

Data Management Plan

Name of Contractor: University of Wyoming

Name of the Project: Structural Health Monitoring of Highway Bridges Subjected to Overweight Vehicles, Phase II - Field Deployment

Project Duration: Start Date: Jan. 31, 2017

End Date: Jul. 31, 2019

DMP Version:

Date Amended, if any:

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WYDOT Project Number: 1906F RS09217

- **Name of all peer reviewed publications, which have been generated using data from this project to include:**

Lu R, Judd JP, Barker MG. "Field evaluation of unintended composite action between steel plate girders and concrete slab in highway bridges." XII Conference on Steel and Composite Construction, Nov. 21-22, Coimbra, Portugal, 2019.

Lu R, Judd JP, Barker MG. "Field test load rating procedures for performance-based design of highway bridges." 9th International Conference on Structural Health Monitoring of Intelligent Infrastructure, St. Louis, Missouri, Aug. 4-7, 2019.

- **Any Digital Object Identifier (DOI), assigned to any peer reviewed publication or data generated by this project:**
- **URLs for all peer reviewed publications which have been generated using data from this project:** NA
- **Dataset URL, if available:** NA

1. Introduction

The purpose of this research project was to develop a structural health monitoring system for highway bridges that are subject to overweight vehicles using fiber optic strain gages by acquiring instrumentation equipment and preparing the equipment for deployment, developing a prototype structural health monitoring system, validating the fiber optic strain gages using diagnostic field tests and transducer strain gages, developing a data logging set-up and storage

system, data transmission system, and a triggering system, deploying a structural health monitoring system on the Bear River bridge, conducting a diagnostic field test, and developing methods to process data

2. Definitions

- a. Code or scripts include code used in the collection, manipulation, processing, analysis or visualization of data, but may also include software developed for other purposes.
- b. Copyright is a set of legal rights extended to copyright owners that govern such activities as reproducing, distributing, adapting, or exhibiting original works fixed in tangible forms.
- c. Data means the recorded factual material commonly accepted in the scientific community as necessary to validate research findings, but not any of the following: preliminary analyses, drafts of scientific papers, plans for future research, peer reviews, communications with colleagues. Recorded material excludes physical objects (e.g. laboratory samples). Research data also does not include trade secrets, commercial information, materials necessary to be held confidential; and personnel and medical information and similar information the disclosure of which would constitute a clearly unwarranted invasion of personal privacy.
- d. Data Archive is a site where machine-readable materials are stored, preserved or possibly redistributed to individuals interested in the materials.
- e. Data Management Plan is a document that specifies your plans for managing your data and files for a research project.
- f. Dataset means collection of data.
- g. Metadata refers to structured data about data that helps define administrative, technical, or structural characteristics of the digital content.

3. Data Types and Storage

The types of data and/or datasets generated and/or used in this project include raw data collection from instrumentation in text format, data processing spreadsheets in Microsoft Excel format, computer code used to reduce data in Julia and MATLAB format, photographs in JPEG format, and written documents in Microsoft Word format. The size of the data is approximately 50 GB. The data will be stored in the University of Wyoming High Bay Research Facility. The raw data is not reproducible. Data generated and derived from the raw data is reproducible. A remote copy of the data is retained by the Principal Investigator in case the archived data is lost or becomes unusable.

4. Data Organization, Documentation, and Metadata

The plan for organizing, documenting, and using descriptive metadata to assure quality control and reproducibility of these data include using text formatted data and Microsoft Excel and Word software to facilitate platform-independent and non-proprietary access in the future.

5. Data and/or Database Access and Intellectual Property

Access to the data is restricted to individuals with access to the University of Wyoming High Bay Research Facility or to those that have been delegated access by the sponsor or Principal Investigators. Access to the data is controlled by the University of Wyoming. There is no embargo on the data.

6. Data Sharing and Reuse

The data will be released for non-commercial use after a written request has been provided to the Principal Investigators and approved by both the Principal Investigators and the sponsor. It is anticipated that Microsoft Excel and Word software will be sufficient tools to work with the data.

7. Data Preservation and Archiving

The data will be preserved and archived in the University of Wyoming High Bay Research Facility for at least 3-5 years by the University of Wyoming. The data will also be archived using self-dissemination. The data formats are standard (e.g. text formatted data) and are anticipated to be long-lived.

NOTE: This DMP is created as a derivative from the DMP belonging to the University of Minnesota and can be found at <https://www.lib.umn.edu/datamanagement/DMP>

Metadata Schema

Elements	Example of what is expected for each element
Title¹	Human-readable name of the asset. Should be in plain English and include sufficient detail to facilitate search and discovery. A name given to the publication or data element. All substitute or alternative titles must have a different Metadata Transmittal Schema.
Creator/contact point	An entity/person(s) primarily responsible for making the content of the resource. Contact person's name, ORCID number, and email for the asset.
Publication Date(s)	The date associated with the final report/dataset.
Description/Abstract	Human-readable description (e.g., an abstract) with sufficient detail to enable a user to quickly understand whether the asset is of interest. May include abstract, table of contents, reference to a graphical representation of content or a free text account of the content.
Subject and Keywords	The topic of the content of the resource. Tags (or keywords) help users discover your dataset; please include terms that would be used by technical and non-technical users.
Identifier² and/or source	A unique identifier for the dataset/publication. Examples: URI, URL, DOI, ISBN, ISSN.
Collection and Related Documents	If there is a secondary dataset, cite source. The collection of which the dataset is a subset should be listed. Include all identifiers and/or sources.
Edition	Most recent date on which the dataset was changed, updated or modified.
Related Documents	Related documents such as technical information about a dataset, developer documentation, etc.
Coverage	Spatial location, temporal period, jurisdiction.
Language	The language of the dataset/publication.

¹ To include alternate title; conference title; and journal title, if they are different.

² To include record numbers; report numbers; NTIS number; TRIS Accession Number; OCLC Number; ISBN; ISSN; contract number; and DOI if available.

Elements	Example of what is expected for each element
Publisher/Distributor	FHWA and Wyoming Department of Transportation List all other publishing companies that this publication has been sent to.
Funding agency	FHWA and Wyoming Department of Transportation
Access Restrictions	The degree to which this dataset could be made publicly available, <i>regardless of whether it has been made available</i> . Choices: public (Data asset is or could be made publicly available to all without restrictions), restricted public (Data asset is available under certain use restrictions), or non-public (Data asset is not available to members of the public).
Intellectual Property and Other Rights	This may include information regarding access or restrictions based on privacy, security, or other policies. This should also serve as an explanation for the selected “accessLevel” including instructions for how to access a restricted file, if applicable, or explanation for why a “non-public” or “restricted public” data asset is not “public,” if applicable.
License	The license or non-license (i.e. Public Domain) status with which the dataset or API has been published.
Code and software needs	List all code specific information. Is there specific software needed to run the database or data.
Format	The machine-readable file format. May include media type or dimensions. Used to determine the software, hardware or other equipment needed to display or operate the resources.
Choice of Repository	If you have a preference, list the repository where you will archive your data/datasets.

NOTE: Each separate report, dataset, collection, existing collection, and software developed must have its own table. All fields in this Schema must be completed at the time of the final report.

NOTE: This Metadata Schema is created as a derivative from the Common Core required fields which can be found at <https://project-open-data.cio.gov/schema/>.