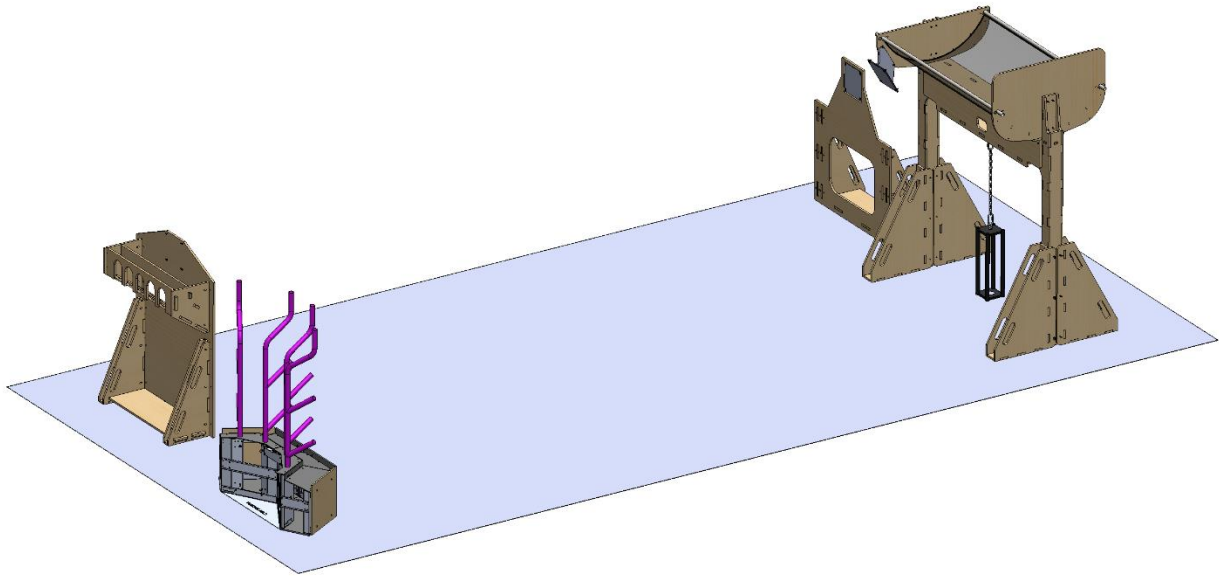
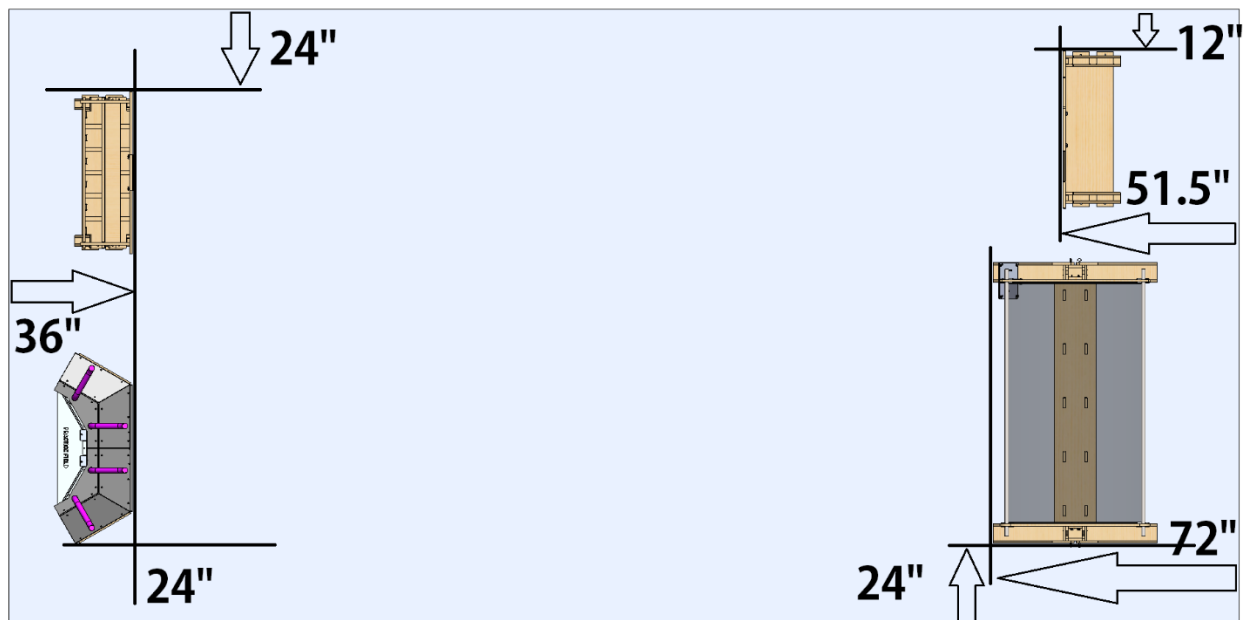


4 Practice Field



This is the recommended layout for the Practice Field, spacing the Reef, Processor, Coral Station and Barge apart to deter teams from testing multiple game piece autonomous routines. This layout intentionally does not space field elements apart in a representative orientation to the playing field. See the [Practice Field Attendant Instructions](#) for more information about running the practice field.



4.1 Practice Field Coral Station

A total of 1 Practice Field Single Coral Station needs to be built.

4.1.1 Tools & Equipment

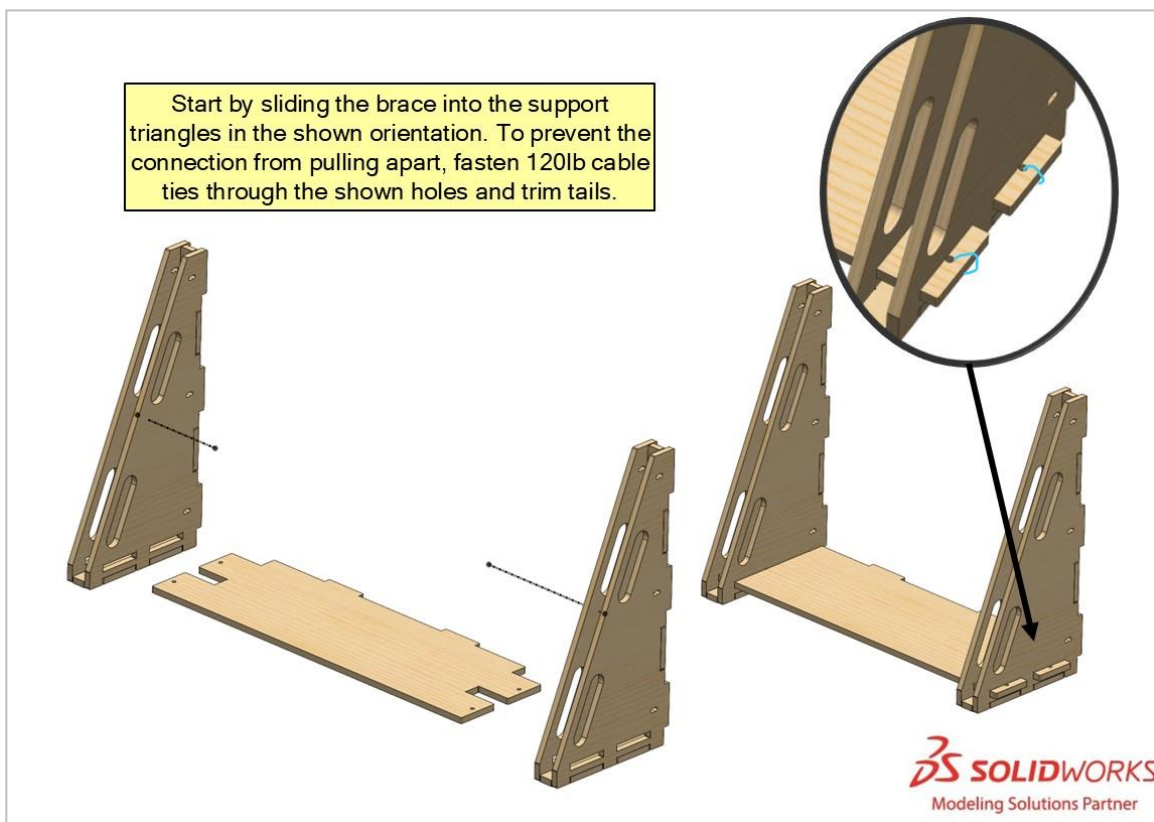
- 7/16" Wrenches/Sockets
- 4x 1.5" 1/4-20 Hex Head Bolts
- 4x 1/4-20 Wingnuts
- 30x 120lb Cable Ties

4.1.2 Assembly

1.



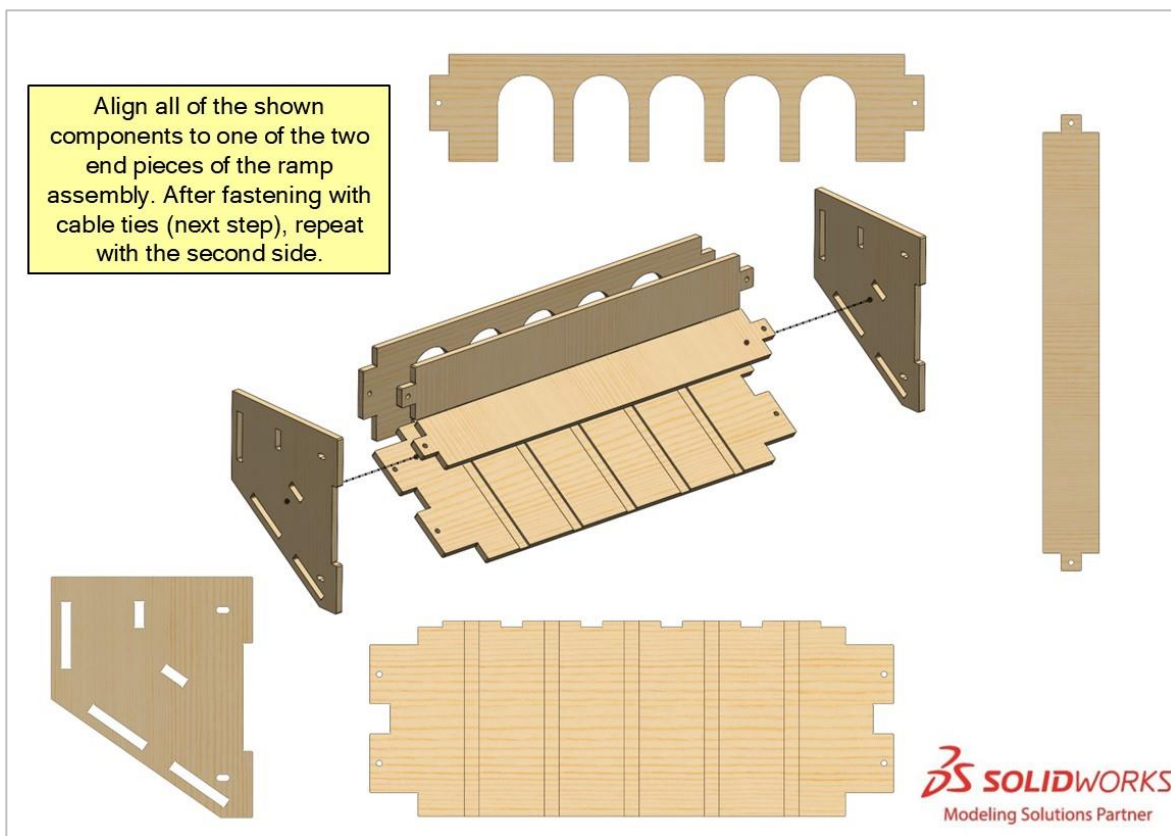
2.



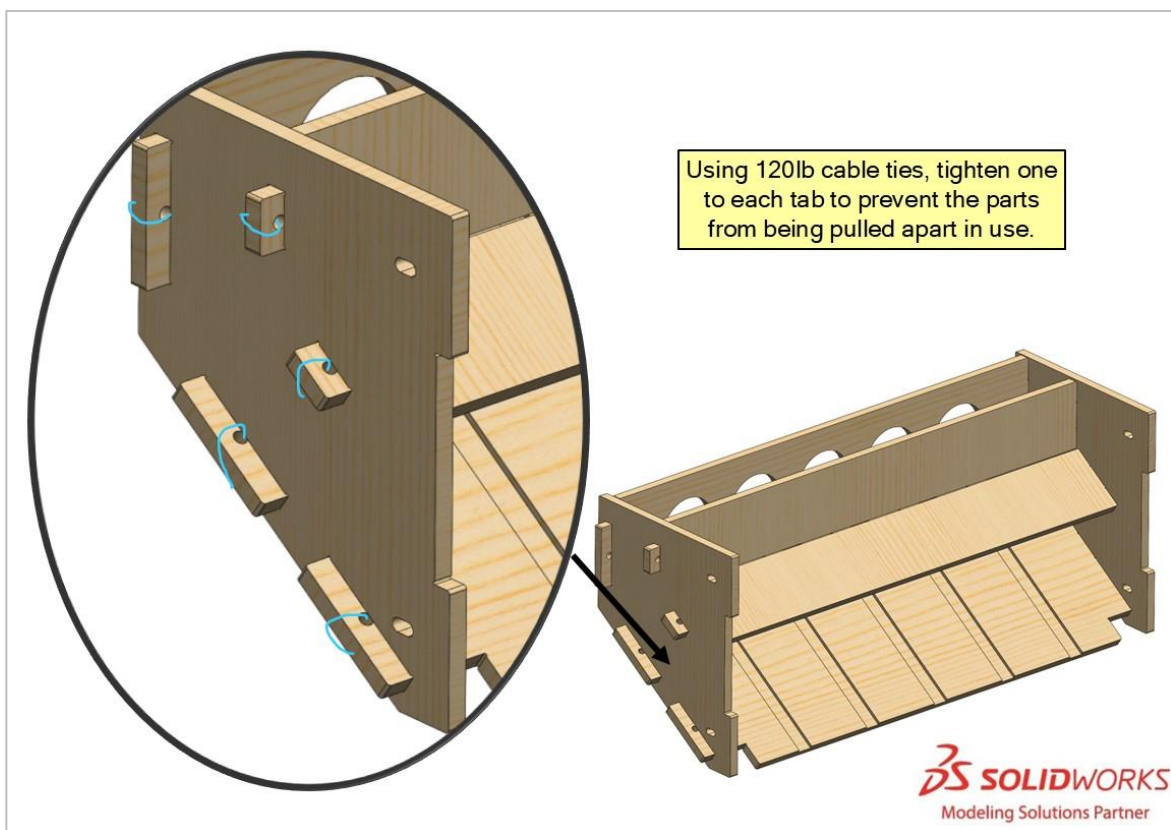
3.



4.

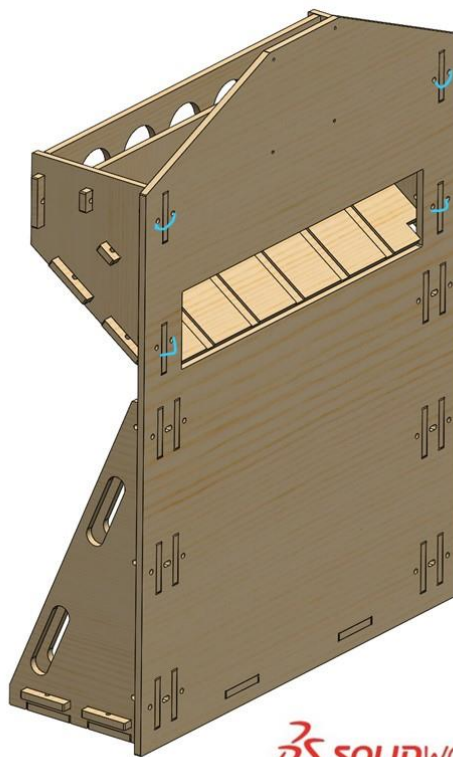
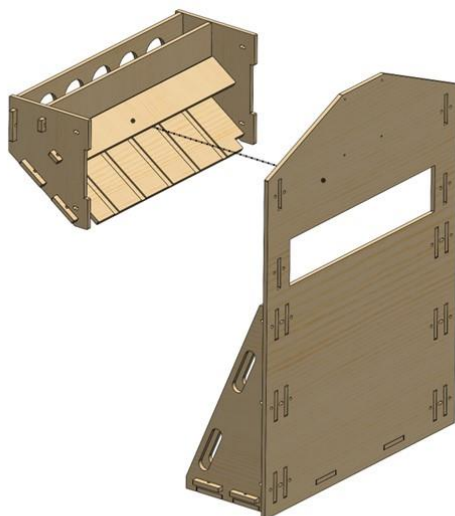


5.



6.

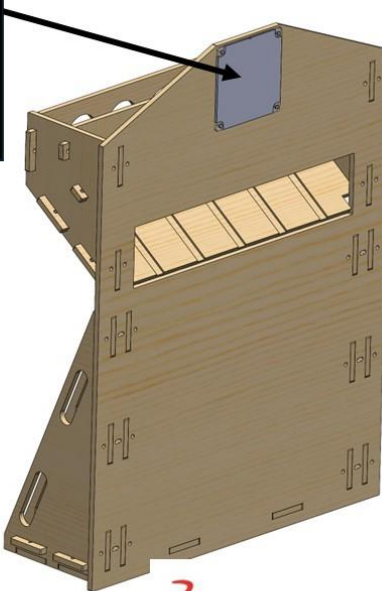
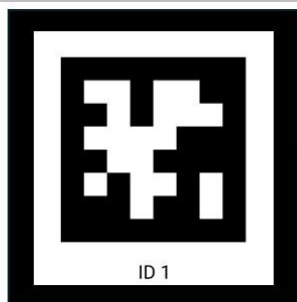
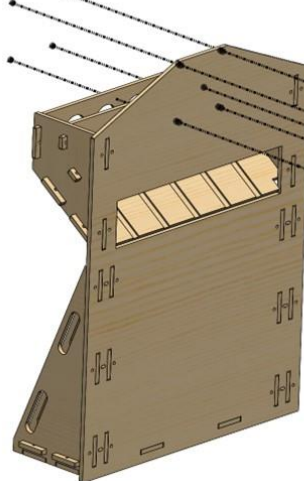
Combine the two assemblies with 120lb cable ties and aligning the tabs of the shelf into the front panel.



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7.

With 1.5" ¼-20 hex head bolts and ¼-20 wingnuts, attach AprilTag ID 1 to the front plate.



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4.2 Practice Field Processor

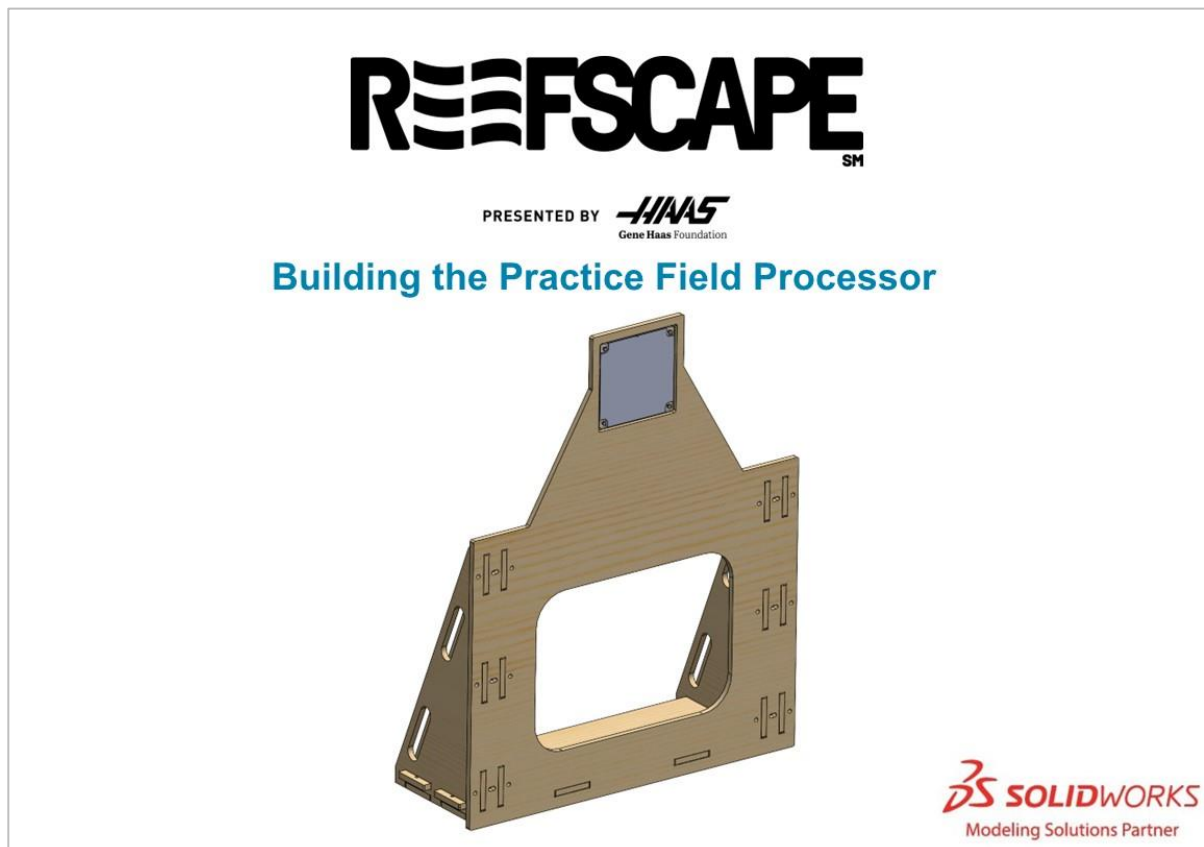
A total of 1 Practice Field Processor needs to be built.

4.2.1 Tools & Equipment

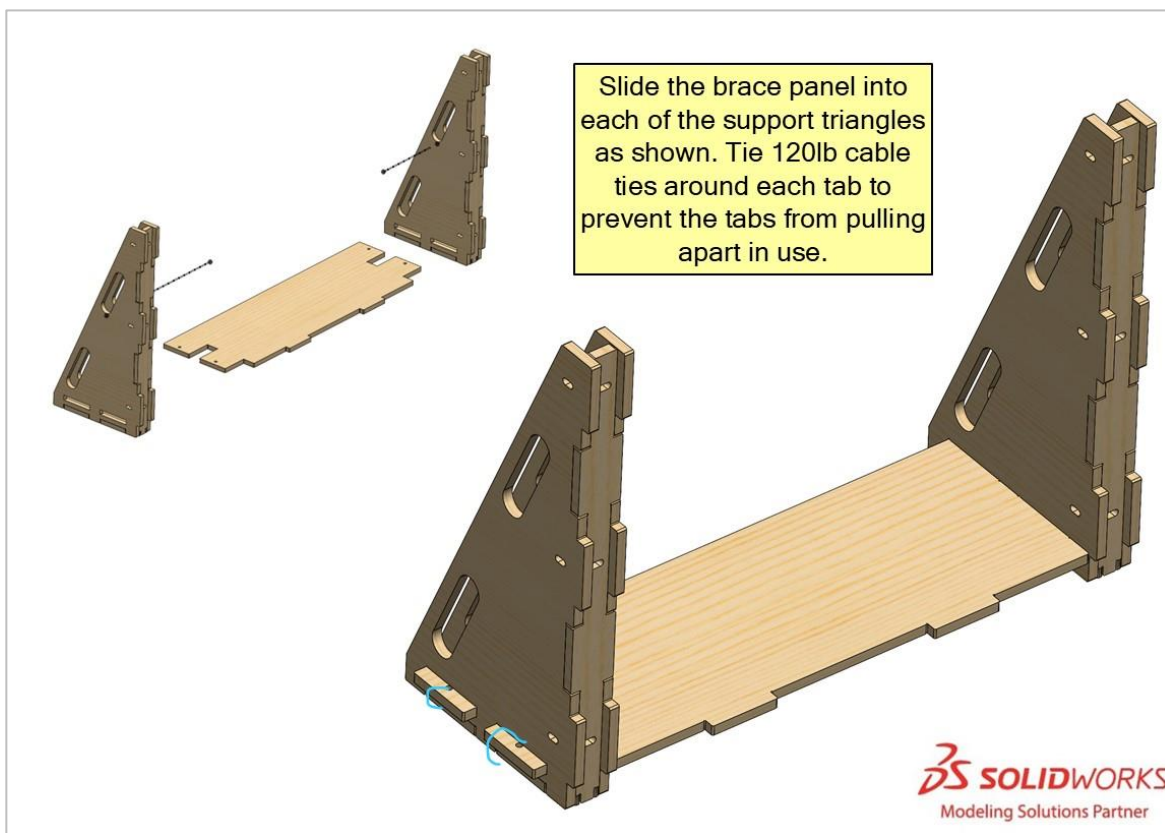
- 7/16" Wrenches/Sockets
- 4x 1" ¼-20 Hex Head Bolts
- 4x ¼-20 Wingnuts
- 16x 120lb Cable Ties

4.2.2 Assembly

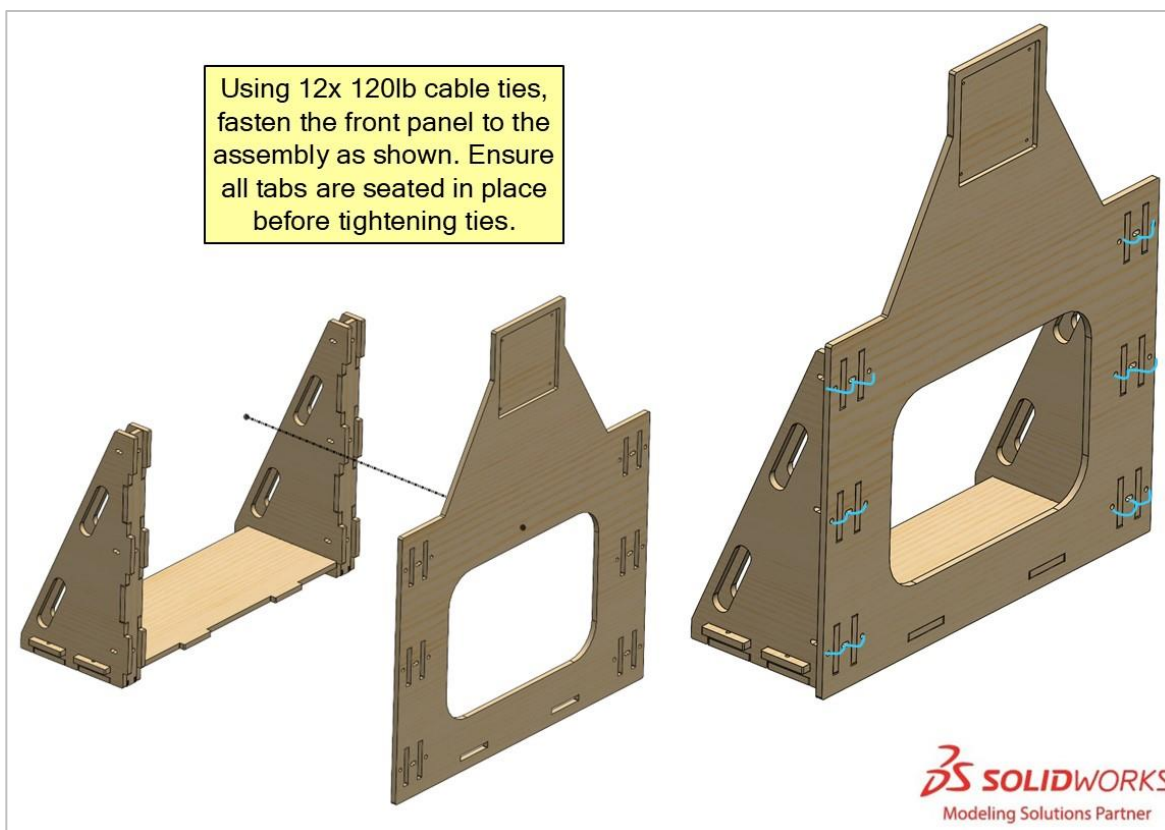
1.



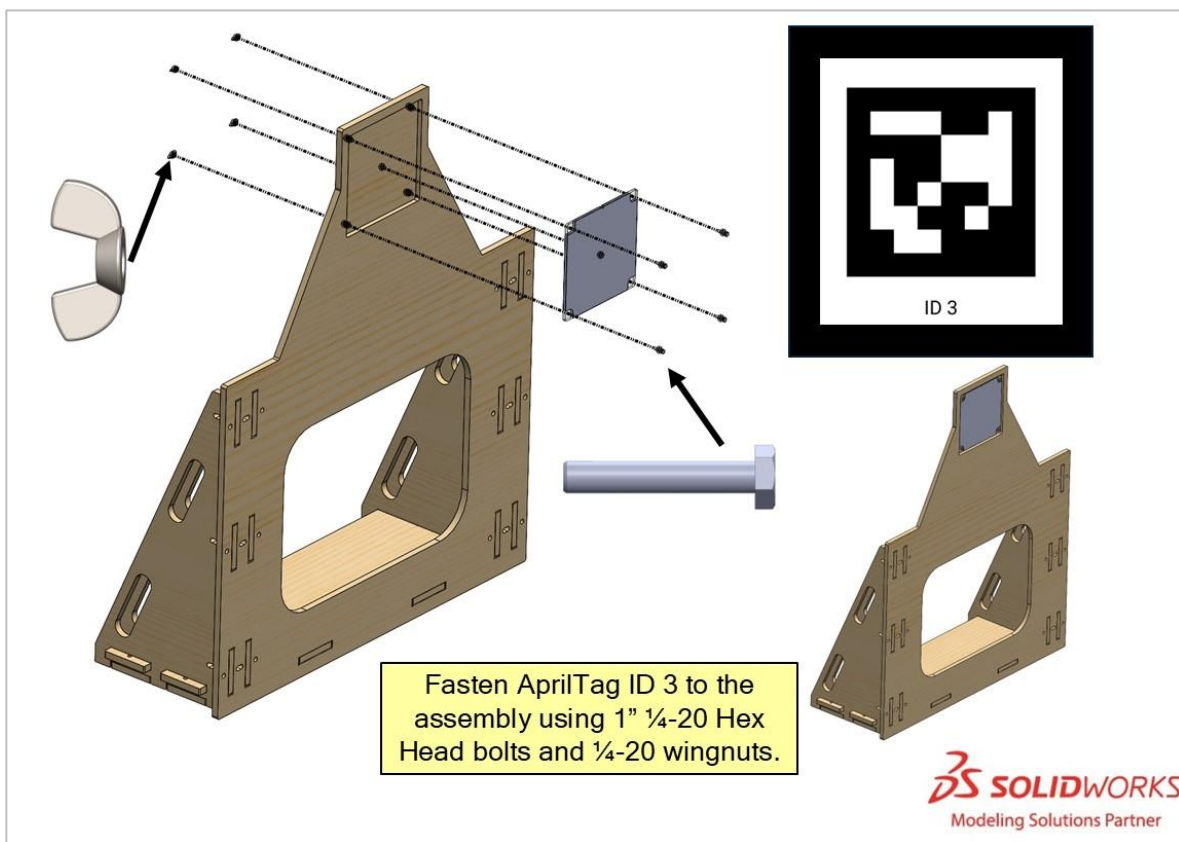
2.



3.



4.



4.3 Practice Field Barge

A total of 1 Practice Field Barge needs to be built.

4.3.1 Tools & Equipment

- 50lb cable ties
- 3/4" wrenches/sockets
- 7/16" wrench/sockets
- 4x 1/4-20 x 2" hex head bolts
- 4x 1/4-20 x 1.5" hex head bolts
- 4x 1/4-20 x 1" hex head bolts
- 4x 1/4-20 wing nuts
- 1x 1/2-13 x 1.25" hex head bolt
- 2x 1/2" washers
- 1x 1/2" nylock nut

4.3.2 Assembly

1.



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Gene Haas Foundation

Building the PF Barge



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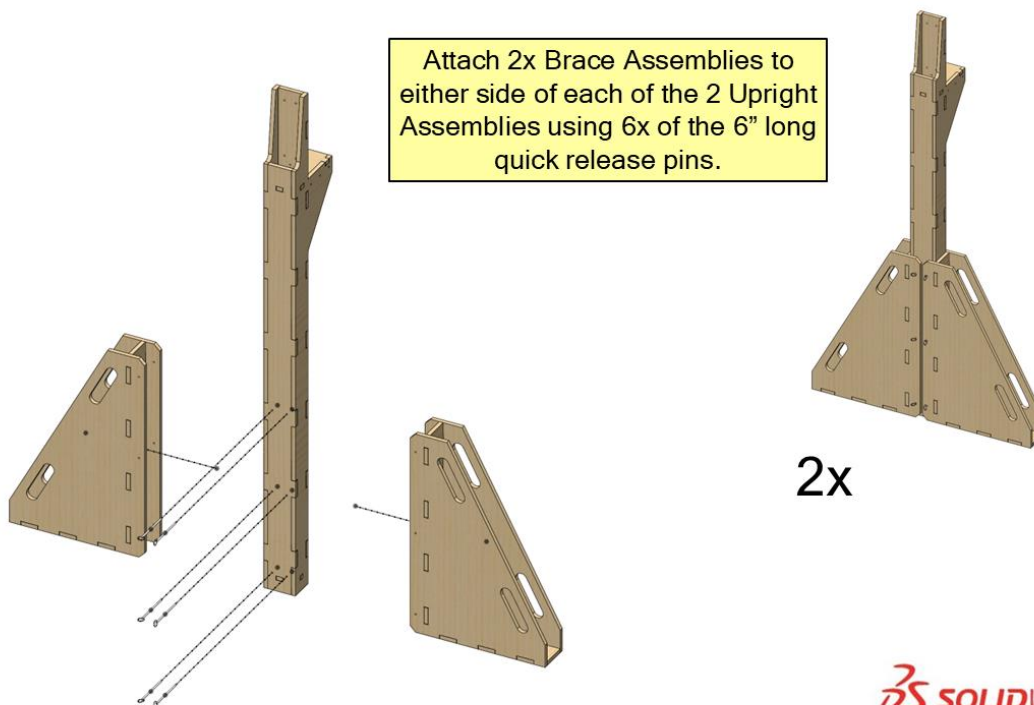
2.

Apply 2x strips of hook tape to the bottom of each of the 4 brace assemblies.

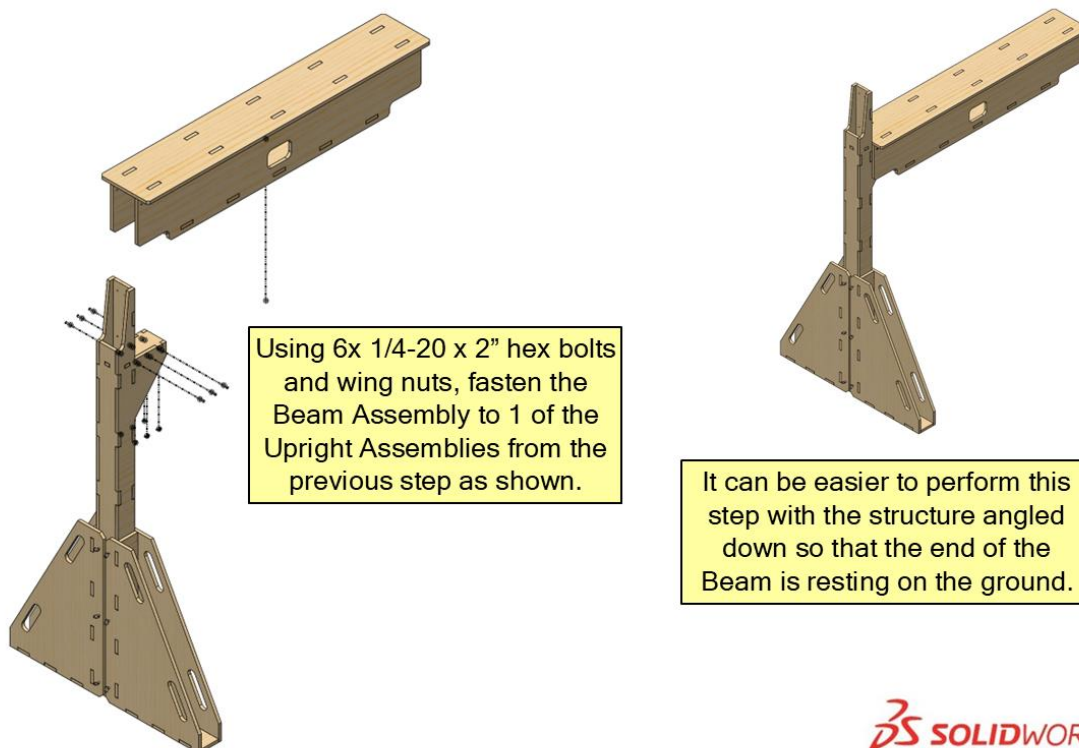


3.

Attach 2x Brace Assemblies to either side of each of the 2 Upright Assemblies using 6x of the 6" long quick release pins.

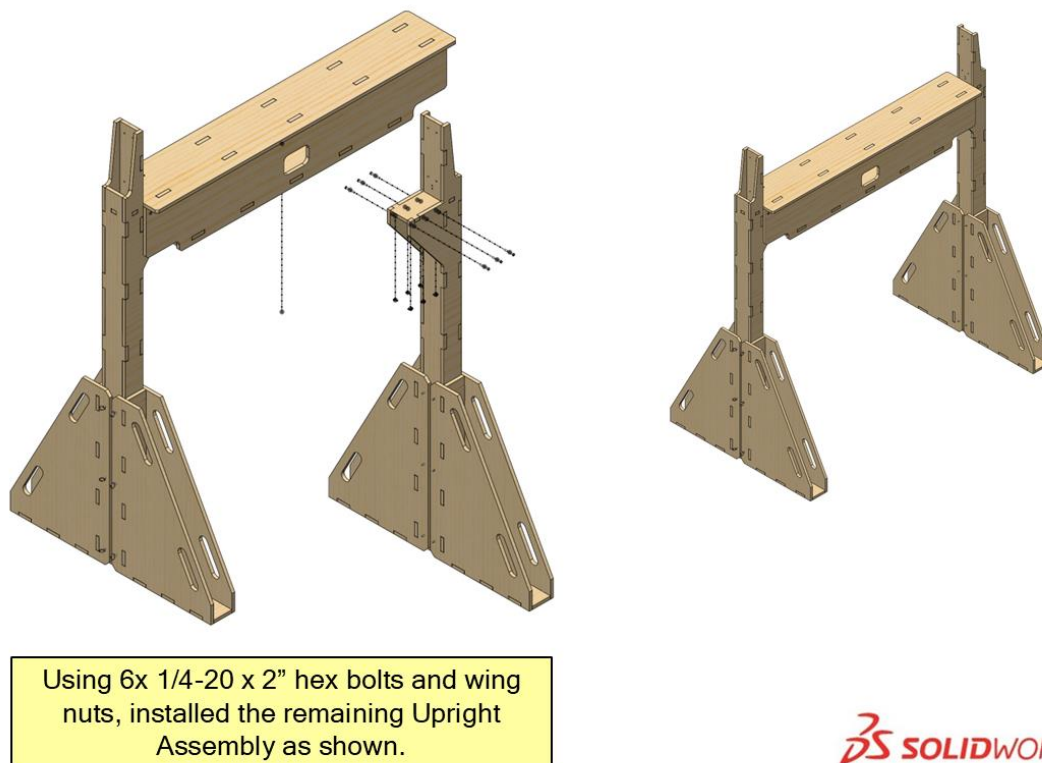


4.



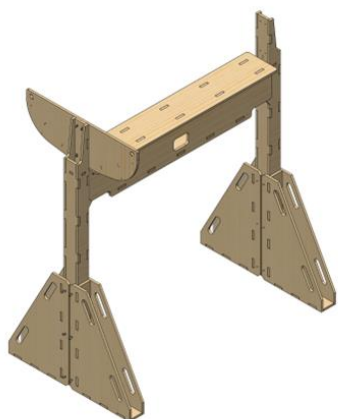
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5.

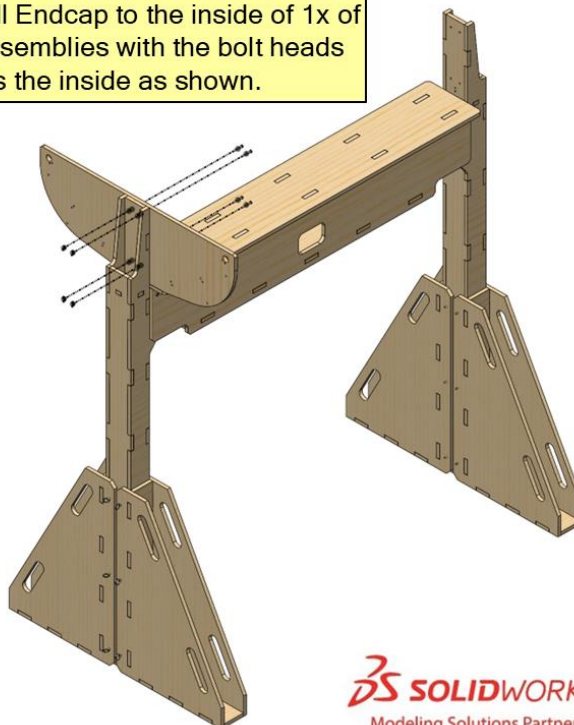


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6.



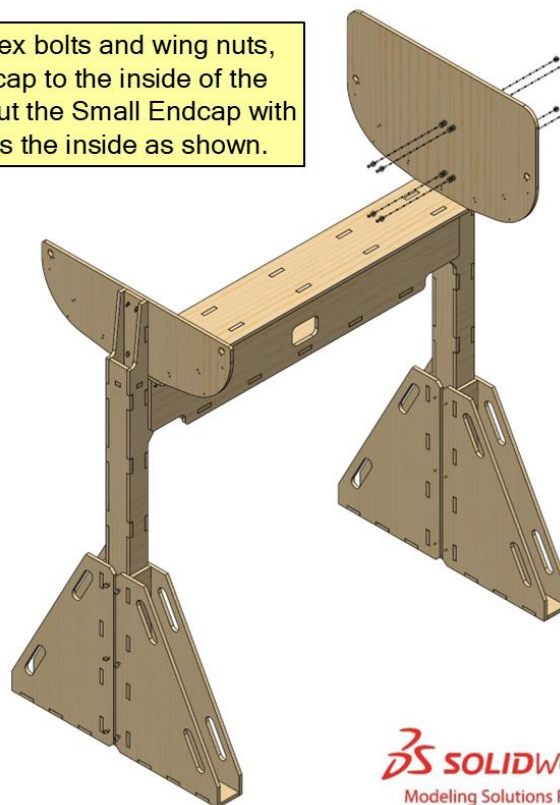
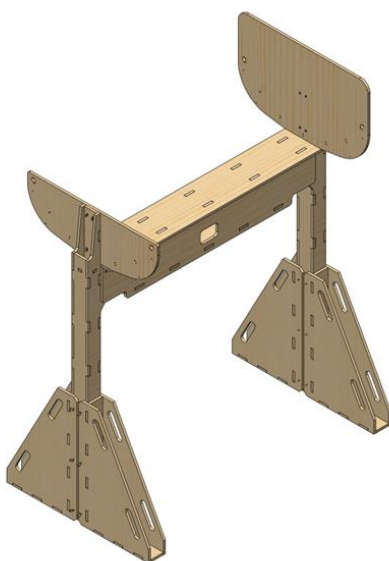
Using 4x 1/4-20 x 2" hex bolts and wing nuts, fasten the Small Endcap to the inside of 1x of the Upright Assemblies with the bolt heads towards the inside as shown.



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7.

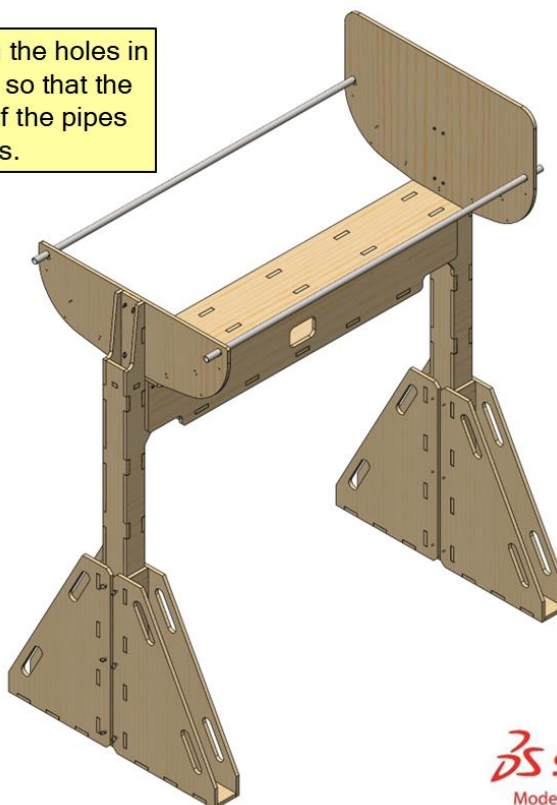
Using 4x 1/4-20 x 2" hex bolts and wing nuts, fasten the Large Endcap to the inside of the Upright Assembly without the Small Endcap with the bolt heads towards the inside as shown.



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8.

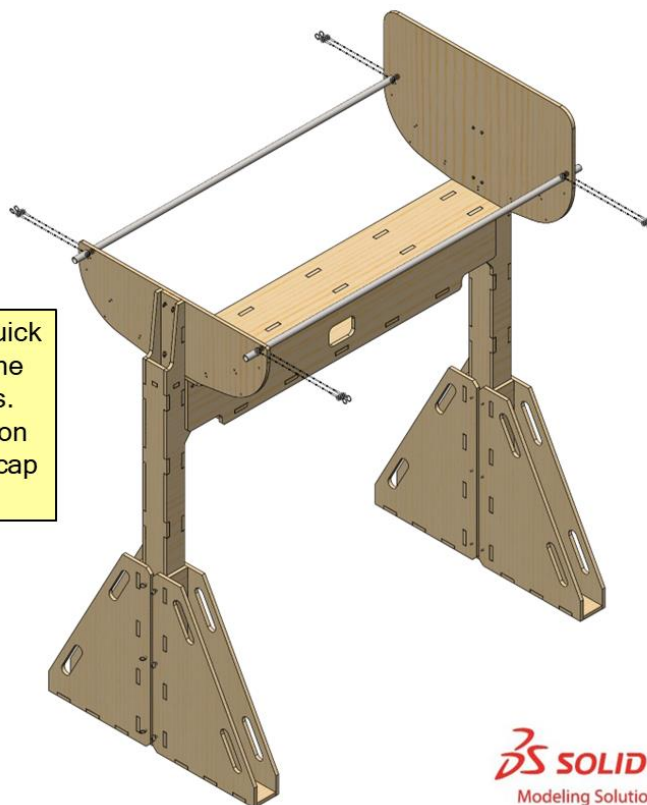
Insert the 2x Net Pipes through the holes in both Endcaps. Position them so that the pairs of holes on either end of the pipes straddle the Endcaps.



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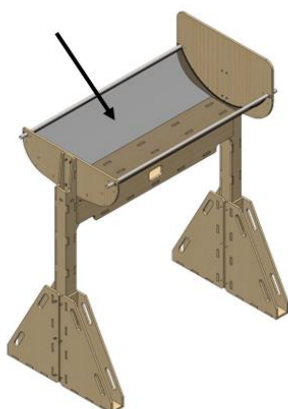
9.

Insert 8x 2-5/16" long quick release pins through the holes in the Net Pipes. There should be a pin on either side of each Endcap for each pipe.

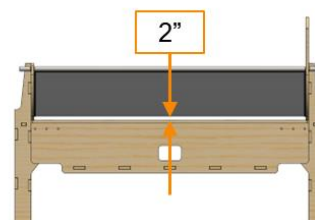


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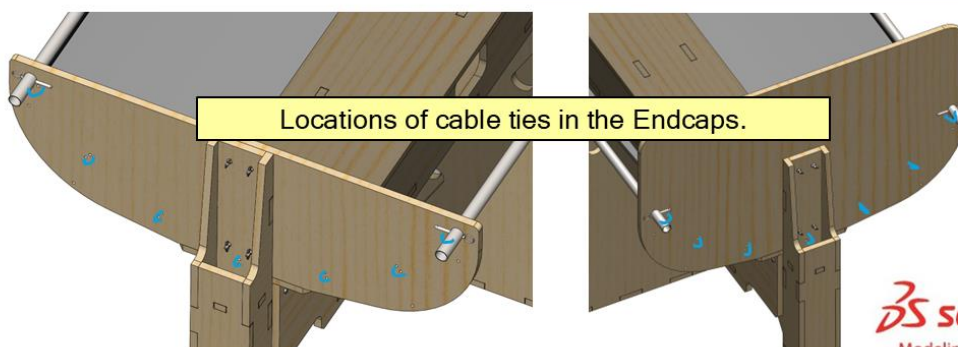
10



Using 50lb cable ties, install the Net on the top of the assembly. The cable ties should fasten to the Net Pipes and the pairs of holes in the Endcaps.



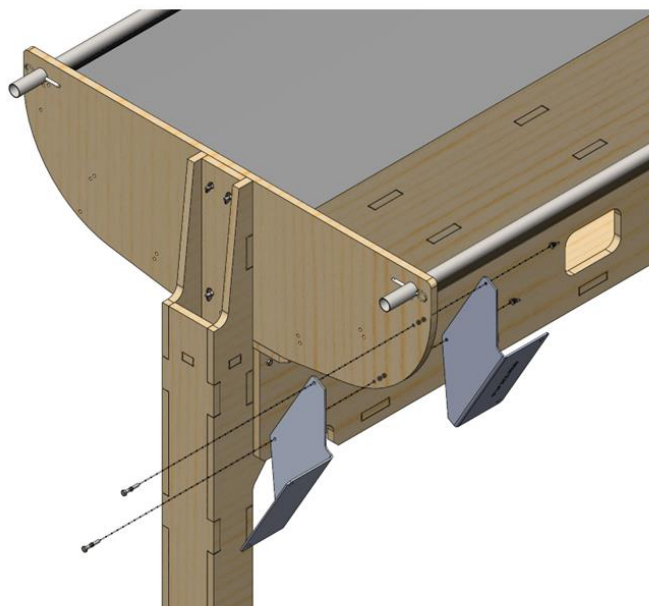
During the installation process, tension the net to maintain the gap between the bottom of the net and the top of the Beam to 2" as shown above. Tension can be adjusted by installing more cable ties or using openings in the net further from the edge to "gather" the net.



Locations of cable ties in the Endcaps.

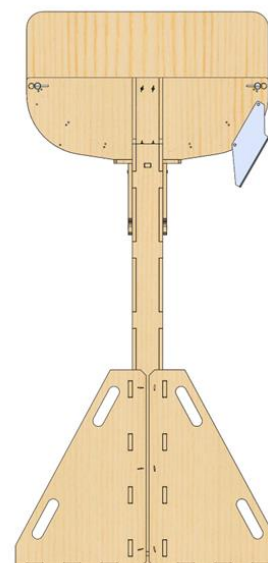
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11



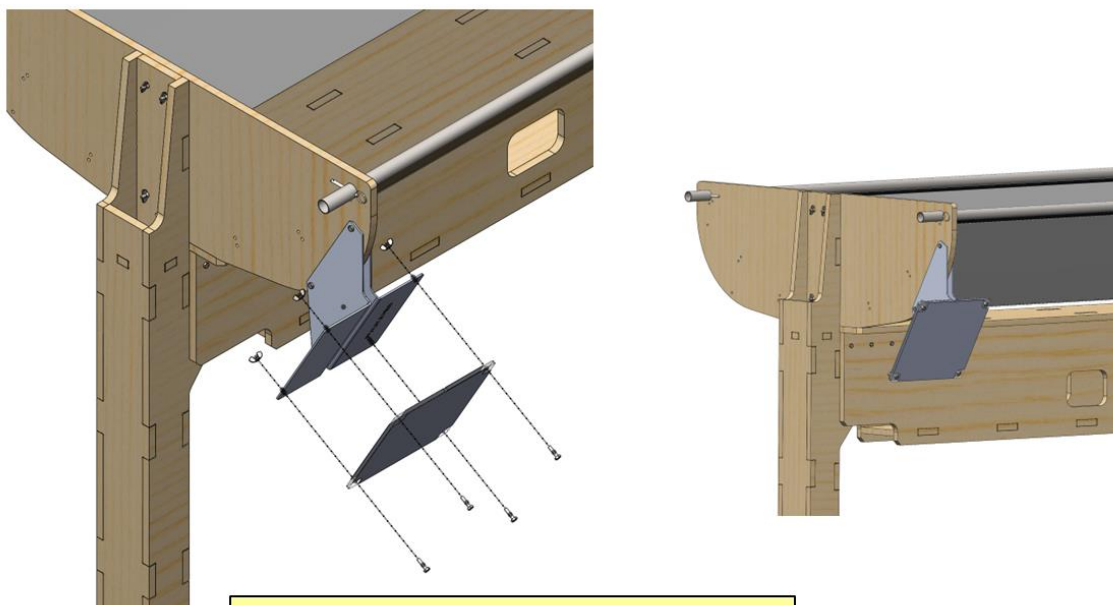
Using 2x 1/4-20 x 1-1/2" hex bolts and 2x wing nuts, install the LH & RH AprilTag Brackets onto either side of one of the Endcaps as shown.

Ensure the orientation of the brackets matches this image.



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12

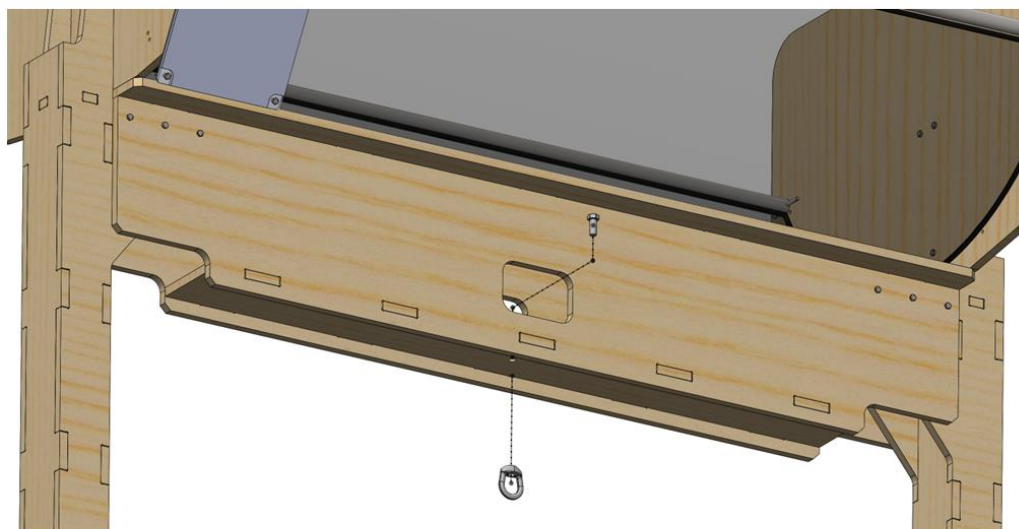


Using 2x 1/4-20 x 1" hex bolts and 2x wing nuts, install the AprilTag panel with ID 5 onto the brackets. Ensure that the tag is upright using the text printed on it.



13

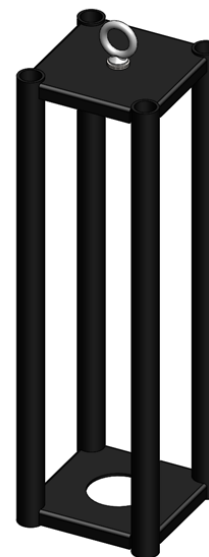
Install the Eye Nut on the bottom of the Beam using 1x 1/2-13 x 1-1/4" hex bolt. Use the access window in the side of the Beam to install the bolt.



14



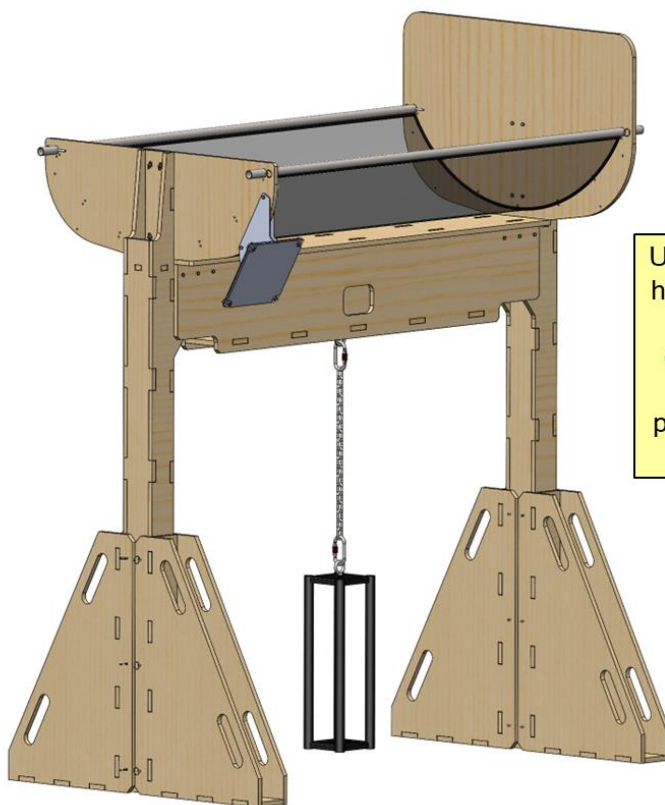
Using 1x 1/2-13 nylock nut and 2x 1/2" washers, install the Eye Bolt on the top of the Cage.



The number of washers can be adjusted to calibrate the height of the Cage from the floor if needed later.

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15



Using the Chain and 2x Carabiners, hang the Cage from the Eye Nut on the Beam. The Cage can be changed between the "deep" and "shallow" configurations during practice by removing the chain and 1x carabiner.

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4.4 Practice Field Reef

4.4.1 Tools & Equipment

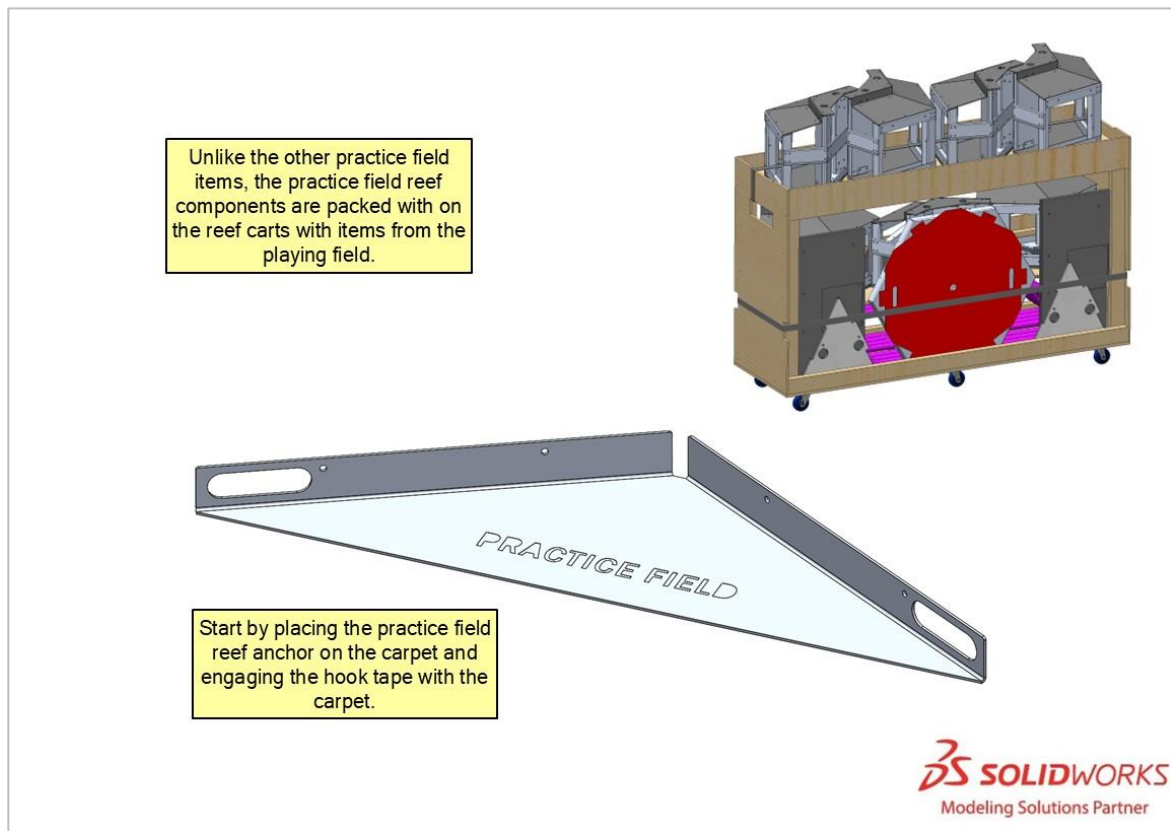
- 2x 7/16" wrenches
- 10x ¼-20 x 1" hex head bolts
- 14x ¼-20 x 1" counter sunk Phillips (#3) bolts
- 8x ¼" x 2.3125" quick pull pins
- 2x ¼"-20 Wingnuts

4.4.2 Assembly

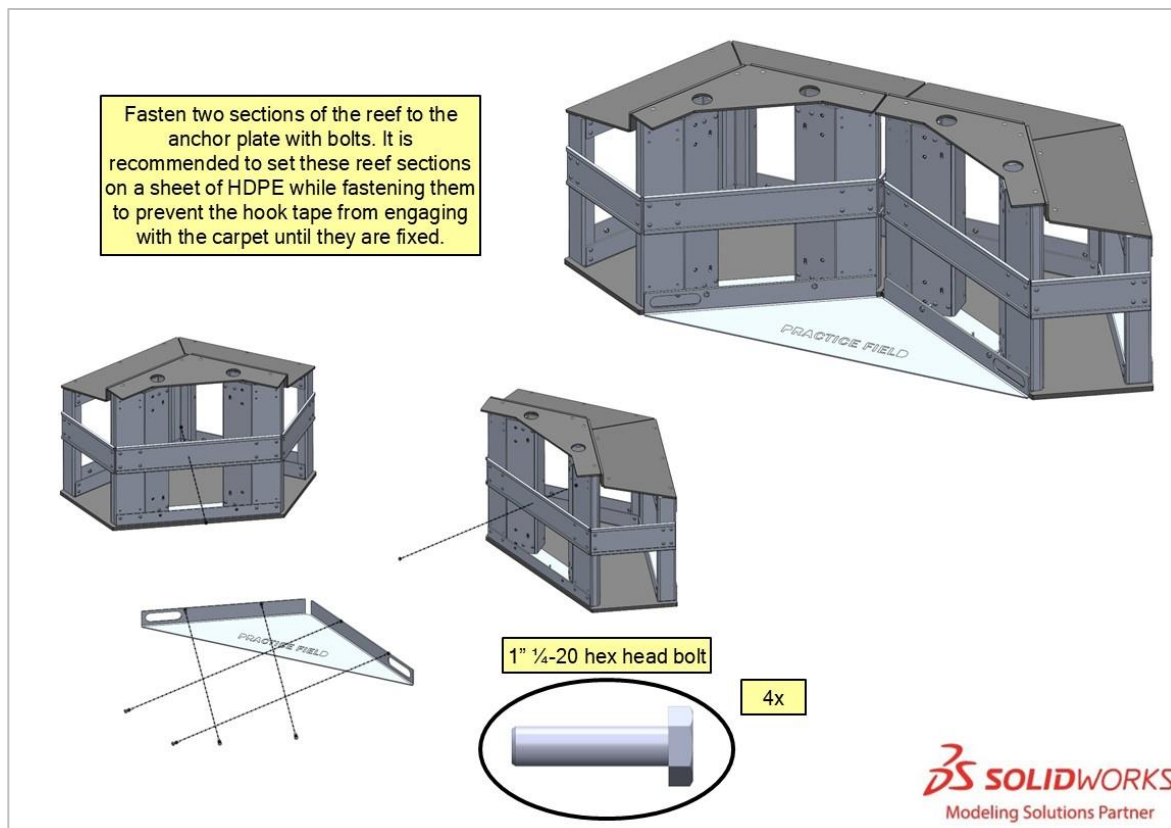
1.



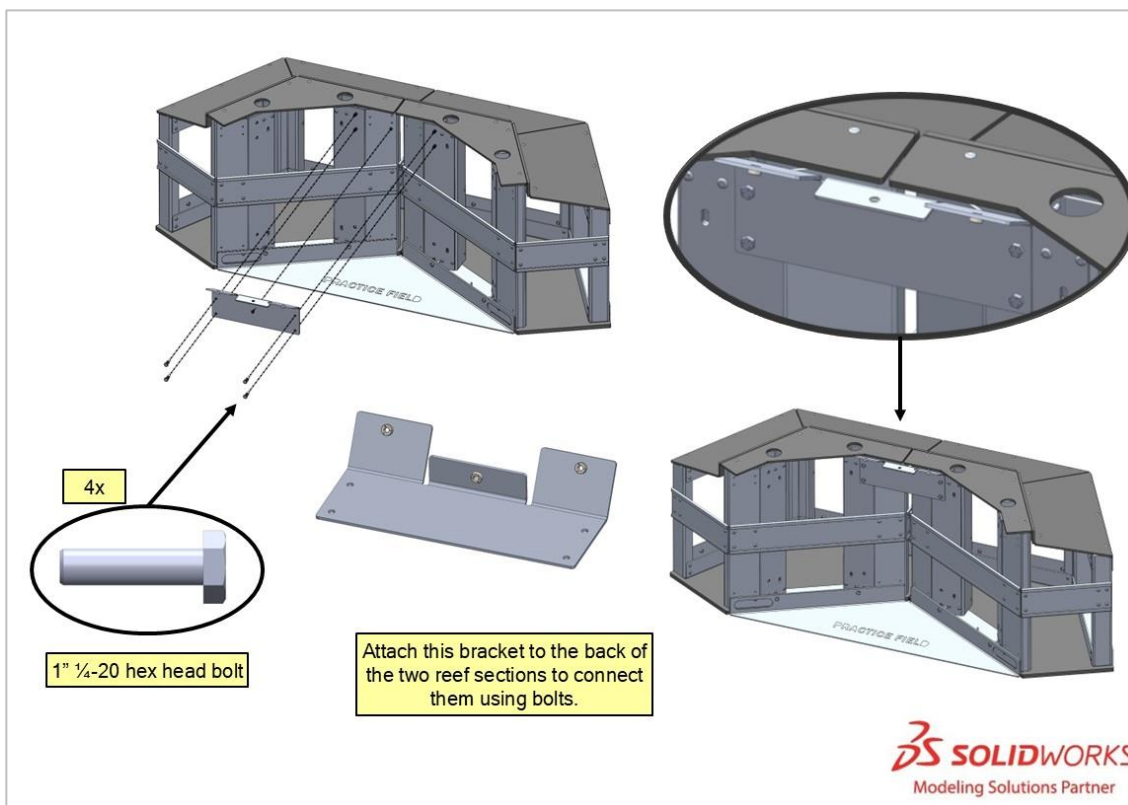
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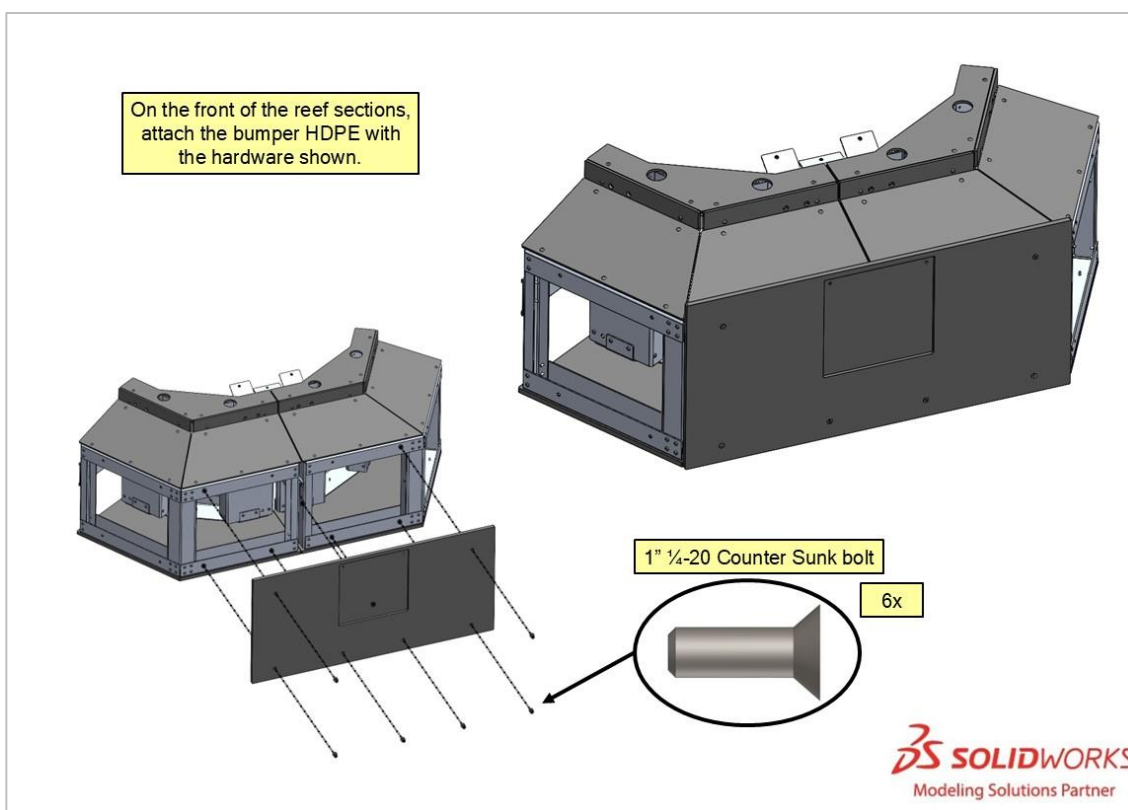
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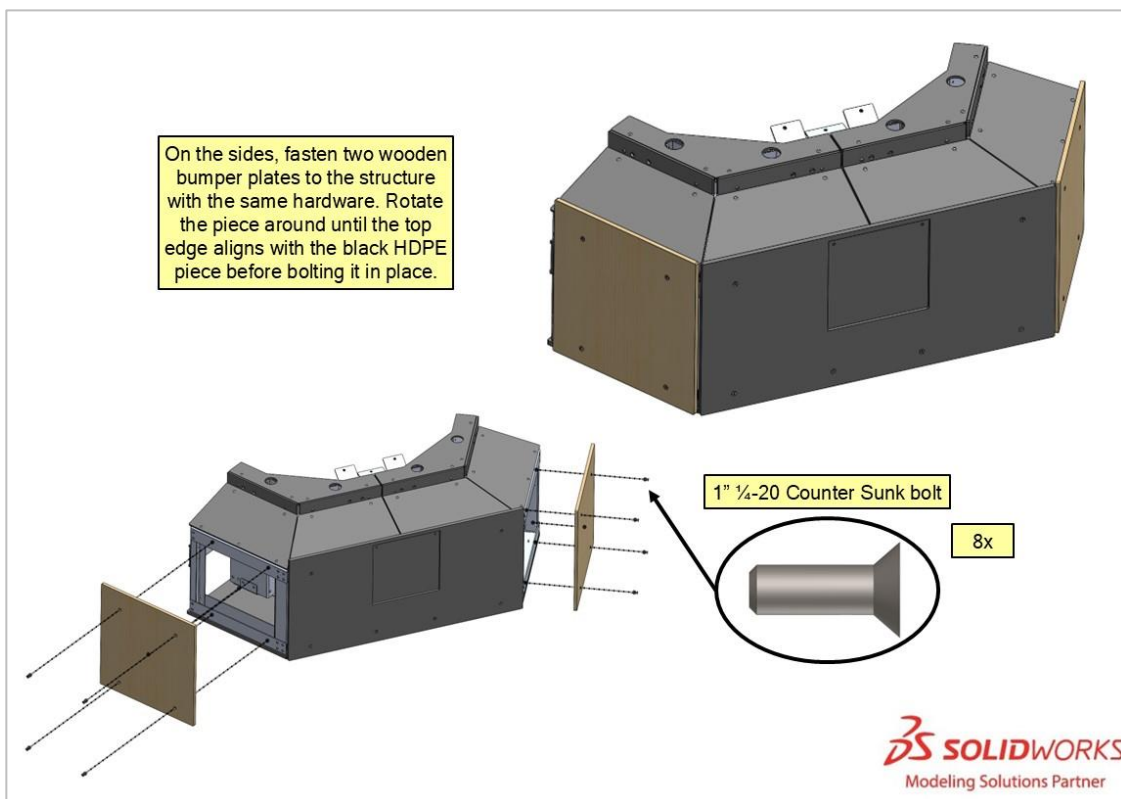
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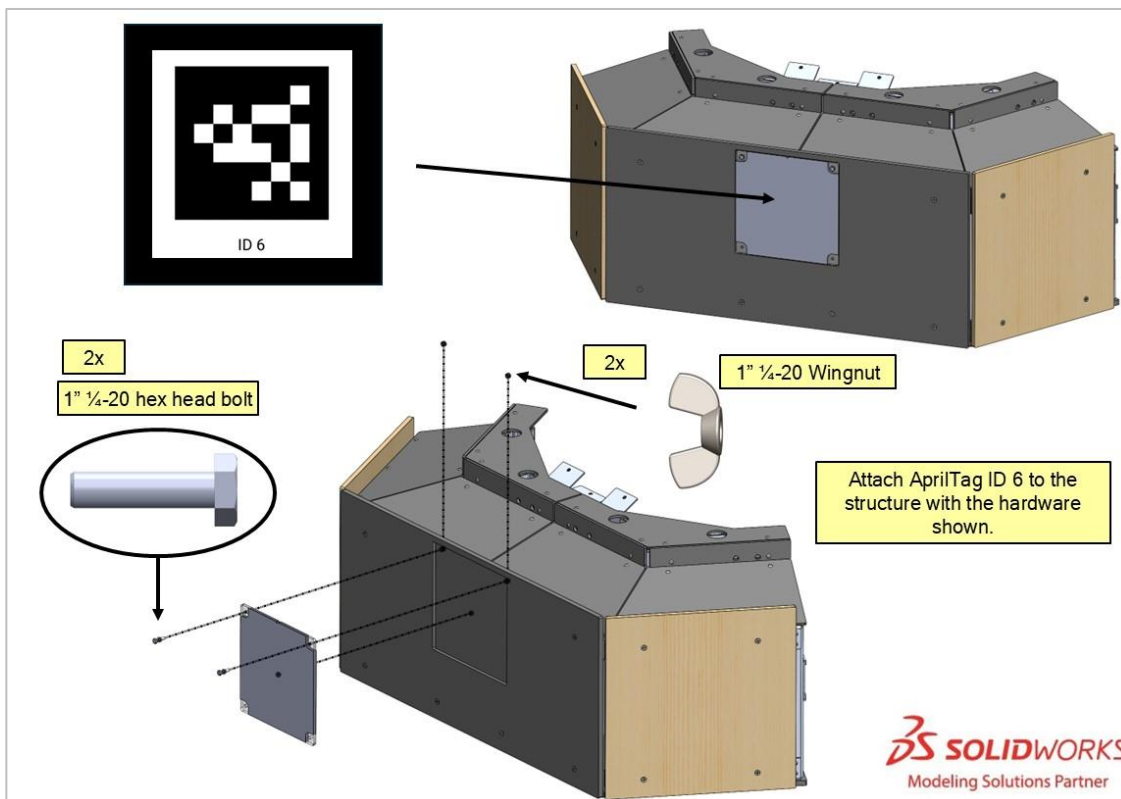
5.



6.



7.



8.

