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Section

A

Subject

Transportation II

Submitted to

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## Railway

- 1) Railways are preferred for long distance
- 2) Road serve as a feeder system
- 3) It require about 20% or <sup>less energy</sup> 25%  $\uparrow$  as compare to highway for dragging force.
- 4) There is less chances of accident as compare to highways.
- 5) We can travel by rail only where track are available
- 6) journey are less comfortable

## Highway

- 1) Recommended for short distances
- 2) It provide door to door service.
- 3) Usually it require great energy as compare to railway.
- 4) Chances of accident are greater.
- 5) It save time for short distance.
- 6) journey are more comfortable.

## Office Study:-

Office study is a type of study which can be done in sitting in office & collect the information froms maps, charts, Aerial photographs or existing engineering reports.

## Preliminary Survey:-

It indicate wheater any of the specific site should be excluded from further consideration because of one or more of the above characteristics.

after this I will be able to select general areas through which the highway can be transversed.

During this phase of the study the position of the feasible route are set as closely as possible by

as possible by

- 1) Establishing all the control points
- 2) Determining preliminary vertical & horizontal alignments for each

Preliminary alignment are used to evaluate the economic & environmental feasibility of the alternative route.

### Economical Evaluation:

Economical Evaluation of each alternative route is carried out to determine the future effect of investing the resources necessary to construct the highway.

Factors Considered in Economic evaluation.

- Road User Cost
- Construction Cost
- Maintenance Cost
- Road User benefits.

### Environmental Evaluation:

highway Constructed at any location

Significant impact on Surrounding:

A highway is integral part of local government.

EIS will determine the negative / positive effects of the highway facility will have on the environment

## Vehicle Performance

Acceleration & deceleration rates of vehicle are often critical parameter in determining highway design.

These rates often govern the dimensions of such design features.

### 1) Freeway ramps:

A means to get traffic onto a control access highway from an uncontrolled access road.

### 2) Climbing/ Passenger lanes

A lane where passengers are pick & drop.

### 3) Turnout bays for Buses

It is a design spot on the side of a road where buses or trams may fall off the flow of traffic to pick up & drop off passengers.

## Acceleration & Deceleration lanes:

Also known as speed change line provide drivers with an opportunity to speed up or slow down in a space not used by high speed traffic.

## Highway Alignment:

It is the position or layout of centre line of the highway on the ground. It includes straight path, horizontal deviation etc.

## Directional Distribution:-

It is also known as D-factor is an important traffic parameter that is frequently used for design & operational performance analysis.

Traditionally the D factor has been used for operational capacity & LOS

⇒ Highway must be designed to adequately serve the peak-hour traffic volume in the

Peak direction of flow

P=7

- ⇒ Total hourly traffic in both directions is used to design two lane roads
- ⇒ In the direction of highway with more than two lanes roads where important intersections are encountered or where additional lanes are to be provided later, knowledge of the hourly traffic volume for each direction of travel is essential. Directional of travel traffic is used for multilane roads & streets

Typically one directional contribute by 55-70% in total traffic although occasionally 80% is observed.



## Broad Classification of Surface distress mode

Surface distress mode is broadly classified into following three groups

### 1) Fracture:

This could be in the form of Cracking or Spalling resulting from such things as excessive load, fatigue, thermal changes moisture damage shrinkage or contraction.

### 2) Distortion:

This is in the form of deformation (rutting, Corrugation, Shoving) which can result from such things as excessive loading Creep, densification or frost action.

### 3) Disintegration:

This is in the form of stripping ravelling or spalling which can result from such things as loss

p=9

of bonding . Chemical reactivity , traffic abrasion  
aggregate degradation , poor compaction of  
blinder aging .

Ans  
(6)Alligator Cracking:-

It is also known as Crocodile Cracking. It is common type of distress in asphalt pavement.

Cause:-

It is caused by the failure of the surface due to traffic loading. Also poor drainage in the road bed is a frequent cause of the degradation of the base or subgrade. A heavy spring thaw, similarly to poor drainage, can weaken the base course leading to fatigue cracking.

Measurement:-

There are many ways to measure fatigue cracking but in general a pavement distress or index is used.

Block Cracking:-

It is a series of large rectangular cracks on an asphalt pavement surface.

This type of cracks typically covers

large Idea  $\epsilon_r$  may occur in area having low traffic.

Cause:

It is basically caused by shrinkage of the asphalt pavement due to temperature cycle

Longitudinal Cracking:

It occurs parallel to the centre line of the pavement

Causes:

Poor constructed joints

Shrinkage of Asphalt layer

Cracks reflecting from underlying layer

Transverse Cracking:

It is an unconnected cracks that run across a road pavement, perpendicular to direction of road

Causes

- Shrinkage of Asphalt layer
- reflection from an existing crack

This is not load related!