

King Fahd University of Petroleum & Minerals  
CIVIL ENGINEERING DEPARTMENT

CE 441

DESIGN OF PAVEMENT

Fall 2002-2003

HOMEWORK # 1

PAVEMENT TYPES, WHEEL LOADS & DESIGN FACTORS

- 1) Draw a sketch showing the main components of both flexible and rigid pavements.
- 2) Discuss the main differences between flexible and rigid pavements in a) load distribution, b) base and subbase function.
- 3) Do problem 1.1 page 22 of the textbook.
- 4)a) Give some typical numbers for tire pressures generally used in Boeing 707 and 747 planes. For their main assembly calculate and draw the tire imprint area for circular and rectangular shapes.  
b) For a cargo 4-axles truck, maximum gross vehicle weight of 45 tons (1 ton = 2240 lbs), load on front axle should not be more than 10 tons, calculate the tire imprint radius for wheels using tire pressure of 80 psi.
- 5) Sketch the relationship between PSI and pavement life for two design alternatives, one with continuous routine maintenance and the other with no maintenance at all. Explain the difference in performance between the two alternatives.