<table>
<thead>
<tr>
<th><strong>Project Title</strong></th>
<th>Exploring strategies to improve mobility and safety on roadway segments in urban areas</th>
</tr>
</thead>
</table>
| **University**   | San Jose State University  
Mineta Consortium for Transportation Mobility |
| **Principal Investigator** | Dr. Stephen Arhin |
| **PI Contact Information** | Assistant Professor, Civil & Environmental Engineering Department  
Director, Transportation Research Center  
Howard University  
2300 Sixth Street NW  
Suite 2121  
Washington, DC 20059  
Tel: 202-806-4798/202-806-6577  
Fax: 202-462-9498  
saarhin@howard.edu |
| **Funding Source(s) and Amounts Provided (by each agency or organization)** | $250,000 |
| **Total Project Cost** | $250,000 |
| **Agency ID or Contract Number** | 69A3551747127 |
| **Start and End Dates** | 06/01/2017 – 12/31/2018 |
| **Brief Description of Research Project** | Traffic congestion is a critical problem most urban areas face. This problem is particularly prominent during morning and evening peak hours, where there are extensive delays, severely impacting travel times and traffic safety. In addition, it is expected that existing roadway networks will be able to accommodate future traffic demands. Consequently, there is a need to improve traffic flow on urban roadways by optimizing traffic operations along the built roadway networks.  
In dense urban areas, most of the roadway networks consist of combinations of signalized and unsignalized intersections which may affect throughput and mobility. The Manual on Uniform Traffic Control Devices (MUTCD) has prescribed warrants for signalizing |
intersections. However, on some corridors where unsignalized intersections (AWSC) do not meet the MUTCD warrants, their effect on mobility on the corridor is compounded. This research will explore strategies or conditions under which such intersections could be coordinated with existing signalized intersections to improve mobility along those corridors. For example, an AWSC intersection that may not meet the warrants for signalization but may ultimately improve throughput due to its proximity to the next signalized intersection (and other land uses) could be explored via modeling and simulation.

This study will identify a minimum of thirty (30) segments with a combination of signalized and AWSC intersections in the District of Columbia for exploration of improvement of throughput or mobility. Each segment will consist of at least two signalized and one AWSC intersections at which field data collection will be conducted (traffic volumes, signal timing, lane configurations, etc.). The segments will be modeled using Synchro or VISSIM based on which alternative strategies for mobility improvement can be explored. Some of the measurements of effectiveness (MOEs) to be evaluated include mean delay, travel time, level of service and average queue lengths. In addition, the compliance rate for both approaches of each AWSC intersection within the segment will be computed based on data obtained via video playback. The hypothesis is that there is linear relationship between STOP sign compliance rate and the distance between each AWSC and signalized intersections will be explored. This will enable the determination of the optimal distance between a pair of AWSC and signalized intersections that could minimize driver non-compliance of STOP signs within the segment. All statistical inferences will be tested at 5% level of significance.

Describe
Implementation of
Research Outcomes
(or why not
implemented)

Place Any Photos
Here

Impacts/Benefits of
Implementation
(actual, not
anticipated)

Web Links
- Reports
- Project website