



Title	ADVANCED CONST. MATERIALS E-18 TRAFFIC	Sheet No.	of	1	2
By	NK	218100	Chk.	/	/
Job No.				CET-3120	

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Using ODOT Factors, Find Total Design ESAL's
For A RIGID Pavt., Urban Area, 4 Lanes.

$$\begin{aligned} 2000 \text{ ADT} &= 10,300 & \%T &= 8\% \\ 2020 \text{ ADT} &= 22,570 & \%G &= 4\% \end{aligned}$$

Use a) ODOT Mid Point Method - 20% Design
b) AASHTO Growth Factors - 20% Design.

ODOT Factors:

$$\begin{aligned} B:C \text{ Ratio} &= 2:1 & CF_B &= 1.72 \\ P_L &= 90\% & CF_C &= 0.80 \\ D_D &= 50\% \end{aligned}$$

$$a) \text{ Mid Point Traffic: } 10,300 + (22,570 - 10,300) \frac{1}{20} = 17,049$$

$$\%B = \frac{2}{2+1} = 67\% \quad \%C = 33\%$$

$$B\text{-ESAL's} = 17,049 (0.9) (0.5) (0.08) (0.67) (1.72) = 707.3$$

$$C\text{-ESAL's} = 17,049 (0.9) (0.5) (0.08) (0.33) (0.80) = 162.0$$

$$\text{Daily ESAL's} = 869.3$$

$$\text{Total ESAL's} = 869.3 \times 365 \times 20 = 6,346,000 \text{ E-18's}$$



Title <i>ADVANCED CONST. PATRIALS</i> <i>E-18 TRAFFIC-</i>		Sheet No. <i>22</i> of <i>22</i>
By <i>NR</i>	<i>218100</i>	Chk. <i>1 1</i>
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b) *NASHUTO* Growth Factor - *20 yrs @ 7%*
 $= 29.78$

DAILY ESAL'S

B-ESAL'S = $10,300 (0.9)(0.5)(0.08)(0.67)(1.72) = 427.3$

C-ESAL'S = $10,300 (0.9)(0.5)(0.08)(0.33)(0.80) = 97.9$

DAILY ESAL'S = 525.2

TOTAL ESAL'S FIRST Yr = $525.2 \times 365 = 191,698$

TOTAL ESAL'S = $191,898 (29.78) = 5,708,766$ *E-18'S*