2020-2021 City Model Slideshow

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Future City Team Name: **Moon Cocoon**

Section I

CITY DESIGN

Residential Zone

What is important for the judges to know about your residential zone?:

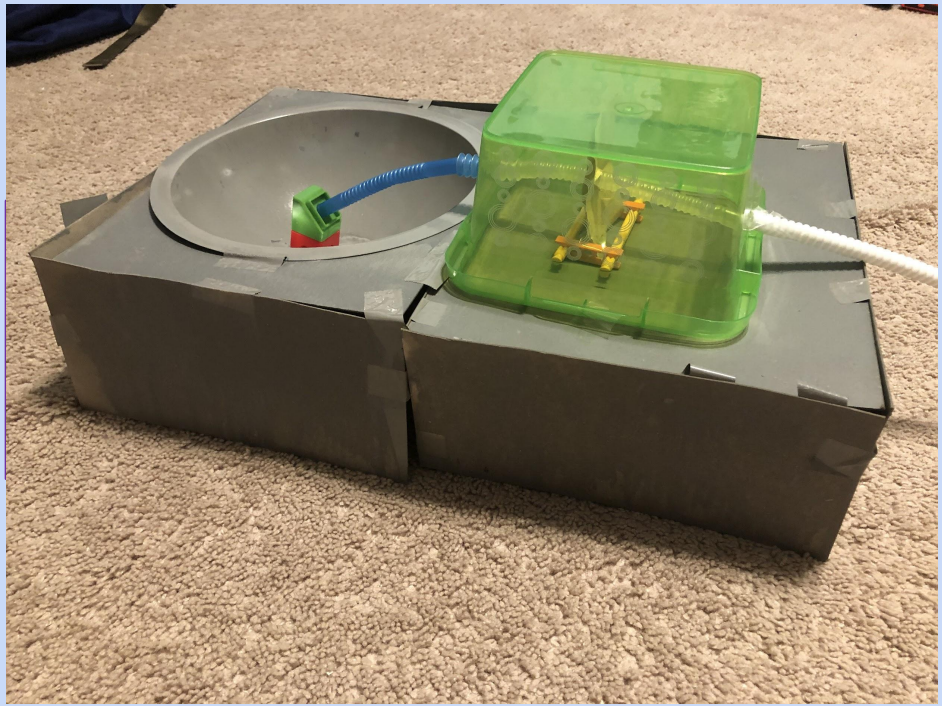
The scale we were given was 1 inch to 20 feet. The lines of cardboard you see on the right are the floors/hallways of the apartment, which people would use to get around and into their rooms. This model is only around ¼ of the entire model, and it shows what would be inside the apartment building. This residential area is underground, and the elevator is what you see on the left of the model. It goes quite fast, because motor i used could only go so low. However, it is still functional.

Commercial Zone

What is important for the judges to know about your commercial zone?:

The large cardboard cartons that you see on the left side of the model are large shopping complexes. In the middle of the of the model is a large recreational area for everyone to enjoy. The large open area is not just an open field. It has many things like a hiking trail but they are too small to show with the scale that we are using which is a 1 inch to 20 feet. There is also a large forest in the recreational area that has more of the hiking trail. It is hard to see on the picture but there is a road with 4 lanes for the rover boards. This goes around the park and it is for quick and easy travel around the park and the shopping center.

Industrial Zone - Water System



What is important for the judges to know about your industrial zone?:

This model shows how the water is taken and transported to the main city. This system mines ice and and water from the bottom of the crater. It then gets transfered up to a building. In this building, the water goes through a filter. The water gets sent to the rest of the city.

Infrastructure Example 1

What type(s) of infrastructure are shown here (water, power, utilities, etc.)?:Greenhouse & Filtration System

How are these related to the realities/challenges of living on the Moon?:

Our greenhouse contains the city's main source of food through crops. We grow a variety of vegetables and fruits. These crops can go through photosynthesis as infrared lights replace sunlight. Additionally, the carbon dioxide that citizens breathe out is transferred to the greenhouse for plants to use in photosynthesis, and the oxygens that the plants produce is transferred back to the dome for citizens to breathe. The greenhouse is air tight and has set temperatures. Due to harmful radiation on the moon the Greenhouse dome is made out of aluminum metal.

Infrastructure Example 2 - Dome

What type(s) of infrastructure are shown here (water, power, utilities, etc.)?:

This model shows what a very small section of our dome looks like. It covers the whole city, so in reality, it is about eight square miles big. Our dome is the main source of protection that citizens have. The outer layer protects citizens from physical threats and harmful sun rays. The second layer from the outside keeps the temperature regulated, and allows citizens comfort. The third layer from the outside provides the citizens with oxygen, and allows the greenhouse to strive, by filtering the carbon dioxide out of the city, and into the greenhouse. The innermost layer of the dome provides light for the city.

City Services Example 1

What type(s) of city services are shown here (health, education, etc.)?: A fire station..

What do you want the judges to know about your city's operations?: It has a large water tank next to it that is connected via pipes. It is covered in solar panels and has power banks so if anything goes wrong it is still able to run.

Transportation Example 1 - Lunar Bus

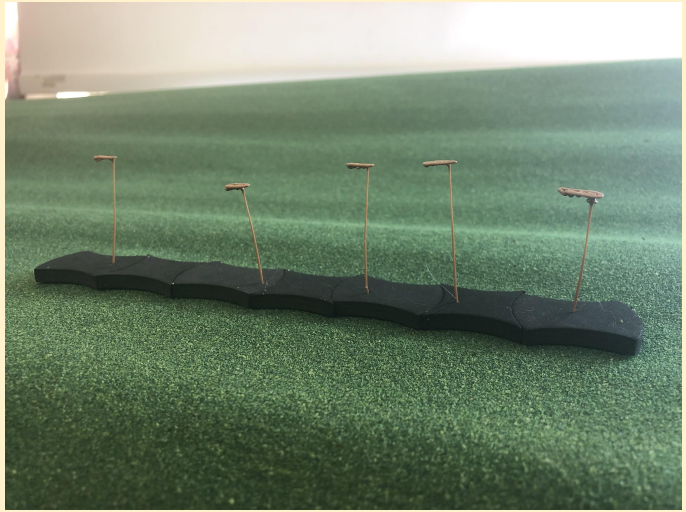
What type(s) of transportation systems are shown here?:

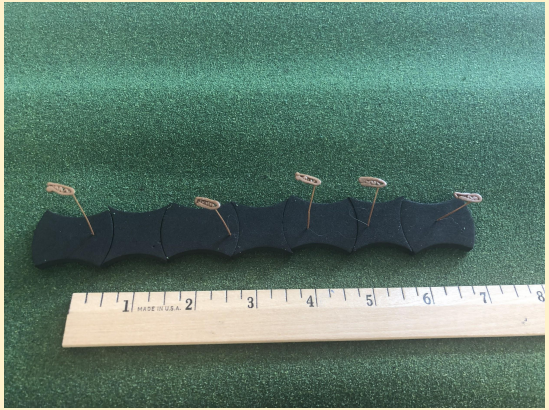
This image consists a lunar bus that is represented by an electrical mini car

What do you want the judges to know about your transportation system(s)?: the

The Lunar bus is designed for rough,bumpy terrain. The Lunar bus is only capable of riding on the outside of the city and all 3 of the buses are placed at the edge of the city. The buses are scheduled to make a trip around the city and are at the station every 2 hours.

Transportation Example 2 - Roverboards





What type(s) of transportation systems are shown here?:

In the picture, we have our roverboards. It is one of our bigger models of the vehicle.

What do you want the judges to know about your transportation system(s)?:

Roverboards are available to every resident starting at the age of 8. Depending on the model, some have equipped seats for children under the required age. The roverboards run on a battery. Throughout the city, there are charging stations where citizens can leave their roverboards and return to for later use. For each roverboard, there is a card that the purchaser receives to unlock their vehicle and transport around the city

Living on the Moon (Resource #1)
Example 1 - Moon Bricks

Identify the Moon resource shown here:

Moon Cocoon uses Moon Bricks to try to keep the city as environmentally friendly as possible. Moon Bricks are made from a combination of lunar regolith and lunar soil, and are often used in the foundation of buildings in our city.

Living on the Moon (Resource #1)
Example 2 - Moon Bricks

What is important for the judges to know about this element of your model?:

The majority of the buildings in the Moon Cocoon are made from Moon Bricks. Moon Bricks are an excellent use of lunar regolith which would normally be useless or even harmful. Firstly, a clay is made from a mixture of materials including lunar regolith and lunar soil. Then, the clay is molded into the desired shape, dried, and then burned at high temperatures. Lastly, they are shipped to wherever they're needed and used.

Living on the Moon (Resource #2) Example 1 - H3

Identify the Moon resource shown here:

What is important for the judges to know about this resource within your city?:

Helium 3 is an abundant resource found in the soil on the moon. Due to the moon's lack of atmosphere, solar winds that contained helium 3 were able to build up on the surface. This element is a clean source of energy that does not produce any nuclear waste, which is why it differs from other nuclear power sources. The process of converting helium 3 into energy is called "nuclear fusion using helium 3." Nuclear fusion creates the same energy source that fuels the Sun and other stars in the universe without the by-product of radioactive waste that can supply an efficient source of energy in our city.

Living on the Moon (Resource #2)
Example 2 - H3

What is important for the judges to know about this element of your model?:

In our city, the H3 factories are our main source of energy to power the systems found in our dome. These include the homes, transportations, businesses, and more. Due to the heat released from production, we use it to regulate the temperatures inside the dome from the surrounding temperatures outside. It is placed outside of the dome. In addition, the mining of helium 3 benefits the economy of our city. Because H3 is abundant on the moon and a sought-out resource on Earth, we can sell the element to factories that offers the planet a clean alternative power source.

Section II

BUILD IT: QUALITY, SCALE, AND MATERIALS

Innovative Material & Use Example 1

Choose one recycled or reused item and describe how you used it creatively in your model:

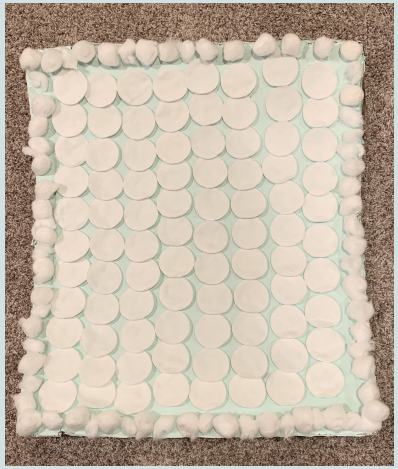
I used plastic straws to represent the tubing that transports the water. The first blue straw is taped to the blocks in the crater, and it is taped to the green building on the top. The second clear straw is not actually taped at all, but it is wedged between the two sides of the containers. The last straw is simply taped to the other side of the container. All three straws were cut up enable to fit.

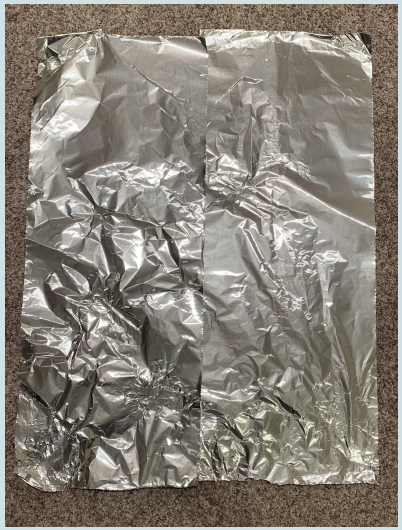
Innovative Material & Use Example 2

Choose another recycled or reused item and describe how you used it creatively in your model:

Throughout my entire model I continuously used reused or recycled items. For the clear dome I used an old game called Perplexus which is 3-D ball-in-a-maze puzzle or labyrinth game enclosed in a transparent plastic sphere. I cracked the 3-D Sphere in half and used that half to represent the enclosure. To create the entrance of the dome, I used the cap of a dried out marker and sliced the closed end of the marker off. I then attached it to the dome using hot glue. I also reused an old cardboard box previously used for a shipped item and changed it into floating shelves or rows for plants to grow on.

Innovative Material & Use Example 3 - Dome





Choose another recycled or reused item and describe how you used it creatively in your model:

One recycled item that I used in this project was cardboard. I cut up boxes that were going to be thrown away, making each side of the box, one layer of the dome. I also used paint that we used to paint my sister's room, to paint the inner and second layer. We were going to throw it away, so instead, I used it for this project. The cotton balls were already ripped, so I decided to use those for the project, instead of getting rid of them.

Example of Scale -

Structure 1

Structure 2

Scale used in model: 1”=20’

<u>Structure 1</u>

What type of structure is this?: this is the residential zone, and in it is an elevator.

What size is the structure on the model?: The full model would be 12.5 by 9 by 20 inches, however i made mine ¼ of it, so it is 4.5 by 6.25 by 10.

What size would this structure be in real life?: 250 by 180 by 400 feet

<u>Structure 2</u>

What type of structure is this?:
This is the industrial zones, and it is shows how water is obtained.

What size is the structure on the model?:
The model is 11 by 17 inches.

What size would this structure be in real life?: 220 by 340 feet

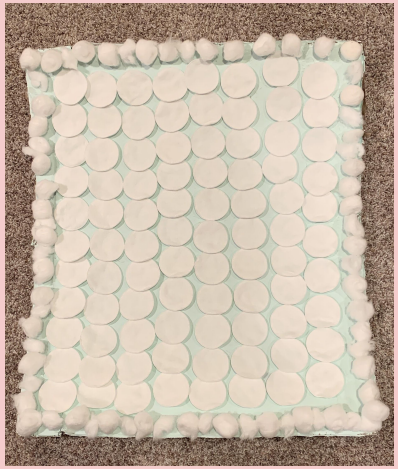
Moving Part 1 - Residential Elevator

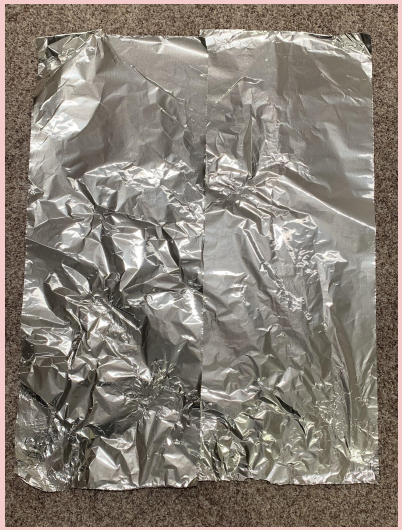
Moving Part 2 - Lunar Bus

Section III

JUDGE ASSESSMENT OF MODEL

Futuristic Technology Example 1 - Dome

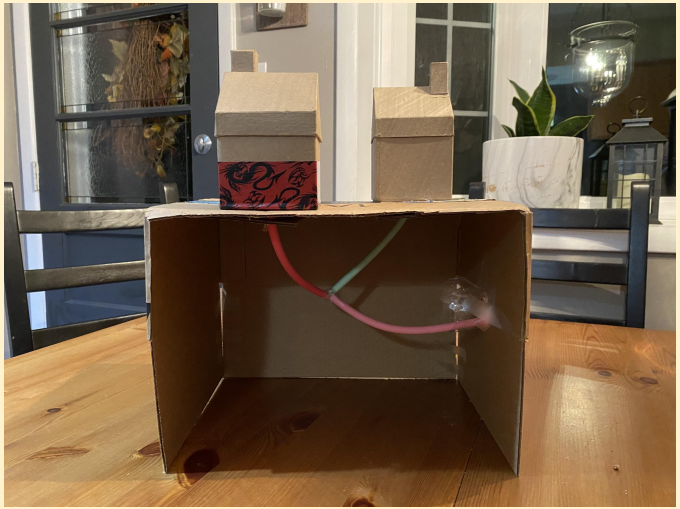


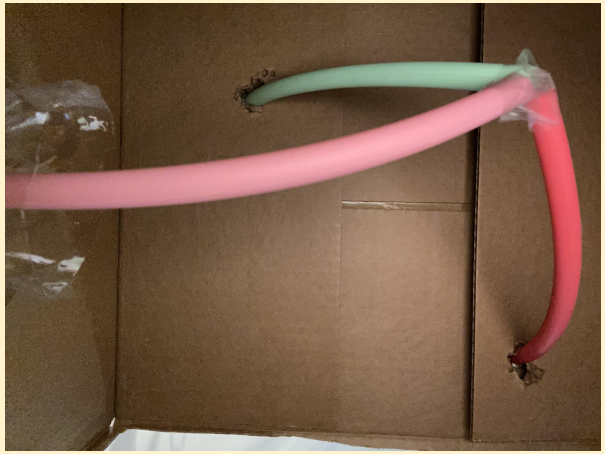


What is important for the judges to know about this example of technology?:

The outer layer is demonstrated in the bottom right picture. It protects citizens from harmful sun radiation, which gets reflected from the material, and from physical moon threats. The layer second from the outside is demonstrated in the top right picture, and is used to keep the city's atmosphere regulated. The layer second from the inside is modeled in the top left picture. The purpose of it is to deliver the carbon dioxide that citizens exhale to the greenhouse, for plants to use, and to deliver oxygen produced by plants, to citizens. The two bottom left pictures represent the innermost layer, which is the artificial sky. During the day, it looks like the picture on the left, while at night, it looks like the picture to the right of that.

Futuristic Technology Example 2





What is important for the judges to know about this example of technology?:

Futuristic Water Bot or FWB is an automated drill that has a pre programmed path where it drills through the terrain , starting from the water systems from each house to the siphon container outside the dome. Once the path is made, the water travels through the tube and distributes the water among all the buildings and water systems, allowing for an efficient way for all the structures to access water.