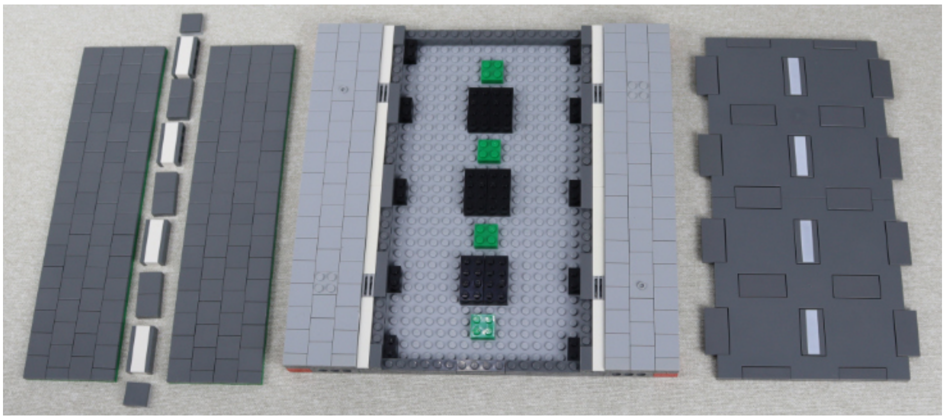
MILS ROADS

By Jetro de Château

HispaBrick Magazine started developing MILS modules back in 2011. The concept was born out of the desire to make large-scale dioramas and the need to transport and store them without taking up too much space. After doing tests internally, we started our first MILS project and built Basic Terrain Modules (BTM) as well as Compatible Terrain Modules (CTM) with river, path and track elements. Our first MILS dioramas centered on Castle scenes, for which these modules are the perfect base.

At the same time, some of our members worked on a MILS standard for their Star Wars display, based on the battle of Hoth.



Serendipitously, LEGO's new road plates are an exact height match for the road sections of our modules. The two road assemblies are basically interchangeable with no adjustments to our MILS base.

The key to all of these modules is that the additional elements (rivers, tracks, paths, etc.) are always centered on the side of the module and follow a standard width and height. Paths and tracks have a standard width of 4 and 8 studs respectively and their height is the same as a BTM. Rivers have a standard width of 8 studs and a height of one plate plus one tile above the baseplate the module is built on. In addition, the river banks slope up at a rate of one plate per stud. All of this ensures compatibility between all modules with similar elements, even if they are from different builders.

The same is true for modules with hills or mountains, although the configuration of these modules can be much more complex.

The original design of the MILS Basic Terrain Modules (BTM) included 1x4 arch bricks attached to the baseplate in the centre of each of the four sides. This arch brick is the perfect example of making the most of what you have on hand. It was simply a piece that one of our members had a lot of and it looked good placed in the centre of the module. Once we saw it we started to speculate about the possibility of using this hole for possible wiring, either for lights or motors for some modules. In the end we have never used this option in any of our HispaBrick Magazine modules and many of our later modules do not even include the arch brick. You can include it, simply replace it with some other brick, or possibly leave it out altogether; the choice is entirely up to you or the needs of your community.

We really enjoy seeing how other communities use the MILS standard for their dioramas. Some have followed our internal guidelines to the letter, while others have made additions and adaptations. A lot depends on the particular interests of a group. Building up a collection of modules takes time and effort. It also requires a *significant* investment in LEGO elements.

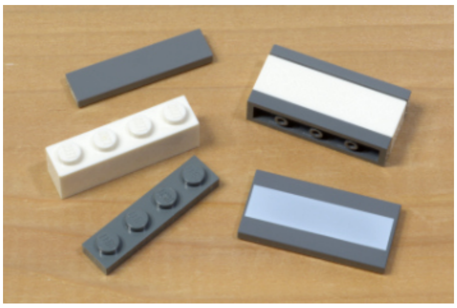
Adapting the MILS concept to roads

This time around, we have turned our attention to our City layout. Instead of reinventing the wheel, we looked at what other communities have done to adapt their cities to MILS, and to adapt MILS to their cities. We soon realised that the most practical height for our road modules was baseplate + brick + plate + tile. Since we wanted the road-adjacent areas (sidewalk, footpath, pavement, trottoir, green area, etc.) to be one plate above the road level this meant we also needed to elevate our preexisting building modules. Where our typical building module base height was baseplate + brick + plate + tile, we needed to make it baseplate + brick + plate + plate + tile, to match the height of the road-adjacent area of our road modules.

Shortly after building our road modules, LEGO presented their new 'thick' road plates (available in set number 60304 and several of the latest LEGO City sets). It is possible and actually quite easy to use these new road plates within our MILS road modules. The new road plates are two plates thick and the road surface of our MILS road modules consists of a plate and a tile–a perfect match. Which of the two versions you favour will depend on two factors. The tile + plate version requires more elements and is a bit more expensive. The version using the new road plates uses fewer elements but might be considered by some to be less aesthetically pleasing.

Our standard

The configuration of the road modules we settled on for our HispaBrick Magazine dioramas was the result of many conversations with other AFOLs in Spain. We would specifically like to thank "Ostman" for providing the digital model for these roads that served as the basis for the instructions we created. For our standard road modules we settled on a six-stud-wide sidewalk pavement, consistent with the latest version of the thin LEGO road plates (available in LEGO sets 7280 and



7281). Since the modules are 32 studs wide, getting the lane divider in the centre of the road requires either a printed part or, in our case, the ingenious use of a 1x4 plate, brick, and tile placed sideways. This takes up the same horizontal space as a 2x4 tile and when you support this assembly with a stack of two plates, the top is perfectly level with the tiles that make up the road surface. The same technique can be used to create a zebra crossing on the T-junction. In that case the stripes are built with a stack of 14 1x4 bricks, alternating dark bluish gray (DBG) and white colours, topped off with two plates and a tile to span the 18-stud-wide gap for the crossing.

Instructions

In order to make things easy for all participants in our community, we created a set of step-by-step instructions as well as a parts list for each module. A general goal was to use the fewest number of elements possible to create the modules. You will find simplified versions of those instructions on the following pages. Whether or not those instructions specifically suit your wants or needs depends on the elements that are readily available for you at any given time. You may want to use plates of different sizes because those are easier or cheaper to get, and adapt the location and number of filler bricks to support the plates you use. The same goes for colour. Unless you have a particular preference for a certain colour, the elements hidden inside the module can be just about any colour you like. The baseplate, the bricks used to build the outer edge (including the 1x4 Technic bricks), the filler bricks used to support the plates the road is built on, etc. – none of those really need to be any specific colour. One element where colour does matter is the 2x2 corner, as this is used to identify who the module belongs to. Internally, each participant in the greater MILS layout uses a different colour/configuration of that corner marker. This is especially helpful when you take the diorama apart, allowing each participant to quickly locate their own contributed modules.

There are different options for sourcing the elements needed to build these modules. LEGO's Pick a Brick may help you on your way, but unless you have a considerable stash of parts you will likely need to use additional sources…such as BrickLink, BrickOwl, Facebook, Ebay, etc. vendors…to acquire the necessary elements. If you are part of a recognised LEGO User Group–either a physical group (LUG) or an online group (LOC)–you may also have access to one of the bulk buy options LEGO provides to these groups. A substantial portion of the bricks and plates used in our modules was obtained in this way.

Pins or no pins

We haven't included any pins in the instructions, even though each module has eight technic brick 1x4 elements with a total of 24 pin holes. The reason is simple: the amount of pins

you actually need is quite small compared to the number of MILS modules, and depends on the kind of layout you are setting up.

Suppose you want to place a row of 10 street modules in front of a row of 10 (modular) buildings. You will want to first connect the matching modules together into two rows, which can be done with just two pins between each module, so 18 pins per row will suffice. Once you have the two rows of modules ready, connecting them to each other can then be done with just four additional pins by connecting them only at the corner modules. This brings the total up to 40 pins for the 20 modules.

For larger dioramas the proportion of pins per module will be even lower. Our largest diorama to date was 6 modules (about 1.5m) wide by 25 modules long (about 6.4m). In order to make sure all the modules stayed in place we linked all the external modules together with pins (front, back and sides). In addition we also linked one line of modules together about halfway down the length of the module, connecting the front and back rows. These modules acted as a frame, keeping the interior modules in place without any further need for pins.

Same instructions, different results

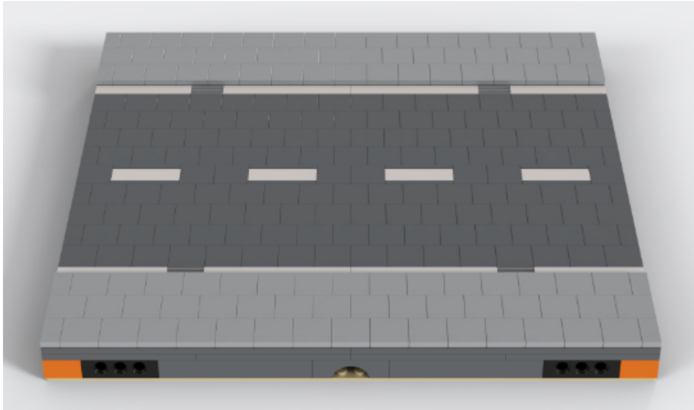
Even though we all used the same instructions as the basis for our modules, that doesn't mean our modules all look the same. Just like with our CTM modules for rivers and paths, the important thing is to ensure that all the road modules are compatible with each other, but there is plenty of room for creativity within each module. Take the cobblestone modules for example. A few DBG tiles mixed in with the LBG ones can simulate an oil spill on the road. You can add a few trans-blue tiles to create a puddle, or any other original ideas you can come up with to personalise your modules. The sides of the road can be designed as green areas, sidewalk pavement, or even parking space. In each case there are many ways of filling in the space: flowers and shrubs, lamp posts or street benches, a bus stop or an information panel. It all depends on your creativity.

Plan ahead

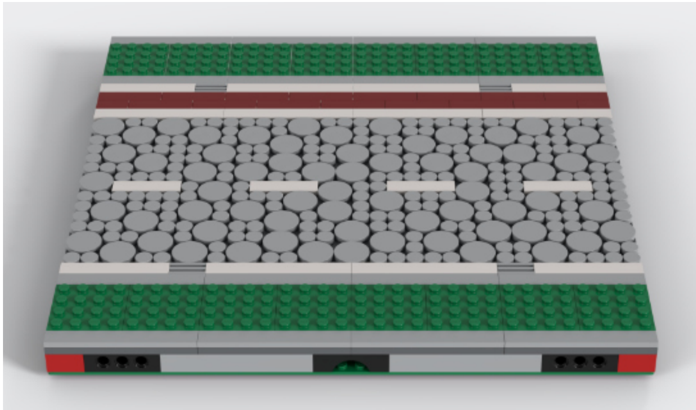
If you are going to do a community build, some preplanning should take place to ensure that your overall design is cohesive. Given the handful of disparate possibilities we present, attaching them one to another in a straight line will be perceived as something more than chaotic. Consider transitioning from straight flat road to cobblestone at a corner or creating a module that has that transition as part of the design. Our cobblestone road module doesn't mate well with the other designs because the cobblestone street has a center offset and a bike path, and the road surface color is light bluish gray while some of the others are dark bluish gray. This is to say that if you intend for there to be some variety in the road surfaces, colors, and widths it will likely behoove you to map things out before commencing building the modules. Modules for corners and intersections will no doubt offer additional opportunities and challenges for creativity.

The Modules

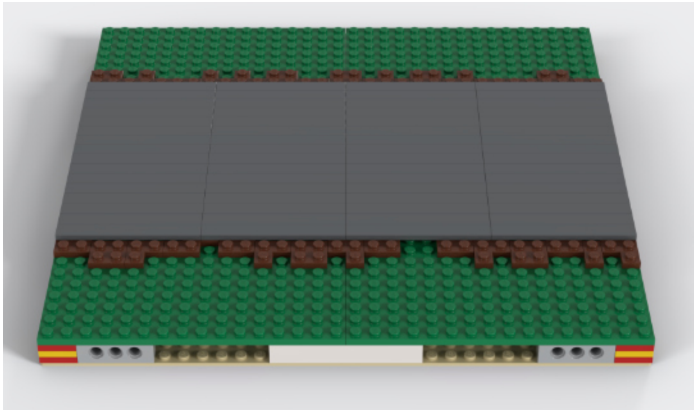
Over the next several pages we present step-by-step instructions for some of the modules we have built. Parts lists are provided, but colors are provided only for the surface pieces as filler bricks can be of any color. Color abbreviations are used for Light Bluish Gray/Medium Stone Grey (lbg) and Dark Bluish Grey/Medium Stone Gray (dbg).



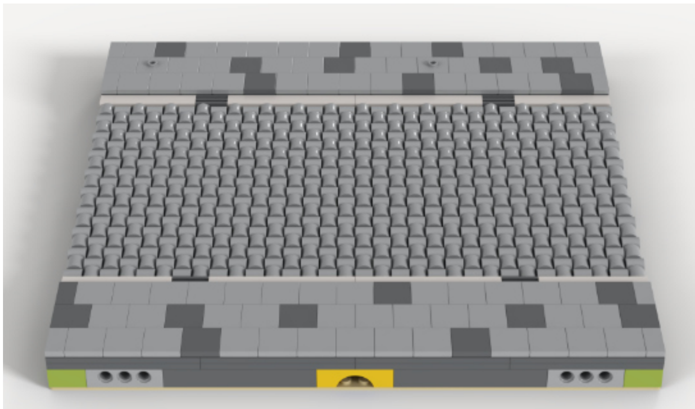
12 Typical Asphalt Street



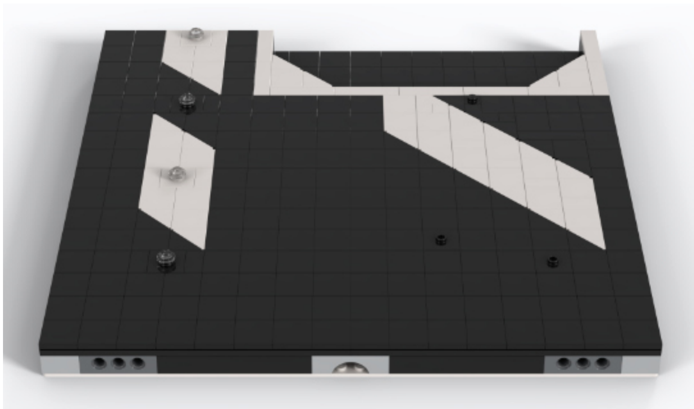
19 Cobblestone Road



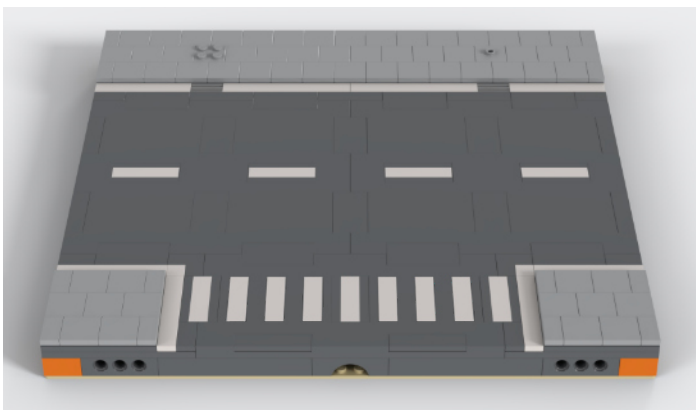
26 Country Road



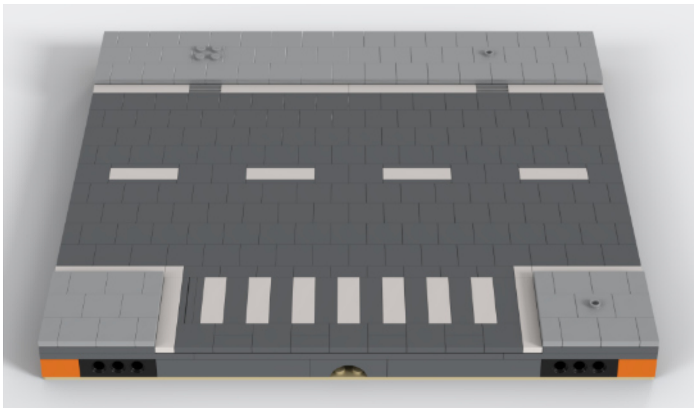
31 Bricked Street



38 Flight Deck

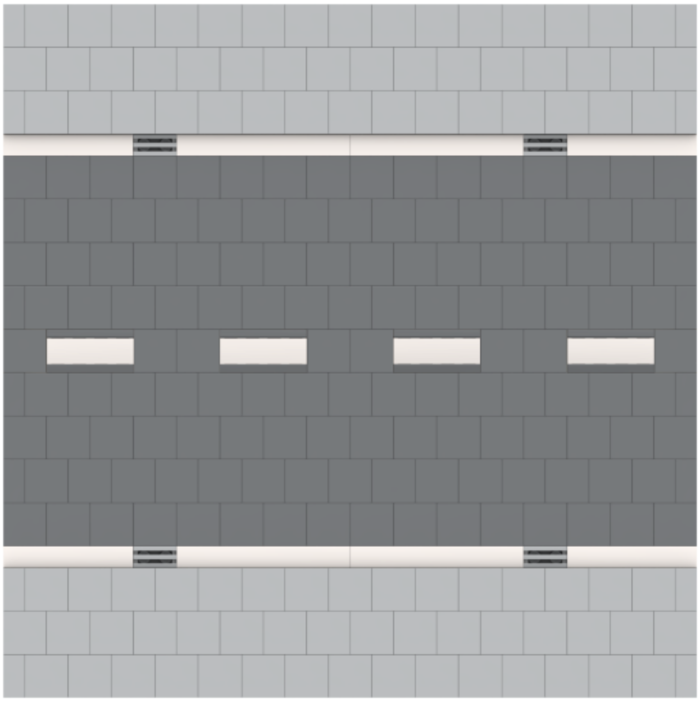


45 T-Junction (Road Plates)



52 T-Junction (Standard Plates)

Typical Asphalt Street



Plain old straight roads can get pretty boring. While the build diagram we present here is just that, with a few simple modifications an additional degree of visual interest can be built into a model.

Swap out some gray for a few 1x2 trans blue tiles and you can create a small puddle. Add some children splashing in the puddle, a car driving over it and splashing pedestrians, or a cleaning brigade draining the puddle.

Another typical encounter is road works. Using the 99563 ingot piece as a subsurface, the road crew can be lifting the asphalt to reveal…surprise!…it used to be a cobblestone road.

And, show of hands please, who doesn't love potholes and roadkill?

Parts List

1	32x32 baseplate	4	1x4 plate, dbg	8	6x8 plate, dbg
4	1x4 arch brick	4	1x8 plate, dbg	8	1x2 tile, dbg
4	1x4 brick, white	10	2x2 plate, dbg	8	1x2 tile, lbg
8	1x8 brick	2	2x2 plate, lbg	4	1x4 tile, dbg
16	2x4 brick	3	2x4 plate, dbg	132	2x2 tile, dbg
4	2x2 brick	4	2x6 plate, dbg	88	2x2 tile, lbg
8	1 x 4 technic brick	4	2x14 plate, dbg	4	1x6 tile, white
2	2x2 jumper, lbg	2	2x16 plate, dbg	4	1x8 tile, white
		4	8x16 plate, dbg	4	1x2 grille tile, flat silver

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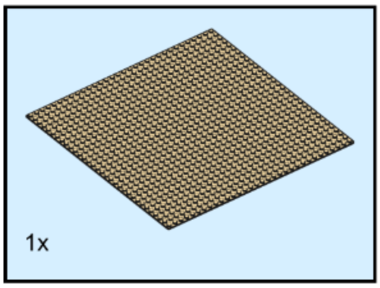

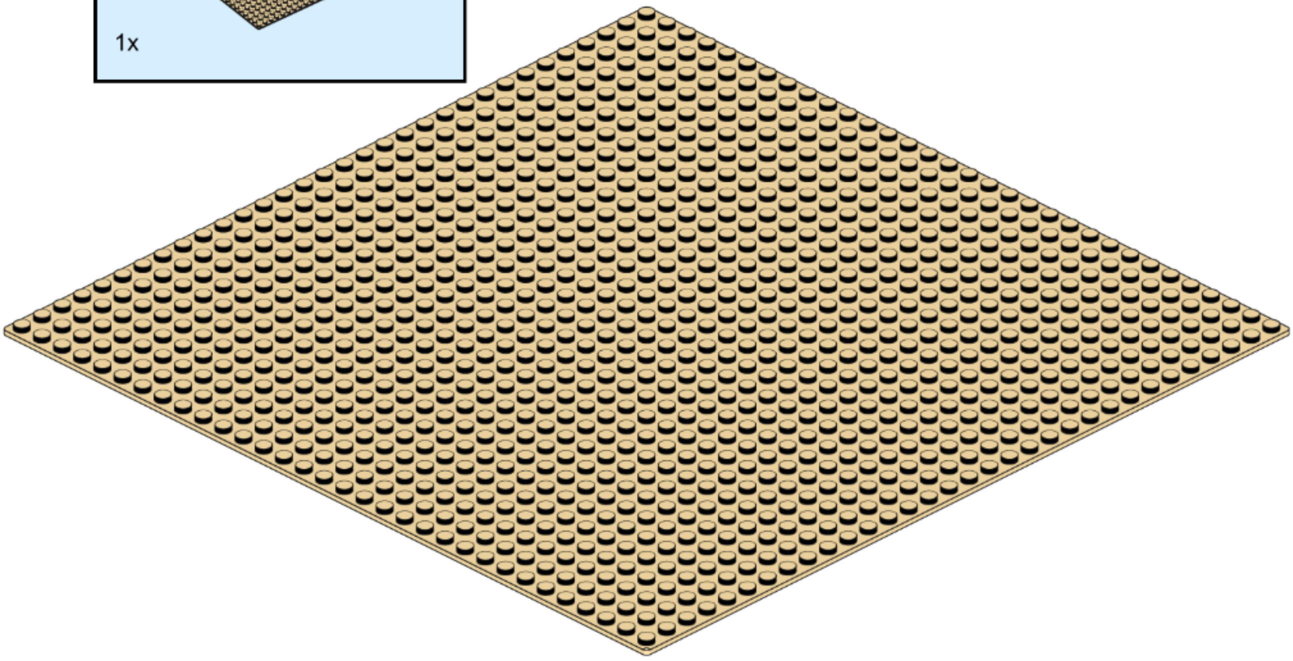

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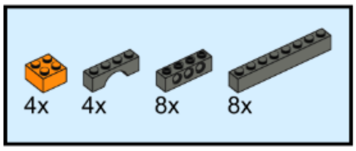

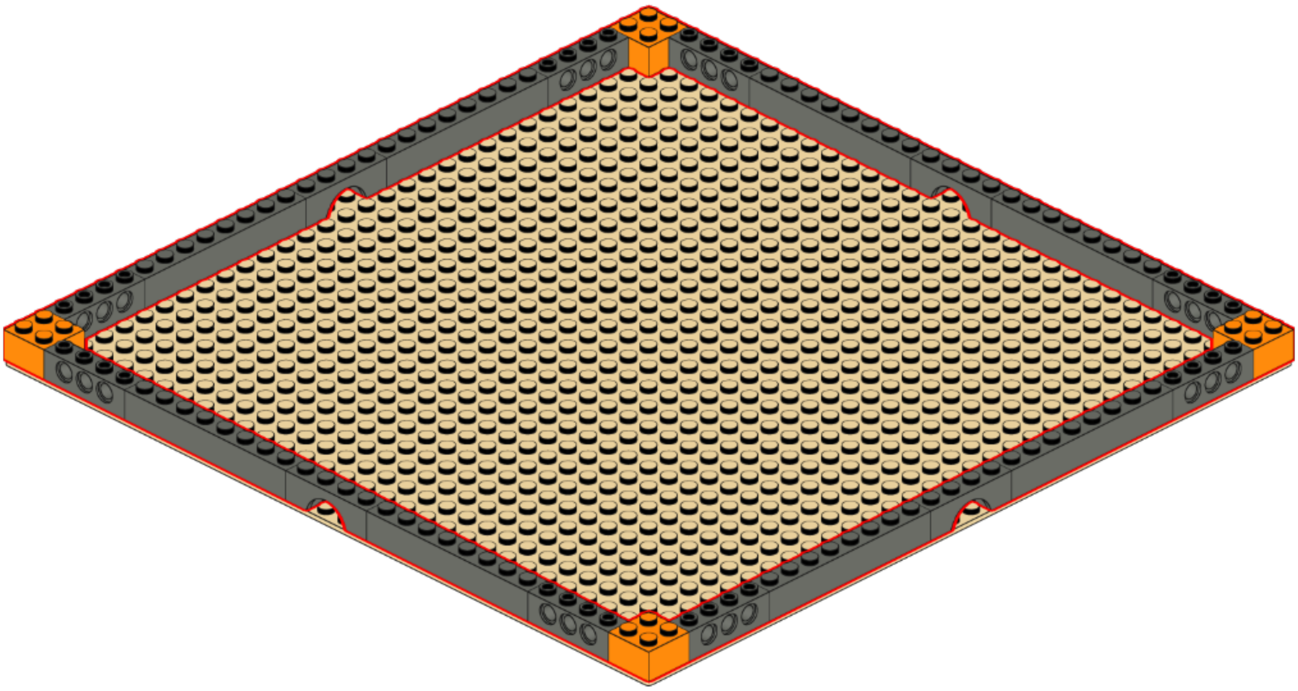

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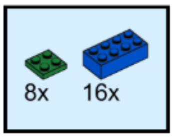

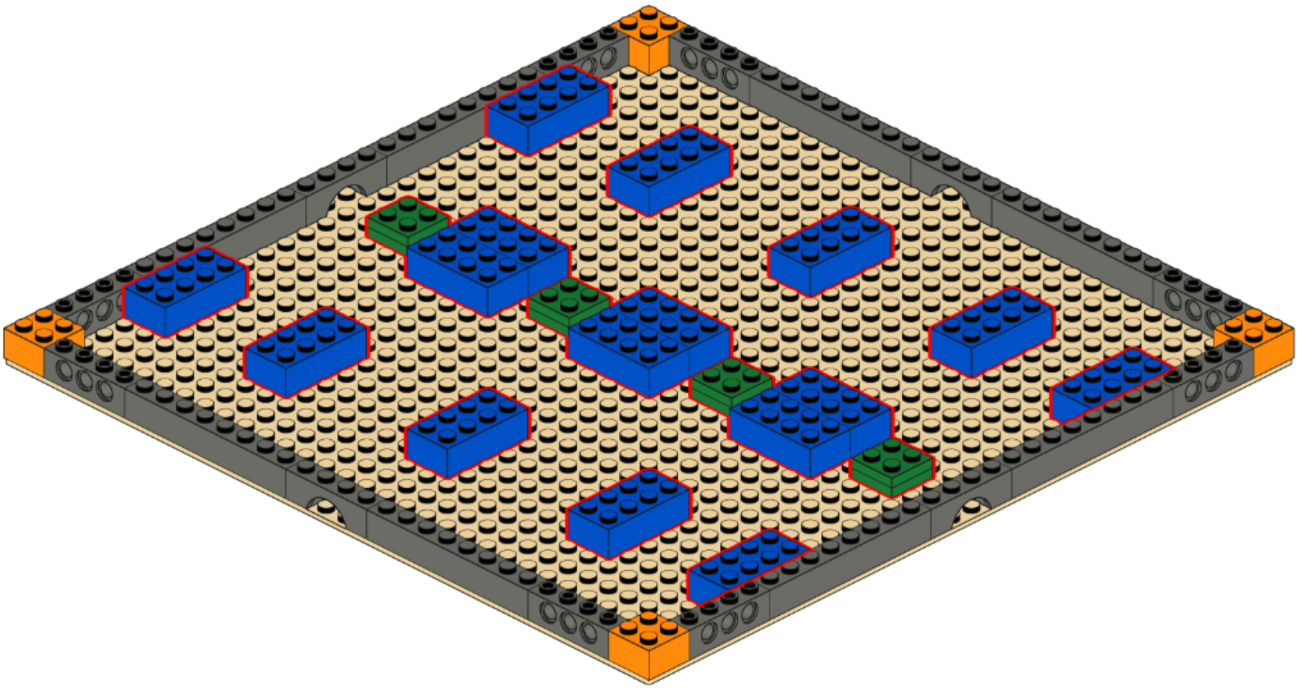

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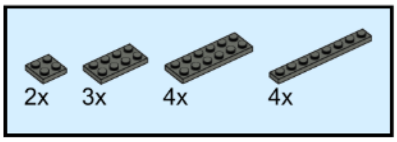

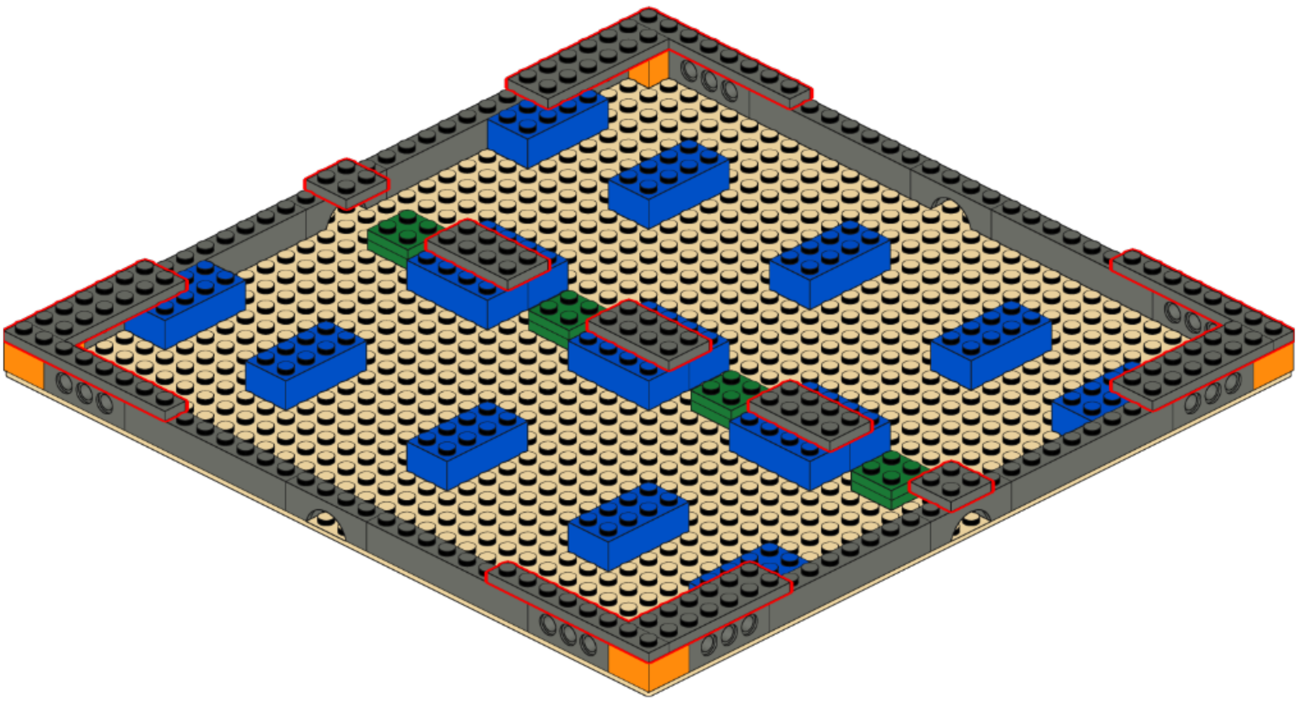

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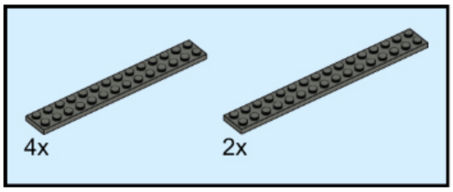

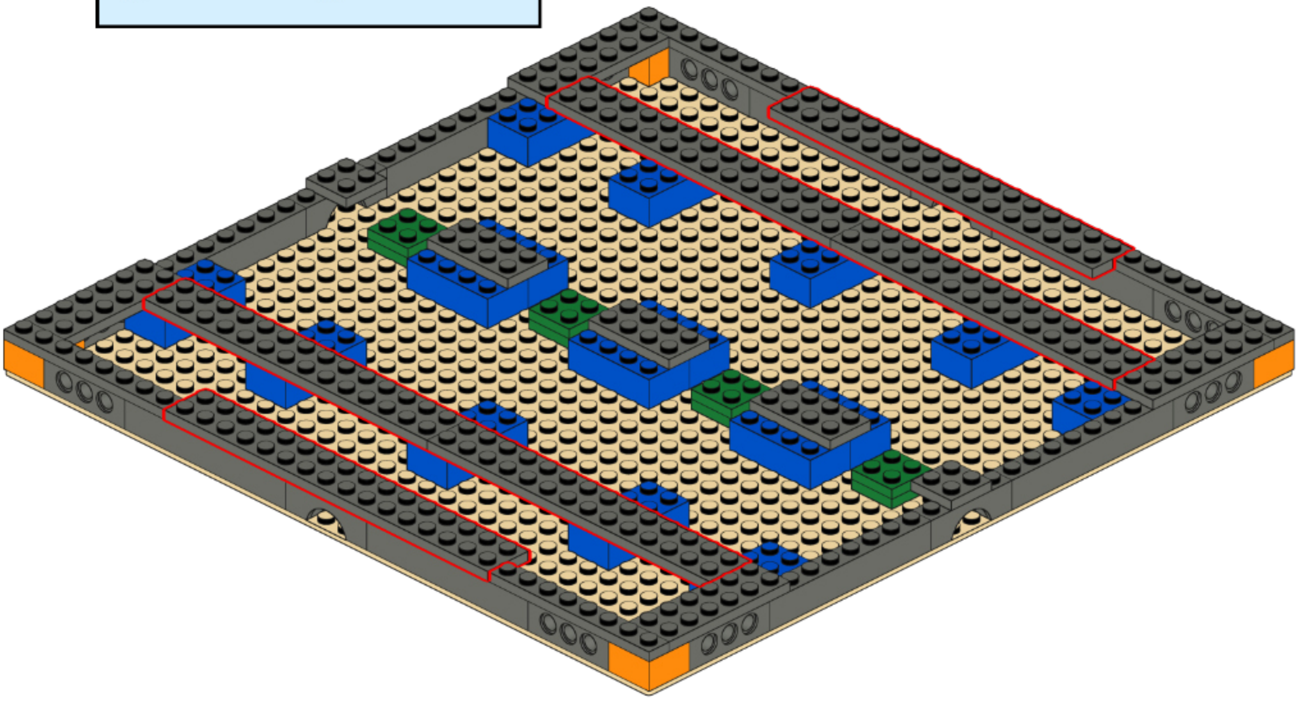

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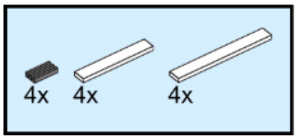

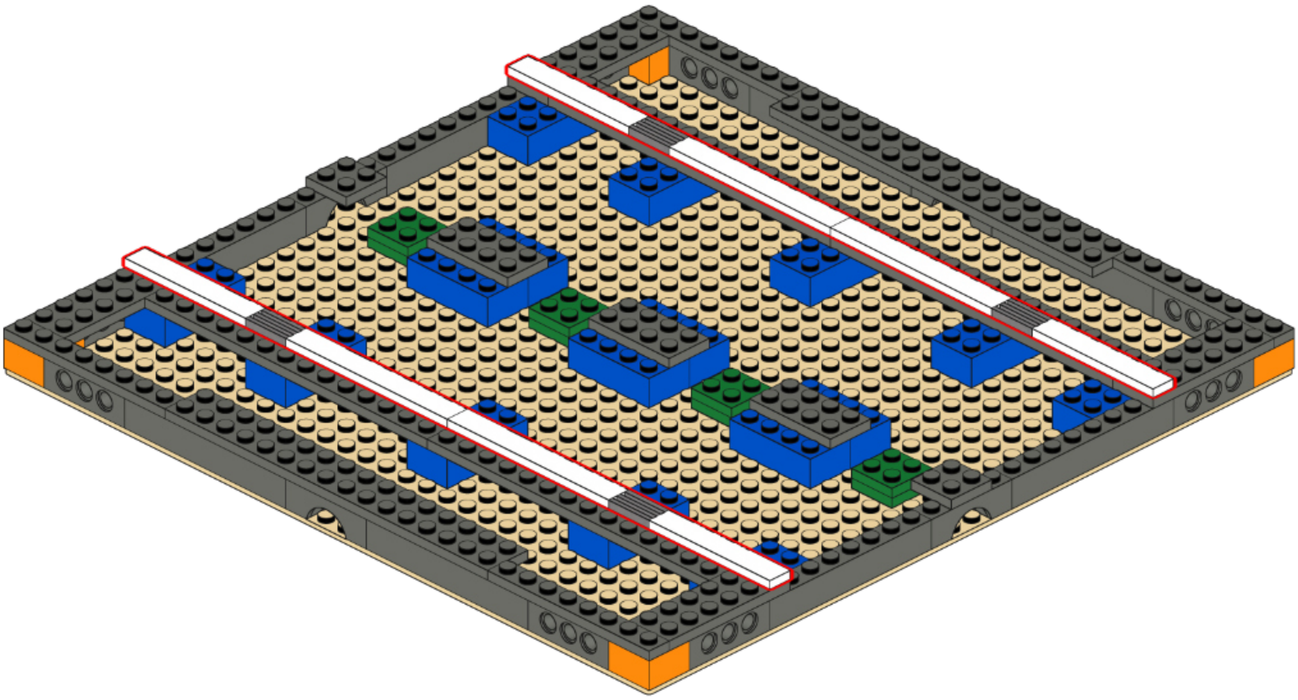

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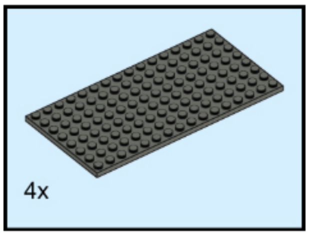

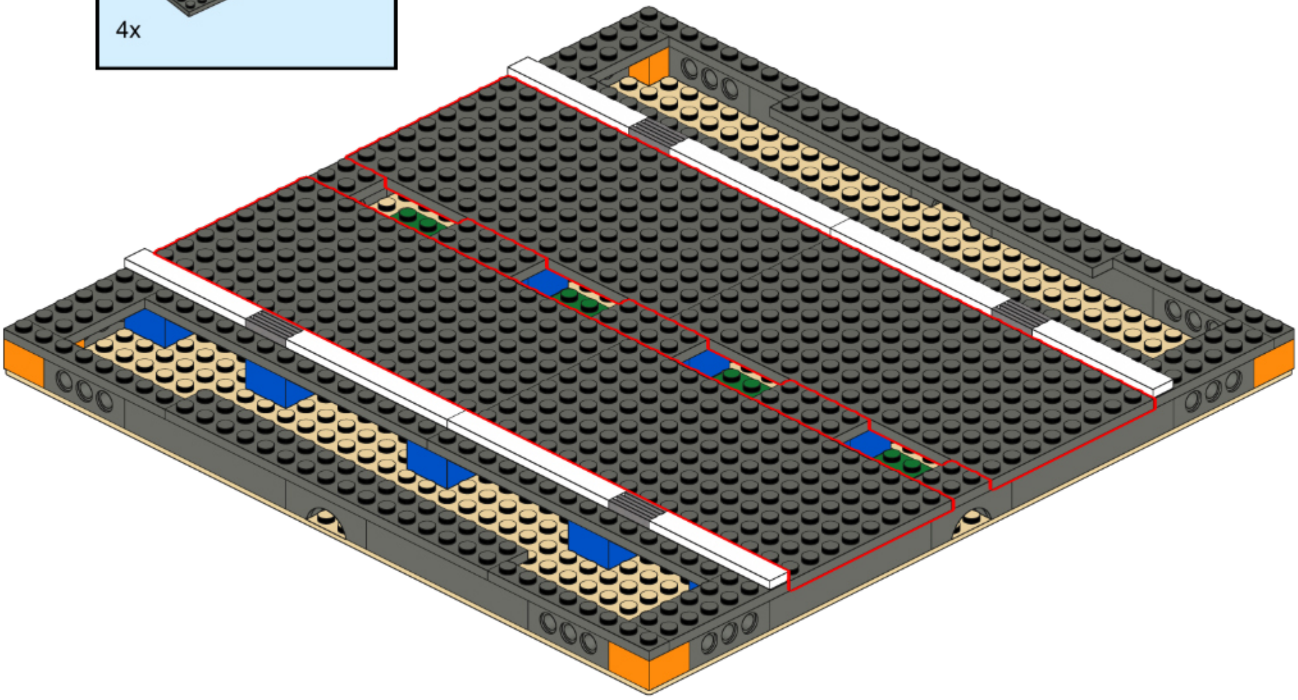

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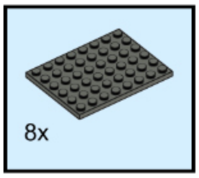

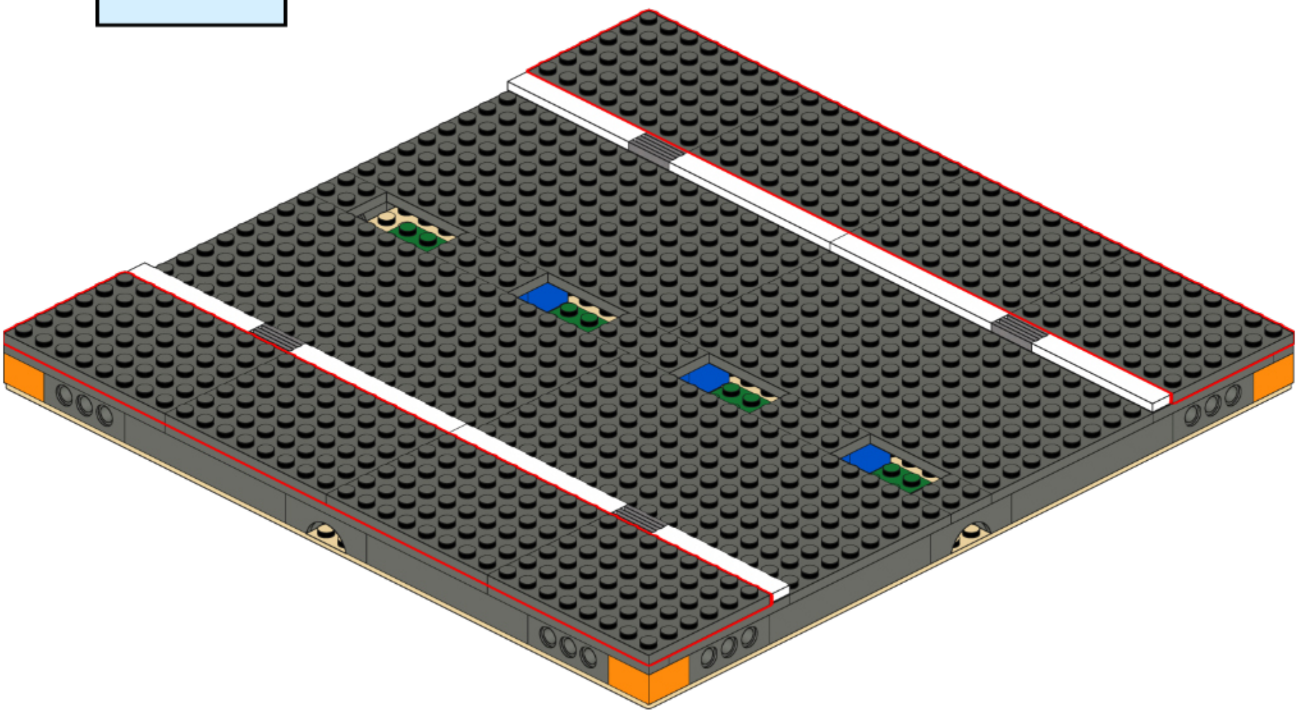

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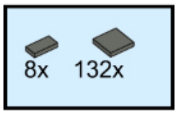

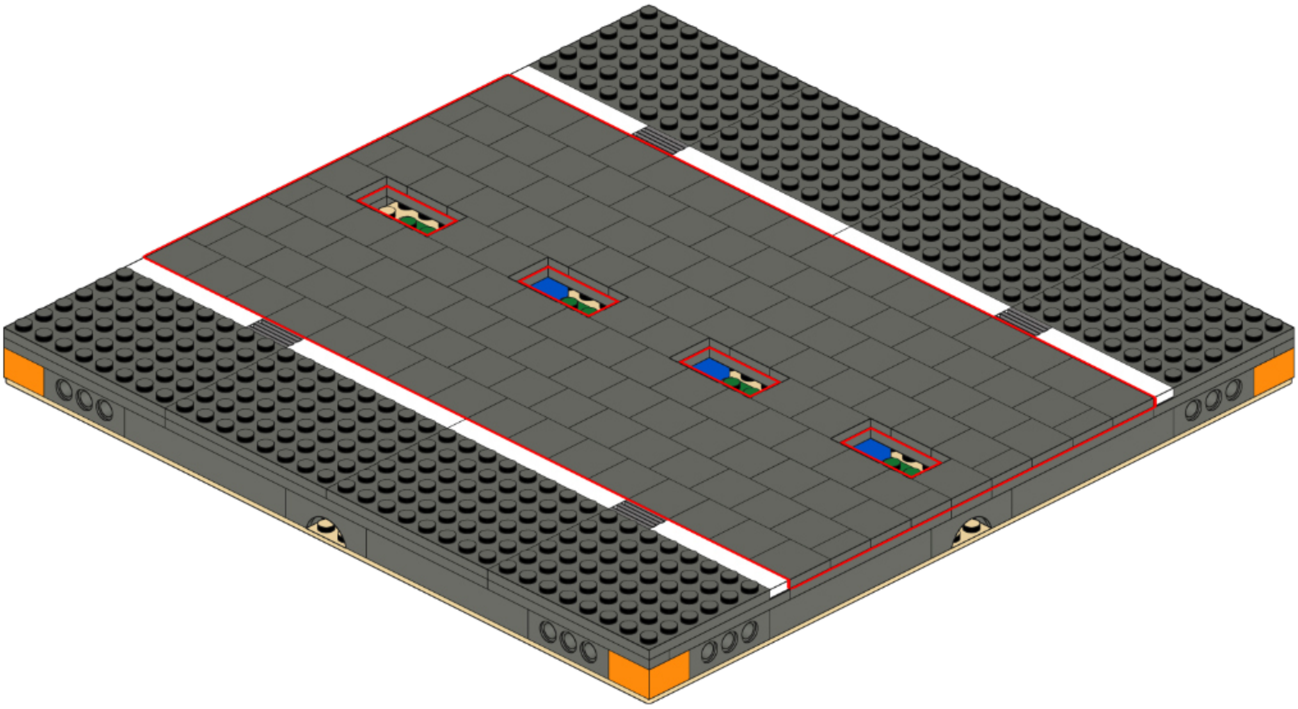

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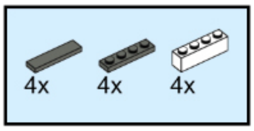

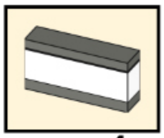

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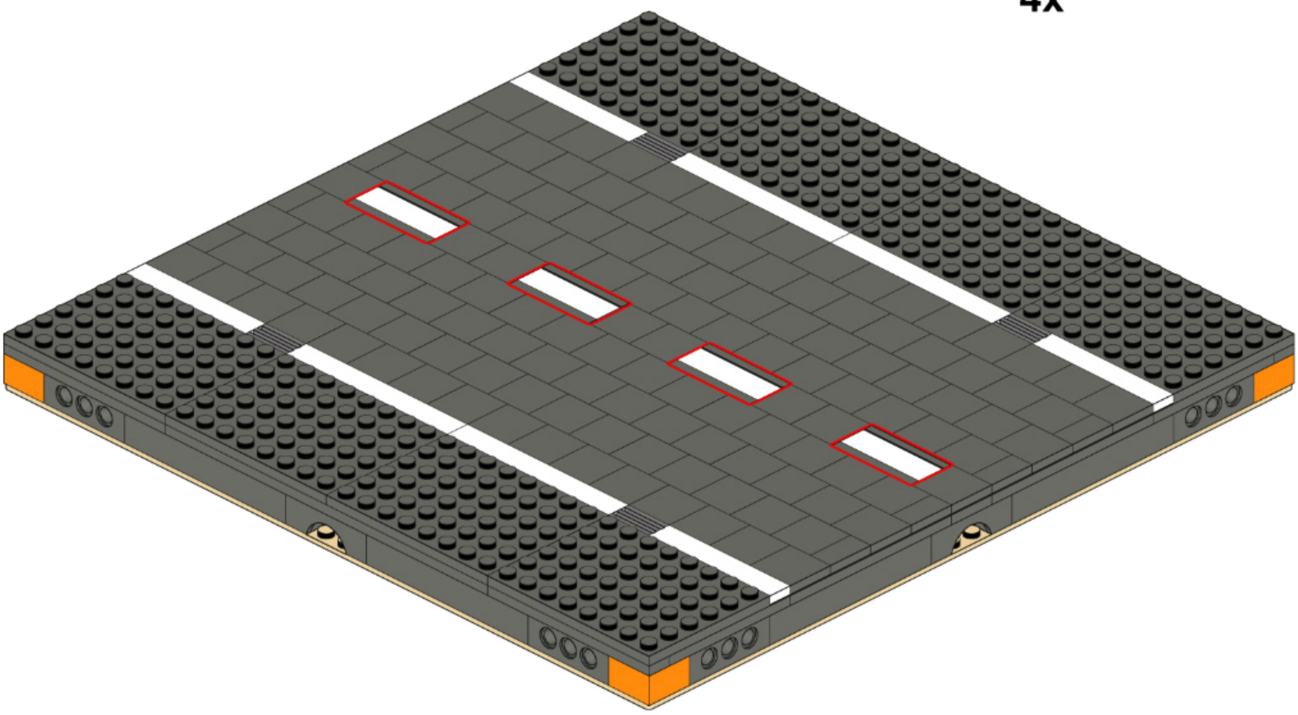

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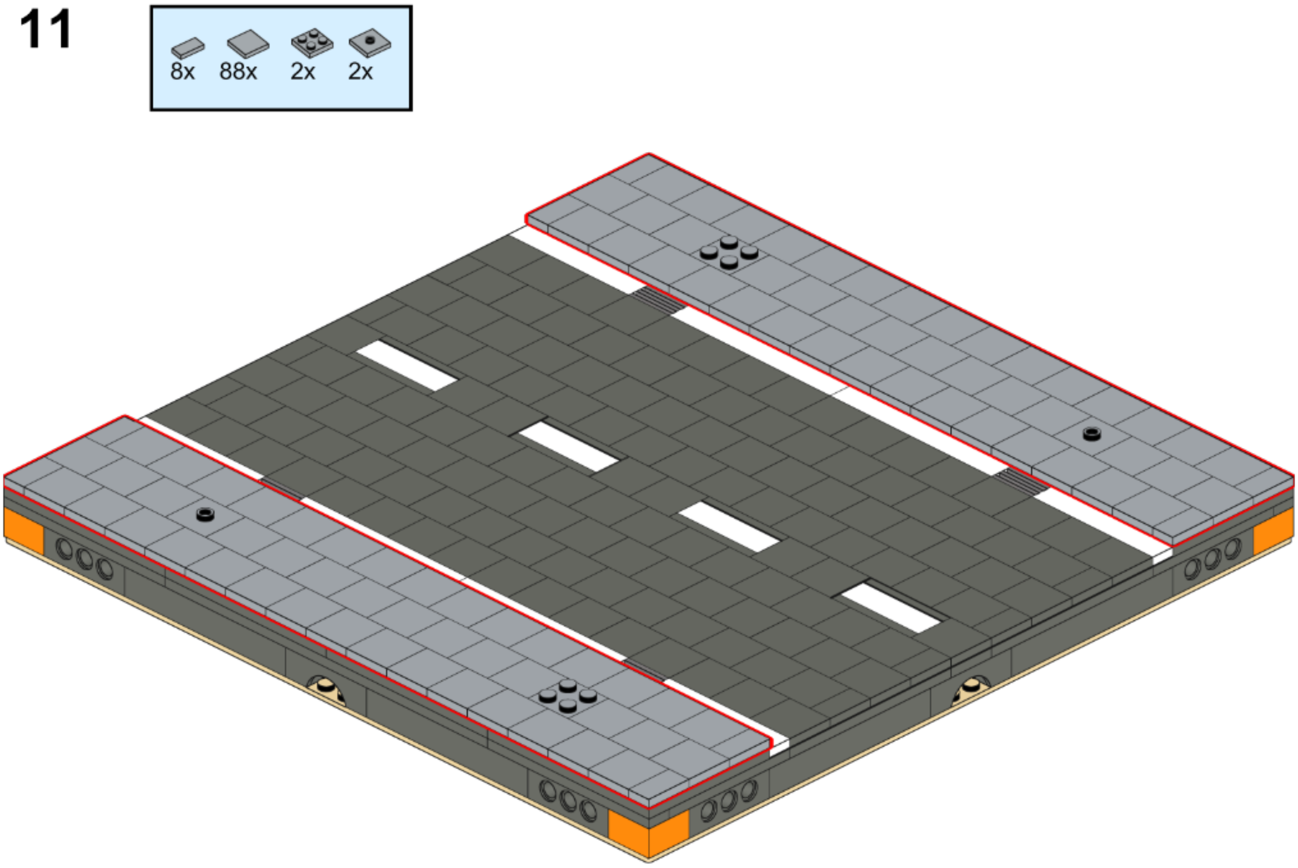
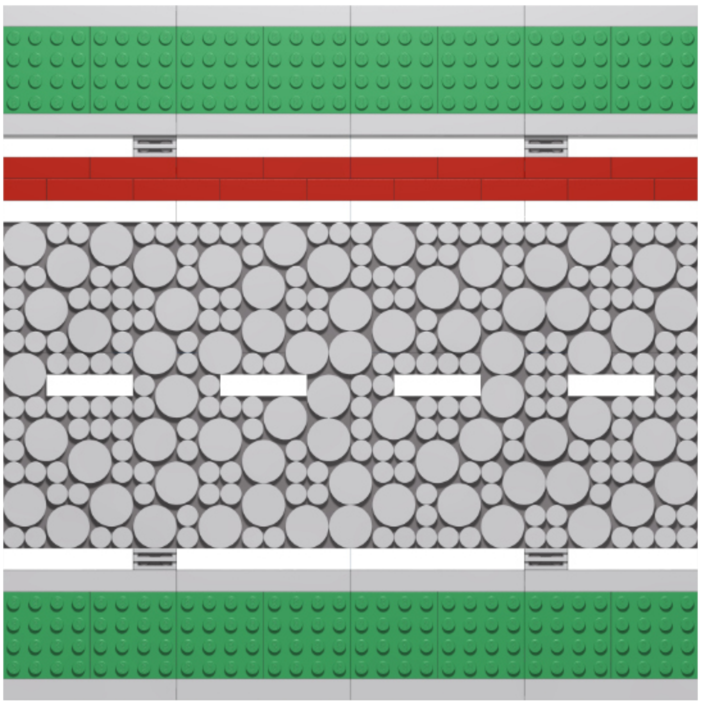


Cobblestone Road

The cobblestone road, using 1x1 and 2x2 round tiles for the road surface, shows the underlying layer of plates. The sample module uses dark bluish gray (dbg) as a base and light bluish gray (lbg) tiles on top of that. You can of course experiment with other combinations, such as using lbg as a base or using dbg tiles. Using white 1x4 tiles as lane dividers means the centre of the road (as marked by those lane dividers) cannot be perfectly centered in the module. To circumvent this issue there is a bike lane on one side of the road. Instead of sidewalk pavement, the area next to the road is covered in green plates. The green areas allow for the addition of some plants.



Parts List

1	32x32 baseplate	200	1x1 tile, round, lbg
4	1x4 arch brick	2	1x2 tile, dark red
8	1x8 brick	15	1x4 tile, dark red
4	2x2 brick	4	1x4 tile, white
9	2x4 brick	4	1x6 tile, white
8	1x4 technic brick	16	1x8 tile, lbg
16	4x4 plate, green	8	1x8 tile, white
8	6x8 plate, dbg	66	2x2 tile, round, lbg
4	16x16 plate, dbg	4	1x2 grille tile, flat silver

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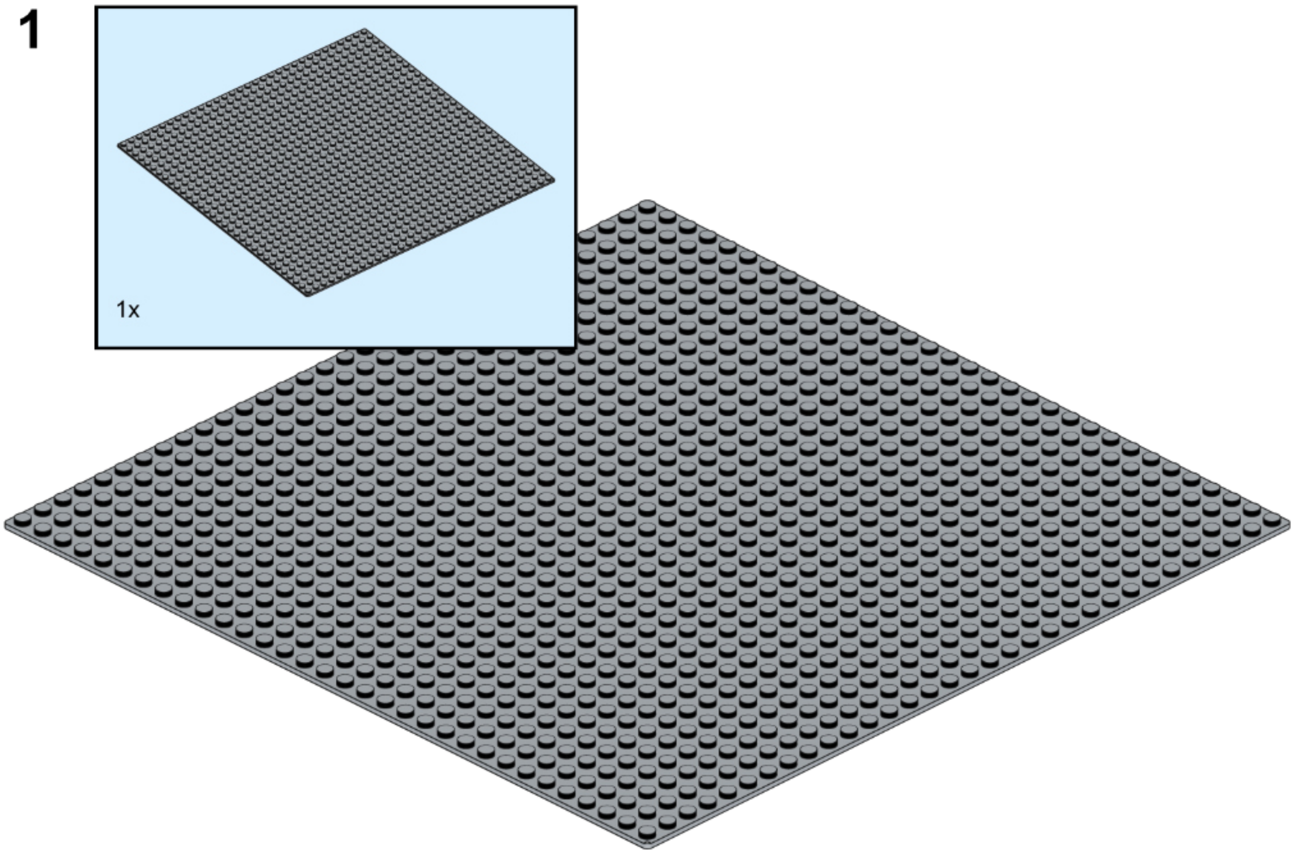

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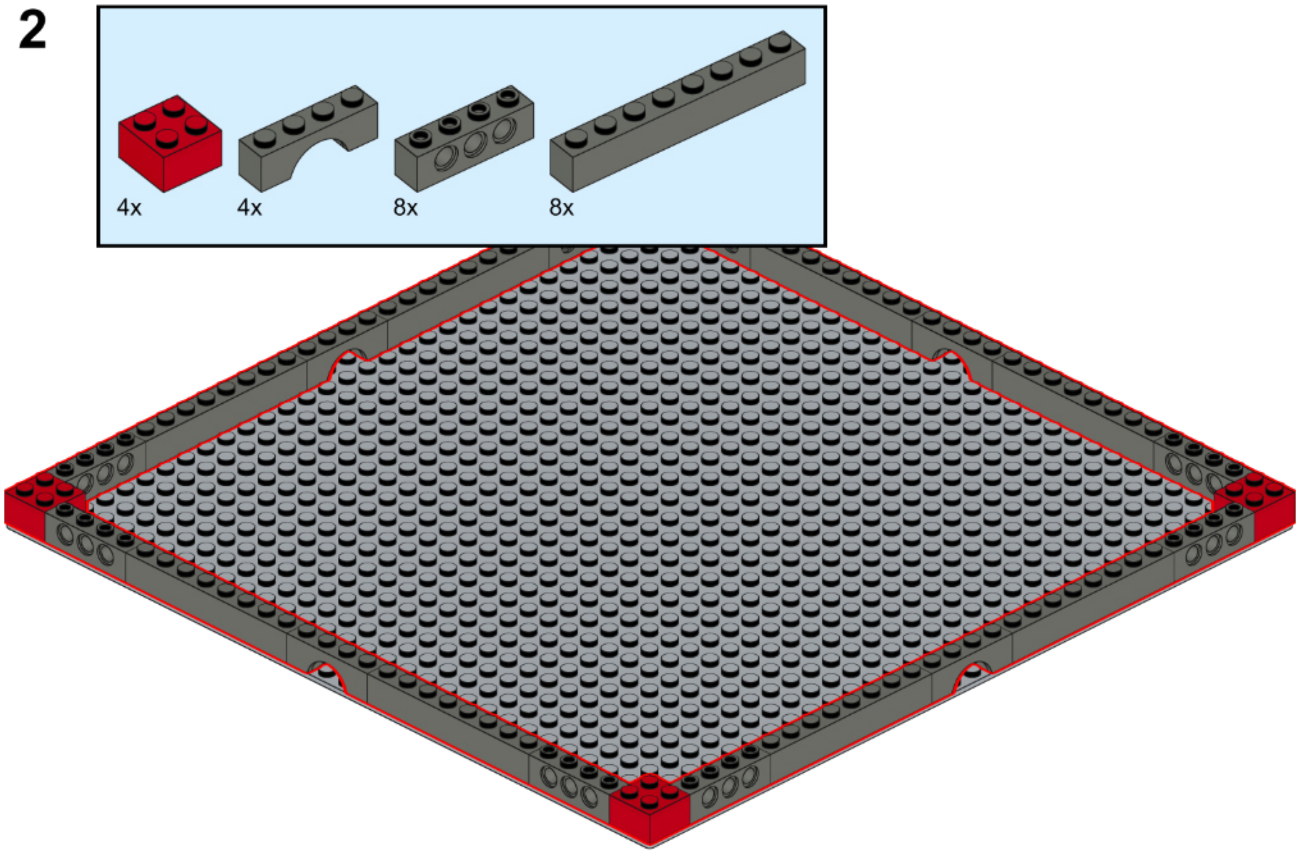

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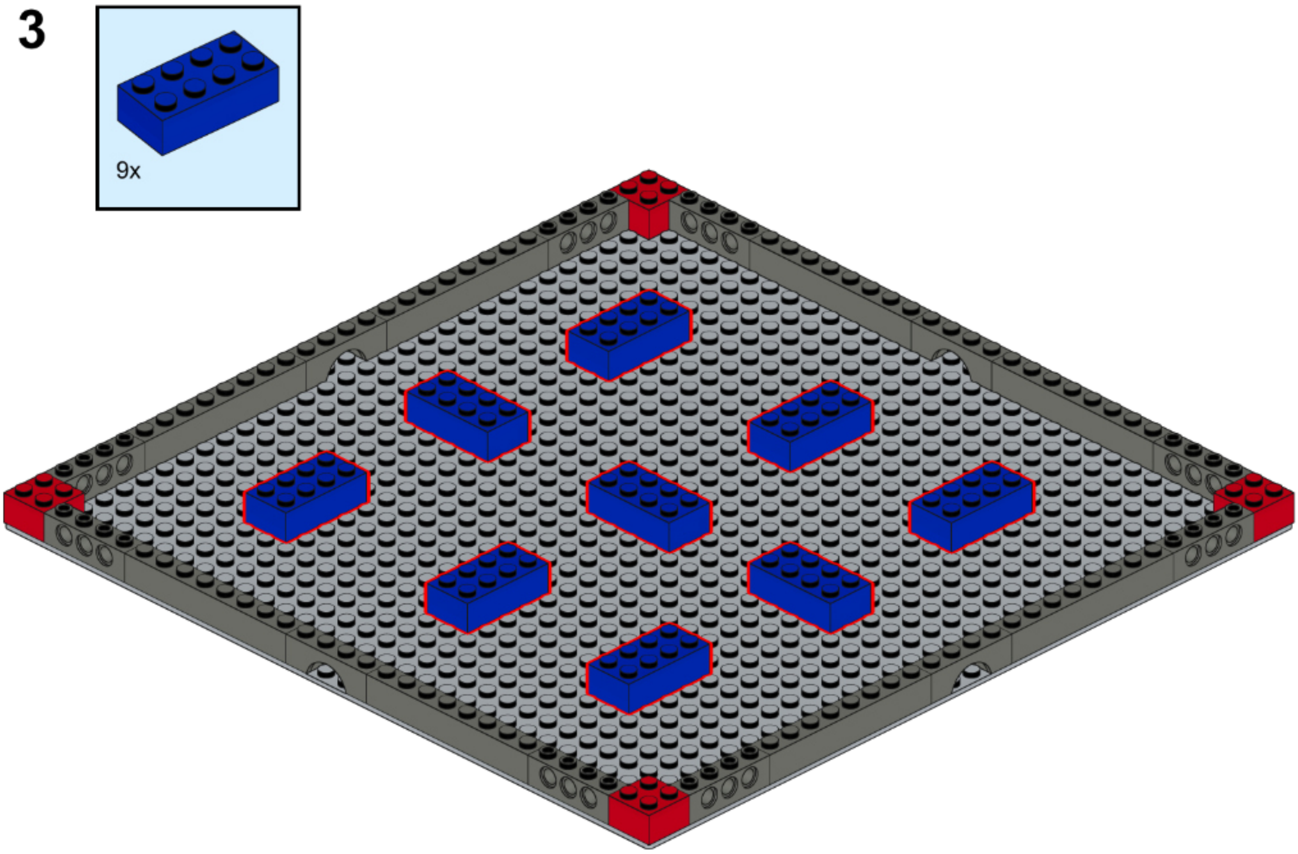

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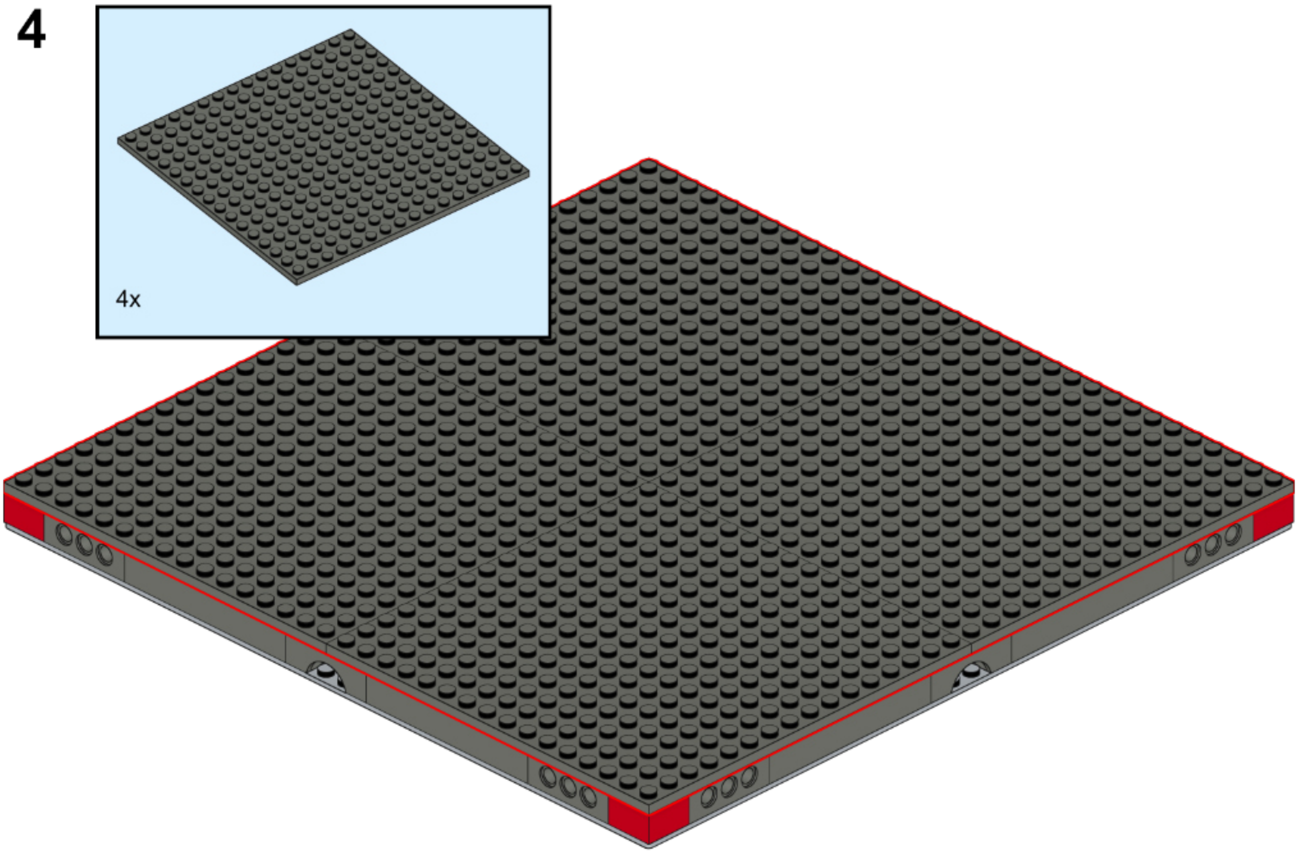

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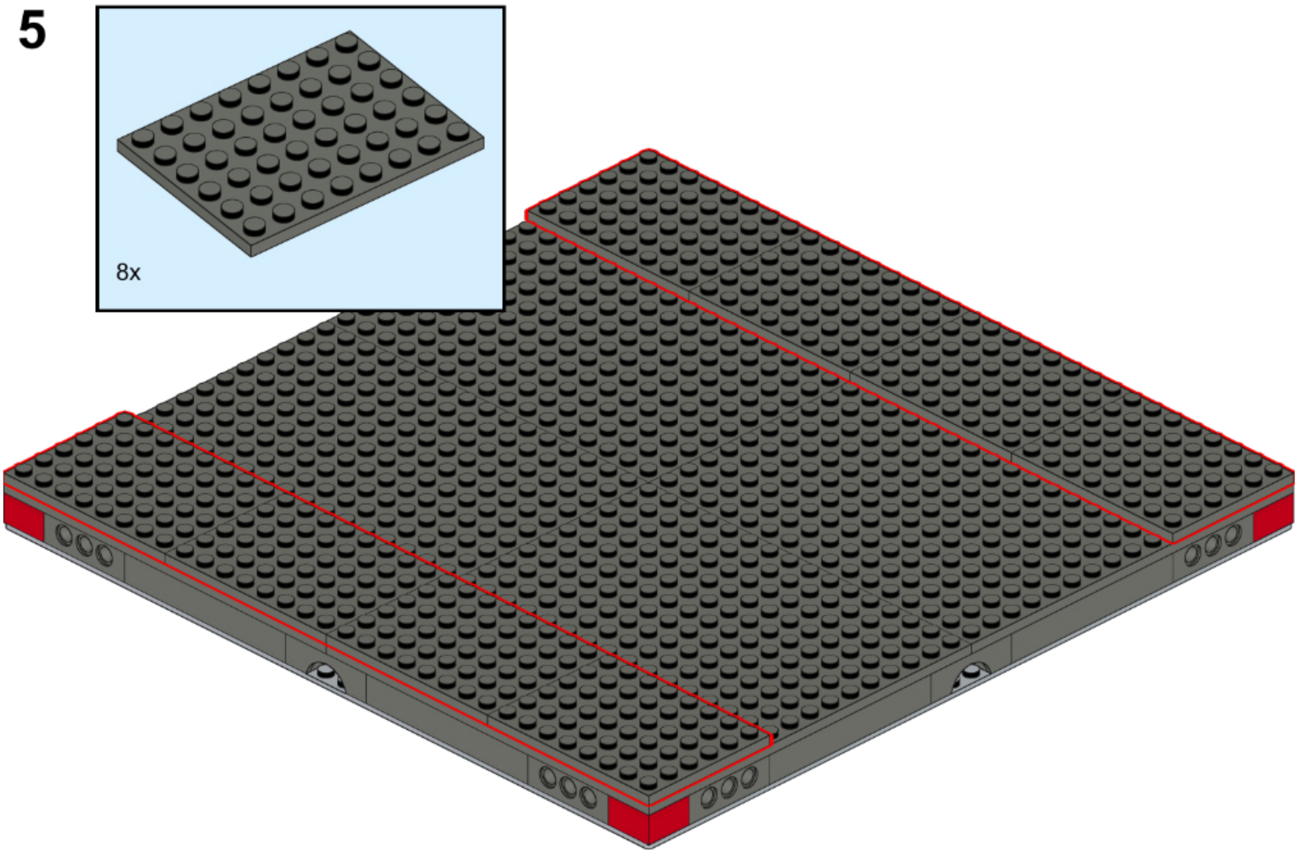

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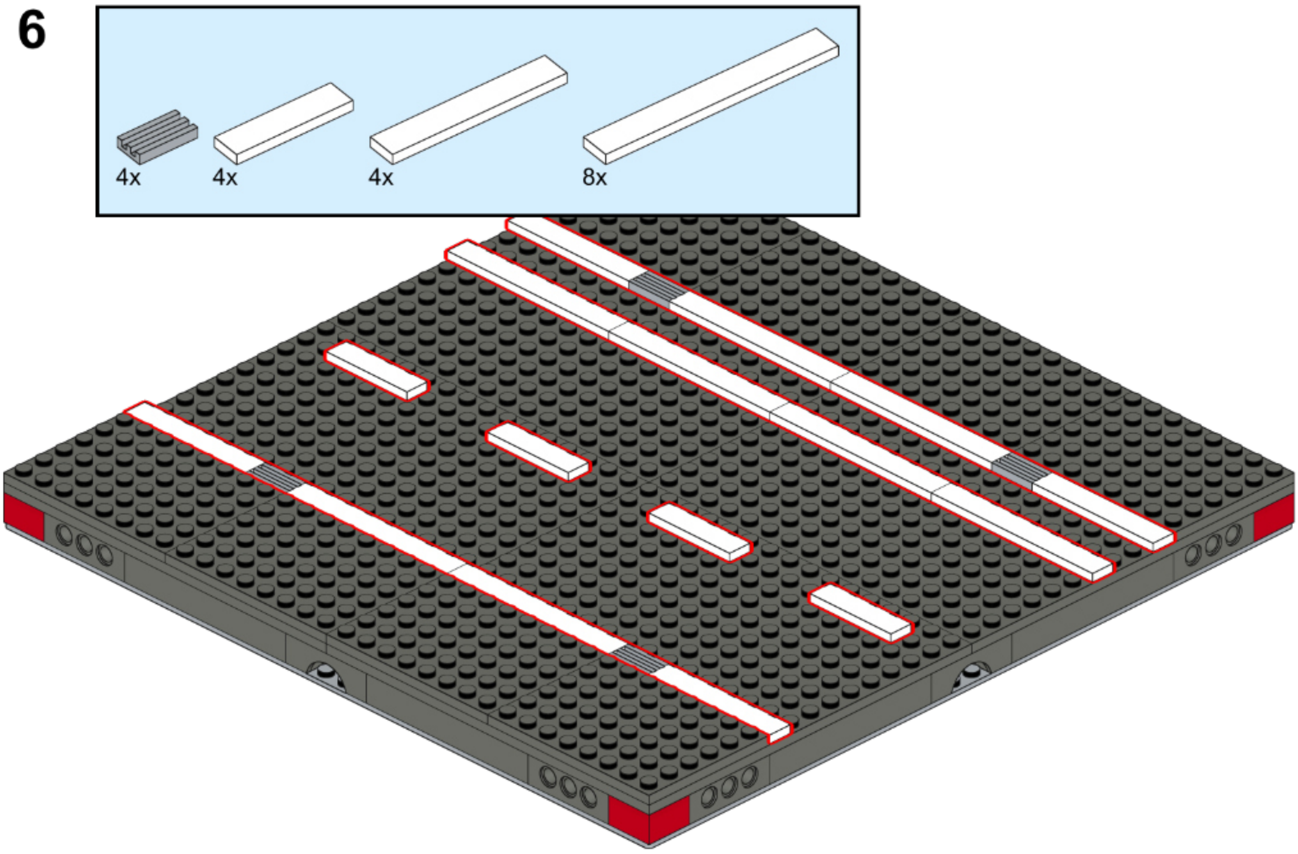

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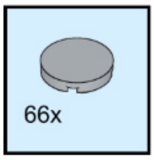

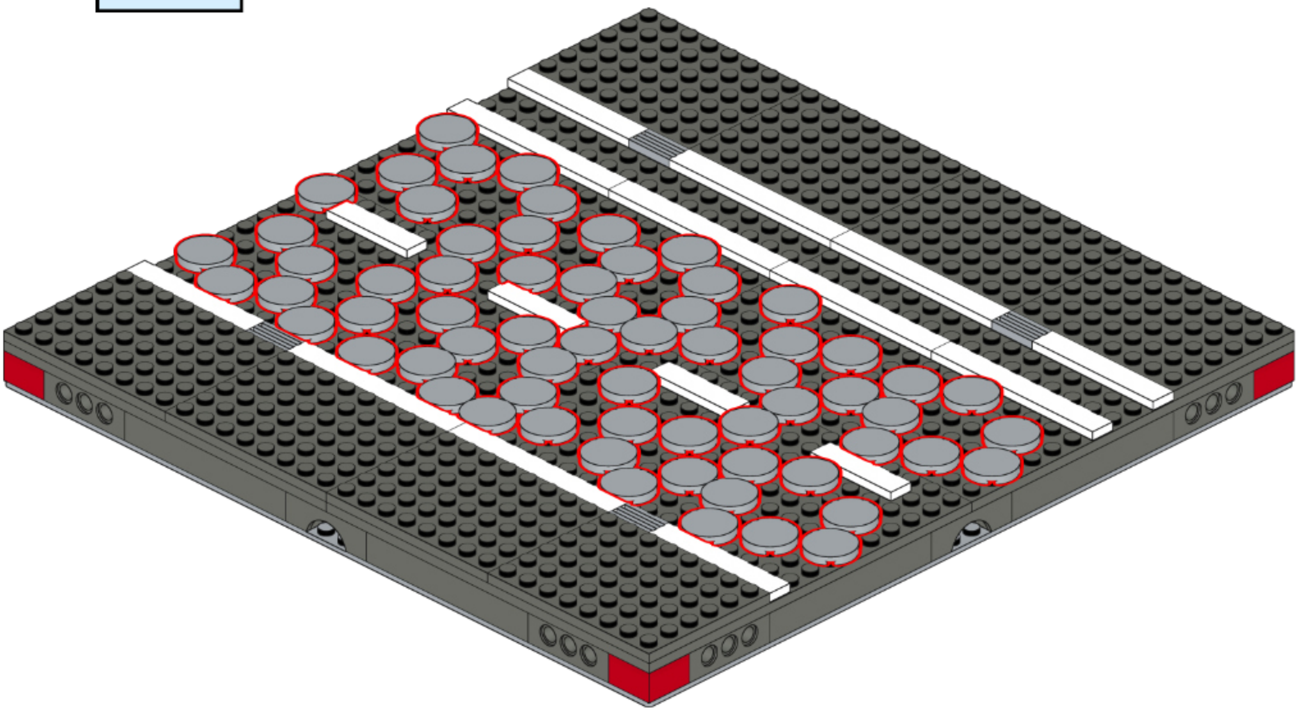

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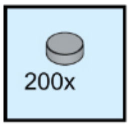

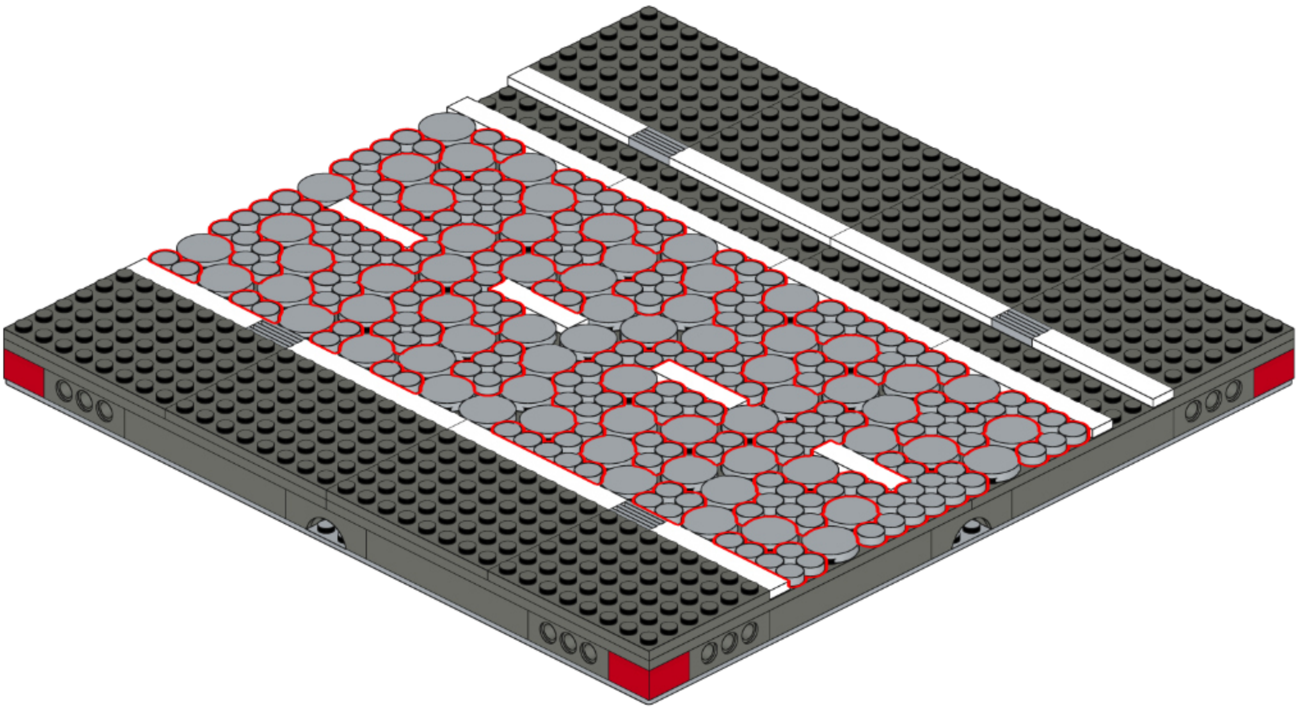

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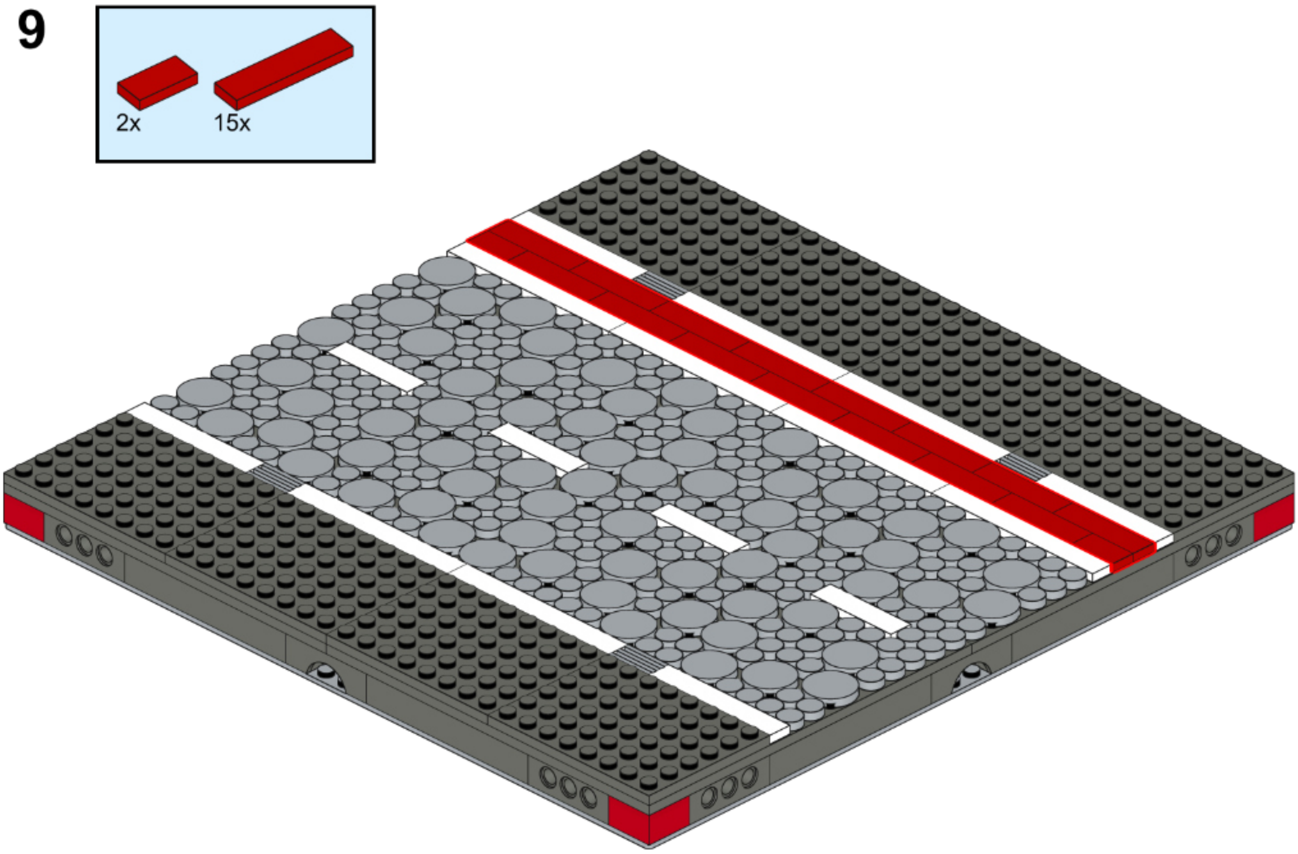

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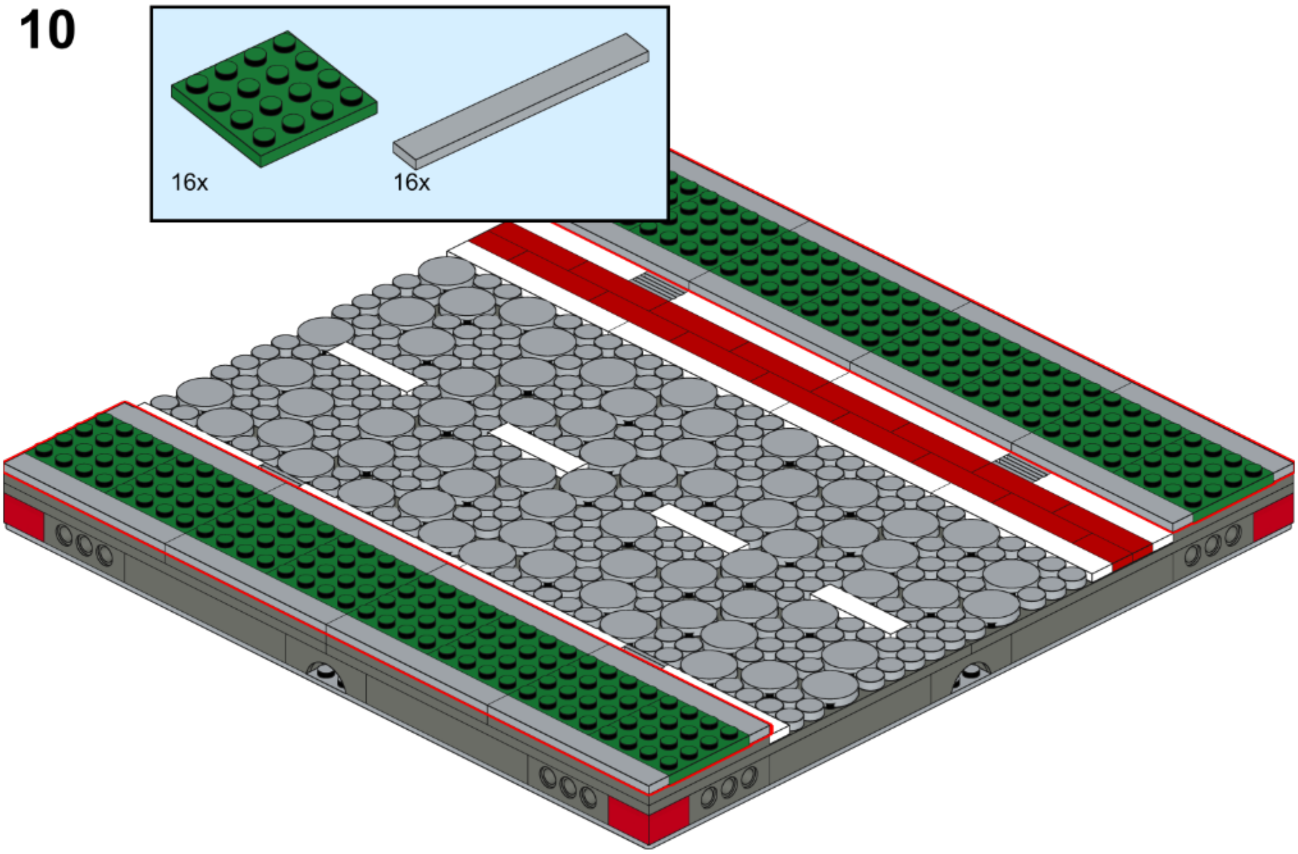

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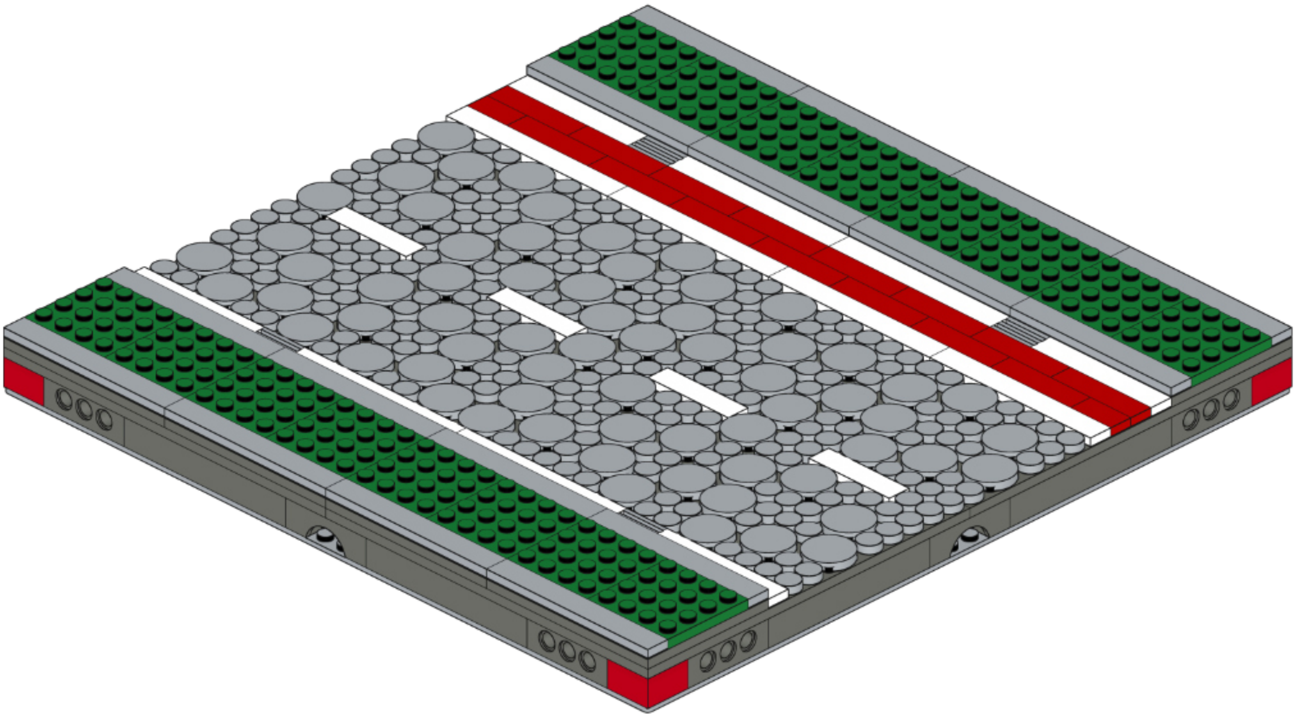
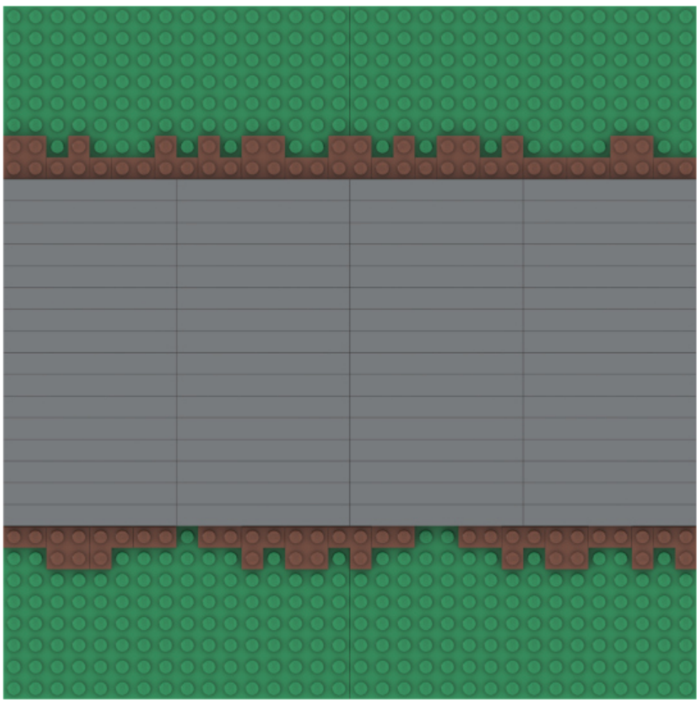


Country Road

The country road module was developed before we even turned our attention to the City and was meant to be used primarily with terrain modules. For this reason, the surface of the road is actually 1 plate higher than the level we chose for our city streets. Connecting this kind of road to any of our city streets requires the use of a transition module. This would entail modifying a country road module to make use of a slope that brings the road level down by one plate smoothly. The roadsides may also need a similar adjustment to transition from the two-plate-higher city module roadsides down to the lower country module roadsides.

Parts List

1	32x32 baseplate	4	2x3 plate, reddish brown
8	2x8 brick	4	2x12 plate, reddish brown
8	1x4 technic brick	9	2x16 plate, reddish brown
6	1x2 plate, reddish brown	4	16x16 plate, green
8	2x2 plate, red	12	2x2 corner plate, reddish brown
15	2x2 plate, reddish brown	64	1x8 tile, dbg
4	2x2 plate, yellow		



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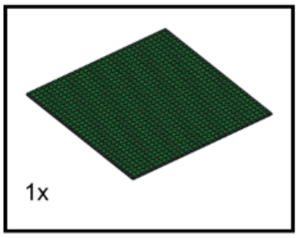

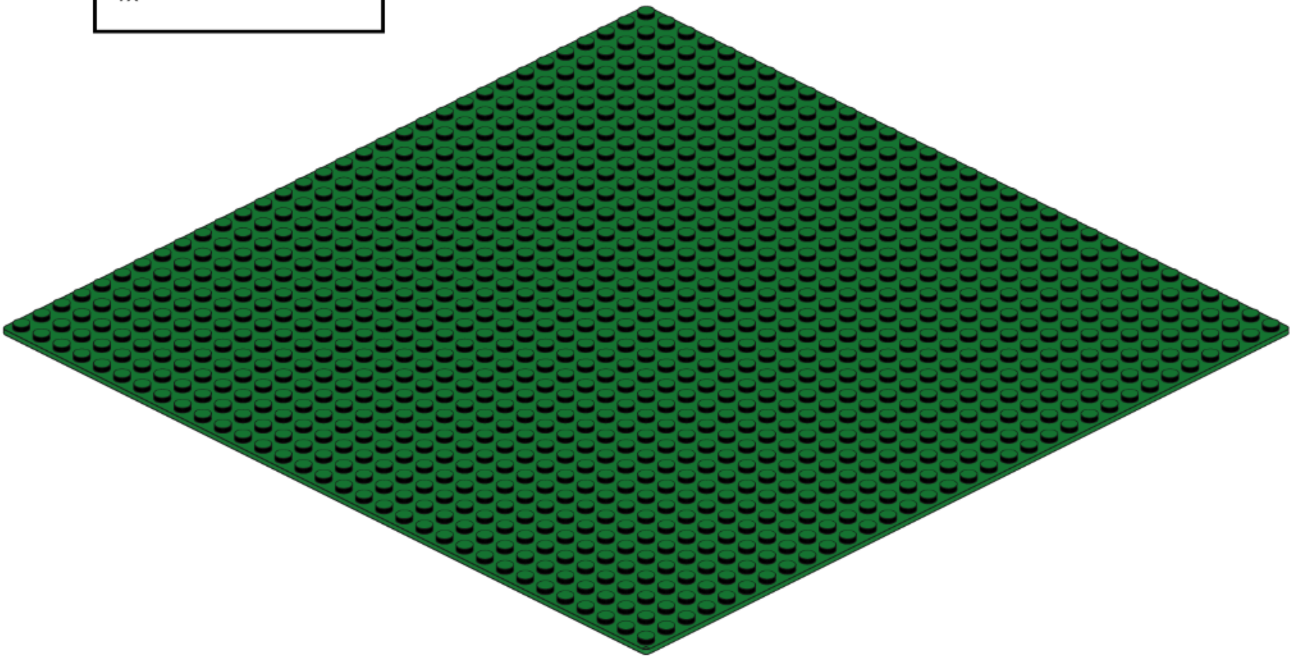

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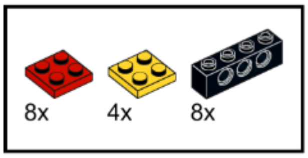

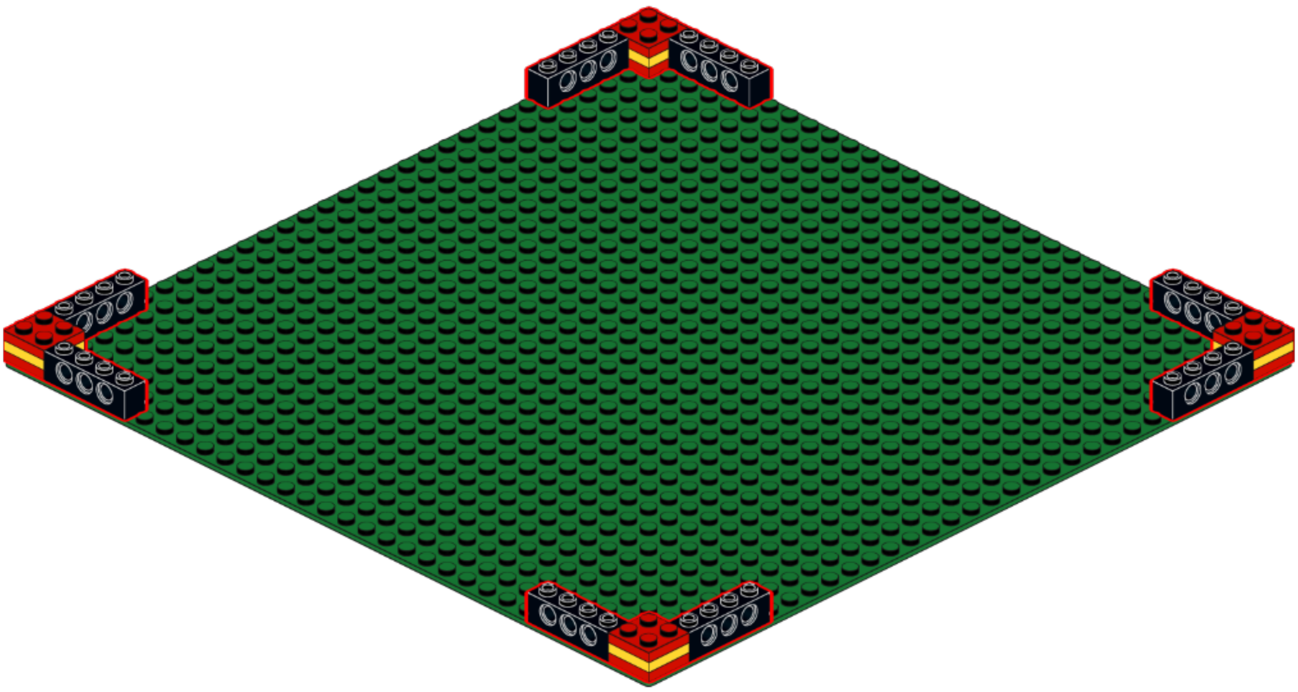

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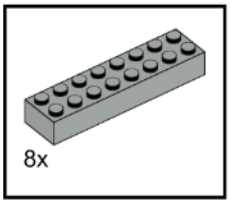

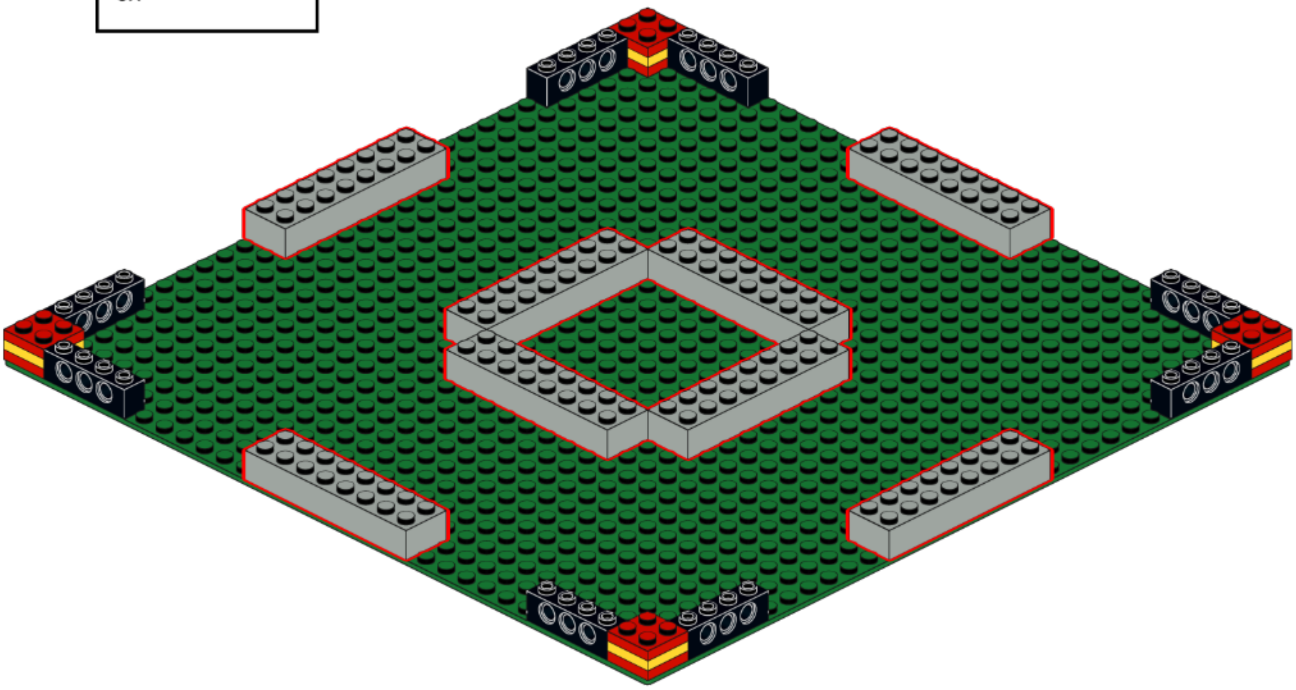

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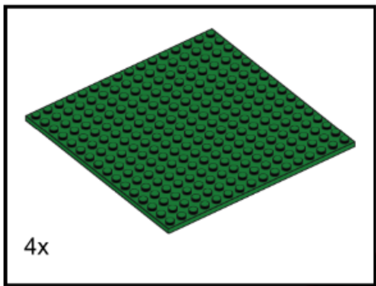

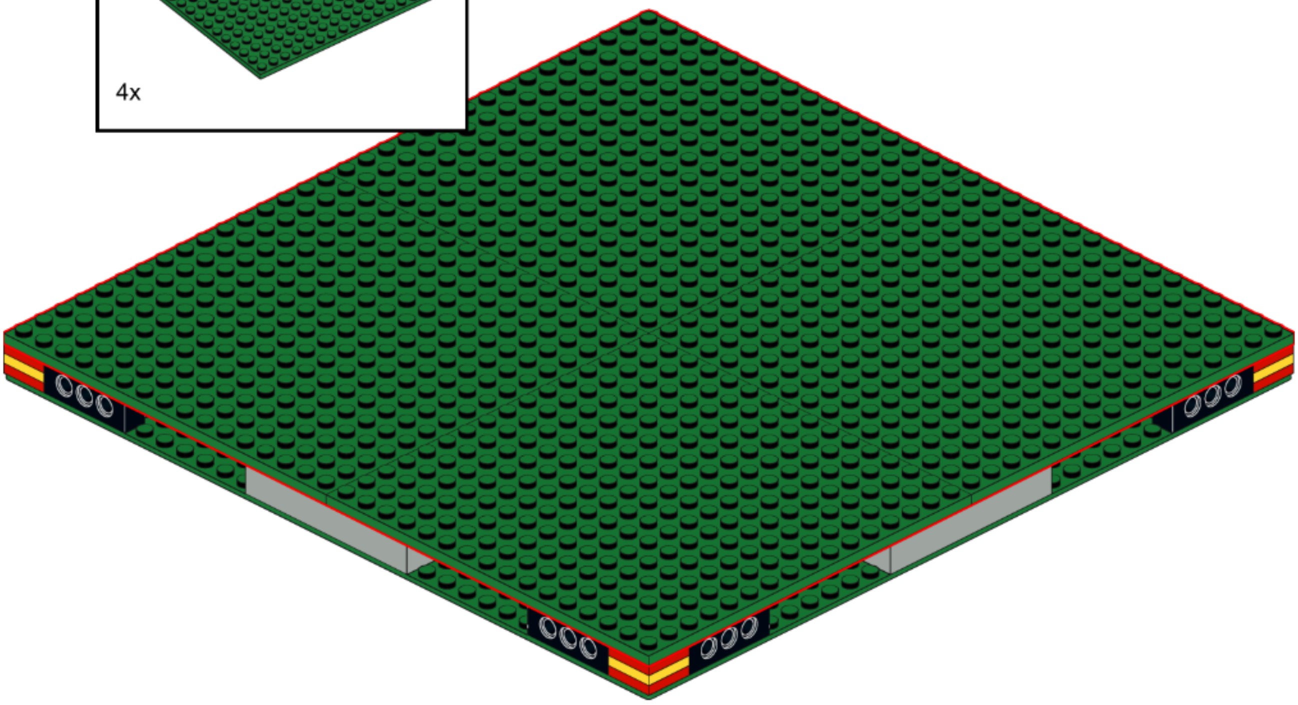

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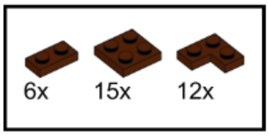

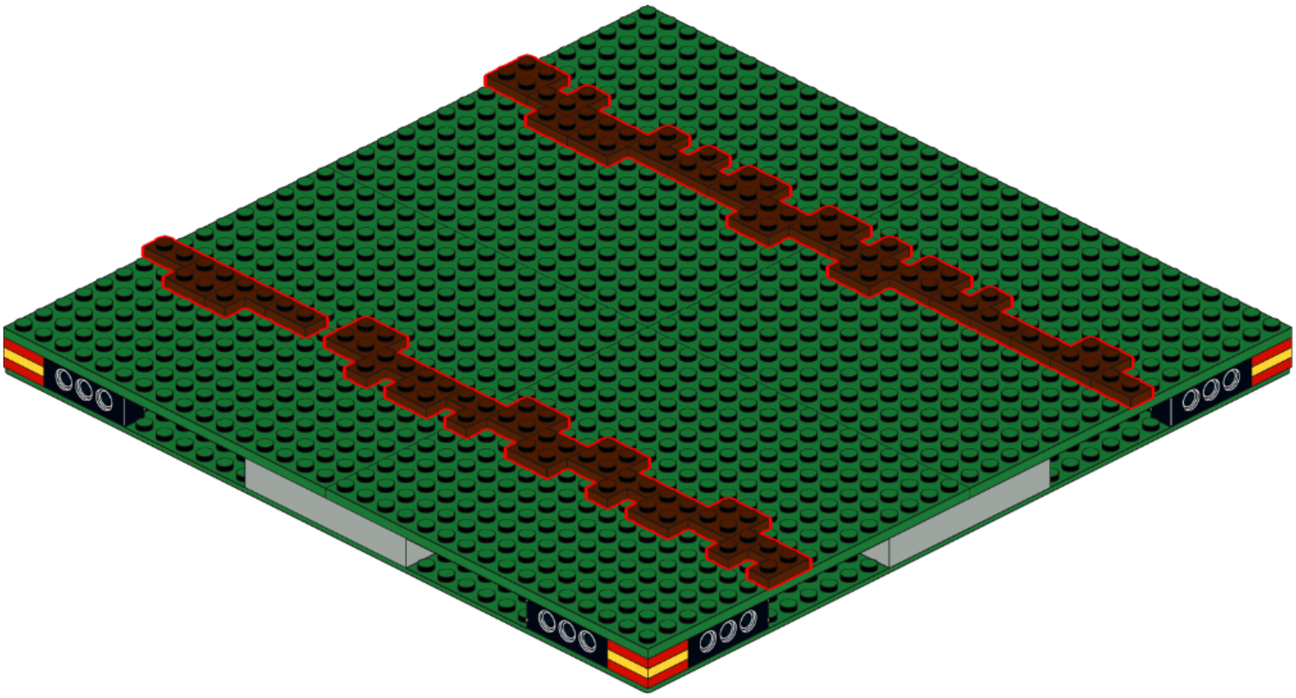

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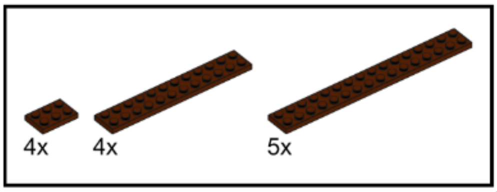

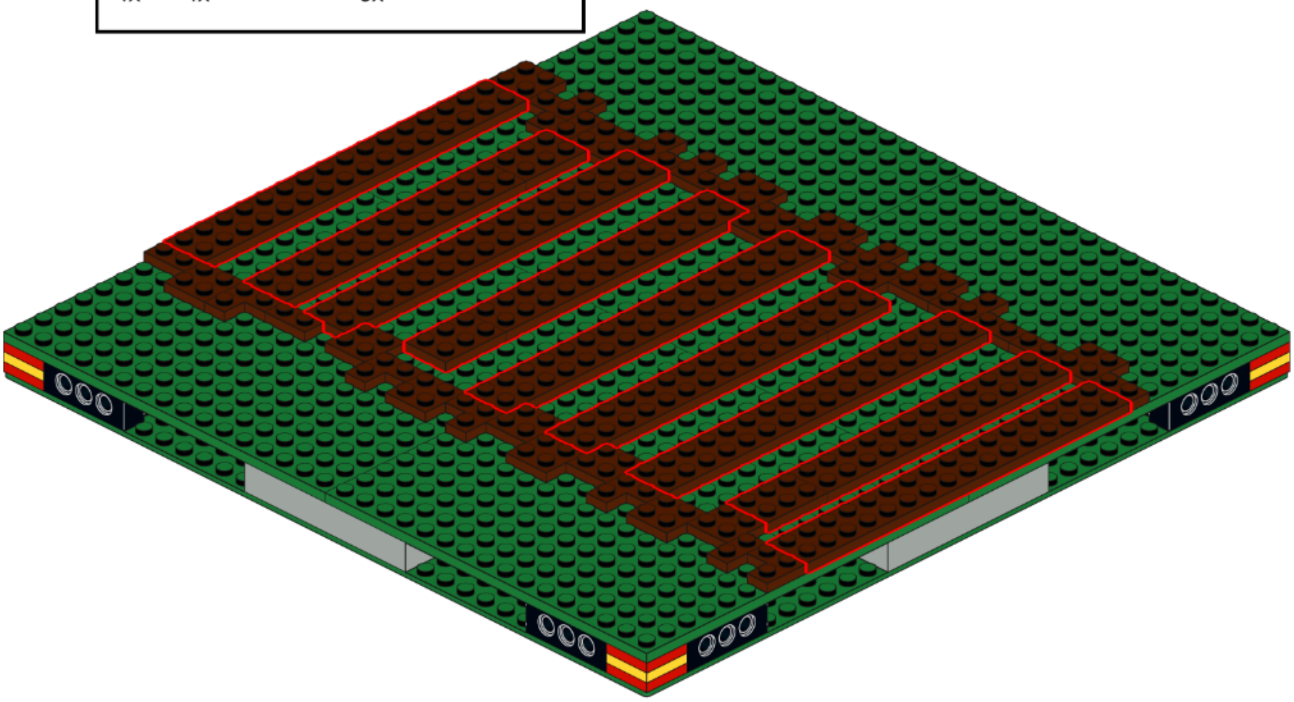

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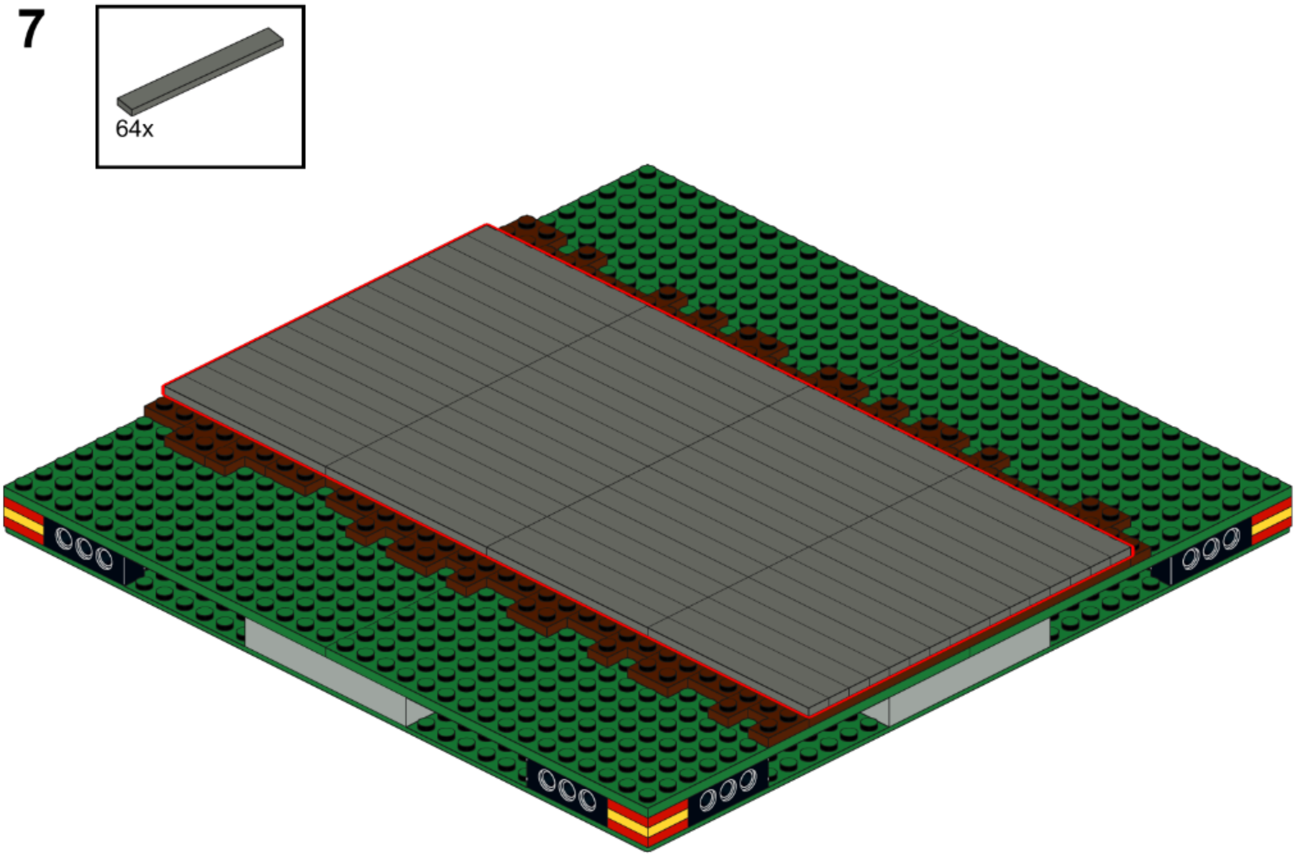
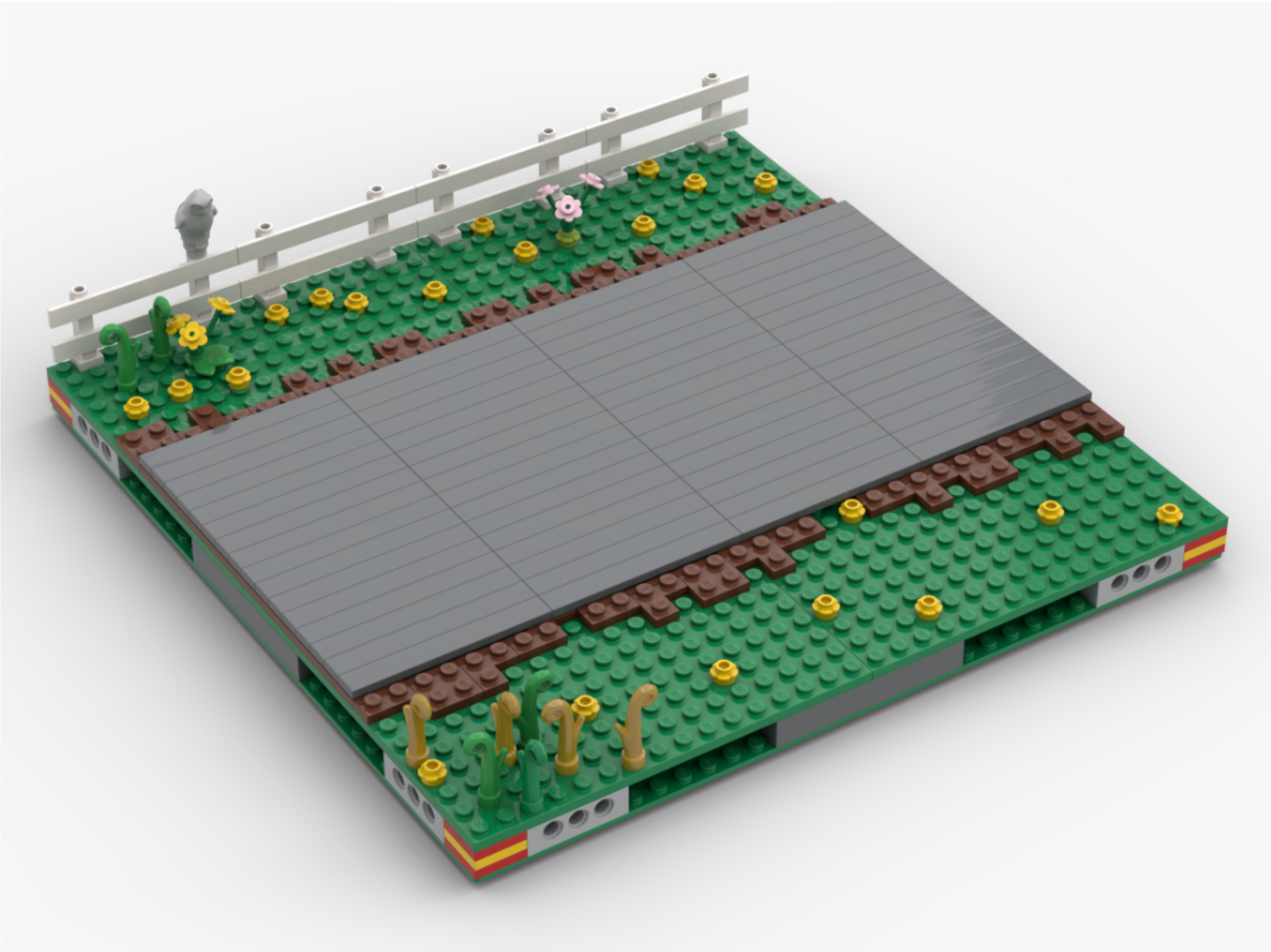
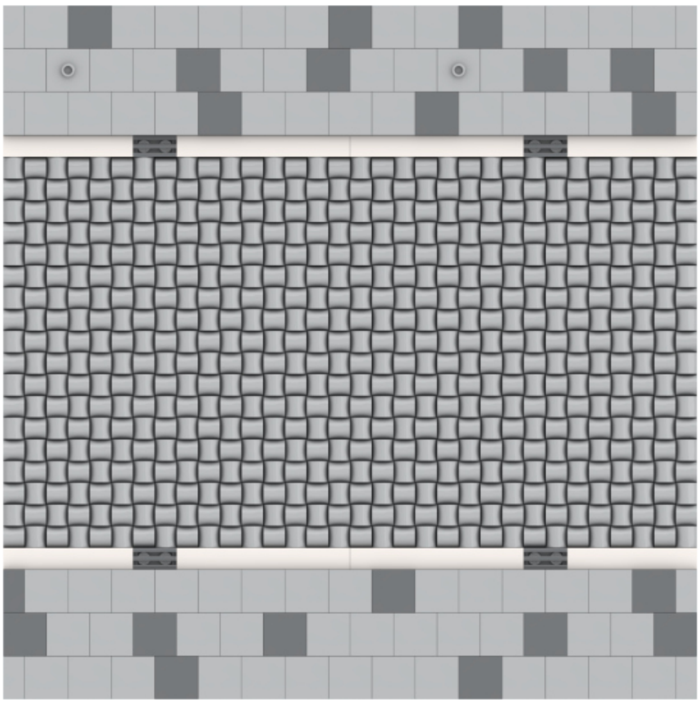




Bricked Street



The bricked street is just one example of the way different textures can be achieved by choosing alternative elements to pave the road. Since the curved 49307 brick used for the road surface is 2 plates high, the area underlying the road had to be lowered to arrive at the five-plate-high road surface level of the other street modules. Some of the LBG tiles in the *trottoir* were swapped out for DBG to add to the character of a period street.

Parts List

1	32x32 baseplate
2	1x4 brick
4	1x8 brick
10	2x2 brick
8	1x4 technic brick
22	1x6 plate
12	1x8 plate, dbg
30	2x2 plate
16	6x8 plate
4	8x8 plate
1	1x2 tile, dbg
7	1x2 tile, llbg
4	1x6 tile, white
4	1x8 tile, white
19	2x2 tile, dbg
71	2x2 tile, lbg
4	1x2 grille tile, flat silver
2	2x2 jumper, lbg
576	1x1x2/3 curve top brick (49307)

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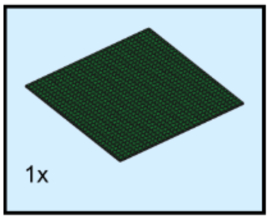

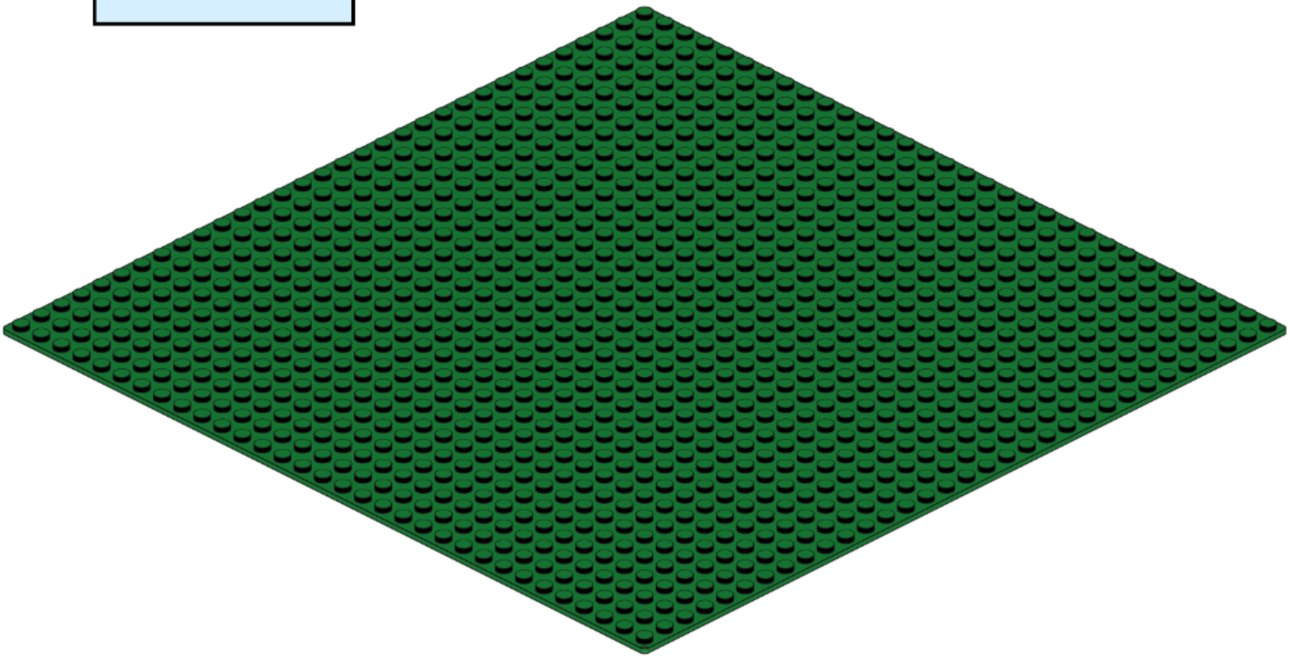

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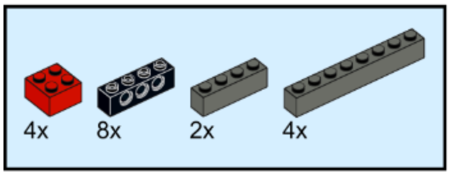

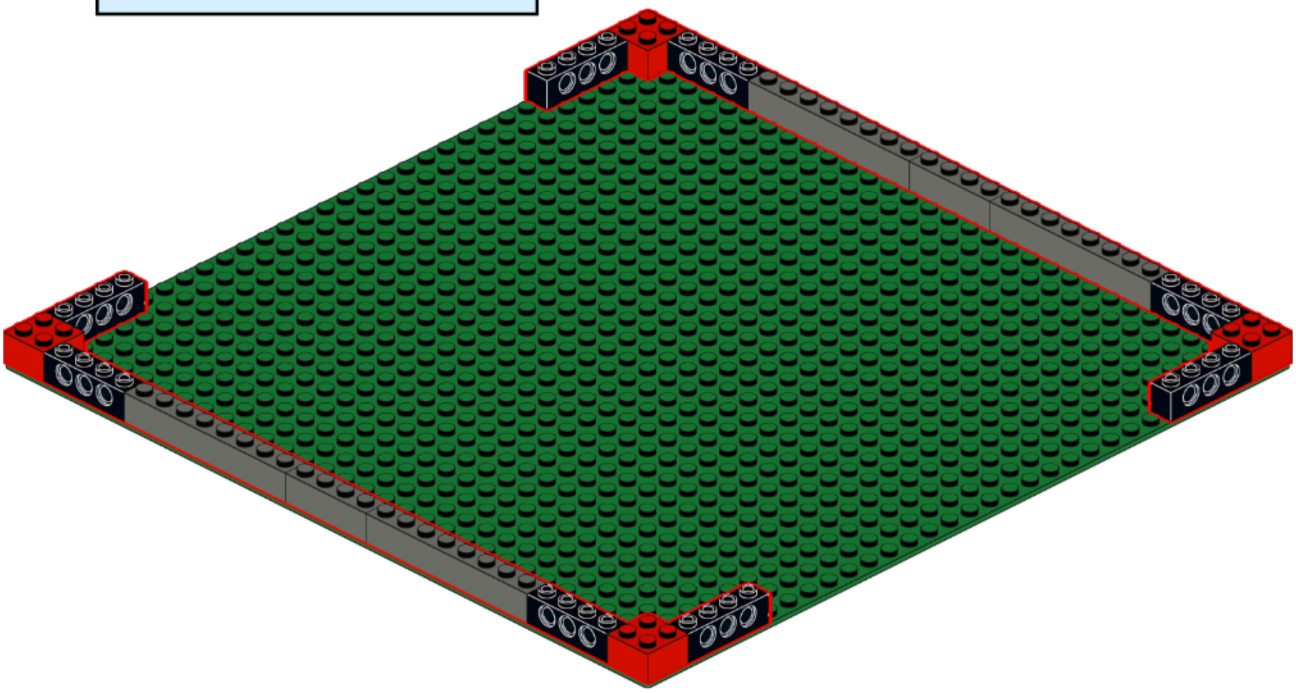

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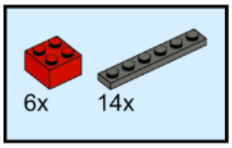

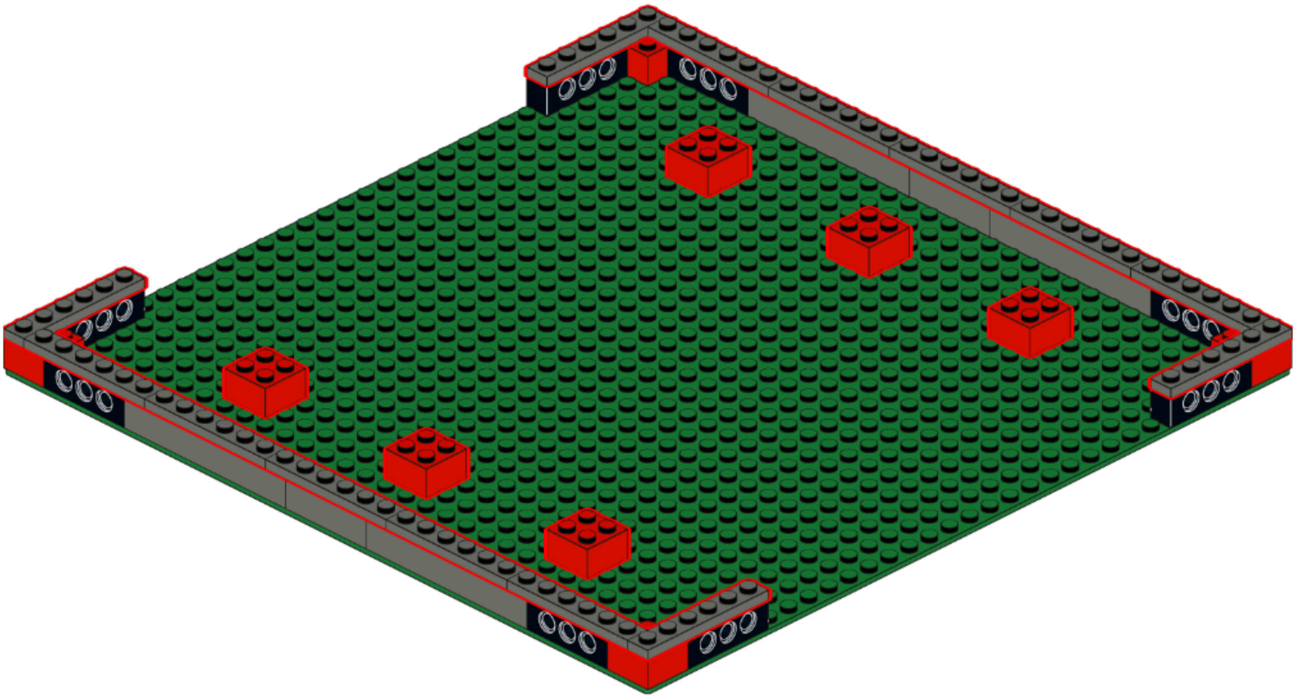

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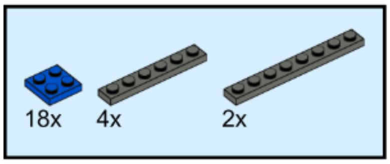

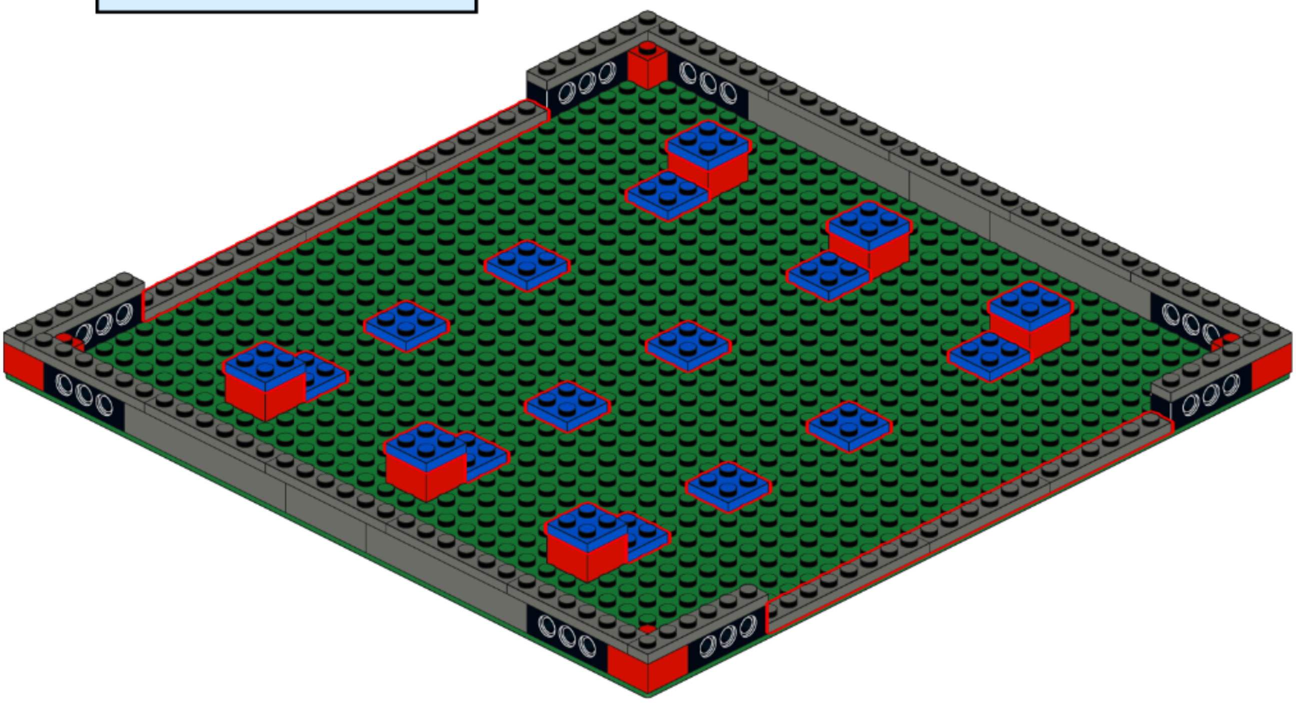

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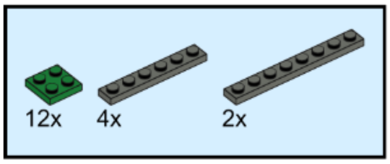

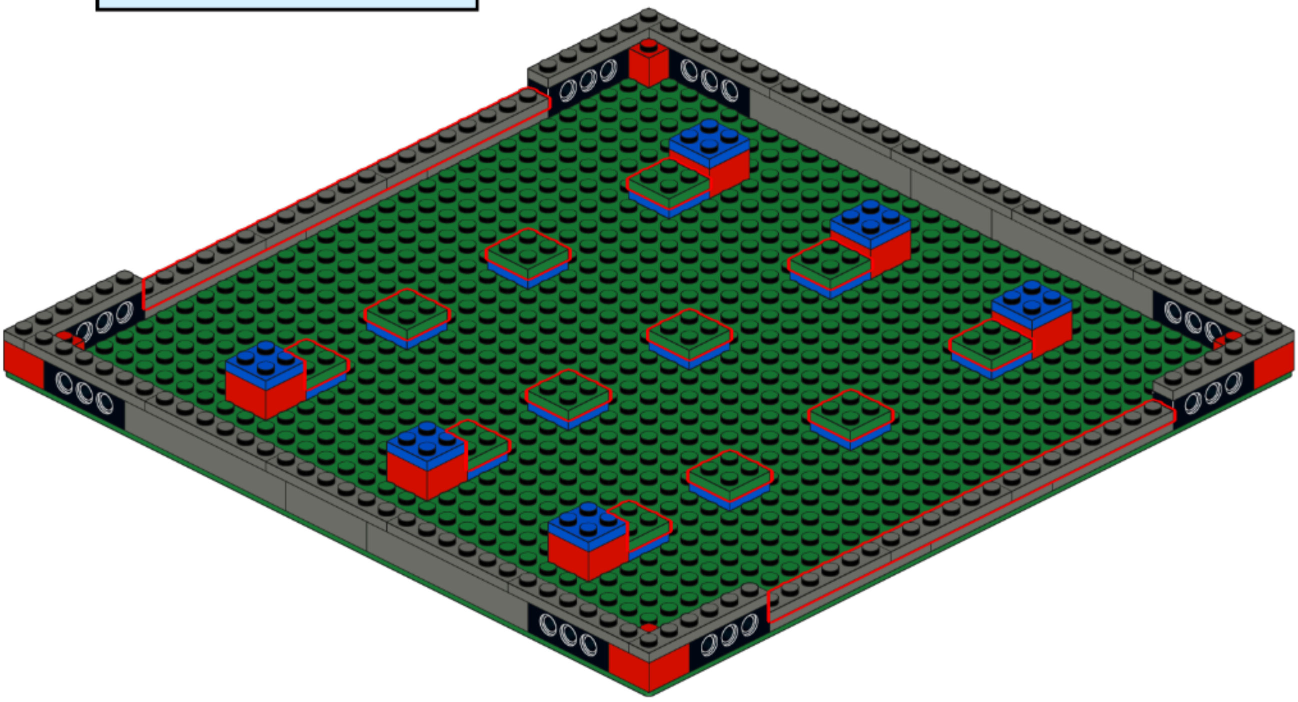

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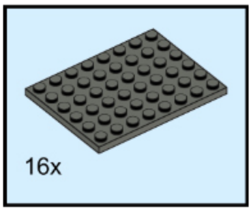

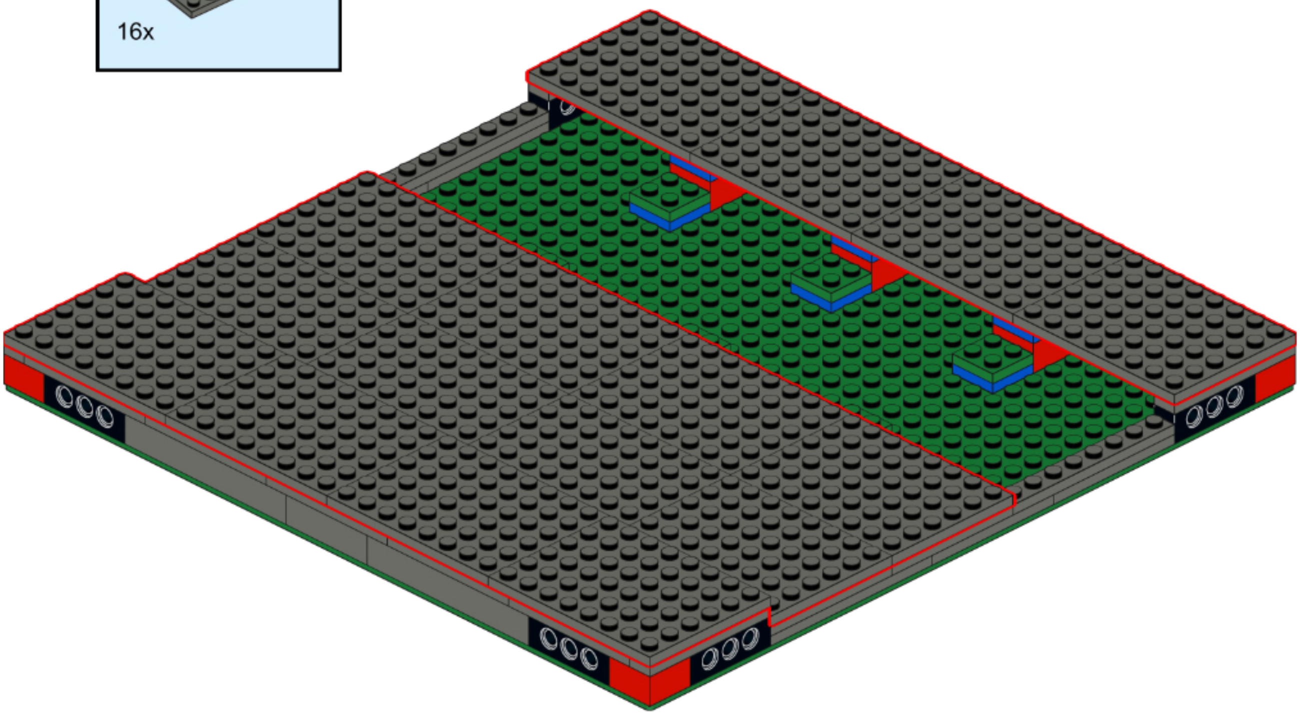

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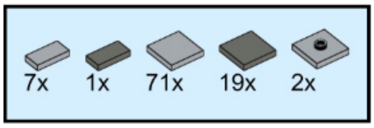

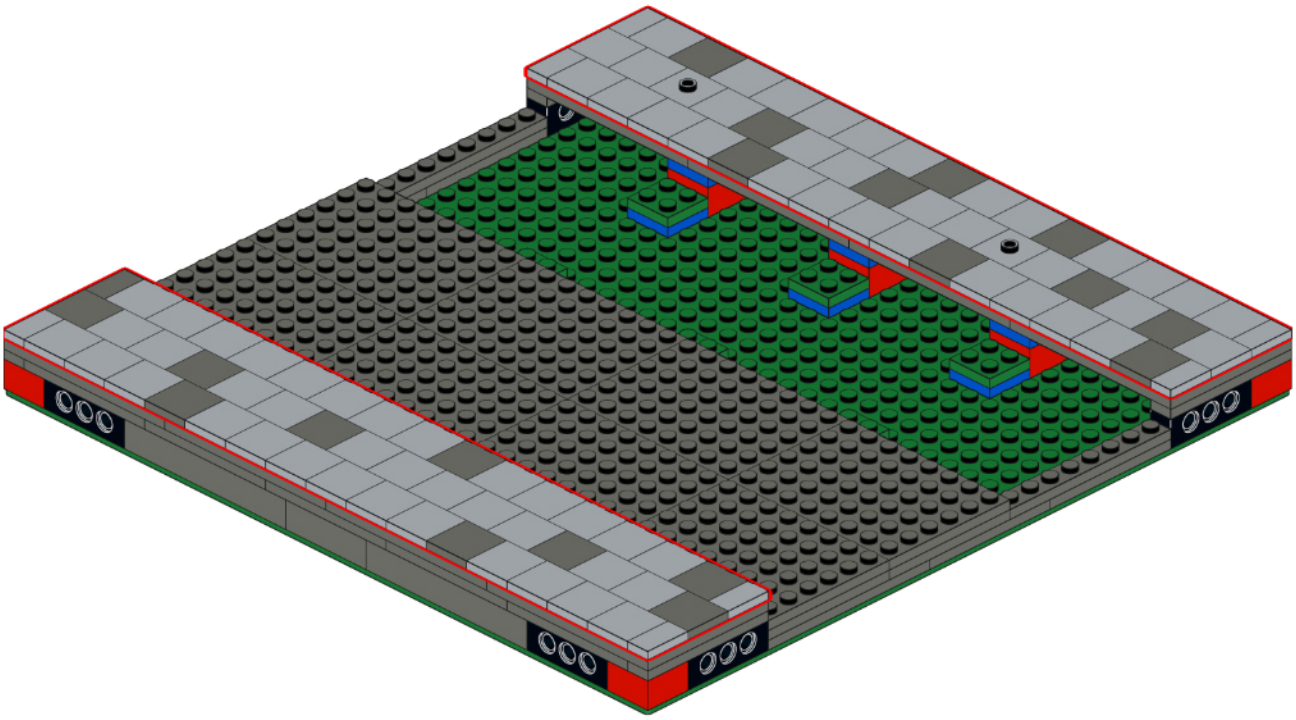

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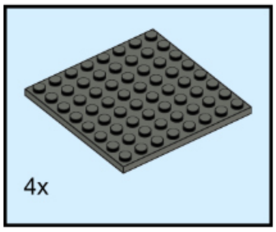

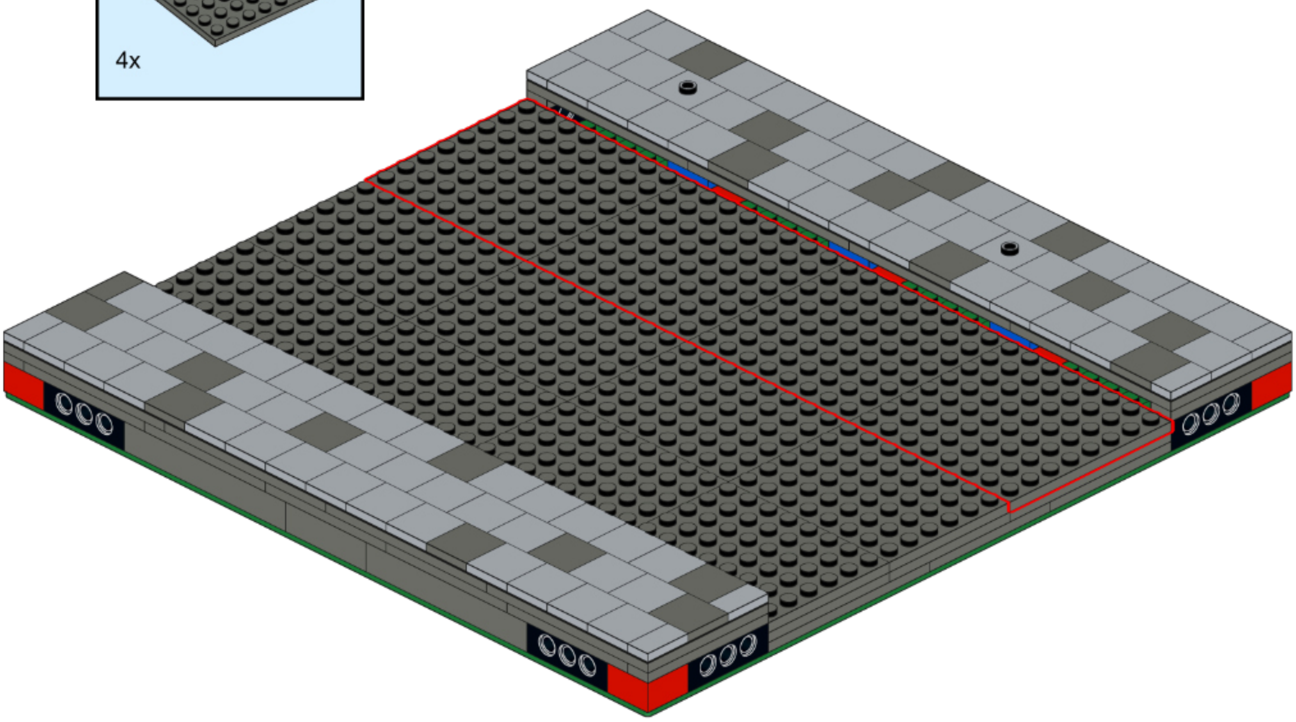

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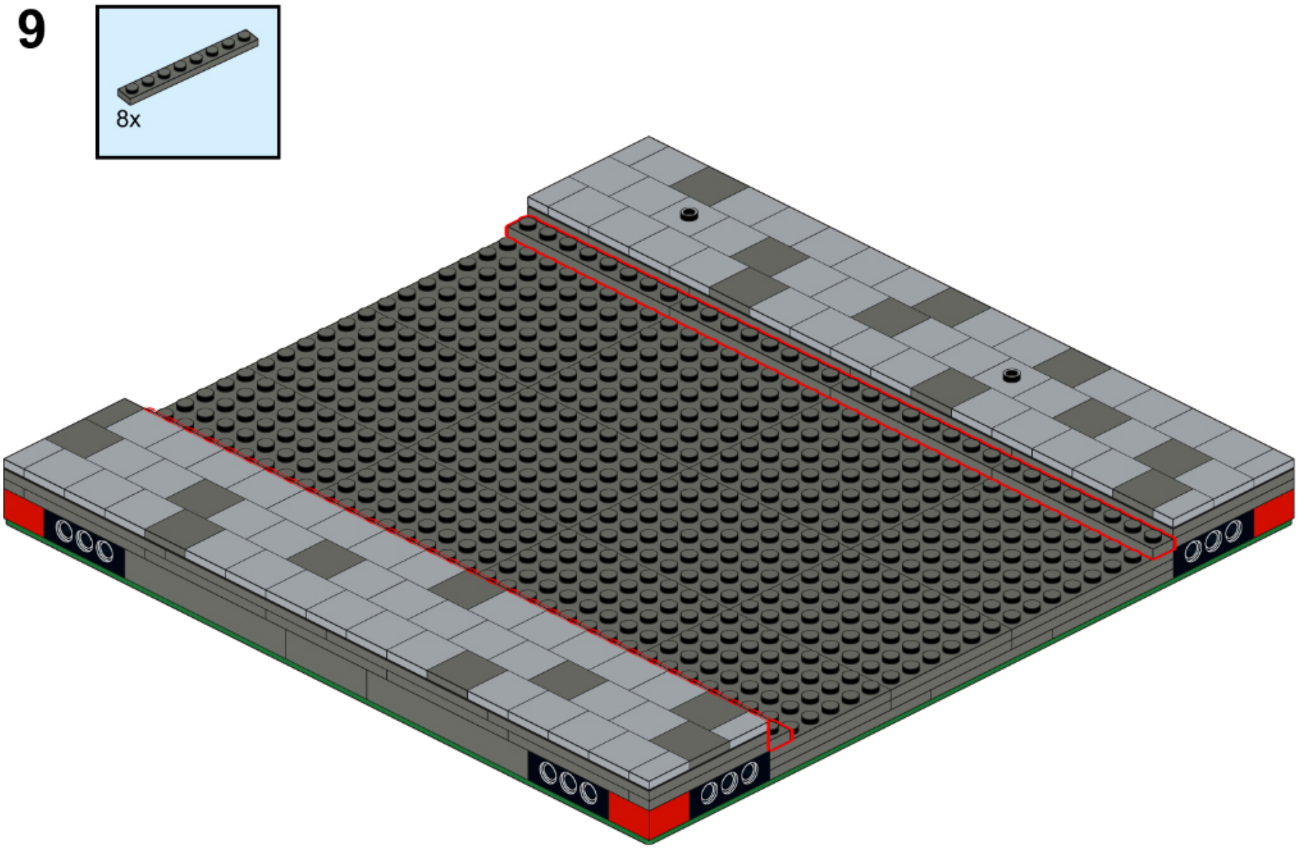

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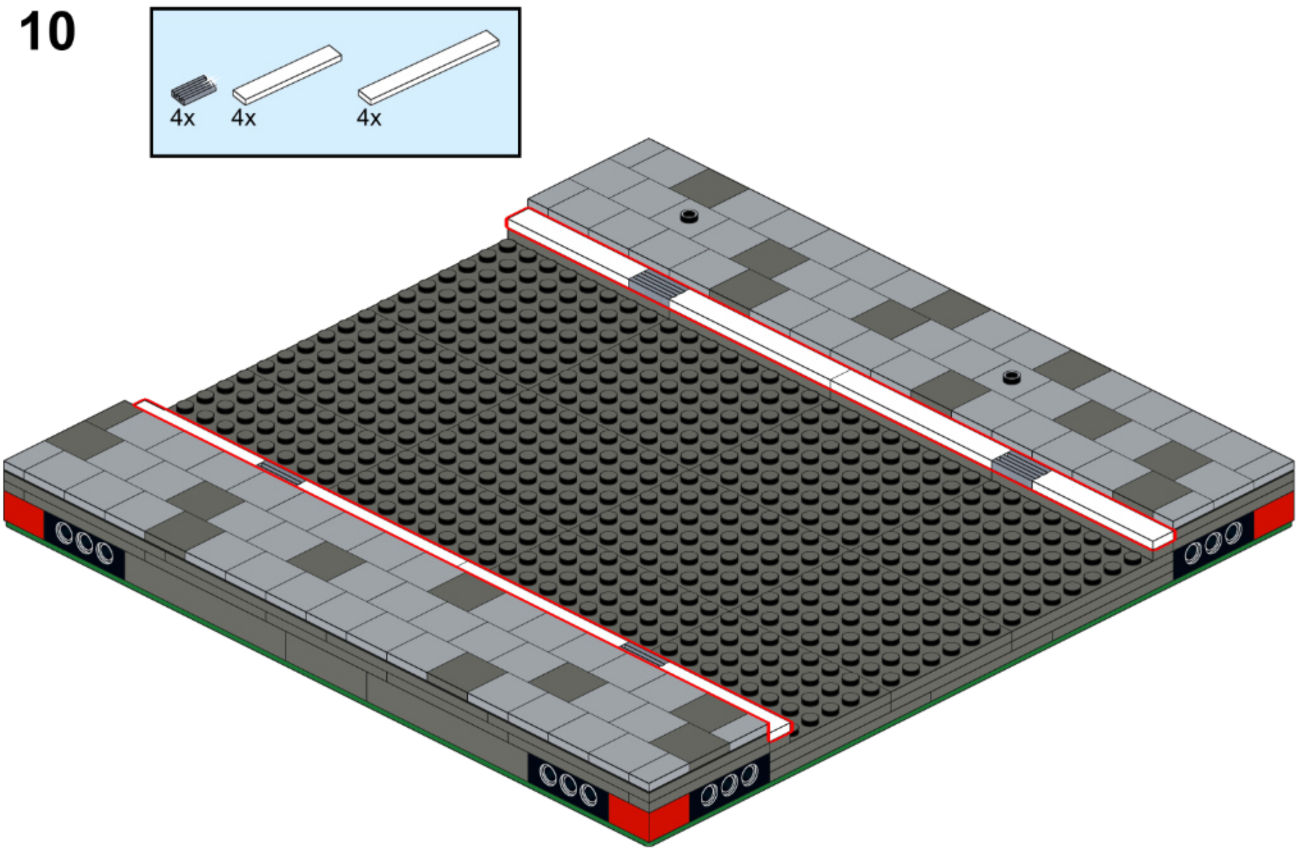

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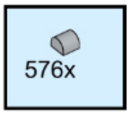
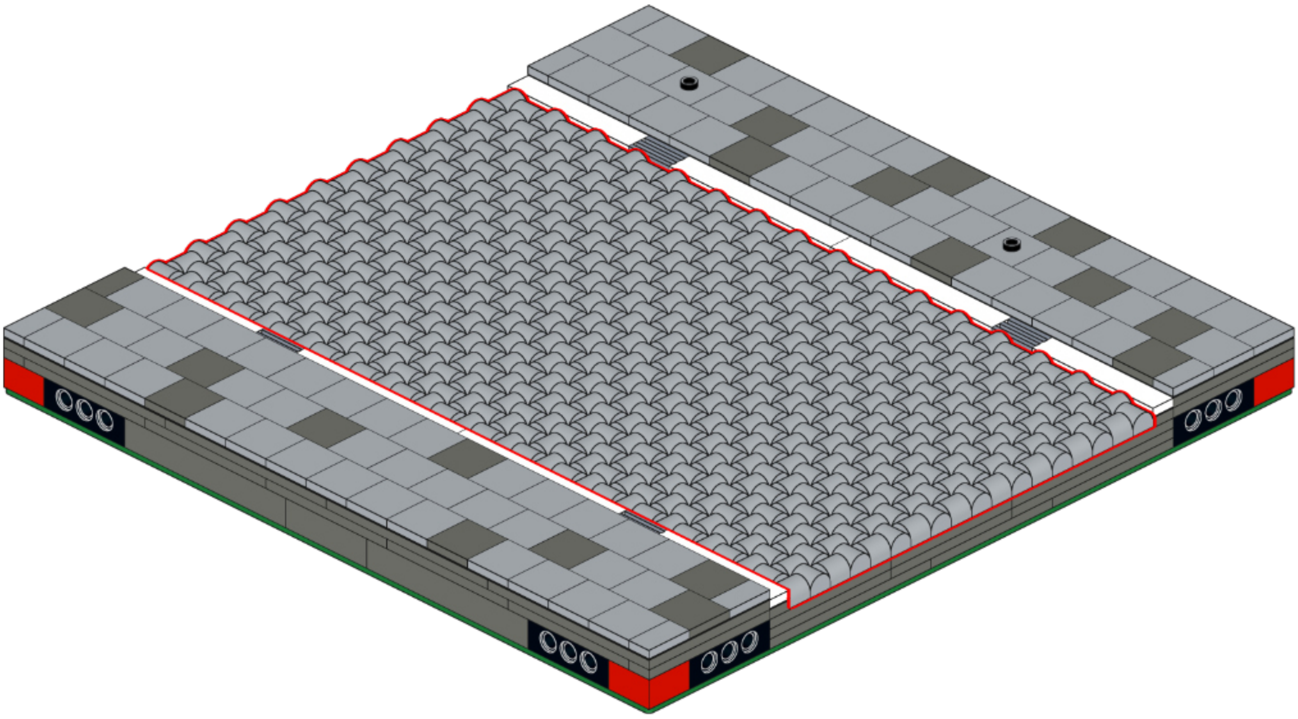
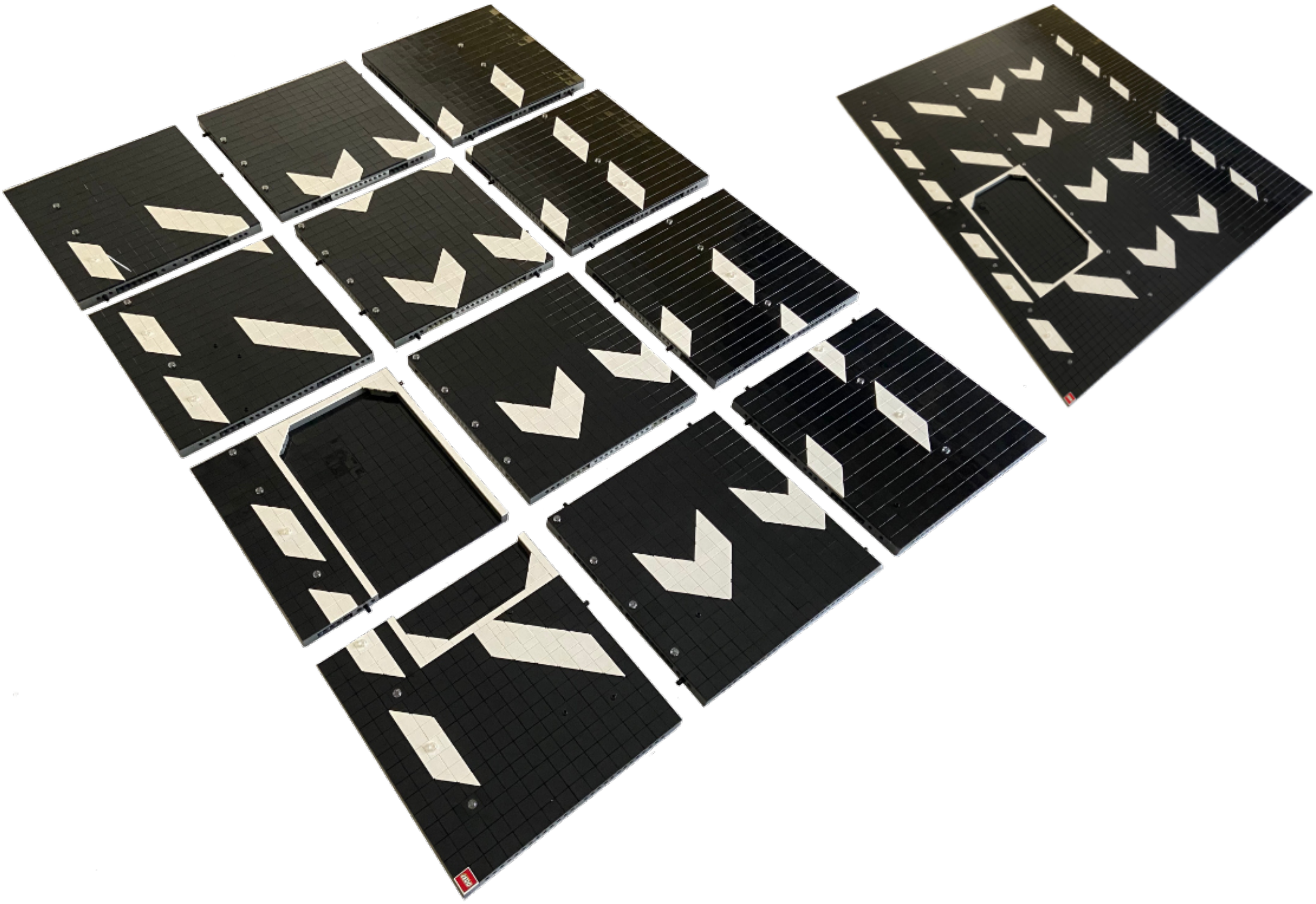


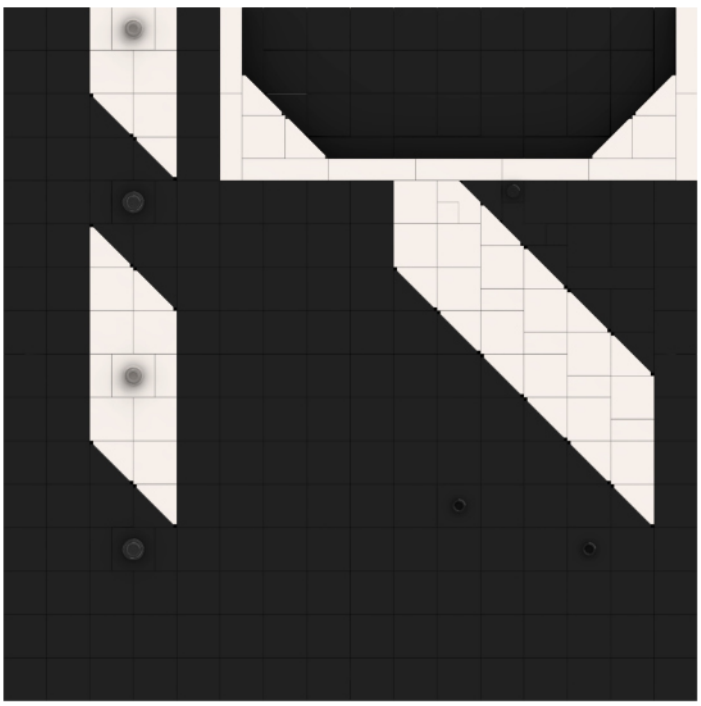




Flight Deck

Of course there are many more uses for (paved) MILS modules. Jump into the future or into an alternate universe and turn your MILS modules into a flight deck worthy of a space hangar. Markings on the floor were created with simple mosaic patterns and lights were added using jumper plates topped with 1x1 round tiles.

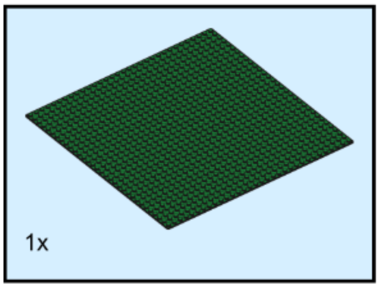
Now, to answer the questions: yes, this flight deck is comprised of twelve modules and, no, we aren't going to show instructions for all of them. Unique to this module, however, is a recessed area. While a specifically lowered area of the module wouldn't necessarily make any sense on a road, here on the flight deck it may be a desirable element to add and provide both aesthetic and narrative interest to the build.

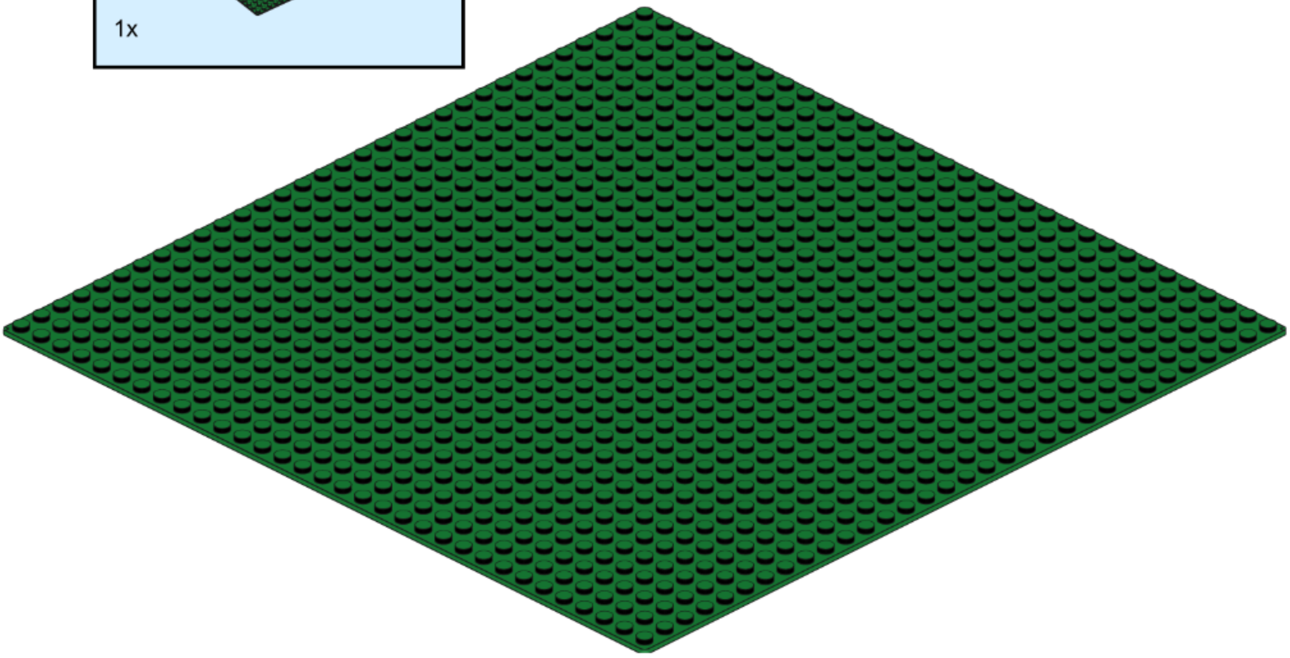


Parts List

1 32x32 baseplate
1 1x2 brick, dbg
1 1x6 brick, dbg
2 1x8 brick, dbg
3 2x2 brick
7 2x4 brick
2 2x2 corner brick
2 3x3 facet brick, dbg
1 1x4 technic brick
6 1x14 technic brick (1 dbg)
1 1x1 plate, black
1 1x2 plate
2 1x6 plate, dbg
3 1x8 plate
2 2x2 corner platev
2 1x4 plate, dbg
1 2x6 plate
1 2x8 plate
1 2x16 plate
3 6x8 plate
1 8x16 plate
2 16x16 plate
4 1x1 plate round, trans clear
1 1x1 tile, black
1 1x1 tile, white
5 1x2 tile, black
8 1x2 tile, white
6 1x4 tile, black
9 1x4 tile, white
184 2x2 tile, black
23 2x2 tile, white
18 2x2 tile 45˚ cut, black
20 2x2 tile 45˚ cut, white
1 2x2 tile decorated, white
1 2x2 facet tile (27263), black
1 2x2 facet tile (27263), white
4 2x2 jumper, black
2 2x2 jumper, white

1





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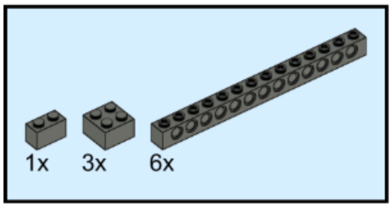

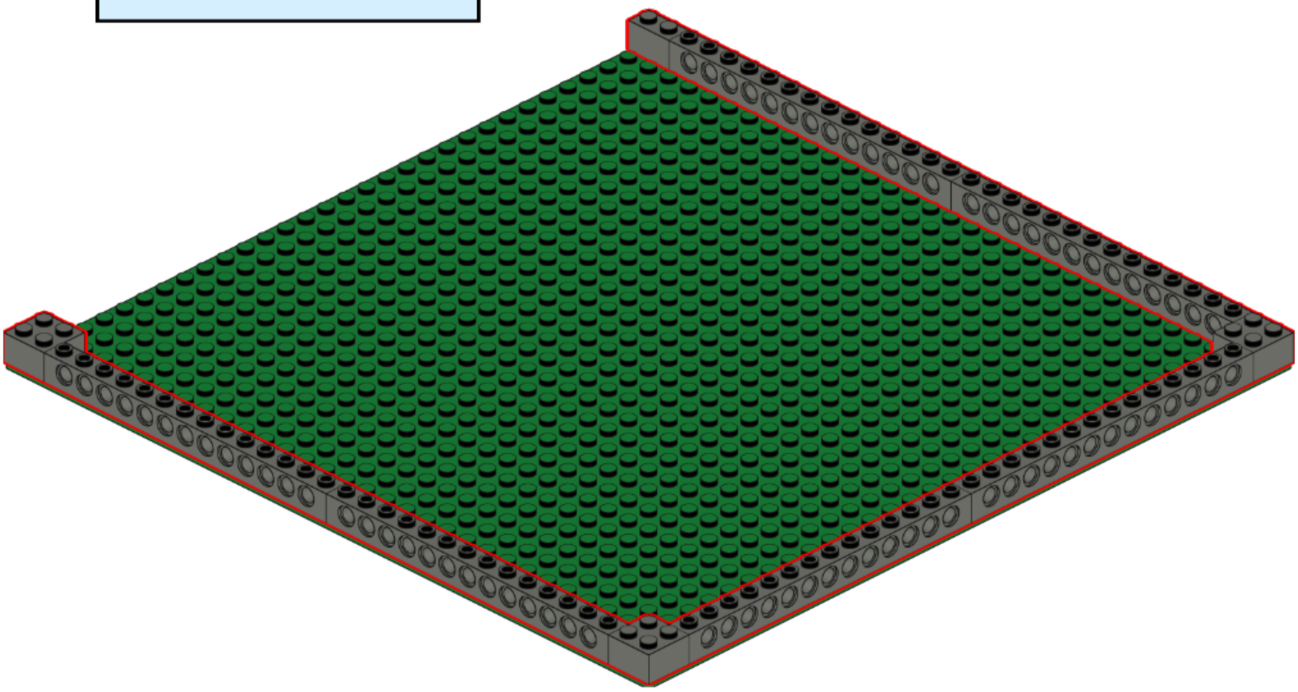

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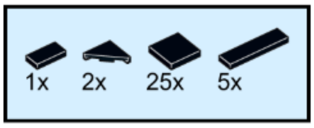

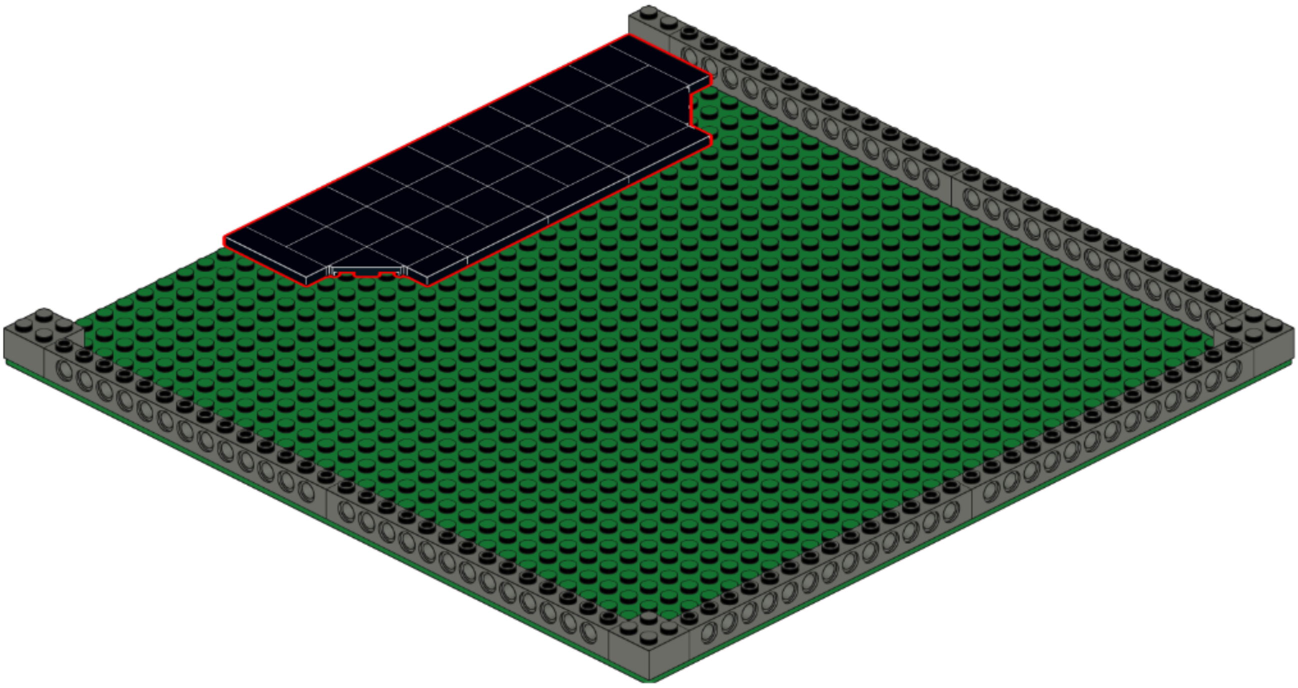

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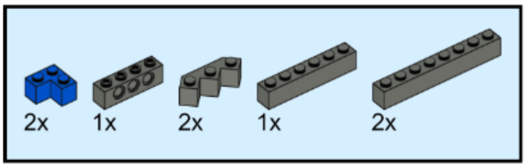

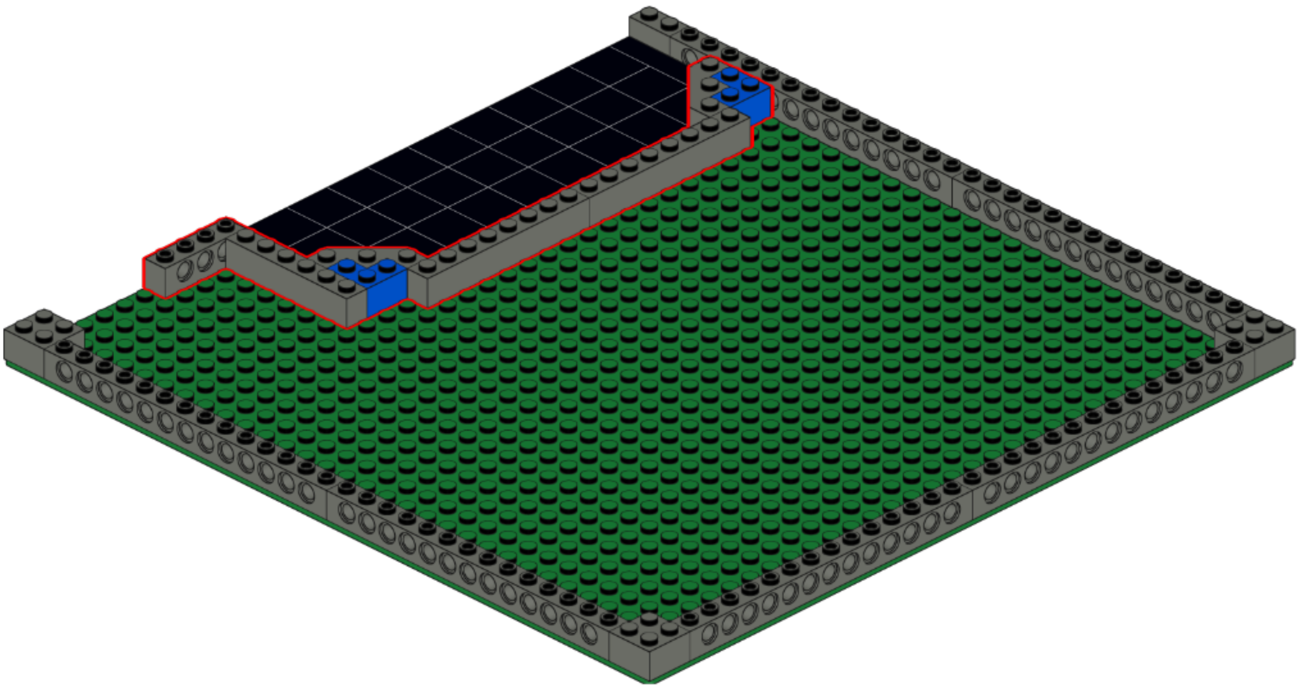

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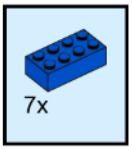

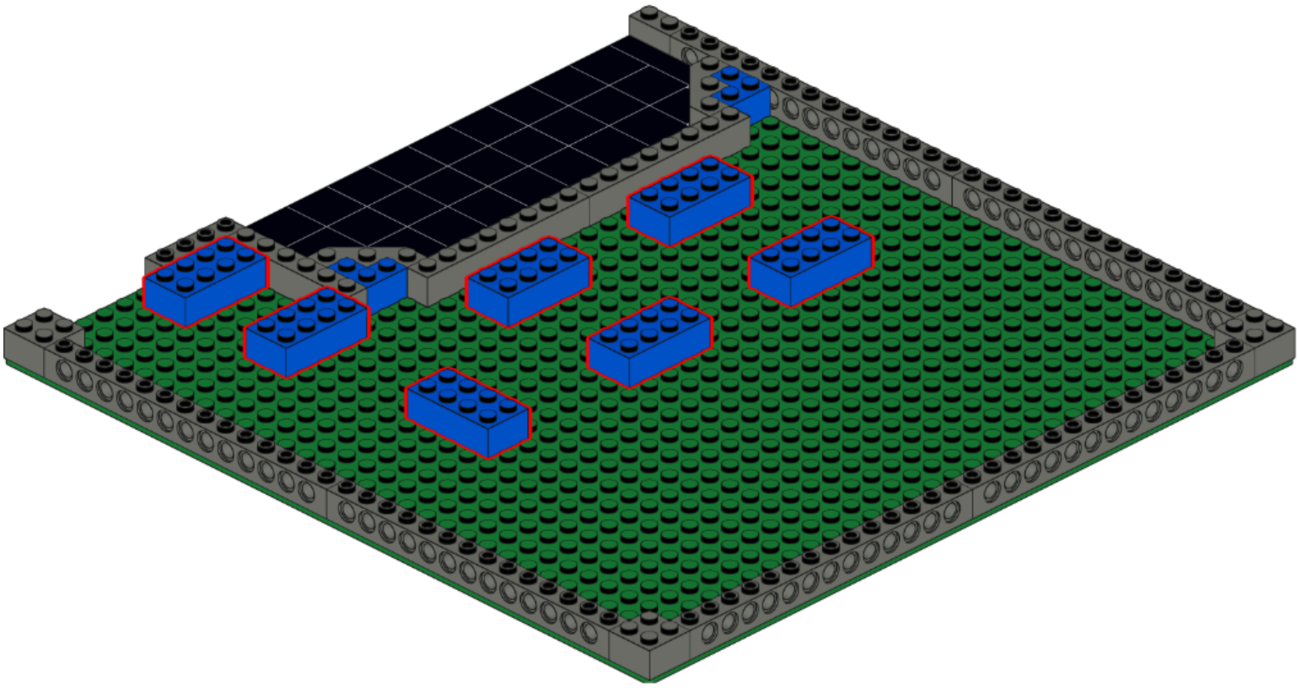

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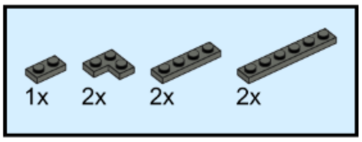

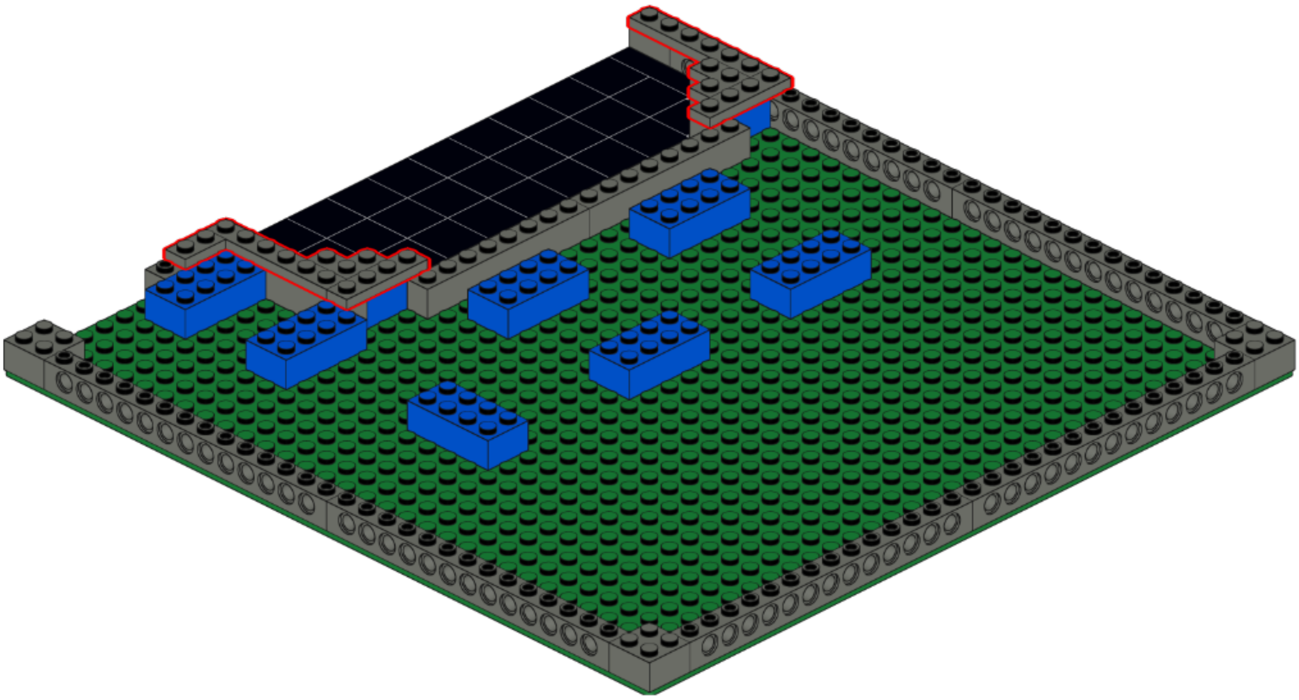

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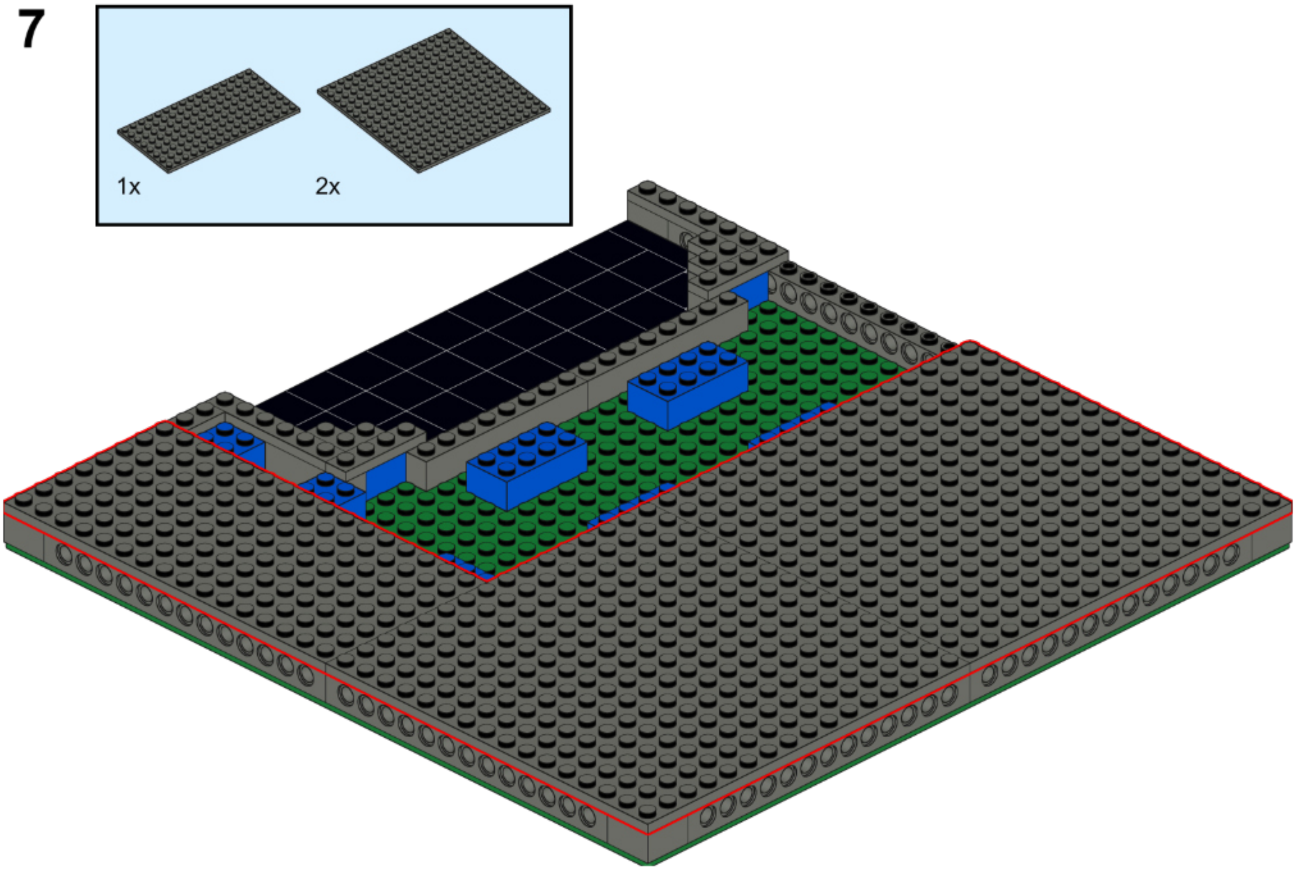

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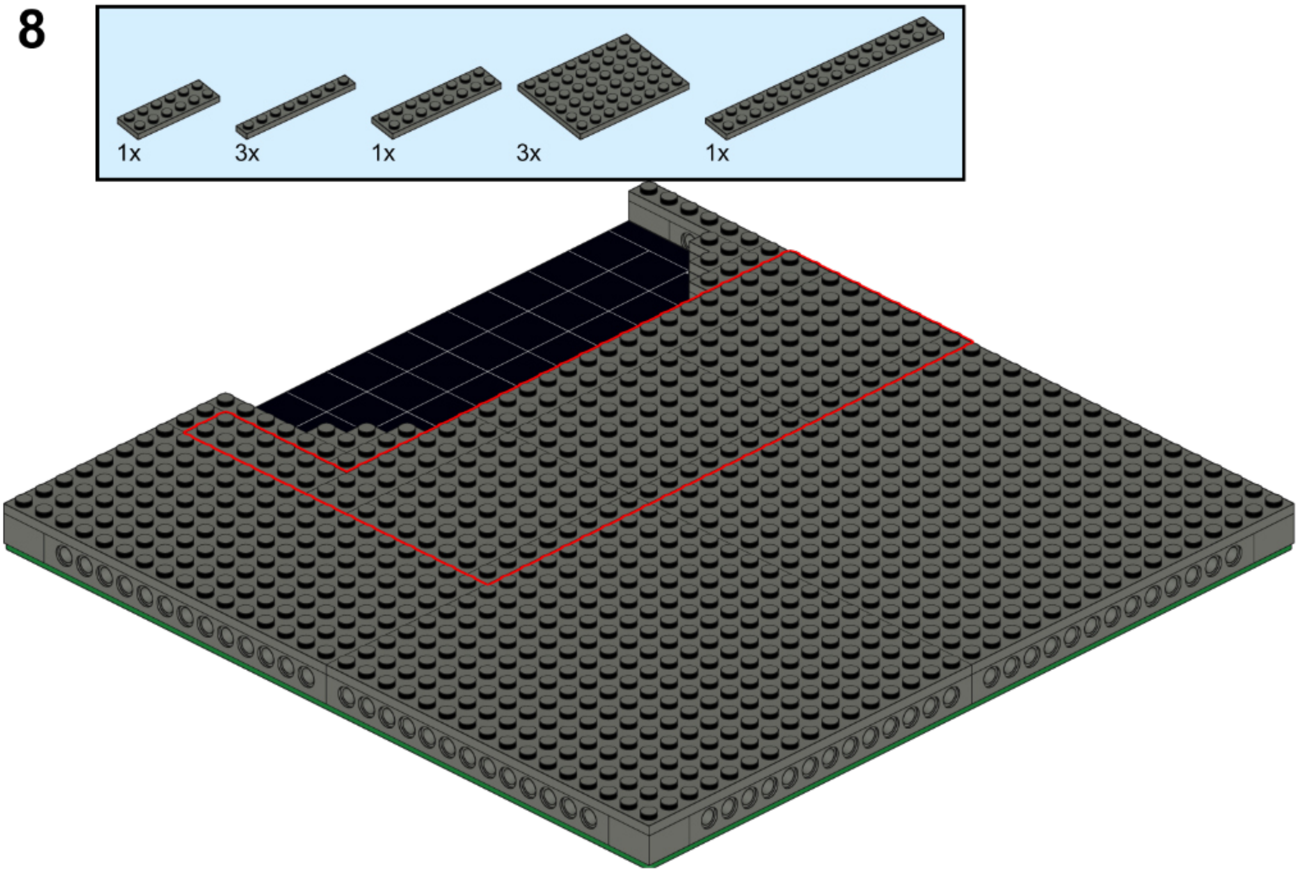

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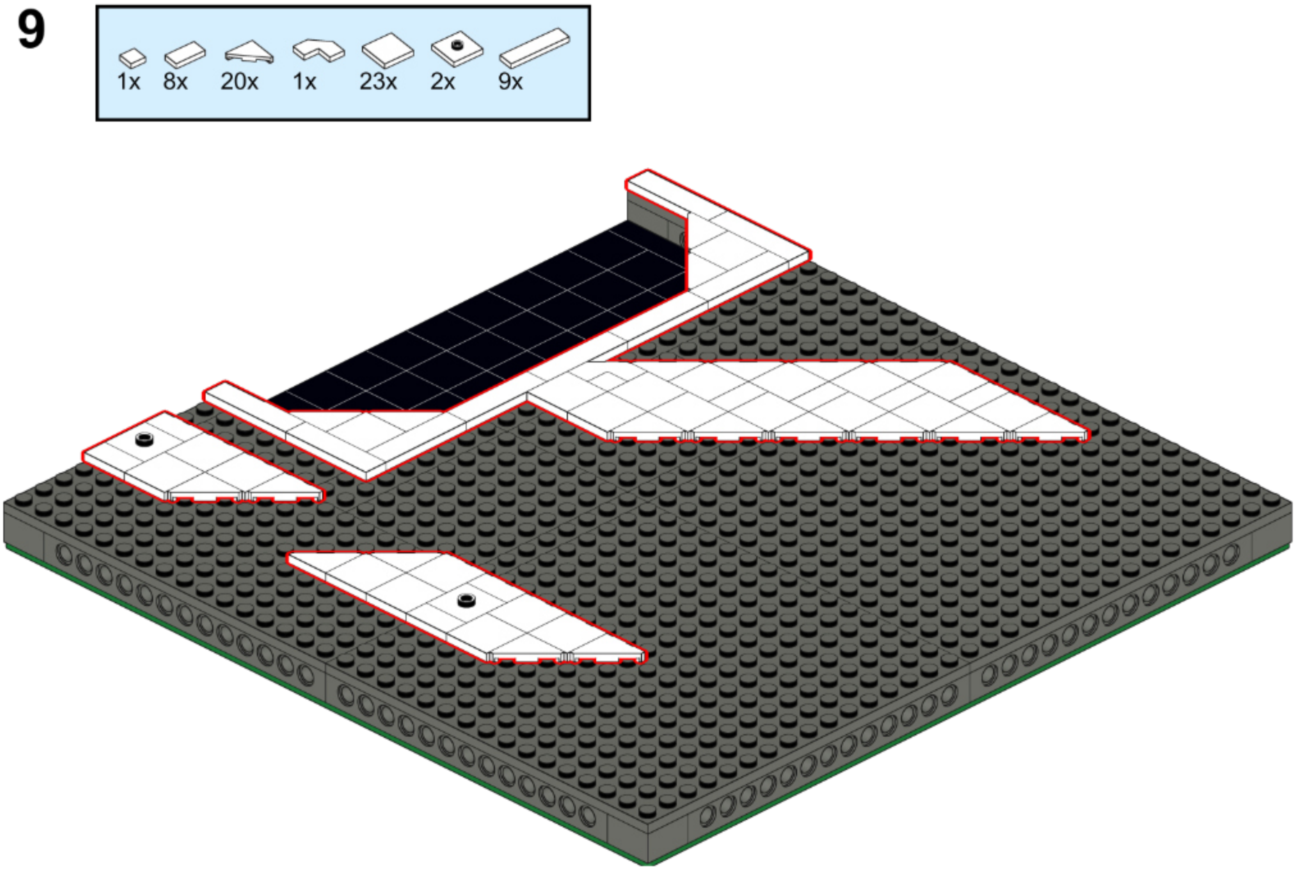

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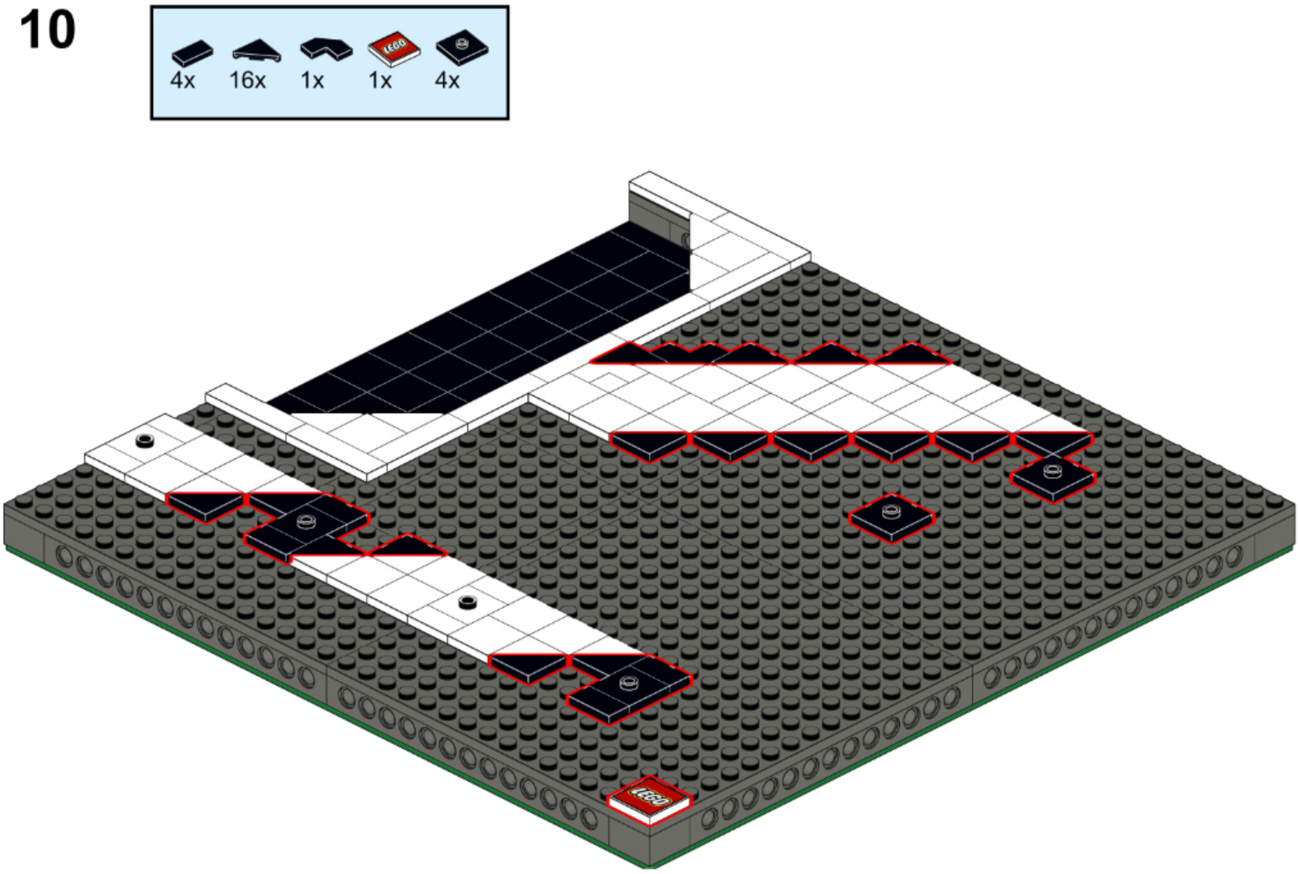

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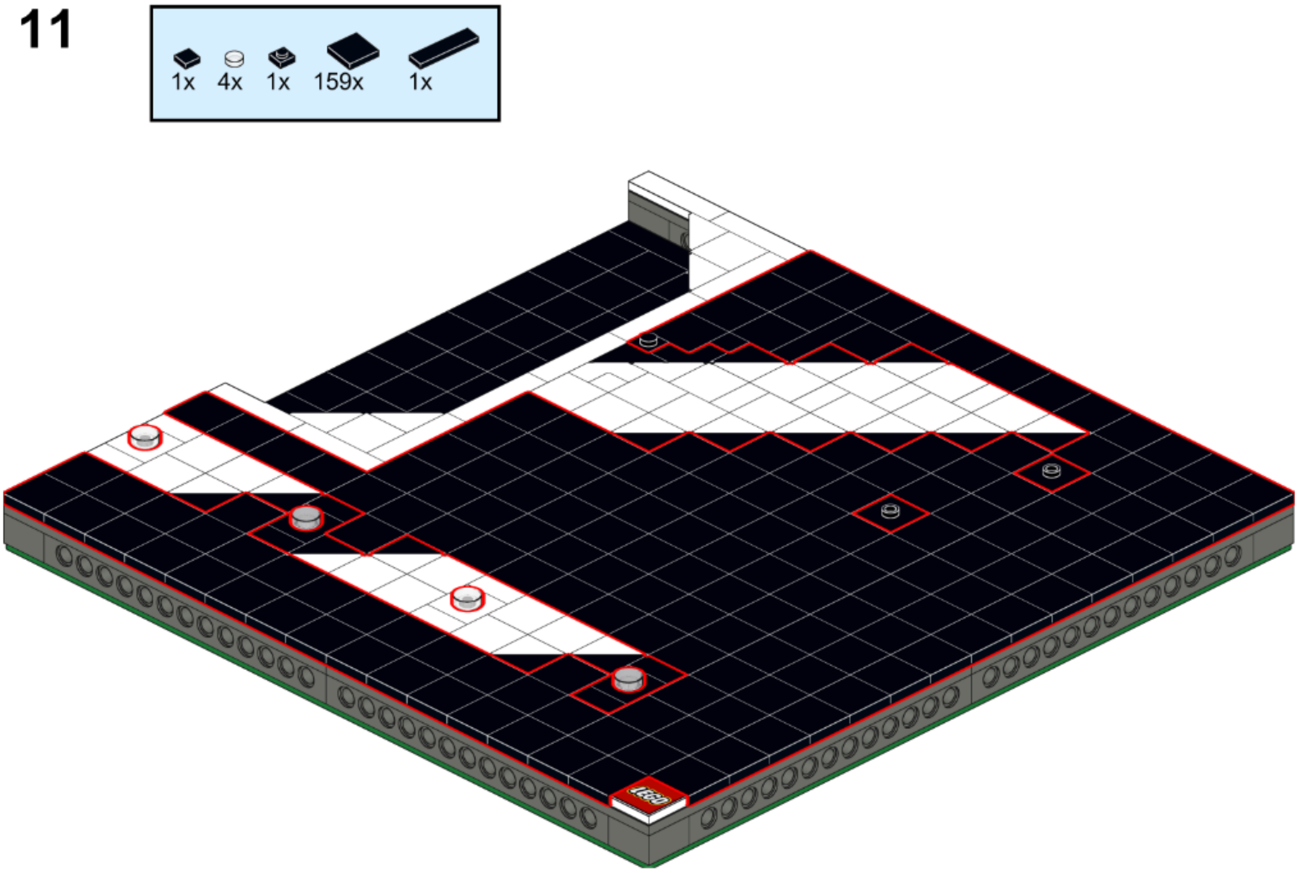
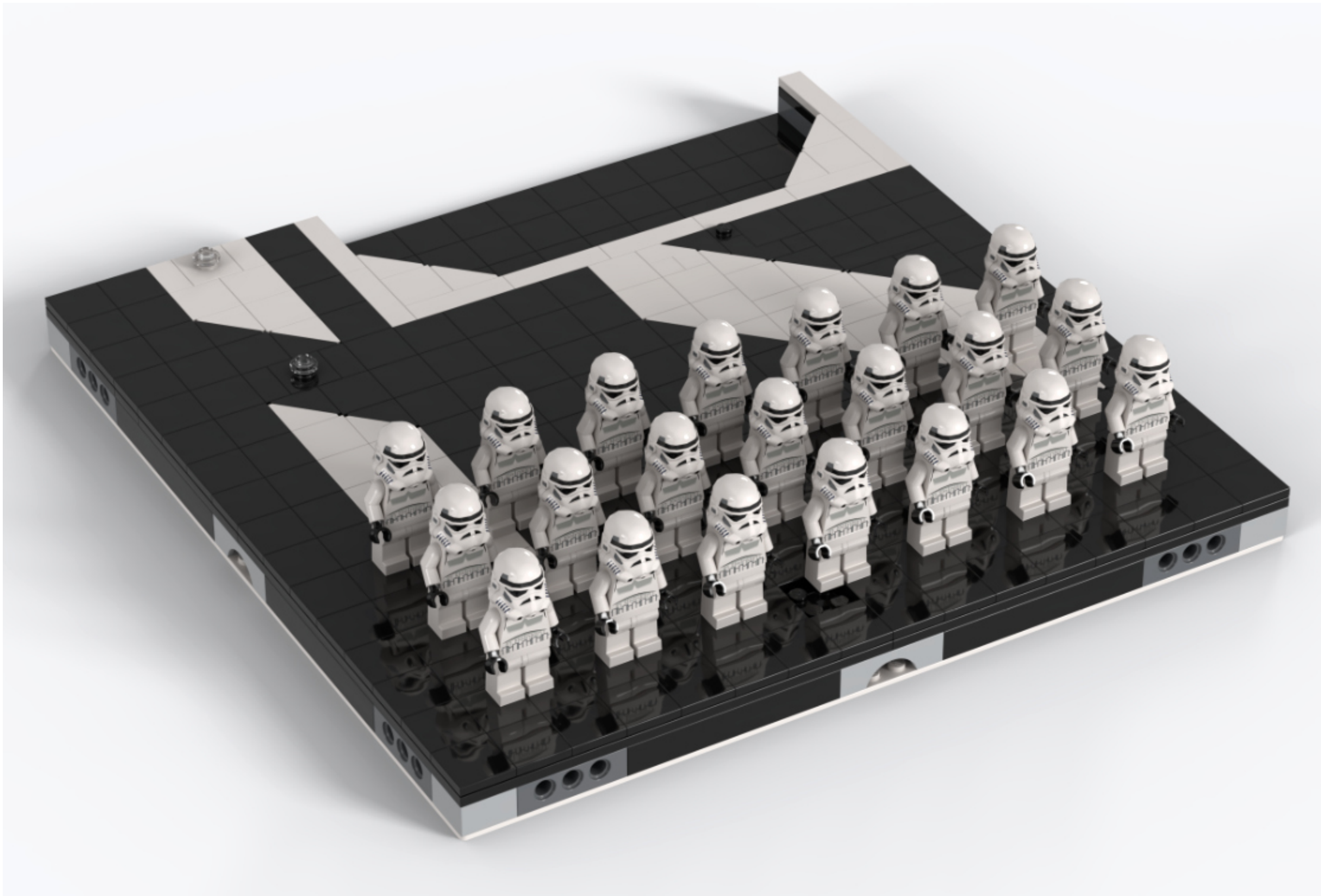


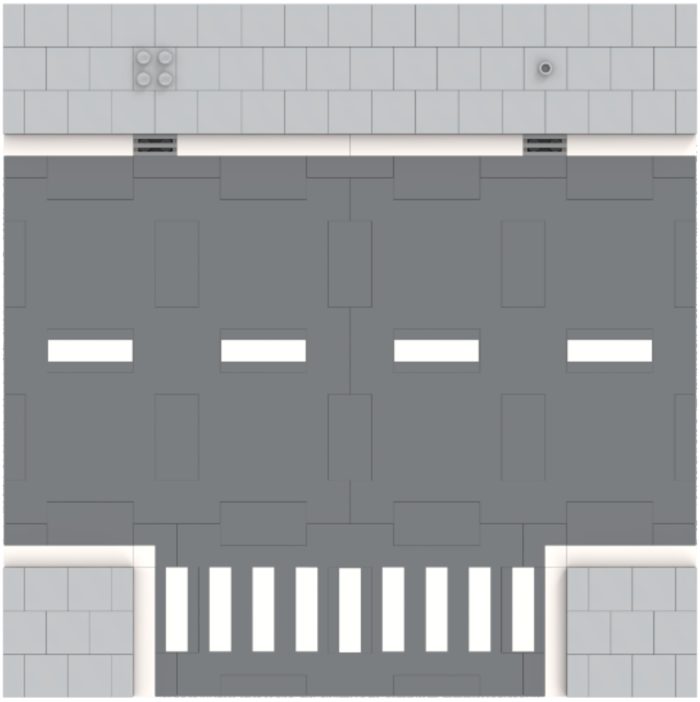


T-Junction (Road Plates)

The original LEGO road plates used to come in three models: a straight street, a 90 degree bend and a T-junction. Building a 90 degree corner with square bricks is tricky business and I have yet to find a satisfactory solution for a MILS module. Making a T-junction is an easier way to change the direction of a street. This T-junction is built with LEGO's new road plates.

Parts List

1 32x32 baseplate
4 1x4 arch brick
8 1x8 brick
19 2x2 brick
8 1x4 technic brick
3 1x8 plate
1 2x2 plate, lbg
2 4x4 plate 45˚ wedge
4 4x8 plate
2 6x6 plate
4 6x8 plate
2 8x8 plate
2 1x1 tile, white
6 1x2 tile, dbg
12 1x2 tile, lbg
9 1x4 tile, dbg
6 1x6 tile, white
2 1x8 tile, white
58 2x2 tile, lbg
14 2x4 tile, dbg
7 2x4 tile decorated, dbg
2 2x2 corner tile, dbg
2 1x2 grille tile, flat silver
1 2x2 jumper, lbg
1 8x16x2/3 road plate, decorated, dbg
2 16x16x2/3 road plate, dbg



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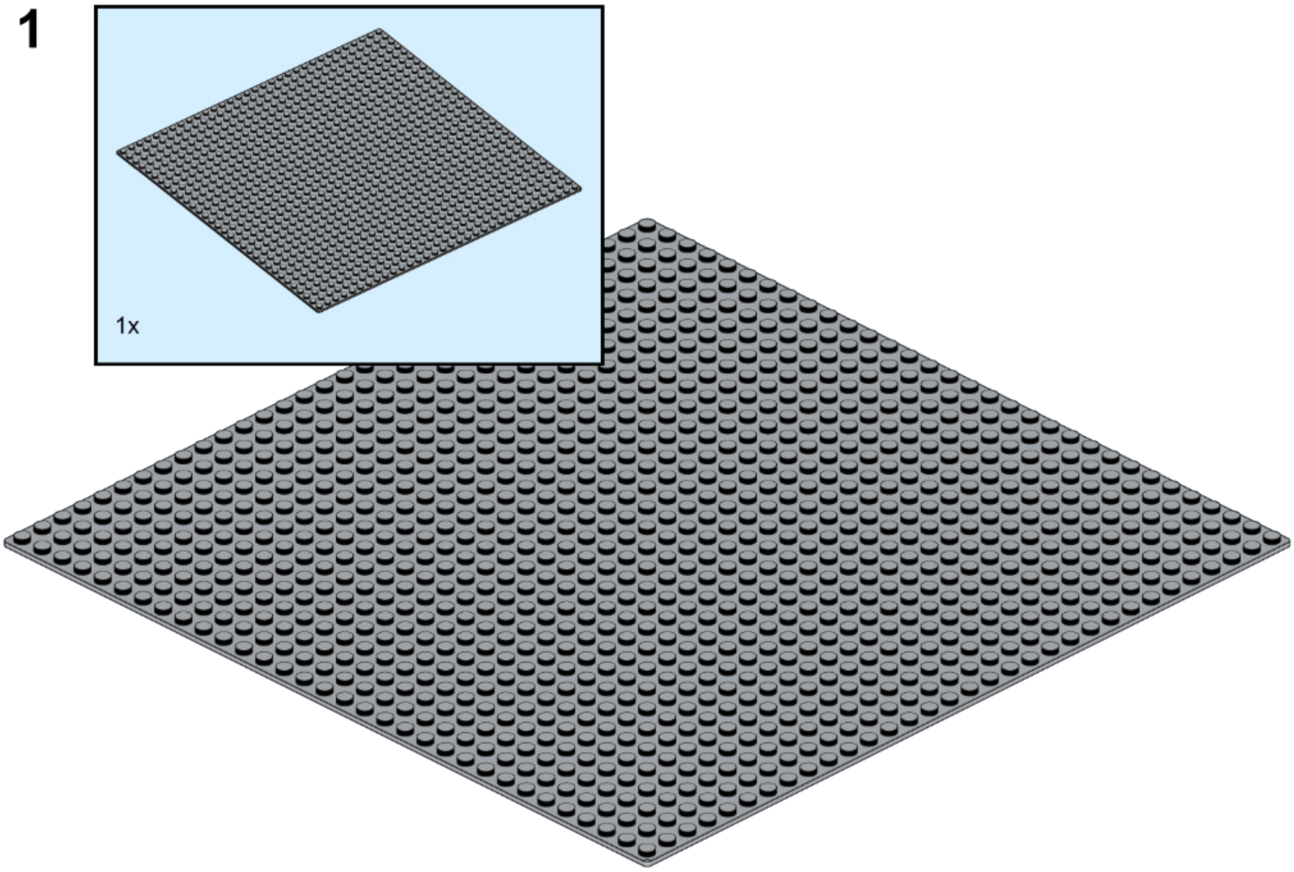

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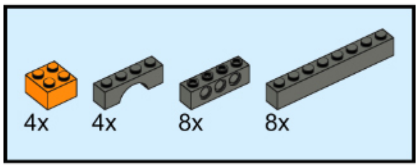

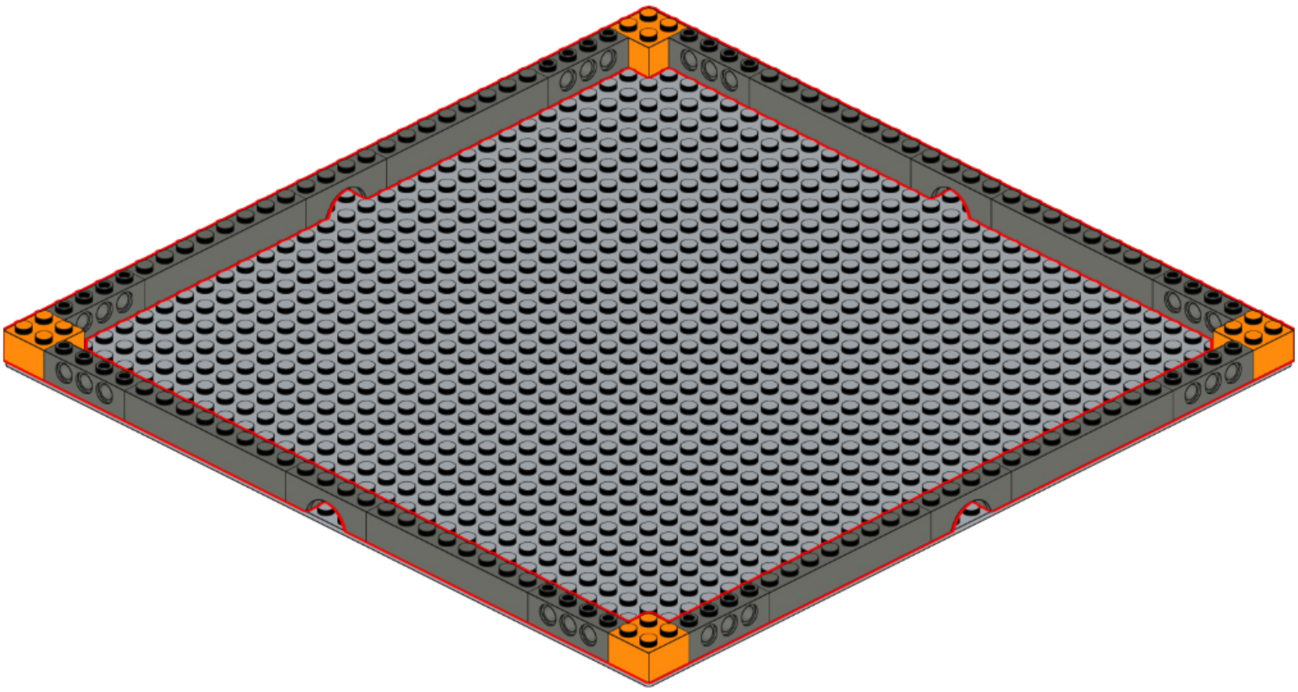

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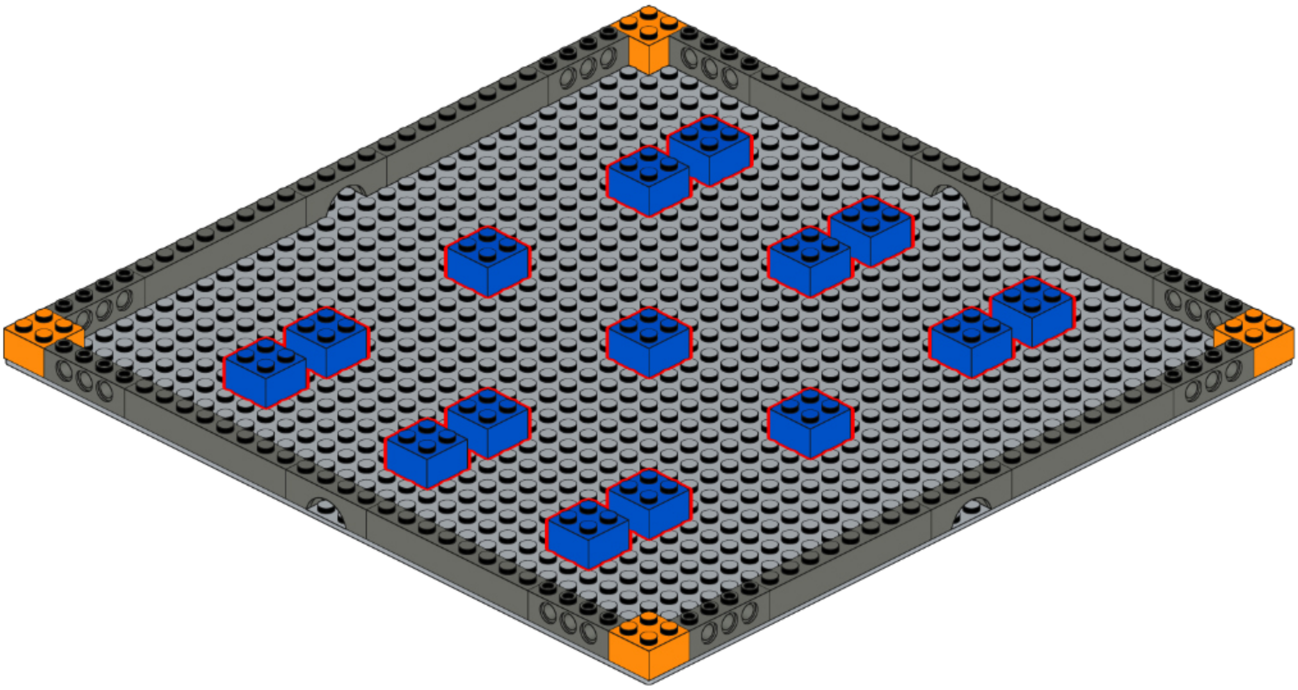

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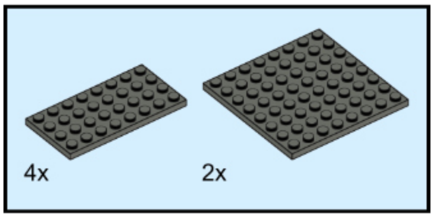

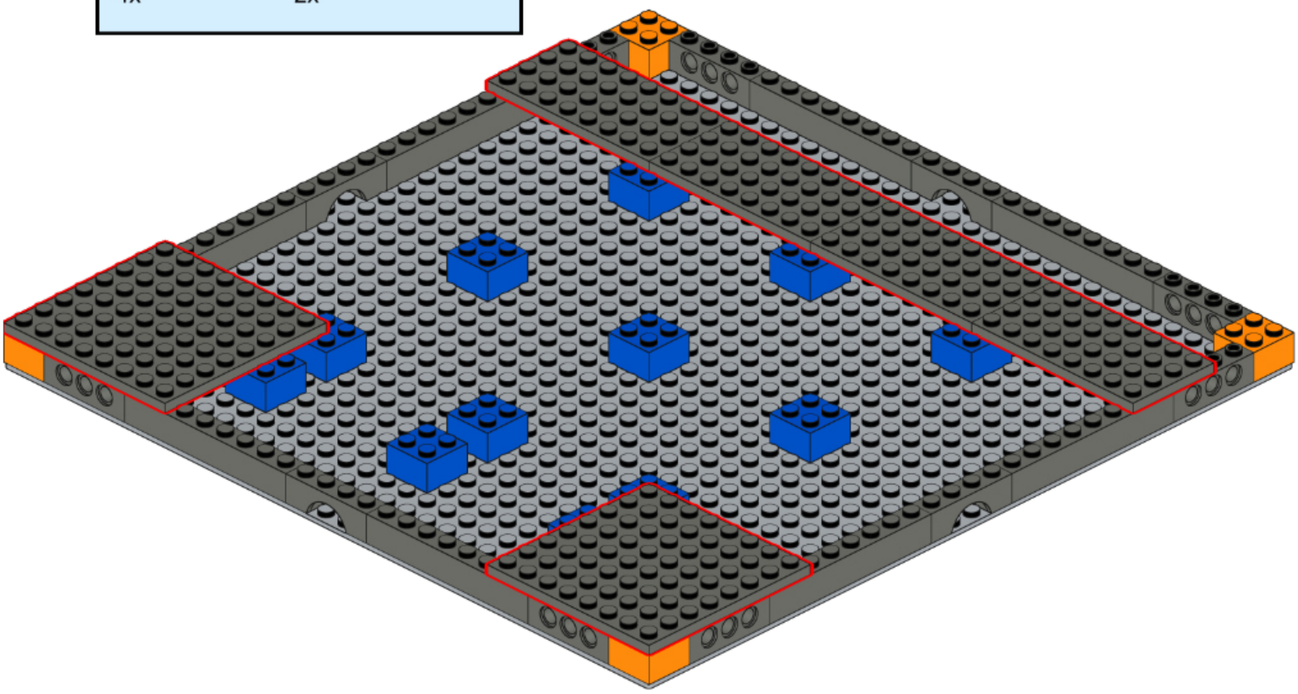

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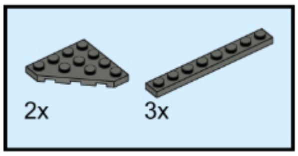

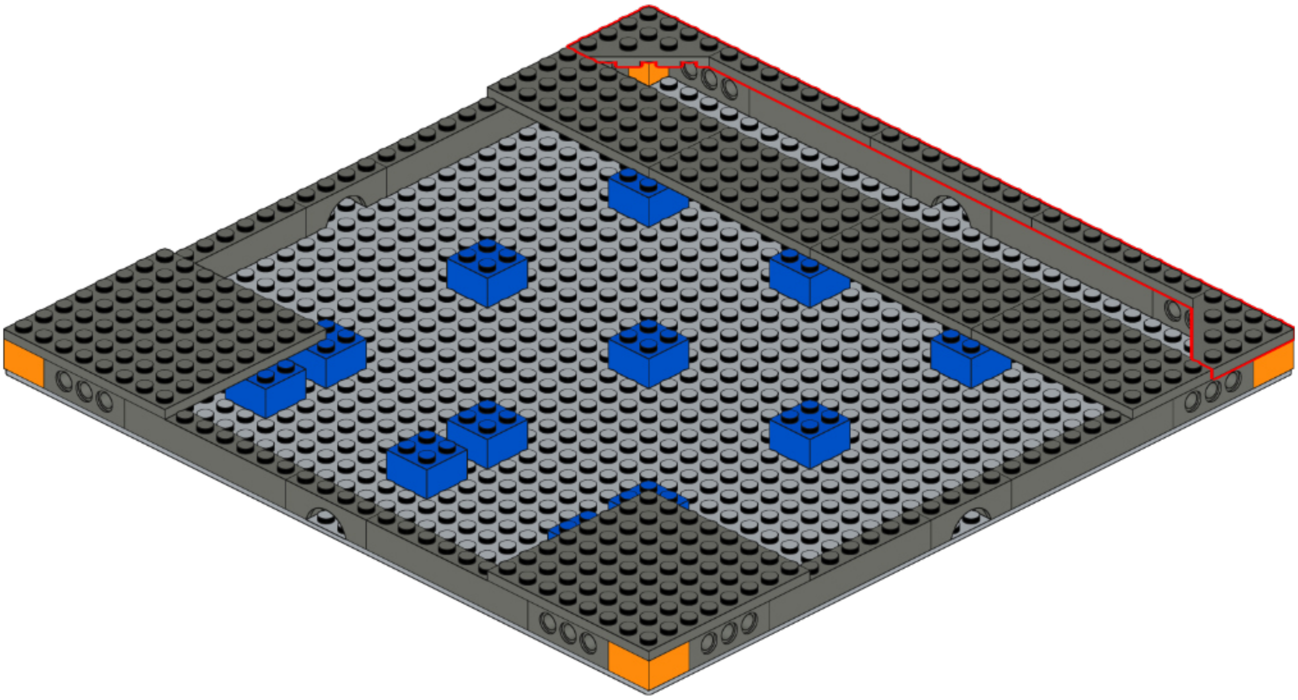

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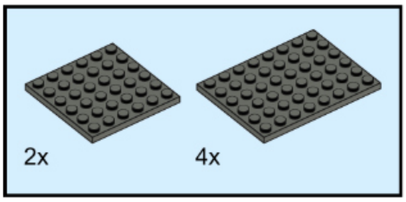

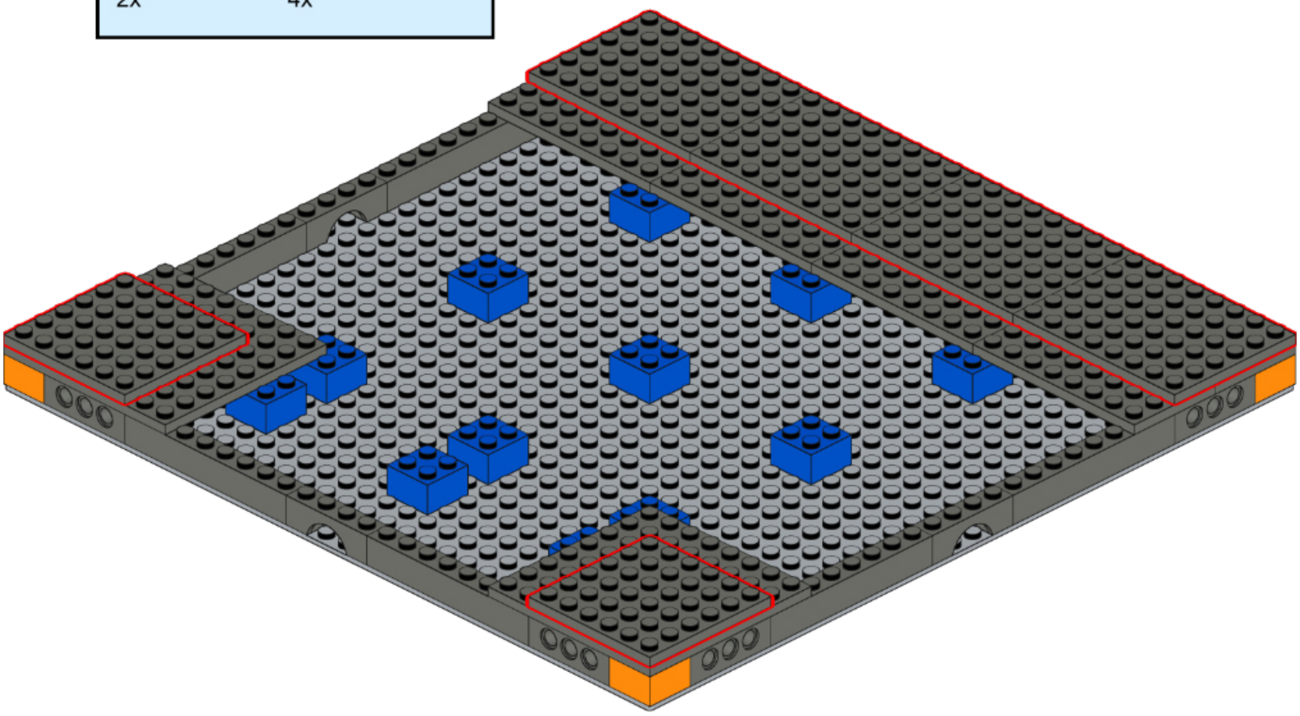

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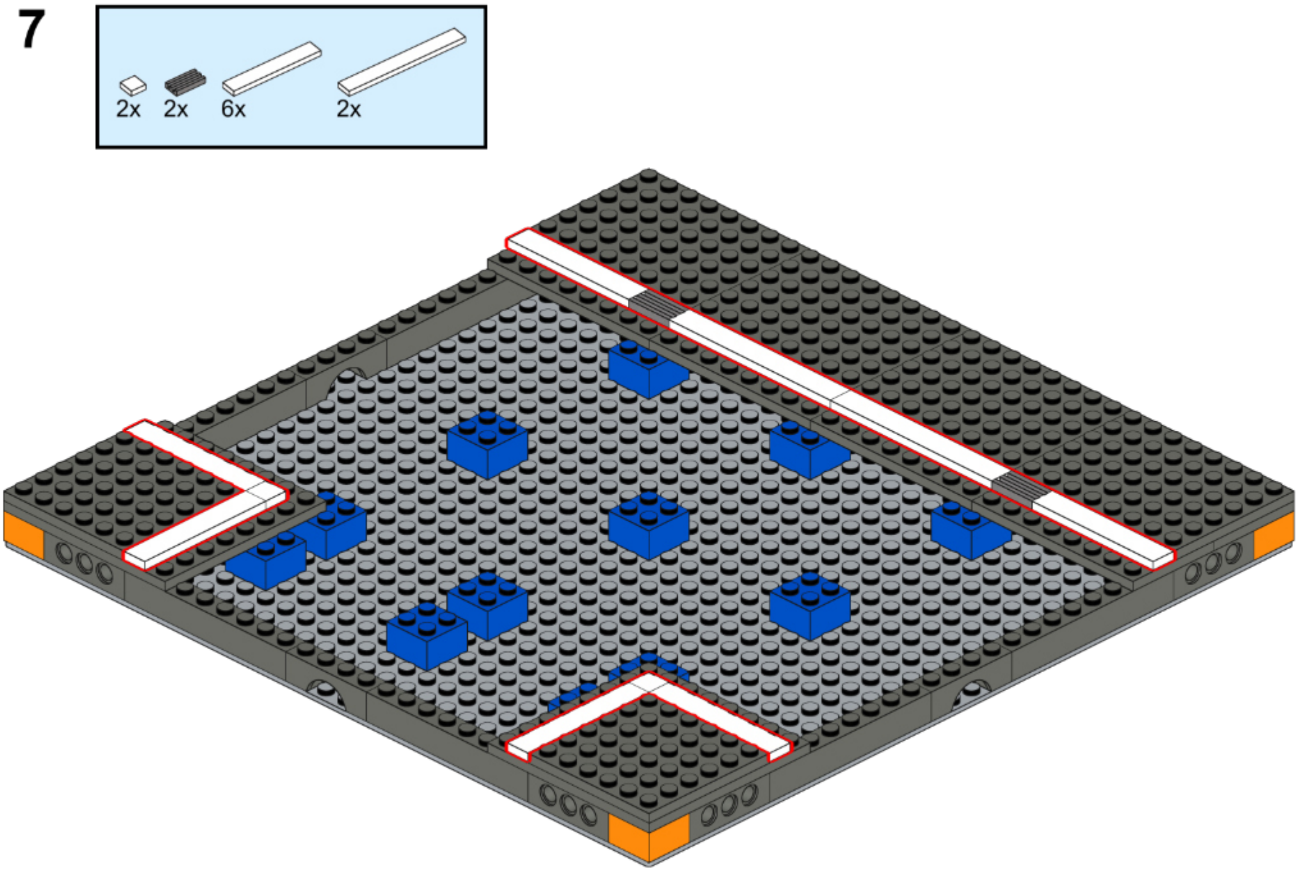

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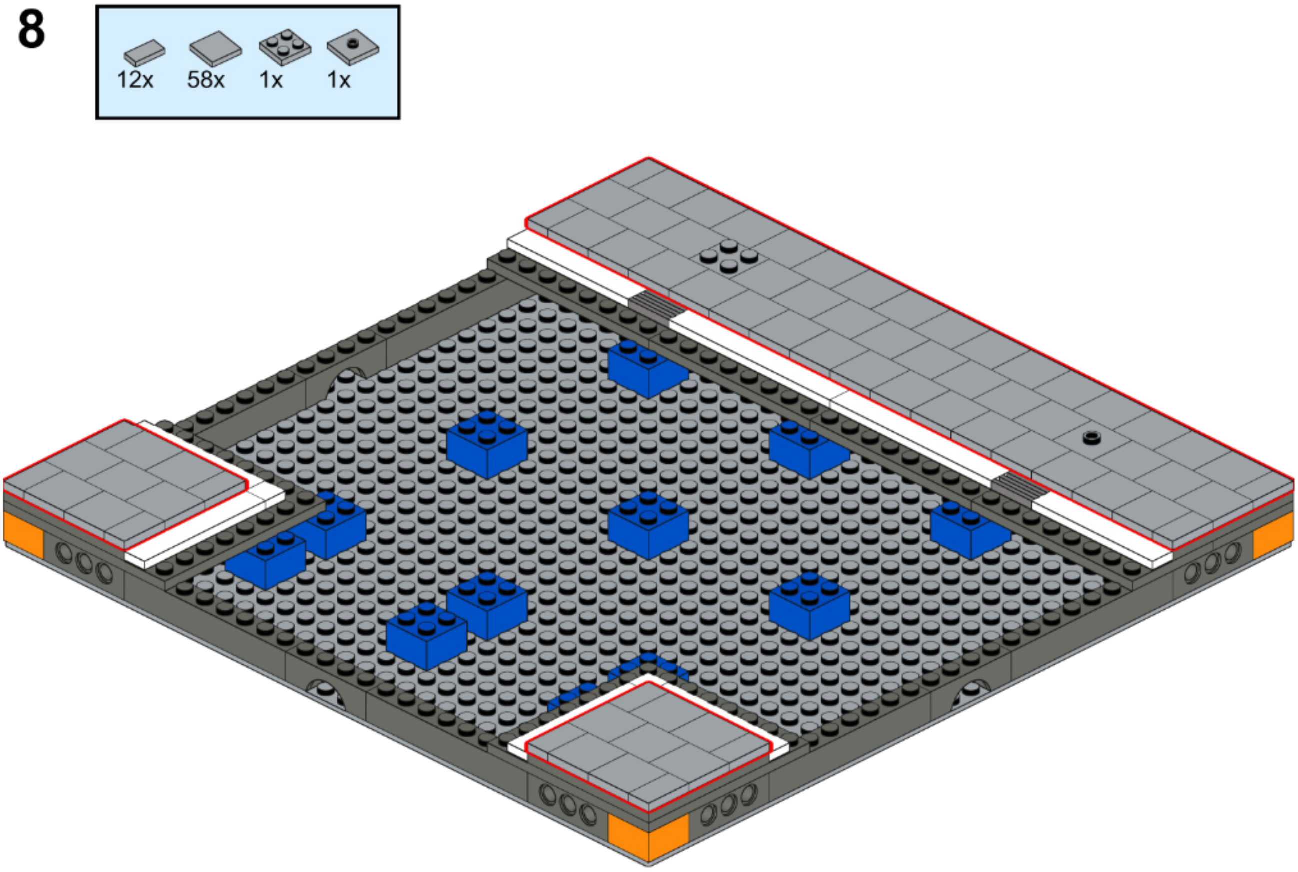

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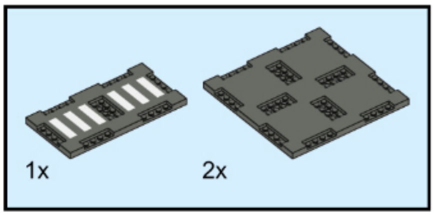

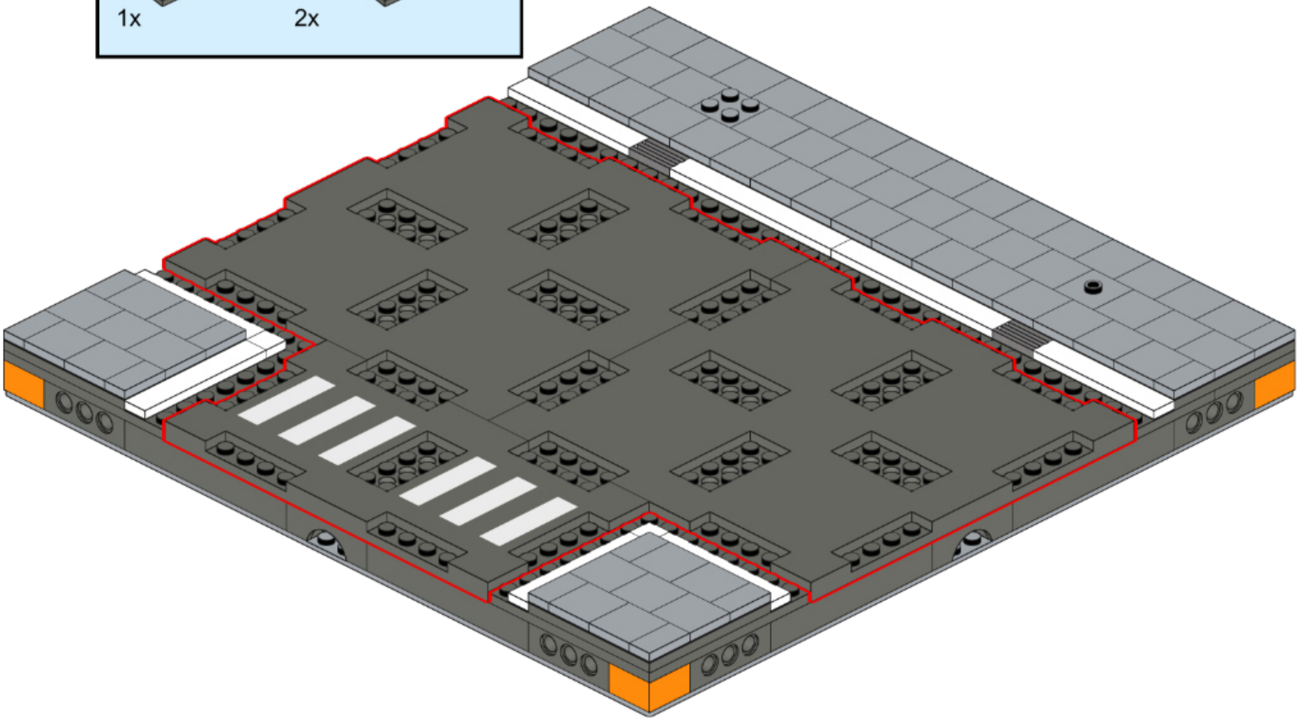

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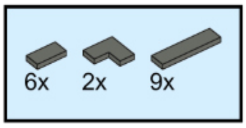

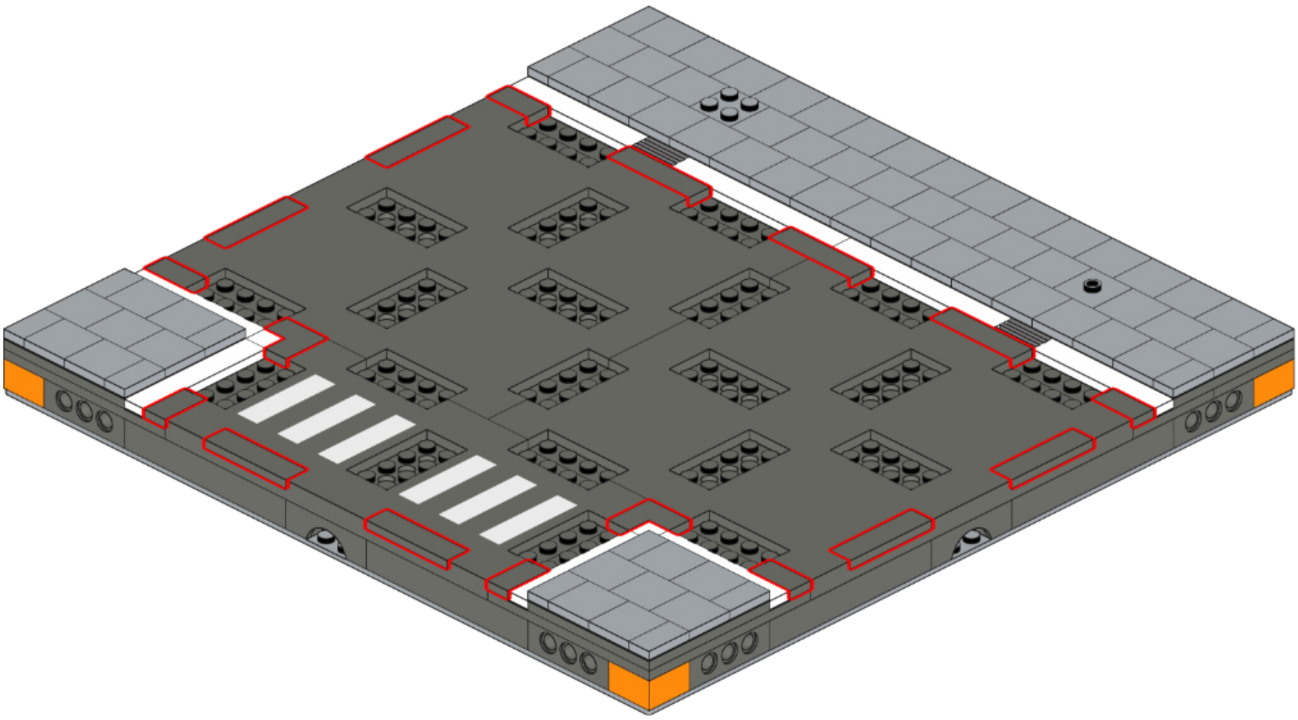

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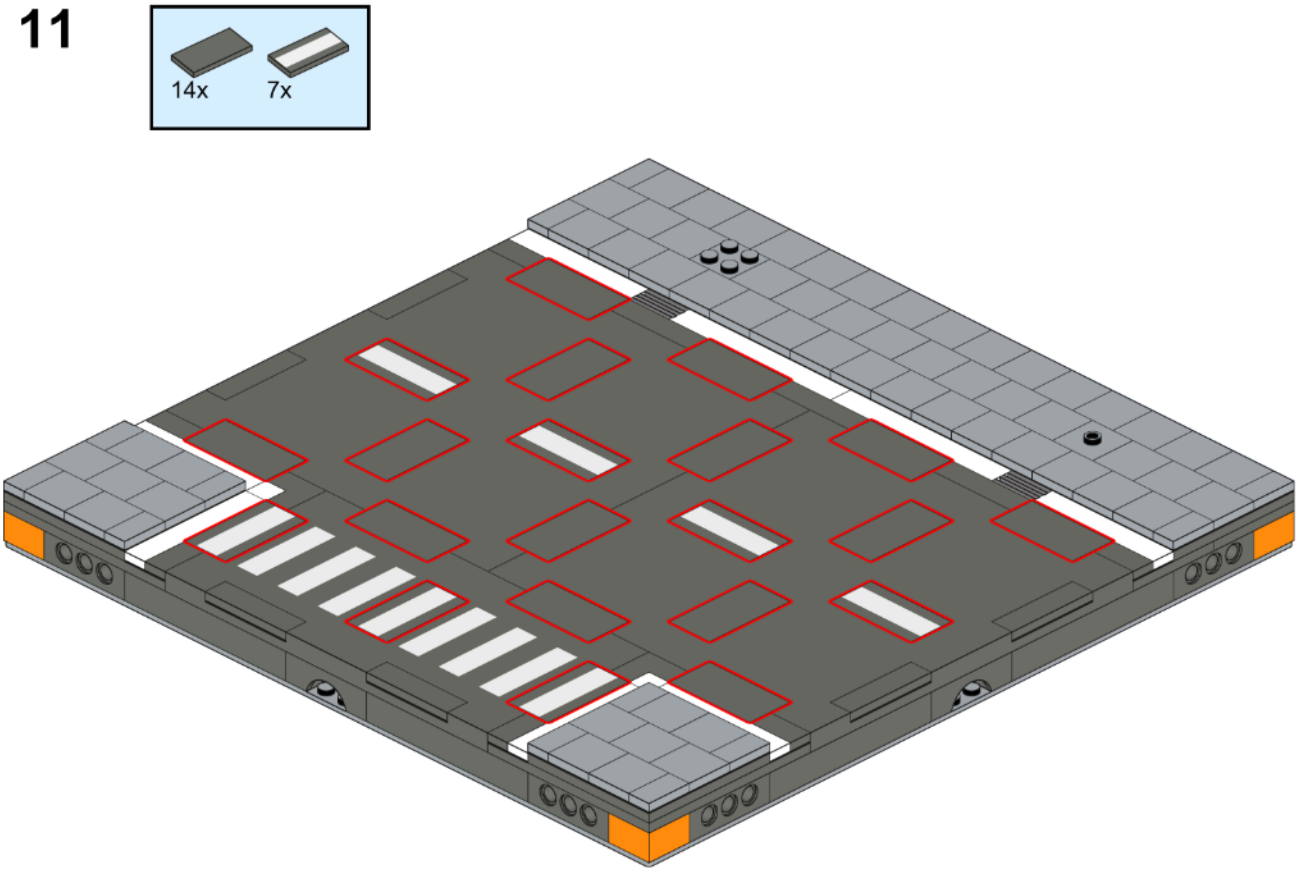
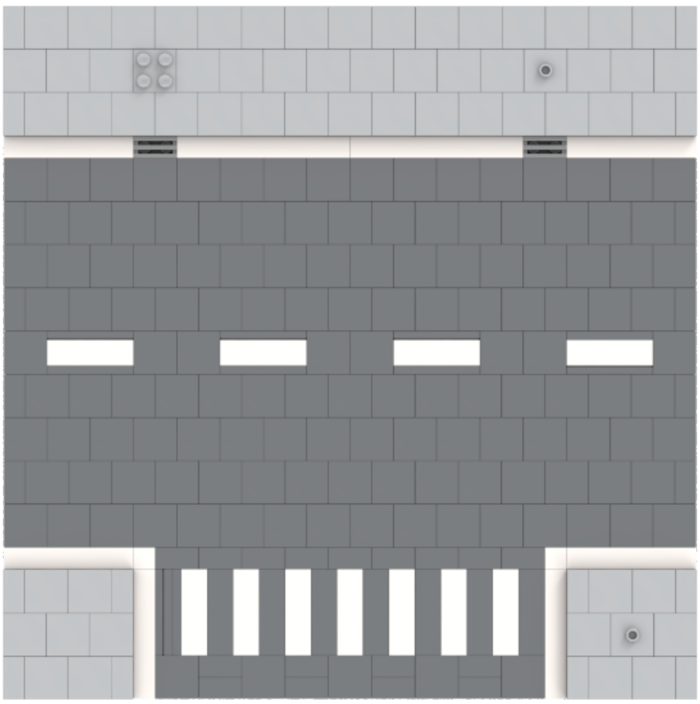


T-Junction (Standard Plates)

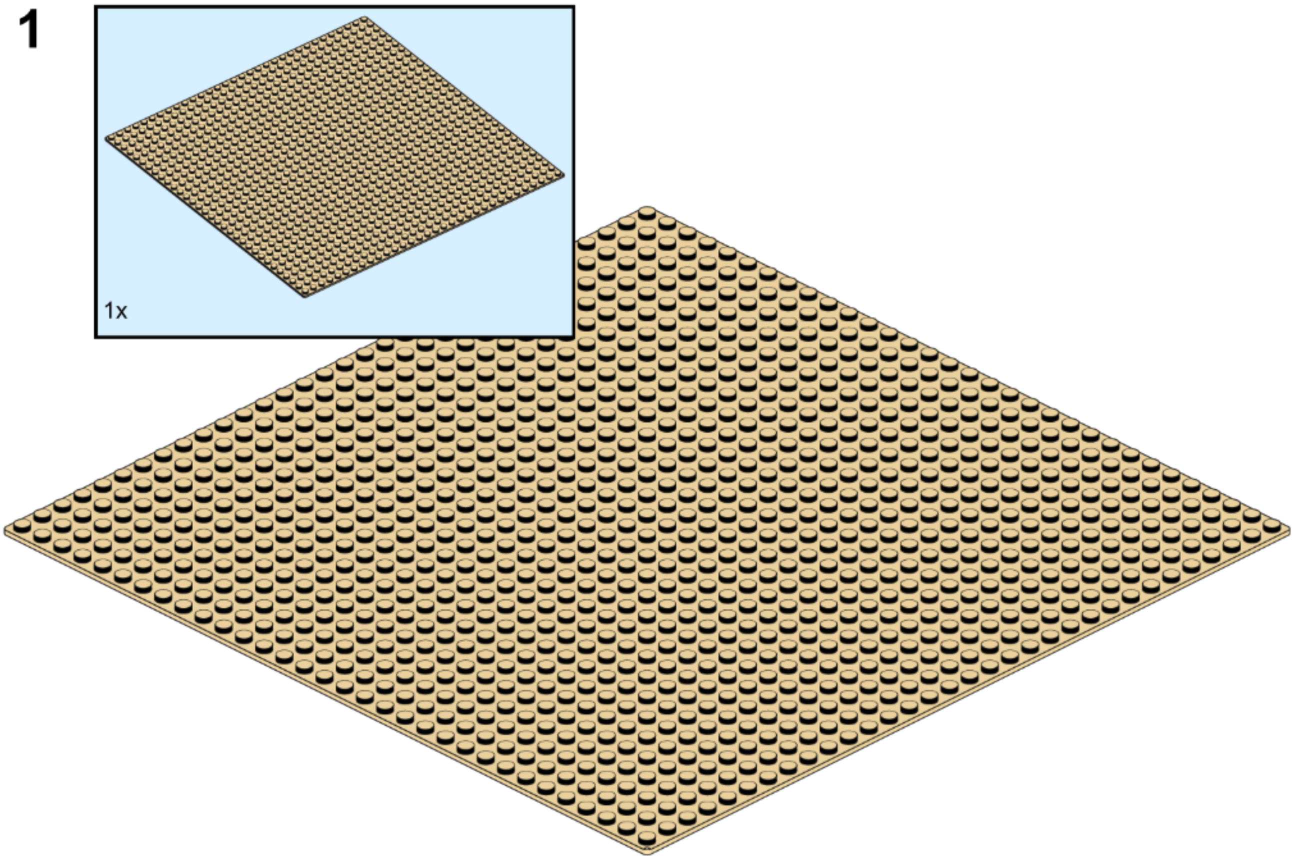
In an exercise of comparison and contrast, this T-Junction is built with standard plates and tiles. Here the zebra crossing is built using the same not-quite-snot technique used for the lane dividers by stacking bricks, plates, and tiles. These stacks are inserted sideways and unattached into appropriate voids in the base.



Parts List

1 32x32 baseplate
4 1x4 arch brick
7 1x4 brick, dbg
11 1x4 brick, white
8 1x8 brick
4 2x2 brick
16 2x4 brick
8 1x4 technic brick
1 1x2 plate
6 1x8 plate
6 1x4 plate, dbg
14 2x2 plate
1 2x2 plate, lbg
3 2x4 plate
4 2x6 plate
2 2x14 plate
2 2x16 plate
2 4x4 plate 45° wedge
2 6x6 plate
4 6x8 plate
4 8x16 plate
2 1x1 tile, white
25 1x2 tile, dbg
12 1x2 tile, lbg
5 1x4 tile, dbg
6 1x6 tile, white
2 1x8 tile, white
137 2x2 tile, dbg
57 2x2 tile, lbg
2 1x2 grille tile, flat silver
2 2x2 jumper, lbg

1



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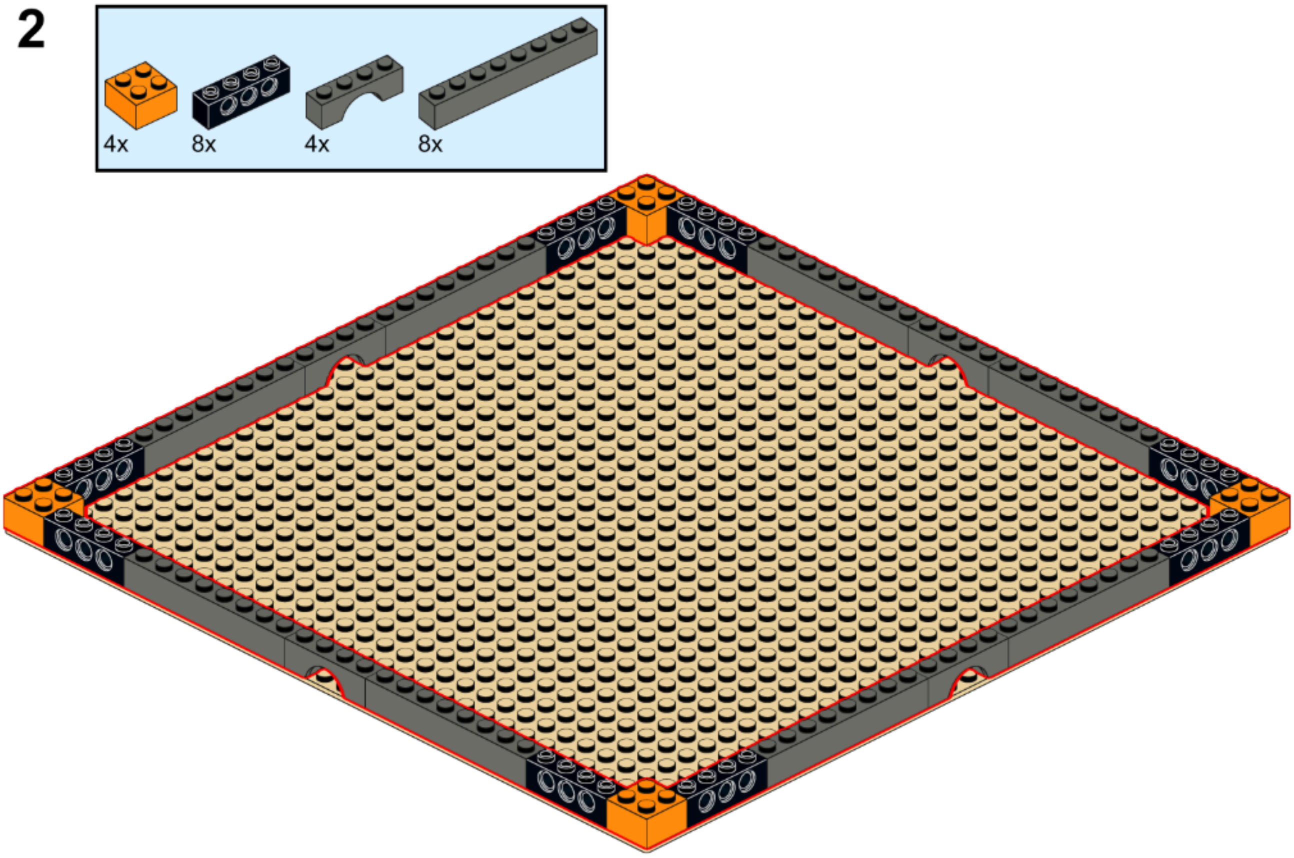

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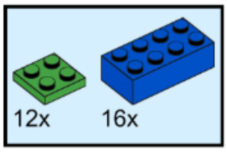

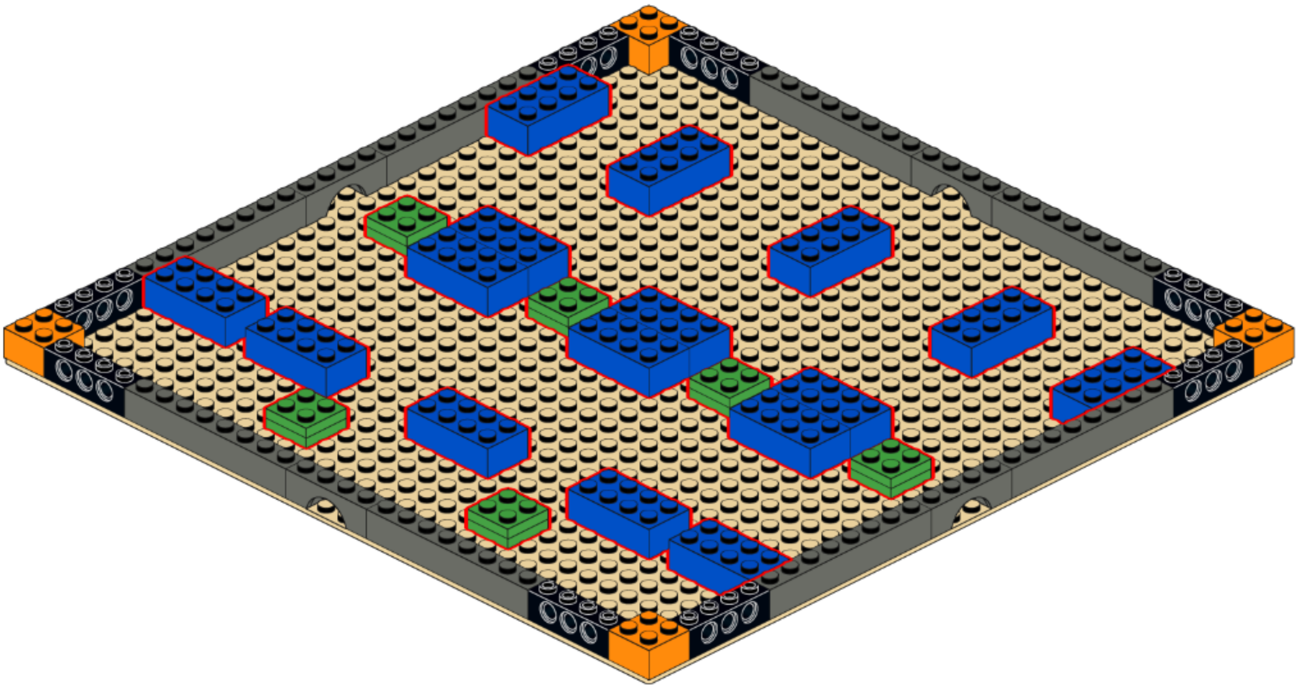

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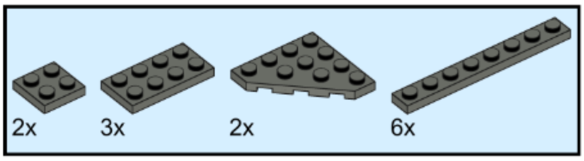

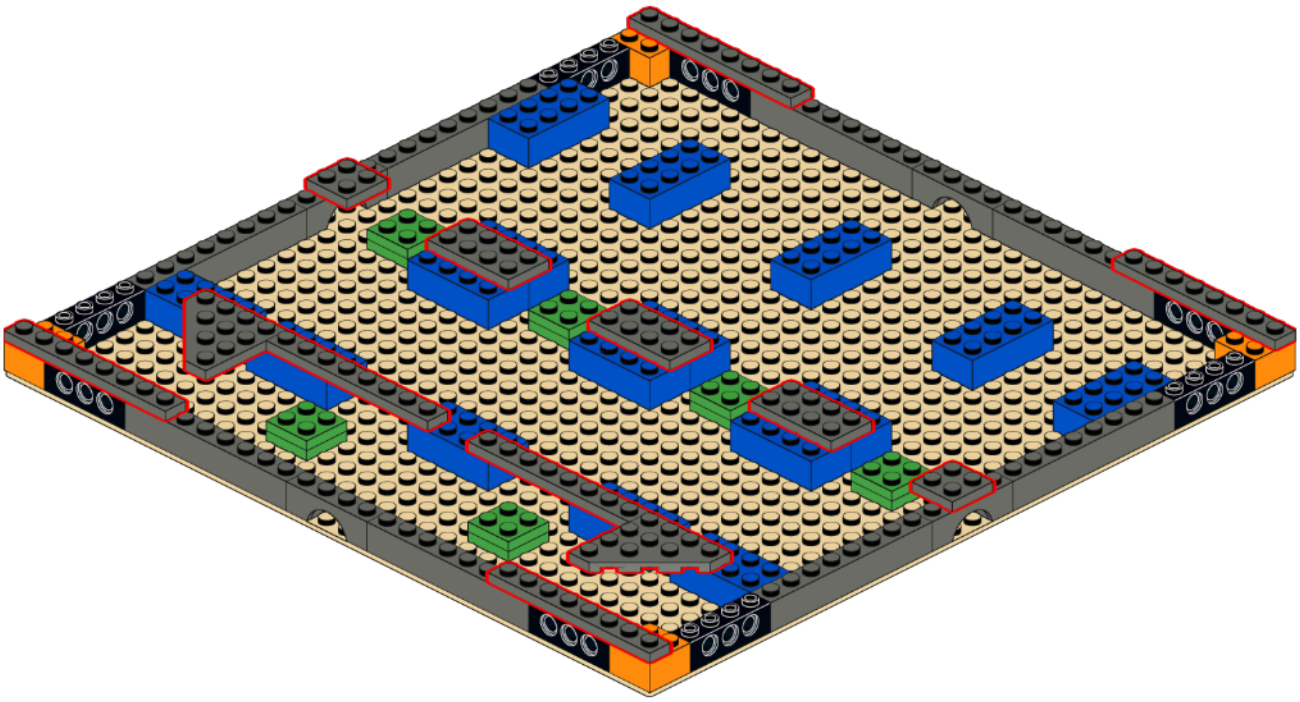

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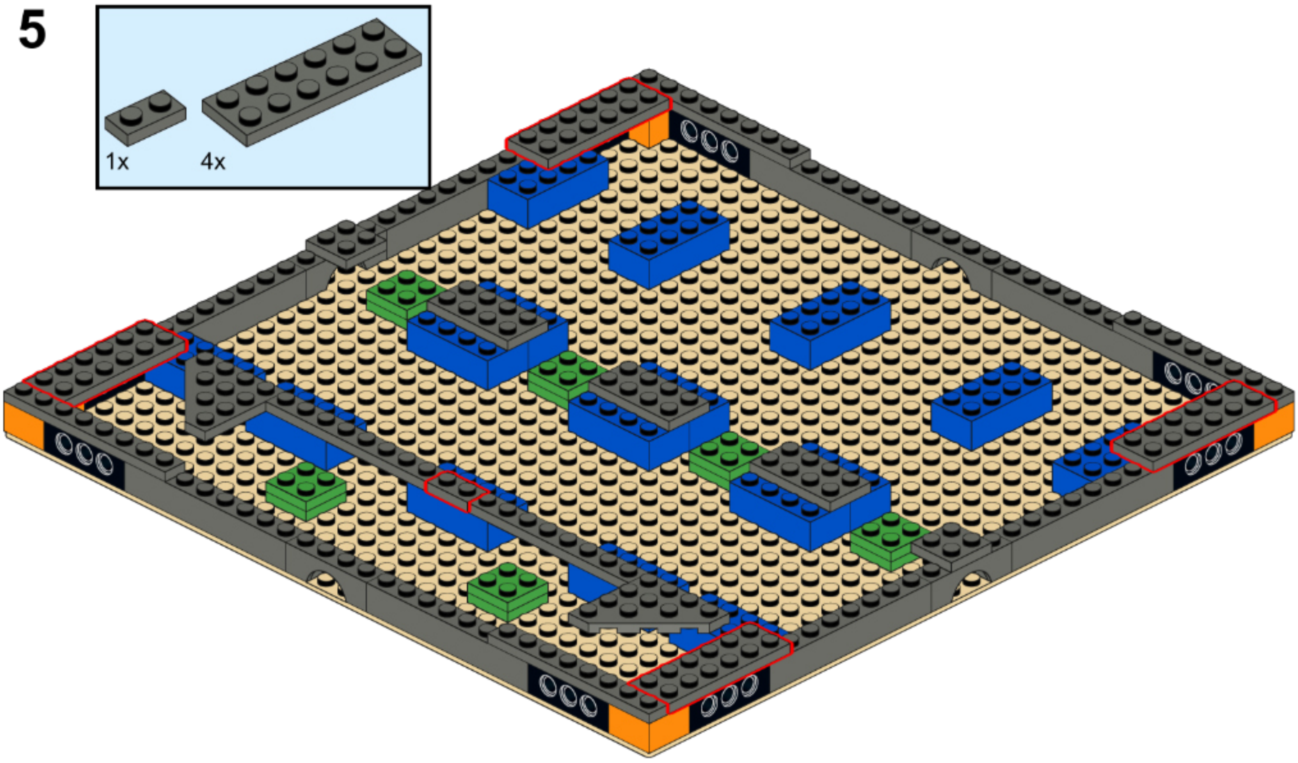

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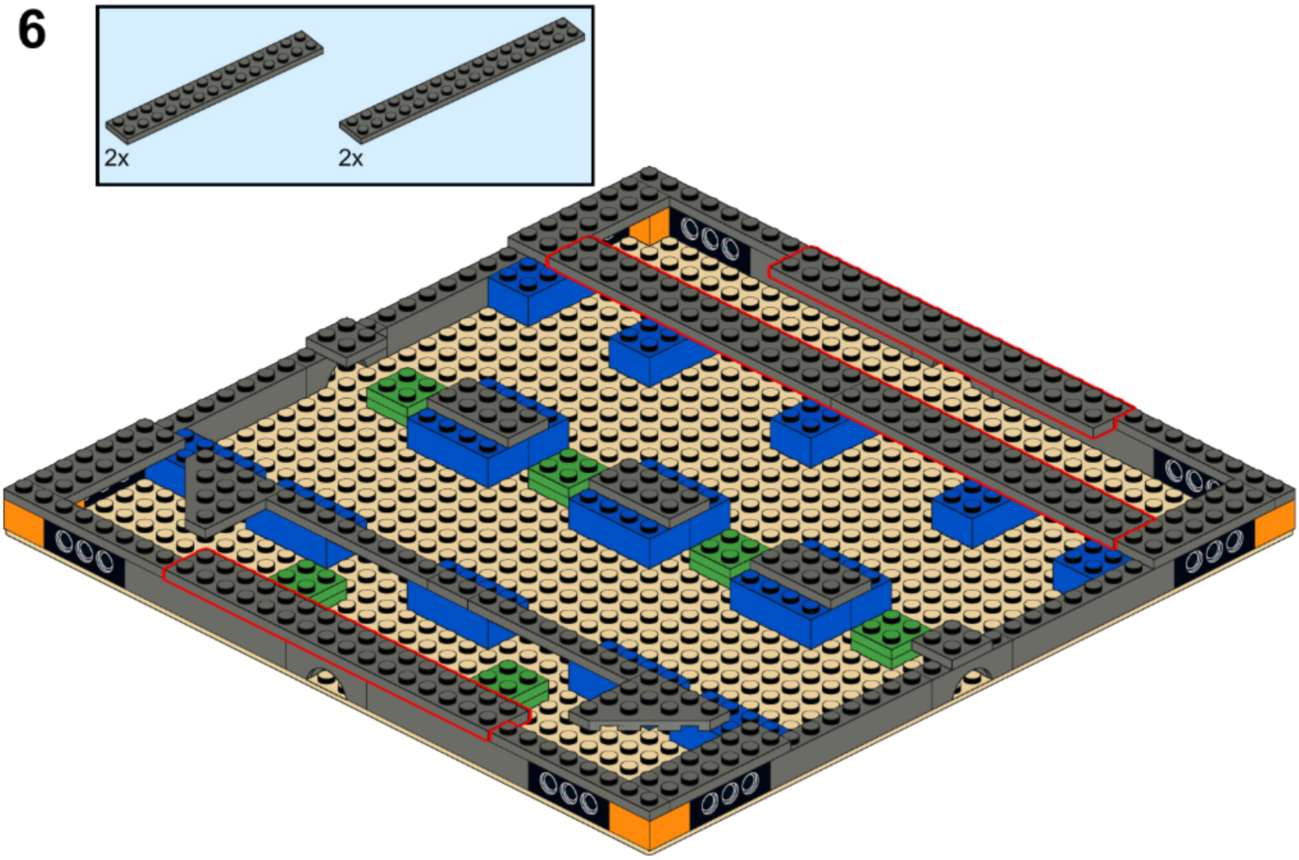

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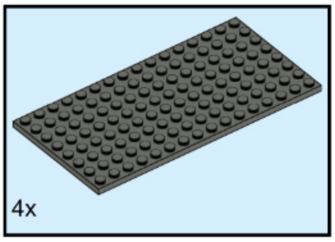

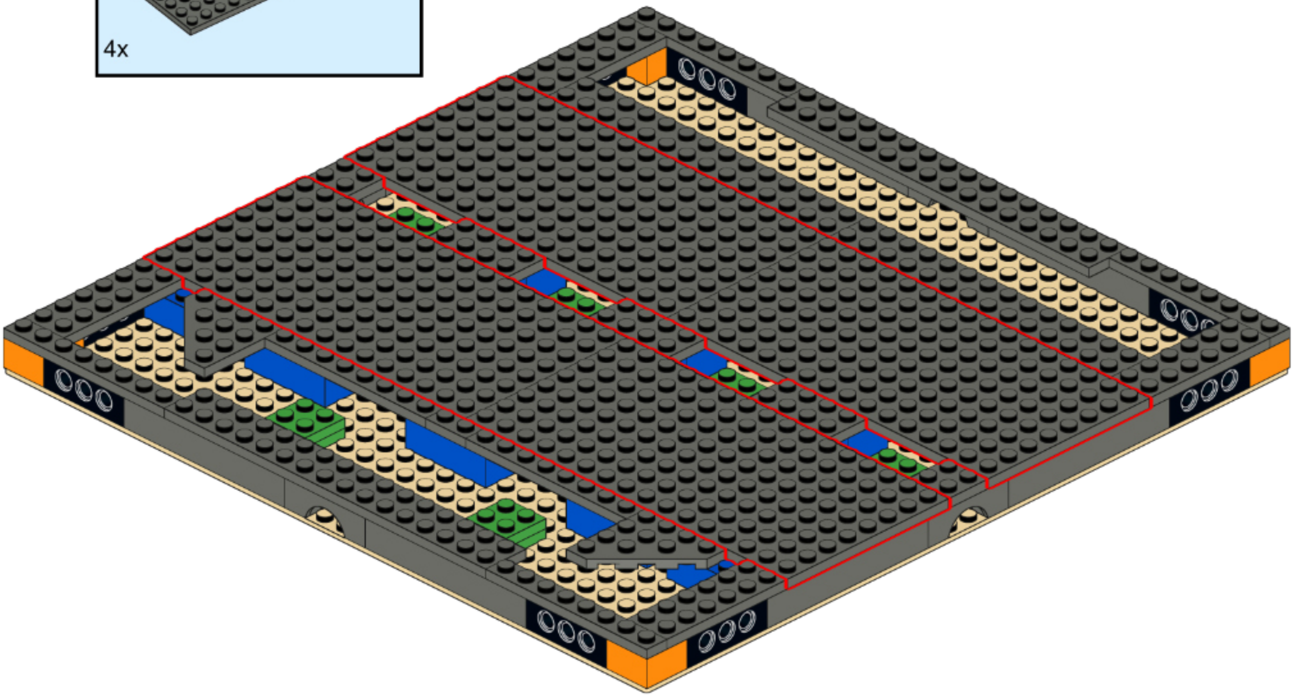

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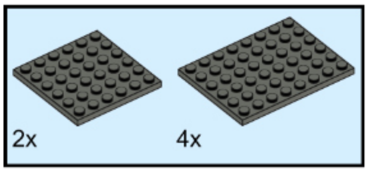

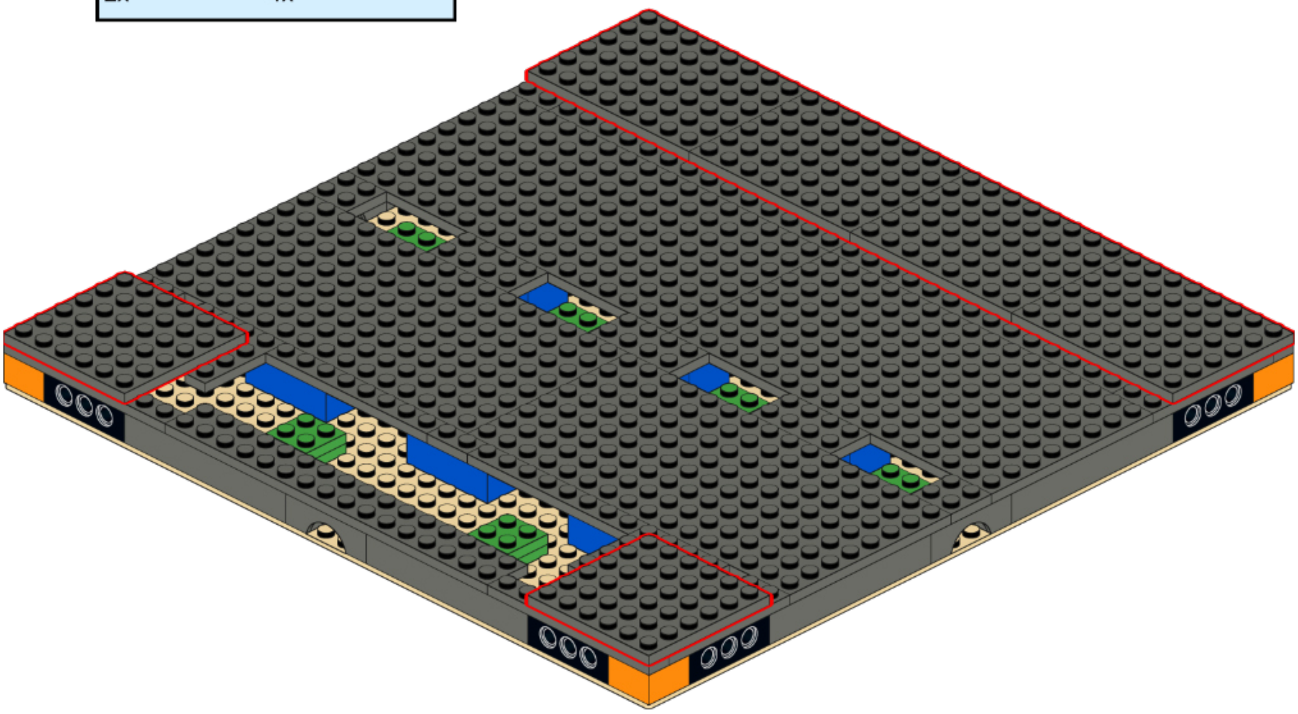

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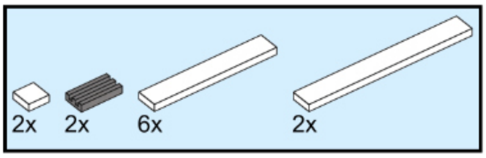

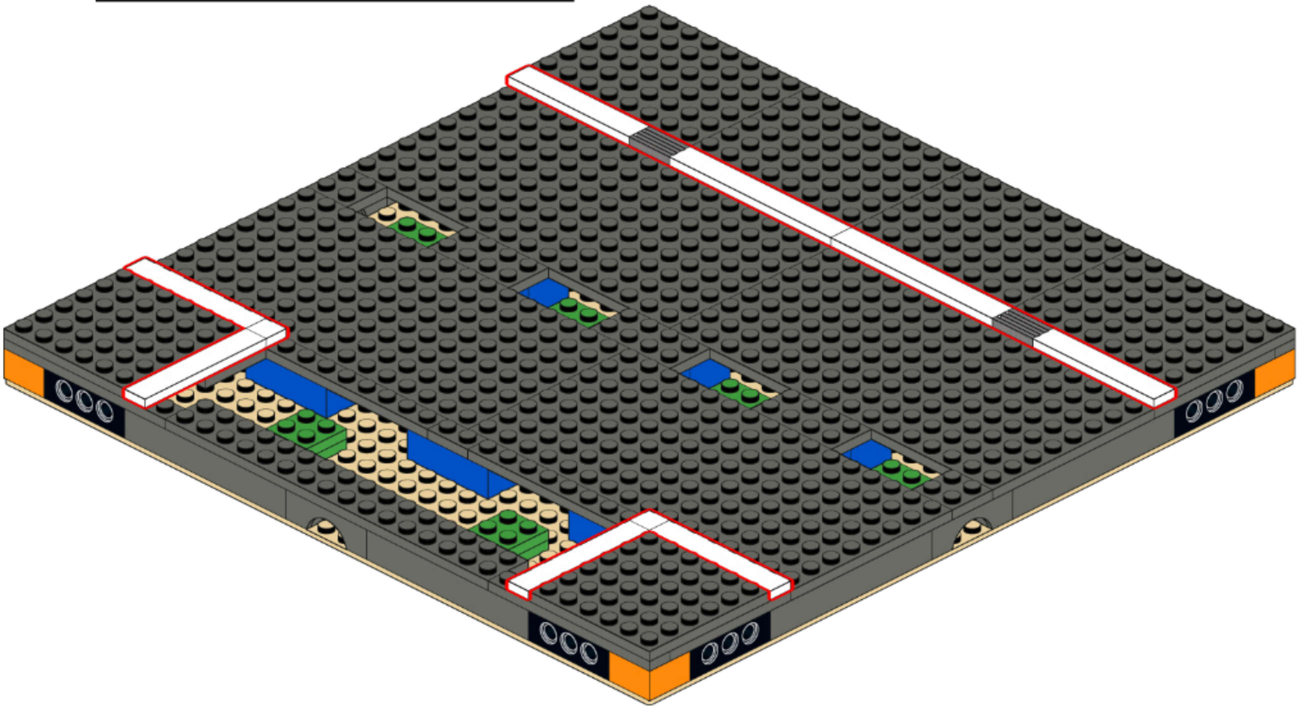

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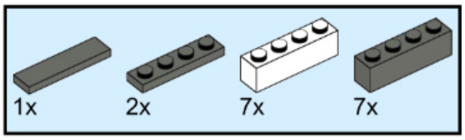

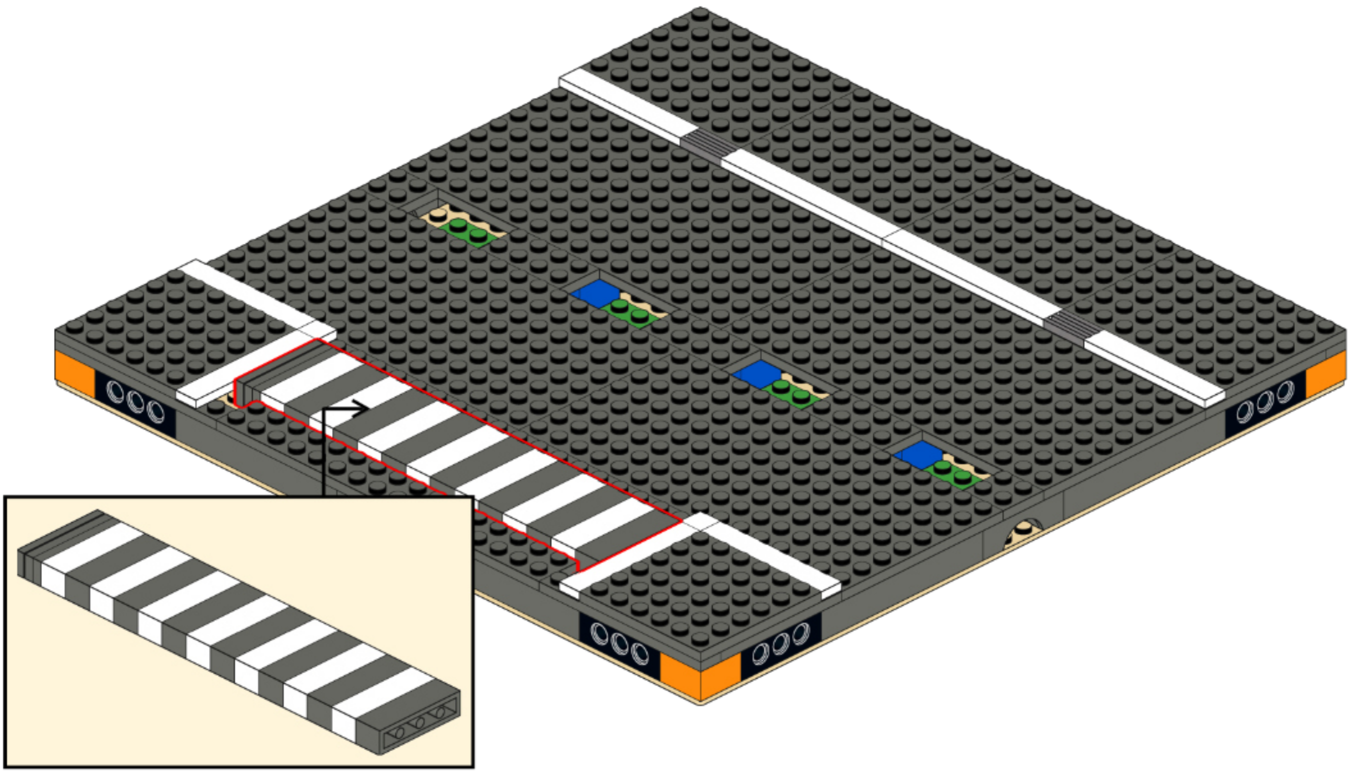

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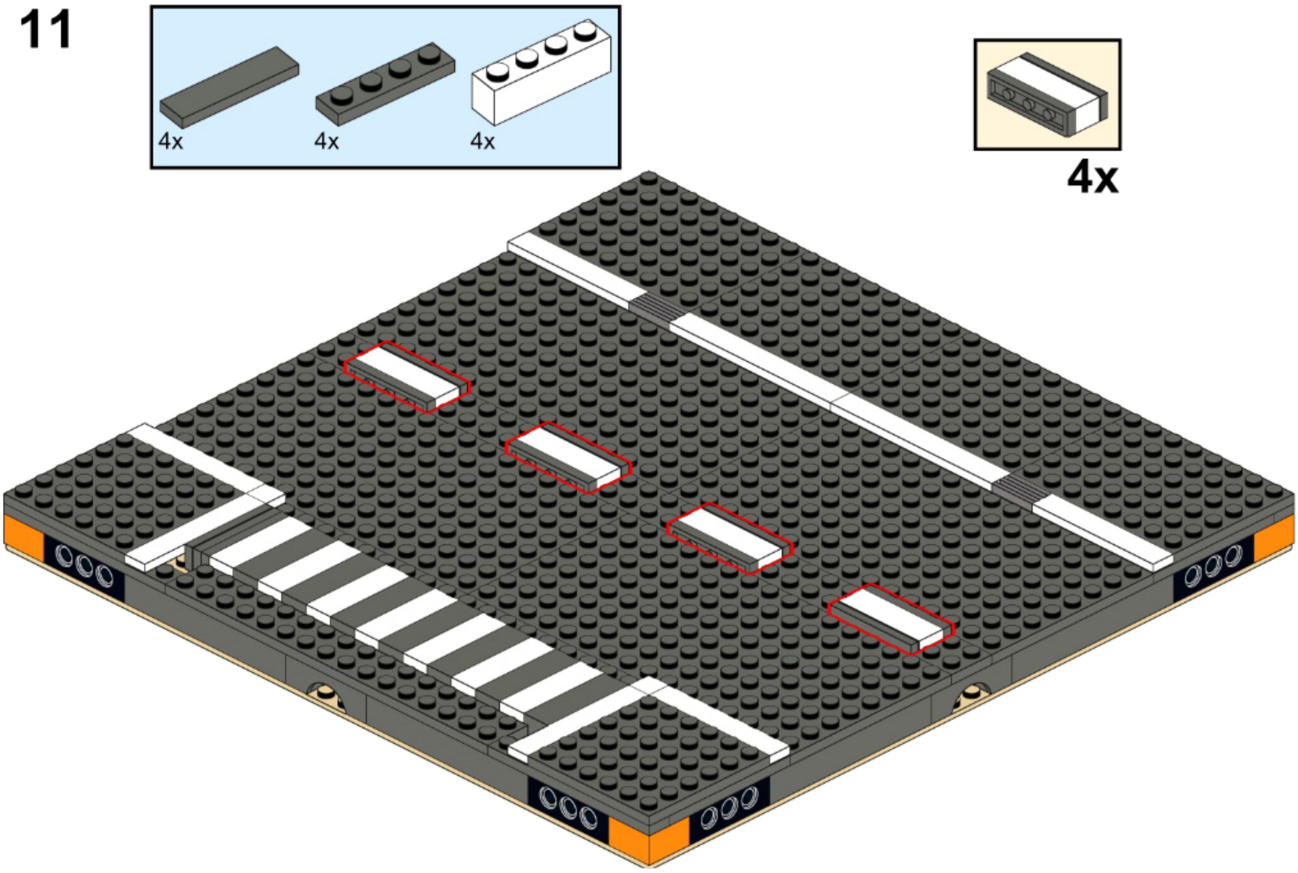

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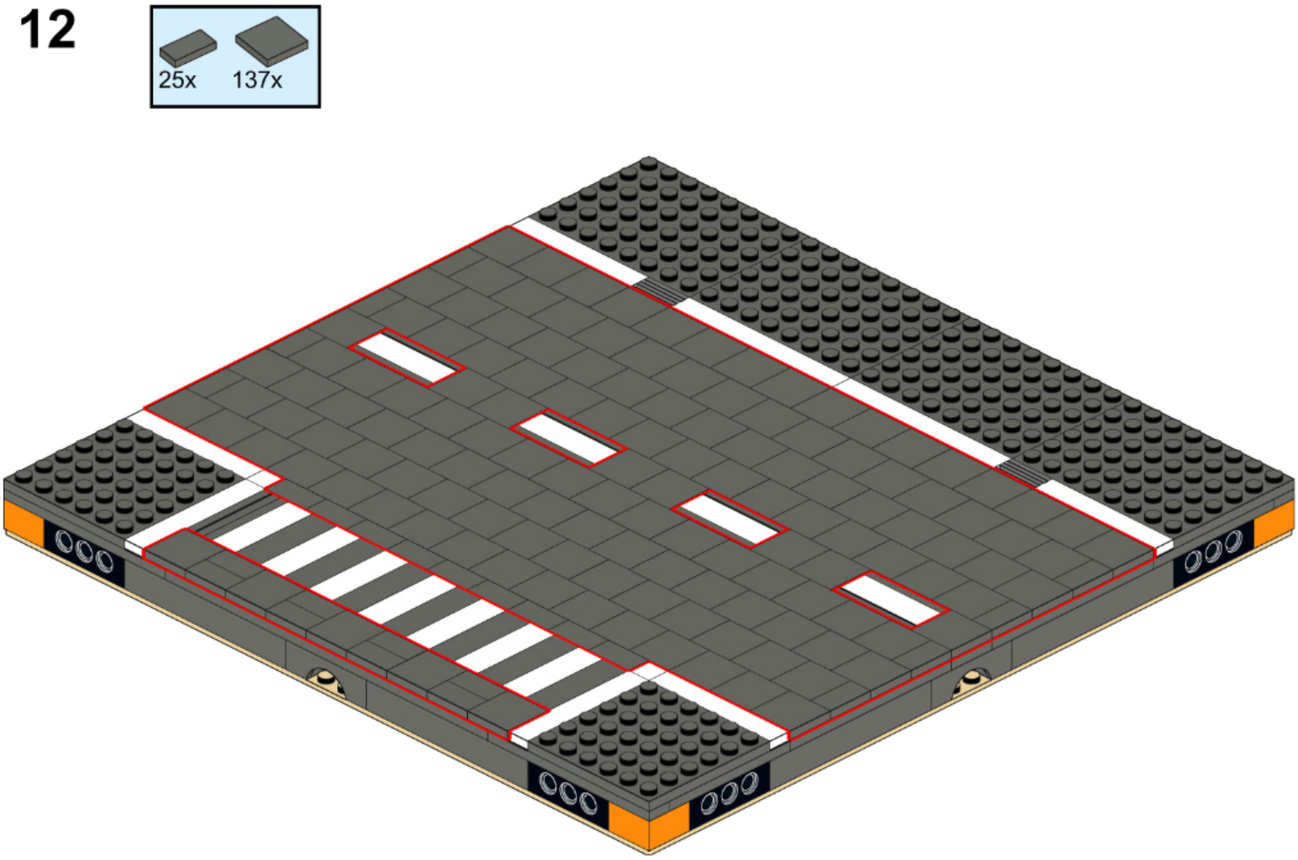

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