

## Introduction

These are instructions for the OMEGA QAT to test the new exciting OMEGA Adventure Gym that Team 2 has developed utilizing the mandated 10 unique shapes, and at least 30 pieces from the OMEGA project kit. Based on the QAT recommendations for safety and instruction adjustments, this set of instructions will be modified to ensure the final product is safe and exciting for the children utilizing this play equipment in a typical public park setting.

The purpose of this document is to assist the QAT in reconstructing our design using descriptions of the parts and step by step instructions. This document will not include graphics of any kind.

The successful QAT will be familiar with Visio 2003 and have above average computer skills and mechanical aptitude. It is estimated that each section will take approximately 10 minutes to assemble for a total of 60 minutes.

The following supplemental information will aid you in preparing to assemble the OMEGA Adventure Gym. In addition there is a trouble shooting section at the end of the document.

- Prepare for construction by opening the OMEGA kit in Microsoft Visio 2003 and finding the **Design Pad** page. This is where you will construct the OMEGA Adventure Gym.

### THE PARTS LISTS

- The parts lists refer to parts on the **Mixed Parts** pages. It may be helpful, but not necessary, to insert a new page to gather the parts you will be using for the design. **Be careful to use the dimensions to find the proper part.**
- When the parts lists call for more than one of any given shape, the user can find ONE shape on the **Mixed Shapes** pages and **copy** and **paste** it multiple times to get the necessary number of that shape.
- Width and Height dimensions are based on the **Size & Position Window** – not on the status bar rounded sizes.
- Color and Pattern **codes** are included to avoid confusion. Many parts are similar in size and shape. Use the included color codes to be certain the correct shape is chosen.
- Use all the information in the parts lists when there is more than one possibility for a shape (for example, if there are 2 green rectangles on one page, find one that fits all aspects of the parts list).

### THE STEPS

- Parts will be placed using x and y coordinates which can be found and edited in the **Size & Position Window**.
- **Bold text** refers to menu items or commands as well as coordinates.
- The step by step instructions assume users have knowledge of **Copying** and **Pasting** shapes from the **Mixed Shapes** pages. The command, **“place”**, is in lieu of **“Copy and Paste”**
- Be sure to keep the **Size & Position Window** open at all times by clicking the Push-pin.

## Instructions

LADDER PARTS					
Quantity (ea.)	Shape	Color (Code)	Pattern (Code)	Dimensions (inches)	
2	Rectangle	Red (02)	Solid (01)	W H	6.0 0.5
7	Rectangle	Light Blue (07)	Diag. Lines (02)	W H	1.25 0.5
9	← Total Parts for Ladder				

The Red Rectangles are the stiles (sides) of the ladder. The Light Blue Rectangles w/Diagonal Lines are the ladder rungs.

### 1. LADDER STILES

- 1.1. Place both Red Rectangles on the design pad.
- 1.2. Use keyboard shortcut **Ctrl + A** to select both Red Rectangles.
- 1.3. Use keyboard shortcut **Ctrl + R** to rotate both Red Rectangles to the right.
- 1.4. From the menu bar choose **View > Size & Position Window** to see the X and Y coordinates of the Red Rectangle.
- 1.5. Click on the push-pin icon on the **Size & Position Window** to keep it open for the duration of the construction.
- 1.6. Place one Red Rectangle at coordinates  
**X: 0.8125 in., Y: 3.25 in.**
- 1.7. Place the second Red Rectangle at coordinates  
**X: 2.3125 in., Y: 3.25 in.**

### 2. LADDER RUNGS – Hint: all seven light blue rectangles have the same X coordinate: 1.5625 in.

- 2.1. Place one Light Blue Rectangle w/Diagonal Lines on the design pad at coordinates  
**X: 1.5625 in., Y: 0.5 in.**
- 2.2. Place a second Light Blue Rectangle w/Diagonal Lines on the design pad at coordinates  
**X: 1.5625 in., Y: 1.25 in.**
- 2.3. Place a third Light Blue Rectangle w/Diagonal Lines on the design pad at coordinates  
**X: 1.5625 in., Y: 2.0 in.**
- 2.4. Place a fourth Light Blue Rectangle w/Diagonal Lines on the design pad at coordinates  
**X: 1.5625 in., Y: 2.75 in.**
- 2.5. Place a fifth Light Blue Rectangle w/Diagonal Lines on the design pad at coordinates  
**X: 1.5625 in., Y: 3.5 in.**
- 2.6. Place a sixth Light Blue Rectangle w/Diagonal Lines at on the design pad coordinates  
**X: 1.5625 in., Y: 4.25 in.**
- 2.7. Place a seventh Light Blue Rectangle w/Diagonal Lines on the design pad at coordinates  
**X: 1.5625 in., Y: 5.0 in.**
- 2.8. HINT: The top rung is not at the top of the ladder stiles.
- 2.9. Save your work.

**Important:** If instructions were followed in order, all Light Blue Rectangle w/Diagonal Lines should be in front of the two Red Rectangles.

See the Troubleshooting Section at the end of the document if you have any problems.

FORT PARTS					
Quantity (ea.)	Shape	Color (Code)	Pattern (Code)	Dimensions (inches)	
1	Rectangle	Light Green (03)	Solid (01)	W H	0.625 2.5
2	Rectangle	Yellow (05)	Solid (01)	W H	0.375 2.25
2	Right Triangle	Blue (04)	Solid (01)	W H	1.5 1.0
5	← Total Parts for Fort				

The Light Green Rectangle is the bottom of the fort. The 2 Yellow Rectangles support the roof. The two Blue Right Triangles comprise the roof.

### 3. FORT BASE

- 3.1. Place one Light Green Rectangle on the design pad at coordinates  
**X: 1.5625 in., Y: 5.1875 in..**
- 3.2. With the Light Green Rectangle still selected, use keyboard shortcut **Ctrl + R** to rotate the shape right.
- 3.3. With the Light Green Rectangle still selected choose **Shape > Order > Send to Back** from the menu bar.

### 4. ROOF SUPPORTS

- 4.1. Place one Yellow Rectangle on the design pad at coordinates  
**X: 0.5 in, Y: 6.25 in.**
- 4.2. With the Yellow Rectangle still selected choose **Shape > Order > Send to Back** from the menu bar.
- 4.3. Place the second Yellow Rectangle on the design pad at coordinates  
**X: 2.625 in, Y: 6.25 in.**
- 4.4. With the second Yellow Rectangle still selected choose **Shape > Order > Send to Back** from the menu bar.

### 5. ROOF

- 5.1. Place one Blue Right Triangle at coordinates  
**X: 0.8125 in, Y: 7.75 in.**
- 5.2. Place the second Blue Right Triangle at coordinates  
**X: 2.3125 in., Y: 7.75 in.**
- 5.3. With the second Blue Right Triangle still selected hit **Ctrl + H** on your keyboard to flip the Blue Right Triangle horizontally.
- 5.4. Save your work.

**Important:** If instructions were followed correctly, the fort is behind the ladder and the roof is in front of the roof supports.

See the Troubleshooting Section at the end of the document if you have any problems.

TUNNEL					
Quantity (ea.)	Shape	Color (Code)	Pattern (Code)	Dimensions (inches)	
2	Rectangle	Plum (no code) <sup>1</sup>	Solid (01)	W H	2.625 1.5
6	Circle	Light Blue (07)	Solid (01)	W H	0.3839 0.3839
8	← Total Parts for Tunnel				

The two Plum Rectangles are the tube part of the tunnel. The six Light Blue Circles are windows in the tunnel.

## 6. TUNNEL SECTIONS

- 6.1. Place one Plum Rectangle on the design pad at coordinates  
**X: 4.0625 in., Y: 6.0 in.**
- 6.2. Place the second Plum Rectangle on the design pad at coordinates  
**X: 6.5625 in., Y: 6.0 in.**

## 7. TUNNEL WINDOWS –Hint: all light blue circles have the same Y coordinate: 6.0 in.

- 7.1. Place one Light Blue Circle on the design pad at coordinates  
**X: 3.2545 in., Y: 6.0 in.**
- 7.2. Place a second Light Blue Circle on the design pad at coordinates  
**X: 4.067 in., Y: 6.0 in.**
- 7.3. Place a third Light Blue Circle on the design pad at coordinates  
**X: 4.8705 in., Y: 6.0 in.**
- 7.4. Place a fourth Light Blue Circle on the design pad at coordinates  
**X: 5.8705 in., Y: 6.0 in.**
- 7.5. Place a fifth Light Blue Circle on the design pad at coordinates  
**X: 6.6205 in., Y: 6.0 in.**
- 7.6. Place a sixth Light Blue Circle on the design pad at coordinates  
**X: 7.3125 in., Y: 6.0 in.**
- 7.7. Save your work.

**Important:** If instructions were followed correctly, the tunnel is in front of the fort and the windows are in front of the tunnel sections.

See the Troubleshooting Section at the end of the document if you have any problems.

<sup>1</sup> The Plum Rectangle has no code associated with it. The associated RGB values of 128, 0, 64 can be accessed through “More Colors” in the Format Fill dialog box.

STEERING WHEEL AREA PARTS					
Quantity (ea.)	Shape	Color (Code)	Pattern (Code)	Dimensions (inches)	
2	Rectangle	Gray (17)	Diag. Lines (02)	W H	3.0 0.5
4	Rounded Rectangle	Red (02)	Solid (01)	W H	1.5748 1.1811
1	Circle	Light Green (03)	Solid (01)	W H	1.8248 1.8248
1	Circle	Olive Green (11)	Black Gradient (36)	W H	1.5 1.5
1	Cross	Yellow (05)	Crosshatch (04)	W H	1.5 1.5
9	← Total Parts for Steering Wheel Area				

The Gray Rectangles w/Diagonal Lines are the platform. The four Rounded Rectangles form the steering wheel framework. The Circles and Cross combine to form the steering wheel.

## 8. PLATFORM

- 8.1. Place one Gray Rectangle w/Diagonal Lines on the design pad at coordinates  
**X: 9.0625 in., Y: 5.25 in.**
- 8.2. With the Gray Rectangle w/Diagonal Lines still selected choose **Shape > Order > Send to Back** from the menu bar.
- 8.3. Place a second Gray Rectangle w/Diagonal Lines on the design pad at coordinates  
**X: 11.9749 in., Y: 5.25 in.**

## 9. FRAMEWORK

- 9.1. Place one Red Rounded Rectangle on the design pad at coordinates  
**X: 9.7751 in., Y: 6.0906 in.**
- 9.2. Place a second Red Rounded Rectangle on the design pad at coordinates  
**X: 10.8125 in., Y: 6.0906 in.**
- 9.3. Place a third Red Rounded Rectangle on the design pad at coordinates  
**X: 9.7751 in., Y: 7.0906 in.**
- 9.4. Place a fourth Red Rounded Rectangle on the design pad at coordinates  
**X: 10.8125 in., Y: 7.0906 in.**

## 10. STEERING WHEEL

- 10.1. Place one Light Green Circle on the design pad at coordinates  
**X: 10.3125 in., Y: 6.5876 in.**
- 10.2. Place one Olive Green/Black Gradient Circle on the design pad at coordinates  
**X: 10.3125 in., Y: 6.6127 in.**
- 10.3. Place one Yellow Cross w/Crosshatch pattern on the design pad at coordinates  
**X: 10.3125 in., Y: 6.6127 in.**
- 10.4. Save your work.

**Important:** If instructions were followed correctly, the left end of the platform is behind the tunnel, and the cross is the front most piece of the steering wheel.

See the Troubleshooting Section at the end of the document if you have any problems.

SLIDE PARTS					
Quantity (ea.)	Shape	Color (Code)	Pattern (Code)	Dimensions (inches)	
2	Rectangle	Dark Green (09)	Vertical Lines (07)	W H	3.0 0.5
2	Rectangle	Dark Green (no code) <sup>2</sup>	Solid (01)	W H	1.375 0.75
2	Rectangle	Light Green (03)	Solid (01)	W H	0.625 2.5
6	← Total Parts for Slide				

The Dark Green Rectangles w/Vertical Lines form slant of the slide. The two Dark Green Rectangles form the top and bottom of the slide. The Light Green Rectangles form the support of the slide.

### 11. SLIDE SLANT

- 11.1. Place one Green Rectangle w/Vertical Lines on the design pad at coordinates  
**X: 11.9688 in., Y: 4.2374 in.**
- 11.2. With the Green Rectangle w/Vertical Lines still selected, set the **Angle to 45 degrees** in the **Size & Position Window**.
- 11.3. Place a second Green Rectangle w/Vertical Lines on the design pad at coordinates  
**X: 10.3811 in., Y: 2.6376 in.**
- 11.4. With the second Green Rectangle w/Vertical Lines still selected, set the **Angle to 45 degrees** in the **Size & Position Window**.

### 12. TOP AND BOTTOM OF SLIDE

- 12.1. Place one Dark Green Rectangle on the design pad at coordinates  
**X: 13.3125 in., Y: 5.125 in.**
- 12.2. Place a second Dark Green Rectangle on the design pad at coordinates  
**X: 8.8125 in., Y: 1.625 in.**
- 12.3. With the second Dark Green Rectangle still selected choose **Shape > Order > Send to Back** from the menu bar.

### 13. SLIDE SUPPORT

- 13.1. Place one Light Green Rectangle on the design pad at coordinates  
**X: 13.5812 in., Y: 4.0 in.**
- 13.2. Place a second Light Green Rectangle on the design pad at coordinates  
**X: 13.5812 in., Y: 1.5 in.**
- 13.3. Save your work.

**Important:** If instructions were followed correctly, the slide is in front of the tunnel platform and the slide support is in front of the slide top.

See the Troubleshooting Section at the end of the document if you have any problems.

<sup>2</sup> The Dark Green Rectangle has no code associated with it. The associated RGB values of 0, 128, 64 can be accessed through "More Colors" in the Format Fill dialog box.

BRIDGE PARTS				
Quantity (ea.)	Shape	Color (Code)	Pattern (Code)	Dimensions (inches)
1	Octagon	Gray (16)	Black Gradient(34)	W 1.5 H 1.5
1	45 Degree Tail Arrow	Blue (04)	Solid (01)	W 1.811 H 0.5
1	Hexagon	Red (02)	Solid (01)	W 1.5 H 1.5
2	Rectangle	Purple (12)	Horizontal Lines (06)	W 3.0 H 0.5
2	Equilateral Triangle	Yellow (05)	Crosshatch (04)	W 1.5 H 1.5 Angle 0 deg.
10	Circle	Pink (06)	Solid (01)	W 0.3839 H 0.3839
1	Actor	Blue (04)	Solid (01)	W 0.7356 H 2
1	Rectangle	Yellow (05)	Solid (01)	W 0.375 H 2.25
2	1-Line Right-Angle Elbow Connector <sup>3</sup>	Black (00)	Solid (01)	W 1.0 H 1.0
21	← Total Parts for Bridge			

The Gray/Black Gradient Octagon, together with the Blue Arrow, forms the right landing of the bridge as well as indicates the suggested direction of play. The Purple w/Horizontal Lines Rectangles and Yellow Triangles w/Crosshatch pattern form the supports of the bridge. The Pink Circles indicate the “logs” that make up the bridge walkway. The Yellow Rectangle combines with the Right-Angle Elbow Connectors to form the hand rail. The Red Hexagon is the landing on the left side of the bridge. The Actor demonstrates the scale of the project.

#### 14. BRIDGE LANDINGS

- 14.1. Place one Gray/Black Gradient Octagon on the design pad at coordinates  
**X: 8.875 in., Y: 1.0 in.**
- 14.2. Place one Blue 45 Degree Tail Arrow on the design pad at coordinates  
**Begin X: 9.3061 in., Begin Y: 1.0 in.**  
**End X: 8.125 in., End Y: 1.0 in.**
- 14.3. Place a Red Hexagon on the design pad at coordinates  
**X: 3.4375 in., Y: 1.0 in.**

#### 15. BRIDGE SUPPORTS

- 15.1. Place one Purple Rectangle w/Horizontal Lines on the design pad at coordinates  
**X: 8.1875 in., Y: 1.75 in.**
- 15.2. With the Purple Rectangle w/Horizontal Lines still selected, use keyboard shortcut **Ctrl + R** to rotate the shape to the right.
- 15.3. With the Purple Rectangle w/Horizontal Lines still selected choose **Shape > Order > Send Backward**.

<sup>3</sup> Any of the 1 inch 1-Line Right-Angle Elbow Connectors can be chosen. The angle will be set in the step-by-step instructions.

- 15.4. With the same Purple Rectangle w/Horizontal Lines still selected choose **Shape > Order > Send Backward** again (the rectangle needs to be behind the arrow and octagon, but in front of the short green rectangle that ends the slide).
- 15.5. Place a second Purple Rectangle w/Horizontal Lines on the design pad at coordinates **X: 4.0625 in., Y: 1.75 in.**
- 15.6. With the second Purple Rectangle w/Horizontal Lines still selected, use keyboard shortcut **Ctrl + R** to rotate the shape to the right.
- 15.7. Place a Yellow Triangle w/Crosshatch Pattern on the design pad at coordinates **X: 8.25 in., Y: 3.5 in.**
- 15.8. Place a Yellow Triangle w/Crosshatch Pattern on the design pad at coordinates **X: 4.125 in., Y: 3.5 in.**

#### 16. BRIDGE WALKWAY

- 16.1. Place one Pink Circle on the design pad at coordinates **X: 7.7545 in., Y: 1.5 in.**
- 16.2. Place a second Pink Circle on the design pad at coordinates **X: 7.4464 in., Y: 1.308 in.**
- 16.3. Place a third Pink Circle on the design pad at coordinates **X: 7.1384 in., Y: 1.058 in.**
- 16.4. Place a fourth Pink Circle on the design pad at coordinates **X: 6.7545 in., Y: 1.0 in.**
- 16.5. Place a fifth Pink Circle on the design pad at coordinates **X: 6.3884 in., Y: 0.942 in.**
- 16.6. Place a sixth Pink Circle on the design pad at coordinates **X: 5.9464 in., Y: 0.942 in.**
- 16.7. Place a seventh Pink Circle on the design pad at coordinates **X: 5.5045 in., Y: 0.942 in.**
- 16.8. Place a eighth Pink Circle on the design pad at coordinates **X: 5.1384 in., Y: 1.058 in.**
- 16.9. Place a ninth Pink Circle on the design pad at coordinates **X: 4.7545 in., Y: 1.192 in.**
- 16.10. Place a tenth Pink Circle on the design pad at coordinates **X: 4.5045 in., Y: 1.442 in.**

#### 17. HAND RAIL/ACTOR

- 17.1. Place one Blue Actor on the design pad at coordinates **X: 6.0 in., Y: 2.0 in.**
- 17.2. Place one Yellow Rectangle on the design pad at coordinates **X: 6.125 in., Y: 2.0625 in.**
- 17.3. With the Yellow Rectangle still selected use keyboard shortcut **Ctrl + R** to rotate the shape to the right.
- 17.4. Place one 1-Line Right-Angle Elbow Connector on the design pad at coordinates **Begin X: 4.2656 in. , Begin Y: 3.0 in.**  
**End X: 5.2656 in., End Y: 2.0 in.**  
**Angle: -45 deg.**
- 17.5. With the 1-Line Right-Angle Elbow Connector still selected choose **Shape > Order > Send to Back** from the menu bar.
- 17.6. Place a second 1-Line Right-Angle Elbow Connector on the design pad at coordinates **Begin X: 8.0625 in. , Begin Y: 3.0 in.**  
**End X: 7.0625 in., End Y: 2.0 in.**  
**Angle: -135 deg.**

**17.7.** With the second 1-Line Right-Angle Elbow Connector selected choose **Shape > Order > Send to Back** from the menu bar.

**Important:** If instructions were followed correctly, the arrow is in front of the octagon. The octagon is in front of the bridge support which is in front of the slide. The bridge supports are in front of the connectors. The actor is behind the hand rail. The hexagon is behind the bridge supports.

See the Troubleshooting Section at the end of the document if you have any problems.

## **Conclusion**

Congratulations! As a member of the OMEGA QAT Team, you have successfully completed the Omega Adventure Gym. The Omega Adventure Gym is a product that will be an entertaining playground for children enjoy when used responsibly.

The Omega Adventure Gym consists of 6 distinct sections which include: a ladder, a fort, a tunnel, a steering wheel, a slide, and a bridge. The finished product is intended to allow a child to climb the ladder, navigate through the tunnel, and perhaps pause to peek through the tunnel windows. Children will then play with the steering wheel before cruising down the slide, tottering over the wobbly bridge, and ending at the base of the ladder to enjoy all over again. After completing the project, it is easy to see that the Omega Adventure Gym, deftly designed and aesthetically pleasing to children, is a replica of what could be a child's playtime dream.

Thank you for participating in Team 2's Omega Adventure Gym. For your convenience, there is a trouble shooting section on the next page which addresses design concerns and software issues. If you have further questions regarding this project, please contact the Project Manger, Shelby Gordon via e-mail: [sg23@njit.edu](mailto:sg23@njit.edu).

## Troubleshooting

### SIZE & POSITION WINDOW

- 1 If the **Size & Position Window** is completely white with no data, simply click on the shape you need to position and the coordinates appear – clicking on the shapes toggles the **Size & Position Window** on and off.
- 2 If you lose the **Size & Position Window**, it can be found under View from the menu bar.

### SELECTING A SHAPE

- 3 If you click too many times to select a shape, a white text box with blinking cursor appears. Simply hit escape to exit the text box mode.

### TYPOS

- 4 Due to the number of coordinates, the complexity of the design, and the absence of graphics, it is prudent to double check coordinates for typos.

### FINDING THE CORRECT SHAPE

- 5 When searching for the correct shape, the patterns can be confusing. Shapes used in this project are listed in the Parts tables with corresponding color and fill pattern codes.  

To find the fill or pattern code of the shapes on the **Mixed Shapes** pages simply right-click on the shape and choose **Format > Fill**. The fill pattern will be shown as well as the associated code.
- 6 The bridge supports use Yellow Equilateral Triangles. Note that the **Mixed Shapes** include two choices for the exact same shape – one is at a 90 degree angle, the other is at a 0 degree angle. The parts list specifies the 0 degree angle, but it is an easy mistake to make.
- 7 A Right Triangle has one right angle (90 degrees). An Equilateral Triangle has 3 equal angles.