PGCPS
Great By Choice

Prince George's County Public Schools

BLUEPRINT SCHOOLS PHASE 2

65% GMP SET NARRATIVE

March 5, 2024

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My
FIRST DAY OF
SCHOOL
BACK TO
SCHOOL

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Robert Frost “Street Presence”

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Project Designs:

The Progressive Education Partnership (“PEP”) has developed designs for two Prototype schools; an Elementary School and a PreK-8 School. These two designs were developed by implementing the Educational Specifications and Performance Standards, as well other key criteria specifically highlighted by PGCPS and further elaborated in this section.

As the design process has progressed, the team has worked to integrate these two prototypes more directly with each unique site

1.1 Prototype Schemes: Elementary PK-5th Grade

PK-5 PROTOTYPE "FLAT 2-STORY"

The two-story "flat" prototype for elementary schools was applied to Margaret Brent, as shown at right.

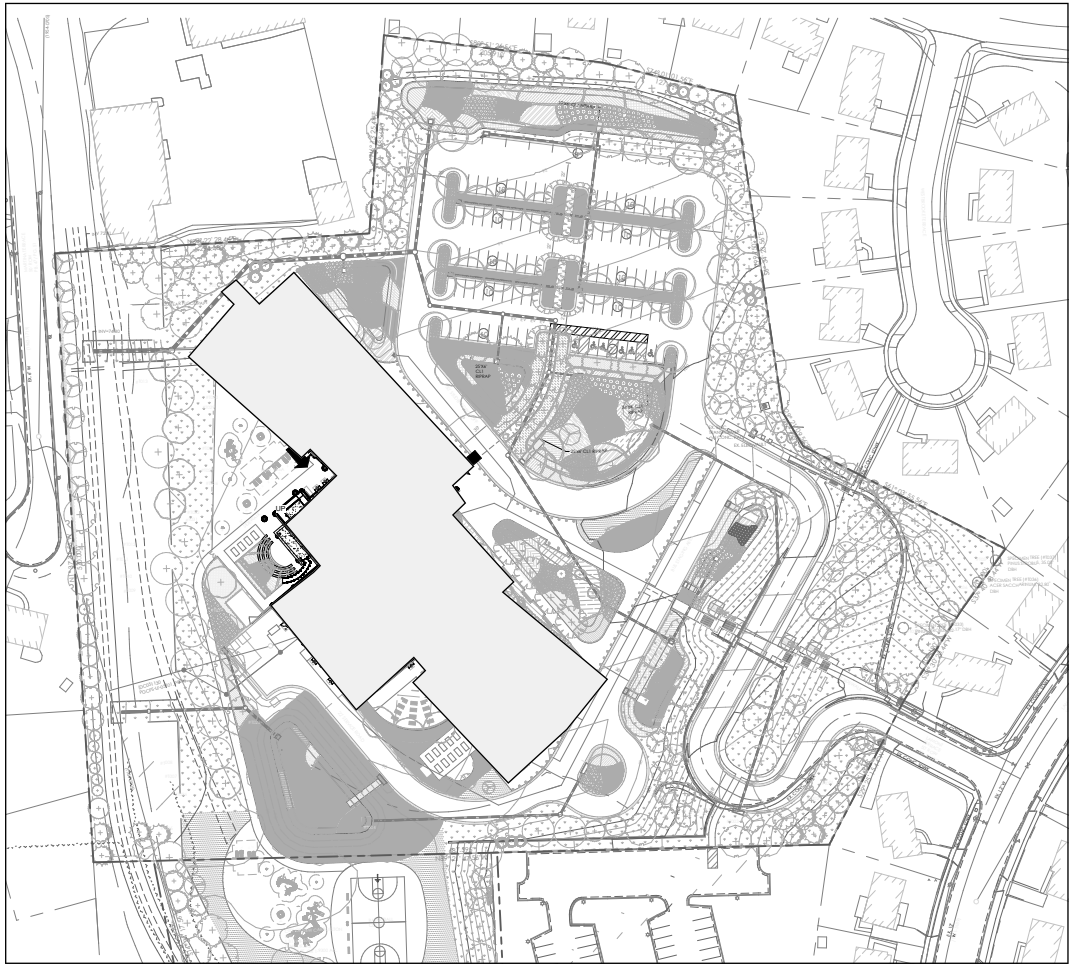
This plan arranges the program in two 'wings' that come together at the heart of the school where the main entrance, dining, and media center are located.

From the entrance of the building, students are welcomed in under the joyful canopy, and have a view directly into the two-story dining area with the stage and views into the landscape beyond. The media center is tucked just to the left of the lobby, and the gym entrance is also visible directly past the grand stair.

Classroom corridors connect to both the left and right, and are easily visible, making the building simple and easy to navigate for even the youngest occupants.

Spread across 2 'wings' and 2 floors, there are 4 classroom "neighborhoods", each with it's own Collaborative Learning Area, and other support spaces.

The "specials" programs such as STEAM, art, and music are located at the center of the building, for easy access to all, and further strengthening the heart of the school as a place where all ages come together.



MARGARET BRENT ELEMENTARY

1.1 Prototype Schemes

BRENT - FLOOR PLANS

FIRST FLOOR

DEPARTMENT

- ACADEMIC - CORE
- ACADEMIC - EXTENDED
- ADMINISTRATION
- BUILDING SUPPORT
- CIRCULATION
- DINING
- MEDIA CENTER
- PERF ARTS
- PHYS ED
- SPEC ED
- SUPPORT
- VISUAL ARTS

0' 16' 48'

Refer to drawing set for more information on floor plans.

1.1 Prototype Schemes

BRENT - FLOOR PLANS

SECOND FLOOR

DEPARTMENT

- ACADEMIC - CORE
- ACADEMIC - EXTENDED
- ADMINISTRATION
- BUILDING SUPPORT
- CIRCULATION
- DINING
- MEDIA CENTER
- PERF ARTS
- PHYS ED
- SPEC ED
- SUPPORT
- VISUAL ARTS

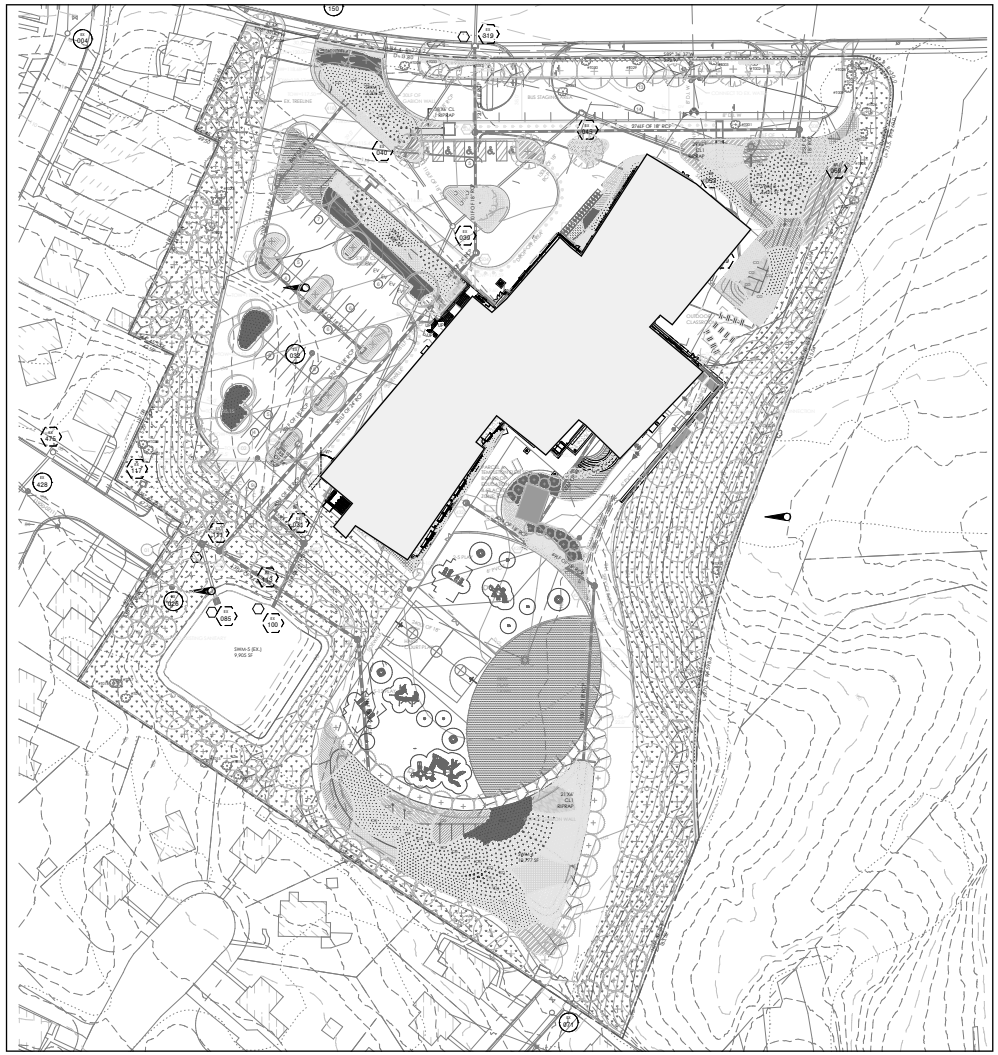
0' 16' 48'

Refer to drawing set for more information on floor plans.

1.1 Prototype Schemes: Elementary PK-5th Grade

PK-5 PROTOTYPE “STEPPED”

Similar to Margaret Brent but adapted to the sloped site at Templeton, the elementary school prototype is arranged the same way. At Templeton, the topography allows some early childhood program to reside at the lower level, which is also on grade. This allows a complete neighborhood to be grouped together while maintaining the same design concept at the main level, 1-story above. At the center of the building is the heart of the school with a central stair that connects all 3 stories.



TEMPLETON ELEMENTARY

1.1 Prototype Schemes

TEMPLETON - FLOOR PLANS

LOWER FLOOR

DEPARTMENT

- ACADEMIC - CORE
- ACADEMIC - EXTENDED
- ADMINISTRATION
- BUILDING SUPPORT
- CIRCULATION
- DINING
- MEDIA CENTER
- PERF ARTS
- PHYS ED
- SPEC ED
- SUPPORT
- VISUAL ARTS

0' 16' 48'

Refer to drawing set for more information on floor plans.

TEMPLETON - FLOOR PLANS

FIRST FLOOR

DEPARTMENT

- ACADEMIC - CORE
- ACADEMIC - EXTENDED
- ADMINISTRATION
- BUILDING SUPPORT
- CIRCULATION
- DINING
- MEDIA CENTER
- PERF ARTS
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- SPEC ED
- SUPPORT
- VISUAL ARTS

0' 16' 48'

Refer to drawing set for more information on floor plans.

TEMPLETON - FLOOR PLANS

SECOND FLOOR

DEPARTMENT

- ACADEMIC - CORE
- ACADEMIC - EXTENDED
- ADMINISTRATION
- BUILDING SUPPORT
- CIRCULATION
- DINING
- MEDIA CENTER
- PERF ARTS
- PHYS ED
- SPEC ED
- SUPPORT
- VISUAL ARTS

0' 16' 48'

Refer to drawing set for more information on floor plans.

1.1 Prototype Schemes

PK-8 PROTOTYPE

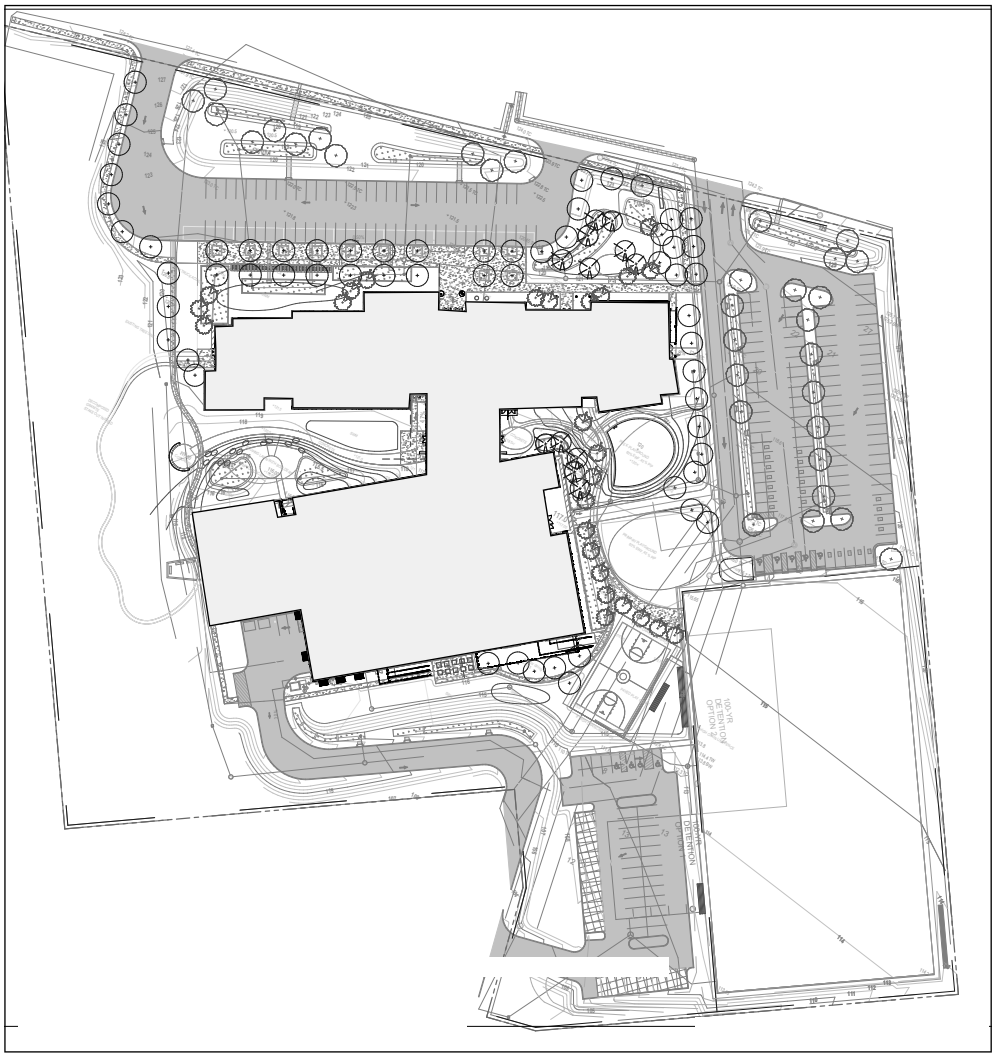
The K-8 program is very large, so this prototype seeks to create both smaller sized “neighborhoods” for like-aged students, as well as unify the entire student body around shared social spaces, coming together in the “heart” of the school.

The first impression for students is the primary academic “bar” containing typical classrooms. As students enter the front door, they are greeted with the main administration area and broad views forward to the “heart” of the building, leading to the cafeteria beyond. The classrooms are stacked vertically – with middle school (grades 6-8) on one side and elementary school (PK-5th grade) on the other. This allows students to circulate vertically among those of similar ages, while coming together at the center only for shared spaces such as the arts.

The youngest children (PK and Kindergarten) have classrooms at the ground level, and their own separate entrance further down from the main central entrance, sheltering them from the busy-ness of the morning rush with older students.

Moving past this academic bar, there are clear views out to the courtyards on either side, and the double-height media center anchoring the heart of the school. The cafeteria affords views to the landscape on two sides, and nests under the gymnasium at the 2nd floor.

The community (and after-hours) entrance is directly adjacent to these large gathering spaces for events such as basketball games, community meetings, or school plays. A second elevator is located near the cafe and gym, and the further academic spaces can easily be separated in off-hours, securing the building from visitors.



ROBERT K FROST PK-8 SCHOOL

1.1 Prototype Schemes

ROBERT FROST PK-8 SCHOOL

FIRST FLOOR PLAN

DEPARTMENT

- ACADEMIC - CORE
- ACADEMIC - EXTENDED
- ADMINISTRATION
- BUILDING SUPPORT
- CIRCULATION
- DINING
- MEDIA CENTER
- PERF ARTS
- PHYS ED
- SPEC ED
- SUPPORT
- VISUAL ARTS

0' 16' 48'

Refer to drawing set for more information on floor plans.

ROBERT FROST PK-8 SCHOOL

SECOND FLOOR PLAN

DEPARTMENT

- ACADEMIC - CORE
- ACADEMIC - EXTENDED
- ADMINISTRATION
- BUILDING SUPPORT
- CIRCULATION
- DINING
- MEDIA CENTER
- PERF ARTS
- PHYS ED
- SPEC ED
- SUPPORT
- VISUAL ARTS

0' 16' 48'

Refer to drawing set for more information on floor plans.

ROBERT FROST PK-8 SCHOOL

THIRD FLOOR PLAN

DEPARTMENT

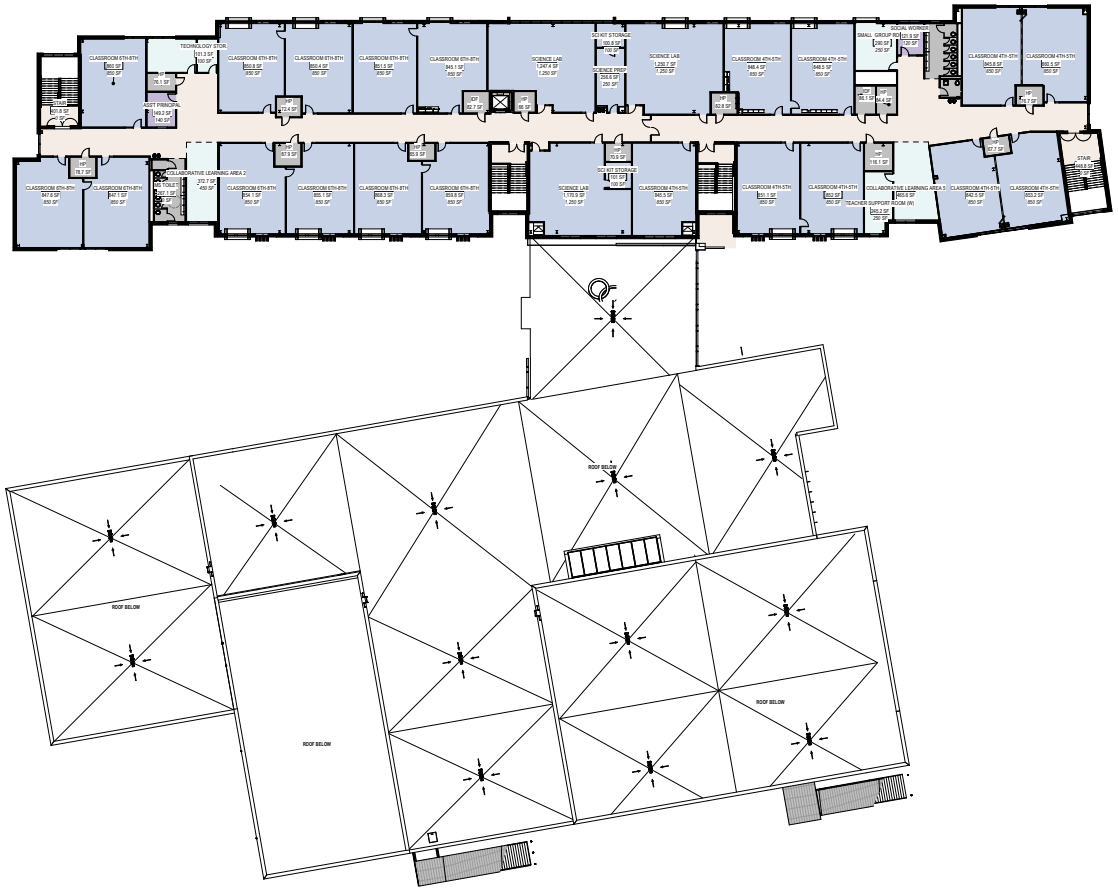
- ACADEMIC - CORE
- ACADEMIC - EXTENDED
- ADMINISTRATION
- BUILDING SUPPORT
- CIRCULATION
- DINING
- MEDIA CENTER
- PERF ARTS
- PHYS ED
- SPEC ED
- SUPPORT
- VISUAL ARTS

0' 16' 48'

Refer to drawing set for more information on floor plans.

ROBERT FROST PK-8 SCHOOL

FOURTH FLOOR PLAN



DEPARTMENT

- ACADEMIC - CORE
- ACADEMIC - EXTENDED
- ADMINISTRATION
- BUILDING SUPPORT
- CIRCULATION
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1.1 Prototype Schemes

Exterior School Design

Through the initial One-on-One feedback, RFP Technical Requirements, and past experience of designing schools, PEP envisions the exterior of these schools to focus on creating a welcoming and safe environment that supports the educational mission. This takes into account a range of factors as already mentioned in Sections 1.4.1, and 1.4.2, and will be emphasized below for examples of how specific elements were captured in the schematic design.

PEP's design intent for the "Civic Entrance" of the Prototype Schools is to create a prominent and inviting gateway that serves as a focal point, and establishes a sense of identity for the institution. The design aims to reflect the school's values, foster a sense of pride, and enhance the connection with the surrounding community. It incorporates elements such as grand entrances and landscaping features to create a visually striking and welcoming entrance. The design creates a space that not only facilitates easy access but conveys a strong sense of belonging among staff, students and visitors

Design Principles

Architectural Character. PEP wishes the entrance of the schools to instill a civic presence that draws inspiration from both contemporary and traditional architecture, and clearly establishes the school as the center of its community. For students, it aims to create a positive first and lasting impression to echo the community's respect for education by inspiring learners from the very start of their daily journey.

Safety and Security. Front entrance doors highlight the primary access point for visitors to enter the building into a locked vestibule, before gaining access to the rest of the school. The main entrance maintains a natural surveillance through open glazing, that gives school users opportunities to passively keep an eye on entrants.

Brent and Robert Frost "Civic Entrance"

Table: Impact of Evaluation Criteria on Conceptual Design from RFP Submission

Evaluation Criteria	Influence on Conceptual Design
School Design	✓ PEP uses effective daylighting and views to improve School User satisfaction upon entry to the building. ✓ Reflects attributes of the Neighborhood Centric and Public Entry Experience described in the design principles, while also remaining cognizant of the Materials to be used in its design.
Collaboration	✓ These concepts provide a framework for flexibility as the designs evolve during the ENA Period, such local personalization of the building through community inspired public art.
Durability	✓ The entrance finds a balance of visually appealing while seeking opportunities to remain affordable through cleanable brick finishes, and use of natural light to reduce costs.
Sustainability	✓ PEP is able to support the CCAP goals, reduce electricity costs, and balance affordability through its use of daylighting on the civic entrance.

Templeton (left), Margaret Brent (right) and Robert Frost (down) “Amphitheater”

Table: Impact of Evaluation Criteria on Conceptual Design

Evaluation Criteria	Influence on Conceptual Design
School Design	✓ Implementation of Outdoor Environmental Classrooms provide School Users with a secondary space for activated learning opportunities.
Collaboration	✓ An integrated design approach influenced the brick selection, for a timeless yet cost-effective finish for the school yard.
Durability	✓ PEP has designed an approach with damage resistant materials, with clear intent to provide an affordable yet functional back-of-house area.
Sustainability	✓ As part of achieving Net Zero Energy ready, PEP is targeting better than code air infiltration rates of 0.15 cfm/ft² at 75 pascals.

1.2 Interior Design

Interior School Design

Once inside a school, the focus is creating functional, safe, and inspiring spaces that support effective teaching and learning. The design considers the unique needs of students, teachers, and staff while prioritizing flexibility, accessibly, and overall comfort. Functional spaces are true drivers of specific intent, however as a whole, PEP has emphasized the use of the design principles in-tandem with durable, sustainable solutions to contribute to a healthy and conducive indoor environment.

The elementary schools' Cafetorium design creates a robust space that accommodates both dining and performing arts activities. A flexible layout can easily adapt various functions, such as assemblies, concerts, performances, and community events. The design incorporates versatile furnishings, seating, and acoustics to allow the schools to transform these spaces from lunchtime student hubs to functional theatres. This dynamic space is intended to be representative of the School Users and can accommodate displays for artwork, and murals throughout.

Architectural Character. The central point of the Prototype Schools maximizes available space to meet the functional demands of a high volume, full-service public school facility. PEP has demonstrated opportunities for display of Public Art and mural installations that are anticipated to be further developed during the ENA Period.

Interior Configuration. To invoke a strong sense of community, the planning and design of these spaces sought to replicate a "Town Center" style, where smaller academic communities come together to share and connect.

Safety and Security. The Cafetoriums are a special focal point of each school and should support these activities with a safe and secure environment. Natural visual surveillance is designed to allow users view of all main entry points.

Cafetorium concept

Education Program Delivery. School Cafetoriums are the "Heart of the School", arranged as a spacious environment where students and educators can form bonds and strengthen relationships.

Table: Impact of Evaluation Criteria on Conceptual Design

Evaluation Criteria	Influence on Conceptual Design
School Design	✓ PEP has accommodated logical lines of sight for School Users that provide clear visuals of the interior and exterior building areas. ✓ Reflects architectural and interior desired features such as optimal space sizing and opportunities for art in the key school focal points.
Collaboration	✓ PEP will use the ENA Period to evaluate the furnishing and specialty equipment options with PGCPS, enabling increased collaboration in choice of FF&E to be procured.
Durability	✓ Epoxy or rubber flooring finishes have been considered to accommodate common spills, and to facilitate the cleanability needed afterwards.
Sustainability	✓ Leverage Indoor Environmental Quality factors including enhanced daylight, thermal comfort, acoustics and indoor air quality.

Elementary Schools and Robert Frost “Library” concept

The library environments for any school provide a welcoming and inspiring space for research, learning and collaboration. The spaces foster creativity, critical thinking, and knowledge exploration by design. PEP incorporates two flexible and functional layouts that allow for different learning styles, intended by the age cohorts to attend these spaces. Dedicated areas for studying, group discussions, and interactive learning are mixed with a room that is supported with ample natural light, comfortable seating, and an inviting atmosphere.

Education Program Delivery. The library is designed to provide a functional, inviting environment for students and teachers to support learning endeavors.

Architectural Character. The room heights and location of vertical elements allow for future flexibility of program adjustments over time.

Interior Configuration. PEP incorporates “Learning Stairs” adjacent to the PreK8 library to support additional, ad-hoc spaces for students to read and collaborate in groups. Views of the natural landscape surrounding the schools provide guests a vibrant space to browse and have sufficient natural lighting

Table: Impact of Evaluation Criteria on Conceptual Design

Evaluation Criteria	Influence on Conceptual Design
School Design	✓ The library spaces optimize available daylighting and views to improve the overall satisfaction of users. ✓ Designs focus on beneficial functionality of the library for School Users; namely students and staff for educational purposes and how it supports learning.
Collaboration	✓ PEP has procured FF&E, learning technologies, and digital resources that are affordable, but will use the ENA to continue development.
Durability	✓ Services Provider input has designed filter maintenance from a location standing on the floor - no need for a ladder to access overhead ceiling tiles.
Sustainability	✓ Performance pathway for interior lighting requirements will use photosensors, occupancy sensors, and comprehensive lighting controls to meet ASHRAE 90.1 efficiencies.

Discovery Commons and Classroom concept

The Collaborative Area and Classrooms in a school should be an engaging and inclusive environment that supports effective teaching and learning. PEP has designed a flexible and adaptable space that caters to different teaching styles, and accommodates the diverse needs of students. Learning technologies such as interactive displays, and collaborative workstations are pre-planned with the overall Required FF&E. Discrete entries for the elementary schools and PreK-8 to provide a welcoming arrival for the youngest learners and their families.

Education Program Delivery. The buildings are designed with a child-scale to provide ample height, open space and daylight into rooms that students and staff will feel connected to during the school year. Easily accommodates change in pedagogy, curriculum, technology, support services, enrollment, and even changes in grade-level configuration over the life of the building.

Architectural Character. The "Discovery Commons" are suffused with natural daylight and views, enhancing connectivity to the landscape and the community surrounding the sites and enhancing the "learning ambiance" within the buildings.

Safety and Security. Classrooms use physical security that is robust but unobtrusive such as the door hardware for simple access control. Specialty laboratory or shop rooms will have emergency shutoff and intruder alarm systems.

Quality, Durability, and Usefulness. Classrooms will see consistent, daily use from students and teachers, and have accommodated for that in the design of materials and equipment in these spaces. High efficiency LEDs, durable wall and floor finishes, and quality-based FF&E will set these rooms up well as successful learning environments.

1.3 Sustainability

The design of each school will achieve the below sustainability requirements:

- Achieve LEED v4 BD+C:Schools certification, with a minimum goal of Silver level.
- Where sites allow for Geothermal (GSHP) installation, the designs will target being Net Zero Ready (NZR). This means that when operated according to the intended protocols in a year with average weather conditions, the total Energy Use Intensity (EUI) will be below 30 kBtu/sf/yr. The intent is to facilitate eventual Net Zero Energy (NZE) readiness by adding PV panels to the roofs, and/or a limited amount of site-mounted PV.
- PGCPS CCAP Priority Recommendations:
- Support environmental justice through climate curriculum, training & partnerships: Design team will consider ways to generate engagement in sustainable design with the students. Where possible, the high performance features of the building will be celebrated, through signage and/or dashboards that display building performance.
- Reduce carbon footprint from PGCPS buildings: Buildings will be designed to have low EUI of 35 or less (if using VRF), or 30 or less (if using GSHP).
- Commit to renewable energy sources for a net zero emissions future: The buildings will be designed to allow for future net zero energy operation, after the installation of PV panels via a PPA process. The only exception will be Hyattsville, due to its urban location and limited site available for Geothermal and/or PV Panels.
- Commit to low carbon school transportation: Dedicated parking spaces will be provided for EV charging stations. The final number of spaces is to be coordinated. Bike racks will be provided at schools that have safe bike routes that connect to the campus.
- Reduce food waste and grow climate-friendly food: Design team will attempt to integrate with existing PGC Composting program, and will reuse trays to reduce waste.
- Commit to sustainable materials management and procurement: Design team will research environmentally preferable materials, and specify them wherever budget and maintenance requirements allow. When possible, priority will be given to materials with transparency documentation such as EPDs or HDPs, and for materials with low embodied carbon. At least 75% of construction waste will be diverted from landfills.
- Commit to climate resilient land management: Design team will seek to minimize impact on existing sites by specifying native vegetation, and minimizing site disturbance to the extent possible within the site constraints.
- Lead by example to support transformational change: Design team will prioritize features that support the physical and mental health of students and faculty. The project will also utilize all-electric systems for HVAC and water heating.

ROBERT FROST INTERIORS “COLLABORATIVE LEARNING AREA” CONCEPT

SITE

2.1 Civil Narrative - Margaret Brent

Infrastructure

The existing school will be demolished and a new facility will be constructed on each site. To support the new education facility, a new water and sewer service connection will be constructed to service the building. A dedicated bus loop and parking facilities will be constructed to separate vehicular traffic and bus traffic during school hours.

Stormwater Management

The new educational facilities will increase the impervious area and require innovative stormwater management controls to provide water quality and quantity control for the site. Using the 2010 Stormwater Design Manual, stormwater management requirements were computed for the entire limits of disturbance. A target water quality volume has been established using the guidance provided in the Maryland Stormwater Management Design Manual: Chapter 5. The objective is to provide sufficient water quality volume so each site mimics woods in good conditions.

Storm Drain Analysis

A storm drain design was developed for the sites to safely convey runoff to and from the stormwater management facilities. We utilized the rational method to estimate the runoff to each sub-drainage area. The 10-year design flows were routed through the system using the HEC-22 method to size the pipes and inlets. Outfall riprap has been sized based on the Maryland Department of Environment design charts provided in the Erosion and Sediment Control Manual.

Erosion and Sediment Control

To address the TIER II and Sediment Control requirements, a plan was generated to minimize sediment-laden water from discharging offsite during construction. Devices such as stabilized construction entrance, silt fence, super silt fence, sediment traps, and permanent stabilization will be implemented before construction. The team will work with the contractor to develop a sequence of construction that will be incorporated into the plans.

2.1 Civil Narrative - Robert Frost K-8

Existing Conditions

The existing school site is located at 6419 85th Avenue in New Carrollton, MD.

The existing site is approximately 12.52 acres of land and is occupied by an existing school building (approximately 42,268 SF) with a small portable classroom adjacent to the main school, a small asphalt parking lot to the south, 3 playgrounds and hardtop surface for recreational activities. The site is accessed by various concrete sidewalk paths and asphalt paths.

The site topography drains mainly to 85th Avenue by way of a storm drain network or by a natural swale. The site drainage is divided by a ridge line that divides Parcel 3 (open field) and Parcel A (school) of the site. There are no signs of stormwater management facility practices on site. All existing utilities including water, gas, electric, sanitary or storm on site will be disconnected, abandoned or removed.

Proposed Conditions:

The proposed site will include a new school building approximately 89,192 SF to replace the existing school building. Along Good Luck Road there will be a proposed one-way bus loop circulation entrance and exit only. There will be two large parking lots for staff or visitors on site. Parking will include ADA and electric vehicle reserved parking spots. The site will provide educational outdoor opportunities, playground equipment for recreational activities, and a multi-purpose field.

The site will implement stormwater management throughout the site with new micro bioretentions. New utility service connections will be installed for water, fire, sanitary, electric and gas lines. A new storm drain system to convey site runoff will be constructed. The realigned off-site storm drain conveyance system will be independent of the on-site storm drain collection system.

2.2 Landscape Architecture Narrative - Elementary Schools

Building Location + Orientation
The key considerations are safety and accessibility, views to and from the building, the school's positioning as a positive presence in the neighborhood, and existing natural features such as topography, forest stands, and sun angles. The school facilities are designed to provide community hubs: thoughtfully placed buildings with shared indoor and outdoor programming.

Pedestrian Circulation
The pedestrian circulation systems provide connections with surrounding neighborhoods and guide movement around the campus. Every programming element on the site has ADA-compliant access. Vehicular circulation is separated from the pedestrian network, and CPTED principles guide design decisions to provide clear and consistent lines of sight and well-distributed lighting.

Vehicular Circulation
There are separate entry points and circulation systems for buses and cars. The parking counts follow the Ed Spec (100 spaces at each school), while also incorporating tree canopy within the parking lots and in buffers at the perimeters. Curb cuts are minimized for safe movement to and from neighboring streets, using existing curb cuts where possible to maintain existing traffic patterns.

Outdoor Learning
Educational opportunities are located throughout the campus for active and passive learning; they include outdoor classrooms (two per campus, each accommodating 35 students), raised beds and edible gardens, nature trails, and meadows. Permit-required measures like bioretention facilities for stormwater management are designed as teaching tools with gathering areas nearby. The plant palette consists of 100% native and adaptive species, and tree canopy coverage has been increased.

Outdoor Recreation
Recreation facilities include sport courts, flexible lawn space, and structured play. Structured play is separated by age (2-5 years and 5-12 years).

Community Interface
Pedestrian connections to the community have been preserved and enhanced. Programmed areas are designed to be safe and defensible during school hours, while providing community amenities at other times.

2.2 Landscape Architecture Narrative - Robert Frost K-8

The school campus spans a 12-acre landscape that is designed to cater to the needs of 2,000 children in grades K-8, offering abundant outdoor opportunities for both active play and enriched learning experiences. Ample parking and a spacious entry plaza are provided along with a dedicated bus loop on the north side of the school. On the East side of the property to the south, themed around outdoor education, the curvy path loops through the outdoor classrooms, playgrounds, paved courts, and educational garden in a continuous ribbon. To minimize negative impacts of development, the west woodland was minimally disturbed and the natural environment will serve as educational arboretum with a trail going through the woods. This will provide an opportunity for students and the community to experience the quality of the natural environment and ecological health. The impervious surfaces have been reduced by using water detention, infiltration, bio retention and rain garden providing learning opportunities for children at the same time. To reduce noise pollution, appropriate setbacks and buffers have been used including planting and solid fences. The west courtyard with an outdoor stage and seating has been created to accommodate various forms of outdoor learning.

The campus perimeter is secured by fences.

New Streetscape sidewalk and planting is provided along Good Luck Road.
Landscape buffer plantings are provided along the rest of the three sides to mitigate development impacts to the neighbors

BUILDING SYSTEMS

3.1 Structural Narrative - Elementary Schools

Margaret Brent Elementary School

Margaret Brent Elementary School will be a structural steel building with braced steel frames and masonry shear walls. The gravity load support system consists of steel roof deck on steel beams and long span steel joists, concrete on metal deck on composite steel beams and girders on elevated floors and slab on grade at the ground floor. Floor framing will be supported by steel columns on drilled shafts that bear on sound soil. The brick façade will be supported on grade beams spanning between drilled shafts at the foundation level, and on relieving angles on elevated floors where required. Hung brick lintels will be required where the width of windows or louvers exceeds 8 feet. The exterior glazing system will bear directly on turn-down slabs on grade. At the perimeter of the building where the exterior grades fall below the finish floor, concrete retaining walls will be installed. Where the exterior grades are higher than the finish floor, either masonry or concrete curbs will be installed above the slab on grade.

Templeton Elementary School

Templeton Elementary School will be a structural steel building with braced steel frames and masonry shear walls. The gravity load support system consists of steel roof deck on steel beams and long span steel joists, concrete on metal deck on composite steel beams and girders on elevated floors and slab on grade at the ground floor. Floor framing will be supported by steel columns on spread footings that bear on compacted soil. Brick façade will be supported on strip footings at the foundation level, and on relieving angles on elevated floors where required. Hung brick lintels will be required where the width of windows or louvers exceeds 8 feet. Exterior glazing system will bear directly on turn-down slabs on grade. At the perimeter of the building where the exterior grades fall below the finish floor, concrete retaining walls will be installed. Where the exterior grades are higher than the finish floor, either masonry or concrete curbs will be installed above the slab on grade. Concrete foundation walls will be installed between the two-story and three-story sections of the building.

3.2 Structural Narrative - Robert Frost K-8

Robert Frost K-8 consists of two structurally isolated wings – the academic wing and the commons wing. The four-story academic wing is a steel structure for gravity support and intermediate reinforced masonry shear walls as the lateral system. The masonry shear walls utilized are the four stair shafts and one elevator shaft. The two-story commons wing is a steel framed structure with varying roof heights due to programming such as the gymnasium, auxiliary gymnasium, and the library. The lateral system in the commons wing consists of steel braced frames and moment frames, though they are not specifically detailed for seismic resistance. The roof system for both structures is metal roof deck over K-series open web steel joists. The long spans over the gym, auxiliary gym, and dance studio are handled with long span joists. All roof areas have an allowance for future photovoltaic panels. The elevated floor system of both structures is composite wide flange framing. Lightweight concrete over metal floor deck is used throughout except the main gymnasium area which uses normal weight concrete. The concrete at the ground level is a five-inch-thick slab on grade. The elevation of the commons area is five feet lower than the academic area while the second-floor elevations are aligned. The building is considered Risk Category III.

3.3 MEP/FP/AV/IT Systems - Elementary Schools

Margaret Brent Elementary School

Mechanical Design Narrative

The HVAC systems serving Brent Elementary School will be distributed geothermal water-source heat pumps throughout the building with a dedicated outside air system (DOAS) providing ventilation air to occupied spaces. Water-source heat pumps will provide conditioning for 1-2 classrooms each and admin areas will have multiple rooms per heat pump. Large gathering spaces such as the cafeteria, gymnasium, and library will each have their own heat pump. There is one DOAS supplying all required outside air. Cooling for dry food storage, as well as MDF/IDF spaces will be through mini-split heat pumps with rooftop mounted condensing units.

Heat will be rejected or absorbed from a geothermal wellfield which is comprised of 78 bores drilled to 500' depth. This system will be comprised of a geothermal wellfield loop and a hydronic loop within the building, allowing water to flow to all heat pumps and facilitate heat rejection to the wellfield. Both the wellfield and building loops will utilize separate lead-lag base mounted pumps.

Electrical Design Narrative

The building will be provided with a 480/277V, three phase, four wire electrical system. This service will serve all building and site needs. Distribution transformers will be located throughout the building to provide services to 120V receptacles and any 208V, single phase or three phase loads. Sustainability features include electric vehicle charging stations in designated parking areas, solar ready electrical infrastructure including pathways to the roof, advanced metering system that will meter individual load types (HVAC, Lighting, Receptacles, Kitchen) and daylight harvesting photocells for lighting in daylit areas. The building will be equipped with an emergency generator to serve both Life Safety and Optional Standby loads throughout the building.

Technology Design Narrative

The building will be provided with security, IT and audiovisual systems. Security systems will include access control (electrified door hardware and associated door controllers by Genetec), video surveillance cameras (high resolution capabilities and easy to use software) and motion sensors (ceiling or wall mounted including headend equipment located in the MDF/IDF closets). IT systems include clocks, paging/intercom, wireless access, communications room infrastructure, and basket tray in the corridors above ceiling along with ladder rack in the MDF/IDFs for cabling support/pathways. The ladder rack in the MDF/IDFs will provide the ability to properly manage the slack loops of both horizontal distribution cable as well as the backbone fiber optic cable without occupying precious wall space. Audiovisual systems include classroom connectivity from the teacher's workstation to the audio and video station in the room, in addition to classroom amplification. Auxiliary sound and video systems will be provided in gymnasiums, auditoriums, and multipurpose rooms. Conference Rooms will feature wall-mounted displays with video-conferencing capabilities.

Plumbing Design Narrative

The new Margaret Brent Elementary School will be provided with commercial grade low flow fixtures that are Watersense labeled. These fixtures will be served by domestic water and sanitary system interconnected to the existing municipal system. The domestic hot water demand for the school will be met by utilizing the heat rejection/absorption of the geothermal system by using geothermal water source heat for the heating of water for fixtures. The sanitary system outflow will be treated appropriately before going to the municipal system by using plaster interceptors for any art sinks. Grease abatement for food service wastes to the municipal system will be achieved by utilizing a 1500 gallon grease interceptor sized per WSSC standards. Roof drainage for the school will feature pairs of primary and secondary roof drains with overflow rain water visible through downspouts on the building exterior, and with primary roof drainage routed down through the building to below grade and out to storm water management systems.

Fire Protection Design Narrative

The building design for the Margaret Brent Elementary School was assessed to determine the demand design points of a fire protection system to provide life safety. The source pressures and flows available on site for the school are adequate and satisfy the requirements of NFPA-13 for the hazards recognized without requiring a fire pump. The building design has also been analyzed for the requirement of standpipes per NFPA-1 and NFPA-101 and no standpipes are required for the school.

Templeton Elementary School

Mechanical Design Narrative

The mechanical system integrates geothermal water source heat pumps, tapping into the Earth with 100 bores as a renewable energy reservoir to regulate indoor temperatures efficiently. Complementing this system, a variable primary variable secondary pumping strategy optimizes energy distribution throughout the building, ensuring comfort while minimizing energy wastage.

The gymnasium features destratification fans that circulate air helping to maintain an optimal climate for physical activity with minimal energy consumption. Furthermore, the school's employs a variable speed ventilation system in the form of a Dedicated Outdoor Air System (DOAS) with a face and bypass strategy, dynamically adjusting airflows to meet occupancy fresh air demands. Through these cutting-edge solutions, the school not only reduces its environmental footprint but also serves as a model of sustainable design within the educational landscape.

Electrical Design Narrative

The building will be provided with a 480/277V, three phase, four wire electrical system. This service will serve all building and site needs. Distribution transformers will be located throughout the building to provide services to 120V receptacles and any 208V, single phase or three phase loads. Sustainability features include electric vehicle charging stations in designated parking areas, solar ready electrical infrastructure including pathways to the roof, advanced metering system that will meter individual load types (HVAC, Lighting, Receptacles, Kitchen) and daylight harvesting photocells for lighting in daylit areas. The building will be equipped with an emergency generator to serve both Life Safety and Optional Standby loads throughout the building.

Technology Design Narrative

The building will be provided with security, IT and audiovisual systems. Security systems will include access control (electrified door hardware and associated door controllers by Genetec), video surveillance cameras (high resolution capabilities and easy to use software) and motion sensors (ceiling or wall mounted including headend equipment located in the MDF/IDF closets). IT systems include clocks, paging/intercom, wireless access, communications room infrastructure, and basket tray in the corridors above ceiling along with ladder rack in the MDF/IDFs for cabling support/pathways. The ladder rack in the MDF/IDFs will provide the ability to properly manage the slack loops of both horizontal distribution cable as well as the backbone fiber optic cable without occupying precious wall space. Audiovisual systems include classroom connectivity from the teacher’s workstation to the audio and video station in the room, in addition to classroom amplification. Auxiliary sound and video systems will be provided in gymnasiums, auditoriums, and multipurpose rooms. Conference Rooms will feature wall-mounted displays with video-conferencing capabilities.

Plumbing Design Narrative

The domestic water supply for the new Robert Frost K-8 School was assessed to determine if there was adequate pressure to supply plumbing fixtures at the most hydraulically remote areas of the building. This assessment concluded that pressure on the site was not adequate and the school will require a domestic water booster pump to ensure and preserve normal operation of fixtures in the upper floors of the classroom areas.

The Robert Frost K-8 School will be provided with commercial grade low flow fixtures that are Watersense labeled. These fixtures will be served by domestic water and sanitary system interconnected to the existing municipal system. The domestic hot water demand for the school will be met by utilizing the heat rejection/absorption of the geothermal system by using geothermal water source heat for the heating of water for fixtures. The sanitary system outflow will be treated appropriately before going to the municipal system by using plaster interceptors for any art sinks and acid waste interceptors for the science labs in the school. Grease abatement for food service wastes to the municipal system will be achieved by utilizing a 2000 gallon grease interceptor sized per WSSC standards. Roof drainage for the school will feature pairs of primary and secondary roof drains with overflow rain water visible through downspouts on the building exterior, and with primary roof drainage routed down through the building to below grade and out to storm water management systems.

Fire Protection Design Narrative

The building design for the Templeton Elementary School was assessed to determine the demand design points of a fire protection system to provide life safety. Due to the building height, the source pressures and flows available on site for the school are not adequate to satisfy the requirements of NFPA-13 for the hazards recognized. The school will require a fire booster pump to supply critical sprinkler coverage for life safety. The height of the school also requires that standpipes are placed at each egress stair and the stage area per NFPA-1 and NFPA-101.

3.4 Mechanical Systems - Robert Frost K-8

HVAC Design Narrative

The HVAC systems serving the Robert Frost School will be distributed geothermal water-source heat pumps throughout the building with a dedicated outside air system (DOAS) providing ventilation air to occupied spaces. Water-source heat pumps will provide conditioning for 1-2 classrooms each and admin areas will have multiple rooms per heat pump. Similarly, 1-2 heat pumps will be provided for science labs following proper zoning strategies. Large gathering spaces such as the cafeteria, gymnasiums, dance studios, fitness room, and library commons will each have their own heat pump. There is one DOAS supplying all required outside air. The ventilation strategy will be employed with VAV/CAV boxes to each space for dynamic control. Cooling of electrical, MDF, and IDF rooms shall be achieved via mini-split VRF systems with the condensing units mounted on the roof.

Heat will be rejected or absorbed from a geothermal wellfield which is comprised of 188 bores drilled to 500' depth. This system will be comprised of a geothermal wellfield loop and a hydronic loop within the building, allowing water to flow to all heat pumps and facilitate heat rejection to the wellfield. Both the wellfield and building loops will utilize separated Lead/Lag/Standby base mounted pumps.

Electrical Design Narrative

The building will be provided with a 480/277V, three phase, four wire electrical system. This service will serve all building and site needs. Distribution transformers will be located throughout the building to provide services to 120V receptacles and any 208V, single phase or three phase loads. Sustainability features include electric vehicle charging stations in designated parking areas, solar ready electrical infrastructure including pathways to the roof, advanced metering system that will meter individual load types (HVAC, Lighting, Receptacles, Kitchen) and daylight harvesting photocells for lighting in daylit areas. The building will be equipped with an emergency generator to serve both Life Safety and Optional Standby loads throughout the building.

Technology Design Narrative

The building will be provided with security, IT and audiovisual systems. Security systems will include access control (electrified door hardware and associated door controllers by Genetec), video surveillance cameras (high resolution capabilities and easy to use software) and motion sensors (ceiling or wall mounted including headend equipment located in the MDF/IDF closets). IT systems include clocks, paging/intercom, wireless access, communications room infrastructure, and basket tray in the corridors above ceiling along with ladder rack in the MDF/IDFs for cabling support/pathways. The ladder rack in the MDF/IDFs will provide the ability to properly manage the slack loops of both horizontal distribution cable as well as the backbone fiber optic cable without occupying precious wall space. Audiovisual systems include classroom connectivity from the teacher's workstation to the audio and video station in the room, in addition to classroom amplification. Auxiliary sound and video systems will be provided in gymnasiums, auditoriums, and multipurpose rooms. Conference Rooms will feature wall-mounted displays with video-conferencing capabilities.

Plumbing Design Narrative

The domestic water supply for the new Robert Frost K-8 School was assessed to determine if there was adequate pressure to supply plumbing fixtures at the most hydraulically remote areas of the building. This assessment concluded that pressure on the site was not adequate and the school will require a domestic water booster pump to ensure and preserve normal operation of fixtures in the upper floors of the classroom areas.

The Robert Frost K-8 School will be provided with commercial grade low flow fixtures that are Watersense labeled. These fixtures will be served by domestic water and sanitary system interconnected to the existing municipal system. The domestic hot water demand for the school will be met by utilizing the heat rejection/absorption of the geothermal system by using geothermal water source heat for the heating of water for fixtures. The sanitary system outflow will be treated appropriately before going to the municipal system by using plaster interceptors for any art sinks and acid waste interceptors for the science labs in the school.

Grease abatement for food service wastes to the municipal system will be achieved by utilizing a 2000 gallon grease interceptor sized per WSSC standards. Roof drainage for the school will feature pairs of primary and secondary roof drains with overflow rain water visible through downspouts on the building exterior, and with primary roof drainage routed down through the building to below grade and out to storm water management systems.

Fire Protection Design Narrative

The building design for the Robert Frost K-8 School was assessed to determine the demand design points of a fire protection system to provide life safety. Due to the building height, the source pressures and flows available on site for the school are not adequate to satisfy the requirements of NFPA-13 for the hazards recognized. The school will require a fire booster pump to supply critical sprinkler coverage for life safety. The height of the school also requires that standpipes are placed at each egress stair and the stage area per NFPA-1 and NFPA-101.

3.5 Food Service

The facilities will be equipped with all-new commercial-grade appliances meeting current N.S.F. requirements and installed in accordance with local governing health codes. The kitchens will be designed to operate as an on-site prep/cooking facility equipped to produce and serve meals to the elementary school and K-8 student populations. All cooking will be done on all-electric equipment which varies depending on the project (elementary school vs. K-8) but follows the County's standard selection. Serving of students will take place on multiple serving counters (dependent on schools and student population) and equipment has been selected based on the County's standard. Per County standard the soiled utensils will be wash, rinsed, and sanitized in a three-compartment sink for the elementary schools. For Frost K-8 soiled utensils and reusable trays will be washed via a conveyorized dishmachine.