

NASRU LLAH

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6th

Highway 5. traffic

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Q1 Keeping in view modes of transportation compare railways with highways?

* Railways :-

- * The load carrying capacity is more
- * It is suitable for long distance
- * The maintenance cost is more
- * Door to door services is not available
- * In railway the frequency of accident is less

* Highways :-

- * The load carrying capacity is less
- * It is suitable for short distance
- * The maintenance cost is less
- * Door to door services are available
- * The frequency of accident is less

Q2 You are a transportation Engineering - you have been tasked to conduct office study as a preliminary step for design of new highway what reference material you will study and what data you will extract?

Being a transportation engineer I will consider the following steps office study for highway.

⇒ Data Examination :-

* It is the first step in which we examine all available data in which the road is to be constructed

* There is no use of photogrammetric investigation in this phase

⇒ Data Sources :-

* The Data sources are majorly available with National and provincial Departments
 * Mostly the data is collected in form of;

⇒ Maps , ⇒ Aerial photographs

⇒ Charts , ⇒ CAD Visuals

* Existing engineering projects e.g dams

* The type of data to be collected is dependent on the highway type

Topography of Data collection:-

* Engineering include geology, climate & traffic volume

* Social & demographic includes land use and zoning pattern.

* Economic including unit cost for construction and the trend of agricultural commercial and industrial activities

* Environmental includes type of wildlife location of recreational & historical sites, effect the air, noise & water pollution

preliminary Analysis of Data:-

It will indicate if any specific sites should be excluded from consideration

(4)

At the completion of this phase, the engineers will be able to select generally areas through which highway can transverse.

in the presence of any historical, archeological sites the routes that transverse it is excluded from their consideration.

(5)

Q3 What is the importance of vehicles performance in highway design?

The vehicles performance in highway design is very important because of following points:

- * Adequate passing and stopping sight distance.
- * Maximum grades.
- * Acceleration and deceleration lanes.

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- * timing of signalized intersection.
- * Braking characteristic also affects, vehicle performance.
- * Climbing or passing lane.
- * Freeway ramps
- * setting speed limit

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Q4 write short Note on Directional Distribution
In Design of highway?

Directional Distribution:-

Highway must be Design to adequate
serve the peak-hour traffic volume in the
peak direction of flow. In Directional
Distribution the total traffic hourly
in both directions is used to design
two lane roads. In the design of
highway with more than two lanes
and on two one roads where additional
important intersection are encountered or
where additional lanes are to be
provided later. Knowledge of the hourly
traffic volume for each direction of
travel is essential.

Example:-

if 80% of the DHV is in one direction
at least three lanes in each direction
would be needed for the 3200 vph.

Q5 Explain broad classification of surface distress modes?

Followings are classification of surface distress mode.

1) Disintegration :-

This is in the form of stripping or removal of paving material, which can result from such things as loss of bonding and chemical reactivity, traffic abrasion aggregate degradation or binder aging.

2) ~~Distortion~~ Fracture :-

This is in the form of cracking or

breaking, generally due to excessive loading and thermal changes.

3) Distortion :-

This could be in the form of ~~cracking~~ or ~~breaking~~, deformation which can result such things as excessive loading densification or subgrade issue.

Qb Explain Alligator Cracking, block cracking longitudinal cracking & transverse cracking?

1) Alligator cracking:-

Alligator cracking is a series of interconnecting cracks caused by fatigue failure of a asphalt surface under repeated traffic loading. The cracks initiate from the bottom of the asphalt surface where tensile stress and strain highest under a wheel load.

2) Block cracking:-

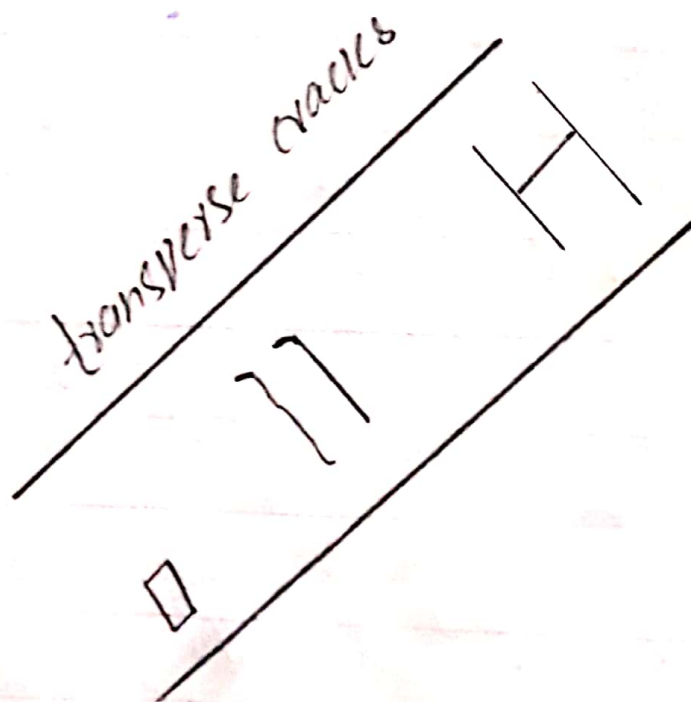
Block cracks are interconnected cracks that divide the pavement into approximate rectangular pieces. block size in size 1 by 1.

foot to 10 by 20 feet. It is caused by shrinkage of the asphalt concrete and daily temperature.

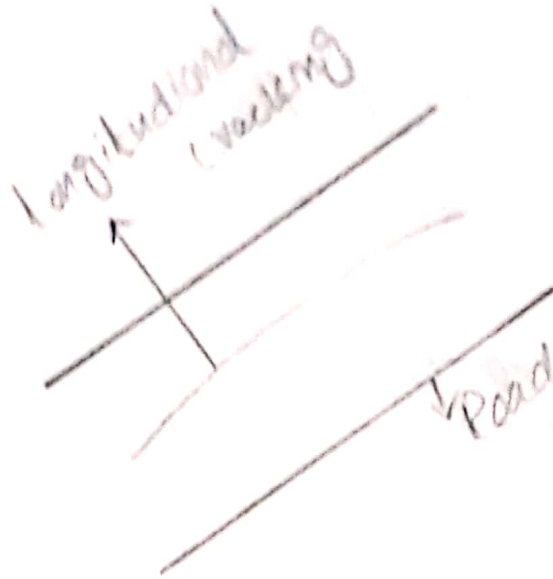
3) Longitudinal cracking:

Longitudinal cracks are parallel to the pavement center line or laydown direction caused by poorly constructed paving line joint. The shrinkage of AC surface due to low temp of the asphalt.

4) Transverse cracking:- Transverse cracks extend across the pavement at approximate right angles to the pavement center line direction of laydown. These type of cracks are not usually load associated.



Longitudinal cracking



⇒ Block Cracking

