FLINT HILL SCHOOL
PETERSON MIDDLE SCHOOL

A4LE LEsolutions Awards

October 2021

“...we created an environment that’s large enough to give middle schoolers the space to learn, grow and enjoy...to ensure that each student’s unique learning journey is understood, respected and supported.”

Flint Hill School
Assistant Head of School

Flint Hill School is a progressive independent school with 1,000 students in Northern Virginia. Originally in a 4-story building, the school has grown into two campuses over the past 20 years. While this expansion created a large new Upper School campus, the Lower and Middle Schools were growing and still housed in the 4-story structure. As curriculum expanded, it became necessary to create a new home with a strong identity for the Middle School. The design team conducted extensive meetings with all faculty departments and staff members, as well as student, parent, and trustee representatives, to develop a comprehensive program of requirements. Additionally, the team studied various opportunities for the new Middle School location. These were all discussed in workshop meetings with a planning committee made up of representatives of all interest groups. It was determined that the best solution was to locate the Middle School adjacent to the Upper School on its large campus, allowing the 7th & 8th graders to share the expansive athletic and performing arts facilities. One of the key goals that came out of the programming sessions was to create an inspiring learning environment to encourage critical thinking through various learning opportunities. The school wanted a vision-driven design to create a new, inspiring home for the Middle School. The resulting bold design is a workshop environment that encourages creativity and experimentation.

The building responds to and enables a curriculum centered on constructive, collaborative processes. Like old industrial buildings where things were made, this new school incorporates exposed structure, MEP systems, transparency, and natural materials to expand awareness and learning. Classrooms, labs, and project areas open onto each other and can expand or contract depending on the learning that is happening at that moment. The large Innovation Center provides areas for exploring and making, allowing for questioning and exploration — all part of learning critical thinking. Additionally, there is a large quiet learning commons with small group study rooms and a large collaboration commons with movable tables and chairs to enable multiple functions (large working groups, presentations, school assembly, dining). Technology plays an integral role in the curriculum and is available in all the learning environments. Most of the building is on-grade with large glazing elements to allow students to connect directly to nature and the outdoors at any time. A large terrace extends the length of the building and steps down to the playing fields, creating a natural grandstand for sporting events. An adjacent purpose-built play area provides physical activities geared specifically to 7th & 8th grade students.

Middle School students are now in a new, dynamic learning environment that encourages them to develop and apply skills and knowledge to better reach their potential in life. This bold new building is a catalyst for inspired teaching, for creative learning, and for Flint Hill's programs moving forward for the Lower School and Upper School.

PROJECT STATISTICS

Client Type:	Independent Day School
Project Type:	Middle School (7th & 8th Grades)
Project Size:	40,000 GSF
Project Cost:	$17.32M
Completion:	September 2020


10900
ENTERING A HUSKY HEALTHY ZONE
ENTERING A HUSKY HEALTHY ZONE
PETERSON MIDDLE SCHOOL

Scope & Budget

In 2016 Flint Hill School undertook an examination of the master plans for its two campuses in Fairfax County, Virginia. While the Upper School had moved to a new nearby campus in 2001, the Lower and Middle Schools were still housed in a 4-story building on the school's original campus. Expanding programmatic needs had led to the urgent need to move one of these two divisions out of the building into a new home. Having helped the school through planning and design challenges since 1999, the Architect intimately knew the school's mission and programmatic needs. Studies were made to build a new Lower School (JK-6) on the original campus, but it was quickly realized that this would involve a long, intensive County planning approval process as well as extensive site costs. The Architect then looked at building a new Middle School (7th & 8th grades) on the Upper School campus. Planning approval had been obtained years earlier for a proposed multi-purpose building adjacent to the Upper School, which was never built. Placing the Middle School on that site would be an easier County-approval process. In addition, the Middle Schoolers could use the Upper School's performing arts classes and extensive athletic facilities.

With the site now set, the Architect and school met in workshops over 6 months to develop the program goals for the project. Part of this process were the nearly 40 meetings with all the faculty and staff plus representatives from students, parents, trustees, and the community. The Architect worked with the school to prioritize the goals. These were then used in all decision-making throughout the rest of the project and to measure the success of the project after completion. These ranged from the usual quantitative (16 classrooms, 3 science labs, 1 art studio, etc.) to the broader, and arguably more important, qualitative goals. The school wanted an inspiring learning environment as well as a strong identity for the Middle School which had always been in ill-defined space. The building needed to be flexible to change as programs evolved. It needed to be open with visible connections within and to the outside views. There needed to be opportunities for social and emotional learning through small and large gathering places. Finally, the building needed to be healthy, safe, and secure. The Architect eagerly met this challenge and, through a design charrette process, produced an inspiring building that has garnered praise from within the school community as well as the neighborhood. Even through the Covid-19 pandemic the building has proven its ability to meet this challenge through inherent flexibility to adapt teaching while maintaining social distancing. The 7th & 8th graders are eager to arrive each day to this creative learning environment.

TYPE OF FACILITY

Middle School (7th & 8th Grades)

TYPE OF CONSTRUCTION

New Construction

TYPE OF PROJECT DELIVERY

CM @ Risk

DAILY AVERAGE OCCUPANCY

240 – 200 Students / 40 Faculty & Staff

DATE OF COMPLETION

September 2020

SITE AREA

50 Acres

FLOOR AREA (GSF)

40,000 GSF

NUMBER OF STORIES

2 Stories

CONSTRUCTION COSTS

Building Area/TGA New:	40,000 TGA
Net Assignable Area New:	37,200 NSF
Building Efficiency Ratio (TGA/NAA) New:	93%
Actual Costs/Site Development Costs:	$4.94M
Actual Costs/Building Costs:	$17.32M
Actual Costs/Furnishing Costs:	$1.0M
Actual Costs/Technology Costs:	$0.55M
Actual Costs/Total Project Costs:	$30.16M


3
2
1

EQUITABLE COMMUNITIES

When students can engage with diverse backgrounds and perspectives, their understanding expands, compassion deepens, and outlook broadens. At Flint Hill, diversity, equity, and inclusion is not a box that is simply checked. The diversity in this school's community is vital to their mission and an essential element of their educational excellence. They fundamentally believe that their individual existence, academic environment, and world at large are enhanced through difference. The director of institutional equity and inclusion resides at the center of operations, as they consistently and proactively address systems and structures to ensure equity for all in the community, regardless of who you are or how you learn. They commit to education and training across the school community to promote ongoing dialogue. They adorn the walls with international flags as a celebration of the rich makeup of the School and invite families to be active participants in the pursuit of understanding. At the heart of all they do is the core value of "Respect and value all equally," which they believe fosters a better, more equitable world. Flint Hill is a school where all students can safely and confidently be themselves.

DESIGN FOR INTEGRATION

The main guiding design precept was to create a place for Inspiration and Innovation. In their previous space, the FHS middle school's progressive curriculum was fighting against its old-style built environment; one that was built around teacher-centered learning. The new design focuses on how students learn best by providing many modes of learning—from small and quiet study spaces to large project areas that encourage collaboration. What we sought to create is a student-centered educational space that fosters innovation and inspiration through a collaborative process. Collaborative environments are supported by creating visual and physical connections between spaces. From adaptable furniture solutions to utilizing corridors for teaching and incorporating smart technology, flexibility supports the diversity of learning styles and is key to meeting the needs of today's students and is ready for changes in the future.


EXIT
EXIT

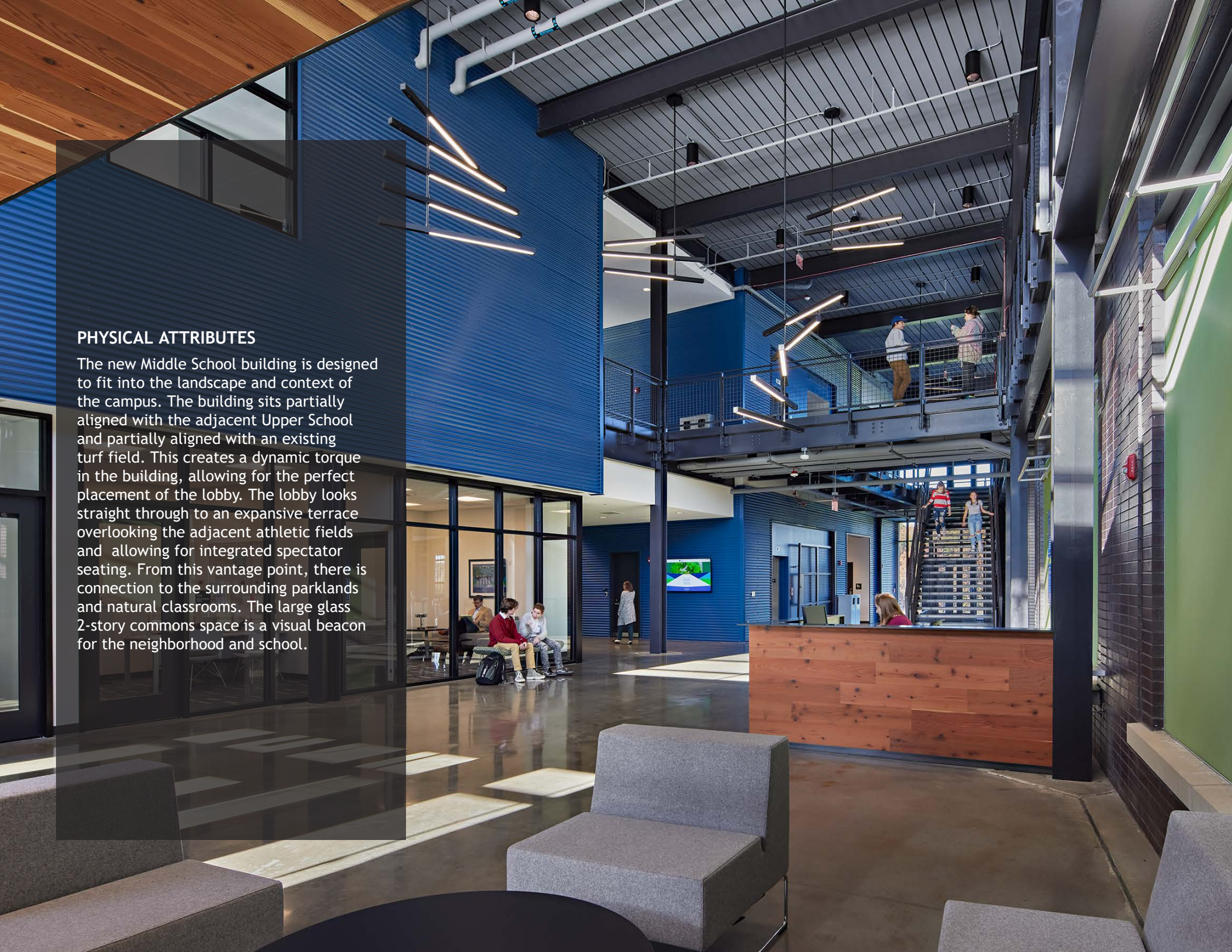
DESIGN FOR CHANGE

This building was built for change! It is an open flexible environment, with an adaptable steel structure, wireless technology, durable materials, and flexible furniture. There are large and small areas that can expand or contract when needed and can easily be used for functions other than just a classroom, project area or meeting space. Areas like the two Commons are multi-functional and used for dining or community-use meeting spaces. The COVID-19 pandemic has tested the school's flexibility. The building opened September 2020 when all social contact was limited. Many students were at home distance learning. FHS was able to pivot and allow all student the opportunity to learn in school in a building that transformed essentially overnight, because all the systems and furniture lent themselves to the new safety measures. Conference rooms became isolation areas; dining commons became the new screening area, open Project Areas and adjacent fields became additional classrooms. The building has back up power from an on-site generator. A large basement element will allow all to shelter in place in an emergency.

DESIGN FOR DISCOVERY

The architect and FHS worked together every step of the way on this project. It was a culmination of 20+ year relationship with between the Owner and Architect. Continuing to work together over such a long period of time allowed the process to be seamless, collaborative, and fun! The resulting design met their goals for the building. When asked how the building was functioning, even in a COVID-19 world, the Assistant Head of School had the following to say:

"This Middle School was designed to embrace students' unique needs during this time in their lives; a place where students learn in a brand-new building designed from the bottom up based on what they need. To bring out the best in students, they need to be known. That is why we created an environment that's large enough to give middle schoolers the space to learn, grow and enjoy what our director of the Middle School calls "responsible independence," but small enough — with a maximum of 100 students per grade — to ensure that each student's unique learning journey is understood, respected and supported."

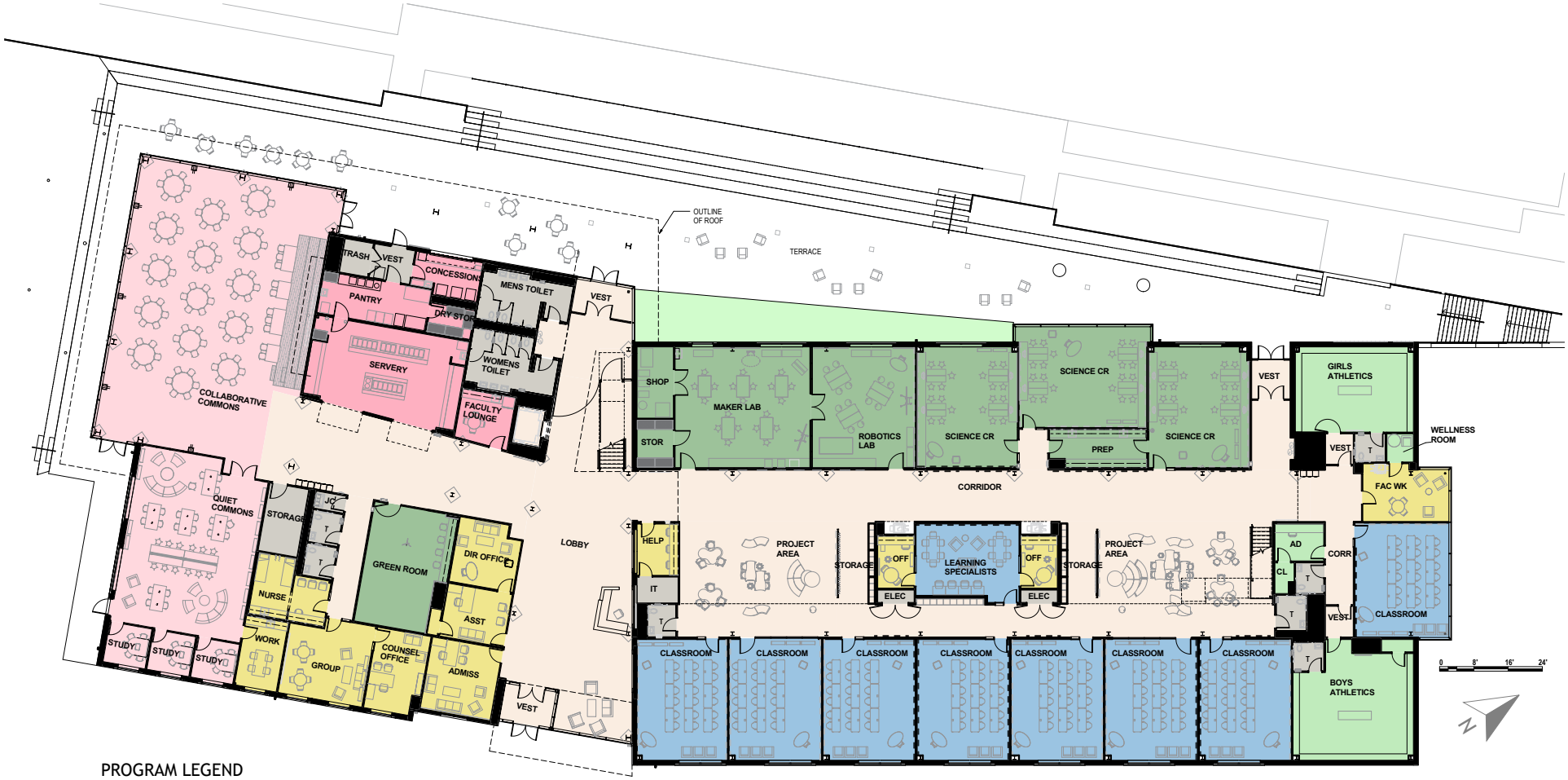


PHYSICAL ATTRIBUTES

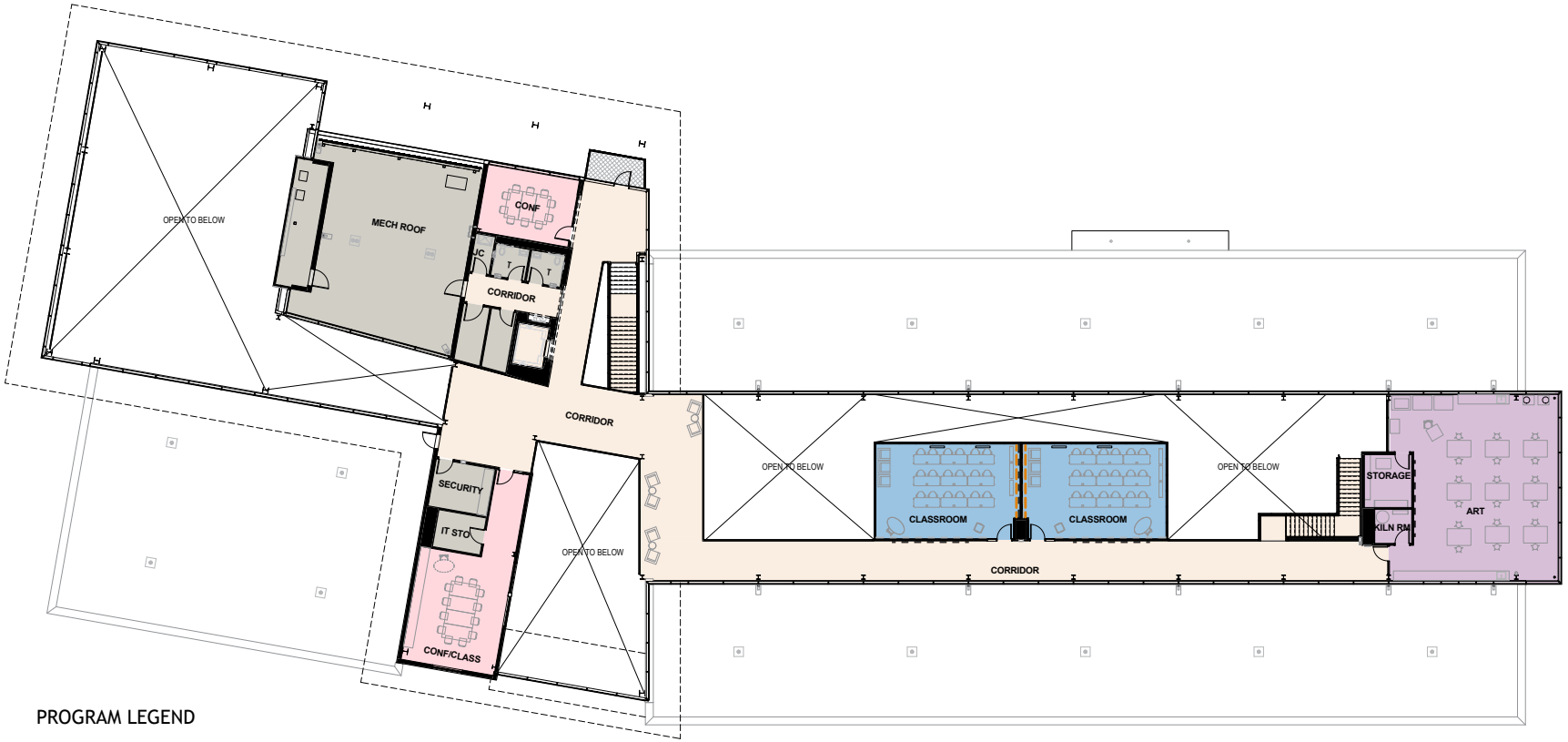
The new Middle School building is designed to fit into the landscape and context of the campus. The building sits partially aligned with the adjacent Upper School and partially aligned with an existing turf field. This creates a dynamic torque in the building, allowing for the perfect placement of the lobby. The lobby looks straight through to an expansive terrace overlooking the adjacent athletic fields and allowing for integrated spectator seating. From this vantage point, there is connection to the surrounding parklands and natural classrooms. The large glass 2-story commons space is a visual beacon for the neighborhood and school.


Bio-retention Facilities
Existing Upper School
New Peterson Middle School
N

Site Plan



First Floor Plan



PROGRAM LEGEND

- CIRCULATION
- FACULTY/ADMIN
- ATHLETICS
- SCIENCE
- ACADEMICS
- ARTS
- DINING
- MEETING/GATHERING
- SERVICE/MAINTENANCE

Second Floor Plan

TREES

Appalachian Red Redbud
Atrovirens Oriental Spruce
Autumn Brilliance Serviceberry
Bald Cypress
Black Gum
Bloodgood Plane Tree
Centennial Magnolia
Emerald Arborvitae
Green Giant Arborvitae
Hackberry
Jane Magnolia
Merril Magnolia
Moonglow Magnolia
Norway Spruce
Oak Leaf Holly
Red Maple
Scarlet Oak
Shumard Oak
Swamp White Oak
Valley Forge Elm
Venus Dogwood
Virginia Pine
Willow Oak
Yellowwood

SHRUBS & GRASSES

Allegheny Viburnum
Annebelle Hydrangea
Arctic Fire Red Twig Dogwood
Baby Spice Viburnum
Bayberry
Blue Muffin Viburnum
Blue Prince Holly
Blue Princess Holly
Bobo Hydrangea
Boomerang Dwarf Lilac
Brandywine Viburnum
Common Rush
Densa Inkberry
Emerald Envy Viburnum
Everlow Yew
Gro-Lo Fragrant Sumac
Gulftied False Holly
Hatfield Yew
Heavy Metal Switchgrass
Henry's Garnet Winterberry
Pfitzer Juniper
Prague Viburnum
Red October Andropogon
Shasta Viburnum
Snow Queen Oak Leaf Hydrangea
Sugar Shack Buttonbush
Tussock Sedge
White Cloud Muhly Grass
Winter Boxwood
Winter Red Winterberry

PERENNIALS/GROUND COVERS

Blue Chip Dwarf Buddelia
Caesar's Brother Iris
Copper Iris
Happy Returns Daylily
Hyperion Daylily
Lilyturf
Red Barrenwood

SITE INSPIRATIONS & MOTIVATIONS

The landscape for the Peterson Middle School project consisted of landscape plants and turf lawn adjacent to the building that do not require a permanent irrigation system for establishment or maintenance. The plant materials are suited for the disturbed silty sand and silty clay soil found on the site and for the urban environmental conditions of the surrounding area. In addition to selection of plant materials suitable for the site's particular urban environment, the specific installation procedures for the plants will foster their establishment and durability.

All impervious runoff from the building is treated in bio-retention areas prior to discharge to the campus storm water system (which eventually ends in the Chesapeake Bay). Plant materials installed in the bio-retention areas consist of native grasses, fruit bearing shrubs, and small fruit bearing trees, which will provide cover for habitat and food sources for birds and mammals. Bio-retention areas are in visible locations adjacent to the building and are used by the Middle School and Upper School science programs as demonstration for storm water treatment and habitat restoration.

EDUCATIONAL GOALS & OBJECTIVES

The Architect has continually updated Flint Hill's master plan for over 20 years. Included in the master plan was the proposal to build a dedicated middle school. In 2017 an intensive process began to determine where to build and the requirements to see the school long into the future. The Architect met with the school's Leadership Group to establish a plan to be as inclusive as possible. The process included 35 interviews with the entire staff and faculty as well as representatives from parents, students, trustees, and larger community. The final program was developed in workshops with the Leadership Group.

COMMUNITY GOALS

As a school building within the community, the building and its amenities act as central elements for the immediate neighborhood and greater Oakton community. With the new project, Flint Hill School was able to strengthen and improve the fields, landscaping, and connecting elements as well as add a new playground/activity element to the campus. Originally, the Middle School did not plan on having a playground; however, during the planning process, there were many requests for this type of area, that it could not be ignored. It is now a great source for outdoor play, teaching and community gathering.

DURABLE & GREEN MATERIALS

As the building design progressed, there was always an eye on the budget and operating. There were multiple cost evaluations and value engineering efforts, including a life cycle cost analysis to compare several high-performance HVAC systems. These systems included air-cooled variable refrigerant volume (VRV), water-cooled/geothermal VRV, and conventional geothermal heat pump systems. The result was the selection of the air-cooled VRV system, with dedicated outdoor air systems. Keeping the building as efficient, durable, and purpose-oriented was a priority. After Design Development, the A/E worked with the school's leadership to reduce a significant amount of square footage in-order to meet the budget. As a result, the building is more compact and allows for the future addition of classrooms for a third-grade level, while keeping the support spaces the right size to accommodate that future growth. Materials are sustainable, durable, and long lasting. The exterior consists of cast-in-place concrete, brick, metal, and glass. Interior materials are steel, polished concrete, recycled wood paneling and natural cork. The building is specifically designed to run on low energy consumption to reduce the cost of use, such as maximizing the use of natural lighting and increasing thermal regulation.


LEARNING
COMMONS
VEGGIES
TODAY
LOAD SOUP
HAM SANDWICH
OR TURKEY
DESSERT
VEGGIE WRAP
FRENCH FRIES
NUGGETS
PIZZA

ENERGY-EFFICIENCY

A high-performance HVAC system was a key goal for this project. After evaluating several system types, the final design uses air-cooled VRV heat recovery systems coupled with dedicated outdoor air systems. The outdoor air systems use energy recovery wheels to pre-condition incoming outdoor air with the building exhaust air stream. Passive features include a high-performance building envelope and permanently installed overhangs that provide shading from solar load. The glazing itself has a horizontal double-lined silkscreen pattern to provide sun shading for specific solar orientations. In addition, there are motorized window coverings on the floor to ceiling glass areas where needed. The lighting throughout the building is LED, with no mercury lamps, and no PCBs in lighting ballasts. Light fixtures are dimmable and controlled with set zones as well as with light-harvesting devices, programmed to dim or brighten depending on the available natural light.

HEALTHY ENVIRONMENTAL ASPECTS

The overall stormwater management strategy for runoff generated on the site focuses on sustainable, low-impact facilities that provide water quality and water quantity benefits. The primary SWM facilities include three (3) bio-retention facilities treating runoff from approximately 1.5 acres of surrounding parking compounds and three (3) bio-retention planters treating runoff from approximately 1 acre of rooftop and newly constructed hardscape. Additionally, approximately 5,500 square feet of permeable pavement was used onsite, treating runoff from approximately 15,800 square feet of parking and adjacent drive aisle area. All these techniques provide retention of stormwater to not only control the peak rate of runoff from their contributing drainage areas, but also to reduce the overall volume of runoff released into the downstream channels from their contributing drainage areas. A final measure of water quality treatment is provided in the form of manufactured underground filtering vaults which provide significant water quality treatment. Overall, the proposed SWM plan will provide retention for approximately 12,400 cubic feet of stormwater runoff, remove approximately 6.5 pounds per year of phosphorous from stormwater runoff, and remove approximately 32 pounds per year of nitrogen from the stormwater runoff.


Bio-retention Facili-
ties

HEALTHY ENVIRONMENTAL ASPECTS

Peterson Middle School was designed with the well-being of the adolescent in mind. Special attention is paid to these crucial years of exploration and self-discovery, offering broad and deep learning opportunities that both challenge and support students. To accomplish these goals, the building has the following features:

- Dedicated Outdoor Air Systems (DOAS) to provide fresh air to each occupied space.
- All classrooms have independent temperature control for occupant comfort.
- Maker Lab equipment has dedicated exhaust to remove heat, dust, and fumes.
- Sealants, mastics, and adhesives are specified as low-VOC, and lead, mercury, asbestos-free.
- Double-wall ductwork, duct silencers, and duct lining in critical areas to reduce unwanted noise.
- All lighting is LED, with no mercury lamps, and no PCBs.
- Daylighting in all rooms and a connection to nature throughout. 95% of the occupied floor area has direct views outside to parkland and the campus.
- Carefully curated healthy food offerings.

Due to these elements of design, the school was able to operate in a COVID-19 world. The spaces and the furniture allowed for social distancing. The HVAC system met CDC requirements, including fresh air changes, Merv-13 filters and outdoor spaces to spread out and teach.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formlabs