Exhibit D – Research Project Requirement Template

> ## Estimating Latent Bicyclist and Pedestrian Demand for Shared Use Path Design

Recipient/Grant (Contract) Number: The University of Texas at Austin/Grant # 69A3552344815 and 69A3552348320

Center Name: National Center for Understanding Future Travel Behavior and Demand (TBD)

Research Priority: Improving Mobility of People and Goods

Principal Investigator(s): Randy Machemehl

Project Partners: N/A

Research Project Funding: $300,000 Federal ($150,000 Federal + $150,000 matching funds)

Project Start and End Date: 06/01/2025 – 5/31/2027

Project Description: This is a human behavioral study designed to develop methodology to predict demand for bicycle and pedestrian facilities.

The current design guidance for bicycle and pedestrian facilities does not include specific guidance for predicting numbers of bicycle and pedestrian users. The available guidance for such facilities suggests designers should consider the number of users, and the modal split among bikers, walkers and joggers but does not suggest a methodology.

This study's objective is to develop a procedure for forecasting numbers of users and the modal split.

Procedural guidance contained in the literature and used by state DOTs and cities will be identified and evaluated. Data from the Texas Bicycle and Pedestrian Count Exchange, along with data available from city count programs, will be collected. The LASSO machine learning regression technique will be used to develop relationships between bicycle and pedestrian counts, and a variety of predictors, including demographic and socioeconomic variables, will be used. A sketch planning estimation procedure will be derived to apply the relationships to proposed bicycle and pedestrian facilities. Estimated modal splits among bicycling, walking and jogging users of proposed paths will be part of the methodology.

US DOT Priorities: This project supports USDOT's safety and transformation priorities by advancing the tools needed to plan for and design safe, high-quality bicycle and pedestrian facilities. By applying innovative machine learning methods to statewide and local count data, the project will provide a practical methodology for forecasting active transportation demand and estimating modal splits among walking, biking, and jogging. These advances will help state DOTs and cities move beyond ad hoc practices toward data-driven, behaviorally informed planning, enabling more effective investments that improve safety and support the growing demand for multimodal transportation.

Outputs: The primary research outputs will be human behavioral methodology that can predict numbers of users for bicycle and walking paths. Demand estimation is a primary part of the planning and design process for virtually every transportation facility except bicycle and pedestrian paths. The general attitude of most bicycle and pedestrian facility planners and designers is "if we build it, they will come". While this may be partially true, there is a need to be able to compare alternative paths to develop a timewise priority for implementation and to maximize the utility of bicycle and pedestrian facilities.

Outcomes/Impacts: The behavioral methodology produced through this study will provide planners and designers of bicycle and pedestrian facilities a means to predict demand for alternative facility locations. This will add a "demand" criterion to the list of evaluation criteria for such facilities and enable more informed decisions regarding exactly where available funding should be invested. There is almost never enough funding available to do "everything" so investments in bicycle and pedestrian facilities should be chosen to maximize public benefits.

Final Research Report: A URL link to the final report will be provided upon completion of the project.