

Gravel Road Condition Rating



Project Overview

Gravel roadways continue to be a challenge when it comes to proactive management and maintenance. Typically, gravel roadways are managed in a reactive mode, either based on major weather events, or citizen complaints.

Conventional pavement management tactics are difficult to implement as gravel road structures are dramatically impacted by rain and snow events.

Rival has teamed with Stantec Consulting to develop a more simple, mobile, and useful method for gravel road rating. Based on the PASER rating criteria, the solution has been successfully piloted with US Federal Highways Administration, Federal Lands division.

Simple field data entry, while mobile

Rival offers a variety of solutions from its core RUBIX platform to conduct roadway condition surveys. The goal of this project was to provide simple condition assessment capabilities with rapid data turnaround. Customized forms were developed to log key PASER data while keeping mobile. The primary tool to accomplish this was Rival's **rRate** application and processing workflow.



rRate is an iPad tablet condition rating application that allows users to collect and map infrastructure attribute locations, images, sketch's and other information based user defined specifications, such as the PASER rating methodology. Data is transferred in near real time to Rivals cloud services to aggregate and report the information on its customizable web based dashboard.

A sample of the form configured and used for the FHWA data collection is shown above.

Project Stats

- Project location: Bosque Wildlife Refuge, New Mexico
- 46 miles of gravel roadways surveyed
- Total Survey time ~ 5 hours
- Total dead haul time (time between segment collection) ~ 10 hours
- Images taken (critical issues, start and end of segments) ~ 103
- **Final condition rating production rate ~ 9.5 miles per hour**

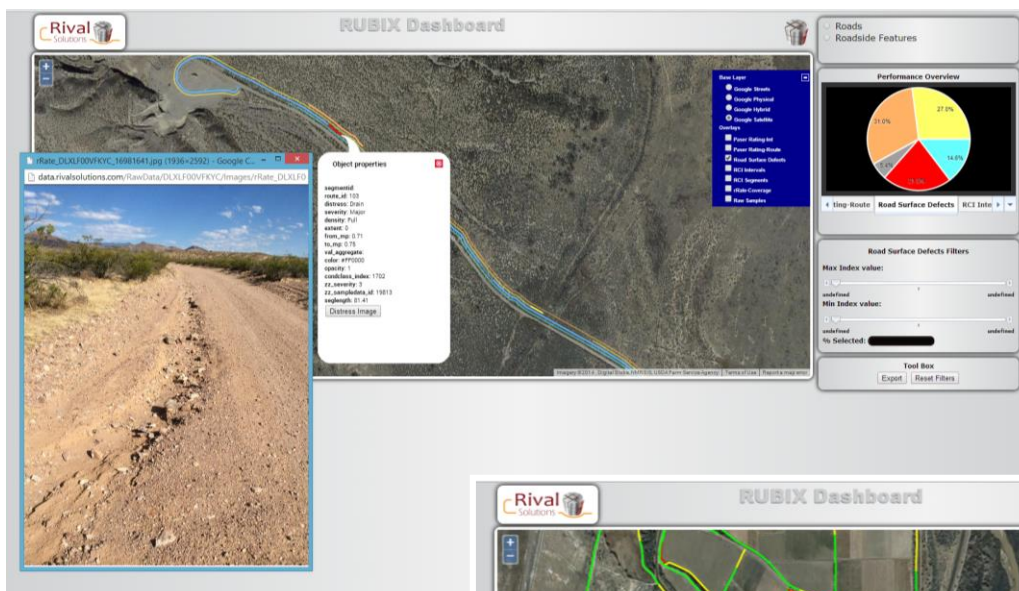
Keep it simple...

The process implemented was simple. As defect events (drainage, washboarding, loose aggregate, etc.) were observed in the field during mobile capture, entries were made through the rRate form and updated when a change of severity was noticed, and cleared when the defect is not present. Once collected and transferred through cell or Wi-Fi coverage to Rival's servers, the data was processed. Since this data is tracked by GPS position, segmenting of the data can be done automatically by matching the collected data to a pre-loaded base GIS map. The data is further reduced based on custom engineering models and each road segment is classified by the following:

- Limited/Local Maintenance
- Routine Maintenance
- Heavy Preventative Maintenance
- Heavy Rehabilitation



rRate mobile data collection kit



The figure above shows individual failures logged from a mobile environment including drainage problems, inadequate crown, loose aggregate, potholes, and washboarding. The small red line in the above image presents the start and end of a critical drainage issue as shown in the image.



The map shows the final PASER recommendations. Red for example indicates that heavy rehab is recommended for those areas.