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Islamic Republic of Pakistan

COMPREHENSIVE STUDY ON TRANSPORTATION SYSTEM IN LAHORE

FINAL REPORT

APPENDIX

October 1991

Japan International Cooperation Agency

国際協力事業団 23073

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List of Abbreviations

AC: Alternating Current BC ratio: Benefit-Cost Ratio CAA: Civil Aviation Authority CIF: Cost, Insurance and Freight DC: Direct Current EIRR: Economic Internal Rate of Return Financial Internal Rate of Return FIRR: GNP: Gross National Product GTS: General Transport Service Household Interview Survey HIS: Heavy Rail Transit HRT: Japan International Cooperation Agency JICA: Lahore Development Authority LDA: Lahore Metropolitan Area LMA: Lahore Metropolitan Corporation LMC: Light Rail Transit LRT: Northwest Frontier Province NWFP: Origin - Destination 0-D: Passenger Car Unit PCU: Pakistan Railways PR: Punjab Road Transport Corporation PRTC: Punjab Transportation Authority PTA: ROW: Right of Way Rs.: Pakistan Rupees Regional Transport Authority RTA: Superintendent of Police-Traffic SP Traffic: Scope of Work S₩: Traffic Engineering and Transport Planning Agency TEPA: TTC: Travel Time Cost Ultra High Frequency UHF:

Vehicle Operating Cost

VOC:

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Some Sceneries of Present Traffic in Lahore



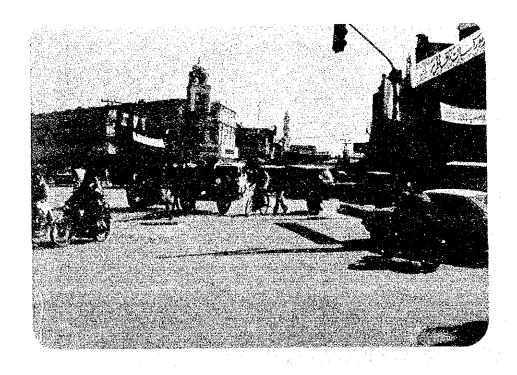
Multan Road Traffic at Chauburji Crossing



Traffic near Chowk Qurtaba



Shahalami Chowk Circular Road Traffic



Lakshami Chowk Mcleod Road Traffic



Traffic Crossing Shahrae Quaid-i- Azam at Charing Cross



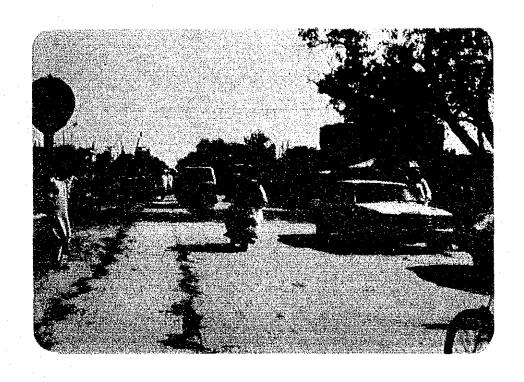
Regal Chowk Traffic on Shahrae Quaid-i- Azam



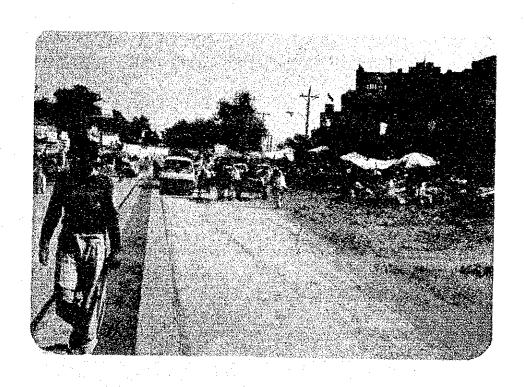
Bridge on River Ravi



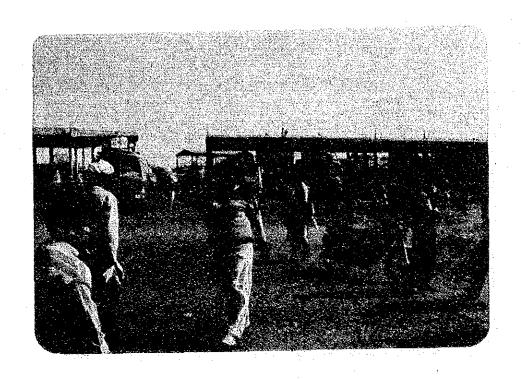
Ravi Road (Approch to Lahore) Traffic on dual Carriageway & Bus Stop



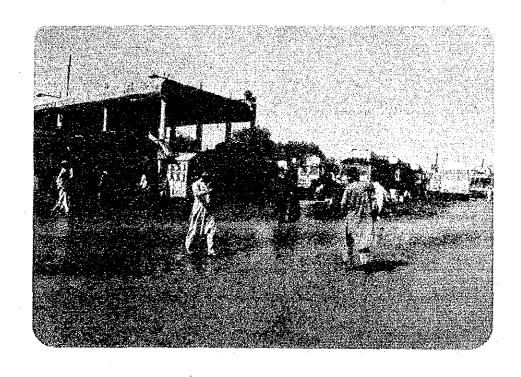
Traffic on Moghal-pura Road (Near Shalimar Gardens)



Baghbanpura Traffic in front of Shalimar Gardens



General Bus Stand Badami Bagh



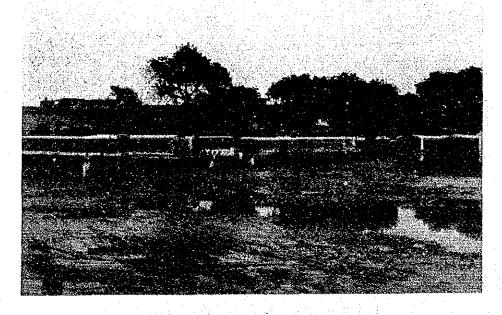
General Bus Stand Badami Bagh (on the road): Buses Parked on Road



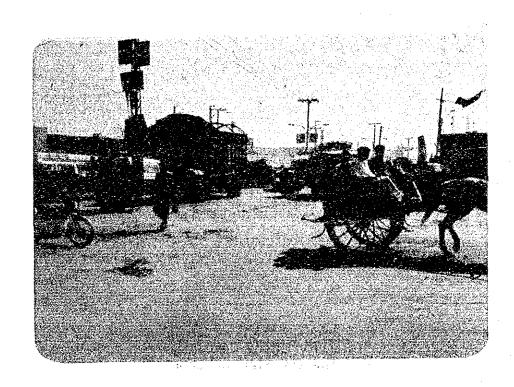
Punjab Road Transport Board Local Buses Depot, Garden Town, Lahore



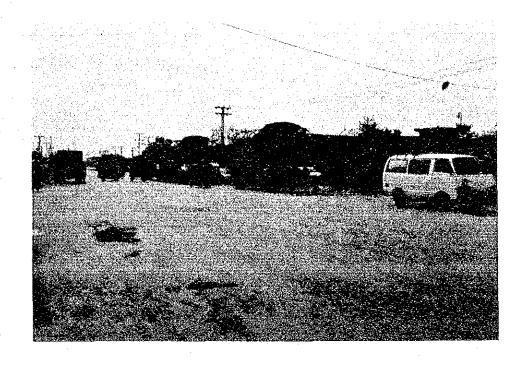
Government Transport Service Intercity Buses Terminal near Railway Station Lahore



Government Transport Service
Bus Terminal for Inter-city
travel near Rail-way Station Lahore
Open parking & drainage problem



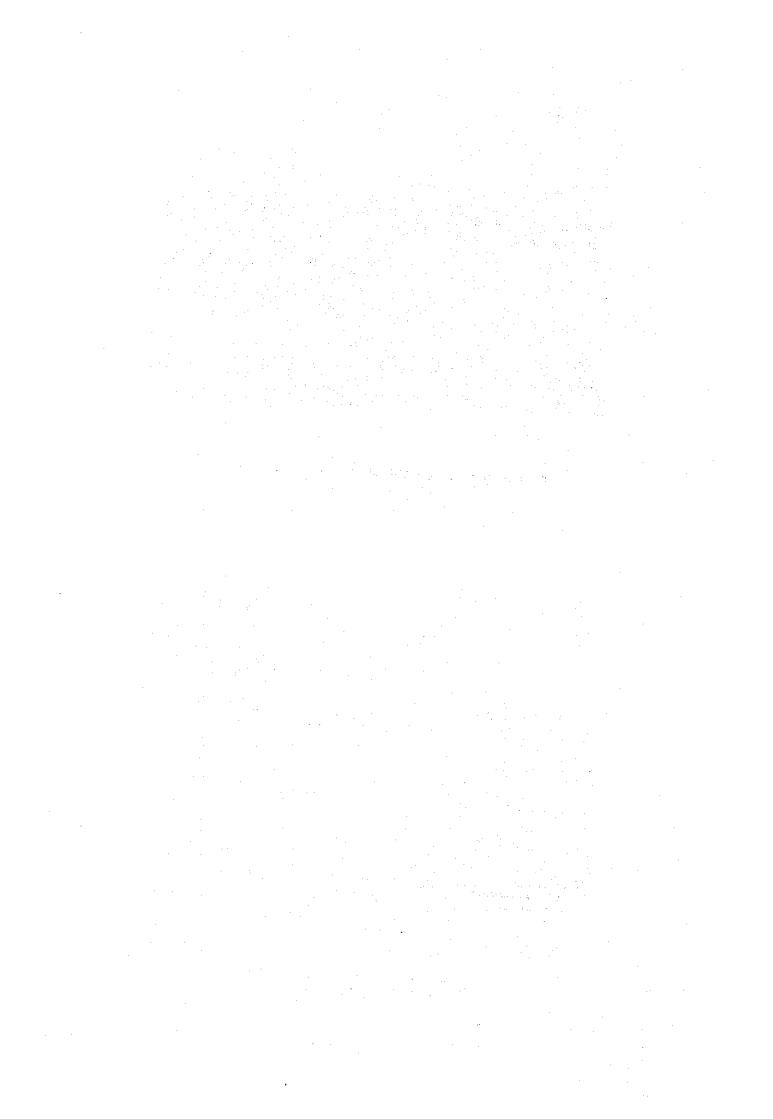
Traffic in front of Do- Moria Bridge (Under Rail tracks) - Circular Road



Trucks parked on the Multan Road(Highway) at Octroi Post



Wahdat Road-Ferozepur Road Crossing



Appendices for Introduction the Scope of Work

SCOPE OF WORK

FOR

COMPREHENSIVE STUDY

TRANSPORTATION SYSTEM IN LAHORE

AGREED UPON

BETWEEN

LAHORE DEVELOPMENT AUTHORITY

AND

JAPAN INTERNATIONAL COOPERATION AGENCY

Chief Metropolitan Planner,

Lahore Development Authority

Government of Punjab

Leader,

Japanese Preliminary Study Team, JICA

Mr. Mohammad Azhar, Member (Planning),

Planning and Development Department,

Government of Punjab

LAHORE, OCTOBER 7, 1989

I. INTRODUCTION

In response to the request of the Government of the Islamic Republic of Pakistan, the Government of Japan has decided to conduct a Comprehensive Study on Transportation System in Lahore (hereinafter referred to as "the Study") in accordance with the relevant laws and regulations in force in Japan.

Accordingly, Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of the technical cooperation programs of the Government of Japan, will undertake the Study in close cooperation with the authorities concerned in Pakistan.

The present document sets forth the Scope of Work with regard to the Study mentioned above.

II. OBJECTIVES OF STUDY

The objectives of study are:

- (1) To formulate a Master Plan to solve urban transportation problems in Lahore City toward the target year of 2010, with intermediate output at the year 2000, and
- (2) To conduct a Feasibility Study on the selected mass transit project and any other selected project.

III. SCOPE OF THE STUDY

1. Study Area

Main study area for the Study is essentially the Lahore Metropolitan Area.

2. Study Framework

In order to achieve the objectives, the Study would be divided into following two (2) phases:

PHASE_I

- 2.1 Master Plan Study
- 1) Review
 Review of the existing reports and data related to the Study.
- 2) Data collection and supplementary surveys.
 - Socio-economic activity
 - Land use
 - Town redevelopment
 - Railway
 - Road network

- Road traffic
- Taxi services
- Parking
- Bus services
- Others
- 3) Site surveys
 - Person and goods movement
 - Origin and destination survey of person movement
- 4) Demand forecast
 - Land use, population, employment forecast
 - Demand forecast for each mode of transportation
- 5) Clarification of present and future urban transportation problems
- 6) Alternative formation and conceptual study on alternatives Formulate alternatives by the above-mentioned processes, appropriate for solving urban transport problems.
 - Network
 - Role in the overall transportation system
 - Estimated volume of passengers
 - Conceptual design on the proposed transportation system
 - Rough estimate of cost
 - Proposal of urban transportation policy options
- 7) Evaluation and selection of a suitable system including mass transit project
- 8) Transportation management plan
- 9) Selection of priority project

PHASE 11

- 2.2 Feasibility Study
 - on the selected mass transit project and any other selected project.
 - 1) Preliminary design
 - 2) Cost estimation
 - 3) Economic and financial analysis
 - 4) Evaluation
 - 5) Conclusions and recommendations

IV. STUDY SCHEDULE

The Study shall be performed in accordance with the attached tentative schedule. (Appendix 1)

V. REPORTS

JICA shall prepare the following reports in English and submit to the Government of the Islamic Republic of Pakistan.

- (1) Inception Report (30 copies)
 This report is to describe the overall approach and implementation program of the Study and to be submitted at the beginning of the first field survey.
- (2) Progress Report (30 copies)
 This report is to describe provisional outcomes of the field survey as well as basic concept of the Master Plan and to be submitted at the end of the first field survey.
- (3) Interim Report (30 copies)

 This report is to describe the revised Master Plan and to be submitted at the middle of the Survey Term.
- (4) Draft Final Report (30 copies)

 This report is to describe all the results of the study including feasibility study report for Phase II and to be submitted within five (5) months after the submission of the Interim Report.

Lahore Development Authority shall provide JICA with its comments within one (1) month after the receipt of the Draft Final Report.

(5) Final Report (50 copies)

This report is to be finalized taking into consideration the above mentioned comments on the Draft Final Report and to be submitted within two (2) months after receipt of the comments.

VI. UNDERTAKING OF THE GOVERNMENT OF THE ISLAMIC REPUBLIC OF PAKISTAN

- (1) To facilitate the smooth conduct of the Study, the Government of the Islamic Republic of Pakistan shall take necessary measures:
 - (a) To secure the safety of Japanese Study Team (hereinafter referred to as "the Team")
 - (b) To permit the members of the Team to enter, leave and sojourn in Pakistan for the duration of their assignment therein, and exempt them from alien registration requirements and consular fees.
 - (c) To exempt the members of the Team from taxes, duties and other charges on equipment, machinery and other materials brought into and out of Pakistan for the conduct of the Study.
 - (d) To exempt the members of the Team from income taxes and other charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Team for their services in connection with the conduct of the Study.
 - (e) To provide the necessary facilities to the Team for remittances as well as utilization of fund introduced into

Pakistan from Japan in connection with the conduct of the Study.

- (f) To provide medical services as needed and its expenses will be chargeable on the members of the Team.
- (g) To secure permission for entry into private properties or restricted areas for the implementation of the Study.
- (h) To secure permission to take all data and documents (including photographs) related to the Study out of Pakistan to Japan by the Team.
- (2) The Government of the Islamic Republic of Pakistan shall bear claims, if any arises against the members of the Team resulting from, occurring in the course of, or otherwise connected with the discharge of their duties in the conduct of the Study, except when such claims arise from gross negligence or willful misconduct on the part of the members of the Team.
- (3) Lahore Development Authority shall act as counterpart agency to the Team and also as coordinating body in relation with other governmental and non-governmental organizations concerned for the smooth conduct of the Study.
- (4) Government of Punjab shall provide the Team with the following, in cooperation with other relevant organizations:
 - (a) Available data and information related to the Study
 - (b) Counterpart personnel
 - (c) Credentials or identification cards
 - (d) Vehicles, typewriters and typists necessary to the conduct of the study in Lahore.
 - (e) Suitable office space with necessary equipment in Lahore

VII. UNDERTAKING OF JICA

For the implementation of the Study, JICA shall take the following measures:

- (1) To dispatch, at its own expense, study teams to Pakistan.
- (2) To perform technology transfer to the Pakistani counterpart personnel in the course of the Study.

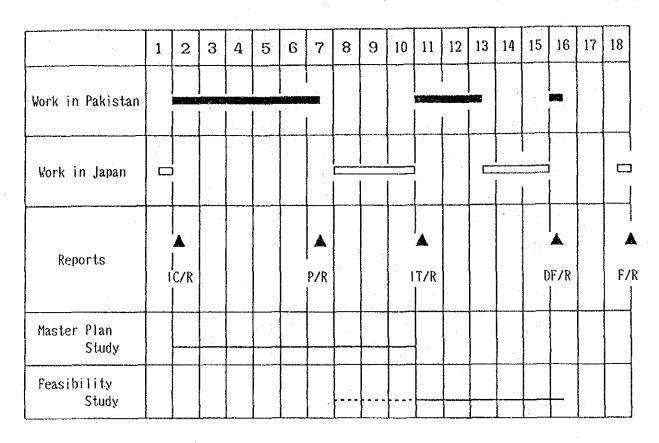
VIII. OTHERS

JICA and the Lahore Development Authority shall consult with each other in respect of any matter that may arise from or in connection with the Study.

Work in Pakistan

⊐ Work in lapan

TENTATIVE SCHEDULE OF THE STUDY



IC/R : Inception Report
P/R : Progress Report
IT/R : Interim Report

DF/R : Draft Final Report

F/R : Final Report

MINUTES OF MEETING

BETWEEN

LAHORE DEVELOPMENT AUTHORITY
GOVERNMENT OF PUNJAB

AND

THE PRELIMINARY STUDY TEAM OF JAPAN INTERNATIONAL COOPERATION AGENCY

on

COMPREHENSIVE STUDY ON TRANSPORTATION SYSTEM IN LAHORE

Sh. Abdur Rashid,

Chief Metropolitan Planner, Lahore Development Authority

Government of Punjab

Prof.Dr.Shigeru MORICHI,

Leader,

Japanese Preliminary Study Team, JICA

Mr. Mohammad Azhar,

Member (Planning), Planning and Development Department,

Government of Punjab

LAHORE, OCTOBER 7, 1989

MINUTES OF MEETING

OF

COMPREHENSIVE STUDY ON TRANSPORTATION SYSTEM IN LAHORE

The Government of Japan, at the request of the Government of Islamic Republic of Pakistan, dispatched the Preliminary Study Team, headed by Prof.Dr. Shigeru MORICHI, from September 29 to October 11, 1989 through Japan International Cooperation Agency to conduct a Preliminary Study on the Comprehensive Study on Transportation System in Lahore. The Japanese Preliminary Study Team had a series of discussions with the relevant Pakistani authorities.

The attendants list is as per annex.

Main items which were agreed upon by both sides are as follows:

- 1. Study should be conducted in accordance with the Scope of Work, duly signed on October 7, 1989.
- 2. Full scale subway system shall be excluded from this study as agreed at the annual consultation meeting of May 1989 between both the governments.
- 3. Study area was agreed to be the Lahore Metropolitan Area with particular emphasis on Lahore City area proper.
- 4. It was agreed by both parties that the site survey should be of in depth nature and including house-hold person trip survey with appropriate size.
- 5. Counterpart personnel shall consist of, as minimum requirement, following officials from Pakistani side:

Team Leader	one
Engineer	two
Urban Planner	two
Traffic Engineer	one
Economist	one
Sociologist	one

- 6. It was agreed by both sides that a steering committee shall be established composed of representatives from relevant governmental organizations and authorities of Pakistani side.
- 7. The Government of Punjab promised to provide the followings to the Japanese full scale study team:
 - 1) Office space with four air conditioners
 - 2) Office telephone facility
 - 3) Office furniture
 - 4) One Pajero jeep (five doors) with driver
 - 5) Two typewriters
- The cost of stationary, reports, etc. shall be borne by the Japanese side.

LIST ATTENDANTS

OF

THE MEETINGS BETWEEN JAPANESE PRELIMINARY STUDY TEAM AND PAKISTANI SIDE FOR COMPREHENSIVE STUDY ON TRANSPORTATION SYSTEM IN LAHORE

JAPANESE SIDE Α.

Japanese Preliminary Study Team 1.

Prof.Dr. MORICHI, Shigeru

Mr. KISHIKAWA, Shin-ichi

Mr. MAEJIMA, Tadafumi

Mr. IWATA, Toichi

Mr. HIROTANI, Akihiko

Leader

Public Transportation Planning

Traffic Planning Coordination Traffic Survey

Japan International Cooperation Agency - Islamabad Office Mr. TANIGAWA, Kazuo Resident Representative

В. PAKISTAN SIDE

1. Planning and Development Department, Government of Punjab

Mr. Zulfigar Ali Shah

Mr. Mohammad Azhar

Chairman Member (Planning)

Chairman of the Meeting

Mr. Shahid Hussain Raja

Mr. Mohammad Ishaque

Mr. Hafiz Masoodur Rasool

Chief (Transport) Assistant Chief (Roads)

Chief (Foreign Aid)

Assistant Chief

Mr. Abdul Ghafoor

Mr. Mushtaq Tariq

External Capital Assistance

Research Officer (ECA)

Housing, Physical and Environmental Planning Department, Government of Punjab

Mr. Shaukat Ali

Mr. Zaidi

Under Secretary

3. Lahore Development Authority

Brig(Retd) Manzoor Malik

Mr. S. H. Zaidi

Mr. Sheikh A. Rashid

Mr. Shaukat Jamal

Mr. Khushal Khan

Director General Chief Engineer

Chief Metropolitan Planner

Director of Metropolitan Planning

Chief Traffic Engineer Traffic Engineering and

Planning Agency

Assistant Director, TEPA

4. Provincial Transport Authority (Punjab)

Mr. Muhammad Siddique

Secretary,

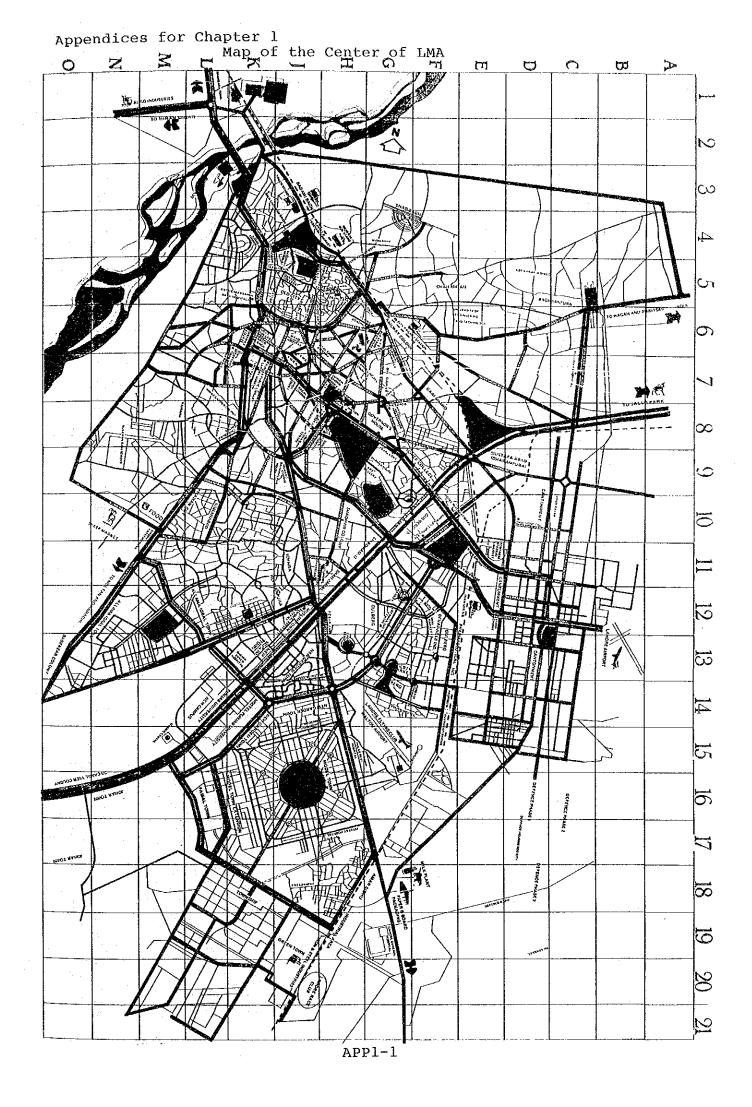
Punjab Road Transport Corporation

Mr. M. M. Akram

Mr. ljaz Ahmed

Managing Director

Deputy Director (Planning)



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APPENDICIES FOR CHAPTER 2

APP 2- 1. Questionnaire Forms for H.I.S.

Covering Letters

in English

in Urdu



LAHORE DEVELOPMENT AUTHORITY

لابهوريين ثرانسيورث سشم كاجامع مطلعه

محترم خواتين وحعرات

B. MI

September, 1990

Honourable Ladles and Gentlemen:

Re: Comprehensive Study on Transportation System in Labore

We are glad to inform you that the Government of the Islamic Republic of Pakistan with the cooperation of the Government of the Japan is making a transportation study for the Lahore Metropolitan Area. The main purpose of this Study is to formulate a Mester Plan to solve urban transportation problems in Lahore City toward the target year of 2010, with intermediate output at the Year 2000. The study covers chiefly the Lahore Metropolitan Area with particular emphasis on Lahore City.

In order to achieve the above Study Objective, it is relevent to have a Rousehold Interview Survey (HIS). The purpose of this HIS is to collect information regarding the socio-economic standard and the daily trafficovement of the people living in the Lahore Metropolitan Area. Ledies and gentlemen, you and your family are among the 12,000 families who are being selected to have an interview by the Surveyors in order to obtain the respective information.

Therefore ladies and gentlemen, we hope that you can cooperate with us to be interviewed the questions in the forms by our Surveyors. The Surveyors are supplied with an identification card from the Traffic Engineering & Transport Planning Agency (TEPA), LDA. Your cooperation is very important to us to achieve the Study Objective.

We would also like to assure you that the collected information will be strictly confidential and will only be used for the Study.

Thanking you

KHUSTAL KHAN
Chief, Traffice Engineering &
Transport Planning Agency (TEPA)
LDA

مین والے اور مراب اور وی ب کہ عرص پالین نکوم مد بیان کے قون سے الاور مراب این ک سدد می الدور مراب این ک سدد می ارتفاق سے الاس مدد می الله میں اللہ اللہ میں اللہ میں

متعد وصل كريد سك في بعد الدائم به به -الم كم اله كو النبطة كو المحل ووقع كو المواجع بين كد قام مطولت الركب ماصل كى جائي ، كان تق بد مرداوي . وكي جائي كو ادر الحين مرفد الن مقتمير ك سلط عن الدائم المواجدة ؟

خوسکی کوئی خان پیدازهد انجز نظرانجزی ایوزانچورت چیک انجزی اندروادی اندال - اندار

CONFIDENTIAL

FORM 1: HOUSEHOLD INFORMATION

15/1	5/4	À
COMPREHENSIVE	BTUDY	ON
TRANSPORTATION SYSTEM IN LAHORE		
JICA-TEF	Δ•LI	Δ C

INSRTUCTION : TO BE COMPLETED FOR HEAD OF HOUSEHOLD	Seq. No.
(1) NAME : (Name) (S/o/W/o)	DATE: SURVEYOR:
(2) ADDRESS OF: HOUSEHOLD (House No.) (Street) (Area/Mohallah/Sector) (3) HOW MANY MEMBERS RESIDE IN YOUR HOUSEHOLD? No. LESS THAN 5 YRS. & ABOVE + HOUSEHOLD	
No. SEX TOTAL LESS THAN 5 YRS. & ABOVE + HOUSEHOLD HELPERS 1. MALE 2. FEMALE	FOR OFFICE USE ONLY
2 TOTAL	(1) (2) Zone Code Household Code
1. LEARNER	(3) 1.
(5) WHAT IS THE TOTAL MONTHLY (6) HOW MANY VEHICLES ARE OWNED BY HOUSEHOLD MEMBERS?	2
1. Bilow Rs. 1000 2. Rs. 1001 — Rs. 2000 3. Rs. 2001 — Rs. 3000 4. Rs. 3001 — Rs. 4000 5. Rs. 4001 — Rs. 5000 6. Rs. 5001 — Rs. 6000 7. Rs. 6001 — Rs. 7000 8. Rs. 7001 — Rs. 8000 9. Rs. 8001 — Rs. 9000 10. Rs. 9001 — Rs. 10000 11. Over Rs. 10000	(4) 1. 2. 3. 4. (5) (6) 1. 2. 3. 3. 3. 4. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3.
(7) DO YOU OWN THE HOUSE YOU RESIDE IN ?	4. 5. 6.
1. YES 2. NO (1)	7
(8) HOW MANY ROOMS IN YOUR HOUSE? (9) HOW LONG HAVE YOU BEEN LIVING AT THE ABOVE ADDRESS?	(8) CHECK CODING
LESS THAN 1 YEAR OVER 1 YEAR YES. (PLS. CHECK)	

CONFIDENTIAL

FORM 2: HOUSEHOLD - MEMBER INFORMATION

15/1	75/	<u>^</u>
COMPREHENSIVE	STUDY	ON
TRANSPORTATION S	YSTEM IN L	AHORE
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		OIOMILTA, POL
l ·	D UP FOR HEAD OF HOUSEHOLD /RS. & ABOVE	Seq. No.
		<u> </u>
,	Name) (\$/o/W/o)	DATE: SURVEYOR:
(2) AGE: (3)	SEX: 1. MALE 2. FEMALE	
(4) WORK ADDRESS :	(Name of COMPANY/OFFICE)	
(House No.)	(Street) (Area/Mohallah/Sector)	FOR OFFICE USE ONLY
(5) SCHOOL ADDRESS:		(1) Zone Code
(If you are student)	(Name of SCHOOL/COLLEGE/UNIV.)	
		Household/Member Code
	(Franklich (Caste)	
	(Street) (Area/Mohallah/Sector)	(2)
(6) OCCUPATION	(7) EMPLOYMENT SECTOR	
		(3)
1. Professional/Technical 2. Administrative/Managerial 3. Clerical 4. Sales 5. Service 6. Agricultural, etc. 7. Production 8. Trans port/Communication 9. Armed Forces 10. Student (primary, etc.) 11. Student (Others) 12. House wife 13. Not classifiable 14. Job less/others (8) MONTHLY INCOME	1. Aguriculture etc. 2. Mining / Quarrying 3. Construction 4. Manufacturing 5. Electricity/Gas/Water 6. Wholesale/Retail Trade 7. Transport/communication 8. Finance/Insurance/Real Estate 9. Service Industry 10. Government 11. Home - Based 12. Not in Employment 13. Others	(a) (b) (c) (c) (c) (c) (d) (d) (d) (d) (d) (d) (d) (d) (d) (d
1. Below Rs, 500 2. Rs, 501 — Rs, 1000 3. Rs, 1001 — Rs, 1500 4. Rs, 1501 — Rs, 2000 5. Rs, 2001 — Rs, 2500 6. Rs, 2501 — Rs, 3000 7. Rs, 3001 — Rs, 4000 8. Rs, 4001 — Rs, 5000 9. Rs, 5001 — Rs, 7500 10. Rs, 7501 — Rs, 10000	1. LEARNER 2. LIGHT 3. HEAVY 4. NONE (10) DID YOU HAVE A TRIP ON THE PRE-SELECTED DAY? 1. YES 2. NO	Number of Trips CHECK CODING 1st 2nd 1st 2nd
11. Over Rs. 10000	PLS. PROCEED TRIP INFORMATION	

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FORM 3: TRIP INFORMATION

•		^a 1st trip	⁸ 2ND TRIP
	ORIGIN	ADDRESS: STATE FULL ADDRESS	NO NEED TO FILL UP.
TABLE(A) FACILITIES 1. Residence 2. School/Education/Cultural 3. Religious 4. Medical/Welfaze	The place you started your travel (Give the Address/ Land Mark, Famous Bidg, near by)	(House No., Street, Area/Mohallah etc.) C Type of Facilities (Enter a number from TABLE A) d	INFORMATION IS SAME AS IN DESTINATION OF 1st TRIP d e AM 1 Departure Time Hours Minutes PM 2
5. Office 6. Shops/Market	DESTINATION	ADDRESS: STATE FULL ADDRESS	ADDRESS: STATE FULL ADDRESS f
7. Reslaurant 8. Amusemeni/Park/ Recreation 9. Factory 10. Transportation/Communication 11. Agriculture 12. Others TABLE (B) PURPOSE 1. To Work 2. To School	The place you finished your travel (Give the Address/ Land Mark, Farnous Bidg, near by) TRIP PURPOSE The purpose of your travel.	(House No., Street, Area/ Mohallah etc.) g Type of Facilities (Enter a number from TABLE A) h Arrival Time Hours Minutes PM 2 (Enter a number from TABLE B)	(House No., Street, Area/ Mohallah etc.) g Type of Facilities (Enter a number from TABLE A) h Arrival Time Hours Minutes PM 2 (Enter a number from TABLE B)
3. To Home 4. Shopping 5. Social, 6. Eating	DID YOU WALK ALL THE WAY FROM ORIGIN TO DESTINATION?	NO 1 YES 2 Thank you, Proceed to the next trip.	NO 1 YES 2 Thank you, Proceed to
7. Mosque/Church 8. Recrealion / Other Private 9. On Business TABLE (D) PARKING	MODE of TRAVEL AND TRANSFER All means of Transport you took for your travel. Choose one of those listed below. TABLE (C) MODE 1. Walk 2. Bicycle 3. M. cycle/Scocler 4. Tonga 5. Taul 6. Rickshaw 7. Car/Jeep 8. Van/Pick-up/Micro Truck 9. Large Truck 10. Institutional Bus 11. Suzuki (Bus) 12. Minibus/Wagon 13. Bus 14. Railway 15. Others This colum is to be filled by CAR/JEEP user.	1st Mode: TRANSFER PIONT Have you Changed mode? 1st Transfer:	TRANSFER PIONT Have you Changed mode? MNO 1
2. Garage/Site of your house 3. Parking lot of the visited place 4. Other open space 5. Not park	This colum is to be filled by BUS/MINIBUS/WAGON	Where did you park your car ? (Driver only). sh Yes,all 1 Yes, but 2 No 3 Vere seats available? the way partly ac	Where did you park your car ? (Driver only) ab Yes,ail ! Yes, but 2 Were seats available? the way partly ac
	user.	Walking time to Bus - stop from ORIGIN :mins. Walking time from the last Bus - Stop ad to OESTINATIONmins.	Walking time to Bus - stop from ORIGIN: Walking time from the last Bus - Stop ad to DESTINATION
Weather: 1 Cloudy 2 Cloudy 3 C	FOR OFFICE USE ONLY Zone Code Household/Member Code Trip Dale		

APP 2- 2. Questionnaire Forms for Cordon Line Survey

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JICA-TEPA-LDA	(5) Number of Passenger finckulan offer.	if Buses (7.8.9,10), excluding other and conductor)		7	PASSEMBER No. 5	(24) Origin	(Ma) (Second)	(Array/Moinsters/Section)	(Division/District/Province) Bidg, Name etc.	(5) Destination	penas) (794)	(Arma/Mothalish/Sector)	(Ovision/Operica/Province) Bidg, Name etc.	Trip Purpose		Place of Residence			
28 36 36 36 36 36 36 36 36 36 36 36 36 36	(5) Numb	#Bud		<u>}</u>	PASSENGER NO. 4	Origin	(Mo.) (Street)	(Area/Mchalan/Sector)	(Division/Discr(2/Province) Bidg, Name etc.	(21) Destination	(peas) (ON)	(Area/Mohelleh/Sector)	(Dereion/District/Province)	Trip Purpose	~)	Place of Residence	^ ~		
	(5) Number Plase	1. Lahore	(7) Sue Route		PASSENGER No. 3	(16) Origin	(Street)	(Area/Motodish/Sector)	(Division/District/Province) Bidg. Name etc.	(iii) Destination	(No.) (Sheet)	(Area/Mohalleh/Sector)	(Division/Disates/Province)	(18) Trip Purpose	^ ~	⁽¹⁹⁾ Place of Residence	^	(19) (10)	
		7. Suzuki (Bus). 8. Minibus/Wapon. 9. Bus. 10. Inequisional Res.	11. Tonga/Animal drawn 12. Others		PASSENGER NO. 2	(12) Origin	(Ho.) (Stroet)	(Aroa/Mohallah/Sector)	(Division/District/Province) Bidg, Name MC.	(13) Destination	(No.) (Street)	(Area/Mohalan/Sector)	(Division/District/Province) Eldg. Nama etc.	Trip Purpose	•	(15) Place of Residence.			
SENGER)	(4) Vehicle Type	1. Bitsycle 2. M.Cycle/Scooter 3. Car/Jeep 4. Tober, Van Pick, In	S. Tad		PASSENGER NO. 1	(9) Origin	(No.) (Street)	(Area/Motrathaty/Sector)	(Division/Detrict/Province) Bidg. Name etc.	® Destination	(rsN)	(Area/Mohakah/Socied)	Okvision/District/Province	(10) Trip Purpose	î	(11) Place of Residence	~		
ROAD SIDE O-D INTERVIEW SHEET (PASSENGER)					QUESTION	(A)Where is the place of origin / destination of your trip ?	(B) What is the purpose of your trip?	1. To Work	2. To School 3. To Home 4. Shougho	s. Societ	7. Moedue/Church 8. Recreation/Other Private	(C) Where is your residence?	1. in Labore Oity	2. Other LMC area	a Office State	Sag No.			
ROAD SIDE	Station No: (1)	Orte: (2)	Suveyor	Supervisor:	Survey		· 0	a (2 =	ŭ t	; <u>*</u>	\$ \$ \$	17	<u></u>	श्र	, 8	я	* - N n =	9

ROAD SIDE O-D INTERVIEW SHEET (COMMODITY)

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COMPREHENSIVE	STUDY	ON
TRANSPORTATION S		
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		AIAW-IPLV, FAV
(4) V	/ehicle Type (5) Number Plate	Seq. No.
	1. Light - van /Pick - up 2. Micro Truck 3. Large Truck 4. Trailer 5. Tank Lorry.	Station No:
	6. Others (6) Loading Capacity	on Date: L.I.I.I.I.I
	(7) Number of Persons (including driver)	Shift: 1, 2, 3, Surveyor:
(3) Survey	(8) Where is the place of origin/destination of your trip?	
Time	Origin Destination	Supervisor :
6	(No.) (Street) (No.) (Street)	
8		FOR OFFICE USE ONLY
9	(Area/Mohallah/Sector) (Area/Mohallah/Sector)	Seq. No.
10	(Division/District/Province) (Division/District/Province)	
11	Bldg. Name etc.	
12	(9) What is the facility of origin/destination	(2)
13	(a) that is it is	(3)
14	.1. Retail store, shopping market 7. Harbour and supermarket 8. Airport	vigin (4)
15	2. Factory and repair shop 9. Reliway station	
16	3. Warehouse and yard for construction materials	(5)
17	4. Construction site 11. Natural land (such as quarry site) De-	stination (6)
18	5. House 6. Office and public facility 13. Others	
19	(specify:	
20	(10) What is the type of commodity?	(B)
21	1. Perishable goods (vegetable, 6. Mining products except for the fresh meat and fish) construction materials	
23	2. Agricultural and forestry products, 7. Chemical products except for fuel	, D.]
24	and preserved fish 8. Fuels 3. Processed foods 9. Metals and machinery	
1	4. Livestock 10. Miscellaneous industrial products	(10)
2	5. Construction matrelals (cement, 11. Others (specify:) wood, earth, sand etc.)	
3		
4	(11) How is your loading condition?	
5	1. Empty 2. 1/4 3. 1/2 4. 3/4 5. F	ul LJ

¥oo Angles	HIMDE ALDA	REMARKS						-	•		
COMPANIES ST	JICA-TEPAIDA	TOTAL									
	,	35	OTHERS IRI IWN								. -
		12 13	MGA REHRA TEAL CADDA DRAMN CAMEL SERGENI ANIBAL DRAWN COMODITY								
YOR:	SUPERVISOR:	11	INSTITU TONGA REHRA OTE TIONAL ANTHAL CADDA DRAWN CAMEL IPASSENGEN REHRI DRAWN DRAWN COUMOUTTY								
SURVEYOR:	SUPER	10	BOS								
·		6	HACON PASSEGEN WACON								
DIRECTION FROM:	70		RICKSHAM								
SHEE			LARGE TAXI TRAILER TANKER								
JRVEY ROAD:		4	LIGHT-LANGE VAN TRUCK FICK-OF TRAILER MICRO TANKER								
NT SU		11	l . i								
TRAFFIC COUNT SURVEY SHEET DIRECTION NO.:		1 2	TYPE BICYCLE GAR. SCOOTER JEEP SCOOTER JEEP ET 3					ì			
TRAFFIC STATION NO.	SURVEY DATE:	VEHICLE	TTYPE BIC	14-15	15-16 23-24	- 7	18 1-2	2-2-3	20 3- 4	21 4 5	22 22
TAR	SURV	/	SURVEY TIME SHIFT	6-7	7-8 15-3	8-9 16-17	9-10 17-18	10-11 18-19	11-12 19-20	12-13 20-21	13-14 21-22 TOTAL

APP. 2- 4 Person Trips of Residents of the LMA

Example 1. Commuting from the Lahore Suburbs: the Case of Mr. Sarwar

Mr. Sarwar, 42 years old, with his wife and 5 children, lives in his own house recently purchased in Sheikhu Pura, the suburbs of Lahore some 30 km from the city center. He commutes to his office of the Traffic Engineering & Transport Planning Agency (TEPA), LDA located along Lytton Road in the center of Lahore, leaving his house 7:00 a.m. in the morning and arriving at his office at 8:30 a.m.

To go to his office, he walks about 2 minutes to the nearest bus stop from home. A minibus and /or bus trip to go to Choke Yadgar located in the north of the Walled City usually takes more than 40 minutes for a 25-kilometer distance because of traffic congestion. He transfers from minibus and/or bus to minibus at Choke Yadgar. From there to ADC bus stop which is the nearest bus stop to his office, it takes about 15 to 20 minutes. After getting off minibus, he walks about 2 minutes to his office.

Mr. Sarwar spends approximately one and a half hours commuting every day.

Example 2. Commuting from North Lahore: the Case of Mr. Syed Muhammad Afzal Naqvi

Mr. Naqvi, 39 years old with his wife, mother in low, a cousin and 5 children, lives in his own house. He got this house from his parents, and it is situated in Northern Lahore in Wassan Pura Mohella. He commutes to his office of the Punjab Economic Research Institute in Gulberg III, leaving his house at 7:00 a.m. in the morning and arriving at his office at 8:00 a.m.

To go to his office he walks about 2 minutes to the nearest bus stop from home. A minibus trip to go to G.T.Road near overhead railway crossing of Lahore Railway Station in 8 minutes, walks again on the overhead crossing for 7 minutes to get a minibus (Route No.43 or 15) which takes him to his office in more than 40 minutes. The minibus stop in just in front of his office.

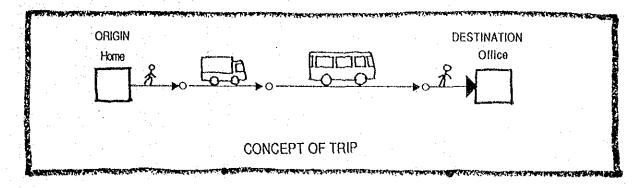
Mr. Naqvi spends approximately one hour commuting every day.

Example 3. Commuting from Gulberg II: the Case of Miss. Salmahsahir

Miss. Salmashahir, 23 years old, lives in the women's dormitory which is a social welfare facilities in Canal Park of Gulberg II, the residential area for high income level in Lahore. She commutes to her office of the Traffic Engineering & Transport Planning Agency (TEPA), LDA located along Lytton Road in the center of Lahore, leaving her dormitory 7:30 a.m. in the morning and arriving at her office at 8:10 a.m.

To go her office, she walks about 4 minutes to the nearest bus stop from the dormitory. A minibus (Route No.43/15/27) to go to Mozang Chowk which is one of problematic intersections in Lahore usually takes about 20 minutes. She transfers from minibus to minibus at Mozang Chowk. From there to the nearest bus stop to her office, it takes about 10 minutes. After getting off minibus, she walks about 1 minute to her office.

Miss. Salmashahir spends approximately 40 minutes commuting every day.





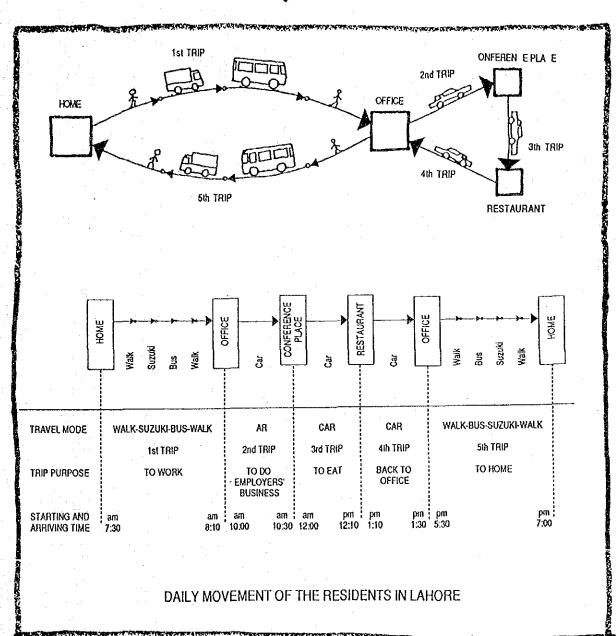


Table - DAYTIM	IE AND NIG		ULATION IN	1990	THE ITEMS	OF DAYTIME	POPULATION	· · · · · · · · · · · · · · · · · · ·
ī	N DAYTIME	AT NIGHT	RATE	WORKER	STUDENT	HOUSEWIFE	INFANT	OTHERS
LMA	5430336	5430336	1.00	1437907	1413729 1161174	1186929 902701	781898 600138	489725 389646
INNER AREA ZONE 1(10101)	4302413	4168000 189377	1.03	1153563 66646	31930	32739	27268	15216
ZONE 2(10102)	40547	23926	1.69	27441	4808	3592	3445	364
ZONE 3(10103)	54874	43905	1.25	15551	25682 12803	4624 4597	6322 4184	1481 1179
ZONE 4(10104) ZONE 5(10105)	38951 64008	29056 13657	1.34 4.69	15326 36760	19763	2163	1966	1940
ZONE 6(10106)	41382	24415	1.69	15621	16126	3991	3515	1213
ZONE 7(10107)	16543	31179	0.53	3537	1553 3146	4782 2814	4489 3379	1816 559
ZONE 8(10201) ZONE 9(10202)	22327 91083	23470 15822	0.95 5.76	11935 67661	15763	2702	2278	664
ZONE10(10203)	87874	62721	1.40	54146	11497	8772	9031	2484
ZONE11(10204)	84178	17805	4.73	34417	42758	1425 3357	2564 4153	1152 1099
ZONE12(10205) ZONE13(10206)	55086 104413	28842 25130	1.91 4.15	22556 39796	22702 52027	6077	3618	585
ZONE14(10207)	54387	32723	1.66	27405	14144	3426	4712	3497
ZONE15 (10208)	32721	37446	0.87	6701	7489	8972	5392 5927	3443 2958
ZONE16(10301) ZONE17(10302)	40246 136230	41162 132573	$\substack{0.98\\1.03}$	10935 33408	9497 34577	10039 36411	19089	9731
ZONE18(10302)	69220	91561	0.76	8370	18119	22976	13184	5039
ZONE19(10304)	74698	79868	0.94	14640	23487	17323	11500 8235	6095 3087
ZONE20(10305)	101447 35286	57193 31440	1.77 1.12	23601 6856	44668 13965	19611 7449	4527	1708
ZONE21(10401) ZONE22(10402)	45575	58675	0.78	10790	11276	10218	8448	3835
ZONE23(10403)	110165	123845	0.89	16728	35388	28065	17832	9715
ZONE24(10404)	71334	60853	1.17	25454 12897	16890 11308	14008 16555	8762 10951	4642 9000
ZONE25(10501) ZONE26(10502)	62085 85044	76055 105379	0.82 0.81	21116	12168	22578	15173	12127
ZONE27 (10502)	70331	86975	0.81	13088	11797	20866	12523	10501
ZONE28 (10504)	173059	227.065	0.76	24014	29670	60014	32694 16432	22838 9996
ZONE29(10601) ZONE30(10602)	98845 93276	114123 105635	0.87 0.88	21862 20497	24477 21303	23891 22727	15210	11475
ZONE31(10701)	84657	94212	0.90	13896	16485	24101,	13565	14737
ZONE32(10702)	145971	116396	1.25	28102	61874	23585 27909	16760 15390	12420 11519
ZONE33(10703) ZONE34(10704)	88485 186769	106887 197154	0.83	17631 33650	14078 44521	45220	28388	30858
ZONE35(10705)	100943	128679	0.78	15586	27103	24075	18528	13418
ZONE36(10801)	77006	89250	0.86	18194	16529	18028	12851 15392	9700 7299
ZONE37(10802) ZONE38(10901)	104335 25973	106900 35028	0.98 0.74	25190 5406	29982 3436	24164 7784	5044	3728
ZONE39(10901)	66895	48751	1.37	24698	18125	11244	7020	4328
ZONE40(10903)	102172	61546	1.66	30444	38869	15132	9862	6604
ZONE41(10904)	50631 64072	74607 74657	0.68 0.86	8835 17488	6612 12987	16259 15879	10742 10750	7063 5550
ZONE42(10905) ZONE43(10906)	67083	28106	2.39	12988	41120	5580	4047	1864
ZONB44(10907)	79005	74605	1.06	27826	10674	19773	10742	8242
ZONE45(11001)	22110 150822	29134 185331	0.76 0.81	1654 29059	4188 40909	8178 31803	4195 26685	3406 19029
ZONE46(11002) ZONE47(11101)	47008	55789	0.84	8267	11157	13633	8033	4878
ZONE48(11102)	39416	27996	1.41	12119	14296	6083	4031	2015
ZONE49(11103)	35599	24377	1.46	7351 18873	20004	3190 35266	3510 22685	756 21074
ZONE50(11104) ZONE51(11105)	134530 61764	157547 27247	0.85 2.27	23505	33655 24463	4589	3923	3917
ZONE52(11201)	18774	37390	0.50	2531	2050	7159	5384	1235
ZONE53(11202)	19357	19630	0.99	2950	8424 23995	3536 27781	2826 19992	1193. 14460
ZONE54(11203) ZONE55(11204)	112398 43594	138844 56737	0.81 0.77	23683 9239	8294	13179	8169	3748
ZONE56 (11205)	46858	57 530	0.81	9526	8326	14280	8284	5405
ZONE57(11206)	93242	121794	0.77	15117	18237	28527	17537	11761
OUTER AREA ZONE58(11301)	1127923 35524	1262336 42108	0.89 0.84	284344 8892	252555 6081	284228 11061	181760 6063	100079 2641
ZONE59(11301)	15787	18474	0.85	3302	3033	4935	2660	1508
ZONE60(11303)	45246	57335	0.79	9326	8608	12588	8255	5468
ZONE61(11304)	32173 29469	39111 18029	0.82 1.63	8775 _. 9453	3425 9957	11374 5093	5631 2596	2256 1718
ZONE62(11305) ZONE63(11306)	29469 28281	36007	0.79	6611	4190	8785	5185	2884
ZONE64(11307)	13997	15202	0.92	3982	2425	4283	2189	808
ZONE65(11401)	12598	15062	0.84 0.68	3557 2081	3188 1937	2659 7451	2169 3983	:746 2946
ZONE66(11402) ZONE67(11403)	18814 27942	27659 33485	0.83	6497	7174	6977	4821	1855
ZONE68 (11404)	38805	48742	0.80	8359	10329	9819	7018	2421
ZONE69(11405)	4260 15409	5519 19661	0.77 0.78	985 4593	445 2155	. 1452 3806	795 2831	489 1683
ZONE70(11406) ZONE71(11501)	11546	11630	0.78	3815	2133	3127	1675	527
ZONE72(11502)	26992	32131	0.84	5694	6060	7495	4626	2520
ZONE73(11503)	31495	38526	0.82	9154	5514	8163	5547 4501	2420
ZONE74(11504) ZONE75(11505)	25852 41334	31883 46825	$\begin{array}{c} 0.81 \\ 0.88 \end{array}$	6493 9491	3559 10058	6810 9386	4591 6742	3827 4742
ZONE76(11505)	62990	65624	0.96	16266	14481	15154	9449	6246
ZONE77 (11507)	75371	82987	0.91	19978	17133	16954	11949	7689
ZONE78(11601)	109368	111242 91549	0.98 0.88	28056 20555	29794 19071	21801 21325	16017 13182	11280 5012
ZONE79(11602) ZONE80(11701)	80936 45782	49769	0.88	20555 12196	8956	21325 11685	7166	4766
ZONE81 (11702)	94355	107230	0.88	25346	19837	22749	15440	8895
ZONE82(11703) ZONE83(11704)	53878 132449	57191 138286	0.94 0.96	14030 32176	14142 36074	13041 32063	8235 19911	3238 9295
ZONE84(11705)	17270	21069	0.82	4681	2782	4192	3034	2199

ZONE NO.	RESIDEN- TIAL	COMMERCIAL	INDUSTRY & WORKSHOPS	EDUCATIO- NAL	PARK & OPEN SPACE		HOSPITAL & WELFARE	TRANSPORT FACILITIES	MILITARY AREA
BUILD 1.V	4 41				1417	BUILDINGS			
1(10101)	137.5	79.0			10.6		5.4		
2(10102)	51.2	8.5	35.5		51.3	0.0		9.5	
3(10103)	49.4	42.3	1.6	10.5		5.2			
4(10104)	31.2	17.7		3.1	2.				
5(10105)	11.3	42.3		5.1	<u> </u>	4.2	15.1	<u></u>	
6(10106)	24.4	37.8		20.9		7.5	2.9		
7(10107)	45.3	31.0		4.1	1.0				
8(10201)	43.4	12.5		5.6	1.3	9.2			
9(10202)	41.4 72.4	37.3 56.2		7.5 22.5	4.9	15.0 49.4			
10(10203)	$\frac{72.4}{36.3}$	16.6		47.6	13.1	31.9			
11(10204) 12(10205)	132.2	17.5		19.4	3.8	18.8			
13(10206)	273.6	25.6		98.1	158.1	53.1	31.3		10.0
14(10207)	80.9	6.1	43.3	2,5	14.0	9.0	01.0	9,4	10.0
15(10208)	96.3	5.0	146.7	5,0	45.0	0.0		0.4	
16(10301)	179.4	13.8	1.9		1010		28.8		
17(10302)	405.5	60.6	6.0	13.4	10.2	2.9	20.0		
18(10303)	397.3	27.5	2.5	18.1	9.4		4.2		
19(10304)	537.5	16.9	42.5	17.5	15.6				
20(10305)	428.8	9.1	29.7	93.5	14.4	1.5	18.7		
21(10401)	82.7	8.8	30.4		0.2				
22(10402)	90.1	28.4	3.5						
23(10403)	209.9	50.3		45.8					
24(10404)	134.9	10.6	134.3	43.2	1.9	6.3	2.8	1	
25(10501)	117.2	53.8	10.0		34.8				
26(10502)	194.0	20,1	14.4		1.7				
27(10503)	162.8	26.3	17.5		1.5				
28(10504)	719.9	69.7	14.4		1.0				
29(10601)	283.8	36.3	28.8			2.5			· · · · · · · · · · · · · · · · · · ·
30(10602)	296.3	37.7	4.2		100 7	·			
31(10701)	151.1	3.3	58.8		122.7			ļ	<u> </u>
32(10702)	268.7	40.6	4.4	3.8	37.0 553.5				<u> </u>
33(10703) 34(10704)	270.0	9.2	53.8		555.5				
35(10705)	261.7	13.1	17.5			<u> </u>		1	
36(10/03)	235.0	25.0	27.5		-			 	
37(10802)	239.2	12.5	16.3		57.1				
38(10901)	111.7	4,4	2.5	11.3	48.1	37.5		.	
39(10902)	250.6	18.3	31.9	11.3	23.1	3,8		<u> </u>	
40(10903)	295.1	11.3		42.6	78.1	16.9			
41(10904)	307.3	4.8	17,5	34.3	25.7		36.3	193.8	
42(10905)	706.9	14.4	5.6	116.9	1.9	1.3			
43(10906)	350.8	5.6		9.4	142.5				
44(10907)	313.5	9.4	10.0		1.9				
45(11001)	475.0	:							
46(11002)	669.6	3.8	265.0	2.5	15.0				
47(11101)	160.3	16.9	30.6			3.1			45.7
48(11102)	75.8	19.2		1	37.5		5.0	69.8	178.2
49(11103)	52.5	8.3		20.0	2.5			130.0	432.1
50(11104)	333,8		2.5	6.7	ļ	ļ		<u> </u>	<u> </u>
51 (11105)	321.6	12.5			329.2	2.5		309.2	427.5
52(11201)	177.2	8.3		7.5				<u> </u>	97.5
53(11202)	130.8	1.7		07.0	10.5	,- ^	11.7	<u> </u>	15.0
54(11203)	1180.9	25.0	25.0	65.8	12.5	15.0		ļ	30.8
55(11204)	306.3	2.5						ļ <u>.</u>	
56(11205)	122.5	10.0	100 1	7 -	75.0	1	11 0	· · · · · · · · · · · · · · · · · · ·	
57(11206) TOTAL	293.6	11.9	103.1	7.5	75.0	900.0	11.9	721.7	1996 0
ititAt.	13513.1	1218.5	1136.1	810.5	1881.1	296.6	162.2	141.1	1236.8

ZONE NO.	GRAVE YARD & MOSQUE	RIVER & CANAL	AGRICUL- TURAL &	INHABITABLE	TOTAL	REMARKS -Disqualified Area for Urbanization-
1/10/01	40.5		OTHERS	216.5	275.0	UI DAILI Zacion
1(10101)	42.5	· · · · · · · · · · · · · · · · · · ·		59.7	156.0	
2(10102)					109.0	
3(10103)				91,7	52.0	
4(10104)	·			48.9	78.0	
5(10105)		· · · · · · · · · · · · · · · · · · ·		53.6	97.0	
6(10106)	3.5			62.2	85.8	
7(10107)	5.4			76.3	72.0	
8(10201)				55.9	113.0	
9(10202)	6,9			78.7	222.0	
10(10203)	21.5			128.6	147.0	
11(10204)	1.5			52.9	193.0	
12(10205)	1.3			149.7		
13(10206)	30.2			299.2	680.0	<u> </u>
14(10207)	3,8		·	87.0	169.0	
15(10208)				101.3	293.0	
16(10301)	7.1			193.2	231.0	
17(10302)	32.4			466.1	531.0	
18(10303)				424.8	459.0	
19(10304)				554.4	630.0	
20(10305)	33.5		614.8	1052.7	1244.0	
21(10401)				91.5	122.1	
22(10402)				118.5	122.0	
23(10403)				260.2	306.0	
24(10404)	7.0	:		145.5	341.0	
25(10501)	,	1.0	85.5	256.5	302.3	
26(10502)			163.8	377.9	394.0	
27(1050 <u>3</u>)			116.9	306,0	325.0	
28(10504)				789.6	805.0	
29(10601)		64.2	2075.4	561.6		Along Ravi-1833.9
30(10602)		100.8	1221.8	904.1		Along Ravi-651.7
31(10701)		205.4	455.6	278.1	996.9	North of Band Road-331.9
32(10702)	12.5	:	88.0	397.3	455.0	
33(10703)	ľ		911.3	593.0		North of Band Road-597.5
34(10704)	6.7		903.1	1219.7		North of Band Road-227.3
35(10705)			376.7	651.5	669.0	the state of the s
36(10801)		508.3	2477.5	885.0		Between Sharaqpur&Ravi-1852.5
37(10802)		15.0	1043.9	1295.6	1384.0	
38(10901)	37.5			116.1	253.0	
39(10902)				268.9	339.0	
40(10903)				306.4	444.0	
41(10904)	8.3			312.1	628.0	
42(10905)			0.0	721.3	847.0	
43(10906)				356.4	508.3	
44(10907)			100.2	423.1	435.0	
45(11001)			883.0	1358.0	1358.0	
46(11002)			8.1	681.5	964.0	
47(11101)			4.4	181.6	261.0	
48(11102)	· ·	· · · · · · · · · · · · · · · · · · ·	2.5	97.5	388.0	
49(11103)			262.6	60.8		Reserved Farm-262.6
50(11104)	· ·		1101.0	1434.8	1444.0	
51 (11105)	- · · · · · - 		195.8	334.1		Reserved Farm-195.8
			137.5	323.0	428.0	,
			23.3	155.8	182.5	<u> </u>
52(11201)				100.0		
52(11201) 53(11202)	-			1710 /	1967 F	
52(11201) 53(11202) 54(11203)			512.5	1718.4 2560 0	1867.5 2560.0	
52(11201) 53(11202) 54(11203) 55(11204)			512.5 2251.2	2560.0	2560.0	
52(11201) 53(11202) 54(11203)			512.5			

APP2-11

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