

King Fahd University of Petroleum & Minerals  
CIVIL ENGINEERING DEPARTMENT

CE 441

DESIGN OF PAVEMENT

Fall 2002-2003

HOMEWORK # 8

DESIGN OF RIGID PAVEMENTS

1. Design a concrete highway for the following conditions. Truck axle weight distribution data are:

Axle Loads (kips)	No. Axles per 1000 Trucks	Axle Loads (kips)	No. Axles per 1000 Trucks
16-18 S	120.9	30-32 T	70.3
18-20 S	110.8	32-34 T	34.4
20-22 S	60.3	34-36 T	24.0
22-24 S	15.6	36-38 T	17.2
24-26 S	1.3	38-40 T	16.8
26-28	0.9	40-42 T	10.5
		42-44 T	9.6

Soil explorations have indicated that the subgrade is a plastic clay with a liquid limit of 50 percent and plastic limit of 25 percent. Plate-bearing tests have indicated  $k$  to be 100 pci, corrected for saturation. The modulus of rupture of the concrete is 600 psi. ADT = 1000 Trucks 30%. Determine the thickness of concrete slab using PCA and AASHTO methods.