Brought to you by Northdoning Heedwell's Tehachapi Division

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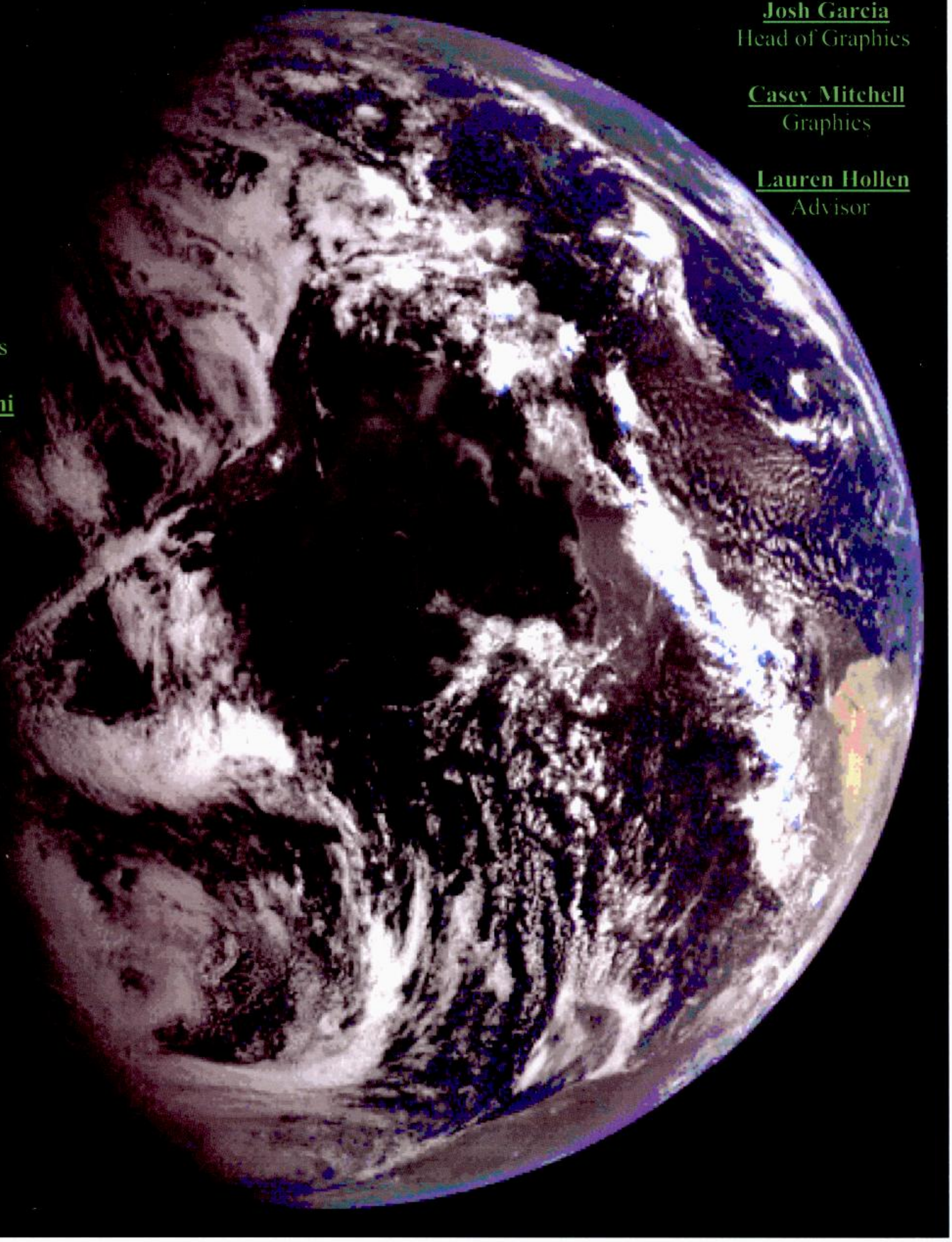


Executive Summary

1.0: Executive Summary

One brilliant light in a world full of infinite light and space, Its mass reflecting of sunlight that is unable to be absorbed. A spinning motion of beauty, and inescapable technological advances. It is the crystal within our imaginations, the future in the palm of our hands.

This is Bellevistat, brought to you by the Tehachapi division of Northdonning Heedwell. We hope you will share the same adventure we had creating this station, as you read all about it.

We have extremely high expectations for the construction of Bellevistat. It will fulfill our hopes of putting a station into orbit as fast and efficiently as possible. Using an extremely methodical computer system, that will unfold the pre-assembled station in orbit automatically. We have also introduced a structure similar to a catapult. This object will be placed in a low level of orbit, and will have the capacity to throw material and objects up into the higher orbits where Bellevistat will pick it up in its orbit.

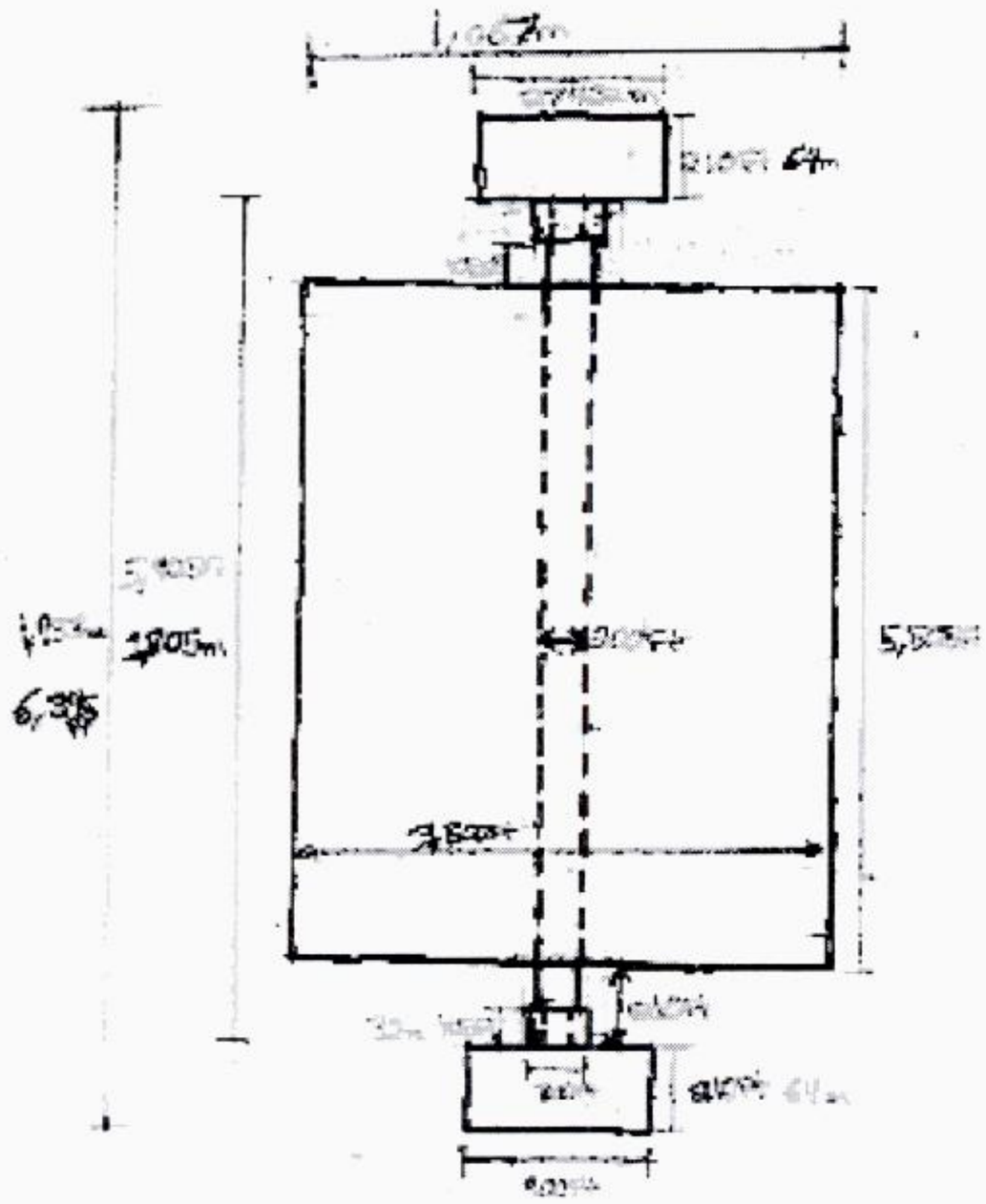
Our inhabitants will enjoy the uniqueness of our station. Its residential will be set up to mimic a normal everyday neighborhood on earth. The streets will be futuristic with a taste of originality in them. Uses include sidewalks, bike paths, segway's, and a moving sidewalk. They will enjoy a selection between three neighborhood types, and six house designs for each neighborhood. Our hope is that they will receive every comfort of a home on earth.

Using a one kilometer diameter, gravity will be created by spinning a cylinder 200ft in diameter. Coming off the cylinder are rectangular connectors between residential and the cylinder. These connectors though used as transportation pathways to residential, are also the key to spinning the massive cylinder (5,505ft height, 3,500ft outer diameter, 1km inner diameter (see section 2.1).

Solar energy collected by panels placed on the outside of the station will power the gears that turn residential. There will be two main gear systems one on each end of the cylinder (200ft in diameter see 2.1). These systems will attach to the two docking bays on either side of the station. Massive generators will be used as a backup power source.

We as a company are thrilled with our accomplishment, and hope you have shared the same energy of excitement we have. Our faith, and hope is that the performed efficiency and structural characteristics are to your liking. This station will serve you to its greatest potential. This we hope will create and fulfill your dreams, becoming reality.

Structural



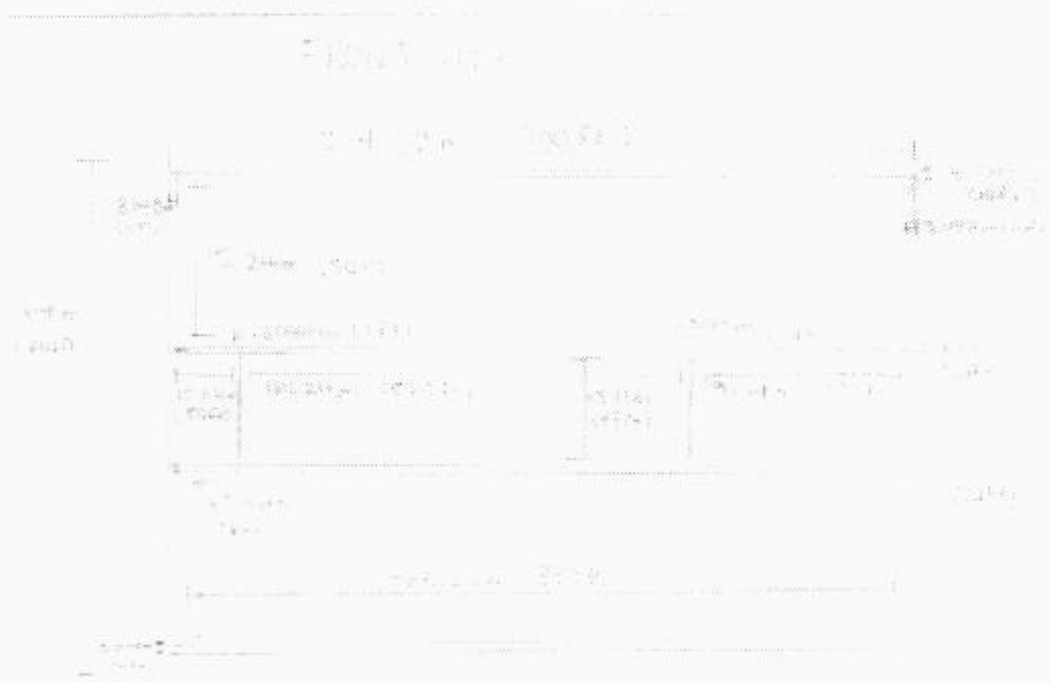
2.0: Bellevistat will provide a safe and comfortable feel for the 18,000 permanent residents and the maximum 1,000 guests and business people to the Bellevistat station.
2.1: The total length of the station Bellevistat will be 1,933 meters and the widest portion of the station will be the residential portion that will be 533 meters. Inside of the residential cylinder will be a smaller cylinder attached to large cylinder connecting to the docking ports located at both ends of the station. The smaller cylinder measures 61 meters in diameter and will connect to the docking stations at another cylinder section that will measure 91 meters in diameter.

2.1: Outline drawing of the station including dimensions.

These small cylinders will serve as the gear boxes that will spin the small axel type cylinder. Which will then in turn spin residential, due to the connectors .Included in the station will be two docking ports, one located at each end of the station.

The docking ports will be 64 meters tall, 366 meters wide and 274 meters deep. Each port will have one large landing pad that can be extended and retracted inside and out of the docking port. The pad will measure 366 meters by 274 meter by 3 meters. This pad will be used for mining. There will also be two smaller landing pads per each port. They measure 259 meters by 183 meters by 3 meters. These pads will be used for small spacecrafts containing vacationers and residents of the space station. These pads will also be able to extend and retract to fit inside of the docking port.

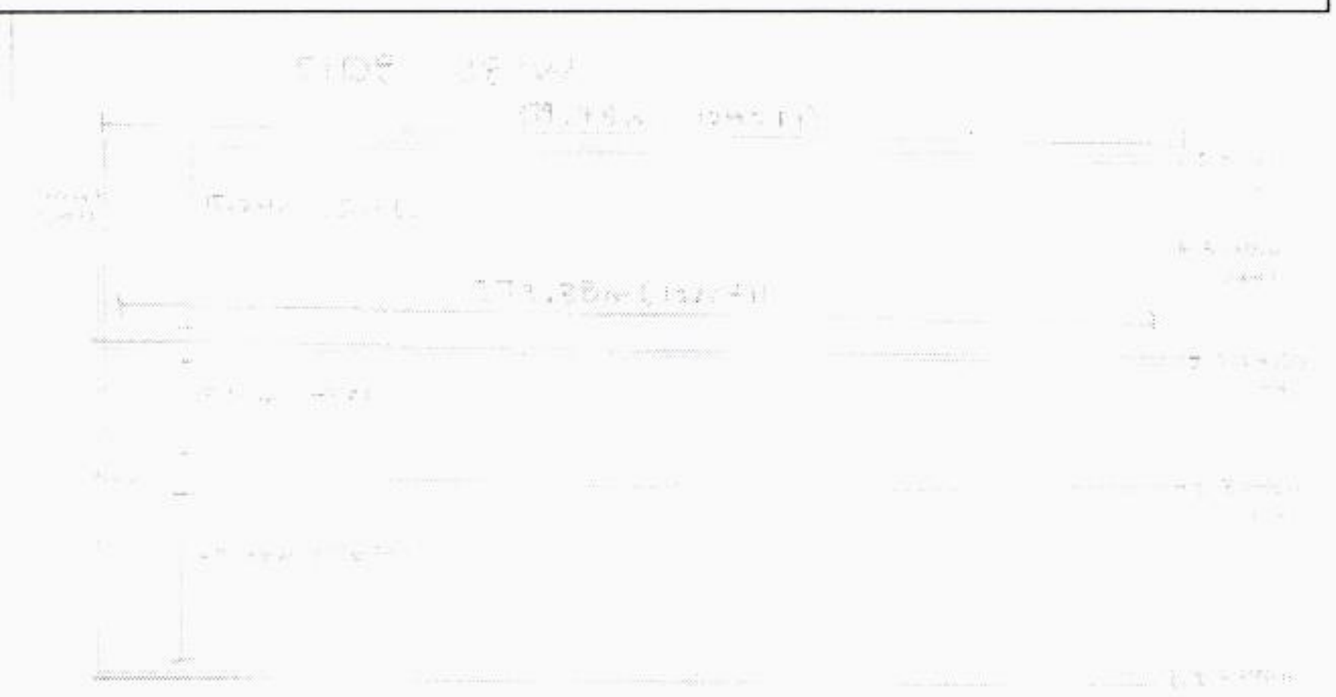
	Volume
Residential	26,098,444 cubic meters
Docking station x 2	1 = 4,594,432 cubic meters
Gear box connectors x 2	1 = 212,724 cubic meters
Small Axel Cylinder	5,103,517 cubic meters
Rectangle passageway connectors x 34	1 = 423,100 cubic meters
Total volume of station	55,201,673 cubic meters



2.2. Docking Bay

Bellevistat has two main docking bays both 64meters high, 247.32meters long and 379.48meters wide. It is comprised of three main stories containing landing stages, recreation, repair facilities, manufacturing, storage, laboratories, and asteroid mining. The top story houses two small landing stages, side by side, that slide out horizontally. Each stage is a total of 266.62meters long and and 3.048meters thick and slide out 259meters. The stage is capable landing 28 ships less than 60.91meters long, 15.24meters wide, and 12.29meters high because the ship spaces are 60.91meters long by 15.24meters wide. At the end of the stage 45.72meters are left extra. Down the center of the stage runs a terminal

220.98 meters long, 60.91meters wide, and 12.19meters high that ends 45.72meters from the end of the stage.



The terminal's walls are all 3.048meters thick, making the interior room 54.86meters wide, 9.14meters high, and 260.5meters long. The second floor contains a zero gravity recreation room 13.11meters high, 15.24meters long, and 373.38meters wide with 3.048meters each ceiling and floor thickness, the repair facility measuring 13.11meters high, 161.24meters long, and 373.38meters wide also with 3.048meter tick ceiling and floor, and the manufacturing which is 91.14meters long, 13.11meters high, and 373.38meters wide with 3.048meter each ceiling and floor. The bottom floor is a massive landing stage. Secured on 91.44meters of the stage, which is one forth of the entire stage, is a building 262.13meters long, 91.44meters wide and 22.25meters high. This building is comprised of seven stories each 2.44meters high with .3048meter thick floors. This building includes the labs, super computers, equipment storage, extra storage, and elevators. The rest of the stage (274.32meters long by 262.13meters wide by 3.048meters thick) slides out to accommodate asteroids and their accompaniment of ships.

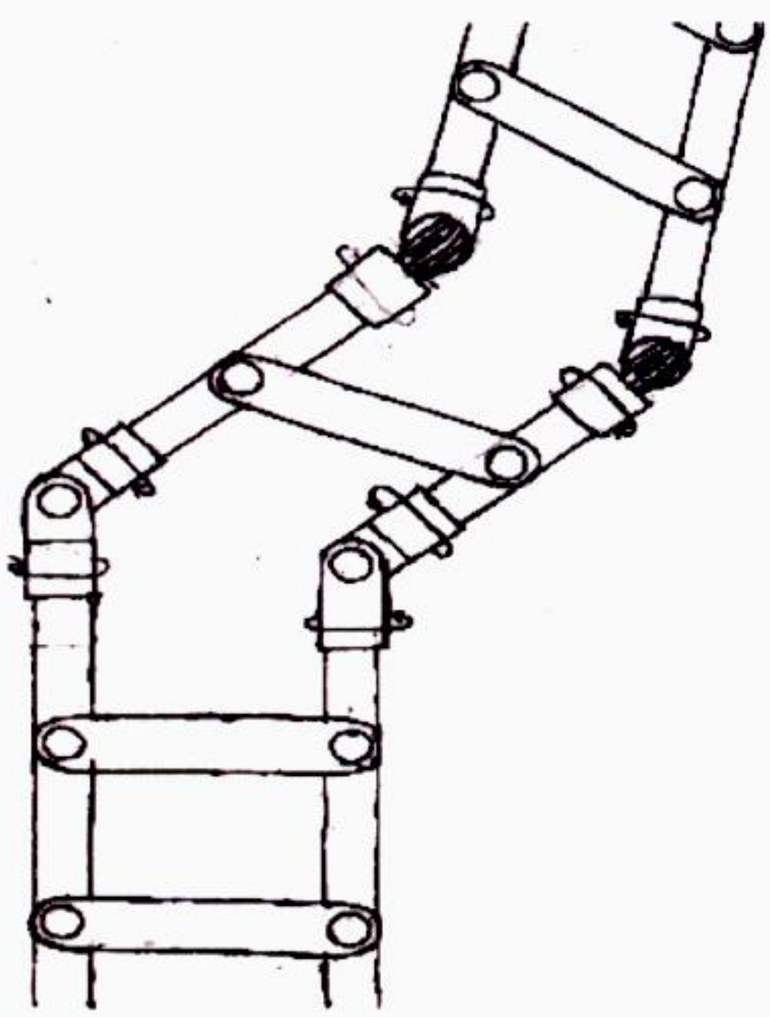
2.2.1:

Bellevisat's residential area is a cylinder measuring 1677.924 meters in height by 1066.8 meters in length by 33.53 meters in thickness. It is two stories high, the first being an emergency/access road, the second is the actual housing area. The housing area is comprised of rectangular housing blocks. Each block surrounds a rectangle 9.144 meters high by 152.4 meters long for the purpose of reflecting the scenery of space. There are a total of 544 rectangles around which houses (making up 4,829,997.6 meters), public service buildings such as hospitals and gyms (making up meters), parks (making up meters), and agriculture (making up meters). The space between each rectangle is 41.148 meters. This space encompasses a street, two sidewalks, one on either side, two front yards, one on either side, and two houses, one on either side. Surrounding the top and bottom of the cylinder are houses which have front yards but no views of space. There are also empty spaces between houses for future development.

type	each	total
Single houses	260.7 meters	3,216,402 meters
Couple houses	571.5 meters	1,175,826.96 meters
Family houses	713.232 meters	445,998.6 meters

2.3: Construction Sequence

The stations residential will be sent up in half's. Each portion will be able to fold and twist itself into a smaller cylinder forming around the axel cylinder. This will be done using unique connecting pieces that have the ability not only to rotate 360 degrees, but the also bend. This technique will also allow each half to cut its height down by half (419 meters). Once each half is compacted they will have a cone attached on top, and rocket engines attached to the bottom of them. Once this is done they will be ready to send up into orbit.



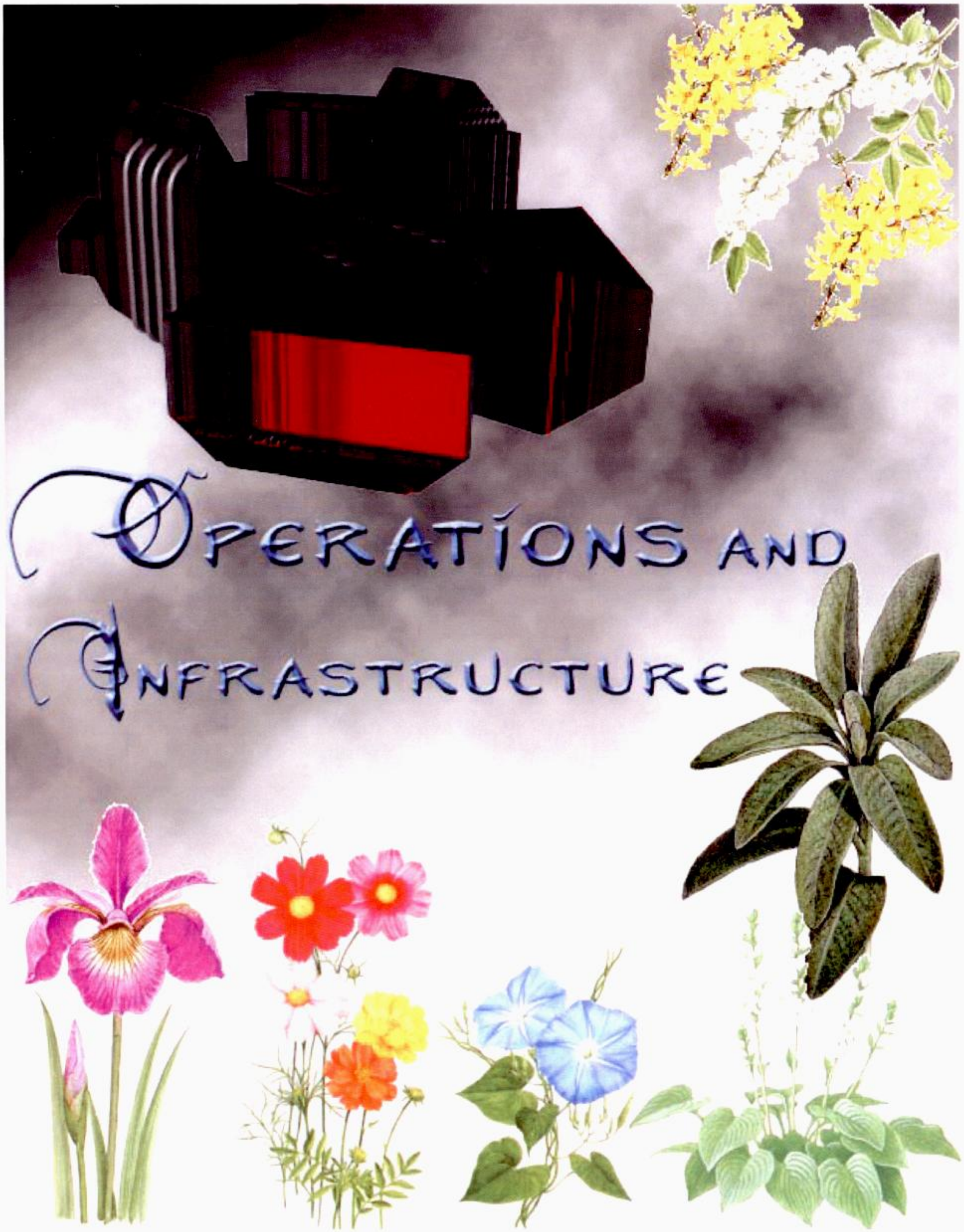
The docking bays will be similarly compacted into a smaller rectangle (32m x 65m x 68). The frames for the oscillating docking areas and mining refining areas will have to be sent up separate at a later date. They will also be compactable, and two of the smaller docking will be able to be sent up in one rocket. The gears and power equipment for the oscillating platforms, will be sent up also in a separate rocket. The gear boxes that spin residential will be compactable, and be sent up together on one rocket Along with its gears and everything else necessary on the same rocket.

The rockets will propel about one hundred and fifty miles into near earth orbit. From near earth orbit a manned shuttle could be sent out to watch over the ship and check for damages that could have happened. From this orbit the ship will slowly slingshot its way out into a deeper earth orbit. From its deep orbit which is about four hundred and fifty miles from sea level the ships main computer will initiate its first programmed mission, to start the construction sequence.

First the main computer will send a signal out to four main sensors that will be used at four points of the station were the two buildings meet the inner ship. When the signal gets sent those sensors, they will then react others which will react others and so on and so forth… The station then begins to untwist and bend itself into its original shape. Once done it is ready for the spiderbot's to tighten in its bolts which will then hold the station in that shape.

2.4 A detachable ship would mine the asteroid in flight. The ship would launch from the mining section of industrial section of the station and fly to the asteroid. It would match the speed of the asteroid and slowly close the distance between the itself and the asteroid. The ship would clamp onto the asteroid and immediately start to drill into the asteroid. A covering for the drilling would capture all of the dust the drill created and would continue to do so until the either the maximum amount of material is extracted or the asteroid is almost too far from the station for the mining ship to return safely. At that point, the drill retracts, and the bottom closes, sealing the dust within the ship and the container would shrink to the smallest possible size. The ship would then detach, and fly back to the station to unload the materials mined. The ore would be refined where the ship lands by a vacuum sucking the dust particles into the refinery.

2.5: There will be two docking facilities, each consisting of two roll out hanger terminals. The roll out terminals roll out on opposite sides to reduce collisions. It also enables on of them two be of use while the other one may be under construction. There is a second docking bay on the bottom of the station, as to maximize efficiency, and prevent any unfortunate events from occurring. The roll out refining bays enable asteroid pieces to be able to land, and not have to moved. There is one in each docking bay, also to maximize efficiency.


Operations and
Infrastructure

3.0

Belevistat contains a complex system of operations that allow top efficiency for the station. Utilizing hydroponics, "carneponics", and sources of renewable energy, along with Earth and other available resources, Belevistat provides an effective safe environment for everyone.

Incoming vehicles will be marked as they arrive and deporting vehicles will also be tagged, making sure thee is never a problem with docking

3.1 Orbit location

Belevistat will be placed in the 5th. layer of Earth's atmosphere . This location is ideal for Belvistat because the molecules travel at a fast enough speed to escape Earth's atmosphere and not cause severe damage to Belevistat.

3.1.1

The majority of building materials will be brought up to the location by materibot. Oxygen will be imported through oxygen tanks brought up. Steel can be processed onboard, and imported materials will be stored in storage facilities until desired.

Materials	Sources
Carbon nanotubing	Earth
Carbon plating	Earth
Oxygen	Moon, Earth, other stations
Steel	Earth/other stations
Expandable foam	Earth/ other stations
Water	Earth
Transparent aluminum	Moon/ earth
Lead	Earth

Fig.3.1.1 Materials chart

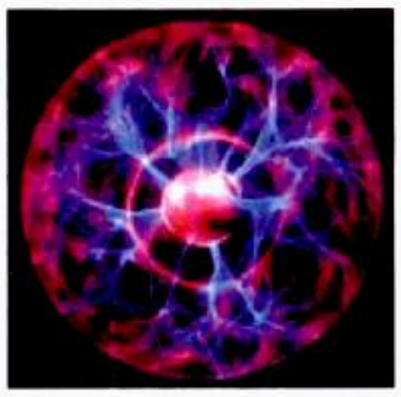
Storage facilities

The personnel and materials will be transported to Belevistat with spacecraft. Robots will transport materials and personnel to the desired locations after the ships dock. There will be 1000m² available for imports. Storage facilities will be placed near the docking bays for easy accessibility. There will be a 200m² room dedicated keeping enough food to last for a year.

3.2.1 food production

All plants will be grown using hydroponic soil-less growing systems located in the Agriculture area. The edible products will be harvested periodically by an automated food collection robot traveling on tracks near the plants. Cultured meat will also be grown in the agriculture area. food will shipped to the anti-gravity storage
facility for long term storage and later to a smaller storage in the artificial gravity section near the kitchens where the food will be prepared and shipped to individual residences. Touch screens will be placed on each refrigerator. Residents can use this screen to pick out their food, pay for it, and choose to have it delivered via machined transportation or to be ready for pick up. Residents will also have the choice to travel to local markets to by food to prepare at home.

3.2.2 electricity



Electricity will be produced by solar panels lining the station. For every square meter the panels will produce 1.6Kw but will eventually slow down to .432Kw. the electricity for the station will be divided between residential, commercial, and satellite operations.

3.2.3 communication

Wireless phone and a local internet service will be provided throughout the station for personal communication and for updates and info from the station regarding news and research. Communication with earth will be paid for (like a long distance phone call) by residents. Every room will be equipped with a computer and two wireless phones able to be used throughout station.

3.2.4 transportation

Internal transportation on bellevistat will be provided by a Maglev train system. The train system will work like a modern subway system. There will be stations about every kilometer where it will stop. These trains will each be able to hold about three-hundred people. There will be two systems of trains that will be used locally, one in the residential area and, one in the commercial area. a small service road will run parallel to the rails for emergency vehicles. in the business area there will be moving sidewalks able to transport residents and visitors to their desired destination.

transportation from residential and business to zero G sector and docking

Located above the spokes connecting the inner cylinder with the outer cylinder will be stations where residents and/or visitors will be able to access an elevator to transport between artificial gravity and zero G sectors. These trams will turn in order to travel up and down the central spire. the turn will keep the gravity to zero-gravity effects to a minimum by accelerating and keeping passengers feeling artificial gravity.

3.2.5 atmosphere

The climate will be set at 20% oxygen. The oxygen will be supplied from various sources, some of which will include hydroponics, fruit trees in the parks, electrolysis, and an emergency back-up system that will supply oxygen for up to ten days in an emergency. The air pressure will be 101325 Pascals(1 atm.). The temperature will be between 16 and 27 degrees Celsius. 55201673m3 of air will be spread throughout the station.

3.2.6 waste management

Waste management is a very important undertaking in any space settlement. Plasma incinerators will dispose of waste that cannot be reused. Reusable waste will be recycled by filtering and decomposing unneeded substances. Human feces will be stripped of nitrogen through chemical processes. Nitrogen will then be made into fertilizer or cleaned using ammonia. Urine will be hydrolyzed into ammonia and carbon dioxide. Computer monitoring will separate all waste.
Urea □ Oxygen + Ammonium + Cyanide
2NH4OCN □ O2 + 2NH3 + 2HCN

3.2.7 water management

Water will go through a hydrological cycle so that it can be preserved and reused. Water will be piped to the different areas of the space station. There will be three different systems that will take care of water management. They will be divided into agricultural, commercial, and residential.

Industrial wastewater will go through the process of electrolysis. Hygiene water will be purified and reused only as hygiene water. Fresh water will come from urine and hydrogen fuel cells. Urine will be stripped of water through vapor compression distillation in large drums. It will then be hydrolyzed, while the condense water will be piped to agriculture. After leaving agriculture, water will be treated with UV radiation to kill micros and undergo filtration. This water can be redirected for consumption. Humidity condensate will also be filtered for portable water use.

day/night cycle

night will be desinated as the time when the earth is between the station and the sun. lights will be dimmed at night to further the effect.

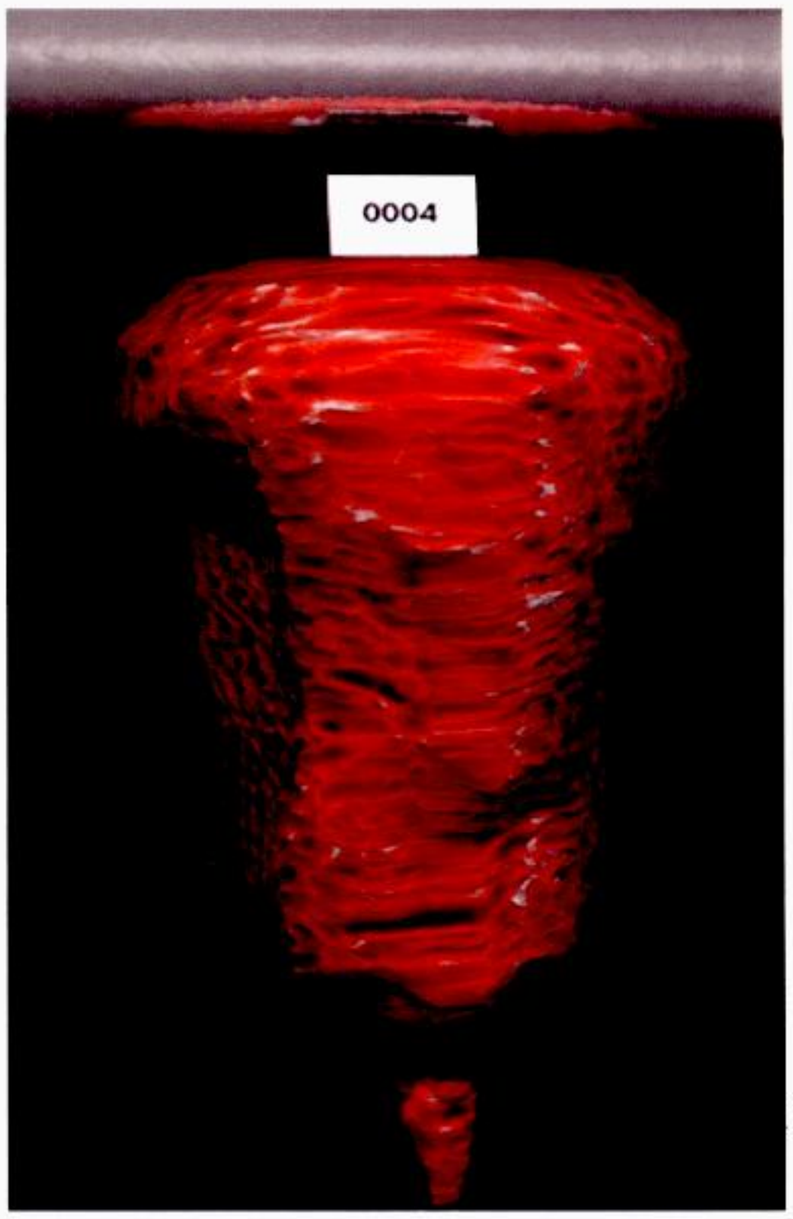
3.3

Vehicle name	Desired payload weigth	cost	Purpose	Ship size	Contract with company
Pyloros	As much as needed	?	Carry passengers from Earth to Belevistat	3	yes
Axon	The	?	Helps ships get	2	yes

			out of Eath's orbit		
Heme	10,000 lbs	?	Carry materials to Belevistat	4	yes
Atria	10,000 lbs	?	Sends materials from earth to Belevistat	2	yes
Annulus	6,000 lbs	?	Send materials from Alexandrat to Belevistat	2	yes
Exsiting infrstructure			Supplies offered		
Alexandriat			?		

3.4.1: The citizens of Bellevistat will have a large range of food choices. Most of Bellevistat's food will be grown in the agricultural areas such as the hydroponics room, with fruit and nut trees scattered throughout the residential areas in parks or entertainment centers. The trees (orange, apple, banana, nectarine, etc.) will be for decoration and oxygen production, and will be harvested three times a year. The parks will contain, along with the fruit and nut trees, small gardens containing tomatoes, lettuce, etc., that will be harvested with the trees. Tilapia fish will be kept in waste tubes for water purification, and will be harvested for consumption. The fish will be fed algae harvested from ponds and fountains, which are also found in the residential areas.

3.4.1.1: Hydroponics will be used to grow food and save room in the agricultural areas. Inside the hydroponics room will be multiple circular shelves 7 meters high, containing plants such as wheat and tomatoes in shelves. Underneath the plants will be a watering system with a 5-degree angle to allow the water to flow into the roots (see picture below). Chart #1 shows the foods that will be grown on Bellevistat in the hydroponics room and in the residential areas.



3.4.1.2: For under soil grown foods such as potatoes and onion Bellivistat will be using Moonsoil. Moonsoil contains no nutrients, so the nutrients will be added from animal culture waste before food production.

3.4.1.3: The daily protein consumption requirement for Bellevistat's residents will be 10% to 15% of their daily calorie intake. Based on a 2,000-3,000 calorie diet, our residents will be eating 200-400 calories of protein a day (see chart #).

3.4.2: For animal production the station will have animal cultures, which will decrease animal feed costs and animal wastes. The

culture design will be an elongated tube with openings where nutrients will flow to the animal tissue being grown (see picture #). The bottom of the tube will have a hole which will allow the waste to leave the culture. The waste will be used to fertilize the Moonsoil growing potatoes, onions, etc. (see below paragraph)

3.4.2.1: For milk production Bellevistat will be using mini-bovine cows, which produce 2,000-2,500 liters of milk a year. Chickens will also be harvested for eggs. These cows and chickens will all be female except for one male, used only for breeding. These animals will not be consumed, but are only used for their by-products. Their wastes will also be used for fertilization of the fruit and nut trees.

3.4.2.2: Soybeans will be harvested in the hydroponics room for those residents who are lactose-intolerant or choose not to eat or drink dairy. Dietary supplements such as vitamin C, multigrain vitamins, vitamin D, etc, will be apart of the citizens' daily consumption.

Typical Meat Nutrition from 110g (4oz)- Chart #2

Source	Calories	Protein	Carbs	Fat
Fish	110-140	20-25g	0g	1-5 g
Chicken	160	28g	0g	7g
Lamb	250	30g	0g	14g
Beef	275	30g	0g	18g
T-bone	450	25g	0g	35g

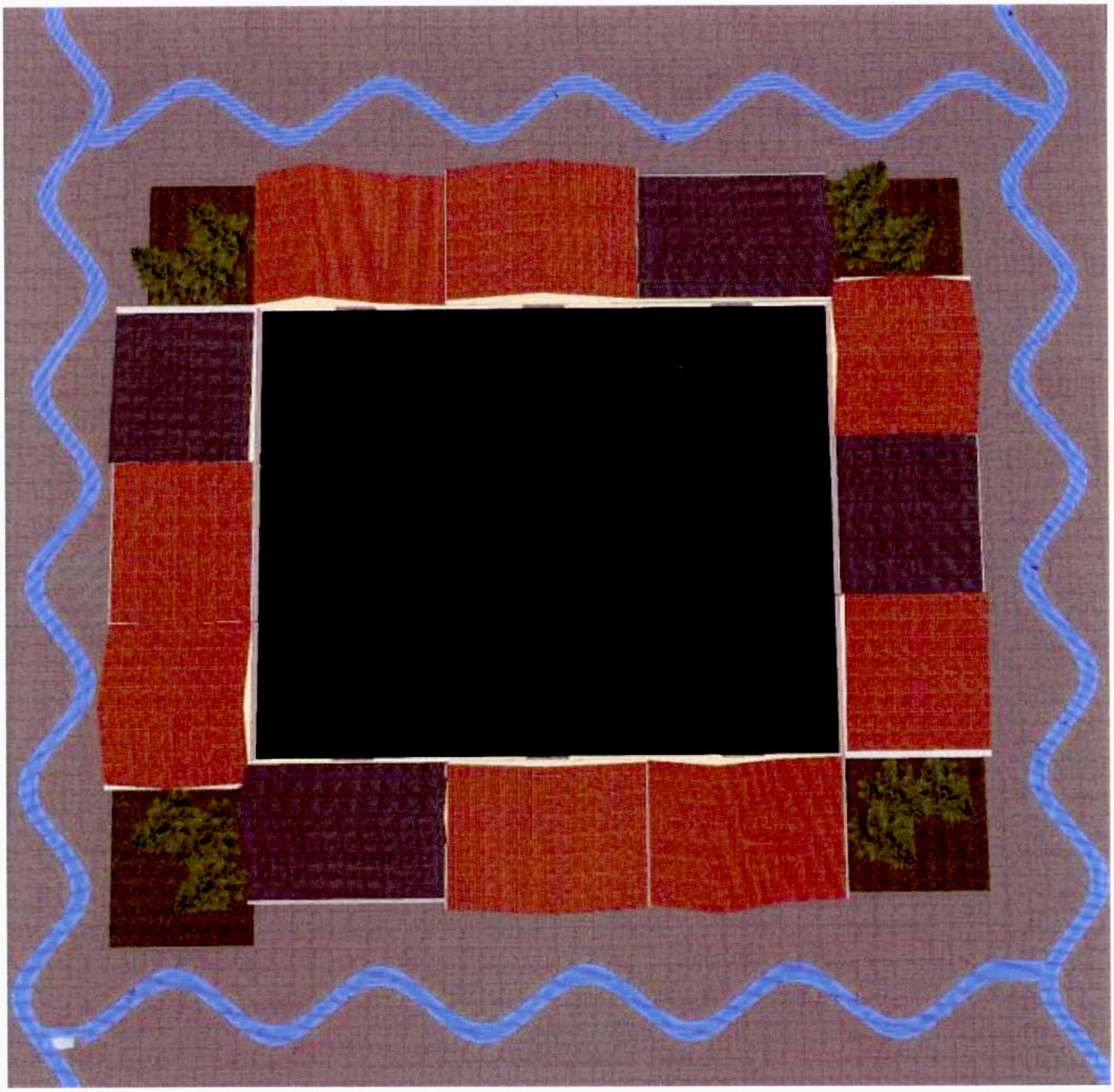
Vegetable	**Nutrients Included**	**Benefits to Human Inhabitants**	**Servings/Day**
Beans	fiber	Lowers cholesterol	1/2 cup
Rice	Insoluble fiber	Reduces bowel disorders	1/2 cup
Lettuce	Vitamin A	Reduces heart disease and birth defects	1 cup
Tomato	Lycopene	Reduces heart and lung disease	1 cup
Peas	Lutein and zeaxanthin	Reduces age-related macular degeneration	1 cup
Carrots	Alpha carotene	Reduces free-radical damage	1 cup
Spinach	Lutein and zeaxanthin	Reduces age-related macular degeneration	1 cup
Eggplant	Anthocyanins	Protects against heart disease by preventing blood clots	1 cup
Broccoli	Sulforaphane	Helps ward off	1 cup

		cancer by inhabiting carcinogens	
Wheat	Thiamine and niacin	Promotes healthy nerves	1 cup
Green Beans	Vitamin K	Promotes strong bones	1 cup
Corn	Folate	Reduces risk of heart attack	1 cup
Fruit	**Nutrients Included**	**Benefits to Human Inhabitants**	**Servings/Day**
Pink grapefruit	Lycopene	Prevents heart and lung disease	1 fruit
Honeydew Melon	Lutein and zeaxanthin	Reduces the risk of cataracts and age-related macular degeneration	1/2 cup
Cantaloupe	Alpha carotene	Protects the skin against free-radical damage	1/2 cup
Oranges	Beta cryptpthanxin	Helps prevent heart disease	1 fruit
Cranberries	Anthocyanins	Protects against heart disease by preventing blood clots	1/2 cup
Apples	Vitamin C	Reduces risk of chronic diseases	1 fruit
Pears	Allicin	Contains antihumor properties	1 fruit
Lemons	Vitamin C	Reduces risk of chronic diseases	1 fruit

3.5

Leftover materials from the building process will be used for residential purposes.

Materials used for building	Materials used for residential
Carbon nanotubing	Wood
Carbon plating	Cement
Oxygen	Cotton
Steel	Plastic
Expandable foam	steel
Water	glass
Transparent aluminum	leather
Lead	Fiberglass



Human Factors

4.0
Bellevistat will contain many amnemities and characteristics of life similar to that on Earth. There will be a variety of housing plans and different neighborhoods for everyone. The education will be state of the art as will the medical options, entertainment and dining options. The quality of life will be maximized on Bellevistat.

4.1.1 Psychological factors
Numerous psychological factors have been incorporated into Belevistat to closely mimic Earth. Bellevistat will run on a 24 hour cycle not to confuse its citizens. Furthermore, the station will have natural sunlight similar to that on Earth. There will be views of space outside accompanying the views of Earth that can be seen by looking below. Most houses will look close to that of what the people on the station are accustomed to. All the houses will be equipped with atleast one computer for communication with people on Earth. This will give allow people on the station to keep in contact with friends and family and prevent homesickness. Also there will be roads and bike paths similar to those on Earth. This will encourage walking and biking as most people do on Earth.

4.1.2 Food
Bellevistat will have world class dining options. All the food will be similar to that on Earth. Please see section

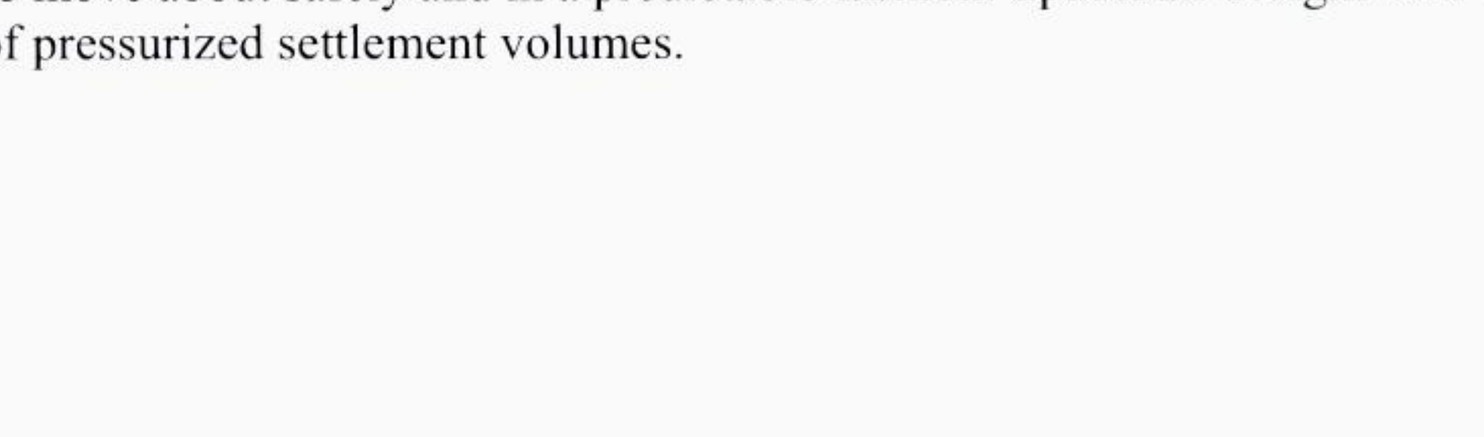
4.1.3 Entertainment
There will be many options for entertainment on Bellevistat. It will consist of familiar activites such as a movie theatre or football to new and exciting options like the Zero G area. There will be many parks and recreation areas for people onboard to have fun. The station will have atleast on large gym type area with many hobbies and pastimes supported. These activites will include the Zero G area, swimming pools, areas to exercise or practice martial arts or yoga and much more. For more details on the parks and recreation see 4.5.

4.2 Housing
Bellevistat will contain 6 housing plans to accommodate every type of person and family. The plans range from 875 square feet to 2500 square feet. All the designs are unique and are located in three different neighborhoods and will each have its own unique characteristics. The specifics of the neighborhoods are in section 4.4. The houses have features such as a minimum of 2 bedrooms, large entertainment areas and most importantly an optional room which can be converted into anything need. This room gives the flexibility of an exercise room to an additional bedroom or bathroom. There will be approximately 12060 single resident housing, 2100 couple housing and 600 family housing. Each plan has room to accommodate guests, family members and overall growth. There will be extra singles housing, and family housing as needed. The square feet and dimensions of these plans as well as size for the number of houses and total housing size are in the diagrams below:

Plan	Square Feet	Length (in feet)	Width (in feet)
Single 1	875	35	25
Single 2	875	35	25
Couple 1	1674	46.5	36
Couple 2	2000	50	40
Family 1	2500	50	50

Family 2	2287.5	55	45

Plan (in Square feet)	Number of Certain Plan	Total Area of Certain Plan
Single 1	6030	5276250
Single 2	6030	5276250
Couple 1	1050	1674000
Couple 2	1050	2100000
Family 1	300	750000
Family 2	300	686250
All Plans	14760	15846450



Section 4.3
Designs of systems, devices, and vehicles intended for use by humans (will consider enhancement of productivity i.e. efficient use of people's time—both inside and outside the settlement). Drawings of these items must clearly indicate their sizes. In parts of the settlement with very low gravity environments, identify means for people to move about safely and in a predictable fashion. Spacesuit designs will be required for work outside of pressurized settlement volumes.

4.3.1
Items to make life easier:

4.3.1.1 Systems:

Compu-Desk System: A system of desks that would all be connected to each other and the teacher's desk. A touch screen would be built into the desktop so that all the school work would be stored into a computer system, and could be accessed by the teacher at anytime from his/her desk. Homework could be done at home over the internet, and sent to an "email" device stored on the Compu-Desk. (Will be introduced in grade 4 and a complete switch will be made in grade 5) The system is voice activated to prevent cheating, and has voice recognition typing (for oral projects) as well as conventional typing (as found on the Tablet PC).

Music System: The Music System provides the perfect concert experience. It would require a whole room, but it would be spacious enough to allow a crowd of people to have a concert experience. On earth an artist would perform and they would be recorded 3D (or holographically) and then they would be shown (3D or holographically) with an extraordinarily superior surround sound system to provide

the ultimate concert experience.

MoshunSens Lights: MoshunSens Lights are motion sensor lights that have a sleep mode and a manual override.

4.3.1.2 Devices:

Wheeler: The Wheeler is an alarm-clock that wheels away from your bed (or wherever you put it) and requires you to catch it in order to shut it off. This makes the owner have to get up and out of bed and wake up to shut it off. The Wheeler would have a setting to have it stay on the same surface (i.e. desktop, side table), or a certain area (i.e. 3 feet area) in order to make it easier to catch, and a setting to keep it in the same place entirely. The Wheeler would have an option to elevate (or dump the owner out of) the bed after going off for a certain amount of time.

Computer Chip: A computer chip would be installed in plugs to prevent things that aren't "registered" (have a computer chip in them) from getting any electrical current. This would prevent children from getting shocked for accidentally placing a pin, finger, or other item into a socket.

TuchScreen Computer: The TuchScreen Computer is a computer that is placed in each room of a house and used to organize recipes, schedules, notes to kids or fellow household members, important dates, money management, etc. A retina scan will be included for the confidential or (critical) really important files. The owner of the file would determine whether or not the retina scan was needed.

Pharmacy-Bots: Pharmacy-Bots are robots that will take a list of your symptoms and diagnose you, and tell you what you should do to recover. Their first and foremost suggestion will always be to see a doctor, in case of a misdiagnosis.

4.3.1.3 Vehicles:

SEGWAY: SEGWAYs are a practical smart way to get around. SEGWAYs are small and can be stored easily. They are run off of lithium-ion batteries, and don't pollute the air supply in the space station. SEGWAYs are also a fun way to travel around since they provide feelings of speed and power while also providing the sense of safety and absolute control while riding.

Bicycle: The bicycle is a healthy travel alternative for walking. Bicycling works some of the same muscles as walking, as well as some different muscles (shins, calves, the quadriceps group, the hamstring group, the gluteal muscles, the upper and lower back muscles, the neck muscles and the arms). This is one way to exercise, since exercising options are limited in outer space.

Moving Sidewalks: Moving Sidewalks help those who walk get to their destination quicker. The Moving Sidewalks move at 2.5 feet per second or 150 feet per hour.

Regular Sidewalks: A Regular Sidewalk will allow those who walk to take their time and enjoy the view.

Repair Vehicles:

4.3.2
Vehicles that people can use to get around in low G:

4.3.3
Space suit (IMPORTANT):

Zero-G:

Outer Space: pressurized, oxygen—more later

Space suit main body cover will be woven mix of spider web and/or Kevlar fiber to keep structure of suit, carbon nano tubes will be used as a slightly flexible skeleton. Joints: composed of even more of carbon nano tubes to hold structure and allow flexibility inside of arm will be spider and Kevlar w maybe one or two nano tubes. Two layer of all of stuff mentioned in-between layer will be X millimeter amnt of water. Water will be used to absorb radiation that is not reflected off of the one atom thick layer of gold on outside of spacesuit. Because the water will only be slightly radiated, then it will still be useful for algae that will be in the spacesuit. The algae will be used as a carbon dioxide filter, and will absorb CO2 (will figure out process later) algae will produce oxygen to breathe.
Possibly aero-gel or ballistic gel to help keep form in-between layer.
Will be able to work in Zero-G, just without radiation protection.

Jobs	tools needed
warehouse	
	forklift
	system of organization
	shelves
	Ways to travel through large areas of storage.
Delivery	
	handcart
	UPS
low-g manufacturing	
	tethers
	handholds
	protective suits
	gecko shoes
	transportation
	tools for maintenance
exterior maintenance	
	spacesuit
	ways to hold tools
	tools for maintenance
Entertainment	
	Music System
Schooling	
	Compu-Desk Systems
	elementary schools (k-5)
Transportation	
	Sidewalks
	Moving Sidewalks
	Bicycles
	SEGWAY PT
Medical	
	Pharmacy-Bots
	hospital gowns
	sanitizer
Every Day Living	
	Moshun-Sense Light System
	The Wheeler
	Computer Chip
	TuchScreen Computer
	stove

forklift
A mechanism that will load materials onto shelves, and transportation devices.

handcart
Portable container that can be used to transport small to medium size loads

UPS
Universal Positioning System tells location inside of Bellevistat

tethers
cables used to hold large materials in low gravity

protective suits
protects from radiation

gecko shoes
Shoes used in low g, helping you to stick to the floor, walls, ceiling, or whatever you are climbing.

Usual ways of transportation used in everyday travel throughout the space station.

Compu-Desk Systems
A desk used for home schooling. It is the same as doing school over the internet, only the computer screen is integrated into the desktop.
SEGWAY PT

An electric scooter to be used for transportation around the space station.

Pharmacy-Bots
Robots that will take a list of your symptoms and diagnose you, and tell you what you should do to recover.

Moshun-Sense Light System
Lights that turn on automatically when motion is detected, and then off after a certain amount of time with no motion.

The Wheeler
An alarm clock with special accessories.

TuchScreen Computer
A computer with a finger controlled mouse and click directly on the screen.

4.4.0

Bellevistat will contain three differentiated neighborhoods to fit the people's design choices. These three neighborhood types will have the same housing plans but the exterior and interior will differ greatly. Certain aspects will be continual in certain neighborhoods. Lifestyles and activity is also taken into consideration. Some neighborhoods overall and some sections of a specific neighborhood will focus on physical activity and others will have more lawns. Some parts of each neighborhood will have more lawns or recreation compared to other parts of the some neighborhood for those people who like the housing style but not the ratio of lawns to recreation and vice versa.

4.4.1 Neighborhood 1

The first neighborhood will focus on the concepts of futuristic designs. The rooms will be flat with some plans have slight, barely noticeable inclination. These homes will use dynamic colors that are rarely used such as metallic silver. The use of steel look-alikes and see through walls and panels will be throughout the house. The edges will be straight and the roofs of the house will have overhangs. This neighborhood will embrace the future. This neighborhood will feature a balance of lawn space to parks and recreation areas.

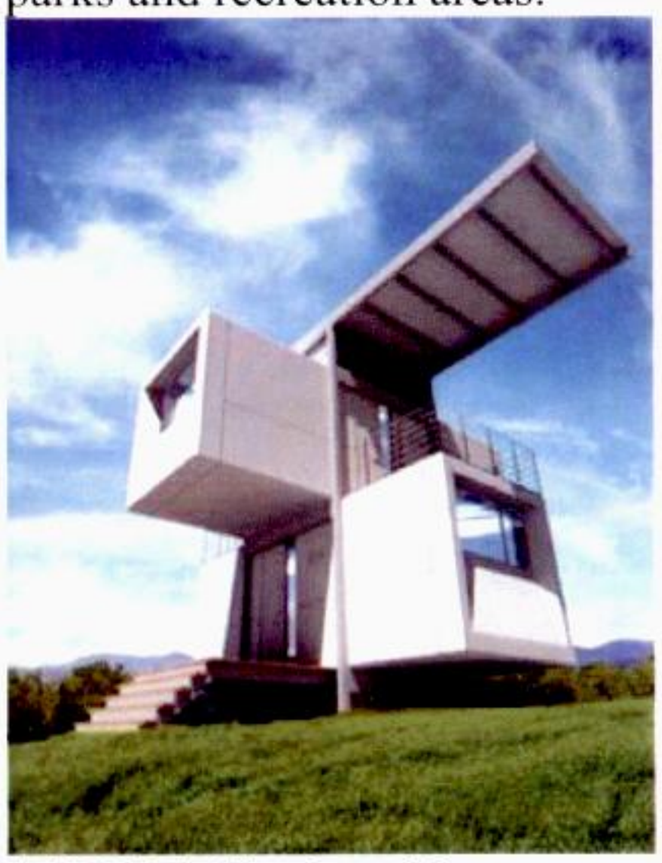
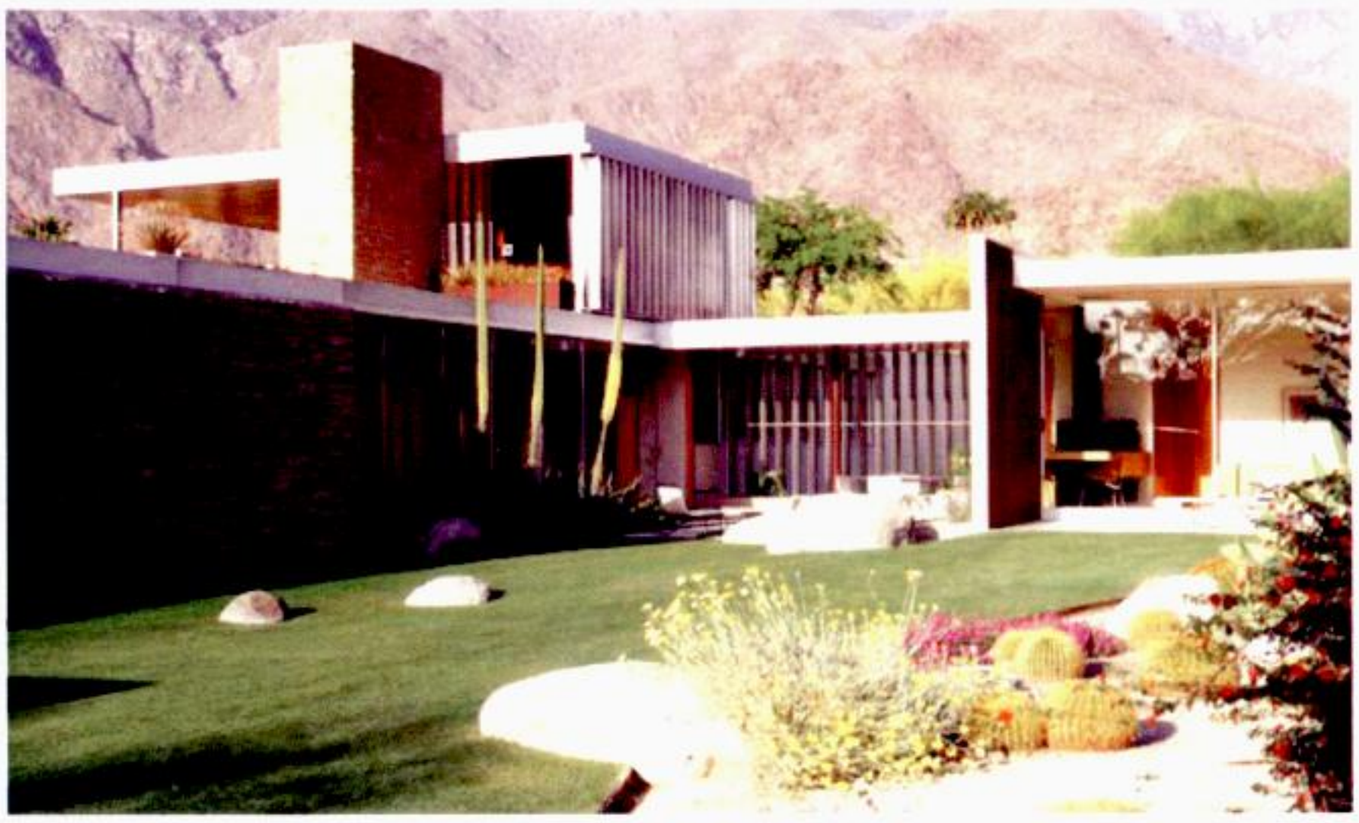


Figure 4.4.1.1 A design for a housing option. This design will be altered to fit the station specifications.

Figure 4.4.1.2 Another design for the first kind of neighborhood.



4.4.2 Neighborhood 2

This neighborhood will have a classic elegance to it. It will be houses with tradition looks and older styles. The rooms will be pointed sharply, with subsequent peaks. The use of pillars and a porch will be key. The colors will be a black and browns for the roofs and the houses will be blues, grays, and other darker, mellower colors. This neighborhood will focus on the maximization of lawns rather than parks and recreation to give it the classic look.

Figure 4.4.2.1- One type of design for Bellevistat housing.

Figure 4.4.2.2 Another design for the station.

4.4.3 Neighborhood 3

The third neighborhood will have modern style homes. The houses roofs will have the look of a tiled roof. The house itself will have a Spanish Villa type feel. It will have external colors of whites, peaches and other light colors. These homes insides will be similar to a house in California in 2008 A.D. The insides will have lighter colors as well. This neighborhood will focus on the maximum physical activity. This will be done through maximizations of the ratio of parks and recreation to lawns. Some parts of the neighborhood will still have a balance of both for those people who like the style of housing.

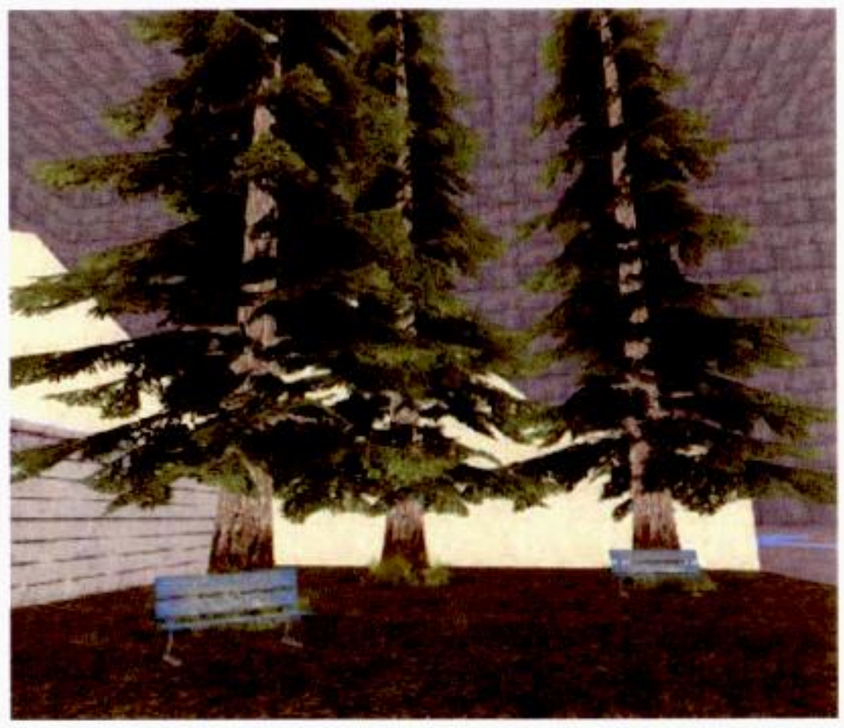
Figure 4.4.3.1 A design for housing.

Figure 4.4.3.2 Another design

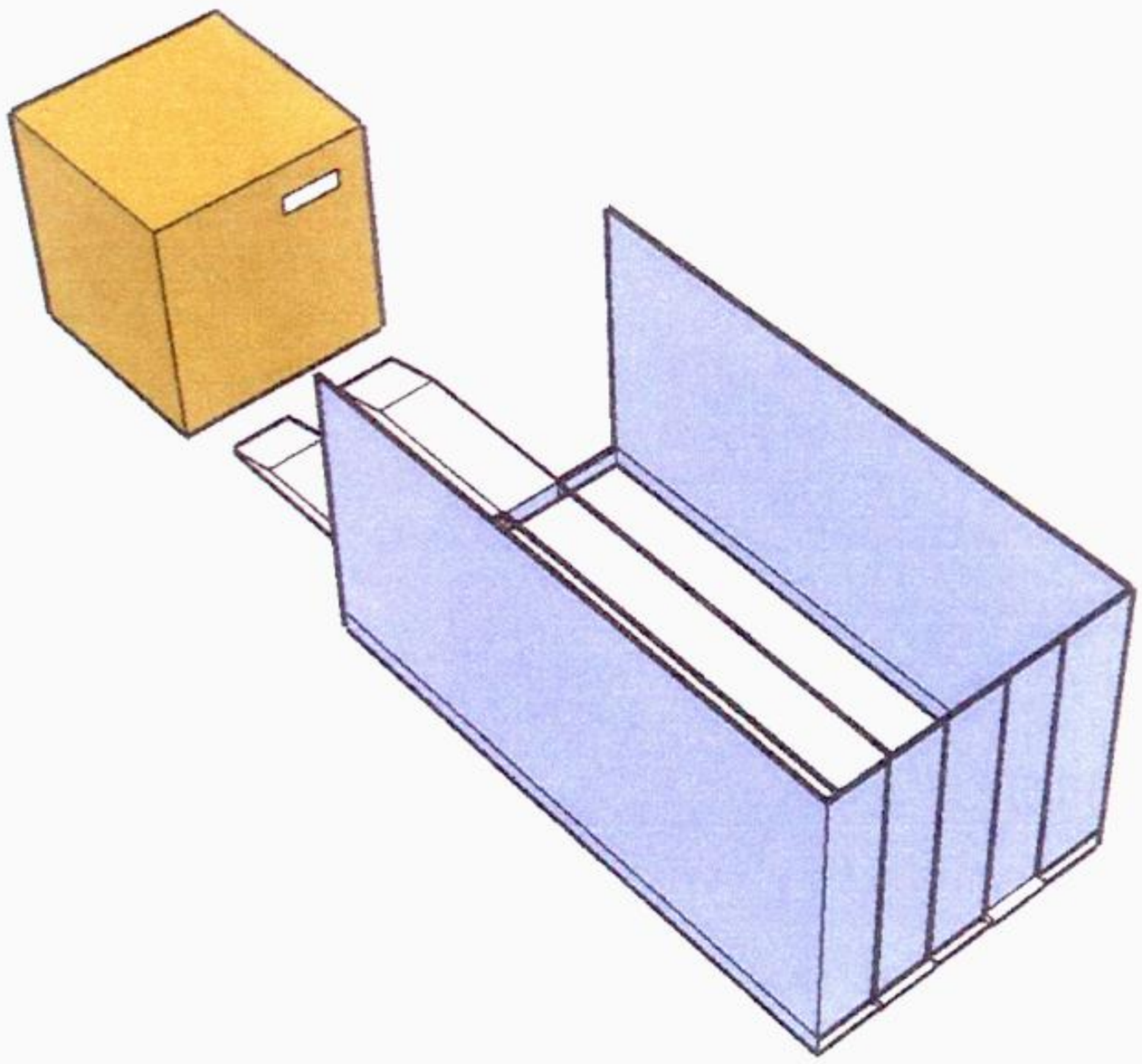
The three neighborhoods will each a third of the station living area. There will be three sections: The Top Right Third, Bottom Third and Top Left Third. Neighborhood Sizes and specifications:

Neighborhood	Number of houses	Total size of the houses (in sq. feet)	Location
1: Futuristic	4920	5248817	Top Right Third
2: Older	4920	5248817	Bottom Third
3: Modern	4920	5248816	Top Left Third

4.5 Bellevistat has a wide variety of activities, entertainment, and recreational options. Some of which will provide physical fitness while others provide mental stimulation for the residents on Bellevistat, including parks, gymnasiums, zero-g areas, and entertainment facilities. There are 70 parks that include fields for soccer, football, baseball, and 2 fields in each park for the generalized use of any other sport. The parks also have areas to walk, plants, playgrounds, and obstacle courses. There are 35 gymnasiums with courts for basketball, volleyball, and other indoor sports. The gymnasiums include a pool, weight room, and dance room, that are in different rooms from the courts inside the Gymnasiums. There are 2 zero-g areas for recreational use. These areas can be used for the entertainment of the residents.



The entertainment facilities of Bellevistat include theaters, bowling allies, arcades, and auditoriums. There are 35 entertainment facilities.



Automations/Robotics

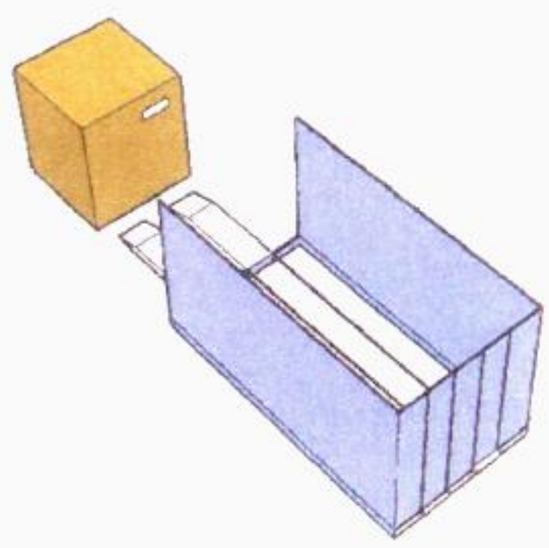
5.0 The station of Bellevistat will have many, differently skilled robots stationed there. In this section,

there will be the different types of computers used and their software, the robots themselves, as well as their functions among the many occupations of Bellevistat. The types of capacity that the computers will have are given in Chart 5.1.2 along with the number of computers and the types. Types of servers and other software devices are also given in Chart 5.1.2.

5.1 The robots that will be doing the construction of Bellevistat will be arachnid structured robots. They will have the ability to hold to the hull with microscopic hooks on the pad of the foot. Different functions will be used through its non-supporting legs. The functions that these robots will have will include (but not be limited to) drilling into the hull, setting in bolts and nuts, navigating the parts to the correct location, and heavy lifting. Nano-bots will be used to attach circuitry in small areas.

5.1.1 Transportation of materials will be sent up via shuttle and picked up in the correct area by the arachnid robots (AR). The AR will take the materials to the specified area, as programmed, and start the constructions. For more details on the construction sequence, see Section 2.3.

5.1.2 The building of Bellevistat will be over seen by (an X # of) people, to ensure accuracy of placement. The distribution of materials will be the responsibility of the FLRs (Fork-Lift Robots). These robots will know the material that they are shipping by a bar code on all sides of the material's box. The FLRs will then place the package in its correct storage area by picking it up in the front, driving to point "A", releasing the "back door" and starting up its conveyer belt system. It will then pull away slowly to drop off the box. Later, the AR will come to retrieve the material. For more accurate numbers on robots see figure 5.1.2.



5.1.3 The interior finishing of Bellevistat will be done by the FIR's (Finishing Interior Robots). The FIR's will work in a cycle as described in Section 5.4. The FIR's will be working mostly with the FLR's (Fork Lift Robots). When the FLR's bring the FIR's the supplies (i.e. pipe, paint, tiles, etc.) then the FIR's will take the materials and set to work.

5.2 The computer systems on Bellevistat will be the most up-to-date software possible. These systems will have a checks and balances system programmed before distribution. The main SC (Super Computers) will store all of the backup files and even more important information about the station itself and its residence. The location of the SC's will be in the docking bay, located on the rolling platforms.

5.2.1.1 The checks and balances system on each computer will be automatically programmed before distribution among the residence. Each residence over the age of 6 will be able to access a computer. The backup files will be sent to a file on the SC so that when a file is lost, the authorized personnel responsible for keeping the SC from being accessed by an outside computer. The SC's will also have their own checks and balances system.

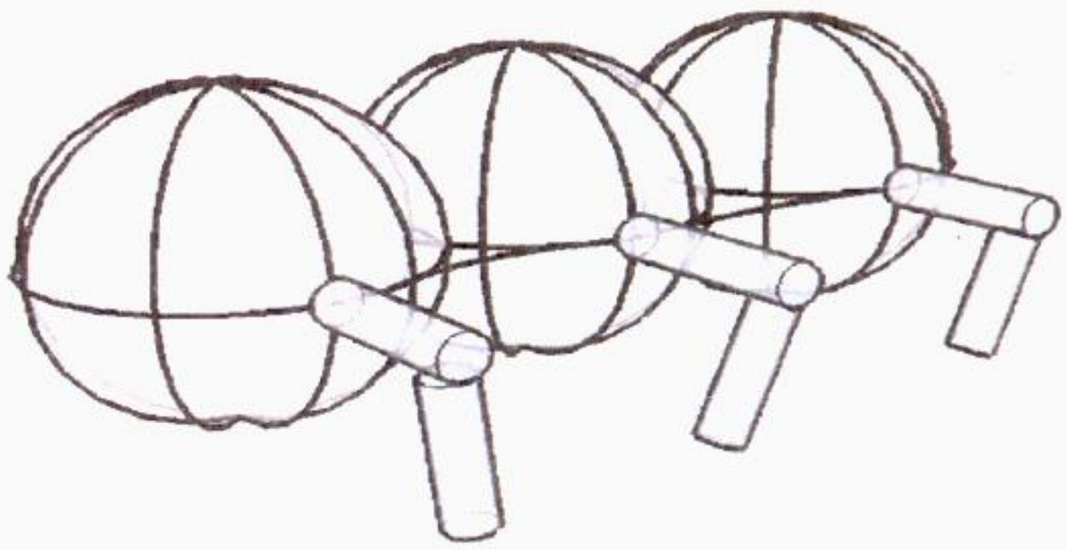
5.2.1.2 The repair of damaged systems will be done by another system that can wirelessly go into the computer and troubleshoot all programs. If the system encounters a problem then it will immediately search and destroy. If the problem is a virus, then the system will alert the person about what it will be doing to their computer, how long it will take to fix the problem with a countdown, and start to destroy the virus, piece by piece so that it will know that the virus is completely gone.

5.2.1.3 The safety functions of each computer will have the same system that searches for problems. It will also send an extra copy of the document or project to a file that is found on the hard drive of every computer. The computer will let the user know it is doing this so that if the document is lost then it can be found by simply going to the hard drive and selecting the backup folder. Contingency plans for all systems will include, but not b limited to, back up files on a different hard drive, extraction of all files and placed in a different area, or files being sent to a "vault" on the hard drive that is only accessible by the proper sequence of "0"'s and "1"'s. This code can only be found with the person who is responsible for the updates of the SC's.

5.2.2.1 The computers on Bellevistat will be located by their functions. Recreational computers will be placed in schools, libraries, and other areas well used by the residence. The super computers (SC) will be placed at the four "corners" of the station. That way the only way someone could access them is if they were one of the authorized personnel. To ensure a mass destruction of files, only one door to a SC room maybe opened at a time around the station.

5.2.2.2 The robots that will be standing by if there are any internal problems will be stationed in the most used areas and some in smaller, less used. There will be smoke detectors and the smoke detectors will have a fingerprint identification program to help identify who pulled the alarm when there wasn't a fire. The robots will sweep the halls and homes to see if there is a fire. If there is not security measures will be taken on the person who pulled the alarm. In case of power failure there will be back-up generators that will always be ready for use. The robots that repair the outside of the station will be lead-based so solar flares will not be able to harm them.

5.2.3 For this automation system there will be several robots who will act as maintenance robots. They will clean up big messes and keep peace among the people on board. They will also be programmed to repair any internal damage that may occur. External repair will be done by Spiderbot. Residence will not be able to see Spiderbot unless they are really trying to find one. They will be stealthy when going around by windows.



5.2.4 The privacy settings for doors and areas of semi-common use will be accessible with a palm scan and key card. This will insure the right person entering through the door is the correct user of the card or visa versa. To access computers, the user must slide their key card on the side of the monitor and prepare for a retina scan. This way, people who are using community computers can not run away with other people's prints and DNA. Areas that are commonly used (i.e. libraries, recreational centers, etc.) will have no password, but will be disconnected from the main computers. These computers will have internet linked to Earth. On the recreational computers, there will be a "Deep Freeze" program that, after the computer is shut down, any programs that are downloaded or saved on the desktop are erased from the hard drive.

5.2.5 Privacy for critical areas, such as the supercomputers (SC), will only be accessed by cleared persons. Two people will be required to access the SC's and must do the sequence in sync. The persons that are chosen will start with a palm scan, next a retina scan, next a keypad password, and finally a key card. If they fail to do at least 2 entry codes, then they will be captured on the spot by bars that extend 6 ½ feet above the floor, locking above them, and electricity fields on the bars.

5.3.1 The CC (Community Computers) that can be used by visitors will have simple functions. Along with other complex programs for those who need them. Assistance for these computers will be done by a friendly, human like voice that can answer all questions about the program being currently used on that computer. The person will be able to ask their question via head set. The head set will be built into the computer to ensure there is no theft.

5.3.2 The systems around the work place are very important to productivity. The systems that will be used are very simple, quick, and easy to learn. Workers will have head sets to speak into at work; these head sets will pick up the vocal waves and transmit them into words on the holographic screen.

5.3.3 Robots on Bellevistat will make working on the station enjoyable to the people. The robots that will be around the home are shown in Chart 5.3.1. Systems that will be used daily are also important to the station's living habits. The systems that are on each computer around the whole of the station are shown in Chart 5.3.1.2.

5.4 The interior finishing of the station will be done by FIR's (Finishing Interior Robots). These robots, as described in Chart 5.1.1, will be able to finish 1 residential home in less than an hour and a half. The reason that it will take the FIR's 2 hours is because of the FLR's. The FLR's (not the ones helping with transportation of asteroid materials) will be transporting the furniture, flooring, and pipes to the FIR's.

5.4.1 The FIR's job, as described in Chart 5.1.1, will be crucial to the early completion of Bellevistat. The longer it takes the FIR's to finish the longer it will take for the residence to wait. The FIR's will be positioned so that maximum efficiency is achieved. The residential homes will have 3 FIR's to complete it. An FIR will be stationed for the plumbing, one for lighting and wiring, and one for painting and floor installation. When the plumbing FIR is finished with its' job, it will then move on to installation of furniture. It will install furniture in the rooms where the paint and flooring has dried and has been set in, in other residential homes. That way, the furniture does not ruin the paint or flooring. When the FIR goes to install furniture in another home, it will be going to another part of the neighborhood where the paint and floors have had an exceptional amount of time to dry. The cycle that the FIR's will be doing is the most efficient way to complete the interior finishing in the best way possible.

5.5 Mining will be done mainly by the FLR's. Workers will have no interaction with raw materials from incoming AMRs (Asteroid Mining Robot). The AMRs will go to the asteroid and mine the materials as quickly as possible to ensure the materials get to the station.

5.5.1 The mining of all asteroids will be done on the way to the station. The SCR (as described in Chart 5.1.1) will capture the asteroid and bring it to the shuttle. On the trip back, the robot will start to break apart the asteroid and store it in boxes. Later when the ship lands at the station, the FLR's will pick up these boxes and, by the bar code on each side, know where to store it. If the SCR's are not done breaking apart the asteroid, then they will take what is left of the asteroid and leave it at the station. Another SCR will come out and finish.

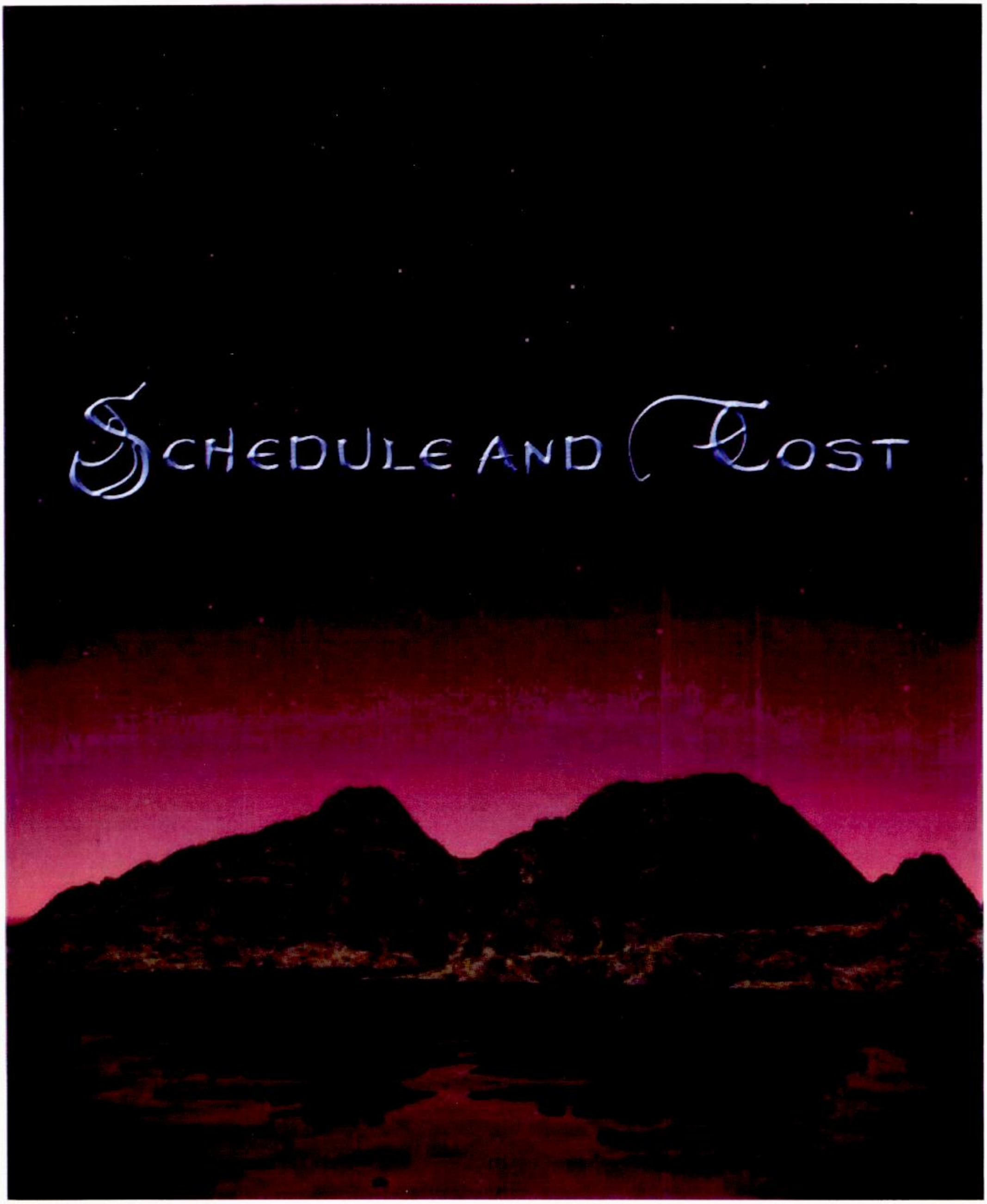
5.5.2 The transportation will be all automated. The only humans needed are the ones that monitor the sorting process from a safe distance away in a large room with a plexi-glass window from floor to ceiling. The other job that a human might have is the programmer for the SCR's homing beacon. They will be for the return back to the shuttle. There might be a pilot on the shuttle, but they will stay in the cockpit the entire trip. If a robot malfunctions on the floor of the loading area, then a towing robot will

come and take it away.

	A	B	C	D
1		Name	Description	Dimensions
2	Construction	Nanobots	Ant-like robots with the ability to solder wires together during construction, run wires to power suppliers, and other tight squeezing jobs.	3 centimeters by 1 centimeter
3		Spiderbots	Arachnid like robot with construction tools built into the legs. They house the nanobots for the small assembly of the electronics.	Radius 1 ft by 4 ft by 7 ft
4				
5	Transportation/ Delivery of Materials to Residence	Box Robot (BR)	Fork lift robot that reads the bar code on any of its sides. See Figure 5.5.2 for image.	2 ft by 4 ft by 1/2 ft
6	Transportation/ Delivery of Materials to Station	Star Catcher Robot (SCR)	Droid robot that lands on an asteroid and captures it. It then brings the asteroid to the spacecraft for delivery. Picks up the signal of the AMR's and finds it to house the rest of the asteroid.	7 ft by 6 ft by 4 ft, extending sides for larger asteroids
7				
8	Mining	Asteroid Mining Robot (AMR)	The AMR's will have the capability to find asteroids that have the essential materials needed on Bellevistat. These seringe looking robots that have 5 extending legs. These legs latch themselves onto the surface of the asteroid and drill into the asteroid, retriving the materials. If the material count is high on the asteroid, the AMR will send for more AMR's to get the rest.	2 ft body by 2 ft radius, drill is 4 ft with max. radius of 2ft., legs are 1 ft (each appendage)
9				
10	Interior Finishing	FIR (Finishing Interior Robots)	Fir Tree looking robot that has extending "branches" that have appendages looking like twigs. The FIRs will be colored green and brown, able to cover a 5 foot radius around themselves with extending arms.	5 1/2' by 2', arms extend 4' high and 5' out

	A	B	C	D	E
1		Name	Description	Demensions	Quantity
2	Maintenance/ Livability Enhancement	Maid Robot	Perfect square shape, attachments that come out of sides(i.e. vacuum, wipe windows, wash dishes), lives in between walls to save space, perform household chores	2' by 2'	1 per 2 homes
3					

4	**(Inside) Repair Computer Systems**	System Recovery Index (SRI)	Back-up files go to smaller computers and are renewed every 3-5 minutes	n/a	
5					
6	**Types of Computers**	Supercomputers (SC)	12" Screen, Laptop, 60 Gigabytes of RAM,	14" by 8" by 12"	4
7		Personal Computers (PC) Over age 6	9" Screen, Full Keyboard, Laptop	12" by 18" by 8"	1 per person
8		Recreational Computer (RC)	Used in libraries, schools, and tourist recreation. Full keyboard functions, key card slider on the side of the monitor, and a retina scan.	monitor-16" by 20" by 2" Tower- 18" by 24" by 6"	500 Computers
9		Server ASTRO (Automated System for Technological Robotic Order)	The server ASTRO is for the network that all the computers on the station are linked to.	n/a	n/a
10		Software Microsoft Office '28, LPC (Learning Program for Children)	Provides microsoft office for everyone that has a personal computer. LPC will be able to be installed on a child's computer for extra learning	n/a	n/a
11					
12	**(Outside) Repair**	Spider Bots	Arachnid like robots that will crawl around the outside of the station repairing everything. They will be covered in plasticized aluminum to protect from solar flares. There will also be painted with a lead based paint to protect from radiation. They will	1 'by 1"	15
13					
14	**Safety Functions**	The Black Box	Secure room around the computer(disguised as a broom cupboard), shielded wires supercomputers only accessible by authorized personnel, by a retina scan, a palm scan, a keypad number that changes every other day, and a key card.	5' by 4' by 8'	One at each entry way to homes and other recreational areas


SCHEDULE AND COST

6.0 Schedule

Task name	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
Proposal acceptance	X															
Development	X	X	X	X	X	X	X									
Computer system	X	X	X	X	X	X										
Energy/ops systems	X	X	X	X	X	X										
Vehicle/ robotics		X	X	X	X	X										
Scale model sytems				X	X	X	X									
Construction					X	X	X	X	X	X	X	X	X	X	X	X
Deployment								X	X	X	X	X				
Active									X	X	X	X	X			
Systam installation										X	X	X	X	X	X	
Communicatio n/computer system										X	X	X	X	X	X	
transport systems											X	X	X			
life support systems											X	X	X	X		
Interior construcion																
Rotation/gravit y											X	X	X	X	X	X
Agriculture const.												X	X	X	X	X
commercial/bus siness const.												X	X	X	X	X
residential const.												X	X	X	X	X
operations testing													X	X	X	
Station operation fully functional															X	
Crew training														X	X	
1st shuttle of population arrives															X	
Remaining population															X	X
Foundation society assumes																X

6.1 Cost

The following charts displays cost and resource management based around a viable task schedule, which would allow Foundation Society management within 16 years of proposal acceptance. Care has been taken in arranging individual task periods to provide the most efficient construction process possible.

6.2 Initial Expense

The initial expenditure of Bellevistat will be a little one and a half trillion dollars. Although this may seem like a huge sum of money, the station will be able to pay for itself within seven years. After the station is paid for, the profits will be nearly $100 billion per year for the Foundation Society to spend as it pleases.

6.2.1 Annual Cost

Initially, construction and mission control expenses will determine the cost to the Foundation Society. Following Bellevistat's year long exchange in 2043, the Foundation Society will gain control of all station operations and will need to establish a budget embracing particular interests and goals.

Table 6.2 Initial Expense

	2028-2043
Structural	$ 550,000,000,000
Operations	$ 294,900,584,000
Human Factors	$50,794,337,030
Automations	$75,854,020,020
Total	$ 971,548,941,050

6.2.2 Annual Revenue

Annual revenue will be collected in a number of ways unique to this space operation. Commerce will provide

6.2.1 Yearly Profit to Foundation Society

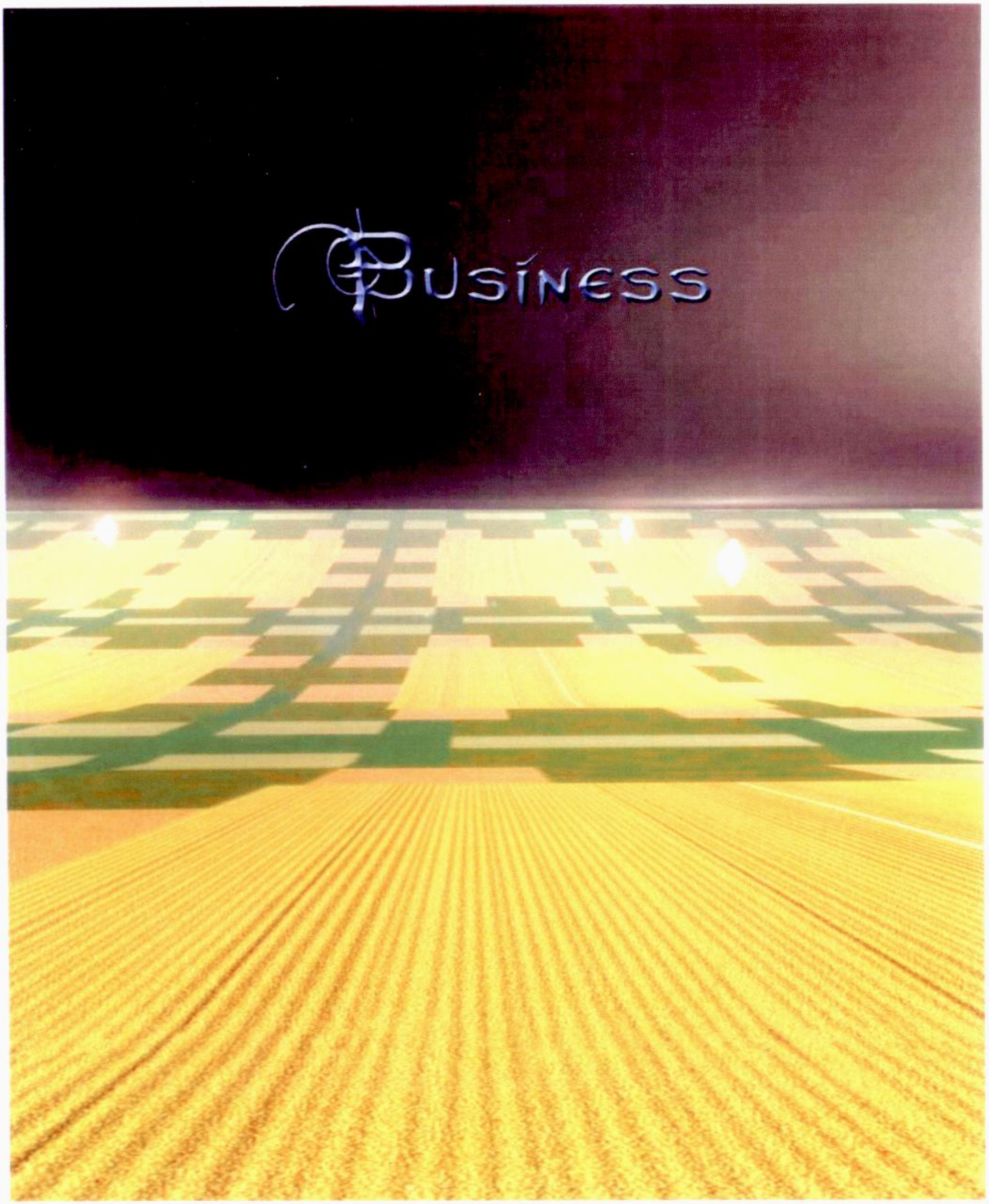
	Beginning 2043
Total	$ 88,003,716,000

significant returns to the Foundation Society in the form of royalties, as will spacecraft support in the form of docking, fueling, provisioning, and maintenance.Tourism will provide an additional boost to the economy. Supplementing the trade industry, commerce, and tourism will be the sale of surplus energy to nearby space stations and possibly even to Earth.

6.2.2 Annual Revenue

Beginning 2043

Spacecraft Support	$ 30,000,000,000
Tourism	$ 6,000,000,000
Exports	$ 11,250,000,000
Commerce	$ 38,000,000,000
Industry	$ 1,200,000,000
Energy Sales	$ 5,000,000,000
Restaurants	$ 48,300,000
Entertainment	$ 500,000,000
Miscellaneous	$ 700,000
Total	$ 91,999,000,000


BUSINESS

7.0
We at Northdoning heedwell understand the vast importance of business ventures; both industrial and commercial. That is why Bellevistat will have the capability to fulfill the resident's wildest imaginations.

Bellevistat has such a large expanse of room that it can expand and accommodate itself to entrepreneurial endeavors, these opportunists will need never fear running out of room to expand and prosper.

7.1
Because we understand how important the mining of asteroids is to the mission, Bellevistat will have the capacity to harvest and process many different asteroid; up to one km across. Northdoning Heedwell specifically designed Bellevistat for this purpose.

When important materials are found on the mined asteroids, Bellevistat will capture them using FLR (see 5.5.), which will then bring the mined materials back to the stations for refining. We'll be able to export our asteroid resources to other stations and Earth. This will allow Bellevistat to make other stations more self-sufficient.

7.1.1
Visitors will have nothing to fear when they come to visit Bellevistat. Plenty of food and facility will be available with world-class services and gourmet. Because Bellevistat has and excess of loading docks, the transportation of the visitors is safely taken care of.

7.2
Due to the unique design of Bellevistat mining operations of asteroids – both major and minor – will be unproblematic. The station was designed so that smaller asteroids could be captured inside the station itself and be studied and refined there. In this zero-gravity field, mining operations can occur with very little threat of injury.

7.2.1
Bellevistat will require the importation of some goods and products. These products will be sent to facilities to be processed, stocked, and well-documented. By these safeguards, Northdoning Heedwell assures that bellevistat will never under or overstock imported goods.

Visiting ships carrying imported goods will be promptly unloaded. The unprocessed goods will be succinctly to warehouses, where they will be processed and finished goods. They will then join the finished goods the station produces independently. Good will be imported and exported weekly.

7.3
Bellevistat will grow excess food to satisfy visitors, even if an unexpected amount of visitors arrive. There will be no fear of shortages.

All transients to Bellevistat will be given a comfortable place to sleep. Temporary housing for transients will be available with enough beds for all. Even such small amenities like grass and ponds will be available for guests.

Bellevistat will provide its transients with many activities to choose from; such as bowling, shopping, and enjoying scenery.

Videos and picture will be uploaded onto computers on Bellevistat and sent via the internet to Earth. Quantum computers will be placed on the station and on the Earth. The power of quantum computers will allow quick communication between the station and the Earth.

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