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## ABOUT THE LEGO® STRUCTURES

### One World Trade Center

This building opened on November 3, 2014, as the tallest building in the Western Hemisphere. It extends 1,776 feet into the air, a tribute to the year the Declaration of Independence was signed. Through its design, architects and engineers wanted to pay homage to the original World Trade Center as well as convey resilience and inspire hope.

Fun facts about the LEGO version:

- 10 feet tall
- Design time: 15 hours
- Build time: 45 hours
- Number of bricks: 25,500
- This model is completely hollow, with no internal structure or interior supports.

### Burj Khalifa

Burj Khalifa, in downtown Dubai, United Arab Emirates, is the tallest building in the world. It's double the size of the Willis Tower at 163 stories and contains more than 24,000 windows, as well as the longest elevator in the world. It was built by bundling structures of smaller size for strength, and a Y-shaped buttressed core prevents twisting in the wind.

Fun facts about the LEGO version:

- 12 feet tall
- Design time: 45 hours
- Build time: 60 hours
- Number of bricks: 16,500
- This is the only model where Adam has used a mathematical expression to visualize the design.

### Golden Gate Bridge

When the Golden Gate Bridge opened in 1937, it was then the longest suspension bridge in the world at 4,200 feet. Built to withstand both wind and earthquakes, each of the bridge's cables comprises hundreds of wires, anchored for support. A deck truss prevents too much sway, but cables can still move up to 27 feet to accommodate winds.

Fun facts about the LEGO version:

- 60 feet long
- Design time: 215 hours
- Build time: 260 hours
- Number of bricks: 64,500
- At 60 feet, this model is so long it could not be fully set up until installation at MSI.

### **Ping An Finance Center**

Scheduled to open in Shenzhen, China in 2016, this new super-skyscraper will be the country's tallest at 1,965 feet. The building's completion marks Shenzhen's rise in population: In 35 years, the city's population has grown from 300,000 to 10 million. Its sleek stainless steel façade will resist salt corrosion, and the columns provide both visual interest and resistance to wind.

Fun facts about the LEGO version:

- 6 feet tall
- Design time: 25 hours
- Build time: 60 hours
- Number of bricks: 20,250
- To simulate the rebars (steel rods in concrete), Adam used silver antennas from Star Wars sets.

### **The Gateway Arch**

The Arch is the nation's tallest memorial and serves as a "Gateway to the West." It is a catenary curve, with its width and height at equal at 630 feet. Architect Eero Saarinen was selected for the project through an anonymous design competition, and the monument was completed in 1965. Visitors can travel to the top of the Arch via an elevator system.

Fun facts about the LEGO version:

- 8 feet tall
- Design time: 25 hours
- Build time: 30 hours
- Number of bricks: 7,500
- Not unlike the real Arch, the model is self-supporting, even without the top sections in place.

### **International Space Station**

This cutting-edge laboratory orbits the Earth at 17,500 miles per hour while it houses a team of international astronauts that conduct experiments in space. The ISS structure is modular, just like LEGO. The first piece was launched by Russia in 1998. Adding additional pieces to the structure is a unique engineering challenge as rockets must be launched in a window of minutes each day to reach the orbiting destination at the right time.

Fun facts about the LEGO version:

- 4 feet wide
- Design time: 30 hours
- Build time: 25 hours

- Number of bricks: 2,500
- The solar panels were created from 2,500 gold bars culled from Harry Potter LEGO sets.

### **Great Pyramid of Giza**

The Great Pyramid of Giza is the oldest and most intact Wonder of the Ancient World: it's the largest in a compound of buildings paying homage to Pharaoh Khufu and his family. It is believed to have been completed in 2560 B.C., and it remained the tallest human-built structure for nearly 4,000 years, made up of 2.3 million giant bricks in all. How these monumental structures were built remains up for study and debate.

Fun facts about the LEGO version:

- Almost 12 feet long
- Design time: 50 hours
- Build time: 45 hours
- Number of bricks: 24,000
- The pieces used in the corners are very rare, only found in a few sets that are no longer produced.

### **American Eagle Roller Coaster**

When this ride opened at Six Flags Great America in 1981, it was the world's tallest wooden coaster at 127 feet tall. It contains 8,300 feet of track, and it's still respected as one of the country's best wooden coasters. Construction of this great coaster took more than 20,000 hours, 9,000 gallons of paint and more than a million feet of lumber.

Fun facts about the LEGO version:

- 12 feet long
- Design time: 55 hours
- Build time: 70 hours
- Number of bricks: 14,500
- Part of Adam's research included walking up to the top of the coaster's lift hill.

### **Palace of Fine Arts**

The Museum of Science and Industry was originally built as the Palace of Fine Arts for the 1893 World's Columbian Exposition. The memory of Chicago's Great Fire frightened the contributors around the world who were sending priceless artworks to the Fair. To assuage them, the Palace of Fine Arts was built with a fireproof brick substructure. After the Fair closed, most of the buildings were destroyed by fire, but this building remained.

Fun facts about the LEGO version:

- 8 feet wide and nearly 2 feet tall
- Design time: 41 hours
- Build time: 187 hours
- Number of bricks: 18,500
- This is the first time Adam has used only white bricks in a model.

## **Cinderella Castle, Disney World**

This theme park icon was designed by Herbert Dickens Ryman, a Disney artist and close friend of Walt Disney. Forced perspective makes this structure appear larger than it is. The windows and bricks on upper levels are made smaller to seem farther away. Steel framed construction and a 10-inch-thick concrete wall lie beneath the ornate façade and allow this building in central Florida, where hurricanes are a threat, to withstand 100 mile-per-hour wind gusts.

Fun facts about the LEGO version:

- 5 feet tall
- Design time: 145
- Build time: 230
- Number of bricks: 36,000
- Almost every LEGO building technique in Adam's repertoire has been used in the castle.

## **Roman Colosseum**

The Colosseum was built in 70-80 A.D. in honor of Titus, Emperor Vespasian's son. It's the largest amphitheater ever erected, and a gift to Roman citizens who would gather in its walls to watch gladiator fights, wild animal shows, re-enactments of battles and more. It could seat an estimated 50,000 to 80,000 patrons, but could empty in minutes because of its ingenious system of 80 entrance/exit arches, corridors and staircases.

Fun facts about the LEGO version:

- More than 6 feet long
- Design time: 120 hours
- Build time: 75 hours
- Number of bricks: 22,500
- To get the oval shape just right, the structure was redesigned over a dozen times.

## **Hoover Dam**

One of America's Seven Modern Civil Engineering Wonders, the Hoover Dam was completed in 1935 as part of President Roosevelt's New Deal. The dam's goals were to tame the Colorado River, distribute water to the parched Southwest and provide hydroelectric power. It was constructed as an arch-gravity dam. Arch dams are best for narrow passages between steep rock walls; gravity dams' massive weight hold back water.

Fun facts about the LEGO version:

- 5 feet long
- Design time: 215 hours
- Build time: 160 hours
- Number of bricks: 42,800
- Adam experimented with more than six ways to construct this model.

## **Fallingwater**

This National Historic Landmark, designed by Frank Lloyd Wright, is considered the “best all-time work of American architecture” by the American Institute of Architects. Completed in 1938, it was built as a private Pennsylvania residence designed to incorporate and complement the surrounding woodland and waterfall. The home is now open to public tours.

Fun facts about the LEGO version:

- 5 feet long
- Design time: 170 hours
- Build time: 130 hours
- Number of bricks: 21,100
- With a set of careful manipulations, this model comes apart like a puzzle.

*Brick by Brick* is sponsored by ArcelorMittal.

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