

## FLEXIBLE PAVEMENT DESIGN USING SOIL FACTORS<sup>1,4</sup>

Required Gravel Equivalency (G.E. in inches) for various Soil Factors (S.F.)

For new construction or reconstruction use projected ADT or HCADT; for reconditioning projects use present ADT or HCADT

<p><b>7 TON : LESS THAN 400 ADT</b></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;"><u>S.F.</u></th> <th style="text-align: center;"><u>Minimum Bit. G.E.</u></th> <th style="text-align: center;"><u>Total G.E.</u></th> </tr> </thead> <tbody> <tr><td style="text-align: center;">50</td><td style="text-align: center;">7</td><td style="text-align: center;">7.3<sup>5</sup></td></tr> <tr><td style="text-align: center;">75</td><td style="text-align: center;">7</td><td style="text-align: center;">9.4<sup>5</sup></td></tr> <tr><td style="text-align: center;">100</td><td style="text-align: center;">7</td><td style="text-align: center;">11.5</td></tr> <tr><td style="text-align: center;">110</td><td style="text-align: center;">7</td><td style="text-align: center;">12.4</td></tr> <tr><td style="text-align: center;">120</td><td style="text-align: center;">7</td><td style="text-align: center;">13.2</td></tr> <tr><td style="text-align: center;">130</td><td style="text-align: center;">7</td><td style="text-align: center;">14</td></tr> </tbody> </table>	<u>S.F.</u>	<u>Minimum Bit. G.E.</u>	<u>Total G.E.</u>	50	7	7.3 <sup>5</sup>	75	7	9.4 <sup>5</sup>	100	7	11.5	110	7	12.4	120	7	13.2	130	7	14	<p><b>9 TON : 151 TO 300 HCADT</b></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;"><u>S.F.</u></th> <th style="text-align: center;"><u>Minimum Bit. G.E.</u></th> <th style="text-align: center;"><u>Total G.E.</u></th> </tr> </thead> <tbody> <tr><td style="text-align: center;">50</td><td style="text-align: center;">7</td><td style="text-align: center;">14</td></tr> <tr><td style="text-align: center;">75</td><td style="text-align: center;">7</td><td style="text-align: center;">17.5</td></tr> <tr><td style="text-align: center;">100</td><td style="text-align: center;">7</td><td style="text-align: center;">21</td></tr> <tr><td style="text-align: center;">110</td><td style="text-align: center;">7</td><td style="text-align: center;">22.4</td></tr> <tr><td style="text-align: center;">120</td><td style="text-align: center;">7</td><td style="text-align: center;">23.8</td></tr> <tr><td style="text-align: center;">130</td><td style="text-align: center;">7</td><td style="text-align: center;">25.2</td></tr> </tbody> </table>	<u>S.F.</u>	<u>Minimum Bit. G.E.</u>	<u>Total G.E.</u>	50	7	14	75	7	17.5	100	7	21	110	7	22.4	120	7	23.8	130	7	25.2	<p><b>9 TON : 1101 - 1500 HCADT <sup>2</sup></b></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;"><u>S.F.</u></th> <th style="text-align: center;"><u>Minimum Bit. G.E.</u></th> <th style="text-align: center;"><u>Total G.E.</u></th> </tr> </thead> <tbody> <tr><td style="text-align: center;">50</td><td style="text-align: center;">8</td><td style="text-align: center;">20.3</td></tr> <tr><td style="text-align: center;">75</td><td style="text-align: center;">8</td><td style="text-align: center;">26.4</td></tr> <tr><td style="text-align: center;">100</td><td style="text-align: center;">8</td><td style="text-align: center;">32.5</td></tr> <tr><td style="text-align: center;">110</td><td style="text-align: center;">8</td><td style="text-align: center;">35</td></tr> <tr><td style="text-align: center;">120</td><td style="text-align: center;">8</td><td style="text-align: center;">37.4</td></tr> <tr><td style="text-align: center;">130</td><td style="text-align: center;">8</td><td style="text-align: center;">39.8</td></tr> </tbody> </table>	<u>S.F.</u>	<u>Minimum Bit. G.E.</u>	<u>Total G.E.</u>	50	8	20.3	75	8	26.4	100	8	32.5	110	8	35	120	8	37.4	130	8	39.8																																																																																							
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Values may not be exact due to rounding

**Notes:**

<sup>1</sup>For 10 Ton design see Bituminous Pavement Design Chart (Aggregate Base)

<sup>2</sup>For HCADT over 1500 more advanced design procedures should be used; please contact Mn/DOT's Pavement Design Unit

<sup>3</sup>General Plasticity: NP = nonplastic; SP= semi-plastic; P = plastic; na = not applicable (An A-5 soil rarely occurs in Minnesota)

<sup>4</sup>Safety edge (30° to 35° wedge) are recommended to minimize edge dropoff. See [www.dot.state.mn.us/stateaid/sa\\_safety\\_edge.html](http://www.dot.state.mn.us/stateaid/sa_safety_edge.html)

<sup>5</sup>These GE values are for the finished pavement section. During construction additional GE may be warranted for a construction platform.