

1.1 ROAD CHARACTERISTICS

The various road characteristics may be classified into six types.

- a. Road surface
- b. Lighting
- c. Roughness
- d. Pavement color
- e. Night visibility
- f. Geometric aspects

1. Road surface

The type of pavement is determined by the volume and composition of traffic, the availability of materials, and available funds. Some of the factors relating to road surface like **road roughness, tire wear, tractive resistance, noise, light reflection**, electrostatic properties etc. should be given **special attention in the design, construction and maintenance of highways** for their safe and economical operation.

Unfortunately, it is impossible to build road surface which will provide the best possible performance for all these conditions.

For heavy traffic volumes, a **smooth riding surface with good all-weather antiskid properties is desirable**. The surface should be chosen to retain these qualities so that maintenance cost and interference to traffic operations are kept to a minimum.

2. Lighting

Illumination is used to **illuminate the physical features of the road way** and to aid in the driving task.

Highway lighting is particularly more **important at intersections, bridge site, level crossing** and in places where there is restriction of traffic to movements.

On urban roads where the density of population is also high, road lighting has other advantages like feeling of security and protection.

3. Roughness

This is one of the main factors that an engineer should give importance during the design, construction, and maintenance of a highway system.

Drivers tend to seek smoother surface when given a choice. On four-lane highways where the texture of the surface of the inner-lane is rougher than that of the outside lane, passing vehicles tend to return to the outside lane after execution of the passing maneuver.

Shoulders or even speed change lanes may be deliberately roughened as a means of delineation.

4. Pavement colors

When the pavements are light colored (for example, cement concrete pavements) there is better visibility during day time whereas during night dark colored pavements like bituminous pavements provide more visibility.

Contrasting pavements may be used to indicate preferential use of traffic lanes. A driver tends to follow the same pavement color having driven some distance on a light or dark surface, he expects to remain on a surface of that same color until he arrives a major junction point.

5. Night visibility

The main reason for increased accident rate during night time may be attributed to poor night visibility.

An important factor is the amount of light which is reflected by the road surface to the drivers eyes.

Glare caused by the reflection of oncoming vehicles is negligible on a dry pavement but is an important factor when the pavement is wet.

6. Geometric aspects

The roadway elements such as **pavement slope, gradient, right of way etc affect transportation in various ways.**

Central portion of the pavement is slightly raised and is sloped to either side so as to prevent the ponding of water on the road surface. This will deteriorate the riding

quality since the pavement will be subjected to many failures like potholes etc.

Minimum lane width should be provided to reduce the chances of accidents. Also the speed of the vehicles will be reduced and time consumed to reach the destination will also be more.

Right of way width should be properly provided. If the right of way width becomes less, future expansion will become difficult and the development of that area will be adversely affected.

One important other road element is the **gradient**. It reduces the **tractive effort of large vehicles**. Again the fuel consumption of the vehicles climbing a gradient is more.

The other **road element that cannot be avoided are curves**. Near curves, chances of accidents are more.

