

Traffic Volume Studies and Analysis

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ABSTRACT

The central idea that lies behind this project is to determine the volume of traffic in a certain intersection. A basic planning study is a prerequisite to intelligent evaluation of any all-inclusive transportation system of a city or state. The planning of integral parts of any master plan, such as one-way streets, major highway networks, expressways, public transit service, and parking facilities, requires traffic volume studies. "Motor Vehicle Volume Studies" or "Traffic Volume studies" is an enumeration of motor vehicles flowing at an intersection or other roadway location. A series of studies (a survey) provides a map of average daily or hourly flow for all streets or highways in an area. Classification is usually made by type of vehicle and time period of day. At intersections, vehicular movements are generally classified by turning and straight movements. This study provides basic data for planning traffic control, roadway maintenance, roadway changes and construction of new facilities. The starting point for most traffic engineering is the current state of facilities and traffic along with a prediction or anticipation of future demand. The former requires that a wide variety of data and information be assembled that adequately describe the current status of systems, facilities and traffic. The information on traffic volume can be gathered automatically or by survey staff and will normally be disaggregated to indicate the number of vehicles of different types in the traffic stream. Disaggregation by vehicle occupancy may also be achieved if the count is made by survey staff rather than by automatic equipment. Depending on the purpose of the survey, the count may relate to traffic passing along a specified link or may relate to traffic making a particular turning movement at an intersection.

INTRODUCTION

Traffic volume studies are conducted to determine the number, movements, and classifications of roadway vehicles at a given location. These data can help identify critical flow time periods, determine the influence of large vehicles or pedestrians on vehicular traffic flow, or document traffic volume trends. The length of the sampling period depends on the type of count being taken and the intended use of the data recorded. For example, an intersection count may be conducted during the peak flow period. If so, manual count with 15-minute intervals could be used to obtain the traffic volume data.

LITERATURE REVIEW

There are many ways and methods of data collection method. They are:-

1. Manual data collection methods: The traditional method of collecting traffic flow data was to station enumerators beside the road and requires them to record the number of vehicles passing in the designated direction(s). The record might be kept on one or more tally counters (perhaps with separate counters for different directions of movement or different classes of vehicle) or on prepared forms with provision for different categories of vehicle.

2. Automatic data collection methods: Automatic counters comprise one or more sensors and a recording device. There are many different types of sensor and the choice between them will depend on site conditions.

Traffic volume studies are usually conducted when certain volume characteristics are needed, some of which follow:

1. Average Annual Daily Traffic (AADT):-

It is the average of 24-hour counts collected every day of the year. AADTs are used in several traffic and transportation analyses for:

- a. Estimation of highway user revenues.
- b. Computation of crash rates in terms of number of crashes per 100 million vehicle miles.
- c. Establishment of traffic volume trends.
- d. Evaluation of the economic feasibility of highway projects.
- e. Development of freeway and major arterial street systems.
- f. Development of improvement and maintenance programs.

2. Average Daily Traffic (ADT):-

It is the average of 24-hour counts collected over a number of days greater than one but less than a year. ADTs may be used for:

- a. Planning of highway activities.
- b. Measurement of current demand.
- c. Evaluation of existing traffic flow.

3. Peak Hour Volume (PHV):-

It is the maximum number of vehicles that pass a point on a highway during a period of 60 consecutive minutes. PHVs are used for:

- a. Functional classification of highways.
- b. Design of the geometric characteristics of a highway, for example, number of lanes, intersection signalization, or channelization.
- c. Capacity analysis.
- d. Development of programs related to traffic operations, for example, one-way street systems or traffic routing.
- e. Development of parking regulations.

4. Vehicle Classification (VC):-

It records volume with respect to the type of vehicles, for example, passenger cars, two-axle trucks, or three-axle trucks. VC is used in:

- a. Design of geometric characteristics, with particular reference to turning-radii requirements, maximum grades, lane widths, and so forth.
- b. Capacity analyses, with respect to passenger-car equivalent of trucks.
- c. Adjustment of traffic counts obtained by machines.
- d. Structural design of highway pavements, bridges, and so forth.

5. Vehicle Miles of Travel (VMT):-

It is a measure of travel along a section of road. It is the product of the traffic volume (that is, average weekday volume or ADT) and the length of roadway in miles to which the volume is applicable. VMTs are used mainly as a base for allocating resources for maintenance and improvement of highways.

6. AAWT:-

It is the average 24-hour traffic volume occurring on weekdays over a full year. AAWT is normally obtained by dividing the total weekday traffic for the year by the annual weekdays. The procedure involved in this analysis involves:-

- 1) Select any junction either signalized or un signalized for the Traffic Volume Studies and proceeds to the survey spot with the Traffic Volume recording sheets and suitable recording equipment if necessary. 2) As the

number of approaches increase at a junction it is tedious job for an surveyor to count all the vehicles in particular turning movement. If the traffic in particular turning movement near the junction is large then take assistance of other surveyor to count the certain number of vehicles.

3) It is also suggestible to the Traffic Surveyor to note down the Turning movement briefly with the indication of place of survey.

4) Aware of all the class of vehicles in the survey area before you proceed to take readings

5) Determine the duration of Traffic Volume survey (2 or 3 hours) and continue recording the number of vehicles in their respective vehicle category in the Traffic Volume Study sheets with the help of tally marks in the corresponding time interval (15 minutes interval)

6) Continue the survey till the end and keep the Traffic Volume Survey sheets for the analysis purpose. Readings are carefully recorded especially on the high volume roads for the better and safe future design projects. Summarize the Traffic Volume recorded by totalling the tally points and denote it with numeral for quick grasp during analysis.

7) Calculate the “Peak Hour Volume (PHV)” and “Peak Hour Factor (PHF)” with the detailed analysis which is discussed in continuation to this procedure, and comment on the flow behaviour of the Traffic Volume using the PHF. If possible suggest any remedy to evade the traffic problem and enhance better workability of the approaches in the study area.

CONCLUSION

The Peak Hour Factor (PHF) value ranges from 0.25 to 1.00. The value representing the extreme peak condition of traffic is 0.25. PHF Value if near to unity value then it is representing Uniform Flow during the Peak Hour. Comment using obtained result

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