

| UTC Project Information  |   |
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| Project Title  | MPC-623 – Reliability of ABC Grouted Coupler Connected Bridge Piers Subject to Vehicular Impact   |
| University   | Utah State University   |
| Principal Investigator   | Andrew D. Sorensen, Ph.D.   |
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| Funding Source(s) and Amounts Provided (by each agency or organization)                            | USDOT, Office of the Assistant Secretary for Research and Technology<br>\$63,500.06<br><br>Utah Local Technical Assistance Program<br>\$63,500.06   |
| Total Project Cost   | \$127,000.12  |
| Agency ID or Contract Number   | 69A3551747108   |
| Start and End Dates  | February 18, 2020 to July 31, 2024  |
| Brief Description of Research Project  | Accelerated Bridge Construction (ABC) refers to a bridge construction type that incorporates innovative techniques, methodologies, and materials to efficiently reduce the construction time, traffic disruption and dynamic performance. The seismic performance of typical ABC pier-footing connections has been undertaken in high earthquake prone states previously, but the performance of these connections under vehicular impact has yet to be studied. This performance is of particular interest because of the frequency of occurrence of vehicular impact to bridge structures. Additionally, the damage resulting from the impact may appear to only be cosmetic; however, the residual capacity of the pier can be drastically reduced. This makes it even more susceptible to failure under subsequent extreme dynamic loading such as seismic. This study analyzes the residual seismic capacity of grouted coupler pier connections that have been subjected to varying levels of vehicular impact. Both the damage level under impact and the resulting reduction in seismic capacity are evaluated to determine the reliability of such connections under a sequential multi-hazard loading scenario. |
| Describe Implementation of Research Outcomes (or why not implemented)<br><br>Place Any Photos Here | This research increases the fundamental knowledge of how static and dynamic loads are transferred in a complex ABC connection type comprised of multiple materials.   |
| Impacts/Benefits of Implementation (actual, not anticipated)                                       | The results of this research will help designers better under load distribution in grouted splice sleeve coupler connections for ABC bridge construction. Additionally, this research supports previous conclusions   |

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|  | about the performance of couplers located in the foundation to resist hazard loading such as seismic.  |
| Web Links <ul style="list-style-type: none"> <li>• Reports</li> <li>• Project Website</li> </ul> | <ul style="list-style-type: none"> <li>• MPC Final Report – <a href="#">Static and Dynamic Experimental Evaluation of Precast Columns with Grouted Splice Sleeve Connectors</a></li> </ul> |