RUTGERS
Center for Advanced Infrastructure and Transportation

# Project Overview Report

1. UTC Identifying Number
   DTRT13-G-UTC28
2. Center Identifying Number
   CAIT-UTC-NC15
3 Project Title
   Development of a Methodological Framework for Optimal Truck Highway Parking Location and Capacity Expansion
4. Principal Investigator & Contact Information
   Yun Bai
   Rutgers, The State University of New Jersey
   100 Brett Road
   Piscataway, NJ 08854
5. Rutgers/CAIT Project Manager
   Patrick Szary, Ph.D.
6. Customer Principal
   Jakub Rowinksi
   North Jersey Transportation Planning Authority
   1 Newark Center $17^{th}$ Floor
   Newark, NJ 07102
7. Project Description
   This research will synthesize and integrate the prior related work into a quantitative (or semi-quantitative) framework. Two major approaches will be adopted and developed. 1) Cost-benefit analysis (CBA): quantitative analysis and evaluation of the dominating economic, social and environmental factors in terms of costs and benefits associated with a range of existing and potential locations. CBA is a common economic approach widely adopted by government agencies and private sectors in their capital investment decisions. CBA is easy to interpret and communicate, and simultaneously accounts for a range of factors associated with positive and negative impacts of a decision. Therefore, this analysis starts from CBA and may attempt to try other proper methods in accordance with project progress and need. 2) Freight network modeling and decision analysis: mathematical modeling and optimization techniques to prioritize the best new and existing locations for parking expansion. Various factors and constraints will be incorporated, including spatial demand, federal hours of service requirements, travel time and traffic impacts, land cost, employment and tax revenue, and budget available, etc.
   The preliminary version of this study will be based on the data from New Jersey. Initial sources of data include transportation network, existing and potential parking locations, parking and traffic demand, land use restriction and cost, etc. It can potentially assist state and regional agencies in making better-informed decisions to optimally allocate limited public resources. The methodology can be further developed to be integrated with intelligent parking information and management systems for long-term network performance enhancement.
8. Implementation of Research Outcomes (or why not implemented)
   The development of a methodological framework for optimally locating and expanding truck parking capacities provides a practical tool for quantitative analysis and decision support. Its application to empirical case studies (e.g., in north New Jersey area) will provide customers (e.g., NJTPA) with engineering guidelines and economic insights for addressing the regional parking capacity shortfall and safety concerns. It is also a vital component that should be integrated into sustainable planning and system design of an integrated intermodal freight system. A final report and accompanied presentation will be delivered to NJTPA. This will provide NJTPA with information in development of future policies. If needed, a computer-aided decision support tool may be developed to implement the analytical method.

9. Impacts/Benefits of Implementation (actual, not anticipated)
   TBD
10. Dates and Budget
    Start Date: 1/1/2015
    End Date: 11/30/2015
    UTC (CAIT) Dollars: $ 51,364
    Cost Sharing: $ 0
    Total Dollars: $ 51,364
11. Keywords
    Truck Parking, Rest Areas, Freight, Safety, Hours-of-Operations, Site Evaluation and Ranking
12. Web Links (Reports and Project Website)
    https://cait.rutgers.edu/cait/research/development-methodological-framework-optimal-truck-highway-parking-location-and-capaci