

<p>Name of Test Stress Sweep Rutting (SSR)</p>	<p>Developer(s) Kim and co-workers North Carolina State University</p>								
<p>Test Method(s) AASHTO TP 134-19</p>	<p>Adoption by Agencies None</p>								
<p>Description Four specimens are tested under a confining pressure of 10 psi (69 kPa) – two at a low temperature (T_L) and two a high temperature (T_H) determined through LTPPBind. Each specimen is loaded for 200 cycles at 3 different deviator stress conditions that vary based on temperature – a total of 600 compressive load cycles per specimen. Test results are used to generate a permanent deformation shift model that can be used in conjunction with the FlexPAVE™ analysis software to model the total rutting in the asphalt pavement layers.</p>	<p>Photographs/Illustrations</p> 								
<p>Test Results Rutting Strain Index (RSI) Permanent Deformation Shift Model</p>	<p>Test Temperature(s) Two Temperatures – High (T_H) and Low (T_L) Based on LTPPBind v3.1 at 98% Reliability</p>								
<p>Equipment & Approximate Cost</p> <table border="0"> <tr> <td>Asphalt Mixture Performance Tester</td> <td>\$100,000</td> </tr> <tr> <td>Core drill</td> <td>\$3,000</td> </tr> <tr> <td>Environmental chamber</td> <td>\$3,000</td> </tr> <tr> <td>Saw for cutting specimens</td> <td>\$6,000</td> </tr> </table>		Asphalt Mixture Performance Tester	\$100,000	Core drill	\$3,000	Environmental chamber	\$3,000	Saw for cutting specimens	\$6,000
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<p>Specimen Fabrication Gyratory specimens, 2 cuts, 1 core, membrane for confinement (4 hours)</p>	<p>Number of Replicate Specimens 4 specimens (2 at each temperature)</p>								
<p>Specimen Conditioning Until a thermocouple in the center of a dummy specimen reaches the target test temperature. Conditioning under confinement for 1 hour in the test chamber prior to testing.</p>	<p>Testing Time 20 minutes per specimen (T_L) 40 minutes per specimen (T_H)</p>								
<p>Data Analysis Complexity Fair – RSI FlexMAT™ calculation Complex – model structure using FlexPAVE™</p>	<p>Test Variability Unknown</p>								
<p>Field Validations Good (Pavement sections in Alabama, Korea, and Canada)</p>	<p>Overall Practicality for Mix Design and QA Good for Mix Design Poor for QA</p>								
<p>Key References</p> <ul style="list-style-type: none"> Ghanbari, A., Underwood, B. S., & Kim, Y. R. (2020). Development of a rutting index parameter based on the stress sweep rutting test and permanent deformation shift model. International Journal of Pavement Engineering. https://www.tandfonline.com/action/showCitFormats?doi=10.1080/10298436.2020.1748190. Kim, D., & Kim, Y. R. (2017). Development of Stress Sweep Rutting (SSR) test for permanent deformation characterization of asphalt mixture. Construction and Building Materials (154), 373-383. 									