

## Florida's Flexible Filler Experience

Grouted and bonded post-tensioning tendons are the predominant multi-strand post-tensioning systems used in bridges in the United States. However, recent durability issues of grouted tendons have prompted the Florida Department of Transportation to move toward unbonded tendons using flexible fillers, with the intent of improving tendon durability and facilitating future maintenance and possible replacement of damaged or corroded tendons, if required.

Non-cementitious, flexible filler materials - such as wax or grease - are an alternative class of possible fillers; these materials result in unbonded tendon systems, with constructability and structural behavior implications. Flexible fillers facilitate reduced maintenance and repair effort, and reducing expense over the bridge service life. Targeted structural members include piers, pier caps, post-tensioned I-beams, posttensioned U-beams, segmental bridges, etc. While flexible fillers have been used in Europe for decades, this new direction in post-tensioning requires reevaluation of the filler injection practices, the current AASHTO LRFD Bridge Design Specifications, and understanding of the anticipated structural behavior.

The presentation will summarize the Florida experience with flexible fillers thus far, from mock-up tendon injections, to structural testing of full size bridge girders, to recently-completed laboratory testing on multi-strand unbonded tendons subjected to a cyclic loading, in an assessment of anchorage and strand susceptibility to fatigue. Further FDOT-funded work to investigate structural behavior of post-tensioned members with flexible fillers is currently underway, and will briefly be described.



### Dr. Natassia Brenkus

Dr. Brenkus is an Assistant Professor at The Ohio State University. The focus of her research has been structural performance and durability of concrete bridge systems, with particular specialization in post-tensioning. Her research efforts have been primarily funded by the Florida Department of Transportation (FDOT). She has seven years' experience investigating innovative bridge technologies and new construction techniques to advance the state-of-the-art of concrete bridges. She has experience in full-scale laboratory, field, and analytical methods of investigation and has co-authored at least five reports for the FDOT, technical reports, journal articles and is currently co-authoring the fib's update to Bulletin 33, Durability of Post-Tensioned Systems.



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