



ARCH 3691  
2013

Advanced Design and Building Information Modeling February

<b>Your Name:</b>	HOCHUL KIM
<b>Name of Project:</b>	Canada house
<b>Preference:</b>	Yes, I would like to develop a BIM model of this project.
<b>Use of Passive Solar Strategies</b>	
The curved roof shape can easily convert solar energy into electricity. The high performance of solar panels, which are 8.3 KW Photovoltaic systems, meets to Reed standard in summer and winter sessions.	
<b>Use of Sustainable strategies</b>	
Loop ventilation system can help save the heat energy. Fan coil and Air to Air exchange system make to reuse the heat energy. So, users get the heat water and temperature by using small solar energy.	
<b>Use of Technology</b>	
Loop water heater Fan Coil + Air - Air Exchange Unit Refrigerant to water heat exchanger	



**Use of materials**

The builders use the anti-fired walls to prevent other buildings from being spread and collapsed.

**Photovoltaic strategy**

The roof of solar panels face to the direction of the sun rising. Therefore, the solar panels are exposed to the sun longer. And, It can generate enough energy to maintain the Canada house. Also, the rounded-roof avoids covering the solar panel by heavy snow.

**What strategy would you copy? What is the greatest strength?**

I would like to develop rounded-shape roof because it can be not only beauty of exterior decoration of the building, but also, increase in energy efficiency in cold areas.

**What is the greatest weakness of the entry? What would you avoid?**

This building is typical house. There are no interesting features. So, I would like to avoid simple structure and shape of building.

**Additional comments?**

This project is for native-Americans. But, the concept origins from Tipi house and their culture. I would like to reorganize the concept and point out support reasons on this project. And, I want to make eco-friendly house to use other natural elements.



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<b>Your Name:</b>	HOCHUL KIM
<b>Name of Project:</b>	Re-Home
<b>Preference:</b>	
<b>Use of Passive Solar Strategies</b>	
This project uses a 7.2 kilowatt solar panel to generate electricity. To maximize solar power, the panels are arranged carefully. Therefore It can minimize having shade.	
<b>Use of Sustainable strategies</b>	
There is a double layer system. This system traps a loss of heat energy because it delays to transfer energy between indoor and outdoor. Also, this house use thermal energy. It save spend of electricity.	
<b>Use of Technology</b>	
ventilation system HIT PV Smart phone application	



### Use of materials

This project uses recycle materials. By using second-handed material it is useful for environment because we do not need to cut down trees. Also, the material is less heavy than others. So, it is easily moved by cranes.

### Photovoltaic strategy

The solar panels are tilted to the sun. It is helpful for accumulating solar energy. The angle of solar panels can face sun ray directly. And It can make more energy than horizontal solar panels.

### What strategy would you copy? What is the greatest strength?

I think pre-fabrication design is good for this project. It is because the house is easy to be built up. Usually, we need a lot of human resource, space, and materials. But pre-fabrication design saves the time and labors because each part can be made in the factories.

### What is the greatest weakness of the entry? What would you avoid?

Generally, pre-fabrication house week for insulation. So, the house is hard to maintain certain temperature.

### Additional comments?

I think the good advantage of this house is easily to move to other places. And, we can shorten the construction period.



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<b>Your Name:</b>	HOCHUL KIM
<b>Name of Project:</b>	Living Light
<b>Preference:</b>	
<b>Use of Passive Solar Strategies</b>	
The wooden house maximizes the open space. And the louver system helps house to keep average annual temperature to control amount of the sun ray.	
<b>Use of Sustainable strategies</b>	
This building has a long-span louver. It is good for energy efficiency because the louver makes shade in summer session, but allows sun ray to reach the deep side of the building during winter. This is because the angle between the sun and ground level is decreasing in the winter time.	
<b>Use of Technology</b>	
Phone application can control temperature and light with one click of the button. Double facade system Energy-saved Pumps reduce usage of the electricity. Unit Design allows dweller to move anywhere easily.	



### Use of materials

Using wood materials and milky glasses reflect the sun ray. By stopping penetrating the ray into the house it reduces to rise indoor temperature. Also, the wood material emotionally helps people to feel comfortable and warm rather than other materials.

### Photovoltaic strategy

Cylinder-shaped solar panel and flat reflector help accumulate solar energy more efficient. The bottom side of the solar panel catches the bounded sun ray. So, It can produce more energy than general solar panel.

### What strategy would you copy? What is the greatest strength?

I want to use the blind glasses and louver system in this project. It would reduce a lot of energy cost and maintenance fee. Also, the blind glosses would help residents to have a private space by screening the view from the outdoor.

### What is the greatest weakness of the entry? What would you avoid?

In my opinion, wood material is not benefit for the house. Wood cannot contain a lot of energy by itself. That means it cannot emit the capped energy during the night time. So, residents should spend more energy.

### Additional comments?

Every material has different percentages of exchanging the energy. The glasses are great loss of heat energy. So, architect should not abuse the glasses in their building design.



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<b>Your Name:</b>	HOCHUL KIM
<b>Name of Project:</b>	Flex House
<b>Preference:</b>	
<b>Use of Passive Solar Strategies</b>	
The wood panels make a shadow. And, the whole glasses windows horizontally allow the sun light to reach inside of the building. Therefore, the house keeps appropriate temperature without special facilities.	
<b>Use of Sustainable strategies</b>	
The horizontal whole glasses windows make brighter space in the building. Also, the wood material can transfer heat energy between inner and external building.	
<b>Use of Technology</b>	
LED lighting Smart phone application	



**Use of materials**

Wood material is good for environment because it can reprocess and reuse after destroying the building. Also, the material is lighter than other one.

**Photovoltaic strategy**

The special feature of solar panel system of this building is solar thermal system, which is concentrating solar energy. Therefore, the house can use more energy than other buildings.

**What strategy would you copy? What is the greatest strength?**

Solar thermal system will help to be gathering solar energy more. Also, organic material is remarkable because it is good in hot area and becomes green building.

**What is the greatest weakness of the entry? What would you avoid?**

The wood weak for stressing the building load. If the building had to build many stories-house, how many stories can we build up?

**Additional comments?**

The wood material can lure insect and be damaged from termite.





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<b>Your Name:</b>	HOCHUL KIM
<b>Name of Project:</b>	Hale Pilihonua
<b>Preference:</b>	
<b>Use of Passive Solar Strategies</b>	
Using louvers is outstanding feature of this building. However, this solar panel is whether it is efficient or not because the solar panels are under the shadow by moving the sun.	
<b>Use of Sustainable strategies</b>	
Combining Louvers system and solar panel is good idea in this project. Also, Solar thermal collectors for hot water and Aquaponics system are good strategy for saving energy.	
<b>Use of Technology</b>	
Louver system Energy-saved LED lights Rounded-shape structure	



**Use of materials**

This material is strong about outside factors, which damage for main structures. Fiber-reinforced polymer covers and protects exterior structure from harmful factors. Also, this shell structure allows the building cool by making shadow.

**Photovoltaic strategy**

The solar panels are along with tube shape main structure. This arrangement is not only good for accumulating solar energy, but also is good way to decrease main building temperature by making shadow.

**What strategy would you copy? What is the greatest strength?**

Louver system is a good strategy for this building. The shell shape is beautiful for building façade. And, it balances indoor temperature.

**What is the greatest weakness of the entry? What would you avoid?**

Rounded-shape structure looks so beautiful. But, It seems likely difficult to layout furniture inside of the building. I think this project will lose efficiency of space organizing.

**Additional comments?**

This building is definitely great in the summer session. But, I am doubt whether it is good for winter session because the shadow can decrease the building temperature.



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<b>Your Name:</b>	HOCHUL KIM
<b>Name of Project:</b>	Y- Container House
<b>Preference:</b>	
<b>Use of Passive Solar Strategies</b>	
This project uses a vacuum insulation. It is higher energy efficiency because vacuum area reduces the speed of transfer energy. Also, water collecting system also good feature of this house.	
<b>Use of Sustainable strategies</b>	
Water collecting system stores the water and uses for growing the plants around house. Therefore, this house can decrease of wasting water. And, It is easy to manage the green areas without other helps of infrastructures.	
<b>Use of Technology</b>	
Collecting water system Split Air Condition System vacuum Insulations	



### Use of materials

This house uses several containers and wood pieces. Using container is increasing mobility of the house because we can easily move each unit with trailer. And, the construction days will be decreased.

### Photovoltaic strategy

This house is using solar panels, which are called as PVC panels. It changes the sun ray into electricity. The solar panels are laid on Y-shaped roof, horizontally.

### What strategy would you copy? What is the greatest strength?

I am motivated from Collecting water system and vacuum insulation in this house. Collecting water system will help save waste of water and manage plants. Vacuum insulation has a great performance of controlling the heat energy in the building.

### What is the greatest weakness of the entry? What would you avoid?

Container house is usually dropping the temperature than common house. Also, containers consist of the iron. But, this material weak for water. I am wonder how to make these containers water-resistant house.

### Additional comments?

What is the good feature of Y-shape house? What is the differences between normal house and this house.



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<b>Your Name:</b>	HOCHUL KIM
<b>Name of Project:</b>	Water Shed House
<b>Preference:</b>	
<b>Use of Passive Solar Strategies</b>	
Garden on the wall and liquid wall are great insulation of the building. It is because plants can control temperature around them. Also, liquid take a long time to transfer energy.	
<b>Use of Sustainable strategies</b>	
Plants on the wall protect from rapidly increasing temperature of inside building. Plants also influence our emotional feeling. It makes us comfortable and comes down.	
<b>Use of Technology</b>	
Garden wall Liquid wall	



**Use of materials**

Liquid wall system can be heavier than other materials. But the advantage is greater than disadvantage of this wall. So, it is useful material in this building.

**Photovoltaic strategy**

Solar panel system is not distinctive. This building is using common solar panels.

**What strategy would you copy? What is the greatest strength?**

Liquid Desiccant Wall and garden wall system have a lot of benefits. This is eco-friendly design and delays energy exchanging between inside and outside of the building.

**What is the greatest weakness of the entry? What would you avoid?**

Liquid wall will be hard for fixing when it is broken down. Also, It is not appropriate in the area, where it is snowing. The liquid can be frozen in extremely cold area.

**Additional comments?**

I just wonder whether It works well for air circulation system in cold area.



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<b>Your Name:</b>	HOCHUL KIM
<b>Name of Project:</b>	Chip house
<b>Preference:</b>	
<b>Use of Passive Solar Strategies</b>	
Generally hot air rise up and cold air drop down because the densities of both airs are different. The hot air usually has a low density. But, the cold air is a high density. This building design is considered by inside of the air flow. Therefore, this house is consist of many different levels.	
<b>Use of Sustainable strategies</b>	
The strategies are to use Energy monitoring system. It reduces the energy loss. Also, the house uses a thermal energy. The storage tank is linked with ground. The system changes the water temperature. The wearing house with white cover is also one of great feature of this project. It makes stable interior temperature and replaces the new material easily.	
<b>Use of Technology</b>	
Energy Monitoring system. The smart phone application Fixed furniture. Exterior material.	



### Use of materials

The white-covered insulation protects the loss of heat energy. The material is replaced to new one, rapidly, because constructor does not need to touch main structure of the building.

### Photovoltaic strategy

The PVC panels are modularized. So, each panel is made to work maximizing efficiency. And the inverter converts DC to AC power for the house. It make resident to use it convenient.

### What strategy would you copy? What is the greatest strength?

The energy detector would be great role of saving energy. Also, the different floor level makes the house more dynamic and energy saving. And, exterior insulation would be great way to decrease energy consumption.

### What is the greatest weakness of the entry? What would you avoid?

Without the wall inside of building, it does not allow dweller to have a private space. Most of people would need to personal space in the house. So, we have to consider about this problems.

### Additional comments?

There are only two sides of windows. So, we would like to think about circulating air system when we open either the window.





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<b>Your Name:</b>	HOCHUL KIM
<b>Name of Project:</b>	Tide Water
<b>Preference:</b>	
<b>Use of Passive Solar Strategies</b>	
<p>This project is built up by selected material. The color of the material is important in this building because the dark color is easy to absorb the solar energy during a day time. Also, each material has different capacities of the containing energy. This building uses high performance of material.</p>	
<b>Use of Sustainable strategies</b>	
<p>10 Gal Drain reservoirs contain the hit energy during a day. And the heat energy is emitted and used at night time. It can reduce the maintenance cost. This process keeps going on until the sun is exploded.</p>	
<b>Use of Technology</b>	
<p>Silent processing system HVAC system High performance window system</p>	



**Use of materials**

The basic concept idea of this building come from arts and craft works. So, there are many decorations in this project. Commonly, they are using wood material in this building.

**Photovoltaic strategy**

Bosch Solar Module converts solar energy into electricity. This device has a great performance. And, It is enough to meet Leed standard.

**What strategy would you copy? What is the greatest strength?**

I think drain reservoir system is good feature in this building. It is because water has a good capacity of energy. And, it is fundamental elements for our life.

**What is the greatest weakness of the entry? What would you avoid?**

This house looks like closing space. The porch of this building usually is shadowy. It is good for summer time, but not winter session.

**Additional comments?**

I cannot understand why this project needs to make secret bookcase passage way into bedroom.