

**TERRA NOVUS
2017-2018**

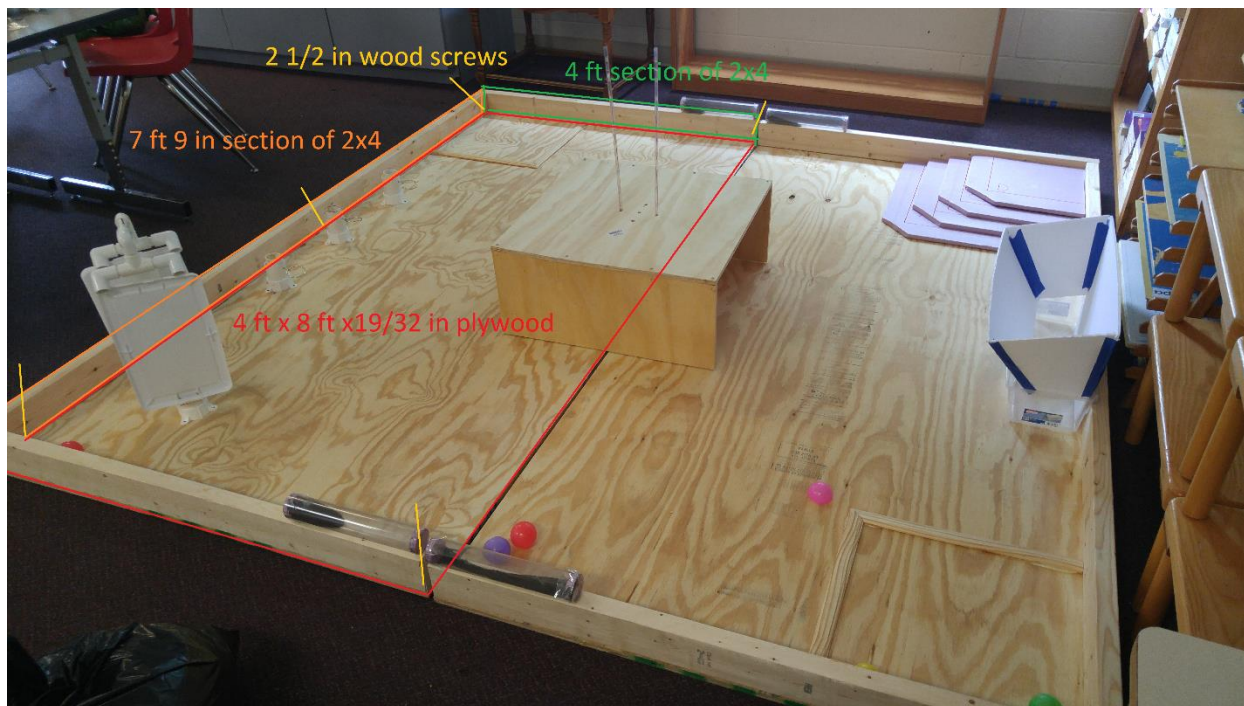
BUILD INSTRUCTIONS

E3 ROBOTICS COMPETITION

Note: The pictures included in the accompanying file will give a more in-depth view of each piece. Request other instructions if the pictures are unclear.

12x 3/4" wood screw for mounting PVC bases to field

Field of Play For 1/2 a field



Field of play for a full 8x8 field

Materials:

2x 4' by 8' by 19/32" Plywood

2"x 8' 2"x 4"

2"x 7' 9" 2" x 4"

2 1/2 " Wood Screws

Procedures:

No cutting is needed for the plywood.

Two 2x4 beams will need to be cut down by 3 inches then cut in half

The 8 foot beams will be placed along the 8 foot sides of plywood as shown in the picture than the cut 2x4s will be put on the short sides of the plywood.

Attach screws where they will effectively hold the two by fours and screw in through the bottom of the plywood.

Satellite

Materials:

2x 8"x 14 ½ Tupperware Tops

2x 2" hinges (with added screws)

3" x 2" Plywood shims

14" x 2 ½ PVC pipe

22" metal rod/dowel

2 1/2 " end cap base (PVC) (with screw holes)

4" x 1" PVC pipe

2x 1" PVC 90o elbow joints

2x 2" x 1" PVC pipe

2x 1" Three-way T-joints (PVC)

4x 1" x 1" PVC pipe

4x 1" (abc angle three-way PVC splitter)

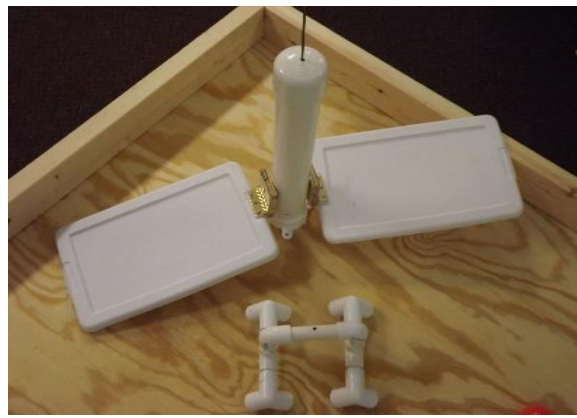
4x 1" wood screw

Procedures:

The base will be drilled in to the plywood with short screws a foot from each side. Attach the 2 ½ in PVC pipe to the base. Set the cap on top of that pipe and drill a hole in the middle of the cap to be able to fit the 22 in metal rod into.

The hinges should be screwed into the plywood shims and the Tupperware tops should be glued or otherwise attached to the hinges so they can swing down. The full assembly should be screwed into the PVC pipe or securely attached.

The holder on top can be seen in the pictures above.



Partitioning Carbon

Materials:

24oz. of magnetic fillings (60oz. in each)

4x 1' or 12" sections of 2" acrylic pipe

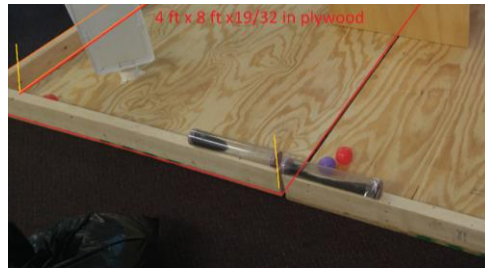
2" diameter foam plugs (x8)

Packing tape to seal plugs

24x Velcro squares

Procedures:

The acrylic tube should be capped on one end with the foam plug and then filled with the magnetic fillings then capped on the other. The caps should be sealed with tape or other complete seal methods. Velcro to table



Base Camp

Materials:

4x 18"x x 1 ½" floor trim (cut one side at 45o angle)



Gorilla Glue

Procedures:

Wood trimming should be cut at a 45-degree angle and each long side should measure 18 inches.

Ore Collection

Materials:

2x 8" x 14 ½" Tupperware bins (one short end cut from each)

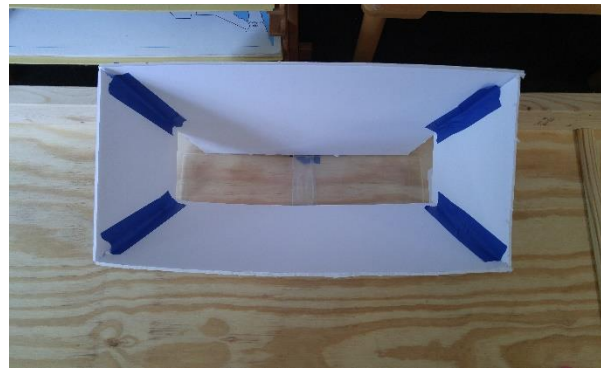
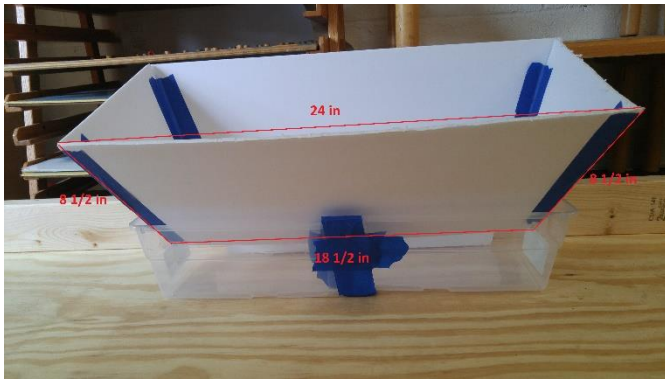
Foam Board

Packing Tape

Ball-pit balls

Procedures:

The plastic Tupperware should each have an end cut off and attached to each other. Foam board should be cut into a bucket shape. This can be trapezoids or any other shape to collect the balls. This bucket shape should then be placed inside the plastic Tupperware.



Rough Terrain

Materials:

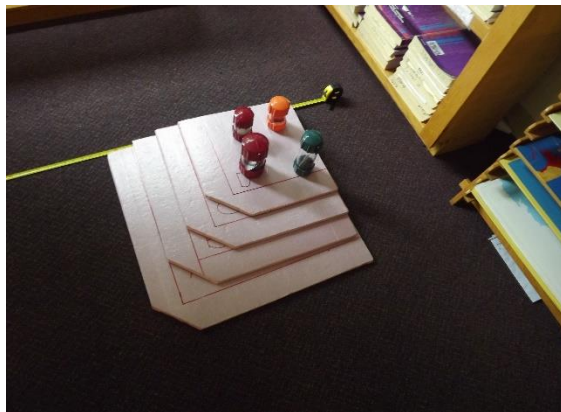
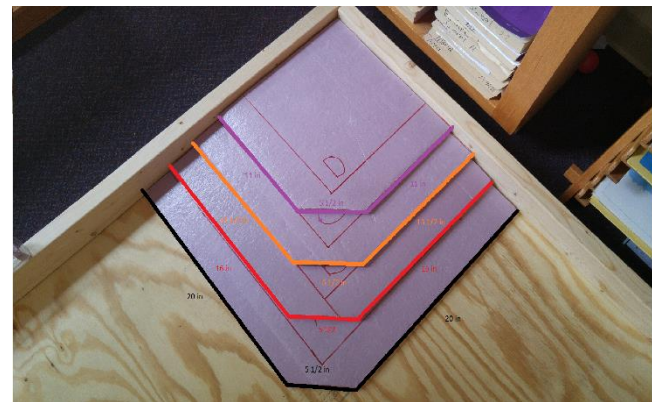
Pink insulation board

50x Velcro squares

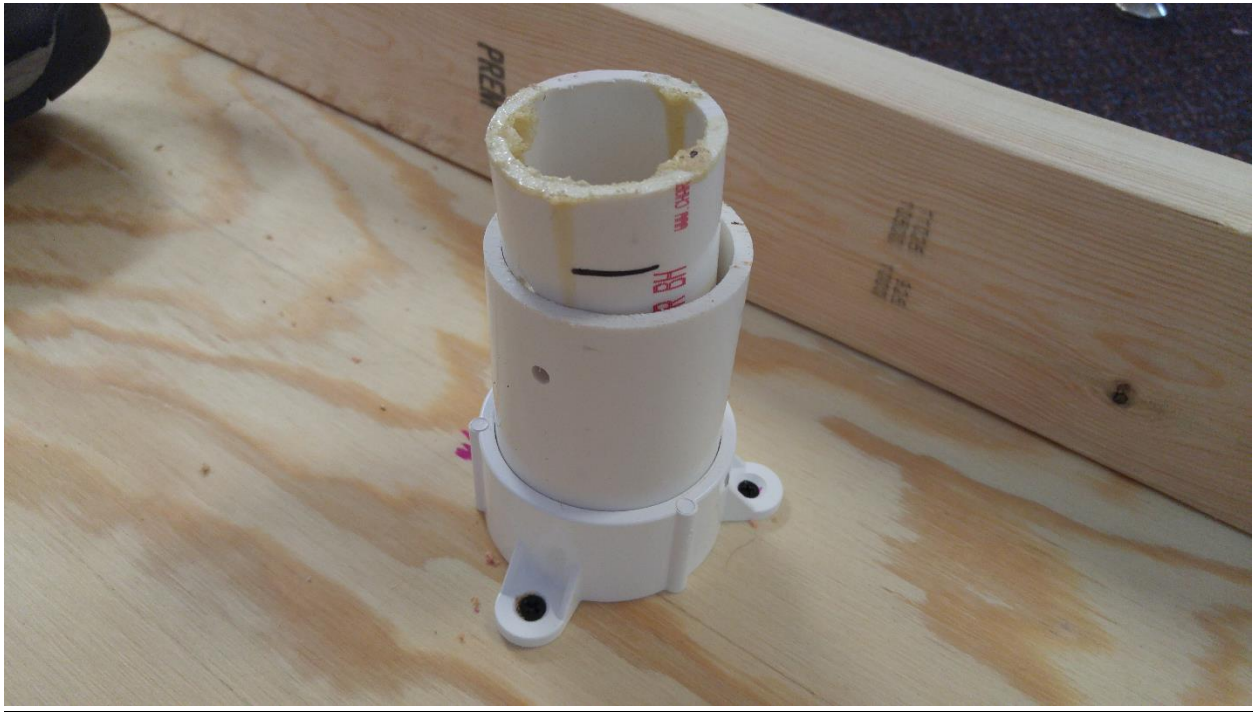
4x Clear-can storage containers (assorted sizes)

Procedures:

Pink insulation board should be cut in tiered sizes. The first square in the bottom should be at least 2 ft. on each side. Each tier should be equally cut down proportionally by a couple inches.

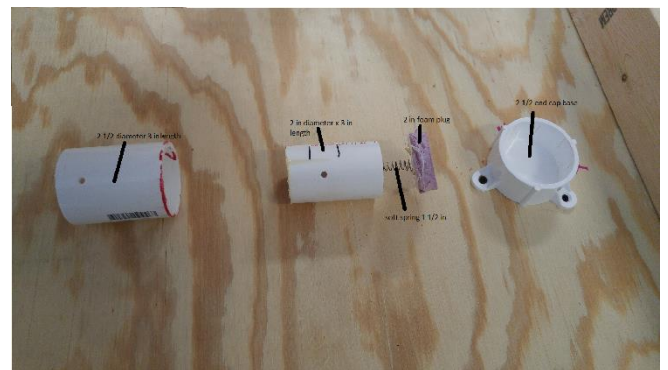


Cooling Pins



Materials:

- 2" Binder rings (x3)
- 3x 3" metal rods/dowels (1/8" diameter)
- 3x 2" diameter 3" sections of PVC pipe
- 3x 2 1/2" diameter 3" sections of PVC pipe
- 6x 2" diameter foam plugs
- 3x 1 1/2" length soft springs
- 3x 2 1/2" end cap base (with screw holes)
- Gorilla glue



Procedures:

The PVC bases should be attached to the plywood with short screws then the 2 1/2" PVC sections should be attached to the PVC bases.

For the spring mechanism, a foam plug should be fit inside the bottom of the 2" pipe section. Another foam plug should have a spring attached to the top and the other end of the spring should be attached to the bottom of foam plug attached to the bottom of the 2" PVC section.

Both the 2 in and 2 ½” sections should be set inside each other and a hole drilled through every layer so that the metal rod can be pushed inside.

The pins will be made of a metal rod cut into sections with binder rings attached to the end.

Glue can be used in every part to hold the foam.



Mountain Transmitter

Materials:

2x Space Swords (light saber toy)

2x 2' x 10" x ½" plywood

2x 23" x 10" x ½" plywood

Wood glue

2' x 2' x ½" plywood

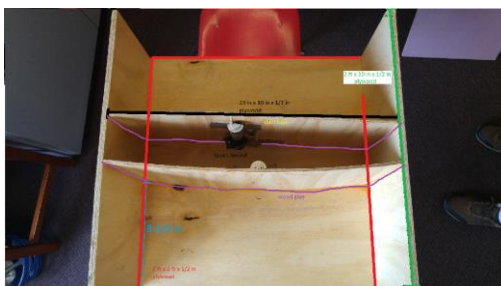
Duct Tape

1" wood screws



Procedures:

The 2' by 10 ½" plywood should be attached to the 2' by 2' section on the 2' side. The 23" pieces should be attached to the middle of the inside of the box about an inch apart (as shown in pictures)



A button should be placed in the middle of the wooden walls.

Extra Pictures

