

<p><b>Name of Test</b> <b>IDT Creep Compliance and Strength Test</b></p>	<p><b>Developer(s)</b> Roque and co-workers Pennsylvania State University</p>								
<p><b>Test Method(s)</b> AASHTO T 322-07 (2020)</p>	<p><b>Adoption by Agencies</b> None</p>								
<p><b>Description</b> The IDT creep test applies a constant load to the specimen for between 100 and 1000 seconds, and measures the vertical and horizontal displacement around the center of the specimen. The displacement data are then used to determine the IDT creep compliance. After the nondestructive IDT creep test is conducted, the tensile strength of the specimen is determined by running the test in the destructive mode (12.5 mm/min loading rate).</p>	<p><b>Photographs/Illustrations</b></p> 								
<p><b>Test Results</b> IDT creep compliance IDT tensile strength</p>	<p><b>Test Temperature(s)</b> Mixtures using binder grades PG XX-34 or softer: -30, -20, and -10°C. Mixtures using binder grades PG XX-28 and PG XX-22: -20, -10, and 0°C. Mixtures using binder grades PG XX-16 or harder: -10, 0, and +10°C.</p>								
<p><b>Equipment &amp; Cost</b></p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">Loading device and data acquisition system</td> <td style="width: 50%;">\$115,000</td> </tr> <tr> <td>Specimen deformation measuring device</td> <td>\$15,000</td> </tr> <tr> <td>Environmental chamber</td> <td>\$20,000</td> </tr> <tr> <td>Saw for cutting specimens</td> <td>\$6,000</td> </tr> </table>		Loading device and data acquisition system	\$115,000	Specimen deformation measuring device	\$15,000	Environmental chamber	\$20,000	Saw for cutting specimens	\$6,000
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Specimen deformation measuring device	\$15,000								
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<p><b>Specimen Fabrication</b> Gyratory specimen, 2 cuts, gluing gage points (2 hours)</p>	<p><b>Number of Replicate Specimens</b> A minimum of 3 specimens</p>								
<p><b>Specimen Conditioning</b> Conditioning for minimum 3 hours at the desired test temperature</p>	<p><b>Testing Time</b> 1-2 days per mixture (multiple temperatures)</p>								
<p><b>Data Analysis Complexity</b> Complex</p>	<p><b>Test Variability</b> Low (7 to 11% COV)</p>								
<p><b>Field Validations</b> Good (inputs to TCModel and MEPDG)</p>	<p><b>Overall Practicality for Mix Design and QA</b> Fair for mix design Poor for QA</p>								
<p><b>Key References</b></p> <ul style="list-style-type: none"> <li>• Roque, R., and W.G. Buttlar (1992). The Development of a Measurement and Analysis System to Accurately Determine Asphalt Concrete Properties Using the Indirect Tensile Mode. Paper presented at The Association of Asphalt Paving Technologist.</li> <li>• Christensen, D.W., and R.F. Bonaquist (2004). NCHRP 530. Evaluation of Indirect Tensile Test (IDT) Procedures for Low-Temperature Performance of Hot Mix Asphalt. Washington DC, Transportation Research Board.</li> </ul>									