

2013-2014

2(c)

<u>Axle Load Groups (k)</u>	<u>Number of Axles (N)</u>	<u>Equivalency Factor * F</u>	<u>ESAL N * F</u>
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Single Axles

0-3	0	0.00015	0
3-7	10	0.0055	0.055
7-8	480	0.0255	12.24
8-12	1440	0.08	115.20
12-15	510	0.3003	153.153
26-30	450	5.98	2691

Tandem Axles

0-6	0	0.001	0
6-12	28	0.0045	0.126
12-18	200	0.0335	6.70
18-24	480	0.138	66.24
24-30	344	0.411	141.384
30-32	540	0.7225	396.09
32-34	552	0.957	528.24
34-36	544	1.23	669.12
			<u>4779.572</u>

Per day total ESAL = 4780 no.

Directional Distribution = 0.5

lane Distribution = 0.9

$$\text{Base Year ESAL} = 365 \times 4780 \times 0.5 \times 0.9 \\ = 785115$$

$$\text{SCA} = \frac{(1+i)^n - 1}{i} = \frac{(1+0.06)^{20} - 1}{0.06} \\ = 36.786$$

$$\text{Design ESAL} = 36.786 \times 785115 \\ = 28881240$$

Using Nomograph SN for design ESAL is found to be 6.1, which is very close to the assumed value. Hence no trial is needed.

1993 AASHTO Empirical Equation for Flexible Pavements

Equation Solver

Variable Descriptions and Typical Values

Precautions

Type in data in the grey boxes and click the calculate button to see the output. To make additional calculations, change the desired input data and click the calculate button again. Click on the text descriptions of the input or output variables for more information.

INPUT

1. Loading

Total Design ESALs (W_{18}):

2. Reliability

Reliability Level in percent (R):

Combined Standard Error (S_e):

3. Serviceability

Initial Serviceability Index (p_i):

Terminal Serviceability Index (p_t):

4. Layer Parameters

Number of Base Layers:

	a	m	M_R	Min. Depth
Surface	<input type="text" value="1"/>	1.0	N/A	<input type="text" value="0"/>
Subgrade	N/A	N/A	<input type="text" value="5000"/>	N/A

OUTPUT

1. Calculation Parameters

Standard Normal Deviate (z_R):

Δ PSI:

Design Structural Number (SN):

2. Layer Depths (to the nearest 1/2 inch)

Surface:

Total SN based on layer depths:

[See Solution Details](#)

Comments

Calculate