









Architecture

Big Ben

London, Great Britain



-  Booklet available in English on
-  Heft in deutscher Sprache erhältlich auf
-  Livret disponible en français sur
-  Folleto disponible en español en
-  Folheto disponível em português em
-  A füzet magyarul ezen a honlapon olvasható: [Architecture.LEGO.com](https://www.lego.com/en-us/architecture)

Big Ben

Big Ben, officially known as the Clock Tower, has stood at the north-eastern corner of the Palace of Westminster for over 150 years. It's one of the most recognized landmarks in the world today, and has become an iconic symbol of both London and England. The story of its design and construction provides a fascinating glimpse into one of the most interesting periods of architectural history.



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History

When the old Palace of Westminster was destroyed by fire on the 16th October 1834, a competition was announced for the design of a new palace building. Over 97 entries were received and in January 1836, it was announced that the competition had been won by the 40 year-old English architect Charles Barry. His initial design, in the modern Neo-Gothic style, was only two-thirds the size of the completed building and was without the 96.3 meter (316 ft) Clock Tower that would become known as Big Ben.

As Barry's own architectural style was more Classical than Gothic, he asked for assistance from one of leading lights of the neo-gothic movement, Augustus Pugin. While it is difficult to say exactly what work can be accredited to Pugin, it's commonly thought that he created much of the gothic-styled interiors of the palace and the design of the clock tower itself.

Neither man would live to see the completion of their work. The intricate designs gave many construction difficulties: adding a whole decade to the estimated six-year building time and tripling the initial budget.



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The design of the clock mechanism would also set new standards in the field of clock making and add further complications to the construction process. After a competition, the task was given to Edward John Dent (1790-1853) in February 1852 and he set about designing a mechanism that would live up to the then unheard demands that the first stroke of each hour should be accurate to within one second. It took seven years before the clock began keeping time on 31st May 1859; the construction



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of the tower itself was delayed, Dent passed away, and modifications had to be made when it was discovered that the clock mechanism was larger than the actual space allowed.

Big Ben was the unofficial name given to the tower's Great Bell. It was the largest bell in the Britain at the time and named after either Sir Benjamin Hall, the first Works Commissioner, or Ben Caunt, a champion heavyweight boxer. The first Great Bell was cast in Stockton-on-Tees and transported to

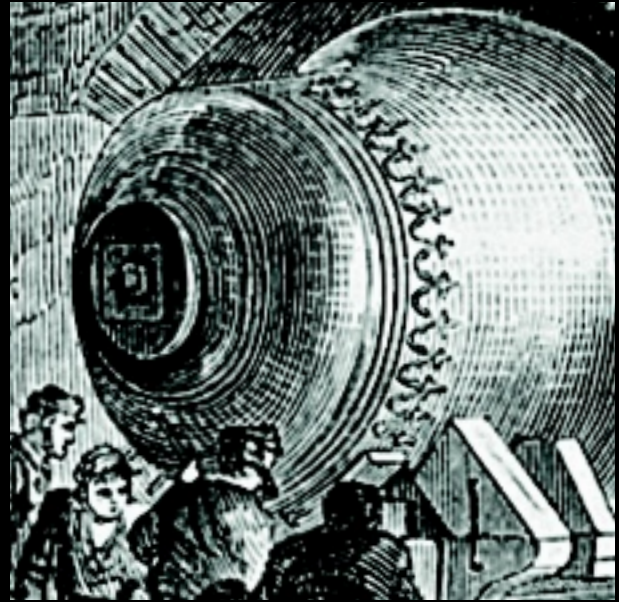


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London by rail and see. Huge crowds gathered to watch it being pulled across Westminster Bridge by 16 white horses. During tests, however, a crack appeared and a new Great Bell had to be cast. Though this one would eventually also develop a crack, successful repairs and a lighter hammer have ensured that it still rings out the time today.

The Neo-Gothic heritage of the Clock Tower is particularly emphasized by the ornate decorations of its upper floors and the clock dials. Each dial is seven meters (23 ft) in diameter and made from cast iron and 312 separate pieces of pot opal glass. Once every five years, specialist technicians abseil down the dials to carry out cleaning and essential repairs.

The clock mechanism is wound by hand three times a week and is still as accurate today as when it was constructed over 150 years ago. Although Big Ben is one of the most famous tourist attractions, it's not open to overseas visitors. Residents of the United Kingdom are able to visit the tower after arrangement with their local Member of Parliament.



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Construction

The foundation stone for the Clock Tower was laid on 28th September 1843 and it wouldn't be completed until 1859; five years behind schedule. The Clock Tower was built from the inside outwards, meaning that no scaffolding was ever visible to the outside world.

The bottom 61 meters (200 ft) of the 96.3 meters (316 ft) high Clock Tower consists of brickwork with sand colored Anston limestone cladding. The remainder of the tower's height is made up of a framed spire of cast iron. The tower was



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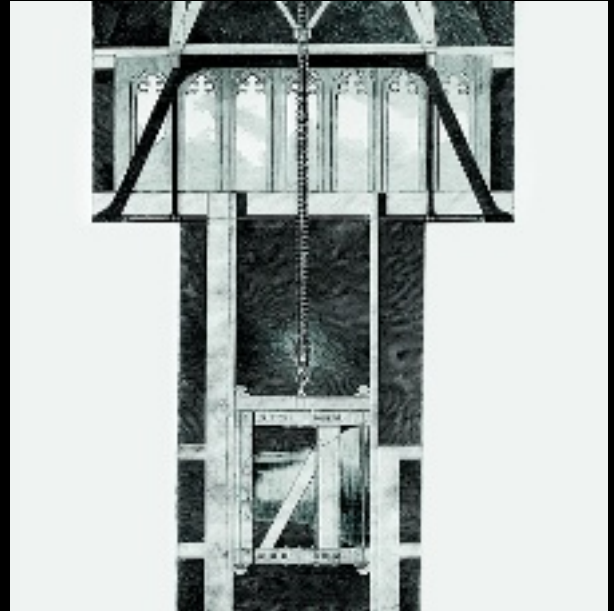


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founded on a 15-metre (49 ft) square raft of 3-metre (9.8 ft) thick concrete, at a depth of 4 meters (13 ft) below ground level. On its completion, the interior volume of the tower was 4,650 cubic meters (164,200 cubic feet).

When it was time to raise the Great Bell, it was discovered that its dimensions meant it was too large to fit up the Clock Tower's shaft vertically, so Big Ben was turned on its side and winched that way. It took 30 hours to lift the bell to the belfry in October 1858.

Over 150 years later the tower stands as a testament to solid architectural design and ingenious engineering. Changes in ground conditions, especially tunneling for the London Underground, means that today the tower leans slightly to the north-west by approximately 22 cm (8.66 inches) at the clock dials.



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Facts about Big Ben

Location:..... London, Great Britain
Architect: Charles Barry / Augustus Pugin
Style: Neo-Gothic
Construction type: Clock tower
Construction materials: ... Brickwork, stone cladding, cast iron
Date: 1843-1859
Height: 96.3 m (316 ft)



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The architects

Charles Barry 23.5.1795–12.05.1860

By the time Charles Barry won the competition to build the new Palace of Westminster, he was already a well-respected architect. Born in Westminster in 1795, opposite where Big Ben would later stand, he was apprenticed to a London surveyor and architect's office at the age of 15 before embarking on a grand tour of Mediterranean Europe and the Middle East.

On his return, he opened his own office in 1821 and soon gained a reputation for his Church designs and remodeling of older country houses.

Though the Palace of Westminster project would further enhance his name, the stress caused by delays and cost overruns would affect his already fragile health. He died at home of a heart attack on 12th May 1860. Having been knighted by Queen Victoria in 1852, he was buried at Westminster Abbey and a life-size marble statue of him was later placed at the foot of Committee Stairs in the Palace of Westminster.



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Augustus Welby Northmore Pugin 1.03.1812-14.09.1852

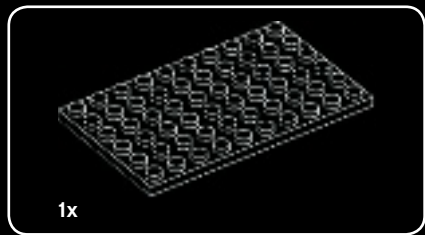
Having only a limited experience of the Neo-Gothic style, Charles Barry turned to one of the style's leading proponents for assistance. Augustus Pugin had literally grown up with Gothic style; his French-born draughtsman father training him to draw Gothic buildings for the renowned reference books he produced on the subject.

After converting to Catholicism, Pugin designed Churches and Cathedrals in England, Ireland and Australia before joining Barry on the work on the Palace of Westminster. The intricate Clock Tower would be one of his last designs before he descended into madness, being committed to an asylum and dying on 14th September 1852 only 40 years old.

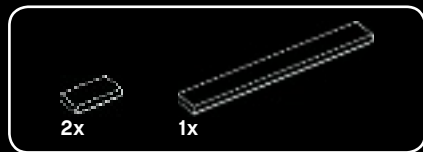
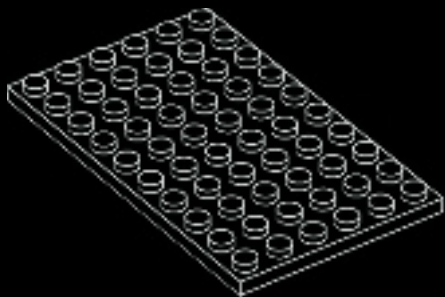
Though the popularity of the Gothic style had been growing throughout the 19th Century, Barry and Pugin's work on the Palace of Westminster and Big Ben would popularize the architectural style and ensure it reached into every corner of Victorian life.



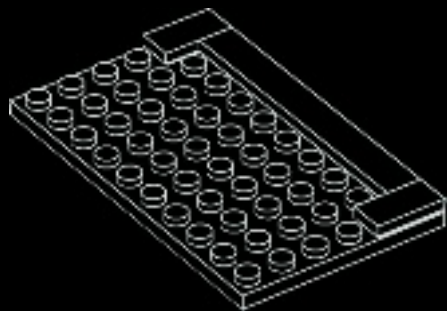
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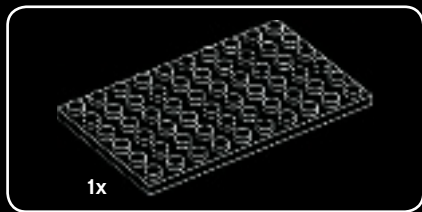


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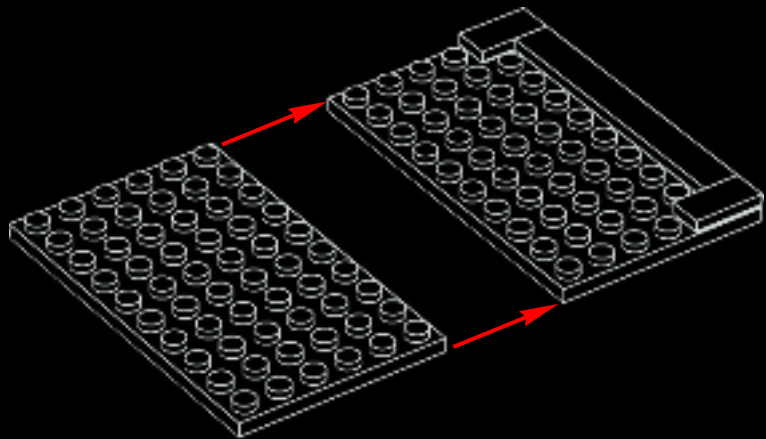


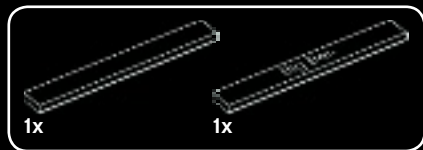
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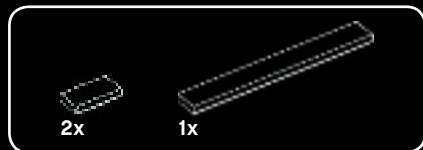
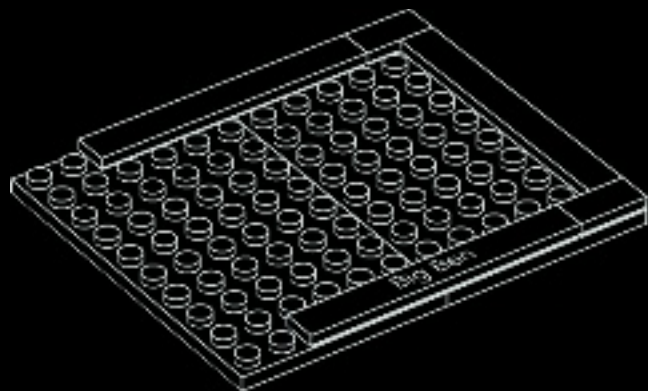


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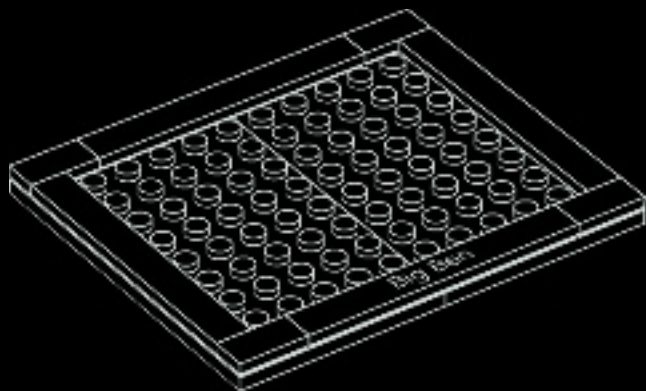




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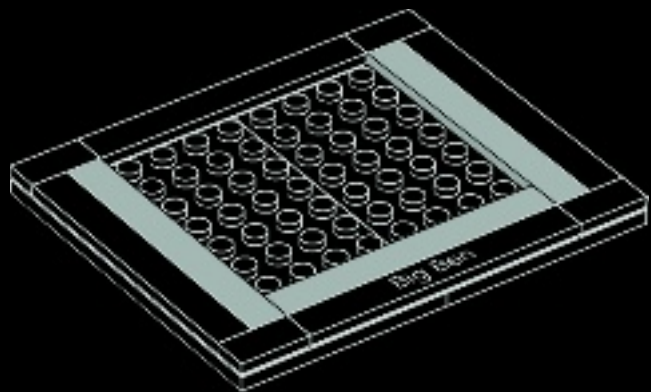


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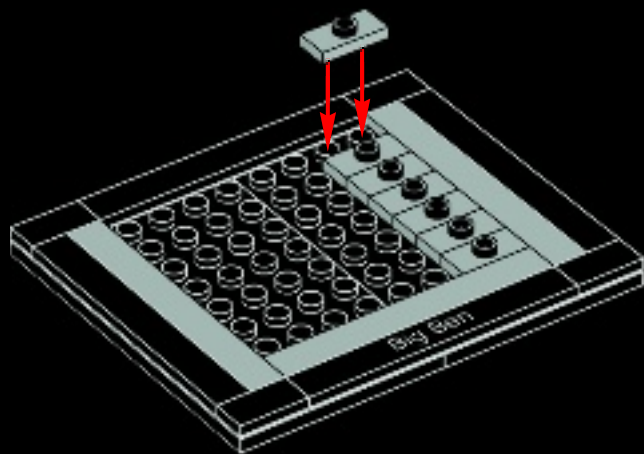




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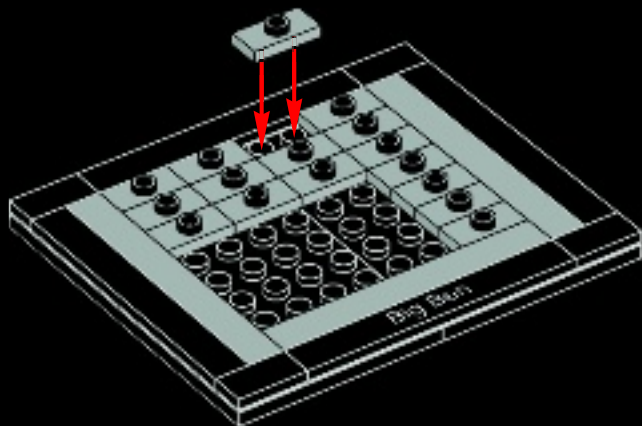
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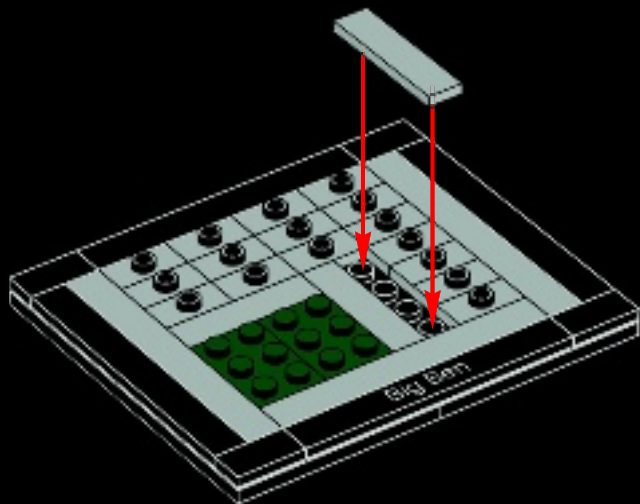


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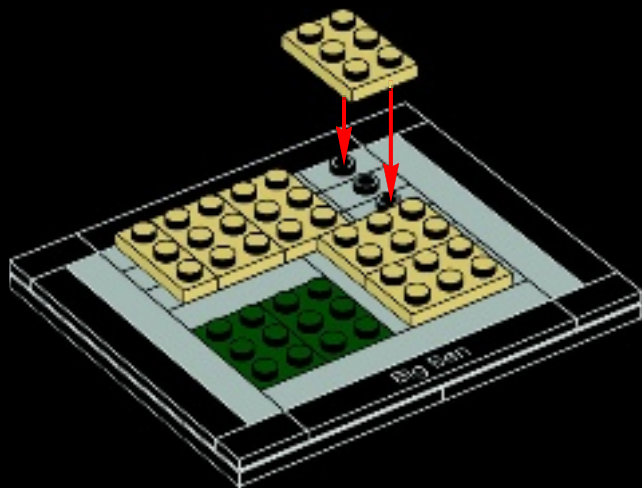


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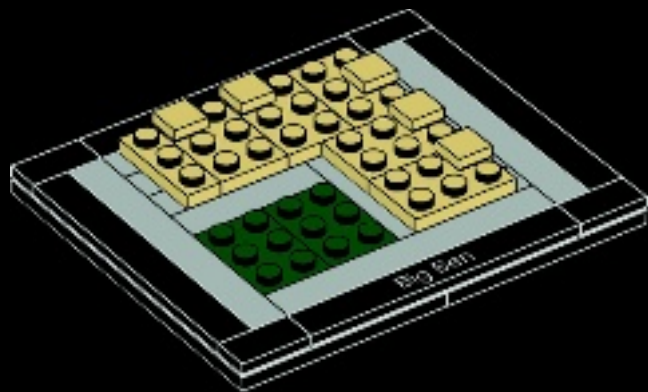
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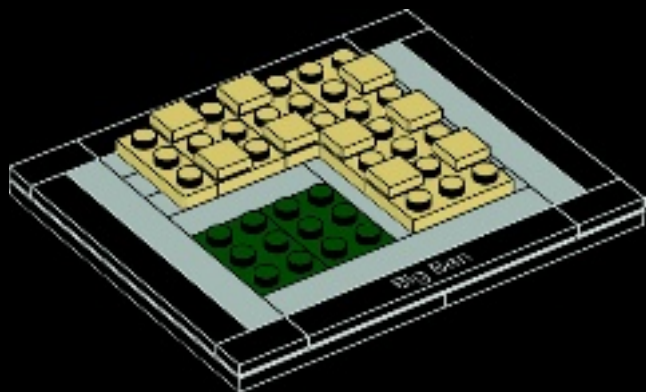
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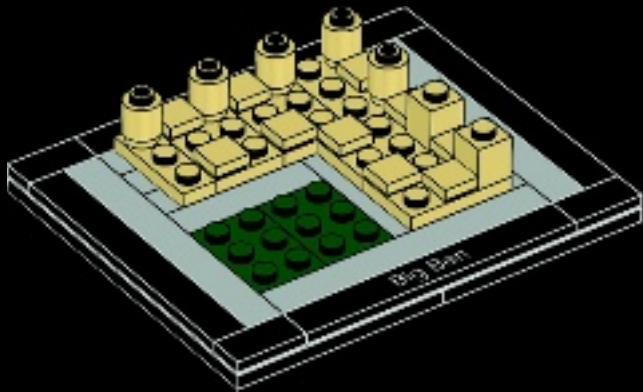


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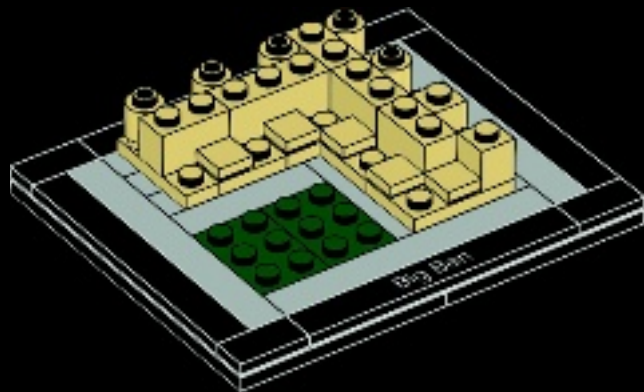


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14



There are 334 steps to the belfry of the Clock Tower and a total of 393 to the lantern (the Ayrton Light), which is illuminated any time Parliament sits after dark.



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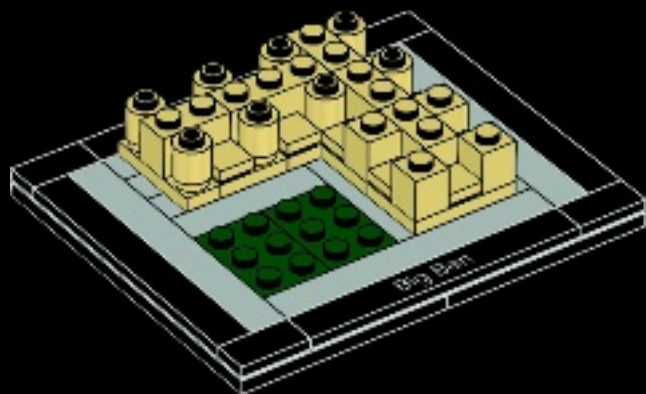


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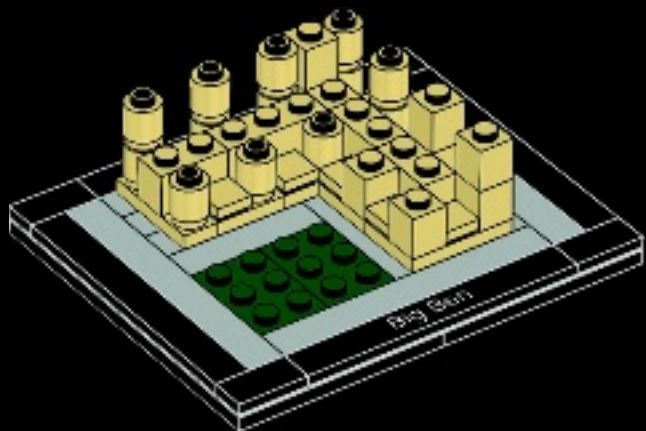


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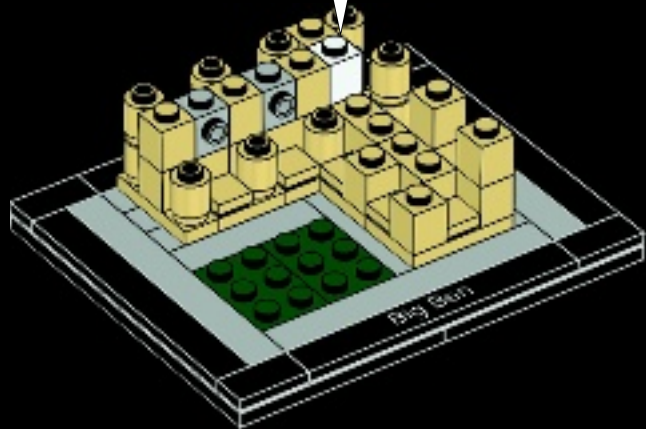


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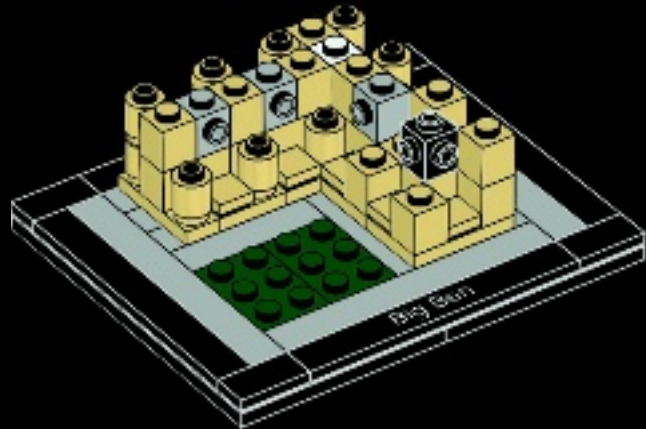


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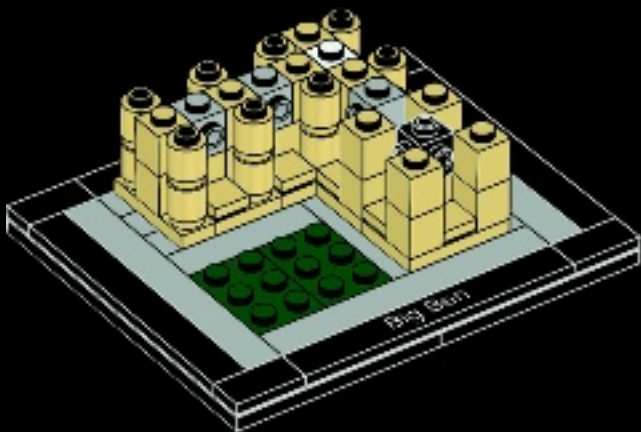


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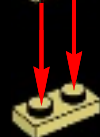


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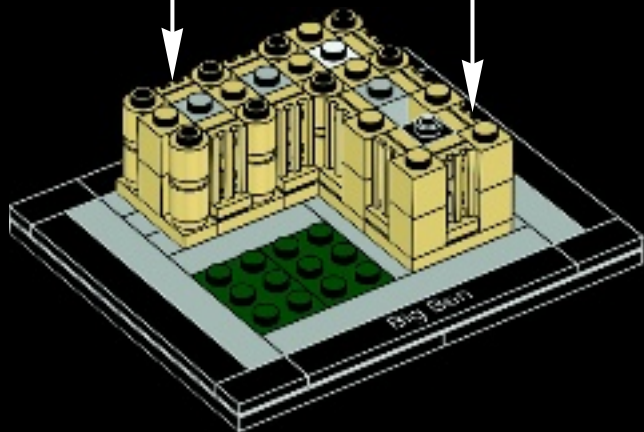
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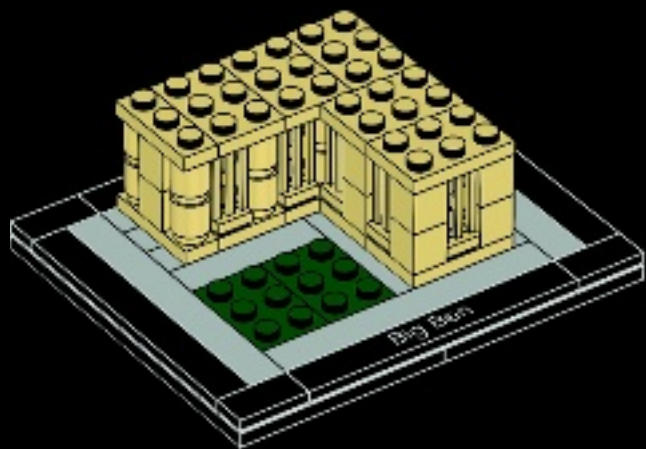


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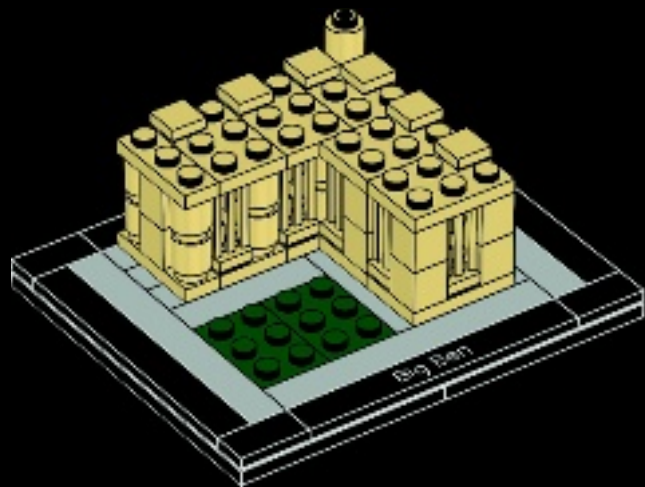


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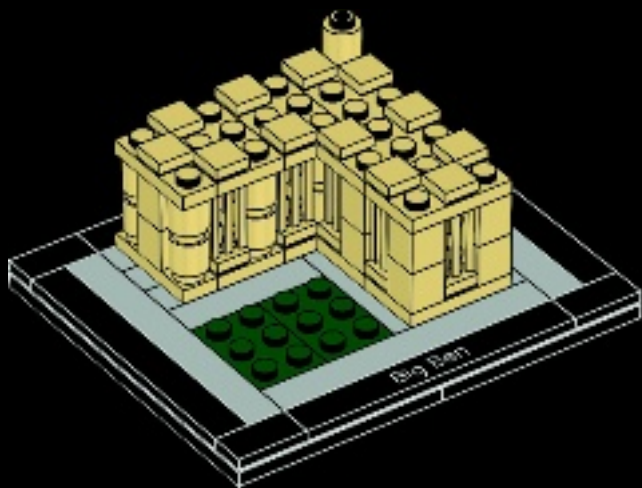
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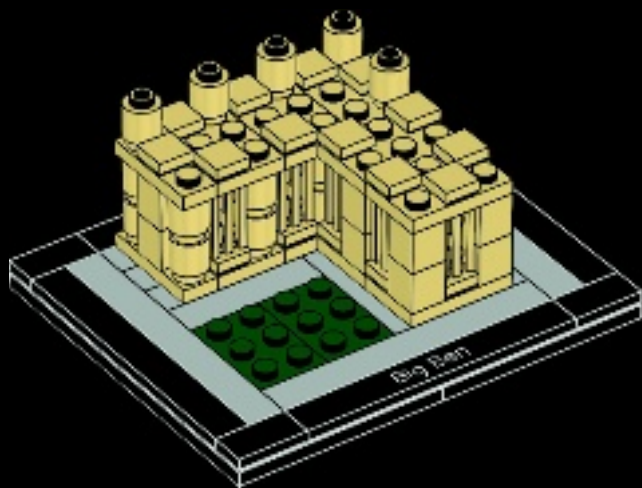


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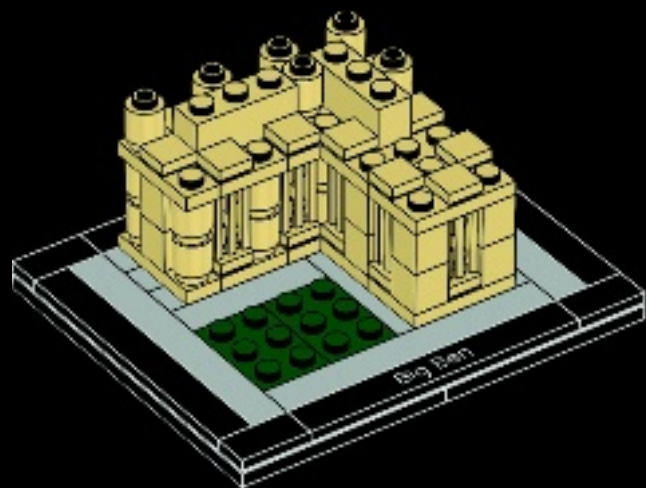


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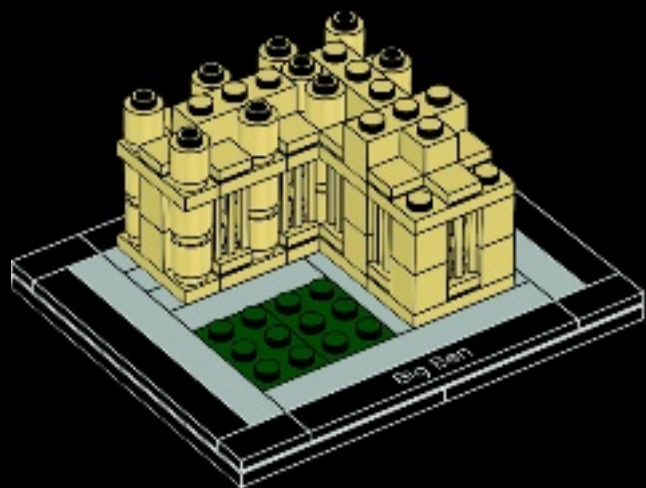


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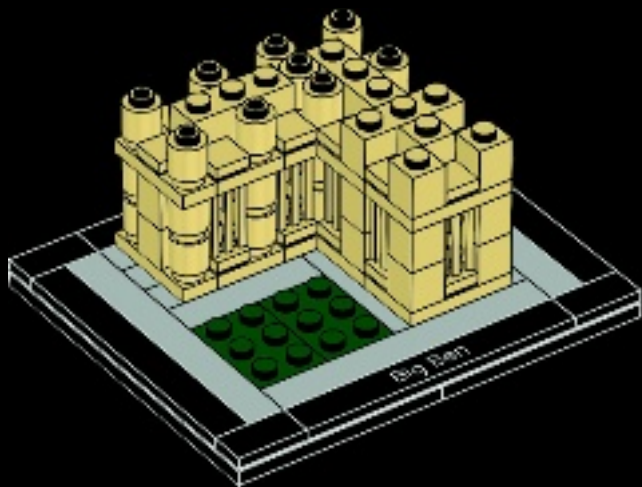
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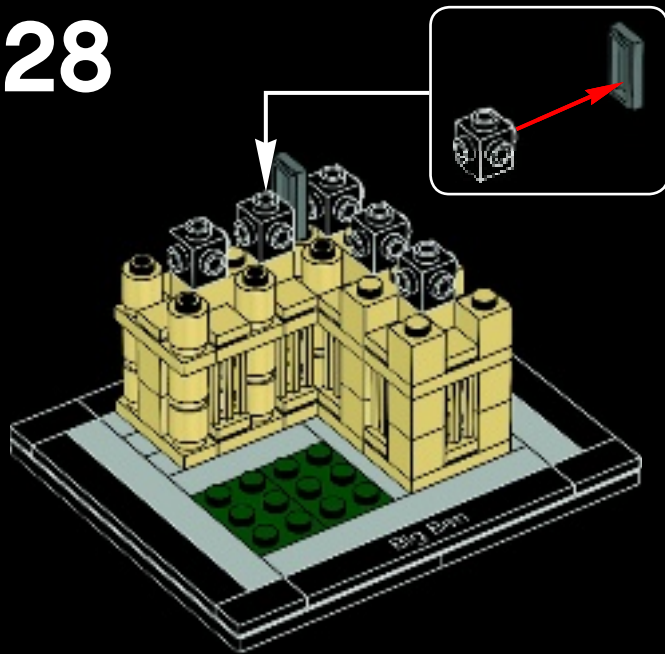


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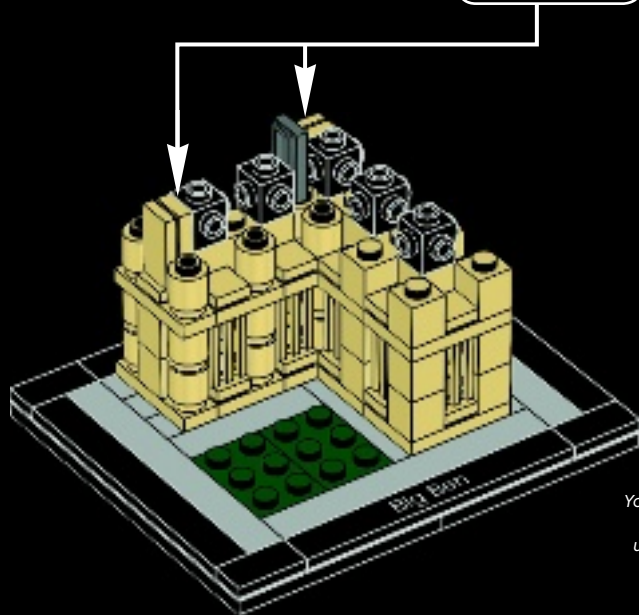
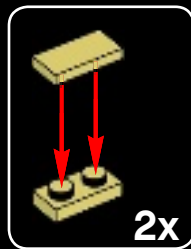


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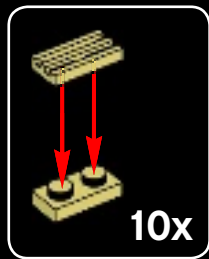
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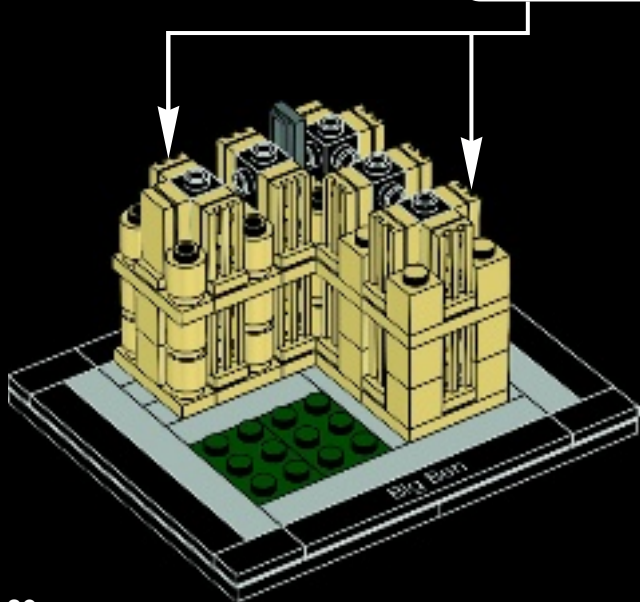
Anston stone from Yorkshire and granite from Cornwall were used on the exterior of the tower to clad the brickwork core.



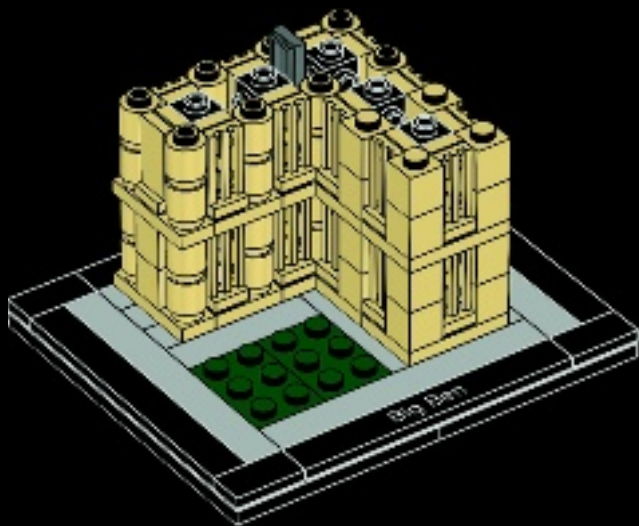
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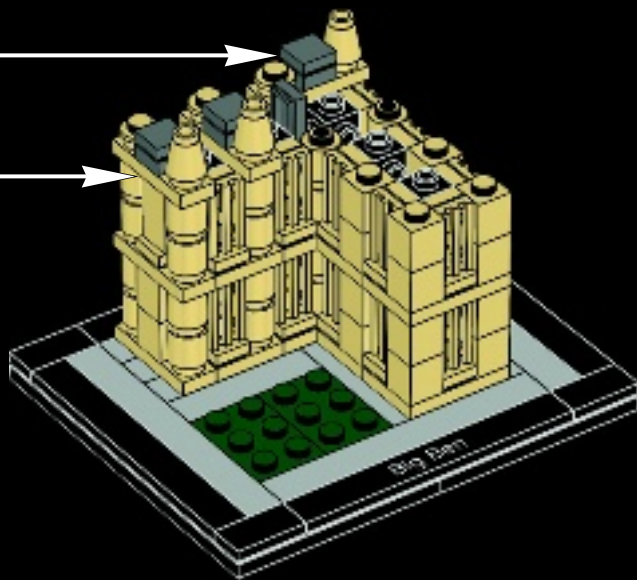
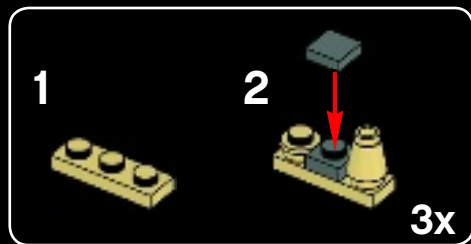


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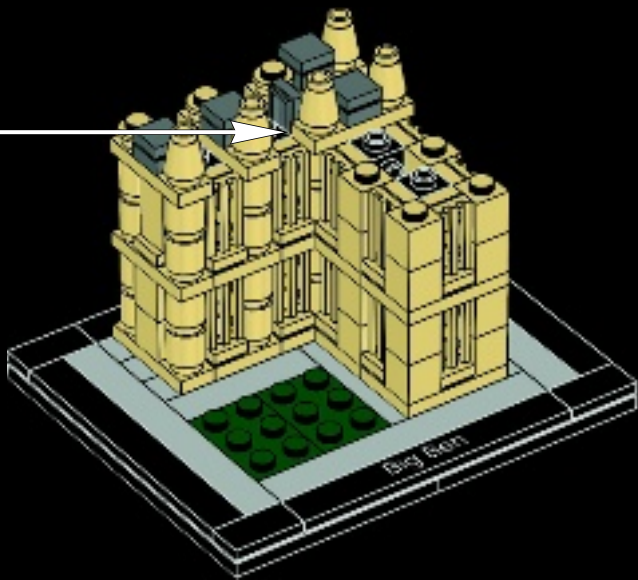


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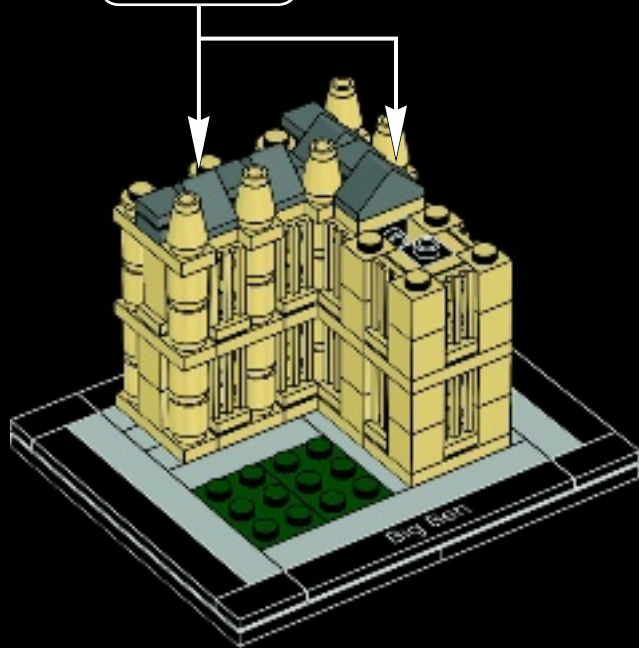
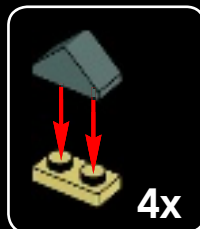


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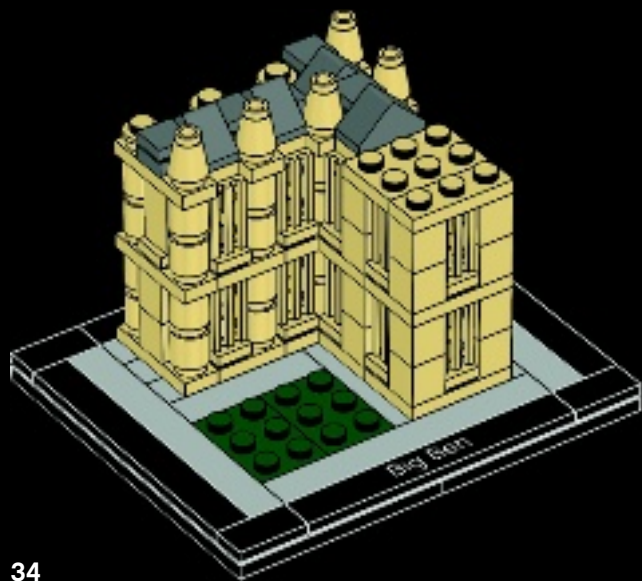


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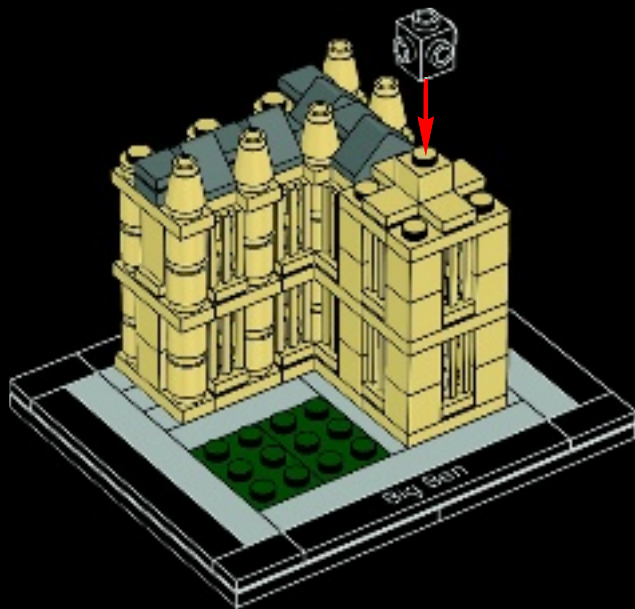


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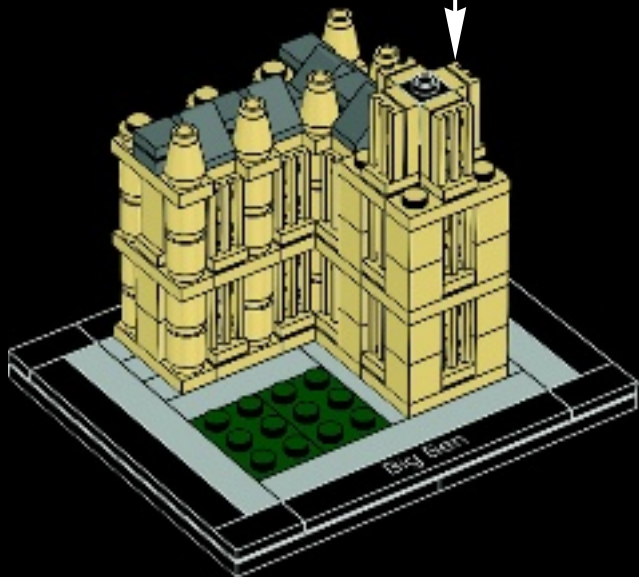
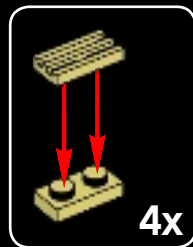
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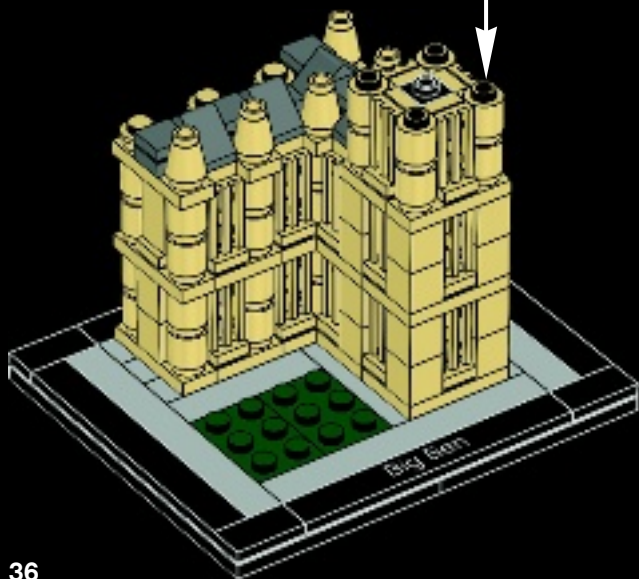


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38



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36



1x



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39





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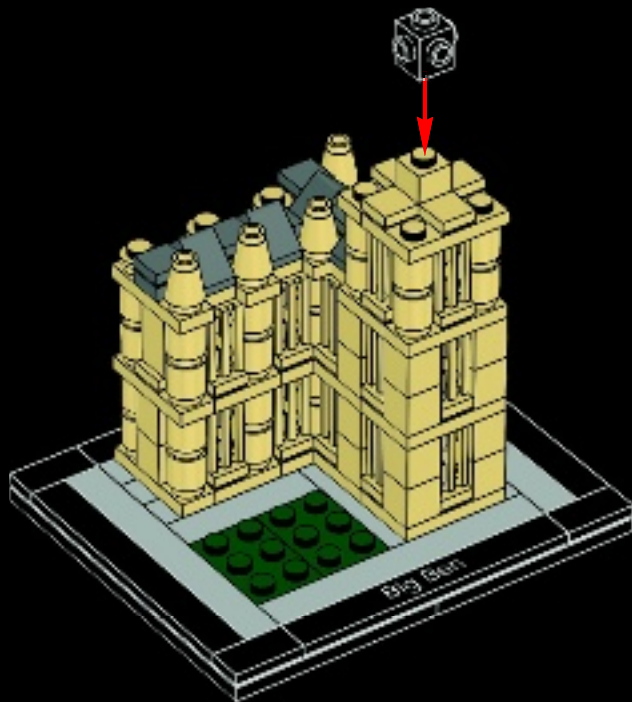


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4x

40



In addition to its three-times-a-week winding, the clock's precision is maintained by using old pennies (taken out of circulation in the early 1970s). These are added to or removed from the clock's pendulum to maintain the timepieces' accuracy.



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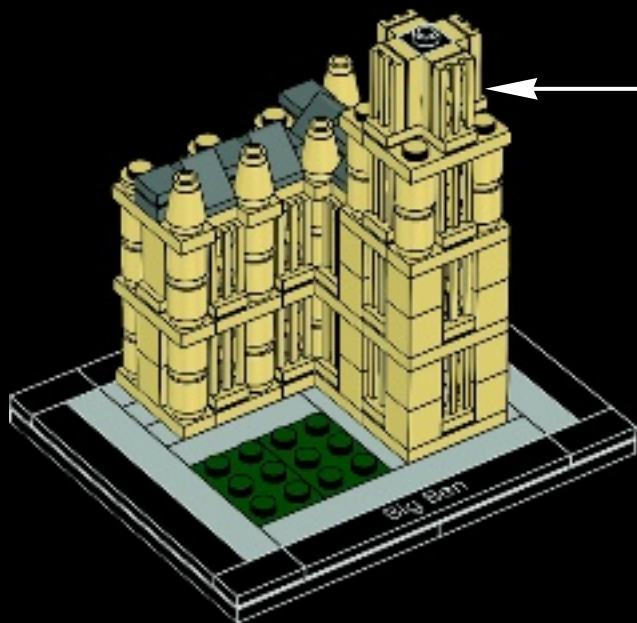
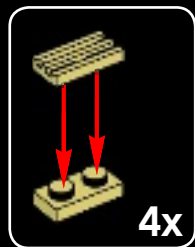


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4x

41





8x

42



4x





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43





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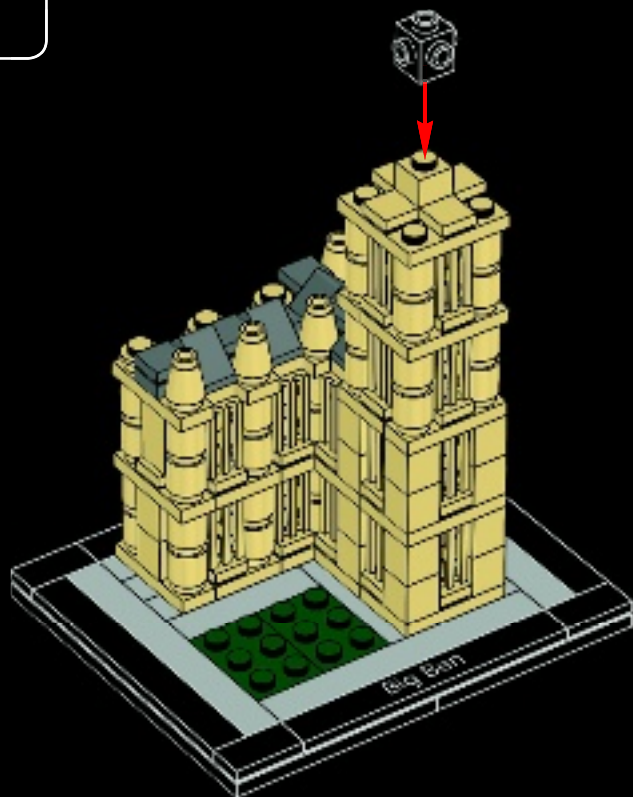


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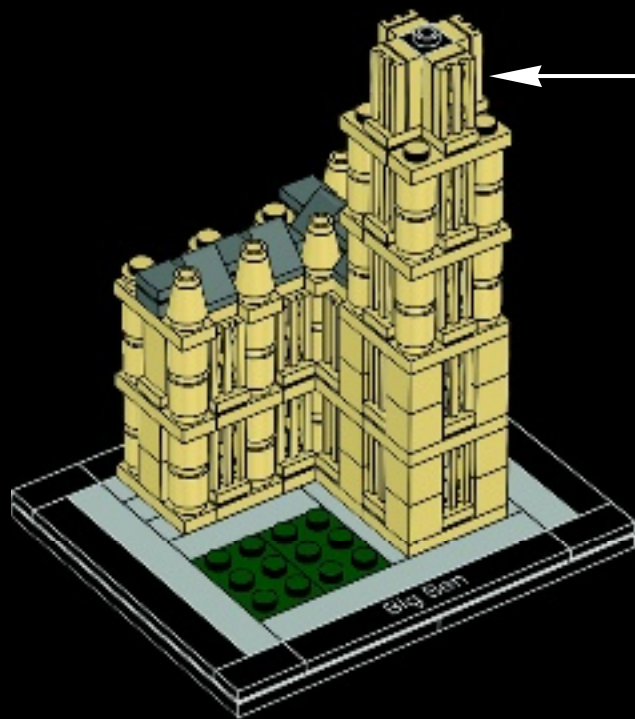


4x



4x

45



4x



8x

46



4x



1x



1x

47





8x

48



'Double Three-legged Gravity Escapement' was the name of a new and revolutionary mechanism, ensuring the clock's accuracy by making sure its pendulum was unaffected by external factors, such as wind pressure on the clock's hands.



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1x



1x

49



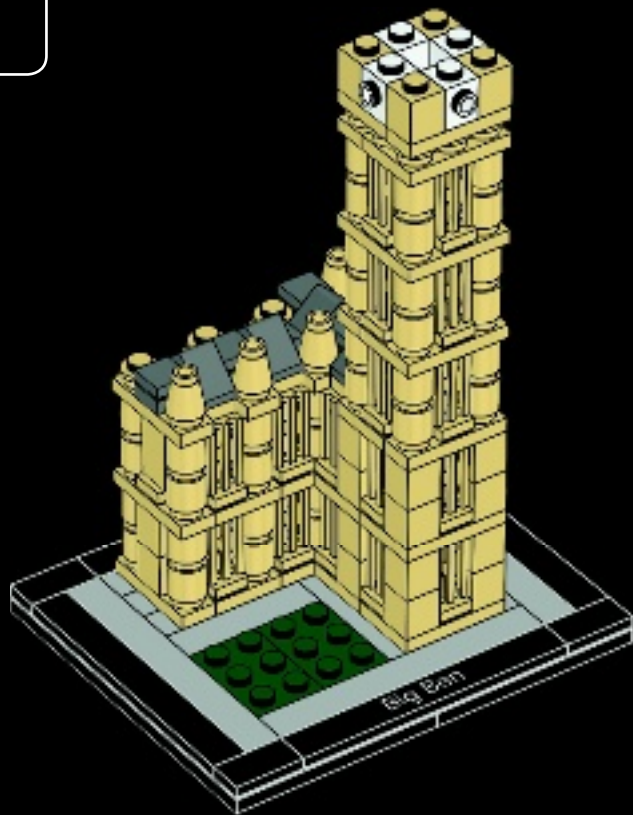


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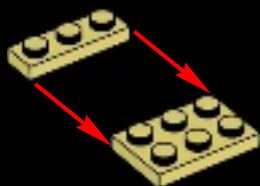


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1x

1



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2





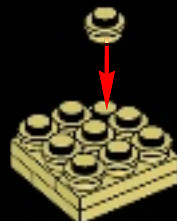
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9x

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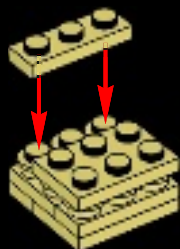


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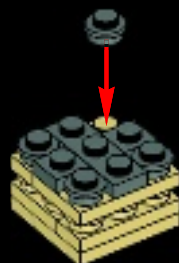


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6





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4x

7



1x

8





4x

9



1x

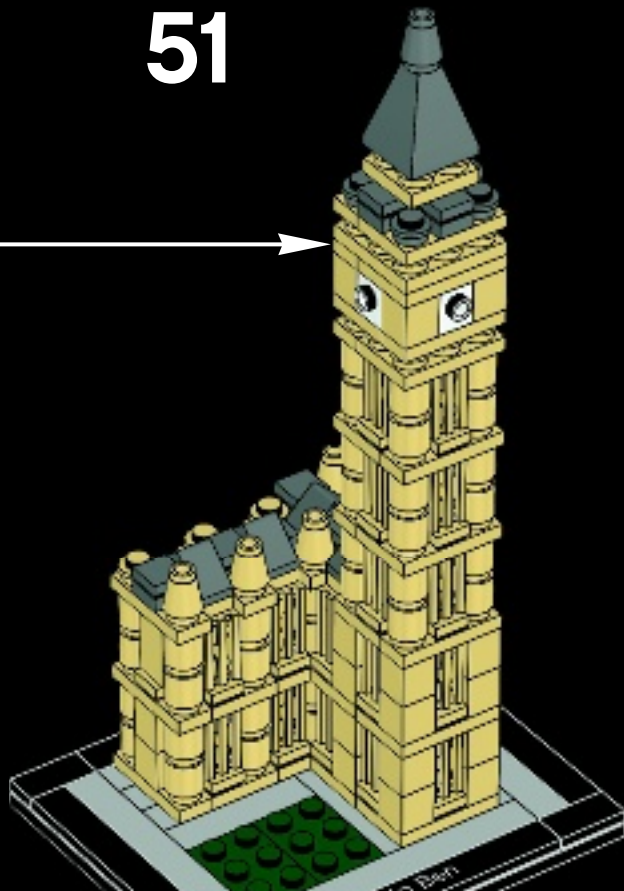


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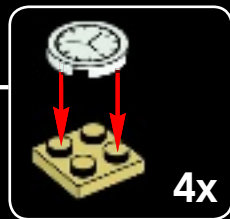
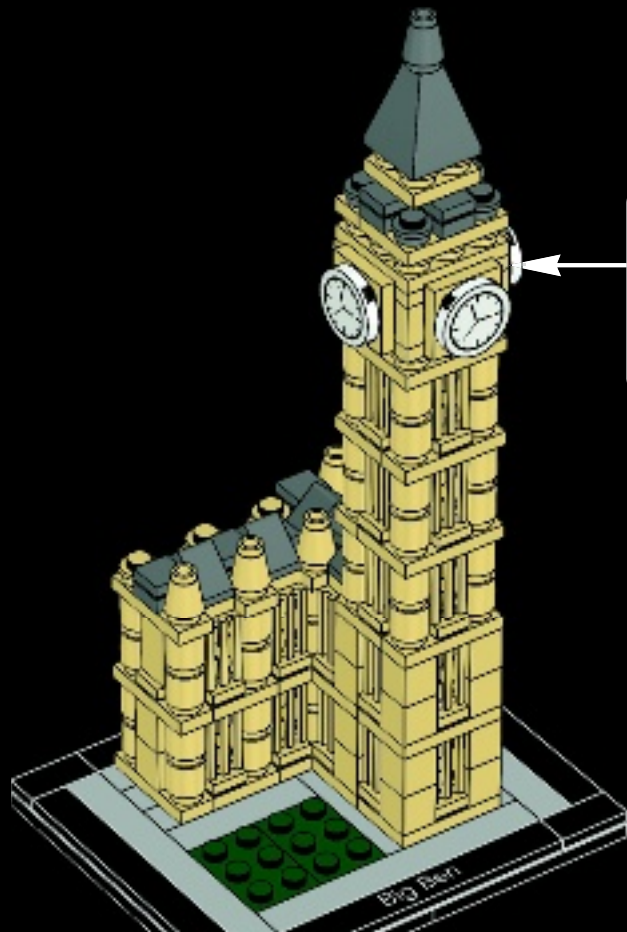
Under each clock dial there is a Latin inscription carved in stone: "Domine Salvam fac Reginam nostrum Victoriam primam" which means "O Lord, save our Queen Victoria the First."



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52





27x
4113915



4x
4109995



4x
4162465



57x
4117070



5x
4529237



38x
4113917



5x
4114084



14x
4121921



18x
4118790



34x
4125253



32x
4124456



2x
4114026



24x
4161734



5x
4558952



4x
4507355



3x
4213567



16x
4211451



3x
4211356



3x
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9x
473326



1x
302426



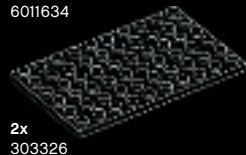
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3x
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1x
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2x
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1x
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6x
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1x
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8x
4210848



1x
4211052



4x
4210633



1x
4529240



4x
4226221



2x
4650244

A Word from the Artist

The first step in creating this LEGO model was to gather graphic and textual material of the original building. This gave me a deeper understanding of the building and its architecture and were later incorporated and reinterpreted into the LEGO design.

I then tried making different versions of the model at various scales, where each model followed certain different principles of the original. The LEGO Big Ben underwent more than fifty concept versions, ranging from humble thirty-piece model to a large replica with the height of over forty bricks. This concept work was done primarily in LEGO Digital Designer, with some of the details tested in actual bricks.

The final LEGO model emphasizes the tripartite division of the tower. The base is represented with 1 x 1 bricks in the corners of the tower, the more delicate shaft of the tower is made using 1x1 round bricks, which lead to the massive top housing the four big clocks.

The ornate stonework of the windows of the tower and the palace is recreated in LEGO Grille plates using the SNOT (Studs Not On Top) technique.

What I found most challenging in creating this model was representing the richness of 19th century gothic revival architecture in a scale usually more appropriate for modern or contemporary architecture of smooth surfaces and clean lines. Nevertheless, with a towers width of only three studs, the LEGO model still captures the main traits of the building, its appearance and its spirit.



Rok Kobe



The 'Scale Model' line – LEGO Architecture in the 1960s

The history of current LEGO Architecture series can be traced back to the beginning of the 1960s when the LEGO brick's popularity was still steadily increasing. Godtfred Kirk Christiansen, the then owner of the company, began looking for ways to further expand the LEGO system, and asked his designers to come up with a set of new components that would add a new dimension to LEGO building.

Their answer was as simple as it was revolutionary: five elements that matched the existing bricks, but were only one third the height. These new building 'plates' made it possible to construct more detailed models than before.

This greater LEGO flexibility seemed to match the spirit of the age; where modernist architects were redefining how houses looked, and people were taking an active interest in the design of their dream home. It was from these trends that the LEGO 'Scale Model' line was born in early 1962.

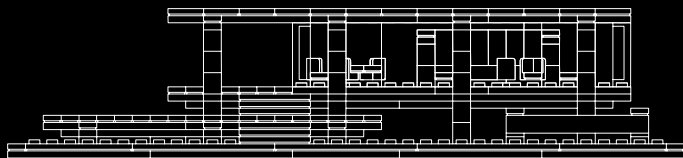
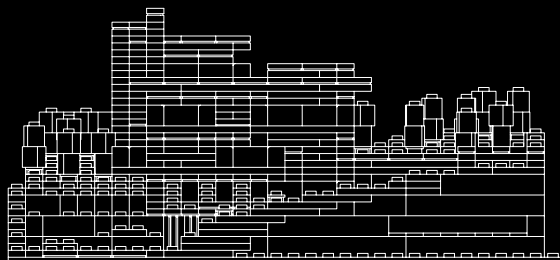
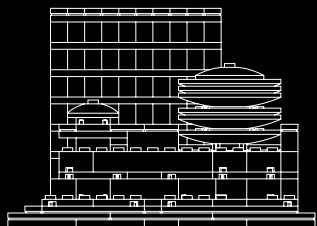
The name itself was a direct link to the way architects and engineers worked and it was hoped that they and others would build their projects 'to scale' in LEGO elements.

As with LEGO Architecture today, the original sets were designed to be different from the normal brightly coloured LEGO boxes, and also included 'An Architectural Book' for inspiration.

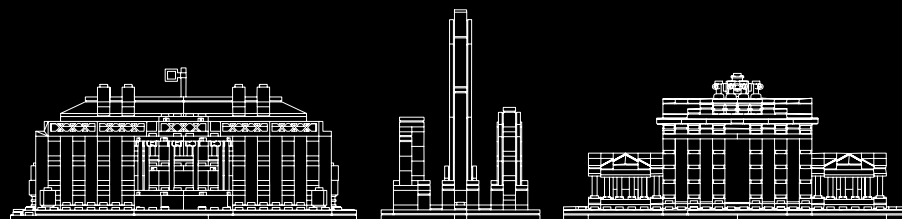
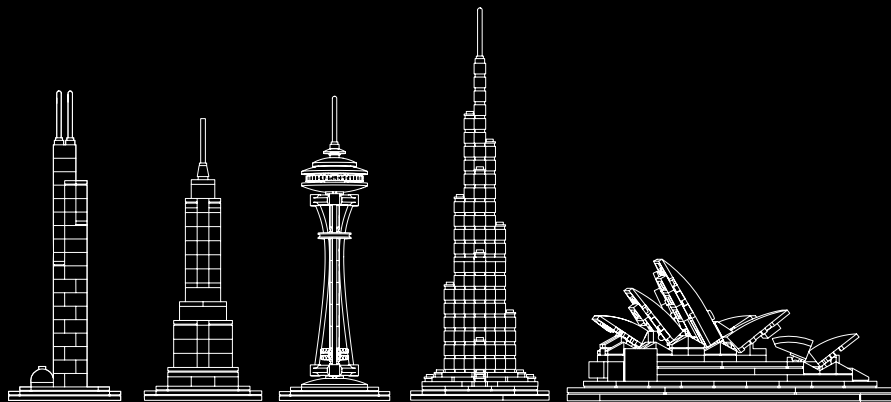
Though the five elements remain an integral part of the LEGO building system today, the 'Scale Model' line phased out in 1965 – it would be over 40 years before its principles would be revived in the LEGO Architecture series we know today.



Architecture series



Landmark series



References

Text credits:

www.parliament.uk

www.wikipedia.org

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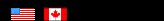
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