

**Research Development Fund – FALL 2018 Application**

**Application Title:** Infrastructure Resiliency and Informatics Laboratory (IRIL) at the Center for Infrastructure Renewal (CIR)

**Lead contact for RDF Application:**

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**Key Participating Units (tentative):**

- **Colleges:** Architecture (Construction Science), Engineering (Civil Engineering, Computer Science and Engineering), Geosciences (Geography)
- **Centers/Labs:** Center for Infrastructure Renewal (CIR), Center for Geospatial Sciences, Applications and Technology (GEOSAT), Hazard Reduction and Recovery Center (HRRC), Construction Informatics and Built Environment Research (CIBER) Lab.

**Anticipated Request Amount (\$):** \$1,000,000

**Executive summary of this application to utilize Research Development Funds:** The goal of this proposal is to establish, equip, and operate the *Infrastructure Resiliency and Informatics Lab (IRIL)*, a shared, cross-disciplinary research and innovation laboratory under the TEES Center for Infrastructure Renewal (CIR), with interest, activities, and projects in the strategic area of infrastructure resiliency technology and urban informatics. In broad terms, a resilient infrastructure is able to resist, absorb, accommodate, and recover from the effect of a hazard (natural or man-made) in a timely and efficient manner, through preservation and restoration of its essential basic components. The timing of this proposal almost coincides with the 1-year anniversary of three devastating hurricanes Harvey, Irma, and Maria, that together marked the 2017 hurricane season as the costliest in U.S. history. In 2017, the American Society of Civil Engineers (ASCE) gave an overall score of D+ to the U.S. infrastructure, indicating a dire need for major efforts in renewing our nation's critical infrastructure, and making America's road, bridges, water and electric systems, and information grid resilient against future disasters. What makes this even more important is that people's daily lives and wellbeing is dependent on the satisfactory performance of these infrastructure elements. While research on different technological and social aspects of resiliency is being conducted across various TAMU units and centers, such activities are often fragmented, each tackling a narrowly defined scope, thus limiting our ability to pursue large grants and synergistically engage in major research activities at a national level. As outlined in this RDF application, to be uniquely competitive at the national stage, this strategic investment will:

1. Advance TAMU research capacity, encourage cross-disciplinary collaboration, and develop new technology and solutions in areas related to infrastructure resiliency, infrastructure-human-data nexus, scientific visualization and information fusion, and advanced urban informatics.
2. Establish an agile and meaningful interface between TAMU and the outside world to work on substantial external funding (e.g., NSF, FEMA, NIST, DOD) while informing the regulatory environment.
3. Support broader impacts through a host of curriculum improvement, training for first responders and communities, professional development, and outreach programs.