# BIG BEN # 10253

## Package contents:

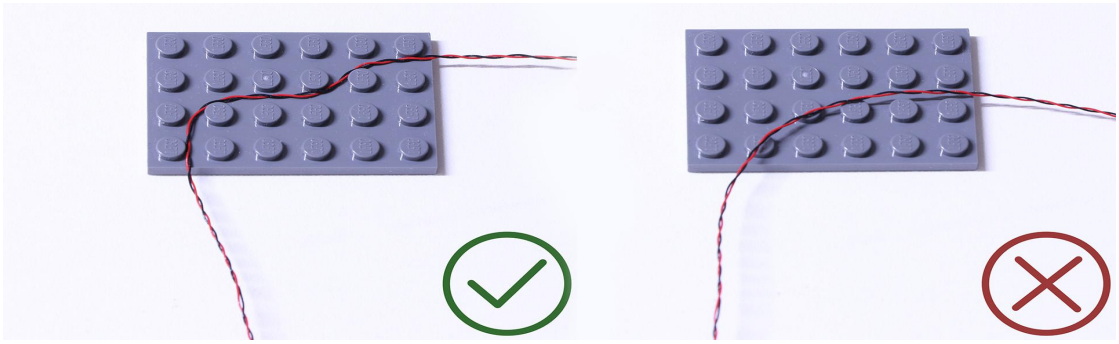
6x Warm White Strip Lights
2x Green Strip Lights
17x Warm White 15cm Dot Lights
3x Warm White 30cm Dot Lights
2x 6-Port Expansion Boards
2x 8-Port Expansion Boards
5x 5cm Connecting Cables
4x 15cm Connecting Cables
1x 30cm Connecting Cable
1x 50cm Connecting Cable
16x Adhesive Squares
1x AA Battery Pack (requires 3x AA Batteries)

## Plate Pieces

9x Plate 1x6, Black
6x Plate, Modified 1x2 with handle on End—Close Ends, Black
6x Tile, Modified 1x1 with Clip, Black
2x Tile 1x1, Dark Grey

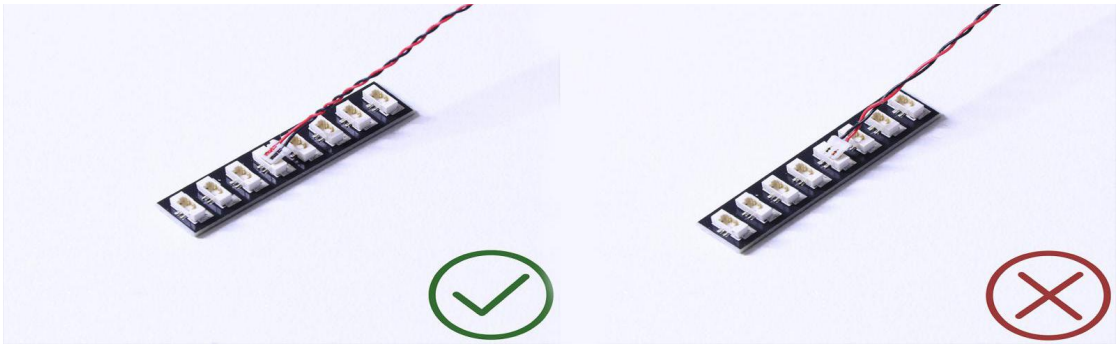
## Note:

Place wires on the surface or under the LEGO building blocks.
The wire can be place between the building blocks or under the block, but they should be placed between the studs correctly.

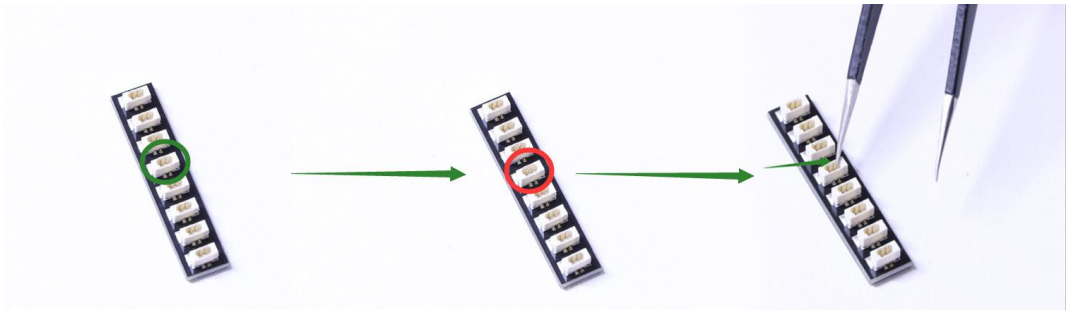


Insert the connectors to the ports.

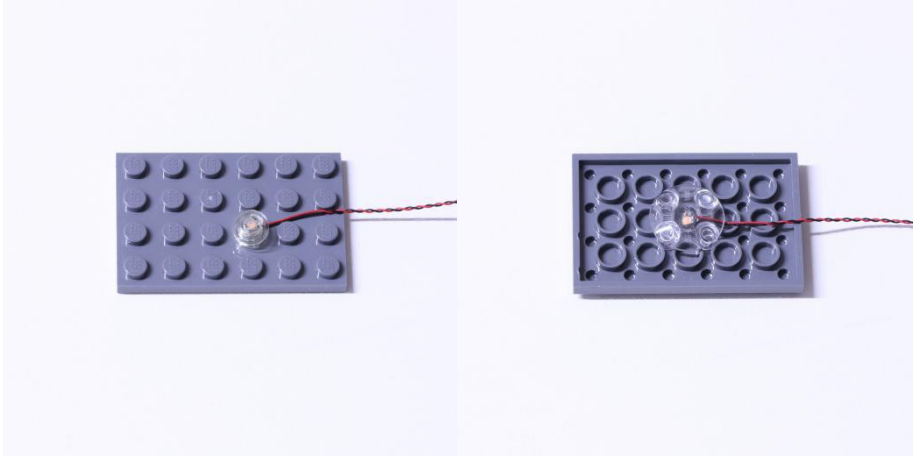
Be careful when you are operating, there's only one correct way to insert, make sure the expansion board is upward, find the soldered "=" sign on the left of the port. When you are inserting, the side which the wires can be seen should be faced to the "=" sign and if you feel hard to insert, please stop, and don't force it, for that may result in bent pins inside the port or overheating of the expansion board.



At this point, use the tweezers to straighten the bent pins.

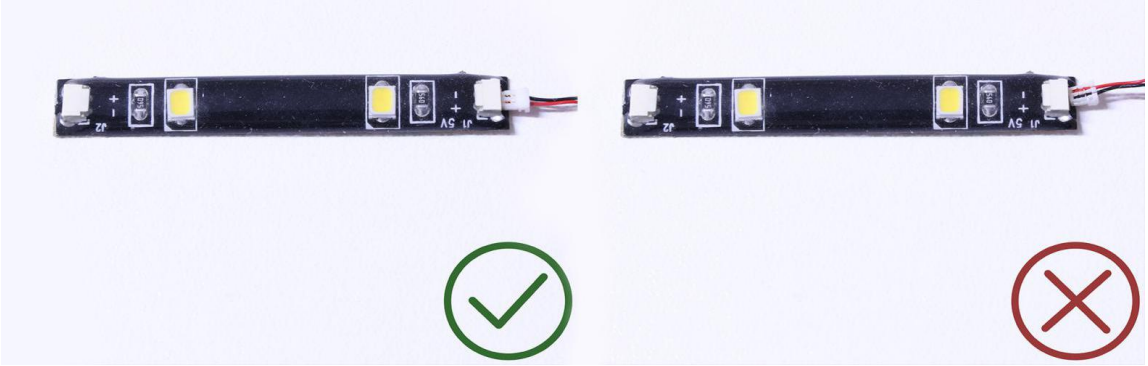


When installing dot lights, make sure they are correctly placed (Yellow LED package is exposed). You can put they either on the top of the studs or between studs.

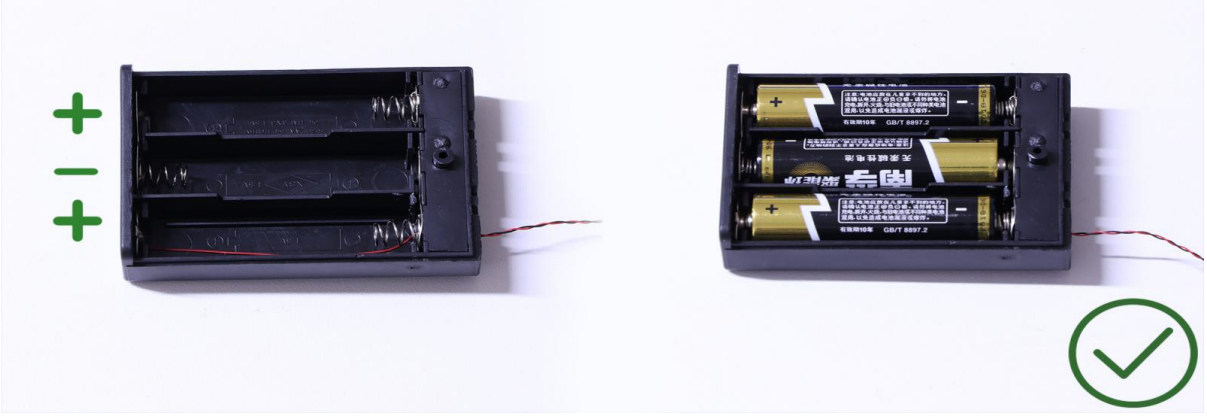


Connecting cable connectors to Strip Lights

Take extra care when inserting connectors to ports on the Strip Lights. Connectors can be inserted only one way. With the Strip Light facing up, ensure the side of the connector with the wires exposed is facing down. If a plug won't fit easily into a port connector, don't force it. Doing so will damage the plug and the connector.



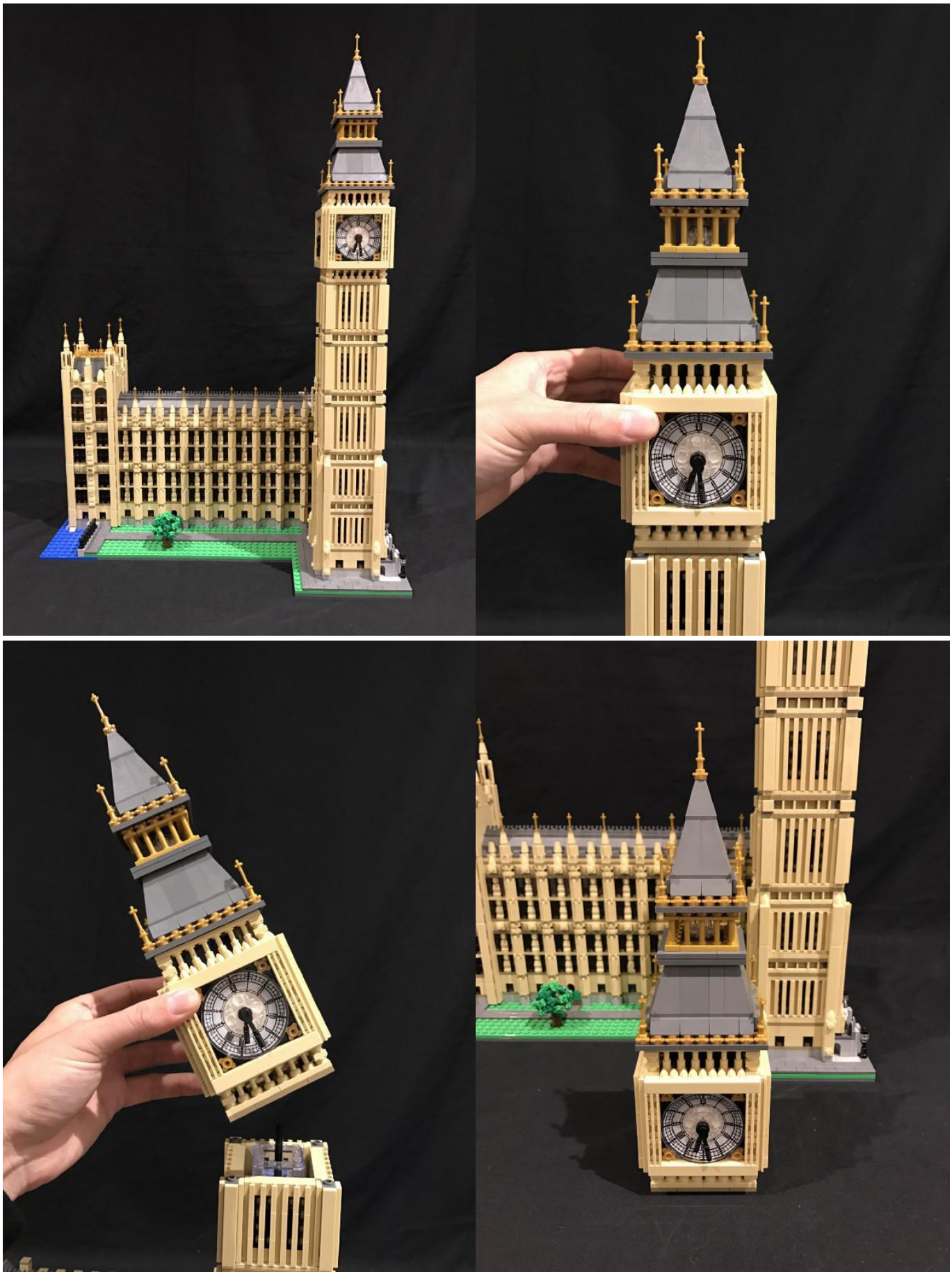
Finally, please pay attention to the positive and negative terminals of the battery when installing the battery case.



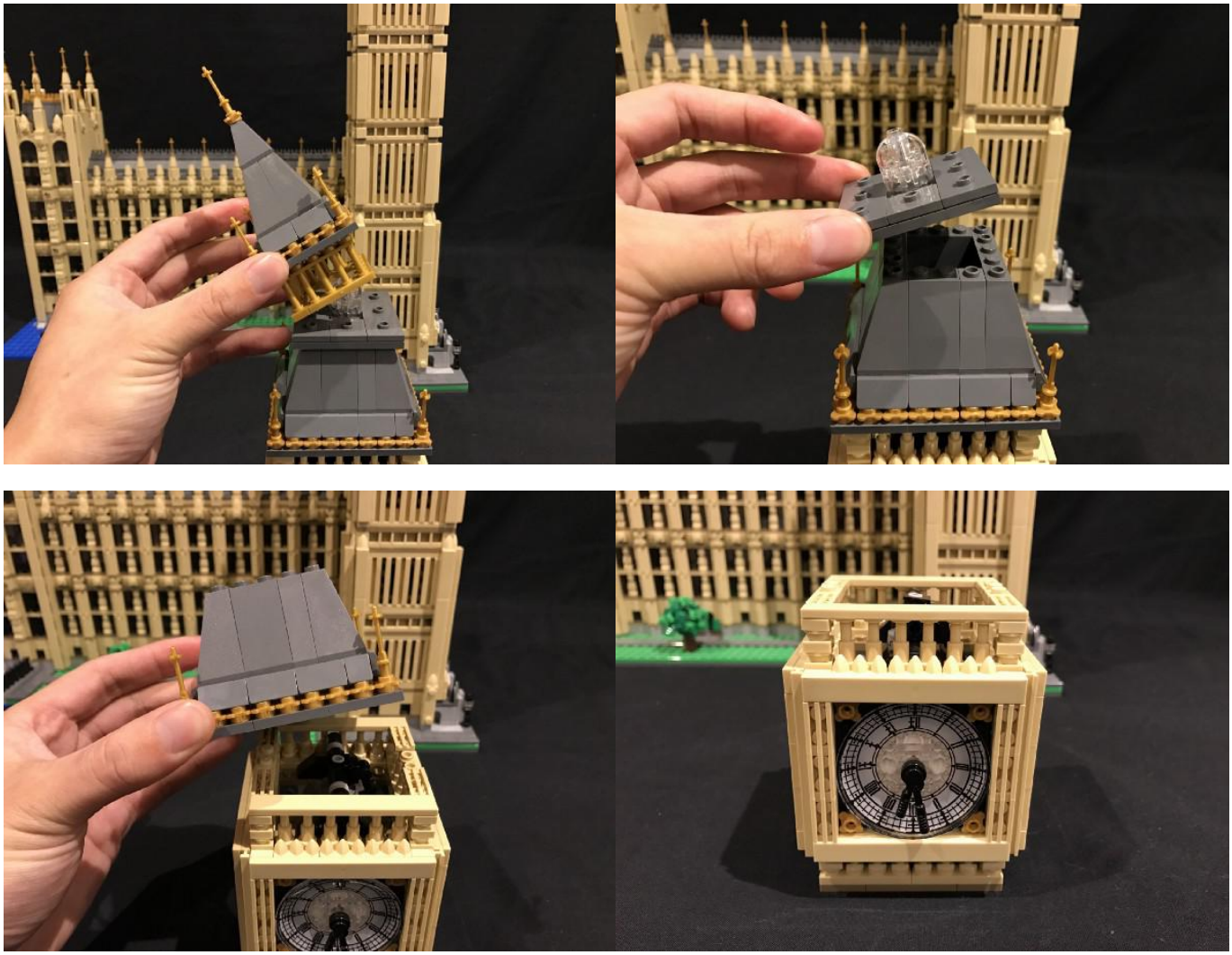
OK, Let’s Begin!

# Instructions for installing this kit

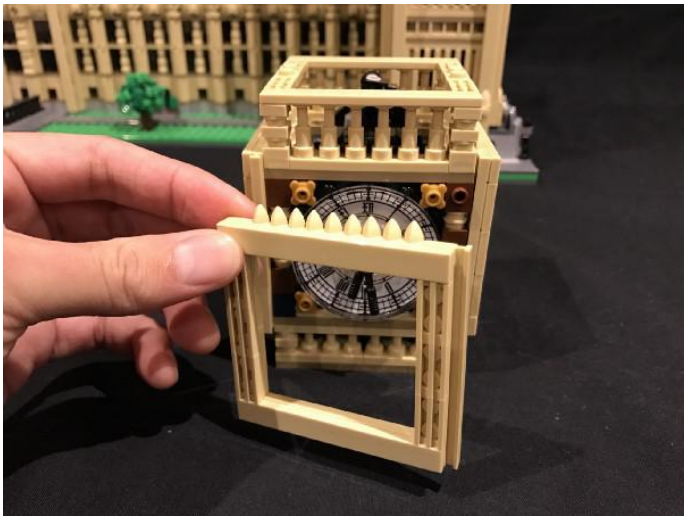
1. ) We will first install lights to clock tower. To start, disconnect the the top part of the tower from where the bottom of the clock is.

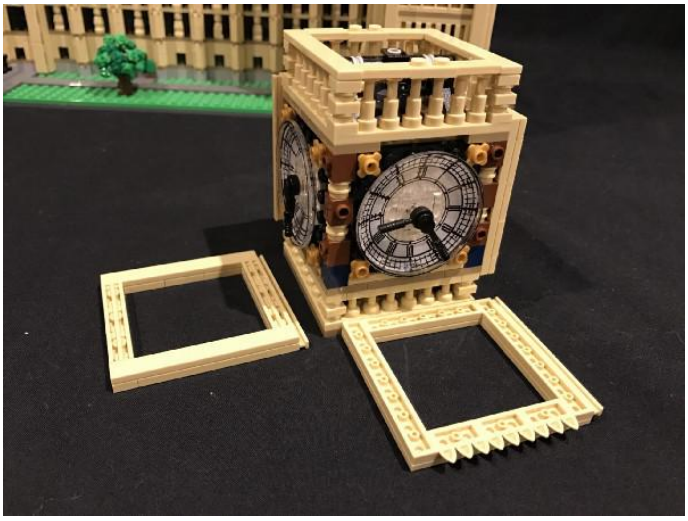


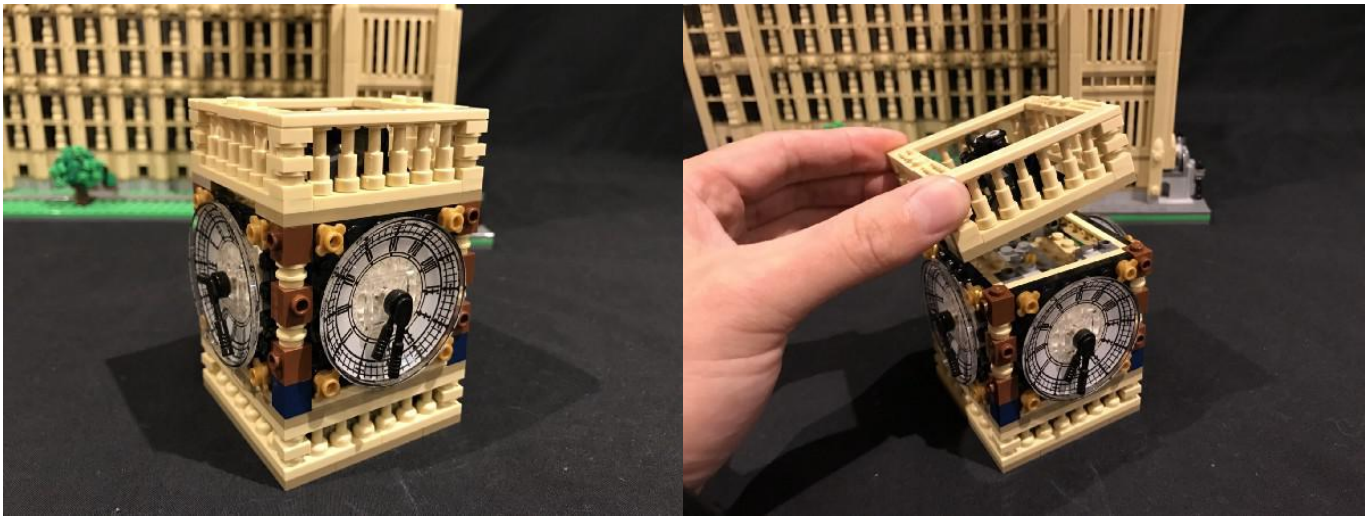
Disconnect the 3 sections of the tower as per below:



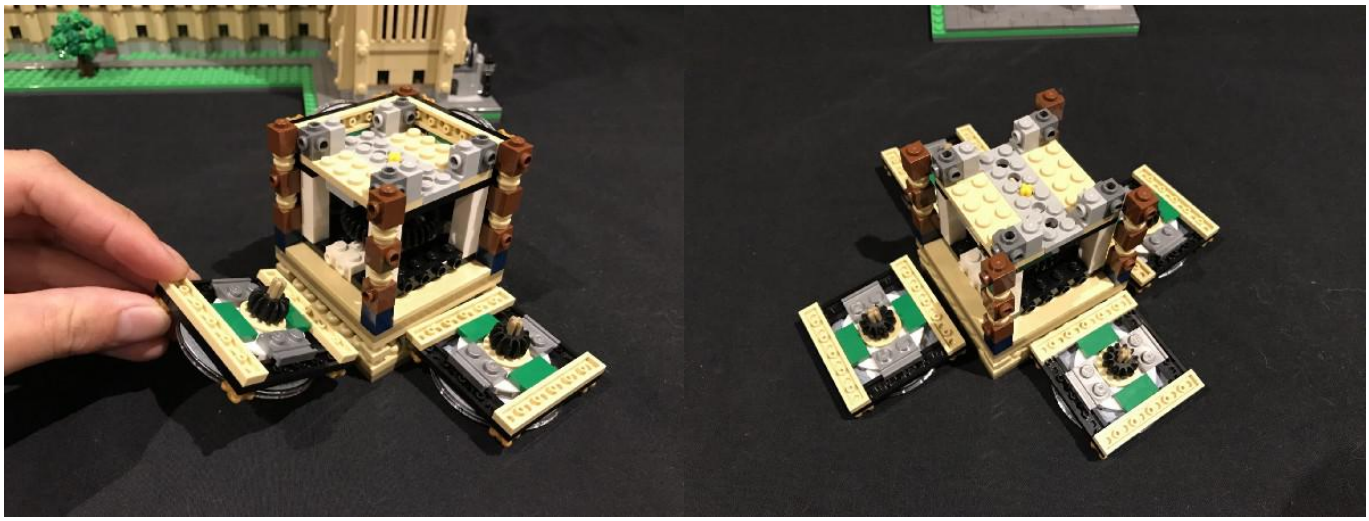
Remove clock border sections from all four sides of the tower and then remove the top section above the clock



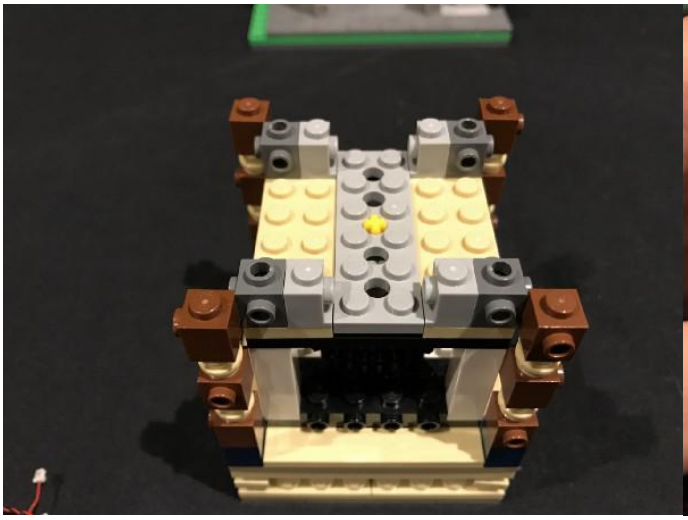


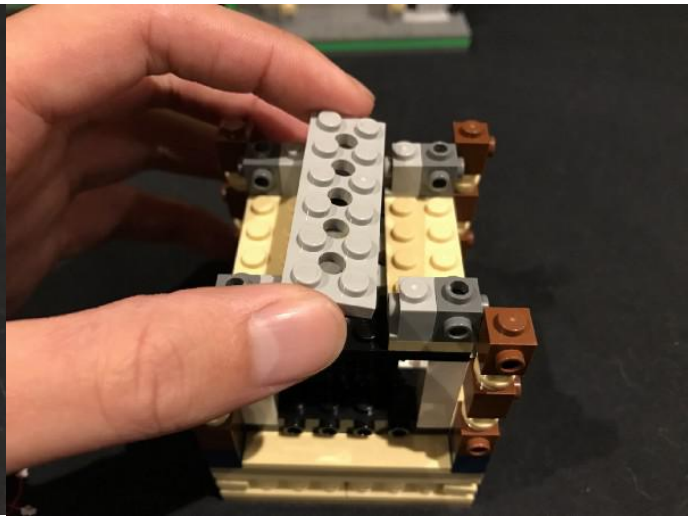


Carefully remove clock sections from all four sides of the tower as per below.

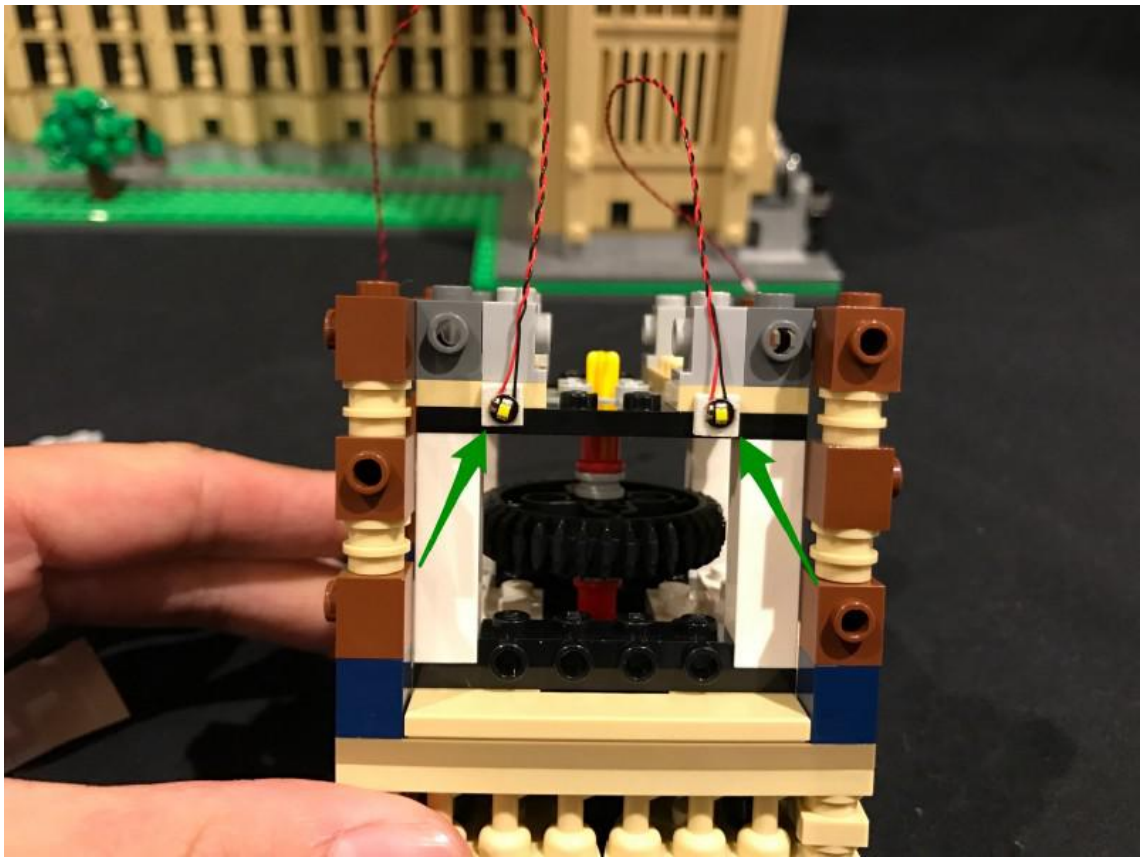


Remove the light grey 2x6 technic plate from the centre.

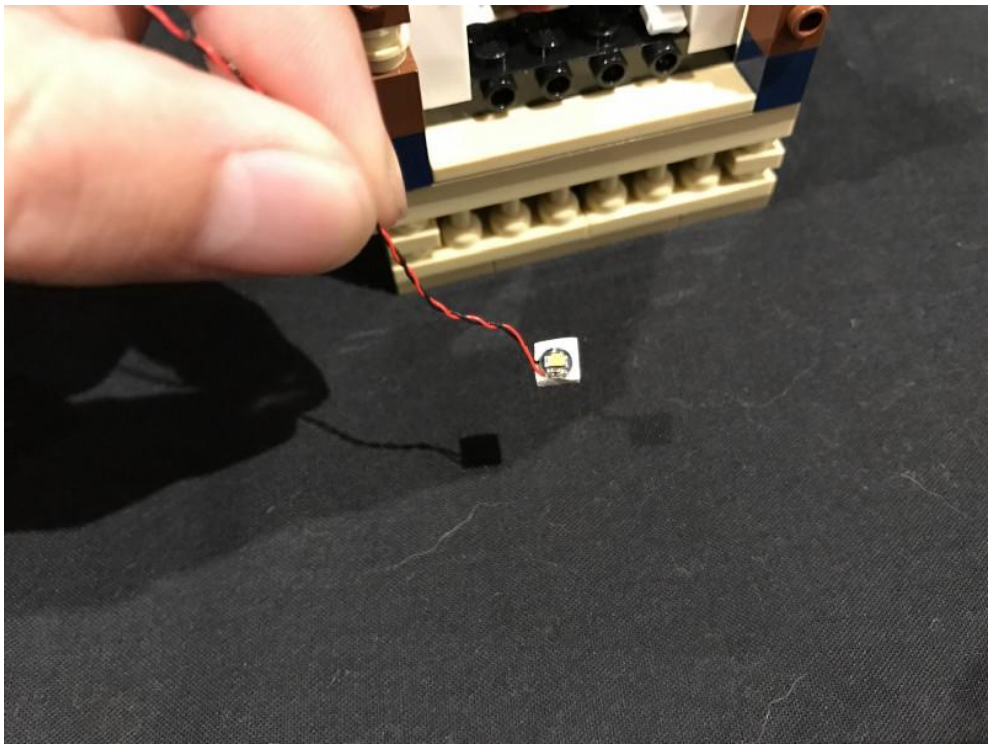




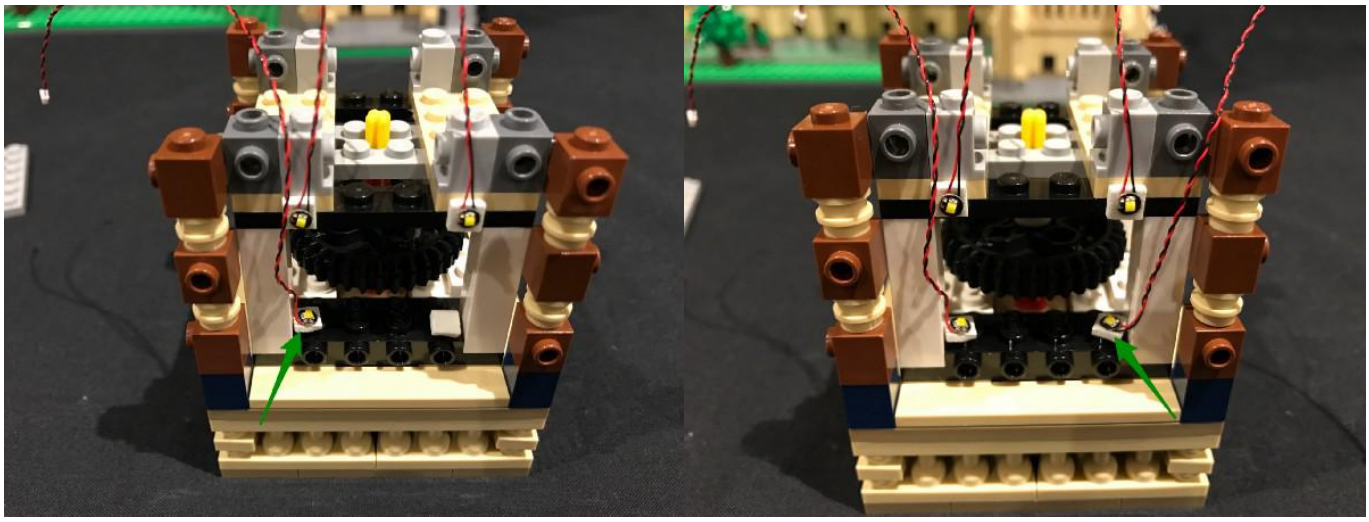
2.) Take 2x **White 15cm Dot Lights** and then stick them to the following positions using 2x **Adhesive Squares**.



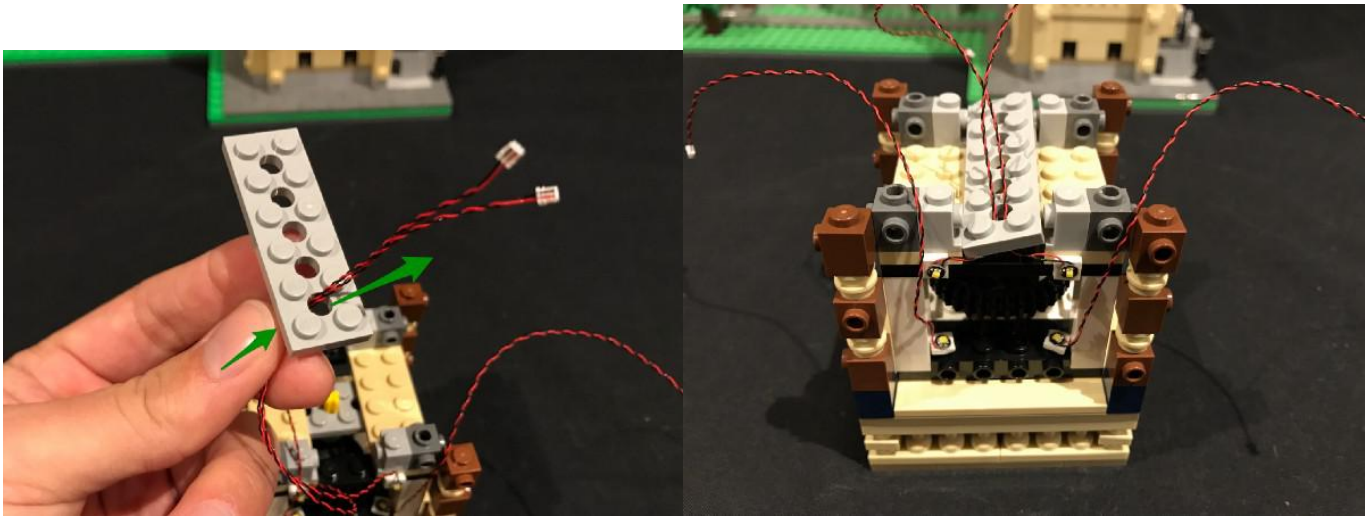
Take another **2x White 15cm Dot Lights** and then stick them to **adhesive squares** before bending the cable up in a 90 degree angle as per below.



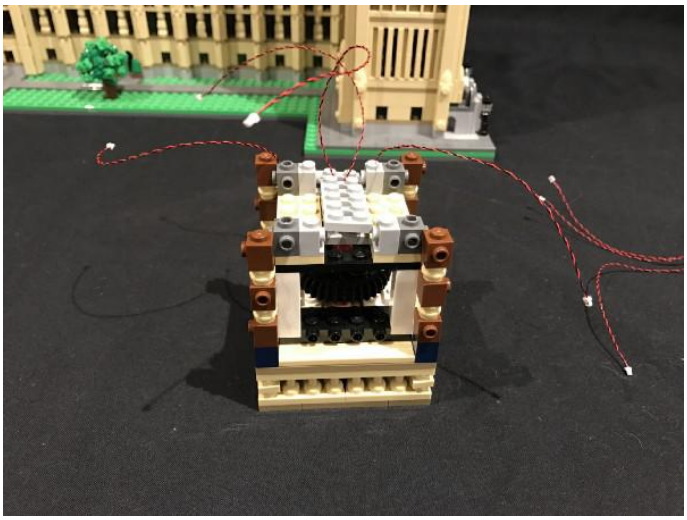
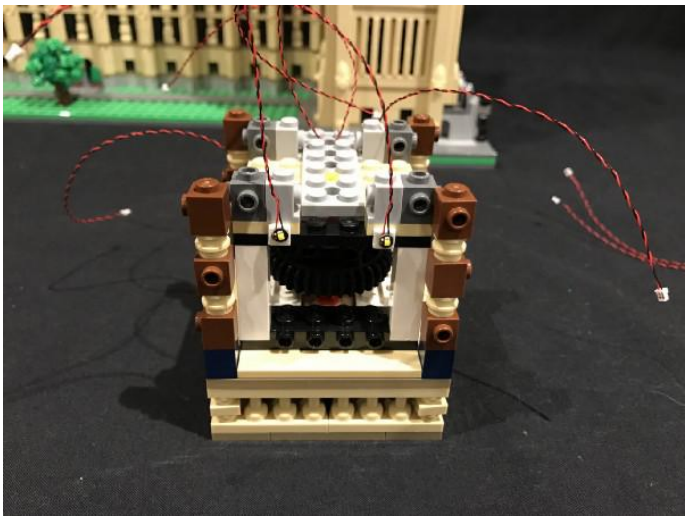
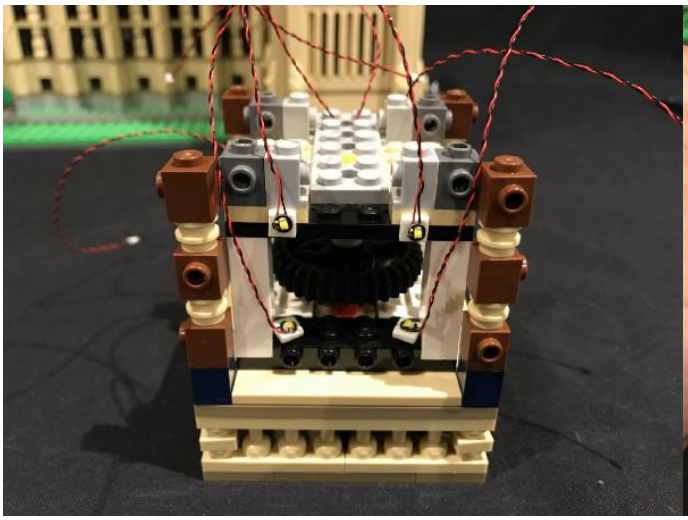
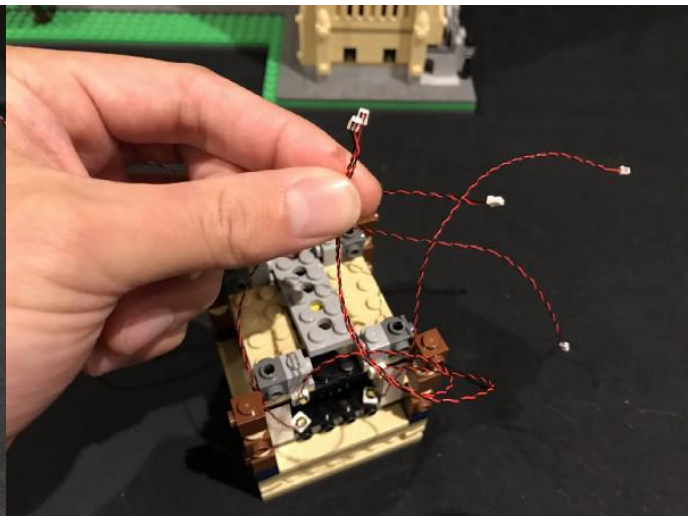
Stick both Dot Lights to the following positions (directly over black studs):



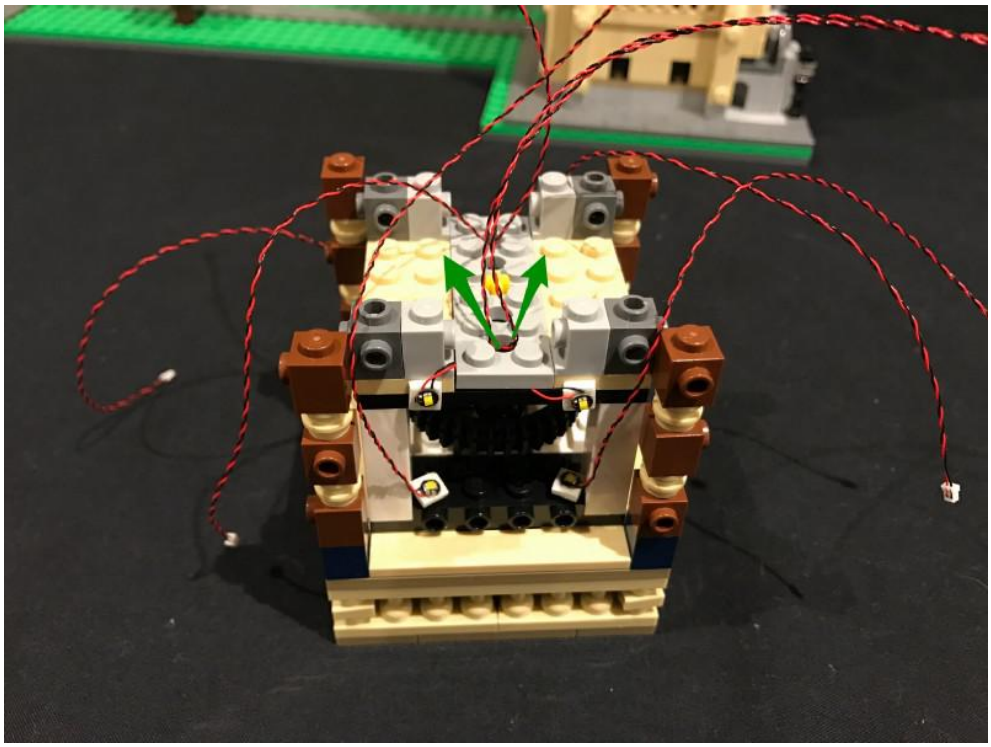
Take the top 2 Dot Light cables and then bring them together before looping the connector sides through the first hole of the light grey technic plate we removed earlier.



Repeat this step to install another **4x White 15cm Dot Lights** to the opposite side of the tower.

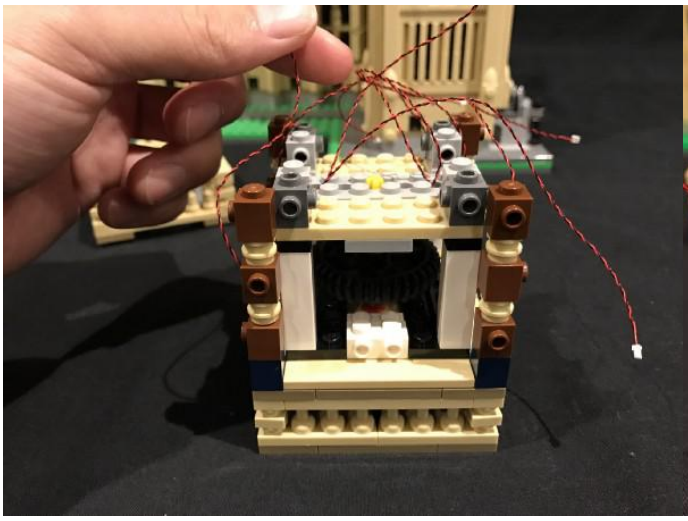





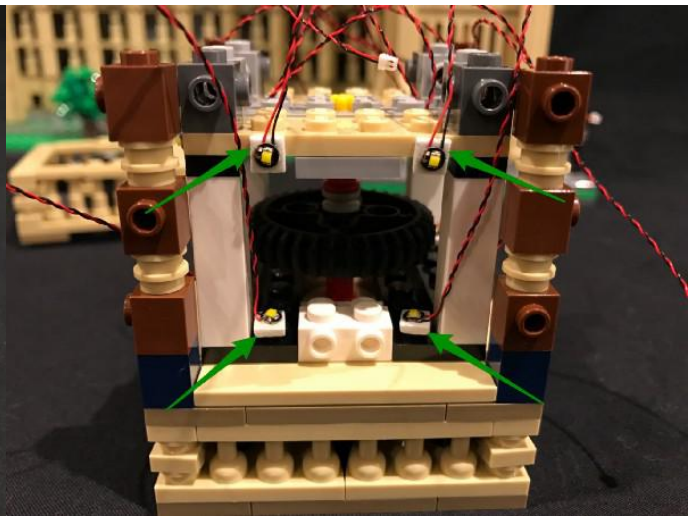
After threading the top two Dot Light cables through the whole of the technic plate, reconnect the plate in place ensuring cables underneath are in between studs.



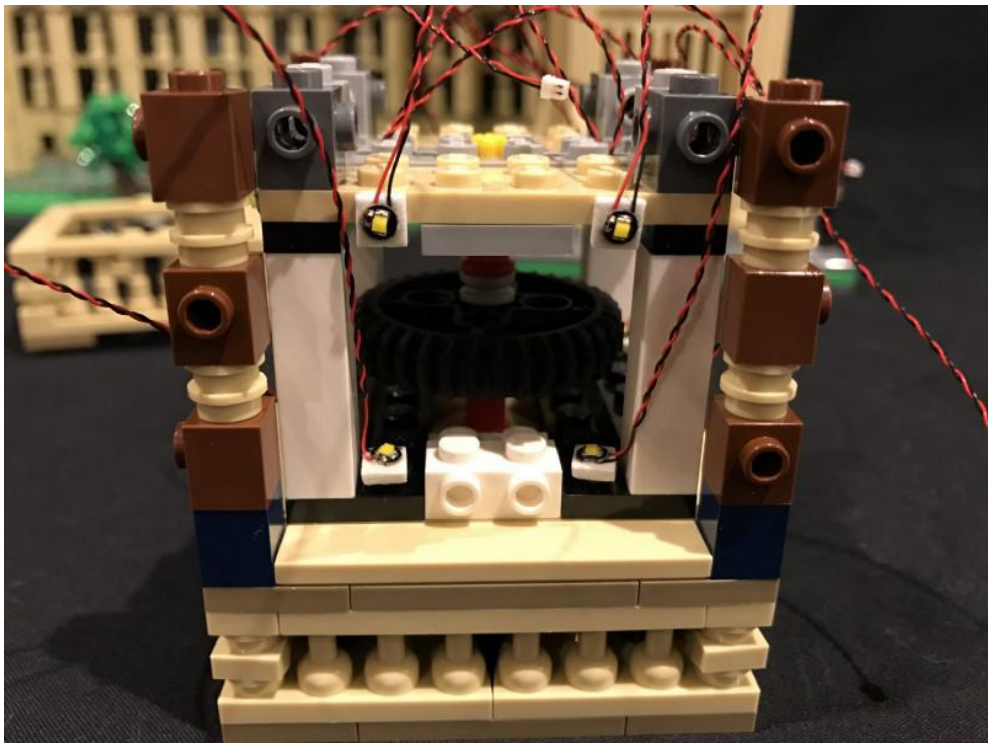
3.) Turn to the next side along and then install another **4x White 15cm Dot Lights** to the top and

bottom corners in the below positions. *(You will notice on these sides of the tower that there is only one plate to stick the top 2 lights on. Ensure you are sticking the Dot Lights to the exact same position as shown below).*

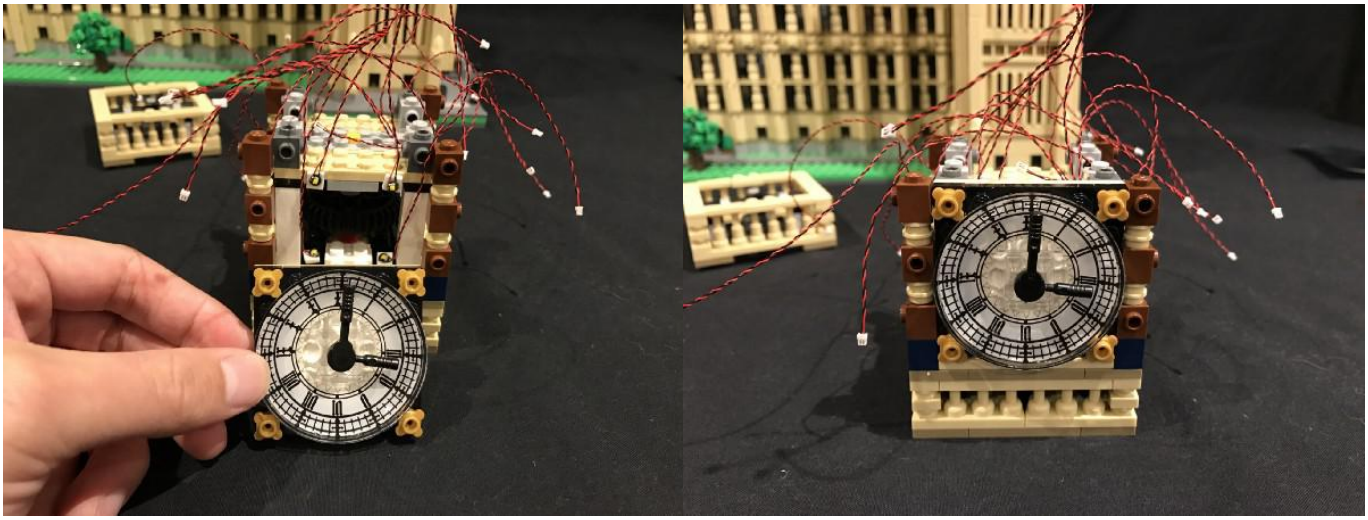




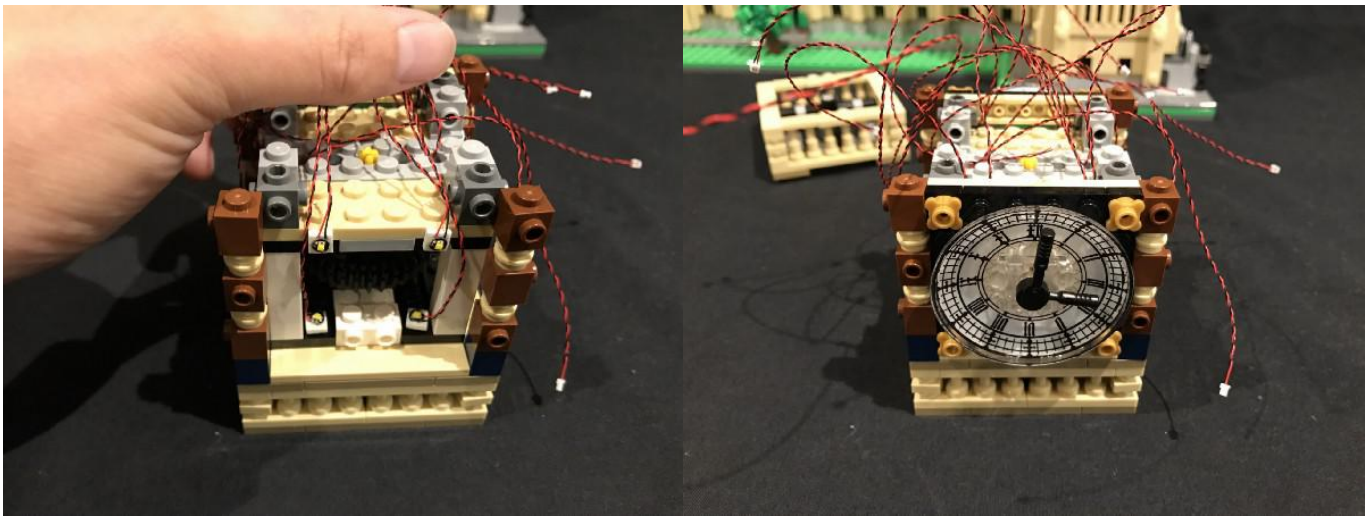
Follow this same method to install another **4x White 15cm Dot Lights** to the remaining side of the tower.



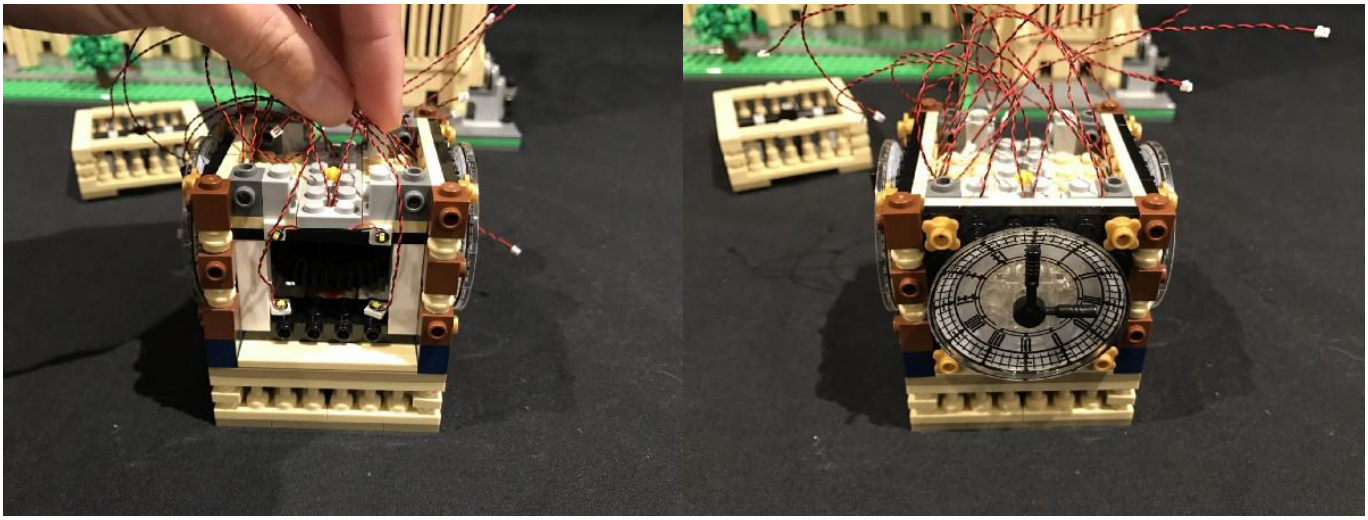
4.) Take one of the clock sections and carefully reconnect it to the tower ensuring cables are neatly laid in between studs as you connect it. Ensure you first reconnect the clock section to the side you have just installed Dot Lights to.



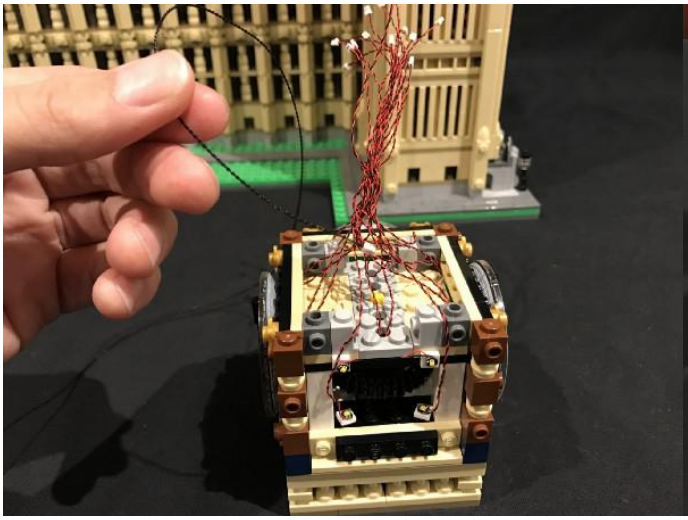
Next, reconnect the clock section to the opposite side of the tower, ensuring you are keeping studs underneath free from cables.

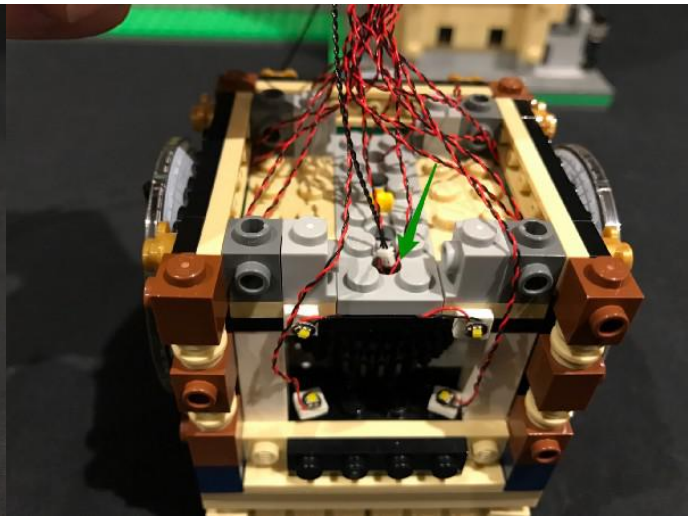


Turn to the next side and then carefully reconnect the clock section.

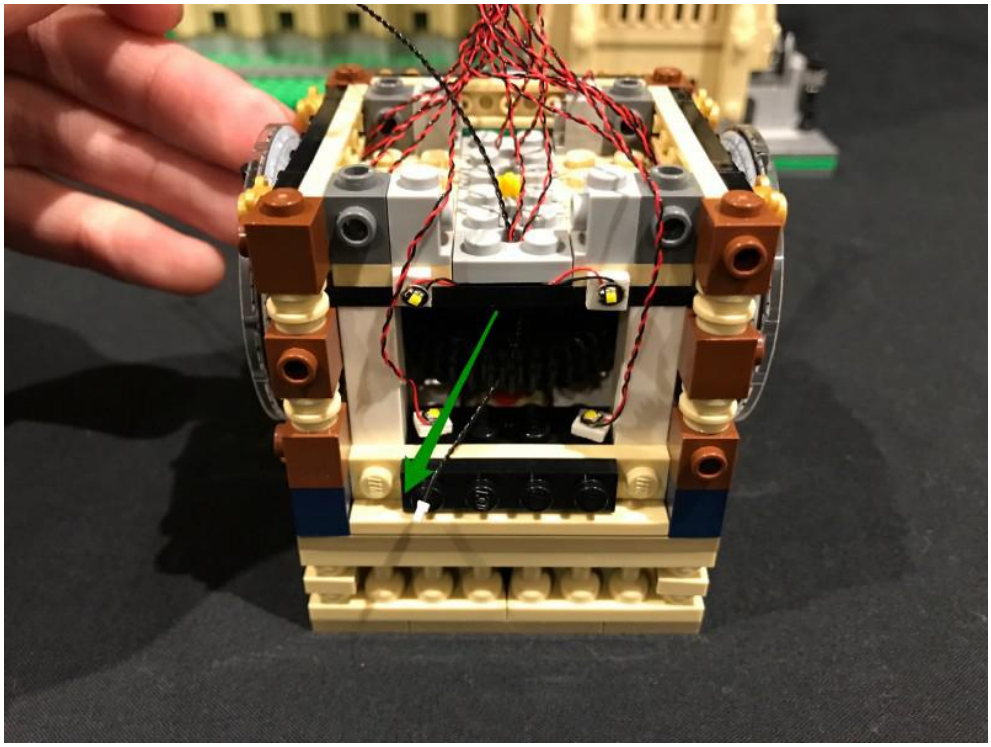


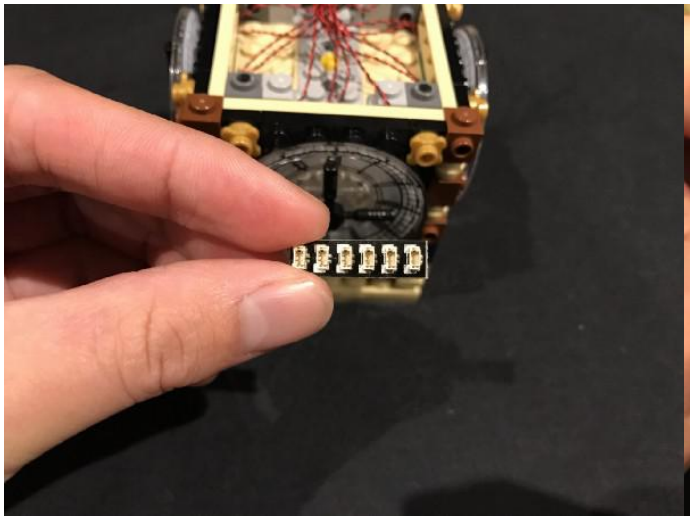
4.) Before we reconnect the remaining clock section, take the **50cm Connecting Cable** and thread one side through the first hole from the top of the light grey technic plate.

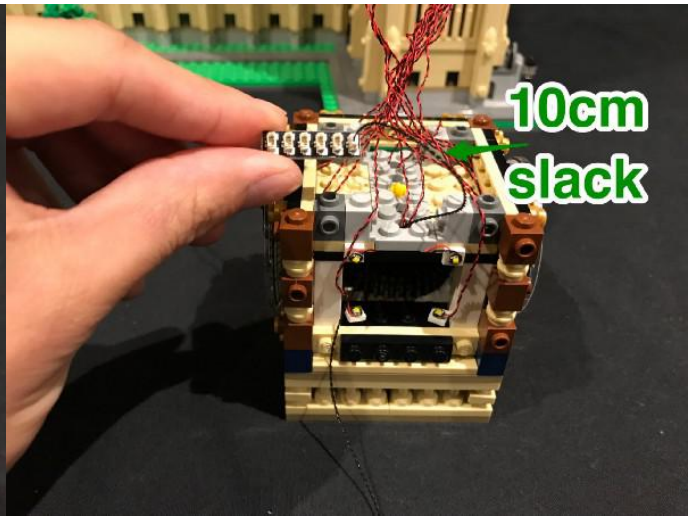




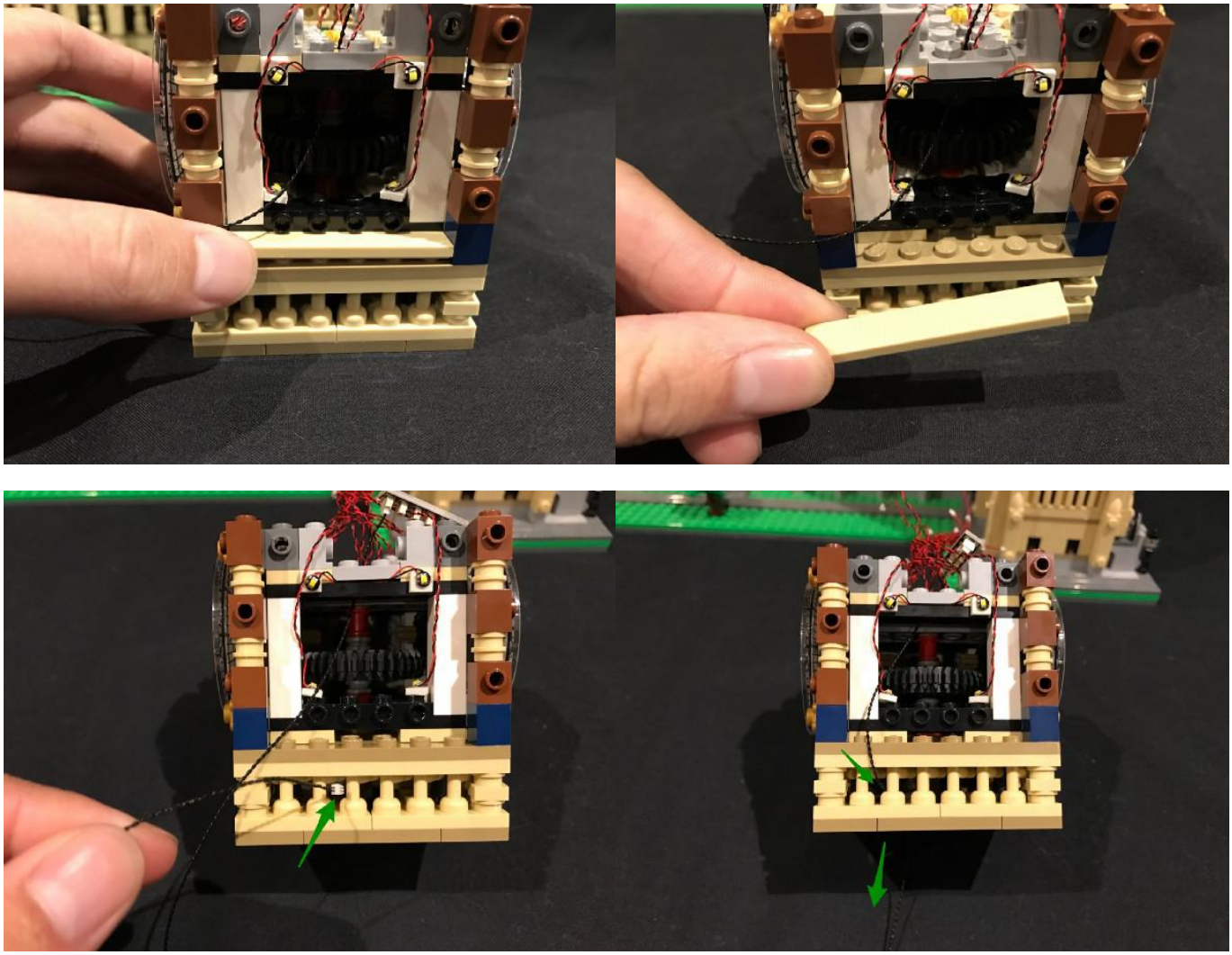
Pull the cable down all the way until you have about 10cm of cable slack between the top of the light grey plate and the connector before connecting it to a **6-Port Expansion Board.**



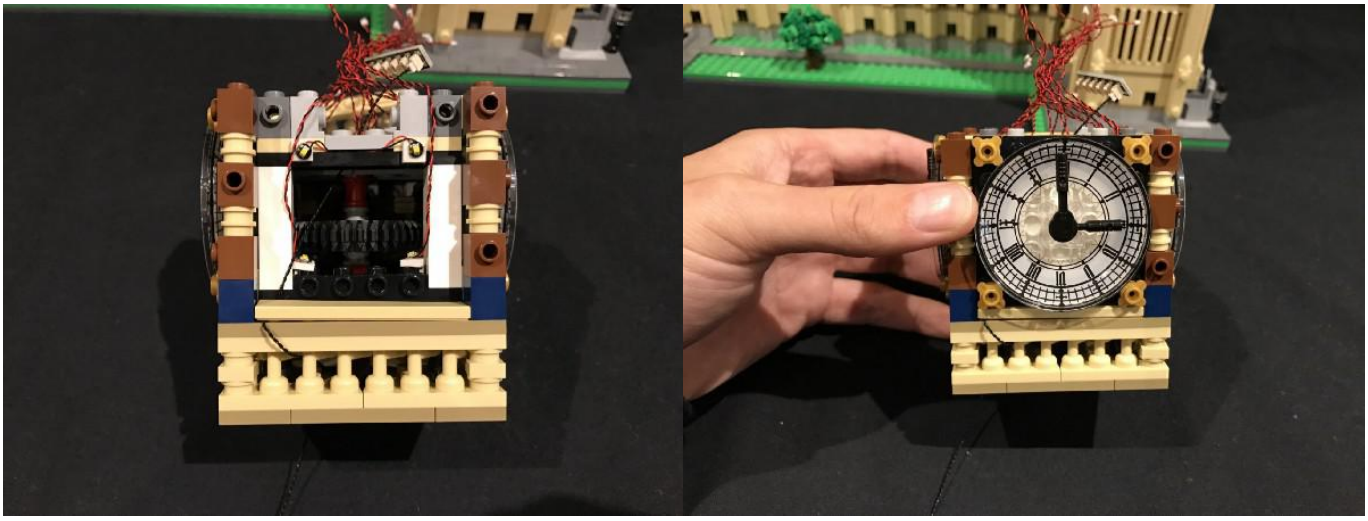




Carefully disconnect the 1x6 tile from below and then thread the cable through one of the gaps. Pull the cable all the way down from underneath but ensure you still leave the 10cm of excess cable above.

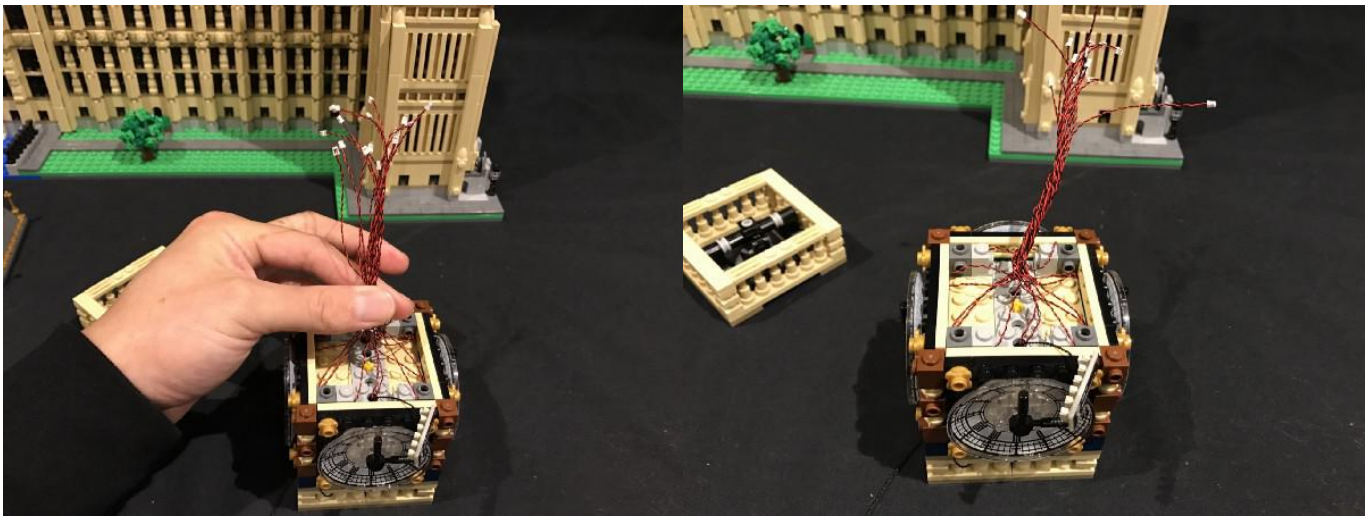


Reconnect the 1x6 tile ensuring the cable is neatly laid in between studs and then carefully reconnect the remaining clock section.

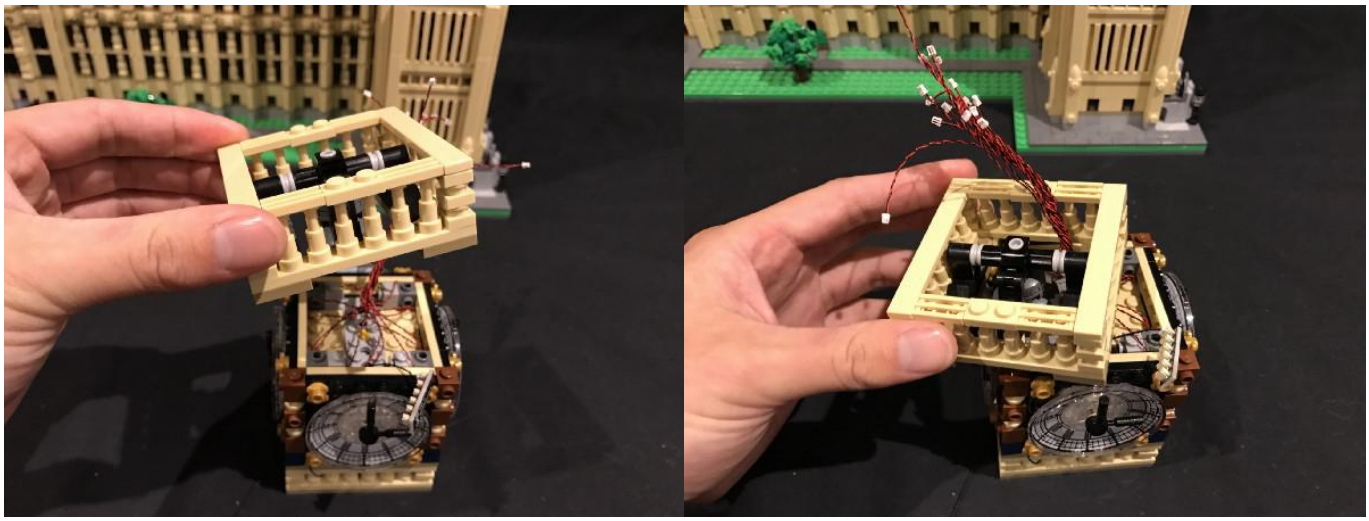


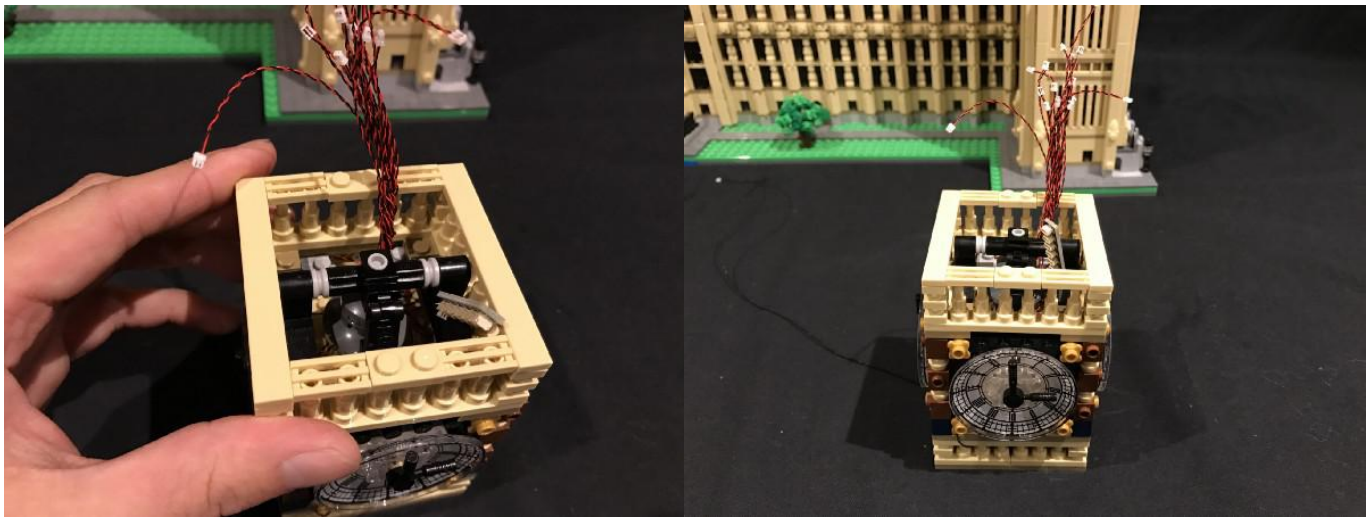
5.) Take all the Dot Light cables and bring them together by twisting them around each other to form

one larger cable.

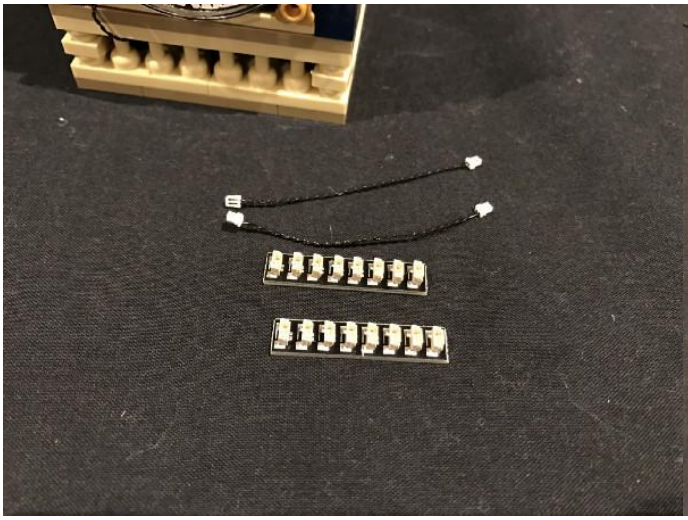
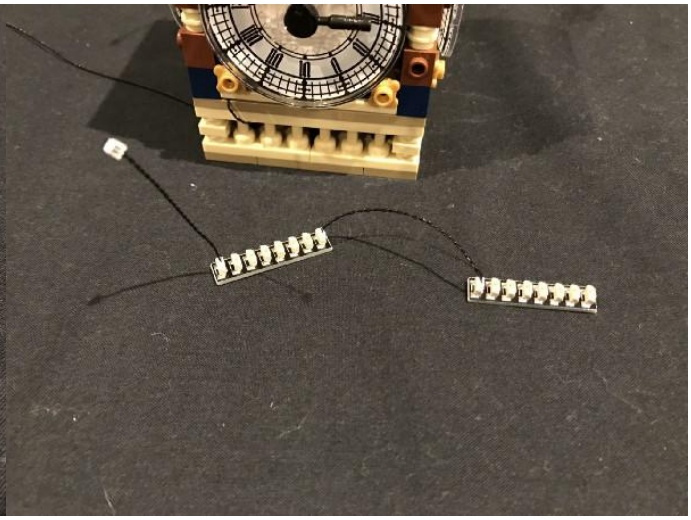


Take the section we removed from above and then thread all cables as well as the expansion board through the bottom of it before securely reconnecting on top of the clock section.

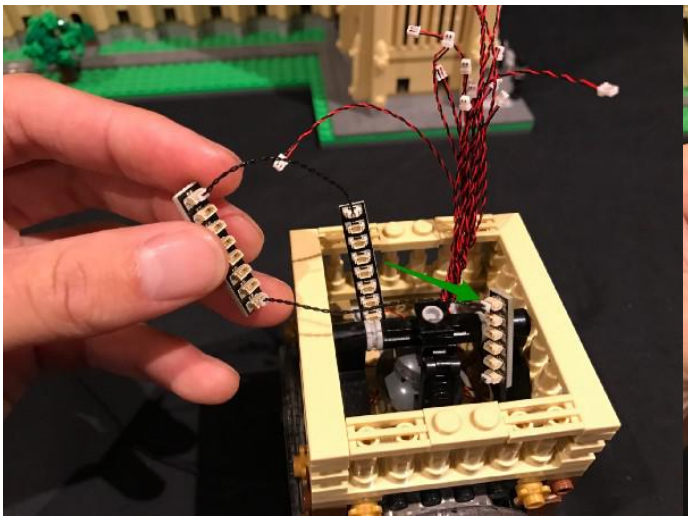
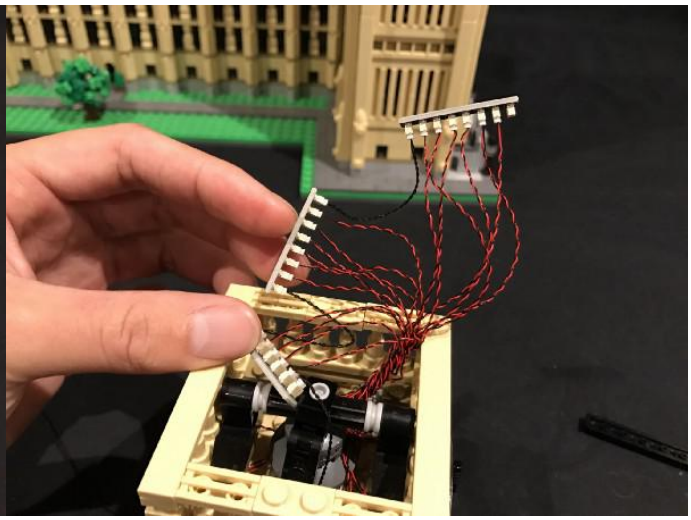




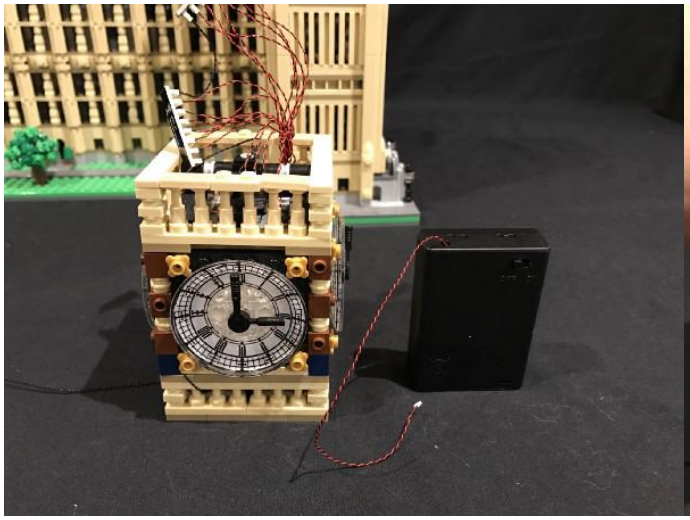
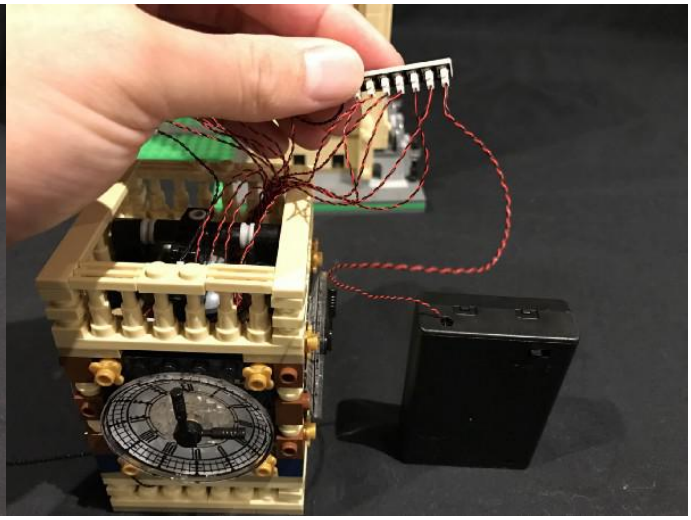
Take 2x **5cm Connecting Cables** and 2x **8-Port Expansion Boards** and connect the the cables to end ports to join the expansion boards together.

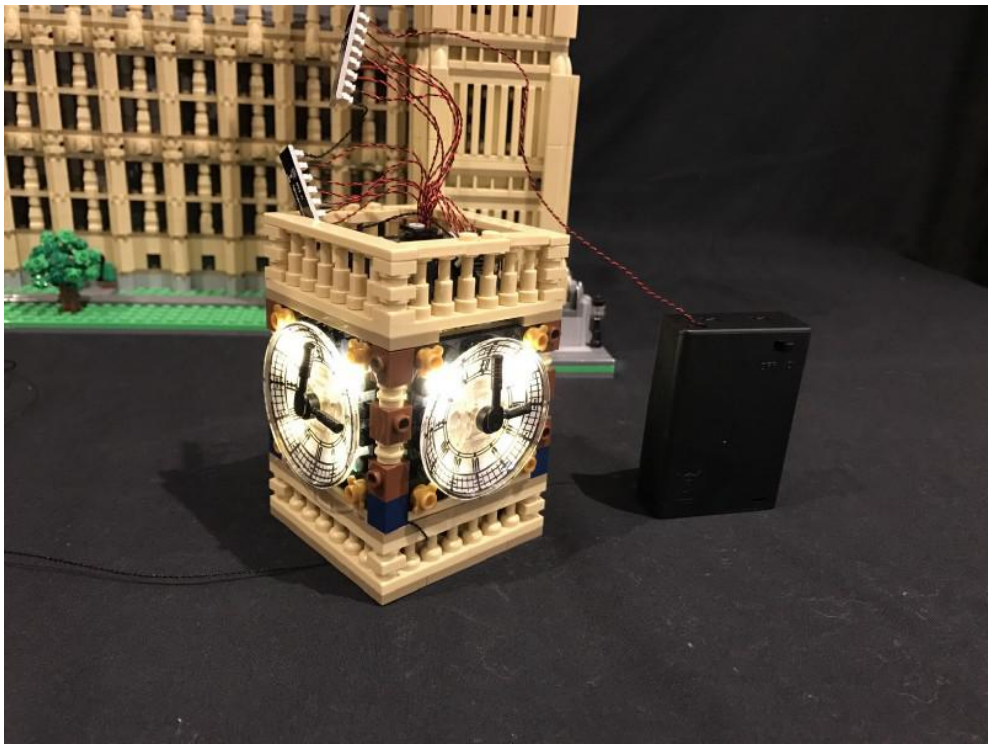



Connect the other end of the 5cm cable to the 6-port expansion board on top of the clock and then connect all Dot Light Cables to available ports.

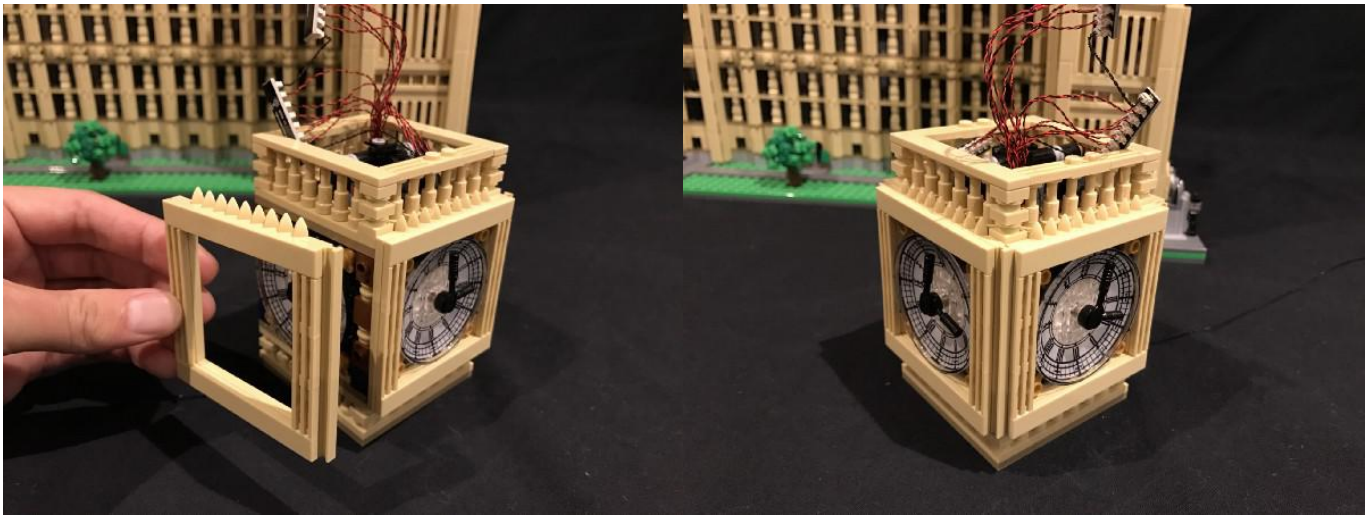



Now take the time to test all the lights we have installed so far. Take the **AA Battery Pack** and insert 3x AA Batteries into it. Connect the battery pack cable into the spare port on the expansion board and turn on to verify all 4 lights from each side of the tower are working OK.

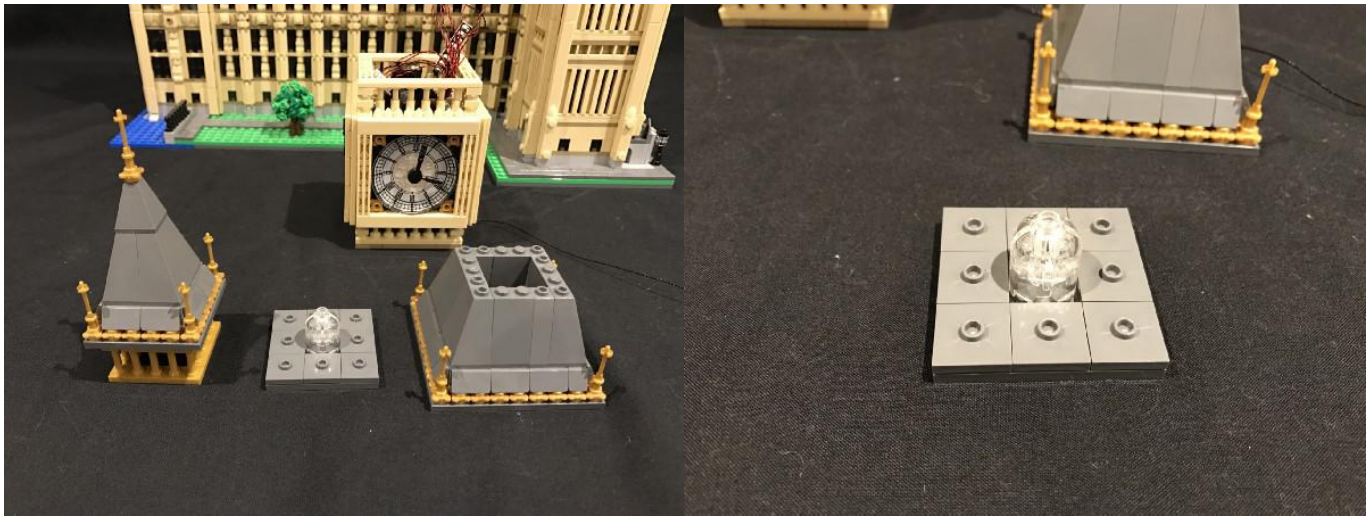



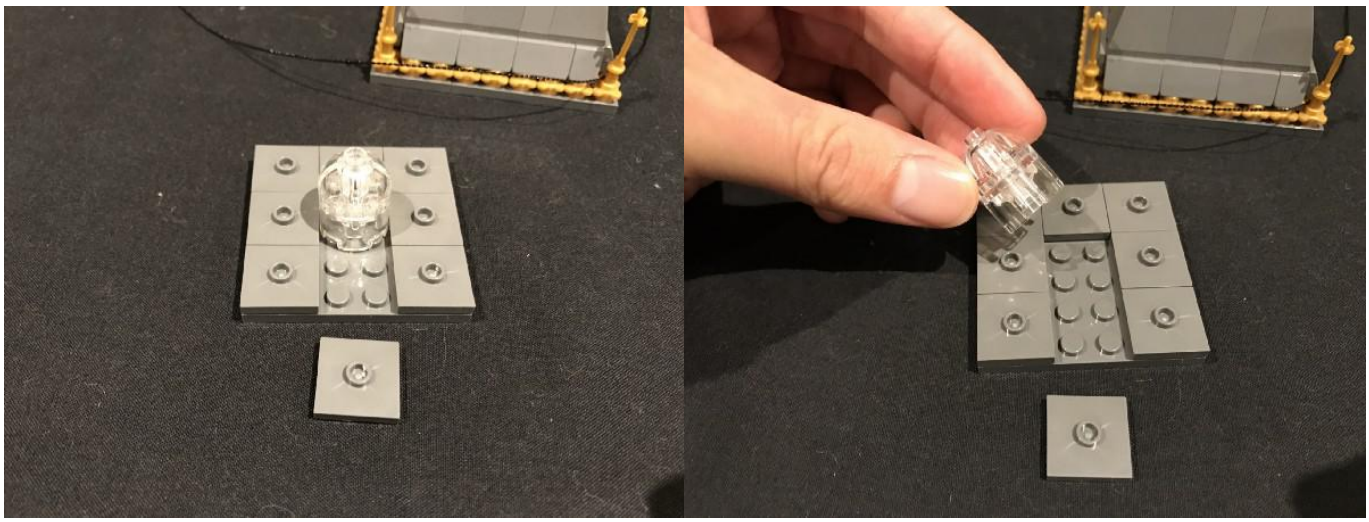


Once you have verified all is OK, disconnect the battery pack and then reconnect to the border sections to each side.

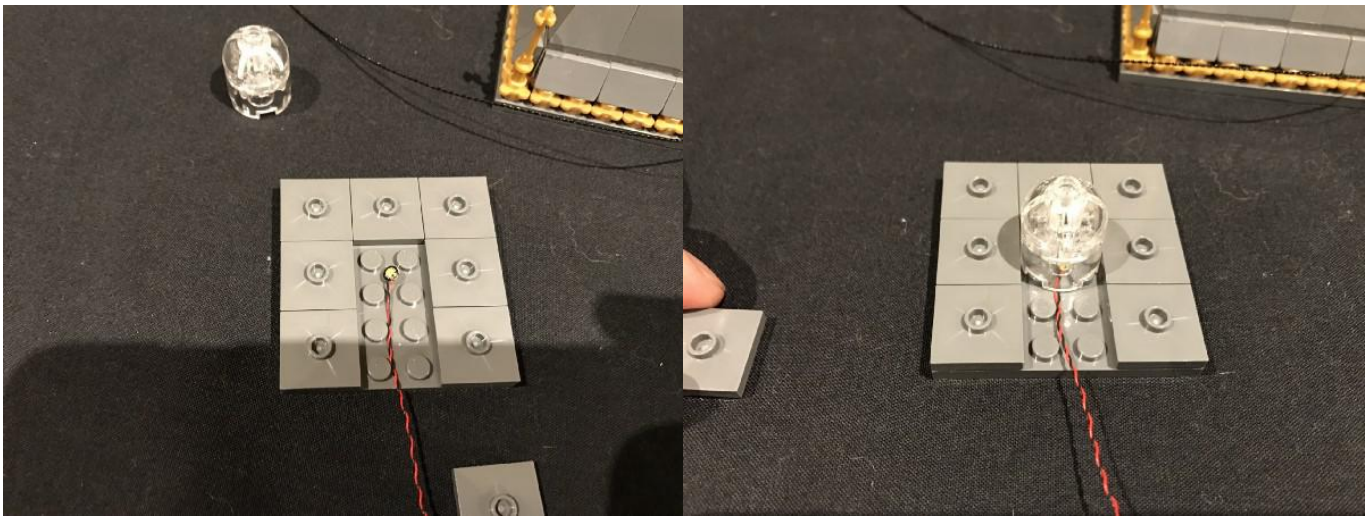


6.) We will now install lights to the top sections. Take the middle section and then disconnect pieces as per below.

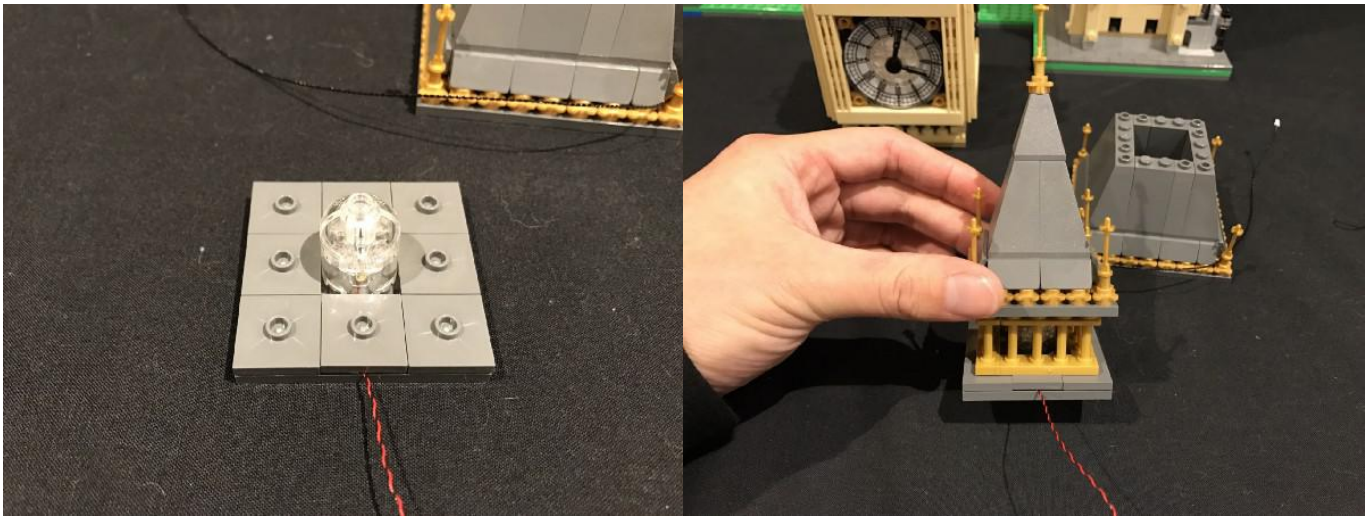




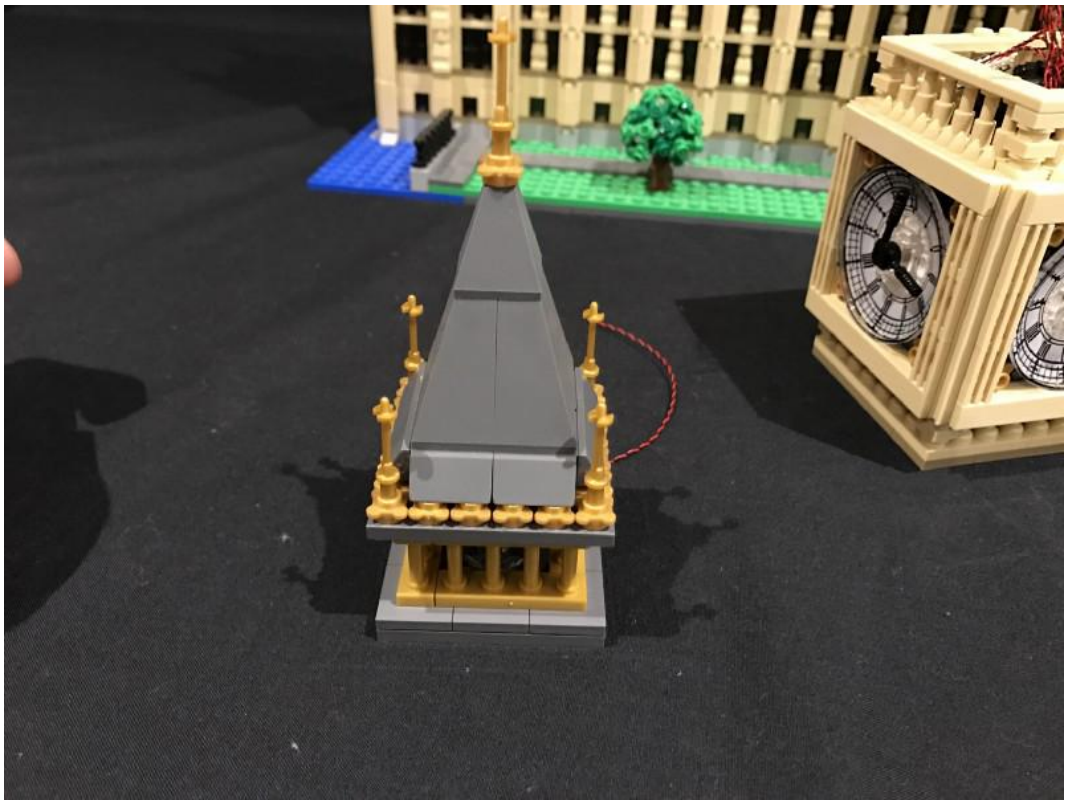
Take a **White 15cm Dot Light** and then place it in the very centre of the base. Secure it in place by reconnecting the trans-clear pieces directly over the top.



Reconnect remaining piece we removed earlier and then reconnect the roof.

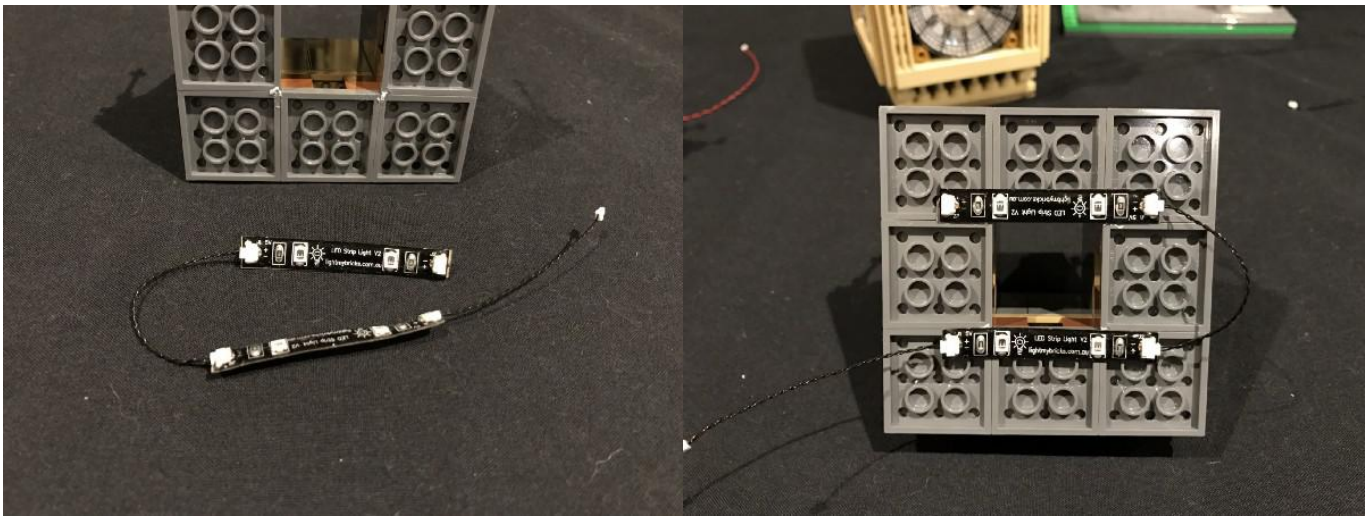


NOTE: The side with the exposed cable will be facing toward the back.



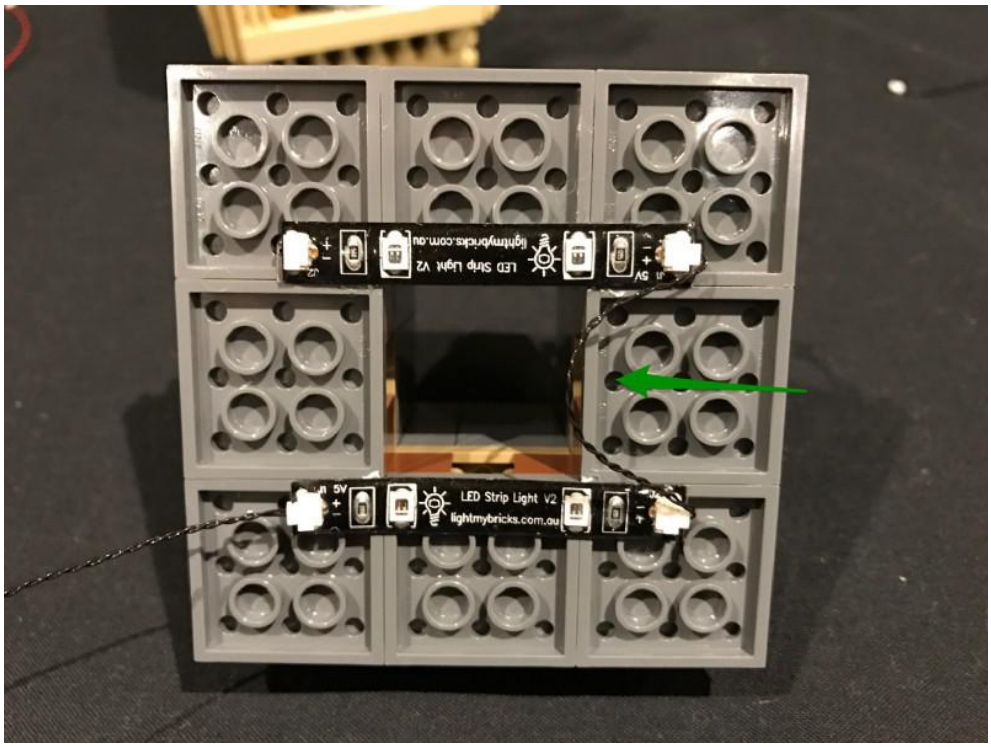
7.) Take the section below and then turn over so we can access underneath of it.

Take the 2x **Green Strip Lights** and connect 2x **5cm Connecting Cables** (one in between strip lights and another to the other side of a strip light). Use their adhesive backing to stick the green strip lights to the below positions underneath.

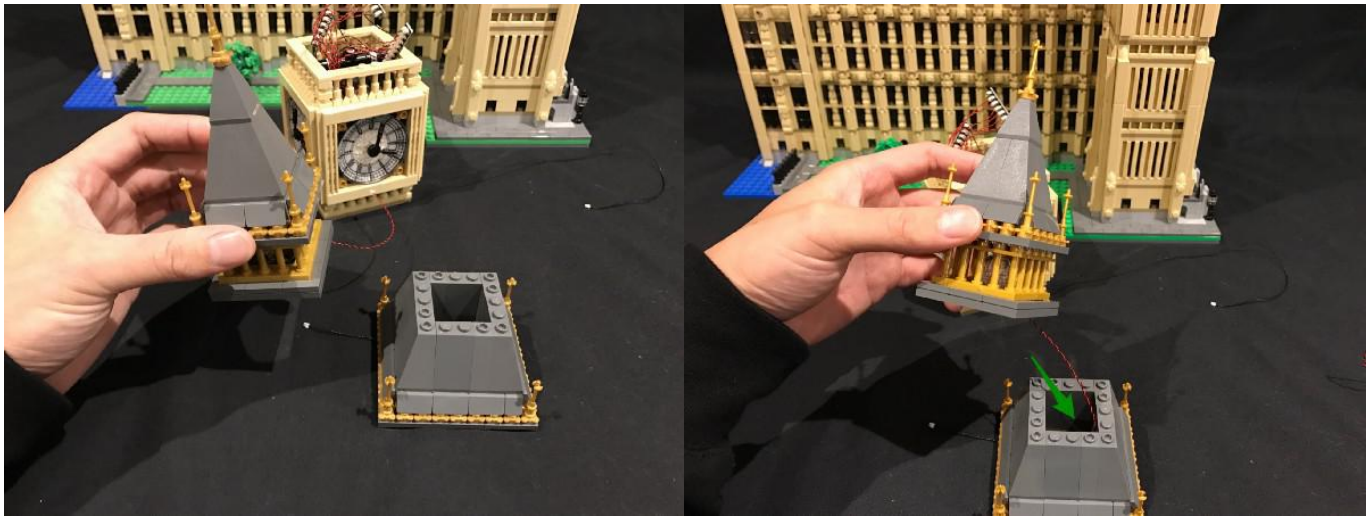


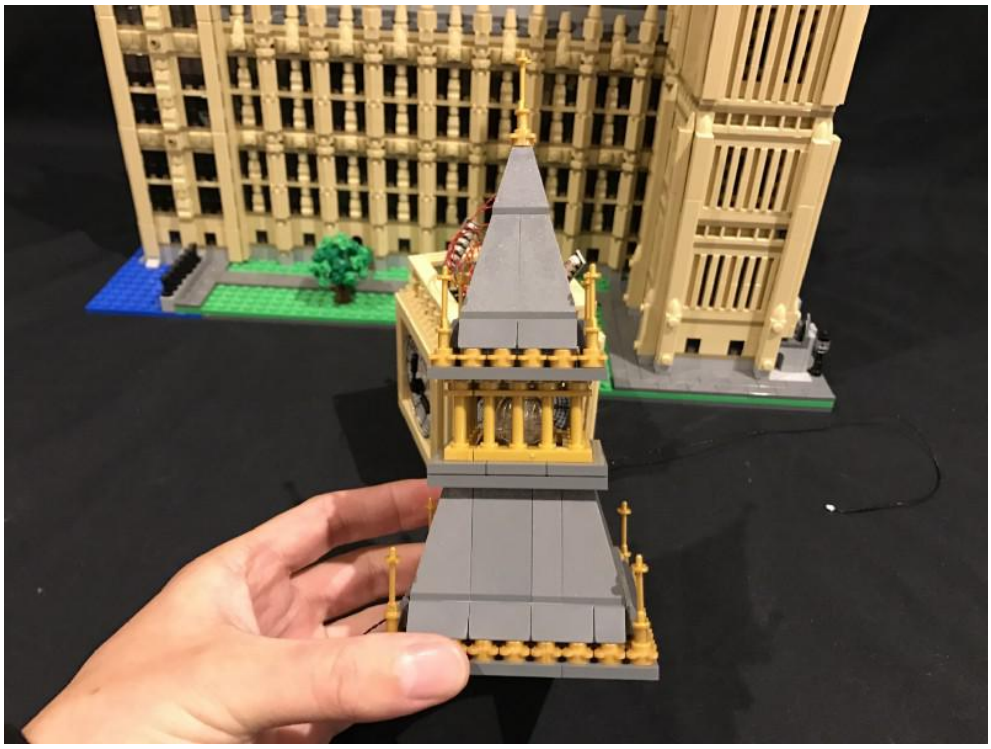
Ensure the strip lights are stuck in the exact position as shown above otherwise we will not be able to reconnect this section.

Push the 5cm cable in between strip lights inward so that it does not get caught and stick out when we reconnect this section.

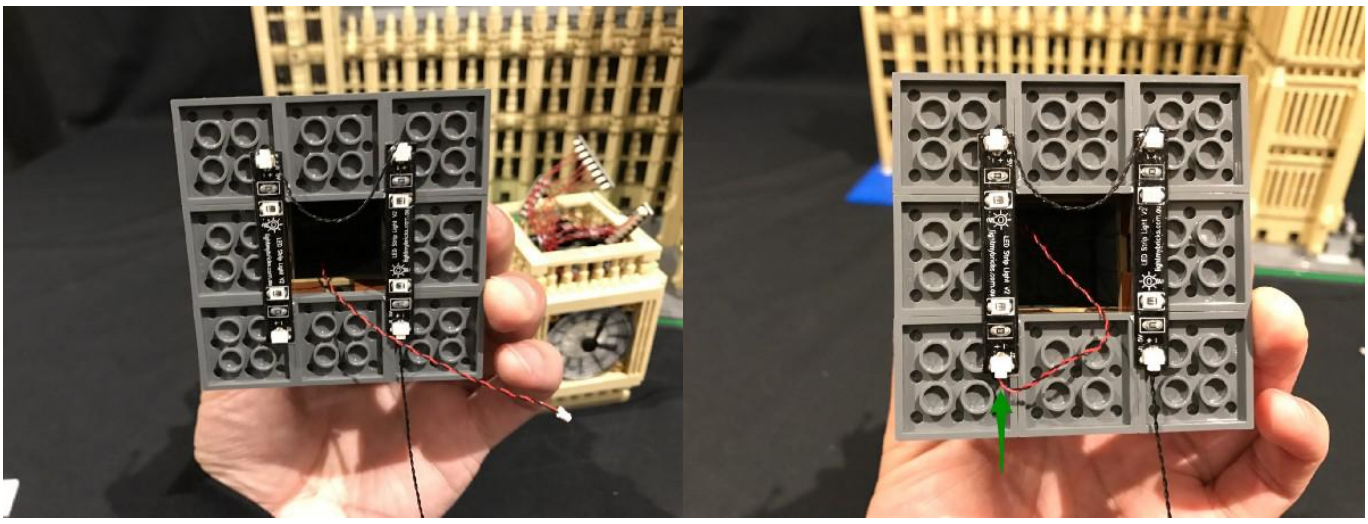



8.) Take the top roof and then thread the Dot Light cable down below before reconnecting over the section we just installed strip lights to.

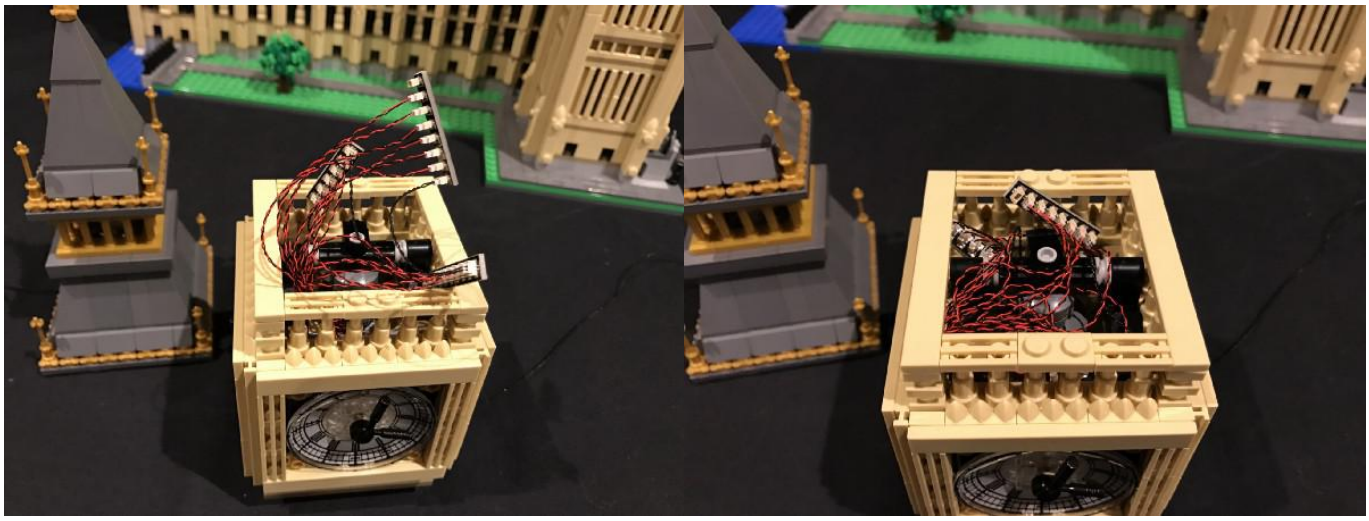


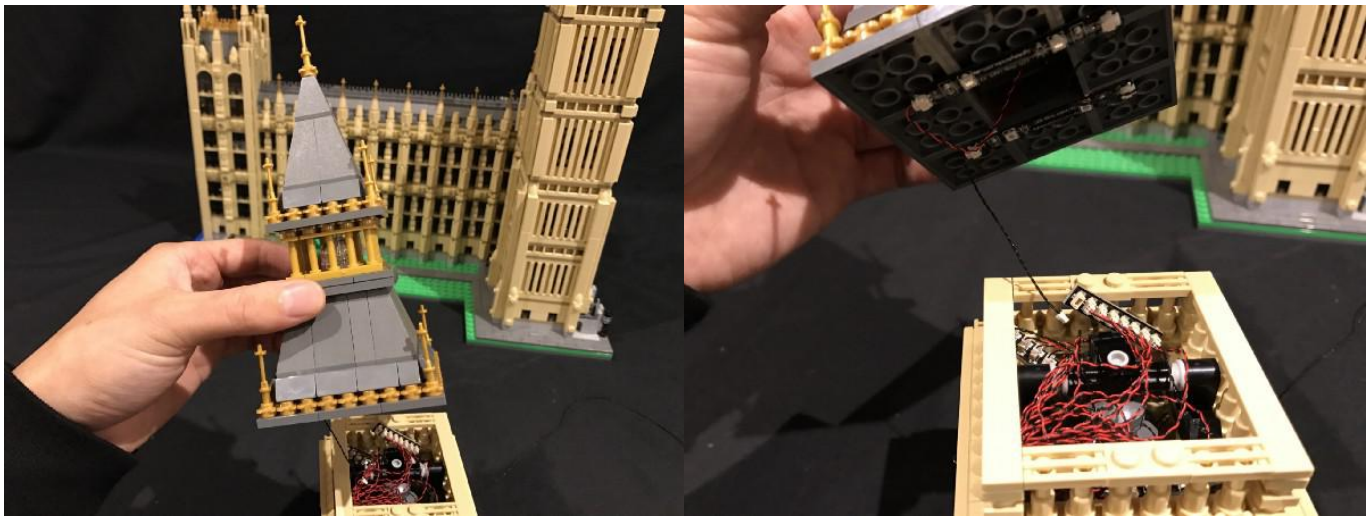


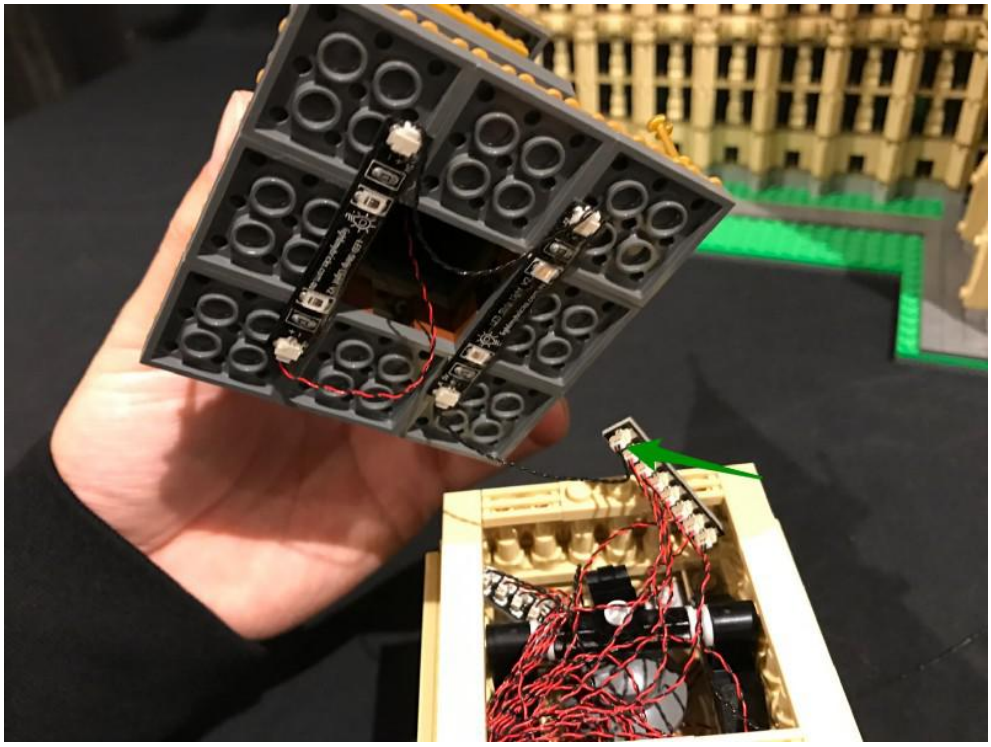
Pull the Dot Light cable down just enough to be able to then connect it into the strip light with the spare port.



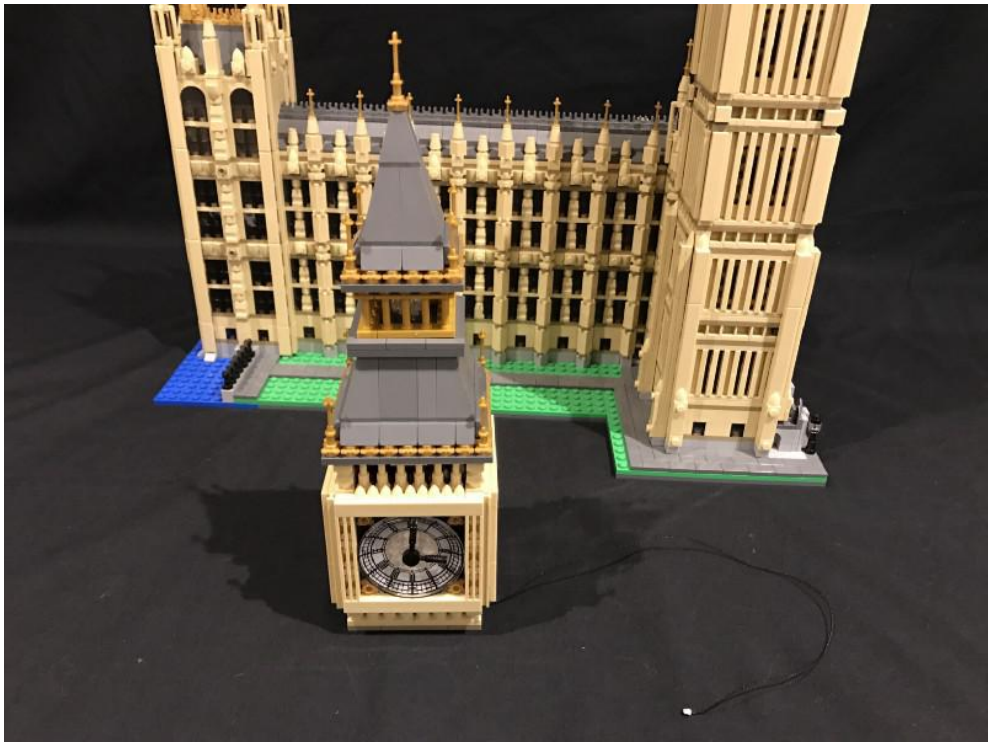
Tuck the expansion boards from the top of the tower in as much as possible and then take the roof section and connect the 5cm cable from the green strip light into the remaining port on the expansion board.





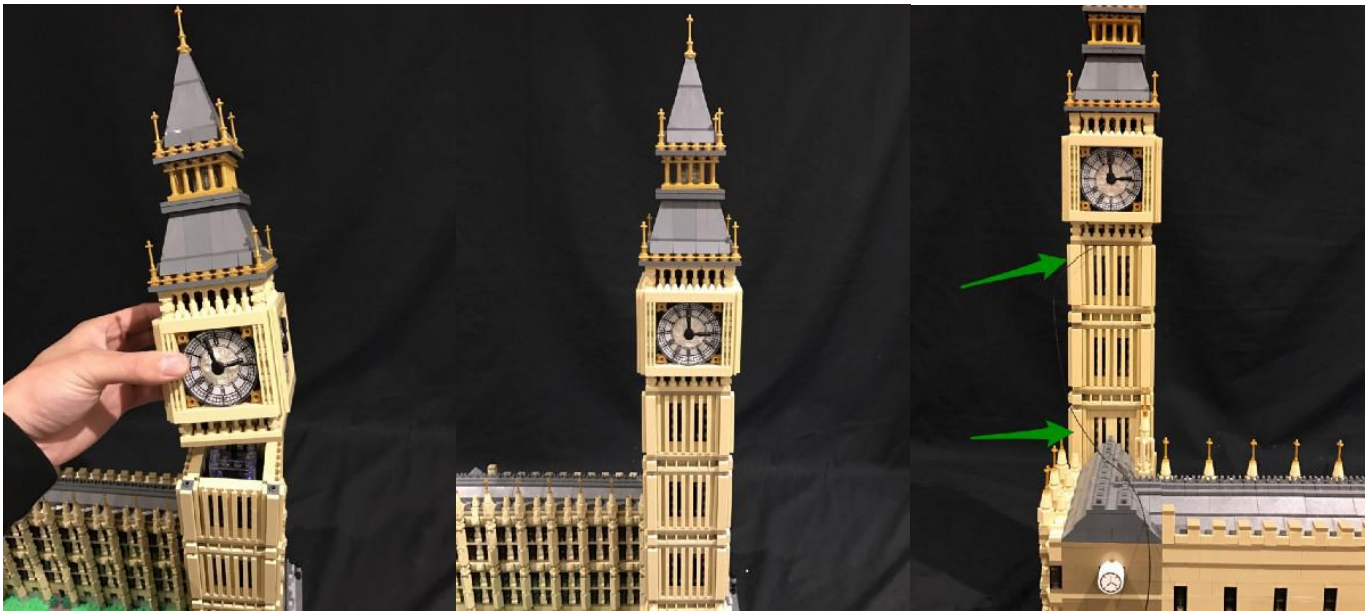


Reconnect roof on top of the clock section and ensure all is secure.

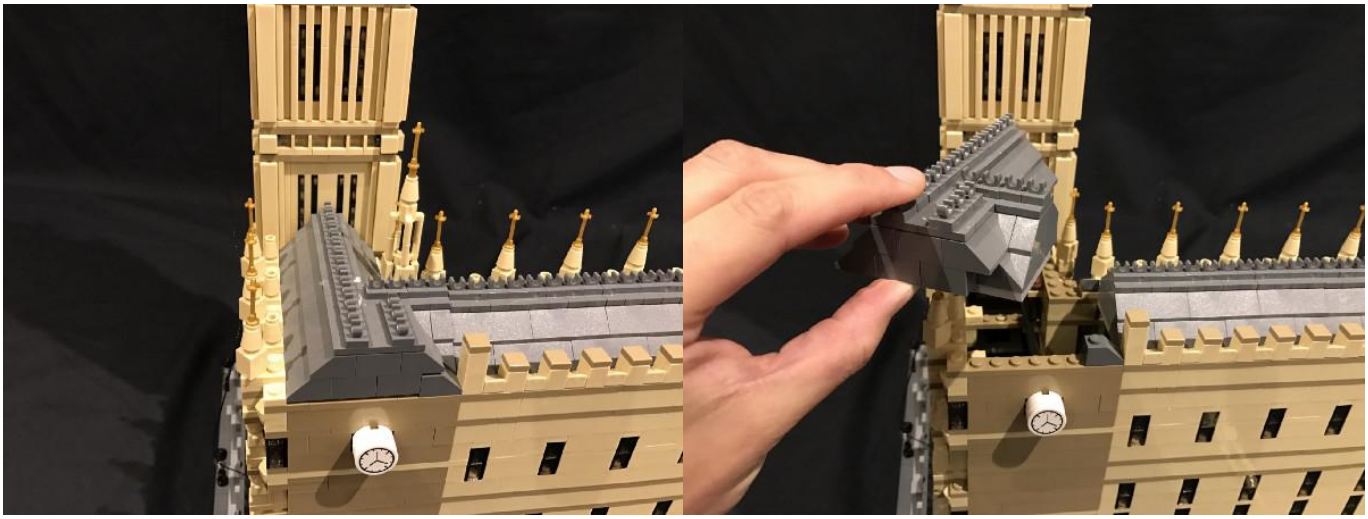


You can now test what we have done so far by connecting the 50cm cable from the base of the clock to a spare expansion board and connect up the battery pack again. Verify all is working OK.

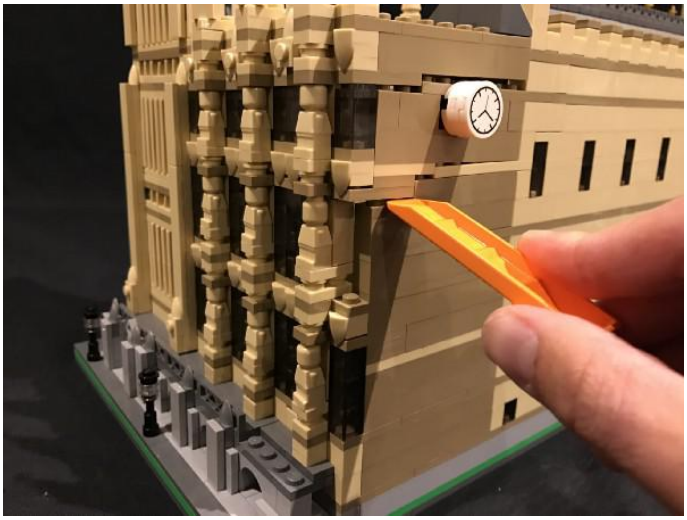
If all is OK, reconnect this whole section back to the rest of the tower and ensure you leave the 50cm cable outside the back.



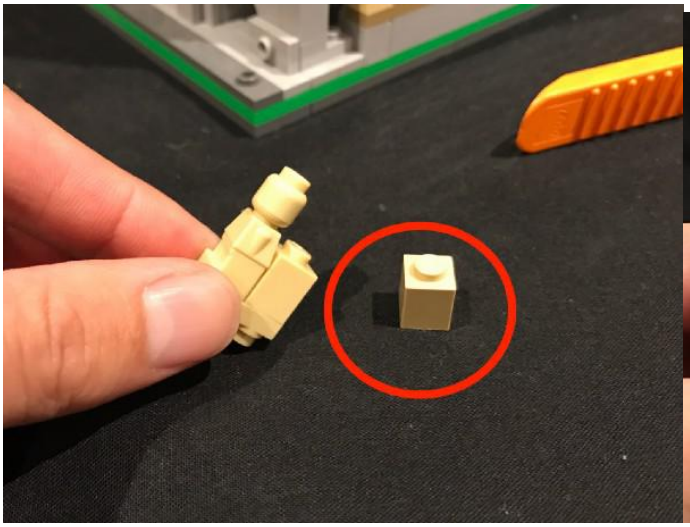
9.) Turn Big Ben over to the back and remove the roof.



You will require the LEGO removal tool to assist with this next step.
Follow below images to get in between sections to allow us to remove a few 1x1 Bricks from the back. This will allow us to thread cable inside the building.
Disclaimer: You will notice you will have another 3x trans-black bricks which are not pictured in this user guide. These will also need to be removed.

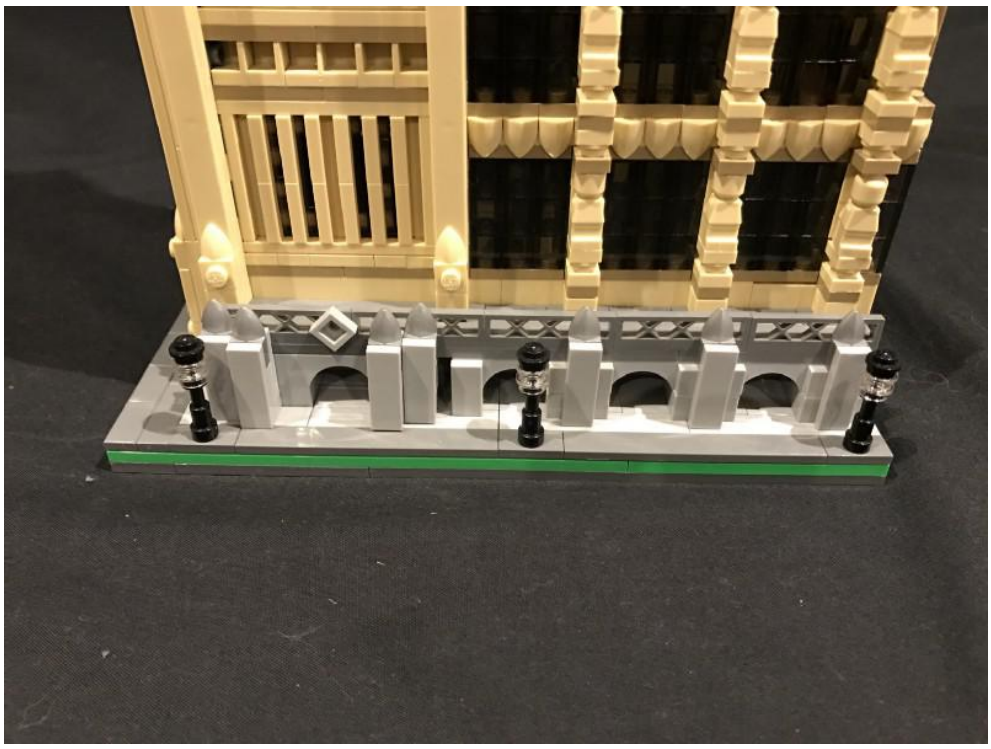




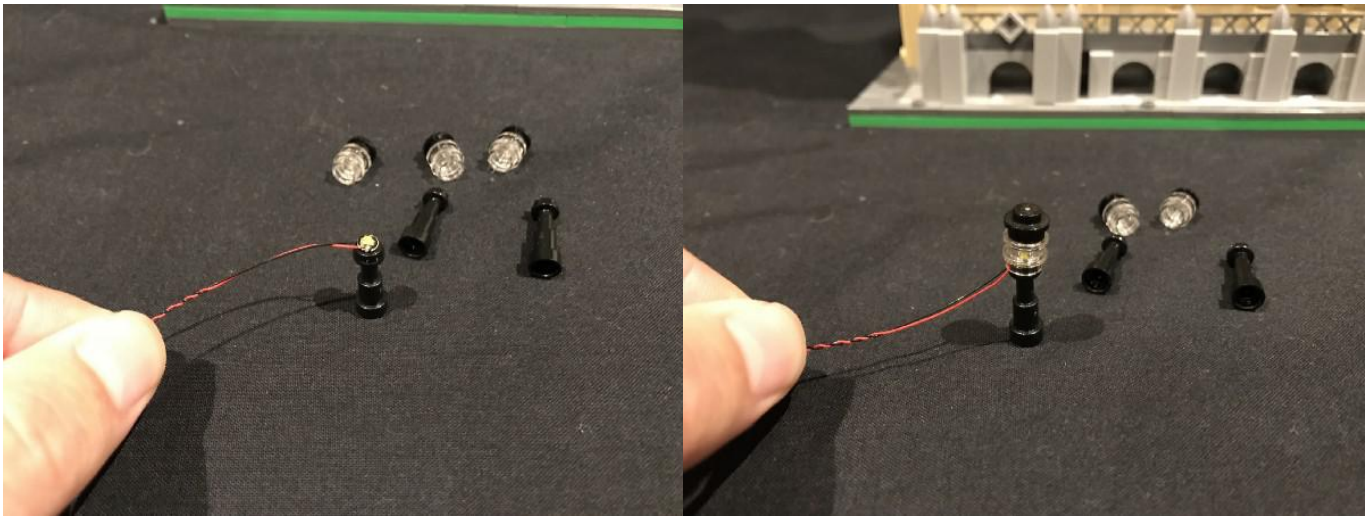



After successfully removing bricks you can reconnect all sections back together, without the bricks we were required to remove.

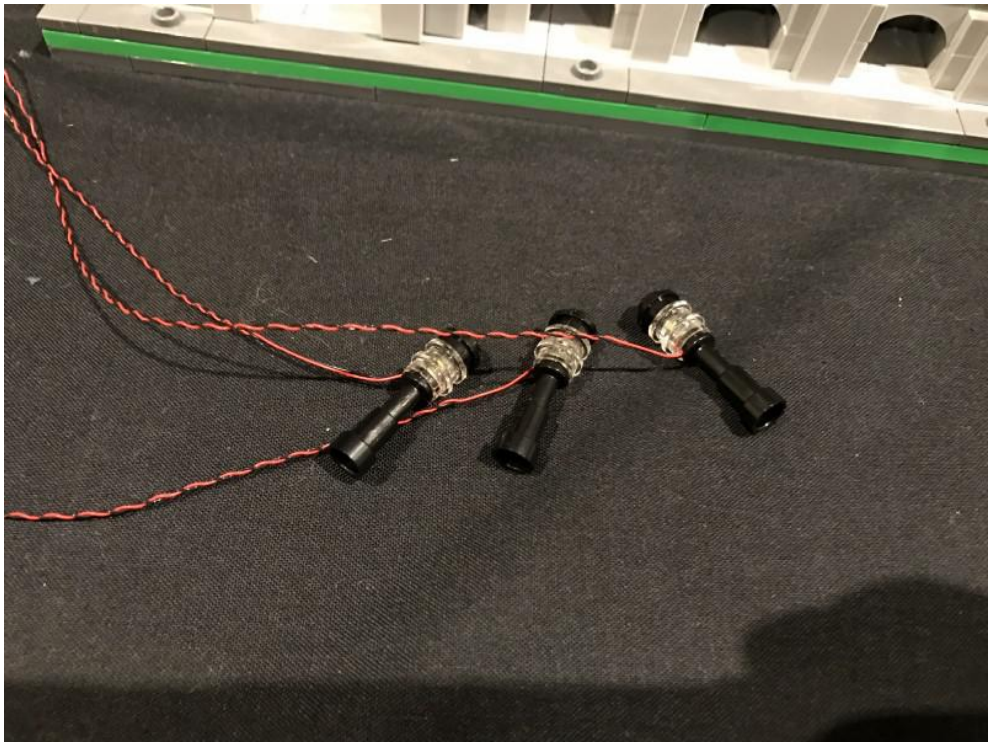
10.) We will now install lights to the lamp posts at the bottom. First remove all three lamp posts and disconnect the tops.



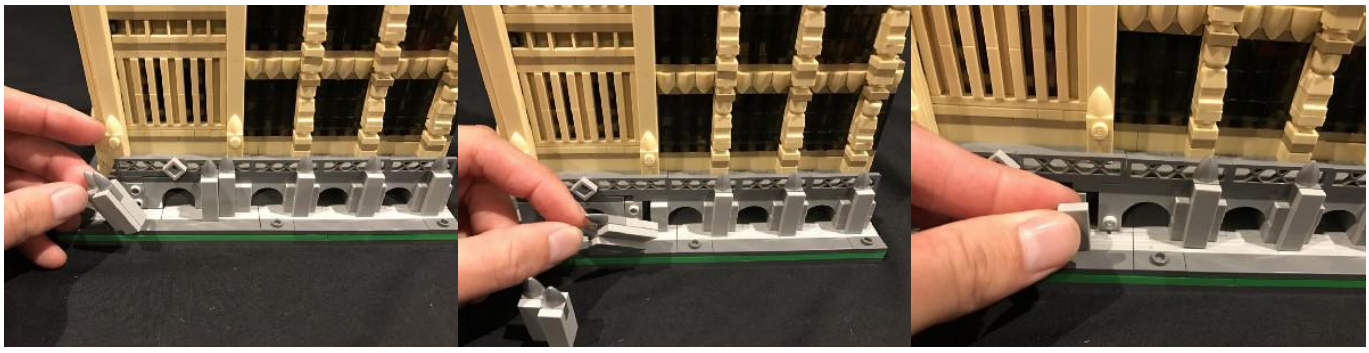
Take a **White 30cm Dot Light** and then place it directly over the lamp post piece. Secure it in place by reconnecting the top pieces directly over the Dot Light as shown below.

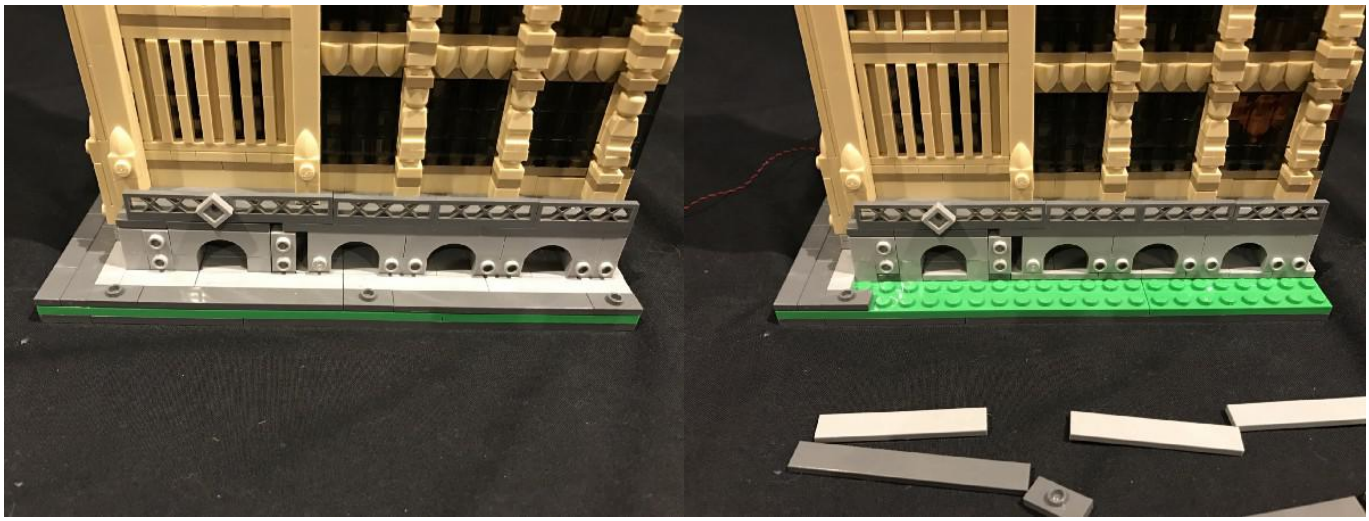


Repeat this step to install another 2x **White 30cm Dot Lights** to the remaining 2 lamp posts.

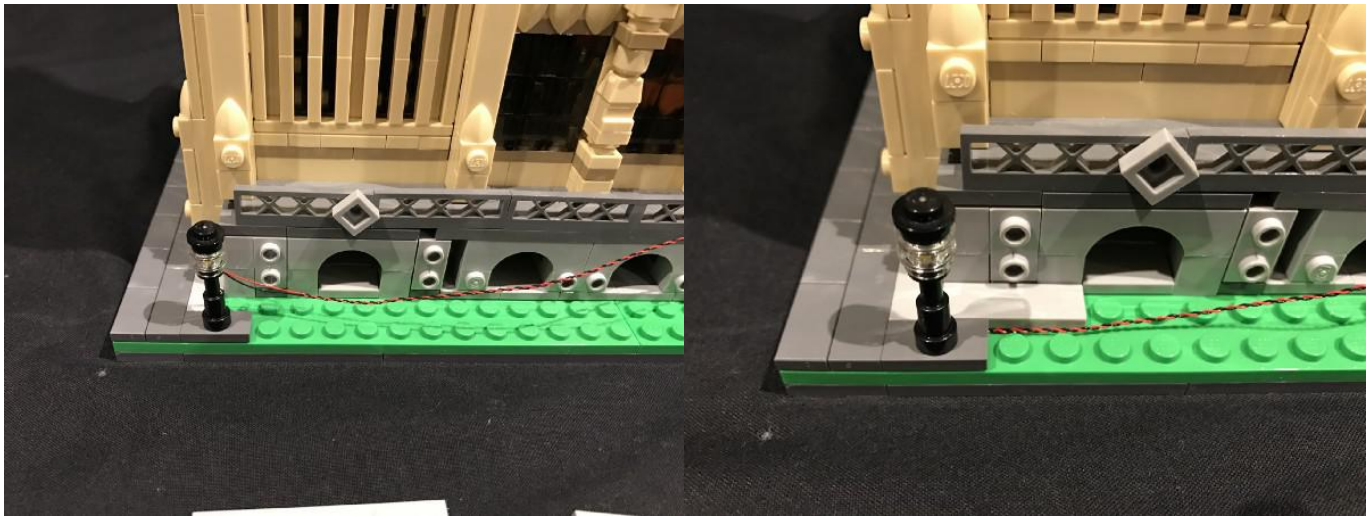


11.) Disconnect the following pieces from the bottom.

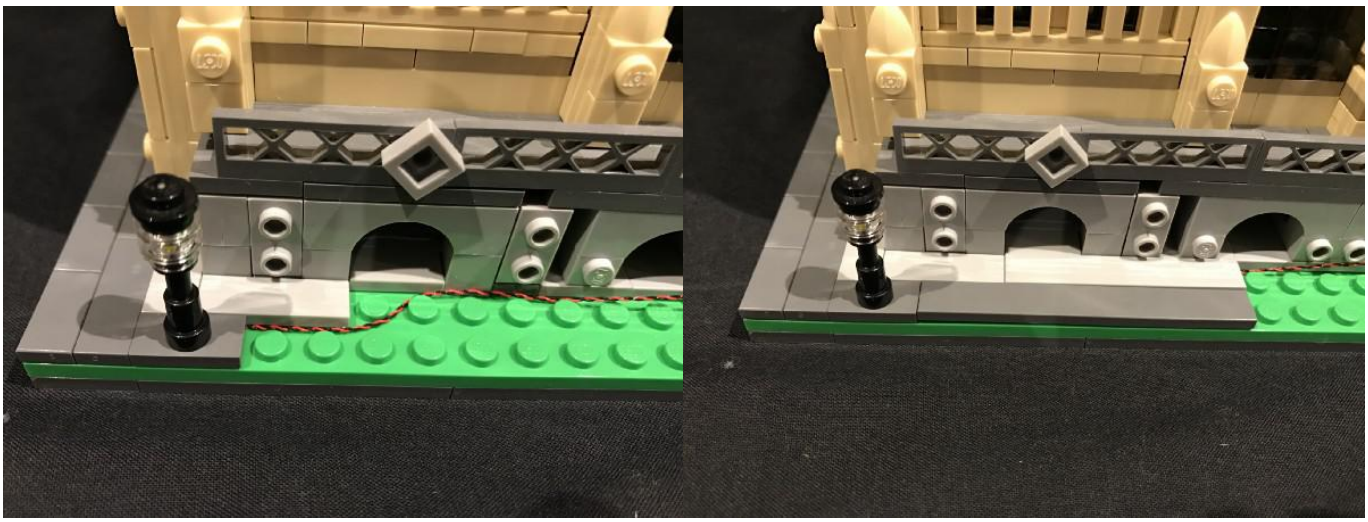




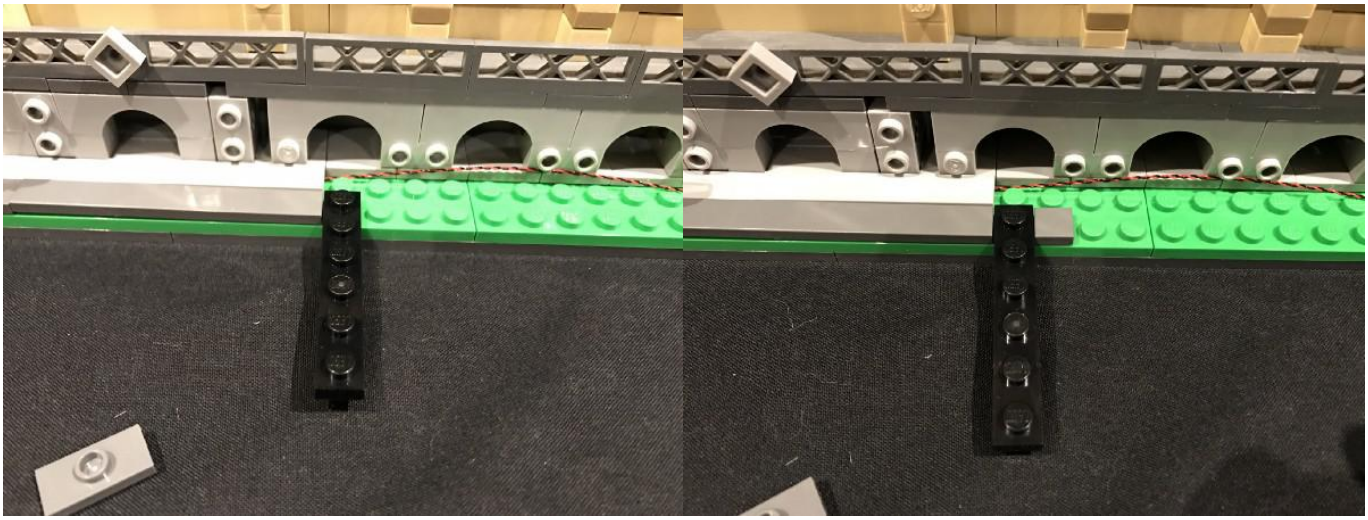
Connect the first lamp post and then lay the cable in between studs before reconnecting one of the light grey tiles over the top of it to secure it in place.



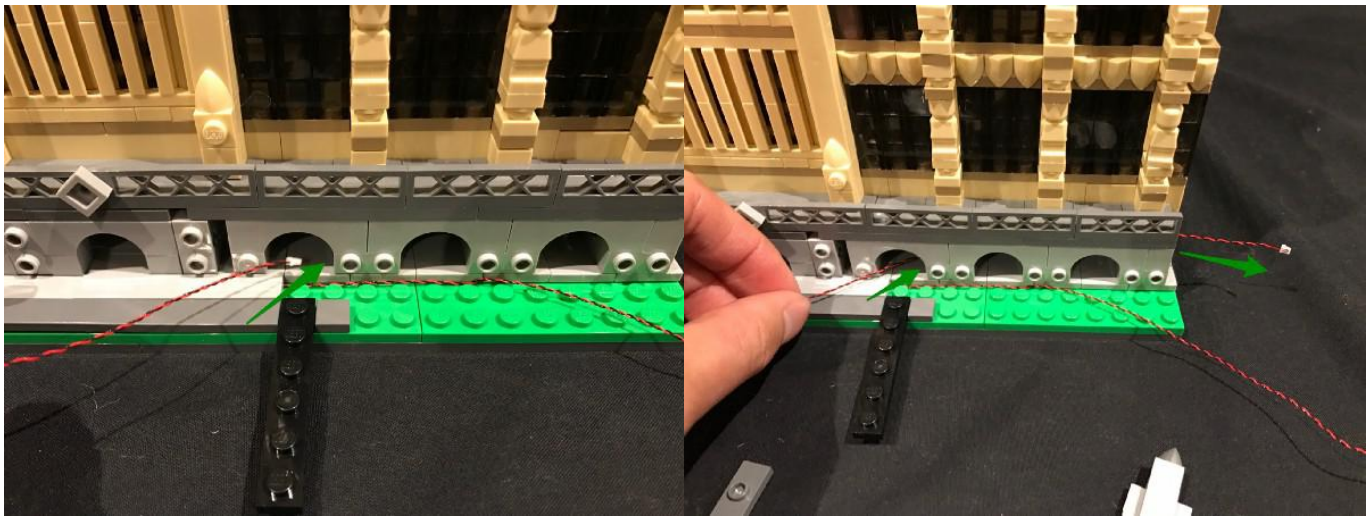
Continue to lay the cable down and securing it place by reconnecting more tiles.

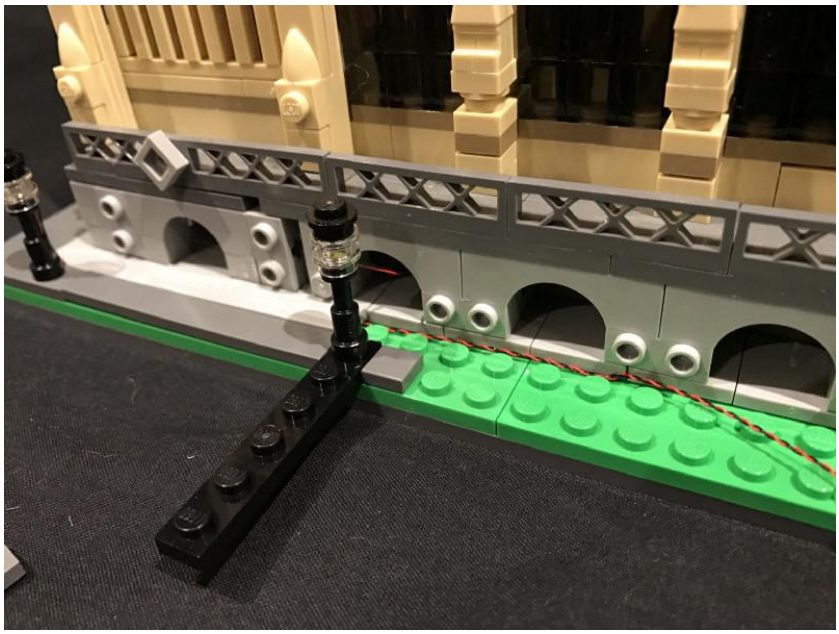


Take a **Black Plate 1x6** (which came in this light kit) and connect it to the following position. Take a **Dark Bluish Grey Tile 1x1** and connect it to the next stud along.

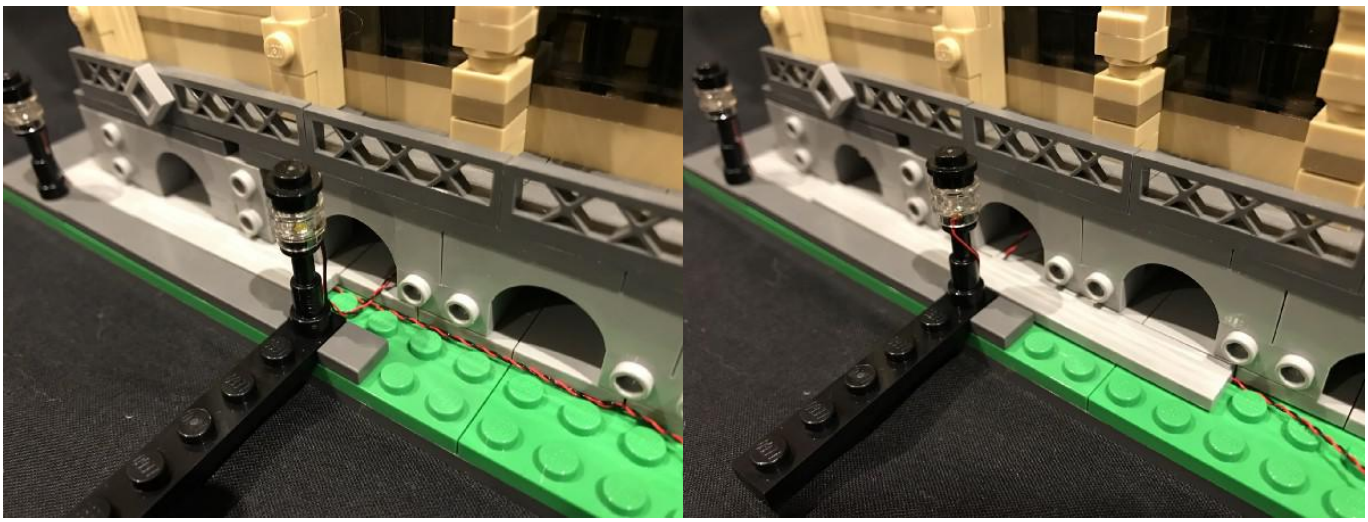


Take the second lamp post and thread the connector side of it through the following space and then thread all along until it reaches the back. Pull it all the way through and then connect the lamp post on the black stud.

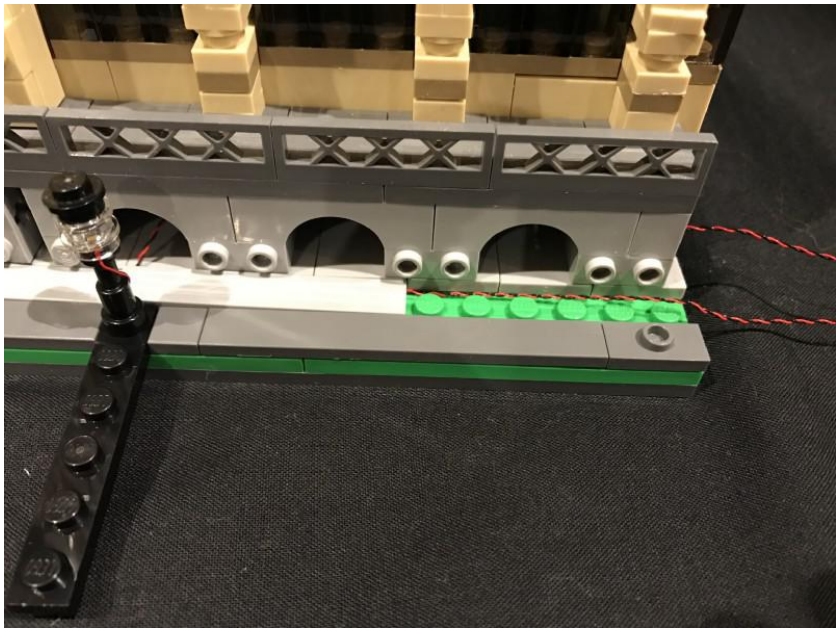




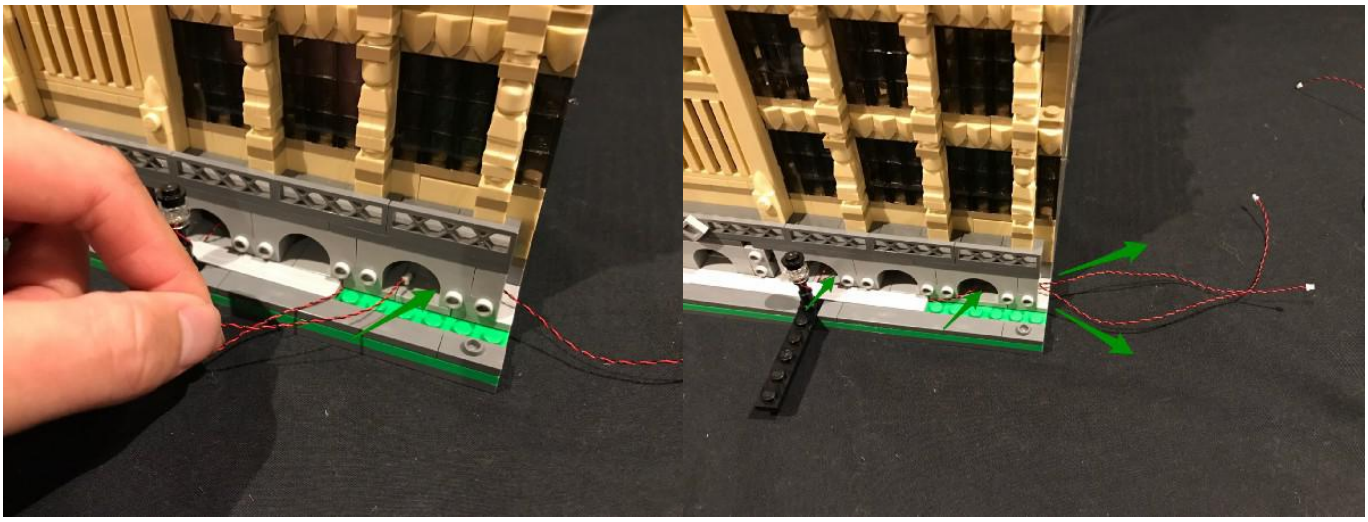
Ensure the cable for the lamp post is pushed down and then reconnect the light grey tile over the top.



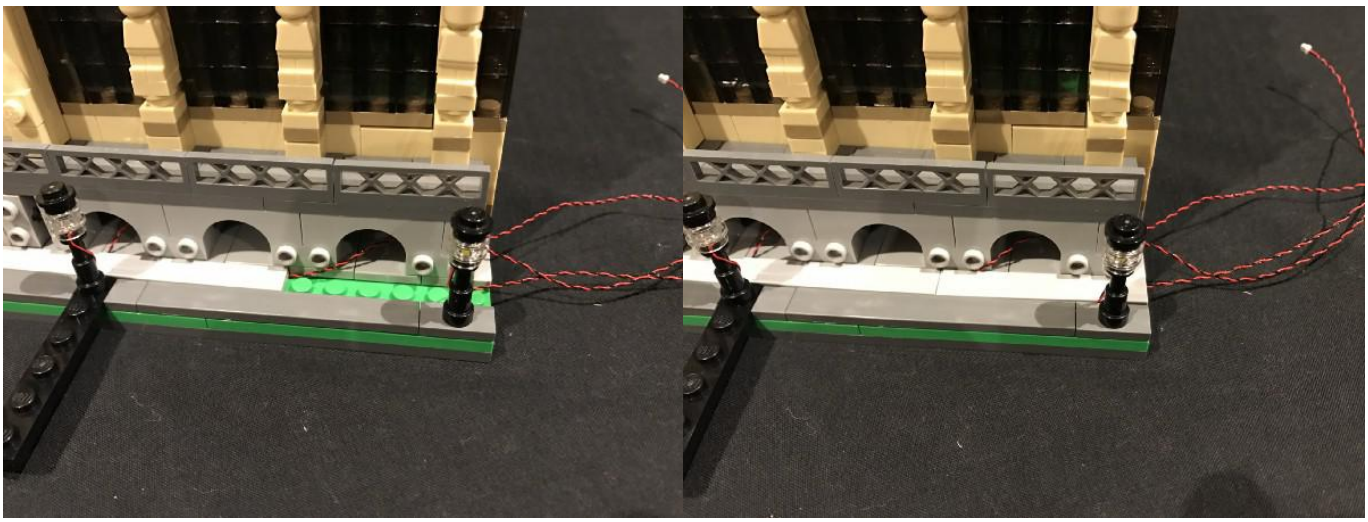
Reconnect the next lot of dark grey tiles.



Take the cable from the first lamp post we connected and thread the cable through the last space and then out the back so that both cables are through.

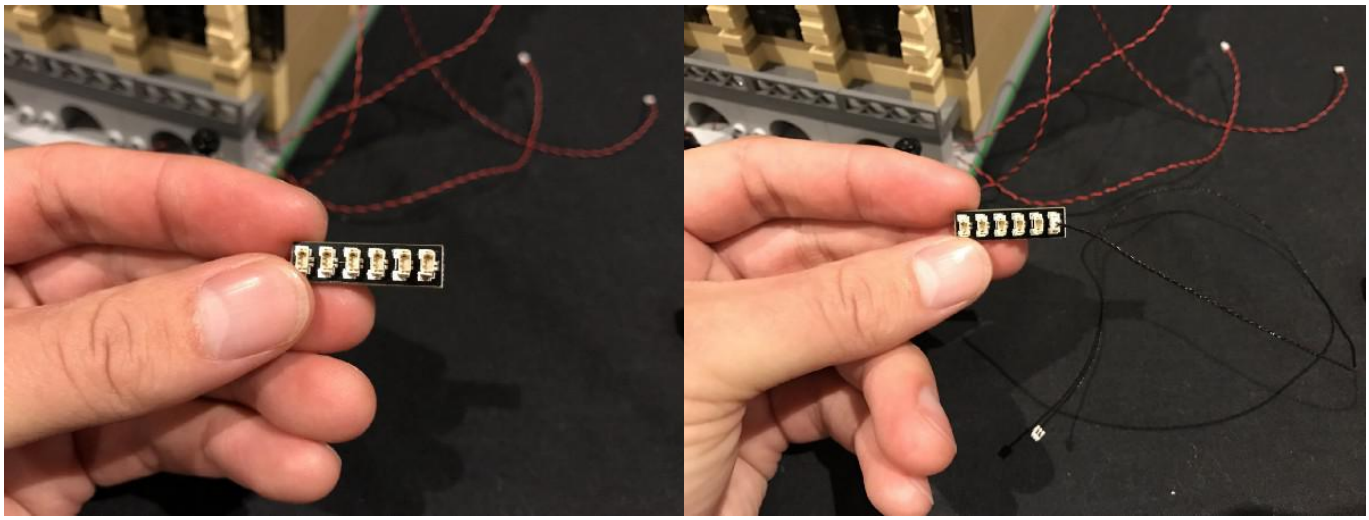


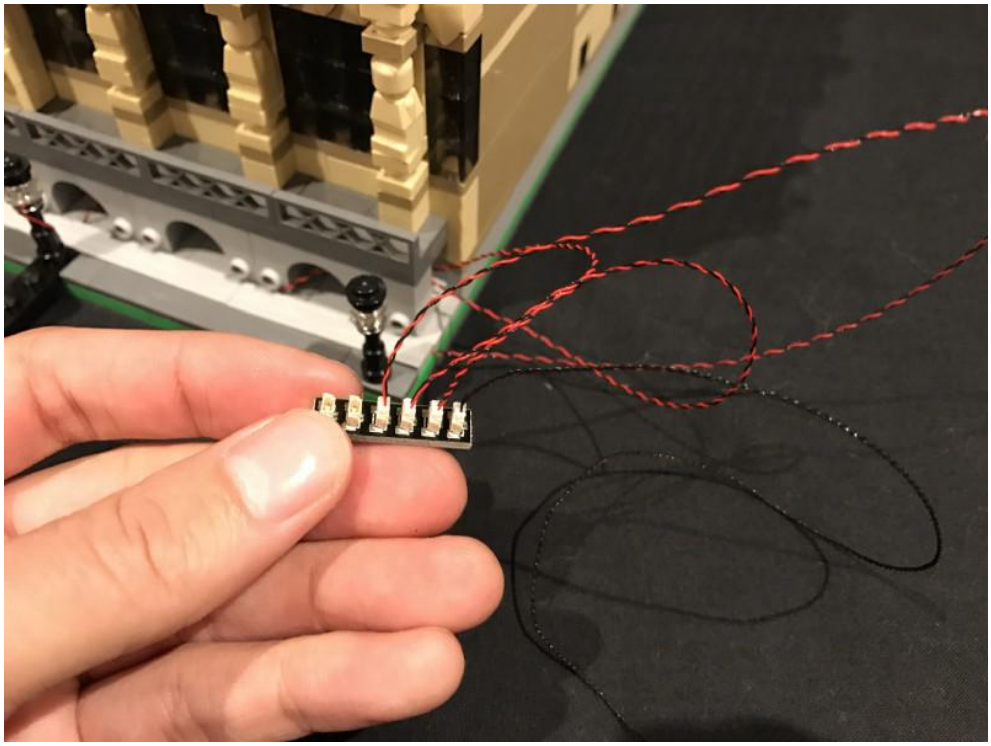
Connect the remaining lamp post and then push down the cable to allow us to reconnect the remaining light grey tile.



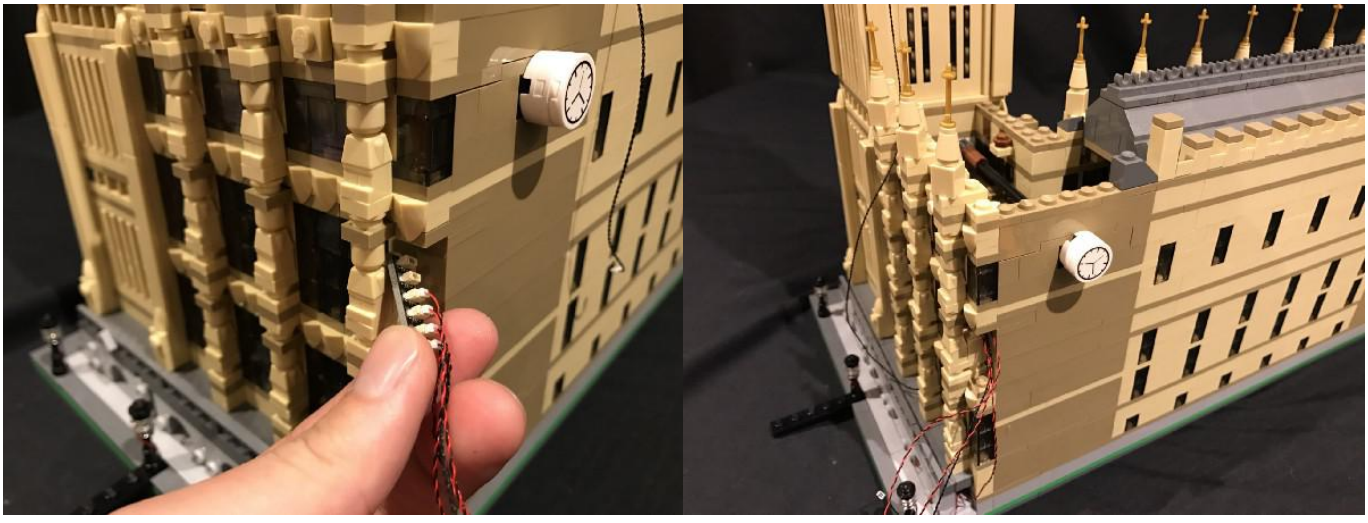
12.) Take the remaining **6-Port Expansion Board** and connect a **30cm Connecting Cable** to it

followed by the 3 Dot Light cables from the lamp posts.



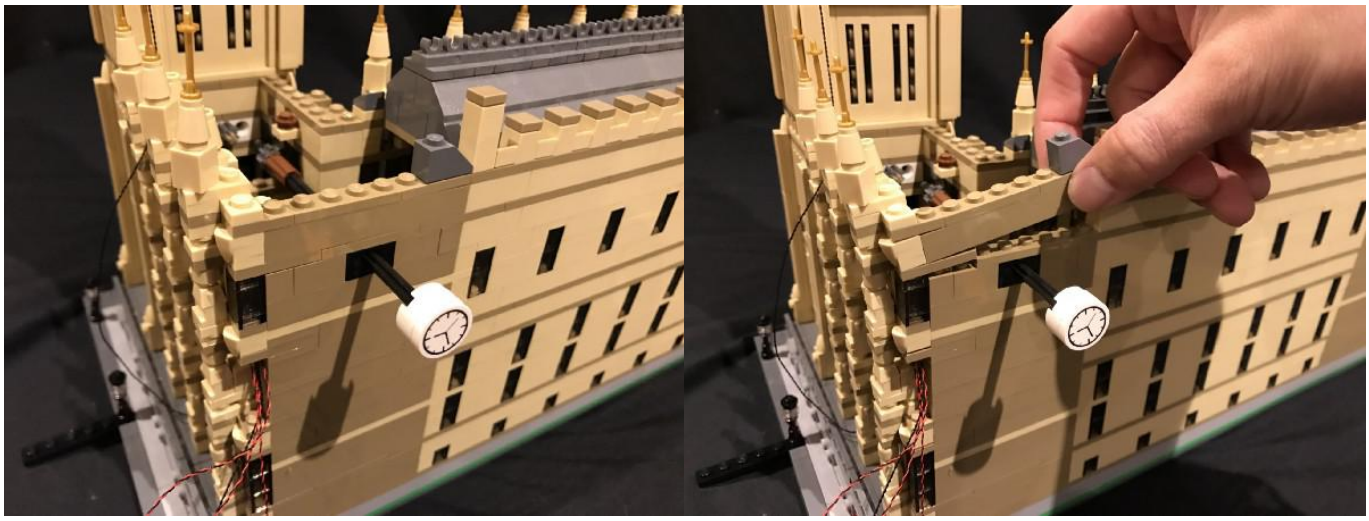


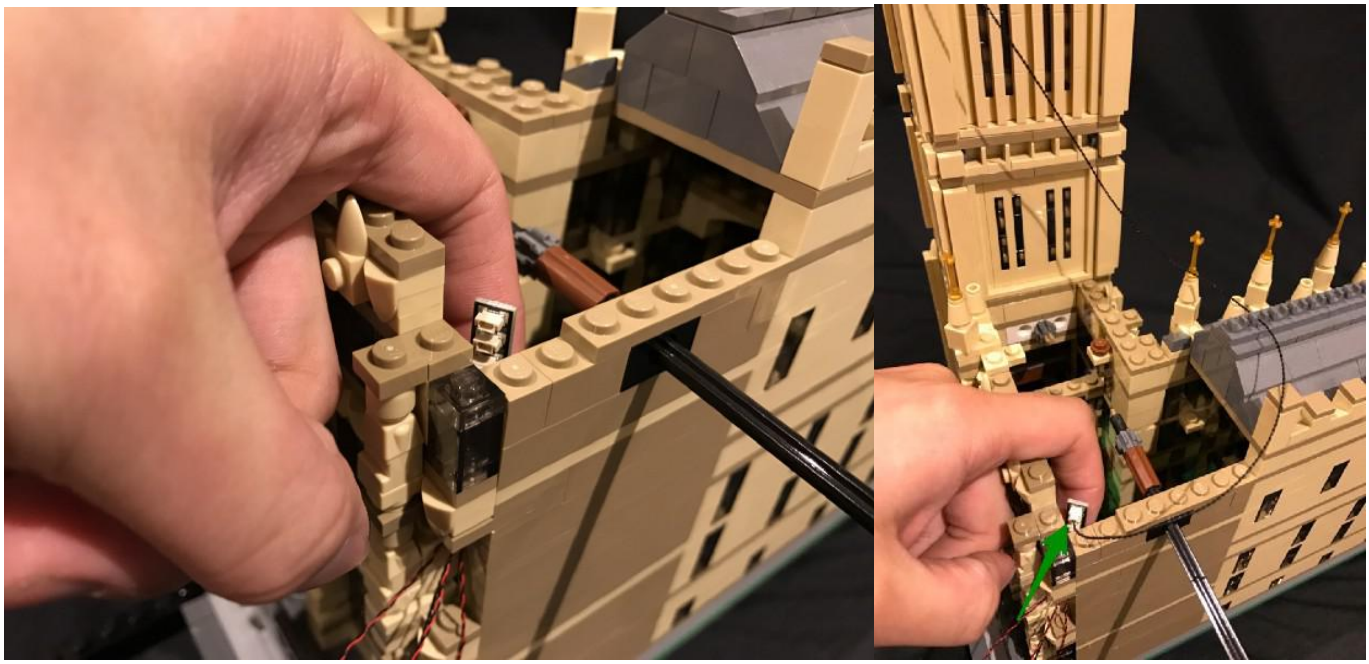
Thread the expansion board and cables through the spacing we created when we removed the bricks from the corner of the building.



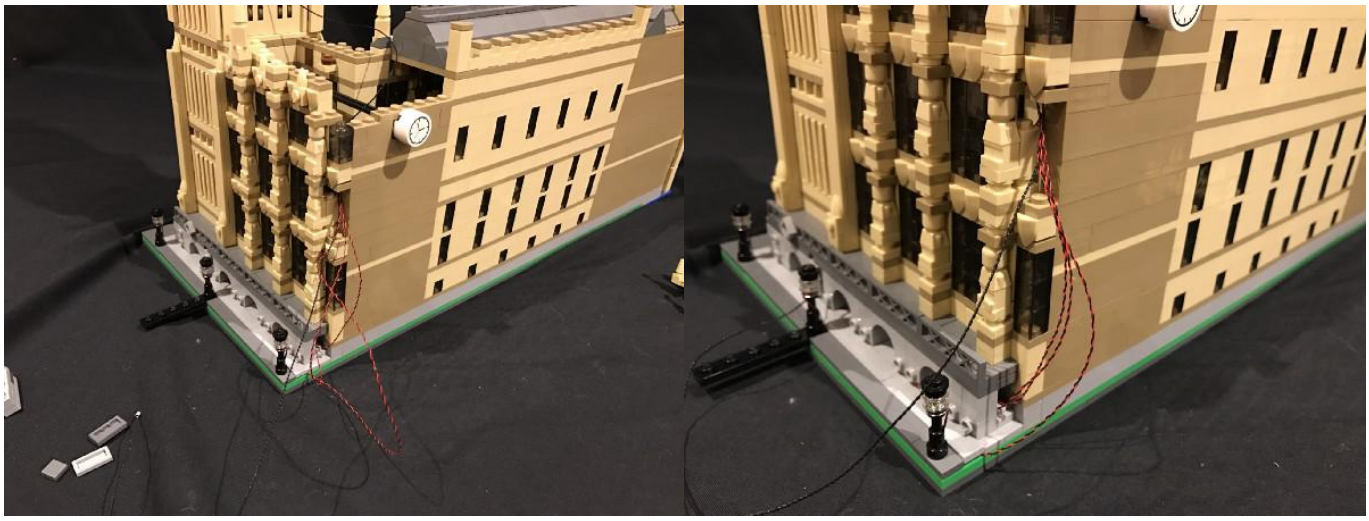
Take the 50cm cable from the tower and connect it to the expansion board we just threaded through.

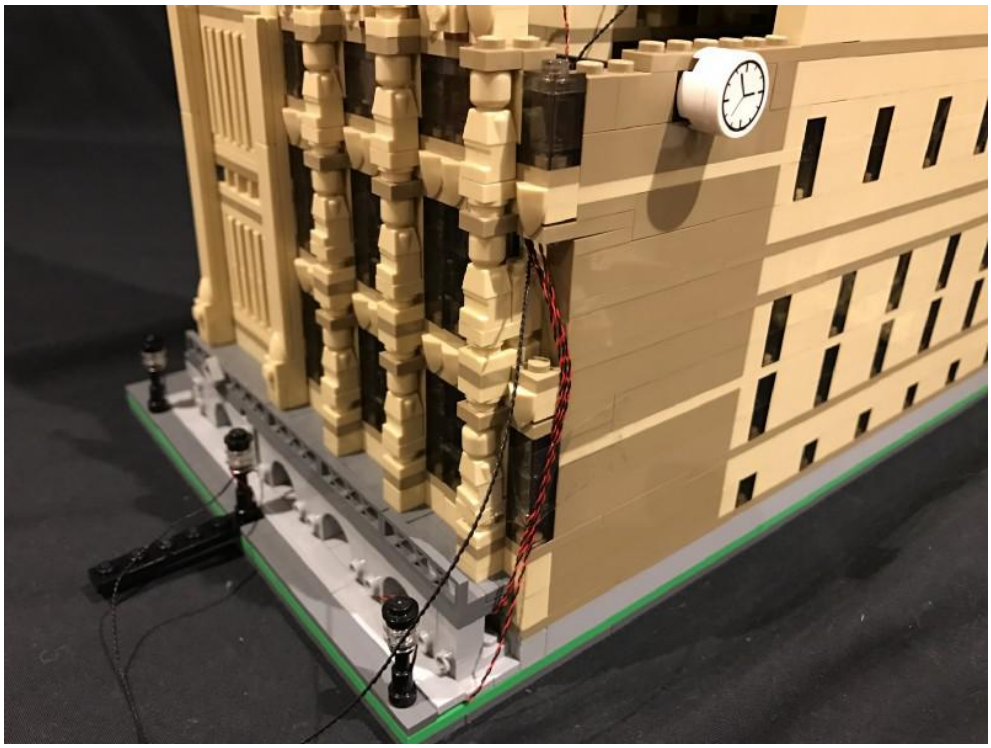
We will not have enough cable length to allow us to easily do this so we will need to disconnect top sections of the wall. Follow the below images to remove sections to allow us to connect the cable to the expansion board.





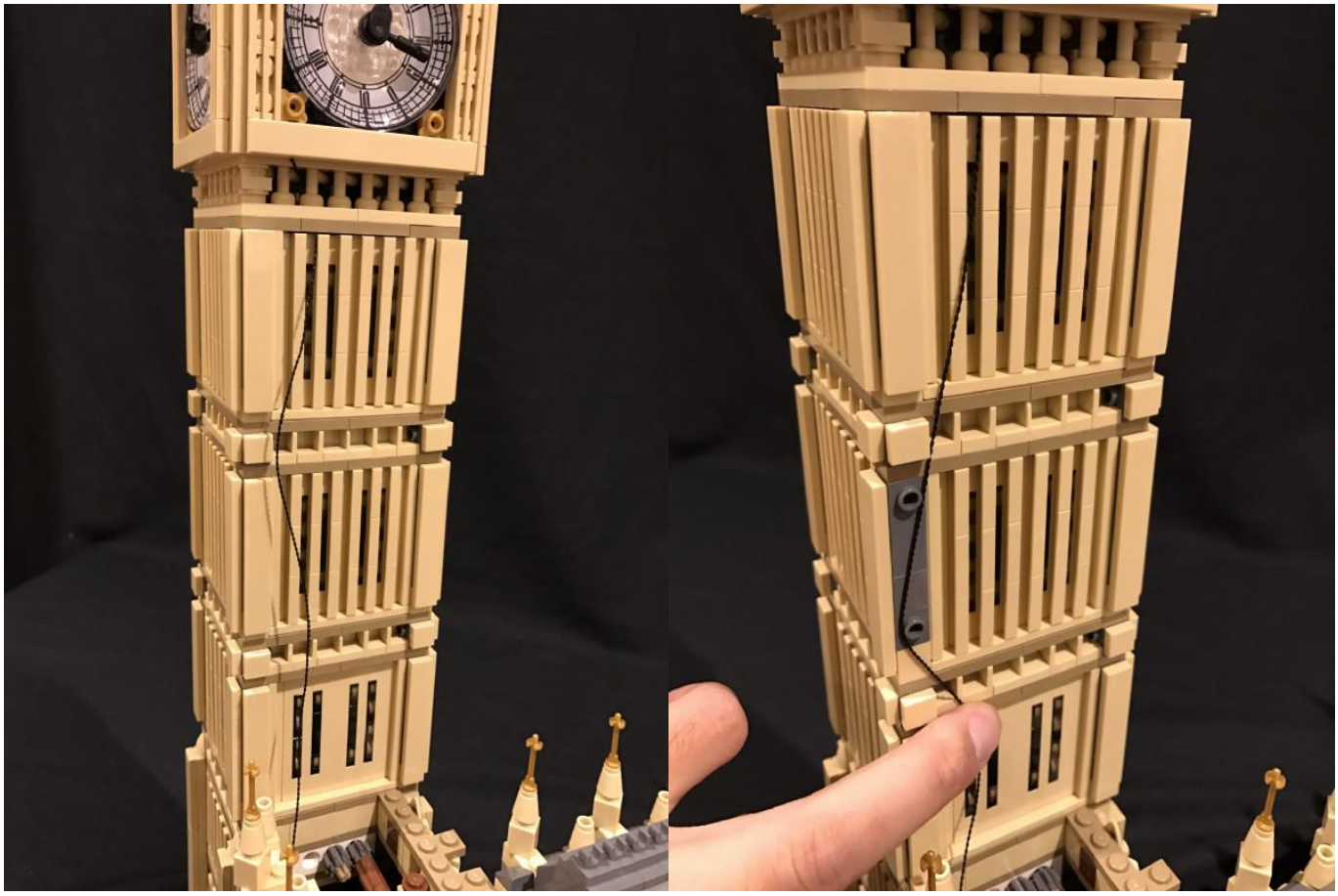
Pull the Dot Light cables in from the inside so that minimal cabling is left on the outside, then secure the Dot Light cables to the back of the wall using tape. Ensure you do not pull in the 30cm cable.





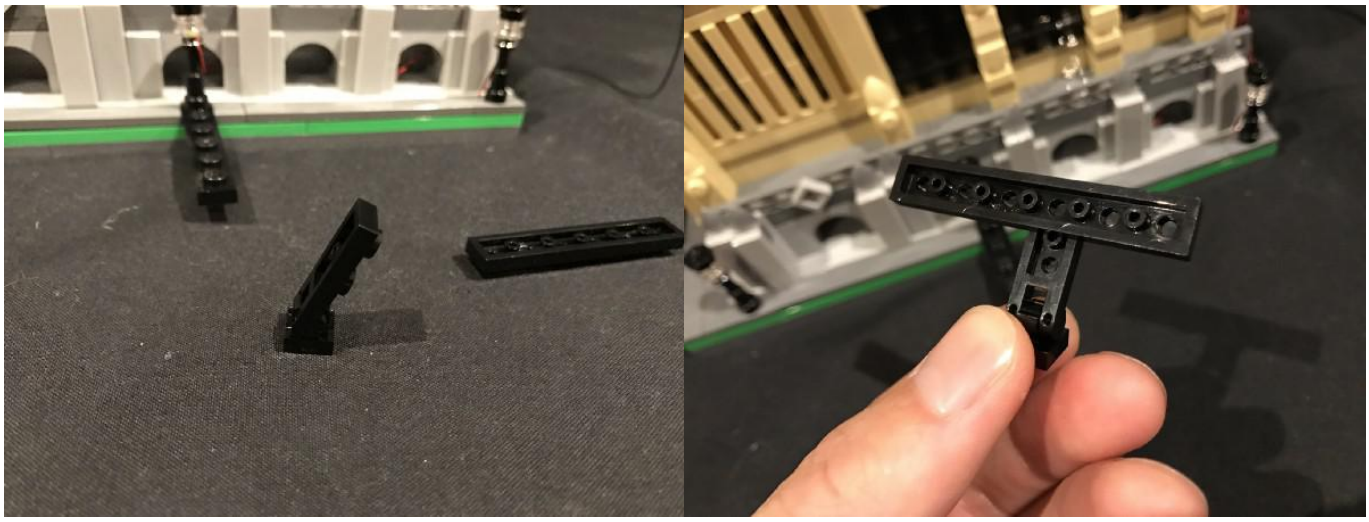
Reconnect sections we removed earlier (trans black bricks in the corner).

Hide the 50cm cable underneath tiles as shown below and then reconnect the roof.



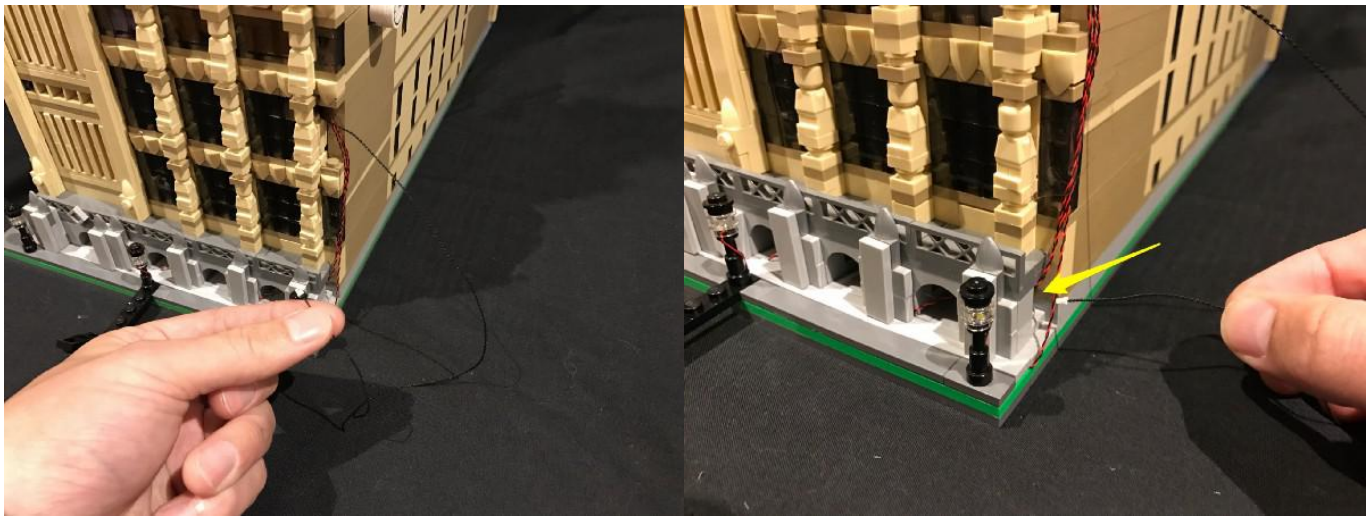
13.) We will now install spot lights to light the outside of the building. Starting from the side where we already have a black 1x6 plate connected, locate the following LEGO pieces which came provided in this light kit and then assemble them together according to images below.

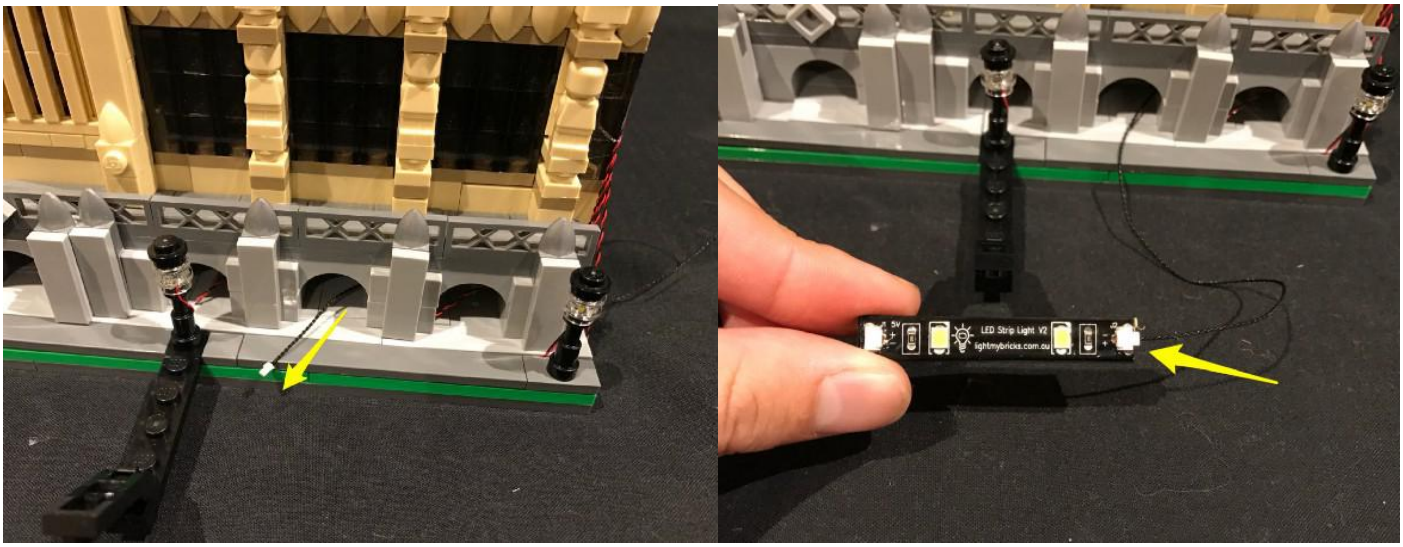
- **Plate 1x6, Black**
- **Plate, Modified 1x2 with handle on End—Close Ends, Black**
- **Tile, Modified 1x1 with Clip, Black**



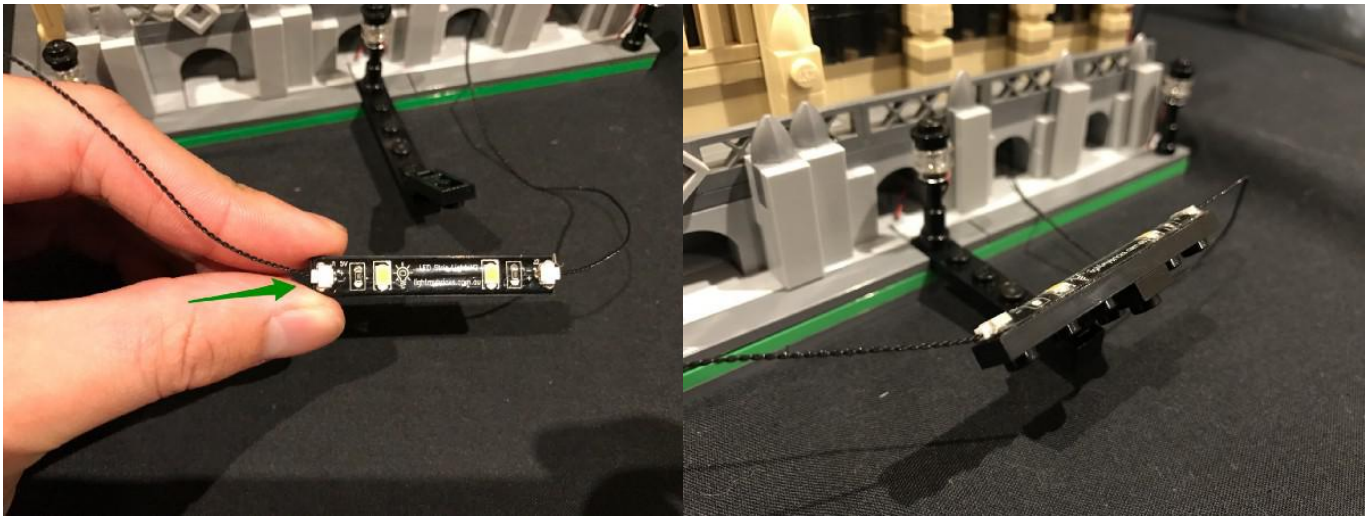
Take a **White Strip Light** and stick it to the base of the Lego plate using the adhesive backing. Since we will be installing a total of 6 Strip Lights to use as spotlights we will identify this particular one as **striplight#1**

Locate the spare end of the 30cm connecting cable from the corner of the building and thread it through the spacing at the back of the building and then out through the second space behind the lamp posts. Connect this cable to the right port of striplight#1.

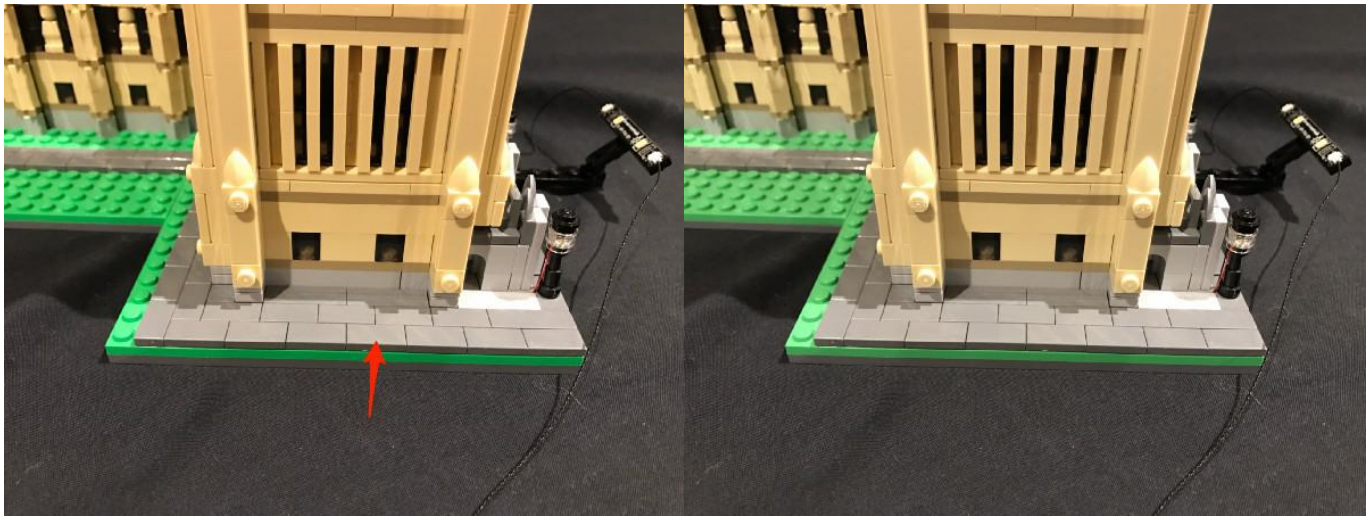


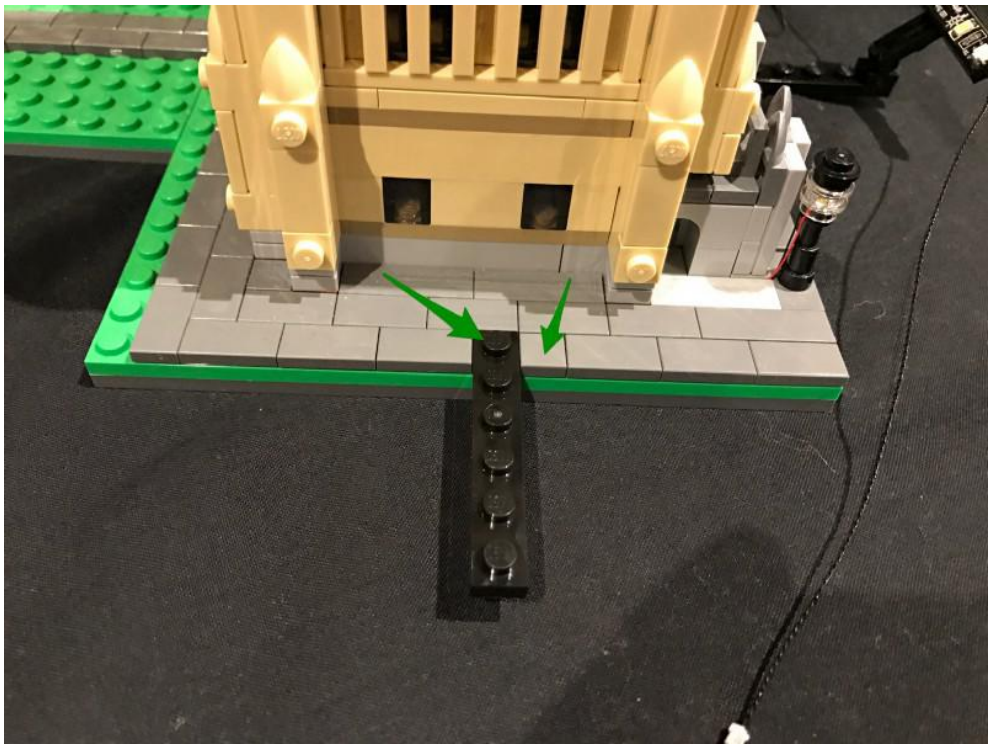


Take a **15cm Connecting Cable** and connect it to the left port of striplight#1 and then connect the base of the spot light to the black 1x6 plate.



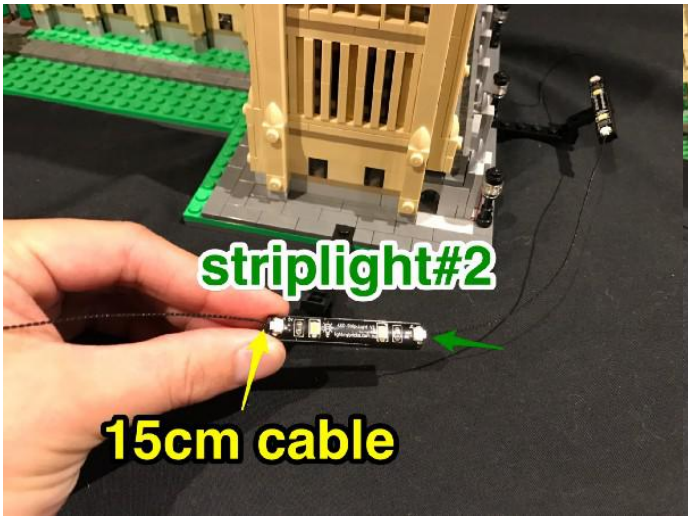
Turn the building around to the front and then remove the following 1x2 LEGO tile and then replace with a **black 1x6 plate** as well as a **dark grey 1x1 tile.**

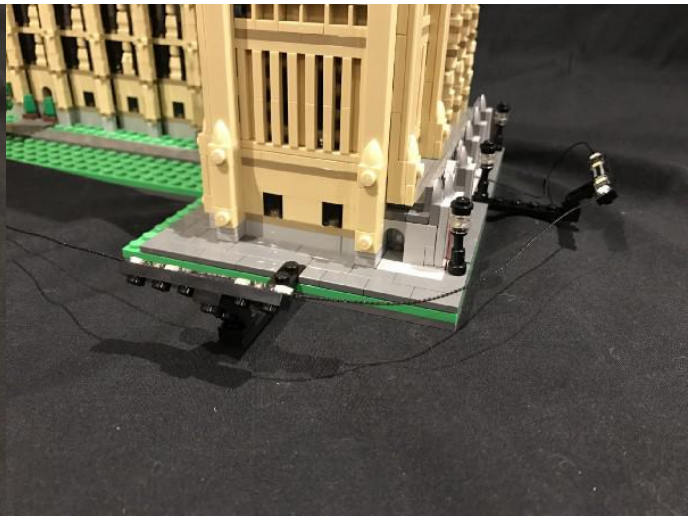




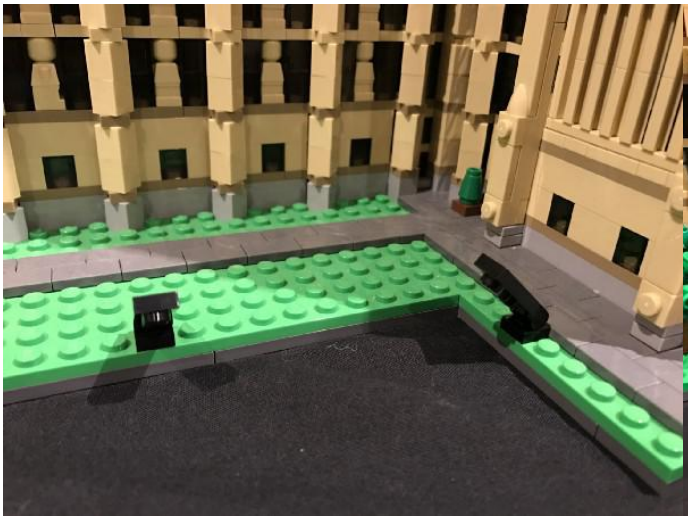
Take another **Plate, Modified 1x2 with handle on End—Close Ends, Black** and **Tile, Modified 1x1 with Clip, Black** and assemble them together to make another spot light.

Take another **White Strip Light (striplight#2)** and stick it onto another **Black 1x6 Plate**. Connect the other end of the 15cm connecting cable from striplight#1 the right port and then connect a new **15cm connecting cable** to the left port. Connect the plate with striplight#2 to the spot light base.

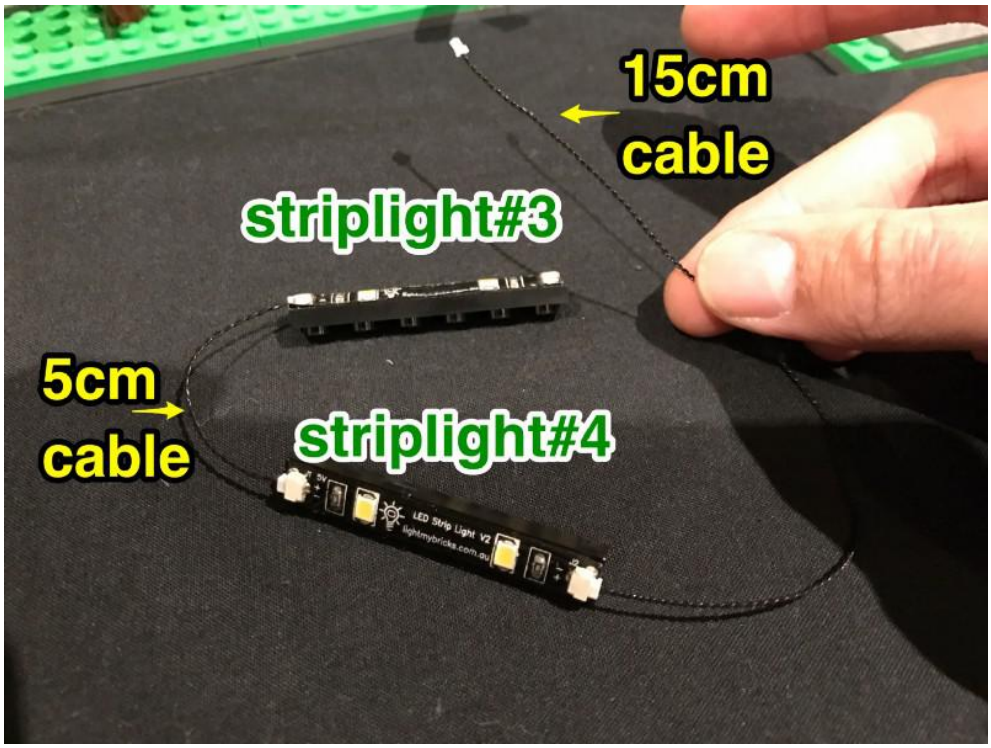


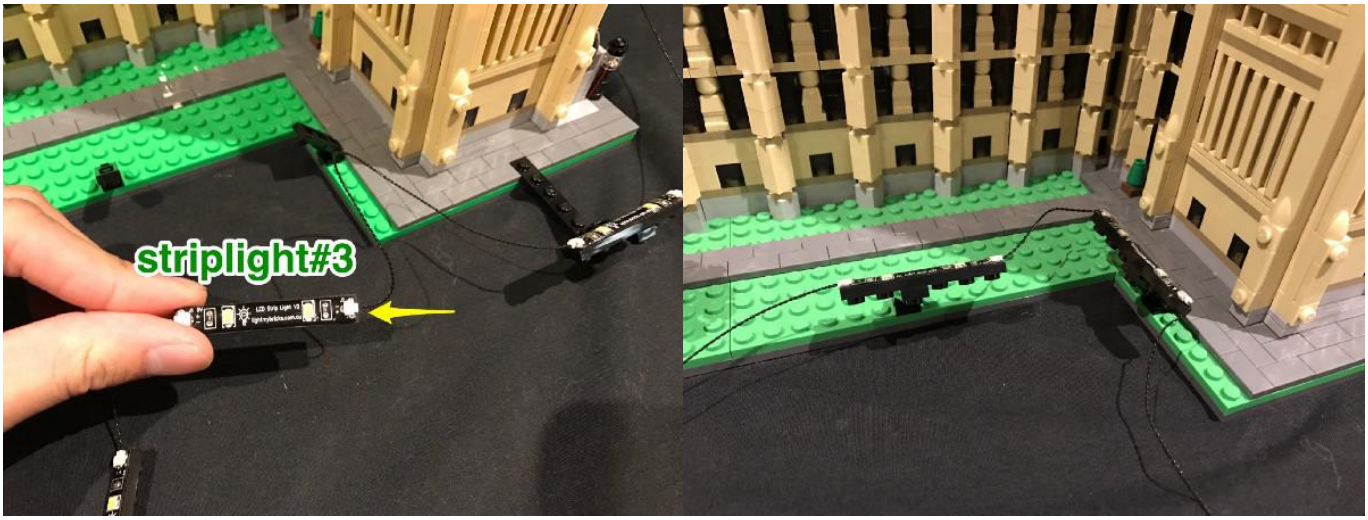
Locate LEGO pieces to assemble another 2 spotlight bases and then connect them to the following positions as per below.



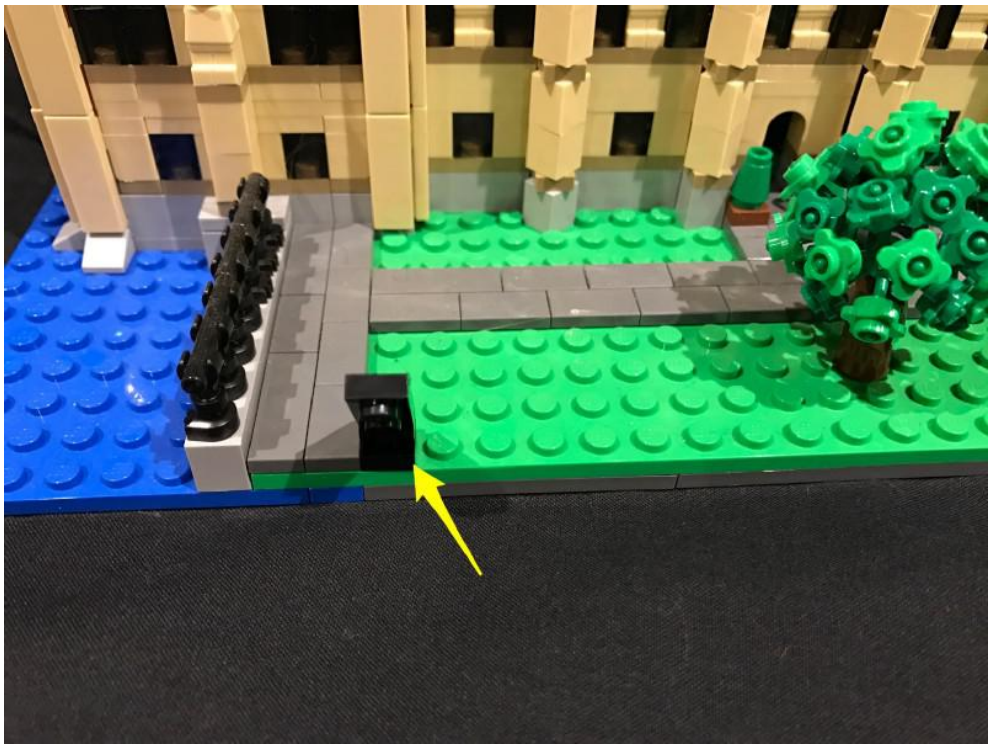
Take **2x White Strip Lights** and stick them onto **Lego 1x6 plates (striplight#3** & **striplight#4)**. Connect the two together using a **5cm Connecting Cable** and then connect a **15cm Connecting Cable** to the right port of the striplight#4



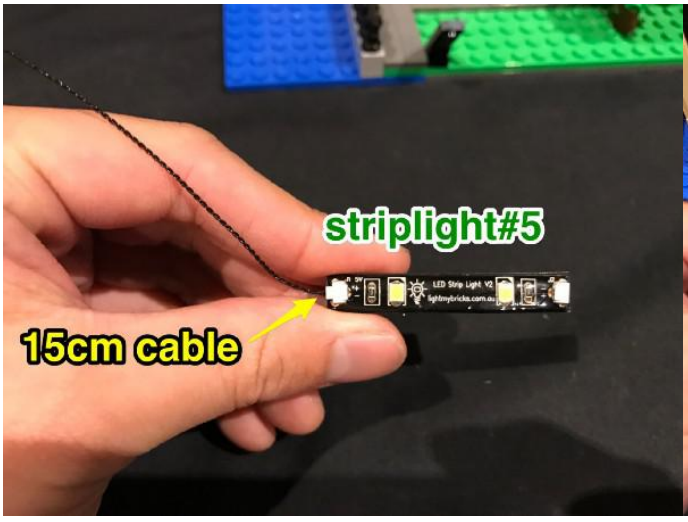

Connect the 15cm connecting cable from striplight#2 to the right port of striplight#3 and then connect both plates to the spot light bases as per below.

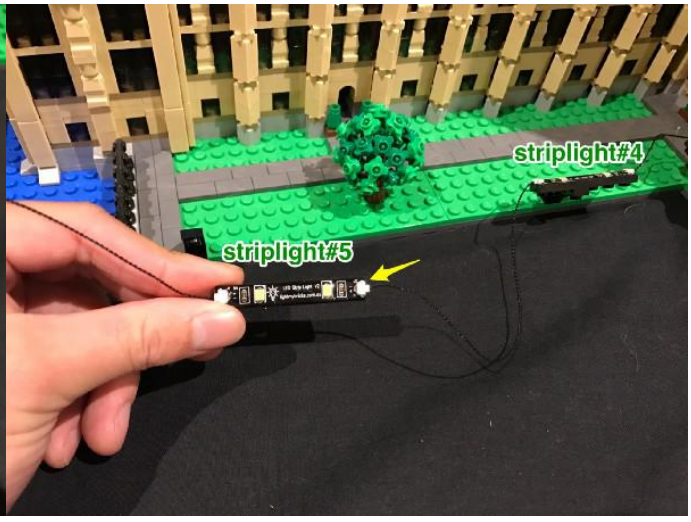



Assemble another few spot light pieces and connect them to the following position.

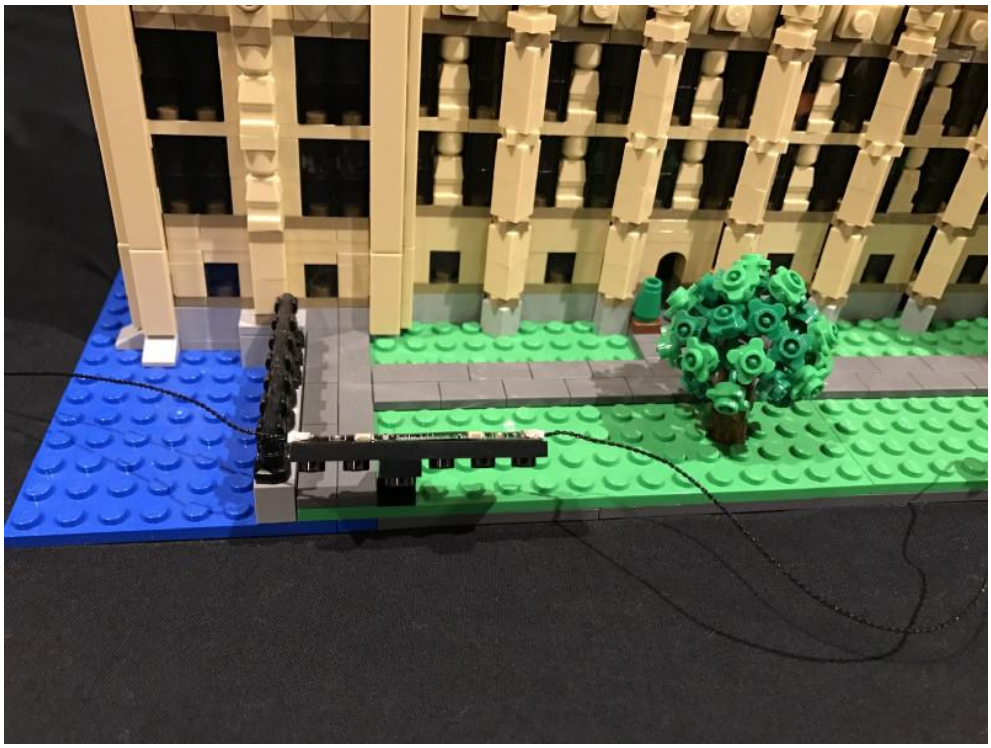


Take another **White Strip Light (striplight#5)** and stick it onto a 1x6 plate. Connect another **15cm connecting cable** to the left port of striplight#5 and then connect the other end of the 15cm cable from striplight#4 to the right port.

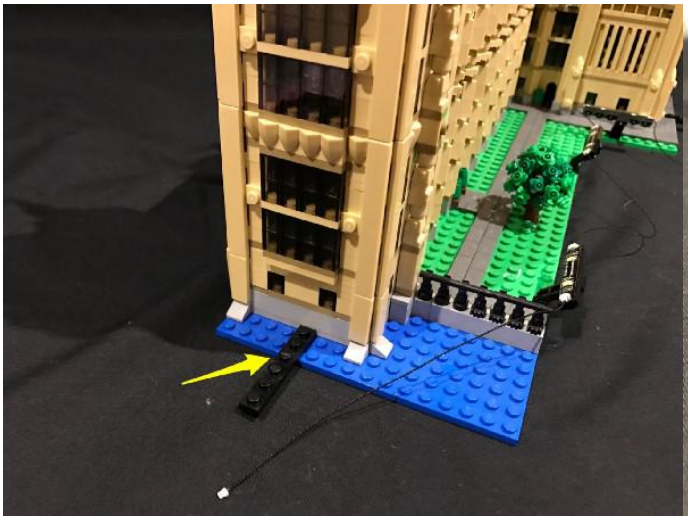


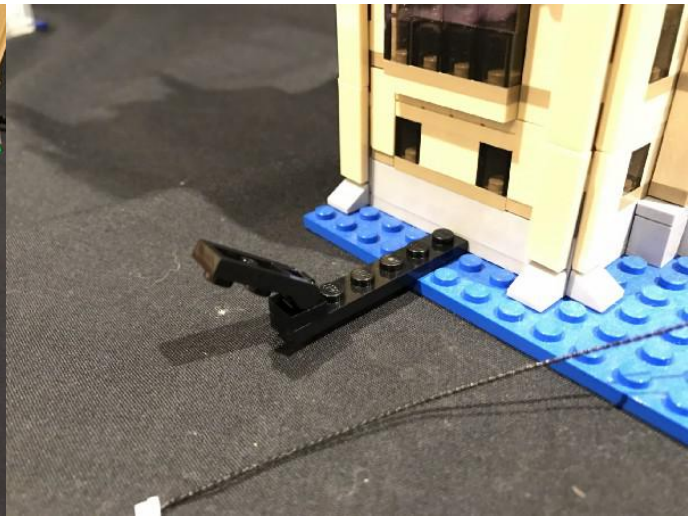




Connect the plate with striplight#5 onto the spot light base.

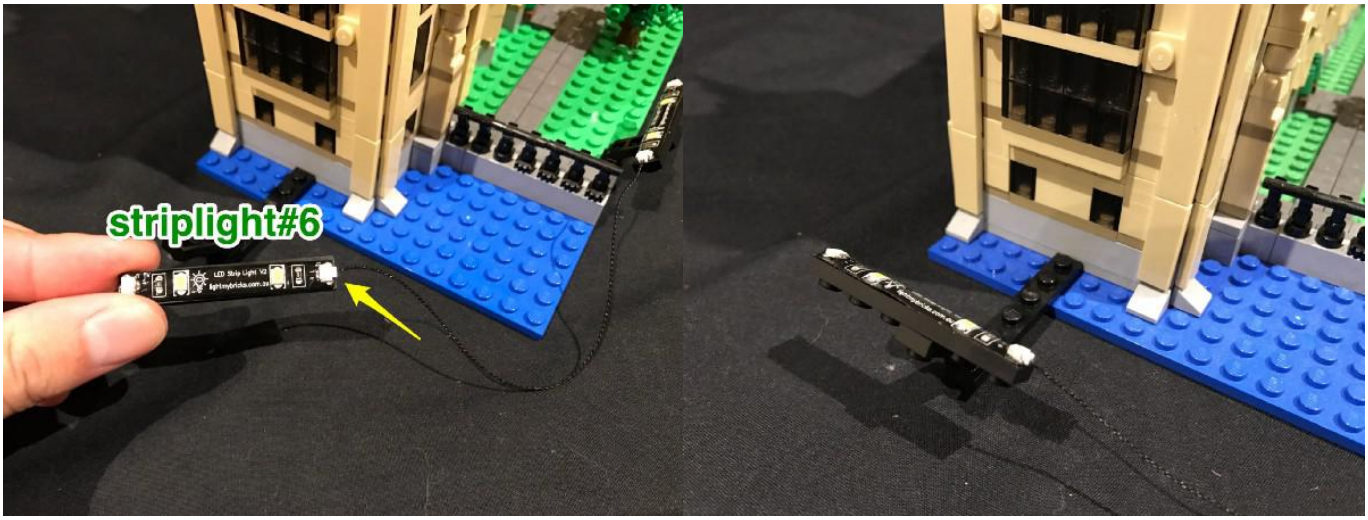


Turn over to the left side of the building and then connect a black 1x6 plate as well as spot light pieces to the following position.

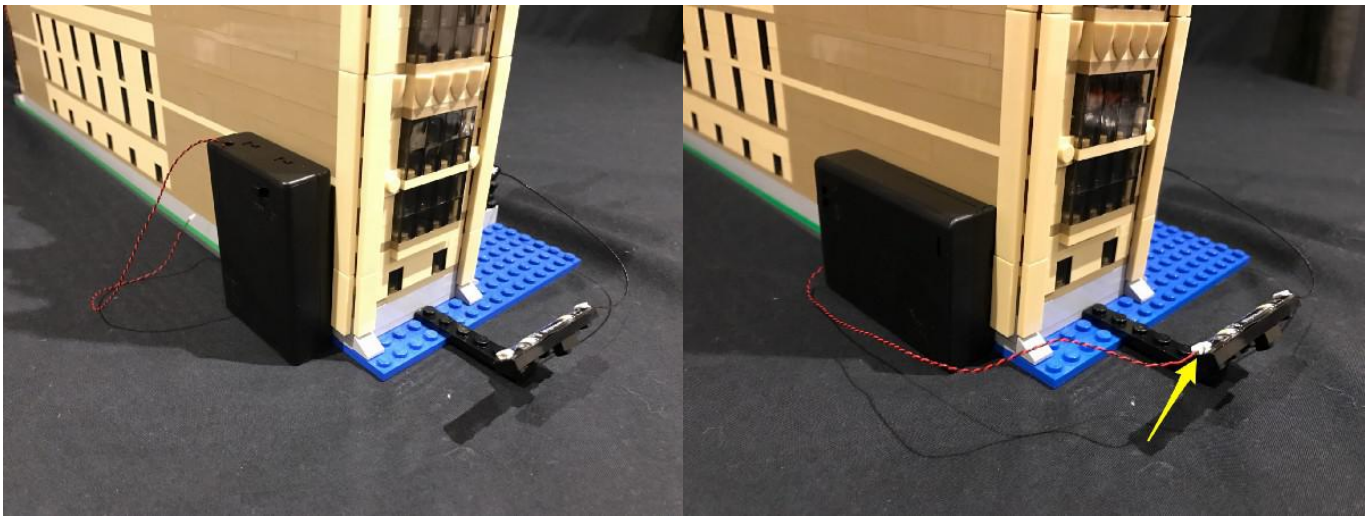




Take the last **White Strip Light** (**striplight#6**) and then stick onto the remaining 1x6 plate. Connect the other end of the 15cm cable from striplight#5 to the right port and then connect the plate with striplight#6 to the spotlight base.




14.) Take the **AA Battery Pack** and position against the back wall and connect the battery pack cable to the left port on striplight#6.



Finally, turn on the battery pack and ensure all spot lights are working. Adjust the angles of the spotlights to ensure they are all shining evenly onto the building.

This completes installation of the Big Ben LED Lighting Kit. ENJOY!