

Wellness Center

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Preliminary Information

Elizabethtown College is committed to providing students with a quality college experience both in and out of the classroom. Educational buildings are consistently renovated and kept to high standards. The college has strived to maintain athletic and wellbeing facilities but renovations are costly and over the past few years these facilities have fallen below standards.

Elizabethtown College currently offers access to medical care, counseling services, wellness education, intramurals and group fitness classes. The Body Shop and Athletes Gym are both in need of severe maintenance and are under equipped for the amount of student use. In 1968, Thompson Gym supported 10 varsity sport teams. Thompson Gym now supports 22 sports teams and over 400 athletes share 8 locker rooms. With this extensive list of wellness activities, increasing student population and already crowded athletic facilities, it is evident that the college is in need of a new wellness center. The proposed wellness center will consist of 3 indoor courts, a regulation track, a large fitness center, wellness support and additional space for athletics.

Site Design

We decided to place our wellness center south of the soccer stadium. We chose this location for numerous reasons but primarily because it allows for much more freedom of design. This placement also allows for the inclusion of a NCAA regulation indoor track, which would be impossible in the area around the gym. Also, according to Coach Schlosser, this has basically already been determined as the only viable option. Some people would say that this facility

would be underutilized due to distance from the dorms, but we completely disagree for two reasons.

First, this center is for wellness including exercise, and the distance is not too great for any student without disabilities to walk, especially those students who want exercise. Furthermore, this facility would be close to the quads and the apartments and not much farther than Thompson for those living in Founder's. The combination of these three living communities houses 704 students, while the remaining dormitories house 812 students, which is not a significantly larger amount.

The students living in the closer dorms are also upperclassmen in general who perhaps deserve to use the newer facility and we have also heard that the ultimate plan is to build more dormitories behind this area. This building could be the start to a great expansion of our college. Having the wellness center in this area would also be very convenient place for the soccer, baseball, and softball teams to have their locker rooms because of proximity to their respective fields. Overall, we believe that placing the new wellness center south of the soccer stadium is by far the better option.

Interior Structures

The wellness we designed has five functional areas, a welcome area, and two bathrooms. The main gym is built with a regulation 200 meter indoor track. This track consists of two 60 meter straightaways with two 40 meter curves with a 59 foot radius of curvature. The size of our gym area allows for 20 feet of room to either side of the track on the north and south sides and 5 feet at the narrowest point on both the east and west side. Within the interior of the track, our design includes 3 full size basketball courts between the straightaways with a 25 foot gap

in between each one. These courts are 74 feet by 50 feet each and one will be wooden used primarily for basketball, while the other two will be made of a multi-sport polymer surface from "sport floor." These courts could be used for almost any sport including soccer, field hockey, baseball, and softball. The area between will be made of the same material allowing for larger games if need be. At the ends of the interior area, there will be plenty of room for storage in small containers and bins. Benches can be placed on the north and south sides to provide respite for tired legs.

The design also features a large 20000 square foot additional program space. This area could be used for any number of activities from yoga classes to athletic banquets. This room features a substantial sound system and projector screen that would allow it to be used to show videos and have dances. Removable chairs and tables could also be used here for large school functions such as comedy shows or banquets. This area is simply another big, multiuse area like the KAV.

The 6 locker rooms are intended to be used by the women's and men's soccer teams or the baseball and softball teams (depending on the season), the women's and men's track teams, and opposing teams. The locker rooms come in three sizes all with a length of 28 feet and all include at least one shower and a full bathroom. The smallest two locker rooms have a width of just 12 feet and would either be used for opposing teams or a smaller team such as a basketball team. The next biggest locker rooms will be 16 feet wide and used for medium sized teams. The biggest two locker rooms will be 18 feet wide and will house the biggest sports teams such as the soccer teams. The three locker rooms on the left will be used primarily by women's teams, while the locker rooms on the right side will be primarily used by men's teams. In the middle of these locker rooms will be a 28 foot by 28 foot training room.

The current training room is too small to house all of our student athletes and commonly has a line of students extending out of the doorway. For this reason, it would be ideal to have a large training room at this new wellness center, while simultaneously keeping the older one for the athletes with locker rooms in this area and smaller injuries. This training room will have 10 training beds, a hot and cold bath, an ice machine, and storage space for physical therapy equipment.

Next, our design includes a new 14750 square foot fitness center. Currently, the athlete's gym is nearly 50 years old and commonly gets too crowded for easy movement, which results in safety issues. This new gym would allow for those who still wanted to use the old gym to do so, but the bigger space with new equipment would be a welcomed relief. The cardio equipment will be located on the west side of the room towards the front of the building with windows facing the soccer field so the runners would be able to see the outdoors and possibly some soccer. The free weight area will be walled with mirrors to allow the lifters to see their form. This room will also include water fountains and high end gym equipment that can be found in most gyms around the country as well as a rubber floor.

The wellness area and counselling suite will have an entry and greeting area and many smaller rooms for counselling as well as a small living area with couches for group therapy. The welcome area is made to be open and will have a two wall entryway to prevent cold air coming in the northern doors. The area between the doors will feature some sort of Blue Jay accomplishments such as a trophy case. Inside the welcome area will be Blue Jay banners and nicer couches for relaxation. This area could also include group games such as pool or ping pong. The two bathrooms will be made standard with one for the women and one for the men. The facility also features two storage closets. The first is small near the smaller bathroom measuring 12 feet by 10 feet and will feature shelves to house smaller athletic equipment. The second one is 12 feet by 20 feet and will be a walk-in closet used to store larger items.

Materials

The initial design process began with a selective decision to determine the best suited materials. A large amount of time was spent focusing on which materials to use to ensure proper functionality, cost effectiveness and possible LEED credentials.

Exterior design is based on aesthetic quality but must also focus on insulation, air flow control and the ability to minimize material demands. Exterior walls must shelter the building from weather, shed water, repel moisture and minimize air infiltration. Quality weather stripping will be placed along

doorways and windows to further minimize exposure to outside weather.

Interior walls define spaces and organize the building. Interior walls and floors are not subjected to weather but must be durable and able to withstand the weight of the structures built above them. Our interior design is based off of mandated room dimensions and the need to properly place mechanical systems. Our interior design plan goes a step further to achieve optimum airflow, solar heat gain and natural lighting. The north facing front entrance has a double doorway system that limits air from entering and leaving the building.

Materials free of volatile organic compounds (VOCs) will be used to construct the interior. VOCs are chemicals used to manufacture and maintain building materials, interior finishing and cleaning products (GreenGuard). Studies conducted by the U.S. Environmental Protection Agency have shown that VOC levels inside buildings range from 2 to 1000 times greater than outdoors. These compounds may produce a smell, cause headaches, eye irritation and dizziness. Long term exposure may lead to chronic illnesses (GreenGuard). We are pleased that our interior design materials are VOC free to ensure a safe environment for students.

Insulated concrete forms (ICFs) were chosen for exterior walls through consideration of cost, thermal mass ability, strength, air infiltration and fire resistance. "ICFs are layered like a sandwich: Outer forms of insulating material hold an inner filling of concrete. The blocks have an internal network of voids. Steel reinforcing is put in place as the blocks are stacked, and the forms are then filled with concrete. Insulation and structure are intertwined" (Green Building). The cost of using ICFS is only 3% more compared to conventional wood-frame buildings and ICFs exterior walls will make the wellness center tight, strong and quiet (Green Building).

The green roof will be covered with plants that are native to central Pennsylvania. We have considered the use of switch grass, blue lobelia, cardinal

flowers, turtlehead and mountain laurel. An extensive list of vegetation could be incorporated on the green roof and so the foliage listed above are just brief examples. The walkways on the green roof can be made out of basic flat stones.

The athletic courts will consist of one wood floored court and two multi-surface sport-floor courts. The fitness center will have a rubberized floor similar to the one currently in the Body Shop. The track that surrounds the three courts will consist of a standard indoor track surface. Counseling rooms will have comfortable seating and the floors will be carpeted. The bathroom floors will be smooth finished tile which will clean very easily. The entrance and walkways will be will most likely be linoleum tile but we will consult further with members of Elizabethtown College.

Important Design Choices

The design process for such a large building as this wellness center is intense and for this reason it is difficult to isolate our most important choices. One early choice that we made was to place the center above the soccer field. Next, we came to the conclusion that we should design for a regulation indoor track. This was because according to the athletic director it would only cost \$2 million dollars more and when considering a high cost project like this that is not terribly large. Also, this would allow for the college to house events and camps throughout the year which would create revenue.

We also decided to install a green roof for all of the environmental benefits and energy savings listed above. A side effect of this decision was that we could cultivate any fruit that grows on a bush and use it in a smoothie bar below. This bar would have to be supplemented with other fruit, ice, yogurt etc., but we still think that it would be a cool way to encourage healthy dieting and also save the college money.

Another way we decided to save money was by designing this wellness center in one story. Since it was possible to fit everything in one large story, we

felt that it was unnecessary to build multiple stories purely for aesthetic reasons. One more interesting design choice was to build the six locker rooms with variable size. We felt that this would allow the most athletes to be housed comfortably because the size of different sports teams on campus is inconstant. The basketball team for instance has a roster size of about 15 players, while the soccer team routinely grows above 30. It would not optimize occupancy to have 6 locker rooms of the same size.

We also opted for a clear story. Along with the required overhang, this will allow for a beautiful natural light and no excessive temperature increase within the building. This will greatly contribute to the overall beauty of the wellness center. All of these design choices are what separates our specific design from the other designs that will be presented.

LEED Accreditation

Although it might seem more expensive in the short-term, we believe that designing this wellness center with the environment in mind would benefit the school long-term, especially when you consider the triple bottom line. This standard for cost management involves social, environmental, and economic cost. Over the total life cycle of this center, thought to be at least 50 years, we believe that minimizing the energy, water and other environmental uses will be economically beneficial to our school. Socially, this new facility will bring great joy to the student body, especially because our school sincerely cares about the environment. Finally, following these lead standards we will be able to have a smaller negative impact on the environment, which is good for the future of the world. Here is a list of some of the LEED credits we intend to achieve.

In location and transportation, the center will be placed in a high density area of a college campus and will be used for a whole variety of uses listed above. Elizabethtown College is also located within a mile of the Amtrak station and therefore has access to quality transit. We also included bike racks at every entrance to encourage less use of motor vehicles as a means of transportation.

For the sustainability of our site, we chose an area that is currently mostly open space and thus

will require minimal demolition. We also intend to use the plants that will be displaced as part of the green roof and will therefore cause minimal impact on the habitat. This aforementioned green roof will also provide rain water management and reduce the heat island effect substantially, as the roof will not be black. We will also use water tanks to recycle gray water and use it in the toilets. This will greatly reduce the indoor water use. Over the life cycle of this building, there will be significant reduction in the impact of this building. We will use insulated concrete forms (ICFs), which create a very well insulated building and therefore reduces energy use.

As far as indoor environmental quality, we will not allow smoking in or around the building and will refuse to use any carcinogenic materials or volatile organic compounds. The well insulated building will be equipped with a heater and air conditioning system as well as ventilation capable of providing thermal comfort year round. We will also ensure that the building has enough light that the facility can be fully operational at any hour, although most lights will be triggered by sensors and will not be on when there is no one in the area. A set of high windows around the whole gym, known as a clear story, will provide great natural lighting to the center during the day. The building should be highly aesthetic with a warehouse design as well as Blue Jay banners and high windows.

Many other LEED credits come from things that are outside our control, but we would certainly encourage. First, we would suggest that a LEED accredited professional be a part of the design team and that the building would be made using advanced commissioning. We would also hope that those constructing the center would be transparent with all the building product and optimization and therefore provide the public with information regarding the environmental products, material ingredients, and materials themselves. Also, during construction, we would encourage that the construction and demolition waste was managed in an environmentally friendly fashion. The construction workers should also be protected using a construction indoor air quality management plan.

Lastly, throughout our design we strived to optimize the energy performance of our wellness center, but we are unsure about the extent of the credits we would receive. For starters, we chose to put our

door on the north side of the building and are aware that this is not energy efficient. For this reason, we installed double glass doors with ten feet in between. This will hopefully ensure that both doors are not open at the same time and the cold winter winds would not be allowed to pass through. We also designed for the optimal overhang of 7.5 feet using the equations listed in the text for optimal shading. As previously stated, we will use rainwater collection to recycle gray water to reduce the water used in our toilets. The biggest energy saving design choice was the green roof. This roof will greatly reduce the heat island effect in the summer and allow for a well-insulated building in the winter. We also chose to make the exterior walls out of insulated concrete forms, which will provide a strong thermal envelope and minimize the amount of energy needed to heat and cool the building.

Overall, we believe that we would definitely achieve a LEED certified status with a minimum of 40 LEED credits. If the installation was done correctly, and all our energy performance was optimal then we could achieve a Gold LEED accreditation. Beyond this accreditation, we believe that designing with the environment in mind is the responsible thing to do for the future of our society and our world.

Closing Summary

Overall, we found this project to be both very interesting and very rewarding. We all learned new design software in Revit, and learned about the innumerable design elements and choices that go into a large scale project such as this wellness center. Simultaneously, we were able to design a beautiful building and we hope that some of the design elements will be implemented into the final design. We realize that we were not as concerned with the economic side of things, but when considering the triple bottom line, we believe environmental concerns should be considered. It is our generation's collective responsibility to stop the downward environmental spiral and protect the world we have home. Too many people are solely concerned with short-term wealth and therefore fail to do what is right.

Furthermore, over the life cycle of the building it will save the college money. The wellness center should

be placed behind the soccer field because it will allow the college to build it the way they want for the cheapest possible price. We hope that the architects consider employ some of the following including a green roof, clearstory, full-size track, and one story design. This center should serve the student body's wellness in the physical, mental, and spiritual sense. Physically, it includes a gym and fitness center. Mentally, there is a mental health and counseling center. Spiritually, the additional space could be used for worship and working out is good for the soul. All in all, we just hope that when this wellness center is finally built, it makes Elizabethtown College a better place.

References

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