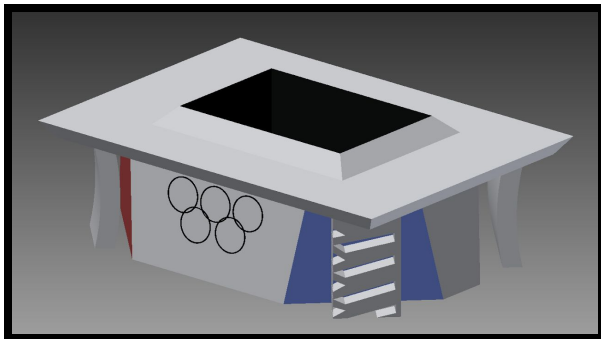


JAPAN 2020

Mirai Olympic Stadium



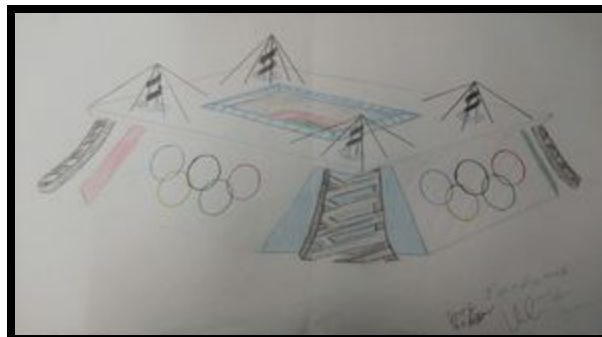
Mr. Timothy Ducey's Engineering English 2 2015-2016 Class

-Mission Oak High School-
-Tulare, California, United States of America-

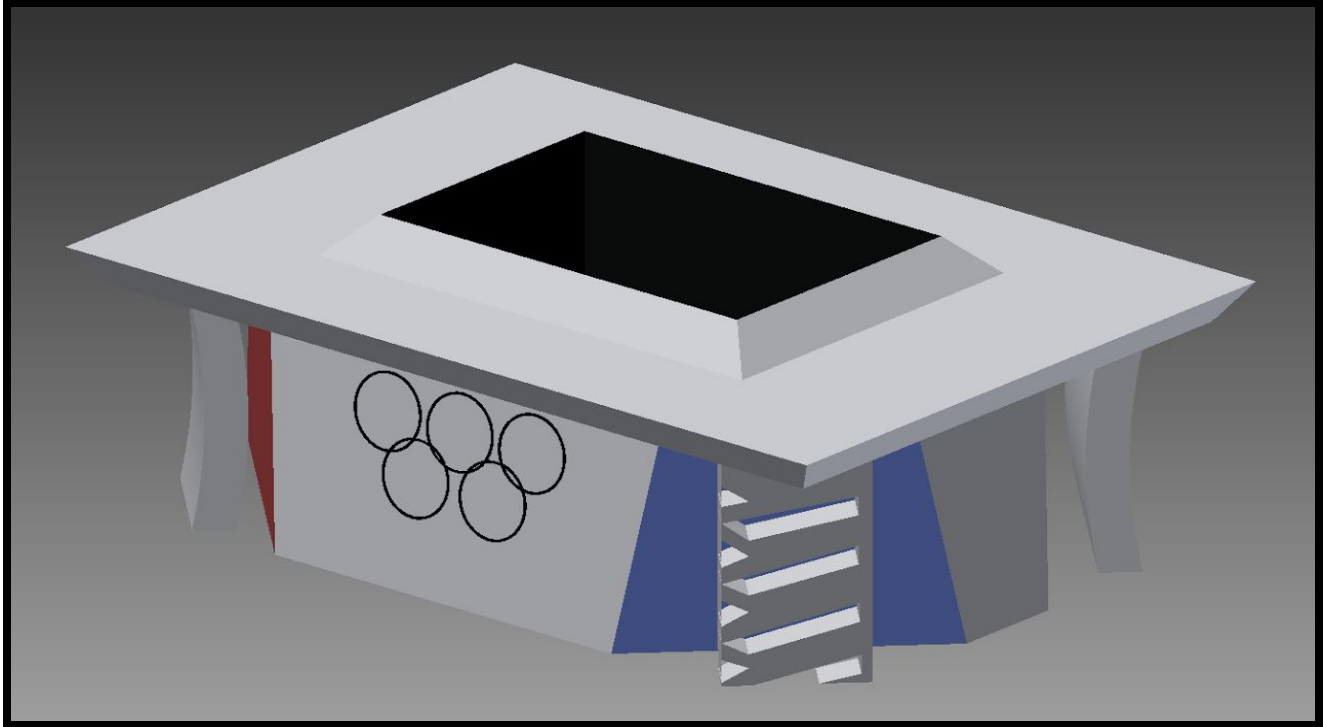
Edward Aderhold, Bryan Contreras, Evan Freitas, Brandy Gomar,
Ukiah Heasley, Elizabeth Hernandez, Lucero Lopez Martinez,
Alexander Lugo, Jeronimo Marquez, Joel Martinez, Jacob Padilla,
Abel Pelayo, Veronica Solorzano, Antonio Velazquez, Gonzalo Zamora

Abstract

Our design has been inspired from many concepts around the world. We took bits and pieces from the most famous stadiums in the world. We decided on this as the design using the modern design and ideas from Japanese culture. We plan to make the entire roof of the building flat using the modern architecture and incorporate solar panels. We also decided to put poles on to hold the roof up and enable the stadium to have wind turbines to also produce power. This is done to generate energy and help with energy costs of running the building. The sides of the buildings are also going to incorporate LED displays to display game information and display the event that is currently in use of the stadium. Modern stadiums inspired us to design the roof and the sides of it to be as they are now. We incorporated the Japanese culture on the side pillars to look like bamboo, and they can be shown to be “holding up the stadium” because of their strong nature. Japan is known for its innovation in the world of technology and their futuristic architecture. To help improve the flow of people that enter and then leave the stadium we introduced revolutionary design. The supporting pillars at the 4 corners of the building are going to be used as both entrances and exits. This is allowed by the usage of elevators to the outside edge of the pillars. In the center of the pillars there is an escalator that will allow the stadium to be emptied in 30 minutes.



Stadium Design



This is the stadium *Mirai* designed on AutoCad. AutoCad is an inventing software used to design one's invention. The stadium (exterior) is going to be made of concrete, glass, and steel. The rings symbolize that the building will be hosting the 2020 olympics. The design's purpose is to look modern. It has a box-like shape to it with the corners extruded off. The roof was designed to shade the audience but leave a hole in the middle exposing the field and track. The pillar-like structures under the corners are elevators and escalators to raise the audience to the top.



Design Criteria

Client:

Japanese Olympic committee.

Designers:

Edward Aderhold, Bryan Contreras, Evan Freitas, Brandy Gomar, Ukiah Heasley, Elizabeth Hernandez, Lucero Lopez Martinez, Alexander Lugo, Jeronimo Marquez, Lio Martinez, Jacob Padilla, Abel Pelayo, Veronica Solorzano, Antonio Velazquez, Gonzalo Zamora

Problem Statement:

The Stadium Designed by Zaha Hadid was a controversial design, and the cost of over \$2 Billion was very appalling, so the design was scrapped.

Design Statement:

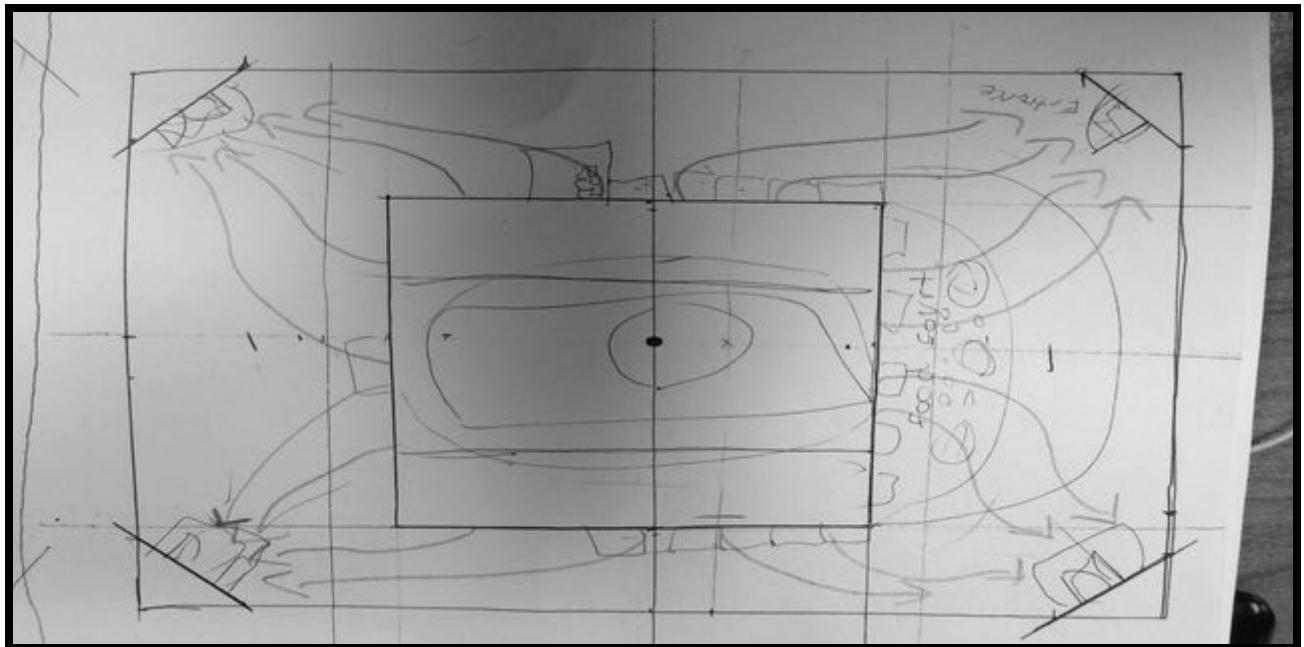
The Design has to be a powerful symbol of Japan and fit within the budget.

Design Criteria:

- Must seat sixty eight thousand people and expand to eighty thousand if Japan Hosts a World Cup.
- Must be under 1.3 Billion US Dollars

The layout of the stadium

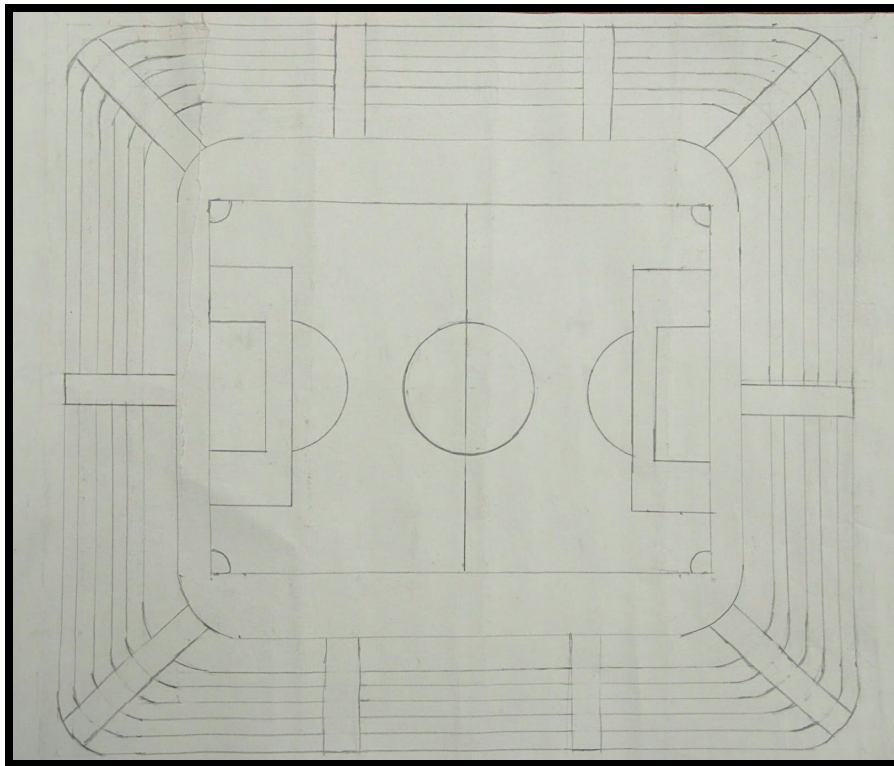
The layout of the stadium was based on openness and simplicity. This allowed for more things such as high traffic flow and availability for different events. First main part of the layout is the open spaces that allow for great traffic to and from the stadium. This will hopefully attract many sporting, concert, and entertainment attractions to use our great facilities. Along with the attractiveness it brings, we can easily change the venue for new events. The second thing that makes our layout unique is the placement of the food court which is in the second floor. This provides for the least amount of missed action when going to buy concessions. We truly believe in the making of a great atmosphere and we made the great open spaces to symbolize the making of your own path. We at team Mirai believe that this venue can host many events.



In detail the Stadium layout begins with entrances on the first floor near the corners of the stadium. When going into the stadium, we still see the basic design that allows for open spaces. There are elevators at every side of the interior structure.

Second the next floor starts as our crown jewel of the stadium equipped with what we like to call the World Court. This food court will showcase every culture in the world. along with other great sites such as a wall showing the great culture of japan.

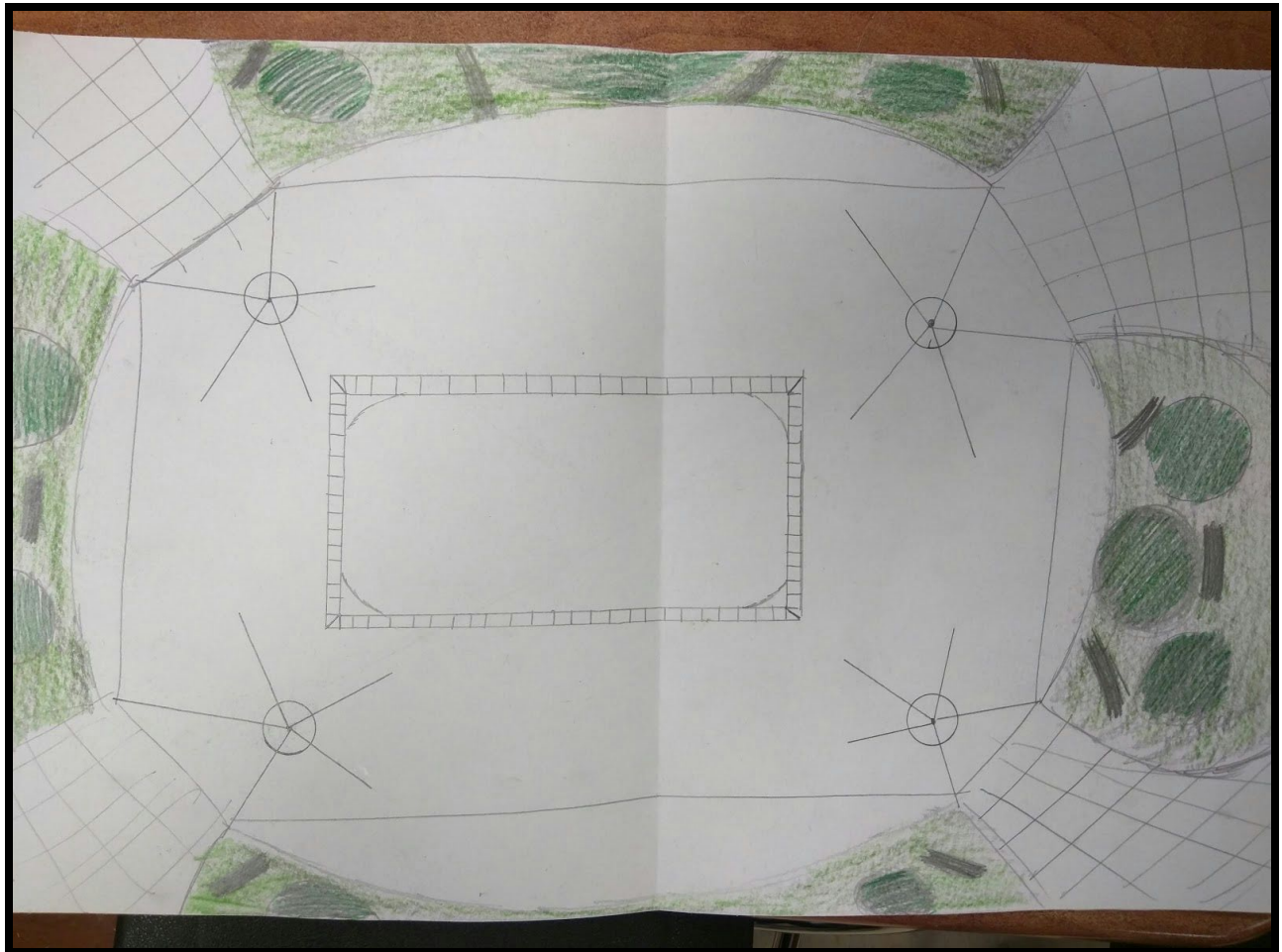
On the third floor we finally see the inclusion of the great Luxury boxes that come with all the amenities that a spectator could ask for.



Mirai Stadium
Bird's Eye View Interior Layout

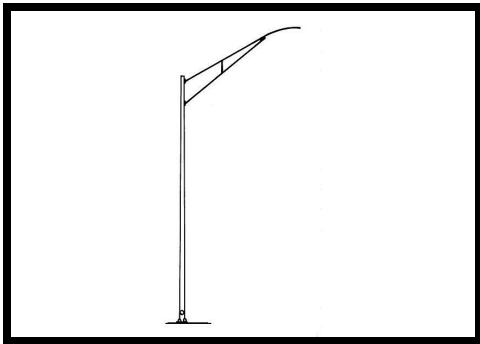
Landscape

The landscape is a very natural setting. It includes native Japanese Maple trees and cherry blossoms to meet its surroundings. There are also benches around the stadium on which one can sit and enjoy the view and setting whenever you please. It has much grass on which one can lay on and relax. Around the stadium are many different types of colorful plants to brighten up and compliment the stadium. Also, when the stadium is not in use, one may still come in and relax and enjoy the quiet scenery whenever he or she pleases. There is also a walkway for the crowd to walk on and move about.



Landscape - Outside Lighting

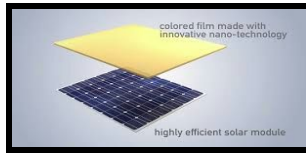
The light poles are going to be Corrosion resistant and lightweight, RTA pole systems include mating arm. A satin sanded finish is standard. Arms include Upsweep, Truss and Davit styles. Cast aluminum bases with nut covers are standard. 1"x36"x 4" galvanized anchor bolts are included with factory supplied template. Transformer bases are available by special quotation on some sizes/styles. Total cost \$850,000. Each light is going to cost 10,000 each there's going to be 85 light poles throughout the whole outside of the stadium.



Eco Friendly

Making a stadium eco friendly is good for the earth and everyone around it. We are going to get white solar panels and wind turbines. The wind turbines are going to weigh 1,000 pounds each. Each wind turbine is going to cost \$10,000,000 each and there's going to be 4 so total it's going to be \$40,000,000 total for all 4 wind turbines total they're going to weigh 4,000 pounds. The solar panels are going to be a total cost of \$40,000,000. The solar panels weigh 50 pounds each.

Total cost of \$80,000,000.



Stadium Seating

- 2 main sections of seating like the old stadium except hold more people per section than the old stadium.



- Stadium should hold 68,000 people
- Will have fairly large seats as there will be enough room to do so.

Luxury Boxes

- Will have Luxury Boxes between each section
- The luxury boxes will have seat service
- Reserved for important people only (Presidents, prime ministers, Kings and Queens)
- There will be waiters in the luxury box to serve food.

Stairs/Elevators/Escalators



Cost: \$25,000 per unit

Total number of units: 16

Total cost for escalators: \$400,000

Elevators: The required number of elevators will be installed to move people with disabilities and special needs, and anybody that wants to use them.

Design:

The powering system used and the elevator's operating mechanism affect its cost. Common types of operating systems are AC, hydraulic and DC systems. Elevators using the hydraulic powering system are very efficient in terms of lifting motion. For this project we choose hydraulic elevators.

Dumbwaiters and elevators are estimated and purchased in a method similar to buying a car. The

manufacturer has a base unit with standard features. Added to this base unit price will be whatever options the owner or specifications require. Increased load capacity, additional stops, higher speed, and cab finish options are items to be considered.

The design includes the following:

Elevator Doors - doors have been included, not only for the elevator itself, but for each floor where the elevator stops.

Hydraulic Piston - the excavation for the elevator piston is included in the estimate. For each floor above grade that the elevator is to travel, there should be an equal length of piston below grade.

Fire Stops - all openings for doors, dumbwaiter access panels, etc., are fire-rated per the applicable code. In case of a fire emergency, their shafts ways will otherwise act as a conduit for smoke and heat.

Typical Costs

Hydraulic passenger elevator - Base unit, 2,000 lb. 200 fpm. 4 stop, standard finish: \$109,500

(According to the *Means Building Construction Cost Data, 2008.*)

Price adjusted for inflation: \$125,00 per elevator

Number of units: 8

Total cost for elevators including installation: \$1 000 000.00



Sample elevator picture

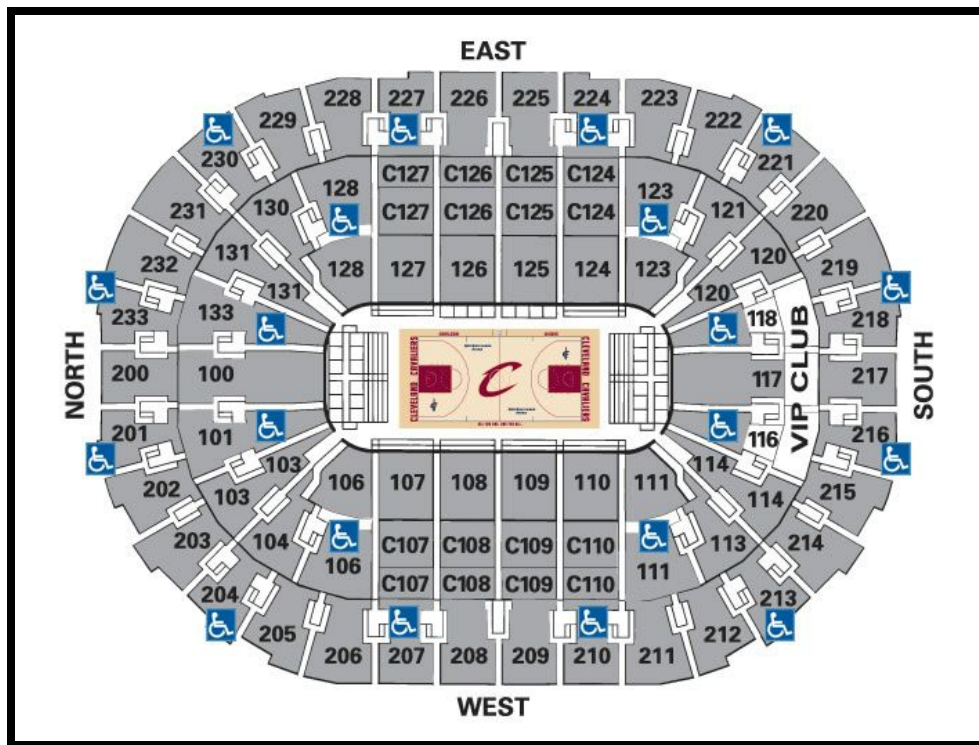
Entrances and Exits

The entrances and exits will be at the four corners of the building. There will be multiple elevators and escalators at each corner. You will have your tickets checked at the gates of the perimeter of the stadium. There will be a fence around the stadium's perimeter. This is the simplest way we could come up with to make the wait time to get into the stadium as short as possible.

For the inside to get into the seating area there will be a wall behind the highest row of seats at that level. There will be walkways between two sections of seats going up and down and then of course the seats will be going from left to right. You will walk into your section when you find it and walk into your row. The stairs will lead to the highest level of seats on that floor and to the lowest set on that level. The top of the seating section will be where the floor starts and the seating goes down from there until it reaches the next level of seats. There will be a very large hallways that span the width of the level circling through the stadium and having a view of the game at all times. There will be small vendors in the hallways except for the second level which will have the massive food court. On the third level there will be Narisawa restaurant.

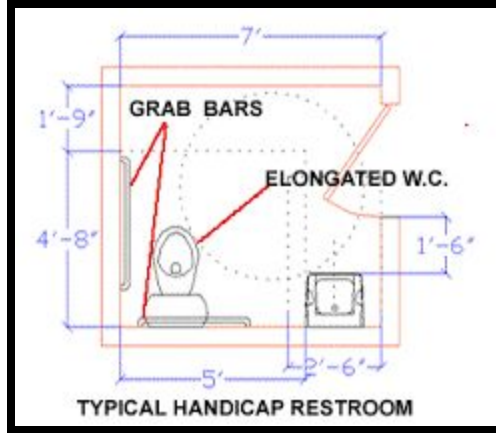
Service elevators will be throughout random spots of the building for maintenance staff and security to use to get to different parts of the stadium that is not accessible to the spectators.

Handicap Access



The stadium's handicap access for our stadium was designed after the Cavaliers handicap seating. There will be Handicap seating in all rows along with Elevators and ramps for people with wheel chairs. There will be handicap bathrooms on all floors along with a shorter line to get in so that they have their own personal doorways and bathrooms so that it's wide enough and can accommodate them correctly.

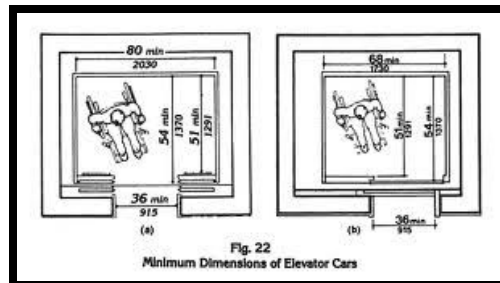
This is what is required for handicap bathroom is and what will be needed for the door to make it as easy as possible for the handicapped. The requirements for the elevators are also on the next few pictures.



The Bathroom must have grab bars, wider toilet and a shorter sink for people in wheelchairs to be able to reach.



The Elevator must be big enough for someone to turn and carry a lot of weight for equipment and other things. The door must also be wide so that more than one person can be put into the elevator.



Track/Field

In the US, building a 400 meter polyurethane track [1] from scratch typically costs **around \$1 million**. Resurfacing an existing track usually costs about **\$300 thousand**.

I worked on the field and track for the olympic stadium "Mirai." I was in charge of finding the area of square that the track and field uses up in the stadium. I researched that an average field uses about 81,000 square feet and an average track uses about 33,730 square feet. to find the area of the field i researched the area (in square feet) a soccer stadium has. I came across a problem in the cost of the track. I found a website that sold tracks and it gave me a price of \$14.99 per square meters. i had to convert square feet into square meters when i found the total square feet of a track. I found that a track consisted of 33,730 square feet and i converted it into 662,688.17 square meters. For the total cost of the turf used for the field I got \$384,750 for 81,000 square feet. For the total cost of the track I got \$9,933,695.67 for 662,688.17 square meters or 33,730 square feet. I used the website FieldTurf.com to find the total cost of turf and averaged the cost out to get \$384,750. <http://www.fieldturf.com/en/fieldturf-difference/cost-analysis>. To find the total area of the field (soccer field) i went to turf.missouri.edu. From that i found the average size of a soccer field for the stadium. The area of the field was 81,000 square feet. <http://turf.missouri.edu/stat/reports/fielddems.htm>. I used the website, alibaba.com, to find the cost of the track. I found that the total cost was \$9,933,695.67.

http://www.alibaba.com/product-detail/synthetic-rubber-running-track-surface-material_1298350300.html?spm=a2700.7724857.35.1.suqEND&s=p.

Turf - \$384,750 \$4.75 per sq. ft. soccer field 81,000 sq. ft

<http://www.fieldturf.com/en/fieldturf-difference/cost-analysis>

<http://turf.missouri.edu/stat/reports/fielddems.htm>

Track - \$9,933,695.67 \$14.99 per square meters Track 662,688.17 square meters

http://www.alibaba.com/product-detail/synthetic-rubber-running-track-surface-material_1298350300.html?spm=a2700.7724857.35.1.suqEND&s=p

	Natural Grass	FieldTurf
Base preparation	\$150,000	\$320,000
Materials	\$2.75 per sq. ft. = \$220,000	\$4.75 per sq. ft. = \$380,000
Maintenance	\$20,000 x 10 years = \$200,000	\$5,000 x 10 years = \$50,000

Total	\$570,000	\$750,000
Scheduling Possibilities	25 hours x 25 weeks x 10 years = 6,250 hours	68 hours x 44 weeks x 10 years = 29,920 hours
Average Cost Per Hour of Use:	\$91.20	\$25.07

Field Type	Length	Width	Total Area
Men's	330-360 ft	195-225 ft	64,350-81,000 sq ft
Women's	240-300 ft	120-180 ft	28,800-54,000 sq ft
High School	330 ft	195 ft	64,350 sq ft
Junior High School	300 ft	165 ft	49,500 sq ft

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synthetic rubber running track surface material

FOB Price: **US \$9.75 - 20.25 / Square Meter** | [Get Latest Price](#)

Min. Order Quantity: 1000 Square Meter/Square Meters

Supply Ability: 43800 Ton/Tons per Year

Port: Guangzhou/Shenzhen

Payment Terms: L/C,T/T,Western Union

Quantity Square Meter/Square...

Please write your requirement here.

Recommend matching suppliers if this supplier doesn't contact me on Message Center within 24 hours.

I agree to share my Business Card to the supplier.

Food & Drinks

<ul style="list-style-type: none">● American● Mexican● Indian● Japanese● Chinese● Italian● Sushi● Alcohol● World Wide deserts● Brazilian	<ul style="list-style-type: none">● Portuguese● African food● Middle Eastern food● Chilean Food● Australian Food● French Food● Greek Food● German
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These are all the different types of food that will be available in the stadium. These food venues will all be in the food courts on the second floor of the stadium. There will be eighteen different food types to eat, and guests will be encouraged to eat somewhere they have never tried before.

The people running each booth will be native citizens of the country the food represents. For example an American chef will be running the American food vendor, and someone that is French will be running the French food vendor.

Exterior Food Vendors

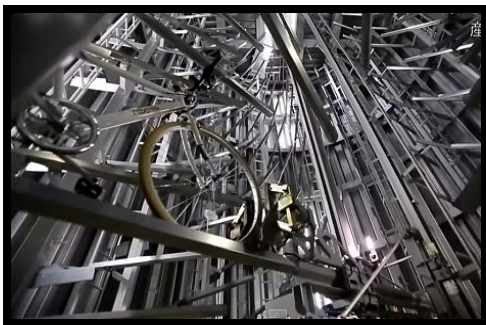
Outside the stadium exterior food vendors will be located in the courtyard area. Vendors will sell many foods including the following all kind of food so that everyone that is going could buy what they like the most or what they eat mostly like american food, corn dogs, hamburgers, hot dogs, pizza, donuts, mcdonalds taco bell etc snacks they will be like ice cream starbucks candy chips bread etc ,like to drink they will be able to get coffee gatorade juices coca cola, pepsi ,dr pepper, beer etc. mexican food they can be tacos,burritos, etc. people from japan can be selling food outside they always selling food in the street and they will be around the stadium they will probably be a japanese festival food they will be the following food are some that are on the japanese festival food, yakitori is a essentially various kinds of grilled chicken on sticks it's a popular drinking food,takoyaki is a ball shaped japanese pancakes with a chunk of octopus in the center,wataame cotton (candy) as in the u.s cotton candy is popular at festivals in japan is usually prepackaged ,yakisoba fried japanese soba (buckwheat noodles),ikayaki grilled squid connally on a stick, karumeyaki grilled caramel it's basically pure sugar, karaage japanese style fried chicken.



This image shows that their making the okonomiyaki are savory japanese pancakes that were traditionally cooked to use up leftovers in the refrigerator. the most popular ingredients are pork and seafood and cheese.

Bike Racks

The bike racks we will use are Eco-cycle Tokyo's underground bicycle storage system. They are buried 11 meters underground. These bike racks can hold up to 200 bikes. The cost of these bikes are 1.5 million. We will need it to hold 6,000 bikes. I know we will need it to hold 6,000 bikes because i multiplied 200 by 30 because 30 is how much bike racks we need & 200 bikes is how much the bike racks holds & the equals to 6,000. All the cyclist has to do is touch his membership card on a reader and insert his bike into the cubicle slot and hit the “park” button on the terminal from there the bikes are whisked away. The storage system transports the bike up to 11 meters underground where it is held one of the 200 bike racks.



Here above shows what one has to do to put away his or her bike. So All the cyclist has to do is touch his membership card on a reader and insert his bike into the cubicle slot and hit the “park” button on the terminal from there the bikes are whisked away. The storage system transports the bike up to 11 meters underground where it is held on one of the 200 bike racks.

Weather

August						
City	Average Daytime High	Average Nighttime Low	Rainy Days		Sunny Days	
			early month	late month	early month	late month
Sapporo	26 C (79 F)	19 C (66 F)	25%	30%	50%	50%
Tokyo	31 C (88 F)	24 C (75 F)	25%	25%	55%	50%
Takayama	31 C (88 F)	20 C (68 F)	35%	35%	60%	60%
Osaka	33 C (91 F)	25 C (77 F)	20%	25%	70%	70%
Fukuoka	32 C (90 F)	25 C (77 F)	25%	30%	65%	60%
Naha	31 C (88 F)	26 C (79 F)	40%	35%	70%	75%

The weather in Tokyo for the olympics will be Around 31 degrees Celsius during the day and around 24 degrees Celsius during the night. For Americans, that would be 79 degrees Fahrenheit during the day and roughly 75 degrees Fahrenheit at night. There is a slight chance of rain during the olympics in Tokyo, around a 25% chance of rain. The building is made so that the people will stay dry when it rains. The olympics will start in early August. The chart below is a rough estimate of the day by day weather for Japan during the olympics. The weather is going to be nice during the olympics, but just in case the stadium will be able to withstand any weather. It will be able to withstand even the worst weather. There will be Air conditioning units in the locker rooms so that the athletes will stay their best so they can represent their countries the best they can.

August Weather Chart - Tokyo Japan

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Jul 26	27	28	29	30	31	Aug 1
Actual Temp 36° Lo 26° Hist. Avg. 29° Lo 23°	Actual Temp 35° Lo 26° Hist. Avg. 29° Lo 23°	Actual Temp 34° Lo 27° Hist. Avg. 29° Lo 23°	Actual Temp 32° Lo 27° Hist. Avg. 29° Lo 23°	Actual Temp 34° Lo 26° Hist. Avg. 29° Lo 23°	Actual Temp 35° Lo 26° Hist. Avg. 29° Lo 23°	Actual Temp 35° Lo 27° Hist. Avg. 29° Lo 23°
2	3	4	5	6	7	8
Actual Temp 35° Lo 26° Hist. Avg. 29° Lo 23°	Actual Temp 35° Lo 26° Hist. Avg. 29° Lo 23°	Actual Temp 35° Lo 26° Hist. Avg. 29° Lo 23°	Actual Temp 35° Lo 26° Hist. Avg. 29° Lo 23°	Actual Temp 36° Lo 27° Hist. Avg. 30° Lo 23°	Actual Temp 38° Lo 27° Hist. Avg. 30° Lo 23°	Actual Temp 33° Lo 26° Hist. Avg. 30° Lo 23°
9	10	11	12	13	14	15
Actual Temp 33° Lo 25° Hist. Avg. 30° Lo 23°	Actual Temp 32° Lo 26° Hist. Avg. 30° Lo 23°	Actual Temp 36° Lo 25° Hist. Avg. 30° Lo 23°	Actual Temp 34° Lo 26° Hist. Avg. 30° Lo 23°	Actual Temp 30° Lo 25° Hist. Avg. 30° Lo 23°	Actual Temp 32° Lo 25° Hist. Avg. 30° Lo 23°	Actual Temp 33° Lo 24° Hist. Avg. 30° Lo 23°
16	17	18	19	20	21	22
Actual Temp 32° Lo 25° Hist. Avg. 30° Lo 23°	Actual Temp 28° Lo 24° Hist. Avg. 30° Lo 23°	Actual Temp 32° Lo 26° Hist. Avg. 30° Lo 23°	Actual Temp 31° Lo 26° Hist. Avg. 30° Lo 23°	Actual Temp 27° Lo 24° Hist. Avg. 30° Lo 23°	Actual Temp 29° Lo 24° Hist. Avg. 29° Lo 23°	Actual Temp 33° Lo 25° Hist. Avg. 29° Lo 23°
23	24	25	26	27	28	29
Actual Temp 31° Lo 25° Hist. Avg. 29° Lo 23°	Actual Temp 29° Lo 23° Hist. Avg. 29° Lo 23°	Actual Temp 23° Lo 21° Hist. Avg. 29° Lo 22°	Actual Temp 21° Lo 18° Hist. Avg. 29° Lo 22°	Actual Temp 27° Lo 20° Hist. Avg. 29° Lo 22°	Actual Temp 24° Lo 20° Hist. Avg. 28° Lo 22°	Actual Temp 22° Lo 19° Hist. Avg. 28° Lo 22°
30	31	Sep 1	2	3	4	5
Actual Temp 22° Lo 20° Hist. Avg. 28° Lo 22°	Actual Temp 24° Lo 21° Hist. Avg. 28° Lo 22°	Actual Temp 26° Lo 21° Hist. Avg. 28° Lo 22°	Actual Temp 32° Lo 24° Hist. Avg. 28° Lo 22°	Actual Temp 30° Lo 23° Hist. Avg. 28° Lo 22°	Actual Temp 30° Lo 22° Hist. Avg. 28° Lo 22°	Actual Temp 29° Lo 23° Hist. Avg. 27° Lo 22°

Cooling

There will be air conditioning in the building but only in the hallways/walkways and in the food court areas. Basically, the only place not cooled is the seating area since it is left open. The other parts of the building such as some rooms themselves will be cooled. It would be too costly to try and cool the entire stadium and use too much power. There won't be any air conditioning in the seating area of the stadium because it is simply too much area to cool. There will be misters to keep participants cool, which is very important given the high humidity Japan experiences in the summer months. The hallways, food court, luxury seating, and the other offices will all have air conditioning.

Cooling Facilities (exterior)



The cooling machines will be placed along the lines in the stadium and in the stadium so that everyone can stay cool in the humid air in Japan. The Mister will work every 5 minutes or when it gets too humid in the rooms. The cooling machine helps with

- Creating a special effect.
- Outdoor cooling
- Making a mystic mood
- Cooling industrial and commercial [locations](#)
- Regulating humidity for curing concrete or metals
- Keeping animals cool
- Humidifying
- Greenhouse cooling

The misty machines will be continuously spraying throughout the day so that the people will stay fresh even in the hot humid summer air in Japan.

Electricity & Plumbing

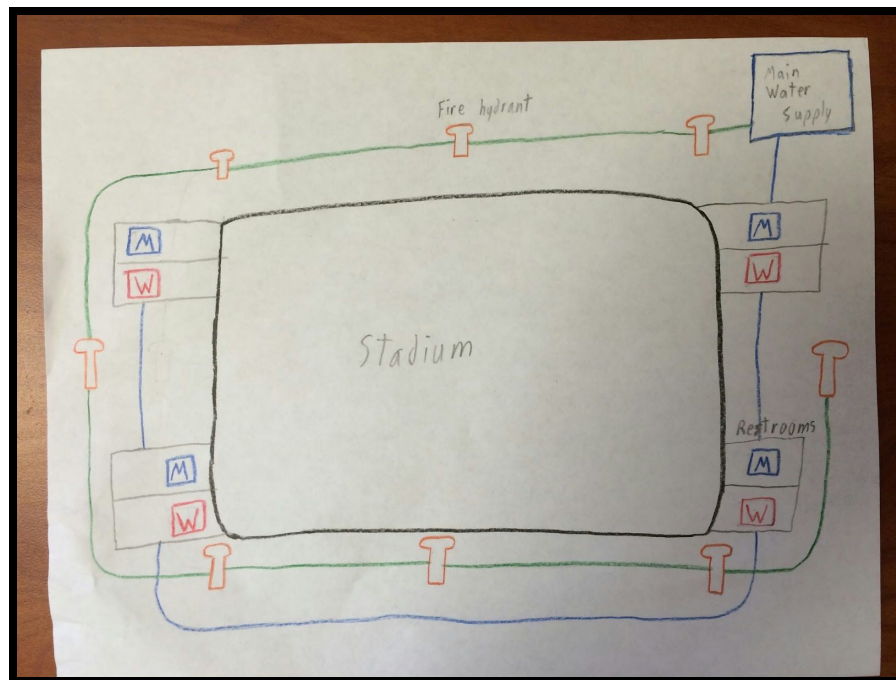
Electricity will be \$400 every time it is used and if it's used every day it'll be \$1,200 every month and the back up generator will be \$5,000,000. The needed amount of power needed per day is about 88,000 kw of energy. The plumbing will already be there so we won't need to waste too much money but if we have to replace it all it would be a total of about \$112,500. If we have to replace plumbing by the end of the first month if we use the electricity every day we would have wasted \$5,113,700 but if the plumbing from the foundation is still safe to use we will only have to waist \$5,001,200.



This is the foundation of the stadium and we will build the stadium on to this.

Plumbing (exterior)

Water lines: starting from the main water supply, the piping will be installed to supply all the restrooms and food vending facilities. In addition, separate lines will be installed to supply the fire hydrants. Sewer lines: starting from the main sewer trunk line, the discharge lines will be connected to the restrooms and food vending facilities. Separate lines will be installed to handle the stormwater. The sewer lines will be made of PVC and concrete piping.



As shown by the picture the main water supply will have two separate lines, one going to all the fire hydrants with high pressured water, ready for any kind of fire, and another water line going to all the exterior restrooms for flushing and washing purposes. A third line will also be run from the main water supply for interior stadium purposes but is not included in the schematic above since this is a plumbing description for the exterior stadium purposes.

Water

The water in Tokyo started to supply water from the Yodobashi purification plant in 1898. They want to have clean water for everyone there kids and family. The water in Tokyo is the best it has evolved into one of the largest facilities in the world with its highest level of technology.



In the stadium there going to be water fountains outside. There is going to be four water fountains in total on each side of the stadium . For landscaping there is going to be sprinklers for the plants and the grass.

There's also going to be provided water in the food section for anyone that wants water can just go to the food section. The water bottles are going to cost 150 yen per water bottle.

There are more than 2,500 dams in Japan their total storage is low because the rivers are short and steep. In Tokyo, there is 90% dry land. Water distribution pipes are typically made from ductile iron and service pipes from stainless steel. The total cost for water pipes will be 2 million for the whole stadium.



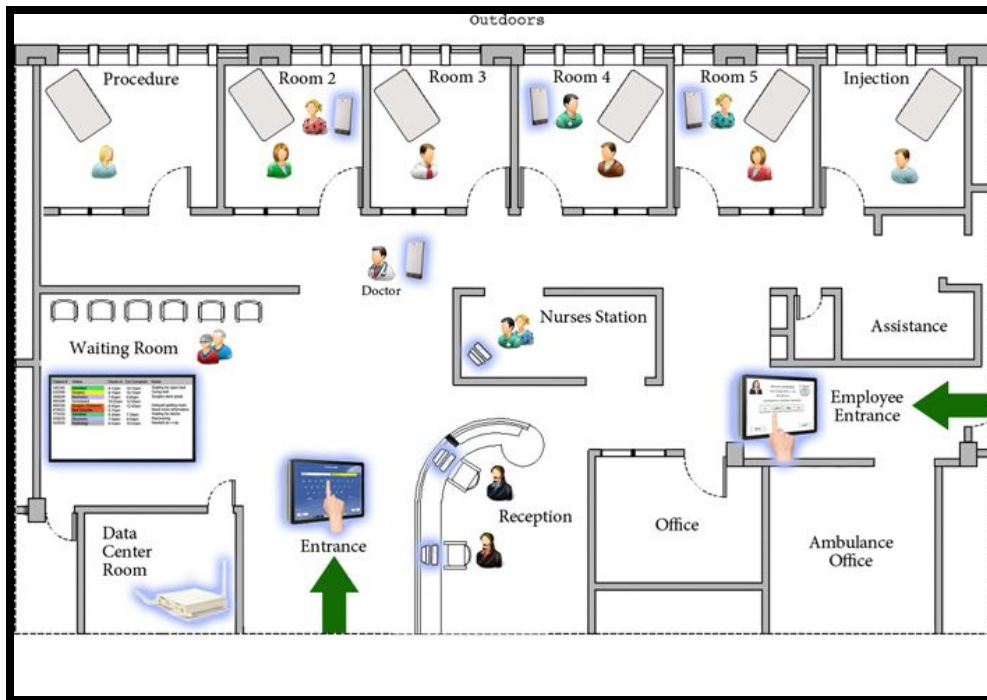
Medical Facilities

There will be a medical facility on site of the stadium, and also a helicopter to be able to airlift people out of the stadium. There will be enough that most injuries should be able to be treated on site but anything life threatening will be done at a nearby hospital. The medical can also be used for minor things for the athletes that might interfere with them playing their sport as good as they would if they were not sick. If needed spectators can receive medical attention but not for anything minor like a scraped knee or a headache. The Health care center in the stadium is going to be able to cover all types of injuries. That is necessary because you never know what could happen in a packed stadium especially with an event this big.

Exterior Medical Facilities

The Mirial Medical Exterior has so many things that are going to benefit people. The building is going to be 30x30x10. The capacity of people in this building will be no more than 15 people.

There are going to be 15 hospital beds in total. The hospitals beds are going to be a little close to each other to save space up. There is going to be one medical exterior on each side of the stadium. It's going to be open 24/7 for anyone who is hurt.



A walk in clinic is the same as a Medical Exterior. It's there for anyone who is hurt it's open 24/7 while the athletics are playing . The clinic is there for anyone who doesn't even have an appointment. This picture shows how our Medical Exterior is going to look like from the inside.

Medical Supplies (Primary Care & Walk-In Clinic)

Service	Self Pay Fee	Prompt Pay Incentive 15%
Ankle Brace (SS137)	\$51.00	\$43.50
Crutches - Underarm (SS129)	\$20.25	\$17.25
Knee Stabilizer (SS946)	\$38.00	\$32.50
Post Op Shoe (SS296)	\$11.00	\$9.50
Arm Sling (SS280)	\$7.50	\$6.50
Thumb Splint (SS390)	\$27.00	\$23.00
Walking Boot (Air Cast) (SS406)	\$63.00	\$53.75

At a walk in clinic here are the supplies that are needed in a clinic. As you can see all the supplies that are shown in this diagram are mostly for the athletics if they are hurt like a broken ankle something in there body like a broken bone. There is no cost for the athletes if they get hurt .

There is going to be one medical exterior facility on each side of the stadium. There are going to eight nurses in total, four nurses for each clinic. There will be two doctors present at each facility.

The total cost for the project will be around \$8,121,500.

Safety

There will be medical crew on hand at all times, not only for the players but also for the spectators. There will be defibrillators at every entrance to the seating section and on the sidelines of the field. There will also be medkits in those same spots.

In terms of emergency exits the escalators can act as stairs in the event of power loss but in the case that they can't be accessed or other problems with them there will be stairs as well. The emergency stairs will be on each level of the stadium and will all lead down to the bottom where the sides will have large doors that can open.

The security crew will be on hand throughout the stadium and can be used to break up fights and help evacuate people in the case of an emergency. They will carry tasers, batons, and firearms and can use them if need be. There will be 24/7 monitoring on the stadium as well with cameras everywhere throughout the stadium.

Emergency Evacuation



Our stadium evacuation plan is designed after the Penn State Stadium. This is just a rough sketch of the building with the different types of escape roots for the different types of natural disasters. There will be signs posted so that people will know what to do

incase of fires, earthquake, tsunamis, hurricanes or tornados. There will be a signs like the one below all around the stadium on every floor so that everyone will know what to do incase of any emergency. There are stairs on all the corners of the stadium so that everyone will be as safe as we can possible make them.



There will be different signs over different things with instructions on what to do incase of emergencies. They will be in different languages so that everyone can understand and be safe.

Security

The stadium has four entrances and the entrances are on each the corner of the stadium. There are going to be four securities on each of the entrances. It's dangerous for the security guards that are going to be working they need to be checking around the stadium that everything is safe and doing well.



Security guards have to check spectators before they go in to ensure no dangerous weapons enter the stadium. There is no food or drink allowed to be carried into the stadium, and one must throw it away before entering the stadium.

There are also going to be security guards in the food and drinks section to ensure those purchasing alcohol are at least 20 years of age as per Japanese law.

On the stadium field, there are going to be 50 security guards checking to ensure the safety of the athletes and those sitting close to the playing field. Additionally, there will be another 500 security guards stationed around the stadium and its premises.



This picture shows a security office. This office is where the security guards will have their breaks and lunch. The office capacity will be up to twenty

people. Each security guard is going to have different breaks while others will be working.



Security guards also are going to carry weapons with them in case anything happens. They don't use them in case something really bad happens. They mostly carry with them a gun and taser.

Stadium Defense

If need be, the stadium will be able to be turned into a fortress, with defenses that cover every type of attack including an Anti-ICBM system. Anti-Air will include JSDF Fighter cover when possible and the land-based Type-91 'Hand Arrow' and Type 93 'Closed Arrow' Surface-to-Air-Missile launchers. For Anti-tank purposes, I believe that the JSDF have the NATO-supplied M2 or M3 Carl Gustav Recoilless Rifle, along with the JSDF's Armored Corps. Artillery can be taken care of by Mortars and the Artillery Corps which belongs to the JSDF. If need be, JSDF Rangers can be brought in to take care of insurgents. Otherwise, the Stadium's assigned infantry should do the job quite well, with the standard Rifle used by the JSDF, unless rifles need to be supplied from other sources. These things will only be used in serious cases, like extreme riots or worse scenarios. Enjoy.

SAM (Surface to Air Missile): Technology and weapons used against Airborne targets like helicopters, jets, and drones.

Type-91 Hand Arrow: Range: Helicopters- 2500 meters Jets- 1700 meters

Type 93 Closed Arrow:

Range: 3500-4000 meters for Helicopters

2700-3800 meters for jets



Type 93 Closed Arrow SAM Truck

ATGM (Anti-Tank Ground Missile) and Recoilless Rifles:

M3 Carl Gustav (MAAWS) :

Range: 700-800 meters

M72 LAW (Light Anti-tank Weapon) :

Range: 500-700 meters.

Tanks:

Type 90 Kyu-Maru Shiki MBT



Nana-Yon Shiki-G (I believe is the most recent model)

McDonnell-Douglas F-4 Phantom, made by Mitsubishi for the JSDAF

Jets: ranging from

Fighters to designated bombers,

these can and will control the

sky.

Mitsubishi F2

F-15J

F4-EJ-kai



Rifles: used by infantry to combat other infantry. simple.

Hana-Non Shiki type 84/89/94

(If the Japanese government and the JSDF cannot or will not provide rifles, FN FALS, Tar-21 Tavors and/or M4 carbines can be ordered, amongst others)

Artillery: used to provide long-range or direct fire support with large field howitzers and mortars.

155-SP (Japanese designation for the M109 Paladin Self-Propelled Howitzer:

Main Cannon: 155 mm (5-ish inches)

Range: 10000-15000 meters.

MSSR (Rocket Artillery):

Rocket Size: 157(?) mm

Range: 8000-13000 meters

82-SP [an APC with a Mortar tube in the back. that simple.]

Mortar Size: 82 mm

Range: 1500-7000 meters.

Helicopters: You already know what these are, except the ones the JSDF uses are for Close Air Support (CAS), usually.

AH-1J/S Cobra:

Weapons:

20 mm Rotary Cannon (something like 800 or so rounds to each full load)

40-80 rockets (half of the amount is put on each side of the Fuselage.)



KV-107 (The JSDF variant of the CH-46 Phrog): Used for Transporting supplies, troops, and the like to areas quickly. Not used for CAS because of its lack of armament and size. (it's really, really damn big.) The KV-107 can easily carry things, like supplies (water, food, and the like) or people. Personnel space is around 15-25, and it can carry several hundred pounds worth of anything else.

IFV's/APC's: Armored vehicles used to support and transport infantry, while having the ability to fight enemy armor, lacking the strength of a real tank, with more speed.

Hachi-Kyu Shiki: Weapon: KDE-35 35mm autocannon Load: Up to 10 infantry, fully loaded and

combat ready, 480 rounds of high-power 35mm ammunition, and 4 Jyu-MAT SACLOS (wire-guided) missiles.

I understand that this raised the question of just how exactly are we going to afford this, and where are we getting the funds for it. Well, most -if not all- of the things listed here are used by the JSDF, and we can request that we can use troops and such from the JSDF for our stadium. I've made a secondary list in case we don't get everything we need (for instance, we can get tanks and such from the JSDF, but no actual infantry.)

Firearms: These can be bought through more...questionable..ways, or ordered for our forces by contracting a company.

Colt M4A1 Carbine: Standard carbine of the US military, chambered in 5.56x45mm NATO, it's probably one of the most omni-purpose weapon systems on earth.

Unit Cost: \$700 (yikes.)

Range: 500 meters

cyclic rate: 700-950 rounds per minute

Needed Amount: 100

FN FAL: Used by over 90 countries since it's introduction in the '50s, the FAL is one of the most widely-used rifles in history. Made in Belgium and used from Angola to Zimbabwe, the FAL has seen everything. Chambered in 7.62x51mm NATO rounds, it packs one helluva punch.

Unit cost: \$800-\$1200

Range: Up to 600 meters (or more, depending on the model)

Cyclic rate: 650-700 rounds per minute.

Needed Amount: 50

Glock 17: The series of Glock handguns has been used for years by US Police Forces.

Chambered in .40/.45 ACP/ 9x19mm Parabellum, it's a very versatile system, and just as easy to use.

Cost: \$350-\$650

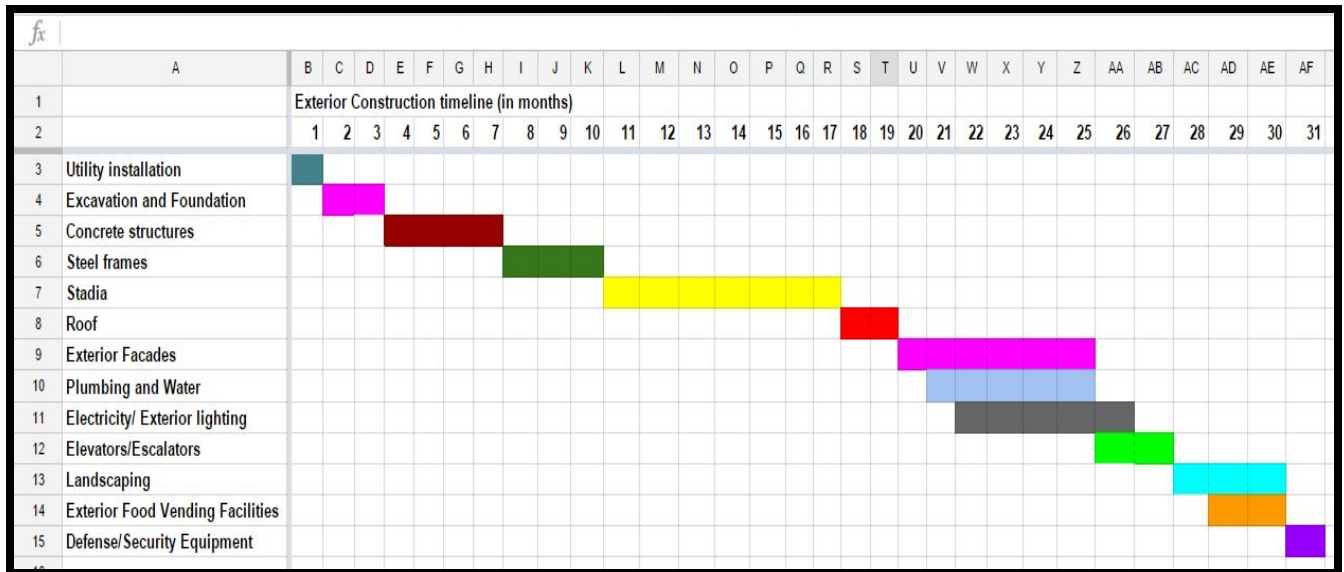
Range: 50 meters (55 yards or more, depending on version and user)

Cyclic Rate: Semi-automatic

Needed amount: 100

Mirai Stadium

Construction Timeline



Utility installation: Contractors will tap into trunk lines to provide electrical, natural gas and water and sewer service to the stadium.

Excavation and foundation: Major excavation of the site begins to make room for the foundation of the stadium.

Concrete Structures: Concrete structures that will support the stadium’s steel structures will be installed on the foundation

Steel Frames: Steel structures and support beams will be attached to the concrete columns to support the seating areas

Stadia: Cranes will place sections of precast concrete on top of the steel structures

Roof: the pieces of steel structure for the roof will be placed and lighter structures will be placed

to complete the roof

Exterior Facades: Metal and glass panels and stonework that will make up the exterior skin of the facility will be attached to the outside of the steel structures

Plumbing and Water: The plumbing and water lines for the exterior restrooms and the food vending areas will be run and tested

Electricity/Exterior lighting: the electrical lines to supply power to the outside facilities and the lighting will be installed

Elevators/Escalators: the elevators and escalators to access the higher levels of the stadium will be installed

Landscaping: the landscaping for the outside grounds will be placed

Exterior food vending facilities: All the equipment for the concession areas will be installed

Defense/ Security Equipment: the equipment to scan the people attending the olympic games and the equipment to monitor the outside grounds will be installed and tested

Mirai Stadium

Budget

Cost Analysis	Average Cost
seats	700,000
lights	10,000,000
screens	50,000,000
concrete	230,000,000
steel	20,000,000
solar	40,000,000
backup generator	5,000,000
Track and Grass	2,000,000
wind turbine	40,000,000
Landscape	5,000,000
Outside LEDs	14,000,000
Luxury Suites	1,000,000
Labor	250,000,000
Roof	80,000,000
Elevator	8,000,000
Escatlors	180,000,000
Pillars	200,000,000
Bathroom	10,000,000
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Vending Machine	250,000
Total Cost	1,145,950,000

Budget - This is the proposed budget for the Mirai stadium.

Conclusion

Stadium *Mirai* - Japan 2020

Our stadium represents the power, unity, and the future---the *Mirai*---for Japan. Our team believes that futuristic look of our design appeals to both the people of Japan and of the world. Our design has met the budget of 1.3 billion dollars which includes the cost of the stadium, seats, and other luxuries that make our stadium unique and a great choice. To conclude our bid for the 2020 Olympic Stadium competition our design represents the future for not only Japan but for the rest of the world as Japan hosts the Olympic games for all the world to see.

