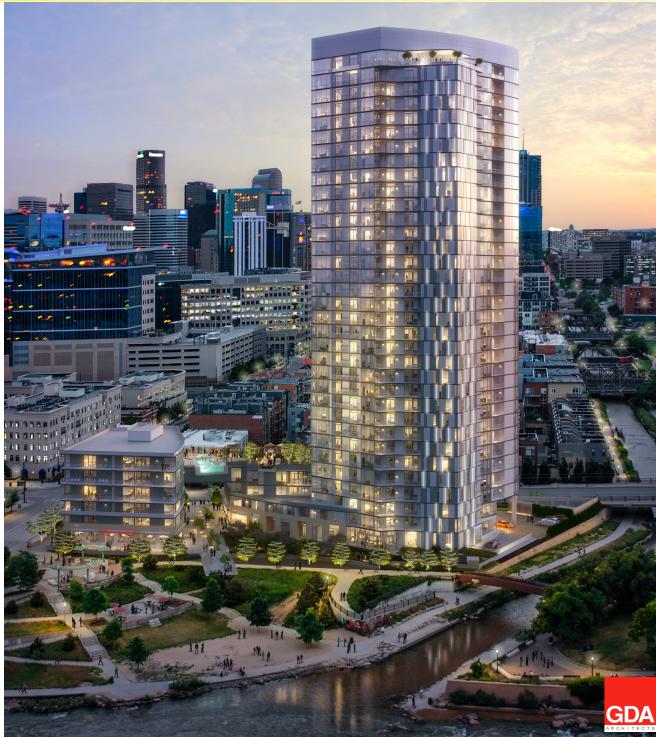


CASEStudy from Meadow Burke

The Confluence Building - Meadow Burke's Lockable Dowel



PROJECT SUMMARY

Breaking ground in November of 2014, the Ultra-Luxury Confluence building is the tallest for-rent structure in the state of Colorado. Construction on the 35-story, 288-unit high-rise apartment community was completed in October of 2017 and connects to a 6-story low-rise counterpart. The building is located at the confluence of Cherry Creek and the South Platte River in Denver, Colorado.

Bryant Nail, Senior Development Officer at PM Realty Group, was responsible for the development of this historic building. The General Contractor awarded the project bid was Clark Construction and Baker Concrete Construction – Rocky Mountain Region, was the Concrete Contractor responsible for the concrete portion of the structure.

THE CHALLENGE

As design, planning and development went underway, challenges arose. The issue of differential settlement between adjacent structures became a concern for the Engineering and Contracting teams. Differential settlement can cause cracks in a structure's foundation and interior walls, as well as uneven settling of doors and windows.

In the case of the Confluence building, constructing a high-rise tower to a low-rise tower via a connected walkway forced the teams from Brockette Davis and Drake, a Structural Engineering Consultation firm, Clark Construction and Baker Concrete to consider the use of a costly and disruptive pour strip on their project. To mitigate these costly delays, Meadow Burke Engineering worked with its manufacturing partners to develop a solution that would allow vertical movement along the joint connecting both structures throughout the settlement period without the use of a pour strip. To achieve this, several modifications were required of the Burke Lockable Dowel components. The Burke Lockable Dowel is designed for use at temporary horizontal movement joints. The dowels allow initial shrinkage of the concrete to take place and are then locked in position. The locked dowels continue to transfer shear and prevent further movement from taking place. While the dowel sleeve assembly is typically installed to allow in-plane and out-of-plane horizontal movement, this application required rotating part of the sleeve assembly 90 degrees to accommodate a vertical movement. The grout sleeve was then adapted to fit this alignment for each Lockable Dowel used along the length of the joint.

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Once the designed settlement reached its limit, the Burke Lockable Dowel joint could be locked without any impact to the construction sequence. The modification of the Burke Lockable Dowel to accommodate movement in the vertical plane resulted in an entire month reduction from the original project timeline.

THE SOLUTION

The use of the Burke Lockable Dowel reduced the project timeline and eliminated the use of traditional pour strips which are costly, disruptive and introduce a significant hazard to a project. The Burke Lockable Dowel is an economical, high-strength stainless steel dowel system that provides immediate high shear transfer while allowing temporary movement across the construction joint.

THE RESULT

Construction can be completed using a traditional monolithic pour, eliminating shoring and safety concerns while allowing other trades access as construction moves ahead.

"We beat the schedule by a month by turning decks in five days, rather than the original six laid out in the bid," says Baker Project Manager Nick Goodwin. "Lockable dowels used between the high- and low-rise towers also saved us time and eliminated pour strips. We have a good project team and built as a cohesive unit."

The Meadow Burke Manufacturing and Engineering teams worked through modifications to the Burke Lockable Dowel and produced a viable solution to the time constraint that Clark Construction and Baker Concrete Construction were facing. The Burke Lockable Dowel allowed the project to finish ahead of schedule and under budget.



Rendering of the Burke Lockable Dowel

For more information regarding the Burke Lockable Dowel or other Meadow Burke products, call us at 877-518-7665 or visit MeadowBurke.com

About Meadow Burke

Meadow Burke is a leading manufacturer and supplier of accessories used to connect, lift, reinforce and form within concrete construction. Our products and engineering enable safe, rapid and cost-effective construction, allowing you to deliver your projects on time and budget.