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Center for Advanced Infrastructure and Transportation

PROJECT OVERVIEW REPORT

1. UTC Identifying Number
   69A3551847102

2. Center Identifying Number
   CAIT-UTC-REG27

3. Project Title
   Designing Concrete Mixtures with RCA

4. Principal Investigator & Contact Information
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   New Jersey Institute of Technology
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   Newark, NJ 07102

5. Rutgers/CAIT Project Manager
   Patrick Szary, Ph.D.

6. Customer Principal
   Leon Heyward, Deputy Commissioner
   NYCDOT, Division of Sidewalk and Inspection Management
   55 Water St
   New York, NY, 10041

7. Project Description
   The use of recycled concrete aggregates (RCA) in new concrete can help to reduce landfilling, improve economics of concrete, and supplement dwindling aggregate supplies in urban areas. The NYCDOT has calculated that they spend $1.45 million/year to dispose of demolished concrete, and has invested in crushing units to produce RCA but have not yet developed a design process for using the material as a replacement aggregate. The primary goal of this proposal is to validate and improve a novel RAC design methodology through both experimental and computational methods.

8. Implementation of Research Outcomes (or why not implemented)
   The intended outcome of the project is to provide guidance to NYCDOT on using their home developed RCA in concrete cast as a part of the sidewalk replacement work. Given adequate performance and cost effectiveness, the knowledge and design tools developed for the sidewalk program could then be deployed to more advanced infrastructure including pavements and bridges.

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9. Impacts/Benefits of Implementation (actual, not anticipated)
   To Be Determined

10. Dates and Budget
    Start date: 12/1/2019
    End date: 11/30/2020
    UTC (CAIT) Dollars: $80,863
    Cost Sharing: $119,137
    Total Dollars: $200,000

11. Keywords
    concrete, recycled concrete aggregates, recycled aggregate concrete, durability, freeze-thaw resistance, corrosion resistance, drying shrinkage of concrete, concrete sustainability, concrete durability

12. Web Links (Reports and Project Website)
    https://cait.rutgers.edu/research/designing-concrete-mixtures-with-rca/