# TABLE OF CONTENTS

- **Crate List** 3
- **Tools Required** 4
- **Assembly Tips** 5
- **Electrical Plan** 6
- **Tension Fabric Structures** 8
- **Inflatable Ship** 10
- **Geological Map Floor** 14
- **PIE Media Wall** 17
- **Deep Sea Fossils Kiosk** 19
- **Drilling the Deep Kiosk** 27
- **What is a core? Kiosk** 36
- **Deep Dark Life Kiosk** 42
- **Quakes & Waves Kiosk** 49
- **Stories from the Core Kiosk** 56
- **Crate Packing Reference Photos** 65
- **As Built Construction Drawings** Appendix A
<table>
<thead>
<tr>
<th>Crate Num</th>
<th>Type</th>
<th>EXT L&quot;</th>
<th>EXT W&quot;</th>
<th>EXT H&quot;</th>
<th>Crate Weight (lbs)</th>
<th>Weight (lbs)</th>
<th>Total Weight (lbs)</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Crate</td>
<td>27</td>
<td>47</td>
<td>31.375</td>
<td>120.3</td>
<td>570.0</td>
<td>690.3</td>
<td>Flooring Tiles</td>
</tr>
<tr>
<td></td>
<td>Gaylord Box</td>
<td>36</td>
<td>36</td>
<td>48</td>
<td>192.8</td>
<td>30.0</td>
<td>222.8</td>
<td>(4) Stanchions</td>
</tr>
<tr>
<td>2</td>
<td>Crate</td>
<td>53.25</td>
<td>53.25</td>
<td>25.75</td>
<td>226.4</td>
<td>570.0</td>
<td>796.4</td>
<td>6 base plates, 6 side plates,</td>
</tr>
<tr>
<td>3</td>
<td>Crate</td>
<td>33</td>
<td>61</td>
<td>27.375</td>
<td>155.0</td>
<td>35.0</td>
<td>190.0</td>
<td>4 overview - Tsunami, Drill, Micro, Core</td>
</tr>
<tr>
<td>4</td>
<td>Crate</td>
<td>36</td>
<td>72</td>
<td>19</td>
<td>160.7</td>
<td>50.0</td>
<td>210.7</td>
<td>2 interactives - Micro, Core</td>
</tr>
<tr>
<td>5</td>
<td>Crate</td>
<td>25.5</td>
<td>88.5</td>
<td>21.75</td>
<td>136.6</td>
<td>85.0</td>
<td>221.6</td>
<td>Interactive - JR Drill Down</td>
</tr>
<tr>
<td>6</td>
<td>Crate</td>
<td>28.5</td>
<td>58.5</td>
<td>29.75</td>
<td>136.5</td>
<td>50.0</td>
<td>186.5</td>
<td>Interactive - Tsunami Tank and Shelf</td>
</tr>
<tr>
<td>7</td>
<td>Crate</td>
<td>53</td>
<td>59</td>
<td>16.375</td>
<td>197.3</td>
<td>75.0</td>
<td>272.3</td>
<td>Interactive - Sea Floor Plinko</td>
</tr>
<tr>
<td></td>
<td>Road box</td>
<td>15</td>
<td>69</td>
<td>44</td>
<td>95.6</td>
<td>125.0</td>
<td>220.6</td>
<td>Storeis Kiosk: touch screen, bezel</td>
</tr>
<tr>
<td></td>
<td>Road box</td>
<td>30</td>
<td>22</td>
<td>26</td>
<td>90.1</td>
<td>35.0</td>
<td>125.1</td>
<td>Storeis Kiosk: CPU</td>
</tr>
<tr>
<td></td>
<td>Road box</td>
<td>27</td>
<td>41</td>
<td>74</td>
<td>207.1</td>
<td>100.0</td>
<td>307.1</td>
<td>Peerless: Small monitors, speakers, a/v rack</td>
</tr>
<tr>
<td></td>
<td>Road box</td>
<td>22</td>
<td>59</td>
<td>43</td>
<td>129.5</td>
<td>75.0</td>
<td>204.5</td>
<td>Peerless: Large Monitors (3)</td>
</tr>
<tr>
<td></td>
<td>Pallet</td>
<td>72</td>
<td>72</td>
<td>36</td>
<td>191.3</td>
<td>800.0</td>
<td>991.3</td>
<td>Inflatable Ship</td>
</tr>
<tr>
<td></td>
<td>Soft Wrap</td>
<td>36</td>
<td>172</td>
<td>78</td>
<td>0.0</td>
<td>50.0</td>
<td>50.0</td>
<td>PIE Media Wall (Peerless AV Rack)</td>
</tr>
<tr>
<td></td>
<td>Crate</td>
<td>18</td>
<td>18</td>
<td>39.5</td>
<td>70.9</td>
<td>15.0</td>
<td>85.9</td>
<td>JR is a Stem Marvel, 3D printed Drill Bit</td>
</tr>
<tr>
<td></td>
<td>Soft Bag</td>
<td>101</td>
<td>18</td>
<td>18</td>
<td>0.0</td>
<td>35.0</td>
<td>35.0</td>
<td>Tectonics Frames</td>
</tr>
<tr>
<td></td>
<td>Soft Bag</td>
<td>101</td>
<td>18</td>
<td>18</td>
<td>0.0</td>
<td>35.0</td>
<td>35.0</td>
<td>Tectonics Frames</td>
</tr>
<tr>
<td></td>
<td>Soft Bag</td>
<td>101</td>
<td>18</td>
<td>18</td>
<td>0.0</td>
<td>15.0</td>
<td>15.0</td>
<td>3D Puzzle Foam</td>
</tr>
<tr>
<td></td>
<td>Generator</td>
<td>25</td>
<td>28</td>
<td>22.5</td>
<td>0.0</td>
<td>50.0</td>
<td>50.0</td>
<td>Generator</td>
</tr>
<tr>
<td></td>
<td>Generator</td>
<td>25</td>
<td>28</td>
<td>22.5</td>
<td>0.0</td>
<td>50.0</td>
<td>50.0</td>
<td>Generator</td>
</tr>
<tr>
<td></td>
<td>Soft Wrap</td>
<td>22</td>
<td>22</td>
<td>71</td>
<td>0.0</td>
<td>25.0</td>
<td>25.0</td>
<td>Freestanding Graphics Panels</td>
</tr>
<tr>
<td></td>
<td>Soft Wrap</td>
<td>22</td>
<td>22</td>
<td>71</td>
<td>0.0</td>
<td>25.0</td>
<td>25.0</td>
<td>Freestanding Graphics Panels</td>
</tr>
</tbody>
</table>
TOOLS REQUIRED

Tool List
• Standard Allen Set (must include 7/32”, 3/16”)
• Phillips Screw drivers (small and medium)
• Standard Socket Set ¼” Drive (must include 7/16”, 9/16”)
• ¼” Drive Ratchet
• Box-end Standard Wrench Set (Must include 7/16”, 9/16”)
• 3/8” -16 Tap
• 1/4 -20 Tap
• Tap handle
• Small (Light duty) Electric drill or screw-driver (do not buy a high-torque screw gun or impact, must be very small duty or hobby) with ¼” Drive or adjustable chuck
• Claw Hammer
• Wonder Bar
• ¼” Drive Chuck Adapter to ¼” Socket Drive
• ¼” Drive Chuck Adapter to 3/8” Socket Drive (if needed)
• 6’ Ladder
• (2) 5 Gal bucket
• Mop
• Swifter

• Consumables (only purchase as needed)
• Visqueen (for the map floor underlayment)
• 1” insulation Foam
• 2” insulation foam
• 8” Zip Ties
• Cleaning Supplies (mild soap, acrylic cleaner)
• Microfiber cloths
• Shoe Covers
• Novus PC-10 Acrylic Plastic Clean & Shine
• All bolts should be started by hand first. Never use a power tool to start threading bolts.

• All bolts and screws should have smooth thread engagement until the head of the bolt or screw contacts the primary surface. Therefore, if you feel any difficulty, binding, or unusual thread engagement, stop turning immediately and remove the screw or bolt to re-engage the threads.

• Never slide interactives or other components against the painted surfaces of baseplates.

• **Avoid putting graphics on the floor as they are double-sided.**

• Recommended (3) people to assemble each kiosk.
ELECTRICAL CONNECTIONS

Generator

3 Plug Splitter

Twist Lock Splitter

Heavy Duty 100' Cord

Blowers

Generator

Twist Lock Splitter

Heavy Duty 100' Cord

Blowers

Ravenswood Studio, Inc. 847-679-2800
Lincolnwood, IL
ELECTRICAL CONNECTIONS
Velcro along perimeter of bottom ring
Inflation

1. To inflate the boat, position the pallet at the front (bow) of the planned location for the boat.

2. Remove the straps holding the folded boat to the pallet. Roll boat off pallet.

3. Remove the pallet.

4. Unfold the boat.

5. Adjust alignment of the boat to ensure proper positioning.

6. Connect the four blower fans to black inlet ducks located near the base of the boat. Ensure the Velcro straps create a good seal.

7. Turn on the fans. Ship will inflate. Keep the fans ON to maintain inflation.

8. Using the provided straps as guy-lines, attach water-barrel or alternative ballast. Manufacturer recommends 1000 lbs per corner (x 4).

9. Install interior graphics by clipping to provided rings.

10. You may now wheel the PIE Media wall into position.

11. Use the provided black tarp to mask light in the media wall opening (near base of ship wall).
INFLATABLE SHIP INSTRUCTIONS

Deflation
1. Remove the PIE Media wall from inside the ship.
2. If needed, remove the interior graphics.
3. Clean the ship as needed using water. If required, use a mild dish soap and rinse well. Allow to fully dry before folding.
4. Disconnect any guy-lines or ballast and remove from area.
5. Turn off the fans and disconnect from inlet tubes.
6. Allow the ship to deflate. If needed, remove shoes and walk on the ship to speed deflation.
7. Fold the ship according to the folding diagrams
Using the D-rings, fold the ship along the dotted lines shown.

Continue folding as shown.
INFLATABLE SHIP FOLDING

Roll the ship into the black cover. Fold as shown.

When fully enclosed in black cover, tighten the provided straps. Then roll the entire ball onto the pallet and strap with ratchet- straps.
Installation

1. Determine position of flooring. Lay down plastic sheeting (if needed) to help the floor expand/contract with temperature changes. Plastic sheeting can be visqueen or painter's drop.

2. Open the crate and remove all boxes.

3. Locate the box with the first Row (A).

4. Open box and begin placing tiles, starting with (A-1) and continuing to snap together tiles in alphanumerical order (A-1, A-2, A-3, A-4,...).

5. When row is complete, begin with next row (B).

6. Repeat until floor is complete.

7. Disassembly is the inverse of Steps 1 – 4, starting with the last row and tile (I-18).
Cleaning Instructions

1) Use only water, mild-soap, and microfiber cloth as needed.
2) Do not use any harsh chemicals or abrasives.
Installation

1. Open the road cases
2. Remove the monitors and place in the corresponding locations. Pay close attention to the numbers on the back of the monitors.
3. Place the shelf on the back of the media wall in the corresponding location. Place the AV box on the shelf – ensure the top of the box clips over the frame.
4. Arrange the wiring harness along the frame using the included Velcro to attach.
5. Connect the HDMI and power connections for each monitor.
6. Plug in the power cord and adjust volume as needed.
PIE MEDIA WALL
1. Assemble the lower tension fabric frame per assembly labels and guides provided in this manual

2. Open all crates and prepare items for assembly.

3. Place baseplate in position.

4. Lower tension fabric frame onto baseplate and ensure holes align properly.

5. Install (5) bolts ¼-20 x 1” using a 7/16” socket.

6. Stretch fabric over frame and secure using Velcro at bottom. Ensure the bolt holes in the frame align with the holes in the fabric.


8. Using a ladder and/or an assistant, place the upper tension fabric structure on the lower tension fabric structure. Fasten with (7) flat-head bolts using 3/16” Alan key. Bolts attach from top-to-bottom.

9. Close the zipper on the upper tension fabric structure.

10. Install (11) Stand-off spacer barrels with the internal Phillips screws.

11. With a helper, align the graphic panel with tumbler Interactive. Be extra careful not to twist the graphic panel. Use the included support brackets to reinforce the lowest standoffs directly behind the tumbler box. **Avoid putting graphics on the floor as they are double-sided.**

12. With help from an assistant, lift the graphics panel and install with (11) stand-off caps.
Stretch fabric over frame and secure using Velcro at bottom. Ensure the bolt holes in the frame align with the holes in the fabric.
Assemble the upper tension fabric structure. Apply fabric and leave zipper open.

You may assemble on the floor, or using a ladder and/or an assistant, place the upper tension fabric structure on the lower tension fabric structure. Fasten with (7) flat-head bolts using 3/16” Alan key. Bolts attach from top-to-bottom.

You may drop bolts through the circular frame to make alignment easier.

Close the zipper on the upper tension fabric structure.
Install (11) Stand-off spacer barrels with the internal Phillips screws.
With a helper, align the graphic panel with tumbler Interactive. Be extra careful not to twist the graphic panel. Use the included support brackets to reinforce the lowest standoffs directly behind the tumbler box.

With help from an assistant, lift the graphics panel and install with (11) stand-off caps.
With a helper, align the graphic panel with tumbler Interactive. Be extra careful not to twist the graphic panel. Use the included support brackets to reinforce the lowest standoffs directly behind the tumbler box.

With help from an assistant, lift the graphics panel and install with (11) stand-off caps. **Avoid putting graphics on the floor as they are double-sided.**
DEEP SEA FOSSILS
1. Assemble the lower tension fabric frame per assembly labels and guides provided in this manual.

2. Open all crates and prepare items for assembly.

3. Place baseplate in position.

4. Lower tension fabric frame onto baseplate and ensure holes align properly.

5. Install (5) bolts ¼-20 x 1” using a 7/16” socket.

6. Install interactive sub-frame supports with (6) through-bolts using a Phillips and 7/16” wrench.

7. Stretch fabric over frame and secure using Velcro at bottom. Ensure the bolt holes in the frame align with the holes in the fabric.


9. Using a ladder and/or an assistant, place the upper tension fabric structure on the lower tension fabric structure. Fasten with (7) flat-head bolts using 3/16” Alan key. Bolts attach from top-to-bottom.

10. Close the zipper on the upper tension fabric structure.

11. Install (5) Stand-off spacer barrels with the internal Phillips screws.

12. Remove the (20) 10-24 screws on the side covers of the interactive for a better hand-hold. Use an allen-key inside one of the holes as a prying tool – Do not pry on the edge of the panel.

13. With help from an assistant, lift interactive panel into position and secure using (4) 3/8-16 x 1-1/2” bolts with plastic washers. Avoid putting graphics on the floor as they are double-sided.

14. Reinstall the side covers.

15. With help from an assistant, lift the graphics panel and install with (5) stand-off caps.
Install interactive sub-frame supports with (6) through-bolts using a Phillips and 7/16” wrench.
Stretch fabric over frame and secure using Velcro at bottom. Ensure the bolt holes in the frame align with the holes in the fabric.

Assemble the upper tension fabric structure. Apply fabric and leave zipper open.

Using a ladder and/or an assistant, place the upper tension fabric structure on the lower tension fabric structure. Fasten with (7) flat-head bolts using 3/16” Alan key. Bolts attach from top-to-bottom.

You may drop bolts through the circular frame to make alignment easier.

Close the zipper on the upper tension fabric structure.
Remove the (20) 10-24 screws on the side covers of the interactive for a better hand-hold. Use an allen-key inside one of the holes as a prying tool – Do not pry on the edge of the panel.
With help from an assistant, lift interactive panel into position and secure using (4) 3/8-16 x 1-1/2” bolts with plastic washers.
DRILLING THE DEEP
DRILLING THE DEEP
Reinstall the side covers.

With help from an assistant, lift the graphics panel and install with (5) stand-off caps.

Avoid putting graphics on the floor as they are double-sided.
DRILLING THE DEEP

Scientists must go deep under the seafloor to understand how our planet works.

It takes a huge drill bit to cut through the mud and rock under the seafloor.

SUPPORTED BY
1. Assemble the lower tension fabric frame per assembly labels and guides provided in this manual.

2. Open all crates and prepare items for assembly.

3. Place baseplate in position.

4. Lower tension fabric frame onto baseplate and ensure holes align properly.

5. Install (5) bolts ¼-20 x 1” using a 7/16” socket.

6. Stretch fabric over frame and secure using Velcro at bottom. Ensure the bolt holes in the frame align with the holes in the fabric.


8. Using a ladder and/or an assistant, place the upper tension fabric structure on the lower tension fabric structure. Fasten with (7) flat-head bolts using 3/16” Alan key. Bolts attach from top-to-bottom.

9. Close the zipper on the upper tension fabric structure.

10. Install (11) Stand-off spacer barrels with the internal Phillips screws.

11. With help from an assistant, lift interactive panel into position and secure using (6) stand-off caps. Note the position of the interactive tether. Avoid putting graphics on the floor as they are double-sided.

12. Install graphics panel using (5) stand-off caps.
Lower tension fabric frame onto baseplate and ensure holes align properly.

Install (5) bolts ¼-20 x 1” using a 7/16” socket.

Stretch fabric over frame and secure using Velcro at bottom. Ensure the bolt holes in the frame align with the holes in the fabric.
Assemble the upper tension fabric structure. Apply fabric and leave zipper open.

Using a ladder and/or an assistant, place the upper tension fabric structure on the lower tension fabric structure. Fasten with (7) flat-head bolts using 3/16” Alan key. Bolts attach from top-to-bottom. You may drop bolts through the circular frame to make alignment easier.

Close the zipper on the upper tension fabric structure.
WHAT IS A CORE?

Install (11) Stand-off spacer barrels with the internal Phillips screws.
1. With help from an assistant, lift interactive panel into position and secure using (6) stand-off caps. Note the position of the interactive tether.

2. Avoid putting graphics on the floor as they are double-sided.

3. Install graphics panel using (5) stand-off caps.
1. Assemble the tension fabric frame per assembly labels and guides provided in this manual

2. Open all crates and prepare items for assembly.

3. Place baseplate in position.

4. Lower tension fabric frame onto baseplate and ensure holes align properly.

5. Install (6) bolts ¼-20 x 1” using a 7/16” socket.

6. Stretch fabric over frame and secure using Velcro at bottom. Ensure the bolt holes in the frame align with the holes in the fabric.

7. Attach the side ‘wave’ supports with the (16) bolts using 7/32” Alan key. The bolts should have easy thread engagement, if you feel resistance, verify proper alignment. Forcing the bolts will cause irreparable damage to the Delrin threads. HAND TIGHTEN ONLY.

8. With two to three people, lift the ramp interactive and move into place. Rest the interactive on the attached post to maintain proper height.

9. Install the (4) alan bolts securing the sides of the interactive to the side-supports.

10. Install the (2) alan bolts at the bottom support post to the tension fabric frame.
Assemble the tension fabric frame per assembly labels and guides provided in this manual

Open all crates and prepare items for assembly.

Place baseplate in position.

Lower tension fabric frame onto baseplate and ensure holes align properly.

Install (6) bolts ¼-20 x 1” using a 7/16” socket.

Stretch fabric over frame and secure using Velcro at bottom. Ensure the bolt holes in the frame align with the holes in the fabric.
DEEP DARK LIFE
Attach the side ‘wave’ supports with the (16) bolts using 7/32” Alan key. The bolts should have easy thread engagement, if you feel resistance, verify proper alignment. Forcing the bolts will cause irreparable damage to the Delrin threads. HAND TIGHTEN ONLY.

With two to three people, lift the ramp interactive and move into place. Rest the interactive on the attached post to maintain proper height.
With two to three people, lift the ramp interactive and move into place. Rest the interactive on the attached post to maintain proper height.

Install the (4) alan bolts securing the sides of the interactive to the side-supports.

Install the (2) alan bolts at the bottom support post to the tension fabric frame.
1. Assemble the tension fabric frame per assembly labels and guides provided in this manual.

2. Open all crates and prepare items for assembly.

3. Place baseplate in position.

4. Lower tension fabric frame onto baseplate and ensure holes align properly.

5. Install (6) bolts ¼-20 x 1” using a 7/16” socket or wrench.

6. Stretch fabric over frame and secure using Velcro at bottom. Ensure the bolt holes in the frame align with the holes in the fabric.

7. Attach the side ‘wave’ supports with the (16) bolts using 7/32” Alan key. The bolts should have easy thread engagement; if you feel resistance, verify proper alignment. Forcing the bolts will cause irreparable damage to the Delrin threads. HAND TIGHTEN ONLY.

8. With two to three people, lift the Tsunami interactive and position in place between the wave supports.

9. Install the (8) bolts securing the sides of the interactive to the side-supports. Use a 7/32” alan key and 9/16” wrench.

10. Use the key (on carabiner) to open the lid on the interactive. Fill with 10 gallons of water (fill level just below the black plastic ramp under the city). Let water temperature normalize to ambient temperature before replacing lid.

11. To empty the interactive, use the supplied siphon pump to extract the water. Best location to place siphon is between the side-wall and rotating drum. Leave the lid removed and allow interactive to fully dry.
Assemble the tension fabric frame per assembly labels and guides provided in this manual.

Open all crates and prepare items for assembly.

Place baseplate in position.

Lower tension fabric frame onto baseplate and ensure holes align properly.

Install (6) bolts ¼-20 x 1” using a 7/16” socket or wrench.

Stretch fabric over frame and secure using Velcro at bottom. Ensure the bolt holes in the frame align with the holes in the fabric.
Attach the side ‘wave’ supports with the (16) bolts using 7/32” Alan key. The bolts should have easy thread engagement, if you feel resistance, verify proper alignment. Forcing the bolts will cause irreparable damage to the Delrin threads. HAND TIGHTEN ONLY.
With two to three people, lift the Tsunami interactive and position in place between the wave supports.

Install the (8) bolts securing the sides of the interactive to the side-supports. Use a 7/32” alan key and 9/16” wrench.
QUAKES & WAVES
Use the key to open the lid on the interactive. Fill with 9.5 to 10 gallons of water (fill level just below the black plastic ramp under the city).

To empty the interactive, use the supplied siphon pump to extract the water. Best location for siphon is between the side-wall and the rotating drum. Leave the lid removed and allow interactive to fully dry.
1. Assemble the tension fabric frame per assembly labels and guides provided in this manual

2. Open all crates and prepare items for assembly.

3. Place baseplate in position.

4. Lower tension fabric frame onto baseplate and ensure holes align properly.

5. Install (6) bolts ⅛-20 x 1” using a 7/16” socket.

6. Stretch fabric over frame and secure using Velcro at bottom. Ensure the bolt holes in the frame align with the holes in the fabric.

7. Attach the side ‘wave’ supports with the (16) bolts using 7/32” Alan key. The bolts should have easy thread engagement, if you feel resistance, verify proper alignment. Forcing the bolts will cause irreparable damage to the Delrin threads. HAND TIGHTEN ONLY.

8. Place the padded spacer block on the baseplate. With two to three people, lift the interactive and move into place. Rest the interactive on the padded spacer block to maintain proper height.

9. Install the (4) alan bolts securing the sides of the interactive to the side-supports.

10. Remove the padded box spacer.


12. Connect cables per diagram, connect (2) power cables to power, turn on the computer.
Assemble the tension fabric frame per assembly labels and guides provided in this manual.

Open all crates and prepare items for assembly.

Place baseplate in position.

Lower tension fabric frame onto baseplate and ensure holes align properly.

Install (6) bolts ¼-20 x 1” using a 7/16” socket.

Stretch fabric over frame and secure using Velcro at bottom. Ensure the bolt holes in the frame align with the holes in the fabric.
Attach the side ‘wave’ supports with the (16) bolts using 7/32” Alan key. The bolts should have easy thread engagement, if you feel resistance, verify proper alignment. Forcing the bolts will cause irreparable damage to the Delrin threads. HAND TIGHTEN ONLY.
Place the padded spacer block on the baseplate. With two to three people, lift the interactive and move into place. Rest the interactive on the padded spacer block to maintain proper height.

Install the (4) alan bolts securing the sides of the interactive to the side-supports. Remove the padded box spacer.
STORIES FROM THE CORE
STORIES FROM THE CORE
STORIES FROM THE CORE