



**Evaluation and Improvement of Traffic Flow on
Roundabout of Arterial Urban Street in
Amman/ Jordan**

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*This Thesis was submitted as Partial Fulfillment of the Requirements for
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Authorization Form

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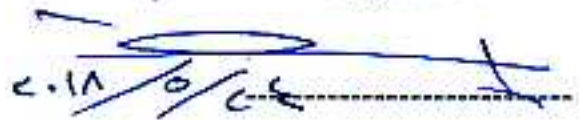
Committee Decision

This Thesis (Evaluation and Improvement of Traffic Flow on Roundabout of Arterial Urban Street in Amman / Jordan) was Successfully Defended and Approved on 15- May- 2018

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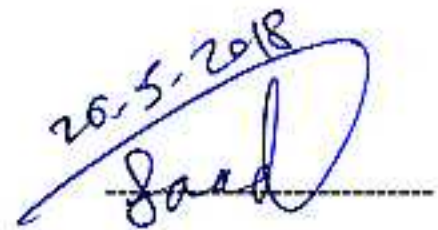


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Dedication

To the spirit of my father

who was supporting and encouraging me to believe in myself

My Mother

Who taught me to trust in Allah

To My Brothers and Sisters

Who always beside me in whole my life

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List of Abbreviations

Abbreviation	Meaning
EPM	Engineering Project Management
LOS	Level of Service
TSM	Transportation System Management
TDM	Transportation Demand Management
TMS	Traffic Management System
TNMS	Traffic Network Management System
QoS	Quality of Service
AS	Autonomous System
DTA	Dynamic Traffic Assignment
DRIP	Dynamic Route Information Panel
ITE	The Institute of Transportation Engineers
PHF	Peak Hour Factor
PHV	Peak Hour Volume
HCM	Highway Capacity Manual
HCS	Highway Capacity Software
AADT	Annual Average Daily Traffic
ITS	Intelligent Transportation System
PCE	Passenger Car Equivalent
TRB	Transportation Research Board
HOV	High Occupancy Vehicle
HOT	High Occupancy Toll

Evaluation and Improvement of Traffic Flow in Roundabout Intersection of Arterial Urban Street in Amman / Jordan

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Abstract

The study aims to analyze, evaluate and improve of the traffic flow conditions on six roundabouts located on arterial Zahran Street in Amman area.

The traffic flow and geometric conditions were analyzed at six selected roundabouts for the three periods of times, existing condition (year 2017), short-term condition (year 2022) and mid-term condition (year 2027).

Highway Capacity Manual (HCM2010) and Highway Capacity Software (HCS2010) were used to analyze and evaluate the data collection for the three periods of times.

The results of analysis shows that the output results of (HCS-2010) indicates LOS-F for all selected roundabouts on all period of times, which represents high congestions with breakdown traffic flow condition.

SIDRA-7 software was used to improve the traffic and geometric conditions on each selected roundabouts. The output results of SIDRA-7 software shows a significant improvement in terms of level of service (LOS), total delays, fuel consumption and CO₂.

The study recommend to implement the improvement geometric conditions, installation of metering traffic signals, or constructing grade separation (overpass or underpass) for short-term and mid-term periods.

Finally, the study proposed a future research that would be comprehensive for the impact of pedestrians on traffic congestion and traffic safety on these roundabouts.

Keywords: Traffic Congestion, Roundabout Improvements, Sidra-7 Software, HCS-2010 Software, Highway Capacity Manual (HCM-2010), Active Traffic Management (ATM).