

WSDOT PAVEMENT ROUGHNESS (IRI) REPORT: 2012

*Network IRI information is taken from the 2013 WSDOT Condition survey.
Report produced 2/11/2015*

BACKGROUND

International Roughness Index (IRI) is a standardized pavement measurement indicating the overall smoothness of a roadway. It is expressed in terms of inches per mile (the lower the number, the smoother the pavement). Properly managing roadway smoothness is an essential facet of pavement management because it not only affects ride quality, but also vehicle costs of fuel and maintenance.

WSDOT uses IRI in two important ways to ensure smooth roads. First, IRI is measured for all Asphalt Concrete Pavement (ACP) contracts after work is completed. This helps to ensure quality construction for an end result of smooth roadway. Second, all WSDOT routes have IRI measured annually¹, which is used to report overall network smoothness and also locate rough areas of pavement needing rehabilitation.

IRI: NETWORK PERFORMANCE

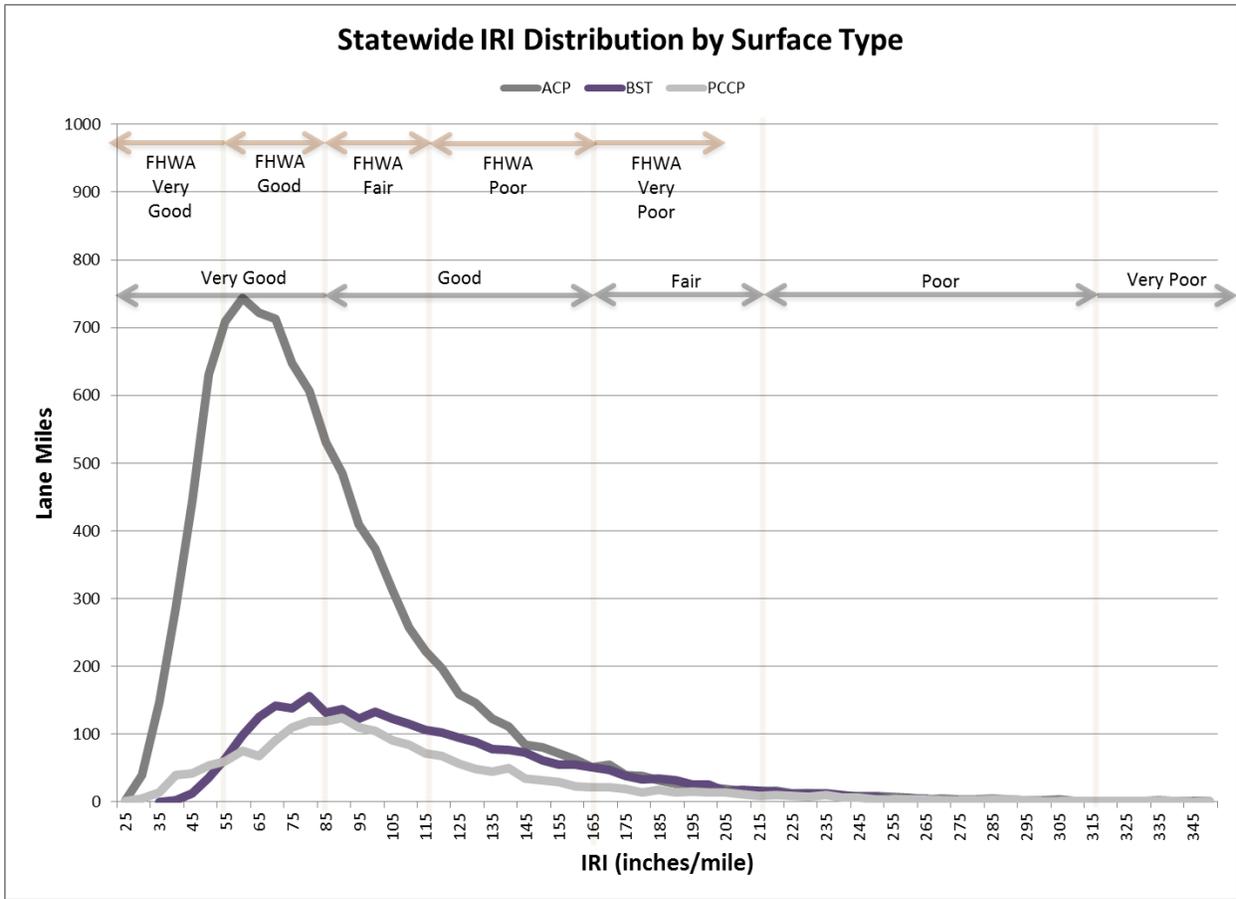
The three major types of surfacing in Washington – Asphalt Concrete Pavement (ACP), Bituminous Surface Treatment (BST, also called Chip Seal) and Portland Cement Concrete Pavement (PCCP) – each have a different distribution of IRI because of their different material characteristics. Therefore, when summarizing network information, it is useful to consider them separately.

IRI measurements are made using WSDOT's Pathway Class I profilometer, following AASHTO PP50 protocols. IRI measurements are made in each wheel path, then averaged and summarized very 1/10th mile. Technically speaking, this average of the left IRI and right IRI is termed the Mean Roughness Index (MRI), but is often generically referred to as IRI.

IRI Categories of Roughness		
	WSDOT	FHWA
Very Good	<= 95	<= 60
Good	96 - 170	61 - 95
Fair	171 - 220	96 - 120
Poor	221 - 320	121 - 170
Very Poor	> 320	> 170

Cells are not acceptable

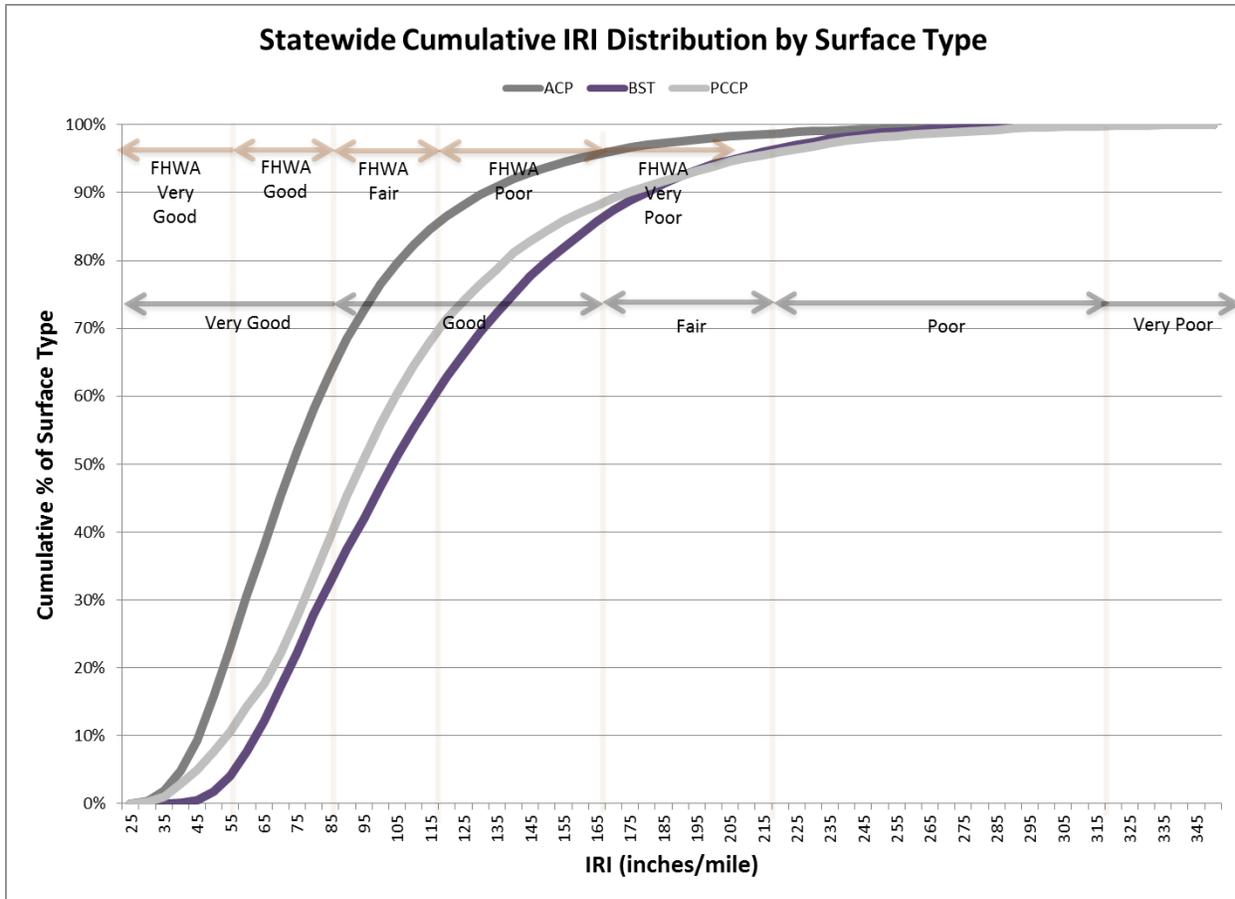
¹ For 2013, many sections not on the National Highway System (NHS) were not able to be surveyed due to budget restrictions.



WSDOT Category	Surface Material Type			
	ACP	BST ²	PCCP	All Pavements
Very Good	69.26%	38.28%	46.44%	60.21%
Good	26.40%	47.67%	41.64%	32.55%
Fair	2.85%	10.11%	7.42%	4.86%
Poor	1.27%	3.76%	4.05%	2.13%
Very Poor	0.22%	0.18%	0.46%	0.25%

FHWA Category	Surface Material Type			
	ACP	BST	PCCP	All Pavements
Very Good	24.76%	4.80%	11.51%	19.13%
Good	44.49%	33.48%	34.93%	41.07%
Fair	15.72%	21.65%	22.25%	17.76%
Poor	10.68%	26.01%	19.39%	14.80%
Very Poor	4.34%	14.05%	11.92%	7.24%

² For 2013, many sections not on the National Highway System (NHS) were not able to be surveyed due to budget restrictions. The vast majority of these were on BST (Chip Seal) surfaced roadways.



COMPARING WSDOT AND FHWA STATISTICS

There is a difference between WSDOT IRI categories and the Federal Highway Administration (FHWA) categorization of IRI. This is because each uses IRI for a separate purpose. WSDOT uses its IRI measurement as a roughness index for the purposes of programming projects. WSDOT also uses a pavement cracking index and a rutting index to indicate when a road should be resurfaced. The vast majority of time a section of roadway will need rehabilitation based on cracking or rutting. Roughness is usually a “lagging” indicator that shows the road is rough after other problems (like cracking and rutting) have become severe. On the other hand, the FHWA categories of IRI were originally developed for Interstate Highways. FHWA uses IRI as a performance evaluation tool, especially for comparing relative performance state to state. Both the WSDOT and FHWA IRI Categorizations are scaled to fit their purpose.