

# Think SCIENCE

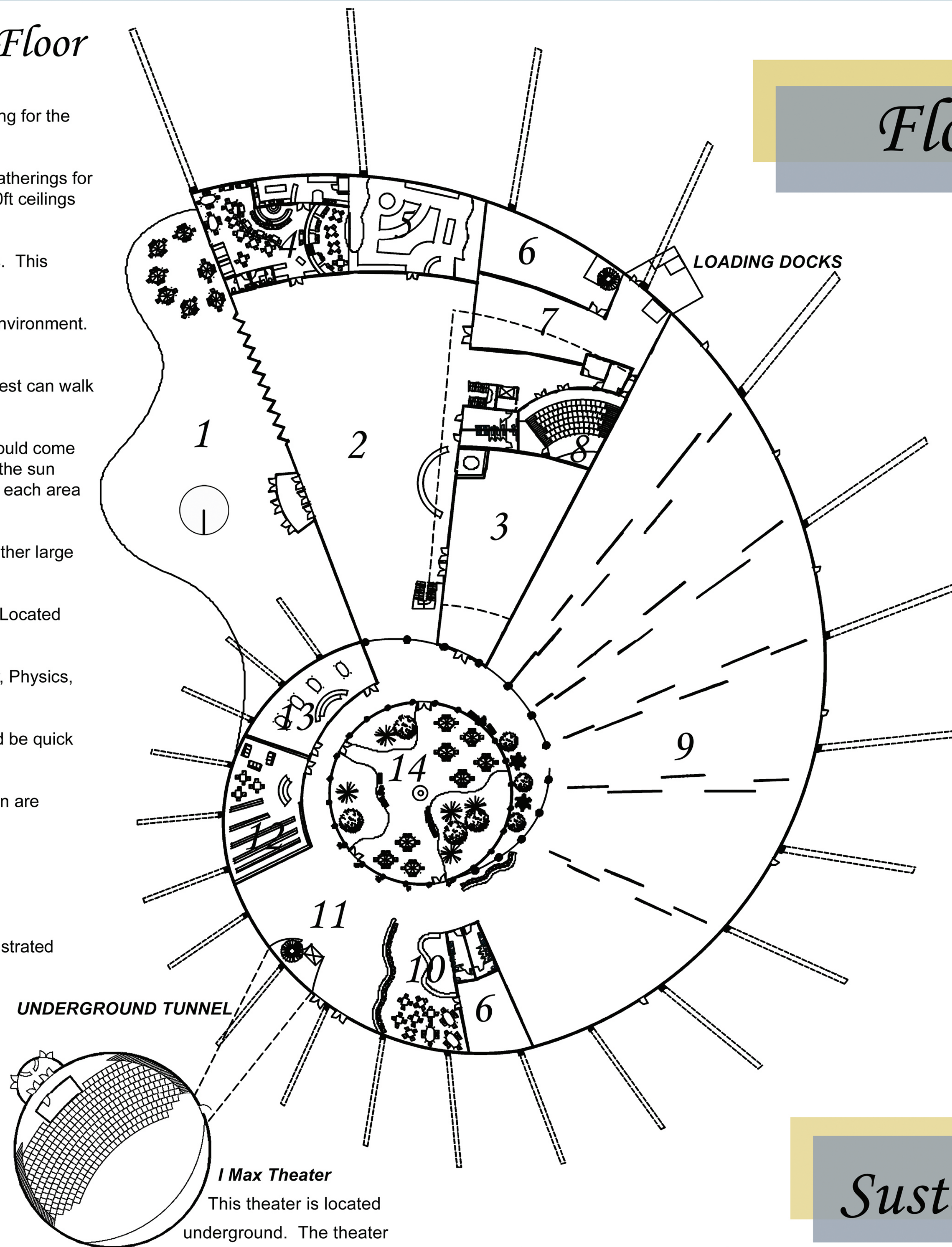
# Think MUSEUM

# Think FARGO

-an interactive science museum for Fargo...to enhance our society for the scientific literacy needed in todays world

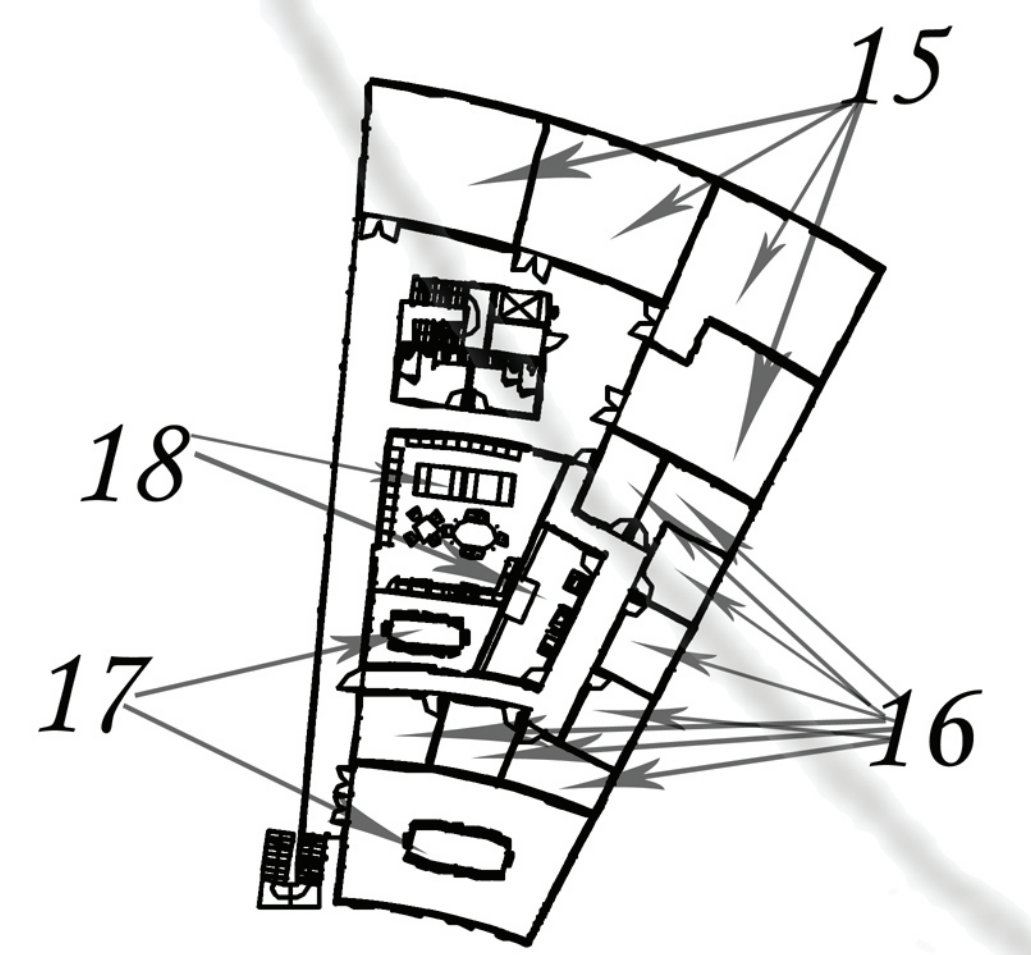
## Ground Floor

- 1 - **THE PLAZA** - The first gathering point to the entrance of the science museum. This area would feature a sundial, outdoor seating for the restaurant, and walkways to the I-Max.
- 2 - **RECEPTION HALL** - This would be the first gathering location with in the museum. This area is large enough to have special gatherings for private and non-private events. The space can also be used for special exhibits or sculptures. The space is large and open with 40ft ceilings and natural daylight filling the room.
- 3 - **MAIN GALLERY** - This is the first gallery that guest would approach. The gallery would feature seasonal and temporary exhibits. This would keep the museum, and the guest up to date with new information.
- 4 - **RESTAURANT** - The theme of this restaurant would be "space" and would feature an exciting and well decorated grill and bar environment. The lowered sitting would have a view of the aquarium on the opposite side.
- 5 - **THE AQUARIUM** - This would feature rare and exotic species from around the world, and also feature an aquarium tank that guest can walk underneath.
- 6 - **MECHANICAL** - The main source of energy would be from geothermal source in the ground. The water source for the toilets would come from the rainwater collection off of the roof that would be stored for later use. Solar panels on the southern roof edge that adjust to the sun angles would also provide energy. The HVAC for the building would be a variable air system that would be separately controlled by each area of the building.
- 7 - **SHIPPING / RECEIVING** - Easily accessible from with in the museum and outside. The loading dock would be able to handle either large semi trailers to medium sized trucks to smaller vehicles. This area also has storage for exhibit materials and shipments.
- 8 - **AUDITORIUM** - A small auditorium that seats about 75 persons. It holds lectures and special events that require digital media. Located behind the auditorium, is a janitor's closet and security office.
- 9 - **THE EXHIBIT GALLERIES** - This is where all the interactive science exhibits are held. Ranging in, but not limited to Astronomy, Physics, History, Biology, Chemistry, and Geography.
- 10 - **FOOD COURT** - Guests are able get food and watch their children play in the recreational area. The type of food served would be quick and easy items such as sandwiches and other nutritional items.
- 11 - **ENCLOSED RECREATIONAL AREA** - This area would have playground equipment and other physical activities where children are allowed to run and play. This area also has access to the I-Max Theater via a tunnel underground.
- 12 - **THE LIBRARY** - An area designated to picking up a book and relaxing, and continuing to educate the young minds.
- 13 - **GIFT SHOP** - A place to buy souvenirs, clothing and unique items.
- 14 - **THE COURTYARD** - To bring people outdoors and provide extra seating and a location for exhibits that may need to be demonstrated outside.



## Floor Plans~

Scale 1/32' = 1'-0"



## Second Floor

- 15 - **CLASSROOMS** - Four different classrooms are provide to help teach children about science
- 16 - **OFFICES** - Eight offices
- 17 - **CONFERENCE ROOMS** - One large room for very large meetings, and a smaller one for a quick breakout space.
- 18 - **EMPLOYEE LOUNGE & MAILROOM /**

## Fargo's Interactive Science Museum:

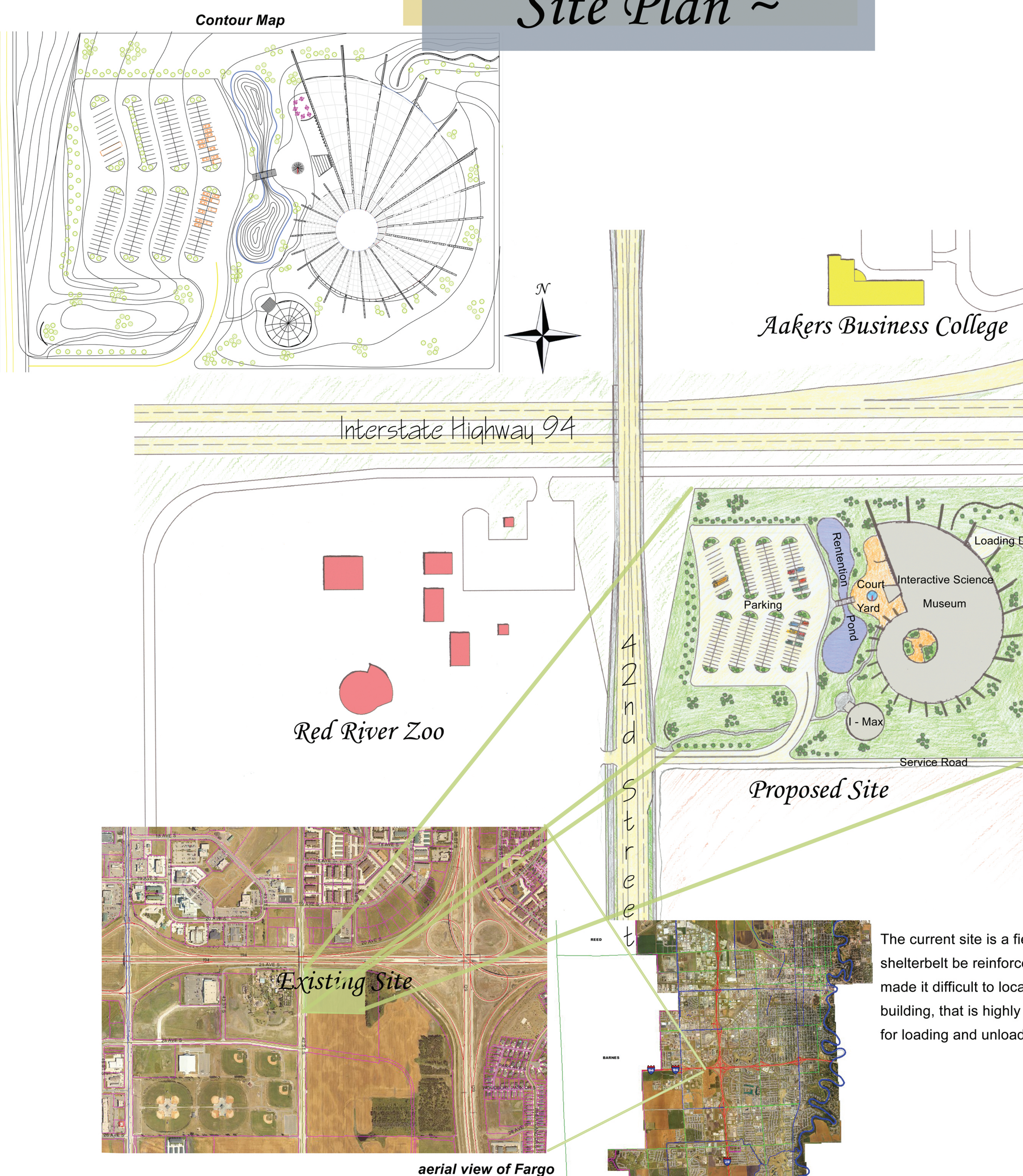
Fargo's interactive science museum will be a place for children and adults to come and learn about science. The exhibits will feature many different forms of science, and the exhibits will be engaging and fun for people of all ages. As guests would enter the museum, they would first encounter the reception / information desk. Then they would either be able to go to the restaurant, aquarium, or to the interactive exhibit galleries. From there, the guest would be able to get food, and enjoy it either in the courtyard, or in the seating provided in the lounge area. Here, people would be able to monitor their children while relaxing. If the children would not care to play in the recreational area, they would be able to continue to learn in the library. After the excitement of all the learning and enjoyment from all the exhibits, guests would then pass the gift shop for souvenirs and other entertaining items. People then would be able to leave the museum the same way they entered the building with out having to pass any of the same things they have already encountered.

With today's advanced society, it is crucial that Fargo is not left behind. This interactive science museum will bring the Red River Valley and surrounding area to the 21st century and beyond. The museum will bring a status of excellence for Fargo, and prestige well earned.

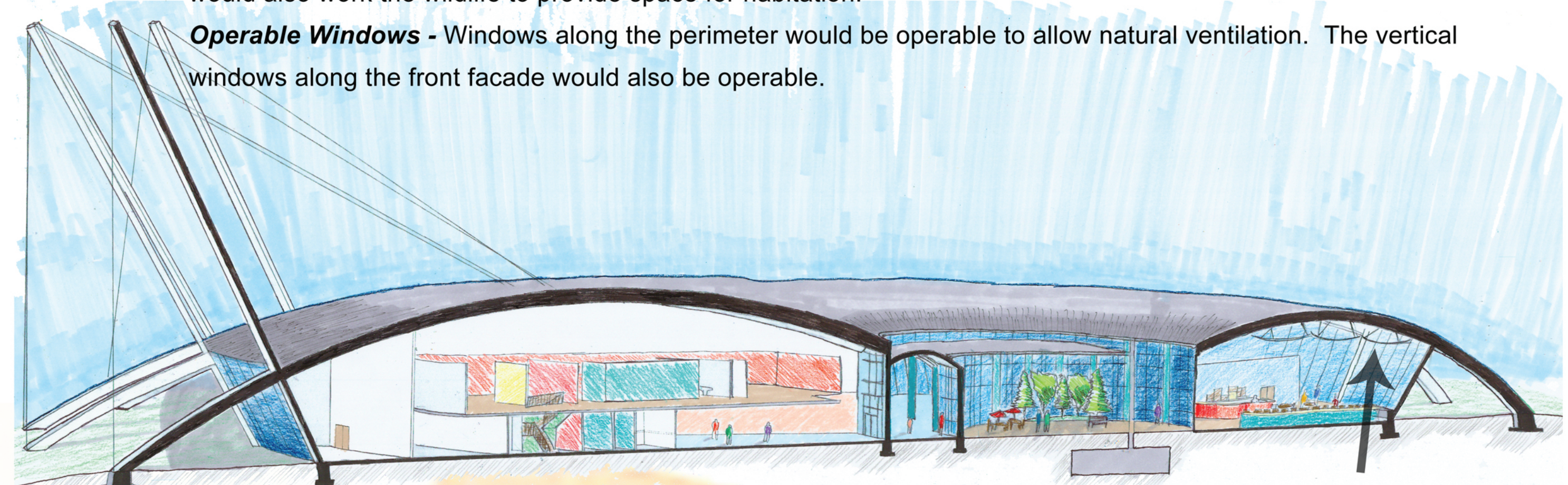
## Sustainability Issues

- Rain Water Collection** - The entire roof collects rain water and funnels the water with eaves trough to a pipe that sends it to a storage tank located underground.
- Solar Collectors** - Mounted on the southern edge of the building, the solar collectors are motorized to adjust to the angle of the sun year around.
- Lighting** - Overhead light is brought in through skylights. Indirect light is brought in through the windows along the perimeter of the building.
- Geothermal Energy** - The heat within the earth is about the same temperature year around. This can be used to heat the building and cool the building. This system is also helps control the humidity.
- Shading Devices** - The southern edge of the building has an overhang that blocks out the sun. All the windows along the perimeter have shading ledges to block out the sun at higher altitudes.
- Retention Pond** - The pond would control any flood issues around the site, and storm water run off. The pond would also work the wildlife to provide space for habitation.
- Operable Windows** - Windows along the perimeter would be operable to allow natural ventilation. The vertical windows along the front facade would also be operable.

## Site Plan ~

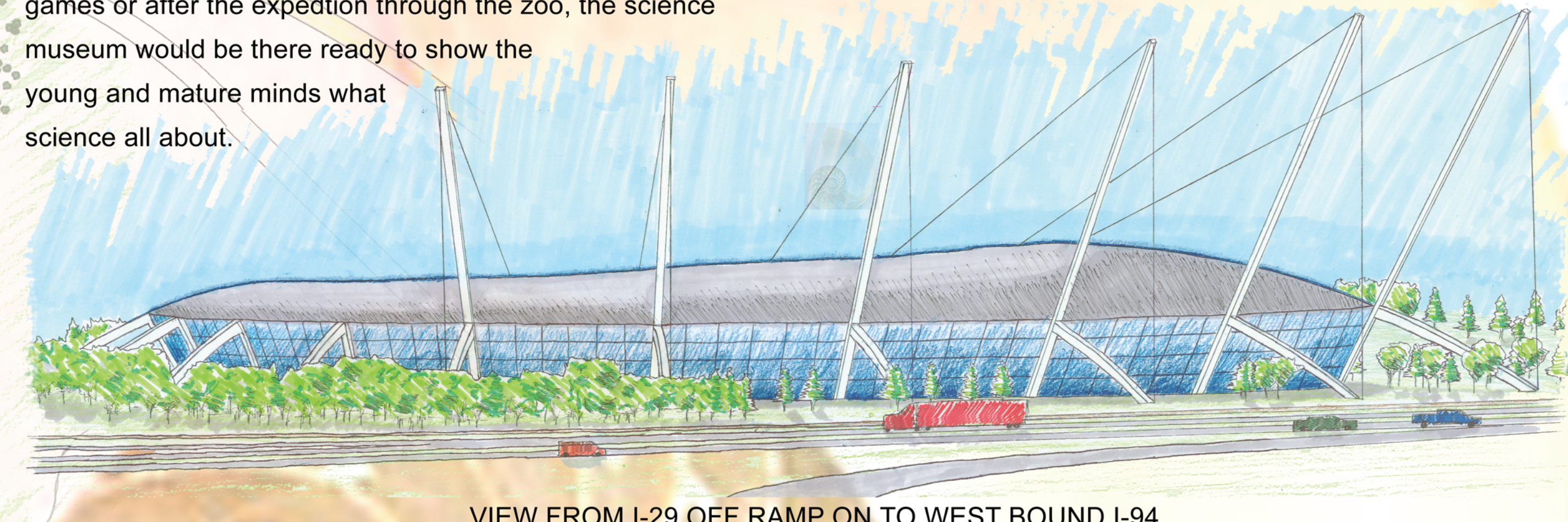


## Sectional Perspective



Panels that are suspended from the joist help absorb sound so the building does not echo from all the noise. They also have an aesthetic quality to them by creating a unique ceiling pattern

The reason for choosing this site falls on many reasons. The first and foremost reason for this site is location. The site is located along one of the cities main pathway. Interstate 94 is located to the north of the site, however there is not an on / off ramp, the building would be highly visible to travelers passing through from any direction. The astonishing view of the building would draw in travelers with curiosity about the building. In that aspect, the travelers would be drawn through the city. The next reason for choosing this site relates to its location again. The Red River Zoo would be located adjacent to the Science Museum. Also in this area the softball diamonds are located to the south and west. With all these other interactive activities in the proximity, the people that are already there can follow the trail to the museum. Whether it would be between softball games or after the expedition through the zoo, the science museum would be there ready to show the young and mature minds what science all about.



VIEW FROM I-29 OFF RAMP ON TO WEST BOUND I-94

Within the site I have developed a trail that leads from the city street, through the site, pass the I-Max Theater which eventually leads the guest to the entrance of the science museum. By creating this path it helps reinforce the use of the outdoor space and gets guest to interact with the museum.

The current site is a field, around the site is a field to the south, and located on the east side is a shelter belt. With my development of the land, I propose that the shelterbelt be reinforced and groomed to be brought up to a better quality. The building has been designed to be viewed from all angles. With that in mind, it made it difficult to locate the part of the building that people tend to think less of, that being the garbage, and shipping and receiving. Along the north side of the building, that is highly visible to interstate traffic, I located a slight retaining wall to block the view of the unsightly yet necessary functions of the building. This area for loading and unloading would be accessed with a service road that runs on the outer perimeter of the site, out of view for aesthetic reasons.

# The Fibonacci Series with Numbers and Nature

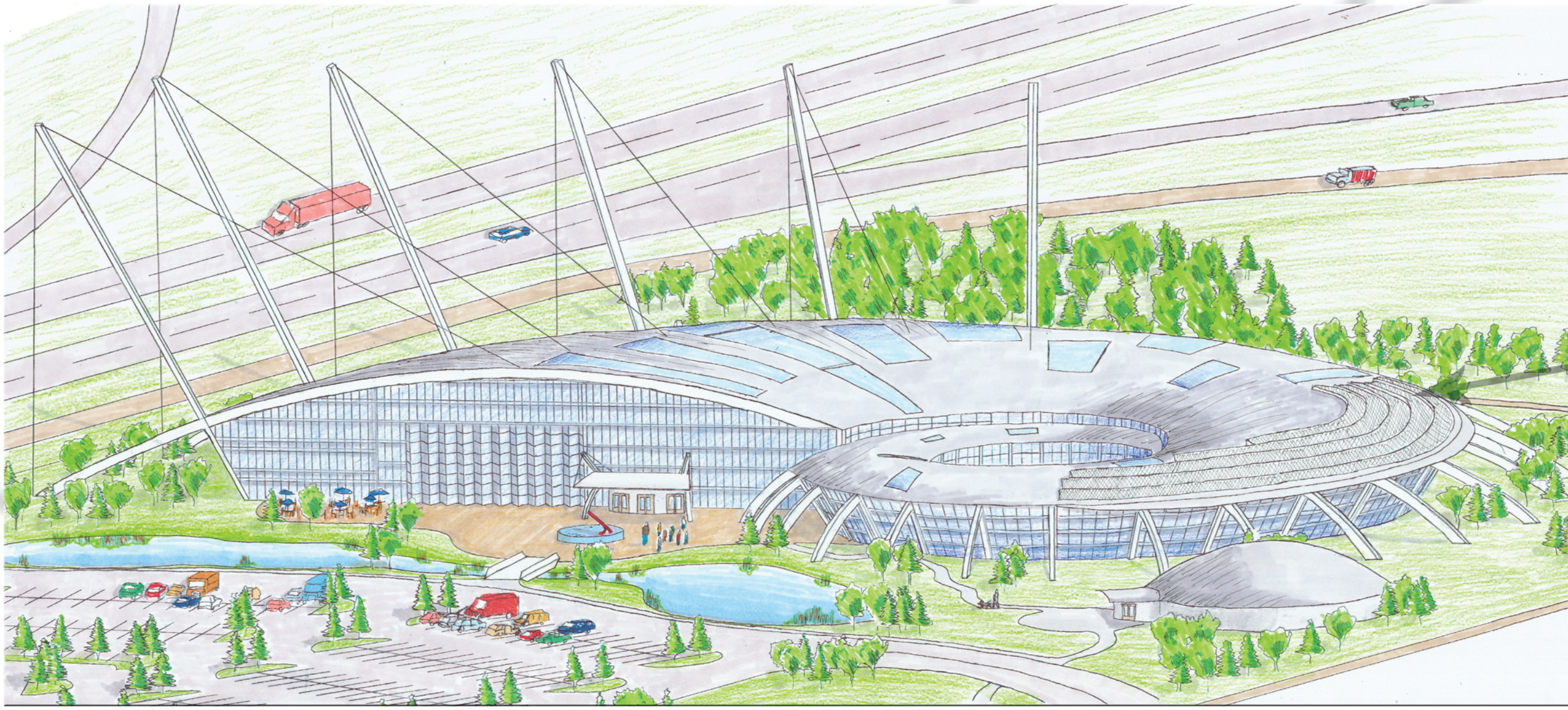
The Fibonacci sequence known as the **golden ratio** 1.618034 is also called the **golden section** or the **golden mean** or just the golden number. Here is a spiral drawn in the squares, a quarter of a circle in each square. The spiral is not a true mathematical spiral (since it is made up of fragments which are parts of circles and does not go on getting smaller and smaller) but it is a good approximation to a kind of spiral that does appear often in nature. Such spirals are seen in the shape of shells of snails and sea shells and, as we can also see, in the arrangement of seeds on flowering plants too. The spiral-in-the-squares makes a line from the center of the spiral increased by a factor of the golden number in each square. So points on the spiral are 1.618 times as far from the centre after a quarter-turn. In a whole turn the points on a radius out from the center are 1.6184 = 6.854 times further out than when the curve last crossed the same radial line.

Naturally occurring in nature, this simple, yet very sophisticated means of organizing is a part of every day life for plants and animals. Fibonacci sequences have been noted to appear in biological settings such as the branching patterns of leaves, grasses, and flowers, branching in bushes and trees, the arrangement of pines on a pine cone, seeds on a raspberry, and spiral patterns in horns and shells. The scales on the surface of a pineapple are arranged in two interlocking spirals, eight spirals in one direction, thirteen in the other; each being a Fibonacci number.

		13	
	8	21	3
		5	

## The Main Entrance.

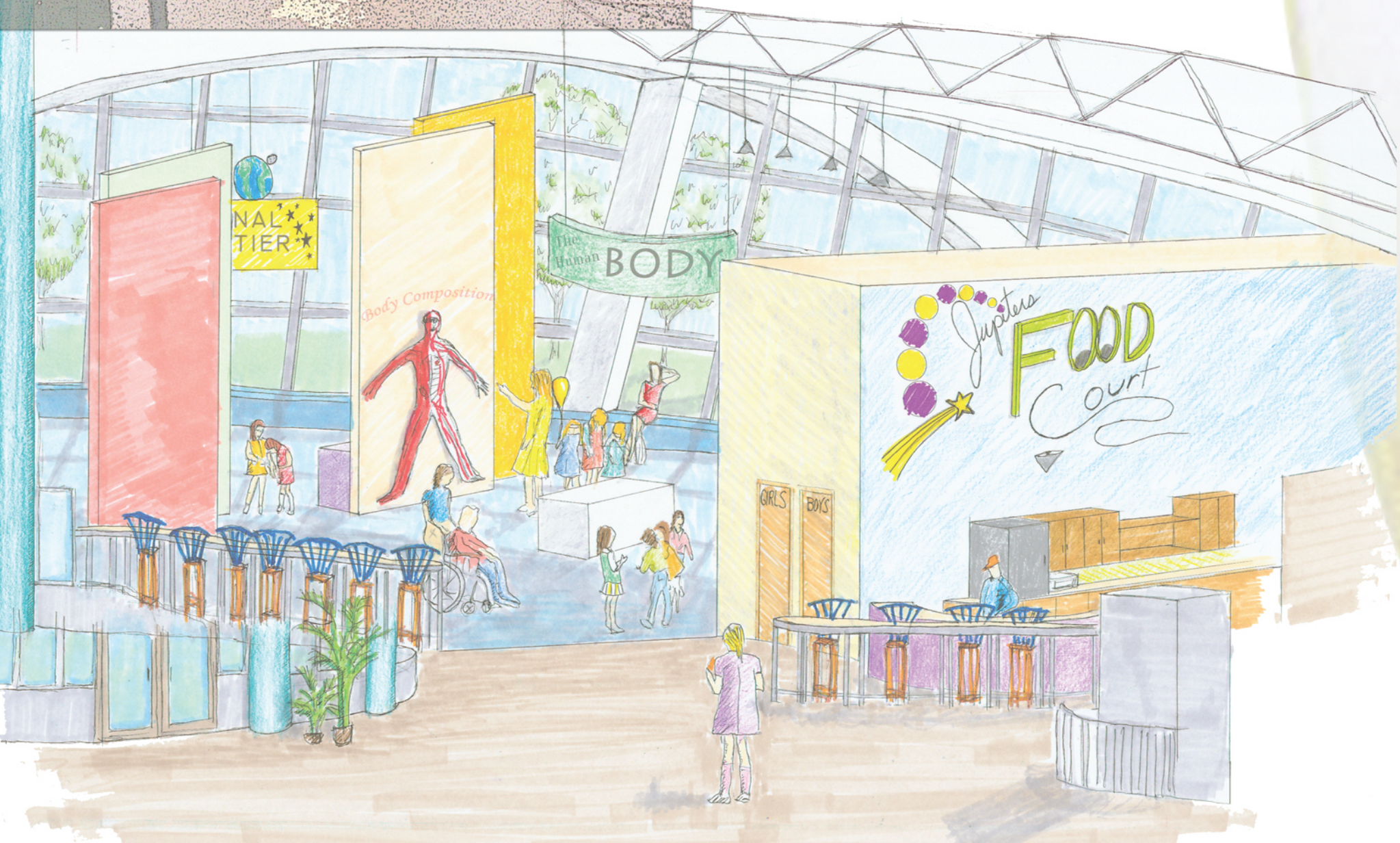
The large glass façade acts as a shading devices in many ways. First, the angled glass breaks up the monotonous on the front and creates unique shading on the outside of the building and on the reception hall on the inside. The shading on the glass over the area that would be for the restaurant is designed to block more sun in the later hours when people are there enjoying an evening meal.



Trials on the site allow the guest to interact with the site and the building.



Aquarium



Food Court

## Concept and Process

When beginning to work with a concept for an interactive museum, I thought about many different organizations and ideas about how a museum should function. I also thought about what an interactive museum should look like and appear to the public.

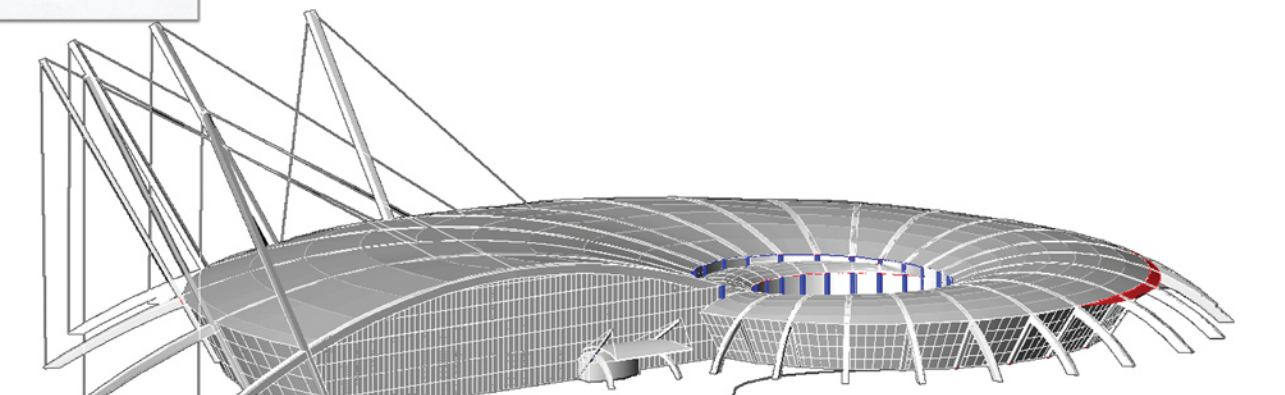
Some of the ideas that I was working with were leading me to radial designs with main activities in the center and galleries located off to the side. My design was starting to take shape when I realized the relationship that I needed between certain areas. After much deliberate work with sketches and Venn diagrams, the processes lead me to scribble a snail shell.



I knew I found my concept. The next step was to figure out the final shape of my idea. As it works out, my idea for an interactive science museum is based on one of the purest forms in nature that occurs naturally and can be mathematically formed to give me a pure and smooth design.

After I had figured out the concept and the underlying principle of my design, the next step was to try to figure out just how big this building needed to be. Working with the nautilus shell for a design was slightly difficult when thinking in terms of structure. That was when I decided that in order to achieve the smooth and pure form of my building, concrete was the choice.

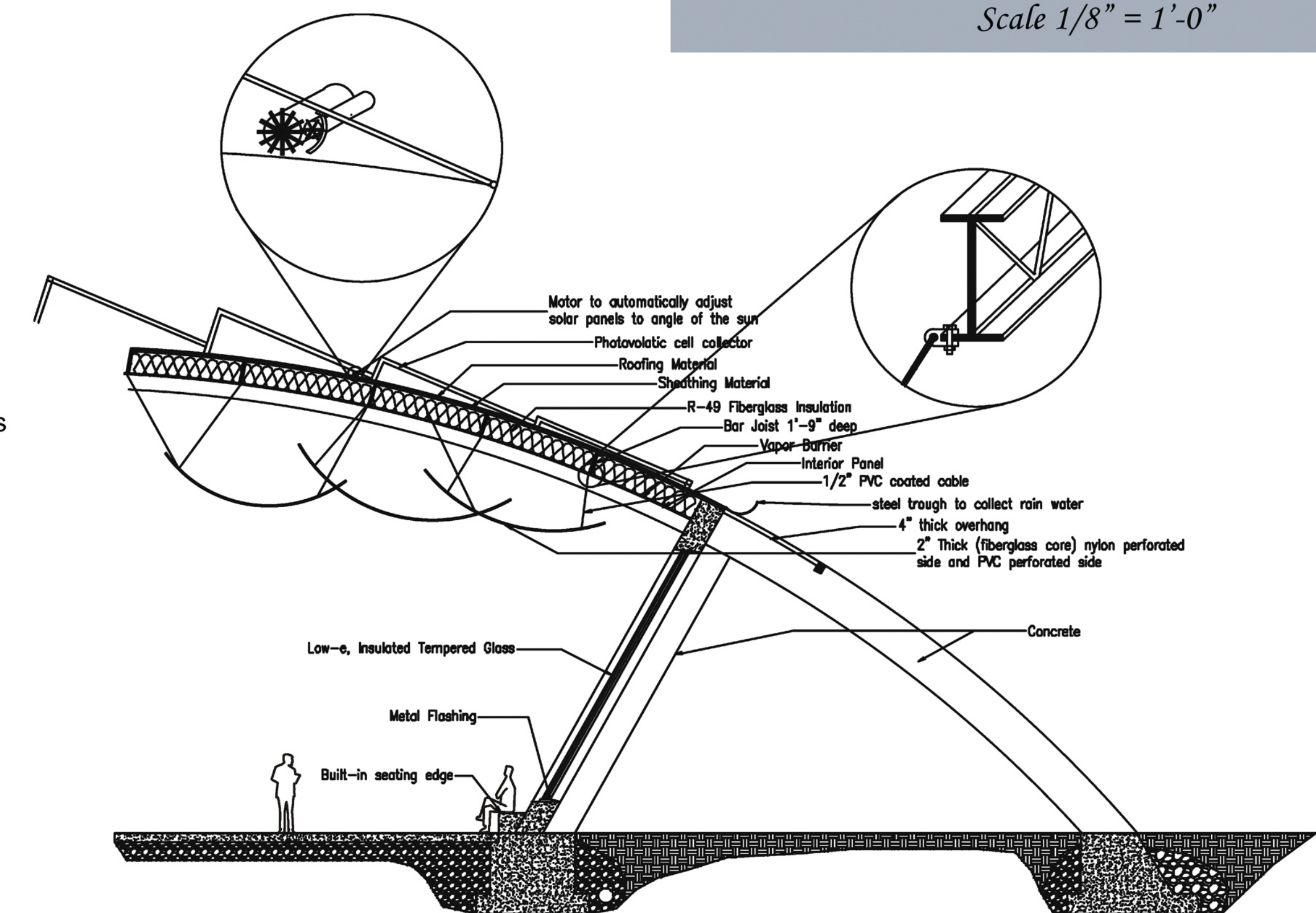
I designed these large concrete ribs that start at the end of a column and gradually ever-so gracefully immerse themselves back into the ground from which they were conceived.



The building is designed to be highly visible from the major interstates that cut through the city. This is achieved by the the large 137 ft concrete braces that appear to be holding the buildings roof by cables. However, the large braces do not act with any structural support and give the building a sculptural appearance, and helps make the building a landmark for Fargo.

## Detail

Scale 1/8" = 1'-0"



## Interactive Exhibits

Exhibits for the museum will be hands-on, and computer interactive. There will also be exhibits that will only require users to look and listen to what the exhibits have to explain. The fun and interaction of the children and the adults with the exhibits will make the environment fun and exciting. With a wide variety of exhibits ranging in the field of science the museum will give Fargo a new place to go on a regular basis. The science museum will bring the scientific literacy of Fargo to a new level.

FIFTH YEAR THESIS PROJECT SPRING 2006

JUSTIN HAYES