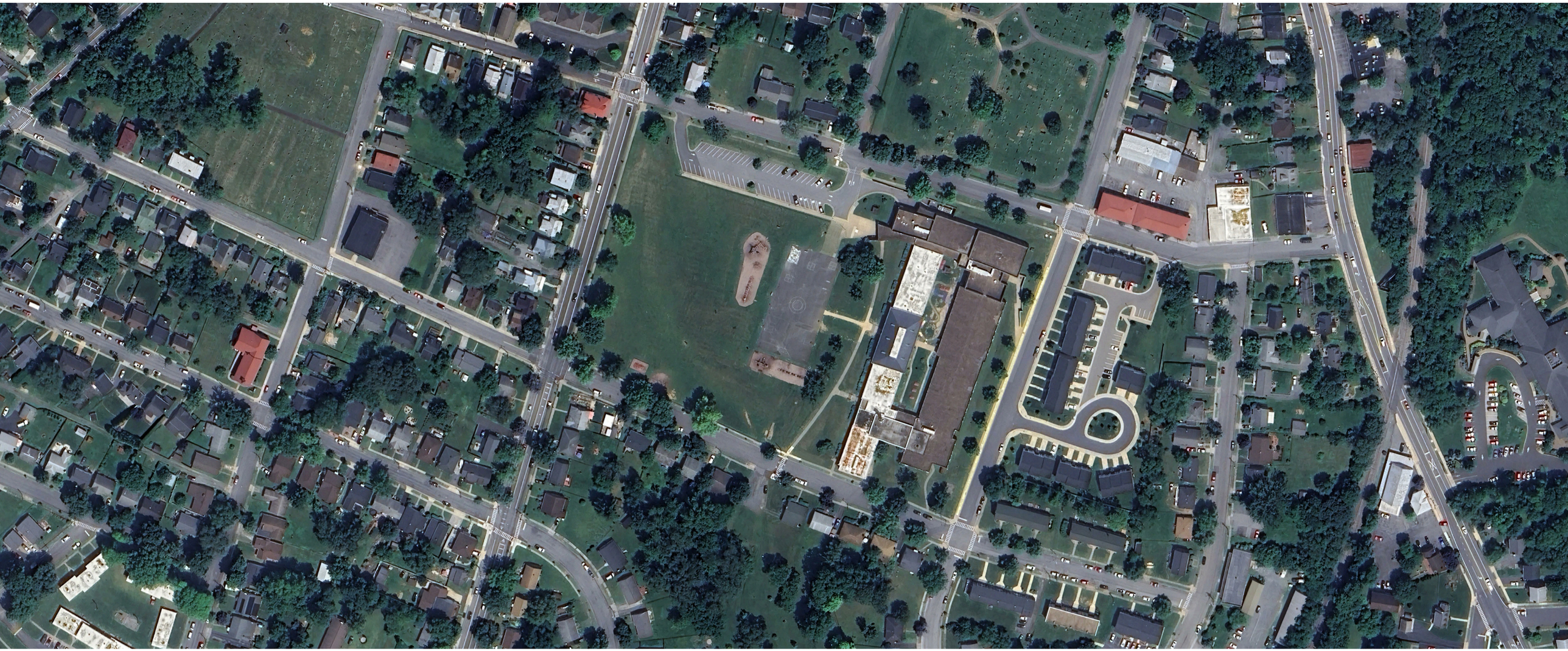
Garland Quarles Elementary School

Feasibility Study Report, August 2026



VMDO

WDS
LEARNING FOR ALL

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01

EXECUTIVE SUMMARY

Executive Summary

BACKGROUND

Winchester Public Schools Office of Capital Programs requested a detailed feasibility study for Garland Quarles Elementary School (GQES) to explore modernization strategies and the reintroduction of fifth grade into elementary schools across the district. VMDO Architects, together with the WPS staff and Steering Committee, worked to prioritize a set of needs and goals to envision possibilities for the future of GQES in Winchester, Virginia. From there, the group developed a matrix of rating criteria categories with associated pros and cons to rank design concepts developed by the design team. Options were evaluated on the basis of how well each addressed important aspects of the rating criteria, cost-effectiveness, and goals established by the committee. Final recommendations and a preferred option were developed based on the outcomes of the objective rankings as well as strong consideration for the long-term value and impact to Winchester Public Schools.

STUDY SCOPE

The following scope of work was established by WPS and met by the design team:

- Perform a comprehensive review (assessment) of the building and site
- Conduct a hazardous materials evaluation and a Phase 1 Environmental Site Assessment
- Refine and confirm the current building program
- Engage stakeholders and the public through community meetings and presentations
- Develop design concepts, budget estimates, and recommendations for various scenarios
- Examine and report on site development issues and zoning considerations
- Make recommendations on a procurement method (Design-Bid-Build, CMAR, Design-Build, etc.)

PROGRAMMATIC NEEDS

An educational space program was developed based on the Virginia Department of Education's (VDOE) recommended space program for a school to meet WPS's anticipated enrollment, and was amended to accommodate the addition of Pre-Kindergarten classrooms and other spaces specific to the needs of the community. The capacity and potential student enrollment were derived by WPS based on the geographical boundaries of the existing school and city growth projections. For the purposes of this study and to provide an apples-to-apples approach, each design option was explored using equivalent enrollment numbers and program spaces, other than the additional Pre-K classrooms in Concept 3. This allowed other variables such as building footprint, orientation, safety and security, access and approach, etc., to be the differentiators of each scheme.

PROCESS

The overall study process included three primary phases

1) Gather & Assess

The initial assessment process began with the review of existing conditions documents and a walk-through of the GQES facility with staff, followed by a period of evaluation, assessment, and investigation which served to lay the groundwork for proposed site concepts. The design and engineering team conducted a comprehensive review of the existing facility to determine the continued viability of existing conditions including structure, roof, interior and exterior finishes, and building systems including the existing heating, cooling, and ventilation equipment, and the electrical, plumbing, sewer, and water systems. A thorough evaluation relative to updated codes and regulations was conducted and recommendations made, as well as a site inventory to address zoning, site restrictions, easements, circulation, landscape and site design, parking capacity, and site utilities. Additionally, a review of the existing GQES programming and space utilization was documented to understand educational adequacy and to determine future program needs.

2) Develop Options & Solicit Feedback

Concurrent with the site evaluation and assessment, the design team facilitated a community engagement process including monthly progress meetings with the Steering Committee, programming meetings with the Building User groups, and a series of public workshops with the school community. A directory of study participants can be found in Section 02. An electronic survey on the existing GQES and preferences for the future GQES was conducted. Feedback was received from students, staff, family members, and neighbors, and results were presented to each group of stakeholders. Our Community Engagement process and take-aways are included in Section 03.

3) Refine Concepts & Make Recommendations

The design team led group members through goal-setting and priorities exercises to understand and anticipate needs and institutional goals, then translated these findings into actionable recommendations and planning concepts for the proposed site. Over the course of the process, there were ample opportunities for stakeholders to provide input on and buy-in to findings, recommendations, and solutions that supported collective goals. The work sessions resulted in a shared vision for the future school, an understanding of the benefits and deficiencies of each design concept and site development, and a rating criteria score card that reflected the key inputs of stakeholders. The process resulted in a consensus among the Steering Committee on a preferred site concept and a recommendation was made to the School Board for their consideration.

VISION

Through the Steering Committee work sessions, common goals were prioritized and established under three main headings considered most important to the group:

EDUCATION

- Promotion of Inquiry and Exploration
- Love of Learning / Happiness
- Flexible / Agile & Adaptable

WHOLE CHILD

- Child-Centered
- Trust, Safety, & Cleanliness
- Place Where People Want To Be

COMMUNITY

- Build Community from Within
- More Than a School / Support the Neighborhood
- Creating Empathy & Understanding through Diversity

These goals were combined and summarized to formulate a vision statement that reflects the committee's common goals and aspirations:

The Future Garland Quarles Elementary School Will Be:

a source of strength for the Winchester community,
a visionary educational environment,
and a welcoming community resource.

The School Will Be An Exemplary Learning Environment By:

creating a strong sense of joy and belonging,
supporting the needs of the whole child,
promoting the teacher-child relationship,
and inspiring the love of learning through
creativity, inquiry, exploration, and play.

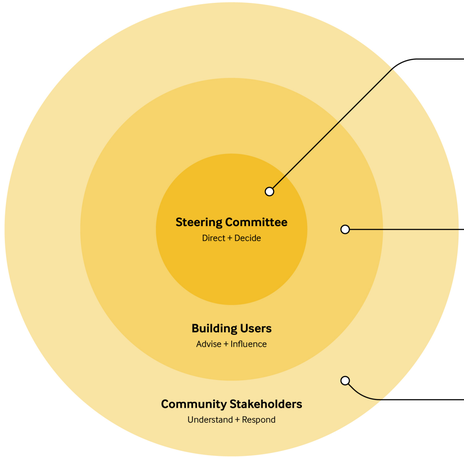


COMMUNITY WORKSHOP 01



STEERING COMMITTEE PRIORITIZATION ACTIVITY

Who are our stakeholders?



The Steering Committee is a small group of stakeholders engaged throughout the process, meeting regularly to evaluate options, make decisions, and direct the work of the project team.

Building Users advise and influence the project through curated workshops and conversations seeking their specific perspectives, input, and expertise.

Community Stakeholders understand and respond to the project through surveys, published updates, and public workshops where they're informed of progress, provide feedback, and build community consensus.

PROJECT STAKEHOLDERS

02

STUDY TEAM

Study Team

ARCHITECTURE
For 50 years **VMDO Architects** has connected people and places through well-designed, community-centered environments. We strive to enrich the human experience and the long-term stewardship of our planet through enduring architecture, sustainable design, sensitivity to sites and landscapes, and design transformations that embody a community's highest ambitions. For decades, VMDO has partnered with Winchester Public Schools to expand and improve learning spaces at all levels, including our most recent collaboration in creating the Shihadeh Innovation Center.

LANDSCAPE ARCHITECTURE
Waterstreet Studio is a Landscape Architecture firm committed to connecting people to place. Our work is focused on planning and design for K-12 clients; residential properties; commercial and institutional campuses; rural conservation tracts; civic spaces and urban streetscapes. Responding to such diversity, we employ a philosophy and approach that promotes creative expression, pioneering thought and active contribution among all disciplines and stakeholders. We listen, we interpret, and then we create.

CIVIL ENGINEERING
Pennoni is a national consulting practice offering a diverse group of clients innovative engineering, design, and technology solutions to improve the communities where we live, work, and serve. We create smart, sustainable solutions that meet the evolving challenges facing our infrastructure and environment through building partnerships with the people we serve. We put our passion, talent, and value into every project, every day.

MECHANICAL, ELECTRICAL, PLUMBING, AND FIRE PROTECTION
CMTA, a Legence company, specializes in creating and maintaining high-performing facilities and energy systems by providing energy solutions, energy consulting and engineering, and performance contracting services. CMTA is recognized as a leader in sustainable facility design and energy efficiency retrofits, often providing performance contracting and consulting engineering services together as part of larger multi-disciplinary comprehensive solutions.

STRUCTURAL ENGINEERING
Structural Concepts, Inc. was formed in 1988 to provide efficient and high-quality structural engineering services in the quickly growing Shenandoah Valley and Northern Virginia areas. Our experience includes concrete, flat plate concrete, steel, composite steel, masonry, timber, and pre-stressed concrete. Previous projects include renovations and additions to John Handley HS, James Wood HS, Jordan Springs ES, Middletown ES, Sacred Heart Academy, and the Shihadeh Innovation Center.

HAZARDOUS MATERIALS SURVEY
ECS Mid-Atlantic

COST ESTIMATING
Downey & Scott

VMDO

waterstreet studio
LANDSCAPE ARCHITECTS
PLANNERS

Pennoni

CMTA

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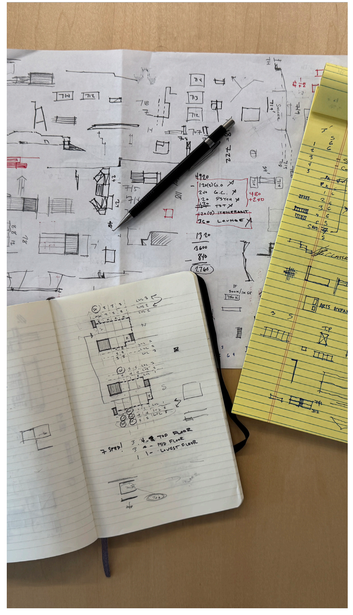
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WPS
LEARNING FOR ALL

Study Team



PROCESS SKETCHES AND NOTES



STEERING COMMITTEE MEETING 01

03

PROCESS & GOALS

The Garland Quarles Elementary School of the future will be...

a **source of strength** for the Winchester community,

a **visionary** educational environment,

and a **welcoming** community resource.

The school will be an exemplary learning environment by...

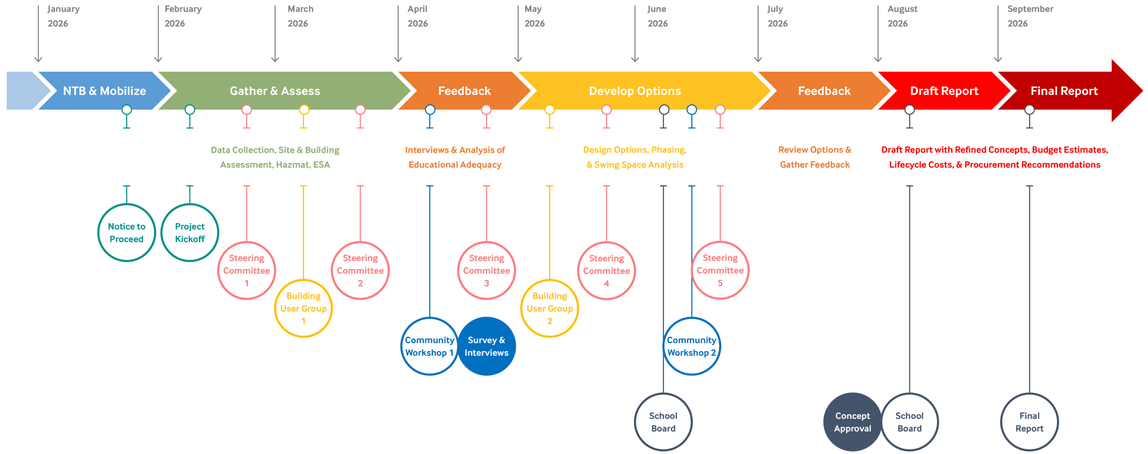
creating a strong sense of **joy and belonging,**

supporting the needs of the **whole child,**

promoting the **teacher-child relationship,**

and inspiring a love of learning through **creativity, inquiry, exploration, and play.**

Process & Goals



GRAPHIC SCHEDULE OF GQES STUDY

PROCESS OVERVIEW

The process for the Garland Quarles Study was rooted in the belief that people support that which they help to create. To make sure that the outcome of the study was authentic to GQES' unique needs and culture, it was important to involve a variety of stakeholders. A Steering Committee led the process with monthly meetings to hear progress and provide direction, but at each phase in the process the study team checked in with current building users and community members to make sure that the outcomes reflected their voices.

Steering Committee meetings commenced with an introductory kick-off to allow the design team to present a *"what we think we know"* assessment of site and building conditions, giving leaders an opportunity to provide input based on their experience and share their goals for the study. Similar material was presented to the Building User Group and included findings from a pre-meeting survey that reflected the diversity of group's thoughts and sparked discussion. Similarly, the first community meeting and survey asked for feedback about the existing conditions of the school and also what the community would like to see prioritized in the future.

By asking similar questions to different groups and providing multiple means of feedback like online surveys and in-person meetings, the study was informed by diverse perspectives. Involving a wide range of perspectives and stakeholders throughout the study helped to build consensus between groups as the study progressed. Once key goals and targets were identified, the design team developed a range of options for discussion and deliberation. Leadership used the critical success factors that had emerged for the study to evaluate these options. These critical success factors were later formalized and used to rank the different options.

Process & Goals

GOALS + ASPIRATIONS EXERCISE

The goal-setting exercise began prior to the first meeting as participants reflected on tone-setting questions individually. To introduce themselves, participants chose one idea from their reflections to share:

Q: From your perspective, what is the purpose of early & elementary education?

"...**Learning & curiosity & joyful place**; support growth & development; space kids want to be, parents want their child & teachers to be inspired... "

"...Early school should **build & harness curiosity in learning**, develop comprehension particularly with reading..."

"...these **spaces also serve as neighborhood community-building** and an opportunity to form a cohort that will span across race/gender/socioeconomic status..."

Q: How should this school meet the needs of the whole child?

"...Plenty of **space for movement** - indoors and out.. "

"...This school should provide a **safe place where children can feel comfortable** to be themselves. The school itself should be clean, habitable and as good if not better than home so the kids can be mentally & physically charged for the lessons ahead. .."

"...Safe, bright, and engaging..."

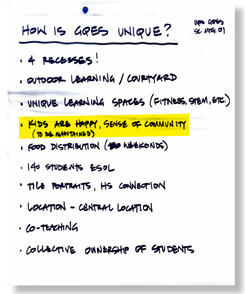
Q: How should this school help meet the needs of the larger community?

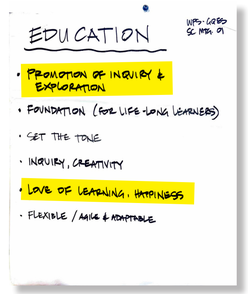
"... A schoolhouse should be a community asset. It's a place where generations of the neighborhood have attended. With that **it should set the standard** and be something to emulate... "

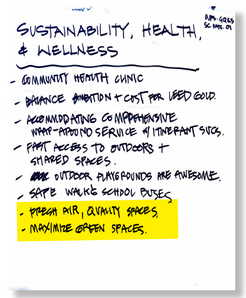
"...hosts family & community engagement opportunities like music, performances, sports, cultural events. **Celebrates the community & is a reflection of community** now and as it grows with coming years .."

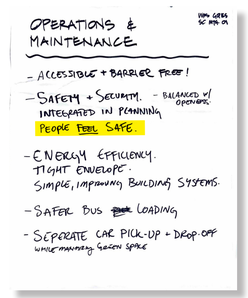
During the meeting, the group generated lists of ways in which a new elementary school might meet the needs of its students, educators, and community. These lists focused on: **Learning & Education, Sustainability, Health, & Wellness, Community,** and **Operations & Maintenance.**

Through these headings and discussions a rudimentary vision statement was established, serving as the project's guiding framework. As the study progressed, committee meetings redefined project expectations, and stakeholder feedback helped refine the vision statement.









VISIONING BOARDS

CRITICAL SUCCESS FACTORS

The Future Garland Quarles Elementary School Will...

- Be child-centered and support the unique needs of each child
- Inspire joy and a love of learning through creativity, inquiry, and exploration
- Be agile and adaptable to meet evolving needs
- Be a good neighbor
- Build community both within the school and for the city of Winchester
- Promote outdoor learning and play
- Balance safety and school security with access to outdoors and a sense of openness

VISION STATEMENT

The Future Garland Quarles Elementary School Will Be...

- a source of strength for the Winchester community
- a visionary educational environment
- a welcoming community resource

The School Will Be An Exemplary Learning Environment By...

- creating a strong sense of joy and belonging
- supporting the needs of the whole child
- promoting the teacher-child relationship
- and inspiring the love of learning through creativity, inquiry, exploration, and play.

Process & Goals

ENGAGING COMMUNITY STAKEHOLDERS

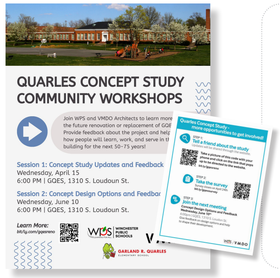
Winchester residents and the GQES community have a strong sense of ownership over community assets. Key in this project was helping as many stakeholders as possible understand the process and progress of the study while giving them the opportunity to share their perspectives. As any renovation or new elementary school will require significant public funds and community support, the study provided ways to disseminate information to the community and integrate their feedback into the planning process.

To spread the word about community engagement opportunities, WPS prepared fliers that were distributed to the surrounding neighborhood and created a recurring announcement in the school newsletter, informing people of upcoming workshops and sharing a link to the Community Visioning Survey. The survey remained open for a month and collected 51 complete survey responses, mostly from employees, teachers, and family members. The survey solicited hundreds of open responses reflecting on hopes, dreams, and pain points with the physical school. Throughout the process community members were invited to share feedback on:

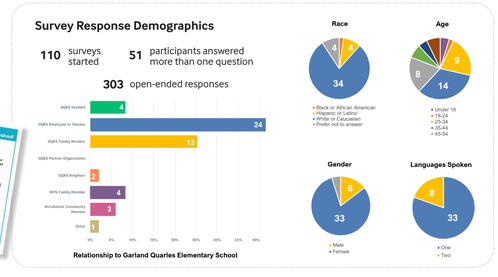
- **Keep, Toss, Create Ideas for the School**
- **Elementary Education**
- **School Site**
- **Community**
- **Sustainability & Health and Wellness**
- **Concept Design Options**



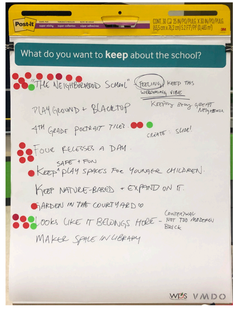
MAPPING EXERCISE OF COMMUNITY SURVEY COMMENTS

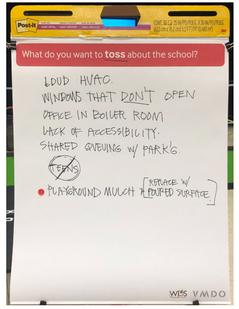


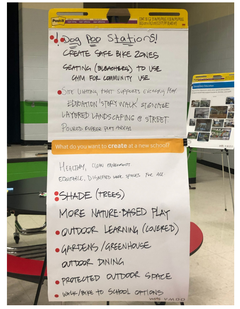
FLIERS AND HANDOUTS INVITING COMMUNITY PARTICIPATION



SURVEY RESPONDENT STATISTICS







COMMUNITY WORKSHOP 01 — KEEP, TOSS, CREATE ACTIVITY

Process & Goals

SELECTION OF PREFERRED OPTIONS

Between Community Workshops, the Steering Committee and Building Users met to refine the space program, advise on important adjacencies, and review site development concepts. Four site concepts were presented to the Steering Committee and Building User Group for feedback and discussion. Through those initial conversations one concept was eliminated as it did not accommodate the needs of the school. The three remaining concepts captured a range of renovation, new construction, and hybrid options. Additionally, the development of Concept 3 expanded the program to include reuse of the existing building to accommodate a district-wide Early Learning Center. Concept 3 gained momentum with WPS leadership and the community as the study progressed.

These three preferred schemes were chosen and carried forward for ranking:

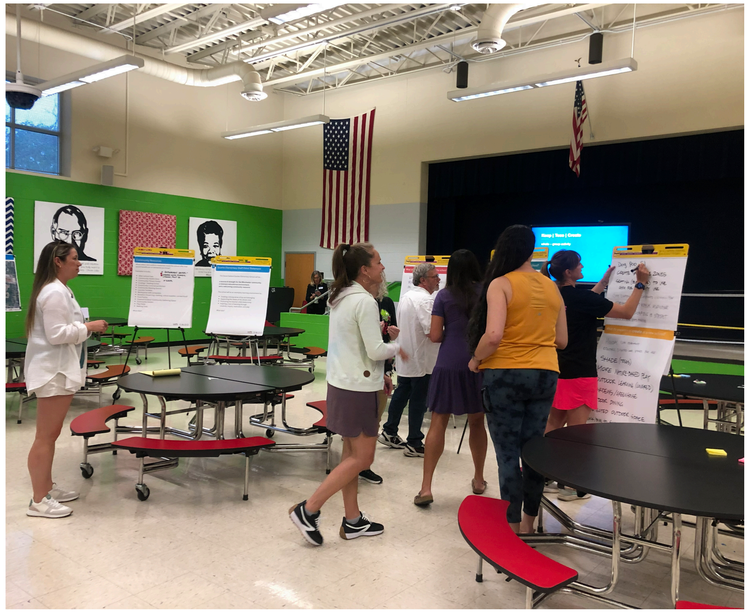
CONCEPT 1
Maximum Renovation with Additions

CONCEPT 2
New School with Integrated Pre-K

CONCEPT 3
Campus with Early Learning Center

PROS/CONS AND SCORING EXERCISE

Each concept was evaluated on the merits of building layout and program adjacencies, orientation and location on the site, ability to accommodate parking and vehicular access, scope of site amenities, safety and security, community connectivity, and future expansion and growth.



COMMUNITY WORKSHOP 01 — KEEP, TOSS, CREATE ACTIVITY

Process & Goals

PROJECT ETHOS

Early conversations with WPS teachers and leadership revealed the fundamental ideals that a new school in Winchester must pursue. These ideals were not so much aspirational as they were the already robust foundations of learning at Garland Quarles. A strong sense of community and connection shared by teachers and students, joy and play as the basis of learning, and experiential learning as the cornerstone of a life of inquiry are celebrated throughout the community, and should be carried forward for future generations. The question is: how can addressing Quarles' existing building issues enable, enhance, and add more to these unique qualities?

Among the many issues WPS leadership was considering throughout the study were access to daylight, fresh air, and outdoor play. All Winchester Public Schools divide their recesses into four short breaks distributed throughout the day. Quarles is notable, however, for observing these breaks rain or shine. Outside access and experiential learning are indispensable parts of Quarles' culture. Spaces like the courtyard, fitness lab, and maker space are evidence of this preferred style of instruction and learning.

In addition to the school's ambitions at an internal, pedagogical level, leadership also recognized the important role the school plays at the community level. Throughout the process stakeholders were asked to considerer ways in which a new school could provide more to the surrounding neighborhoods and the city at large.

Through discussions with leadership, teachers, and community members concerning the above topics, a list outlining the fundamental values of the project was developed: A new school will improve safety, comfort, and functionality while preserving Quarles' history, community identity, outdoor learning culture, and child-centered values by:

- Celebrating the character of the 1954 building.
- Keeping the 'neighborhood school' feel through smaller enrollment and intimate learning communities.
- Preserving and deepening connections across generations and grade levels (Different age groups see each other in the hallways, older students return after graduation to see their 4th grade portrait tiles, etc.).
- Being a good neighbor.
- Creating a school that fits the neighborhood and is a resource to the community
- Creating learning spaces that build on Quarles' cultures of movement, experiential learning, and outdoor access.
- Promoting ease of access to special programs and resource spaces
- Creating a safe & welcoming arrival/departure experience regardless of transport.
- Designing the site to be both secure and welcoming as a community resource.



EXISTING MAKER SPACE AT GQES > PRECEDENT MAKER SPACE

SUPPORT THE WHOLE CHILD

The pedagogy at Garland Quarles emphasizes hands-on learning to enhance understanding of core concepts such as math and reading. By balancing academics with play and movement, the creativity, curiosity, and well-being of the child is placed at the forefront of the curriculum. Supporting hands-on learning with intentionally designed to experiential learning spaces is essential to the success of this learning model.



EXISTING OUTDOOR CLASSROOM AT GQES > PRECEDENT OUTDOOR CLASSROOM

MORE WAYS TO PLAY & LEARN OUTDOORS

Time outdoors is an essential part of daily life at Garland Quarles. Students learn and play outside in all seasons and weather conditions. Opportunities to improve outdoor learning and play include providing shade structures and trees, proximal seating and teaching surfaces, and introducing native plantings, rain-gardens, and nature-based play structures.



EXISTING GYMNASIUM AT GQES > PRECEDENT FLEX-USE GYMNASIUM

EXPAND COMMUNITY USE AFTER HOURS

The Garland Quarles gym is an important community resource operated by City Parks and Recreation in the evenings. The potential to further such connections between school amenities and community needs should be explored early in the design process. Survey responses indicate community interest in after-school care, a fitness center, donation closets, and recreational play fields.



EXISTING EAST-FACING CLASSROOM WINDOWS AT GQES > PRECEDENT CLASSROOM WITH SOLAR SHADING

PROMOTE CONNECTION WITH NATURE

Views, light, and air are essential to the mental health of both students and staff. These connections to nature are compromised by glare from poorly oriented windows. Future improvements should optimize window orientation, utilize solar shading where needed, frame views of the outdoors, and provide operable windows for natural ventilation.

KEEP

Preserve **Identity, History, & Community Feel**

- **Historic Character** of the 1954 Building (Portrait Tiles, Facade, Wide Hallways, etc.)
- **Strong Sense of Community** & Small-School Feel
- **Outdoor Spaces**, Especially the Courtyard & Mature Trees
- **4 Recesses/Day** & Play-Based Learning Culture
- Welcoming Interior Elements & Bright Colors (Student Displays, Artwork, etc.)

TOSS

Fix **Infrastructure, Comfort, & Safety Issues**

- **Poor HVAC Systems**
- **Aging Infrastructure** & Leaky Roofs
- **Inadequate Parking**, Unsafe Bus & Car Pick-Up/Drop-Off
- **Fluorescent Lighting**
- **Unsecured Playground** Access During School Hours
- Cramped and Poorly Located Specialized Spaces (OT, TDT, Speech, etc.)

CREATE

Create **Purpose-Built Spaces that Support Learning & Growth**

- **More Outdoor Learning Space**
- **Specialized Instruction Spaces** (SPED, Small Group, Keyboard Lab, STEM, Music, etc.)
- **Flexible Meeting Spaces & Areas for Collaboration**
- **Better Storage** in Classrooms & Throughout Building
- Spaces for **5th Grade** and Other Expanded Programs
- More parking, separate bus and car drop-off, considerations for students who walk or bike to school





STUDENT ART AND FOURTH-GRADE SELF PORTRAIT TILES LINE THE SCHOOL'S CORRIDORS



EXISTING BUS CURB DROP-OFF ON SOUTH KENT STREET



EXISTING COURTYARD USED AS A 'STORYWALK' PATH, ENCOURAGING READING DEVELOPMENT

Elementary Education

A strong sense of community forms the backbone of education at Garland Quarles. Teachers work as a team and share a collective sense of ownership of students while students form relationships across grade levels in the hallways and during recess. Teachers also cite the school spaces as helping to create this culture:

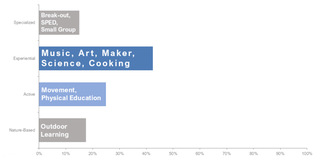
"The wide hallways [of the 1954 building] allow students to think big thoughts!"
"The hallways making a loop is so convenient for finding staff and students, keeping grade level classrooms together, and facilitating inter-grade relationships."
"[Keep] the smaller school with parental and community involvement"

Focused on supporting the whole-child, Garland Quarles adapted its spaces over time to facilitate hands-on and movement-based learning. The library, maker space, fitness lab, and courtyard are frequently used, and the community survey reflects the important role these types of learning spaces play in the school's future. Additionally, the wide hallways of the 1954 building have been adapted with furniture to create varied, flexible spaces for students to work in. A new school should provide purpose-built spaces that allow for break-out groups of many sizes, learning environments designed for co-teaching and specials, and well-connected resource spaces (IEP, sensory room, etc.) that serve the whole school. Hallway break-out spaces and specials should function as meeting points between learning communities, maintaining the communal feel of the current GQES.

TEACHERS AND FAMILIES SAY...

- "It is important to get to know each student and what makes him/her thrive! Offering lots of opportunities to learn about different things and explore will help students figure that out."
- "My children speak highly of the STEM lab. I think having more hands-on labs would be beneficial"
- "Easier access to shared learning spaces like the Library and Maker Space"
- "Thinking about spaces in specific ways is important. Classrooms spaces for whole and small groups, some classrooms that only work with small groups (EL, SPED, intervention, etc)"
- "...the special education department could use a sensory room [that] not only SPED students could use, but others if they were having a hard time"

WHAT TYPES OF **LEARNING SPACES** SHOULD BE PRIORITIZED AT GARLAND QUARLES?



Teachers and families indicated a clear preference for spaces that promote **Experiential Learning & Movement**.

COMMUNITY SURVEY RESULTS — LEARNING SPACES

RECOMMENDED VARIATIONS IN LEARNING ENVIRONMENTS



LEARNING SPACES FOR DIFFERENT AGES



FLEXIBLE CLASSROOMS FOR CO-TEACHING



BREAK-OUT LEARNING SPACES FOR GROUPS



OUTDOOR CLASSROOMS



EXPERIENTIAL LEARNING SPACE



ACTIVE LEARNING SPACE

School Site

Spaces that expand outdoor access and learning are critical to the success of the new school. Currently the school has a well used playground, open field, and a few covered outdoor spaces. These spaces are well used by both the school and the surrounding neighborhood. Common neighborhood uses include soccer games, bike riding, and dog-walking. The openness of the site presents issues during the school day, however, as people cut through while children are playing. Reconfiguring the site to create clearer school boundaries and introducing separate bus and car pick-up/drop-off are key safety features that a new school must design for.

There is a strong interest in more outdoor learning spaces and shade from stakeholders. Leadership advised that providing a variety of spaces is helpful, but cautioned against overly defining what activities can occur any given place. A few covered gathering areas and ample partially-covered spaces (through shade structures and trees) would greatly expand the school's capacity for outdoor learning and play. Stakeholders were excited about landscape-centered educational opportunities such as native pollinator plantings, and stormwater management learning areas. Additionally, teachers and families expressed interest in expanding the school garden to be a featured teaching garden, though there were reservations concerning the long-term maintenance of such a space.

FOUR RECESSES

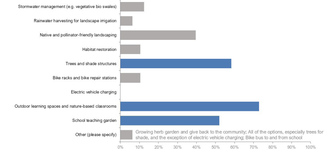
"By having four recesses our school provides students with multiple opportunities to build friendships and a sense of belonging, with opportunities to resolve conflicts, with much needed mental breaks, and time to work on motor skill development and unstructured play."

-GQES Teacher

"I think the ease of access to the outdoors is an extremely important feature of our school. We have four 15-minute recesses, and transition time is built into the recess time. That means that if students have to walk 5 minutes just to get outside, their recess would be severely shortened. Our new school design will need to ensure that all students maintain quick and easy access to outdoor play areas."

-GQES Teacher

WHAT **SITE ELEMENTS** WOULD YOU LIKE TO SEE PRIORITIZED AT GARLAND QUARLES?



Users want more **Outdoor Learning** opportunities and greater protection from the elements in the form of **Shade Structures & Trees.**

COMMUNITY SURVEY RESULTS — SITE ELEMENTS

SITE RECOMMENDATIONS



MAINTAIN AND EXPAND SHADE AND NATURE PLAY



SEPARATE BUS AND CAR PICK-UP & DROP-OFF



ADD STORMWATER MANAGEMENT LEARNING AREAS



INTRODUCE TRAFFIC CALMING MEASURES

STUDENTS & STAFF LIKE TO...

- "...soak in fresh air and sun."
- "...see what students do with logs in make believe play."
- "...play games and do learning activities."
- "...have outside reading lessons on nice days."
- "...find a bench to relax and read a book."
- "...climb on trees."

FAVORITE SPACES AMONG STUDENTS & STAFF ARE THE...

- **Courtyard**
  A great gathering space that is contained and protected, but is often disturbed by loud HVAC systems
- **Playgrounds & Playfields**
  Well used during and after school hours, but does not feel secure due to openness of site
- **Shade Trees**
  Located in front of school with benches for sitting and logs for play. Good for climbing.
- **Covered Gazebo**
  Well-used, but could be larger.

Community

Throughout the community engagement process, the function of the school as a focal point for community life became abundantly clear. Many of the community meeting participants were neighbors looking to preserve the positive impact Garland Quarles had on their everyday routines. For them, the excitement and laughter of kids at recess and after school had become an uplifting presence that they could not imagine losing. A new school must recognize the context in which it exists and make a concerted effort to maintain these harmonious relationships while safeguarding the security and privacy of students. School leadership emphasized how important it is to remain "a good neighbor" and provide added value to the community around them.

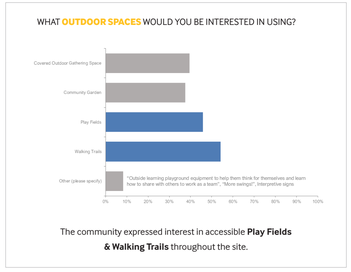
With that being said, the community surrounding Garland Quarles is changing. The newly constructed housing development across Kent Street and the conversion of long-held single-family homes into rental units are evidence of this. As Winchester continues to shift and grow, the needs and wants of the community will follow suit.

So.... what can a new school do to provide for the Winchester of the future?

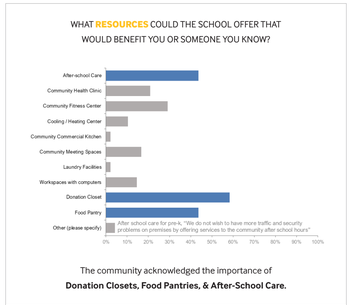
As a baseline, the school can continue to offer its play fields and playgrounds for community use after hours. Community use of the gym, cafeteria, and meeting rooms can be achieved by locking up the academic sections of the building after hours. Because 85% of Garland Quarles student body is economically disadvantaged with a large portion of them English language learners, community members were specifically interested in amenities that would further empower these students and families. Options like flexible classroom space for adult learners, after-school care, a small food pantry, or donation closet are possible by adding marginal square-footage to the school program.

Winchester Public Schools currently partners with Valley Health to offer a school-based telehealth clinic at John Handley High School. The school nurse is able to refer students and staff to the onsite clinic where they can be seen virtually that by a health care professional. This model has been very successful, and WPS plans for it to implemented in the new Garland Quarles School. With additional partnership and a separate entrance to the clinic, the school could see this program scaled to serve a broader community need.

Lastly, as weather events become more unpredictable and safety nets strained, there is significant opportunity for the school to become a center of community strength and resilience in Winchester. Cities need public spaces where relationships and knowledge can be built. They also need places to access resources during and after times of crisis. Garland Quarles is located in the heart of Winchester's most vulnerable communities, making it an ideal candidate to serve as a Resilience Hub (See **Appendix A**).



COMMUNITY SURVEY RESULTS — OUTDOOR SPACES



COMMUNITY SURVEY RESULTS — COMMUNITY RESOURCES

DESIRED COMMUNITY RESOURCES AS IDENTIFIED BY COMMUNITY AND STEERING COMMITTEE MEMBERS

- **Multi-Purpose Meeting Rooms**
  (Community Groups, Training, PTA Meetings, etc.)
- **Community Classrooms**
  (Partner Hosted Workshops, Adult Education, etc.)
- **English Language Learners Empowerment Center**
- **Community Health Clinic**
- Community Use of **Gymnasium** & **Play Fields**
- **Food Distribution** at School
- Use of school as a **Resilience Hub**
  (discussed further in Appendix A)

Further discussions between WPS, the city of Winchester, and partner organizations are recommended to establish which community resources a new school might provide as well as a strategy for implementation.

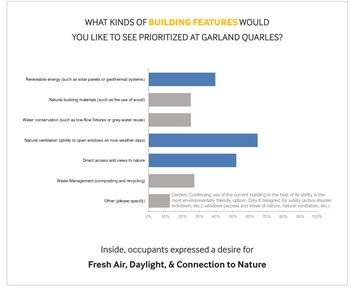


WALKING TRAILS WERE A HIGHLY REQUESTED COMMUNITY RESOURCE

Health & Sustainability

The health and well-being of students is foundational to the joyful learning environments central to the school. At QGES, the importance of access to fresh air and sunlight is a strong value underlying the recess program. The future school design should amplify these values by bringing them indoors. This includes giving occupants the ability to open windows for fresh air, providing ample daylighting, and enabling direct access to outdoors and views to nature. Biophilia, the innate human love of the natural world, when incorporated into buildings has been shown to lower stress, improve health, and increase happiness. At Garland Quarles, users should feel connected to nature — inside and out.

An efficient, high performing building also improves occupant health. This study proposes improving the existing building envelope in concepts centered around reuse, and providing a highly efficient envelope in all new construction. This, paired with smart building solar-orientation and a direct outside air system mechanical system, would make for lower energy costs and comfortable indoor environments. Leadership affirmed that the school should be as sustainable as possible while balancing costs. This study, therefore, proposes flexible systems capable of transitioning into renewable energy in the future should the initial cost burden be too high.



COMMUNITY SURVEY RESULTS — BUILDING FEATURES

COMPONENTS OF ALL CONCEPT OPTIONS

- **Net-Zero Ready Design**
  A Net-Zero building generates all of the power it consumes creating operational savings for the district. If it is not feasible to include solar in the construction budget, the building can still be built with all of the needed infrastructure and planning to add solar panels any time after opening.
- **All-Electric Building**
  Maximizes the benefits of school running on renewable energy by removing sources of gas.
- **Distributed Water Source Heat Pump**
  Uses water transfer heating or cooling to the air around the building. Allows for immediate or future adoption of a geothermal exchange system.
- **Hybrid Mass Timber Structure**
  Wood as a structural material for the building is not only biophilic and beautiful, but also helps reduce the carbon cost of construction also known as embodied carbon.
- **Stormwater Management & Rainwater Harvesting**
  All stormwater is managed onsite either through bio-swales or underground storage systems. An above-ground cistern harvests water from roofs irrigate landscape at no cost.
- **Heat Mitigating Strategies**
  Light colored paving and roof materials and ample trees help to keep the site and building cool.
- **Native & Low-Maintenance Landscape**
  Planting native species requires less irrigation and supports habitat
- **Operable Windows**
  Building users are able to open windows in classrooms and offices for nice weather days letting in fresh air and connection to nature.
- **Non-Toxic, Low VOC interior finishes**
  Interior finishes impact air quality and where touched are absorbed by our skin. Red list free materials should be prioritized indoors.
- **Meet VA High Performing Buildings Act Requirements**
  - LEED v5 Certified (or equivalent)
  - Electric Vehicle Charging Infrastructure
  - Solar Energy Generation Requirement Led by Local Authority having Jurisdiction

COMPONENTS FOR FURTHER CONSIDERATION

- **Off-Grid Capabilities (Solar Panels & Battery Storage)**
  Solar can bought outright or through a Power Purchase Agreement. When paired with a battery storage system, the school can run even during power outages.
- **Geothermal Exchange System**
  Lowers the energy use of the building by harnessing the natural consistent temperatures of the earth below ground. Lower building energy use means fewer solar panels are needed to get to Net-Zero.
- **Graywater Reuse**
  Reuse water inside the building to reduce water consumption
- **Natural Ventilation (Mixed-Mode System)**
  Winchester's climate may be compatible to incorporate natural ventilation as a cooling strategy. In a Mixed-Mode system, the mechanical system has a most to assist cool outside air to move through the building.

EXAMPLES OF REQUESTED SUSTAINABILITY FEATURES



DIRECT ACCESS TO OUTDOORS & VIEWS TO NATURE



NATURAL VENTILATION WITH OPERABLE WINDOWS



RENEWABLE ENERGY — GEOTHERMAL



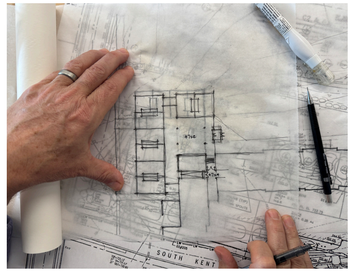
HEAT MITIGATION — SHADE STRUCTURES

Process Work

DESIGN PROCESS

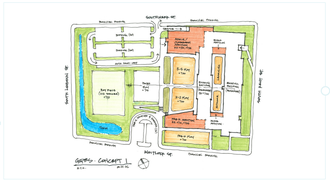
The development of the study's three proposed concepts was a highly iterative process. Optimal site and building layouts often began as napkin sketches which, through subsequent meetings with the steering committee, the implementation of real square footages, and coordination with various consultants, gradually morphed into the refined schemes seen in Section 06.

To the right are a selection of images illustrating the chronological progression of each concept. Through these images, created both by hand and computer, the core ideas of each proposal can be better understood.



A SNAPSHOT OF THE DRAWING PROCESS — CONCEPT 1 PRE-K ADDITION STUDY

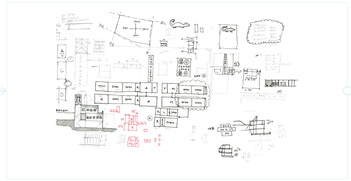
Concept 1



CONCEPT 1 SITE PLAN STUDY



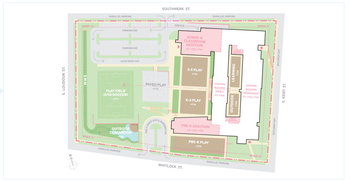
CONCEPT 1 INITIAL FLOOR PLAN STUDY



CONCEPT 1 INITIAL FLOOR PLAN REVISIONS

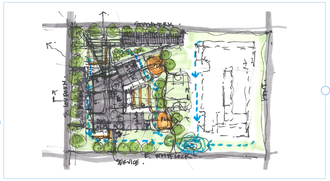


CONCEPT 1 FLOOR PLAN DEVELOPMENT

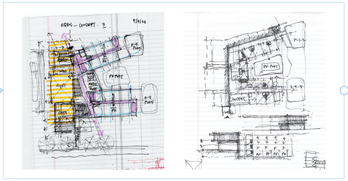


CONCEPT 1 FINAL SITE PLAN

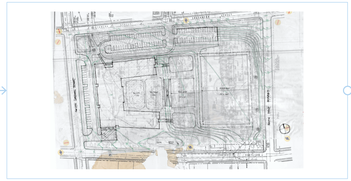
Concept 2



CONCEPT 2 SITE PLAN SKETCH



CONCEPT 2 FLOOR PLAN STUDIES



CONCEPT 2.SITE PLAN STUDY



CONCEPT 2 PK-5 FLOOR PLAN DEVELOPMENT

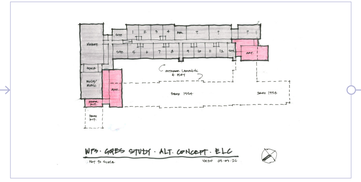


CONCEPT 2 FINAL SITE PLAN

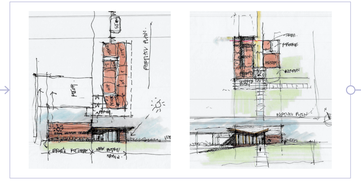
Concept 3



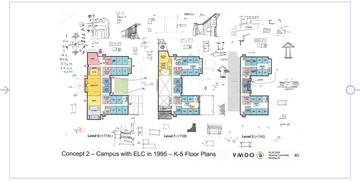
CONCEPT 3 SITE PLAN NAPKIN SKETCH



CONCEPT 3 ELC FLOOR PLAN STUDY



CONCEPT 3 ELC ENTRY SCHEME STUDIES



CONCEPT 3 K-5 FLOOR PLAN DEVELOPMENT



CONCEPT 3 FINAL SITE PLAN

Process Work

04

PROJECT PROGRAM

Program Summary

PROGRAM OVERVIEW

The Garland Quarles Elementary School Study utilizes two distinct program summaries to define the scope of work. Each summary offers a different vision of the future with implications at a school and district-wide level.

Pre-K Through Fifth Grade

The first program summary follows the framework initially set forth by the district in the RFP and interview stages — an elementary school containing grades Pre-K through Five with a 200-student increase in capacity to accommodate future growth. This program includes 1/2 of the district's Pre-K classrooms and assumes the other 1/2 would be accommodated by the Virginia Avenue Elementary School. Also captured within the program summary are the various resource, administrative, support, and specialty spaces essential to the creation of an innovative contemporary learning environment.

Early Learning Center & Kindergarten Through Fifth Grade

The second program summary emerged from an internal study of the building's 1995 addition. The presence of a large gymnasium and dining area paired with generously sized and day-lit classrooms pointed to reuse. After careful analysis it was determined that this portion of the existing facility could accommodate the Pre-K needs of the *entire district.* A centralized Early Learning Center (ELC) was then proposed, enabling greater operational efficiency within the Pre-K program. The consolidation of Pre-K would also create a consistent K-5 structure across all of the district's elementary schools. The second program summary, therefore, outlines two facilities: an Early Learning Center to accommodate district-wide Pre-K and a newly constructed K-5 facility on the opposite end of the site.



PRECEDENT EARLY LEARNING CENTER

PK-5 Program

SPACE CATEGORIES

The Garland Quarles Elementary School Feasibility Study includes 8 program categories that group spaces based on their primary activities:

01 ACADEMIC CORE encompasses all Elementary, Pre-K, and Special Education home classrooms.

02 RESOURCE contains alternative learning spaces for students and teachers away from the home classroom. These flexible spaces support a range of group sizes and activities (ESOL, tutoring, co-teaching), allowing student needs to shape and adapt their usage over time.

03 ADMIN & HEALTH SUITE consists primarily of administrative offices and associated support spaces. These include everyday operations spaces, mental and physical health support spaces (health clinic, psychologist, guidance, etc.), and teacher planning spaces, providing the organizational backbone of school operations.

04 COMMUNAL comprises of gathering and social spaces. Such spaces are integral at both a student and community level, with the potential to serve a wider base of constituents in the after-school and summer hours. These spaces include the library, dining facilities, and the stage.

05 ATHLETICS & FITNESS correspond to interior spaces facilitating student movement and activity. Also contained are the network of support spaces (offices, toilets, storage, etc.) that enable their operation.

06 ART & MUSIC provides traditional spaces for student creativity and expression, namely art and music classrooms.

07 EXPLORATORY consists of spaces engaging the intersection of technology, learning, and creativity. These include a Maker Space and STEM lab.

08 SUPPORT contains centralized custodial and storage facilities as well as receiving and loading areas. These spaces and their adjacencies are integral to the maintenance and operational capacity of the building.

Space Category	Proposed	Existing	Yield
Academic Core	48,480	22,740	25,740
Resource	5,440	1,500	3,940
Admin + Health Suite	9,720	3,400	6,320
Communal	12,580	9,730	2,850
Athletics + Fitness	9,260	6,430	2,830
Art + Music	5,520	2,000	3,520
Exploratory	2,400	1,620	780
Support	1,800	190	1,610
Net Total:	95,200	47,610	47,590
Halls, Toilets, Mechanical, Etc. (45%):	42,800	28,200	14,600
Gross Total Building Area	**138,000**	**75,810**	**62,190**
Student Capacity	**834**	**500**	**324**



PK-5 Program

	Proposed Areas					Existing				
	NSF/space	# of Spaces	Subtotal NSF	Total NSF		NSF/space	# of Spaces	Subtotal NSF	Total NSF	Notes/Questions
Academic Core				**48,480**					**22,740**	
Pre-K Classrooms				**8,640**					**4,120**	
Pre-K Headstart	1,080	3	3,240			1,030	1	1,030		
Pre-K	1,080	5	5,400			1,030	3	3,090		
Elementary Classrooms				**39,840**					**18,620**	
Kindergarten	1,080	6	6,480			960	4	3,840		
1st Grade	1,080	6	6,480			890	4	3,560		
2nd Grade	840	6	5,040			840	4	3,360		
3rd Grade	840	6	5,040			710	6	4,260		
4th Grade	840	6	5,040			720	5	3,600		
5th Grade	840	5	4,200							
SPED (Self-Contained)	1,080	7	7,560							
Resource				**5,440**					**1,500**	
Special Education				**5,440**					**1,500**	
Resource / Breakout	400	4	1,600			820 / 460	2	1,280		
SPED Resource	400	7	2,800							
OT/PT	800	1	800							
Sensory / De-Escalation	120	2	240							
Speech						220	1	220		
Arts & Music				**5,520**					**2,000**	
Art				**2,760**					**1,000**	
Art Classroom	1,200	2	2,400			900	1	900		
Art Storage	240	1	240			60	1	60		
Kiln	120	1	120			40	1	40		
Music				**2,760**					**1,000**	
Music Classroom	1,200	2	2,400			760	1	760		
Music Storage	360	1	360			140	1	140		
Music Office						100	1	100		
Exploratory				**2,400**					**1,620**	
Learning Labs				**2,400**					**1,620**	
Maker Space	960	1	960			360	1	360		
STEM Lab	960	1	960			950	1	950		
Writing Center						150	1	150		
Storage	240	2	480			50 / 110	2	160		

PK-5 Program

	Proposed Areas					Existing				
	NSF/space	# of Spaces	Subtotal NSF	Total NSF		NSF/space	# of Spaces	Subtotal NSF	Total NSF	Notes/Questions
Admin + Health Services				**9,720**					**3,400**	
Administration				**4,920**					**2,830**	
Principal Office	180	1	180			140	1	140		
Principal Toilet	60	1	60							
Assistant Principal Office	150	1	150			110	1	110		
Admin Assistant	120	2	240			65	2	130		
Guidance Office	120	2	240			120	2	240		
Guidance Conference	240	1	240			300	1	300		
Guidance Storage						60	1	60		
Tutor Office						100	1	100		
School Psychologist	120	1	120							
TDT Flex Office	120	1	120							
Itinerant Office	120	2	240							
Tech Resource Office	120	1	120							
Wait/Reception	480	1	480			320	1	320		
Book/Supply Storage	600	1	600			210	1	210		
Record Storage	240	1	240			120	1	120		
Work Room	360	1	360			70	1	70		
Teacher Lounge w/ Toilet	360	1	360			710	1	710		
Conference	240	1	240			170	1	170		
Closet	60	1	60			40	1	40		
Unisex Toilet	60	2	120			50	1	50		
SRO Office	120	1	120			60	1	60		
Pre-K Administration	120	1	120							
Pre-K Support Services	150	1	150							
Family Liaison	120	1	120							
Book-Keeper Office	120	1	120							
Registrar Office	120	1	120							
Planning				**3,960**					**0**	
Teacher Conference	240	2	480							
Team Planning	480	7	3,360							
Comfort Room	60	2	120							
Health Suite				**840**					**570**	
Waiting	240	1	240							
Exam/Isolation	120	1	120			490	1	490		
Office	120	1	120							
Rest	240	1	240							
Toilet	60	1	60			40	2	80		
Storage	60	1	60							

PK-5 Program

	Proposed Areas					Existing				
	NSF/space	# of Spaces	Subtotal NSF	Total NSF		NSF/space	# of Spaces	Subtotal NSF	Total NSF	Notes/Questions
Communal				**12,580**					**9,730**	
Elementary Cafeteria				**6,320**					**5,130**	
Dining Area	3,200	1	3,200			2,720	1	2,720		
Chair & Table Storage	480	1	480			110	1	110		
Extended Day Programming Office	240	1	240							
Kitchen & Serving	2,400	1	2,400			2,300	1	2,300		
Gymnatorium				**1,740**					**1,220**	
Stage	1,200	1	1,200			1000	1	1000		
Stage Storage	240	1	240			40	1	40		
AV Closet	60	1	60							
Ramp	240	1	240			180	1	180		
Library				**4,520**					**3,380**	
Reading Room	3,200	1	3,200			2,680	1	2,680		
Library Office	240	1	240			50	1	50		
Staff / Work Room	240	1	240			300	1	300		
IT / RT Office	120	1	120							
AV Storage	240	1	240			180	1	180		
MDF (Head End)	480	1	480			170	1	170		Current MDF room located in admin front office
Athletics & Fitness				**9,260**					**6,430**	
Elementary Physical Education				**7,260**					**5,610**	
Gymnasium (54' x 90')	6,400	1	6,400			5,050	1	5,050		
PE Storage (Interior)	300	1	300			200	1	200		
PE Storage (Exterior)	200	1	200			160	1	160		
PE Office w/ Toilet	300	1	300			120 / 80	2	200		
Unisex Toilet	60	1	60							
Pre-K Physical Education				**2,000**					**820**	
Movement (Multi-Purpose)	2,000	1	2,000			820	1	820		
Support				**1,800**					**190**	
Back of House				**1,800**					**190**	
Receiving Area	240	1	240							
General Storage	720	1	720			190	1	190		
Custodial Office	240	1	240							
Custodial Locker & Toilet	120	1	120							
Custodial Work & Storage	480	1	480							

K-5 Program

SPACE CATEGORIES

The Garland Quarles Elementary School Feasibility Study includes 8 program categories that group spaces based on their primary activities:

01 ACADEMIC CORE encompasses all Elementary, Pre-K, and Special Education home classrooms.

02 RESOURCE contains alternative learning spaces for students and teachers away from the home classroom. These flexible spaces support a range of group sizes and activities (ESOL, tutoring, co-teaching), allowing student needs to shape and adapt their usage over time.

03 ADMIN & HEALTH SUITE consists primarily of administrative offices and associated support spaces. These include everyday operations spaces, mental and physical health support spaces (health clinic, psychologist, guidance, etc.), and teacher planning spaces, providing the organizational backbone of school operations.

04 COMMUNAL comprises of gathering and social spaces. Such spaces are integral at both a student and community level, with the potential to serve a wider base of constituents in the after-school and summer hours. These spaces include the library, dining facilities, and the stage.

05 ATHLETICS & FITNESS correspond to interior spaces facilitating student movement and activity. Also contained are the network of support spaces (offices, toilets, storage, etc.) that enable their operation.

06 ART & MUSIC provides traditional spaces for student creativity and expression, namely art and music classrooms.

07 EXPLORATORY consists of spaces engaging the intersection of technology, learning, and creativity. These include a Maker Space and STEM lab.

08 SUPPORT contains centralized custodial and storage facilities as well as receiving and loading areas. These spaces and their adjacencies are integral to the maintenance and operational capacity of the building.

Space Category	Proposed	Existing	Yield
Academic Core	34,320	22,740	11,580
Resource	3,440	1,500	1,940
Admin + Health Suite	8,930	3,400	4,260
Communal	12,580	9,730	2,850
Athletics + Fitness	7,260	6,430	830
Art + Music	5,280	2,000	3,280
Exploratory	2,400	1,620	780
Support	1,800	190	1,610
Net Total:	76,010	47,610	28,400
Halls, Toilets, Mechanical, Etc. (45%):	34,210	28,200	6,010
Gross Total Building Area	**110,220**	**75,810**	**34,410**
Student Capacity	**608**	**500**	**108**



K-5 Program

	Proposed Areas					Existing				
	NSF/space	# of Spaces	Subtotal NSF	Total NSF		NSF/space	# of Spaces	Subtotal NSF	Total NSF	Notes/Questions
Academic Core				**34,320**					**22,740**	
Pre-K Classrooms									**4,120**	
Pre-K Headstart						1,030	1	1,030		
Pre-K						1,030	3	3,090		
Elementary Classrooms				**34,320**					**18,620**	
Kindergarten	1,080	5	5,400			960	4	3,840		
1st Grade	1,080	5	5,400			890	4	3,560		
2nd Grade	840	5	4,200			840	4	3,360		
3rd Grade	840	5	4,200			710	6	4,260		
4th Grade	840	5	4,200			720	5	3,600		
5th Grade	840	4	3,360							
SPED (Self-Contained)	1,080	7	7,560							
Resource				**5,280**					**1,500**	
Special Education				**5,280**					**1,500**	
Resource / Breakout	400	4	1,600			820 / 460	2	1,280		
SPED Resource	400	6	2,400							
OT/PT	800	1	800							
Sensory / De-Escalation	120	2	240							
Speech						220	1	220		
Arts & Music				**5,280**					**2,000**	
Art				**2,640**					**1,000**	
Art Classroom	1,200	2	2,400			900	1	900		
Art Storage	180	1	180			60	1	60		
Kiln	60	1	60			40	1	40		
Music				**2,640**					**1,000**	
Music Classroom	1,200	2	2,400			760	1	760		
Music Storage	240	1	240			140	1	140		
Music Office						100	1	100		
Exploratory				**2,400**					**1,620**	
Learning Labs				**2,400**					**1,620**	
Maker Space	960	1	960			360	1	360		
STEM Lab	960	1	960			950	1	950		
Writing Center						150	1	150		
Storage	240	2	480			50 / 110	2	160		

K-5 Program

	Proposed Areas					Existing				
	NSF/space	# of Spaces	Subtotal NSF	Total NSF		NSF/space	# of Spaces	Subtotal NSF	Total NSF	Notes/Questions
Admin + Health Services				**8,930**					**3,400**	
Administration				**4,610**					**2,830**	
Principal Office	180	1	180			140	1	140		
Principal Toilet	60	1	60							
Assistant Principal Office	150	1	150			110	1	110		
Admin Assistant	120	2	240			65	2	130		
Guidance Office	120	2	240			120	2	240		
Guidance Conference	200	1	200			300	1	300		
Guidance Storage						60	1	60		
Tutor Office						100	1	100		
School Psychologist	120	1	120							
TDT Flex Office	120	1	120							
Itinerant Office	120	2	240							
Tech Resource Office	120	1	120							
Wait/Reception	480	1	480			320	1	320		
Book/Supply Storage	600	1	600			210	1	210		
Record Storage	240	1	240			120	1	120		
Work Room	360	1	360			70	1	70		
Teacher Lounge w/ Toilet	360	1	360			710	1	710		
Conference	240	1	240			170	1	170		
Closet	60	1	60			40	1	40		
Unisex Toilet	60	2	120			50	1	50		
SRO Office	120	1	120			60	1	60		
Pre-K Administration										
Pre-K Support Services										
Family Liaison	120	1	120							
Book-Keeper Office	120	1	120							
Registrar Office	120	1	120							
Planning				**3,480**					**0**	
Teacher Conference	240	2	480							
Team Planning	480	6	2,880							
Comfort Room	60	2	120							
Health Suite				**840**					**570**	
Waiting	240	1	240							
Exam/Isolation	120	1	120			490	1	490		
Office	120	1	120							
Rest	240	1	240							
Toilet	60	1	60			40	2	80		
Storage	60	1	60							

K-5 Program

	Proposed Areas					Existing				
	NSF/space	# of Spaces	Subtotal NSF	Total NSF		NSF/space	# of Spaces	Subtotal NSF	Total NSF	Notes/Questions
Communal				**12,580**					**9,730**	
Elementary Cafeteria				**6,320**					**5,130**	
Dining Area	3,200	1	3,200			2,720	1	2,720		
Chair & Table Storage	480	1	480			110	1	110		
Extended Day Programming Office	240	1	240							
Kitchen & Serving	2,400	1	2,400			2,300	1	2,300		
Gymnatorium				**1,740**					**1,220**	
Stage	1,200	1	1,200			1000	1	1000		
Stage Storage	240	1	240			40	1	40		
AV Closet	60	1	60							
Ramp	240	1	240			180	1	180		
Library				**4,520**					**3,380**	
Reading Room	3,200	1	3,200			2,680	1	2,680		
Library Office	240	1	240			50	1	50		
Staff / Work Room	240	1	240			300	1	300		
IT / RT Office	120	1	120							
AV Storage	240	1	240			180	1	180		
MDF (Head End)	480	1	480			170	1	170		Current MDF room located in admin front office
Athletics & Fitness				**9,260**					**6,430**	
Elementary Physical Education				**7,260**					**5,610**	
Gymnasium (54' x 90')	6,400	1	6,400			5,050	1	5,050		
PE Storage (Interior)	300	1	300			200	1	200		
PE Storage (Exterior)	200	1	200			160	1	160		
PE Office w/ Toilet	300	1	300			120 / 80	2	200		
Unisex Toilet	60	1	60							
Pre-K Physical Education				**2,000**					**820**	
Movement (Multi-Purpose)	2,000	1	2,000			820	1	820		
Support				**1,800**					**190**	
Back of House				**1,800**					**190**	
Receiving Area	240	1	240							
General Storage	720	1	720			190	1	190		
Custodial Office	240	1	240							
Custodial Locker & Toilet	120	1	120							
Custodial Work & Storage	480	1	480							

ELC Program

SPACE CATEGORIES

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04 COMMUNAL comprises of gathering and social spaces. Such spaces are integral at both a student and community level, with the potential to serve a wider base of constituents in the after-school and summer hours. These spaces include the library, dining facilities, and the stage.

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07 EXPLORATORY consists of spaces engaging the intersection of technology, learning, and creativity. These include a Maker Space and STEM lab.

08 SUPPORT contains centralized custodial and storage facilities as well as receiving and loading areas. These spaces and their adjacencies are integral to the maintenance and operational capacity of the building.

Space Category	Proposed	Existing	Yield
Academic Core	16,000	22,740	-6,740
Resource	920	1,500	-580
Admin + Health Suite	3,200	3,400	-200
Communal	5,550	9,730	-4,180
Athletics + Fitness	5,650	6,430	-780
Art + Music	0	2,000	-2,000
Exploratory	0	1,620	-1,620
Support	700	190	510
Net Total:	32,020	47,610	-15,590
Halls, Toilets, Mechanical, Etc. (40%):	12,800	28,200	-15,400
Gross Total Building Area	**44,820**	**75,810**	**-30,990**
Student Capacity	**228**	**500**	**-272**



ELC Program

	Proposed Areas					Existing				
	NSF/space	# of Spaces	Subtotal NSF	Total NSF		NSF/space	# of Spaces	Subtotal NSF	Total NSF	Notes/Questions
Academic Core				**16,000**					**22,740**	
Pre-K Classrooms				**16,000**					**4,120**	
Pre-K Headstart	1,000	6	6,000			1,030	1	1,030		
Pre-K	1,000	10	10,000			1,030	3	3,090		
Elementary Classrooms				**0**					**18,620**	
Kindergarten						960	4	3,840		
1st Grade						890	4	3,560		
2nd Grade						840	4	3,360		
3rd Grade						710	6	4,260		
4th Grade						720	5	3,600		
5th Grade										
SPED (Self-Contained)										
Resource				**920**					**1,500**	
Special Education				**920**					**1,500**	
Resource / Breakout						820 / 460	2	1,280		
SPED Resource	400	2	800							
OT/PT										
Sensory / De-Escalation	120	1	120							
Speech						220	1	220		
Arts & Music				**0**					**2,000**	
Art				**0**					**1,000**	
Art Classroom						900	1	900		
Art Storage						60	1	60		
Kiln						40	1	40		
Music				**0**					**1,000**	
Music Classroom						760	1	760		
Music Storage						140	1	140		
Music Office						100	1	100		
Exploratory				**0**					**1,620**	
Learning Labs				**0**					**1,620**	
Maker Space						360	1	360		
STEM Lab						950	1	950		
Writing Center						150	1	150		
Storage						50 / 110	2	160		

ELC Program

	Proposed Areas					Existing				
	NSF/space	# of Spaces	Subtotal NSF	Total NSF		NSF/space	# of Spaces	Subtotal NSF	Total NSF	Notes/Questions
Admin + Health Services				**3,200**					**3,400**	
Administration				**1,900**					**2,830**	
Principal Office						140	1	140		
Principal Toilet										
Assistant Principal Office						110	1	110		
Admin Assistant	120	1	120			65	2	130		
Guidance Office						120	2	240		
Guidance Conference						300	1	300		
Guidance Storage						60	1	60		
Tutor Office						100	1	100		
School Psychologist	120	1	120							
TDT Flex Office										
Itinerant Office										
Tech Resource Office										
Wait/Reception	240	1	240			320	1	320		
Book/Supply Storage	240	1	240			210	1	210		
Record Storage	120	1	120			120	1	120		
Work Room	240	1	240			70	1	70		
Teacher Lounge w/ Toilet						710	1	710		
Conference	240	1	240			170	1	170		
Closet						40	1	40		
Unisex Toilet	60	1	60			50	1	50		
SRO Office	100	1	100			60	1	60		
Pre-K Administration	180	1	180							
Pre-K Support Services	120	1	120							
Family Liaison	120	1	120							
Book-Keeper Office										
Registrar Office										
Planning				**700**					**0**	
Teacher Conference	240	1	240							
Team Planning	400	1	400							
Comfort Room	60	1	60							
Health Suite				**600**					**570**	
Waiting	120	1	120							
Exam/Isolation	120	1	120			490	1	490		
Office	120	1	120							
Rest	120	1	120							
Toilet	60	1	60			40	2	80		
Storage	60	1	60							

ELC Program

	Proposed Areas					Existing				
	NSF/space	# of Spaces	Subtotal NSF	Total NSF		NSF/space	# of Spaces	Subtotal NSF	Total NSF	Notes/Questions
Communal				**5,550**					**9,730**	
Elementary Cafeteria				**4,330**					**5,130**	
Dining Area	2,720	1	2,720			2,720	1	2,720		
Chair & Table Storage	110	1	110			110	1	110		
Extended Day Programming Office										
Kitchen & Serving	1,500	1	1,500			2,300	1	2,300		ELC. to use warming kitchen
Gymnatorium				**1,220**					**1,220**	
Stage	1,000	1	1,000			1000	1	1000		
Stage Storage	40	1	40			40	1	40		
AV Closet										
Ramp	180	1	180			180	1	180		
Library				**0**					**3,380**	
Reading Room						2,680	1	2,680		
Library Office						50	1	50		
Staff / Work Room						300	1	300		
IT / RT Office										
AV Storage						180	1	180		
MDF (Head End)						170	1	170		Current MDF room located in admin front office
Athletics & Fitness				**5,650**					**6,430**	
Elementary Physical Education				**5,650**					**5,610**	
Gymnasium (54' x 90')	5,050	1	5,050			5,050	1	5,050		
PE Storage (Interior)	200	1	200			200	1	200		
PE Storage (Exterior)	200	1	200			160	1	160		
PE Office w/ Toilet	120 / 80	2	200			120 / 80	2	200		
Unisex Toilet										
Pre-K Physical Education				**0**					**820**	
						820	1	820		
Support				**700**					**190**	
Back of House				**700**					**190**	
Receiving Area	200	1	200							
General Storage	300	1	300			190	1	190		
Custodial Office	100	1	100							
Custodial Locker & Toilet	100	1	100							

05

EXISTING CONDITIONS ANALYSIS

Civil Analysis

GENERAL SITE ANALYSIS

Garland Quarles Elementary School is located at 1300 S Loudoun Street, Winchester, VA 22601 within the Third Ward of the City of Winchester. The school is located on a 9.59 acre parcel of land (PID# 9823), zoned EIP (Education/Institution/Public Use) & is bound on all four (4) sides by E Southwerk Street to the north, S Kent Street to the east, E Whitlock Avenue to the south and S Loudoun Street to the west. Public street parking is permitted along all four (4) streets. Generally the site is surrounded by single & multi-family residential development, a cemetery to the northeast and an access point to Overlook Park to the south.

The site currently derives access to its only parking lot along the north side of the site from two (2) entrances along E Southwerk Street. Bus pick-up & drop-off occur directly along S Kent Street with no bus loop or pull-off from the public right of way.

EIP Zoning Regulations

- Main Building Setback – 35'
- Main Building Height – 45'
  - ◊ Note: See Sect. 16.1-7-3 of the Winchester, VA Zoning Ordinance

TRANSPORTATION, VEHICULAR, AND PEDESTRIAN ACCESS

There are only two (2) points of vehicular access to the site, both along Southwerk Street. The western-most entrance allows for ingress to a small, one-way parking lot, while the eastern access allows for egress. The parking lot has 50 standard spaces & 3 handicap accessible spaces for a total of 53 spaces. The eastern entrance also provides truck access to the loading dock and dumpsters as well as emergency access to the playground areas.

Bus loading & unloading occurs along S Kent Street, a public right of way with no pull off, refuge, or separation from public traffic flow. Students unload onto 10' sidewalk along S Kent Street and continue along a 10' sidewalk down a ramp to access the school's eastern entrance. At this access point, the school's doorway is approximately 6' below the grade at S Kent Street.

The Garland Quarles Elementary School site is surrounded by public sidewalks that are approximately 4' wide along E Southwerk Street, E Whitlock Avenue, & S Loudoun Street & a 10' sidewalk along S Kent Street. Connections from the public network to the school occur along S Kent Street, E Whitlock Avenue, & E Southwerk Street. Internal sidewalks of varying widths also exist, creating connections from the parking lot, playgrounds, and the courtyard to the school building.

SITE UTILITIES

There are existing public sanitary sewer and public water services provided to the School by the City of Winchester. Public water exists within E Southwerk, S Loudoun, & W Whitlock Streets. Water service is provided to the existing school building at the corner of E Southwerk & S Kent Street. Sanitary sewer serves the existing school via a 10" PVC main that bisects the playground area of the site. Also currently serving the school are power, telecommunications at the corner of E Southwerk & S Kent Street, & gas along the southern side of the existing school.

STORM DRAINAGE AND STORMWATER MANAGEMENT

Storm drainage exists on site throughout the front play areas. From a visual surface level inspection it appears all onsite drainage flows to the south towards a large storm sewer structure at the mid-block of E Whitlock Avenue. From this structure runoff is conveyed under E Whitlock Avenue into Overlook Park & it's associated floodplain.

Storm Sewer systems exist within the S Kent, E Whitlock, & S Loudoun Street public right of ways that surround the school. No public storm sewer drainage exists within E Southwerk Street. Generally runoff enters the site from W Southwerk Street via sheetflow and existing curb & gutter and drains into multiple inlets as part of an existing storm sewer network within the School's parking lot. Runoff entering these drainage inlets then conveys to the south east through an existing storm sewer that bisects the site, eventually outfalling on the south side of E Whitlock Ave at Overlook Park. No SWM/BMP facilities currently exist onsite, given that development onsite generally occurred before modernized stormwater management regulations.



TRUCK, LOADING, AND DUMPSTER ACCESS OFF OF PARKING LOT

SITE SOILS

Onsite soils consist entirely of Map Unit 514B – Frederick-Poplimento-Urban Land Complex which is Hydrologic Soil Group C, well drained, loam/silty clay loam. Given the onsite & surrounding development it is likely that a majority of the onsite soils have been disturbed by previous development and a geotechnical investigation should be performed to support any future development and/or structural design.

SITE TOPOGRAPHY

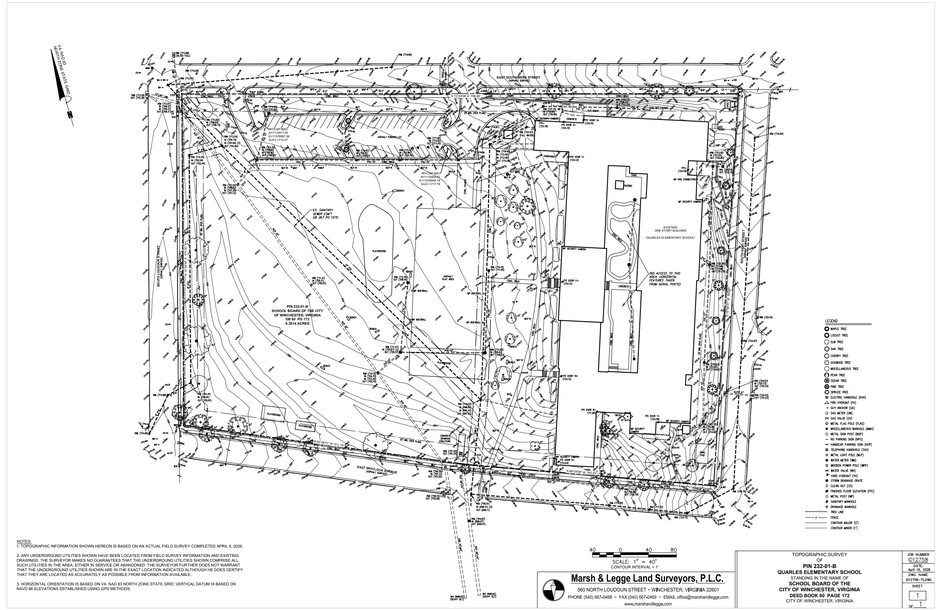
There is significant elevation change across the site; from its highest point in the northeast corner at the intersection of E Southwerk & S Kent Streets at an elevation of 738' to its lowest point, a drainage swale located approximately mid-block along E Whitlock Street at an elevation of 706', is a difference of 32'. A majority of the change in grade occurs in an east-west direction in the latter third of the site, where the building exists. The site manages the grade using various retaining walls, ramps, steps, & even the building walls.

The two-thirds of the site in front of the existing building are generally gentle slopes, facilitating play areas, playgrounds, and an asphalt court area. A large drainage swale also exists across the front of the site, which controls a drainage area in excess of 100 acres. No FEMA Floodplain exists onsite and no known wetlands exist onsite. Management of the contributing drainage area to the site will be paramount to siting a new building & associated facilities along S Loudoun Street.



LARGE DRAINAGE STRUCTURE ALONG E WHITLOCK EDGE OF SITE

Civil Analysis



SITE TOPOGRAPHIC & UTILITY SURVEY

Landscape Analysis

LOCATION AND SITE CONTEXT

Garland Quarles Elementary School (GQES) is located at 1310 South Loudoun Street, Winchester, in Frederick County, Virginia. The school's campus is framed by South Loudoun Street on its west boundary, East Whitlock Avenue to the south and Kent Street to the east. East Southwerk Street forms its northern boundary with Sacred Heart Cemetery across the street from the campus's northeast corner.

- The GQES campus is located within a primarily residential neighborhood and is surrounded by low-density housing and local neighborhood streets.
- From a circulation perspective, the school is well integrated with the surrounding neighborhoods. Visibility and access from surrounding roads are a key attribute.
- The school lies just less than a mile southeast of John Handley High School and is approximately one mile west of Interstate 81.
- The site serves not only as an educational facility but can also operate as an informal community gathering area with significant open space and playgrounds available to the surrounding neighborhoods.

CAMPUS OBSERVATIONS & OPPORTUNITIES SUMMARY

Overview

- While the campus is operational and provides essential facilities, many opportunities exist to improve safety, accessibility, student experience, & long-term performance.
- Many site elements reflect aging infrastructure, limited accessibility, and underutilized outdoor potential.
- The site presents a strong opportunity to transform from a primarily functional environment into a more cohesive, accessible, and educationally rich campus landscape.

Key Observations

Circulation & Accessibility
- Pedestrian routes connect major destinations but lack full ADA accessibility, particularly to playground areas and secondary entrances.
- Some paths, stairs, and handrails are not compliant or show wear, creating potential safety and accessibility concerns.
- Entry points are not clearly defined, limiting wayfinding and campus identity.
- Vehicular circulation is effective with separate bus and parent drop-off zones.

Topography & Drainage
- The site naturally drains toward a central low point and western basin, which currently functions as stormwater conveyance.
- Minor drainage issues (e.g., standing water) suggest localized inefficiencies.
- Large turf areas contribute to runoff rather than infiltration.

Landscape & Vegetation
- The campus is dominated by open lawn with limited spatial definition and ecological diversity.
- Tree canopy is concentrated at the perimeter, leaving play and gathering areas exposed to sun.
- Some trees may be in declining health, requiring evaluation.

Playgrounds & Outdoor Space
- Play areas support traditional recreation but offer limited variety and inclusivity.
- Some play areas are not ADA accessible and are disconnected from primary circulation routes.
- Hardscape play areas appear oversized and potentially underutilized.
- Shade is minimal across most play environments.

Outdoor Learning
- Outdoor learning spaces are informal and underdeveloped, lacking dedicated infrastructure such as seating, shade, and defined gathering areas.
- Existing spaces are recreation-focused rather than curriculum-integrated.
- Play opportunities are functional but limited in diversity and inclusivity.
- Existing features (interior courtyard, planting beds) are informal and underdeveloped.

Safety & Visibility
- Open sightlines support supervision, but localized blind spots exist near entrances and service areas.
- Lighting and spatial organization could be improved to enhance safety.

Amenities & Identity
- Site furnishings (seating, bike racks, trash receptacles) are limited and inconsistently placed.
- The campus lacks a strong sense of arrival and identity, particularly at primary entrances.

Amenities & Identity
- Low soil permeability, rock outcrops, and grading challenges limit recreational and ecological performance.
- The site has low biodiversity and limited environmental resilience.

KEY OPPORTUNITIES

Improve Circulation & Accessibility
- Expand ADA-compliant pathways to connect all major destinations, especially playgrounds.
- Upgrade stairs, ramps, and walking surfaces for safety and compliance.
- Strengthen entry points and wayfinding to improve navigation and campus identity.
- Maintain separation of vehicular and pedestrian systems while improving clarity.

Transform Stormwater into an Asset
- Convert the existing drainage basin into a multi-functional green infrastructure system (bioswales, rain gardens).
- Use stormwater features as educational tools and outdoor classrooms.
- Reduce runoff by increasing permeable surfaces and planting areas.

Enhance Landscape Structures & Shade
- Introduce tree canopy and planting zones to define outdoor spaces and improve comfort.
- Replace extensive lawn areas with layered, diverse landscapes.
- Increase use of native plantings to support biodiversity and reduce maintenance.

Modernize Play Environments
- Expand beyond traditional equipment to include:
  - ◊ Nature-based play
  - ◊ Sensory and inclusive play elements
  - ◊ Social and flexible gathering spaces
- Improve connectivity between play areas.
- Add shade structures and seating for usability and supervision.

Develop Outdoor Learning Environments
- Introduce dedicated outdoor classrooms, gardens, and nature-based learning areas.
- Integrate curriculum with site features such as:
  - ◊ Pollinator gardens
  - ◊ Environmental monitoring stations
  - ◊ Habitat areas
- Leverage the site as a "living laboratory" for environmental education.
- Overall, the interior courtyard is an asset that could be improved upon.
  - ◊ This area could be an enclosed, safe space that would be enhanced by natural shade and the opportunity to create an amazing nature-based play space.

Landscape Analysis

Strengthen Safety & Visibility
- Address identified blind spots through design and landscape adjustments.
- Improve lighting and spatial organization along key routes and entrances.

Upgrade Amenities & Campus Identity
- Provide coordinated site furnishings (benches, bike racks, waste/recycling).
- Enhance the main entry sequence with landscaping, signage, and gathering space.
- Create a stronger sense of place and community presence.

Expand Recreational & Community Use
- Regrade portions of the site to create usable, flatter play fields.
- Introduce walking and biking loops to support both school and community use.
- Increase shaded seating and gathering areas to support after-hours use.

CONCLUSION

- The campus is well-positioned for improvement, with strong foundational assets but clear gaps in accessibility, environmental performance, and program diversity.
- Strategic investments can transform the site into a more inclusive, resilient, and educationally dynamic environment that better supports students, staff, and the broader community.



ARC PATH CONNECTS BUILDING TO PLAY AREAS



MAIN ENTRANCE



EXISTING GARDEN BEDS



CANOPY WITH LOGS FOR NATURE-BASED PLAY



STUDENTS PLAYING IN STORMWATER DRAINAGE SWALE



EXTERIOR SITE ACCESS FROM NEIGHBORHOOD: RAMP CONDITION



STRUCTURED PLAY AREAS



EXISTING COURTYARD

Structural Analysis

INTRODUCTION

VMDO Architects engaged Structural Concepts, Inc. (SCI) to perform a structural condition assessment related to the renovation of the Garland R. Quarles Elementary School. The Quarles Elementary School is located at 1310 S. Loudoun Street in downtown Winchester, Virginia. The original building is dated 1954, with additions made in 1958 and 1995. Record drawings from each of these phases were examined for this study. Representatives from Winchester Public Schools, VMDO, and SCI conducted a site visit at Quarles Elementary School on February 12, 2026.

GENERAL CONDITIONS

Based on our site visit, visible portions of the structure are in good condition, yet much of the structure is hidden by finishes. A much better understanding of the structure is obtained by studying record drawings. The descriptions that follow are based on record drawings, unless noted otherwise.

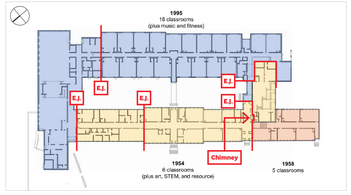
1954 ORIGINAL BUILDING FOUNDATION AND FLOOR

Foundations in the 1954 portion are strip footings designed for an allowable soil bearing capacity of 6,000 pounds per square foot (PSF). The original structure from 1954 has a basement under the original cafeteria (the cafeteria became the library in the 1995 project). This basement has two storage rooms, a mechanical room, and a coal storage room. Floors and walls are made of concrete throughout the basement. The framed floor above the mechanical room and the coal storage room are made of reinforced concrete slabs on concrete beams and columns. Framed floors above basement storage rooms and framed floors over a crawl space in the southern third of this phase are made with precast concrete joists at 24" spacing. The floor in the northern two thirds of this phase is a 5" concrete slab on grade. A pipe trench exists around the perimeter of classrooms and is covered with a 5" thick reinforced concrete slab on metal deck.

1954 ORIGINAL BUILDING SUPERSTRUCTURE

Walls in the 1954 structure are unreinforced masonry 12½" thick. The outer surface of these walls is brick which is laid interlocking with tiles or blocks to create a single structural wythe. Horizontal strips of concrete are provided at the top and bottom of these masonry walls where the floor and roof framing connect. This concrete layer is reinforced to act as a lintel above window and door openings.

Flat roofs over classrooms in the 1954 portion are open web steel joists at approximately 24" spacing covered with 2" thick concrete and 2" thick insulation. Original drawings depict built-up roofing, but the roofing surface observed during our visit was membrane.



EXISTING BUILDING PHASES DIAGRAM SHOWING LOCATION OF EXPANSION JOINTS

The center third of the building has a hipped roof over that structure which is finished with slate. The hipped roof is supported on light wood framing configured like a truss, but, unlike a true truss, it is supported by a flat structural ceiling with the same construction as the classroom roofs. The roof over the original cafeteria has long-span open web steel joists spaced at 4' 6" which support a surface of 2" thick poured gypsum. Short parapets surround all flat-roofed areas.

Expansion joints separate the original structure into three parts (refer to diagram above). One joint is north of the hip roof and the other separates the original cafeteria from the south classroom wing. A large, square chimney is located just north of this expansion joint, and cafeteria roof joists are supported by the common wall on loose bearing plates.

1958 ADDITION

The 1958 addition is located west of the original cafeteria and south of the original classrooms. Its floor height is lower than the original classrooms but higher than the original basement. Foundations are strip footings designed for 3,000 PSF soil bearing capacity. Floors are a mix of slab on grade, concrete slab, and precast concrete joists at about 4-foot spacing over crawl space. Walls are like those from 1954. Roof framing is open web steel joists at 30" spacing.

1995 ADDITION

The 1995 addition provided a new classroom wing about 50 feet east of existing classrooms. It renovated the original cafeteria into a library and added a new cafeteria and a new gymnasium at the north end. These combine with the original building to enclose a new courtyard. Expansion joints are provided at the two locations where new construction abuts existing, and within the north end of the new classroom wing.

Foundations for the 1995 addition are strip footings designed for 3,000 PSF soil bearing capacity. All floors are concrete slabs on grade 4" thick. Walls of this phase have brick as veneer which is backed by reinforced CMU. CMU thickness is typically 8" nominal with #5 vertical bars at 48" spacing, although some CMU is thicker or has more reinforcing. Roof framing is open web steel joists at 48" spacing, except that gymnasium roof joists are at 6'-0" spacing. Roof surfaces are ballast over single-ply membrane over 3" insulation over metal deck.

OBSERVATIONS

There were a few observations of structural interest during the site visit. One was a loosened parapet at the southwest corner of the 1954 wing. The loose parapet is depicted on the facing page and may need to be rebuilt. Cracks in concrete floors on grade were also observed. Floor cracks can be repaired but such repair is optional if the utility of the room is not affected.

RECOMMENDATIONS

Seismic loads are explicitly considered in the 1995 structure but are not considered in either the original work or the 1958 addition. Seismic loads must be retroactively considered if these older portions receive substantial structural alterations, as defined by the existing building code. Since the walls of these older portions are made of unreinforced masonry, they are unlikely to possess sufficient ductility without invasive and expensive modifications. It is therefore convenient to avoid triggering these provisions unless careful thought is given to doing so. If triggered, the entire wing to the nearest expansion joint must be evaluated for seismic behavior.

Snow drift provisions in the modern format were first introduced in 1988. As a result, drifting snow was explicitly considered in the 1995 structure but not in the first two phases. Any new feature which causes snow drifts on the existing structure will trigger analysis of existing roof framing for modern snow loads. Triggers are anything over 15 feet wide that projects above the existing roof. Examples include new air-conditioning equipment or the addition of a partial second floor. The area of roof which must be evaluated is any portion impacted by the new snow drift, which is typically about 20 feet wide. Required repairs within that area are often complex and labor intensive, though thankfully the affected area is smaller than for seismic triggers.

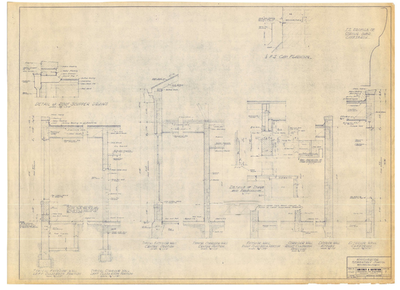
Structural Analysis



PARAPET CONDITION AT SW CORNER OF 1954 WING



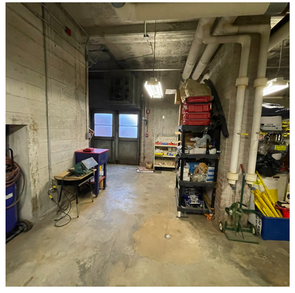
SLATE DETAILING OF HIP ROOF AT 1954 ENTRANCE



ORIGINAL 1954 UNREINFORCED MASONRY WALL SECTIONS



LOOSENED PARAPET CLOSE-UP AT SW CORNER OF 1954 WING



BASEMENT UNDER ORIGINAL 1954 STRUCTURE



ROOF SYSTEMS: MEMBRANE ON 1954 PORTION (LEFT), BALLAST ON 1995 ADDITION (RIGHT)

Architectural Analysis

INTRODUCTION

Garland Quarles Elementary School (GQES), located at 1310 North Loudoun Street, Winchester, Virginia 22601, is built on 9.59 acres and owned by the Winchester City Public Schools. It is identified as PIN 232-1-B Parcel Number 9823 on Winchester City tax map.

The building was developed in three phases. Designed in 1954, the original twelve-classroom school with a library, cafeteria, and basement mechanical room was built to educate grade PK-4 students in Winchester. A five-classroom addition was designed in 1958 and sits seven feet below the floor elevation of the original school. The last phase of development was designed in 1995, including a renovation of the existing buildings and the addition of approximately 46,000 square feet, including 18 classrooms, a gymnasium, and a new cafeteria and kitchen. The resultant complex of buildings is a one-story "donut" plan around an enclosed courtyard, with two long wings of East-West facing classrooms along double-loaded corridors. The library connects the wings on the South and a cafetorium and gymnasium connect the wings to administration and main entrances on the North.

Beyond routine maintenance and upgrades to finishes, furniture, and equipment, the 75,000 square foot building has seen no significant improvement since that time.

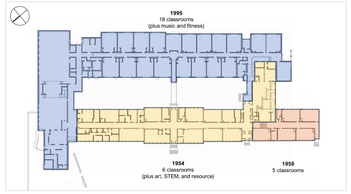
As illustrated in the diagram to the right, this assessment will reference the 1954 building, the 1958 building, and the 1995 building to help organize and locate observations and recommendations. The following are architectural observations and recommendations for repairs or improvements.

EXTERIOR

Roofing

1954 Building

The main central volume of the building has a hip roof covered with slate shingles. Now 75 years old, the roof is in need of significant repairs (including replacing broken or missing shingles, flashing, gutters and downspout, trim and accessories) or replacement. The roof over the classroom wings to either side of the slate roof is a white membrane roofing system. The age of this roof is unknown, but there are known issues (ponding, leaks, discoloration, flashing, etc.) that suggest it is at the end of its functional life. The roof over the original cafeteria and kitchen is a built-up roofing system. The age of this roof is unknown, but there is significant ponding and other issues that suggest it is at the end of its functional life. We recommend a comprehensive repair or replacement of the slate roof and replacement of the membrane and built-up roofing systems.



EXISTING BUILDING PHASES DIAGRAM

1958 Building

The 1958 Building uses the same white membrane roofing as the 1954 Building. It is assumed that the roofing is the same age, however, there is significant ponding on the roof of the 1958 Building. Major mechanical equipment on the roof will need to be replaced, and it is recommended to coordinate roof replacement with this work.

1995 Building

The roofing of the 1995 building is a black roofing membrane with stone ballast. At more than 30 years old, the roofing has reached the end of its functional life and should be replaced. Major mechanical equipment on the roof will need to be replaced, and it is recommended to coordinate roof replacement with this work. Discoloration and displacement of the stone ballast and the growth of moss and mildew all suggest that this roof is not draining effectively

General Notes

Given increasing heavy rainfall events, all conductors and downspouts should be replaced and increased in size and number. Insulation should be increased as required to meet existing energy codes and to provide positive drainage slopes. Flashing, trim, coping and accessories should all be replaced as part of an overall renewal of all roofs.

Exterior Skin & Wall Assembly

1954 & 1958 Buildings

The exterior skin is brick veneer on CMU back up with limestone sills and painted wood trim. The original drawings show that there is currently no insulation or air barrier in the wall construction. The wall assembly does not meet current energy codes and requires additional insulation and air sealing.

Minor cracking in the masonry veneer was observed at several locations. Moisture damage was also observed on the inside of the exterior wall. It is difficult to discern if this moisture is coming from the roof or the wall, but the co-location of cracking and moisture damage suggests that moisture is migrating through the exterior wall. These areas would need to be repaired, and expansion joints would be introduced to reduce future failure of the veneer. In addition, changes to the mechanical system will require infill of the existing vents below the windows. All existing exterior masonry requires re-pointing and cleaning. If retained, existing wood trim should be repaired and repainted.

Flooding in the basement level of the 1954 Building is due in part to a lack of sufficient exterior drainage moving water away from the building, and from exterior doors in particular. However, it is likely that flooding is also due to a lack of adequate waterproofing of the CIP concrete foundation walls. While this condition may be diminished with improvements to roof and exterior drainage systems, this will likely require remediation with new exterior waterproofing systems and other flood mitigation measures.

1995 Building

The exterior skin is mainly brick veneer on CMU back up with brick sills and painted metal trim. The existing masonry is badly stained in several locations, and the mortar and exterior sealants have failed and require repair. EIFS panels are used as infill panels and soffits. The original drawings show typical wall construction that includes 1 ½" of rigid insulation and a 1 ¼" air space. While the wall assembly is far from best practice, it is likely adequate to meet current energy codes (assuming significant increases in roof insulation). EIFS panels should be repaired and repainted or replaced with other durable panel systems. All existing exterior masonry requires re-pointing and cleaning. All exterior sealants should be removed and replaced

Windows & Doors

1954 & 1958 Buildings

The original windows were replaced as part of the 1995 Addition/Renovation. Now 30 years old, these windows have reached the end of their functional life and should be replaced with contemporary, high-performing, insulated window systems. Existing cast stone sills should be cleaned and repaired or replaced. Where not used for access or egress, original wood doors should be repaired and repainted. Access and egress doors should be replaced as needed for accessibility, security, access control, and durability.

1995 Building

The existing windows are the original aluminum windows and storefront glazing systems. Now 30 years old, these windows have reached the end of their functional life and should be replaced with contemporary, high-performing, insulated window systems. Existing brick sills should be cleaned and repaired or replaced. Access and egress doors should be replaced as needed for accessibility, security, access control, and durability.



STONE BALLAST ROOF (1995), POOLING AND MOSS UNDER EQUIPMENT



WATER ISSUES AT FLASHING



DOORS AT 1995 BUS ENTRANCE (NE CORNER)



SLATE HIP ROOF AT 1954 ENTRY



POOLING ON BUILT-UP ROOF SYSTEM (1954)



LOCALIZED CRACKING ON INTERIOR FACE OF WALL



LOCALIZED CRACKING ON EXTERIOR FACE OF WALL



DOORS AND WINDOWS AT 1954 MAIN ENTRY



DOORS AND WINDOWS AT 1958 MAIN ENTRY



WHITE MEMBRANE ROOF ON 1958 ADDITION



WHITE MEMBRANE ROOF SUPPORTING EQUIPMENT



WINDOWS ON EAST FACADE OF 1995 ADDITION



WINDOWS ON NORTH FACADE OF 1995 GYMNASIUM

INTERIOR

Floor Finishes

1954 & 1958 Buildings

Floor finishes consist of quarry tile in corridors and toilet rooms, a combination of resilient tile and carpet in classrooms, library, and administration office suite, and sealed concrete in the basement. In general, tile base is used at tile floors and resilient base is used at resilient tile and carpet. The quarry tile in the corridors and toilet rooms is in good condition and is a durable, long-lasting finish. It has a dated appearance and doesn't help with acoustics but is costly to remove and replace. At a minimum, the quarry tile should be protected during renovations, then repaired and cleaned. For durability, maintenance, and occupant health, carpet should be replaced with resilient flooring. Existing resilient tile should be replaced with new resilient flooring material. Concrete should be repaired and resealed.

1995 Building

Floor finishes consist of resilient tile in corridors and cafetorium, a combination of resilient tile and carpet in classrooms, ceramic tile in the toilet rooms, wood athletic flooring in the gymnasium, and quarry tile in the kitchen and servery. In general, tile base is used at tile floors and resilient base is used at resilient tile and carpet. Some cracking in the floor finish was observed. This is likely due to movement in the structural slab below. The quarry tile in the kitchen and servery and the ceramic tile in the toilet rooms are in good condition and are durable, long-lasting finishes. They have a dated appearance and don't help with acoustics but are costly to remove and replace. Modifications to fixture and equipment layouts in those spaces may require removal and replacement, but at a minimum, those finishes should be protected during renovations, then repaired and cleaned. For durability, maintenance, and occupant health, carpet should be replaced with resilient flooring. Existing resilient tile should be replaced with new resilient flooring material.

Ceiling Finishes & Lighting

The majority of the buildings feature suspended ACT ceilings with recessed fluorescent lighting. Toilet rooms have gypsum board ceilings. The cafetorium and gymnasium have no finished ceiling and are open to structure above. Acoustics, light quality and appearance could all be improved by introducing an acoustic ceiling treatment in the cafetorium and gymnasium. ACT ceilings throughout the school are fairly dated, most are in fair to good condition, but it is recommended that all ACT ceilings be replaced in coordination with lighting, life safety, and mechanical upgrades. See electrical narrative for lighting observations and recommendations.

Wall Finishes

1954 & 1958 Buildings

Typical interior corridor walls are plaster on CMU with glazed tile wainscoting and wood trim. A similar glazed tile wainscot extends to +/-6'-0" AFF in toilet rooms. This glazed tile is in good condition and is a durable, long-lasting finish. It has a dated appearance and doesn't help with acoustics but is costly to remove and replace. It is difficult to remove or repair when making modifications or introducing new openings in the wall but can be painted with a high-performance coating to update its appearance. Other interior walls between classrooms are plaster on CMU and gypsum wall board partitions have been installed where the original classrooms have been subdivided or modified. Some moisture damage was observed in the plaster surface due to moisture intrusion from the exterior.

At a minimum, all interior walls should be repaired and repainted in coordination with a more comprehensive renovation. However, creating larger openings between the classrooms and corridors is recommended to increase connectivity, daylight, views, and passive observation. Upgrades to electrical, data, and life safety systems may require furring out CMU walls to conceal routing and rough-in connections. A unique feature of this building is the handmade ceramic tiles made by students installed in the corridors. Unfortunately, it seems unlikely that these can be removed and reinstalled without damaging the tiles.

1995 Building

The majority of walls in this building are painted CMU. Toilet rooms have painted CMU block walls with a ceramic tile wainscot, generally in good condition. This is a durable, long-lasting finish, however, creating larger openings between the classrooms and corridors is recommended to increase connectivity, daylight, views, and passive observation. Upgrades to electrical, data, and life safety systems may require furring out CMU walls to conceal routing and rough-in connections. A unique feature of this building is the hand-painted murals on corridor walls. They would be difficult to protect and may not be in keeping with the future vision for the school, but some of these murals may be able to be preserved in the renovation of the school.

Doors & Trim

1954 & 1958 Buildings

Most interior doors are stained solid wood doors in painted hollow metal frames with stainless steel hardware. Most doors to core instructional spaces include a window in the upper half of the door. Condition is fair to good. There are wood doors on hold-opens separating the 1958 Building from the 1954 Building.

1995 Building

Most interior doors are stained solid wood doors in painted hollow metal frames with stainless steel hardware. Most doors to core instructional spaces include a full-height sidelight. Condition is fair to good. There are painted metal doors on hold opens separating the 1995 Building from the 1958 and 1954 Buildings.

Casework

1954 & 1958 Buildings

The original interior classroom casework is stained solid wood with shelves, glass doors and brass hardware. While they are in fair to good condition, they should be supplemented to meet contemporary classroom needs. Plastic laminate casework has been added (likely in the 1995 renovation) to support classroom sinks, worksurface, display, and storage. Replacement of existing casework with new casework is recommended.

1995 Building

The existing plastic laminate casework is in fair to good condition. The wide variety of additional storage solutions deployed throughout the school suggests that the current storage is not adequate for classroom needs. Replacement of existing casework with new casework is recommended.

Furnishings

Window coverings are in fair to good condition. It is recommended that all window coverings be replaced with new manual roller shades in all regularly occupied spaces and motorized roller shades in the cafetorium, gymnasium, and library. Additionally, black-out shades should be provided in assembly and presentation spaces. Additional exterior shading devices are recommended in east-facing classrooms to mitigate direct sunlight and glare in the morning.

Classroom desks and chairs are dated and are in fair condition, in some cases showing signs of cracking and more severe damage from years of use. While some of the furniture has been replaced with new, flexible furniture to support specific programs like STEM and Maker Space, it is recommended that the majority of classroom furniture be replaced with modern, flexible furniture that supports the needs of 21st century learning and instruction. New durable, weather-proof furniture should be purchased to support outdoor learning and dining.

Wood and laminate shelving in the library is in good condition. Administrative workstations and lounge furniture is in very good condition and could be reused where appropriate.

Architectural Analysis



TYPICAL 1995 CLASSROOM INTERIOR



HAND-PAINTED MURAL ON 1995 CORRIDOR WALL



LIBRARY LOCATED IN ORIGINAL 1954 CAFETERIA WING



LOCALIZED SUBSURFACE CRACKING, RESILIENT TILE



GYPSUM CEILING IN BATHROOMS



LOCALIZED MOISTURE DAMAGE IN PLASTER



TYPICAL 1954 CORRIDOR



FURNITURE LAYOUT IN ART ROOM



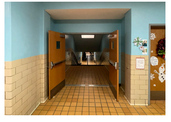
QUARRY TILE IN KITCHEN



OPEN STRUCTURE CEILING IN GYMNASIUM & DINING



PAINTED METAL DOOR ON HOLD-OPENS



DOOR ON HOLD-OPENS TO 1958 ADDITION

Equipment
Toilet room partitions and accessories throughout the school are in fair condition but replacement is recommended to improve safety and function, and to meet current accessibility requirements.

Markerboards, chalkboards, and display surfaces throughout the school are in fair condition but replacement is recommended to provide renewed surfaces and to support the needs of 21st century learning and instruction.

BUILDING CODE & ACCESSIBILITY

Building Entrances
There are ramps providing accessible access to the three main building entrances. Other entries to the building are not accessible, requiring interior or exterior stairs for access. There are two accessible entry / exits to the central courtyard.

Ramps & Lifts
There are accessible ramps and lifts connecting the various floor levels of the buildings. However, the lift to 1958 building does not work reliably, rendering the 5 classrooms on that level inaccessible. An elevator is recommended to accommodate access to all levels of the existing school.

General Notes
Existing toilet rooms are relatively spacious; however, it is likely that they do not meet current accessibility requirements. Buildings of this age typically require replacement and relocation of fixtures, which lead to more comprehensive renovations to these spaces.

Accessibility issues can be addressed through renovations. However, significant modifications will be required to meet current requirements, let alone best practices in universal design.

SAFETY & SECURITY

The existing site lacks a defined boundary, allowing for uncontrolled access to the school site during the school day. The main parking area is combined with the auto drop-off and service/loading, mixing traffic and creating long drop-off queues onto the public roads. The bus drop-off is along the curb of Kent Street, a public road, creating potential conflicts with buses and private vehicles. The volume of the cafeteria/kitchen and a large masonry wall supporting the entrance canopy obscures critical views from the administration to the parking/drop-off and entry approach to the school. While a secure entry vestibule with audio, video and access control has been installed at the main/visitor entrance, the bus entrance lacks a secure vestibule and administrative space.

As a one-story school with a large footprint, there are quite a few exterior doors to the building. These entry points lack contemporary access control. Finally, while the school has security cameras, it lacks comprehensive coverage of the school and site.

EDUCATIONAL ADEQUACY

Administration
The existing administrative reception area lacks clear views of the approach to the main entrance and lacks an appropriately sized reception and waiting area. Further, the school lacks the number and size of offices, workspaces, and storage rooms to accommodate current administrative functions, let alone future needs. While a contemporary school would have a more distributed administration model, the existing Administration spaces are concentrated near the main entrance, remote from most of the staff and students.

Staff
The existing school lacks adequate and accessible staff support spaces included in contemporary schools, including staff workrooms, conference rooms, and planning spaces, as well as dedicated staff toilets and comfort rooms (for lactation, prayer, private phone calls, recovery, reflection, etc.).

Classrooms
Most of the existing classrooms are slightly undersized based on the VDOE guidelines. Several spaces that are being used as classrooms are significantly undersized and should be reprogrammed as special use / resource classrooms. Art and Music rooms are both undersized, but the school does have both a dedicated STEM lab and a dedicated Fitness Lab (in addition to the Gymnasium).

Support Spaces
The existing school does not meet current VDOE guidelines for self-contained special education and resource spaces. Nor does it include amenities to support these programs, including sensory rooms, de-escalation space, OT/PT, and storage.

Library
The existing Library is located in the 1954 original cafetorium and kitchen. As this space was not designed for this purpose, it is less than ideal. Library office, storage, and work areas are located in the original kitchen which is separated from the main reading room. The main reading room is organized in a series of tiered spaces connected by ramps. A new Maker Space occupies the original stage. This arrangement limits the use, observation, and flexibility of the space. In addition, there is limited visibility and connection between the Library and the public corridor. Further, the large, South-facing windows allow uncontrolled heat and glare into the space. As a result, the blinds are pulled, limiting access to daylight and views. It is recommended that this space be radically reimagined as a contemporary Library.

Cafetorium
The current dining area is adequately sized for the current school population according to VDOE guidelines. An adjacent stage with a ramp allows it to function as a cafetorium, though the stage is undersized and lacks storage and high-quality AV systems. While it is the primary gathering space in the school, there is a general lack of visibility into this space. The floor and wall surfaces in the space are hard, durable materials. Combined with a lack of ceiling finishes, the space has poor acoustics, both for its daily use for dining and its function as a performance venue. The dining area and servery would need to be modified to support a larger student population and a more spacious dining area would allow for a variety of seating options and layouts that increase connections and reduce disruptions and noise.

Gymnasium
The Gymnasium is adequately sized and is commonly described as "the best elementary gym in the district". It has access to a two-sided stage that would allow it to function as a "Gymatorium", but it lacks an accessible path to the stage. There are doors that allow access to the gym and public toilets for after-hours and community use, while securing the classroom wings. The gym is adjacent to the existing courtyard, allowing ease of use of that space when weather permits. Unfortunately, the Gym is remote from the existing paved play area and play field, making those spaces more difficult to use during limited class time. The school lacks adequate dedicated office and storage space for physical education, let alone after-hours community use. Further, the existence of a separate Fitness Lab suggests that the gymnasium alone is inadequate to meet the needs of the school's programs.

Outdoor Learning & Play
The school places a high priority on outdoor learning and play. The majority of outdoor play occurs in the front of the school on the west side of the site, which includes multiple playgrounds, a paved play area, and a natural grass playfield. While this space is valued, it is a relatively large open space that lacks definition, organization, secure boundaries and opportunities for outdoor learning and nature play.

The majority of outdoor learning occurs in the central courtyard. While it is valued and used for a variety of special programs, it is fairly barren and ill-defined, lacking the organization, shade, equipment, and furnishing that would encourage teachers and students to use it regularly throughout the school year. Noise from the rooftop mechanical system creates a significant barrier to the use of the courtyard for instruction.

Architectural Analysis


RAMP ACCESS TO LIBRARY FROM 1995 ADDITION


LIMITED VISIBILITY OF ENTRY AT RECEPTION

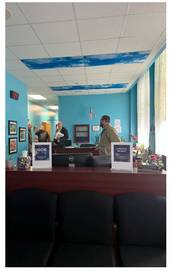


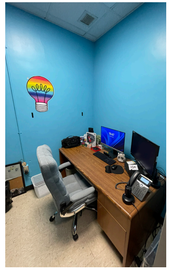
TIERED PROGRAM SPACE IN THE LIBRARY


UNRELIABLE LIFT IN 1958 ADDITION


STAIRS TO SOUTH ENTRY IN 1958 ADDITION


MAIN ENTRY CANOPY SIGHTLINES INHIBITED BY MASONRY SUPPORTING WALL


INADEQUATE WORK SPACE FOR STAFF/ADMIN



MEP Analysis

PURPOSE

The purpose of CMTA's assessment was to validate the status of current systems, functionality, and age of the mechanical, electrical, and plumbing systems at this facility, and provide recommendations for future replacements.

EXECUTIVE SUMMARY

This assessment revealed that much of the MEP equipment is at the end of its useful life. A new central cooling system is required immediately. The central heating equipment is working and within it useful life. The zone air handling units are past their useful life and should be replaced, this will reduce headaches down the road as equipment will begin to fail in piecemeal. To keep costs down, most of the equipment can be replaced in kind with a few modifications.

The current HVAC design for the Garland Quarles Elementary School consists of a chiller/boiler central plant with three rooftop air handlers. One Air Handling Unit serves the gym, the other two provide outside air to classroom indoor fan coil units. Restroom exhaust is pulled with the classroom return air to the air handlers, utilizing heat recovery. The exhaust fans are past their useful life expectancy and should be replaced, they appear to be in good condition. The boilers are in good condition and within their useful life. The boilers are sized at 2520 MBH each. The hydronic system consists of two inline boiler pumps, two building hot water base-mounted pumps, and two base-mounted chilled water pumps. Domestic water system is designed with water softeners, a brine tank, and two gas fired heater with 71 gal. self-storage, one at 140 deg F and one at 120 deg F. The domestic water is fed by a 4" domestic water main. The building has a fully automatic wet sprinkler system with two zones.

CHILLED WATER

The chilled water was previously provided by a 184 ton chiller. It is no longer operational. Chilled water is now being provided by a temporary unit.

The chilled water system uses two, 435 gpm base mounted pumps to circulate 44 deg. water to the rooftop air handlers and indoor fan coil units. The pumps are at the end of their useful life in accordance with ASHRAE standards.

Recommendations

Because the chiller is currently out of commission, there is a decision that needs immediate attention with a few paths forward. The first, is a one-to-one replacement of the chiller, with the potential of a hybrid geo-thermal system to take care of the capacity of a future expanded building. The second would be to replace the chiller with one sized large enough for the future building capacity. The third option is continuing to use the temporary chiller, until the beginning of the future project. With all these options the pumps will need to be replaced and sized accordingly. It is also recommended to replace the chilled water piping throughout the building. Multiple water stains were found throughout the building, which is likely caused by hydronic leakage.

HOT WATER

Hot water is provided with two firetube boilers. Their flue and intake are routed together to the roof. The boilers are in good shape and are 6 and 7 years old. This means they are within their useful life in accordance with ASHRAE Standards.

The hot water system uses two base mounted pumps, 75 and 105 gpm, and two inline pumps, 50 gpm each, to provide 180° F water to the building. Each hot water pump is in rough condition and at the end of their useful life in accordance with ASHRAE standards.

Recommendations

It is also recommended to replace the hot water piping throughout the building, Multiple water stains were found throughout the building, which is likely caused by hydronic leakage.

It is recommended to replace the pumps but keep the boilers and utilize the rest of their useful life.



184-TON CHILLER



BOILER



HOT WATER PUMPS

MEP Analysis

AIR HANDLING

There are three rooftop air handlers serving the building. One is dedicated to conditioning the gym. The other two of the AHUs provide outside air to the rest of the building. Each AHU has a supply and exhaust fan, as well as a heating and cooling coil. These units are constant volume. They would be much more efficient if operated with demand control ventilation. Each of these units are at the end of their useful lives in accordance with ASHRAE standards. There are fan coil units and unit ventilators serving each classroom. These units are also near the end of their useful lives.

Recommendations

It is recommended that all the fan coil units and unit ventilators are replaced along with the connected ductwork. Diffusers and louvers all appeared to be in good shape. We can clean and reuse louvers and diffusers where applicable.

FIRE PROTECTION

The fire protection is fed from an 8" main feeding two 6" zone pipes. We noticed multiple ceiling stains near fixture heads, likely due to old leaky piping, We recommend a replacement of the entire system within the building due to the age.

ELECTRICAL DISTRIBUTION

The building electrical service is 3-phase 277/480V/3P/4W. The building is served via an 1600A GE Spectra Series Switchboard. The main service is manufactured by GE and was installed around 1997. The service is in good working order and has been maintained well, however it is approaching the end of its expected useful life.

Electrical panels are located throughout the building. GE is also the manufacturer of all branch panelboards. Most panelboards were in dedicated closets which were locked, but a few were in the corridors or classrooms and unlocked. Most branch panelboards are in good working order and have been maintained well, however they are approaching the end of their expected useful life.

Recommendations

The electrical equipment is in good working condition, however all equipment is approaching the end of its expected useful life and should be replaced as part of a standalone project or the next major renovation in the next 5 years. As an additional immediate fix, any panelboards in corridors, classrooms, or any other public spaces should be locked to prevent access by students or other unauthorized personnel.



ROOF-TOP AIR HANDLING UNIT



ELECTRICAL DISTRIBUTION EQUIPMENT



FIRE PROTECTION PIPING



LEAKER SPRINKLER HEAD



BACKFLOW PREVENTER



ELECTRICAL DISTRIBUTION EQUIPMENT



ELECTRICAL DISTRIBUTION EQUIPMENT



ELECTRICAL DISTRIBUTION EQUIPMENT

MEP Analysis

EMERGENCY STANDBY

Emergency power is provided by a 20kW natural gas emergency generator manufactured by Kohler. The generator was originally installed in 1997 but has since been replaced. A single automatic transfer switch transfers power from the normal power source to the emergency power source after the loss of utility power. The automatic transfer switch provides emergency power to life safety and emergency systems such as fire alarm, exit signs, and egress lighting. Emergency power systems do not have proper separation as IT loads, and security loads are currently connected to the emergency transfer switch.

Recommendations

The existing emergency electrical panelboard and transfer switch are approaching the expected end of their useful life and should be evaluated for replacement soon. The generator is in good working condition, but it is quite small for a school of this size and does not back up all loads that are typically covered in schools. The kitchen cooler/freezer are not on emergency power for example. Desired emergency loads should be evaluated and could necessitate replacing the current generator to provide additional capacity.

LIGHTING SYSTEMS

Lighting throughout the building is primarily accomplished with 2x4 recessed LED troffers in the corridors and classrooms. Almost all fixtures are fluorescent with minimal lighting upgraded to LED. Lighting levels are mostly appropriate for the space being lit and lighting color temperatures are mostly consistent throughout the school as well. Individual lighting zone control is achieved primarily using line voltage toggle switches. Exterior lighting is also primarily fluorescent, however there were more instances of newer LED lighting fixtures. Most exterior lighting was off during the day, but the one fixture that was on did not meet the American Medical Association recommendations for color temperature. Most exterior lighting fixtures were not dark sky compliant.

Recommendations

The existing lighting system would be unlikely to meet current energy code requirements for lighting power density and should be replaced with LED. Lighting controls should be installed to meet energy code requirements. Dimmer switches should be provided for all regularly occupied spaces.



EMERGENCY ELECTRICAL PANELBOARD


INTERIOR LIGHTING FIXTURE



CIRCUIT DIRECTORY


EMERGENCY GENERATOR


TRANSFER SWITCH AND ELECTRICAL PANELBOARD


EXTERIOR LIGHTING FIXTURE


INTERIOR LIGHTING FIXTURE


EXTERIOR LIGHTING FIXTURE

MEP Analysis

LIFE SAFETY SYSTEMS

The building features an addressable fire alarm system. The main control panel is a Notifier System 5000; this panel is considered obsolete and Notifier is no longer manufacturing replacement parts for this system. The main fire alarm panel is in the main office.

Exit signs were illuminated throughout the building. The exit signs are powered by the emergency panelboard. Egress lighting is present throughout the building and powered from the emergency panelboard.

Recommendations

Ensure fire alarm testing records and preventative maintenance logs are up to date. The fire alarm system should be replaced in the next few years as replacement parts will be more difficult to come by.

LOW-VOLTAGE SYSTEMS

The building features an addressable public address/clock system, security management system, and video management system. The public address system head-end is a Rauland Telecenter System 21 which is discontinued by the manufacturer. The video management system seems to be new and in good working order. The security management system has a mix of device ages with some older devices that are near the expected end of their useful life.

The main low-voltage wiring closet is located near the library and it is also used as an office. Other IT components are throughout the building typically in rooms shared with electrical equipment. Dedicated cooling systems are not provided for rooms with IT equipment currently.

The school also includes A/V systems in the gym, auditorium, and classrooms. The systems seem to have been installed recently and are in good working condition.

Recommendations

Ensure all systems are compliant with current county standards and evaluate for replacement/expansion during the next major renovation. Establish dedicated IT closets with cooling/heating to meet BICSI standards.


LIFE SAFETY EQUIPMENT


LOW-VOLTAGE EQUIPMENT



LIFE SAFETY EQUIPMENT



LIFE SAFETY EQUIPMENT



LIFE SAFETY EQUIPMENT


LOW-VOLTAGE EQUIPMENT

Hazmat Survey

EXECUTIVE SUMMARY

The subject property is improved with a single-story elementary school located at 1310 S Loudoun Street in Winchester, City of Winchester, Virginia. The structure consists of approximately 89,127 square feet and was reportedly originally constructed in 1951. At the time of our survey, the subject building was occupied and active. The project is in the pre-design stage, and the future plans for the building are currently being determined by the client. ECS was contracted to perform a Hazardous materials survey of the building before demolition/renovation activities.

The purpose of the survey was to determine whether asbestos-containing materials (ACMs), lead-containing paint (LCP), or lead-based paint (LBP), universal waste, and liquid suspect PCB-containing equipment are present on the subject property. The survey was performed within the interior and exterior areas of the subject building. Please note that due to scheduling constraints and inclement weather, ECS has not completed the roof survey. When the roof survey is completed, ECS will provide a revised report reflecting that data.

On March 13, 2026, Mr. Taylor R. Michelitch, an accredited and licensed inspector for the Commonwealth of Virginia, performed the asbestos survey. Bulk samples were submitted to Scientific Analytical Institute (SAI) in Greensboro, North Carolina for analysis via Polarized Light Microscopy (PLM) in accordance with the current EPA-600 methodology.

A total of 47 bulk samples from 17 homogeneous areas were submitted to the laboratory, of which 63 layers were analyzed. Based on the laboratory analysis of the bulk samples collected during the survey, none of the materials was reported to contain asbestos.

On June 5, 2026, ECS returned to the site to collect samples from the buildings roof as well as collect samples from the exterior of the building. An additional 118 samples were collected. Of these additional samples, eight of the materials were reported to contain asbestos. The following materials that were reported to contain asbestos are as follows:

- Black Roof Vent Sealant with Silver Paint on the South Roof
- Parapet Flashing Sealant with Silver Paint on the South Roof
- Beige Multi-Layered HVAC Pitch Pocket on the South Low Roof
- White Exterior Door Caulk on the West Old Entry Door A11 and West Courtyard Old Entry Door
- White Exterior Wall Vent Caulk on the Courtyard West Wall
- White Exterior Expansion Joint on the West Wall near Door A10
- White Exterior Wall Vent Caulk on the South Wall near Door A8
- Light Exterior Gray Window Ledge Caulk on the South Wall near Door A8

Due to inaccessibility or the destructive means that asbestos sampling requires, unseen ACMs may remain within the building hidden behind inaccessible areas, which include, but are not limited to, sub-grade walls, structural members, topping slabs, sub-grade sealants, flooring located below underlayments, areas behind exterior walls, pipe trenches, and subsurface utilities.

If suspect materials are discovered during construction activities, they should be presumed to contain asbestos and be treated as ACMs or be sampled immediately upon discovery and prior to disturbance for asbestos content by an accredited or certified asbestos inspector in accordance with 29 Code of Federal Regulations (CFR) 1926.1101.

The LBP survey was performed by a Commonwealth of Virginia licensed Lead Inspector. Painted and/or glazed surfaces were assessed for lead content using a Direct-Read X-Ray Fluorescence (XRF) Spectrometer. Based on the testing performed, the following building components were reported as coated with lead-based paint/finish/glaze:

- Gray and White Wood Door Case;
- Beige Ceramic Wall; and
- Brown Metal Door Case;

In addition to our survey for ACM and LBP, ECS surveyed the building for various materials classified as Hazardous Waste or Universal waste, which may require special handling or disposal if disturbed or removed from the building. The materials are referenced below:

- Fluorescent Lamps and associated ballasts;
- Exit Signs/Fire Extinguishers
- Refrigerants associated with refrigerators, HVAC systems, and other fixtures i.e. water coolers
- Paints and Cleaning Chemicals

Recommendations regarding the removal and disposal of the ACM, LCP, LBP and hazardous/universal waste identified by ECS can be found in Section 5.0 of this report.
The executive summary is an integral portion of this report; however, ECS recommends that the report be read in its entirety.

SITE DESCRIPTION

The subject property is improved with a single-story elementary school located at 1310 S Loudoun Street in Winchester, City of Winchester, Virginia. The structure consists of approximately 89,127 square feet and was reportedly originally constructed in 1951. At the time of our survey, the subject building was occupied and active. The project is in the pre-design stage, and the future plans for the building are currently being determined by the client. ECS was contracted to perform a Hazardous materials survey of the building before demolition/renovation activities.

PURPOSE

The purpose of the survey was to determine whether asbestos-containing materials (ACMs), lead-containing paint (LCP), or lead-based paint (LBP), universal waste, and liquid suspect PCB-containing equipment are present on the subject property. The survey was performed on the interior and exterior areas of the subject building.

METHODOLOGY

ECS performed the authorized Scope of Services in general accordance with our proposal, standard industry practice(s) and methods specified by regulation(s) for the identification of ACMs, LBPs, and universal waste and suspect liquid PCB-containing equipment and fixtures.

Asbestos-Containing Materials
The non-destructive asbestos survey was performed on March 13, 2026 by asbestos inspector Mr. Taylor Michelitch who has received EPA-accredited training and is licensed by the Commonwealth of Virginia. Samples of suspect ACMs were collected utilizing hand tools and placed into individual, labeled plastic bags. Unique bulk suspect ACM samples were submitted to Scientific Analytical Institute (SAI) in Greensboro, North Carolina for analysis via Polarized Light Microscopy (PLM) in accordance with current EPA-600 methodology. Materials consisting of additional layers were analyzed separately. SAI is listed as an accredited laboratory by the National Voluntary Laboratory Accreditation Plan (NVLAP) managed by the National Institute of Standards and Technology (NIST) for bulk sample analysis by currently approved EPA methodology by PLM.

During the survey, ECS attempted to identify suspect ACMs in readily accessible areas. However, due to the destructive means required to identify some materials, certain areas were deemed inaccessible (i.e. behind walls or sub grade materials) and were not surveyed for suspect ACMs.

Hazmat Survey

Samples were collected in general accordance with EPA Standard 40 CFR 763 Subpart E, Asbestos Hazard Emergency Response Act (AHERA) and OSHA Standard 29 CFR 1926.1101 Inspection Protocol. Multiple samples of each unique material were submitted. Samples were analyzed using the "Positive Stop" methodology. If one sample of a homogeneous material is reported to contain asbestos, the remaining samples of that material are not analyzed. EPA regulations stipulate that if one sample contains asbestos, the entire quantity of that material contains asbestos, regardless of additional analysis.

Lead in Paint and Surface Coatings
The lead paint survey was performed using an X-ray fluorescence (XRF) Spectrometer to identify lead concentrations in painted and glazed surfaces. The survey was conducted utilizing the U.S. EPA definition of lead-based paint (LBP). Under this definition, painted surfaces that contain lead in concentrations equal to or greater than 1.0 milligrams per square centimeter (≥ 1.0 mg/cm2) are classified as coated with LBP. Paints with detectable concentrations of lead are considered lead-containing paints. Additionally, fixtures or components manufactured with factory-applied glazing (i.e., sinks, toilets, ceramic tiles, etc.) are tested as these factory-applied finishes often contain lead. Activities that disturb lead-containing materials (while not lead-based paints by the U.S. EPA definition) are regulated by OSHA (29 CFR 1926.62).

Because the current stage of the project is in the pre-design stage, the scope of the lead paint survey was not conducted in accordance with HUD Chapter 7 requirements. Additional screening may be needed following the determination of the future plans for the building.

Universal Waste and Suspect Liquid PCB-Containing Equipment
ECS performed a visual survey of the interior and exterior of the building for the presence of universal waste materials and suspect liquid PCB-containing equipment. ECS entered the accessible areas to identify universal waste materials, including batteries, stored pesticides, mercury-containing equipment, and lamps. Additionally, lamp ballasts suspected of containing PCBs and lead-containing equipment were documented if observed.

No sampling or other characterization was performed as part of this scope of service. Additionally, ECS did not access any energized electrical equipment or other equipment/ devices that were in use or that may pose a hazard to ECS personnel or building occupants.

RESULTS

Asbestos Sampling
In total, 47 bulk samples from 17 homogeneous areas were submitted to the laboratory, of which 63 layers were analyzed. An ACM is defined as any material containing more than one percent (>1%) asbestos as determined using the method specified in Appendix E, Subpart E, 40 CFR Part 763, Section 1, PLM. The U.S. EPA categorizes ACM as follows:

- Friable ACMs are defined as any ACM that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. Non-friable ACMs are defined as any ACM that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.
- Category I non-friable ACM includes packings, gaskets, resilient floor coverings, and asphalt roofing products containing more than one percent (>1%) asbestos.
- Category II non-friable ACM includes any material, excluding Category I non-friable ACM, containing more than one percent (>1%) asbestos.

Regulated Asbestos Containing Materials (RACM) are friable ACM or non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or has crumbled, been pulverized, or reduced to powder in the course of renovation and/or demolition operations.

SAI submitted a signed final laboratory report to ECS on March 26, 2026. In summary, none of the bulk samples submitted for analysis were reported to contain asbestos in detectable concentrations. A complete list of the sampled materials submitted for analysis and sample locations are included in the appendices of this report.

On June 5, 2026, ECS returned to the site to collect samples from the buildings roof as well as collect samples from the exterior of the building. An additional 118 samples were collected. Of these additional samples, eight of the materials were reported to contain asbestos. A brief summary of the materials that were reported to contain asbestos can be found on the following page.

Previously Identified Asbestos-Containing Materials
In a 3-Year AHERA Re-Inspection report performed by ECS for Winchester Public Schools (WPS) (ECS project: 47:17611, dated: November 10, 2023), ECS was able to assess the previously identified ACMs in the building. After interviewing the client and reviewing the school's management plan, the only reported material that remains in the school and contains asbestos is the pipe insulation on a run of piping in the building's crawlspace near the mechanical room. ECS did not sample this material as it was already determined to be asbestos-containing. Pipe insulation throughout the crawlspace of the building that is similar in nature to this insulation should be considered asbestos-containing unless sampled otherwise.

Suspect or Assumed Asbestos-Containing Materials
Due to the inaccessibility or the destructive means that asbestos sampling requires, additional suspect ACMs may remain within the building hidden behind inaccessible areas that include but are not limited to: sub-grade walls, structural members, topping slabs, sub-grade sealants, flooring located below underlayments, areas behind exterior walls, pipe trenches, and subsurface utilities, etc. These areas were deemed inaccessible and were not assessed.

If these materials are discovered during construction activities, they should be presumed to contain asbestos and be treated as ACMs or sampled immediately upon discovery and prior to disturbance for asbestos content by a licensed asbestos inspector in accordance with 29 CFR 1926.1101.

Based upon our experience in the identification of ACMs in similarly constructed buildings, the following additional suspect ACMs may also be located in inaccessible areas of the structure:

- Pipe Flange Gaskets in heating and plumbing systems
- Blackboards and associated mastics
- Vapor barrier and other materials below hardwood gym floor
- Hidden caulking within windows or areas of the windows not accessible for testing
- Water Fountain Components
- Waterproofing Membrane/Mastics/Vapor Barriers within exterior wall cavities, behind interior finishes, exterior veneer, and/or subgrade walls/subslab
- Thermal System Insulation behind walls, above ceilings, or below grade
- Subgrade Cementitious Duct Banks and Pipes
- Mastics associated with mirrors/boards and between walls
- Vermiculite Insulation behind CMU walls, if present
- Electrical Panels Asbestos Cement Components in electrical systems
- Fire Doors and Casings
- Suspect Materials within inaccessible areas of the building/outside the scope of the survey
- Flooring Materials that may not have been observed or sampled

Lead in Paint and Surface Coatings
Lead-based paint is defined by the U.S. EPA and Virginia as any paint or other surface coating that contains lead equal to or in excess of 1.0 mg/cm2 or 0.5% by weight. A total of 64 readings were collected during the survey, including calibration readings. Based on the XRF results, several surfaces analyzed with the XRF were identified as lead-based paint. A list of the XRF readings is appended to this report. Lead-based paints identified are summarized in the table and photographs located on the following page.

Hazmat Survey

Some paints and surface coatings contained a detectable concentration of paint. Paint and surface coatings that contain detectable concentrations of lead are considered "lead-containing" by OSHA and the Commonwealth of Virginia. Since OSHA has no specific action level for lead in paint, all paint on the site found to have a measurable concentration of lead should be assumed to be lead-containing, Work performed that may disturb lead-containing paint is regulated by OSHA under 29 CFR 1926.62.

VIEWS OF LEAD-BASED PAINT LOCATIONS



GRAY WOOD DOOR COMPONENTS



BROWN METAL DOOR CENTER CASING



WHITE WOOD DOOR CASE



BEIGE CERAMIC WALL

Universal Waste and Liquid Suspect PCB-Containing Equipment

The disposal of fixtures and equipment in buildings that contain various substances, such as mercury or lead, is regulated by local, state, and federal regulations. Collectively, most mercury-containing materials and batteries, which may contain lead, along with stored pesticides, are classified as "Universal Waste". The disposal of lamp ballasts and electrical transformers that contain suspect PCB-containing oils is also regulated at the state and federal levels.

Suspect Polychlorinated Biphenyl (PCB) Containing Ballasts and Equipment

Polychlorinated biphenyls (PCBs) are toxic coolants or lubricating oils used in some electrical transformers and capacitors, hydraulically operated equipment, light ballasts, and other similar equipment.

As part of our survey, ECS attempted to identify potential liquid PCB-containing materials and equipment. At the time of the survey, ECS visually observed the fluorescent light ballasts in accessible areas of the structure in an attempt to identify labeling indicating the presence/absence of PCB-containing fluids. Labeling was not observed or accessible on the ballasts surveyed. At this time, it is recommended that all ballasts be assumed to be suspect PCB-containing.

Mercury-Containing Components

The EPA classifies mercury as both hazardous and toxic. The survey included observations for equipment that could contain mercury, such as thermostats, transformers, fluorescent lamps, and switch-containing devices. As previously discussed, fluorescent lamps were observed. The fluorescent lamps may contain small quantities of mercury. ECS was not able to locate any suspect mercury-containing thermostats.

Lead-Acid Batteries

Suspected lead-acid batteries located in emergency lamps, exit signs, alarm panels, and associated with electrical components, etc., were observed or are assumed to be present. No evidence of leaking or damage was observed.

Other Materials Observed

During the survey, ECS also observed the following materials, which may have special handling and/ or disposal requirements:

- Exit Signs/Fire Extinguishers
- Refrigerants Associated with Refrigerators and HVAC Systems
- Paints and Cleaning Chemicals

RECOMMENDATIONS AND REGULATORY REQUIREMENTS

Asbestos-Containing Materials

None of the bulk samples submitted to Scientific Analytical Institute were reported to contain detectable concentrations of asbestos. If additional suspect asbestos-containing materials are uncovered which were not accessible during this sampling event, it is recommended that these materials be sampled or tested immediately upon discovery for asbestos content by an asbestos inspector in accordance with 29 CFR 1926.1101.

Lead in Paint and Surface Coatings

Based on the findings of the lead survey, detectable concentrations of lead were identified on some paints and surface coatings. The presence of lead is a concern primarily when conditions exist where it may be inhaled or ingested. Regardless of the analytical results of a material, all painted and/or glazed surfaces may still contain concentrations of lead in the paint, which when disturbed, may generate lead dust greater than the Permissible Exposure Limit (PEL) of 50 micrograms per cubic meter (ug/m3) as an 8-hour Time Weighted Average (TWA) established by the OSHA "Lead Exposure in Construction Rule (29 CFR 1926.62)."

The OSHA standard gives no guidance on acceptable levels of lead in paint at which no exposure to airborne lead (above the action level) would be expected. Rather, OSHA defines airborne concentrations and references specific types of work practices and operations from which a lead hazard may be generated (reference 29 CFR 1926.62, section d). Environmental and personnel monitoring should be conducted during any removal/demolition process (as appropriate) to verify that actual personal exposures are below the PEL of 50 µg/m3 as an 8-hour Time Weighted Average (TWA). Under OSHA requirements, the contractor performing renovation work will be required to conduct this monitoring and follow applicable requirements under 29 CFR 1926.62 if disturbing lead-containing paint.

Universal Waste and Liquid PCBs in Equipment

Fluorescent lamp ballasts manufactured prior to 1979 may contain small quantities of PCBs. Additionally, regardless of "PCB labeling," ballasts produced between 1980 and 1991 may contain di-ethyl hexyl phthalate (DEHP), which is classified as a potential carcinogen by the EPA. Additionally, DEHP contamination on Superfund sites is common, and responsible parties are subject to liability under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) should cleanup of DEHP be necessary.

ECS recommends that all ballasts suspected to contain PCBs be properly recycled or disposed of in accordance with US EPA and regulations. In practice, many ballasts lacking the "No-PCBs" label have been removed from buildings as part of routine maintenance; however, inspection of each ballast by the contractor performing removal is still recommended to ensure proper disposal into the proper waste stream.

ECS recommends that fluorescent lamp tubes/bulbs suspected to contain mercury be properly recycled or disposed of in accordance with EPA and Virginia regulations. Recycling is the most environmentally friendly means of disposal for these materials. Fluorescent lamps may be disposed of as universal waste if they remain unbroken during removal. If bulbs are crushed or broken prior to disposal, they are classified as hazardous waste by the EPA.

The disposal of universal waste and lamp ballasts must be performed in a manner by which the individual wastes are segregated and disposed of properly as required by federal regulations. If any of these materials are observed to be leaking or otherwise damaged prior to disposal, they must be disposed of as hazardous waste in accordance with EPA regulations. Handling, packaging, labeling, and disposal of hazardous materials should be performed in accordance with EPA and Department of Transportation regulations.

Hazmat Survey

Generators of universal and hazardous waste must obtain an EPA Generator ID number in order to dispose of these materials.

Other Hazardous and Regulated Waste

During the survey, ECS also observed several materials that may require additional consideration if disposed of during construction activities, including, but not limited to, cleaning products, exit signs, and fire detection sensors.

LIMITATIONS

The conclusions and recommendations presented within this report are based upon a reasonable level of assessment within normal bounds and standards of professional practice for a site in this particular geographic setting. ECS is not responsible or liable for the discovery and elimination of hazards that may potentially cause damage, accidents, or injuries.

The observations, conclusions, and recommendations pertaining to environmental conditions at the subject site are necessarily limited to conditions observed, and/ or materials reviewed at the time this study was undertaken. No warranty, expressed or implied, is made with regard to the conclusions and recommendations presented within this report. This report is provided for the exclusive use of the client. This report is not intended to be used or relied upon in connection with other projects or by other unidentified third parties without the written consent of ECS and the client.
During this study, samples were submitted for analysis at an accredited laboratory via polarized light microscopy. As with any similar survey of this nature, actual conditions exist only at the precise locations from which samples were collected. Certain inferences are based on the results of this sampling and related testing to form a professional opinion of conditions in areas beyond those from which the samples were collected. No warranty, expressed or implied, is made.

Our recommendations are in part based on federal, state, and local regulations and guidelines. ECS does not assume the responsibility of the person(s) in charge of the site, or otherwise undertake responsibility for reporting to any local, state, or federal public agencies, any conditions at the site that may present a potential danger to public health, safety, or the environment. Under this scope of services, ECS assumes no responsibility regarding any response actions initiated as a result of these findings. General compliance with regulations and response actions are the sole responsibility of the Client and should be conducted in accordance with local, state, and/or federal requirements.

Location	Substrate	Component	Color	Results
NW Hall	Wood	Door Case	Gray	4.7 mg/cm²
NW Hall	Ceramic	Wall	Beige	2.7 mg/cm²
Basement	Metal	Door Face	Tan	0.1 mg/cm²
Basement	Metal	Door Case	Tan	0.1 mg/cm²
Mech. Room/ Library	Metal	Stair Railing	Red	0.4 mg/cm²
NW Entrance	Metal	Door Center Casing	Brown	1.5 mg/cm²
NW Entrance	Wood	Door Casing	Gray	7.4 mg/cm²
Exterior	Metal	Door Case	White	0.3 mg/cm²
Exterior	Wood	Door Case	White	3.2 mg/cm²
Exterior	Wood	Door Face	White	0.4 mg/cm²
Exterior	Metal	Stair Railing	Black	0.1 mg/cm²
Exterior	Wood	Door Face	White	1.6 mg/cm²
Exterior	Wood	Door Case	White	1.9mg/cm²

SUMMARY OF XRF READINGS CONCERNING LEAD IN PAINTED SURFACES

Sample ID	Sample Location	Material Description	Analytical Results	Category
40 and 41	South Roof	Black Roof Vent Sealant with Silver Paint	5% Crysotile	Category II Non-Friable
42 and 43	South Roof	Parapet Flashing Sealant with Silver Paint	6% Crysotile	Category II Non-Friable
79 and 80	South Low Roof	Beige Multi-Layered HVAC Pitch Pocket	6% Crysotile	Category II Non-Friable
97 and 98	West Old Entry Door A11 and Courtyard West Old Entry Door	White Exterior Door Caulk	3% Crysotile	Category II Non-Friable
100	Courtyard West Wall	White Exterior Wall Vent Caulk	3% Crysotile	Category II Non-Friable
101 and 102	West Wall Near Door A10	White Exterior Expansion Joint	3% Crysotile	Category II Non-Friable
103 and 104	South Wall Near Door A8	White Exterior Wall Vent Caulk	4% Crysotile	Category II Non-Friable
105 and 106	South Wall Near Door A8	Light Gray Exterior Window Ledge Caulk	3% Crysotile	Category II Non-Friable
Previously Identified	Crawl Space Near Mechanical Room	Asbestos-Containing Pipe	N/A	Friable

SUMMARY OF MATERIALS REPORTED TO CONTAIN ASBESTOS

Asbestos Bulk Sample Locations and Analysis Results

In the table above, ECS has provided the general areas where the identified materials were observed during this survey. These materials may also be present in other locations throughout the building, other than where the material(s) are listed in this report. Additional concealed asbestos-containing materials may be present that were not observed during the site survey or accounted for in the table above. If materials similar to these materials are encountered during demolition work, the materials should be assumed to be asbestos-containing unless sampled to determine otherwise.

Based on laboratory analytical results, ECS recommends that all exterior white caulking be considered asbestos-containing unless sampled otherwise.

06

DESIGN CONCEPT OPTIONS

Concept 1

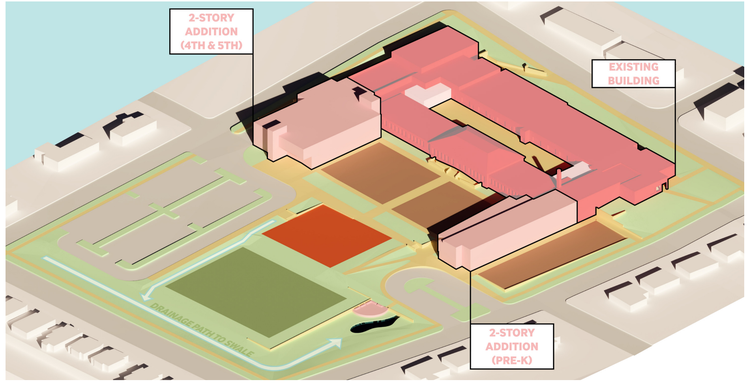
MAXIMUM RENOVATION WITH ADDITIONS

USE AS MUCH OF THE EXISTING SCHOOL AS POSSIBLE

Concept Scope	
Demolition Area	8,980 SF
Moderate Renovation Area	32,370 SF
Heavy Renovation Area	34,480 SF
New Construction Area	52,230 SF
Total Area	**119,060 SF**

Cost Estimate	
New Building	$0
Additions to Existing Building	$23,790,765
Renovations to Existing Building	$22,707,497
Site Work	$7,636,650
Temporary Facilities	$2,110,000
Cost Escalation —14.26%	$8,020,525
Total Cost	**$64,265,437**
Solar Array*	$3,004,280
*estimate assumes geothermal HVAC and does not include connection fees or escalation	
Total Cost + Add Alternates	**$67,269,717**

CONCEPT 1 STATISTICS



CONCEPT 1 SITE AERIAL VIEW FROM SOUTHWEST CORNER

ARCHITECTURAL DESIGN NARRATIVE

Concept 1 makes maximum reuse of the current Garland Quarles facility. The existing 1954 and 1995 buildings remain and are extensively renovated into contemporary learning environments. The sunken 1958 wing is demolished, making way for a 2-Story Pre-K addition along E Whitlock Ave. A second 2-Story addition projects from the existing dining area, accommodating the primary administrative suites on the first floor and a large learning community above. Making use of the existing building requires a phased, occupied construction process which will likely take between 39 and 42 months.

Phase 1 will include the abatement and demolition of the 1958 building and the existing kitchen, delineation of the construction boundary, and set up of temporary facilities. This will likely be executed in the summer when the school is vacant.

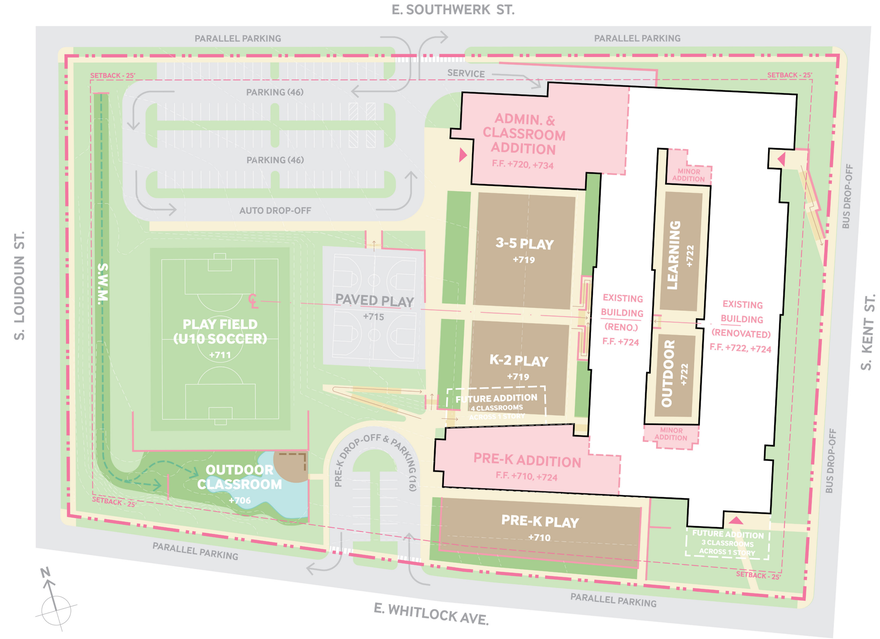
Phase 2 will include the construction of the new additions. This phase will require the temporary relocation of the main entrance of the school, creation of protected pathways, and separation of construction activities from outdoor play spaces. This phase will require 5-6 temporary classrooms (with toilets) to offset the classrooms lost in the demolition of the 1958 building. Further, this phase will require temporary relocation of the kitchen and cafeteria (to make way for the north addition) or require dining in existing classrooms during this phase. The construction of these additions will be disruptive to school operations, but when this phase is complete, a new administrative suite and 20 new classrooms will be available for use.

Phase 3 will include renovation of the existing cafeteria, stage, gymnasium, and associated spaces. This will be executed in the summer when the school is vacant and these shared spaces are not in use.

Phase 4 will include cycling students through the new additions as portions of the existing buildings are renovated. This will be disruptive to learning, but can be coordinated with the school schedule to ensure a consistent home room for students and teachers on a semester basis.

Phase 5 will include the completion of associated site work. Paving and hardscape will likely be executed in the summer when the school is not in use. By this point in phase 5 the district can meet its goal of 5th grade reintroduction. Landscape planting will be completed in the fall to improve chances of survival.

The conservative nature of this approach creates two opposing conditions: an open and adaptable site and a rigid and constrained building. Although outdoor play is an important component of life at GQES, it is not our recommendation that it come at the expense of the educational environment.



CONCEPT 1 ARCHITECTURAL SITE PLAN

Site Work & Utilities

CONCEPT 1: MAXIMUM RENOVATION WITH ADDITIONS

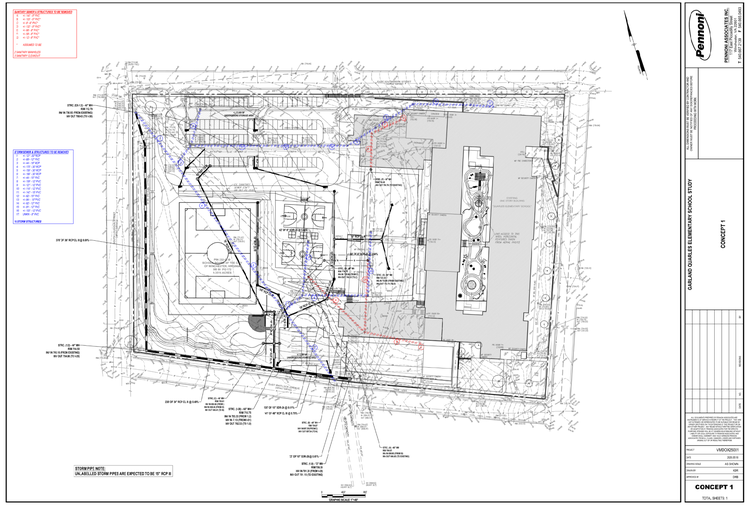
CIVIL ENGINEERING DESIGN NARRATIVE

Concept 1 involves two (2) expansion wings & a full interior renovation of the existing school building to meet the current and future needs of Winchester Public Schools. Additional improvements include two (2) parking lot expansions, one accessed off E Southwerk St., which provides 104 spaces & a student drop-off loop, and the other accessed off of E Whitlock Avenue, which provides for 16 spaces. New pedestrian pathways & site circulation routes are provided as well as play fields/play areas and a stormwater conveyance channel and associated rain garden. Small retaining walls (Less than 3.5' in height) are required to facilitate the grading of the noted play areas/field. Concept 1 generally has the smallest scale earthmoving requirements & impact to the site.

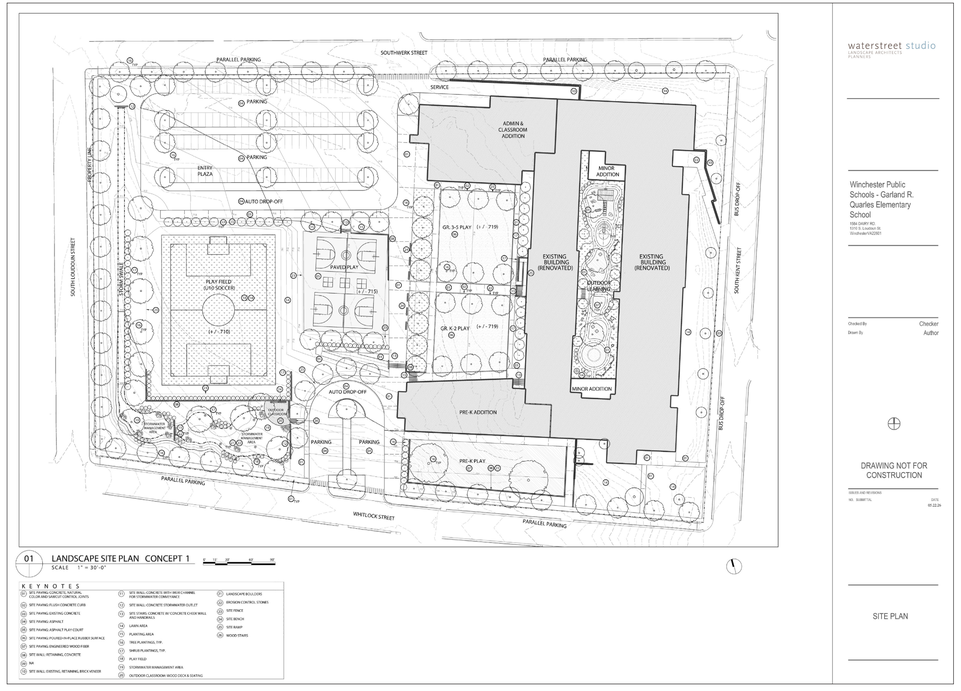
Utility relocation will be a significant impact to site development. A 10" PVC Sanitary Sewer main & a 30" RCP storm sewer line currently bisect the site. These utilities will need to be removed and re-routed for the site to function as proposed. The 30" storm sewer line will be removed & relocated to parallel S Loudoun Street and E Whitlock Street before making connection back to the existing outfall point. The 30" line is currently inadequate to convey the approximately 55 acres of drainage that contribute to the site, and as such the pipe will need to upsized to a range of 36-48".

Portions of the existing 10" PVC Sanitary Sewer Main as well as portions of an existing 8" main will need to be rerouted to facilitate the construction of the new southern wing for the building expansion. Given the size of the existing contributing sewer shed pump around methods & timing should be considered early in the design/construction process so that costs are properly managed.

Additional fire hydrants may be required to facilitate adequate fire coverage & fire flow. These items will be further clarified at time of final engineering.



CONCEPT 1 CIVIL SITE PLAN



01 LANDSCAPE SITE PLAN CONCEPT 1
SCALE 1" = 30'-0"

KEYNOTES

01	SITE WALL (CONCRETE WITH WOOD COPING, COLOR AND FINISH AS PER CONCEPTUAL ELEVATIONS)
02	SITE PAVING FLUSH CONCRETE CURB
03	SITE PAVING EXISTING CONCRETE
04	SITE PAVING ASPHALT
05	SITE PAVING ASPHALT PLAY COURT
06	SITE PAVING PLOYGROUND RUBBER/ASBESTOS SURFACE
07	SITE PAVING ENGINEERED WOOD FIBER
08	SITE WALL, RETAINING, CONCRETE
09	NA
10	SITE WALL, EXISTING, RETAINING, BRICK VENEER
11	SITE WALL (CONCRETE WITH WOOD COPING FOR COMBINATION CONVEYANCE)
12	SITE WALL (CONCRETE STORMWATER OUTLET
13	SITE STAIRS, CONCRETE W/ CONCRETE CHEEK WALL AND HANDRAIL
14	LAWN AREA
15	PLANTING AREA
16	TREE PLANTING, TYP.
17	SHRUB PLANTING, TYP.
18	PLAY FIELD
19	STORMWATER MANAGEMENT AREA
20	OUTDOOR CLASSROOM: WOOD DECK & SEATING
21	LANDSCAPE BOULDERS
22	EROSION CONTROL STONES
23	SITE FENCE
24	SITE BENCH
25	SITE SIGNAGE
26	WOOD STAIRS

CONCEPT 1 LANDSCAPE SITE PLAN

MEP Systems

CONCEPT 1: MAXIMUM RENOVATION WITH ADDITIONS

MECHANICAL SYSTEMS DESIGN NARRATIVE

Option One: Combination Geothermal WSHP & Six Pipe Geothermal – Fan Coil

For option one, we will use a geothermal wellfield, under the new soccer field, to cover the heating and cooling load of both the renovated and new buildings. The new building will be served directly by the geothermal wellfield to classroom high efficiency heat pumps. The renovated building will be a 6-pipe geothermal system with a heat pump chiller sending both hot and chilled water throughout the building to classroom fan coils.

A benefit of this option is the efficiency gains from the geothermal wellfield. With this option being two separate buildings attached to the same wellfield, it will further benefit from load sharing. While these buildings will have similar mechanical needs, whenever one needs cooling and one needs heating, the exchange in energy will lead to efficiency benefits. It will also lower upfront costs as it requires fewer wells compared to two separate wellfields. Longterm the geothermal wellfield will perform better for longer with a more balanced exchange of energy.

The new building will utilize new premium efficiency, multi-staged, water source heat pumps rated for geothermal range of operation. The units will be zoned with a single heat pump serving two classrooms or similar spaces typically. The average size of these heat pumps will be 4 ton with larger spaces requiring higher tonnages. Two high volume low velocity fans for air circulation for the gymnasium. A new central pumping system will be in the main mechanical room along with the geothermal manifold. The pumps will be sized for 75% of the full flow with an inline pump for low flow conditions. This setup will give the pumps backups for redundancy, while also giving them flexibility.

The renovated building will utilize a 6-pipe geothermal system with a heat pump chiller sending both hot and chilled water throughout the building to classroom fan coils. This will require a separate hot water and chilled water loop, increasing the amount of piping, pumps, valves, etc. A drawback of this option is the fan coils are often louder, less efficient and may provide less filtration than the heat pumps in the new building. The benefit of using the fan coils in the renovated building is the ease of installation as there won't be any architectural changes needed to fit the fan coils above ceiling.

The buildings will require a certain amount of outside air supplied to each room. To cover these needs, the new school will be provided with new water source heat pump units for 100% outside air delivery, decoupled from the other airstreams. The renovated building's units will utilize the hot and chilled water from the heat pump chiller. These units will cover the kitchen makeup air needs. These units will be provided with full flow enthalpy wheels for heat recovery. These dedicated outside air systems will utilize demand control ventilation via new variable volume terminals in the supply ductwork at each classroom which utilizes local CO2 sensors for control.

Option Two: Combination Cooling Tower/Boiler – Heat Pump & Chiller/Boiler – Fan Coil

We will use a cooling tower/boiler system that will supply heat pumps to serve the new building, and a chiller/boiler system will supply fan coils to serve the renovated building.

With this combination option, the new building will utilize the higher performing cooling tower boiler system. This system will feed new premium efficiency, multi-staged, water source heat pumps. The units will be zoned with a single heat pump serving two classrooms or similar spaces typically. The average size of these heat pumps will be 4 ton with larger spaces requiring higher tonnages. Two high volume low velocity fans for air circulation will be used for a gymnasium.

A major drawback of this setup would be the size of the necessary mechanical yard for the cooling tower and chiller. With the size of these pieces of equipment, and their need to be outside, there will be some site planning required to cover this, leading to less flexibility for playgrounds, parking lots and other school necessities. These systems are considerably less efficient than a geothermal wellfield. Longterm, this will lead to higher energy costs and maintenance throughout the life of the equipment.

The buildings will require a certain amount of outside air supplied to each room. To cover these needs, the new school will be provided with new water source heat pump units for 100% outside air delivery, decoupled from the other airstreams. The renovated building's units utilize hot and chilled water from the heat pump chiller. These units will cover the kitchen makeup air needs. These units will be provided with full flow enthalpy wheels for heat recovery. These dedicated outside air systems will utilize demand control ventilation via new variable volume terminals in the supply ductwork at each classroom which utilizes local CO2 sensors for control.

PLUMBING SYSTEMS DESIGN NARRATIVE

Major Renovation

The existing plumbing fixtures shall be replaced with new low flow fixtures for reduced water use. All water closets, lavatories, sinks, drinking fountains, floor drains, etc. shall be commercial grade. Piping runouts and insulations will be replaced where required throughout building.

New Construction

Plumbing fixtures shall be provided as indicated on the architectural drawings. All water closets, lavatories, sinks, drinking fountains, floor drains, etc. shall be commercial grade low flow fixtures. Provide for the new construction's new sanitary system, which is complete and independent from the existing building, including termination to the site systems, which are interconnected to the existing municipal systems.

Domestic Hot Water

Geothermal Options

Domestic hot water will be produced from one Trane, Colmac, or approved equal geothermal heat pump unit. Option two, with two separate buildings, will require two separate units. Cold, hot, and recirculating water piping will be routed throughout the school. We will store 140°F, that will be supplied to the kitchen, with a 120°F loop supplied throughout the building. The 120°F water shall be mixed utilizing a thermostatic mixing valve. All hand-washing sinks & showers will be provided with a dedicated ASPE mixing valve to achieve the required temperatures to avoid scalding.

Non-Geothermal Option

Domestic hot water will be produced from a high efficiency gas fired water heater. Option two, with two separate buildings, will require two separate units. Cold, hot, and recirculating water piping will be routed throughout the school. We will store 140°F, that will be supplied to the kitchen, with a 120°F loop supplied throughout the building. The 120°F water shall be mixed utilizing a thermostatic mixing valve. All hand-washing sinks & showers will be provided with a dedicated ASPE mixing valve to achieve the required temperatures to avoid scalding.

FIRE PROTECTION SYSTEMS DESIGN NARRATIVE

Major Renovation

All existing sprinkler heads are expected to be replaced with new runout piping as necessary. Sprinklers shall be recessed, quick response, pendant type sprinklers in areas containing ceilings. Upright sprinklers shall be used in areas containing no ceilings, such as mechanical rooms, etc. Dry pendant/upright type sprinklers shall be utilized in areas subject to freezing temperatures such as the loading dock and all freezer/cooler boxes.

New Construction

A new metered fire service line will be supplied to the new Elementary School via underground supply from the local utility service. A 750 GPM fire pump is expected to be required for three story new building. The new fire pump may not be necessary, but for this exercise, please include price of fire pump. Incoming fire service shall include a post indicator valve and a double detector check valve assembly. Installation shall meet or exceed all applicable requirements of NFPA, state, and local codes.

The entire building shall be provided with a new fire suppression system designed in accordance with all applicable standards of NFPA including but not limited to NFPA 13. Piping 2" and smaller shall be schedule 40 steel pipe with threaded fittings, and 2-1/2" and larger shall be schedule 10 steel pipe with grooved type fittings. There shall be wet stand pipes in each of the egress stairs.

MEP Systems

CONCEPT 1: MAXIMUM RENOVATION WITH ADDITIONS

Sprinklers shall be recessed, quick response, pendant type sprinklers in areas containing ceilings. Upright sprinklers shall be used in areas containing no ceilings, such as mechanical rooms, etc. Dry pendant/upright type sprinklers shall be utilized in areas subject to freezing temperatures such as the loading dock and all freezer/cooler boxes.

ELECTRICAL SYSTEMS DESIGN NARRATIVE

Electrical Distribution

A new 2000A/277/480V/3PH/4W switchgear (BOD: Square-D QED-2) shall be in the main electric room located in the existing main electrical room. Each area of the building shall have dedicated electrical space with 277/480V/3PH/4W and 120/208V/3PH/4W branch circuit panelboards separated for specific loads such as mechanical equipment, lighting, receptacles, etc.

A multi-circuit sub-metering device connected to the building automation system shall monitor all building load categories including future renewable energy and report to the energy dashboard system.

All wiring shall be copper, minimum #12AWG installed in conduit, minimum size ¾". MC cable is not acceptable. Power connections and code required disconnecting means will be provided for all HVAC and plumbing equipment. Combination starter/fusible disconnects will be provided for selected equipment as required.

Integral surge protective devices will be provided for the main distribution panel, emergency panelboards, and select branch circuit panels.

Emergency Electrical Distribution

A new 125kW diesel generator (BOD: Cummins) with 24-hour belly tank will be provided for life-safety and general emergency loads.

All emergency electrical distribution equipment will be housed in a separate room , located on the first floor inside the main electric room, from the normal power equipment and shall consist of two life-safety and general branch automatic transfer switches (one each), two life-safety and general branch distribution transformers (one each) and a limited number of life-safety and general branch panelboards. All life-safety emergency loads shall be selectively coordinated to 0.1 seconds. Load shedding will be implemented to reduce generator sizing and ensure that all life-safety emergency loads receive priority during an emergency power outage situation.

Interior Lighting

Interior artificial lighting will be accomplished with recessed high-performance LED troffer fixtures (BOD: Metalux #24CZ2) throughout the building with more decorative LED lighting in selected spaces such as Library, Entry Lobby, Dining, etc. Lighting in the Gymnasium will be low-glare LED High-Bays (BOD: Vision Engineering #VHB3). Lighting throughout will meet the latest Illuminating Engineering Society of North America (IESNA) Handbook, IESNA Recommended Practices, etc. Interior egress lighting shall be connected to the life-safety branch of emergency power.

100% occupancy/vacancy sensor coverage will be provided throughout except in electrical and mechanical rooms. Occupancy sensors will be automatic on/automatic off. Vacancy sensors will be manual on/automatic off. Automatic daylight dimming will be employed in most zones.

Dimming switches will be provided in all offices and classrooms. All interior lighting controls will be stand-alone systems (BOD: nLight). Specialty lighting fixtures and controls to be provided in the auditorium.

Exterior Lighting

Dark sky compliant LED exterior lighting will be provided at all exit doors for egress lighting. Parking lot/Roadway lighting will be post top LED fixtures (BOD: Cooper #GLEON) on square steel poles, pathway lighting will be post top LED fixtures (BOD: Cooper #Arbor) on square steel poles. All fixtures shall be in accordance with the site guidelines for color to match the existing landscape architectural theme. Backlight shielded optics will be utilized to minimize glare to adjacent properties. Exterior lights will also feature integral motion sensing for reduced glare, energy usage and extended LED lamp life. Exterior egress lighting shall be connected to the life-safety branch of emergency power.

Exterior lighting will be controlled through the web-based DDC control system through RS-232 connected digital relays (BOD: nLight).

Fire Alarm

A new fully addressable fire alarm system (BOD: Simplex) shall be provided with notification and initiation devices per NFPA requirements. All peripheral devices shall be installed per ADA requirements. Connections will be provided to all fire suppression equipment, air handling units over 2,000CFM, door access controls, etc.

Telephone/Data

The contractor will provide all rough-in's, faceplates, cabling paths, cabling and patch panels for all telephone and data systems. Telephone system shall be IP based. Owner shall provide active components including wireless access points. Minimum stub-out conduit size will be 1" and cabling paths will consist of 12" cable tray with J-hook assemblies on 48" centers.

The horizontal data network will utilize CAT 6 infrastructure. New fiber and copper utilities will be demarcated in the MDF room which shall be centralized on the 1st floor of each building in order to minimize the need for satellite closets. Satellite closets will be required where low-voltage cabling distance exceed 290'. Wireless coverage will be provided for the entire school utilizing CAT 6A cabling.

Audio/Visual System

Gymnasium and Dining in both buildings shall have local sound systems with ceiling mounted/suspend loudspeakers, wall mounted rack (with amplifier, mixer, equalizer, etc.), wireless microphone system and hardwired microphone inputs (BOD: Shure/Atlas).

Public Address System

An IP based building wide Public Address System (BOD: Rauland) shall be provided in both buildings with two-way communication between most spaces. System shall feature a software-based head end and shall be integrated with the telephone system. All areas within building shall be individually addressable and shall be capable of having custom bell schedules. Call intuition will be primarily done through the telephone system but call stations will be provided in select areas.

Electronic Safety and Security

A new ESS system will include interior and exterior Video Management Systems (VMS), Security Management Control System (SMS) and an emergency warning notification system interface (BOD: S2).

The SMS includes door access and logic capabilities such as visitor management, time schedules, intrusion detection and digital signage for emergency notification features. VMS will include security cameras that will be specified along with servers and analytics (motion detection) that run them. Both VMS and SMS systems will be integrated with a single web portal interface. The integrated system reports directly to any authorized group of users including the local police department if desired via programmed Push Notification.

Lighting Protection

Both buildings shall feature a complete Lightning Protection System certified to NFPA 780. System shall comply with UL #96A. Building steel shall not be used as a down conductor. Down conductors shall be concealed within the building. Each down conductor shall be terminated to a dedicated ground rod. Provide surge protective devices for all systems identified in NFPA 780.

Structural Systems

CONCEPT 1: MAXIMUM RENOVATION WITH ADDITIONS

OVERVIEW

Many existing walls in both the 1954 and 1995 wings have a structural role in supporting the roof, so the proposed renovation does not move interior walls. The 1958 wing with its intermediate floor height is demolished completely to make room for a two-story addition with aligned floors. The 1995 kitchen is also demolished and replaced with a two-story structure that includes a new kitchen.

EXISTING TO REMAIN

The original 1954 structure is still in good condition. Likewise, few structural defects were noted in the 1995 portion. Concept 1 keeps the good bones of these buildings and refreshes the rest. In this case, the skeleton of the building includes many of its walls, so classroom sizes and locations do not change even while finishes and mechanical systems are updated. While this architectural layout avoids triggering mandatory compliance with current building code, renovation is a perfect time to implement voluntary seismic upgrades where they are practical. Such areas are shown colored blue in the renovation diagram on the facing page.

PRE-K ADDITION

Several flights of stairs in the 1958 wing make it difficult to accommodate handicapped students there. Removing this wing does not impact the stability of the remaining structure, and its demolition makes room for a new wing with the floor at the same level as the original. A lower level near the original basement also makes sense due to existing topography. New stairs and an elevator provide access to new classrooms at this level.

A portion of the lower level is identified as crawl space. Making this area inaccessible and leaving it unexcavated avoids expensive underpinning of the existing wall foundation at the south end of the 1954 classroom wing. Record drawings do not indicate the height of foundations in this area, but they could be 8 or 10 feet above the basement floor level. The horizontal separation provided by this crawl space keeps new structures far enough from the existing foundation that normal footings work. An inaccessible crawl space will also be needed under the exterior stairs which serve the fire exit on the upper level at this same area.

ADMIN ADDITION

The new administrative wing with classrooms on the second floor is located beside the existing kitchen, which is in a strategic location beside the cafeteria. Turning the existing kitchen roof into a floor for a new second level is impractical for multiple reasons, so the existing kitchen is demolished and rebuilt as a two-story structure.

This addition will have a small impact on the original 1954 structure because of drifting snow. The addition is higher than the original structure, which forms an obstacle to wind blowing across the low roof, which loses speed and releases any snow it carries. Snow drifts can also form from wind carrying snow off the higher roof, which is again released at the change in height. Roof joists in the purple-hatched area of the original structure in the figure below will need to be reinforced for the new snow drift, whether caused by wind across the high roof or the low roof.



ROOF JOIST REINFORCEMENT ZONE

NEW STRUCTURE

Foundations will be footings bearing on undisturbed soil or compacted fill. Exterior foundations must be at least 30 inches below finished grade. The finished grade is near the floor level at most locations, so such walls do not retain soil. An exception is the north wall of the Pre-K addition, which will retain 8 to 10 feet of soil. This wall will be a cantilever-style retaining wall with a wide footing and a concrete or fully grouted masonry stem.

Non-combustible construction will be used to frame most additions. The classrooms added in the outdoor courtyard will be masonry bearing wall construction to match the existing construction to which they connect. Two-story additions could be masonry bearing wall construction also, but it may be more economical to use steel columns for gravity and lateral loads, then cold-formed metal studs for both exterior and interior walls. Exterior wall studs will be designed to deflect less than L/600 under service wind loads to keep brick veneer from cracking.

Lower floors will be 4" thick concrete slabs on grade with welded wire reinforcement over a 4" layer of gravel. Elevated floors will be 3" of normal weight concrete over 3" deep metal form deck for a total slab thickness of 6 inches. This slab will be supported by steel beams spaced up to 9'-6" apart. To improve floor stiffness and reduce steel cost, beams will be joined compositely with the concrete slab by welding headed shear studs through the metal deck prior to concrete placement. Roofs will be open web steel joists at approximately 6'-0" on center supporting metal deck 1½" deep by 22 gage thickness with type B corrugations.

Doors and punched window openings in masonry walls will have precast masonry lintels above them, while brick veneer will have loose steel angle lintels. This works for openings up to 6'-0" wide. Wider openings require deeper, site-cast masonry lintels with veneer supported from the wall via continuous bent plate ledgers connected with screw anchors.

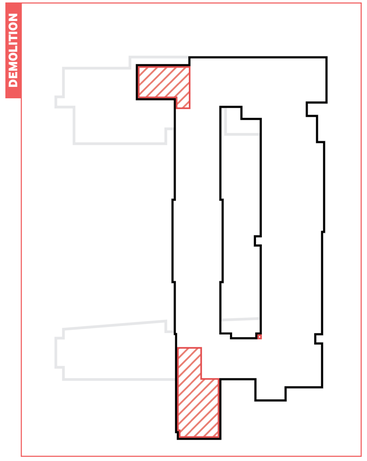
An architectural feature at the main entrance to the administration wing affects structure because the upper floor overhangs the lower at this location. Floor beam spacing in this area will be closer than typical to provide sufficient strength and stiffness to the cantilever condition. Selecting finishes other than brick for the wall above this entrance would save money because it would reduce both the weight and the required stiffness for these cantilever floor beams.

Exposed wood framing is recommended in a showcase area of the south addition, shown hatched pink in the structure diagram on the facing page. This renewable construction material has a warm appearance and good acoustic properties. Fire performance is a primary consideration for wood framing, but unprotected wood is permitted by code where the ceiling height exceeds 20 feet. Glulam joists are available in stock sizes for spans like these. For greater visual impact, the decking between joists can also be made of wood, either as planks assembled on site or as prefabricated panels that are either cross-laminated or nail-laminated.

Resistance to lateral loads such as wind and seismic are concentrated into stiff areas of the building. Such areas are labeled as shear elements and are colored blue in the structure diagram on the facing page. Shear elements can be masonry walls if this material is already present for fire separation. If masonry is not used, diagonal members added to the steel frame function equally well. These diagonals can be located to avoid obstructing mechanical and architectural circulation paths. The metal roof deck will function as a diaphragm to carry lateral loads to shear elements with the addition of steel angles at the perimeter and at re-entrant corners.

Structural Systems

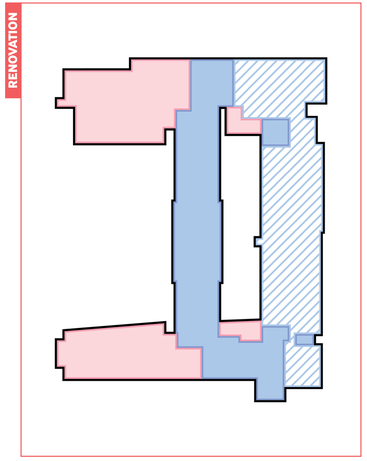
CONCEPT 1: MAXIMUM RENOVATION WITH ADDITIONS



Demolition | Existing Building Extents | Future Building Extents

Demolition — Complete abatement and removal of existing building, disposal of all materials, and preparation of the site for future development.

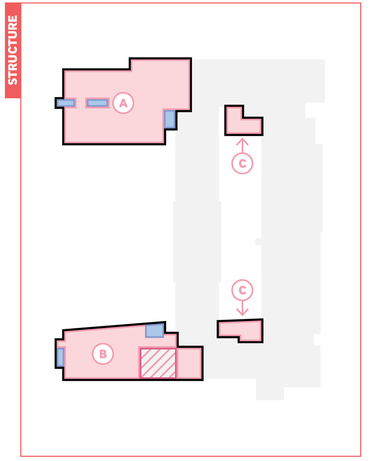
Note: In Concept 1, much of the 1958 wing and the northwest corner of the 1995 wing are demolished, to be replaced by larger additions.



Addition | Heavy Renovation | Moderate Renovation

Moderate Renovation — MEP systems replacement, roof replacement, window/door replacement, ADA/code modifications (toilet rooms, etc.), minor reconfiguration of interior spaces, upgraded interior finishes (flooring, ceilings, paint, wall tile, etc.), furniture and equipment.

Heavy Renovation — All of the above, plus structural modifications (i.e. new lateral support in 1954 building), and major reconfigurations of interior spaces.



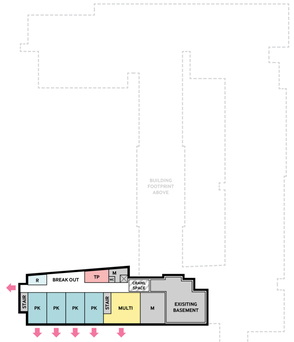
Mass Timber, Standard Span, Recommended | Mass Timber, Long Span, Recommended | Mass Timber *or* Steel Framing | Shear/Core Component | Existing Building

A 22' Clear Span | B 25' Clear Span | C 20' Clear Span

Programming

CONCEPT 1: MAXIMUM RENOVATION WITH ADDITIONS

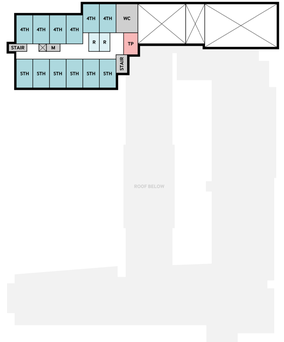
LEVEL 0



LEVEL 1



LEVEL 2



EXISTING FEATURES

Since Concept 1 retains a majority of the existing structure, its programmatic organization diverges very little from the current school. In essence, it is a series of double-loaded corridors forming a loop around a central courtyard.

ADDITIONS

The building begins to differentiate itself through several additions: two large additions containing learning communities and two small additions containing specialty programs.

The specialty additions, housing the maker space and STEM lab, provide direct outdoor access and resolve some of the awkward connections between different building phases.

The northwest addition serves as the primary entrance, containing much of the building's administrative functions. A modernized kitchen and expanded dining area fill the rest of the first floor. Above, connected by elevator, is the 4th & 5th grade learning community.

The south-most, two-story addition is dedicated solely to the Pre-K program. 8 classrooms are stacked (4 over 4), connected by a double-height multi-purpose space (dining, play, etc.) with direct outdoor access. Additional resource space is located in the corridor.

- Academic Core
- Resource
- Admin & Health
- Communal
- Athletics & Fitness
- Art & Music
- Exploratory
- Support
- Entrance
- Exit

Analysis & Evaluation

CONCEPT 1: MAXIMUM RENOVATION WITH ADDITIONS

Priority	Category	Score
IIIIIIIIIIII	Educational Program	1.6
IIIIIIIIII	Staging & Phasing	.5
IIIIIIII	Community	2.5
IIIIII	Safety & Security	2.5
IIIII	Parking & Circulation	2.3
III	Site Amenities	3
III	Inclusion & Accessibility	2
I	Health & Sustainability	3
I	Cost	2

4 - Exceeds Needs
3 - Meets Needs with No Compromises
2 - Meets Needs with Minimal Compromises
1 - Meets Needs with Significant Compromises
0 - Does Not Meet Needs

Final rankings determined by average score across all 9 categories
Priority indicates relative importance of a category as voted on by Steering Committee

Pros

- Leverages existing buildings for re-use
- Orients classroom additions for optimal daylight
- Improves accessibility in and around existing building
- Provides protected outdoor learning & play
- Includes a dedicated Pre-K wing w/ parking, drop-off, and play

Cons

- Multi-phased construction project extends occupancy schedule
- Requires temporary facilities for swing space
- Structural remediation of 1954 structure required
- Existing undersized classrooms remain
- East-facing classroom windows require exterior sunshades
- Curbside bus drop-off remains on S. Kent Street

OVERALL SCORE
2.16

FINAL RANKING
#3

Concept 2

NEW SCHOOL WITH INTEGRATED PRE-K

DEMOLISH EXISTING SCHOOL

Concept Scope	
Demolition Area	75,810 SF
Moderate Renovation Area	0 SF
Heavy Renovation Area	0 SF
New Construction Area	133,077 SF
Total Area	**133,077 SF**

Cost Estimate	
New Building	$54,516,324
Additions to Existing Building	$0
Renovations to Existing Building	$0
Site Work	$9,328,881
Temporary Facilities	$0
Cost Escalation —11.92%	$7,610,348
Total Cost	**$71,455,533**
Solar Array*	$1,820,390
*estimate assumes geothermal HVAC and does not include connection fees or escalation	
Total Cost + Add Alternates	**$73,275,943**

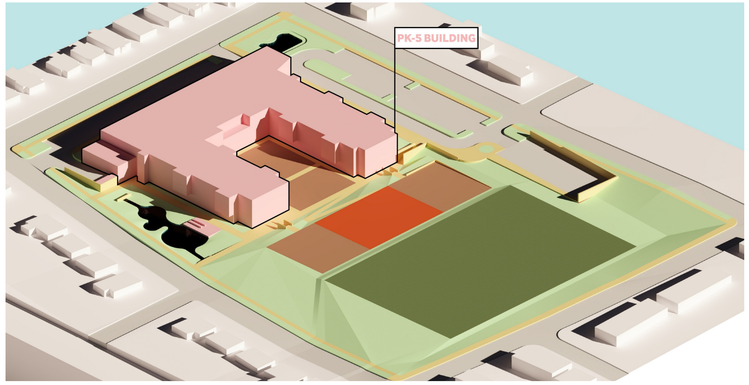
CONCEPT 2 STATISTICS

ARCHITECTURAL DESIGN NARRATIVE

Concept 2 provides a new PK-5 school, and demolishes the entire existing facility. The organization of the school site is very similar to the current Garland Quarles: structured play areas sandwiched between a school and an open play field. The orientation of these elements, however, is flipped. The construction of Concept 2 is accomplished in two major phases over the course of roughly two years.

Phase 1 (21 months) focuses on the construction of the new school on the West edge of the site while the existing school remains in operation. A construction fence would delineate the site, maximizing safety and minimizing disruption.

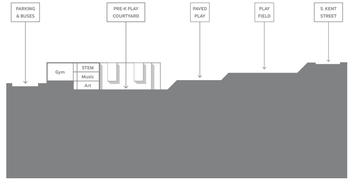
Phase 2 (6 months) focuses on the abatement, demolition, and removal of the existing buildings and any remaining sitework.



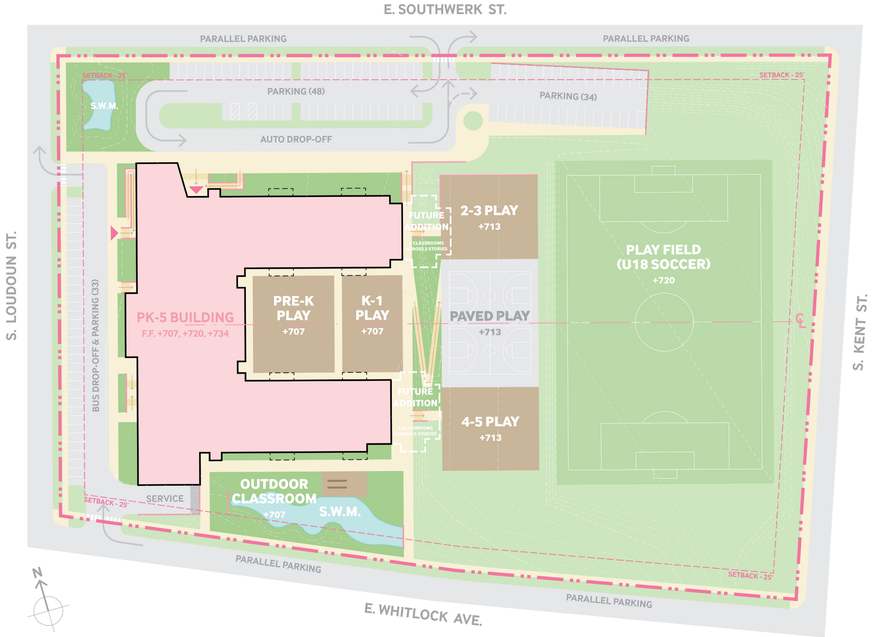
CONCEPT 2 SITE AERIAL VIEW FROM SOUTHEAST CORNER

Although the general site approach is very similar to the existing Garland Quarles, there are some major topographical differences between the two. To minimize the scale of the building, the bottom floor sits on an existing lowpoint in the site, roughly fifteen feet below the floor level of the current school. This results in several complications. First, since the surrounding street levels are above this low point, entry into the building is facilitated on the level above. In order to meet required head-height on the lower floor, however, the entry level sits 4' above grade. As such, building access is entirely reliant on stairs and ramps. Second, in order to create the large, flat play areas that the school requires, the landscape must be tiered (refer to the adjacent site section diagram). This creates a series of abrupt shifts in topography as one moves between play areas, raising some concerns about accessibility and sight lines.

The result of this approach, however, is the largest overall play field of any concept and the opportunity to integrate learning and play features into the sloped, in-between sections.



DIAGRAMMATIC SITE SECTION — NOT TO SCALE



CONCEPT 2 ARCHITECTURAL SITE PLAN

Site Work & Utilities

CONCEPT 2: NEW SCHOOL WITH INTEGRATED PRE-K

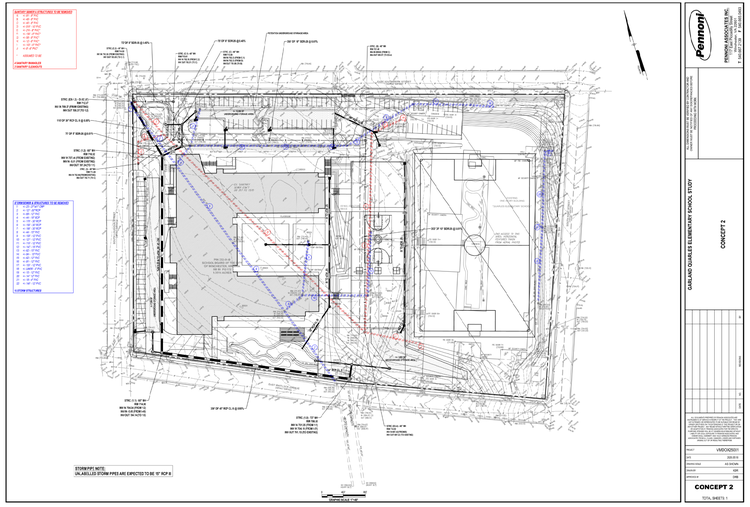
CIVIL DESIGN NARRATIVE

Concept 2 involves full demolition of the existing building, and construction of a new Elementary School Building & Early Learning Center to serve Pre-K thru 5 on the west side of the site, fronting S Loudoun Street. Additional improvements include three (3) parking lot areas, two accessed off E Southwerk St., the first provides 50 spaces & a student drop-off loop, while the second provides and additional 36 spaces. Lastly, one accessed off S Loudoun Street, which provides 30 spaces and a bus drop off loop. New pedestrian pathways & site circulation routes are provided as well as play fields/play areas and associated rain garden(s). Various steps, ramps, & small retaining walls (Less than 3.5' in height) are required to facilitate pedestrian access & the grading of the noted play areas/field. Option 3 generally has significant earthmoving requirements & impact to the site including steep slopes in the south east corner & large fill volumes to reach building pad & playfield elevations.

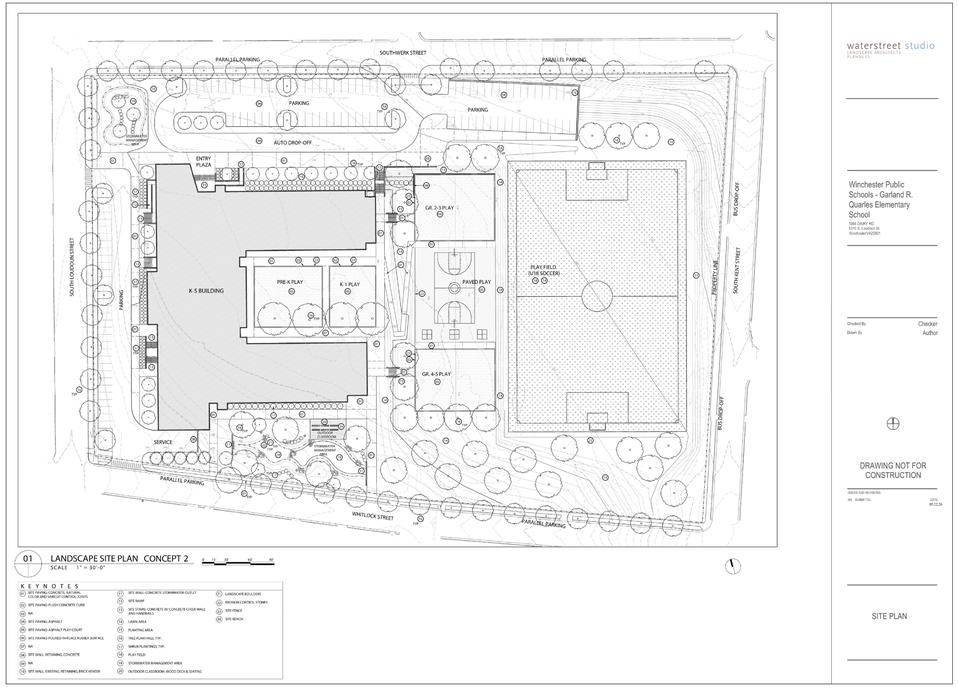
Utility relocation will be a significant impact to site development. A 10" PVC Sanitary Sewer main & a 30" RCP storm sewer line currently bisect the site. These utilities will need to be fully removed and re-routed for the site to function as proposed. The 30" storm sewer line will be removed & relocated to parallel S Loudoun Street and E Whitlock Street before making connection back to the existing outfall point. The 30" line is currently inadequate to convey the approximately 55 acres of drainage that contribute to the site, and as such the pipe will need to upsized to a range of 36-48". Stormwater management is proposed through the use of multiple underground detention facilities & rain gardens.

The existing 10" PVC Sanitary Sewer Main as well as an existing 8" main will need to be removed & rerouted to facilitate the construction of the new Elementary School building. Given the size of the existing contributing sewer shed pump around methods & timing should be considered early in the design/construction process so that costs are properly managed.

Water service connection location(s) have not yet been determined. Watermains exist in S Loudoun Street, E Southwerk Street, & E Whitlock Ave. for possible connection locations. Additional fire hydrants may also be required to facilitate adequate fire coverage & fire flow. These items will be further clarified at time of final engineering.



CONCEPT 2 CIVIL SITE PLAN



CONCEPT 2 LANDSCAPE SITE PLAN

MEP Systems

CONCEPT 2: NEW SCHOOL WITH INTEGRATED PRE-K

MECHANICAL SYSTEMS DESIGN NARRATIVE

Option One: Combination Geothermal WSHP

The new building will utilize new premium efficiency, multi-staged, water source heat pumps rated for geothermal range of operation. The units will be zoned with a single heat pump serving two classrooms or similar spaces typically. The average size of these heat pumps will be 4 ton with larger spaces requiring higher tonnages. Two high volume low velocity fans for air circulation for the gymnasium. A new central pumping system will be in the main mechanical room along with the geothermal manifold. The pumps will be sized for 75% of the full flow with an inline pump for low flow conditions.

The buildings will require a certain amount of outside air supplied to each room. To cover these needs, the new school will be provided with new water source heat pump units for 100% outside air delivery, decoupled from the other airstreams. The renovated building's units 100% outside air units will utilize the hot and chilled water from the heat pump chiller. These units will cover the kitchen makeup air needs. These units will be provided with full flow enthalpy wheels for heat recovery. These dedicated outside air systems will utilize demand control ventilation via new variable volume terminals in the supply ductwork at each classroom which utilizes local CO2 sensors for control.

Option Two: Cooling Tower – Boiler – Heat Pump

For option two, we will use a cooling tower – boiler system that will supply heat pumps to serve the new building. With this option, we get to utilize the higher performing cooling tower boiler system, with the flexibility of a new building. This system will feed new premium efficiency, multi-staged, water source heat pumps. The units will be zoned with a single heat pump serving two classrooms or similar spaces typically. The average size of these heat pumps will be 4 ton with larger spaces requiring higher tonnages. Two high volume low velocity fans for air circulation will be used for a gymnasium.

This option requires space on site for the cooling tower and its necessary clearances. There is also considerable maintenance that comes with a cooling tower. There will be routine maintenance of cleaning the unit inside and out, as well as the usual maintenance to keep the fans and pumps operating. This unit will also require chemical water treatment. This work will likely have to be contracted out.

With the boiler it will require a connection to the site natural gas line, and if installed within the building, the boiler requires a flue to the outside.

The buildings will require a certain amount of outside air supplied to each room. To cover these needs, the new school will be provided with new water source heat pump units for 100% outside air delivery, decoupled from the other airstreams. The renovated buildings outside air units will utilize the hot and chilled water from the heat pump chiller. These DOAS units will also cover the kitchen makeup air needs. The units will be provided with full flow enthalpy wheels for heat recovery. These dedicated outside air systems will utilize demand control ventilation via new variable volume terminals in the supply ductwork at each classroom which utilizes local CO2 sensors for control.

PLUMBING SYSTEMS DESIGN NARRATIVE

Same All Concepts, Refer to Concept 1.

FIRE PROTECTION SYSTEMS DESIGN NARRATIVE

Same All Concepts, Refer to Concept 1.

ELECTRICAL SYSTEMS DESIGN NARRATIVE

Electrical Distribution

A new 1600A/277/480V/3PH/4W switchgear (BOD: Square-D QED-2) shall be in the main electric room located on the first floor. Each area of the building shall have dedicated electrical space with 277/480V/3PH/4W and 120/208V/3PH/4W branch circuit panelboards separated for specific loads such as mechanical equipment, lighting, receptacles, etc.

A multi-circuit sub-metering device connected to the building automation system shall monitor all building load categories including renewable energy and report to the energy dashboard system.

All wiring shall be copper, minimum #12AWG installed in conduit, minimum size ¾". MC cable is not acceptable. Power connections and code required disconnecting means will be provided for all HVAC and plumbing equipment. Combination starter/fusible disconnects will be provided for selected equipment as required.

Integral surge protective devices will be provided for the main distribution panel, emergency panelboards, and select branch circuit panels.

Emergency Electrical Distribution

A new 100kW diesel generator (BOD: Cummins) with 24-hour belly tank will be provided for life-safety and general emergency loads.

All emergency electrical distribution equipment will be housed in a separate room , located on the first floor inside the main electric room, from the normal power equipment and shall consist of two life-safety and general branch automatic transfer switches (one each), two life-safety and general branch distribution transformers (one each) and a limited number of life-safety and general branch panelboards. All life-safety emergency loads shall be selectively coordinated to 0.1 seconds. Load shedding will be implemented to reduce generator sizing and ensure that all life-safety emergency loads receive priority during an emergency power outage situation.

Interior Lighting

Interior artificial lighting will be accomplished with recessed high-performance LED troffer fixtures (BOD: Metalux #24CZ2) throughout the building with more decorative LED lighting in selected spaces such as Library, Entry Lobby, Dining, etc. Lighting in the Gymnasium will be low-glare LED High-Bays (BOD: Vision Engineering #VHB3). Lighting throughout will meet the latest Illuminating Engineering Society of North America (IESNA) Handbook, IESNA Recommended Practices, etc. Interior egress lighting shall be connected to the life-safety branch of emergency power.

100% occupancy/vacancy sensor coverage will be provided throughout except in electrical and mechanical rooms. Occupancy sensors will be automatic on/automatic off. Vacancy sensors will be manual on/automatic off. Automatic daylight dimming will be employed in most zones.

Dimming switches will be provided in all offices and classrooms. All interior lighting controls will be stand-alone systems (BOD: nLight). Specialty lighting fixtures and controls to be provided in the auditorium.

Exterior Lighting

Dark sky compliant LED exterior lighting will be provided at all exit doors for egress lighting. Parking lot/Roadway lighting will be post top LED fixtures (BOD: Cooper #GLEON) on square steel poles, pathway lighting will be post top LED fixtures (BOD: Cooper #Arbor) on square steel poles. All fixtures shall be in accordance with the site guidelines for color to match the existing landscape architectural theme. Backlight shielded optics will be utilized to minimize glare to adjacent properties. Exterior lights will also feature integral motion sensing for reduced glare, energy usage and extended LED lamp life. Exterior egress lighting shall be connected to the life-safety branch of emergency power.

Exterior lighting will be controlled through the web-based DDC control system through RS-232 connected digital relays (BOD: nLight).

MEP Systems

CONCEPT 2: NEW SCHOOL WITH INTEGRATED PRE-K

Fire Alarm

A new fully addressable fire alarm system (BOD: Simplex) shall be provided with notification and initiation devices per NFPA requirements. All peripheral devices shall be installed per ADA requirements. Connections will be provided to all fire suppression equipment, air handling units over 2,000CFM, door access controls, etc.

Telephone/Data

The contractor will provide all rough-in's, faceplates, cabling paths, cabling and patch panels for all telephone and data systems. Telephone system shall be IP based. Owner shall provide active components including wireless access points. Minimum stub-out conduit size will be 1" and cabling paths will consist of 12" cable tray with J-hook assemblies on 48" centers.

The horizontal data network will utilize CAT 6 infrastructure. New fiber and copper utilities will be demarcated in the MDF room which shall be centralized on the 1st floor of each building in order to minimize the need for satellite closets. Satellite closets will be required where low-voltage cabling distance exceed 290'. Wireless coverage will be provided for the entire school utilizing CAT 6A cabling.

Audio/Visual System

Gymnasium and Dining in both buildings shall have local sound systems with ceiling mounted/suspend loudspeakers, wall mounted rack (with amplifier, mixer, equalizer, etc.), wireless microphone system and hardwired microphone inputs (BOD: Shure/Atlas).

Public Address System

An IP based building wide Public Address System (BOD: Rauland) shall be provided in both buildings with two-way communication between most spaces. System shall feature a software-based head end and shall be integrated with the telephone system. All areas within building shall be individually addressable and shall be capable of having custom bell schedules. Call intuition will be primarily done through the telephone system but call stations will be provided in select areas.

Electronic Safety and Security

A new ESS system will include interior and exterior Video Management Systems (VMS), Security Management Control System (SMS) and an emergency warning notification system interface (BOD: S2).

The SMS includes door access and logic capabilities such as visitor management, time schedules, intrusion detection and digital signage for emergency notification features. VMS will include security cameras that will be specified along with servers and analytics (motion detection) that run them. Both VMS and SMS systems will be integrated with a single web portal interface. The integrated system reports directly to any authorized group of users including the local police department if desired via programmed Push Notification.

Lighting Protection

Both buildings shall feature a complete Lightning Protection System certified to NFPA 780. System shall comply with UL #96A. Building steel shall not be used as a down conductor. Down conductors shall be concealed within the building. Each down conductor shall be terminated to a dedicated ground rod. Provide surge protective devices for all systems identified in NFPA 780.



WATER SOURCE HEAT PUMP (WSHP) MECHANICAL CLOSET



GEOTHERMAL WELL FIELD UNDER CONSTRUCTION



GEOTHERMAL PIPING HEADER

Structural Systems

CONCEPT 2: NEW SCHOOL WITH INTEGRATED PRE-K

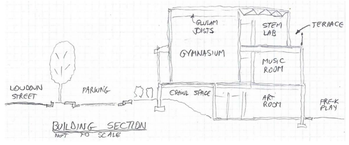
OVERVIEW

An advantage of this concept is that the entire structure is new, so there will be none of the surprises that are common in renovation projects, which occur even when record drawings are available. The existing structure will remain in use until the new structure is ready to replace it. The new building can efficiently fulfill its mission without constraints from previous designs.

SITE GRADING

Floor elevations for this concept were set beginning at the center courtyard. A low elevation is desired for this courtyard due to existing topography, while selected to be high enough that rainwater does not pool. The lowest floor level then matches this height, so its classrooms have easy access to play areas. Next, grading on the north and west sides of the building were set to match adjacent streets, which have gentle slopes. The street at the south of this site slopes more steeply, and a service entrance there is accommodated via an exterior retaining wall. This grading results in exterior stairs with about 9 risers each at entrances on the north and west sides.

Since the second floor is about 6 feet higher than finished grade on the north and west sides as described above, a crawl space and structural floor are provided at the second floor. The unexcavated area inside the crawl space can slope towards the lower level, such that partition walls which enclose the crawl space do not retain any soil. It would also be possible to use full-height retaining walls in place of those partitions so the second floor could be a grade-supported slab on compacted soil fill, but that approach is probably more expensive.



DIAGRAMMATIC STRUCTURAL SECTION

Foundations will be footings bearing on undisturbed soil or compacted fill. Exterior foundations must be at least 30 inches below finished grade. The soil level inside the crawl space matches finished grade outside at most locations, so such walls do not retain soil. Exceptions occur at the north-east corner and the south-west corner of the building, where exterior retaining walls cause abrupt changes in the soil level outside the structure. Foundation walls nearby will be cantilever-style retaining walls with a wide footing and a concrete or fully grouted masonry stem.

NEW STRUCTURE

Non-combustible construction will be used in most locations. Steel columns support upper levels, and cold-formed metal studs are used for all exterior and interior walls except where required by the fire code around stair shafts or elevator shafts. Exterior wall studs will be designed to deflect less than L/600 under service wind loads to keep brick veneer from cracking.

Floors at the lowest level will be 4" thick concrete slabs on grade with welded wire reinforcement over a 4" layer of gravel. Elevated floors will be 3" of normal weight concrete over 3" deep metal form deck for a total slab thickness of 6 inches. This slab will be supported by steel beams spaced up to 9'-6" apart. To improve floor stiffness and reduce steel cost, beams will be joined compositely with the concrete slab by welding headed shear studs through the metal deck prior to concrete placement. Roofs will be open web steel joists at approximately 6'-0" on center supporting metal deck 1½" deep by 22 gage thickness with type B corrugations.

An architectural feature at the courtyard affects structure because the upper levels overhang the lowest level at 4 narrow locations. Floor beam spacing in these areas will be closer than typical to provide sufficient strength and stiffness to the cantilever condition. Selecting finishes other than brick for the walls above these cantilevers would save money because it would reduce both the weight and the required stiffness for these cantilever floor beams.

Windows for this concept have not yet been selected, but their shape influences the structure. The simplest form is punched windows less than 6' wide. Punched windows up to 12' wide require stouter headers and jambs. Strips of windows over 12' wide are often supported by spandrel framing from the level above rather than by their jambs. Less common daylight options include clerestory windows and skylights, with structure selected on a case-by-case basis.

Exposed wood framing is recommended in certain showcase areas shown hatched pink in the structure diagram on the facing page. This renewable construction material has a warm appearance and good acoustic properties. Fire performance is a primary consideration, but mass timber can be used with certain limitations. Unprotected wood framing is permitted where the ceiling height is over 20 feet, so the 3 rooms with high ceilings are good candidates. The gymnasium, the dining room, and the stage will be framed with glulam joists. Glulam is available in made-to-order sizes for long or complex situations and in stock sizes for short and medium spans. For greater visual impact, the decking between joists can also be made of wood, either as planks assembled on site or as prefabricated panels that are either cross-laminated or nail-laminated.

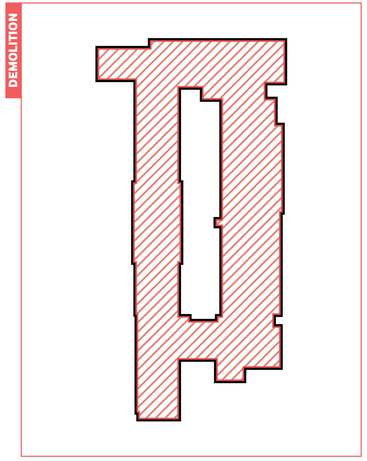
Resistance to lateral loads such as wind and seismic are concentrated into stiff areas of the building. Such areas are labeled as shear elements and are colored blue in the structure diagram on the facing page. Shear elements can be masonry walls if this material is already present for fire separation at circulation corridors. If masonry is not used, diagonal members added to the steel frame function equally well. These diagonals can be located to avoid obstructing mechanical and architectural circulation paths. Concrete floors and metal roofs function as diaphragms to carry lateral loads to shear elements.

Air conditioning systems often require rooftop units (RTUs). Mechanical systems for this project have not yet been selected, but RTUs for a building of this size are often both bulky and heavy. In addition to the RTU weight, the roof structure must consider two other factors. First, drifting snow must be considered beside large mechanical units. Second, unsightly units are sometimes surrounded by screen walls, which require support for wind loads and often cause additional snow drifts.

Two-story high spaces have special structural considerations. Exterior walls must be thicker than typical because of their height. Gaps in the floor plate at level 3 complicate the lateral analysis because an irregularly shaped diaphragm has abrupt stiffness changes. Horizontal floor reinforcing called struts may be added near floor openings. Chord elements in diaphragms also have higher axial force when the plan aspect ratio is large. Large aspect ratios can tend toward twisting behavior with large displacements during earthquakes, which are mitigated by using a stouter lateral system. These issues are largely internal to the structural discipline and are only mentioned here so the team is not surprised by special framing details near the 2-story spaces.

Structural Systems

CONCEPT 2: NEW SCHOOL WITH INTEGRATED PRE-K



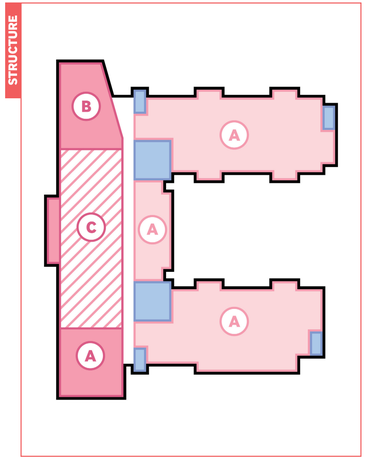
Demolition

Existing Building Extents

Future Building Extents

Demolition — Complete abatement and removal of existing building, disposal of all materials, and preparation of the site for future development.

Note: No part of the existing Garland Quarles facility is retained in Concept 2.



Mass Timber, Standard Span, Recommended

Mass Timber, Long Span, Recommended

Mass Timber or Steel Framing

Shear/Core Component

Existing Building

A 25' Clear Span

B 30' Clear Span

C 64' Clear Span



LONG-SPAN MASS TIMBER APPLICATION (GYMNASIUM)

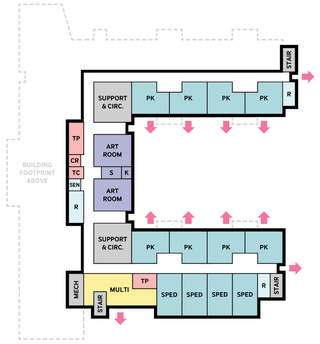


LONG-SPAN MASS TIMBER APPLICATION (DINING)

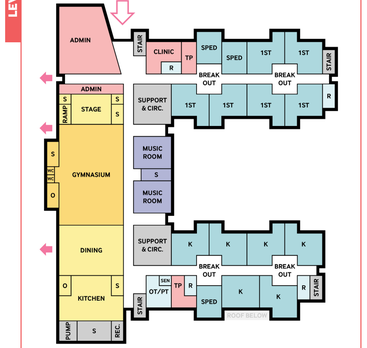
Programming

CONCEPT 2: NEW SCHOOL WITH INTEGRATED PRE-K

LEVEL 0



LEVEL 1



LEVEL 2



PK-5 BUILDING

One of the essential organizational components of Concept 2 is the sunken ground floor. The move attempts to make an otherwise large building appear smaller, but also enables direct outdoor access on two separate levels.

Level zero contains the Pre-K and SPED programs as well as two art rooms. Direct outdoor access is facilitated through a protected central courtyard and a multi-purpose space (dining, play, etc.) to the south. Students with the highest mobility and sensitivity needs, therefore, have the easiest path out of the building (for play or in case of emergency).

Level one contains a majority of the building's communal functions (gym, dining, stage). A north-south spine allows easy separation of public activity from the classroom wings. The primary entrance is located on the north face of the building, adjacent to the admin suite. Level two contains the library, student services, and a STEM lab (with a terrace). Both levels contain mixed-age classroom wings bookended by resource and planning spaces

Due to community building-height preferences and a large student capacity, concept 2 is characterized by long corridors and large learning communities. To provide a more generous structure to the corridor spaces, portions of the classroom wings are pushed out, creating break-out spaces for each grade level and breaking up the building mass.

- Academic Core
- Resource
- Admin & Health
- Communal
- Athletics & Fitness
- Art & Music
- Exploratory
- Support
- Entrance
- Exit

Analysis & Evaluation

CONCEPT 2: NEW SCHOOL WITH INTEGRATED PRE-K

Priority	Category	Score
IIIIIIIIIIII	Educational Program	2.4
IIIIIIIIII	Staging & Phasing	3
IIIIIIII	Community	2
IIIIII	Safety & Security	2
IIIII	Parking & Circulation	3
III	Site Amenities	3.5
III	Inclusion & Accessibility	2.5
I	Health & Sustainability	1.5
I	Cost	2.5

4 - Exceeds Needs
3 - Meets Needs with No Compromises
2 - Meets Needs with Minimal Compromises
1 - Meets Needs with Significant Compromises
0 - Does Not Meet Needs

Final rankings determined by average score across all 9 categories
Priority indicates relative importance of a category as voted on by Steering Committee

Pros

- Single facility simplifies operations
- Existing school remains operational during construction
- All classrooms ideally oriented for daylight
- High-performing building envelope and building systems (operational savings over time)
- Compact footprint allows for more site amenities

Cons

- Removal of all existing building assets
- Large student population, including Pre-K students
- Some parking is remote from school
- Significant grading required for U18 Soccer Field

OVERALL SCORE
2.49

FINAL RANKING
#2

Concept 3

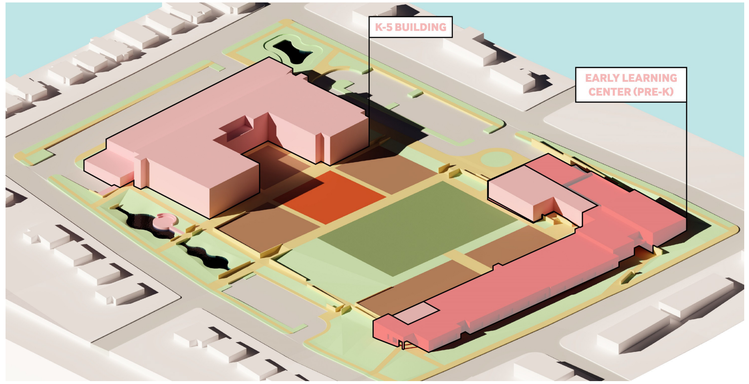
CAMPUS WITH EARLY LEARNING CENTER

BUILD NEW SCHOOL AND RENOVATE 1995 BUILDING

Concept Scope	
Early Learning Center	
Demolition Area	34,550 SF
Moderate Renovation Area	25,540 SF
Heavy Renovation Area	15,720 SF
New Construction Area	6,950 SF
Subtotal Area	**48,210 SF**
K-5 Building	
New Construction Area	116,840 SF
Subtotal Area	**116,840 SF**
Total Area	**165,050 SF**

Cost Estimate	
Early Learning Center	
Additions to Existing Building	$3,431,771
Renovations to Existing Building	$14,587,060
Cost Escalation —13.79%	$2,484,797
Subtotal Cost	**$20,503,628**
K-5 Building	
New Construction	$48,015,398
Site Work	$10,757,854
Temporary Facilities	$0
Cost Escalation —11.92%	$7,005,772
Subtotal Cost	**$65,779,024**
Total Cost	**$86,282,652**
Solar Array*	$3,055,200
*estimate assumes geothermal HVAC and does not include connection fees or escalation	
Total Cost + Add Alternates	**$89,337,852**

CONCEPT 3 STATISTICS



CONCEPT 3 SITE AERIAL VIEW FROM SOUTHEAST CORNER

ARCHITECTURAL DESIGN NARRATIVE

Concept 3 creates a campus of buildings including a new K-5 elementary school on the west edge of the site and a district-wide Early Learning Center (Pre-K) on the East. The existing 1995 building is renovated and provided modest additions to accommodate the ELC. This concept is accomplished in 3 phases over the course of 3 years.

Phase 1 (21 months) focuses on the construction of the new K-5 school on the west edge of the site while the existing school remains in operation.

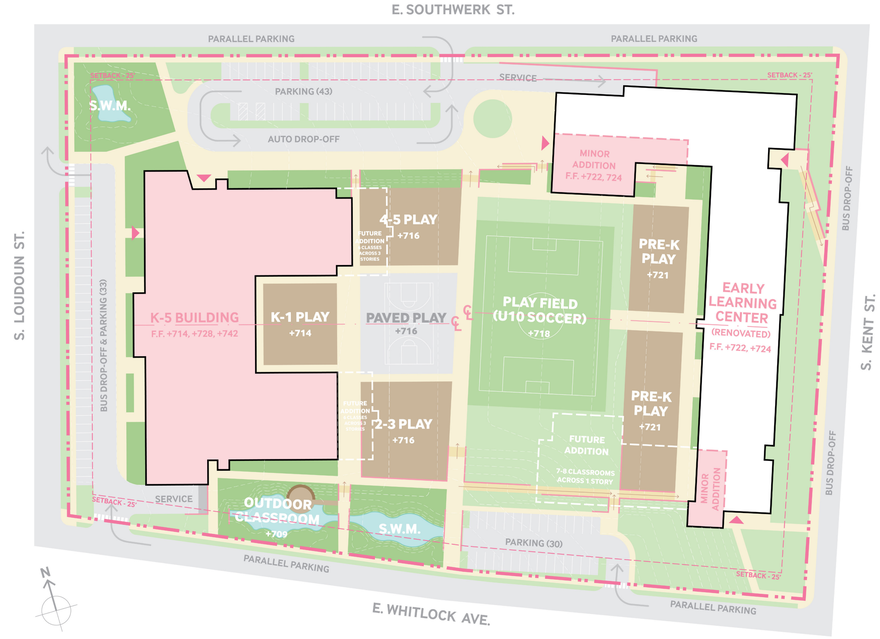
Phase 2 (3 months) includes sitework (parking, playgrounds, etc.) associated with the new K-5 school and abatement, demolition, and removal of the existing 1954 & 1958 buildings. This will likely be executed in the summer when the school is vacant.

Following phase 2, students will be moved from the existing Garland Quarles facility into the new one, allowing the renovation phase to begin.

Phase 3 (12 months) includes renovations and additions to the 1995 building to create a district-wide Early Learning Center. This phase will also involve resolving any sitework adjacent to the ELC.

After the construction of the ELC, Pre-K classes will be relocated from the K-5 Building, making room for the 5th grade transition from the middle schools. This final stage would complete the process of meeting district-wide reorganization goals.

Functionally, the campus forms an accessible, protected central play space. Grading, site walls, and stormwater swales both secure and diversify the site and its usage. Since there are two buildings, however, future site adaptability is the most limited in this concept.



CONCEPT 3 ARCHITECTURAL SITE PLAN

Site Work & Utilities

CONCEPT 3: CAMPUS WITH EARLY LEARNING CENTER

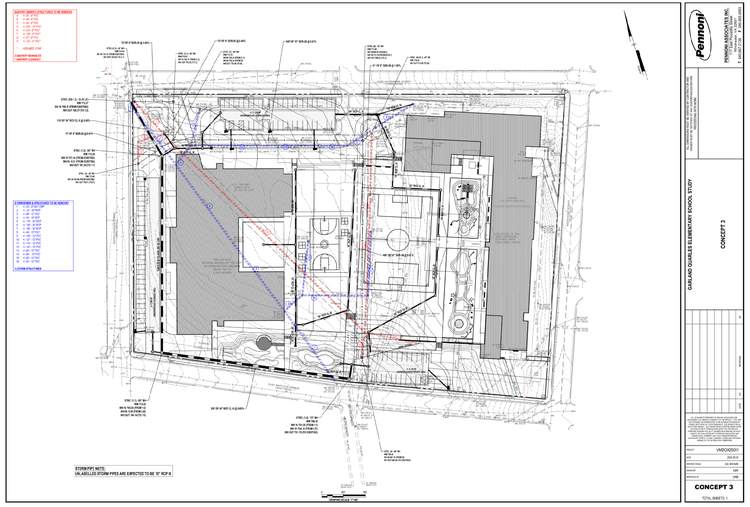
CIVIL DESIGN NARRATIVE

Concept 3 involves demolition of a portion of the existing building, a full interior renovation of the remaining portion of the existing school building to meet the current and future needs of Winchester Public Schools (an Early Learning Center), and construction of a new Elementary School Building to serve K thru 5 on the west side of the site, fronting S Loudoun Street. Additional improvements include three (3) parking lot areas, one accessed off E Southwerk St., which provides 45 spaces & a student drop-off loop, one accessed off of W Whitlock Avenue, which provides for 28 spaces and lastly one accessed off S Loudoun Street, which provides 30 spaces and a bus drop off loop. New pedestrian pathways & site circulation routes are provided as well as play fields/play areas and associated rain garden(s). Various steps, ramps, & small retaining walls (Less than 3.5' in height) are required to facilitate pedestrian access & the grading of the noted play areas/field. Option 2 generally has significant earthmoving requirements & impact to the site including steep slopes in the south east corner & large fill volumes to reach building pad elevations.

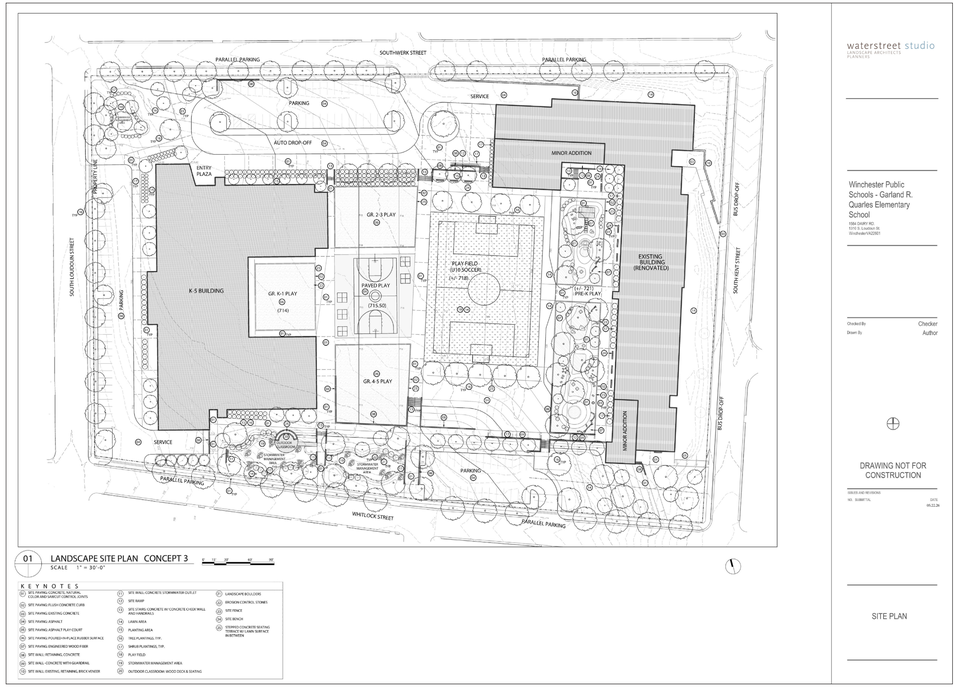
Utility relocation will be a significant impact to site development. A 10" PVC Sanitary Sewer main & a 30" RCP storm sewer line currently bisect the site. These utilities will need to be fully removed and re-routed for the site to function as proposed. The 30" storm sewer line will be removed & relocated to parallel S Loudoun Street and E Whitlock Street before making connection back to the existing outfall point. The 30" line is currently inadequate to convey the approximately 55 acres of drainage that contribute to the site, and as such the pipe will need to upsized to a range of 36-48". Stormwater management is proposed through the use of multiple underground detention facilities & rain gardens.

The existing 10" PVC Sanitary Sewer Main as well as an existing 8" main will need to be removed & rerouted to facilitate the construction of the new Elementary School building. Given the size of the existing contributing sewer shed pump around methods & timing should be considered early in the design/construction process so that costs are properly managed.

Water service connection location(s) have not yet been determined. Watermains exist in S Loudoun Street, E Southwerk Street, & E Whitlock Ave. for possible connection locations. Additional fire hydrants may also be required to facilitate adequate fire coverage & fire flow. These items will be further clarified at time of final engineering.



CONCEPT 3 CIVIL SITE PLAN



CONCEPT 3 LANDSCAPE SITE PLAN

MEP Systems

CONCEPT 3: CAMPUS WITH EARLY LEARNING CENTER

MECHANICAL SYSTEMS DESIGN NARRATIVE

Option One: Chiller/Boiler – Fan Coil

For option one, we will use a six-pipe geothermal system serving fan coils throughout the school. The geothermal wellfield will be installed under the new soccer field, to cover the heating and cooling load of the new school. The fan coils will be installed above ceilings supplying either hot or cold air to classrooms. The six pipes refer to the number of pipes running into or out of the heat pump chiller (HPC). The heat pump chiller is a heat exchanger that separates the wellfield water loop and the building water piping loops. During the winter months, it pulls heat from the wellfield piping loop to the HPC, then sends hot water to the fan coils to heat the air. In the summer months it does the opposite, taking heat from the chilled-water loop and sending it to the wellfield. This setup requires separate hot water and chilled water piping loops, increasing the amount of piping, pumps, valves, etc. that will need to be installed.

Fan coils are simple units with fans that push air over either hot or chilled water coils into rooms to create comfortable learning environments. Their maintenance is limited to coils, valves, and fans with an individual compressor in the heat pump chiller. A drawback of this option is the fan coils are often louder, less efficient and may provide less filtration than a heat pump option. The cafeteria or gymnasium will require their own heat pumps, connected directly to the geothermal loop, to cover the large heating and cooling needs of these rooms. A new central pumping system will be in the main mechanical room alongside all the other necessary equipment. The pumps will be sized for 75% of the full flow with an inline pump for low flow conditions. This setup will give the pumps backups for redundancy, while also giving them flexibility.

There are a few financial benefits that go along with the geothermal option. The first is a tax credit for the installation and usage of the geothermal wellfield. This tax credit returns around 30% of the HVAC construction cost. The initial capital for the wellfield system will be needed up front but after the rebate this becomes the cheapest option. The second is the lower lifetime cost of the system, compared to others, due to the overall efficiencies and energy savings year after year.

All buildings require a certain amount of outside air supplied to each room. To cover these needs, the new school will be provided with 100% outside air units utilizing the hot and chilled water from the heat pump chiller. The fresh air ducts will be separate from the fan coil ductwork. These units will also cover the kitchen makeup air needs. These units will be provided with full flow enthalpy wheels for heat recovery. This takes the heat from the air leaving the building and transfers it to the air coming into the building during winter, or vice versa, saving energy throughout the year.

The dedicated outside air systems will utilize demand control ventilation via new variable volume terminals in the supply ductwork at each classroom which utilizes local CO2 sensors for control. This means they will send only the amount of air needed when it is needed. This saves energy that would otherwise be wasted.

Option Two: Cooling Tower/Boiler – Heat Pump

The new school will be conditioned by a combination cooling tower/boiler system and new premium efficiency, multi-staged, water source heat pumps, with a single heat pump serving two classrooms or similar spaces typically. The average size of these heat pumps will be 4 ton with larger spaces requiring higher tonnages. Two high volume, low velocity fans for circulating air throughout the gymnasium. A new central pumping system will be based in the main mechanical room along with other necessary equipment. Similar to the six-pipe geo system, this will require separate hot water and chilled water piping loops, increasing the amount of piping, pumps, valves, etc. The pumps will be sized for 75% of the full flow with an inline pump for low flow conditions. This setup will give the pumps backups for redundancy, while also giving them flexibility. New HDPE heat pump piping will be utilized throughout entire project with insulated copper runouts to the individual heat pumps.

A drawback of the cooling tower option is the added maintenance that it will require. There will be the routine maintenance of cleaning the unit inside and out, as well as the usual maintenance for the additional fans and pumps. This unit will also require chemical water treatment. This work will likely have to be contracted out.

Another drawback of this option is the need for a mechanical yard on site. The cooling tower will need to be located outside but will be too heavy to be installed on the roof of the building.

The building will require a certain amount of outside air supplied to each room. To cover these needs, the new school will be provided with new water source heat pump units for 100% outside air delivery, separate from the other necessary ductwork. These units will also cover the kitchen makeup air needs. These units will be provided with full flow enthalpy wheels for heat recovery. These dedicated outside air systems will utilize demand control ventilation via new variable volume terminals in the supply ductwork at each classroom which utilizes local CO2 sensors for control.

Option Three: Chiller/Boiler – Fan Coil

Option 3 is to replace the existing system one-to-one. A chiller and boiler will be used to provide the heating and cooling load of the new building, with fan coils conditioning individual rooms. A new central pumping system will be in the main mechanical room. The pumps will be sized for 75% of the full flow with an inline pump for low flow conditions. This setup will give the pumps backups for redundancy, while also giving them flexibility.

A benefit of this option is the maintenance staff will already have a full understanding of the required maintenance the included equipment. It would be familiar and wouldn't require learning to operate and maintain a new system.

When looking at the lifetime of each system, this system is the most expensive, which is due to it being the least efficient of all the systems. Day over day this system takes more energy and more money to operate. There is also the higher installation cost with larger amounts of piping and ancillary equipment that needs to be purchased and installed.

The building will require a certain amount of outside air supplied to each room. To cover these needs, the new school will be provided with new water source units for 100% outside air delivery, decoupled from the other airstreams. The units will provide the kitchen makeup air needs. These units will be provided with full flow enthalpy wheels for heat recovery. These dedicated outside air systems will utilize demand control ventilation via new variable volume terminals in the supply ductwork at each classroom which utilizes local CO2 sensors for control.

PLUMBING SYSTEMS DESIGN NARRATIVE

Same All Concepts, Refer to Concept 1

FIRE PROTECTION SYSTEMS DESIGN NARRATIVE

Same All Concepts, Refer to Concept 1

ELECTRICAL SYSTEMS DESIGN NARRATIVE

Electrical Distribution

A new 2500A/277/480V/3PH/4W switchgear (BOD: Square-D QED-2) shall be in the main electric room located on the first floor of the K-5 building. Each area of the K-5 building shall have dedicated electrical space with 277/480V/3PH/4W and 120/208V/3PH/4W branch circuit panelboards separated for specific loads such as mechanical equipment, lighting, receptacles, etc. A new 800A/277/480V/3PH/4W distribution panelboard (BOD: Square-D I-Line) shall be in the main electric of the Pre-K building and will be fed from the 2500A switchgear in the K-5 building. Each area of the Pre-K building shall have dedicated electrical space with 277/480V/3PH/4W and 120/208V/3PH/4W branch circuit panelboards separated for specific loads such as mechanical equipment, lighting, receptacles, etc.

A multi-circuit sub-metering device connected to the building automation system shall monitor all building load categories including renewable energy and report to the energy dashboard system.

MEP Systems

CONCEPT 3: CAMPUS WITH EARLY LEARNING CENTER

All wiring shall be copper, minimum #12AWG installed in conduit, minimum size ¾". MC cable is not acceptable.

Power connections and code required disconnecting means will be provided for all HVAC and plumbing equipment. Combination starter/fusible disconnects will be provided for selected equipment as required. Integral surge protective devices will be provided for the main distribution panel, emergency panelboards, and select branch circuit panels.

Emergency Electrical Distribution

A new 125kW diesel generator (BOD: Cummins) with 24-hour belly tank will be provided for life-safety and general emergency loads to serve the K-5 building. A new 60kW diesel generator (BOD: Cummins) with 24-hour belly tank will be provided for life-safety and general emergency loads to serve the Pre-K building.

All emergency electrical distribution equipment will be housed in a separate room , located on the first floor inside each main electric room, from the normal power equipment and shall consist of two life-safety and general branch automatic transfer switches (one each), two life-safety and general branch distribution transformers (one each) and a limited number of life-safety and general branch panelboards for both the K-5 and Pre-K buildings. All life-safety emergency loads shall be selectively coordinated to 0.1 seconds. Load shedding will be implemented to reduce generator sizing and ensure that all life-safety emergency loads receive priority during an emergency power outage situation.

Interior Lighting

Interior artificial lighting will be accomplished with recessed high-performance LED troffer fixtures (BOD: Metalux #24CZ2) throughout the building with more decorative LED lighting in selected spaces such as Library, Entry Lobby, Dining, etc. Lighting in the Gymnasium will be low-glare LED High-Bays (BOD: Vision Engineering #VHB3). Lighting throughout will meet the latest Illuminating Engineering Society of North America (IESNA) Handbook, IESNA Recommended Practices, etc. Interior egress lighting shall be connected to the life-safety branch of emergency power.

100% occupancy/vacancy sensor coverage will be provided throughout except in electrical and mechanical rooms. Occupancy sensors will be automatic on/automatic off. Vacancy sensors will be manual on/automatic off. Automatic daylight dimming will be employed in most zones.

Dimming switches will be provided in all offices and classrooms. All interior lighting controls will be stand-alone systems (BOD: nLight). Specialty lighting fixtures and controls to be provided in the auditorium.

Exterior Lighting

Dark sky compliant LED exterior lighting will be provided at all exit doors for egress lighting. Parking lot/Roadway lighting will be post top LED fixtures (BOD: Cooper #GLEON) on square steel poles, pathway lighting will be post top LED fixtures (BOD: Cooper #Arbor) on square steel poles. All fixtures shall be in accordance with the site guidelines for color to match the existing landscape architectural theme. Backlight shielded optics will be utilized to minimize glare to adjacent properties. Exterior lights will also feature integral motion sensing for reduced glare, energy usage and extended LED lamp life. Exterior egress lighting shall be connected to the life-safety branch of emergency power.

Exterior lighting will be controlled through the web-based DDC control system through RS-232 connected digital relays (BOD: nLight).

Fire Alarm

A new fully addressable fire alarm system (BOD: Simplex) shall be provided with notification and initiation devices per NFPA requirements. All peripheral devices shall be installed per ADA requirements. Connections will be provided to all fire suppression equipment, air handling units over 2,000CFM, door access controls, etc.
A single fire alarm system will be provided for the entire campus with fiber connecting the main panels for each building.

Telephone/Data

The contractor will provide all rough-in's, faceplates, cabling paths, cabling and patch panels for all telephone and data systems. Telephone system shall be IP based. Owner shall provide active components including wireless access points. Minimum stub-out conduit size will be 1" and cabling paths will consist of 12" cable tray with J-hook assemblies on 48" centers.

The horizontal data network will utilize CAT 6 infrastructure. New fiber and copper utilities will be demarcated in the MDF room which shall be centralized on the 1st floor of each building in order to minimize the need for satellite closets. Satellite closets will be required where low-voltage cabling distance exceed 290'. Wireless coverage will be provided for the entire school utilizing CAT 6A cabling.

The campus will be tied together with fiber running between the MDFs in each building.

Audio/Visual System

Gymnasium and Dining in both buildings shall have local sound systems with ceiling mounted/suspend loudspeakers, wall mounted rack (with amplifier, mixer, equalizer, etc.), wireless microphone system and hardwired microphone inputs (BOD: Shure/Atlas).

Public Address System

An IP based building wide Public Address System (BOD: Rauland) shall be provided in both buildings with two-way communication between most spaces. System shall feature a software-based head end and shall be integrated with the telephone system. All areas within building shall be individually addressable and shall be capable of having custom bell schedules. Call intuition will be primarily done through the telephone system but call stations will be provided in select areas.

The campus will feature two independent public address systems (one for each building).

Electronic Safety and Security

A new ESS system will include interior and exterior Video Management Systems (VMS), Security Management Control System (SMS) and an emergency warning notification system interface (BOD: S2).

The SMS includes door access and logic capabilities such as visitor management, time schedules, intrusion detection and digital signage for emergency notification features. VMS will include security cameras that will be specified along with servers and analytics (motion detection) that run them. Both VMS and SMS systems will be integrated with a single web portal interface. The integrated system reports directly to any authorized group of users including the local police department if desired via programmed Push Notification.

The campus security systems will be tied together with fiber running between the main panels in each building.

Lighting Protection

Both buildings shall feature a complete Lightning Protection System certified to NFPA 780. System shall comply with UL #96A. Building steel shall not be used as a down conductor. Down conductors shall be concealed within the building. Each down conductor shall be terminated to a dedicated ground rod. Provide surge protective devices for all systems identified in NFPA 780.

Structural Systems

CONCEPT 3: CAMPUS WITH EARLY LEARNING CENTER

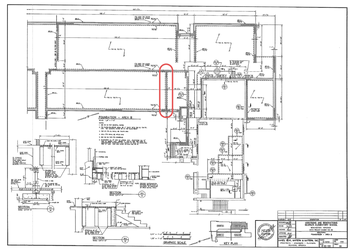
OVERVIEW

The 1995 wing is less susceptible to earthquakes than the 1954 original and is large enough to serve Winchester as an early learning center. The rest of the student body starts over in a new building at the other end of the site built over imported soil fill.

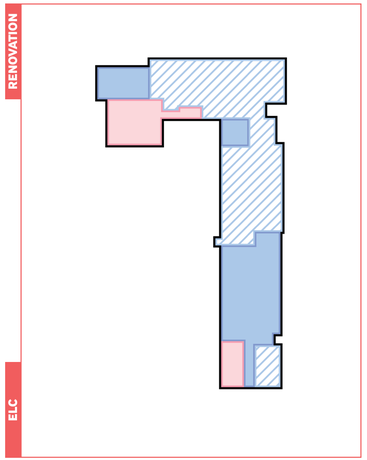
EXISTING TO REMAIN

The classroom wing constructed in 1995 is still in good condition. Unlike the original wing, its masonry walls contain steel reinforcing which provides ductility to resist earthquakes. Concept 3 keeps this wing and repurposes it to serve all the Pre-K students in the city. Small additions mend the scars where other wings were cut away, shown colored pink on the adjacent ELC Renovation diagram. These additions will be constructed with masonry bearing walls to match the existing construction to which they connect.

Some of the classroom walls are moved in the proposed layout to provide larger learning spaces. Most of these walls are non-structural and thus easy to move, but one such wall appears on record structural drawings, highlighted red in the figure below. It is likely that a new roof joist will be needed to replace this structural wall. Steel joists can be ordered with a field-bolted splice that allows for two halves to be raised independently and mated in the air. This method is highly effective for retrofitting existing buildings where overhead interferences prohibit single-piece installation.



PARTIAL FOUNDATION PLAN OF 1995 ADDITION



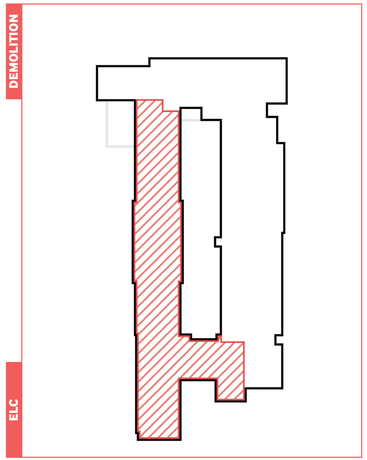
Addition

Heavy Renovation

Moderate Renovation

Moderate Renovation — MEP systems replacement, roof replacement, window/door replacement, ADA/code modifications (toilet rooms, etc.), minor reconfiguration of interior spaces, upgraded interior finishes (flooring, ceilings, paint, wall tile, etc.), furniture and equipment.

Heavy Renovation — All of the above, plus structural modifications, and major reconfigurations of interior spaces.



Demolition

Existing Building Extents

Future Building Extents

Demolition — Complete abatement and removal of existing building, disposal of all materials, and preparation of the site for future development.

Note: In Concept 3, the majority of demolition occurs in the 1954 & 1958 sections of the building. This helps mitigate many of the existing circulation and structural concerns faced by Concept 1.

Structural Systems

CONCEPT 3: CAMPUS WITH EARLY LEARNING CENTER

SITE GRADING

The new building is set with the ground floor at street level on the north and west sides so exit doors need no stairs and so floors can be supported by the subgrade for economy. Large volumes of off-site fill soil will be needed to level the site. Once leveled, however, building construction is straight forward: foundations bear on the compacted soil fill, with exterior foundations lowered 30 inches for frost protection. A few site walls are indicated on the civil plan so play areas and sports fields can all be at nearly the same elevation, yet none of these site walls exceed 7 feet in height so are all economical and simple to construct.

NEW STRUCTURE

Non-combustible construction will be used in most locations. Steel columns support upper levels, and cold-formed metal studs are used for all exterior and interior walls except where required by the fire code around stair shafts or elevator shafts. Exterior wall studs will be designed to deflect less than L/600 under service wind loads to keep brick veneer from cracking.

Floors at the lowest level will be 4" thick concrete slabs on grade with welded wire reinforcement over a 4" layer of gravel. Elevated floors will be 3" of normal weight concrete over 3" deep metal form deck for a total slab thickness of 6 inches. This slab will be supported by steel beams spaced up to 9'-6" apart. To improve floor stiffness and reduce steel cost, beams will be joined compositely with the concrete slab by welding headed shear studs through the metal deck prior to concrete placement. Roofs will be open web steel joists at approximately 6'-0" on center supporting metal deck 1½" deep by 22 gage thickness with type B corrugations.

Windows for this concept have not yet been selected, but their shape influences the structure. The simplest form is punched windows less than 6' wide. Punched windows up to 12' wide require stouter headers and jambs. Strips of windows over 12' wide are often supported by spandrel framing from the level above rather than by their jambs. Less common daylight options include clerestory windows and skylights, with structure selected on a case-by-case basis.

Exposed wood framing is recommended in certain showcase areas shown hatched pink in the K-5 Building structure diagram on the right. This renewable construction material has a warm appearance and good acoustic properties. Fire performance is a primary consideration, but mass timber can be used with certain limitations. Unprotected wood framing is permitted where the ceiling height is over 20 feet, so the 3 rooms with high ceilings are good candidates.

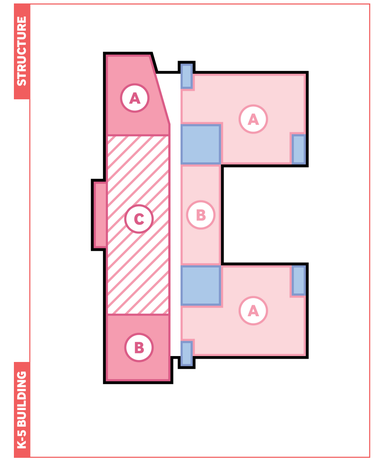
The gymnasium, the dining room, and the stage will be framed with glulam joists. Glulam is available in made-to-order sizes for long or complex situations and in stock sizes for short and medium spans. For greater visual impact, the decking between joists can also be made of wood, either as planks assembled on site or as prefabricated panels that are either cross-laminated or nail-laminated.

The third floor is smaller than the first and second floors. A snow drift will form beside this step, causing extra load on the lower roof all along the west corridor of level 3. Roof framing at level 2 will need to be a little stouter to support this snow drift.

Air conditioning systems often require rooftop units (RTUs). Mechanical systems for this project have not yet been selected, but RTUs for a building of this size are often both bulky and heavy. In addition to the RTU weight, the roof structure must consider two other factors. First, drifting snow must be considered beside large mechanical units. Second, unsightly units are sometimes surrounded by screen walls, which require support for wind loads and often cause additional snow drifts.

Resistance to lateral loads such as wind and seismic are concentrated into stiff areas of the building. Such areas are labeled as shear elements and are colored blue in the adjacent K-5 Building structure diagram. Shear elements can be masonry walls if this material is already present for fire separation at circulation corridors. If masonry is not used, diagonal members added to the steel frame function equally well. These diagonals can be located to avoid obstructing mechanical and architectural circulation paths. Concrete floors and metal roofs function as diaphragms to carry lateral loads to shear elements.

Two-story high spaces have special structural considerations. Exterior walls must be thicker than typical because of their height. Gaps in the floor plate at level 2 complicate the lateral analysis because an irregularly shaped diaphragm has abrupt stiffness changes. Horizontal floor reinforcing called struts may be added near floor openings. Chord elements in diaphragms also have higher axial force when the plan aspect ratio is large. Large aspect ratios can tend toward twisting behavior with large displacements during earthquakes, which are mitigated by using a stouter lateral system. These issues are largely internal to the structural discipline and are only mentioned here so the team is not surprised by special framing details near the 2-story spaces.



Mass Timber, Standard Span, Recommended

Mass Timber, Long Span, Recommended

Mass Timber *or* Steel Framing

Shear/Core Component

Existing Building

A 30' Clear Span

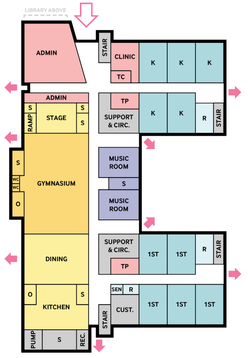
B 25' Clear Span

C 64' Clear Span

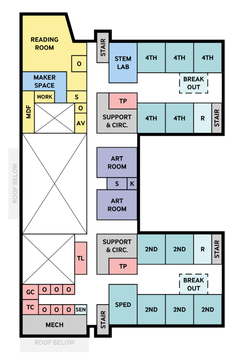
Programming

CONCEPT 3: CAMPUS WITH EARLY LEARNING CENTER

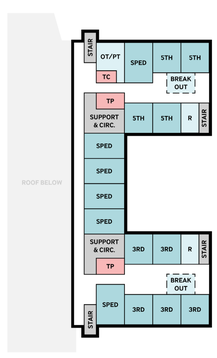
LEVEL 1



LEVEL 2



LEVEL 3



Academic Core
Resource
Admin & Health
Communal
Athletics & Fitness
Art & Music
Exploratory
Support
Entrance
Exit

K-5 BUILDING

The programmatic organization of the K-5 building follows a similar logic to that of Concept 2, however, it is more compact due to a reduced student capacity, and is entered on the ground floor. The building is largely defined by three volumes: a north-south bar containing a majority of the school's communal programs, and two east-west wings containing classrooms, resource rooms, and teacher planning spaces. This organizational strategy allows for the greatest degree of equality across grade levels, as access to outdoor play is facilitated through the individual learning community staircases and the locations of specialty programs are more or less centralized.

On level one, the primary entrance sits adjacent to admin on the north side of the building. A central spine connects the entry to the gymnasium and music rooms, then dining as one moves south. Level two contains the library, STEM lab, student services, and art rooms. At level three the double-height communal spaces on the western side of the building drop off. As such, it is primarily composed of classroom spaces. The central spine is converted into a learning community for the SPED program. OT and PT services are appropriately co-located along with two integrated SPED classrooms.

Throughout the building, the learning communities are characterized by a flexible, central breakout space, accounting for future growth and the potential for co-teaching.

Programming

CONCEPT 3: CAMPUS WITH EARLY LEARNING CENTER

EARLY LEARNING CENTER

Since it is primarily a renovation project, the Early Learning Center maintains much of the organization of the existing building. The relative location of the main entry is preserved in the north-west corner, directly off of the shared auto drop-off lane. From this main entry, the communal programs of the ELC (gym, dining, stage, extended day programming, etc.) are accessed via an east-west spine. These program spaces, similar to the current configuration, can be isolated from the classroom corridor via locked doors. The classroom wing is located south of this communal spine, with the classrooms themselves bookended by support, resource, and planning spaces.

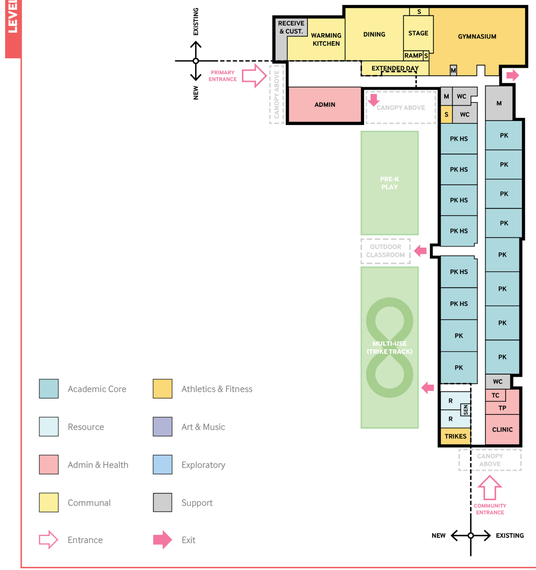
Pre-K play and outdoor covered space are accessed in three locations: the center of the communal spine, the former courtyard entry/exit door, and a hallway in the new south-most addition.

A relatively intensive renovation process is required in the classroom wing, particularly on the southeast side of the building where classes are both undersized and lack toilet rooms.

Additions to the building are concentrated around areas where demolition scars must be covered. These additions were exploited to introduce right-sized teacher resource and planning spaces on the south end of the building as well as a new administrative suite at the northwest corner.

In addition to after-school gym and cafeteria access, it is important to note the separate community entrance shown on the drawing on the south end of the building. There have been a number of discussions with leadership concerning a community health clinic. There are several versions of this idea, ranging from the standard nurse's office typology to a full-service healthcare provider operating out of the ELC on a full-time basis. It is not possible at this time to assess the feasibility of the latter proposal, and it is entirely contingent on a partnership between WPS and Valley Health, however, a space has been allotted and an entrance designated should this idea come to fruition.

LEVEL 1



Academic Core
Resource
Admin & Health
Communal
Entrance
Athletics & Fitness
Art & Music
Exploratory
Support
Exit

Analysis & Evaluation

CONCEPT 3: CAMPUS WITH EARLY LEARNING CENTER

Priority	Category	Score
IIIIIIIIIIIII	Educational Program	3.4
IIIIIIIIII	Staging & Phasing	3
IIIIIIII	Community	3.5
IIIIII	Safety & Security	3
IIIII	Parking & Circulation	2.3
III	Site Amenities	2
III	Inclusion & Accessibility	3
I	Health & Sustainability	3
I	Cost	2

Pros

- Leverages existing 1995 building for re-use
- Existing school remains operational during construction
- New K-5 classrooms ideally oriented for daylight
- High-performing K-5 building envelope and building systems (operational savings over time)
- Provides dedicated ELC for entire district
- Retains existing gym and cafetorium for community use
- Smaller K-5 school is consistent throughout district
- Protected outdoor learning & play spaces

Cons

- Larger project costs more
- More buildings reduces area for site amenities
- Dedicated ELC requires staffing and operational changes
- ELC bus drop-off on S. Kent Street

OVERALL SCORE
2.8

FINAL RANKING
#1

4 - Exceeds Needs
3 - Meets Needs with No Compromises
2 - Meets Needs with Minimal Compromises
1 - Meets Needs with Significant Compromises
0 - Does Not Meet Needs

Final rankings determined by average score across all 9 categories
Priority indicates relative importance of a category as voted on by Steering Committee

07

FINAL
RECOMMENDATIONS

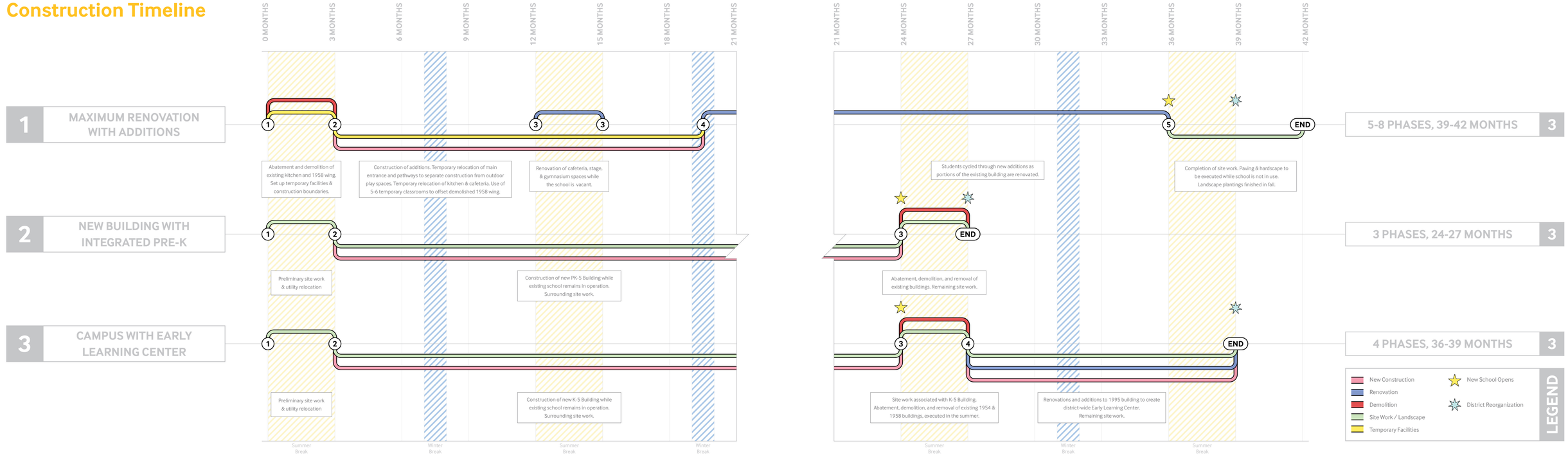
Evaluation Matrix

Throughout the project process, stakeholders were asked to identify goals and aspirations they deemed essential to the success of a new school in Winchester. As the project progressed, these ideas became more defined and allowed for the development of key themes. In the latter stages of the project, these themes were put before the steering committee to both refine and rank in terms of relative importance.

The matrix to the right shows these selected themes, important subcategories, and their relative importance as determined by vote (highest to lowest, from left to right). The concepts were then objectively ranked according to their performance in each category and a total score was calculated. Concept 3 was found to be the most advantageous. For a more thorough analysis of each concept, refer to the previous section.



Construction Timeline

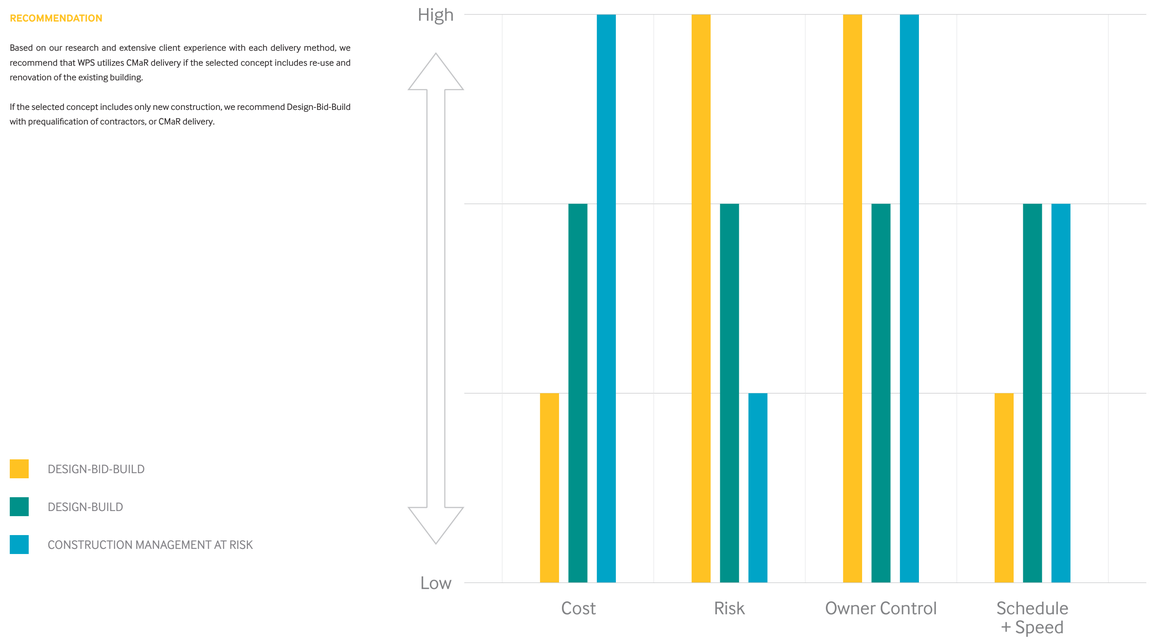


Procurement Methods

RECOMMENDATION

Based on our research and extensive client experience with each delivery method, we recommend that WPS utilizes CMaR delivery if the selected concept includes re-use and renovation of the existing building.

If the selected concept includes only new construction, we recommend Design-Bid-Build with prequalification of contractors, or CMaR delivery.



D-B-B

Design-Bid-Build

PROS

- Lowest Cost
- High-Level Owner Control (in Contract)
- Time-Tested Delivery Method (Most Familiar)
- Permitted under Current School Board Policies

CONS

- Increased Owner Risk
- Low-Bid Contracting (GC + Subs)
- Cost Determined at Bid Date
- Longest Overall Schedule
- Increased Involvement Required of Owner's Rep. / PM

D-B

Design-Build

PROS

- Single Team / Point of Contact + Responsibility
- Early Contractor Selection
- Flexibility in Selection / Prequalification of Subcontractors
- Increased Access to Quality Subcontractors
- Potential for Design-Assist or Early Procurement of Major Scope and Systems
- Earlier Known Cost of Work (GMP) than with D-B-B

CONS

- Budget-Driven + Schedule-Driven
- More Demanding on Owner Up-Front to Establish Project Criteria
- Reduced Owner Control / Quality
- Likely Requires School Board / Legal Action

CMaR

Construction Management at Risk

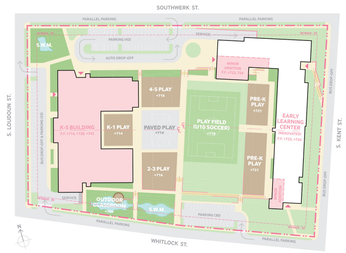
PROS

- Early Contractor Selection
- Preconstruction Services (Logistics, Schedule, Budget, etc.)
- Flexibility in Selection / Prequalification of Subcontractors
- Increased Access to Quality Subcontractors
- Potential for Design-Assist or Early Procurement of Major Scope and Systems
- Earlier Known Cost of Work (GMP) than With D-B-B
- Familiar Procurement Method to District Leadership

CONS

- Increased Costs for Preconstruction Services
- Initial Construction Bids may not be as Competitive as D-B-B (Although Quality of Work Should be Higher)
- Limited Added Value for Larger, More Complex Projects

Final Recommendation



CONCEPT 3 ARCHITECTURAL SITE PLAN

Concept 3	
Campus with Early Learning Center	
Elementary School Area	**116,000 GSF** (3-STORY)
Early Learning Center Area	**48,000 GSF** (1-STORY)
Estimated Total Construction Cost	**$86.3 Million**

OVERVIEW

Of the three concepts developed, the community and leadership expressed strong support for Concept 3 as it best utilizes existing building assets, site conditions, and site area while meeting the educational and capacity goals of the district for a new transformational, high-performing elementary school. The added benefit of utilizing the existing 1995 building to accommodate all of the district's PK enrollment is the consolidation of WPS's early learning resources and operations while providing parity in capacity between the new elementary school and other district-wide elementary schools. For more information on Concept 3, refer to Section 06.

EDUCATIONAL PROGRAM

This concept provides a stand-alone dedicated center for all of WPS' Pre-K, allowing additional capacity for grades K-5 at all of WPS' Elementary Schools. Programming meets current VDOE recommendations, allows room for growth, and includes student and staff support spaces that reflect current best practices and accommodate anticipated services.

STAGING & PHASING

The projected construction timeline for this concept is between 36 and 39 months, with the newly constructed K-5 building available for use at around 24 months. An estimated construction phasing timeline is provided on page 104.

COMMUNITY

In addition to a new Gymnasium and Dining Commons in the Elementary School, community benefits include retaining the existing Gymnasium, Cafeteria & Kitchen for school and community use. The addition of a community health clinic with a dedicated entrance has been proposed in the Early Learning Center. Exterior playgrounds, recreational courts, walking paths, and a U-10 soccer field are proposed for after-school and weekend use by the community.

SAFETY & SECURITY

The site plan and building layout have been developed based on Crime Prevention Through Environmental Design (CPTED) principles and VMDO best-practices developed over decades of educational design experience. Active and passive strategies for safety and security are utilized throughout the site planning, building planning, detailing and product specifications.

PARKING & CIRCULATION

The elementary school includes a dedicated bus loop and visitor parking lot to the west as well as an auto drop-off lane and staff parking lot to the north. Dedicated service and delivery access drives are proposed for each building. The Early Learning Center includes a small staff parking lot to the south and proposes the continued use of S. Kent Street as a bus drop-off lane. In addition to the dedicated parking areas provided, parallel parking on all four streets bordering the site is available for overflow and special events parking.

SITE AMENITIES

To support walking and biking to school, improvements to sidewalks bordering the site are proposed and a network of sidewalks and walking paths within the site connect buildings, parking areas, and site amenities and provide a perimeter walking circuit. Stormwater management works with the natural slope of the site to slow, filter, and channel stormwater and promotes environmental stewardship through the use of an outdoor classroom, rain gardens, bioswales, and underground detention. Age-appropriate playgrounds, recreational courts, and fields are centrally located on the site, proximal to learning spaces, and protected from the street by the perimeter buildings. Abundant landscaping and native trees are proposed to provide shade and to support local ecosystems.

INCLUSION & ACCESSIBILITY

Planning for the buildings and the site was rooted in the goal of meeting the needs of a diverse community of students and staff. Spatial variety, accommodation, adaptability, and place-based design strategies are fundamental to creating an inclusive and accessible campus that reflects the needs of the community. The site plan proposes grading and low site walls to manage topography and provide wheelchair access to all exterior spaces. The 3-story Elementary School has a central elevator and all spaces have been planned with universal access in mind.

HEALTH & SUSTAINABILITY

The health and wellness of building occupants is at the forefront of our planning efforts for the campus. Promoting access to abundant daylight, views and connections to nature, systems choices that support indoor air quality, and the responsible selection and use of materials are integrated into the planning solution. The concept aims to reduce the building's projected energy use by optimizing the building's envelope, massing, orientation, fenestration and systems. The roof has been designed to support a photo-voltaic roof array sized to completely offset the annual energy use of the building with the goal of achieving a Net Zero Energy building.

08

PROJECT APPENDIX

Appendix A - Resilience

Resilience is the ability of people and their communities to anticipate, accommodate, and positively adapt to / thrive amidst changing climate conditions and hazard events. The term resilience is often used interchangeably with emergency preparedness and response, but these elements only address part of this concept. Social and economic resilience are also key factors for how communities weather events. Many communities are exploring "Resilience Hubs" as ways to support community resilience holistically and schools and community centers are good candidates to also perform in this role. Schools naturally build networks through the community as hubs for activity and gathering. Schools already contain many of the spaces needed to perform as a resilience hub, just additional organizational management is required.

Winchester's 2023 Flood Preparedness and Resilience Plan identifies GQES as a potential shelter location in an emergency. Given the school's location in the most socially vulnerable area of Winchester, there are significant opportunities to expand GQES's role as a resilience center. This should be further discussed between WPS, the city of Winchester, and partner organizations as the school planning continues.

THREE RESILIENCE HUB MODES



EVERYDAY

At its core, the Resilience Hub serves as a central point to design and implement a strategy to address root causes of vulnerability and help communities thrive. 99% of the time, a Resilience Hub operates in the "everyday" mode as a resource to the community by supporting needs and facilitating strong community ties.



DISRUPTION

During a disruption event, a community's Resilience Hub can be the central point for gathering, assessing impact, sharing stories, assembling information, accessing resources, and spearheading response. Because of the trust formed during the "everyday," community members know where to go and what support they can receive during a disruption. The Hub facility may also be equipped with renewable energy and back-up power to be able to operate if other infrastructure has failed.

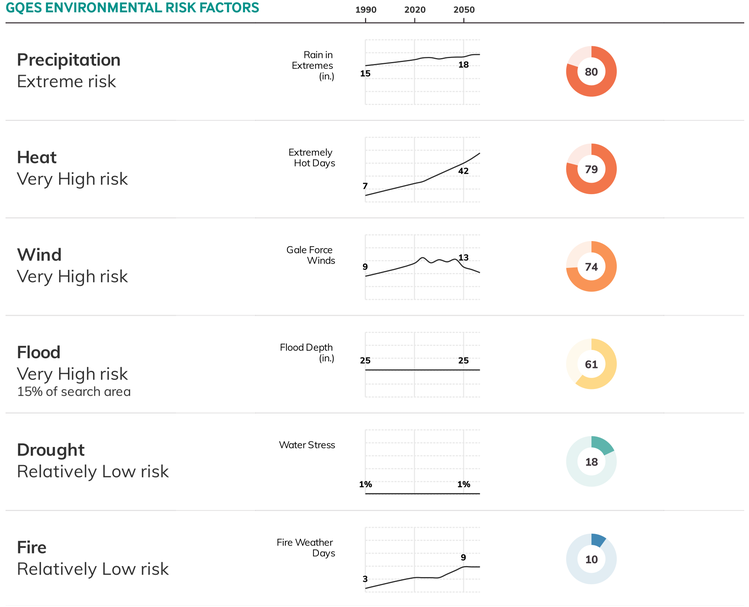


RECOVERY

Resilience Hubs can play a critical role in post-disruption recovery and ongoing communication needs. For resilient communications, the site can remain a central point for gathering, sharing information, and accessing resources. Hubs can also provide space for additional experts, aid organizations, volunteers, and support networks to gather and better understand and help meet community needs.

URBAN SUSTAINABILITY DIRECTORS NETWORK "GUIDE TO DEVELOPING RESILIENCE HUBS" (2019)

GQES ENVIRONMENTAL RISK FACTORS



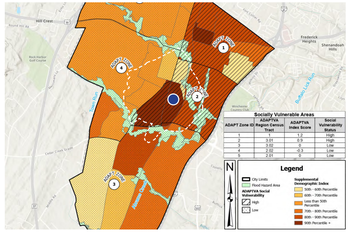
CLIMATE CHECK REPORT, 2026

https://climatecheck.com/

Appendix A - Resilience

GQES is located in the highest socially vulnerable area in Winchester

This index indicates communities that may need support before, during, or after disaster.


Socially Vulnerable Areas
ADAPTVA ADAPT Zone ID
Region Census Tract
ADAPTVA Index Score
Social Vulnerability Status
1 3.01 0.9 High
2 3.02 0 Low
3 3.03 -0.3 Low
4 2.01 0 Low
Legend
City Limits
Flood Hazard Area
ADAPTVA Social Vulnerability
High
Low
Supplemental Social Vulnerability Index
50th - 69th Percentile
70th - 79th Percentile
80th - 89th Percentile
90th Percentile +
Battlefield of Third Winchester
Shenandoah Valley
Frederick Heights
Apple Blossom Mall
Shawnee Golf Course
Red Bud Run
Abrams Creek
Winchester
Shawnee
Rolling Hills
Handley High School
Handley Regional Library
Shawnee Park
Jim Barnett Park
Shawnee Golf Course
Abrams Creek
Meadow Branch
Red Bud Run
Shawnee Elementary School
Bass Hollow
Shawnee Land
Fairmont Ave
Cedar Creek
Hill Creek
Rose Hill Cemetery
Rose Hill Golf Course
Winchester Country Club
Shawnee Golf Course
Jim Barnett Park
Shawnee Park
Shawnee Land
Shawnee Elementary School
Handley High School
Handley Regional Library
Shenandoah Valley
Frederick Heights
Apple Blossom Mall
Battlefield of Third Winchester
Abrams Creek
Meadow Branch
Red Bud Run
Bass Hollow