

“Ocean Imagineer”, Request for Estimate for Yuen Lee Marine

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Dear Yuen Lee,

As a media artist, I (Cesar Jung-Harada) is collaborating with MakerBay Foundation (not for profit organisation), to develop a floating work of art that resembles an oyster to:

- Clean the water with oysters, underwater, and increase biodiversity
- Produce green and clean energy from solar power.

As such, we are looking for your help to

- Rent floating cubes
- Have a space by the water to assemble the frames
- Help to tow the artwork to the exhibition site, install the sinkers
- Help to tow the artwork to the typhoon shelter and back to the exhibition in North Point in case of typhoon

This request for estimate is rather urgent as

- Exhibition runs from Aug 30 to Nov 29, 2021.
- We would like to rent the floating blocks from Aug 23 to Dec 1, 2021

More details are in the attached estimate request.

Thank you very much for your consideration and expertise,

Cesar Jung-Harada (Scoutbots Limited), with MakerBay Foundation Limited

Summary of Estimate Request in a Timeline

Item	Time & Date	Location	Price HKD
1a. Rental of 376 floating cubes	Aug 23, 8:00 - Dec 1, 18:00	YMT	
1b. Space for Assembly on site (two 40 ft containers side by side)	Aug 23, 8:00 - Aug 25, 8:00	YMT	
1c. Crane in the water	Aug 25, 8:00 - 8:30	YMT	
2a. Towing Artwork Yau Ma Tei -> North Point	Aug 25, 8:30 - 10:00	YMT -> NP	
2b. Installation four 2t sinkers in North Point	Aug 25, 10:00 - 11:00	NP	
2c. Positioning of artwork at the exhibition site.	Aug 25, 11:00 - 12:00	NP	
2d. Remove four 2t sinkers. Towing Artwork North Point -> Yau Ma Tei	Nov 30, 8:00 - 12:00	NP -> YMT	
2e. Space to Disassemble (two 40 ft containers side by side)	Nov 30, 13:00 - Dec 1, 18:00	YMT	
2e. Returning of 376 floating blocks cleaned	Dec 1, 18:00	YMT	
3a. Towing to nearest typhoon shelter	Unknown date Cost for towing to shelter and returning to exhibition site	Typhoon Shelter	

Timeline #1. Rental of floating cubes, assembly in Yau Ma Tei

	<p>1a. Rental of 376 floating cubes 376 Standard HDPE Pontoon, class A.</p> <p>1b. Space for Assembly on site We need the space of two 40 ft containers for 48 hours to attach the floating cubes to the steel frames</p> <p>1c. Crane in the water Ideally, we would like a crane to lift the structure down in the water as one piece.</p>
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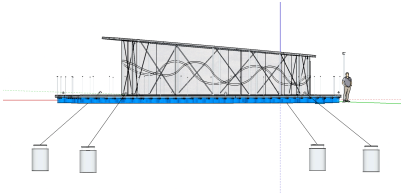
- Provisional dates for renting the **376 floating cubes**
 - Monday Aug 23, 8:00 - Wednesday Dec 1, 18:00
- Provisional dates for the **space for assembly**: 48 hours to assemble


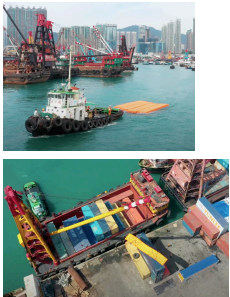
- Monday Aug 23, 8:00 - Wednesday Aug 25, 8:00 AM
- Provisional dates for the **space for disassembly**: 48 hours to disassemble
 - Tuesday Nov 30, 13:00 - Wednesday Dec 1, 18:00
- **Provisional location**: Marine Department Yau Ma Tei Public Cargo Working Area, 海事處油麻地公眾貨物裝卸區. We need the space of two 40ft containers, side by side.
- **Division of labour**:
 - 1a. Yun Lee provides the floating cubes and unloads them from the storage container. MakerBay assembles the pontoons in the desired shape.
 - 1b. Yun Lee provides a vacant space equivalent to two 40ft containers, within reach of a crane. MakerBay assembles the steel structure and attaches the floating cubes to the steel structure.
 - 1c. Yun Lee provides a crane capable of lifting 8 tons from the Public Cargo Working Area to the water. MakerBay will position the lifting equipment directly on the structure.

Notes:

- **Sinkers**. We will also load four sinkers, each 2 tons, with an easy to lift “handle” and designed to be easily moved with a pallet jack in flat terrain. The sinkers can be loaded on the artwork or separately on the towing / crane ship.
- **Floating cubes**. We need you to give us the exact dimensions of one pontoon and possibly a group of pontoons (6 x 28 cubes?) so we can dimension the steel frames with precision.

Timeline #2. Towing Yau Ma Tei <-> North Point, installation of four 2t sinkers

	<p>2a. Towing Artwork Yau Ma Tei -> North Point Wednesday Aug 25, 8:00 - 10:00 The structure is 16m Long x 8m wide x 3.8m high, (less than 35cm draft) and weighs about 7 tons without equipment and accessories (they will be delivered after the structure is installed in North Point. The towing can be done on a single point at the narrowest “tip” of the “oyster”, or by 2 towing points, directly on the structure</p>
	<p>2b. Installation of four 2t sinkers in North Point Wednesday Aug 25, 10:00 - 11:00 We need the help of Yuen Lee to install four 2 tons sinkers</p>

	<p>2c. Positioning of artwork at the exhibition site. Wednesday Aug 25, 11:00 - 12:00 Note that the crane ship will need to fit the clearance under the highway bridge. Seafloor is sand and silt about 5m in the deepest point by the bridge, and 3m at the shallowest, by the edge of the promenade.</p>
	<p>2d. Return of floating blocks Tuesday Nov 30, 8:00 - 12:00</p> <ul style="list-style-type: none"> • 8:00 - 9:00: Removal of sinkers • 9:00 - 11:00: Towing back to Yau Ma Tei • 11:00 - 12:00 Lifting on Yau Ma Tei Public Cargo Working Area
	<p>Disassemble Tuesday Nov 30, 13:00 - Dec 1, 18:00</p> <ul style="list-style-type: none"> • Disassembly by the MakerBay team • Returning of floating blocks cleaned

Provisional time to travel and install:

Wednesday Aug 25, 8:00 - 12:00

Exact location for the installation

22°17'35.7"N 114°11'55.7"E | 22.293251, 114.198813 | <https://goo.gl/maps/SSwx82QT6vrvYyWN9>

Division of labour

Yun Lee tows the artwork, installs the sinker, positions the artwork.

MakerBay crew can be on board of the artwork to help with maneuver and ropework and signaling (light and horn if required).

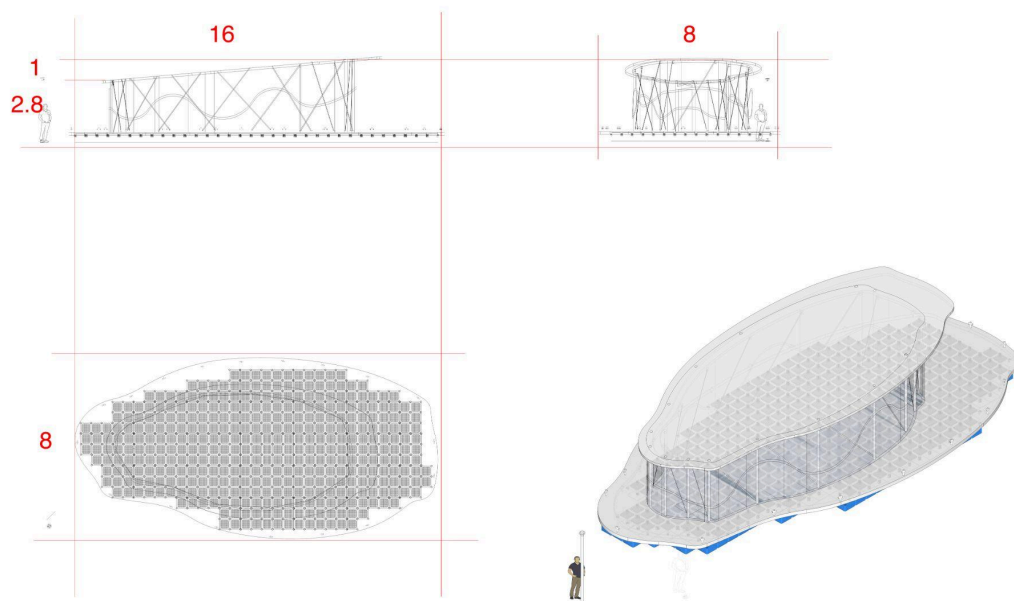
Timeline #3 Typhoon Sheltering to Nearest Typhoon Shelter



3a. Typhoon sheltering to nearest typhoon shelter

In the likely event of a typhoon signal MakerBay team will request Yun Lee to be towed and moored to the nearest typhoon shelter. After the typhoon is passed, we will need to be returned to the exhibition site

4. Overall Design



- **Size:** 16 x 8 x 3.8m
- **Weight:** 8t tons floating object + 8t of sinker (4 x 2t sinkers)
- **Passengers:** 0. No one is authorized on the platform. Only registered crew for short maintenance.
- **Contact:** Director: Cesar Jung-Harada +852 9610 7593, contact@cesarharada.com | Project Manager: Jasimran Dhaliwal +852 5542 2040, Jasimran@makerbay.org

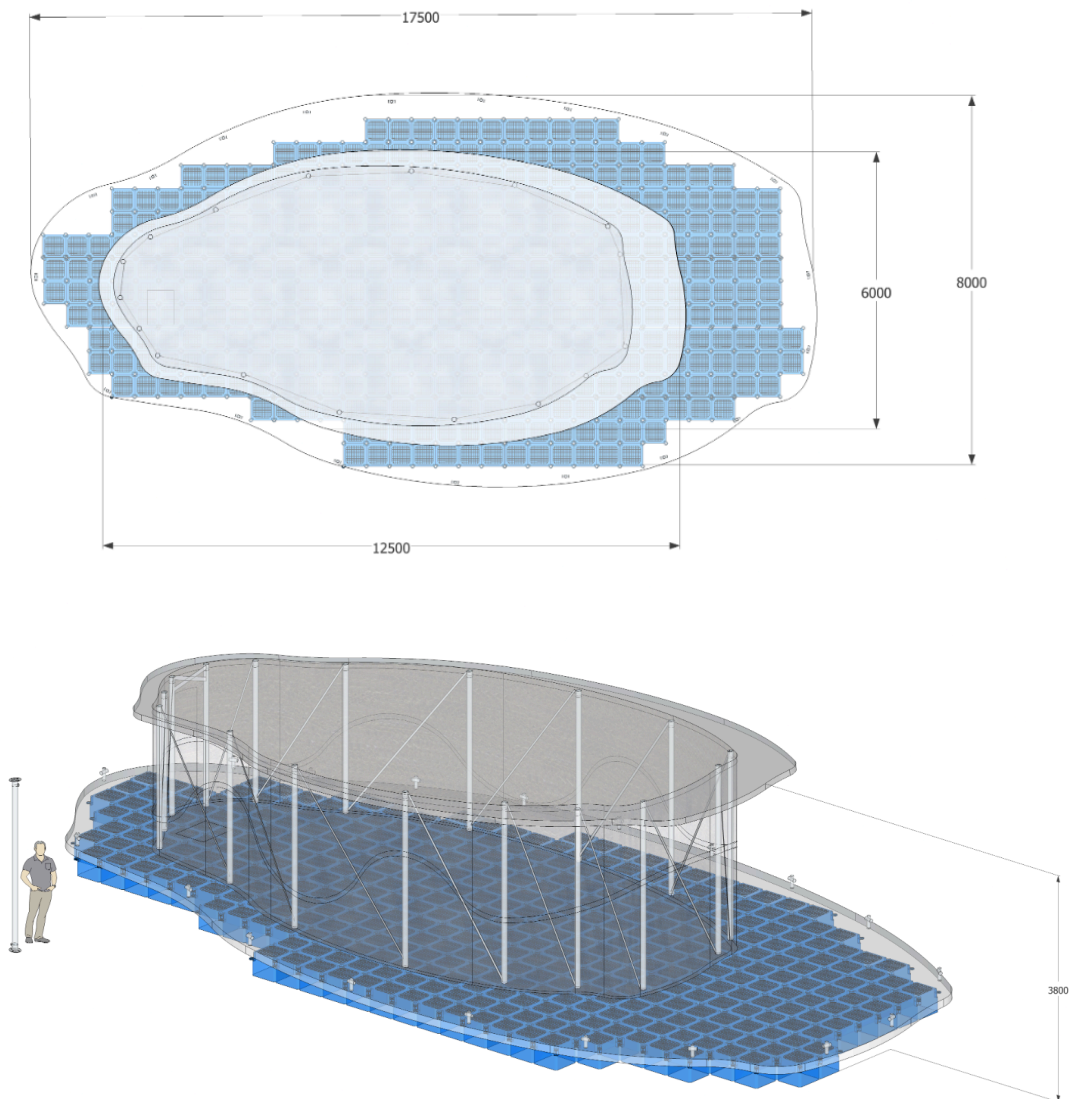
Materials

- **Flotation:** 376 Standard HDPE Pontoons, class A. Each pontoon contains 90 liters. Buoyancy 350 kg/m². Total max weight is 8 tons. 376 pontoons, that's 94m², 32.9 t load capacity.
- **Deck structure:** Steel Frame
- **Deck material:** Outdoor Plywood, treated and marine coated
- **Pontoon attachment to frame:** Heavy gauge marine ropes
- **Columns:** Steel Frame, fully triangulated
- **Envelope:** Polycarbonate, High impact resistant, UV light filtering
- **Roofing:** Polycarbonate, High impact resistant, UV light filtering
- **Sinker:** Marine treated concrete, stainless steel "handle"
- **Rope:** Heavy gauge marine rope with anti-chafing protection

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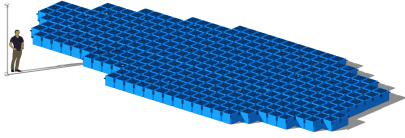
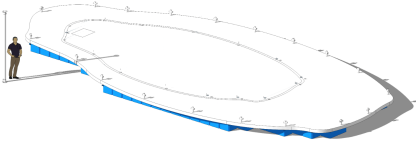
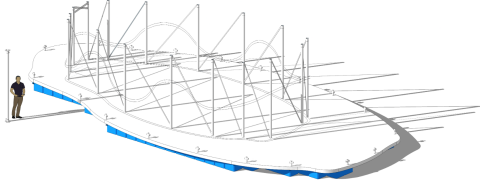
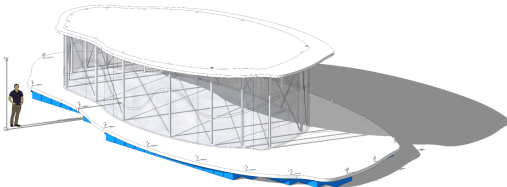
2. Jasimran Dhaliwal, Project Manager: jasimran@makerbay.org | +852 5542 2040

Technical views







1. Cesar Jung-Harada, Director: contact@cesarharada.com | +852 9610 7593
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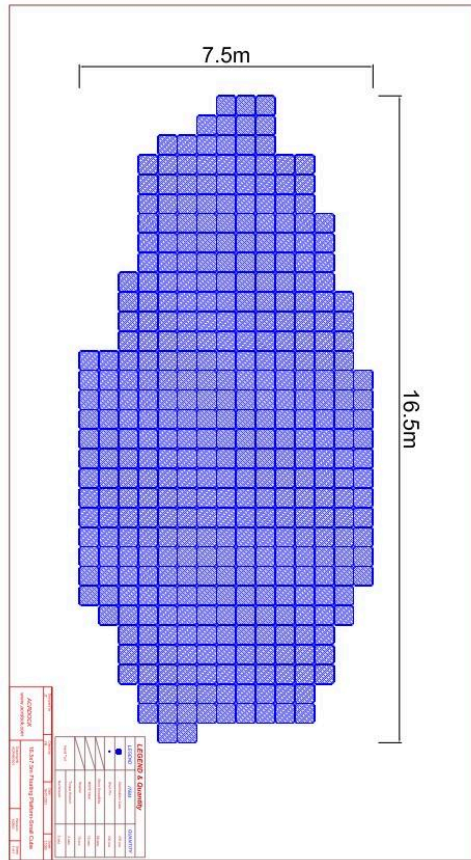
Constructions Steps

 <p>Assemble HDPE Pontoons</p>	 <p>Install steel frame and clad with flooring</p>
 <p>Solidly bolt and weld steel columns, triangulate</p>	 <p>Roof has a lightweight steel structure. Both the roof and walls are made of high impact resistant and UV filtering polycarbonate</p>

Background Research for Pontoon Design

 <p>Full flexible pontoon</p>	 <p>Open, non triangulated [link]</p>	 <p>Semi-closed, non triangulated [link]</p>	 <p>Enclosed, semi open triangulated [link]</p>
<p>We like this option because it's very reliable, predictable and easy to build</p>	<p>Only the top of the pontoon is attached. It does not feel safe.</p>	<p>The pontoons are partially enclosed. Decent safety but not very rigid</p>	<p>The pontoons are mostly enclosed. High safety and rigid</p>

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Retailer specification

The most common type of pontoon that we found is size A (50x50x40cm); average 7kg per piece with a load capacity of 350kg/ m². If your load is 7,000 kg. We need at least 90 A-type pontoons. The total weight for 90 pieces of A-Type pontoons would be 630kg

The total load capacity for 90 pieces of A-Type pontoons would be 7,875kg

Our Design has 376 pontoons. So we have more than 4 times the required load.

Theoretical calculation

We calculate the theoretical buoyancy capacity of the pontoons, to find out how many will be needed.

$F_b = V_s \times D \times g$, where F_b is the buoyancy force that is acting on the object, V_s is the submerged volume of the object, D is the density of the fluid the object is submerged in, and g is the acceleration due to gravity.

$g = 9.81$, $D = 1025$ (approx. density of seawater)

$V_s = 0.1 \text{ m}^3$ (size of submerged pontoon)

So $F_b = 1005.525\text{N}$

Given the weight of the pontoon is 1.27 kg, the opposing force exerted would be 12.7N

Hence the carrying capacity (N) is $1005.5 - 12.7\text{N} = 992.8\text{N}$

And because $F = ma$, and the acceleration of gravity = 9.81ms^{-2}
The carrying capacity in kg is: 101.2kg (per 0.1m^3)

Thus for 1 m^2 , the carrying capacity would be $101.2 \times 4 = 404.8 \text{ kg}$ (per m^2)

Compared to the manufacturer's details, there is a 13.5% percentage difference.

5. Safety

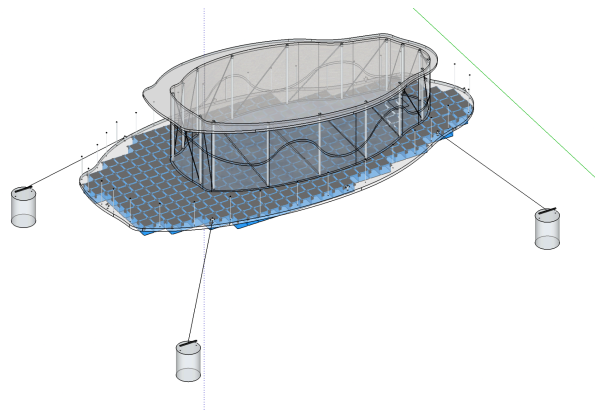
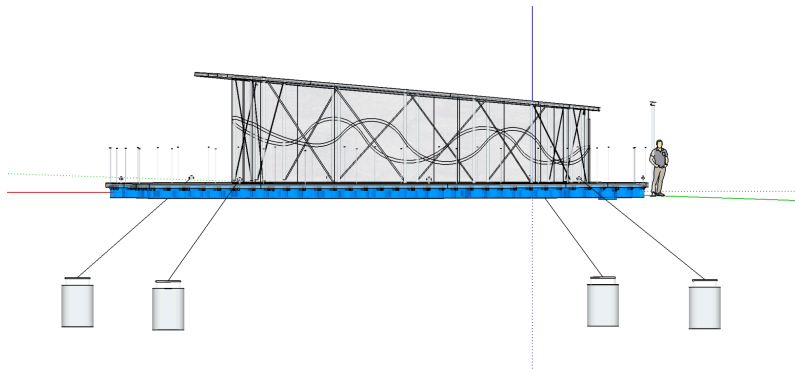
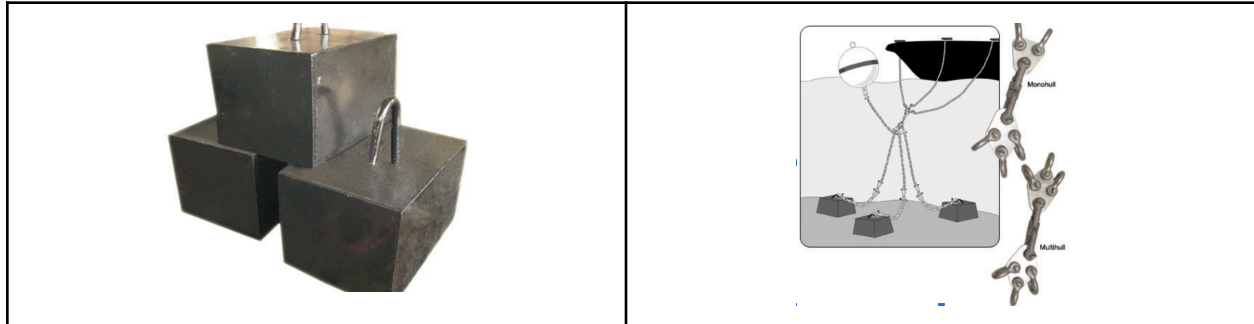
For safety reasons, no members of the public are allowed onto the pontoons during exhibition

We will have onboard the vessel, first aid kit for emergency use, and fire extinguishers and fire blankets.

6. Sinkers

We will use 4 sinker blocks, each at least 2 tons. The ropes tying the sinkers to the pontoon are adjustable to cater for the excessive changes caused by high and low tides.


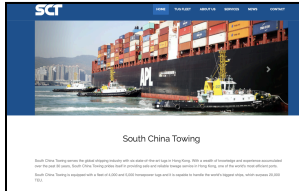

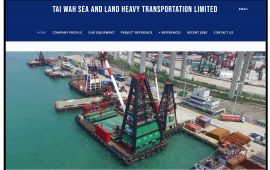
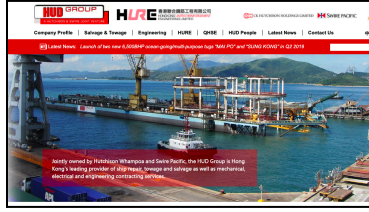
- Company name: [China Shipping Anchor Chain \(Jiangsu\) Co., Ltd.](#)
- Address: Jiangsu, China
- Website: [Link](#)



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7. Typhoon Evacuation Plan

We intend to evacuate the exhibition site and keep our sinkers signaled with surface floats to evacuate from early Typhoon signals. Our preferred towing company is Yun Lee, and we have initiated contact with alternative towing companies. List of typhoon shelters [Typhoon shelter](#).


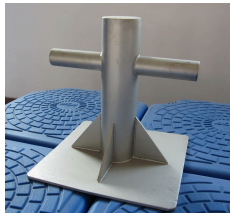


<p>Yun Lee Marine LTD</p> <ul style="list-style-type: none"> Name of our contact: Yukie Duong Telephone: +852 6100 4091 Email: yukie_nkduong@yunlee.com.hk Address: Flat D, 31/F, Billion Plaza II, 10 Cheung Yue Street, Kowloon, Hong Kong Website: http://www.yunlee.com.hk/ <p>Yun Lee would be our preferred towing company as they have experience towing artworks, such as the giant rubber duck.</p>	
<p>SOUTH CHINA TOWING</p> <ul style="list-style-type: none"> Website: http://www.southchinatowing.com.hk/ 	
<p>GAC</p> <ul style="list-style-type: none"> Email: bruce.leung@gac.com Website: gac.com Name of our contact: Bruce Leung 	
<p>Tai Wah</p> <ul style="list-style-type: none"> Website: http://taiwahhk.com/ 	
<p>HUD</p> <ul style="list-style-type: none"> Name of Contact: Jerry Lo Website: https://www.hud.com.hk/contact_us.php 	

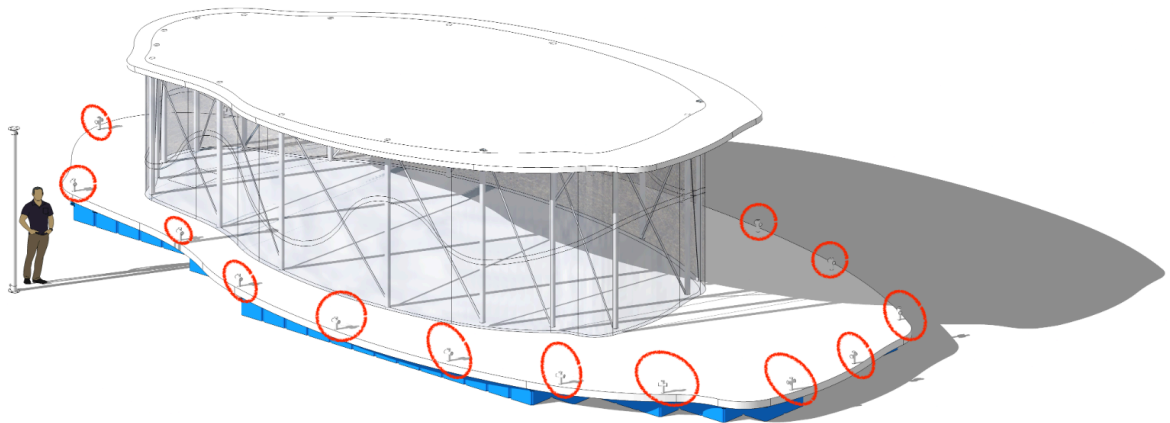
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8. Pontoon Attachments

To make it easy for us to be towed and secure the structure at sea, we have planned a number of solid bollards surrounding the structure.



 <p>SS Cleat [link]</p>	 <p>1 bollard [link]</p>	 <p>2 pins bollard [link]</p>	 <p>4 pin bollard [link]</p>
<p>Edge bollard</p>	<p>Pin-attached is our preferred attachment technique as it is simple, reliable and does not compromise the water tightness</p>		



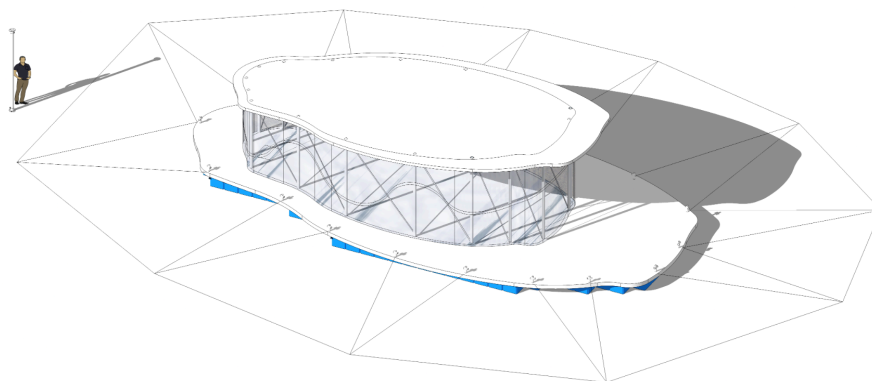
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9. Trespassing

For security reasons, the vessel will be surrounded by inflatable booms to avoid trespassing.

Image of inflatable boom	Supplier with their details
 <p>[Link]</p>	<p>Jiangsu, China HOPETOPWAY PVC Floatation Containment Boom Manufacturer, Trading company Means of Contact</p>
 <p>[Link]</p>	<p>400m minimum order Shandong, China Material: rubber 3,000m MAX per month Huahai Means of Contact</p>
<p>Aqua Flex (waiting for reply)</p>	<p>We need AT LEAST 130m, but preferably 140m of boom length.</p>


To maintain the boom, we intend to use thin floating “tethers”, bamboo poles:



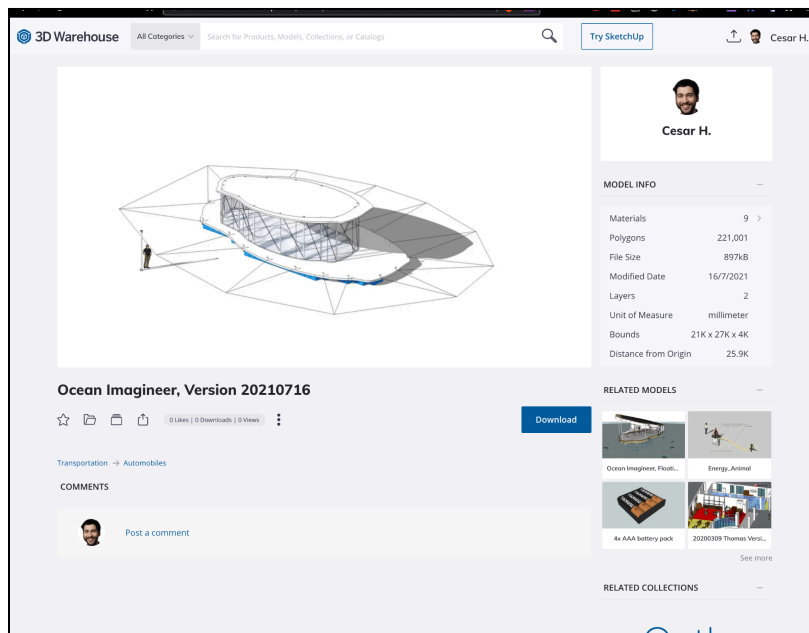
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10. Signal Lights

According to the marine lighting rules laid down by the International Maritime Conference, we will be required to have a lighting configurations as follows: an all-round anchor light placed at the upper most point of the structure

Location	Product	Supplier	Image
Upper most point of the structure	Anchor light	Keenso https://www.amazon.com/Navigation-360%C2%B012V-Waterproof-Cockpit-Portable/dp/B07F8YXJ1J	

11. View and Download 3D File



<https://bit.ly/3wExYgQ>



12. List of Contributors

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