

The structural number is related to the coefficients as follows:

$$SN = a_1t_1 + a_2t_2 + a_3t_3 + \dots + a_nt_n$$

where:

$a_i$  = material coefficient for each material in the pavement section (Table 600.06).

$t_i$  = thickness of each material in the pavement section (cm).

SN = Structural number desired for the pavement section (Step 6).

Various combinations of pavement materials of various thickness are possible to meet or exceed a given structural number. Once the structural requirements are met the combination and thickness of the individual pavement material sections is based on such factors as aggregate availability, aggregate size, cost of various pavement materials, minimum recommended thickness, restrictions on overall thickness, number of lifts required. These factors are discussed in more detail below.

**Material Availability** - Conservation of natural resources should be given considered in the evaluation of the pavement design, and in areas where materials are scarce, availability should be given considerable weight.

**Continuity of Pavement Type** - To maintain uniform driving conditions, consideration should be given to continuing the same type of exiting pavements, especially if a new project is relatively short. This is assuming that the existing pavements are satisfactory.

**Location and Local Conditions** - Although there are many pavement designs that will meet the requirements of the design equation, there are situations when local conditions, such as underground utilities close to the surface, poor drainage, flooding, etc. where one design might function more efficiently than another. Past experience and judgement should be used in the final selection of the pavement design.

**Anticipated Construction Problems** - Consideration should also be given to the feasibility of the proposed design in regard to standard construction methods.

**Costs** - Comparative costs provided in the pavement design procedure should be given consideration in the selection of the pavement design. Consideration should also be given to maintenance cost.

**Minimum Structural Number** - AASHTO design is based on traffic-induced fatigue failure. Establishing a minimum design takes into account such factors as ease of construction, maintenance, current practice or failure under the action of a few heavy design loads. Table 600.07 should be used as a guide for minimum pavement design.

*Table 600.07*  
**Minimum Pavement Design**

<i>Roadway Classification</i>	<i>Minimum Structural Number</i>	<i>Minimum AC Thickness (cm)</i>
Truck Route	7.9	30
Freeway	6.9	28
Expressway	6.9	28
Main Road	4.9	21
Sector Road	2.5	11
Low Volume	2.0	6

Additionally on layered sections using aggregate base, a minimum thickness of 20 cm shall be used for the base material.

Normally, the pavement section which satisfies the structural requirements and represents the least cost would be selected. However, as previously discussed, there may be times when the least cost design would not necessarily be the most appropriate design. The following page contains an example of a typical flexible pavement design.