

## **Enhancing the Performance of Asphalt Mixtures Containing High RAP Content with the Use of Different WMA Technologies Dataset**

Dataset available at: [https://digitalcommons.lsu.edu/transet\\_data/93/](https://digitalcommons.lsu.edu/transet_data/93/)

(This dataset supports report **Enhancing the Performance of Asphalt Mixtures Containing High RAP Content With the Use of Different WMA Technologies**)

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[https://digitalcommons.lsu.edu/transet\\_data/93/](https://digitalcommons.lsu.edu/transet_data/93/)

The related final report **Enhancing the Performance of Asphalt Mixtures Containing High RAP Content With the Use of Different WMA Technologies**, is available from the National Transportation Library's Digital Repository at <https://rosap.ntl.bts.gov/view/dot/56608>

### **Metadata from the LSU Digital Commons Repository record:**

Document Type: Data Set

Publication Date: 11-2020

Abstract: The production of Warm-mix asphalt mixtures in conjunction with reclaimed asphalt pavement (RAP) has received considerable interest in recent years for economic and environmental reasons. The primary objective of this project is to enhance the performance of asphalt mixtures containing RAP in Region 6 using different WMA technologies. In this project, the effect of utilizing 0%, 25%, and 35% RAP contents on the performance of different WMA mixtures against rutting, moisture damage, and fatigue cracking are evaluated. The effects of the WMA technologies on the rutting performance of the asphalt mixtures and recovered binders were investigated using loaded wheel tracker (LWT) and multiple stress creep recovery (MSCR), respectively. Further, the influences of these technologies on the cracking performance of the asphalt mixtures and recovered binders were evaluated using Semi-Circular Bending (SCB) and linear amplitude sweep (LAS) test, respectively. Based on the results, WMA mixtures containing no RAP have a lower value of the Jnr compared to the HMA control mixture. This is an indication of the better performance of the WMA mixtures against the permanent deformation. Moreover, findings from the LWT test completely agree with the results from the MSCR test. On the other hand, the fracture resistance is found to be enhanced with the incorporation of a higher percentage of RAP and WMA technologies. Overall fracture resistance performance of WMA-RAP mixtures is observed to be better compared to HMA-RAP mixtures. Moreover, the results of the LAS test show that the incorporation of RAP materials and WMA technologies is associated with improved fatigue life of the WMA-RAP mixtures.

Comments: Tran-SET Project: 19BLSU01

### **Recommended citation:**

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## Dataset description:

This dataset contains 1 file collection described below.

### 19BLSU01\_Dataset.zip:

- 19BLSU01 Dataset Folder
  - SCB Data Folder
    - WS35R – SCB Computation.xlsx
    - WS25R – SCB Computation.xlsx
    - WS0R – SCB Computation.xlsx
    - WE35R – SCB Computation.xlsx
    - WE25R – SCB Computation.xlsx
    - WE0R – SCB Computation.xlsx
    - WA35R – SCB Computation.xlsx
    - WA25R – SCB Computation.xlsx
    - WA0R – SCB Computation.xlsx
    - Results.xlsx
    - H35R – SCB Computation.xlsx
    - H25R – SCB Computation.xlsx
    - H0R – SCB Computation.xlsx
  - HWTT Data Folder
    - WS35R.xls
    - WS25R.xls
    - WS0R.xls
    - WE35R.xls
    - WE25R.xls
    - WE0R.xls
    - WA35R.xls
    - WA25R.xls
    - WA0R.xls
    - HOR.xls
    - H35R.xls
    - H25R.xls
  - DSR Data Folder
    - Virgin Binder Folder
      - T350 Results Folder
        - OB Folder
          - RTFO Folder
            - Sample 1 Folder
              - PG76-22 VB-RTFO (Sample 1) 2019-12-08 110209.rdf
              - PG&^22 VB-RTFO (Sample 1) 2019-12-08 110209.csv
            - Sample 2 Folder
              - PG76-22 VB-RTFO (Sample 2).csv



- PG76-22 WS25R-PAV (Sample 4).csv
  - PG76-22 WS25R-PAV (Sample 4) 2020-08-26 133055.rdf
- Sample 3 Folder
  - WS25R Frequency Sweep-sample 3.csv
  - WS25R Amplitude sweep-sample 3.csv
  - PG76-22 WS25R-PAV (Sample 3) 2020-07-20 130105.rdf
  - PG76-22 WS25R-PAV (Sample 2).csv
- Sample 2 Folder
  - WS25R Frequency Sweep-sample 2.csv
  - WS25R Amplitude sweep-sample 2.csv
  - PG76-22 WS25R-PAV (Sample 2).csv
  - PG76-22 WS25R-PAV (Sample 2) 2020-07-16 114901.rdf
- Sample 1 Folder
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  - WS25R Amplitude sweep-sample 1.csv
  - PG76-22 WS25R-PAV (Sample 1).csv
  - PG76-22 WS25R-PAV (Sample 1) 2020-07-16 100506.rdf
- WS0R Folder
  - .DS\_Store
  - Sample 3 Folder
    - WS0R Frequency Sweep-sample 3.csv
    - WS0R Amplitude sweep-sample 3.csv
    - PG76-22 WS0R-PAV (Sample 3).csv
    - PG76-22 WS0R-PAV (Sample 3) 2020-06-04 103534.rdf
  - Sample 2 Folder
    - WS0R Frequency Sweep-sample 2.csv

- WS0R Amplitude sweep-sample 2.csv
  - PG76-22 WS0R-PAV (Sample 2).csv
  - PG76-22 WS0R-PAV (Sample 2) 2020-05-27 124642.rdf
- Sample 1 Folder
  - PG76-22 WS0R-PAV (Sample 1).csv
  - PG76-22 WS0R-PAV (Sample 1) 2020-05-26 104435.rdf
  - Frequency Sweep1.csv
  - Amplitude sweep.csv
- WE25R Folder
  - .DS\_Store
  - Sample 4 Folder
    - WE25R Frequency Sweep-sample 4.csv
    - WE25R Amplitude sweep-sample 4.csv
    - PG76-22 WE25R-PAV (Sample 4).csv
    - PG76-22 WE25R-PAV (Sample 4) 2020-08-26 123611.rdf
  - Sample 3 Folder
    - WE25R Frequency Sweep-sample 3.csv
    - WE25R Amplitude sweep-sample 3.csv
    - PG76-22 WE25R-PAV (Sample 3) 2020-07-20 120117.rdf
    - PG76-22 WE25R-PAV (Sample 2).csv
  - Sample 2 Folder
    - WE25R Frequency Sweep-sample 2.csv
    - WE25R Amplitude sweep-sample 2.csv
    - PG76-22 WE25R-PAV (Sample 2).csv
    - PG76-22 WE25R-PAV (Sample 2) 2020-07-09 125220.rdf
  - Sample 1 Folder
    - WE25R Frequency Sweep-sample 1.csv

- WE25R Amplitude sweep-sample 1.csv
- PG76-22 WE25R-PAV (Sample 1).csv
- PG76-22 WE25R-PAV (Sample 1) 2020-07-09 102230.rdf
- End results Folder
  - PG72-22 WE25R-PAV (Sample 1).rdf
- WE0R Folder
  - .DS\_Store
  - Sample 3 Folder
    - WE0R Frequency Sweep-sample 3.csv
    - WE0R Amplitude sweep-sample 3.csv
    - PG76-22 WE0R-PAV (Sample 3).csv
    - PG76-22 WE0R-PAV (Sample 3) 2020-06-04 133711.rdf
  - Sample 2 Folder
    - WE0R Frequency Sweep-sample 2.csv
    - WE0R Amplitude sweep-sample 2.csv
    - PG76-22 WE0R-PAV (Sample 2).csv
    - PG76-22 WE0R-PAV (Sample 2) 2020-05-27 144733.rdf
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    - WE0R Amplitude sweep-sample 1.csv
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    - PG76-22 WE0R-PAV (Sample 1) 2020-05-27 135152.rdf
- WA25R Folder
  - .DS\_Store
  - Sample 5 Folder
    - WA25R Frequency Sweep-sample 5.csv
    - WA25R Amplitude sweep-sample 5.csv

- PG76-22 WA25R-PAV (Sample 5).csv
  - PG76-22 WA25R-PAV (Sample 5) 2020-08-31 133224.rdf
- Sample 4 Folder
  - WA25R Frequency Sweep-sample 4.csv
  - WA25R Amplitude sweep-sample 4.csv
  - PG76-22 WA25R-PAV (Sample 4).csv
  - PG76-22 WA25R-PAV (Sample 4) 2020-08-25 153919.rdf
- Sample 2 Folder
  - WA25R Frequency Sweep-sample 2.csv
  - WA25R Amplitude sweep-sample 2.csv
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  - PG76-22 WA25R-PAV (Sample 2) 2020-07-17 104049.rdf
- Sample 1 Folder
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  - WA25R Amplitude sweep-sample 1.csv
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  - PG76-22 WA25R-PAV (Sample 1) 2020-07-16 132654.rdf
- WA0R Folder
  - .DS\_Store
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    - WA0R Amplitude sweep-sample 4.csv
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    - PG76-22 WA0R-PAV (Sample 4) 2020-08-25 142933.rdf
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- WA0R Amplitude sweep-sample 3.csv
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  - PG76-22 WA0R-PAV (Sample 3) 2020-06-04 120252.rdf
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  - WA0R Amplitude sweep-sample 2.csv
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  - PG76-22 WA0R-PAV (Sample 2) 2020-05-28 130904.rdf
- Sample 1 Folder
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  - WA0R Amplitude sweep-sample 1.csv
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  - PG76-22 WA0R-PAV (Sample 1) 2020-05-28 103806.rdf
- H25R Folder
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  - Sample 5 Folder
    - PG76-22 H25R-PAV (Sample 5)frrr.csv
    - PG76-22 H25R-PAV (Sample 5)fr.csv
    - PG76-22 H25R-PAV (Sample 5).csv
    - PG76-22 H25R-PAV (Sample 5) 2020-08-31 183638.rdf
  - Sample 4 Folder
    - PG76-22 H25R-PAV (Sample 4).csv
    - PG76-22 H25R-PAV (Sample 4) 2020-08-25 131932.rdf
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    - H25R Amplitude sweep-sample 4.csv
  - Sample 3 Folder
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    - PG76-22 H25R-PAV (Sample 3) 2020-07-20 105358.rdf



- H25R Frequency Sweep-sample 3.csv
  - H25R Amplitude sweep-sample 3.csv
- Sample 2 Folder
  - PG76-22 H25R-PAV (Sample 2).csv
  - PG76-22 H25R-PAV (Sample 1) 2020-07-17 131358.rdf
  - H25R Frequency Sweep-sample 2.csv
  - H25R Amplitude sweep-sample 2.csv
- Sample 1 Folder
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  - PG76-22 H25R-PAV (Sample 1) 2020-06-03 112536.rdf
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  - H25R Amplitude sweep-sample 1.csv
- H05 Folder
  - .DS\_Store
  - Sample 5 Folder
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    - PG76-22 H0R-PAV (Sample 5) 2020-08-31 123633.rdf
    - H0R-Frequency Sweep Sample 5.csv
    - H0R Amplitude sweep-sample 5.csv
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    - PG76-22 H0R-PAV (Sample 4) 2020-08-25 120714.rdf
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    - H0R Amplitude sweep-sample 4.csv
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    - PG76-22 H0R-PAV (Sample 3) 2020-06-04 181434.rdf
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    - H0R Amplitude sweep-sample 3.csv
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    - PG76-22 H0R-PAV (Sample 2).csv
    - H0R-Frequency Sweep Sample 2.csv
    - H0R Amplitude sweep-sample 2.csv

- Sample 1 Folder
      - PG76-22 H0R-PAV (Sample 1).csv
      - PG76-22 H0R-PAV (Sample 1) 2020-06-03 112536.rdf
      - H0R-Frequency Sweep Sample 1.csv
      - H0R Amplitude sweep-sample 1.csv
  - T350 Results Folder
    - WS25R Folder
      - Sample 3 Folder
        - PG76-22 WS25R-RTFO (Sample 3).csv
        - PG76-22 WS25R-RTFO (Sample 3) 2020-03-02 133603.rdf
        - 6.csv
        - 5.csv
      - Sample 2 Folder
        - PG76-22 WS25R-RTFO (Sample 2).csv
        - PG76-22 WS25R-RTFO (Sample 2) 2020-03-02 114238.rdf
      - Sample 1 Folder
        - PG76-22 WS25R-RTFO (Sample 1).csv
        - PG76-22 WS25R-RTFO (Sample 1) 2020-03-01 190206.rdf
    - WS0R Folder
      - RTFO Folder
        - Sample 3 Folder
          - PG76-22 WS0R-RTFO (Sample 3).csv
          - PG76-22 WS0R-RTFO (Sample 3) 2019-12-08 175313.rdf
        - Sample 2 Folder
          - PG76-22 WS0R-RTFO (Sample 2).csv
          - PG76-22 WS0R-RTFO (Sample 2) 2020-12-08 170313.rdf
        - Sample 1 Folder
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          - PG76-22 WS0R-RTFO (Sample 1) 2019-12-08 161502.rdf

- WE25R Folder
  - Sample 3 Folder
    - PG76-22 WE25R-RTFO (Sample 3).csv
    - PG76-22 WE25R-RTFO (Sample 3) 2020-03-12 122028.rdf
  - Sample 2 Folder
    - PG76-22 WE25R-RTFO (Sample 2).csv
    - PG76-22 WE25R-RTFO (Sample 2) 2020-03-10 115900.rdf
  - Sample 1 Folder
    - PG76-22 WE25R-RTFO (Sample 1).csv
    - PG76-22 WE25R-RTFO (Sample 1) 2020-03-10 110804.rdf
- WE0R Folder
  - RTFO Folder
    - Sample 3 Folder
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    - Sample 2 Folder
      - PG76-22 WE0R-RTFO (Sample 2).csv
      - PG76-22 WE0R-RTFO (Sample 2) 2019-12-08 141051.rdf
    - Sample 1 Folder
      - PG76-22 WE0R-RTFO (Sample 1).csv
      - PG76-22 WE0R-RTFO (Sample 1) 2019-12-08 132805.rdf
- WA25R Folder
  - Sample 3 Folder
    - PG76-22 WA25R-RTFO (Sample 3).csv
    - PG76-22 WA25R-RTFO (Sample 3) 2020-03-01 182005.rdf
  - Sample 2 Folder
    - PG76-22 WA25R-RTFO (Sample 2) 2020-03-01 174042.rdf

- Sample 1 Folder
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    - PG76-22 WA25R-RTFO (Sample 1) 2020-03-01 145155.rdf
- WA0R Folder
  - Sample 3 Folder
    - PG76-22 WA0R-RTFO (Sample 3).csv
    - PG76-22 WA0R-RTFO (Sample 3) 2019-12-10 135530.rdf
  - Sample 2 Folder
    - PG76-22 WA0R-RTFO (Sample 2).csv
    - PG76-22 WA0R-RTFO (Sample 2) 2019-12-10 125405.rdf
  - Sample 1 Folder
    - PG76-22 WA0R-RTFO (Sample 1).csv
    - PG76-22 WA0R-RTFO (Sample 1) 2019-12-10 115342.rdf
- T350 Reslts – All in One Folder
  - T350- All in One.xlsx
- OB -1- Test Trial Folder
  - PG76-22 OB (Sample 1) – MSCR 2019-11-25 164718.rdf
  - OB-MSCR-1.oxps
  - MSCR-1.csv
- H25R Folder
  - Sample 3 Folder
    - PG76-22 H25R-RTFO (Sample 3).csv
    - PG76-22 H25R-RTFO (Sample 3) 2020-03-12 130430.rdf
  - Sample 2 Folder
    - PG76-22 H25R-RTFO (Sample 2).csv
    - PG76-22 H25R-RTFO (Sample 2) 2020-03-11 181519.rdf
  - Sample 1 Folder
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    - PG76-22 H25R-RTFO (Sample 1) 2020-03-11 172133.rdf



- Sample 2 Folder
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    - PG76-22 WS0R-RTFO (Sample 2) 2019-12-08 165411.rdf
  - Sample 1 Folder
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    - PG76-22 WS0R-RTFO (Sample 1) 2019-12-08 160650.rdf
- WE25R Folder
  - Sample 3 Folder
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    - PG76-22 WE25R-RTFO (Sample 3) 2020-03-12 121324.rdf
  - Sample 2 Folder
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    - PG76-22 WE25R-RTFO (Sample 2) 2020-03-12 115137.rdf
  - Sample 1 Folder
    - PG76-22 WE25R-RTFO (Sample 1).csv
    - PG76-22 WE25R-RTFO (Sample 1) 2020-03-10 110126.rdf
- WE0R Folder
  - RTFO Folder
    - Sample 3 Folder
      - PG76-22 WE0R-RTFO (Sample 3).csv
      - PG76-22 WE0R-RTFO (Sample 3) 2019-12-08 152237.rdf
    - Sample 2 Folder
      - PG76-22 WE0R-RTFO (Sample 2).csv
      - PG76-22 WE0R-RTFO (Sample 2) 2019-12-08 140352.rdf
    - Sample 1 Folder
      - PG76-22 WE0R-RTFO (Sample 1).csv







- WS0R-PAV\_GstarvsRedFreq\_Sample 1.csv
  - WA0R-PAV\_GstarvsRedFreq\_Sample 1\_all.csv
  - HOR-PAV\_GstarvsRedFreq\_Sample 1\_all.csv
- \_\_MACOSX Folder
  - Appears to have all the same files from the 19BLSU01 Dataset Folder, organized in the same way

The .xlsx and .xls file types are Microsoft Excel files, which can be opened with Excel, and other free available software, such as OpenRefine.

The .csv, Comma Separated Value, file is a simple format that is designed for a database table and supported by many applications. The .csv file is often used for moving tabular data between two different computer programs, due to its open format. The most common software used to open .csv files are Microsoft Excel and RecordEditor, (for more information on .csv files and software, please visit <https://www.file-extensions.org/csv-file-extension>).

The .txt file type is a common text file, which can be opened with a basic text editor. The most common software used to open .txt files are Microsoft Windows Notepad, Sublime Text, Atom, and TextEdit (for more information on .txt files and software, please visit <https://www.file-extensions.org/txt-file-extension>).

The .rdf file extension is associated with the ArcGIS, a geospatial analysis suite for Microsoft Windows operating system, developed by Esri. The .rdf file contains report document with GIS statistical information. (for more information on .csv files and software, please visit <https://www.file-extensions.org/rdf-file-extension-arcgis-report-document>).

The oxps file extension is mainly related to a latest variant of the XML Paper Specification, which was introduced in Windows 8 and used ever since even in current Windows 10. (for more information on .csv files and software, please visit <https://www.file-extensions.org/oxps-file-extension>).

### **National Transportation Library (NTL) Curation Note:**

As this dataset is preserved in a repository outside U.S. DOT control, as allowed by the U.S. DOT's Public Access Plan (<https://ntl.bts.gov/public-access>) Section 7.4.2 Data, the NTL staff has performed *NO* additional curation actions on this dataset. NTL staff last accessed this dataset at [https://digitalcommons.lsu.edu/transet\\_data/93/](https://digitalcommons.lsu.edu/transet_data/93/) on 2021-07-23. If, in the future, you have trouble accessing this dataset at the host repository, please email [NTLDataCurator@dot.gov](mailto:NTLDataCurator@dot.gov) describing your problem. NTL staff will do its best to assist you at that time.