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Subject : Highway &
Traffic Eng

Qno # 1

Pg # 1

Comparing railway & Highway with respect to different modes of transportation

Highway

- ① The load carrying capacity of highway is less as compare to railway.
- ② The frequency of accidents is more.
- ③ The Maintenance Cost is less.
- ④ Door to Door Service is available
- ⑤ Highways are suitable for any distance.

Railway

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① The Railway Carrying Capacity is more as Compare to highway

② The frequency of accidents is less

③ Door to Door Service is not available

④ It is Suitable for long distances .

⑤ The Maintenance Cost is more .

Qno # 2

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preliminary Survey for design of new highway

preliminary Survey is third stage of engineering survey. After reconnaissance Survey preliminary Survey is conducted.

In preliminary Survey we check topography, drainage, soil and requirements for constructing road with good alignment, earth work, cutting filling etc.

There are two types of preliminary Survey

- 1) Conventional method
- 2) Modern Rapid approach

For conducting preliminary step for design of new highway, the reference material which I will study or my aim is finalize the most suitable alignment out of various alternative alignments. All modern equipments like theodolites will be used. The following should be studied for constructing new highway

- 1) Primary traversing
- 2) topographical features
- 3) Levelling works
- 4) drainage study & hydrological features
- 5) data Soil Survey
- 6) material Survey
- 7) traffic Survey
- 8) Determination of final Center line

Importance of vehicle performance

Acceleration and deceleration rates of vehicle are often critical parameters in determining highway design.

These rates often govern the dimensions of such design features.

- Freeway ramps
- Climbing or passing lane
- Turnout bay or buses
- Acceleration and deceleration lanes
- Highway alignment [adequate passing and stopping sight distance]
- Determine the need for truck
- Climbing lanes (steep grade)

Directional distribution

Highway must be designed to adequately serve the peak hour traffic volume in the peak direction of flow.

Total hourly traffic in both directions is used to design two lane roads.

In the design of highways with more than two lanes and on two lane roads where 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. Directional traffic is used for multilane roads & streets. Typically, one direction contributes by 55-70% in total traffic, although occasionally 80% is observed.

Q no # 5

Surface distress modes can be classified broadly into the following three groups

- 1) **Fraction**, This could be in the form of cracking or breaking, generally due to excessive loading, fatigue, thermal changes
- 2) **Distortion**, This is in the form of deformation, which can result from such things as excessive loading, densification
- 3) **Disintegration**, This is in the form of stripping or raveling or removal of paving materials, which can result from such things as loss of bonding, chemical reactivity, traffic abrasion, aggregate degradation or binder aging.

Alligator cracking

Explanation, Alligator cracking may be considered a combination of fatigue and block cracking.

It is the series of interconnected cracks of various stages of development.

Alligator cracking develops into a many sided pattern that resembles chicken wire or alligator skin.

Occurs in area's subjected to repeated traffic loading.

Block Cracking

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Explanation, A pattern of cracks that divides the pavement into approximately rectangular pieces, with sides generally longer than one foot.

Rectangular blocks range in size from approximately 0.1m^2 to 10m^2 .

Possible causes can be shrinkage of asphalt.

Longitudinal Cracking

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Explanation,

Longitudinal cracks are predominantly parallel to pavement centerline. location within the lane (wheel path versus non-wheel path) is significant.

Possible causes are expansion and contraction of pavement material, roadbed settlement, poorly constructed paving joints.

Transverse Cracking

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Explanation,

Cracking across the Centerline, not due to reflection cracking. Transverse Cracking occurs roughly perpendicular to the Centerline of the pavement.

They can be caused by shrinkage of the asphalt layer.

Possible Causes : Expansion & Contraction of pavement material, roadbed

Settlement, poorly constructed paving

joints.