INSPIRING EXCELLENCE

RESEARCH | DEVELOP | PRESENT

UPPER MERION AREA HIGH SCHOOL

MAIN ENTRANCE

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 next generation learning activities of "research, development, and presentation."

SCOPE OF WORK + BUDGET

- New construction on existing site
- Grades 9-12
- 1,500 student capacity
- Site is 59 acres
- 345,000 SF
- 230 SF per student
- Construction value of $138 million
- $288 per SF
- $66,155 per student
- Building Construction was 26 months
- Building completed in August 2022
- Site anticipated completion in July 2023

SCHOOL + COMMUNITY RESEARCH/ENGAGEMENT

- The high school is located in Upper Merion Township, home to over 28,000 residents.
- This is the only high school in the school district and it provides education for two townships and one borough.
- A design committee of students, staff, local community representatives and the school district officials collaborated with the firm to create a unique high school 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.
- Provide career and higher education type spaces to prepare students when they graduate high school!
- Flexible learning spaces for small or large groups combined with technology are distributed throughout the high school.

RESULTS OF THE PROCESS + PROJECT

- The student commons is a mixed-use 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.
- The student commons is not only a dining commons but also a collaboration area that can be used throughout the day with the library commons accessible from the second 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.

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 STEAM based center, multiple project and team-based spaces and a 3-story learning stair.
- Transparency and accessibility through the learning stair is key.

SUSTAINABILITY + WELLNESS

- Condensed site design that connects with the existing middle school--saving space and resources required for two separate schools.
- The high school 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 high school.

MAIN ENTRANCE

SCOPE OF WORK + BUDGET

The design and construction of a new 345,000 SF UMAHS serving grades 9-12. The school replaces the existing high school on the campus that is shared with the District's middle school and District Administration building. The existing high school remained operational throughout construction and was demolished soon after the completion of the new facility and the area repurposed for athletic fields.

The construction value for the entire project is $138,000,000.

GRADE STRUCTURE: 9-12

TOTAL STUDENT CAPACITY: 1,500 students

SITE ACREAGE: 59 acres

BUILDING AREA: 345,000 SF

AREA PER STUDENT: 230 SF

CONSTRUCTION TIMEFRAME: 26 months for building

CONSTRUCTION COMPLETED:
BUILDING - August 29, 2022
SITE - July 2023 anticipated

CONSTRUCTION VALUE: $138 million

BUILDING COST PER SF: $288

BUILDING COST PER STUDENT: $66,155

UPPER MERION AREA SCHOOL DISTRICT MAP

SCHOOL + COMMUNITY RESEARCH/ ENGAGEMENT

THE COMMUNITY

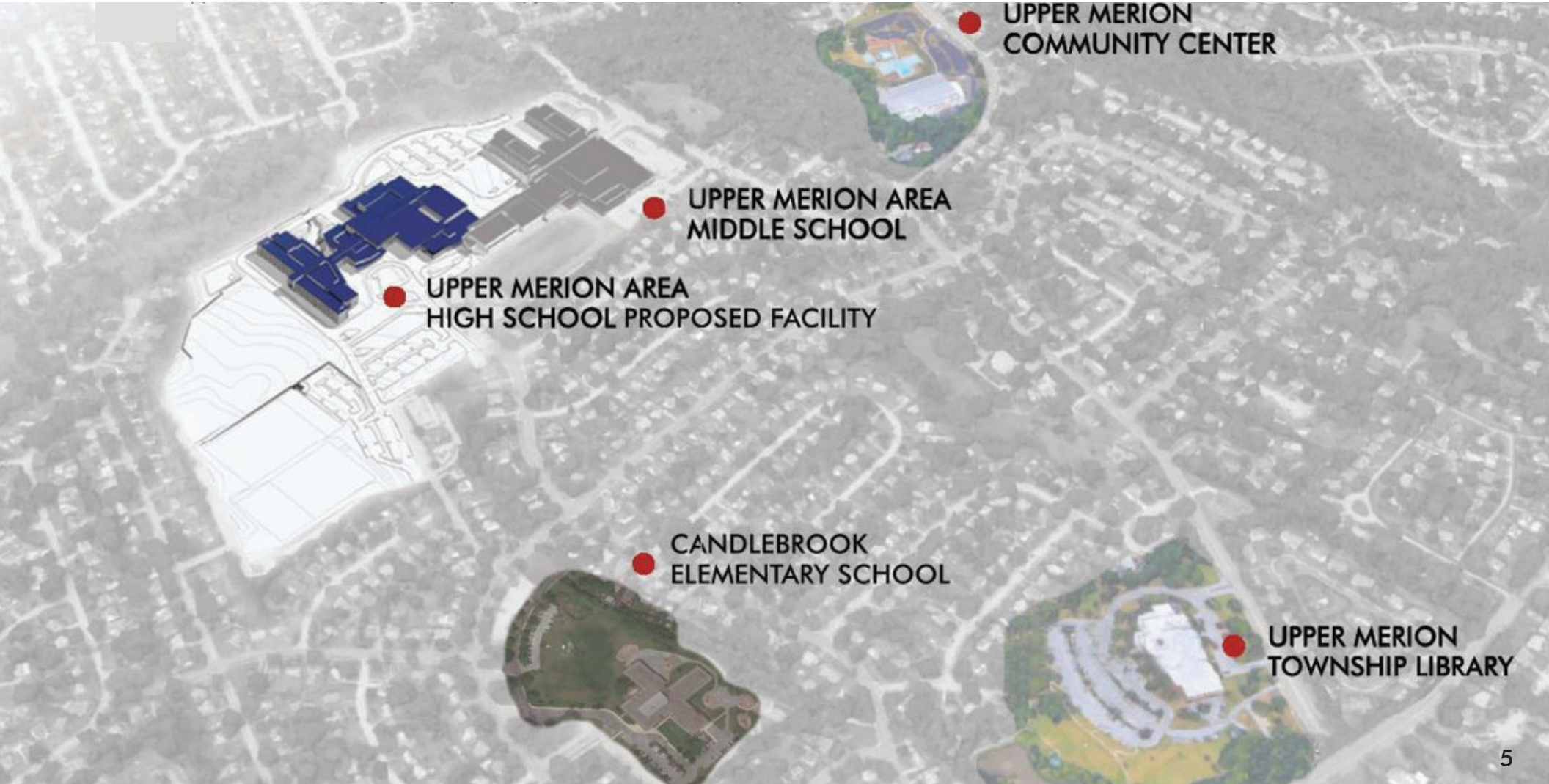
The Upper Merion Area School District (UMASD) is a highly regarded school district located in Upper Merion Township, King of Prussia, Pennsylvania. Situated just 20 miles northwest of Philadelphia, the township covers approximately 17 square miles and serves as a prominent activity center in the region. Known for its retail sector, the community is home to the largest shopping mall in Pennsylvania, the King of Prussia mall, and features corporate office buildings, restaurants, the Children's Hospital of Philadelphia (CHOP), and the historic Valley Forge National Historical Park. UMASD, with a tax base of 42% residential and 58% commercial and industrial properties, does not impose an Earned Income Tax.

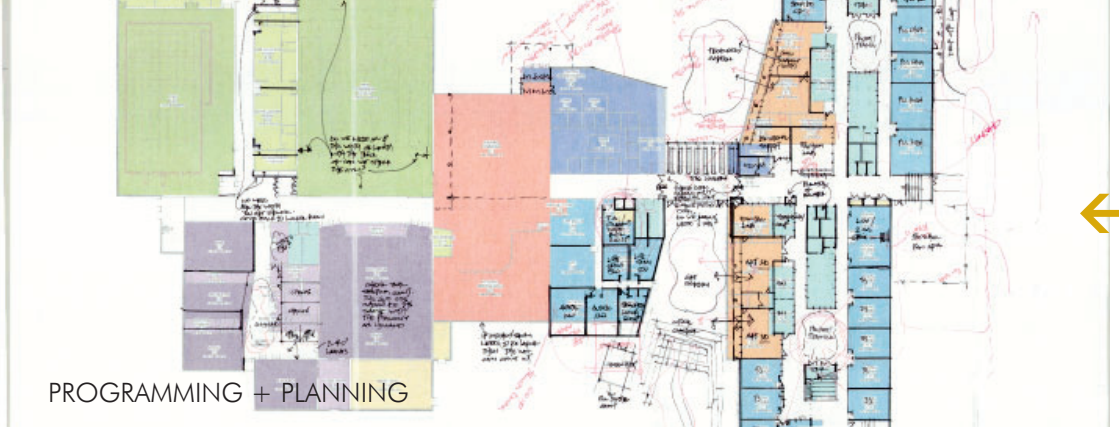
The district consists of two townships, Upper Merion and Bridgeport, along with West Conshohocken Borough. It serves around 4,300 students in seven schools, including five elementary schools for grades K-4, a 5-8 middle school, and a 9-12 high school, all located on a shared 59-acre campus. UMASD is renowned for its exceptional public schools, excelling in areas such as academic performance and overall equity.

KING OF PRUSSIA - TODAY

LEGEND

1 K.O.P. Mall
2 K.O.P. Town Center
3 Lifetime Fitness
4 Home Depot/ Carmax
5 Lockheed Martin
6 U.S. DOT
7 PennDOT
8 Valley Forge Casino
9 Corporate Park
10 To Vanguard
11 To Pfizer & GSK
12 To SEI
13 To Other Major Biotech
14 Valley Forge Park





PROGRAMMING + PLANNING

CONCEPTUAL DESIGN

RENDERINGS OF CONCEPTUAL DESIGN

COMPLETED CONSTRUCTION OF THE NEW SCHOOL

DESIGN WORKSHOPS

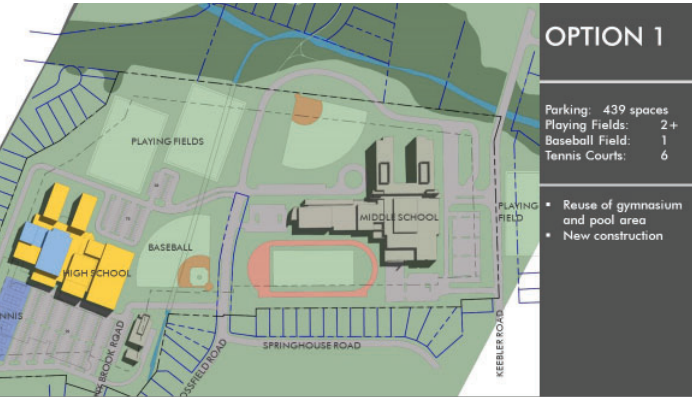
DESIGNED BY THE STAKEHOLDERS + COMMUNITY

The planning process for the new school involved collaboration with educators, community members, and students to create a comprehensive and inclusive design. Educators actively contributed to ensure the school would be flexible and meet the needs of all students in the future.

Working closely with the design team, community members, including local constituents, played a crucial role in aligning the school's design with the surrounding corporate office buildings and industries. This resulted in learning spaces that reflected the work environment, preparing students for their future careers.

The perspectives of high school juniors and seniors were valued in the planning process. Their feedback regarding the limitations of the existing high school and their insights into enhancing the learning experience had a profound impact on creating inclusive spaces.

Through this collaborative approach with educators, community members, and students, the planning process achieved a comprehensive and inclusive design for the new school. It incorporated flexibility, aligned with the surrounding work environment, and catered to the needs of all students, ensuring a valuable and relevant learning experience.



OPTION 1

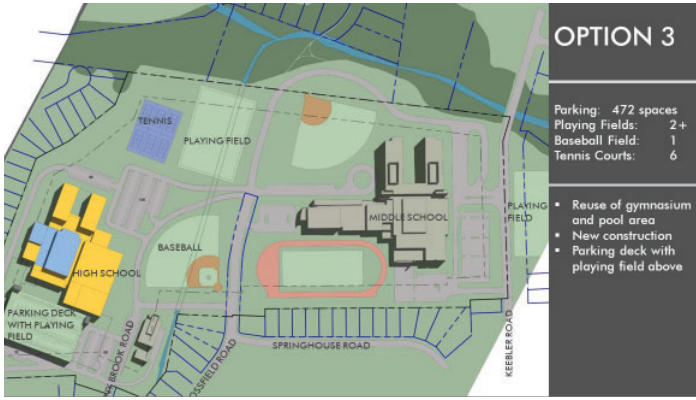
Parking: 439 spaces
Playing Fields: 2+
Baseball Field: 1
Tennis Courts: 6

- Reuse of gymnasium and pool area
- New construction

OPTION 2

Parking: 442 spaces
Playing Fields: 2+
Baseball Field: 1
Tennis Courts: 6

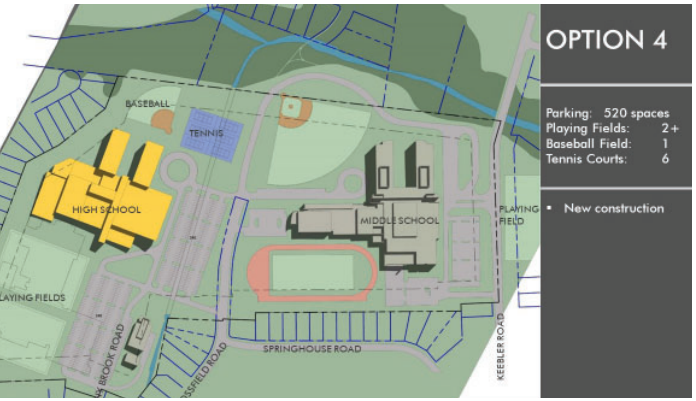
- Reuse of gymnasium and pool area
- Reuse of existing classroom wing
- Reuse of Performing Arts
- New construction
- Parking deck with playing field on top



OPTION 3

Parking: 472 spaces
Playing Fields: 2+
Baseball Field: 1
Tennis Courts: 6

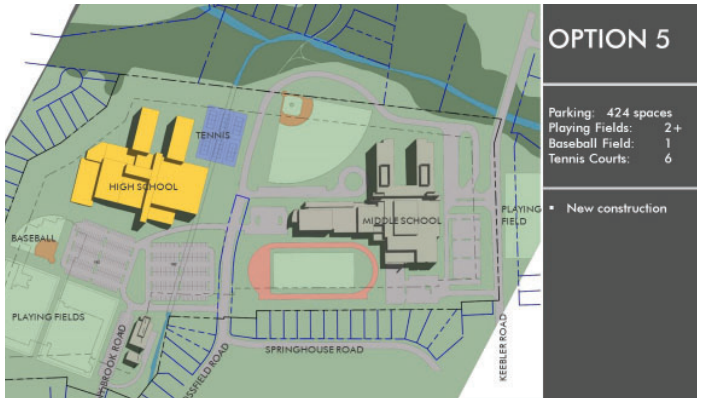
- Reuse of gymnasium and pool area
- New construction
- Parking deck with playing field above



OPTION 4

Parking: 520 spaces
Playing Fields: 2+
Baseball Field: 1
Tennis Courts: 6

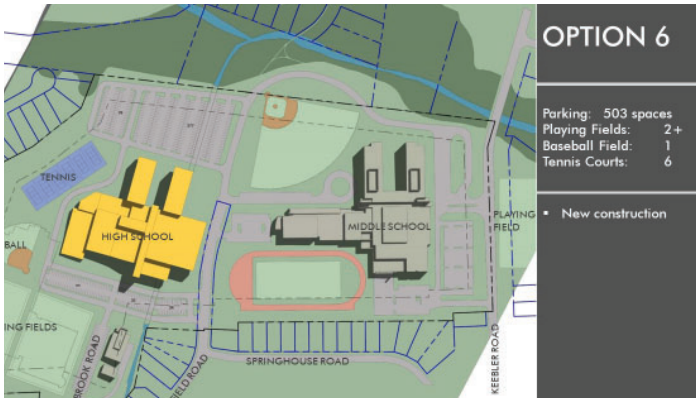
- New construction



OPTION 5

Parking: 424 spaces
Playing Fields: 2+
Baseball Field: 1
Tennis Courts: 6

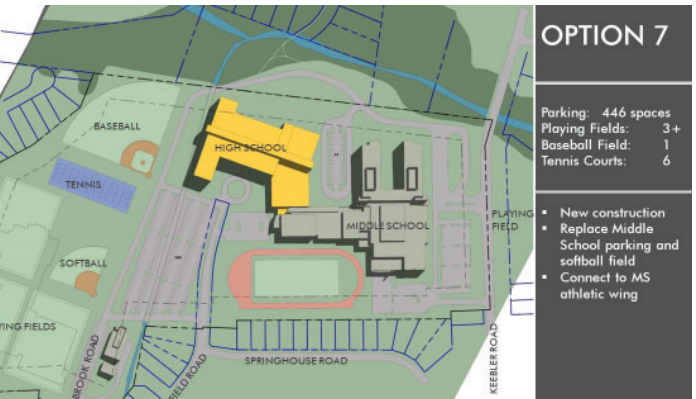
- New construction



OPTION 6

Parking: 503 spaces
Playing Fields: 2+
Baseball Field: 1
Tennis Courts: 6

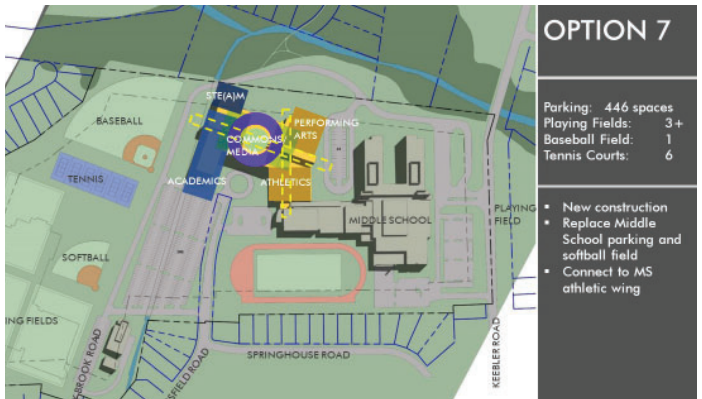
- New construction



OPTION 7

Parking: 446 spaces
Playing Fields: 3+
Baseball Field: 1
Tennis Courts: 6

- New construction
- Replace Middle School parking and softball field
- Connect to MS athletic wing



OPTION 7

Parking: 446 spaces
Playing Fields: 3+
Baseball Field: 1
Tennis Courts: 6

- New construction
- Replace Middle School parking and softball field
- Connect to MS athletic wing

CONCEPTUAL DESIGN PROCESS

Several options were explored to determind the best solution to locate the high school.

TOURING OTHER FACILTIIES WITH THE SCHOOL DISTRICT

PROGRAMMING, PLANNING, + DESIGN WORKSHOPS

CHALLENGES

The decision-making process involved determining whether to renovate the existing high school or construct a new facility. Adapting the program to the existing high school seemed promising, but after considering available sites, building the new school on the current site emerged as the most cost-effective solution.

To maximize site utilization on the 59-acre shared site with the middle school, district administration building, and stadium, the final concept aimed to create a secondary campus for grades 5 -12. The new high school would connect with the existing middle school, allowing middle school students to access advanced classes. Consolidating the building footprint on one side of the campus ensured the existing high school could remain operational during construction. Once the new high school was completed, the existing high school would be demolished, making way for athletic fields, parking, and circulation.

The site presented the challenge of an underground stream, which was turned into an opportunity. The building design incorporated a bridge over the stream, linking community spaces to the academic wing. Revealing the stream's outfall was positively received by the Department of Environmental Protection (DEP). Additionally, the site design included an outdoor teaching area and amphitheater, enhancing the educational program delivery.

OUTDOOR AMPITHEATER

FLEXIBLE LEARNING SPACES

LEARNING COMMONS IN ACADEMIC WING

AVAILABLE ASSETS

The limitations of the post-industrial building clearly hindered the true potential of the students in their ability to collaborate with other students. Double loaded corridors and stairwells became makeshift teaming spaces to work together in groups. UMASD strives to engage students and teachers in the most collaborative process which requires spaces that allow for that collaborative process to happen. The new high school facility does not limit learning to just the classroom, rather one that provides opportunities for learning that can take place anytime and anywhere in the school. The combination of flexible learning environments with classrooms adjacent to small and large group instruction areas to do individual or group work; learning stairs for group activities, presentations and workshops; and indoor/outdoor capabilities offer a variety of learning spaces to support the next generation learner.

VALUE OF PROCESS + PROJECT TO THE COMMUNITY AT LARGE

The UMASD is the nucleus of the community it serves. Therefore, it was important for the design of the high school to be a reflection of the community and to provide the foundation needed to prepare students for higher education and to successfully enter the work force upon graduation, ideally close to home. At key milestones throughout the design, meetings were held where interested planning partners from the community worked with the team to further advance the concept of school to work partnerships to help bridge the disconnect. The design of the school is meant to not only allow the students to explore a variety of career paths but offers a work-like environment that supports critical thinking, promotes collaboration, with a focus of research-based learning tailored to real-world trends in the workforce. The community overwhelmingly supported the design which reflected the area's corporate businesses and collaborative work environment. Ultimately, both the school and community will benefit from this collaboration, providing a facility that is poised to prepare students for career paths that will benefit the community at large.

JUSTICE, EQUITY, DIVERSITY, + INCLUSION

UMASD acknowledges the significant socio-economic diversity within the district, considering the various industries present, such as retail, pharmaceuticals, corporations, and business start-ups. The district's mission aims to create a challenging, caring learning community that inspires excellence and fosters lifelong learners who can realize their fullest potential. Understanding that home influences play a role in shaping students' aspirations, whether to follow their parents' career path or explore new opportunities, the district's vision for the new school is to establish an inclusive learning environment that promotes these values and enables all students to excel on an equal footing.

EDUCATIONAL ENVIRONMENT DESIGN

One of the most important EDUCATIONAL VISIONS + GOALS of the project was the motivation to move away from a 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 nontraditional learning environments and learning activities of "researching, developing, and presenting."

3-STORY LEARNING STAIRS SURROUNDED BY LEARNING COMMONS OUTSIDE OF CLASSROOMS

LEARNING STAIRS


DINING/CAFE AREA IN THE STUDENT COMMONS SPACE


TEACHER PLANNING CENTERS

SUPPORTING THE CURRICULUM

As part of the Visioning sessions that initiated the design process, eight (8) priorities were identified and described below. For each priority, the vision and goal are noted. How the priority influenced the design of the school is depicted as follows:

PRIORITY 1 – TECHNOLOGY INTEGRATION: 1:1 laptop program has significantly increased the amount of learning happening outside the traditional classroom.

VISION/GOALS: UMAHS had implemented a laptop program for all students before the pandemic, emphasizing the development of 21st century skills and the integration of technology in education. This enabled students to move beyond traditional classroom settings and lectures, allowing for project- and portfolio-based learning. However, suitable spaces were needed to support these innovative approaches.

RESULTING DESIGN: Spaces that promote the integration of technology and technology distribution include the collaboration spaces outside of the classrooms in the common areas serving as an extension of the classroom; and the learning stairs where students can work in and around the learning stairs together in groups or individually at the bar seating around the perimeter.

PRIORITY 2 – TECHNOLOGY INTEGRATION: 1:1 laptop program has decentralized access to research and library resources.

VISION/GOALS: The traditional library does not meet the current needs of the students. Research can be done anywhere with technology so the library needs to be reconfigured for modern use (less stacks, more varied seating, etc.).

RESULTING DESIGN: The high school library commons is designed to promote reading with a variety of workspaces and soft seating among the stack areas. Breakout rooms adjacent to the library for student collaboration in small group rooms with several seating options offer students' different ways to study and work together in teams.

PRIORITY 3 – TEACHER COLLABORATION: Emphasis on teacher collaboration on shared curriculum and common assessments.

VISION/GOALS: Continual efforts to get teachers outside the comfort of their class space to plan and collaborate with colleagues. Providing dedicated teacher spaces outside of the classroom.

RESULTING DESIGN: The teacher planning centers central to the academic areas are provided on each floor and each wing. The planning centers are professional workspaces and collaborative areas for teacher work.

INSTRUCTIONAL SPACE

STEAM LEARNING COMMONS

LIBRARY COMMONS

PRIORITY 4 – STUDENT-CENTERED INSTRUCTION: Use of classroom as instructional space geared towards student-centered collaborative activities.

VISION/GOALS: In the previous high school, the inclusion of teacher workspaces within individual classrooms resulted in the loss of instructional space dedicated solely to professional resources. The success of flexible seating and collaborative student seating arrangements was inconsistent. The challenge now is to maximize the available square footage for student instruction in the new school setting.

RESULTING DESIGN: The teacher planning centers allow for significantly less "teacher space" in each classroom. Flexible classroom design provides maximum instructional area when not designing the space around a stationary teacher's desk thereby allowing every wall of the classroom can be used for instruction.

PRIORITY 5 – STEAM: Need for appropriate learning spaces for Science, Technology, Engineering, the Arts, and Math.

VISION/GOALS: Improving the space design and showcasing these educational opportunities central to the academic wing. Although the former industrial arts spaces had been adapted to STEAM spaces in the original high school, these programs were remote and isolated in the building. Secondly, the underutilized makerspace was largely due to location in the old high school. Outdoor learning activities took place in parking lot areas which did not offer an ideal or safe venue.

RESULTING DESIGN: The STEAM programs are located on the lower level of the academic wing. Full height glass partitions from the collaboration areas into the STEAM spaces allow full transparency and provide a window for students to see what the other students are doing to generate interest in the programs. The STEAM labs have direct access to outdoor learning spaces from the Art and Technology/Engineering spaces. The makerspaces are part of the technology/engineering program and integrated into the curriculum.

PRIORITY 6 – LITERACY INITIATIVES: To enhance student engagement and motivation by empowering them to choose texts that resonate with their interests and preferences.

VISION/GOALS: The former library was the primary location for books. Attempts to bring reading into the classroom using a variety of bookcases and book carts was hindered by the availability of space.

RESULTING DESIGN: Built-in casework to provide subject area reading materials for classroom libraries and collaborative areas to display books of choice provide materials close at hand instead of on the other side of the building. Central common areas in the academic wings provide spaces for students to read in close proximity to the teacher and classroom.

INDOOR TRACK + COMPETITION-SIZED GYMNASIUM

COMPETITION-SIZED NATATORIUM

STUDENT COMMONS

PRIORITY 7 – PHYSICAL EDUCATION AND HIGH SCHOOL ATHLETICS: Increase in Life Fitness and Wellness in the physical education curriculum and strength training for student athletes.

VISION/GOALS: To improve participation in physical education and the arts. The students made the best use of a variety of disjointed gyms and fitness areas.

RESULTING DESIGN: The athletic complex provides students a wide variety of opportunities to support fitness and wellness. The main gymnasium can be divided into three separate teaching spaces or used as one large competition gym. An indoor track on the second level of the gymnasium provides a running service in a safe, conditioned environment. Separate spaces are designed specifically for life fitness and athletic strength training.

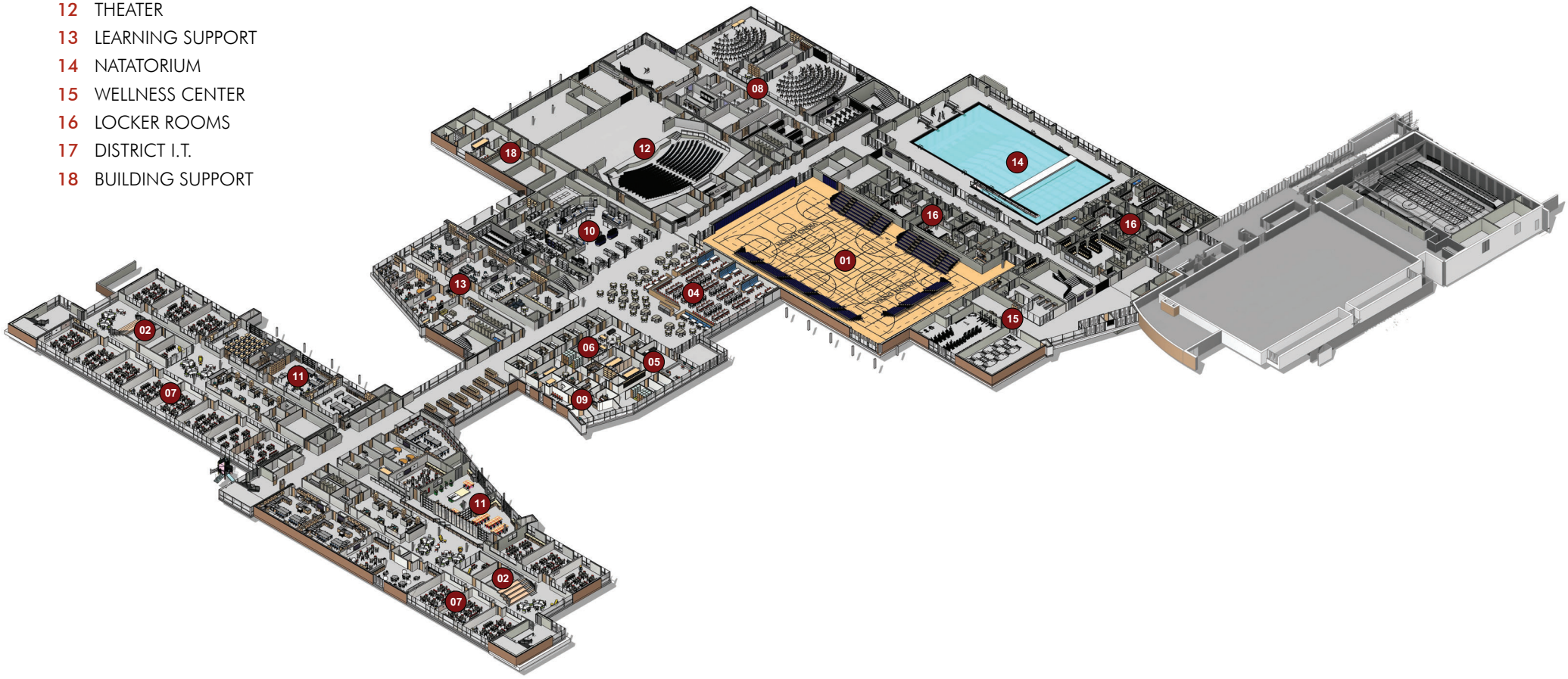
PRIORITY 8 – SPECIAL EDUCATION AREAS: Increased population of students with special needs that require life skills and job training.

VISION/GOALS: To provide a more inclusive environment for the special needs students. The old high school had small classrooms that did not need the instructional needs of the students, teachers and assistants.

RESULTING DESIGN: The location of the special needs classrooms are directly adjacent to the Student Commons area so that these students are "front and center" with the student body. The Life Skills suite provides full amenities to help transition students including academic classrooms, a functional apartment and a job training workroom that is connected to the school store. At the prominent intersection of the student commons link to the academic wing, the school store is run by the special needs students to provide real-world experiences. This opportunity for daily interaction with the other students' aides in the development of skill sets to help shape the student's future professional life.

1ST FLOOR PLAN

01 GYMNASIUM
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
12 THEATER
13 LEARNING SUPPORT
14 NATATORIUM
15 WELLNESS CENTER
16 LOCKER ROOMS
17 DISTRICT I.T.
18 BUILDING SUPPORT



SUPPORTING A VARIETY OF LEARNING + TEACHING STYLES

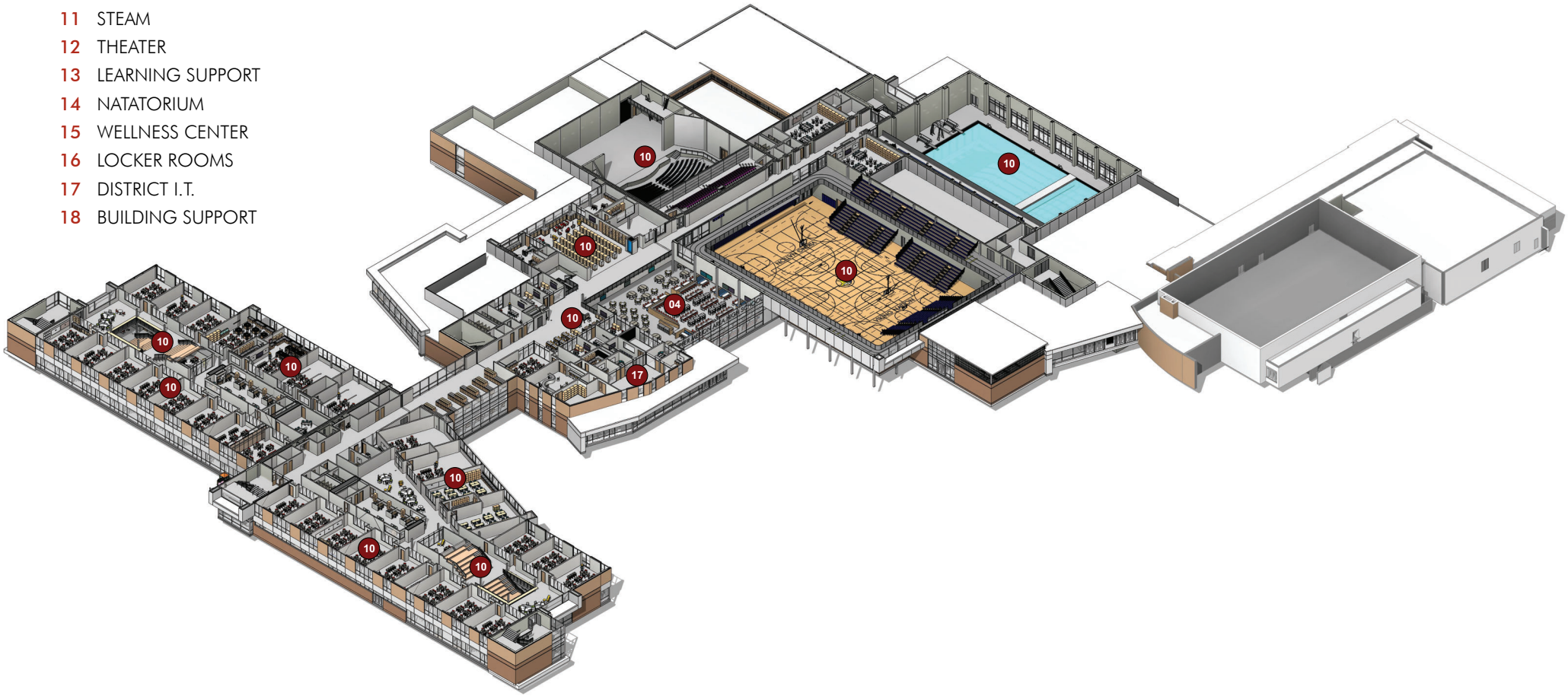
The main objective of the project was to create a building that fosters project-based learning and encourages students to apply their knowledge rather than relying on memorization. The new high school incorporates various collaborative spaces to support this educational approach. It features a 3-story academic wing that houses core academic programs, multiple project and team-based spaces, and 3-story learning stairs in each wing to support the school's STEAM curriculum. The design emphasizes transparency, promoting visual connections between teaming spaces and classrooms. Every area of the facility, including corridors and stairs, is designed as a learning space. Classrooms or learning studios are complemented by adjacent small group and large group instruction areas, catering to individual and group learning activities. With the integration of technology, these diverse spaces enable project-based learning and provide opportunities for local businesses to engage with students either in-person or remotely, offering real-world experiences.

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

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. Through the integration and access to technology, students take ownership of their learning, freeing up the teacher to do what they do best: guide the instruction. To accommodate the variety of instructional methods, the spaces must be agile to allow for "rapid reconfiguration" to shape and reshape the classroom to support the desired activities. As technology continues its rapid pace of change and our understanding of how each of us learns continues to evolve, flexibility and adaptability will be key to ensuring that all physical spaces will continue to evolve to support learning.

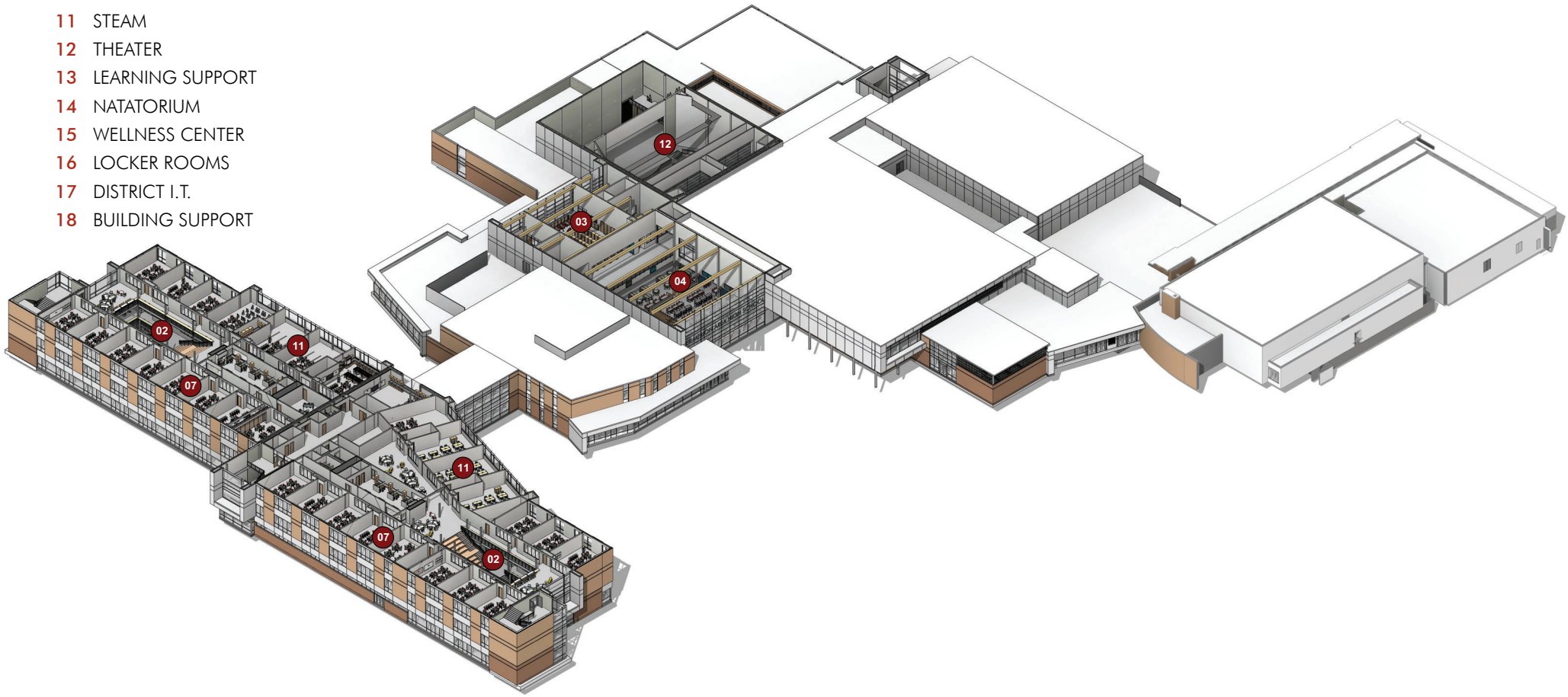


3RD FLOOR PLAN

01 GYMNASIUM
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
12 THEATER
13 LEARNING SUPPORT
14 NATATORIUM
15 WELLNESS CENTER
16 LOCKER ROOMS
17 DISTRICT I.T.
18 BUILDING SUPPORT

INNOVATIVE ASPECTS OF THE EDUCATIONAL ENVIRONMENT

The facility's design focuses on providing career-oriented and higher education-level learning spaces to prepare students for future success. Students are engaged in nontraditional learning environments that emphasize research, development, and presentation skills. The flexible design allows for personalized learning based on student aptitude and career interests, moving away from traditional content or age configurations. The student commons serves as a central hub for self-motivated learning, socialization, and collaboration, offering resources and break-out spaces. Connecting with the outdoors, the facility features an exposed underground stream, an outdoor amphitheater, and science-based teaching areas, providing opportunities for outdoor learning. The STEAM programs on the first floor are equipped with overhead doors, expanding students' capabilities to implement and test their work.



STUDENT COMMONS


LEARNING STAIRS + LEARNING COMMONS

RESULTS OF THE PROCESS + PROJECT

HOW THE PROJECT ACHIEVES EDUCATIONAL GOALS + OBJECTIVES

The new facility offers state-of-the-art spaces that support interactive and research-based learning activities, providing students with opportunities to engage in research, development, and presentations. The design incorporates flexible spaces that cater to diverse learning styles and promote movement and collaboration. The academic wing features a dynamic STEAM based core with learning stairs that physically connect different floors and also serve as an amphitheater for presentations. The two-story Student Commons serves as a central hub with dining options and spaces for socialization and support, including the Career and College Counseling Center. The high school is connected to the middle school, creating a shared “secondary campus” that allows middle school students to take courses across grade levels based on their interests. Additionally, the athletic facilities enhance wellness and promote physical activity for all students.

CUSTOM BRANDED WALL GRAPHICS PROVIDES IDENTITY + PRIDE

HOW THE PROJECT ACHIEVES SCHOOL DISTRICT GOALS

The district aimed to overcome building constraints by creating an environmentally friendly facility that would fit within the existing property. To achieve this, the new high school was connected to the existing middle school, allowing for shared facilities and benefiting students from grades 5 -12. By consolidating the building footprint in one area, there was ample space for parking, circulation, and athletic fields, which are essential to support the program.

A key goal for the district was to provide state-of-the-art spaces for student athletics and performing arts, enabling students to excel in these areas. The new facility includes a district gymnasium, pool, and auditorium with support spaces, offering students the opportunity to actively participate in sports and showcase their talents in the performing arts. This focus on athletics and arts contributes to the holistic development of students, nurturing their overall well-being.

To foster a sense of pride and identity, the district aimed to create a facility that strongly represents the Viking Nation, their longstanding tradition. From the moment one enters the school, the branding and spirit of Viking Nation are evident. Throughout the building, graphics featuring the Viking mascot and “Viking Nation” are prominently displayed, accompanied by motivational phrases. Wall graphics incorporating the school’s colors strategically reinforce the Viking brand and instill a sense of pride and belonging among students and staff. This branding initiative serves to honor their Viking heritage and cultivate a lasting legacy of school pride, embracing the motto “Once a Viking, Always a Viking.”

HOW THE PROJECT ACHIEVES COMMUNITY GOALS

UMASD’s goal is to create a welcoming and functional facility that serves both students and the community. Through a collaborative partnership, the community can utilize spaces such as playing fields, pool, gymnasiums, and performance areas. The primary areas of community interaction are the athletic and performing arts spaces. The main entrance at the Student Commons provides a dynamic and inviting experience with its two-story design, ample natural light, and exposed wood beams. This space serves as a pre- and post-event breakout area connected to the gymnasium and auditorium. Public spaces, including fitness and wellness facilities, are available for after-school use, separated from academic areas for privacy and security. The shared athletic fields, some featuring synthetic turf, accommodate physical education classes and community activities. UMASD’s design aims to create a positive and inclusive environment for students and community members alike.

STUDENT COUNSELING AND CAREER CENTER

CHILDCARE PROGRAM SPACES

UNINTENDED RESULTS + ACHIEVEMENTS OF THE PROCESS + PROJECT

The opening of the new high school has had a profound impact on the staff, as observed by the Principal, who noted a revitalized sense of school pride among the team. The incorporation of natural light, transparency in design, and connections to the outdoors have fostered a positive and uplifting environment for both students and staff. In contrast to the challenges and limitations of the outdated 1960s building, the staff is now liberated from such constraints. This newfound freedom enables them to wholeheartedly dedicate themselves to student learning and well-being, which remains their utmost passion and priority.

VALUE + GOOD STEWARDSHIP OF FINANCIAL RESOURCES

UMASD has a commendable track record of responsible financial management, evident in their status as the lowest taxed community in Montgomery County, Pennsylvania. They have strategically implemented incremental millage increases in their budgets well in advance of debt service obligations, ensuring a smooth transition for taxpayers. This approach allowed the district to construct a new elementary school, replace an outdated one, and accommodate growing enrollment while offering full-day Kindergarten. With the completion of the new high school, UMASD maintains its AAA rating from Moody's and continues to have the lowest tax millage rate in the county.

During the initial design process, various concepts were explored for building the high school on the existing property, which posed logistical challenges due to its limited space already occupied by practice fields, tennis courts, and other facilities. However, an opportunity arose to acquire an adjacent property, albeit at a high cost. After careful consideration, it became evident that purchasing and developing the additional property would lead to excessive expenses, potentially compromising the educational space or burdening the community with higher taxes. Thus, the decision to design the new school on the existing high school site was the fiscally prudent choice, ensuring financial stability while meeting the district's needs.

SITE PLAN

PHYSICAL ENVIRONMENT DESIGN

SITE PLAN

The new high school is connected to the middle school providing shared athletic spaces adjacent to the existing stadium and consolidates the overall building footprint on the site. This reduces the space and resources it would take to build a separate building on the site. The building area is on the opposite side of the site from the old high school which allowed it to remain occupied during construction. Parking and circulation patterns to provide a separation of bus and vehicular traffic for both schools was concentrated around the buildings. After the completion of the new high school and the demolition of the original high school building, the entire perimeter of the site was reconfigured to accommodate the athletic fields to support the program.

PHYSICAL ATTRIBUTES OF THE ENVIRONMENT

Materials were intentionally selected for functionality, durability, using classic finishes that will last for decades. High ceilings with glue-laminated wood beams in the student/dining commons and natatorium provide an aesthetically dynamic effect with acoustical panels provided for noise-level comfort, making the environment conducive for learning. The new high school is designed to use natural daylighting throughout for energy efficiency and to positively impact the quality of space for the individual. The visual and physical connectivity to all the various learning spaces in the classroom wings and the communal spaces promote flexible learning accessible from every space.

MAIN ENTRANCE

FITTING WITHIN THE LARGER CONTEXT OF THE COMMUNITY

Nestled in a densely populated residential community, the consolidation of the buildings allows for a large portion of the site to be dedicated to open green space for the athletic fields directly adjacent to the houses that surround the property. The entry point of the high school is tucked deeper into the site. There is a natural separation from the residential neighborhood on the other side of the stream that flows along the adjacent property line from the high school and middle school. The campus is near the other UMASD educational facilities and township facilities to provide venues and a wide variety of public activities for the community.

INSPIRATION + MOTIVATION

The high school has been designed to inspire student leaning and well-being. Every aspect of the programming, site utilization, space relationships and materials selections were meant to inspire and motivate the students and faculty by providing the tools for individual achievement to be their best selves. There was a great investment into the design of the academic areas to provide those opportunities to excel in all subjects' areas. Both the athletic and the performing arts program highlight student talents and achievement that is shared with the community as part of the events and performances throughout the year.

CAFE ACCESSIBLE THROUGH THE STUDENT COMMONS


2-STORY THEATER


2-STORY GYMNASIUM

ATHLETIC WELLNESS PROGRAM

SUSTAINABILITY + WELLNESS

The incorporation of green and sustainable design practices and materials, as well as energy-efficient measures, includes a level of sustainability and environmental sensibility to reduce the negative impact on the environment. The integration of systems and building envelope solutions will achieve lower long-term operating costs with improved life cycle returns for the building. This includes daylighting, systems that are energy efficient with long term life cycles and building automation. Low VOC containing materials, recycled materials including steel, acoustical ceiling tiles, and polished concrete floors with recycled glass aggregate contribute to the building's sustainability. Stormwater measurements, electric car charging stations, and daylighting the underground stream as part of an educational outdoor environment are a few sustainable site amenities.

THE MUSIC PROGRAM IS DESIGNED WITH NATURAL DAYLIGHT + ACOUSTICAL PANELS

NATURAL DAYLIGHT IS USED THROUGHOUT THE ENTIRE SCHOOL

ENERGY-EFFICIENCY WITHIN THE SOLUTION

ARCHITECTURAL

- The design and location of the classroom wing orientated 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 adding another finish material thereby reducing material use in this construction.

MECHANICAL

- The central plant uses high efficiency hot water heaters, boilers, and chillers to minimize energy usage while keeping the building comfortable.
- VFDs (Variable Frequency Drives) 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 (Chlorofluorocarbons) 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-Emitting Diode) 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 the central plant, air handling equipment, and interior and exterior lighting controls.

GLUE-LAMINATED WOOD BEAMS IN THE COMPETITION-SIZE NATATORIUM

TYPICAL STEAM CLASSROOM

DURABLE + GREEN MATERIALS RELATING TO MAINTENANCE

The new facility incorporates durable and environmentally friendly materials, prioritizing sustainability and reduced maintenance. The roofing system utilizes a gray membrane that reflects solar heat, contributing to lower heating costs and mitigating the heat island effect. The interior construction materials and finishes are sourced from recycled and renewable materials, including glue-laminated wood beams for the student/dining commons and natatorium, as well as structural steel, acoustical ceilings, and flooring materials. Additionally, the corridors and dining commons feature ground concrete with recycled content. These choices not only ensure longevity and durability but also align with the commitment to sustainable practices and resource conservation.

HEALTHY ENVIRONMENTAL ASPECTS

The several healthy environmental features are incorporated to prioritize the well-being and comfort of staff and students. The air handling equipment is equipped with carbon dioxide sensors in areas with high occupant density, allowing for the optimization of outside air intake based on actual occupancy levels, reducing energy waste. Extensive glazing throughout the building maximizes the use of natural light, promoting daylighting and creating a more comfortable and focused environment. This approach positively impacts the well-being of occupants. Moreover, low emitting VOCs (Volatile Organic Compounds) are specified for materials used in the facility, ensuring better indoor air quality and minimizing potential health risks associated with harmful emissions. These conscious design choices contribute to a healthier and more sustainable learning environment.




INSPIRING EXCELLENCE

RESEARCH | DEVELOP | PRESENT

UPPER MERION AREA HIGH SCHOOL

IMAGES TAKEN BY UMASD.
THE FIRST YEAR (AUG 2022-JUN 2023) OF UMAHS STUDENTS IN THEIR NEW HIGH SCHOOL.