

Burj Khalifa, Dubai

Stone Installation Challenges for World's Tallest Building

Burj Khalifa (known during construction as Burj Dubai) - the world's tallest building - opened January 4, 2010. Custom Building Products was selected to provide tile and stone installation and protective products in different areas of the building.

For the 160 floors of Burj Khalifa, the designers selected a vast range of stone and tile from dense natural stone like Absolute Black Granite, to porous stone such as Silver Travertino and Satuario Marble, as well as conventional porcelain tile. Massive amounts of stone were installed on both walls and floors throughout bathrooms, elevators, hospitality areas, lobbies and pools. The substrates that were tiled over include a combination of concrete, cementitious plaster, gypsum board, cement backer board and even steel.

In an effort to reduce complexity, the contractor wanted a single adhesive for all tile and stone installations, regardless of type or substrate, which is a significant challenge especially in the extreme hot weather conditions of Dubai. Compounding that challenge – the installers were accustomed to working with mud bed mortars, not thin-sets, and needed extra support.

Custom's VersaBond Flex® Fortified Thin-Set Mortar was selected as the ideal mortar due to its high flexibility and bond strengths plus its high performance in both wet and dry areas – including swimming pool surrounds.

Specialized application requirements - adhering granite countertops, bonding stone to the elevators' steel substrate, and coping around a suspended swimming pool – were installed with Custom's CEG-2000™ 100% Solids Commercial Epoxy Grout. CEG-2000 offers high bond strengths to moisture sensitive stone and other non-vitreous surfaces.

Custom led the process of training the installers on how to properly use thin-set technology, by dividing the training into two phases – the first taught the correct application techniques to the company's staff on a multi level basis. To achieve this Ikan (CBP partner in the UAE and region) held three days of



intensive training in their Dubai facility. Each day a different level of staff attended ranging from upper management to site foremen. The training involved theory, hands-on application and trouble shooting. The second phase of training was developed to ensure the training techniques were followed on-site by regular site inspections. The visits were a coordination of local Ikan staff and Custom Technical Service Specialists who monitored application technique and quality, as well as consulting on product use as conditions changed on site. For example, during the hottest summer months, an on-site inspection revealed inefficient mixing and use of VersaBond Flex. A quick report from Technical Services detailed why – installers were covering large containers of mixed VersaBond Flex, resulting in dramatically reduced pot life and thus yield of the mortar. During the inspections, any suggestions or variations from standard application technique were recorded then communicated to the contractor ensuring that the highest quality control was maintained throughout the job.

Custom also supplied Aqua Mix sealers for exterior areas located around the building, called Burj Boulevard. Flamed and sand-blasted finished granite was used for pedestrian and vehicular traffic areas. Ultra Solv was selected due to its high resistance to oil based contaminants, its optimized penetration into relatively dense surfaces like granite, and its ability to leave the stone looking natural. In other areas where an enhanced color was required, Enrich'N'Seal™ was used.

The granite pavers were sealed using Ultra Solv® on all six sides to reduce the stones' immediate surface water absorption from the curing cement installation system. Without a proper sealer, the moisture could cause the stone to stain or effloresce. The Burj Khalifa project offered many installation challenges that Custom and Ikan were able to solve with innovative products and a technical support program of education and quality control.

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