

The Boston Globe

A 'vertical assembly line' rises above Downtown Crossing

By Tim Logan



At 520 feet above downtown Boston, the upper reaches of the Millennium Tower are open to the sky, a few fingers of steel girders and temporary fencing framing workers spreading concrete for each new floor — a third of an acre every other day.

Four hundred feet below that on the seventh floor, a sunny two-bedroom is all but ready to move in.

The construction of the Millennium Tower in Downtown Crossing, the tallest new building to hit the Boston skyline in 40 years, is like no other this city has seen. On this “vertical assembly line,” as project superintendent Rich Michaels calls it, lower floors are finished before the upper ones are enclosed. The process is so fast that some new residents will be cooking in their multimillion-dollar condos while painters touch up the top floors.

Boston hasn't built many towers crammed into tight downtown spaces, but the assembly-line process is used in cities such as New York where clusters of skyscrapers are more common. At 60 stories and 685 feet at its peak, the Millennium Tower is the first of several new towers to hit the skyline in the coming months, all to be built faster than the generation of skyscrapers before them.



DAVID L. RYAN/GLOBE STAFF

At the 52-story Millennium Tower in Downtown Crossing, windows go up on the 50th floor.

From start to finish, the Millennium will take a little more than three years to build — one year less than the Prudential Tower in the 1960s, and much faster than the long-delayed John Hancock Tower.

“Nobody in the city has ever done anything like this this quickly,” said Angus Leary, Northeast regional president for Suffolk Construction, the Millennium’s contractor. “The lessons we’re learning here will carry forward to other projects.”

Those include choreographing the movement of 500 workers through the tower’s network of hoists 19 hours a day, scheduling just-in-time delivery of millions of pounds of steel forged in Maine, marble from Italy, and other materials, and completing work on each floor in time for the weekly visit from inspectors.

Suffolk and the building’s developer, Millennium Partners, spent two years planning before breaking ground in late 2013, said Kathy MacNeil, Millennium’s construction manager. With work now in full swing, the tower grows by two floors each week, while the lower levels receive finishing touches.

Unlike other Boston towers that were framed with steel, the Millennium is being formed by concrete, pumped upward through hoses to the top floor — the 50th last week — where workers pour it into forms arranged like tabletops over the floors below. With the concrete still wet, they layered in rebar to stiffen and strengthen each 17,000-square-foot pad, and punch about 500 holes, or “sleeves,” to allow

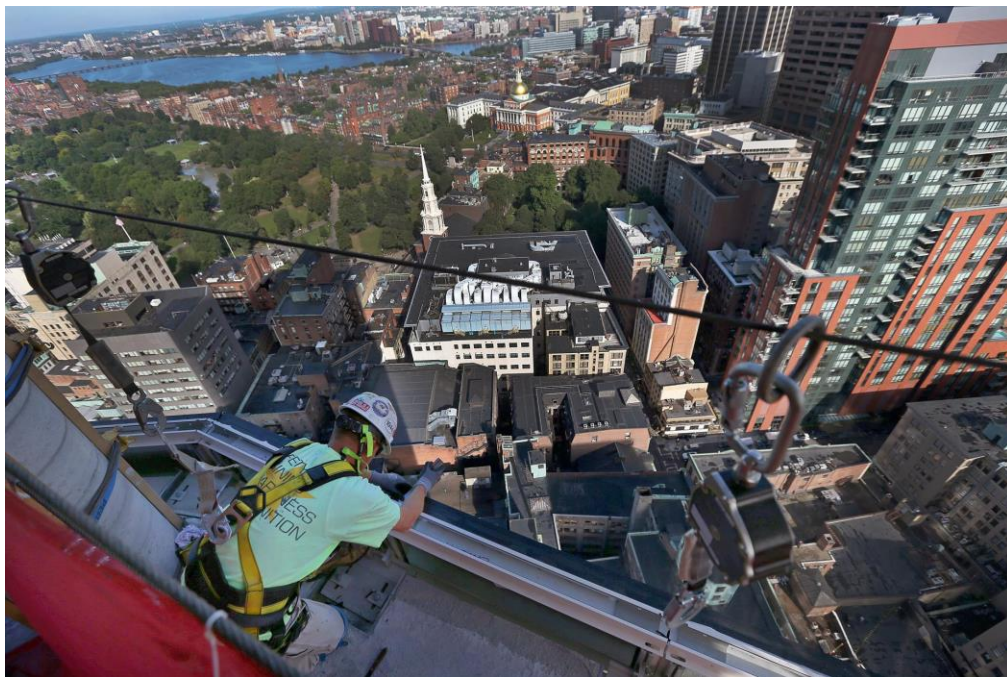
mechanical systems to run vertically through the tower. Workers use GPS to ensure each hole is aligned accordingly.

“Those have to be perfect,” said Michaels, the general superintendent for Suffolk. “If that sleeve is in the wrong location, there’s going to be a pipe in someone’s living room.”

Down on 34, two men wearing harnesses guide 10-foot panes of glass as a colleague above winches them into place on the outside of the building. In construction parlance, this is known as “the curtain wall” — the blue skin of glass that will give the tower its distinctive look.

Each floor has 140 panes. It takes the team seven minutes to install one, a little faster on a good day.

“It’s like a synchronized ballet,” said Michaels.



AVID L. RYAN/GLOBE STAFF

Worker Brian Hemenway hangs over the edge of the 35th floor to glaze the windows.

Floor 27 is a maze of ductwork and vents. Copper water lines snake from floor to ceiling and the outlines of hallways take shape. A transformer distributes power from a main line to lower floors, and digital antennas boost cell services above. There’s even a break room up here, a “sky cafe” that sells coffee, sandwiches, and energy drinks so workers don’t have to schlep down for lunch.

“We’ve got to work fast,” McNeil said. “I’ve got condos sold here.”

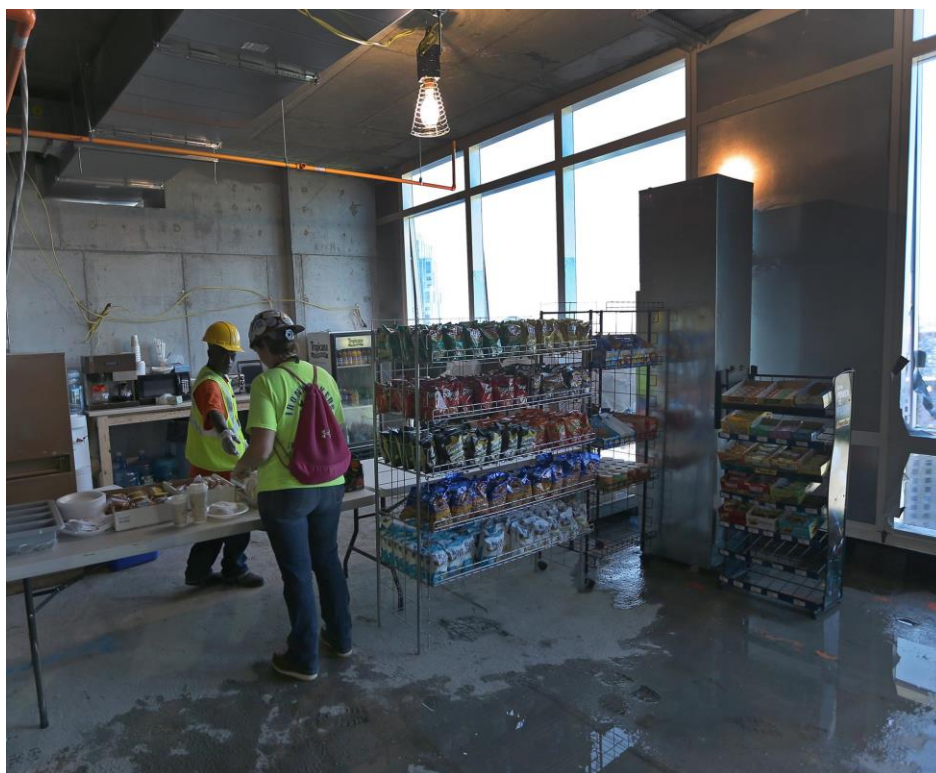
On 22, the walls are framed in, plumbing and electrical installed. Each unit requires 140 distinct “construction activities,” Michaels said, and the subcontractors complete a floor every week. Each Monday they begin again on the next.

The clerk of the works, a woman with a backpack and a clipboard, wheels around a corner. She's checking that everything is squared away before the city's building inspector — who has a standing appointment every Wednesday at 11 — comes through. If the inspector finds something amiss, the whole system could grind to a halt.

“Think about what would happen,” Michaels said. “Everyone would have to go home.”

Down on 7, the units are pretty much ready: new white carpeting and floors of Croatian hardwood, Sub-Zero refrigerator and marble kitchen island. The air is thick with fresh paint, and blue masking tape marks a needed touch-up.

By this time next year, condos on the lower floors should be lived in, while above them Suffolk and Millennium put the finishing touches to the tower's most expensive units, before moving onto their next project.



DAVID L. RYAN/GLOBE STAFF

The Babu Sky Cafe serves as a makeshift lunch spot on the 22nd floor.