

2.5 ORIGIN AND DESTINATION SURVEY

The origin and destination survey carried out mainly due to

- (i) plan the road network facilities for vehicular traffic, and
- (ii) plan the schedule of different modes of transportation for the trip demand of commuters
- (iii) to locate the intermediate stops
- (iv) to establish the design standards for the road, bridges and culverts along the route
- (v) to locate the terminals and plan the terminal facilities
- (vi) to plan the transportation system and mass transit facilities in cities including routes and schedules of operation to judge adequacy of existing routes and to use in planning new networks of roads.

There are a number of methods for collecting the O-D data. Some of the methods are commonly adopted are:

- 1. Roadside interview method**
- 2. License plate method**
- 3. Return post card method**
- 4. Tag on car method**
- 5. Home interview method**
- 6. Work spot interview method**

Road side interview method

The vehicles are stopped at previously decided interview stations by a group of persons and answer to prescribed questionnaire are collected on the spot. The information collected include the place and time of origin and destination, route, location of stoppages, the purpose of trip, type of vehicle and numbers of passenger in each vehicle.

In this method the data is collected quickly in short duration and the field

organization is simple and the team can be trained quickly. The main drawback of this method is that vehicles stopped for interview, and there is delay to the vehicular movement.

License plate method

The entire area under study is cordoned out and the observers are simultaneously stationed at all points of entry and exit on all the routes leading to out of the area.

Each party at the observation station is given synchronized time pieces and they note the license plate numbers (registration numbers) of the vehicles entering and leaving the cordoned area and the time.

Separate recording sheets are maintained for each direction of movement for a specified time interval. After collecting the field data major work remains of the office computations and analysis, by tracking each vehicle number and its time of entering and leaving the cordon area.

This method is quite easy and quick as far as the field work concerned. The field organization can also be trained quickly. However, this method is quite advantageous when the area under consideration is small, like a large intersection or a small business center.

Return post card method

Pre-paid reply post cards with return address are distributed to the road users at some selected points along the route or the cards are mailed to the owners of vehicles. The questionnaire to be filled by road user is printed on the card, along with a request for co-operation and purpose of the study. The distributing stations for the cards may be selected where vehicles have to stop as in case of a toll booth.

The method is suitable where the traffic is heavy. The personnel need not be skilled or trained just distributing the cards. The only a draw back of this method is part of the road users may return the cards promptly after filling in the desire details properly and correctly.

Tag on car method

In this method a pre-coded card stuck on the vehicles as its enters the area under

study. When the car leaves cordon area the other observations are recorded on the tag. This method is useful where the traffic is heavy and moves continuously. But the method gives only information regarding the points of entry and exit and the time taken to traverse the area.

Home interview method

A random sample of 0.5 to 10 percent of the population is selected and the residences are visited by trained personnel who collect the travel data from each member of the household. The data collected may be useful either for planning the road network and other facilities for the vehicular traffic or for planning the mass transportation requirement of passengers.

Work spot interview method

The transportation needs of work trip can be planned by collecting the O & D data at work spots like the offices, factories, educational institutions, etc. by personal interview.

2.5.1 ACCIDENT STUDIES

The traffic accidents may involve property damages, personal injuries or even casualties. One of the main objective of traffic engineering is to provide safe traffic movements.

Road accident cannot be totally prevented, but suitable traffic engineering and management measures, the accident rate can be considerably decreases. Therefore the traffic engineer has to carryout systematic accident studies to investigate the causes of accidents and to take preventive measures in terms of design and control.

The objective of the accident studies may be listed below:

To study the causes of accidents and to suggest corrective treatment at location,

- ❖ To evaluate the existing design
- ❖ To support the proposed designs
- ❖ To carryout the before and after studies and to demonstrate the improvement inthe problem
- ❖ To make computations of financial loss

There are four basic elements in a traffic accident:

- ❖ The road users
- ❖ The vehicles
- ❖ The roads and its condition and
- ❖ Environmental factor-traffic, weather etc.

Causes of accidents

Road users: excessive speed and rash driving, careless ,violation of rules and regulations, failure to see or understand the traffic situations, signs or signal, temporary effect due to fatigue, sleep or alcohol.

Vehicles defects: Failure of brakes, steering system, and lighting system etc.,

Road condition: Skidding road surface, pot holes, ruts and other damaged conditions of the road surfaces.

Road design: defective geometric design like inadequate sight distance, inadequate width of shoulders, improper curve design, improper lighting and improper control devices.

Environmental factor: unfavorable weather condition like mist, fog, snow, dust, smoke and heavy rainfall which restrict the normal visibility and render driving unsafe.

TYPES OF ACCIDENTS:

- Fatal accident
- Grievous injury accidents
- Slightly injured accidents
- Minor injury accidents
- Non-injury accidents

Fatal accidents: An accident in which one or more persons were killed.

Grievous injury accident: Accidents in which persons were grievously injured. For example permanent disfigurement of head or face.

Slightly injured accidents: Persons who have sustained only minor injuries or bruises or sprains.

Minor injury accidents: Accidents in which persons received only minor injuries.

Non-injury accidents: Accidents in which no one was killed or injured.

COLLISION DIAGRAM:

A collision diagram is the schematic representation of all accidents occurring at a particular location.

Nature of collision:

Different types of collision are,

- ❖ Head on collision
- ❖ Rear end collision
- ❖ Side swipe collision
- ❖ Right angle collision

- ❖ Right turn collision
- ❖ Fixed object collision
- ❖ Out of control collision

