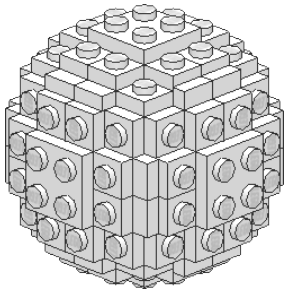
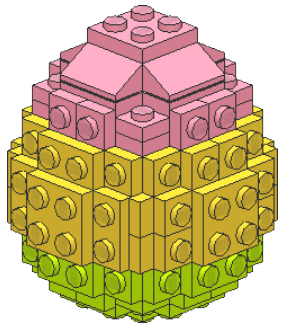
Studs in All Directions





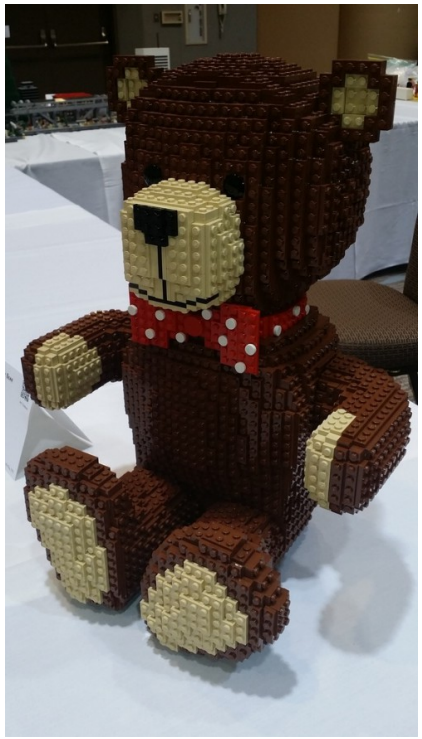
Bricks by the Bay 2018

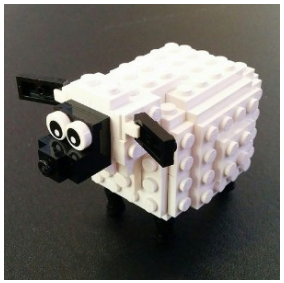
Santa Clara, California

Bill Ward

bill@wards.net

www.brickpile.com



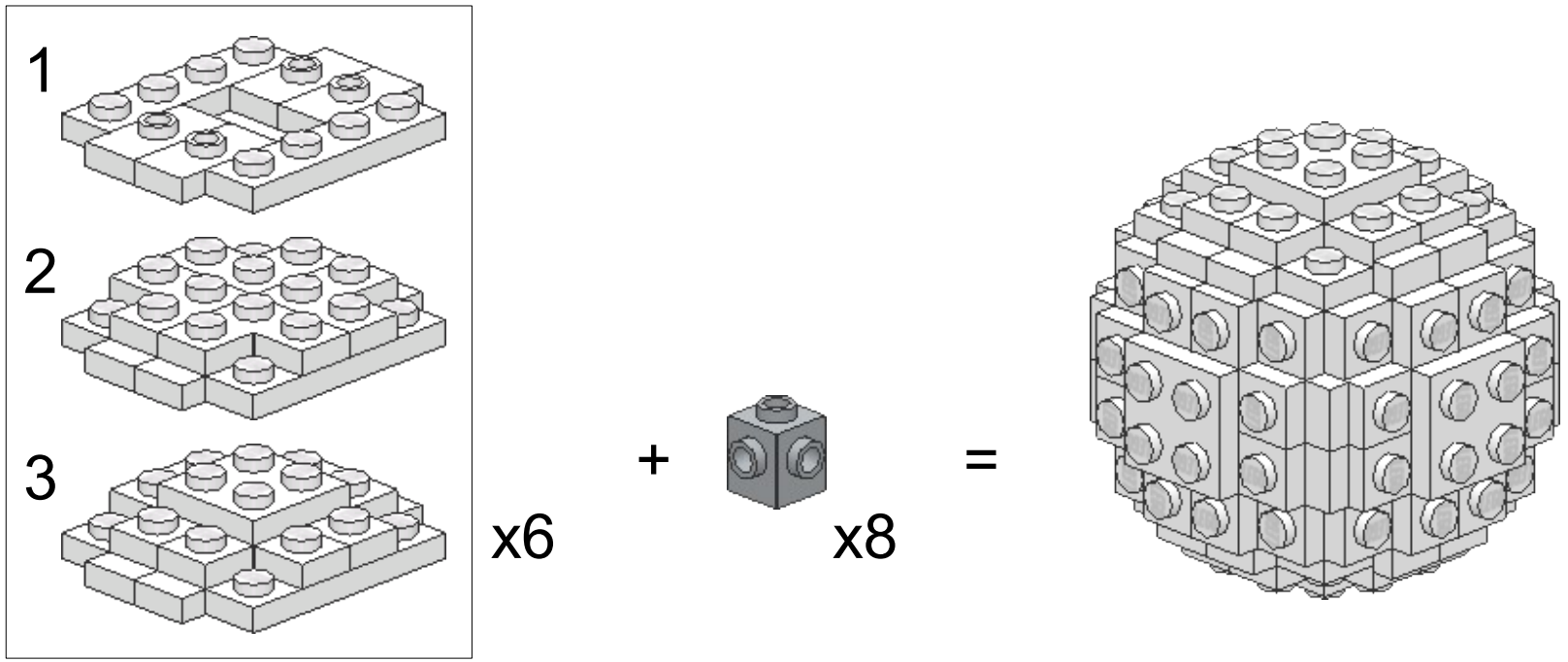


Travis Brick

- a.k.a. “Brick, Modified 1 x 1 with Studs on 4 Sides”
- Named the “Travis Brick” by the LEGO fan community after the late Space builder Travis Kunce, who had it tattooed on his arm
- Many “Studs on All Sides” techniques use this piece

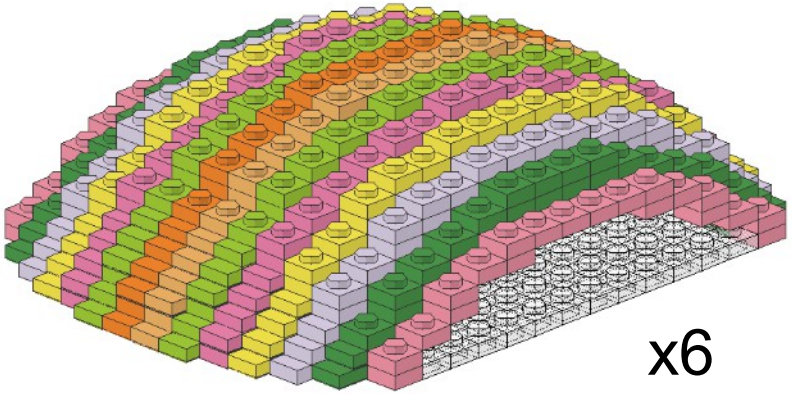
Lowell Sphere

- How do you build a sphere out of LEGO?
- Solution designed by Bruce Lowell for a 6.8-stud diameter sphere (4 studs + 6 plates)
- Basis for many MOCs by many people



Bram's Sphere Generator

- Bram Lambrecht wrote a program to generate LDraw instructions for a Lowell Sphere of any diameter
  - http://lego.bldesign.org/sphere/



x6

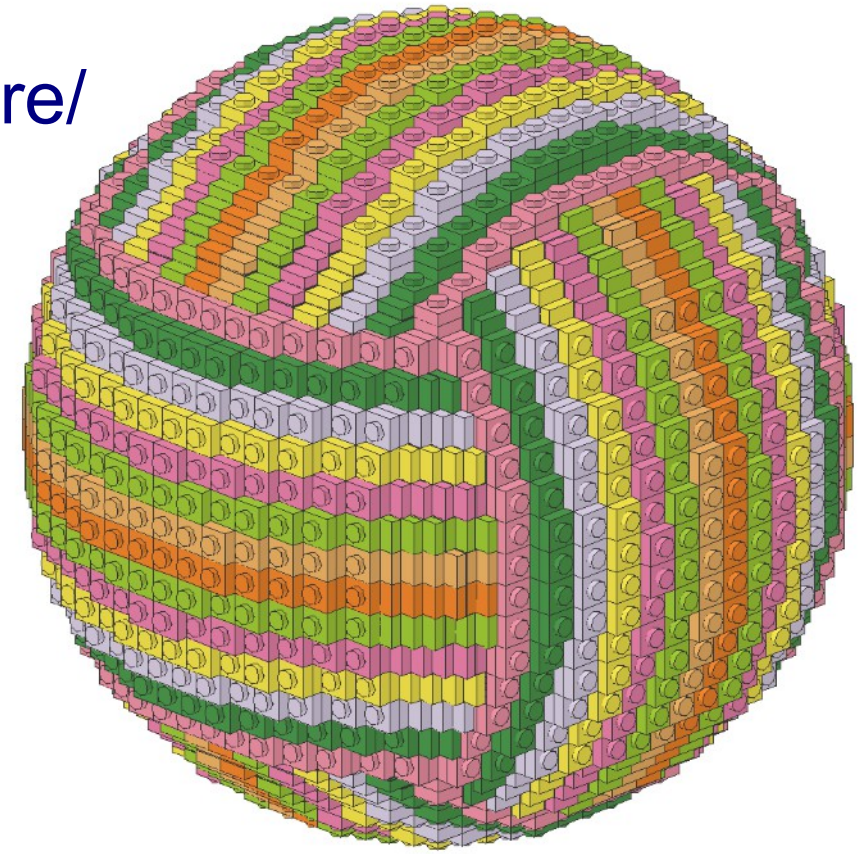
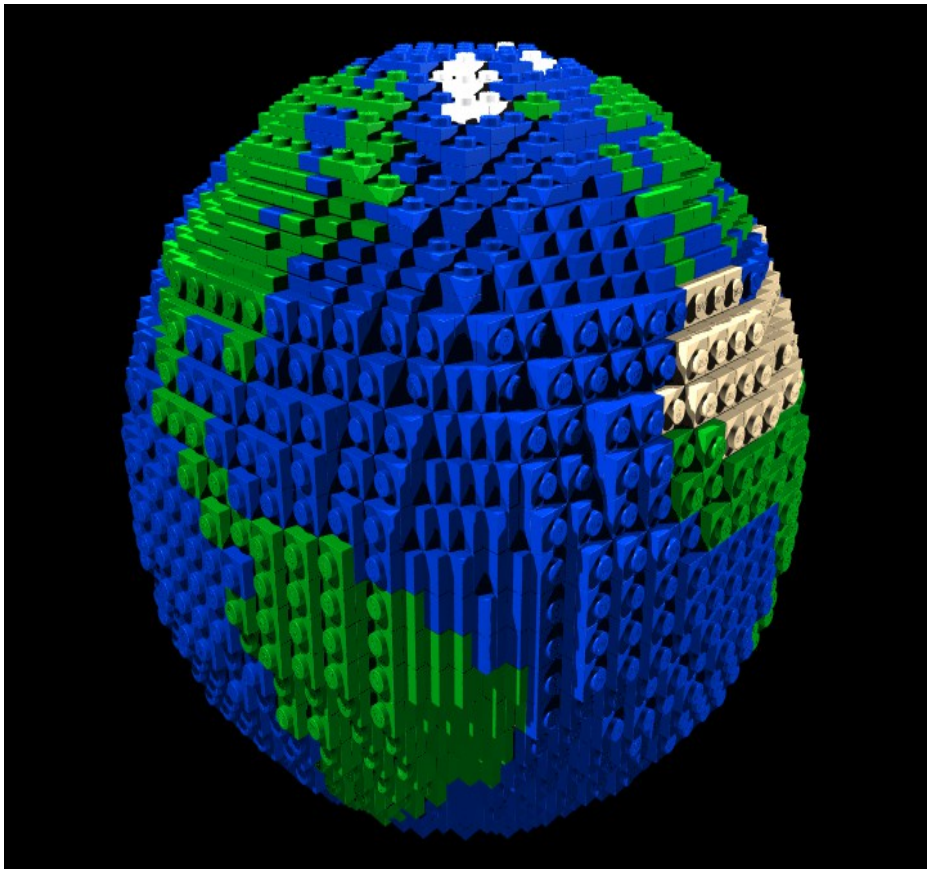


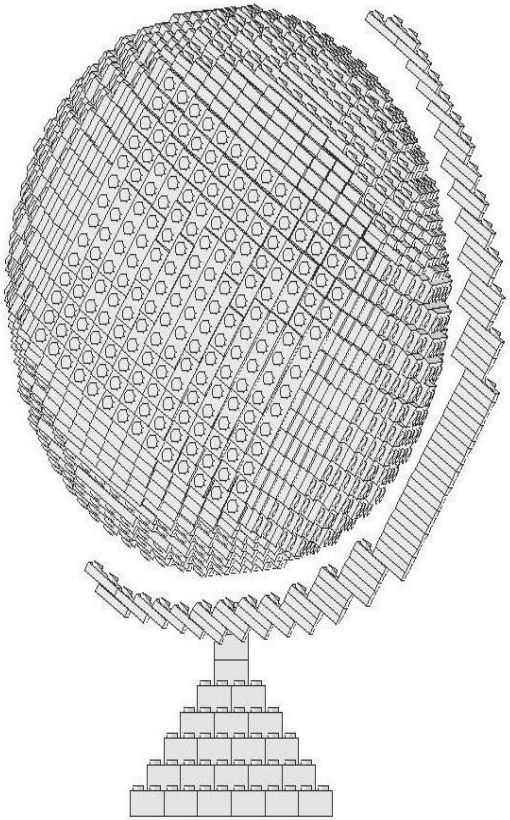
Image from https://ideas.lego.com/projects/16205 by "WWWally"

LEGO IDEAS failed project: Globe

https://ideas.lego.com/projects/16205

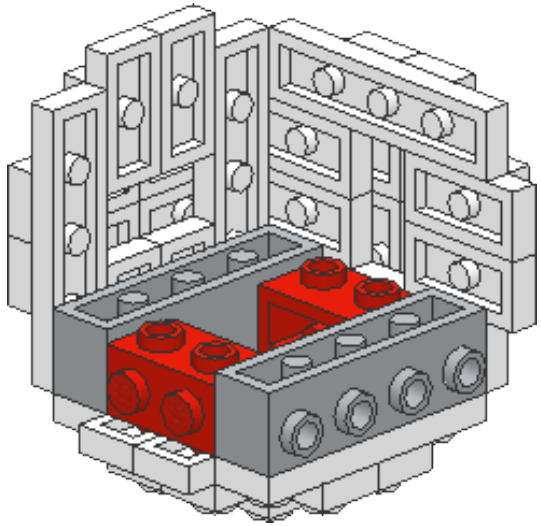
Globe design based on Lowell Sphere by “WWWally” from 2012





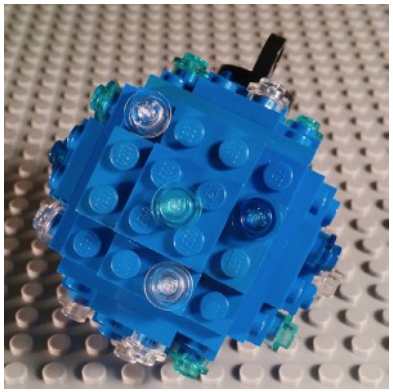
Travis Brick Not Required

- Note: For the 6.8 stud diameter Lowell Sphere and up, you can use other SNOT parts for the connection instead of the Travis Bricks.
- Tip: you can center the jumper plates on the hollow studs if using old style jumper plates.

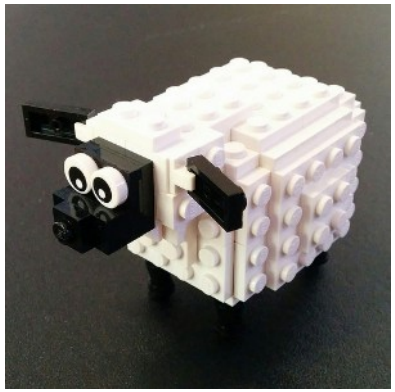


Some of my Lowell Sphere based MOCs

Christmas Ornaments

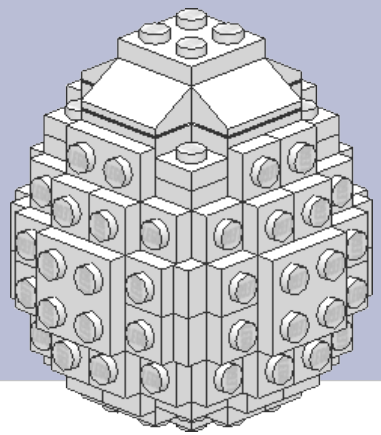


Sheep

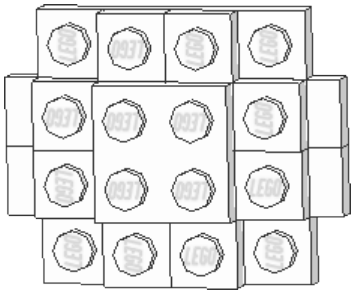


Kermit's eyes

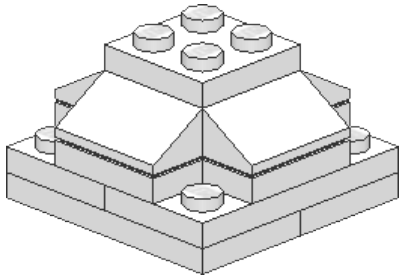
Easter Eggs



Breaking Eggs
Going from Sphere to Oval

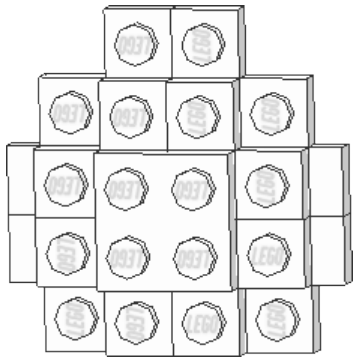


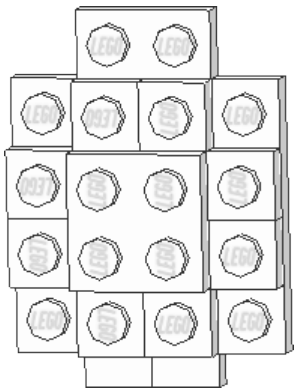
The round end (bottom) of egg is the same as on a standard Travis Sphere



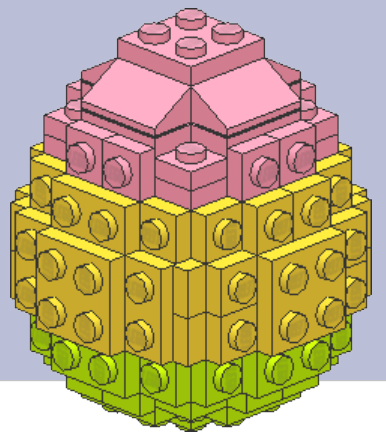
The pointy end (top) of the egg is my own custom design

The sides (2 of each version) are the same as on a standard Travis Sphere but with one edge extended

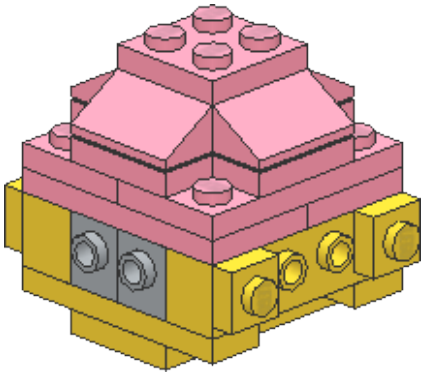


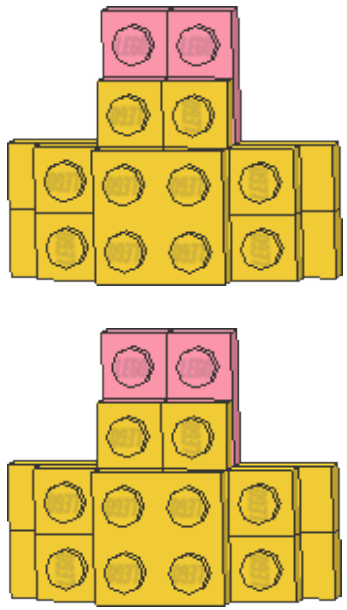


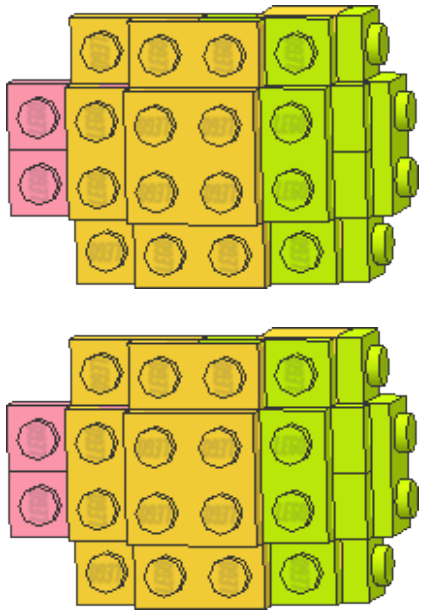
Coloring Eggs

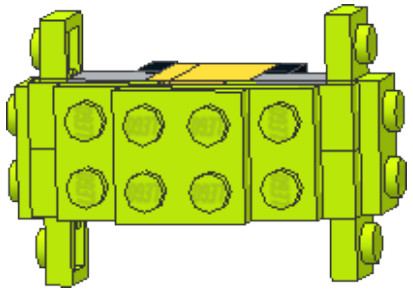


This egg has the *exact same shape* as the white one, but to get the colors to work, and to work around the limited range of parts in pink, the structure is very different!



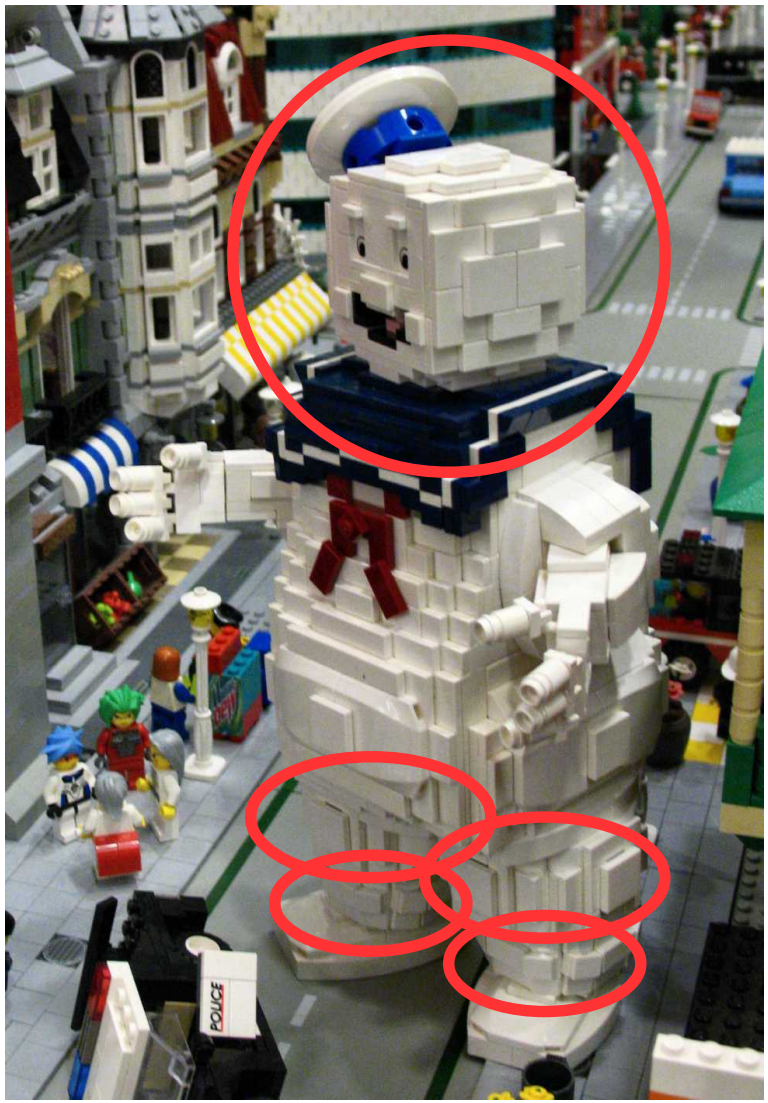




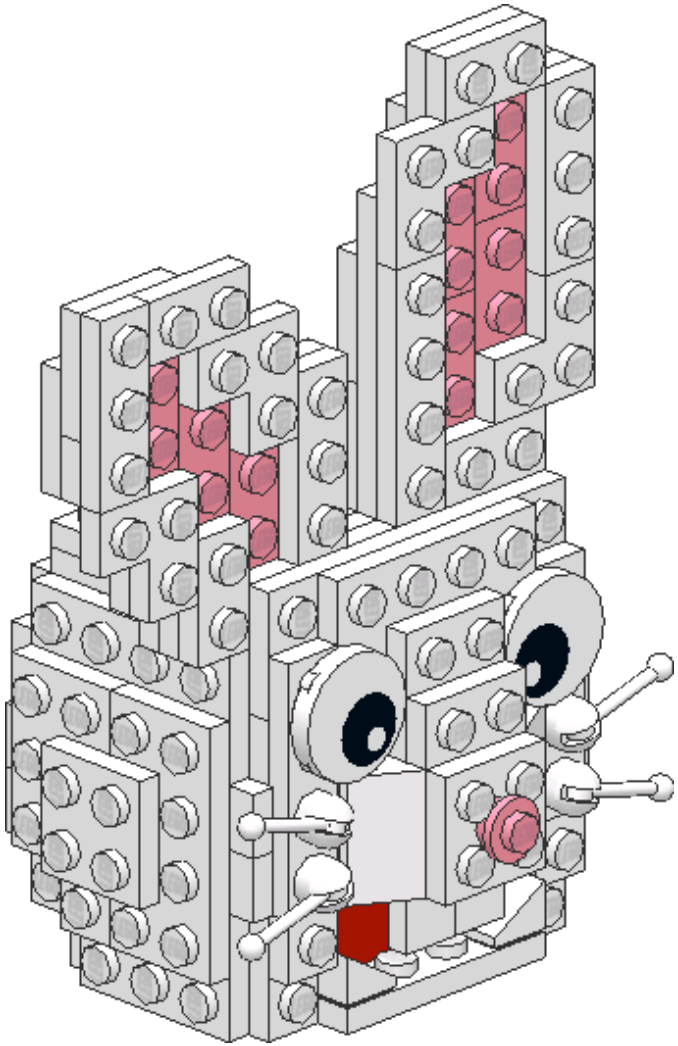


More Studs in All Directions MOCS

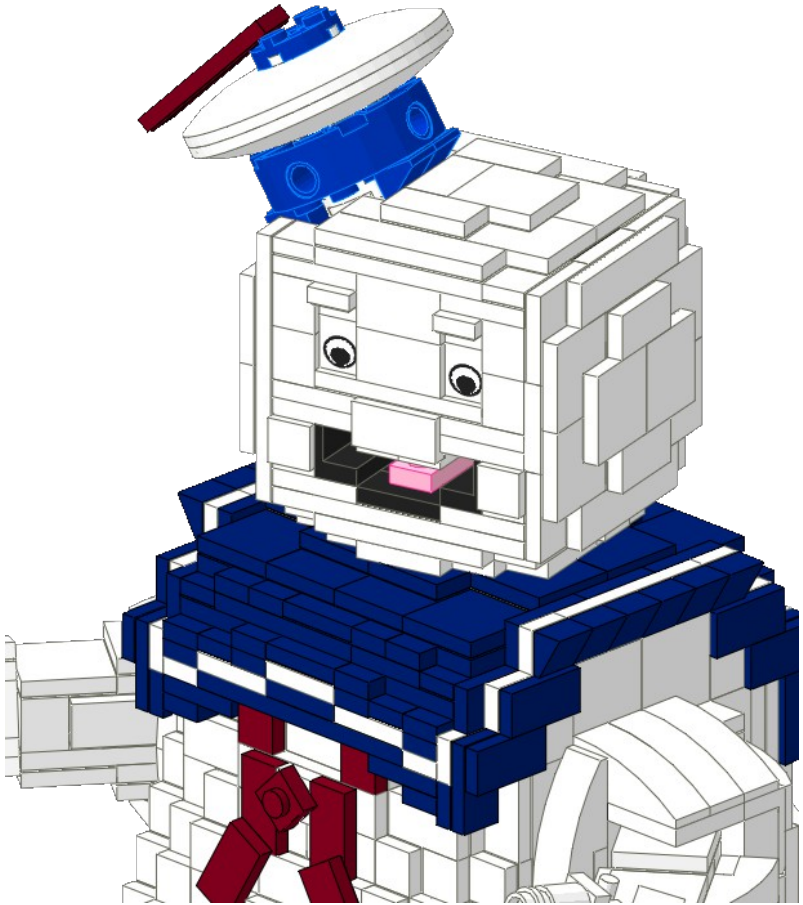
More use of Lowell Sphere-based components in some of my models...



Head Close-Ups

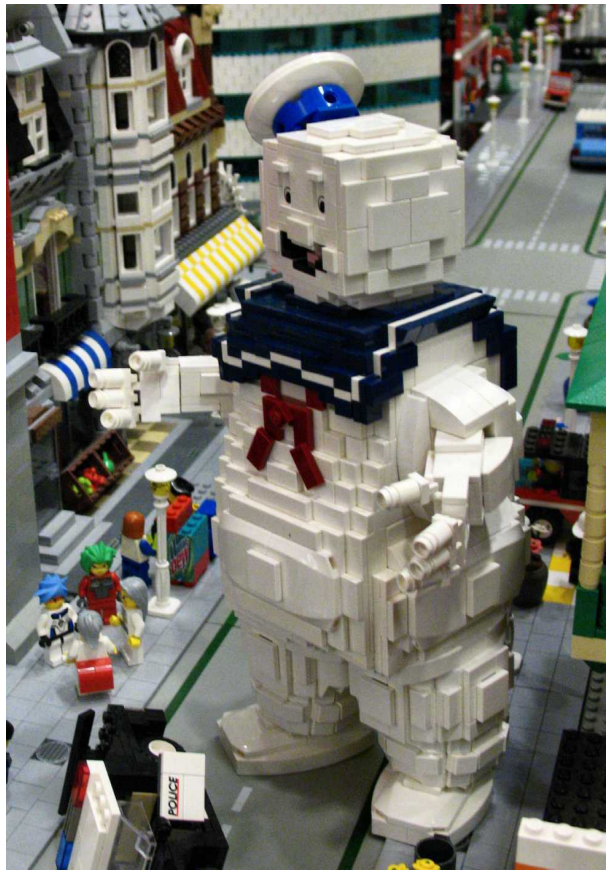


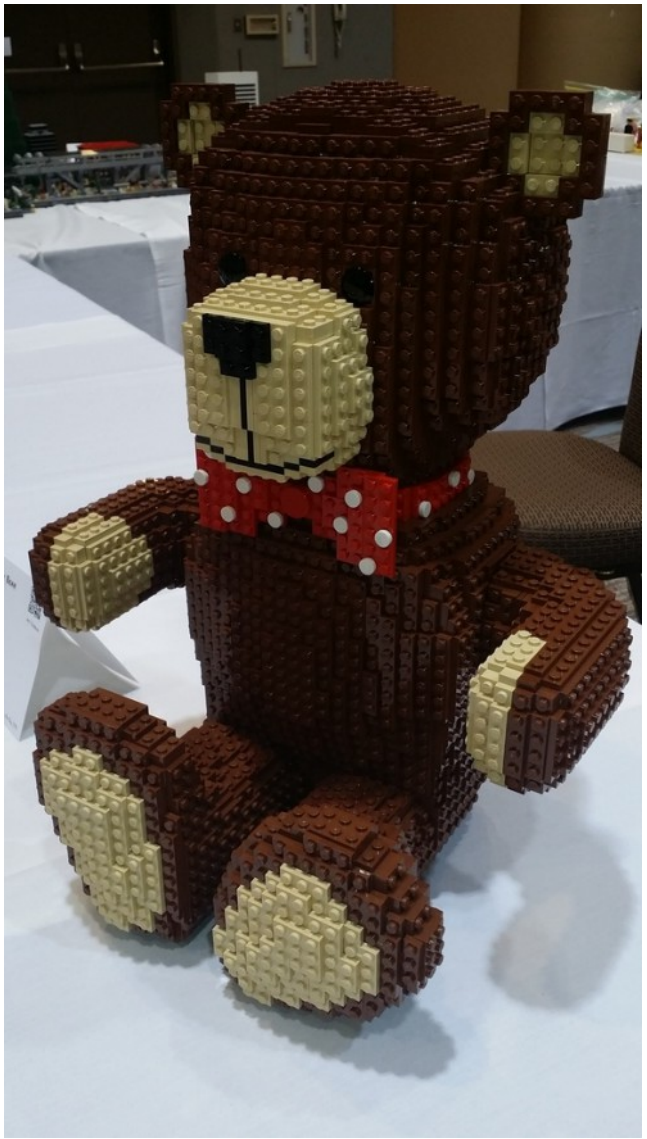
Side panels of both heads are very similar to Lowell Sphere sections.



Taking it to the Next Level

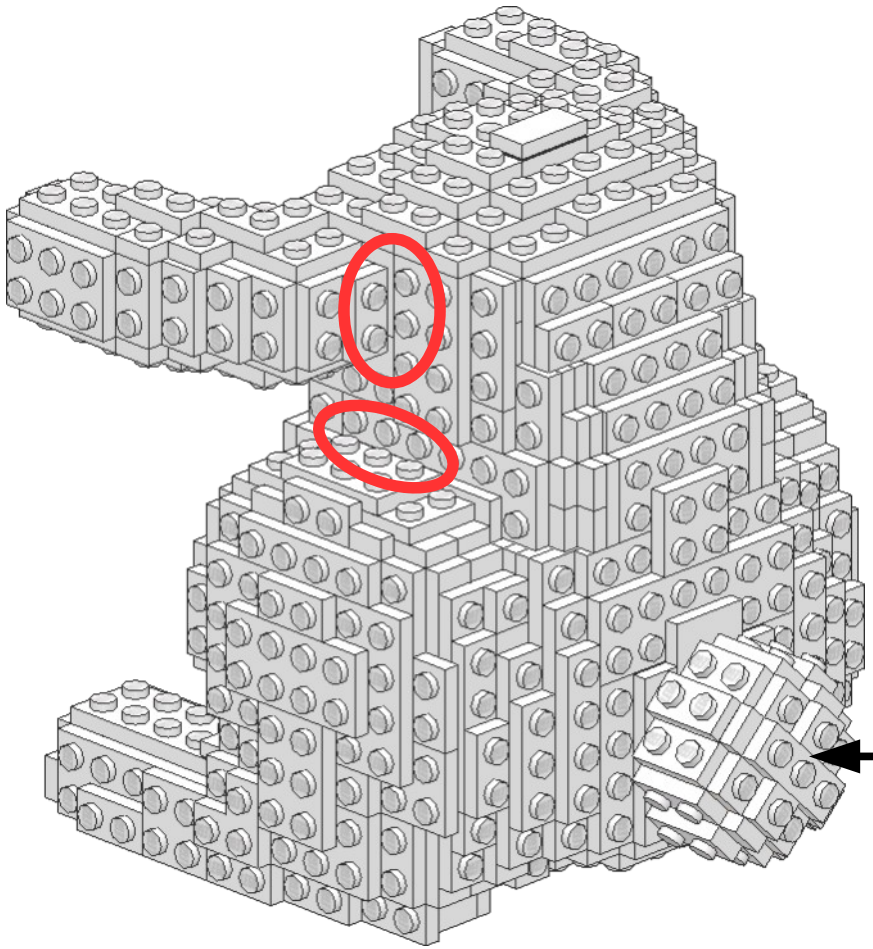
The bodies of the bunny, Stay-Puft, and Teddy Bear are built in a similar way, just not a spherical shape...





Concave Junctions

- Watch out for studs hitting each other!



Use a tile or leave a gap where the studs might otherwise hit.

Hey look! Another Lowell Sphere!

Fragile!

Each side of one of these models is connected by just a few studs along the edges or corners. Models built this way can be easily crushed!

This mess happened after I took Teddy to an event without adequate packing. This shows parts of Teddy's head after it broke apart.

Dealing with Fragile Models

There are two ways to avoid this problem:

1) Don't let it break – use adequate protection. Wrap models in cling wrap, then cover with tape to secure. Especially if taking on a plane in your checked luggage!

2) Build it more securely – a strong central core, not just a few SNOT bricks in the corners, to take the strain. (Next project for Teddy Bear is to redo using this approach)

Additional Resources

- Bruce Lowell's “Lowell Sphere” page
  http://www.brucelowell.com/lowell-sphere/
- Bram Lambrecht's sphere generator
  http://lego.bldesign.org/sphere/
- Slides for this talk available on my website
  http://www.brickpile.com/tag/studs-on-all-sides/
- My “Brick Geometry” presentation
  http://www.brickpile.com/tag/brick-geometry/

Q & A

Thank you

Contact me if you have any further questions...

bill@wards.net
www.brickpile.com