

Intelligent Compaction Frequently Asked Questions

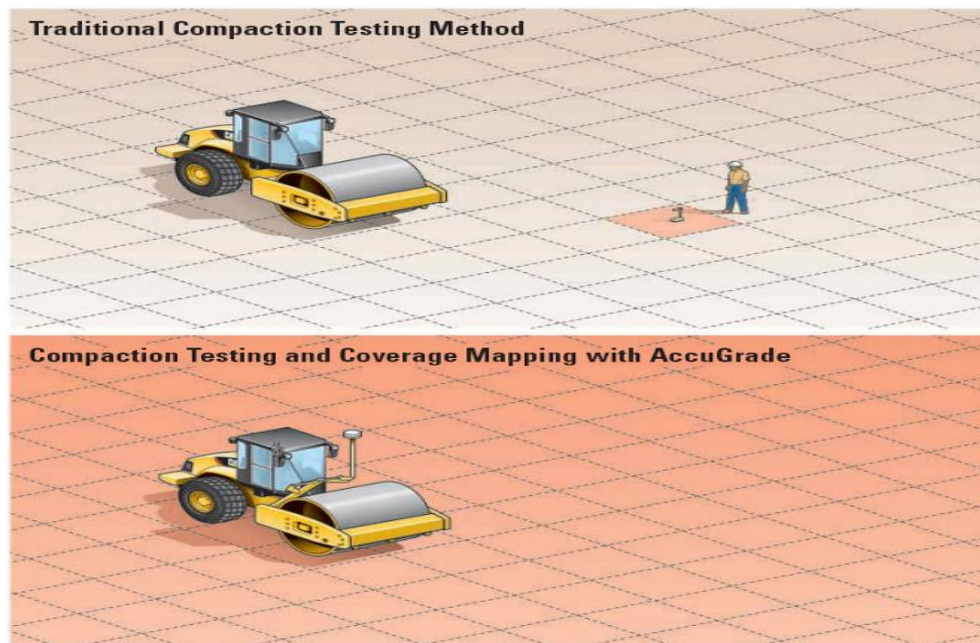
Q: What is Intelligent Compaction?

A: Intelligent Compaction refers to the compaction of road materials, such as soils, aggregate bases, or asphalt pavement materials, using rollers equipped with measuring devices, displays and data acquisition system allowing the construction staff to view real time compaction data.

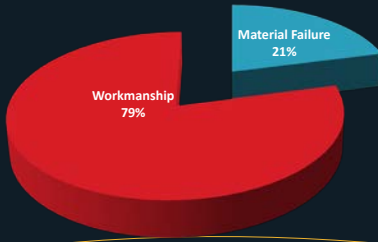
Q: What is Intelligent Compaction roller?

A: Intelligent Compaction roller is a vibratory steel drum rollers equipped with accelerometer, temperature sensors, GPS, displays, and documentation and feedback control system that processes compaction data in real time for the roller operator. The data can be post processed to create compaction quality report.

Intelligent compaction rollers facilitate real-time quality control for compaction by monitoring roller passes, surface temperature and material stiffness that allow for timely adjustments to the compaction process. Intelligent compaction rollers maintain a continuous data record of precise location of the roller using GPS, the number of roller passes, and material stiffness measurements. The data can be processed using FHWA Veda software to create a daily compaction quality control report to ensure that specification required roller passes, material temperature and material stiffness based on material density are met.



Premature Pavement Failure

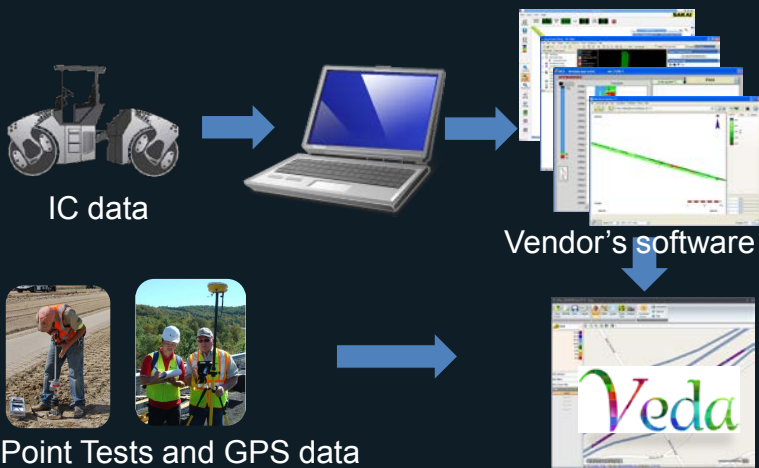


Courtesy of Mark W. ...

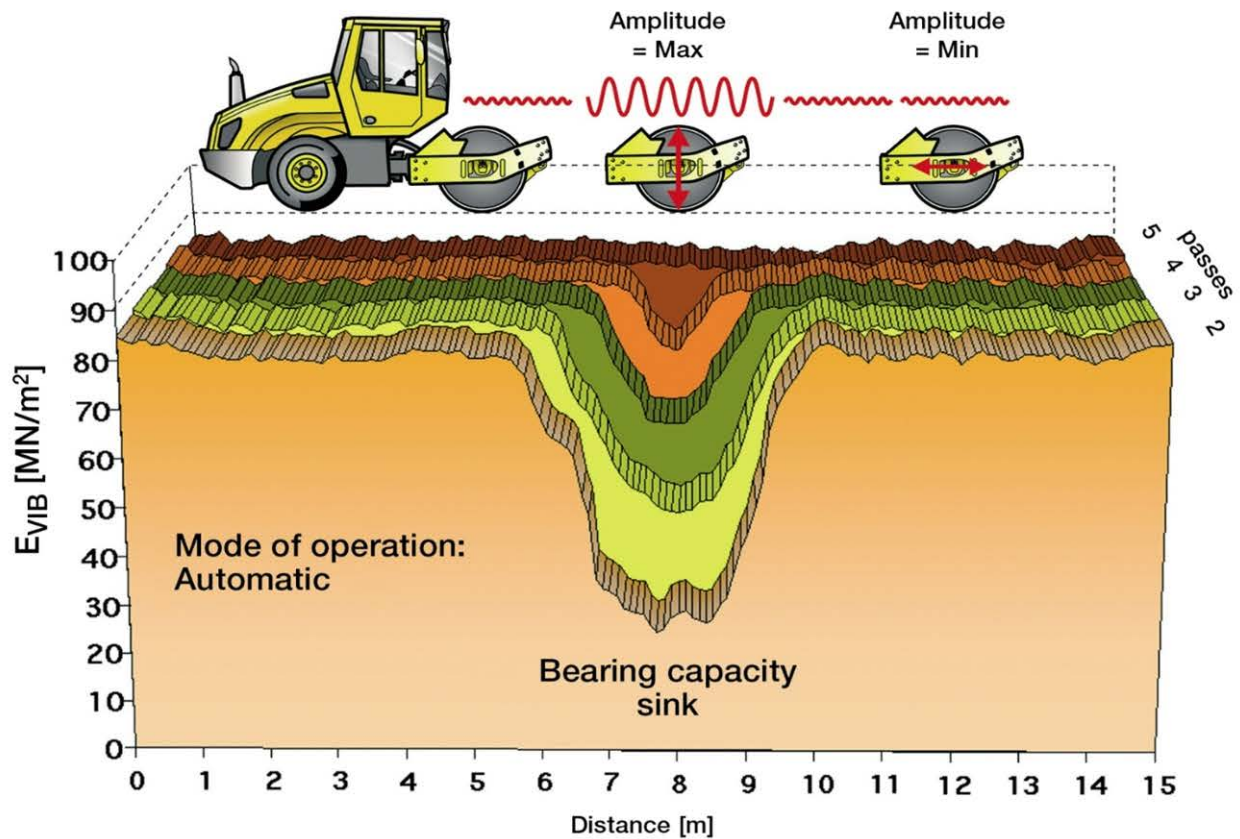
An Example IC System



IC Data Flow



Intelligent Compaction is also used to map the stiffness of the underlying material in order to establish the baseline stiffness of the materials and to identify areas of weak support. On a new construction project, mapping will be conducted on the in-place materials (soils and/or aggregate) base materials. Where an HMA overlay is being placed over an existing asphalt pavement, mapping will be conducted on the existing asphalt pavement or on the pavement after milling operations are completed.



Although there are efforts to use Intelligent Compaction as an acceptance tool, however at this time, Intelligent Compaction is being used as a quality control tool helping contractors to achieve uniform compaction by monitoring the rolling pattern, temperature and stiffness.

Q: What is Intelligent Compaction Automated Machine Guidance Roller?

A: Pneumatic tired rollers equipped with measurement devices installed by the roller manufacturer or a post manufacture retrofit system including GPS, temperature sensor, on-board documentation system, and displays.



Q: What are the benefits of Intelligent Compaction?

A: The major benefits of Intelligent Compaction can be categorized within the following areas:

- Improved Density
- Increased Productivity
- Reduction of Highway Repair Costs
- Continuous Record of Material Stiffness Values
- Identification of Non-Compactable Areas
- Improved Depth of Compaction

Q: Does Caltrans have any Intelligent Compaction Specification?

A: With participation of industry, Caltrans has developed Intelligent Compaction specifications for compaction of HMA and Cold In Place Recycling projects that are used as a quality control specification. Specification for full depth reclamation and soil are in development. Access Caltrans specification here:

[Non-Standard Special Provision Intelligent Compaction -HMA](#)

[Non-Standard Special Provision Intelligent Compaction -CIR](#)

Q: What is cost of Intelligent Compaction?

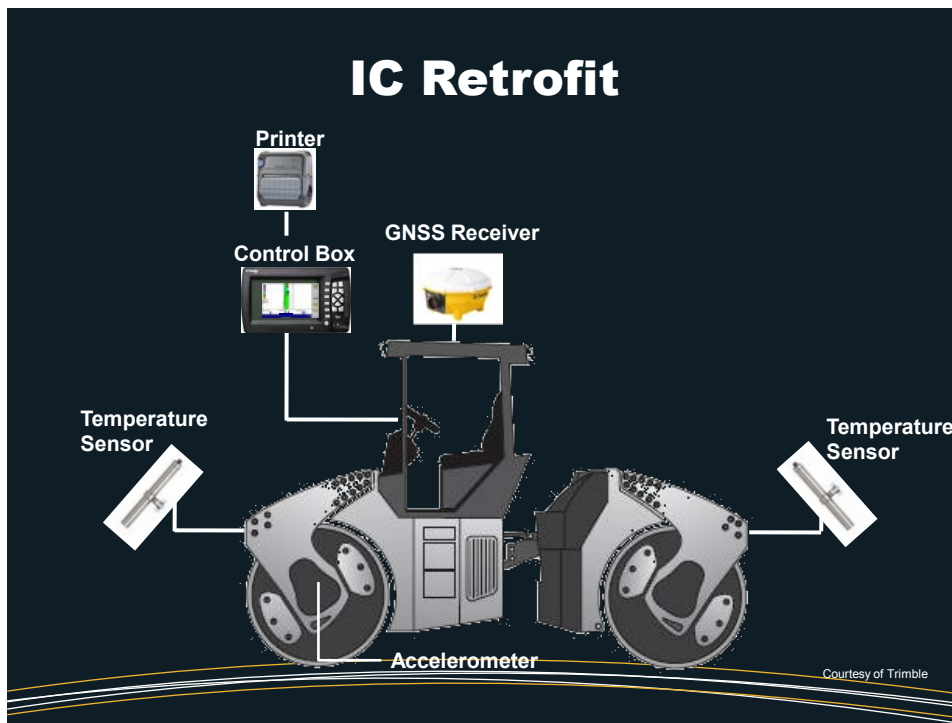
A: The Intelligent Compaction is paid as lump sum. At this time, it is estimated that Intelligent Compaction will add 3% to 5% to the cost of the HMA and Cold In Place recycling and its components.

Q: Who makes the Intelligent Compaction rollers?

A: Currently there are 6 roller manufacturers that make Intelligent Compaction rollers Sakai, caterpillar, Hamm and Bomag, Ammann/Case, and Dynapac.

Q: Can the old rollers be retrofitted with the Intelligent Compaction equipment?

A: Yes. The old rollers are retrofitted with the equipment GPS, heat sensor, accelerometer, displays, and control box.



Q: Is the use of Intelligent Compaction mandatory on all Caltrans projects?

A: It is not mandatory however highly recommended to include Intelligent Compaction on HMA and CIR projects.

Q: My project has no project control plan. Can I waive the Intelligent Compaction?

A: No. The district surveyors can set up control points to allow the contractor to calibrate the equipment. Refer to specification.

Q: where do I download Veda software and other documents?

A: www.intelligentcompaction.com Caltrans Intelligent Compaction webpage is under construction.

Q: Who can I contact if I have questions about Intelligent Compaction?

A: Ebi Fini 916-227-5396 ebi.fini@dot.ca.gov