BubbleDeck: Bubble Filled Concrete Technology

BubbleDeck is the patented integration technique of linking air, steel, and concrete in a two-way structural slab. Hollow recycled plastic spheres are inserted into the slab and held in place by reinforcing steel mesh. The geometry of the BubbleDeck slab is defined by the spheres of a certain size, placed in a precise modular grid for a particular overall deck thickness.

The voids are positioned in the middle of the cross section, while maintaining solid sections in top and bottom where high stresses can exist. Therefore, the slab is fully functional with regards to both positive and negative bending. The end result eliminates the use of concrete that has little carrying effect while maintaining the two-way span (biaxial) strength. In zones where shear forces are high, the spheres are simply left out at columns and walls.

BubbleDeck eliminates up to 35% of the structural concrete. When coupled with the reduced floor thickness and facade, smaller foundations and columns, construction costs can be reduced by as much as 10%.

Experience has shown that the most cost effective application of the technology is with semi-precast panels. On most projects this approach eliminates over 95% of expensive formwork compared with traditional concrete structures. With virtually no formwork, no downturn beams or drop heads, and fast coverage of typically 350ft^2 per panel, using BubbleDeck means floor cycles up to 20% faster than traditional construction methods. Regardless of project size, shape or complexity; simply shore, place, and pour to quickly install concrete decks.

Off-site manufacturing, fewer vehicle trips and crane lifts as well as simple installation all combine to minimize operating risks, as well as lower health & safety risks. As a result, major projects around the world have chosen the BubbleDeck technology as the low-risk way to build large and complex projects.

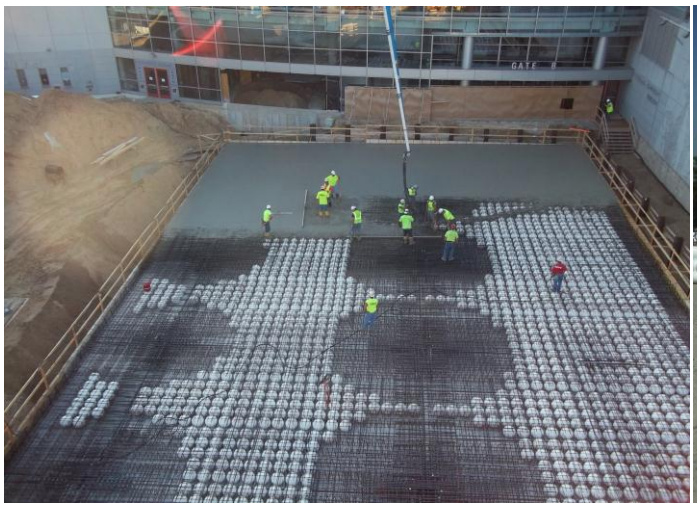
The BubbleDeck system offers a wide range of advantages in building design and during construction. There are a number of green attributes including; reduction in total construction materials, use of recycled materials, lower energy consumption and reduced CO^2 emissions, less transportation and crane lifts that make BubbleDeck more environmentally friendly than other concrete construction techniques.

With the use of BubbleDeck, mechanical, electrical and plumbing (MEP) lines and fixtures are easily installed within the floor. Individual through-hole areas can be coordinated and installed within the precast panels rather than at the job site to speed construction time.

BubbleDeck panels are suitable for use in all building types especially open floor designs such as commercial, educational, hospitals and other institutional buildings.

BubbleDeck has developed a slab edge technique that eliminates virtually all edge formwork and incorporates an integral safety rail and allows accurate setting of building envelope anchors (precast anchors, curtain wall pockets, and threaded inserts to attach brick ledgers). Using this approach no worker is exposed to a work site situation normally requiring fall arrest around the building edge.

Ariel View of the new Teaching and Learning Harvey building at Mudd College in Claremont, California (top, left)
BubbleDeck Panel Installation at the LaBahn Arena in Madison, Wisconsin (top, right)



Concrete top pour at the LaBahn Arena in Madison, Wisconsin (top, left)
Plastic Balls at a Precast Facility (top, right)

Integration of Plastic with Steel