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### LITERATURE REVIEW PAPER ON CAUSEWAY ANALYSIS

DARSHAK CHAUDHARI<sup>1</sup>, PRITESH PATEL<sup>1</sup>, MEET PRAJAPATI<sup>1</sup>, DEEP RAWAL<sup>1</sup>,  
PROF. DHAVAL M. PATEL<sup>2</sup>

1. U.G. Student, Department of Civil Engineering, SVBIT, Gandhinagar – 382650
2. Assistant Professor, Department of Civil Engg., S.V.B.I.T., Gandhinagar - 382650

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**Abstract:** A Causeway is a road or railway route across a wide body of water or wet land raised up on an Embankment. A causeway is however supported on earth or stone, whereas a bridge or viaduct is mainly supported by free-standing columns or arches[8]. Size sand shapes may vary from small circular pipes to extremely large arch sections that are sometime used in place of bridges. There are meet the immediate people get interview then survey to how much water come to causeway. The succeeding derivation route is simply the hard, trodden surface of a path. The name by this route comes to be practical to a firmly-surfaced road. It is now little-used except in dialect and in the names of roads which were first notable for their solidly-made surface. The 1911 Encyclopædia Britannica states "causey, a mound or dam, which is resulting, through the Norman-French caucie from the late Latin via calcite, a street imprinted firm with the feet [7]. A careful approach to culvert design is essential, both in new land development and retrofit situations, because culverts often significantly influence upstream and downstream flood risks, flood plain management and public safety. There are also analyses to which type traffic flow there it also survey to damage to causeway in monsoon. We can identify the quantity of the much water overtopping the causeway and its effect of the road and local environmental area. We would Analysis the surrounding people which type face difficult to monsoon. There should be proper design of causeway then get solution.

**Keywords:** Causewav, Bridge, .Stream, Runoff, Discharge

Corresponding Author: DARSHAK CHAUDHARI



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## INTRODUCTION

When first used, the word appeared in a form such as "causey way" making clear its derivation from the earlier form "causey". This word seems to have come from the same source by two different routes. It derives ultimately, from the Latin for heel, calyx, and most likely comes from the trampling technique to consolidate. Generally now days we are suggestion to Offer a design that is reasonably convenient, economical, and logistically Possible for the contractor to build and take away Provide a design that will not be subject to failure due to standard stream flow situation. This should consider in-stream obstructions such as piers or islands that could direct high velocity jets at points along the causeway. Its basic requirement of the causeway.

In the monsoon season are the causeway is the main problem in the rural and urban area. Most of road breaks due causeway problem.

First the building of a causeway utilised ground that had been compressed upon to compact and solidify it as much as likely, one coating at a time, often by slaves or flocks of sheep. Today, this work is done by equipment. The same technique would have been used for road embankment, raised river banks, sea banks and fortification earthworks.[8]

offer a design that will not foundation a momentous boost in the Ordinary High Water stage, will not notably increase the swiftness of flow from first to last the causeway opening(s) for that flow rate, will not significantly alter flow distribution, and will not concentrate flow on the piers and foundations.

### Highway causeway Crossing Analysis:

The hydraulic analysis of a highway-stream crossing for a particular flood frequency involves the following:

- For the determining the remote place linked with each alternative profile and waterway, Opening and influential the effects on flow allocation and velocities
- estimate scour potential and The hydraulic design of a bridge over a watercourse involves the next such that the risk associated with the backwoods and increased velocities are not excessive
- establishing a location and Bridge length
- Orientation and Roadway and bridge profiles

### II. objectives

Objectives .of .Causeway analysis .are .as .follows:-

- To identify the hold up the protection of the environment resources Due to the causeway and To get better highway safety and security by identify and working to apply to engineering solution to help build good roads

- To construct group of people hold for long term success and safe environment and To instruct the public on ordinary solution and historical resource and safety along the passageway.
- perk up ambler by cycle and moving in initiatives down and association to cause way.

### III. STUDY AREA



Fig.Site location (Source:- Google image)

Idar is taluka of Sabarakantha, Gujarat. The site location is at idar taluka between ganthiyol and jawangadh village. According to Bureau of Indian Standards. idar taluka is under seismic zone III.

### IV. METHODOLOGY

- Step: 1 To Identify Problem and objective of our topic
- Step: 2 To Study of research paper
- Step: 3 To identify our problem methodology
- Step: 4 To collect the different type of data related our project
- Step: 5 Data analysis with using different method

### V. DATA COLLECTION

This one the following data are used for the calculate the different methods.

All that data collect from government office and different types of the survey are done by the our.

- Collection of General Data
  - Preliminary Survey

- Collection of Preliminary Data for selection of Bridge Sites
- Public survey

## VI ESTIMATION OF FLOOD DISCHARGE METHOD

For the identify the flood discharge we can used different methods. For the future work we can used the following method for our work.

- 1) By Catchment Run off Method
- 2) By Empirical Formulae
- 3) By Rational Formula

### By Catchment Run off Method

The catchment area is the command area of a river wherefrom the river gets the supply of water. The catchment area is computed from the contour map and the flood discharge is estimated from the "Run-off" formula.

The rainfall is measured by rain gauges in millimetre. From the daily record of rainfall, annual rainfall for a zone is determined. The annual rainfall varies from place to place and therefore, the recorded rainfall for a considerable period, say fifty years, is very useful in getting the maximum rainfall recorded during this period. Run-off is defined as the proportion of water out of the total rainfall in the catchment area running to the water course Channel or river.

It is needless to mention that full quantity of rainfall docs not reach the water course as some quantity is soaked in the soil to form the subsoil water strata, some quantity is absorbed by vegetation, some quantity is evaporated and the rest only flows to the channel or river. How the rain water reaches the channel or the river from the catchment area

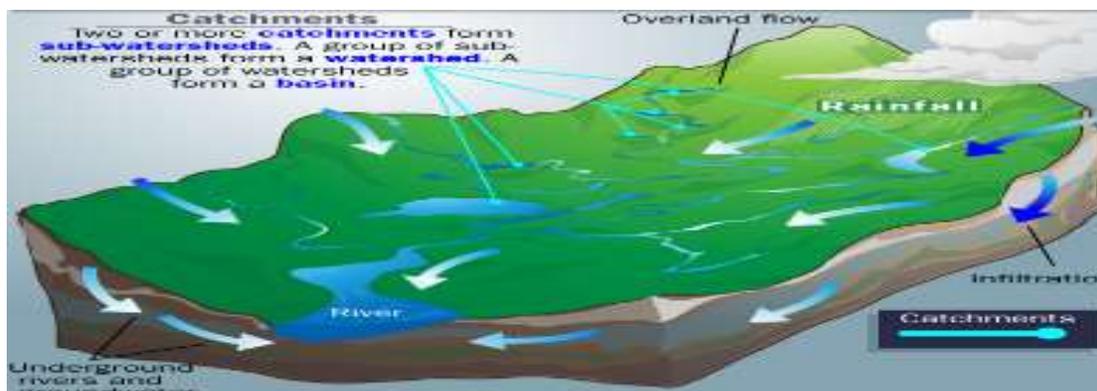


FIG1: Run-off from normal single catchment

(Source:<https://science.howstuffworks.com/environmental/conservation/issues/watershed1.htm>)

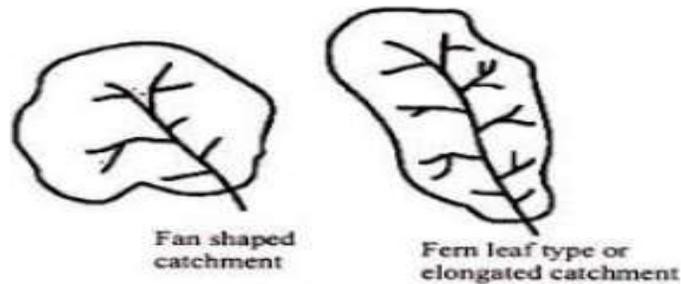


FIG 2 : Run-off from fan like shape of catchment

(Source:<http://www.geographynotes.com/precipitation-2/catchment-area/catchment-area-slope-and-its-classification-geography/4687>)

### By Empirical Formula

We can use different empirical formula for the catchment area. This empirical formula can depend upon the topography and shape of the catchment area. Detail of the formula are given as below.

Depending upon the location of the catchment.

- I) Dickens' formula:

$$Q = C.A^{3/4}$$

Where,

Q = Discharge in cusecs (ft<sup>3</sup>/s).

A = Catchment area in sq. miles.

C = A coefficient having value

11 for Northern India,

14 to 19 for Central India

22 for western India.

- Rye's formula:

$$Q = C.A^{2/3}$$

Where,

C = A coefficient equal to 6.8 for areas within 25 km. of the coast, 8.5 for areas between 25 to 160 km. of the coast and 10.0 for limited areas near the hills.

- Inglis Formula:

$$Q = 125.A^{1/2}$$

For area between 100 to 1000 sq.km

$$Q = 125.A^{1/2} - 2.60 (A - 260)$$

For all types of catchment:

For small area only:

$$Q = 125 / (A+10)^{1/2}$$

By Rational Formula

$$Q = 0.028 P.F.A.l_c$$

Where,

Q = Max Run-off in cubic meter/sec.

A = Area of catchment in hectares.

l<sub>c</sub> = Critical intensity of rainfall in cm per hour.

P=Percentage co-efficient of runoff for the catchment Characteristics.

F = 1 for small areas.

Here,

$$l_c = l_o (2/t_c+1)$$

**Estimating flood discharge from cross sectional area and Bed slope:**

In a beck have non-erodible banks and couch, the form and the size of the cross-section remain particularly the same during a flood as at normal times and therefore, the normal section and the perimeter may be used in calculating the release. But in a stream flowing from beginning to end alluvium region, the cross-sectional area and the perimeter may change during highest 'floods due to the scouring of the banks and the double bed and as such in estimating the maximum food discharge, the depth of scour has to be ascertained first and the values of the cross-sectional area and the perimeter may then be calculated by taking levels of the bed at certain intervals.

The value of the rugosity co-efficient depends on the nature of the bed and the store of the stream and right care is obligatory to be occupied in select the right price of this co-efficient in order to get the correct discharge. Some values of the rugosity co-efficient, n, are given in table below for various types of surface conditions

**VII RESULT AND CONCLUSION**

By the study of the Data and literature paper after the existing cause way. Hydraulic analysis & catchment area and local inquiry define that the existing cause are identify using different methods given the paper. We will get the result based on the paper and then after we can give the suggestion of the causeway analysis and maintain of the exiting causeway

**REFERENCES**

1. Essentials of Bridge Engineering - By D. Johnson Victor.
2. Bridge Engineering - By K. S. Rakshit.
3. Concrete Bridge Design & Practice - By Dr. V .K. Raina.
4. Foundation Design - By Wayne C Teng.
5. The World of Bridges - By Dr. V. K. Raina.
6. IRC SP13.

7. Oxford English Dictionary. 1971. ISBN 0-19-861212-5.
8. <https://en.wikipedia.org/wiki/Causeway>
9. <https://science.howstuffworks.com/environmental/conservation/issues/watershed1.htm>.
10. <https://www.nbmcw.com/roads-pavements/472-salient-drainage-design-aspects-for-roads-a-highways.html>.
11. <http://www.expertsmind.com/questions/estimation-of-discharge-30129526.aspx>.