Application Title: Design Research for Health (*DrHealth*): Transdisciplinary Living Labs for the Built, Natural and Virtual Environment

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Key Participating Units: College of Architecture, Center for Health Systems & Design, College of Engineering, School of Public Health, College of Education & Human Development, College of Agriculture & Life Sciences, College of Liberal Arts, Texas A&M Transportation Institute, Center for Population Health & Aging and Ergonomics Center, School of Public Health, Human Behavior Lab, Texas Virtual Data Library, High Performance Research Computing Center, Texas Target Communities, The Texas A&M University System RELLIS Campus, Human Clinical Research Facility, Ergonomics Center, Clinical Science and Translational Research Institute

Anticipated Request Amount ($): $1,692,745

Marching Fund ($): $818,780+ (excluding part of in-kind personal and space use support)

Executive Summary: With RDF support, our transdisciplinary team will establish "Design Research for Health (*DrHealth*): Transdisciplinary Living Labs for the Built, Natural and Virtual Environment," the first-of-its-kind research infrastructure that will help tackle many long-standing challenges in quantifying the impact of our everyday environment - where we live, work, play and learn - on human health. *DrHealth* will create a series of indoor and outdoor living and programmable labs at TAMUS's Brazos County campuses and nearby communities, which utilize and integrate the latest technologies and tools to empower TAMUS' research community to study design for health. The labs will facilitate a broad range of transdisciplinary research targeting everyday environments (e.g. homes, schools, workplaces, neighborhoods) and their health impacts related to (a) protecting health (e.g. reducing exposure to heat, pollution, hazards, crime/crash risks), (b) developing health (e.g. promoting walking/physical activity, healthy aging, mental health, physical fitness), and (c) restoring health (e.g. increasing access to nature, therapeutic landscape, sensory experiences, and healing healthcare environment). *DrHealth*'s overall aim is to bring the traditionally separated disciplines together to allow for a more accurate and comprehensive assessment for the true impact of our environment (built, natural, and virtual) on human health, including both direct and indirect pathways.

DrHealth's innovation comes from (1) the capability of making the environment programmable to meet the needs of controllability, scalability, and adaptability; (2) the capacity to support the full range of environmental experiments including the real, virtual, and mixed-reality settings, and (3) the capability to conduct and process location-specific and real-time measures of both the environment and the corresponding human exposure and response. These labs will stimulate creative and innovative research ideas and methods, and foster transdisciplinary collaboration to support a wide range of grants, research, publications and patents related to assessing the environmental impacts on human health outcomes and beyond. Further, it is designed to support the full range of scholarships including methodological, pedagogical, community/participatory, and translational research, in addition to the traditional hypothesis or theory-driven topical research.