



UTC Project Information	
Project Title	PRESTRESS LOSSES IN UHPC AND HYBRID PRECAST, PRESTRESSED BRIDGE GIRDERS
University	University of Oklahoma
Principal Investigator	Royce W. Floyd, Ph.D., P.E., S.E.
PI Contact Information	rfloyd@ou.edu
Funding Source(s) and Amounts Provided (by each agency or organization)	ABC-UTC funds: \$60,000 Match funds : \$30,000
Total Project Cost	\$ 90,000
Agency ID or Contract Number	69A3552348322
Start and End Dates	January 2, 2024 - December 31, 2024
Brief Description of Research Project	<p>Precast, prestressed concrete bridge girders are used extensively in conventional and accelerated bridge construction. As longer span girders are desired to reduce the number of supports and improve speed of construction the impacts of high prestressing force on the end regions of the beams become more significant. End region behavior of prestressed concrete girders has been a significant concern warranting numerous studies over the years focused on stress limits, prestress transfer length, cracking caused by the prestress, and shear capacity. Ultra-high performance concrete (UHPC) is a relatively recent advancement in cementitious composite materials with mechanical and durability properties far exceeding those of conventional concrete. These improved mechanical properties have the potential to mitigate the impacts of high stresses in prestressed girder end regions and to provide greater overall girder capacity. In addition, UHPC has the potential to increase the overall durability of these prestressed girders if used in areas of high exposure. However, little research has been conducted on the behavior of hybrid girders using UHPC in the end region or as a stay-in-place formwork shell. The proposed project will leverage results obtained through Oklahoma DOT support on long term behavior of full UHPC prestressed girders to design and evaluate time dependent behavior and strength of hybrid conventional self-consolidating concrete and UHPC girders. A total of 10 prestressed girders will be cast, instrumented, and tested and the results used to develop predictions for prestress loss behavior and recommendations for girder detailing.</p>

Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	The outcomes will be tracked and reported once they are identified.
Impacts/Benefits of Implementation (actual, not anticipated)	The impacts will be tracked and reported once they are identified.
Web Links <ul style="list-style-type: none">• Reports• Project website	https://abc-utc.fiu.edu/research-projects/prestress-losses-in-uhpcand-hybrid-precast-prestressed-bridge-girders/