2.1 TRAFFIC FLOW CHARACTERISTICS

Traffic surveys are carried out to analyses the traffic characteristics. These studies help in deciding the geometric design feature and traffic control for safe and efficient traffic movements. Traffic surveys for collecting traffic data are also called traffic census.

The various traffic surveys generally carried out are:

1. Traffic volume count survey
2. Speed studies
   a. Spot speed studies
   b. Speed and delay studies
3. Origin and destination survey
4. Parking survey
5. Accident studies
6. Traffic flow characteristics
7. Traffic capacity studies

2.1.1 TRAFFIC VOLUME COUNT SURVEY

Methods of Measurements:

a. Measurement at a point of road
b. Measurement over short section of road
c. Measurement over long section of road
d. Moving observer method

Traffic volume is the number of vehicles crossing a section of road per unit time at any selected period. The **uses of traffic volume survey are given below:**

1. Traffic volume survey is used in planning, traffic operation and control of existing facilities and also for planning and designing the new facilities.
2. This survey is used in the analysis of traffic patterns and trends.
3. Volume distribution study is used in planning one-way streets and other regulatory measures.
4. It is used for design of intersections, in planning signal timings, channelization and

other control devices.

5. Classified volume count survey is useful in structural design of pavements, in geometric design and in computing roadway capacity.
6. Pedestrian volume study is used for planning sidewalks, cross walks, subways and pedestrian signals.
7. To determine the traffic flow or traffic in the peak hour.

Methods Available For Traffic Counts

The available for traffic volume counts are listed below:

1. Manual count
2. Mechanical count
3. Combination of manual and mechanical methods
4. Automatic devices(pneumatic tube, photo electric cells, magnetic detectors and radar detectors)
5. Photographic methods

Number of lanes in the highway on which the count is to be taken and the type of information desired. However it is not practicable to have counts for all the 24 hoursof the day and on all days round the year.

Equipment needed:

The following equipment is needed for manual counts,

1. A watch
2. Pencils or pen
3. Supply of blank field data sheet with clip board

The **advantages** of manual methods and situations where these are to be preferred are:

1. Data accumulated by manual methods are easy to analyse.
2. Manual methods are suitable for short-term and non-continuous counts.
3. Details such as vehicle classification and number of occupants can be easilyobtained.
4. Specific vehicular movements such as left turns, right turns, straight aheadetc.at a junction can be noted and recorded.
5. Even if automatic devices are used, it is often necessary to check the

accuracyof these devices periodically and manual methods are serving this purpose.

Disadvantages of manual methods:

It is not practicable to have counts for all the 24 hours of the day and on all days round the year.

Mechanical counts:

The method employs a field team to record traffic volume on the prescribed record sheets. By this method it is possible to obtain data which can not be collected by mechanical counters, such as **vehicle classification, turning movements and counts where loading conditions or numbers of occupants are required**.

However it is not practicable to have counts for all the 24 hours of the day and on all days round the year.

Hence it is necessary to resort to statistical sampling techniques in order to cut down the manual hours involved in taking complete counts complete counts, first the fluctuations of traffic volume during the hours of the day and the daily variations are observed. Then by **statistical analysis** the peak hourly traffic volume as well as average daily traffic volumes are calculated.

Combination of Manual and Mechanical Method:

An example of a combination of manual and mechanical method is the multiple pen recorder. A chart moves continuously at the speed of a clock. Different pens record the occurrence of different events on the chart.

The main advantage of this method is

(i) A permanent record is kept arrival of each class of vehicle. The classification and vehicle count performed simultaneously.

(ii) Additional information such as time headways between successivevehicles and the arrival per unit time become available.

Automatic devices:

- Photo electric cells
- Magnetic detector and
- Radar detectors
- Pneumatic tube

- Electric contact
- Co axial cable

Photographic method:

In this method, the video camera stationed on the top of an elevated building select vehicles at random and follow their course along the road, noting the number of vehicles entering the test section. This method useful for studying short test sections like intersection etc.

Presentation of traffic volume data:

1. Average Annual Daily Traffic(AADT) : The average 24-hour traffic volume at a given location over a full 365-day year, i.e. the total number of vehicles passing the site in a year divided by 365.

2. Average Annual Weekday Traffic(AAWT) : The average 24-hour traffic volume occurring on weekdays over a full year. It is computed by dividing the total weekday traffic volume for the year by 260.

3. Average Daily Traffic(ADT) : An average 24-hour traffic volume at a given location for some period of time less than a year. It may be measured for six months, a season, a month, a week, or as little as two days. An ADT is a valid number only for the period over which it was measured.

4. Average Weekday Traffic (AWT) : An average 24-hour traffic volume occurring onweekdays for some period of time less than one year, such as for a month or a season. **PCU(passenger car unit): It is common practice to consider the passenger car asthe standard vehicle unit to convert the other vehicle classes and this unit iscalled passenger car unit or PCU**