

<b>Project Title:</b>	<b>Develop Non-Proprietary MASH Compliant Sign Post System</b>
<b>Project Synopsis:</b>	<p>MASH evaluation and determination of a non-proprietary sign system. Consider wind loading to evaluate various sign system configurations. Perform full-scale crash testing on sign support system. Provide recommendations for use of various configurations with the evaluated sign support system.</p>
<b>Project Goal(s):</b>	<p>Review state sign standards and survey state usage of non-proprietary sign post systems. Determine critical configuration of a sign post system through engineering analysis (mounting height, sign area, post size). Evaluate the selected sign support configuration for MASH TL-3 compliance. Provide engineering analysis and opinion for other less critical sign support system configurations.</p>
<b>Project Background:</b>	<p>Currently, there is not a full array of MASH compliant, non-proprietary small sign support systems for permanent installations utilizing u-channels or square tubes. There are several NCHRP 350 compliant, non-proprietary splice and slip base designs respectively and similar systems have been tested under MASH that are both proprietary and non-proprietary. U-channel and square tube post sizes are well known and used throughout the industry and have been a staple of signing programs for most agencies both trunkline and local. They (both u-channel and square) are used because of their production ease, economy, transport logistics, installation means and reliability.</p> <p>These systems need to firstly meet wind loading requirements and minimum height requirements. Determining the largest sign to fit each post size to not fail with a 90 mph wind load at a minimum bottom height of 84 inches (will evaluate other sign mounting heights). The intent is to create a single system that can be used with existing non-proprietary posts that would allow for continued use and understanding of available support systems.</p> <p>With over a quarter million of these post types installed, at an estimated asset cost of over \$25 million throughout the Michigan trunkline network, comparable MASH-compliant devices are needed. State and local transportation agencies would find it advantageous to continue using similar u-channel or square-tube sign supports to minimize the potential economic impact of product and manufacturing modifications, and the possibility of having to resort to proprietary options. A MASH-compliant version of a current post type and its configurations (one or two posts) would allow agencies to continue using familiar systems while maintaining existing maintenance and installation equipment and knowledge.</p>
<b>Proposed Work Plan:</b>	<p>Task 1: Literature Review and State Survey</p> <ul style="list-style-type: none"> <li>• Review non-proprietary sign post systems and state sign standards</li> <li>• Survey state usage of non-proprietary sign post systems             <ul style="list-style-type: none"> <li>○ Select highest priority sign support system (i.e., u-channel, square post)</li> </ul> </li> <li>• Perform wind loading analysis on various configurations of the selected sign support system with proposed splice or slip configuration for 84" and 90" mounting height to determine the worst-case configuration for crash testing</li> </ul> <p>Task 2: Crash Testing</p> <ul style="list-style-type: none"> <li>• Evaluate MASH compliance of critical post configuration with full-scale crash testing.</li> </ul> <p>Task 3: Final Report</p> <ul style="list-style-type: none"> <li>• Provide final report, documenting MASH compliance for crash testing.</li> <li>• Provide engineering opinion on any acceptable sign post system variations, such as variations of post size, area size, and mounting heights.</li> </ul>

<b>Deliverables:</b>	A report providing details of sign post system, documentation of the evaluation and crash tests performed, the results of each crash test, the assessment of the performance according to MASH criteria TL-3, and engineering opinion for MASH compliance for similar, less critical, designs which were not crash tested.
<b>Urgency and Expected Benefit:</b>	<p>With over a quarter million of these post types installed, at an estimated asset cost of over \$25 million throughout the Michigan trunkline network, comparable MASH-compliant devices are needed.</p> <p>A MASH-compliant version of a current post type and its configurations (one or two posts) would allow agencies to continue using familiar systems while maintaining existing maintenance and installation equipment and knowledge.</p>
<b>Problem Funding and Research Period:</b>	<p>Estimated cost is \$165,000.</p> <p>Project Duration is 18 months.</p>
<b>Developer(s) of the Problem Statement:</b>	<p>Name: Dean Kanitz, Alonso Uzcategui, Carlos Torres</p> <p>Email: <a href="mailto:kanitzd@michigan.gov">kanitzd@michigan.gov</a>, <a href="mailto:uzcateguia@michigan.gov">uzcateguia@michigan.gov</a>, <a href="mailto:torresc@michigan.gov">torresc@michigan.gov</a></p> <p>Phone: 517-335-2855, 517-335-2624, 517-335-2852</p>