

INSPIRING EXCELLENCE

RESEARCH | DEVELOP | PRESENT
UPPER MERION AREA HIGH SCHOOL

FRONT ENTRY OF THE NEW HIGH SCHOOL



EXECUTIVE SUMMARY

The new Upper Merion Area High School (UMAHS) will provide career and higher education level spaces for the students to engage in the 21st century learning activities of “research, development and presentation.”

SCHOOL + COMMUNITY RESEARCH/ENGAGEMENT

- The high school (HS) is located in Upper Merion Township, home to over 28,000 residents.
- This is the only HS in the school district (SD) and it provides education for two townships and one borough.
- A design committee of students, staff, parents, local community representatives and SD officials collaborated with the firm to create a unique HS that best responded to the desired educational program and site.

EDUCATIONAL ENVIRONMENT DESIGN

- Evolving the pedagogical approach from passive lecture-based to active project and portfolio-based learning.
- The design of the HS is to provide career and higher education level spaces to promote learning by research, development and presentation.
- Flexible learning spaces for small or large groups combined with technology are distributed throughout the HS.

PHYSICAL ENVIRONMENT DESIGN

- Student services and technology distribution and support spaces are located between the commons space and the academic area.
- A 3-story academic wing supports the core academic programs with a STE(A)M based center, multiple project and team-based spaces and a 3-story learning stair.
- Transparency and accessibility through the learning stair is key.

RESULTS OF THE PROCESS + PROJECT

- The student commons is a 2-story atrium space with learning resources on the second level enhancing the research- and project-based components mixed with dining opportunities on the first floor.
- After hours, this space supports pre- and post- activity functions for the athletic and performing arts complexes.
- A full competition gymnasium and competition swimming venue will be the connector to the existing middle school (MS).

SUSTAINABILITY + WELLNESS

- Condensed site design that connects with the existing MS-saving space and resources required for two separate schools.
- The HS is designed to utilize natural daylight throughout.
- Energy efficient materials and systems were chosen intentionally.
- Recycled and renewable materials and finishes are also chosen for spaces inside and outside, throughout the new school.
- High efficiency HVAC and lighting are used throughout the HS.

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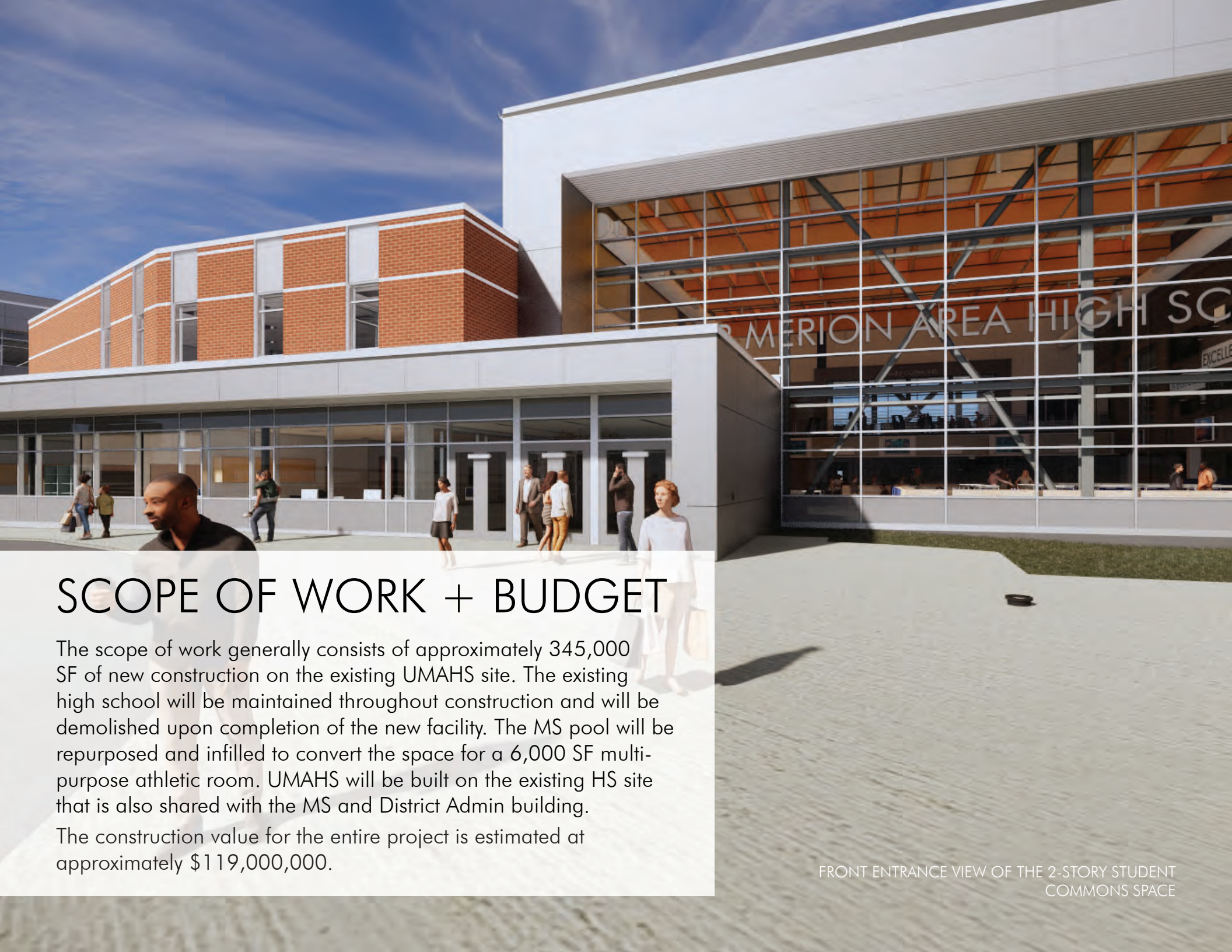
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SCOPE OF WORK + BUDGET

The scope of work generally consists of approximately 345,000 SF of new construction on the existing UMAHS site. The existing high school will be maintained throughout construction and will be demolished upon completion of the new facility. The MS pool will be repurposed and infilled to convert the space for a 6,000 SF multi-purpose athletic room. UMAHS will be built on the existing HS site that is also shared with the MS and District Admin building.

The construction value for the entire project is estimated at approximately \$119,000,000.

FRONT ENTRANCE VIEW OF THE 2-STORY STUDENT
COMMONS SPACE

An aerial photograph of a suburban area with a yellow dashed line tracing a boundary. The boundary follows a winding road in the upper half and then turns into a more complex, angular path in the lower half, enclosing a mix of residential and undeveloped land. The text 'UPPER MERION AREA SCHOOL DISTRICT' is in the top left.

UPPER MERION AREA SCHOOL DISTRICT

SCHOOL + COMMUNITY RESEARCH/ ENGAGEMENT

UMAHS is located in Upper Merion Township in King of Prussia, PA and is a part of the Upper Merion Area School District (UMASD) with approximately 4,300 students. The Township itself is roughly 17 sq miles and home to 28,000 residents.

UMASD has evolved to provide education through seven schools. This HS will provide education for two townships and one borough; Upper Merion Township, Bridgeport Township and West Conshohocken Borough.



DESIGN WORKSHOP WITH UMASD STAKEHOLDERS



DESIGNED BY THE STAKEHOLDERS + COMMUNITY

A Design Committee held planning and design workshops with project stakeholders including students, staff, parents, local community representatives and officials. The planning and design process allowed a collaborative approach that adequately included the SD's educational vision and the community's goals.

An aerial photograph of a school campus. A new high school building is highlighted in red, situated adjacent to an existing middle school building. The campus includes several athletic fields, including baseball and softball fields, and a large outdoor amphitheater. The site is surrounded by a residential neighborhood with houses and trees. The text 'ORIGINAL SITE' is visible in the bottom left corner.

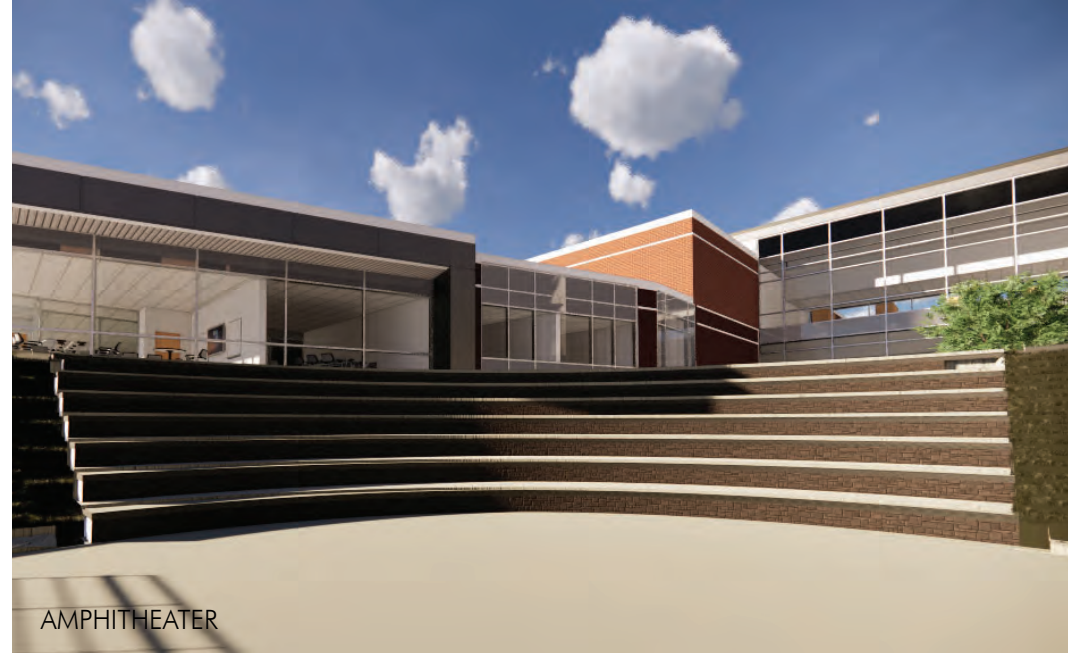
PROJECT CHALLENGES

The first challenge was to determine whether or not to renovate and add onto the existing HS or to build a new facility. New construction options considered building on the current HS site, which is shared by the MS, district admin building and stadium, or at a new site. After reviewing multiple options, the recommendation to build new on the current site was the most cost-effective solution that would achieve the targeted design goals. The design to build the new HS adjacent to the existing MS with the connection to support shared secondary athletic facilities set the stage to further develop the design.

The 59-acre site posed challenges and opportunities. The site is bisected by an underground stream. The proposed building was designed to have the stream flow between the community spaces on one side and the 3-story academic wing on the other. Instead of burying the underground stream, the stream and its outfall were exposed with a new outdoor amphitheater and teaching area integrated into the design. The remainder of site will be developed for tiered athletic fields, parking and circulation.



STUDENT COMMONS IN THE FRONT OF THE FACILITY



AMPHITHEATER

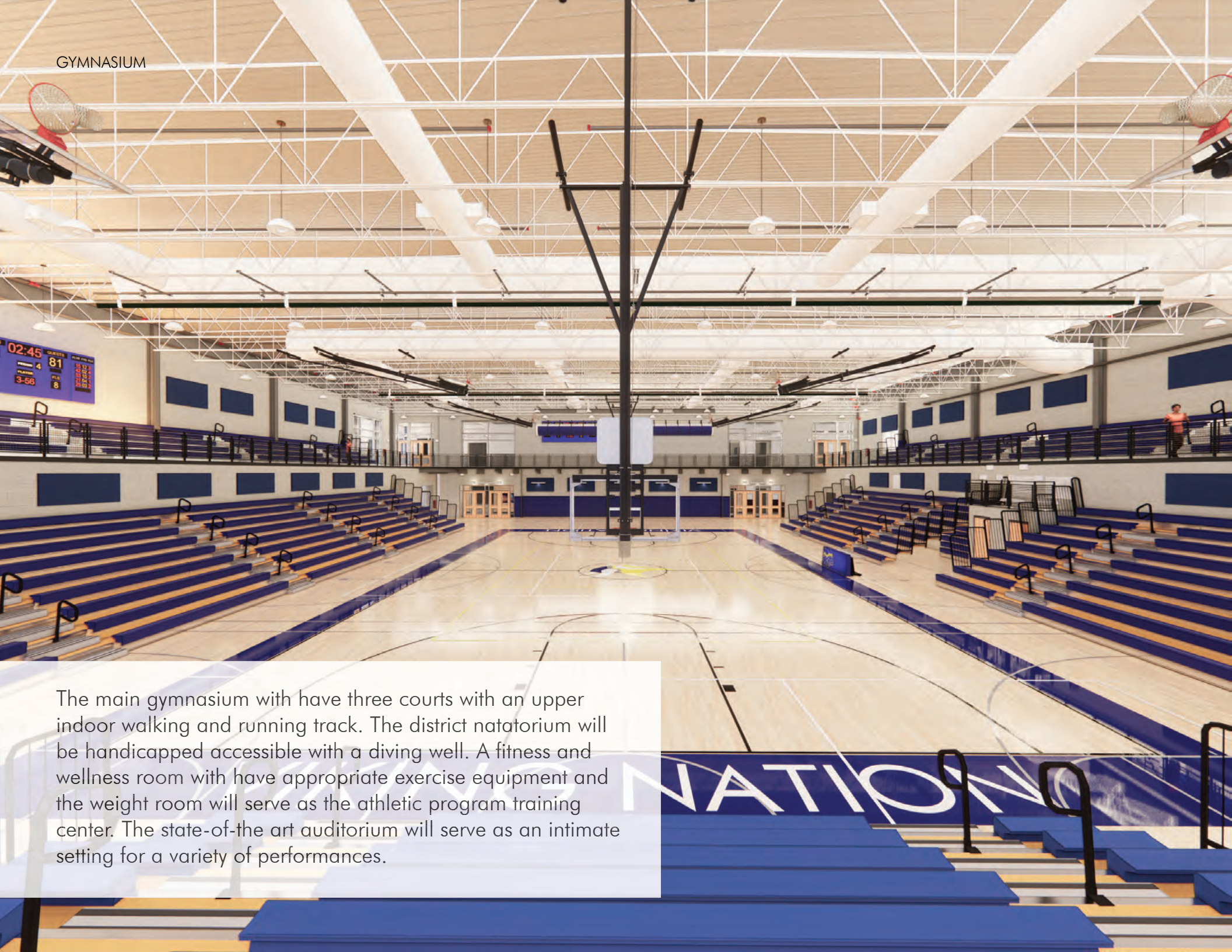
AVAILABLE ASSETS

The new HS will feature assets for both the students and community.

Central to the school will be the student services area to support the student body.

Located between the Student Commons and the 3-story academic wing are the Career and College Counseling Center and the Technology/IT support center. The Student Commons at the main entrance to the school offers dining options and a community space for peer-to-peer and staff-to-peer socialization opportunities.

GYMNASIUM



The main gymnasium will have three courts with an upper indoor walking and running track. The district natatorium will be handicapped accessible with a diving well. A fitness and wellness room will have appropriate exercise equipment and the weight room will serve as the athletic program training center. The state-of-the-art auditorium will serve as an intimate setting for a variety of performances.



VALUE OF PROCESS + PROJECT TO THE COMMUNITY AT LARGE

The planning process allowed for the educational community to have tremendous input into the concept and the final design.

By utilizing a consensus based planning approach, ideas provided by the many constituents can be found in the overall plan for the facility. The educational vision is clearly supported by the many unique aspects of this facility. Meetings were held where interested planning partners met on multiple occasions to work with the team to further develop the project and to encourage the use of sustainable techniques.

The new HS will provide dynamic and functional spaces that support various learning and teaching styles--benefitting the community for decades.

EDUCATIONAL ENVIRONMENT DESIGN

One of the most important EDUCATIONAL VISION + GOALS of the project was the motivation to move away from a completely lecture-based learning process towards project- and portfolio-based learning. The goal of project-based learning is to bring the multitude of students not served well by the lecture format into the realm of application of data rather than regurgitation of data. The District and building team embraced this theme because it brings a variety of other concepts into consideration. The intent behind the overall design of the facility is to provide career and higher education level spaces for the students to engage in non traditional learning environments and learning activities of "researching, developing and presenting."



SECOND FLOOR VIEW OF THE LEARNING STAIR



DINING/CAFE AREA IN THE STUDENT COMMONS SPACE



INSTRUCTIONAL SPACE IN THE TECH ED WING

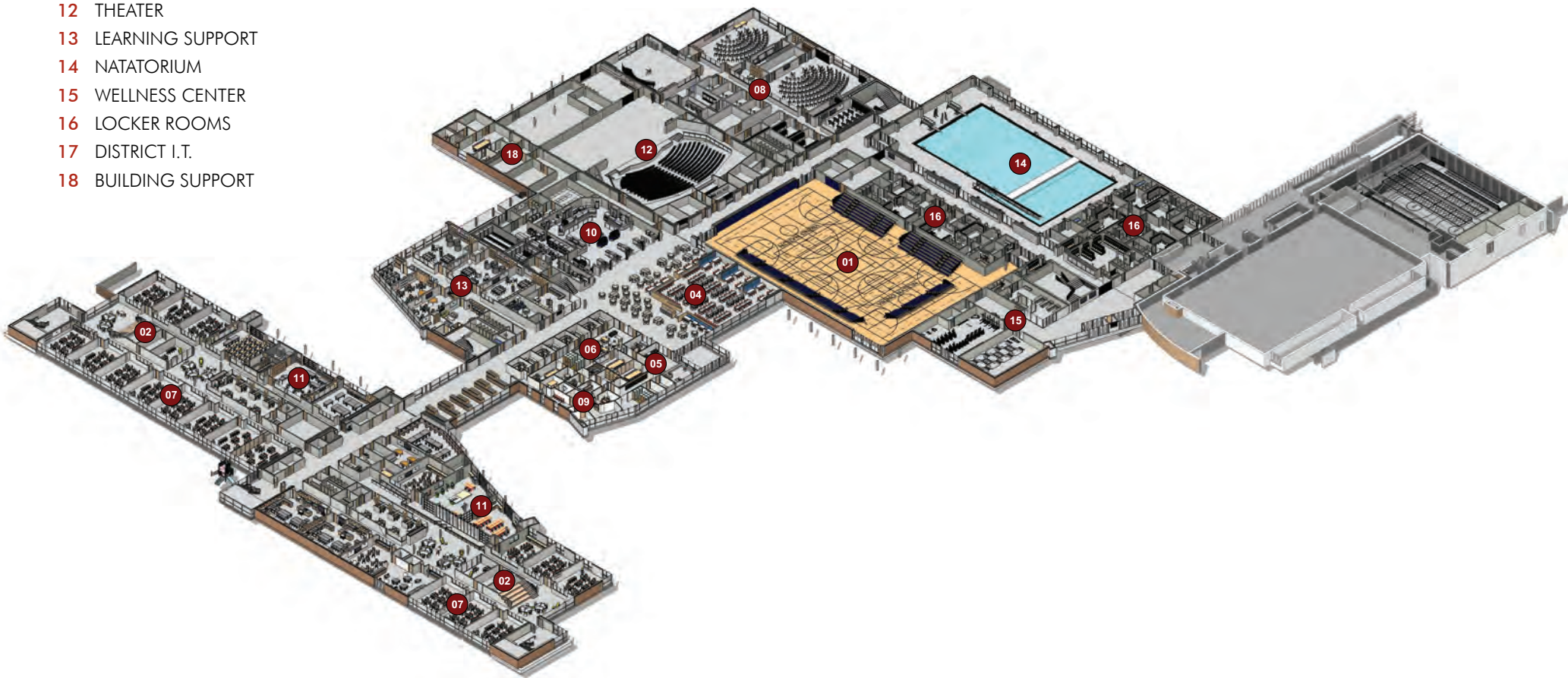
SUPPORTING THE CURRICULUM

UMAHS provides a 1-to-1 environment, providing laptops to students in all grades.

There is a strong focus on 21st century skills development and integration of technology into teaching and learning. The HS design includes technology distribution and support spaces located between the commons space and the academic area to integrate the correlation of teaching and learning. Additionally, the HS offers virtual coursework and service learning for credit. A 3-story academic wing supports the core academic programs with a STE(A)M based center, multiple project and team-based spaces and a 3-story learning stair supports the school's STE(A)M curriculum.

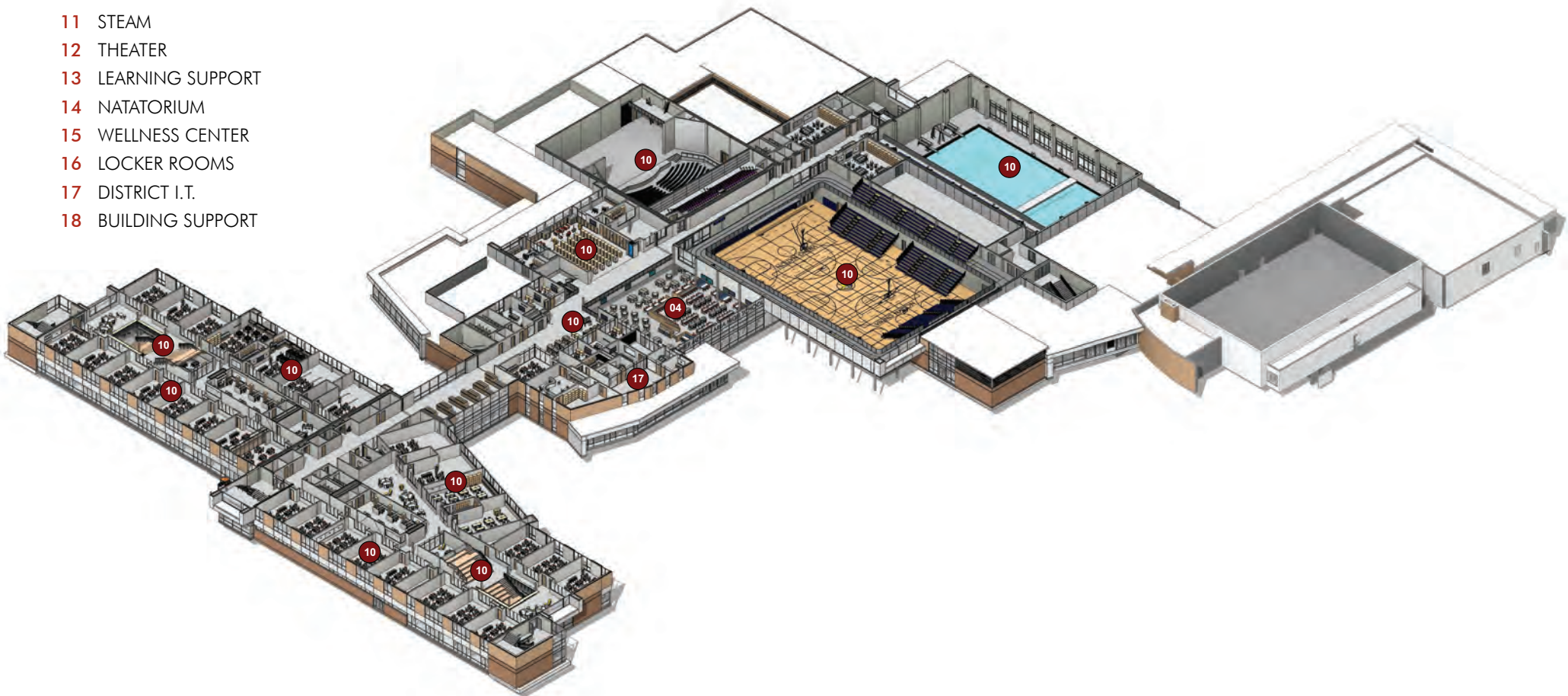
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- 02 LARGE GROUP INSTRUCTION
- 03 LIBRARY COMMONS
- 04 BUILDING COMMONS
- 05 ADMINISTRATION
- 06 GUIDANCE
- 07 LEARNING COMMUNITY
- 08 MUSIC
- 09 NURSE
- 10 KITCHEN
- 11 STEAM
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- 14 NATATORIUM
- 15 WELLNESS CENTER
- 16 LOCKER ROOMS
- 17 DISTRICT I.T.
- 18 BUILDING SUPPORT



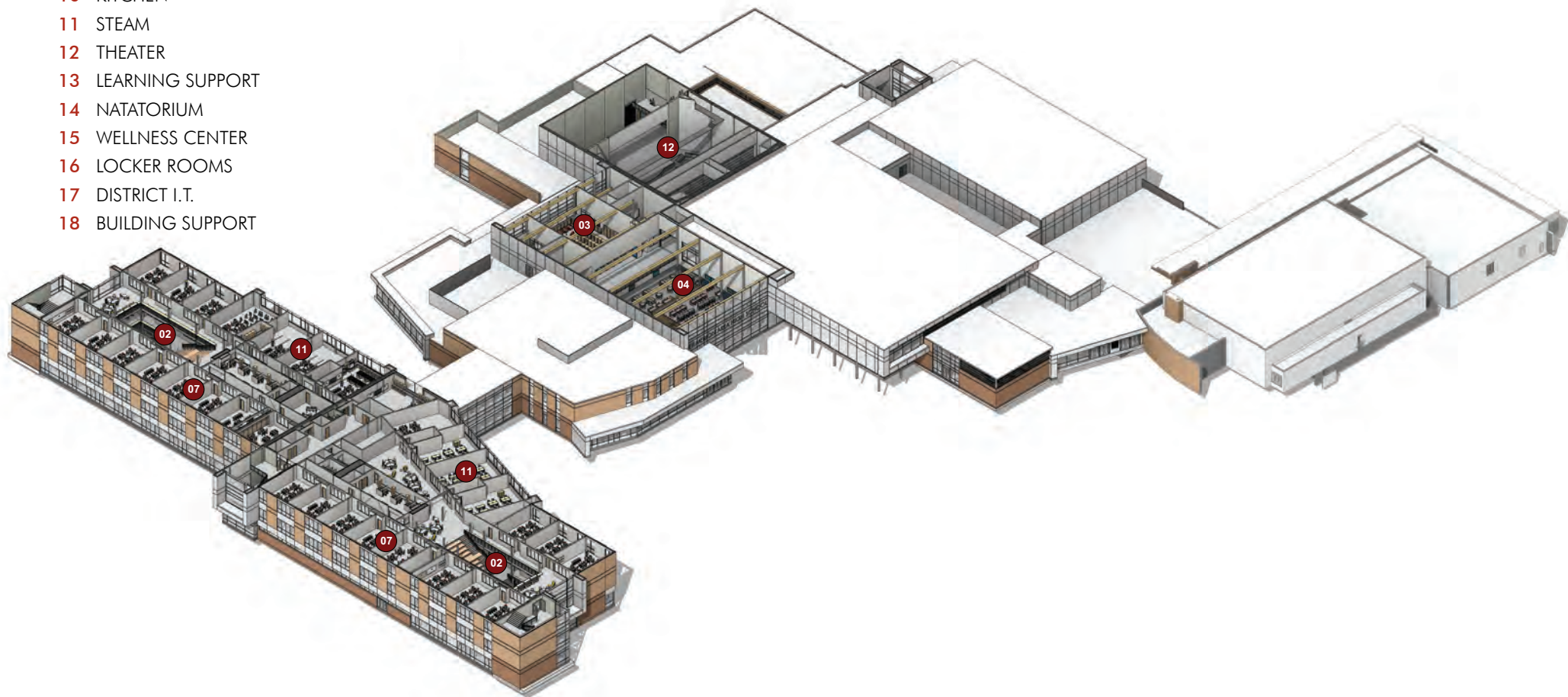
2ND FLOOR PLAN

- 01 GYMNASIUM
- 02 LARGE GROUP INSTRUCTION
- 03 LIBRARY COMMONS
- 04 DINING
- 05 ADMINISTRATION
- 06 GUIDANCE
- 07 LEARNING COMMUNITY
- 08 MUSIC
- 09 NURSE
- 10 KITCHEN
- 11 STEAM
- 12 THEATER
- 13 LEARNING SUPPORT
- 14 NATATORIUM
- 15 WELLNESS CENTER
- 16 LOCKER ROOMS
- 17 DISTRICT I.T.
- 18 BUILDING SUPPORT



3RD FLOOR PLAN

- 01 GYMNASIUM
- 02 LARGE GROUP INSTRUCTION
- 03 LIBRARY COMMONS
- 04 BUILDING COMMONS
- 05 ADMINISTRATION
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FIRST FLOOR VIEW OF THE LEARNING STAIR



LEARNING GROUP INSTRUCTIONAL SPACES IN THE CLASSROOM WING



ADDITIONAL GROUP LEARNING SPACES

SUPPORTING A VARIETY OF LEARNING + TEACHING STYLES

The new HS has a 3-story academic wing that supports the core academic programs with a STE(A)M based center, multiple project and team-based spaces, and a 3-story learning stair. The learning stair connects all core programs vertically to enhance the cross-pollination of learning activities. Transparency is a key aspect of the facility's design and is utilized to promote the visual connection between each of the learning activities.

Every space in the facility, such as corridors and stairs, is essentially a learning space. These spaces are designed to be learning studios, small group instruction areas and large group instruction areas. These spaces provide individual, small to large-group learning and teaching styles and are intended to be used as presentation areas and/or to provide a dynamic team collaboration area.



VIEW LOOKING UP FROM THE SECOND FLOOR LEARNING STAIR

ADAPTABILITY + FLEXIBILITY

A variety of instructional delivery methods are utilized, including blended and online learning to personalize the process to engage all learners, tapping into their unique learning styles. The SD and the building team were influenced by the notion of technology being of tremendous use in that it can be used to assess each learner's strengths, freeing up the teacher to do what they do best: guide the instruction. Learners are engaged, they take ownership of their learning and a life-long love of learning is instilled.

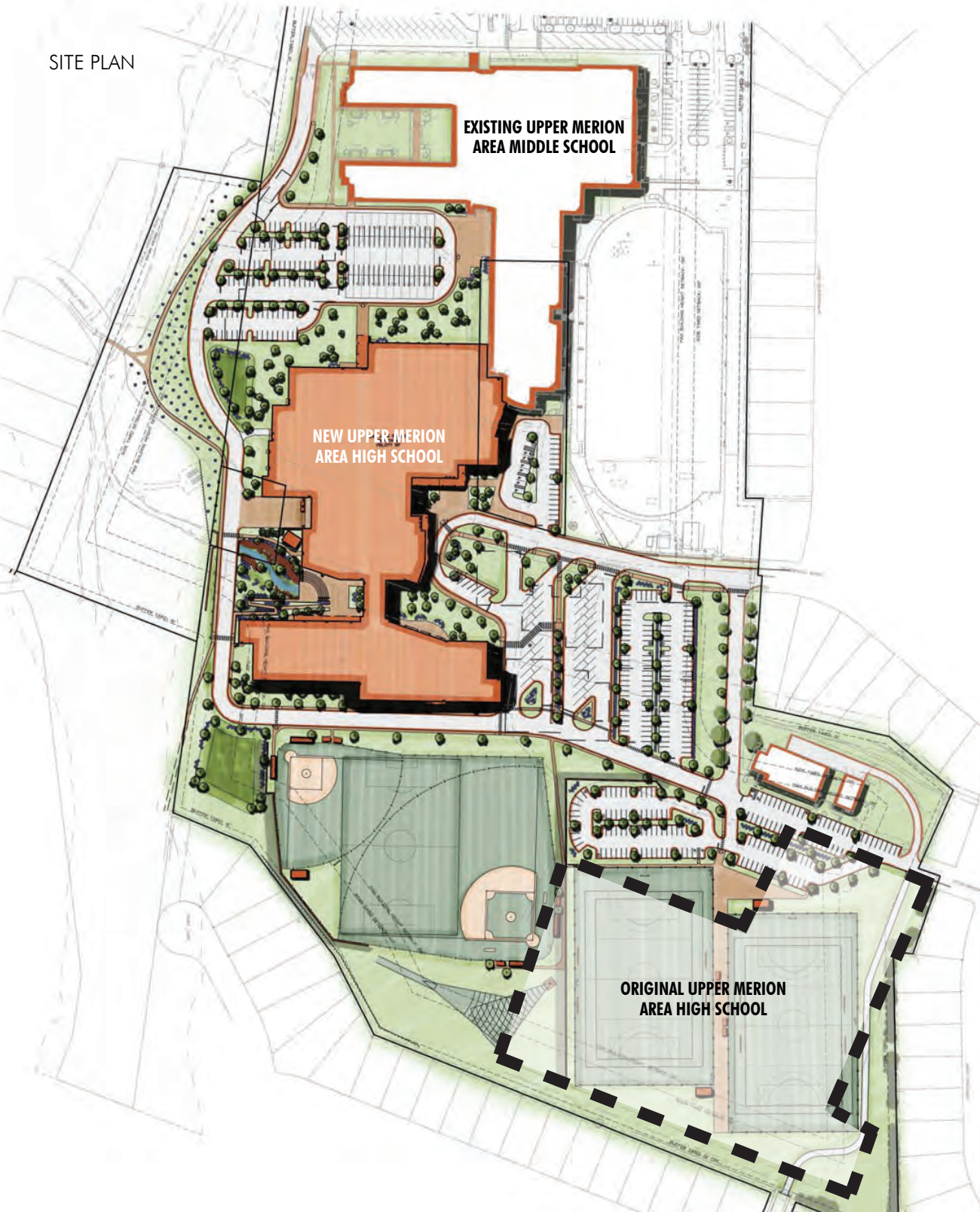
To accommodate the variety of instructional methods, our spaces must be agile; allowing them to be shaped and reshaped to support the desired activities. We refer to this as "rapid reconfiguration." Particularly, as technology continues its rapid pace of change and our understanding of how each of us learns continues to evolve, this notion of flexibility and adaptability will be key to ensuring that all physical spaces in this facility support learning.

PHYSICAL ENVIRONMENT DESIGN

The SITE PLAN on this page depicts how the SD chose the design option of building a new HS on the existing site--making its athletic program spaces accessible to the existing MS (outlined as a white building.)

This reduces the space and resources it would take to build a separate building on a new site and makes this an academic campus that promotes the higher education level vision with shared athletic facilities.

This also allows the original HS remain in use while the new HS is being constructed. After the completion of the new HS and the demolition of the original HS, athletic fields will be built.





FIRST FLOOR VIEW OF THE LEARNING STAIR



STUDENT COMMONS



NATATORIUM

PHYSICAL ATTRIBUTES

Materials were intentionally selected for functionality, durability, using classic finishes that will last for decades. High ceilings and acoustical panels were designed not only for a large dynamic effect but also for noise-level comfort, making the environment conducive for learning.

The new HS is designed to use natural daylighting throughout the different areas for energy efficiency and to impact the quality of space for individuals.

Another physical feature to the HS is the connectivity to all of the various learning spaces both from the classroom wings and the communal spaces, making flexible learning accessible from every space.

UPPER MERION AREA SCHOOL DISTRICT AREA

● CALEY ELEMENTARY SCHOOL

● UPPER MERION
COMMUNITY CENTER

● UPPER MERION AREA
MIDDLE SCHOOL

● UPPER MERION AREA
HIGH SCHOOL PROPOSED FACILITY

FITTING WITHIN THE COMMUNITY

The HS is located in an area that has developed to be one of the most important activity centers in the region. It is also home to many businesses, the King of Prussia Mall, and the Valley Forge National Historical Park. The two attractions bring countless visitors each year.

Designed to be a state-of-the-art educational facility with competition-sized athletic facilities, the new HS is in close proximity to other UMASD educational facilities and community facilities, and will be an attractive addition to the surrounding community.

CANDLEBROOK
ELEMENTARY SCHOOL

● UPPER MERION
TOWNSHIP LIBRARY

● UPPER MERION
TOWNSHIP PARK



CLOSER VIEW OF THE STUDENT COMMONS



SMALL INSTRUCTIONAL SPACE AROUND THE LEARNING STAIR

INSPIRING + MOTIVATING DESIGN

There are many features designed into the new HS that will help inspire and motivate the students, faculty and district.

The integration of technology will provide a state-of-the-art experience for students that they can become familiar with in preparing for their future higher education and careers.

Most of the spaces and furniture are flexible to support individual or group learning--providing comfort for each student's preferred learning style. All the spaces in the building are flexible and useable space made conducive to "researching, developing and presenting."

There is great investment into the design of both the athletic program and the performing arts program that will bring great commitment and talent from students as well as attention from the community.

RESULTS OF THE PROCESS + PROJECT

Construction of this facility began in the Spring of 2020. Therefore, the direct outcome data is not yet available. Judging by the process and the enthusiasm for the proposed educational structure, the team expects great results.

STRUCTURAL ELEMENT BEING CONSTRUCTED
FOR THE NEW HIGH SCHOOL



INDOOR TRACK LOCATED ON THE SECOND
LEVEL OF THE GYMNASIUM



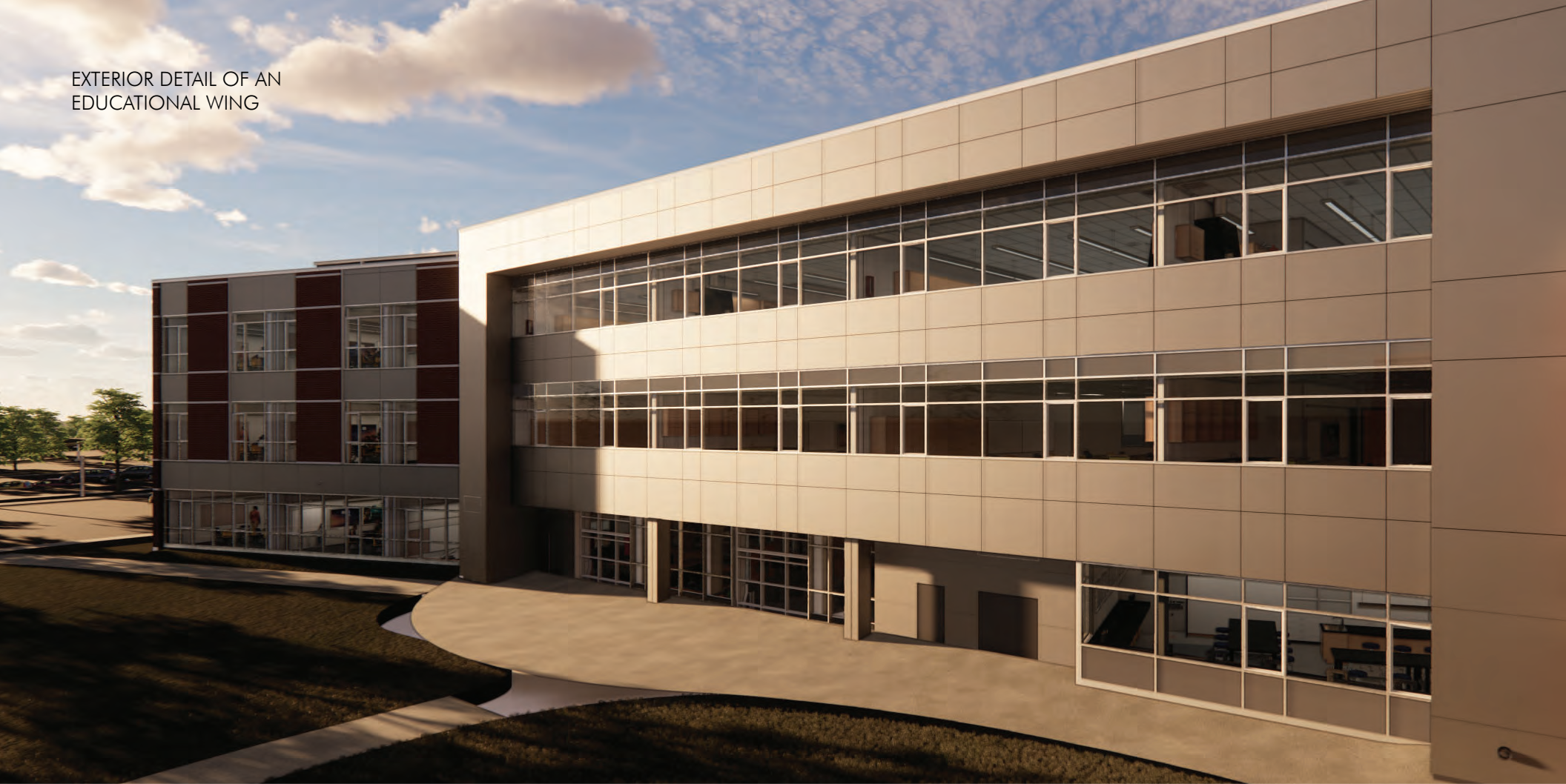
INSTRUCTIONAL CLASSROOM SPACE



ACHIEVING THE EDUCATIONAL, COMMUNITY + SCHOOL DISTRICT GOALS + OBJECTIVES

At key milestones throughout the design, community meetings were held to review the project scope and to receive input. The community overwhelmingly supported the design which was a reflection of the area's corporate businesses and collaborative work environment. A rewarding attribute is that the facility is poised to prepare students for career paths that will benefit the community at large.

EXTERIOR DETAIL OF AN
EDUCATIONAL WING



UNINTENDED RESULTS + ACHIEVEMENTS

With the project not yet built, the expectations from unintended consequences is yet to be learned. There have been several site related challenges, that have driven this to be a very unique project. Two consequences are as follows:

- The underground stream was a challenge that grew into an opportunity. The stream required that the design team bifurcate the building to bridge that underground structure. Further, the Department of Environmental Protection strongly believes that previously captured waterways in the state be revealed where possible. The team took the opportunity to split the building into the community spaces and the academic spaces, thus allowing two distinct campus structures with a small structure/bridge spanning the underground stream. The team exposed the end of the stream and developed a full outdoor classroom/presentation space around it.

OVERALL VIEW OF THE NEW HIGH SCHOOL



- The condensed site with the original HS that had to remain operational provided another unique challenge that became an opportunity. The team master planned the new HS to connect with the existing MS. In the short term, this will allow the two schools to share resources between performing arts and athletic structures, reducing the quantity of spaces required for each separately. The facilities will serve as a true secondary campus. As the educational program evolves from specifically a grade structure format to more of a competencies based program, students can feel free to take classes wherever in the facility that best suites their academic needs.

SITE PLAN

EXISTING
UPPER MERION AREA MIDDLE SCHOOL

UPPER MERION AREA HIGH SCHOOL
NEW FACILITY



SUSTAINABILITY + WELLNESS

We apply green and sustainable design practices and materials as well as energy efficient measures into every project that we undertake. To do our part to be good stewards, we include a level of sustainability and environmental sensibility to reduce the negative impact on the environment. As part of our holistic approach, the integration of systems and building envelope solutions strive to lower long-term operating costs with improved life cycle returns for the building.

You can find examples of sustainability and wellness listed on the next few pages.



STUDENT COMMONS

ENERGY-EFFICIENCY SOLUTIONS

Architectural

- The design and location of the long classroom wing, orientated long-ways in the East/West direction, aids in natural daylighting and more consistent HVAC loads.
- Low cost, high insulation value materials in conjunction with the brick veneer and air cavity wall system leverages natural thermocycling to help stabilize the interior thermal comfort of the building.
- Finishes include ground concrete floors in lieu of yet another material finish thereby reducing material use in this construction.

Mechanical

- Central plants use high efficiency hot water heaters, boilers, and chillers to minimize energy usage while keeping the building comfortable.
- VFDs are provided on pumps and fans to reduce speeds when appropriate to further reduce energy consumption.
- Energy recovery wheels are provided on the majority of air handling equipment to recover energy that would normally be exhausted outside.

- Only CFC-free refrigerants were used. These refrigerants do not deplete ozone and have low global warming potential.

Electrical

- Daylighting sensors to automatically control artificial lighting to reduce energy costs.
- Low energy usage LED light fixtures are provided throughout the building with occupancy and daylight sensors.
- Occupancy sensors automatically turn off lights in spaces that are not occupied, and daylight sensors limit lighting output based on sunlight to further reduce energy demand.

Plumbing

- All plumbing fixtures are low-flow, water saving fixtures.

Building Automation

- Building systems are completely automated with the ability to view and override systems remotely. Systems include central plants, air handling equipment, and interior and exterior lighting controls.



CLASSROOM WING CORRIDOR



STUDENT COMMONS



DINING/CAFE

HEALTHY ENVIRONMENTAL ASPECTS

- Air handling equipment also utilizes carbon dioxide sensors in high occupant density spaces to reduce the amount of unconditioned outside air when spaces are not at full capacity.
- Extensive glazing harnesses natural light for daylighting throughout the entire building. This helps for comfort, focus and well-being for all staff and students in the building.
- Low emitting VOCs specified throughout.



DURABLE + GREEN MATERIALS

- Gray roofing membrane which helps reflect heat from the sun and assists in lowering heating costs and reduction of the heat island effect.
- Recycled and renewable interior construction materials and finishes including glue-laminated structural framing in the dining commons and natatorium, structural steel, acoustical ceilings, and floor materials.
- Stained concrete in the corridors and dining commons with recycled content.



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LEARNING STAIR