

# Community-Centered Wellness Medically Integrated Fitness Facility and Pediatric Practice

SYNTHESIS IN ARCHITECTURE & DESIGN . A REPORT ON ARCH 431 STUDENT WORK . FALL SEMESTER 2017

### THE PENNSYLVANIA STATE UNIVERSITY ARCH 431 Architectural Design V Fall 2017

Community-Centered Wellness: Medically Integrated Fitness Facility and Pediatric Practice

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### **1** Introduction

Chronic diseases are the No. 1 cause of death and disability and the single greatest threat to our nation. They are increasingly prevalent across all ages and demographics. However, chronic diseases are often preventable or manageable through early detection, improved nutrition, regular exercise, lifestyle management education and appropriate treatment therapy. Moreover, according to a 2017 report from the World Health Organization, "climate change affects the social and environmental determinants of health — clean air, safe drinking water, sufficient food and secure shelter. Reducing emissions of greenhouse gases through better transport, food and energy-use choices can result in improved health, particularly through reduced air pollution."

During the fall semester of 2017 fourth-year architecture students were challenged to design a building that would engage community members in the pursuit of health and physical fitness. Emphasis was be placed on developing a holistic architecture — recognizing interconnected and life-sustaining relationships between food, energy, and water, people and their environment.

#### **Project Background**

Pottstown was once one of Southeastern
Pennsylvania's major employment centers. Today
economic development is a pressing need. The
borough is a waterfront town, and the Schuylkill River
and adjacent Schuylkill River Trail are significant
recreational and economic assets, which can
play a vital role in the re-development of the area.
Additional assets that can contribute to economic

re-development is an affordable housing stock and a historic downtown, with popular architectural styles, that are both in need of revitalization.

An additional need is to improve the health outcomes of the area's residents because Pottstown's residents. are more likely to be in poor health and experience barriers to healthcare relative to surrounding areas. Of particular concern is how socio-economic characteristics can have adverse behavioral health outcomes for children and the health of the community. There is currently a collective movement to promote and enhance the behavioral health of the youth population. In 2005 a public-private partnership called PEAK (Pottstown Early Action for Kindergarten Readiness) was forged to address the great need the school district saw in trying to best serve its children and families. With an unwavering mission that says: "every child in Pottstown will enter kindergarten ready to learn and achieve," PEAK has designed and implemented strategies that focus on community outreach, family engagement, quality improvement, kindergarten transition and health/wellness. The Pottstown School District, reaching 3,200 children and their families, is pushing the envelope to incorporate resilience and social emotional learning as cornerstones in their teaching practice. (COH November 2016)

#### Pottstown Area Health and Wellness Foundation

Our community partner this semester, Pottstown Area Health and Wellness Foundation (PAHWF), desires to help people improve their health and well-being by enthusiastically embracing a healthier lifestyle and thus, create a healthy dynamic community. They strive to achieve their mission by providing education, funding, resources, and programs that motivate people to adopt healthy lifestyles. The neighborhood connections PAHWF fosters enhance physical and emotional health by encouraging recreational opportunities and providing resources such as healthy recipes. The organization envisions a Wellness District contiguous with Pottstown's significant park system as a way to:

- · Improve the health of the community;
- Positively impact the image, reputation, and economic growth of downtown Pottstown;
- · Support recreational tourism initiatives.

As an extension of Pottstown Area Health and Wellness Foundation's mission and Pottstown's extensive recreation network, a Health and Wellness District is to be realized in cooperation with regional educational, medical and community organizations.



Reading Railroad Pottstown Station



Pottstown Borough Hall

#### **Project Site**

The Borough of Pottstown is located in the northwest corner of Montgomery County, Pennsylvania along the Schuylkill River. The character of the borough is primarily urban residential with commercial and industrial lands located adjacent to railroads, highways, and riverfront lands. The Pottstown heyday is evidenced by a number of National Register Historic Sites and Districts from this period. The Pottstown Parks and Recreation Department operates and maintains sixteen facilities, including a community center. The parks throughout the borough encompass 108 acres, with Riverfront and Memorial Parks comprising 89 percent of the area (Masterplan, January 2003). This region, part of the historic town, comprises Pottstown's GATEWAY Tourism and Recreation District (TREC). Attractions include the Colebrookedale Railroad Secret Valley Line, mini golf, the Carousel of Pottstown, and several downtown restaurants and eateries (Welcome

Brochure, March 2017). Other activities include a children's "spray ground," ball fields, and a BMX track where community events are held. A train station will be constructed for Colebrookdale Railroad that will include a community space.

The TREC area is envisioned to include a Medically Integrated Fitness Center and interactive Family Wellness Education and Pediatric Practice. There is an opportunity for this district to spark economic development and draw visitors, businesses, and future residents to Pottstown through continued design and planning that incorporates beauty, sustainability, and active living. A site to the west of the Memorial Park baseball fields, currently home to a Quality Inn and diner, has been identified for the Medically Integrated Fitness Center. Three additional sites located between Riverfront and Memorial Park hold potential for an interactive Wellness Education and Pediatric Practice





Downtown Pottstown, PA

The TREC district will provide facilities for special programs throughout the year for various ages of youth, college students, families and senior citizens. The district is envisioned to be inclusive; however mixing of populations can be intimidating in this environment. The basic program for the two primary facilities in the district is detailed below. Specific area and layout of spaces depend on the project concept. Moreover, opportunities for flexibility, adaptability, and

sharing or separation of common spaces are based on time of day or spatial layout. Other community health and recreation areas may be incorporated in the projects dependeing on the research and understanding of PAHWF and the Pottstown community's goals.



Potential site locations for the project at Pottstown, PA

#### **Medically Integrated Fitness Center (MIFC)**

An integrated wellness center is a destination of the community to access clinical services as well as wellness and prevention services, including exercise programs offered by a medical fitness component. In short, the medical fitness center embodies the concept of "exercise is medicine."

(Business Plan, 2014; 17)

The role of medical fitness centers in preventing and managing chronic health conditions and improving long-term clinical outcomes is increasingly critical. The Pottstown Area Industrial Development, Inc. Wellness and Fitness Center Phase II Business Plan outlines the "benefits, scope, program components, facility size, conceptual design, project cost, development timeline, and financial performance of the overall project" (Business Plan, 2014; 2). The primary components of the Wellness Center include a fitness center, office space for Pottstown Area Health and Wellness Foundation or other health-related businesses or organizations, a sports performance training area, education/conference space, and a healthy food and beverage area or café. The fitness area may also serve other area businesses, such as a student center and classrooms for the local community college and outpatient physical and occupational therapy and medicine clinics for local health centers.

The Wellness Center is comprised of a number of tenants who will collaborate on programming and share facilities, as appropriate, with a goal of improving the health of the overall community as well as their own constituents. (Business Plan, 2014; 2)

The Medically Integrated Fitness Center (MIFC) will

support PAHWF's mission, goals, and objectives to improve the health of the community in a comprehensive facility that offers a variety of fitness, recreational, and health education programs to community residents and area businesses, addressing the unique needs of a wide variety of individuals and fostering confidence in the community, especially "at-risk" populations.

#### **MIFC Program**

- Medical Fitness / Recreation Center including exercise equipment areas, indoor track, exercise studios, and support spaces such as locker rooms;
- Indoor Aquatic Facilities with a 25 meter (24' x 83') lap pool, and 20' x 42' warm-water exercise pool and support spaces (office, changing rooms, storage, and pool mechanical rooms);
- Outpatient Clinical Services: physical therapy and occupational health with check in/out, changing, and waiting area;
- Educational/Conference Space with no fewer than three classrooms;
- Lease Spaces for sports performance retail, PAHWF, and health services offices, babysitting services, and healthy food and beverage retail;
- Common Areas with Wellness Resources, incorporating lobby and reception area(s), conference rooms, facility support, and circulation.

#### Family Wellness and Pediatric Practice (FWPP)

There is a higher percentage of children under 5 years of age in Pottstown than in both Pennsylvania and the United States (Census, 2010). A new collaboration between Pottstown Memorial Medical Center and Nemours Children's Health System has enhanced the pediatric care to borough residents in Pottstown, PA. Parks and recreation settings have become increasingly recognized as an important part of the healthcare delivery system. There is an interest in building a pediatric care facility that is located adjacent to a large urban park in the borough. Children would not only have increased access to pediatric care, but have access to open green space at Memorial Park during their visit, providing additional positive health outcomes to children. This facility would also incorporate evidenced-based design features to create a healing environment. As the healthcare industry has shifted from a treatmentbased approach towards a more preventative and holistic approach to healthcare, there is increasing consideration for incorporating access to nature in the design process of healthcare facilities, and prescribing engagement in parks and recreation facilities and services, in order to improve health outcomes of patients. (Pediatric Practice Proposal)

In terms of building design, specific natural features could promote positive mood changes and feelings of relaxation in children and their caregivers. This may include: fountains with running water, artwork of natural environments, interactive nature displays, access to a garden, views of the park from patient rooms, and trees and plants (Whitehouse et al., 2001).

The proposed Pottstown Family Wellness Center and Pediatric Practice will be similar to the Byrnes Health

Education Center (https://byrneshec.org), "offering high-quality health education to youth, adults, educators, and corporations on-site and remotely through online learning and webcasting (Summary of Stakeholders). Unlike the MIFC, which is centered on fitness, the Family Wellness and Pediatric Practice is centered on preventative and sick-child care.

#### **FWPP Program**

- Wellness Welcome Area with strong connections to the park. Design space for active and passive/ quiet play and a library with reading areas for individuals and small groups.
- Interactive Children's Health Museum engaging and educating children about their bodies, health, and wellbeing in an interactive and fun environment.
- Education and e-Learning Facility includes "five teaching theaters that integrate interactive learning and teaching exhibits" for youth programs and adult education classes and conference spaces for tutoring and literacy/ language services.
- Pediatric Clinical and Child Abuse Services in a secure and nurturing environment.
- Pediatric preventative, sick-child, and wellness care (waiting area, check in/check out kiosk, clinical exam rooms, and staff/medical offices).
- Great Hall for Nutrition and Fitness will help visitors make healthy lifestyle choices by providing a place to eat and exercise in a fun and educational environment.

#### Resilience, Sustainability, and Code Requirements

The Wellness Center must integrate best practices for Resilient and Sustainable Buildings (RSBs) and provide for the necessary infrastructure to buffer the building from storms and power outages, serving the community as a place of shelter during disaster events. Projects will adopt LEED Resilient Design Pilot Credits.

The Well Building Standard is the "leading tool for advancing health and well-being in buildings globally" (https://www.wellcertified.com). Consistent with goals for the Wellness Center, "Well fosters a holistic formula for better health and wellness outcomes, leading to improvements..." WELL Building Standard™ (WELL) consists of features across seven concepts — air, water, nourishment, light, fitness, comfort, mind, and innovation — comprehensively addressing "the design and operations of buildings, but also how they impact and influence human behavior related to health and well-being (http://standard.wellcertified.com/features)."

All public and work spaces must be humanely designed incorporating access to exterior views, controlled day-lighting, and natural ventilation. All public spaces are to be fully ADA accessible and Universal Design compliant. Buildings must comply with local zoning requirements, including those for lot coverage. Egress and building design must adhere to applicable International Energy Conservation Code (IECC) 2009 or higher; International Building Code (IBC) and local regulatory requirements.

The sites identified for development have the potential for flooding. Comply with local zoning associated with floodplains. All equipment and materials must be protected from flooding and

habitable spaces located above the FEMA designated base flood elevation (BFE).

The National Flood Insurance Program defines minimum requirements for floodproofing of non-residential buildings (NFIP-technical Bulletin 3-93). Compliance must include:

- Assuring that buildings are watertight or substantially impermeable to the passage of water to the floodproof design elevation;
- "The building's utilities and sanitary facilities, including heating, air conditioning, electrical, water supply, and sanitary sewage services, must be located above the BFE, completely enclosed within the building's watertight walls, or made watertight and capable of resisting damage during flood conditions;
- All of the building's structural components must be capable of resisting specific flood-related forces" outlined in Bulletin 3-93.





### 2 Community Workshops

This project was supported through a collaboration between the Hamer Center for Community Design at Penn State (Hamer Center) and the Pottstown Area Health and Wellness Foundation (Pottstown Foundation). The fall 2017 collaboration was initiated on August 29 with a project introduction webconference between the class and foundation. The Arch 431 students and faculty were in University Park, PA, while representatives of the Pottsptown Foundation communicated from Pottstown, PA.

On September 14, 2017, students and faculty visited the project site and attended a workshop in Pottstown to hear the Pottstown community partners' perspectives on the vision for the community center and to share the initial design ideas. The Pottstown Foundation made a public presentation on October 17, 2017, at the Hamer Center Coffee Hour — an

event at the Stuckeman School — on health, wellness, and community. The presentation was followed by a research development luncheon with interested faculty members and a project workshop conducted with the architecture studio course students.

On November 16, 2017, a workshop with Pottstown representatives took place at Pottstown. More than thirty Pottstown professionals, decision-makers, and community members attended presentations of projects by the student teams and participated in discussions to provide the students with feedback on their work. The semester concluded with presentations of the student work at Penn State, University Park, on December 7, 2017.



Pottstown Foundation presentation at the Hamer Center Coffee Hour





Pottstown Foundation community partners at Stuckeman School on October 17, 2017



Project site visit on September 14, 2017



Workshop at Pottstown on September 14, 2017



Workshop at Pottstown on September 14, 2017



Student project presentation to Pottstown professionals, decision-makers, and community members on November 16, 2017

### 3 Final Exhibition and Design Review



Student team presentation during final design review on December 7, 2017



Howard Brown, project reviewer from Pottstown Foundation



**Project reviewers** (from left to right): Anthony Vischansky, Benay Gursoy



David W. Kraybill, Pottstown Foundation President



Student team presention during final design review

### 4 Student Projects



### THE POTTSTOWN HUB

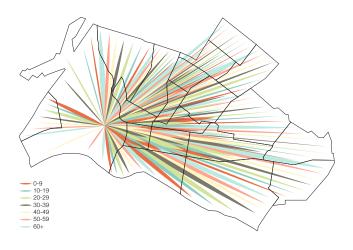
Mieke Kissick, Jordan Marett, Dave VanLandingham



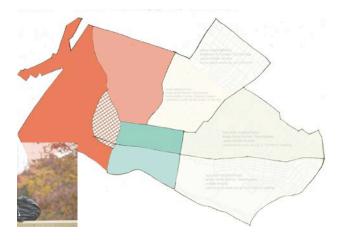
Based on Pottstown's current need for a community space for members to come together, we hope to create a building that promotes interaction between Pottstown's neighborhoods, thus encouraging a healthy environment for all its residents. Expanding on the idea of a medically integrated fitness center, we aspire to develop a building that promotes systemic lifestyle changes within the community members, specifically families with children, college students, and the elderly—while taking conscientious measures to not ostracize those of a lower income; this building will relate to preventative treatments in the way that we emphasize not only exercise and its benefits, but also the importance of growing, cooking, and eating food. In this way we hope to generate a healthier environment combined with a space that economically drives the Pottstown borough.

### **URBAN SITE STRATEGY CONCEPT**

When speaking with the community and analyzing the site, we found a consistent need in the Pottstown community for a place of connection. The MIFC program lends itself to many different age and people groups. By creating a building that brings together all of the Pottstown community, we hope to engage everyone and revitalize the area.

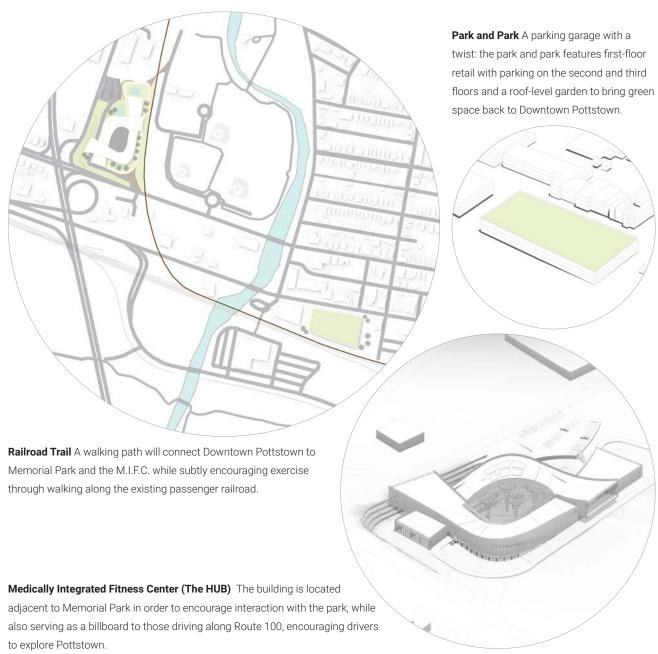


**Age Distribution Diagram** After an extensive analysis of age distribution within the Pottstown community, we wanted to emphasize creating a space that brings all age groups together. This later influenced our selection of program elements that can better bring together Pottstown residents of all ages.



**Site Selection Diagram** After analyzing the economic status, travel preferences, housing types, and other characteristics of each neighborhood, we found that one of the sites could serve as an overlapping space between zones, therefore promoting a central hub for Pottstown residents to come together.

### **SITE PLAN**



## The HUB Health and Unity Building

#### Required Program

- Medical Fitness / Recreation Center
- Indoor Aquatics Facilities
- Outpatient Clinical Services
- Educational/Conference Space
- Lease Spaces
- Common Areas
- Parking

#### **Desired Program**

- Farmer's Market Space
- Greenhouse
- Public-Accessed Classrooms
- Healthy Cafe
- Community Garden/Green Area
- Nutrition/Cooking Class Space
- Professional Development Spaces

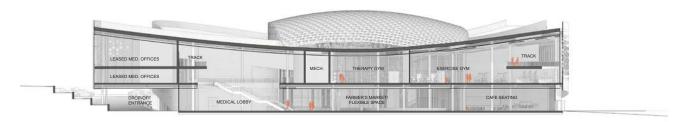






**Plans** The first floor features open communal spaces with two lobbies, one for medical and one for fitness, and an aquatics wing. The second floor contains more fitness and medical spaces. The partial third floor is a track as well as additional medical offices.

### **SECTIONS AND ELEVATIONS**



**Section Through Medical Lobby** The overlapping spaces of the two forms creates the double height lobby cores. The medical wing flows into the fitness program, forming a progression of levels of exercise spaces.



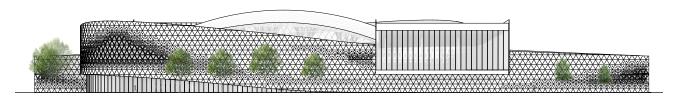
**Section Through Fitness Lobby** The fitness wing extends off the double height fitness lobby, opposite the aquatic wing. Divided up into separate studios, these spaces all overlook Memorial Park.



**Section Through Greenhouse** The central greenhouse acts as the main circulation core for the community, creating visual connections between spaces. The atrium brings natural light and fresh air into all spaces surrounding it.



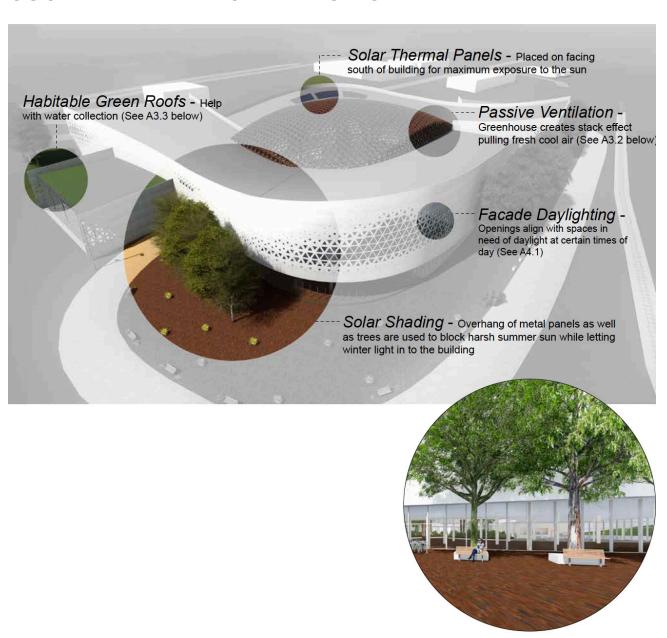
**South Elevation** This view faces King St, one of the main roads into Pottstown. The facade is formed from triangulated metal paneling that wraps around the building, peeling up to expose the entrances.

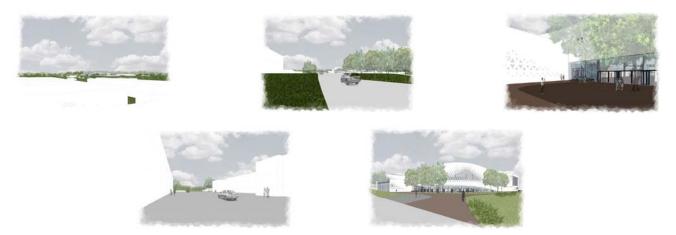


**East Elevation** This view faces Memorial Park, home to many athletic events in Pottstown. The triangulated window system follows the form and program of the building while also relating to daylighting.

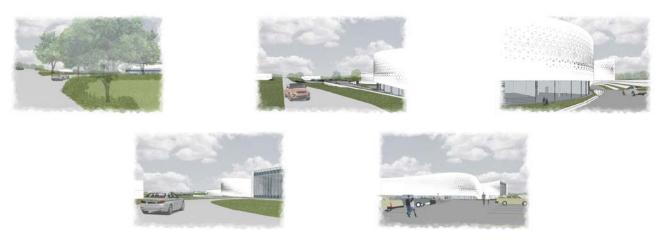


### **SUSTAINABILITY STRATEGIES**





**City Storyboard** Entering from within dowtown Pottstown, one can see the HUB beside Memorial Park. An iconic structure, it attracts people to its site and welcomes pedestrians to its southern entrance.

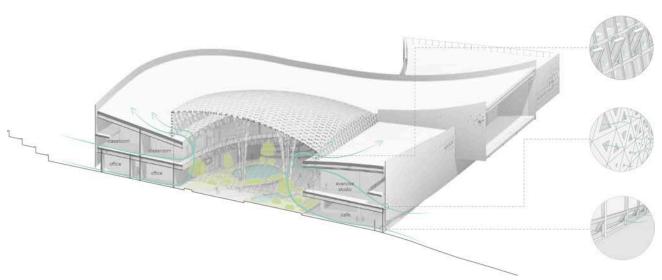


**Highway Storyboard** Traveling Route 100 into Pottstown, drivers get a glimpse of this large medically integrated fitness facility. They have access to the parking lot located north of the building or have the ability to drive down to the drop-off location into the medical building lobby.

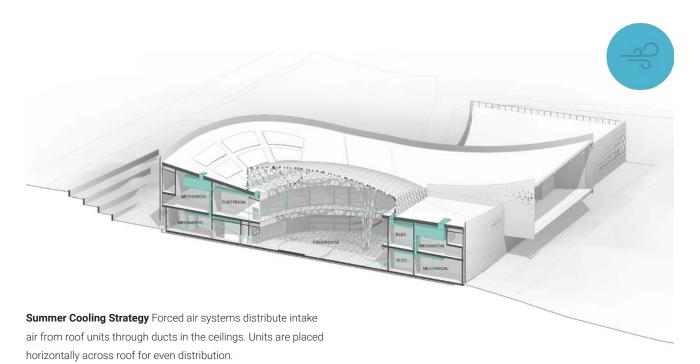
### **AIR**

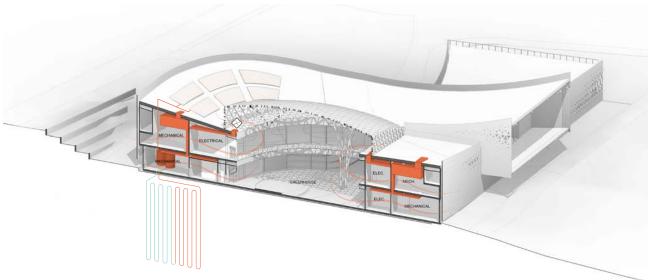
Many passive benefits influence the form of the building, specifically the incorporation of a greenhouse. Because the greenhouse serves as a programmatic center point to the building, the energy systems reinforce this idea by using the central space to the fullest. The stack effect created by the central greenhouse serves to passively ventilate the building and minimize cooling needs during summer months.

Inversely, the greenhouse helps preheat intake air during the summer, therefore reducing cooling needs. Forced air systems are used when passive cooling and heating is insufficient. The combination of the linear ribbons wrapping around a central court emphasizes the strengths of both systems, therefore reducing inefficiencies and excessive runs.



Passive Ventilation System During summer, fresh air intake occurs at low windows of exterior-facing rooms. Warm air pools at the top of the greenhouse, creating a chimney effect, and air is exhausted through operable, automatic windows. In the winter, the system is reversed and air intake occurs at the greenhouse, where the air is then passively preheated and then moved in to smaller spaces. The greenhouse vegetation serves to filter the air as well to create a healthier biophilic environment.





**Winter Heating Strategy** Forced air handling units are also used for heating system. A ground-coupled heat system aids with domestic hot water within the building.

### **WATER**

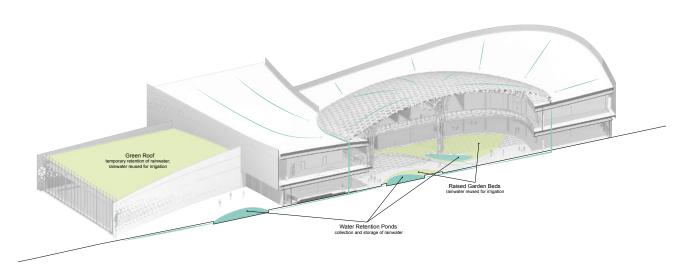
The building's greenhouse serves as an emphasis point for water retention and preservation. The roof is sloped inwards to direct rainfall towards a series of gutters, which then collect in the greenhouse's interior pools. These pools irrigate the interior vegetation, including an indoor year-round greenhouse. Exterior rainwater collects at a retention pond on the north end of the building, which helps passively cool the

building during the summer when the northwest wind passes over the pond. This exterior pond also aids the small exterior space at the north end to become a more calm environment, whereas the building's south end features a large plaza. Additionally habitable green roofs are used as both a water retention feature and as spaces to create interaction between building users and their exterior environment.







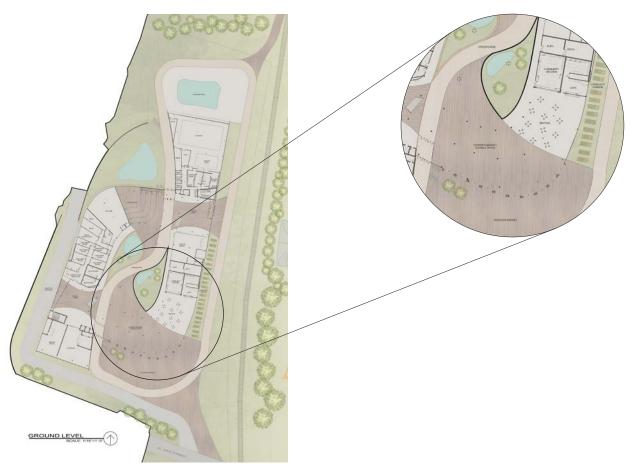


**Water Rentention** The roofs are sloped to capture rainwater and pool it in a series of retention ponds inside and outside of the building. The exterior pond collects rainwater from outside of the building and the interior ones irrigate greenhouse vegetation.

### **NOURISHMENT**

In emphasizing the process of growing, making, and eating food, we hoped to positively influence the community's overall health and well being. We placed many food-oriented programs in the front pedestrian entrance of the building. Additionally we added a greenhouse and farmer's market to the original program in order to aid in the Pottstown Foundation's mission to create a healthier lifestyle through healthier foods. A community kitchen located

next to the greenhouse makes healthy cooking available to all, and a healthy cafe provides access to food quickly if needed. This food-centric area of program functions in both winter and summer, with the community garden located both in planting beds on the outside of the building and within the greenhouse. The farmer's market space additionally can seamlessly transition from exterior to interior space if need be.







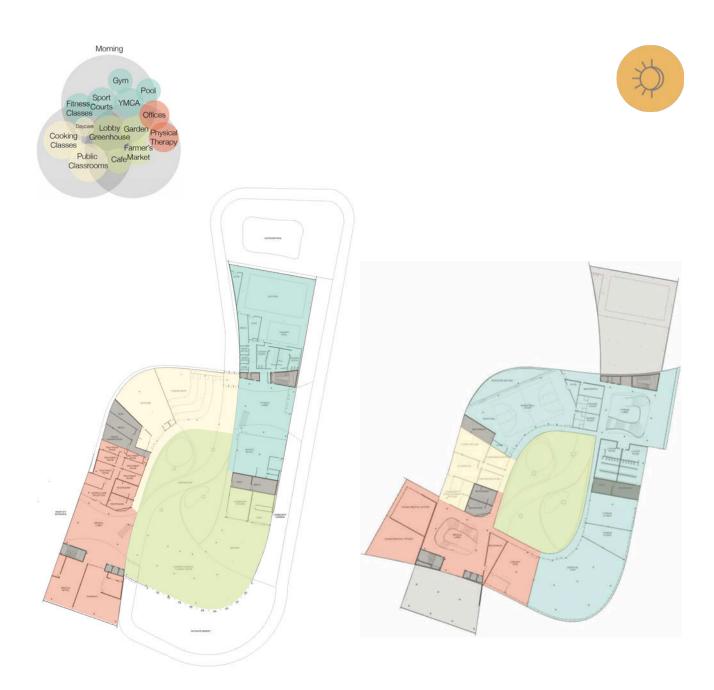
THE POTTSTOWN HUB 37

# **LIGHT**

Daylighting greatly influences the layout of program within the building. We developed a series of diagrams and studies to help inform our building's daylighting scheme, which benefits users in three ways. First it seeks to activate zones of the building according to their relationship to the sun, aligning with our concept of bringing together people based on how they move throughout the day. Secondly,

it minimizes uses of artificial lighting and reduces energy consumption. Thirdly, the natural light emphasis in the building helps promote the user's natural circadian rythmn, thus improving overall wellness of occupants. These diagrams helped us develop our initial studies that later became the building's overall form.





**Program Layout** These plans demonstrate which areas of the program are laid out where, with red being medical; blue, fitness; yellow, community; and green, food-related. These programs were laid out so that in their main time of use they are where the sun will be shining.

THE POTTSTOWN HUB 39

#### **FITNESS**

The program of a medically integrated fitness center obviously in some part requires an emphasis on physcial activity. Our building design incorporates many fitness facilities, such as a gym, occupational therapy, and sports area with a basketball court, rockwall, and smaller raquetball-sized courts. Additionally, we emphasize passively exercising through our parking garage scheme (seen in the site

plan earlier) and through our walking path on the building's ground floor level. The building connects to a greater urban-scale path system and to the trails of Memorial Park. These gestures all encourage building users to both exercise and experience their beautiful surrounding environment in the Pottstown community.



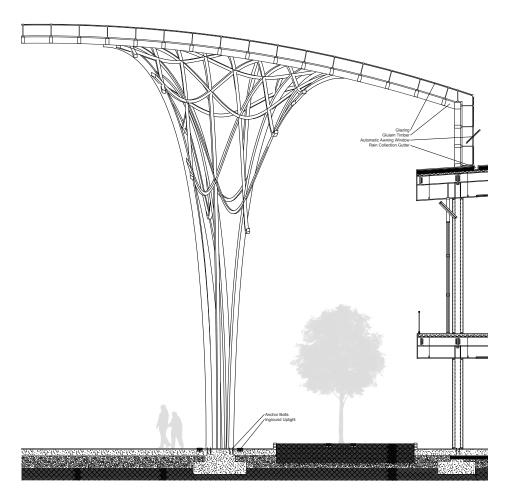


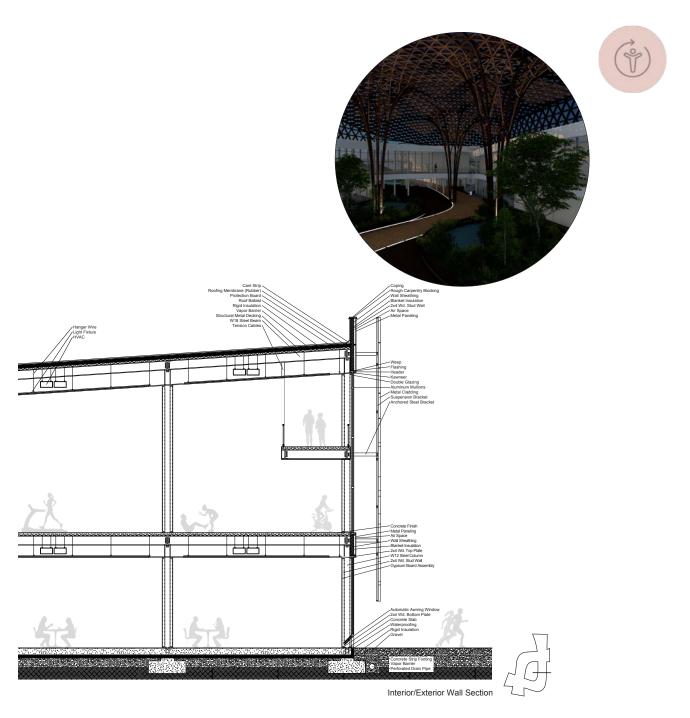


THE POTTSTOWN HUB 41

# **COMFORT**

The systems of the building strive for efficiency while providing amenities. With the fitness, medical, and educational facilities surrounding the large atrium full of greenery, one experiences a sense of relaxation. The incorporation of automatic awning windows allows for fresh air to flow through the spaces, supplying users a clean experience.



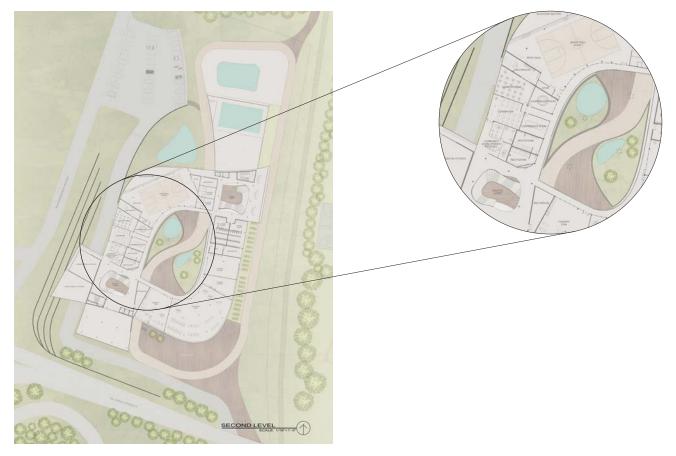


THE POTTSTOWN HUB 43

#### **MIND**

The psycological experience within the building will differ from person to person; however, we intended to create an experience at which people feel both comfortable and connected. The greenhouse serves as both a pleasant green experience while also serving as the communal meeting point for Pottstown residents. The fitness lobby cantilevers and reaches towards Memorial Park, emphasizing one's relationship to the park and the greater Pottstown area. Lastly the building serves to help

residents better themselves. The professional development wing of classrooms and meeting spaces is intended for study spaces, lectures, meetings, and any sort of community event. Resume writing, job placement, and other sorts of personal advancement programs are housed within these spaces to help those less fortunate within Pottstown get back on their feet. In this way, the building can serve the whole community, not solely a select group with enough means.







THE POTTSTOWN HUB 45





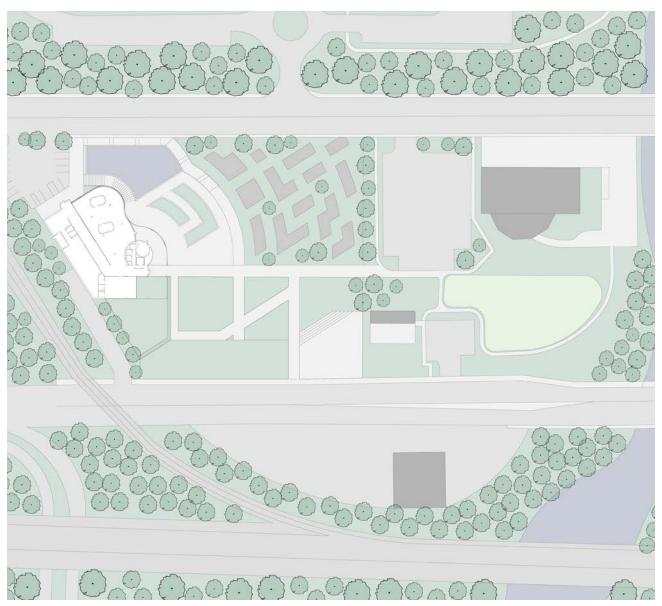


# THE POTTSTOWN CHILDREN'S CENTER

Alyssa Clayburn, Kaila Hanlin, Suzanne Varnell

Our purpose is to create a place to eat, exercise, and enjoy healthy living, as well as promote health education, provide wellness care, and foster a nurturing environment for children from all backgrounds. This is accomplished in a way that encourages kids to learn while they play and makes wellness a fun and interactive experience for the whole family, regardless of abilities, so that families in the Pottstown community develop healthy living habits that they can apply to their everyday lives outside of the wellness center.

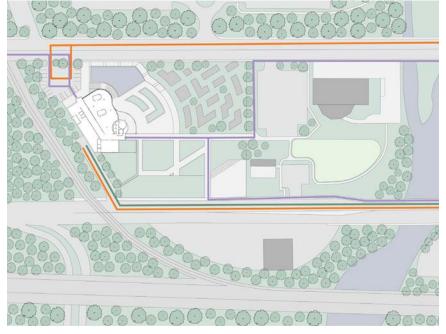
# **SITE DESIGN**



**Overall Site Design** The site is divided into five zones, each dedicated to a different sense. For example, the smell garden includes different herbs, and the sound "garden" features a waterfall wall that isolates the site from the busy roads and railroads.

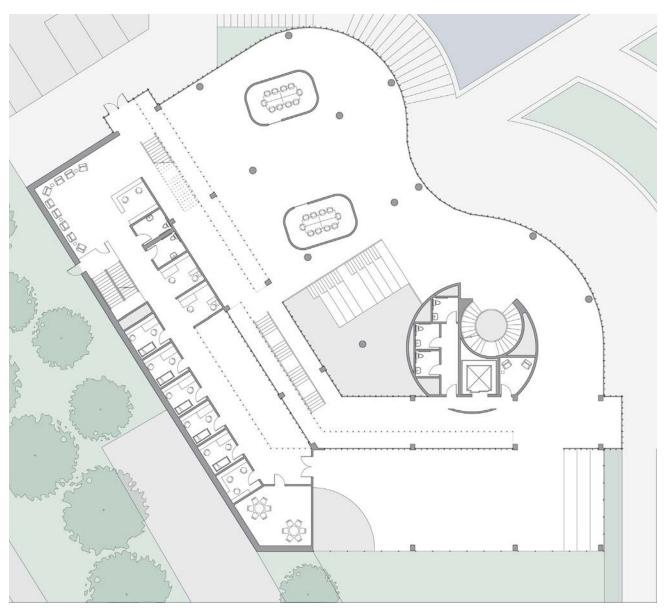


View of Sound Garden The waterfall wall helps to acoustically isolate the site from the busy road and the train that passes by from time to time. It also helps with water retention and extra water is collected to irrigate the multiple gardens located on site.

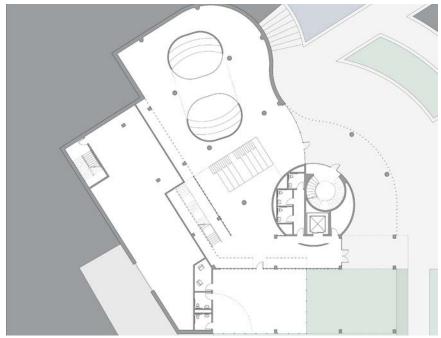


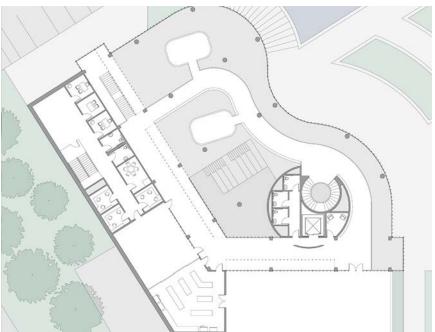
**Site Access** The site is accessible from both High Street and King Street to service and emergency vehicles. Cars can park on the northwestern part of the site; additional parking is located off site, and multiple new crosswalks have been added to aid those walking from off site.

# **BUILDING DESIGN**



**First Floor Plan** This floor features an open, flexible play space, small classrooms, the primary clinical space, and a group therapy room. There is also a small set of teaching stairs which can be used for a multitude of programs.





daycare, teaching stairs, teaching theaters, and direct connections to the exterior gardens. It also features outdoor play space for the daycare, in addition to the flexible interior play space.

**Second Floor Plan** This floor includes the Mission Kids offices, exercise space, a teaching kitchen, a community garden, and a suspended walkway with a library.

# **BUILDING DESIGN**



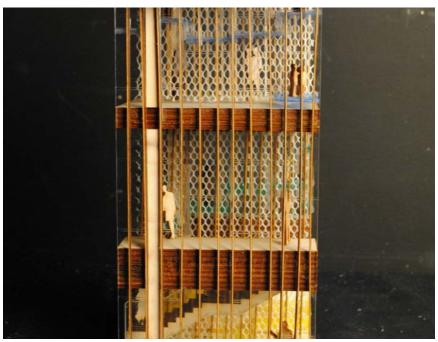
**Longitudinal Section** This section features the main circulation space. Children can climb up, while their parents take the stairs that run next to the climbing space. The platforms are color-coded to help children locate themselves in the building.



**Transverse Section** This section show off the duality of the building, bisected by the circulation spine. Also visible are the climbing platforms, which are color-coded by floor.



**Model of Climbing Wall** As previously mentioned, the children can climb up the platforms as their parents walk up the adjacent stairs. This promotes physical activity in children and their parents, and provides a way for kids to learn about their bodies in space.



Model of Spine Enclosure The wooden slats serve a multitude of purposes. First, they provide a structure for the climbing platforms to attach to. They also serve to provide shading from the hot summer sun, preventing the building from overheating.

#### **AIR**

Because a portion of the program deals with treatment of sick children, the circulation of air is a very important part of this building. One way this was addressed was through the use of glass to separate the clinic play space from the rest of the building. This allows the children to have the visual connection to the main play space, but not infect the air. The mesh implemented between the rest of the play space allows air to circulate, in addition to allowing

communication between the children in the play space and their parents in the main circulation space next to them.

The climbing wall is also the main air circulation space throughout the building. The spine capitalizes on the northwest winds, using them to flush the stale air out of the building and bring in fresh air. This is accomplished using operable windows on the upper portion of the spine, which allow air to circulate.

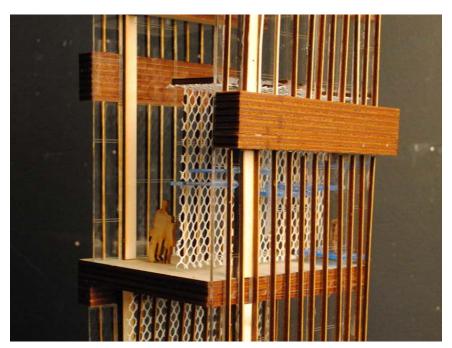


**Model Showing the Separation in Play Space** This separation allows sick children to still play and interact visually with the rest of the building without infecting the healthy children.





**Section Showing Ventilation Systems** The northwestern winds can be seen entering the building in the top right corner of the building. The red and blue arrows in the building represent the warm and cold air, respectively moving through the building.



**Model Showing Playspace Mesh** The mesh allows for air circulation between the play spaces and the main circulation space. The mesh also allows for easy communication between parents and children.

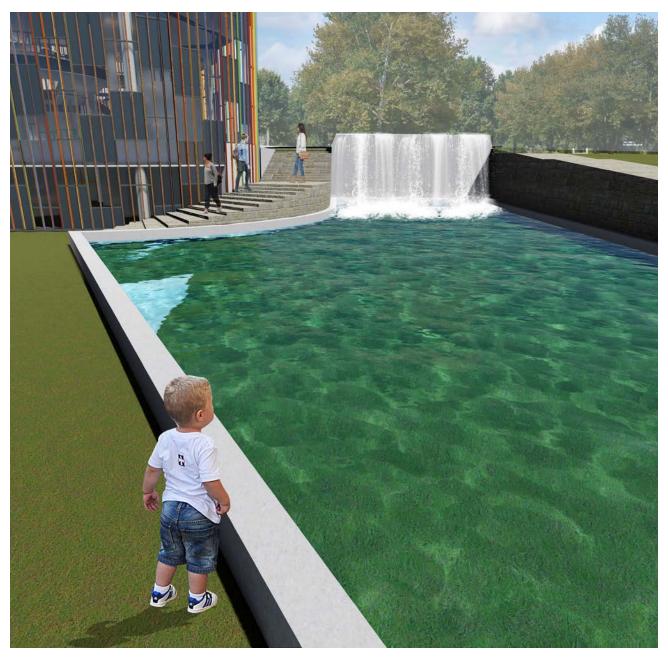
#### **WATER**

The building is located on a floodplain, so bioswales are utilized as a stormwater management strategy on the eastern side of the site. This helps to manage the amount of stormwater that reaches the building.

Another way water is utilized is for ventilation. A water feature is placed on the north west end of the site toward the prevailing winds. It will help cool the

air before it enters the building for natural ventilation.

This water feature is also used for the sound garden, which helps to isolate the site acoustically from the busy highway and rail line nearby. The pool also retains water, which drains into a filtration system to be used to irrigate the gardens throughout the site.



**Rendering of the Sound Garden** The waterfall feature allows for an auditory isolation from the busy streets. It also helps with water retention, and provides an irrigation system for the gardens throughout the site.

# **NOURISHMENT**

Making a place where healthy eating habits could be formed was one of the largest goals of the project. This is accomplished in a few different ways. First, there are multiple gardents throughout the project. There is a teaching garden near the daycare, for kids to learn how their food is made. An herb garden allows children to experience new scents, and also

can be integrated in the lessons. A final community garden is located on the occupiable roof next to the kitchen. This allows community members to grow their own food, then go inside and learn how to make healthy meals with it. These are lessons that anyone of any age can take with them from the center and apply to their daily lives.



**Site Design Model** This model shows the site design, including the multiple teaching gardens and herb gardens. Also shown is the occupiable roof where the community garden is located.



**Rendering of Teaching Gardens** These gardens' proximity to the daycare makes it an optimal garden for teaching children about how food is made. There is direct access from the play yard for the daycare, but this can be closed off if need be.

# **LIGHT**

Light is also an important part of the building. The decision to make the circulation spine glass presented both challenges and opportunities. The glass core brings ambient light into the center of the building, preventing too much glare from direct sunlight. However, it also creates a lot of glare. Thus, the wooden slats were added to cut down on some of the glare from the sun. Windows were strategically

added to make sure all of the rooms, except those that specifically do not need light, such as the bathrooms, received some light. For example, the exam rooms were given high windows so that the required privacy was still provided, but natural light also entered the building. Colored glass panels are also used to create a different effect in some of the children's play spaces.

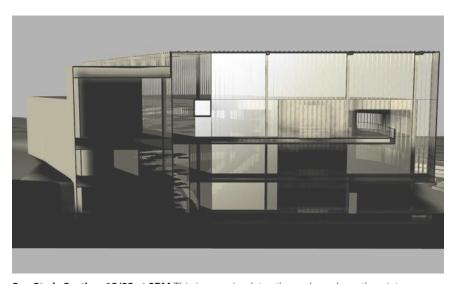


**Rendering of Spine During Day** The glass core creates a bright, playful circulation space. The addition of the wooden slats prevents too much direct light from entering the space and overwhelming occupants with harsh lighting.





**Sun Study Section:** 6/22 at 3PM This image simulates the sun's angle on the summer solstice at 3 PM. Minimal direct light is entering the building, minimizing both glare and heat gain.

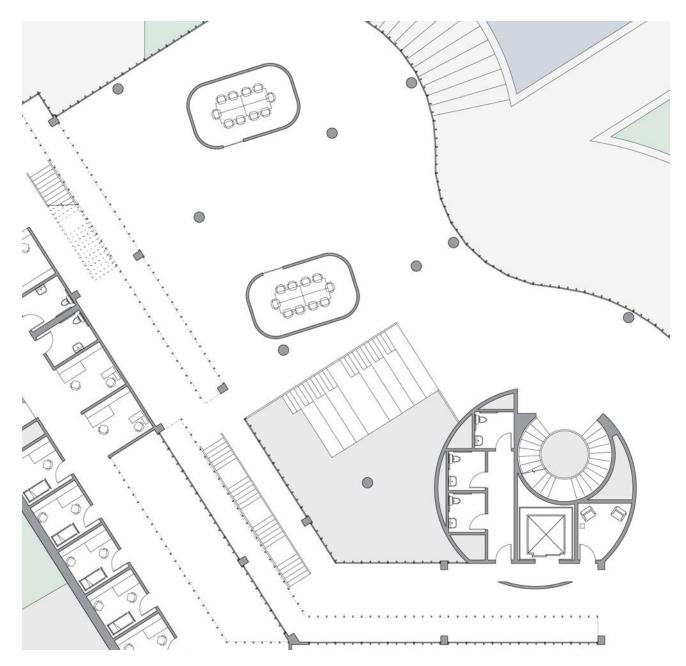


**Sun Study Section: 12/22 at 3PM** This image simulates the sun's angle on the winter solstice at 3 PM. Maximum direct light is entering the building, providing heat and light during the cold winter months.

#### **FITNESS**

One of the main ways fitness was addressed was through the circulation spaces in the building. While the elevator is in a convenient location for those that must use it, it is hidden behind a wall, making the stairs visually more present and more inviting. There are also multiple types of staircases, presenting different spatial and physical experiences. For example, the primary stair presents a very light, open experience, and provides a different experience

depending on user. Children can climb up colorful platforms, while their parents climb the warm, wooden stairs next to them. Another staircase, this one circular, provides a simultaneously heavy and light experience. The hope of creating multiple exciting staircases is that occupants will be subtly encouraged to use the stairs if they are physically able.

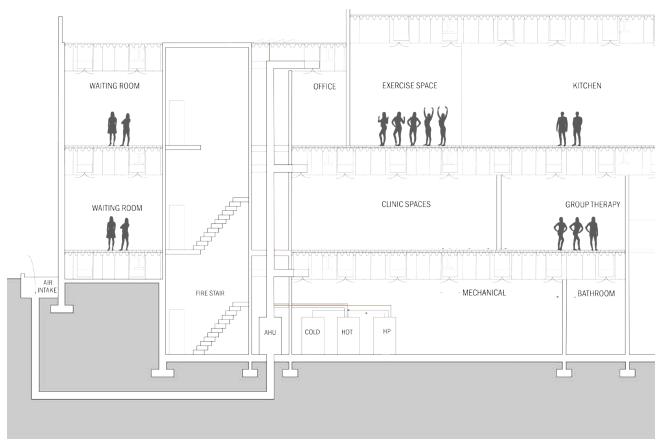


**Partial Plan Showing Circulation** The elevator is blocked from view using the partial wall, while the stairs are out in the open and celebrated. This will encourage physically able users to take the stairs. The climbing areas are also seen outlined in the wooden slats

#### **COMFORT**

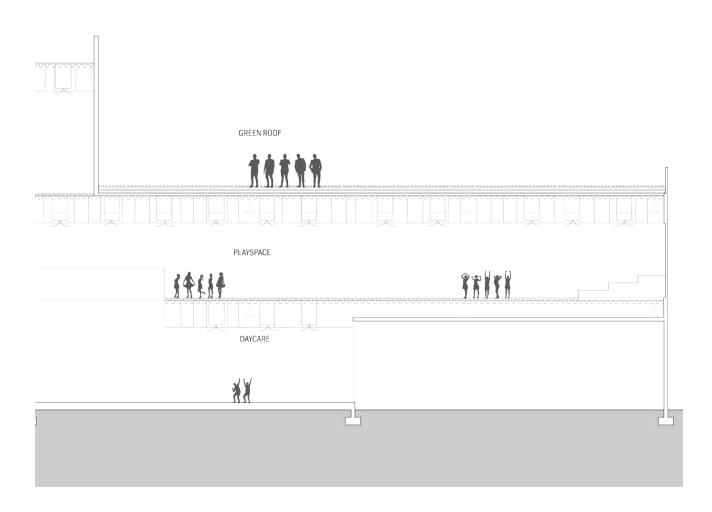
Comfort, especially thermal comfort, was a primary concern of the building, and quite a few challenges arose in this category. First of all, creating a thermally comfortable space in the circulation core was a challenge. This was solved in a few ways. First, slats were added to prevent too much sunlight from entering the building. Second, operable windows were added to the top of the core, allowing the hot

air to escape the building. Another challenge was how to make occupants of all ages comfortable in the building. One way this was solved was through the use of radiant heat flooring. This creates a warm, welcoming environment for kids to crawl across, instead of cold concrete. It also allows for heat to rise from the floor, creating a thermally comfortable space in all conditions.



**Technical Systems Section** The section through the floor buildup shows the radiant heat system that helps to create a thermally comfortable environment.





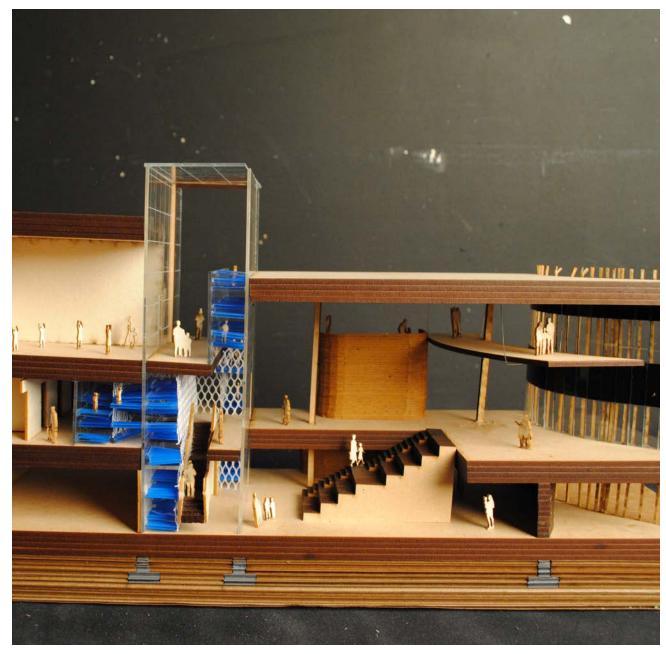
#### **MIND**

The building features many elements that focus on the mind of the user in addition to the body. One such feature is the sensory rooms, located on the first and second floors. These are for people with developmental disorders who can become overwhelmed by the overstimulation of the senses. These rooms provide a neutral space for them to decompress in these situations. There are also many

features that stimulate the mind as well. The space to the northeast of the spine provides a flexible play space in which exhibits can be installed, allowing the client to continually stimulate childrens' minds with new lessons as often as they want. There are also many teaching locations and a library throughout the building, which allow the building to become a learning space in addition to a pediatric practice.



**Concept Diagram** The main concept of the building can be summarized in the three words "play," "learn," and "heal." All three of these words center around both physical and mental health. The building aims to help with mental health in addition to physical.



**Rendering of Library** This library is located along the suspended walkway, allowing occupants to experience the concept of a library in a new way. The walkway also leads to reading areas, in which children and their parents can find a quiet spot to read and learn.

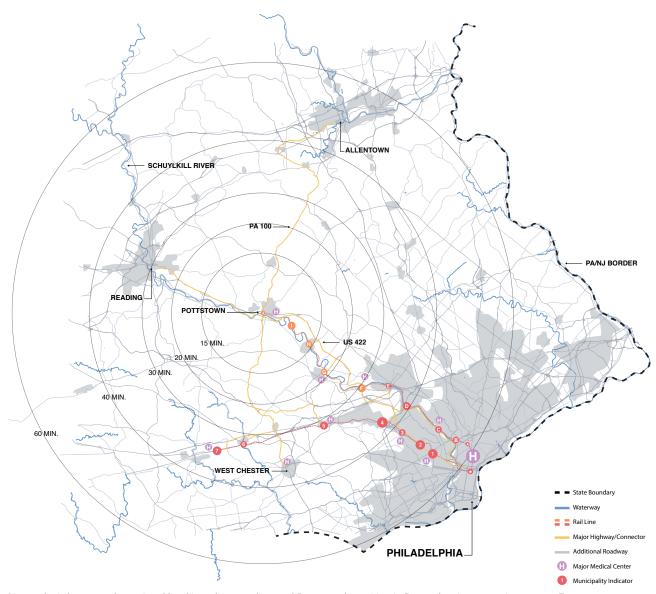


# EUDAEMONIA: DESIGNING A FLOURISHING POTTSTOWN

Audrey Krieman, Grant Davis, Nathan Myers

The word Eudaemonia is an ancient Greek term meaning "a state of human flourishing." This embodies the essence and goals of the stakeholders, the community, and the design team of this project. From very early in the design process, it was clear that in order for a new health- and wellness-related project to be effective, it must both inspire a spirit of health and well-being in the people of Pottstown while also catalyzing economic and social development fueled by the arrival of new people and ideas to the area. Taking the form of a wellness park, Eudaemonia encourages residents to get active and participate in the Walking Pottstown Initiative started by the Pottstown Area Health and Wellness Foundation.

# **PROJECT APPROACH**

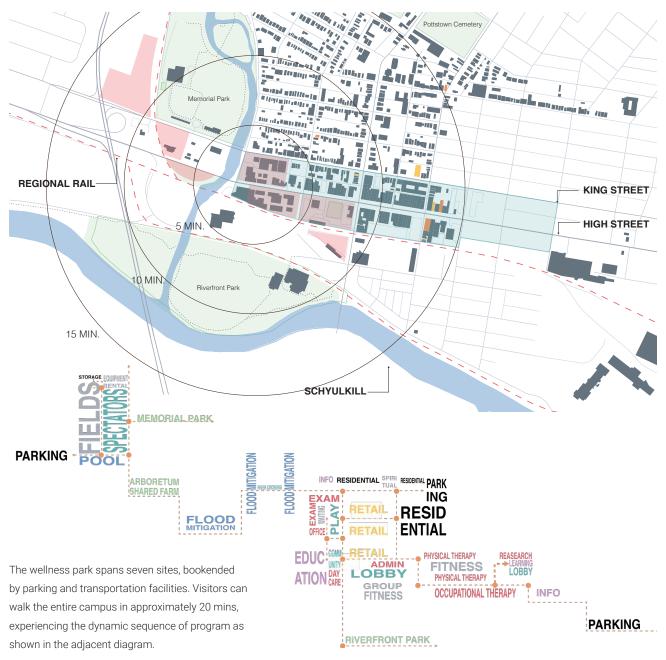


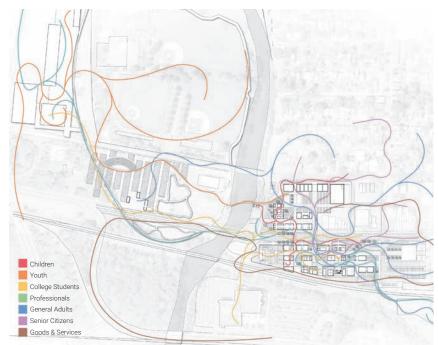
Site analysis began at the regional level in order to understand Pottstown's position in Pennsylvania as a project asset. Focus was dedicated to connections to other regional players, the correlation between transportation, health outcomes, and household income, as well as methods of arriving in Pottstown to the project site.



Pottstown is well situated in southeastern Pennsylvania with three state roads running through the town. In addition, the Reading Railroad and Philadelphia SEPTA System once had a co-operated station that currently operates as a bus terminal for both local and regional routes. Additionally, other infrastructure such as shopping, grovery, and recreation was documented.

### PROGRAMMATIC AND FORMAL IMPLICATIONS



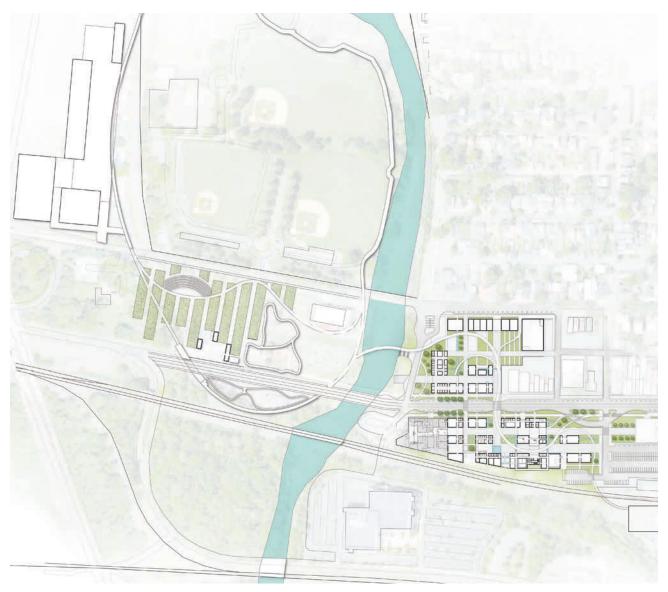


The entire campus is walkable and invites people of all ages to walk through. Different demographic groups may enter and experience the project in a variety of ways. While there are places for individual groups, public space is shared by all. The adjacent diagram illustrates the conceptual routes of the various users of the facility. Whether coming from the dense urban core of Pottstown or the vast recreational park area, all are able to enjoy the various facilities within the campus.



The project is designed to be porous and accessible from all sides, view corridors are left unobstructed, and masses are formed in between circulation paths. The geometry of the buildings is sourced directly from a rigorous study of the existing urban fabric and context.

### **DESIGN**



By spreading all of the project programs across the site, a spirit of walking is created, which emphasizes the Walking Pottstown Initiative. Patrons experience a progression from the dense urban MIFC area to a community farm and finally a sports and recreation field house facility. Walking and biking trails connect to local streets, parks, and the Schuylkill River Trail.

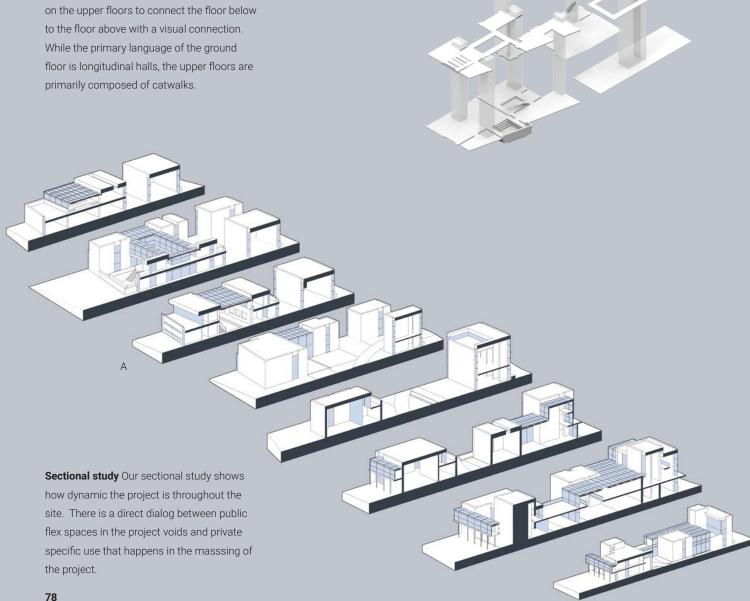


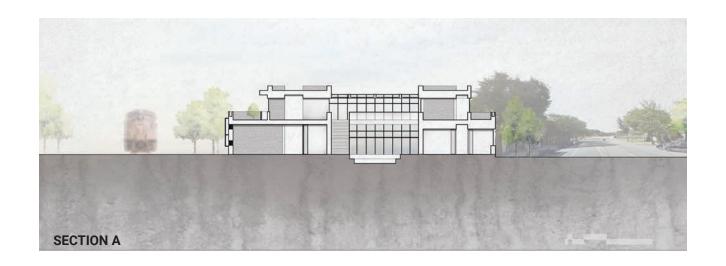
The proposed facility on High Street, imagined to be the first phase of the project, was developed to completion. This area of the project draws strongly on the existing urban context and previous program analysis to create a dynamic and harmonious plan.

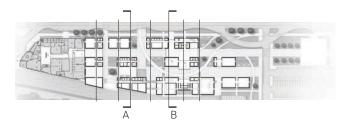
### **SPATIAL STRATEGIES**

#### **Spatial connections between**

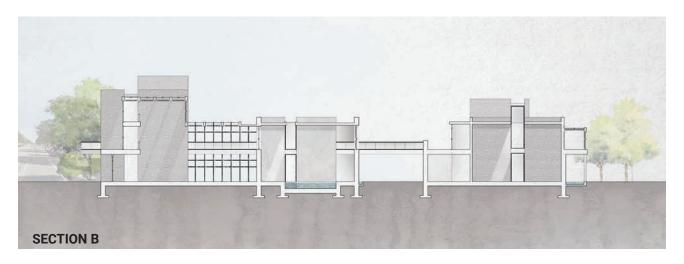
floorplates This diagram shows the vertical risers in the building. The floorplates open up





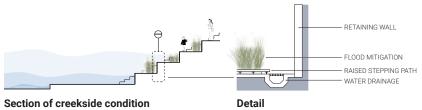


Our project sits on a lot between Montgomery Community College and the Pottstown Borough Building. In the front of the project, High Street runs through Pottstown, while on the back side the project is bordered by a rail line used for freight.



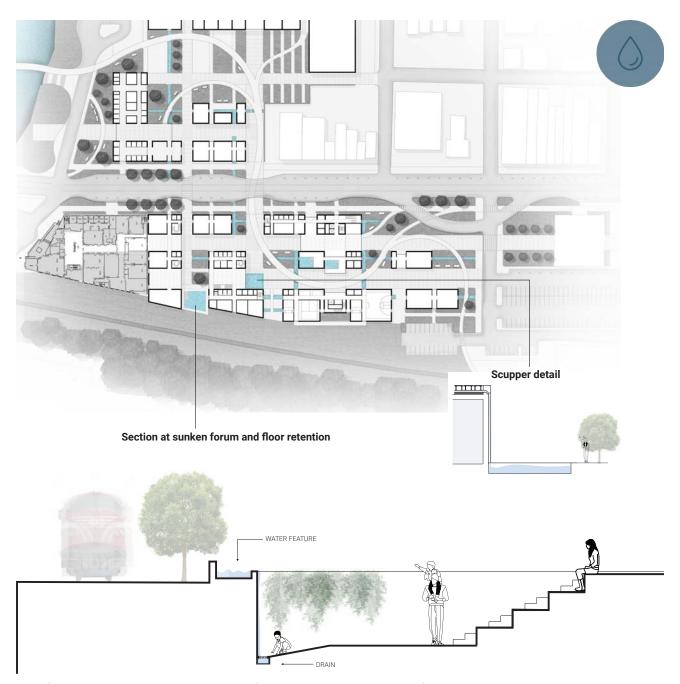
### **WATER**

The wellness park straddles Manatawney Creek, which feeds into the Schyulkill River. Prone to high rainfall, Pottstown experiences flooding. By strategically landscaping these floodplains, our project helps control and direct the creek as water level rises. Water on site is treated and reused as gray water for irrigating vegetation, flush toilets.





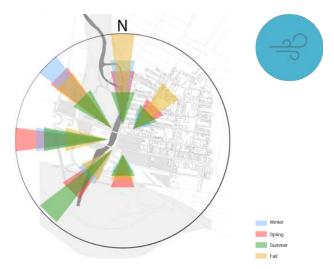




Water features placed throughout the site hold and filter water on site. The building rooflines direct water to the pools.

### **AIR**

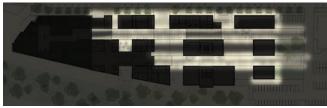
The positioning of the project is based on local weather data. The buildings sit to properly ventilate in the summer, capitalizing on a powerful southwesterly wind, and to block northwestern winds from reaching the inner courtyard in the winter. The distribution system is integrated into the structural system and seemlessly works with the passive systems to make each space optimally conditioned year-round.

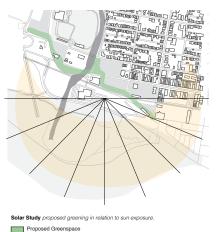




### **LIGHT**

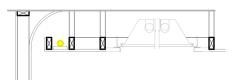
The program layout is planned according to the daylighting needs of each space. In the public flex space, panels block the sun from reaching down and heating the space while still allowing for an appropriate amount of light. This louvered system creates subtle lines of light that enhance the architecture of the space. Lighting is incorporated into the project's structural system, illuminating each space supplementally to daylighting.

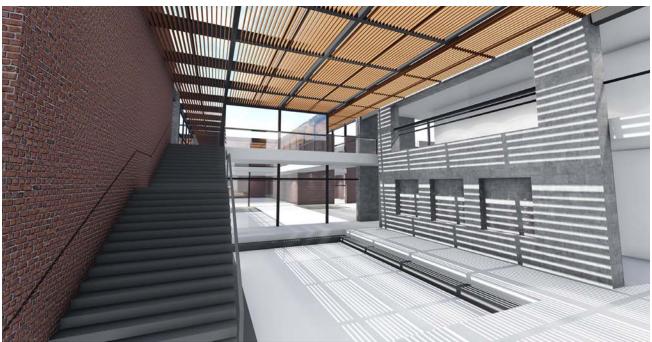












### **FITNESS**

Fitness is well integrated into the project's essence. With celebrated stairways and long paths sweeping across the site, the campus encourages simple and natural exercise in addition to more concentrated workout zones throughout the MIFC. Treating vertical circulation as a pleasing space promotes its use, which helps improve well-being. Additionally, the workout spaces are organized based on the varied levels of privacy needed in a medical facility.

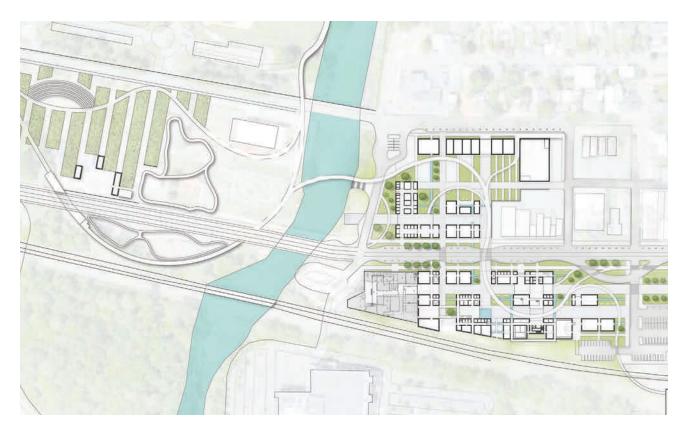






### **NOURISHMENT**

The campus plan incorporates several greenhouses and lots for community gardens. Additionally there is space allocated for a healthy smoothie bar and a farmer's market. The wellness park also includes a cooking laboratory to teach locals and visitors how to prepare healthy meals.

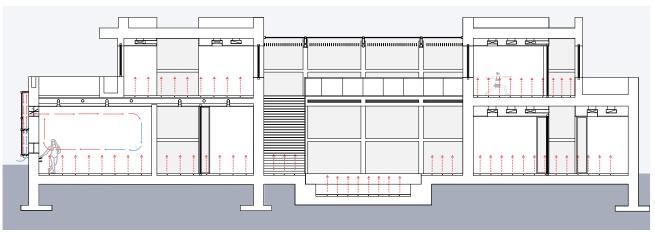


### **COMFORT**

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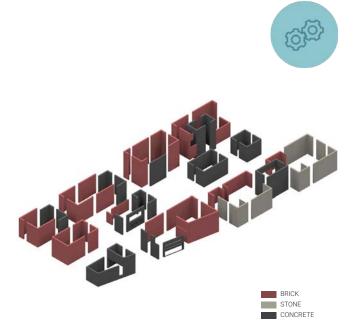
Although exercise and medical treatment are not always the most relaxing task, the facilities in this project maximize comfort, both thermally and spatially. A combined system of radiantly heated floors works in conjunction with trombe walls to keep the building comfortable in winter, while windows in the void spaces open to ventilate in summer. Sunken seating areas provide a place for patrons to lounge, relax, and gather.

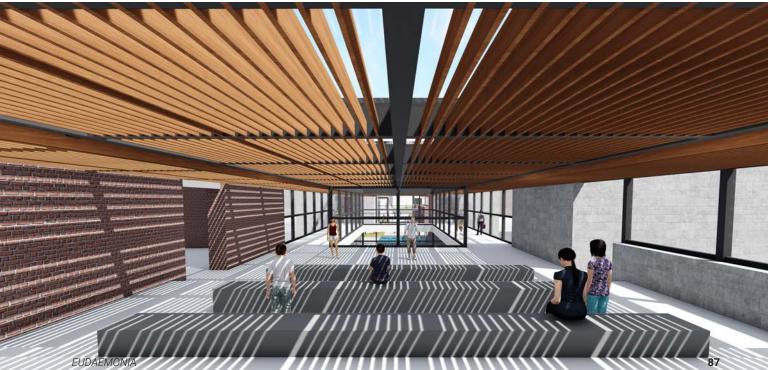




### **MIND**

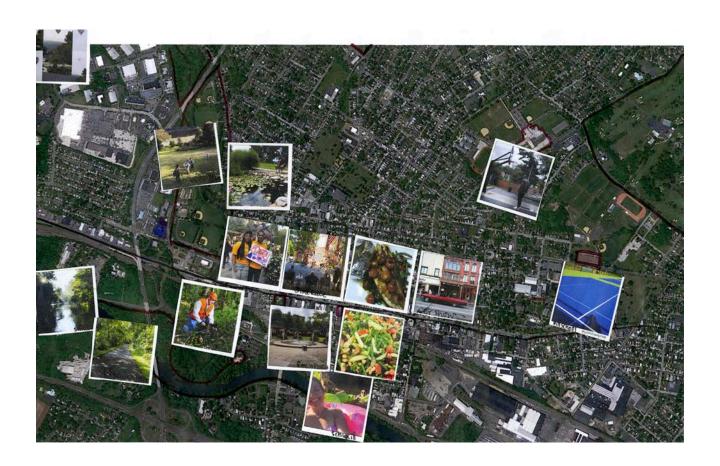
This project worked with stakeholders to create adaptable spaces that would be capable of fitting the needs of the community. There are various lecture spaces spread across the site that can be used for informal teaching or casual sitting. Spiritual wellness is also considered, with several meditiation or chapellike spaces incorportated into the site design. The most common materials used throughout Pottstown are incorporated into the project to reinforce a sense of belonging. Locally sourced materials also reduce the environmental impact of the construction.











# CREATING COMMUNITY COHESION

Hannah Helmes, Klarysa Forczyk

Our goal is to unite the community — those of all ages, occupations, and lifestyles — in a journey towards healthier living. This will be centered in a facility that is easily accessible, affordable, and provides the knowledge and care to treat current patients, as well as proactively prevent future health issues. This goal is realized in our design proposal for a MIFC, or Medically Integrated Fitness Center, which achieves these ideals through a main central greenspace that is the social center and connector in the building. It creates connections to adjacent fitness spaces and is surrounded by an enclosed trail.

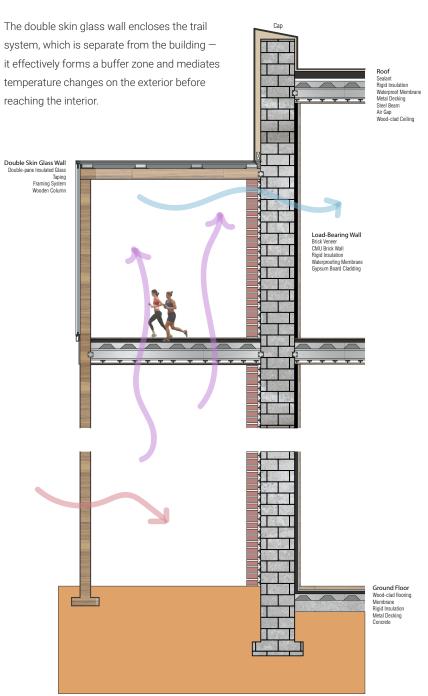
### **AIR**

Our design's double-skin wall is the chief facilitator of our fresh-air ventilation system. It provides a microclimate for the winter garden as a buffer zone. As the sun warms up the winter garden, hot air circulates throughout the building, administrated by the double-skin facade that also serves as a

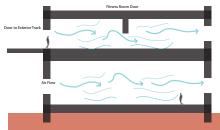
circulation route. Fresh air intake is regulated during the summer by the placement of trees on the north side of the building, allowing for cool air to enter the building. The green roof on the eastern side of the building assists with cooling the building and filtering air for the fresh-air intake.



Above are two elevations displaying the north and south facades. The north facade depicts the view from High Street, as well as the brick veneer and glass materials used. Trees form a wall for natural air cooling on the northern facade. The glass-covered trail, which provides a buffer zone between the interior of the facility and exterior, is seen on the south facade.





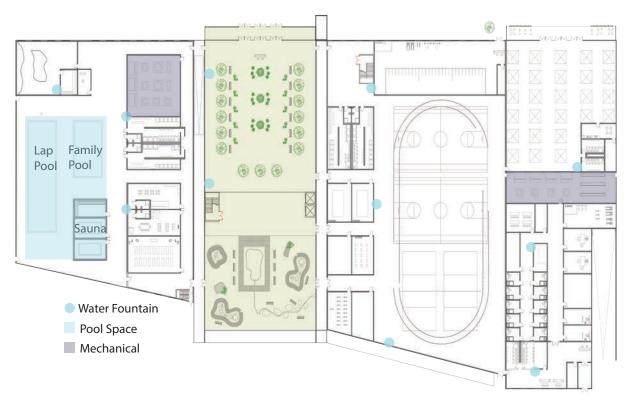


The above-right cross-ventilation diagram displays a section in the gym portion of the building, where windows and door openings are placed in line in order to optimize air path flow.

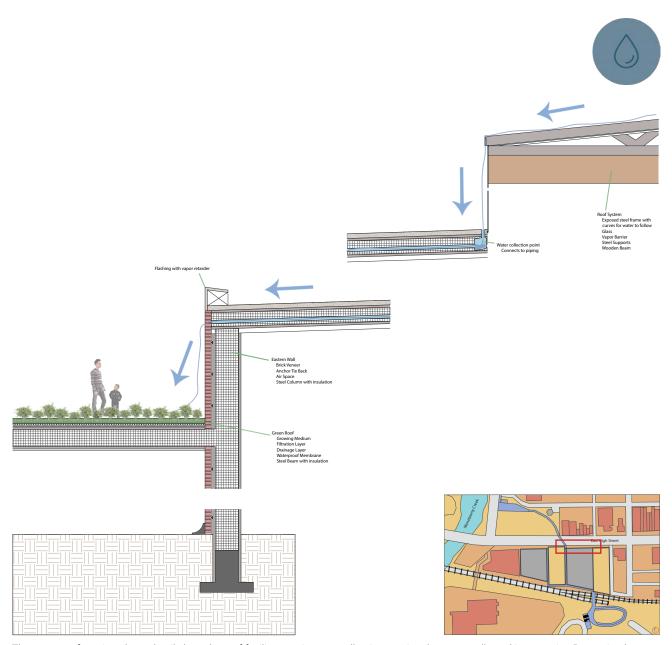
### **WATER**

The building's roof supports water collection by sloping down towards water collection points. On the east side, water collected from rainfall irrigates the greenroof. Water is collected for use in reservoirs, which aids in pool maintenance. The pool itself has a serviceable mechanical room within its vicinity, and

the building encourages water consumption through water fountains placed throughout.



Throughout the building, water consumption is promoted through the thoughtful placement of water fountains. Moreover, the facility hosts a large pool area with a variety of pool spaces to encourage different levels of water fitness.



The green roof section above details how the roof facilitates rainwater collection, storing the water collected in resevoirs. Resevoirs then transport water down the gentle slope of the roof covering the gym facility portion to the green roof located on the eastern side. Water collection enhances the building's sustainability.

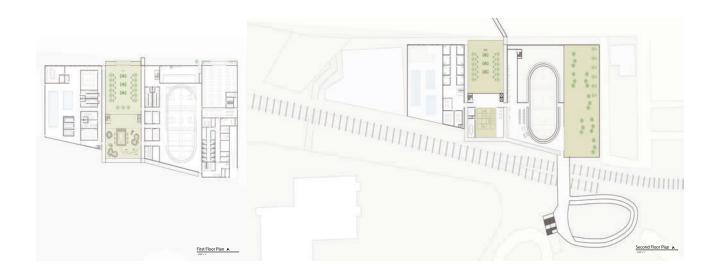
CREATING COMMUNITY COHESION 95

### **NOURISHMENT**

Our farmer's market is located on High Street, a pedestrian-populated street, in order to enhance accessibility and promote civic engagement. More than 30 potential vendors can utilize the farmer's market space within separate booths. This wide-open area provides a variety in food choices that support clean eating. Moreover, the demonstration kitchen in the winter garden allows for community members

to learn about healthy eating habits through cooking classes.

Community members can further their healthy lifestyles beyond physical exercise at the gym facility through learning how to purchase and prepare healthy food. Lastly, the green roof contains a small community garden that provides a demonstration on healthy food production, as well as outdoor seating.





**Pottstown Living** The purpose of design is more than just building a fitness center, it is creating community cohesion through its current traditions brought together by the Medically Integrated Fitness Center.

CREATING COMMUNITY COHESION 97

### **LIGHT**

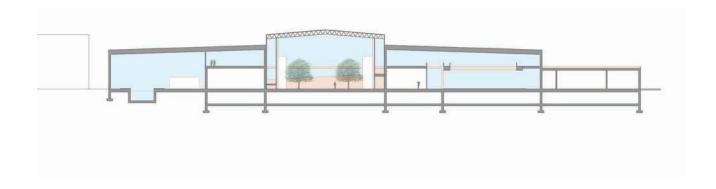
The building's position in the city reduces glare in the glass-clad winter garden, which is further prevented by insulated glass. During the day, daylighting

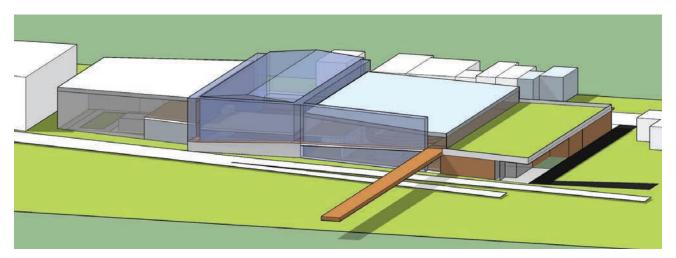
provides natural lighting in the building through southfaced glazing. At night, the trail within the double-skin walls is lit continuously to provide 24-hour access.











**Southern Light** The southern wall receives sun with shading on the winter garden ceiling. Insulated glass diffuses glare with little need for electrical lighting.

### **FITNESS**

Our building facilitates fitness in everyday lifestyles. The trail promotes active lifestyles by extending the Schuylkill River Trail through the building, providing an easy-access connection from city to river. The trail circumscribes the winter garden at a gentle slope, which subtly enhances and varies circulation — thereby easily increasing patrons' fitness levels

— while maintaining accessibility. Furthermore, the trail is a direct path to an outdoor track. Although an enclosed space, the trail is ten feet wide to accommodate differing active lifestyles and provide people with ample space for their desired mode of

movement. Aside from circulatory spaces, fitness has a prominent presence in the building within the following areas:

Exterior Interior

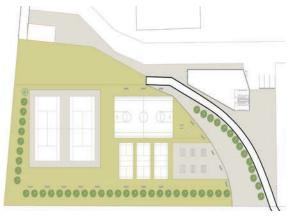
-Track -Track

-Basketball -Basketball

-Badminton -Rock Climbing

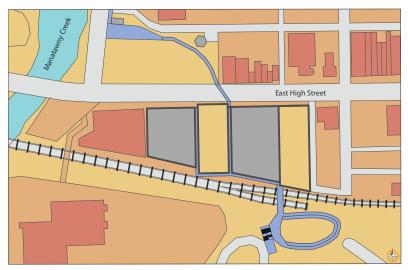
-Tennis -Pools

-Playground -Exercise/Weight Rooms

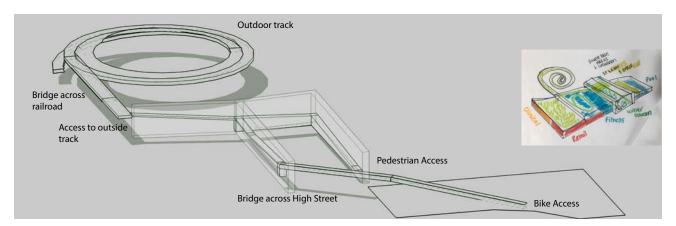












**Trail Diagram** The circulation of the trail in the building is separate from the circulation of the building users, blurring the lines between inside and outside. The connection to the Schuylkill River Trail wraps around the building and follows a continuous slope for accessibility and exercise.

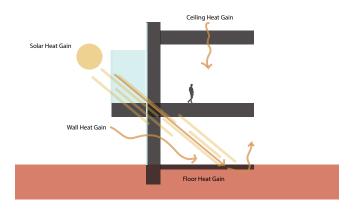
### **COMFORT**

Entering the building through a winter garden provides a 24/7 accessible green space. Within the winter garden's fresh-air space, there is secluded seating in an environment surrounded by wood, which both absorbs sound and provides a natural aesthetic. The building's multiple routes of circulation provide opportunities to use specific areas of the building with ease. Reception spaces placed before main recreation areas allow for individual paces when

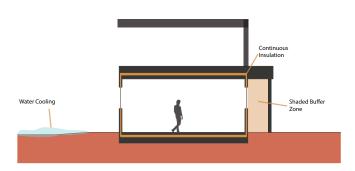
proceeding throughout the building. The building houses a zen garden and meditation room placed in the corner of the building for noise reduction. The building's location on High Street provides easy accessibility for pedestrians; there is a direct drop-off for private access on the eastern side by the clinical space.

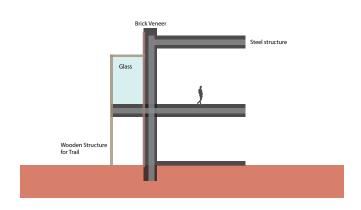


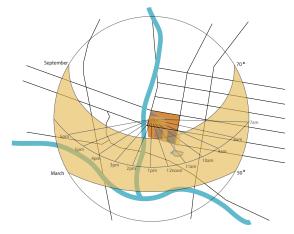
The presence of a central, continuously accessible greenspace encourages community cohesion through engagement with adjoining fitness spaces. These spaces are made accessible by fire exits, stairwells, and elevators.











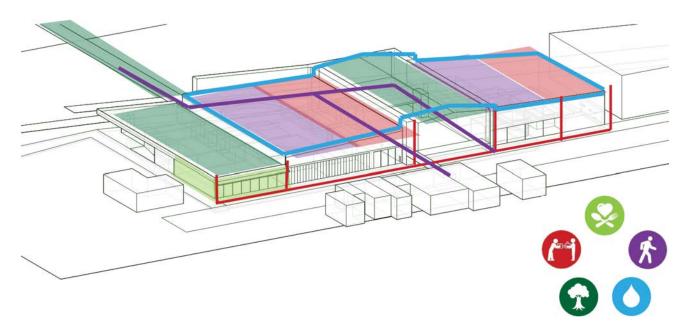
As demonstrated through the diagrams, the building's design uses suitable materials, daylighting, and topographical positioning in order to achieve the best aesthetic to encourage prolonged physical fitness and healthy eating.

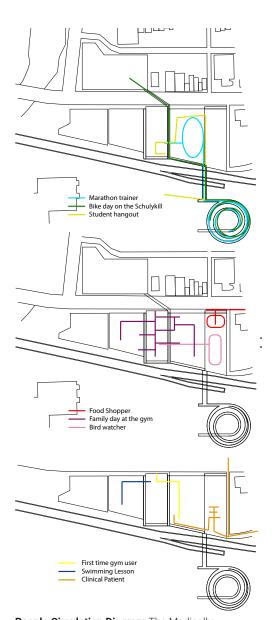
CREATING COMMUNITY COHESION 103

### **MIND**

The clinical space, while connected to the main facility, is secluded and has a separate entrance to maintain a more private atmosphere. This clinical area has its own fitness spaces for more timid users. The building's separation of different fitness spaces, bridged by swipe-access stations, allows for members to go directly to their intended space. However, these separate fitness spaces are all connected either physically or visually to the winter garden, the main social space. The winter garden

provides a comfortable environment where nature can be enjoyed at a warmer temperature during winter months, and a cooler temperature during summer months. Lastly, the student area on the winter garden's mezzanine is a space adaptable to the needs of the adjoining conference room and demonstration kitchen. Throughout the public spaces in the building, aesthetics are enhanced through constant views of exterior nature or other interior fitness spaces.







People Circulation Diagram The Medically

Integrated Fitness Center serves multiple purposes for multiple users. The overall health of the community benefits from the fitness spaces, gardens, farmer's market, and clinical space.



## **GREENSCAPE**

Cher Xu, Megan Loney, Stefan Fombrun

The Pottstown Area Health and Wellness Foundation's vision is to establish a Family Wellness and Pediatric Practice where the children of Pottstown have access to pediatric care, as well as access to Memorial Park, which provides additional health benefits.

Our collective goal is to design a pediatric center focused on integrating the natural environment into the building in order to cultivate a healing biophilic center for pediatric patients as well as the entire Pottstown community. Nothing ever works in isolation.

The vision is to create a central urban living room for pediatric patients and the greater Pottstown community where they are able to gather and embrace a healthy lifestyle together. By developing a biophilic space that encourages interaction between children and seniors, meaningful connections can be made to aid in the healing process and promote overall wellness.

### **PROJECT OVERVIEW**



Based on the the information gathered during our site visit to Pottstown, we believe that we can engage the citizens of Pottstown in physical activity and join both sides of the community by bridging the gap between existing green spaces.





There is a clear disconnect between the heart of downtown Pottstown and the neighborhoods west of the Manatawney Creek. Vehicular access quickly pulls people past the site, and the lack of pedestrian bridges and engaging program discourages activity in the space. People quickly bypass existing parks to get to their destination, instead of experiencing their rich natural surroundings.

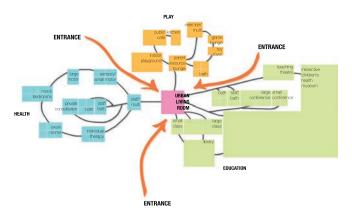


Green space between the MIFC and pediatric practice will contain program that is useful to both entities.

Regenerative exercise and play come together as the aging population and young children are able to interact.

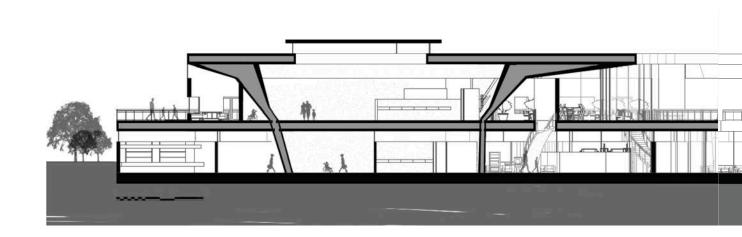


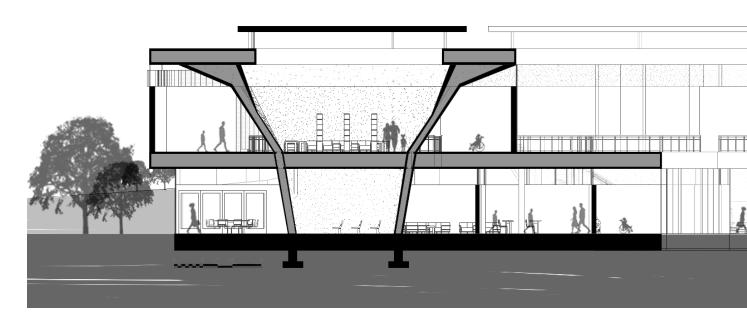
We propose one continuous park to house sites for physically engaging program such as a meditation walk, new bike trails, and playful attractions for children and adults alike. The location we chose for the pediatric center is directly west of the park, creating a connection with the neighborhood, and the MIFC directly east, connecting with downtown.

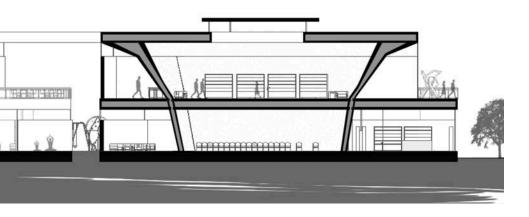


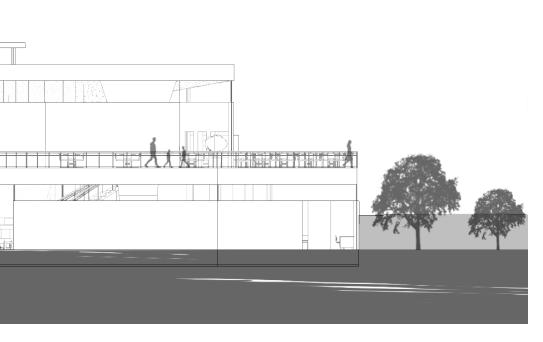
Our design capitalizes on health, play, and education. While the building is zoned such that each program feels a sense of privacy, it also invites instances for the programs to intermingle and benefit each other.

# **PROJECT OVERVIEW**









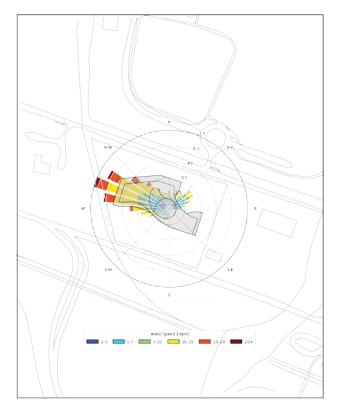
**Building sections** Longitudinal section looking north shown above, transverse section looking west shown below. The section of our building demonstrates the structural and formal roles played by the cores of our building. All major structural components exist within the two cast-in-place concrete cores and the post-stress concrete slab floors. This system eliminates the need for an obtrusive structural column grid, and allows for all of our walls (as they are all non-structural) to feature glass reveals. Maximum flexibility, visibility, and connection of spaces is achieved through this scheme.

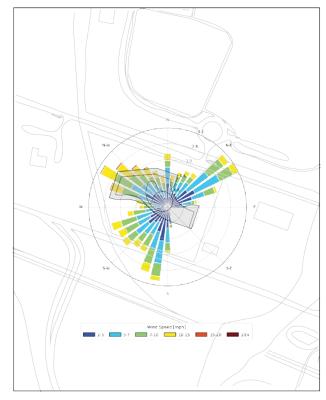
### **AIR**

Trees to the west of our site will protect against harsh west winds and allow for passive breezes to enter the site from the northeast and southwest.

The building is oriented such that western winds

are blocked and deflected by a system of straight walls, while winds from the northeast and southwest are captured by long, curved walls and utilized to introduce fresh air into the building.



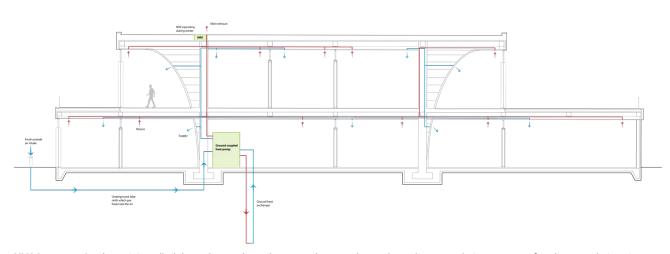


**Site resource: wind** Yellow, red, and maroon represent harsh wind patterns (predominately from the northwest). Green, aqua, and navy represent calm winds, which can be utilized for natural ventilation and passive cooling.





**Diagram of pediatric center on site** Passive winds entering the system via the Urban Living Room, and aggressive winds blocked by mature existing trees.



**HVAC system** Outdoor air is pulled through a sculptural vent outdoors and runs through a meandering system of underground pipes in order to lower or raise the air's temperature (depending on the season).

## **WATER**

A man-made pond wraps around the building's facade, weaves through the central Urban Living Room, and continues around the southern yoga and meditation deck. This water feature is both aesthetically pleasing, as well as energy efficient as it aids in the passive cooling of the building.



View from exterior meditation deck



Exterior site view from southwest



### **MIND**

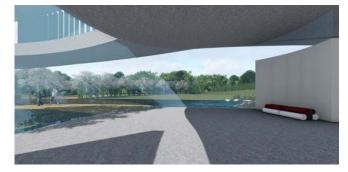
We believe that strong mental health is necessary in order to achieve lasting physical health. Our proposal for Pottstown Pediatric Center promotes a well-

balanced and healthy lifestyle.

It is our belief that patients who are surrounded by nature benefit immensely in a number of ways.

Studies show that people are able to heal more quickly both mentally and physically when they are immersed in a natural environment. It is human instinct to desire a fruitful connection with nature.





Interior view from yoga and aerobics studio

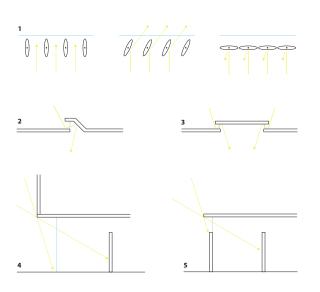


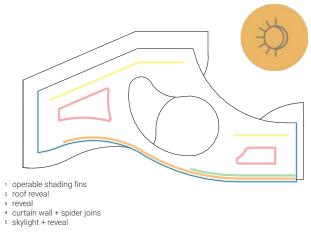
## **LIGHT**

Large glass spans are introduced into the Pediatric Center's facade in order to provide excellent views of the luscious gardens and park spaces that frame the site. Passive lighting systems are introduced through the use of solar-powered path and garden lighting that is utilized through the night on site.

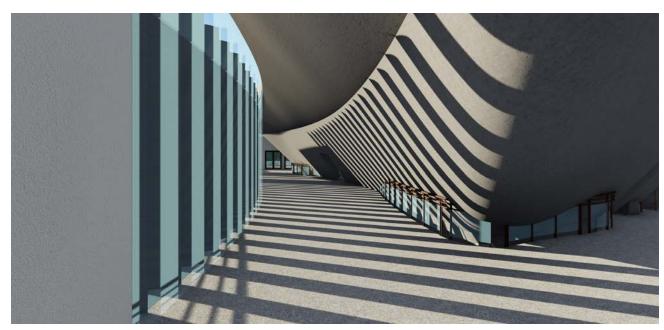








**Passive Lighting Features** A variety of design decisions were made in order to bring in plenty of natural light as well as the ability to reduce heat gain in the sumemer months.

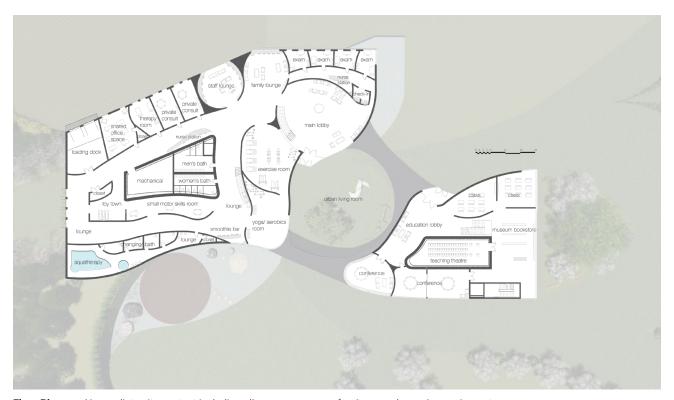


**Operable Shading Fins** shown shedding late afternoon light into the second-floor circulation space, which continues onto the core wall on the first floor.

## **FITNESS**



**The Yoga Deck** is a tranquil space for both exercise and meditation. It is surrounded by shallow water and features a stone path.



Floor Plans and immediate site context including all program spaces, furniture, and exercise equipment.





**The Urban Living Room** features playground equipment for children, seating for families, and natural elements for all to enjoy.



# **COMFORT**

Pottstown Pediatric Center features a variety of unique spaces to suit the needs of an equally diverse variety of patients and visitors. Peaceful gardens, secure play spaces, cozy mock bedrooms, and grand lobbies and classrooms flooded with light are some of these spaces.









**Access** to and throughout the site provides a sense of security for all pediatric patients, families, and visitors from the community.

# SITE

**Physical Model of Site** The massing of our proposed Pottstown Pediatric Center design, site interventions, and surrounding site context.





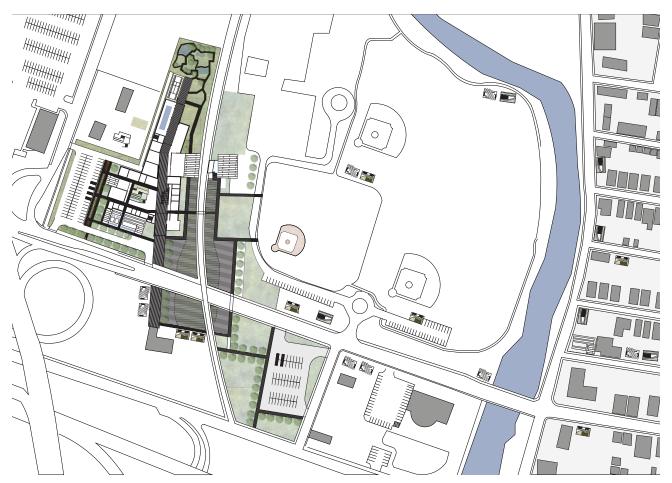


# ACTIVATING POTTSTOWN

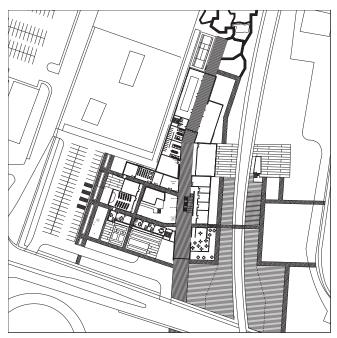
Connor McGowan, Lucia Chamorro, Maria De Fatima Vela

The concept for our design is "Activating Pottstown." Our goal for the project is activating Pottstown's existing features and resources by developing a physically inducing environment while mantaining the town's historical identity. This project is important because the Pottstown Area Health and Wellness Foundation's mission is to enhance the health and wellness of area residents, providing education, funding, and programs that motivate people to adopt healthy lifestyles. Our design does just that. Its diverse program and urban scale create an environment where users can learn, eat, and heal.

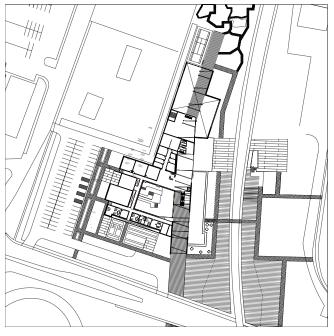
## **CONTEXT**



**Site Plan** This drawing depicts our intentions towards the sites our building interacts with, as well as the urban scale to which our design reaches. The scattered rectangular points are areas that serve as connections to the MIFC.



**Ground Level Floor Plan** This illustrates the MIFC's program on the first level of the building. The paving patterns demonstrate the way in which the landscaping continues into the building.



**Second Level Floor Plan** This illustrates programmatic spaces on the second floor. The central event space corridor highlights the two structural grids, and how their interaction with one another determined the pattern of our roof design.

### **CONTEXT**



**Longitudinal Section** Cut through the courtyard and pool area.

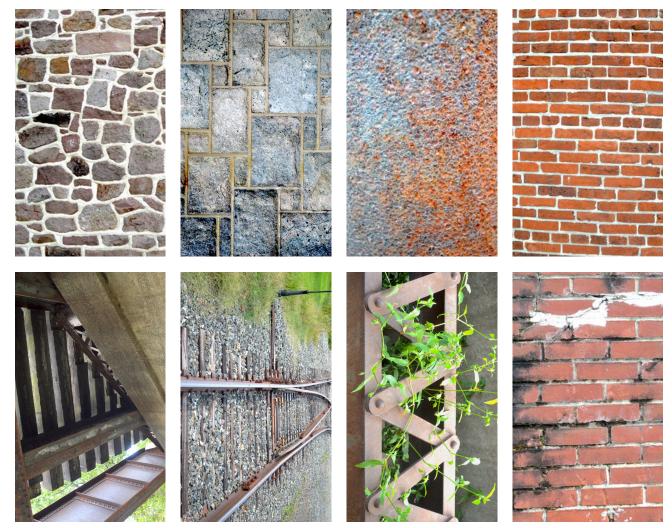


**Transverse Section** Cut through the courtyard, daycare, and primary event space.



**Longitudinal Elevation** As seen from Memorial Park.

These sections and elevation show the materials selected for the building, as well as the overlapping programmatic spaces in our design.



**Materials** Series of materials found around Pottstown, PA. They are meant to highlight Pottstown's identity and serve as the design basis for the materiality of the building, as well as the scattered fitness taxonomies around town.

### **WATER**

The MIFC strategically integrates water features as a way to extend Pottstown's existing water masses such as the Schuylkill River and its particular floodplain into its landscape. These water elements promote hydration, relaxation, and serve as buffer

zones between the extensive green areas of both the site and Memorial Park. In the case of heavy rain, these ponds are to serve as stormwater collectors, diminishing the risk of flooding.



View of Water Features The garden on the north side of the site houses three ponds. Two of the three ponds are shown.

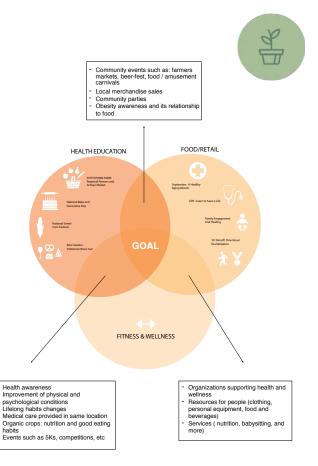


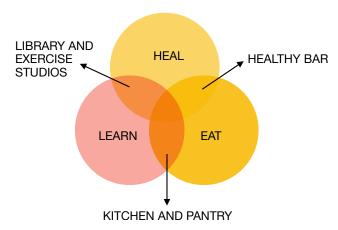
sites and Pottstown's water masses and floodplain.



#### **NOURISHMENT**

To comply with the Pottstown Area Health and Wellness Foundation's mission, we developed a series of graphs. We analyzed Pottstown's existing community events and merged the health, education, food, fitness, and wellness aspects of it as a way to determine the programs the MIFC will house. We activate the food and health awareness component by providing communal areas large enough to facilitate the growth of existing community events such as the farmer's market and the family engagement and healing program. Our MIFC also includes an area designated for urban farming. People can learn about healthy foods in one of the classrooms, and then practice the earliest stages of food production right outside the door. The MIFC also houses a cafe that serves healthy foods. Accompanying the cafe is a mostly glass-enclosed classroom kitchen where people will learn healthy cooking habits.





#### **COMFORT**

(F)

The MIFC's program and layout are designed to provide its users with a sense of comfort and tranquility throughout the building. By carefully selecting materials, such as the interior brick, we bring Pottstown's identity into the design to give people a familiar feeling. Office spaces are carefully placed around the courtyard, creating open spaces and visual connections to the outdoors, making a more relaxed evironment.



**View of Office Corridor** Exposes the internal use of brick, as well as the openness of the hallways achieved by incorporating open to below spaces. The courtyard creates a transparency between the interior and exterior spaces.

### **LIGHT**

Natural and artificial lighting responds to the building in particular ways. The design uses natural light to illuminate the MIFC building through the placement of large glass panels in the courtyard, aquatic facility, retail, cafe, and main entrance. The introduction of this much daylight gives the building a great sense

of transparency, as well as visual connections from inside to outside.

The artificial lighting is specifically designed to highlight the MIFC's community space, which is the most unique and dynamic element of the building.



View of Main Corridor and Courtyard The building captures great amount of natural light through its open courtyard and roof design.





**Aerial View of MIFC** Artificial lighting is specifically designed to highlight the building's main corridor and event space.

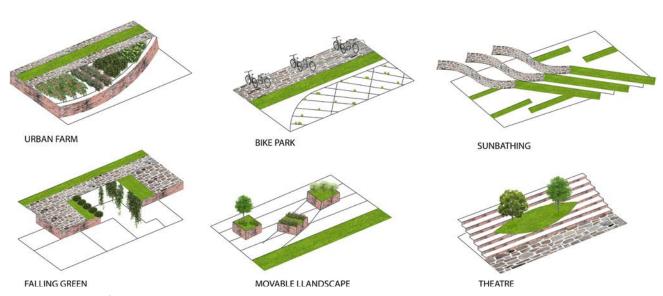


**View of Main Entrance** Image of MIFC building at dawn.

#### **FITNESS**

To create a more physically engaging environment, we are using active architecture. Active architecture is defined as an approach to development that identifies urban planning and architecture solutions to support healthy communities. The MIFC is surrounded by extensive green areas. To promote active living, we wanted to connect the surrounding areas with a series of points that refer to our MIFC. These points can serve as guides that relate back to the building itself. These elements not only promote physical activity, but also create spaces for social connections. The function of these points includes urban farms, bike racks, sunbathing seating, falling green spaces, movable landscape, and a theatre.

The site design of the MIFC creates an environment in which outdoor physical activity is encouraged. The bike racks suggest transportation use other than cars. The vast green spaces allow for multipurpose use. On the northern end of the site, there is a relaxation garden with long winding paths and a central platform for yoga and meditation. The MIFC has also incorporated a train station into its design for the recreational railway that runs adjacent to the site. This train platform looks directly into the interior sports courts, highlighting the idea of physical activity upon arrival. Together, these elements instill a desire in people to spend more time outdoors.



Taxonomies Series of points scattered around Pottstown that relate to our MIFC building and motivate people to exercise.





View of the Aquatic Facility and Fitness Area The transparency of the gym allows a connection between people using the aquatic facility and people exercising in the gym area.

#### **MIND**

The Memorial Park side of the building is far more open than any other. It contains windows that create transparency, establishing a direct connection to the park. This side of the building includes the kitchen program as well as the cafe and retail areas, allowing for a more open plan. The connection with nature is evident in our design, particularly in the landscape.

The vast green regions are enclosed by trees that provide shading during the summer. The courtyard does far more than deliver a green space for yoga and eating lunch. It brightens the central core of the MIFC with sunlight while creating a connection to the outdoors via views to the sky.



**View of Courtyard** This space is not only an extension of the landscape in the heart of the building but it also serves as a place for people to enjoy the outdoors and any activities happening inside or outside the MIFC building, such as yoga or the urban farm.





View of Meditation Area Space designated to host meditation and relaxation activities surrounded by a harmonious flora and fauna design.



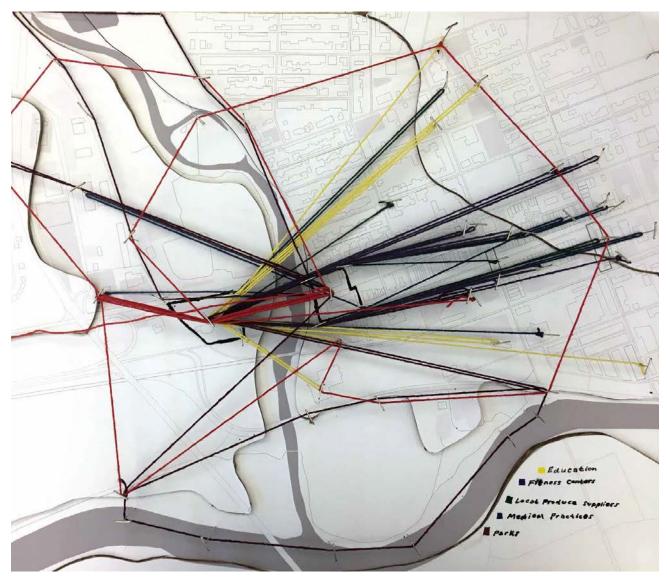




# **COMMUNITY CONNECTIONS**

Heather Schneider, Molly Mank

Our design focuses on pathways as a way to connect the MIFC and Pediatric Center to the community. Initial research of the Pottstown area revealed a wide variety of resources scattered throughout the town, as well as a stark difference between the left and right sides of Manatawny Creek. Data from MapMyRun and MapMyRide, which are running and biking apps that track popular exercise routes, proved to be the unifying factor among disjointed elements. We decided to utilize these exercise routes as a way to knit together our three separate buildings. A series of both existing and proposed pathways then extend this complex out into the community in all directions, bridging the gap between the two sides of the creek. A central "catalyst" building contains program elements shared between the Pediatric Center and MIFC such as an outdoor swimming pool, community kitchen, and performance space.

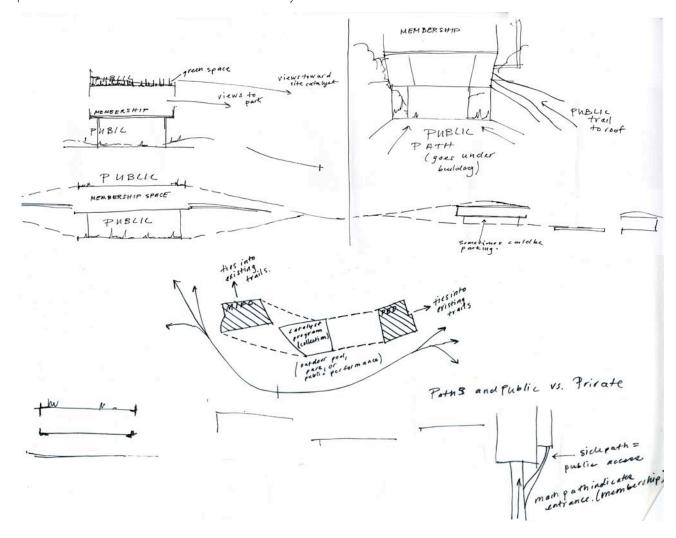


**An early study model** showing the ways in which the resources of Pottstown can inform connections between the community and connect our buildings.

#### **PUPLIC VS. PRIVATE SCHEME**

Our team saw pathways and footbridges as architectural elements that symbolize movement and connect one place to another. The sectional layout of our project sandwiches private program elements between two public levels, giving both the ground plane and the roof back to the entire community. Our

goal was to use the pathways to denote public vs. private programs. Main pathways would lead into membership-only places with a central check-in desk. Smaller pathways branching off would lead either up or down to publicly accessible programs.



COMMUNITY CONNECTIONS 143

# **OVERALL AXONOMETRIC**



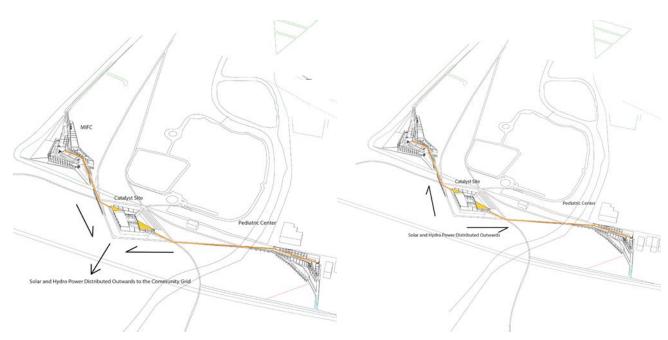
**From Left to Right: MIFC, Catalyst, and Pediatric Center** We chose these three sites as a way to connect the left side of Manatawny Creek to the city of Pottstown.

# **ENERGY DISTRIBUTION**

Not only people, but also resouces, are connected by the complex. Renewable energy is collected by solar panels on each of the three buildings. Hydroelectricity is generated at the catalyst site. These energy systems are allocated across both the complex sites and the greater Pottstown area depending on usage and season.

During winter months, each building relies on its own supply of solar energy to power heating. However, when energy is at its highest demand, additional power generated in the calayst can be "sent out" to the MIFC and Pediatric Center. Energy from each building can also be redistributed across the site to where it is most needed, limiting the use of the community grid.

Summer months provide a surplus of generated solar energy, more than the buildings will likely require for normal functioning. Therefore, stored energy is sent back out to the community grid, helping to offset summer electrical surges.

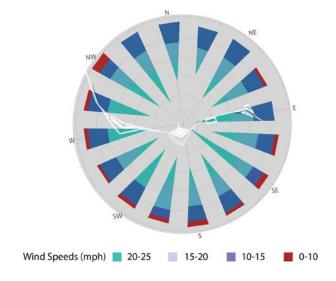


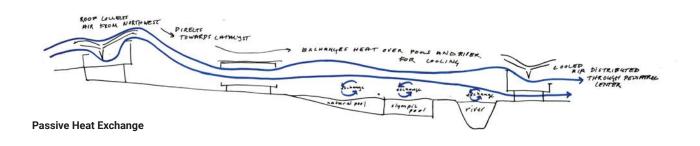
**Summer Energy Distribution** 

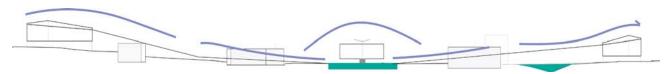
**Winter Energy Distribution** 

# **AIR**

The angular forms of each building act in unison to coax wind across the sites. By directing wind circulation over the river, additional cooling is gained through heat exchange. This air is then utilized for passive cooling.

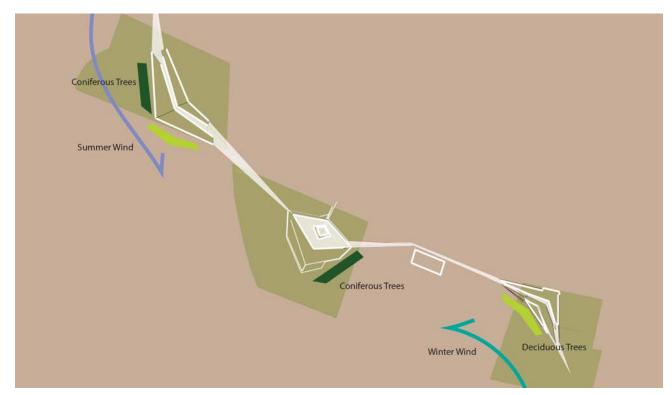






**Wind movement across the site** The building is oriented on axis with the prevailing summer wind for natural ventilation. This axis also creates a formal connection to the catalyst site.





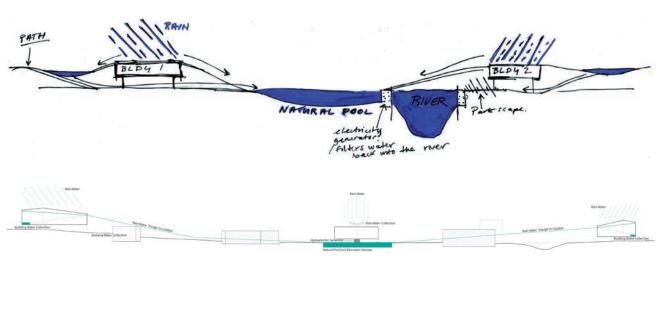
While wind collection is a primary goal, rows of coniferous trees are planted on areas of the site affected by the harshest winds. Due to the site orientation and building shape, coniferous trees are planted on the western wall of the MIFC and the southeastern wall of the catalyst site.

### **WATER**

Water is a celebrated and essential theme in our project. The central catalyst is located in the floodplain, making it a natural low point relative to the surrounding sites. This creates the opportunity for gravity-fed water collection from the roofs of the MIFC and Pediatric Center into the natural pool and constructed wetland at the Catalyst. The water is then filtered in an underground system to be reused in bathrooms and landscaping. Smaller collectors provide water for bathrooms in the Child Abuse Center and the MIFC changing rooms.

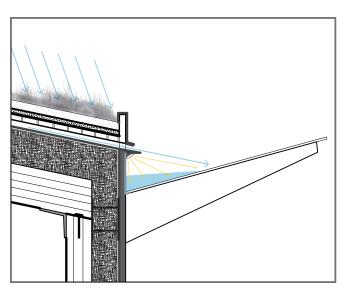
The fact that flooding occurs in the surrounding area informed our decision to raise parts of the building off the ground on pilotis. We also placed programs that were less sensitive to water, such as the indoor track and exercise rooms without special equipment, on the ground floor and programs such as the library and equipment gyms above.

The flow of water is celebrated with a series of lighting effects, as explained in the next section.

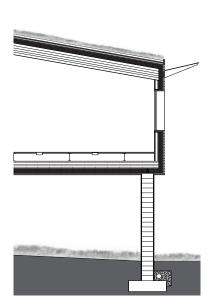


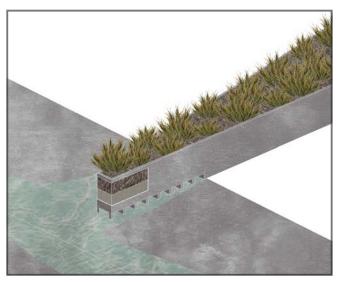


From Sketch to Final Product The evolution of our project based on water collection



**Water Collection Detail 1** Child Abuse Center - a glass gutter rests on top of wooden brackets.





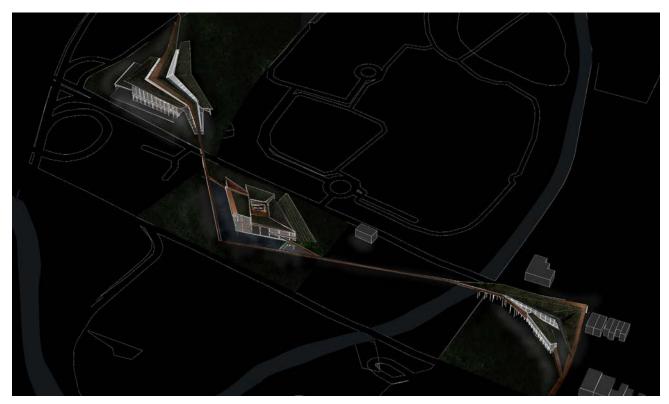
**Water Collection Detail 2** Metal collectors where solar shading is needed, as seen in the Pediatric Center indoor garden.



### LIGHT

Light is used to highlight the movement of people, water, and energy throughout our project. Our chosen lighting schemes are directional and are used to both emphasize the processional nature of our project and celebrate the collection and renewal of water. As rainwater and snow melt flow towards the collection zones, both artificial and natural light project shadows of the water onto the spaces below.

Different areas of the buildings and pathways are filled with these ephemeral light patterns depending on the time of day and year, as well as the amount and velocity of the flowing water. Water collectors along the raised pathways are lit in such a way as to provide lighting for the users on top while projecting light down to the ground plane below, creating two safe routes to move throughout Pottstown.



Overall Night View in Axonometric Light is used to connect the three builings to each other and the surrounding pathways.

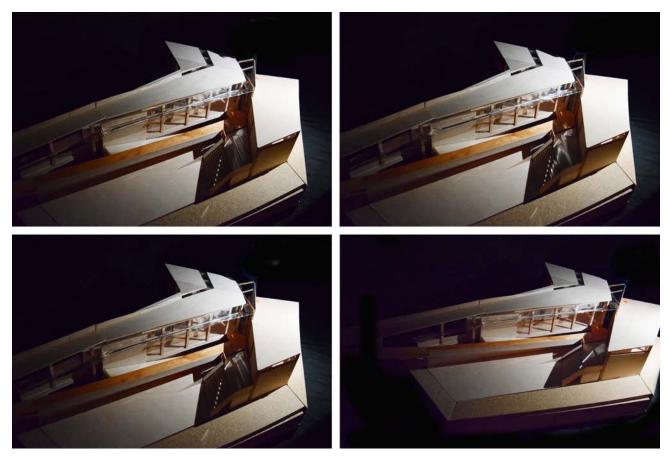


Night View of the MIFC Entrance from above King Street Directional light provides both visual and physical connections to the pathway.



Night View of the MIFC Entrance from Memorial Park Light highlights the repetition of building elements leading to the entrance.

# **LIGHT**



Water and Light Effects at the MIFC Entrance Light projects animated and ephemeral shadows onto important points of movement below.



Water and Light Effects on the Main Entry Pathway Both the speed and the amount of water flowing determines the shadows' position.



Water and Light Effects in the Entry Courtyard and Interior Spaces The angle of the glass allows light to be reflected deep into the interior.

#### LIGHT

Sunlight is used as much as possible throughout our project to greatly reduce the energy demands of artificial lighting, especially in basement-level areas. Pathways "cut" light wells into the ground plane. The slope of the ramp leading to the underground parking in the MIFC also allows light to enter the basement level. No level of the Pediatric Center is without sunlight due to the manipulation of the ground plane. The building is a split level with the clinical program occupying the street level and a second floor while the public access program occupies the ground level open to the back (south-facing) side. An indoor garden spans these three stories, bringing natural light to each floor.











October, 6:00pm

**MIFC Daylighting Study** The ramp to underground parking is seen allowing light to enter the underground running track at all times of day. Thin, transparent wood panels fill yoga and meditation spaces with an ambient glow.





**Light Corridors** Vertical light wells allow natural daylighting and water projections to reach basement areas.

# **FITNESS**

Movement is an integral component to Pottstown's health and wellness initiatve. Not only does the complex facilitate a fitness program, but behaves as one collectively. Manipulations in ground planes of all three buildings, combined with a trailway system, create a running track of gentle slopes. This track

spans the entire complex starting at street level and gradually inclining to each rooftop.

Access to scenic roof-top parks, as well as connection paths to local attractions, activate pedestrian movement throughout Pottstown.



Pottstown Trail Map A network of marked routes weaves throughout the buildings.



**Running Path Approach to the Pediatric Center** 



**Elevated Exercise** Raised pathways provide a scenic route for running and walking.

### **COMFORT**

Heating and cooling systems within the complex are designed for optimal comfort. To achieve this, passive systems are utilized during both the summer and winter seasons. Open-to-below spaces within the building allow for optimal airflow.

During the winter, Hydro-Radiative Heat is generated by solar energy and distributed throughout each building. The generated hot air, which rises through sectional gaps in the building, is recovered on the building's top floors.

Level manipulations and sectional gaps also aid in summer cooling methods. Passive cooling via ventilation is primarily relied on; however, extreme temperatures merit use of a small air conditioning unit. Cool air garnered through both of these means circulates throughout the building, with hot air exhausted through the top floor.

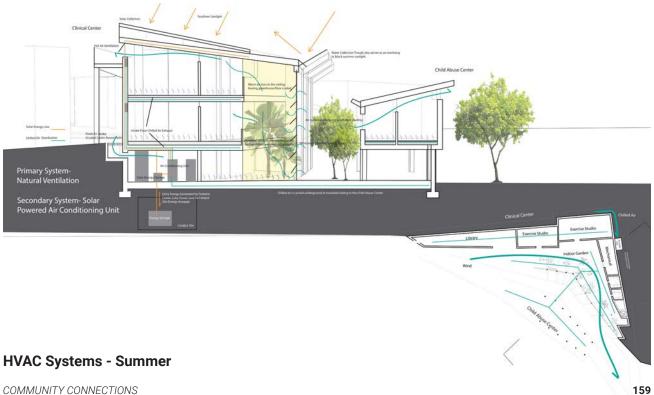
By controlled use of both passive and mechanical systems, optimal comfort level is achieved throughout the complex during all seasons.

The triple-height tropical greenhouse, located within the building's core, plays a vital role in providing a comfortable indoor climate year-round. Not only do the plants provide a refreshing sensory experience, but aid in both passive heating and cooling.









#### **MIND**

Both the MIFC and the Pediatric Center are designed to promote fitness and respect the privacy of users. The physical therapy elements of the MIFC program are kept separate from the very public areas of the building such as group fitness studios and basketball courts. In a similar manner, the Child Abuse Center is housed in a separate building from the main Pediatric Center and elevated off the ground plane. This allows visitors access to the best views of the entire

property while being high enough off the ground to not be seen by those below.

The materiality of our project also promotes a calming environment. CLT walls emit the aroma of fresh-cut wood while creating a calming, neutral backdrop. Thin wooden wall coverings turn sunlight into diffused ambient light for yoga and meditation spaces. Accessible green roofs provide garden spaces with sweeping views of Pottstown.



Meditation Room Viewed from the Outside



Yoga Studio Viewed from the Inside





**Strategic Program Layout** The Child Abuse Center is removed from the main building and sits above the main garden, allowing users to come and go in privacy.



**Strategic Program Layout** Medical and rehabilitation aspects of the MIFC are placed above other public spaces, providing views into the indoor garden and affording users a heightened sense of privacy.



**STUCKEMAN**SCHOOL





#### **Community-Centered Wellness**

Medically Integrated Fitness Facility and Pediatric Practice

This report is a result of a community-university initiative between the Pottstown Area Health and Wellness Foundation and a Penn State fourth-year architecture class, Arch 431: Architectural Design V. It presents the result of a design research studio where students were encouraged toward active exploration, information collection, analysis, and synthesis of the paramount relationship between community health and economic growth with recreational tourism initiatives.

The proposed projects are all located adjacent to Riverfront and Memorial Parks, encouraging interactive wellness opportunities. Urban and architectural solutions are presented for a Medically Integrated Fitness Center (MIFC) or Pediatric Practice within the Pottstown Gateway Tourism and Recreation District (TREC).