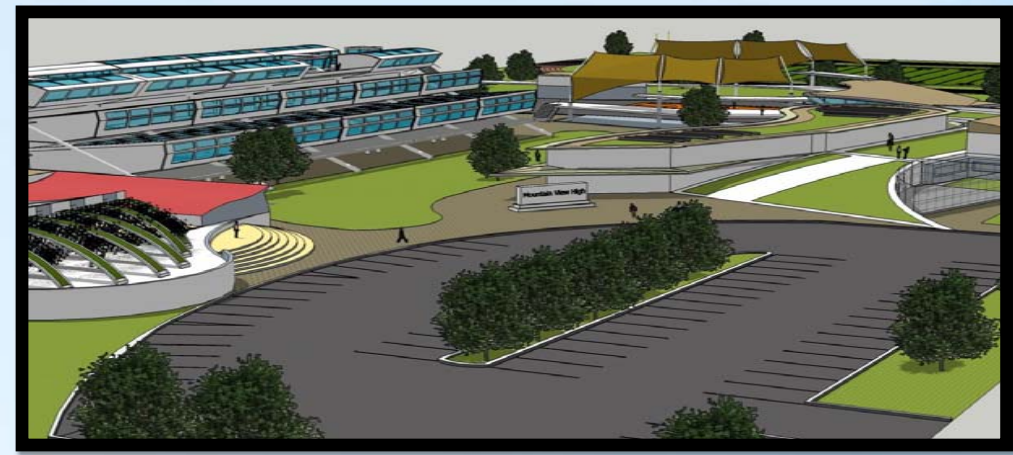


Mountain View High School

Oposing the traditional design of a modern day high school, we decided to take a more radical route in the construction of this educational facility. With the concept of energy efficiency and natural lighting in mind, our inspiration was taken directly from nature itself: using the design and structure of a tree. When it rains, the slanted roofs of our main building guides the water to the center and then to an underground tank. This water is then recycled and used irrigation and other purposes. Solar panels installed on top of the roofs capture sunlight, much like the leaves of a plant, and converts it to usable energy. Moreover, glass roofs provide natural lighting, creating an ecologically conscious school. All these different aspects combine to form a highly eco-friendly and self staining school.



Define and/or describe the problems/challenges you faced when deciding on the design project you chose to do for the competition.
 We immediately decided on designing the ideal school because we felt that we were most familiar with the aspects of an educational environment. Many of us had different ideas of where we wanted to build our school; some wanting to build in the cities, while others in suburban areas. Another topic that was difficult for us to decide on was the content of our school such as whether or not to have a baseball field.

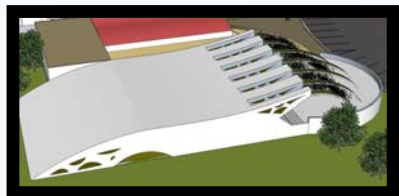
Thoroughly describe your design process.

We first thought of making each of our buildings to have an eco-friendly function. We came up with the ideas to make our buildings generate energy, have green roofing, gather rain water, and provide natural shading. Instead of just adding energy efficient and green installments (energy efficient lights, water saving toilets, etc.), we assigned each building a function or functions and integrated them into each building's design. Our other goal was to make our structures to look unique and aesthetically pleasing in order to provide a friendly learning environment for the students. Throughout this process our buildings started to evolve, warp, and change as we came up with new ideas.

A



At the front of the school is theater. A rib-caged roof where vines grow to provide natural shading is at its entrance. Next to the theater, there is a cafeteria on top of the library (red Roof).

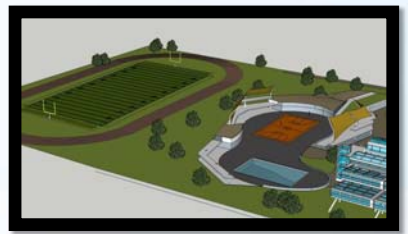


B



This is the administration building, which has 12 classrooms integrated within its two stories. There is a ramp in front of the school that multi-tasks as a walk way and a green roof to the first floor of the administration building. Resting on top of the second floor's green roof are solar panels that provide some energy to the school.

C

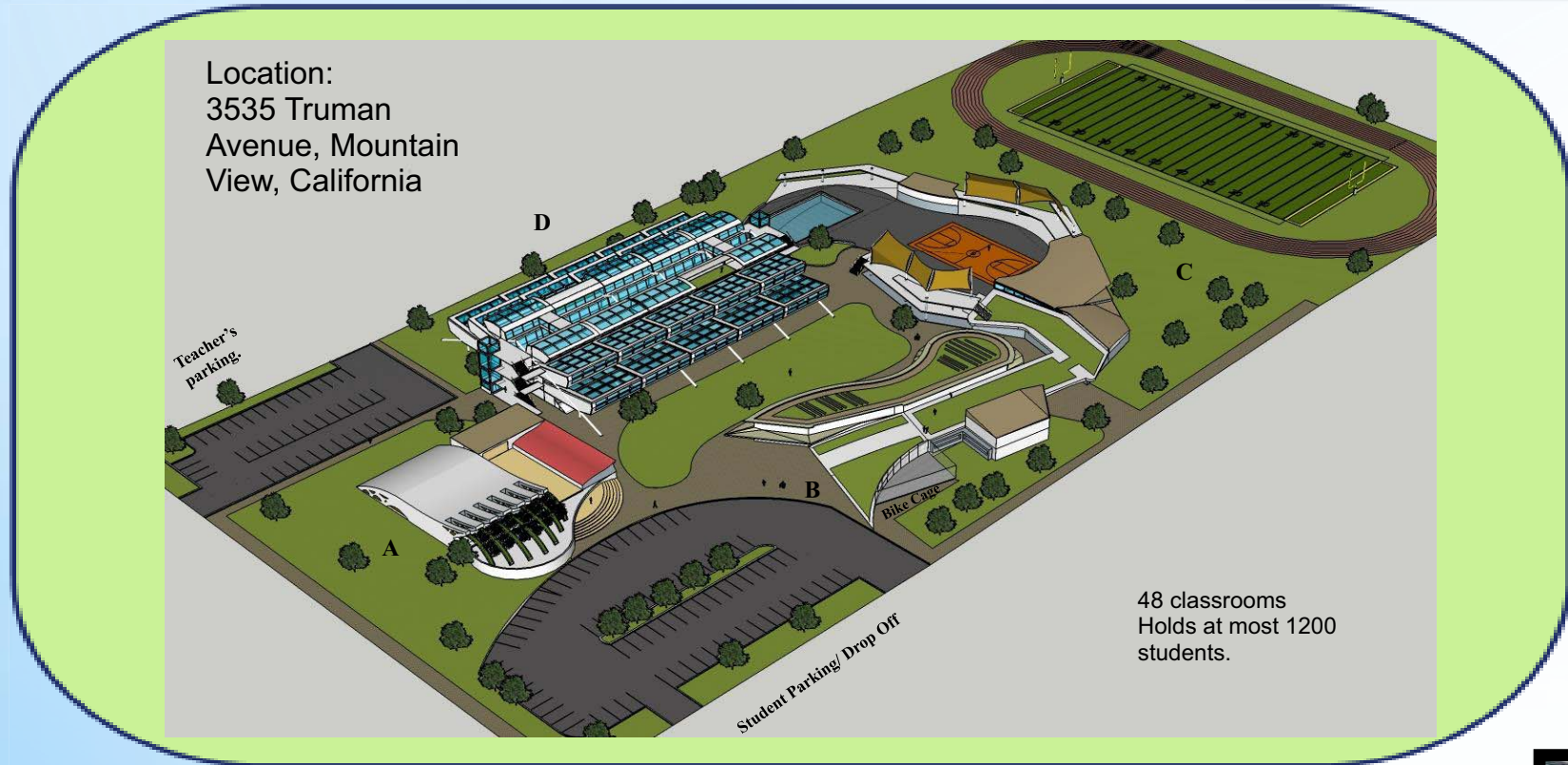
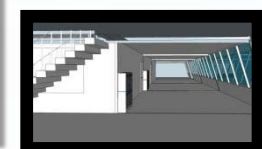
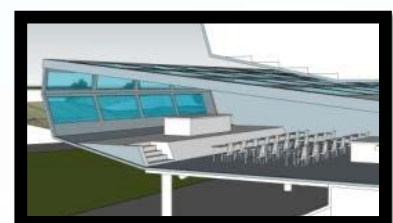


Connected to the administration building is the athletics building. This include boys and girls locker rooms, a weight room, storage rooms, and an outside basketball/ volleyball and pool. Surrounding the court are stands like a coliseum, where students sit and watch games or school rallies. There is no roof for the basketball courts to minimize costs. Instead, there are cloth sheets that expand over the stands. These provide shade for students, and reduce wind.

D



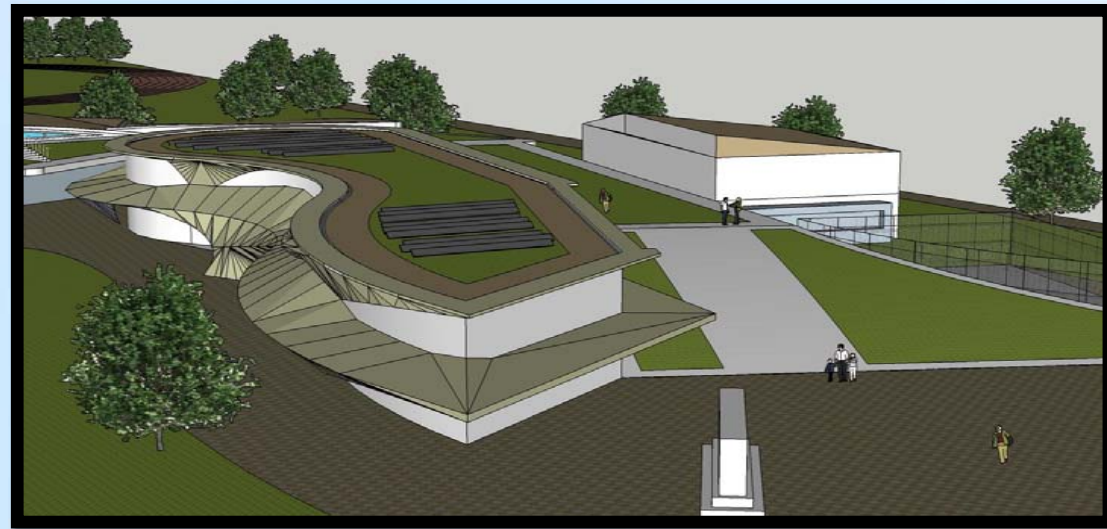
This is the largest building in the school. It contains 34 classrooms, four bathrooms and Lockers. Each of the four levels has a unique type of classroom that pertains to the subject taught. For example the sciences would be held on the second level because of its spacious room and the third floor would hold math or history because of its college/ lecture like classrooms.



Estimated Total Cost: 86.2 million.
 Site: 10.6 million. Buildings: 75.6 million

Designers and Inventors From Palo Alto High ACE: Joseph Chang, Ariel Rao, Christina Nilles, Beatrice Goh, Jake Caccamo, Katia Kiefaber, Chloe Merriam

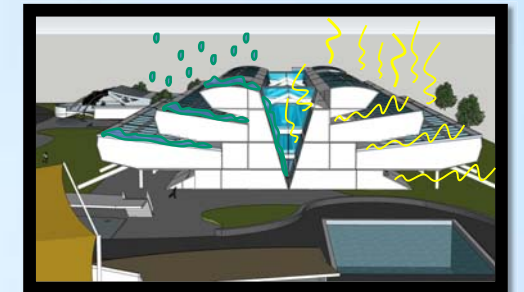
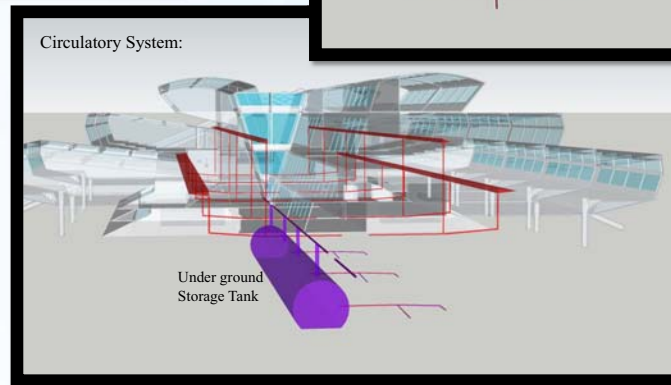
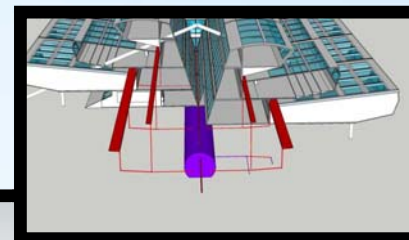
Concealed eco-Friendly Functions:



Question C: Explain how your design approach is an appropriate, innovative solution to the design competition problem. Explain how your design is different from other approaches or processes, if such is the case.

Our design process approach is an appropriate, innovative solution to the design competition problem because given that California reforms are striving to create more environmentally conscious schools, focusing on Eco-efficiency is relevant, and appropriate to current and, likely, future efforts to preserve our Earth. We incorporated energy efficiency as one of the core foundations for our school and it serves as one of the primary reasons that our school is a solid competitor in this year's competition. We strived to make our school as self-sustainable as possible. Reducing the need to use city recourses, such as water and energy from power plants, saves money and cuts the school's carbon footprint. Our school can be placed in almost any area, to promote education. Places that are prominent in agriculture or isolated cities (in Alaska), would be able to have a functional school that can generate recourses like energy and water to its city. This school can also be built overseas to bring education to kids in rural areas.

We structured our education wing based upon subject matter, such as science, history and math, in order to maximize the sharing of resources amongst similar subjects. For example, different Chemistry teachers, are able to share ideas and supplies for labs more easily and effectively, reducing hassle and allowing more time to teach. Students as well can conveniently interact with each other and are able to explore and learn material through group discussion. These discussions are provided in study rooms, which are located on each level and open lounges on the top floor. Our teachers are knowledgeable in each subject matter pertaining to that floor level in order to thoroughly help students who need it. We tactically placed many stairs, entrances, and walkways around the school for easy access and reduce traffic. These instilments will provide students with the resources needed to excel academically.

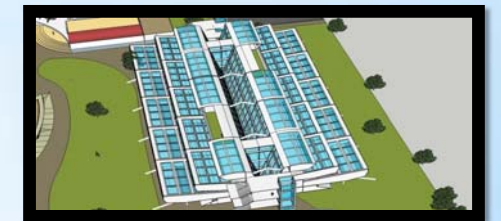


Question D: Describe any social/ecological or otherwise beneficial qualities of your design solution. For example, is it a universal design? How? Is it environmentally friendly? Does it use cost-effective or recyclable materials?

Our design is very environmentally friendly in that the structure is taken directly from nature itself, keeping in mind the famously common symbol of the tree. Moreover, our buildings were designed with the idea of energy efficiency in mind. This carved the path for the idea of integrating nature into the architecture of our buildings. Viewing "green" as the basis of life, we used the structure of a tree as the foundation for the academic wing of our school.

As a tree has leaves, each classroom is represented as the branches of the tree, each extending out to maximize the lighting received in the classrooms. Natural light replaces expensive, energy consuming electricity, more specifically lights. The classrooms have roofs that slant inward, allowing the water, when it rains, to funnel towards the center and be recycled for irrigation purposes. Additionally, the roofs are lined with solar panels which capture sunlight and convert it to usable energy.

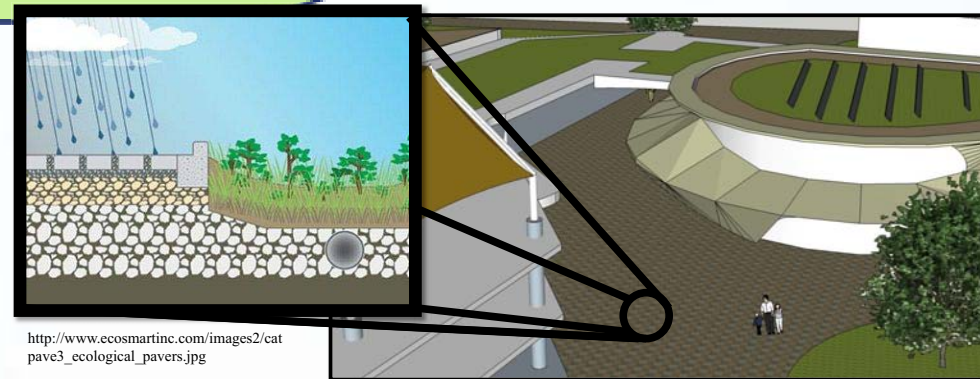
Our school utilizes recyclable materials as well in the construction of our buildings. Some include recyclable metal, shredded wood, recycled glass. In class, students also use recycled paper for classroom activities. We use recycled tires and the soles of athletic shoes in creating our athletic field. Also recycled rubber is used to insulate classrooms. All facilities employ CFL lights that operate in accordance to motions sensors in the room that detect when people are in the room. To supply hot water to our sinks, the school is built with tankless water heaters that only supply hot water sporadically, instead of continuously, in order to save water and energy.



Question E: Describe what you learned from this design competition.

We learned that making a school has its challenges as we had to, overcome adversity and understand the key components of a school. There is an abundant amount of information needed

There are many people of different backgrounds and educations needed to develop and construct a school. Opposed to traditional homework, ACE exposed us to a real working environment in which we had to meet deadlines and group collaboration became a necessity. Through this, we were able to meet new people with whom we had to share our ideas and compromise, in order to optimize the proficiency of the project. Also, we were taught to use many technical programs, such as Sketch-Up, which allowed us to illustrate our intricate design ideas more visually. Topics we learned: architecture, mechanical engineering -fields, careers, Eco-friendly aspects, how buildings work - mechanisms, LEED, importance of ventilation, difficulty of following building standards, adhering to rules, codes, explored unique, aesthetic designs, building sustainability - (structure shaping, molding, forming).



http://www.ecosmartinc.com/images2/cat/pave3_ecological_pavers.jpg

Not only does our main building collect water but by using Permeable pavers, our school's side walks and parking lots can too. The tiles we will use will have cracks in them to allow water to seep through and reach our fields, and plants. It also acts as a drainage system, minimizing the need to make more storm drains.