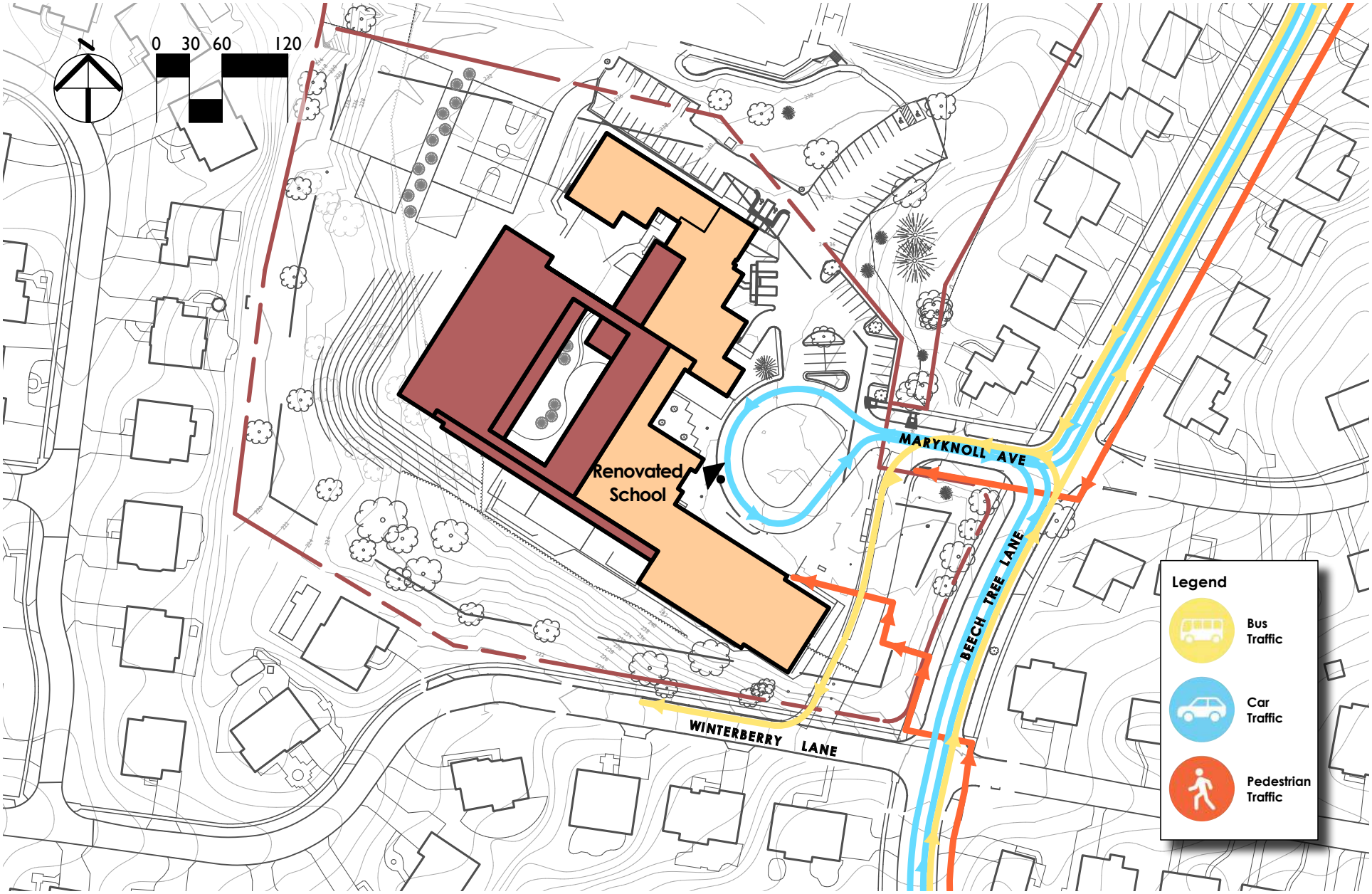
- The site will require significant re-grading as many trees would need to be removed in order to construct the new addition.
- The addition would take up more of the outdoor play area that students use on a day-to-day basis. These areas would have to be replaced.
- Parking deficiencies are not addressed, which means that the school will continue to share parking with the local park.

APPROACH 3 - SITE PLAN

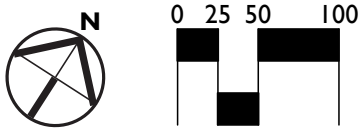
APPROACH 3 - PROGRAMMING DIAGRAM



APPROACH 3 - SITE CIRCULATION



APPROACH 3 - FLOOR PLANS



LEGEND

- Classrooms
- Media Center, PE, Multi-Purpose & Kitchen
- Administration
- Music & Arts
- Instructional Support
- Building Support

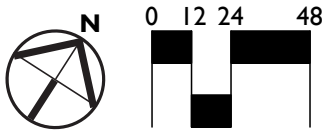
REDACTED

MAIN LEVEL

UPPER LEVEL

FLOOR PLANS

APPROACH 3 - MAIN LEVEL FLOOR PLAN



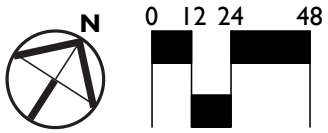
LEGEND

- Classrooms
- Media Center, PE, Multi-Purpose & Kitchen
- Administration
- Music & Arts
- Instructional Support
- Building Support

REDACTED

MAIN LEVEL

APPROACH 3 - UPPER LEVEL FLOOR PLAN



LEGEND

- Classrooms
- Media Center, PE, Multi-Purpose & Kitchen
- Administration
- Music & Arts
- Instructional Support
- Building Support

REDACTED

UPPER LEVEL

APPROACH 3 - SPACE ANALYSIS

Burning Tree Elementary School Space Analysis	ED Spec MCPS Elementary School			Approach 3 Comparison to Ed Spec		Approach 3 Burning Tree Elementary School		
	Area(s)	SF	Total Net	SF	%	Area(s)	SF	Total Net
General Classrooms			**33,150**	**540**	2%			**33,690**
Pre-Kindergarten (incl. 250 sf of storage)	2	1,200	2,400	0	0%	2	1,200	2,400
Kindergarten (incl. 250 sf of storage) (incl. toilet)	4	1,200	4,800	0	0%	4	1,200	4,800
Standard (incl. 150 sf of storage)	19	850	16,150	57	0%	19	853	16,207
Special Education Learning Center (incl. 150 sf of storage)	7	850	5,950	350	6%	7	850	6,300
Art (incl. 250 sf of storage)	1	1,200	1,200	25	2%	1	1,225	1,225
Music (incl. 250 sf of storage)	1	1,200	1,200	8	1%	1	1,208	1,208
Instrumental Music Room (incl. stor)	1	450	450	40	9%	1	490	490
Dual Purpose Room	1	1,000	1,000	60	6%	1	1,060	1,060
Support Rooms			**3,335**	**-107**	-3%			**3,228**
Large Instructional Support Room	1	550	550	-125	-23%	1	425	425
Small Instructional Support Room	2	425	850	18	2%	2	434	868
Speech/Language Room	1	250	250	0	0%	1	250	250
Therapy/Support Room	1	250	250	0	0%	1	250	250
Special Education Support	2	250	500	0	0%	2	250	500
Personal Care Room	1	100	100	0	0%	1	100	100
Conference Room	1	275	275	0	0%	1	275	275
Testing Room	1	140	140	0	0%	1	140	140
Support Staff Offices	3	140	420	0	0%	3	140	420
Library Media Center			**2,875**	**-115**	-4%			**2,760**
Learning Environment	1	2,100	2,100	30	1%	1	2,130	2,130
Work and Production Area	1	475	475	-148	-31%	1	327	327
LMC Storage Room	1	300	300	3	1%	1	303	303
Physical Education			**4,430**	**118**	3%			**4,548**
Gymnasium	1	3700	3,700	50	1%	1	3,750	3,750
Office	1	140	140	34	24%	1	174	174
Storage	1	250	250	4	2%	1	254	254
Storage	2	100	200	10	5%	2	105	210
Outside Storage	1	140	140	20	14%	1	160	160
Multipurpose Room			**4,135**	**-234**	-6%			**3,901**
Multipurpose Room	1	3200	3,200	-375	-12%	1	2,825	2,825
Chair Storage	1	180	180	47	26%	1	227	227
Table Storage	1	180	180	65	36%	1	245	245
Platform	1	450	450	0	0%	1	450	450
Before/After Care Prep Area	1	25	25	33	132%	1	58	58
Before/After Care Storage	1	100	100	-4	-4%	1	96	96

APPROACH 3 - SPACE ANALYSIS (CONTINUED)

Burning Tree Elementary School Space Analysis	ED Spec MCPS Elementary School			Approach 3 Comparison to Ed Spec		Approach 3 Burning Tree Elementary School		
	Area(s)	SF	Total Net	SF	%	Area(s)	SF	Total Net
Kitchen			**1,372**	**16**	1%			**1,388**
Serving Area	1	300	300	-28	-9%	1	272	272
Walk-in Cooler/Freezer (included in Serving Area)	1	155	155	16	10%	1	171	171
Dry Storage	1	192	192	16	8%	1	208	208
Office	1	100	100	13	13%	1	113	113
Toilet Room	1	70	70	-6	-9%	1	64	64
Preparation Area (included in Serving Area)	1	555	555	5	1%	1	560	560
Administration			**1,765**	**36**	2%			**1,801**
General Office	1	500	500	-14	-3%	1	486	486
Workroom	1	300	300	38	13%	1	338	338
Principal's Office (incl. 50 sf toilet room)	1	250	250	0	0%	1	250	250
Assistant Principal's Office	1	140	140	0	0%	1	140	140
Conference Room	1	275	275	-18	-7%	1	257	257
Storage	1	100	100	8	8%	1	108	108
Record Room	1	75	75	-5	-7%	1	70	70
Toilet Room	1	50	50	-3	-6%	1	47	47
Remote Workroom	1	75	75	30	40%	1	105	105
Counseling Suite			**320**	**3**	1%			**323**
Counselor's Office	1	160	160	1	1%	1	161	161
Itinerant Staff Office	1	160	160	2	1%	1	162	162
Staff Development Area			**600**	**-68**	-11%			**532**
Staff Development Office	1	100	100	0	0%	1	100	100
Reading Specialist Office	1	100	100	-2	-2%	1	98	98
Training/Conference Room	1	400	400	-66	-17%	1	334	334
Health Services Suite			**710**	**208**	29%			**918**
Waiting Area	1	100	100	60	60%	1	160	160
Treatment/Medication Area	1	120	120	16	13%	1	136	136
Office/Health Assessment Room	1	100	100	63	63%	1	163	163
Health Assessment/Isolation Room	1	100	100	42	42%	1	142	142
Rest Area	1	200	200	-50	-25%	1	150	150
Toilet Room	1	50	50	41	82%	1	91	91
Storage Room	1	40	40	36	90%	1	76	76

APPROACH 3 - SPACE ANALYSIS (CONTINUED)

Burning Tree Elementary School Space Analysis	ED Spec MCPS Elementary School			Approach 3 Comparison to Ed Spec		Approach 3 Burning Tree Elementary School		
	Area(s)	SF	Total Net	SF	%	Area(s)	SF	Total Net
Staff Area			**750**	**52**	7%			**802**
Staff Lounge (incl. 2 ex. toilet rooms)	1	650	650	52	8%	1	702	702
Privacy Room	2	50	100	0	0%	2	50	100
Building Service Facilities			**1,885**	**149**	8%			**2,034**
Building Services Office	1	140	140	21	15%	1	161	161
Locker/Shower Area	1	150	150	38	25%	1	188	188
Compactor/Trash Room	1	150	150	-12	-8%	1	138	138
General Storage and Receiving	1	550	550	-39	-7%	1	511	511
General Storage	3	240	720	0	0%	3	240	720
Building Services Outdoor Storage	1	175	175	141	81%	2	158	316
Building Support Spaces			**600**	**104**	17%			**704**
Book Storage	1	200	200	5	3%	1	205	205
PTA Storage	1	100	100	0	0%	1	100	100
Telecommunication Closet (MDF)	1	150	150	-12	-8%	1	138	138
Telecommunication Closet (IDF)	3	50	150	111	74%	3	87	261

Gross Area Grand Total Summary	ED Spec MCPS Elementary School	Approach 3 Comparison to Ed Spec	Approach 3 Burning Tree Elementary School
Total Net Sq. Ft.	**56,477**	**152**	**56,629**
Gross Area Factor (Walls, Circulation, Toil, Mech/Elec, Struct, Shafts,...)	**24,204**	**5,286**	**29,490**
Efficiency Factor %	70%		66%
Gross Area Grand Total	**80,681**	**5438**	**86,119**

CIVIL DESIGN NARRATIVE

PROPOSED SITE ASSESSMENT

There will be major site upgrades included in Approach 3. The existing drop off loop will be completely removed and replaced. A new bus aisle connecting Winterberry Lane to Maryknoll Avenue will provide separation between bus and car circulation. The existing relocatable classrooms will be removed and a large addition will be constructed in the rear of the existing building. Pedestrian access to Burning Tree Local Park will be provided from Maryknoll Avenue and will require ramps and handrails to be ADA-compliant. New paved play areas and playground will be constructed northwest of the proposed building and the Pre-K play spaces will be removed from the front of the building and constructed southwest of the proposed addition.

SEDIMENT AND EROSION CONTROL

Any project over 5,000 sf of disturbance will need to receive approval of the erosion and sediment control plan from Montgomery County DPS. Plans should conform to the 2011 Standards and Specifications for Soil Erosion and Sediment Control from Maryland Department of the Environment. It is anticipated that any major project will need to include a sediment trap or sediment basin with a connection to the public storm drain system. All projects will also require a stabilized construction entrance, inlet protection, silt or super silt fence, stockpile areas, concrete washouts, and permanent stabilization.

SITE DEMOLITION

Major site demolition is required for Approach 3. Significant grading would be required west of the proposed building, including clearing of forest. The existing drop off loop would be completely demolished and replaced. The existing pre-K play area would be removed to make room for the new bus aisle. The existing play area west of the building would be demolished and replaced northwest of the proposed building, where green play space is currently located.

GRADING

The site should be designed to have a balance between cut and fill to limit the amount of export or import for the site. All grass areas should be stabilized with sod.

FORESTATION

The project will not be clearing any forest. Large trees near the public sidewalk or along residential properties should be maintained when possible. The property will need to go through a forest conservation exemption or a full forest conservation plan depending on the amount of work being proposed. All work will be reviewed by the Maryland National Capital Park and Planning Commission.

SITE IMPROVEMENTS

Any pavement shall meet the following requirements:

- Sidewalk shall be concrete (4,500 psi). Sidewalks shall be 5’ wide and 4” deep with WWF 6x6 and a 4” stone base.
- All curb and gutter shall be concrete (4,500 psi).
- All heavy duty concrete (4,500 psi) for ADA spaces or vehicular pavement shall be 8” thick with WWF 4x4 and 4” GAB.
- Asphalt pavement shall be 6” thick (2” asphalt surface course and 4” asphalt base course) with a 6” GAB.
- Heavy duty asphalt pavement for the bus loop, loading dock, or construction access shall be 6” thick (2” asphalt surface course and 4” asphalt base course) with an 8” GAB.
- All pavement shall be over an approved subgrade.

PROPOSED SITE UTILITIES

- Water – The waterline for the site shall be upgraded to an 8” DIP to serve the sprinkler system, hydrants, and domestic demand for the building. This will require a new water meter vault with easement. The existing waterline will require a service connection abandonment. The new line will require a new service connection.
- Sanitary Sewer – The existing sanitary sewer should be reused if possible. If a new line is necessary, a new line should be connected to the line in Beech Tree Road.
- Gas – The existing line should be reused if able. Otherwise a new line will need to be coordinated with Washington Gas
- Electric – The existing electric should be maintained if possible. If a new electric main is needed, the locations should

be closest to the new transformer to limit the amount of new electric main that will be needed. All work to be coordinated with PEPCO.

- Stormwater Management – All new work will need to meet Montgomery County SWM requirements. The site will need to meet the County's ESD requirements. It is assumed that a combination of pervious pavement, micro-bioretentions, and other ESD practices will be needed. If ESD cannot be met, Chapter 3 or structural practices can be considered.
- Storm Drainage – New drainage infrastructure will need to be constructed to meet the proposed grades of the new building and site features. The new storm drain system will connect to the existing drainage system within Beech Tree Road.

ATHLETIC FIELDS, ATHLETIC COURTS, AND PLAY AREAS

The existing fields and courts will be maintained if possible. If any of the courts or play spaces are removed with the new work, an effort should be made to group the paved play area and playground together. Access to the Burning Tree Local Park amenities shall be kept open in all Approaches.

ARCHITECTURAL DESIGN NARRATIVE

Approach 3 proposes to retain approximately 50% of the existing building while expanding the facility by approximately 18,000 square feet to meet the Montgomery County Public Schools (MCPS) Education Specification. This approach addresses both the school's capacity needs and code compliance requirements, while reusing portions of the existing facility.

Key features of this approach include:

- Construction of a two-story addition to eliminate split-level classrooms and remove all existing relocatable classrooms.
- The new addition will require significant site grading, including the removal of mature trees to accommodate the expanded footprint.
- Reconfigured site circulation to separate buses and cars: a new bus loop will be added, and the existing bus loop will be repurposed for car drop-off/pick-up.
- All routes to building entries will be handicap accessible, and code-compliant ADA parking will be provided.
- The gymnasium and adjacent spaces will remain in their current location, preserving part of the existing structure.
- The floor plan will be reconfigured and expanded to align with the MCPS Education Specification for 21st-century learning.
- Remaining existing spaces will receive cosmetic upgrades, including new flooring, paint, windows, and doors.
- Replacement of all major building systems, including plumbing, electrical, and mechanical, along with a new chiller, boiler, generator, and new roof system.

Construction under Approach 3 will require full temporary relocation of students and staff. The building will be unoccupied during construction, which is estimated to take approximately 18–24 months.

STRUCTURAL DESIGN NARRATIVE

This option is for a new two-story addition preserving at least 50% of the existing school. The existing two-story classroom portion of the building will be demolished, and new 2-story wing will be built towards the rear of the school. The existing lower level will be backfilled to avoid any underpinning of the existing building foundation.

The basis for the new addition is as follows. The first floor will be a 4" concrete slab on grade and the foundations are anticipated to be spread footings designed using an allowable bearing capacity of 6000 psf (to be verified by geotechnical engineer). The second floor shall be constructed using a composite steel beam floor system or conventional steel bar joists supporting concrete filled metal deck. The roof framing shall consist of conventional steel bar joists supporting 1 ½" x 22-gauge galvanized metal roof deck. The exterior walls will be 8" masonry backup filled with #5 at

24" o/c with 3000 psi grout. The building stability will be achieved by either masonry shear walls and/or steel moment frames. A 2" expansion joint will be provided between the new school addition and existing gym wing to remain. Sustainability requirements will specify recycled content for structural steel and concrete and will mandate suppliers to support the project achieving Green Globes certification.

MEP GENERAL DESIGN NARRATIVE

Project Approach 3 – renovation and addition - includes comprehensive renovations and a one- and two-story building addition at Burning Tree Elementary School. Due to the overall extent of renovations and programmatic revisions provided throughout the existing school, reuse of the existing systems throughout the school is not recommended, with new systems (including mechanical, electrical, plumbing, fire-protection, communications, and electronic safety and security) provided throughout all renovation and building addition areas.

Mechanical, electrical, plumbing, fire-protection, communications, and electronic safety and security improvements included within the scope of the renovation and addition are summarized within this section.

MECHANICAL DESIGN NARRATIVE

HEATING AND COOLING INFRASTRUCTURE SYSTEMS

A centralized air-to-water heat pump unit system is recommended to support the proposed renovation and addition concept. This type of mechanical system provides the ability to have independent heating or cooling year-round, while delivering an extremely high level of overall building energy efficiency.

Chilled/Heating Water Side of Heat Exchanger: A pair of air-to-water two-pipe heat pump chillers will generate either heating water or chilled water for the centralized air-to-water heat pump system. These heat pump chillers will be located at grade and positioned adjacent to the gymnasium area. Three base-mounted chilled/heating water pumps (two active and one stand-by) will circulate a propylene glycol-water mixture between the heat pump chillers and the primary (source) side of the system's plate-and-frame heat exchanger. The heat exchanger and the chilled/heating water pumping systems will be located within the main mechanical room. Chilled/heating water pumps will be provided with N+1 redundancy such that the operation of the building can be maintained in the event of a single pump failure. In addition, these pumping systems will be equipped with variable frequency drives for use during system balancing. Major chilled/heating water infrastructure components, including the chilled/ heating water pumps, a plate-and-frame heat exchanger, a glycol feeder, an air separator, an expansion tank, and a buffer tank will also be located within the main mechanical room.

Heat Pump Loop Side of Heat Exchanger: Two base-mounted heat pump loop distribution pumps (one active and one stand-by) will circulate an all-water fluid between the secondary (load) side of the plate-and-frame heat exchanger and the water-source heat pump units located throughout the building. Heat pump loop distribution pumping systems will also be located within the main mechanical room and be provided with N+1 redundancy such that the operation of the building can be maintained in the event of a single pump failure. In addition, these pumping systems will be equipped with variable frequency drives for reduced energy consumption during periods of reduced system demand. Major heat pump loop infrastructure components, including the heat pump loop distribution pumps, a plate-and-frame heat exchanger (described previously), an air separator, and an expansion tank will also be located within the main mechanical room.

CLASSROOM HVAC SYSTEMS

Extended range vertical heat pump units will be provided for space conditioning within the school's classroom areas, with these heat pump units located within mechanical closets positioned near the area served. Given the school's existing 10'-8" floor-to-floor height constraints, it is anticipated that one heat pump closet will be required for every two classroom areas. Doors for all mechanical closets will be accessed from the corridor for routine maintenance. Heat pump units will generally be equipped with two-stage type compressors, helping to extend compressor life and improve the overall energy efficiency of these systems under part load operation.

A series of VAV rooftop DOAS units with supply and exhaust fans, enthalpy wheels for pre-conditioning outdoor air, DX heat pump coils with water-cooled compressors, and hot gas reheat coils for tempering supply air will be provided to deliver conditioned ventilation airflow to the classroom areas. Airflow supplied from these DOAS units will be dehumidified, conditioned, and delivered directly to each space. Exhaust airflow from classrooms, restrooms, and storage room areas will be routed through each DOAS unit's enthalpy wheel for pre-conditioning of outdoor air.

The use of demand control ventilation within the classroom areas will be provided to assist with reducing the school's overall energy consumption. To accomplish this control strategy, a series of VAV retrofit-type air terminal units will be installed within the conditioned outdoor air ductwork systems. Each classroom will be provided with a dedicated VAV air terminal unit, regulating the quantity of conditioned outdoor air delivered to each space based on the actual room carbon dioxide levels.

MUSIC AND ART CLASSROOM HVAC SYSTEMS

The music and art classroom areas will be provided with a similar HVAC system approach as the other classroom areas. This HVAC system approach includes extended range vertical heat pump units for space conditioning, DOAS units for ventilation, and demand control ventilation via VAV retrofit-type air terminal units. Heat pump units will continue to be positioned within mechanical closets, with supply and return air ductwork extending from these units to the area served.

ADMINISTRATION, GUIDANCE, AND HEALTH SUITE HVAC SYSTEMS

The administration, guidance, and health suite areas will be provided with space conditioning through a VRF system. This system will be complete with heat recovery type water-cooled condensing units connected to the building's heat pump loop. Condensing units will be located within mechanical rooms positioned near the spaces served. Doors to mechanical rooms will be accessible from the corridor for routine maintenance.

The use of ceiling cassette type VRF terminal units is anticipated, promoting sufficient clearance access for filter replacement. Multi-occupant spaces will be provided with 3'x3' cassettes with high efficiency (MERV 10 or higher) disposable filters. Single occupant spaces will be provided with 2'x2' cassettes with the VRF manufacturer's standard washable filter.

Conditioned ventilation air will be provided by a constant volume dedicated DOAS unit. Similar to classroom areas, this DOAS unit will be provided with supply and exhaust fans, an enthalpy wheel for pre-conditioning outdoor air, a DX heat pump coil with water-cooled compressors, and a hot gas reheat coil for tempering supply air. Airflow supplied from this DOAS unit will be dehumidified, conditioned, and delivered directly to each space. Exhaust airflow from classrooms, restrooms, and storage room areas will be routed through the DOAS unit's enthalpy wheel for pre-conditioning of outdoor air. A pair of dedicated switch-operated exhaust fans will also be provided for the health suite area, with one fan serving the rest area and the other fan serving the isolation room area.

MEDIA CENTER, CAFETERIA, AND GYMNASIUM HVAC SYSTEMS

A series of rooftop heat pump units with single-zone VAV fan control, heat pump type water-cooled compressors, and hot gas reheat coils will provide space conditioning and ventilation for the media center, cafeteria, and gymnasium areas. The equipment's water-cooled compressors will be connected to the building's heat pump loop. Full airside economizer, demand control ventilation, and enthalpy wheel type energy recovery devices will be provided for these rooftop heat pump units.

KITCHEN HVAC SYSTEMS

A dedicated rooftop heat pump unit with single-zone VAV fan control, heat pump type water-cooled compressors, and a hot gas reheat coil will provide space conditioning and ventilation for the kitchen area. The equipment's water-cooled compressors will be connected to the building's heat pump loop. Full airside economizer and an enthalpy wheel type energy recovery device will be provided for this rooftop heat pump unit.

General exhaust from the kitchen restroom, storage rooms, and the kitchen space itself will be routed to a rooftop exhaust fan. A separate rooftop exhaust fan will also be provided for serving the kitchen's associated exhaust hood.

MISCELLANEOUS BUILDING AREAS

Data, Telecomm, and the Elevator Machine Room (or Elevator Shaft) will be served by ductless split systems. Heating-only type spaces such as mechanical rooms, electrical rooms, stairs, storage rooms, and entry vestibules will be provided with electric-resistance type cabinet and propeller unit heaters. In addition, dedicated switch-operated exhaust fans will also be provided within the health suite area (as described previously) and within the administration workroom.

AUTOMATIC TEMPERATURE CONTROL (ATC) SYSTEMS

Automatic temperature controls will be direct digital type controls (DDC). HVAC equipment refrigeration system controls, refrigeration safety devices, and the air-to-water heat pump chillers will utilize the equipment manufacturer's packaged controller and interfaced with the DDC system. Controllers for the air-to-water heat pump chillers will be interfaced using BACnet IP protocol. Controls for the remaining mechanical equipment will be non-manufacturer based DDC controls provided by the ATC contractor. Actuation will be electric / electronic for all systems. All system components will be installed in accordance with MCPS standards and networked to the existing front-end server located at the MCPS Energy Management Office.

PLUMBING DESIGN NARRATIVE

DOMESTIC WATER PIPING SYSTEMS (INCLUDING WATER SERVICE ENTRANCE)

A new combination fire/water service will enter the school within the first floor mechanical room. This combination fire/water service will be capable of supporting both the fire and water service demands of the proposed renovation and addition areas. A new domestic water service, complete with basket strainer and backflow preventer will separate the domestic water and fire services prior to distributing water throughout the school. Domestic water piping will be distributed from this first floor mechanical room area to plumbing fixtures and equipment located throughout the school. All domestic water piping systems will be constructed of Type L copper, with soldered joints provided for piping 2-inches in diameter and smaller and brazed joints provided on piping 2.5-inches in diameter and larger. For Approach 3, a domestic water booster pump is not required to support the domestic water system due to the available municipal water pressure reflected in the project's flow test information.

DOMESTIC HOT WATER HEATER SYSTEM

Domestic hot water for the proposed renovation and addition will be produced by a pair of electric resistance tank type domestic water heaters. Domestic hot water will be generated at 140-degrees F, with 120-degrees F domestic hot water distributed throughout the entire school. Local thermostatic mixing valves will reduce the water temperature to 110-degrees F at hand washing fixtures. The domestic hot water system will be complete with a master thermostatic mixing valve, a hot water circulation pump, and an expansion tank.

STORM WATER PIPING SYSTEMS

New storm water drainage, including roof drains, overflow drains, and storm water piping systems will be provided throughout the proposed renovation and addition areas. Above- and below-grade storm water piping will be constructed from solid core PVC material. All storm water piping systems will exit the school at various locations and coordinate with available site piping connections provided for the proposed renovation and addition areas.

SANITARY WASTE AND VENT PIPING

New sanitary waste and vent piping systems will be provided throughout the proposed renovation and addition areas. Above- and below-grade sanitary and vent piping will be constructed from solid core PVC material. Vent piping will terminate at the roof level, with a minimum 25-foot separation provided between vent piping terminations and any outdoor air intake locations. Sanitary piping systems will exit the building at various locations and will coordinate with the available site piping connections provided for the proposed renovation and addition.

The following special sanitary and vent piping systems are anticipated:

- Equipment and sinks that may discharge grease into the sanitary system from the kitchen will be piped to a new underground concrete grease interceptor. The discharge from this interceptor will be connected to site sanitary piping system.
- Sinks within the art classrooms will be provided with solids interceptors, collecting debris and preventing it from entering the site sanitary piping system.

PLUMBING FIXTURES

New plumbing fixtures will meet ADA and utilize water conservation features. Floor-mounted water closets will utilize 1.28 gallon per flush valves. Urinals will be wall-hung and provided with pint flush valves (0.125 gallon per flush). Wall-hung cast-iron lavatories will utilize self-closing faucets that supply 0.35 gallons per minute. Showers will utilize 1.5 GPM type heads. The water consumption figures noted are equal to or less than what is required by the current plumbing code and for promoting good water conservation practices. All wall-mounted fixtures will be supported from fixture carriers.

GAS PIPING SYSTEMS

A new natural gas service will be provided by Washington Gas for the proposed renovation and building addition. The gas service meter and pressure reducing station will be positioned outdoors and located near the new first floor mechanical room. Gas piping will be constructed of schedule 40 black steel and serve the school's emergency generator.

ELECTRICAL DESIGN NARRATIVE

POWER DISTRIBUTION AND GENERATOR POWER

Under Approach 3, a new main electrical room is recommended to be located towards the north-west end of the new addition, near the proposed new mechanical service yard, with a new 2000A switchboard and utility connection. The new switchboard will serve all new downstream distribution equipment.

The proposed addition under Approach 3 does not conflict with the existing Pepco electrical service. However, a new Pepco utility connection will be required due to the location of the new main electrical room.

The new main electrical room will have a new 277/480V switchboard as well as a 277/480V mechanical panelboard, a 277/480V lighting panel, an energy-efficient step-down transformer, and a 120/208V receptacle branch circuit panelboard.

Under Approach 3 the portable/relocatable classrooms installed at the school will be removed. The associated 45-kVA transformer and distribution panel in the existing main electrical serving portable classrooms will also be removed.

Existing distribution equipment such as branch panels and transformers will be removed, except the existing generator, automatic transfer switches, and non-life-safety panelboards installed in 2019 will remain and be reused. New branch electrical closets will be located on the first and second floors of the classroom wing as well as between the admin area and the single-story classroom wing on the first floor. These closets will house additional electrical distribution equipment such as lighting, mechanical, receptacle, and standby panels and energy-efficient step-down transformers. A new 277/480V mechanical panel and 120/208V receptacle panel will be provided in the admin area.

LIGHTING

In the proposed building addition and renovated spaces under Approach 3, MCPS standard classroom lighting will be provided in the classrooms. This will consist of recessed led luminaires (lighting fixtures). Lighting controls in classrooms will include lighting relay controllers to control low-voltage lighting control stations, occupancy sensors, and dimming capability. Emergency lighting will be automatically switched ON during a power outage.

In the proposed building addition and renovated spaces, lensed type recessed LED luminaires will be provided in the offices, corridors, toilet rooms, storage rooms, and support spaces. The existing gymnasium will have the existing high-bay and wall mounted luminaires replaced with high-bay pendant-mounted and wall mounted LED luminaires respectively. LED downlights will be provided where smaller fixtures are appropriate. Lighting controls will include occupancy sensors to automatically turn OFF lighting in a room or space when unoccupied.

Exterior building-mounted perimeter security lighting will be full cut-off utilizing LED light sources.

Lighting levels will be designed in accordance with the recommendations of the Illuminating Engineering Society of North America (IESNA). Lighting controls will meet the requirements of ASHRAE Standard 90.1-2022. The lighting power density will not exceed 0.70 watts per square foot per Table 9.5.1 of ASHRAE Standard 90.1-2022.

FIRE PROTECTION DESIGN NARRATIVE

SPRINKLER SYSTEM

The entire renovation and building addition will be fully sprinklered, with the sprinkler system separated into several zones that will match the fire alarm pull zones for the building. The existing sprinkler piping and associated sprinkler heads will be removed, with new sprinkler piping and associated heads provided for all renovation and building addition areas. A fire pump is not required to support the school's sprinkler system due to the available municipal water pressure reflected in the project's flow test information. All work will be specified to conform to standards of the National Fire Protection Association (NFPA) and will include requirements for performance verification through hydraulic calculations.

FIRE DETECTION AND ALARM SYSTEM

A new fire alarm control panel will be provided and will serve both the existing and new fire alarm devices in the proposed building addition under Approach 3. The basis-of-design system will be by Fire-Lite Alarms/Honeywell. Initiation devices and notification devices will be located to meet code requirements. A new fire alarm annunciator panel will be provided at the main entrance.

Ceiling-mounted fire alarm combination speaker/strobe devices will be installed in classrooms, corridors, offices, and multi-occupant toilet rooms. Notification appliance circuit (NAC) power extender panels will be provided where needed for speaker/strobe and strobe devices. Strobe spacing and locations will be per NFPA requirements for rooms and corridors. Candela minimum required light output intensity will be indicated on the drawings.

COMMUNICATIONS DESIGN NARRATIVE

DATA AND VOICE COMMUNICATIONS SYSTEMS

The existing Dell file server and data racks will be removed and a new MDF and IDF room will be required in the proposed double-story addition under Approach 3 to serve the new classrooms, offices, and support spaces on the first and second floors, respectively. New data and voice communications systems will be provided. Additional IDF rooms will be required in both the renovated single story wing and on the 2nd floor of the double-story addition to ensure cabling runs are 295' or less.

The communications infrastructure will include outlet boxes, conduits and raceways, and conduit sleeves through walls and floors for the installation of the data and voice communications cabling. The number of communications outlets in each room will comply with MCPS and Maryland State requirements.

INTERCOM AND SOUND SYSTEMS

Intercommunications/public address system devices will be provided throughout the building renovation and addition proposed under Approach 3. This will include call switches and speakers in the classrooms, and speakers in the corridors and multi-occupant toilet rooms. The existing Rauland Telecenter intercom head-end console in the main office will be salvaged and replaced with a new head-end console. Exterior building-mounted speakers will be provided where required.

INSTRUCTIONAL/CLASSROOM TECHNOLOGY

In the building renovation and addition proposed under Approach 3, classrooms will be equipped with convenience receptacles throughout. Teacher's desk receptacles will be connected to a generator standby panelboard. A receptacle will be located at the front of the classroom off-center of the teaching wall for Promethean smart boards.

SECURITY SYSTEM

The existing Napco intrusion detection system will be expanded for the proposed building addition. Intrusion detection devices will include motion detectors/sensors and door contacts. Door access control system card readers will be provided where required by MCPS. Video surveillance system equipment will include dome cameras in the corridors and building exterior where required.

KITCHEN DESIGN NARRATIVE

GENERAL DESCRIPTION:

The facility will be equipped with all-new commercial-grade appliances meeting current N.S.F. requirements and installed in accordance with local governing health codes. All countertops and work surfaces will be of durable stainless-steel and mounted on legs or swivel casters to promote sanitation and ease of cleaning. Likewise, shelving inside the walk-in cooler/freezer will be installed with casters to aid in re-stocking of food supplies.

The kitchen will be designed to operate as a reheat facility equipped to produce and serve breakfast and lunch meals to a projected enrollment of 612 students during three (3) meal periods. Bulk refrigerated items will be stored in a walk-in cooler/freezer with remote refrigeration. Reheating will take place in all electric convection oven with a type 2 exhaust hood above. A fire protection system is not required for this type of kitchen. Backup hot & cold items will be stored in the reach-in heated cabinets and reach-in refrigerators behind the serving line. Kitchen pots, pans, and utensils will be cleaned via a 3-compartment pot washing sink. Clean ware will be stored on mobile pot & pan shelving.

Serving of students will take place on one cafeteria serving counter equipped with: hot food counter lowerator, mechanically-refrigerated cold pan for cold food, cashier's stand, and bulk milk coolers for milk and beverages.

SPATIAL DESCRIPTION:

The overall foodservice operation should contain approximately 1,500 +/- square feet and encompass the following functional work areas:

- Receiving Area
- Dry Storage
- Walk-in Cooler/Freezer
- Manager's Office
- Main Food Prep Area
- Serving Area
- Staff Toilet/Locker
- Ware Washing Area
- Custodial Closet

APPROACH 3 - ENERGY MODEL

Energy Use Index: 35 kBtu/ft^2

IES INTEGRATED ENVIRONMENTAL SOLUTIONS

Energy Model Output Report

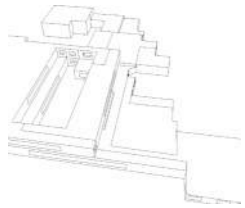
Project:	Burning Tree ES - Approach 3
Address:	7900 Beech Tree Rd, Bethesda, MD 20817
Climate File:	Baltimore_TMY2.fwt
Simulation:	BTES - Approach 3.aps

Design Team:	JPA
Energy Analyst:	JPA
Owner:	MCPS
Conditioned Area (ft²):	87910.6541

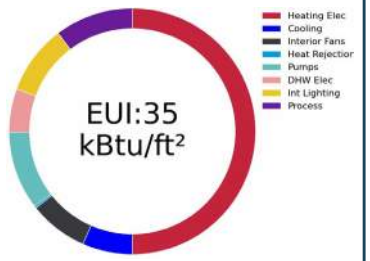
Annual Energy Consumption (kBtu/ft²/year) & CO2 KgCO2/ft²/yr

Energy End Use	Site Energy	Source Energy	CO2 Emissions
Heating Fossil Fuel	0.0	0.0	0.0
Heating Electricity	17.5	27.7	0.8
Space Cooling	2.3	3.2	0.1
Fans Interior	2.7	4.2	0.1
Heat Rejection	0.1	0.1	0.0
Pumps	3.6	5.4	0.1
DHW Fossil Fuel	0.0	0.0	0.0
DHW Electricity	2.0	3.1	0.1
Interior Lighting	3.2	5.0	0.1
Exterior Lighting	0.0	0.0	0.0
Receptacle	0.0	0.0	0.0
Data Center	0.0	0.0	0.0
Cooking Fossil Fuel	0.0	0.0	0.0
Cooking Electricity	0.0	0.0	0.0
Elevators & Escalators	0.0	0.0	0.0
Refrigeration	0.0	0.0	0.0
Process	3.6	5.6	0.2
TOTAL (ex renewables)	35	54	1

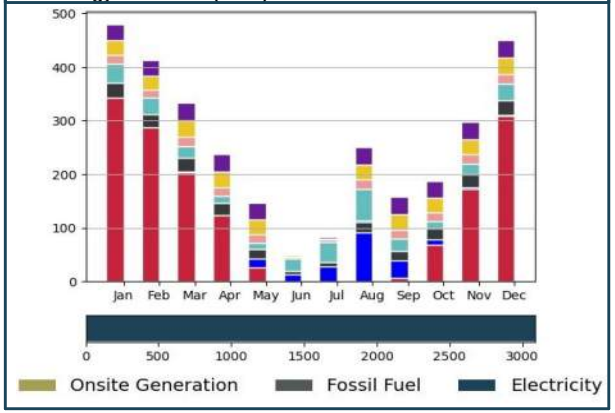
Project Viewer - 3D Model



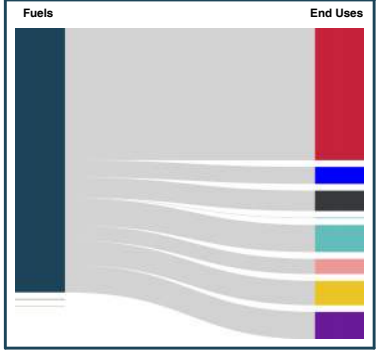
Site Energy Use Intensity



Site Energy Dashboard (MBtu)



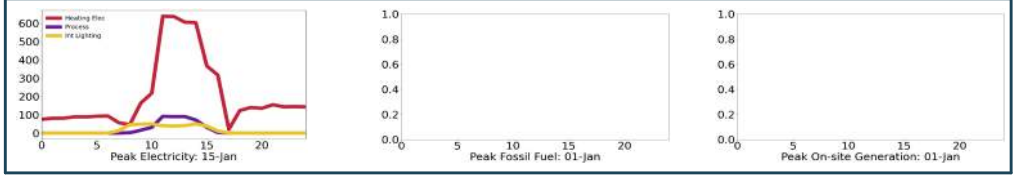
Site Energy Flows – Sankey Diagram



Annual Fuel Costs and Peak Demands

Fuels	Cost ($)	Peak Day	Peak Time	Peak Demand
Electricity	144,722.00	15-Jan	12:00	853.7 kW
Fossil Fuel	0.00	01-Jan	0:00	0.0 kBtu/h
Total	144,722.00	01-Jan	0:00	

Peak Energy Sources for Electricity (kW), Fossil Fuel (kBtu/h) and Onsite Power Generation (kW): Top 3 Contributors



APPROACH 3 - MAINTENANCE AND OPERATIONAL COSTS

MAINTENANCE AND OPERATION COST ESTIMATE — APPROACH 3

A. OPERATION

	Systems	Quantity	Units	Total Cost
1	Two-pipe Chilled/Heating Water System	0	SQUARE FOOT	
2	Four-pipe Chilled Water and Heating Water System	0	SQUARE FOOT	
3	Heat Pump System	87911	SQUARE FOOT	
4	Condenser Water System	0	TON	
			Total Service Cost	

B. MAINTENANCE - REPAIR

	Equipment	Quantity	Total Cost
1	Chiller, Air Cooled, Reciprocating; Repair air cooled chiller, 100 ton	2	
2	Water Cooled Condenser; Repair condenser, water cooled, 15 ton	7	
3	Fan Coil, DX Air Conditioner, Cooling Only; Repair fan coil, DX 3 ton	92	
4	Multi-Zone Air Conditioner; Repair multi-zone rooftop unit, 40 ton	4	
5	Single Zone Variable Volume; Repair single zone variable volume, 20 ton	3	
6			
7			
8			
9			
10			
		Subtotal	

C. MAINTENANCE - FILTERS

	Equipment	Quantity	Total Cost
1	Particulate Air Filtration, Supported Type, 1"	92	
2	Particulate Air Filtration, Supported Type, 2"	14	
3	Particulate Air Filtration, Supported Type, 4"	7	
4	Particulate Air Filtration, Supported Type, 12"	0	
		Subtotal	

D. MAINTENANCE - PREVENTATIVE MAINTENANCE

	Equipment	Quantity	Total Cost
1	Chiller, Recip., Air Cooled	2	
2	Condensing Unit, Water Cooled	3	
3	Condensing Unit, Water Cooled	4	
4	Air Handling Unit	3	
5	Air Handling Unit	4	
6	Fan Coil Unit	92	
7	Pump, Centifugal	6	
8	Controls	1	
9			
10			
		Subtotal	
		Total Maintenance Cost	

APPROACH 3 - ONE TIME OPERATIONS COSTS ESTIMATE

A. EXISTING[1]	
Estimated Remaining Equipment Life	0 Yrs
Below the Line Costs Multiplier[2,3]	0.00
Subtotal HVAC Equipment Cost	[redacted]
Total HVAC Equipment Cost	
Single Payment (P/F) Present Worth	
B. RENOVATION	
Estimated Equipment Life	16 Yrs
Below the Line Costs Multiplier[2,3]	1.35
Subtotal HVAC Cost[2]	[redacted]
Total HVAC Cost	
Subtotal HVAC Equipment Cost[2]	
Total HVAC Equipment Cost	
Single Payment (P/F) Present Worth	
C. ADDITION	
Estimated Equipment Life	16 Yrs
Below the Line Costs Multiplier[2,3]	1.35
Subtotal HVAC Cost[2]	[redacted]
Total HVAC Cost	
Subtotal HVAC Equipment Cost[2]	
Total HVAC Equipment Cost	
Single Payment (P/F) Present Worth	
D. NEW CONSTRUCTION	
Estimated Equipment Life	16 Yrs
Below the Line Costs Multiplier[2,3]	0.00
Subtotal HVAC Cost[2]	[redacted]
Total HVAC Cost	
Subtotal HVAC Equipment Cost[2]	
Total HVAC Equipment Cost	
Single Payment (P/F) Present Worth	
Total Cost	[redacted]

Notes:
1. HVAC equipment not replaced as part of scope of work
2. Values from or calculated based on cost estimate
3. Below the Line Costs include general conditions, overhead & profit, bonds & insurance, prevailing wage requirement, design contingency, and esclation

APPROACH 4: REPLACEMENT SCHOOL

APPROACH 4 - SUMMARY:
REPLACEMENT SCHOOL

CONSTRUCTION COST ESTIMATE: [redacted]

GROSS SQUARE FOOTAGE

EXISTING BUILDING:	68,119 GSF
AREA OF DEMOLITION:	-68,119 GSF
AREA OF ADDITION:	± 80,396 GSF
TOTAL AREA OF BUILDING:	± 80,396 GSF

PARKING TABULATION

SCHOOL STANDARD SPACES:	69	PARK STANDARD SPACES:	27
SCHOOL HANDICAP SPACES:	4	PARK HANDICAP SPACES:	2
TOTAL SCHOOL PARKING SPACES:	73	TOTAL PARK PARKING SPACES:	29
TOTAL PARKING SPACES:			102

SUMMARY:

- The existing building would be demolished entirely and a new building will be constructed in its place.
- The new building will fully meet Montgomery County Public Schools Education Specification requirements and will be compliant with current codes and standards.

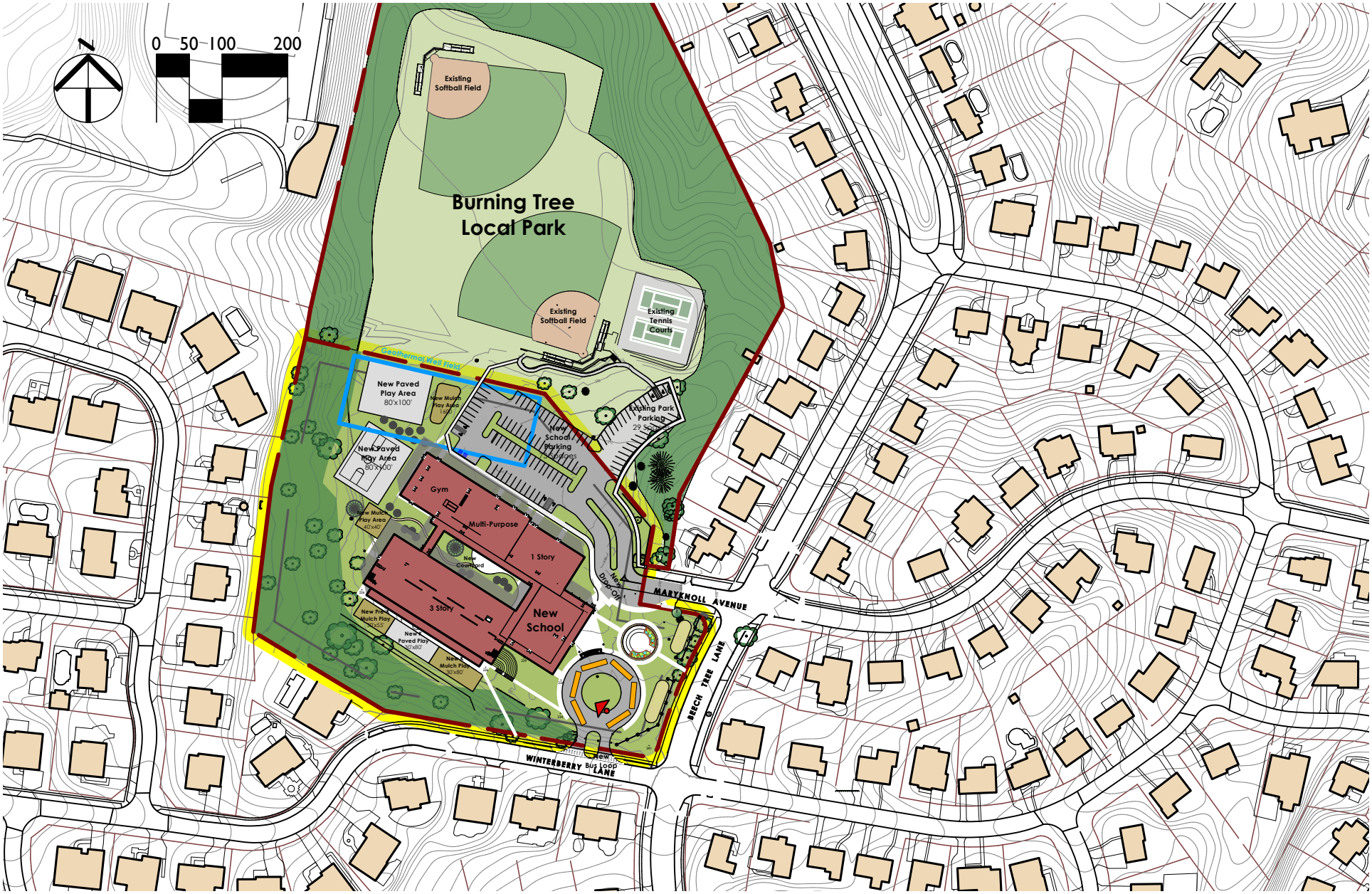
OPPORTUNITIES:

- The school would be able to better blend in with the neighborhood.
- Most issues that the community has would be resolved and would be set up to address the schools' future needs.
- Further separation from the local park gives more relief to the traffic congestion.
- This approach would aim to make the building a high performance school.
- Sustainable and CPTED strategies would be used to help make the building more energy efficient and address the community's safety concerns.
- The design will be more compact to reduce the limit of disturbance.
- A new car parking lot and a parent drop-off area will be constructed. This will allow bus and vehicular traffic to be separated providing pedestrian safety.
- A pedestrian plaza has been added to further separate the pedestrian foot traffic from the vehicular traffic.

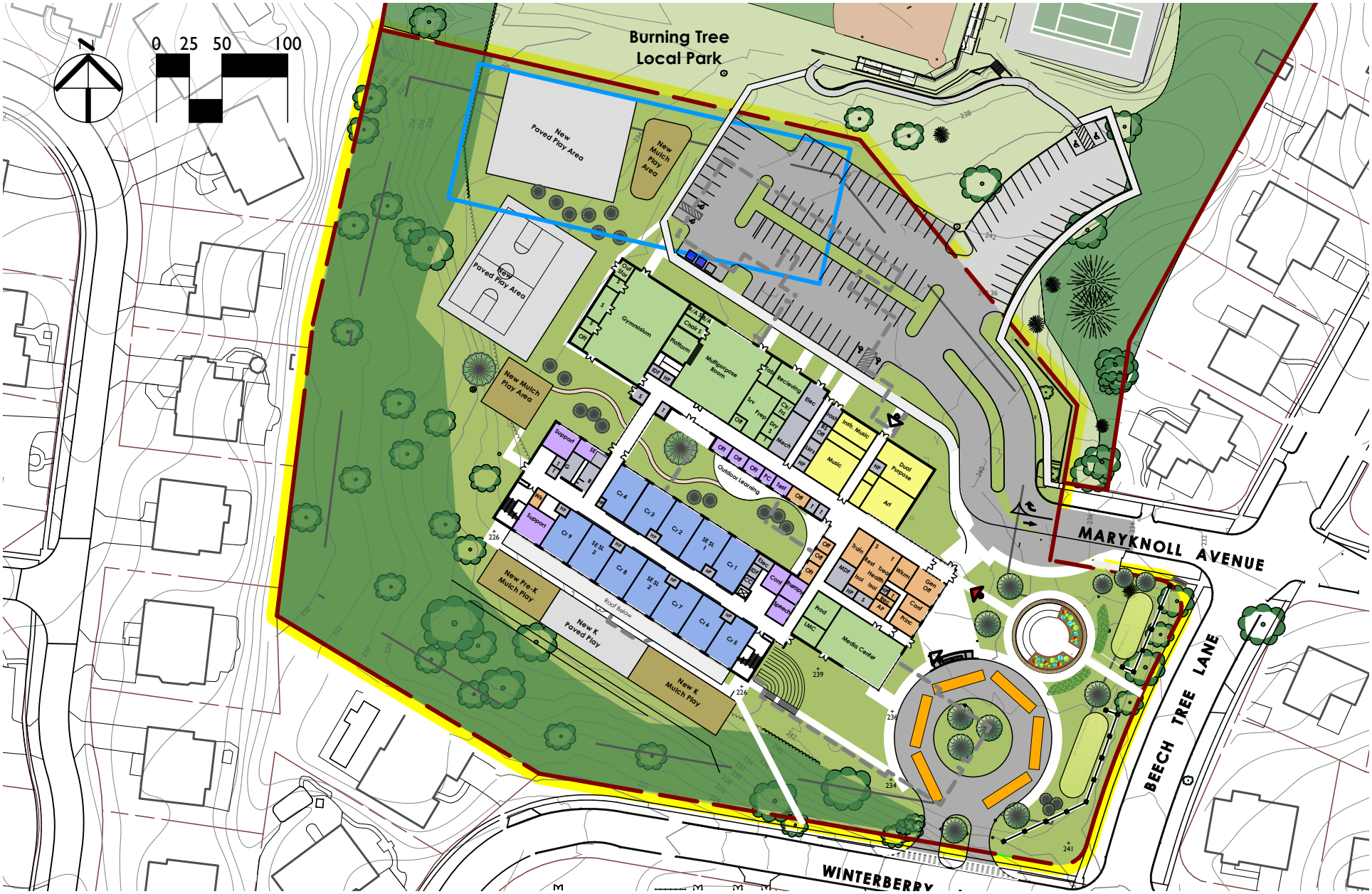
CHALLENGES:

- The cost of a replacement school is the most expensive option between all approaches.
- The site will require slight re-grading as some trees would need to be removed in order to construct the replacement school.

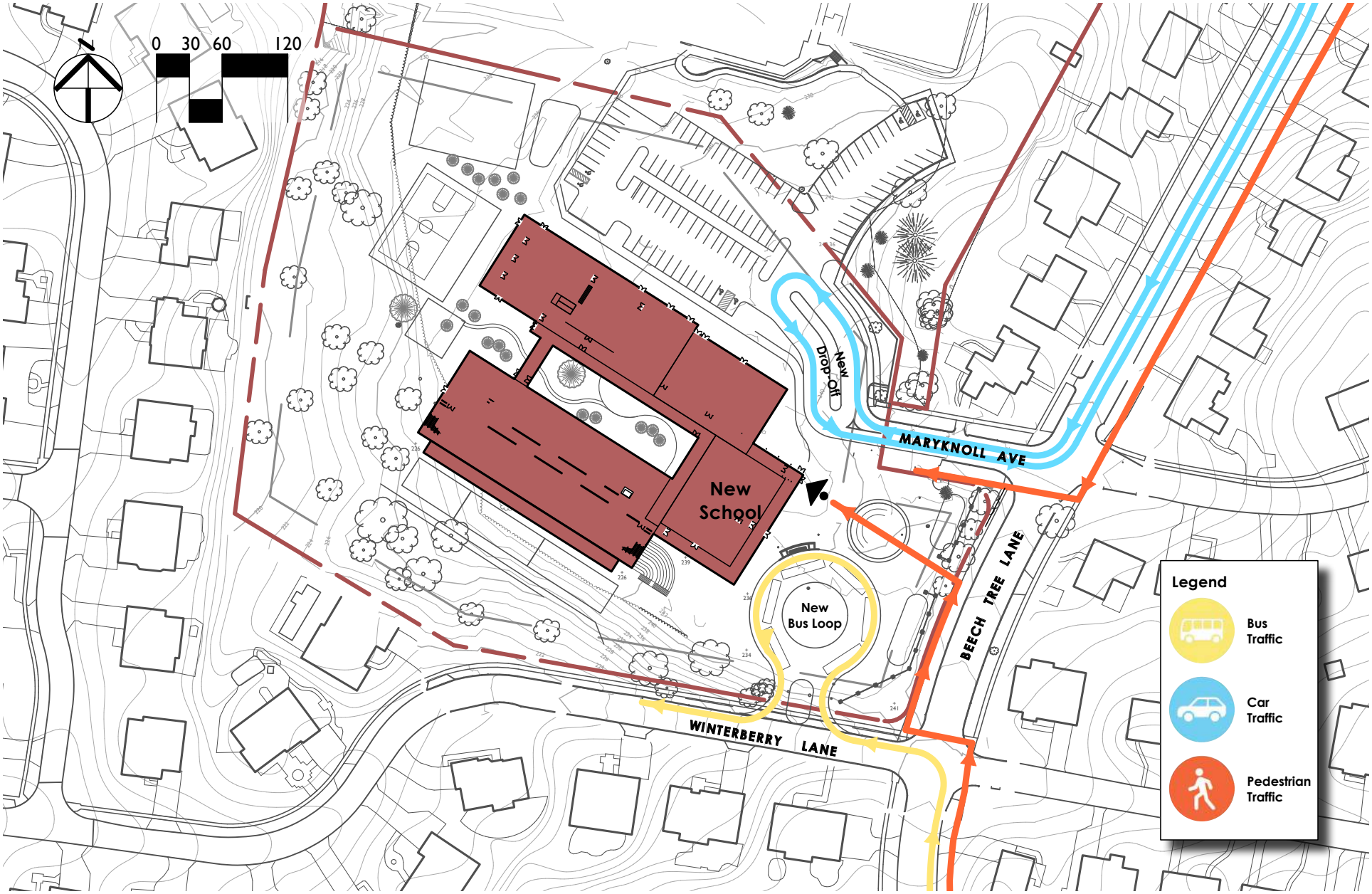
APPROACH 4 - SITE PLAN



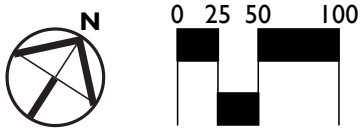
APPROACH 4 - PROGRAMMING DIAGRAM



APPROACH 4 - SITE CIRCULATION

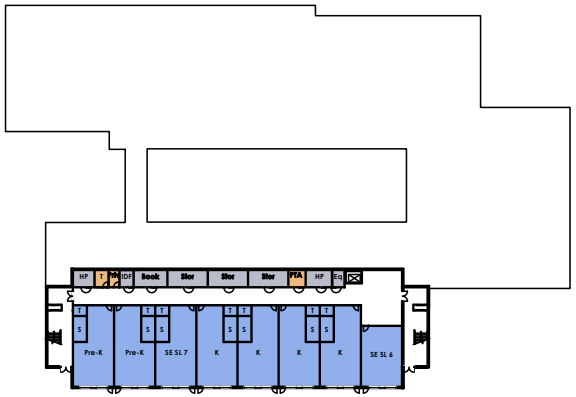


APPROACH 4 - FLOOR PLANS



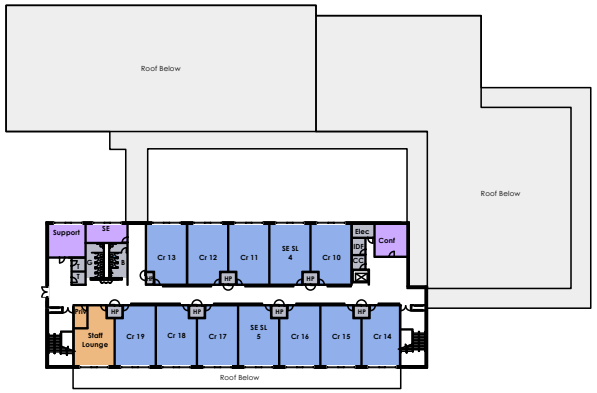
LEGEND

- Classrooms
- Media Center, PE, Multi-Purpose & Kitchen
- Administration
- Music & Arts
- Instructional Support
- Building Support



LOWER LEVEL

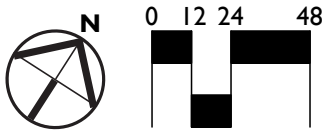
MAIN LEVEL



UPPER LEVEL

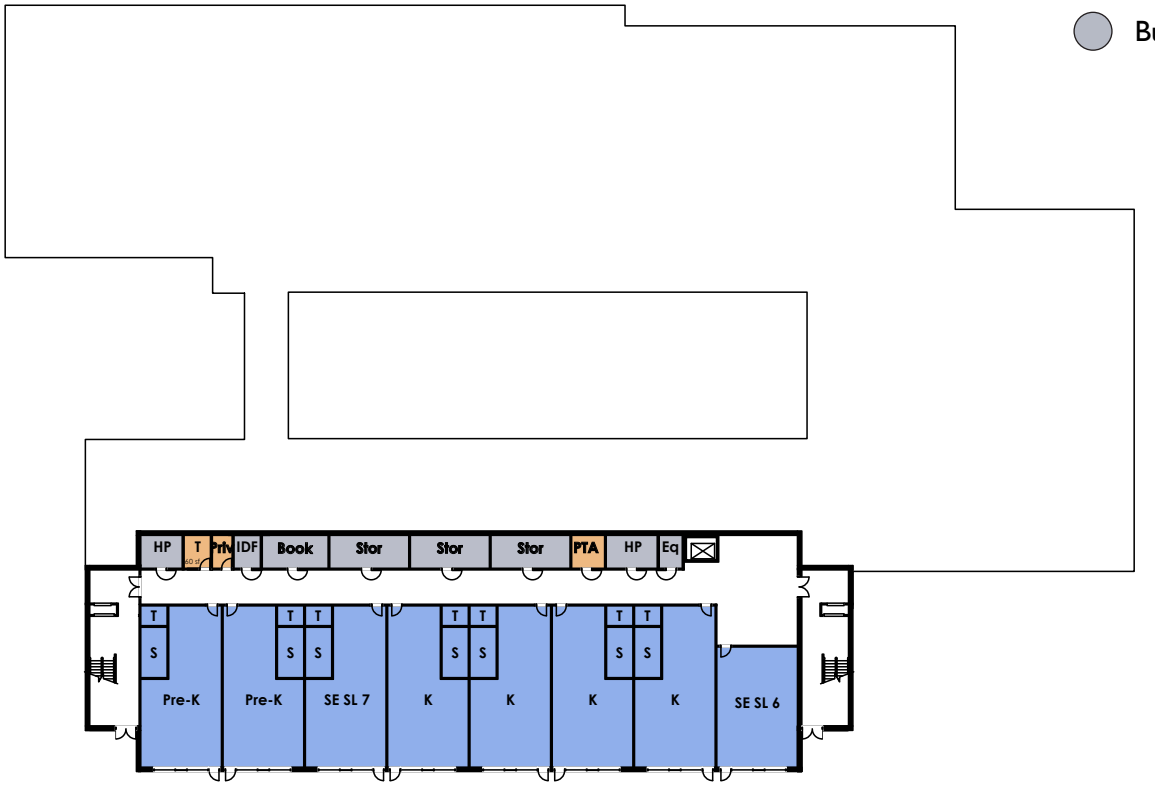
FLOOR PLANS

APPROACH 4 - LOWER LEVEL FLOOR PLAN



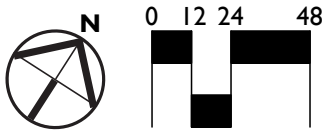
LEGEND

- Classrooms
- Media Center, PE, Multi-Purpose & Kitchen
- Administration
- Music & Arts
- Instructional Support
- Building Support



LOWER LEVEL

APPROACH 4 - MAIN LEVEL FLOOR PLAN

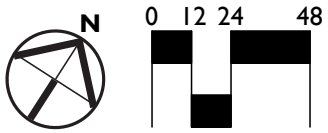


LEGEND

- Classrooms
- Media Center, PE, Multi-Purpose & Kitchen
- Administration
- Music & Arts
- Instructional Support
- Building Support

MAIN LEVEL

APPROACH 4 - UPPER LEVEL FLOOR PLAN



LEGEND

- Classrooms
- Media Center, PE, Multi-Purpose & Kitchen
- Administration
- Music & Arts
- Instructional Support
- Building Support

UPPER LEVEL

APPROACH 4 - SPACE ANALYSIS

Burning Tree Elementary School Space Analysis	ED Spec MCPS Elementary School			Approach 4 Comparison to Ed Spec		Approach 4 Burning Tree Elementary School		
	Area(s)	SF	Total Net	SF	%	Area(s)	SF	Total Net
General Classrooms			**33,150**	**598**	2%			**33,748**
Pre-Kindergarten (incl. 250 sf of storage)	2	1,200	2,400	0	0%	2	1,200	2,400
Kindergarten (incl. 250 sf of storage) (incl. toilet)	4	1,200	4,800	0	0%	4	1,200	4,800
Standard (incl. 150 sf of storage)	19	850	16,150	114	1%	19	856	16,264
Special Education Learning Center (incl. 150 sf of storage)	7	850	5,950	434	7%	7	862	6,384
Art (incl. 250 sf of storage)	1	1,200	1,200	0	0%	1	1,200	1,200
Music (incl. 250 sf of storage)	1	1,200	1,200	10	1%	1	1,210	1,210
Instrumental Music Room (incl. stor)	1	450	450	38	8%	1	488	488
Dual Purpose Room	1	1,000	1,000	2	0%	1	1,002	1,002
Support Rooms			**3,335**	**170**	5%			**3,505**
Large Instructional Support Room	1	550	550	1	0%	1	551	551
Small Instructional Support Room	2	425	850	44	5%	2	447	894
Speech/Language Room	1	250	250	30	12%	1	280	280
Therapy/Support Room	1	250	250	31	12%	1	281	281
Special Education Support	2	250	500	56	11%	2	278	556
Personal Care Room	1	100	100	0	0%	1	100	100
Conference Room	1	275	275	8	3%	1	283	283
Testing Room	1	140	140	0	0%	1	140	140
Support Staff Offices	3	140	420	0	0%	3	140	420
Library Media Center			**2,875**	**71**	2%			**2,946**
Learning Environment	1	2,100	2,100	66	3%	1	2,166	2,166
Work and Production Area	1	475	475	-15	-3%	1	460	460
LMC Storage Room	1	300	300	20	7%	1	320	320
Physical Education			**4,430**	**12**	0%			**4,442**
Gymnasium	1	3700	3,700	-50	-1%	1	3,650	3,650
Office	1	140	140	3	2%	1	143	143
Storage	1	250	250	50	20%	1	300	300
Storage	2	100	200	6	3%	2	103	206
Outside Storage	1	140	140	3	2%	1	143	143
Multipurpose Room			**4,135**	**81**	2%			**4,216**
Multipurpose Room	1	3200	3,200	21	1%	1	3,221	3,221
Chair Storage	1	180	180	18	10%	1	198	198
Table Storage	1	180	180	3	2%	1	183	183
Platform	1	450	450	0	0%	1	450	450
Before/After Care Prep Area	1	25	25	38	152%	1	63	63
Before/After Care Storage	1	100	100	1	1%	1	101	101

APPROACH 4 - SPACE ANALYSIS (CONTINUED)

Burning Tree Elementary School Space Analysis	ED Spec MCPS Elementary School			Approach 4 Comparison to Ed Spec		Approach 4 Burning Tree Elementary School		
	Area(s)	SF	Total Net	SF	%	Area(s)	SF	Total Net
Kitchen			**1,372**	**-32**	-2%			**1,340**
Serving Area	1	300	300	22	7%	1	322	322
Walk-in Cooler/Freezer (included in Serving Area)	1	155	155	0	0%	1	155	155
Dry Storage	1	192	192	9	5%	1	201	201
Office	1	100	100	2	2%	1	102	102
Toilet Room	1	70	70	16	23%	1	86	86
Preparation Area (included in Serving Area)	1	555	555	-81	-15%	1	474	474
Administration			**1,765**	**41**	2%			**1,806**
General Office	1	500	500	6	1%	1	506	506
Workroom	1	300	300	6	2%	1	306	306
Principal's Office (incl. 50 sf toilet room)	1	250	250	0	0%	1	250	250
Assistant Principal's Office	1	140	140	0	0%	1	140	140
Conference Room	1	275	275	-5	-2%	1	270	270
Storage	1	100	100	8	8%	1	108	108
Record Room	1	75	75	-5	-7%	1	70	70
Toilet Room	1	50	50	-2	-4%	1	48	48
Remote Workroom	1	75	75	33	44%	1	108	108
Counseling Suite			**320**	**-5**	-2%			**315**
Counselor's Office	1	160	160	0	0%	1	160	160
Itinerant Staff Office	1	160	160	-5	-3%	1	155	155
Staff Development Area			**600**	**-2**	0%			**598**
Staff Development Office	1	100	100	0	0%	1	100	100
Reading Specialist Office	1	100	100	0	0%	1	100	100
Training/Conference Room	1	400	400	-2	-1%	1	398	398
Health Services Suite			**710**	**59**	8%			**769**
Waiting Area	1	100	100	0	0%	1	100	100
Treatment/Medication Area	1	120	120	-5	-4%	1	115	115
Office/Health Assessment Room	1	100	100	10	10%	1	110	110
Health Assessment/Isolation Room	1	100	100	10	10%	1	110	110
Rest Area	1	200	200	0	0%	1	200	200
Toilet Room	1	50	50	42	84%	1	92	92
Storage Room	1	40	40	2	5%	1	42	42

APPROACH 4 - SPACE ANALYSIS (CONTINUED)

Burning Tree Elementary School Space Analysis	ED Spec MCPS Elementary School			Approach 4 Comparison to Ed Spec		Approach 4 Burning Tree Elementary School		
	Area(s)	SF	Total Net	SF	%	Area(s)	SF	Total Net
Staff Area			**750**	**161**	21%			**911**
Staff Lounge (incl. 2 ex. toilet rooms)	1	650	650	93	14%	1	743	743
Privacy Room	2	50	100	68	68%	2	84	168
Building Service Facilities			**1,885**	**-181**	-10%			**1,704**
Building Services Office	1	140	140	-5	-4%	1	135	135
Locker/Shower Area	1	150	150	-5	-3%	1	145	145
Compactor/Trash Room	1	150	150	-5	-3%	1	145	145
General Storage and Receiving	1	550	550	9	2%	1	559	559
General Storage	3	240	720	0	0%	3	240	720
Building Services Outdoor Storage	1	175	175	-175	-100%	0	0	0
Building Support Spaces			**600**	**256**	43%			**856**
Book Storage	1	200	200	0	0%	1	200	200
PTA Storage	1	100	100	0	0%	1	100	100
Telecommunication Closet (MDF)	1	150	150	166	111%	1	316	316
Telecommunication Closet (IDF)	3	50	150	90	60%	3	80	240

Gross Area Grand Total Summary	ED Spec MCPS Elementary School	Approach 4 Comparison to Ed Spec	Approach 4 Burning Tree Elementary School
Total Net Sq. Ft.	**56,477**	**679**	**57,156**
Gross Area Factor (Walls, Circulation, Toil, Mech/Elec, Struct, Shafts,...)	**24,204**	**-679**	**23,525**
Efficiency Factor %	70%		71%
Gross Area Grand Total	**80,681**	**0**	**80,681**

CIVIL DESIGN NARRATIVE

PROPOSED SITE ASSESSMENT

Approach 4 includes complete replacement of the existing building and all on-site pavement. The existing access from Maryknoll Avenue will be maintained for car access, including a new parent drop-off loop, staff and visitor parking, and parking for Burning Tree Local Park. A new curb cut along Winterberry Lane will be added for the bus loop. A Celebrated Entry plaza will be added near the front of the building to provide a civic presence to the neighborhood and allow for pedestrian access from Beech Tree Road. Two new basketball courts and a paved play area will be added northwest of the proposed building and the new Pre-K play spaces will be constructed southwest of the new building. All existing utilities will be removed. It is not anticipated that any of the existing connections can be reused in this configuration. A new water, sewer, electric, gas, storm, and other miscellaneous utility connection will need to come from Beech Tree Road. Stormwater retention may be required for quantity control to tie into the existing storm drain system in Beech Tree Road.

SEDIMENT AND EROSION CONTROL

Any project over 5,000 sf of disturbance will need to receive approval of the erosion and sediment control plan from Montgomery County DPS. Plans should conform to the 2011 Standards and Specifications for Soil Erosion and Sediment Control from Maryland Department of the Environment. It is anticipated that any major project will need to include a sediment trap or sediment basin with a connection to the public storm drain system. All projects will also require a stabilized construction entrance, inlet protection, silt or super silt fence, stockpile areas, concrete washouts, and permanent stabilization.

SITE DEMOLITION

Complete site demolition is required for Approach 4. The existing building, parking lot, play spaces, utilities, and all site amenities would be removed.

GRADING

The site should be designed to have a balance between cut and fill to limit the amount of export or import for the site. All grass areas should be stabilized with sod.

FORESTATION

The project will not be clearing any forest. Large trees near the public sidewalk or along residential properties should be maintained when possible. The property will need to go through a forest conservation exemption or a full forest conservation plan depending on the amount of work being proposed. All work will be reviewed by the Maryland National Capital Park and Planning Commission.

SITE IMPROVEMENTS

Any pavement shall meet the following requirements:

- Sidewalk shall be concrete (4,500 psi). Sidewalks shall be 5' wide and 4" deep with WWF 6x6 and a 4" stone base.
- All curb and gutter shall be concrete (4,500 psi).
- All heavy duty concrete (4,500 psi) for ADA spaces or vehicular pavement shall be 8" thick with WWF 4x4 and 4" GAB.
- Asphalt pavement shall be 6" thick (2" asphalt surface course and 4" asphalt base course) with a 6" GAB.
- Heavy duty asphalt pavement for the bus loop, loading dock, or construction access shall be 6" thick (2" asphalt surface course and 4" asphalt base course) with an 8" GAB.
- All pavement shall be over an approved subgrade.

PROPOSED SITE UTILITIES

- Water – The waterline for the site shall be upgraded to an 8" DIP to serve the sprinkler system, hydrants, and domestic demand for the building. This will require a new water meter vault with easement. The existing waterline will require a service connection abandonment. The new line will require a new service connection.
- Sanitary Sewer – The existing sanitary sewer should be reused if possible. If a new line is necessary, a new line should be connected to the line in Beech Tree Road.
- Gas – The existing line should be reused if able. Otherwise a new line will need to be coordinated with Washington Gas

- Electric – The existing electric should be maintained if possible. If a new electric main is needed, the locations should be closest to the new transformer to limit the amount of new electric main that will be needed. All work to be coordinated with PEPCO.
- Stormwater Management – All new work will need to meet Montgomery County SWM requirements. The site will need to meet the County's ESD requirements. It is assumed that a combination of pervious pavement, micro-bioretentions, and other ESD practices will be needed. If ESD cannot be met, Chapter 3 or structural practices can be considered.
- Storm Drainage – New drainage infrastructure will need to be constructed to meet the proposed grades of the new building and site features. The new storm drain system will connect to the existing drainage system within Beech Tree Road.

ATHLETIC FIELDS, ATHLETIC COURTS, AND PLAY AREAS

The existing fields and courts will be maintained if possible. If any of the courts or play spaces are removed with the new work, an effort should be made to group the paved play area and playground together. Access to the Burning Tree Local Park amenities shall be kept open in all Approaches.

ARCHITECTURAL DESIGN NARRATIVE

Approach 4 proposes a complete demolition and replacement of the existing Burning Tree Elementary School building. The new facility will be designed to fully meet Montgomery County Public Schools (MCPS) Education Specification requirements and incorporate modern learning environments and state-of-the-art technology.

Key features of this approach include:

- Construction of a new 80,000 square foot building, designed as a compact one- and three-story structure to fit harmoniously within the surrounding residential neighborhood.
- Major support spaces—including the administrative suite, health suite, gymnasium, cafeteria, and media center—will be located on the ground level for ease of access.
- The three-story classroom wing will house general education spaces, allowing for clear grade separation and operational efficiency.
- The new building will be designed to fully integrate all MCPS technology standards, creating a future-ready learning environment.
- A new site plan includes:
  - » A dedicated parking area and a parent drop-off loop.
  - » Separation of bus and vehicular traffic, significantly improving pedestrian safety.
  - » A new pedestrian plaza to provide a safe and welcoming community gathering space, while further separating foot traffic from vehicles.

Construction under Approach 4 will require a full temporary relocation of students and staff. The building will be unoccupied during construction, which is estimated to last approximately 18–24 months.

STRUCTURAL DESIGN NARRATIVE

This option is for the construction of a completely new Burning Tree Elementary School.

The basis for the new replacement school is as follows. The first floor will be a 4" concrete slab on grade and the foundations are anticipated to be spread footings designed using an allowable bearing capacity of 6,000 psf (to be verified by geotechnical engineer). The second floor shall be constructed using a composite steel beam floor system or conventional steel bar joists supporting concrete filled metal deck. The roof framing shall consist of conventional steel bar joists supporting 1 ½" x 22-gauge galvanized metal roof deck. The roof framing will be designed with additional reserve capacity

to be solar ready. The exterior walls will be 8" masonry backup filled with #5 at 24" o/c with 3,000 psi grout. The building stability will be achieved by either masonry shear walls and/or steel moment frames. Sustainability requirements will specify recycled content for structural steel and concrete and will mandate suppliers to support the project achieving Green Globes certification.

MEP GENERAL DESIGN NARRATIVE

Project Approach 4 – Replacement School - includes onsite replacement of Burning Tree Elementary School. Mechanical, electrical, plumbing, fire-protection, communications, and electronic safety and security improvements included within the scope of the proposed replacement school are summarized within this section.

MECHANICAL DESIGN NARRATIVE

HEATING AND COOLING INFRASTRUCTURE SYSTEMS

A ground-coupled geothermal heat pump unit system is recommended to support the proposed replacement school concept. This type of mechanical system provides the ability to have independent heating or cooling year-round, while delivering an extremely high level of overall building energy efficiency.

A ground-coupled geothermal borehole field will be located northwest of the proposed replacement school and positioned below a portion of the site's paved play, parking lot, and playground areas. Geothermal boreholes will be 525- to 550-feet in depth, with approximately 95 to 100 geothermal boreholes anticipated for the proposed replacement school. The final quantity and depth of geothermal boreholes will be determined during design and will depend on the thermal properties and ground temperature of the project site. Vertical geothermal borehole loop piping will be encased in a thermally enhanced grout, promoting good heat transfer between the loop piping and the earth. Circuit mains from geothermal boreholes will be routed below grade to the first floor mechanical room located adjacent to the gymnasium.

Two base-mounted pumps (one active and one stand-by) will circulate an all-water fluid between the school and geothermal borehole field. Geothermal pumping systems will be located within the first floor mechanical room and provided with N+1 redundancy such that the operation of the building can be maintained in the event of a single pump failure. In addition, these pumping systems will be equipped with variable frequency drives for reduced energy consumption during periods of reduced system demand. Major mechanical infrastructure components, including distribution pumps, incoming geothermal piping, associated geothermal piping headers, an air separator, and an expansion tank will also be located within this mechanical room.

CLASSROOM HVAC SYSTEMS

Extended range vertical heat pump units will be provided for space conditioning within the school's classroom areas, with these heat pump units located within mechanical closets positioned near the area served. Doors for all mechanical closets will be accessed from the corridor for routine maintenance. Heat pump units will generally be equipped with two-stage type compressors, helping to extend compressor life and improve the overall energy efficiency of these systems under part load operation.

A series of VAV rooftop DOAS units with supply and exhaust fans, enthalpy wheels for pre-conditioning outdoor air, DX heat pump coils with water-cooled compressors, and hot gas reheat coils for tempering supply air will be provided to deliver conditioned ventilation airflow to the classroom areas. Airflow supplied from these DOAS units will be dehumidified, conditioned, and delivered directly to each space. Exhaust airflow from classrooms, restrooms, and storage room areas will be routed through each DOAS unit's enthalpy wheel for pre-conditioning of outdoor air.

The use of demand control ventilation within the classroom areas will be provided to assist with reducing the school's overall energy consumption. To accomplish this control strategy, a series of VAV retrofit-type air terminal units will be installed within the conditioned outdoor air ductwork systems. Each classroom will be provided with a dedicated VAV air terminal unit, regulating the quantity of conditioned outdoor air delivered to each space based on the actual room carbon dioxide levels.

MUSIC AND ART CLASSROOM HVAC SYSTEMS

The music and art classroom areas will be provided with a similar HVAC system approach as the other classroom areas. This HVAC system approach includes extended range vertical heat pump units for space conditioning, DOAS units for ventilation, and demand control ventilation via VAV retrofit-type air terminal units. Heat pump units will continue to be positioned within mechanical closets, with supply and return air ductwork extending from these units to the area served.

ADMINISTRATION, GUIDANCE, AND HEALTH SUITE HVAC SYSTEMS

The administration, guidance, and health suite areas will be provided with space conditioning through a VRF system. This system will be complete with heat recovery type water-cooled condensing units connected to the geothermal heat pump loop. Condensing units will be located within mechanical rooms positioned near the spaces served. Doors to mechanical rooms will be accessible from the corridor for routine maintenance.

The use of ceiling cassette type VRF terminal units is anticipated, promoting sufficient clearance access for filter replacement. Multi-occupant spaces will be provided with 3'x3' cassettes with high efficiency (MERV 10 or higher) disposable filters. Single occupant spaces will be provided with 2'x2' cassettes with the VRF manufacturer's standard washable filter.

Conditioned ventilation air will be provided by a constant volume dedicated DOAS unit. Similar to classroom areas, this DOAS unit will be provided with supply and exhaust fans, an enthalpy wheel for pre-conditioning outdoor air, a DX heat pump coil with water-cooled compressors, and a hot gas reheat coil for tempering supply air. Airflow supplied from this DOAS unit will be dehumidified, conditioned, and delivered directly to each space. Exhaust airflow from classrooms, restrooms, and storage room areas will be routed through the DOAS unit's enthalpy wheel for pre-conditioning of outdoor air. A pair of dedicated switch-operated exhaust fans will also be provided for the health suite area, with one fan serving the rest area and the other fan serving the isolation room area.

MEDIA CENTER, CAFETERIA, AND GYMNASIUM HVAC SYSTEMS

A series of rooftop heat pump units with single-zone VAV fan control, heat pump type water-cooled compressors, and hot gas reheat coils will provide space conditioning and ventilation for the media center, cafeteria, and gymnasium areas. The equipment's water-cooled compressors will be connected to the geothermal heat pump loop. Full airside economizer, demand control ventilation, and enthalpy wheel type energy recovery devices will be provided for these rooftop heat pump units.

KITCHEN HVAC SYSTEMS

A dedicated rooftop heat pump unit with single-zone VAV fan control, heat pump type water-cooled compressors, and a hot gas reheat coil will provide space conditioning and ventilation for the kitchen area. The equipment's water-cooled compressors will be connected to the geothermal heat pump loop. Full airside economizer and an enthalpy wheel type energy recovery device will be provided for this rooftop heat pump unit.

General exhaust from the kitchen restroom, storage rooms, and the kitchen space itself will be routed to a rooftop exhaust fan. A separate rooftop exhaust fan will also be provided for serving the kitchen's associated exhaust hood.

MISCELLANEOUS BUILDING AREAS

Data, Telecomm, and the Elevator Machine Room (or Elevator Shaft) will be served by ductless split systems. Heating-only type spaces such as mechanical rooms, electrical rooms, stairs, storage rooms, and entry vestibules will be provided with electric-resistance type cabinet and propeller unit heaters. In addition, dedicated switch-operated exhaust fans will also be provided within the health suite area (as described previously) and within the administration workroom.

AUTOMATIC TEMPERATURE CONTROL (ATC) SYSTEMS

Automatic temperature controls will be direct digital type controls (DDC). HVAC equipment refrigeration system controls and refrigeration safety devices will utilize the equipment manufacturer's packaged controller and interfaced with the DDC system. Controls for the remaining mechanical equipment will be non-manufacturer based DDC controls provided by the

ATC contractor. Actuation will be electric / electronic for all systems. All system components will be installed in accordance with MCPS standards and networked to the existing front-end server located at the MCPS Energy Management Office.

PLUMBING DESIGN NARRATIVE

DOMESTIC WATER PIPING SYSTEMS (INCLUDING WATER SERVICE ENTRANCE)

A new combination fire/water service will enter the replacement school within the first floor mechanical room. This combination fire/water service will be capable of supporting both the fire and water service demands of the replacement school. A new domestic water service, complete with basket strainer and backflow preventer will separate the domestic water and fire services prior to distributing water throughout the school. Domestic water piping will be distributed from this first floor mechanical room area to plumbing fixtures and equipment located throughout the school. All domestic water piping systems will be constructed of Type L copper, with soldered joints provided for piping 2-inches in diameter and smaller and brazed joints provided on piping 2.5-inches in diameter and larger. For Approach 4, a domestic water booster pump is required to support the domestic water system due to the available municipal water pressure reflected in the project's flow test information and the approach's three-story building design.

DOMESTIC HOT WATER HEATER SYSTEM

Domestic hot water for the replacement school will be produced by a pair of electric resistance tank type domestic water heaters. Domestic hot water will be generated at 140-degrees F, with 120-degrees F domestic hot water distributed throughout the replacement school. Local thermostatic mixing valves will reduce the water temperature to 110-degrees F at hand washing fixtures. The domestic hot water system will be complete with a master thermostatic mixing valve, a hot water circulation pump, and an expansion tank.

STORM WATER PIPING SYSTEMS

New storm water drainage, including roof drains, overflow drains, and storm water piping systems will be provided throughout the replacement school. Above- and below-grade storm water piping will be constructed from solid core PVC material. All storm water piping systems will exit the school at various locations and coordinate with available site piping connections provided for the proposed replacement school.

SANITARY AND VENT PIPING SYSTEMS

New sanitary waste and vent piping systems will be provided throughout the replacement school. Above- and below-grade sanitary and vent piping will be constructed from solid core PVC material. Vent piping will terminate at the roof level, with a minimum 25-foot separation provided between vent piping terminations and any outdoor air intake locations. Sanitary piping systems will exit the building at various locations and will coordinate with the available site piping connections provided for the proposed replacement school.

The following special sanitary and vent piping systems are anticipated:

- Equipment and sinks that may discharge grease into the sanitary system from the kitchen will be piped to a new underground concrete grease interceptor. The discharge from this interceptor will be connected to site sanitary piping system.
- Sinks within the art classrooms will be provided with solids interceptors, collecting debris and preventing it from entering the site sanitary piping system.

PLUMBING FIXTURES

New plumbing fixtures will meet ADA and utilize water conservation features. Floor-mounted water closets will utilize 1.28 gallon per flush valves. Urinals will be wall-hung and provided with pint flush valves (0.125 gallon per flush). Wall-hung cast-iron lavatories will utilize self-closing faucets that supply 0.35 gallons per minute. Showers will utilize 1.5 GPM type heads. The water consumption figures noted are equal to or less than what is required by the current plumbing code and for promoting good water conservation practices. All wall-mounted fixtures will be supported from fixture carriers.

GAS PIPING SYSTEMS

A new natural gas service will be provided by Washington Gas for the replacement school. The gas service meter and pressure reducing station will be positioned outdoors and located near the new first floor mechanical room. Gas piping will be constructed of schedule 40 black steel and serve the school's emergency generator.

ELECTRICAL DESIGN NARRATIVE

POWER DISTRIBUTION AND GENERATOR POWER

A new Pepco electrical service will be provided for the replacement school under Approach 4. A new outdoor pad-mounted Pepco utility transformer will be provided near the main electrical room. (The front of the utility transformer will be within 20 feet from a vehicular paved road.) A secondary service concrete-encased ductbank (with minimum 10 ducts) will be run from the utility transformer to the CT section of a new main switchboard in the main electrical room. The Pepco electric meter will be in the main electrical room.

Power will be distributed at 277/480 volts and 120/208 volts. The power distribution system will consist of the following electrical equipment: Main switchboard, distribution panelboards, lighting panelboards, branch circuit panelboards, dry-type transformers, enclosed switches (safety switches / disconnects) and/or enclosed circuit breakers, and combination starters and/or variable frequency drives for motor loads.

The main electrical room will have the main switchboard, transformer(s), and panelboards. A separate "auxiliary" electrical room will be provided within the main electrical room for generator-connected equipment. Generator-connected equipment will consist of enclosed switches, automatic transfer switches, transformers, and panelboards.

The main switchboard will be connected to Pepco utility power, will be rated at 277/480 volts, 3 phase, 4-wire, will incorporate ground fault protection and surge protection, and will have a CT section, main section with main circuit breaker, and distribution section(s) with molded-case feeder circuit breakers. The main switchboard will serve mechanical loads and panelboards, lighting panelboards, and general receptacle branch circuit panelboards (via step-down transformers) in the main electrical room and electrical closets throughout the school. The main switchboard for the replacement school will most likely be sized at 2000 amperes. The main switchboard will be sized with spare capacity and space for future circuit breakers to accommodate any future renovations to the school.

There will be an onsite outdoor natural-gas generator with weatherproof, sound-attenuated enclosure, sized to accommodate emergency / life-safety and standby loads via automatic transfer switches. The generator will be rated at 277/480 volts, 3 phase, 4-wire. The estimated size for the generator is 150 kW. Enclosed circuit breakers mounted at the generator will serve automatic transfer switches located in the "auxiliary" electrical room within the main electrical room serving emergency / life safety and standby loads. In addition to the on-site generator a generator docking station will be provided to allow for connecting to a temporary portable generator.

Panelboards will be rated at 277/480 volts and 120/208 volts and serve as distribution, lighting, or branch circuit panels. There will be dedicated panelboards for lighting, mechanical loads, and receptacle plug loads. Panelboards will have a copper bus structure. Panelboards will be sized with approximately 25 percent spare capacity and 25 percent spare breaker space. A three-phase surge protective device (SPD) will be mounted adjacent to each respective emergency (life-safety) panel, lighting panel, and receptacle / plug load branch circuit panel.

Electrical provisions will be made for future solar photovoltaic (PV) system for the school to be solar PV ready on the roof.

LIGHTING

In the proposed replacement school under Approach 4, MCPS standard LED luminaires (lighting fixtures) in corridors, classrooms, instructional spaces, offices, workrooms, seminar rooms, storage rooms, group toilet rooms, and rooms with lay-in ceilings will be recessed 2' x 2' or 2' x 4' LED luminaires. Recessed LED downlights will be used where smaller luminaires are appropriate. High-abuse wall-mounted LED luminaires will be used in stairwells. LED strip luminaires with lenses will be used in support spaces with open ceilings. High-bay "UFO" style luminaires will be provided in

the gymnasium. Architectural LED luminaires will be provided in the main vestibule, main lobby, media center, and cafeteria.

Exterior full-cutoff dark-sky compliant LED building-mounted luminaires will be provided. Exterior luminaires will include building-mounted luminaires around the perimeter of the building, and pole-mounted luminaires for parking, drop-off, and bus loop.

Lighting levels will be designed in accordance with the recommendations of the Illuminating Engineering Society of North America (IESNA). Lighting controls will meet the requirements of ASHRAE Standard 90.1-2022. The lighting power density will not exceed 0.70 watts per square foot per Table 9.5.1 of ASHRAE Standard 90.1-2022.

Lighting controls include lighting room controllers to control low-voltage lighting control stations, occupancy sensors, and dimming capability. Emergency lighting will be automatically switched ON during a power outage.

FIRE PROTECTION DESIGN NARRATIVE

SPRINKLER SYSTEM

The entire replacement school will be fully sprinklered, with the sprinkler system separated into several zones that will match the fire alarm pull zones for the building. A fire pump is not required to support the school's sprinkler system due to the available municipal water pressure reflected in the project's flow test information. All work will be specified to conform to standards of the National Fire Protection Association (NFPA) and will include requirements for performance verification through hydraulic calculations.

FIRE DETECTION AND ALARM SYSTEM

A new fire detection and alarm system will comply with the State of Maryland Fire Code, local authorities having jurisdiction, International Building Code, and NFPA for the replacement school under Approach 4. The fire detection and alarm system will be stand-alone, addressable, and will have voice evacuation capability. The main fire alarm control panel (FACP) will be in the main telecom room. The FACP will be equipped with battery backup. The fire alarm annunciator with graphic display and adjacent keypad will be located at the main building entrance vestibule or lobby. Initiation devices include manual pull stations, smoke detectors, duct smoke detectors, heat detectors, and carbon monoxide detectors (where gas-fired equipment is used, if any). Notification devices include fire alarm combination speaker/strobe devices, strobes, and fire alarm speakers. The fire detection and alarm system will be connected to the lighting control system to facilitate the automatic illumination of the path of egress upon initiation of the building fire alarm system.

COMMUNICATIONS DESIGN NARRATIVE

DATA AND VOICE COMMUNICATIONS SYSTEMS

A dedicated MDF will be provided near the location of the Media Center in the new replacement building under Approach 4. IDF rooms will be provided for new data racks throughout the new replacement building proposed under Approach 4 to ensure cabling runs are 295' or less in length. At least one (1) IDF room will be located on each floor in the proposed 3-story wing. The telecommunications infrastructure will include outlet boxes, conduits and raceways, and conduit sleeves through walls and floors for the installation of the data and voice cabling. The number of telecom outlets in each room will comply with MCPS and Maryland State requirements.

INTERCOM AND SOUND SYSTEMS

Intercommunications/public address system devices will be provided throughout the new replacement building under Approach 4. This will include call switches and speakers in the classrooms, and speakers in the corridors and multi-occupant toilet rooms. Exterior building-mounted speakers will be provided where required. A new head-end console will be provided.

INSTRUCTIONAL/CLASSROOM TECHNOLOGY

In the new replacement building under Approach 4, classrooms will be equipped with convenience receptacles throughout. Teacher's desk receptacles will be connected to a generator standby panelboard. A receptacle will be located

at the front of the classroom off-center of the teaching wall for Promethean smart boards.

ELECTRONIC SAFETY AND SECURITY SYSTEMS

The new replacement building under Approach 4 will be provided with a new intrusion detection system, access control system, and video surveillance system. Intrusion detection devices will include motion detectors/sensors and door contacts. Door access card readers will be provided where required by MCPS. Video surveillance equipment will include dome cameras in the corridors and building exterior where required.

KITCHEN DESIGN NARRATIVE

GENERAL DESCRIPTION:

The facility will be equipped with all-new commercial-grade appliances meeting current N.S.F. requirements and installed in accordance with local governing health codes. All countertops and work surfaces will be of durable stainless-steel and mounted on legs or swivel casters to promote sanitation and ease of cleaning. Likewise, shelving inside the walk-in cooler/freezer will be installed with casters to aid in re-stocking of food supplies.

The kitchen will be designed to operate as a reheat facility equipped to produce and serve breakfast and lunch meals to a projected enrollment of 612 students during three (3) meal periods. Bulk refrigerated items will be stored in a walk-in cooler/freezer with remote refrigeration. Reheating will take place in all electric convection oven with a type 2 exhaust hood above. A fire protection system is not required for this type of kitchen. Backup hot & cold items will be stored in the reach-in heated cabinets and reach-in refrigerators behind the serving line. Kitchen pots, pans, and utensils will be cleaned via a 3-compartment pot washing sink. Clean ware will be stored on mobile pot & pan shelving.

Serving of students will take place on one cafeteria serving counter equipped with: hot food counter lowerator, mechanically-refrigerated cold pan for cold food, cashier's stand, and bulk milk coolers for milk and beverages.

SPATIAL DESCRIPTION:

The overall foodservice operation should contain approximately 1,500 +/- square feet and encompass the following functional work areas:

- Receiving Area
- Dry Storage
- Walk-in Cooler/Freezer
- Manager's Office
- Main Food Prep Area
- Serving Area
- Staff Toilet/Locker
- Ware Washing Area
- Custodial Closet

APPROACH 4 - ENERGY MODEL

Energy Use Index: 25 kBtu/ft²

IES INTEGRATED ENVIRONMENTAL SOLUTIONS

Energy Model Output Report

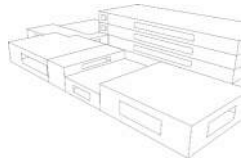
Project:	Burning Tree ES - Approach 4
Address:	7900 Beech Tree Rd, Bethesda, MD 20817
Climate File:	Baltimore_TMY2.fwt
Simulation:	BTES - Approach 4.aps

Design Team:	JPA
Energy Analyst:	JPA
Owner:	MCPS
Conditioned Area (ft²):	85426.4630

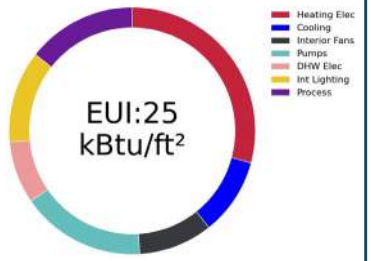
Annual Energy Consumption (kBtu/ft²/year) & CO2 KgCO2/ft²/yr

Energy End Use	Site Energy	Source Energy	CO2 Emissions
Heating Fossil Fuel	0.0	0.0	0.0
Heating Electricity	7.5	11.8	0.3
Space Cooling	2.6	3.7	0.1
Fans Interior	2.5	3.9	0.1
Heat Rejection	0.0	0.0	0.0
Pumps	4.2	6.3	0.2
DHW Fossil Fuel	0.0	0.0	0.0
DHW Electricity	2.1	3.2	0.1
Interior Lighting	3.1	4.8	0.1
Exterior Lighting	0.0	0.0	0.0
Receptacle	0.0	0.0	0.0
Data Center	0.0	0.0	0.0
Cooking Fossil Fuel	0.0	0.0	0.0
Cooking Electricity	0.0	0.0	0.0
Elevators & Escalators	0.0	0.0	0.0
Refrigeration	0.0	0.0	0.0
Process	3.7	5.7	0.2
TOTAL (ex renewables)	25	39	1

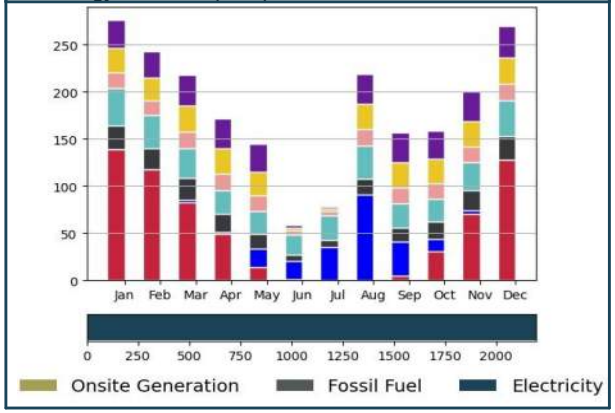
Project Viewer - 3D Model



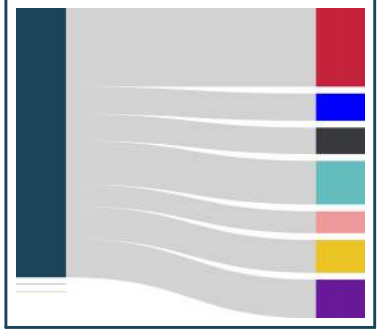
Site Energy Use Intensity



Site Energy Dashboard (MBtu)



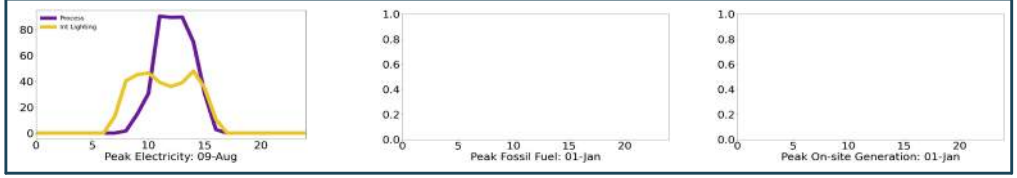
Site Energy Flows – Sankey Diagram



Annual Fuel Costs and Peak Demands

Fuels	Cost ($)	Peak Day	Peak Time	Peak Demand
Electricity	102,962.00	09-Aug	13:00	462.2 kW
Fossil Fuel	0.00	01-Jan	0:00	0.0 kBtu/h
Total	102,962.00	01-Jan	0:00	

Peak Energy Sources for Electricity (kW), Fossil Fuel (kBtu/h) and Onsite Power Generation (kW): Top 3 Contributors



APPROACH 4 - MAINTENANCE AND OPERATIONAL COSTS

MAINTENANCE AND OPERATION COST ESTIMATE — APPROACH 4

A. OPERATION

	Systems	Quantity	Units	Total Cost
1	Two-pipe Chilled/Heating Water System	0	SQUARE FOOT	
2	Four-pipe Chilled Water and Heating Water System	0	SQUARE FOOT	
3	Heat Pump System	85427	SQUARE FOOT	
4	Condenser Water System	0	TON	
			Total Service Cost	

B. MAINTENANCE - REPAIR

	Equipment	Quantity	Total Cost
1	Water Cooled Condenser; Repair condenser, water cooled, 15 ton	7	
2	Fan Coil, DX Air Conditioner, Cooling Only; Repair fan coil, DX 3 ton	85	
3	Multi-Zone Air Conditioner; Repair multi-zone rooftop unit, 40 ton	4	
4	Single Zone Variable Volume; Repair single zone variable volume, 20 ton	3	
5			
6			
7			
8			
9			
10			
		Subtotal	

C. MAINTENANCE - FILTERS

	Equipment	Quantity	Total Cost
1	Particulate Air Filtration, Supported Type, 1"	85	
2	Particulate Air Filtration, Supported Type, 2"	14	
3	Particulate Air Filtration, Supported Type, 4"	7	
4	Particulate Air Filtration, Supported Type, 12"	0	
		Subtotal	

D. MAINTENANCE - PREVENTATIVE MAINTENANCE

	Equipment	Quantity	Total Cost
1	Condensing Unit, Water Cooled	3	
2	Condensing Unit, Water Cooled	4	
3	Air Handling Unit	3	
4	Air Handling Unit	4	
5	Fan Coil Unit	85	
6	Pump, Centifugal	2	
7	Controls	1	
8			
9			
10			
		Subtotal	
		Total Maintenance Cost	

APPROACH 4 - ONE TIME OPERATIONS COSTS ESTIMATE

A. EXISTING[1]

Estimated Remaining Equipment Life	0 Yrs
Below the Line Costs Multiplier[2,3]	0.00
Subtotal HVAC Equipment Cost	[redacted]
Total HVAC Equipment Cost	
Single Payment (P/F) Present Worth	

B. RENOVATION

Estimated Equipment Life	16 Yrs
Below the Line Costs Multiplier[2,3]	0.00
Subtotal HVAC Cost[2]	[redacted]
Total HVAC Cost	
Subtotal HVAC Equipment Cost[2]	
Total HVAC Equipment Cost	
Single Payment (P/F) Present Worth	

C. ADDITION

Estimated Equipment Life	16 Yrs
Below the Line Costs Multiplier[2,3]	0.00
Subtotal HVAC Cost[2]	[redacted]
Total HVAC Cost	
Subtotal HVAC Equipment Cost[2]	
Total HVAC Equipment Cost	
Single Payment (P/F) Present Worth	

D. NEW CONSTRUCTION

Estimated Equipment Life	16 Yrs
Below the Line Costs Multiplier[2,3]	1.29
Subtotal HVAC Cost[2]	[redacted]
Total HVAC Cost	
Subtotal HVAC Equipment Cost[2]	
Total HVAC Equipment Cost	
Single Payment (P/F) Present Worth	

Total Cost [redacted]

Notes:
1. HVAC equipment not replaced as part of scope of work
2. Values from or calculated based on cost estimate
3. Below the Line Costs include general conditions, overhead & profit, bonds & insurance, prevailing wage requirement, design contingency, and esclation

APPENDIX

9

PROJECT SCHEDULE

Community Meeting #1	20 May 2025
Community Meeting #2	27 May 2025
Presentation to Staff	3 June 2025
Community Meeting #3	3 June 2025
Presentation to PTA	September 2025
Capital Improvements Program Released	October 2025
Design Phase Duration	18 Months
Project Bid	TBD
Construction Duration (Based on Approach)	See next page.
School Occupied	TBD

WHAT IS THE MOST CRITICAL ASPECT BURNING TREE ELEMENTARY SCHOOL THAT SHOULD BE IMPROVED IN THE NEW DESIGN?

- School MUST be ADA compliant and better accountability for special education students and places to support behaviors
- Safe drinking water fountains – Access to safe and clean water (replace old pipelines with lead)
- Building expansion – Having enough space for the students going forward – No more portable classrooms!
- Dedicated kids and ride route for drop off and pick up – No car pick up loop
- Better climate control
- Space for school gatherings and events – Gym, Cafeteria, Outdoor space, Yard space.
- The safety of staff and students is priority with having enough space for all students to have a positive educational experience including equal access to all areas of the building. – Fenced in campus
- Bathrooms for younger students, less mold/roaches, and windows in offices that do not have them.
- The bi-level design is horrible
- ADA, safety, space planning, room for ALL students INSIDE the building
- Pipes without lead, space for enough kids, roof that is up to code, fence that provides protection
- Increased classroom space, bigger common spaces (APR and hallways), ADA compliance, safe pipes free from lead, updated systems for safety, fire safety
- Least amount of time of children displacement to holding school
- Reduce classroom student count with more classrooms addressing overcrowded school
- Replacing aging infrastructure and modernize school classrooms and community gathering areas
- The building itself needs major updates including making it accessible and the playground/blacktop/grounds need to be redone
- Would like the exterior design to have a pleasant appearance that fits into the neighborhood style; would like for expanded space for drop off and pick up safe from street traffic

WHAT FEATURE OF THE CURRENT OF BURNING TREE ELEMENTARY SCHOOL DO YOU VALUE MOST AND HOPE TO SEE CARRIED FORWARD IN THE NEW DESIGN?

- The kid-friendly community feel - I would like to keep the size small. The school is a wonderful community.
- Lots of outdoor blacktop space
- The main playground - The separate kindergarten playground
- Special sentimental features, like artwork for gym teacher and central frog at entrance.
- Green spaces around the school
- Community spaces
- I want the culture to be carried forward.
- None.
- Its intimate scale, Kid friendly/community feel, Small community feel
- The closeness of the classrooms and the flow of the building. I like that the classrooms are cohorted by grade
- Community-friendly spaces
- Artwork on the walls, bathrooms in learning center classrooms
- The community! The families are amazing
- The large outdoor space, Maintaining ample outdoor space for outdoor play
- Community spaces
- Valued part of the neighborhood
- I'm not attached to the current facility at all

PROVIDE YOUR THOUGHTS ON APPROACH 1: RENEWAL.

PROS

- Addressing lead in pipes
- New electrical, plumbing would take care of lead in pipes, etc. Shorter displacement
- New plumbing and existing building. Would be like new. Less construction. Shorter time being displaced.
- Plumbing/safe drinking water improvements and I believe fixing the broken alarm system.
- Really appreciate that it would fix health and safety issues, which also contribute to learning experience improvements.
- Addresses lead in the pipes, renews existing spaces.
- The basic minimum long-standing systems needs are addressed.
- Plumbing, pipes, water, boilers, fixed to building (anything before 15 years)
- Replacing old fixtures.
- No lead in pipes.
- Minimal disruptions to learning.
- Brought up to newer.
- Something is better than nothing.
- Bare minimum. Least expensive.
- Cheaper, addresses mechanical issues, provides makeover.
- Some upgrades.

CONS

- Only cosmetic improvements — does not address underlying structural/ safety issues. Temporary fixes that will require more work (and more money) later. This often leads to "surprise" issues once walls/floors are opened (e.g., mold, asbestos, bad wiring). No meaningful upgrades to HVAC, plumbing, or fire suppression systems. Does not meet modern ADA, safety, or learning environment standards. Disruptive to students and staff if done during the school year, with minimal benefit."
- Does not impact space, traffic, learning experience. Cost without addressing capacity or ADA. Not worth relocation, cost, and lost year of opportunity to expand building. Band-Aid approach.
- Worse outcome. Same time period.
- No real major changes - not ADA compliant. No new carpool access. Relocation likely for little return.
- No structural changes - not enough
- Doesn't give our community an elementary school as up to date as other nearby schools.
- Displacement with little/ no benefit. Traffic pattern not changed.
- Does not address parking deficiencies. Does not future proof for project increase in student enrollment when school is currently over capacity. Value seems minimal as it does not address all issues , and still displaces school for almost as long as rebuilding the school.
- Insufficient to address the needs of the students and community - accessibility and traffic unaffected. But we do need new pipes!
- From my understanding, no improvement to the car/bus lines, ADA capabilities and the portable classrooms still exist. They currently house the oldest students in the smallest classrooms which makes moving around very tight. I am not sure with this option if I was told that the students would be displaced or not. Does not address the issue with the front playground as well as lack of fencing at the school when the students leave the cafeteria and go out to recess.
- Wouldn't fix ADA and space issues which are also important.
- This approach will not adequately address all of the issues with the old school including projected overcrowding. It's a waste of taxpayer money as further repairs and/or replacement will be needed.
- Doesn't address overcrowding, doesn't bring spaces like kitchen, library, etc. into size compliance, traffic pattern still unsafe, no ADA compliance, feels like a Band-Aid for a more necessary renovation.
- Not worth the effort as it's very short term
- This will not meaningfully help, given the age of the building, the lack of ADA compliance, and overcrowding.
- Does not address need for ADA accessibility for students, staff, and visitors. Does not address school population size needs now or future growth (portables needed now, no pre-k space, many undersized areas within the school). Does not address pedestrian safety accessing the building. Does not address traffic needs for accessing and dropping off to the building. Does not address parking needs for the current school size or expected/projected future increases. Traffic, kitchen, walls, No ADA

fixes (not touched)
- No updated kitchen. No change to traffic pattern.
- No change to traffic pattern safety. Cafeteria and media not sized for # of students. Not ADA compliant for classrooms. Portables still required.
- Still not enough space for all students in the building. No new traffic pattern. Doesn't meet ADA.
- Wouldn't solve the accessibility issues. Seems like a band-aid fix. Doesn't solve the portable classroom issue.
- Does not address things that we truly need to be fixed (ADA). Not fix active shooter.
- Feels like lipstick on a pig. Nothing for ADA.
- No movement of walls - some spaces need more footage. Not nearly enough.
- No change of floor plan, does not address ADA concerns, no kitchen update, finishes only, nothing done to portables, no accessibility
- Traffic pattern stays the same, no stairwell upgrades, portables stay.

PROVIDE YOUR THOUGHTS ON APPROACH 2: ADA UPGRADES AND LIGHT RENOVATIONS

PROS

- ADA compliance
- School will be ADA compliant. Addition to school.
- ADA issues resolved.
- Plumbing/safe drinking water improvements as well as ADA capabilities and I believe fixing the broken alarm system.
- Adds an elevator with a new 2nd story addition.
- ADA improvement is good
- The basic minimum long-standing systems needs are addressed. Addresses basic long-standing need for ADA accessibility for students, staff, and visitors at minimum requirements by law.
- ADA plan. Ramps, fixing classes. Some bathrooms (Not All)
- ADA compliance with access.
- Solves accessibility issues.
- Stops going through classrooms for ADA.
- Glad that there is ADA approaches.
- ADA only - timely. Long overdue.
- Provides an accessibility route, reconfigures main office and health suite.
- ADA upgrades.

CONS

- Expensive for limited return — costs add up fast just to meet minimum legal requirements. Many old structures can't be retrofitted fully for ADA without major re-engineering. Still leaves school with outdated, unsafe, or non-functional infrastructure. May create a patchwork of accessible and inaccessible areas, confusing or unsafe. No educational benefit — doesn't improve classrooms, lighting, or student experience.
- Does not increase space or traffic problems, does not improve earning experience. Not worth cost + displacement if learning not improved significantly. No parking improvement.
- No sunlight.
- Displacement
- Cosmetic - not enough, classrooms too small + lead in water still!
- May only be a band-aid for the current ADA issues.
- Band-aid on a broken leg.
- Does not address parking deficiencies.
- Does not future proof for project increase in student enrollment when school is currently over capacity.
- Value seems minimal as it does not address all issues, and still displaces school for almost as long as rebuilding the school.
- Accessibility is a major issue, but this plan is a band-aid, and a pretty bad one. I dislike the hallway plan - the classrooms should have exterior windows.
- From my understanding, no improvement to the car/bus line and the portable classrooms still exist. They currently house the oldest students in the smallest classrooms which makes moving around very tight. I am not sure with this option if I was told that the students would be displaced or not. Does not address the issue with the front playground as well as lack of fencing at the school when the students leave the cafeteria and go out to recess.
- Concerned that it wouldn't fix serious health/safety issues posed by old pipes, or space. Two story addition in the back seems like a Band-Aid approach. Would take away outdoor play space. If we get these fixes now,

would it take a long time to get the other fixes we need (I.e., put BTES at the back of the line for any projects).
- This approach will not adequately address all of the issues with the old school including projected overcrowding. It's a waste of taxpayer money as further repairs and/or replacement will be needed.
- Does not address issues with lead, aging infrastructure, space needs, outdated equipment (boiler, chiller, kitchen, etc.) and does not address traffic pattern issues.
- School could use more space as the outdoor portable classrooms are not an ideal learning environment nor a long term solution and they have already been there a couple years.
- This also is not useful given overcrowding and age of the building, there's too much more to do.
- ADA accessibility is not well-integrated into the overall school design and function. Still poses ADA safety concerns for emergencies. Addition is a bandaid to a large-scale set of needs. It is not a holistic solution, nor a financially efficient and responsible solution. This plan uses ADA funds for bandaid renovations to a school that is at the end of its useful life, and those funds would be more appropriately used for schools needing ADA improvements in buildings still well-functioning and not due for larger-scale interventions, as BTES is due for. Does not address school population size needs now or future growth (portables needed now, no pre-k space, many undersized areas within the school). Does not address pedestrian safety accessing the building. Does not address traffic needs for accessing and dropping off to the building. Does not address parking needs for the current school size or expected/projected future increases.
- Nothing with piping/ water. No buses change. ONE ADA accessible route. No traffic changes.
- No big changes to fix of accessing classroom.
- Lead in pipes. Portable still required. No change in traffic pattern/safety. More doors needed to be secured in code red/ severe weather.
- Still not enough space for all students in the building. No new traffic pattern. No upgrade to utilities.
- School would still have dated systems and fixtures. No changes to traffic patterns.
- Does not address plumbing & HVAC. Does not address Code Red.
- Not enough is fixed here. Traffic pattern needs to change.
- ADA only - not nearly enough. Adding a corridor outside the existing building seems unwitty.
- Floor plan doesn't change, no new finishes, corridor adds yet another element to existing footprint, capacity issues remain.
- Portables stay, no capacity increase, no traffic pattern changes.

PROVIDE YOUR THOUGHTS ON APPROACH 3: MAJOR RENOVATIONS AND ADDITION

PROS

- More classroom space. New car loop + bus line + relieve traffic issue
- Separate car + bus loop.
- More space and properly sized rooms.
- Gets rid of split levels.
- Include eliminating portable classrooms.
- Fixing the plumbing/drinking water as well as portables and ADA capabilities. Separate car and bus line to ensure better safety for students.
- New traffic pattern makes safer routes for kids entering/ leaving school, additional classroom space added and removal of portables, addresses issues with lead, aging infrastructure, etc.
- It's a good 2nd choice if the 4th can't be executed.
- This is the minimum that should be acceptable - it addresses ADA and capacity issues.
- The basic minimum long-standing systems needs are addressed. Addresses basic long-standing need for ADA accessibility for students, staff, and visitors at minimum requirements by law.
- 18,000 more square ft. to school + 1 & 2. Buses changed, office changed.
- Adds 18,000 square feet. ADA accessibility. Courtyard new. Better bus loop.
- Increased safety, increased spaces.
- Portables removed. No lead in pipes. ADA compliance with access. K playground relocated away from road.
- More accessible and moder. More space, no portables. Improved traffic pattern.
- Addresses arrival.
- No more portables! I really like this one.
- Increased capacity. Courtyard. #1 + #2 + more = yes.

- 18,000 sq foot addition, no relocatable, no more split levels, addresses ADA concerns, all finishes updated, car/bus loop addressed.
- 18,000+ sq feet. of space, no portables, new play area, courtyard, renovations.

CONS

- Cost often approaches or exceeds rebuild, especially with structural and system fixes. May be technically infeasible due to shifting ground, unstable foundation, or outdated layout. Difficult to renovate while school is in session — requires student relocation. High risk of cost overruns and delays due to unforeseen issues (e.g., piping, asbestos). Still may not meet modern energy, safety, and educational standards. Ends up investing in a fundamentally flawed structure with limited future flexibility.
- Less green space for play compared to current.
- Dealing with exposing site conditions.
- Displacement
- Too car friendly - may encourage more car traffic.
- Removes trees and creates a smaller play area. The new traffic pattern on Winterberry looks tight.
- Seems like a lot of resources for a finished product that will suffice but not be perfect.
- Kids will be displaced from the school into a holding center from my understanding.
- "Seems like it would entail significant time out of the school and loss of outdoor play space without making enough improvements, like more space for # if kids needed, to last the school another ~20 years. Not sure the buses on Winterberry option will work - it's a pretty narrow residential street."
- This is not the optimal solution as it retains 50% of the original building that still has problems. Including the unsafe boiler room. And this approach is not sufficient for the long term needs of the community.
- While this option is great and addresses most of the issues needed to improve and make burning tree a safe environment, it feels like the work needed would be as expensive as replacing the building, and would displace students for just as long.
- Retrofitting and renovating an existing structure can be as expensive and timely if not more than starting from the ground up.
- The downside is that the core old building, with its more expensive upkeep, remains and will always be a maintenance issue.
- ADA accessibility is not well-integrated into the overall school design and function. Addition is a bandaid, and partial addition cuts students off from rest of the building. It is not a holistic solution, nor a financially efficient and responsible solution. This plan uses ADA funds for bandaid renovations to a school that is at the end of its useful life, and those funds would be more appropriately used for schools needing ADA improvements in buildings still well-functioning and not due for larger-scale interventions, as BTES is due for. Does not address school population size needs now or future growth (portables needed now, no pre-k space, many undersized areas within the school). Does not address pedestrian safety accessing the building. Does not address traffic needs for accessing and dropping off to the building. Does not address parking needs for the current school size or expected/projected future increases. Reduces outdoor play space for all grades.
- Re-location
- Re-location
- Traffic pattern / safety better but not great. Use transition school. Loss of forest.
- Still limited parking. Time.
- It's adding so much- why not just take care of it completely so it can last longer?
- Weird configurations. Relocating.
- Remove trees. Relocation but that sounds worth it to me honestly.
- If admin takes media center space, new media center goes where? 5th + 4th grade pods? 1 level or 2? Not great. Expensive but probably worthwhile
- Preserving green space, community concerns about new bus loop, relocation.
- Traffic separation but not a big change.

PROVIDE YOUR THOUGHTS ON APPROACH 4: REPLACEMENT SCHOOL

PROS

- Long-Term Safety and Stability.
- Eliminates foundational, structural, and system risks — no patchwork fixes or legacy hazards.
- Modern, Accessible Design.
- Fully ADA-compliant, inclusive, and designed for current and future learning needs.
- Improved Learning Environment
- Custom-built for 21st-century education: natural light, STEM labs, tech integration, and flexible spaces.
- Lower Total Cost Over Time.
- Avoids ongoing repair bills and surprise renovation costs; reduces future maintenance needs.
- Energy Efficiency and Sustainability
- Incorporates green building standards for lower utility costs and long-term environmental benefits.
- Boosts Community Confidence.
- Shows investment in student success and safety; improves morale, enrollment, and staff recruitment.
- Future-Ready Infrastructure.
- Built with growth and evolving education models in mind — no need to rebuild again in 10–15 years."
- This is clearly the best outcome for students learning environment. Better building design vs. appr. 3. More daylight + better playground location. New non-classroom shared spaces. Bigger event capacity - APR, cafeteria, stage. CPTED. Safety + Security. Energy efficiency. More efficient financially. Eliminates need for future renovation.
- Cohesive, safer, better for the world
- New modern building
- N/A
- Everything Is new and up-to-date.
- New school, traffic, ADA met.
- This option seems to make the most sense. Pros include increased parking which is a major issue currently, even outside of peak pickup/drop off times. I think moving the kiss and ride lanes off of Beach Tree road will ease congestion, and increase safety for pedestrians. Eliminates needs for portable classrooms. Safety of drinking water and increased capacity of facilities and usable instruction spaces.
- This is the best option - sets the school up for the future, addresses accessibility and traffic needs, and will be beautiful. My now-kindergartner will probably be displaced for a year or two, but it is worth it for the community
- Fixing the plumbing/drinking water as well as portables and ADA capabilities. Separate car and bus line to ensure better safety for students.
- Would fix most problems.
- This is the best plan. We will finally have an ADA compliant school that provides for a safe learning environment and ample space for current needs and projected population growth.
- This option seems to make the most sense based on all of the work needed to update the BTES building to bring everything up to code and compliance. We would have the opportunity to thoughtfully design the school to make a new structure work for the foreseeable future.
- This option provides most potential for the future while serving the needs of a growing school district and will provide students with the best possible resources.
- This is the best solution.
- This options holistically addresses long-standing systems needs, long-standing need for ADA accessibility for students, staff, and visitors. ADA accessibility is well-integrated into the overall school design and function. ADA safety concerns for emergencies are eliminated. This solution is a holistic design that is financially efficient and responsible. This plan releases ADA funds to other schools more appropriately in need of ADA improvements in buildings still well-functioning and not due for larger-scale interventions, as BTES is due for. Efficiently addresses school population size needs now or future growth (portables no longer needed, pre-k space can be integrated, all areas within the school can be appropriately sized for needs). This solution addresses pedestrian safety accessing the building, and traffic needs for accessing and dropping off to the building. This solution appropriately addresses parking needs for the current school size or expected/projected future increases. Outdoor play

spaces are improved and appropriate for the school needs. This solution is best for the school, our surrounding community, and the county as a whole.
- Good for environment.
- Separate car traffic and bus loop. Geothermal.
- Good for environment.
- Most problems can fixed. Traffic is safer. Correct size classrooms. ADA access. Energy efficient - HVAC.
- Geothermal.
- Would be completely up to today's standards.
- More parking. All issues fixed. Energy efficient.
- Probably our best bet.
- Better traffic flow. Most attractive option + much needed update. Fewer trees come down.
- Whole new building.
- Separate parking for teachers, change in traffic pattern, less cut down trees from property.

CONS

- No Cons
- Displacement
- Too slow - 2028/29 minimum.
- Displaces students for a long period of time. May make the school traffic too busy for the neighborhood.
- Longest displacement?
- Kids will be displaced from the school into a holding center from my understanding, with demolishing the whole school, I do not know how long that process would take.
- Biggest concerns are time out of building and loss of outdoor play space. Again not sure bus route on Winterberry will work given space but assuming that can be adjusted in design
- The biggest obstacle would be the timeline for displacing students.
- The downside is cost but it represents a long-term investment that will pay off for the broader community.
- 3-4 years to build.
- Is there a way to keep the mural dedicated to a past principal that is near they gym. This is important/ mascot mural.
- Use transition school.
- Time.
- How long would we be at a holding school?
- Relocating. Lose mural.
- Relocation but once again it sounds worth it.
- 3 floors? Not great for young children + problematic for HVAC. Most expensive option.
- Time/cost.

EXISTING SITE ASSESSMENT

Burning Tree Elementary School is located at 7900 Beech Tree Road in Bethesda, Maryland. The school site is approximately 6.78 acres and currently contains the existing elementary school and associated amenities. The 6.78 acres is comprised of two sites – Parcel 872 (tax account 07-00417843) and Lot 1 (tax account 07-00652682). Both sites are owned by the Montgomery County Board of Education.

Based on a site visit on April 29, 2025 and review of the available existing drawings, the following was noted and observed:

ZONING INFORMATION

Zone: Residential – 90 Zone (R-90)

SITE SOILS

According to information obtained from the United States Department of Agriculture Natural Resources Conservation Service, the project area is underlain with four soil groups:

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
2C	Glenelg silt loam, 8 to 15 percent slopes	0.4	4.5%
2UB	Glenelg-Urban land complex, 0 to 8 percent slopes	6.8	80.6%
2UC	Glenelg-Urban land complex, 8 to 15 percent slopes	0.2	1.9%
116D	Blocktown channery silt loam, 15 to 25 percent slopes, very rocky	1.1	13.0%
Total		**8.5**	**100.0%**

Figure 1 - Burning Tree Elementary School

Figure 2 - Burning Tree Elementary School Location Map

SITE TOPOGRAPHY

The school building is located at the highest point of the property with the slope running away from the building in all directions. Runoff on the north side of the building sheds towards the Burning Tree Local Park fields and adjacent residential houses, where it eventually drains to Beech Tree Road.

Runoff east of the building drains directly to Beech Tree Road. Runoff south of the building sheds directly to Winterberry Lane. Runoff on the western side of the building and playground sheds through adjacent residential yards before it drains to Summer Mill Court. All points eventually drain into the nearby Booze Creek.

SITE CIRCULATION

The site has one access point along Beech Tree Road. This entrance serves buses, staff, parents, and visitors, as well as Burning Tree Local Park patrons. There is a bus loop in front of the building that is separated from parent drop off. The parents enter the site and turn right to enter a parking area that is used for pick-up and drop-off of students. The parking area does not loop, leading parents and visitors to make difficult 3-point turns in the middle of the parking lot once they've picked up or dropped off their child. The parking lot is also shared with Burning Tree Local Park. Park patrons must drive through the school site to visit the Park. There are currently 36 parking spaces on the school property and 39 spaces on the Park property.

Figure 3 - Burning Tree Elementary School Topography Map

Figure 4 - Burning Tree Elementary School Location Existing Utility Plan

EXISTING SITE ASSESSMENT

SITE UTILITIES

Water: The site is served by a 6" waterline that enters the property from Beech Tree Road and runs up the entrance drive. The 6" waterline enters the north side of the building.

Sanitary Sewer: The site is served by a 6" sanitary sewer. The sanitary sewer line enters the building near the front door.

Storm Drains: There is an extensive storm drain network on site.

Gas & Electric: There is a gas line that runs from Beech Tree Road up the entrance drive to the gas meter near the loading dock. There are also records of underground electric service to the building, as well as visual evidence of overhead wires and utility poles on the site.

Utility Easements: There are no known evidence of existing utility easements on the property.

STORMWATER MANAGEMENT

Per existing records, the property has existing 42" RCP storage pipes beneath the bus loop and front grass area adjacent to Beech Tree Road. There are no other known stormwater management facilities on site.

FLOODPLAINS, WETLANDS, AND WATERWAYS

There are no records of any floodplains or wetlands on the site.

Figure 5 – Burning Tree Elementary School FEMA Floodplain Map

Figure 6 – Non-Compliant ADA Parking Spaces

LANDSCAPE, TREES, AND FOREST CONSERVATION

The property is within a Priority Urban Forest Area per Maryland Department of Natural Resources. There are no records of a forest conservation area on the site.

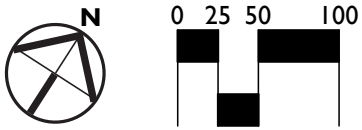
ATHLETIC FIELDS, ATHLETIC COURTS, AND PLAY AREAS

There are two existing play areas located to the east and west of the building. The Pre-K play area includes asphalt and mulch play areas. The play area for the rest of the students is located west of the building and also includes asphalt and mulch play areas. There is a small grass play field located north of the mulch play area west of the building. The students have access to the adjacent Burning Tree Local Park which includes tennis courts, softball and soccer fields.

ADA ACCESS

A few items on site were found to be non-compliant with the Americans with Disabilities Act (ADA). Both ADA-designated parking areas near the north building entrance and the Bar-T Kids Club entrance are non-compliant. Access from Beech Tree Road has curb ramps and crosswalks with non-compliant slopes. The existing ADA bus drop off area is compliant per ADA standards, but not up to the current MCPS standard of a 20-foot wide level drop off area.

EXISTING ARCHITECTURAL ASSESSMENT:
SPACE ANALYSIS - ROOM SIZES COMPARED TO EDUCATIONAL SPECIFICATIONS



LEGEND

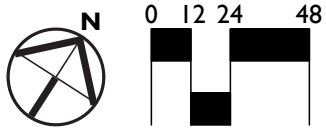
- Undersized - More Than 20% Required By Program
- Undersized - Between 11 - 19% Required By Program
- Within - 10% Required By Program
- Oversized - Between 11 - 19% Required By Program
- Oversized - More Than 20% Required By Program

REDACTED

EXISTING FLOOR PLANS

EXISTING ARCHITECTURAL ASSESSMENT:

SPACE ANALYSIS - ROOM SIZES COMPARED TO EDUCATIONAL SPECIFICATIONS



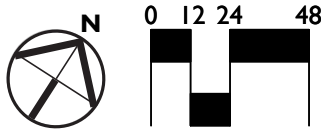
REDACTED

LEGEND

- Undersized - More Than 20% Required By Program
- Undersized - Between 11 - 19% Required By Program
- Within - 10% Required By Program
- Oversized - Between 11 - 19% Required By Program
- Oversized - More Than 20% Required By Program

LOWER LEVEL

EXISTING ARCHITECTURAL ASSESSMENT:
SPACE ANALYSIS - ROOM SIZES COMPARED TO EDUCATIONAL SPECIFICATIONS



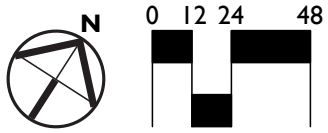
REDACTED

LEGEND

- Undersized - More Than 20% Required By Program
- Undersized - Between 11 - 19% Required By Program
- Within - 10% Required By Program
- Oversized - Between 11 - 19% Required By Program
- Oversized - More Than 20% Required By Program

MAIN LEVEL

EXISTING ARCHITECTURAL ASSESSMENT:
SPACE ANALYSIS - ROOM SIZES COMPARED TO EDUCATIONAL SPECIFICATIONS



REDACTED

LEGEND

- Undersized - More Than 20% Required By Program
- Undersized - Between 11 - 19% Required By Program
- Within - 10% Required By Program
- Oversized - Between 11 - 19% Required By Program
- Oversized - More Than 20% Required By Program

UPPER LEVEL

EXISTING ARCHITECTURAL ASSESSMENT: SPACE ANALYSIS

Burning Tree Elementary School Space Analysis	ED Spec MCPS Elementary School			Existing Burning Tree ES Comparison to Ed Spec		Existing Burning Tree Elementary School		
	Area(s)	SF	Total Net	SF	%	Area(s)	SF	Total Net
General Classrooms			**33,150**	**-7,830**	-24%			**25,320**
Pre-Kindergarten (incl. 250 sf of storage)	2	1,200	2,400	-2,400	-100%	0	0	0
Kindergarten (incl. 250 sf of storage) (incl. toilet)	4	1,200	4,800	1,585	33%	5	1,277	6,385
Standard (incl. 150 sf of storage)	19	850	16,150	-5,345	-33%	12	900	10,805
Special Education Learning Center (incl. 150 sf of storage)	7	850	5,950	-440	-7%	6	918	5,510
Art (incl. 250 sf of storage)	1	1,200	1,200	-175	-15%	1	1,025	1,025
Music (incl. 250 sf of storage)	1	1,200	1,200	-170	-14%	1	1,030	1,030
Instrumental Music Room (incl. stor)	1	450	450	115	26%	1	565	565
Dual Purpose Room	1	1,000	1,000	-1,000	-100%	0	0	0
Support Rooms			**3,335**	**50**	1%			**3,385**
Large Instructional Support Room	1	550	550	45	8%	1	595	595
Small Instructional Support Room	2	425	850	-110	-13%	2	370	740
Speech/Language Room	1	250	250	40	16%	1	290	290
Therapy/Support Room	1	250	250	510	204%	1	760	760
Special Education Support	2	250	500	-365	-73%	1	135	135
Personal Care Room	1	100	100	-100	-100%	0	0	0
Conference Room	1	275	275	-275	-100%	0	0	0
Testing Room	1	140	140	10	7%	1	150	150
Support Staff Offices	3	140	420	295	70%	3	238	715
Library Media Center			**2,875**	**-200**	-7%			**2,675**
Learning Environment	1	2,100	2,100	-370	-18%	1	1,730	1,730
Work and Production Area	1	475	475	-105	-22%	1	370	370
LMC Storage Room	1	300	300	275	92%	1	575	575
Physical Education			**4,430**	**20**	0%			**4,450**
Gymnasium	1	3700	3,700	0	0%	1	3,700	3,700
Office	1	140	140	15	11%	1	155	155
Storage	1	250	250	-5	-2%	1	245	245
Storage	2	100	200	0	0%	1	200	200
Outside Storage	1	140	140	10	7%	1	150	150
Multipurpose Room			**4,135**	**-860**	-21%			**3,275**
Multipurpose Room	1	3200	3,200	-830	-26%	1	2,370	2,370
Chair Storage	1	180	180	-120	-67%	1	60	60
Table Storage	1	180	180	-180	-100%	0	0	0
Platform	1	450	450	-55	-12%	1	395	395
Before/After Care Prep Area	1	25	25	-25	-100%	0	0	0
Before/After Care Storage	1	100	100	350	350%	1	450	450

EXISTING ARCHITECTURAL ASSESSMENT: SPACE ANALYSIS

Burning Tree Elementary School Space Analysis	ED Spec MCPS Elementary School			Existing Burning Tree ES Comparison to Ed Spec		Existing Burning Tree Elementary School		
	Area(s)	SF	Total Net	SF	%	Area(s)	SF	Total Net
Kitchen			**1,372**	**-337**	**-25%**			**1,035**
Serving Area	1	300	300	585	195%	1	885	885
Walk-in Cooler/Freezer (included in Serving Area)	1	155	155	-155	-100%	1	0	0
Dry Storage	1	192	192	-72	-38%	1	120	120
Office	1	100	100	-100	-100%	0	0	0
Toilet Room	1	70	70	-40	-57%	1	30	30
Preparation Area (included in Serving Area)	1	555	555	-555	-100%	1	0	0
Administration			**1,765**	**-455**	**-26%**			**1,310**
General Office	1	500	500	-275	-55%	1	225	225
Workroom	1	300	300	10	3%	1	310	310
Principal's Office (incl. 50 sf toilet room)	1	250	250	-10	-4%	1	240	240
Assistant Principal's Office	1	140	140	-140	-100%	0	0	0
Conference Room	1	275	275	0	0%	1	275	275
Storage	1	100	100	-15	-15%	1	85	85
Record Room	1	75	75	30	40%	1	105	105
Toilet Room	1	50	50	20	40%	1	70	70
Remote Workroom	1	75	75	-75	-100%	0	0	0
Counseling Suite			**320**	**-95**	**-30%**			**225**
Counselor's Office	1	160	160	65	41%	1	225	225
Itinerant Staff Office	1	160	160	-160	-100%	0	0	0
Staff Development Area			**600**	**-100**	**-17%**			**500**
Staff Development Office	1	100	100	125	125%	1	225	225
Reading Specialist Office	1	100	100	-100	-100%	0	0	0
Training/Conference Room	1	400	400	-125	-31%	1	275	275
Health Services Suite			**710**	**-290**	**-41%**			**420**
Waiting Area	1	100	100	-20	-20%	1	80	80
Treatment/Medication Area	1	120	120	15	13%	1	135	135
Office/Health Assessment Room	1	100	100	-100	-100%	0	0	0
Health Assessment/Isolation Room	1	100	100	-100	-100%	0	0	0
Rest Area	1	200	200	-60	-30%	1	140	140
Toilet Room	1	50	50	-15	-30%	1	35	35
Storage Room	1	40	40	-10	-25%	1	30	30

EXISTING ARCHITECTURAL ASSESSMENT: SPACE ANALYSIS

Burning Tree Elementary School Space Analysis	ED Spec MCPS Elementary School			Existing Burning Tree ES Comparison to Ed Spec		Existing Burning Tree Elementary School		
	Area(s)	SF	Total Net	SF	%	Area(s)	SF	Total Net
Staff Area			**750**	**-115**	-15%			**635**
Staff Lounge (incl. 2 ex. toilet rooms)	1	650	650	-40	-6%	1	610	610
Privacy Room	2	50	100	-75	-75%	1	25	25
Building Service Facilities			**1,885**	**-647**	-34%			**1,238**
Building Services Office	1	140	140	15	11%	1	155	155
Locker/Shower Area	1	150	150	-100	-67%	1	50	50
Compactor/Trash Room	1	150	150	30	20%	1	180	180
General Storage and Receiving	1	550	550	-360	-65%	1	190	190
General Storage	3	240	720	-367	-51%	1	353	353
Building Services Outdoor Storage	1	175	175	135	77%	2	155	310
Building Support Spaces			**600**	**-600**	-100%			**0**
Book Storage	1	200	200	-200	-100%	0	0	0
PTA Storage	1	100	100	-100	-100%	0	0	0
Telecommunication Closet (MDF)	1	150	150	-150	-100%	0	0	0
Telecommunication Closet (IDF)	3	50	150	-150	-100%	0	0	0

Gross Area Grand Total Summary	ED Spec MCPS Elementary School	Existing Burning Tree ES Comparison to Ed Spec	Existing Burning Tree Elementary School
Total Net Sq. Ft.	**56,477**	**-12,009**	**44,468**
Gross Area Factor (Walls, Circulation, Toil, Mech/Elec, Struct, Shafts,...)	**24,204**	**-553**	**23,651**
Efficiency Factor %	70%		65%
Gross Area Grand Total	**80,681**	**-12562**	**68,119**

EXISTING ARCHITECTURAL ASSESSMENT:
ELEVATION CHANGES

FLOOR HEIGHT CHANGES

Burning Tree Elementary School has undergone several renovations and additions over the years, resulting in a variety of interior floor elevations due to significant site grade changes.

The original building, constructed in 1958, used a split-level design where classroom floors were either 5'-4" above or below the main level. A mechanical room was located 10'-8" below the main level and was not accessible by elevator.

In 1959, an addition continued this split-level design, maintaining the same floor height variations.

A major renovation and addition in 1991 introduced an elevator to connect the various split levels. While it maintained most existing floor elevations, it also introduced new elevation transitions to accommodate accessible egress. In particular, the southeast portion of the building required a 2'-0" drop to meet grade via a ramp.

In 2007, a gymnasium addition was constructed. Access to the gym required another interior elevation change, this time 2'-10" below the main level.

Existing Floor Height Offsets From Main Level (0'-0" F.F.)

	Area (GSF)	Elevation Relative to Main Level
	±1,750 GSF	-10'-8" F.F.
	±18,800 GSF	-5'-4" F.F.
	± 8,440 GSF	-2'-10" F.F.
	± 8,440 GSF	-2'-0" F.F.
	± 34,953 GSF	0'-0" F.F.
	± 8,440 GSF	+1'-8" F.F.

REDACTED

EXISTING FLOOR PLAN - ELEVATION VARIATIONS

EXISTING ARCHITECTURAL ASSESSMENT:
ENCLOSURE ASSESSMENT

SCOPE OF INVESTIGATIONS

This report presents the findings from a visual condition survey of the building enclosure at the existing Burning Tree Elementary School. The assessment focused on exterior components of the building and includes recommendations for short-term repairs, identification of any major distress or failure, and suggestions for further invasive investigation if warranted.

The exterior features evaluated include brick veneer facades, standing seam mansard-style perimeter roofing, and aluminum storefront systems. Surrounding site elements such as concrete sidewalks and asphalt paving were also reviewed.

Overall Condition: The building envelope components were generally found to be in good condition, with only minor maintenance or repairs recommended at this time.

Structural Movement: There was no evidence of structural settlement or failure in mortar joint reinforcement.

Brick Veneers and Mortar Systems: These systems are in good condition overall, with some isolated concerns including spalling, algae staining, efflorescence, and minor water damage. These issues do not currently impact structural integrity and do not require corrective action.

Openings and Structural Elements: Steel lintels, precast concrete lintels, exposed structural steel, roof decking, window frames, and exterior doors were all observed to be in good condition, requiring only routine maintenance.


Figure 7 - Front Entrance


Figure 8 - Bus Loop


Figure 9 - Side Entrance

Site Conditions: Some areas of the concrete sidewalk are missing sealant at the brick interface. These joints should be re-caulked to prevent water infiltration and insect intrusion.

At this time, no major deficiencies or failures were observed that would require further invasive studies. The limited scope of identified concerns can be addressed through standard maintenance practices.

PROPERTY CONDITION

In general, the structure appears to be in good condition for a building of its age and construction type. Significant improvements and renovations have been made since the original construction, and the exterior envelope appears to have been well maintained over time. During the course of this survey, TCA identified several minor site-related items that warrant timely attention and/or repair. These items are outlined in the following sections.

MASONRY

The primary exterior finish of the building is clay brick masonry. Overall, the brick was observed to be in good condition, with some localized instances of spalling See Figure 10. Additionally, certain areas of the exterior façade exhibit notable algae growth, efflorescence, and signs of water damage. See Figures 11, 12, and 13.


Figure 10 - Spalling Brick


Figure 11 - Algae Staining


Figure 12 - Efflorescence


Figure 13 - Water damage

EXISTING ARCHITECTURAL ASSESSMENT:
ENCLOSURE ASSESSMENT

JOINT MORTAR

The mortar joints were generally tight, well-tooled, and showed minimal signs of deterioration. However, in some localized areas, joints were found to be cracked or missing mortar, requiring repointing of the affected brick masonry See figures 14 and 15.

MASONRY WEEPS

Masonry weep holes were observed at regular intervals across the building envelope and appeared to be unobstructed and in good condition. No signs of blockage or damage were noted.

WINDOW AND DOORS

Some of the exterior window and doors date back to the original construction, while others appear to have been replaced during renovations and additions completed in or before 2007. It is recommended that all existing frames be replaced with new thermally broken aluminum storefront systems to enhance energy performance and durability See figure 16.

JOINT REINFORCEMENT

No visible signs of corrosion were observed in the masonry joint reinforcement. This does not appear to be a current concern at this structure.

CAULKING

Isolated areas were identified where caulking was missing or deteriorated, particularly at the interface between horizontal concrete sidewalks and vertical brick walls. These joints should be re-caulked to prevent water or insect infiltration, which could lead to future damage. See figures 17 and 18.

Figure 14 - Cracked Mortar

Figure 15 - Missing Mortar

Figure 16 - Window Frame

STEEL LINTELS

Steel lintels located above openings are in good condition with no evidence of coating loss, corrosion, or structural compromise.

CONCRETE LINTELS

Precast concrete lintels were also found to be in good condition, with no signs of cracking, erosion, or other visible deterioration.

SETTLEMENT

No evidence of structural settlement was observed in the building itself. However, minor cracking was noted in some concrete pads adjacent to the structure. These cracks should be repaired to prevent further deterioration. See Figure 19.

THERMAL RESISTANCE

The existing wall assemblies from the original construction have thermal resistance values ranging between R-3 and R-12. Any newly constructed exterior walls will be designed to meet or exceed a minimum R-value of R-25, in accordance with current energy performance standards.

Figure 17 - Eroding Caulk Joint

Figure 18 - Eroding Caulk Joint

Figure 19 - Cracked Concrete

EXISTING ARCHITECTURAL ASSESSMENT:
ENCLOSURE AND SITE ASSESSMENT

STEEL COLUMNS

The exposed structural steel columns were found to be in fair to poor condition. Only two exposed columns were observed, both part of the 2007 gymnasium addition, located adjacent to the existing trash room. As shown in Figure 20, one column exhibits significant rust and deterioration, which will require either repair or full removal and replacement.

CONCRETE SIDEWALK

Concrete sidewalks throughout the site were generally found to be in good to fair condition. However, a few areas show visible cracking and spalling, necessitating repair or replacement of individual slabs. See figures 21 and 22.

BRICK PAVERS

Engraved brick pavers located near the north entrance of the building were observed to be in excellent condition. Depending on the selected design approach, these pavers may need to be carefully removed, preserved, and relocated . See figure 23.


Figure 20 - Rusted Steel Column


Figure 21 - Crack in Concrete


Figure 22 - Concrete Spalling

LOADING DOCK

The loading dock, approximately four feet in height, was found to be in good condition, with minor cracking in the concrete. These cracks should be repaired to maintain long-term durability. See figure 19 and 24.

EXTERIOR STAIRS

Most exterior stairs on the site are in good condition and do not require repair. However, the stair located at the rear of the building, leading from the play area to the gymnasium, does not meet current code requirements for stair tread depth. This stair will need to be replaced to comply with accessibility and safety standards. See Figure 25.

ROOFING

The roof was replaced in 2011 and is now approaching the end of its expected useful life. At the time of this assessment, there were no visible signs of active leakage or damage. However, due to its age, the roof should be monitored regularly, and planning for future replacement is recommended as part of the long-term capital maintenance strategy.


Figure 23 - Engraved Brick Pavers


Figure 24 - Loading Dock


Figure 25 - Stair Tread

EXISTING ARCHITECTURAL ASSESSMENT:
INTERIOR BUILDING ASSESSMENT

In general, the interior finishes and equipment were observed to be in good condition, particularly for a building of this age and construction type. Renovations and improvements have been made since the original construction, and the interiors appear to have been well maintained over time. During the course of this survey, TCA identified several minor items related to interior finishes and systems that warrant timely attention and/or repair. These items are detailed below.

MASONRY

The primary interior wall finish throughout the building is concrete masonry unit (CMU) or glazed masonry unit (GMU). These materials were observed to be in good overall condition, with only minor cracking in isolated locations. See Figures 26 and 27.

JOINT MORTAR

Mortar joints were typically tight and well-tooled, with minimal evidence of failure. However, a few joints were observed to be cracked and will require repair and repointing . See Figure 27 and 30.

CONCRETE SLAB

Exposed concrete slabs—primarily located in the mechanical and electrical rooms—were found to be in good condition. Some minor cracking was noted, likely the result of normal soil settlement. These cracks do not appear to represent any structural concern. See Figure 28.


Figure 26 - GMU Cracking


Figure 27 - CMU Cracking


Figure 28 - Concrete Cracking

WINDOW AND DOORS

Several window and door frames appear to be original to the building, though many have been refinished over time. Frames that have not been refinished exhibit chipped paint and mortar cracking. Frames exposed to exterior conditions should be replaced with new thermally broken hollow metal frames or aluminum storefront systems to enhance energy performance and longevity. See figures 29 and 30.

VINYL COMPOSITION TILE

The majority of interior flooring consists of vinyl composition tile (VCT), which is generally in good condition. However, several areas were noted to have cracked or damaged tiles, and at least one area had a visible rust stain. In addition, the flooring exhibits inconsistent color patterns, likely resulting from piecemeal replacement during past renovations, giving the interior a visually uncoordinated appearance. See figures 31 and 32.


Figure 29 - Door Frame


Figure 30 - Window Frame

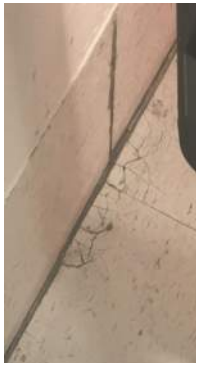


Figure 31 - VCT


Figure 32 - VCT

EXISTING ARCHITECTURAL ASSESSMENT:
INTERIOR BUILDING ASSESSMENT

WOOD FLOORING

Wood flooring is located in the gymnasium and is currently in fair to poor condition. The surface shows noticeable wear and tear and the existing game lines are faded and require repainting to restore proper visibility and function. See figure 33.

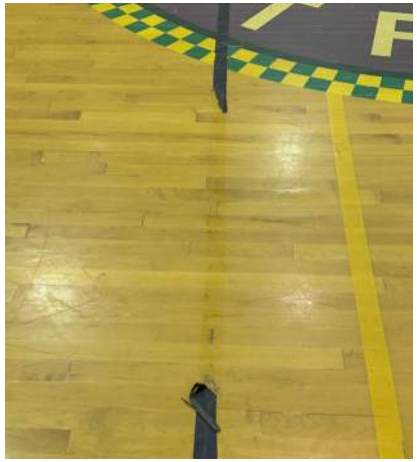


Figure 33 - Gymnasium Flooring

ACOUSTICAL CEILING TILES

Most interior ceilings consist of acoustical ceiling tiles, which were generally observed to be in good condition. However, in select areas, there is evidence of roof leakage, resulting in stained or damaged ceiling tiles. These areas will require further evaluation of the roof system and replacement of the affected ceiling tiles. See figure 34.


Figure 34 - Ceiling Tile Damage

CASEWORK

Casework within classrooms was found to be in fair condition, with visible wear and tear from age and use. Notably, countertops surrounding unit ventilators show minor cracks and surface damage, and may require localized replacement or repair. See figures 35 and 36.



Figure 35 and 36 - Casework

BASE HEATER

Baseboard heating units are present in several parts of the building. In one toilet room, a unit was found to be partially obstructed by a wall, making it difficult to access. The unit should be exposed and made accessible to ensure proper operation and eliminate potential safety hazards. See figure 37.


Figure 37 - Base Heater

WINDOWS

In one classroom, a window exhibited excessive condensation between panes, which typically indicates a compromised seal or crack within the glazing system. The affected window assembly will likely require replacement to restore performance and prevent further moisture intrusion. See figure 38.


Figure 38 - Window Assembly

CERAMIC WALL TILE

Ceramic wall tile is used extensively in toilet rooms. In several locations, tiles were found to be uneven, likely due to adhesion issues or moisture damage. In other areas, tiles were missing entirely and replaced with plywood coverings, which is not a durable or hygienic solution. Full replacement of tile finishes in these areas is recommended . See figures 39 and 40.


Figure 39 - Ceramic Wall Tile


Figure 40 - Ceramic Wall Tile

EXISTING ARCHITECTURAL ASSESSMENT:
INTERIOR BUILDING ASSESSMENT

WOOD DOORS

The majority of interior doors throughout the school are wooden and are generally in good condition. However, several doors show significant finish damage. These should be refinished or replaced as needed to maintain durability and appearance. See figure 41.


Figure 41- Bathroom Wood Door

ACCESS PANEL

In one toilet room, an access panel located in the ceiling shows signs of potential mold growth. This condition should be tested and evaluated promptly to determine if remediation is required due to potential health concerns. See figure 42.


Figure 42 - Access Panel

WALL MOUNTED ITEMS

Various items are affixed to walls throughout the school that pose potential hazards to students, including improperly secured or protruding materials. These items should be removed, and the underlying walls repaired or refinished as needed. See figures 43 and 44.



Figure 43 and 44 - Misc. Items

WINDOW BLINDS

Window blinds are present throughout the building, many of which are damaged or non-functional. These blinds should be replaced to ensure light control, privacy, and visual consistency. See figure 45.


Figure 45 - Window Blinds

ELECTRICAL WIRING

In several locations, exposed electrical wiring is visible with no apparent function. These wires should be secured out of student reach and either safely enclosed within walls, ceilings, or covered with access panels to meet code and safety standards. See figure 46.


Figure 46 - Exposed Wiring

VISUAL DISPLAY BOARDS

Most classrooms are equipped with chalkboards, whiteboards, and tack boards, which generally show typical signs of wear. In one classroom, a display board was found to be missing, and will need to be replaced to support instructional use See figures 47 and 48.


Figure 47 - Missing Display Board


Figure 48 - Typical Display Board

CLASSROOM FURNITURE

Several classrooms use student desks and chairs outfitted with tennis balls on the leg bases, a common workaround to reduce noise. The condition of the furniture suggests that replacement with newer, ergonomically designed furnishings may be warranted. See figure 49.


Figure 49 - Classroom Furniture

EXISTING ARCHITECTURAL ASSESSMENT:
INTERIOR BUILDING ASSESSMENT

MURALS

Numerous murals are located throughout the school and contribute significantly to the building's character, identity, and connection to the community. These murals should be preserved and protected to the greatest extent possible during any renovation or replacement work. See figure 50.

Figure 50 - School Mural

TEMPERATURE CONTROLS

Temperature regulation appears to be inconsistent throughout the building. In several classrooms, portable fans were observed in use by staff to help control indoor climate. Such fluctuations in comfort can negatively affect student learning and staff productivity. The existing HVAC system should be evaluated and replaced as necessary to provide consistent temperature control. See figure 51.


Figure 51 - Mobile Fans

SPRINKLER SYSTEM

The building is equipped with a sprinkler system, which overall appears to be in functional condition. However, localized signs of rust were observed on certain sprinkler heads and piping, which could compromise emergency performance. A comprehensive evaluation of the system is recommended. See figure 52.


Figure 52 - Rusted Sprinkler Head


Figures 53 and 54 - Rusted Pipes

PIPES

Exposed piping throughout the building appears to be aged, with visible oxidation and rust. While functionality is not immediately in question, the appearance suggests deterioration that may require replacement or reconditioning as part of a broader mechanical systems upgrade. See figures 53 and 54.


Figure 55 - Unenclosed Stall

RESTROOMS

One girls' restroom stall was found to be not fully enclosed, with direct visibility to an adjacent window. This condition poses privacy and security concerns and should be rectified by either fully enclosing the stall or removing it altogether. See figure 55.

In the boys' restroom, a pipe was observed running vertically from the ceiling to a floor drain, creating a potential trip and hygiene hazard. This condition is not appropriate for a student-accessible restroom and should be removed or rerouted. See figure 56.


Figure 56 - Drainage Pipe

MECHANICAL STAIR ACCESS

A set of stairs leading to the electrical room near the gymnasium was observed to be steep with narrow risers. Although the stairs show no visible damage, they appear to fall short of current code compliance for egress and accessibility. This stair should be redesigned or replaced to meet current building code standards. See figure 57 and 58.


Figures 57 and 58 - Stair Access

EXISTING ARCHITECTURAL ASSESSMENT:
ADA ACCESSIBILITY ASSESSMENT

CLASSROOM ACCESS

Classrooms are situated along a central corridor and are primarily accessed via split-level staircases. While students with mobility issues can use an elevator to move between levels, the classroom layout is segmented, and many rooms are not directly accessible from a corridor. This results in students with disabilities having to pass through multiple classrooms to reach their destination, which poses privacy, disruption, and code compliance concerns. See figure 59.

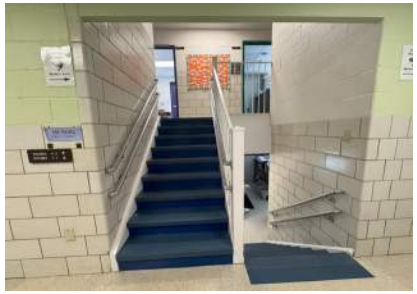


Figure 59 - Split Level Stair

CLASSROOM SINKS

Most general classrooms are equipped with non-ADA-compliant sinks. To achieve compliance, the existing casework would need to be removed and replaced with fully accessible units, including appropriate knee clearance, reach ranges, and lever-operated fixtures. See figure 60.

Figure 60 - Classroom Casework

Figure 61 - Multi-purpose Stage

STAGE

The stage in the multi-purpose room lacks an accessible route and does not comply with ADA standards. A lift or ramp should be installed to provide equal access for students and staff with mobility impairments. See figures 61 and 62.

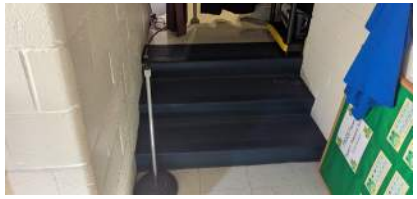


Figure 62 - Stairs leading to stage

TOILET ROOMS

Toilet rooms located within classrooms and staff areas do not meet current ADA requirements. Deficiencies include a lack of compliant turning radius, grab bars, and accessible accessories. Full renovation of these spaces will be required to meet code. See figures 63 and 64.

Figure 63 - Bathroom Accessibility

Figure 64 - Bathroom Accessibility

TOILET ROOM STALLS

Several restrooms are missing ADA-compliant stalls entirely. Additionally, in one girls' restroom, a stall has a direct view to the outside through a window, presenting a serious privacy and safety concern. This condition must be corrected through reconfiguration and visual screening. See figure 65.

Figure 65 - Bathroom Stalls

DOOR CLOSERS

All observed door closers exceed the ADA-required maximum of five pounds of force to open, making them non-compliant. These closers should be replaced or adjusted to meet accessibility standards. See Figure 66.

Figure 66 - Door Closer

ROOM SIGNAGE

Classroom and directional signage throughout the school does not include braille or tactile lettering, as required by ADA regulations. Updated signage will be necessary to ensure the building is navigable and accessible to visually impaired individuals. See figure 67.

Figure 67 - School Signage

EXISTING ARCHITECTURAL ASSESSMENT:
ADA ACCESSIBILITY ASSESSMENT

VENDING MACHINE

A vending machine located near the gymnasium lacks adequate clear floor space in front of it, making it inaccessible to individuals with disabilities. While its current placement appears intended to restrict access to adjacent administrative areas, it inadvertently violates ADA accessibility requirements. The vending machine should be relocated to a compliant location that provides sufficient maneuvering clearance without obstructing key circulation routes. See figure 68.

Figure 68 - Vending Machine

MECHANICAL ROOM ACCESS

Within the gymnasium, a set of stairs leading to a mechanical room was found to be steep and non-compliant with current building code. Additionally, one tread is disconnected from the stringer, posing a significant safety hazard. This stair assembly should be repaired immediately and fully evaluated for compliance with IBC stair design requirements See figure 69.


Figure 69 - Disconnected Tread

RAMP

The ramp leading to the exterior exit along the kindergarten wing on the east side of the building does not comply with the ADA-required maximum slope of 1:12. To ensure safe and equitable access, the existing ramp must be demolished and reconstructed to meet current ADA slope, landing, handrail, and edge protection standards See figure 70.

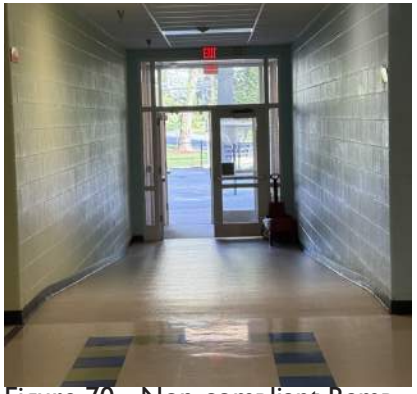


Figure 70 - Non-compliant Ramp

EXISTING STRUCTURAL SYSTEM ASSESSMENT

Burning Tree Elementary School was originally constructed in 1957 as a primarily one-story structure with a two-story split level at the classrooms. In 1990, a one-story classroom addition was added to the south and the media center and main entry were also constructed at that time. In 2006, a one-story gymnasium addition was constructed to the north of the existing school. Information on the structural aspects of the building is based on the available existing drawings and a field visit to the school.

Based on a site visit on April 29, 2025 and the review of the available existing drawings, the following was noted and observed:

FOUNDATION SYSTEM

The existing building was constructed on spread footings placed on earth with a 6000 psf soil bearing value. The existing foundation walls were constructed with masonry walls. During the site visit, we did not notice any signs of settlement.

FIRST FLOOR SYSTEM

The existing lower level and first floor of the school is a 5"± concrete slab on grade reinforced with welded wire fabric. Based on our site visit, the overall slab on grade appears to be in a satisfactory condition.

UPPER LEVEL FLOOR SYSTEM

The upper level at the classrooms is constructed with 8" Dox Plank with a 2" concrete topping. The 8" plank spans from the exterior wall to the interior corridor wall. The dox plank is supported by a steel beam at the opening in the corridor wall for the stairs. Based on our site visit, the dox plank floor appears to be in a satisfactory condition.

ROOF SYSTEM

The roof system for the original school is plywood supported by wood roof joists at 24" on center that bear on the interior/exterior masonry load bearing walls. The roof over the cafeteria is wood nailers supported by steel bar joists at 2'-6" on center supported by masonry bearing walls around the cafeteria. For the addition built in 1990, the existing roof was constructed utilizing a 1 ½" metal deck supported by steel bar joists at 6'-0" on center supported by interior/exterior masonry load bearing walls. Lastly, the roof for the 2006 gym addition is 1 ½" metal deck supported by bar joists bearing on masonry bearing walls. Based on our site visit, the roof appears to be in a satisfactory condition.

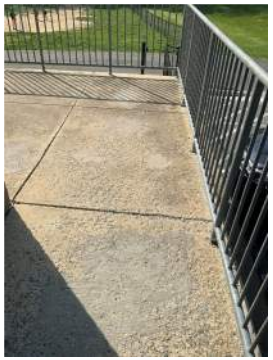
EXTERIOR WALL SYSTEM

The exterior wall is constructed with 4" brick veneer and a 8" masonry back up wall. There is no cavity in the exterior wall for the original 1957 building. For the 1990 and 2006 additions a cavity was provided between the brick veneer and masonry wall. Steel lintels were provided over all the wall openings to support the floor and roof above. Based on our site visit, the exterior wall and steel lintels appear to be in satisfactory condition.

EXISTING STRUCTURAL SYSTEM ASSESSMENT

STRUCTURAL CONSIDERATIONS

A. The existing concrete slab around the existing gymnasium shows signs of wear. The existing concrete slab will need to be repaired or replaced.



B. The existing stair tread that leads to the mechanical mezzanine at the gym will need to be repaired as it has become disconnected from the stair stringer.

C. Any structural modifications to the floor structure will be challenging due to the pre-cast plank floor system. Installing additional structural reinforcement or adding steel beams to the existing floor structure could prove to be time consuming and costly. The modification of the floor system could require temporary shoring depending on how invasive the modifications are.

D. As previously stated, the existing structure is supported by interior and exterior masonry bearing walls. These existing bearing walls reduce the flexibility to renovate the building. As such, it may be necessary as a part of the renovation to remove some of these bearing walls. The removal of these bearing walls will require temporary shoring of the floor/roof structure and the installation of steel beams, columns and footings accordingly. The extent of this modification could be significant depending on the extent of the renovation.

E. Structural modifications to the roof structure will be required if new mechanical units will be placed on the existing roof. Also, units that are longer than fifteen feet will create snow drifting loads on the existing roof that must be considered. Installing additional structural reinforcement to existing steel bar joists and adding steel beams to the existing roof structure could prove to be time consuming and costly. At the location of the wood roof, new steel members may need to be provided to support any new roof mounted mechanical units.

F. There are multiple challenges in renovating an existing building. The structural components of the building for the most part are concealed by architectural finishes. Unknown and unforeseen conditions will occur during the renovations. Once these conditions are resolved by the design team, increased time and costs will be incurred by the contractor which will be passed on to the Owner. Working in an existing building is usually a slow and difficult process. It will be difficult to move and erect steel in the required locations due to the inability of a crane to be utilized. As previously stated, temporary shoring may need to be installed which would restrict the available work space as well. This type of work can prove to be labor intensive, slow and ultimately costly.

G. Renovating an existing building can prove to be costly if the existing lateral system of the building becomes compromised. If the lateral system of the building becomes compromised by more than 10%, it will be necessary to reevaluate the entire lateral system of the building. Removing large portions of the interior and exterior wall system of this building will affect the lateral system of the building. Modification of an existing lateral system of the building or creating a new lateral system for this building will result in substantially increased construction costs.

EXISTING MECHANICAL SYSTEM ASSESSMENT

GENERAL

Burning Tree Elementary School was originally constructed in 1958, with a classroom addition constructed in 1991 and a gymnasium addition constructed in 2007. It appears that the mechanical equipment that currently exists within the school varies in age. The existing heating water infrastructure systems and associated chilled/heating water distribution piping were installed during the 1991 modernization and addition; the gymnasium area HVAC systems and the existing chilled water infrastructure systems were installed around 2007; and the remaining HVAC systems were installed during the 2016 HVAC systemic renovation. The following is a description of the existing mechanical systems.

HEATING WATER INFRASTRUCTURE SYSTEMS

Two steel forced-draft firebox gas-fired boilers produce heating water for the school. Located within the lower level boiler room area, this equipment was installed in 1991 and appeared to be in fair to poor condition. Operational concerns were noted by building services personnel with boiler #1. This equipment has exceeded its useful service life and is recommended for replacement during any future building renovations.

Manufactured by Burnham Boilers (Model 4FW-250-50-G-GP), each boiler has a gross output rating of 1,607 MBH. While the existing boilers are functioning adequately to satisfy the existing school, there does not appear to be surplus capacity to support any planned additions without losing standby capacity in the event that one boiler fails. Combustion air enters the boiler room through a wall-mounted louver positioned above the exterior doors. While provided, this approach does not comply with the current International Mechanical Code (IMC) and CSD-1 requirements for combustion air.

Existing Heating Water Boilers (Shown Above)

Heating water is supplied to the building's two-pipe chilled/heating water piping system through two base-mounted end-suction pumps, located within the lower level boiler room area. Manufactured by Paco, these variable speed pumps are each provided with 15 horsepower motors and arranged in a lead/lag setup, with only one pump operating at any time. The existing pumps were replaced during the 2016 HVAC systemic renovation and appeared to be in good operating condition during our site visit. The two-pipe chilled/heating water distribution system is equipped with an air separator, shot feeder, and an air-charged expansion tank.

Existing Chilled/Heating Water Pumps and VFD (Shown Above)

EXISTING MECHANICAL SYSTEM ASSESSMENT

CHILLED WATER INFRASTRUCTURE SYSTEMS

A single 120-ton air-cooled chiller (Diakin/McQuay Model AGS-120CS) is provided for production of chilled water. This chiller was installed during the 2007 gymnasium addition and appeared to be in fair operating condition. The chiller is located within a fenced enclosure and positioned near the gymnasium addition and adjacent to the existing school's lower level boiler room.

Existing Air-Cooled Chiller (Shown Above)

Chilled water is supplied to the building's two-pipe chilled/heating water piping system through two base-mounted end-suction pumps, described previously within the Heating Water Infrastructure Systems section. Refer to this section for details regarding these pumps.

HVAC SYSTEMS

The heating, ventilating, and air conditioning (HVAC) systems vary slightly throughout the school. A majority of these systems, excluding the gymnasium area, were installed in 2016 and appeared to be in good condition. The following is a breakdown of the various spaces and their associated HVAC system:

Perimeter Classroom Areas: Perimeter classroom areas throughout the school are provided with space conditioning through a series of vertical and horizontal fan coil units, connected to the building's two-pipe chilled/heating water system. Vertical fan coil units are typically integrated within the perimeter millwork, with a discharge grille provided at the top of the millwork. Manufactured by Diakin, this fan coil unit equipment and branch chilled/heating water piping was installed during the 2016 HVAC systemic renovation and appeared to be in good condition. Note that the school's existing chilled/heating water piping mains were not replaced during the noted 2016 HVAC systemic renovation. Replacement of this piping should be considered during any major building renovations.

Conditioned outdoor air for the perimeter classroom areas is provided through a series of rooftop dedicated outdoor air system (DOAS) units. DOAS units are provided with direct expansion (DX) cooling, gas-fired heating, a hot-gas reheat coil for humidity control, and an enthalpy wheel for pre-conditioning the outdoor air. Above-ceiling conditioned outdoor air ductwork and associated air devices provide tempered, dehumidified ventilation air to each classroom. Above-ceiling exhaust air ductwork and associated air devices remove excess airflow from each classroom. Manufactured by Aaon, the DOAS equipment is generally located on structural steel rooftop dunnage, was installed during the 2016 HVAC systemic renovation, and appeared to be in good condition.

Existing Rooftop DOAS and Classroom Fan Coil Unit (Shown Above)

EXISTING MECHANICAL SYSTEM ASSESSMENT

Administration and Health Suite Areas: The administration and health suite areas are provided with space conditioning through an air-cooled variable refrigerant flow (VRF) system. Indoor VRF terminal units are comprised of both ceiling-cassette and vertical console type units. Manufactured by Diakin, this VRF equipment was installed during the 2016 HVAC systemic renovation and appeared to be in good condition. Ventilation for the administration and health suite areas is provided by a single DOAS unit (DOAS-5). This DOAS unit is similar in configuration as the classroom DOAS equipment described previously, was installed during the 2016 HVAC systemic renovation, and appeared to be in good condition.

Gymnasium and Gymnasium Lobby Areas: The gymnasium is provided with heating and ventilation by a gas-fired heating and ventilating (H&V) unit, along with companion outdoor air intakes and exhaust fans for summer operation. Air-conditioning for the gymnasium is currently not provided. Manufactured by Reznor, this H&V unit is located on a mechanical mezzanine that is positioned above the gymnasium storage area. The adjacent gymnasium lobby and gymnasium office areas are provided with space conditioning and ventilation through a packaged rooftop unit, complete with DX cooling and gas-fired heating. All equipment within this area was installed in 2007 and appeared to be in good to fair condition during our site visit.


Existing Gymnasium H&V Unit and Gymnasium Lobby Rooftop Unit (Shown Above)

Interior Classroom Areas: Interior classrooms located adjacent to the media center (including the Communications Center, former Computer Lab, and additional interior classroom areas) are provided with space conditioning through an air-cooled VRF system. Indoor VRF terminal units are comprised of above-ceiling horizontal-ducted type units. Manufactured by Diakin, this equipment was installed during the 2016 HVAC systemic renovation and appeared to be in good condition. Ventilation for the interior classroom areas is provided by a single DOAS unit (DOAS-6). This DOAS unit is similar in configuration as the classroom DOAS equipment described previously, was installed during the 2016 HVAC systemic renovation, and appeared to be in good condition.


Existing Rooftop DOAS and VRF Air-Cooled Condensing Units (Shown Above)

Media Center and Media Support Areas: The media center and adjacent media support areas are provided with space conditioning through a series of vertical fan coil units, manufactured by Diakin and similar to the perimeter classroom areas described previously. Ventilation for the media support areas is accomplished through the interior classroom DOAS unit (DOAS-6) described previously. In addition to the fan coil units, a packaged DX rooftop unit with gas-fired heating is provided for both space conditioning and ventilation within the media center area. The area's fan coil unit, DOAS unit, and packaged rooftop unit equipment were all installed during the 2016 HVAC systemic renovation and appeared to be in good condition.

EXISTING MECHANICAL SYSTEM ASSESSMENT

Multipurpose Room and Stage Areas: Primary space conditioning and ventilation for the multi-purpose room and stage areas is accomplished through a packaged DX rooftop unit with gas-fired heating. Manufactured by Trane, this rooftop unit is positioned above the kitchen area, was installed around 2012, and appeared to be in good to fair condition. Additional space conditioning for the multi-purpose room is provided by two vertical two-pipe fan coil units, manufactured by Diakin and similar to the perimeter classroom areas described previously. Fan coil unit equipment was installed during the 2016 HVAC systemic renovation and appeared to be in good condition.

Kitchen Area: A single above-ceiling horizontal ducted two-pipe fan coil unit provides space conditioning for the kitchen area. A ceiling-mounted exhaust register is positioned near the kitchen's convection oven and is ducted to a dedicated rooftop exhaust fan. While the age of the kitchen exhaust fan is not known, the kitchen fan coil unit was installed during the 2016 HVAC systemic renovation and appeared to be in good condition.

Kitchen Area, Including Overhead Supply Diffusers

Building Exhaust Systems: A series of roof-mounted exhaust fans remove building air throughout the school. A majority of the school's rooftop exhaust fans were removed during the 2016 HVAC systemic renovation, with building exhaust accomplished through the DOAS equipment's associated internal exhaust fans. Most of the exhaust fans that remained after this HVAC systemic renovation serve either the 2007 gymnasium addition or utility type spaces within the existing school (such as the lower level boiler room). These remaining exhaust fans appeared to be in fair condition.

AUTOMATIC TEMPERATURE CONTROL (ATC) SYSTEMS

The school's existing ATC system is primarily comprised of a StruxureWare direct digital control (DDC) system with BACnet protocol. Beyond these StruxureWare components, an existing Andover central plant controller is located within the lower level boiler room area and limited pneumatic control components serve select heating-only equipment (such as unit heaters and convectors) throughout the school. Pneumatic control components are supplied by an existing duplex air compressor with a horizontal storage tank located within the lower level boiler room. Replacement of any existing pneumatic control device with electronically-operated DDC type components is recommended under any planned building renovations.

Existing Central Plant DDC Controller and Boiler Room Air Compressor

EXISTING PLUMBING SYSTEM ASSESSMENT

DOMESTIC COLD WATER AND ASSOCIATED DOMESTIC WATER PIPING

Burning Tree Elementary School is served from the county water system through a 6-inch combination fire and water service, entering the building within an existing outdoor storage room located adjacent to the trash room. A 3-inch domestic water main extends from this service to support the building's domestic water requirements. It is anticipated that limited surplus capacity exists within the existing 3-inch domestic cold water main.

Combination Fire and Water Service and Sprinkler Backflow Preventer

The school's domestic water piping systems (including cold water, hot water, and hot water return piping) vary in age, with this piping installed either during the school's 1958 original construction or during the 1991 modernization and addition. These piping systems and associated piping components (valves, fittings, and piping insulation) are nearing or have exceeded their useful service life and are recommended for replacement during any planned building renovations.

DOMESTIC HOT WATER EQUIPMENT

Domestic hot water is generated by a water heater that is located within the lower level boiler room. Manufactured by State Industries (Model SBD-100-199NES), this heater is provided with a 199 MBH gas burner, capable of 193 gallons per hour recovery, and complete with an integral 100-gallon hot water storage tank. This equipment was installed around 2021 and appeared to be in good condition. A circulation pump maintains continuous hot water flow throughout the building. It is anticipated that minimal surplus capacity exists for the existing hot water heater.

Domestic Water Heater and Domestic Hot Water Circulation Pump

NATURAL GAS SERVICE

The 2-inch incoming natural gas service and associated rotary meter is located outdoors and positioned adjacent to the water service room. This gas service supplies MEP equipment throughout the school, including the existing boilers, water heater, DOAS units, packaged rooftop units, and the emergency generator.

Incoming Natural Gas Service

EXISTING PLUMBING SYSTEM ASSESSMENT

SANITARY WASTE, VENT, AND STORM WATER PIPING

Like the domestic water piping systems, a majority of the existing above- and below-grade sanitary waste, vent, and storm water piping systems were installed either during the school's 1958 original construction or during the 1991 modernization and addition. These piping systems are nearing or have exceeded their useful service life and are recommended for replacement during any planned building renovations.

PLUMBING FIXTURES

Plumbing fixtures appeared to generally be in good condition. The water closets are floor-mounted, urinals are wall-hung, and the lavatories are individual wall-hung type. The school is equipped with plumbing fixtures that do not appear to meet the Americans with Disabilities Act (ADA) requirements. In addition, the presence of lead was identified by MCPS in a 2024 test report at several bubblers and sinks throughout the school. While these bubblers and sinks have been taken out of operation, replacement of plumbing fixtures containing the presence of lead should be considered as part of any planned future building renovations.

Existing Urinal and Lavatory Plumbing Fixtures

EXISTING FIRE PROTECTION SYSTEMS ASSESSMENT

SPRINKLER SYSTEM

The entire Burning Tree Elementary School is currently provided with sprinkler coverage throughout, with a majority of school's existing sprinkler piping and associated sprinkler heads installed during the 1991 modernization and addition. A double-check type backflow preventer is provided within the water service room, separating the fire service from the domestic water service. A fire line extends from this backflow preventer to a series of zone valve assemblies, located within the lower level boiler room area. Sprinkler mains extend from each zone valve assembly and serve sprinkler heads located throughout their respective zone.

FIRE ALARM SYSTEM

The fire detection and alarm system, installed in 2015, is by Silent Knight with a fire alarm control panel (FACP) (model 5820XL-EVS) located in the building services office. A voice evacuation panel (model EVS-RCU) is located adjacent to the fire alarm annunciator panel in the main lobby. A distributed audio amplifier panel (model EVS-125W) and two notification appliance circuit (NAC) panels are located within the same closet as the main file server. Fire alarm devices include manual pull stations, smoke detectors, and audible and visual notification devices.

Existing Fire Detection and Alarm System Panels

EXISTING ELECTRICAL SYSTEM ASSESSMENT

GENERAL

Burning Tree Elementary School was originally constructed in 1958. The electrical equipment within Burning Tree Elementary School varies in age with most of the distribution equipment having been installed in 1991 during the modernization and addition of the school, apart from electrical equipment added in 2007 for the gymnasium addition and equipment added in 2019 for the generator and emergency power distribution system upgrade. Most of the electrical equipment is generally in fair to good condition. However, some of the equipment, specifically the main switchboard, has been discontinued and is no longer supported by the manufacturer.

The following is a detailed description of the existing electrical, communications, and electronic safety and security systems.

POWER DISTRIBUTION

The school's electrical service is fed from a Pepco utility pole located on the north side of the school. A primary utility feeder is routed underground from this utility pole to the primary section of a pad-mounted Pepco utility transformer (Pepco #759421-2752) located adjacent to this utility pole. Secondary service feeders then run underground from the secondary section of the Pepco utility transformer to the 2000-ampere CT cabinet of the main switchboard located in the main electrical room.

Existing Pepco Utility Transformer and Pole

The main electrical room is located on the north side of the building adjacent to the 2007 gym addition and contains the main switchboard, Pepco meter (X8D350573197), lighting Panel L1, 75-kVA transformer, two-section branch circuit Panel P1, two (2) automatic transfer switches for both life safety and non-life safety loads, life safety Panel HVLS, 30-kVA transformer, life safety Panel LVLS, non-life safety panel HVLNS, 45-kVA transformer, non-life safety panel LVLNS, four enclosed disconnect switches, 45-kva transformer DT-3, and a distribution panel serving portable classrooms.

Main switchboard is by General Electric, GE AV-Line, rated at 277/480 volts, 3 phase, 4-wire, 2000-ampere bus, with a fault current rating of 100 kAIC. The switchboard consists of four sections. The first section contains the power company CT cabinet. The second section is an 800A tap section for a 100A spare enclosed disconnect switch and the building grounding connection. The third section houses a 2000A fused switch (GE THPC3620G3T). The fourth section is a 1200A distribution section with six (6) fused switches; consisting of a 200A fused switch serving Panel L1, a 400A fused switch serving Chiller No. 2, a 400A fused switch serving Panel HVNLS via transfer switch, a 60A fused switch serving Panel HVLS via transfer switch, a 60A fused spare switch, and 200A fused switch serving gym panel NH. The fourth section is also a 1200A distribution section with seven (7) fused switches, consisting of a 60A fused switch serving M2B, a 100A fused switch serving M2A, a 60A spare fused switch, a 100A fused switch serving Panel M, a 400A fused switch serving Panel L2, a 400A fused switch serving Panel L3 and Panel P3 (via transformer T-7), and a 400A fused switch serving Panel M3. The GE AV-Line is obsolete and has been discontinued by ABB, which now owns General Electric products. New parts can no longer be obtained for modifications to the main switchboard.

EXISTING ELECTRICAL SYSTEM ASSESSMENT

Existing Switchboard

The electrical equipment (switchboard, panelboards, disconnects, starters) installed in the building prior to 2014 are manufactured by General Electric. Newer electrical equipment (panelboards, disconnects, transformers) installed in the building after 2014 are manufactured by Square D (Schneider Electric). Branch panelboards in the school are primarily located in electrical closets.

Typical classrooms have ivory general receptacles with ivory wall plates, and isolated ground receptacles with orange wall plates.

Typical Existing Classroom Receptacle Layout

GENERATOR POWER

There is a natural-gas outdoor generator in weatherproof enclosure adjacent to the main electrical room, rated at 100 kW, 277/480 volts, 3 phase, 4-wire. This 100-kW generator replaced a 45-kW generator during a 2019 system upgrade.

Existing Kohler Emergency Generator

Electrical feeders run underground from the generator to a 400-ampere automatic transfer switch (ATS) and a 60-ampere ATS in the main electrical room. The main switchboard serves the "normal" line side of both ATS's. The 60-ampere ATS serves Panel HVLS and Panel LVLS (via 30 kVA transformer) in the main electrical room. The 400-ampere ATS serves Panel HVNLS and Panel LVNLS (via 45 kVA transformer) in the main electrical room. Panel HVLS serves VFD mechanical loads. Panel LVLS serves the fire alarm control panels, security panels, and a telephone receptacle. Panel HVNLS serves emergency egress lighting and exit lights in the building. Panel LVNLS serves the generator jacket heater, mechanical loads, and the health room refrigerator. The generator and transfer switches are by Kohler Power Systems, which has recently changed its name to Rehlko.

EXISTING ELECTRICAL SYSTEM ASSESSMENT

Existing Automatic Transfer Switches

LIGHTING

LED lighting is primarily used throughout the school. The main lobby, main office area, media center, classrooms, instructional spaces, corridors, and support spaces with drop ceilings use 2' x 4' recessed flat panel LED luminaires (lighting fixtures).

Existing LED Luminaires)

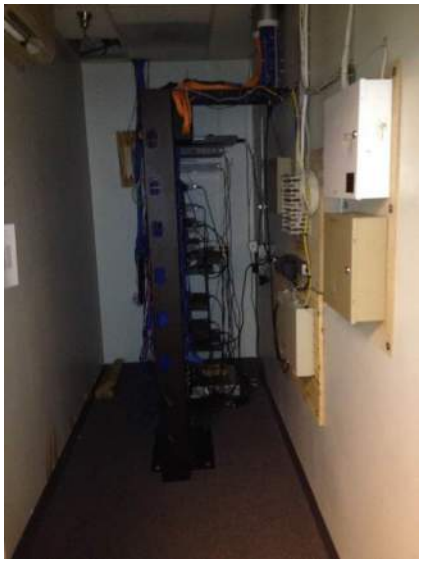
Lighting fixtures with metal halide lamps are located in the gym. Exterior building mounted wall pack security lighting and pole-mounted lights in the parking lot use metal halide lamps.

Existing Gymnasium and Exterior Metal Halide Luminaires

EXISTING TELECOMMUNICATIONS ASSESSMENT

DATA SYSTEMS

A Category 5/5E wiring system is installed throughout the school. This system provides connectivity for the computer lab, media center, offices, classrooms, and instructional spaces. Each typical classroom has both student and teacher outlets. The main file server is located in a closet within the communications center/television studio. The main file server is housed within a Dell file server freestanding cabinet. There are two data racks in the main telecom room located within the television studio control room. Data racks have a rack-mounted data fiber-optic distribution enclosure and data patch panels. Category 5/5E data cables are blue in color.



Existing Main File Server & Data Racks

TELEPHONE (VOICE) SYSTEM

The telephone system head-end is by Comdial. There are 110-connecting blocks on the wall behind the two data racks in the main telecom room. Voice cables are white in color.

INTERCOM AND SOUND ENHANCEMENT SYSTEMS

The school intercom (public address) system is by Rauland, Telecenter. The main intercom console is located in the main office area. The system has the capability to perform select local calls to classrooms or paging throughout the school. Each classroom has a call switch and ceiling-mounted speaker(s). Ceiling speakers are also located in the corridors.

Existing Intercom System

The multipurpose room has a local sound system with a wall mounted sound system cabinet on the side of the platform/stage. The sound system cabinet has an Altec Lansing 1415A power amplifier to drive the two wall-mounted performance speakers in the multipurpose room, with one on each side of the platform/stage.

The gym also has a local sound system with wall-mounted amplifier located in the gym office, microphone outlets on each side of the gym, and two spherical ceiling-hung speakers.

EXISTING TELECOMMUNICATIONS ASSESSMENT

Existing Media Retrieval Rack

There are Promethean smart boards located in the media center, classrooms, and instructional spaces throughout the school.

SECURITY SYSTEM

The security system consists of an intrusion detection system by Napco, a door access control card reader at the main entrance, and video surveillance cameras at the main entrance, along the exterior perimeter of the building, and throughout the corridors. The intrusion detection system includes the control panel in the main telecom room, keypads in the main office and the media center office, and motion detectors in the corridors and rooms with windows.

Existing Security System

EXISTING KITCHEN ASSESSMENT

Burning Tree Elementary School was consolidation of Fernwood and Whittier Elementary Schools and modernized in 1990. The grades are Pre-K through 5th with a current capacity of 500 students with the goal to expand to 576 students. The majority of the equipment seems old and may be from the 1990s. Much of the equipment is outdated, inefficient, non-compliant with current codes and has seen its useful life.

EXISTING CONDITIONS:

Floors:

Kitchen and serving areas are thick-set quarry tile with coved base. Although old most tiles appear in sound condition with the exception of some tiles by the walk-in box doors which have been damaged over the years of use.

Walls:

Combination of painted CMU and tile around the warewashing and cooking area. Condition seems fair.

Ceilings:

8'-0" drop ceiling throughout kitchen and serving area are slightly soiled. Dry storage is painted hard ceiling that is cracking and discolored from repair work.

Lighting:

Light level throughout space is within code standards.

AREAS:

Receiving:

Large overhead roll down door and double door leading into kitchen which is large enough to accept bigger deliveries.


Flooring


Walls


Ceiling


Receiving


Dry Storage

Dry Storage:

Product stored on shelving units surrounding perimeter of room. Ceiling mounted HVAC equipment is leaking onto floor.

Walk-in Cooler/Freezer:

Boxes look very old and worn out. Flooring is rusted and corroded from the years of use. Light fixtures are missing.

Kitchen:

There is currently no ventilation hood in this kitchen. Convection oven seems to be worn out. Not many worktables to prep food. Gas, water and drain lines around cooking area are rusting, unsanitary, and it is difficult to properly keep area clean.

Serving:

Serving area consists of a single straight-lined counter, with provisions for milk, hot food, cold food, open counter space, and a cashier's station. The serving counters look newer than the rest of the equipment in the kitchen. Milk cooler is leaking all over the kitchen floor presenting a slipping hazard. Hand washing sinks are porcelain and do not meet current health code. There are no previsions for back up hot holding cabinets or refrigerators. The ice cream freezer is located far from the serving line and does not seem to be the ideal location.

Building Services:

Space seems very small.

Dishwashing:

Three-compartment sink seems to be original to


Walk-in Cooler/Freezer


Convection Oven


Preparation Area


Handwashing Sink

EXISTING KITCHEN ASSESSMENT

the building, and is covered in rust and corrosion. Seems disposer was removed, and a drain line was retrofitted under the left drainboard. Drain directs waste to an above ground grease interceptor which is undesirable by staff due to unpleasant smells and maintenance.

EQUIPMENT:

Current Cooking Equipment:

One convection oven. Poor condition.

Refrigeration:

There is a walk-in cooler and freezer located side by side to one another. Both units are old and will need to be replaced. Units are both rusty and corroded. They have past their useful lifespan.

Worktables & Pot Sinks:

Stainless tops and bases badly scratched and rusting.


Three-compartment Sink


Janitor Space


Serving Counters

CONCLUSIONS:

The kitchen is old, worn out, and presents an uncomfortable working environment. The majority of the equipment has either seen its useful life or is in violation of current health codes and current county standards. Replace all outdated inefficient equipment with new energy saving appliances according to current MCPS standards. Select bright, colorful, attractive finishes to promote friendly inviting atmosphere. With the anticipated increase of students, a second serving line should be considered, walk-in cooler and walk-in freezer should be replaced.

SUSTAINABLE STRATEGIES

Aligning with Maryland's High Performance Building Mandate

If Approach 3 or 4 are pursued, the project will present a unique opportunity to deliver a high-performing, sustainable learning environment that meets both local community priorities and statewide policy goals. The project will pursue Green Globes® certification, a nationally recognized sustainability assessment and rating system administered by the Green Building Initiative (GBI). By targeting a minimum Two Green Globes certification, the Burning Tree Elementary School project would fully comply with this mandate. This approach has several benefits in the context of this project.

How Green Globes Applies to Burning Tree Elementary School

1. Energy and Water Efficiency

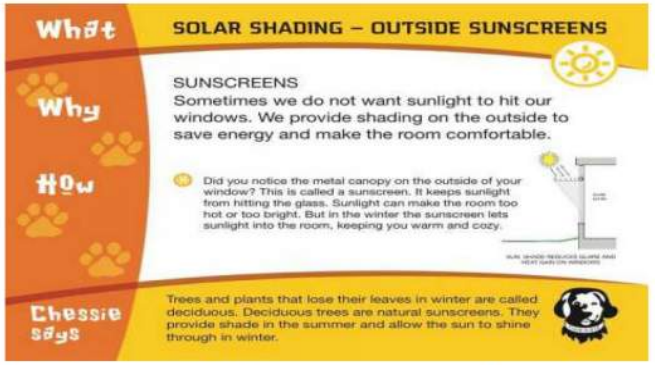
- The project's geothermal HVAC system and planned future solar array directly contribute to energy performance targets.
- Use of low-flow fixtures, native plantings, and advanced stormwater strategies align with water conservation and site sustainability credits.

2. Indoor Environmental Quality

- The design emphasizes daylighting, indoor air quality, and thermal comfort, directly supporting student well-being and academic performance.
- Use of Energy Recovery Ventilators (ERVs) and low-emitting materials supports Green Globes and Maryland's indoor air quality standards.

3. Sustainable Site Development

- Both approach 3 and approach 4 pedestrian-safe access and integrated recreational spaces.
- All approaches share a co-location with Burning Tree Local Park, which provides athletic fields that can be used by the school, maximizing land use efficiency—an area Green Globes rewards.



Signage highlighting sustainable features

Dashboard to track real-time energy savings

Human sundial at outdoor classroom

SUSTAINABLE STRATEGIES

The design team will look to incorporate as many sustainable strategies that are required for a two (2) Green Globe certification and that are fiscally responsible.


Green Roof and Cisterns for Storage Greywater


Human Sundial, Rainbarrel and Solar Panels


660Kw Solar Array


Natural Daylight at the Core of the Building


Natural Daylight at Secured Vestibule

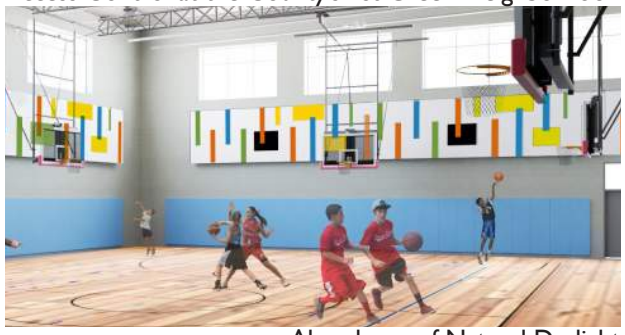

Sunshades, Solar Array, Play Inclusive Play Area


Outdoor Classroom on the roof with Wind Turbine


Access Control at the County's 1st Green Neighborhood


Inclusive Design


Terrazzo - Durable finish that is easy to Maintain


Abundance of Natural Daylight

NET ZERO ENERGY DESIGN

A Net Zero Energy building generates as much energy as it consumes over the course of a year, achieved through a combination of highly efficient building systems and on-site renewable energy sources such as solar photovoltaics and geo-exchange systems. This section outlines the additional design strategies that would need to be incorporated for this school to become a Net Zero Energy School. The design team would be targeting an energy use index (EUI) of 25 to achieve net zero energy certification.

To reach true zero energy—without relying heavily on oversized renewable systems—the building must first excel in the core principles of sustainable design. According to the comparative study "Zero Energy Schools – Beyond Platinum" by architect Paul C. Hutton, which analyzed eleven Net Zero Energy schools, the following fundamental design strategies are essential to achieving this goal:

1. Building Orientation and Massing:

Orienting the long axis of the building within 15 degrees of east-west axis results in energy savings by reducing heating loads on the building in the summer and by facilitating daylight harvesting. Buildings should also seek to utilize multi-story construction in lieu of single floor designs. Combining optimum orientation and massing can easily yield 15 percent energy savings.

2. Building Envelope:

By exceeding the current building code requirements for the thermal design of exterior walls and roofs, a well designed, constructed, and insulated building envelope can yield energy savings of 15 percent over minimal code compliant construction.

3. Daylighting:

Electric lighting can consume as much as 20 percent of the total energy use in a building. Substituting free daylight for costly electric light during the day, can reduce electric lighting energy by half with proper light dimming controls as discussed below.

4. Electric Lighting and Controls:

The first step to reduce energy use related to electric lighting is to minimize lighting power density (LPD) while maintaining comfortable interior lighting. This is accomplished through careful fixture selection and placement, as well as, automated controls such as occupancy sensors and dimming sensors in response to daylighting.

5. HVAC and Controls:

The combination of space heating, ventilation, and air-conditioning consume more energy than any other single component in a school building. It was found that geothermal systems reduce energy use substantially and were utilized in all but two of the eleven net zero energy schools in this study.

6. Occupant Behavior and Plug Loads:

Occupant behavior poses a challenge to school districts attempting to predict energy usage for the designer's energy model. No where is this more evident than in the effort to control potentially excessive and wasteful plug loads. Bringing in an appliance such as a small refrigerator; using incandescent desk lamps; neglecting to turn off computers and monitors each night or storing very little food in a large walk-in kitchen cooler while school is closed for the summer are all examples of staff behavior that can substantially increase energy consumption over the course of a year.

7. Renewable Energy:

Renewable energy sources on a school building or site are necessary in order to achieve Net Zero Energy. Photovoltaic (PV) panels, otherwise known as 'solar panels' and wind power are the two most commonly used technologies for renewable energy. It was found that PV panel systems were utilized in all but one of the eleven net zero energy schools in the study regardless of geographic, climatic, size or programmatic variation among each of the schools.

Note: These strategies are only achievable in Approaches 3 and 4.

NET ZERO ENERGY DESIGN

As the designer of Maryland's first Net Zero Energy school, TCA recommends incorporating the following design strategies:

Geothermal HVAC System:

Utilize a unitary geothermal system with dedicated heat pump closets for each room. This approach allows for decentralized control and energy-efficient operation.

Note: This strategy is only achievable in Approach 4.

Efficient Hot Water Delivery:

Design the domestic hot water system using heat pump water heaters, organized into four small distributed loops throughout the school. These high-efficiency units reduce overall energy consumption, and their strategic placement minimizes the energy typically required for hot water recirculation.

Note: This strategy is only achievable in Approaches 3 and 4.

Low-Energy Lighting:

Implement a lighting plan that minimizes lighting power density through careful selection and placement of LED fixtures. All exterior building and site lighting will utilize LEDs. Interior lighting will feature occupancy sensors and photocell dimming controls, especially in larger spaces that benefit from natural daylighting.

Note: This strategy is only achievable in Approaches 1, 3, and 4.

Daylighting and Envelope Optimization:

Maximize natural daylighting opportunities while balancing window and roof openings to maintain a high-performance thermal envelope. Exterior walls will be insulated to a minimum of R-25, with high-performance double-glazed windows and thermally broken doors and frames. Sunshades will be installed on all east-, south-, and west-facing windows. Roof insulation will be a minimum of R-30.

Note: This strategy is only achievable in Approaches 2, 3, and 4.

Roof Prepared for PV Integration:

The roof structure will be evaluated and reinforced as necessary to accommodate the future installation of photovoltaic (PV) panels.

Note: This strategy is only achievable in Approach 4.

High-Efficiency Kitchen Design:

Specify the most energy-efficient food service equipment available, including:

- Walk-in refrigeration units with demand defrost and dual-door access (only one opening to the kitchen),
- Refrigeration systems using R-290 refrigerant,
- ENERGY STAR appliances,
- Type II low-energy exhaust hoods, and
- Boiler-less steamers.

Note: This strategy is only achievable in Approach 4.

These strategies collectively reduce the building's Energy Use Index (EUI), lowering operational costs from day one. Additionally, they position the school for a cost-effective transition to Net Zero Energy by minimizing the number of PV panels required—should Montgomery County Public Schools choose to pursue this goal in the future.

CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN (CPTED)

Designing for Community, Pride, and Safety at Burning Tree Elementary School

Designers of educational facilities hold a unique opportunity to create lasting landmarks that inspire pride and strengthen neighborhood identity. A school is more than a building—it is a dynamic environment where each new generation of students brings fresh energy, stories, and experiences. Through thoughtful design and curriculum integration, schools have the power to educate, support, and inspire not only students, but also their families and the broader community.

Community pride is a powerful driver of school safety. When a space is valued and respected, it is more likely to be well-maintained. This collective sense of ownership leads to increased natural surveillance, as more individuals take an active interest in the facility's well-being. The result is a safer, more welcoming school environment.

CPTED Strategies for the Burning Tree Elementary School

To support safety and foster community care, the following Crime Prevention Through Environmental Design (CPTED) principles have been integrated into the design of the renovation/addition or new Burning Tree Elementary School:

Natural Surveillance

- Assistant Principal's office located adjacent to the main stair for visibility and oversight.
- Clear sightlines along wide corridors with no hidden alcoves.
- Strategically placed benches encourage student interaction and casual supervision.
- Glazing behind benches at corridor ends offers framed views of the exterior, bringing in calming natural light and colors.

Simplified Circulation

- A straightforward layout supports intuitive wayfinding and easier monitoring by staff.
- Color-coded zones distinguish grade-level areas and aid navigation within the multi-story building.

Celebrated Entry

- A prominent entrance canopy clearly marks the school's main point of entry, welcoming visitors and guiding foot traffic. This would be included in approach 4 only.

Wayfinding & Inspiration

- Large, inspirational murals located at major intersections help orient students and reflect the school's values and identity.

Spacious Corridors and Stairs

- Exceeding code-required widths, hallways and stairwells accommodate high-traffic transitions comfortably and safely.

Security Design Considerations

One of the most complex challenges in school design is the use of glass. While glazing is essential for natural surveillance, daylighting, and fostering transparency, it must be carefully balanced to avoid compromising safety during lockdowns and to maintain energy efficiency.

- It's important to design glazing with multiple considerations in mind:
- Maximize visibility and connection among students and staff.
- Support supervision without creating hidden or isolated spaces.
- Reduce energy costs through strategic placement and shading.

A critical insight from current safety data is that incidents of sexual assault within school settings are statistically more common than active shooter events. This reality underscores the importance of designing spaces where students are visible and activity is observable—creating a secure and accountable environment without diminishing openness or accessibility.

FLOW TEST RESULTS

WSSCWATER
DELIVERING THE ESSENTIAL

CUSTOMER INFORMATION

FLOW TEST PREPARED FOR:	Clark | Azar & Associates, Inc.
CONTACT PERSON	Moses Smiroldo
ADDRESS:	20440 Century Blvd,S/220,Germantown,MD 20874
TELE. #	301-528-2010
FAX #	n/a
EMAIL:	msmiroldo@clarkazar.com

FIRE FLOW TEST INFORMATION

TEST LOCATION	TEST DATE	TIME OF TEST	200-FT Sht	MAP PAGE	GRID #
7900 Beech Tree Rd	7/24/23	10:34AM	210NW07	M5406	H02

FLOW TEST RESULTS

TEST HYDRANT (S&R) No.	F017	
FLOW HYDRANT (FLOW) No.	F037	
ELEVATION @S&R HYDRANT (FT)	249	
ELEVATION @FLOW HYDRANT (FT)	236	
HHG:	415	
LHG:	395	
STATIC PRESSURE (PSI):	64	
RESIDUAL PRESSURE (PSI):	42	
PITOT FLOW (GPM)	1921	
MAIN LINE SIZE (IN)	8	
RATED CAPACITY AT 20 PSI IN GPM	2793	

*** Test Results Adjusted to LHG Condition**

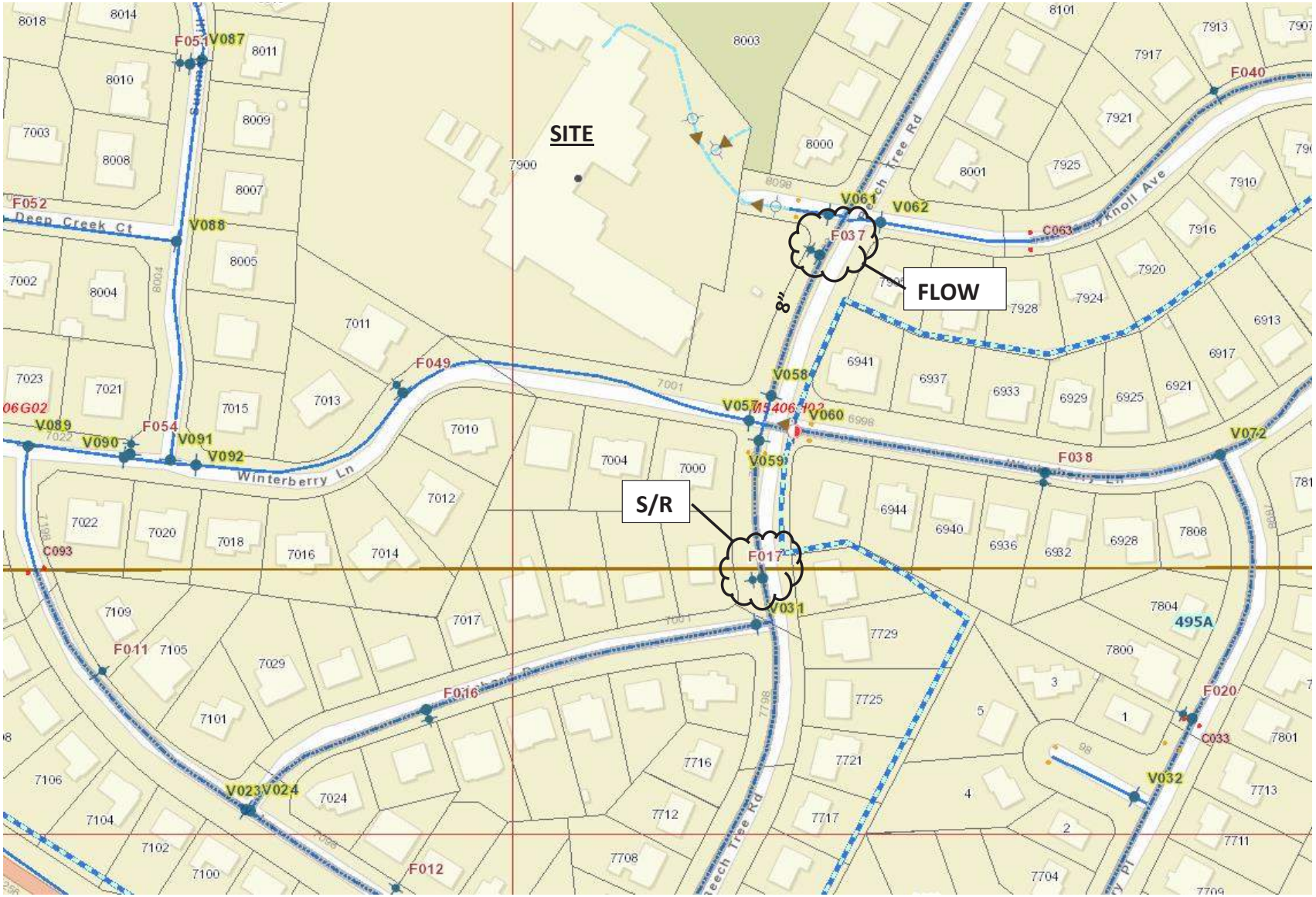
*Adjusted Residual Pressure W/**PITOT FLOW**	41	(PSI)
*Adjusted Residual Pressure W/**1000 GPM**	57	(PSI)
*Adjusted Residual Pressure W/**1500 GPM**	49	(PSI)

TEST CONDUCTED BY:	O. Taylor,M. Duckworth
REVIEWD BY:	M. Duckworth

WSSC Confidential 7900 Beech Tree Rd 7-24-2023.xlsm 7/25/2023

FLOW TEST RESULTS

7900 Beech Tree Rd, Bethesda 20817 – 400A Pressure Zone



IAC FEASIBILITY STUDY - COST ESTIMATE GUIDE

EDUCATIONAL SPECIFICATIONS

Burning Tree Elementary School

Educational Specifications

Feasibility Study

March 8, 2025

Montgomery County Public Schools
Rockville, Maryland 20850

MONTGOMERY COUNTY PUBLIC SCHOOLS
Expanding Opportunity and Unleashing Potential

Burning Tree Elementary School

Educational Specifications
Feasibility Study

March 8, 2025

Montgomery County Public Schools
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MONTGOMERY COUNTY PUBLIC SCHOOLS
Expanding Opportunity and Unleashing Potential

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Space Summary

Burning Tree Elementary School
Square Foot Summary

Updated March 8 2025

When this project is complete, the following spaces are to be provided:
The capacity will be 612 with a core of 640.

Facility	#	Description	Net Sq. Ft.	Total Net Sq. Ft.
Classrooms				**33,500**
Prekindergarten	**2**	Includes 250 s.f. storage	1200	**2400**
Kindergarten	**5**	Includes 250 s.f. storage	1200	**6000**
Standard	**19**	Includes 150 s.f. storage	850	**16150**
Special Education Learning Center	**6**	Includes 150 s.f. storage	850	**5100**
Art	**1**	Includes 250 s.f. storage	1200	**1200**
Music	**1**	Includes 250 s.f. storage	1200	**1200**
Instrumental Music Room	1		450	**450**
Dual purpose Room	**1**		1000	**1000**
Support Rooms				**3,335**
Large Instructional Support Room	1		550	**550**
Small Instructional Support Room	2		425	**850**
Speech/Language Room	1		250	**250**
Therapy/Support Room	1		250	**250**
Special Education Support	2		250	**500**
Personal Care Room	1		100	**100**
Conference Room	1		275	**275**
Testing Room	1		140	**140**
Support Staff Offices	3		140	**420**
Library Media Center				**2,875**
Learning Environment	1		2100	**2100**
Work and Production Area	1		475	**475**
LMC Storage Room	1		300	**300**

Physical Education				**4,430**
Gymnasium	1		3700	**3700**
Office	1		140	**140**
Storage	1		250	**250**
Storage	2		100	**200**
Outside Storage	1		140	**140**
Multipurpose Room				**4,135**
Multipurpose Room	1		3200	**3200**
Chair Storage	1		180	**180**
Table Storage	1		180	**180**
Platform	1		450	**450**
Before/After Care Prep Area	1		25	**25**
Before/After Care Storage	1		100	**100**
Kitchen				**1,372**
Serving Area	1		300	**300**
Walk-in Cooler/Freezer	1		155	**155**
Dry Storage	1		192	**192**
Office	1		100	**100**
Toilet Room	1		70	**70**
Preparation Area	1		555	**555**
Administration				**1,765**
General Office	1		500	**500**
Workroom	1		300	**300**
Principal's Office	1	Includes toilet room	250	**250**
Assistant Principal's Office	1		140	**140**
Conference Room	1		275	**275**
Storage	1		100	**100**
Record Room	1		75	**75**
Toilet Room	1		50	**50**
Remote Workroom	1		75	**75**
Counseling Suite				**320**
Counselor's Office	1		160	**160**
Itinerant Staff Office	1		160	**160**
Staff Development Area				**600**
Staff Development Office	1		100	**100**
Reading Specialist Office	1		100	**100**

Training/Conference Room	1		400	**400**
Health Services Suite				**710**
Waiting Area	1		100	**100**
Treatment/Medication Area	1		120	**120**
Office/Health Assessment Room	1		100	**100**
Health Assessment/Isolation Room	1		100	**100**
Rest Area	1		200	**200**
Toilet Room	1		50	**50**
Storage Room	1		40	**40**
Staff Areas				**750**
Staff Lounge	1		650	**650**
Privacy Room	2		50	**100**
Building Service Facilities				**1,885**
Building Services Office	1		140	**140**
Locker/Shower Area	1		150	**150**
Compactor/Trash Room	1		150	**150**
General Storage and Receiving	1		550	**550**
General Storage	3		240	**720**
Building Services Outdoor Storage	1		175	**175**
Building Support Spaces				**800**
Book Storage	1		200	**200**
PTA Storage	1		100	**100**
Emergency Command Center	1	If greater than 100K GSF	200	**200**
Telecommunication Closet	1		150	**150**
Telecommunication Closet	3		50	**150**
Total				**56,477**

Introduction

☐ This document describes the facilities that are needed for the Burning Tree ES educational program. The descriptions below will provide the architect with important guidelines and staff will be used by staff representatives to review drawings for the facility.

☐ This school will be designed with a capacity for 612 students and a core capacity for 640 students.

☐ 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 additional program requirements for the school.

☐ 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. fire sprinkler, 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 schematic design, design development, and final design phase.

☐ The design of the school should promote a collaborative approach for both teaching and learning. Flexibility of design should be provided to accommodate changing educational programs and pedagogy.

☐ The project will be designed to the meet current local and state sustainability guidelines.

General Planning Considerations

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

Code and Guidelines

☐ The architect is expected to become thoroughly familiar 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 Standards for Accessible Design*. (The regulation can be found at https://www.ada.gov/2010ADAstandards_index.htm)

☐ In addition to the ADASAG, the *Maryland Accessibility Code* (COMAR.05.02.02) also is required for public schools. (The regulation can be found at http://mdcodes2.umbc.edu/dhcd/access.htm).
Per COMAR 23.03.02: Regulation .29, all high school projects that include replacing or upgrading the electrical system should be designed and constructed sot that a designated public shelter area can be fully powered in the event of an emergency.

☐ The architect should refer to the MCPS Facility Guideline Specifications when noted. The Document can be found at:
http://www.montgomeryschoolsmd.org/departments/construction/publications/guidelines.shtm

☐ Special consideration should be given to energy conservation including total life-cycle costs. The current Department of General Service (DGS) requirements shall be applied as design criteria. Life-cycle cost accounting in accordance with DGS criteria is required. A statement on energy conservation must be a part of the preliminary plans submission. Additional details on energy conservation will be provided under separate cover.

☐ The architect should refer to MSDE 2006 *Classroom Acoustic Guidelines* to address the acoustical qualities for classrooms. Core learning spaces should include sound-absorptive finishes for compliance with reverberation time requirements as specified in ANSI, *Acoustical Performance Criteria, Design Requirements, and Guidelines for Schools* (ANSI S12.60-2002.)

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

Educational Considerations

☐ The school should be designed to support flexible and collaborative learning environments. When possible, the architect should identify collaborative work spaces throughout the building. These spaces can be located near the instructional spaces as well as informal areas such as the library, hallways, etc.

- ☐ All spaces should be designed in such a way that can be adapted to changes in pedagogical changes in the future.
- ☐ 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.
- ☐ For maximum instructional flexibility, large special instruction areas such as those provided for general music and multipurpose laboratories should be designed to allow easy conversion of some or all of the space for other kinds of instruction in the future
- ☐ Every teaching station, support space, and core area must be wired for computer and VOIP telephone, along with adequate electrical supply in compliance with Maryland Sate design guidelines for Technology in Schools and the MCPS Office of Technology and Innovation (OTI) 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.

Facility Considerations

- ☐ The architect is to design the spaces within 5 percent (plus/minus) of the net square foot guidelines provided in this document unless otherwise noted.
- ☐ The first impression of a building is important. The main entrance to the school should have a clear and inviting identity, and the architect should emphasize the entrance area through its design and landscape.
- ☐ 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 should be used.
- ☐ The design of the main lobby area needs to convey a feeling of warmth and welcome. The inclusion of a lighted showcase in which student work can be displayed is recommended.
- ☐ The main lobby should have a large overhead-animated electronic display board for messages and videos.
- ☐ Lighting must meet current guidelines and provide adequate levels.
- ☐ Carpeting 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 library media center (LMC).

- ☐ The inclusion of lighted showcases to display student work should be provided in the corridors of the main entrance, art, technology education, gymnasium, and in each grade level area. They should be recessed into the wall with access from within a room and have an electric outlet.
- ☐ Staff work areas should be arranged to encourage interdisciplinary interaction.
- ☐ 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.
- ☐ A MCPS-designed alarm system will provide security for this facility. The architect will provide for this system in consultation with the Division of Design and Construction (DDC) staff.
- ☐ 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.
- ☐ All windows should be equipped with window coverings. The specification for the window coverings will be provided by DDC. Screens on operable windows should be installed in all food related areas.
- ☐ Careful placement of glass is required to avoid excess heat gain in occupied areas.
- ☐ The entire school is to be air-conditioned.
- ☐ 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.
- ☐ Core spaces such as the cafeteria, gymnasiums, and LMC should be easily accessible for community use and secure from the rest of the building after school hours.
- ☐ Special attention should be given to security measures within the building including location of security barriers in corridors, lockable doors to secure various sections of the building for after-hour use.
- ☐ 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 LMC, multipurpose room, gymnasium, specialized centers, and support rooms.
- ☐ For security purposes, all doors into classrooms, conference rooms, offices, etc. must be designed with a sidelight window with shades. If a sidelight is not possible, then the door requires a vision panel.

- ☐ 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.
- ☐ Some toilet rooms should be located so that they may be used during after-hour use.
- ☐ Bathrooms for staff and students should be located throughout the building. Some student bathrooms must be located near the cafeteria and gymnasiums.
- ☐ To the extent feasible, at least one inclusive restroom should be provided on each floor and in high-traffic areas for student use. These toilets should be designed with a non-locking door and one individual stall in each toilet room.
- ☐ Electric water bottle filling stations with filters should be strategically located throughout the building and close to the restrooms. All of the water coolers should have water bottle filling stations and should be located near high volume areas such as the cafeteria and gymnasium and on each floor.
- ☐ Corridors where lockers are installed must be a minimum of 10' in width.
- ☐ The number of lockers in the corridor should be equal to the core capacity plus 10% of the core capacity.
- ☐ The location of the elevator(s) must consider use by the student population, LMC staff, and after-hours users.
- ☐ A public address system is required in the facility. The architect and engineers should refer to the MCPS Facility Guideline Specifications for additional information.
- ☐ A building services call system is required.
- ☐ A room numbering system which is logical and understandable and which lends itself to electronic scheduling of room assignments for students is required.

Site Considerations

- ☐ A covered walkway from the bus loading area to the front door is desirable.
- ☐ 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 encourage by eliminating visual barriers.
- ☐ Exterior lighting is to be shaded from neighboring properties and is to be operable as appropriate from both time and key switches. For major entrances, a doorbell should be installed.
- ☐ Separate controls on a time clock for illumination of walkways and parking lots, including parking areas for the stadium area are required.

☐ Landscaping and provision for outdoor watering are to be included. Planting is to include screen planting and those that may be needed for erosion control. Other landscaping to support energy conservation and to relate the building to the site with aesthetic appeal must be included.

Technology Framework

The latest technology should be integrated into every aspect of building. The architect should consult with the OTI and the DDC for the latest technology requirements. The architect must at a minimum plan for the following elements.

- ☐ With wireless access, local area and wide area computer and video networks, students should have access to each other, to schools throughout the county with similar capabilities, and to universities and government institutions throughout the world.
- ☐ Each classroom is to have one dedicated 20 amp electrical circuit for a charging mobile laptop cart.
- ☐ Each classroom will have an interactive teaching board at the teaching wall and computer network outlet (CNO) for the teacher's computer.
- ☐ Additional outlets to allow for charging of personal student devices should be provided in the classrooms and throughout the building.
- ☐ CNOs consisting of a flush mounted standard electrical box with 1 1/2" conduit to the ceiling space overhead should be located in all classrooms, offices, and other work locations according to the following general rules:
  - ☐ one CNO per office, staff office, planning room, etc. adjacent to telephone outlet
  - ☐ One CNO for VOIP system in the classroom
  - ☐ Two CNOs for student use located 3' apart along the back or side wall in each classroom.
  - ☐ Multiple CNOs in media center at circulation desk, reference areas, etc.
  - ☐ One CNO at each science lab workstation
  - ☐ All other areas such as the stage, bookstore, dining room, etc., where computers might be used.
- ☐ The number and location of telecommunication closets required to support the building-wide computer network is dependent on the size and geometry of the building. The layout of the telecommunication closets will be determined during the design phase of the project.
- ☐ Outdoor wireless access points need to be provided at the schools.
- ☐ Wireless access point needs to be provided at the main entrance of the school for a message board.
- ☐ CNOs for security cameras are required at the schools. The number and location will be determined during the design process.

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.

Prekindergarten/Kindergarten Classroom

- ☐ If the school has a Head Start program, the classroom should be designed as a prekindergarten/kindergarten classroom.
- ☐ Each room should allow flexibility in creation of activity areas and to provide for individualized instruction through arrangement of the "centers" approach.
- ☐ An area should be designated for placement of a 12’ by 15’ area rug over the finished floor (NIC).
- ☐ A 100 square foot walk-in storage closet and 150 square feet of general storage (casework throughout the classroom) is needed.
- ☐ When possible there should be interconnecting interior doors between all kindergarten and pre-kindergarten rooms.
- ☐ All prekindergarten rooms should have an outside door or be directly accessible to the outside and convenient to the main entrance of the school building.
- ☐ The prekindergarten classrooms must have direct access to the prekindergarten play areas. See the Site Requirements section for a description of play areas. The computers should not be located next to a marker board where magnets might damage the hardware and software. Glare from the windows on the computer screens should be eliminated as much as possible. Security for the computers should be planned in consultation with the DDC. Computer/technology wiring must be in accordance with MSDE/MCPS guidelines.
- ☐ Every classroom must have computer outlets for two student workstations and one teacher workstation. The building information and communications distribution system and other aspects of the building design must comply with the latest revision of the MSDE *Maryland Public School Standards for Telecommunications Distribution Systems*.
- ☐ The main teaching wall layout should be in accordance to MCPS Facilities Guide.
- ☐ A sink must be provided,
- ☐ In a non-class-size reduction school, the built-in student wardrobe area must provide at least 28 individual compartments to store students’ belongings. The architect is to refer to the MCPS Facility Guideline Specifications for a typical cubby design. Lockers in the classroom may be considered for the kindergarten classrooms.

- ☐ In a class-size reduction school, the built-in student wardrobe area must provide least 24 individual compartments to store students' belongings. The architect is to refer to the MCPS Facility Guideline Specifications for a typical cubby design. Lockers in the classroom may be considered for the kindergarten classrooms.
- ☐ A total of 20 feet of tackboard and 10 feet of magnetic marker board should be installed at eye-level height for small children, with tack stripping along walls for display of student work.
- ☐ A small lockable teacher's wardrobe must be provided, as per MCPS Facility Guideline Specifications.
- ☐ Each room must have a toilet room that is accessible from within the room and easily accessible from outside. The toilet room will contain a standard height toilet, a child height sink with mirror, and soap and towel dispensers that are accessible to small children. The light switch should automatically turn on the vent fan.
- ☐ Each classroom should be equipped with window coverings per the MCPS design guidelines.
- ☐ Battery operated clocks will be installed.
- ☐ All classrooms should be equipped with a handicapped accessible sink, with cabinets above and below.
- ☐ A full-length mirror should be installed in the prekindergarten rooms only.

Standard Classroom

- ☐ Each classroom should be designed to support flexible furniture arrangements that will support a variety of teaching and learning models.
- ☐ 150 square feet of casework storage is needed in the classroom.
- ☐ When possible there should be interconnecting interior doors between all classrooms.
- ☐ The computers should not be located next to a marker board 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 DDC. Computer/technology wiring must be in accordance with DDC/MSDE/OTI guidelines.
- ☐ Every classroom must have computer outlets for two student workstations and one 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*.
- ☐ The architect should refer to the MCPS Facility Guideline Specifications for the main teaching wall layout.
- ☐ The remaining walls should be outfitted with magnetic maker board and a tack strip above.
- ☐ A small 4x4 tack board may be considered near the entrance of each classroom and will be discussed during the quarter scale review.
- ☐ Lockers will be provided in the hallway for storing student belongings. 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 an accessible sink.
- ☐ 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 MCPS Facility Guideline Specifications.
- ☐ Designated shelf space, not near a window, for an aquarium/terrarium with nearby electrical outlet, is desirable.
- ☐ Each classroom should be equipped with window coverings or shades. The specifications for the window coverings will be provided by DDC.

- ☐ Battery operated clocks will be installed.
- ☐ A school may consider reducing the size of each classroom to create small break-out/collaborative rooms in the school. The number and design of these breakout/collaborative rooms may be determined by school and MCPS staff.

Special Education Classroom: Learning Center Program

- ☐ Provide standard academic classrooms dispersed so that they are located with grade level peers.
- ☐ Class size in this program tends to be smaller, with a 10:1 ratio.
- ☐ The Kindergarten LC classroom, which is included in the count of Kindergarten classrooms, must include a bathroom.
- ☐ The support rooms for the program that should be located as a suite or adjacent to one another include the Coordinator's Office, a Conference room, a file room, and a reception area.

Art Room

The art room is to provide space for teaching and creating art, displaying student work and educational aids, and storing supplies and materials. The room should be designed as follows:

- ☐ The minimum square footage for the teaching area must be 800 square feet. The ideal room dimensions are approximately 25’ x 32’.
- ☐ The art room must not be carpeted.
- ☐ Both art and music rooms must be located near student restrooms.
- ☐ Two computer drops along wall for student use should be provided.
- ☐ The design of all work, display, and storage areas should create an environment that is functional and easy to clean.
- ☐ Lighting should be both natural and artificial and conducive to close work.
- ☐ A door to the outside is desirable.
- ☐ Space and electrical outlets for two kilns should be in the farthest corner of the storeroom with proper ventilation.
- ☐ Eight duplex electrical outlets are to be provided (where feasible quadruplex outlets may be utilized).
- ☐ Any available wall space should have tack boards.

The window wall should have the following:

- ☐ Windows that permit views of the surrounding landscape.
- ☐ Window coverings to permit room darkening.
- ☐ Shelves under windows 15” deep.
- ☐ Tack board or tack strips above windows if space permits.

The teaching wall should have the following:

- ☐ Standard teaching wall should be provided. The architect should refer to DDC standards.
- ☐ Fourteen-inch deep, 24 inch high, shelving under the center of the 16-foot long tack board and white board.

Sinks and sink area:

☐ Three sinks should be provided. Faucets should be accessible to students and positioned to prevent splashes onto floor.

- ☐ One ADA accessible sink (34" high)
- ☐ One sink located on a peninsula (30" high). Peninsula is to be no longer than 3 feet.
- ☐ One 12” deep sink (32").

☐ Removable plaster traps

☐ Closed cabinets below and above

☐ Conveniently located towel and soap dispensers

☐ At least 9 feet of counter space (includes 1 ½ feet of counter space on both sides of the sinks) with rounded corners

☐ Hot and cold water faucets

☐ A tile backsplash that spans from the countertop to the bottom of the wall cabinets.

☐ Extra caulking where the countertop meets the backsplash.

☐ A 5- to 7-foot open space is needed for drying rack(s) along one wall.

The wall opposite or adjacent to the teaching station should have the following:

☐ One 6-foot tall, 12-foot long tack board with 24-inch tall, 14-inch deep shelving units below.

Art Storeroom

☐ The storeroom must be approximately 8.5-9’ wide by approximately 25-30’.

☐ The storeroom must have a 6-foot wide, 30-inch tall, and 34-inch deep worktable immediately inside the entrance to the storeroom with 5-6 built-in sliding drawers. This table will accommodate a 30-inch square paper cutter and storage of large art reproductions and papers below.

☐ Three or four 6-foot tall, 36-inch wide paper storage shelf sections, 24” deep with shelves 8 inches on center to accommodate 18” x 24” paper.

☐ An empty floor space should be left to accommodate flat files. 5-drawer flat file units are 40 ¾”W x 15 3/8”H x 28 3/8”D x 2” drawer depth. Three of these 5-drawer units will be stacked on top of each other. (NIC)

☐ Empty floor space should be left to accommodate one rolling care and filing cabinet.

- ☐ All extra space should be filled storage shelving and cabinets. There should be no empty walls in the storage closet.
- ☐ Seven foot tall open shelving, 18 inches deep, should be provided along remaining walls where space permits. Twelve to fourteen inch deep sections are acceptable for some sections where 18-inch deep shelves won't fit.
- ☐ Teacher wardrobe should be provided in the storeroom.

Kiln Area

- ☐ The kiln area should be located at the far end of the storeroom and should accommodate two kilns.
- ☐ Two or three 7-foot tall, 18-inch deep, 36-inch wide shelf sections near kiln area for storage of ceramic work.
- ☐ Two kiln exhaust hoods and fans (local switch) must be installed with a 24 hour timer. Positive ventilation (using negative pressure) is needed to assure removal of fumes.
- ☐ Kilns should be 30 inches wide, 30 inches deep and 36 inches tall. Allow an additional 6 inches in depth for opening of the kiln lid.
- ☐ Electrical characteristics for the kiln are 250 volt, 50 amps, single phase, and 7200 watts. Provide 2-250V, 50 amp 3-prong plug outlets. NEMA configuration 6-50R. Provide two outlets on wall behind the kilns.

Hallway Outside

- ☐ The hallway outside of the art room should have two tack boards for displaying artwork. Tack strips also should be provided on other walls.
- ☐ There should be a lockable showcase with lights located near the art room or at the main entrance of the school.

Music Suite

Spatial Needs
Music Room
Instrumental Music Room
Music Storage Room

☐ The music room and instrumental music room should be located adjacent to each other with a shared storage room.

☐ These rooms should be located near the multipurpose room to allow easy access to the performance platform.

☐ The two music rooms must be acoustically treated for isolation and reverberation with a combination of absorptive and reflective acoustic wall panels, by Wenger or equal, to be included the base bid design.

Music Room

☐ The teaching area for the music room must be 34’ x 31’ and have a circle 20 feet in diameter, with chairs arranged around three sides of a surrounding box of the circle.

☐ 100 linear feet of general storage (casework throughout the classroom) is needed in the classroom. Adjustable, open shelving must allow for storage of books, CDs, and small instrument as follows:

- ☐ 12” deep shelving for 140 books (140 linear inches)
- ☐ 12” deep shelving for 13-15 baskets 12”x9” for small musical instruments
- ☐ 12” deep shelving for four medium sized drums (12”x12”x12”)
- ☐ Two 18” deep shelves, 3’ long for bass xylophones
- ☐ 12” deep shelving, 42” long for 4 alto xylophones, 2 shelves high
- ☐ 12” deep shelving, 42” long for 4-6 soprano xylophones, 3 shelves high
- ☐ 12” deep shelving for 4 alto and 4 soprano glockenspiels
- ☐ Some additional shelving for books, CDs, instruments, and teaching materials.

☐ The music room needs a child height sink.

☐ Window coverings will be provided for room darkening. If there is a roof monitor then window coverings are required.

- ☐ The architect should refer to the MCPS Facility Guideline Specifications for the main teaching wall layout. The teaching wall also should have a single music staff on both marker boards located on the upper third of the magnetic board.
- ☐ An additional 8'magnetic marker board should be provided in the classroom with a single music staff.
- ☐ Two 4' tack boards should be provided in the classroom.
- ☐ A minimum of eight duplex electrical outlets should be provided in the classroom. No fewer than four outlets should be located on the teaching wall, space out along the teaching wall.
- ☐ 36" wide doors into the music room and platform to accommodate the passage of a piano.
- ☐ Two speaker outlets and 12" deep shelves, installed 6' 8" high, should be located in the front of the classroom for speakers.
- ☐ Additional outlets should be provided throughout the room for use of instruments and sound system.
- ☐ The architect should show the location for an electronic keyboard at the main teaching wall.
- ☐ A location for a teacher's desk is required.
- ☐ A teacher's wardrobe is required.

Instrumental Music Room

- ☐ A deep sink and countertop area should be provided for cleaning and repairing musical instruments.
- ☐ 36" doors into the instrumental music room must be wide enough to accommodate the passage of piano and large instruments.

Music Storage Room

- ☐ A 250-square foot secure room to store instruments, equipment, choral and instrumental music, music stands, and instructional charts is necessary with access from the music room.
- ☐ Ideally, this room should be located between the general and instrumental music rooms with access from both rooms.
- ☐ 48"W x 24"D x 84"H wood cabinets with adjustable shelves and lockable doors should be provided in the instrumental storage room for the sound system. Some open adjustable shelving also should be provided. Specific storage and shelving specifications are available through Montgomery County Public School's MCPS Facility Guideline 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 designed at 34” 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.

Support Rooms

Spatial Needs
Large Instructional Support Room
Small Instructional Support Room
Speech/Language Room
Occupational Therapy/Physical Therapy (OT/PT) Room
Testing Room
Support Staff Offices
Parent Resource Room (For Title 1 Schools)

Large Instructional Support Room

- ☐ Room for a teacher's desk, lockable file cabinet, and assorted sized furniture is desired.
- ☐ This room should have computer outlets for two or three student workstations and one 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*.
- ☐ The architect should refer to the MCPS Facility Guideline Specifications for the main teaching wall layout.
- ☐ The remaining walls should be outfitted with magnetic maker board and a tack strip above.
- ☐ A small 4x4 tack board may be considered near the entrance of each classroom and will be discussed during the quarter scale review.
- ☐ Each classroom must include a minimum of 50 linear feet of built-in adjustable shelving for books.
- ☐ Space for a big book rack should with an incline to display the book open and also for storage beneath for space to lay the books flat should be provided.
- ☐ A small lockable teacher's wardrobe must be provided, as per MCPS Facility Guideline Specifications.
- ☐ 40 mailboxes should be designed for storage of student work such as folders or notebooks.
- ☐ This classroom should be equipped with a handicapped accessible sink. Cabinets should be provided above and below the counter area.
- ☐ Each classroom should be equipped with window coverings. DDC will provide the specifications for the window coverings.
- ☐ Battery operated clocks will be installed. The clock should not be mounted behind the projection screen.

Small Instructional Support Room

- ☐ Room for a teacher's desk, lockable file cabinet, and assorted sized furniture is desired.
- ☐ This room should have computer outlets for two or three student workstations and one 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*.
- ☐ The architect should refer to the MCPS Facility Guideline Specifications for the main teaching wall layout.
- ☐ The remaining walls should be outfitted with magnetic maker board and a tack strip above.
- ☐ A small 4x4 tack board may be considered near the entrance of each classroom and will be discussed during the quarter scale review.
- ☐ Each classroom must include built-in adjustable shelving under the windows.
- ☐ A small lockable teacher's wardrobe must be provided, as per MCPS Facility Guideline Specifications.
- ☐ This classroom should be equipped with a handicapped accessible sink. Cabinets should be provided above and below the counter area.
- ☐ Each classroom should be equipped with window coverings. DDC will provide the specifications for the window coverings.
- ☐ 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.

Speech/Language Room

- ☐ This room requires a marker board, tack board, open and closed lockable storage, open shelving, and a lockable teacher wardrobe.
- ☐ Room for a teacher's desk, lockable file cabinet, and table to work with small groups of students is required.
- ☐ The speech/language room should be wired for access to one computer workstation each.
- ☐ The speech room must be located on the first floor and be acoustically treated.
- ☐ The speech room needs a 4’ x 4’ mirror mounted to the wall to supplement verbal skills training.
- ☐ The speech room requires a sink with counter space.

Occupational Therapy/Physical Therapy (OT/PT) Room

- ☐ Each room must have two marker boards that are mounted two feet off the floor.
- ☐ A tack board, open and closed lockable storage, open shelving, and a lockable teacher wardrobe are required.
- ☐ A sink with counter space is required in the OT/PT room.
- ☐ Room for two teacher's desks, lockable file cabinet, and assorted sized furniture with adjustable legs should be provided.
- ☐ The OT/PT room should be wired for access to two computer workstations each.
- ☐ Data and electrical outlets should be located on all walls to allow for multiple uses and flexibility to move equipment around if needed.
- ☐ The OT/PT room requires a ceiling mounted hook, with a 12'foot diameter clear space for hanging swings and other suspended equipment.

Swing Hardware and Accessories Recommendations

- **Equipment that should be paired**- Base mat, chain for length, height adjuster, rotational component.

- Kit-LINK
- Includes rotational hook: LINK and chain: LINK Height adjuster: LINK
- Mat- LINK

Swings:

- Cocoon: LINK - Autism
- Platform: LINK - OT/PT/PEP

- ☐ The OT/PT room requires a lockable storage closet with sufficient area to house large gross motor equipment (minimum of 35 square feet) such as therapy balls, scooter boards, walkers, balance beams, ramps, etc.

Testing Room

- ☐ School and/or central office staff test individual students or small groups of students. Typical testing includes psychological, diagnostic, vision/hearing, gifted, and makeup testing for required standardized tests. This room also will be used to accommodate post-test conferences with teachers and/or parents.
- ☐ This room should be designed as a secure room for testing materials and should have a counter with lockable cabinets above and below.
- ☐ This room needs acoustical treatment as well as video, voice, and data outlets.

Support Staff Offices

- ☐ Office space is needed for permanent as well as itinerant support staff (curriculum coordinator, team coordinator, social worker, psychologist, auditory and vision specialists, and psychiatrist).
- ☐ A teacher's wardrobe should be provided for itinerant staff use.
- ☐ Video, voice, and data outlets should be provided.

Parent Resource Room (For Title 1 Schools)

- ☐ Space for a teacher's desk, computer, and telephone should be provided.
- ☐ Space for a conference table and chairs as well as soft seating should be provided in this room.
- ☐ Space should be provided for bookshelves and other shelving to store a variety of types of materials and supplies.
- ☐ Data and electrical outlet should be provided for an interactive teaching board.
- ☐ Magnetic board should be provided in this room.

Library Media Center

Spatial Needs
Main Learning Environment
Instructional Area
Work and Production Area
General Storage

- ☐ The Library Media Center (LMC) is the information hub of the school.
- ☐ The latest version of the MSDE document, *Facilities Guidelines for Library Media Programs,* may be used as a reference for the design of the LMC.
- ☐ The LMC should be centrally located and easily accessible from the outside to allow the LMC easy access by outside groups during after school hours and in the summer.
- ☐ There should be easy access to the elevator.
- ☐ Toilet rooms should be located nearby the LMC.
- ☐ Sight lines are an important feature in the design of the LMC. Staff should have visual supervision of the entire LMC including the entrance from the LMC circulation desk.
- ☐ Flexible lighting with the ability to darken separate areas of the main resource room without affecting other spaces.
- ☐ If possible, the LMC should not be located below high noise level activities such as music, technology education, cafeteria, or physical education.
- ☐ Multiple charging outlets need to be provided throughout the LMC and can be located in the floor, wall, and counters. Consideration should be given to the location of the circulation desk and seating areas that may require data and or power for the use of computers or staff/student work areas.
- ☐ Ideally, a countertop with outlets above the counter should be provided along one of the walls of the LMC to allow users to plug in portable devices. The counter should be located in an area that can be easily supervised and at a desk top height so that chairs can be interchanged in the library.

Main Learning Environment

This is the main area of the library that includes the stacks, instructional space, and circulation area.

Stacks (the area containing book shelves)

- ☐ The height of the low moveable bookshelves should accommodate three rows of books and the height should be 42 inches high in order to accommodate picture and nonfiction books.
- ☐ Must be on wheels to allow for flexibility.
- ☐ Different materials can be explored based on design and cost factors to include metal and wood shelving.
- ☐ Soft, comfortable seating should be provided for individual and collaborative student work and power should be provided throughout this area.
- ☐ Consideration should be given for shelving for special types of collections such as graphic novels, periodicals, and oversized books including picture books. The shelving should be flexible that can convert for different types of collections.
- ☐ Wall shelving should be maximized in this area, where possible. (height 5 feet when possible)
- ☐ Consideration should be given to provide opportunities to display and highlight student work and items in the collection.
- ☐ Lights should be designed to allow for flexible arrangement of shelving in the stacks.
- ☐ Shelving is to be allocated on the average as follows:

	Linear Feet
Non-Fiction (including biographies)	430
Fiction	285
Picture Books (with no dividers)	75
Magazines (with space for back issues)	12
New Book/Interest Display	10
Media Center Storage (20-24” depth)	As space allows

Circulation Area

- ☐ The architect needs to identify a location for a circulation desk that is large enough to accommodate two computer workstations and a networked printer to access the online catalog system.
- ☐ If space permits, storage cabinets should be provided in the circulation area for miscellaneous activities such as book repairs and holds.
- ☐ The circulation desk furniture package will include the following features:
  - ☐ a storage area for book return carts;
  - ☐ a book return container to catch the books;
  - ☐ supplies drawers;
  - ☐ a writing area unit; and
  - ☐ an area for a laser printer and supplies.
  - ☐ The front height of the circulation desk should have an area that does not exceed 39" in height so that elementary students have access.
  - ☐ There should be two means of egress for the circulation desk.
  - ☐ The work surface for the staff member should meet ADA compliance with optimal ergonomics (keyboard height).
  - ☐ Electric and Ethernet needs to be provided.

Instructional Area

- ☐ Sight lines are an important feature in this area. Staff should have visual supervision of the entire LMC from this area.
- ☐ A teaching wall area designed for an interactive board should be included.
- ☐ This area needs to accommodate read-alouds and other instructional activities.
- ☐ This area should include table and chair seating as well as soft seating so that the combination of seating totals 30. A variety of heights in the instructional area for students including standing and sitting options should be provided.
- ☐ The space should be easy to reconfigure for a variety of uses and groupings with the use of flexible furniture to support whole class, small group, and project based learning activities.

☐ The instructional areas need access to all forms of technology in the school including wireless access.

Work and Production Area

This area was formerly two distinct spaces: the library media specialist office and library media center workroom. The new combined space now supports the library media staff functions and is also used as a multipurpose space to include maker activities for student and school staff use.

☐ The work area should be delineated through the use of a different ceiling height or half wall.

☐ This room requires VCT floor material.

☐ Consideration for a counter for student use is preferable.

☐ Adequate electrical and data outlets are to be designed in consultation with the LM Specialist and central office staff members.

☐ It must contain a sink with hot and cold water, in addition to ample worktops for library media processing, student and teacher use.

☐ Space is needed for two staff work stations. This can be built-in or through furniture.

☐ Two lockable wardrobes need to be provided. See media center specifications available from the MCPS Facility Guideline Specifications.

☐ This space needs to contain open shelving to accommodate materials for student use such as maker space supplies and hands on activities as well as closed lockable cabinets for library media center supplies.

☐ Space should be provided for a networked school printer that is accessible by teachers and students.

☐ Electric and data should be located on all walls to provide flexibility in the use of the space.

☐ The work area includes space for collaborative planning and processing of library media materials.

Library Media Storage

☐ The library media storage room provides for storage of library media materials, equipment, seasonal materials and supplies.

☐ Electric and Ethernet should be provided to accommodate library media technology needs.

- ☐ A variety of shelving should be provided for instructional materials for teacher use such as DVDs, audio book resources, and equipment with some open space to accommodate computer cart storage.

- ☐ Varied depths of shelving should be provided including 6”, 12” and 24” deep.

Physical Education

The gymnasium has two major purposes:

- To provide an indoor facility for the physical education instructional program.
- To provide for student and community recreation during after school hours, weekends, summers, and holidays.

Spatial Needs
Gymnasium (74'x50')
Physical Education Office
Storage Rooms
Lobby Area
Outdoor Storage

Gymnasium

☐ The location of the gymnasium should be near the play areas, directly accessible from a corridor, and easily accessible from the parking lots.

☐ Buffering the gymnasium with a corridor or related spaces is required to separate gymnasium noise from the rest of the school.

☐ No glass walls should be designed in the gymnasium for safety and security purposes. Clerestory windows can be designed to provide natural light in the gymnasium.

☐ The physical education office should be adjacent to the gymnasium and lobby.

☐ The architect should refer to detailed requirements provided by MCPS Facility Guideline Specifications.

☐ Any windows into the gymnasium should be oriented north and south so that direct east-west sunlight does not impact play in the gymnasium. However, windows should not be placed in the end walls.

☐ The gymnasium should be ADA accessible from within and without (access from inside gym to playfields).

☐ A ceiling clearance of a minimum of 24 feet free of girders, pipes, heating vents, lights and curtain supports is required.

☐ No ledges or sills should be created over 6' in height that would make it difficult to retrieve a ball.

☐ Glazed tile on the walls must cover at least seven feet from the floors.

☐ If the gymnasium is a community sized gymnasium (84'x 75') then a vinyl-mesh curtain to divide the floor area into two equal size spaces should be provided. It must be the type that can

be electrically rolled to the ceiling for storage. If the gymnasium has a divider curtain, a clock with a protective wire covering should be provided on both ends of the room.

☐ Adequate lighting in the gymnasium is required. The lighting should be securely mounted and guarded to prevent damage by balls with keylock switches to control the lighting.

☐ A minimum number of windows to prevent glare and glass breakage is requested.

☐ Acoustical treatment of walls and ceiling is required and must be able to withstand damage by balls.

☐ Ventilation equipment must not inhibit use of the space for auditorium purposes.

☐ A wood floor should be installed in the gymnasium. Striping for basketball, volleyball, and floor games should be provided. (i.e. hopscotch and four square)

☐ Graphics or approved words should be painted on the gymnasium walls. The school may choose from an approved curriculum list of words to paint on the gymnasium walls. The list of words will be provided by MCPS staff.

☐ A marker board, 4'x6', with no ledge is required.

☐ Separate heating source or controls to permit use when the remaining part of the building is not occupied is required.

☐ Recessed door handles are required.

☐ Doorway center posts must be removable to allow for the passage of equipment.

☐ A recessed fire alarm box or covered fire alarm box, preferably in a corner of the room needs to be provided.

☐ Two call buttons located at opposite sides of the gymnasium are required to contact the main office.

☐ A clock with a protective wire covering should be provided on a sidewall of the gymnasium. The fire extinguisher, if mounted in the gymnasium, should be recessed into the wall.

☐ Wall safety padding must be mounted under each basketball backstop with 16 feet under end basketball backstops and 12 feet under side basketball backstops with nylon nets.

☐ Doors or openings should not be directly behind basketball backstops.

☐ Fan-shaped basketball backstop, adjustable from 8 feet to 10 feet, must be mounted four feet from the sidewalls to provide two equal sized side courts. The backstops must be of aluminum composition. Collapsible rims must be provided.

☐ A basketball backstop, adjustable from 8 feet to 10 feet, must be mounted on each end wall for full court play. The fan-shaped backstops must be of aluminum composition. Collapsible rims must be provided.

- ☐ A hand crank must be provided for the adjustable basketball backstops if they are not operated electrically.
- ☐ Four climbing ropes (1 knotted, 3 plain) with hoist located 6 feet from the ground and safety cables located away from ceiling lights and basketball backstops should be provided.
- ☐ One 8-foot semi-guyed (wall mounted) horizontal bar with safety chain and floor plates should be provided. The MCPS shade shop will provide safety padding.
- ☐ One pair of volleyball aluminum uprights and one center volleyball aluminum upright (insertion type) must be provided. Heavy-duty net ratchet and removable crank handle should be included.
- ☐ Five solid brass floor plates and floor sleeves need to be installed. Two volleyball nets, 32" in length with end sleeves for wooden dowels should be provided.
- ☐ Two portable game standards are required.
- ☐ Audio controls for a sound system that are easily accessible to the instructor should be provided.
- ☐ A wall-mounted, chin up bar should be provided. The lowest bar height should be approximately 5 feet from the floor.
- ☐ Video, voice, data and electrical outlets on opposite walls of the gymnasium are required.

Physical Education Office

The following items are required in the physical education office:

- ☐ Non-breakable window to the gymnasium, low enough to view students, is required.
- ☐ Non-breakable window to the lobby for supervision, low enough to view students, is required.
- ☐ Toilet and shower facilities are required.
- ☐ Video, voice, data and electrical outlets are required.
- ☐ Window blinds for windows are required.
- ☐ VCT flooring is required.
- ☐ A call button the main office is required.
- ☐ Three full size clothing locker should be provided.
- ☐ Electrical outlets.
- ☐ A tack board should be provided.

- ☐ A wall-mounted clock should be provided.
- ☐ A small closet with shelves should be designed in this office.

Storage Rooms

- ☐ All of the storage rooms require 8-foot doors and 12-foot ceiling heights with a flush threshold.
- ☐ One of the storage rooms needs to accommodate and maneuver a mat mover cart (7’ x 3’) in and out of the room easily.
- ☐ The large storage room requires 8-foot double doors with no center post and must be able to accommodate a set of parallel bars.
- ☐ The large storage room must contain shelves, 6 feet high and 18 inches deep, mounted on at least two walls. The shelves must be adjustable after installation.
- ☐ The large storage closet must have a length that will accommodate a 12' long balance beam.
- ☐ Both of the small storage closets must contain shelves, 6 feet high 18 inches deep, mounted on the two side and back walls. The shelves must be adjustable after installation.
- ☐ One of the small storage rooms will be used for community use (ICB) and should have straps to store the volleyball standards along one wall (about 10’ long).

Lobby Area

- ☐ Separate toilet rooms for boys and girls should be located in the lobby.
- ☐ An electric water cooler with bottle filling station and filter should be located in the lobby area.
- ☐ Six feet of tack board should be installed in the lobby area.
- ☐ The window between the lobby and physical education office must be low enough to view people in the lobby.
- ☐ A set of doors to separate the gymnasium, lobby area, and restrooms from the rest of the school during after-hours is required.

Multipurpose Room and Platform

Spatial Needs
Multipurpose Room
Platform
Chair Storage
Table Storage
Before/After Care Kitchenette
Before/After Care Storage

Multipurpose Room

- ☐ The multipurpose room should have a ceiling height of 12–14 feet.
- ☐ A building service utility closet should be provided near the entrance to the multipurpose room for convenient lunch cleanups.
- ☐ Table storage and chair storage must be located adjacent to the multipurpose room.
- ☐ Exits from the multipurpose room must be sufficient to allow maximum seating.
- ☐ The doors from the main corridor into the multipurpose room should be on hold opens.
- ☐ Toilet rooms and an electric water cooler with bottle filling station and filter should be near the multipurpose room to allow for public use.
- ☐ Audiences need to be able to hear and see presentations from all locations in the room.
- ☐ Ventilation equipment noise must not inhibit use of the space for auditorium purposes.
- ☐ Acoustical treatment is needed.
- ☐ Proper lighting and sound amplification are required.
- ☐ Each side of the risers at the multipurpose room floor level should be equipped with video, voice, data and electrical outlets.
- ☐ Lighting, windows, fire alarm box, clock, and ceiling must be protected to prevent damage by balls.
- ☐ Outdoor play areas should be accessible from the multipurpose room. Children should not have to cross driveways or parking lots to access the play areas.
- ☐ An audio loop system should be provided for hearing impaired students; guidelines are available through the Division of Desisgn and Construction .
- ☐ An independent sound system should be provided in the multipurpose room.

☐ A call button to the main office should be provided.

Platform

☐ A minimum of 450 square feet of useable space must be provided for the performance platform.

☐ The platform should have a proscenium opening 24 feet wide. The depth is to be 15 feet deep. The platform floor is to be three risers above the multipurpose room floor. A full set of platform curtains is to be provided. An 8'x10' motorized projection screen is to be provided. Platform steps must NOT be carpeted.

☐ The platform must be accessible to the physically handicapped.

☐ Each side of the platform should be equipped with video, voice, data and electrical outlets.

☐ Access should be provided to the platform from both sides.

Chair and Table Storage

☐ Storage rooms are required for the storing the tables in the multipurpose room and folding chairs.

Before/After Care Kitchenette

☐ A sink (34”), refrigerator, counter space, and base and wall cabinets should be provided in this area.

☐ A secured overhead door is required for this space.

Food Services

- ☐ The kitchen is operated as a "finishing kitchen" and should include an area for dry storage, a manager's workstation, toilet facilities, preparation and serving area, and a receiving area for daily deliveries.
- ☐ A sheltered dock is preferred and should be separate from other school receiving.
- ☐ Delivery flow path must be clear of preparation area.
- ☐ The trash room should be separate from the rest of the building i.e. no common walls.
- ☐ The trash room should not be accessed from the kitchen.
- ☐ Air conditioning must be available at all times in elementary kitchens, storage, and office.
- ☐ Code requirements for lighting, surfaces, and equipment must be met. These requirements are included in the MCPS Facility Guideline Specifications.
- ☐ Windows must have screens.
- ☐ Receiving door should be 48” wide and must be self-closing with peephole and doorbell to manager’s office.
- ☐ An easy to mop floor such as, slip resistant quarry tile floor or polyurethane cement flooring system is required. If quarry tile is used then the color of grout should be the same or darker than the color of the floor.
- ☐ There should be direct access to both the hallway and the multipurpose room to facilitate one-way circulation through the serving line.
- ☐ A minimum 9’ ceiling height is recommended.
- ☐ A building service closet with floor type mop basin shall be located outside the kitchen but readily accessible to the kitchen.
- ☐ A dedicated circuit is required for the cash register with under the floor conduit for connection to the computer in the manager’s office.

Serving Area

- ☐ A 26 ft. long serving line with 3-ft. clearance at each end should be provided.
- ☐ The color selection will be approved by Food Services.
- ☐ A single door refrigerator and microwave oven on a cart adjacent to the service area is needed.

- ☐ A wall clock and tack board should be located on a wall so it is visible from the serving line wall.

Walk-in Cooler/Freezer

- ☐ A 7' 9" x 8' 8 1/2" cooler is required.
- ☐ A 7' 9" x 10’ 8 1/2" freezer with a height of 8' 6" is required.
- ☐ A mobile polymer shelving and dunnage is required.
- ☐ A roof top compressor is required.

Dry Storage

- ☐ The recommended dimension for the dry storage area is 12’ x 16’.
- ☐ A mobile polymer shelving and dunnage is required.
- ☐ Adequate ceiling height for top shelf storage should be considered.
- ☐ This space should be totally secure and free of roof access ladders or electrical panels.
- ☐ Locking cabinets for chemical storage should be provided.

Manager‘s Office

- ☐ Visibility to delivery and serving area is required.
- ☐ The office should be located away or protected from outside door draft.
- ☐ Desk (NIC), file (NIC), telephone, tack board, and LAN access are required.

Toilet Room

- ☐ A hand sink with soap and towel dispenser, sanitary napkin disposal, and three full-height lockers are required.

Preparation Area

- ☐ A roll-in double convection oven is required.
- ☐ An oven cart and dolly (2 each) are required.
- ☐ A half size range is required.

- ☐ A heat removal exhaust hood is required.
- ☐ Work tables, one 6 ft. and the other 8 ft. with 2 drawers each, under the table are needed.
- ☐ Arlington wire baskets (500 each) and dollies (10 each) are required.
- ☐ Hand sink with pedals and soap and towel dispensers that meet the code requirements are needed.
- ☐ A three compartment sink, 24” x 24” x 14”, with 24 inch drainboards, is required. Disposal in drain board with pre-rinse spray is required.
- ☐ A 6-foot louvered shelf above with hooks is required.
- ☐ A mobile warmer to accommodate Arlington baskets is needed.
- ☐ Two utility carts are required.

Administration suite

Spatial Needs
General Office
Workroom
Command Center
Principal's Office
Assistant Principal's Office
Conference Room
Counselor's Office
Storage Room
Records Room

- ☐ The administration suite must be located with good access from the main entrance of the school and visual oversight of the main entrance and bus drop-off area.
- ☐ The suite must be a natural first stop for visitors to the school and must, therefore, have direct corridor access. A security vestibule must be designed so that all visitors must enter the general office to check in before entering the school.
- ☐ Spaces need to be arranged for student and visitor flow and for efficient use by office staff.
- ☐ The general office is to be treated as the center of the administration suite with direct access to the principal's office, the workroom, and the health suite.
- ☐ A coat closet is to be provided for office staff and visitors.
- ☐ Sufficient electrical outlets are to be provided (where feasible, quadruplex outlets may be utilized) as well video, voice, data and electrical outlets for the general office, principal's, and assistant principal's offices.
- ☐ A glass display case should be located in the vestibule of the Administration suite entrance.
- ☐ The administration suite should be designed with separate toilet rooms. If the school chooses, one of these toilet rooms may be located in the principal's office.
- ☐ The administrative secretary should have access to a private area during the day to work on fiscal duties.

General Office

- ☐ A counter/or furniture should be provided near the entrance to greet and separate visitors from staff and to provide a place to write.
- ☐ Space for two to three staff persons is required behind the counter/furniture.

- ☐ The general office should be equipped with a staff bulletin board.

Workroom

- ☐ The location of mailboxes should not create congestion by impeding the smooth flow of traffic in the general office and hallways. Staff mailboxes are to be readily accessible but not visible from the main entrance and are to contain 80 boxes at least 5.5 inches tall by 12 inches wide plus five additional boxes that are somewhat larger.
- ☐ Cabinetry appropriate for storing a variety of office and school supplies should be designed along one wall of the workroom.
- ☐ A portion of countertop is to be more than 30 inch wide to accommodate a large paper cutter.
- ☐ Space adequate for a large copying machine with necessary electric service and ventilation is required.
- ☐ A sink (34”) is needed in the workroom.
- ☐ There should be direct access to a corridor from the workroom.
- ☐ The workroom should be treated acoustically to keep machine and work noises at low levels.

Command Center

- ☐ An interior room in the school needs to be designated as the command center for shelter in place/lock down emergencies. In many schools, the workroom in the administration suite may serve this purpose. The room cannot be on an outside wall.
- ☐ The room designated as the command center must have all data and communication equipment including the public address (PA) system.
- ☐ The PA console should be located in the room that is designated as the command center.
- ☐ Window coverings such as mini blinds or roller shades must be provided for all windows and doors to the command center.
- ☐ In secondary schools, the security camera monitors should be located in this area.
- ☐ The space designated as the Command Center must be large enough to accommodate up to six staff persons.
- ☐ Storage space is needed for the shelter in place/lock down emergency kit.

Principal's Office

- ☐ This office requires an outside window, a public entrance connected to the main office, and a private entrance.
- ☐ These areas are to relate effectively with each other as well as to the general office.
- ☐ Each office should be planned for an l-shaped desk, computer, phone, file cabinets, and a small table for four to six chairs for small group meetings.
- ☐ This office requires a private toilet room.

Assistant Principal's Office

- ☐ This office should be carpeted.
- ☐ This office should be equipped with a tack board and two-shelf adjustable bookcases under the windows. Each shelf must be able to hold a 12 inch notebook upright
- ☐ This office should have good visible access to the main entrance and bus drop-off.

Conference Room

- ☐ The conference room should be carpeted.
- ☐ The conference room requires a magnetic marker board, a tack board, and one bookcase.
- ☐ The conference room should be equipped with a video, voice, data and electrical outlets and outlets to accommodate an interactive teaching board.

Counselor's Office

- ☐ The counselor's office should be easily accessible from the classrooms and near, but not a part of, the administration suite and should have a window.
- ☐ This office needs a marker board, tackboard, telephone and computer.

Storage and Records Rooms

- ☐ Two lockable rooms are needed for storage of office supplies and student records.
- ☐ The records room needs space for lockable file cabinets.

2nd Floor Workroom

- ☐ This room requires appropriate electrical wiring and ventilation to house a copier for staff use.
- ☐ This room requires a work counter and cabinets under and over the counter for storing supplies.

Staff Development Area

Spatial Needs
Staff Development Office
Reading Specialist Office
Training/Conference Room

Staff Development Office

- ☐ The staff development area should be located near the classrooms.
- ☐ The office should include one workstation.
- ☐ This office needs a marker board, tack board, closet, and video, voice, and data outlets.

Reading Specialist Office

- ☐ The staff development area should be located near the classrooms.
- ☐ The office should include one workstation.
- ☐ This office needs a marker board, tack board, closet, and video, voice, and data outlets.

Training/Conference Room

- ☐ This room will be used for staff training needs.
- ☐ This room should include ample shelving for training materials.
- ☐ The room should be able to comfortably accommodate up to 12 participants seated around a conference table.
- ☐ A marker board and tack board should be installed.
- ☐ Data and electrical outlets should be provided to accommodate an interactive teaching board.

Health Services Suite

Spatial Needs
Waiting Area
Treatment/Medication Area
Office/Health Assessment Room
Health Assessment/Isolation Room
Rest Area
Toilet Room
Storage Room

- ☐ The Health Services Suite should be in complete compliance with COMAR 13A.05.05.10A.
- ☐ The health suite must meet accessibility requirements of the ADA, and at a minimum, include spaces for waiting, examination and treatment, storage, resting, a separate room for private consultation and for use as the school health services professional's office, a toilet room, and lockable cabinets for storing health records and medications.
- ☐ A designated school health services professional from the Montgomery County Department of Health and Human Services (DHHS) must be involved in the planning of the health services suite.
- ☐ The architect should refer to MSDE document, *School Health Services,* June 2002 for specific utility information.
- ☐ The suite should be designed to provide easy visual supervision of all the spaces by the health services professional. The suite should be laid out so that an additional workstation for a health professional can be positioned near the treatment and waiting areas.
- ☐ In addition to access to the general office, the health services suite also must have a window into the general office so that office staff may monitor the room when heath staff is unavailable.
- ☐ The health room also must have a door to the corridor.
- ☐ Ventilation is important throughout the health suite.
- ☐ The countertops should be seamless to aid in maintaining sanitary conditions.
- ☐ The floor finish should be an easily cleaned non-absorbent material. Carpet should not be used in any areas of the health suite.
- ☐ A non-porous ceiling material should be used. Vinyl-coated ceiling tile or painted drywall is an acceptable choice.
- ☐ If any of the areas are enclosed then glazed walls areas should be provided.

- ☐ The health suite requires wall and base cabinets, lockable file cabinets, for storing health records. A portion of these cabinets must be lockable to store medications, medical supplies, and equipment.

Waiting Area

- ☐ The waiting area should have space for four to eight chairs.
- ☐ A small tack board should be provided in the waiting area to display health care and other information of importance to students and staff.

Treatment/Medication Area

- ☐ This area should be adjacent to the waiting area to facilitate the efficient flow of students.
- ☐ This area should have a kitchen type sink (34") with cabinets above and below (including a locked medicine cabinet), a 34-inch high countertop, and a small residential style refrigerator/freezer to store medical supplies and foods.
- ☐ A minimum of 12 linear feet of wall and base cabinets should be provided.
- ☐ The freezer should have an icemaker.
- ☐ The treatment area also requires a computer.

Office/Health Assessment Room

- ☐ The room requires one computer, fax machine, and electronic connection and physical proximity to a copy machine.
- ☐ The spaces used for consultation and examinations must be enclosed with sufficient acoustical isolation to ensure complete privacy and confidentiality.
- ☐ A small sink (34"), with cup, towel, and soap dispensers should be provided.

Health Assessment/Isolation Room

- ☐ This room needs to have access and have a door to the corridor.
- ☐ The spaces used for consultation and examinations must be enclosed with sufficient acoustical isolation to ensure complete privacy and confidentiality.
- ☐ A small sink (34"), with cup, towel, and soap dispensers should be provided.

- ☐ Space should allow for a small desk, secretarial chair, three lateral file cabinets with four drawers and a recovery cot.
- ☐ This room will require a telephone and a computer..
- ☐ In the rest area and Isolation Room, supplementary power ventilation capable of 20 changes per hour should be provided, with control by means of a separate switch within the health suite.
- ☐ A window is needed in this room to provide supervision from the treatment area and office. The design of the window also needs to ensure that only staff can see into the room.

Rest Area

- ☐ This area should not be a fully contained room but rather an area that can provide privacy for each cot with a draw curtain on a ceiling track.
- ☐ The rest area needs space four cots with individual light switches for wall sconces, electrical outlets 16” from the finished floor, and bedside cabinets for each rest area.
- ☐ This area should not be a fully contained room but rather an area that can provide privacy for each cot with a draw curtain on a ceiling track.
- ☐ The Isolation Room (see above) should be located adjacent to the rest area,
- ☐ In the rest area and Isolation Room, supplementary power ventilation capable of 20 changes per hour should be provided, with control by means of a separate switch within the health suite.

Toilet Room

- ☐ One ADA toilet should be provided.
- ☐ The toilet room should be accessed without having to go through another functional space in the health suite such as a rest area.
- ☐ Ideally, students should be able to enter the health suite solely to use the toilet room without disrupting other activities.

Storage Room

- ☐ The storage area is to have space sufficient for a four drawer locked file cabinet, a wardrobe for coats, and space for storing large items such as wheelchairs.

Staff Lounge

- ☐ The staff lounge is a place for staff members to relax, study, plan, and think together.
- ☐ Two toilet rooms are required just outside of the staff lounge.
- ☐ The staff lounge should contain a compact built-in kitchen with six linear feet of counter space for a microwave and sink (34") and a space for a refrigerator (NIC).
- ☐ A clock should be provided.
- ☐ Ventilation must be provided. An operable window in the staff room is preferred.
- ☐ An area should be designated for Video, voice, data and electrical outlets.

Privacy Room

- ☐ A small, enclosed room with countertop and space for one chair is needed.
- ☐ An electrical outlet should be provided above and below the counter and the counter should be tall enough to accommodate a small refrigerator.
- ☐ A small sink is needed for hand washing and washing of personal items.
- ☐ A mirror should be provided above the counter.
- ☐ This space needs to be accessible to staff with disabilities.

Building Service Facilities

Spatial needs
Building Service Office
Locker/Shower area
Compactor/Trash Room
General Storage & Receiving Area
General Storage
Building Service Outdoor Storage
Building Service Closets

Building Service Office

- ☐ The entire building services area should be located adjacent to the general receiving area.
- ☐ The office should be designed as a general office that can accommodate two staff members with two desks and appropriate wiring for computers, phones, etc.
- ☐ If possible, the office should have a window or a sightline to the outside to monitor weather conditions.

Locker/Shower Area

- ☐ A locker area must be located near the receiving area.
- ☐ Six full-size lockers should be provided in the locker area.
- ☐ The locker area should be designed with an enclosed toilet room and shower room for building service staff use.
- ☐ An ENERGY STAR stackable washer and dryer are required in this area.

Compactor/Can Wash/Trash Room

- ☐ This room needs to be completely separate from the kitchen spaces with no common walls.
- ☐ Trash trucks must have access to this room.
- ☐ The room should be heated and have adequate interior lighting, floor drainage, and easily cleanable surfaces.
- ☐ Hot and cold water should be available for flushing and cleaning.
- ☐ The room should be designed to be pest free and well ventilated.

- ☐ Floors should be sloped so that wash down stays within the room and goes down the drain.
- ☐ The compactors need to be installed with enough clearance away from the wall to permit staff to access the equipment from all sides.
- ☐ A roll-up door for trash transfer to trucks, steam cleaning equipment, and trash collection containers are needed.
- ☐ The room should be designed with a ramp to allow trashcans to be rolled to the dock.

General Storage and Receiving Area

- ☐ The receiving area should be enclosed, floor to ceiling, with a chain link fence.
- ☐ Flexible shelving is required but should not occupy more than one third of the area.
- ☐ This area must be secured.
- ☐ Good lighting and easy access to materials being stored are required.
- ☐ Electrical outlets, upgraded lighting and ventilation must be provided in this area.

General Storage

- ☐ Flexible shelving to accommodate books, teaching aids, large size (24" x 36") paper, and other instructional supplies is required.
- ☐ Good lighting and easy access to materials being stored are required.
- ☐ Electrical outlets, upgraded lighting and ventilation must be provided in all large storage rooms for future flexibility.

Building Service Outdoor Storage Room

- ☐ Outdoor storage is to be near the service area and is to be suitable for heavy mowing, snow removal, and other outdoor equipment.
- ☐ The dimensions of the outdoor storage area must be able to accommodate two tractors side by side (one tractor is approximately 9’ long by 7.5’ wide and a second smaller tractor) and other equipment.
- ☐ A rolling garage style door and a regular door must be provided.
- ☐ A ramped and paved driveway is required for the tractor so that it can access the sidewalk and driveways of the school during snow removal.

- ☐ Electrical service and lighting inside must be provided. Access to the light switches must be available at both entrances.
- ☐ Proper ventilation for storage of gasoline is required.

Building Service Closets

- ☐ At a minimum, there should be a building service closet for each 19,000 gross square of the facility. In addition, there should be a building service closet on each floor and each wing of the facility and near the gymnasium.
- ☐ The closets should be a minimum of 25 sq. ft.
- ☐ The building service closet must accommodate a minimum of one utility cart.
- ☐ The closet requires shelving for cleaning supplies and a mop/broom holder is required.
- ☐ The closet requires a floor mop sink with hot and cold running water and a floor drain.
- ☐ Where feasible, closet doors should swing outward in order to maximize the storage area and provide easier access to items within the closets.

Building Support Spaces

Spatial needs
Book Storage
PTA Storage
Emergency Command Center
Telecommunications Rooms

Book Storage

☐ This room should be located near the standard classrooms.

☐ Metal shelving that is 12’ deep should be provided in this room.

PTA Storage

☐ This room should be located near the multipurpose room.

☐ Metal shelving should provided along one side of the room.

Emergency Command Center

☐ This space is required in buildings that are 100,000 gross square feet or greater.

☐ The emergency command center must have a door directly to the exterior of the building on the address side.

☐ The exterior door to the emergency command center must be within 50 feet of a fire department access road.

☐ A fire department access box must be provided within 6 feet of the door to the emergency command center. The exterior door to the emergency command center must be identified on the exterior face as the emergency command center in a manner acceptable to the director.

☐ The emergency command center must also comply with the provisions of Section 911 of the International Building Code, 2015 edition.

☐ The annunciator must be located in this room.

☐ A shunt trip to disconnect the electrical service to the building must be provided

Telecommunication Equipment Closet

☐ These rooms should have corridor access and be centrally located in the school.

☐ Specifications for this space are available from the MCPS Facility Guideline Specifications.

Site Requirements

- ☐ The architect should consider the architecture of the neighborhood in designing the building
- ☐ 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, 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. The architect should consider the architecture of the neighborhood in designing the building.
- ☐ The design should retain as many trees as possible in order to buffer the school and the playing fields.
- ☐ Pedestrian access must be provided from the surrounding neighborhoods.
- ☐ An unimproved area on-site should be designated to serve as an environmental study area in the future. The architects may refer to the following two MSDE design guidelines: *Conserving and Enhancing the Natural Environment on New and Existing School Sites,* 1999 and *A Practical Guide Planning, Constructing, and Using School Courtyards,* 2012. The documents are available at the following website: www.marylandpublicschools.org/MSDE/newsroom/publications
- ☐ A covered area for students in the bus loading area should be provided.
- ☐ Space for buses to load at one time is needed. The number of buses will be reviewed during the design phase in consultation with the Department of Transportation.
- ☐ Bike racks should be provided near the building.
- ☐ 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.
- ☐ Accessible parking spaces should be located near the main entrance, the before/after Care entrance, and the playing fields.

Driveway and Service Drive

- ☐ The architect/engineer should refer to the MCPS Facility Guideline Specifications when designing the driveway, bus loop, service drives, etc.
- ☐ 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.
- ☐ A student drop off area should be provided and must be separate from the bus loop area.
- ☐ All driveways must be arranged so that children do not cross them to get to the play areas.
- ☐ Care for safety of students must be exercised in developing the driveways including use of safety rails in the bus loading area.
- ☐ Pedestrian access to the school facilities should be designed to make the best use of community right-of-ways and avoid crossing of loading zone areas.
- ☐ The site must comply with the most current ADA or COMAR regulations, whichever is most stringent.
- ☐ Site access must be provided to comply with fire protection and storm water management.
- ☐ 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 should line up with the intersecting street.
- ☐ Driveways should be located so that vehicle headlights do not project into adjacent homes.
- ☐ A service drive is required to service the kitchen, boiler room, and general delivery area. The architect should refer to the MCPS Facilities Guide.
- ☐ Site access must be provided to comply with fire protection and storm water management regulations.

Parking

- ☐ Ideally, 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.
- ☐ The parking area should be designed to maximize safety and minimize speed.
- ☐ Adequate lighting should be provided.
- ☐ Parking area should have two exits.
- ☐ Guardrails or bollards are to be installed to protect fields and play areas.

Landscaping

- ☐ Planting should include screen planting and other planting needed for erosion control.
- ☐ Existing plant stock, if on site, is to be evaluated for reuse and protected accordingly.
- ☐ Landscaping to support energy conservation and to relate the building to the site with aesthetic appeal must be included.
- ☐ Consideration should be given to safety and security when selecting plant materials.
- ☐ Provision for outdoor watering must be included.
- ☐ The landscaping plan should include areas for outdoors environmental education programs.

Physical Education Site Requirements

The items described below are for a school that meets the minimum useable site size of 7.5 acres that is capable of fitting the instructional program, including site requirements. 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 the diagram in the MCPS Facilities Guideline Specifications.
- ☐ Softball infields are not skinned for elementary schools. However, one field may be skinned if it does not significantly impact the soccer playing area.

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.
- ☐ 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 the MCPS Facility Guideline Specification).

☐ A second area, designated for primary use, shall be striped according to drawings provided in the MCPS Facility Guideline Specification. On small sites, this pave area should be fenced for use by Grade Kindergarten students.

Kindergarten Paved Play Area

☐ A third paved area, at least 40’x 60’ but preferably 80' x 100', is desired, 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 Facility Guideline Specification.

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.

Prekindergarten Play Areas

☐ If the school has a prekindergarten, Head Start, or Preschool Education Program, then a separate and fenced outdoor play is required.

☐ This area must be adjacent to the classrooms with access directly from the classrooms.

☐ If the school does not have a prekindergarten program than the outdoor play area should be master planned so that it can be added on at a later time.

☐ The prekindergarten play area should include a 40’x40’ paved play area and a 40’x40’ mulched area. The architect will consult with the MCPS staff on the design of the playground equipment.

Additional Program Requirements

- ☐ Burning Tree Elementary School currently faces ADA challenges due to the split-level design and the design team is charged with identifying solutions to improve accessibility and overcome this design.
- ☐ The purpose of this feasibility study is to explore a stand-alone ADA solution versus a holistic major capital project approach.
- ☐ The design team should evaluate options to separate car and bus drop off to improve safety on site.