A Representation of the Congestion Situation Including Saturation Flow Analysis Adjacent to Daffodil International University

A Thesis paper submitted to the
Department of Civil Engineering
In partial fulfillment of the requirement for the Degree of Bachelor of Science in Civil Engineering

Prepared By:

Md. Nafiul Islam Sarkar **ID: 163-47-236**

Afrose-Al-Raza Hemal **ID: 163-47-242**

Md. Monirul Islam **ID: 163-47-243**

Supervised by

DR. MOHAMMAD HANNAN MAHMUD KHAN
Assistant Professor & Associate Head
Daffodil International University

Department of Civil Engineering

DAFFODIL INTERNATIONAL UNIVERSITY

January 2020

APPROVAL

This thesis titled “A Representation of the Congestion Situation Including Saturation Flow Analysis Adjacent to Daffodil International University”, submitted by Md. Nafiul Islam Sarkar, Afrose-Al-Raza Hemal, Md. Monirul Islam, to the Department of Civil Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of Bachelor of Science in Civil Engineering and approved as to its style and contents. The presentation has been held on January, 2020

Dr. Mohammad Hannan Mahmud Khan
Assistant Professor & Associate Head
Department of Civil Engineering
Daffodil International University

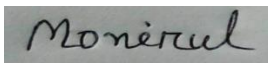
DECLARATION

We hereby declare that, this thesis paper has been done by us under the supervision of Dr**. Mohammad Hannan Mahmud Khan,** department of Civil Engineering, Daffodil International University. We also declare that neither this thesis paper nor any part of this thesis paper has been submitted elsewhere for award of any degree or diploma.

Submitted by

Md. Nafiul Islam Sarkar
ID: 163-47-236
Department of Civil Engineering
Daffodil International University

Afrose -Al-Raza Hemal
ID: 163-47-242
Department of Civil Engineering
Daffodil International University



Md. Monirul Islam
ID: 163-47-243
Department of Civil Engineering
Daffodil International University

ACKNOWLEDGEMENT

Thanks to almighty Allah for his graciousness, unlimited kindness and with the blessing of whom the good deeds are fulfilled. I would like to express my deepest sincere gratitude to our supervisor Dr. Mohammad Hannan Mahmud Khan, Assistant Professor and Associate Head, Department of Civil Engineering, Daffodil International University (DIU) for giving us a unique opportunity to work on such an important topic. His continuous guidance, invaluable suggestion, affectionate encouragement, generous help and invaluable acumen are greatly acknowledged. His keen interest on the topic and enthusiastic support on my effort was a source of inspiration to carry out of study. I consider myself fortunate to work under his supervision.

Special thanks go to Md. Sohan hossain (163-47-204), Md. Mahabub Rahaman (163-47-213), Al Rifat Akash (163-47-266) for their help and hard work during the data collection in the study area.

Finally, we would like to express a special indebtedness to our father and mother whose encouragement and support was the source of inspiration for this work.

DEDICATIONS

This thesis dedicated to all of our parents and supervisor who inspired us for made this effort possible.

ABSTRACT

Traffic is now a growing concern in most cities around the world. Inadequate traffic control wastes time and energy and causes harmful carbon emissions, road accidents and many economic problems. This thesis focuses on a cooperative traffic control framework to optimize travel time for better uniform traffic flow across multiple sections of Mirpur Road. To reach the target, we first select three segments from Mirpur Road. The number of vehicles up and down in each section will be calculated for the three scheduled times of the day. We need to count traffic to get a better picture of the traffic scene. We will then convert the calculated data into a PCU (passenger car unit) based on a standard reference. We will determine the capacity of the road for the selected sections and we will also determine the saturation flow for the selected intersections. Lastly, a comparison will be made between our roadway capacity and saturation flow. Then compare the output which will help to represent the current traffic conditions of the Mirpur road. However, while data computation may not be decent enough to illustrate the actual situation, it may be helpful to have a true scale of information to help traffic computation lead to digitalization. Thus, in future studies this approach can be used to determine the method of automation of the traffic signals.

Table of contents

List of figures

List of Tables

CHAPTER 1

INTRODUCTION

1.1 Introduction:

As the number of vehicles worldwide increases and the need for mobility increases, the frequency and duration of traffic jams in large cities increases. High fuel costs and environmental concerns provide important incentives to reduce traffic delays. In short, the most effective measures to deal with traffic jams seem to be to build new roads- An alternative that is often not viable due to lack of space and or budget or due to environmental or social needs-and a more efficient use of existing infrastructure and capabilities through the management and control of an improved traffic. The dynamic traffic control in an urban setup has always been very attractive to traffic engineers and has been for quite some time.

Urban arterial roads are very attractive to drivers. However, a large number of vehicles entering urban arterial roads can cause traffic congestion, or even cause traffic accidents. Vehicles on arterial roads need to reduce travel time and number of stops.

The purpose is to get a smooth flow of vehicles on the main arterial roads. Green Wave Control is an arterial traffic coordination control system, which combines the traffic signals of intersections with arterial roads to match any or less red lights driving at a certain speed. In other words, the traffic signals at adjacent intersections turn green at a given time sequence, like a rotating "green wave"

1.2 Problem Definition:

Dhaka, the capital of Bangladesh, is one of the most thickly populated urban communities on the planet. Twelve million people live in the city of Bangladesh. The numbers are increasing day by day and most of the traffic is badly affected by the huge traffic jam. Defective traffic signaling systems, inadequate manpower, narrow roads and overtaking tendencies of drivers create long-haul traffic. Due to traffic, most of the working hours have to be left on the roads which indirectly adversely affect the economy. It causes severe air pollution and noise pollution and it worsens the overall environmental conditions.

1.3 Objectives of the Research

- The objectives of the study are as follows:
- Study of complex heterogeneous traffic.
- Measurement of roadway capacity for different links.
- Measurement of saturation flow of particular links.
- Comparison between roadway capacity and saturation flow by ArcGIS.

1.4 Scope:

The scopes of this research are:

- The main purpose of this research is to analyze Hourly PCU variation and the comparison between roadway capacity and saturation flow from collected traffic Data.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction:

Every day, millions of people experience traffic congestion. Especially in contemporary cities, people are often stuck in traffic jams for a few minutes, thus wasting considerable time and money. Traffic delays can result in the loss of health of drivers and high risk of road accidents. Also, the environment is affected because vehicles emit huge amounts of harmful carbon, causing severe global warming.

2.2 Literature Review:

An analysis by NASA revealed that the global surface temperatures in 2012, which caused numerous concerns such as a rise in sea level, decrease in snow cover, and decline in sea-ice extent, were the ninth warmest on record [1]. In addition, the European Commission stated that road transportation contributes to approximately one-fifth of the total CO_2 emissions in Europe [2]. Light-duty vehicles (i.e., cars and vans) are the major source producing approximately 15% of CO_2 emissions in Europe. In addition to harming humans and the environment, traffic congestion affects the economy. The Toronto Board of Trade stated that economic loss in the Toronto region caused by traffic congestion is $6 billion a year and will increase to $15 billion by 2031 [3]. Therefore, efficient traffic management is urgently required for relieving traffic congestion by enabling vehicles to cross intersections as quickly as possible. The waiting and travel time of drivers and greenhouse gas emissions produced from transportation must be further reduced. Traditional traffic control employs fixed-time signal control and thus cannot dynamically meet current traffic.

Demands [4]. Traffic congestion is caused when traffic flows differ from typical circumstances. Consequently, adaptive signal control [5], such as split cycle offset optimization technique (SCOOT) [6] and Sydney coordinated adaptive traffic system (SCATS) [7], has been proposed for solving the ineffective control problem by using real-time traffic information to determine how signals should be scheduled. Real-time traffic information is generally collected by dedicated detectors, such as induction loops [8], [9],

magnetic sensors, and video cameras [10], [11], to obtain the number of vehicles approaching or exiting an intersection.

Traditional fixed-time traffic control cannot dynamically meet current traffic demands. Here through this research, we can learn about the status of traffic jams of 3 Links of Mirpur road by compared ArcGIS Application. Based on the result of our exploration we will bring forward some points of consideration to alleviate the current problems for particular links.

CHAPTER 3

METHODOLOGY

3.1 Introduction:

This chapter of the thesis deals with the method that has been applied in preceding with the thesis objectives. The chapter discusses the questions that were raised during performance of the study. The chapter also provides an overview of the research approach and explanation of specific terms that were used reaching the study goals. In determining the a representation of the congestion situation Including Saturation flow analysis adjacent to Daffodil International University a proper method of attack needs to be selected. An appropriate way of proceeding to the study leads to success in a steady way while an approach without good guidance leads to wondering around. This chapter takes an attempt to show how the thesis work was proceeding and the reason behind following those ways.

3.2 Flow chart of methodology:

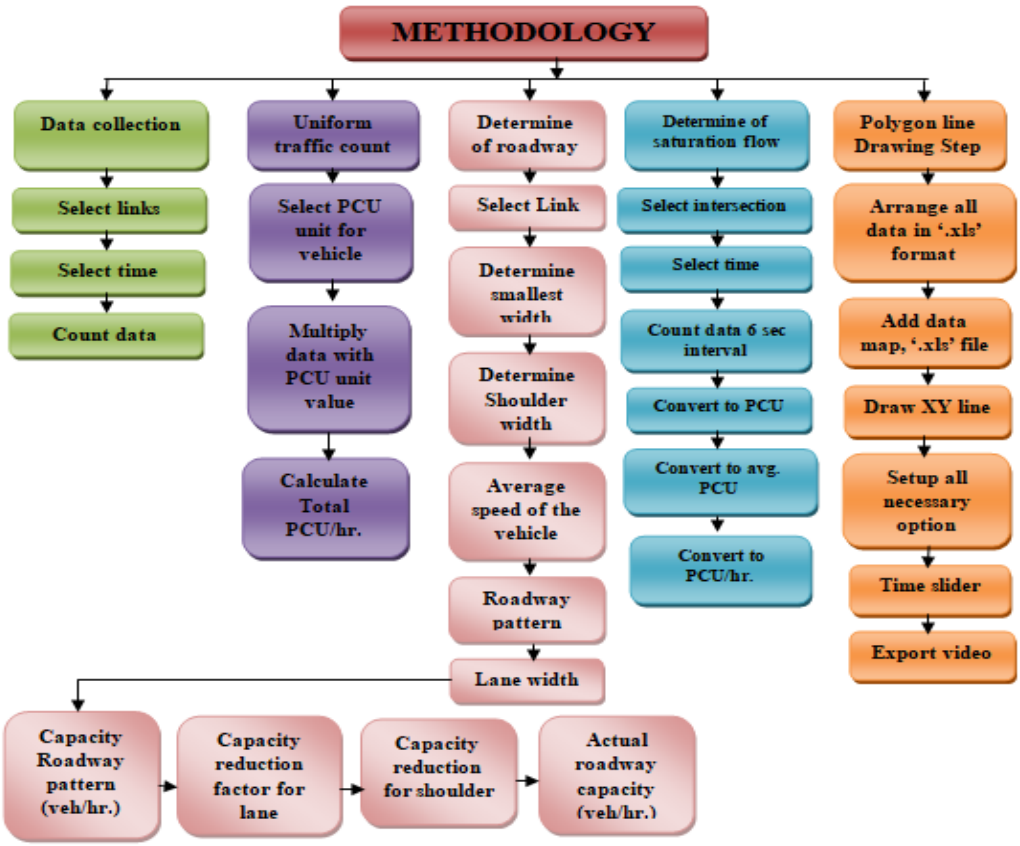


Fig: 3.1 Methodology flow chart

3.3 Data Collection:

Several links are selected in Dhaka city, for the analysis. The links are selected from Mirpur Road. Those links are Dhanmondi-32 to Shukrabad, Shukrabad to Dhanmondi-27, and Dhanmondi-27 to Manik Mia Ave. In our scheduled links, its vehicles make the most of these three days on Monday, Wednesday, Thursday .So we collect these three days of data a week. We have no data for these days, so there is a public holiday on Friday, Saturday; New-market is closed on Tuesday. We count the traffic volume data for each link for 7 days. We calculate the traffic volume for each link by dividing it into three spells per day. Spells are from at Morning Peak hour (9 AM to 11 AM), at off Peak hour (1 PM to 3 PM) and at Peak hour (5 PM to 7 PM). We used stopwatch, Hand Note, Pen, Mobile camera for this operation. We collect day wise data and links wise data. We collect the data and then input it into Microsoft Excel.

Fig 3.2: Picture at Mirpur Road

Here,

Upward Direction: → Dhanmondi-32, → Shukrabad, → Dhanmondi-27, → Manik Mia Avenue

Downward Direction: →Manik Mia Avenue, →Dhanmondi-27, →Shukrabad, →Dhanmondi-

Direction						
Date		Bus	Covered Van	Private car	CNG	Motor-cycle
		(2hr)	(2hr)	(2hr)	(2hr)	(2hr)
Day 1	Peak					
	Off-Peak					
	Peak					
Day 2	Peak					
	Off-Peak					
	Peak					
Day 3	Peak					
	Off-Peak					
	Peak					
Day 4	Peak					
	Off-Peak					
	Peak					
Day 5	Peak					
	Off-Peak					
	Peak					
Day 6	Peak					
	Off-Peak					
	Peak					
Day 7	Peak					
	Off-Peak					
	Peak					

Table: 3.1 7 days data collection table

3.4 Uniform Traffic Count:

We calculate PCU from the traffic volume data. Then we multiply the hourly peak, off peak vehicle with the PCU factor and calculate the PCU/hr. for each spell for Bus, Covered van, Private Car, CNG and Motor-cycle.

Vehicle Type	Passenger Car Unit (PCU) Value
BUS	3
COVERED VAN	2
PRIVATE CAR	1
CNG	0.75
MOTOR-CYCLE	0.5

Table: 3.2 Passenger Car Unit (PCU) Value

3.5 Determine of Roadway Capacity:

First we calculated the road capacity of our assigned links. To calculate the roadway capacity of link -1, measures the three widths at the beginning and the middle at the end of link. Then find the smallest width from all width. Then we measured Shoulder width. Then find out to calculate the average speed of the vehicle. We consider the vehicle into two categories,

Category-1 (Bus, Private car, Covered van) and Category-2 (CNG, Motor-cycle)

To find out the average speed of category-1, let's find average time to go 100m for three buses. In the same way we calculate the average time to go stop 100m of three private cars and three covered van by a stopwatch. Then take the average time of the bus private car, covered van divided by three. Then convert the meters to kilometers and second to hour. Thus, we first calculate the average speed for category-1 vehicles. For the category-2 of the vehicle, let's first calculate the average time to go 100m on three CNG and three Motor-cycles. To find the average time divided by two. Similarly, calculate the average speed for the category-2 vehicles by converting meters to kilometers per hour. Then we calculate the passing sight distance from the recommended table for the category-1 and category-2 vehicles. Using all the above data, we calculate roadway capacity for the category-1 and category-2 by using recommended manual. Then add the roadway capacity for the category-1 and category-2 vehicles and calculate the total capacity of the link-1. Similarly we find out the total capacity for link-2 and link-3.

Link			
1	Roadway pattern=		
2	Lane width=		
3	Shoulder condition=		
4	Operating speed=		
5	%Passing sight distance=		
6	Level of service=		
Solution :			
Capacity of 3 lane 2 way=			veh/hr
Capacity reduction factor for 9 feet width=			
Capacity reduction for 1 feet shoulder=			
Therefore actual roadway capacity=			passenger(veh/hr)

Table: 3.3 determined roadway capacity

3.6 Determine of Saturation flow:

First we select intersection for our selected links. Then we took cycle time and Green + Amber period. We count vehicles 6 sec interval. We took data 3.5 meters distance from stop line. We started counting when the green signal starts. In six second interval vehicle count recorded on the given form Table. When a vehicle's rear wheel crosses the stop line then the count included. We continue keep counting when saturation flow level goes on. We discontinue counting when the flow no longer saturation level. Our counting stopped at the end of ember period and we count any vehicle crossing on the red period in the last interval. We repeated vehicle count for six cycles. Then we convert vehicles in terms of PCU values for every interval Table. Then we determined average PCU for each interval. Then we convert PCU/hour from 6 second average PCU. We collected data in Monday, Wednesday, Thursday and time peak hour (9 am to 11 am) and off peak hour (1 pm to 3 pm).

A Method for Measuring Saturation Flow at Traffic Signals

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....INTERSECTIONS

C-
G-
A-

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in Total 5 equiv	PCU Factor	Converted PCU in Total 5 equiv	Total PCU	Sample	Average
0	Bus											
	Covered van											
	Private car											
	CNG											
	Motor cycle											
1	Bus											
	Covered van											
	Private car											
	CNG											
	Motor cycle											
2	Bus											
	Covered van											
	Private car											
	CNG											
	Motor cycle											
3	Bus											
	Covered van											
	Private car											
	CNG											
	Motor cycle											
4	Bus											
	Covered van											
	Private car											
	CNG											
	Motor cycle											
5	Bus											
	Covered van											
	Private car											
	CNG											
	Motor cycle											

Table: 3.4 Saturation flow data sheet

3.7 Polygon line Drawing Step:

We prepared (.xls) file for our all data. We set up format by LINE, XSTART, YSTART, XEND, YEND, Point, HourlyPCU and Time_stamp for hourly PCU video simulation in ArcGIS. Similarly we set up format by LINE, XSTART, YSTART, XEND, YEND, Point, Time_stamp, Road_capacity and Saturation_flow for comparison between roadway capacity and saturation flow video simulation in ArcGIS.

For hourly PCU video simulation process:

Step 01:
Select→ Add Data → Select map

Step 02:
Select →Add Data → Select the Excel File (.xls)

Step 03:
Catalog→ System Toolboxes→ Data Management Tools→ Features→ XY to line.

Step 04:
Input Line (Here, Select the Excel File(.xls)→ Start X Field (Here, Select X Start)→ Start Y Field (Here, Select Y Start)→ End X Field (Here, Select X End)→End Y Field (Here, Select Y End)→ Line Type (Here, Select RHUMB_LINE)→ Spatial Reference Properties (Here, Select Asia → Everest – Bangladesh) → Ok

Step 05:
Select Layer→ Layer properties →Time→ Enable time on this layer→ time filed→ Time_stamp→ time step interval→ 3 days → click calculate→ time zone→ Dhaka→ Apply→ ok.

Step 06:
Select Layer→ Layer properties→ Symbology→ Quantities→ graded colors→ values→ select hourly PCU→ Classes→ Select 6→ Apply→ ok

Step 07:

Select time slider→ option→ time display→ time zone→ Dhaka→ time step interval→ 3 days→ time windows → 4 days→ time extent→ restrict full time extent to→ select layer→ ok.

Step: 8

Run the video simulation and export.

For roadway capacity and saturation flow comparison video simulation process:

Similarly hourly PCU video simulation just step-06 will be changed.

Step 06:

Select Layer→ Layer properties→ Symbology→ chart→ graded colors→ values→ select roadway capacity and saturation flow data → graded colors→ Apply→ ok

LINE	XSTART	YSTART	XEND	YEND	Point	HourlyPCU	Time_stamp
1							
2							
3							
4							
5							

Table: 3.5 ArcGIS Hourly PCU '.xls' format

LINE	XSTART	YSTART	XEND	YEND	Point	Time_stamp	Road_capacity	Saturation_flow
1								
2								
3								
4								
5								

Table: 3.6 ArcGIS Roadway capacity & Saturation flow '.xls' format

CHAPTER 4
ROADWAY CAPACITY AND SATURATION FLOW

4.1 Introduction:

The capacity of a roadway is its ability to collected traffic. It is usually represent as the number of vehicles that can pass a given point in a certain time at a given speed. Of course roadways are not ideal and prevailing roadway and traffic conditions those reduce ability of a road to collected traffic must be taken into consideration in roadway capacity estimation. In determining roadway capacities for uninterrupted flow conditions the general procedure, described below, is to apply appropriate empirically based adjustments for prevailing roadway and traffic conditions. The limit of a given link of roadway expressed either as unidirectional or the two headings for a two path or three path roadways might be characterized as greatest number of vehicle that has a sensible desire for ignoring a given connection of roadway during a given timespan under winning roadway and traffic condition. While the most extreme number of vehicles that can be gathered stays fixed under comparable roadway and traffic conditions, there is a scope of lesser volumes which can be dealt with under varying working conditions.

When the green period at a traffic signal commences vehicles take a few seconds to accelerate to normal running speed, but after this initial period the queue discharges at a more or less constant rate. This rate is called the saturation flow and is usually expressed in vehicles per hour of green time. While the signal is green, vehicles continue to pass through the intersection at the saturation rate of flow, subject to the existence of stable queue. Some vehicles, but not all, make use of the amber period to cross the intersection and the average discharge rate falls to zero toward the end of this period.

The analysis of data from a typical field data sheet is followed step by step. Passenger Car Equivalence of vehicles is given in order to be able to convert the saturation flow to passenger car units if the composition of the traffic is known.

4.2 Roadway capacity:

We considered two categories vehicles as chapter three methodology. So we determined roadway capacity for two categories vehicle.

Passing sight distance for design of two lane highways:

Metric					US Customary				
Design speed (km/h)	Assumed speeds (km/h)		Passing sight distance (m)		Design speed (mph)	Assumed speeds (mph)		Passing sight distance (ft)	
	Passed vehicle	Passing vehicle	From Exhibit 3-6	Rounded for design		Passed vehicle	Passing vehicle	From Exhibit 3-6	Rounded for design
30	29	44	200	200	20	18	28	706	710
40	36	51	266	270	25	22	32	897	900
50	44	59	341	345	30	26	36	1088	1090
60	51	66	407	410	35	30	40	1279	1280
70	59	74	482	485	40	34	44	1470	1470
80	65	80	538	540	45	37	47	1625	1625
90	73	88	613	615	50	41	51	1832	1835
100	79	94	670	670	55	44	54	1984	1985
110	85	100	727	730	60	47	57	2133	2135
120	90	105	774	775	65	50	60	2281	2285
130	94	109	812	815	70	54	64	2479	2480
					75	56	66	2578	2580
					80	58	68	2677	2680

Exhibit 3-7. Passing Sight Distance for Design of Two-Lane Highways

Table: 4.1 passing sight distance for design of two lane highway.

Link -1

Link name: Dhanmondi-32 to Shukrabad

Dhanmondhi-32 to Shukrabad link we measured and found three lanes two ways. maximum width of the lane was 50 feet and minimum width was 28 feet. We took minimum width 28 feet. Then we determined operating speed of two categories vehicle. After that we determined for two type categories vehicles roadway capacity the selected link.

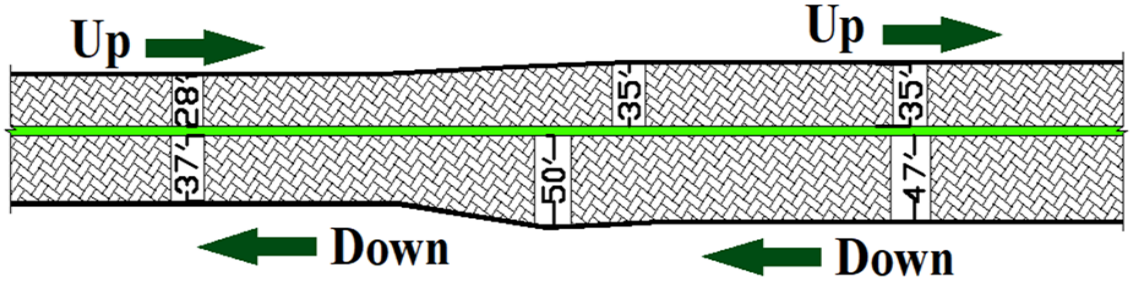


Fig: 4.1 Link-1 with measurement

Category-1(Bus, Private car, Covered van)	
Bus :(100m to go need time)	Private car: (100m to go need time)
Bus-1= 6 sec	Private car-1=5 sec
Bus-2= 7 sec	Private car-2=4 sec
Bus-3= 6 sec	Private car-3=6 sec
Avg= 6 sec	Avg=5 sec
Covered van: (100m to go need time)	
Covered van-1=7 sec	
Covered van-2=9 sec	
Covered van-3=5 sec	
Avg=7 sec	
Avg time= (7+5+6)/3=6 sec	

Category-1(Bus,Private car, Covered van)

Average=	6	sec
Speed=	59	kmph
Convert=	37	mph

Segment-2 for category-1

1	Roadway pattern=	3 Lane two way	
2	Lane width=	9	feet
3	Shoulder condition=	1	feet
4	Operating speed=	37	mph
5	%Passing sight distance=	16.25	ft
6	Level of service=	d	

Solution :					
Capacity of 3 Lane 2 way=			2280	veh/hr	
Capcity reduction factor for 9 feet width=			0.81		
Capcity reduction for 1 feet shoulder=			0.78		
Therefore actual roadway capacity=			1441	passenger(veh/hr)	

Category-2(CNG, Motor cycle)	
CNG :(100m to go need time)	Motor cycle :(100m to go need time)
CNG-1= 6 sec	Motor cycle-1= 5 sec
CNG-2= 6 sec	Motor cycle-2= 6 sec
CNG-3= 7 sec	Motor cycle-3= 4 sec
Avg= 6 sec	Avg= 5 sec
Avg. time= (6+5)/2=6 sec	

Category-2(c.n.g,m.c)

Average=	6	sec	
Speed=	64	kmph	
Convert	39	mph	

Link-1 for category-2

1	Roadway pattern=	3 Lane two way	
2	Lane width=	9	feet
3	Shoulder condition=	1	feet
4	Operating speed=	39	mph
5	%Passing sight distance=	13.56	ft.
6	Level of service=	d	

Solution :					
Capacity of 3 lane 2 way=			3200	veh/hr.	
Capacity reduction factor for 9 feet width=			0.81		
Capacity reduction for 1 feet shoulder=			0.78		
Therefore actual roadway capacity=			2022	Passenger (veh/hr.)	

Link-2

Link name: Shukrabad to Dhanmondi-27

Shukrabad to Dhanmondi-27 link we measured and found three lanes two ways. Maximum width of the lane was 51 feet and minimum width was 27 feet. We took minimum width 27 feet. Then we determined operating speed of two categories vehicle. After that we determined for two type categories vehicles roadway capacity the selected link. Sobhanbag mosque created bottled neck. So here road is congested.

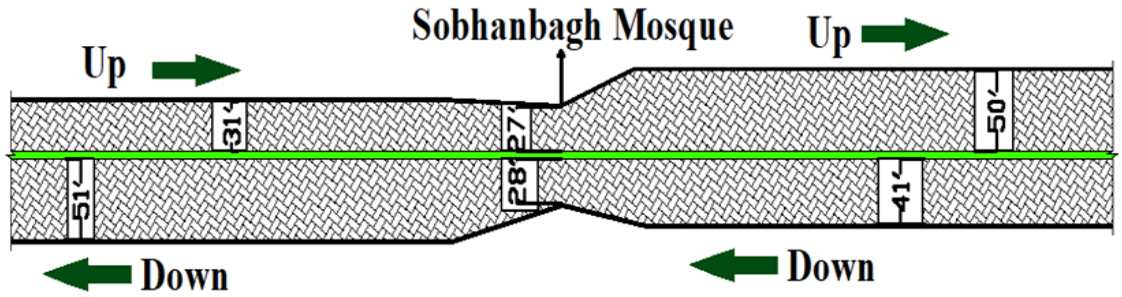


Fig: 4.2 Link-2 with measurement

Category-1(Bus, Private car, Covered van)	
Bus :(100m to go need time)	Private car: (100m to go need time)
Bus-1= 8 sec	Private car-1= sec
Bus-2= 6 sec	Private car-2=6 sec
Bus-3= 5 sec	Private car-3=5 sec
Avg= 6 sec	Avg=5 sec
Covered van: (100m to go need time)	
Covered van-1=6 sec	
Covered van-2=8 sec	
Covered van-3=7 sec	
Avg=7 sec	
Avg time= (6+5+7)/3=6 sec	

Category-2(CNG, Motor cycle)	
CNG :(100m to go need time)	Motor cycle :(100m to go need time)
CNG-1= 5 sec	Motor cycle-1= 6 sec
CNG-2= 8 sec	Motor cycle-2= 3 sec
CNG-3= 6 sec	Motor cycle-3= 4 sec
Avg= 6 sec	Avg= 4 sec
Avg. time= (6+4)/2=5 sec	

Category-1(Bus, Private car, Covered van)

Average=	6	sec
Speed=	59	kmph
Convert=	37	mph

Link-2 for category-1

1.Roadway pattern=	3 Lane two way	
2. Lane width=	9	feet
3. Shoulder condition=	1	feet
4.Operating speed=	37	mph
5. %Passing sight distance=	16.25	Ft.
6.Level of service=	d	

Solution :					
Capacity of 3 Lane 2 way=			2280	veh/hr.	
Capacity reduction factor for 9 feet width=			0.81		
Capacity reduction for 1 feet shoulder=			0.78		
Therefore actual roadway capacity=			1441	Passenger (veh/hr.)	

Category-2(CNG, Motor-Cycle)					
Average=	5	sec			
Speed=	68	kmph			
Convert=	42	mph			
Link-2 for category-2					
1	Roadway pattern=	3 Lane two way			
2	Lane width=	9	feet		
3	Shoulder condition=	1	feet		
4	Operating speed=	42	mph		
5	%Passing sight distance=	16.25	Ft.		
6	Level of service=	d			

Solution :					
Capacity of 3 Lane 2 way=			3200	veh/hr.	
Capacity reduction factor for 9 feet width=			0.81		
Capacity reduction for 1 feet shoulder=			0.78		
Therefore actual roadway capacity=			2022	Passenger (veh/hr.)	

Link-3

Link name: Dhanmondi-27 to Manik mia

Dhanmondi-27 to Manik mia link we measured and found three lanes two ways. Maximum width of the lane was 51 feet and minimum width was 37 feet. We took minimum width 37 feet. Then we determined operating speed of two categories vehicle. After that we determined for two type categories vehicles roadway capacity the selected link.

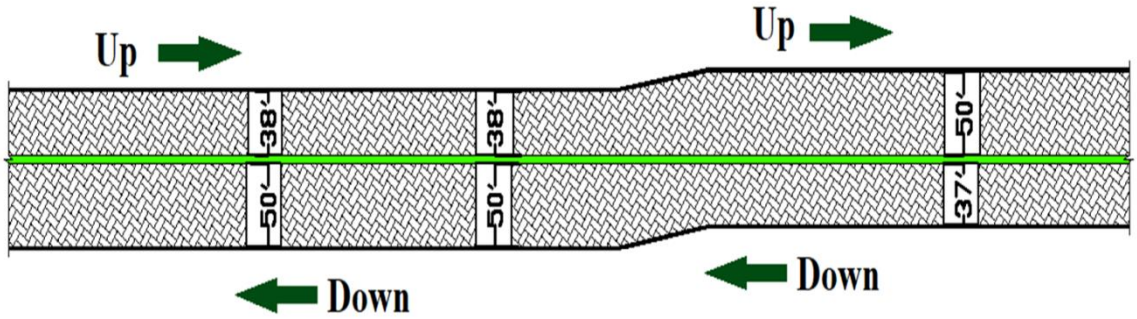


Fig: 4.3 Link-3 with measurement

Category-1(Bus, Private car, Covered van)	
Bus :(100m to go need time)	**Private car: (100m to go need time)**
Bus-1= 5 sec	Private car-1= 6sec
Bus-2= 6 sec	Private car-2=4 sec
Bus-3= 4 sec	Private car-3=6 sec
Avg= 5 sec	Avg=5 sec
Covered van: (100m to go need time)	
Covered van-1=9 sec	
Covered van-2=6 sec	
Covered van-3=5 sec	
Avg=7 sec	
Avg time= (5+5+7)/3=6 sec	

Category-2(CNG, Motor cycle)	
CNG :(100m to go need time)	Motor cycle :(100m to go need time)
CNG-1= 7 sec	Motor cycle-1= 5 sec
CNG-2= 5 sec	Motor cycle-2= 4 sec
CNG-3= 4 sec	Motor cycle-3= 6 sec
Avg= 5 sec	Avg= 5 sec
Avg. time= (5+5)/2=5 sec	

Category-1(Bus,Private car, Covered van)

Average=	6	sec
Speed=	64	kmph
Convert=	39	mph

Link-3 for category-1

1	Roadway pattern=	3 Lane two way	
2	Lane width=	12	feet
3	Shoulder condition=	1	feet
4	Operating speed=	39	mph
5	%Passing sight distance=	13.56	ft
6	Level of service=	d	

Solution :					
Capacity of 3 Lane 2 way=			2320	veh/hr	
Capcity reduction factor for 9 feet width=			1		
Capcity reduction for 1 feet shoulder=			0.78		
Therefore actual roadway capacity=			1810	passenger(veh/hr)	

Category-2(CNG, Motor-Cycle)

Average=	5	sec
Speed=	70	kmph
Convert=	43	mph

Link-3 for category-2

1	Roadway pattern=	3 lane two way	
2	Lane width=	12	feet
3	Shoulder condition=	0.78	feet
4	Operating speed=	39	mph
5	%passing sight distance=	13.56	ft
6	level of service=	d	

Solution :					
Capacity of 3 Lane 2 way=			3240	veh/hr	
Capcity reduction factor for 9 feet width=			1		
Capcity reduction for 1 feet shoulder=			0.78		
Therefore actual roadway capacity=			2527	Passenger(veh/hr)	

4.3 Saturation flow:

Our links we collected 6 sec interval PCU saturation flow then we converted hourly PCU saturation flow for up and down direction also peak hour and off peak hour for three days (Monday, Wednesday and Thursday).

Date: 14/11/2019 Thursday				
Link Name	**Direction**	**Time**	**Saturation flow (PCU/6 sec)**	**Saturation flow (PCU/hr.)**
Link-1	Up	Peak Hour	11.01	6606
	Up	Off Peak Hour	8.09	4854
	Down	Peak Hour	12.39	7434
	Down	Off Peak Hour	7.48	4488
Link-2	Up	Peak Hour	13	7800
	Up	Off Peak Hour	7.87	4722
	Down	Peak Hour	11.38	6828
	Down	Off Peak Hour	8.07	4842
Link-3	Up	Peak Hour	11.72	7032
	Up	Off Peak Hour	8.23	4938
	Down	Peak Hour	12.85	7710
	Down	Off Peak Hour	7.7	4620

Table: 4.2 Saturation flow for Thursday (Link-1, Link-2, Link-3)

Date: 18/11/2019 Monday				
Link Name	Direction	Time	Saturation flow (PCU/6 sec)	Saturation flow (PCU/hr.)
Link-1	Up	Peak Hour	10.99	6594
	Up	Off Peak Hour	8.74	5244
	Down	Peak Hour	10.1	6060
	Down	Off Peak Hour	8.19	4914
Link-2	Up	Peak Hour	10.53	6318
	Up	Off Peak Hour	8.81	5286
	Down	Peak Hour	9.98	5988
	Down	Off Peak Hour	8.35	5010
Link-3	Up	Peak Hour	9.02	5412
	Up	Off Peak Hour	8.74	5244
	Down	Peak Hour	10.28	6168
	Down	Off Peak Hour	8.19	4914

Table: 4.3 Saturation flow for Monday (Link-1, Link-2, Link-3)

Date: 20/11/2019 Wednesday				
Link Name	Direction	Time	Saturation flow (PCU/6 sec)	Saturation flow (PCU/hr.)
Link-1	Up	Peak Hour	10.56	6336
	Up	Off Peak Hour	8.59	5154
	Down	Peak Hour	12.39	7434
	Down	Off Peak Hour	9.47	5682
Link-2	Up	Peak Hour	11.72	7032
	Up	Off Peak Hour	8.44	5064
	Down	Peak Hour	11.38	6828
	Down	Off Peak Hour	8.69	5214
Link-3	Up	Peak Hour	13	7800
	Up	Off Peak Hour	8.19	4914
	Down	Peak Hour	12.84	7704
	Down	Off Peak Hour	8.72	5232

Table: 4.4 Saturation flow for Wednesday (Link-1, Link-2, Link-3)

4.4 Compare between roadway capacity and saturation flow:

For our selected links we compare between total roadway capacity and saturation flow we saw that roadway capacity PCU/hr. is lower than saturation flow PCU/hr. So this link is saturated.

Date: 14/11/2019 Thursday					
Link	Direction	Time	Total Roadway Capacity (PCU/hr.)	Saturation flow (PCU/6 sec)	Saturation flow (PCU/hr.)
Link -1	Up	Peak Hour	2022	11.01	6606
	Up	Off Peak Hour	2022	8.09	4854
	Down	Peak Hour	2022	12.39	7434
	Down	Off Peak Hour	2022	7.48	4488
Link -2	Up	Peak Hour	1731	13	7800
	Up	Off Peak Hour	1731	7.87	4722
	Down	Peak Hour	1731	11.38	6828
	Down	Off Peak Hour	1731	8.07	4842
Link -3	Up	Peak Hour	2169	11.72	7032
	Up	Off Peak Hour	2169	8.23	4938
	Down	Peak Hour	2169	12.85	7710
	Down	Off Peak Hour	2169	7.7	4620

Table: 4.5 Compare between roadway capacity and saturation flow 14/11/2019 Thursday

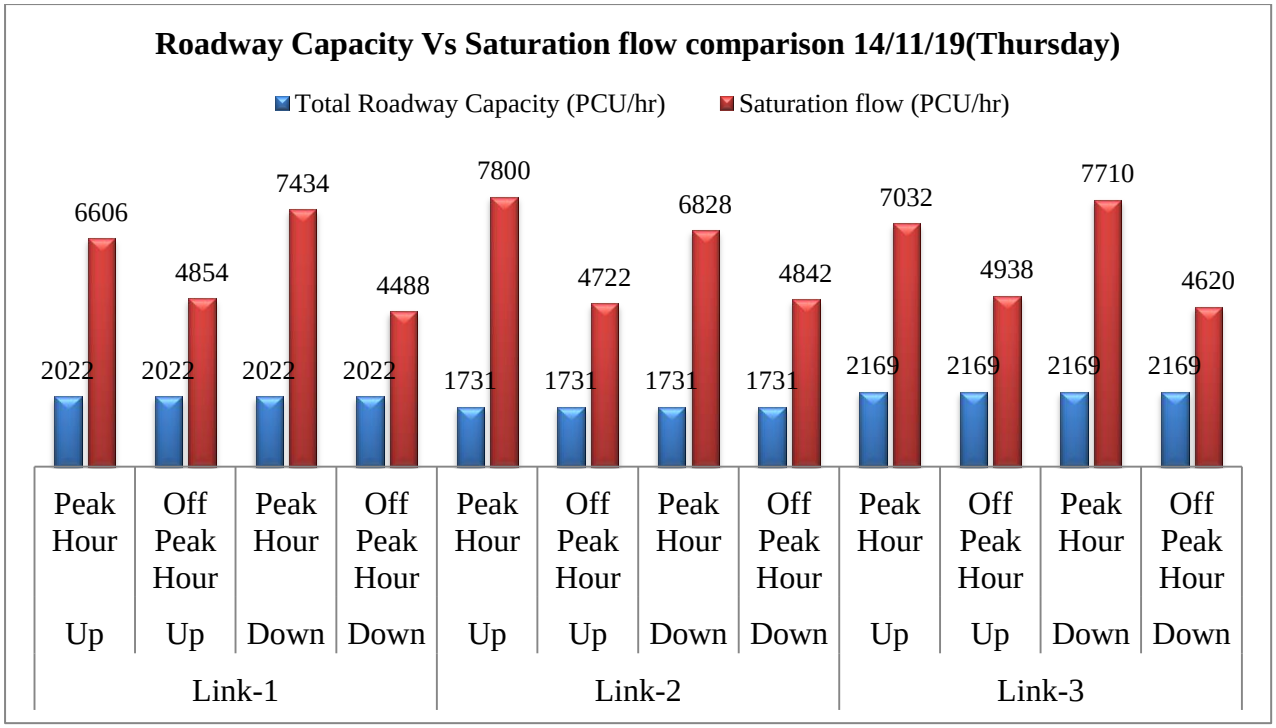


Fig: 4.4 Roadway Capacity vs. Saturation flow comparison bar chart on 14/11/19(Thursday)

We see from roadway capacity and saturation flow comparison bar chart on Thursday link-1 peak hour and off peak hour of up & down direction saturation flow is higher than roadway capacity. We see here link-2 & link-3 condition are similar to link-1. So link-1, link-2 & link-3 are saturated and congested.

Date: 18/11/2019 Monday					
Link	Direction	Time	Total Roadway Capacity (PCU/hr.)	Saturation flow (PCU/6 sec)	Saturation flow (PCU/hr.)
Link -1	Up	Peak Hour	2022	10.99	6594
	Up	Off Peak Hour	2022	8.74	5244
	Down	Peak Hour	2022	10.1	6060
	Down	Off Peak Hour	2022	8.19	4914
Link -2	Up	Peak Hour	1731	10.53	6318
	Up	Off Peak Hour	1731	8.81	5286
	Down	Peak Hour	1731	9.98	5988
	Down	Off Peak Hour	1731	8.35	5010
Link -3	Up	Peak Hour	2169	9.02	5412
	Up	Off Peak Hour	2169	8.74	5244
	Down	Peak Hour	2169	10.28	6168
	Down	Off Peak Hour	2169	8.19	4914

Table: 4.6 Compare between roadway capacity and saturation flow 18/11/2019 Monday

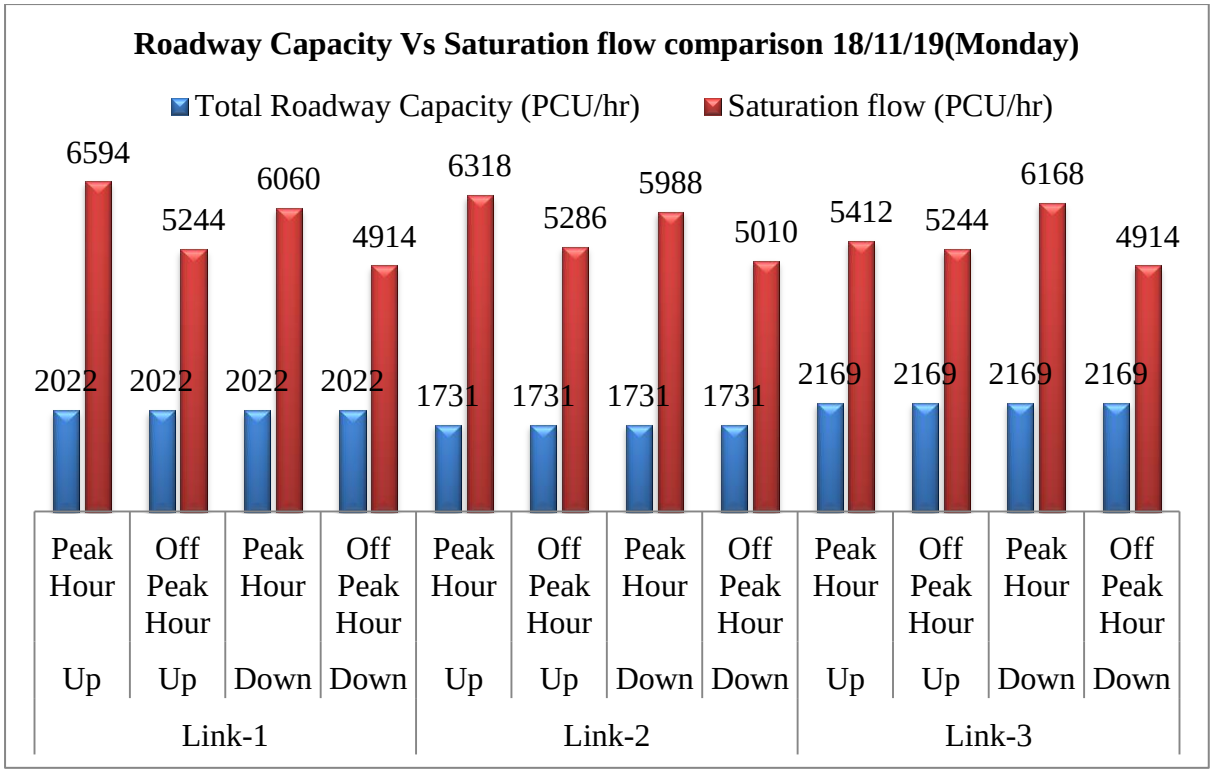


Fig: 4.5 Roadway Capacity vs. Saturation flow comparison bar chart on 18/11/19(Monday)

We see from roadway capacity and saturation flow comparison bar chart on Monday link-1 peak hour and off peak hour of up & down direction saturation flow is higher than roadway capacity. We see here link-2 & link-3 condition are similar to link-1. So link-1, link-2 & link-3 are saturated and congested.

Date: 20/11/2019 Wednesday					
Link	Direction	Time	Total Roadway Capacity (PCU/hr.)	Saturation flow (PCU/6 sec)	Saturation flow (PCU/hr.)
Link -1	Up	Peak Hour	2022	10.56	6336
	Up	Off Peak Hour	2022	8.59	5154
	Down	Peak Hour	2022	12.39	7434
	Down	Off Peak Hour	2022	9.47	5682
Link -2	Up	Peak Hour	1731	11.72	7032
	Up	Off Peak Hour	1731	8.44	5064
	Down	Peak Hour	1731	11.38	6828
	Down	Off Peak Hour	1731	8.69	5214
Link -3	Up	Peak Hour	2169	13	7800
	Up	Off Peak Hour	2169	8.19	4914
	Down	Peak Hour	2169	12.84	7704
	Down	Off Peak Hour	2169	8.72	5232

Table: 4.7 Compare between roadway capacity and saturation flow 20/11/2019 Wednesday

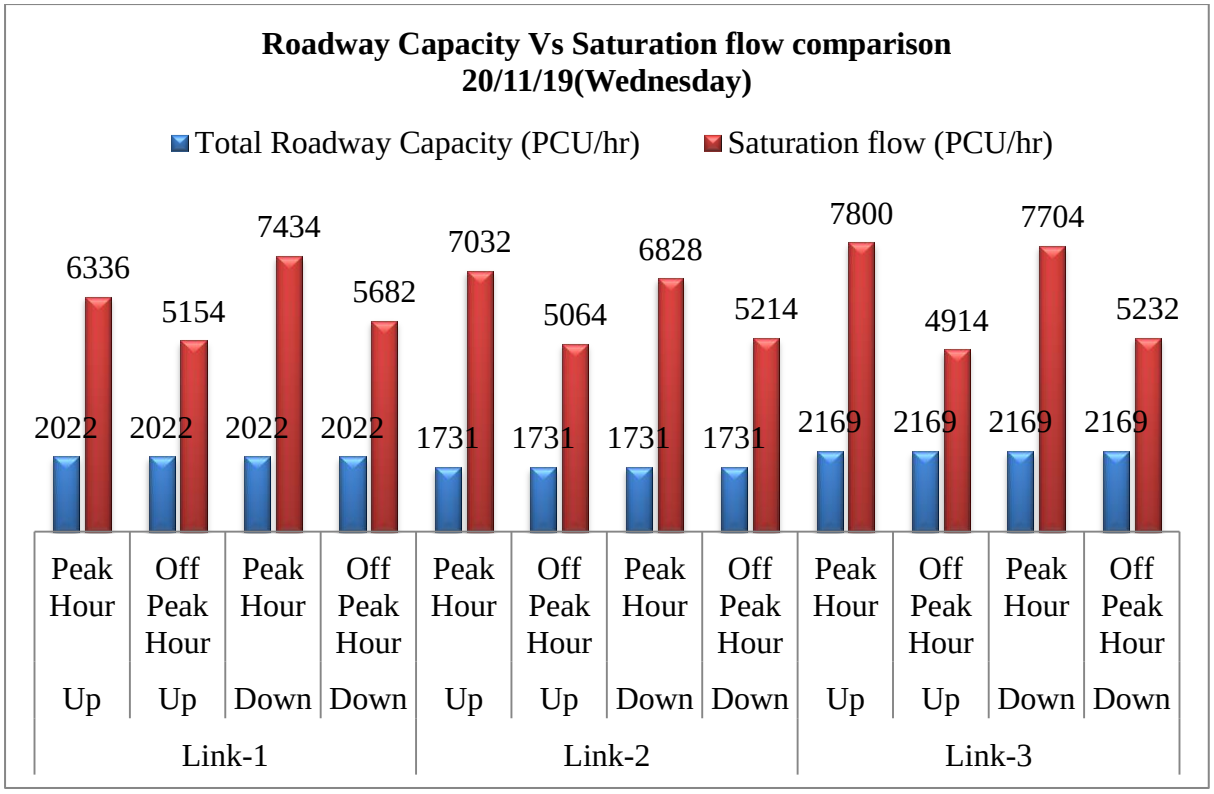


Fig: 4.6 Roadway Capacity vs. Saturation flow comparison bar chart on 20/11/19(Wednesday)

We see from roadway capacity and saturation flow comparison bar chart on Wednesday link-1 peak hour and off peak hour of up & down direction saturation flow is higher than roadway capacity. We see here link-2 & link-3 condition are similar to link-1. So link-1, link-2 & link-3 are saturated and congested.

CHAPTER 5

RESULT AND DISCUSSION

5.1 Result:

After inputting the day wise hourly PCU/Lane data and roadway capacity and saturation flow per lane through the ArcGIS application for each link and intersection, the time slider shows us different color line above the link and intersection relative to the PCU/Lane and roadway capacity. Hourly PCU is in how many vehicle moves on the road. Then we could understand about what is roadway condition is it saturated or not.

5.1.1 Hourly PCU:

Name	Color	PCU Range	Type
Green		1517-1600	Free flow
Light green		1608.5-2050	Stable
Cyan		2064.5-2600	Approaching unstable flow
Orange		2603.25-3050	Approaching unstable flow
Red		3100.25-3300	Unstable flow
Maroon		3308.5-3500	Forced flow

Fig: 5.1 Color variation and PCU range

Fig: 5.2 Hourly PCU/lane time slider

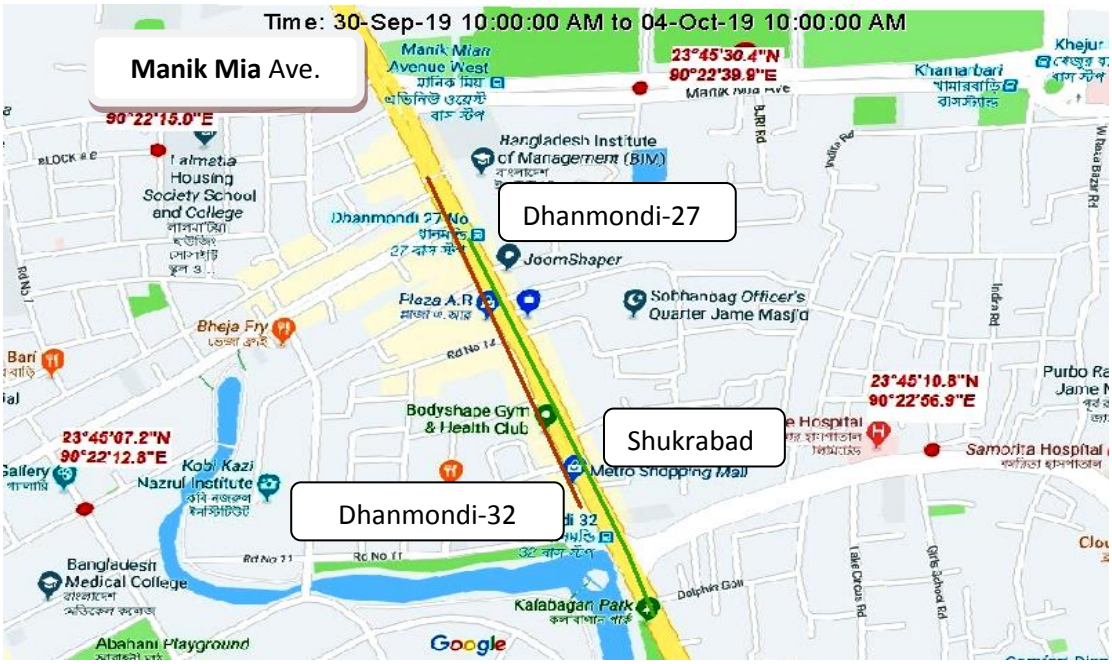


Fig: 5.3 Hourly PCU/Lane variations from 30-sep-19 10:00 AM to 04-oct-19 10:00 AM

From 30/09/2019 to 04/10/2019 based on these five-day PCU data, from the color line we can see that the value of this five-day PCU from Dhanmondi-32 to Dhanmondi-27 was from the range 3308.5 to 3500 and maroon color it is forced flow. On the other hand, PCU from Dhanmondi-27 to Kalabagan was from range 1517 to 1600 and green color it is free flow.

Fig: 5.4 Hourly PCU/Lane variations from 12-oct-19 10:00 AM to 16-oct-19 10:00 AM

From 12/10/2019 to 16/10/2019 based on these five-day PCU data, from the color line we can see that the value of this five-day PCU from Dhanmondi-32 to Dhanmondi-27 was from the range 1517 to 1600 and green color it is free flow. On the other hand, PCU from Dhanmondi-27 to Shukrabad was from range 3308.50 to 3500 and maroon color it is forced flow.

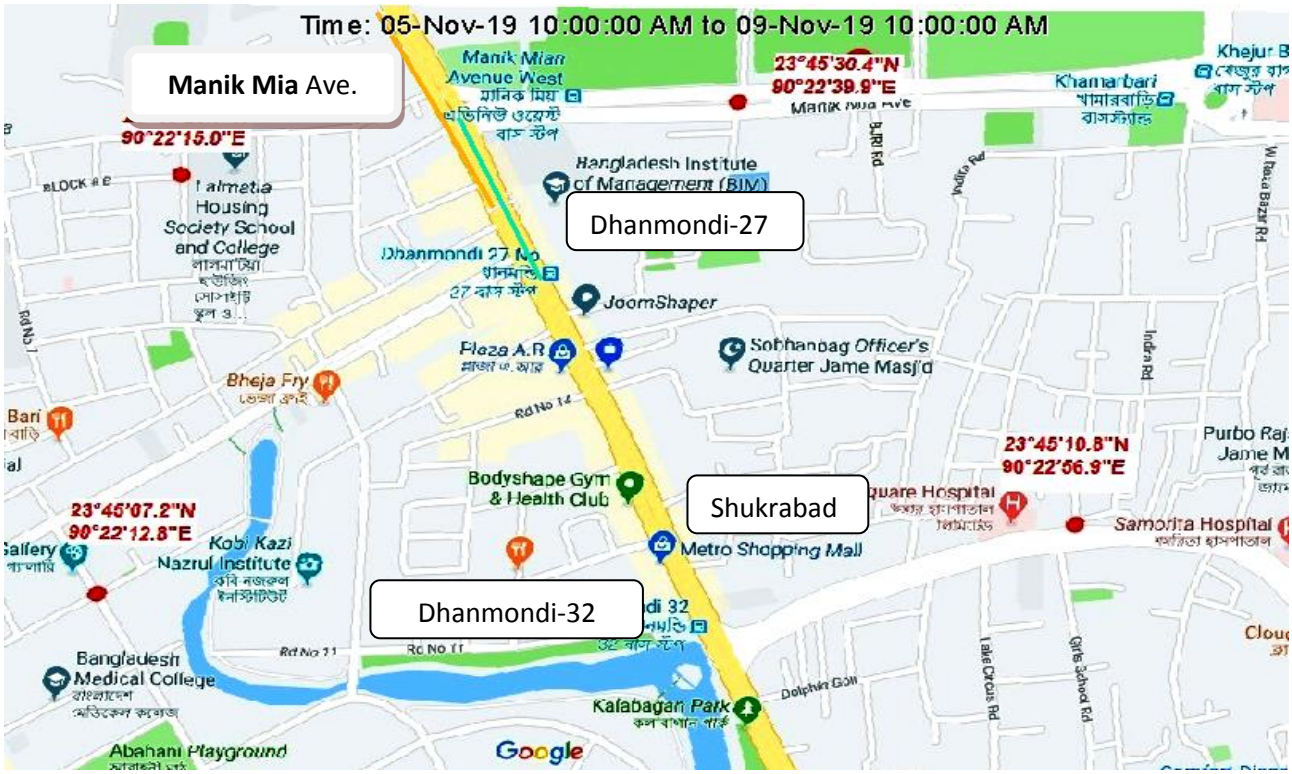


Fig: 5.5 Hourly PCU/Lane variations from 05-Nov-19 10:00 AM to 09-Nov-19 10:00 AM

From 05/11/2019 to 09/11/2019 based on these five-day PCU data, from the color line we can see that the value of this five-day PCU from Dhanmondi-27 to Ashadgate was from the range 2603.25 to 3050 and orange color it is approaching unstable flow. On the other hand, PCU from Manik mia to Dhanmondi-27 was from range 1608.50 to 2050 and light green color it is stable flow.

5.1.2 Roadway Capacity and Saturation flow:

Color variation for Roadway capacity and saturation flow

Color	Name
	Roadway capacity
	Saturation flow

Fig: 5.6 Color variations for Roadway capacity and saturation flow

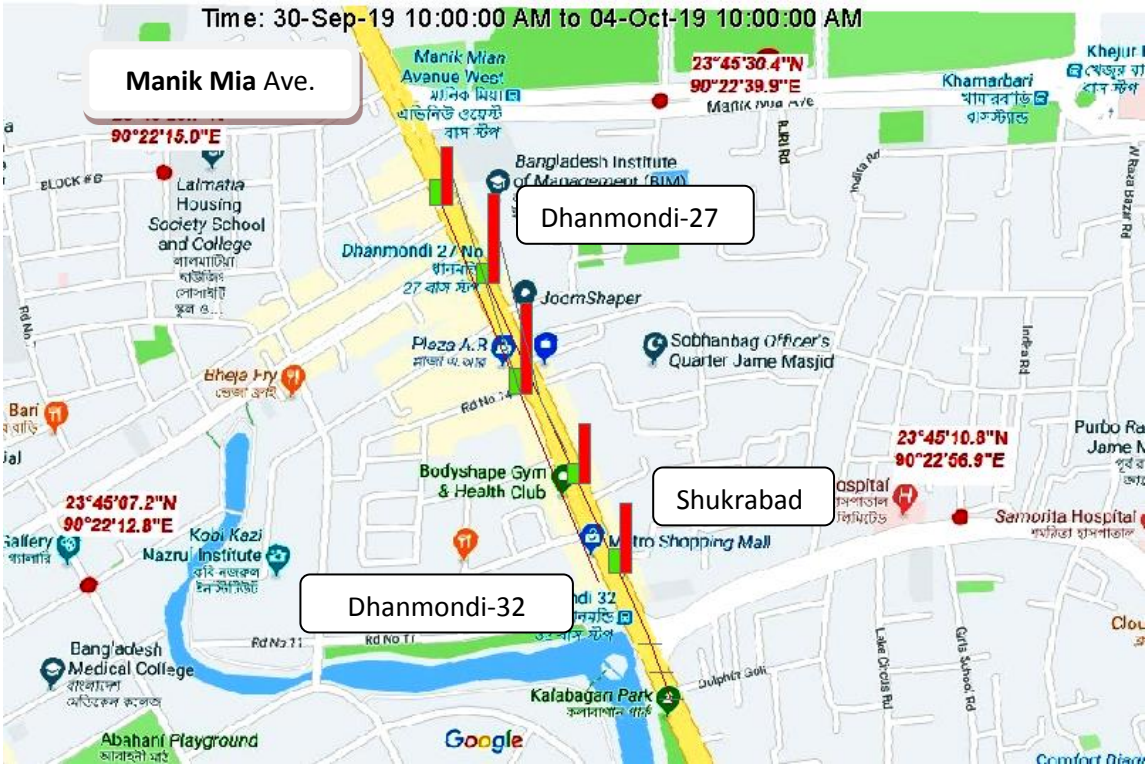


Fig: 5.7 Comparison between roadway capacity and saturation flow from 30-Sep-19 10:00 AM to 04-Oct-19 10:00 AM

From 30-Sep-19 10:00 AM to 04-Oct-19 10:00 AM based on these five-day Roadway capacity and saturation flow data from the color flow chart we can see that saturation flow was higher than roadway capacity for Manik mia to Dhanmondi-27, Dhanmondi-27 to Shukrabad, Shukrabad to Dhanmondi-32. On the other hand Dhanmondi-32 to Dhanmondi-27 we can see that saturation flow was higher than roadway capacity. So the road was congested.

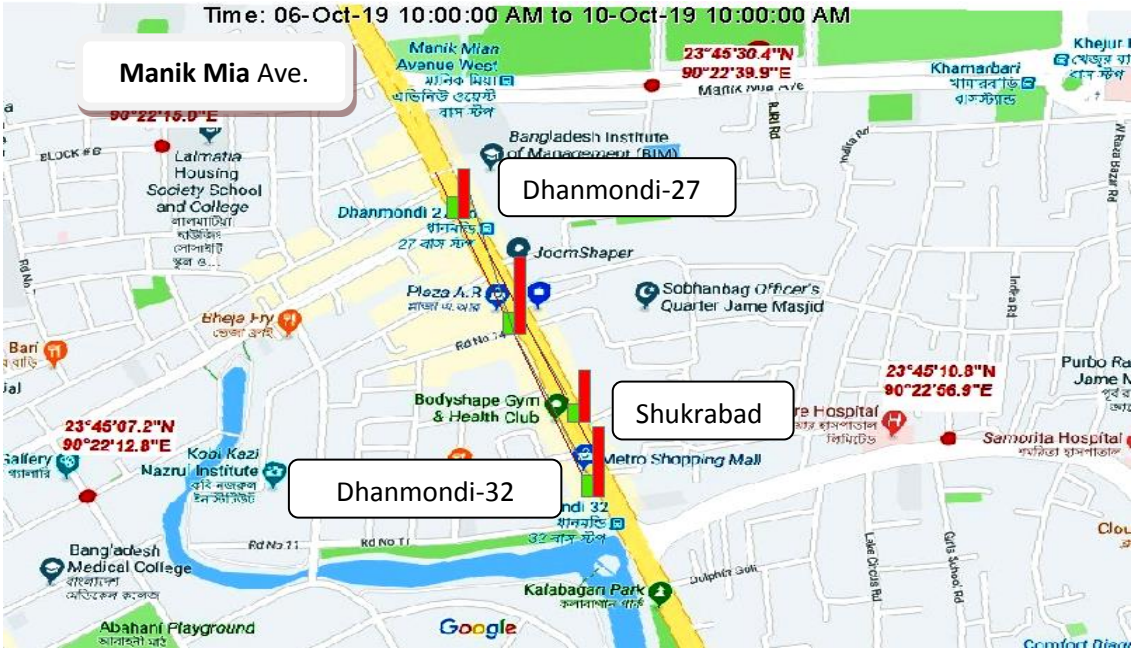


Fig: 5.8 Comparison between roadway capacity and saturation flow from 06-Oct-19 10:00 AM to 10-Oct-19 10:00 AM

From 06-Oct-19 10:00 AM to 10-Oct-19 10:00 AM based on these five-day Roadway capacity and saturation flow data from the color flow chart we can see that saturation flow was higher than roadway capacity for Dhanmondi-27 to Shukrabad. On the other hand Dhanmondi-32 to Dhanmondi-27 we can see that saturation flow was higher than roadway capacity. So the road was congested.

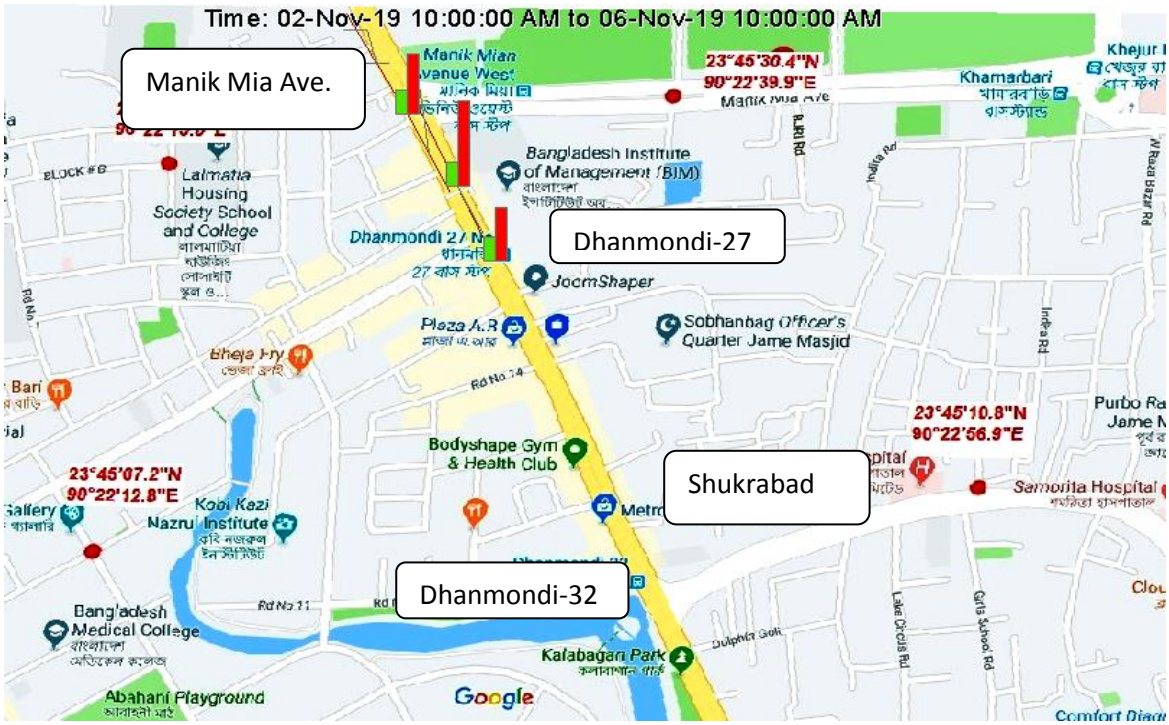


Fig: 5.9 Comparison between roadway capacity and saturation flow from 02-Nov-19 10:00 AM to 06-Nov-19 10:00 AM

From 02-Nov-19 10:00 AM to 06-Nov-19 10:00 AM based on these five-day Roadway capacity and saturation flow data from the color flow chart we can see that saturation flow was higher than roadway capacity for Mnik mia to Shukrabad. On the other hand Dhanmondi-27 to Manik mia we can see that saturation flow was higher than roadway capacity. So the road was congested.

5.1.3 Video Simulation link:

1. **Hourly PCU:** https://www.youtube.com/watch?v=8VBsbtUIpTU

2. **Roadway capacity and Saturation flow:**
   https://www.youtube.com/watch?v=vjP9jgrJ464

CHAPTER 6
CONCLUSION

Conclusion:

We worked with 3 links and 4 intersections and presented traffic conditions and comparison between roadway capacity and saturation flow in the video simulation. It was very difficult to deal with just 3 links and 4 intersection data to replicate the real scenario. If there were more links and intersections working together instead of 3 links and 4 intersections, would be a lot of benefit to understanding an actual traffic conditions and compared between roadway capacity and saturation flow yet time constraints bound us to do. Moreover, we were not able to collect traffic data and saturation flow at the same time at each link and intersection during the data collection, resulting in gaps in the simulation. We considered 5 types of vehicles while collecting traffic volumes and saturation flow. We considered 2 categories vehicle for determined roadway capacity. We believe that the representation could have been much better with larger amount of data in terms of duration, variations in the vehicle types and category in the vehicle types. However, this thesis output would provide a good platform to introduce the method of representation.

Based on the results, we found similarities in the traffic congestion situation and road are saturated with the traffic count distributions for different links and intersections over the period of the study. This might be a result of PCU, roadway capacity and saturation flow consideration and as well. However, the method that was demonstrated in this thesis could be a decent start of resourceful research projects.

In the future, the study of other data's and steps can be included for better portraying of the congestion situation. The data volume can be increased in terms of number of days and vehicle types for more accurate representation. Our thesis will help a lot of in determining much PCU each link and intersection, determining roadway capacity and saturation flow each link and intersection has for automation traffic signaling. This can lead to the application of modern concepts i.e. cooperative greens for achieve the most efficient method of traffic management for sustainable development of Dhaka city.

Appendices

Data of heterogeneous traffic:

Link-1: Dhanmondi-32 to Shukrabad

UP											
Date		Bus		Covered Van		Private car		CNG		Motor-cycle	
		(1hr)	PCU	(1hr)	PCU	(1hr)	PCU	(1hr)	PCU	(1hr)	PCU
16-09-2019 (Monday)	Peak	145	435	37	74	791	791	275	206	312	156
	Off-Peak	155	465	47	94	969	969	182	137	545	273
	Peak	184	552	39	78	1127	1127	288	216	737	369
18-09-2019 (Wednesday)	Peak	155	465	42	84	798	798	248	186	301	151
	Off-Peak	135	405	66	132	1103	1103	278	209	329	165
	Peak	183	549	53	106	1257	1257	232	174	385	193
19-09-19 (Thursday)	Peak	132	396	39	78	989	989	305	229	295	148
	Off-Peak	195	585	89	178	1169	1169	401	301	752	376
	Peak	225	675	91	182	1726	1726	295	221	1055	528
23-09-2019 (Monday	Peak	149	447	36	72	797	797	182	137	312	156
	Off-Peak	158	474	43	86	956	956	256	192	525	263
	Peak	188	564	32	64	1096	1096	245	184	712	356
25-09-2019 (Wednesday)	Peak	157	471	41	82	788	788	236	177	328	164
	Off-Peak	137	411	51	102	1124	1124	285	214	357	179
	Peak	189	567	39	78	1212	1212	228	171	372	186
26-09-2019 (Thursday)	Peak	162	486	89	178	1011	1011	301	226	298	149
	Off-Peak	196	588	90	180	1189	1189	389	292	742	371
	Peak	216	648	86	172	1801	1801	363	272	1054	527
30-09-2019 (Monday)	Peak	121	363	33	66	723	723	288	216	298	149
	Off-Peak	147	441	41	82	895	895	176	132	514	257
	Peak	163	489	30	60	1072	1072	295	221	696	348

Table: 1 Dhanmondi-32 to Shukrabad (up) 7 Days 1 hr. and PCU/hr. data

DOWN											
Date		Bus		Covered Van		Private car		CNG		Motor-cycle	
		(1hr)	PCU	(1hr)	PCU	(1hr)	PCU	(1hr)	PCU	(1hr)	PCU
16-09-2019 (Monday)	Peak	220	660	31	62	1350	1350	388	291	1016	508
	Off-Peak	142	426	69	138	975	975	248	186	255	128
	Peak	146	438	50	100	1061	1061	320	240	380	190
18-09-2019 (Wednesday)	Peak	241	723	67	134	1478	1478	279	209	1119	560
	Off-Peak	103	309	93	186	960	960	392	294	509	255
	Peak	102	306	37	74	1011	1011	277	208	271	136
19-09-19 (Thursday)	Peak	260	780	71	142	1665	1665	413	310	1101	551
	Off-Peak	116	348	43	86	1088	1088	296	222	448	224
	Peak	164	492	55	110	1506	1506	358	269	661	331
23-09-2019 (Monday	Peak	222	666	46	92	1526	1526	414	311	1015	508
	Off-Peak	135	405	60	120	916	916	244	183	254	127
	Peak	143	429	62	124	1038	1038	316	237	377	189
25-09-2019 (Wednesday)	Peak	238	714	38	76	1426	1426	277	208	1115	558
	Off-Peak	101	303	130	260	936	936	383	287	508	254
	Peak	104	312	85	170	1029	1029	272	204	269	135
26-09-2019 (Thursday)	Peak	266	798	75	150	1688	1688	407	305	1101	551
	Off-Peak	123	369	70	140	1067	1067	293	220	447	224
	Peak	171	513	85	170	1598	1598	353	265	665	333
30-09-2019 (Monday)	Peak	232	696	45	90	1312	1312	375	281	1007	504
	Off-Peak	105	315	61	122	936	936	240	180	281	141
	Peak	141	423	65	130	1049	1049	313	235	362	181

Table: 2 Dhanmondi-32 to Shukrabad (Down) 7 Days 1 hr. and PCU/hr. data

Link-2: Shukrabad to Dhanmondi-27

UP											
Date		Bus		Covered Van		Private car		CNG		Motor-cycle	
		(1hr)	PCU	(1hr)	PCU	(1hr)	PCU	(1hr)	PCU	(1hr)	PCU
2/10/2019 (Wednesday)	Peak	175	525	28	56	778	778	237	178	321	161
	Off-peak	131	393	43	86	1096	1096	269	202	335	168
	Peak	178	534	33	66	1195	1195	227	170	377	189
3/10/2019 (Thursday)	Peak	185	555	36	72	986	986	309	232	302	151
	Off-peak	186	558	71	142	1126	1126	415	311	781	391
	Peak	231	693	86	172	1776	1776	293	220	1075	538
9/10/2019 (Wednesday)	Peak	163	489	46	92	772	772	231	173	337	169
	Off-peak	141	423	49	98	1136	1136	286	215	386	193
	Peak	187	561	37	74	1224	1224	233	175	355	178
10/10/2019 (Thursday)	Peak	178	534	88	176	1101	1101	321	241	327	164
	Off-peak	196	588	86	172	1191	1191	396	297	751	376
	Peak	223	669	76	152	1876	1876	366	275	1072	536
14/10/2019 (Monday)	Peak	121	363	36	72	732	732	277	208	296	148
	Off-peak	143	429	41	82	876	876	165	124	514	257
	Peak	171	513	33	66	1063	1063	294	221	626	313
16/10/2019 (Wednesday)	Peak	152	456	31	62	798	798	249	187	311	156
	Off-peak	143	429	54	108	1125	1125	297	223	377	189
	Peak	193	579	39	78	1301	1301	246	185	336	168
17/10/2019 (Thursday)	Peak	182	546	87	174	996	996	295	221	302	151
	Off-peak	191	573	93	186	1277	1277	241	181	827	414
	Peak	238	714	79	158	1802	1802	281	211	1126	563

Table: 3 Shukrabad to Dhanmondi-27 (up) 7 days 1hr and PCU/hr. data

DOWN											
Date		Bus		Covered Van		Private car		CNG		Motor-cycle	
		(1hr)	PCU	(1hr)	PCU	(1hr)	PCU	(1hr)	PCU	(1hr)	PCU
2/10/2019 (Wednesday)	Peak	227	681	31	62	1350	1350	315	236	1001	501
	Off-peak	145	435	69	138	975	975	245	184	509	255
	Peak	147	441	50	100	1061	1061	320	240	270	135
3/10/2019 (Thursday)	Peak	247	741	67	134	1478	1478	375	281	1101	551
	Off-peak	103	309	92	184	960	960	282	212	396	198
	Peak	101	303	37	74	1011	1011	425	319	675	338
9/10/2019 (Wednesday)	Peak	260	780	71	142	1665	1665	296	222	1010	505
	Off-peak	115	345	42	84	1085	1085	375	281	252	126
	Peak	160	480	55	110	1506	1506	425	319	377	189
10/10/2019 (Thursday)	Peak	275	825	46	92	1525	1525	412	309	1115	558
	Off-peak	135	405	58	116	916	916	275	206	508	254
	Peak	142	426	59	118	1035	1035	302	227	270	135
14/10/2019 (Monday)	Peak	240	720	36	72	1425	1425	305	229	1103	552
	Off-peak	101	303	130	260	935	935	240	180	280	140
	Peak	104	312	85	170	1025	1025	315	236	362	181
16/10/2019 (Wednesday)	Peak	260	780	75	150	1695	1695	385	289	1016	508
	Off-peak	125	375	70	140	1075	1075	280	210	560	280
	Peak	170	510	85	170	1596	1596	275	206	320	160
17/10/2019 (Thursday)	Peak	280	840	44	88	1510	1510	420	315	1114	557
	Off-peak	105	315	56	112	950	950	295	221	420	210
	Peak	141	423	65	130	1044	1044	365	274	675	338

Table: 4 Shukrabad to Dhanmondi-27 (down) 7 days 1hr and PCU/hr. data

Link- 3 Dhanmondi-27 to Manik mia Ave.

UP											
Date		Bus		Covered Van		Private car		CNG		Motor-cycle	
		(1hr)	PCU	(1hr)	PCU	(1hr)	PCU	(1hr)	PCU	(1hr)	PCU
21/10/2019 (Monday)	Peak	137	411	32	64	828	828	301	226	309	155
	Off-Peak	133	399	47	94	962	962	188	141	522	261
	Peak	178	534	36	72	1125	1125	309	232	713	357
23/10/2019 (Wednesday)	Peak	152	456	35	70	802	802	221	166	346	173
	Off-Peak	181	543	56	112	1175	1175	277	208	398	199
	Peak	188	564	39	78	1282	1282	241	181	401	201
24/10/2019 (Thursday)	Peak	166	498	88	176	988	988	301	226	322	161
	Off-Peak	171	513	91	182	1169	1169	426	320	802	401
	Peak	289	867	73	146	1722	1722	333	250	1095	548
28/10/2019 (Monday)	Peak	130	390	28	56	785	785	201	151	377	189
	Off-Peak	144	432	36	72	958	958	287	215	487	244
	Peak	171	513	31	62	1122	1122	295	221	574	287
4/11/2019 (Monday)	Peak	165	495	33	66	756	756	244	183	356	178
	Off-Peak	133	399	49	98	989	989	265	199	401	201
	Peak	198	594	52	104	1056	1056	287	215	611	306
6/11/2019 (Wednesday)	Peak	169	507	32	64	772	772	225	169	333	167
	Off-Peak	145	435	44	88	1182	1182	257	193	378	189
	Peak	177	531	37	74	1302	1302	298	224	415	208
7/11/2019 (Thursday)	Peak	220	660	28	56	1226	1226	319	239	292	146
	Off-Peak	188	564	78	156	1278	1278	405	304	877	439
	Peak	271	813	66	132	1855	1855	249	187	1125	563

Table: 5 Dhanmondi-27 to Manik mia (up) 7 days 1 hr. and PCU/hr. Data

DOWN											
Date		Bus		Covered Van		Private car		CNG		Motor-cycle	
		(1hr)	PCU	(1hr)	PCU	(1hr)	PCU	(1hr)	PCU	(1hr)	PCU
21/10/2019 (Monday)	Peak	178	534	37	74	1587	1587	415	311	1188	594
	Off-Peak	112	336	135	270	997	997	287	215	277	139
	Peak	119	357	85	170	1035	1035	325	244	382	191
23/10/2019 (Wednesday)	Peak	210	630	77	154	1627	1627	387	290	1016	508
	Off-Peak	127	381	72	144	1057	1057	292	219	582	291
	Peak	186	558	87	174	1624	1624	263	197	422	211
24/10/2019 (Thursday)	Peak	287	861	43	86	1582	1582	442	332	1175	588
	Off-Peak	112	336	56	112	956	956	289	217	477	239
	Peak	157	471	66	132	1096	1096	391	293	678	339
28/10/2019 (Monday)	Peak	235	705	33	66	1337	1337	444	333	1023	512
	Off-Peak	118	354	62	124	822	822	256	192	322	161
	Peak	124	372	57	114	987	987	366	275	397	199
4/11/2019 (Monday)	Peak	195	585	69	138	1301	1301	389	292	1139	570
	Off-Peak	111	333	88	176	836	836	211	158	312	156
	Peak	236	708	38	76	889	889	319	239	441	221
6/11/2019 (Wednesday)	Peak	225	675	69	138	1675	1675	411	308	1095	548
	Off-Peak	147	441	44	88	1125	1125	286	215	506	253
	Peak	138	414	51	102	1403	1403	392	294	307	154
7/11/2019 (Thursday)	Peak	252	756	43	86	1225	1225	277	208	1201	601
	Off-Peak	117	351	57	114	1325	1325	254	191	369	185
	Peak	145	435	49	98	1241	1241	433	325	723	362

Table: 6 Dhanmondi-27 to Manik mia (down) 7 days 1 hr. and PCU/hr. Data

Data of Roadway capacity for different links:

Link-1			
Dhanmoni-32 to Shukrabad			
SL. NO	DOWN	UP	Unit
1	28	37	ft.
2	32	50	ft.
3	35	47	ft.
Lowest Width	28	37	ft.
Shoulder condition	1	1	ft.
Lane type	3 lane 2 way		
Width	28 ft.		
Lane width	9 ft.		

Total Roadway capacity for two way Link-1		Total Passenger (veh/hr.)
Category -1	Bus	4044
	Private car	
	Covered van	
Category - 2	CNG	
	Motor-cycle	

Table: 7 Link-1 roadway capacity measurement data and Total Roadway capacity

Link-2			
Shukrabad to Dhanmondi-27			
SL. NO	DOWN	UP	Unit
1	31	51	ft.
2	27	28	ft.
3	50	41	ft.
Lowest Width	27	28	ft.
Shoulder condition	1	1	ft.
Lane type	3 lane 2 way		
Width	27 ft.		
Lane width	9 ft.		

Total Roadway capacity for two way Link-2		Total Passenger (veh/hr.)
Category - 1	Bus	3462
	Private car	
	Covered van	
Category - 2	CNG	
	Motor-cycle	

Table: 8 Link-2 Roadway capacity measurement data and Total Roadway capacity

Link-3			
Dhanmondi -27 to Manik Mia			
SL. NO	DOWN	UP	Unit
1	37	51	ft.
2	37	38	ft.
3	50	38	ft.
Lowest Width	37	38	ft.
Shoulder condition	1	1	ft.
Lane type	3 lane 2 way		
Width	37 ft.		
`Lane width	12 ft.		

Total Roadway capacity for two way Link-3		Total Passenger (veh/hr.)
Category -1	Bus	4337
	Private car	
	Covered van	
Category - 2	CNG	
	Motor-cycle	

Table: 9 Link-3 Roadway capacity measurement data and total roadway capacity

Data of Saturation flow for particular links:

Peak hour data's:

A Method for Measuring Saturation Flow at Traffic Signals

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....Dhanmondi-32 (Up).....INTERSECTIONS

Total Average- 11.01

Peak Hour: 9 am to 11 am
Thursday 14/11/2019

C- 4 min 2 sec
G- 1 min 15 sec
A- 3 sec

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in total 5 cycle	PCU factor	Converted PCU in total 5 cycle	Total PCU	Sample	Average
0	Bus	2	2	1	2	3	10	1.96	19.6	64.6	5	12.92
	Covered van	1	0	0	0	1	2	1.43	2.86			
	Private car	7	9	5	3	4	28	1	28			
	CNG	3	6	2	3	4	18	0.76	13.68			
	Motor cycle	7	5	4	5	2	23	0.02	0.46			
1	Bus	2	1	2	3	1	9	1.96	17.64	63.4	5	12.68
	Covered van	3	0	2	0	1	6	1.43	8.58			
	Private car	3	5	4	7	4	23	1	23			
	CNG	5	1	2	7	3	18	0.76	13.68			
	Motor cycle	6	7	3	4	5	25	0.02	0.5			
2	Bus	1	1	3	3	1	9	1.96	17.64	48.23	5	9.646
	Covered van	1	1	0	1	2	1	1.43	1.43			
	Private car	6	2	5	4	2	19	1	19			
	CNG	1	3	1	5	3	13	0.76	9.88			
	Motor cycle	3	4	4	1	2	14	0.02	0.28			
3	Bus	1	2	1	2	1	7	1.96	13.72	46.48	5	9.296
	Covered van	0	0	0	1	1	2	1.43	2.86			
	Private car	2	2	6	3	5	18	1	18			
	CNG	2	2	5	4	2	15	0.76	11.4			
	Motor cycle	3	8	5	7	2	25	0.02	0.5			
4	Bus	3	1	3	2	2	11	1.96	21.56	47.73	5	9.546
	Covered van	0	1	0	0	1	1	1.43	1.43			
	Private car	2	2	6	4	5	19	1	19			
	CNG	2	1	1	2	1	7	0.76	5.32			
	Motor cycle	8	7	2	2	2	21	0.02	0.42			
5	Bus	5	1	2	4	3	15	1.96	29.4	59.99	5	11.998
	Covered van	0	1	1	0	1	3	1.43	4.29			
	Private car	3	6	2	3	2	16	1	16			
	CNG	2	4	1	4	2	13	0.76	9.88			
	Motor cycle	4	2	3	8	4	21	0.02	0.42			

Table: 10 Saturation flow Dhanmondi-32 (up) intersection Thursday peak hour data

A Method for Measuring Saturation Flow at Traffic Signals

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....Shukrabad (Down).....INTERSECTIONS

Total Average- 12.39

Peak Hour: 9 am to 11 am
Thursday 14/11/2019

C- 3 min 41 sec
G- 2 min 16 sec
A- 3 sec

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in total 5 cycle	PCU factor	Converted PCU in total 5 cycle	Total PCU	Sample	Average
0	Bus	3	2	1	2	3	11	1.96	21.56	76.72	5	15.344
	Covered van	0	1	3	0	0	4	1.43	5.72			
	Private car	8	9	8	8	6	39	1	39			
	CNG	5	2	2	1	3	13	0.76	9.88			
	Motor cycle	7	9	2	8	2	28	0.02	0.56			
1	Bus	1	2	3	1	1	8	1.96	15.68	50	5	10
	Covered van	1	0	2	0	1	4	1.43	5.72			
	Private car	3	2	5	2	7	19	1	19			
	CNG	1	2	2	4	3	12	0.76	9.12			
	Motor cycle	9	0	3	2	10	24	0.02	0.48			
2	Bus	4	1	3	5	2	15	1.96	29.4	70.19	5	14.038
	Covered van	1	0	0	1	2	1	1.43	1.43			
	Private car	8	5	2	9	5	29	1	29			
	CNG	3	2	4	1	3	13	0.76	9.88			
	Motor cycle	5	3	9	1	6	24	0.02	0.48			
3	Bus	3	2	4	2	3	14	1.96	27.44	61.9	5	12.38
	Covered van	0	1	0	2	1	4	1.43	5.72			
	Private car	3	2	3	4	7	19	1	19			
	CNG	3	2	4	2	1	12	0.76	9.12			
	Motor cycle	2	3	5	12	9	31	0.02	0.62			
4	Bus	3	3	3	2	2	13	1.96	25.48	57.01	5	11.402
	Covered van	0	1	1	0	2	1	1.43	1.43			
	Private car	2	5	5	4	6	22	1	22			
	CNG	3	3	1	2	1	10	0.76	7.6			
	Motor cycle	2	11	2	2	8	25	0.02	0.5			
5	Bus	3	1	2	4	3	13	1.96	25.48	55.95	5	11.19
	Covered van	1	0	1	1	0	3	1.43	4.29			
	Private car	3	5	1	4	2	15	1	15			
	CNG	1	3	2	5	3	14	0.76	10.64			
	Motor cycle	10	7	3	5	2	27	0.02	0.54			

Table: 11 Saturation flow Shukrabad (down) intersection Thursday peak hour data

A Method for Measuring Saturation Flow at Traffic Signals

Peak Hour: 9 am to 11 am
Thursday 14/11/2019

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....Shukrabad (up).....INTERSECTIONS

Total Average- 13.00

C- 3 min 5 sec
G- 2 min 5 sec
A- 3 sec

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in total 5 cycle	PCU factor	Converted PCU in total 5 cycle	Total PCU	Sample	Average
0	Bus	3	2	3	2	3	13	1.96	25.48	80.64	5	16.128
	Covered van	0	1	3	0	0	4	1.43	5.72			
	Private car	8	9	8	8	6	39	1	39			
	CNG	5	2	2	1	3	13	0.76	9.88			
	Motor cycle	7	9	2	8	2	28	0.02	0.56			
1	Bus	2	2	3	1	4	12	1.96	23.52	64.68	5	12.936
	Covered van	1	0	2	0	1	4	1.43	5.72			
	Private car	3	2	5	2	7	19	1	19			
	CNG	7	2	2	4	6	21	0.76	15.96			
	Motor cycle	9	0	3	2	10	24	0.02	0.48			
2	Bus	4	1	3	5	2	15	1.96	29.4	70.19	5	14.038
	Covered van	1	0	0	1	2	1	1.43	1.43			
	Private car	8	5	2	9	5	29	1	29			
	CNG	3	2	4	1	3	13	0.76	9.88			
	Motor cycle	5	3	9	1	6	24	0.02	0.48			
3	Bus	3	2	4	2	3	14	1.96	27.44	61.8	5	12.36
	Covered van	0	1	0	2	1	4	1.43	5.72			
	Private car	3	2	3	4	7	19	1	19			
	CNG	3	2	4	2	1	12	0.76	9.12			
	Motor cycle	2	3	5	7	9	26	0.02	0.52			
4	Bus	3	3	3	2	2	13	1.96	25.48	56.97	5	11.394
	Covered van	0	1	1	0	2	1	1.43	1.43			
	Private car	2	5	5	4	6	22	1	22			
	CNG	3	3	1	2	1	10	0.76	7.6			
	Motor cycle	2	9	2	2	8	23	0.02	0.46			
5	Bus	3	1	2	4	3	13	1.96	25.48	55.85	5	11.17
	Covered van	1	0	1	1	0	3	1.43	4.29			
	Private car	3	5	1	4	2	15	1	15			
	CNG	1	3	2	5	3	14	0.76	10.64			
	Motor cycle	5	7	3	5	2	22	0.02	0.44			

Table: 12 Saturation flow Shukrabad (Up) intersection Thursday peak hour data

A Method for Measuring Saturation Flow at Traffic Signals

Peak Hour: 9 am to 11 am
Thursday 14/11/2019

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....Dhanmandi-27 (Down).....INTERSECTIONS

Total Average- 11.38

C- 3 min 29 sec
G- 2 min 5 sec
A- 3 sec

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in total 5 cycle	PCU factor	Converted PCU in total 5 cycle	Total PCU	Sample	Average
0	Bus	3	2	3	2	2	12	1.96	23.52	70.23	5	14.046
	Covered van	1	0	1	0	1	3	1.43	4.29			
	Private car	7	9	8	7	4	35	1	35			
	CNG	2	2	2	2	1	9	0.76	6.84			
	Motor cycle	8	11	4	4	2	29	0.02	0.58			
1	Bus	2	4	2	3	4	15	1.96	29.4	71.23	5	14.246
	Covered van	0	0	1	0	0	1	1.43	1.43			
	Private car	5	9	5	4	6	29	1	29			
	CNG	4	1	4	3	2	14	0.76	10.64			
	Motor cycle	8	7	6	9	8	38	0.02	0.76			
2	Bus	0	1	1	2	1	5	1.96	9.8	34.29	5	6.858
	Covered van	1	0	0	0	1	1	1.43	1.43			
	Private car	4	5	4	4	2	19	1	19			
	CNG	1	1	1	0	2	5	0.76	3.8			
	Motor cycle	2	3	5	1	2	13	0.02	0.26			
3	Bus	3	2	1	4	1	11	1.96	21.56	53.47	5	10.694
	Covered van	0	0	0	2	1	3	1.43	4.29			
	Private car	4	5	4	4	4	21	1	21			
	CNG	2	2	2	2	0	8	0.76	6.08			
	Motor cycle	7	3	5	10	2	27	0.02	0.54			
4	Bus	3	2	3	3	1	12	1.96	23.52	55.89	5	11.178
	Covered van	0	1	0	0	2	1	1.43	1.43			
	Private car	4	5	4	3	4	20	1	20			
	CNG	2	3	4	2	3	14	0.76	10.64			
	Motor cycle	4	3	2	2	4	15	0.02	0.3			
5	Bus	4	2	3	3	2	14	1.96	27.44	56.28	5	11.256
	Covered van	0	1	1	0	0	2	1.43	2.86			
	Private car	4	5	2	2	1	14	1	14			
	CNG	2	5	2	4	2	15	0.76	11.4			
	Motor cycle	7	5	3	9	5	29	0.02	0.58			

Table: 13 Saturation flow dhanmondi-27 (down) intersection Thursday peak hour data

A Method for Measuring Saturation Flow at Traffic Signals

Peak Hour: 9 am to 11 am
Thursday 14/11/2019

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....Dhanmondi-27 (Up).....INTERSECTIONS

Total Average- 11.72

C- 3 min 21sec
G- 1 min 25sec
A- 3sec

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in total 5 cycle	PCU factor	Converted PCU in total 5 cycle	Total PCU	Sample	Average
0	Bus	4	2	4	3	2	15	1.96	29.4	75.72	5	15.144
	Covered van	0	1	0	0	1	2	1.43	2.86			
	Private car	7	9	8	8	4	36	1	36			
	CNG	2	2	2	2	1	9	0.76	6.84			
	Motor cycle	8	13	4	4	2	31	0.02	0.62			
1	Bus	4	2	2	3	1	12	1.96	23.52	61.49	5	12.298
	Covered van	0	0	1	0	0	1	1.43	1.43			
	Private car	7	4	5	4	6	26	1	26			
	CNG	2	3	2	4	2	13	0.76	9.88			
	Motor cycle	8	9	3	5	8	33	0.02	0.66			
2	Bus	2	4	1	2	3	12	1.96	23.52	53.07	5	10.614
	Covered van	1	0	0	0	1	1	1.43	1.43			
	Private car	4	7	4	4	2	21	1	21			
	CNG	2	1	3	1	2	9	0.76	6.84			
	Motor cycle	2	4	5	1	2	14	0.02	0.28			
3	Bus	4	3	2	1	2	12	1.96	23.52	58.98	5	11.796
	Covered van	1	0	0	2	1	4	1.43	5.72			
	Private car	4	7	4	4	4	23	1	23			
	CNG	2	2	2	2	0	8	0.76	6.08			
	Motor cycle	9	5	2	10	7	33	0.02	0.66			
4	Bus	3	2	3	3	1	12	1.96	23.52	53.61	5	10.722
	Covered van	0	1	0	0	2	1	1.43	1.43			
	Private car	4	5	4	3	4	20	1	20			
	CNG	2	3	1	2	3	11	0.76	8.36			
	Motor cycle	4	3	2	2	4	15	0.02	0.3			
5	Bus	4	2	1	2	2	11	1.96	21.56	48.75	5	9.75
	Covered van	0	1	2	0	0	3	1.43	4.29			
	Private car	4	5	2	2	1	14	1	14			
	CNG	2	2	2	4	1	11	0.76	8.36			
	Motor cycle	6	5	3	8	5	27	0.02	0.54			

Table: 14 Saturation flow Dhanmondi-27 (up) intersection Thursday peak hour data

A Method for Measuring Saturation Flow at Traffic Signals

Peak Hour: 9 am to 11 am
Thursday 14/11/2019

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....Manik Mia Avenue (Down).....INTERSECTIONS

Total Average- 12.85

C- 3 min 2sec
G- 2 min 5sec
A- 3sec

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in total 5 cycle	PCU factor	Converted PCU in total 5 cycle	Total PCU	Sample	Average
0	Bus	3	2	4	2	1	9	1.96	17.64	66.6	5	13.32
	Covered van	0	1	0	1	0	2	1.43	2.86			
	Private car	4	7	7	5	2	25	1	25			
	CNG	6	4	8	2	7	27	0.76	20.52			
	Motor cycle	7	9	3	5	5	29	0.02	0.58			
1	Bus	2	1	4	2	3	12	1.96	23.52	73.06	5	14.612
	Covered van	1	0	1	0	0	2	1.43	2.86			
	Private car	6	6	4	5	6	27	1	27			
	CNG	8	6	2	7	2	25	0.76	19			
	Motor cycle	7	6	9	3	9	34	0.02	0.68			
2	Bus	4	2	2	3	1	12	1.96	23.52	65.4	5	13.08
	Covered van	1	0	0	1	2	2	1.43	2.86			
	Private car	5	4	6	3	3	21	1	21			
	CNG	7	7	1	5	3	23	0.76	17.48			
	Motor cycle	4	7	5	9	2	27	0.02	0.54			
3	Bus	2	2	5	1	3	13	1.96	25.48	62.15	5	12.43
	Covered van	1	0	0	1	1	3	1.43	4.29			
	Private car	4	5	4	2	4	19	1	19			
	CNG	5	3	2	5	2	17	0.76	12.92			
	Motor cycle	3	3	6	9	2	23	0.02	0.46			
4	Bus	2	2	4	2	1	11	1.96	21.56	60.77	5	12.154
	Covered van	0	1	0	0	2	1	1.43	1.43			
	Private car	5	5	5	3	4	22	1	22			
	CNG	3	2	9	2	4	20	0.76	15.2			
	Motor cycle	3	6	8	9	3	29	0.02	0.58			
5	Bus	3	2	1	3	4	13	1.96	25.48	57.63	5	11.526
	Covered van	0	1	2	0	0	3	1.43	4.29			
	Private car	3	4	2	3	7	19	1	19			
	CNG	2	3	2	3	1	11	0.76	8.36			
	Motor cycle	4	5	7	3	6	25	0.02	0.5			

Table: 15 Saturation flow Manik mia (down) intersection Thursday peak hour data

A Method for Measuring Saturation Flow at Traffic Signals

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....Dhanmondi-32 (Up).....INTERSECTIONS

Total Average- 10.99

Peak Hour: 9 am to 11 am
Monday 18/11/2019

C- 3 min 27 sec
G- 1 min 45 sec
A- 3 sec

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in total 5 cycle	PCU factor	Converted PCU in total 5 cycle	Total PCU	Sample	Average
0	Bus	2	2	1	2	3	10	1.96	19.6	56.03	5	11.206
	Covered van	1	0	0	1	1	3	1.43	4.29			
	Private car	5	7	2	5	3	22	1	22			
	CNG	2	3	4	2	2	13	0.76	9.88			
	Motor cycle	2	4	3	2	2	13	0.02	0.26			
1	Bus	1	2	2	3	1	9	1.96	17.64	58.82	5	11.764
	Covered van	3	0	6	0	1	10	1.43	14.3			
	Private car	4	2	6	4	3	19	1	19			
	CNG	1	1	2	1	5	10	0.76	7.6			
	Motor cycle	4	2	2	4	2	14	0.02	0.28			
2	Bus	2	4	3	3	3	15	1.96	29.4	55.79	5	11.158
	Covered van	1	1	0	1	1	1	1.43	1.43			
	Private car	2	4	3	3	2	14	1	14			
	CNG	3	2	1	5	3	14	0.76	10.64			
	Motor cycle	2	3	5	2	4	16	0.02	0.32			
3	Bus	1	2	2	4	3	12	1.96	23.52	58.57	5	11.714
	Covered van	1	0	1	2	1	5	1.43	7.15			
	Private car	5	2	3	2	5	17	1	17			
	CNG	2	3	2	3	4	14	0.76	10.64			
	Motor cycle	2	2	4	3	2	13	0.02	0.26			
4	Bus	2	1	3	2	2	10	1.96	19.6	48.39	5	9.678
	Covered van	2	1	0	2	1	1	1.43	1.43			
	Private car	2	3	6	4	3	18	1	18			
	CNG	2	1	3	2	4	12	0.76	9.12			
	Motor cycle	3	2	2	3	2	12	0.02	0.24			
5	Bus	1	1	2	2	3	9	1.96	17.64	51.99	5	10.398
	Covered van	0	2	1	0	2	5	1.43	7.15			
	Private car	3	2	2	3	4	14	1	14			
	CNG	1	7	2	4	3	17	0.76	12.92			
	Motor cycle	2	2	3	4	3	14	0.02	0.28			

Table: 16 Saturation flow Dhanmondi-32 (up) intersection Monday peak hour data

A Method for Measuring Saturation Flow at Traffic Signals

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....Shukrabad (Down).....INTERSECTIONS

Total Average- 10.10

Peak Hour: 9 am to 11 am
Monday 18/11/2019

C- 3 min 44 sec
G- 2 min 9 sec
A- 3 sec

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in total 5 cycle	PCU factor	Converted PCU in total 5 cycle	Total PCU	Sample	Average
0	Bus	3	2	1	2	3	11	1.96	21.56	55.03	5	11.006
	Covered van	0	1	1	0	1	3	1.43	4.29			
	Private car	4	3	4	5	3	19	1	19			
	CNG	5	2	2	1	3	13	0.76	9.88			
	Motor cycle	2	4	2	5	2	15	0.02	0.3			
1	Bus	1	2	3	1	2	9	1.96	17.64	46.8	5	9.36
	Covered van	1	0	2	0	1	4	1.43	5.72			
	Private car	3	2	5	2	2	14	1	14			
	CNG	1	2	2	4	3	12	0.76	9.12			
	Motor cycle	4	2	3	2	5	16	0.02	0.32			
2	Bus	2	1	3	5	2	13	1.96	25.48	56.63	5	11.326
	Covered van	1	0	0	1	2	1	1.43	1.43			
	Private car	4	5	2	4	3	18	1	18			
	CNG	3	2	4	3	3	15	0.76	11.4			
	Motor cycle	2	3	5	2	4	16	0.02	0.32			
3	Bus	2	2	1	2	2	9	1.96	17.64	46.04	5	9.208
	Covered van	0	1	0	2	1	4	1.43	5.72			
	Private car	3	2	3	2	4	14	1	14			
	CNG	2	2	4	2	1	11	0.76	8.36			
	Motor cycle	2	3	5	3	3	16	0.02	0.32			
4	Bus	3	1	2	2	1	9	1.96	17.64	42.89	5	8.578
	Covered van	0	1	1	0	2	1	1.43	1.43			
	Private car	2	2	5	4	3	16	1	16			
	CNG	3	3	1	2	1	10	0.76	7.6			
	Motor cycle	2	3	2	2	2	11	0.02	0.22			
5	Bus	3	1	2	4	3	13	1.96	25.48	55.71	5	11.142
	Covered van	1	0	1	1	0	3	1.43	4.29			
	Private car	3	5	1	4	2	15	1	15			
	CNG	1	3	2	5	3	14	0.76	10.64			
	Motor cycle	3	5	3	2	2	15	0.02	0.3			

Table: 17 Saturation flow Shukrabad (down) intersection Monday peak hour data

A Method for Measuring Saturation Flow at Traffic Signals

Peak Hour: 9 am to 11 am
Monday 18/11/2019

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....Shukrabad (up).....INTERSECTIONS

Total Average- 10.53

C- 3 min 5 sec
G- 2 min 5 sec
A- 3 sec

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in total 5 cycle	PCU factor	Converted PCU in total 5 cycle	Total PCU	Sample	Average
0	Bus	3	2	1	2	3	11	1.96	21.56	55.48	5	11.096
	Covered van	0	1	3	0	0	4	1.43	5.72			
	Private car	2	5	4	3	4	18	1	18			
	CNG	5	2	2	1	3	13	0.76	9.88			
	Motor cycle	4	4	2	3	3	16	0.02	0.32			
1	Bus	1	2	3	3	2	11	1.96	21.56	53.58	5	10.716
	Covered van	1	0	2	0	1	4	1.43	5.72			
	Private car	3	2	3	2	7	17	1	17			
	CNG	1	2	2	4	3	12	0.76	9.12			
	Motor cycle	2	0	3	2	2	9	0.02	0.18			
2	Bus	2	1	1	2	2	8	1.96	15.68	42.53	5	8.506
	Covered van	1	0	0	1	2	1	1.43	1.43			
	Private car	4	2	2	4	3	15	1	15			
	CNG	3	2	4	1	3	13	0.76	9.88			
	Motor cycle	2	3	9	7	6	27	0.02	0.54			
3	Bus	3	2	4	2	3	14	1.96	27.44	57.68	5	11.536
	Covered van	0	1	0	2	1	4	1.43	5.72			
	Private car	4	2	3	4	2	15	1	15			
	CNG	3	2	4	2	1	12	0.76	9.12			
	Motor cycle	4	3	5	5	3	20	0.02	0.4			
4	Bus	2	3	1	2	2	10	1.96	19.6	50.93	5	10.186
	Covered van	0	1	1	0	2	1	1.43	1.43			
	Private car	2	5	5	4	6	22	1	22			
	CNG	3	3	1	2	1	10	0.76	7.6			
	Motor cycle	2	6	2	2	3	15	0.02	0.3			
5	Bus	3	1	2	4	3	13	1.96	25.48	55.75	5	11.15
	Covered van	1	0	1	1	0	3	1.43	4.29			
	Private car	3	5	1	4	2	15	1	15			
	CNG	1	3	2	5	3	14	0.76	10.64			
	Motor cycle	3	4	3	5	2	17	0.02	0.34			

Table: 18 Saturation flow Shukrabad (up) intersection Monday peak hour data

A Method for Measuring Saturation Flow at Traffic Signals

Peak Hour: 9 am to 11 am
Monday 18/11/2019

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....Dhanmondi-27 (Down).....INTERSECTIONS

Total Average- 9.98

C- 3 min 29 sec
G- 2 min 5 sec
A- 3 sec

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in total 5 cycle	PCU factor	Converted PCU in total 5 cycle	Total PCU	Sample	Average
0	Bus	3	2	1	2	2	10	1.96	19.6	55.36	5	11.072
	Covered van	1	0	0	0	1	2	1.43	2.86			
	Private car	7	4	3	7	4	25	1	25			
	CNG	2	3	2	2	1	10	0.76	7.6			
	Motor cycle	3	4	4	2	2	15	0.02	0.3			
1	Bus	2	2	2	3	1	10	1.96	19.6	54.27	5	10.854
	Covered van	0	0	1	0	2	3	1.43	4.29			
	Private car	5	4	5	4	6	24	1	24			
	CNG	2	1	2	1	2	8	0.76	6.08			
	Motor cycle	3	2	3	2	5	15	0.02	0.3			
2	Bus	3	1	1	2	3	10	1.96	19.6	45.69	5	9.138
	Covered van	1	0	2	2	1	1	1.43	1.43			
	Private car	4	5	4	4	2	19	1	19			
	CNG	1	1	1	2	2	7	0.76	5.32			
	Motor cycle	2	3	5	3	4	17	0.02	0.34			
3	Bus	3	2	1	2	1	9	1.96	17.64	50.78	5	10.156
	Covered van	1	0	0	2	1	4	1.43	5.72			
	Private car	4	5	4	4	4	21	1	21			
	CNG	2	2	2	2	0	8	0.76	6.08			
	Motor cycle	6	3	2	4	2	17	0.02	0.34			
4	Bus	1	2	3	2	1	9	1.96	17.64	47.73	5	9.546
	Covered van	0	1	0	0	2	1	1.43	1.43			
	Private car	4	5	4	3	4	20	1	20			
	CNG	2	3	1	2	3	11	0.76	8.36			
	Motor cycle	4	3	2	2	4	15	0.02	0.3			
5	Bus	2	2	1	2	2	9	1.96	17.64	45.43	5	9.086
	Covered van	0	1	1	1	0	3	1.43	4.29			
	Private car	4	5	2	2	1	14	1	14			
	CNG	2	3	2	4	1	12	0.76	9.12			
	Motor cycle	4	5	3	3	4	19	0.02	0.38			

Table: 19 Saturation flow Dhanmondi-27 (down) intersection Monday peak hour data

A Method for Measuring Saturation Flow at Traffic Signals

Peak Hour: 9 am to 11 am
Monday 18/11/2019

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....Dhanmondi-27 (Up).....INTERSECTIONS

Total Average- 9.02

C- 3 min 21sec
G- 1 min 25sec
A- 3sec

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in total 5 cycle	PCU factor	Converted PCU in total 5 cycle	Total PCU	Sample	Average
0	Bus	1	2	1	2	2	8	1.96	15.68	41.68	5	8.336
	Covered van	0	1	0	0	1	2	1.43	2.86			
	Private car	2	3	4	5	2	16	1	16			
	CNG	2	2	2	2	1	9	0.76	6.84			
	Motor cycle	2	4	4	3	2	15	0.02	0.3			
1	Bus	4	2	2	1	1	10	1.96	19.6	49.45	5	9.89
	Covered van	0	0	1	0	0	1	1.43	1.43			
	Private car	3	4	5	4	6	22	1	22			
	CNG	2	1	2	1	2	8	0.76	6.08			
	Motor cycle	5	2	3	4	3	17	0.02	0.34			
2	Bus	2	3	1	2	2	10	1.96	19.6	41.07	5	8.214
	Covered van	1	0	0	0	1	1	1.43	1.43			
	Private car	4	4	2	4	2	16	1	16			
	CNG	1	1	1	0	2	5	0.76	3.8			
	Motor cycle	2	4	3	1	2	12	0.02	0.24			
3	Bus	2	3	2	1	1	9	1.96	17.64	45.07	5	9.014
	Covered van	0	0	0	2	1	3	1.43	4.29			
	Private car	4	5	3	2	2	16	1	16			
	CNG	2	2	2	2	1	9	0.76	6.84			
	Motor cycle	4	3	2	4	2	15	0.02	0.3			
4	Bus	2	2	1	3	1	9	1.96	17.64	44.75	5	8.95
	Covered van	0	1	0	0	2	1	1.43	1.43			
	Private car	4	2	4	3	4	17	1	17			
	CNG	2	3	1	2	3	11	0.76	8.36			
	Motor cycle	5	3	2	2	4	16	0.02	0.32			
5	Bus	4	2	1	2	2	11	1.96	21.56	48.65	5	9.73
	Covered van	0	1	2	0	0	3	1.43	4.29			
	Private car	4	5	2	2	1	14	1	14			
	CNG	2	2	2	4	1	11	0.76	8.36			
	Motor cycle	4	5	3	5	5	22	0.02	0.44			

Table: 20 Saturation flow Dhanmondi-27 (up) intersection Monday peak hour data

A Method for Measuring Saturation Flow at Traffic Signals

Peak Hour: 9 am to 11 am
Monday 18/11/2019

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....Manik Mia Avenue (Down).....INTERSECTIONS

Total Average- 10.28

C- 3 min 2sec
G- 2 min 5sec
A- 3sec

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in total 5 cycle	PCU factor	Converted PCU in total 5 cycle	Total PCU	Sample	Average
0	Bus	1	2	2	2	1	9	1.96	17.64	56.8	5	11.36
	Covered van	0	1	0	1	0	2	1.43	2.86			
	Private car	4	7	8	5	2	26	1	26			
	CNG	2	4	2	2	3	13	0.76	9.88			
	Motor cycle	7	3	4	6	1	21	0.02	0.42			
1	Bus	3	1	3	2	1	10	1.96	19.6	58.86	5	11.772
	Covered van	1	0	1	0	2	4	1.43	5.72			
	Private car	6	6	4	5	6	27	1	27			
	CNG	1	2	2	1	2	8	0.76	6.08			
	Motor cycle	8	5	2	4	4	23	0.02	0.46			
2	Bus	3	2	1	2	0	8	1.96	15.68	47.46	5	9.492
	Covered van	1	0	0	1	2	2	1.43	2.86			
	Private car	5	4	6	3	3	21	1	21			
	CNG	2	1	1	3	3	10	0.76	7.6			
	Motor cycle	4	4	5	1	2	16	0.02	0.32			
3	Bus	4	2	1	2	4	13	1.96	25.48	55.11	5	11.022
	Covered van	1	0	0	1	1	3	1.43	4.29			
	Private car	4	5	4	2	4	19	1	19			
	CNG	2	1	2	1	2	8	0.76	6.08			
	Motor cycle	3	3	2	3	2	13	0.02	0.26			
4	Bus	3	2	1	2	1	9	1.96	17.64	42.37	5	8.474
	Covered van	0	1	0	0	2	1	1.43	1.43			
	Private car	2	5	2	3	4	16	1	16			
	CNG	2	2	1	2	2	9	0.76	6.84			
	Motor cycle	9	3	2	2	7	23	0.02	0.46			
5	Bus	3	2	2	3	1	11	1.96	21.56	47.73	5	9.546
	Covered van	0	1	2	0	0	3	1.43	4.29			
	Private car	3	4	2	3	1	13	1	13			
	CNG	2	3	2	3	1	11	0.76	8.36			
	Motor cycle	2	6	3	9	6	26	0.02	0.52			

Table: 21 Saturation flow Manik mia (down) intersection Monday peak hour data

A Method for Measuring Saturation Flow at Traffic Signals

Peak Hour: 9 am to 11 am
Wednesday 20/11/2019

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....Dhanmondi-32 (Down).....INTERSECTIONS

Total Average- 10.92

C- 3 min 50 sec
G- 2 min 32 sec
A- 3 sec

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in total 5 cycle	PCU factor	Converted PCU in total 5 cycle	Total PCU	Sample	Average
0	Bus	1	2	1	2	2	8	1.96	15.68	54.36	5	10.872
	Covered van	2	0	1	0	1	4	1.43	5.72			
	Private car	6	4	5	5	4	24	1	24			
	CNG	3	2	2	3	1	11	0.76	8.36			
	Motor cycle	8	7	4	5	6	30	0.02	0.6			
1	Bus	2	1	2	1	2	8	1.96	15.68	57.96	5	11.592
	Covered van	1	0	2	0	1	4	1.43	5.72			
	Private car	7	6	5	5	7	30	1	30			
	CNG	1	1	2	1	3	8	0.76	6.08			
	Motor cycle	8	4	3	2	7	24	0.02	0.48			
2	Bus	4	3	1	2	3	13	1.96	25.48	60.69	5	12.138
	Covered van	1	0	0	1	1	1	1.43	1.43			
	Private car	6	5	7	4	3	25	1	25			
	CNG	1	1	1	5	3	11	0.76	8.36			
	Motor cycle	3	4	7	1	6	21	0.02	0.42			
3	Bus	3	2	1	2	2	10	1.96	19.6	55.22	5	11.044
	Covered van	0	1	0	2	1	4	1.43	5.72			
	Private car	4	5	4	4	5	22	1	22			
	CNG	2	2	2	2	2	10	0.76	7.6			
	Motor cycle	2	4	2	5	2	15	0.02	0.3			
4	Bus	1	2	1	2	2	8	1.96	15.68	47.91	5	9.582
	Covered van	0	1	2	0	2	1	1.43	1.43			
	Private car	4	5	6	3	4	22	1	22			
	CNG	2	3	1	2	3	11	0.76	8.36			
	Motor cycle	4	7	2	5	4	22	0.02	0.44			
5	Bus	2	2	1	3	2	10	1.96	19.6	51.49	5	10.298
	Covered van	0	1	2	0	0	3	1.43	4.29			
	Private car	4	5	2	3	4	18	1	18			
	CNG	2	3	2	4	1	12	0.76	9.12			
	Motor cycle	4	6	3	5	6	24	0.02	0.48			

Table: 22 Saturation flow Dhanmondi-32 (down) intersection Wednesday peak hour data

A Method for Measuring Saturation Flow at Traffic Signals

Peak Hour: 9 am to 11 am
Wednesday 20/11/2019

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....Dhanmondi-32 (Up).....INTERSECTIONS

Total Average- 10.56

C- 4 min 2 sec
G- 1 min 15 sec
A- 3 sec

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in total 5 cycle	PCU factor	Converted PCU in total 5 cycle	Total PCU	Sample	Average
0	Bus	3	2	1	2	1	9	1.96	17.64	59.7	5	11.94
	Covered van	1	0	0	0	1	2	1.43	2.86			
	Private car	6	7	5	3	4	25	1	25			
	CNG	3	6	2	3	4	18	0.76	13.68			
	Motor cycle	8	7	4	5	2	26	0.02	0.52			
1	Bus	2	1	2	0	1	6	1.96	11.76	64.48	5	12.896
	Covered van	3	0	2	0	1	6	1.43	8.58			
	Private car	6	5	8	7	4	30	1	30			
	CNG	5	1	2	7	3	18	0.76	13.68			
	Motor cycle	4	7	3	4	5	23	0.02	0.46			
2	Bus	1	1	3	2	1	8	1.96	15.68	46.27	5	9.254
	Covered van	1	1	0	1	2	1	1.43	1.43			
	Private car	6	2	5	4	2	19	1	19			
	CNG	1	3	1	5	3	13	0.76	9.88			
	Motor cycle	3	4	4	1	2	14	0.02	0.28			
3	Bus	1	2	1	2	1	7	1.96	13.72	46.42	5	9.284
	Covered van	0	0	0	1	1	2	1.43	2.86			
	Private car	2	2	6	3	5	18	1	18			
	CNG	2	2	5	4	2	15	0.76	11.4			
	Motor cycle	3	5	5	7	2	22	0.02	0.44			
4	Bus	3	1	3	2	2	11	1.96	21.56	47.67	5	9.534
	Covered van	0	1	0	0	1	1	1.43	1.43			
	Private car	2	2	6	4	5	19	1	19			
	CNG	2	1	1	2	1	7	0.76	5.32			
	Motor cycle	5	7	2	2	2	18	0.02	0.36			
5	Bus	3	1	2	2	3	11	1.96	21.56	52.25	5	10.45
	Covered van	0	1	1	0	1	3	1.43	4.29			
	Private car	3	6	2	3	2	16	1	16			
	CNG	2	4	1	4	2	13	0.76	9.88			
	Motor cycle	4	2	3	8	9	26	0.02	0.52			

Table: 23 Saturation flow Dhanmondi-32 (up) intersection Wednesday peak hour data

A Method for Measuring Saturation Flow at Traffic Signals

Peak Hour: 9 am to 11 am
Wednesday 20/11/2019

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....Shukrabad (Down).....INTERSECTIONS

Total Average- 12.39

C- 3 min 41sec
G- 2 min 16sec
A- 3sec

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in total 5 cycle	PCU factor	Converted PCU in total 5 cycle	Total PCU	Sample	Average
0	Bus	3	2	1	2	3	11	1.96	21.56	76.72	5	15.344
	Covered van	0	1	3	0	0	4	1.43	5.72			
	Private car	8	9	8	8	6	39	1	39			
	CNG	5	2	2	1	3	13	0.76	9.88			
	Motor cycle	7	9	2	8	2	28	0.02	0.56			
1	Bus	1	2	3	1	1	8	1.96	15.68	50	5	10
	Covered van	1	0	2	0	1	4	1.43	5.72			
	Private car	3	2	5	2	7	19	1	19			
	CNG	1	2	2	4	3	12	0.76	9.12			
	Motor cycle	9	0	3	2	10	24	0.02	0.48			
2	Bus	4	1	3	5	2	15	1.96	29.4	70.19	5	14.038
	Covered van	1	0	0	1	2	1	1.43	1.43			
	Private car	8	5	2	9	5	29	1	29			
	CNG	3	2	4	1	3	13	0.76	9.88			
	Motor cycle	5	3	9	1	6	24	0.02	0.48			
3	Bus	3	2	4	2	3	14	1.96	27.44	61.9	5	12.38
	Covered van	0	1	0	2	1	4	1.43	5.72			
	Private car	3	2	3	4	7	19	1	19			
	CNG	3	2	4	2	1	12	0.76	9.12			
	Motor cycle	2	3	5	12	9	31	0.02	0.62			
4	Bus	3	3	3	2	2	13	1.96	25.48	57.01	5	11.402
	Covered van	0	1	1	0	2	1	1.43	1.43			
	Private car	2	5	5	4	6	22	1	22			
	CNG	3	3	1	2	1	10	0.76	7.6			
	Motor cycle	2	11	2	2	8	25	0.02	0.5			
5	Bus	3	1	2	4	3	13	1.96	25.48	55.95	5	11.19
	Covered van	1	0	1	1	0	3	1.43	4.29			
	Private car	3	5	1	4	2	15	1	15			
	CNG	1	3	2	5	3	14	0.76	10.64			
	Motor cycle	10	7	3	5	2	27	0.02	0.54			

Table: 24 Saturation flow Shukarabad (down) intersection Wednesday peak hour data

A Method for Measuring Saturation Flow at Traffic Signals

Peak Hour: 9 am to 11 am
Wednesday 20/11/2019

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....Shukrabad (up).....INTERSECTIONS

Total Average- 13.00

C- 3 min 5sec
G- 2 min 5sec
A- 3sec

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in total 5 cycle	PCU factor	Converted PCU in total 5 cycle	Total PCU	Sample	Average
0	Bus	3	2	3	2	3	13	1.96	25.48	80.64	5	16.128
	Covered van	0	1	3	0	0	4	1.43	5.72			
	Private car	8	9	8	8	6	39	1	39			
	CNG	5	2	2	1	3	13	0.76	9.88			
	Motor cycle	7	9	2	8	2	28	0.02	0.56			
1	Bus	2	2	3	1	4	12	1.96	23.52	64.68	5	12.936
	Covered van	1	0	2	0	1	4	1.43	5.72			
	Private car	3	2	5	2	7	19	1	19			
	CNG	7	2	2	4	6	21	0.76	15.96			
	Motor cycle	9	0	3	2	10	24	0.02	0.48			
2	Bus	4	1	3	5	2	15	1.96	29.4	70.19	5	14.038
	Covered van	1	0	0	1	2	1	1.43	1.43			
	Private car	8	5	2	9	5	29	1	29			
	CNG	3	2	4	1	3	13	0.76	9.88			
	Motor cycle	5	3	9	1	6	24	0.02	0.48			
3	Bus	3	2	4	2	3	14	1.96	27.44	61.8	5	12.36
	Covered van	0	1	0	2	1	4	1.43	5.72			
	Private car	3	2	3	4	7	19	1	19			
	CNG	3	2	4	2	1	12	0.76	9.12			
	Motor cycle	2	3	5	7	9	26	0.02	0.52			
4	Bus	3	3	3	2	2	13	1.96	25.48	56.97	5	11.394
	Covered van	0	1	1	0	2	1	1.43	1.43			
	Private car	2	5	5	4	6	22	1	22			
	CNG	3	3	1	2	1	10	0.76	7.6			
	Motor cycle	2	9	2	2	8	23	0.02	0.46			
5	Bus	3	1	2	4	3	13	1.96	25.48	55.85	5	11.17
	Covered van	1	0	1	1	0	3	1.43	4.29			
	Private car	3	5	1	4	2	15	1	15			
	CNG	1	3	2	5	3	14	0.76	10.64			
	Motor cycle	5	7	3	5	2	22	0.02	0.44			

Table: 25 Saturation flow Shukarabad (up) intersection Wednesday peak hour data

A Method for Measuring Saturation Flow at Traffic Signals

Peak Hour: 9 am to 11 am
Wednesday 20/11/2019

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....Dhanmondi-27 (Down).....INTERSECTIONS

Total Average- 11.38

C- 3 min 29 sec
G- 2 min 5 sec
A- 3 sec

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in total 5 cycle	PCU factor	Converted PCU in total 5 cycle	Total PCU	Sample	Average
0	Bus	3	2	3	2	2	12	1.96	23.52	70.23	5	14.046
	Covered van	1	0	1	0	1	3	1.43	4.29			
	Private car	7	9	8	7	4	35	1	35			
	CNG	2	2	2	2	1	9	0.76	6.84			
	Motor cycle	8	11	4	4	2	29	0.02	0.58			
1	Bus	2	4	2	3	4	15	1.96	29.4	71.23	5	14.246
	Covered van	0	0	1	0	0	1	1.43	1.43			
	Private car	5	9	5	4	6	29	1	29			
	CNG	4	1	4	3	2	14	0.76	10.64			
	Motor cycle	8	7	6	9	8	38	0.02	0.76			
2	Bus	0	1	1	2	1	5	1.96	9.8	34.29	5	6.858
	Covered van	1	0	0	0	1	1	1.43	1.43			
	Private car	4	5	4	4	2	19	1	19			
	CNG	1	1	1	0	2	5	0.76	3.8			
	Motor cycle	2	3	5	1	2	13	0.02	0.26			
3	Bus	3	2	1	4	1	11	1.96	21.56	53.47	5	10.694
	Covered van	0	0	0	2	1	3	1.43	4.29			
	Private car	4	5	4	4	4	21	1	21			
	CNG	2	2	2	2	0	8	0.76	6.08			
	Motor cycle	7	3	5	10	2	27	0.02	0.54			
4	Bus	3	2	3	3	1	12	1.96	23.52	55.89	5	11.178
	Covered van	0	1	0	0	2	1	1.43	1.43			
	Private car	4	5	4	3	4	20	1	20			
	CNG	2	3	4	2	3	14	0.76	10.64			
	Motor cycle	4	3	2	2	4	15	0.02	0.3			
5	Bus	4	2	3	3	2	14	1.96	27.44	56.28	5	11.256
	Covered van	0	1	1	0	0	2	1.43	2.86			
	Private car	4	5	2	2	1	14	1	14			
	CNG	2	5	2	4	2	15	0.76	11.4			
	Motor cycle	7	5	3	9	5	29	0.02	0.58			

Table: 26 Saturation flow Dhanmondi-27 (down) intersection Wednesday peak hour data

A Method for Measuring Saturation Flow at Traffic Signals

Peak Hour: 9 am to 11 am
Wednesday 20/11/2019

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....Dhanmondi-27 (Up).....INTERSECTIONS

Total Average- 11.72

C- 3 min 21 sec
G- 1 min 25 sec
A- 3 sec

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in total 5 cycle	PCU factor	Converted PCU in total 5 cycle	Total PCU	Sample	Average
0	Bus	4	2	4	3	2	15	1.96	29.4	75.72	5	15.144
	Covered van	0	1	0	0	1	2	1.43	2.86			
	Private car	7	9	8	8	4	36	1	36			
	CNG	2	2	2	2	1	9	0.76	6.84			
	Motor cycle	8	13	4	4	2	31	0.02	0.62			
1	Bus	4	2	2	3	1	12	1.96	23.52	61.49	5	12.298
	Covered van	0	0	1	0	0	1	1.43	1.43			
	Private car	7	4	5	4	6	26	1	26			
	CNG	2	3	2	4	2	13	0.76	9.88			
	Motor cycle	8	9	3	5	8	33	0.02	0.66			
2	Bus	2	4	1	2	3	12	1.96	23.52	53.07	5	10.614
	Covered van	1	0	0	0	1	1	1.43	1.43			
	Private car	4	7	4	4	2	21	1	21			
	CNG	2	1	3	1	2	9	0.76	6.84			
	Motor cycle	2	4	5	1	2	14	0.02	0.28			
3	Bus	4	3	2	1	2	12	1.96	23.52	58.98	5	11.796
	Covered van	1	0	0	2	1	4	1.43	5.72			
	Private car	4	7	4	4	4	23	1	23			
	CNG	2	2	2	2	0	8	0.76	6.08			
	Motor cycle	9	5	2	10	7	33	0.02	0.66			
4	Bus	3	2	3	3	1	12	1.96	23.52	53.61	5	10.722
	Covered van	0	1	0	0	2	1	1.43	1.43			
	Private car	4	5	4	3	4	20	1	20			
	CNG	2	3	1	2	3	11	0.76	8.36			
	Motor cycle	4	3	2	2	4	15	0.02	0.3			
5	Bus	4	2	1	2	2	11	1.96	21.56	48.75	5	9.75
	Covered van	0	1	2	0	0	3	1.43	4.29			
	Private car	4	5	2	2	1	14	1	14			
	CNG	2	2	2	4	1	11	0.76	8.36			
	Motor cycle	6	5	3	8	5	27	0.02	0.54			

Table: 27 Saturation flow Dhanmondi-27 (up) intersection Wednesday peak hour data

A Method for Measuring Saturation Flow at Traffic Signals

Peak Hour: 9 am to 11 am
Wednesday 20/11/2019

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....Manik Mia Avenue (Down).....INTERSECTIONS

Total Average- 12.85

C- 3 min 2 sec
G- 2 min 5 sec
A- 3 sec

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in total 5 cycle	PCU factor	Converted PCU in total 5 cycle	Total PCU	Sample	Average
0	Bus	3	2	4	2	1	9	1.96	17.64	66.6	5	13.32
	Covered van	0	1	0	1	0	2	1.43	2.86			
	Private car	4	7	7	5	2	25	1	25			
	CNG	6	4	8	2	7	27	0.76	20.52			
	Motor cycle	7	9	3	5	5	29	0.02	0.58			
1	Bus	2	1	4	2	3	12	1.96	23.52	73.06	5	14.612
	Covered van	1	0	1	0	0	2	1.43	2.86			
	Private car	6	6	4	5	6	27	1	27			
	CNG	8	6	2	7	2	25	0.76	19			
	Motor cycle	7	6	9	3	9	34	0.02	0.68			
2	Bus	4	2	2	3	1	12	1.96	23.52	65.4	5	13.08
	Covered van	1	0	0	1	2	2	1.43	2.86			
	Private car	5	4	6	3	3	21	1	21			
	CNG	7	7	1	5	3	23	0.76	17.48			
	Motor cycle	4	7	5	9	2	27	0.02	0.54			
3	Bus	2	2	5	1	3	13	1.96	25.48	62.15	5	12.43
	Covered van	1	0	0	1	1	3	1.43	4.29			
	Private car	4	5	4	2	4	19	1	19			
	CNG	5	3	2	5	2	17	0.76	12.92			
	Motor cycle	3	3	6	9	2	23	0.02	0.46			
4	Bus	2	2	4	2	1	11	1.96	21.56	60.77	5	12.154
	Covered van	0	1	0	0	2	1	1.43	1.43			
	Private car	5	5	5	3	4	22	1	22			
	CNG	3	2	9	2	4	20	0.76	15.2			
	Motor cycle	3	6	8	9	3	29	0.02	0.58			
5	Bus	3	2	1	3	4	13	1.96	25.48	57.63	5	11.526
	Covered van	0	1	2	0	0	3	1.43	4.29			
	Private car	3	4	2	3	7	19	1	19			
	CNG	2	3	2	3	1	11	0.76	8.36			
	Motor cycle	4	5	7	3	6	25	0.02	0.5			

Table: 28 Saturation flow Manik mia (down) intersection Wednesday peak hour data

Off-peak hour data's:

A Method for Measuring Saturation Flow at Traffic Signals

Off Peak Hour: 1 pm to 3 pm
Thursday 14/11/2019

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....Dhanmondi-32 (Up).....INTERSECTIONS

Total Average- 9.89

C- 3 min 49 sec
G- 2 min 5 sec
A- 3 sec

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in total 5 cycle	PCU factor	Converted PCU in total 5 cycle	Total PCU	Sample	Average
0	Bus	1	1	2	2	1	7	1.96	13.72	48.1	5	9.62
	Covered van	0	1	1	0	0	2	1.43	2.86			
	Private car	4	5	6	4	3	22	1	22			
	CNG	2	2	3	2	3	12	0.76	9.12			
	Motor cycle	7	3	5	4	1	20	0.02	0.4			
1	Bus	1	2	1	2	2	8	1.96	15.68	54.49	5	10.898
	Covered van	1	0	1	0	1	3	1.43	4.29			
	Private car	5	3	5	5	4	22	1	22			
	CNG	2	6	3	2	3	16	0.76	12.16			
	Motor cycle	6	2	1	3	6	18	0.02	0.36			
2	Bus	1	1	0	3	1	6	1.96	11.76	46.49	5	9.298
	Covered van	0	1	0	2	1	1	1.43	1.43			
	Private car	5	6	5	2	5	23	1	23			
	CNG	4	3	3	0	3	13	0.76	9.88			
	Motor cycle	4	5	7	2	3	21	0.02	0.42			
3	Bus	1	3	1	2	1	8	1.96	15.68	47.98	5	9.596
	Covered van	0	0	2	0	2	4	1.43	5.72			
	Private car	5	3	2	1	3	14	1	14			
	CNG	4	2	2	4	4	16	0.76	12.16			
	Motor cycle	4	1	2	12	2	21	0.02	0.42			
4	Bus	2	2	2	3	2	11	1.96	21.56	48.57	5	9.714
	Covered van	0	2	1	0	1	1	1.43	1.43			
	Private car	4	2	2	2	4	14	1	14			
	CNG	2	4	4	1	4	15	0.76	11.4			
	Motor cycle	2	2	2	2	1	9	0.02	0.18			
5	Bus	2	2	4	1	2	11	1.96	21.56	51.15	5	10.23
	Covered van	0	2	1	0	0	3	1.43	4.29			
	Private car	5	2	2	4	2	15	1	15			
	CNG	3	4	2	2	2	13	0.76	9.88			
	Motor cycle	4	5	3	2	7	21	0.02	0.42			

Table: 29 Saturation flow dhanmondi-32 (up) intersection Thursday off peak hour data

A Method for Measuring Saturation Flow at Traffic Signals

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....Sukrabad (Up).....INTERSECTIONS

Total Average- 8.17

Off Peak Hour: 1pm to 3 pm
Thursday 14/11/2019

C- 3 min 49 sec
G- 2 min 5 sec
A- 3 sec

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in total 5 cycle	PCU factor	Converted PCU in total 5 cycle	Total PCU	Sample	Average
0	Bus	1	2	1	1	2	7	1.96	13.72	45.3	5	9.06
	Covered van	0	1	1	0	0	2	1.43	2.86			
	Private car	6	4	3	3	4	20	1	20			
	CNG	2	3	4	0	2	11	0.76	8.36			
	Motor cycle	7	3	3	3	2	18	0.02	0.36			
1	Bus	2	2	1	3	1	9	1.96	17.64	45.12	5	9.024
	Covered van	1	0	1	0	0	2	1.43	2.86			
	Private car	4	3	4	3	2	16	1	16			
	CNG	3	2	3	1	2	11	0.76	8.36			
	Motor cycle	2	3	2	2	4	13	0.02	0.26			
2	Bus	1	4	1	2	2	10	1.96	19.6	41.19	5	8.238
	Covered van	0	1	0	2	0	1	1.43	1.43			
	Private car	4	2	2	1	1	10	1	10			
	CNG	3	2	3	1	4	13	0.76	9.88			
	Motor cycle	3	0	5	4	2	14	0.02	0.28			
3	Bus	2	3	1	2	3	11	1.96	21.56	42.55	5	8.51
	Covered van	0	0	2	0	1	3	1.43	4.29			
	Private car	1	2	3	1	1	8	1	8			
	CNG	5	0	2	2	2	11	0.76	8.36			
	Motor cycle	1	2	4	9	1	17	0.02	0.34			
4	Bus	1	2	1	2	1	7	1.96	13.72	32.65	5	6.53
	Covered van	0	1	0	1	2	1	1.43	1.43			
	Private car	2	3	2	2	3	12	1	12			
	CNG	2	2	1	1	1	7	0.76	5.32			
	Motor cycle	3	1	2	1	2	9	0.02	0.18			
5	Bus	2	3	1	1	1	8	1.96	15.68	38.28	5	7.656
	Covered van	0	2	1	0	1	4	1.43	5.72			
	Private car	2	0	3	2	2	9	1	9			
	CNG	3	2	2	2	1	10	0.76	7.6			
	Motor cycle	6	2	1	2	3	14	0.02	0.28			

Table: 30 Saturation flow Shukrabad (Up) intersection Thursday off peak hour data

A Method for Measuring Saturation Flow at Traffic Signals

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....Sukrabad (Down).....INTERSECTIONS

Total Average- 8.34

Off Peak Hour: 1pm to 3 pm
Thursday 14/11/2019

C- 3 min 49 sec
G- 2 min 5 sec
A- 3 sec

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in total 5 cycle	PCU factor	Converted PCU in total 5 cycle	Total PCU	Sample	Average
0	Bus	2	2	2	2	1	9	1.96	17.64	46.88	5	9.376
	Covered van	0	1	1	0	0	2	1.43	2.86			
	Private car	6	1	3	4	3	17	1	17			
	CNG	1	4	4	1	2	12	0.76	9.12			
	Motor cycle	4	3	3	2	1	13	0.02	0.26			
1	Bus	2	0	2	4	1	9	1.96	17.64	48.4	5	9.68
	Covered van	2	0	2	0	0	4	1.43	5.72			
	Private car	2	4	1	2	2	11	1	11			
	CNG	4	4	2	4	4	18	0.76	13.68			
	Motor cycle	7	2	4	3	2	18	0.02	0.36			
2	Bus	1	2	1	0	2	6	1.96	11.76	35.17	5	7.034
	Covered van	0	2	0	1	0	1	1.43	1.43			
	Private car	4	1	4	1	4	14	1	14			
	CNG	2	2	2	2	2	10	0.76	7.6			
	Motor cycle	2	4	4	4	5	19	0.02	0.38			
3	Bus	5	3	1	1	3	13	1.96	25.48	47.07	5	9.414
	Covered van	0	0	2	0	1	3	1.43	4.29			
	Private car	2	0	3	2	1	8	1	8			
	CNG	2	4	1	3	2	12	0.76	9.12			
	Motor cycle	1	2	2	2	2	9	0.02	0.18			
4	Bus	3	1	2	3	1	10	1.96	19.6	38.65	5	7.73
	Covered van	0	2	0	0	3	1	1.43	1.43			
	Private car	1	1	4	1	2	9	1	9			
	CNG	2	2	1	2	4	11	0.76	8.36			
	Motor cycle	4	3	2	2	2	13	0.02	0.26			
5	Bus	2	0	1	0	2	5	1.96	9.8	34.12	5	6.824
	Covered van	1	1	2	0	0	4	1.43	5.72			
	Private car	2	2	3	1	2	10	1	10			
	CNG	3	1	4	2	1	11	0.76	8.36			
	Motor cycle	2	2	2	2	4	12	0.02	0.24			

Table: 31 Saturation flow Shukrabad (down) intersection Thursday off peak hour data

A Method for Measuring Saturation Flow at Traffic Signals

Off Peak Hour: 1 pm to 3 pm
Thursday 14/11/2019

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....Dhanmondi-27 (Up).....INTERSECTIONS

Total Average- 9.19

C- 3 min 49 sec
G- 2 min 5 sec
A- 3 sec

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in total 5 cycle	PCU factor	Converted PCU in total 5 cycle	Total PCU	Sample	Average
0	Bus	2	3	2	3	1	11	1.96	21.56	54.39	5	10.878
	Covered van	0	0	1	0	0	1	1.43	1.43			
	Private car	6	3	4	2	4	19	1	19			
	CNG	3	4	3	3	3	16	0.76	12.16			
	Motor cycle	4	2	3	0	3	12	0.02	0.24			
1	Bus	1	0	1	1	2	5	1.96	9.8	49	5	9.8
	Covered van	1	0	1	0	0	2	1.43	2.86			
	Private car	5	5	4	4	2	20	1	20			
	CNG	5	6	3	3	4	21	0.76	15.96			
	Motor cycle	3	7	2	2	5	19	0.02	0.38			
2	Bus	1	4	2	0	3	10	1.96	19.6	40.95	5	8.19
	Covered van	0	1	0	1	0	1	1.43	1.43			
	Private car	5	1	2	2	2	12	1	12			
	CNG	3	2	4	0	1	10	0.76	7.6			
	Motor cycle	2	3	5	2	4	16	0.02	0.32			
3	Bus	4	3	2	1	2	12	1.96	23.52	48.06	5	9.612
	Covered van	0	0	1	2	1	4	1.43	5.72			
	Private car	1	1	4	3	2	11	1	11			
	CNG	1	2	1	2	4	10	0.76	7.6			
	Motor cycle	4	3	0	2	2	11	0.02	0.22			
4	Bus	2	2	2	1	1	8	1.96	15.68	40.21	5	8.042
	Covered van	1	1	0	2	1	1	1.43	1.43			
	Private car	3	2	1	5	2	13	1	13			
	CNG	3	0	4	2	4	13	0.76	9.88			
	Motor cycle	3	2	2	2	2	11	0.02	0.22			
5	Bus	1	2	0	2	2	7	1.96	13.72	42.94	5	8.588
	Covered van	0	2	2	0	0	4	1.43	5.72			
	Private car	4	1	2	2	2	11	1	11			
	CNG	3	4	4	3	2	16	0.76	12.16			
	Motor cycle	3	2	3	2	7	17	0.02	0.34			

Table: 32 Saturation flow dhanmondi-27 (up) intersection Thursday off peak hour data

A Method for Measuring Saturation Flow at Traffic Signals

Off Peak Hour: 1 pm to 3 pm
Thursday 14/11/2019

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....Dhanmondi-27 (Down).....INTERSECTIONS

Total Average- 8.79

C- 3 min 49 sec
G- 2 min 5 sec
A- 3 sec

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in total 5 cycle	PCU factor	Converted PCU in total 5 cycle	Total PCU	Sample	Average
0	Bus	2	2	2	1	0	7	1.96	13.72	45.86	5	9.172
	Covered van	0	0	3	0	1	4	1.43	5.72			
	Private car	3	5	2	2	5	17	1	17			
	CNG	3	3	1	3	2	12	0.76	9.12			
	Motor cycle	2	3	2	3	5	15	0.02	0.3			
1	Bus	1	2	3	0	2	8	1.96	15.68	50.51	5	10.102
	Covered van	1	0	1	1	0	3	1.43	4.29			
	Private car	5	2	5	4	2	18	1	18			
	CNG	2	3	2	4	5	16	0.76	12.16			
	Motor cycle	7	2	1	3	6	19	0.02	0.38			
2	Bus	1	1	2	0	2	6	1.96	11.76	37.89	5	7.578
	Covered van	0	1	0	1	0	1	1.43	1.43			
	Private car	3	4	5	2	2	16	1	16			
	CNG	2	3	2	0	4	11	0.76	8.36			
	Motor cycle	2	4	2	3	6	17	0.02	0.34			
3	Bus	2	1	2	0	2	7	1.96	13.72	41.79	5	8.358
	Covered van	0	0	2	0	1	3	1.43	4.29			
	Private car	1	5	2	2	5	15	1	15			
	CNG	3	3	1	2	2	11	0.76	8.36			
	Motor cycle	4	2	1	12	2	21	0.02	0.42			
4	Bus	1	1	2	1	0	5	1.96	9.8	41.45	5	8.29
	Covered van	1	1	0	0	2	1	1.43	1.43			
	Private car	2	5	5	4	4	20	1	20			
	CNG	4	2	2	3	2	13	0.76	9.88			
	Motor cycle	5	2	3	2	5	17	0.02	0.34			
5	Bus	1	2	2	1	2	8	1.96	15.68	46.13	5	9.226
	Covered van	0	1	1	1	0	3	1.43	4.29			
	Private car	4	2	4	4	2	16	1	16			
	CNG	3	4	2	2	2	13	0.76	9.88			
	Motor cycle	6	1	3	2	2	14	0.02	0.28			

Table: 33 Saturation flow dhanmondi-27 (down) intersection Thursday off peak hour data

A Method for Measuring Saturation Flow at Traffic Signals

Off Peak Hour: 1 pm to 3 pm
Thursday 14/11/2019

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....Manik Mia Ave. (Down).....INTERSECTIONS

Total Average- 8.39

C- 3 min 49 sec
G- 2 min 5 sec
A- 3 sec

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in total 5 cycle	PCU factor	Converted PCU in total 5 cycle	Total PCU	Sample	Average
0	Bus	1	3	4	0	2	10	1.96	19.6	45.67	5	9.134
	Covered van	2	0	1	0	0	3	1.43	4.29			
	Private car	1	2	0	6	4	13	1	13			
	CNG	2	4	1	4	0	11	0.76	8.36			
	Motor cycle	7	2	3	2	7	21	0.02	0.42			
1	Bus	1	1	2	0	1	5	1.96	9.8	31.91	5	6.382
	Covered van	2	0	0	1	0	3	1.43	4.29			
	Private car	4	2	0	0	4	10	1	10			
	CNG	2	2	3	1	2	10	0.76	7.6			
	Motor cycle	1	2	1	2	5	11	0.02	0.22			
2	Bus	1	2	1	1	0	5	1.96	9.8	35.75	5	7.15
	Covered van	0	2	0	1	0	1	1.43	1.43			
	Private car	3	3	5	2	2	15	1	15			
	CNG	4	2	4	0	2	12	0.76	9.12			
	Motor cycle	2	3	7	3	5	20	0.02	0.4			
3	Bus	2	3	2	2	1	10	1.96	19.6	49.8	5	9.96
	Covered van	0	0	1	0	1	2	1.43	2.86			
	Private car	5	0	5	3	4	17	1	17			
	CNG	0	2	3	3	5	13	0.76	9.88			
	Motor cycle	4	3	5	6	5	23	0.02	0.46			
4	Bus	3	1	1	2	1	8	1.96	15.68	44.05	5	8.81
	Covered van	0	1	0	0	1	1	1.43	1.43			
	Private car	3	5	6	5	0	19	1	19			
	CNG	2	3	2	1	2	10	0.76	7.6			
	Motor cycle	2	5	3	2	5	17	0.02	0.34			
5	Bus	3	1	2	1	1	8	1.96	15.68	44.49	5	8.898
	Covered van	0	2	1	0	0	3	1.43	4.29			
	Private car	2	5	2	4	2	15	1	15			
	CNG	1	4	3	2	2	12	0.76	9.12			
	Motor cycle	6	2	3	2	7	20	0.02	0.4			

Table: 34 Saturation flow Manik mia (down) intersection Thursday off peak hour data

A Method for Measuring Saturation Flow at Traffic Signals

Off Peak Hour: 1 pm to 3 pm
Monday 18/11/2019

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....Dhanmondi-32 (Up).....INTERSECTIONS

Total Average- 8.74

C- 3 min 49 sec
G- 2 min 5 sec
A- 3 sec

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in total 5 cycle	PCU factor	Converted PCU in total 5 cycle	Total PCU	Sample	Average
0	Bus	2	1	2	2	1	8	1.96	15.68	47.88	5	9.576
	Covered van	0	0	1	0	1	2	1.43	2.86			
	Private car	6	4	3	4	3	20	1	20			
	CNG	1	2	4	1	4	12	0.76	9.12			
	Motor cycle	3	3	1	2	2	11	0.02	0.22			
1	Bus	2	3	1	1	0	7	1.96	13.72	43.34	5	8.668
	Covered van	1	0	1	0	0	2	1.43	2.86			
	Private car	2	2	4	4	6	18	1	18			
	CNG	4	1	3	1	2	11	0.76	8.36			
	Motor cycle	7	1	2	6	4	20	0.02	0.4			
2	Bus	1	2	1	3	1	8	1.96	15.68	41.53	5	8.306
	Covered van	1	1	0	1	0	1	1.43	1.43			
	Private car	5	4	3	4	2	18	1	18			
	CNG	1	2	3	0	2	8	0.76	6.08			
	Motor cycle	2	4	7	2	2	17	0.02	0.34			
3	Bus	1	3	2	1	2	9	1.96	17.64	44.96	5	8.992
	Covered van	0	0	2	0	2	4	1.43	5.72			
	Private car	2	2	2	5	2	13	1	13			
	CNG	3	2	1	3	2	11	0.76	8.36			
	Motor cycle	4	4	2	0	2	12	0.02	0.24			
4	Bus	1	1	2	0	1	5	1.96	9.8	42.71	5	8.542
	Covered van	0	1	0	1	1	1	1.43	1.43			
	Private car	4	5	6	4	3	22	1	22			
	CNG	3	2	2	1	4	12	0.76	9.12			
	Motor cycle	2	6	3	2	5	18	0.02	0.36			
5	Bus	3	1	2	2	3	11	1.96	21.56	41.77	5	8.354
	Covered van	0	0	1	0	0	1	1.43	1.43			
	Private car	1	5	2	1	2	11	1	11			
	CNG	0	4	4	2	0	10	0.76	7.6			
	Motor cycle	2	2	3	2	0	9	0.02	0.18			

Table: 35 Saturation flow Dhanmondi-32 (up) intersection Monday off peak hour data

A Method for Measuring Saturation Flow at Traffic Signals

Off Peak Hour: 1 pm to 3 pm
Monday 18/11/2019

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....Sukrabad (Up).....INTERSECTIONS

Total Average- 8.35

C- 3 min 49 sec
G- 2 min 5 sec
A- 3 sec

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in total 5 cycle	PCU factor	Converted PCU in total 5 cycle	Total PCU	Sample	Average
0	Bus	1	2	2	1	0	6	1.96	11.76	42.05	5	8.41
	Covered van	0	0	1	0	2	3	1.43	4.29			
	Private car	6	5	2	4	1	18	1	18			
	CNG	1	2	4	1	2	10	0.76	7.6			
	Motor cycle	7	2	5	2	4	20	0.02	0.4			
1	Bus	2	1	1	2	1	7	1.96	13.72	34.16	5	6.832
	Covered van	1	0	1	0	0	2	1.43	2.86			
	Private car	0	2	4	2	4	12	1	12			
	CNG	2	1	1	1	2	7	0.76	5.32			
	Motor cycle	5	1	2	3	2	13	0.02	0.26			
2	Bus	1	2	1	0	1	5	1.96	9.8	37.71	5	7.542
	Covered van	0	1	0	1	0	1	1.43	1.43			
	Private car	5	2	3	4	3	17	1	17			
	CNG	1	2	3	4	2	12	0.76	9.12			
	Motor cycle	4	2	7	2	3	18	0.02	0.36			
3	Bus	1	1	2	1	2	7	1.96	13.72	47.55	5	9.51
	Covered van	0	2	2	0	1	5	1.43	7.15			
	Private car	5	5	2	2	4	18	1	18			
	CNG	3	2	1	3	2	11	0.76	8.36			
	Motor cycle	4	3	2	5	2	16	0.02	0.32			
4	Bus	2	2	1	2	0	7	1.96	13.72	47.09	5	9.418
	Covered van	0	1	0	0	1	1	1.43	1.43			
	Private car	3	4	6	5	3	21	1	21			
	CNG	3	3	2	1	5	14	0.76	10.64			
	Motor cycle	2	2	3	3	5	15	0.02	0.3			
5	Bus	0	2	2	1	1	6	1.96	11.76	42.03	5	8.406
	Covered van	0	2	1	0	0	3	1.43	4.29			
	Private car	5	2	2	4	2	15	1	15			
	CNG	3	3	4	2	2	14	0.76	10.64			
	Motor cycle	5	2	3	2	5	17	0.02	0.34			

Table: 36 Saturation flow Shukrabad (up) intersection Monday off peak hour data

A Method for Measuring Saturation Flow at Traffic Signals

Off Peak Hour: 1 pm to 3 pm
Monday 18/11/2019

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....Sukrabad (Down).....INTERSECTIONS

Total Average- 8.19

C- 3 min 49 sec
G- 2 min 5 sec
A- 3 sec

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in total 5 cycle	PCU factor	Converted PCU in total 5 cycle	Total PCU	Sample	Average
0	Bus	2	1	2	1	2	8	1.96	15.68	45.51	5	9.102
	Covered van	0	0	1	0	0	1	1.43	1.43			
	Private car	4	3	4	4	4	19	1	19			
	CNG	1	4	3	2	2	12	0.76	9.12			
	Motor cycle	2	2	3	2	5	14	0.02	0.28			
1	Bus	2	0	1	2	2	7	1.96	13.72	39.51	5	7.902
	Covered van	1	1	1	0	0	3	1.43	4.29			
	Private car	4	4	1	2	4	15	1	15			
	CNG	2	1	2	1	2	8	0.76	6.08			
	Motor cycle	7	4	2	3	5	21	0.02	0.42			
2	Bus	2	1	2	2	1	8	1.96	15.68	36.01	5	7.202
	Covered van	0	1	0	1	2	1	1.43	1.43			
	Private car	4	4	2	4	0	14	1	14			
	CNG	1	2	1	0	2	6	0.76	4.56			
	Motor cycle	2	2	7	2	4	17	0.02	0.34			
3	Bus	2	1	2	1	2	8	1.96	15.68	43.07	5	8.614
	Covered van	0	0	2	0	1	3	1.43	4.29			
	Private car	4	2	0	2	5	13	1	13			
	CNG	2	2	4	3	2	13	0.76	9.88			
	Motor cycle	1	2	1	5	2	11	0.02	0.22			
4	Bus	1	2	0	1	1	5	1.96	9.8	33.93	5	6.786
	Covered van	0	1	1	0	1	1	1.43	1.43			
	Private car	3	2	4	2	3	14	1	14			
	CNG	2	2	2	1	4	11	0.76	8.36			
	Motor cycle	5	2	3	2	5	17	0.02	0.34			
5	Bus	3	2	2	1	2	10	1.96	19.6	47.71	5	9.542
	Covered van	0	2	1	0	0	3	1.43	4.29			
	Private car	1	5	0	4	2	12	1	12			
	CNG	3	4	4	2	2	15	0.76	11.4			
	Motor cycle	6	5	3	2	5	21	0.02	0.42			

Table: 37 Saturation flow Shukrabad (down) intersection Monday off peak hour data

A Method for Measuring Saturation Flow at Traffic Signals

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....Dhanmondi-27(Up).....INTERSECTIONS

Total Average- 8.81

Off Peak Hour: 1 pm to 3 pm
Monday 18/11/2019

C- 3 min 49 sec
G- 2 min 5 sec
A- 3 sec

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in total 5 cycle	PCU factor	Converted PCU in total 5 cycle	Total PCU	Sample	Average
0	Bus	2	1	3	3	2	11	1.96	21.56	49.44	5	9.888
	Covered van	0	1	1	0	0	2	1.43	2.86			
	Private car	5	5	0	4	3	17	1	17			
	CNG	2	2	3	1	2	10	0.76	7.6			
	Motor cycle	5	5	2	5	4	21	0.02	0.42			
1	Bus	2	1	1	2	1	7	1.96	13.72	39.72	5	7.944
	Covered van	1	0	1	0	0	2	1.43	2.86			
	Private car	4	3	2	4	3	16	1	16			
	CNG	2	1	3	1	2	9	0.76	6.84			
	Motor cycle	2	3	2	3	5	15	0.02	0.3			
2	Bus	1	2	1	3	1	8	1.96	15.68	35.63	5	7.126
	Covered van	0	1	0	1	0	1	1.43	1.43			
	Private car	2	4	3	0	3	12	1	12			
	CNG	1	2	2	1	2	8	0.76	6.08			
	Motor cycle	5	4	7	3	3	22	0.02	0.44			
3	Bus	1	2	2	1	2	8	1.96	15.68	47.61	5	9.522
	Covered van	0	0	2	0	1	3	1.43	4.29			
	Private car	2	5	3	5	4	19	1	19			
	CNG	3	2	1	3	2	11	0.76	8.36			
	Motor cycle	4	3	2	3	2	14	0.02	0.28			
4	Bus	2	2	2	2	1	9	1.96	17.64	43.71	5	8.742
	Covered van	0	1	0	0	1	1	1.43	1.43			
	Private car	3	0	6	4	3	16	1	16			
	CNG	2	2	2	1	4	11	0.76	8.36			
	Motor cycle	5	2	3	2	2	14	0.02	0.28			
5	Bus	3	2	3	1	2	11	1.96	21.56	48.29	5	9.658
	Covered van	0	2	1	0	0	3	1.43	4.29			
	Private car	2	5	0	4	2	13	1	13			
	CNG	1	4	3	2	2	12	0.76	9.12			
	Motor cycle	3	5	3	2	3	16	0.02	0.32			

Table: 38 Saturation flow Dhanmondi-27 (up) intersection Monday off peak hour data

A Method for Measuring Saturation Flow at Traffic Signals

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....Dhanmondi-27 (Down).....INTERSECTIONS

Total Average- 8.35

Off Peak Hour: 1 pm to 3 pm
Monday 18/11/2019

C- 3 min 49 sec
G- 2 min 5 sec
A- 3 sec

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in total 5 cycle	PCU factor	Converted PCU in total 5 cycle	Total PCU	Sample	Average
0	Bus	2	1	0	1	2	6	1.96	11.76	39.21	5	7.842
	Covered van	0	0	1	0	0	1	1.43	1.43			
	Private car	5	3	3	4	3	18	1	18			
	CNG	2	2	3	1	2	10	0.76	7.6			
	Motor cycle	3	8	3	3	4	21	0.02	0.42			
1	Bus	2	1	1	2	1	7	1.96	13.72	41.19	5	8.238
	Covered van	1	0	1	0	1	3	1.43	4.29			
	Private car	4	5	2	4	1	16	1	16			
	CNG	2	1	3	1	2	9	0.76	6.84			
	Motor cycle	3	1	2	3	8	17	0.02	0.34			
2	Bus	1	2	1	1	1	6	1.96	11.76	35.13	5	7.026
	Covered van	0	1	1	1	0	1	1.43	1.43			
	Private car	5	4	3	2	3	17	1	17			
	CNG	1	2	1	0	2	6	0.76	4.56			
	Motor cycle	2	4	7	3	3	19	0.02	0.38			
3	Bus	1	0	2	1	3	7	1.96	13.72	47.1	5	9.42
	Covered van	0	1	2	0	1	4	1.43	5.72			
	Private car	4	5	2	4	4	19	1	19			
	CNG	3	2	1	3	2	11	0.76	8.36			
	Motor cycle	2	3	2	6	2	15	0.02	0.3			
4	Bus	2	2	2	1	1	8	1.96	15.68	43.81	5	8.762
	Covered van	0	1	0	0	1	1	1.43	1.43			
	Private car	3	4	6	2	3	18	1	18			
	CNG	2	2	2	1	4	11	0.76	8.36			
	Motor cycle	5	2	3	2	5	17	0.02	0.34			
5	Bus	0	2	2	1	2	7	1.96	13.72	44.11	5	8.822
	Covered van	0	2	1	0	0	3	1.43	4.29			
	Private car	5	2	2	4	2	15	1	15			
	CNG	3	2	4	2	3	14	0.76	10.64			
	Motor cycle	6	5	3	2	7	23	0.02	0.46			

Table: 39 Saturation flow Dhanmondi-27 (down) intersection Monday off peak hour data

A Method for Measuring Saturation Flow at Traffic Signals

Off Peak Hour: 1 pm to 3 pm
Monday 18/11/2019

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....Manik Mia Ave. (Down).....INTERSECTIONS

Total Average- 9.21

C- 3 min 49 sec
G- 2 min 5 sec
A- 3 sec

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in total 5 cycle	PCU factor	Converted PCU in total 5 cycle	Total PCU	Sample	Average
0	Bus	2	1	0	1	2	6	1.96	11.76	44.3	5	8.86
	Covered van	1	0	1	0	0	2	1.43	2.86			
	Private car	4	5	7	4	1	21	1	21			
	CNG	2	2	2	1	4	11	0.76	8.36			
	Motor cycle	2	2	5	2	5	16	0.02	0.32			
1	Bus	1	3	2	1	0	7	1.96	13.72	46.49	5	9.298
	Covered van	1	0	1	0	1	3	1.43	4.29			
	Private car	6	1	2	4	6	19	1	19			
	CNG	4	1	4	1	2	12	0.76	9.12			
	Motor cycle	5	1	2	2	8	18	0.02	0.36			
2	Bus	1	2	1	4	1	9	1.96	17.64	41.59	5	8.318
	Covered van	0	1	0	0	0	1	1.43	1.43			
	Private car	5	4	3	1	3	16	1	16			
	CNG	1	2	3	0	2	8	0.76	6.08			
	Motor cycle	4	4	7	4	3	22	0.02	0.44			
3	Bus	1	0	2	1	2	6	1.96	11.76	46.55	5	9.31
	Covered van	0	0	2	0	1	3	1.43	4.29			
	Private car	5	5	2	5	4	21	1	21			
	CNG	3	2	2	3	2	12	0.76	9.12			
	Motor cycle	4	5	2	6	2	19	0.02	0.38			
4	Bus	2	1	2	3	1	9	1.96	17.64	48.27	5	9.654
	Covered van	0	1	0	0	1	1	1.43	1.43			
	Private car	3	5	6	2	3	19	1	19			
	CNG	4	2	2	1	4	13	0.76	9.88			
	Motor cycle	5	2	3	2	4	16	0.02	0.32			
5	Bus	3	2	2	1	2	10	1.96	19.6	49.15	5	9.83
	Covered van	0	2	1	0	0	3	1.43	4.29			
	Private car	2	5	2	4	2	15	1	15			
	CNG	1	4	4	2	2	13	0.76	9.88			
	Motor cycle	5	2	3	2	7	19	0.02	0.38			

Table: 40 Saturation flow Manik mia (down) intersection Monday off peak hour data

A Method for Measuring Saturation Flow at Traffic Signals

Off Peak Hour: 1 pm to 3 pm
Wednesday 20/11/2019

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....Dhanmondi-32 (Up).....INTERSECTIONS

Total Average- 8.59

C- 3 min 49 sec
G- 2 min 5 sec
A- 3 sec

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in total 5 cycle	PCU factor	Converted PCU in total 5 cycle	Total PCU	Sample	Average
0	Bus	1	2	1	1	0	5	1.96	9.8	41.04	5	8.208
	Covered van	0	0	1	0	1	2	1.43	2.86			
	Private car	6	5	3	4	3	21	1	21			
	CNG	2	1	3	1	2	9	0.76	6.84			
	Motor cycle	7	8	5	3	4	27	0.02	0.54			
1	Bus	2	3	1	2	2	10	1.96	19.6	46.07	5	9.214
	Covered van	1	0	1	1	0	3	1.43	4.29			
	Private car	4	1	4	4	2	15	1	15			
	CNG	2	1	3	1	2	9	0.76	6.84			
	Motor cycle	2	2	2	3	8	17	0.02	0.34			
2	Bus	1	2	1	0	1	5	1.96	9.8	34.63	5	6.926
	Covered van	0	1	0	1	0	1	1.43	1.43			
	Private car	5	4	3	2	3	17	1	17			
	CNG	1	2	3	0	2	8	0.76	6.08			
	Motor cycle	2	2	7	2	3	16	0.02	0.32			
3	Bus	1	2	2	1	1	7	1.96	13.72	44.49	5	8.898
	Covered van	0	0	2	0	1	3	1.43	4.29			
	Private car	1	5	2	5	4	17	1	17			
	CNG	4	2	1	3	2	12	0.76	9.12			
	Motor cycle	5	3	2	6	2	18	0.02	0.36			
4	Bus	2	2	2	0	1	7	1.96	13.72	45.77	5	9.154
	Covered van	0	1	0	0	1	1	1.43	1.43			
	Private car	3	4	6	5	3	21	1	21			
	CNG	3	2	2	1	4	12	0.76	9.12			
	Motor cycle	7	8	3	2	5	25	0.02	0.5			
5	Bus	2	1	2	1	2	8	1.96	15.68	45.59	5	9.118
	Covered van	0	2	1	0	0	3	1.43	4.29			
	Private car	3	2	2	4	2	13	1	13			
	CNG	3	5	4	2	2	16	0.76	12.16			
	Motor cycle	6	5	3	2	7	23	0.02	0.46			

Table: 41 Saturation flow Dhanmondi-32 (up) intersection Wednesday off peak hour data

A Method for Measuring Saturation Flow at Traffic Signals

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....Sukrabad (Up).....INTERSECTIONS

Total Average- 9.17

Off Peak Hour: 1 pm to 3 pm
Wednesday 20/11/2019

C- 3 min 49 sec
G- 2 min 5 sec
A- 3 sec

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in total 5 cycle	PCU factor	Converted PCU in total 5 cycle	Total PCU	Sample	Average
0	Bus	2	2	3	1	2	10	1.96	19.6	53.77	5	10.754
	Covered van	0	1	1	0	1	3	1.43	4.29			
	Private car	6	5	2	4	5	22	1	22			
	CNG	2	2	3	1	2	10	0.76	7.6			
	Motor cycle	4	2	2	2	4	14	0.02	0.28			
1	Bus	2	2	1	2	4	11	1.96	21.56	49.02	5	9.804
	Covered van	1	0	1	0	0	2	1.43	2.86			
	Private car	5	5	4	4	1	19	1	19			
	CNG	2	1	1	1	2	7	0.76	5.32			
	Motor cycle	7	1	2	3	1	14	0.02	0.28			
2	Bus	1	2	1	1	1	6	1.96	11.76	36.53	5	7.306
	Covered van	0	1	0	1	0	1	1.43	1.43			
	Private car	5	4	3	2	3	17	1	17			
	CNG	1	2	3	0	2	8	0.76	6.08			
	Motor cycle	2	4	2	2	3	13	0.02	0.26			
3	Bus	1	2	2	1	2	8	1.96	15.68	51.01	5	10.202
	Covered van	0	2	2	0	1	5	1.43	7.15			
	Private car	5	5	2	5	4	21	1	21			
	CNG	1	2	1	3	2	9	0.76	6.84			
	Motor cycle	4	3	2	6	2	17	0.02	0.34			
4	Bus	0	1	2	2	1	6	1.96	11.76	40.65	5	8.13
	Covered van	0	1	0	0	1	1	1.43	1.43			
	Private car	3	5	2	5	3	18	1	18			
	CNG	3	2	2	1	4	12	0.76	9.12			
	Motor cycle	2	2	6	2	5	17	0.02	0.34			
5	Bus	2	0	2	1	2	7	1.96	13.72	44.09	5	8.818
	Covered van	0	2	1	0	0	3	1.43	4.29			
	Private car	2	5	2	4	2	15	1	15			
	CNG	2	4	4	2	2	14	0.76	10.64			
	Motor cycle	6	5	2	2	7	22	0.02	0.44			

Table: 42 Saturation flow Shukarabad (up) intersection Wednesday off peak hour data

A Method for Measuring Saturation Flow at Traffic Signals

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....Sukrabad (Down).....INTERSECTIONS

Total Average- 8.42

Off Peak Hour: 1 pm to 3 pm
Wednesday 20/11/2019

C- 3 min 49 sec
G- 2 min 5 sec
A- 3 sec

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in total 5 cycle	PCU factor	Converted PCU in total 5 cycle	Total PCU	Sample	Average
0	Bus	1	2	3	1	1	8	1.96	15.68	48.38	5	9.676
	Covered van	0	0	1	0	3	4	1.43	5.72			
	Private car	6	5	2	4	2	19	1	19			
	CNG	3	2	2	1	2	10	0.76	7.6			
	Motor cycle	7	5	2	3	2	19	0.02	0.38			
1	Bus	2	0	1	2	1	6	1.96	11.76	43.8	5	8.76
	Covered van	1	0	1	0	0	2	1.43	2.86			
	Private car	3	5	4	4	6	22	1	22			
	CNG	2	1	3	1	2	9	0.76	6.84			
	Motor cycle	7	1	3	3	3	17	0.02	0.34			
2	Bus	2	1	1	2	1	7	1.96	13.72	36.07	5	7.214
	Covered van	0	1	0	1	0	1	1.43	1.43			
	Private car	4	4	3	4	1	16	1	16			
	CNG	1	0	3	0	2	6	0.76	4.56			
	Motor cycle	4	2	7	2	3	18	0.02	0.36			
3	Bus	1	0	1	1	2	5	1.96	9.8	41.01	5	8.202
	Covered van	0	0	2	0	1	3	1.43	4.29			
	Private car	5	5	2	5	2	19	1	19			
	CNG	2	2	1	3	2	10	0.76	7.6			
	Motor cycle	4	3	2	5	2	16	0.02	0.32			
4	Bus	0	2	2	1	1	6	1.96	11.76	40.57	5	8.114
	Covered van	0	1	0	0	1	1	1.43	1.43			
	Private car	3	3	6	3	3	18	1	18			
	CNG	3	2	2	1	4	12	0.76	9.12			
	Motor cycle	5	2	2	2	2	13	0.02	0.26			
5	Bus	1	2	2	1	1	7	1.96	13.72	42.68	5	8.536
	Covered van	0	1	1	0	0	2	1.43	2.86			
	Private car	2	5	2	4	2	15	1	15			
	CNG	2	4	4	2	2	14	0.76	10.64			
	Motor cycle	6	5	3	2	7	23	0.02	0.46			

Table: 43 Saturation flow Shukarabad (down) intersection Wednesday off peak hour data

A Method for Measuring Saturation Flow at Traffic Signals

Off Peak Hour: 1pm to 3 pm
Wednesday 20/11/2019

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....Dhanmondi-27 (Up).....INTERSECTIONS

Total Average- 8.44

C- 3 min 49 sec
G- 2 min 5 sec
A- 3 sec

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in total 5 cycle	PCU factor	Converted PCU in total 5 cycle	Total PCU	Sample	Average
0	Bus	2	1	3	0	2	8	1.96	15.68	38.1	5	7.62
	Covered van	0	1	1	0	0	2	1.43	2.86			
	Private car	4	5	1	2	2	14	1	14			
	CNG	2	2	1	1	1	7	0.76	5.32			
	Motor cycle	2	5	1	2	2	12	0.02	0.24			
1	Bus	0	2	1	1	2	6	1.96	11.76	38.33	5	7.666
	Covered van	2	0	1	0	0	3	1.43	4.29			
	Private car	1	2	2	1	6	12	1	12			
	CNG	5	2	3	1	2	13	0.76	9.88			
	Motor cycle	6	1	2	3	8	20	0.02	0.4			
2	Bus	2	1	1	0	1	5	1.96	9.8	35.15	5	7.03
	Covered van	0	1	0	1	0	1	1.43	1.43			
	Private car	4	3	3	6	3	19	1	19			
	CNG	1	0	3	0	2	6	0.76	4.56			
	Motor cycle	2	4	7	2	3	18	0.02	0.36			
3	Bus	1	2	2	1	2	8	1.96	15.68	47.75	5	9.55
	Covered van	0	0	2	0	1	3	1.43	4.29			
	Private car	5	5	0	5	4	19	1	19			
	CNG	3	2	1	3	2	11	0.76	8.36			
	Motor cycle	2	3	2	12	2	21	0.02	0.42			
4	Bus	0	2	2	1	1	6	1.96	11.76	43.67	5	8.734
	Covered van	0	1	0	0	1	1	1.43	1.43			
	Private car	6	1	6	5	3	21	1	21			
	CNG	3	2	2	1	4	12	0.76	9.12			
	Motor cycle	5	3	3	2	5	18	0.02	0.36			
5	Bus	3	2	2	1	2	10	1.96	19.6	50.34	5	10.068
	Covered van	0	3	1	0	0	4	1.43	5.72			
	Private car	5	1	2	4	2	14	1	14			
	CNG	3	3	4	2	2	14	0.76	10.64			
	Motor cycle	6	1	3	2	7	19	0.02	0.38			

Table: 44 Saturation flow Dhanmondi-27 (up) intersection Wednesday off peak hour data

A Method for Measuring Saturation Flow at Traffic Signals

Off Peak Hour: 1pm to 3 pm
Wednesday 20/11/2019

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....Dhanmondi-27 (Down).....INTERSECTIONS

Total Average- 8.69

C- 3 min 49 sec
G- 2 min 5 sec
A- 3 sec

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in total 5 cycle	PCU factor	Converted PCU in total 5 cycle	Total PCU	Sample	Average
0	Bus	2	2	1	1	2	8	1.96	15.68	40.94	5	8.188
	Covered van	1	0	1	0	0	2	1.43	2.86			
	Private car	4	2	0	4	3	13	1	13			
	CNG	4	2	2	2	2	12	0.76	9.12			
	Motor cycle	2	4	4	3	1	14	0.02	0.28			
1	Bus	1	0	1	2	2	6	1.96	11.76	46.58	5	9.316
	Covered van	1	2	1	0	0	4	1.43	5.72			
	Private car	6	1	4	4	6	21	1	21			
	CNG	2	2	3	1	2	10	0.76	7.6			
	Motor cycle	7	5	2	3	8	25	0.02	0.5			
2	Bus	1	1	1	2	1	6	1.96	11.76	34.85	5	6.97
	Covered van	1	1	0	1	0	1	1.43	1.43			
	Private car	2	4	3	4	3	16	1	16			
	CNG	1	2	2	0	2	7	0.76	5.32			
	Motor cycle	4	1	7	2	3	17	0.02	0.34			
3	Bus	2	1	1	1	2	7	1.96	13.72	47.57	5	9.514
	Covered van	0	2	0	0	1	3	1.43	4.29			
	Private car	5	5	1	5	4	20	1	20			
	CNG	3	2	2	3	2	12	0.76	9.12			
	Motor cycle	4	3	11	2	2	22	0.02	0.44			
4	Bus	2	1	2	3	1	9	1.96	17.64	47.79	5	9.558
	Covered van	0	1	0	0	1	1	1.43	1.43			
	Private car	1	5	6	5	3	20	1	20			
	CNG	3	1	2	1	4	11	0.76	8.36			
	Motor cycle	2	6	3	2	5	18	0.02	0.36			
5	Bus	2	2	2	1	2	9	1.96	17.64	42.89	5	8.578
	Covered van	0	2	1	0	0	3	1.43	4.29			
	Private car	0	5	2	4	2	13	1	13			
	CNG	1	4	1	2	2	10	0.76	7.6			
	Motor cycle	1	5	3	2	7	18	0.02	0.36			

Table: 45 Saturation flow Dhanmondi-27 (down) intersection Wednesday off peak hour data

A Method for Measuring Saturation Flow at Traffic Signals

Off Peak Hour: 1 pm to 3 pm
Wednesday 20/11/2019

TRAFFIC COUNT FOR SATURATION FLOW CALCULATION OF

OF.....Manik Mia Ave.(Down).....INTERSECTIONS

Total Average- 8.72

C- 3 min 49 sec
G- 2 min 5 sec
A- 3 sec

No. of vehicles per 6 sec interval		1	2	3	4	5	No. of Vehicles in total 5 cycle	PCU Factor	Converted PCU in total 5 cycle	Total PCU	Sample	Average
0	Bus	1	2	0	1	2	6	1.96	11.76	44.64	5	8.928
	Covered van	1	0	1	0	0	2	1.43	2.86			
	Private car	6	5	4	4	3	22	1	22			
	CNG	2	2	3	1	2	10	0.76	7.6			
	Motor cycle	7	2	5	3	4	21	0.02	0.42			
1	Bus	2	1	1	2	1	7	1.96	13.72	45.33	5	9.066
	Covered van	1	0	1	0	1	3	1.43	4.29			
	Private car	4	5	1	4	6	20	1	20			
	CNG	2	1	3	1	2	9	0.76	6.84			
	Motor cycle	7	1	5	3	8	24	0.02	0.48			
2	Bus	1	2	1	2	1	7	1.96	13.72	39.53	5	7.906
	Covered van	1	1	0	1	0	1	1.43	1.43			
	Private car	4	4	3	4	3	18	1	18			
	CNG	1	2	3	0	2	8	0.76	6.08			
	Motor cycle	5	4	1	2	3	15	0.02	0.3			
3	Bus	1	2	2	1	2	8	1.96	15.68	50.12	5	10.024
	Covered van	0	1	2	0	1	4	1.43	5.72			
	Private car	4	5	2	5	4	20	1	20			
	CNG	3	2	1	3	2	11	0.76	8.36			
	Motor cycle	4	5	2	5	2	18	0.02	0.36			
4	Bus	2	0	2	1	1	6	1.96	11.76	36.87	5	7.374
	Covered van	0	1	0	0	1	1	1.43	1.43			
	Private car	3	0	3	5	3	14	1	14			
	CNG	3	2	2	1	4	12	0.76	9.12			
	Motor cycle	5	9	3	6	5	28	0.02	0.56			
5	Bus	0	2	1	1	2	6	1.96	11.76	45.01	5	9.002
	Covered van	0	2	1	0	0	3	1.43	4.29			
	Private car	5	4	2	4	2	17	1	17			
	CNG	3	4	4	2	2	15	0.76	11.4			
	Motor cycle	6	5	3	7	7	28	0.02	0.56			

Table: 46 Saturation flow Manik mia (down) intersection Wednesday off peak hour data

REFERENCES

[1] Carbon Dioxide Concentration. National Aeronautics and Space Admissions. Accessed on Jan. 11, 2016. [Online]. Available: http://climate.nasa.gov/key_indicators#co2

[2] Road transport: Reducing CO2 emissions from vehicles. (Oct. 2013). Climate Action, European Commission. [Online]. Available: http://ec.europa.eu/clima/policies/transport/vehicles/index_en.htm

[3] A Green Light to Moving the Toronto Region: Paying for Public Transportation Expansion, Discussion Paper, Toronto Region Board of Trade, Toronto, ON, Canada, Mar. 2013.

[4] F. Ahmad, S. A. Mahmud, and F. Z. Yousaf, "Shortest processing time Scheduling to reduce traffic congestion in dense urban areas," IEEE Trans. Syst., Man, Cybern, Syst., to be published.

[5] Adaptive Signal Control. United States Department of Transportation-Federal Highway Administration. Accessed on Jan. 11, 2016. [Online]. Available: http://www.fhwa.dot.gov/everydaycounts/technology/adsc/

[6] SCOOT. Split Cycle Offset Optimizations Technique. Accessed on Jan.

11, 2016. [Online].

Available: http://www.scoot-utc.com/

[7] SCATS. Sydney Coordinated Adaptive Traffic System. Accessed on Jan.

11, 2016. [Online].

Available: http://www.scats.com.au/

[8] Loop Cutting Contracts. Sheriff Technologies Ltd.

Accessed on Jan. 11, 2016. [Online].

Available: http://sherifftechnologies.com/civil-engineering/groundworksinstallation-civils/loop-cutting-contracts

[9] S. S. M. Ali, B. George, L. Vanajakshi, and J. Venkatraman, "A multiple

Inductive loop vehicle detection system for heterogeneous and lane-less traffic," IEEE Trans. In strum. Meas., vol. 61, no. 5, pp. 1353–1360, May 2012.

[10] M. F. Rachmadi et al., "Adaptive traffic signal control system using camera sensor and embedded system," in Proc. IEEE Region 10 Conf. (TENCON), 2011, pp. 1261–1265.

[11] Traffic Signal Maintenance in the City of Salem Traffic Signals. Accessed

on Jan. 11, 2016. [Online].

Available:http://www.cityofsalem.net/Departments/PublicWorks/TransportationServices/TrafficEngineering/Pages/TrafficSignalMaintenance.aspx

[12] Traffic Monitoring Guide. U.S. Department of Transportation, Federal Highway

Administration, Washington, D.C., October 1992.

[13] Highway Capacity Manual. Special Report 209, 3rd edition, Transportation Research Board, National Research Council, Washington, D.C., 2000.

[14] Manual on Uniform Traffic Control Devices. U.S. Department of Transportation, Federal Highway Administration, Washington, D.C., 2003.

[15] Traffic Engineering Handbook, 5th edition, James L. Pline, ed., Institute of Transportation Engineering, Washington, D.C., 1999.

[16] Highway Capacity Manual. HCM 2000, Transportation Research Board, National Research Council, Washington, D.C., 2000.