

## **Mechatronics Project Group Proposals for Peer Gynt DARC Installations**

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### **Procession**

The DANM Mechatronics Project group is collaborating with the Performative Technology Project Group under the direction of Kimberly Jannarone to create several large scale interactive exhibits in the Digital Arts Research Center for the Peer Gynt Performances. The Mechatronics collaboration begins when the audience leaves the Experimental Theater space and moves in three to four groups down to the DARC. The audience will be guided by actors carrying illuminated umbrellas along three paths to the DARC. Several illuminated umbrellas will be distributed to audience members in each group to provide protection from potential rain and to add festivity to the procession. The electronics for the umbrellas will be developed by Mechatronics while the umbrella design and construction will be the responsibility of the costume shop and/or props.



The three paths from the Experimental Theater to the DARC will be marked with illuminated mushrooms. The electronics for the mushrooms will be developed by Mechatronics while the mushroom design and construction will be a collaboration with scenic design and/or props.



One path will lead audience members down the sidewalk to the side entrance to the DARC where the path will split into two paths guiding some audience members into the side entrance and others further down into the main entrance. The side entrance leads to Anitra's Lounge while the main entrance leads to the Wave Walker. The third path from the Experimental Theater to the DARC guides audience members through the Art Department and across the 3<sup>rd</sup> floor bridge into the DARC.

### **Sine Wave /DARC Bridge**

A large flowing interactive kinetic sculpture that guides the audience along the bridge with soft flowing wave motion. The piece signifies the journey of Peer across the ocean and sets the stage for the storm ahead in the Light Lab. It is designed for all weather use and will be installed for the duration of the show. Audience members will have the ability to create the wave motion from either a hand turned crank or bike pedal interface. The sine wave is constructed of laser cut 3' wood spines connected via a central steel braided wire supported by a 2" flat steel frame. The frame is approximately 16" above the level of the handrails and will be clamped to the steel handrails. The edge of the sine wave will protrude approximately 6"-8" onto the bridge leaving over 9' of clearance. The sine wave will be illuminated at night for safety.

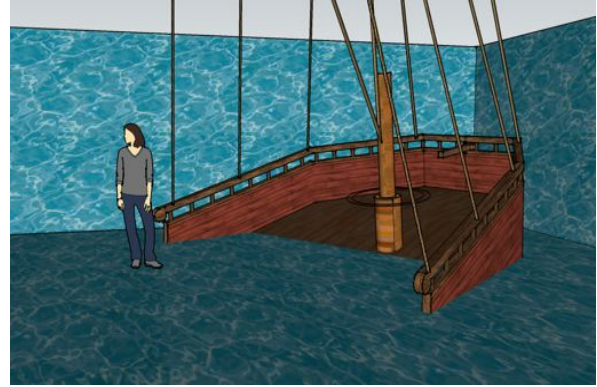


## Furtttenbach Wave Walker / DARC 3<sup>rd</sup> Floor Breezeway & Main Entrance

We built a working prototype of the Furtttenbach Wave Walker for Open Studios. The base is built on a ½" thick plastic 100 gallon water tank. We connected four 10' wood planks with 1" flat steel bars. The wood planks were then screwed to two 2" x 4" x 4' boards that were bolted to the tank with ½" steel bolts. The tank was filled with approximately 40 gallons of water that served as the counterbalance for people walking across the planks. Bungee cords attached to steel screw eyes on the corners and sides of the wooden planks kept the interface within the confines of our modular 1" steel bar frame. We will be adding metal chains as an extra safety precaution for the Peer Gynt installation. Strings that are attached to the same screw eyes are guided through the steel frame to a Game Track controller that sends realtime movement data to a laptop where it triggers audio in a Max/Msp/Jitter application. The steel pipe handrails will be covered with foam pipe insulation for safety. A rope net along each side of the plank will provide additional hand support for smaller children. We will build a plexiglass reservoir with a reciprocating pump to contain the water splashed out of the base.



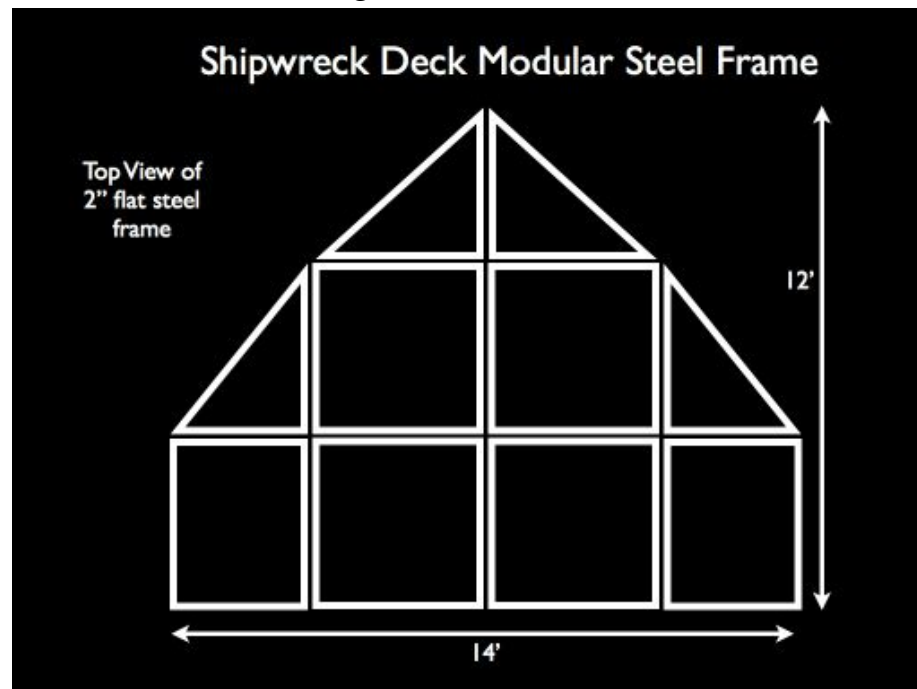
## Shipwreck / Light Lab



### Narrative Description

The Shipwreck is an interactive set built on a large platform that can hold up to ten audience volunteers. It is based on the same interactive design as the Furttenbach Wave Walker where the movement of the audience affects sound design and video performances with the additional ability to also lean forward. This movement is limited to approximately six inches of vertical travel on the left and right and approximately twelve inches of vertical travel forward. This subtle rolling motion will give the audience the sensation that they are moving on a partially submerged shipwreck. A handrail around the outside edge of the shipwreck helps contain the audience members and provides them with support. Similarly, a central mast and accompanying circular hand rail in the center provides additional stability for the audience. Ropes for sail rigging may also be attached to the outer rail and central mast. These ropes can be pulled by audience members to trigger audio or video events. Triggering is achieved through Gametrack controllers that change two scalable variables per controller when strings are pulled.

### Shipwreck Base Structural Design

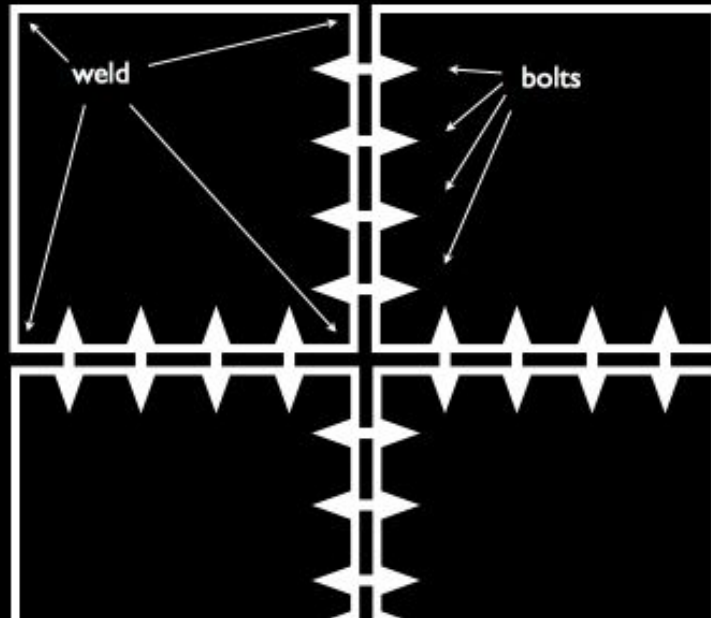


## Shipwreck Base Structural Design

### Shipwreck Deck Frame

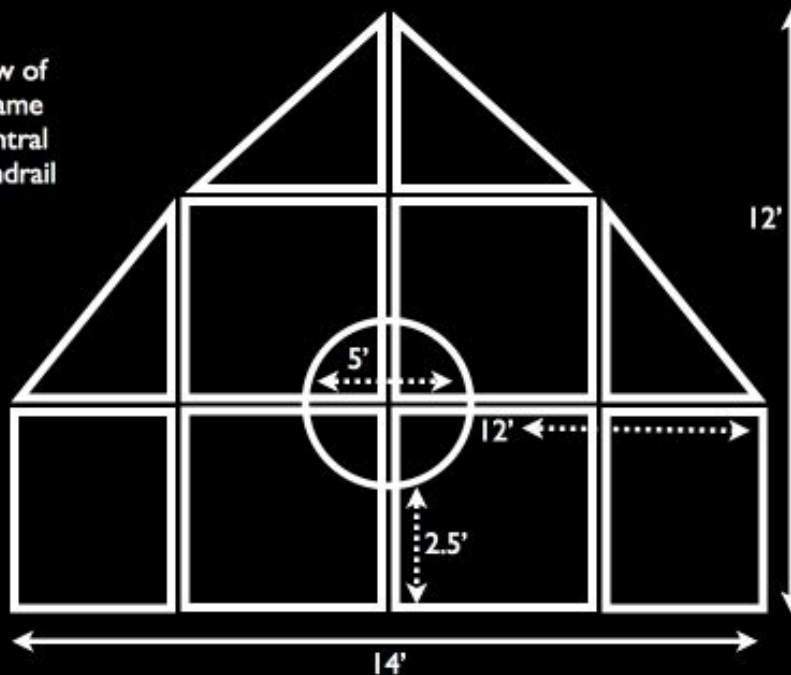
all 2" steel frame components are welded in corners

all modular steel components connected every 8" with 3/4" steel bolts



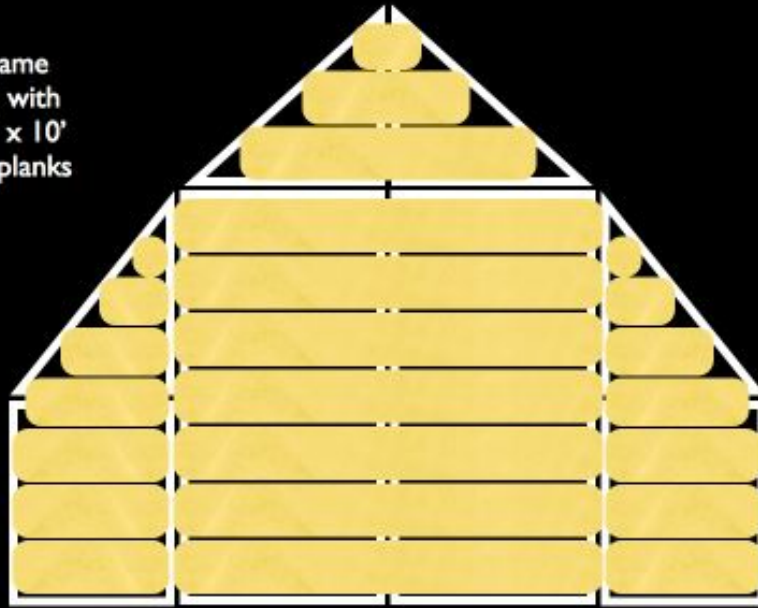
### Shipwreck Deck Modular Steel Frame

Top View of steel frame with central mast handrail



## Shipwreck Deck Modular Steel Frame

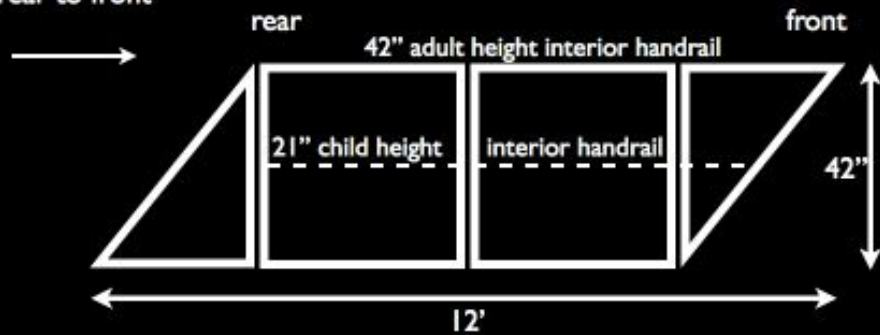
steel frame  
covered with  
2" x 10" x 10'  
wooden planks



## Shipwreck Deck Modular Steel Frame

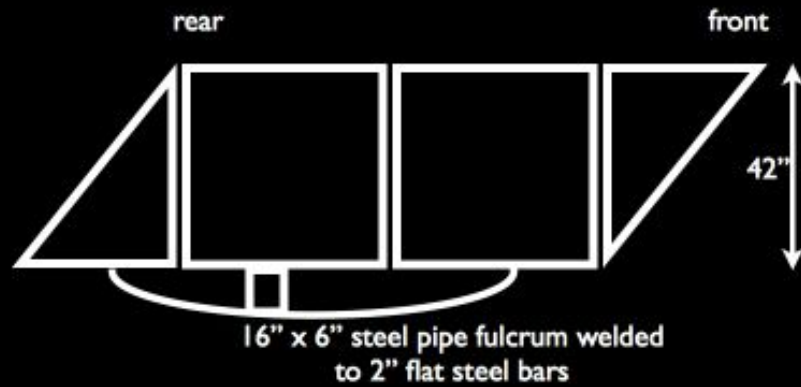
Side View of  
2" flat steel  
frame handrails

audience  
moves from  
rear to front



## Shipwreck Deck Modular Steel Frame

Side View of  
2" flat steel  
frame and  
fulcrum



## Shipwreck Balance Frame

Top View of  
2" flat steel  
bars welded to  
a 16" x 6"  
1" thick steel pipe

Size TBD by  
weight distribution  
balance



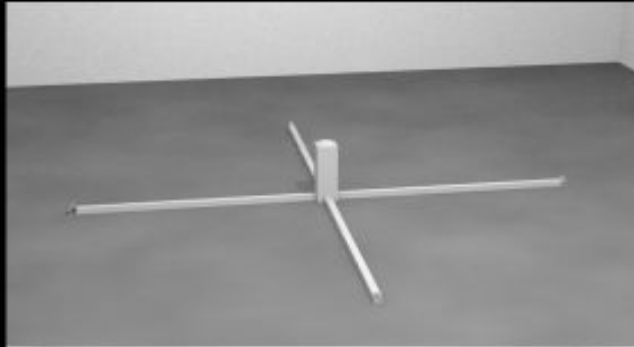
prototype



## Shipwreck Base

1" square steel base  
with corner  
connections to  
modular steel frame

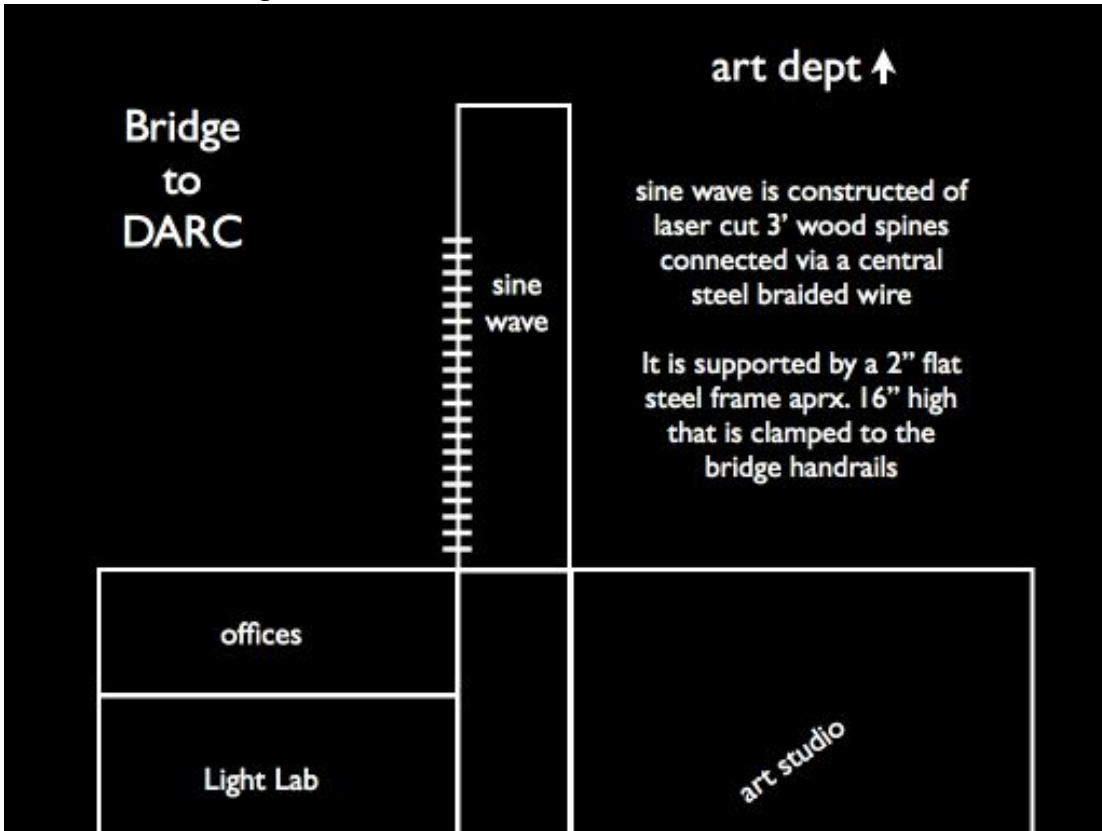
corners connected  
with hydraulic  
cylinders for fluid  
movement



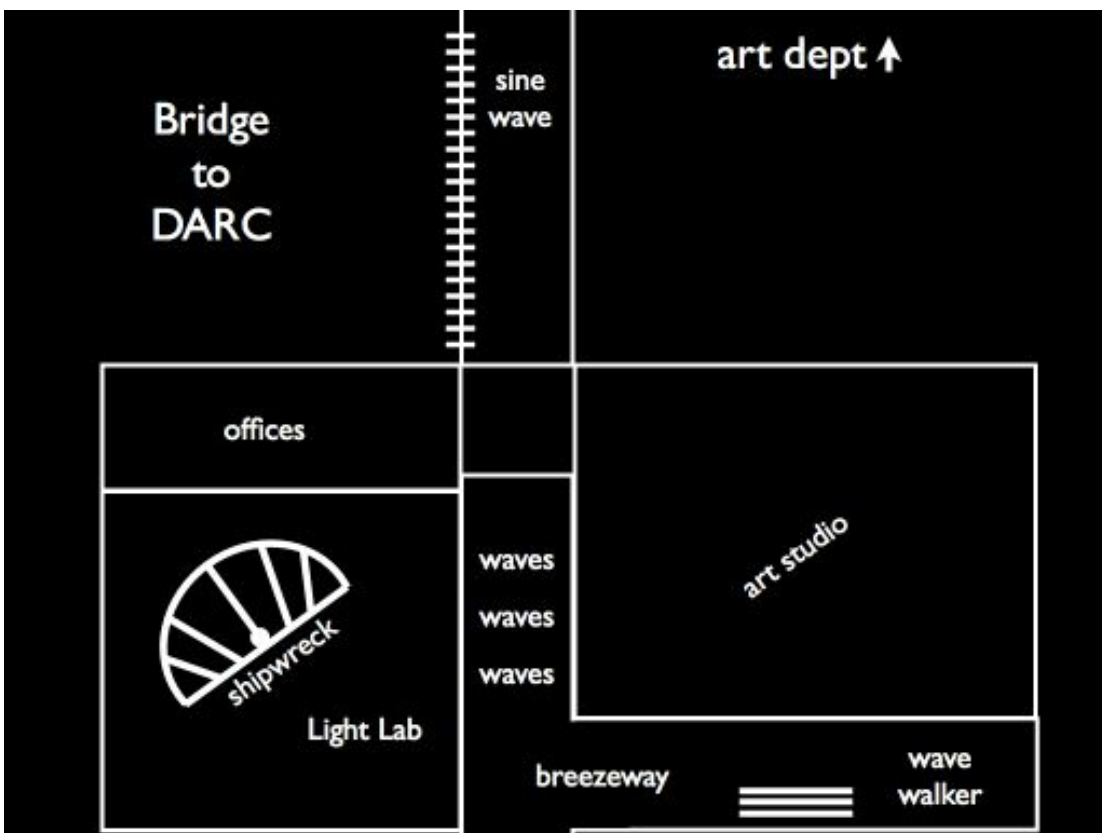


# Installation Location Diagrams

## Sine Wave / Bridge



## DARC 3<sup>rd</sup> Floor



DARC Ground Floor

