Appendix-4
Seminar Materials

Project on Improvement of Traffic Management Capacity in Lahore Central Area in Islamic Republic of Pakistan

Kick-off Meeting

Date: Thursday, 25th February 2016

Venue: Royal Palm Golf & Country Club

10:00 – 10:30 Registration

10:30 – 11:00 Opening Keynotes

Mr. Saif ur REHMAN, Chief Engineer, TEPA

Mr. Nobuyuki TSUNEOKA, JICA Headquarters, Tokyo

11:00 – 11:45 Presentation of the Project Outline

Mr. Masato KOTO, Chief Consultant, JICA Project Team

(Project Objective, Scope and Outcomes)

Mr. Muhammad Waqar ASLAM, Team Leader, TEPA

(Existing Traffic Issues in Lahore)

11:45 – 12:15 Questions and Answers

12:15 – 12:30 Closing Remarks

Mr. Saif ur REHMAN, Chief Engineer, TEPA

12:30 – 14:30 Lunch

Chief Engineer TEPA Key Note

Lahore, the provincial capital of Punjab, is the second largest city in Pakistan with a population of about 11 million and it is 16th most populous city in the world. The city's population has been growing at an annual growth rate of about 3%. The city's rapidly growing population coupled with extremely high motorization (registered vehicles increased by double between 2001 and 2008) has resulted in chronic traffic congestion, caused by a series of issues such as:

1. Lack of Public transport network
2. Inefficient and poor condition of existing public transport system
3. Insufficient traffic management; poor junction design and lack of traffic control
4. Illegal and uncontrolled parking
5. Encroachment of road space & public right of way,
6. Poor public space management;
7. Roadside commercial activities,
8. Absence of sidewalks, bus stops, proper bus services, and shelters
9. Disorderly traffic

While population and economy of Lahore city is foreseen to grow steadily in the future, the increase of transport demand will be at much faster rate. The gradual shift from poor quality public transport to private transport due to the increase of income and motorcycle/ car ownership would further exacerbate the road traffic congestion. This trend is the most fundamental threat to the quality of Lahoris life to overcome.

Under the strong pressure of this rapidly growing transport demand, the critical issues are not only how to develop transport infrastructure but how to seek a sustainable solution between urban development and transport development. The increase in traffic has also increased the number of traffic accidents and our roads are growing dangerous day by day. Unfortunately, we have little traffic sense and perhaps no respect for the traffic rules.

JICA supported Lahore city in establishing its overall plan for urban transport sector through the Comprehensive Urban Transport Study in 1991. Although some of road improvement projects have been implemented based on the proposed plan, chaotic traffic situations still remain due to the rapid motorization mentioned above. In order to update the plan to fit with its development trend, based on the request from the Government of Punjab, JICA conducted a study named "The Project for Lahore Urban Transportation Master Plan Study in Pakistan (2010-2012)".

The study proposed 1) Long Term Urban Transport Master Plan up to 2030, 2) Action Plan for identified priority projects up to 2020. The Action Plan includes Core Program 1, which emphasizes on immediate commencement of mass public transport system such as Mass Rapid Transit (MRT) and Bus Rapid Transit (BRT); and Core Program 2, which focuses on traffic management in central Lahore, where the worst bottleneck in the transport network of Lahore exists.

Requested by GOP to JICA, as one of proposed projects among the Core Program 2, this Technical Cooperation Project, namely the "Project on Improvement of Traffic Management Capacity in Lahore Central Area" aims at enhancement of traffic management capacity of relevant organizations through pilot projects.

PROJECT ON
IMPROVEMENT OF
TRAFFIC MANAGEMENT CAPACITY
IN
LAHORE CENTRAL AREA

THE GOVERNMENT OF THE PUNJUB,
ISLAMIC REPUBLIC OF PAKISTAN

Project Kick-off Meeting
25th February 2016

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

METS RESEARCH & PLANNING, INC.
CTI ENGINEERING INTERNATIONAL CO., LTD.

Table of Contents

1. Project Background

- Lahore, the capital of Punjab Province, is the 2nd largest city in Pakistan with about 10 mil. population. The city's rapid population growth coupled with extremely high motorization has resulted in chronic traffic congestion.

- To cope with this chronic traffic congestion in Lahore, JICA supported "The Project for Lahore Urban Transportation Master Plan Study in Pakistan (LUTMP, 2010 - 2012)". LUTMP proposed, 1) Long Term Urban Transport Master Plan up to 2030, 2) Action Plan for identified priority projects up to 2020 and 3) Development of mass transit system together with necessary urban transport measures.

- BRT line (Metro Bus System (MBS)) was implemented and MBS contributed to the decrease of traffic congestions along the corridor. However, traffic congestions in the Lahore Central Area still have increased because there are no effective countermeasures of the traffic management.

- Considering these circumstances, the Pakistan Government requested the Japan Government to support "the Project on Improvement of Traffic Management Capacity in Lahore Central Area (LITMC)" for the improvement of the traffic management capacity to decrease the traffic congestions in Lahore.

1. Project Background

Urban Transport Related Projects after the LUTMP

- **Completed**

  (2) BRT (Green Line, L=27km)

  (3) Soft Components (Parking Privatization: Establishment of Lahore Parking Company)

- **On-going**

(1) Elevated Rail Mass Transit System, Partially Underground (Orange Line, L=27km), and the feasibility studies of Blue (L=22km) and Purple Lines (L=19km) will be completed in April, 2016

(2) Multi-modal Intercity Bus Terminals (3 Locations)

(3) Soft Components (Vehicle Inspection and Registration System, Road Safety Program)

2. Outline of the Project

Project Purpose		**1) To enable TEPA to formulate and implement countermeasures for traffic management** **2) To enhance the technical knowhow of related organizations on traffic management**
Outputs		1) Capacity Development for traffic management of TEPA and related organizations is conducted through training. 2) Institutional and personal capacity for traffic management of TEPA is enhanced mainly through implementation of Pilot Project(s). 3) Pilot Project(s) are summarized into “handbook” to be shared among TEPA and related organizations as a reference for other areas’ improvement. 4) Traffic management improvement plan in Lahore is developed.
Outline of Activities	Activity 1	1-1 To conduct the capacity assessment of related organizations of the traffic management. 1-2 To conduct pre-evaluation to trainees to participate in the course of traffic management. 1-3 To develop training plan and materials. 1-4 To conduct training courses. 1-5 To conduct the post evaluation test to trainees after the training courses and to recommend the future capacity development plan.
	Activity 2	2-1 To conduct traffic condition surveys in Lahore central area. 2-2 To analyze traffic data, identify traffic management issues and develop traffic management plan, which includes countermeasures. 2-3 To select and to plan Pilot Project(s). 2-4 To implement Pilot Project(s). 2-5 To conduct traffic surveys to evaluate effectiveness of the pilot project (s). 2-6 To support TEPA to prepare its institutional improvement plan for traffic management and to monitor its implementation.

2. Outline of the Project

Outline of Activities	Activity 3	3-1 To make and disseminate “handbook” that contains process of data collection, analysis, development of countermeasures and implementation of traffic management. 3-2 To conduct workshops/seminars to transfer engineering knowhow to staff of related organizations. 3-3 To develop the geometric design manual of the intersection. 3-4 To develop the handbook for the pedestrian safety facilities.
	Activity 4	4-1 To develop the traffic management plan in the Lahore Central Area. 4-2 To develop the pedestrian traffic improvement plan. 4-3 To develop the traffic demand management plan.
Project Area		Lahore Central Area
Counterparts, etc. in Pakistan		(1) Counterpart（C/P） ・Traffic Engineering & Transport Planning Agency (TEPA), Lahore Development Authority (LDA)) ・Punjab Province Traffic Office (Transport Planning Unit (TPU), Transport Department (TD))
		(2) Other related organizations ・Traffic Police ・City District Government, Lahore (CDGL)
		(3) Beneficiaries ・Direct beneficiaries: TEPA, TPU, Traffic Police, GDGL of staff, a total of about 40 people ・Indirect beneficiaries: Lahore City citizen about 10 million people, about 2 million vehicles (including motorcycles)
Project Period		From January 2016 until December 2018

3. Project Design Matrix (PDM) - 1

Narrative Summary	Objectively verifiable indicators	Means of verification	Important assumptions
Overall Goal Traffic management capacity which is necessary to decrease the traffic congestion in Lahore City will be enhanced.	1. Traffic condition in Lahore is maintained. 2. User's satisfaction is improved.	Government reports	Urban transport Policy of Government of Punjab and CDGL does not charge drastically.
Project Purpose 1. TEPA will be able to formulate and implement countermeasures for traffic management. 2. Technical knowhow of related organizations on traffic management will be enhanced.	1. Technical documents for design and implementation are developed. 2. Traffic management is properly planned in a coordinative manner.	1. Developed technical documents 2. Documents of related organizations	Government funding for traffic managements is ensured.
Outputs 1. Capacity Development for traffic management of TEPA and related organizations is conducted through training.	1. Training materials are developed. 2. Training courses are conducted. 3. Results of assessment test after the training show improvement of knowledge of the trainees. 4. Future training course is discussed and recommended.	1. Training materials 2. Project Progress Report 3. Results of assessment test	Continuous involvement of TEPA and related organizations is secured.
2. Institutional and personal capacity for traffic management of TEPA is enhanced mainly through implementation of Pilot Project(s).	1. Pilot Project(s) is implemented. 2. Pilot Project(s) is evaluated. 3. Achievement of TEPA's institutional improvement plan.	1. Implementation plan 2. Results of evaluation 3. TEPA's report	
3. Pilot Project(s) are summarized into "handbook" to be shared among TEPA and related organizations as reference for other areas' improvement.	1. The handbook is published. 2. Number of workshops/seminars.	1. Handbook 2. Project Progress Report	

3. Project Design Matrix (PDM) - 2

Narrative Summary	Objectively verifiable indicators	Means of verification	Important assumptions
4. Traffic management improvement plan in Lahore is developed.	1. Traffic management plan is developed. 2. Pedestrian traffic improvement plan is developed. 3. Traffic demand management plan is developed.	1. Traffic management plan 2. Pedestrian traffic improvement plan 3. Traffic demand management plan	
Activities 1-1 To conduct the capacity assessment of related organizations of the traffic management. 1-2 To conduct pre-evaluation to trainees to participate in the course of traffic management. 1-3 To develop training plan and materials. 1-4 To conduct training courses. 1-5 To conduct the post evaluation test to trainees after the training courses and to recommend the future capacity development plan.	Inputs Japanese side: ・Dispatch of Japanese experts: 1) Chief consultant / traffic management 2) Deputy chief consultant / traffic management 3) Road facilities design 4) Traffic signal design and operation 5) Pilot project implementation and management 6) Traffic survey / analysis 7) Capacity development planning / organization improvement 8) Training plan / Seminar 9) Project evaluation ・Training of counterpart personnel in Pakistan. ・Necessary equipment. ・Handbook printing. ・Workshop / Seminar Pakistan side: ・Provision of office and necessary facilities. ・Appointment of counterpart personnel from available TEPA／TPU staff ・Counterpart budget: administrative cost including staff salary, transportation and utilities. ・Security arrangement for JICA experts.		Trainees stay and continue to work for the organization.
2-1 To conduct traffic condition surveys in Lahore central area. 2-2 To analyze traffic data, identify traffic management issues and develop traffic management plan, which includes countermeasures. 2-3 To select and plan Pilot Project(s). 2-4 To implement Pilot Project(s). 2-5 To conduct traffic surveys to evaluate effectiveness of the Pilot Project (s). 2-6 To support TEPA to prepare its institutional improvement plan for traffic management and to monitor its implementation.			
3-1 To make and disseminate “handbook” that contains process of data collection, analysis, development of countermeasures and implementation of traffic management. 3-2 To conduct workshops/seminars to transfer engineering knowhow to staff of related organizations. 3-3 To develop the geometric design manual of the intersection. 3-4 To develop the handbook for pedestrian safety facilities.			Preconditions
4-1 To develop the traffic management plan in the Lahore Central Area. 4-2 To develop the pedestrian traffic improvement plan. 4-3 To develop the traffic demand management plan.			Security level of Lahore continuously maintains for JICA experts to conduct the activities.

4. Our Approach

- How to enhance the motivation of counterparts?

Capability enhancement for traffic management to decrease traffic congestion is a general project purpose that can be adopted by any other city looking to solve its traffic problems. It is therefore important and necessary that Lahore counterparts are motivated to be involved in the project's planning and activities. Keeping an awareness that success of the project is not only for Lahore but for other cities in Pakistan. And the counterparts could be a main actor of this important mission.

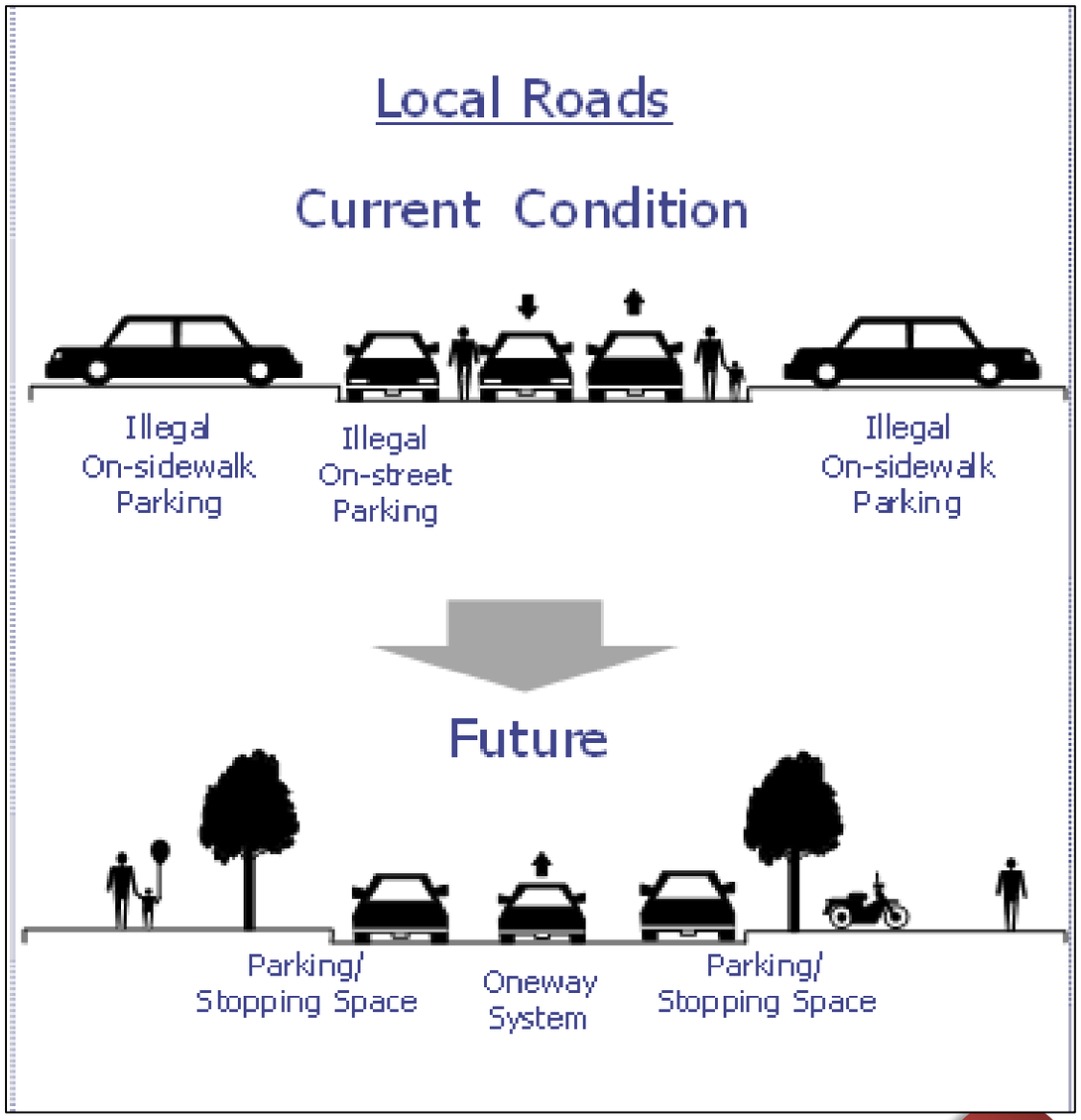
- Thus, we have come up with the following as some sort of "project call to action":

Pakistan's Urban Environmental Improvement Starting from Lahore!

To show everybody in Pakistan how the collaboration between Pakistani counterparts and Project Team has led to concretize the following concept:

- To maximize the existing limited urban transport space
- To maximize the effectiveness of the combination of several traffic management countermeasures

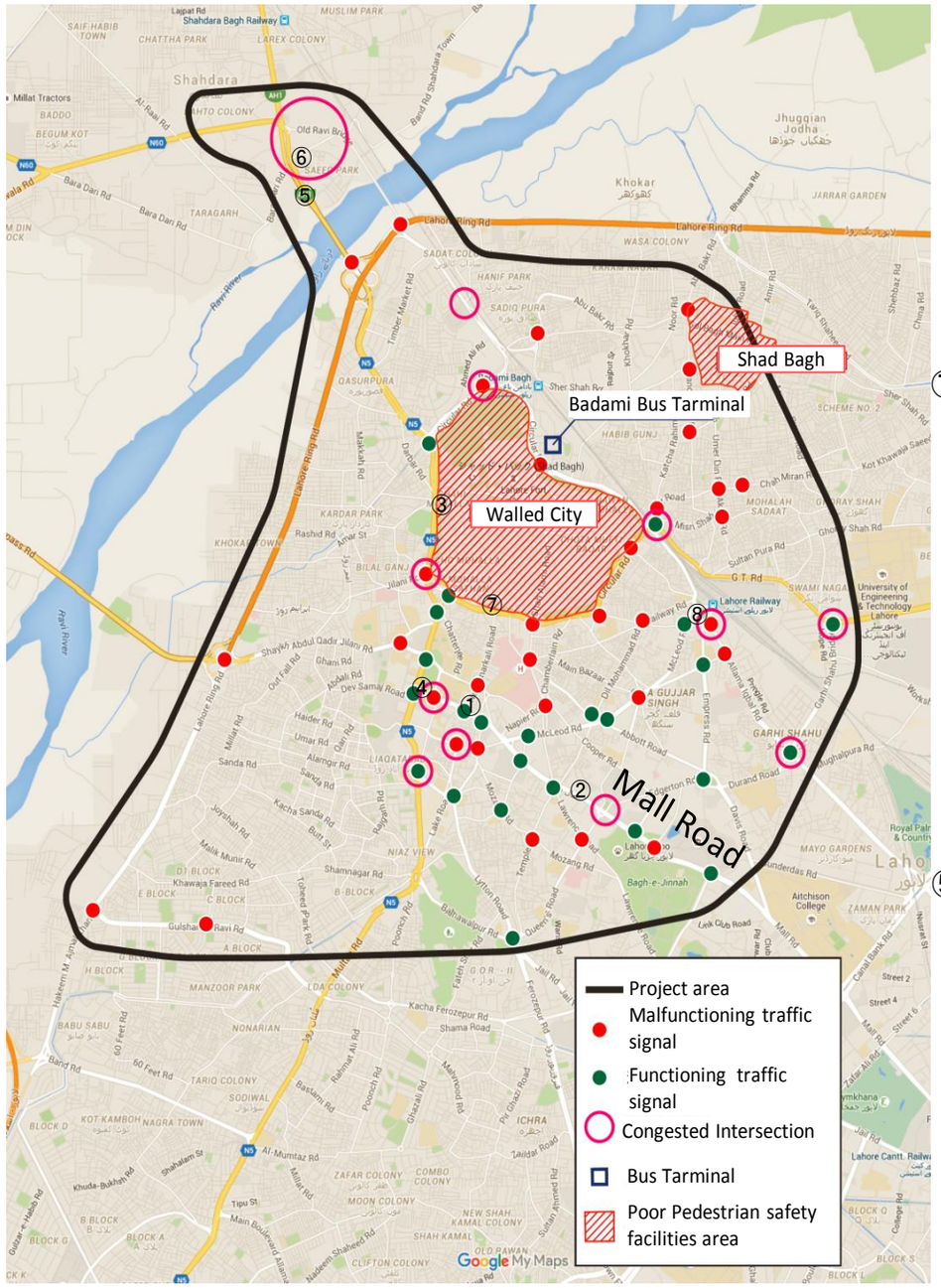
For example



5. Project Area and Its Traffic Situation

Project Area

Traffic situation in Lahore Central Area



【Mall Road】

① Functioning traffic signal at Mall Road near Anarkali

② Traffic congestion at Mall Road/Lawrence Road intersection.

【Major intersections】

⑦ Mixed traffic around the market often causing traffic jams at circular intersection near Mori Gate

⑧ Functioning traffic signal at intersections around Lahore Station

【Metro（B R T）】

⑤MBS bus entering the gate toward the Ravi River west bank bus terminal

⑥ Vendors and shoppers crowding the space under the stairs of the station

【Sidewalk/Roadside condition】

③ Street vendors occupying one lane of the road around Walled City

④ Pedestrians walking on the carriageway under the N5 overpass

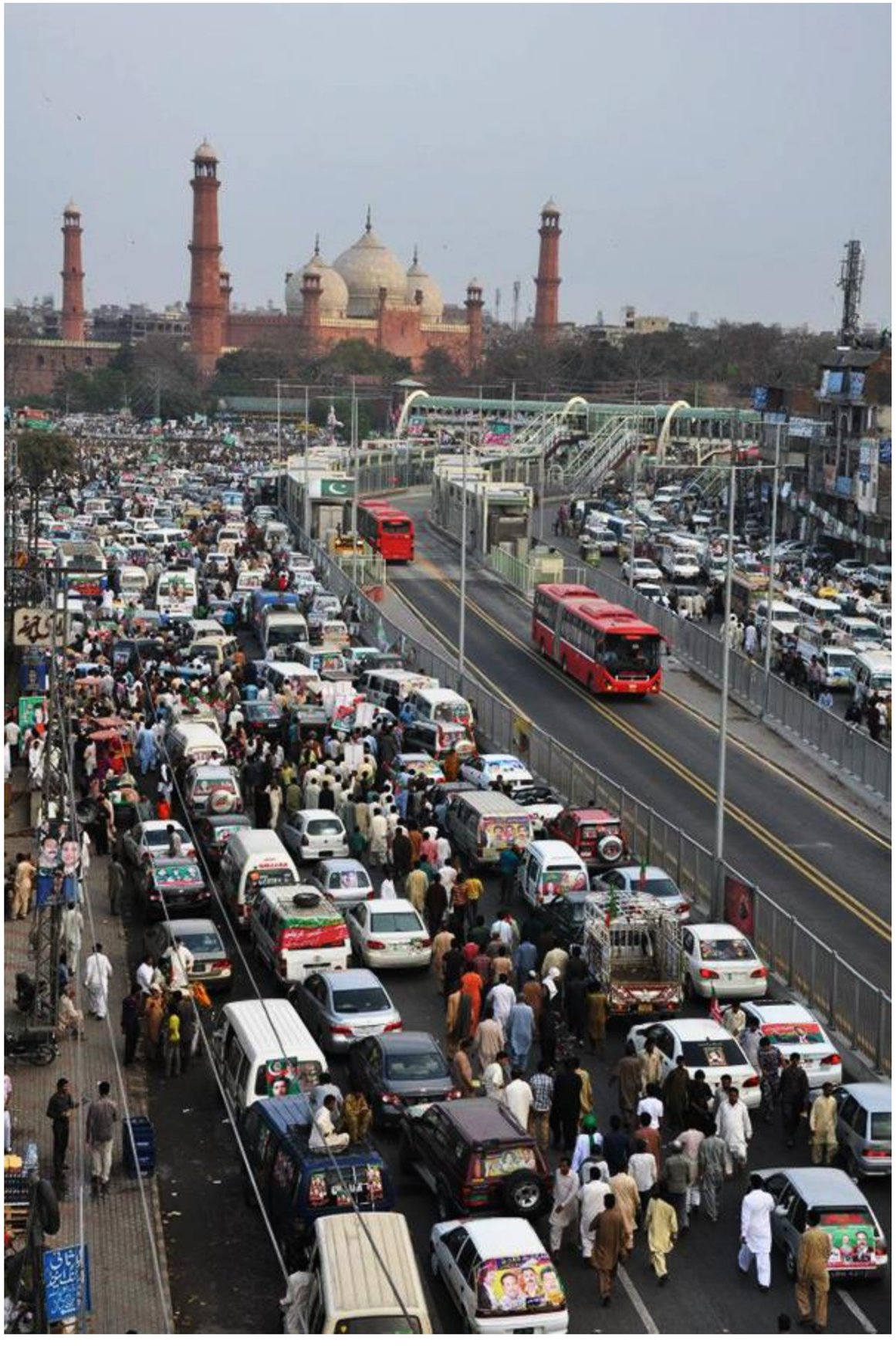
Ravi River West bank – Bank Road – Gulshan Ravi Main Road – Lahore Zoo - Shalimar Road – Railway East Area

5. Project Area and Its Traffic Situation

- Lack of Public Transport Network
- Inefficient and poor condition of existing public transport system
- Insufficient traffic management; poor junction design and lack of traffic control
- Malfunctioning and poor condition of traffic signals
- Mix traffic volume
- Lack of facilities for Pedestrians
- Road Safety Issues
- Violation of traffic rules
- Lack of Enforcement

5. Project Area and Its Traffic Situation

- Illegal and uncontrolled parking
- Encroachment of road space & public right of way
- Absence of sidewalks, bus stops, proper bus services, and shelters
- Poor public space management
- Lack of maintenance of roads
- Lack of parking space round major commercial areas
- Lack of awareness among people about the traffic rules
- No check and balance on driver licensing and training
- Unclear Road network Pattern

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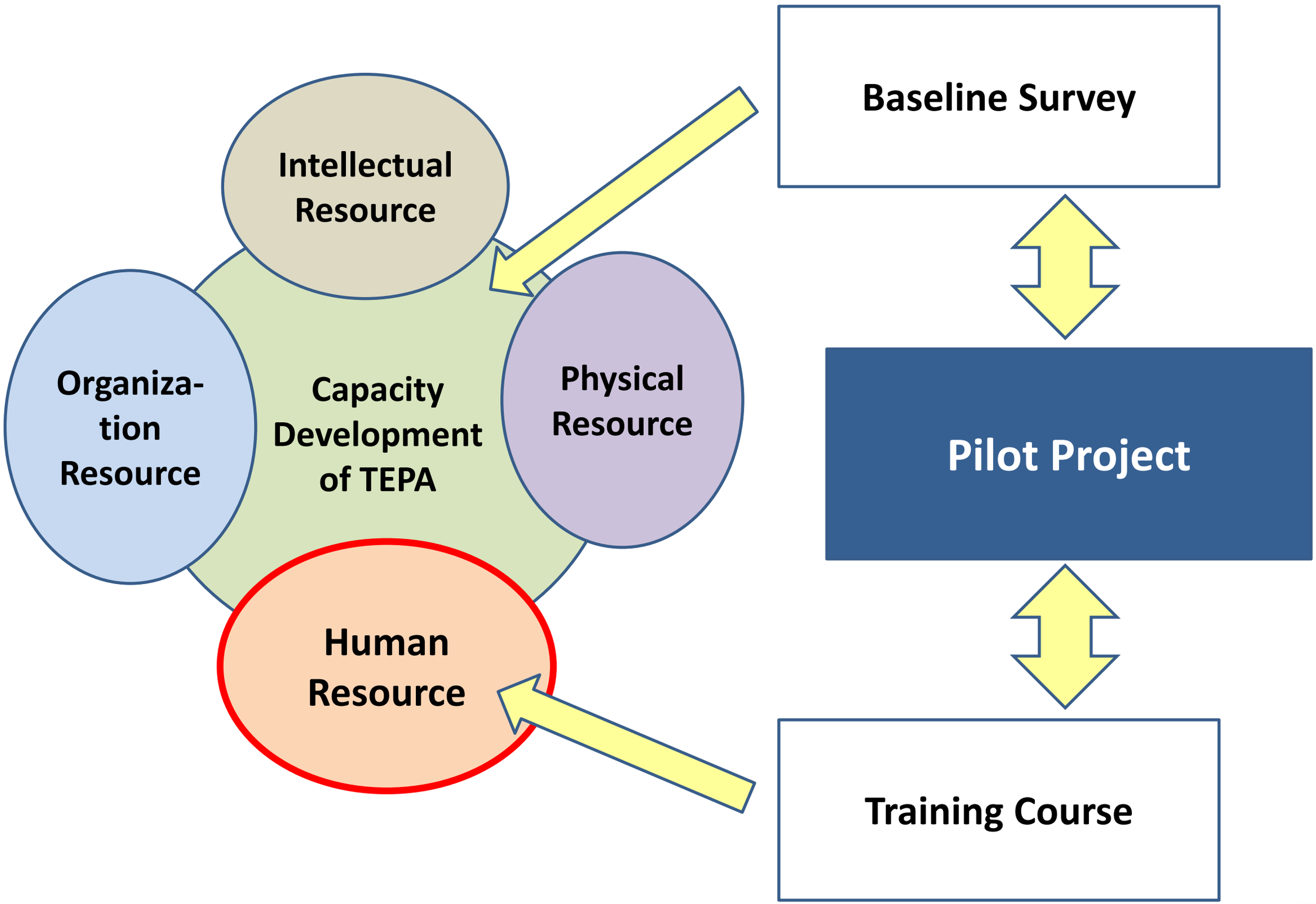
6. Output 1: TEPA's Traffic Management Capacity will Increase through Training (2)

・The organization, personnel, physical and intellectual resources of C/P agency which is a component of an organization's ability will be analyzed by the baseline survey. Then training program of C/P will be planned.

・The training courses is composed of not only classroom lectures also, site survey, the case study since it is important to improve the core capacity of human resources and practical skill in problem coping.

・The training course content will be carried out timely, and it becomes a part survey, planning and design of pilot project. The resulted of training program will be monitored to confirm the establishment of capacity building.

6. Output 1: TEPA's Traffic Management Capacity will Increase through Training (2)



6. Output 1: TEPA's Traffic Management Capacity will Increase through Training (2)

■ Outline of the Institutional Assessment Survey Form (Draft)

A survey will be conducted in the beginning of the project to collect information about the agencies involved in the project. Using the survey results, an assessment will be made of the overall work and assets of each agency for traffic management. This is also basic information to develop the TEPA's institutional implementation plan.

The survey items are as follows:

A. Interviewee's Profile

B. Basic Data of the Agency

C. Agency's Assets in Traffic Management

D. Existing Practices in Planning, Implementation, Evaluation and Monitoring of Traffic Management

E. Traffic Problems and Potential Solutions

6. Output 1: TEPA's Traffic Management Capacity will Increase through Training (3)

■ Outline of the Trainees Assessment Survey Form (Draft)

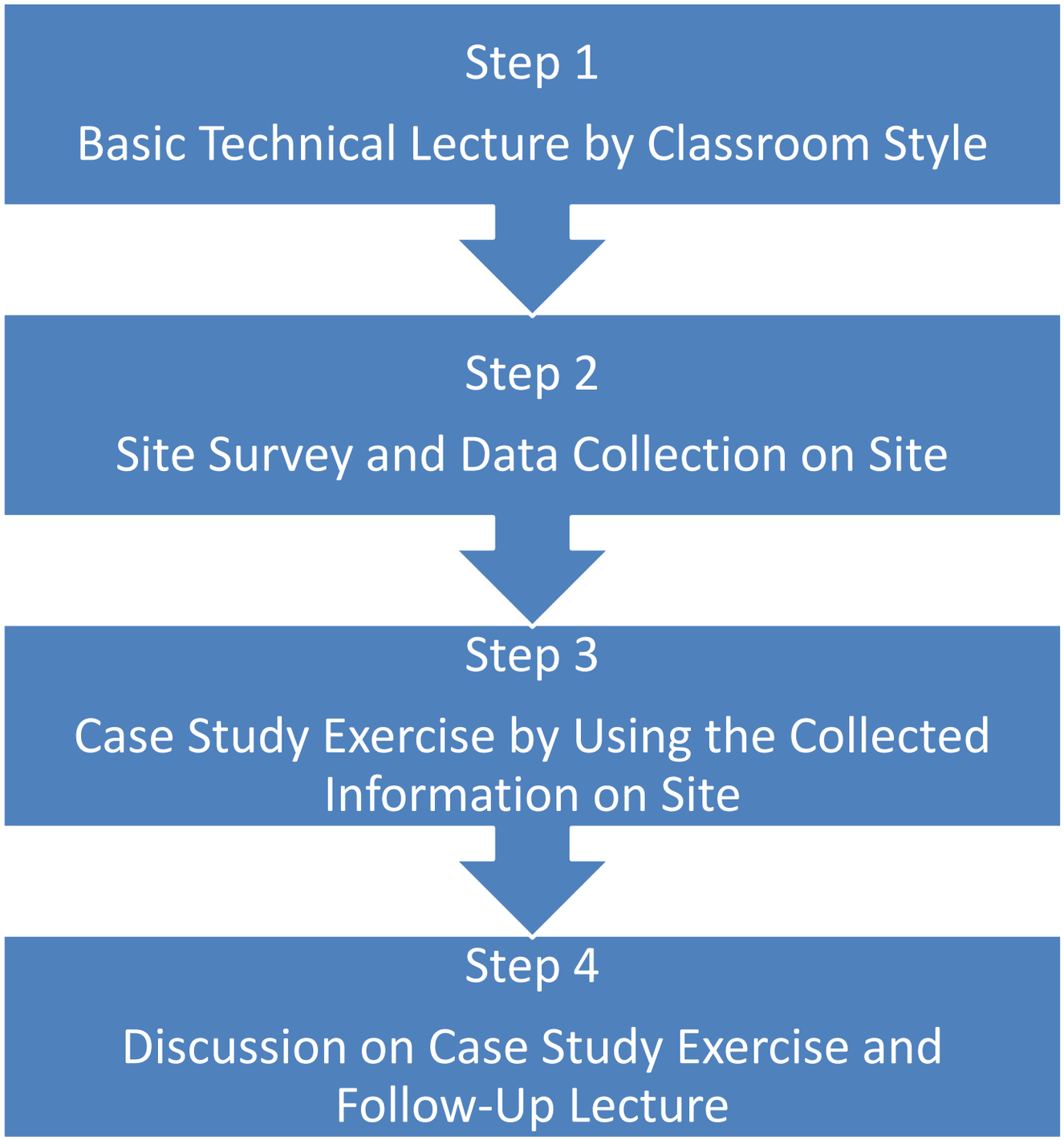
A training needs assessment is conducted as preparation for the project in order to focus on the necessary aspects making the training more efficient and increased motivation among the trainees.

The survey items are as follows:

A. Personal Information
B. Education and Training
C. Relevant Trainings Attended
D. Career Profile/Work Experience
E. Proficiency in Traffic Simulation Software and Other Relevant Types of Software
F. Motivation to Participate in the Training
G. Assessment of Level of Capability in Implementing Traffic Management
H. Awareness in Transportation Problems in Lahore Central Area/Whole City

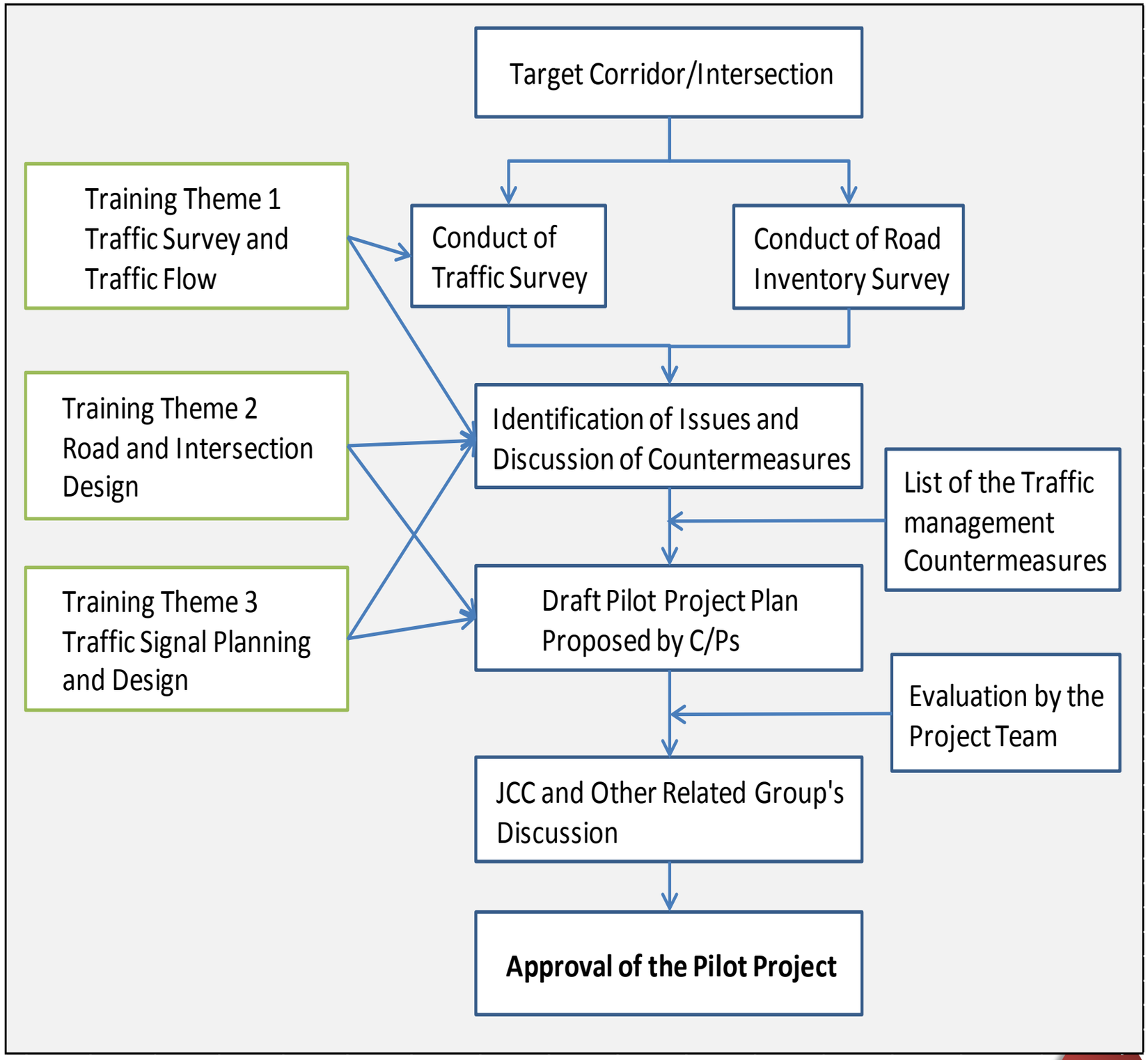
6. Output 1: TEPA's Traffic Management Capacity will Increase through Training (4)

- Training courses in four (4) steps: Technical Lecture at Classroom, actual field survey, case study exercise and follow-up classroom lecture.
- The trainings should lead to application for practical uses through 4-step training.
- Maximize the use of the LUTMP training materials.



7. Output 2: TEPA's Traffic Management Capacity will be Strengthened through Pilot Project (1)

- To have an effective collaboration between the training Theme and the Pilot Project
- To produce a stable outcome of technology transfer from the training course based on counterparts taking the lead with advice and guidance from the project team



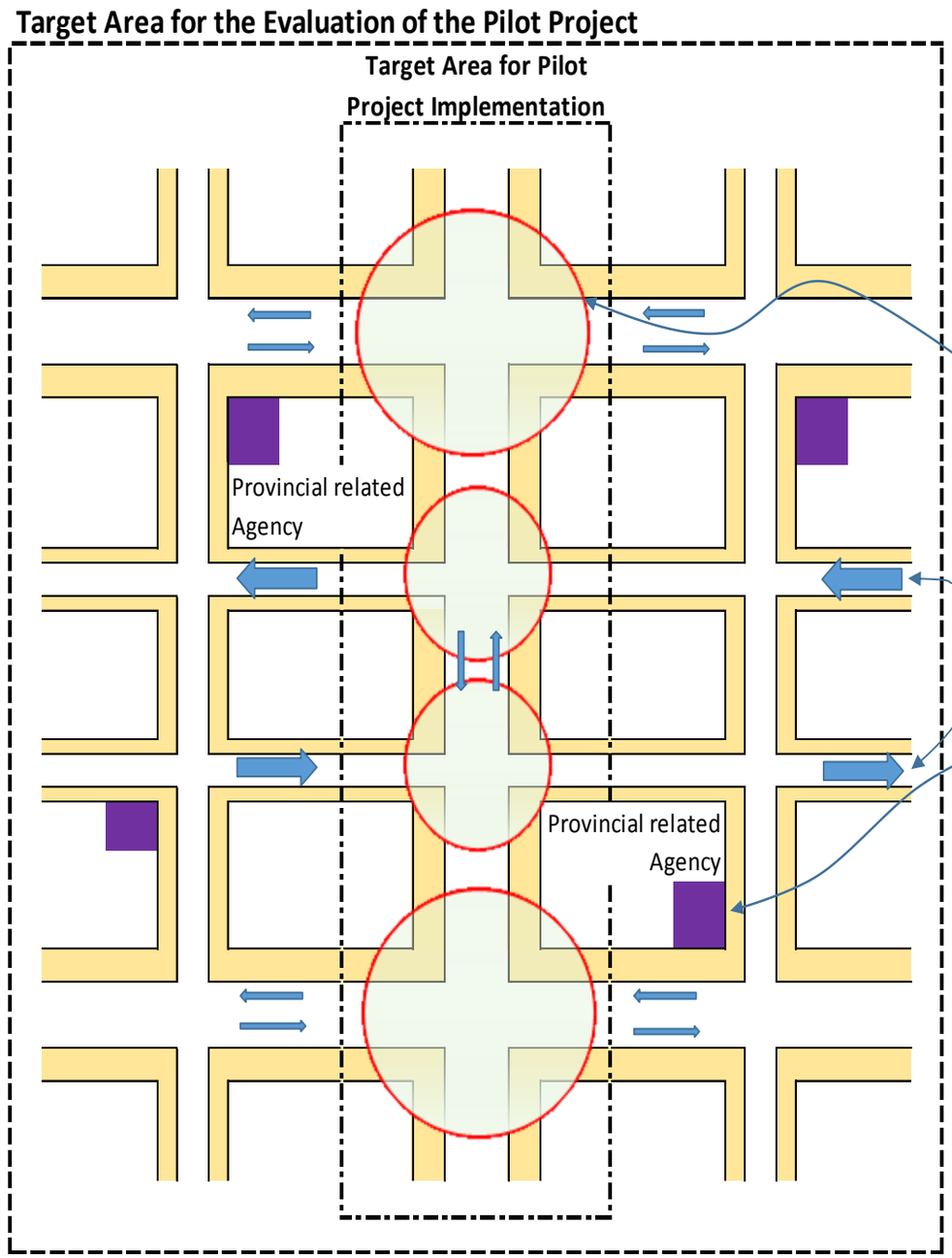
7. Output 2: TEPA's Traffic Management Capacity will be Strengthened through Pilot Project (2)

Ideas for the Target Area of the Pilot Project to

Traffic Management Plan, Pedestrian Traffic Improvement Plan and Traffic Demand Management Plan

Expand to the Whole Lahore Central Area

Image of the Pilot Project Area and Implementation of the Traffic Management Measures



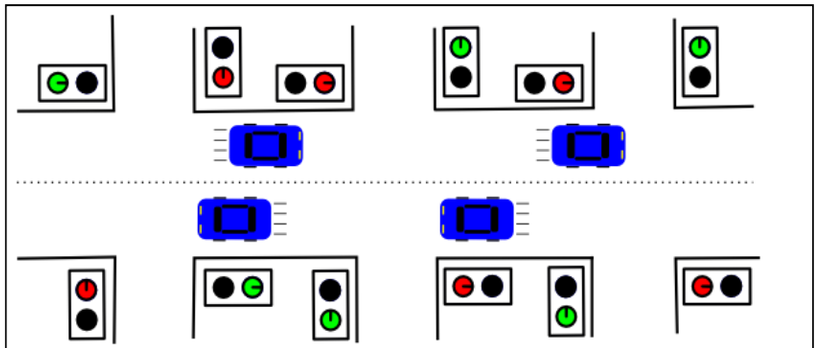
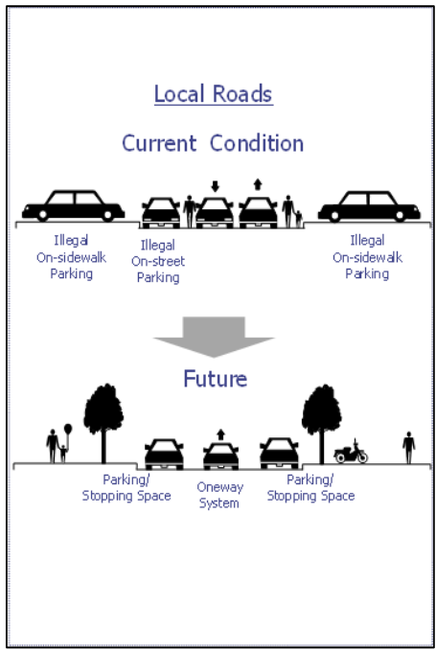


Image of the Offset Adjustment of the Traffic Signal

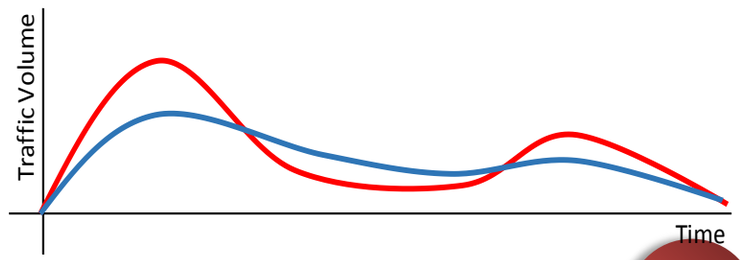
Intersection Improvement including Traffic Signal Upgrading (off-set adjustment)

Parking measures and Sidewalk Improvement together with One-way System

Traffic Demand Management Measures

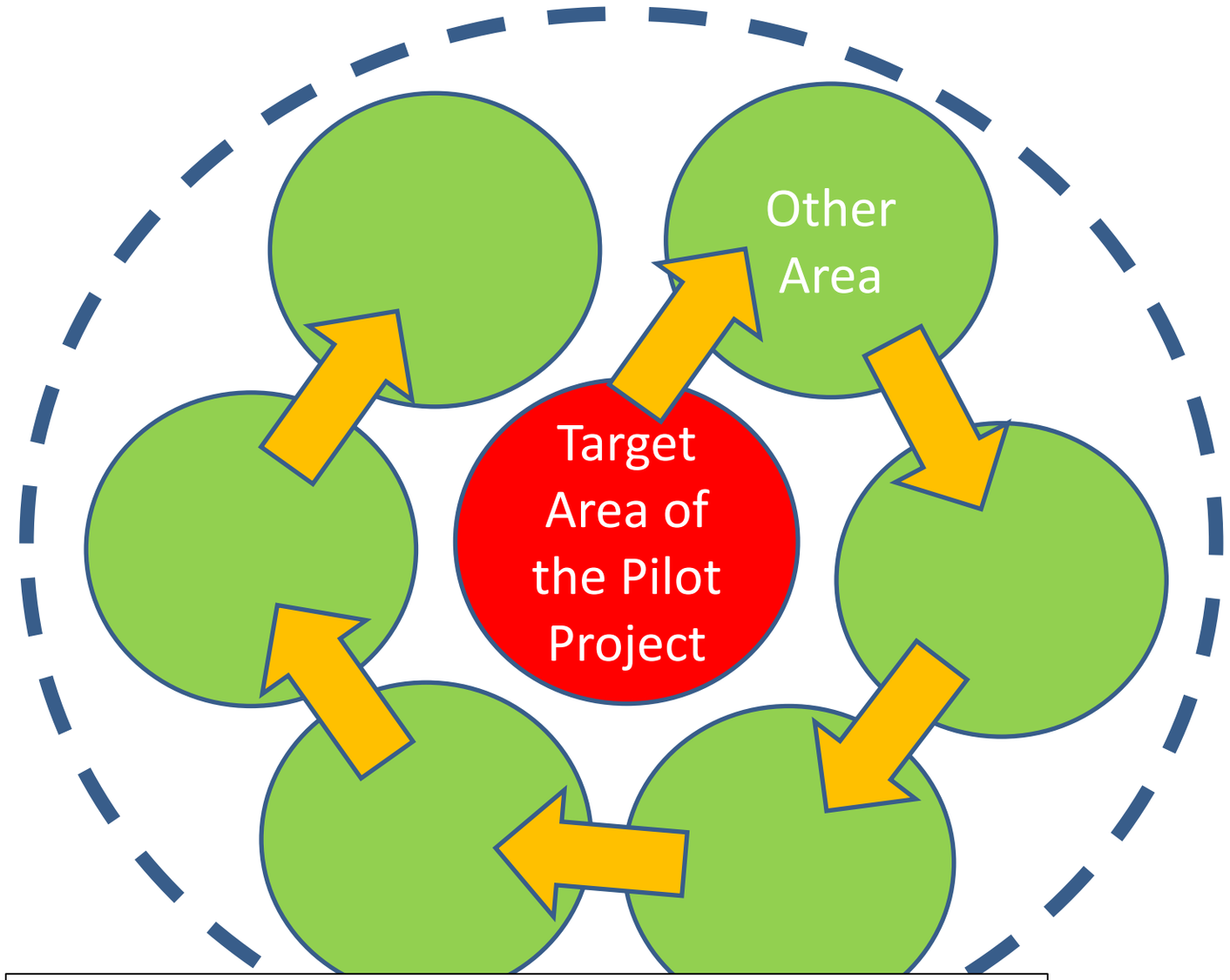


Staggered Commuting Hours in Collaboration with Provincial/City related Agencies in the Pilot Project Area



7. Output 2: TEPA's Traffic Management Capacity will be Strengthened through Pilot Project (3)

- To expand to the whole area based on the outcomes of the Pilot Project area
- To consider the viewpoints of whole Lahore Central Area and the Pilot Project Area
- To secure the budget for the traffic management improvement
- To forge collaboration between related agencies and to secure the personnel



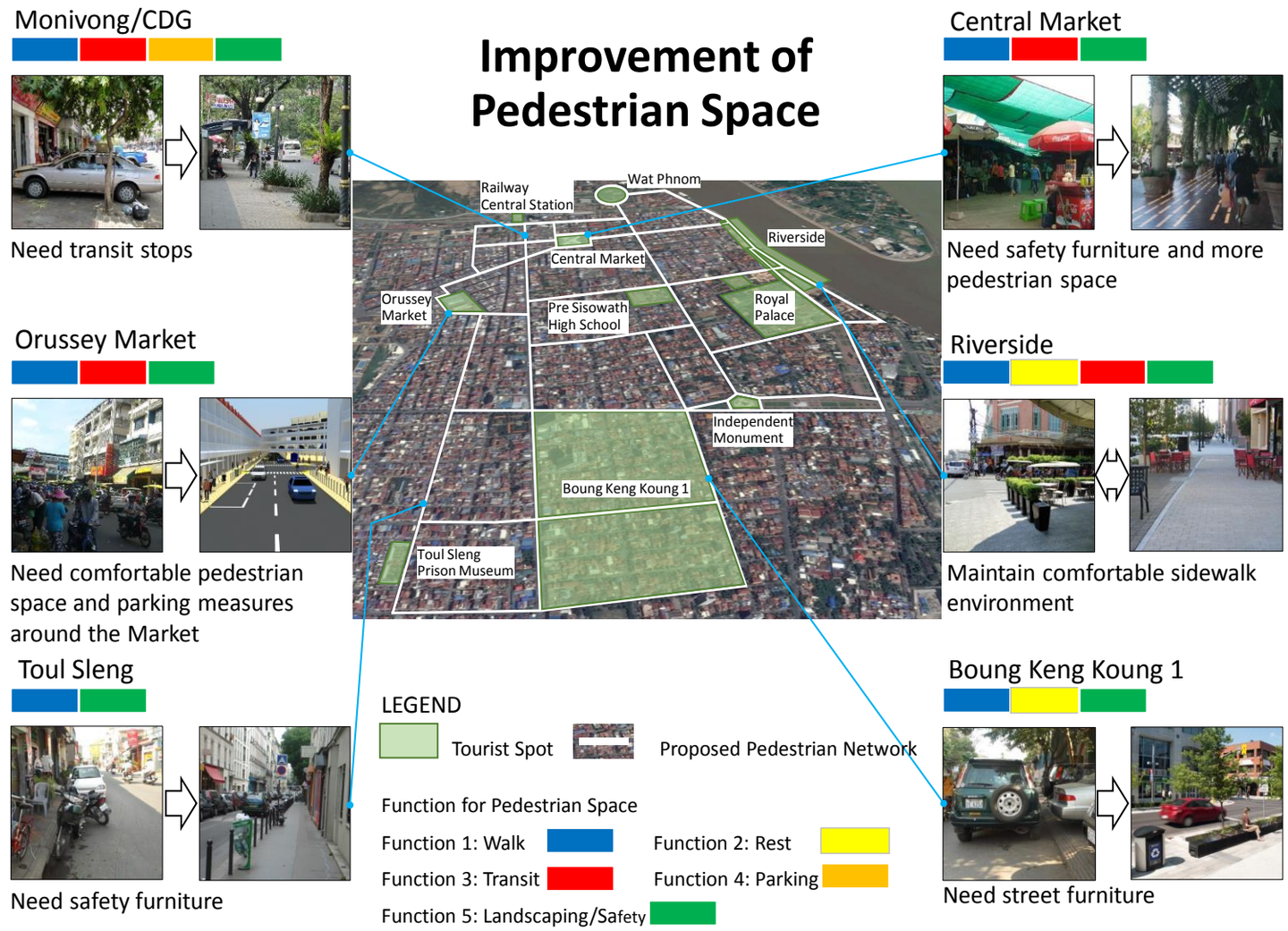
Viewpoint of the Whole Lahore Central Area

↓

To Cope with the Traffic Management Plan, Pedestrian Traffic Improvement Plan, etc.

8. Outputs 3 & 4: Experience of the Pilot Project is Summarized in Handbooks and Traffic Management Plan will be Developed

- A handbook will be developed based on the Pilot Project activities and examples of the other cities used as reference during the Pilot Project.
- The geometric design manual at intersection will be developed based on the "Punjab Geometric Manual" and will also consider the comparison between Punjab's and Japan's manual, experience from training materials produced and the results of the Pilot Project.
- The traffic management plan will be developed based not only on UTMP's Traffic Management Plan but also on characteristics of Lahore and the examples of the other cities.

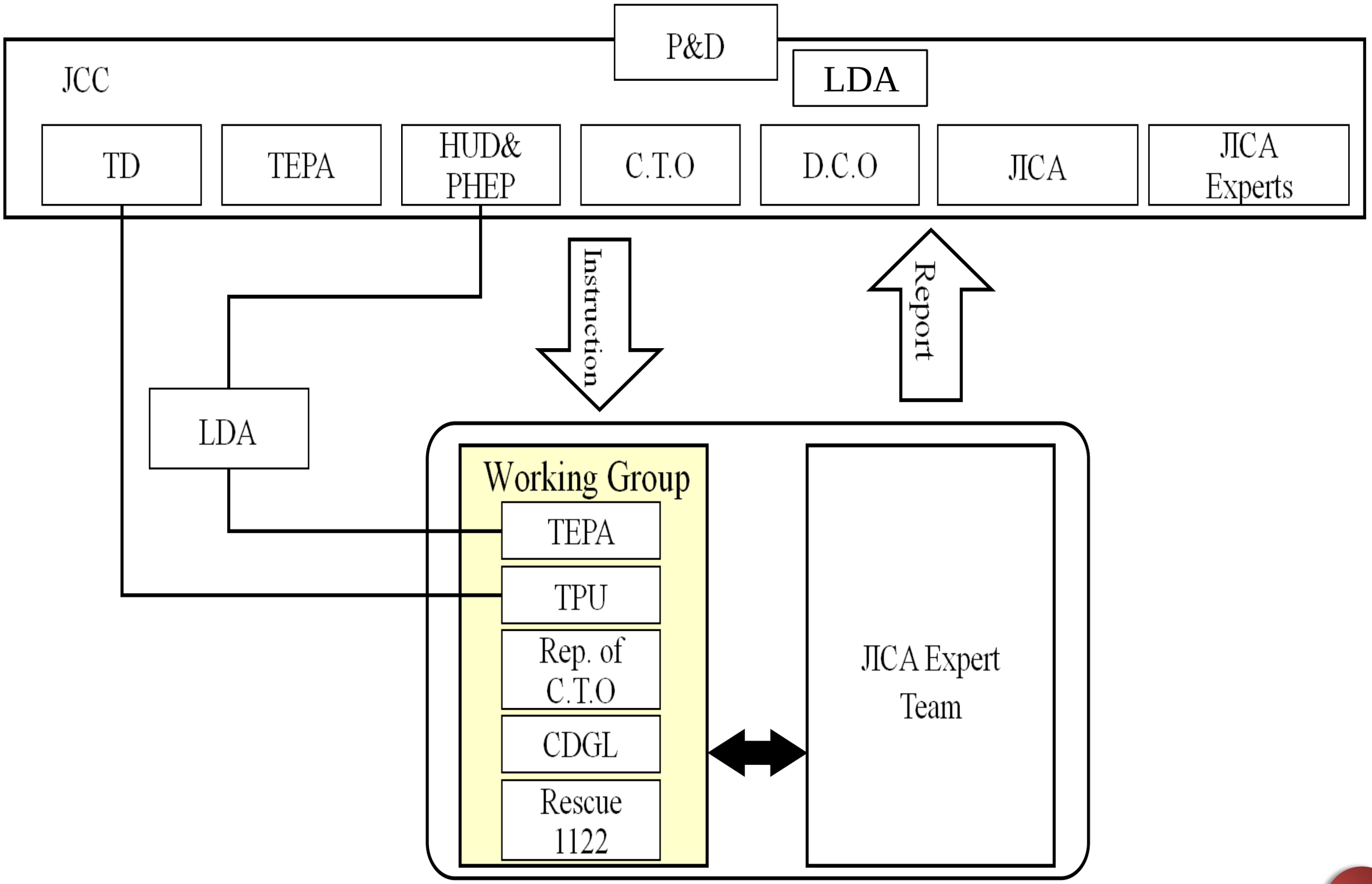


8. Outputs 3 & 4: Experience of the Pilot Project is Summarized in Handbooks and Traffic Management Plan will be Developed

- Related Manuals, Handbooks and Plans developed by the LUTMP

No.	Name of Material	LUTMP	Pakistan Standard	Japan Standard	Pilot Project	Other Countries
1	Intersection Geometric Design Manual		✔ Punjab Geometric Manual	✔	✔	✔
2	Handbook for Pilot Project		✔ Manual for Signs, Signals and Markings and Punjab Traffic and Transport manual 2008	✔	✔	✔
3	Handbook on Pedestrian Traffic Facilities			✔	✔	✔
4	Traffic Management Plan	✔		✔	✔	✔
5	Demand Management Plan	✔		✔	✔	✔
6	Pedestrian Traffic Improvement Plan			✔	✔	✔

9. Implementation Structure of the Project



10. Joint Coordinating Committee and Working Group

■Proposed Member of the Joint Coordinating Committee

1. Chairperson
Secretary, Planning and Development Department
2. Members from Pakistani side
(1) Member, Planning and Development Department
(2) Secretary, Housing, Urban Development and Public Health Engineering Department
(3) Secretary, Transport Department
(4) Chief of Traffic Officer
(5) District Coordination Officer
(6) Managing Director, Transport Engineering and Transport Planning Agency
(7) Director General, LDA
3. Members from Japanese side
(1) Representative of JICA Pakistan Office
(2) Japanese experts
(3) Personnel concerned to be decided by the Japanese side
4. Others
Persons who are invited by the Chairperson may attend the JCC meeting.

■Proposed Member of the Working Group

12 members from related agencies such as P&D, TEPA, Transport, TPU, LDA and Lahore City, etc.

11. Project Framework

Year: 2016 / 2017 / 2018

Month: Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec (each year)

【Oveall Actitivities】

2.2.1 Reviw of Existing Reports and Data

2.2.2 Preparation of Inception Report

2.2.3 Presentation and Discussion of Inception Report

2.2.4 Preparation of Work Plan

(Revision of Work Plan)

(Revision of Work Plan)

2.2.5 Monitoring

Monitoring

Monitoring

Monitoring

Monitoring

2.2.6 Setting of Index for PDM

2.2.7 JCC (1st)

JCC (2nd)

JCC (3rd)

JCC (4th)

JCC (5th)

JCC (6th)

2.2.8 Publicity Activities

2.2.9 Preparation of Project Completion Report

【Activities for Output 1】

Capacity Development for traffic management of TEPA and related organizations is conducted through training.

2.2.10

2.2.10 Needs Analysis for Trainees to Participate in the Course of Traffic Management

Test

2.2.11 Conduct of Assessment Test befire Training

Test

Test

Test

Training Plan

Preparation of Materials

2.2.12 Development of Training Plan and Material

Preparation of Materials

Preparation of Materials

Preparation of Materials

1st Training

2.2.13 Conduct of Training Courses

2nd Training

3rd Training

4th Training

Test

2.2.14 Conduct of Assessment Test after Training

Test

Test

Test

【Activities for Output 2】

Institutional and personal capacity for traffic management of TEPA is enhanced mainly through implementation of Pilot Project(s).

2.2.15 Conduct of Traffic Condition Surveys in Lahore Central Area

2.2.16 Identification of Traffic Management issues Based on Traffic Data Analysis

2.2.17 Selection of Pilot Project as a Social Experiment and Preparation of its Implementation Plan

2.2.18 Conduct of Pilot Project

Detailed Design tender Documenta

Coordination with related organizations

Tender Procedure Contract

Pilot Project Construction

Pilot Project（Soft countermeasures）

Prelimimnaly Survey

2.2.19 Conduct of Traffic Surveys to Assess the Pilot Project

Post-project Survey

Post-project Survey

2.2.20 Preparation of TEPA Institutional Improvement Plan for Traffic Management

Montoring

Monitoring

【Activities for Output 3】

Pilot Project(s) are summarized into"handbook"to be shared among TEPA and related organizations as reference for other areas.

2.2.21 Preparation of Handbook that contains Know-how for Traffic Management

1st WS

2.2.22 Conduct of Workshops/Seminars for Knowledge Transfer to Staff to Related Organizations

2nd WS

3rd WS

4th WS

2.2.23 Preparation of Geometric Design Manual fo Intersections

2.2.24 Preparation of Safety Assessment Handbook for Pedestrian

【Activities for Output 4】

Improvement plans on traffic management in Lahore will be developed.

2.2.25 `Preparation of Traffic Management Plan of Lahore Central Area

2.2.26 Prepararion of Traffic Improvement Plan for Pedestrian

2.2.27 Preparation of Traffic Demand Management Plan

Meetings with JICA: ▲Kick off Meeting

JCC: ▲1st ▲2nd ▲3rd ▲4th ▲5th ▲6th

Monitoring Sheet: ▲Ver.1 ▲Ver.2 ▲Ver.3 ▲Ver.4 ▲Ver.5

Report: ▲ IC/R ▲ Work Plan ▲ Work Plan ▲ Wprl Plan Draft Completion Report ▲ Completion Report ▲

12. JICA Experts and Assignment Schedule

		Expert in Charge	Affiliation	2015fiscal year			2016 fiscal year												2017 fiscal year												2018 fiscal year								
				2016												2017												2018											
				Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Work in Pakistan	Chief consultant / traffic management (1)	KOTO Masato	METS			1.5		1.0		1.0				1.0		1.0		1.0						1.0						0.5						0.5			
	Deputy chief consultant / traffic management (2)	UENO Ryuichi	CTII			1.0						1.0								0.5					0.5						0.5					0.5			
	Road facilities design	ONO Masazumi	CTII			1.5		1.5			1.5			1.5		1.0			1.0					1.0							0.5					0.5			
	Traffic signal design and operation	SANPEI Akihiro	METS				1.0		1.5			1.5		1.0					1.0						0.5														
	Pilot project implementation and management	****	****											1.5				2.0							0.5														
	Traffic survey / analysis	TERAOKA Yusuke	CTII			1.5			1.5			1.5				1.0			1.0						1.0						1.0								
	Capacity development planning / organization improvement	NASHREEN Sinarimbo	CTII			1.5							1.0							1.0						0.5				0.5					1.0				
	Training plan / Seminar	MACHIDA Chikahiko	METS			1.5		1.0				1.0				1.0			1.0						1.0						1.0								
	Project evaluation	****	****							1.0								0.5						0.5						0.5					1.0				
Work in Japan	Chief consultant / traffic management (1)	KOTO Masato	METS		0.15																																0.15		
	Deputy chief consultant / traffic management (2)	UENO Ryuichi	CTII		0.15																																0.15		
	Road facilities design	ONO Masazumi	CTII		0.15																																		
	Submission timing of reports, etc. (indicated by △ and the report name)			△Inception Report JP △IC/R	△Work Plan					△Monitoring Sheet								△Monitoring Sheet △Work Plan						△Monitoring Sheet						△Monitoring Sheet	Work Plan△				△Monitoring Sheet	Completion Report Draft △		Completion Report △	

		2015 fiscal year		2016 fiscal year		2017 fiscal year		2018 fiscal year		TOTAL	
		local	Japan	local	Japan	local	Japan	local	Japan	local	Japan
Work in Pakistan	Chief consultant / traffic management (1)	1.50		4.50		2.00		0.50		8.50	
	Deputy chief consultant / traffic management (2)	1.00		1.00		1.00		1.00		4.00	
	Road facilities design	1.50		5.50		2.00		1.00		10.00	
	Traffic signal design and operation	0.00		5.00		1.50		0.00		6.50	
	Pilot project implementation and management	0.0		3.50		0.50		0.00		4.00	
	Traffic survey / analysis	1.00		4.50		2.00		1.00		8.50	
	Capacity development planning / organization improvement	1.00		1.50		2.00		1.00		5.50	
	Training plan / Seminar	1.50		3.00		2.00		1.00		7.50	
	Project evaluation	0.00		1.50		1.00		1.00		3.50	
	Local work summary	7.50		30.00		14.00		6.50		58.00	
Work in Japan	Chief consultant / traffic management (1)		0.15		0.00		0.00		0.15		0.30
	Deputy chief consultant / traffic management (2)		0.15		0.00		0.00		0.15		0.30
	Road facilities design		0.15		0.00		0.00		0.00		0.15
	Japan work summary		0.45		0.00		0.00		0.30		0.75
	TOTAL	7.95		30.00		14.00		6.80		58.75	

Legend		
■	Work in Pakistan	METS：METS RESEACH & PLANNING, INC
□	Work in Japan	CTII： CTI Engineering International Co., Ltd

Closing Remarks

Distinguished guests, ladies and gentlemen, on behalf of the organizers and sponsors of this kick off meeting, it is indeed my pleasure to make a few closing remarks and express gratitude to all those who made this event cordial and interactive.

The presentation by Mr Masato Koto The Chief consultant of JICA team and Mr. Waqar Aslam TEPA Team Leader, has been very comprehensive, fruitful and informative to highlight major traffic issues of Lahore and outlining a project scheme for capacity building of TEPA and other Agencies

The main objectives of this kick off meeting are to invite all stack holders to discuss and understand our 03 years long program on "improvement of traffic management capacity in Lahore" and contribute their valuable suggestions and eventually to formulate a comprehensive working group.

This working group shall work with JICA consultant team for study, training and building traffic management schemes. This whole exercise shall result in technology transfer and capacity building of local departments so that they will be capable of planning, designing and implementation of traffic management programs of Lahore city.

So this is just a beginning of our long journey and I look forward your same active participation and contribution in JICA-TEPA technical cooperation.

Again, I would like to extend my appreciations especially to JICA headquarters and JICA consultant team for their keen interests and contributions in improvement of traffic management scenario in Lahore.

It is my sincere duty to thank all of you here today. This program is a success because of your efforts and participation. Thank you very much on behalf of JICA and TEPA, LDA till we meet again!

Meeting Record

1. Meeting Name

Project Kickoff Meeting of Project on Improvement of Traffic Management Capacity in Lahore Central Area

2. Date

25 Feb 2016　11:00-13：30

3. Venue

Royal Palm Golf & Country Club Lahore-Pakistan

4. Question and Answers Session

Question 1:

Name: Dr. Tanvir Iqbal Qyum

Former chairman of Department of transportation engineering and management in UET Lahore.

Suggestions:

- Related academies should be included in your JCC.
- You should also included Transportation engineering department, CRP(City and regional planning department), Environmental Engineering department from UET should be included in your team.
- Second thing is about your slogan. I think this should be re considered as" Pakistan Urban Traffic Sustainability Program started from Lahore"
- JICA team should have also co ordinate with PAKSTRAN(Pakistan Sustainable Transportation Project) team also.

Question 2:

Name: Dr. Zahra Batool

Assistant Professor in Department of Transportation Engineering and Management UET Lahore.

- I strongly feel with a lack of co ordination with the acedemies. This is very important to consider.
- Regarding your objectives it is stated very clearly we are trying to improve environmental improvement of Lahore so it is my humble suggestion try to interlink this project with the World Bank stated sustainable development goals.

- Third suggestion is regarding Production of manuals. It will be also very interesting and useful if you try to incorporate our local factors in these kind of manuals.

Answer: By Waqar Aslam:

We have already considered this part in the manuals. All the manuals will be formulated based on local conditions and we will be using the already prepared draft manual for that purpose.

Question 3:

Name: Nadeem Afzal

D.S.P Traffic Police Lahore.

- There are several things on the road including the hand carts, the donkey carts, the auto rickshaws, cars, motor bikes, loaders trucks. etc. everything is on circular road. I can't understand how it is going to be planned to deal with all the traffic which is on the road.
- Very recently TEPA has put cat eyes on the road, which are making the lot of trouble in moving the slow-moving traffic. Mostly these are stucks on the cat eyes and whole the traffic is being stopped. So there should be consultation and co ordination between enforcement, execution and planning agencies.

Answer by Waqar Aslam Chaudry:

Basically the purpose of this seminar to involve and consult with all the stake holders. And answer to your first part is that we want to improve the traffic management by removing the illegal parking, and by improving the geometric design which is not happening now a days.

Question 4:

Usman Shakir

Transportation design Engineer (EA consultant)

- How will TEPA ensure that whatever JICA create it will be implemented as it is.
- How you will reduce the vehicle ownership? As it is the basic part of traffic management.

Answer by Mazhar Iqbal:

- Implementation basically depends upon our man power, our budget and our affordability.

- Lahore does not have a higher level of vehicle ownership. Traffic management doesnot mean only physical management it also means demand management. Only providing road capacity is not a answer. You can modify your curb designs, providing proper parking spaces, proper license issuing method. Car ownership will continue to grow in Lahore. We have to manage all these by traffic management.

Question 5:

Jamshid Mahmood

Transport Modeler (NESPAK Pakistan)

- Will JICA give its knowledge, technical training, and software techniques to Pakistani professionals and engineers to become a better transport modeler?

Answer by Mazhar Iqbal:

- It all depends budget and capacity of JICA. JICA did not have their office for 14months in 2010. For doing transportation modeling you have to involve from day 1 into the project. This time JICA have their office, their sitting arrangement and have capacity to do this project. We are working from day 1 unlike last time. We will also open training program for the outside people also.

Question 6:

Bilal Zia

Assistant professor (Department of transportation engineering in UET Lahore)

- What are the basis and factors of selecting your study area in Lahore?
- What are the impacts of your project outside your study area?
- How you will change the driving behavior of people? How you train the drivers?

Answer by Mazhar Iqbal:

- The factors depend upon how much money, time and resources we have.
- On the driving behavior it is the traffic police who have to answer it.
- Answer by Mr.Koto: we are not doing project on the whole study area but on different portions in the study area because we have some constraints in terms of time and budget.

5. Attendant List

Attendance List

THE PROJECT ON IMPROVEMENT OF TRAFFIC MANAGEMENT CAPACITY
IN LAHORE CENTRAL AREA IN ISLAMIC REPUBLIC OF PAKISTAN

Date: 25-Feb-2016
Venue: Royal Palm Golf & Country Club.
Staring Time: 11:00
Topic: Kickoff Meeting
Chaired by:

Attendance List

No.	Name	Organization	Position	[redacted]	Signature
1	Nawed Ajmal	City Traffic Police	D.S.P.		
2	Sajj-Ur-Rahman	TEPA			
3	Farhan Haider	EA Consultant	GM Punjab		
4	Tanweer Siddiqi	ALBAYRAK	DMD		
5	M. Saeed Tahir	CDGL	EDO(W&S		
6	Ahmad Raza	ECSP.	HEAD HIG		
7	Khalid Rafique	TEPA			
8	Zafar Ahmed	LTC	COO		
9	Zeeshan Usmani	TEPA	DD		
10	Sohail Rashid	TEPA	Director		
11	Zahara Sohail	UET, Lhr	AP		
12	Tahir Sh	DO Tech CDGL	DO Tech		
13	ASNA AHMED	LE PARK	Manager Operation		
14	M. AMMAR.	C&W	SECTION OFFICER		
15	Prof. Dr. Ahmad	UET	Chairman		
16					
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Attendance List

THE PROJECT ON IMPROVEMENT OF TRAFFIC MANAGEMENT CAPACITY
IN LAHORE CENTRAL AREA IN ISLAMIC REPUBLIC OF PAKISTAN

Date: 25-Feb-2016
Venue: Royal Palm Golf & Country Club
Staring Time: 11:00
Topic: Kickoff Meeting
Chaired by:

Attendance List

No.	Name	Organization	Position	[redacted]	Signature
1	Hafiz Bilal Fazal	L.D.A.	Dy. Dir.		
2	Jamshaid Mahmood	NESPAK	Senior Engr.		
3	Asim Rehman	EPA	D.D.		
4	Dr Tanvir I. Qureshi	USA	Associate Dean		
5	Hammad Hassan	TEPA	R.A		
6	Zeeshan Sohail	TEPA	S.E		
7	Akmal Niazi	TEPA	Asst Dir		
8	Kazim Khan	LEPARC	Manager Parking		
9	Farhan Anwar	TEPA	Asst Director		
10	Zahid Sattar	TEPA	A.D		
11	Dr. Ziauddin Rafique	DTEM UET			
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Attendance List

THE PROJECT ON IMPROVEMENT OF TRAFFIC MANAGEMENT CAPACITY
IN LAHORE CENTRAL AREA IN ISLAMIC REPUBLIC OF PAKISTAN

Date: 25-Feb-2016
Venue: Royal Palm Golf & Country Club
Staring Time: 11:00
Topic: Kickoff Meeting
Chaired by:

Attendance List

No.	Name	Organization	Position	[redacted]	Signature
1	M. Usman Sheikh	EA Consulting	Transportation Design Engr.		
2	Muhammad Asif	Police	SP-traffic		
3	ARSHAD MAHR	NESPAK	Principal		
4	[illegible]	Nespak	Chief Engineer		
5	Ahsan Zulfiqar	Nespak	Senior Engr.		
6	M. USMAN MALIK	LTC	Manager Planning		
7	Mubeen Asghar Khan	TEPA	DD(Comm)		
8	USMAN NAZAR	TEPA	DD(TE)		
9	Amna Chaudhry	UET	Assistant Professor		
10	Yasir Aziz	C42			
11	Durre Nayab	C42	Reporter		
12	Kamran Ihsan	TPM Transport Dept	TDM		Kamran
13	Bilal Zia	DTCM, UET	Assist. Prof		
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TEPA
Traffic Engineering & Transport Planning Agency
Government of Punjab

Project for Improvement of Traffic Management Capacity in Lahore Central Area

METS Research & Planning, INC.
CTI Engineering International Co. Ltd.
Tokyo, Japan

CE/TEPA/LDA/ 339 **Dated: 19th September, 2016**

LITMC STUDY– INVITATION TO PROJECT REVIEW WORKSHOP

Dear Sir/ Madam,

Traffic Engineering and Transport Planning Agency (TEPA), with the assistance of Japan International Cooperation Agency (JICA) started the "Project for Improvement of Traffic Management Capacity in Lahore Central area". The objectives of this project are the improvement of traffic congestion in the Lahore Central area through the capacity development of traffic management related agencies especially TEPA. This is a Technical Cooperation Project with the following expected outputs:

1. Capacity Development for traffic management of TEPA and related organizations would be conducted through training.
2. Institutional and personal capacity for traffic management of TEPA is to be enhanced mainly through implementation of Pilot Project(s).
3. Pilot Project(s) are summarized into "handbook" to be shared among TEPA and related organizations as a reference for other areas' improvement.
4. Traffic management improvement plan for Lahore Central area.

Since the commencement of the project, it's progressing at its desired pace and following key targets have been achieved:

1. A kick-off meeting held on 25th February, 2016
2. 1st Joint Coordination Committee (JCC) meeting on 24th March 2016
3. Detailed Traffic Surveys conducted in April-May 2016.
4. 1st meeting of Working Group (WG) held on 2nd August, 2016
5. Selection of Pilot Project Area and the concept of the Pilot Project in June-August, 2016
6. 2nd meeting of JCC held on 18-August-2016 for confirmation of the selection of Pilot Project area.

The JICA Project Team intends to share the progress on the project among the stakeholders to make them aware of the project benefits and its impact on improvement of traffic management in Lahore Central area and to get their precious comments for successful implementation of the pilot project.

In view of foregoing, you are cordially invited to attend the Progress Review Workshop (main theme is the detailed traffic surveys) on **Wednesday, 28th September, 2016** at **0900** hrs at **Fairways Hall, Royal Palm Golf & Country Club**, Canal Bank Road Lahore. Program agenda is enclosed for your information.

(SAIF UR REHMAN)
Chief Engineer
TEPA, LDA

***Contact Person*:**
Mr. Muhammad Waqar Aslam
Team Leader TEPA, LDA (0334-442 1680)

Ms. Zaib-un-Nisa, Office Administrator
JICA Project Team (042-3717 3429, 0313-796 5244)

AGENDA

One Day Seminar on
Improvement of Traffic Management Capacity in Lahore

Venue: Fairway's Hall, Royal Palm Golf & Country Club, Lahore

Date: Wednesday, 28th September, 2016 **Time: 09:00 to 13:30**

09:00 – 09:30	**Registration**
09:30 – 10:00	**Opening Keynotes**

Mr. Saif ur Rehman, Chief Engineer, TEPA
(Welcome note)

Mr. Ryuichi Ueno, Deputy Chief Consultant, JICA Project Team
(Brief introduction of Project)

10:00 – 10:50	**Presentations**

Aqeel Younis Mughal, Transport Planner, Metro Associates
(Conduct of Traffic surveys, Approach, Methodology and Quality Assurance)

Mr. Khurram Saeed, Research Associate, TEPA
(Survey Data Analysis and Problem Identification)

Mr. Muhammad Waqar Aslam, Traffic Engineer /Team Leader, TEPA
(Selection of Pilot project area, Traffic Safety Campaign)

10:50 – 11:00	**Q&A Session**
11:00 – 12:00	**Presentations**

Dr.Murtaza Bukhari, Project Director, Transport Planning Unit (TPU)
Vehicle Inspection and Certification System A Government of the Punjab Project

Mr. Mishkat, Punjab Safe Cities Authorities (PSCA)
(Traffic Management System)

12:00 – 12:15	**Q&A Session**
12:15 – 12:30	**Closing Remarks**

Mr. Touseef Ahmed, Director P&D, TEPA

12:30 – 13:30	**Lunch**

Assalam-o-Alaikum

Ladies and gentlemen, I welcome you all on the first seminar on Project of "Improvement of Traffic Management Capacity of Lahore Central Area". Let me give you a brief introduction of this project and its progress before we formally start the seminar.

This study "Improvement of Traffic Management Capacity of Lahore Central Area" was started in February, 2016 upon the arrival of JICA Study team to enhance the technical capacity of TEPA and to improve the traffic management of Lahore Central Area in assistance with JICA technical team by involving all the related stake holders. For this purpose, first Joint Coordination Committee(JCC) meeting of the project was held on 24th March, 2016 in Committee Room of P&D under the chairmanship of Secretary P&D in which the inception report of the project was approved.

After approval, different Traffic and transport surveys were conducted on selected intersections and corridors of Lahore Central area from April to May 2016. Based on the site visits, survey analysis and results a candidate pilot project was identified.

1st meeting of Working Group (WG) of this project was held on 02nd August, 2016 in Committee room of TEPA in which all the related stakeholders were taken onboard to take their input regarding the selected pilot project area. It was unanimously recommended by all member of the working group to go ahead with the proposed pilot

project area which includes ten (10) intersections along Lytton road, Queens Road, Mall Road, Begum-Fane Road and Mozang Road. The same was approved in 2nd JCC meeting held on 18th August, 2016 in Committee Room of P&D under the Chairmanship of Secretary P&D.

This seminar is held today by JICA in coordination with TEPA in order to share with all the related stakeholders about the methodology adopted for this project and results of the survey analysis. Further, there is also a presentation from Transport Department on project of "Vehicle Inspection and Certification System in Punjab" to share the salient features of the project and from Punjab Safe City Authority (PSCA) regarding their project of Traffic Signals in Lahore. Today's seminar will help us all in understanding the status of current traffic management projects going on in Lahore; their characteristics/features and benefits to common people.

OBEY ALL ROAD SIGNS & TRAFFIC LAWS

Road sense is the offspring of courtesy and the parent of safety

Improvement of Traffic Management Capacity in Lahore

28th September, 2016

Fairway's Hall, Royal Palm Golf & Country Club, Lahore

Time: 09:00 to 13:30

LDA TEPA

Jointly Organized by

JICA

PROJECT ON IMPROVEMENT OF TRAFFIC MANAGEMENT CAPACITY IN LAHORE CENTRAL AREA

Mr.Saif ur Rehman
Chief Engineer, TEPA

Welcome Note

28 September 2016

Traffic Engineering & Transport Planning Agency (TEPA)

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

PROJECT ON IMPROVEMENT OF TRAFFIC MANAGEMENT CAPACITY IN LAHORE CENTRAL AREA

Ryuichi Ueno
Duputy Chief Consultant, JICA Project Team

Brief Intoroduction of Project

28 September 2016

Traffic Engineering & Transport Planning Agency (TEPA)

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

Introduction of Seminar

Project Overview

"the Project on Improvement of Traffic Management Capacity in Lahore Central Area (LITMC)" for the improvement of the traffic management capacity to decrease the traffic congestions in Lahore.

Project Output

1. Capacity Development for traffic management of TEPA and related organizations is conducted through training.
2. Institutional and personal capacity for traffic management of TEPA is enhanced mainly through implementation of Pilot Project(s).
3. Pilot Project(s) are summarized into "handbook" to be shared among TEPA and related organizations as a reference for other areas' improvement.
4. Traffic management improvement plan in Lahore is developed.

Introduction of Seminar

Schedule of Seminar

1st Seminar: Present Traffic Issues in Lahore Central Area (28th Sep. 2016)

2nd Seminar: Detailed Pilot Project Plan (23th Nov. 2016)

3rd Seminar: Implementation of Pilot Project (May 2017)

4th Seminar: Traffic Management Plan in Lahore Central Area (Aug. 2018)

Introduction of Seminar

Objective of the 1st Seminar

To share the progress on the project among the stakeholders to make aware of the project benefits and impact on improvement of traffic management in Lahore Central Area and to get your precious comments for successful implementation of the pilot project.

- Conduct Traffic Surveys, Approach, Methodology and Quality Assurance (Consultant)
- Traffic Survey Analysis and Problem Identification(TEPA)
- Selection of Pilot Project Area, Traffic Safety Campaign (TEPA)
- Traffic Management System (PSCA)

Introduction of Seminar

- Please take note and reserve your questions for each presentation at the end of presentation session.

PROJECT ON IMPROVEMENT OF TRAFFIC MANAGEMENT CAPACITY IN LAHORE CENTRAL AREA

Presented By: Khurram Saeed
TEPA Study Team

SURVEY DATA ANALYSIS AND PROBLEM IDENTIFICATION

28 September 2016

Traffic Engineering & Transport Planning Agency (TEPA)

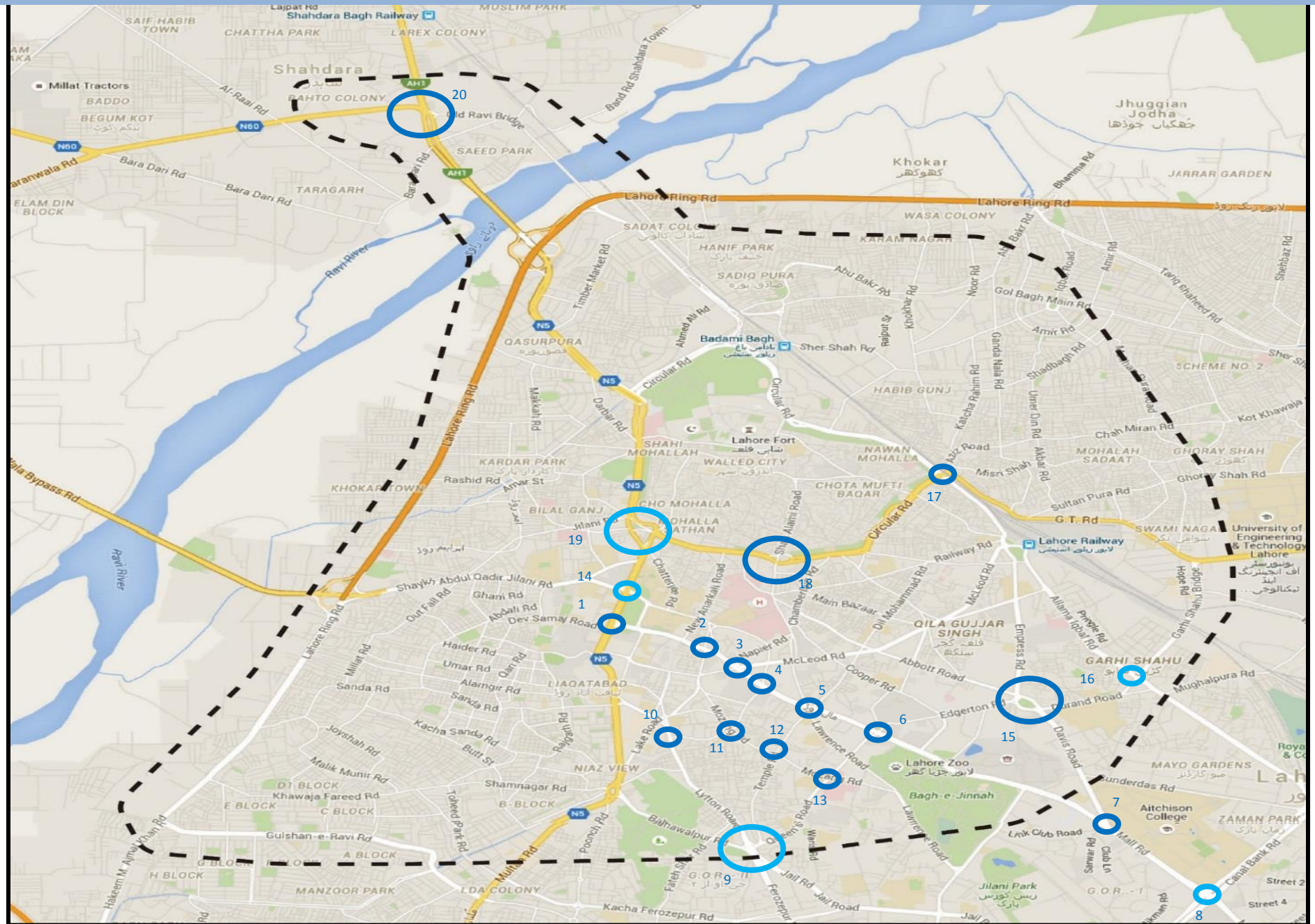
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

Content Of the Presentation

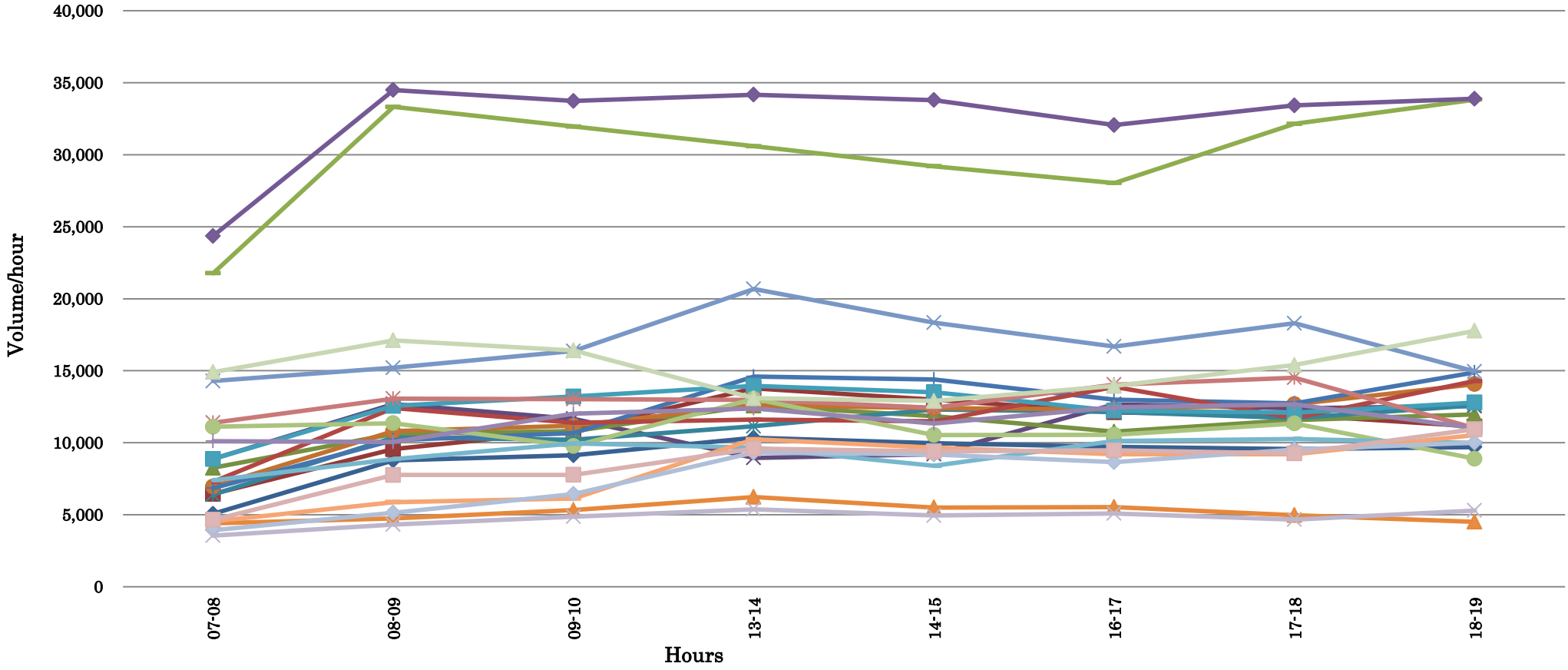
- Traffic Count Survey Analysis
- Travel Speed Survey Analysis
- Parking Survey Analysis
- TDM Survey Analysis

TRAFFIC COUNT SURVEY ANALYSIS

Study Area - Intersection Surveyed



Hourly Traffic Volume for Study Area Intersections

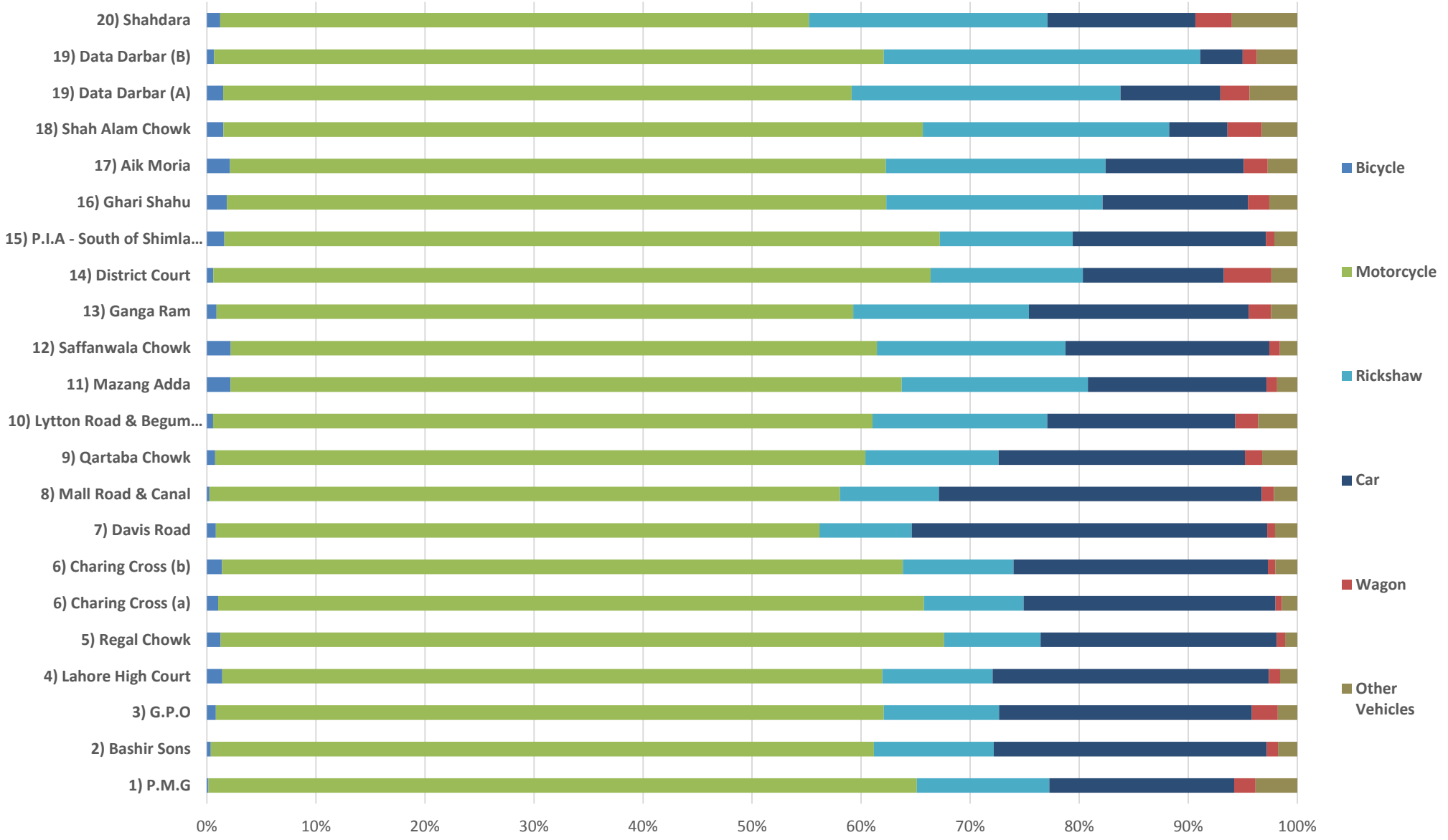


Summary of Traffic Volume per Hour

Sr. No.	Intersection Name	Morning	Mid-day	Afternoon
1	P.M.G	12,693	9,208	12,675
2	Bashir Sons	9,126	10,340	9,722
3	G.P.O	10,852	13,772	12,107
4	Lahore High Court	10,804	12580	11,967
5	Regal Chowk	10,367	12,308	12,603
6-A	Chairing Cross (a)	11,177	12,625	14,071
6-B	Chairing Cross (b)	10,666	14,600	14,896
7	Davis Road	12,409	11,603	14,284
8	Mall Road & Canal	33,328	30,597	33,832
9	Qartaba Chowk	34,496	34,175	33,888
10	Lytton Road & Begum	13,209	13,950	12,794
11	Mazang Adda	5,319	6,237	5,536
12	Saffanwala Chowk	4,869	4,949	5,296
13	Ganga Ram	7,769	9,595	10,941
14	District Court	16,367	20,684	18,298
15	P.I.A - South of Shimla Hill	13,061	12,983	14,518
16	Ghari Shahu	11,357	13,050	11,344
17	Aik Moria	12,016	12385	12,672
18	Shah Alam Chowk	9,949	9,671	10,266
19-A	Data Darbar (A)	6,122	10,239	10,540
19-B	Data Darbar (B)	6,439	9,319	10,009
20	Shahdara	17,115	13,092	17,774

Volume in Vehicle/hour

Modal Share of Study Area Intersections



Identified Issues

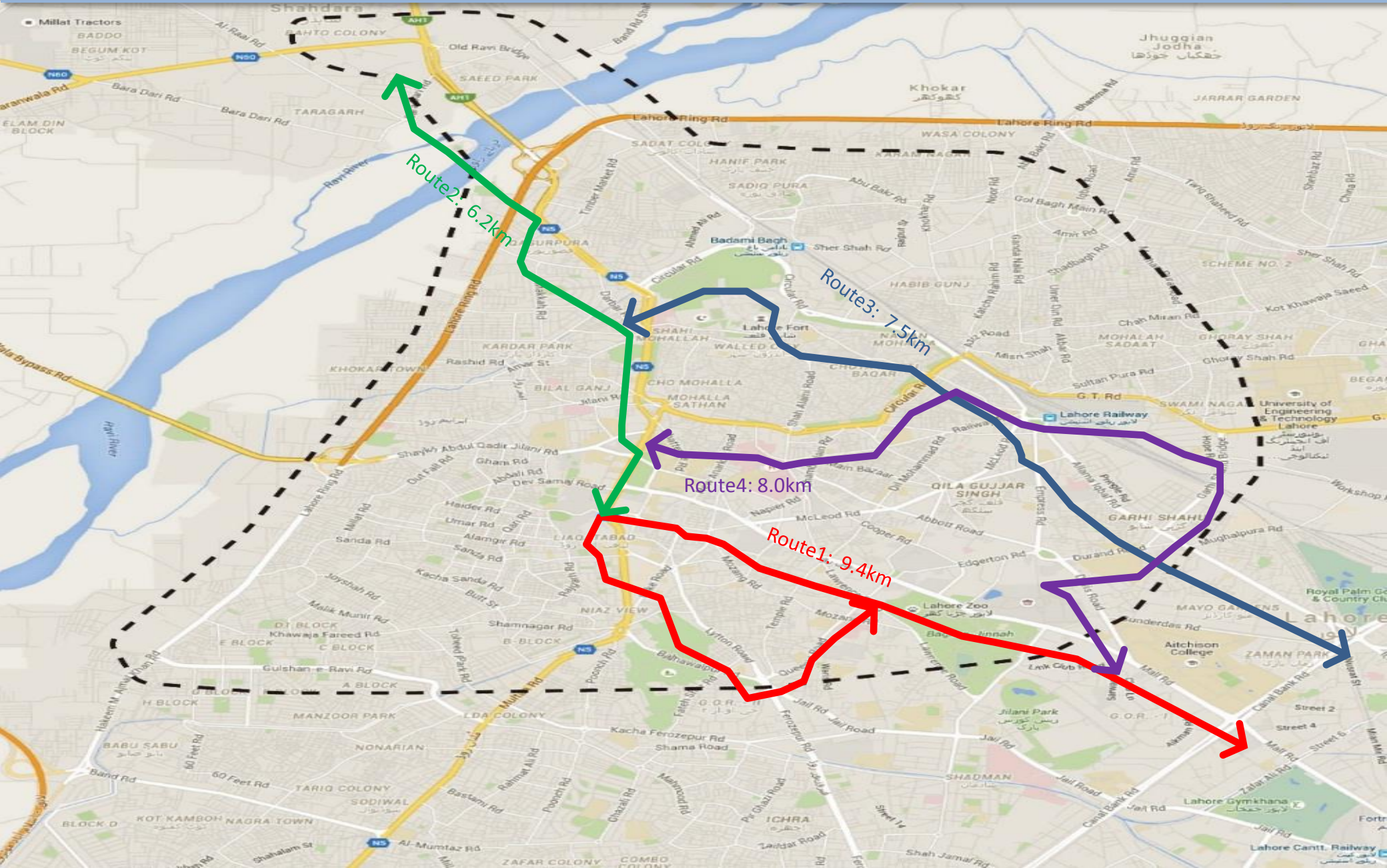
Sr. No.	Intersection Name	Issues
1	P.M.G	On-street parking of Aiwane Adal creates bottlenecks near intersection, Fixed signal phasing
2	Bashir Sons	Very sharp left turning from mall road to jamaludin afghani road, No channelizing for left turning
3	G.P.O	Some traffic data is missing due to orange line construction, No proper channelization of left turning from mall road. Geometry needs to be improved
4	Lahore High Court	Illegal parking and encroachment on fane Road, Very Sharp left turning from mall road to McLeod Road, No service road available adjacent to Lahore High Court
5	Regal Chowk	On-street parking and encroachment on Hall Road, Traffic from service road disturbs main-stream traffic.
6-A	Charing Cross (a)	Frequent traffic jams and road blocks due to strikes and political activities, No channelization for separate left turning
6-B	Charing Cross (b)	Frequent traffic jams and road blocks due to strikes and political activities, No channelization for separate left turning
7	Davis Road	Fixed signal timing, no channelizing islands available for left turning on Press Club road, security barriers installed on G.O.R road
8	Mall Road & Canal	Fixed signal timing, frequent passage of VIP traffic movements
9	Qartaba Chowk	Severe traffic conflicts for straight and turning traffic before and after U-turns, weaving problem, On-street parking on Queens road
10	Lytton-Begum Road	Fixed signal timing, no separate left turning on Begum Road, on-street parking near intersection, geometry needs to be improved
11	Mazang Adda	No separate left turning, encroachment and On-street parking near intersection, fixed signal timing, electric poles present on main road.
12	Saffanwala Chowk	Encroachment and on-street parking creates traffic bottlenecks, fixed signal timing, pedestrian walkways unavailable
13	Ganga Ram	Traffic bottlenecks due to encroachment and On-street Parking of Hospital, geometry needs to be improved
14	District Court	Less number of lanes on Saggian Bypass Side.
15	Shimla Hill	Geometry needs to be improved.
16	Ghari Shahu	Geometry needs to be improved, less number of lanes, insufficient median width, wrong turning of motorcyclists creates traffic conflicts
17	Aik Moria	Geometry needs to be improved, illegal Qing qi stops, luggage carrying hand driven carts create problems, On-street parking
18	Shah Alam Chowk	Traffic bottlenecks due to encroachment and On-street Parking, geometry needs serious improving near intersection.
19-A	Data Darbar (A)	Intersection narrowing due to shops and encroachment, high volume of pedestrian traffic creates bottlenecks and delays for vehicles
19-B	Data Darbar (B)	On-street parking of cinqs and placement of bus-stop near intersection creates severe traffic problems.
20	Shahdara	Grade separation (flyover or underpass) must be provided, geometry needs to be improved, parking and encroachment problems

TRAVEL SPEED SURVEY ANALYSIS

Routes for Travel Speed Surveys

- Route 1 (From Mall-Canal Crossing to Faisal Chowk via Mall Road, Lytton Road, Qartaba Chowk and Queens road)
- Route 2 (From Civil Secretariat to Shahdara Morr)
- Route 3 (From Dharampura Bridge to Azadi Chowk via Allama Iqbal road)
- Route 4 (From Davis Road Chowk to Bhatti Chowk via Shimla Hill, Gharhi Shahu, cooper store, Do Moria, Circular Road, shah alami and anarkali)

Route for Travel Speed Survey

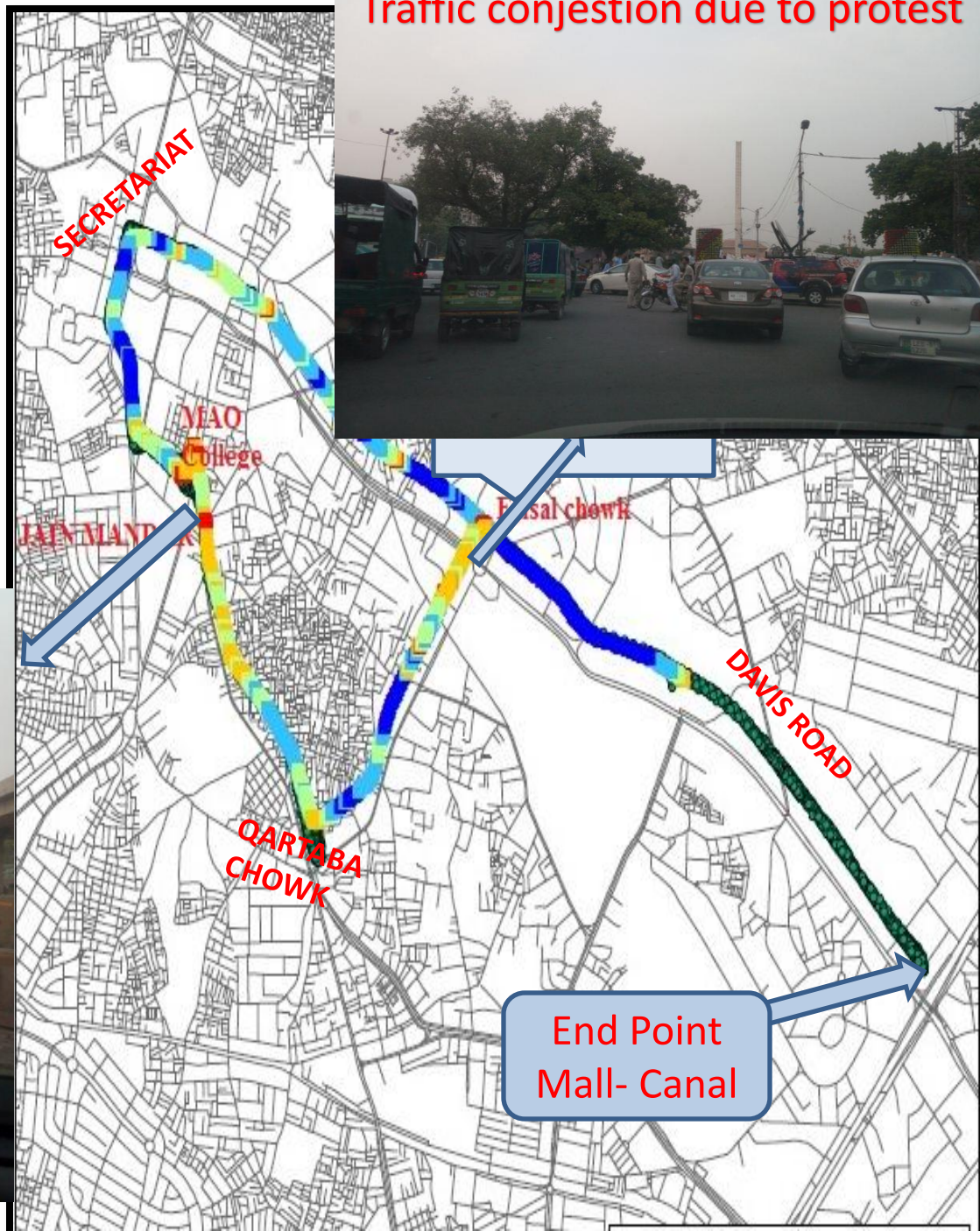


Survey Schedule

- ✓ Morning (3 Runs for each round trip)
- ✓ Noon (2 runs for each round trip)
- ✓ Evening (2 runs for each round trip)

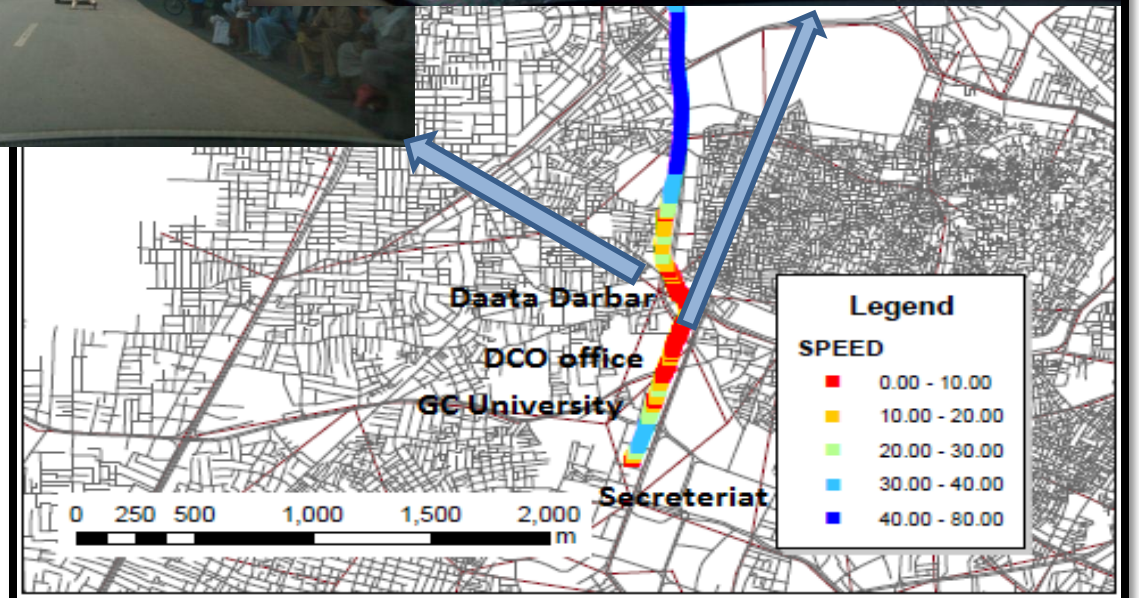
Route 1: Morning Scenario

- Direction 1 (From Faisal Chowk to Mall-Canal Crossing)



Route 2: Afternoon Scenario

- Direction 1 (from Secretariat to Shahdara Moor)

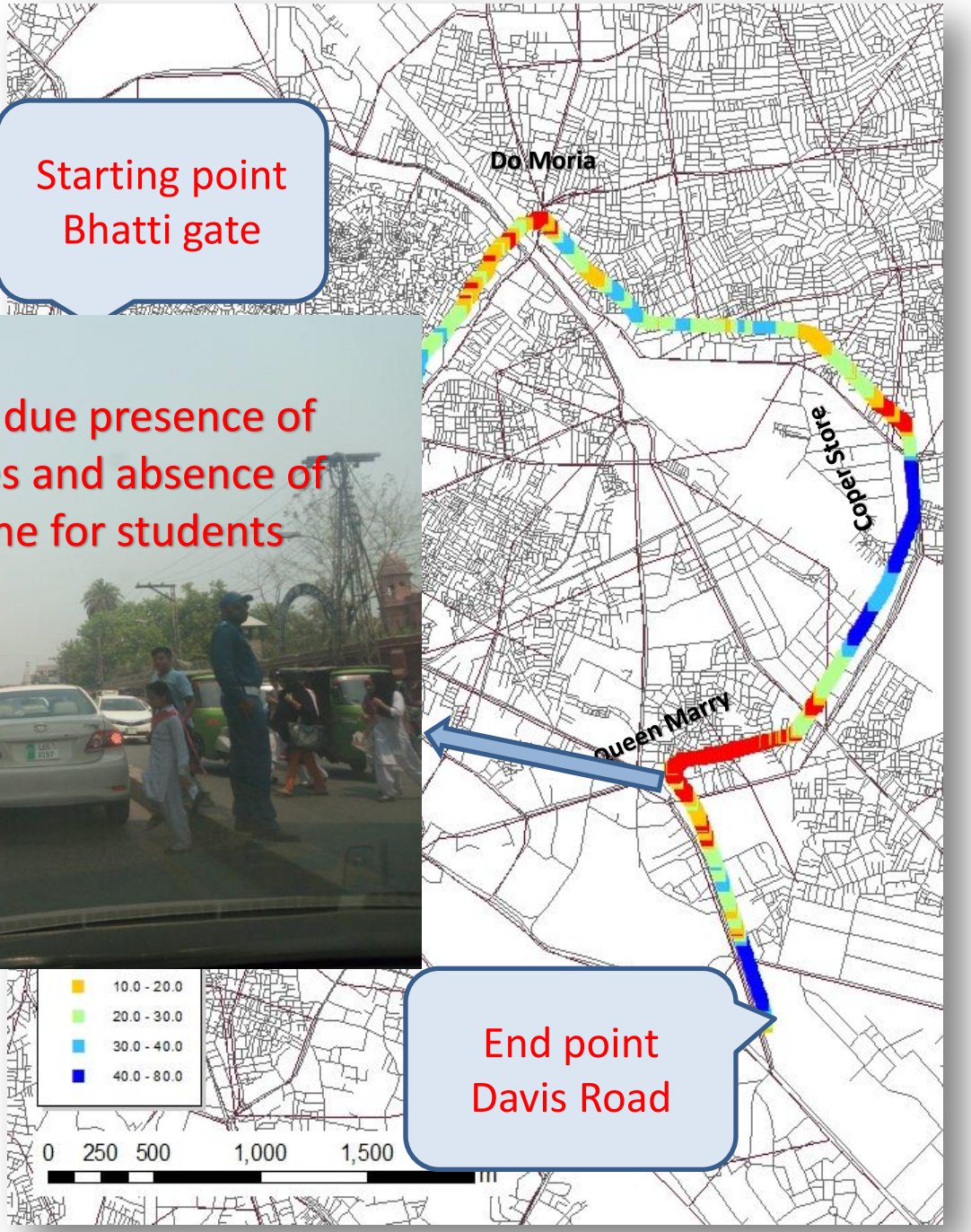


Route 3 : Noon Scenario

- Direction 1 (Azadi Chowk to Dharampura)

Route 4: Noon Scenario

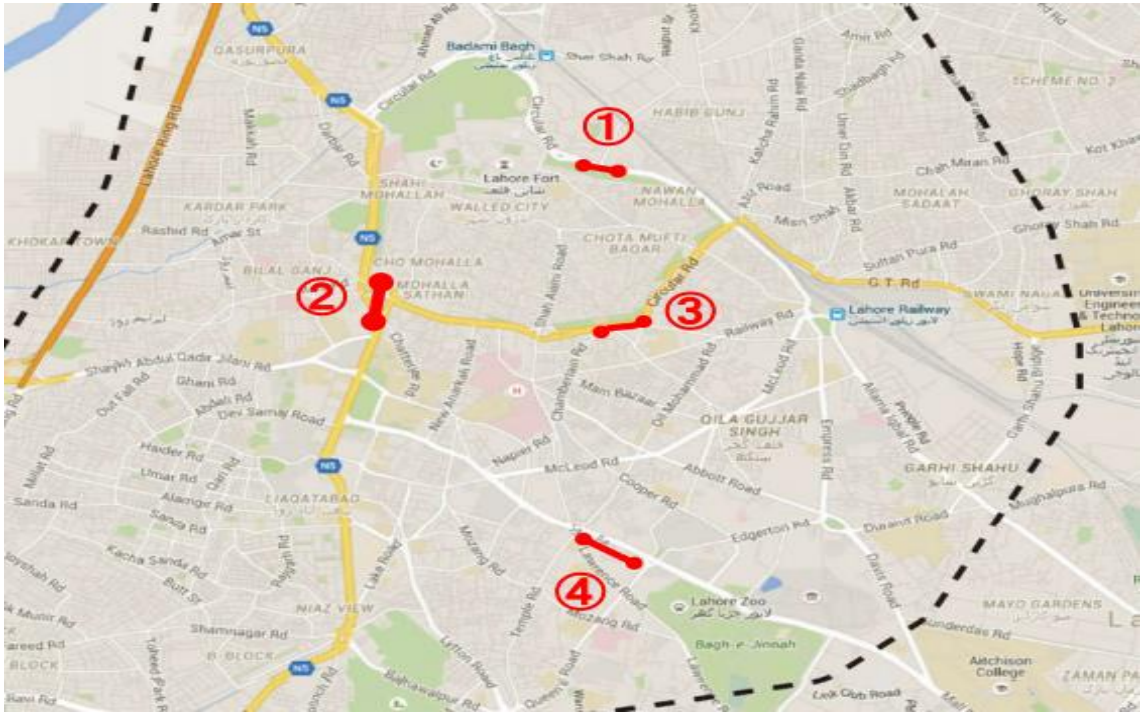
- Direction 1 (From Bhatti gate to Davis Road)



PARKING SURVEY ANALYSIS

Parking Survey

- Counting number of parking at 4 locations
  - ① **Kashmiri Gate**
  - ② **Darbar**
  - ③ **Mochi Gate**
  - ④ **Mall Road**



Parking Survey

The Project on Improvement of Traffic Management Capacity in Lahore Central Area in Islamic Republic of Pakistan

Surveyor:

Location No.:

Section No.:

Date: (dd/mm/yy)

Start Time: (hour:minuite)

Direction Map North

Time	Number of Parking by Vehicle Type					Remarks
	Motor -cycle	Rickshaw, Qingqi	Car	Truck	Others	
8:00 - 8:30						
8:30 - 9:00						
9:00 - 9:30						
9:30 - 10:00						
10:00 - 10:30						
10:30 - 11:00						
11:00 - 11:30						
11:30 - 12:00						
12:00 - 12:30						
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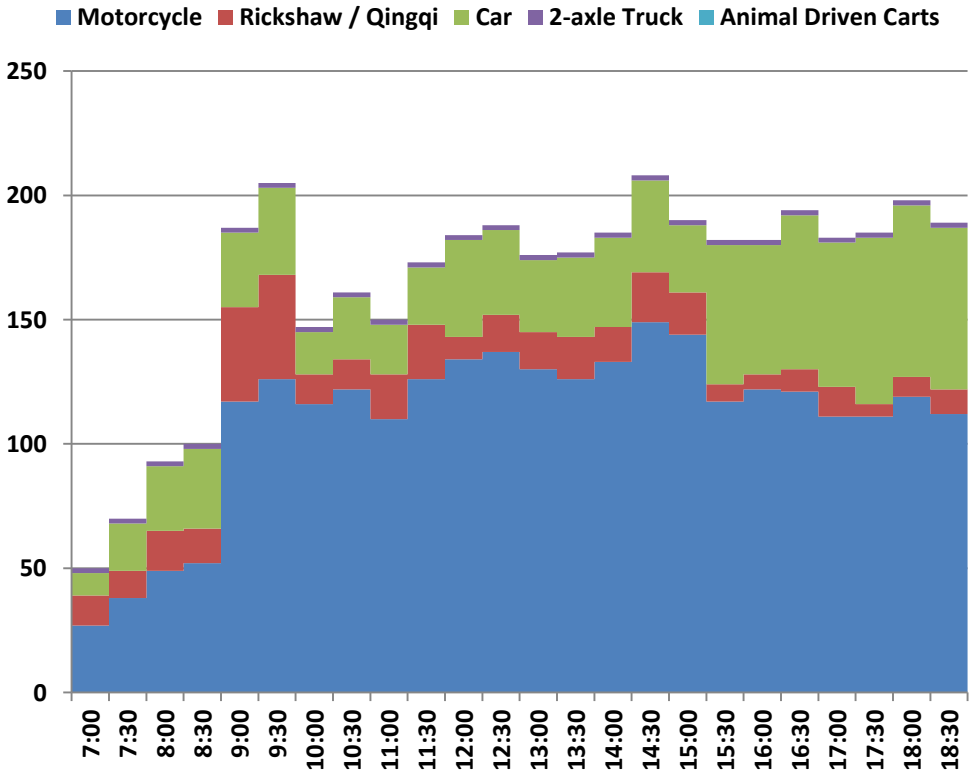
16:00 - 16:30						
16:30 - 17:00						
17:00 - 17:30						
17:30 - 18:00						
18:00 - 18:30						
18:30 - 19:00						
19:00 - 19:30						
19:30 - 20:00						

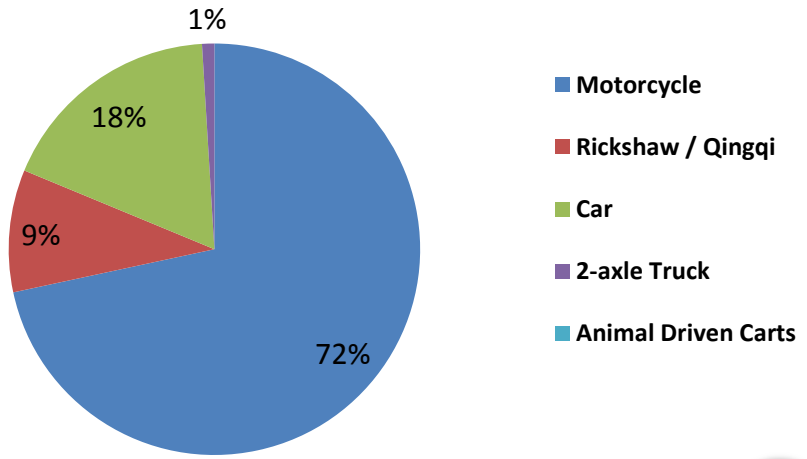
Parking at Kashmiri Gate

- Number of maximum parking is 208, almost capacity.
- Average occupancy is 79% from 7:00 to 19:00
- Peak time is 14:30, 72% is motorcycle
- This is an on Street Parking



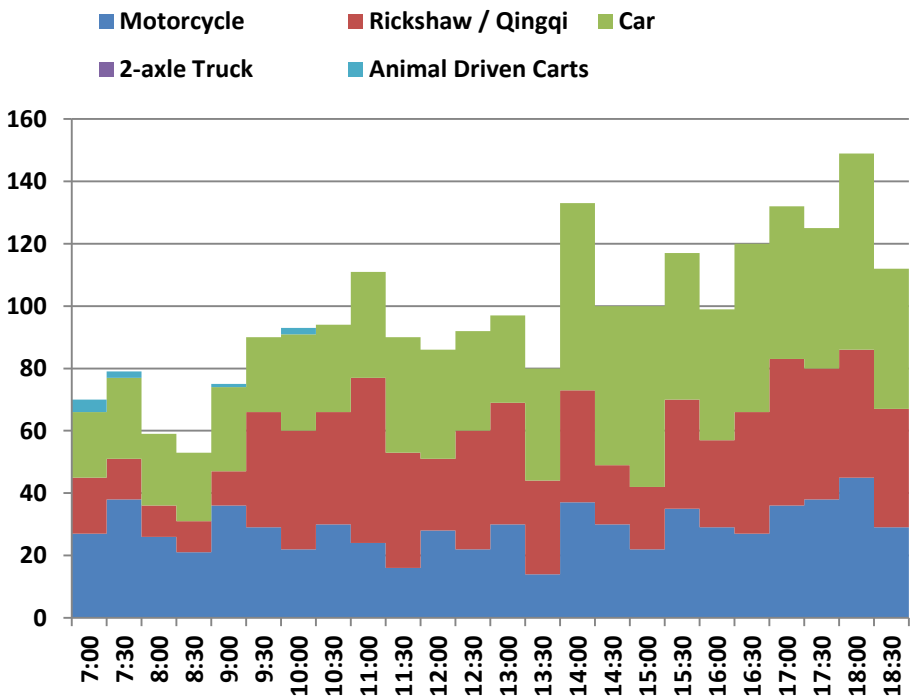
Parking Site - 1

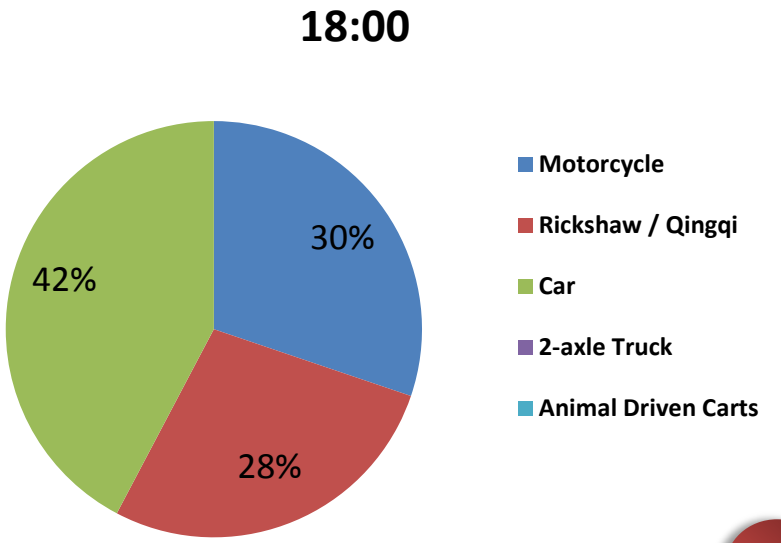
14:30



Parking at Darbar

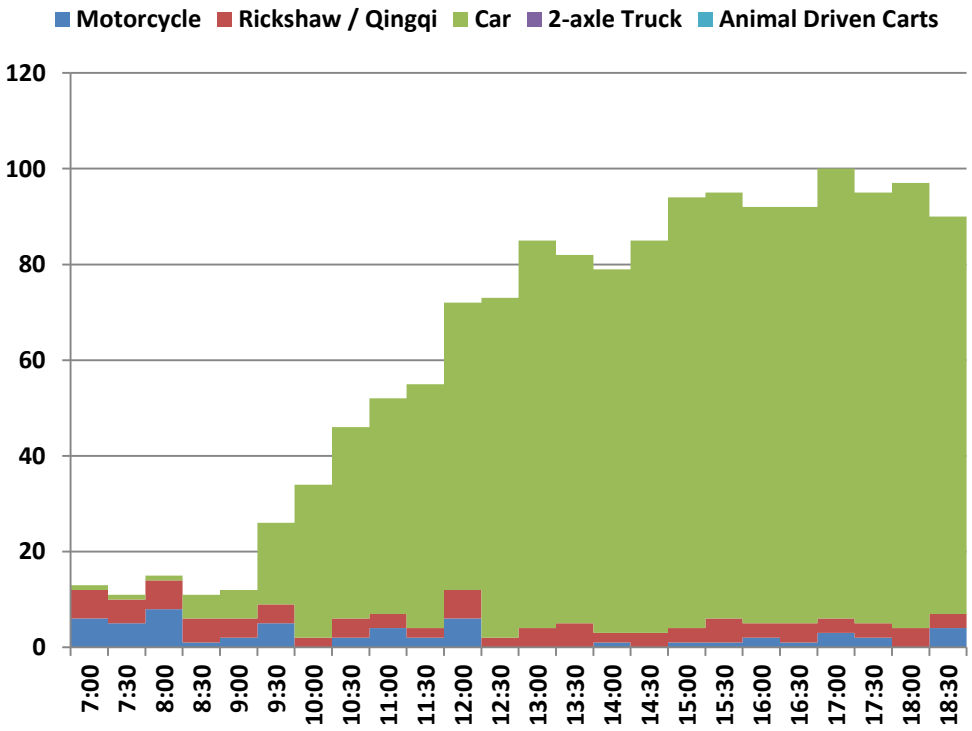
- Number of maximum parking is 149, almost capacity.
- Average occupancy is 66% from 7:00 to 19:00
- Peak time is 18:00, 42% is car, 30 % is motorcycle

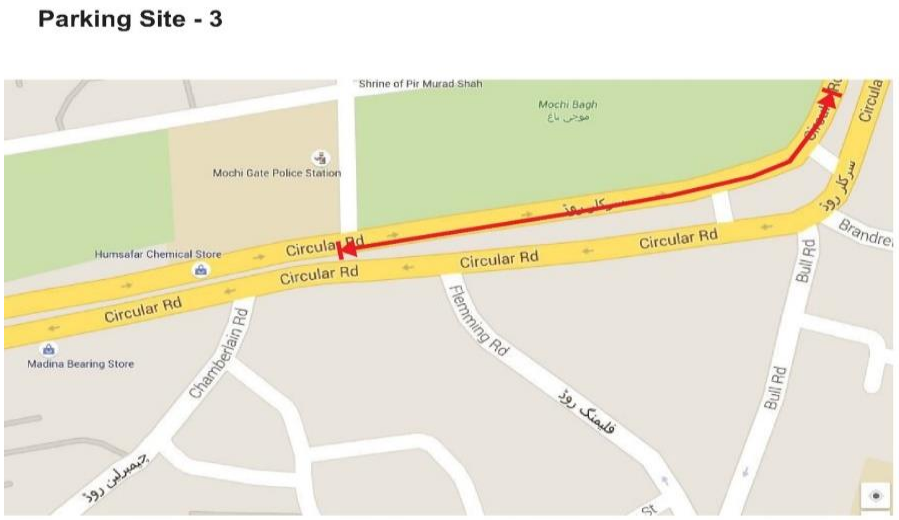


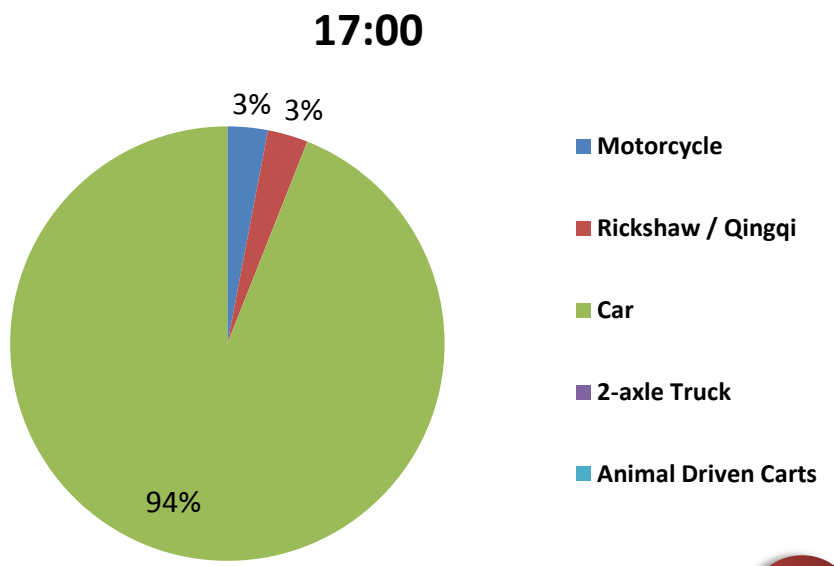


Parking at Mochi Gate

- Number of maximum parking is 100, almost capacity.
- Average occupancy is 63% from 7:00 to 19:00
- Peak time is 17:00, 94% is car.
- On Street Parking

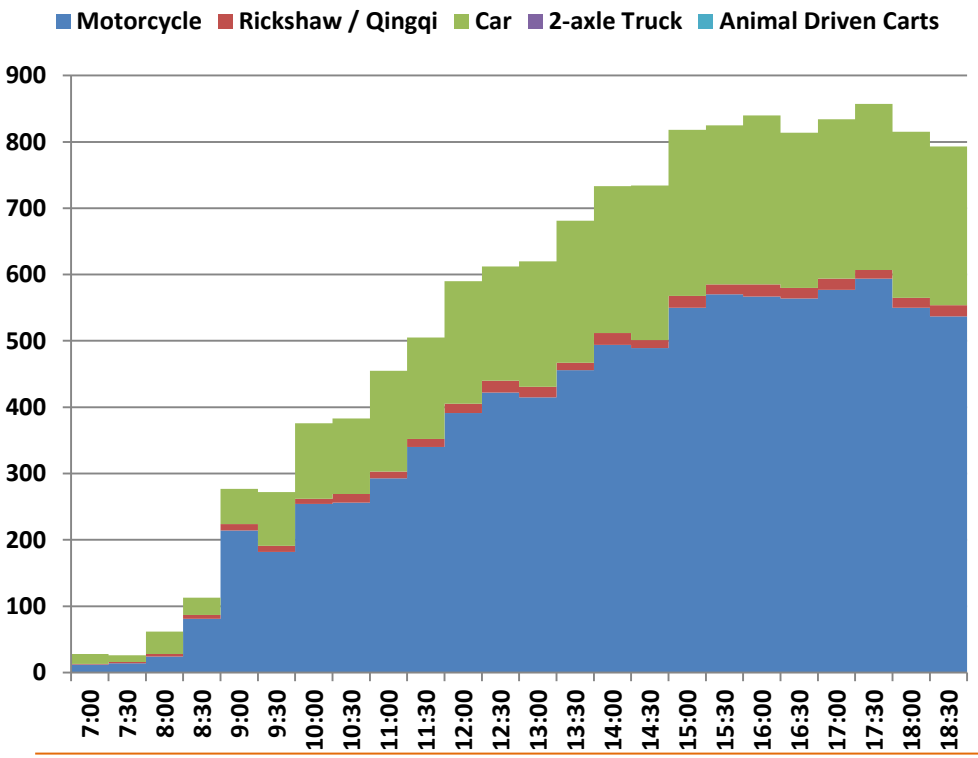




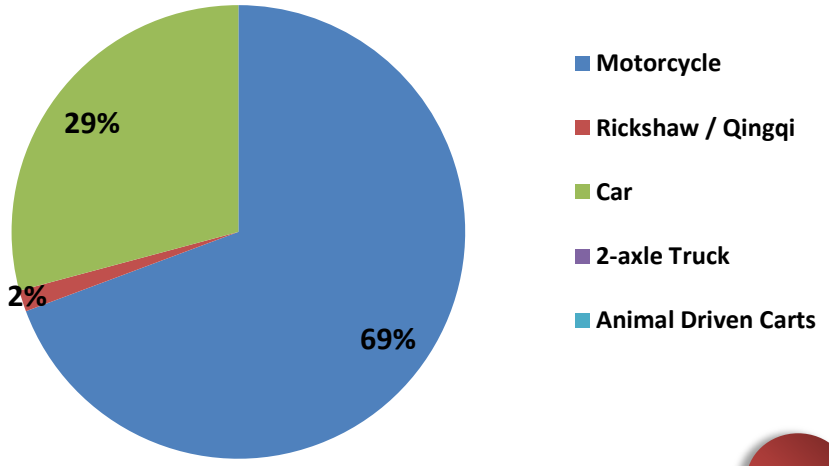


Parking at Mall Road

- Number of maximum parking is 857, almost capacity.
- Average occupancy is 64% from 7:00 to 19:00
- Peak time is 17:30, 69% is motorcycle.
- Parking is Done on Service Road



17:30



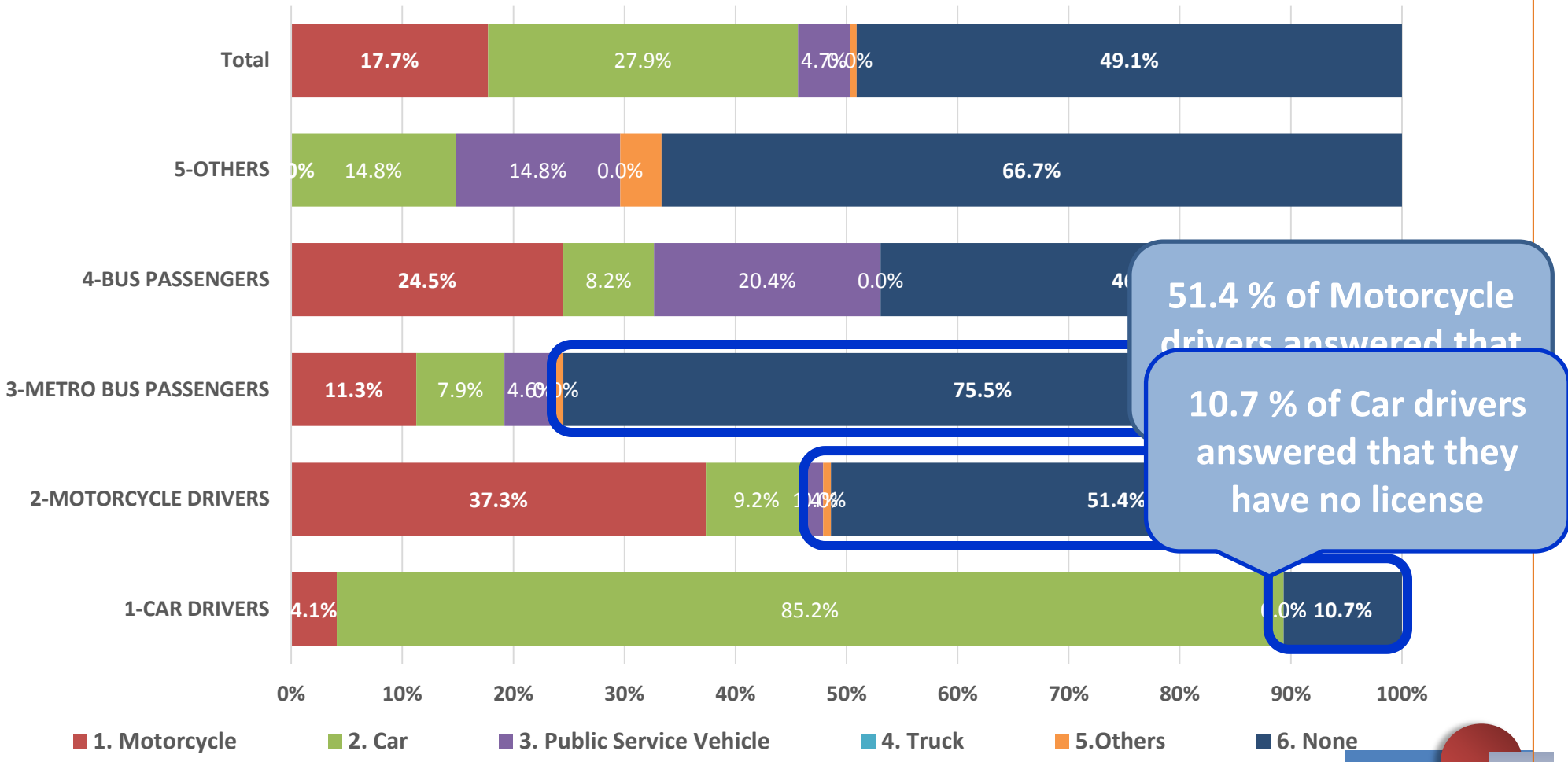
TDM SURVEY ANALYSIS

Overview of TDM Interview Survey

Respondents	Sample No.
Motorcycle Drivers	141
Car Drivers	122
Public Transport Users (BRT)	152
Public Transport Users Bus Stop / Terminal	48
Other	27
Total	**490**

Trip Characteristics

Q. Do you have a driving license?



Traffic Management Measures

Q. Please assess the traffic conditions from the following aspects ?

☐1.Very Bad, ☐ 2.Bad, ☐ 3.Average, ☐ 4.Good, ☐5.Very Good

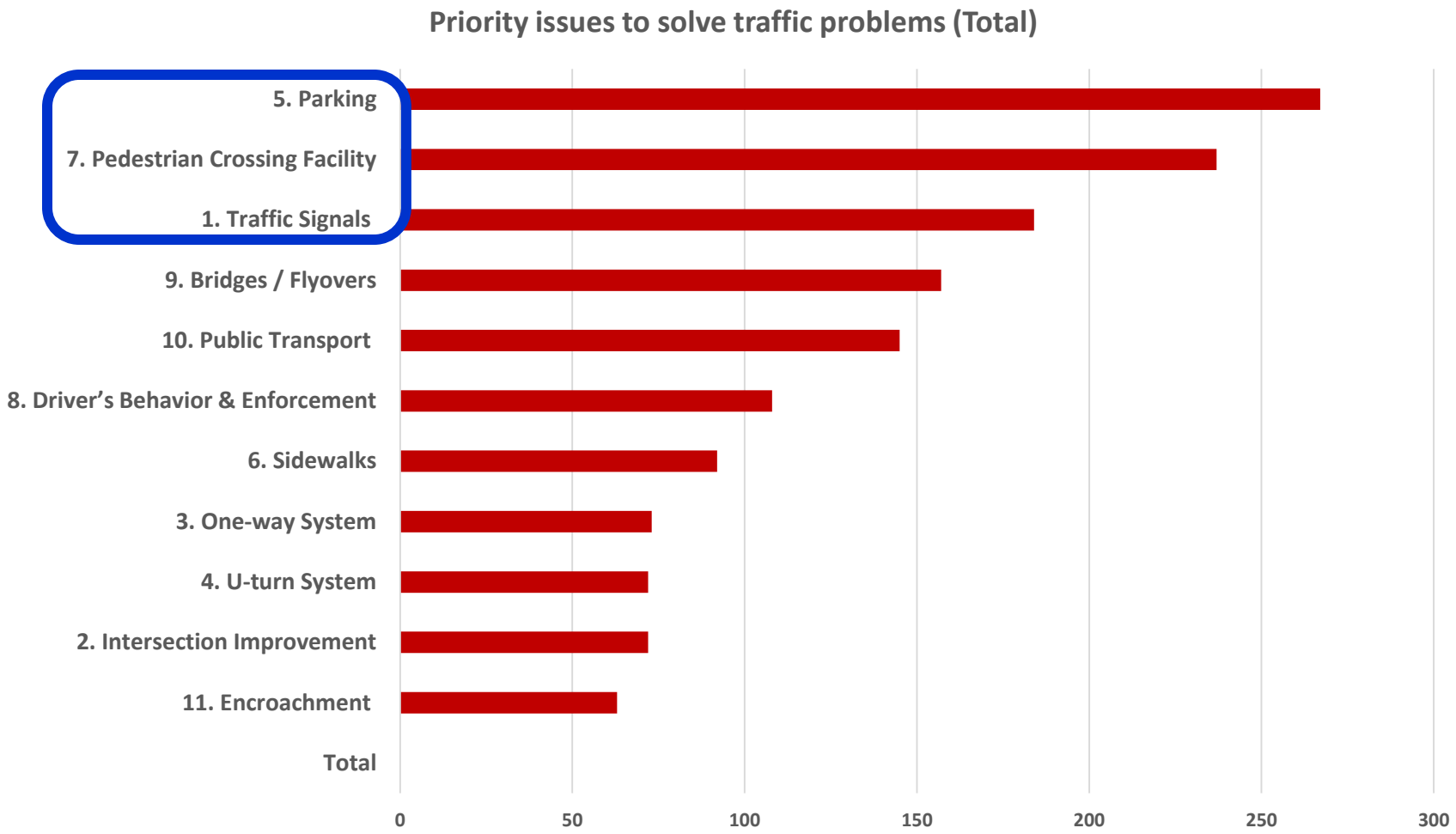
Average score of 5-point evaluation is as follows:

Low evaluation of pedestrian Crossing facilities.

	1-CAR DRIVERS	2-MOTORCYCLE DRIVERS	3-METRO BUS PASSENGERS	4-BUS PASSENGERS	5-OTHERS	TOTAL
A. Traffic Signal Operation	3.12	3.20	3.10	3.13	3.48	3.16
B. Traffic Signs and Road Markings of Intersections	3.27	3.30	3.35	3.56	3.50	3.34
C. Geometric Design of Intersections	2.89	2.95	3.16	2.95	3.19	3.01
D. One-way System	2.69	2.66	2.71	2.51	1.96	2.63
E. U-turn System	3.10	2.88	3.14	3.23	3.12	3.06
F. Signal Free Corridor	3.62	3.04	2.76	2.71	2.58	3.05
G. Parking Supply & Enforcement	2.08	2.14	2.63	2.98	2.70	2.38
H-1 Sidewalk Condition	2.52	2.40	2.99	3.05	3.00	2.71
H-2 Public Transport	3.02	2.58	3.03	3.16	3.11	2.91
I. Pedestrian Crossing Facility (Supply, Operation, Condition)	2.23	2.03	1.90	2.10	2.00	2.04
J. Drivers' Behavior	2.25	2.13	2.22	2.33	2.41	2.22
K. Enforcement of traffic rules & regulations	2.25	2.34	2.49	2.86	2.93	2.44

Traffic Management Measures

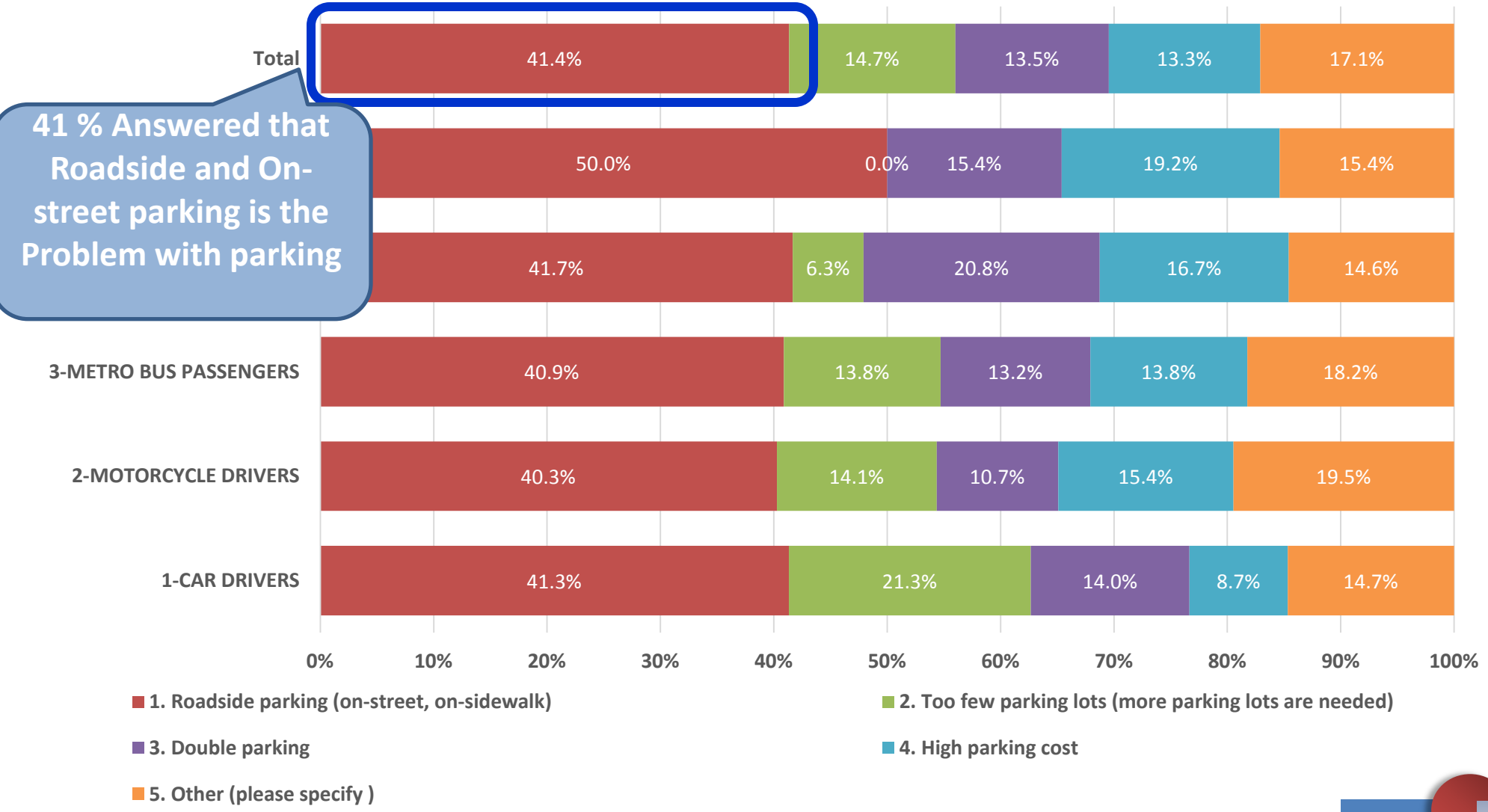
Please choose the three (3) priority issues to solve traffic problems in Lahore central area.



Traffic Management Measures

What do you think is the problem of the Parking? (choose that apply)

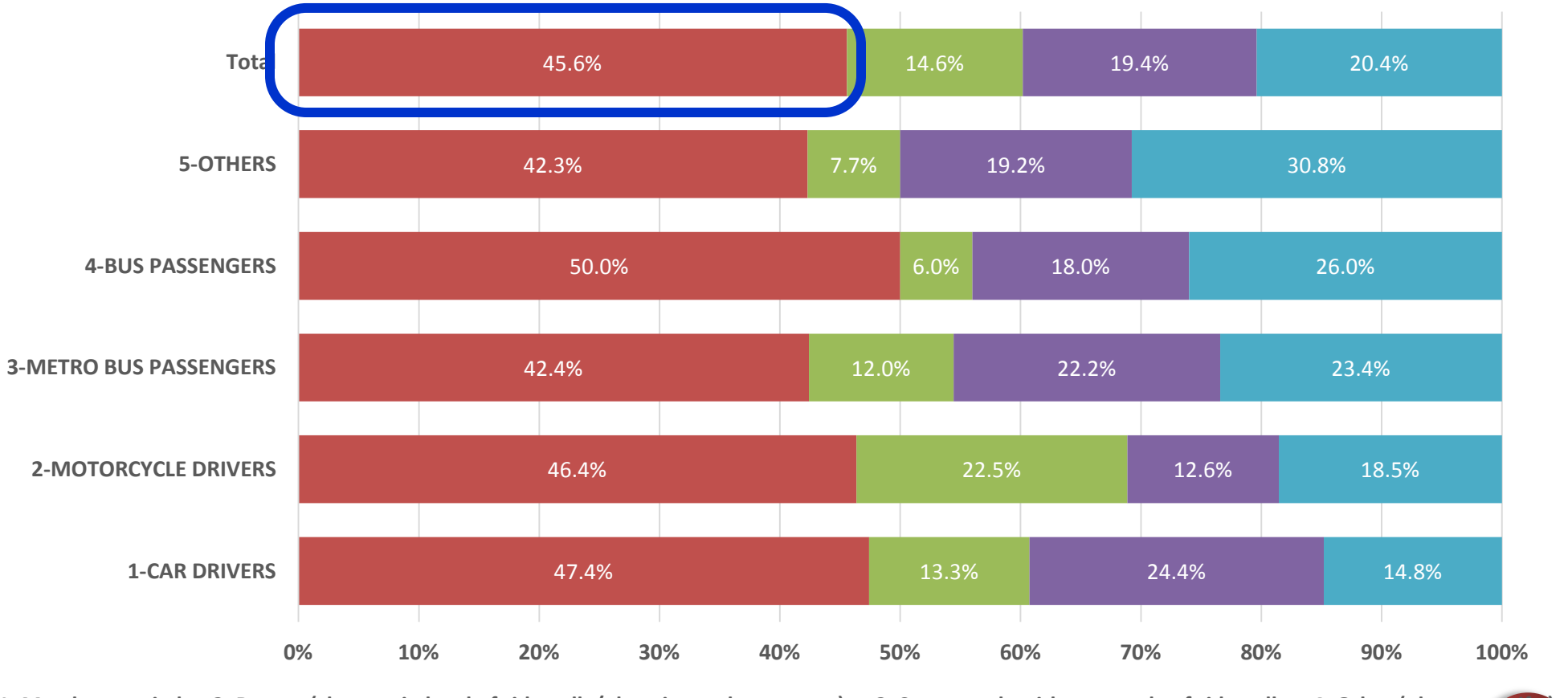
41 % Answered that Roadside and On-street parking is the Problem with parking



Traffic Management Measures

Q. What do you think is the problem of Side Walks?

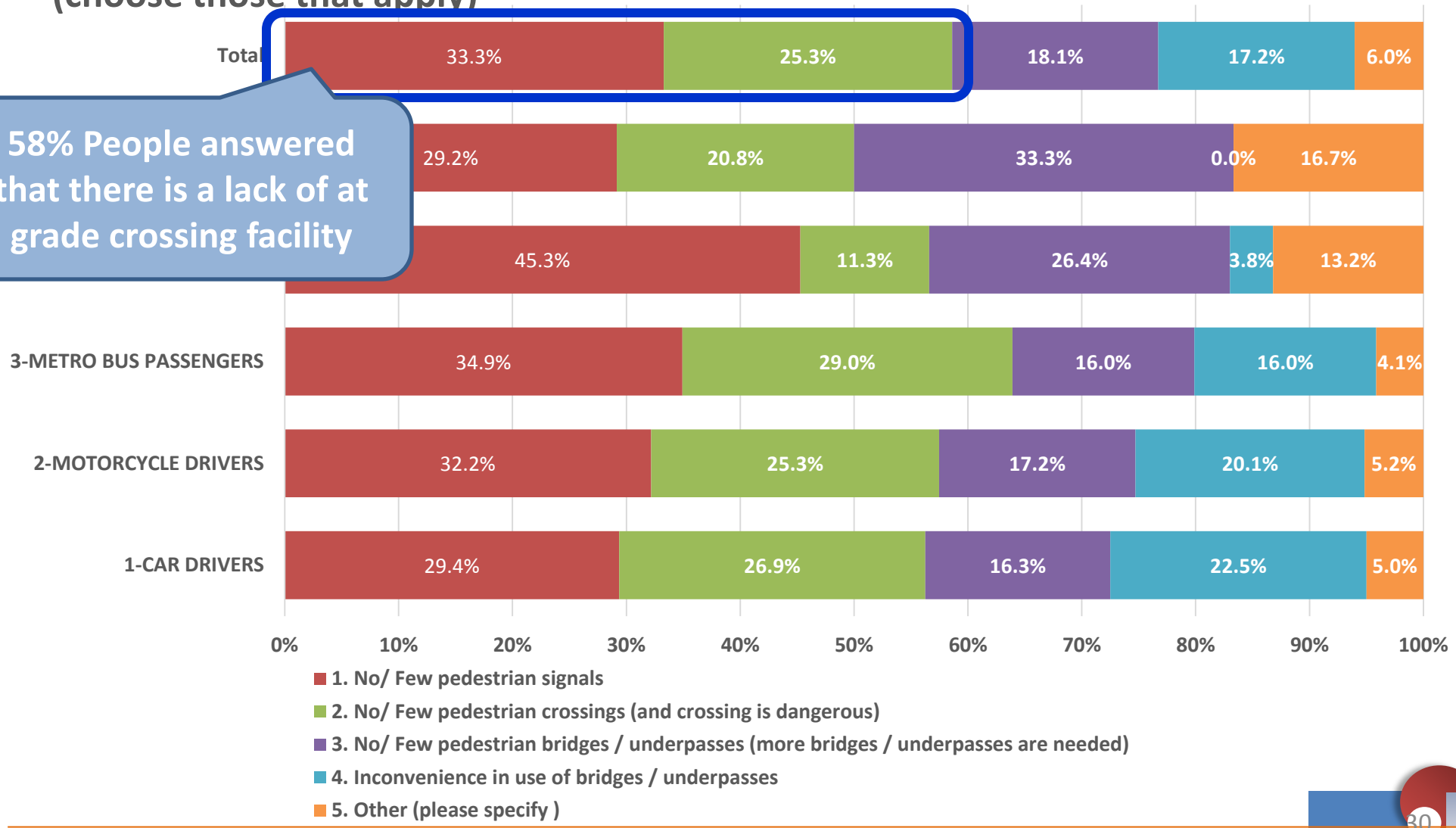
About 50% of respondents answered “Mostly occupied”.



Traffic Management Measures

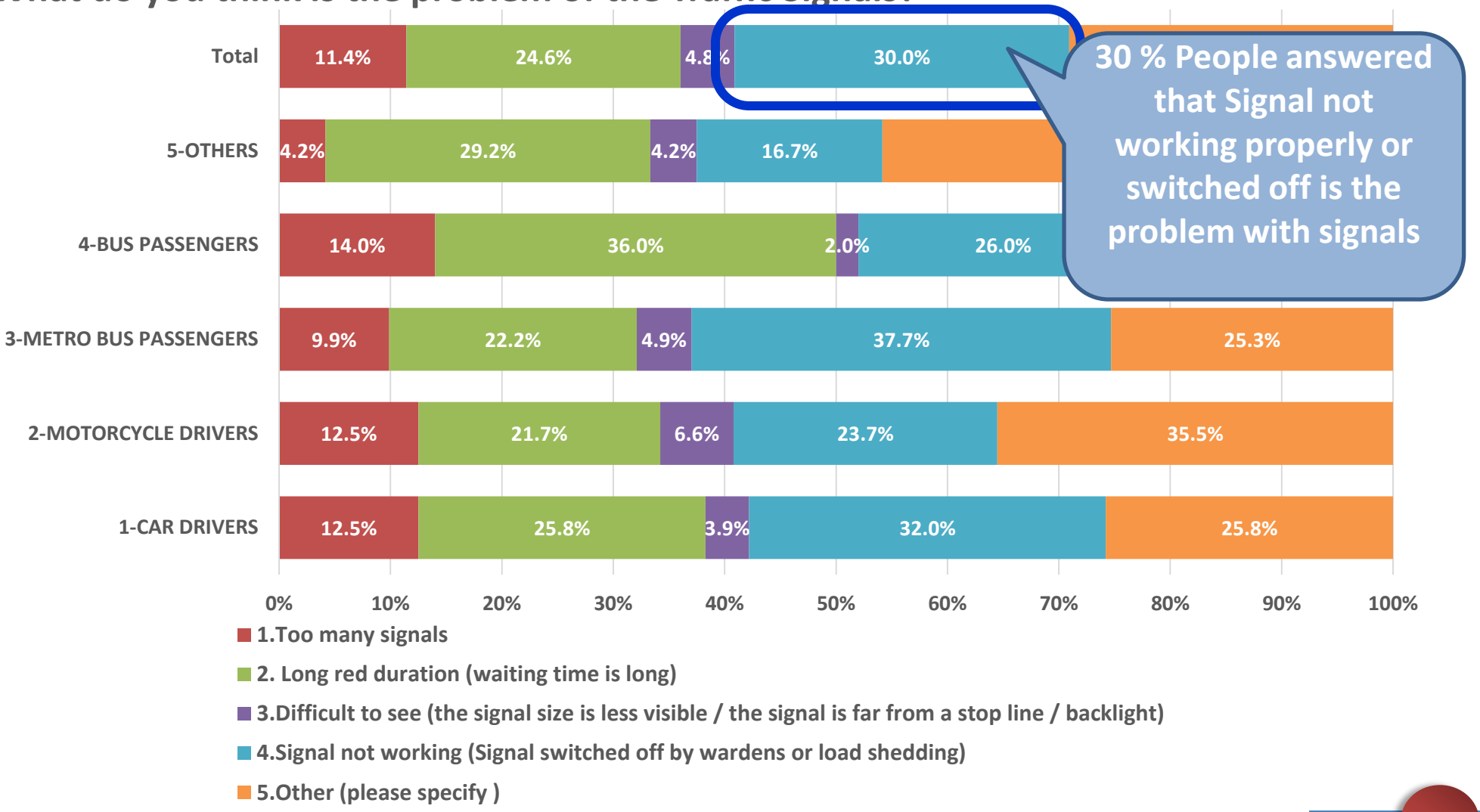
What do you think is the problem of the Pedestrian Crossing Facility? (choose those that apply)

58% People answered that there is a lack of at grade crossing facility



Traffic Management Measures

What do you think is the problem of the Traffic Signals?

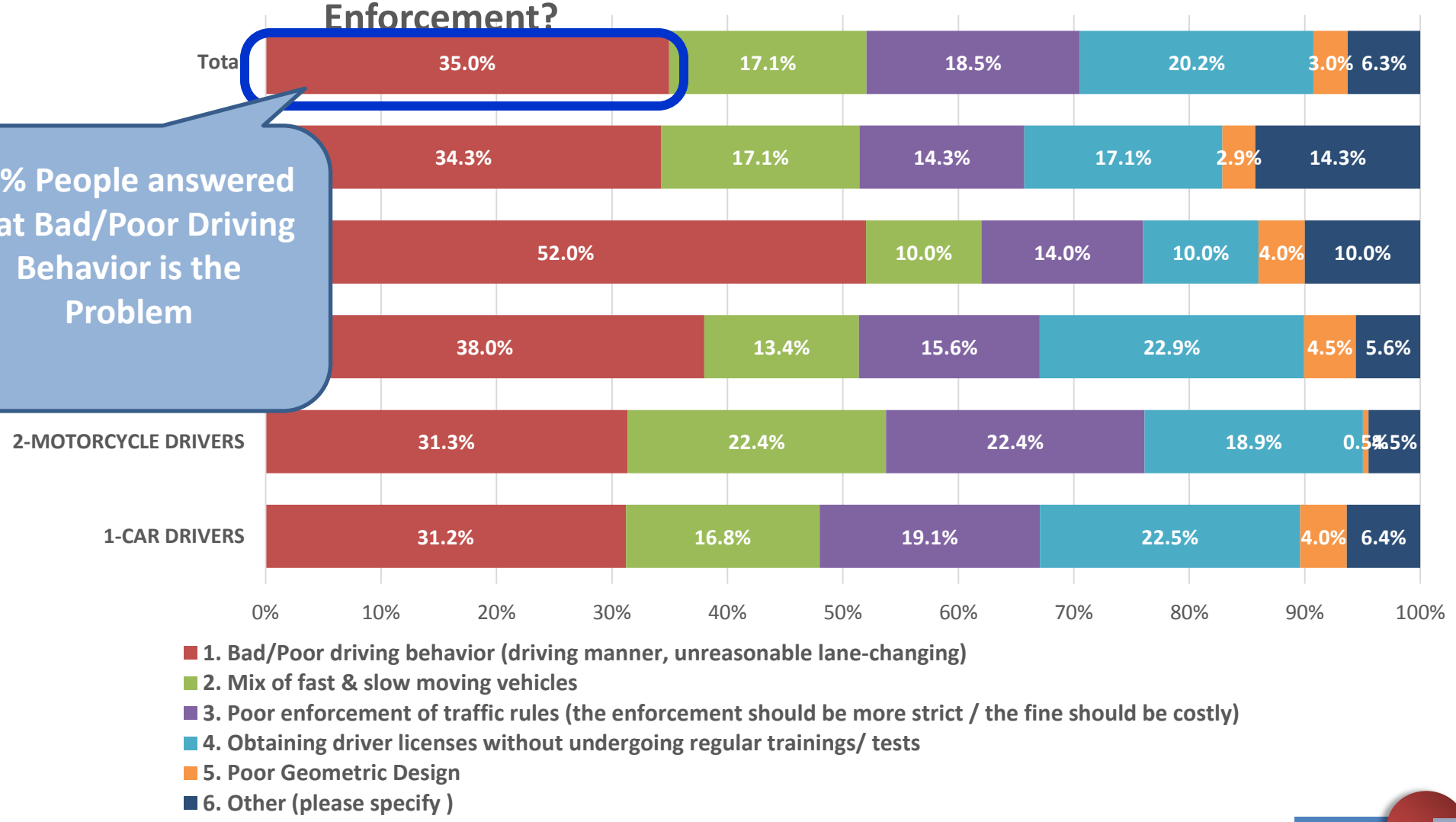


30 % People answered that Signal not working properly or switched off is the problem with signals

Traffic Management Measures

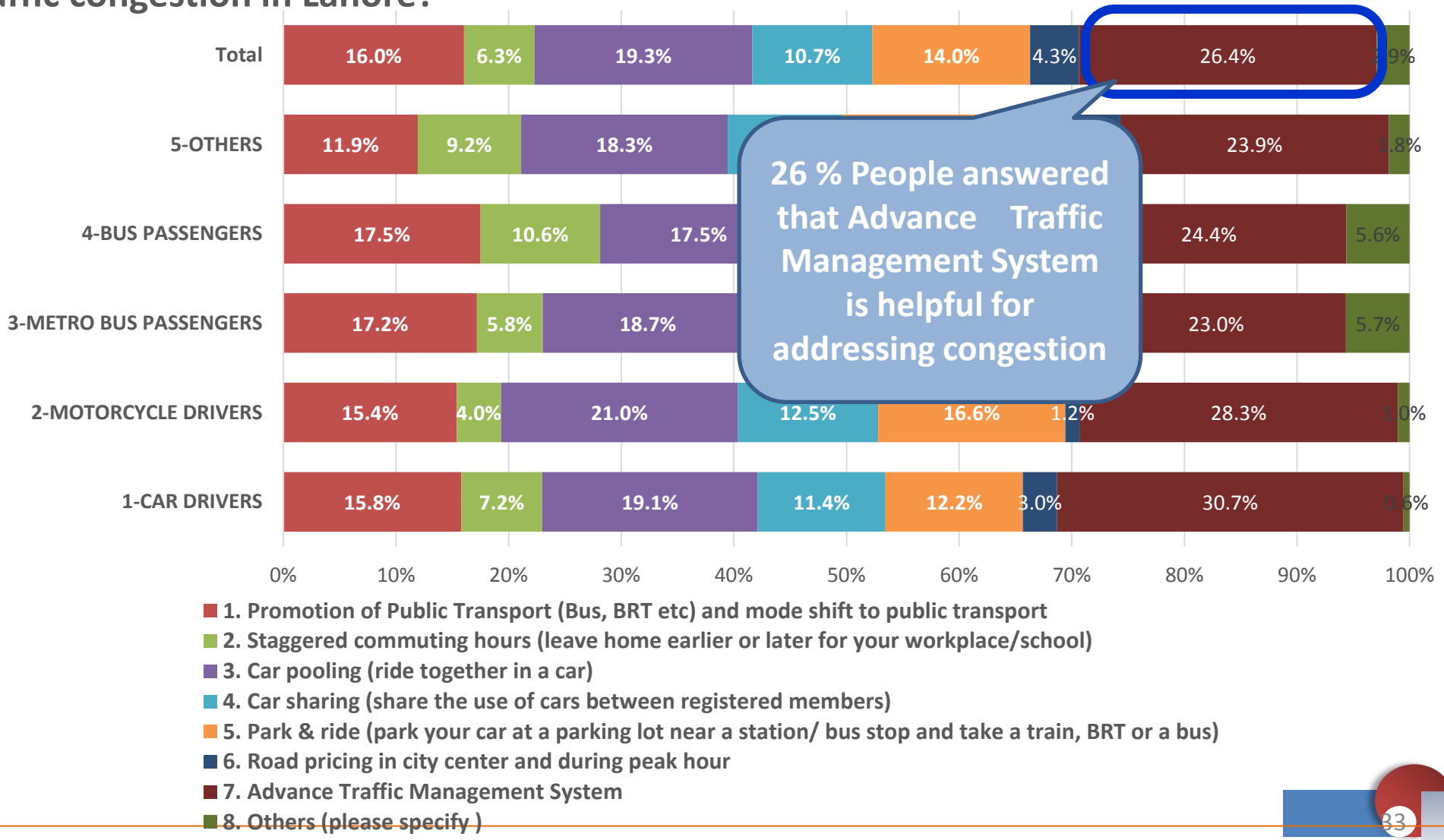
What do you think is the problem of the Drivers' Behavior & Enforcement?

35% People answered that Bad/Poor Driving Behavior is the Problem



Traffic Management Measures

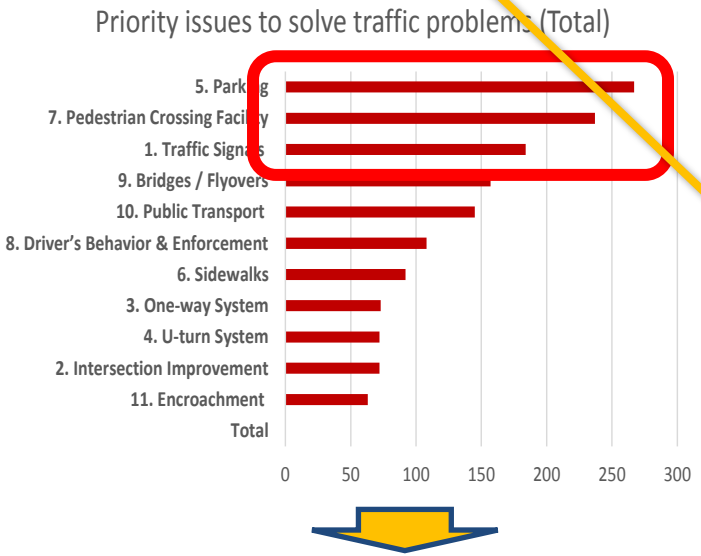
Please choose the measures which you think are helpful for addressing traffic congestion in Lahore?



Summary

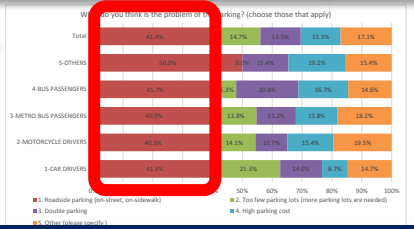
--- Key Issue ---

- ✔ Parking
- ✔ Pedestrian Crossing Facility
- ✔ Traffic Signals



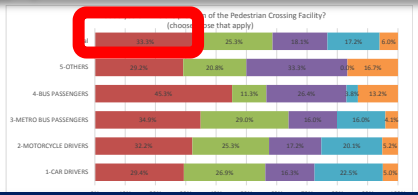
To the Pilot Project…

Parking: "Roadside parking" is problem.

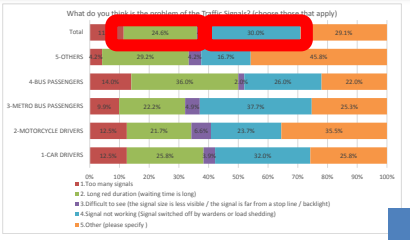


Pedestrian Crossing Facility:

"No/ Few pedestrian At-grade crossings".

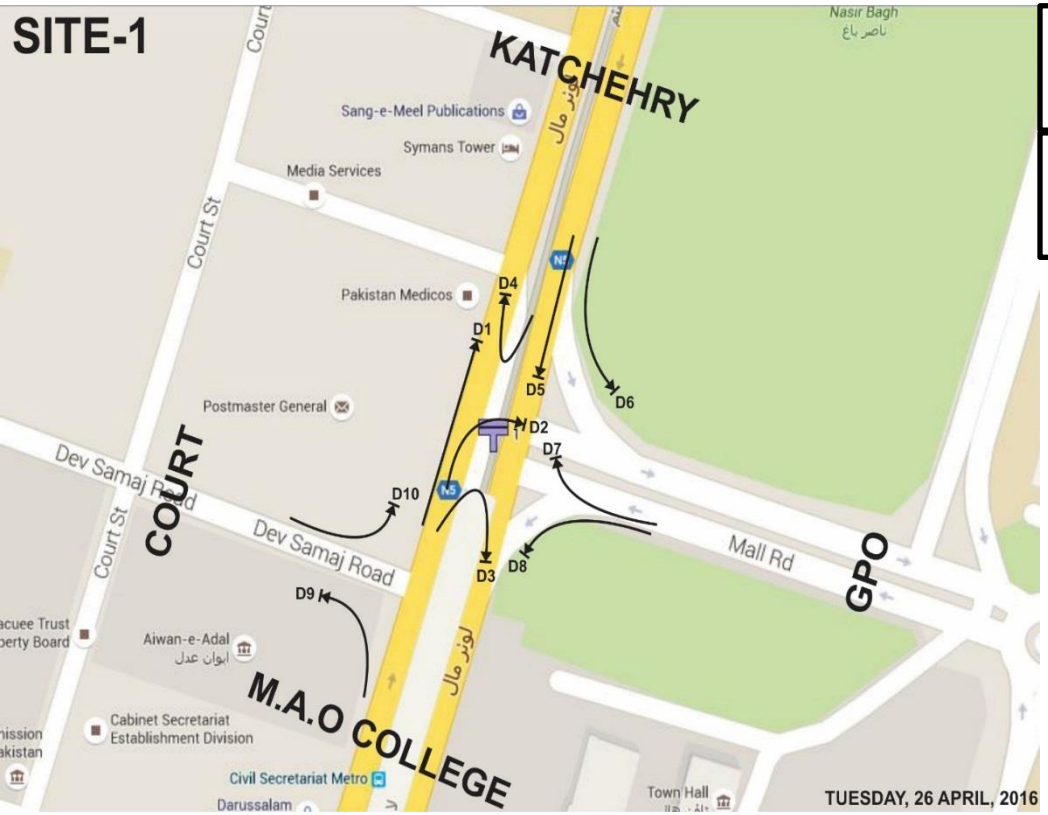


Traffic Signals: "Signal not working properly"

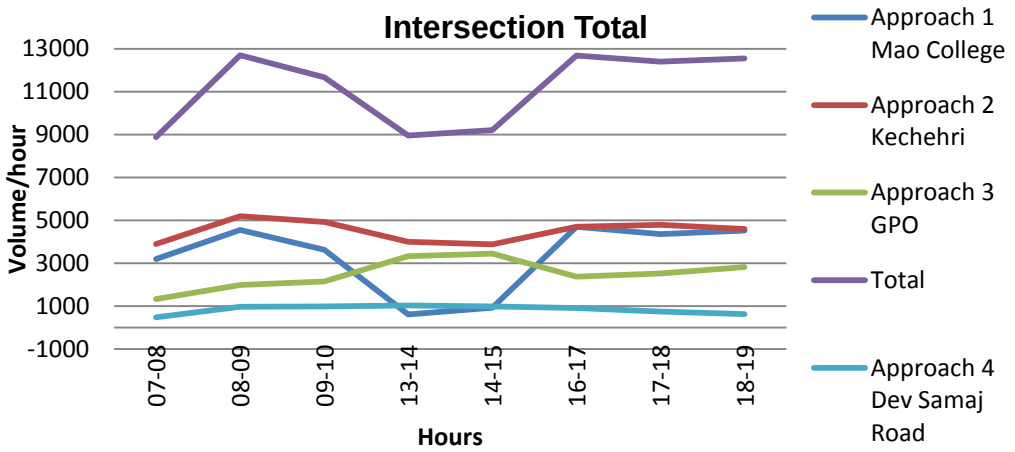


Thank you

Site # 1 PMG Chowk



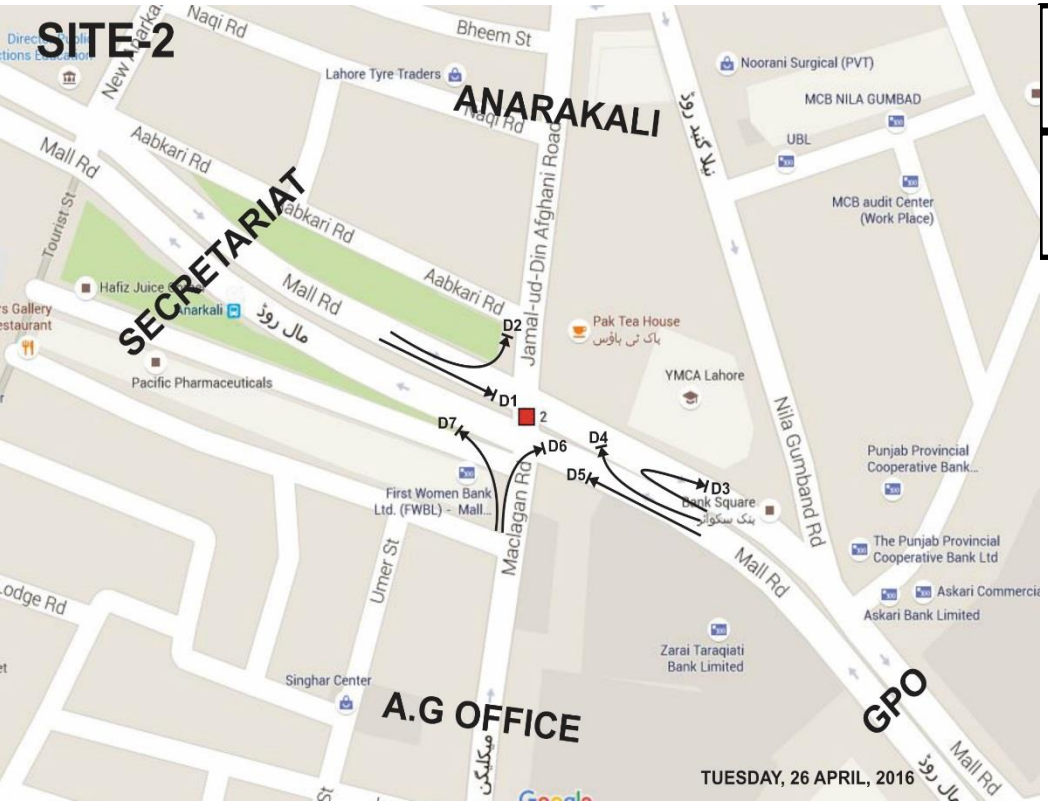
Peak Hour	08-09 am
Peak Hour Volume	12,693



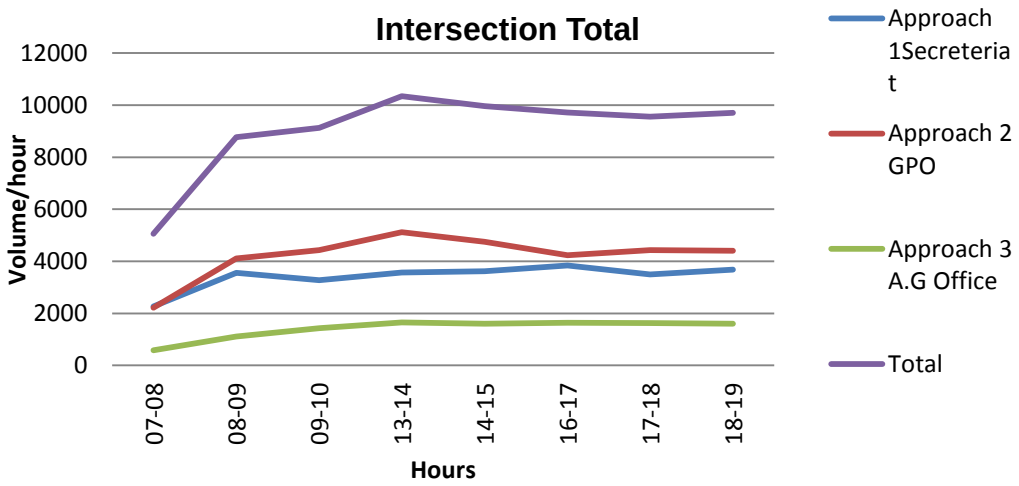
IDENTIFIED ISSUES

On-street parking of Aiwane Adal creates bottlenecks near intersection, Fixed signal phasing

Site # 2 Bashir Sons



Peak Hour	01-02 pm
Peak Hour Volume	10,340

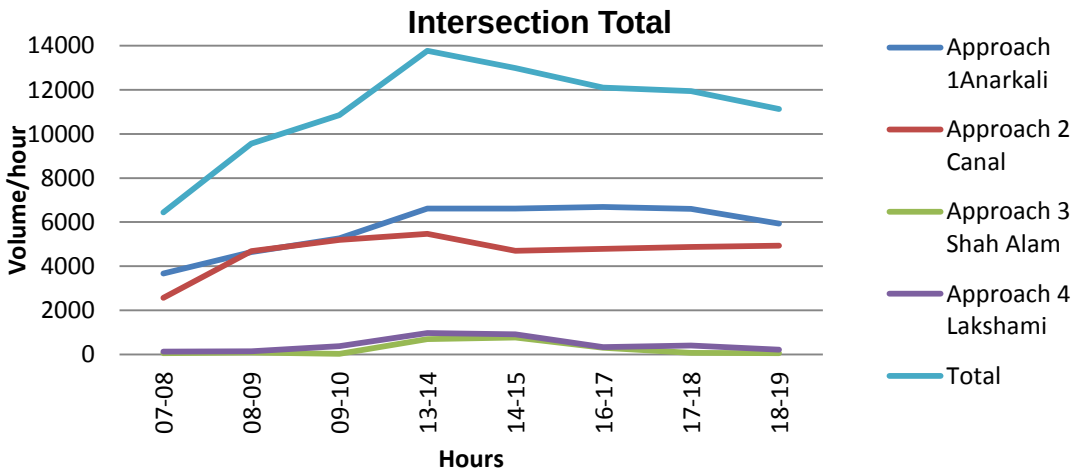


IDENTIFIED ISSUES

Very sharp left turning from mall road to jamaludin afghani road, No channelizing for left turning

Site # 3 G.P.O

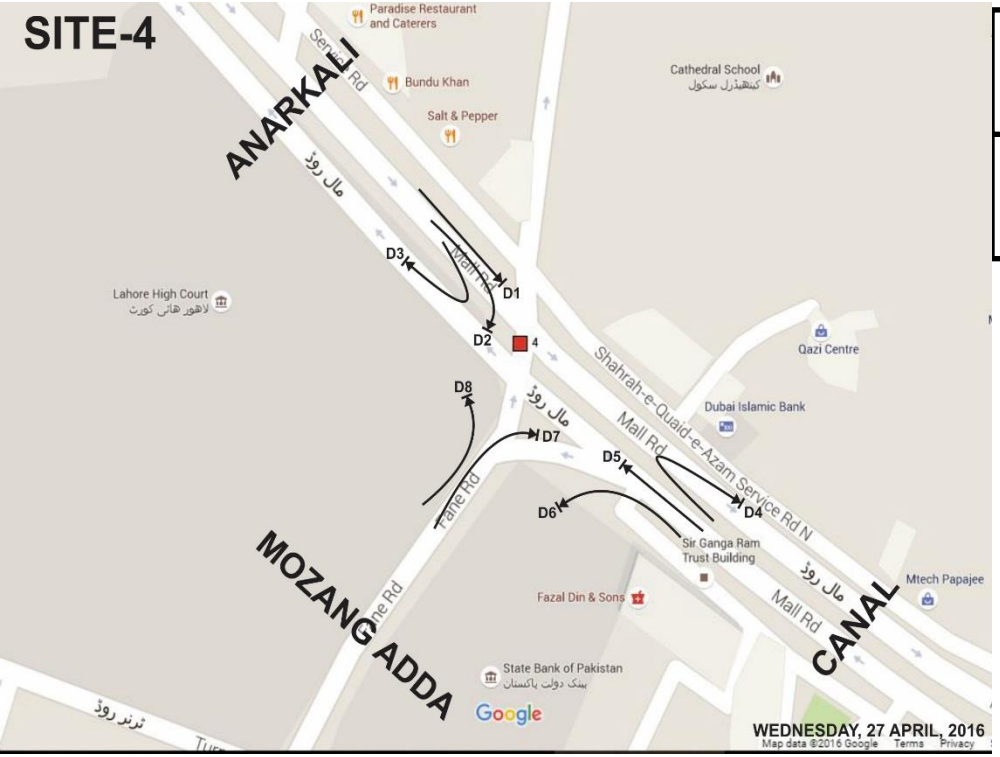
Peak Hour	01-02 pm
Peak Hour volume	13,772



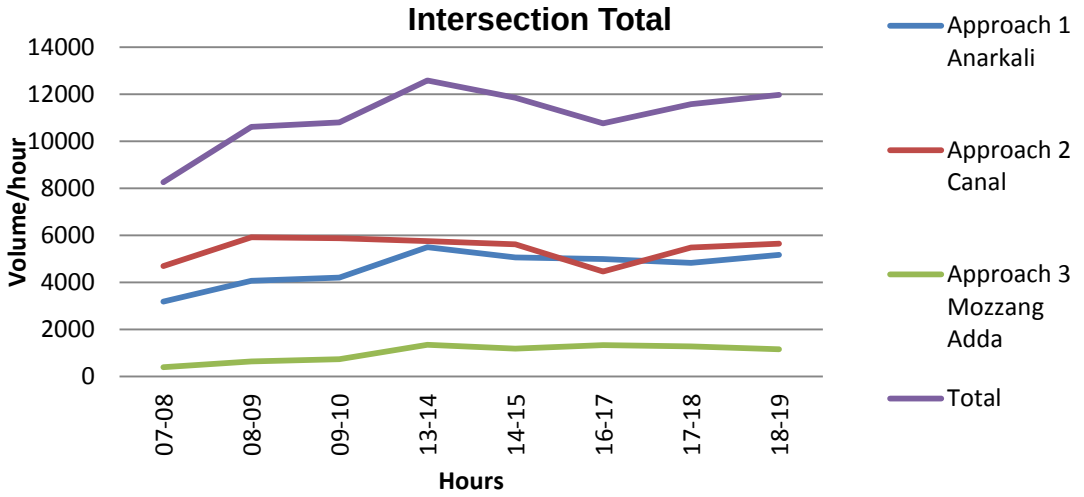
IDENTIFIED ISSUES

Some traffic data is missing due to orange line construction, No proper channelization of left turning from mall road. Geometry needs to be improved

Site # 4 Lahore High Court



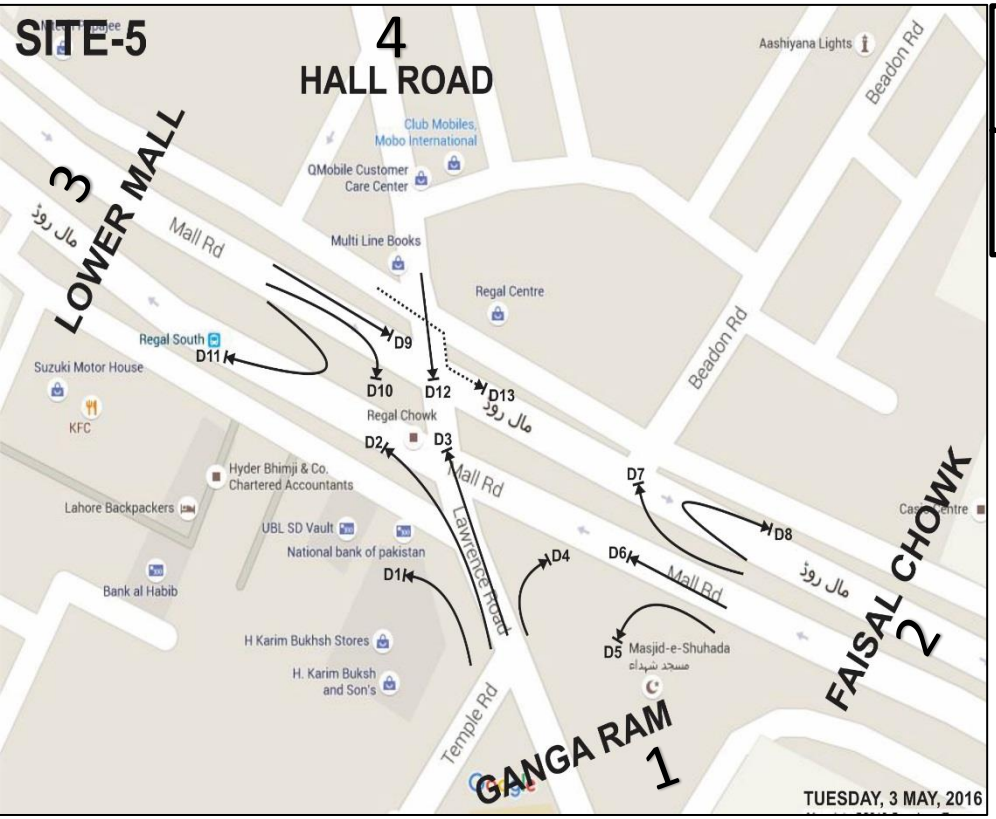
Peak Hour	01-02pm
Peak Hour volume	13,772



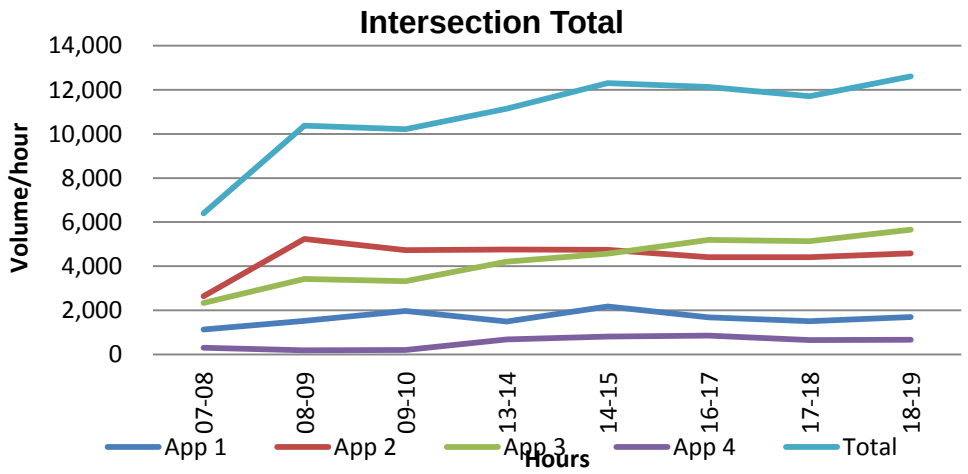
IDENTIFIED ISSUES

Illegal parking and encroachment on fane Road, Very Sharp left turning from mall road to McLeod Road, No service road available adjacent to Lahore High Court

Site # 5 Regal Chowk



Peak Hour	01-02 pm
Peak Hour Volume	13,950

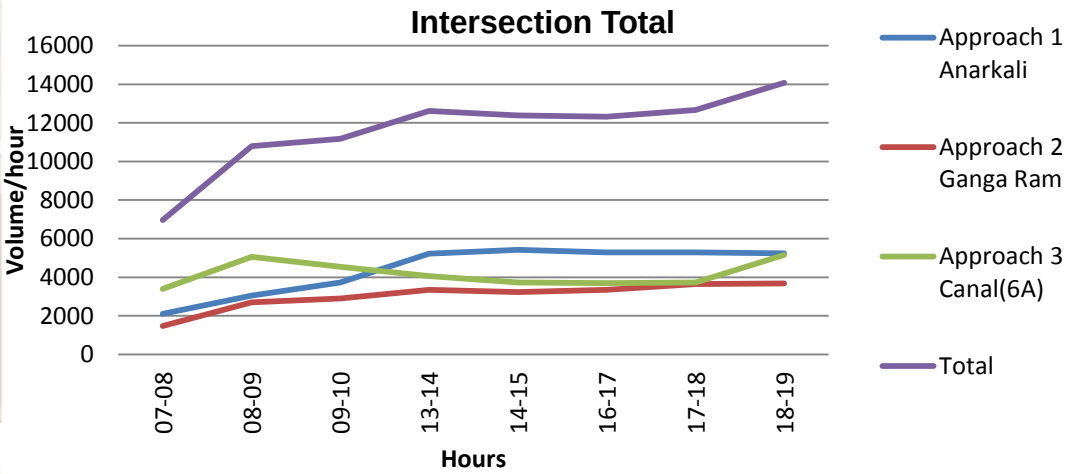


IDENTIFIED ISSUES

On-street parking and encroachment on Hall Road, Traffic from service road disturbs main-stream traffic.

Site # 6 Charing Cross

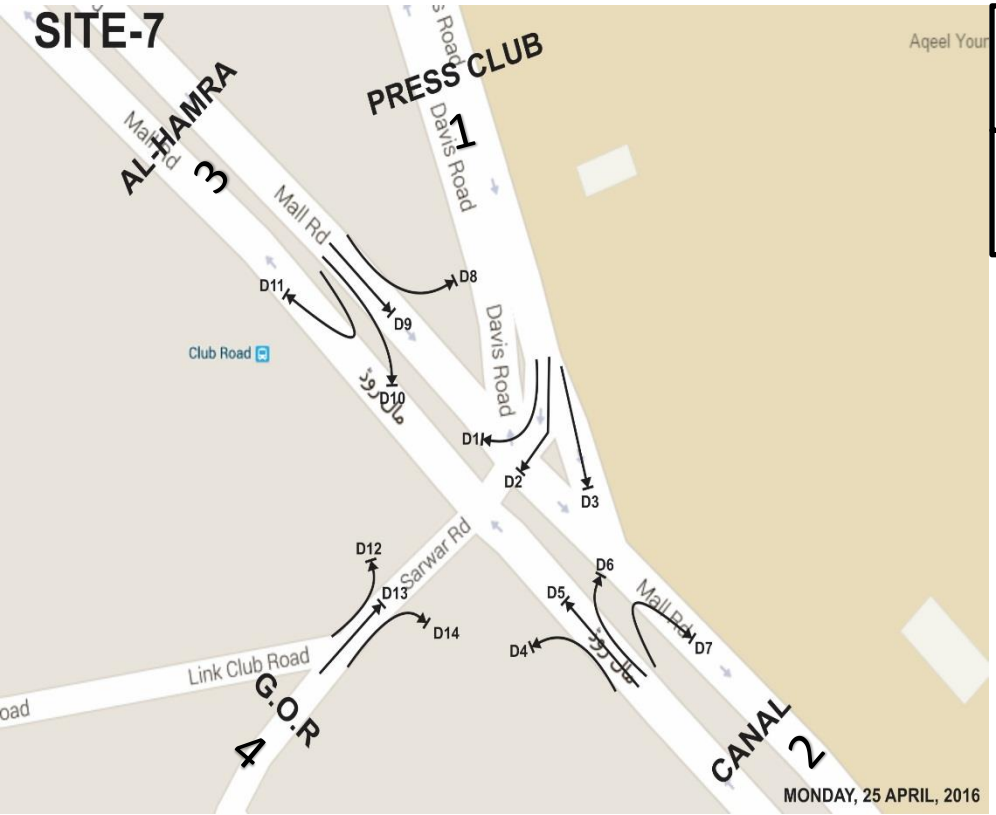
Peak Hour	06-07 pm
Peak Hour Volume	28,967



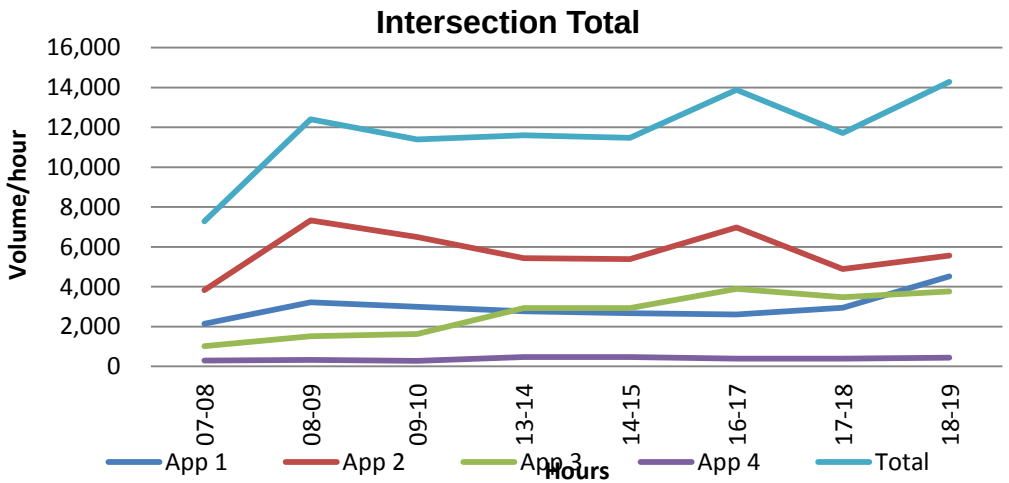
IDENTIFIED ISSUES

Frequent traffic jams and road blocks due to strikes and political activities, No channelization for separate left turning

Site # 7 Davis Road



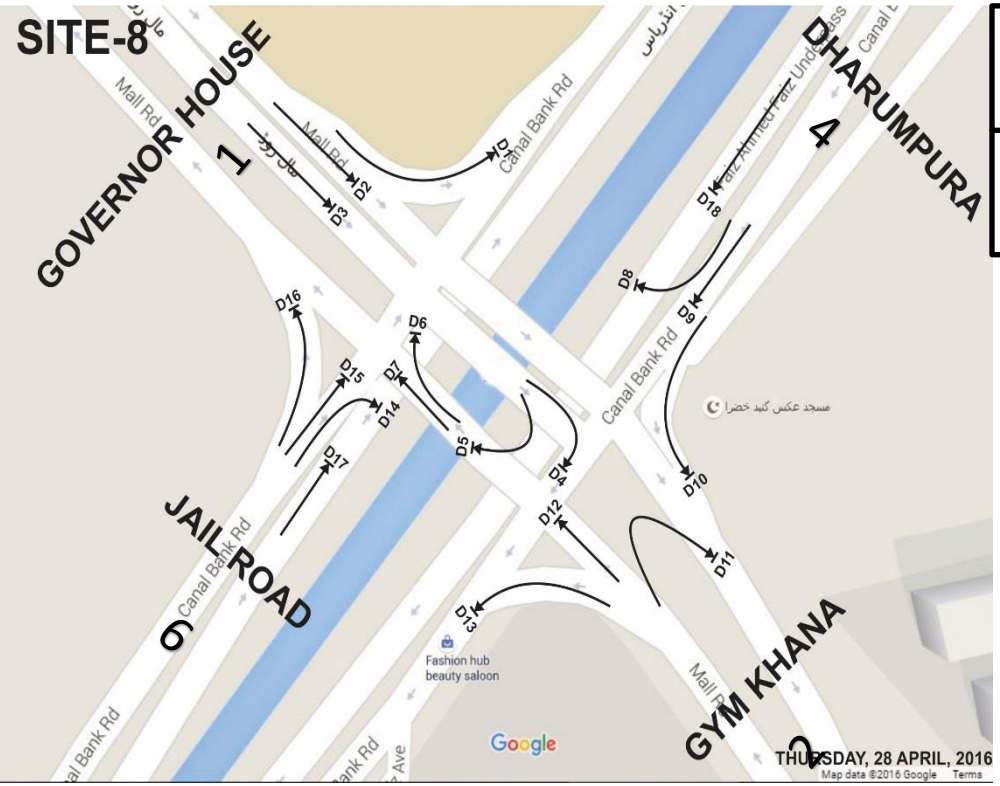
Peak Hour	02-03 pm
Peak Hour Volume	13,950



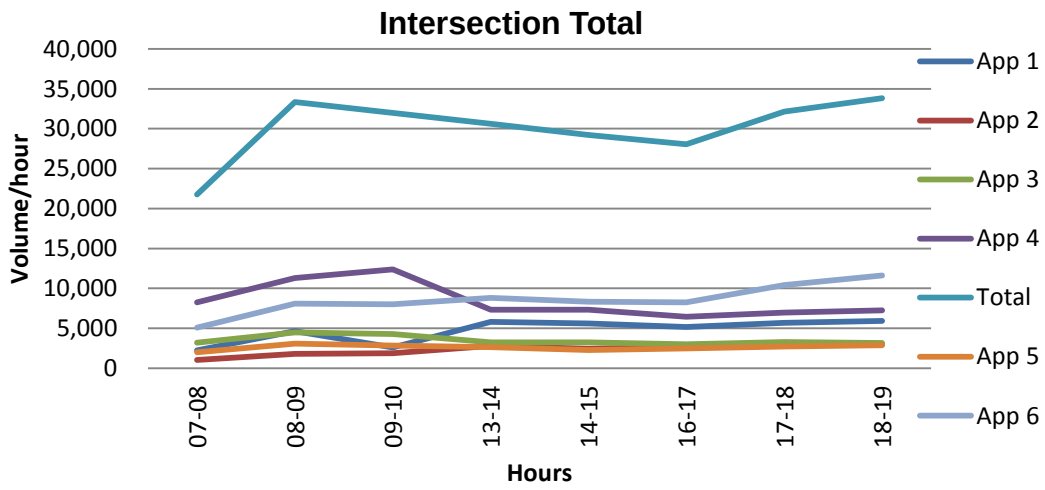
IDENTIFIED ISSUES

Fixed signal timing, no channelizing islands available for left turning on Press Club road, security barriers installed on G.O.R road

Site # 8 Mall Road & Canal



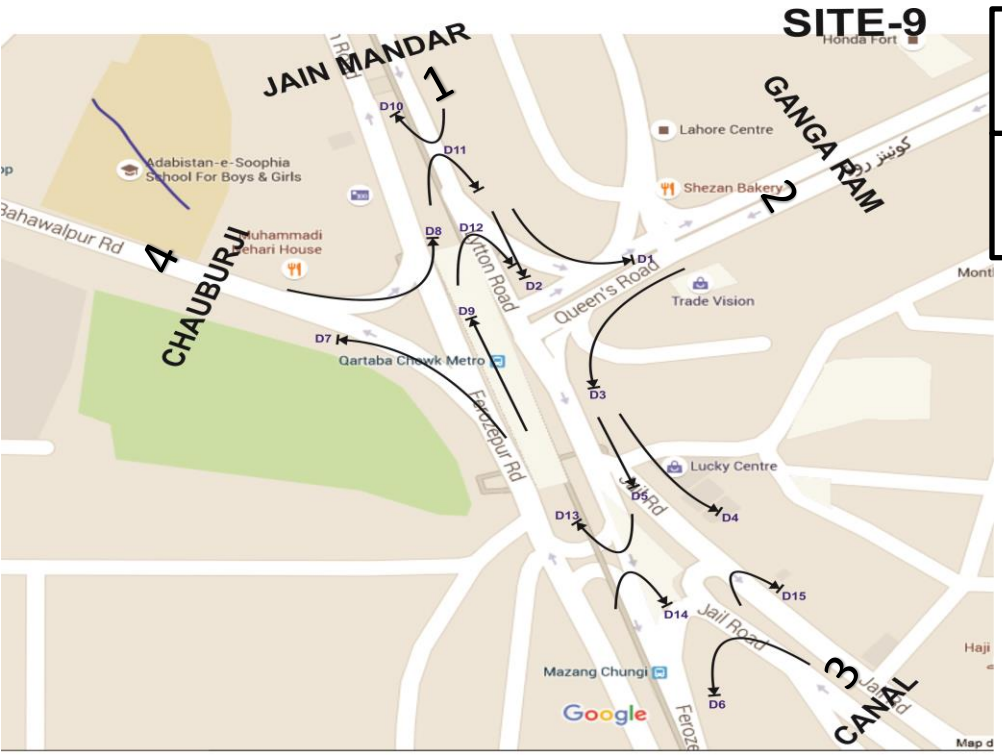
Peak Hour	06-07 pm
Peak Hour Volume	33,882



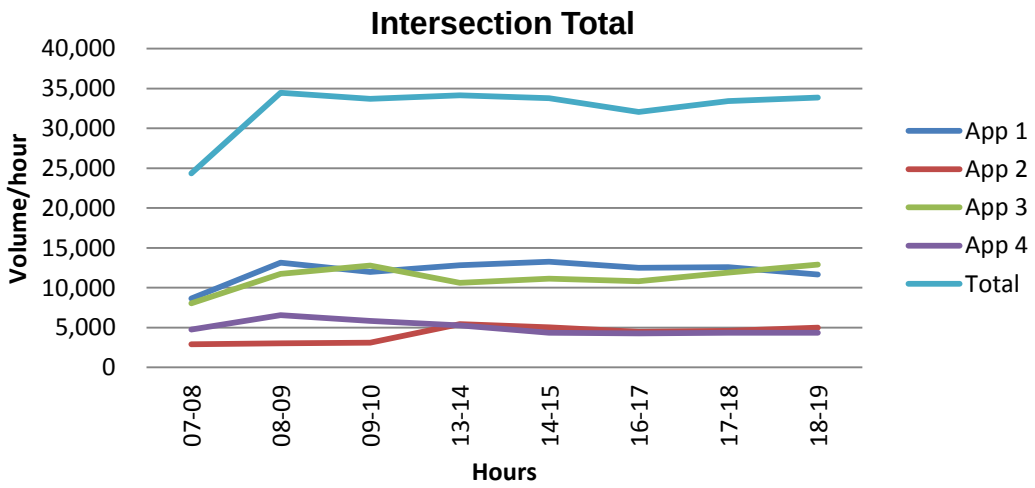
IDENTIFIED ISSUES

Fixed signal timing, frequent passage of VIP traffic movements

Site # 9 Qartaba Chowk



Peak Hour	08-09 am
Peak Hour Volume	34,496

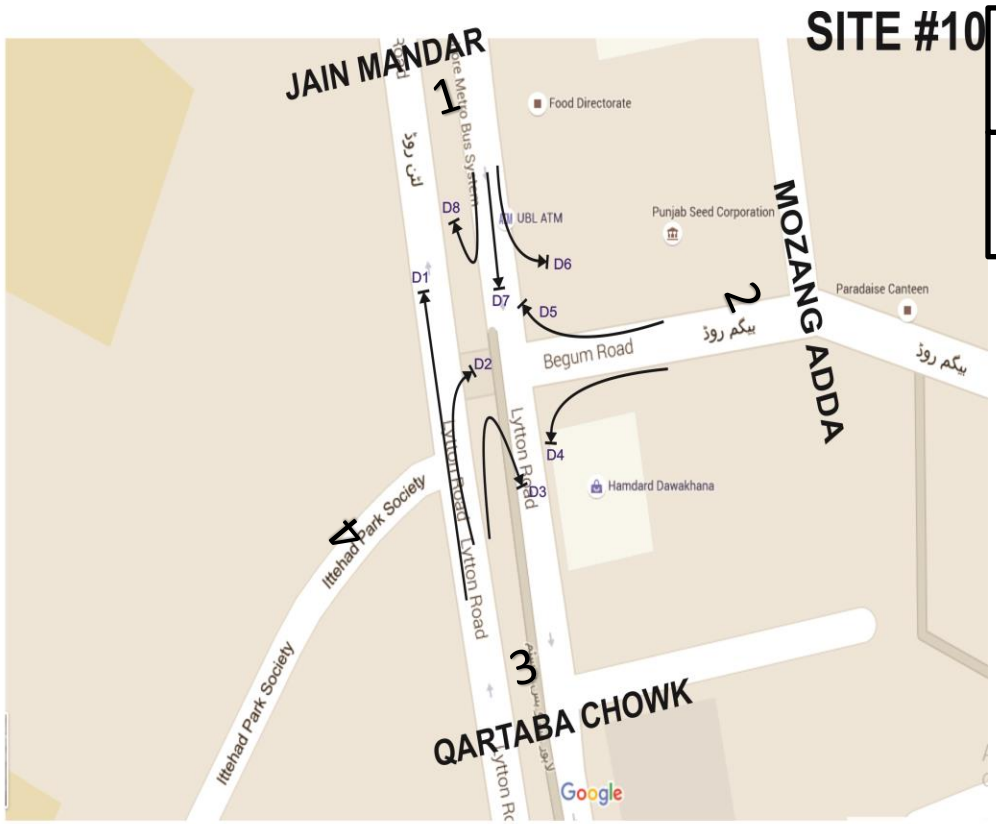


IDENTIFIED ISSUES

Severe traffic conflicts for straight and turning traffic before and after U-turns, weaving problem, On-street parking on Queens road

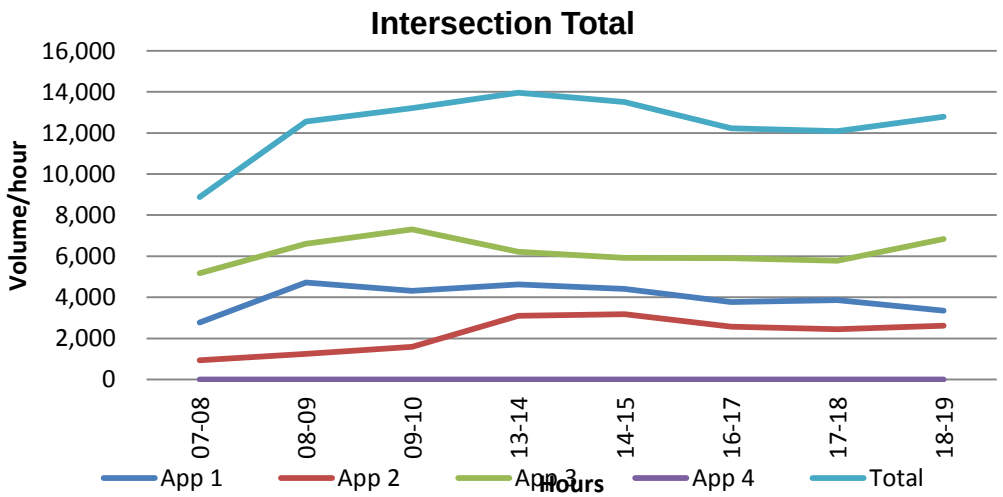
Wednesday, 13 April, 2016

Site # 10 Lytton Road & Begum Road



12-APRIL-2016

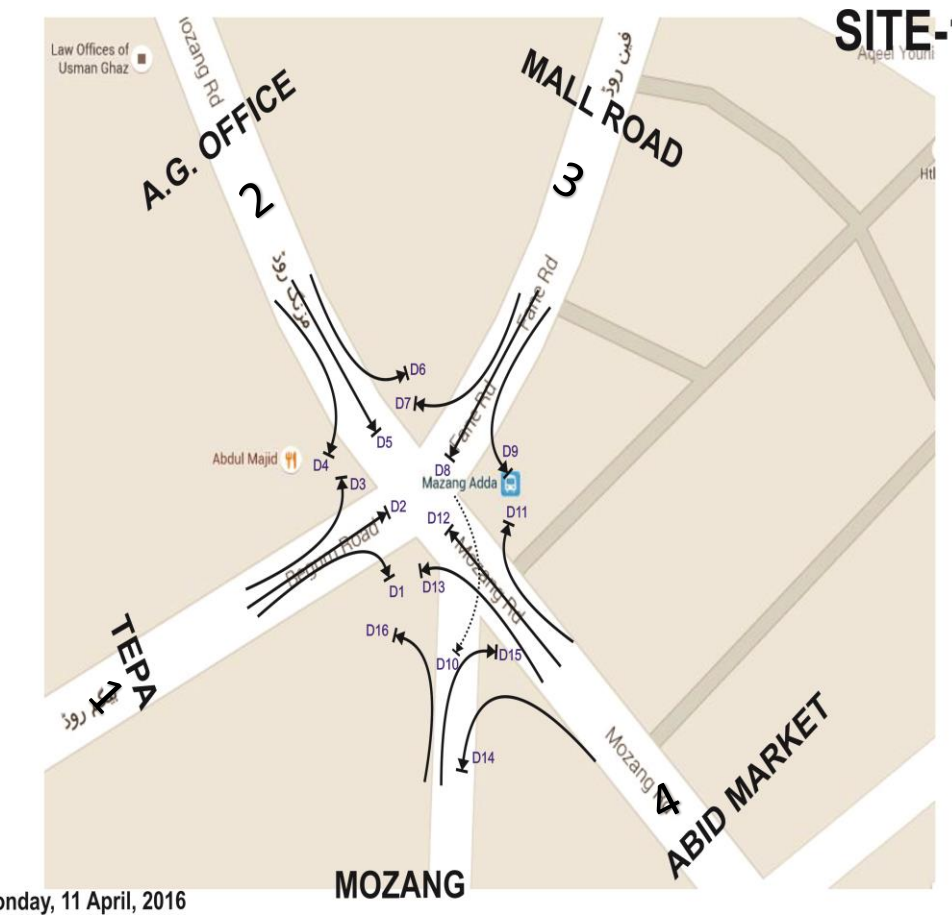
Peak Hour	01-02 pm
Peak Hour Volume	13,950



IDENTIFIED ISSUES

Fixed signal timing, no separate left turning on Begum Road, on-street parking near intersection, geometry needs to be improved

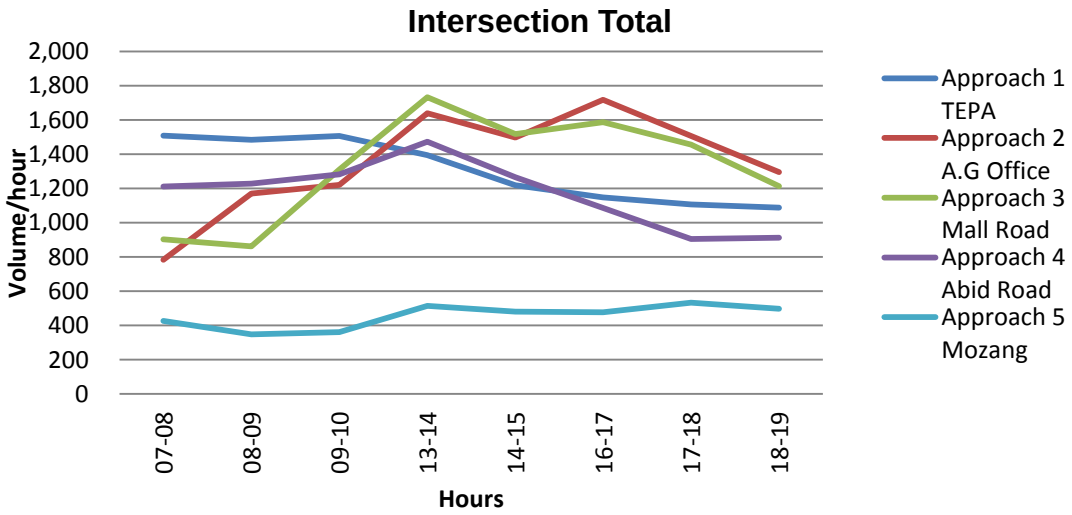
Site # 11 Mazang Adda



onday, 11 April, 2016

Peak Hour 01-02 pm

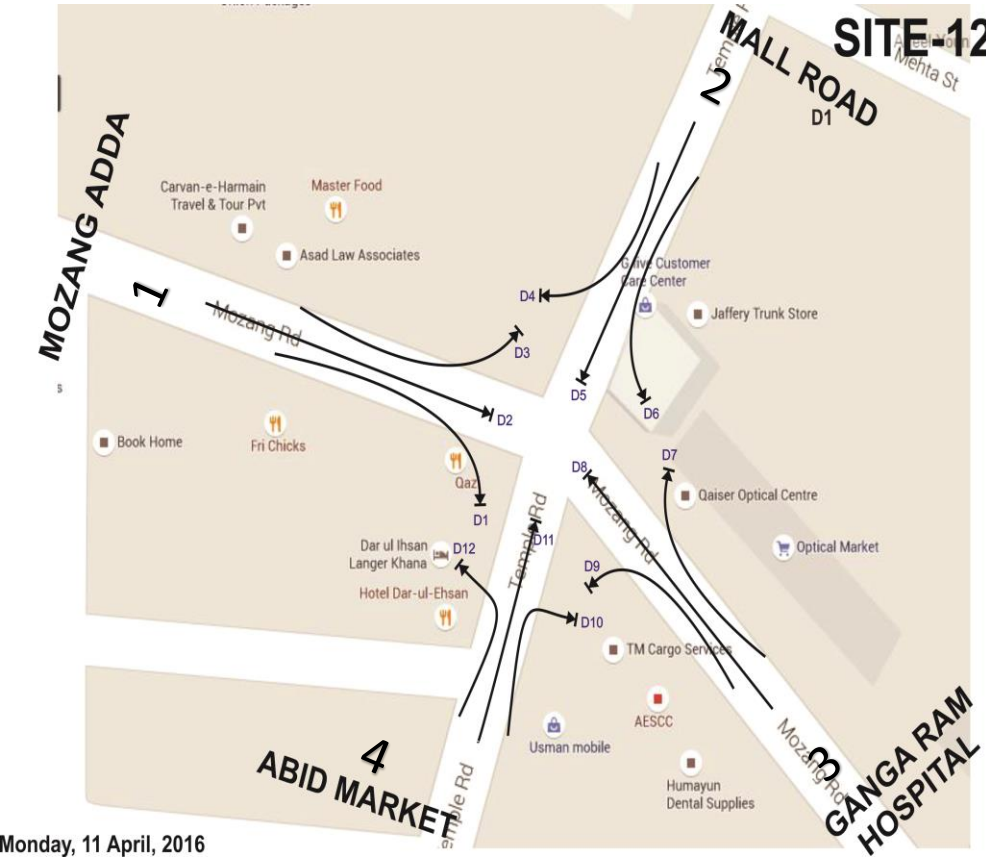
Peak Hour Volume 6,237



IDENTIFIED ISSUES

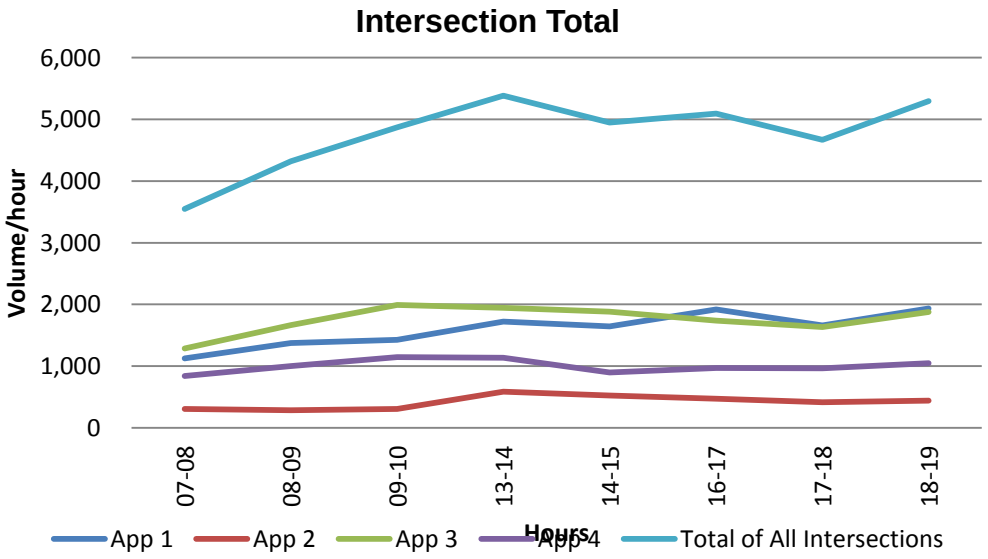
No separate left turning, encroachment and On-street parking near intersection, fixed signal timing, electric poles present on main road.

Site # 12 Saffanwala Chowk



Peak Hour 06-07 pm

Peak Hour Volume 5,296



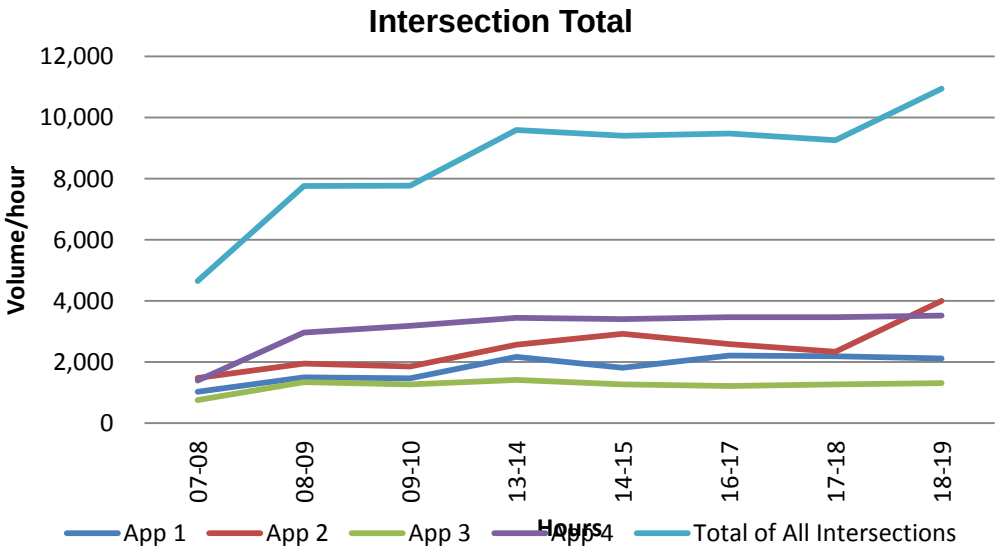
IDENTIFIED ISSUES

Encroachment and on-street parking creates traffic bottlenecks, fixed signal timing, pedestrian walkways unavailable

Site # 13 Ganga Ram

Peak Hour 06-07 pm

Peak Hour Volume 10,941



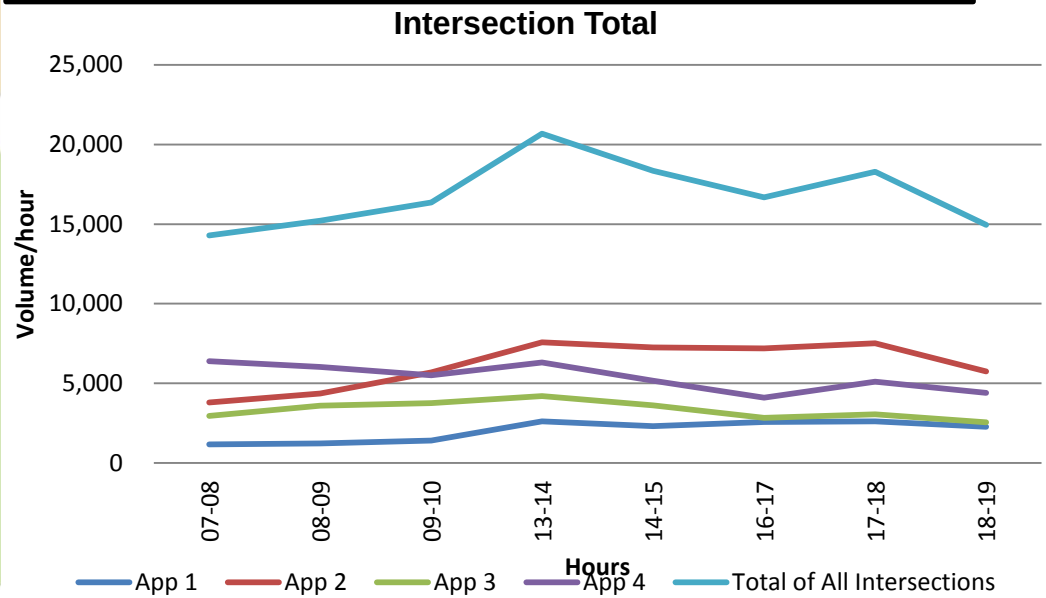
IDENTIFIED ISSUES

Traffic bottlenecks due to encroachment and On-street Parking of Hospital, geometry needs to be improved

Site # 14 District Court

Peak Hour 01-02 pm

Peak Hour Volume 20,684



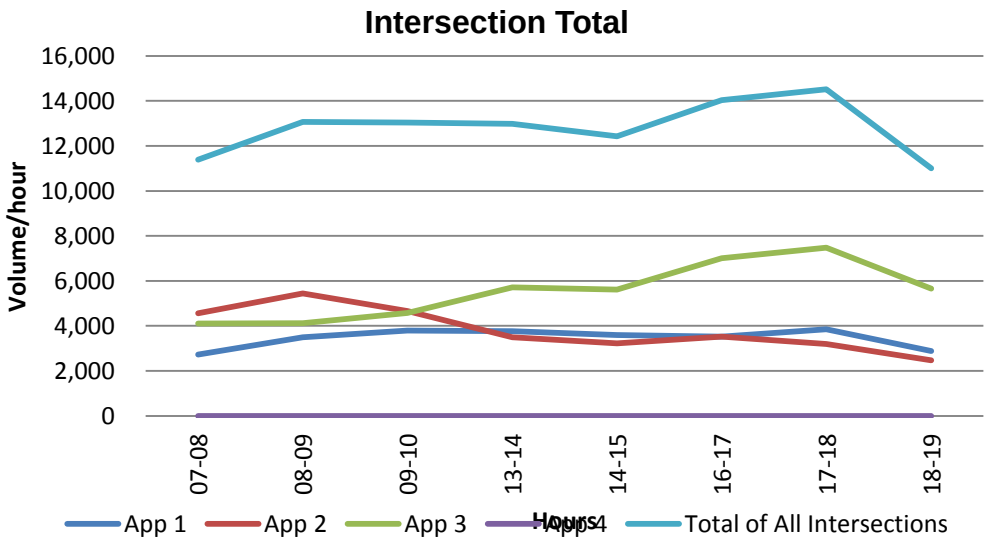
IDENTIFIED ISSUES

Less number of lanes on Saggian Bypass Side.

Site # 15 P.I.A - South of Shimla Hill

Peak Hour 05-06 pm

Peak Hour Volume 14,518

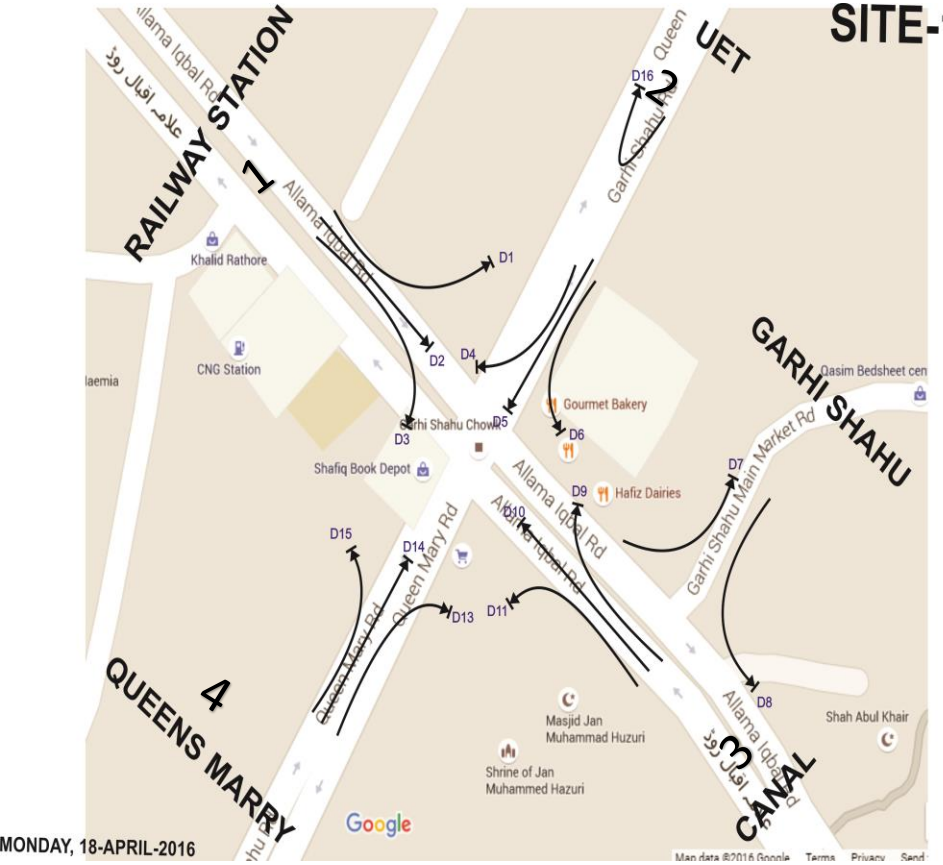


IDENTIFIED ISSUES

Geometry needs to be improved.

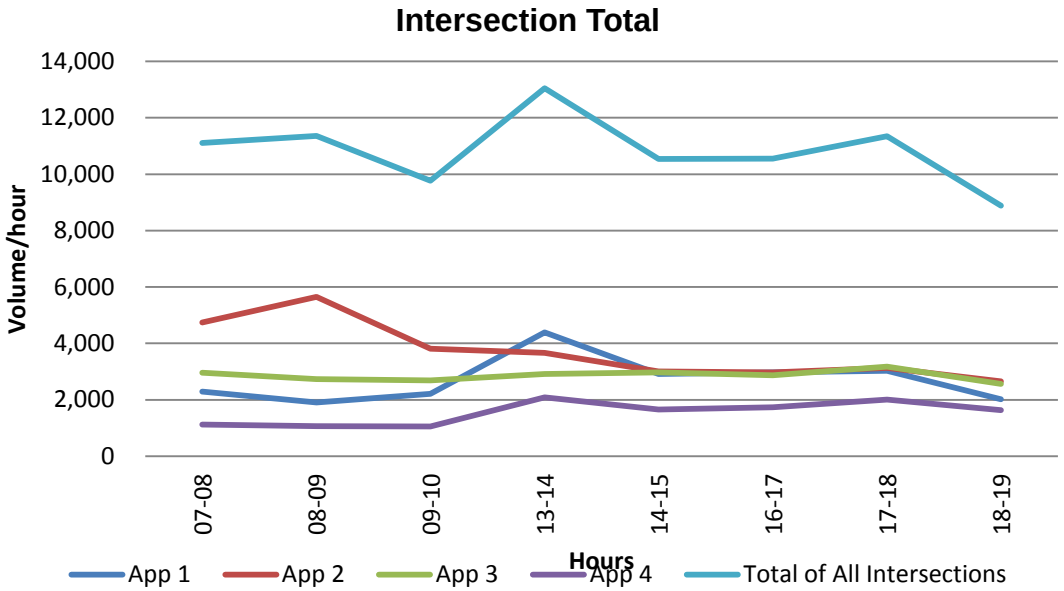
.

Site # 16 Ghari Shahu



Peak Hour 01-02 pm

Peak Hour Volume 13,050

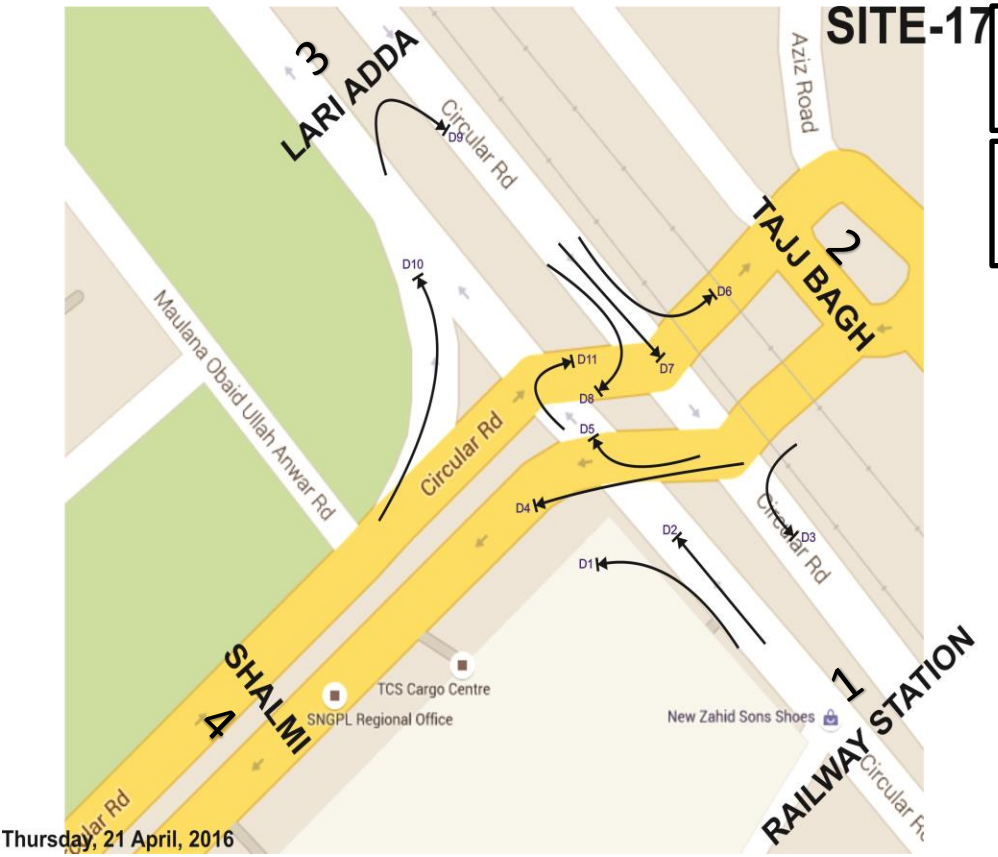


IDENTIFIED ISSUES

Geometry needs to be improved, less number of lanes, insufficient median width, wrong way turning of motorcyclists creates traffic conflicts

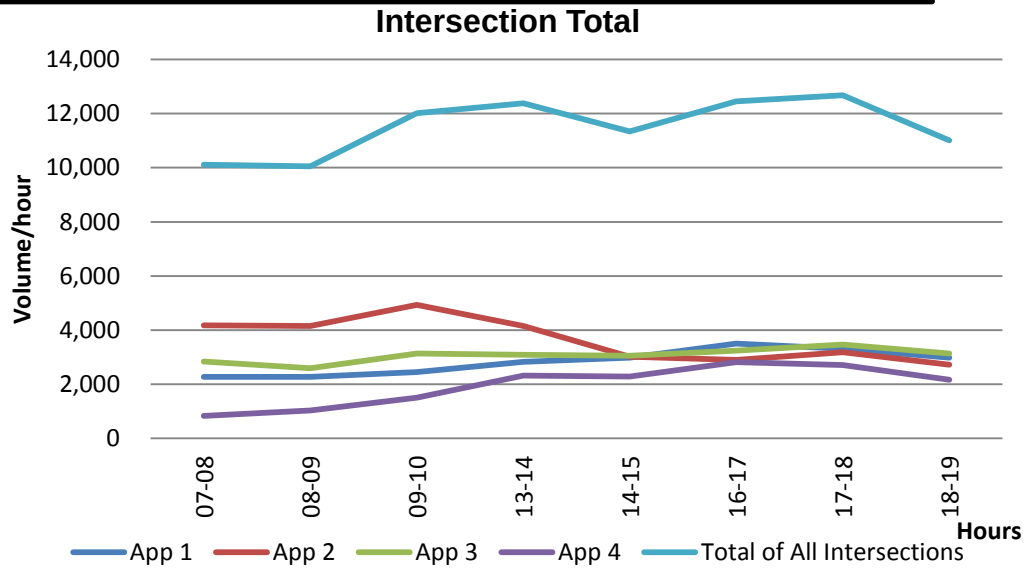
.

Site # 17 Aik Moria



Peak Hour 05-06 pm

Peak Hour Volume 12,672



IDENTIFIED ISSUES

Geometry needs to be improved, illegal Qing qi stops, luggage carrying hand driven carts create problems, On-street parking

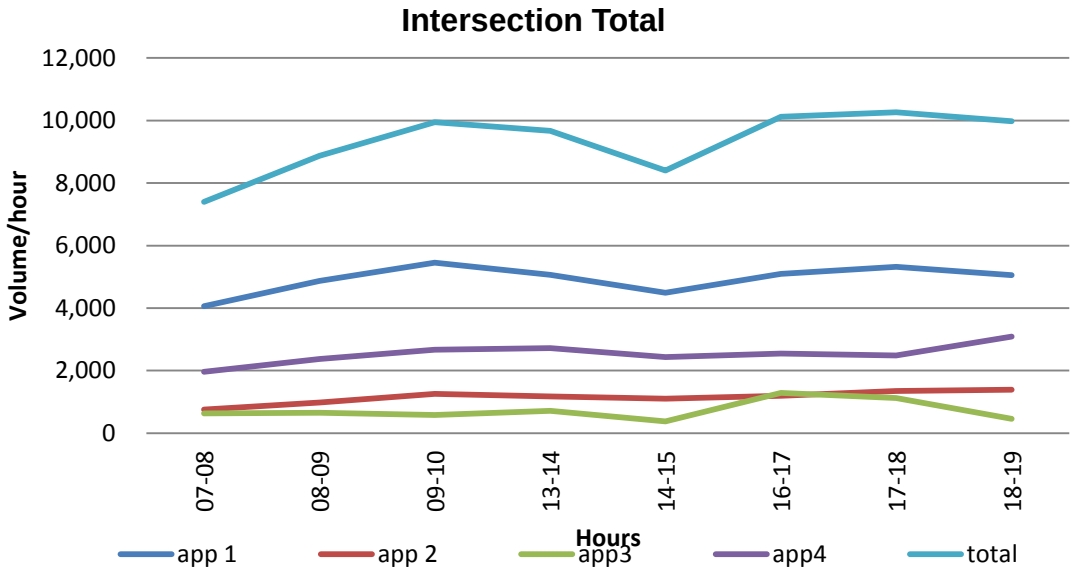
.

Site # 18 Shah Alam Chowk

EDNESDAY, 20-APRIL-2016

Peak Hour 05-06 pm

Peak Hour Volume 10,226

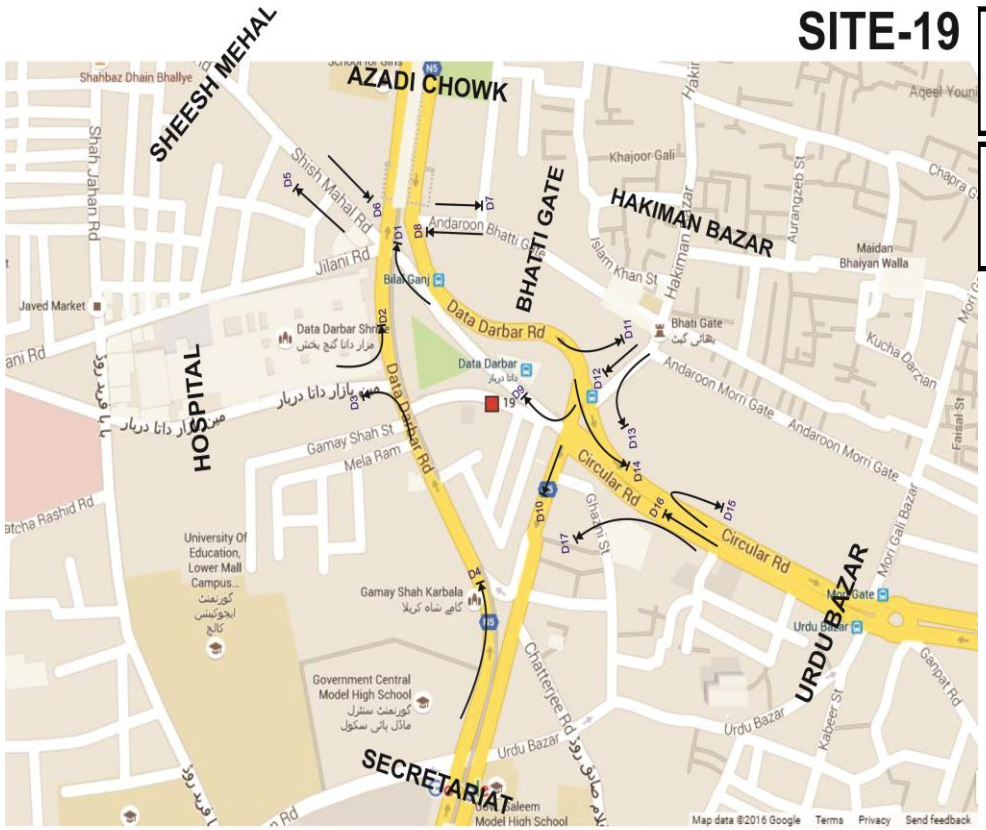


IDENTIFIED ISSUES

Traffic bottlenecks due to encroachment and On-street Parking, geometry needs improvement near intersection.

.

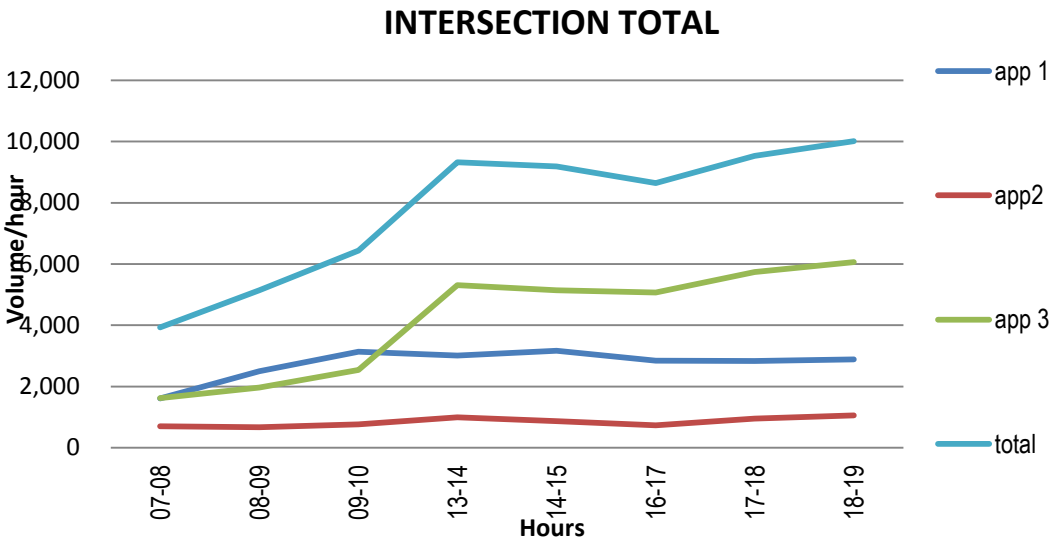
Site # 19 Data Darbar



Tuesday, 19-April-2016

Peak Hour 06-07 pm

Peak Hour Volume 20,549



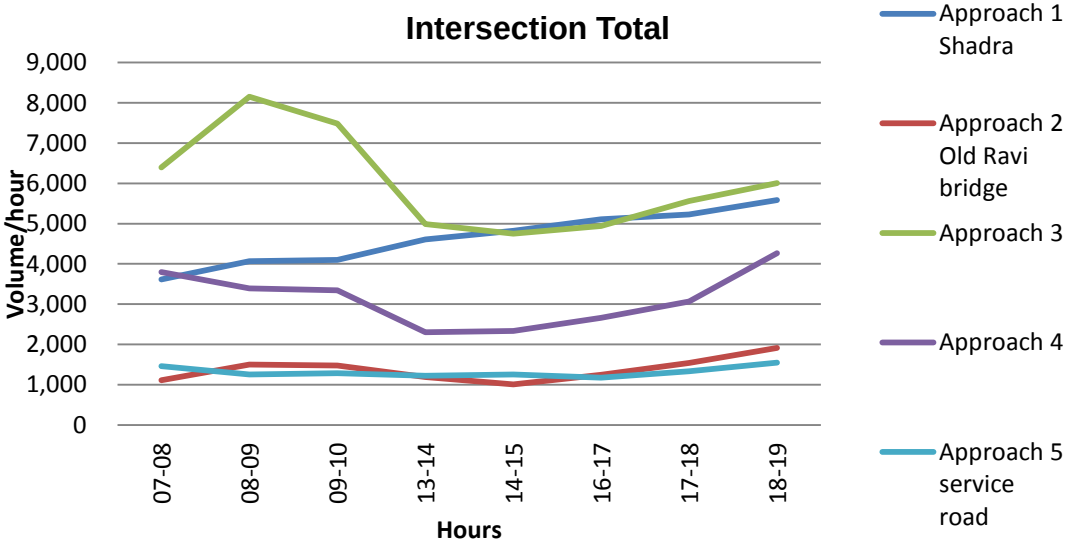
IDENTIFIED ISSUES

Intersection narrowing due to shops and encroachment, high volume of pedestrian traffic creates bottlenecks and delays for vehicles, placement of bus-stop near intersection

Site # 20 Shahdara

Peak Hour 06-07 pm

Peak Hour Volume 17,774



IDENTIFIED ISSUES

Grade separation (flyover or underpass) must be provided, geometry needs to be improved, parking and encroachment problems

Traffic Engineering & Transport Planning Agency (TEPA)

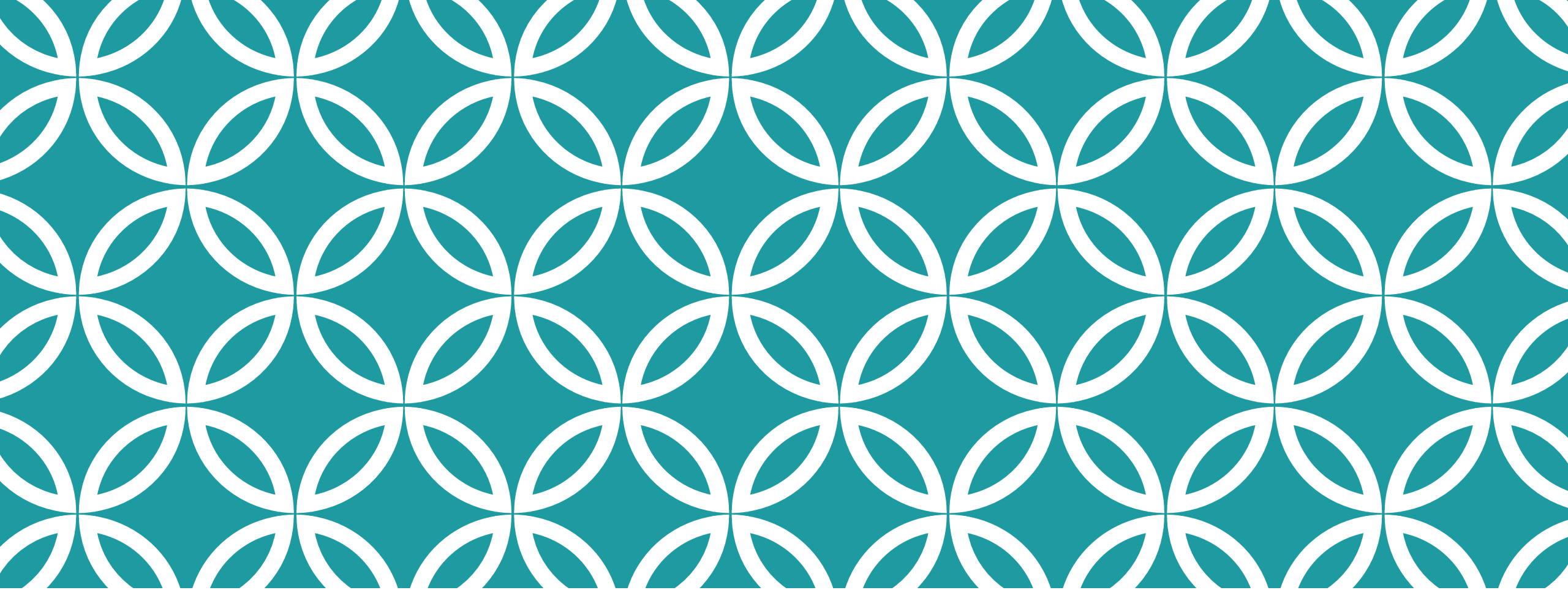
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

CONDUCT OF TRAFFIC SURVEYS

METHODOLOGY & QUALITY ASSURANCE

AQEEL YOUNIS MUGHAL
Transport Planning & Modelling
METRO Associates

CONTENTS



QUALITY ASSURANCE IN RELATION WITH TRAFFIC SURVEYS

Background & Importance

GOOD DATA - FOUNDATION FOR ENGINEERING PROJECTS

FOUR I'S OF GOOD TRAFFIC DATA

Integrity. Data that is timely, accurate, complete and verifiable.

Information. Data integrity, along with transportation engineering expertise, leads to better and more accurate assumptions.

Intelligence. Further expertise, knowledge, and other tools allow for the intelligent use of Information. This is the basic building block of sound engineering judgment.

Informed Action. Well assembled and supported Intelligence leads to informed action by decision makers.

IMPLICATIONS OF BAD TRAFFIC DATA

Poor Execution. With bad data, engineering and infrastructure projects have a weak base to start from - resulting in projects that exceed timelines, budgets and compromise results.

Compromised Results. Poorly executed projects lead to lower than anticipated Level-of-Service (for example); and ultimately affect the Engineering Firm's reputation.

eg. Signal Timing Plan: *Under-reported volume can lead to shorter signal phases, and create long queues. Over-reported volumes result can result in increased delay for certain movements.*

Complaints & Problems. Traffic delays, accidents, and overall driver frustration wi persist soon after project completion.

Example: BRAC North Virginia

Headline News:
$1 Billion BRAC mistake: Traffic upends plans for 6,400-person facility - *Federal Times, October 2010*

The Defense Base Closure and Realignment Commission (BRAC), is directed at closing excess military facilities and reducing overall expenditures. In 2005, this process would move about 6,400 workers from the Pentagon to the new Department of Defense Headquarters at the Mark Center in Alexandria, Virginia.

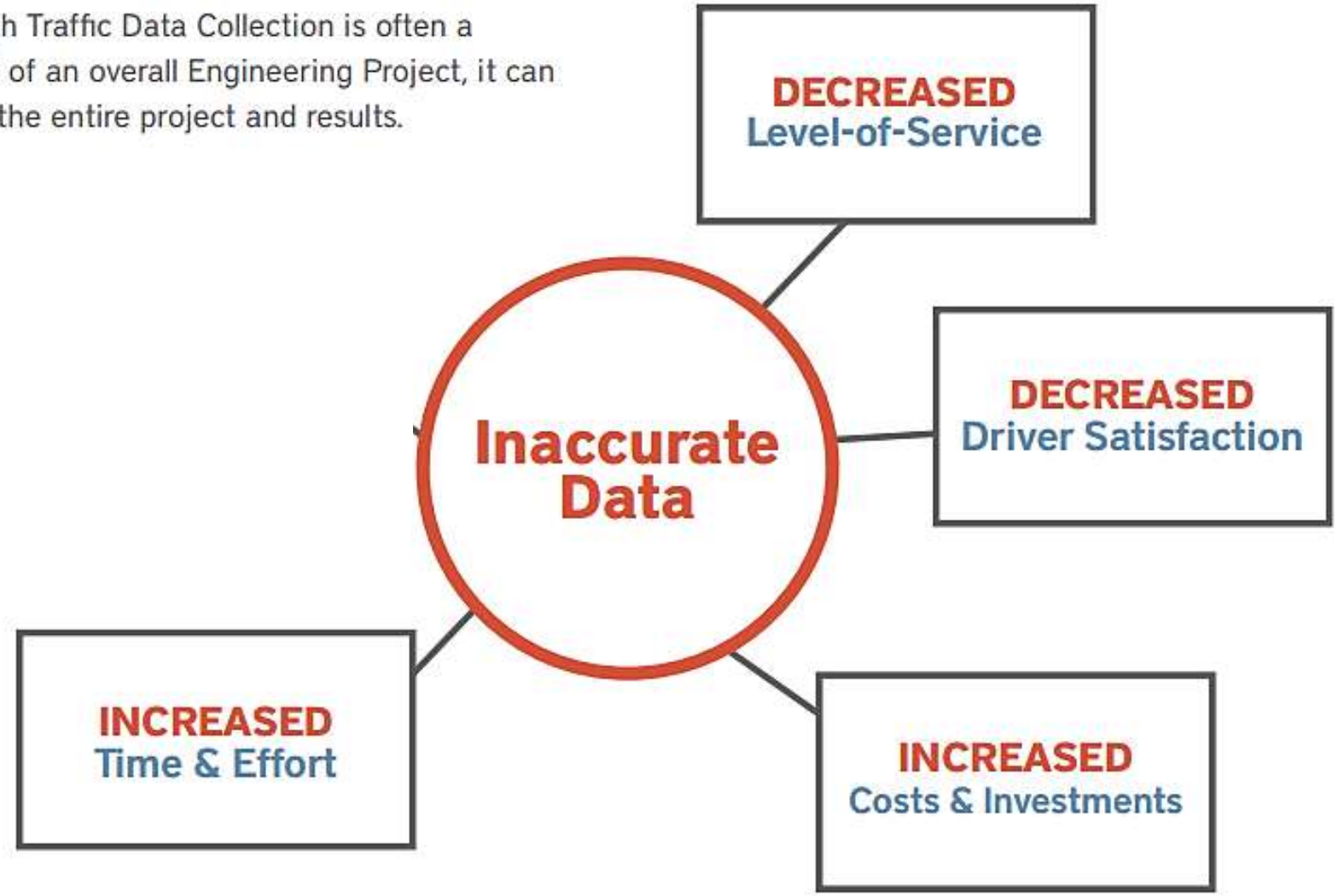
Once the $1 billion facility was constructed, heavy traffic congestion was immediate. It was later determined that faulty traffic data was used and the location did not have the infrastructure or transit to support this influx of people. It was selected as it was the lowest bid.

What was the damage?

- Only 1,000 parking spaces were built for nearly 6,400 personnel.
- Lack of supporting infrastructure and no access to nearby Metro or Rail stations.
- Level-of-Service was severely compromised on 6 major intersections in Alexandria.
- An additional $100 million are going towards improvements ($20M DoD; $80M VDOT).

IMPORTANCE OF DATA ACCURACY

Although Traffic Data Collection is often a fraction of an overall Engineering Project, it can impact the entire project and results.



IMPORTANCE OF DATA INTEGRITY

Timely. Simply applying a growth factor to historical data can severely reduce accuracy, especially with other factors such as economic downturn, or increased commercial development.

Accurate. Accurate data is the foundation for all Engineering Projects. Without a solid foundation, project recommendations, execution, and outcomes will falter.

Complete. Having complete data helps draw a more accurate picture of project requirements. For example, vehicle classifications & pedestrian data offer a complete picture of an intersection.

Verifiable. How will you know your traffic data is accurate? Having the ability to review data abnormalities provides supporting evidence to recommendations and piece-of-mind.

> *Decisions about major public investments to the sum of hundreds of thousands of dollars are predicated on data.*

Tom Springer, AICP, CEP
Qk4 Engineering

RESOURCES REQUIRED FOR DATA COLLECTION

The exact number of persons and equipment required depends on the following;

- The location of the station
- The quality of the data to be collected
- The level of traffic flow
- The nature of the road section and traffic flow characteristics within which the station falls
- Traffic composition

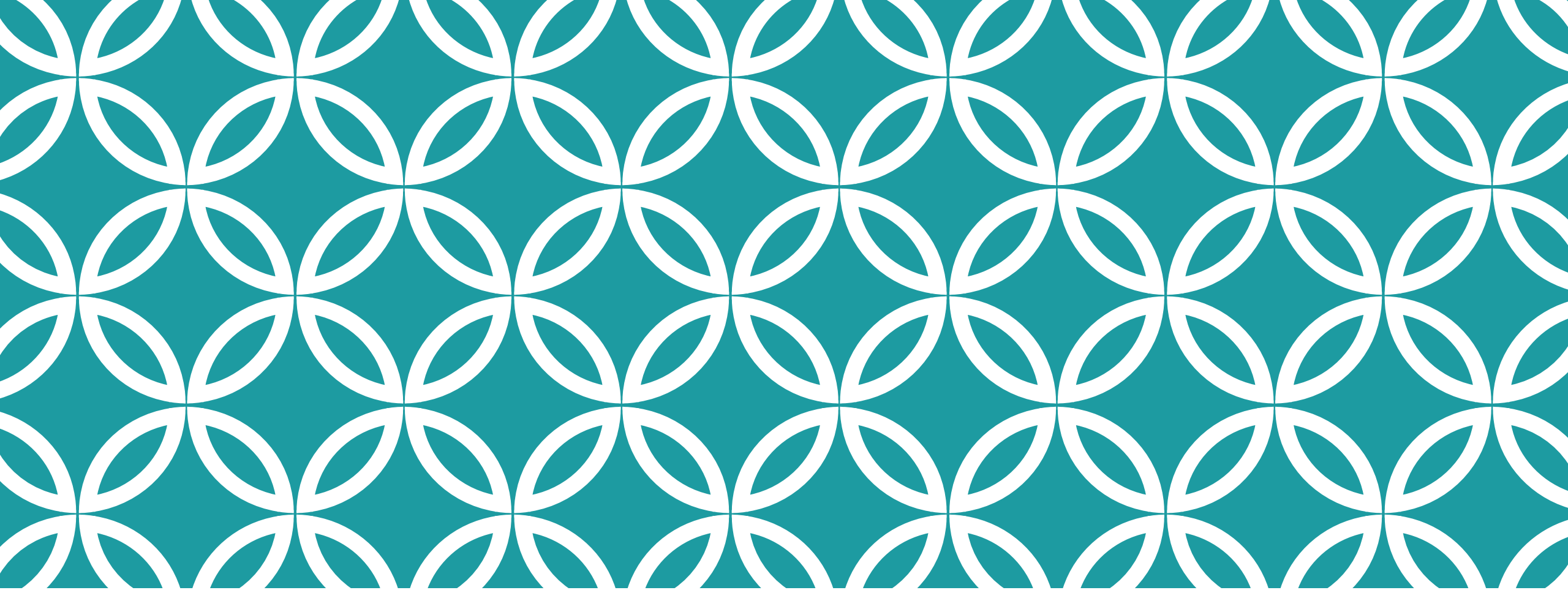
WAY FORWARD

- Traffic survey guidelines
- Quality assurance procedures for each survey type
  - Must be complied by each Survey company
- Central Data Bank for Past Surveys (helpful in data validation)

SURVEY SCHEDULE

Survey \ Time	April																		
	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Intersection																				
Survey Location	11,12	10,13	9	6				16	19	18	17				7	1,2	3,4	8		

Survey \ Time	May											
	1	2	3	4	5	6	7	8	9	10	11	12
	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu
Intersection												
Survey Location		20	5	14	15							
Travel Speed												
Survey Route									1	4	3	2
Parking												
Survey Location										4,3	1,2	
Interview												
Survey Location									1,2,3,4,5 (BRT ST)			



MANUAL CLASSIFIED COUNTS

MCC

OBJECTIVE

To know traffic volume and flow at intersections

VEHICLE CLASSIFICATION & CONFIGURATION

Bicycle

Vehicle Type-1

Motorcycle

Vehicle Type-2

Rickshaw, Qinqqi

Vehicle Type 3

Car, Taxi, 4WD
Jeep, Land Cruiser
Hiace, single / twin-cabin passenger
pick-up

Vehicle Type 4

Wagon, Suzuki,
Minibus
(Up to16 seats)

Vehicle Type-5

Mazda, Coaster
(up to 24 seats)

Vehicle Type-6

Large bus
(>30 seats)

Vehicle Type-7

Pick-up,
Delivery truck
Utility vehicle,
Ambulance

Vehicle Type-8

2-axle truck

Vehicle Type-9

3-axle truck,
3+-axle turck

Vehicle Type-10

Tractor
(with or without trolley)

Vehicle Type-11

Other mechanized vehicle (indluding construction vehicle)

Vehicle Type-12

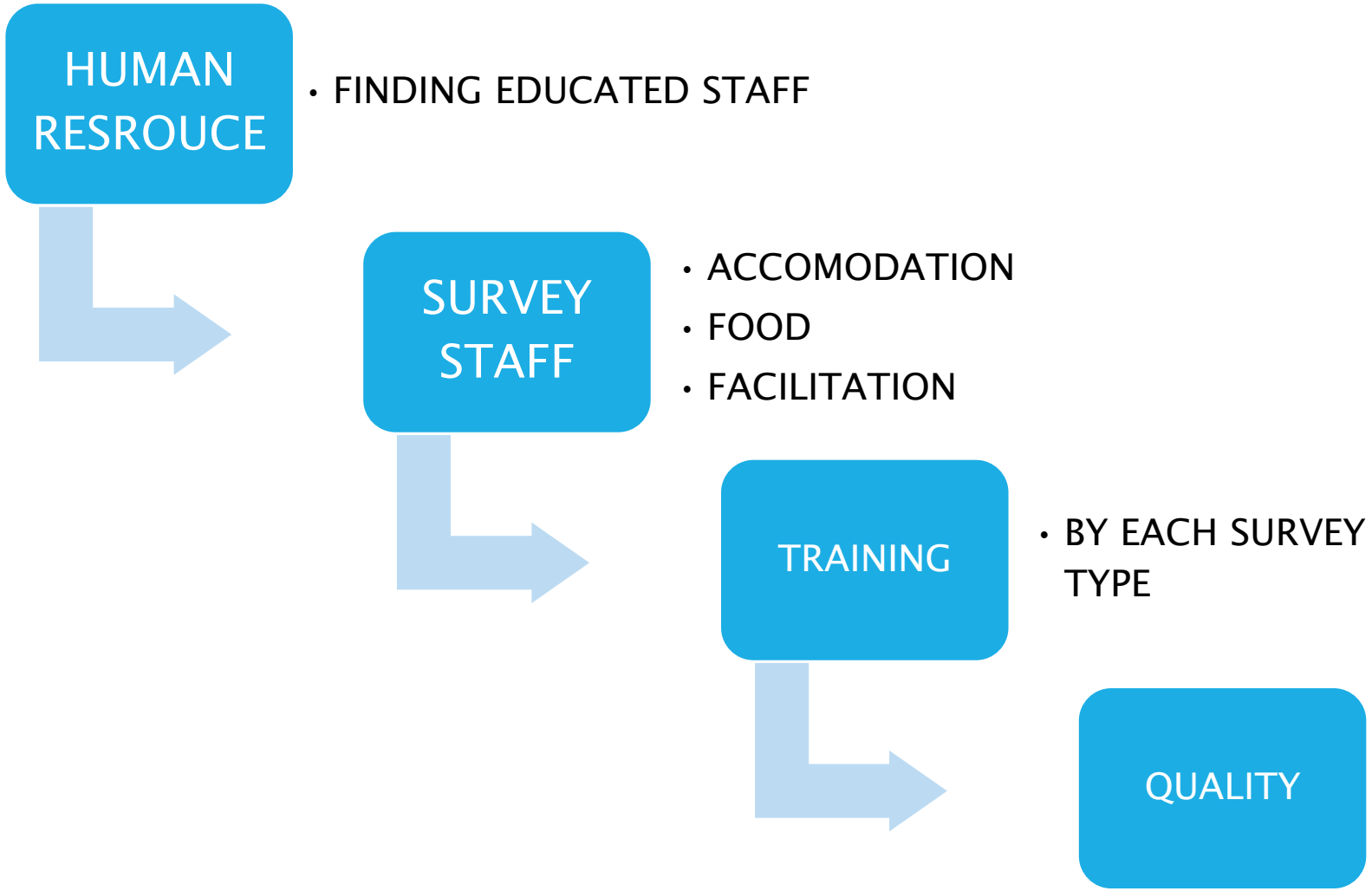
Animal-driven cart

Vehicle Type-13

FACTORS

- Weather conditions
- Purpose of the traffic counting
- Method of traffic counting
- Location of the counting sites
- Traffic flow level
- Road type

SURVEY MANAGEMENT



SITES DESCRIPTION

No	Intersection Name	Signal
1	P.M.G. (Mall Rd- Lower Mall)	✓
2	Bashir Sons (Mall Rd- Maclagan Rd)	✓
3	G.P.O. (Mall Rd- McLeod Rd)	✓
4	Lahore High Court (Mall Rd- Fane Rd)	✓
5	Regal Chowk (Mall Rd- Lawrence Rd)	✓
6	Faisal Chowk (Mall Rd- Queen's Rd)	✓
7	Avari Hotel (Mall Rd- Khayaban-e-Awan-e-Iqbal)	✓
8	Govenor House (Mall Rd- Shahrah Awan-e-Sanat-o-Tijarat)	✓
9	Davis Road (Mall Rd- Davis Rd)	Priority
10	Mall Canal (Mall Rd- Canal Bank Rd)	✓
11	Qartaba Chowk (Litton Rd- Queen's Rd)	✓
12	Mazang Adda (Mozang Rd- Fane Rd)	✓
13	Ganga Ram (Queen's Rd- Mozang Rd)	✓
14	District Court (Lower Mall- Katchery Rd)	✓
15	P.I.A. (Davis Rd- Durand Rd) Plaza Cinema	✓
16	Ghari Shahu (Allama Iqbal Rd- Queen Mary Rd)	✓
17	Aik Moria (G.T. Rd- Circular Rd)	✓
18	Shah Alam (Shah Alam Rd- Circular Rd)	✓
19	Data Darbar (Data Darbar Rd- Circular Rd- Lower Mall)	✓
20	Shahdara (G.T. Rd- Lahore-Sargodha Rd)	Roundabout

SITES LOCATION MAP

TYPE OF SURVEY FORMS

1.1

2.1

2.2

3.1

3.2

3.3

4.1

4.2

4.3

4.4

1.1

Project for Improvement of Traffic Management Capacity in Lahore

Manual Classifed Count (MCC)

Traffic Counts Survey

Form 1.1

Survey Consultant: METRO ASSOCIATES (Pvt) Ltd.

Survey Site (Location) ___

Survey Direction From ___ To ___ Direction # ___

Day ___ Date ___

Surveyor ___ Coded by ___ Checked by ___

Time 1/4 Hour Beginning ___

Car, Taxi, 4WD Jeep, Land Cruiser Hiace, single / twin-cabin passenger pick-up

1	2	3	4	5	6	7	8	9	10	11	12	
13	14	15	16	17	18	19	20	21	22	23	24	
25	26	27	28	29	30	31	32	33	34	35	36	
37	38	39	40	41	42	43	44	45	46	47	48	
49	50	51	52	53	54	55	56	57	58	59	60	
61	62	63	64	65	66	67	68	69	70	71	72	
73	74	75	76	77	78	79	80	81	82	83	84	
84	85	86	87	88	89	90	91	92	93	94	95	
96	97	98	99	100	101	102	103	104	105	106	107	

Vehicle Type 4

1	2	3	4	5	6	7	8	
9	10	11	12	13	14	15	16	
17	18	19	20	21	22	23	24	
25	26	27	28	29	30	31	32	
33	34	35	36	37	38	39	40	
41	42	43	44	45	46	47	48	
49	50	51	52	53	54	55	56	
57	58	59	60	61	62	63	64	
64	65	66	67	68	69	70	71	

Vehicle Type 3

Motorcycle

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	
51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	
76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	
101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	
126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	
151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	
176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	

Vehicle Type-2

Mazda, Coaster (up to 24 seats)

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50

Vehicle Type-6

Large bus (>30 seats)

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50

Vehicle Type-7

Pick-up, Delivery truck Utility vehicle, Ambulance

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80

Vehicle Type-8

Wagon, Suzuki, Minibus (Up to16 seats)

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80

Vehicle Type-5

2-axle truck

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20

Vehicle Type-9

3-axle truck, 3+-axle turck

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20

Vehicle Type-10

Tractor (with or without trolley)

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20

Vehicle Type-11

Other mechanized vehicle (indluding construction vehicle)

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25

~~Vehicle Type-12~~

Animal-driven cart

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25

~~Vehicle Type-13~~

Bicycle

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25

~~Vehicle Type-1~~

Comments (Weather etc.) ___

2.1

Project for Improvement of Traffic Management Capacity in Lahore

Manual Classifed Count (MCC)

Traffic Counts Survey

Form 2.1

Survey Consultant: METRO ASSOCIATES (Pvt) Ltd.

Survey Site (Location)

Survey Direction From

To

Direction #

Surveyor

Coded by

Checked by

Day

Date

Time 1/4 Hour Beginning

Motorcycle 	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125
	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225
	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250
	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275
	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300
Vehicle Type-2																									
Wagon, Suzuki, Minibus (Up to16 seats) 	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125
	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
Vehicle Type-5																									
Bicycle 	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125
Vehicle Type-1																									

Comments (Weather etc.)

2.2

Project for Improvement of Traffic Management Capacity in Lahore

Manual Classifed Count (MCC)

Traffic Counts Survey

Form 2.2

Survey Consultant: METRO ASSOCIATES (Pvt) Ltd.

Survey Site (Location)

Survey Direction From

To

Direction #

Surveyor

Coded by

Checked by

Day

Date

Time 1/4 Hour Beginning

Car, Taxi, 4WD Jeep, Land Cruiser Hiace, single / twin-cabin passenger pick-up 	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125
	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225
Vehicle Type 4																									
Rickshaw, Qingl 	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125
	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
Vehicle Type-3																									
Mazda, Coaster (up to 24 seats) 	1	2	3	4	5	6	7	8	9	10	Large bus (>30 seats) 	1	2	3	4	5	6	7	8	9	10
	11	12	13	14	15	16	17	18	19	20		11	12	13	14	15	16	17	18	19	20
	21	22	23	24	25	26	27	28	29	30		21	22	23	24	25	26	27	28	29	30
	31	32	33	34	35	36	37	38	39	40		31	32	33	34	35	36	37	38	39	40
	41	42	43	44	45	46	47	48	49	50		41	42	43	44	45	46	47	48	49	50
Vehicle Type-6											Vehicle Type-7										
Pick-up, Delivery truck Utility vehicle, Ambulance 	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125
	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
Vehicle Type-8																									
Other mechanized vehicle (indluding construction vehicle)	1	2	3	4	5	Animal-driven cart 	1	2	3	4	5	6	7	8	9	10
	6	7	8	9	10		11	12	13	14	15	16	17	18	19	20
	11	12	13	14	15		21	22	23	24	25	26	27	28	29	30
	16	17	18	19	20		31	32	33	34	35	36	37	38	39	40
	21	22	23	24	25		41	42	43	44	45	46	47	48	49	50
Vehicle Type-12						Vehicle Type-13										

Comments (Weather etc.)

3.1

Project for Improvement of Traffic Management Capacity in Lahore

Manual Classifed Count (MCC)

Traffic Counts Survey

Form 3.1

Survey Consultant: METRO ASSOCIATES (Pvt) Ltd.

Survey Site (Location)

Survey Direction From To

Direction #

Surveyor

Coded by

Checked by

Day

Date

Time 1/4 Hour Beginning

Motorcycle	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125
	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225
	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250
	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275
	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300
	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325
	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350
	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375
	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400
	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425
	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450
	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475
	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500
	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525
	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550
	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575
	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600
	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625
	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650
	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675
	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700
	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725
	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750
	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775
	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800
	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825
	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850
	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875
	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900
	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925
	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950
	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975
	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000
Vehicle Type-2																									

Comments (Weather etc.)

3.2

Project for Improvement of Traffic Management Capacity in Lahore

Manual Classifed Count (MCC)

Traffic Counts Survey

Form 3.2

Survey Consultant: METRO ASSOCIATES (Pvt) Ltd.

Survey Site (Location)

Survey Direction From To

Direction #

Surveyor

Coded by

Checked by

Day

Date

Time 1/4 Hour Beginning

Car, Taxi, 4WD Jeep, Land Cruiser Hiace, single / twin-cabin passenger pick-up	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125
	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225
	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250
	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275
	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300
	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325
	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350
	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375
	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400
	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425
	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450
	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475
	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500
	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525
	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550
	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575
	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600
	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625
	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650
	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675
	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700
	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725
	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750
	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775
	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800
	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825
	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850
	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875
	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900
	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925
	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950
	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975
	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000
Vehicle Type-1																									

Comments (Weather etc.)

3.3

Project for Improvement of Traffic Management Capacity in Lahore

Manual Classifed Count (MCC)

Traffic Counts Survey

Form 3.3

Survey Consultant: METRO ASSOCIATES (Pvt) Ltd.

Survey Site (Location)

Survey Direction From To

Direction #

Surveyor

Coded by

Checked by

Day

Date

Time 1/4 Hour Beginning

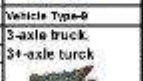
Rickshaw,Qingqi	1	2	3	4	5	6	7	8	9	10
	11	12	13	14	15	16	17	18	19	20
	21	22	23	24	25	26	27	28	29	30
	31	32	33	34	35	36	37	38	39	40
	41	42	43	44	45	46	47	48	49	50
	51	52	53	54	55	56	57	58	59	60
	61	62	63	64	65	66	67	68	69	70
	71	72	73	74	75	76	77	78	79	80
	81	82	83	84	85	86	87	88	89	90
	91	92	93	94	95	96	97	98	99	100
Vehicle Type-3										

Wagon, Suzuki, Minibus (Up to 18 seats)	1	2	3	4	5	6	7	8	9	10
	11	12	13	14	15	16	17	18	19	20
	21	22	23	24	25	26	27	28	29	30
	31	32	33	34	35	36	37	38	39	40
	41	42	43	44	45	46	47	48	49	50
	51	52	53	54	55	56	57	58	59	60
	61	62	63	64	65	66	67	68	69	70
	71	72	73	74	75	76	77	78	79	80
	81	82	83	84	85	86	87	88	89	90
	91	92	93	94	95	96	97	98	99	100
Vehicle Type-5										

Mazda, Coaster (up to 24 seats)	1	2	3	4	5	6	7	8	9	10
	11	12	13	14	15	16	17	18	19	20
	21	22	23	24	25	26	27	28	29	30
	31	32	33	34	35	36	37	38	39	40
	41	42	43	44	45	46	47	48	49	50
	51	52	53	54	55	56	57	58	59	60
	61	62	63	64	65	66	67	68	69	70
	71	72	73	74	75	76	77	78	79	80
	81	82	83	84	85	86	87	88	89	90
	91	92	93	94	95	96	97	98	99	100
Vehicle Type-6										

Large bus (>30 seats)	1	2	3	4	5	6	7	8	9	10
	11	12	13	14	15	16	17	18	19	20
	21	22	23	24	25	26	27	28	29	30
	31	32	33	34	35	36	37	38	39	40
	41	42	43	44	45	46	47	48	49	50
	51	52	53	54	55	56	57	58	59	60
	61	62	63	64	65	66	67	68	69	70
	71	72	73	74	75	76	77	78	79	80
	81	82	83	84	85	86	87	88	89	90
	91	92	93	94	95	96	97	98	99	100
Vehicle Type-7										

Pick-up, Delivery truck Utility vehicle, Ambulance	1	2	3	4	5	6	7	8	9	10
	11	12	13	14	15	16	17	18	19	20
	21	22	23	24	25	26	27	28	29	30
	31	32	33	34	35	36	37	38	39	40
	41	42	43	44	45	46	47	48	49	50
	51	52	53	54	55	56	57	58	59	60
	61	62	63	64	65	66	67	68	69	70
	71	72	73	74	75	76	77	78	79	80
	81	82	83	84	85	86	87	88	89	90
	91	92	93	94	95	96	97	98	99	100
Vehicle Type-8										

2-axle truck	1	2	3	4	5	6	7	8	9	10
	11	12	13	14	15	16	17	18	19	20
	21	22	23	24	25	26	27	28	29	30
	31	32	33	34	35	36	37	38	39	40
	41	42	43	44	45	46	47	48	49	50
	51	52	53	54	55	56	57	58	59	60
	61	62	63	64	65	66	67	68	69	70
	71	72	73	74	75	76	77	78	79	80
	81	82	83	84	85	86	87	88	89	90
	91	92	93	94	95	96	97	98	99	100
Vehicle Type-9										

3-axle truck, 3+-axle turck	1	2	3	4	5	6	7	8	9	10
	11	12	13	14	15	16	17	18	19	20
	21	22	23	24	25	26	27	28	29	30
	31	32	33	34	35	36	37	38	39	40
	41	42	43	44	45	46	47	48	49	50
	51	52	53	54	55	56	57	58	59	60
	61	62	63	64	65	66	67	68	69	70
	71	72	73	74	75	76	77	78	79	80
	81	82	83	84	85	86	87	88	89	90
	91	92	93	94	95	96	97	98	99	100
Vehicle Type-10										

Bicycle	1	2	3	4	5	6	7	8	9	10
	11	12	13	14	15	16	17	18	19	20
	21	22	23	24	25	26	27	28	29	30
	31	32	33	34	35	36	37	38	39	40
	41	42	43	44	45	46	47	48	49	50
	51	52	53	54	55	56	57	58	59	60
	61	62	63	64	65	66	67	68	69	70
	71	72	73	74	75	76	77	78	79	80
	81	82	83	84	85	86	87	88	89	90
	91	92	93	94	95	96	97	98	99	100
Vehicle Type-1										

Tractor	1	2	3	4	5	6	7	8	9	10
	11	12	13	14	15	16	17	18	19	20
	21	22	23	24	25	26	27	28	29	30
	31	32	33	34	35	36	37	38	39	40
	41	42	43	44	45	46	47	48	49	50
	51	52	53	54	55	56	57	58	59	60
	61	62	63	64	65	66	67	68	69	70
	71	72	73	74	75	76	77	78	79	80
	81	82	83	84	85	86	87	88	89	90
	91	92	93	94	95	96	97	98	99	100
Vehicle Type-11										

Other mechanized vehicle (including construction vehicle)	1	2	3	4	5	6	7	8	9	10
	11	12	13	14	15	16	17	18	19	20
	21	22	23	24	25	26	27	28	29	30
	31	32	33	34	35	36	37	38	39	40
	41	42	43	44	45	46	47	48	49	50
Vehicle Type-12										

Animal-driven cart	1	2	3	4	5	6	7	8	9	10
	11	12	13	14	15	16	17	18	19	20
	21	22	23	24	25	26	27	28	29	30
	31	32	33	34	35	36	37	38	39	40
	41	42	43	44	45	46	47	48	49	50
	51	52	53	54	55	56	57	58	59	60
	61	62	63	64	65	66	67	68	69	70
	71	72	73	74	75	76	77	78	79	80
	81	82	83	84	85	86	87	88	89	90
	91	92	93	94	95	96	97	98	99	100
Vehicle Type-13										

Comments (Weather etc.)

SITE MAP & STAFFING

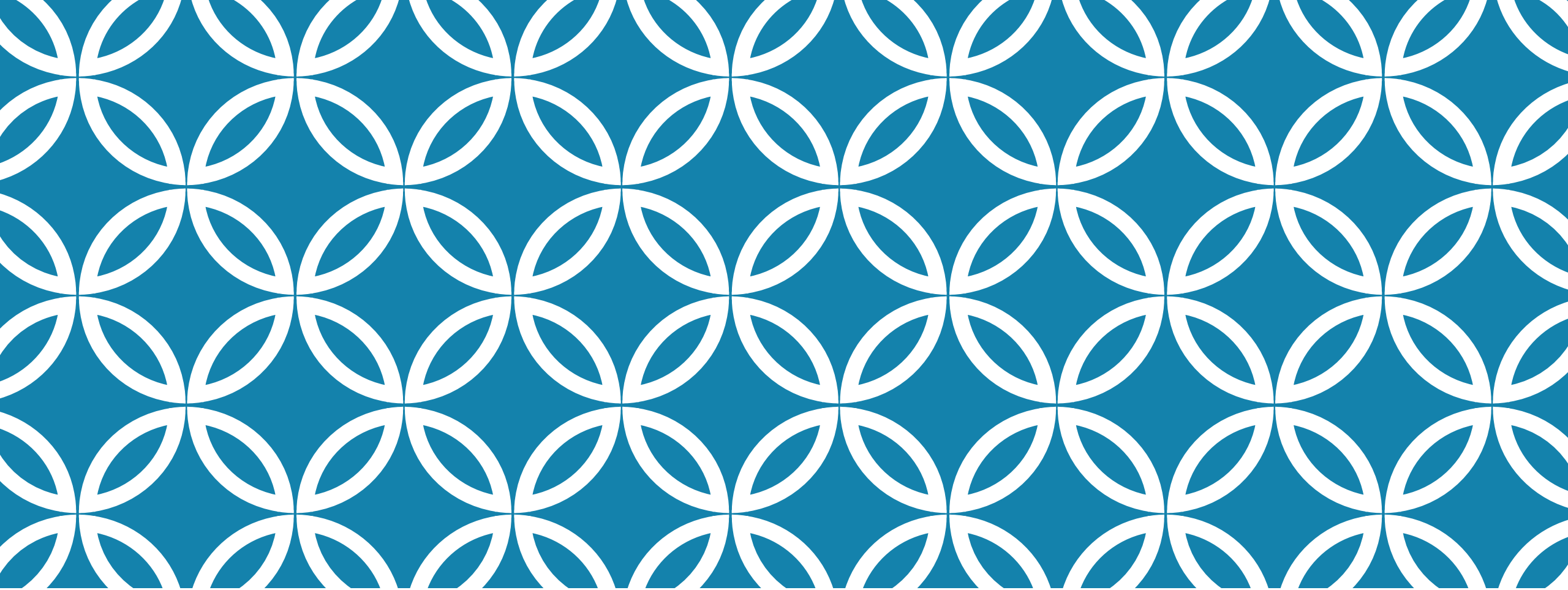
SITE SUPERVISOR

SURVEYORS

RELIEVERS

Site #	1	Location	P.M.G	1	Direction	1	Date	Tuesday, April 26, 2016	16
Day	TUESDAY	4	Supervisor	AHMED RAZA	1	Coder	FARAZ AHMED	2	

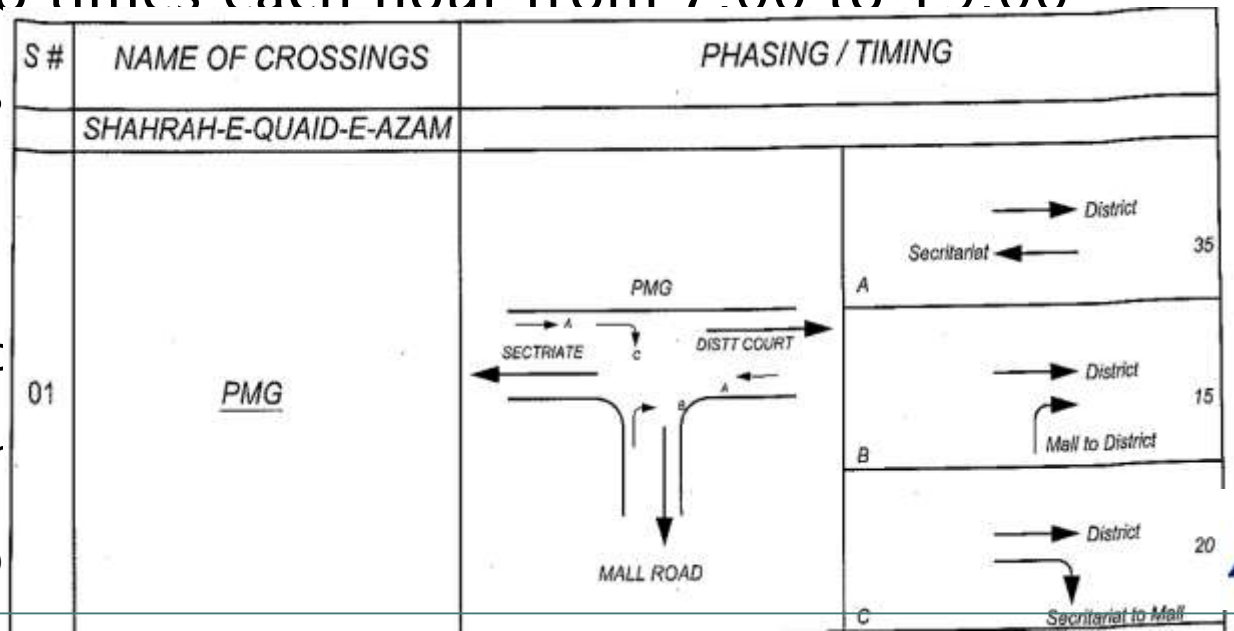
Code						Vehicle Type												
						1	2	3	4	5	6	7	8	9	10	11	12	13
Location	Site #	Direction	Date	Day	1/4 Hour	Bicycle	Motor-Bike	Rickshaw / Qingqi	Car	Wagon	Coaster	Large bus	Pick-Up	2-axle Truck	3+-axle Truck	Tractor	Other Vehicle	Animal Driven Carts
1	1	1	16	4	**7:00**		166	64	25	18	3	1	6	1		1	4	
1	1	1	16	4	7:15	1	216	57	51	29	11	3	8				3	
1	1	1	16	4	7:30		455	82	73	32	7	2	2	1			2	
1	1	1	16	4	7:45		419	58	66	33	3		3	4			3	1
1	1	1	16	4	8:00	4	428	64	52	28	5	3	6	2				
1	1	1	16	4	8:15		398	60	52	16	4		3	4			1	3
1	1	1	16	4	8:30	1	503	77	64	27	4		2	1			4	3
1	1	1	16	4	8:45		422	92	60	24	6		2	4			2	
1	1	1	16	4	9:00		466	95	76	23	5			3		1	3	
1	1	1	16	4	9:15		473	92	72	30	4		4	1			3	
1	1	1	16	4	9:30		239	53	38	5	3		2					3
1	1	1	16	4	9:45		72	54	41	11	1						2	
1	1	1	16	4	**13:00**		46	7	4									
1	1	1	16	4	13:15		36	2	6									
1	1	1	16	4	13:30		54	3	8									
1	1	1	16	4	13:45		41	2	5									
1	1	1	16	4	14:00		51	3	3									
1	1	1	16	4	14:15		52	7	5									
1	1	1	16	4	14:30		87	10	11									
1	1	1	16	4	14:45		92	5	6									
1	1	1	16	4	**16:00**	1	435	78	108	18	3	6	6	7			1	3
1	1	1	16	4	16:15	1	466	87	96	23	8	3	9	11			1	2
1	1	1	16	4	16:30	1	481	116	98	24	2		8	11			5	
1	1	1	16	4	16:45	2	506	80	95	21	4	2	11	5			2	3
1	1	1	16	4	17:00		496	100	112	32	3	4	15	6			2	1
1	1	1	16	4	17:15		510	66	88	30	1	1	8	8		1	7	4
1	1	1	16	4	17:30	1	477	93	97	29	3	1	6	8			1	4
1	1	1	16	4	17:45	2	488	107	109	27	3	4	6	7	2		6	2
1	1	1	16	4	18:00		496	76	113	36	5	2	7	8			1	3
1	1	1	16	4	18:15	2	531	94	89	27	3	1	3	2			1	4
1	1	1	16	4	18:30	1	556	91	101	21	1		7	15				1
1	1	1	16	4	18:45	4	518	120	106	33	7		9	5			2	5



SIGNAL PHASING & TIMING SURVEY

SURVEY DESCRIPTION

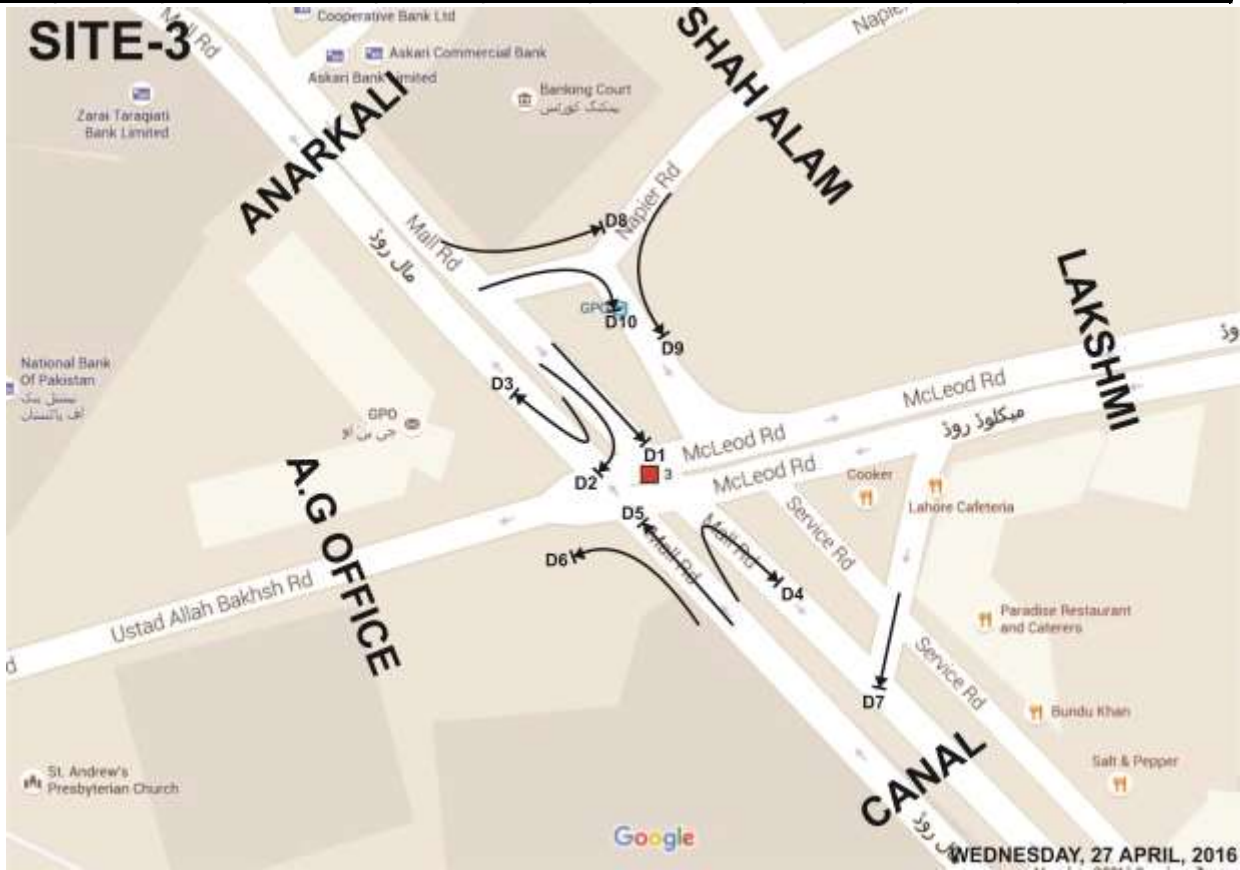
- Survey Objective is to measure **Signal Phase Pattern**, and the **Phase Time**
- The Survey was conducted on all Signalized Junctions for selected sites
- Measurement was done two times each hour from 7:00 to 19:00
- Additional information was junctions;
  - Signal Operational
  - Signal not working – Warden Cc
  - Signal not working – No Warder
  - Un-signalized – Warden Contro



GPO		North Bound					South Bound					East Bound					West Bound					
Cycle Pattern	Cycle Time Split	NBL2	NBL	NBT	NBR	NBR2	SBL2	SBL	SBT	SBR	SBR2	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	WBR2	Cycle Time
A	Green			52					1													52
	Yellow			3					1													3
	Phase Shift			-					1													-
B	Green			34	1																	34
	Yellow			3	1																	3
	Phase Shift			3	1																	3
C	Green													24	1							24
	Yellow													3	1							3
	Phase Shift													3	1							3
D	Green																					-
	Yellow																					-
	Phase Shift																					-

G.P.O						
3						
Time	Phase	Green	Yellow	Red	Phase Shift	Total
55	A	52	3	70	-	125
40	B	34	3	85	3	125
30	C	24	3	95	3	125
	D					-
125	-	110	9	-	6	125

		CANAL			
		N			
LAKSHMI	W		E	A.G. OFFICE	
		S			
		ANARKALI			



TRAFFIC SIGNAL ASSESSMENT SURVEY - DATA

SITE #	1	**LOCATION**			1
DATE	Tuesday, April 26, 2016	6	**DAY**		2
SURVEYOR	FARRUKH MAHMOOD	A1	**SUPERVISOR**	AHMED RAZA	1

Time Start	Time End	Signal Type	Working	Not Working - No Body	Traffic Wardens
7:00 AM	***8:00 AM***	Pre-Timed		1	
8:00 AM	***9:00 AM***	Pre-Timed			
9:00 AM	***10:00 AM***	Pre-Timed			
1:00 PM	***2:00 PM***	Pre-Timed			4
2:00 PM	***3:00 PM***	Pre-Timed			4
4:00 PM	***5:00 PM***	Pre-Timed			
5:00 PM	***6:00 PM***	Pre-Timed			
6:00 PM	***7:00 PM***	Pre-Timed			

TRAVEL SPEED SURVEY

TS

TRAVEL TIME & DELAY SURVEY

SPEED – TRAVEL TIME – DELAY

SPEED and TRAVEL TIME used to measure performance of traffic facilities and networks whereas **DELAY** to measure performance of traffic flow at intersections

- **Travel Time and Delay studies should not be confused;**
  - Travel Time Study collects only average travel time to traverse a given segment
  - Delay Study provides information concerning the **amount**, **cause**, **location**, **duration**, and **frequency** of delay as well as travel time and similar value.
    - The time lost by traffic due to traffic friction and traffic control device is called delay.
    - Types of delay: Congestion Delay, Fixed Delay, Operational Delay, Stopped Delay, Travel Time Delay, Approach Delay

PURPOSE OF TRAVEL TIME & DELAY STUDY

- Evaluate the **quality of traffic movement** along a route and determine the locations, types, and extent of traffic delays by using a moving test vehicle.
- This study method can be used to compare **operational conditions** before and after roadway or intersection improvements have been made. It can also be used as a tool to assist in prioritizing projects by comparing the magnitude of the operational deficiencies (such as delays and stops) for each project under consideration.
- Can also be used by planners to monitor **level of service** for local government comprehensive plans.
- Provides the engineer with quantitative information with which he can **develop recommendations** for improvements such as *traffic signal re-timing*, *safety improvements*, *turn lane additions*, and *channelization enhancements*

METHODOLOGIES

1. **Floating car method (Used)**
2. Average speed method
3. Moving vehicle method
4. Maximum car method
5. Elevated observer method
6. License plate method
7. Photographic method
8. Interview method
9. Cycle based method

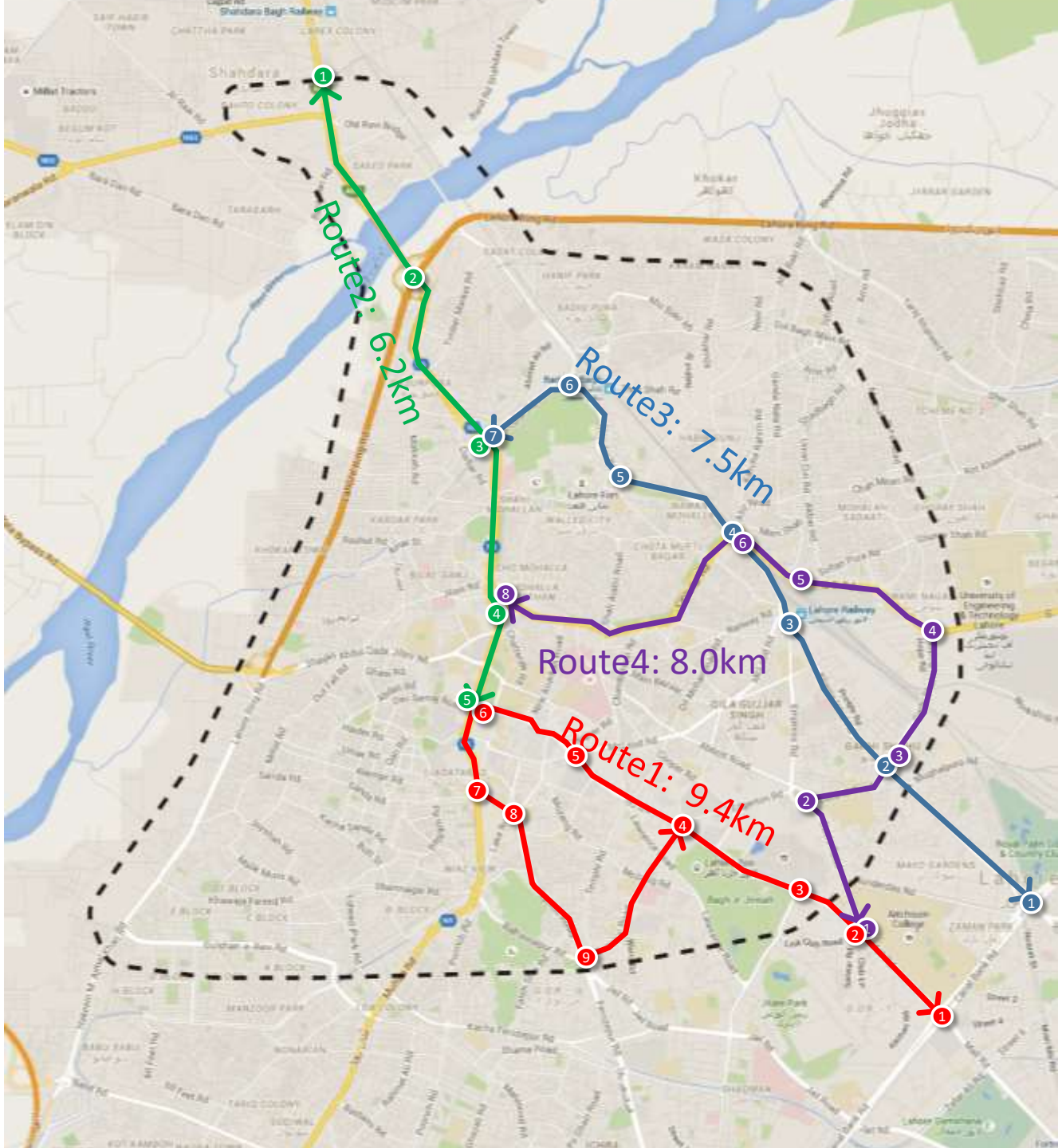
In this method the driver tries to float in the traffic stream passing as many vehicles. In such a test vehicle, one passenger acts as observer while another records duration of delays and the actual elapsed time of passing control points along the route from start to finish of the run.

PLANNED ROUTES

FLOATING CAR METHOD

GPS & PICTURES

MANUAL FORM FILL



Travel Speed Survey Form

A Project for Improvement of Traffic Management Capacity in Lahore

Travel Speed Survey

Survey Consultant: METRO ASSOCIATES (Pvt) Ltd.

Survey Site (Location) _____ Surveyor _____

Survey Direction _____

Date _____ Day _____ Coded by _____

Strat Time _____ Checked by _____

Sample NO _____

*Intersection name and passed time should be written

NAME OF INTERSECTION (Check Point)	Time Started / Passed	stop time	DA	start distance (km)	Stop distance (km)

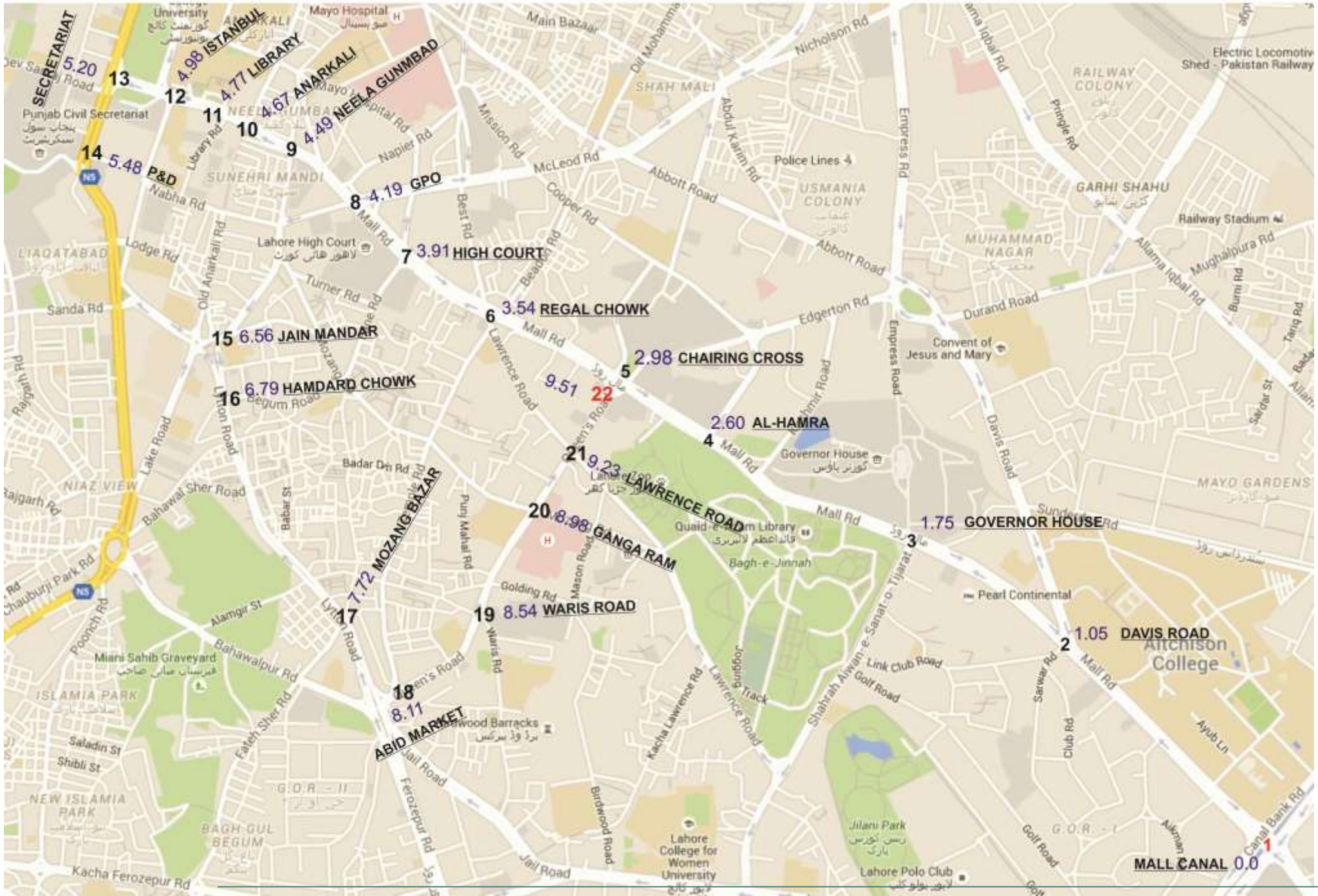
Symbols for Delay Cause

S1 : Traffic Signal(ONE)
2 : Traffic Signal(2 times or more)
GC : General Congestion
RR: Road Repairing
TA :Traffic Accident
PC :Police Check
OT: Others (pls. specify)

DIRECTION: 1 TO 22

ROUTE-1

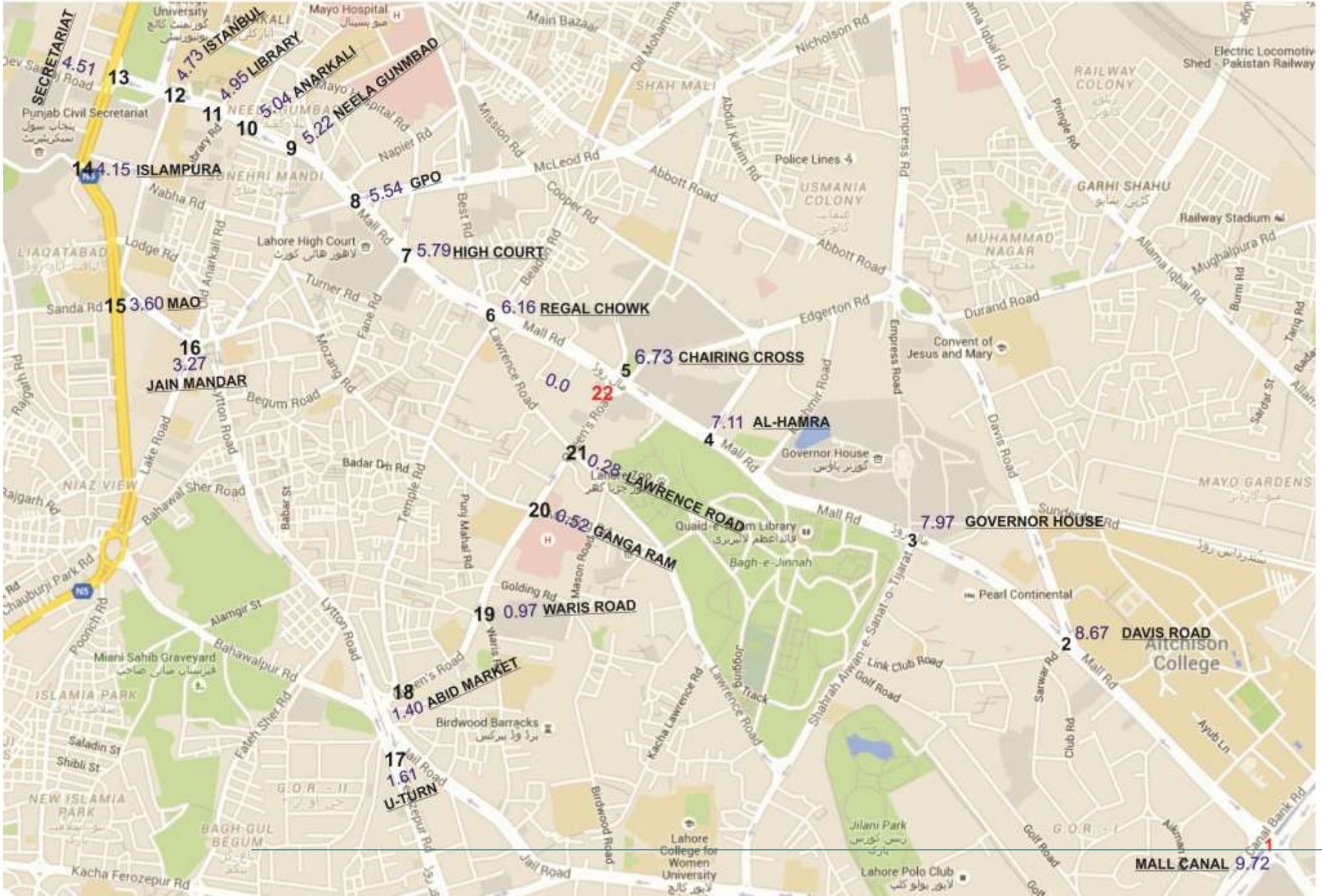
MONDAY, 9 MAY, 2016



DIRECTION: 22 TO 1

ROUTE-1

MONDAY, 9 MAY, 2016



ROUTE #	1	SURVEYOR	**SIKANDAR**
SURVEY DIRECTION	1	CODER	**SIKANDAR**
DATE	9/5/2016	SUPERVISOR	**AHMED RAZA**
DAY	MONDAY		
START TIME	7:00 AM		
SAMPLE NO	1		

#	NAME OF INTERSECTION (Check Point)	Time Started / Passed		Stop Time		DA	Start Distance (km)	Stop Distance (km)
		MIN	SEC	MIN	SEC			
1	MALL CANAL	0	0	1	52	S1	0	1.05
2	DAVIS ROAD	1	52	3	23	S1	1.05	1.75
3	GOVERNOR HOUSE	3	23	5	47	TW	1.75	3.54
4	AL-HAMRA							
5	CHAIRING CROSS							
6	REGAL CHOWK	5	47	6	31	S1	3.54	3.91
7	HIGH COURT	6	31	7	27	S1	3.91	4.19
8	GPO	7	27	13	37	S1	4.19	6.79
9	NEELA GUMBAD							
10	ANARKALI							
11	LIBRARY							
12	ISTANBUL							
13	SECRETARIAT							
14	P & D							
15	JAIN MANDAR							
16	HAMDARD CHOWK	13	37	18	10	STOP	6.79	9.51
17	MOZANG BAZAR							
18	ABID MARKET							
19	WARIS ROAD							
20	GANGA RAM							
21	LAWRENCE ROAD							
22	CHAIRING CROSS	18	10				9.51	

DA	DESCRIPTION
S1	Traffic Signal (One)
S2	Traffic Signal (Twice)
GC	General Congestion
TW	Traffic Warden Control
RB	Road Block
UT	U - Turn
CW	Construction Work

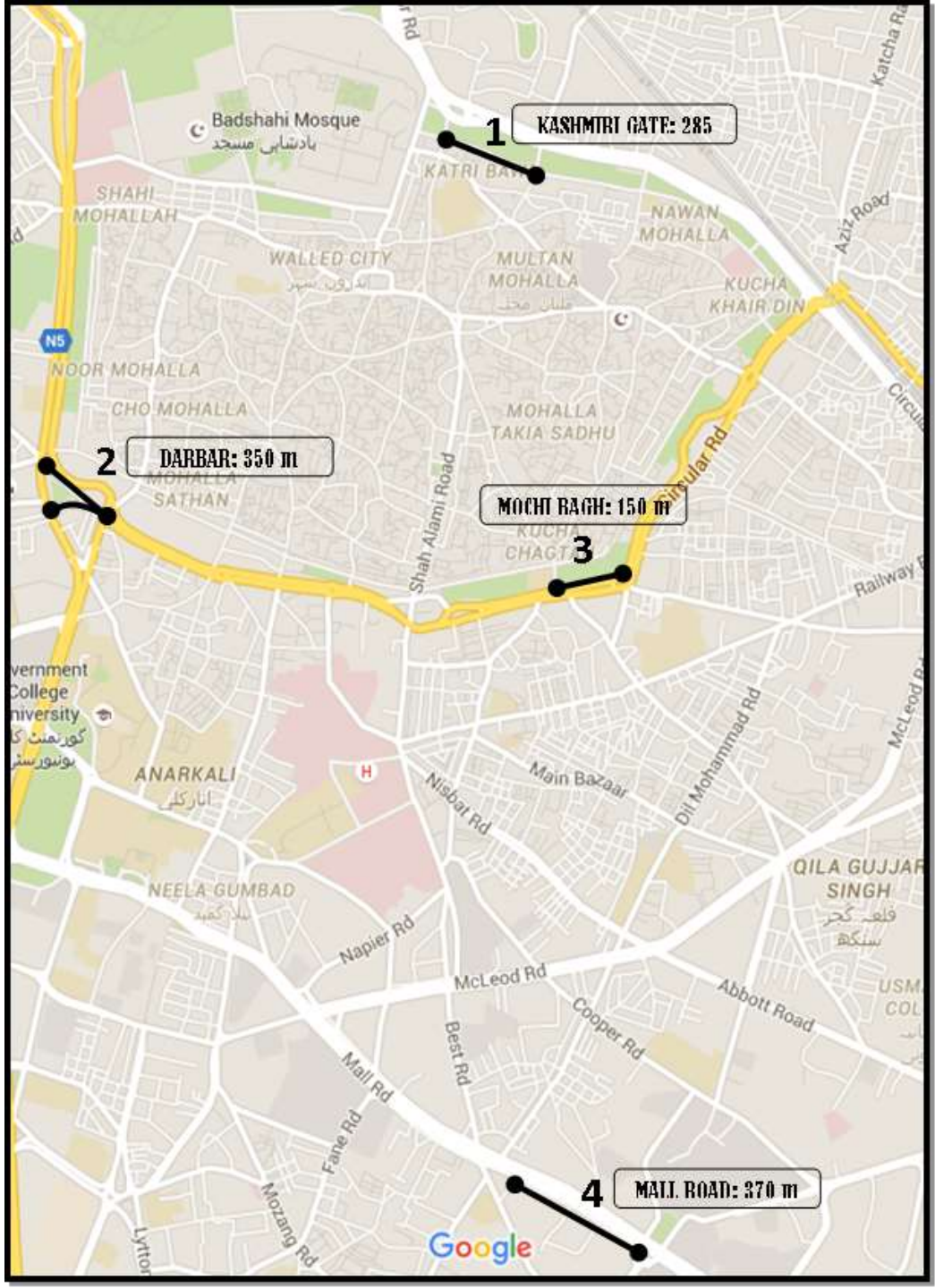
PARKING SURVEY

SURVEY DESCRIPTION

- Periodic observation and recording every 30 minutes of parked vehicles by vehicle type at on-street parking by surveyors;
  - Parking demand
  - Occupancy condition
  - Illegal parking situation

Parking Survey Sites Location

Parking Survey Sites		
No.	Road Section	Survey Site Description
1	Circular Road North Arc	Kashmiri Gate
2	Railway Circle	Railway Station
3	Circular Road South Arc	Near Mochi Gate
4	Darbar	Darbar Parking



Parking Site - 1

Project for Improvement of Traffic Management Capacity in Lahore

Parking Accumulation Survey

Count Sheet

Form 1

Survey Consultant: METRO ASSOCIATES (Pvt) Ltd.

Survey Site (Location) ☐☐☐

Survey Section ☐☐☐

Time 1/2 Hour Beginning ☐☐☐☐

Day ☐

Date ☐☐

Surveyor ☐☐☐

Coded by ☐☐☐

Checked by ☐☐☐

Motorcycle

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125
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551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575
576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600
601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625
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651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675
676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700
701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725
726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750
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776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800
801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825
826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850
851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875

Vehicle Type-2 ☐☐☐

Car, Taxi, 4WD
Jeep, Land Cruiser
Hiace

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125
126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225

Vehicle Type 4 ☐☐☐

Rickshaw, Qingi

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25

Vehicle Type-3

2-axle truck

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25

Vehicle Type-9

Animal-driven cart

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25

Vehicle Type-13

Comments (Weather etc.)

Site #	1	Location	KASHMIRI GATE	1	Date	Wednesday, May 11, 2016	31
Day	WEDNESDAY	3	Supervisor	AHMED RAZA	1	Coder FARAZ	2

Code						Vehicle Type				
						2	3	4	9	13
Location	Site #	Direction	Date	Day	1/4 Hour	Motorcycle	Rickshaw / Qingqi	Car	2-axle Truck	Animal Driven Carts
1	1	-	31	3	7:00	27	12	9	2	
1	1	-	31	3	7:30	38	11	19	2	
1	1	-	31	3	8:00	49	16	26	2	
1	1	-	31	3	8:30	52	14	32	2	
1	1	-	31	3	9:00	117	38	30	2	
1	1	-	31	3	9:30	176	42	35	2	
1	1	-	31	3	10:00	116	12	17	2	
1	1	-	31	3	10:30	122	12	25	2	
1	1	-	31	3	11:00	110	18	20	2	
1	1	-	31	3	11:30	126	22	23	2	
1	1	-	31	3	12:00	134	9	39	2	
1	1	-	31	3	12:30	137	15	34	2	
1	1	-	31	3	13:00	130	15	29	2	
1	1	-	31	3	13:30	126	17	32	2	
1	1	-	31	3	14:00	133	14	36	2	
1	1	-	31	3	14:30	149	20	37	2	
1	1	-	31	3	15:00	144	17	27	2	
1	1	-	31	3	15:30	117	7	56	2	
1	1	-	31	3	16:00	122	6	52	2	
1	1	-	31	3	16:30	121	9	62	2	
1	1	-	31	3	17:00	111	12	58	2	
1	1	-	31	3	17:30	111	5	67	2	
1	1	-	31	3	18:00	119	8	69	2	
1	1	-	31	3	18:30	112	10	65	2	

TRAFFIC DEMAND MANAGEMENT MEASURES INTERVIEW SURVEY

SURVEY DESCRIPTION

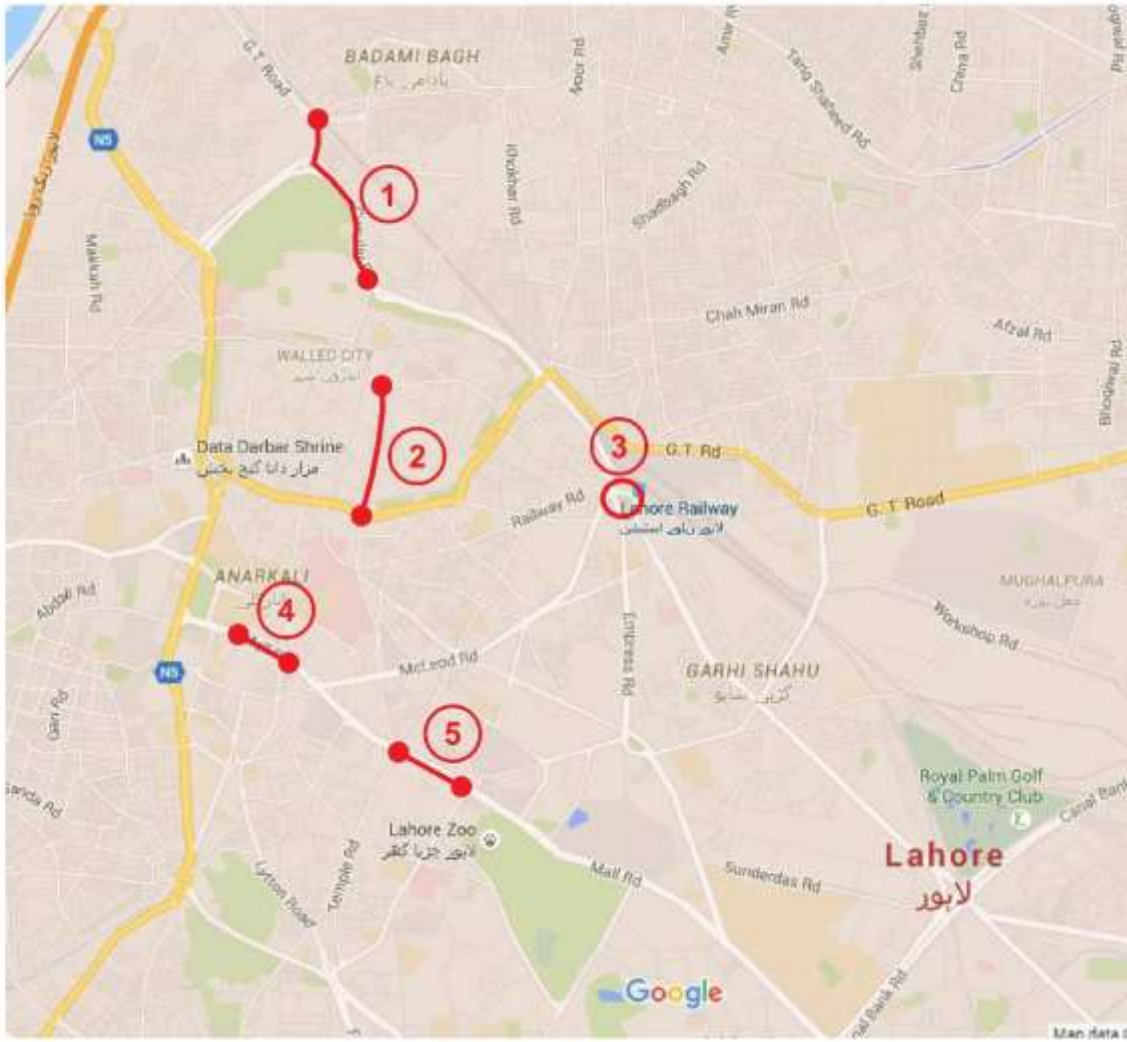
- To know the reaction of general public over traffic demand management measures
  - Existing public transport services
  - Measures to improve traffic flow
  - Major causes of traffic congestion etc.
- Interview private (cars, and motorcycle drivers) and public transport users (using METRO, and buses)

Location	Number	Time		
Car Park (motorcycle drivers)	200	8:00	~	20:00
Car Park (car drivers)	200	8:00	~	20:00
BRT Station (public transport users)	150	8:00	~	20:00
Bus Stop / Terminal (public transport users)	50	8:00	~	20:00
Total	600			

INTERVIEW LOCATOIN MAP

BRT STATIONS

1. AZADAI CHOWK
2. KATCHEHRI
3. MAO COLLEGE



Traffic Management Interview Survey

The Project on Improvement of Traffic Management Capacity
in Lahore Central Area in Islamic Republic of Pakistan

Survey Site: _____ Surveyor: _____

Date: _____ (dd/mm/yy)

Time: _____ (hour:minute)

Personal Characteristics

Q.1 Gender : 1.☐Male 2.☐Female

Q.2 Age : 1.☐18-29 2.☐30-39 3.☐40-49 4.☐50-59 5.☐60 and above

Q.3 Occupation :
1.☐Professional/ Technical
2.☐Administrative/ Managerial
3.☐Clerical
4.☐Sales
5.☐Service
6. ☐Agriculture, forestry, farming
7. ☐Manufacturing/Production
8. ☐Transport/ Communication
9. ☐Armed Forces
10.☐Student (High school & Univ.)
11.☐Housewife
12.☐Not classifiable
13.☐Jobless
14.☐Others(_____)

Q.4 Monthly Income:
1.☐Below 4,000
2.☐4,001- 6,000
3.☐6,001- 8,000
4.☐8,001- 10,000
5.☐10,001- 12,500
6. ☐12,501- 15,000
7. ☐15,001- 17,500
8. ☐17,501- 20,000
9. ☐20,001- 25,000
10.☐25,001- 30,000
11.☐30,001- 40,000
12.☐40,001- 50,000
13.☐50,001-100,000
14.☐More than 100,000

Trip Characteristics

Q.5 How do you go to the workplace/ school?
1.☐Walk 2.☐Bicycle 3.☐Motorcycle 4.☐Car 5.☐Bus 6.☐Rickshaw 7.☐Metrobus 8.☐Others()

Q.6 How long does it take to go to the workplace/ school?
1.☐Within 10minutes 2.☐11 - 30 minutes 3.☐31 - 60 minutes 4.☐Over 60 minutes

Q.7 Do you have a driving license? (choose those that apply)
1.☐Motorcycle 2.☐Car 3.☐Public Service Vehicle 4.☐Truck 5.☐Others() 6.☐None

Q.8 How many vehicles do you own? (choose those that apply and write down the no. of unit)
1.☐Motorcycle ( ) 2.☐Car ( ) 3.☐Rickshaw, Qingqi ( ) 4.☐Van, Bus ( ) 5.☐Truck ( ) 6.☐Others() ( ) 7.☐None

Traffic Management Measures

Q.9 Please assess the traffic conditions from the following aspects.

	Very Bad	Bad	Average	Good	Very Good	
A. Traffic Signal Operation	☐1	☐2	☐3	☐4	☐5	
B. Traffic Signs and Road Markings of Intersections	☐1	☐2	☐3	☐4	☐5	
C. Geometric Design of Intersections	☐1	☐2	☐3	☐4	☐5	
D. One-way System	☐1	☐2	☐3	☐4	☐5	
E. U-turn System	☐1	☐2	☐3	☐4	☐5	
F. Signal Free Corridor	☐1	☐2	☐3	☐4	☐5	
G. Parking Supply & Enforcement	☐1	☐2	☐3	☐4	☐5	
H. Sidewalk Condition	☐1	☐2	☐3	☐4	☐5	
H. Public Transport	☐1	☐2	☐3	☐4	☐5	
I. Pedestrian Crossing Facility (Supply, Operation, Condition)	☐1	☐2	☐3	☐4	☐5	
J. Drivers' Behavior	☐1	☐2	☐3	☐4	☐5	
K. Enforcement of traffic rules & regulations	☐1	☐2	☐3	☐4	☐5	
L. Others(.....)	☐1	☐2	☐3	☐4	☐5	

Q.10 What do you think is the problem of the **Traffic Signals**? (choose those that apply)
1.☐ Too many signals
2.☐ Long red duration (waiting time is long)
3.☐ Difficult to see (the signal size is less visible / the signal is far from a stop line / backlight)
4.☐ Signal not working (Signal switched off by wardens or load shedding)
5.☐ Other (please specify_____)

Q.11 What do you think is the problem of the **Intersections**? (choose those that apply)
1.☐ Poor geometric designs (configuration is bad)
2.☐ Poor/ No traffic signs
3.☐ Poor/ No road markings
4.☐ Other (please specify_____)

Q.12 What do you think is the problem of **One-Way System**? (choose those that apply)
1.☐Long detour to reach a destination
2.☐Lack of information/ traffic signs of one-way route
3.☐ Other (please specify_____)

Q.13 What do you think is the problem of **U-turn System**? (choose those that apply)
1.☐ Cause of traffic accidents
2.☐ Cause of traffic congestions
3.☐ Other (please specify_____)

Q.14 What do you think is the problem of **Signal Free Corridor**? (choose those that apply)
1.☐ More travelling time
2.☐ Inefficiency of U-turns
3.☐ Cause of traffic accidents
4.☐ Cause of traffic congestions
5.☐ Other (please specify_____)

Q.15 What do you think is the problem of **Side Walks**? (choose those that apply)
1.☐ Mostly occupied
3.☐ Bumpy (changes in level of sidewalk / deteriorated pavement)
4.☐ Some roads without supply of sidewalk
5.☐ Other (please specify_____)

Q.16 What do you think is the problem of the **Pedestrian Crossing Facility**? (choose those that apply)
1.☐ No/ Few pedestrian signals
2.☐ No/ Few pedestrian crossings (and crossing is dangerous)
3.☐ No/ Few pedestrian bridges / underpasses (more bridges / underpasses are needed)
4.☐ Inconvenience in use of bridges / underpasses
5.☐ Other (please specify_____)

Q. 17 Type of Pedestrian Crossing Facility preferred? (choose those that apply)
1.☐ Overhead Bride
2.☐ Underpass
3.☐ At-Grade

Q.18 What do you think is the problem of the **Parking**? (choose those that apply)
1.☐ Roadside parking (on-street, on-sidewalk)

2. ☐ Too few parking lots (more parking lots are needed)
3. ☐ Double parking
4. ☐ High parking cost
5. ☐ Other (please specify_____)

Q.19 What do you think is the problem of the **Drivers' Behavior & Enforcement**? (choose those that apply)

1. ☐ Bad/Poor driving behavior (driving manner, unreasonable lane-changing)
2. ☐ Mix of fast & slow moving vehicles
3. ☐ Poor enforcement of traffic rules (the enforcement should be more strict / the fine should be costly)
4. ☐ Obtaining driver licenses without undergoing regular trainings/ tests
5. ☐ Poor Geometric Design
6. ☐ Other (please specify_____)

Q.20 What do you think is the problem in use of **Public Transport**? (choose those that apply)

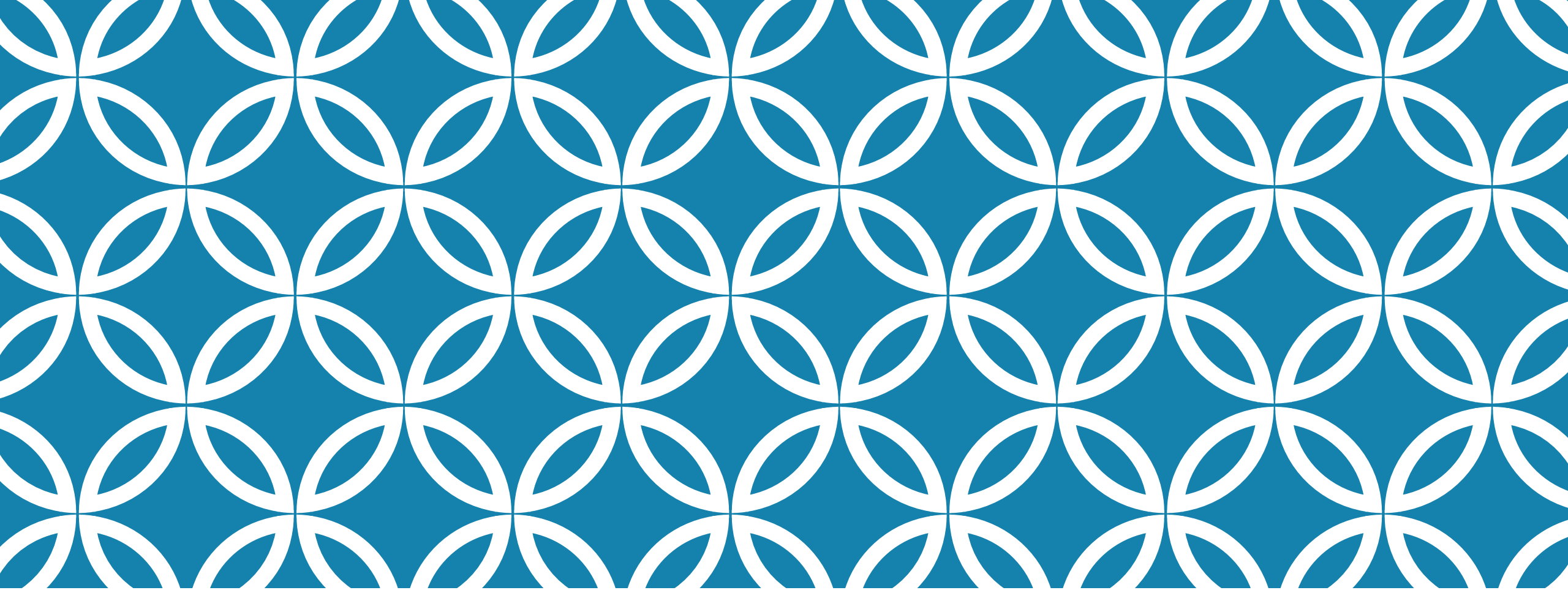
1. ☐ Few Bus Routes
2. ☐ Very less/ few buses on route (More Headway)
3. ☐ More Journey Time
4. ☐ Poor Bus Conditions
5. ☐ No/Poor Integration
6. ☐ Poor Bus Stop facilities
7. ☐ Other (please specify_____)

Q.21 Please choose the three (3) priority issues to solve traffic problems in Lahore central area.

1. ☐Traffic Signals	4. ☐U-turn System	7.☐Pedestrian Crossing Facility	☐
2. ☐Intersection Improvement	5. ☐Parking	8.☐Driver's Behavior & Enforcement	☐
3. ☐One-way System	6. ☐Sidewalks	9.☐Bridges / Flyovers	☐
10.☐Public Transport	11.☐Encroachment		

Q 22.Please choose the measures which you think are helpful for addressing traffic congestion in Lahore?

1. ☐ Promotion of Public Transport (Bus, BRT etc) and mode shift to public transport
2. ☐ Staggered commuting hours (leave home earlier or later for your workplace/school)
3. ☐ Car pooling (ride together in a car)
4. ☐ Car sharing (share the use of cars between registered members)
5. ☐ Park & ride (park your car at a parking lot near a station/ bus stop and take a train, BRT or a bus)
6. ☐ Road pricing in city center and during peak hour
7. ☐ Advance Traffic Management System
8. ☐ Others (please specify_____)



QUESTIONS ARE MOST WELLCOME

THANKS FOR YOUR PATIENCE