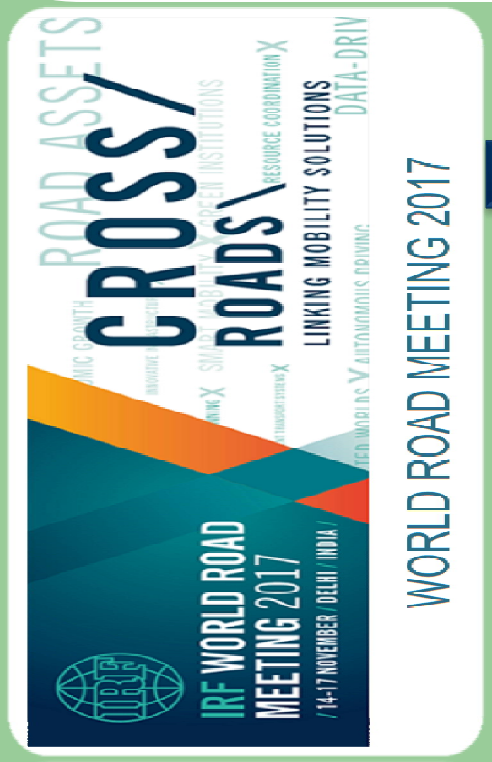
INVESTIGATION OF CAPACITY AND CAUSES OF CONGESTION AT ROTARY INTERSECTION: A CASE STUDY OF KULULA PUSHTA SQUARE



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INTRODUCTION

- In recent times, there has been tremendous increase in road traffic at intersections (majorly at rotaries) leading to deterioration in capacity and inefficient performance of traffic systems.
- Kabul, one of the most populated city (more than 3.6 million) of Afghanistan is facing the increase traffic congestion and delay.
  - Kabul city don't have proper public transport facilities.

INTRODUCTION

- Kulula Pushta Square is one of the most congested intersection of Kabul city.
- Kulula Pushta intersection is the junction of connecting two roads (arterial and collectors).
- Kulula Pushta Square is channelized intersection having central island with traffic separators at four legs.

About the Study Area

- Kabul city population growth is 6.9% but traffic growth is 11% for years of 2005-2006.
- More than 150 intersections had congestion and only 18 intersections were channelized.
- Planned up to 2018 is that all roads and intersections shall be paved.

About the Study Area

- Kabul city have more than 3.6million vehicles with traffic growth 11-12% that are causing congestion.
- City has 1500km roads and 20% are paved and 60% pavements are damaged.
- **T**he distance between Kulula Pushta rotary weaving section and CBD area is affecting the capacity of weaving section.

Objectives of the study

- To investigate the ***existing*** and ***improved*** geometry of the rotary.
- To analyze and study the ***capacity*** of rotary.
- To study the probable ***causes of congestion***.

Problem Statement

- Lack of traffic ***regulation***.
- Absence of ***traffic control devices*** and pavement marking.
- ***Vehicle parking*** at intersection area.
- Using of rotary space by ***nearby owners***.
- ***Un-planned traffic management*** in term of driver licensing.

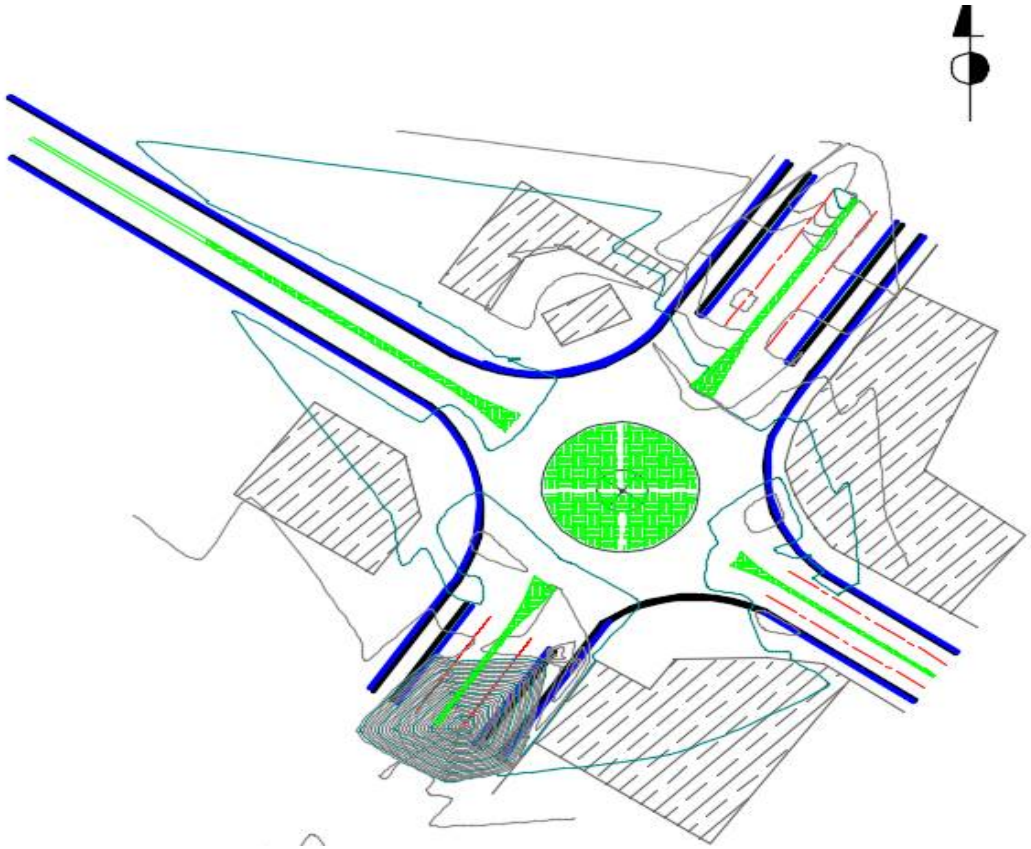
Approach Methodology structure

- Defining Of Problems
- Literature Review
- Data Collection
- Data Analysis
- Conclusion
- Recommendations

Data Collection

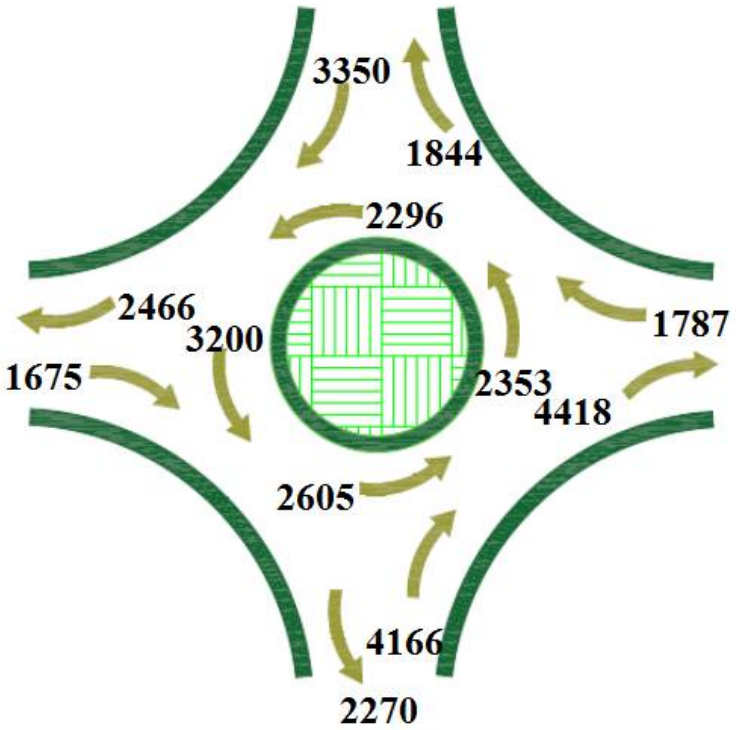
Topographic Map

To specify the geometrical features of the intersection

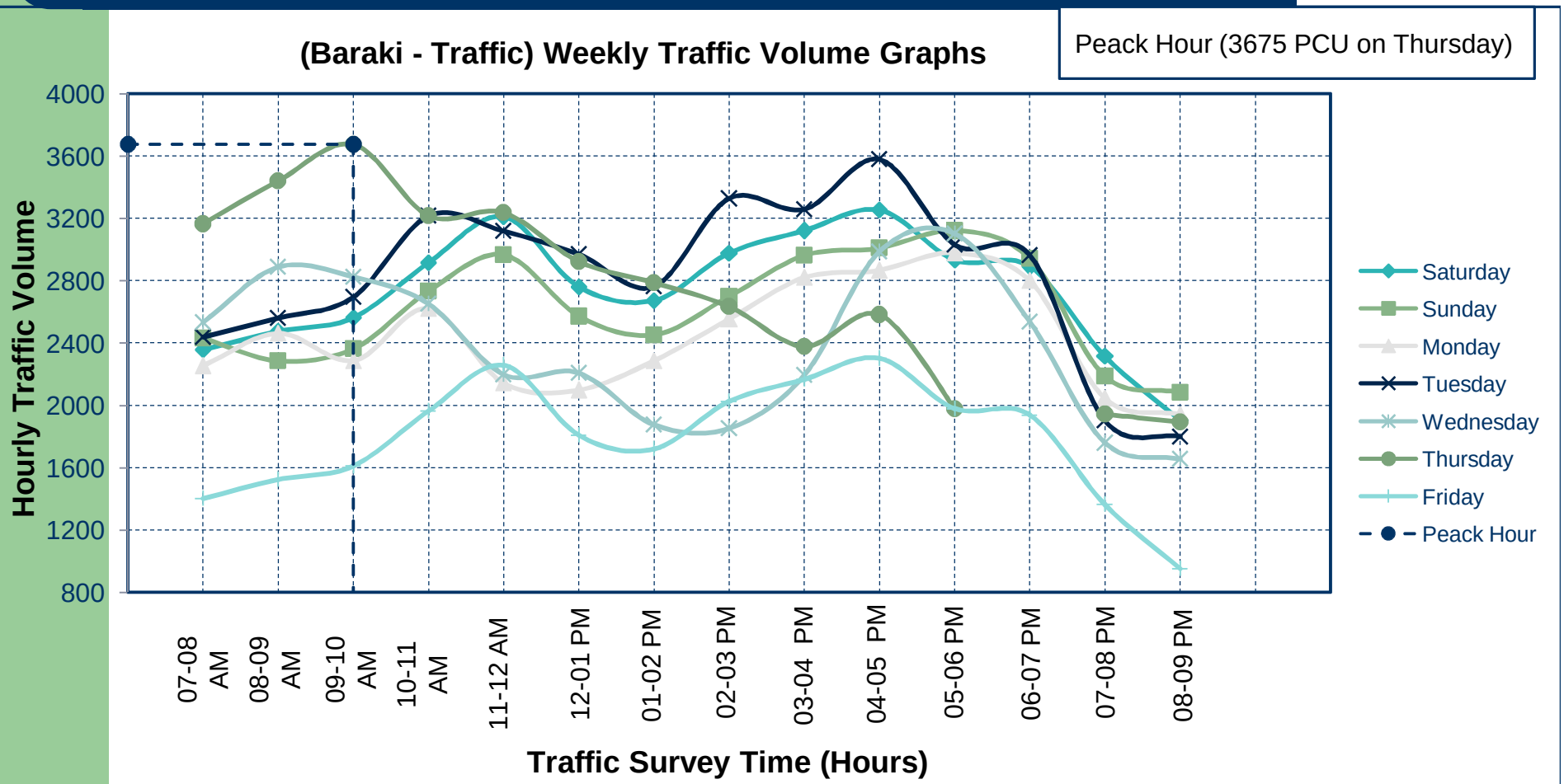


Data Collection

Traffic Count and Survey for Kulula Pushta Rotary and its flow diagram



Data Analysis



Data Analysis

- **Over all peak hour flow is at evening time of working day and the capacity (As per TRRL formula)**

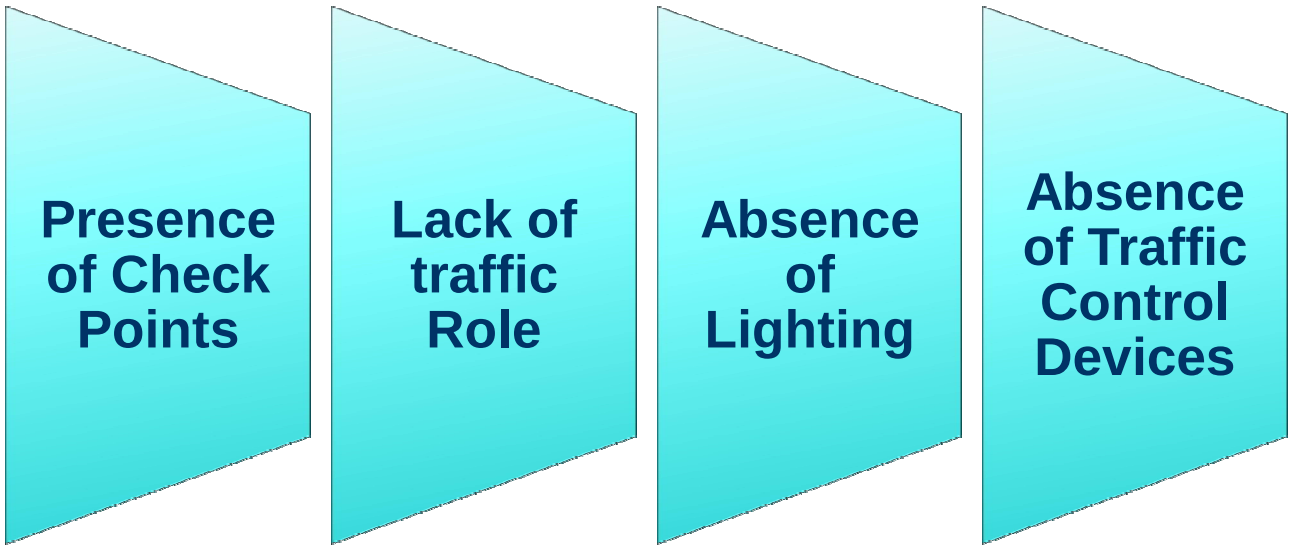
Bound entry volume	Taimani-Traffic	Baraki-Traffic	Ansari-Traffic	Gul-e-Sourkh-Traffic
Volume at bounds	3216	3957	1751	1608
Capacity at bounds	3661	3181	1446	1521
Volume to capacity ratio	0.96	1.03	1.02	1.01

Conclusions

- Peak flow is at ***evening time*** of working days with highest peak flow of ***4166 PCU/h*** at southbound.
- Traffic flow at Kulula Pushta square is of ***mix type traffic*** with percentage of heavy vehicles up to ***2.10%***.
- Absence of ***traffic regulations*** especially at lane changing.

Conclusion

The causes of congestion consist of:



Recommendations

Type	Feature	Existing	Improvement
Geometrical	Central Circle	44	55-100
	Entry Radius	41-45	48
Provision of Bypass lane and Reduction of conflict between entry lanes			
Traffic Regulation	***License restriction*** and lane changing characteristics		
Traffic control devices in term of ***Signal/ Signage*** are Improper at all legs.			
Removal of obstruction (***check point and buriers***)			
General knowledge for people about road importance and safety			

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