2019 UDOT RESEARCH PROBLEM STATEMENT

**** Problem statement deadline is Feb. 6, 2019. Submit statements to UTRAC@utah.gov. ****

Title: Evaluating the Safety Impacts of Access Connections on State Highways **No. (Office Use):** 19.03.06

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Select ONE Subject Area ☐ Materials/Pavements ☐ Maintenance ☒ Traffic Mgmt/Safety ☐ Structures/Geotech ☐ Planning ☐ Perf Mgmt/Data Analytics ☐ Public Transportation ☐ Other

1. Describe the problem to be addressed:

In the 2018 General Session of the Utah Legislature, House Bill 266 was passed that amended previous provisions related to access to public highways and provided circumstances under which a highway authority may not close a legal point of access to a public highway (*1*). The provisions of H.B. 266 make it more important than ever for UDOT Right-of-Way to be strategic in access permitting so that projects planned in the future will allow for reasonable and safe access. The provisions outlined in H.B. 266 help to maintain property rights. The question that still needs to be addressed, however, is whether or not there are public safety issues associated with potential crashes at these access locations. National research shows that as access density increases, crash rates increase. These relationships vary, but have been estimated such that "crash rates generally increase by the square root of the change in access density, up to about 40 accesses per mile. Thus, an increase from 10 to 20 access points per mile would translate into approximately a 41% increase in the crash rate" (*2*). Research specific to Utah showed that the relationship between the number of access points per mile and the crash rate at locations where study sites share similar characteristics show that an increase from 10 to 20 access points per mile would translate into approximately an 83% increase in the crash rate (*3*). More recent statistics show that in 2018, 36% of all crashes were intersection related (*4*). Driveways are part of those intersections; however, there is not currently an easy way in Utah to identify exactly what portion they are. As the density of driveways increases, the probability of crashes increases as well.

The purpose of this research project is to evaluate the statewide impacts of access on public safety in Utah. Possible questions to consider in this analysis include:

- How are driveways contributing to the Utah crash frequency?
- How does the UDOT crash reporting system identify driveway related crash histories and severity?
- How can UDOT better track access permits issued and the safety effects of such permitted access?
- What is the crash frequency of left turns at driveways (not at signalized intersections)?
- How can safety be improved at access permit locations across the state?

Answering these and other questions related to the statewide impacts of access on public safety will allow UDOT to better quantify the safety impact of access permits and the safety issues associated with granting such access. This will also contribute to UDOT's effort to reduce the total number of fatalities to less than 200 by 2020, and ultimately to achieve the goal of ZERO Fatalities across the state.

References:

1. Utah State Legislature. H.B. 266 Limited Access Highway Amendments. <https://le.utah.gov/~2018/bills/static/HB0266.html> Accessed January 29, 2019.
2. Williams K., Stover, V. G., Dixon, K. K., and Demosthenes, P. (2014). *Access Management Manual*, 2nd Ed. Transportation Research Board, Washington, DC.
3. Schultz, G. G., and Lewis, J. S. (2006). "Assessing the Safety Benefits of Access Management Techniques." Report No. UT-06.08. Utah Department of Transportation Research and Development Division, Salt Lake City, UT.
4. Utah Department of Transportation. Numetric Safety Analysis. <https://udot.numetric.com/roads/crash-query#/>. Accessed January 29, 2019.

2. Write the project objective (25 words or less):

Evaluate the statewide impacts of access driveways and access permitting on public safety in Utah.

3. Explain why this research is important:
(In response, consider addressing specific UDOT goals, applicability in Utah or other states, etc.)

This research effort would benefit both the Right-of-Way and Traffic & Safety Divisions at UDOT by providing better understanding on the safety factors associated with access permitting so that UDOT can issue permits that provide the most feasible safety to the driveway users. The findings from the study will contribute to Carlos' Top 10 and UDOT's Zero Fatalities efforts.

4. List the major tasks:

1. Kickoff meeting to develop a project scope of work and cost estimates
2. Conduct a literature review
3. Extract data for driveway crashes that have taken place on Utah's highways
4. Evaluate types and contributing causes of driveway related crashes across the state
5. Conduct spatial and temporal analyses of driveway crashes and fatalities
6. Develop conclusions and recommendations related to the statewide impacts of access on public safety in Utah
7. Provide the results to UDOT in the form of a written report

5. List the expected deliverables (reports, manual, specification, design method, training, etc.):

1. Technical report documenting the literature review and research results and technical publications in peer-reviewed journals.
2. Listing of locations with high access and driveway related crashes and fatalities.
3. Recommendations on ways to improve access permitting based on the results.

6. Describe how the research results will be implemented:
(In response, consider addressing UDOT leader support, process or standard improvement, etc.)

This research effort would be implemented by both the Right-of-Way and Traffic & Safety Divisions at UDOT by providing better understanding on the safety factors associated with access permitting so that UDOT can issue permits that provide the most feasible safety to the driveway users. In a similar manner, when a UDOT project affects existing driveways, using the research to find the best location and design when the driveways are replaced.

7. Requested from UDOT: $70,000 **Other/Matching Funds:** $ **Total Cost:** $70,000
(or UTA for Public Transportation)

8. Outline the proposed schedule, including start and major event dates:

It is recommended that this project begin in late summer or early Fall 2019 with the initial tasks of the project scope of work and detailed estimate, followed with the literature review and remaining tasks. It is anticipated that the project would take 16-18 months, including 2-month final report review period.