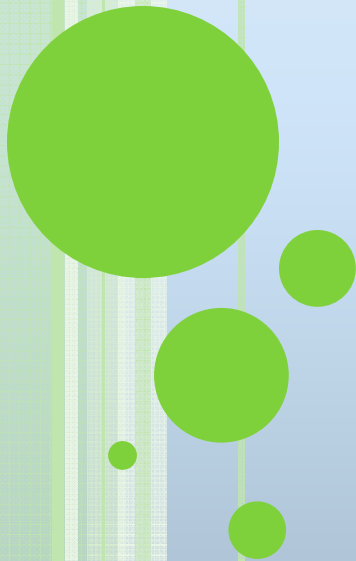


AURORA OUTREACH MIDDLE SCHOOL

Hope for the Forgotten and the Future



PLANNING PROCESS

Our team started with twelve students turning in an application. Eventually, we were narrowed down to a team of eight. We started by talking about where we wanted our school to be located. We knew we wanted to reclaim an area, and finally decided on a landfill. Next, did some programming to see how our spaces would relate to each other. We decided on conventional teardrop shape lifted off the ground to allow for parking underneath. After that we decided on our themes; Alaska, Hope, and the Aurora Borealis. Next we all decided what we wanted to work on and got to work on floor plans, model building, writing the narrative, designing our digital storytelling, writing the presentation, as well as researching sustainable technology. This school represents everything we want our future to be.



THEMES

Our themes include Hope, the Alaskan Frontier, and the Aurora Borealis.



H_{ELPING}

O_{UR}

P_{EOPLE &}

E_{NVIRONMENT}



© Martin W. Grosnick



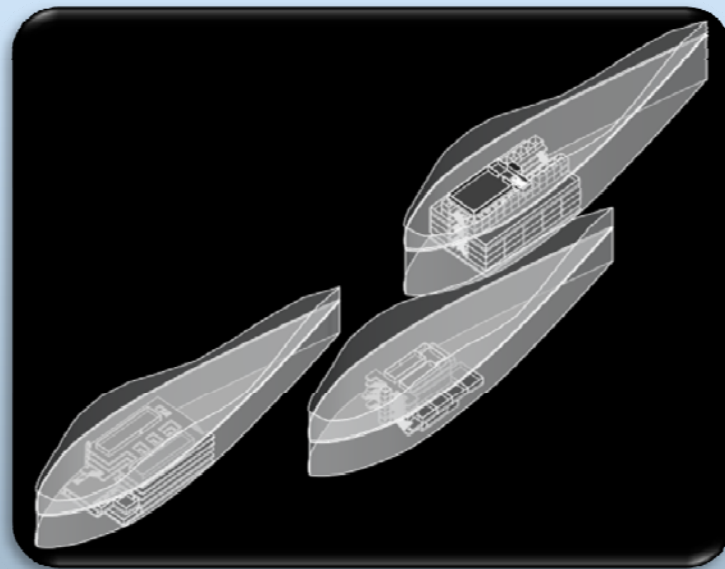
LOCATION

After much consideration, we decided to build on a landfill. However, there were several problems we had to solve, such as settling, gas inhalation, groundwater contamination, soil contamination, and explosions.



SHAPE

We decided on a teardrop shape; it is very aerodynamic, with only a .04 drag coefficient. This would prevent snow drifts in our snowy, windy valley. We will also be able to have an inner and outer structure, to allow for passive security. The buildings would be lifted off the ground to allow for settling, prevent drift, and provide covered parking.



BUILDING ON THE LANDFILL

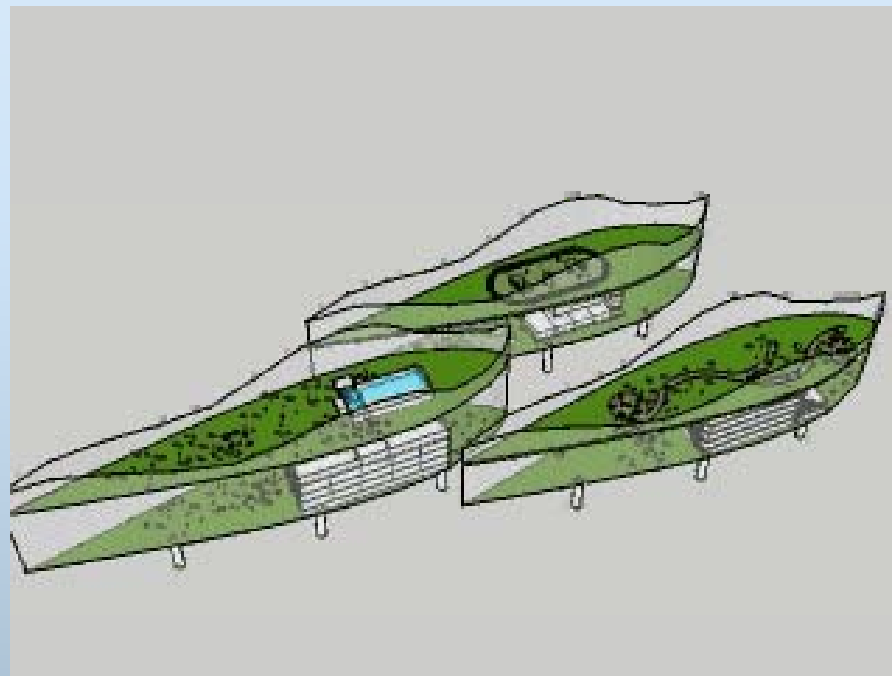
First, we would landfill mine the area. This would remove the salvageable and hazardous materials. We will drill concrete piles with a bitumen slip coat to prevent settling. Next, we would put in methane pipes to prevent explosions and gas inhalation problems as well as provide methane for heating our school. After that carbon sequestration would be used to form the buildings' foundation and main support structures.

Both the contaminated ground water and the landfill leachate will be purified in the "living machine" and hydroponic water purification system. Soil contamination won't be an issue, because we will have a few feet of clay acting as a liner. 700,000 gallons of leachate were trucked to Anchorage for treatment in 2008. Having the purification system on the lot will save tons of fuel and money.



BUILDINGS

We have three main buildings; our school building, a recreation and exploratory building, and a homeless shelter.

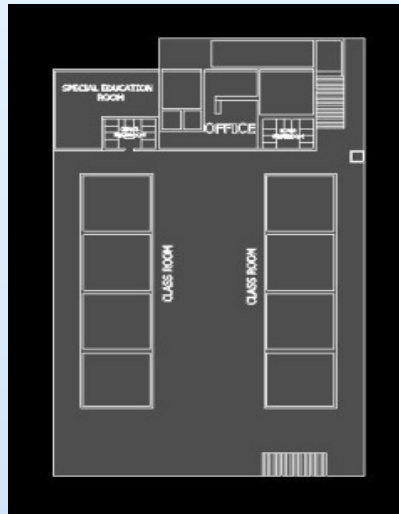


SCHOOL BUILDING

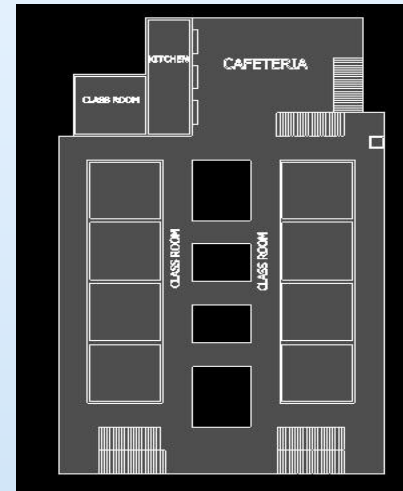
Our school building has an inspiring, educational environment. Our hydroponic gardens are also located on the top floor of our school building. There are plants located around the building to provide air quality and motivate our students through biophilia.



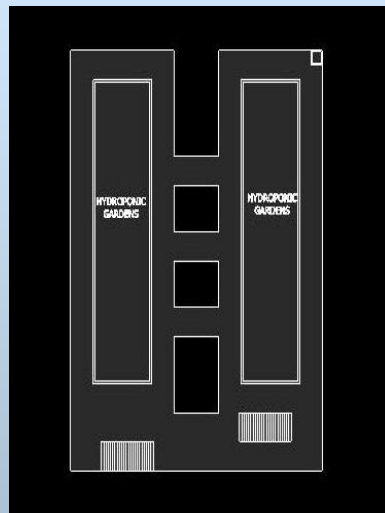
SCHOOL BUILDING FLOOR PLANS



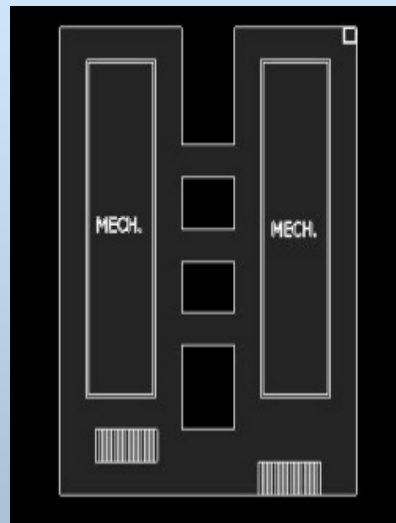
First Floor



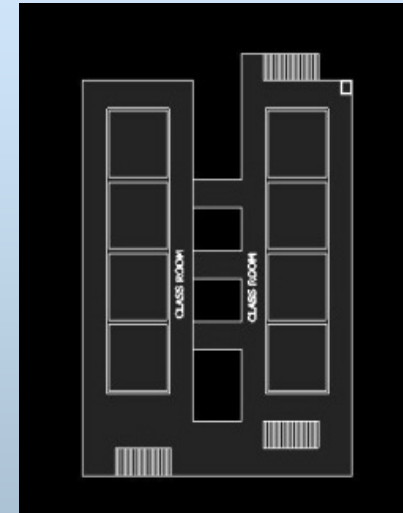
Second Floor



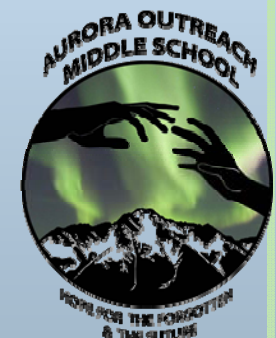
Third Floor



Fourth Floor



Fifth Floor

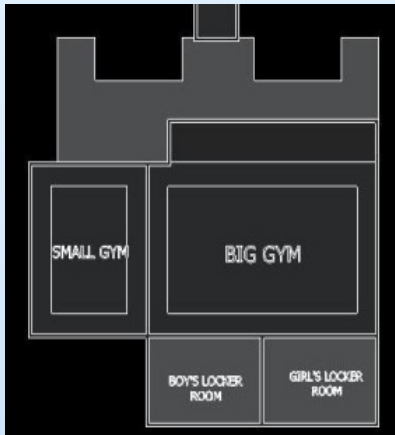


RECREATION AND EXPLORATORY BUILDING

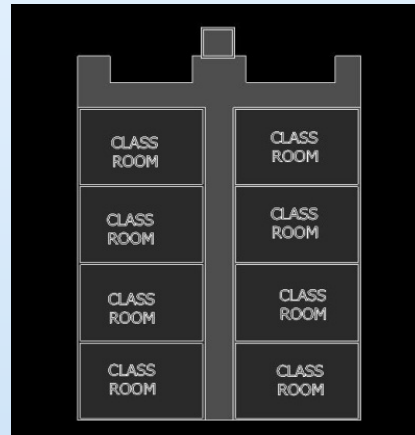
Our next building is the Exploratory and Recreation building. This is where all of our classes like art, fashion and design, native cultures, and industrial technology are held. Like the other buildings, this building has a green roof which incorporates a walking track and a soccer field. There is also a field on the roof, which is a green roof similar to those on our other buildings.



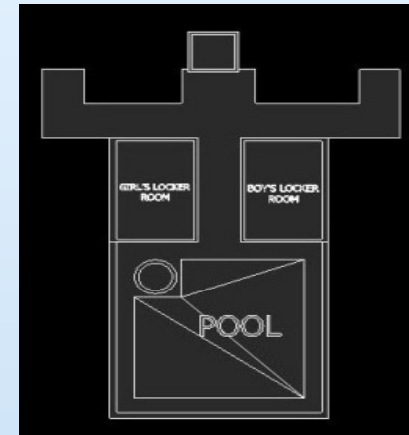
RECREATION AND EXPLORATORY BUILDING FLOOR PLANS



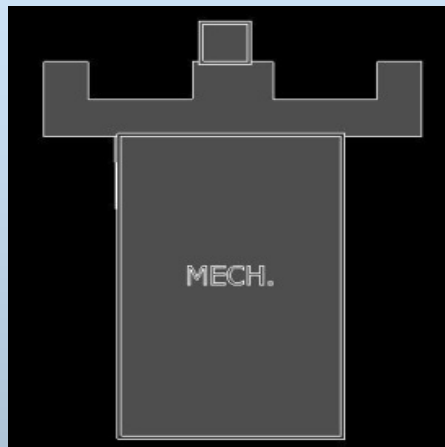
First Floor



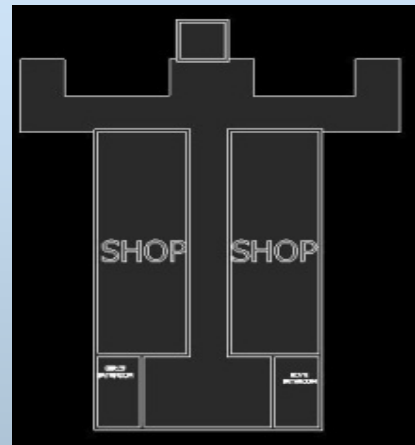
Second Floor



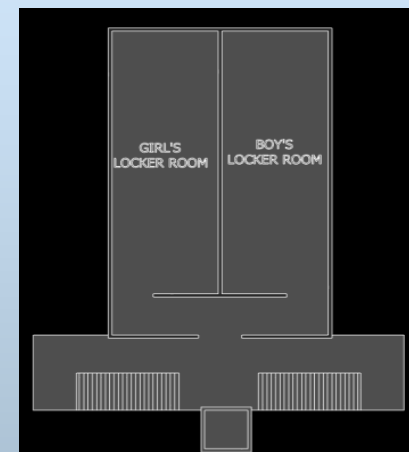
Third Floor



Fourth Floor



Fifth Floor

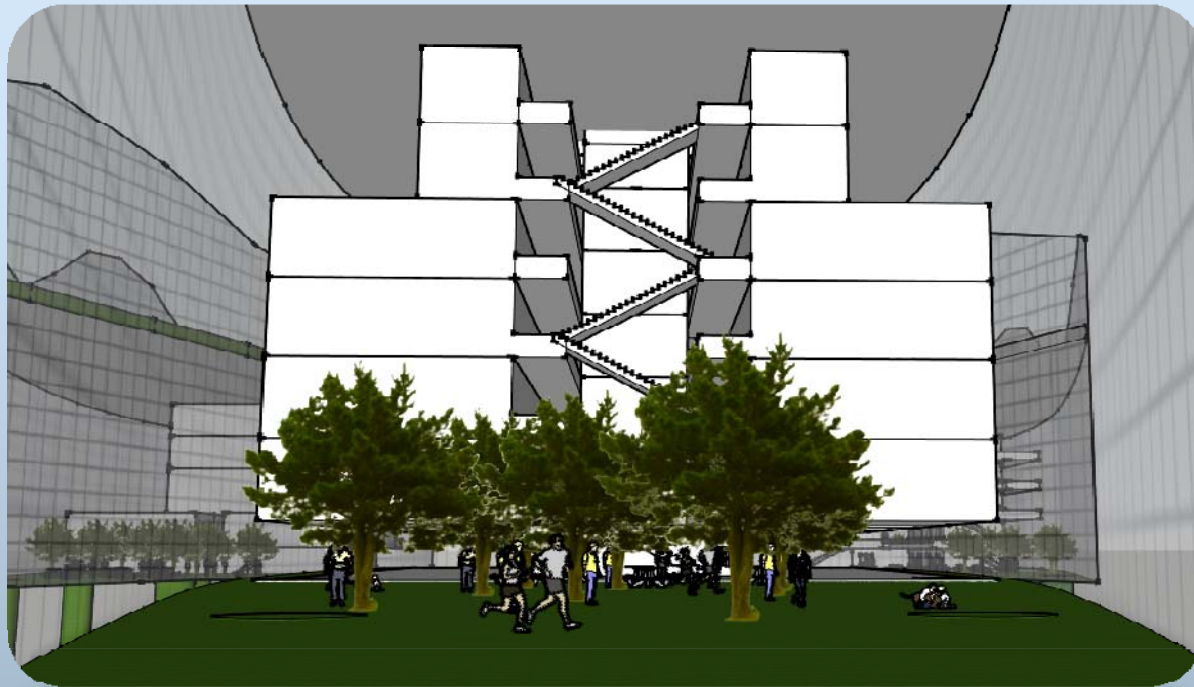


Sixth Floor

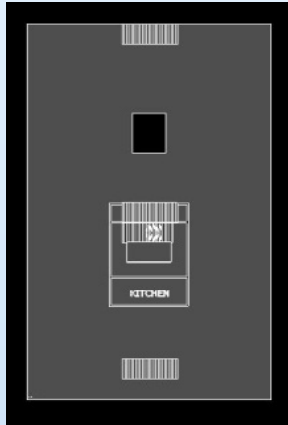


STUDENT AND FAMILY DORMITORY

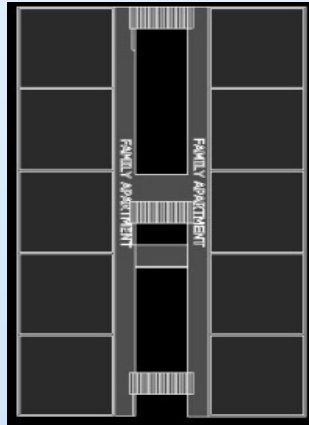
Our dormitory is one of our most important buildings, where we can house some of the homeless in the valley. We will be able to house 100 students and 50 families out of the 400 homeless in the valley, 180 of which are unaccompanied minors. Our observatory is also located in the homeless dormitory.



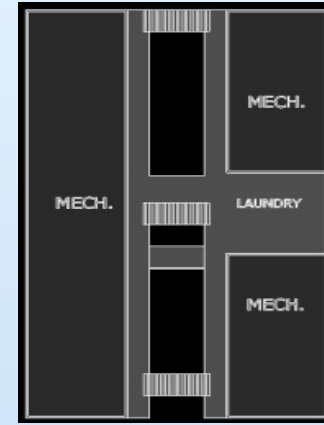
HOMELESS DORMITORY FLOOR PLANS



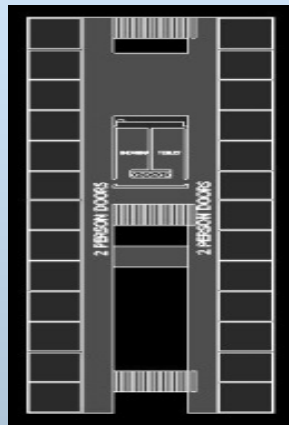
First Floor



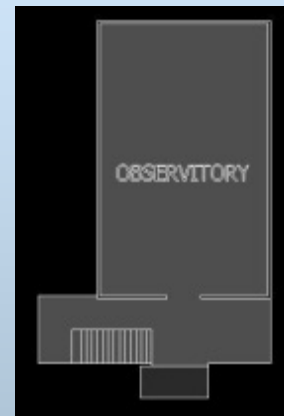
Second-Fourth
Floors



Fifth Floor



Sixth-Seventh
Floors



Eighth Floor



HOMELESS IN OUR SCHOOL

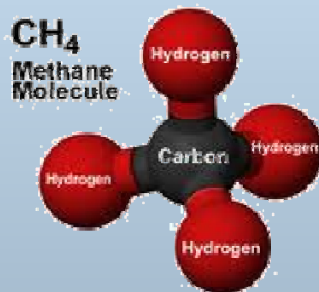
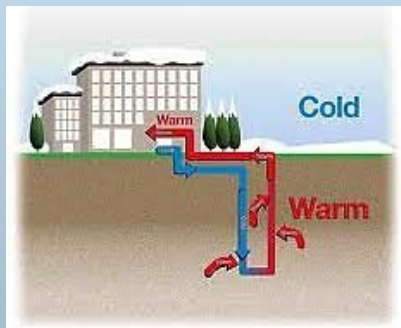
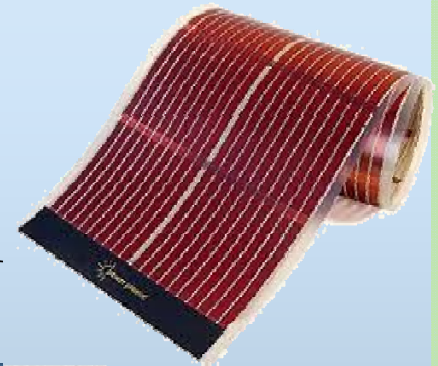
We all agreed that we wanted dorms incorporated in our school, and after we met Kristen Hill (the School District Family Connection Representative) we decided on homeless housing. She talked to us about the homeless in our valley. We decided that the dorms would be available to the homeless, after they go through a screening and background check. There will be a thrift store that the community and students can donate old, gently used clothes to be given to the homeless or sold to the other students at a lower price. Adults may be employed in the thrift store or our cafeteria for income and job experience.



RENEWABLE ENERGY

We have four main renewable energy resources; wind and solar for electric energy, and geothermal and methane for heating. Wind is abundant in the valley, and comes off the Matsu glacier. We have vertical axis wind turbines between the buildings, these will take advantage of the Venturi Affect.

We will use indirect solar energy with thin, flexible power plastic on the interior of the school like wallpaper. Our geothermal heating is a heat pump that transfers heat from the ground to the building. We will also get methane from the landfill and our anaerobic digester.

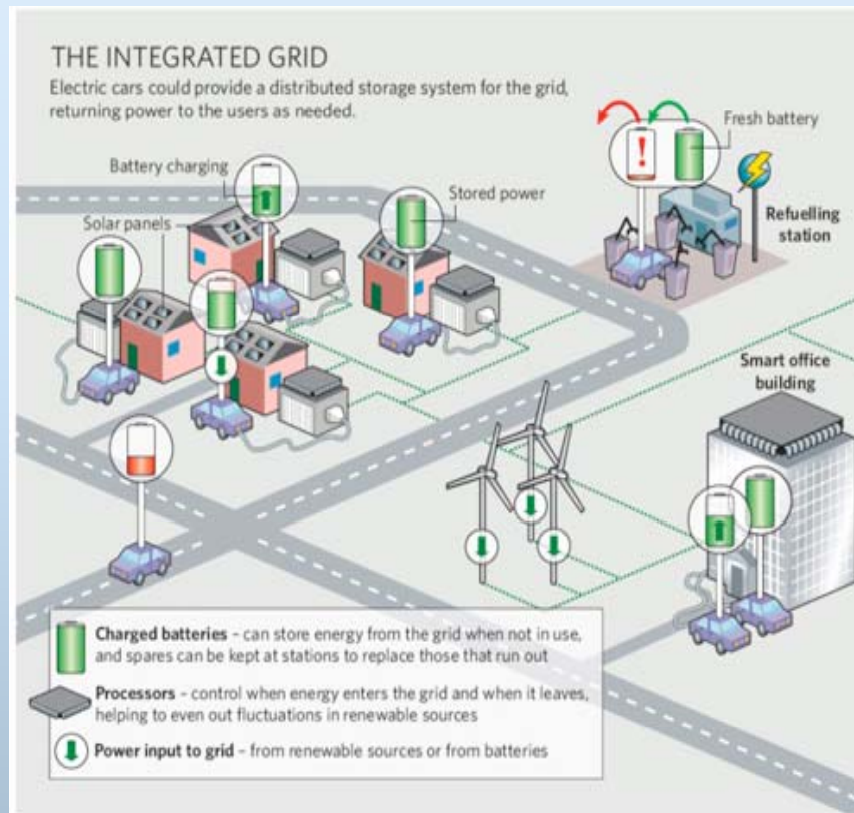


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GRID INTEGRATION

Aurora Outreach will also be integrated with the grid. The school acts as a sponge, soaking up power when the grid has extra energy. If we have energy to spare, we can put it into the grid and if we aren't producing enough power, we can pull some from the grid. It will hold it in a hydrogen fuel cell until the extra energy is needed.



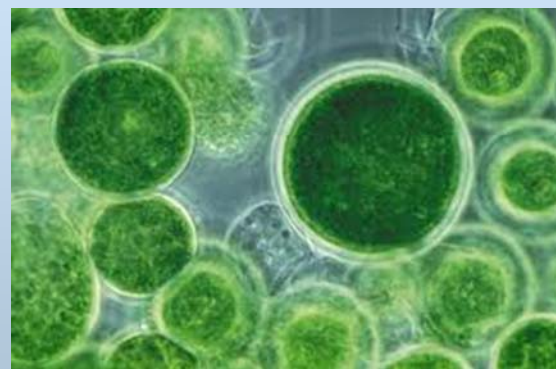
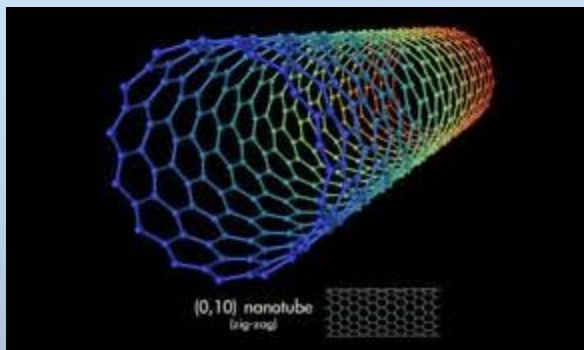
ANAEROBIC DIGESTER, “LIVING MACHINE”, AND HYDROPONIC GARDENS

Our community's black water, landfill leachate, and the rain water we capture will all go into the anaerobic digester. This is a machine in which bacteria breaks down the waste and leaves behind the fiber. The fiber then can be used as building material. The nutrient rich substance that is left behind is sent to the “living machine”, where it will be purified. The plants in the “living machine” release water vapor, which is condensed. This is used to feed our hydroponic gardens which produce water and fresh food for our students.



BUILDING MATERIALS

Our school's main support structures will be formed from carbon sequestration. We will also build with carbon nanotubes, one of the strongest possible materials due to its lattice structure. Our carpets will be made of algae based bioplastics, which are products made with algae's oil instead of petroleum.



SPECIAL EDUCATION

We wanted to have our school teach all kinds of learners, including those with special needs. We have included both quiet and sensory rooms. There is wheelchair access everywhere in the school, even the homeless dormitories. Our school has special bathrooms and showers, as well as a fire lane. Our acoustics will be controlled with aluminum sound boards and will have no greater than 30bDA as well as a reverberation time of no more than .4 seconds. Our special education area is located in the school building.



“LIKE” DEVICE

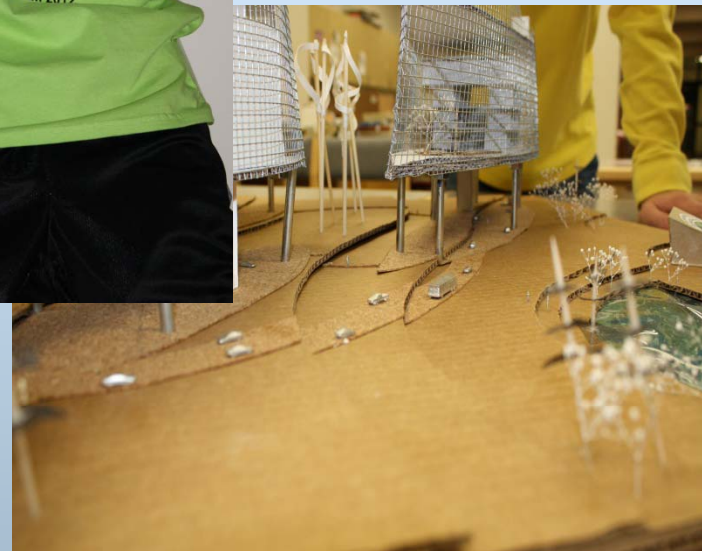
We wanted our school to be paperless, because it takes 45 liters of water to make one piece of paper. We have combined a Laptop, iPad, Kindle and colored E-Ink to make the “LIKE” device. The device will be lightweight, and much more portable than textbooks or binders. It will hold all of the students textbooks and work they have done. This will make it hard for them to lose things, because everything will be stored in the cloud. Artwork and announcements will be displayed on OLED screens. This will save the school over \$200,000 a year in paper, save trees, and save water.



PRESENTATION BOARDS



MODEL



HISTORY OF THE LOGO

When the logo was created, we knew we wanted to incorporate the Aurora Borealis. We started by drawing up some ideas, and we liked a sketch that showed two hands outreaching towards each other with the northern lights in the background. Next we found pictures of hands and the aurora, and put them into Auto CAD. We all took turns creating the hands, and superimposed them on a picture of the northern lights in Photoshop. Finally, we added our school name and motto, and we had our logo.



TMS DESIGN TEAM MEMBERS

Kea Bekkedahl: Presenter and Interior Design

Dylan Blohm: Model Builder

Shannon Burden: Model Builder and Narrative

Kailey Carlson: Power Point and Boards

Jacob Gudz: Model Builder

Sophie Miller: Presenter and Researcher

Alex Neubauer: Sketch Up Artist and Presenter

Samantha Stewart: Narrative and Model



OUR SCHOOL

Aurora Outreach Middle School was built on the idea of hope. Our students learn from the community, and the community learns from the unique technologies at our school. All of this makes us an incredible school with hands on learning, community involvement, an integrated curriculum, and environmentally friendly resources to inspire our students. We have a sense of pride in knowing that we are helping our people and environment for future generations.



AURORA OUTREACH
MIDDLE SCHOOL



HOPE FOR THE FORGOTTEN
& THE FUTURE