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Dynamic Post Testing Review

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and Innovative Technology Administration

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DYNAMIC POST TESTING REVIEW

Submitted by

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MwRSF Research Report No. TRP-03-328-15

December 15, 2015
# Dynamic Post Testing Review

The objective of this research study was to compile a database of existing dynamic post testing conducted globally and located in many different research reports for use internally during future Midwest Roadside Safety Facility (MwRSF) research studies.

Prepared in cooperation with U.S. Department of Transportation, Federal Highway Administration.

DISCLAIMER STATEMENT

This report was completed with funding in part from the Federal Highway Administration, U.S. Department of Transportation (USDOT). The contents of this report reflect the views and opinions of the authors who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the Mid-America Transportation Center (MATC) or the Federal Highway Administration (FHWA), U.S. Department of Transportation. This report does not constitute a standard, specification, regulation, product endorsement, or an endorsement of manufacturers.
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- J.D. Schmidt, Ph.D., P.E., Research Assistant Professor
- C.S. Stolle, Ph.D., Research Assistant Professor
- A.T. Russell, B.S.B.A., Shop Manager
- S.M. Tighe, Laboratory Mechanic
- D.S. Charroin, Laboratory Mechanic
- M.A. Rasmussen, Laboratory Mechanic
- E.W. Krier, Laboratory Mechanic
- Undergraduate and Graduate Research Assistants

**Nebraska Department of Roads**

- Phil TenHulzen, P.E., Design Standards Engineer
- Jim Knott, P.E., State Roadway Design Engineer
- Jodi Gibson, Research Coordinator

**Federal Highway Administration**

- John Perry, P.E., Nebraska Division Office
- Danny Briggs, Nebraska Division Office
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1 INTRODUCTION

1.1 Background

The Midwest Roadside Safety Facility (MwRSF) has utilized dynamic post testing during design phases of many projects. The dynamic post testing is located among many different research reports and is presented in different formats. Since previous research and development efforts have proven to be very helpful in other projects, there is a need to compile this extensive amount of data available to allow MwRSF researchers to easily utilize the data in order to compare the performance characteristics of different posts. Thus, creating a database from the existing dynamic post testing data is necessary.

1.2 Objective

The objective of this research study was to compile a database of existing dynamic post testing conducted globally and located in many different research reports for MwRSF use internally during future research studies.

1.3 Scope

The primary research objective was achieved through the completion of several tasks. First, the research effort will begin with a review of previous dynamic post testing conducted globally. During the literature review of dynamic tests, a database will be developed in order to compare the performance characteristics of different post types. Finally, the performance evaluation of the posts will be used during the concept development phase for a short-radius system for intersecting roadways.
2 DATABASE CREATION

2.1 Literature Review

Over 70 reports that contained information on component testing that included a post were reviewed. These reports included those written or published by the researchers of MwRSF as well as reports published by external researchers [1-75].

2.2 Database Compilation

A database was created from the information gathered from the reports. Pull down menus were used within the database for some categories in order to help with consistency of the information reported. The information gathered included:

- General system category
- Publication year
- Report number
- Was a blockout used?
- General material of the post
- Post size
- Post material specification
- Was a soil plate used?
- Impact angle (0 degree = weak axis impact, 90 degree = strong axis impact)
- Type of test
- Test name(s)
- Test year
- Test month(s)
- Foundation type
- Soil type
- Load height in inches and millimeters
- Primary and secondary post lengths in inches and millimeters (primary is the first or only post impacted, secondary is the second post impacted if present)
- Primary and secondary post embedment depths in inches and millimeters (primary is the first or only post impacted, secondary is the second post impacted if present)
- Bogie number
- Accelerometer(s) used – sometimes multiple units were used
- Title of the report
- Names of the report authors
- Keywords (typically taken from the Technical Documentation Page in the report)
- Additional information deemed pertinent from the report
- Reason for testing
2.3 Final Product

Excerpts from the database are shown in Figures 2 through 2. This database will be a living document that will be updated periodically with new post testing that has occurred both internally at MwRSF and externally at other crash test laboratories.
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Figure 2.1. Excerpt from the Post Testing Database, Sheet 1 of 3
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<td>grading, guarded posts, w-beam, post quality, age, moisture, location, static tests, logo tests</td>
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<td>Cow, B.V., Kull, L.D., and Robin, J.</td>
<td>Dynamic Impact Testing of Unbraced Plate Bentwood Steel on Steel</td>
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<td>Also shown in Ritchie M. Fatigue's Thesis</td>
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**Figure 2.3. Excerpt from the Post Testing Database, Sheet 3 of 3**
3 REFERENCES


15. Kuipers, B.D. and Reid, J.D., *Testing of M203.7x9.7 (M8x6.5) and S76x8.5 (S3x5.7) Steel Posts - Post Comparison Study for the Cable Median Barrier*, Final Report to the Midwest States Regional Pooled Fund Program, Transportation Research Report No. TRP-03-143-03, Midwest Roadside Safety Facility, University of Nebraska-Lincoln, October 24, 2003.


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