Step 1: Build TE-23002, TE-23003 and TE-23004.

Step 2: Bolt together using 1/4-20 x 4" long hex head bolts and wing nuts, using 4 spacers in between each assembly. Washers are optional.

This can be converted to a co-op GRID by swapping out the 1 for another 2.

**ITEM NO. PART NUMBER DESCRIPTION QTY.**
1 TE-23002 End Cone Ramp (Right) 1
2 TE-23003 Middle Cone Ramp 1
3 TE-23004 Cube Shelf 1
4 TE-23006 Spacer Plywood 4
5 hex._25_20_partial Steel Hex Head Bolt, 1/4-20 x 4", partially threaded 4
6 wing._25_20 Steel Wing Nut, 1/4-20, 31/64" Base Diameter 4
NOTE: All holes shown are for bolt/wing nut connections that are included to make it easier to store this assembly. If storage of this assembly is not a concern, wood screws could be used instead of bolts and wing nuts, and all drilled holes can be skipped except for the bolts that hold the poles and the holes in TE-23003.
Step 1: Assemble floor frame of Cone Ramp with #8 wood screws as shown.

Please note orientation of all holes in 4 while assembling. The holes in the two side beams should match up.
Step 2: Assemble 2x Cone Ramp Vertical assemblies using #8 wood screws as shown. Make a "left hand" and "right hand" version as shown.
Step 3: Assemble Cone Ramp Diagonal Assembly with #8 wood screws as shown. Note orientation of holes while assembling.
Step 4: If making the poles yourself, install the (12) caps to the end of the pipe with no holes with an arbor press or mallet.

There is a CAD file of a similar but not exact version of the cap in the shared CAD files for this assembly that can be 3D Printed.

Apply 2 pieces of (13) vision tape per pole as shown.

These poles with caps installed can be purchased from AndyMark. These do not include the drilled holes or applied vision tape.
Step 5: Attach the Vertical Assemblies to the Floor Frame using 1/4-20 x 2.5" Long Hex Bolts 14 and 1/4-20 Wing Nuts 18. Washers are optional.

Note the orientation of the 7 panels being on the inside of the frame.

This step can be done with wood screws instead of bolts and wing nuts if storage space is not a concern.
Step 6: Install Poles into assembly using 1/4-20 x 5" Long Bolts 17 and Wing nuts 18. Washers are optional. Note that the tall pole is the one closer to the vertical assemblies.

This assembly is designed to be either a left or right end cone ramp, depending on what side both poles are bolted to. It will be relatively simple to adjust this later if you want to change which end you have built.
Step 7: Install Diagonal Assembly over the poles, and bolt into place with 1/4-20 x 3.5" Long Bolts (15) and wing nuts (18). Washers are optional.

This assembly is designed so that it can be a left or right end cone ramp because of the two sets of holes in the diagonal assembly. If you have only one drilled one set of holes, it will only work that way.
Step 8: Attach 3 to each of the poles with cable ties that go around the poles and through the holes in 3.
In this example, the poles are on the left side of the assembly so the beam should be bolted on to the right side of the frame.

Step 9: Bolt onto the side of the frame opposite of the installed poles using 1/4-20 x 4" long bolts and wing nuts. Washers are optional.

2 spacers can be used to accurately represent the size of the real GRID frame and locate the End Cone Ramp off of a wall correctly.
NOTE: All holes shown are for bolt/wing nut connections that are included to make it easier to store this assembly. If storage of this assembly is not a concern, wood screws could be used instead of bolts and wing nuts, and all drilled holes can be skipped except for the bolts that hold the poles and the holes in TE-23003.

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>PART NUMBER</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>1</td>
<td>TE-23007</td>
<td>Shark Fin</td>
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<tr>
<td>2</td>
<td>TE-23008</td>
<td>Cone Ramp Horizontal</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>TE-23010</td>
<td>Cone Ramp Crossbeams</td>
<td>4</td>
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<td>4</td>
<td>TE-23011</td>
<td>Cone Ramp Vertical</td>
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<td>5</td>
<td>TE-23012</td>
<td>Cone Ramp Gusset</td>
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<td>6</td>
<td>TE-23013</td>
<td>Cone Ramp Diagonal Beam</td>
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<td>7</td>
<td>TE-23015</td>
<td>Cone Ramp Diagonal Panel</td>
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<tr>
<td>8</td>
<td>TE-23016</td>
<td>Lower Pole</td>
<td>1</td>
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<td>9</td>
<td>TE-23017</td>
<td>Upper Pole</td>
<td>1</td>
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<td>10</td>
<td>CCF-RT-13-1</td>
<td>Pole Cap</td>
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<td>11</td>
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<td>washer_flat_25</td>
<td>Flat Washer for 1/4&quot; Screw</td>
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</table>
Step 1: Assemble floor frame of Cone Ramp with #8 wood screws as shown.

Please note orientation of all holes in 2 while assembling. The holes in the two side beams should match up.
Step 2: Assemble 2x Cone Ramp Vertical assemblies using #8 wood screws as shown. Make a “left hand” and “right hand” version as shown.
Step 3: Assemble Cone Ramp Diagonal Assembly with #8 wood screws as shown. Note orientation of holes while assembling.
Step 4: If making the poles yourself, install the (10) caps to the end of the pipe with no holes with an arbor press or mallet.

There is a CAD file of a similar but not exact version of the cap in the shared CAD files for this assembly that can be 3D Printed.

Apply 2 pieces of (11) vision tape per pole as shown.

These poles with caps installed can be purchased from AndyMark. These do not include the drilled holes or applied vision tape.
Step 5: Attach the Vertical Assemblies to the Floor Frame using 1/4-20 x 2.5" Long Hex Bolts 12 and 1/4-20 Wing Nuts 15. Washers are optional.

Note the orientation of the panels being on the inside of the frame.

This step can be done with wood screws instead of bolts and wing nuts if storage space is not a concern.
Step 6: Install Poles into assembly using 1/4-20 x 5" Long Bolts (14) and Wing nuts (15). Washers are optional. Note that the tall pole is the one closer to the vertical assemblies.
Step 7: Install Diagonal Assembly over the poles, and bolt into place with 1/4-20 x 3.5" Long Bolts (16) and wing nuts (15). Washers are optional.
Step 8: Attach 1 to each of the poles with cable ties that go around the poles, and through the holes in 1.
NOTE: All holes shown are for bolt/t-nut connections that are included to make it easier to store this assembly. If storage of this assembly is not a concern, wood screws could be used instead of bolts and t-nuts and all drilled holes can be skipped.
Step 1: Assemble 2x Cube Shelf Side Frames using #8 wood screws. Match orientation of t-nut holes as shown above if you are using them.
Step 2: Install 14 t-nuts as shown if you are using them for storage.
Step 3: Attach 1, 8 and 9 to the Cube Shelf Side Frames with #8 wood screws as shown. Create a left and right version, as shown below.

If you are building a full GRID or set of GRIDS, these holes should be oriented as shown.
Step 4: Attach 10, 11, and 12 panels to the frames with 1/4-20 x 2' Long Hex Head Bolts into t-nuts as shown (or #8 wood screws), washers are optional. Panels should end up flush with each other at the top edges.
33.69

2x \( \frac{1}{16} \) THRU ALL

2.63

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL: \( \frac{1}{16} \)
ANGULAR: MACH \( 1^\circ \)
THREE PLACE DECIMAL: \( 0.001 \)
MATERIAL/FINISH:
1.25" SCH40 AL Tube

DO NOT SCALE DRAWING

LOWER POLE

TEAM
NAME
DATE
DRAWN
JO
12/21/2022

PROPRIETARY AND CONFIDENTIAL
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COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.
2x \( \frac{3}{16} \) [\( \frac{1}{2} \)] thru all
2x 1.75 \( \frac{3}{4} \) 29.00 [29]

1.50 [1 \( \frac{1}{2} \)]

9.00 [9]

2x \( \phi \) .31 [5/16] THRU ALL

REVISIONS

ZONE REV. DESCRIPTION DATE APPROVED
A A Hole Location Change 1/4/2023 JO
B B

A

DO NOT SCALE DRAWING

C Cube Shelf Rear Vertical

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL: \( \frac{1}{16} \)
ANGULAR: MACH \( \pm 1^\circ \)
TWO PLACE DECIMAL: \( \pm 0.13 \)
THREE PLACE DECIMAL: \( \pm 0.125 \)

MATERIAL/FINISH:
2" x 4" Lumber

PROPRIETARY AND CONFIDENTIAL
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COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.

TEAM NAME DATE
DRAWN JO 11/7/2022

TITLE: Cube Shelf Rear Vertical

SIZE DWG. NO. REV
A C TE-23020
**Cube Shelf Front Panel**

**Material/Finish:**
1/2" Plywood

**Dimensions:**
- **18.50 [18 1/2] ft** (18.75 ft \[16 5/8\], 2x 1.75 \[3/4\], 2x .75 \[3/4\], 2x 6.50 \[6 1/2\], 2x 20.50 \[20 1/2\], 23.50 \[23 1/2\], 4x .28 [9/32], thru all)

**Notes:**
- **DO NOT SCALE DRAWING**
- **PROPRIETARY AND CONFIDENTIAL**
- **UNLESS OTHERWISE SPECIFIED:**
  - Dimensions are in inches.
  - Tolerances:
    - Fractional ±1/16
    - Angular, Machined ±1°
    - Two place decimal ±1/32
    - Three place decimal ±1/128
  - Material/finish:
    - 1/2" Plywood
  - Comments:
    - Remove all burrs and sharp edges.

**Scale:**
2:5

**Sheet:** 1 of 1

**Drawn:**
Jo

**Date:**
11/7/2022