R&D Proposal - Impermeable Ultra High-Performance Concrete Coatings for Submerged Pipelines

Natural gas pipelines installed in submerged environments currently rely on a layered protection system, consisting of anti-corrosion coatings, cathodic protection (CP), and external concrete weight coatings (CWCs). While CWCs provide ballast and impact resistance, they are porous and can influence CP effectiveness if the underlying fusion epoxy coating disbands, leading to pathways for potential corrosion and complicating inspection and repair. Texas A&M University-Corpus Christi's (TAMU-CC) Advanced Materials for Sustainable Infrastructure Lab (AMSI) is developing a new class of heavyweight ultra-high-performance concrete (UHPC) based weight coating that retains the ballast function of conventional CWCs while offering superior durability, improved crack control, and substantially reduced lifecycle corrosion risk, and eliminates the need for the anti-corrosion epoxy layer and the complexity of its application. UHPC is expected to carry a modestly higher unit cost than normal concrete, which should be offset by eliminating the epoxy application. The project is expected to take 12 - 18 months. AMSI needs project funding for this project from the pipeline construction industry. Contact Thomas Kalb, Director of the Coastal Bend Midstream Program at TAMU-CC, at thomas.kalb@tamucc.edu to discuss this R&D opportunity.