

Architecture Assignment: Building a House

S.P.I.C.E. Report



Situation:

We needed to design a house that would fit the needs of our client. Our client was a newly married couple who are looking to settle in California. California has a very warm and dry climate. Our clients frequently had people over and needed a large living/family room and dining area. They might also be looking to start a family soon.

Problem:

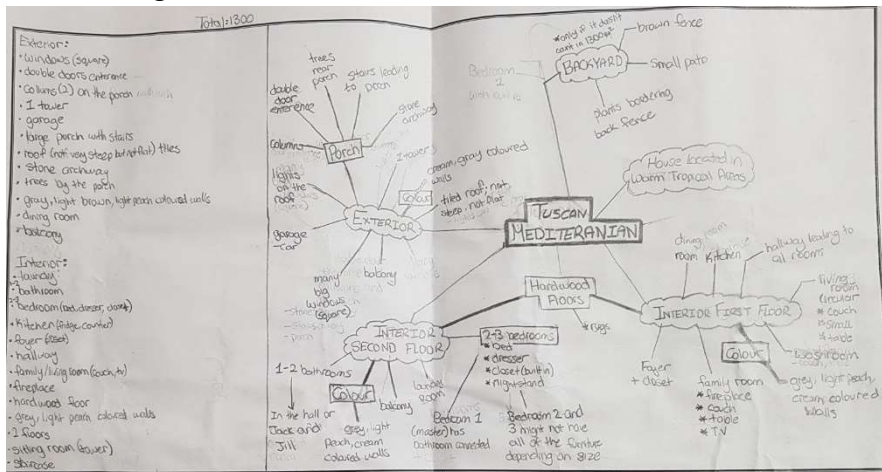
We were supposed to design a house on $\frac{1}{4}$ acre of land but the house itself could only be 1300 square feet. When making a scale model of our house, we had to make the model on a board that was 12" x 16". Deciding the scale of the house was also complicated. The real life model of the house had to be scaled down enough for it to fit on the 12" x 16" board but not be too small. Nevertheless, we finally got the house to scale, but our walls were still too small so we made the walls a little bit taller than they actually would have been. The scale we used for the rooms of the house was 4.5' in real life would be 1" for the model. All of the walls were 8ft high in real life so we made all of the walls 3.25" for the model and the doors about $\frac{7}{8}$ of that because the doors in reality were 6.5'. Before scaling down the house, we had to create the actual house model and floor plan. In order to design the size of the rooms and the height of the house itself, we referred to the Ontario's Architecture Building Code. We made sure that the rooms were not less than the minimum requirement but also that when the area of all of the rooms were added, it was not more than 1300 square feet. Another constraint we constantly had to face was the deadlines. In order to complete our 3D model, print all of the parts, and finish constructing the scale model, we constantly had to make smaller deadlines for ourselves so that everything would get done by the due date. We used the website "Homestyler" to create our floor plan. In order to create the 3D model of our house, we had access to many softwares such as Inventor and Sketchup. In the

beginning, we were asked to create bubble diagrams of everything we wanted in our houses and we made individual sketches based on those things. After that, we got into pairs and came up with a final floor plan sketch that both people agreed to. As we started to design and construct the actual house, the measurements had to be altered multiple times. Certain parts of the house were supposed to line up with each other but as we were making the 3D model, the thickness of the walls did not allow those parts of the house to line up. As we were making the scaled walls on inventor so that they could get laser cut, we had to change the measurements again so that the thickness of the foam board would allow those parts of the house to line up. Many times, when we had to have a part be cut, the laser cutter was being used so we were unable to get it cut and had to cut it ourselves. Despite all of these constraints and problems we had to face, the house looked just the way we wanted it to.

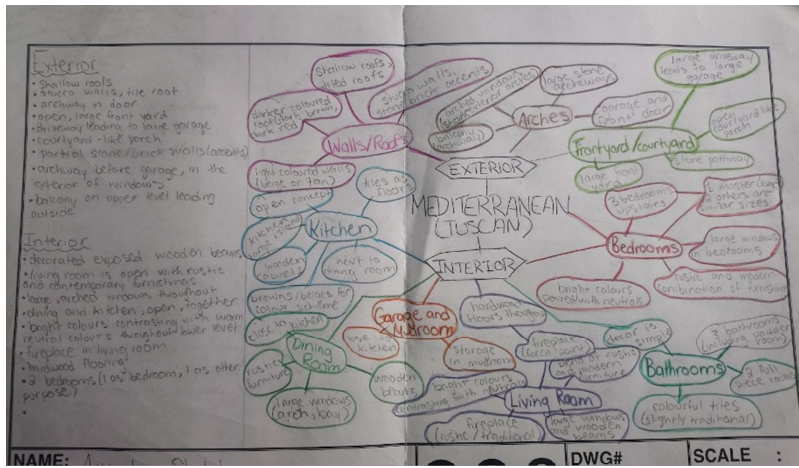
Possibilities:

We needed a house that had a large family room so that when our clients had guests over, they would be able to talk comfortably with them. The house needed to have a large master bedroom so that our clients would be able to sleep in a quiet and comfy room in the back of their house. A second bedroom would also be needed so that if our clients had family members staying over or if they ever decided to have children, there would be a room for them to reside in. The bedroom could also be used for other purposes, such as an office, so the room would not be dead space. The garage is a storage necessity in a house like this one. It had to be big enough for our client to put their car, as well as any other necessary belongings. It would work as the perfect storage area. The backyard is another important part of the house. The backyard is an essential place to entertain and host guests, especially because the house is being built in a warm climate. We needed the backyard to be a large and comfortable place for our clients to host outdoor events. We had gotten into pairs after making our individual sketches so we decided to make a whole new sketch by using the things that we liked best from our own sketches.

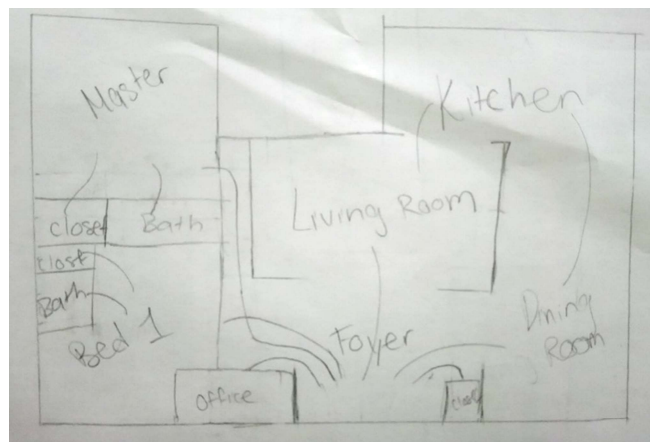
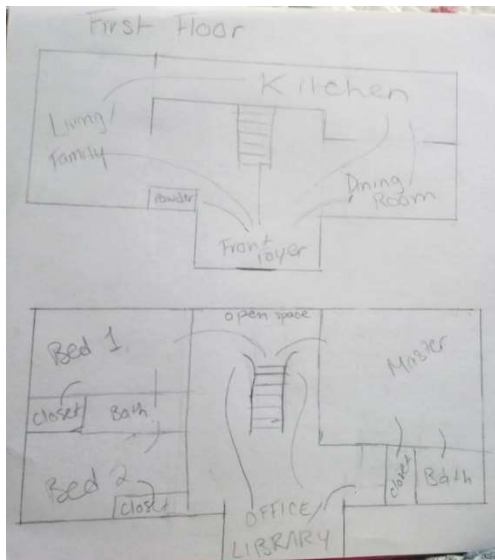
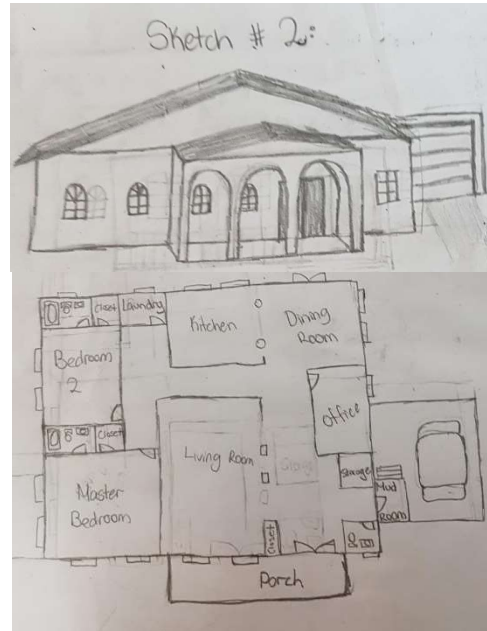
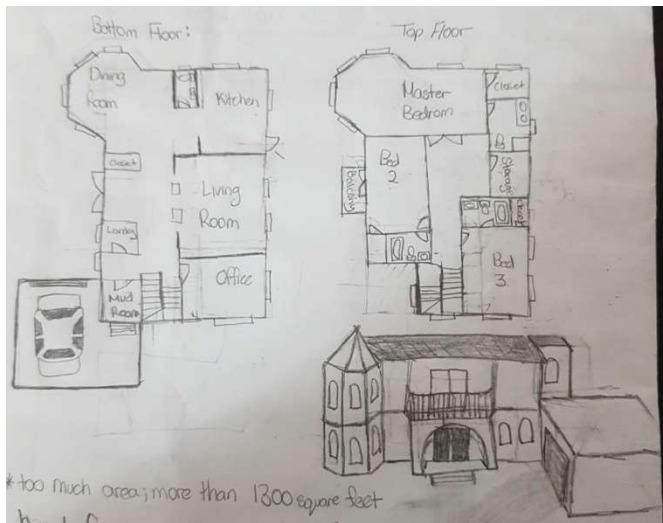
Bubble Diagram 1:



Bubble Diagram 2:

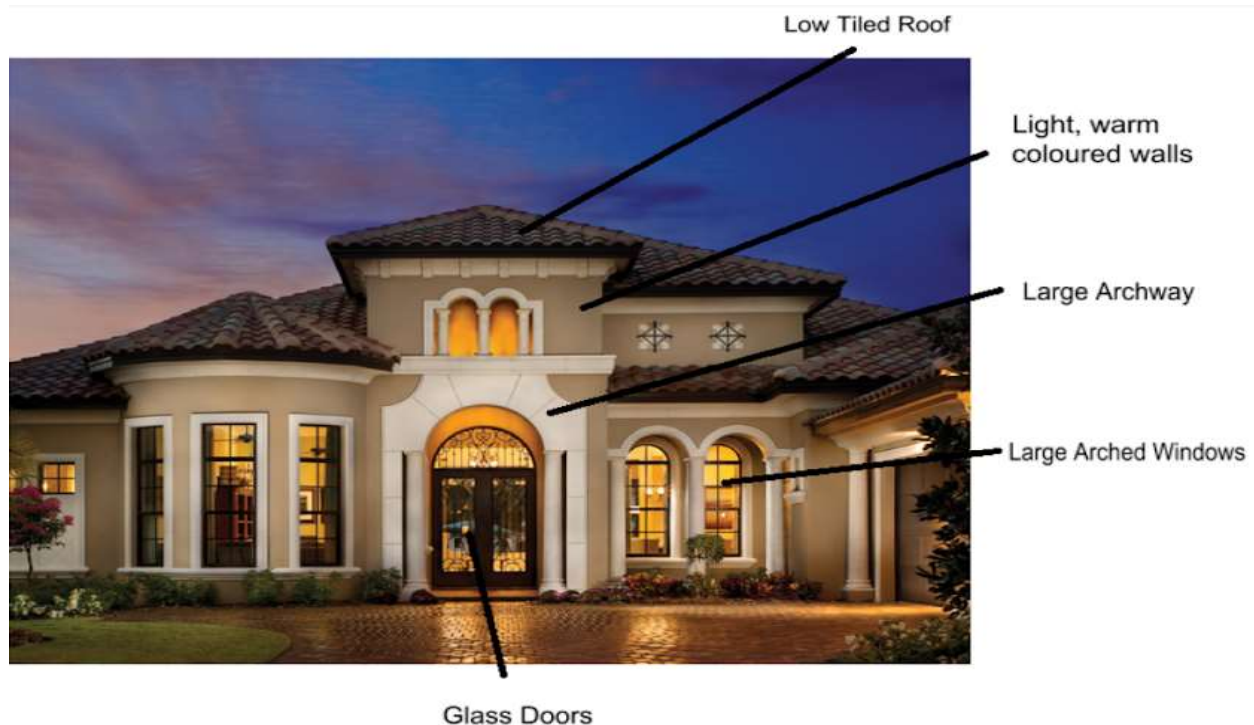


Sketches:

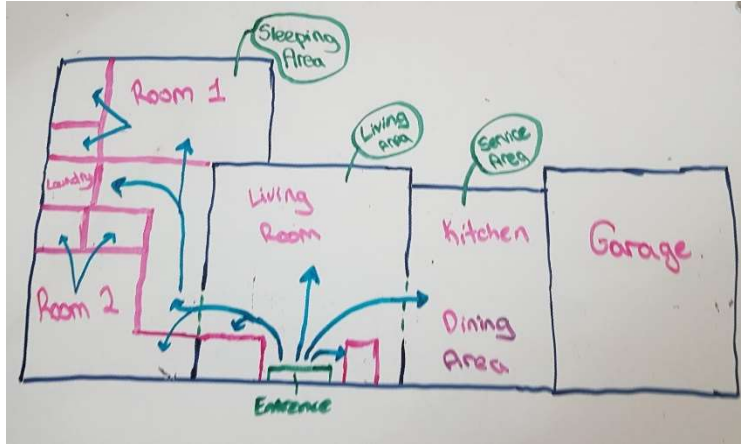


Investigation:

We decided to make a Mediterranean House so we researched some of its features. We saw that these kinds of houses were usually one floor but the few houses that do have two floors would have verandas. The houses has many open features such as courtyards, arches, and columns. They also have big and open windows all over the house. These features not only make the house look open, but they also allow breezes and lots of light to enter the house. The houses are made with light coloured stucco exteriors and have tile roofs which would help keep the house cool. The roofs are usually shallow with a small slope. They have a wide overhang so that there would be shade in the warm climate. Mediterranean houses usually overlap with Florida houses and Spanish homes because these houses are made in areas with warm climates.



The features of a Mediterranean house were appealing to us because they made the house look elegant and kept the house cool in a warm climate, just like our clients would need it to be. We definitely wanted to have the open concept that all Mediterranean houses had so we tried to make many big, arched windows. We also decided to use warm, soft, and light colours on the exterior of the house to have a warm and comfortable feeling when looking upon the house. Archways were put along the porch and the garage as well. The house is being made in a warm, dry climate so the windows, arches, and light colours would help the house stay cool and allows breezes to enter the house.



- Living Area:
- Living/family room
 - Dining room
- Service Area:
- Kitchen
 - Laundry
- Sleeping Area:
- 2 Bedrooms
- each have their own bathroom and closet
- Other:
- 1 car garage
 - Mudroom
 - Large driveway
 - Powder room
 - Coat closet
 - Hallway connecting all areas

Final Floor Plan:

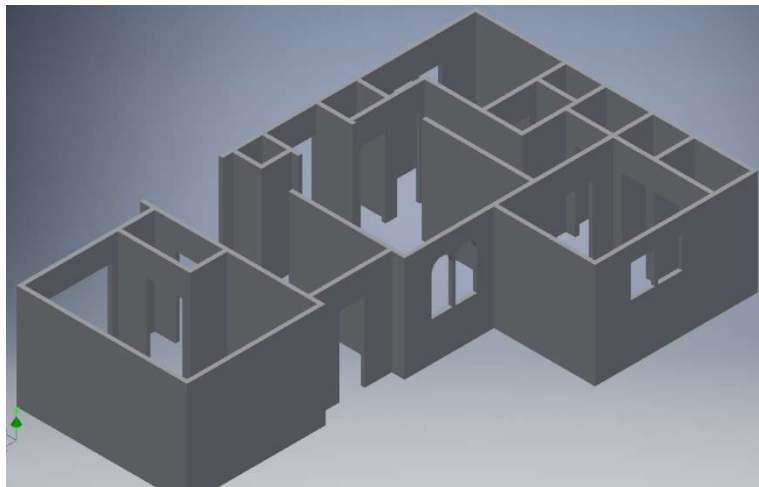


3D Model:



Construction:

We wanted to laser cut a foam board to make most of the parts for the model. Before doing that, we had to make a scale for our house. Our base board was 12" x 16" because our house was more wide than it was long. In the end, we learned that 1" for the model = 4.5' in the real life house is the only way our house would fit. With this scale we were able to work on things outside of the house such as the porch and backyard as well. However, our walls were 8ft tall and this scale would have meant that our walls would have to be 1.778" which seemed too small to laser cut. Instead we made our walls about 3.25" and the doors and windows according to that scale.



Most of the parts we were able to laser cut but some of them we had to hand cut because the laser cutter was being used or because calculating the measurement of that part of the house was a little complicated (roof, dining room wall etc). The parts of our house that did not have smooth edges due to the open parts of the foam or our cutting skills were covered with paper so that the edges appeared to be smooth as well.

We definitely wanted to have the open concept that all Mediterranean houses had so we tried to make many big and arched windows.



We also decided to use soft, and light colours on the exterior of the house such as tan/peach to have a warm and comfortable feeling when looking upon the house. We did not add any kind of texture to it because most Mediterranean houses usually have a stucco exteriors which are smooth.



Archways were put along the porch and the garage as well. These were made out of foam and painted the same colour as all of the other exterior walls for our model but in real life, they would be made with stone with the same or similar colour.

We added designs to the front and back door to make it seem like a glass door.

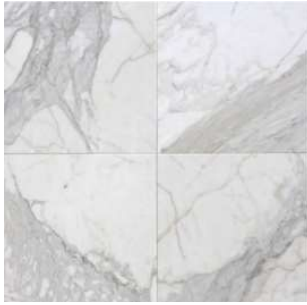


Our roof was made out of popsicle sticks and straws to give it a tile-like texture. It is painted brown like most Mediterranean houses but it was a little steeper than regular Mediterranean roofs. The real Mediterranean house would have a brown tile roofing.



Our walls were made out of foam and most of them were laser cut. The walls were kept white because a new house would have white walls and the owners of the house would decide if they want to paint them. We did add flooring to the rooms.

We put marble for the halls, kitchen, dining room, and foyer.



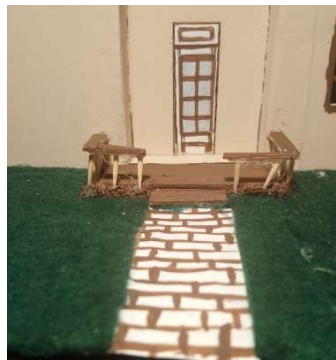
We put hardwood flooring for the rooms, closets, and living/family room.



We put tiles for the bathrooms/washrooms laundry room, and the mudroom.



We used green felt as the grass around the whole house. The driveway was made out of asphalt. There was a stone pathway right outside of the porch in the front yard and also the deck in the backyard. The deck was made out of popsicle sticks just like it would be made out of wood in real life.



Evaluate:

The finished version of our house look very similar to the way we wanted it to. Overall, the house is about 1303.5 square feet. Some of the edges were rough and parts of the base board were still showing but none of these problems were so noticeable that it took away from the actual model. The house allowed people to easily access the living and service areas of the house. The sleeping areas were kept away from the traffic and noisier parts of the house. Mediterranean houses are made for warm climates which is where our client plans on living. The sleeping area is large which would allow our client to have privacy. It would also allow them to have relatives stay over or have space for if they decide on having a child. The living area is also fairly large which means that they will be able to entertain any guests they have over comfortably. The exterior features of a Mediterranean house such as the arches and the colours also make the house look attractive and pleasant as well. The house is made to suit all of our clients needs.

