Traffic Management for Urun-Islampur City

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Abstract— **Traffic Data Collection and projections there of traffic volumes are basic requirements for planning of road development and management schemes. Traffic Data forms an integral part in the science of descriptive national economics and such knowledge is essential in drawing up a rational transport policy for movement of passengers and goods by both government and the private sectors. In this paper the requirements for developing traffic control model for Urun-Islampur city are shown. This paper shows manual counting method. The data collected manually as per requirements. Data collection method is helpful for collecting Traffic Data in any city.**

I.   INTRODUCTION

Indian traffic characteristics are fundamentally very different from those in the developed countries. India with heterogeneous type of traffic needs speed flow-curve to be defined according to road and traffic conditions prevalent in Indian condition. Urun-Islampur is one of the fast developing Indian city in the District Sangli, State Maharashtra. Also Urun-Islampur is the main city in Walwa tahsil. The city is surrounded by minor and major industries and has also become an educational hub. Due to this reason the vehicles are rapidly growing in this city and creates lots of traffic congestion problems.

Parking system is one of the essential parameter for traffic management for Urun-Islampur. In Urun-Islampur city no parking space is available and none of any traffic signal is present. This is the main reason creates traffic congestion. Also heavy vehicles creates congestion and traffic jam problem. For the directing the vehicles signals and sign boards are necessary but there is no one facility available for directing vehicles.

For the reducing traffic congestion Urun-Islampur municipal takes initiative for traffic management. The Proper traffic management reduce congestion and directing vehicles smoothly. Urun-Islampur municipal needs to flow of traffic should be smooth and the vehicles are directed easily. Urun-Islampur municipal needs to develop a plan for well traffic management

A. Congestion and Definition

Congestion is a condition in which the number of vehicles attempting to use a roadway at any time exceeds the ability of the roadway to carry the load at generally acceptable service levels. Because of huge crowd and unconditional roads creates traffic congestion problems. The proper traffic management is necessary to remove traffic congestion. Traffic congestion increases because of peak period traffic growth

II.   SCOPE OF THE STUDY

The study divides the urun islampur city in 9 broad zones. All city roads are considered for the study. Data collected for traffic volume count, accidents survey for safety purpose, parking facilities, calculation of traffic speed, average growth of vehicles and for bus stop management.

III.   METHODOLOGY

A. Identificatin of study links

B. Data Collection

   a. Data collect from congested area by manual counting method
   b. Data collect from bus depot
   c. Accidental data
      1. Major accidents
      2. Minor accidents
   d. Parking data in peak hours
   e. Time analysis
   f. Vehicle growth data

C. Conclusion

IV.   TURNING MOVEMENT SURVEY OF VEHICLES AT SELECTED ZONES

12 hours Manual Traffic Counts have been conducted to cover all the Vehicular Movements at the congested area. The Turning Movement Survey has been conducted to obtain Information on Mode wise and Direction wise Turning Movement of Traffic at the Intersection. The Survey has been conducted for 12 hours (8:00am to 8:00pm) covering morning and evening peak hours. Traffic Counting has been carried out manually by using hand tally. The Count Data have been recorded per hour for each vehicle category has been computed. The Traffic Volume Count Data has been processed using the commonly used Spreadsheet Package. The processed Hourly Traffic Volume Data has been compiled Direction wise. The Peak Hourly Directional Vehicular Movement Data has been used to plan and design the Improvement Scheme such as Grade Separation and At Grade Intersections

TABLE I.   TYPE OF VEHICLES

Motorized Traffic	Non-Motorized Traffic
2-Wheelers, Auto Rickshaw, Passenger Car , Car, Taxi and jeep	Bicycle, Cycle, Animal Drawn
Utility Vehicle : Van and Tempo	Vehicle, Hand

Bus	Mini Bus Standard Bus	Drawn Cart
Truck	Light Commercial Vehicle (LCV)	
	Heavy Commercial Vehicle (HCV)	
Farm Vehicles	Agricultural Tractor (AgT)	
	Agricultural Tractor & Trailer (AgTT)	

TRAFFIC SURVEY SHEET

Spot Name :

Day :   Date :   /   /

TIME	Motor cycle :
7.00am to 8.00am	
	Jeep\Car :
	Auto Rickshaw :
	Truck/Bus/Tempo :
	Lorry :
	Tractor :
	Othes :

V.   ANALYSIS OF TURNING MOVEMENT COUNT DATA

Traffic data have been assembled on hourly basis to determine the most appropriate Peak Hours. Data collected from Traffic Surveys have been computerized and analyzed to study Hourly Variation of Traffic, Peak Hour Flows, and Traffic Composition etc. The Counts have been classified by Category of Vehicles and by Direction of Movement. The various Vehicle Types having different Sizes and Characteristics have been converted into Equivalent Passenger Car Units. The Passenger Car Unit (PCU) Factors recommended by Indian Road Congress in "Guidelines for Capacity of Urban Roads in Plain Areas" (IRC: 106 – 1990) have been used

TABLE II.   PCU FACTOR OF VEHICLES

Sr .No	Vehicle Type	Equivalent PCU Factor	
		% composition of Vehicle Type	
		Up to 10%	10% and above
A	**Fast Vehicles**		
1	Two wheeler, Motorcycle	0.5	0.75
2	Passenger car, pick up van	1.0	1..0
3	Auto Rickshaw	1.2	2.0
4	Light Commercial vehicle	1.4	2.0
5	Truck or Bus	2.2	3.7
6	Agricultural tractor trailer	4.0	5.0
B	**Slow Vehicles**		
1	Cycle	0.4	0.5
2	Cycle Rickshaw	1.5	2.0
3	Horse drawn vehicle	1.5	2.0
4	Hand cart	2.0	3.0

VI.   TRAFFIC VOLUME COUNT

Traffic volume count is carried out in Nov – Dec 2016is given below. The identification of peak hour was done by traffic volume study in 12 hours 8am to 8pm working day study. The peak hours were identified at 9.30am to 12pm and 5.30pm to 7.30pm. Evening peak was more congested than morning seen by observation and collected data

TABLE III.   TOTAL VEHICLES IN DAY

Vehicles→ Places↓	Motorcycle	Jeep/Car	Auto Rickshaw	Truck/Bus/Tempo	Lorry	Tractor	Others
Gandhi Chouk	*16997*	*595*	*610*	*15*	*0*	*4*	2
Yallama Chouk	*15992*	272	415	164	2	9	11
Asta Naka	*22493*	7561	1425	3357	412	468	359
Zari Naka	*24957*	8556	3992	3402	469	276	31
Azad chouk	*15332*	407	532	65	0	7	1
Bahe Naka	*12875*	342	277	355	4	85	67
Jayant Patil Chouk	*23341*	6963	2004	2706	346	361	113
Ambedkar Naka	*9410*	6381	746	3739	670	668	552
Juni Bhaji Mandai	*12332*	314	558	44	0	3	9

VII.   DATA COLLECTED FROM BUS DEPOT

The buses are creates more traffic congestion problem in city. This data is collected from urun islampur bus depot for directing buses in proper time management to reduce traffic congestion problem. The collected data is useful for the bus stop management.

TABLE IV.   BUS DATA

	Monday to Saturday	Sunday
Gandhi Chouk	0	0
Yallama Chouk	14	7
Asta Naka	374	335
Zari Naka	466	417
Azad chouk	0	0
Bahe Naka	31	30
Jayant Patil Chouk	378	356
Ambedkar Naka	229	209
Juni Bhaji Mandai	0	0

VIII.   ACCIDENTAL DATA

The main purpose of collecting accidental data is safety. The data was collected from urun islampur police station records. The data was collected from year 2012 to 2016 by police records. The data is divided in two forms Major accidents and Minor accidents.

TABLE V.   MAJOR ACCIDENTS

Year	Accidents
2012	4
2013	3
2014	6
2015	6
2016	6

TABLE VI.   MINOR ACCIDENTS

Year	Accidents
2012	15
2013	12
2014	9
2015	5
2016	3

IX.   PARKING DATA

Parking data consist of type of vehicles (two wheeler, four wheeler, hand cart, rickshaw,tempo and tractors) and number of vehicles for selected route. The data is collected for well parking management and to provide road parking space. This data is collected by manual counting in peak hours. Also the available parking space data collected from urun islampur municipal

TABLE VII.   NUMBER OF VEHICLES PARKED IN SELECTED ROUTE

Route	Number of vehicles parked 5pm to 7pm	Number of vehicles parked 9am to 11am
Bahe naka to yallama chouk	250	134
Yallama chouk to gandhi chouk	102	83
Gandhi chouk to azad chouk	166	114
Azad chouk to zari naka	290	58
Juni bhaji mandai to shani mandir	349	290
Asta naka to ambedkar naka	42	30
Jain mandir road	34	23
Jayant patil chouk to juni bhaji mandai	146	180
Jayant patil chouk to zari naka	291	236
Zari naka to asta naka	111	137
Market yard road	44	91

TABLE VIII.   AVAILABLE PARKING SPACE

Route	Parking space
Bahe naka to yallama chouk	704sqm
Yallama chouk to gandhi chouk	No parking space
Gandhi chouk to azad chouk	218sqm
Azad chouk to zari naka	484sqm
Juni bhaji mandai to shani mandir	484sqm
Asta naka to ambedkar naka	484.4sqm
Jain mandir road	No parking space
Jayant patil chouk to juni bhaji mandai	No parking space
Jayant patil chouk to zari naka	No parking space
Zari naka to asta naka	No parking space
Market yard road	No parking space

X.   TIME ANALYSIS

In time analysis, traveling time for selected route is find out. For finding this traveling time manual method is used in this method motor cycle passion plus is used. Following tables shows time analysis for different route from 6pm to 8pm and 9am to 12am respectively.speed breakers breaks the speed and delay the time for that number of speed breakers also calculated

TABLE IX.   TIME ANALYSIS (9AM TO 11AM)

Route	Time	Speed breakers	Distance
Yallama chouk To Gandhi chouk	2'25''09	3	0.2km
Gandhi chouk To Azad chouk	01'34''07	6	0.3km
Azad chouk To Zari naka	02'07''05	5	0.4km
Zari naka To Jayant patil chouk	02'18''08	0	0.6km
Zari naka To Asta naka	01'34''08	0	0.8km
Asta naka To Ambedkar naka	01'35''02	0	0.5km
Asta naka To Bahe naka	03'15''07	1	0.9km
Bahe naka To Gandhi chouk	02'18''00	5	0.6km
Bahe naka To Yallama chouk	01'23''03	3	0.4km
Gandhi chouk To Juni bhaji mandai	01'17''02	3	0.3km
Juni bhaji mandai To Azad chouk	00'53''05	4	0.2km
Jayant patil chouk To Juni bhaji mandai	02'30''07	3	0.8km
Jayant patil chouk To Azad chouk	02'27''01	7	0.7km

TABLE X.   TIME ANALYSIS P(6PM TO 8PM)

Route	Time	Speed breakers	Distance
Yallama chouk To Gandhi chouk	00'47''09	3	0.2km
Gandhi chouk To Azad chouk	01'28''09	6	0.3km
Azad chouk To Zari naka	01'42''05	5	0.4km
Zari naka To Jayant patil chouk	01'54''06	0	0.6km
Zari naka To Asta naka	01'55''09	0	0.8km
Asta naka To Ambedkar naka	01'10''07	0	0.5km
Asta naka To Bahe naka	03'03''09	1	0.9km
Bahe naka To Gandhi chouk	01'51''03	5	0.6km
Bahe naka To Yallama chouk	01'10''06	3	0.4km
Gandhi chouk To Juni bhaji mandai	01'03''06	3	0.3km
Juni bhaji mandai To Azad chouk	01'11''00	4	0.2km
Jayant patil chouk To Juni bhaji mandai	02'55''06	3	0.8km
Jayant patil chouk To Azad chouk	02'41''09	7	0.7km

XI. VEHICLE GROWTH DATA

The vehicle growth data was collected from RTO department Sangli. The rapidly vehicle growth creates congestion problem in city. The data was collected from year 2011 to 2016 by RTO records.

TABLE XI. VEHICLE GROWTH DATA

Year	Total Vehicles
2011	4,59,207
2012	5,20,901
2013	5,72,632
2014	6,27,352
2015	7,12,631

XII. CONCLUSION

The collection of data by manual counting method is used for well traffic management. The manual counting method is easy to work and well observed meathod.The data used to create better traffic control model

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