PROJECT OVERVIEW REPORT

1. UTC Identifying Number
   69A3551847102

2. Center Identifying Number
   CAIT-UTC-REG 16

3. Project Title
   Fire in Tunnel Collaborative Project

4. Principal Investigator & Contact Information
   Negar Elhami-Khorasani, Ph.D.
   Assistant Professor
   University at Buffalo (UB)
   136 Ketter Hall
   Buffalo, NY 14260

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

6. Customer Principal
   Harry Capers, Vice President
   Arora and Associates, P.C.
   1200 Lenox Drive, Suite 200
   Lawrenceville, NJ 08648

7. Project Description
   The primary goal of this proposal is to increase safety and minimize economic losses in the transportation network by enhancing resilience of existing and new tunnels subject to fire events. This is achieved by developing a better understanding on the effects of a fire on tunnel structure integrity, and establishing a scenario-based risk assessment methodology to quantify fire damage to tunnel lining considering soil-liner interaction. The methodology can be used to assess and decide on proper mitigation measures, such as the design of passive fire protection of tunnel linings, to minimize life cycle costs and achieve resilience of the tunnel structure in the event of a fire.

8. Implementation of Research Outcomes (or why not implemented)
   The intended outcome of the project can be used to make recommendations and propose design guidelines for structural fire resistance of tunnels based on performance requirements, such as acceptable downtime duration (for repair) given a potential fire event. The methodology will be applicable to both new and existing roadway and railway tunnels, and in particular to the Gateway Tunnel
Project—which will be an extension of the Northeast rail corridor to link New Jersey and New York.

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

10. Dates and Budget
    Start date: 10/1/2018
    End date: 9/30/2020
    UTC (CAIT) Dollars: $266,273
    Cost Sharing: $264,030 (UB: $139,030, NJIT: 100,000; PU: $25,000)
    Total Dollars: $530,303

11. Keywords
    Tunnel fire, risk assessment, concrete lining, fire protection, downtime, resilience

12. Web Links (Reports and Project Website)
    https://cait.rutgers.edu/research/fire-in-tunnel-collaborative-project/