

Province Wide Standardized Pavement Condition Rating

Project Overview

Last November, the ministry of municipal affairs of the province of Quebec, Canada, published a new guide for municipalities on how to establish an infrastructure intervention plan. This latest guide integrated pavement condition to water, sewage and storm water condition assessments to establish priorities.

An Overall Road Condition Index is required and is computed from road defect, roughness, frost sensitivity, and structural capacity indices.

With its opened platform architecture, RUBIX enabled small and medium size municipalities to conduct the required field data collection and produce reports required for the pavement portion of the intervention plan preparation.

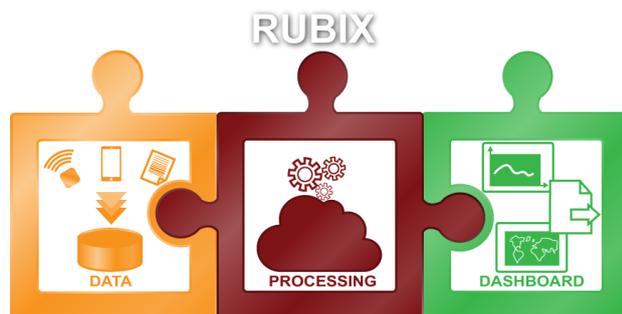


Mobile devices apps, iPhone rRuf and iPad rRate, are used to collect roughness and pavement distresses respectively.

Pavement Rating Indices

Four pavement condition indicators were defined in the new guide. Two of those are:

- **Road Roughness:** data collection is done with rRuf (iPhone app that's converts your iPhone into a class-3 profiler). Rubix processing engine turns acceleration data into a segmented roughness map layer automatically.



- **Road Defects:** data collection is done with rRate (iPad app used for visual inspection) and specific PCI rating forms. Rubix processing engine computes PCI values for corresponding samples and segments.

Project Highlights

- Roughness data is collected at nearly zero operational cost
- Pavement distress inspection productivity as high as 10 km (6 miles) per day
- Inspection project management and QC tools built-in to track progress and review and approve results
- No IT infrastructure required
- No data and file management required

Updates made easy

One tool for network and project base analysis

Not only does RUBIX facilitate the initial data collection but it also simplifies the maintenance of condition status data. In fact, roughness data can be collected from municipal service vehicles thus allowing to collect data all year long at no extra operational cost. Data can then be further used to analyze seasonal condition variations, per the requirements of the guide.

Pavement distress collection can also be integrated into maintenance activities and critical roadway sections inspected on higher frequency intervals allowing for better degradation rate monitoring. The RUBIX pavement condition assessment tool can also be used before repairs or rehabilitation projects to ensure that optimal rehabilitation alternatives are applied.

Finally, RUBIX can be used to inspect other types of infrastructures (sidewalks, bike paths, non-paved roads, etc.) maximizing the return on investment.

Inspection data and results are accessed through the rDash web application (RUBIX management dashboard). Pictures collected during inspection activities are accessible through rDash web interface.

The screenshot shows the RUBIX software interface with the following data tables and controls:

Segment Information			
Segment ID	Index Value	Std Dev.	Coverage (%)
240952	85.39	20.66	15.77
Segment Length	Sample Length	N	a
317.02	25	12.68	12.07

Sample Information:

Sample ID	Date	User Segment ID	Project
14931	2014-05-06 18:16:21-04	240952	pcc dorval

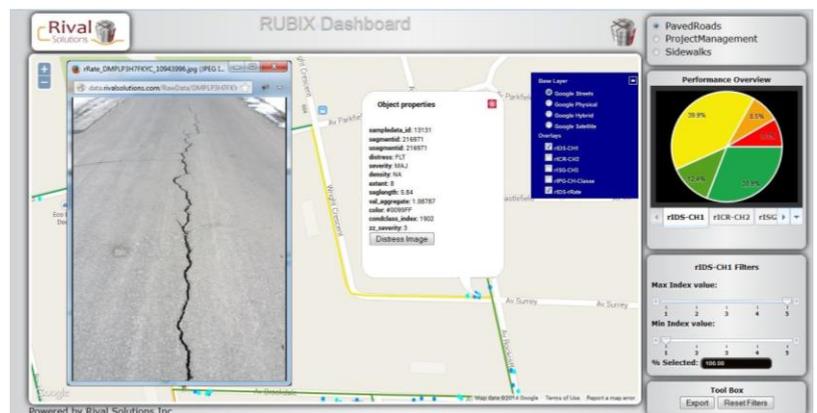
Sample Size	Length	Width	Index Value
250	25	10	70.7778

User Attributes: Evaluator: CI

Severity and Extent controls:

Severity: FLT [0, 1, 2, 3] Extent: 10

Comments: [Text input]



Road segments are classified based on condition indices and color coded to provide a visual overview.

Review inspection forms are built-in the rDash web application. It allows for QC and more detailed analysis (sample by sample) of rating results.



rRate hardware kit