RENOVATIONS

Roof lifted above the stars

Contractors cook up a Planet Hollywood eatery topped by a 10-screen cinema

Don Johnson stirred up lots of rumors on a hot April day in south Florida by showing up some two hours late for a publicity fete outside the not-so-nearly finished Planet Hollywood restaurant in Coconut Grove. But workers trying to wrap up the eatery's renovation for a May 15 celebrity-studded opening didn't have time to notice. They were busy kicking up construction dust not stardust.

Aside from the difficulty of squeezing a commercial kitchen into a space built to sell clothes, the Planet Hollywood team had to demolish a 4,000-sq-ft corner section of a post-tensioned floor slab to create a mezzanine overlooking a lobby. And in a 10-screen movie theater project on the third floor, the team had to raise the three-story department store's 4-million-lb roof slab by 11 ft to create 22 ft of headroom.

The $3.5-million restaurant and the $2.5-million Cobb Theater are part of a comeback strategy for the Mayfair shopping mall. The theater is on time for a September finish and the restaurant was completed in just 88 days by May 15, says James J. Phillips, vice president for the general contractor, Waas-Phillips Construction Co., Miami.

Columns were fitted with lifting mechanism, temporary posts.

Basically, the 273 x 90-ft post-tensioned concrete structure consists of 6-in.-deep slabs with shallow beams and drop panels. The 47 perimeter columns are an average 24 x 26 in. In the center, in the long direction, is a line of ten, 30-in.-dia columns.

Tricky. Renovating a post-tensioned slab is tricky. Slab penetrations first require detensioning and then retensioning of the cables. If a cable snaps, it recoils and rips through the concrete, shooting pieces everywhere.

"There were in excess of 300 holes cored" for ductwork, shafts, escalators, pipes and conduit, says Charlie Skarbrevic, president of post-tensioning subcontractor, PTSI, Miramar, Fla. And, "we had only one incident," adds Phillips. "A few hours after we retensioned a cable, it snapped." No one was hurt. And engineers could find no reason for the mishap, so work

Completed: The roof slab was raised 11 ft, very slowly, over 26 days.

Movie auto had to be moved in early. Slab was cut to open up lobby area.

proceeded without any change, says Phillips.

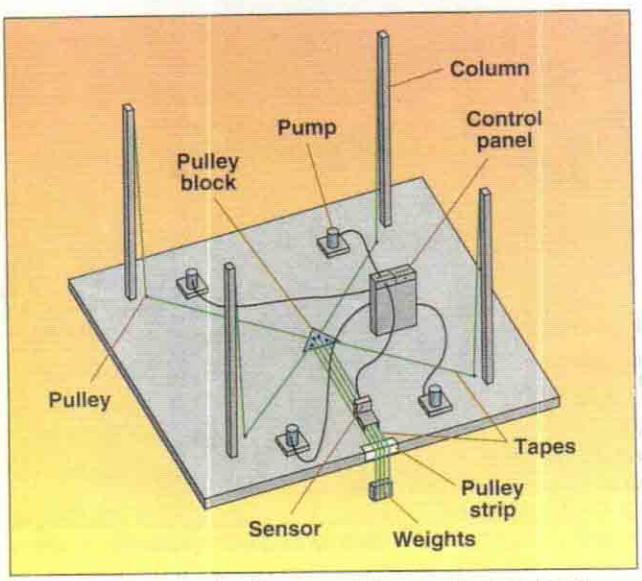
Meanwhile, workers upstairs prepared the structure for the roof lift, which took place April 12 to May 7. "This is a first, but not because of its size," says Peter M. Vanderklaauw, veteran roof lifter and president of project subcontractor Liftplate International Inc., Miami. The challenge here is the concrete columns, he adds. "It's a piece of cake to extend steel columns."

Workers chipped away at column concrete (left) to expose reinforcing steel (right) that was cut just before roof lift began.

The team considered demolishing the roof and adding new structure. But "cost and logistics became prohibitive," says Douglas Wood, of the Coral Gables, Fla., structural engineer that bears his name. Demolition alone would have cost $350,000. The lift cost a total of $600,000.

But cutting the columns for lifting did require extra steps. In concrete structures, some bending forces in the slab are transferred into columns, says Wood. "When columns are cut, bending is transferred back into the slab, creating the possibility of downward movement at midspan.

"To compensate, we added external post-tensioned cables in both directions," says Wood. A steel bracket installed at midspan gives the cables a triangular profile. Tensioning creates an upward force and lifts the center of the span. The cables remain in the final configuration because the extended 30-in.-dia columns are 22 ft tall and unbraced. By themselves, they are not stiff enough, says Wood.



Tapes allowed monitoring of movement at each column during lift.

For additional lateral resistance during lifting only, workers added six steel columns and extended them through small holes in the roof slab. The roof then slid up the columns, which were braced against existing columns or stairwell shear walls.

Liftplate lifted against permanent columns because the roof was too heavy to use the floor slab without shoring it. That would have interfered with restaurant work. Instead, Liftplate mounted two sleeves with telescoping lifting posts on each of 48 columns. Lifting cylinders were suspended from them.

Lifting equipment pushed lifting posts upward, using jacking. After installing equipment and posts, workers prepared columns for cutting by chipping out a band of concrete 8 ft above the floor. Just before lifting, crews flame-cut column reinforcing bars, leaving 6 in. protruding. To avoid cracking the slab, posts were pushed up in ¾-in. increments, up to 1 ft a day. Lifts had to be within 1 in. of each other at all times. During lifts, only essential workers were present.

To keep everything in sync, Liftplate used a patented system of stainless steel tapes, one at each lifting point, connected to a sensor that indicates movement.

Back in Planet Hollywood, Sylvester Stallone's car from *The Cobra* sat in the chaos. "We had to bring it in early through a temporary opening to the outside," says Phillips.

Photographed with actor Johnson when he finally showed up that April day, Phillips is nonchalant about stars. However, he's not blasé about the roof: "When we saw it floating, it was awesome, our hearts were racing." ▣

By Nadine M. Post in Coconut Grove

Post-tensioned cables were added to counter bending in slab after columns were cut for roof lifting.