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Paper Advance surveying

24/06/2020

final term

Q1

Ans **Transition Curve :-**

It is curve in plan which is provided to change the horizontal alignment from straight to circular curve gradually i-e the radius of transition curve varies between infinty to R or R to infinte

transition curve are provided to serve following purpose

i) to introduce super elevation
ii) to introduce extra wideng
iii) to reduce the radius from infinit to straight transition to a radius R at curved Junction gradually

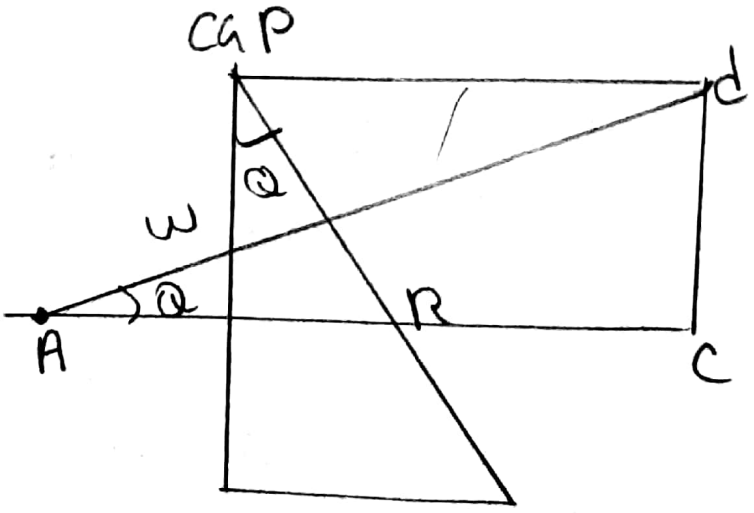
Super elevation effected by the speed of vechicle & radius of curve

Super elevation :- super elevation the banking of roading such that the inter edge of pavment is higher then the inside edge the use of super elevation allow vechicle

to travel through a curve more safely at a higher speed than would otherwise be possible

The transitional rate of applying super elevation into and out of curve in influced by several factor then factor are design speed radius of curve minimum curve radius for horozontal alligment and determine by the design speed realire more super elevation then lower design speed for given radius super elevation is effete by thore factor which are design speed, radius of the curve and dependent of each other

Mathematically



W = weigth of vechle
P = centrifugal force
V = speed of vechle (m/s)
g = acceleration due to gravity
R = radius of curve
h = super elevation in m
b = width of road in m
a = Distance b/w center of road & edge

Equilibrium :-

The resultant of weigh & centrifugal force muste be equal and opposite to reaction perpendicular to road

Equation for super elevation :-

$$e+f = \frac{V^2}{127R}$$

e = Rate of superelevation in %
f = lateral friction factor
v = velocity of vecile m/s
R = Radius of circular curve in m

Q

Ans

A) **Tringulation:-** The method of tringulation is based on angels. from measure angels the Position of the Point of intest are Computer based on the measure angle and two known Points. from these angle distane are computed whic are in turn used to caluclate coordinde for target Point

B) **Trilateration:-** The method of trillatio is based on distance in this Process this method is done with distanes from these distance the angles are computed once. then it is used in conjuction with distance to get Position of target Pant

Principle of tringulation:- in this Process all three angles of each, triange are in in the field including one base line

→ the side of the first triangl is called base line and vertice of indival triangle are know tringulation station.

To minimize accumulation of erreor in length subsidiry at suitble interval are Provide

Poincple of Trilletration

→ it is method of control survey in which networ of triangle is used as trilation

-> all three side of each triangle are measured in field with distance measure intrument

=> horozontal angle are measured in field

=> trilletration is adjusted afer computing of angle and cordinate of station are deteo mined

=> In trilletratio angel are computed indirectly from the lengt of side of triangels

Q3

Ans Part 1A)

Hydrographic Survey:-

In this surve we deal with water bodie 1-e lake, ocean, Pond, canel which effect mas time navigation marine construtions oil explorata and other related activites the hydrograph From is used to describe maritime catography thee are widely used for determinatio of

1) water volum
2) Rate of flow
3) under the water determine of area shape

hydrographic survey is mainly conducted under the concern Authority these are Carried by sensor, sounding or electoonic sensor for shallow water bodies

minimize

Why we do hydrographic survey

1) To determine depth of the bed
2) To determine shore line
3) to locate sever of all by measuring direct current
4) locating of sea level
5) Tide measurment
6) river and stream flow measurment
7) Planing of massive structure like bridge dame harbour

1) factor to determine while conducting hydrographic survey

following factor are to be determine while conducting hydrographic survey

i) survey Equipment
ii) Preparation of hydrographic survey specipication
iii) issue to a designated
iv) Resource allocation

v) Program planning of that unit
vi) Detail survey Planning

Q3 b) **Sounding**:- the Proces of measuring the depth below the wate surface is called Soundy this coorespond to ordinary spirit levelnes in land survey whose depth are measure below horzental line the objec of making Soundig is thus to determine the centrifugation of sub scarface

Purpose sounding

i) sounding is almos importar for any water body to improve its nagtabl Propeate to know about selting and soaing ete

ii) In hydrographic survey Soug is the measurmal of depth below water surface

(iii) In shoal the main Purpes and and objectie of soundg

Q4
A)

Areial Photogrammetry :- Areial Photgrametry is the Process in which an aircraft with camera is used to take Photos from certain height in air of minum 3 to 4 control Points

Use of Areal Photography :-

It is used because it Provide compute genrate 2d and 3d model ase topographical in nature. these ~~Model~~ represent the dimension & Physical factor of area of land audio stuig accuraly thes modl can relocated and zoomed alond with survey of used of aseal photography

Q4 10

B)

Procedure of arieal Photography

1) establishing of control Point
2) flight Planing & Photography
3) Photo interpretation and steroscopy
4) Parallel and measurment of Poller
5) contraction of map and catography

Establishing control Point

Control Point are established on ground with know relative Posttion the Photograph capture by setting the Point as boundre be minum 3 to 4 Point (central Point

flight Planing and Photography :-

IS knowing the height of maulme while taking Photo, curve to be covered numbe of Photo you stopp and time interval between exposure