

2010-2011

2(c)

Axle Loads multiplied by LSF	Expected Repetitions	Fatigue Analysis		Erosion Analysis	
		Allowable Repetition	Fatigue (%)	Allowable Repetition	Erosion (%)
<u>Single Axles</u>					
36	6310	27000	23.4	286800	2.2
33.6	16160	84600	19.1	329800	4.9
31.2	30140	230000	13.1	837200	3.6
28.8	64410	1200000	5.1	2576100	2.5
26.4	106900	unlimited	0	unlimited	0
			$\Sigma = 61$		$\Sigma = 13.2$
<u>Tandem Axles</u>					
62.4	25570	1320000	1.94	216700	11.80
57.6	42810	unlimited	0	308000	13.98
52.8	124900	unlimited	0	unlimited	0
			$\Sigma = 1.94$		$\Sigma = 25.70$

$$\text{Total Fatigue} = 61 + 1.94 = 62.94\%$$

$$\text{Total Erosion} = 13.2 + 25.70 = 38.90\%$$

$$\text{Total damage} = 101.84\%$$

Since, total damage is acceptable, the design thickness of 9.5" is sufficient.