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Section : 'A'

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roadbed settlement.

Transverse Cracking...

Transverse cracking is an unconnected cracks that runs across a road pavement perpendicular to the direction of the road.

or

craking across the centline not due to reflection cracking.

It is occur due to the expension and contraction of pavement material, roadbed settlement, poorly constructed paving joints.

- occur in area subjected to repeated traffic loading.

Block cracking:-

A pattern of cracking that divides the pavement into approximately rectangular pieces, with sides generally longer than on foot

⇒ Block cracking generally occur at parking places and other place where the traffic load is not that high. There [illegible] of [illegible]

⇒ The main reason is oxidative hardening of binder / asphalt.

⇒ Shrinkage of asphalt.

Longitudinal cracking:-

Longitudinal cracking occur parallel to the centerline of the pavement. Location with in the lane (wheel path versus non-wheel path) is significant possible occur: a poorly constructed joint, shrinkage of asphalt layer

3) Disintegration:-

It is in the form which the bond blw aggregate and asphalt is lost it is usually called. revaling or removal of paving material such thing which lose of bond occurs chemical reactivity, traffic abrasion, aggregate degradion.

QNO#6

Explain Alligator cracking, block cracking longnitudnal cracking and Transverse cracking

Ans: Alligator craking :-

Alligato craking refers to a sorface damaged in such a way which look like reptiles scales most notably those on an alligator or crocodile's back.

- The ~~combuston~~ series of interconnected cracks of various stage of developmt

Directional Design Hourly Volum (DDHV) =
$0.6 \times 420 = 252$ veh/hr

Q No #05

Explain board classification of surface distress modes ?

Distress:-

Is a condition of the pavement structure that reduce servicability or load to ~~reduced~~ reduction in service life.

Surface distress mode are classfied into the following three groups.

1) **Fracture :-**

This is in form of cracking or breaking for such things as excessive loading, moisture damage slippage or contraction thermal change.

2) **Distortion:-**

This is in form of deformation which can result this is in form such things as excessive loading, creep, desification, consolidation, swelling.

Q No # 04 Short Note :-

Directional distribution :-

Shows the ratio of traffic on opposite side of the road during the peak or design hour, commonly expressed as percent in the peak and off-peak flow directions.

The directional distribution is defined as the percentage of heavier volume over the total highway volume

Important of directional distribution :-

→ Accounts for the direction distribution of traffic

→ Used to convert average daily traffic to directional peak hour traffic

Example :-

if traffic directionally ~~distribution~~ split 60/40, what is directional distribution of traffic for the previous example (Design hourly volume = 420 veh/hr)?

QNO3

What is important of vehicle performance in highways design?

Ans Acceleration and deceleration rate of vehicles are often critical parameters in determining high way.

These rate often govern the dimension of such design feature.

→ The speedup and slow down lanes
→ Free way ramp
→ The proper line for climbing & passing lanes
→ turn out bays for bus it often indent into the sidewalk or other pedistrian area.
→ Determine the need for truck climbing lanes

→ Highway aligment (adequate passing and stoping sight distance.

Data to be collected by studies:-

I will study different material and will extract the following data from the study.

→ Soil characteristic
→ High Flood level of the area
→ valleys, Ponds, lakes, hills etc
→ Religious places or any other permant structure of the area.
→ Geolgical feature.

Final location survey:-

This phase gives a detailed layout of selected route (final horizontal and vertical Alignment final position of structure and drainage channels.

Data required angles, elevation and horizontal distance.

we should also know about the proposed alignment can change are alteration are done

(3) Periminary Survey:-

This is done to collect all the physical information of longitudinal cross section profile, soil survey drainage, and hydrological data, material survey, traffic survey and alternate Alignment proposed after recognation survey.

Physical information:-

→ we should identify the crack.
→ we should identify the Demage
→ we should identify the Trees which is on high way.
→ we should identify Telecommunication on road side.

Collect data:-

We should collect data from several data such as

Existing Engineer report.
Map
Aerial photographs.
Charts.

Map study:-

First of all we study the Map. ~~which give the survey department of pakistan,~~ and will suggest alternative possible routes. The map study is with respect to topographical map. which give the survey department of pakistan. topographic map of the area will help me to study the nature of the ~~rough~~ route, things place e.t.c

Recon Reconnaissance survey:-

In this survey we visit field and do field survey. The field survey to collect the additional details this way we should do field survey. This survey

(5)	The width of rail-ways track is less	The width of high-ways is more
(6)	rail-ways tracks, Starting and destination point is fixed for train	high-ways, starting and destination point is not fixed for traffic
(7)	The cost of maintenance is high	The cost of maintenance is less.

QNO # 02

You are a transportation engineer. You have been tasked to conduct office study as a preliminary step for design of new highway. what reference meterial you will study and what data you will extract:-

Ans **OFFice study:-**

The first step in any highway location study is the Knowing all avilible data of the area in which the highway is constructed.

Q NO Q NO # 01

(1) Keeping in view diffuent mode of transportation compare rail-ways with highway.

	Railways	Highways
(1)	For long distance transportation by rail-ways tracks is safe, convenient and economical	For short distance ~~high-ways is~~ the transportation of good and people is speedly and easily
(2)	Railways track are made only for movement of train	High ways are designed for the movement of different types of traffic such as, cars, bus, etc
(3)	The strength of rail-way track is more	The strength of high-ways is less.
4)	The right entry is not free for railways vehical because there movement is always according to schedule	The right entry is free to all vehical because they move freely there movement are not to any schedule