

| <b>UTC Project Information</b>  |   |
|---|---|
| Project Title   | MPC-651 – Development of LRFD Recommendations of Driven Piles on Intermediate Geomaterials  |
| University  | University of Wyoming   |
| Principal Investigator  | Kam Ng, Ph.D., P.E.<br>Shaun S. Wulff, Ph.D.  |
| PI Contact Information  | <p>Kam Ng, Ph.D., P.E.<br/>Associate Professor<br/>Department of Civil &amp; Architectural Engineering<br/>University of Wyoming<br/>Phone: (307) 766-4388<br/>Email: kng1@uwyo.edu<br/>ORCID: 0000-0001-5099-5454</p> <p>Shaun S. Wulff, Ph.D.<br/>Professor<br/>Department of Mathematics &amp; Statistics<br/>University of Wyoming<br/>Phone: (307) 766-6483<br/>Email: wulff@uwyo.edu<br/>ORCID: 0000-0002-5695-4925</p>   |
| Funding Source(s) and Amounts Provided (by each agency or organization) | <p>USDOT, Office of the Assistant Secretary for Research and Technology<br/>\$45,646</p> <p>Wyoming Department of Transportation<br/>\$113,399</p>  |
| Total Project Cost  | \$159,045   |
| Agency ID or Contract Number  | 69A3551747108   |
| Start and End Dates   | May 7, 2021 to July 31, 2022  |
| Brief Description of Research Project                                   | <p>Many piles in the Rock Mountain region are driven on Intermediate Geomaterials (IGM). IGM is a transitional geomaterial between soil and hard rock, which is not well defined for the design and construction of driven piles. Reliable static analysis methods have not been developed to estimate the pile resistance on IGM. The resistances of piles driven on IGMs are currently determined using dynamic analysis or static load test methods during construction. These limitations reduce the accuracy of pile resistance estimation, result in lower LRFD resistance factors, and eventually increase the construction cost. The proposed research is to develop the Load and Resistance Factor Design recommendations of driven piles on IGMs. The research objectives are to 1) develop advanced static analysis methods for pile resistance estimation on IGM, 2) validate and improve the accuracy of dynamic analysis methods, 3) develop LRFD resistance factors for piles on IGM, and 4) recommend changes and improvements to current pile design and construction practices. The research objectives will be accomplished from seven</p> |

|  |  |
|--|--|
|  | tasks: data collection, electronic database development, data assessment, pile resistance estimation, LRFD resistance factor calibrations, LRFD recommendations and reporting. |
| Describe Implementation of Research Outcomes (or why not implemented)<br><br>Place Any Photos Here |  |
| Impacts/Benefits of Implementation<br>(actual, not anticipated)                                    |  |
| Web Links <ul style="list-style-type: none"><li>• Reports</li><li>• Project Website</li></ul>      |  |