

GIZMODO

How NYC's Newest Neighborhood Will Float Above an Active Train Yard

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In Manhattan this spring, crews are ramping up work on Hudson Yards, the largest private development in US history. But what's fascinating about this new mega-development aren't just its buildings. It's the fact that they will float above an existing train depot on a massive artificial foundation. We got an early look at how it's being built.

First, a little back story. West Side Yard, a sunken rail yard wedged above the High Line and two blocks away from Penn Station, is a critical nerve center in NYC's transit system: A 26-acre depot that serves overflow Long Island Railroad trains during rush hour, with 30 tracks and space for storage and maintenance, too. It's so important that it's been spared from the rush to redevelop the West Side in the wake of the High Line—though that's not to say its creators didn't foresee it.



When the rail yard opened in the 1980s, its engineers were already imagining the day when a hungry developer would pave over it. So they left a small gap that runs around the edges of the yard—just enough space for structural members to be laid down without interrupting traffic. Think of it as an insurance plan for future city-builders.

Now, those builders have arrived—and they're building something far bigger than the planners of the 1980s probably ever imagined: Hudson Yards, a tightly-packed puzzle of four skyscrapers and a cadre of other towers that represent the largest private development project in the entire history of the US, and the largest development in NYC since Rockefeller Center.

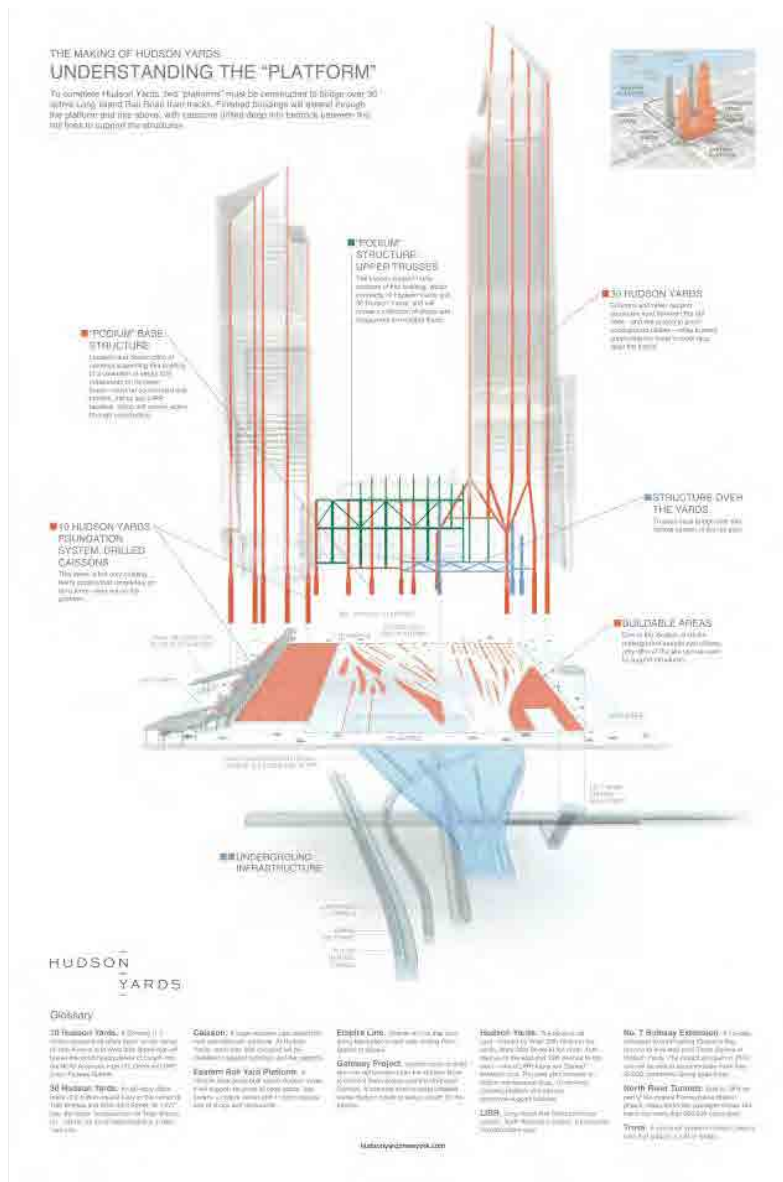




It will add an entire new neighborhood to Manhattan—65,000 people will live or work here—and all of it, from offices to schools to streets, will rest on the super-strong platform that's now being built over the rail yards.

A Bridge That Holds Up a Neighborhood

Building this platform, let alone the buildings themselves, will require a Jenga-esque succession of tactical construction stages—in part because the rail yard will continue to function as the massive new neighborhood rises above it. Related Companies, the developer of the project, explains the structure with this graphic:



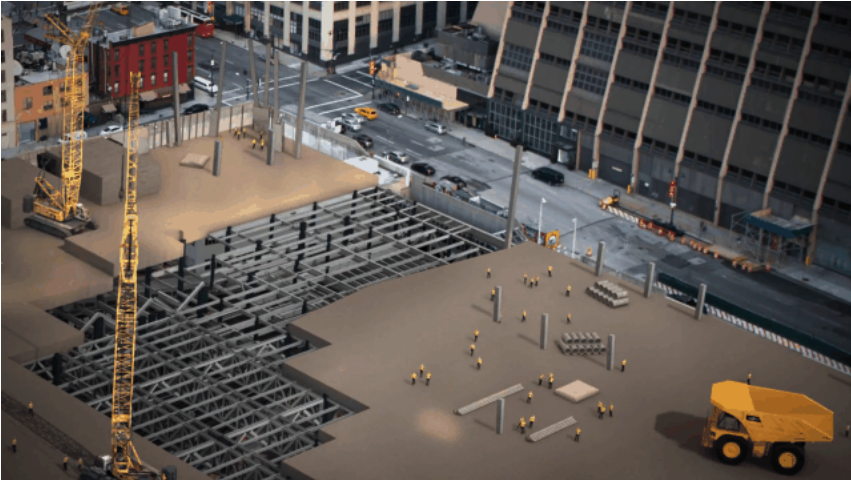
But let's take it in steps. To begin with, crews will drill 300 caissons—essentially, large column-like pipes—into the bedrock below the tracks, filling them with concrete:



Builders have been doing this in NYC for ages—just look at the Brooklyn Bridge. A century later, this feat will be just as complicated: Because trains will continue to run through the yard, crews will sink the caissons in sections, avoiding the moving trains, drilling as deep as 80 feet into the bedrock below the West Side.



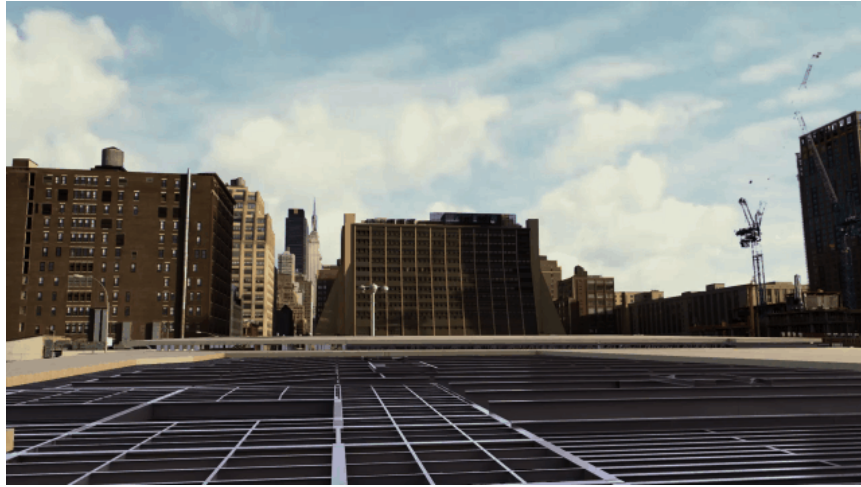
Once the caissons are in place, work will begin on a massively heavy, incredibly strong platform—a foundation perched on columns. This work will go piece-by-piece too, all to ensure the safety of the train drivers and the construction crews both:



But the most difficult bit will come at the narrow neck of the rail yard. Here, the trains form a dense thicket of activity, and there's no room for massive caissons. Instead, crews will built a series of trusses across the rail yard:



Then—then!—come the buildings. Skyscrapers, apartment complexes, restaurants, a public school. Some 17 million square feet of office and residential spaces. 14 acres of public land. Hotels, shops, a theater. All that and more will sit perched on what amounts to a bridge—a bridge that supports thousands of people and no fewer than three skyscrapers.



By the time the platform is complete, workers will have installed 25,000 tons of steel (more than half of the Williamsburg Bridge) and 14,000 cubic yards of concrete. It will weigh more than 35,000 tons. For comparison's sake, the bridge portion of the Brooklyn Bridge weighs around 14,680 tons.

A New Generation of NYC Megastructures

The architect of some of the first skyscrapers in the world, Daniel Burnham, once said "make no little plans, they have no magic to stir men's blood and probably themselves will not be realized." In other words, small ideas don't get anyone excited enough to see them through to completion.



While most of the supertall building boom spotlight has been placed China and the UAE over the past few months, there's an even more staggering... [Read... \(http://gizmodo.com/four-of-americas-tallest-buildings-are-being-built-on-1327172554\)](http://gizmodo.com/four-of-americas-tallest-buildings-are-being-built-on-1327172554)

It's a good way to describe Hudson Yards, a cornucopia of pricey real estate that will be so vastly lucrative that it justifies one of the largest structures ever built in New York. Some may see it as more evidence of Manhattan's [transformation into a city of penthouse-dwelling oligarchs \(http://gizmodo.com/four-of-americas-tallest-buildings-are-being-built-on-1327172554\)](http://gizmodo.com/four-of-americas-tallest-buildings-are-being-built-on-1327172554). But that constantly-churning economic metabolism is the core of New York's urban soul. What's great about it, though, is that what emerges out of the mire of the present will last far beyond it. Each generation scrubs away the legacy of the last—and then makes up its own stories about how the past came to be.

However you feel about the new burst of development in New York, it's been too long since the city built a new megastructure. We're lucky that we get to watch this one take shape. We'll have more on the project soon.