

1 USE OF WASTE PLASTIC MATERIALS FOR ROAD CONSTRUCTION IN KERALA

This project is in support from the Highway Lab & Engineering Division. The Stadium Mini bypass road in Kozhikode city was laid with waste plastic in March-April 2009. An evaluation study on the road laid with Plastic was conducted by the Engineering Division In February 2010 Logans road, the arterial corridor in Thalassery town was also laid with waste plastic used for pavement reconstruction. Thus three roads were laid with waste plastic in Vadakara town, Thalassery town and in Kozhikode city.



Hon, Minister for Home Affairs Sri Kodyeri Balakrishnan opening the Logans road newly laid with waste plastic for traffic in Thalassery Town

2 INTEGRATED RURAL ACCESSIBILITY PLANNING (IRAP) MICRO LEVEL INTERVENTIONS IN HILLY AREAS OF NORTHERN KERALA -

CASE STUDIES OF NILAMBUR BLOCK IN MALAPPURAM DISTRICT
AND NILESHWAR- KANHANGAD BLOCKS IN KASARGODE DISTRICT

1. Introduction

While rural road planning and development initiatives generally aim at the provision of all weather road connectivity for rural settlements to various facilities, due to the complexities of the issues involved, certain areas and communities are left out of the preview of such initiatives due to limiting factors like geographic constraints and limited number of beneficiaries. There is also a general recognition of the limitations of such initiatives in achieving overall development of marginalized communities living in accessibility restricted hilly and mountainous regions. Facilitating accessibility alone need not make these people more mobile, as they lead subsistence level self-contained life with little interaction with outside world. While a part of this attitude is a reflection of their overall outlook and attitude, lack of gainful employment opportunities outside and subsistence level farming practices within the settlement can also be the reasons for such a state of living condition.

This situation warrants a comprehensive outlook on the various issues related to accessibility, mobility and sustainable developmental initiatives required to ensure long-term development. Based on the initiatives of international development agencies like International Labour Organisation (ILO) similar studies were being undertaken in various parts of the developing world known as Integrated Rural Accessibility Planning (IRAP), and the solutions that emerge from such initiatives are taken up for implementation with local knowledge, participation and management. These studies are primarily undertaken to tackle the issues of accessibility, mobility and economic backwardness simultaneously.

IRAP as a development planning tool takes measures to optimise location of key services as a complementary to improving rural infrastructure and mobility. An effective rural transport should aim at synergies between location, infrastructure and transport services. IRAP focuses on households as generators of rural transport trips and uses simple criteria to prioritise access improvements in consideration of stakeholders interest based on time spent to reach basic economic and social services. IRAP incorporates mobility and locality aspects of access.

The present proposal to undertake such a study in selected blocks in Malappuram and Kasargode Districts of the state where there are predominantly tribal settlements in the accessibility restricted and backward hilly regions of the districts.

2 . State-of-the- art Review

The initiative by the International Labour Organisation (ILO) during the late eighties on different aspects of rural transport as part of a general poverty allevation objectives was based on various pilot projects undertaken mainly to develop two perspectives on regional levels – the first one for Asia and the second one for Africa. The main emphasis of the study conducted in Philippines (1989) was on developing a decentralised access planning methodology and capacity building for access planning at local Government level. In Africa the emphasis was less on capacity building and more on identifying implementing and pilot testing interventions to improve rural transport. The finding of the study led to a change in the objectives of the exercise, consequently leading to a change in African acronym IRTP (Integrated Rural Transport Planning) to a new acronym IRAP (Integrated Rural Accessibility Planning). The initiation of the IRAP pilot projects soon attracted the interest of the governments supporting the expansion of the process, particularly because of its relevance to the new policy of decentralisation.

The IRAP project was undertaken in Laos, as an off-spring of the Philippines project during the year 1995 to better conform to the Laos situation. Recent research and development has further contributed to improvements in the process. The strength of IRAP is that with minor modification it easily can be adopted to the existing planning environment in most Asian countries.

Under Department of International Development (DFID) similar studies were initiated in developing countries as sustainability studies popularly known as Sustainability Livelihood, Accessibility and Mobility (SLAM). The research field under IRAP is of serious intents in this manner and abundant literature is available currently with Transport Research Laboratory (TRL of UK)

. National Transportation and Research Centre (NATPAC) had also conducted a pilot study under IRAP in Attappady of Palakkad district of the State. Two case studies were undertaken during the current year 2009-10 viz Nilambur Block in Malappuram District and Nileshtar and Kanhangad Blocks in Kasargode District

3 Scope and objectives of the study

IRAP has a role in decentralized planning locally.

The Purpose of the study proposed is to objectively evaluate the mobility needs of marginalized communities who are socially and economically backward and are residing in hilly and mountainous terrains vis a vis their accessibility status. Restrictions on mobility due to accessibility constraints call for a detailed study to arrive at long term solutions, which are cost effective, labour intensive and can be implemented with initiatives under the developmental schemes of local bodies. The study will be of a Need based Approach.

The study will give more importance to Intra – settlement movements, to meet subsistence based travel needs over Inter settlement movements. In conventional Planning Studies the latter is focussed while under IRAP the former is given enough attention. The access needs and related mobility could be intervened through Transportation and Non-transportation means. For instance basic need of moving for water supply could be intervened by provision of water in the habitat through a non-transport and non – communication means , where as reaching health and education centres, a concern of social welfare need transport intervention.

Towards this, the main objectives of the study will be:

- To study the household and demographic characteristics of tribal communities in the typical hilly pachayaths of Malappuram and Kasargode Districts.
- To study the socio economic characteristics that have a bearing on transport needs of these people
- To assess the travel requirements and pattern of goods transportation
- To study the existing transport facilities especially the road transport
- To suggest cost effective solutions aimed at improving mobility of people and
- To suggest appropriate cost effective and labour intensive technology and applications to improve mobility and accessibility in transportation sector locally,

3. Methodology

Data required for the study will be collected from primary and secondary sources. Most of the secondary data are available from various offices of rural local bodies of block and

panchayath, DRDA ,Tribal Development Department and other governmental agencies. Suitable field studies like household surveys will be planned to collect information on the socioeconomic characteristics and travel demand and pattern of goods transportation based on appropriate sampling techniques. Detailed studies also will be done to evaluate the existing accessibility means for each settlement to various facilities like health centres, schools and other identifiable trip destinations. Schematic representation of the methodology as a Planning Cycle is given in **Figure - I**

The IRAP tools of decentralized developmental planning consists of :

- .Accessibility indicators
- Accessibility data base
- Prioritisations and Interventions and
- Integration into Local level



6 Study Output

While a general outcome of the study will be to establish travel demand model for communities with similar background, specific solutions evolved from the study include recommendations on:

- Accessibility improvements to trails, footpaths and trekking paths to facilitate accessibility specific to the study area
- Measures aimed at improving mobility like introduction of appropriate transport means
- Means of management of services with local level participation to ensure reasonable viability.
- The output will provide general accessibility improvement measures on roads, crossings and drainage related to typical terrains,

General accessibility improvement measures identifiable can be

i. **Roads :-**

- Bamboo reinforced concrete
- Clay brick surface
- Removing vegetation
- Construction of passing points
- Edge barriers
- Gravel wearing course
- Hand picked stone surfacing hand picked sets and blocks etc.

ii. **Crossings :-**

- Causeways
- Stepping stones
- Suspension bridges
- Rope ways etc.

iii. **Drainage :-**

Diversion banks

- Mitre drains
- Drifts etc.

Similarly

iv. Non-transport interventions could be-

- Accessibility solutions
- Extension and mobile services and
- Storage facilities.

TABLE 1

Tribal Settlement wise distance to selected facilities in Nilambur Block in Malappuram District

Name of Panchayath	Name of settlement	Co.operation Society	Hospital	Market	School	Post Office	Police station
Chaliyar	Kandilappara	Kakkadampoyil (12 km)	Koodaranji (12km)	Valanthode (2km)	Kakkadampoyil (12 km)	Kakkadampoyil (12 km)	Thiruvampadi (14km)
	Ambumala	Moolepadam (12 km)	Akampadam 15km	Moolepadam (12 km)	Badal School in Settlement	Idivanna 12km	Nilambur
	Palakkayam	Moolepadam (5 km)	Akampadam 12km	Moolepadam (5 km)	Akampadam 12km	Idivanna 10km	Nilambur
	Vettilakolly	Akampadam (15 km)	Akampadam 15km	Moolepadam (12 km)	Akampadam (15 km)	Moolepadam (12 km)	Nilambur 30kms
	Nayadampoyil	Kakkadampoyil (5 km)	Koodaranji (20km)	Valanthode (3km)	Kakkadampoyil (5 km)	Kakkadampoyil	Nilambur 35kms
	Valanthode	Kakkadampoyil (2km)	Koodaranji (18km)	Kakkadampoyil	Valanthode	Kakkadampoyil	Nilambur
Vazhikadavu	Keeripotty (Paralunda)	Kanchiram	Munda (8km)	Vazhikadavu	Marutha 2km	Chakkapadam 2km	Vazhikadavu
Edakkara	Aranadampadam	Edakkara (5 km)	Edakkara (5km)	Aranadampadam (1/2km0)	Palemad 2km	Palemad 2km	Edakkara
Amarambalam	Kombankallu	Olarvattam (1/2 km)	Thelpara (2km)	Thelpara (2km)	Thelpara (2km)	4km	Nilambur 20kms
Chokkad	Chenapadi	Srambikal 2km	Chokkad (8km)	Srambikal 2km	Srambikal 2km	Srambikal 2km	Kalikavu 8km

	Kaniyampotti	Chokkade 5 km	Kalikavu 6km	Chokkade 5 km	Kallamula 4km	Mampattumoola 3km	Kalikavu 6km
Kalikkavu	Adakkakundu	Adakkakunndu 1km	Kalikavu 2km	Kalikavu 2km	Parasseri 2km	Adakkakunndu 1km	Kalikavu 2km
	Pattanitharissu	Adakkakunndu 1 1/2km	Kalikavu 5km	Adakkakunndu 1.500km	Adakkakunndu 1 1/2km	Adakkakunndu 1 1/2km	Kalikavu 5km
Chungathara	Kuttimunda	Chungathara 2km	Chungathara 2km	Chungathara 2km	Chungathara 2km	Pookkottumanna 2km	Edakkara 6km
	Kattilapadam	Konnamanna 3.0km	Chungathara 5km	1.5kms	Konnamanna 3.0km	Pallikkuthu 4km	Edakkara (5 km)
	Konnamanna	Konnamanna 0.500km	Chungathara 5km	Konnamanna 0.500km	Konnamanna 1/2km	Pallikkuthu 1km	Edakkara (10 km)
Karulai	Mundakadavu	Karulai 8km	Nilambur 20km	Karulai 8km	Nilambur 20km	Karulai 8km	Nilambur 20kms
Moothedam	Marathumkadavu 1km	Thalippadam 4km	Edakkara (8km)	Marathumkadavu 1km	Thalippadam 4km	Nambooripotty 2km	Edakkara (8km)
	Thalippadam	Thalippadam 1km	Edakkara (8km)	Thalippadam 1km	Thalippadam 1km	Nambooripotty 2km	Edakkara (8km)

Contd....

	Melekarode	Chemanthitta 1 1/2 km	Edakkara (6km)	Chemanthitta 1 1/2 km	Thalippadam 2km	Maramvettichal 2km	Edakkara (8km)
	Uchakulam	Karappuram 4km	Karappuram 4km	Kalkulam 3km	Uchakulam Badal School	Karappuram 3km	Edakkara (10 km)
Pothukal	Thaze Thudimutty	Bhoodanam 3km	Pothukal 5km	Pothukal 5km	Bhoodanam 3km	Bhoodanam 3km	Pothukal 5km
	Kavalappara	Nettikulam 4km	Pothukal 5km	Nettikulam 4km	Bhoodanam 4km	Bhoodanam 4km	Pothukal 5km
	Malankundu	Vellimuttam 5km	Nettikulam 15km	Murukanchira 2km	Poolapadam 3km	Padar 2km	Pothukal 15km
	Appankappu	Pothukal 10km	Nettikulam 10km	Chalikkal 3.0km	Thamburattikkal 4km	Chalikkal 3.0km	Pothukal 10km
	Thandankallu	Pothukal 6km	Nettikulam 10km	Thamburattikkal 3km	Thamburattikkal 3km	Thamburattikkal 3km	Pothukal 6km
	Tharippanpotty	Nettikulam 6km	Nettikulam 6km	Thamburattikkal 4km	Anganavadi in side colony	Thamburattikkal 4km	Pothukal 15km
	Irutukkuthy	Munderi 2km	Pothukal 15km	Thamburattikkal 3km	Thamburattikkal 3km	Munderi 2km	Pothukal 15km
	Vaniyampuzha	Munderi 3km	Thamburattikkal 6km	Munderi 3km	Badal School in Colony	Munderi 3km	Pothukal 15km
	Chembra	Ambutanpotti 6km	Nettikulam 4.5km	Pothukal 4km	Chembra LP School (Badal School)	Bhoodanam 8km	Pothukal 4km

TABLE 2

Settlement wise improvement measures suggested in Nilambur

Block in Malappuram District

Name of settlements	Improvement measures suggested
Kandilapara	<ul style="list-style-type: none">• Road improvement
Ambumala	<ul style="list-style-type: none">• Remove vegetation• Steps along the hill• Electric fencing• Solar lights
Palakkayam	<ul style="list-style-type: none">• Road development• Causeway• Electric fencing• Solar lights
Vettilakolly	<ul style="list-style-type: none">• Road development• Cut vegetation• Edge barriers• Electric fencing
Nayadampoyil	<ul style="list-style-type: none">• Road development• causeway
Chenapady	<ul style="list-style-type: none">• Causeway• Electric fencing• Solar lights• Cutting vegetation
Kuttimunda	<ul style="list-style-type: none">• Road development• Side protection• Pipe culvert
Mundakadavu	<ul style="list-style-type: none">• Road development• Cut vegetation• Solar lights
Uchakulam	<ul style="list-style-type: none">• Road development• Surface dressing of foot path

	to colony <ul style="list-style-type: none"> • Electric fencing • Solar lights
Thazhe Thudumutty	<ul style="list-style-type: none"> • Road development • Hand packed steps to hill top • Solar lights

4 IDENTIFICATION OF ACCIDENT PRONE LOCATIONS AND IMPROVEMENT MEASURES IN STATE HIGHWAYS OF NORTHERN KERALA

1. Introduction

The proposed study is to collect accident data for major stretches of state highways in Northern Kerala for the past years and to analyse the trends in accident and compare appropriate accident ratios as indicators across districts and these highways. The second phase of the project consists of preparing improvement designs for major accident prone locations.

2. Scope and Objectives

The objectives of the proposed study are:

- ❖ To analyse the accident causative factors and arrive at accident abating measures
 - ❖ To evolve a suitable methodology to identify accident prone locations
- And
- ❖ To identify accident prone locations of first, second and third orders to be improved on priority basis

3. Methodology

Road accidents occur due to combined factors necessitating a scientific approach. Reliable data on accident frequency and characteristics, geometric features on the roads and traffic volume are to be collected. Records from Police stations along the state highways forming the vital source are to be perused for FIR details. Results are to be extracted from analysis of this data source. Prioritising the accident prone locations later improvement measures can be suggested. Prioritisation of locations was assessed through

an Accident Risk Index formed of consistency, tendency and level of accidents added through weightages given. Further a Road safety auditing was also conducted on SH 30 in terms of segments identified as accident prone locations

4. Study results

Identification of accident prone locations and improvement measure packages will be useful to Public Works Dept. (Roads) and Local authorities. Number of accident prone locations were identified in SH 30- The Tellicherry- Koottupuzha road leading to Karnataka. They are as follows:

1. Town hall Jn.-Chirakkara Jn. (New over bridge)
2. Eranholi bridge-3rd Mile (Chungam)
3. 3th Mile-West ponniam (Ponniam)
4. 5th Mile-6th Mile (Vettummal)
5. Kunninumithal- Pookkode (Kottayampoil)
6. SBI Jn.-Mavelimukku (Koothuparamba)
7. Nirmala College Jn.-Kandamkunnu (Moonnampeedika)
8. Sankara Vidyapeedom H.S.S Jn.-Court Jn. (Mattannur)
9. Old Post Office Jn.-Village Office Jn. (Chavassery)
10. Payancherry Jn.-Kuttupuzha Jn. (Erutty)

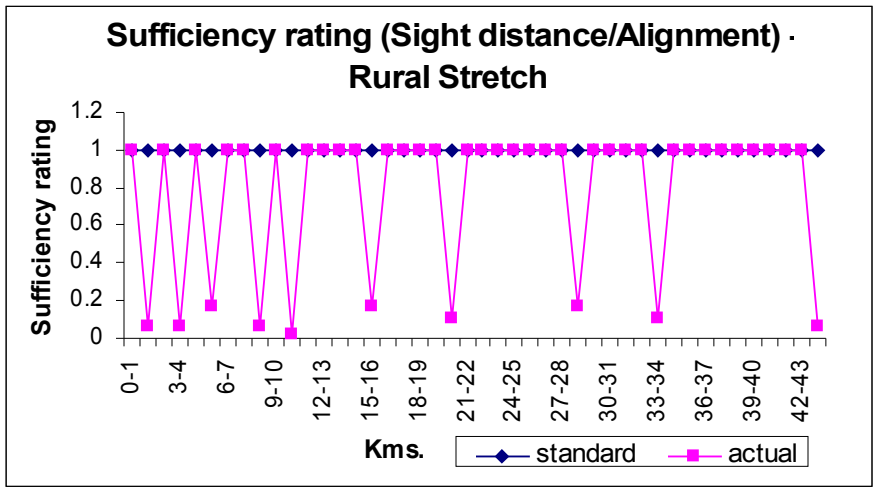
TABLE 1
Distribution of total no.of accidents occurred along S H 30 during June 2004-
June-2009

Sl. No.	Police station Limits	No.of accidents during the year						Total	No. of persons involved		
		2004	05	06	07	08	09		Simple injury	Grievous injury	Fatal injury
1	Thalasserry	5	15	17	19	17	9	82	118	41	12
2	Kadirur	10	31	13	21	16	17	108	72	74	4
3	Kuthuparamb	14	21	10	25	20	5	95	112	60	8
4	Mattannur	13	26	30	32	43	19	163	163	77	28
5	Iritty	21	21	32	25	25	5	129	78	64	13

	Total	63	114	102	122	121	55	577	543	316	65
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TABLE 2

SAFETY AUDITING OF SH 30- SIGHT DISTANCE DETAILS



Kms	standard	actual
0-1	1	1
1-2	1	0.06
2-3	1	1
3-4	1	0.06
4-5	1	1
5-6	1	0.17
6-7	1	1
7-8	1	1
8-9	1	0.06
9-10	1	1
10-11	1	0
11-12	1	1
12-13	1	1
13-14	1	1
14-15	1	1
15-16	1	0.17
16-17	1	1
17-18	1	1
18-19	1	1
19-20	1	1
20-21	1	0.11
21-22	1	1
22-23	1	1
23-24	1	1
24-25	1	1
25-26	1	1
26-27	1	1
27-28	1	1
28-29	1	0.17
29-30	1	1
30-31	1	1
31-32	1	1
32-33	1	1
33-34	1	0.11
34-35	1	1
35-36	1	1
36-37	1	1
37-38	1	1
38-39	1	1
39-40	1	1
40-41	1	1
41-42	1	1
42-43	1	1

5 CONSULTANCY PROJECT

. TRAFFIC AND TRANSPORTATION STUDY FOR THALASSERY TOWN

Introduction

Thalassery is an historically important town located in the Malabar coast. The town is a trading centre and Central Business District is congested with mixed traffic. The urban centre has an area of 2398 sq.km. and according to 2001 census, population was 99,386 persons. The town is well connected by road and rail network. The National Highway 17 and the Shoranur – Mangalore rail line constrict the spread of Central Business District with in the town. The rail line and the high way bisects the Central Area of the town. At the request of Thalassery Municipality a Traffic Operational Plan study was initiated.

Scope and Objectives of the study

The scope of the study is to formulate short term traffic improvements and long term road development schemes for the Urban Centre of Thalassery in Kannur district. The following tasks were carried out to formulate suitable road and transport development plan for the town:

- i) Review of available study reports, plans and various schemes;
- ii) Conduct of traffic and engineering surveys;
- iii) Analysis of data;
- iv) Preparation of short term traffic improvement proposals;
- v) Forecasting of traffic future transport requirements;
- vi) Formulation of long term transport infrastructure development programmes/schemes to meet the future traffic demand;

4. Studies Under taken

4.1 Collection of secondary data

The secondary data were collected from published documents and also from government and private agencies such as Municipal office, Police station, PWD (Roads),

Private Bus Operators Association and other agencies actively involved in the planning and development of the town.

4.2 Primary surveys

To Collect primary traffic data ,following primary traffic surveys were conducted:

Intersection volume

Parking

Speed and delay

Link volume

Inter-city traffic (passenger & goods)

Physical surveying with total station

5 Project Outputs

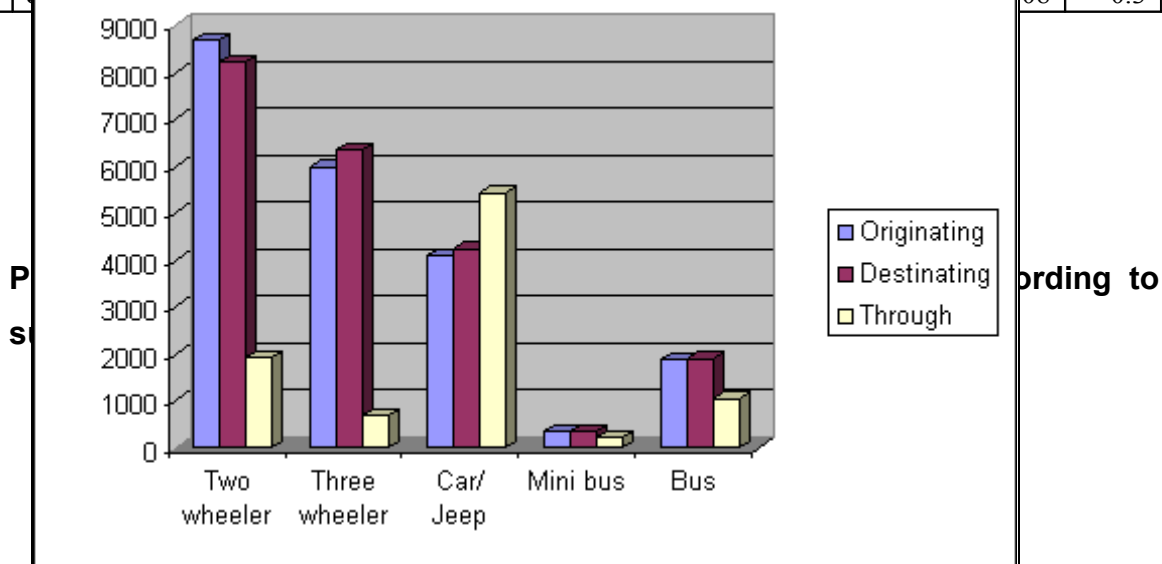
A comprehensive traffic and transportation study was conducted for the urban area.

Traffic projections were made and accordingly a futuristic operational plan for traffic also was prepared including necessary mass transport recirculation plans relating to infrastructural improvements suggested for road transportation system. Intersection improvement plans were prepared for major thirteen junctions and three plans were submitted for corridor developments within the Central Business District of the town.

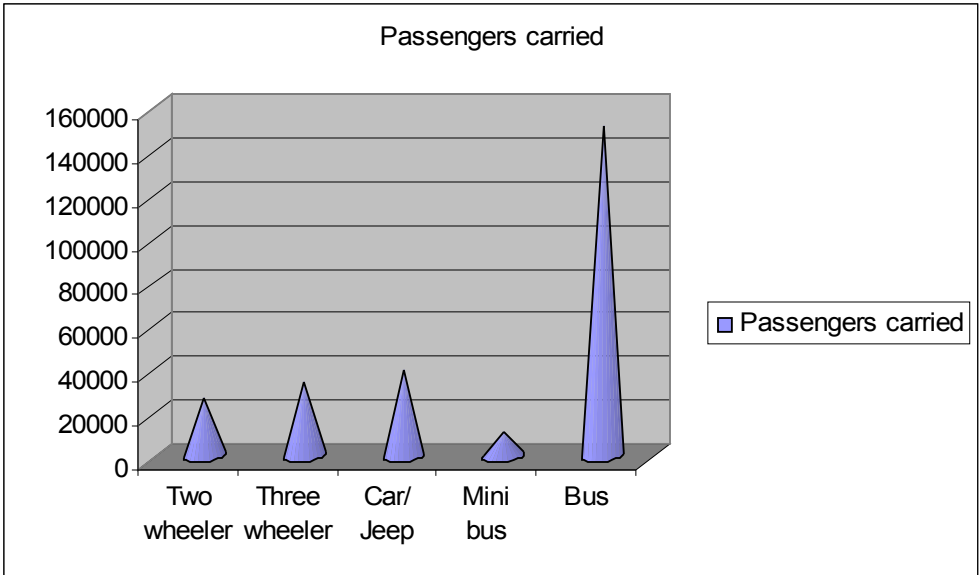
Table 1

Carriage way width, peak hour capacity, peak hour traffic in PCU, V/C ratio and existing travel speed on; major road sections in Thalassery town

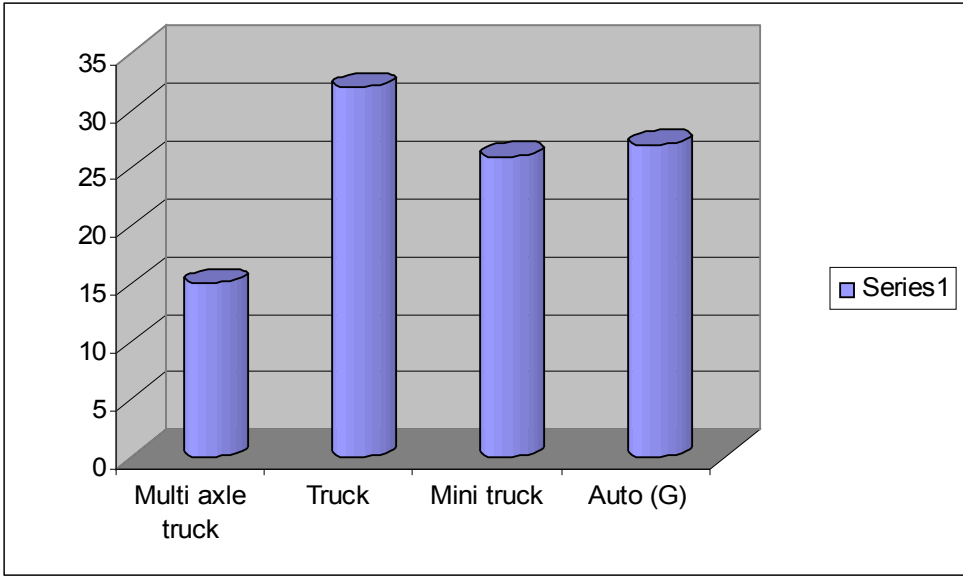
Sl. No.	Road sections	Carriage way width (in meters)	Peak hour capacity (in PCU)	Existing peak hour traffic (PCU)	V/C ratio	Present speed (kms/hr)
1	National Highway 17					
	- Dharmadam-Co-op. Hospital	7.500	2000	2157	1.0	46
	- Co-op. Hospital jn. – Court jn	7.500	2000	1705	0.8	35
	- Court jn. – Municipal office jn	7.500	2000	2283	1.1	35
	- Municipal office Jn. – Old Police station jn.	7.500	2000	1214	0.6	28
	- Old Police station jn. – Saidar Pally jn.	6.000	1200	925	0.8	36
	- Saidar pally jn. – Punnol (Town limit)	7.000	2000	1487	0.7	32
2	Hospital road	15.000	4500	916	0.2	40
3	Logance road	5.300	1200	2123	1.7	28
4	O.V.Road	5.500	1200	1797	1.5	23
5	Railway station road					
	- ROB junction-Kuyyali road jn	5.000	800	721	0.9	37
	- Kuyyali road jn. – Co-op. Hospital junction.	5.000	800	566	0.7	37
6	Manavatty jn. – Saidar pally jn. (A.V.K. Nair road)	7.300	2000	1196	0.6	33
7	Temple Gate road	5.000	800	385	0.5	21
8	T.C. Road					
	- ROB/OV road jn. – Town hall jn.	5.500	1200	1732	1.4	27
	- Town hall road jn. – Eranjoli bridge	5.500	1200	1637	1.4	29
9	Manavatty Jn. – Bank Auditorium	5.500	1200	2027	1.7	22
	- Bank auditorium – Manjodi jn.	5.500	1200	1306	1.1	29
	- Manjodi jn.-Kannichira (town limit.)	5.500	1200	1265	1.0	23
10		5.000	800	633	1.0	26
11				808	0.3	38



Distribution of inter-city passenger vehicles according to vehicle type



Distribution of inter-city passengers according to vehicle type



Distribution of inter-city vehicles according to vehicle type

ROAD SAFETY PROGRAMMES

Formation of School Traffic Clubs in 100 schools in Kozhikode Educational District

- in association with City Police and an NGO Kozhikode Area Resource Mobilisation Agency (KARMA)

- Setting up of Road Safety Library – NATPAC
- Poster exhibitions
- Literature Distribution to Bus Drivers
- Janamythri- Residents Association Meetings- Children’s Speeches
- Basic Drills to Students and Elders
- Assist Policing – Student Policing
- Pedestrian Problems in your Town
- Other Students to your school Club and Interact
- Study the traffic problems of your town
- Interaction with Depts of Police & Motor Vehicle
- Kerb Drill For Children & Elders
- Knowledge of Road Signs & Markings
- Community Road Safety Education- All stake holders
- Safety Auditing by students of School locality
- Problems in Traveling to Schools
- School Safety Zones and Safe Roads to Schools

Dist. Level inauguration of Road Safety Programme for School Children in Kozhikode, Kannur, Palakkad, Kasargode and VadaKara Educational Districts.

Teachers Training Programmees in Kozhikode, Kannur, Palakkad and Kasargode districts in association with Department of Education, Govt. of Kerala

(Demonstration classes on Basic Life Saving Techniques by School Of Emergency Medicine of Malabar Institute of Medical Sciences- Kozhikode)

Community Road Safety Education Programmes (CRSE)