5. “Cost-Effective Thermoplastic Technology for Vehicular Bridge Superstructure,” UTCA-5228

There is presently no attempt in using thermoplastic composites for bridge structures because of the perception of high cost and expensive manufacturing. Previous work in composite bridges has focused on thermoset prepreg composites to enhance strength/stiffness. The use of thermoset composites in bridge construction and repair is relatively well-established. Recent work by the UAB investigators in the area of thermoplastic composites for protection of bridge piers has shown significant potential for use of TPs in civil structural applications. Most sub-elements can be fabricated in the factory; therefore, high quality control can be assured. Moreover, the construction period can be shortened because most of the parts are pre-fabricated.

This project (with Prof. Vaidya of MSE) will examine key design parameters and a novel design concept for producing a low cost bridge deck. Due to inherent advantages of TPs in impact protection, the deck will be able to sustain routine structural loads and accidental impact loads. The work is new, and open to significant development, hence will provide an opportunity to develop a novel versatile, cost-efficient solution for rapidly constructed bridges.

For more information concerning this research project, click on an investigator(s) name below: Nasim Uddin, Professor.