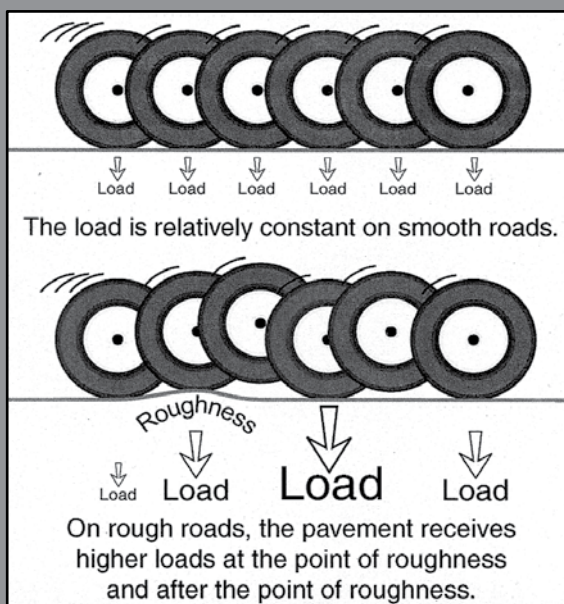


International Roughness Index (IRI) – The Ultimate Test of Subgrade Stabilization

Tests conducted in material testing laboratories are known as accelerated tests. They attempt in a matter of days or weeks to predict the performance of road construction materials in the actual service environment over periods of many years. Falling Weight Deflectometer (FWD) testing that is conducted in the field during and after construction is superior to laboratory testing as the FWD test measures the modulus of the materials at multiple locations in the completed road construction project, rather than evaluating a few small laboratory specimens in a laboratory testing apparatus. What both laboratory testing and FWD testing lack is the ability to evaluate the performance of the full scale road networks on a continuing basis over the life of the pavement project. The National Cooperative Highway Research Program (NCHRP) began the development a test method that could evaluate the performance of road systems over a period of years and that effort was continued by the World Bank in the 1980's. They developed a standardized international method to measure the rate at which a pavement develops roughness. Pavement roughness leads to higher dynamic loads on localized pavement sections which increases pavement deterioration at those locations. This not only lowers ride quality, but also leads to a cycle of increasing deterioration rates and roughness severity. Known as the International Roughness Index (IRI), this test method became the generally accepted

index for predicting the limits of the remaining service life of a specific section of highway pavement. IRI measurement has been in nationwide use since 1990 when the Federal Highway Administration (FHWA) mandated implementation of annual IRI evaluation of highways by all state highway agencies. IRI testing of highway pavements is conducted with equipment known as Profilers or Profilometers.

The goal of subgrade stabilization in highway construction, besides providing an all-weather working platform for the contractor during the construction phase, is to maintain pavement smoothness by protecting against differential settlements. In areas where pavements historically developed roughness at a rapid rate, soil stabilization treatments were often specified by highway design engineers as a measure to prolong pavement smoothness and good ride quality. Given the close relationship of subgrade stabilization and pavement smoothness, IRI measurement became the ultimate test for the effectiveness of various soil stabilization treatments. IRI testing can determine on a project specific basis whether a particular soil stabilization treatment was effective in prolonging pavement smoothness over time, or whether the stabilization product applied was actually counterproductive and accelerated the rate at which the pavement experienced increased roughness.



**How
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