Code Foo

First of all, since King Kong is a pretty heavy guy, I'm gonna make a few assumptions here and say that the structural integrity of the building is going to be pretty important. Lincoln Logs aren't exactly known for they're overbearing stability; we have to make sure King Kong would be safe up there.

Google brought me to a diagram detailing the dimensions of the logs, so all these measurements will be based on this information being true. So with the idea of structural integrity in mind, I will choose to use one of the smaller logs, coming in at 4½ inches in length. The smaller the logs, the smaller the gaps between structures will be and thus more rigidity. To be more accurate, we need to take into consideration the 3 dimensional volume presented by the basic square shape of the Lincoln Logs. Each log stands ¾ of an inch in height with a 3/16 inch indention on each side. When placed on top of each other, the 2 blocks without indentations would stand at 1½ inch tall, but subtract the two spaces for interlocking at 2 * 3/16 and you get 1½ inches minus 6/16 inches, simplified this is 1⅛ of an inch. Now to calculate the cubic inches the simple structure would take: (1⅛) * (4½) * (4½) = 22.78125 inches cubed. This translates into 0.01318359375 feet cubed per 4 Lincoln Logs. The layout of the logs would be to simply interlock "cubes" or blocks of 4 logs at once.

After another quick internet search, I discovered the that the Empire State Building's official website, states the building as a whole has a volume of 37 million cubic feet. This leaves us with our first and straightforward quantitative assessment of how many logs we'd need: ~37,000,000ft^3 / .01318359375ft^3 = 2,806,518,518.52, or about 2.8 billion structures 0.13 cubic feet Lincoln log structures. Since we used 4 blocks per structure, this would end up being about 11,226,074,074 individual Lincoln Logs.

However, this calculation is the entire volume of the building. We likely don't want just a big solid building that no one can go into or do anything in, so we will add some habitable space inside by removing some logs! The highest floor any normal person can go to in the building, is the 102nd floor observation deck. This floor stands 1,250 feet above street level. So let's make 102 floors of space in our replica! The average height of a floor happens to be about 10ft. Helpful information on the building's official website as well, is that it contains right at 2.7 million square feet of office space, or how I phrased it, "habitable space". This square footage describes the 2-dimensional floor plan, so if we added the third dimension into this equation (height), we can estimate that, on average, every square foot will likely be enclosed by approximately a 10ft ceiling. Take the 2.7 million square feet and multiply that by 10ft, and you are left with 27 million cubic feet of space you are carving out of the building.

Now take our original base volume of 37 million cubic feet, subtract the 27 million cubic feet we're going to remove so we can actually use the building, and we are left with 10 million cubic feet we have to build with Lincoln Logs. As earlier calculated, one structure of four logs, takes up about .01318359375 cubic feet of volume. 10,000,000 / .01318359375 = 758,518,518 structures to fill up the remaining space. To get the raw number of Lincoln Logs, simply multiply by the number of logs per structure, and you're left with 758,518,518 * 4 = 3,034,074,074. So to

have a perfect to-scale replica of the Empire State Building with an adequate amount of livable space, we would need just a tad over 3 BILLION Lincoln Logs!

Most larger numbers were rounded to the nearest integer