Fingal County Council

Comhairle Contae Fhine Gall

Fingal Landfill Project

VOLUME 4B

Environmental Impact Statement

Technical Appendix G

WASTE MANAGEMENT PLAN

Working for the Dublin Region

April 2006

RPS

ENVIRONMENTAL IMPACT STATEMENT

For The Proposed

Fingal Landfill

April 2006

VOLUME 1	**NON-TECHNICAL SUMMARY**
VOLUME 2	**MAIN REPORT**
VOLUME 3 - 5	**TECHNICAL APPENDICES**

VOLUME 4B – TECHNICAL APPENDIX

Appendix G (Traffic)

APPENDIX G

TRAFFIC

RPS

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

APPENDICES

1 INTRODUCTION

RPS Consulting Engineers (RPS) carried out a Traffic Impact Assessment (TIA) as part of the Environmental Impact Statement for the proposed Fingal Landfill. The proposed Fingal Landfill, as shown in **Figure 1.1,** is situated approximately 20km to the north of Dublin City Centre and 5.5km to the south of Balbriggan in a predominantly rural area. The site is bounded to the north and south by Rowan's Road and agricultural land respectively. It is bounded to the east and west by the M1 Motorway and Tooman Road respectively.

This report considers and assesses the traffic implications of the proposed development on the local and strategic road network. This TIA assesses and considers the impact of the proposed development on the surrounding roads and deals with the traffic and highway considerations of the development proposals. This will include an assessment of the existing traffic conditions and of the future traffic conditions with and without the proposed development in place. In addition, mitigation measures are proposed in order to alleviate any significant negative impacts that may arise from the proposed development. This assessment has been prepared with the benefit of ongoing discussions with RPS's Waste Department, Fingal County Council and the local community. This has been facilitated by a number of Public Workshops within the local community.

This TIA has been undertaken in accordance with the Institution of Highways and Transportation's (IHT) document "Guidelines for Traffic Impact Assessment, September 1994, the National Roads Authority's Draft document "Guidelines on Traffic Impact Assessments" and the United Kingdom Highways Agency document "Design Manual for Roads and Bridges".

2 METHODOLOGY

The methodology, as described below, was adopted for this TIA.

2.1.1 Study Area

The Study Area for which the traffic impacts were analysed is as shown in **Figure 2.1**. "Location of Traffic Surveys". This area included seven junctions that surround the site of "Fingal Landfill".

2.1.2 Traffic Data Collection

A variety of traffic data was collected including manual classified traffic surveys, Automatic Tube Counter (ATC) surveys, accident statistics, junction visibility and junction geometry data. The traffic surveys (manual classified turning count surveys) were carried out at 7 junctions in the vicinity of the proposed development on Wednesday April 6th 2005. In addition, an ATC was placed on Nevitt Road for a period of seven days, commencing on April 4th 2005. Information was also obtained during site visits and an examination of Ordnance Survey mapping was undertaken. This data was used to examine existing traffic patterns and characteristics, which provided a good basis on which to predict future traffic volumes.

2.1.3 Existing Traffic Conditions

An Excel Spreadsheet model of the AM (08:00 – 09:00) and PM (17:00 – 18:00) peak hour traffic flows from the traffic survey data collected was created and assessed. This model was used in conjunction with the junction capacity assessment models PICADY (Priority Intersection Capacity and Delay (Version 4.0) and ARCADY (Assessment of Roundabout Capacity and Delay) (Version 6.0) to determine the operational performance of a number of roundabouts and priority junctions within the Study Area. These mathematical modelling tools were used to examine the existing traffic conditions and to determine the operational capacity of each junction that was assessed.

All models were validated on the basis of site observation. The comparison of the current operational capacity of each junction with that of the future was used to appropriately assess the impact of the development on the road network.

The traffic data was also converted to Annual Average Daily Traffic (AADT) flows using appropriate expansion factors from the document "Expansion Factors for Short Period Traffic Counts*"* 1978 by J Delvin.

2.1.4 Committed Development

A review of relevant planning applications submitted to Fingal County Council over the past five years was undertaken to establish the committed developments within the vicinity of the proposed Fingal Landfill. This information determines if the committed development would result in an increase in traffic levels within the vicinity of the proposed development. Site visits were undertaken to establish whether or not the granted planning permissions were under construction/complete and to assess whether these traffic flows would have been accounted for in the traffic surveys undertaken in April 2005.

2.1.5 Institution of Highways and Transportation's Guidelines

According to the IHT Guidelines, a TIA should normally be produced where one or other of the following thresholds are exceeded:

- *traffic to and from the development exceeds 10% of the two-way traffic flow on the adjoining highway*
- *traffic to and from the development exceeds 5% of the two-way traffic flow on the adjoining highway, where traffic congestion exists or will exist within the assessment period or in other sensitive locations*

It is generally assumed that the 10% threshold applies to rural areas while the 5% applies to urban areas where congestion is evident. In the case of the proposed development, while it is located in a rural area, it is expected to become an urbanised area given the level of development proposed for the future. The proposed development traffic, was as a result, tested against both thresholds.

The proposed development will exceed the 10% threshold on the local roads within the Study Area. This is particularly relevant to the local road Rowan's Road (the northern boundary of the site). It should be noted that this threshold was not reached on the M1 Motorway (Dublin to Belfast). It was considered appropriate to undertake a full TIA, particularly as the proposed development exceeds both thresholds on the local road network. Further details of this assessment are contained in the forthcoming sections.

2.1.6 Future Year Network Assessment

The estimated future year traffic volumes within the Study Area were calculated using NRA traffic growth figures (NRA Future Traffic Forecasts 2002 – 2040, August 2003). According to the IHT Guidelines, the traffic implications of a proposed development must be assessed for both the "Opening Year" and for the corresponding "Design Year," which is 15 years after the opening of the full development, in this case, as new infrastructure is to be provided. This is considered appropriate in order to determine whether the infrastructure can cater for future forecast traffic levels. In the case of this development, three future years have been tested as part of the assessment. These included:

- 2008 Construction Year of the proposed development;
- 2009 Opening Year of the proposed development; and
- 2024 Design Year, that is, fifteen years after the Opening Year

The NRA traffic growth factors used to determine the growth in background traffic on the surrounding road network are summarised in the following **Table 2.1.** The surrounding road network consists of National Primary, National Secondary and Non National Roads, and as such, different factors were used for each road type. It should be noted that the National Primary Route within the Study Area is the M1, the National Secondary Route is generally the R132 and all remaining roads are of Non National Road classification. It should be noted that the R132 is classed as a Regional Road however given that this is an important commuter route to Dublin City Centre, it was considered appropriate to use the growth this particular road as a National Secondary Road. The combination of these aforementioned traffic growth factors, together with existing traffic flows for 2005 allow the future year scenarios, referred to above be forecast for all roads in the study network. This is deemed to be robust for the future year traffic assessment.

Table 2.1: Traffic Growth Factors

Road Type	Growth Period	Growth Factor (Cars & LGVs*)	Percentage Per Annum	Growth Factor (HGV**)	Percentage Per Annum
National Primary	2005 – 2008	1.11	3.5%	1.11	3.5%
	2005 – 2009	1.15	3.5%	1.14	3.4%
	2005 - 2024	1.52	2.2%	1.57	2.4%
National Secondary	2005 – 2008	1.11	3.5%	1.09	2.9%
	2005 – 2009	1.13	3.2%	1.12	2.8%
	2005 - 2024	1.46	2.0%	1.49	2.1%
Non National	2005 – 2008	1.06	1.8%	1.05	1.6%
	2005 – 2009	1.07	1.8%	1.07	1.6%
	2005 - 2024	1.25	1.2%	1.27	1.3%

* LGVs – Light Goods Vehicles similar to that of a van/ commercial vehicle
** HGVs – Heavy Goods Vehicles similar to that of a truck or lorry

The future traffic volumes, combined with committed development volumes and the traffic associated with the proposed development were input into the Excel Spreadsheet model. A number of scenarios, which will be described later, were tested to assess the impact of the proposed development on the surrounding road network. These scenarios included the comparison of "Do Nothing", that is, without the development in place and "Do Something", that is, with the development in place.

2.1.7 Case Study - Balleally Landfill

In order to determine appropriate traffic parameters/assumptions for the proposed Fingal Landfill operation, reference was made to several landfill operations across the country. RPS's Waste Department, in consultation with Fingal County Council, considered on the basis of waste parameters, traffic and other pertinent characteristics, that Balleally Landfill to be the most appropriate case study on which to develop the traffic parameters for Fingal Landfill. RPS's Waste Department in consultation with Balleally Landfill Management supplied all traffic information requested for the purposes of this TIA. These parameters include location, landfill operation, tonnage size of heavy goods vehicles (HGVs) and peak hour/daily HGV movements.

2.1.7.1 First Principles Approach

In addition, Balleally Landfill is an example currently contained in the TRICS (Trip Rate Information Computer System) trip generation database software. This software is used to determine/estimate the arrival and departure trip rates for various land uses, in this case a landfill site. It should be noted from discussions with Balleally Landfill Management, that up to 30% of the daily trips are directly associated with the importation of soil for capping of the Landfill Cells. It is proposed for Fingal Landfill that this soil importation will not be required as there will be an adequate supply of suitable material already available on site. This issue has not therefore been included in the traffic assessment. Further information regarding the output of this assessment has been discussed later in the Report.

2.1.8 Public Consultation

There were two public consultation workshops regarding Fingal Landfill which were undertaken in April 2005 and January 2006. The public who attended these workshops provided their opinions and suggestions of the proposed development, in addition to their perceived concerns regarding the Project. The following summarises the main topics raised in relation to Traffic:

- The traffic impact on the Nevitt Road;
- The impact of HGVs on the local Primary School at Hedgestown;
- The haulage route of the HGVs to and from the proposed development, particularly if the route were to pass residential housing;
- The impact of HGVs on local businesses; and
- Increase in traffic levels.

RPS considered all traffic issues discussed and, where feasible, incorporated many of the objectives as requested by local residents.

2.1.9 Reference Material

This TIA has been undertaken in accordance with the Environmental Protection Agency's (EPA) document "Guidelines on Information to be contained in Environmental Impact Statements" and the Institution of Highways and Transportation's document "Guidelines for Traffic Impact Assessment*"*. Other sources referred to included:

- EPA, 2003 Advice Notes on Current Practice (in the preparation of Environmental Impact Statements)
- Institution of Highways and Transportation's document "Guidelines for Traffic Impact Assessment*,* September 1994
- National Roads Authority, "Design Manual for Roads & Bridges"
- Highways Agency (UK), "Design Manual for Roads & Bridges"
- National Roads Authority, June 2005, "Draft Traffic and Transport Assessment Guidelines"
- Dublin Transportation Office, May 2003, "Traffic Management Guidelines Manual"
- Scottish Executive, January 2003, "Guide to Transport Assessment in Scotland Consultation Paper"
- "Expansion Factors for Short Period Traffic Counts" 1978 by J Delvin.

3 EXISTING ENVIRONMENT

Despite the local and rural nature of this location, a significant amount of infrastructural development has been constructed to the east of the proposed Landfill Site. This infrastructure includes two major road projects including the M1 Dublin to Belfast Motorway, which forms the eastern boundary of the proposed development. This motorway forms part of *Euro-Route* which provides high quality infrastructure between Dublin and Belfast. Furthermore, there is a current planning application to upgrade the existing M1 interchange at Courtlough (to the north east of the Landfill Site). However, this is subject to planning permission from An Bord Pleanála, an oral hearing for which was convened in August 2005. The Fingal Landfill is located approximately 300m to the west of the R132 (formerly the N1 Dublin to Belfast Road) which now provides linkages between smaller towns and cities including Balbriggan.

All the roads to the north, south and west of the proposed Landfill Site are of local road status and provide linkages to villages such as Naul, Ballyboghil and townland areas such as Damastown and Hedgestown.

3.1 EXISTING ROAD NETWORK

3.1.1 Existing Conditions on the M1 between Lissenhall and Courtlough Interchanges

The National Roads Authority (NRA) provides traffic counter data for all National Primary Routes across the country including the M1 Motorway. This information can be sourced from the following internet site http://www.nra.ie/Transportation/TrafficDataCollection/TrafficCounterData. The Annual Average Daily Traffic (AADT) on the M1 between Lissenhall and Courtlough Interchanges in 2005, approximately 20km to the north of Dublin City Centre was estimated to be 43,398 vehicles (two way). This information was based on 349 days of recorded data. The composition of Heavy Goods Vehicle (HGV) was 8.6% (3,732 vehicles).

The Lissenhall (Swords) to Courtlough section of the M1 opened in Summer 2003. The old N1 Dublin to Belfast National Primary Route prior to the opening of this motorway section merged with the M1 at Courtlough Interchange. The N1, which runs parallel to the new M1 section, has since been altered and down graded in road hierarchy. The N1 is now a regional route known as the R132 and links with the M1 at a priority junction to the east of Courtlough Interchange.

3.1.2 Traffic Surveys

Traffic Surveys were undertaken on Wednesday April 6th 2005 in order to establish existing traffic patterns within the Study Area. Manual classified counts were carried out for a twelve hour period commencing at 07.00, at seven junctions, as listed in **Table 3.1.** In addition, to manual classified counts, an ATC was placed on the Nevitt Road between the Nevitt Road/Tooman Road junction and the Nevitt Road overbridge for a period of seven days. The locations of the traffic surveys are shown in **Figure 2.1.** The information was collected and collated to determine if there were specific differences in daily trends in traffic movements along this particular road.

Table 3.1: Traffic Survey Locations

Location	Junction Type	Reference Number from Figure 2.1
Nevitt Road/Tooman Road/Knightstown Road	Crossroads Junction	1
Nevitt Road	Link Count to the west of Nevitt Road overbridge.	2
Nevitt Road/"FiveRoads"	Four Armed Roundabout	3
Hedgestown Road /Nevitt Road/ R132	Four Armed Roundabout including R132 on and off ramps	4
Rowan's Road/Tooman Road	Priority Junction	5
M1 Courtlough Interchange West	Four Armed Roundabout including M1 on and off ramps	6
M1 Courtlough Interchange East	Four Armed Roundabout including M1 on and off ramps	7
R132/Rowan's Road (East)	Priority Junction	8

The traffic survey data was examined in order to identify possible patterns and trends. The existing daily traffic flow profiles for the road network surrounding the proposed site were analysed to identify the periods of peak traffic flow at all junctions. The analysis of these traffic flows enabled RPS to identify the periods of maximum total traffic at each junction. The weekday AM and PM peak hour periods were identified as 08:00 – 09:00 hours for the weekday AM peak hour and 17:00 – 18:00 hours for the weekday PM peak hour.

3.1.3 Existing Traffic Flows with the Study Area

The traffic data was converted to Annual Average Daily Traffic (AADT) flows using appropriate expansion factors from the document "Expansion Factors for Short Period Traffic Counts*", 1978 by J Delvin.* Figure 3.1 shows the Existing AM and PM peak Traffic Flows for 2005. The M1 Motorway, as previously mentioned, is a standard grade separated motorway with two lanes and a hard shoulder in each direction in the vicinity of Fingal Landfill. It is the most heavily trafficked road within the Study Area. The majority of this traffic, however, is strategic in nature and is attracted toward major towns and cities such as Dublin, Drogheda, Dundalk and Belfast. The R132 has an AADT of approximately 5,465 (two way), between Courtlough Interchange and Hedgestown, of which 23% comprises HGVs. This road has more localised traffic that caters for towns and villages such as Balbriggan, Lusk and Swords.

The remaining roads (Rowan's Road, Tooman Road and Nevitt Road) surrounding the proposed development site are local roads that provide linkages to villages and local community areas. Rowan's Road is located to the north of the proposed development and connects to a number of local roads. It leads to Naul village by means of the Regional Road R108. Rowan's Road forms a priority junction with the R108 approximately 3.5km to the west of Fingal Landfill. This road is substandard and currently experiences traffic volumes of approximately 1,416 AADT (two way), of which approximately 10% accounts for HGVs.

The Tooman Road is located to the west of the Fingal Landfill and is approximately 1.5km long. There are approximately 15no. residential properties that front onto this road. In addition, there is a local joinery located mid way along this road. The road is generally substandard with a narrow carriageway and a number of bends with limited visibility. The road has an AADT of approximately 316 AADT (two way) of which 8% comprises HGVs.

Nevitt Road forms a crossroads junction with Tooman Road. This road provides linkages to Dublin and Balbriggan via the R132, Drogheda, Naul and Ballboghil via the R108 and Naul and Balbriggan via the R132. There is one quarry/inert landfill and one inert landfill located off this road and approximately 10 residential properties located along this road. Nevitt Road has an AADT of approximately 1,757 (two way) of which 55% consists of HGVs. This is considered high for the standard of the road used and it can be assumed that much of the HGV traffic is likely to be attributed to the quarry/inert landfill and other inert landfill located in this area.

Table 3.2: Existing AADTs within the Study Area

Location	Location Description	AADT Vehicles (two way)	HGV %
Tooman Road	West of the Proposed Landfill Site	316	8%
Rowan's Road	(West of M1 Courtlough Interchange)	1,416	10%
M1	(Between Lissenhall (north of Swords) and Courtlough Interchanges)	43,398	8.5%
R132	(East of M1 Courtlough Interchange)	8,794	15%
R132	(Nevitt Road and M1 Courtlough Interchange)	5,465	23%
Nevitt Road	(Between Tooman Road and M1 Nevitt Overbridge)	1,757	55%
Hedgestown Road Link	(Between Nevitt Road Roundabout and Hedgestown)	1,217	40%

The following provides a brief description of each junction surveyed. Note that the reference number stated is identical to that used in **Table 3.1 and Figure 2.1.**

Nevitt Road /Tooman Road /Knightstown Road Junction (Reference 1): This junction is located approximately 1.5 km to the west of the M1 and provides linkages to Ballyboghil Village via Knightstown Road (to the south) and Rowan's Road via Tooman Road (to the north). All the roads leading to this junction are narrow, of poor quality and classed as local roads. This junction is a simple crossroads where traffic on Nevitt Road has priority over other movements. Tooman Road and the road to Ballyboghil (Knightstown Road) are the minor arms with road widths of 5.4m and 4.6m respectively. The traffic survey results showed that the Nevitt Road has approximately 55% HGVs daily. Generally the major movements through this junction are on the Nevitt Road.

Nevitt Road/The "Five Roads" Junction (Reference *3):* This junction is located at the most easterly point of Nevitt Road and is a four armed roundabout. This junction links to the Hedgestown/ R132 junction, to the R132 northbound on and off slips and provides access for a cul-de-sac road. There is signage on the "Five Roads" to warn drivers of the potential presence of school children from the nearby Primary School and playing fields at Hedgestown. It was established from the traffic survey results that approximately 50% of the traffic surveyed on the Nevitt Road was HGVs. The majority of the HGVs come from the R132 (Dublin Road) and travel west on Nevitt Road and similarly the reverse movements travel east to the R132 (Dublin Road) via Hedgestown. It was also noticed that a significant number of HGVs travel past Hedgestown from this roundabout. This has been substantiated/supported by on site observations.

R132/Hedgestown Roundabout Junction (Reference 4): This roundabout junction has four arms with two of these being the on and off southbound ramps for the R132. This junction is located in close proximity to a nearby school at Hedgestown and there is a sign that warns drivers of the presence of a school on the junction arm that leads to the school building. This roundabout has an ICD of approximately 32m. The HGV movements at this junction are predominantly from the Nevitt Road, the Five Roads and the R132. However, it was noted from the survey results and on-site observations that HGVs travel eastbound through the townlands of Man 'O War/Hedgestown.

Tooman Road/Rowan's Road (Reference 5): This priority junction is located to the north west of the proposed Fingal Landfill and the standard of alignment and road quality is poor in the vicinity of the junction.

M1 Courtlough Grade Separated Junction: Fingal Landfill is situated to the south east of the M1 at the Courtlough Grade Separated Junction. This junction comprises two four armed roundabouts. The roads that form the arms of the roundabouts are single carriageways with ICD of approximately 32m (Courtlough Interchange East) and 35m (Courtlough Interchange West).

R132/Rowan's Road (East) T-Junction (Reference 8): This junction which operates as a three armed priority arrangement, is located approximately 200m to the east of the Courtlough Interchange. Rowan's Road has a right turning lane onto the R132 (Dublin Road). While the R132 (Dublin Road) has adequate width at the junction for left and right turning lanes, there are ,however, no specific road markings for these lanes. There are rumble strips and chevron direction signs on the approach to this junction from the R132.

3.2 JUNCTION CAPACITY ANALYSIS

The junctions listed in **Table 3.1,** with the exception of Rowan's Road / Tooman Road junction, were tested for operational performance. These have been tested with PICADY version 4.0 and ARCADY version 6.0. The junctions were assessed using the AM and PM peak flows which are 08:00 – 09:00 and 17:00 – 18:00 respectively. The results are based on the Ratio of Flow to Capacity (RFC), which is the output figure of each junction arm. If the RFC value exceeds 0.85, then the junction is considered not to be operating satisfactorily and will experience junction delays and queuing. The following sections summarise the junction capacity analysis for each junction tested. All the junction capacity results were validated by site observations.

3.2.1 Nevitt Road/Tooman Road /Knightstown Road Junction

The junction capacity analysis of this junction showed that all arms of the junction operate satisfactorily during both the AM and PM peak. **Table 3.2** summarises the results, which show that none of the junction arms exceed the RFC threshold of 0.85 and as such no queuing is expected to occur. The results indicate that the junction has a significant degree of reserve capacity

Table 3.2: Nevitt Road /Tooman Road /Knightstown Road PICADY Analysis Results

	Arm A Nevitt Road East		Arm B Road to Ballyboghil		Arm C Nevitt Road West		Arm D Tooman Road	
Weekday	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**
AM Peak	0.002	0.0	0.019	0.0	0.003	0.0	0.046	0.0
PM Peak	0.000	0.0	0.030	0.0	0.011	0.0	0.042	0.0

*** Q denotes the number of vehicles**

3.2.2 Nevitt Road/ "Five Roads" Roundabout

The junction capacity analysis of this junction showed that all arms of the junction operate satisfactorily during both AM and PM peaks. **Table 3.3** below summarise the results, which show that none of the junction arms exceed the RFC threshold of 0.85. As a result, queuing is unlikely to occur.

Table 3.3: Nevitt Road /"Five Roads" Roundabout ARCADY Analysis Results

	Arm A Nevitt Road		Arm B Cul de Sac		Arm C Link to R132		Arm D Link to Hedgestown	
Weekday	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**
AM Peak	0.078	0.1	0.001	0.0	0.038	0.0	0.018	0.0
PM Peak	0.088	0.1	0.006	0.0	0.024	0.0	0.033	0.0

***Q denotes the number of vehicles**

It is clear from the results that the junction has a significant degree of reserve capacity and is capable of accommodating a level of additional traffic.

3.2.3 R132/Hedgestown Roundabout

The junction capacity analysis of this junction showed that all arms of the junction operate satisfactorily during both AM and PM peak. **Table 3.4** below summarise the results, which show that none of the junction arms exceed the RFC threshold of 0.85 and as such queuing is not expected to occur.

Table 3.4: R132/Hedgestown Roundabout ARCADY Analysis Results

	Arm A R132 Off Slip		Arm B Hedgestown		Arm D Link to "Five Roads"	
Weekday	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**
AM Peak	0.010	0.0	0.007	0.0	0.030	0.0
PM Peak	0.009	0.0	0.015	0.0	0.031	0.0

***Q denotes the number of vehicles**
****Arm C R132 On Slip has not been shown as the traffic on this arm has been included in Arms A, B and D.**

It is evident from the above results that the junction has a significant degree of reserve capacity and can cater for additional traffic flows.

3.2.4 M1 Courtlough Interchange Roundabouts

Details of the operational performance of the two roundabouts that form the Courtlough Interchange are provided in the following paragraphs.

3.2.4.1 M1 Courtlough Interchange Roundabout East

The M1 Courtlough Interchange Roundabout East is a four armed junction with an ICD of approximately 32m. The capacity analysis of this junction showed that all arms of the junction operate satisfactorily during both AM and PM peaks. **Table 3.5** summarise the results, which show that none of the junction arms exceed the RFC threshold of 0.85 and as such queuing is unlikely to occur.

Table 3.5: M1 Courtlough Interchange East

M1 Courtlough Interchange Roundabout East	Arm A M1 Off Slip		Arm B Rowan's Road East		Arm D M1 Overbridge	
Weekday	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**
AM Peak	0.085	0.1	0.194	0.3	0.087	0.1
PM Peak	0.058	0.1	0.150	0.2	0.181	0.2

***Q denotes the number of vehicles**
****Arm C M1 On Slip has not been shown as the traffic on this arm has been included in Arms A, B and D.**

The results indicate that the interchange has the capacity to accommodate a significant degree of additional traffic.

3.2.4.2 M1 Courtlough Interchange Roundabout West

The M1 Courtlough Interchange Roundabout West is also a four armed junction and has an ICD of approximately 35m. The majority of the HGV movements at this junction turn onto the M1 northbound from Rowan's Road (East). The junction capacity analysis of this junction showed that all arms of the junction during both AM and PM peak will operate satisfactorily. The results in **Table 3.6** show that none of the junction arms exceed the RFC threshold of 0.85 and as such queuing is unlikely to occur. The junction is capable of accommodating a significant amount of additional traffic.

Table 3.6: M1 Courtlough Interchange West

M1 Courtlough Interchange Roundabout West	Arm A Rowan's Roads		Arm C M1 Overbridge		Arm D M1 Off Slip	
Weekday	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**
AM Peak	0.020	0.0	0.070	0.1	0.095	0.1
PM Peak	0.081	0.1	0.070	0.1	0.162	0.2

***Q denotes the number of vehicles**
****Arm B M1 On Slip has not been shown as the traffic on this arm has been included in Arms A, C and D.**

3.2.5 R132/Rowan's Road (East) Priority Junction

The capacity analysis of this junction showed that all arms of the junction operate satisfactorily during both the AM and PM peaks. **Table 3.7** below summarises the results, which show that none of the junction arms exceeded the RFC threshold of 0.85 and as such queuing is unlikely to occur. It is concluded from the results that the junction is capable of accommodating additional traffic movements.

Table 3.7: R132/Rowan's Road East Junction

R132/Rowan's Road East	Arm A R132 (Balbriggan Road)		Arm B R132 (Dublin Road)		Arm C Rowan's Road (East)	
Weekday	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**
AM Peak	0.193	0.2	0.231	0.3	0.236	0.3
PM Peak	0.232	0.3	0.356	0.5	0.150	0.2

3.3 JUNCTION VISIBILITY

Geometric standards for major/minor priority junctions are provided in Volume 6 of the NRA document "Design Manual for Roads and Bridges" (DMRB) TD42/95. These include standards for visibility. It is essential that minor road drivers have adequate visibility in each direction to see the oncoming major road traffic in sufficient time to permit them to make their manoeuvres. The visibility distance required from the minor road is determined by the speed limit on the major road. **Table 3.8** shows the corresponding visibility distance for each speed limit.

Table 3.8: Visibility Distances from the Minor Road (Source: NRA DMRB) Table 7/1

Speed Limit of Major Road (Kph)	Visibility Distance (m)
70	120
85	160
100	215

The visibility at the R132/Rowan's Road (East) Road and Tooman Road/ Nevitt Road junctions were examined during a site visit. The results have been described below. It should be noted that the remaining junctions within the Study Area had sufficient junction visibility due to the recently constructed road infrastructure on both the M1 and the R132, which would have been designed to meet required standards.

The R132/Rowan's Road (East) Road priority junction was assessed in order to determine if the junction design met the above DMRB standards. This is to ensure that traffic making the right turn movement from the R132 (minor road) to Rowan's Road (East) (major road) is able to see oncoming traffic in sufficient time to permit them to make the right turn manoeuvre safely. The speed limit at this junction is 80kph. The corresponding visibility distance required by the DMRB is approximate 160m to the east and west of the minor road, in this case the Balbriggan Road and Rowan's Road respectively. The visibility analysis was carried out as a part of a site visit on the 5th of July 2005. The results of the analysis show that there is sufficient visibility to the east and west of the junction as the 160m is achieved.

3.4 ACCIDENT DATA

An assessment of accident data within the Study Area was undertaken to determine if there were any existing problems or trends on the road network. The NRA accident data (1996– 2002) was extracted for the M1 Motorway and sections of road in the vicinity of the proposed development for a 6 year period. A summary of this information has been provided in **Table 3.9** below. The results of the accident data were divided into different categories of 'Fatal', 'Serious' or 'Minor'. There were no fatalities recorded. However those remaining accidents have been shown in **Figure 3.2**. The recorded accident data does not include "material damage only" accidents, or accidents which were not reported to or recorded by the Gárda Siochana.

Table 3.9: Accident Statistics for adjacent road network

Road Section	Serious Injury (Number of Incidents) (year)	Minor Injury (Number of Incidents) (year)
R132 from South of Hedgestown (Man O' War) Roundabout	0	6 (2 in 1997, 3 in 1998, 1 in 1999)
R132 from North of Hedgestown Roundabout (Old N1 Link Road)	0	5 (2 in 1996, 2 in 1997, 1 in 1999)
M1 North of the Courtlough Interchange	0	2 (1 in 1996, 1 in 1998)
Nevitt Road	0	1 (1999)
Old link Road from Rowan's Road to R132 (cul-de-sac)	1 (1998)	0
Rowan's Road	0	1 (1996)

The results show that there have been a number of accidents recorded for the R132. These have all been in the category of "minor injury". It is considered that the new motorway should assist in improving road safety and in reducing the previously high volumes of traffic on the R132. It is, however, unclear without accident data from 2003 onwards, if the opening of the M1 Motorway has resulted in a lesser frequency of accidents on the R132. In addition, there was an accident noted on the old link between Rowan's Road and the R132, This is now a cul-de-sac, however, with the opening of the M1 Motorway and is only used for access purposes.

3.5 PUBLIC TRANSPORT

The area of the proposed Fingal Landfill site is served by bus. Bus Eireann, provides an expressway service (No 100 or No 101) from Dublin to Drogheda and vice versa stopping at various locations including Balrothery and Balbriggan. This service operates throughout the day as shown in Appendix B and has increased services during the AM and PM peak periods (approximately every 15 to 30 minutes). There is also a Dublin Bus Service No 33 Dublin to Balbriggan which provides a local bus service. This bus route, summarised in Appendix B, serves a number of locations, including Drumcondra, Dublin Airport, Swords, Rush and Lusk. This is a regular service running throughout the day, roughly one per hour, with increased services during AM and PM peak periods. These bus services can be reached from the R132 near the "Five Roads"/Nevitt Road junction where there are bus stops and bus lay-bys provided on either side of the road.

The proposed Fingal Landfill is approximately 8km from the Dublin to Belfast railway line. The nearest railway stations to the site are Skerries and Lusk. These stations have regular services, as shown in Appendix B, to and from Dublin City Centre and all major towns including Drogheda, Dundalk and Belfast.

There are taxi services available, but they are, however, generally restricted to towns.

There are no cycling or pedestrian facilities currently available within the area of the proposed Fingal Landfill, including Nevitt Road, Tooman's Road and Rowan's Road. It should be noted that footpaths are only provided on the Nevitt Road and Rowan's Road where they cross the M1 Motorway (overbridges). There are footpaths provided on the link road from the Nevitt Road to Hedgestown, at junctions 3 and 4 (See Table 3.1) and on the R132 (near the "Five Roads"/Nevitt Road junction) which are largely used by school children from the local Primary School at Hedgestown.

3.6 DEVELOPMENT PLAN –OBJECTIVES FOR THE FUTURE

There are a number of planning documents that have been prepared by the Planning Department of Fingal "County" Council which refer to the Study Area of the proposed development. The following lists those traffic related objectives that are applicable to the proposed site of the Fingal Landfill.

3.6.1 "Fingal County Development Plan 2005 – 2011"

"Fingal County Development Plan 2005 – 2011" provides broad transportation objectives across the entire County. The Plan lists objectives for road construction and improvement measures on the Naul Road located approximately 6km to the west of the M1 and at the M1 Courtlough Interchange. In addition, traffic management and road improvement schemes are also proposed for the villages and communities of Ballyboghil, Garristown, Oldtown and Naul. Furthermore, the Plan also identifies several rural clusters including Colecot, Hegestown ("Five Roads") and Malhaney (Man O'War), where there are objectives to facilitate the development of public transport schemes.

The "Fingal County Development Plan 2005-2011" also requires the development of Action Area Plans and Local Area Plans within the county boundary. The following summarises those plans that affect the area of the proposed development site.

3.6.1.1 "Courtlough Action Area Plan 2000"

The "Courtlough Action Area Plan 2000" relates to lands comprising approximately 66Ha at the Courtlough Interchange on the M1 Motorway. This area comprises five separate land parcels surrounding the existing Courtlough Interchange. The Plan forms the background in guiding development in the area of Courtlough. There is a significant amount of proposed development relating to this area, which has the potential to alter traffic patterns within the Study Area of Fingal Landfill. The following information has been incorporated into the traffic assessment of this EIS.

The proposals of the "Courtlough Action Area Plan 2000" include improvements to the existing M1 interchange at Courtlough as summarised below:

- A 120 metre wide motorway reservation running north – south on the centre axis of the existing motorway
- There are a number of development areas proposed in the Courtlough Action Area Plan that surround the Courtlough Interchange. Some of these development areas are located adjacent to the M1 and must allow for a 30 to 40 metre wide reservation between these areas and the M1 motorway.

The "Courtlough Action Area Plan 2000" further states that in order to accommodate the volume of traffic generated by the development, it is proposed to increase the road capacity by:

a) The provision of a second bridge over the M1 motorway
b) Reordering/widening of the four slips from one lane to two lanes
c) Enlargement of the two existing interchange roundabouts

d) The construction of two new roundabouts on Rowan's Road west of the interchange

e) The construction of two new roundabouts on the N1 Balbriggan Road east of the interchange

f) The conversion of the existing single carriageway at the interchange to a dual carriageway for a length of 0.75km.

There are also proposals to encourage public transport. The Plan states that *a* balanced approach towards movement to and from the area, encouraging the use of public transport and cycling will be pursued. The Plan proposes the necessary introduction of a "Mobility Management Plan" to encourage the use of sustainable transport modes. It also envisages that the following public transport and cycling objectives stated in the Plan should be provided:

- Linkages to the Arrow rail service at the Balbriggan interchange and to the Balbriggan urban area through an augmented Dublin Bus stage bus service
- Linkages to the inter-city rail service at Drogheda through an augmented Bus Éireann stage service
- Linkages to the Rush/Lusk area and to the Arrow rail service at Rush/Lusk station through a new shuttle bus service
- Linkages to the new Swords Quality Bus Corridor (QBC) and to Dublin Airport through an augmented Dublin Bus and Bus Éireann service
- Direct, safe and well lit routes for pedestrians and cyclists will be designed into the development. In locations where it is not appropriate to provide separate routes for pedestrians and cyclists the design of roads will incorporate the provision of safe locations where pedestrians and cyclists cross significant traffic flows.

The inclusion of these objectives will significantly alter traffic patterns in this area and as such were considered in the assessment of traffic for Fingal Landfill.

3.6.1.2 "Ballyboghil Local Area Plan"

This Local Area Plan refers specifically to the rural village of Ballyboghil which is located approximately 3.6km to the south of the proposed landfill. The Plan was adopted in 2004 and relates to the periods 2004-2009. The Plan has been prepared within the context of "Fingal County Development Plan 2005 - 2011" and sets out the framework for the optimal development of Ballyboghil Village. This Plan aims to protect and enhance the special character and amenities of the Village, whilst ensuring that new development is physically, visually and functionally integrated. One of the objectives is to provide additional and upgrade existing infrastructure serving the village and there are proposals for road improvements, particularly on the Naul Road and Ballyboghil Road. There are also proposals to develop residential areas within the Village. These improvements are unlikely to affect the existing traffic patterns in the vicinity of the proposed landfill. Furthermore, it is expected that the increase in traffic flows from Fingal Landfill would not have any impact on these particular objectives.

3.6.1.3 Hedgestown - Variation No 35 – Rural Housing Policy

There is no specific Local Area Plan for Hedgestown. However there are some objectives/policies stated in the above policy document. Fingal County Council adopted this document in 2004. The primary aim of this policy is to support the viable rural economy, community and way of life for those who farm, work and live there and for the ultimate long-term benefit of the metropolitan area itself. Hedgestown has been designated as a rural cluster under the "Fingal County Development Plan". The objectives are largely related to zoning, residential development and continuing agricultural development. There may, as a result, be an increase in traffic volumes within this townland. No further information, however, is available on traffic volumes. Generally, it is anticipated that any future development will be minor and unlikely to be affected by the traffic of the proposed development.

3.6.2 Balbriggan Integrated Development Framework Plan

This Plan specifically relates to the physical and social development of Balbriggan Town. The majority of the objectives in this Plan relate to the commercial core of Balbriggan, the harbour and seashore and the surrounding residential suburban development. It is considered unlikely that the key aims of this Plan would be affected by the operation of Fingal Landfill.

3.7 COMMITTED DEVELOPMENT

There are proposals for a variety of industries to develop within the vicinity of Fingal Landfill as discussed below. These industries or developments, shown in **Figure 3.3,** are likely to result in additional traffic volumes on the existing road network. It is important as a result to understand the influence of these traffic patterns in order to appropriately estimate forecast future traffic flows on the surrounding road network.

3.7.1 Murphy's Environmental Limited

Murphy's Environmental Limited is a quarry and inert landfill development located approximately 2km to the west of Fingal Landfill. It is adjacent to the intersection of a local road and Nevitt Road in the townland of Hollywood Great, Naul, Co. Dublin. This intersection is approximately 1km to the east of the "Nag's Head" crossroads at the Naul Road (R108) and some 3.5km to the west of the R132 intersection at the "Five Roads" junction.

There are two separate operations at this facility, which include stone/rock extraction and landfill restoration. HGVs are required to transport different materials to and from the site. In October 2004, planning permission to infill, restore and reinstate the Hollywood Quarry was extended for a further 15 years. An EIS was prepared as part of this planning application, which provided detailed information on various aspects of the environment. RPS obtained a copy of the traffic chapter of this EIS from Murphy's Environmental Limited.

This EIS included information on the traffic volumes and patterns. It stated that from the traffic surveys undertaken it is estimated that the route used by HGVs associated with this facility is split 75:25 in favour of the R132 (formerly the N1 National Primary Route) where the majority of HGVs will arrive via the R132 and travel west along Nevitt Road. It is expected that most vehicles will depart using the same route, that is, travel eastwards from the site rather than westwards along an inferior road system. The additional movements associated with the proposed land restoration project will have their greatest impact over the next 5 to 7 years. This is due to the continuing operation of the extraction process in tandem with the restoration activity. This period during the land restoration project can therefore be considered as part of the "worst-case" scenario or critical scenario as it will be operating at peak conditions. The year 2009 is considered to represent this "worst-case" scenario. This information has been determined by the following factors: site area, space available and tonnage infill per year. It is anticipated in the Murphy's Environmental EIS that there will be approximately 58 truck arrivals a day (based on 20 tonne loads). It has been assumed therefore that the average number of movements associated with the restoration project to and from the site will be 116 per day (two way). As per above, 75% of this traffic will travel to and from eastern side of this development and as such 88 vehicles (two-way) is predicted to travel along the Nevitt Road. It is further anticipated in the Murphy's Environmental EIS that the quarrying operations will be scaled down and cease over the next 5-7 years as stated in the EIS and the facility will only be used for the land restoration of the entire site.

This committed development will be included in the assessment years of Fingal Landfill as appropriate

3.7.2 M1 Business Park Development

This site surrounds the M1 Courtlough Interchange where the development lands are bisected in a north-south direction by the M1 Motorway and in an east-west direction by the R132. The Courtlough/Rowan's Road Light Industrial/Warehousing Development EIS was prepared by Frank Benson and Partners to determine the impact of this development as part of a planning application (reference document "Proposed Light Industrial/Warehousing Development and Associated Site Development and Landscaping Works on lands at Courtlough/Rowan's Roads, Co. Dublin" by Frank Benson and Partners). This development proposal comprises industrial and commercial elements, including office buildings, Technology Park, Science Park, Motorway Services Station on a 66 Ha (163.1 acres) site located at Rowan's Road, Balbriggan, Co. Dublin. The subject area is to be developed over six sites on a phased basis over a number of years. The following table provides details of each site proposed within the M1 Business Park development.

Table 3.10: Details of the M1 Business Park Development Phases I to IV

Site	Description	Total Area (m^2)	Number of Car Parking Spaces
Site A	Office Based Science& Technology	76,681	2,190
Site B	Warehouse Distribution	31,212	313
Site C	Motorway Services (restaurant, retail, 124 bedroom hotel, 32 pump fuel filling station)	13,474	270
Site D	Light Industrial Warehousing	27,756	278
Site E	Light Industrial/Warehousing	20,862	207
Site F	Light Industrial/Warehousing Hotel (120 bedroom)	38,340 Not available	385 150

Source: Chapter 15 of the "Courtlough/Rowan's Road Light Industrial/Warehousing Development EIS" by Frank L Benson and Partners, June 2001

It is predicted that the M1 Business Park development will, on completion of Phases I to IV, result in an additional AADT of approximately 17,000 (two-way) onto the local and regional road network. This figure only comprises the development trips arising from the entire development. It is estimated in the EIS for this development that approximately 15% of the development trips would be HGVs. The development will be constructed over four phases which are described below.

- ***Phase I*** of the development has already been granted planning permission. This phase will include those lands to the east of the existing Courtlough Interchange. It is anticipated that the majority of this development will be open by 2008. The development will include Sites A, B and C. It is anticipated that this Phase would be constructed by 2008. It has therefore been assumed that this phase would be in place in tandem with the construction of the initial Fingal Landfill cells and the "County" Road in 2008, as described more fully in Chapter 6.

- ***Phase II to IV*** of the M1 Business Park development is largely located to the west of the existing Courtlough Interchange. This part of the overall development does not have planning permission as yet and is subject to Approval for the upgrade of the Courtlough Interchange. This proposed Interchange Scheme is currently before An Bord Pleanála for Approval. Should the upgrade of the Interchange be approved, it is anticipated that it could be constructed by 2007, based on a nine month construction period (Source: "Courtlough Interchange EIS prepared by Carl Bro/RPS Planning and Environment). However Phases II-IV is anticipated to take between three to six years to build, depending on market conditions. It has been assumed therefore that the design year of 2024 will include for Phases II to IV of the M1 Business Park development. It should be noted that this EIS included the traffic associated with the improvements of the Courtlough Interchange (discussed later in this chapter).

The M1 Business Park has devised a "Mobility Management Plan" and specific proposals for pedestrians and cyclists to be constructed over the four phases. These proposals are summarised below:

- Pedestrian footpaths and crossing points will be provided on the four key roundabout junctions and on both sides of the proposed dual carriageway section between Rowan's Road and the Courtlough Interchange

- Cycle facilities will include eastbound and westbound cycle lanes between the four roundabout junctions (Rowan's Road and the Courtlough Interchange). The upgrade of the Courtlough Interchange (bridge) will also include an eastbound cycle lane. Cycle lanes will be linked to the buildings by a system of interlinking cycle lanes within the various development areas of the M1 Business Park

- In locations where it is not appropriate to provide separate routes for pedestrians and cyclists, the design of the roads incorporates the provision of safe locations where pedestrians and cyclists can cross significant traffic flows.

The EIS provided AM (08:00 – 09:00) peak flows for the M1 Business Park development trips around the Courtlough Interchange. These flows were integrated into the AM scenarios for this traffic assessment. There was no information on development trips for the PM peak period (17:00 – 18:00) and, as such, the AM peak flows were transposed for the PM peak period to provide for a robust assessment.

3.7.3 Courtlough Interchange EIS

The proposed improvements have been summarised below. These improvements are consistent with the proposals for the Courtlough Action Area Plan and the EIS for the M1 Business Park.

- Construction of a 2 lane bridge over the existing M1 Motorway adjacent to and immediately south of the existing 2 lane overbridge

- The roundabouts immediately east and west of the existing overbridge will be enlarged

- The northwest and southeast slip roads will be widened to accommodate two running lanes.

The EIS for the above development stated that predicted traffic flows and associated traffic impacts for the proposed improvements were outlined in the traffic assessment prepared for the M1 Business Park planning application and EIS. The EIS stated that proposed project traffic flows at the Courtlough Interchange would include a substantial increase in base traffic.

3.7.4 Waste Permits

There are a number of waste permit facilities in operation that are located within close proximity to Fingal Landfill. These developments, summarised below, will influence traffic patterns during the life of the proposed landfill. Information on the waste permit activities was obtained from the Relevant Local

Authority. Despite the information available, there was not sufficient data available to determine the haulage routes for each of these facilities.

3.7.4.1 Waste Permit for Top Soil – A&T Tipper Hire, Baldaragh

This waste permit facility located in the townland of Hollywood Great just off the Nevitt Road received planning permission for a thirty six month period in 2004. The permit is due to expire in 2007 and the maximum number of loads received at this facility site shall not exceed 50 in any one day (that is, 50 two way movements). In accordance with the conditions of the permit, waste can only be accepted at the site between 08:00 – 18:00 Monday to Friday and 08:00 – 15:00 on Saturdays. It has been assumed that all traffic from this facility would travel along the Nevitt Road. For the purposes of this TIA, it has been assumed that given the permit expiry in 2007, the traffic associated with this facility was removed from all assessment years of Fingal Landfill.

3.7.4.2 Clashford Recovery Facility Limited (Waste Permit)

This facility was granted planning permission in 2001 and has since been renewed in 2005 for a further 36 months, that is 2008. This development, located in the village of Naul, has permission to receive waste for recovery activity. RPS consulted Fingal County Council and Meath County Council's Planning and Waste Departments for traffic information on this development. Fingal County Council informed RPS that a further waste permit could be issued for this facility which would mean that it could be in operation until 2011. However, there is no information on the haulage route or number of HGVs expected on a daily basis for this facility. Due to the limited information available, it has therefore not been possible to apply any committed development figures to the future modelling scenarios. It can be concluded, however, that these flows would have been included in the 2005 traffic survey counts.

3.7.4.3 Kilsaran Concrete Limited

This is a concrete/paving facility which is in operation in Naul village. The number of truck movements from this facility is not known but it is believed that traffic from this development uses the Nevitt Road via the R108 to gain access to the R132. RPS consulted Fingal County Council and Meath County Council's Planning and Waste Departments for traffic information on this development. It is the understanding of the Local Authority that there are no restrictions as to when this development will close. Due to the limited information it has not been possible to determine the traffic volumes from this development. However it is felt that some of the traffic volumes from this development are likely to have been incorporated in the traffic surveys undertaken in April 2005 for this project.

3.7.5 Other Committed Development

The planning applications which were granted planning permission from 2000 to 2005 were examined in order to establish if there would be any additional developments to those referred to above that could have a potential traffic impact within the vicinity of the Study Area. The remaining granted planning consents for development (other than those mentioned above) relate to one-off houses or amendments to existing dwellings, which would not add a significant traffic contribution to the road network in this locality. They have therefore been discounted in terms of the traffic assessment for Fingal Landfill.

4 PROPOSED DEVELOPMENT

This proposed development will require the following infrastructure as part of the access route for landfill vehicles.

- Construction of a new single carriageway of width 8m road to the east and parallel to Tooman Road (in a north south direction), This road, shown in **Figure 4.1**, will be referred to as the ""County" Road" hereafter. It is proposed to provide a roundabout junction at either end of the "County" Road that is, where the "County" Road meets with Rowan's Road and Nevitt Road. The road will also has a 1m hard strip on either side of the carriageway;

- Nevitt Road is to be "extinguished" as part of the Compulsory Purchase Order for Fingal Landfill and all traffic that currently use this section of road will be diverted onto the "County" Road as a suitable alternative. This road would be closed from the Nevitt Road/"County" Road junction to the Nevitt Road/M1 overbridge. The Nevitt Road eastbound traffic would be diverted via the "County" Road and Rowan's Road onto the R132. Similarly, Nevitt Road westbound traffic would be diverted in the opposite direction;

- The proposed "County" Road will include the provision of a footpath of 1.8m width on one side of the carriageway. These non-vehicular facilities will assist in achieving sustainable objectives as outlined in the "Fingal County Development Plan 2005-2011" and integrate with the existing public transportation proposals from the M1 Business Park; and

- The proposed access into the Fingal Landfill site would be provided from the "County" Road. It should be noted that the "County" Road will be a public road from the Nevitt Road to Rowan's Road. The access into the proposed development will be a private road.

4.1.1 Landfill Operation

The Fingal Landfill is expected to be open for approximately 300 working days a year. The operating and construction hours of the Landfill have been summarised in **Table 4.1.** This accounts for the working hours of the entire facility.

The HGV activity associated with waste delivery shall only be on the surrounding road network during the hours of Acceptance of Waste for Disposal noted in the Table below. This means that HGVs will only be on the road network from 08:00 to 16:30 and as such will only affect the AM peak period.

Table 4.1: Fingal Landfill Hours of Operation

Activity	Monday to Friday	Saturday
Acceptance of Waste for Disposal	08:00 – 16:30	08:00 – 16:30
Landfill Operation Hours	07:30 – 20:00	07:30 – 18:30
Construction of Landfill Cells and associated activities	07:30 –20:00	07:30 – 18:30
Public Recycling Facility (Acceptance of Waste)	08:00 – 16:30	08:00 – 16:00

It should be noted that the HGVs associated with the construction of landfill cells shall only be permitted on the surrounding road network between 07:30 to 18:00, despite the fact that construction activities may continue until 20:00 hours within the site. This means that construction traffic would not operate on the road network after the PM peak period.

4.1.2 Proposed Trip Generation

The estimated number of vehicles entering and exiting the proposed Fingal Landfill has been based on traffic activities at the Balleally Landfill. It has been assumed that there will be a variety of HGV sizes that is, tonnage sizes arriving and departing from the proposed Landfill. In order to determine a reliable number of HGVs, information on HGV activity (shown in **Table 4.2**) during the months of June and December 2004 was obtained from Balleally Landfill. It was considered that these two months would best reflect robust landfill traffic activity. The information collected included HGV tonnage sizes surveyed at the landfill site. The following table summarises the total monthly and daily HGVs based for June and December 2004 at Balleally Landfill. The total monthly weight recorded was 11,484 tonnes and 8,757 for June and December 2004 respectively. In addition, it should be noted that Balleally Landfill follows the same waste acceptance times to those planned for Fingal Landfill.

Table 4.2: The number and size of HGVs at Balleally Landfill during June and December 2004

Vehicle Category	Total Vehicles June 2004	Percentage of Total Vehicles	Daily Vehicles (26 Day Month)	Total Vehicles December 2004	Percentage of Total Vehicles	Daily Vehicles (31 Day Month)
<1 tonnes	135	10%	5	70	8%	2
>=1 <=5 tonnes	389	29%	15	161	18%	5
>5 <=10 tonnes	259	19%	10	213	23%	7
>10 <=15 tonnes	327	24%	13	290	32%	9
>15 <=20 tonnes	225	17%	9	161	18%	5
>20 tonnes	24	2%	1	15	2%	0
Total	1359	100%	52	910	100%	28

Source: Balleally Landfill Management/Fingal County Council

The information shows that HGV activity was higher during the month of June. It was considered that this month would be representative of the "worst case" number of HGVs that would travel to and from the proposed Landfill. The number of HGVs associated with Fingal Landfill was calculated using a ratio of tonnage waste between Balleally Landfill and Fingal Landfill. Fingal Landfill was based on 500, 000 tonnes per annum and 300 working days (500,000/300=1666.67 tonnes per day). The ratio, as shown in **Table 4.3**, was based on the amount of transported waste material recorded at the Balleally Landfill during June 2004 that is, 441.70 tonnes per day and estimated waste material to Fingal Landfill as described above.

Table 4.3. The Ratio of Weight/Day between Balleally and Fingal Landfill

	Approximate Weight/Day (tonnes)	Ratio Fingal: Balleally
Balleally Landfill	**441.70**	
Assessment Year		
Fingal Opening Year 2009	1666.67	3.77
Fingal Design Year 2024	1666.67	3.77

The ratio devised for each assessment year of the Fingal Landfill is shown in **Table 4.3**. This ratio was applied to Balleally HGV vehicle sizes as per **Table 4.2** in order to appropriately estimate the number of HGVs for Fingal Landfill. The number of HGVs for Fingal Landfill is shown in **Table 4.4** for each assessment year.

Table 4.4: Fingal Landfill Monthly and Daily HGVs (One-Way Flows) for each assessment year 2009 and 2024.

Vehicle Size Category	Monthly HGVs 2009	Daily HGVs 2009	Monthly HGVs 2024	Daily HGVs 2024
<1 tonnes	509	20	509	20
>=1 <=5 tonnes	1468	56	1468	56
>5 <=10 tonnes	977	38	977	38
>10 <=15 tonnes	1234	47	1234	47
>15 <=20 tonnes	849	33	849	33
>20 tonnes	91	3	91	3
Total	5,128	197	5,128	197

The maximum daily two way flow is estimated to be approximately 394 vehicles (197 deliveries). This figure has been compared with the TRICS trip generation computer software. This software estimates arrival and departure trips for a given development by calculating trip rates using certain parameters from similar developments. The TRICS database (version 2006a) includes Balleally Landfill data for July 2003 and recorded approximately 348 daily two way flows as shown in **Appendix C**. It can be said that this lower figure has been based on one day's data from 2003. It was considered that the recent information from 2004 with a higher figure of 394 reflects a "worst case" and would be the most appropriate for the purposes of this TIA. This provides for a very robust assessment of traffic impact.

The proposed development will have the same hours of waste acceptance as the current Balleally Landfill. Given this, the hourly profile of vehicles movements into the Balleally Landfill was applied to the total number of daily vehicles entering the proposed Landfill. It was established from an examination of the profile that that was no HGV traffic associated with waste deliveries during the peak hour (17.00-18.00). A similar assumption was made for Fingal Landfill. This accords with the proposed hours of acceptance of waste for Fingal Landfill which will terminate at 16.30.

4.1.2.1 Cell Construction Traffic

In addition to those vehicles that will deliver waste to the Fingal Landfill, there will also be HGV traffic involved in the ongoing landfill cell construction process. It is estimated by RPS's Waste Department that throughout the life of the landfill, up to three landfill cells could potentially be in the process of being constructed simultaneously, as a "worst case" scenario. HGV activity would be restricted to those hours shown in Table 4.2. It is anticipated that the following cycle could occur simultaneously over a 2-month period.

- Three cells would be prepared for waste collection. This would mean the excavation and lining of the cell. It should be noted that this is considered to be the "worst case" scenario.
- A cell would receive waste. The approximate number of HGVs delivering waste is as previously described.
- A cell would be capped once full. It is assumed that excavated material retained on site from the cell excavation would be used to cap the cell.

It is estimated, that 100 two way HGV trips a day would be present during the construction of one cell. This allows for a contingency factor in the order of 40% to provide for a robust assessment. The figure would equate to a total number of HGV trips of approximately 300 (two-way) per day for three landfill cells. This traffic would occur between 07:30 and 18:00 Monday to Saturday and as such would impact on both the AM and PM peak hour periods.

A total of approximately 700 HGV (two way) trips a day would be expected, on combination of the landfill waste delivery traffic and that associated with the cell construction. **Table 4.5** summarises the combined traffic flows expected during each assessment year for both the AM Peak (08:00 – 09:00) and PM Peak (17:00 – 18:00).

Table 4.5: Predicted Traffic Flows associated with Fingal Landfill during the AM Peak 08:00 – 09:00 and PM Peak 17:00 – 18:00

Year	Waste Delivery Vehicles (Two-Way)	Construction Vehicles	Total HGVs
2008 AM	0	30	30
2008 PM	0	30	30
2009 AM	32	30	62
2009 PM	0	30	30
2024 AM	32	30	62
2024 PM	0	30	30

4.1.3 Haulage Route

The haulage route, as shown in **Figure 4.2,** for all Dublin landfill traffic will arrive via the M1 Motorway and exit onto the Courtlough Interchange. The traffic will then travel westwards to the proposed new “County” Road. The main access into the landfill will be accessed from this newly constructed “County” Road. A private access road will be provided to access the site from the termination point of the “County” Road as shown previously on **Figure 4.1**. The departing traffic will return via the same route.

4.1.4 Trip Distribution

The main source of waste will be from Dublin City. It has been assumed that all HGVs associated with the Fingal Landfill will use the M1 Motorway. It is estimated that 90% of landfill delivery vehicles will travel from the south that is, M1 from Dublin) while 10% will come from the north (that is, M1 from Dundalk). The number of trips based on this percentage split has been shown in **Table 4.6** below. In all cases the landfill trucks will follow the haulage route as previously described. This will mean that 100% of Fingal Landfill HGVs will only be present on Rowan’s Road between the Courtlough Interchange and the proposed new “County” Road.

Table 4.6: Daily One Way HGVs (Landfill Waste Deliveries)

Year	Daily HGVs (One Way)	90%	10%
2009	197	177	20
2024	197	177	20

* NB: This table only shows the number of landfill waste deliveries

It has been assumed in worst case scenario that 100% of HGVs associated with the landfill cell construction, once the landfill is in operation, would arrive via the M1 motorway northbound (from Dublin) and return via the reverse journey.

4.1.5 Public Recycling Centre

The Fingal Landfill is proposed to have a Public Recycling Centre where the public can deposit recyclable material. The Public Recycling Centre is proposed to be located south of the Fingal Landfill Site. They will enter the proposed landfill via the proposed access Road. The numbers associated with the Public Recycling Centre have been based on Balleally Landfill data as summarised in **Table 4.7**.

Table 4.7: Traffic Associated with the Balleally Public Recycling Centre

Survey Data Day	Survey Data Date	One Way Vehicle Movements
Monday	10/02/'04	95
Tuesday	25/05/'04	116
Wednesday	07/12/'04	130
Thursday	21/10/'04	76
Friday	17/12/'04	92
Saturday	18/12/'04 10/07/'04	92 265
Sunday	23/10/'04	144

The results show that Saturday was the busiest day of the week with 265 one way trips and as such it was considered that this figure would represent the "worst case" scenario for the proposed development. This was adopted for weekday traffic and applied using the daily traffic profile from the Balleally Landfill. These traffic flows were then integrated into the various traffic impact scenarios as discussed in the following Chapter.

The distribution of these trips have been divided across four different roads from different directions as summarised below.

- Rowan's Road (West of Tooman/Rowan's Road Junction)
- Nevitt Road (West of Tooman/Nevitt Road Junction)
- Hedgestown
- Balbriggan (R132)

It has been assumed that 25% of the Public Recycling Centre traffic would come from each of the roads described above.

5 POTENTIAL IMPACTS

This section examines the potential impact of the proposed development on the surrounding road network. The road network is tested with and without the proposed development in place that is “Do Nothing” and “Do Something”. The proposed development traffic in the “Do Something” scenario includes the traffic from waste delivery and landfill cell construction activities. The results, described below, show whether any of the junctions within the Study Area will experience operational difficulties such as queuing or delay.

5.1 DESIGN YEARS JUNCTION CAPACITY ANALYSIS

The existing traffic flows, taken from the traffic counts carried out in 2005, together with the M1 Business Park traffic and the proposed landfill development have been used to estimate the predicted traffic flows for the future design years. Some of the committed developments have a limited time of operation and this has been taken into account when establishing the future flows on the road network. The future scenarios described below were analysed for both AM peak (08:00 – 09:00) and PM peak (17:00 – 18:00) hours. It should be noted that the impact of the waste delivery vehicles would only affect the surrounding road network during the AM peak period. The cell construction traffic will affect both AM and PM peaks.

The following summarises each scenario tested:-

- **“Do Nothing” 2009** (that is, without Fingal Landfill in place). This includes
  - The 2005 traffic flows factored to 2009 using the NRA growth rates
  - The removal of the Baldaragh Waste Permit traffic (Committed Development) as the facility is closed
  - The inclusion of Murphy’s Environmental Limited traffic (Committed Development)
  - The inclusion of Phase I of the M1 Business Park (Committed Development)
  - This scenario has also been tested with and without the upgrade of the M1 Courtlough Interchange.

- **“Do Something” 2009** (that is, with Fingal Landfill in place). This includes
  - The 2005 traffic flows factored to 2009 using the NRA growth rates
  - The removal of the Baldaragh Waste Permit traffic (Committed Development) as the facility is closed
  - The inclusion of Murphy’s Environmental Limited traffic (Committed Development)
  - The inclusion of the M1 Business Park Phase I (Committed Development)
  - The inclusion and exclusion of the upgrade of the M1 Courtlough Interchange.
  - The inclusion of landfill traffic when disposing of approximately 500,000 tonnes of waste annually
  - The inclusion of the landfill cell construction
  - The inclusion of Public Recycling traffic
  - The closure of the Nevitt Road which will result in diverted traffic via the “County” Road to the M1 and the R132.

“Do Nothing” 2024 (that is, without Fingal Landfill in place). This includes:

  - The 2005 traffic flows factored to 2024 using the NRA growth rates

- The removal of the Baldaragh Waste Permit traffic (Committed Development) as the facility is closed
- The removal of Murphy's Environmental Limited traffic (Committed Development) as the facility is closed. This accounts for all traffic volumes associated with Murphy's Quarry as stated in the Murphy's Environmental Limited EIS including those trips contained within the 2005 traffic surveys
- The inclusion of M1 Business Park Phase I (Committed Development) with the exclusion of the upgrade of the M1 Courtlough Interchange
- The inclusion of M1 Business Park Phase I – IV (Committed Development) with the inclusion of the upgrade of the M1 Courtlough Interchange.

- **"Do Something" 2024** (that is, with Fingal Landfill in place). This includes:

  - The 2005 traffic flows factored to 2024 using the NRA growth rates
  - The removal of the Baldaragh Waste Permit traffic (Committed Development) as the facility is closed
  - The removal of Murphy's Environmental Limited traffic (Committed Development) as the facility is closed. This accounts for all traffic volumes associated with Murphy's Quarry as stated in the Murphy's Environmental EIS including those trips contained within the 2005 traffic survey.
  - The inclusion and exclusion of the upgrade of the M1 Courtlough Interchange
  - The inclusion of M1 Business Park Phase I (Committed Development) with the exclusion of the upgrade of the M1 Courtlough Interchange
  - The inclusion of M1 Business Park Phase I – IV (Committed Development) with the inclusion of the upgrade of the M1 Courtlough Interchange
  - The inclusion of landfill traffic when disposing of approximately 500,000 (worst case scenario) tonnes of waste annually
  - The inclusion of Public Recycling traffic
  - The closure of the Nevitt Road which will divert traffic via the "County" Road to the M1 and the R132.

5.1.1 Traffic Growth Prediction

Future traffic flows were estimated using NRA growth rates. The following summarises the traffic prediction for the assessment years in the "Do Nothing" Scenarios (with no development in place).

Opening Year 2009 ("Do Nothing"): It is anticipated that traffic flows will increase around the Courtlough Interchange with the opening of the M1 Business Park development. Those trips associated with this development will result in an increase in traffic volumes on the major strategic routes, that is, the M1 Motorway and the R132. The traffic volumes, in particular, HGVs, on the Nevitt Road are also expected to increase with the Murphy's Environmental Limited extension. The Tooman Road and local roads around Hedgestown are expected to increase according to the traffic growth rates provided by the NRA.

Design Year 2024 ("Do Nothing"): The traffic flows will have increased further around the Courtlough Interchange particularly with the approval (by An Bord Pleanála) of the Courtlough Interchange upgrade and remaining M1 Business Park Sites. It is expected that the traffic flows associated with this development would peak by approximately 2015. The number of HGVs on the Nevitt Road would be expected to decrease with the closure of Murphy's Environmental Limited.

In addition, the opening year and design year was tested with and without the upgrade of the Courtlough Interchange as a sensitivity test and to provide for a robust assessment.

5.2 JUNCTION CAPACITY ANALYSIS

As with the existing capacity analysis in **Section 3.0**, all junctions with the exception of Rowan's Road/ Tooman Road T-Junction were tested for operational capacity in order to determine whether they will operate effectively or have capacity issues at these junctions by the way of queuing and delays etc. These have been tested with PICADY version 4.0 and ARCADY version 6.0 and this is based on the Ratio to Flow Capacity (RFC), which is the output figure of each junction arm. If the RFC value exceeds 0.85, then the junction is considered not to be operating satisfactorily and would experience junction delays and queuing. The following summarises the results of the junction capacity analysis for each junction during the Opening Year 2009 and Design Year 2024. The relevant turning counts traffic flows information for each junction have been shown in Appendix A (Figures 5.1 to 5.6).

5.2.1 Nevitt Road/ "Five Roads" Roundabout

The Nevitt Road/Five Roads Roundabout junction was analysed using ARCADY, and a summary of the results can be seen in **Tables 5.1a and b**. The Junction arm labelling convention is as follows:

- Arm A – Nevitt Road
- Arm B – Cul de Sac
- Arm C – Link to R132
- Arm D – Link to Hedgestown

Table 5.1a: Nevitt Road/ "Five Roads" Roundabout Junction Capacity Results for AM peak

	Arm A Nevitt Road		Arm B Cul de Sac		Arm C Link to R132		Arm D Link to Hedgestown	
Weekday	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**
AM Peak								
2009								
2009 "Do Nothing"	0.078	0.1	0.001	0.0	0.037	0.0	0.019	0.0
2009 "Do Something"	0.000	0.0	0.001	0.0	0.002	0.0	0.012	0.0
2024								
2024 "Do Nothing" and without Courtlough Interchange upgrades	0.080	0.1	0.001	0.0	0.035	0.0	0.024	0.0
2024 "Do Something" and without Courtlough Interchange upgrades	0.000	0.0	0.001	0.0	0.002	0.0	0.014	0.0
2024 "Do Nothing" and with Courtlough Interchange upgrades	0.074	0.1	0.001	0.0	0.035	0.0	0.025	0.0
2024 "Do Something" and with Courtlough Interchange upgrades	0.000	0.0	0.001	0.0	0.002	0.0	0.014	0.0

It is clear from the results that the closure of Nevitt Road (the "Do Something" Scenario for 2009 and 2024) has a positive impact on the capacity of the junction. This is due to the fact that traffic is diverted from the Nevitt Road via the "County" Road/Rowan's Road and the R132. The reduction in traffic has resulted in a positive impact overall on traffic flows in the area.

Table 5.1b: Nevitt Road/ "Five Roads" Roundabout Junction Capacity Results for PM peak

	Arm A Nevitt Road		Arm B Cul de Sac		Arm C Link to R132		Arm D Link to Hedgestown	
Weekday	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**
PM Peak								
2009								
2009 "Do Nothing"	0.095	0.1	0.006	0.0	0.027	0.0	0.036	0.0
2009 "Do Something"	0.000	0.0	0.005	0.0	0.005	0.0	0.024	0.0
2024								
2024 "Do Nothing" and without Courtlough Interchange upgrades	0.100	0.1	0.008	0.0	0.022	0.0	0.042	0.0
2024 "Do Something" and without Courtlough Interchange upgrades	0.000	0.0	0.008	0.0	0.007	0.0	0.028	0.0
2024 "Do Nothing" and with Courtlough Interchange upgrades	0.100	0.1	0.008	0.0	0.022	0.0	0.042	0.0
2024 "Do Something" and with Courtlough Interchange upgrades	0.000	0.0	0.008	0.0	0.007	0.0	0.028	0.0

The above results show that all junction arms during both the AM and PM peak periods do not exceed the RFC value of 0.85 in either the "Do Nothing" or "Do Something" scenarios. This indicates that there would be minimal queues in the future on all junction arms during the peak traffic flows.

In addition, in the "Do Something" Scenario, the situation improves with a reduction in traffic flows attributed to by the diversion of Nevitt Road traffic. Fingal Landfill has, therefore, an overall positive impact in traffic terms on this junction in future years, including the Design Year 2024.

5.2.2 R132/Hedgestown Roundabout

The R132/Hedgestown Roundabout junction was analysed using ARCADY, and a summary of the results can be seen in **Tables 5.2a and b**. The Junction arm labelling convention is as follows:

- Arm A – R132 off slip
- Arm B – Hedgestown Road
- Arm C – R132 On Slip
- Arm D – Link to "Five Roads"

The capacity analysis of this junction shows that all arms of the junction during AM peak will operate satisfactorily with and without the development in the future design years. The table below summarises the results, which show that none of the junction arms exceeded the RFC threshold of 0.85. As a result, queuing is not expected to occur. The R132 on slip has not been included in the capacity analysis as it is an exit from the roundabout only.

Table 5.2a: R132/Hedgestown Roundabout ARCADY Capacity Results during AM peak

	Arm A R132 Off Slip		Arm B Hedgestown Road		Arm D Link to Five Roads	
Weekday	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**
AM Peak						
2009						
2009 "Do Nothing"	0.011	0.0	0.007	0.0	0.031	0.0
2009 "Do Something"	0.008	0.0	0.008	0.0	0.001	0.0
2024						
2024 "Do Nothing" and without Courtlough Interchange upgrades	0.014	0.0	0.009	0.0	0.029	0.0
2024 "Do Something" and without Courtlough Interchange upgrades	0.010	0.0	0.010	0.0	0.002	0.0
2024 "Do Nothing" and with Courtlough Interchange upgrades	0.014	0.0	0.010	0.0	0.029	0.0
2024 "Do Something" and with Courtlough Interchange upgrades	0.010	0.0	0.010	0.0	0.002	0.0

***Q denotes the number of vehicles**

**Arm C R132 On Slip has not been shown as the traffic on this arm has been included in Arms A, B and D.

The results indicate that the junction will operate very satisfactorily in both 2009 and 2024 with and without Fingal Landfill. The introduction of Fingal Landfiil will result in a positive traffic impact at the junction for Arms A and D. This is due to the reduction in traffic flows due to the closure of Nevitt Road. The upgrade to Courtlough Interchange does not have an impact on the overall performance of the junction as it will not result in additional traffic flows in the area of the junction. The small increase in RFC on Arm C is due to the minimal increase in traffic associated with the Public Recycling Centre.

Table 5.2b: R132/Hedgestown Roundabout ARCADY Capacity Results for PM peak

	Arm A R132 Off Slip		Arm B Hedgestown Road		Arm D Link to Five Roads	
Weekday	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**
PM Peak						
2009						
2009 “Do Nothing”	0.009	0.0	0.016	0.0	0.033	0.0
2009 “Do Something”	0.004	0.0	0.016	0.0	0.002	0.0
2024						
2024 “Do Nothing” and without Courtlough Interchange upgrades	0.013	0.0	0.019	0.0	0.034	0.0
2024 “Do Something” and without Courtlough Interchange upgrades	0.006	0.0	0.019	0.0	0.003	0.0
2024 “Do Nothing” and with Courtlough Interchange upgrades	0.013	0.0	0.019	0.0	0.034	0.0
2024 “Do Something” and with Courtlough Interchange upgrades	0.006	0.0	0.019	0.0	0.003	0.0

***Q denotes the number of vehicles**
**Arm C R132 On Slip has not been shown as the traffic on this arm has been included in Arms A, B and D.

It is clear from the results that the junction will operate very satisfactorily in both 2009 and 2024, with and without Fingal Landfill. It can be said that Arms A and C will experience a positive impact in traffic terms on introduction of Fingal Landfill. This is due to the closure of Nevitt Road and the diversion of traffic via the “County” Road and Rowan’s Road. The upgrade to Courtlough Interchange does not have an impact on the results as it does not generate additional traffic in this area, similar to the AM Peak.

5.2.3 M1 Courtlough Interchange Roundabouts

For the purposes of this TIA, the Courtlough Interchange was tested with and without the proposed upgrades.

The proposed upgrades to this interchange, according to the Courtlough Interchange EIS, would include two bridges over the M1 with carriageways of approximately 7m wide on each bridge. The M1 off slips will be given a second running lane and the inscribed diameters would be approximately 60m and 65m for the west and east roundabouts respectively.

5.2.3.1 M1 Courtlough Interchange Roundabout West

The West Courtlough Interchange Roundabout junction was analysed using ARCADY, and a summary of the results can be seen in **Tables 5.3a and b**.

The Junction arm labelling convention is as follows:

- Arm A – Rowan's Road
- Arm B – M1 On Slip
- Arm C – M1 Overbridge
- Arm D – M1 off slip

Table 5.3a: M1 Courtlough Interchange Roundabout West ARCADY Capacity Results for AM Peak

	Arm A Rowan's Road		Arm C M1 Over Bridge		Arm D M1 Off Slip	
Weekday	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**
AM Peak						
2009						
2009 "Do Nothing"	0.067	0.1	0.206	0.3	0.298	0.4
2009 "Do Something"	0.164	0.2	0.238	0.3	0.363	0.6
2024						
2024 "Do Nothing" and without Courtlough Interchange upgrades	0.079	0.1	0.230	0.3	0.361	0.6
2024 "Do Something" and without Courtlough Interchange upgrades	0.187	0.2	0.269	0.4	0.442	0.8
2024 "Do Nothing" and with Courtlough Interchange upgrades	0.146	0.2	0.365	0.6	0.678	2.1
2024 "Do Something" and with Courtlough Interchange upgrades	0.218	0.3	0.398	0.7	0.779	3.4

***Q denotes the number of vehicles**
**Arm B M1 On Slip has not been shown as the traffic on this arm has been included in Arms A, C and D.

Table 5.3b: M1 Courtlough Interchange Roundabout West ARCADY Capacity Results for PM Peak

	Arm A Rowan's Road		Arm C M1 Over Bridge		Arm D M1 Off Slip	
Weekday	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**
PM Peak						
2009						
2009 "Do Nothing"	0.322	0.5	0.139	0.2	0.264	0.4
2009 "Do Something"	0.427	0.7	0.165	0.2	0.297	0.4
2024						
2024 "Do Nothing" and without Courtlough Interchange upgrades	0.394	0.6	0.163	0.2	0.350	0.5
2024 "Do Something" and without Courtlough Interchange upgrades	0.514	1.1	0.183	0.2	0.384	0.6
2024 "Do Nothing" and with Courtlough Interchange upgrades	0.680	2.1	0.192	0.2	0.340	0.5
2024 "Do Something" & with Courtlough Interchange upgrades	0.751	3.0	0.207	0.3	0.359	0.6

***Q denotes the number of vehicles**
**Arm B M1 On Slip has not been shown as the traffic on this arm has been included in Arms A, C and D.

The results above indicate that the junction will operate satisfactorily in 2009 and 2024 with the introduction of Fingal Landfill. A maximum RFC of 0.779 is predicted for Arm D (M1 Off Slip) in the AM peak 2024 with Courtlough Interchange Upgrades. This includes Phases I - IV of the M1 Business Park which is expected to generate significant traffic activity. A corresponding queue of 3 vehicles is predicted. It is not expected on the basis of the above results that there will be a level of interaction between the existing and proposed junctions on Rowan's Road.

5.2.3.2 M1 Courtlough Interchange Roundabout East

The East Courtlough Interchange Roundabout junction was analysed using ARCADY, and a summary of the results is shown in **Table 5.4**.

The Junction arm labelling convention is as follows:

- Arm A – M1 Off Slip
- Arm B – Rowan's Road East
- Arm C – M1 On Slip
- Arm D – M1 over bridge

Table 5.4a: M1 Courtlough Interchange Roundabout East Capacity Results during AM Peak

	Arm A M1 Off Slip		Arm B Rowan's Road East		Arm D M1 Overbridge	
Weekday	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**
AM Peak						
2009						
2009 "Do Nothing"	0.203	0.3	0.374	0.6	0.177	0.2
2009 "Do Something"	0.233	0.3	0.433	0.8	0.242	0.3
2024						
2024 "Do Nothing" and without Courtlough Interchange upgrades	0.255	0.3	0.448	0.8	0.206	0.3
2024 "Do Something" and without Courtlough Interchange upgrades	0.292	0.4	0.510	1.0	0.272	0.4
2024 "Do Nothing" and with Courtlough Interchange upgrades	0.297	0.4	0.502	1.0	0.227	0.3
2024 "Do Something" and with Courtlough Interchange upgrades	0.324	0.5	0.552	1.2	0.274	0.4

***Q denotes the number of vehicles**
**Arm C M1 On Slip has not been shown as the traffic on this arm has been included in Arms A, B and D.

Table 5.4b: M1 Courtlough Interchange Roundabout East Capacity Results for PM Peak

	Arm A M1 Off Slip		Arm B Rowan's Road East		Arm D M1 Overbridge	
Weekday	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**
PM Peak						
2009						
2009 "Do Nothing"	0.165	0.2	0.161	0.2	0.343	0.5
2009 "Do Something"	0.193	0.2	0.334	0.5	0.409	0.7
2024						
2024 "Do Nothing" and without Courtlough Interchange upgrades	0.224	0.3	0.211	0.3	0.400	0.7
2024 "Do Something" and without Courtlough Interchange upgrades	0.271	0.4	0.381	0.6	0.466	0.9
2024 "Do Nothing" and with Courtlough Interchange upgrades	0.237	0.3	0.382	0.6	0.517	1.1
2024 "Do Something" and with Courtlough Interchange upgrades	0.263	0.4	0.406	0.7	0.564	1.3

***Q denotes the number of vehicles**
**Arm C M1 On Slip has not been shown as the traffic on this arm has been included in Arms A, B and D.

The results indicate that the junction would perform satisfactorily in 2009 and 2024 with and without Fingal Landfill. All RFCs are below the value of 0.85 and there is low queue formation on all arms. Fingal Landfill will not have a significant impact on the overall performance of the junction. It is not expected that there will be interaction between the junctions on Rowan's Road on the basis of the above predicted queue lengths.

The roundabouts of the Courtlough Interchange were tested with and without the proposed upgrade of the Courtlough Interchange for both the Do Nothing and Do Something Scenarios. The junction capacity analysis results showed that in all scenarios test the traffic associated with the Fingal Landfill, would not cause queuing or operational difficulties. The Fingal Landfill, therefore, is not dependant on the upgrade Courtlough Interchange.

5.2.4 Rowan's Road East/R132 Roundabout

At present this is a priority junction. The proposals from the M1 Business Park development provide for a modification to this junction to a roundabout with an inscribed diameter of approximately 50m. This information was obtained from the "Courtlough/Rowan's Road Light Industrial/Warehousing Development EIS", June 2001, prepared by Frank L. Benson and Partners. This roundabout junction will consist of 4 arms, 3 of which are the existing roads that meet at this junction and the other will be the entrance to the Site C of the M1 Business Park.

The junction was analysed using ARCADY, and a summary of the results is shown in **Table 5.5a and b**. The Junction arm labelling convention is as follows:

- Arm A – R132 (Balbriggan Road)
- Arm B – R132 (Dublin Road)

- Arm C – Rowan's Road East
- Arm D – Access to Site C of M1 Business Park

Table 5.5a: R132/Rowan's Road (East) Roundabout Capacity Results during AM Peak

	Arm A R132 (Balbriggan Road)		Arm B R132 (Dublin Road)		Arm C Rowan's Road East		Arm D Access to Site C of M1 Business Pk	
Weekday	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**
AM Peak								
2009								
2009 "Do Nothing"	0.360	0.6	0.228	0.3	0.346	0.5	0.189	0.2
2009 "Do Something"	0.373	0.6	0.272	0.4	0.395	0.7	0.196	0.2
2024								
2024 "Do Nothing" and without Courtlough Interchange upgrades	0.451	0.8	0.288	0.4	0.415	0.7	0.202	0.3
2024 "Do Something" and without Courtlough Interchange upgrades	0.468	0.9	0.333	0.5	0.466	0.9	0.210	0.3
2024 "Do Something" and with Courtlough Interchange upgrades	0.639	1.8	0.483	0.9	0.439	0.8	0.276	0.4
2024 "Do Something" and with Courtlough Interchange upgrades	0.663	1.9	0.537	1.2	0.484	0.9	0.291	0.4

Q denotes the number of vehicles in a queue on a given junction arm

Table 5.5b: R132/Rowan's Road (East) Roundabout Capacity Results during PM Peak

	Arm A R132 (Balbriggan Road)		Arm B R132 (Dublin Road)		Arm C Rowan's Road East		Arm D Access to Site C of M1 Business Pk	
Weekday	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**
PM Peak								
2009								
2009 "Do Nothing"	0.262	0.4	0.251	0.3	0.489	1.0	0.218	0.3
2009 "Do Something"	0.275	0.4	0.277	0.4	0.557	1.3	0.232	0.3
2024								
2024 "Do Nothing" and without Courtlough Interchange upgrades	0.329	0.5	0.318	0.5	0.601	1.5	0.246	0.3
2024 "Do Something" and without Courtlough Interchange upgrades	0.341	0.5	0.343	0.5	0.672	2.0	0.264	0.4
2024 "Do Nothing" and with Courtlough Interchange upgrades	0.435	0.8	0.451	0.8	0.673	2.0	0.366	0.6
2024 "Do Something" and with Courtlough Interchange upgrades	0.452	0.8	0.473	0.9	0.729	2.7	0.399	0.7

Q denotes the number of vehicles in a queue on a given junction arm

The results indicate that the introduction of Fingal Landfill will have minimal impact overall on the road network in 2009 and 2024. The junction will operate satisfactorily in 2009 and 2024 for both AM and PM peak traffic flows with and without the Courtlough Interchange upgrades. All RFC values are below 0.85 and there will be minimal queue formation.

5.2.5 New Roundabout on Rowan's Road at M1 Business Park Access to Sites A & F

At present, Rowan's Road is a rural road with carriageway of approximately 7m. The M1 Business Park development will involve the upgrading of this road and the construction of a roundabout with an ICD of 50m (to the west of the interchange). It will consist of four arms, two of which will be the existing road and the other two will be the entrance to the Sites A & F (see **Table 3.10** for further details) of the M1 Business Park development. There is no landfill traffic delivering waste during the PM peak hour. However there will be landfill cell construction vehicles present and as such the AM and PM peak periods for this junction were tested to check if the operational capacity was functioning satisfactorily with the construction traffic for the proposed Fingal Landfill

The junction was analysed using ARCADY, and a summary of the results is shown in **Table 5.6**.

The Junction arm labelling convention is as follows:

- Arm A – Link to Courtlough Interchange
- Arm B – Access to Site F of M1 Business Park
- Arm C – Rowan's Road West
- Arm D – Access to Site A of M1 Business Park

Table 5.6a: New Roundabout on Rowan's Road at Access to Site A and F Capacity Results during the AM Peak

	Arm A Link to Courtlough Interchange		Arm B Access to Site F		Arm C Rowan's Road West		Arm D Access to Site A	
Weekday	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**
AM Peak								
2009								
2009 "Do Nothing"	0.266	0.4	0.000	0.0	0.077	0.1	0.032	0.0
2009 "Do Something"	0.377	0.6	0.000	0.0	0.209	0.3	0.035	0.0
2024								
2024 "Do Nothing" and without Courtlough Interchange upgrades	0.277	0.4	0.000	0.0	0.083	0.1	0.032	0.0
2024 "Do Something" and without Courtlough Interchange upgrades	0.386	0.6	0.000	0.0	0.210	0.3	0.035	0.0
2024 "Do Something" and with Courtlough Interchange upgrades	0.486	0.9	0.149	0.2	0.109	0.1	0.075	0.1
2024 "Do Something" and with Courtlough Interchange upgrades	0.547	1.2	0.171	0.2	0.203	0.3	0.080	0.1

Q denotes the number of vehicles in a queue on a given junction arm

Table 5.6b: New Roundabout on Rowan's Road at Access to Site A and F. Capacity Results during the PM Peak

	Arm A Link to Courtlough Interchange		Arm B Access to Site F		Arm C Rowan's Road West		Arm D Access to Site A	
Weekday	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**
PM Peak								
2009								
2009 "Do Nothing"	0.097	0.1	0.000	0.0	0.139	0.2	0.271	0.4
2009 "Do Something"	0.162	0.2	0.000	0.0	0.255	0.3	0.283	0.4
2024								
2024 "Do Nothing" and without Courtlough Interchange upgrades	0.112	0.1	0.000	0.0	0.158	0.2	0.266	0.4
2024 "Do Something" and without Courtlough Interchange upgrades	0.170	0.2	0.000	0.0	0.273	0.4	0.286	0.4
2024 "Do Nothing" and with Courtlough Interchange upgrades	0.143	0.2	0.178	0.2	0.100	0.1	0.627	1.7
2024 "Do Something" and with Courtlough Interchange upgrades	0.173	0.2	0.185	0.2	0.168	0.2	0.670	2.0

Q denotes the number of vehicles in a queue on a given junction arm

The new roundabout on Rowan's Road is expected to operate satisfactorily in 2009 and 2024 for both AM and PM peak traffic flows. The Fingal Landfill will have minimal impact on the operational performance of the junction as evident from a comparison of the "Do Nothing" and "Do Something" Scenario for each year. All RFCs are below the value of 0.85 and queues are minimal.

This junction was tested with and without the proposed upgrade of the Courtlough Interchange for both the Do Nothing and Do Something Scenarios. The junction capacity analysis results showed that in all scenarios tested the traffic associated with the Fingal Landfill, would not cause queuing or operational difficulties. The introduction of the Courtlough Interchange upgrade and the final three phases of the M1 Business Park results in an increase in queue lengths and RFCs. All values are, however, within acceptable values.

5.3 CONCLUSIONS FROM RESULTS

The results of the junction analysis clearly demonstrate that each junction tested has adequate capacity to accommodate the traffic flows expected to be generated by the Fingal Landfill in both the Opening Year 2009 and the Design Year 2024. The existing road network surrounding Courtlough Interchange is capable of accommodating the Fingal Landfill without being upgraded. The revised road network planned at Courtlough (which is the subject of a current planning application for which a decision is expected presently from An Bord Pleanála) including all phases of the M1 Business Park is also capable of accommodating Fingal Landfill satisfactorily.

6 CONSTRUCTION

If approved, the expected year of opening of Fingal Landfill is 2009. It is anticipated, however, that the construction of the Facility including infrastructure (that is, the “County” Road and Access Road) will take place in 2008. The other process expected to commence in 2008 is the excavation and preparation of landfill cells. As a “worst case” scenario up to three cells could be constructed at any one time.

The construction of landfill cells will be ongoing throughout the life of the landfill. The traffic associated with the cell construction as such has already been incorporated into the “Do Something” Scenarios for 2009 and 2024 and in the junction capacity analysis of all the assessment years as described in **Section 5.0**.

6.1 CONSTRUCTION OF THE “COUNTY” ROAD

The proposed “County” Road, which links Rowan’s Road with Nevitt Road, is approximately 1.3km long. In addition, this road will extend into an Access Road, a private road to serve the Landfill facility. The total length of both sections of road combined will be 2.25km. It has been assumed that this road would take approximately 10 months to construct. This period could be extended, however, depending on when earthworks for the scheme could be organised. It is considered that months 6, 7, 8 and 9 would have the highest level of traffic activity. This has been used as the “worst case” scenario for traffic levels during the construction period.

It is estimated that approximately 12,000 tonnes of material would be outsourced and would be transported by HGV. This would include sub base materials, bituminous pavement and HGVs carrying landscaping materials, signage, kerbing and pipes. It is assumed that the average truck size would be 12 tonnes. The number of HGVs estimated during construction has been summarised in the following **Table 6.1**.

Table 6.1: Average Number of HGVs during the Construction Period of the “County” Road

HGV Size (Tonnes)	Material Required (Tonnes)	Total HGVs over 10 months (One Way)	HGVs per month (One Way)	HGVs daily (6-day week) (One Way)
12	12,000	1,000	100	4

It is estimated that an average of 8 HGVs (two way) would be expected on a daily basis for the construction of the “County” Road. In addition, to the above construction vehicle trips, there will be vehicle trips by employees and site visitors.

It should be noted that the majority of the construction traffic for the road will be in months 6, 7, 8 and 9 and, as such, during these months, it has been assumed that approximately 75% of the construction traffic would be on the road network during these months. In this case **Table 6.2** shows the number of HGVs that would be expected during this period.

Table 6.2: Number of HGVs during months 6,7,8 and 9 of the “County” Road Construction Period

Total HGVs over 10 months (One Way)	75% of Total HGVs (One Way)	HGVs per month over 4 month period (One Way)	HGVs per week (One Way)	HGVs daily (6-day week) (One Way)
1000	750	188	47	8

There will be approximately 16 HGVs (two way) anticipated on a daily basis. In both cases the number of HGVs estimated is significantly lower than the number of HGVs associated with the operational phase.

It is not normally a requirement of the IHT Guidelines to test years other than the Year of Opening or Design Year. It was considered prudent, however, to test the impact of construction traffic in this case. The main reason for this was to investigate the impact on Nevitt Road, as it is proposed that the haulage route for the construction activities during this year will be to and from the Nevitt Road until the facility's year of opening. The following scenario was tested:

- **"Do Something" 2008** (that is, without Fingal Landfill in place but including cell construction and "County" Road/Access Road and ancillary works). This includes
  - The 2005 traffic flows factored to 2008 using the NRA growth rates.
  - The removal of the Baldaragh Waste Permit traffic (Committed Development) as the facility is closed.
  - The inclusion of Murphy's Environmental Limited traffic (Committed Development).
  - The inclusion of Phase I of the M1 Business Park (Committed Development).
  - The traffic associated with cell construction.
  - The traffic associated with the construction of the "County" Road, Private Road and ancillary landfill facilities.

The junctions Nevitt Road/"Five Roads" Roundabout junction and the R132/Hedgestown Roundabout junction have been tested for the construction phase of Fingal Landfill. It should be noted that the junctions tested would be the only junctions to be affected by the construction traffic operations in 2008. The results have been provided in the following tables.

Table 6.3: Nevitt Road /"Five Roads" Roundabout ARCADY Analysis Results

"Do Something" 2008	Arm A Nevitt Road		Arm B Cul de Sac		Arm C Link to R132		Arm D Link to Hedgestown	
Weekday	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**
AM Peak	0.106	0.1	0.001	0.0	0.062	0.1	0.020	0.0
PM Peak	0.128	0.1	0.006	0.0	0.047	0.0	0.036	0.0

***Q denotes the number of vehicles**

Table 6.4: R132/Hedgestown Roundabout ARCADY Analysis Results

"Do Something" 2008	Arm A R132 Off Slip		Arm B Hedgestown		Arm D Link to "Five Roads"	
Weekday	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**	**Max RFC**	**Max Q**
AM Peak	0.011	0.0	0.008	0.0	0.042	0.0
PM Peak	0.009	0.0	0.017	0.0	0.048	0.0

***Q denotes the number of vehicles**

The results above indicate that there will be minimal impact on the Nevitt Road/"Five Roads" junction and the R132/Hedgestown Road junction during the construction period in 2008. All RFCs are below the value of 0.85 and queues are not expected to form.

The construction traffic is therefore not a critical element of this proposed development. It is estimated that the daily traffic generated from the construction stage will be significantly less than that expected to be generated by the final operational stage of the proposed development.

7 MITIGATION MEASURES

During the development of the Fingal Landfill a number of measures have been proposed and integrated into the overall project design for the operational and construction phases. These measures have been identified as part of the detailed assessment of traffic and its impact on the surrounding road network.

7.1 OPERATIONAL

The following mitigation measures have been proposed:

- Closure of the Nevitt Road between Tooman/Nevitt Road Crossroads and the Nevitt Road M1 Overbridge, prior to the opening of Fingal Landfill in 2009;
- The provision of a new road referred to as the "County" Road" between Rowan's Road and Nevitt Road. This single carriageway road will run parallel (immediately to the west) to Fingal Landfill in a north/south direction. It is proposed to provide two junctions at either end of the "County" Road, that is, where the "County" Road meets with Rowan's Road and Nevitt Road. The junction design will be subject to detailed junction design and relevant guidelines and best practice documentation will be adhered to in this process;
- The "County" Road will be designed to afford a high quality facility for pedestrians /cyclists with the provision of a footpath one side of the carriageway;
- The "County" Road will be a public road between Rowan's Road and Nevitt Road and will act as a diversion route for those vehicles that will be affected by the Nevitt Road closure. The "County" Road will become a private road on entry to the Landfill Site;
- Landfill waste deliveries will not be accepted at the Fingal Landfill site until the "County" Road has been fully constructed and is open to the public in 2009;
- Fingal Landfill traffic will be restricted to the haulage route as shown on Figure 4.2;
- Fingal Landfill will only accept waste deliveries between the hours of 08:00 to 16:30, Monday to Saturdays; and
- The Public Recycling Centre will only accept domestic recyclable waste deliveries between the hours of 08:00 – 16:30 Monday to Friday and 08:00 –16:00 on Saturdays and Sundays. Vehicles other than HGVs will only be permitted access into the Public Recycling Centre.

The results of the traffic assessment which included the above measures showed that no operational difficulties are anticipated. Mitigation measures as a result are not required for any of the junctions affected by Fingal Landfill.

7.2 CONSTRUCTION

While there are no requirements to improve existing junction layouts, the following restrictions are recommended to provide for an ordered and regulated system of traffic management for this operation. A number of measures have been proposed as follows:

- The construction traffic (Cell and “County” Road construction) will only access the site off the Nevitt Road and the R132 until such time as the “County” Road is developed and thereafter all construction traffic will access the site from the M1 via Rowan’s Road and the “County” Road;

- The HGVs associated with cell construction will be restricted to the hours of 07:30 – 18:00, Monday to Saturday. These vehicles will only be permitted to use the same haulage to that of the construction of the “County” Road until the “County” Road is constructed and open to the public. At this stage, the cell construction HGVs must follow the same haulage route to that of the waste delivery HGVs as described above in 7.1;

- The HGVs associated with cell construction will not be permitted to directly pass the Hedgestown Primary School during the school opening and closing hours. This is to ensure the safety of primary school children;

- Material that has been excavated on site will be used for capping of the cells.

- Wheel wash facilities will be provided on site to ensure that construction debris will not have an impact on the quality of roads in the surrounding area; and

- Parking will be provided on site for both employees and visitors.

8 RESIDUAL IMPACTS

Fingal Landfill has already been assessed with the recommended mitigation measures detailed in this TIA and the results showed that no operational difficulties are expected. It can be stated, therefore, that the overall impact of Fingal Landfill in terms of traffic impact will be imperceptible (as defined under the EPA *Guidelines for Information to be Contained in Environmental Impact Statements)*.

9 CONCLUSIONS

The following can be concluded from the Traffic Impact Assessment:

- Nevitt Road will be closed to traffic with the opening of Fingal Landfill in 2009. The provision of the new "County" Road" between Rowan's Road and Nevitt Road will afford a suitable alternative. It will also afford a high degree of accessibility to Fingal Landfill. The new Road has been designed to include footpaths on either side. . These non-vehicular facilities will integrate well with the proposed M1 Business Park proposals. In addition, the provision of such facilities complement the objectives of Fingal County Council's current Development Plan;

- Fingal Landfill will not result in traffic congestion or operational problems on the road network. All junctions have been proven to operate satisfactorily in the Opening Year 2009 and the Design Year 2024. The sensitivity testing has showed that even if the upgrade of the Courtlough Interchange does not take place, the road network has sufficient reserve capacity to accommodate Fingal Landfill satisfactorily;

- Fingal Landfill will result in a positive impact in the overall operational capacity of the road network in the vicinity of Hedgestown;

- Fingal Landfill traffic will be restricted to a specific haulage route where there is high quality road infrastructure, that is the M1 Motorway, Courtlough Interchange and the new "County" Road; and

- The overall impact of Fingal Landfill in terms of traffic impact will be imperceptible (as defined under the EPA *Guidelines for Information to be Contained in Environmental Impact Statements)*.

APPENDIX A

Figures

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FINGAL LANDFILL PROJECT

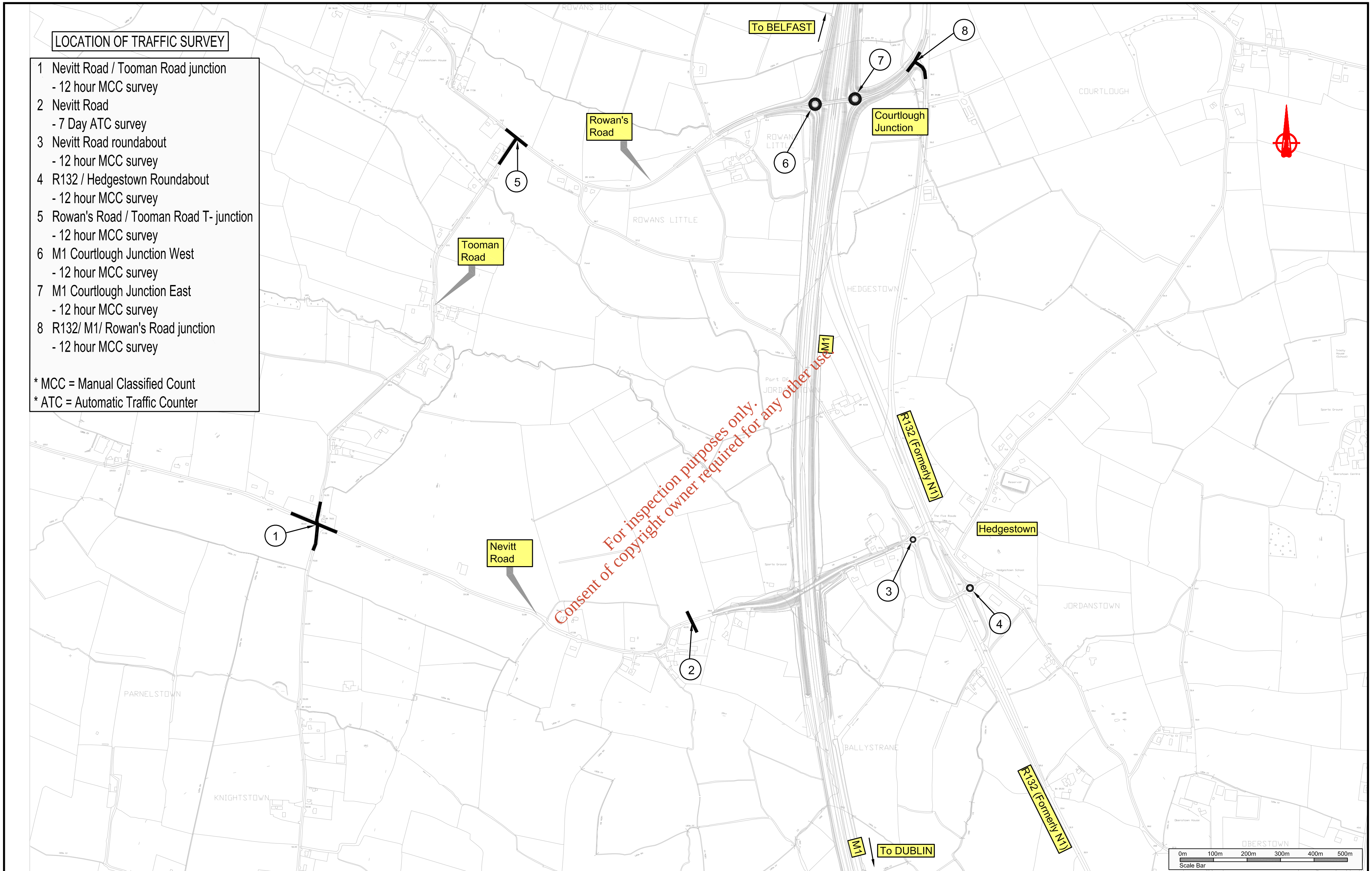
Title:

Site Location Plan

No.	Date	Drn. Chk.	Amendment / Issue	App.
F01	Apr.06	NL TD	Final	GK
A01	Apr.06	NL TD	Issue For Approval	GK

Issue Details
Drawn: NL
Checked: TD
Approved: GK
Scale: N.T.S
Date: Apr.'06

Office Use Only
Job No: MDR0303
File Ref: MDT0303TR0009F01
Fig No: Fig 1.1
Rev: F01



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No.	Date	Dr./Ck.	Amendment / Issue	App.
F01	Apr.'06	NL/TD	Final	GK
A01	Mar.'06	NL/TD	Issue For Approval	GK

Project: FINGAL LANDFILL PROJECT

Title: Location of Traffic Surveys

Drawn by:	NL	Job No: MDR0303	
Checked by:	TD	File No: MDR0303TR0006F01	
Approved by:	GK	Drg. No: Fig 2.1	Rev: F01
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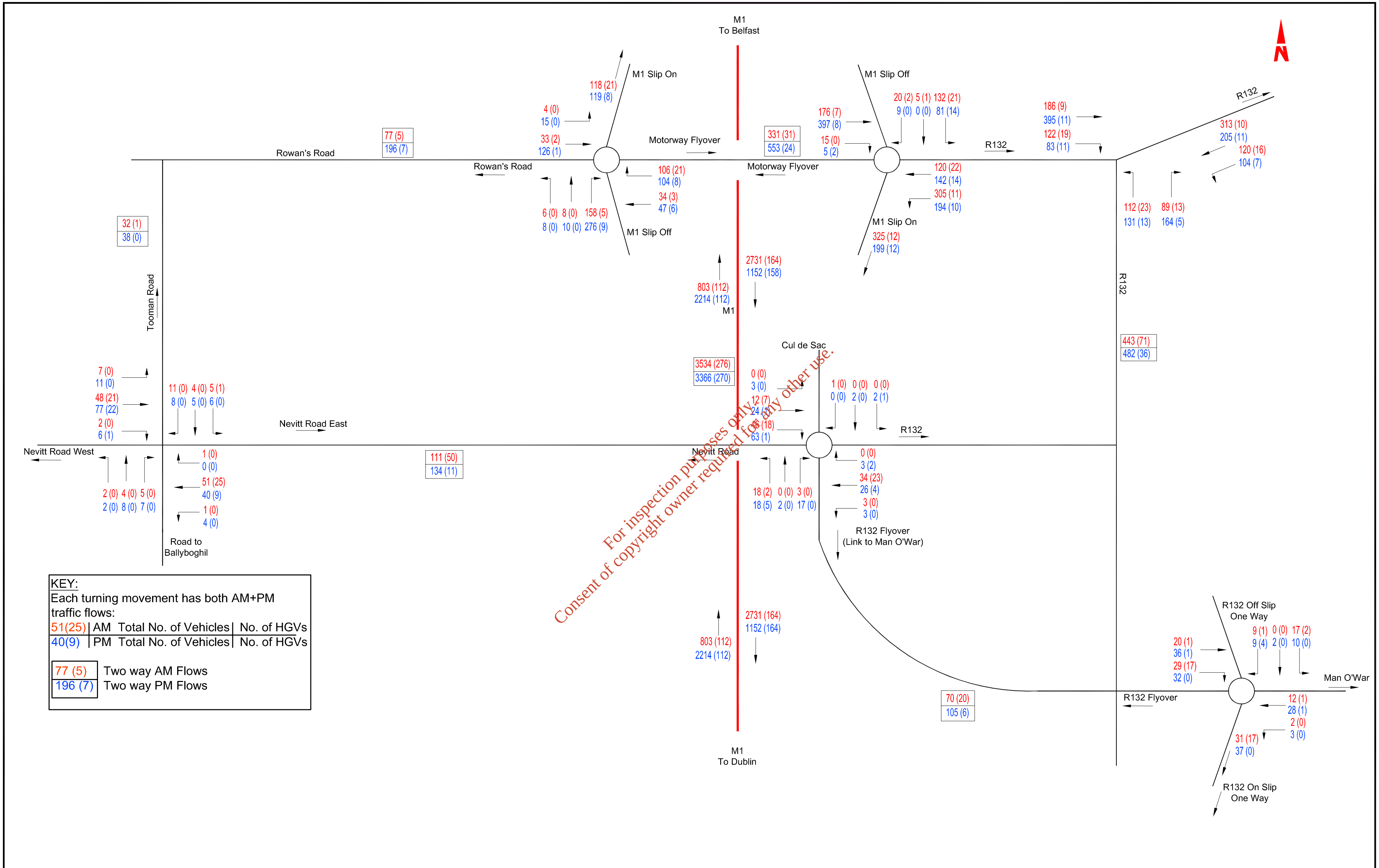
Date:	Oct.'05		



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No.	Date	Drn. / Chk.	Amendment / Issue	App.
F01	Apr.'06	NL / TD	Final	GK
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Project: FINGAL LANDFILL PROJECT

Title: Existing AM/PM Peak Traffic Flows 2005

Drawn by: NL	Job No: MDR0303		
Checked by: TD	File No: MDR0303TR1005F01		
Approved by: GK	Drg. No: Fig 3.1	Rev: F01	
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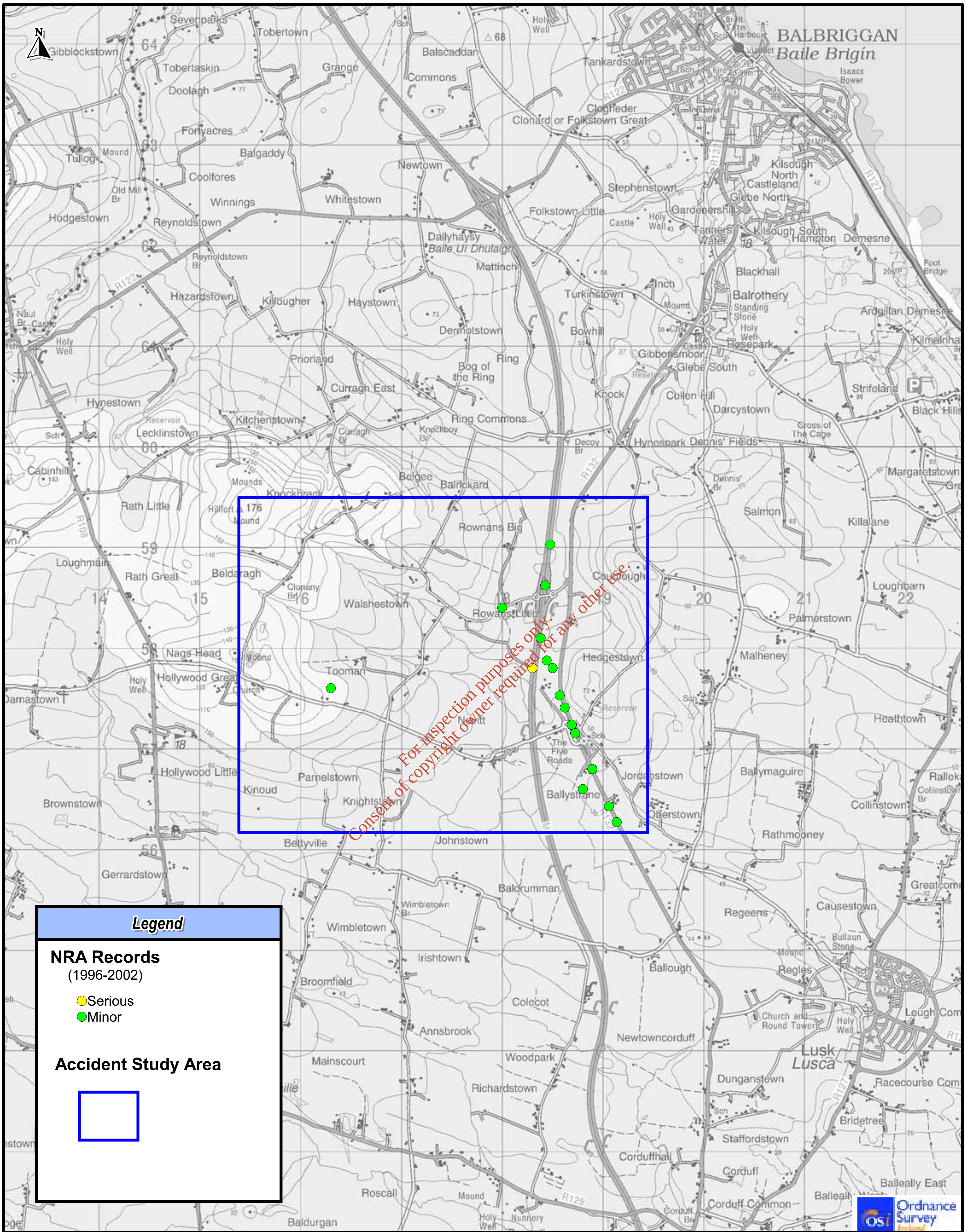
Date: Sept.'05			



Project	Fingal Landfill Project	Figure	3.2
Title	Accident Data		

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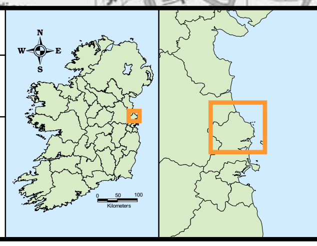

Issue Details

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Approved:	GK		MDR0303MI0001F01
Scale:	1:50,000 @ A4	Drawing No.	Rev.
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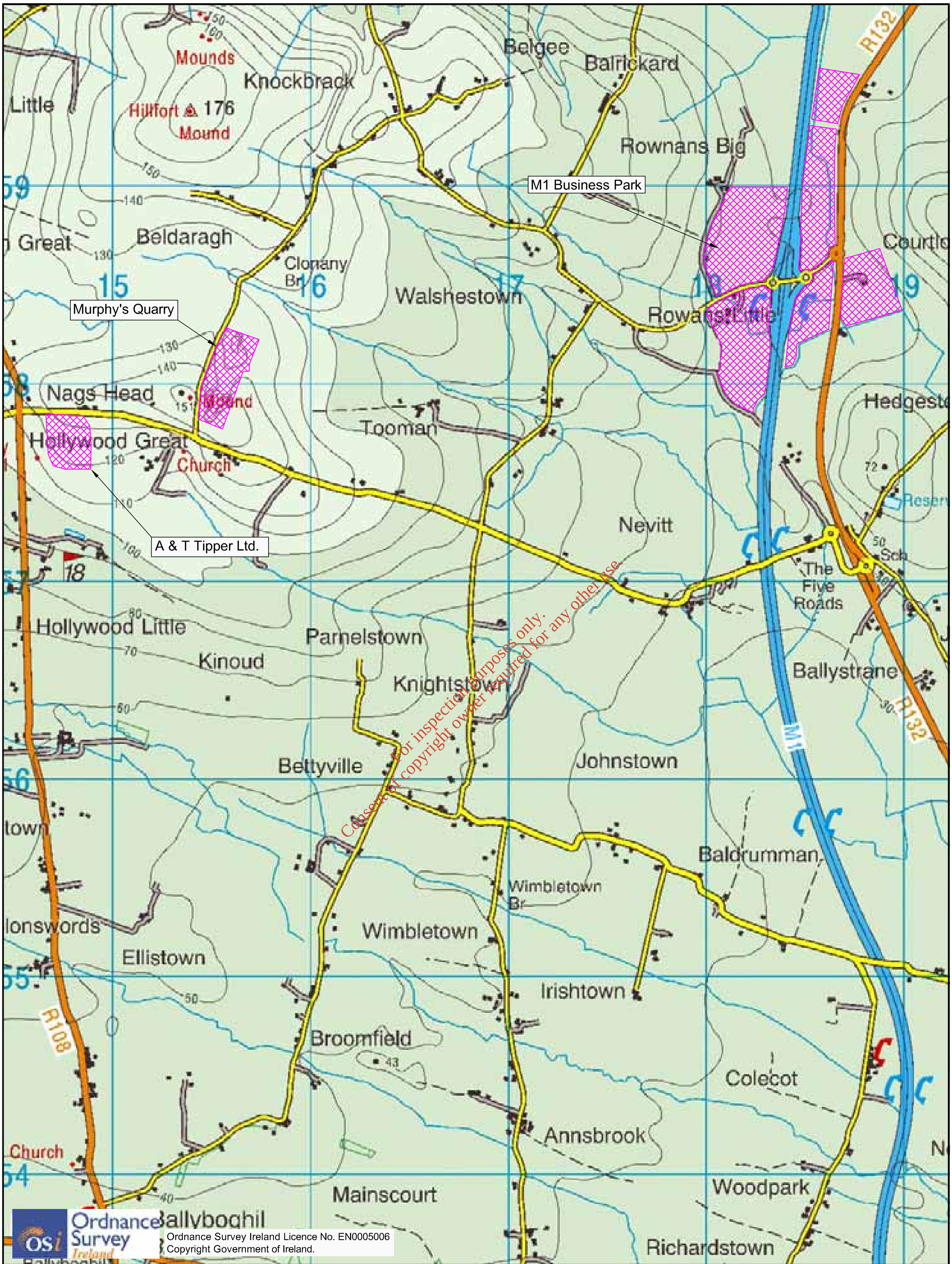

Client:		Project: FINGAL LANDFILL PROJECT	Issue Details		Office Use Only	
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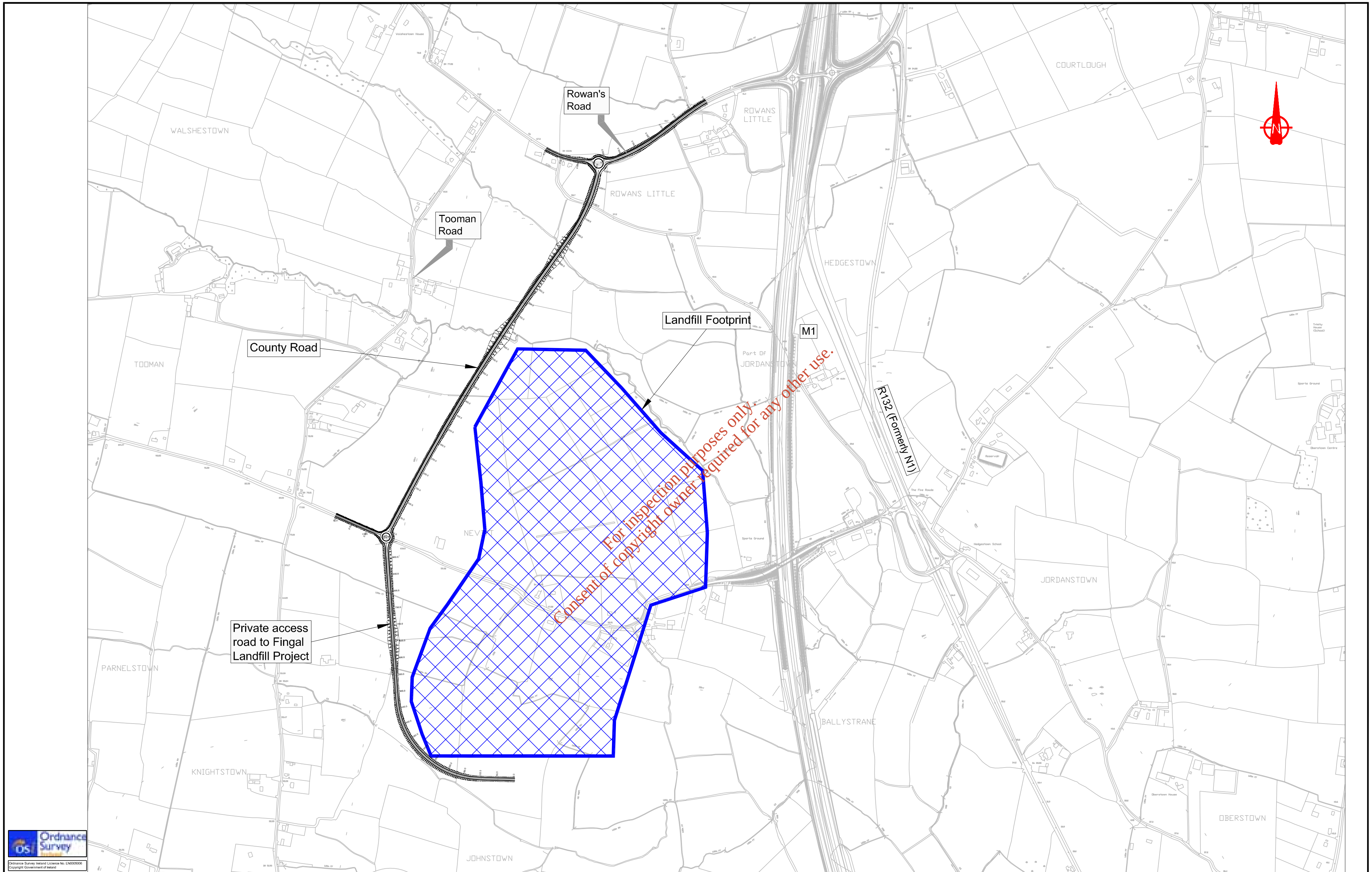
			Checked:	TH	File Ref.	MDR0303TR0004F01
		Title: INDICATIVE LOCATIONS OF COMMITTED DEVELOPMENT	Approved:	GK	Fig No.	Rev.
			Scale:	N.T.S	Fig 3.3	F01
			Date:	Jul'05		



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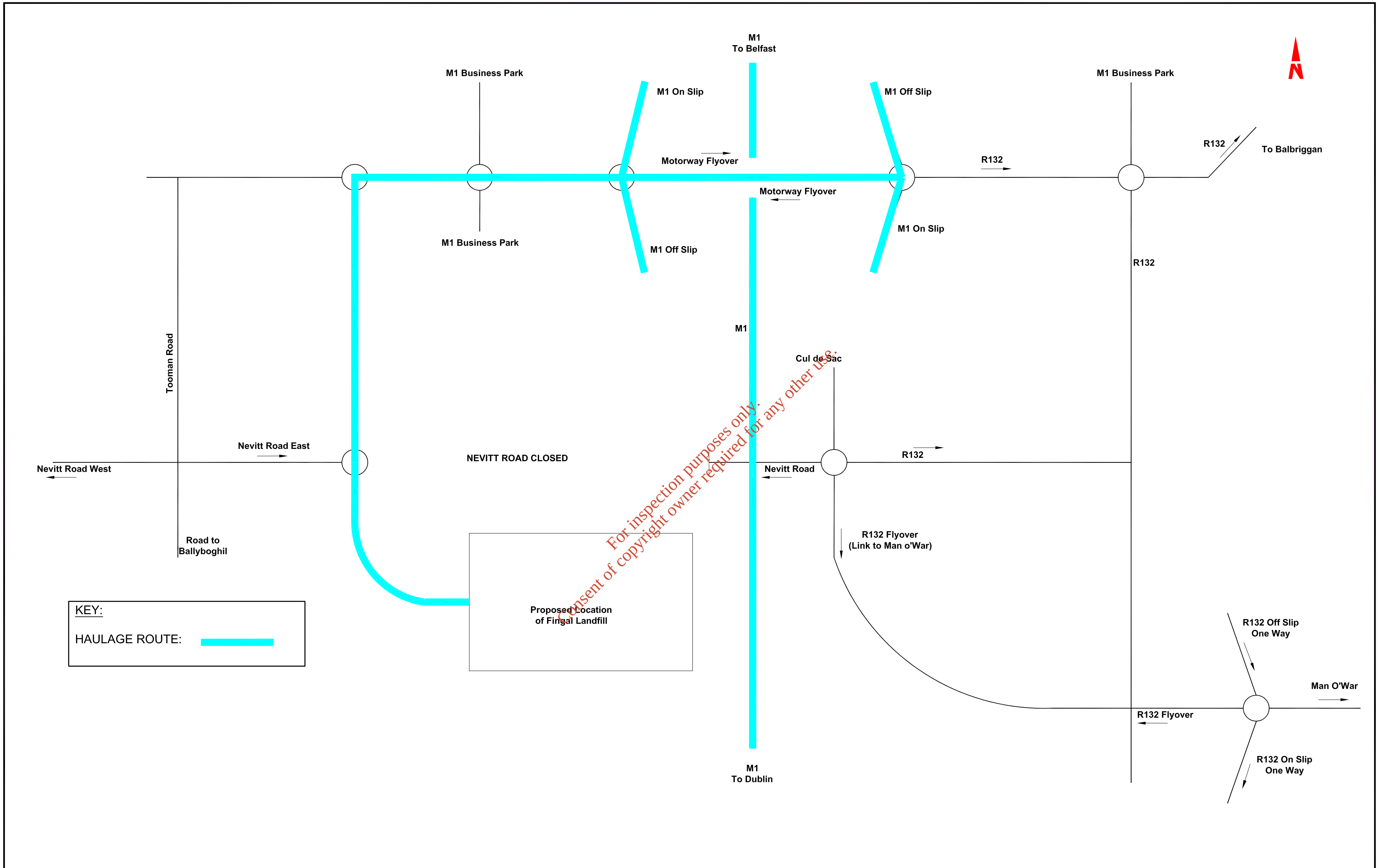
F01	Apr'06	NL TD	Final	GK
A01	Apr'06	NL TD	Issue For Approval	GK

Project: FINGAL LANDFILL PROJECT

Title: Proposed County Road Alignment

Drawn by:	NL	Job No: MDR0303	
Checked by:	TD	File No: MDR0303TR0010F01	
Approved by:	GK	Drg. No:	Rev:
Scale:	1/5000 @ A1	Fig 4.1	F01
Date:	Apr. '06		



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No.	Date	Drn. / App.	Amendment / Issue	App.
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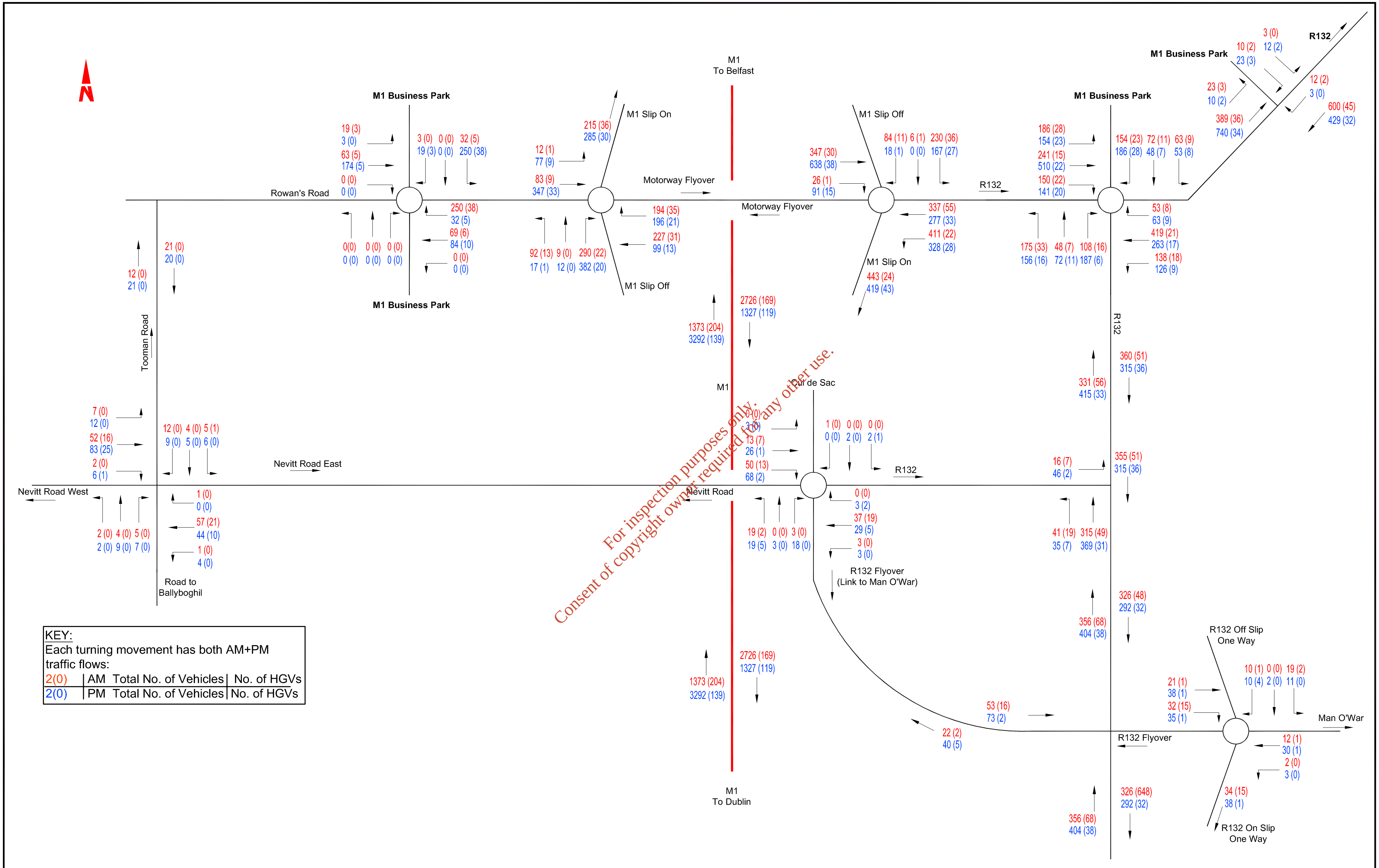
A01	Mar.06	NL / TH	Issue For Approval	GK

Project: FINGAL LANDFILL PROJECT

Title: HAULAGE ROUTE

Drawn by:	NL	Job No: MDR0303	
Checked by:	TH	File No: MDR0303TR0008F01	
Approved by:	GK	Drg. No: Fig 4.2	Rev: F01
Scale: N.T.S			
Date: Feb.06			



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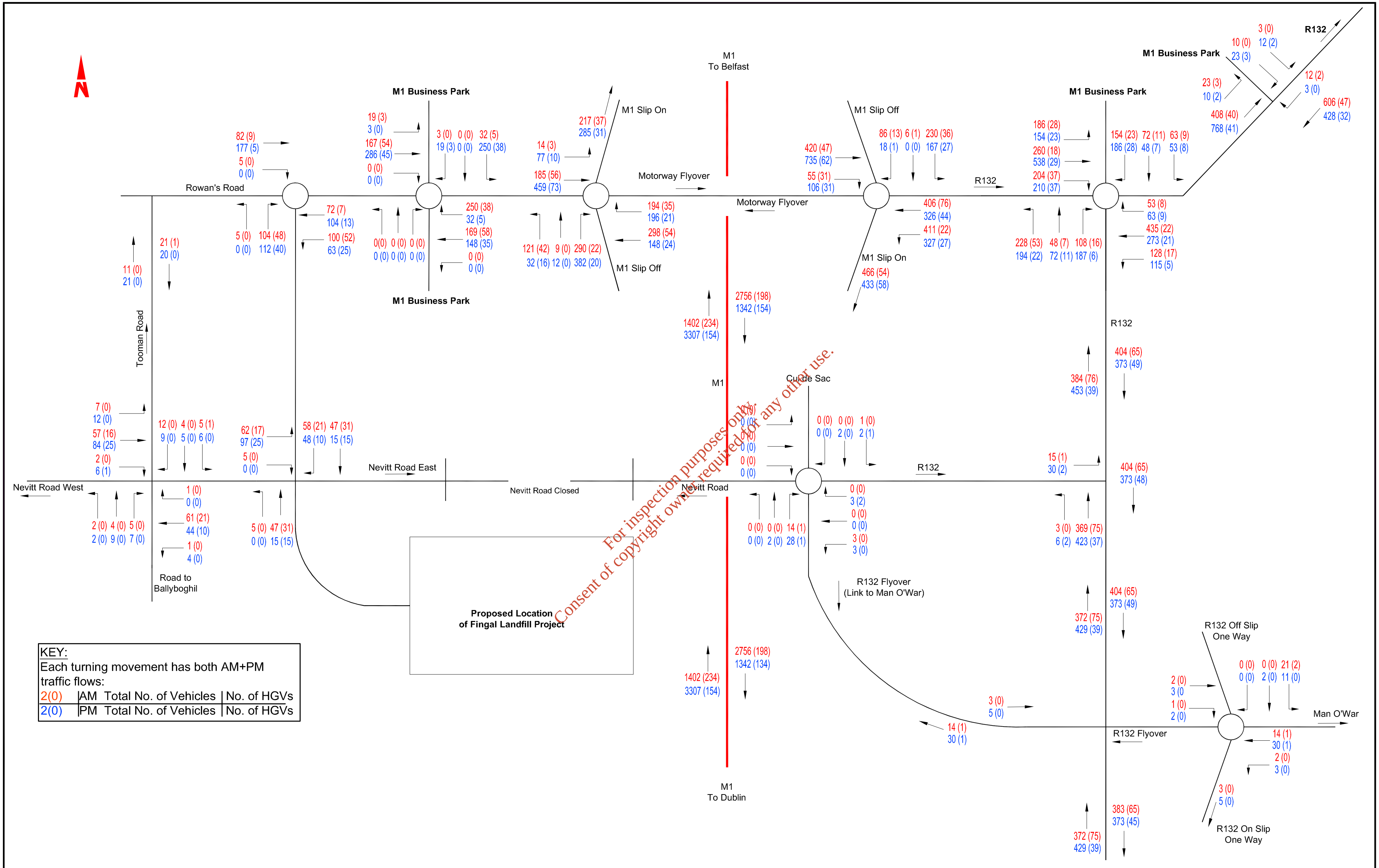
No.	Date	Drn. / App.	Amendment / Issue	App.
F01	Apr.'06	NL / TD	Final	GK
A01	Mar.'06	NL / TD	Issue For Approval	GK

Project: FINGAL LANDFILL PROJECT

Title: Do Nothing Scenario AM & PM Peak Traffic Flows 2009

Drawn by: NL	Job No: MDR0303		
Checked by: TD	File No: MDR0303TR1005F01		
Approved by: GK	Drg. No: Fig 5.1	Rev: F01	
Scale: N.T.S			
Date: Sept.'05			



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F01	Apr.'06	NL	TD	Final	GK
A01	Mar.06	NL	TD	Issue For Approval	GK

Project:

FINGAL LANDFILL PROJECT

Title:

Do Something Scenario
AM & PM Peak
Traffic Flows 2009

Drawn by: NL	Job No: MDR0303		
Checked by: TD	File No: MDR0303TR1005F01		
Approved by: GK	Drg. No:	Rev:	
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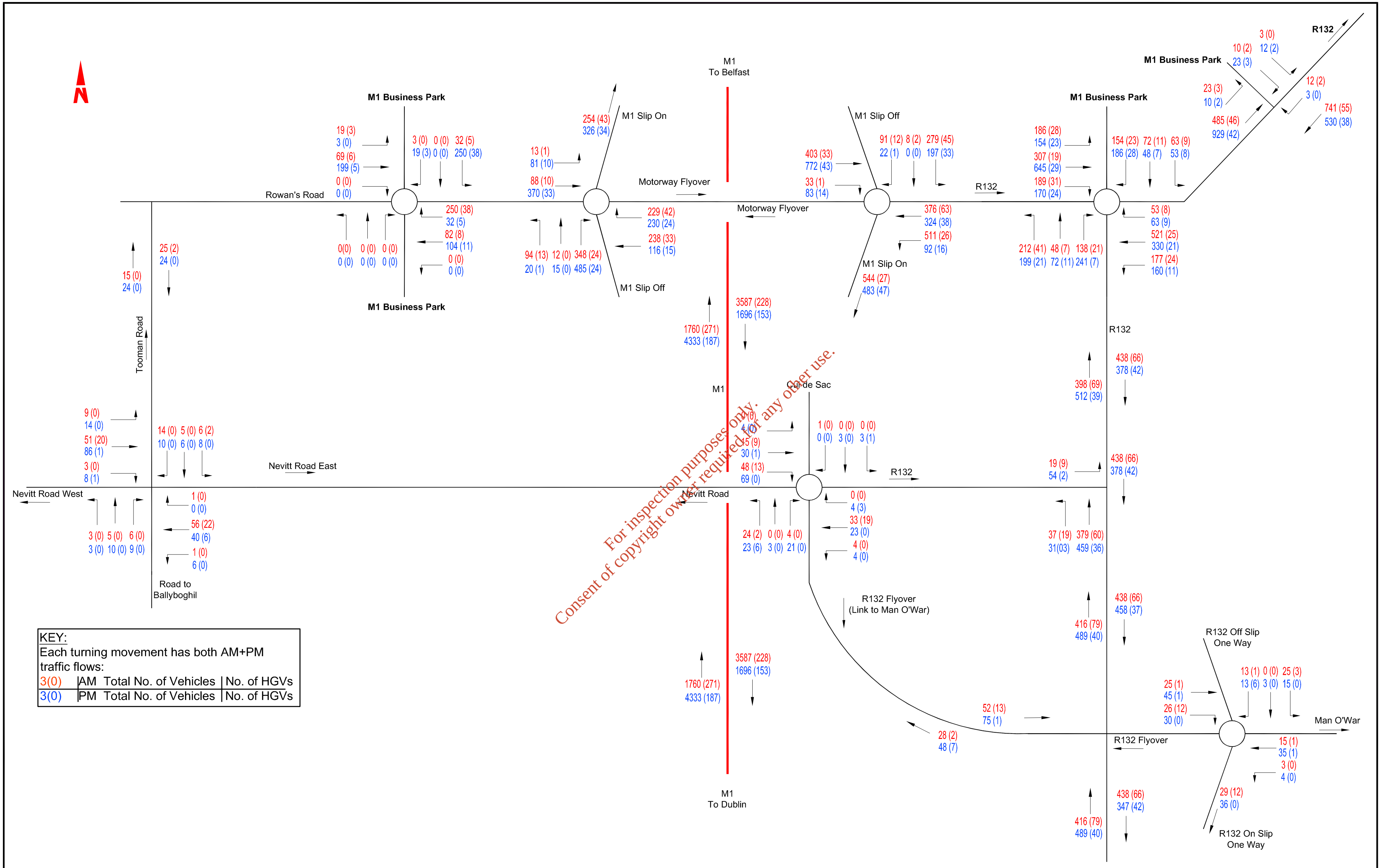

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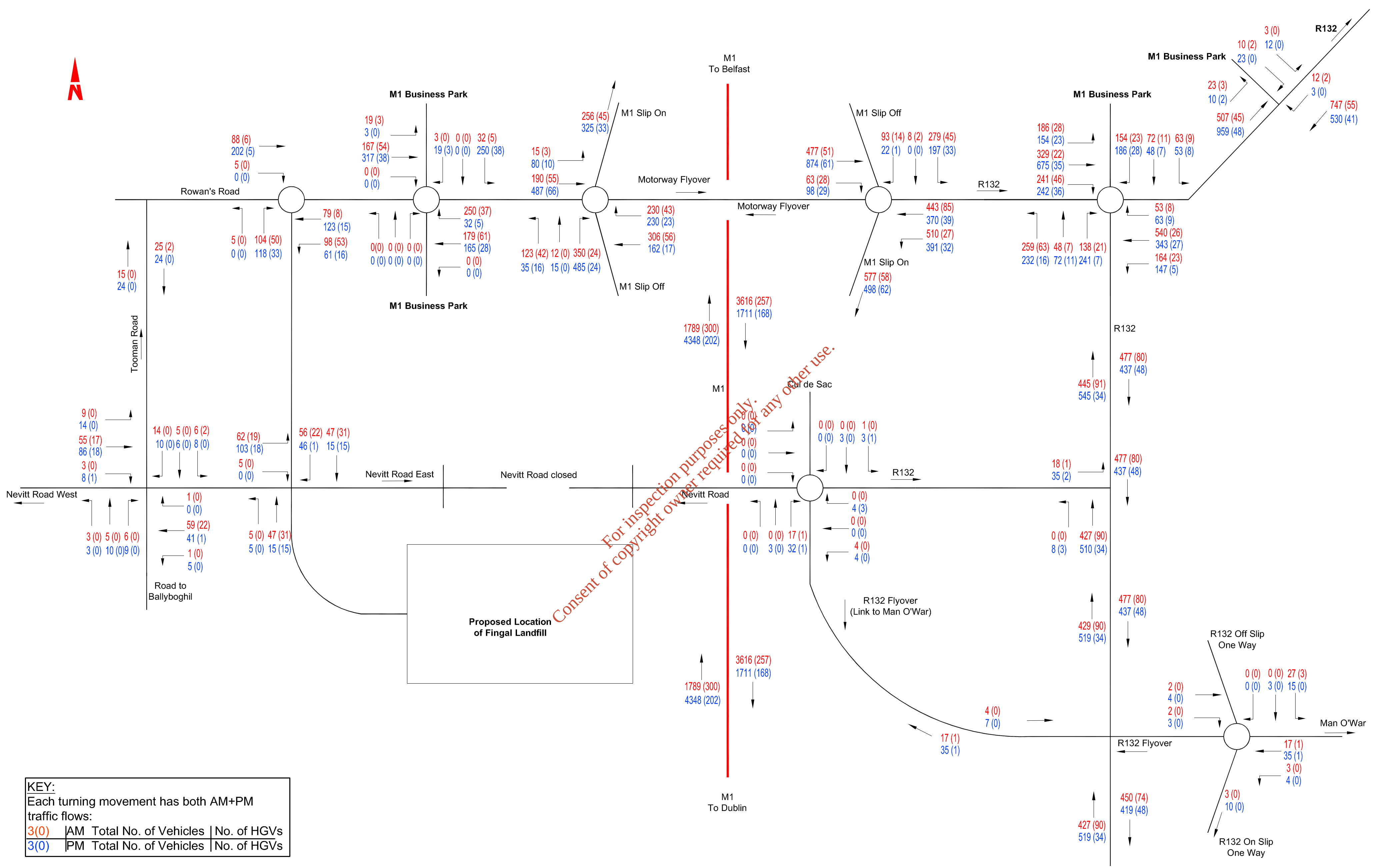
3. DO NOT SCALE, use figured dimensions only, if in doubt ask.

No.	Date	Drn.	Amendment / Issue	App.
F01	Apr.'06	NL TD	Final	GK
A01	Mar.06	NL TD	Issue For Approval	GK

Project: FINGAL LANDFILL PROJECT

Title: Do Nothing Scenario AM & PM Peak Traffic Flows 2024 (No Courtlough Interchange upgrade)

Drawn by: NL	Job No: MDR0303		
Checked by: TD	File No: MDR0303TR1005F01		
Approved by: GK	Drg. No: Fig 5.3	Rev: F01	
Scale: N.T.S			
Date: Sept.'05			



KEY:
Each turning movement has both AM+PM traffic flows:

3(0)	AM Total No. of Vehicles	No. of HGVs
3(0)	PM Total No. of Vehicles	No. of HGVs

Client: Fingal County Council
Comhairle Contae Fhine Gall

RPS Consulting Engineers

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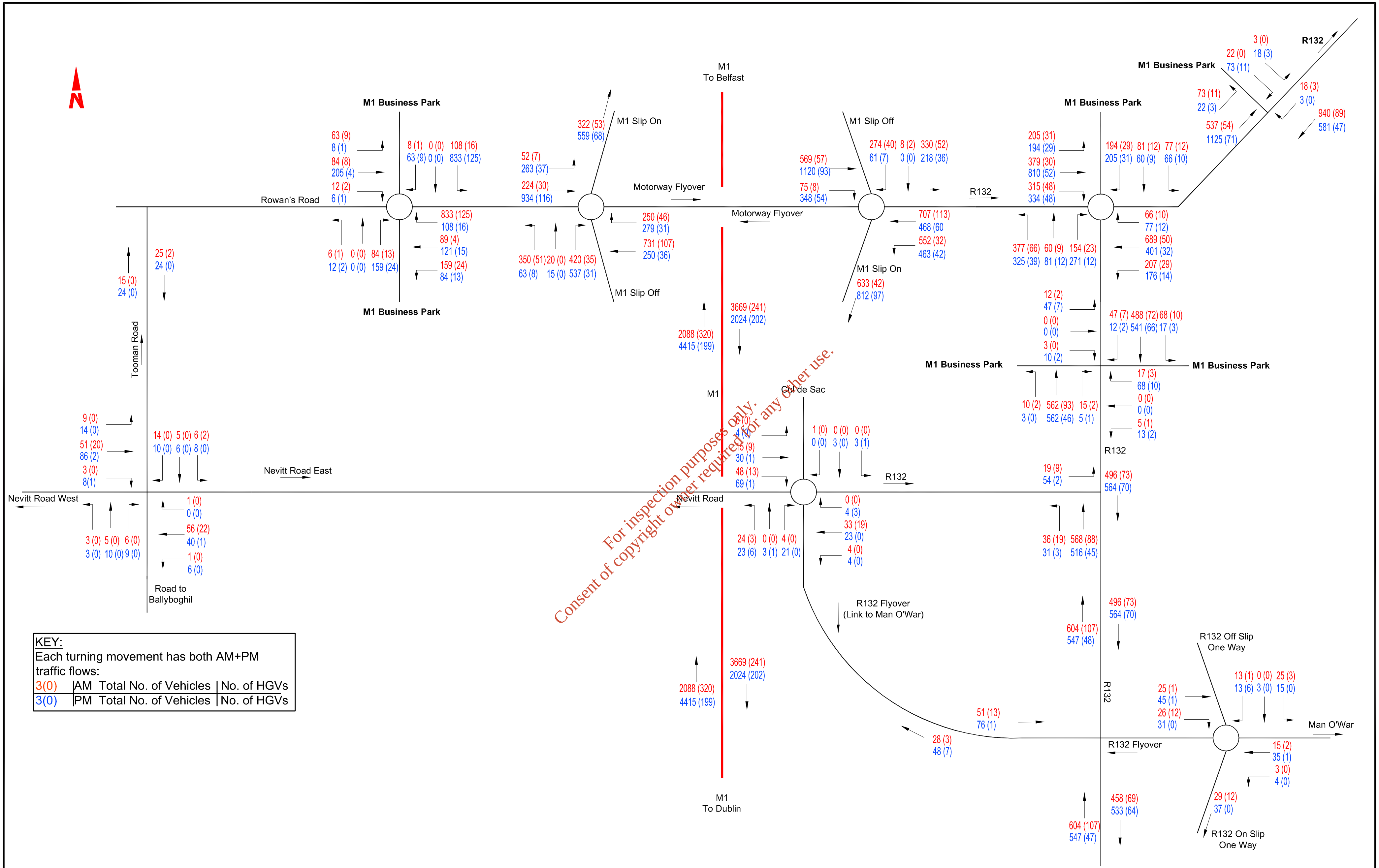
No.	Date	Drn/Chk	Amendment / Issue	App.
F01	Apr.'06	NL/TD	Final	GK
A01	Mar.'06	NL/TH	Issue For Approval	GK

Project: FINGAL LANDFILL PROJECT

Title: Do Something Scenario
AM & PM Peak Traffic Flows
2024
(No Courtlough
Interchange upgrade)

Drawn by:	NL	Job No:	MDR0303
Checked by:	TH	File No:	MDR0303TR0005F01
Approved by:	GK	Drg. No: Fig 5.4	Rev: F01
Scale:	N.T.S		
Date:	Sept.'05		



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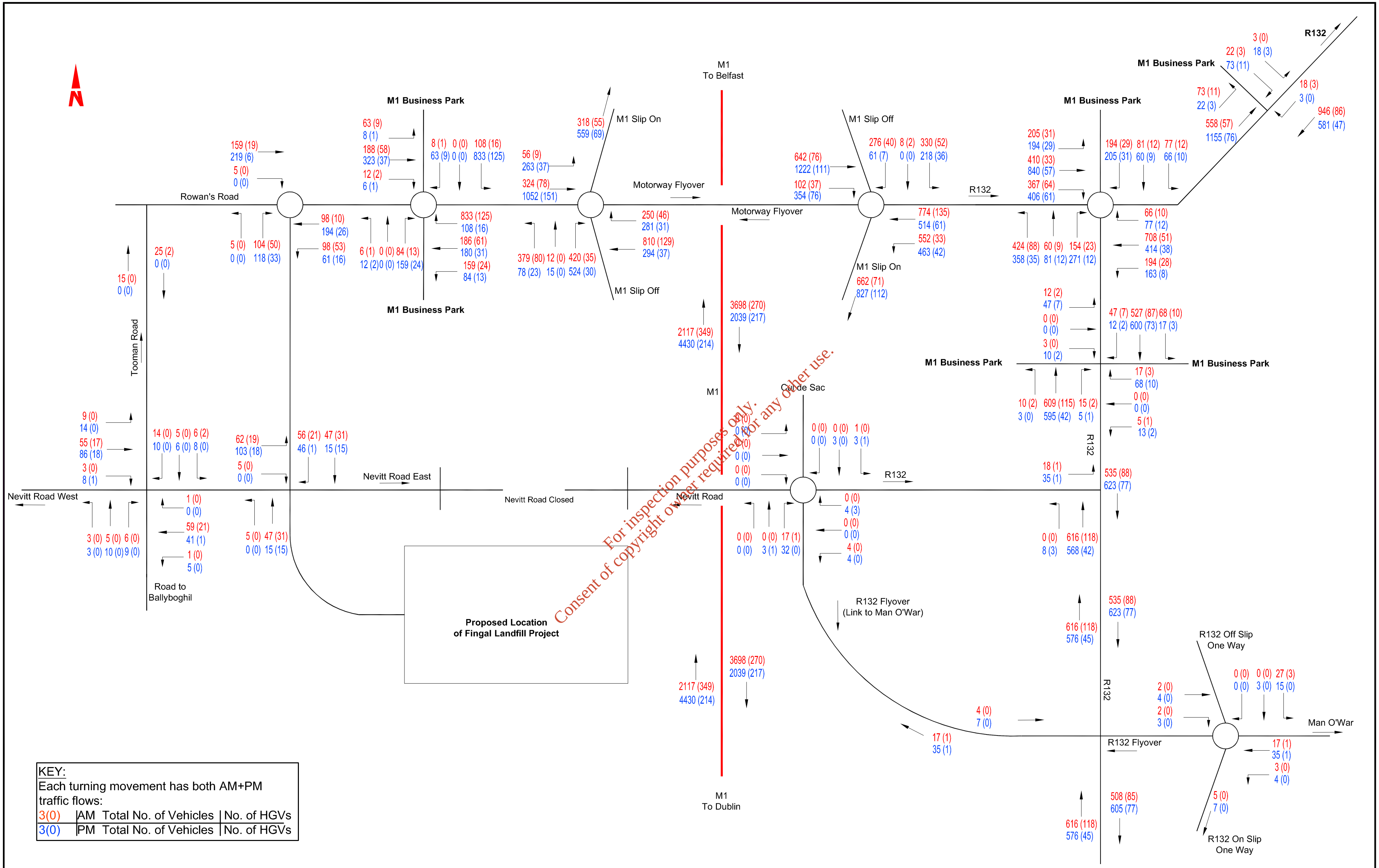
No.	Date	Drn / App	Amendment / Issue	App.
F01	Apr.'06	NL / TD	Final	GK
A01	Mar.06	NL / TH	Issue For Approval	GK

Project:
FINGAL LANDFILL PROJECT

Title:
Do Nothing Scenario
AM & PM Peak Traffic Flows
2024
(With Courtlough Interchange upgrades)

Drawn by:	NL	Job No: MDR0303	
Checked by:	TD	File No: MDR0303TR0005F01	
Approved by:	GK	Drg. No:	Rev:
Scale:	N.T.S	Fig 5.5	F01
Date:	Sept.'05		



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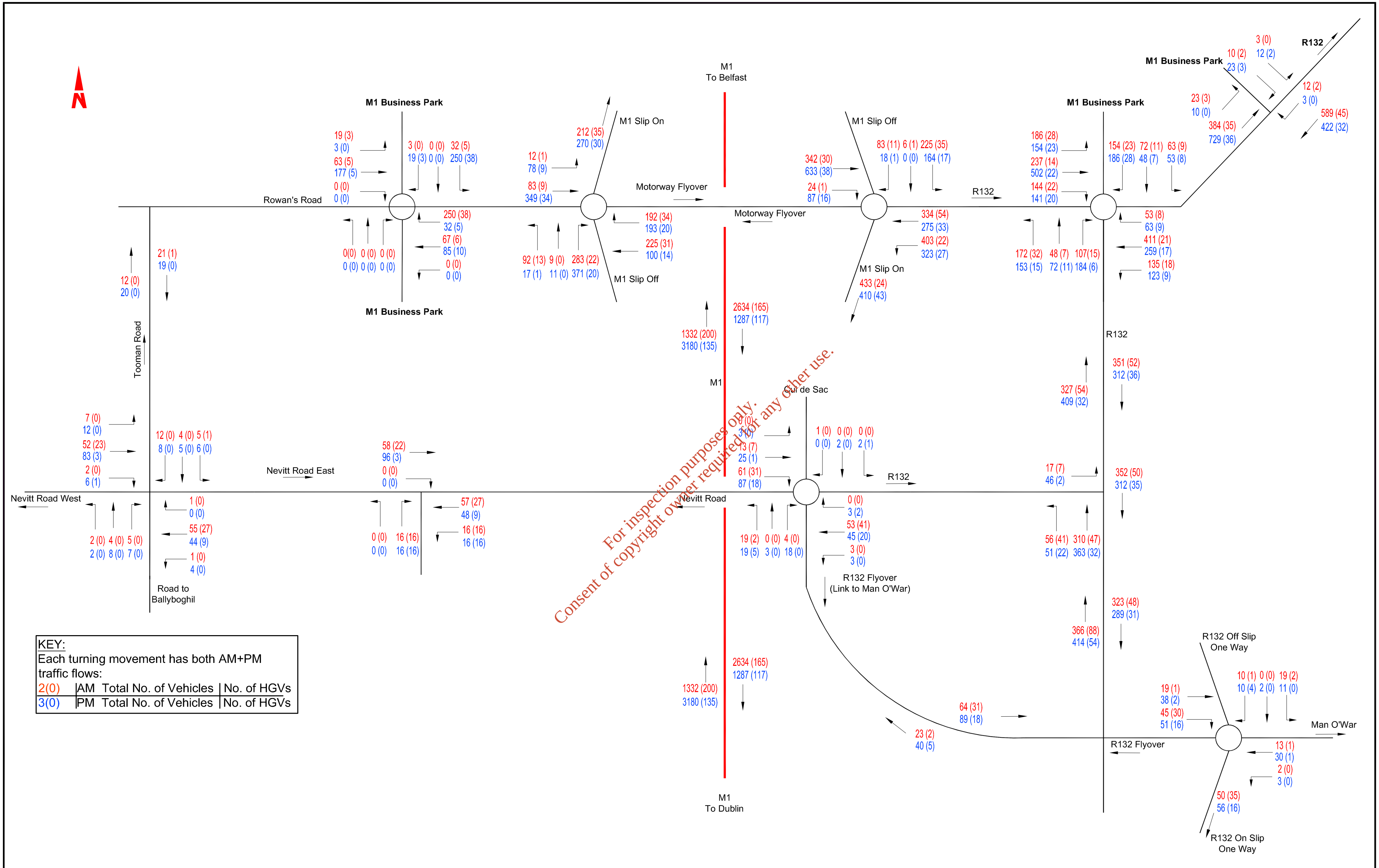
No.	Date	Drn./App.	Amendment / Issue	App.
F01	Apr.'06	NL/TD	Final	GK
A01	Mar.06	NL/TH	Issue For Approval	GK

Project: FINGAL LANDFILL PROJECT

Title: Do Something Scenario
AM & PM Peak Traffic Flows
2024
(with Courtlough
Interchange upgrades)

Drawn by:	NL	Job No:	MDR0303
Checked by:	TH	File No:	MDR0303TR1005F01
Approved by:	GK	Drg. No: Fig 5.6	Rev: F01
Scale:	N.T.S		
Date:	Sept.'05		



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No.	Date	Drn./App.	Amendment / Issue	App.
F01	Apr.'06	NL / TD	Final	GK
A01	Mar.06	NL / TD	Issue For Approval	GK

Project: FINGAL LANDFILL PROJECT

Title: Do Something Scenario AM & PM Peak Traffic Flows 2008

Drawn by:	NL	Job No:	MDR0303
Checked by:	TD	File No:	MDR0303TR1005F01
Approved by:	GK	Drg. No: Fig 5.7	Rev: F01
Scale:	N.T.S		
Date:	Sept.'05		

APPENDIX B

Public Transport Information

Dublin Bus Service ***Route No 33 Dublin City Centre to Balbriggan***

Operative Date: 30th January 2006

33 From LOWER ABBEY STREET

An Lár (Sr. na Mainistreach Íoch), Sord, Lusca, Ros, Sceirí, Baile Brigín.

Journey Time - 110 mins approx

- ◆LOWER ABBEY STREET
- ↓3 mins.
- ◆Upper Gardiner Street
- ↓12 mins.
- ◆Drumcondra Station
- ↓15 mins.
- ◆Omni Shopping Centre
- ↓10 mins.
- ◆Airport Roundabout
- ↓10 mins.
- ◆Swords Village
- ↓20 mins.
- ◆Lusk
- ↓10 mins.
- ◆Rush
- ↓15 mins.
- ◆Skerries
- ↓15 mins.
- ◆BALBRIGGAN

MONDAY TO FRIDAY			SATURDAY			SUNDAY		
0620	1130	1740	0620S	1340	1850	0930	1615	2030
0658MS	1230S	1800	0815	1435	1950	1130S	1715	2200
0720S	1330	1830	0915	1520	2100	1315	1745	2320S
0730	1430	1930	1010	1615	2210	1415	1845	
0805	1530	2030	1105	1635S	2320S	1515	1945	
0845	1600S	2130	1150	1710				
0930	1630	2230	1235S	1740				
0945S	1700S	2320S	1255	1805				
1040	1720S							

33 From BALBRIGGAN

Baile Brigín. , Sceirí, Ros, Lusca, Sord, An Lár (Sr. na Mainistreach Íoch),

Journey Time - 110 mins approx

- ◆BALBRIGGAN
- ↓10 mins.
- ◆Skerries
- ↓15 mins.
- ◆Rush
- ↓10 mins.
- ◆Lusk
- ↓20 mins.
- ◆Swords Village
- ↓20 mins.
- ◆Airport Roundabout
- ↓13 mins.
- ◆Omni Shopping Centre
- ↓11 mins.
- ◆Drumcondra Station
- ↓11 mins.
- ◆Parnell Square East
- ↓4 mins.
- ◆LOWER ABBEY STREET

MONDAY TO FRIDAY			SATURDAY			SUNDAY		
0450D	1030	1730	0450D	1155	1800	0800	1300S	1800
0605S	1130	1830	0615S	1250	1800S	1000	1400	1900
0635	1230	1930	0705	1335	1930	1145S	1500	2030
0705S	1300S	2015	0750S	1430	2030	1200	1600	2200
0720S	1330	2115	0800	1430S	2140	1300	1700	
0735S	1400S	2315	0900	1525	2300			
0745	1430	2345B	1000	1620				
0825S	1445S		1055	1705				
0900S	1530							
0930	1630							

M - From Mountjoy Square
S - To/from Skerries only
D - via Donabate
B - to Binns Bridge only

		STAGE			STAGE
75	25	Lower Abbey Street	88	12	Corner Collinstown Rd.
76	24	Mountjoy Square / Dorset St. (Nth Fredrick St.)	89	11	Dublin Airport
77	23	Dorset St. (North Circular Rd.)	90	10	Jnct. North Rd. To Airport
78	22	Drumcondra Station	91	9	Swords Rd. (Coachman's Inn)
79	21	Drumcondra Rd. Upr. (Richmond Rd.)	92	8	Swords Rd. (Kettles Lane)
80	20	Drumcondra Rd. Upr. (Griffith Ave.)	93	7	Swords Road (Pinnock Hill Hse.)
81	19	Swords Rd. (Collins Ave.)	94	6	Swords Main St. (Arro)
82	18	Swords Rd. (Shanowen Rd.)	95	5	Swords (Taylor's)
83	17	Swords Rd. (Lorcan Rd.)	96	4	Swords (Big Tree)
84	16	Swords Rd. (Santry Ave.)	97	3	Seatown Lane

Table No.

DROGHEDA – BALBRIGGAN – DUBLIN 101

MONDAY TO SATURDAY

SERVICE NUMBER		101	101	101	101	100	101	101	101	100	101	101
Drogheda (Bus Station)	dep.	0615	0630	0645	0700	0715	0730	0745	0800	0815	0830	0900
Julianstown		0630	0645	0700	0715	0730	0745	0800	0815	0825	0845	0915
Balbriggan (Bath Road)		0638	0653	0708	0723	0738	0753	0808	0823	0838	0853	0923
Balbriggan (Bank of Ireland)		0640	0655	0710	0725	0740	0755	0810	0825	0840	0855	0925
Balrothery (Dublin Road)		0643	0658	0713	0728	0743	0758	0813	0828	0843	0858	0928
Swords (By–pass)	↓	0700	0715	0730	0745	0800	0815	0830	0845	0900	0915	0945
Dublin (Busáras)	arr.	0730	0745	0800	0815	0830	0845	0900	0915	0945	0945	1015

MONDAY TO SATURDAY

SERVICE NUMBER		100	100	100	101	100	101	100	101	100	101	100
										SX		
Drogheda (Bus Station)	dep.	0915	0945	1015	1045	1115	1145	1215	1245	1315	1345	1415
Julianstown		0930	1000	1030	1100	1130	1200	1230	1300	1330	1400	1430
Balbriggan (Bath Road)		0938	1008	1038	1108	1138	1208	1238	1308	1338	1408	1438
Balbriggan (Bank of Ireland)		0940	1010	1040	1110	1140	1210	1240	1310	1340	1410	1440
Balrothery (Dublin Road)		0943	1013	1043	1113	1143	1213	1243	1313	1343	1413	1443
Swords (By–pass)	↓	1000	1030	1100	1130	1200	1230	1300	1330	1400	1430	1500
Dublin (Busáras)	arr.	1030	1100	1130	1200	1230	1300	1330	1400	1430	1500	1530

MONDAY TO SATURDAY

SERVICE NUMBER		101	100	101	101	100	100	100	101	100	100	101
Drogheda (Bus Station)	dep.	1445	1515	1530	1545	1615	1715	1745	1800	1815	1915	1945
Julianstown		1500	1530	1545	1600	1630	1730	1800	1815	1830	1930	2000
Balbriggan (Bath Road)		1508	1538	1553	1608	1638	1738	1808	1823	1838	1938	2008
Balbriggan (Bank of Ireland)		1510	1540	1555	1610	1640	1740	1810	1825	1840	1940	2010
Balrothery (Dublin Road)		1513	1543	1558	1613	1643	1743	1813	1828	1843	1943	2013
Swords (By–pass)	↓	1530	1600	1615	1630	1700	1800	1830	1845	1900	2000	2030
Dublin (Busáras)	arr.	1600	1630	1645	1700	1730	1830	1900	1915	1930	2030	2100

MONDAY TO SATURDAY

SERVICE NUMBER		100	101									
Drogheda (Bus Station)	dep.	2115	2145	....	....	....	....	....	....	....	....	....
Julianstown		2130	2200	....	....	....	....	....	....	....	....	....
Balbriggan (Bath Road)		2138	2208	....	....	....	....	....	....	....	....	....
Balbriggan (Bank of Ireland)		2140	2210	....	....	....	....	....	....	....	....	....
Balrothery (Dublin Road)		2143	2213	....	....	....	....	....	....	....	....	....
Swords (By–pass)	↓	2200	2230	....	....	....	....	....	....	....	....	....
Dublin (Busáras)	arr.	2230	2300	....	....	....	....	....	....	....	....	....

No services on Christmas Day or St. Stephen's Day.

SX = Saturday excepted.

ALL SERVICES TO/FROM DUBLIN OPERATE VIA INDEPENDENT BRIDGE AND SANTRY.

Table No.

DUBLIN – BALBRIGGAN – DROGHEDA 101

MONDAY TO SATURDAY

SERVICE NUMBER		***100***	***100***	***100***	***101***	***101***	***100***	***101***	***100***	***101***	***101***	***100***
		SX							**SX**			
		S										
Dublin (Busáras)	dep.	....	0715	0730	0800	0815	0830	0900	0930	0945	1000	1030
Swords (By–pass)		....	0735	0800	0830	0845	0900	0930	1000	1015	1030	1100
Balrothery (Dublin Road)		....		0817	0847	0902	0917	0947	1017	1032	1047	1117
Balbriggan (Bank of Ireland)		0730		0820	0850	0905	0920	0950	1020	1035	1050	1120
Balbriggan (Bath Road)		0732		0822	0852	0907	0922	0952	1022	1037	1052	1122
Julianstown		0740		0830	0900	0915	0930	1000	1030	1045	1100	1130
Drogheda (Bus Station)	arr.	0755	0820	0845	0915	0930	0945	1015	1045	1100	1115	1145

MONDAY TO SATURDAY

SERVICE NUMBER		***101***	***100***	***100***	***100***	***100***	***101***	***100***	***101***	***100***	***101***	***101***
Dublin (Busáras)	dep.	1100	1130	1230	1300	1330	1400	1430	1500	1530	1600	1615
Swords (By–pass)		1130	1200	1300	1330	1400	1430	1500	1530	1600	1630	1645
Balrothery (Dublin Road)		1147	1217	1317	1347	1417	1447	1517	1547	1617	1647	1702
Balbriggan (Bank of Ireland)		1150	1220	1320	1350	1420	1450	1520	1550	1620	1650	1705
Balbriggan (Bath Road)		1152	1222	1322	1352	1422	1452	1522	1552	1622	1652	1707
Julianstown		1200	1230	1330	1400	1430	1500	1530	1600	1630	1700	1715
Drogheda (Bus Station)	arr.	1215	1245	1345	1415	1445	1515	1545	1615	1645	1715	1730

MONDAY TO SATURDAY

SERVICE NUMBER		***100***	***101***	***101***	***100***	***101***	***100***	***101***	***100***	***101***	***101***	***100***
								SO				
Dublin (Busáras)	dep.	1630	1700	1715	1730	1745	1800	1815	1830	1845	1900	1930
Swords (By–pass)		1700	1730	1745	1800	1815	1830	1845	1900	1915	1930	2000
Balrothery (Dublin Road)		1717	1747	1802	1817	1832	1847	1902	1917	1932	1947	2017
Balbriggan (Bank of Ireland)		1720	1750	1805	1820	1835	1850	1905	1920	1935	1950	2020
Balbriggan (Bath Road)		1722	1752	1807	1822	1837	1852	1907	1922	1937	1952	2022
Julianstown		1730	1800	1815	1830	1845	1900	1915	1930	1945	2000	2030
Drogheda (Bus Station)	arr.	1745	1815	1830	1845	1900	1915	1930	1945	2000	2015	2045

MONDAY TO SATURDAY

SERVICE NUMBER		***101***	***101***	***100***	***100***	***101***						
Dublin (Busáras)	dep.	2000	2100	2130	2230	2300	....	....	....	....	....	....
Swords (By–pass)		2030	2130	2200	2300	2330	....	....	....	....	....	....
Balrothery (Dublin Road)		2047	2147	2217	2317	2347	....	....	....	....	....	....
Balbriggan (Bank of Ireland)		2050	2150	2220	2320	2350	....	....	....	....	....	....
Balbriggan (Bath Road)		2052	2152	2222	2322	2352	....	....	....	....	....	....
Julianstown		2100	2200	2230	2330	0000	....	....	....	....	....	....
Drogheda (Bus Station)	arr.	2115	2220	2245	2345	0015	....	....	....	....	....	....

No services on Christmas Day or St. Stephen's Day.

SX = Saturday excepted.
S = Departs Skerries 0715.
SO = Saturday only.

ALL SERVICES OPERATE VIA AMIENS ST, FIVE LAMPS, BELVEDERE ROAD, DORSET ST, INDEPENDENT BRIDGE, DRUMCONDRA ROAD, AND SANTRY.

Table No.

DUBLIN–DROGHEDA–DUBLIN 101

SUNDAY & BANK HOLIDAYS

SERVICE NUMBER		100	101	100	101	100	101	100	101	100
Dublin (Busáras)	dep.	1000	1100	1200	1300	1400	1500	1600	1700	1800
Swords (By–Pass)		1025	1125	1225	1325	1425	1525	1625	1725	1825
Balrothery (Dublin Road)		1047	1147	1247	1347	1447	1547	1647	1747	1847
Balbriggan (Bank of Ireland)		1050	1150	1250	1350	1450	1550	1650	1750	1850
Balbriggan (Bath Road)		1052	1152	1252	1352	1452	1552	1652	1752	1852
Julianstown		1110	1210	1310	1410	1510	1610	1710	1810	1910
Drogheda (Bus Station)	arr.	1115	1215	1315	1415	1515	1615	1715	1815	1915

SUNDAY & BANK HOLIDAYS

SERVICE NUMBER		101	100	100	100	100	101			
Dublin (Busáras)	dep.	1830	1900	2000	2100	2230	2300	....	....	....
Swords (By–Pass)		1855	1925	2025	2125	2255	2325	....	....	....
Balrothery (Dublin Road)		1917	1947	2047	2147	2317	2347	....	....	....
Balbriggan (Bank of Ireland)		1920	1950	2050	2150	2320	2350	....	....	....
Balbriggan (Bath Road)		1922	1952	2052	2152	2322	2352	....	....	....
Julianstown		1940	2010	2110	2210	2340	0010	....	....	....
Drogheda (Bus Station)	arr.	1945	2015	2115	2215	2345	0015	....	....	....

SUNDAY & BANK HOLIDAYS

SERVICE NUMBER		101	101	100	101	100	101	100	101	100
Drogheda (Bus Station)	dep.	0815	0915	1015	1115	1215	1315	1415	1515	1615
Julianstown		0820	0920	1020	1120	1220	1320	1420	1520	1620
Balbriggan (Bath Road)		0828	0928	1028	1128	1228	1328	1428	1528	1628
Balbriggan (Bank of Ireland)		0830	0930	1030	1130	1230	1330	1430	1530	1630
Balrothery (Dublin Road)		0833	0933	1033	1133	1233	1333	1433	1533	1633
Swords (By–Pass)		0905	1005	1105	1205	1305	1405	1505	1605	1705
Dublin (Busáras)	arr.	0930	1030	1130	1230	1330	1430	1530	1630	1730

No services on Christmas Day or St. Stephen's Day.

SUNDAY & BANK HOLIDAYS

SERVICE NUMBER		101	101	100	100	101	101	100		
Drogheda (Bus Station)	dep.	1645	1715	1815	1915	1945	2045	2115	....	....
Julianstown		1650	1720	1820	1920	1950	2050	2120	....	....
Balbriggan (Bath Road)		1658	1728	1828	1928	1958	2058	2128	....	....
Balbriggan (Bank of Ireland)		1700	1730	1830	1930	2000	2100	2130	....	....
Balrothery (Dublin Road)		1703	1733	1833	1933	2003	2103	2133	....	....
Swords (By–Pass)		1735	1805	1905	2005	2035	2135	2150	....	....
Dublin (Busáras)	arr.	1800	1830	1930	2030	2100	2200	2215	....	....

No services on Christmas Day or St. Stephen's Day.

APPENDIX C

TRICS

BALEALLY LANDFILL

Site Reference:	IR-12-C-01
Grid reference:	
Land Use Type:	12 - CIVIC AMENITY SITES/C - LANDFILL
Region/Area	REPUBLIC OF IRELANDREPUBLIC OF IRELAND
Description:	LANDFILL, NEAR DUBLIN
Street:	BALLEALLY LANE
District:	
Town:	NEAR DUBLIN
Post Code:	
Location:	Free Standing (PPS6 Out of Town)
Location Sub Category:	No Sub Category
Use Class:	Not Known
Population within 500m:	50
Population within 1 Mile:	1,000 or Less
Population within 5 Miles:	50,001 to 75,000
Car ownership within 5 Miles:	1.1 to 1.5
Buses/Trains per day (both directions):	0
Is site associated with a travel plan:	No
If not, are there any plans to implement a Travel Plan in the future?	
Is survey data available before the implementation of the Travel Plan?	
Is the location of the site hilly or flat:	
Site area	40.0 hect
No. of developments for this Site:	1
No. of survey Days for this Site:	1

Comments
This site is located next to the Balleally Civic Amenities Site (site reference IR 12 A 01) in county Dublin between the towns of Lusk (to the west) and Rush (to the east), around 15 kilometres north of the city centre. Local roads head to these small towns and also west to the N1/M1, heading south towards Dublin and north.
The site is in a rural location and is surrounded by open land.

Design features encouraging non-car modes

12. Pedestrians
Specific attention is paid to security at this site.

13. Pedal cycles
None

14. Public transport
None

Site reference:	IR-12-C-01
Trade name:	BALLEALLY LANDFILL
Site area (h/a):	40
Open since	1970
Total Employees	19
Full Time Employees	
Part Time Employees	
Name of nearest site	
Distance to nearest similar site	30 Km
Grid Reference of nearest site	

OPENING TIMES (24 Hour format)

Mon to Thurs	08:00	to	16:30
Friday	08:00	to	16:30
Saturday	08:00	to	13:00
Sunday	00:00	to	00:00

Comments

This landfill site has been open for over 30 years. It is one of two landfill sites in the Dublin area and handles waste from all the Dublin local authorities.
Following local concerns about seepage of waste into the surrounding environment, the council has commissioned consultants to retrofit appropriate containment structures around the landfill mound. There were 10 engineering consultants on site at the time of the survey (not included in the employees figure shown).
To cater for the growth and development of the Dublin area, an additional pit is being prepared adjacent to the existing mound.
Waste dispoed of at this site includes municipal waste, commercial waste, industrial waste, inert waste, sludges, waste from hospitals or healthcare facilities, disinfection, and untreated waste.
There is a power station on site that has the potential to generate 6.5MW, and there is also a crushing facility for demolition waste.
All 19 employees are full time.
The Gross Floor Area of covered areas is 165m2.
On Bank Holiday weekends the site is open for Fingal County Council domestic refuse disposal only.
Charges for disposal are: general waste (E130 per tonne), pre-approved loads (E165 per tonne), pre-approval fee (E100 flat fee), environmental levy (E15 per tonne).
The maximum tonnes disposed of in a year is 451,500. This consists of household (152,500), commercial (200,000), sewage sludge - treated (30,000), construction and demolition (63,000), and industrial sludges (6,000).
The site includes a small staff car park.

Site reference: IR-12-C-01 Survey date: 17/07/03 Day of week: Thursday

Survey type: Manual Count
AM weather: Mild & Cloudy
PM weather: Mild & Cloudy
Initial car park occupancy: 7 Final car park occupancy: 9
BRACKETED ACCUMULATION FIGURES ARE NOT ABSOLUTE

Data proportions in %

Motor cars	11	Motor cycles	0	Public service	0
Light goods	13	OGV (1)	22	OGV (2)	54

Taxis are included as cars in this survey

Time	Arrivals 175	Departures 173	Totals	Parking Accum
00:00-01:00				
01:00-02:00				
02:00-03:00				
03:00-04:00				
04:00-05:00				
05:00-06:00				
06:00-07:00				
07:00-08:00	22	3	25	26
08:00-09:00	21	18	39	29
09:00-10:00	15	25	40	19
10:00-11:00	23	17	40	25
11:00-12:00	21	25	46	21
12:00-13:00	22	22	44	21
13:00-14:00	10	9	19	22
14:00-15:00	24	20	44	26
15:00-16:00	12	14	26	24
16:00-17:00	5	20	25	9
17:00-18:00	0	0	0	9
18:00-19:00				
19:00-20:00				
20:00-21:00				
21:00-22:00				
22:00-23:00				
23:00-24:00				

Comments

No PSV's or pedal cycles entered or exited the site during this survey.

Site reference: IR-12-C-01 Survey date: 17/07/03 Day of week: Thursday

Vehicles surveyed: OGV

Data proportions in % OGV (1) 29 OGV (2) 71

1 occupant per OGV is assumed, and included in the vehicle occupants count

Time	Arrivals 127	Departures 135	Totals
00:00-01:00			
01:00-02:00			
02:00-03:00			
03:00-04:00			
04:00-05:00			
05:00-06:00			
06:00-07:00			
07:00-08:00	3	1	4
08:00-09:00	15	18	33
09:00-10:00	13	18	31
10:00-11:00	16	13	29
11:00-12:00	18	21	39
12:00-13:00	20	20	40
13:00-14:00	8	6	14
14:00-15:00	21	17	38
15:00-16:00	10	12	22
16:00-17:00	3	9	12
17:00-18:00	0	0	0
18:00-19:00			
19:00-20:00			
20:00-21:00			
21:00-22:00			
22:00-23:00			
23:00-24:00			

APPENDIX D

Junction Capacity Analysis

Output Results

2005 AM Peak

TRL LIMITED

CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

PICADY 4.1 ANALYSIS PROGRAM
RELEASE 4.0 (NOV 2003)

FOR SALES AND DISTRIBUTION INFORMATION,
PROGRAM ADVICE AND MAINTENANCE CONTACT:
TRL SOFTWARE BUREAU
TEL: CROWTHORNE (01344) 770758, FAX: 770864
EMAIL: SoftwareBureau@trl.co.uk

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS IN NO WAY RELIEVED OF HIS RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2005 AM Peak\Site 1 Xrds.vpi"
(drive-on-the-left) at 10:00:13 on Friday, 7 April 2006

RUN TITLE
****
2005 AM Existing Site 1

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY
****

INPUT DATA

```
                      MINOR ROAD (ARM D)
                          I
                          I
                          I
                          I
                          I
                          I
MAJOR ROAD (ARM C) --------------------- MAJOR ROAD (ARM A)
                          I
                          I
                          I
                          I
                          I
                          I
                      MINOR ROAD (ARM B)
```


ARM A IS Nevitt Road East
ARM B IS Road to Ballyboghill
ARM C IS Nevitt Road West
ARM D IS Tooman Road

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B

STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C

ETC.

GEOMETRIC DATA

DATA ITEM	MINOR ROAD B		MINOR ROAD D	
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W)	6.25 M.	(W)	6.25 M.
CENTRAL RESERVE WIDTH	(WCR)	0.00 M.	(WCR)	0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B)	2.20 M.	(WA-D)	2.20 M.
- VISIBILITY	(VC-B)	200.0 M.	(VA-D)	150.0 M.
- BLOCKS TRAFFIC		NO		NO
MINOR ROAD - VISIBILITY TO LEFT	(VB-C)	10.0 M.	(VD-A)	10.0 M.
- VISIBILITY TO RIGHT	(VB-A)	10.0 M.	(VD-C)	10.0 M.
- LANE 1 WIDTH	(WB-C)	-	(WD-A)	3.20 M.
- LANE 2 WIDTH	(WB-A)	-	(WD-C)	0.00 M.
- WIDTH AT 0 M FROM JUNC.		4.40 M.		-
- WIDTH AT 5 M FROM JUNC.		4.00 M.		-
- WIDTH AT 10 M FROM JUNC.		3.50 M.		-
- WIDTH AT 15 M FROM JUNC.		2.30 M.		-
- WIDTH AT 20 M FROM JUNC.		2.30 M.		-
- LENGTH OF FLARED SECTION		1 VEHS		-

TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.66	0.99	0.66
ARM B	15.00	45.00	75.00	0.14	0.21	0.14
ARM C	15.00	45.00	75.00	0.71	1.07	0.71
ARM D	15.00	45.00	75.00	0.25	0.38	0.25

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	0.019	0.962	0.019
		0.0	1.0	51.0	1.0
		(0.0)	(0.0)	(49.0)	(0.0)
	ARM B	0.455	0.000	0.182	0.364
		5.0	0.0	2.0	4.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.842	0.035	0.000	0.123
		48.0	2.0	0.0	7.0
		(43.8)	(0.0)	(0.0)	(0.0)
	ARM D	0.250	0.200	0.550	0.000
		5.0	4.0	11.0	0.0
		(20.0)	(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
07.45-08.00								
B-CD	0.05	8.27	0.006		0.0	0.0	0.1	
B-AD	0.09	6.95	0.013		0.0	0.0	0.2	
A-B	0.01							
A-C	0.64							
A-D	0.01	10.76	0.001		0.0	0.0	0.0	
D-ABC	0.25	8.09	0.031		0.0	0.0	0.5	
C-D	0.09							
C-A	0.60							
C-B	0.03	11.24	0.002		0.0	0.0	0.0	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.00-08.15								
B-CD	0.06	8.20	0.007		0.0	0.0	0.1	
B-AD	0.10	6.88	0.015		0.0	0.0	0.2	
A-B	0.01							
A-C	0.76							
A-D	0.01	10.72	0.001		0.0	0.0	0.0	
D-ABC	0.30	8.03	0.037		0.0	0.0	0.6	
C-D	0.10							
C-A	0.72							
C-B	0.03	11.19	0.003		0.0	0.0	0.0	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.15-08.30								
B-CD	0.07	8.12	0.009		0.0	0.0	0.1	
B-AD	0.13	6.79	0.019		0.0	0.0	0.3	
A-B	0.02							
A-C	0.93							
A-D	0.02	10.65	0.002		0.0	0.0	0.0	
D-ABC	0.37	7.94	0.046		0.0	0.0	0.7	
C-D	0.13							
C-A	0.88							
C-B	0.04	11.12	0.003		0.0	0.0	0.0	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.30-08.45								
B-CD	0.07	8.12	0.009		0.0	0.0	0.1	
B-AD	0.13	6.79	0.019		0.0	0.0	0.3	
A-B	0.02							
A-C	0.93							
A-D	0.02	10.65	0.002		0.0	0.0	0.0	
D-ABC	0.37	7.94	0.046		0.0	0.0	0.7	
C-D	0.13							
C-A	0.88							
C-B	0.04	11.12	0.003		0.0	0.0	0.0	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
08.45-09.00								
B-CD	0.06	8.20	0.007		0.0	0.0	0.1	
B-AD	0.10	6.88	0.015		0.0	0.0	0.2	
A-B	0.01							
A-C	0.76							
A-D	0.01	10.72	0.001		0.0	0.0	0.0	
D-ABC	0.30	8.03	0.037		0.0	0.0	0.6	
C-D	0.10							
C-A	0.72							
C-B	0.03	11.19	0.003		0.0	0.0	0.0	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
09.00-09.15								
B-CD	0.05	8.27	0.006		0.0	0.0	0.1	
B-AD	0.09	6.95	0.013		0.0	0.0	0.2	
A-B	0.01							
A-C	0.64							
A-D	0.01	10.76	0.001		0.0	0.0	0.0	
D-ABC	0.25	8.09	0.031		0.0	0.0	0.5	
C-D	0.09							
C-A	0.60							
C-B	0.03	11.24	0.002		0.0	0.0	0.0	

QUEUE FOR STREAM B-CD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE FOR STREAM B-AD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE FOR STREAM A-D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE FOR STREAM D-ABC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
B-CD	5.5	3.7	0.7	0.12	0.7	0.12
B-AD	9.6	6.4	1.4	0.15	1.4	0.15
A-B	1.4	0.9				
A-C	69.9	46.6				
A-D	1.4	0.9	0.1	0.09	0.1	0.09
D-ABC	27.4	18.3	3.5	0.13	3.5	0.13
C-D	9.6	6.4				
C-A	65.8	43.9				
C-B	2.7	1.8	0.2	0.09	0.2	0.09
ALL	193.3	128.9	6.0	0.03	6.0	0.03

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

****** PICADY 4 run completed.

=== end of file ===

[Printed at 10:06:48 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
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TRL Limited Tel: +44 (0) 1344 770018
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Nine Mile Ride Email: softwarebureau@trl.co.uk
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RG40 3GA,UK

Run with file:- "r:\MDR0303\Tr\Junction Analysis 04-04-06\2005 AM Peak\Site 3.vai" (drive-on-the-left) at 10:11:53 on Friday,

FILE PROPERTIES
****

RUN TITLE: 2005 AM Existing Site 3
LOCATION: Five Roads Roundabout
DATE: 05/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****

ARM A - Nevitt Road
ARM B - Cul de Sac
ARM C - Link to R132
ARM D - Link to Hedgestown

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.05	3.95	8.80	20.00	31.60	21.0	0.557	19.415
ARM B	2.71	3.95	6.30	20.00	31.60	36.0	0.513	17.163
ARM C	5.50	5.50	0.00	15.00	31.60	6.0	0.693	29.635
ARM D	3.75	4.80	7.90	25.00	31.60	21.0	0.611	23.587

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2005 AM Existing SIte 3

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.73	1.09	0.73
ARM B	15.00	45.00	75.00	0.01	0.02	0.01
ARM C	15.00	45.00	75.00	0.46	0.69	0.46
ARM D	15.00	45.00	75.00	0.26	0.39	0.26

DEMAND SET TITLE: 2005 AM Existing SIte 3

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	0.000	0.207	0.793
		0.0	0.0	12.0	46.0
		(0.0)	(0.0)	(58.3)	(39.1)
	ARM B	1.000	0.000	0.000	0.000
		0.0	0.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.919	0.000	0.000	0.081
		34.0	0.0	0.0	3.0
		(67.6)	(0.0)	(0.0)	(0.0)
	ARM D	0.857	0.000	0.143	0.000
		18.0	0.0	3.0	0.0
		(11.1)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	0.73	13.56	0.053		0.0	0.1	0.8		0.08
ARM B	0.01	16.61	0.001		0.0	0.0	0.0		0.06
ARM C	0.46	17.93	0.026		0.0	0.0	0.4		0.06
ARM D	0.26	21.13	0.012		0.0	0.0	0.2		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	0.87	13.55	0.064		0.1	0.1	1.0		0.08
ARM B	0.01	16.50	0.001		0.0	0.0	0.0		0.06
ARM C	0.55	17.86	0.031		0.0	0.0	0.5		0.06
ARM D	0.31	21.05	0.015		0.0	0.0	0.2		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	1.06	13.55	0.078		0.1	0.1	1.2		0.08
ARM B	0.02	16.35	0.001		0.0	0.0	0.0		0.06
ARM C	0.68	17.77	0.038		0.0	0.0	0.6		0.06
ARM D	0.38	20.94	0.018		0.0	0.0	0.3		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	1.06	13.55	0.078		0.1	0.1	1.3		0.08
ARM B	0.02	16.35	0.001		0.0	0.0	0.0		0.06
ARM C	0.68	17.77	0.038		0.0	0.0	0.6		0.06
ARM D	0.38	20.94	0.018		0.0	0.0	0.3		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	0.87	13.55	0.064		0.1	0.1	1.0		0.08
ARM B	0.01	16.50	0.001		0.0	0.0	0.0		0.06
ARM C	0.55	17.86	0.031		0.0	0.0	0.5		0.06
ARM D	0.31	21.05	0.015		0.0	0.0	0.2		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	0.73	13.56	0.053		0.1	0.1	0.9		0.08
ARM B	0.01	16.61	0.001		0.0	0.0	0.0		0.06
ARM C	0.46	17.93	0.026		0.0	0.0	0.4		0.06
ARM D	0.26	21.13	0.012		0.0	0.0	0.2		0.05

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.1

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	79.5	53.0	6.3	0.08	6.3	0.08
B	1.4	0.9	0.1	0.06	0.1	0.06
C	50.7	33.8	2.9	0.06	2.9	0.06
D	28.8	19.2	1.4	0.05	1.4	0.05
ALL	160.4	107.0	10.6	0.07	10.6	0.07

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

==================== end of file ====================

[Printed at 10:03:02 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
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Run with file:- "r:\MDR0303\Tr\Junction Analysis 04-04-06\2005 AM Peak\Site 4.vai" (drive-on-the-left) at 10:13:05 on Frid

FILE PROPERTIES
****

RUN TITLE: 2005 AM Existing Site 4
LOCATION: Hedgestown Interchange
DATE: 05/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - R132 Off slip
ARM B - Hedgestown
ARM C - R132 Slip on
ARM D - Link to "Five Roads"

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM C IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	7.70	7.70	2.00	30.00	31.70	16.0	1.789	55.923
ARM B	3.96	5.96	5.00	30.00	31.70	27.0	1.336	39.531
ARM D	4.60	5.60	8.00	25.30	31.70	36.0	1.350	41.010

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	0.0	0.0
B	0.0	0.0
C	0.0	0.0
D	0.0	0.0

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2005 AM Existing Site 4

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.32	0.49	0.32
ARM B	15.00	45.00	75.00	0.17	0.26	0.17
ARM D	15.00	45.00	75.00	0.61	0.92	0.61

DEMAND SET TITLE: 2005 AM Existing Site 4

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
		TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S)			
07.45 - 09.15					
	ARM A	0.000	0.654	0.000	0.346
		0.0	17.0	0.0	9.0
		(0.0)	(11.8)	(0.0)	(11.1)
	ARM B	0.000	0.000	0.143	0.857
		0.0	0.0	2.0	12.0
		(0.0)	(0.0)	(0.0)	(8.3)
	ARM D	0.000	0.408	0.592	0.000
		0.0	20.0	29.0	0.0
		(0.0)	(5.0)	(58.6)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	0.32	48.79	0.007		0.0	0.0	0.1		0.02
ARM B	0.17	36.03	0.005		0.0	0.0	0.1		0.03
ARM D	0.61	29.99	0.020		0.0	0.0	0.3		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	0.39	48.52	0.008		0.0	0.0	0.1		0.02
ARM B	0.21	35.86	0.006		0.0	0.0	0.1		0.03
ARM D	0.73	29.99	0.024		0.0	0.0	0.4		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	0.48	48.16	0.010		0.0	0.0	0.1		0.02
ARM B	0.26	35.63	0.007		0.0	0.0	0.1		0.03
ARM D	0.90	29.99	0.030		0.0	0.0	0.5		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	0.48	48.16	0.010		0.0	0.0	0.1		0.02
ARM B	0.26	35.63	0.007		0.0	0.0	0.1		0.03
ARM D	0.90	29.99	0.030		0.0	0.0	0.5		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	0.39	48.52	0.008		0.0	0.0	0.1		0.02
ARM B	0.21	35.86	0.006		0.0	0.0	0.1		0.03
ARM D	0.73	29.99	0.024		0.0	0.0	0.4		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	0.32	48.78	0.007		0.0	0.0	0.1		0.02
ARM B	0.17	36.03	0.005		0.0	0.0	0.1		0.03
ARM D	0.61	29.99	0.020		0.0	0.0	0.3		0.03

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	35.7	23.8	0.7	0.02	0.7	0.02
B	19.2	12.8	0.5	0.03	0.5	0.03
D	67.2	44.8	2.3	0.03	2.3	0.03
ALL	122.0	81.4	3.6	0.03	3.6	0.03

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

== end of file ==

[Printed at 10:05:13 on 18/04/2006]

TRL LIMITED

CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

PICADY 4.1 ANALYSIS PROGRAM
RELEASE 3.0 (MAR 2001)

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS IN NO WAY RELIEVED OF HIS RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:- "r:\MDR0303\Tr\arcady-picady results\Site 5.vpi" at 10:25:58 on Thursday, 28 April 2005

RUN TITLE
****
Site 5

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY
****

INPUT DATA

```
MAJOR ROAD (ARM C) --------------------- MAJOR ROAD (ARM A)
                            I
                            I
                            I
                            I
                            I
                            I
                      MINOR ROAD (ARM B)
```

ARM A IS ROWANS ROAD
ARM B IS TOOMAN ROAD
ARM C IS Arm C

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B

STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C

ETC.

GEOMETRIC DATA

DATA ITEM		MINOR ROAD B
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W)	10.00 M.
CENTRAL RESERVE WIDTH	(WCR)	0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B)	2.20 M.
- VISIBILITY	(VC-B)	100.0 M.
- BLOCKS TRAFFIC		NO
MINOR ROAD - VISIBILITY TO LEFT	(VB-C)	20.0 M.
- VISIBILITY TO RIGHT	(VB-A)	20.0 M.
- LANE 1 WIDTH	(WB-C)	5.00 M.
- LANE 2 WIDTH	(WB-A)	0.00 M.

TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.35	0.52	0.35
ARM B	15.00	45.00	75.00	0.15	0.23	0.15
ARM C	15.00	45.00	75.00	0.15	0.23	0.15

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S): ARM A	ARM B	ARM C
07.45 - 09.15				
	ARM A	0.000	0.821	0.179
		0.0	23.0	5.0
		(0.0)	(10.0)	(10.0)
	ARM B	0.833	0.000	0.167
		10.0	0.0	2.0
		(10.0)	(0.0)	(10.0)
	ARM C	0.917	0.083	0.000
		11.0	1.0	0.0
		(10.0)	(10.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

DEFAULT PROPORTIONS OF HEAVY VEHICLES ARE USED

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
07.45-08.00								
B-AC	0.15	9.27	0.016		0.0	0.0	0.2	
C-A	0.14							
C-B	0.01	9.50	0.001		0.0	0.0	0.0	
A-B	0.29							
A-C	0.06							

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-AC	0.140	0.000	0.013	0.006	0.010
C-B	0.114	0.000		0.010	

```
-----------------------------------------------------------------------------------------------
I  TIME      DEMAND  CAPACITY  DEMAND/    PEDESTRIAN  START   END      DELAY     GEOMETRIC DELAYI
I          (VEH/MIN) (VEH/MIN) CAPACITY     FLOW      QUEUE  QUEUE    (VEH.MIN/      (VEH.MIN/   I
I                                (RFC)    (PEDS/MIN)  (VEHS) (VEHS)  TIME SEGMENT)  TIME SEGMENT) I
I 08.00-08.15                                                                                    I
I  B-AC       0.18       9.26    0.019                  0.0    0.0        0.3                    I
I  C-A        0.16                                                                               I
I  C-B        0.01       9.49    0.002                  0.0    0.0        0.0                    I
I  A-B        0.34                                                                               I
I  A-C        0.07                                                                               I
I                                                                                                I
I                   EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:                         I
I                             MAJOR RD.    CENT RES  VIS TO LEFT      VISIBILITY                 I
I     MARGINAL    LANE WIDTH    WIDTH       WIDTH    (AHEAD FOR MAJOR)  TO RIGHT                 I
I      CHANGE:      (.1M)       (.1M)       (.1M)         (M)            (M)                     I
I                                                                                                I
I       B-AC          0.140      0.000       0.013       0.006          0.010                    I
I       C-B           0.114      0.000                   0.010                                   I
-----------------------------------------------------------------------------------------------

-----------------------------------------------------------------------------------------------
I  TIME      DEMAND  CAPACITY  DEMAND/    PEDESTRIAN  START   END      DELAY     GEOMETRIC DELAYI
I          (VEH/MIN) (VEH/MIN) CAPACITY     FLOW      QUEUE  QUEUE    (VEH.MIN/      (VEH.MIN/   I
I                                (RFC)    (PEDS/MIN)  (VEHS) (VEHS)  TIME SEGMENT)  TIME SEGMENT) I
I 08.15-08.30                                                                                    I
I  B-AC       0.22       9.24    0.024                  0.0    0.0        0.4                    I
I  C-A        0.20                                                                               I
I  C-B        0.02       9.47    0.002                  0.0    0.0        0.0                    I
I  A-B        0.42                                                                               I
I  A-C        0.09                                                                               I
I                                                                                                I
I                   EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:                         I
I                             MAJOR RD.    CENT RES  VIS TO LEFT      VISIBILITY                 I
I     MARGINAL    LANE WIDTH    WIDTH       WIDTH    (AHEAD FOR MAJOR)  TO RIGHT                 I
I      CHANGE:      (.1M)       (.1M)       (.1M)         (M)            (M)                     I
I                                                                                                I
I       B-AC          0.140      0.000       0.013       0.006          0.010                    I
I       C-B           0.113      0.001                   0.010                                   I
-----------------------------------------------------------------------------------------------

-----------------------------------------------------------------------------------------------
I  TIME      DEMAND  CAPACITY  DEMAND/    PEDESTRIAN  START   END      DELAY     GEOMETRIC DELAYI
I          (VEH/MIN) (VEH/MIN) CAPACITY     FLOW      QUEUE  QUEUE    (VEH.MIN/      (VEH.MIN/   I
I                                (RFC)    (PEDS/MIN)  (VEHS) (VEHS)  TIME SEGMENT)  TIME SEGMENT) I
I 08.30-08.45                                                                                    I
I  B-AC       0.22       9.24    0.024                  0.0    0.0        0.4                    I
I  C-A        0.20                                                                               I
I  C-B        0.02       9.47    0.002                  0.0    0.0        0.0                    I
I  A-B        0.42                                                                               I
I  A-C        0.09                                                                               I
I                                                                                                I
I                   EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:                         I
I                             MAJOR RD.    CENT RES  VIS TO LEFT      VISIBILITY                 I
I     MARGINAL    LANE WIDTH    WIDTH       WIDTH    (AHEAD FOR MAJOR)  TO RIGHT                 I
I      CHANGE:      (.1M)       (.1M)       (.1M)         (M)            (M)                     I
I                                                                                                I
I       B-AC          0.140      0.000       0.013       0.006          0.010                    I
I       C-B           0.113      0.001                   0.010                                   I
-----------------------------------------------------------------------------------------------

-----------------------------------------------------------------------------------------------
I  TIME      DEMAND  CAPACITY  DEMAND/    PEDESTRIAN  START   END      DELAY     GEOMETRIC DELAYI
I          (VEH/MIN) (VEH/MIN) CAPACITY     FLOW      QUEUE  QUEUE    (VEH.MIN/      (VEH.MIN/   I
I                                (RFC)    (PEDS/MIN)  (VEHS) (VEHS)  TIME SEGMENT)  TIME SEGMENT) I
I 08.45-09.00                                                                                    I
I  B-AC       0.18       9.26    0.019                  0.0    0.0        0.3                    I
I  C-A        0.16                                                                               I
I  C-B        0.01       9.49    0.002                  0.0    0.0        0.0                    I
I  A-B        0.34                                                                               I
I  A-C        0.07                                                                               I
I                                                                                                I
I                   EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:                         I
I                             MAJOR RD.    CENT RES  VIS TO LEFT      VISIBILITY                 I
I     MARGINAL    LANE WIDTH    WIDTH       WIDTH    (AHEAD FOR MAJOR)  TO RIGHT                 I
I      CHANGE:      (.1M)       (.1M)       (.1M)         (M)            (M)                     I
I                                                                                                I
I       B-AC          0.140      0.000       0.013       0.006          0.010                    I
I       C-B           0.114      0.000                   0.010                                   I
-----------------------------------------------------------------------------------------------
```

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
09.00-09.15								
B-AC	0.15	9.27	0.016		0.0	0.0	0.3	
C-A	0.14							
C-B	0.01	9.50	0.001		0.0	0.0	0.0	
A-B	0.29							
A-C	0.06							

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-AC	0.140	0.000	0.013	0.006	0.010
C-B	0.114	0.000		0.010	

WARNING THE JUNCTION MODELLED CAN CARRY HIGH-SPEED MAJOR ROAD TRAFFIC. (AG23 REF. 8.4.2(v)).

QUEUE FOR STREAM B-AC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
B-AC	16.5	11.0	1.8	0.11	1.8	0.11
C-A	15.1	10.1				
C-B	1.4	0.9	0.1	0.10	0.1	0.10
A-B	31.5	21.0				
A-C	6.9	4.6				
ALL	71.3	47.5	1.9	0.03	1.9	0.03

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

****** PICADY 4 run completed.

== end of file ==

[Printed at 10:05:57 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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Run with file:- "r:\MDR0303\Tr\Junction Analysis 04-04-06\2005 AM Peak\Site 6.vai" (drive-on-the-left) at 10:14:34 on Frid

FILE PROPERTIES
****

RUN TITLE: 2005 AM Existing Site 6
LOCATION: Courtlough Interchange West
DATE: 05/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - Rowan's Road
ARM B - M1 on slip
ARM C - M1 Overbridge
ARM D - M1 Off Slip

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM B IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.73	6.09	20.00	40.00	35.00	16.0	1.409	43.035
ARM C	4.43	5.59	15.00	17.50	35.00	11.0	1.442	43.128
ARM D	4.00	5.23	5.00	20.00	35.00	27.0	1.259	37.904

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	4.0	0.0
B	3.0	0.0
C	0.0	0.0
D	2.0	0.0

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2005 AM Existing Site 6

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.46	0.69	0.46
ARM C	15.00	45.00	75.00	1.75	2.63	1.75
ARM D	15.00	45.00	75.00	2.15	3.23	2.15

DEMAND SET TITLE: 2005 AM Existing Site 6

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	0.108	0.892	0.000
		0.0	4.0	33.0	0.0
		(0.0)	(0.0)	(6.1)	(0.0)
	ARM C	0.243	0.757	0.000	0.000
		34.0	106.0	0.0	0.0
		(8.8)	(19.8)	(0.0)	(0.0)
	ARM D	0.035	0.047	0.919	0.000
		6.0	8.0	158.0	0.0
		(0.0)	(0.0)	(3.2)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	0.46	35.84	0.013		0.0	0.0	0.2		0.03
ARM C	1.75	36.82	0.048		0.0	0.0	0.7		0.03
ARM D	2.15	34.31	0.063		0.0	0.1	1.0		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	0.55	34.86	0.016		0.0	0.0	0.2		0.03
ARM C	2.09	36.82	0.057		0.0	0.1	0.9		0.03
ARM D	2.57	33.82	0.076		0.1	0.1	1.2		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	0.68	33.52	0.020		0.0	0.0	0.3		0.03
ARM C	2.56	36.82	0.070		0.1	0.1	1.1		0.03
ARM D	3.14	33.15	0.095		0.1	0.1	1.6		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	0.68	33.52	0.020		0.0	0.0	0.3		0.03
ARM C	2.56	36.82	0.070		0.1	0.1	1.1		0.03
ARM D	3.14	33.15	0.095		0.1	0.1	1.6		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	0.55	34.85	0.016		0.0	0.0	0.2		0.03
ARM C	2.09	36.82	0.057		0.1	0.1	0.9		0.03
ARM D	2.57	33.82	0.076		0.1	0.1	1.2		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	0.46	35.82	0.013		0.0	0.0	0.2		0.03
ARM C	1.75	36.82	0.048		0.1	0.0	0.8		0.03
ARM D	2.15	34.31	0.063		0.1	0.1	1.0		0.03

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.1

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	50.7	33.8	1.5	0.03	1.5	0.03
C	192.0	128.0	5.5	0.03	5.5	0.03
D	235.8	157.2	7.6	0.03	7.6	0.03
ALL	478.6	319.0	14.6	0.03	14.6	0.03

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

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[Printed at 10:07:41 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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Run with file:- "r:\MDR0303\Tr\Junction Analysis 04-04-06\2005 AM Peak\Site 7.vai" (drive-on-the-left) at 10:15:44 on Frid

FILE PROPERTIES
****

RUN TITLE: 2007 AM Existing Site 7
LOCATION: Courtlough Interchange East
DATE: 05/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - M1 Off Slip
ARM B - Rowan's Road East
ARM C - M1 On Slip
ARM D - M1 Overbridge

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM C IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	4.02	8.20	10.00	30.00	32.80	26.0	1.423	43.991
ARM B	3.74	6.38	15.00	70.00	32.80	15.0	1.497	44.269
ARM D	4.53	5.90	15.00	20.00	32.80	40.0	1.350	41.710

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	3.0	0.0
B	0.0	0.0
C	2.0	0.0
D	0.0	0.0

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2005 AM Existing Site 7

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	1.96	2.94	1.96
ARM B	15.00	45.00	75.00	5.31	7.97	5.31
ARM D	15.00	45.00	75.00	2.39	3.58	2.39

DEMAND SET TITLE: 2005 AM Existing Site 7

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
		TURNING PROPORTIONS TURNING COUNTS (VEH/HR) (PERCENTAGE OF H.V.S)			
07.45 - 09.15					
	ARM A	0.000	0.841	0.032	0.127
		0.0	132.0	5.0	20.0
		(0.0)	(15.9)	(20.0)	(10.0)
	ARM B	0.000	0.000	0.718	0.282
		0.0	0.0	305.0	120.0
		(0.0)	(0.0)	(3.6)	(18.3)
	ARM D	0.000	0.921	0.079	0.000
		0.0	176.0	15.0	0.0
		(0.0)	(4.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	1.96	35.11	0.056		0.0	0.1	0.9		0.03
ARM B	5.31	40.34	0.132		0.0	0.2	2.2		0.03
ARM D	2.39	40.23	0.059		0.0	0.1	0.9		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	2.34	34.51	0.068		0.1	0.1	1.1		0.03
ARM B	6.34	40.19	0.158		0.2	0.2	2.8		0.03
ARM D	2.85	40.23	0.071		0.1	0.1	1.1		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	2.87	33.69	0.085		0.1	0.1	1.4		0.03
ARM B	7.77	39.99	0.194		0.2	0.2	3.6		0.03
ARM D	3.49	40.23	0.087		0.1	0.1	1.4		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	2.87	33.68	0.085		0.1	0.1	1.4		0.03
ARM B	7.77	39.99	0.194		0.2	0.2	3.6		0.03
ARM D	3.49	40.23	0.087		0.1	0.1	1.4		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	2.34	34.50	0.068		0.1	0.1	1.1		0.03
ARM B	6.34	40.19	0.158		0.2	0.2	2.8		0.03
ARM D	2.85	40.23	0.071		0.1	0.1	1.2		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	1.96	35.10	0.056		0.1	0.1	0.9		0.03
ARM B	5.31	40.34	0.132		0.2	0.2	2.3		0.03
ARM D	2.39	40.23	0.059		0.1	0.1	1.0		0.03

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.1

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.2
08.15	0.2
08.30	0.2
08.45	0.2
09.00	0.2
09.15	0.2

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.1

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	215.3	143.5	6.7	0.03	6.7	0.03
B	582.8	388.5	17.4	0.03	17.4	0.03
D	261.9	174.6	7.0	0.03	7.0	0.03
ALL	1059.9	706.6	31.1	0.03	31.1	0.03

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

== end of file ==

[Printed at 10:08:08 on 18/04/2006]

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CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

PICADY 4.1 ANALYSIS PROGRAM
RELEASE 4.0 (NOV 2003)

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Run with file:- "r:\MDR0303\Tr\Junction Analysis 04-04-06\2005 AM Peak\Site 8.vpi" (drive-on-the-left) at 12:55:21 on Thur

RUN TITLE
****
2005 AM Existing Site 8

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY
****

INPUT DATA

```
MAJOR ROAD (ARM C) --------------------- MAJOR ROAD (ARM A)
                              I
                              I
                              I
                              I
                              I
                              I
                         MINOR ROAD (ARM B)
```

ARM A IS R132 BALBRIGGAN ROAD
ARM B IS R132
ARM C IS LINK TO SITE 7

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B

STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C

ETC.

GEOMETRIC DATA

DATA ITEM		MINOR ROAD B
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W)	11.26 M.
CENTRAL RESERVE WIDTH	(WCR)	0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B)	3.30 M.
- VISIBILITY	(VC-B)	200.0 M.
- BLOCKS TRAFFIC		NO
MINOR ROAD - VISIBILITY TO LEFT	(VB-C)	100.0 M.
- VISIBILITY TO RIGHT	(VB-A)	200.0 M.
- LANE 1 WIDTH	(WB-C)	-
- LANE 2 WIDTH	(WB-A)	-
- WIDTH AT 0 M FROM JUNC.		10.00 M.
- WIDTH AT 5 M FROM JUNC.		10.00 M.
- WIDTH AT 10 M FROM JUNC.		9.00 M.
- WIDTH AT 15 M FROM JUNC.		6.50 M.
- WIDTH AT 20 M FROM JUNC.		6.00 M.
- LENGTH OF FLARED SECTION		3 VEHS

TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	5.41	8.12	5.41
ARM B	15.00	45.00	75.00	2.51	3.77	2.51
ARM C	15.00	45.00	75.00	3.85	5.77	3.85

TIME	FROM/TO	TURNING PROPORTIONS TURNING COUNTS (VEH/HR) (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
07.45 - 09.15				
	ARM A	0.000	0.277	0.723
		0.0	120.0	313.0
		(0.0)	(13.3)	(3.2)
	ARM B	0.443	0.000	0.557
		89.0	0.0	112.0
		(14.6)	(0.0)	(20.5)
	ARM C	0.604	0.396	0.000
		186.0	122.0	0.0
		(4.8)	(15.6)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

```
 ----------------------------------------------------------------------------------------------------
 I  TIME      DEMAND   CAPACITY  DEMAND/   PEDESTRIAN  START   END      DELAY      GEOMETRIC DELAYI
 I          (VEH/MIN)  (VEH/MIN) CAPACITY     FLOW     QUEUE  QUEUE   (VEH.MIN/      (VEH.MIN/   I
 I                                 (RFC)   (PEDS/MIN)  (VEHS) (VEHS) TIME SEGMENT)  TIME SEGMENT) I
 I 07.45-08.00                                                                                    I
 I  B-C        1.40      10.44     0.134                 0.0    0.2        2.2                    I
 I  B-A        1.11       7.90     0.141                 0.0    0.2        2.3                    I
 I  C-A        2.33                                                                               I
 I  C-B        1.52       9.99     0.153                 0.0    0.2        2.6                    I
 I  A-B        1.50                                                                               I
 I  A-C        3.91                                                                               I
 I                                                                                                I
 I                    EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:                        I
 I                              MAJOR RD.   CENT RES  VIS TO LEFT       VISIBILITY                I
 I     MARGINAL   LANE WIDTH     WIDTH       WIDTH    (AHEAD FOR MAJOR)  TO RIGHT                 I
 I      CHANGE:      (.1M)       (.1M)       (.1M)        (M)              (M)                    I
 I                                                                                                I
 I       B-C          0.110       0.007                                   0.011                   I
 I       B-A          0.083       0.012       0.025       0.006           0.008                   I
 I       C-B          0.112       0.007                   0.010                                   I
 ----------------------------------------------------------------------------------------------------


 ----------------------------------------------------------------------------------------------------
 I  TIME      DEMAND   CAPACITY  DEMAND/   PEDESTRIAN  START   END      DELAY      GEOMETRIC DELAYI
 I          (VEH/MIN)  (VEH/MIN) CAPACITY     FLOW     QUEUE  QUEUE   (VEH.MIN/      (VEH.MIN/   I
 I                                 (RFC)   (PEDS/MIN)  (VEHS) (VEHS) TIME SEGMENT)  TIME SEGMENT) I
 I 08.00-08.15                                                                                    I
 I  B-C        1.67      10.15     0.165                 0.2    0.2        2.9                    I
 I  B-A        1.33       7.54     0.176                 0.2    0.2        3.1                    I
 I  C-A        2.78                                                                               I
 I  C-B        1.82       9.77     0.186                 0.2    0.2        3.3                    I
 I  A-B        1.79                                                                               I
 I  A-C        4.67                                                                               I
 I                                                                                                I
 I                    EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:                        I
 I                              MAJOR RD.   CENT RES  VIS TO LEFT       VISIBILITY                I
 I     MARGINAL   LANE WIDTH     WIDTH       WIDTH    (AHEAD FOR MAJOR)  TO RIGHT                 I
 I      CHANGE:      (.1M)       (.1M)       (.1M)        (M)              (M)                    I
 I                                                                                                I
 I       B-C          0.107       0.008                                   0.010                   I
 I       B-A          0.079       0.014       0.025       0.005           0.007                   I
 I       C-B          0.110       0.009                   0.009                                   I
 ----------------------------------------------------------------------------------------------------


 ----------------------------------------------------------------------------------------------------
 I  TIME      DEMAND   CAPACITY  DEMAND/   PEDESTRIAN  START   END      DELAY      GEOMETRIC DELAYI
 I          (VEH/MIN)  (VEH/MIN) CAPACITY     FLOW     QUEUE  QUEUE   (VEH.MIN/      (VEH.MIN/   I
 I                                 (RFC)   (PEDS/MIN)  (VEHS) (VEHS) TIME SEGMENT)  TIME SEGMENT) I
 I 08.15-08.30                                                                                    I
 I  B-C        2.05       9.75     0.210                 0.2    0.3        3.8                    I
 I  B-A        1.63       7.05     0.231                 0.2    0.3        4.3                    I
 I  C-A        3.40                                                                               I
 I  C-B        2.23       9.46     0.236                 0.2    0.3        4.5                    I
 I  A-B        2.19                                                                               I
 I  A-C        5.72                                                                               I
 I                                                                                                I
 I                    EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:                        I
 I                              MAJOR RD.   CENT RES  VIS TO LEFT       VISIBILITY                I
 I     MARGINAL   LANE WIDTH     WIDTH       WIDTH    (AHEAD FOR MAJOR)  TO RIGHT                 I
 I      CHANGE:      (.1M)       (.1M)       (.1M)        (M)              (M)                    I
 I                                                                                                I
 I       B-C          0.103       0.009                                   0.010                   I
 I       B-A          0.074       0.017       0.025       0.005           0.007                   I
 I       C-B          0.106       0.011                   0.009                                   I
 ----------------------------------------------------------------------------------------------------


 ----------------------------------------------------------------------------------------------------
 I  TIME      DEMAND   CAPACITY  DEMAND/   PEDESTRIAN  START   END      DELAY      GEOMETRIC DELAYI
 I          (VEH/MIN)  (VEH/MIN) CAPACITY     FLOW     QUEUE  QUEUE   (VEH.MIN/      (VEH.MIN/   I
 I                                 (RFC)   (PEDS/MIN)  (VEHS) (VEHS) TIME SEGMENT)  TIME SEGMENT) I
 I 08.30-08.45                                                                                    I
 I  B-C        2.05       9.75     0.210                 0.3    0.3        4.0                    I
 I  B-A        1.63       7.05     0.231                 0.3    0.3        4.5                    I
 I  C-A        3.40                                                                               I
 I  C-B        2.23       9.46     0.236                 0.3    0.3        4.6                    I
 I  A-B        2.19                                                                               I
 I  A-C        5.72                                                                               I
 I                                                                                                I
 I                    EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:                        I
 I                              MAJOR RD.   CENT RES  VIS TO LEFT       VISIBILITY                I
 I     MARGINAL   LANE WIDTH     WIDTH       WIDTH    (AHEAD FOR MAJOR)  TO RIGHT                 I
 I      CHANGE:      (.1M)       (.1M)       (.1M)        (M)              (M)                    I
 I                                                                                                I
 I       B-C          0.103       0.009                                   0.010                   I
 I       B-A          0.074       0.017       0.025       0.005           0.007                   I
 I       C-B          0.106       0.011                   0.009                                   I
 ----------------------------------------------------------------------------------------------------
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-----------------------------------------------------------------------------------------------------------
I  TIME       DEMAND  CAPACITY  DEMAND/    PEDESTRIAN  START   END       DELAY      GEOMETRIC DELAYI
I          (VEH/MIN)  (VEH/MIN) CAPACITY      FLOW     QUEUE  QUEUE    (VEH.MIN/       (VEH.MIN/   I
I                                (RFC)     (PEDS/MIN) (VEHS)  (VEHS)  TIME SEGMENT)  TIME SEGMENT) I
I 08.45-09.00                                                                                      I
I  B-C        1.67     10.15    0.165                  0.3     0.2         3.1                     I
I  B-A        1.33      7.54    0.176                  0.3     0.2         3.4                     I
I  C-A        2.78                                                                                 I
I  C-B        1.82      9.77    0.186                  0.3     0.2         3.6                     I
I  A-B        1.79                                                                                 I
I  A-C        4.67                                                                                 I
I                                                                                                  I
I                   EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:                           I
I                             MAJOR RD.    CENT RES  VIS TO LEFT       VISIBILITY                  I
I    MARGINAL   LANE WIDTH     WIDTH        WIDTH   (AHEAD FOR MAJOR)  TO RIGHT                    I
I     CHANGE:     (.1M)        (.1M)        (.1M)         (M)           (M)                        I
I                                                                                                  I
I      B-C          0.107       0.008                                 0.010                        I
I      B-A          0.079       0.014       0.025      0.005          0.007                        I
I      C-B          0.110       0.009                  0.009                                       I
-----------------------------------------------------------------------------------------------------------

-----------------------------------------------------------------------------------------------------------
I  TIME       DEMAND  CAPACITY  DEMAND/    PEDESTRIAN  START   END       DELAY      GEOMETRIC DELAYI
I          (VEH/MIN)  (VEH/MIN) CAPACITY      FLOW     QUEUE  QUEUE    (VEH.MIN/       (VEH.MIN/   I
I                                (RFC)     (PEDS/MIN) (VEHS)  (VEHS)  TIME SEGMENT)  TIME SEGMENT) I
I 09.00-09.15                                                                                      I
I  B-C        1.40     10.43    0.134                  0.2     0.2         2.4                     I
I  B-A        1.11      7.89    0.141                  0.2     0.2         2.6                     I
I  C-A        2.33                                                                                 I
I  C-B        1.52      9.99    0.153                  0.2     0.2         2.8                     I
I  A-B        1.50                                                                                 I
I  A-C        3.91                                                                                 I
I                                                                                                  I
I                   EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:                           I
I                             MAJOR RD.    CENT RES  VIS TO LEFT       VISIBILITY                  I
I    MARGINAL   LANE WIDTH     WIDTH        WIDTH   (AHEAD FOR MAJOR)  TO RIGHT                    I
I     CHANGE:     (.1M)        (.1M)        (.1M)         (M)           (M)                        I
I                                                                                                  I
I      B-C          0.110       0.007                                 0.011                        I
I      B-A          0.083       0.012       0.025      0.006          0.008                        I
I      C-B          0.112       0.007                  0.010                                       I
-----------------------------------------------------------------------------------------------------------

QUEUE FOR STREAM   B-C
-------------------------
TIME SEGMENT     NO. OF
  ENDING        VEHICLES
                IN QUEUE
  08.00            0.2
  08.15            0.2
  08.30            0.3
  08.45            0.3
  09.00            0.2
  09.15            0.2

QUEUE FOR STREAM   B-A
-------------------------
TIME SEGMENT     NO. OF
  ENDING        VEHICLES
                IN QUEUE
  08.00            0.2
  08.15            0.2
  08.30            0.3
  08.45            0.3
  09.00            0.2
  09.15            0.2

QUEUE FOR STREAM   C-B
-------------------------
TIME SEGMENT     NO. OF
  ENDING        VEHICLES
                IN QUEUE
  08.00            0.2
  08.15            0.2
  08.30            0.3
  08.45            0.3
  09.00            0.2
  09.15            0.2
```

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
B-C	153.6	102.4	18.4	0.12	18.4	0.12
B-A	122.0	81.4	20.1	0.16	20.1	0.16
C-A	255.0	170.0				
C-B	167.3	111.5	21.3	0.13	21.3	0.13
A-B	164.5	109.7				
A-C	429.2	286.1				
ALL	1291.7	861.1	59.7	0.05	59.7	0.05

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

****** PICADY 4 run completed.
== end of file ==

[Printed at 10:08:57 on 18/04/2006]

2005 PM Peak

TRL LIMITED

CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

PICADY 4.1 ANALYSIS PROGRAM
RELEASE 4.0 (NOV 2003)

FOR SALES AND DISTRIBUTION INFORMATION,
PROGRAM ADVICE AND MAINTENANCE CONTACT:
TRL SOFTWARE BUREAU
TEL: CROWTHORNE (01344) 770758, FAX: 770864
EMAIL: SoftwareBureau@trl.co.uk

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS IN NO WAY RELIEVED OF HIS RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2005 PM Peak\Site 1 Xrds.vpi"
(drive-on-the-left) at 10:04:22 on Friday, 7 April 2006

RUN TITLE
****
2005 PM Existing Site 1

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY
****

INPUT DATA

```
                       MINOR ROAD (ARM D)
                              I
                              I
                              I
                              I
                              I
                              I
MAJOR ROAD (ARM C) --------------------- MAJOR ROAD (ARM A)
                              I
                              I
                              I
                              I
                              I
                              I
                       MINOR ROAD (ARM B)
```


ARM A IS Nevitt Road East
ARM B IS Road to Ballyboghill
ARM C IS Nevitt Road West
ARM D IS Tooman Road

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B

STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C

ETC.

GEOMETRIC DATA

DATA ITEM		MINOR ROAD B		MINOR ROAD D
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W)	6.25 M.	(W)	6.25 M.
CENTRAL RESERVE WIDTH	(WCR)	0.00 M.	(WCR)	0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B)	2.20 M.	(WA-D)	2.20 M.
- VISIBILITY	(VC-B)	200.0 M.	(VA-D)	150.0 M.
- BLOCKS TRAFFIC		NO		NO
MINOR ROAD - VISIBILITY TO LEFT	(VB-C)	10.0 M.	(VD-A)	10.0 M.
- VISIBILITY TO RIGHT	(VB-A)	10.0 M.	(VD-C)	10.0 M.
- LANE 1 WIDTH	(WB-C)	-	(WD-A)	3.20 M.
- LANE 2 WIDTH	(WB-A)	-	(WD-C)	0.00 M.
- WIDTH AT 0 M FROM JUNC.		4.40 M.		-
- WIDTH AT 5 M FROM JUNC.		4.00 M.		-
- WIDTH AT 10 M FROM JUNC.		3.50 M.		-
- WIDTH AT 15 M FROM JUNC.		2.30 M.		-
- WIDTH AT 20 M FROM JUNC.		2.30 M.		-
- LENGTH OF FLARED SECTION		1 VEHS		-

TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.55	0.83	0.55
ARM B	15.00	45.00	75.00	0.21	0.32	0.21
ARM C	15.00	45.00	75.00	1.17	1.76	1.17
ARM D	15.00	45.00	75.00	0.24	0.36	0.24

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15		TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S)			
	ARM A	0.000	0.091	0.909	0.000
		0.0	4.0	40.0	0.0
		(0.0)	(0.0)	(22.5)	(0.0)
	ARM B	0.412	0.000	0.118	0.471
		7.0	0.0	2.0	8.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.819	0.064	0.000	0.117
		77.0	6.0	0.0	11.0
		(28.6)	(16.7)	(0.0)	(0.0)
	ARM D	0.316	0.263	0.421	0.000
		6.0	5.0	8.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
16.45-17.00								
B-CD	0.08	8.05	0.009		0.0	0.0	0.1	
B-AD	0.14	6.81	0.020		0.0	0.0	0.3	
A-B	0.05							
A-C	0.50							
A-D	0.00	9.67	0.000		0.0	0.0	0.0	
D-ABC	0.24	8.50	0.028		0.0	0.0	0.4	
C-D	0.14							
C-A	0.96							
C-B	0.08	9.70	0.008		0.0	0.0	0.1	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.00-17.15								
B-CD	0.09	7.98	0.011		0.0	0.0	0.2	
B-AD	0.16	6.74	0.024		0.0	0.0	0.4	
A-B	0.06							
A-C	0.60							
A-D	0.00	9.60	0.000		0.0	0.0	0.0	
D-ABC	0.28	8.42	0.034		0.0	0.0	0.5	
C-D	0.16							
C-A	1.15							
C-B	0.09	9.67	0.009		0.0	0.0	0.1	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.15-17.30								
B-CD	0.11	7.89	0.014		0.0	0.0	0.2	
B-AD	0.20	6.65	0.030		0.0	0.0	0.4	
A-B	0.07							
A-C	0.73							
A-D	0.00	9.51	0.000		0.0	0.0	0.0	
D-ABC	0.35	8.31	0.042		0.0	0.0	0.6	
C-D	0.20							
C-A	1.41							
C-B	0.11	9.63	0.011		0.0	0.0	0.2	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.30-17.45								
B-CD	0.11	7.89	0.014		0.0	0.0	0.2	
B-AD	0.20	6.65	0.030		0.0	0.0	0.5	
A-B	0.07							
A-C	0.73							
A-D	0.00	9.51	0.000		0.0	0.0	0.0	
D-ABC	0.35	8.31	0.042		0.0	0.0	0.7	
C-D	0.20							
C-A	1.41							
C-B	0.11	9.63	0.011		0.0	0.0	0.2	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.45-18.00								
B-CD	0.09	7.98	0.011		0.0	0.0	0.2	
B-AD	0.16	6.74	0.024		0.0	0.0	0.4	
A-B	0.06							
A-C	0.60							
A-D	0.00	9.60	0.000		0.0	0.0	0.0	
D-ABC	0.28	8.41	0.034		0.0	0.0	0.5	
C-D	0.16							
C-A	1.15							
C-B	0.09	9.67	0.009		0.0	0.0	0.1	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
18.00-18.15								
B-CD	0.08	8.05	0.009		0.0	0.0	0.1	
B-AD	0.14	6.80	0.020		0.0	0.0	0.3	
A-B	0.05							
A-C	0.50							
A-D	0.00	9.67	0.000		0.0	0.0	0.0	
D-ABC	0.24	8.49	0.028		0.0	0.0	0.4	
C-D	0.14							
C-A	0.96							
C-B	0.08	9.70	0.008		0.0	0.0	0.1	

QUEUE FOR STREAM B-CD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE FOR STREAM B-AD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE FOR STREAM A-D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE FOR STREAM D-ABC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-CD	8.3	5.5	1.0	0.13	1.0	0.13
B-AD	15.0	10.0	2.3	0.15	2.3	0.15
A-B	5.5	3.7				
A-C	54.8	36.6				
A-D	0.0	0.0	0.0	0.00	0.0	0.00
D-ABC	26.1	17.4	3.2	0.12	3.2	0.12
C-D	15.1	10.1				
C-A	105.6	70.4				
C-B	8.2	5.5	0.9	0.10	0.9	0.10
ALL	238.6	159.1	7.4	0.03	7.4	0.03

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

****** PICADY 4 run completed.

=== end of file ===

[Printed at 10:10:03 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
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RG40 3GA,UK

Run with file:- "r:\MDR0303\Tr\Junction Analysis 04-04-06\2005 PM Peak\Site 3.vai" (drive-on-the-left) at 10:16:29 on Frid

FILE PROPERTIES
****

RUN TITLE: 2005 PM Existing Site 3
LOCATION: Five Roads Roundabout
DATE: 05/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - Nevitt Road
ARM B - Cul de Sac
ARM C - Link to R132
ARM D - Link to Hedgestown

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.05	3.95	8.80	20.00	31.60	21.0	0.557	19.415
ARM B	2.71	3.95	6.30	20.00	31.60	36.0	0.513	17.163
ARM C	5.50	5.50	0.00	15.00	31.60	6.0	0.693	29.635
ARM D	3.75	4.80	7.90	25.00	31.60	21.0	0.611	23.587

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2005 PM Existing Site 3

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	1.13	1.69	1.13
ARM B	15.00	45.00	75.00	0.05	0.08	0.05
ARM C	15.00	45.00	75.00	0.40	0.60	0.40
ARM D	15.00	45.00	75.00	0.46	0.69	0.46

DEMAND SET TITLE: 2005 PM Existing Site 3

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.033	0.267	0.700
		0.0	3.0	24.0	63.0
		(0.0)	(0.0)	(4.2)	(1.6)
	ARM B	0.000	0.000	0.500	0.500
		0.0	0.0	2.0	2.0
		(0.0)	(0.0)	(50.0)	(0.0)
	ARM C	0.813	0.094	0.000	0.094
		26.0	3.0	0.0	3.0
		(15.4)	(66.7)	(0.0)	(0.0)
	ARM D	0.486	0.054	0.459	0.000
		18.0	2.0	17.0	0.0
		(27.8)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	1.13	18.83	0.060		0.0	0.1	0.9		0.06
ARM B	0.05	13.19	0.004		0.0	0.0	0.1		0.08
ARM C	0.40	24.47	0.016		0.0	0.0	0.2		0.04
ARM D	0.46	20.54	0.023		0.0	0.0	0.3		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	1.34	18.79	0.071		0.1	0.1	1.1		0.06
ARM B	0.06	13.08	0.005		0.0	0.0	0.1		0.08
ARM C	0.48	24.38	0.020		0.0	0.0	0.3		0.04
ARM D	0.55	20.50	0.027		0.0	0.0	0.4		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	1.65	18.75	0.088		0.1	0.1	1.4		0.06
ARM B	0.07	12.93	0.006		0.0	0.0	0.1		0.08
ARM C	0.58	24.25	0.024		0.0	0.0	0.4		0.04
ARM D	0.68	20.43	0.033		0.0	0.0	0.5		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	1.65	18.75	0.088		0.1	0.1	1.4		0.06
ARM B	0.07	12.93	0.006		0.0	0.0	0.1		0.08
ARM C	0.58	24.25	0.024		0.0	0.0	0.4		0.04
ARM D	0.68	20.43	0.033		0.0	0.0	0.5		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	1.34	18.79	0.071		0.1	0.1	1.2		0.06
ARM B	0.06	13.08	0.005		0.0	0.0	0.1		0.08
ARM C	0.48	24.38	0.020		0.0	0.0	0.3		0.04
ARM D	0.55	20.49	0.027		0.0	0.0	0.4		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	1.13	18.83	0.060		0.1	0.1	1.0		0.06
ARM B	0.05	13.18	0.004		0.0	0.0	0.1		0.08
ARM C	0.40	24.47	0.016		0.0	0.0	0.3		0.04
ARM D	0.46	20.54	0.023		0.0	0.0	0.4		0.05

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1
18.15	0.1

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	123.4	82.3	7.1	0.06	7.1	0.06
B	5.5	3.7	0.4	0.08	0.4	0.08
C	43.9	29.3	1.8	0.04	1.8	0.04
D	50.7	33.8	2.5	0.05	2.5	0.05
ALL	223.5	149.0	11.9	0.05	11.9	0.05

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

== end of file ==

[Printed at 10:19:09 on 18/04/2006]

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____________________ A R C A D Y  6 ____________________

    ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY


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Run with file:- "r:\MDR0303\Tr\Junction Analysis 04-04-06\2005 PM Peak\Site 4.vai" (drive-on-the-left) at 10:17:17 on Frid

FILE PROPERTIES
****

```
  RUN TITLE: 2005 PM Existing Site 4
   LOCATION: Hedgestown Interchange
       DATE: 05/04/2006
     CLIENT:
ENUMERATOR:
 JOB NUMBER:
     STATUS:
DESCRIPTION:
```


INPUT DATA
****
ARM A - R132 Off Slip
ARM B - Hedgestown
ARM C - R132 On Slip
ARM D - Link to "Five Roads"

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM C IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	7.70	7.70	2.00	30.00	31.70	16.0	1.789	55.923
ARM B	3.96	5.96	5.00	30.00	31.70	27.0	1.336	39.531
ARM D	4.60	5.60	8.00	25.30	31.70	36.0	1.350	41.010

```
V = approach half-width        L = effective flare length          D = inscribed circle diameter
E = entry width                R = entry radius                    PHI = entry angle
```

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	0.0	0.0
B	0.0	0.0
C	0.0	0.0
D	0.0	0.0

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2005 PM Existing Site 4

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.26	0.39	0.26
ARM B	15.00	45.00	75.00	0.39	0.58	0.39
ARM D	15.00	45.00	75.00	0.85	1.28	0.85

DEMAND SET TITLE: 2005 PM Existing Site 4

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.476	0.095	0.429
		0.0	10.0	2.0	9.0
		(0.0)	(0.0)	(0.0)	(44.4)
	ARM B	0.000	0.000	0.097	0.903
		0.0	0.0	3.0	28.0
		(0.0)	(0.0)	(0.0)	(3.6)
	ARM D	0.000	0.529	0.471	0.000
		0.0	36.0	32.0	0.0
		(0.0)	(2.8)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	0.26	45.69	0.006		0.0	0.0	0.1		0.02
ARM B	0.39	37.53	0.010		0.0	0.0	0.2		0.03
ARM D	0.85	40.41	0.021		0.0	0.0	0.3		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	0.31	45.43	0.007		0.0	0.0	0.1		0.02
ARM B	0.46	37.38	0.012		0.0	0.0	0.2		0.03
ARM D	1.01	40.41	0.025		0.0	0.0	0.4		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	0.38	45.08	0.009		0.0	0.0	0.1		0.02
ARM B	0.57	37.17	0.015		0.0	0.0	0.2		0.03
ARM D	1.24	40.41	0.031		0.0	0.0	0.5		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	0.38	45.08	0.009		0.0	0.0	0.1		0.02
ARM B	0.57	37.17	0.015		0.0	0.0	0.2		0.03
ARM D	1.24	40.41	0.031		0.0	0.0	0.5		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	0.31	45.43	0.007		0.0	0.0	0.1		0.02
ARM B	0.46	37.38	0.012		0.0	0.0	0.2		0.03
ARM D	1.01	40.41	0.025		0.0	0.0	0.4		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	0.26	45.68	0.006		0.0	0.0	0.1		0.02
ARM B	0.39	37.52	0.010		0.0	0.0	0.2		0.03
ARM D	0.85	40.41	0.021		0.0	0.0	0.3		0.03

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
A	28.8	19.2	0.6	0.02	0.6	0.02
B	42.5	28.3	1.2	0.03	1.2	0.03
D	93.2	62.2	2.4	0.03	2.4	0.03
ALL	164.5	109.7	4.2	0.03	4.2	0.03

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ===

[Printed at 10:18:40 on 18/04/2006]

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CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

PICADY 4.1 ANALYSIS PROGRAM
RELEASE 3.0 (MAR 2001)

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Run with file:- "r:\MDR0303\Tr\arcady-picady results\Site 5.vpi" at 10:25:58 on Thursday, 28 April 2005

RUN TITLE
****
Site 5

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY
****

INPUT DATA

```
MAJOR ROAD (ARM C) --------------------- MAJOR ROAD (ARM A)
                             I
                             I
                             I
                             I
                             I
                             I
                     MINOR ROAD (ARM B)
```

ARM A IS ROWANS ROAD
ARM B IS TOOMAN ROAD
ARM C IS Arm C

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B

STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C

ETC.

GEOMETRIC DATA

DATA ITEM		MINOR ROAD B
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W)	10.00 M.
CENTRAL RESERVE WIDTH	(WCR)	0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B)	2.20 M.
- VISIBILITY	(VC-B)	100.0 M.
- BLOCKS TRAFFIC		NO
MINOR ROAD - VISIBILITY TO LEFT	(VB-C)	20.0 M.
- VISIBILITY TO RIGHT	(VB-A)	20.0 M.
- LANE 1 WIDTH	(WB-C)	5.00 M.
- LANE 2 WIDTH	(WB-A)	0.00 M.

TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.35	0.52	0.35
ARM B	15.00	45.00	75.00	0.15	0.23	0.15
ARM C	15.00	45.00	75.00	0.15	0.23	0.15

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S): ARM A	ARM B	ARM C
07.45 - 09.15				
	ARM A	0.000	0.821	0.179
		0.0	23.0	5.0
		(0.0)	(10.0)	(10.0)
	ARM B	0.833	0.000	0.167
		10.0	0.0	2.0
		(10.0)	(0.0)	(10.0)
	ARM C	0.917	0.083	0.000
		11.0	1.0	0.0
		(10.0)	(10.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

DEFAULT PROPORTIONS OF HEAVY VEHICLES ARE USED

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
07.45-08.00								
B-AC	0.15	9.27	0.016		0.0	0.0	0.2	
C-A	0.14							
C-B	0.01	9.50	0.001		0.0	0.0	0.0	
A-B	0.29							
A-C	0.06							

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-AC	0.140	0.000	0.013	0.006	0.010
C-B	0.114	0.000		0.010	

```
-----------------------------------------------------------------------------------------------
I  TIME      DEMAND  CAPACITY  DEMAND/    PEDESTRIAN  START   END      DELAY      GEOMETRIC DELAYI
I          (VEH/MIN) (VEH/MIN) CAPACITY     FLOW      QUEUE  QUEUE    (VEH.MIN/      (VEH.MIN/   I
I                                (RFC)    (PEDS/MIN) (VEHS)  (VEHS)  TIME SEGMENT)  TIME SEGMENT) I
I 08.00-08.15                                                                                     I
I   B-AC       0.18      9.26    0.019                 0.0     0.0        0.3                     I
I   C-A        0.16                                                                               I
I   C-B        0.01      9.49    0.002                 0.0     0.0        0.0                     I
I   A-B        0.34                                                                               I
I   A-C        0.07                                                                               I
I                                                                                                 I
I                   EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:                          I
I                             MAJOR RD.    CENT RES  VIS TO LEFT      VISIBILITY                  I
I     MARGINAL   LANE WIDTH    WIDTH       WIDTH    (AHEAD FOR MAJOR) TO RIGHT                    I
I      CHANGE:     (.1M)       (.1M)       (.1M)        (M)             (M)                       I
I                                                                                                 I
I       B-AC        0.140      0.000       0.013      0.006           0.010                       I
I       C-B         0.114      0.000                  0.010                                       I
-----------------------------------------------------------------------------------------------
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-----------------------------------------------------------------------------------------------
I  TIME      DEMAND  CAPACITY  DEMAND/    PEDESTRIAN  START   END      DELAY      GEOMETRIC DELAYI
I          (VEH/MIN) (VEH/MIN) CAPACITY     FLOW      QUEUE  QUEUE    (VEH.MIN/      (VEH.MIN/   I
I                                (RFC)    (PEDS/MIN) (VEHS)  (VEHS)  TIME SEGMENT)  TIME SEGMENT) I
I 08.15-08.30                                                                                     I
I   B-AC       0.22      9.24    0.024                 0.0     0.0        0.4                     I
I   C-A        0.20                                                                               I
I   C-B        0.02      9.47    0.002                 0.0     0.0        0.0                     I
I   A-B        0.42                                                                               I
I   A-C        0.09                                                                               I
I                                                                                                 I
I                   EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:                          I
I                             MAJOR RD.    CENT RES  VIS TO LEFT      VISIBILITY                  I
I     MARGINAL   LANE WIDTH    WIDTH       WIDTH    (AHEAD FOR MAJOR) TO RIGHT                    I
I      CHANGE:     (.1M)       (.1M)       (.1M)        (M)             (M)                       I
I                                                                                                 I
I       B-AC        0.140      0.000       0.013      0.006           0.010                       I
I       C-B         0.113      0.001                  0.010                                       I
-----------------------------------------------------------------------------------------------
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-----------------------------------------------------------------------------------------------
I  TIME      DEMAND  CAPACITY  DEMAND/    PEDESTRIAN  START   END      DELAY      GEOMETRIC DELAYI
I          (VEH/MIN) (VEH/MIN) CAPACITY     FLOW      QUEUE  QUEUE    (VEH.MIN/      (VEH.MIN/   I
I                                (RFC)    (PEDS/MIN) (VEHS)  (VEHS)  TIME SEGMENT)  TIME SEGMENT) I
I 08.30-08.45                                                                                     I
I   B-AC       0.22      9.24    0.024                 0.0     0.0        0.4                     I
I   C-A        0.20                                                                               I
I   C-B        0.02      9.47    0.002                 0.0     0.0        0.0                     I
I   A-B        0.42                                                                               I
I   A-C        0.09                                                                               I
I                                                                                                 I
I                   EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:                          I
I                             MAJOR RD.    CENT RES  VIS TO LEFT      VISIBILITY                  I
I     MARGINAL   LANE WIDTH    WIDTH       WIDTH    (AHEAD FOR MAJOR) TO RIGHT                    I
I      CHANGE:     (.1M)       (.1M)       (.1M)        (M)             (M)                       I
I                                                                                                 I
I       B-AC        0.140      0.000       0.013      0.006           0.010                       I
I       C-B         0.113      0.001                  0.010                                       I
-----------------------------------------------------------------------------------------------
```

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-----------------------------------------------------------------------------------------------
I  TIME      DEMAND  CAPACITY  DEMAND/    PEDESTRIAN  START   END      DELAY      GEOMETRIC DELAYI
I          (VEH/MIN) (VEH/MIN) CAPACITY     FLOW      QUEUE  QUEUE    (VEH.MIN/      (VEH.MIN/   I
I                                (RFC)    (PEDS/MIN) (VEHS)  (VEHS)  TIME SEGMENT)  TIME SEGMENT) I
I 08.45-09.00                                                                                     I
I   B-AC       0.18      9.26    0.019                 0.0     0.0        0.3                     I
I   C-A        0.16                                                                               I
I   C-B        0.01      9.49    0.002                 0.0     0.0        0.0                     I
I   A-B        0.34                                                                               I
I   A-C        0.07                                                                               I
I                                                                                                 I
I                   EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:                          I
I                             MAJOR RD.    CENT RES  VIS TO LEFT      VISIBILITY                  I
I     MARGINAL   LANE WIDTH    WIDTH       WIDTH    (AHEAD FOR MAJOR) TO RIGHT                    I
I      CHANGE:     (.1M)       (.1M)       (.1M)        (M)             (M)                       I
I                                                                                                 I
I       B-AC        0.140      0.000       0.013      0.006           0.010                       I
I       C-B         0.114      0.000                  0.010                                       I
-----------------------------------------------------------------------------------------------
```

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
09.00-09.15								
B-AC	0.15	9.27	0.016		0.0	0.0	0.3	
C-A	0.14							
C-B	0.01	9.50	0.001		0.0	0.0	0.0	
A-B	0.29							
A-C	0.06							

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-AC	0.140	0.000	0.013	0.006	0.010
C-B	0.114	0.000		0.010	

WARNING THE JUNCTION MODELLED CAN CARRY HIGH-SPEED MAJOR ROAD TRAFFIC. (AG23 REF. 8.4.2(v)).

QUEUE FOR STREAM B-AC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
B-AC	16.5	11.0	1.8	0.11	1.8	0.11
C-A	15.1	10.1				
C-B	1.4	0.9	0.1	0.10	0.1	0.10
A-B	31.5	21.0				
A-C	6.9	4.6				
ALL	71.3	47.5	1.9	0.03	1.9	0.03

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

****** PICADY 4 run completed.

=== end of file ===

[Printed at 10:11:59 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:- "r:\MDR0303\Tr\Junction Analysis 04-04-06\2005 PM Peak\Site 6.vai" (drive-on-the-left) at 10:18:11 on Frid

FILE PROPERTIES
****

RUN TITLE: 2005 PM Existing Site 6
LOCATION: Courtlough Interchange West
DATE: 05/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****

ARM A - Rowan's Road
ARM B - M1 On Slip
ARM C - M1 Overbridge
ARM D - M1 Off Slip

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM B IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.73	6.09	20.00	40.00	35.00	16.0	1.362	42.339
ARM C	4.43	5.59	15.00	17.50	35.00	11.0	1.442	43.128
ARM D	4.00	5.23	5.00	20.00	35.00	27.0	1.259	37.904

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	7.0	0.0
B	7.0	0.0
C	0.0	0.0
D	2.0	0.0

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2005 PM Existing Site 6

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	1.76	2.64	1.76
ARM C	15.00	45.00	75.00	1.89	2.83	1.89
ARM D	15.00	45.00	75.00	3.67	5.51	3.67

DEMAND SET TITLE: 2005 PM Existing Site 6

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.106	0.894	0.000
		0.0	15.0	126.0	0.0
		(0.0)	(0.0)	(0.8)	(0.0)
	ARM C	0.311	0.689	0.000	0.000
		47.0	104.0	0.0	0.0
		(12.8)	(7.7)	(0.0)	(0.0)
	ARM D	0.027	0.034	0.939	0.000
		8.0	10.0	276.0	0.0
		(0.0)	(0.0)	(3.3)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	1.76	35.16	0.050		0.0	0.1	0.8		0.03
ARM C	1.89	39.46	0.048		0.0	0.1	0.7		0.03
ARM D	3.67	34.25	0.107		0.0	0.1	1.8		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	2.10	33.81	0.062		0.1	0.1	1.0		0.03
ARM C	2.25	39.46	0.057		0.1	0.1	0.9		0.03
ARM D	4.39	33.75	0.130		0.1	0.1	2.2		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	2.58	31.96	0.081		0.1	0.1	1.3		0.03
ARM C	2.76	39.46	0.070		0.1	0.1	1.1		0.03
ARM D	5.37	33.08	0.162		0.1	0.2	2.9		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	2.58	31.95	0.081		0.1	0.1	1.3		0.03
ARM C	2.76	39.46	0.070		0.1	0.1	1.1		0.03
ARM D	5.37	33.07	0.162		0.2	0.2	2.9		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	2.10	33.80	0.062		0.1	0.1	1.0		0.03
ARM C	2.25	39.46	0.057		0.1	0.1	0.9		0.03
ARM D	4.39	33.75	0.130		0.2	0.1	2.3		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	1.76	35.14	0.050		0.1	0.1	0.8		0.03
ARM C	1.89	39.46	0.048		0.1	0.1	0.8		0.03
ARM D	3.67	34.24	0.107		0.1	0.1	1.8		0.03

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1
18.15	0.1

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1
18.15	0.1

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.2
17.45	0.2
18.00	0.1
18.15	0.1

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
A	193.3	128.9	6.2	0.03	6.2	0.03
C	207.1	138.0	5.6	0.03	5.6	0.03
D	403.1	268.8	13.9	0.03	13.9	0.03
ALL	803.5	535.7	25.6	0.03	25.6	0.03

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ===

[Printed at 10:18:05 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:- "r:\MDR0303\Tr\Junction Analysis 04-04-06\2005 PM Peak\Site 7.vai" (drive-on-the-left) at 10:19:25 on Frid

FILE PROPERTIES
****

RUN TITLE: 2005 PM Existing Site 7
LOCATION: Courtlough Interchange East
DATE: 05/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - M1 Off Slip
ARM B - Rowan's Road East
ARM C - M1 On Slip
ARM D - M1 Overbridge

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM C IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	4.02	8.20	10.00	30.00	32.80	26.0	1.360	43.063
ARM B	3.74	6.38	15.00	70.00	32.80	15.0	1.497	44.269
ARM D	4.53	5.90	15.00	20.00	32.80	40.0	1.350	41.710

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	7.0	0.0
B	0.0	0.0
C	2.0	0.0
D	0.0	0.0

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2005 PM Existing Site 7

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	1.13	1.69	1.13
ARM B	15.00	45.00	75.00	4.20	6.30	4.20
ARM D	15.00	45.00	75.00	5.03	7.54	5.03

DEMAND SET TITLE: 2005 PM Existing Site 7

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.900	0.000	0.100
		0.0	81.0	0.0	9.0
		(0.0)	(17.3)	(0.0)	(0.0)
	ARM B	0.000	0.000	0.577	0.423
		0.0	0.0	194.0	142.0
		(0.0)	(0.0)	(5.2)	(9.9)
	ARM D	0.000	0.988	0.012	0.000
		0.0	397.0	5.0	0.0
		(0.0)	(2.0)	(40.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	1.13	31.20	0.036		0.0	0.0	0.6		0.03
ARM B	4.20	41.02	0.102		0.0	0.1	1.7		0.03
ARM D	5.03	40.70	0.123		0.0	0.1	2.1		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	1.34	30.02	0.045		0.0	0.0	0.7		0.03
ARM B	5.02	40.97	0.122		0.1	0.1	2.1		0.03
ARM D	6.00	40.70	0.147		0.1	0.2	2.6		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	1.65	28.39	0.058		0.0	0.1	0.9		0.04
ARM B	6.14	40.89	0.150		0.1	0.2	2.6		0.03
ARM D	7.35	40.70	0.181		0.2	0.2	3.3		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	1.65	28.38	0.058		0.1	0.1	0.9		0.04
ARM B	6.14	40.89	0.150		0.2	0.2	2.6		0.03
ARM D	7.35	40.70	0.181		0.2	0.2	3.3		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	1.34	30.01	0.045		0.1	0.0	0.7		0.03
ARM B	5.02	40.97	0.122		0.2	0.1	2.1		0.03
ARM D	6.00	40.70	0.147		0.2	0.2	2.6		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	1.13	31.19	0.036		0.0	0.0	0.6		0.03
ARM B	4.20	41.02	0.102		0.1	0.1	1.7		0.03
ARM D	5.03	40.70	0.123		0.2	0.1	2.1		0.03

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.1
17.45	0.1
18.00	0.0
18.15	0.0

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.2
17.45	0.2
18.00	0.1
18.15	0.1

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.2
17.30	0.2
17.45	0.2
18.00	0.2
18.15	0.1

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	123.4	82.3	4.4	0.04	4.4	0.04
B	460.7	307.2	12.9	0.03	12.9	0.03
D	551.2	367.5	16.0	0.03	16.0	0.03
ALL	1135.4	756.9	33.2	0.03	33.2	0.03

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ===

[Printed at 10:17:28 on 18/04/2006]

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  CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

                        PICADY 4.1  ANALYSIS PROGRAM
                           RELEASE 4.0 (NOV 2003)

               ADAPTED FROM PICADY/3 WHICH IS CROWN COPYRIGHT
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Run with file:- "r:\MDR0303\Tr\Junction Analysis 04-04-06\2005 PM Peak\Site 8.vpi" (drive-on-the-left ) at 12:56:35 on Thur

 RUN TITLE
 *********
 2005 PM Existing Site 8


.MAJOR/MINOR JUNCTION CAPACITY AND DELAY
 ***************************************

 INPUT DATA
 ----------

                    MAJOR ROAD (ARM C) --------------------- MAJOR ROAD (ARM A)
                                                I
                                                I
                                                I
                                                I
                                                I
                                                I
                                          MINOR ROAD (ARM B)

ARM A IS R132 BALBRIGGAN ROAD
ARM B IS R132
ARM C IS LINK TO SITE 7


STREAM LABELLING CONVENTION
---------------------------

       STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B

       STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C

       ETC.
```

GEOMETRIC DATA

DATA ITEM		MINOR ROAD B
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W)	11.26 M.
CENTRAL RESERVE WIDTH	(WCR)	0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B)	3.30 M.
- VISIBILITY	(VC-B)	200.0 M.
- BLOCKS TRAFFIC		NO
MINOR ROAD - VISIBILITY TO LEFT	(VB-C)	100.0 M.
- VISIBILITY TO RIGHT	(VB-A)	200.0 M.
- LANE 1 WIDTH	(WB-C)	-
- LANE 2 WIDTH	(WB-A)	-
- WIDTH AT 0 M FROM JUNC.		10.00 M.
- WIDTH AT 5 M FROM JUNC.		10.00 M.
- WIDTH AT 10 M FROM JUNC.		9.00 M.
- WIDTH AT 15 M FROM JUNC.		6.50 M.
- WIDTH AT 20 M FROM JUNC.		6.00 M.
- LENGTH OF FLARED SECTION		3 VEHS

TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	3.86	5.79	3.86
ARM B	15.00	45.00	75.00	3.69	5.53	3.69
ARM C	15.00	45.00	75.00	5.97	8.96	5.97

TIME	FROM/TO	ARM A	ARM B	ARM C
		TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S)		
16.45 - 18.15				
	ARM A	0.000	0.337	0.663
		0.0	104.0	205.0
		(0.0)	(6.7)	(5.4)
	ARM B	0.556	0.000	0.444
		164.0	0.0	131.0
		(3.0)	(0.0)	(9.9)
	ARM C	0.826	0.174	0.000
		395.0	83.0	0.0
		(2.8)	(13.3)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

```
-------------------------------------------------------------------------------------------------
I  TIME       DEMAND  CAPACITY  DEMAND/   PEDESTRIAN  START   END       DELAY      GEOMETRIC DELAYI
I          (VEH/MIN) (VEH/MIN) CAPACITY     FLOW      QUEUE  QUEUE    (VEH.MIN/      (VEH.MIN/   I
I                                (RFC)    (PEDS/MIN) (VEHS) (VEHS)  TIME SEGMENT)  TIME SEGMENT) I
I 16.45-17.00                                                                                  I
I   B-C        1.64     11.04    0.148                  0.0    0.2         2.5                   I
I   B-A        2.05      9.33    0.220                  0.0    0.3         4.0                   I
I   C-A        4.94                                                                            I
I   C-B        1.04     10.53    0.099                  0.0    0.1         1.6                   I
I   A-B        1.30                                                                            I
I   A-C        2.56                                                                            I
I                                                                                              I
I                    EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:                      I
I                              MAJOR RD.    CENT RES  VIS TO LEFT      VISIBILITY              I
I     MARGINAL   LANE WIDTH    WIDTH        WIDTH    (AHEAD FOR MAJOR) TO RIGHT                I
I      CHANGE:      (.1M)      (.1M)        (.1M)         (M)            (M)                   I
I                                                                                              I
I       B-C           0.111       0.004                                 0.010                  I
I       B-A           0.084       0.011        0.026       0.006        0.008                  I
I       C-B           0.116       0.005                    0.010                               I
-------------------------------------------------------------------------------------------------

-------------------------------------------------------------------------------------------------
I  TIME       DEMAND  CAPACITY  DEMAND/   PEDESTRIAN  START   END       DELAY      GEOMETRIC DELAYI
I          (VEH/MIN) (VEH/MIN) CAPACITY     FLOW      QUEUE  QUEUE    (VEH.MIN/      (VEH.MIN/   I
I                                (RFC)    (PEDS/MIN) (VEHS) (VEHS)  TIME SEGMENT)  TIME SEGMENT) I
I 17.00-17.15                                                                                  I
I   B-C        1.96     10.74    0.182                  0.2    0.2         3.2                   I
I   B-A        2.45      8.95    0.274                  0.3    0.4         5.4                   I
I   C-A        5.90                                                                            I
I   C-B        1.24     10.37    0.119                  0.1    0.1         2.0                   I
I   A-B        1.55                                                                            I
I   A-C        3.06                                                                            I
I                                                                                              I
I                    EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:                      I
I                              MAJOR RD.    CENT RES  VIS TO LEFT      VISIBILITY              I
I     MARGINAL   LANE WIDTH    WIDTH        WIDTH    (AHEAD FOR MAJOR) TO RIGHT                I
I      CHANGE:      (.1M)      (.1M)        (.1M)         (M)            (M)                   I
I                                                                                              I
I       B-C           0.108       0.005                                 0.010                  I
I       B-A           0.081       0.014        0.026       0.006        0.008                  I
I       C-B           0.114       0.006                    0.010                               I
-------------------------------------------------------------------------------------------------

-------------------------------------------------------------------------------------------------
I  TIME       DEMAND  CAPACITY  DEMAND/   PEDESTRIAN  START   END       DELAY      GEOMETRIC DELAYI
I          (VEH/MIN) (VEH/MIN) CAPACITY     FLOW      QUEUE  QUEUE    (VEH.MIN/      (VEH.MIN/   I
I                                (RFC)    (PEDS/MIN) (VEHS) (VEHS)  TIME SEGMENT)  TIME SEGMENT) I
I 17.15-17.30                                                                                  I
I   B-C        2.39     10.30    0.232                  0.2    0.3         4.4                   I
I   B-A        3.00      8.42    0.356                  0.4    0.5         7.8                   I
I   C-A        7.22                                                                            I
I   C-B        1.52     10.14    0.150                  0.1    0.2         2.6                   I
I   A-B        1.90                                                                            I
I   A-C        3.75                                                                            I
I                                                                                              I
I                    EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:                      I
I                              MAJOR RD.    CENT RES  VIS TO LEFT      VISIBILITY              I
I     MARGINAL   LANE WIDTH    WIDTH        WIDTH    (AHEAD FOR MAJOR) TO RIGHT                I
I      CHANGE:      (.1M)      (.1M)        (.1M)         (M)            (M)                   I
I                                                                                              I
I       B-C           0.104       0.006                                 0.010                  I
I       B-A           0.076       0.017        0.026       0.005        0.007                  I
I       C-B           0.112       0.008                    0.010                               I
-------------------------------------------------------------------------------------------------

-------------------------------------------------------------------------------------------------
I  TIME       DEMAND  CAPACITY  DEMAND/   PEDESTRIAN  START   END       DELAY      GEOMETRIC DELAYI
I          (VEH/MIN) (VEH/MIN) CAPACITY     FLOW      QUEUE  QUEUE    (VEH.MIN/      (VEH.MIN/   I
I                                (RFC)    (PEDS/MIN) (VEHS) (VEHS)  TIME SEGMENT)  TIME SEGMENT) I
I 17.30-17.45                                                                                  I
I   B-C        2.39     10.30    0.233                  0.3    0.3         4.5                   I
I   B-A        3.00      8.42    0.356                  0.5    0.5         8.2                   I
I   C-A        7.22                                                                            I
I   C-B        1.52     10.14    0.150                  0.2    0.2         2.6                   I
I   A-B        1.90                                                                            I
I   A-C        3.75                                                                            I
I                                                                                              I
I                    EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:                      I
I                              MAJOR RD.    CENT RES  VIS TO LEFT      VISIBILITY              I
I     MARGINAL   LANE WIDTH    WIDTH        WIDTH    (AHEAD FOR MAJOR) TO RIGHT                I
I      CHANGE:      (.1M)      (.1M)        (.1M)         (M)            (M)                   I
I                                                                                              I
I       B-C           0.104       0.006                                 0.010                  I
I       B-A           0.076       0.017        0.026       0.005        0.007                  I
I       C-B           0.112       0.008                    0.010                               I
-------------------------------------------------------------------------------------------------
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 -------------------------------------------------------------------------------------------------
 I  TIME      DEMAND   CAPACITY  DEMAND/   PEDESTRIAN  START   END      DELAY     GEOMETRIC DELAYI
 I          (VEH/MIN) (VEH/MIN) CAPACITY     FLOW     QUEUE  QUEUE   (VEH.MIN/      (VEH.MIN/   I
 I                                (RFC)   (PEDS/MIN) (VEHS) (VEHS) TIME SEGMENT)  TIME SEGMENT) I
 I 17.45-18.00                                                                                  I
 I   B-C         1.96     10.73    0.182                 0.3    0.2        3.5                  I
 I   B-A         2.45      8.95    0.274                 0.5    0.4        5.9                  I
 I   C-A         5.90                                                                           I
 I   C-B         1.24     10.37    0.119                 0.2    0.1        2.1                  I
 I   A-B         1.55                                                                           I
 I   A-C         3.06                                                                           I
 I                                                                                              I
 I                  EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:                        I
 I                            MAJOR RD.    CENT RES  VIS TO LEFT      VISIBILITY                I
 I      MARGINAL   LANE WIDTH  WIDTH        WIDTH   (AHEAD FOR MAJOR) TO RIGHT                  I
 I       CHANGE:     (.1M)     (.1M)        (.1M)        (M)           (M)                      I
 I                                                                                              I
 I        B-C          0.108      0.005                                0.010                    I
 I        B-A          0.081      0.014       0.026       0.006        0.008                    I
 I        C-B          0.114      0.006                   0.010                                 I
 -------------------------------------------------------------------------------------------------

 -------------------------------------------------------------------------------------------------
 I  TIME      DEMAND   CAPACITY  DEMAND/   PEDESTRIAN  START   END      DELAY     GEOMETRIC DELAYI
 I          (VEH/MIN) (VEH/MIN) CAPACITY     FLOW     QUEUE  QUEUE   (VEH.MIN/      (VEH.MIN/   I
 I                                (RFC)   (PEDS/MIN) (VEHS) (VEHS) TIME SEGMENT)  TIME SEGMENT) I
 I 18.00-18.15                                                                                  I
 I   B-C         1.64     11.03    0.148                 0.2    0.2        2.7                  I
 I   B-A         2.05      9.33    0.220                 0.4    0.3        4.4                  I
 I   C-A         4.94                                                                           I
 I   C-B         1.04     10.53    0.099                 0.1    0.1        1.7                  I
 I   A-B         1.30                                                                           I
 I   A-C         2.56                                                                           I
 I                                                                                              I
 I                  EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:                        I
 I                            MAJOR RD.    CENT RES  VIS TO LEFT      VISIBILITY                I
 I      MARGINAL   LANE WIDTH  WIDTH        WIDTH   (AHEAD FOR MAJOR) TO RIGHT                  I
 I       CHANGE:     (.1M)     (.1M)        (.1M)        (M)           (M)                      I
 I                                                                                              I
 I        B-C          0.111      0.004                                0.010                    I
 I        B-A          0.084      0.011       0.026       0.006        0.008                    I
 I        C-B          0.116      0.005                   0.010                                 I
 -------------------------------------------------------------------------------------------------

 QUEUE FOR STREAM   B-C
 -------------------------
 TIME SEGMENT    NO. OF
   ENDING       VEHICLES
                IN QUEUE
   17.00            0.2
   17.15            0.2
   17.30            0.3
   17.45            0.3
   18.00            0.2
   18.15            0.2

 QUEUE FOR STREAM   B-A
 -------------------------
 TIME SEGMENT    NO. OF
   ENDING       VEHICLES
                IN QUEUE
   17.00            0.3
   17.15            0.4
   17.30            0.5     *
   17.45            0.5     *
   18.00            0.4
   18.15            0.3

 QUEUE FOR STREAM   C-B
 -------------------------
 TIME SEGMENT    NO. OF
   ENDING       VEHICLES
                IN QUEUE
   17.00            0.1
   17.15            0.1
   17.30            0.2
   17.45            0.2
   18.00            0.1
   18.15            0.1
```

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
B-C	179.6	119.8	20.8	0.12	20.8	0.12
B-A	224.9	149.9	35.8	0.16	35.8	0.16
C-A	541.6	361.1				
C-B	113.8	75.9	12.5	0.11	12.5	0.11
A-B	142.6	95.1				
A-C	281.1	187.4				
ALL	1483.7	989.1	69.1	0.05	69.1	0.05

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

****** PICADY 4 run completed.
== end of file ==

[Printed at 10:16:15 on 18/04/2006]

2008 Do Something

```
___________________ A R C A D Y  6 ___________________

    ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY


    Analysis Program: Release 3.0 (JUNE 2005)

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Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2008 Do Something\AM Peak\Site 3.vai"
(drive-on-the-left) at 10:34:28 on Friday, 7 April 2006

FILE PROPERTIES
****

```
  RUN TITLE: 2008 AM Do Something Site 3
   LOCATION: Five Roads Roundabout
       DATE: 04/04/2006
     CLIENT:
 ENUMERATOR:
 JOB NUMBER:
     STATUS:
DESCRIPTION:
```


INPUT DATA
****

ARM A - Nevitt Road
ARM B - Cul de Sac
ARM C - Link to R132
ARM D - Link to Hedgestown

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.05	3.95	8.80	20.00	31.60	21.0	0.557	19.415
ARM B	2.71	3.95	6.30	20.00	31.60	36.0	0.513	17.163
ARM C	5.50	5.50	0.00	15.00	31.60	6.0	0.693	29.635
ARM D	3.75	4.80	7.90	25.00	31.60	21.0	0.611	23.587

V = approach half-width   L = effective flare length   D = inscribed circle diameter
E = entry width   R = entry radius   PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: Site 3 AM

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.93	1.39	0.93
ARM B	15.00	45.00	75.00	0.01	0.02	0.01
ARM C	15.00	45.00	75.00	0.70	1.05	0.70
ARM D	15.00	45.00	75.00	0.29	0.43	0.29

DEMAND SET TITLE: Site 3 AM

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	0.000	0.176	0.824
		0.0	0.0	13.0	61.0
		(0.0)	(0.0)	(54.0)	(51.0)
	ARM B	1.000	0.000	0.000	0.000
		0.0	0.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.946	0.000	0.000	0.054
		53.0	0.0	0.0	3.0
		(77.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.826	0.000	0.174	0.000
		19.0	0.0	4.0	0.0
		(11.0)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	0.93	12.79	0.072		0.0	0.1	1.1		0.08
ARM B	0.01	16.42	0.001		0.0	0.0	0.0		0.06
ARM C	0.70	16.68	0.042		0.0	0.0	0.6		0.06
ARM D	0.29	20.96	0.014		0.0	0.0	0.2		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	1.10	12.79	0.086		0.1	0.1	1.4		0.09
ARM B	0.01	16.27	0.001		0.0	0.0	0.0		0.06
ARM C	0.84	16.58	0.050		0.0	0.1	0.8		0.06
ARM D	0.34	20.83	0.016		0.0	0.0	0.2		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	1.35	12.79	0.106		0.1	0.1	1.7		0.09
ARM B	0.02	16.07	0.001		0.0	0.0	0.0		0.06
ARM C	1.02	16.46	0.062		0.1	0.1	1.0		0.06
ARM D	0.42	20.65	0.020		0.0	0.0	0.3		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	1.35	12.79	0.106		0.1	0.1	1.8		0.09
ARM B	0.02	16.07	0.001		0.0	0.0	0.0		0.06
ARM C	1.02	16.46	0.062		0.1	0.1	1.0		0.06
ARM D	0.42	20.65	0.020		0.0	0.0	0.3		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	1.10	12.79	0.086		0.1	0.1	1.5		0.09
ARM B	0.01	16.27	0.001		0.0	0.0	0.0		0.06
ARM C	0.84	16.58	0.050		0.1	0.1	0.8		0.06
ARM D	0.34	20.83	0.016		0.0	0.0	0.3		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	0.93	12.79	0.072		0.1	0.1	1.2		0.08
ARM B	0.01	16.41	0.001		0.0	0.0	0.0		0.06
ARM C	0.70	16.67	0.042		0.1	0.0	0.7		0.06
ARM D	0.29	20.96	0.014		0.0	0.0	0.2		0.05

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.1

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	101.5	67.6	8.7	0.09	8.7	0.09
B	1.4	0.9	0.1	0.06	0.1	0.06
C	76.8	51.2	4.9	0.06	4.9	0.06
D	31.5	21.0	1.5	0.05	1.5	0.05
ALL	211.2	140.8	15.2	0.07	15.2	0.07

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ===

[Printed at 10:21:58 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
program advice and maintenance, contact:

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Web: www.trlsoftware.co.uk

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2008 Do Something\AM Peak\Site 4.vai"
(drive-on-the-left) at 10:35:15 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2008 AM Do Something Site 4
LOCATION: Hedgestown Roundabout
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - R132 Off Slip
ARM B - Hedgestown Road
ARM C - R132 On Slip
ARM D - Link to "Five Roads"

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM C IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	7.70	7.70	2.00	30.00	31.70	16.0	1.789	55.923
ARM B	3.96	5.96	5.00	30.00	31.70	27.0	1.336	39.531
ARM D	4.60	5.60	8.00	25.30	31.70	36.0	1.350	41.010

V = approach half-width
E = entry width
L = effective flare length
R = entry radius
D = inscribed circle diameter
PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	0.0	0.0
B	0.0	0.0
C	0.0	0.0
D	0.0	0.0

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: Site 4 AM

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.36	0.54	0.36
ARM B	15.00	45.00	75.00	0.19	0.28	0.19
ARM D	15.00	45.00	75.00	0.80	1.20	0.80

DEMAND SET TITLE: Site 4 AM

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	0.655	0.000	0.345
		0.0	19.0	0.0	10.0
		(0.0)	(11.0)	(0.0)	(10.0)
	ARM B	0.000	0.000	0.133	0.867
		0.0	0.0	2.0	13.0
		(0.0)	(0.0)	(0.0)	(8.0)
	ARM D	0.000	0.297	0.703	0.000
		0.0	19.0	45.0	0.0
		(0.0)	(5.0)	(67.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	0.36	48.62	0.007		0.0	0.0	0.1		0.02
ARM B	0.19	35.62	0.005		0.0	0.0	0.1		0.03
ARM D	0.80	27.60	0.029		0.0	0.0	0.4		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	0.43	48.24	0.009		0.0	0.0	0.1		0.02
ARM B	0.22	35.36	0.006		0.0	0.0	0.1		0.03
ARM D	0.96	27.60	0.035		0.0	0.0	0.5		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	0.53	47.72	0.011		0.0	0.0	0.2		0.02
ARM B	0.27	35.00	0.008		0.0	0.0	0.1		0.03
ARM D	1.17	27.60	0.042		0.0	0.0	0.7		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	0.53	47.72	0.011		0.0	0.0	0.2		0.02
ARM B	0.27	34.99	0.008		0.0	0.0	0.1		0.03
ARM D	1.17	27.60	0.042		0.0	0.0	0.7		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	0.43	48.24	0.009		0.0	0.0	0.1		0.02
ARM B	0.22	35.36	0.006		0.0	0.0	0.1		0.03
ARM D	0.96	27.60	0.035		0.0	0.0	0.5		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	0.36	48.61	0.007		0.0	0.0	0.1		0.02
ARM B	0.19	35.62	0.005		0.0	0.0	0.1		0.03
ARM D	0.80	27.60	0.029		0.0	0.0	0.5		0.04

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	39.8	26.5	0.8	0.02	0.8	0.02
B	20.6	13.7	0.6	0.03	0.6	0.03
D	87.8	58.5	3.3	0.04	3.3	0.04
ALL	148.1	98.7	4.7	0.03	4.7	0.03

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ===

[Printed at 10:24:48 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
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RG40 3GA,UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2008 Do Something\AM Peak\Site 6.vai"
(drive-on-the-left) at 10:35:55 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2008 AM Do Something Site 6
LOCATION: Courtlough Interchange West
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - Rowan's Road
ARM B - M1 On Slip
ARM C - M1 Overbridge
ARM D - M1 Off Slip

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM B IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.73	6.09	20.00	40.00	35.00	16.0	1.346	42.107
ARM C	4.43	5.59	15.00	17.50	35.00	11.0	1.442	43.128
ARM D	4.00	5.23	5.00	20.00	35.00	27.0	1.190	36.744

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	8.0	0.0
B	6.0	0.0
C	0.0	0.0
D	7.0	0.0

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: Site 6 AM

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	1.19	1.78	1.19
ARM C	15.00	45.00	75.00	5.21	7.82	5.21
ARM D	15.00	45.00	75.00	4.80	7.20	4.80

DEMAND SET TITLE: Site 6 AM

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
		TURNING PROPORTIONS TURNING COUNTS (VEH/HR) (PERCENTAGE OF H.V.S)			
07.45 - 09.15					
	ARM A	0.000	0.126	0.874	0.000
		0.0	12.0	83.0	0.0
		(0.0)	(8.0)	(11.0)	(0.0)
	ARM C	0.540	0.460	0.000	0.000
		225.0	192.0	0.0	0.0
		(14.0)	(18.0)	(0.0)	(0.0)
	ARM D	0.240	0.023	0.737	0.000
		92.0	9.0	283.0	0.0
		(14.0)	(0.0)	(8.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	1.19	29.83	0.040		0.0	0.0	0.6		0.03
ARM C	5.21	37.23	0.140		0.0	0.2	2.4		0.03
ARM D	4.80	27.06	0.177		0.0	0.2	3.2		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	1.42	28.21	0.050		0.0	0.1	0.8		0.04
ARM C	6.22	37.23	0.167		0.2	0.2	3.0		0.03
ARM D	5.73	25.77	0.222		0.2	0.3	4.2		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	1.74	26.04	0.067		0.1	0.1	1.1		0.04
ARM C	7.62	37.23	0.205		0.2	0.3	3.8		0.03
ARM D	7.02	24.02	0.292		0.3	0.4	6.1		0.06

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	1.74	26.03	0.067		0.1	0.1	1.1		0.04
ARM C	7.62	37.23	0.205		0.3	0.3	3.9		0.03
ARM D	7.02	24.02	0.292		0.4	0.4	6.2		0.06

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	1.42	28.20	0.050		0.1	0.1	0.8		0.04
ARM C	6.22	37.23	0.167		0.3	0.2	3.0		0.03
ARM D	5.73	25.76	0.223		0.4	0.3	4.4		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	1.19	29.81	0.040		0.1	0.0	0.6		0.03
ARM C	5.21	37.23	0.140		0.2	0.2	2.5		0.03
ARM D	4.80	27.04	0.178		0.3	0.2	3.3		0.05

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.0

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.2
08.15	0.2
08.30	0.3
08.45	0.3
09.00	0.2
09.15	0.2

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.2
08.15	0.3
08.30	0.4
08.45	0.4
09.00	0.3
09.15	0.2

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	130.3	86.8	5.0	0.04	5.0	0.04
C	571.8	381.2	18.6	0.03	18.6	0.03
D	526.5	351.0	27.3	0.05	27.3	0.05
ALL	1228.6	819.1	50.8	0.04	50.8	0.04

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ===

[Printed at 10:25:15 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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RG40 3GA,UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2008 Do Something\AM Peak\Site 7.vai"
(drive-on-the-left) at 10:37:14 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2008 AM Do Something Site 7
LOCATION: Courtlough Interchange East
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****

ARM A - M1 Off Slip
ARM B - Rowan's Road East
ARM C - M1 On Slip
ARM D - M1 Overbridge

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM C IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	4.02	8.20	10.00	30.00	32.80	26.0	1.375	43.295
ARM B	3.74	6.38	15.00	70.00	32.80	15.0	1.465	43.805
ARM D	4.53	5.90	15.00	20.00	32.80	40.0	1.350	41.710

V = approach half-width   L = effective flare length   D = inscribed circle diameter
E = entry width   R = entry radius   PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	6.0	0.0
B	2.0	0.0
C	7.0	0.0
D	0.0	0.0

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: Site 7 AM

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	3.92	5.89	3.92
ARM B	15.00	45.00	75.00	9.21	13.82	9.21
ARM D	15.00	45.00	75.00	4.57	6.86	4.57

DEMAND SET TITLE: Site 7 AM

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
		TURNING PROPORTIONS TURNING COUNTS (VEH/HR) (PERCENTAGE OF H.V.S)			
07.45 - 09.15	ARM A	0.000	0.717	0.019	0.264
		0.0	225.0	6.0	83.0
		(0.0)	(16.0)	(17.0)	(13.0)
	ARM B	0.000	0.000	0.547	0.453
		0.0	0.0	403.0	334.0
		(0.0)	(0.0)	(5.0)	(16.0)
	ARM D	0.000	0.934	0.066	0.000
		0.0	342.0	24.0	0.0
		(0.0)	(9.0)	(4.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	3.92	31.65	0.124		0.0	0.1	2.1		0.04
ARM B	9.21	37.74	0.244		0.0	0.3	4.8		0.03
ARM D	4.57	38.38	0.119		0.0	0.1	2.0		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	4.69	30.49	0.154		0.1	0.2	2.7		0.04
ARM B	11.00	37.33	0.295		0.3	0.4	6.2		0.04
ARM D	5.46	38.38	0.142		0.1	0.2	2.5		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	5.74	28.90	0.199		0.2	0.2	3.7		0.04
ARM B	13.47	36.77	0.366		0.4	0.6	8.5		0.04
ARM D	6.69	38.38	0.174		0.2	0.2	3.1		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	5.74	28.90	0.199		0.2	0.2	3.7		0.04
ARM B	13.47	36.77	0.366		0.6	0.6	8.6		0.04
ARM D	6.69	38.38	0.174		0.2	0.2	3.2		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	4.69	30.48	0.154		0.2	0.2	2.8		0.04
ARM B	11.00	37.33	0.295		0.6	0.4	6.4		0.04
ARM D	5.46	38.38	0.142		0.2	0.2	2.5		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	3.92	31.64	0.124		0.2	0.1	2.2		0.04
ARM B	9.21	37.73	0.244		0.4	0.3	4.9		0.04
ARM D	4.57	38.38	0.119		0.2	0.1	2.1		0.03

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.2
08.30	0.2
08.45	0.2
09.00	0.2
09.15	0.1

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.00	0.3	
08.15	0.4	
08.30	0.6	*
08.45	0.6	*
09.00	0.4	
09.15	0.3	

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.2
08.30	0.2
08.45	0.2
09.00	0.2
09.15	0.1

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	430.6	287.0	17.1	0.04	17.1	0.04
B	1010.6	673.7	39.4	0.04	39.4	0.04
D	501.9	334.6	15.3	0.03	15.3	0.03
ALL	1943.0	1295.3	71.8	0.04	71.8	0.04

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

== end of file ===

[Printed at 10:25:41 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2008 Do Something\AM Peak\Site 8 Roundabout.vai"
(drive-on-the-left) at 10:38:20 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2008 AM Do Something Site 8
LOCATION: Rowan's Road East/R132 Roundabout
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - R132 (Balbriggan Road)
ARM B - R132 (Dublin Road)
ARM C - Rowan's Road East
ARM D - Access to Site C of M1 Business Park

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	5.80	8.20	22.00	32.00	50.00	28.0	0.740	39.241
ARM B	6.00	8.00	30.00	26.00	50.00	19.0	0.761	40.534
ARM C	7.00	7.50	10.00	18.50	50.00	33.0	0.703	36.987
ARM D	7.50	8.00	5.00	20.50	50.00	32.0	0.734	39.559

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: Site 8 AM

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	7.49	11.23	7.49
ARM B	15.00	45.00	75.00	4.09	6.13	4.09
ARM C	15.00	45.00	75.00	7.09	10.63	7.09
ARM D	15.00	45.00	75.00	3.61	5.42	3.61

DEMAND SET TITLE: Site 8 AM

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	0.225	0.686	0.088
		0.0	135.0	411.0	53.0
		(0.0)	(7.0)	(5.0)	(15.0)
	ARM B	0.327	0.000	0.526	0.147
		107.0	0.0	172.0	48.0
		(14.0)	(0.0)	(19.0)	(15.0)
	ARM C	0.418	0.254	0.000	0.328
		237.0	144.0	0.0	186.0
		(6.0)	(15.0)	(0.0)	(15.0)
	ARM D	0.218	0.249	0.533	0.000
		63.0	72.0	154.0	0.0
		(14.0)	(15.0)	(15.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	7.49	33.20	0.226		0.0	0.3	4.3		0.04
ARM B	4.09	29.25	0.140		0.0	0.2	2.4		0.04
ARM C	7.09	31.37	0.226		0.0	0.3	4.3		0.04
ARM D	3.61	30.16	0.120		0.0	0.1	2.0		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	8.94	32.49	0.275		0.3	0.4	5.6		0.04
ARM B	4.88	28.20	0.173		0.2	0.2	3.1		0.04
ARM C	8.46	31.01	0.273		0.3	0.4	5.5		0.04
ARM D	4.31	29.32	0.147		0.1	0.2	2.6		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	10.95	31.50	0.348		0.4	0.5	7.8		0.05
ARM B	5.98	26.74	0.224		0.2	0.3	4.2		0.05
ARM C	10.37	30.50	0.340		0.4	0.5	7.6		0.05
ARM D	5.28	28.17	0.188		0.2	0.2	3.4		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	10.95	31.49	0.348		0.5	0.5	8.0		0.05
ARM B	5.98	26.73	0.224		0.3	0.3	4.3		0.05
ARM C	10.37	30.50	0.340		0.5	0.5	7.7		0.05
ARM D	5.28	28.16	0.188		0.2	0.2	3.5		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	8.94	32.48	0.275		0.5	0.4	5.8		0.04
ARM B	4.88	28.19	0.173		0.3	0.2	3.2		0.04
ARM C	8.46	31.00	0.273		0.5	0.4	5.7		0.04
ARM D	4.31	29.31	0.147		0.2	0.2	2.6		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	7.49	33.19	0.226		0.4	0.3	4.4		0.04
ARM B	4.09	29.24	0.140		0.2	0.2	2.5		0.04
ARM C	7.09	31.36	0.226		0.4	0.3	4.4		0.04
ARM D	3.61	30.14	0.120		0.2	0.1	2.1		0.04

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.00	0.3	
08.15	0.4	
08.30	0.5	*
08.45	0.5	*
09.00	0.4	
09.15	0.3	

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.2
08.15	0.2
08.30	0.3
08.45	0.3
09.00	0.2
09.15	0.2

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.00	0.3	
08.15	0.4	
08.30	0.5	*
08.45	0.5	*
09.00	0.4	
09.15	0.3	

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.2
08.30	0.2
08.45	0.2
09.00	0.2
09.15	0.1

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	821.4	547.6	35.9	0.04	35.9	0.04
B	448.4	298.9	19.7	0.04	19.7	0.04
C	777.5	518.3	35.3	0.05	35.3	0.05
D	396.3	264.2	16.1	0.04	16.1	0.04
ALL	2443.5	1629.0	107.0	0.04	107.0	0.04

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

== end of file ==

[Printed at 10:26:18 on 18/04/2006]

ARCADY 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2008 Do Something\AM Peak\Site 9 A & F Business Park Roundabout.vai"
(drive-on-the-left) at 10:39:20 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2008 AM Do Something Site 9
LOCATION: Rowan's Road West/M1 Business Park
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - Link to Courtlough Interchange
ARM B - Access to Site F of M1 Business Park
ARM C - Rowan's Road West
ARM D - Access to Site A of M1 Business Park

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	4.00	8.00	2.00	23.00	50.00	6.0	0.596	24.986
ARM B	4.00	8.00	2.00	22.00	50.00	22.0	0.565	23.668
ARM C	4.00	8.00	2.00	25.00	50.00	15.0	0.581	24.347
ARM D	4.00	8.00	2.00	23.00	50.00	26.0	0.558	23.394

V = approach half-width
E = entry width
L = effective flare length
R = entry radius
D = inscribed circle diameter
PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: Site 9 AM

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	3.96	5.94	3.96
ARM B	15.00	45.00	75.00	0.00	0.00	0.00
ARM C	15.00	45.00	75.00	1.02	1.54	1.02
ARM D	15.00	45.00	75.00	0.44	0.66	0.44

DEMAND SET TITLE: Site 9 AM

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	0.000	0.211	0.789
		0.0	0.0	67.0	250.0
		(0.0)	(0.0)	(9.0)	(15.0)
	ARM B	0.000	0.000	0.000	0.000
		0.0	0.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.768	0.000	0.000	0.232
		63.0	0.0	0.0	19.0
		(8.0)	(0.0)	(0.0)	(16.0)
	ARM D	0.914	0.000	0.086	0.000
		32.0	0.0	3.0	0.0
		(16.0)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	3.96	21.95	0.181		0.0	0.2	3.2		0.06
ARM B	0.00	21.10	0.000		0.0	0.0	0.0		0.00
ARM C	1.02	20.26	0.051		0.0	0.1	0.8		0.05
ARM D	0.44	19.99	0.022		0.0	0.0	0.3		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	4.73	21.95	0.216		0.2	0.3	4.0		0.06
ARM B	0.00	20.59	0.000		0.0	0.0	0.0		0.00
ARM C	1.22	19.89	0.062		0.1	0.1	1.0		0.05
ARM D	0.52	19.91	0.026		0.0	0.0	0.4		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	5.80	21.94	0.264		0.3	0.4	5.3		0.06
ARM B	0.00	19.92	0.000		0.0	0.0	0.0		0.00
ARM C	1.50	19.39	0.077		0.1	0.1	1.2		0.06
ARM D	0.64	19.80	0.032		0.0	0.0	0.5		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	5.80	21.94	0.264		0.4	0.4	5.4		0.06
ARM B	0.00	19.91	0.000		0.0	0.0	0.0		0.00
ARM C	1.50	19.38	0.077		0.1	0.1	1.3		0.06
ARM D	0.64	19.80	0.032		0.0	0.0	0.5		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	4.73	21.95	0.216		0.4	0.3	4.2		0.06
ARM B	0.00	20.59	0.000		0.0	0.0	0.0		0.00
ARM C	1.22	19.88	0.062		0.1	0.1	1.0		0.05
ARM D	0.52	19.91	0.026		0.0	0.0	0.4		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	3.96	21.95	0.181		0.3	0.2	3.4		0.06
ARM B	0.00	21.09	0.000		0.0	0.0	0.0		0.00
ARM C	1.02	20.25	0.051		0.1	0.1	0.8		0.05
ARM D	0.44	19.99	0.022		0.0	0.0	0.3		0.05

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.2
08.15	0.3
08.30	0.4
08.45	0.4
09.00	0.3
09.15	0.2

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.1

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	434.7	289.8	25.5	0.06	25.5	0.06
B	0.0	0.0	0.0	0.00	0.0	0.00
C	112.4	75.0	6.1	0.05	6.1	0.05
D	48.0	32.0	2.5	0.05	2.5	0.05
ALL	595.1	396.7	34.0	0.06	34.0	0.06

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

== end of file ==

[Printed at 10:26:40 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
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RG40 3GA,UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2008 Do Something\PM Peak\Site 3.vai"
(drive-on-the-left) at 10:40:37 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2008 PM Do Something Site 3
LOCATION: Five Roads Roundabout
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - Nevitt Road
ARM B - Cul de Sac
ARM C - Link to R132
ARM D - Link to Hedgestown

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.05	3.95	8.80	20.00	31.60	21.0	0.557	19.415
ARM B	2.71	3.95	6.30	20.00	31.60	36.0	0.513	17.163
ARM C	5.50	5.50	0.00	15.00	31.60	6.0	0.693	29.635
ARM D	3.75	4.80	7.90	25.00	31.60	21.0	0.611	23.587

V = approach half-width　　L = effective flare length　　D = inscribed circle diameter
E = entry width　　R = entry radius　　PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: Site 3 PM

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	1.44	2.16	1.44
ARM B	15.00	45.00	75.00	0.05	0.08	0.05
ARM C	15.00	45.00	75.00	0.64	0.96	0.64
ARM D	15.00	45.00	75.00	0.50	0.75	0.50

DEMAND SET TITLE: Site 3 PM

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.026	0.217	0.757
		0.0	3.0	25.0	87.0
		(0.0)	(0.0)	(4.0)	(21.0)
	ARM B	0.000	0.000	0.500	0.500
		0.0	0.0	2.0	2.0
		(0.0)	(0.0)	(50.0)	(0.0)
	ARM C	0.882	0.059	0.000	0.059
		45.0	3.0	0.0	3.0
		(45.0)	(67.0)	(0.0)	(0.0)
	ARM D	0.475	0.075	0.450	0.000
		19.0	3.0	18.0	0.0
		(26.0)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	1.44	16.47	0.087		0.0	0.1	1.4		0.07
ARM B	0.05	12.96	0.004		0.0	0.0	0.1		0.08
ARM C	0.64	19.98	0.032		0.0	0.0	0.5		0.05
ARM D	0.50	20.52	0.024		0.0	0.0	0.4		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	1.72	16.44	0.104		0.1	0.1	1.7		0.07
ARM B	0.06	12.81	0.005		0.0	0.0	0.1		0.08
ARM C	0.76	19.86	0.038		0.0	0.0	0.6		0.05
ARM D	0.60	20.42	0.029		0.0	0.0	0.4		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	2.10	16.40	0.128		0.1	0.1	2.2		0.07
ARM B	0.07	12.61	0.006		0.0	0.0	0.1		0.08
ARM C	0.93	19.68	0.047		0.0	0.0	0.7		0.05
ARM D	0.73	20.29	0.036		0.0	0.0	0.6		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	2.10	16.40	0.128		0.1	0.1	2.2		0.07
ARM B	0.07	12.61	0.006		0.0	0.0	0.1		0.08
ARM C	0.93	19.68	0.047		0.0	0.0	0.7		0.05
ARM D	0.73	20.29	0.036		0.0	0.0	0.6		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	1.72	16.44	0.104		0.1	0.1	1.8		0.07
ARM B	0.06	12.81	0.005		0.0	0.0	0.1		0.08
ARM C	0.76	19.85	0.038		0.0	0.0	0.6		0.05
ARM D	0.60	20.42	0.029		0.0	0.0	0.5		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	1.44	16.47	0.087		0.1	0.1	1.5		0.07
ARM B	0.05	12.96	0.004		0.0	0.0	0.1		0.08
ARM C	0.64	19.98	0.032		0.0	0.0	0.5		0.05
ARM D	0.50	20.51	0.024		0.0	0.0	0.4		0.05

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1
18.15	0.1

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	157.7	105.1	10.7	0.07	10.7	0.07
B	5.5	3.7	0.4	0.08	0.4	0.08
C	69.9	46.6	3.7	0.05	3.7	0.05
D	54.8	36.6	2.8	0.05	2.8	0.05
ALL	288.0	192.0	17.6	0.06	17.6	0.06

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ===

[Printed at 10:27:41 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2008 Do Something\PM Peak\Site 4.vai"
(drive-on-the-left) at 10:41:24 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2008 PM Do Something Site 4
LOCATION: Hedgestown Roundabout
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - R132 Off Slip
ARM B - Hedgestown Road
ARM C - R132 On Slip
ARM D - Link to "Five Roads"

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM C IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	7.70	7.70	2.00	30.00	31.70	16.0	1.789	55.923
ARM B	3.96	5.96	5.00	30.00	31.70	27.0	1.336	39.531
ARM D	4.60	5.60	8.00	25.30	31.70	36.0	1.350	41.010

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	0.0	0.0
B	0.0	0.0
C	0.0	0.0
D	0.0	0.0

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: Site 4 PM

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.29	0.43	0.29
ARM B	15.00	45.00	75.00	0.41	0.62	0.41
ARM D	15.00	45.00	75.00	1.11	1.67	1.11

DEMAND SET TITLE: Site 4 PM

TIME	TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S) FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.478	0.087	0.435
		0.0	11.0	2.0	10.0
		(0.0)	(0.0)	(0.0)	(40.0)
	ARM B	0.000	0.000	0.091	0.909
		0.0	0.0	3.0	30.0
		(0.0)	(0.0)	(0.0)	(3.0)
	ARM D	0.000	0.427	0.573	0.000
		0.0	38.0	51.0	0.0
		(0.0)	(5.0)	(31.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	0.29	45.61	0.006		0.0	0.0	0.1		0.02
ARM B	0.41	37.13	0.011		0.0	0.0	0.2		0.03
ARM D	1.11	34.20	0.033		0.0	0.0	0.5		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	0.34	45.21	0.008		0.0	0.0	0.1		0.02
ARM B	0.49	36.87	0.013		0.0	0.0	0.2		0.03
ARM D	1.33	34.20	0.039		0.0	0.0	0.6		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	0.42	44.66	0.009		0.0	0.0	0.1		0.02
ARM B	0.60	36.51	0.017		0.0	0.0	0.2		0.03
ARM D	1.63	34.20	0.048		0.0	0.0	0.7		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	0.42	44.66	0.009		0.0	0.0	0.1		0.02
ARM B	0.60	36.51	0.017		0.0	0.0	0.3		0.03
ARM D	1.63	34.20	0.048		0.0	0.0	0.7		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	0.34	45.20	0.008		0.0	0.0	0.1		0.02
ARM B	0.49	36.87	0.013		0.0	0.0	0.2		0.03
ARM D	1.33	34.20	0.039		0.0	0.0	0.6		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	0.29	45.60	0.006		0.0	0.0	0.1		0.02
ARM B	0.41	37.13	0.011		0.0	0.0	0.2		0.03
ARM D	1.11	34.20	0.033		0.0	0.0	0.5		0.03

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	31.5	21.0	0.7	0.02	0.7	0.02
B	45.2	30.2	1.2	0.03	1.2	0.03
D	122.0	81.4	3.7	0.03	3.7	0.03
ALL	198.8	132.6	5.7	0.03	5.7	0.03

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ===

[Printed at 10:28:28 on 18/04/2006]

________________ A R C A D Y 6 ________________

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2008 Do Something\PM Peak\Site 6.vai"
(drive-on-the-left) at 10:41:54 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2008 PM Do Something Site 6
LOCATION: Courtlough Interchange West
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - Rowan's Road
ARM B - M1 On Slip
ARM C - M1 Overbridge
ARM D - M1 Off Slip

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM B IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.73	6.09	20.00	40.00	35.00	16.0	1.314	41.643
ARM C	4.43	5.59	15.00	17.50	35.00	11.0	1.442	43.128
ARM D	4.00	5.23	5.00	20.00	35.00	27.0	1.217	37.208

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	10.0	0.0
B	13.0	0.0
C	0.0	0.0
D	5.0	0.0

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: Site 6 PM

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	5.34	8.01	5.34
ARM C	15.00	45.00	75.00	3.66	5.49	3.66
ARM D	15.00	45.00	75.00	4.99	7.48	4.99

DEMAND SET TITLE: Site 6 PM

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.183	0.817	0.000
		0.0	78.0	349.0	0.0
		(0.0)	(12.0)	(10.0)	(0.0)
	ARM C	0.341	0.659	0.000	0.000
		100.0	193.0	0.0	0.0
		(14.0)	(10.0)	(0.0)	(0.0)
	ARM D	0.043	0.028	0.930	0.000
		17.0	11.0	371.0	0.0
		(6.0)	(0.0)	(5.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	5.34	28.61	0.187		0.0	0.2	3.4		0.04
ARM C	3.66	38.73	0.095		0.0	0.1	1.5		0.03
ARM D	4.99	30.74	0.162		0.0	0.2	2.9		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	6.37	26.84	0.237		0.2	0.3	4.6		0.05
ARM C	4.37	38.73	0.113		0.1	0.1	1.9		0.03
ARM D	5.96	29.82	0.200		0.2	0.2	3.7		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	7.81	24.40	0.320		0.3	0.5	6.9		0.06
ARM C	5.36	38.73	0.138		0.1	0.2	2.4		0.03
ARM D	7.29	28.55	0.255		0.2	0.3	5.1		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	7.81	24.39	0.320		0.5	0.5	7.0		0.06
ARM C	5.36	38.73	0.138		0.2	0.2	2.4		0.03
ARM D	7.29	28.55	0.256		0.3	0.3	5.1		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	6.37	26.83	0.238		0.5	0.3	4.8		0.05
ARM C	4.37	38.73	0.113		0.2	0.1	1.9		0.03
ARM D	5.96	29.81	0.200		0.3	0.3	3.8		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	5.34	28.58	0.187		0.3	0.2	3.5		0.04
ARM C	3.66	38.73	0.095		0.1	0.1	1.6		0.03
ARM D	4.99	30.72	0.162		0.3	0.2	2.9		0.04

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.3
17.30	0.5
17.45	0.5
18.00	0.3
18.15	0.2

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.2
17.45	0.2
18.00	0.1
18.15	0.1

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.2
17.30	0.3
17.45	0.3
18.00	0.3
18.15	0.2

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	585.5	390.3	30.1	0.05	30.1	0.05
C	401.8	267.8	11.7	0.03	11.7	0.03
D	547.1	364.7	23.5	0.04	23.5	0.04
ALL	1534.4	1022.9	65.4	0.04	65.4	0.04

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ===

[Printed at 10:28:51 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2008 Do Something\PM Peak\Site 7.vai"
(drive-on-the-left) at 10:42:47 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2008 PM Do Something Site 7
LOCATION: Courtlough Interchange East
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - M1 Off Slip
ARM B - Rowan's Road East
ARM C - M1 On Slip
ARM D - M1 Overbridge

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM C IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	4.02	8.20	10.00	30.00	32.80	26.0	1.265	41.671
ARM B	3.74	6.38	15.00	70.00	32.80	15.0	1.481	44.037
ARM D	4.53	5.90	15.00	20.00	32.80	40.0	1.350	41.710

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	13.0	0.0
B	1.0	0.0
C	5.0	0.0
D	0.0	0.0

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: Site 7 PM

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	2.28	3.41	2.28
ARM B	15.00	45.00	75.00	7.47	11.21	7.47
ARM D	15.00	45.00	75.00	9.00	13.50	9.00

DEMAND SET TITLE: Site 7 PM

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
		TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S)			
16.45 - 18.15					
	ARM A	0.000	0.901	0.000	0.099
		0.0	164.0	0.0	18.0
		(0.0)	(10.0)	(0.0)	(6.0)
	ARM B	0.000	0.000	0.540	0.460
		0.0	0.0	323.0	275.0
		(0.0)	(0.0)	(8.0)	(12.0)
	ARM D	0.000	0.879	0.121	0.000
		0.0	633.0	87.0	0.0
		(0.0)	(6.0)	(18.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	2.28	26.89	0.085		0.0	0.1	1.4		0.04
ARM B	7.47	38.05	0.196		0.0	0.2	3.6		0.03
ARM D	9.00	38.82	0.232		0.0	0.3	4.5		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	2.72	24.70	0.110		0.1	0.1	1.8		0.05
ARM B	8.93	37.64	0.237		0.2	0.3	4.6		0.03
ARM D	10.75	38.82	0.277		0.3	0.4	5.7		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	3.33	21.71	0.153		0.1	0.2	2.7		0.05
ARM B	10.93	37.09	0.295		0.3	0.4	6.2		0.04
ARM D	13.16	38.82	0.339		0.4	0.5	7.6		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	3.33	21.70	0.153		0.2	0.2	2.7		0.05
ARM B	10.93	37.09	0.295		0.4	0.4	6.3		0.04
ARM D	13.16	38.82	0.339		0.5	0.5	7.7		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	2.72	24.68	0.110		0.2	0.1	1.9		0.05
ARM B	8.93	37.64	0.237		0.4	0.3	4.7		0.03
ARM D	10.75	38.82	0.277		0.5	0.4	5.8		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	2.28	26.85	0.085		0.1	0.1	1.4		0.04
ARM B	7.47	38.04	0.197		0.3	0.2	3.7		0.03
ARM D	9.00	38.82	0.232		0.4	0.3	4.6		0.03

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.2
17.45	0.2
18.00	0.1
18.15	0.1

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.3
17.30	0.4
17.45	0.4
18.00	0.3
18.15	0.2

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.3	
17.15	0.4	
17.30	0.5	*
17.45	0.5	*
18.00	0.4	
18.15	0.3	

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
A	249.6	166.4	11.9	0.05	11.9	0.05
B	820.0	546.7	29.1	0.04	29.1	0.04
D	987.3	658.2	35.8	0.04	35.8	0.04
ALL	2056.8	1371.2	76.7	0.04	76.7	0.04

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ===

[Printed at 10:29:10 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2008 Do Something\PM Peak\Site 8 Roundabout.vai"
(drive-on-the-left) at 10:43:40 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2008 PM Do Something Site 8
LOCATION: Rowan's Road East/R132 Roundabout
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - R132 (Balbriggan Road)
ARM B - R132 (Dublin Road)
ARM C - Rowan's Road East
ARM D - Access to Site C of M1 Business Park

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	5.80	8.20	22.00	32.00	50.00	28.0	0.740	39.241
ARM B	6.00	8.00	30.00	26.00	50.00	19.0	0.761	40.534
ARM C	7.00	7.50	10.00	18.50	50.00	33.0	0.703	36.987
ARM D	7.50	8.00	5.00	20.50	50.00	32.0	0.734	39.559

V = approach half-width
E = entry width
L = effective flare length
R = entry radius
D = inscribed circle diameter
PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: Site 8 PM

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	5.56	8.34	5.56
ARM B	15.00	45.00	75.00	5.11	7.67	5.11
ARM C	15.00	45.00	75.00	9.96	14.94	9.96
ARM D	15.00	45.00	75.00	3.59	5.38	3.59

DEMAND SET TITLE: Site 8 PM

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.276	0.582	0.142
		0.0	123.0	259.0	63.0
		(0.0)	(7.0)	(7.0)	(14.0)
	ARM B	0.450	0.000	0.374	0.176
		184.0	0.0	153.0	72.0
		(3.0)	(0.0)	(10.0)	(15.0)
	ARM C	0.630	0.177	0.000	0.193
		502.0	141.0	0.0	154.0
		(4.0)	(15.0)	(0.0)	(15.0)
	ARM D	0.185	0.167	0.648	0.000
		53.0	48.0	186.0	0.0
		(15.0)	(15.0)	(15.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	5.56	32.66	0.170		0.0	0.2	3.0		0.04
ARM B	5.11	32.67	0.157		0.0	0.2	2.7		0.04
ARM C	9.96	31.43	0.317		0.0	0.5	6.8		0.05
ARM D	3.59	27.45	0.131		0.0	0.1	2.2		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	6.64	31.93	0.208		0.2	0.3	3.9		0.04
ARM B	6.10	31.69	0.193		0.2	0.2	3.5		0.04
ARM C	11.90	30.89	0.385		0.5	0.6	9.2		0.05
ARM D	4.28	26.08	0.164		0.1	0.2	2.9		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	8.13	30.94	0.263		0.3	0.4	5.3		0.04
ARM B	7.48	30.36	0.246		0.2	0.3	4.8		0.04
ARM C	14.57	30.14	0.483		0.6	0.9	13.6		0.06
ARM D	5.25	24.21	0.217		0.2	0.3	4.1		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	8.13	30.94	0.263		0.4	0.4	5.3		0.04
ARM B	7.48	30.35	0.246		0.3	0.3	4.9		0.04
ARM C	14.57	30.13	0.483		0.9	0.9	14.0		0.06
ARM D	5.25	24.20	0.217		0.3	0.3	4.1		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	6.64	31.92	0.208		0.4	0.3	4.0		0.04
ARM B	6.10	31.68	0.193		0.3	0.2	3.6		0.04
ARM C	11.90	30.88	0.385		0.9	0.6	9.6		0.05
ARM D	4.28	26.06	0.164		0.3	0.2	3.0		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	5.56	32.64	0.170		0.3	0.2	3.1		0.04
ARM B	5.11	32.65	0.157		0.2	0.2	2.8		0.04
ARM C	9.96	31.43	0.317		0.6	0.5	7.1		0.05
ARM D	3.59	27.42	0.131		0.2	0.2	2.3		0.04

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.3
17.30	0.4
17.45	0.4
18.00	0.3
18.15	0.2

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.2
17.30	0.3
17.45	0.3
18.00	0.2
18.15	0.2

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.5	
17.15	0.6	*
17.30	0.9	*
17.45	0.9	*
18.00	0.6	*
18.15	0.5	

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.2
17.30	0.3
17.45	0.3
18.00	0.2
18.15	0.2

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	610.2	406.8	24.6	0.04	24.6	0.04
B	560.8	373.9	22.4	0.04	22.4	0.04
C	1092.9	728.6	60.3	0.06	60.3	0.06
D	393.5	262.4	18.6	0.05	18.6	0.05
ALL	2657.4	1771.6	126.0	0.05	126.0	0.05

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ===

[Printed at 10:29:32 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2008 Do Something\PM Peak\Site 9 A & F Business Park Roundabout.vai"
(drive-on-the-left) at 10:44:29 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2008 PM Do Something Site 9
LOCATION: Rowan's Road West/M1 Business Park
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - Link to Courtlough Interchange
ARM B - Access to Site F of M1 Business Park
ARM C - Rowan's Road West
ARM D - Access to Site A of M1 Business Park

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	4.00	8.00	2.00	23.00	50.00	6.0	0.596	24.986
ARM B	4.00	8.00	2.00	22.00	50.00	22.0	0.565	23.668
ARM C	4.00	8.00	2.00	25.00	50.00	15.0	0.581	24.347
ARM D	4.00	8.00	2.00	23.00	50.00	26.0	0.558	23.394

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: Site 9 PM

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	1.46	2.19	1.46
ARM B	15.00	45.00	75.00	0.00	0.00	0.00
ARM C	15.00	45.00	75.00	2.25	3.38	2.25
ARM D	15.00	45.00	75.00	3.36	5.04	3.36

DEMAND SET TITLE: Site 9 PM

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.000	0.726	0.274
		0.0	0.0	85.0	32.0
		(0.0)	(0.0)	(12.0)	(16.0)
	ARM B	0.000	0.000	0.000	0.000
		0.0	0.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.983	0.000	0.000	0.017
		177.0	0.0	0.0	3.0
		(3.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.929	0.000	0.071	0.000
		250.0	0.0	19.0	0.0
		(15.0)	(0.0)	(16.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	1.46	21.95	0.067		0.0	0.1	1.0		0.05
ARM B	0.00	22.58	0.000		0.0	0.0	0.0		0.00
ARM C	2.25	23.39	0.096		0.0	0.1	1.6		0.05
ARM D	3.36	19.22	0.175		0.0	0.2	3.1		0.06

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	1.75	21.92	0.080		0.1	0.1	1.3		0.05
ARM B	0.00	22.36	0.000		0.0	0.0	0.0		0.00
ARM C	2.69	23.34	0.115		0.1	0.1	1.9		0.05
ARM D	4.02	19.01	0.211		0.2	0.3	3.9		0.07

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	2.14	21.88	0.098		0.1	0.1	1.6		0.05
ARM B	0.00	22.08	0.000		0.0	0.0	0.0		0.00
ARM C	3.29	23.27	0.141		0.1	0.2	2.4		0.05
ARM D	4.92	18.71	0.263		0.3	0.4	5.2		0.07

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	2.14	21.88	0.098		0.1	0.1	1.6		0.05
ARM B	0.00	22.07	0.000		0.0	0.0	0.0		0.00
ARM C	3.29	23.27	0.141		0.2	0.2	2.5		0.05
ARM D	4.92	18.71	0.263		0.4	0.4	5.3		0.07

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	1.75	21.92	0.080		0.1	0.1	1.3		0.05
ARM B	0.00	22.36	0.000		0.0	0.0	0.0		0.00
ARM C	2.69	23.34	0.115		0.2	0.1	2.0		0.05
ARM D	4.02	19.00	0.211		0.4	0.3	4.1		0.07

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	1.46	21.95	0.067		0.1	0.1	1.1		0.05
ARM B	0.00	22.57	0.000		0.0	0.0	0.0		0.00
ARM C	2.25	23.39	0.096		0.1	0.1	1.6		0.05
ARM D	3.36	19.22	0.175		0.3	0.2	3.2		0.06

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1
18.15	0.1

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.2
17.45	0.2
18.00	0.1
18.15	0.1

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.3
17.30	0.4
17.45	0.4
18.00	0.3
18.15	0.2

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	160.4	107.0	8.0	0.05	8.0	0.05
B	0.0	0.0	0.0	0.00	0.0	0.00
C	246.8	164.5	12.0	0.05	12.0	0.05
D	368.9	245.9	24.9	0.07	24.9	0.07
ALL	776.1	517.4	44.9	0.06	44.9	0.06

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ==

[Printed at 10:30:24 on 18/04/2006]

2009 Do Nothing

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2009 Do Nothing\AM Peak\Site 3.vai"
(drive-on-the-left) at 11:09:29 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2009 AM Do Nothing Site 3
LOCATION: Five Roads Roundabout
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - Nevitt Road
ARM B - Cul de Sac
ARM C - Link to R132
ARM D - Link to Hedgestown

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.05	3.95	8.80	20.00	31.60	21.0	0.557	19.415
ARM B	2.71	3.95	6.30	20.00	31.60	36.0	0.513	17.163
ARM C	5.50	5.50	0.00	15.00	31.60	6.0	0.693	29.635
ARM D	3.75	4.80	7.90	25.00	31.60	21.0	0.611	23.587

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2009 AM Do Nothing Site 3

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.79	1.18	0.79
ARM B	15.00	45.00	75.00	0.01	0.02	0.01
ARM C	15.00	45.00	75.00	0.50	0.75	0.50
ARM D	15.00	45.00	75.00	0.28	0.41	0.28

DEMAND SET TITLE: 2009 AM Do Nothing Site 3

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	0.000	0.206	0.794
		0.0	0.0	13.0	50.0
		(0.0)	(0.0)	(53.8)	(26.0)
	ARM B	1.000	0.000	0.000	0.000
		0.0	0.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.925	0.000	0.000	0.075
		37.0	0.0	0.0	3.0
		(51.4)	(0.0)	(0.0)	(0.0)
	ARM D	0.864	0.000	0.136	0.000
		19.0	0.0	3.0	0.0
		(10.5)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	0.79	14.72	0.053		0.0	0.1	0.8		0.07
ARM B	0.01	16.61	0.001		0.0	0.0	0.0		0.06
ARM C	0.50	19.71	0.025		0.0	0.0	0.4		0.05
ARM D	0.28	21.23	0.013		0.0	0.0	0.2		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	0.94	14.72	0.064		0.1	0.1	1.0		0.07
ARM B	0.01	16.50	0.001		0.0	0.0	0.0		0.06
ARM C	0.60	19.64	0.030		0.0	0.0	0.5		0.05
ARM D	0.33	21.15	0.016		0.0	0.0	0.2		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	1.15	14.71	0.078		0.1	0.1	1.2		0.07
ARM B	0.02	16.35	0.001		0.0	0.0	0.0		0.06
ARM C	0.73	19.53	0.037		0.0	0.0	0.6		0.05
ARM D	0.40	21.04	0.019		0.0	0.0	0.3		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	1.15	14.71	0.078		0.1	0.1	1.3		0.07
ARM B	0.02	16.35	0.001		0.0	0.0	0.0		0.06
ARM C	0.73	19.53	0.037		0.0	0.0	0.6		0.05
ARM D	0.40	21.04	0.019		0.0	0.0	0.3		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	0.94	14.72	0.064		0.1	0.1	1.0		0.07
ARM B	0.01	16.50	0.001		0.0	0.0	0.0		0.06
ARM C	0.60	19.63	0.030		0.0	0.0	0.5		0.05
ARM D	0.33	21.15	0.016		0.0	0.0	0.2		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	0.79	14.72	0.053		0.1	0.1	0.9		0.07
ARM B	0.01	16.61	0.001		0.0	0.0	0.0		0.06
ARM C	0.50	19.71	0.025		0.0	0.0	0.4		0.05
ARM D	0.28	21.23	0.013		0.0	0.0	0.2		0.05

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.1

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	86.4	57.6	6.3	0.07	6.3	0.07
B	1.4	0.9	0.1	0.06	0.1	0.06
C	54.8	36.6	2.9	0.05	2.9	0.05
D	30.2	20.1	1.4	0.05	1.4	0.05
ALL	172.8	115.2	10.7	0.06	10.7	0.06

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ===

[Printed at 10:27:49 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
program advice and maintenance, contact:

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Crowthorne House Fax: +44 (0) 1344 770864
Nine Mile Ride Email: softwarebureau@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2009 Do Nothing\AM Peak\Site 4.vai"
(drive-on-the-left) at 11:10:10 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2009 AM Do Nothing Site 4
LOCATION: Hedgestown Roundabout
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - R132 Off Slip
ARM B - Hedgestown Road
ARM C - R132 On Slip
ARM D - Link to "Five Roads"

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM C IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	7.70	7.70	2.00	30.00	31.70	16.0	1.789	55.923
ARM B	3.96	5.96	5.00	30.00	31.70	27.0	1.336	39.531
ARM D	4.60	5.60	8.00	25.30	31.70	36.0	1.350	41.010

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	0.0	0.0
B	0.0	0.0
C	0.0	0.0
D	0.0	0.0

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2009 AM Do Nothing Site 4

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.36	0.54	0.36
ARM B	15.00	45.00	75.00	0.17	0.26	0.17
ARM D	15.00	45.00	75.00	0.66	0.99	0.66

DEMAND SET TITLE: 2009 AM Do Nothing Site 4

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	0.655	0.000	0.345
		0.0	19.0	0.0	10.0
		(0.0)	(10.5)	(0.0)	(10.0)
	ARM B	0.000	0.000	0.143	0.857
		0.0	0.0	2.0	12.0
		(0.0)	(0.0)	(0.0)	(8.3)
	ARM D	0.000	0.396	0.604	0.000
		0.0	21.0	32.0	0.0
		(0.0)	(4.8)	(46.9)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	0.36	49.29	0.007		0.0	0.0	0.1		0.02
ARM B	0.17	36.00	0.005		0.0	0.0	0.1		0.03
ARM D	0.66	31.49	0.021		0.0	0.0	0.3		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	0.43	49.01	0.009		0.0	0.0	0.1		0.02
ARM B	0.21	35.82	0.006		0.0	0.0	0.1		0.03
ARM D	0.79	31.49	0.025		0.0	0.0	0.4		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	0.53	48.64	0.011		0.0	0.0	0.2		0.02
ARM B	0.26	35.58	0.007		0.0	0.0	0.1		0.03
ARM D	0.97	31.49	0.031		0.0	0.0	0.5		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	0.53	48.64	0.011		0.0	0.0	0.2		0.02
ARM B	0.26	35.58	0.007		0.0	0.0	0.1		0.03
ARM D	0.97	31.49	0.031		0.0	0.0	0.5		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	0.43	49.01	0.009		0.0	0.0	0.1		0.02
ARM B	0.21	35.82	0.006		0.0	0.0	0.1		0.03
ARM D	0.79	31.49	0.025		0.0	0.0	0.4		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	0.36	49.29	0.007		0.0	0.0	0.1		0.02
ARM B	0.17	36.00	0.005		0.0	0.0	0.1		0.03
ARM D	0.66	31.49	0.021		0.0	0.0	0.3		0.03

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	39.8	26.5	0.8	0.02	0.8	0.02
B	19.2	12.8	0.5	0.03	0.5	0.03
D	72.7	48.4	2.4	0.03	2.4	0.03
ALL	131.6	87.8	3.7	0.03	3.7	0.03

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

== end of file ==

[Printed at 10:28:14 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
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Web: www.trlsoftware.co.uk

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2009 Do Nothing\AM Peak\Site 6.vai"
(drive-on-the-left) at 11:12:59 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2009 AM Do Nothing Site 6
LOCATION: Courtlough Interchange West
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****

ARM A - Rowan's Road
ARM B - M1 On Slip
ARM C - M1 Overbridge
ARM D - M1 Off Slip

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM B IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.73	6.09	20.00	40.00	35.00	16.0	1.330	41.875
ARM C	4.43	5.59	15.00	17.50	35.00	11.0	1.442	43.128
ARM D	4.00	5.23	5.00	20.00	35.00	27.0	1.190	36.744

V = approach half-width
E = entry width
L = effective flare length
R = entry radius
D = inscribed circle diameter
PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	9.0	0.0
B	6.0	0.0
C	0.0	0.0
D	7.0	0.0

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2009 AM Do Nothing Site 6

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	1.19	1.78	1.19
ARM C	15.00	45.00	75.00	5.26	7.89	5.26
ARM D	15.00	45.00	75.00	4.89	7.33	4.89

DEMAND SET TITLE: 2009 AM Do Nothing Site 6

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	0.126	0.874	0.000
		0.0	12.0	83.0	0.0
		(0.0)	(8.3)	(10.8)	(0.0)
	ARM C	0.539	0.461	0.000	0.000
		227.0	194.0	0.0	0.0
		(13.7)	(18.0)	(0.0)	(0.0)
	ARM D	0.235	0.023	0.742	0.000
		92.0	9.0	290.0	0.0
		(14.1)	(0.0)	(7.6)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	1.19	29.63	0.040		0.0	0.0	0.6		0.04
ARM C	5.26	37.28	0.141		0.0	0.2	2.4		0.03
ARM D	4.89	27.08	0.181		0.0	0.2	3.2		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	1.42	28.00	0.051		0.0	0.1	0.8		0.04
ARM C	6.28	37.28	0.169		0.2	0.2	3.0		0.03
ARM D	5.84	25.77	0.226		0.2	0.3	4.3		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	1.74	25.81	0.067		0.1	0.1	1.1		0.04
ARM C	7.70	37.28	0.206		0.2	0.3	3.9		0.03
ARM D	7.15	24.01	0.298		0.3	0.4	6.2		0.06

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	1.74	25.80	0.067		0.1	0.1	1.1		0.04
ARM C	7.70	37.28	0.206		0.3	0.3	3.9		0.03
ARM D	7.15	24.00	0.298		0.4	0.4	6.3		0.06

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	1.42	27.98	0.051		0.1	0.1	0.8		0.04
ARM C	6.28	37.28	0.169		0.3	0.2	3.1		0.03
ARM D	5.84	25.77	0.227		0.4	0.3	4.5		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	1.19	29.60	0.040		0.1	0.0	0.6		0.04
ARM C	5.26	37.28	0.141		0.2	0.2	2.5		0.03
ARM D	4.89	27.06	0.181		0.3	0.2	3.4		0.05

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.0

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.2
08.15	0.2
08.30	0.3
08.45	0.3
09.00	0.2
09.15	0.2

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.2
08.15	0.3
08.30	0.4
08.45	0.4
09.00	0.3
09.15	0.2

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	130.3	86.8	5.0	0.04	5.0	0.04
C	577.3	384.9	18.8	0.03	18.8	0.03
D	536.1	357.4	27.9	0.05	27.9	0.05
ALL	1243.7	829.1	51.7	0.04	51.7	0.04

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ===

[Printed at 10:28:27 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
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RG40 3GA,UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2009 Do Nothing\AM Peak\Site 7.vai"
(drive-on-the-left) at 11:13:37 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2009 AM Do Nothing Site 7
LOCATION: Courtlough Interchange East
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - M1 Off Slip
ARM B - Rowans' Road East
ARM C - M1 On Slip
ARM D - M1 Overbridge

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM C IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	4.02	8.20	10.00	30.00	32.80	26.0	1.375	43.295
ARM B	3.74	6.38	15.00	70.00	32.80	15.0	1.465	43.805
ARM D	4.53	5.90	15.00	20.00	32.80	40.0	1.350	41.710

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	6.0	0.0
B	2.0	0.0
C	7.0	0.0
D	0.0	0.0

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2009 AM Do Nothing Site 7

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	4.00	6.00	4.00
ARM B	15.00	45.00	75.00	9.35	14.03	9.35
ARM D	15.00	45.00	75.00	4.66	6.99	4.66

DEMAND SET TITLE: 2009 AM Do Nothing Site 7

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	0.719	0.019	0.262
		0.0	230.0	6.0	84.0
		(0.0)	(15.7)	(16.7)	(13.1)
	ARM B	0.000	0.000	0.549	0.451
		0.0	0.0	411.0	337.0
		(0.0)	(0.0)	(5.4)	(16.3)
	ARM D	0.000	0.930	0.070	0.000
		0.0	347.0	26.0	0.0
		(0.0)	(8.6)	(3.8)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	4.00	31.61	0.127		0.0	0.1	2.1		0.04
ARM B	9.35	37.57	0.249		0.0	0.3	4.9		0.04
ARM D	4.66	38.53	0.121		0.0	0.1	2.0		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	4.78	30.43	0.157		0.1	0.2	2.8		0.04
ARM B	11.16	37.16	0.300		0.3	0.4	6.3		0.04
ARM D	5.57	38.53	0.145		0.1	0.2	2.5		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	5.85	28.81	0.203		0.2	0.3	3.8		0.04
ARM B	13.67	36.58	0.374		0.4	0.6	8.8		0.04
ARM D	6.82	38.53	0.177		0.2	0.2	3.2		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	5.85	28.81	0.203		0.3	0.3	3.8		0.04
ARM B	13.67	36.58	0.374		0.6	0.6	8.9		0.04
ARM D	6.82	38.53	0.177		0.2	0.2	3.2		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	4.78	30.43	0.157		0.3	0.2	2.8		0.04
ARM B	11.16	37.15	0.301		0.6	0.4	6.6		0.04
ARM D	5.57	38.53	0.145		0.2	0.2	2.6		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	4.00	31.60	0.127		0.2	0.1	2.2		0.04
ARM B	9.35	37.57	0.249		0.4	0.3	5.0		0.04
ARM D	4.66	38.53	0.121		0.2	0.1	2.1		0.03

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.2
08.30	0.3
08.45	0.3
09.00	0.2
09.15	0.1

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.00	0.3	
08.15	0.4	
08.30	0.6	*
08.45	0.6	*
09.00	0.4	
09.15	0.3	

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.2
08.30	0.2
08.45	0.2
09.00	0.2
09.15	0.1

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	438.8	292.5	17.5	0.04	17.5	0.04
B	1025.7	683.8	40.5	0.04	40.5	0.04
D	511.5	341.0	15.6	0.03	15.6	0.03
ALL	1975.9	1317.3	73.6	0.04	73.6	0.04

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

==================== end of file ====================

[Printed at 10:28:42 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2009 Do Nothing\AM Peak\Site 8.vai"
(drive-on-the-left) at 11:14:26 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2009 AM Do Nothing Site 8
LOCATION: Rowan's Road East / R132 Roundabout
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - R132 (Balbriggan Road)
ARM B - R132 (Dublin Road)
ARM C - Rowan's Road East
ARM D - Access to Site C of M1 Business Park

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	5.80	8.20	22.00	32.00	50.00	28.0	0.740	39.241
ARM B	6.00	8.00	30.00	26.00	50.00	19.0	0.761	40.534
ARM C	7.00	7.50	10.00	18.50	50.00	33.0	0.703	36.987
ARM D	7.50	8.00	5.00	20.50	50.00	32.0	0.734	39.559

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2009 AM Do Nothing Site 8

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	7.63	11.44	7.63
ARM B	15.00	45.00	75.00	4.14	6.21	4.14
ARM C	15.00	45.00	75.00	7.21	10.82	7.21
ARM D	15.00	45.00	75.00	3.61	5.42	3.61

DEMAND SET TITLE: 2009 AM Do Nothing Site 8

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	0.226	0.687	0.087
		0.0	138.0	419.0	53.0
		(0.0)	(13.0)	(5.0)	(15.1)
	ARM B	0.326	0.000	0.529	0.145
		108.0	0.0	175.0	48.0
		(14.8)	(0.0)	(18.9)	(14.6)
	ARM C	0.418	0.260	0.000	0.322
		241.0	150.0	0.0	186.0
		(6.2)	(14.7)	(0.0)	(15.1)
	ARM D	0.218	0.249	0.533	0.000
		63.0	72.0	154.0	0.0
		(14.3)	(15.3)	(14.9)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	7.63	32.74	0.233		0.0	0.3	4.5		0.04
ARM B	4.14	29.16	0.142		0.0	0.2	2.4		0.04
ARM C	7.21	31.35	0.230		0.0	0.3	4.4		0.04
ARM D	3.61	30.04	0.120		0.0	0.1	2.0		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	9.10	32.01	0.284		0.3	0.4	5.9		0.04
ARM B	4.94	28.08	0.176		0.2	0.2	3.2		0.04
ARM C	8.61	30.98	0.278		0.3	0.4	5.7		0.04
ARM D	4.31	29.17	0.148		0.1	0.2	2.6		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	11.15	31.02	0.359		0.4	0.6	8.2		0.05
ARM B	6.05	26.60	0.227		0.2	0.3	4.3		0.05
ARM C	10.55	30.47	0.346		0.4	0.5	7.8		0.05
ARM D	5.28	27.99	0.189		0.2	0.2	3.4		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	11.15	31.02	0.360		0.6	0.6	8.4		0.05
ARM B	6.05	26.60	0.228		0.3	0.3	4.4		0.05
ARM C	10.55	30.47	0.346		0.5	0.5	7.9		0.05
ARM D	5.28	27.99	0.189		0.2	0.2	3.5		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	9.10	32.01	0.284		0.6	0.4	6.1		0.04
ARM B	4.94	28.07	0.176		0.3	0.2	3.3		0.04
ARM C	8.61	30.97	0.278		0.5	0.4	5.9		0.04
ARM D	4.31	29.17	0.148		0.2	0.2	2.6		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	7.63	32.73	0.233		0.4	0.3	4.6		0.04
ARM B	4.14	29.14	0.142		0.2	0.2	2.5		0.04
ARM C	7.21	31.34	0.230		0.4	0.3	4.6		0.04
ARM D	3.61	30.02	0.120		0.2	0.1	2.1		0.04

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.00	0.3	
08.15	0.4	
08.30	0.6	*
08.45	0.6	*
09.00	0.4	
09.15	0.3	

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.2
08.15	0.2
08.30	0.3
08.45	0.3
09.00	0.2
09.15	0.2

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.3
08.15	0.4
08.30	0.5 *
08.45	0.5 *
09.00	0.4
09.15	0.3

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.2
08.30	0.2
08.45	0.2
09.00	0.2
09.15	0.1

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	836.4	557.6	37.7	0.05	37.7	0.05
B	453.9	302.6	20.1	0.04	20.1	0.04
C	791.2	527.5	36.2	0.05	36.2	0.05
D	396.3	264.2	16.2	0.04	16.2	0.04
ALL	2477.8	1651.9	110.2	0.04	110.2	0.04

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ===

[Printed at 10:28:58 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2009 Do Nothing\AM Peak\Site 9.vai"
(drive-on-the-left) at 11:15:11 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2009 AM Do Nothing Site 9
LOCATION: Rowan's Road West / M1 Business Park Roundabout
DATE: 05/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****

ARM A - Link to Courtlough Interchange
ARM B - Access to Site F of M1 Business Park
ARM C - Rowan's Road West
ARM D - Access to Site A of M1 Business Park

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	4.00	8.00	2.00	23.00	50.00	6.0	0.596	24.986
ARM B	4.00	8.00	2.00	22.00	50.00	22.0	0.565	23.668
ARM C	4.00	8.00	2.00	25.00	50.00	15.0	0.581	24.347
ARM D	4.00	8.00	2.00	23.00	50.00	26.0	0.558	23.394

V = approach half-width
E = entry width
L = effective flare length
R = entry radius
D = inscribed circle diameter
PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2009 AM Do Nothing Site 9

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	3.99	5.98	3.99
ARM B	15.00	45.00	75.00	0.00	0.00	0.00
ARM C	15.00	45.00	75.00	1.02	1.54	1.02
ARM D	15.00	45.00	75.00	0.44	0.66	0.44

DEMAND SET TITLE: 2009 AM Do Nothing Site 9

TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	0.000	0.216	0.784
		0.0	0.0	69.0	250.0
		(0.0)	(0.0)	(8.7)	(15.2)
	ARM B	0.000	0.000	0.000	0.000
		0.0	0.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.768	0.000	0.000	0.232
		63.0	0.0	0.0	19.0
		(7.9)	(0.0)	(0.0)	(15.8)
	ARM D	0.914	0.000	0.086	0.000
		32.0	0.0	3.0	0.0
		(15.6)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	3.99	21.94	0.182		0.0	0.2	3.3		0.06
ARM B	0.00	21.08	0.000		0.0	0.0	0.0		0.00
ARM C	1.02	20.28	0.051		0.0	0.1	0.8		0.05
ARM D	0.44	20.06	0.022		0.0	0.0	0.3		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	4.76	21.93	0.217		0.2	0.3	4.1		0.06
ARM B	0.00	20.57	0.000		0.0	0.0	0.0		0.00
ARM C	1.22	19.91	0.061		0.1	0.1	1.0		0.05
ARM D	0.52	19.98	0.026		0.0	0.0	0.4		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	5.83	21.93	0.266		0.3	0.4	5.3		0.06
ARM B	0.00	19.89	0.000		0.0	0.0	0.0		0.00
ARM C	1.50	19.40	0.077		0.1	0.1	1.2		0.06
ARM D	0.64	19.87	0.032		0.0	0.0	0.5		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	5.83	21.93	0.266		0.4	0.4	5.4		0.06
ARM B	0.00	19.89	0.000		0.0	0.0	0.0		0.00
ARM C	1.50	19.40	0.077		0.1	0.1	1.3		0.06
ARM D	0.64	19.87	0.032		0.0	0.0	0.5		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	4.76	21.93	0.217		0.4	0.3	4.2		0.06
ARM B	0.00	20.57	0.000		0.0	0.0	0.0		0.00
ARM C	1.22	19.90	0.062		0.1	0.1	1.0		0.05
ARM D	0.52	19.98	0.026		0.0	0.0	0.4		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	3.99	21.94	0.182		0.3	0.2	3.4		0.06
ARM B	0.00	21.07	0.000		0.0	0.0	0.0		0.00
ARM C	1.02	20.27	0.051		0.1	0.1	0.8		0.05
ARM D	0.44	20.06	0.022		0.0	0.0	0.3		0.05

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.2
08.15	0.3
08.30	0.4
08.45	0.4
09.00	0.3
09.15	0.2

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.1

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
A	437.4	291.6	25.7	0.06	25.7	0.06
B	0.0	0.0	0.0	0.00	0.0	0.00
C	112.4	75.0	6.0	0.05	6.0	0.05
D	48.0	32.0	2.5	0.05	2.5	0.05
ALL	597.8	398.6	34.2	0.06	34.2	0.06

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

== end of file ==

[Printed at 10:29:12 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
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RG40 3GA,UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2009 Do Nothing\PM Peak\Site 3.vai"
(drive-on-the-left) at 11:17:30 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2009 PM Do Nothing Site 3
LOCATION: Five Roads Roundabout
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - Nevitt Road
ARM B - Cul de Sac
ARM C - Link to R132
ARM D - Link to Hedgestown

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.05	3.95	8.80	20.00	31.60	21.0	0.557	19.415
ARM B	2.71	3.95	6.30	20.00	31.60	36.0	0.513	17.163
ARM C	5.50	5.50	0.00	15.00	31.60	6.0	0.693	29.635
ARM D	3.75	4.80	7.90	25.00	31.60	21.0	0.611	23.587

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2009 PM Do Nothing Site 3

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	1.21	1.82	1.21
ARM B	15.00	45.00	75.00	0.05	0.08	0.05
ARM C	15.00	45.00	75.00	0.44	0.66	0.44
ARM D	15.00	45.00	75.00	0.50	0.75	0.50

DEMAND SET TITLE: 2009 PM Do Nothing Site 3

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.031	0.268	0.701
		0.0	3.0	26.0	68.0
		(0.0)	(0.0)	(3.8)	(2.9)
	ARM B	0.000	0.000	0.500	0.500
		0.0	0.0	2.0	2.0
		(0.0)	(0.0)	(50.0)	(0.0)
	ARM C	0.829	0.086	0.000	0.086
		29.0	3.0	0.0	3.0
		(17.2)	(66.7)	(0.0)	(0.0)
	ARM D	0.475	0.075	0.450	0.000
		19.0	3.0	18.0	0.0
		(26.3)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	1.21	18.66	0.065		0.0	0.1	1.0		0.06
ARM B	0.05	13.14	0.004		0.0	0.0	0.1		0.08
ARM C	0.44	24.18	0.018		0.0	0.0	0.3		0.04
ARM D	0.50	20.70	0.024		0.0	0.0	0.4		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	1.45	18.63	0.078		0.1	0.1	1.2		0.06
ARM B	0.06	13.02	0.005		0.0	0.0	0.1		0.08
ARM C	0.52	24.08	0.022		0.0	0.0	0.3		0.04
ARM D	0.60	20.65	0.029		0.0	0.0	0.4		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	1.77	18.58	0.095		0.1	0.1	1.6		0.06
ARM B	0.07	12.87	0.006		0.0	0.0	0.1		0.08
ARM C	0.64	23.94	0.027		0.0	0.0	0.4		0.04
ARM D	0.73	20.58	0.036		0.0	0.0	0.5		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	1.77	18.58	0.095		0.1	0.1	1.6		0.06
ARM B	0.07	12.86	0.006		0.0	0.0	0.1		0.08
ARM C	0.64	23.94	0.027		0.0	0.0	0.4		0.04
ARM D	0.73	20.58	0.036		0.0	0.0	0.6		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	1.45	18.63	0.078		0.1	0.1	1.3		0.06
ARM B	0.06	13.02	0.005		0.0	0.0	0.1		0.08
ARM C	0.52	24.08	0.022		0.0	0.0	0.3		0.04
ARM D	0.60	20.65	0.029		0.0	0.0	0.5		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	1.21	18.66	0.065		0.1	0.1	1.1		0.06
ARM B	0.05	13.14	0.004		0.0	0.0	0.1		0.08
ARM C	0.44	24.18	0.018		0.0	0.0	0.3		0.04
ARM D	0.50	20.70	0.024		0.0	0.0	0.4		0.05

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1
18.15	0.1

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	133.0	88.7	7.7	0.06	7.7	0.06
B	5.5	3.7	0.4	0.08	0.4	0.08
C	48.0	32.0	2.0	0.04	2.0	0.04
D	54.8	36.6	2.7	0.05	2.7	0.05
ALL	241.3	160.9	12.9	0.05	12.9	0.05

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

== end of file ==

[Printed at 10:29:56 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
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THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2009 Do Nothing\PM Peak\Site 4.vai"
(drive-on-the-left) at 11:18:14 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2009 PM Do Nothing Site 4
LOCATION: Hedgestown Roundabout
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - R132 Off Slip
ARM B - Hedgestown Road
ARM C - R132 On Slip
ARM D - Link to "Five Roads"

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM C IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	7.70	7.70	2.00	30.00	31.70	16.0	1.789	55.923
ARM B	3.96	5.96	5.00	30.00	31.70	27.0	1.336	39.531
ARM D	4.60	5.60	8.00	25.30	31.70	36.0	1.350	41.010

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	0.0	0.0
B	0.0	0.0
C	0.0	0.0
D	0.0	0.0

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2009 PM Do Nothing Site 4

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.29	0.43	0.29
ARM B	15.00	45.00	75.00	0.41	0.62	0.41
ARM D	15.00	45.00	75.00	0.91	1.37	0.91

DEMAND SET TITLE: 2009 PM Do Nothing Site 4

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.478	0.087	0.435
		0.0	11.0	2.0	10.0
		(0.0)	(0.0)	(0.0)	(40.0)
	ARM B	0.000	0.000	0.091	0.909
		0.0	0.0	3.0	30.0
		(0.0)	(0.0)	(0.0)	(3.3)
	ARM D	0.000	0.521	0.479	0.000
		0.0	38.0	35.0	0.0
		(0.0)	(2.6)	(2.9)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	0.29	46.21	0.006		0.0	0.0	0.1		0.02
ARM B	0.41	37.54	0.011		0.0	0.0	0.2		0.03
ARM D	0.91	39.91	0.023		0.0	0.0	0.3		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	0.34	45.93	0.007		0.0	0.0	0.1		0.02
ARM B	0.49	37.37	0.013		0.0	0.0	0.2		0.03
ARM D	1.09	39.91	0.027		0.0	0.0	0.4		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	0.42	45.55	0.009		0.0	0.0	0.1		0.02
ARM B	0.60	37.14	0.016		0.0	0.0	0.2		0.03
ARM D	1.33	39.91	0.033		0.0	0.0	0.5		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	0.42	45.54	0.009		0.0	0.0	0.1		0.02
ARM B	0.60	37.14	0.016		0.0	0.0	0.2		0.03
ARM D	1.33	39.91	0.033		0.0	0.0	0.5		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	0.34	45.93	0.007		0.0	0.0	0.1		0.02
ARM B	0.49	37.37	0.013		0.0	0.0	0.2		0.03
ARM D	1.09	39.91	0.027		0.0	0.0	0.4		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	0.29	46.21	0.006		0.0	0.0	0.1		0.02
ARM B	0.41	37.53	0.011		0.0	0.0	0.2		0.03
ARM D	0.91	39.91	0.023		0.0	0.0	0.4		0.03

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	31.5	21.0	0.7	0.02	0.7	0.02
B	45.2	30.2	1.2	0.03	1.2	0.03
D	100.1	66.7	2.6	0.03	2.6	0.03
ALL	176.9	117.9	4.5	0.03	4.5	0.03

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ===

[Printed at 10:30:13 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
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RG40 3GA,UK

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2009 Do Nothing\PM Peak\Site 6.vai"
(drive-on-the-left) at 11:18:57 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2009 PM Do Nothing Site 6
LOCATION: Courtlough Interchange West
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - Rowan's Road
ARM B - M1 On Slip
ARM C - M1 Overbridge
ARM D - M1 Off Slip

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM B IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.73	6.09	20.00	40.00	35.00	16.0	1.314	41.643
ARM C	4.43	5.59	15.00	17.50	35.00	11.0	1.442	43.128
ARM D	4.00	5.23	5.00	20.00	35.00	27.0	1.217	37.208

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	10.0	0.0
B	13.0	0.0
C	0.0	0.0
D	5.0	0.0

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2009 PM Do Nothing Site 6

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	5.30	7.95	5.30
ARM C	15.00	45.00	75.00	3.69	5.53	3.69
ARM D	15.00	45.00	75.00	5.14	7.71	5.14

DEMAND SET TITLE: 2009 PM Do Nothing Site 6

TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.182	0.818	0.000
		0.0	77.0	347.0	0.0
		(0.0)	(11.7)	(9.5)	(0.0)
	ARM C	0.336	0.664	0.000	0.000
		99.0	196.0	0.0	0.0
		(13.1)	(10.7)	(0.0)	(0.0)
	ARM D	0.041	0.029	0.929	0.000
		17.0	12.0	382.0	0.0
		(5.9)	(0.0)	(5.2)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	5.30	28.46	0.186		0.0	0.2	3.4		0.04
ARM C	3.69	38.68	0.095		0.0	0.1	1.6		0.03
ARM D	5.14	30.65	0.168		0.0	0.2	3.0		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	6.33	26.64	0.238		0.2	0.3	4.6		0.05
ARM C	4.40	38.68	0.114		0.1	0.1	1.9		0.03
ARM D	6.13	29.72	0.206		0.2	0.3	3.8		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	7.75	24.11	0.321		0.3	0.5	6.9		0.06
ARM C	5.39	38.68	0.139		0.1	0.2	2.4		0.03
ARM D	7.51	28.45	0.264		0.3	0.4	5.3		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	7.75	24.10	0.322		0.5	0.5	7.1		0.06
ARM C	5.39	38.68	0.139		0.2	0.2	2.4		0.03
ARM D	7.51	28.44	0.264		0.4	0.4	5.4		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	6.33	26.62	0.238		0.5	0.3	4.8		0.05
ARM C	4.40	38.68	0.114		0.2	0.1	1.9		0.03
ARM D	6.13	29.72	0.206		0.4	0.3	4.0		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	5.30	28.43	0.186		0.3	0.2	3.5		0.04
ARM C	3.69	38.68	0.095		0.1	0.1	1.6		0.03
ARM D	5.14	30.64	0.168		0.3	0.2	3.1		0.04

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.3
17.30	0.5
17.45	0.5
18.00	0.3
18.15	0.2

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.2
17.45	0.2
18.00	0.1
18.15	0.1

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.3
17.30	0.4
17.45	0.4
18.00	0.3
18.15	0.2

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	581.4	387.6	30.2	0.05	30.2	0.05
C	404.5	269.7	11.8	0.03	11.8	0.03
D	563.6	375.7	24.5	0.04	24.5	0.04
ALL	1549.5	1033.0	66.6	0.04	66.6	0.04

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

== end of file ==

[Printed at 10:30:32 on 18/04/2006]

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            ____________________ A R C A D Y  6 ____________________

                ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY


                Analysis Program: Release 3.0 (JUNE 2005)

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 ---------------------------------------------------------------------------------
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 ---------------------------------------------------------------------------------

 Run with file:-
 "r:\MDR0303\Tr\Junction Analysis 04-04-06\2009 Do Nothing\PM Peak\Site 7.vai"
(drive-on-the-left ) at 11:19:55 on Friday, 7 April 2006



 FILE PROPERTIES
 ***************

   RUN TITLE: 2009 PM Do Nothing Site 7
    LOCATION: Courtlough Interchange East
        DATE: 04/04/2006
      CLIENT:
  ENUMERATOR:
  JOB NUMBER:
      STATUS:
 DESCRIPTION:


 INPUT DATA
 **********
 ARM A - M1 Off Slip
 ARM B - Rowan's Road East
 ARM C - M1 On Slip
 ARM D - M1 Overbridge


 GEOMETRIC DATA
 --------------


 GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

 ARM C IS JUNCTION EXIT ONLY

 ------------------------------------------------------------------------------------------------------------------------
 I ARM    I   V (M)   I    E (M)   I    L (M)   I    R (M)   I   D (M)   I   PHI (DEG)  I  SLOPE  I INTERCEPT (PCU/MIN) I
 ------------------------------------------------------------------------------------------------------------------------
 I ARM A I    4.02   I     8.20   I    10.00   I    30.00   I   32.80   I      26.0    I  1.265  I        41.671         I
 I ARM B I    3.74   I     6.38   I    15.00   I    70.00   I   32.80   I      15.0    I  1.465  I        43.805         I
 I ARM D I    4.53   I     5.90   I    15.00   I    20.00   I   32.80   I      40.0    I  1.350  I        41.710         I
 ------------------------------------------------------------------------------------------------------------------------

 V = approach half-width       L = effective flare length           D = inscribed circle diameter
 E = entry width               R = entry radius                     PHI = entry angle


 DATA FOR VERY LARGE ROUNDABOUTS
 -------------------------------
 ARM   CIRFLO      SEP
   A     13.0      0.0
   B      2.0      0.0
   C      0.0      0.0
   D      0.0      0.0
```

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2009 PM Do Nothing Site 7

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	2.31	3.47	2.31
ARM B	15.00	45.00	75.00	4.10	6.15	4.10
ARM D	15.00	45.00	75.00	9.11	13.67	9.11

DEMAND SET TITLE: 2009 PM Do Nothing Site 7

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.903	0.000	0.097
		0.0	167.0	0.0	18.0
		(0.0)	(16.2)	(0.0)	(5.6)
	ARM B	0.000	0.000	1.000	0.000
		0.0	0.0	328.0	0.0
		(0.0)	(0.0)	(8.5)	(11.9)
	ARM D	0.000	0.875	0.125	0.000
		0.0	638.0	91.0	0.0
		(0.0)	(6.0)	(16.5)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	2.31	25.47	0.091		0.0	0.1	1.5		0.04
ARM B	4.10	38.27	0.107		0.0	0.1	1.8		0.03
ARM D	9.11	38.87	0.234		0.0	0.3	4.5		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	2.76	23.37	0.118		0.1	0.1	2.0		0.05
ARM B	4.90	37.86	0.129		0.1	0.1	2.2		0.03
ARM D	10.88	38.87	0.280		0.3	0.4	5.8		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	3.38	20.49	0.165		0.1	0.2	2.9		0.06
ARM B	6.00	37.29	0.161		0.1	0.2	2.8		0.03
ARM D	13.33	38.87	0.343		0.4	0.5	7.7		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	3.38	20.48	0.165		0.2	0.2	3.0		0.06
ARM B	6.00	37.29	0.161		0.2	0.2	2.9		0.03
ARM D	13.33	38.87	0.343		0.5	0.5	7.8		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	2.76	23.35	0.118		0.2	0.1	2.0		0.05
ARM B	4.90	37.85	0.129		0.2	0.1	2.3		0.03
ARM D	10.88	38.87	0.280		0.5	0.4	5.9		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	2.31	25.44	0.091		0.1	0.1	1.5		0.04
ARM B	4.10	38.26	0.107		0.1	0.1	1.8		0.03
ARM D	9.11	38.87	0.234		0.4	0.3	4.7		0.03

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.2
17.45	0.2
18.00	0.1
18.15	0.1

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.2
17.45	0.2
18.00	0.1
18.15	0.1

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.3	
17.15	0.4	
17.30	0.5	*
17.45	0.5	*
18.00	0.4	
18.15	0.3	

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	253.7	169.1	12.9	0.05	12.9	0.05
B	449.8	299.8	13.8	0.03	13.8	0.03
D	999.6	666.4	36.3	0.04	36.3	0.04
ALL	1703.0	1135.4	63.0	0.04	63.0	0.04

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

== end of file ==

[Printed at 10:30:47 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2009 Do Nothing\PM Peak\Site 8.vai"
(drive-on-the-left) at 11:21:27 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2009 PM Do Nothing Site 8
LOCATION: Rowan's Road East / R132 Roundabout
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****

ARM A - R132 (Balbriggan Road)
ARM B - R132 (Dublin Road)
ARM C - Rowan's Road East
ARM D - Access to Site C of M1 Business Park

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	5.80	8.20	22.00	32.00	50.00	28.0	0.740	39.241
ARM B	6.00	8.00	30.00	26.00	50.00	19.0	0.761	40.534
ARM C	7.00	7.50	10.00	18.50	50.00	33.0	0.703	36.987
ARM D	7.50	8.00	5.00	20.50	50.00	32.0	0.734	39.559

V = approach half-width
E = entry width
L = effective flare length
R = entry radius
D = inscribed circle diameter
PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2009 PM Do Nothing Site 8

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	5.65	8.48	5.65
ARM B	15.00	45.00	75.00	5.19	7.78	5.19
ARM C	15.00	45.00	75.00	10.06	15.09	10.06
ARM D	15.00	45.00	75.00	3.59	5.38	3.59

DEMAND SET TITLE: 2009 PM Do Nothing Site 8

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.279	0.582	0.139
		0.0	126.0	263.0	63.0
		(0.0)	(1.6)	(6.5)	(14.3)
	ARM B	0.451	0.000	0.376	0.173
		187.0	0.0	156.0	72.0
		(3.2)	(0.0)	(10.3)	(15.3)
	ARM C	0.634	0.175	0.000	0.191
		510.0	141.0	0.0	154.0
		(4.3)	(14.2)	(0.0)	(14.9)
	ARM D	0.185	0.167	0.648	0.000
		53.0	48.0	186.0	0.0
		(15.1)	(14.6)	(15.1)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	5.65	33.21	0.170		0.0	0.2	3.0		0.04
ARM B	5.19	32.57	0.159		0.0	0.2	2.8		0.04
ARM C	10.06	31.41	0.320		0.0	0.5	6.9		0.05
ARM D	3.59	27.34	0.131		0.0	0.2	2.2		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	6.75	32.48	0.208		0.2	0.3	3.9		0.04
ARM B	6.19	31.59	0.196		0.2	0.2	3.6		0.04
ARM C	12.02	30.85	0.389		0.5	0.6	9.4		0.05
ARM D	4.28	25.96	0.165		0.2	0.2	2.9		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	8.26	31.47	0.263		0.3	0.4	5.3		0.04
ARM B	7.59	30.25	0.251		0.2	0.3	4.9		0.04
ARM C	14.72	30.09	0.489		0.6	0.9	13.9		0.06
ARM D	5.25	24.07	0.218		0.2	0.3	4.1		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	8.26	31.47	0.263		0.4	0.4	5.3		0.04
ARM B	7.59	30.24	0.251		0.3	0.3	5.0		0.04
ARM C	14.72	30.09	0.489		0.9	1.0	14.3		0.07
ARM D	5.25	24.05	0.218		0.3	0.3	4.2		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	6.75	32.47	0.208		0.4	0.3	4.0		0.04
ARM B	6.19	31.58	0.196		0.3	0.2	3.7		0.04
ARM C	12.02	30.85	0.390		1.0	0.6	9.8		0.05
ARM D	4.28	25.94	0.165		0.3	0.2	3.0		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	5.65	33.20	0.170		0.3	0.2	3.1		0.04
ARM B	5.19	32.55	0.159		0.2	0.2	2.9		0.04
ARM C	10.06	31.40	0.320		0.6	0.5	7.2		0.05
ARM D	3.59	27.32	0.131		0.2	0.2	2.3		0.04

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.3
17.30	0.4
17.45	0.4
18.00	0.3
18.15	0.2

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.2
17.30	0.3
17.45	0.3
18.00	0.2
18.15	0.2

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.5	
17.15	0.6	*
17.30	0.9	*
17.45	1.0	*
18.00	0.6	*
18.15	0.5	

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.2
17.30	0.3
17.45	0.3
18.00	0.2
18.15	0.2

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	619.8	413.2	24.6	0.04	24.6	0.04
B	569.1	379.4	22.9	0.04	22.9	0.04
C	1103.8	735.9	61.5	0.06	61.5	0.06
D	393.5	262.4	18.7	0.05	18.7	0.05
ALL	2686.2	1790.8	127.7	0.05	127.8	0.05

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ===

[Printed at 10:42:51 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
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THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2009 Do Nothing\PM Peak\Site 9.vai"
(drive-on-the-left) at 10:40:16 on Tuesday, 18 April 2006

FILE PROPERTIES
****

RUN TITLE: 2009 PM Do Nothing Site 9
LOCATION: Rowan's Road West / M1 Business Park Roundabout
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - Link to Courtlough Interchange
ARM B - Access to Site F of M1 Business Park
ARM C - Rowan's Road West
ARM D - Access to Site A of M1 Business Park

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	4.00	8.00	2.00	23.00	50.00	6.0	0.596	24.986
ARM B	4.00	8.00	2.00	22.00	50.00	22.0	0.565	23.668
ARM C	4.00	8.00	2.00	25.00	50.00	15.0	0.581	24.347
ARM D	4.00	8.00	2.00	23.00	50.00	26.0	0.558	23.394

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2009 PM Do Nothing Site 9

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	1.45	2.18	1.45
ARM B	15.00	45.00	75.00	0.00	0.00	0.00
ARM C	15.00	45.00	75.00	2.21	3.32	2.21
ARM D	15.00	45.00	75.00	3.36	5.04	3.36

DEMAND SET TITLE: 2009 PM Do Nothing Site 9

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.000	0.724	0.276
		0.0	0.0	84.0	32.0
		(0.0)	(0.0)	(11.9)	(15.6)
	ARM B	0.000	0.000	0.000	0.000
		0.0	0.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.983	0.000	0.000	0.017
		174.0	0.0	0.0	3.0
		(2.9)	(0.0)	(0.0)	(0.0)
	ARM D	0.929	0.000	0.071	0.000
		250.0	0.0	19.0	0.0
		(19.0)	(0.0)	(15.8)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	1.45	21.98	0.066		0.0	0.1	1.0		0.05
ARM B	0.00	22.59	0.000		0.0	0.0	0.0		0.00
ARM C	2.21	23.41	0.095		0.0	0.1	1.5		0.05
ARM D	3.36	18.64	0.180		0.0	0.2	3.2		0.07

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	1.73	21.95	0.079		0.1	0.1	1.3		0.05
ARM B	0.00	22.37	0.000		0.0	0.0	0.0		0.00
ARM C	2.64	23.36	0.113		0.1	0.1	1.9		0.05
ARM D	4.02	18.44	0.218		0.2	0.3	4.1		0.07

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	2.12	21.91	0.097		0.1	0.1	1.6		0.05
ARM B	0.00	22.09	0.000		0.0	0.0	0.0		0.00
ARM C	3.24	23.29	0.139		0.1	0.2	2.4		0.05
ARM D	4.92	18.16	0.271		0.3	0.4	5.4		0.08

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	2.12	21.91	0.097		0.1	0.1	1.6		0.05
ARM B	0.00	22.09	0.000		0.0	0.0	0.0		0.00
ARM C	3.24	23.29	0.139		0.2	0.2	2.4		0.05
ARM D	4.92	18.16	0.271		0.4	0.4	5.5		0.08

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	1.73	21.95	0.079		0.1	0.1	1.3		0.05
ARM B	0.00	22.37	0.000		0.0	0.0	0.0		0.00
ARM C	2.64	23.36	0.113		0.2	0.1	1.9		0.05
ARM D	4.02	18.44	0.218		0.4	0.3	4.3		0.07

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	1.45	21.98	0.066		0.1	0.1	1.1		0.05
ARM B	0.00	22.58	0.000		0.0	0.0	0.0		0.00
ARM C	2.21	23.41	0.095		0.1	0.1	1.6		0.05
ARM D	3.36	18.64	0.180		0.3	0.2	3.4		0.07

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1
18.15	0.1

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.2
17.45	0.2
18.00	0.1
18.15	0.1

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.3
17.30	0.4
17.45	0.4
18.00	0.3
18.15	0.2

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	159.1	106.0	7.9	0.05	7.9	0.05
B	0.0	0.0	0.0	0.00	0.0	0.00
C	242.7	161.8	11.7	0.05	11.7	0.05
D	368.9	245.9	25.9	0.07	25.9	0.07
ALL	770.6	513.7	45.5	0.06	45.5	0.06

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ===

[Printed at 10:41:07 on 18/04/2006]

2009 Do Something

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
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Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2009 Do Something\AM Peak\Site 3.vai"
(drive-on-the-left) at 11:30:14 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2009 AM Do Something Site 3
LOCATION: Five Roads Roundabout
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - Nevitt Road
ARM B - Cul de Sac
ARM C - Link to R132
ARM D - Link to Hedgestown

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.05	3.95	8.80	20.00	31.60	21.0	0.557	19.415
ARM B	2.71	3.95	6.30	20.00	31.60	36.0	0.513	17.163
ARM C	5.50	5.50	0.00	15.00	31.60	6.0	0.693	29.635
ARM D	3.75	4.80	7.90	25.00	31.60	21.0	0.611	23.587

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2009 AM Do Something Site 3

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.00	0.00	0.00
ARM B	15.00	45.00	75.00	0.01	0.02	0.01
ARM C	15.00	45.00	75.00	0.04	0.06	0.04
ARM D	15.00	45.00	75.00	0.17	0.26	0.17

DEMAND SET TITLE: 2009 AM Do Something Site 3

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	0.000	0.000	0.000
		0.0	0.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.000	0.000	0.000	1.000
		0.0	0.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.000	0.000	0.000	1.000
		0.0	0.0	0.0	3.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.000	0.000	1.000	0.000
		0.0	0.0	14.0	0.0
		(0.0)	(0.0)	(7.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	0.00	19.31	0.000		0.0	0.0	0.0		0.00
ARM B	0.01	17.07	0.001		0.0	0.0	0.0		0.06
ARM C	0.04	29.63	0.001		0.0	0.0	0.0		0.03
ARM D	0.17	22.04	0.008		0.0	0.0	0.1		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	0.00	19.29	0.000		0.0	0.0	0.0		0.00
ARM B	0.01	17.05	0.001		0.0	0.0	0.0		0.06
ARM C	0.04	29.62	0.002		0.0	0.0	0.0		0.03
ARM D	0.21	22.04	0.009		0.0	0.0	0.1		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	0.00	19.26	0.000		0.0	0.0	0.0		0.00
ARM B	0.02	17.02	0.001		0.0	0.0	0.0		0.06
ARM C	0.05	29.62	0.002		0.0	0.0	0.0		0.03
ARM D	0.26	22.04	0.012		0.0	0.0	0.2		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	0.00	19.26	0.000		0.0	0.0	0.0		0.00
ARM B	0.02	17.02	0.001		0.0	0.0	0.0		0.06
ARM C	0.05	29.62	0.002		0.0	0.0	0.0		0.03
ARM D	0.26	22.04	0.012		0.0	0.0	0.2		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	0.00	19.29	0.000		0.0	0.0	0.0		0.00
ARM B	0.01	17.05	0.001		0.0	0.0	0.0		0.06
ARM C	0.04	29.62	0.002		0.0	0.0	0.0		0.03
ARM D	0.21	22.04	0.009		0.0	0.0	0.1		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	0.00	19.31	0.000		0.0	0.0	0.0		0.00
ARM B	0.01	17.07	0.001		0.0	0.0	0.0		0.06
ARM C	0.04	29.63	0.001		0.0	0.0	0.0		0.03
ARM D	0.17	22.04	0.008		0.0	0.0	0.1		0.05

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
A	0.0	0.0	0.0	0.00	0.0	0.00
B	1.4	0.9	0.1	0.06	0.1	0.06
C	4.1	2.7	0.1	0.03	0.1	0.03
D	19.2	12.8	0.9	0.05	0.9	0.05
ALL	24.7	16.5	1.1	0.04	1.1	0.04

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

== end of file ==

[Printed at 10:34:29 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited   Tel: +44 (0) 1344 770018
Crowthorne House   Fax: +44 (0) 1344 770864
Nine Mile Ride   Email: softwarebureau@trl.co.uk
Wokingham, Berks.   Web: www.trlsoftware.co.uk
RG40 3GA,UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2009 Do Something\AM Peak\Site 4.vai"
(drive-on-the-left) at 11:30:52 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2009 AM Do Something Site 4
LOCATION: Hedgestown Roundabout
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - R132 Off Slip
ARM B - Hedgestown Road
ARM C - R132 On Slip
ARM D - Link to "Five Roads"

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM C IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	7.70	7.70	2.00	30.00	31.70	16.0	1.789	55.923
ARM B	3.96	5.96	5.00	30.00	31.70	27.0	1.336	39.531
ARM D	4.60	5.60	8.00	25.30	31.70	36.0	1.350	41.010

V = approach half-width   L = effective flare length   D = inscribed circle diameter
E = entry width   R = entry radius   PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	0.0	0.0
B	0.0	0.0
C	0.0	0.0
D	0.0	0.0

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2009 AM Do Something Site 4

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.26	0.39	0.26
ARM B	15.00	45.00	75.00	0.20	0.30	0.20
ARM D	15.00	45.00	75.00	0.04	0.06	0.04

DEMAND SET TITLE: 2009 AM Do Something Site 4

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	1.000	0.000	0.000
		0.0	21.0	0.0	0.0
		(0.0)	(9.5)	(0.0)	(0.0)
	ARM B	0.000	0.000	0.125	0.875
		0.0	0.0	2.0	14.0
		(0.0)	(0.0)	(0.0)	(7.1)
	ARM D	0.000	0.667	0.333	0.000
		0.0	2.0	1.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	0.26	51.01	0.005		0.0	0.0	0.1		0.02
ARM B	0.20	37.20	0.005		0.0	0.0	0.1		0.03
ARM D	0.04	41.01	0.001		0.0	0.0	0.0		0.02

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	0.31	51.00	0.006		0.0	0.0	0.1		0.02
ARM B	0.24	37.20	0.006		0.0	0.0	0.1		0.03
ARM D	0.04	41.01	0.001		0.0	0.0	0.0		0.02

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	0.38	50.98	0.008		0.0	0.0	0.1		0.02
ARM B	0.29	37.20	0.008		0.0	0.0	0.1		0.03
ARM D	0.05	41.01	0.001		0.0	0.0	0.0		0.02

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	0.38	50.98	0.008		0.0	0.0	0.1		0.02
ARM B	0.29	37.20	0.008		0.0	0.0	0.1		0.03
ARM D	0.05	41.01	0.001		0.0	0.0	0.0		0.02

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	0.31	51.00	0.006		0.0	0.0	0.1		0.02
ARM B	0.24	37.20	0.006		0.0	0.0	0.1		0.03
ARM D	0.04	41.01	0.001		0.0	0.0	0.0		0.02

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	0.26	51.01	0.005		0.0	0.0	0.1		0.02
ARM B	0.20	37.20	0.005		0.0	0.0	0.1		0.03
ARM D	0.04	41.01	0.001		0.0	0.0	0.0		0.02

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	28.8	19.2	0.6	0.02	0.6	0.02
B	21.9	14.6	0.6	0.03	0.6	0.03
D	4.1	2.7	0.1	0.02	0.1	0.02
ALL	54.8	36.6	1.3	0.02	1.3	0.02

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ==

[Printed at 10:34:57 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770018
Crowthorne House Fax: +44 (0) 1344 770864
Nine Mile Ride Email: softwarebureau@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2009 Do Something\AM Peak\Site 6.vai"
(drive-on-the-left) at 11:32:50 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2009 AM Do Something Site 6
LOCATION: Courtlough Interchange West
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - Rowan's Road
ARM B - M1 On Slip
ARM C - M1 Overbridge
ARM D - M1 Off Slip

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM B IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.73	6.09	20.00	40.00	35.00	16.0	1.330	41.875
ARM C	4.43	5.59	15.00	17.50	35.00	11.0	1.442	43.128
ARM D	4.00	5.23	5.00	20.00	35.00	27.0	1.162	36.280

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	9.0	0.0
B	8.0	0.0
C	0.0	0.0
D	9.0	0.0

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2009 AM Do Something Site 6

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	2.49	3.73	2.49
ARM C	15.00	45.00	75.00	6.15	9.23	6.15
ARM D	15.00	45.00	75.00	5.25	7.88	5.25

DEMAND SET TITLE: 2009 AM Do Something Site 6

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	0.070	0.930	0.000
		0.0	14.0	185.0	0.0
		(0.0)	(21.4)	(30.3)	(0.0)
	ARM C	0.606	0.394	0.000	0.000
		298.0	194.0	0.0	0.0
		(16.2)	(10.7)	(0.0)	(0.0)
	ARM D	0.288	0.021	0.690	0.000
		121.0	9.0	290.0	0.0
		(34.7)	(0.0)	(7.6)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	2.49	25.42	0.098		0.0	0.1	1.6		0.04
ARM C	6.15	37.82	0.163		0.0	0.2	2.9		0.03
ARM D	5.25	24.41	0.215		0.0	0.3	4.0		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	2.97	24.10	0.123		0.1	0.1	2.1		0.05
ARM C	7.34	37.82	0.194		0.2	0.2	3.6		0.03
ARM D	6.27	23.04	0.272		0.3	0.4	5.5		0.06

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	3.64	22.26	0.163		0.1	0.2	2.9		0.05
ARM C	8.99	37.82	0.238		0.2	0.3	4.6		0.03
ARM D	7.68	21.15	0.363		0.4	0.6	8.3		0.07

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	3.64	22.25	0.164		0.2	0.2	2.9		0.05
ARM C	8.99	37.82	0.238		0.3	0.3	4.7		0.03
ARM D	7.68	21.14	0.363		0.6	0.6	8.5		0.07

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	2.97	24.08	0.123		0.2	0.1	2.1		0.05
ARM C	7.34	37.82	0.194		0.3	0.2	3.7		0.03
ARM D	6.27	23.03	0.272		0.6	0.4	5.7		0.06

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	2.49	25.40	0.098		0.1	0.1	1.7		0.04
ARM C	6.15	37.82	0.163		0.2	0.2	2.9		0.03
ARM D	5.25	24.39	0.215		0.4	0.3	4.2		0.05

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.1
08.30	0.2
08.45	0.2
09.00	0.1
09.15	0.1

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.2
08.15	0.2
08.30	0.3
08.45	0.3
09.00	0.2
09.15	0.2

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.00	0.3	
08.15	0.4	
08.30	0.6	*
08.45	0.6	*
09.00	0.4	
09.15	0.3	

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	272.9	181.9	13.3	0.05	13.3	0.05
C	674.6	449.8	22.3	0.03	22.3	0.03
D	575.9	383.9	36.3	0.06	36.3	0.06
ALL	1523.4	1015.6	71.9	0.05	71.9	0.05

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ==

[Printed at 10:35:14 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
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Web: www.trlsoftware.co.uk

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2009 Do Something\AM Peak\Site 7.vai"
(drive-on-the-left) at 11:35:32 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2009 AM Do Something Site 7
LOCATION: Courtlough Interchange East
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - M1 Off Slip
ARM B - Rowan's Road East
ARM C - M1 On Slip
ARM D - M1 Overbridge

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM C IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	4.02	8.20	10.00	30.00	32.80	26.0	1.344	42.831
ARM B	3.74	6.38	15.00	70.00	32.80	15.0	1.465	43.805
ARM D	4.53	5.90	15.00	20.00	32.80	40.0	1.350	41.710

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	8.0	0.0
B	2.0	0.0
C	9.0	0.0
D	0.0	0.0

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2009 AM Do Something Site 7

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	4.03	6.04	4.03
ARM B	15.00	45.00	75.00	10.21	15.32	10.21
ARM D	15.00	45.00	75.00	5.94	8.91	5.94

DEMAND SET TITLE: 2009 AM Do Something Site 7

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	0.714	0.019	0.267
		0.0	230.0	6.0	86.0
		(0.0)	(15.7)	(16.7)	(15.1)
	ARM B	0.000	0.000	0.503	0.497
		0.0	0.0	411.0	406.0
		(0.0)	(0.0)	(5.4)	(18.7)
	ARM D	0.000	0.884	0.116	0.000
		0.0	420.0	55.0	0.0
		(0.0)	(11.2)	(56.4)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	4.03	29.04	0.139		0.0	0.2	2.4		0.04
ARM B	10.21	35.98	0.284		0.0	0.4	5.8		0.04
ARM D	5.94	35.82	0.166		0.0	0.2	2.9		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	4.81	27.47	0.175		0.2	0.2	3.1		0.04
ARM B	12.19	35.36	0.345		0.4	0.5	7.8		0.04
ARM D	7.09	35.82	0.198		0.2	0.2	3.7		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	5.89	25.31	0.233		0.2	0.3	4.5		0.05
ARM B	14.94	34.52	0.433		0.5	0.8	11.2		0.05
ARM D	8.68	35.82	0.242		0.2	0.3	4.7		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	5.89	25.31	0.233		0.3	0.3	4.5		0.05
ARM B	14.94	34.52	0.433		0.8	0.8	11.4		0.05
ARM D	8.68	35.82	0.242		0.3	0.3	4.8		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	4.81	27.46	0.175		0.3	0.2	3.2		0.04
ARM B	12.19	35.36	0.345		0.8	0.5	8.1		0.04
ARM D	7.09	35.82	0.198		0.3	0.2	3.8		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	4.03	29.02	0.139		0.2	0.2	2.5		0.04
ARM B	10.21	35.97	0.284		0.5	0.4	6.0		0.04
ARM D	5.94	35.82	0.166		0.2	0.2	3.0		0.03

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.2
08.15	0.2
08.30	0.3
08.45	0.3
09.00	0.2
09.15	0.2

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.00	0.4	
08.15	0.5	*
08.30	0.8	*
08.45	0.8	*
09.00	0.5	*
09.15	0.4	

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.2
08.15	0.2
08.30	0.3
08.45	0.3
09.00	0.2
09.15	0.2

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	441.5	294.4	20.2	0.05	20.2	0.05
B	1120.3	746.9	50.2	0.04	50.2	0.04
D	651.3	434.2	22.9	0.04	22.9	0.04
ALL	2213.1	1475.4	93.3	0.04	93.3	0.04

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

== end of file ==

[Printed at 10:35:27 on 18/04/2006]

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2009 Do Something\AM Peak\Site 8 Roundabout.

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2009 Do Something\AM Peak\Site 8 Roundabout.vai"
(drive-on-the-left) at 11:37:15 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2009 AM Do Something Site 8
LOCATION: Rowans Road East/R132 Roundabout
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - R132 (Balbriggan Road)
ARM B - R132 (Dublin Road)
ARM C - Rowan's Road East
ARM D - Access to Site C of M1 Business Park

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	5.80	8.20	22.00	32.00	50.00	28.0	0.740	39.241
ARM B	6.00	8.00	30.00	26.00	50.00	19.0	0.761	40.534
ARM C	7.00	7.50	10.00	18.50	50.00	33.0	0.703	36.987
ARM D	7.50	8.00	5.00	20.50	50.00	32.0	0.734	39.559

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2009 AM Do Something Site 8

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	7.70	11.55	7.70
ARM B	15.00	45.00	75.00	4.80	7.20	4.80
ARM C	15.00	45.00	75.00	8.13	12.19	8.13
ARM D	15.00	45.00	75.00	3.61	5.42	3.61

DEMAND SET TITLE: 2009 AM Do Something Site 8

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	0.208	0.706	0.086
		0.0	128.0	435.0	53.0
		(0.0)	(13.3)	(5.1)	(15.1)
	ARM B	0.281	0.000	0.594	0.125
		108.0	0.0	228.0	48.0
		(14.8)	(0.0)	(23.2)	(14.6)
	ARM C	0.400	0.314	0.000	0.286
		260.0	204.0	0.0	186.0
		(6.9)	(18.1)	(0.0)	(15.1)
	ARM D	0.218	0.249	0.533	0.000
		63.0	72.0	154.0	0.0
		(14.3)	(15.3)	(14.9)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	7.70	32.16	0.239		0.0	0.3	4.6		0.04
ARM B	4.80	28.34	0.169		0.0	0.2	3.0		0.04
ARM C	8.13	30.94	0.263		0.0	0.4	5.2		0.04
ARM D	3.61	29.32	0.123		0.0	0.1	2.1		0.04

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TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	9.19	31.31	0.294		0.3	0.4	6.1		0.05
ARM B	5.73	27.25	0.210		0.2	0.3	3.9		0.05
ARM C	9.70	30.57	0.317		0.4	0.5	6.8		0.05
ARM D	4.31	28.31	0.152		0.1	0.2	2.7		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	11.26	30.16	0.373		0.4	0.6	8.7		0.05
ARM B	7.02	25.78	0.272		0.3	0.4	5.5		0.05
ARM C	11.88	30.07	0.395		0.5	0.6	9.6		0.05
ARM D	5.28	26.93	0.196		0.2	0.2	3.6		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	11.26	30.16	0.373		0.6	0.6	8.9		0.05
ARM B	7.02	25.77	0.272		0.4	0.4	5.6		0.05
ARM C	11.88	30.07	0.395		0.6	0.7	9.8		0.05
ARM D	5.28	26.93	0.196		0.2	0.2	3.7		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	9.19	31.31	0.294		0.6	0.4	6.4		0.05
ARM B	5.73	27.24	0.210		0.4	0.3	4.1		0.05
ARM C	9.70	30.57	0.317		0.7	0.5	7.1		0.05
ARM D	4.31	28.30	0.152		0.2	0.2	2.7		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	7.70	32.14	0.240		0.4	0.3	4.8		0.04
ARM B	4.80	28.32	0.170		0.3	0.2	3.1		0.04
ARM C	8.13	30.93	0.263		0.5	0.4	5.4		0.04
ARM D	3.61	29.30	0.123		0.2	0.1	2.1		0.04

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.00	0.3	
08.15	0.4	
08.30	0.6	*
08.45	0.6	*
09.00	0.4	
09.15	0.3	

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 QUEUE AT ARM B
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  TIME SEGMENT   NO. OF
   ENDING      VEHICLES
               IN QUEUE

   08.00           0.2
   08.15           0.3
   08.30           0.4
   08.45           0.4
   09.00           0.3
   09.15           0.2



 QUEUE AT ARM C
 --------------

  TIME SEGMENT   NO. OF
   ENDING      VEHICLES
               IN QUEUE

   08.00           0.4
   08.15           0.5
   08.30           0.6  *
   08.45           0.7  *
   09.00           0.5
   09.15           0.4



 QUEUE AT ARM D
 --------------

  TIME SEGMENT   NO. OF
   ENDING      VEHICLES
               IN QUEUE

   08.00           0.1
   08.15           0.2
   08.30           0.2
   08.45           0.2
   09.00           0.2
   09.15           0.1
```


QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
A	844.7	563.1	39.6	0.05	39.6	0.05
B	526.5	351.0	25.2	0.05	25.2	0.05
C	891.3	594.2	44.0	0.05	44.0	0.05
D	396.3	264.2	16.9	0.04	16.9	0.04
ALL	2658.8	1772.5	125.6	0.05	125.6	0.05

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

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[Printed at 10:35:47 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2009 Do Something\AM Peak\Site 9 A & F Business Park Roundabout.vai"
(drive-on-the-left) at 11:37:56 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2009 AM Do Something Site 9
LOCATION: Rowan's Road West / M1 Business Park
DATE: 05/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****

ARM A - Link to Courtlough Interchange
ARM B - Access to Site F of M1 Business Park
ARM C - Rowan's Road West
ARM D - Access to Site A of M1 Business Park

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	4.00	8.00	2.00	23.00	50.00	6.0	0.596	24.986
ARM B	4.00	8.00	2.00	22.00	50.00	22.0	0.565	23.668
ARM C	4.00	8.00	2.00	25.00	50.00	15.0	0.581	24.347
ARM D	4.00	8.00	2.00	23.00	50.00	26.0	0.558	23.394

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2009 AM Do Something Site 9

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	5.24	7.86	5.24
ARM B	15.00	45.00	75.00	0.00	0.00	0.00
ARM C	15.00	45.00	75.00	2.33	3.49	2.33
ARM D	15.00	45.00	75.00	0.44	0.66	0.44

DEMAND SET TITLE: 2009 AM Do Something Site 9

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
		TURNING PROPORTIONS TURNING COUNTS (VEH/HR) (PERCENTAGE OF H.V.S)			
07.45 - 09.15					
	ARM A	0.000	0.000	0.403	0.597
		0.0	0.0	169.0	250.0
		(0.0)	(0.0)	(34.3)	(15.2)
	ARM B	0.000	0.000	0.000	0.000
		0.0	0.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.898	0.000	0.000	0.102
		167.0	0.0	0.0	19.0
		(32.3)	(0.0)	(0.0)	(15.8)
	ARM D	0.914	0.000	0.086	0.000
		32.0	0.0	3.0	0.0
		(15.6)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	5.24	20.31	0.258		0.0	0.3	5.1		0.07
ARM B	0.00	20.03	0.000		0.0	0.0	0.0		0.00
ARM C	2.33	17.05	0.136		0.0	0.2	2.3		0.07
ARM D	0.44	19.13	0.023		0.0	0.0	0.3		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	6.25	20.31	0.308		0.3	0.4	6.5		0.07
ARM B	0.00	19.31	0.000		0.0	0.0	0.0		0.00
ARM C	2.78	16.73	0.166		0.2	0.2	2.9		0.07
ARM D	0.52	18.86	0.028		0.0	0.0	0.4		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	7.66	20.30	0.377		0.4	0.6	8.8		0.08
ARM B	0.00	18.33	0.000		0.0	0.0	0.0		0.00
ARM C	3.40	16.30	0.209		0.2	0.3	3.9		0.08
ARM D	0.64	18.50	0.035		0.0	0.0	0.5		0.06

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	7.66	20.30	0.377		0.6	0.6	9.0		0.08
ARM B	0.00	18.32	0.000		0.0	0.0	0.0		0.00
ARM C	3.40	16.30	0.209		0.3	0.3	3.9		0.08
ARM D	0.64	18.50	0.035		0.0	0.0	0.5		0.06

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	6.25	20.31	0.308		0.6	0.4	6.9		0.07
ARM B	0.00	19.29	0.000		0.0	0.0	0.0		0.00
ARM C	2.78	16.73	0.166		0.3	0.2	3.1		0.07
ARM D	0.52	18.86	0.028		0.0	0.0	0.4		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	5.24	20.31	0.258		0.4	0.3	5.3		0.07
ARM B	0.00	20.01	0.000		0.0	0.0	0.0		0.00
ARM C	2.33	17.04	0.136		0.2	0.2	2.4		0.07
ARM D	0.44	19.12	0.023		0.0	0.0	0.4		0.05

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.00	0.3	
08.15	0.4	
08.30	0.6	*
08.45	0.6	*
09.00	0.4	
09.15	0.3	

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.2
08.15	0.2
08.30	0.3
08.45	0.3
09.00	0.2
09.15	0.2

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	574.5	383.0	41.6	0.07	41.6	0.07
B	0.0	0.0	0.0	0.00	0.0	0.00
C	255.0	170.0	18.5	0.07	18.5	0.07
D	48.0	32.0	2.6	0.05	2.6	0.05
ALL	877.6	585.1	62.7	0.07	62.7	0.07

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

== end of file ==

[Printed at 10:36:04 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
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THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2009 Do Something\PM Peak\Site 3.vai"
(drive-on-the-left) at 11:38:18 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2009 PM Do Nothing Site 3
LOCATION: Five Road Roundabout
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****

ARM A - Nevitt Road
ARM B - Cul de Sac
ARM C - Link to R132
ARM D - Link to Hedgestown

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.05	3.95	8.80	20.00	31.60	21.0	0.557	19.415
ARM B	2.71	3.95	6.30	20.00	31.60	36.0	0.513	17.163
ARM C	5.50	5.50	0.00	15.00	31.60	6.0	0.693	29.635
ARM D	3.75	4.80	7.90	25.00	31.60	21.0	0.611	23.587

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2009 PM Do Nothing Site 3

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.00	0.00	0.00
ARM B	15.00	45.00	75.00	0.05	0.08	0.05
ARM C	15.00	45.00	75.00	0.08	0.11	0.08
ARM D	15.00	45.00	75.00	0.38	0.56	0.38

DEMAND SET TITLE: 2009 PM Do Nothing Site 3

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.000	0.000	0.000
		0.0	0.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.000	0.000	0.500	0.500
		0.0	0.0	2.0	2.0
		(0.0)	(0.0)	(50.0)	(0.0)
	ARM C	0.000	0.500	0.000	0.500
		0.0	3.0	0.0	3.0
		(0.0)	(66.7)	(0.0)	(0.0)
	ARM D	0.000	0.067	0.933	0.000
		0.0	2.0	28.0	0.0
		(0.0)	(0.0)	(3.6)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	0.00	19.16	0.000		0.0	0.0	0.0		0.00
ARM B	0.05	13.58	0.004		0.0	0.0	0.1		0.07
ARM C	0.08	22.21	0.003		0.0	0.0	0.0		0.05
ARM D	0.38	22.78	0.016		0.0	0.0	0.2		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	0.00	19.11	0.000		0.0	0.0	0.0		0.00
ARM B	0.06	13.55	0.004		0.0	0.0	0.1		0.07
ARM C	0.09	22.21	0.004		0.0	0.0	0.1		0.05
ARM D	0.45	22.78	0.020		0.0	0.0	0.3		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	0.00	19.05	0.000		0.0	0.0	0.0		0.00
ARM B	0.07	13.51	0.005		0.0	0.0	0.1		0.07
ARM C	0.11	22.20	0.005		0.0	0.0	0.1		0.05
ARM D	0.55	22.77	0.024		0.0	0.0	0.4		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	0.00	19.05	0.000		0.0	0.0	0.0		0.00
ARM B	0.07	13.51	0.005		0.0	0.0	0.1		0.07
ARM C	0.11	22.20	0.005		0.0	0.0	0.1		0.05
ARM D	0.55	22.77	0.024		0.0	0.0	0.4		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	0.00	19.11	0.000		0.0	0.0	0.0		0.00
ARM B	0.06	13.55	0.004		0.0	0.0	0.1		0.07
ARM C	0.09	22.21	0.004		0.0	0.0	0.1		0.05
ARM D	0.45	22.78	0.020		0.0	0.0	0.3		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	0.00	19.16	0.000		0.0	0.0	0.0		0.00
ARM B	0.05	13.58	0.004		0.0	0.0	0.1		0.07
ARM C	0.08	22.21	0.003		0.0	0.0	0.1		0.05
ARM D	0.38	22.78	0.016		0.0	0.0	0.3		0.04

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
A	0.0	0.0	0.0	0.00	0.0	0.00
B	5.5	3.7	0.4	0.07	0.4	0.07
C	8.2	5.5	0.4	0.05	0.4	0.05
D	41.1	27.4	1.8	0.04	1.8	0.04
ALL	54.8	36.6	2.6	0.05	2.6	0.05

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

== end of file ==

[Printed at 10:36:38 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
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Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2009 Do Something\PM Peak\Site 4.vai"
(drive-on-the-left) at 11:38:58 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2009 PM Do Something Site 4
LOCATION: Hedgestown Roundabout
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - R132 Off Slip
ARM B - Hedgestown Road
ARM C - R132 On Slip
ARM D - Link to "Five Roads"

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM C IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	7.70	7.70	2.00	30.00	31.70	16.0	1.789	55.923
ARM B	3.96	5.96	5.00	30.00	31.70	27.0	1.336	39.531
ARM D	4.60	5.60	8.00	25.30	31.70	36.0	1.350	41.010

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	0.0	0.0
B	0.0	0.0
C	0.0	0.0
D	0.0	0.0

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2009 PM Do Something Site 4

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.16	0.24	0.16
ARM B	15.00	45.00	75.00	0.41	0.62	0.41
ARM D	15.00	45.00	75.00	0.06	0.09	0.06

DEMAND SET TITLE: 2009 PM Do Something Site 4

TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.846	0.154	0.000
		0.0	11.0	2.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.000	0.000	0.091	0.909
		0.0	0.0	3.0	30.0
		(0.0)	(0.0)	(0.0)	(7.1)
	ARM D	0.000	0.600	0.400	0.000
		0.0	3.0	2.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	0.16	55.81	0.003		0.0	0.0	0.0		0.02
ARM B	0.41	37.07	0.011		0.0	0.0	0.2		0.03
ARM D	0.06	41.01	0.002		0.0	0.0	0.0		0.02

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	0.19	55.79	0.003		0.0	0.0	0.1		0.02
ARM B	0.49	37.06	0.013		0.0	0.0	0.2		0.03
ARM D	0.07	41.01	0.002		0.0	0.0	0.0		0.02

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	0.24	55.76	0.004		0.0	0.0	0.1		0.02
ARM B	0.60	37.04	0.016		0.0	0.0	0.2		0.03
ARM D	0.09	41.01	0.002		0.0	0.0	0.0		0.02

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	0.24	55.76	0.004		0.0	0.0	0.1		0.02
ARM B	0.60	37.04	0.016		0.0	0.0	0.2		0.03
ARM D	0.09	41.01	0.002		0.0	0.0	0.0		0.02

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	0.19	55.79	0.003		0.0	0.0	0.1		0.02
ARM B	0.49	37.06	0.013		0.0	0.0	0.2		0.03
ARM D	0.07	41.01	0.002		0.0	0.0	0.0		0.02

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	0.16	55.81	0.003		0.0	0.0	0.0		0.02
ARM B	0.41	37.07	0.011		0.0	0.0	0.2		0.03
ARM D	0.06	41.01	0.002		0.0	0.0	0.0		0.02

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	17.8	11.9	0.3	0.02	0.3	0.02
B	45.2	30.2	1.2	0.03	1.2	0.03
D	6.9	4.6	0.2	0.02	0.2	0.02
ALL	69.9	46.6	1.7	0.02	1.7	0.02

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

== end of file ==

[Printed at 10:36:54 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2009 Do Something\PM Peak\Site 6.vai"
(drive-on-the-left) at 11:39:32 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2009 PM Do Something Site 6
LOCATION: Courtlough Interchange West
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - Rowan's Road
ARM B - M1 On Slip
ARM C - M1 Overbridge
ARM D - M1 Off Slip

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM B IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.73	6.09	20.00	40.00	35.00	16.0	1.314	41.643
ARM C	4.43	5.59	15.00	17.50	35.00	11.0	1.442	43.128
ARM D	4.00	5.23	5.00	20.00	35.00	27.0	1.203	36.976

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	10.0	0.0
B	15.0	0.0
C	0.0	0.0
D	6.0	0.0

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2009 PM Do Something Site 6

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	6.70	10.05	6.70
ARM C	15.00	45.00	75.00	4.30	6.45	4.30
ARM D	15.00	45.00	75.00	5.32	7.99	5.32

DEMAND SET TITLE: 2009 PM Do Something Site 6

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.144	0.856	0.000
		0.0	77.0	459.0	0.0
		(0.0)	(13.0)	(15.9)	(0.0)
	ARM C	0.430	0.570	0.000	0.000
		148.0	196.0	0.0	0.0
		(16.2)	(10.7)	(0.0)	(0.0)
	ARM D	0.075	0.028	0.897	0.000
		32.0	12.0	382.0	0.0
		(50.0)	(0.0)	(5.2)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	6.70	27.11	0.247		0.0	0.3	4.8		0.05
ARM C	4.30	38.14	0.113		0.0	0.1	1.9		0.03
ARM D	5.32	28.72	0.185		0.0	0.2	3.3		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	8.00	25.35	0.316		0.3	0.5	6.8		0.06
ARM C	5.13	38.14	0.135		0.1	0.2	2.3		0.03
ARM D	6.36	27.66	0.230		0.2	0.3	4.4		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	9.80	22.95	0.427		0.5	0.7	10.8		0.08
ARM C	6.29	38.14	0.165		0.2	0.2	2.9		0.03
ARM D	7.79	26.22	0.297		0.3	0.4	6.2		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	9.80	22.94	0.427		0.7	0.7	11.1		0.08
ARM C	6.29	38.14	0.165		0.2	0.2	3.0		0.03
ARM D	7.79	26.21	0.297		0.4	0.4	6.3		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	8.00	25.33	0.316		0.7	0.5	7.1		0.06
ARM C	5.13	38.14	0.135		0.2	0.2	2.4		0.03
ARM D	6.36	27.66	0.230		0.4	0.3	4.6		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	6.70	27.08	0.247		0.5	0.3	5.0		0.05
ARM C	4.30	38.14	0.113		0.2	0.1	1.9		0.03
ARM D	5.32	28.71	0.186		0.3	0.2	3.5		0.04

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.3	
17.15	0.5	
17.30	0.7	*
17.45	0.7	*
18.00	0.5	
18.15	0.3	

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.2
17.30	0.2
17.45	0.2
18.00	0.2
18.15	0.1

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.3
17.30	0.4
17.45	0.4
18.00	0.3
18.15	0.2

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	735.0	490.0	45.6	0.06	45.6	0.06
C	471.7	314.5	14.4	0.03	14.4	0.03
D	584.1	389.4	28.3	0.05	28.3	0.05
ALL	1790.8	1193.9	88.3	0.05	88.3	0.05

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ==

[Printed at 10:37:07 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
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TRL Limited Tel: +44 (0) 1344 770018
Crowthorne House Fax: +44 (0) 1344 770864
Nine Mile Ride Email: softwarebureau@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2009 Do Something\PM Peak\Site 7.vai"
(drive-on-the-left) at 11:40:20 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2009 PM Do Something Site 7
LOCATION: Courtlough Interchange East
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - M1 Off Slip
ARM B - Rowan's Road East
ARM C - M1 On Slip
ARM D - M1 Overbridge

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM C IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	4.02	8.20	10.00	30.00	32.80	26.0	1.233	41.207
ARM B	3.74	6.38	15.00	70.00	32.80	15.0	1.465	43.805
ARM D	4.53	5.90	15.00	20.00	32.80	40.0	1.350	41.710

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	15.0	0.0
B	2.0	0.0
C	6.0	0.0
D	0.0	0.0

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2009 PM Do Something Site 7

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	2.31	3.47	2.31
ARM B	15.00	45.00	75.00	8.16	12.24	8.16
ARM D	15.00	45.00	75.00	10.51	15.77	10.51

DEMAND SET TITLE: 2009 PM Do Something Site 7

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.903	0.000	0.097
		0.0	167.0	0.0	18.0
		(0.0)	(16.2)	(0.0)	(5.6)
	ARM B	0.000	0.000	0.501	0.499
		0.0	0.0	327.0	326.0
		(0.0)	(0.0)	(8.3)	(13.5)
	ARM D	0.000	0.874	0.126	0.000
		0.0	735.0	106.0	0.0
		(0.0)	(8.4)	(29.2)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	2.31	23.31	0.099		0.0	0.1	1.6		0.05
ARM B	8.16	36.93	0.221		0.0	0.3	4.2		0.03
ARM D	10.51	37.57	0.280		0.0	0.4	5.7		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	2.76	20.87	0.132		0.1	0.2	2.2		0.06
ARM B	9.75	36.43	0.268		0.3	0.4	5.4		0.04
ARM D	12.55	37.57	0.334		0.4	0.5	7.4		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	3.38	17.52	0.193		0.2	0.2	3.5		0.07
ARM B	11.94	35.74	0.334		0.4	0.5	7.4		0.04
ARM D	15.37	37.57	0.409		0.5	0.7	10.2		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	3.38	17.50	0.193		0.2	0.2	3.6		0.07
ARM B	11.94	35.74	0.334		0.5	0.5	7.5		0.04
ARM D	15.37	37.57	0.409		0.7	0.7	10.4		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	2.76	20.84	0.132		0.2	0.2	2.3		0.06
ARM B	9.75	36.42	0.268		0.5	0.4	5.6		0.04
ARM D	12.55	37.57	0.334		0.7	0.5	7.7		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	2.31	23.27	0.099		0.2	0.1	1.7		0.05
ARM B	8.16	36.92	0.221		0.4	0.3	4.3		0.03
ARM D	10.51	37.57	0.280		0.5	0.4	5.9		0.04

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.2
17.30	0.2
17.45	0.2
18.00	0.2
18.15	0.1

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.3	
17.15	0.4	
17.30	0.5	
17.45	0.5	*
18.00	0.4	
18.15	0.3	

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.4	
17.15	0.5	
17.30	0.7	*
17.45	0.7	*
18.00	0.5	*
18.15	0.4	

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	253.7	169.1	15.0	0.06	15.0	0.06
B	895.4	596.9	34.4	0.04	34.4	0.04
D	1153.2	768.8	47.2	0.04	47.2	0.04
ALL	2302.3	1534.8	96.6	0.04	96.6	0.04

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

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[Printed at 10:37:21 on 18/04/2006]

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2009 Do Something\PM Peak\Site 8 Roundabout.vao

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A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
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RG40 3GA,UK

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2009 Do Something\PM Peak\Site 8 Roundabout.vai"
(drive-on-the-left) at 11:41:10 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2009 PM Do Something Site 8
LOCATION: Rowan's Road East / R132 Roundabout
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - R132 (Balbriggan Road)
ARM B - R132 (Dublin Road)
ARM C - Rowan's Road East
ARM D - Access to Site C of M1 Business Park

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	5.80	8.20	22.00	32.00	50.00	28.0	0.740	39.241
ARM B	6.00	8.00	30.00	26.00	50.00	19.0	0.761	40.534
ARM C	7.00	7.50	10.00	18.50	50.00	33.0	0.703	36.987
ARM D	7.50	8.00	5.00	20.50	50.00	32.0	0.734	39.559

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2009 Do Something\PM Peak\Site 8 Roundabout.vao

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2009 PM Do Something Site 8

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	5.64	8.46	5.64
ARM B	15.00	45.00	75.00	5.66	8.49	5.66
ARM C	15.00	45.00	75.00	11.27	16.91	11.27
ARM D	15.00	45.00	75.00	3.59	5.38	3.59

DEMAND SET TITLE: 2009 PM Do Something Site 8

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.255	0.605	0.140
		0.0	115.0	273.0	63.0
		(0.0)	(4.3)	(7.7)	(14.3)
	ARM B	0.413	0.000	0.428	0.159
		187.0	0.0	194.0	72.0
		(3.2)	(0.0)	(11.3)	(15.3)
	ARM C	0.596	0.233	0.000	0.171
		538.0	210.0	0.0	154.0
		(5.4)	(17.6)	(0.0)	(14.9)
	ARM D	0.185	0.167	0.648	0.000
		53.0	48.0	186.0	0.0
		(15.1)	(14.6)	(15.1)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	5.64	32.00	0.176		0.0	0.2	3.2		0.04
ARM B	5.66	32.26	0.176		0.0	0.2	3.1		0.04
ARM C	11.27	30.89	0.365		0.0	0.6	8.4		0.05
ARM D	3.59	26.38	0.136		0.0	0.2	2.3		0.04

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2009 Do Something\PM Peak\Site 8 Roundabout.vao

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	6.73	31.13	0.216		0.2	0.3	4.1		0.04
ARM B	6.76	31.26	0.216		0.2	0.3	4.1		0.04
ARM C	13.46	30.35	0.444		0.6	0.8	11.6		0.06
ARM D	4.28	24.81	0.173		0.2	0.2	3.1		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	8.24	29.95	0.275		0.3	0.4	5.6		0.05
ARM B	8.28	29.90	0.277		0.3	0.4	5.6		0.05
ARM C	16.49	29.60	0.557		0.8	1.2	18.1		0.08
ARM D	5.25	22.66	0.232		0.2	0.3	4.4		0.06

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	8.24	29.94	0.275		0.4	0.4	5.7		0.05
ARM B	8.28	29.89	0.277		0.4	0.4	5.7		0.05
ARM C	16.49	29.60	0.557		1.2	1.3	18.7		0.08
ARM D	5.25	22.64	0.232		0.3	0.3	4.5		0.06

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	6.73	31.12	0.216		0.4	0.3	4.2		0.04
ARM B	6.76	31.25	0.216		0.4	0.3	4.2		0.04
ARM C	13.46	30.34	0.444		1.3	0.8	12.3		0.06
ARM D	4.28	24.78	0.173		0.3	0.2	3.2		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	5.64	31.98	0.176		0.3	0.2	3.3		0.04
ARM B	5.66	32.24	0.176		0.3	0.2	3.2		0.04
ARM C	11.27	30.88	0.365		0.8	0.6	8.8		0.05
ARM D	3.59	26.35	0.136		0.2	0.2	2.4		0.04

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.3
17.30	0.4
17.45	0.4
18.00	0.3
18.15	0.2

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2009 Do Something\PM Peak\Site 8 Roundabout.vao

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.3
17.30	0.4
17.45	0.4
18.00	0.3
18.15	0.2

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.6	*
17.15	0.8	*
17.30	1.2	*
17.45	1.3	*
18.00	0.8	*
18.15	0.6	*

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.2
17.30	0.3
17.45	0.3
18.00	0.2
18.15	0.2

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	618.4	412.3	26.0	0.04	26.0	0.04
B	621.2	414.1	26.0	0.04	26.0	0.04
C	1236.8	824.6	78.0	0.06	78.0	0.06
D	393.5	262.4	19.9	0.05	19.9	0.05
ALL	2869.9	1913.3	150.0	0.05	150.0	0.05

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

== end of file ==

[Printed at 10:37:37 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2009 Do Something\PM Peak\Site 9 A & F Business Park Roundabout.vai"
(drive-on-the-left) at 11:41:45 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2009 PM Do Something Site 9
LOCATION: Rowan's Road West / M1 Business Park
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - Link to Courtlough Interchange
ARM B - Access to Site F of M1 Business Park
ARM C - Rowan's Road West
ARM D - Access to Site A of M1 Business Park

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	4.00	8.00	2.00	23.00	50.00	6.0	0.596	24.986
ARM B	4.00	8.00	2.00	22.00	50.00	22.0	0.565	23.668
ARM C	4.00	8.00	2.00	25.00	50.00	15.0	0.581	24.347
ARM D	4.00	8.00	2.00	23.00	50.00	26.0	0.558	23.394

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2009 PM Do Something Site 9

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	2.25	3.38	2.25
ARM B	15.00	45.00	75.00	0.00	0.00	0.00
ARM C	15.00	45.00	75.00	3.61	5.42	3.61
ARM D	15.00	45.00	75.00	3.36	5.04	3.36

DEMAND SET TITLE: 2009 PM Do Something Site 9

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
		TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S)			
16.45 - 18.15					
	ARM A	0.000	0.000	0.822	0.178
		0.0	0.0	148.0	32.0
		(0.0)	(0.0)	(23.6)	(15.6)
	ARM B	0.000	0.000	0.000	0.000
		0.0	0.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.990	0.000	0.000	0.010
		286.0	0.0	0.0	3.0
		(15.7)	(0.0)	(0.0)	(0.0)
	ARM D	0.929	0.000	0.071	0.000
		250.0	0.0	19.0	0.0
		(15.2)	(0.0)	(15.8)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	2.25	20.32	0.111		0.0	0.1	1.8		0.06
ARM B	0.00	21.96	0.000		0.0	0.0	0.0		0.00
ARM C	3.61	20.84	0.173		0.0	0.2	3.1		0.06
ARM D	3.36	18.30	0.184		0.0	0.2	3.3		0.07

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	2.69	20.29	0.132		0.1	0.2	2.3		0.06
ARM B	0.00	21.62	0.000		0.0	0.0	0.0		0.00
ARM C	4.31	20.79	0.207		0.2	0.3	3.9		0.06
ARM D	4.02	17.90	0.224		0.2	0.3	4.2		0.07

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	3.29	20.25	0.162		0.2	0.2	2.9		0.06
ARM B	0.00	21.17	0.000		0.0	0.0	0.0		0.00
ARM C	5.28	20.73	0.255		0.3	0.3	5.0		0.06
ARM D	4.92	17.37	0.283		0.3	0.4	5.8		0.08

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	3.29	20.25	0.162		0.2	0.2	2.9		0.06
ARM B	0.00	21.17	0.000		0.0	0.0	0.0		0.00
ARM C	5.28	20.73	0.255		0.3	0.3	5.1		0.06
ARM D	4.92	17.37	0.283		0.4	0.4	5.9		0.08

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	2.69	20.29	0.132		0.2	0.2	2.3		0.06
ARM B	0.00	21.62	0.000		0.0	0.0	0.0		0.00
ARM C	4.31	20.79	0.207		0.3	0.3	4.0		0.06
ARM D	4.02	17.89	0.224		0.4	0.3	4.4		0.07

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	2.25	20.32	0.111		0.2	0.1	1.9		0.06
ARM B	0.00	21.95	0.000		0.0	0.0	0.0		0.00
ARM C	3.61	20.84	0.173		0.3	0.2	3.2		0.06
ARM D	3.36	18.29	0.184		0.3	0.2	3.5		0.07

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.2
17.30	0.2
17.45	0.2
18.00	0.2
18.15	0.1

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.3
17.30	0.3
17.45	0.3
18.00	0.3
18.15	0.2

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.3
17.30	0.4
17.45	0.4
18.00	0.3
18.15	0.2

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	246.8	164.5	14.1	0.06	14.1	0.06
B	0.0	0.0	0.0	0.00	0.0	0.00
C	396.3	264.2	24.3	0.06	24.3	0.06
D	368.9	245.9	27.1	0.07	27.1	0.07
ALL	1012.0	674.6	65.4	0.06	65.4	0.06

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ===

[Printed at 10:37:52 on 18/04/2006]

2024 Do Nothing with CL

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\AM Peak\Site 3.vai"
(drive-on-the-left) at 11:46:06 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 AM Do Nothing Site 3 with Courtlough Interchange
LOCATION: Five Roads Roundabout
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****

ARM A - Nevitt Road
ARM B - Cul de Sac
ARM C - Link to R132
ARM D - Link to Hedgestown

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.05	3.95	8.80	20.00	31.60	21.0	0.557	19.415
ARM B	2.71	3.95	6.30	20.00	31.60	36.0	0.513	17.163
ARM C	5.50	5.50	0.00	15.00	31.60	6.0	0.693	29.635
ARM D	3.75	4.80	7.90	25.00	31.60	21.0	0.611	23.587

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\AM Peak\Site 3.vao

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: Site 3 AM

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.73	1.09	0.73
ARM B	15.00	45.00	75.00	0.01	0.02	0.01
ARM C	15.00	45.00	75.00	0.46	0.69	0.46
ARM D	15.00	45.00	75.00	0.35	0.52	0.35

DEMAND SET TITLE: Site 3 AM

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	0.000	0.259	0.741
		0.0	0.0	15.0	43.0
		(0.0)	(0.0)	(60.0)	(27.0)
	ARM B	1.000	0.000	0.000	0.000
		0.0	0.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.892	0.000	0.000	0.108
		33.0	0.0	0.0	4.0
		(58.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.857	0.000	0.143	0.000
		24.0	0.0	4.0	0.0
		(13.0)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	0.73	14.30	0.051		0.0	0.1	0.8		0.07
ARM B	0.01	16.63	0.001		0.0	0.0	0.0		0.06
ARM C	0.46	19.21	0.024		0.0	0.0	0.4		0.05
ARM D	0.35	20.86	0.017		0.0	0.0	0.3		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	0.87	14.30	0.061		0.1	0.1	0.9		0.07
ARM B	0.01	16.53	0.001		0.0	0.0	0.0		0.06
ARM C	0.55	19.15	0.029		0.0	0.0	0.4		0.05
ARM D	0.42	20.79	0.020		0.0	0.0	0.3		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	1.06	14.29	0.074		0.1	0.1	1.2		0.08
ARM B	0.02	16.38	0.001		0.0	0.0	0.0		0.06
ARM C	0.68	19.07	0.035		0.0	0.0	0.5		0.05
ARM D	0.51	20.69	0.025		0.0	0.0	0.4		0.05

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\AM Peak\Site 3.vao

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TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	1.06	14.29	0.074		0.1	0.1	1.2		0.08
ARM B	0.02	16.38	0.001		0.0	0.0	0.0		0.06
ARM C	0.68	19.07	0.035		0.0	0.0	0.6		0.05
ARM D	0.51	20.69	0.025		0.0	0.0	0.4		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	0.87	14.30	0.061		0.1	0.1	1.0		0.07
ARM B	0.01	16.53	0.001		0.0	0.0	0.0		0.06
ARM C	0.55	19.15	0.029		0.0	0.0	0.5		0.05
ARM D	0.42	20.78	0.020		0.0	0.0	0.3		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	0.73	14.30	0.051		0.1	0.1	0.8		0.07
ARM B	0.01	16.63	0.001		0.0	0.0	0.0		0.06
ARM C	0.46	19.21	0.024		0.0	0.0	0.4		0.05
ARM D	0.35	20.86	0.017		0.0	0.0	0.3		0.05

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.1

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	79.5	53.0	5.9	0.07	5.9	0.07
B	1.4	0.9	0.1	0.06	0.1	0.06
C	50.7	33.8	2.7	0.05	2.7	0.05
D	38.4	25.6	1.9	0.05	1.9	0.05
ALL	170.0	113.4	10.6	0.06	10.6	0.06

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

== end of file ==

[Printed at 10:03:33 on 18/04/2006]

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\AM Peak\Site 4.vao

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A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770018
Crowthorne House Fax: +44 (0) 1344 770864
Nine Mile Ride Email: softwarebureau@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\AM Peak\Site 4.vai"
(drive-on-the-left) at 11:46:32 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 AM Do Nothing Site 4 with Courtlough Interchange
LOCATION: Hedgestown Roundabout
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****

ARM A - R132 Off Slip
ARM B - Hedgestown Road
ARM C - R132 On Slip
ARM D - Link to "Five Roads"

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM C IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	7.70	7.70	2.00	30.00	31.70	16.0	1.789	55.923
ARM B	3.96	5.96	5.00	30.00	31.70	27.0	1.336	39.531
ARM D	4.60	5.60	8.00	25.30	31.70	36.0	1.350	41.010

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	0.0	0.0
B	0.0	0.0
C	0.0	0.0
D	0.0	0.0

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\AM Peak\Site 4.vao

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: Site 4 AM

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.47	0.71	0.47
ARM B	15.00	45.00	75.00	0.22	0.34	0.22
ARM D	15.00	45.00	75.00	0.64	0.96	0.64

DEMAND SET TITLE: Site 4 AM

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	0.658	0.000	0.342
		0.0	25.0	0.0	13.0
		(0.0)	(12.0)	(0.0)	(8.0)
	ARM B	0.000	0.000	0.167	0.833
		0.0	0.0	3.0	15.0
		(0.0)	(0.0)	(0.0)	(13.0)
	ARM D	0.000	0.490	0.510	0.000
		0.0	25.0	26.0	0.0
		(0.0)	(4.0)	(46.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	0.47	49.26	0.010		0.0	0.0	0.1		0.02
ARM B	0.22	34.88	0.006		0.0	0.0	0.1		0.03
ARM D	0.64	32.70	0.019		0.0	0.0	0.3		0.03

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\AM Peak\Site 4.vao

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	0.57	49.00	0.012		0.0	0.0	0.2		0.02
ARM B	0.27	34.73	0.008		0.0	0.0	0.1		0.03
ARM D	0.76	32.70	0.023		0.0	0.0	0.4		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	0.69	48.65	0.014		0.0	0.0	0.2		0.02
ARM B	0.33	34.52	0.010		0.0	0.0	0.1		0.03
ARM D	0.93	32.70	0.029		0.0	0.0	0.4		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	0.69	48.65	0.014		0.0	0.0	0.2		0.02
ARM B	0.33	34.52	0.010		0.0	0.0	0.1		0.03
ARM D	0.93	32.70	0.029		0.0	0.0	0.4		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	0.57	49.00	0.012		0.0	0.0	0.2		0.02
ARM B	0.27	34.73	0.008		0.0	0.0	0.1		0.03
ARM D	0.76	32.70	0.023		0.0	0.0	0.4		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	0.47	49.25	0.010		0.0	0.0	0.1		0.02
ARM B	0.22	34.88	0.006		0.0	0.0	0.1		0.03
ARM D	0.64	32.70	0.019		0.0	0.0	0.3		0.03

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\AM Peak\Site 4.vao

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	52.1	34.7	1.1	0.02	1.1	0.02
B	24.7	16.5	0.7	0.03	0.7	0.03
D	69.9	46.6	2.2	0.03	2.2	0.03
ALL	146.7	97.8	4.0	0.03	4.0	0.03

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

==================== end of file ====================

[Printed at 10:04:23 on 18/04/2006]

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\AM Peak\Site 6.vao

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A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770018
Crowthorne House Fax: +44 (0) 1344 770864
Nine Mile Ride Email: softwarebureau@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\AM Peak\Site 6.vai"
(drive-on-the-left) at 11:47:10 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 AM Do Nothing Site 6 with Courtlough Interchange
LOCATION: Courtlough Interchange West
DATE: 05/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****

ARM A - Rowan's Road
ARM B - M1 On Slip
ARM C - M1 Overbridge
ARM D - M1 Off Slip

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM B IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	9.16	12.96	1.70	25.20	60.00	36.0	1.416	59.237
ARM C	8.57	12.28	0.60	26.30	60.00	42.0	1.498	56.767
ARM D	6.00	10.00	5.00	20.00	60.00	27.0	1.125	46.900

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	12.0	17.0
B	11.0	0.0
C	0.0	17.0
D	17.0	0.0

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2024 AM Do Nothing Site 6 with Courtlough Interchange

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	3.45	5.18	3.45
ARM C	15.00	45.00	75.00	12.26	18.39	12.26
ARM D	15.00	45.00	75.00	9.88	14.81	9.88

DEMAND SET TITLE: 2024 AM Do Nothing Site 6 with Courtlough Interchange

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	0.188	0.812	0.000
		0.0	52.0	224.0	0.0
		(0.0)	(13.5)	(13.4)	(0.0)
	ARM C	0.745	0.255	0.000	0.000
		731.0	250.0	0.0	0.0
		(14.4)	(18.4)	(0.0)	(0.0)
	ARM D	0.443	0.025	0.532	0.000
		350.0	20.0	420.0	0.0
		(14.6)	(0.0)	(8.3)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	3.45	40.23	0.086		0.0	0.1	1.4		0.03
ARM C	12.26	49.18	0.249		0.0	0.3	4.9		0.03
ARM D	9.88	27.97	0.353		0.0	0.5	8.0		0.06

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\AM Peak\Site 6.vao

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	4.12	37.88	0.109		0.1	0.1	1.8		0.03
ARM C	14.64	49.18	0.298		0.3	0.4	6.3		0.03
ARM D	11.79	25.16	0.469		0.5	0.9	12.8		0.07

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	5.05	34.70	0.145		0.1	0.2	2.5		0.03
ARM C	17.93	49.18	0.365		0.4	0.6	8.5		0.03
ARM D	14.44	21.31	0.678		0.9	2.0	28.8		0.14

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	5.05	34.64	0.146		0.2	0.2	2.6		0.03
ARM C	17.93	49.18	0.365		0.6	0.6	8.6		0.03
ARM D	14.44	21.30	0.678		2.0	2.1	30.9		0.15

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	4.12	37.80	0.109		0.2	0.1	1.9		0.03
ARM C	14.64	49.18	0.298		0.6	0.4	6.4		0.03
ARM D	11.79	25.14	0.469		2.1	0.9	13.9		0.08

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	3.45	40.18	0.086		0.1	0.1	1.4		0.03
ARM C	12.26	49.18	0.249		0.4	0.3	5.0		0.03
ARM D	9.88	27.93	0.354		0.9	0.5	8.4		0.06

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.1
08.30	0.2
08.45	0.2
09.00	0.1
09.15	0.1

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\AM Peak\Site 6.vao

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QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.00	0.3	
08.15	0.4	
08.30	0.6	*
08.45	0.6	*
09.00	0.4	
09.15	0.3	

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.00	0.5	*
08.15	0.9	*
08.30	2.0	**
08.45	2.1	**
09.00	0.9	*
09.15	0.5	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	378.5	252.3	11.6	0.03	11.6	0.03
C	1345.2	896.8	39.7	0.03	39.7	0.03
D	1083.3	722.2	102.7	0.09	102.7	0.09
ALL	2806.9	1871.2	154.0	0.05	154.0	0.05

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

== end of file ==

[Printed at 10:04:49 on 18/04/2006]

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\AM Peak\Site 7.vao

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A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770018
Crowthorne House Fax: +44 (0) 1344 770864
Nine Mile Ride Email: softwarebureau@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\AM Peak\Site 7.vai"
(drive-on-the-left) at 11:47:44 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 AM Do Nothing Site 7 with Courtlough Interchange
LOCATION: Courtlough Interchange East
DATE: 05/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - M1 Off Slip
ARM B - Rowan's Road East
ARM C - M1 On Slip
ARM D - M1 Overbridge

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM C IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	9.64	16.00	2.20	27.20	65.00	48.0	1.367	61.245
ARM B	8.99	16.00	3.60	45.70	65.00	42.0	1.474	62.128
ARM D	8.57	12.28	0.60	22.60	65.00	38.0	1.436	57.113

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	11.0	0.0
B	6.0	17.0
C	17.0	0.0
D	0.0	17.0

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\AM Peak\Site 7.vao

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2024 AM Do Nothing Site 7 with Courtlough Interchange

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	7.65	11.48	7.65
ARM B	15.00	45.00	75.00	15.74	23.61	15.74
ARM D	15.00	45.00	75.00	8.05	12.08	8.05

DEMAND SET TITLE: 2024 AM Do Nothing Site 7 with Courtlough Interchange

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
		TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S)			
07.45 - 09.15					
	ARM A	0.000	0.539	0.013	0.448
		0.0	330.0	8.0	274.0
		(0.0)	(15.8)	(25.0)	(14.6)
	ARM B	0.000	0.000	0.438	0.562
		0.0	0.0	552.0	707.0
		(0.0)	(0.0)	(5.8)	(16.0)
	ARM D	0.000	0.884	0.116	0.000
		0.0	569.0	75.0	0.0
		(0.0)	(10.0)	(11.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	7.65	42.60	0.180		0.0	0.2	3.2		0.03
ARM B	15.74	48.99	0.321		0.0	0.5	7.0		0.03
ARM D	8.05	51.87	0.155		0.0	0.2	2.7		0.02

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\AM Peak\Site 7.vao

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	9.13	40.55	0.225		0.2	0.3	4.3		0.03
ARM B	18.79	47.68	0.394		0.5	0.6	9.6		0.03
ARM D	9.61	51.87	0.185		0.2	0.2	3.4		0.02

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	11.19	37.73	0.297		0.3	0.4	6.2		0.04
ARM B	23.02	45.87	0.502		0.6	1.0	14.7		0.04
ARM D	11.77	51.87	0.227		0.2	0.3	4.4		0.02

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	11.19	37.73	0.297		0.4	0.4	6.3		0.04
ARM B	23.02	45.87	0.502		1.0	1.0	15.0		0.04
ARM D	11.77	51.87	0.227		0.3	0.3	4.4		0.02

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	9.13	40.54	0.225		0.4	0.3	4.4		0.03
ARM B	18.79	47.66	0.394		1.0	0.7	9.9		0.03
ARM D	9.61	51.87	0.185		0.3	0.2	3.4		0.02

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	7.65	42.58	0.180		0.3	0.2	3.3		0.03
ARM B	15.74	48.97	0.321		0.7	0.5	7.2		0.03
ARM D	8.05	51.87	0.155		0.2	0.2	2.8		0.02

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.2
08.15	0.3
08.30	0.4
08.45	0.4
09.00	0.3
09.15	0.2

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\AM Peak\Site 7.vao

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QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.00	0.5	
08.15	0.6	*
08.30	1.0	*
08.45	1.0	*
09.00	0.7	*
09.15	0.5	

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.2
08.15	0.2
08.30	0.3
08.45	0.3
09.00	0.2
09.15	0.2

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	839.2	559.5	27.8	0.03	27.8	0.03
B	1726.4	1150.9	63.5	0.04	63.5	0.04
D	883.1	588.7	21.1	0.02	21.1	0.02
ALL	3448.6	2299.1	112.4	0.03	112.4	0.03

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

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[Printed at 10:05:18 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\AM Peak\Site 8 Roundabout.vai"
(drive-on-the-left) at 11:48:27 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 AM Do Nothing Site 8 with Courtlough Interchange
LOCATION: Rowans Road East / R132 Roundabout
DATE: 05/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****

ARM A - R132 (Balbriggan Road)
ARM B - R132 (Dublin Road)
ARM C - Rowan's Road East
ARM D - Access to Site C of M1 Business Park

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	5.80	8.20	22.00	32.00	50.00	28.0	0.740	39.241
ARM B	6.00	8.00	30.00	26.00	50.00	19.0	0.761	40.534
ARM C	8.00	10.50	10.00	18.50	50.00	33.0	0.813	46.732
ARM D	7.50	8.00	5.00	20.50	50.00	32.0	0.734	39.559

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\AM Peak\Site 8 Roundabout

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2024 AM Do Nothing Site 8 with Courtlough Interchange

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	12.02	18.04	12.02
ARM B	15.00	45.00	75.00	7.39	11.08	7.39
ARM C	15.00	45.00	75.00	11.24	16.86	11.24
ARM D	15.00	45.00	75.00	4.40	6.60	4.40

DEMAND SET TITLE: 2024 AM Do Nothing Site 8 with Courtlough Interchange

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	0.215	0.716	0.069
		0.0	207.0	689.0	66.0
		(0.0)	(14.0)	(7.2)	(15.2)
	ARM B	0.261	0.000	0.638	0.102
		154.0	0.0	377.0	60.0
		(14.9)	(0.0)	(17.5)	(15.0)
	ARM C	0.422	0.350	0.000	0.228
		379.0	315.0	0.0	205.0
		(7.9)	(15.2)	(0.0)	(15.1)
	ARM D	0.219	0.230	0.551	0.000
		77.0	81.0	194.0	0.0
		(15.6)	(14.8)	(14.9)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	12.02	30.20	0.398		0.0	0.7	9.6		0.05
ARM B	7.39	26.33	0.281		0.0	0.4	5.7		0.05
ARM C	11.24	38.78	0.290		0.0	0.4	6.0		0.04
ARM D	4.40	26.84	0.164		0.0	0.2	2.9		0.04

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\AM Peak\Site 8 Roundabout

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	14.36	29.07	0.494		0.7	1.0	14.2		0.07
ARM B	8.82	24.67	0.358		0.4	0.6	8.1		0.06
ARM C	13.42	38.21	0.351		0.4	0.5	8.0		0.04
ARM D	5.25	25.36	0.207		0.2	0.3	3.9		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	17.59	27.54	0.639		1.0	1.7	25.0		0.10
ARM B	10.80	22.42	0.482		0.6	0.9	13.4		0.09
ARM C	16.43	37.43	0.439		0.5	0.8	11.5		0.05
ARM D	6.43	23.33	0.276		0.3	0.4	5.6		0.06

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	17.59	27.53	0.639		1.7	1.8	26.2		0.10
ARM B	10.80	22.39	0.483		0.9	0.9	13.9		0.09
ARM C	16.43	37.42	0.439		0.8	0.8	11.7		0.05
ARM D	6.43	23.32	0.276		0.4	0.4	5.7		0.06

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	14.36	29.06	0.494		1.8	1.0	15.2		0.07
ARM B	8.82	24.63	0.358		0.9	0.6	8.6		0.06
ARM C	13.42	38.19	0.351		0.8	0.5	8.3		0.04
ARM D	5.25	25.34	0.207		0.4	0.3	4.0		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	12.02	30.18	0.398		1.0	0.7	10.2		0.06
ARM B	7.39	26.29	0.281		0.6	0.4	6.0		0.05
ARM C	11.24	38.76	0.290		0.5	0.4	6.2		0.04
ARM D	4.40	26.81	0.164		0.3	0.2	3.0		0.04

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.00	0.7	*
08.15	1.0	*
08.30	1.7	**
08.45	1.8	**
09.00	1.0	*
09.15	0.7	*

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TRL              TRL VIEWER    3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\AM Peak\Site 8 Roundabout

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 QUEUE AT ARM B
 --------------

  TIME SEGMENT   NO. OF
   ENDING      VEHICLES
               IN QUEUE

   08.00          0.4
   08.15          0.6  *
   08.30          0.9  *
   08.45          0.9  *
   09.00          0.6  *
   09.15          0.4



 QUEUE AT ARM C
 --------------

  TIME SEGMENT   NO. OF
   ENDING      VEHICLES
               IN QUEUE

   08.00          0.4
   08.15          0.5  *
   08.30          0.8  *
   08.45          0.8  *
   09.00          0.5  *
   09.15          0.4



 QUEUE AT ARM D
 --------------

  TIME SEGMENT   NO. OF
   ENDING      VEHICLES
               IN QUEUE

   08.00          0.2
   08.15          0.3
   08.30          0.4
   08.45          0.4
   09.00          0.3
   09.15          0.2



                 QUEUEING DELAY INFORMATION OVER WHOLE PERIOD
                 --------------------------------------------

 ----------------------------------------------------------------------------
 I  ARM  I   TOTAL DEMAND  I     * QUEUEING *     I  * INCLUSIVE QUEUEING *  I
 I       I                 I      * DELAY *       I         * DELAY *        I
 I       I-------------------------------------------------------------------I
 I       I  (VEH)  (VEH/H) I  (MIN)    (MIN/VEH) I    (MIN)      (MIN/VEH)  I
 ----------------------------------------------------------------------------

 I   A   I 1319.1 I  879.4 I   100.4 I    0.08    I     100.4  I     0.08     I
 I   B   I  810.4 I  540.3 I    55.7 I    0.07    I      55.7  I     0.07     I
 I   C   I 1232.7 I  821.8 I    51.7 I    0.04    I      51.7  I     0.04     I
 I   D   I  482.7 I  321.8 I    25.0 I    0.05    I      25.0  I     0.05     I
 ----------------------------------------------------------------------------
 I  ALL  I 3844.9 I 2563.3 I   232.7 I    0.06    I     232.8  I     0.06     I
 ----------------------------------------------------------------------------

 * DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
 * INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
 * THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

 END OF JOB

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 [Printed at 10:05:43 on 18/04/2006]
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A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\AM Peak\Site 9.vai"
(drive-on-the-left) at 11:49:04 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 AM Do Nothing Site 9 with Courtlough Interchange
LOCATION: Rowans Road West / M1 Business Park
DATE: 05/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - Link to Courtlough Interchange
ARM B - Access to Site F of M1 Business Park
ARM C - Rowan's Road West
ARM D - Access to Site A of M1 Business Park

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	8.00	10.50	2.00	23.00	50.00	6.0	0.844	46.774
ARM B	4.00	8.00	2.00	22.00	50.00	22.0	0.565	23.668
ARM C	8.00	10.50	2.00	25.00	50.00	15.0	0.822	45.579
ARM D	4.00	8.00	30.00	23.00	50.00	26.0	0.691	35.055

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\AM Peak\Site 9.vao

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2024 AM Do Nothing Site 9 with Courtlough Interchange

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	13.57	20.36	13.57
ARM B	15.00	45.00	75.00	1.13	1.69	1.13
ARM C	15.00	45.00	75.00	2.14	3.21	2.14
ARM D	15.00	45.00	75.00	1.45	2.18	1.45

DEMAND SET TITLE: 2024 AM Do Nothing Site 9 with Courtlough Interchange

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	0.146	0.087	0.767
		0.0	159.0	94.0	833.0
		(0.0)	(15.1)	(10.6)	(15.0)
	ARM B	0.933	0.000	0.067	0.000
		84.0	0.0	6.0	0.0
		(15.5)	(0.0)	(16.7)	(0.0)
	ARM C	0.561	0.070	0.000	0.368
		96.0	12.0	0.0	63.0
		(9.8)	(16.7)	(0.0)	(14.3)
	ARM D	0.931	0.000	0.069	0.000
		108.0	0.0	8.0	0.0
		(14.8)	(0.0)	(12.5)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	13.57	40.59	0.334		0.0	0.5	7.4		0.04
ARM B	1.13	13.95	0.081		0.0	0.1	1.3		0.08
ARM C	2.14	31.06	0.069		0.0	0.1	1.1		0.03
ARM D	1.45	28.95	0.050		0.0	0.1	0.8		0.04

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\AM Peak\Site 9.vao

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TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	16.21	40.55	0.400		0.5	0.7	9.8		0.04
ARM B	1.34	12.67	0.106		0.1	0.1	1.7		0.09
ARM C	2.55	29.16	0.088		0.1	0.1	1.4		0.04
ARM D	1.73	28.63	0.060		0.1	0.1	1.0		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	19.85	40.49	0.490		0.7	1.0	14.1		0.05
ARM B	1.65	10.92	0.151		0.1	0.2	2.6		0.11
ARM C	3.13	26.57	0.118		0.1	0.1	2.0		0.04
ARM D	2.12	28.20	0.075		0.1	0.1	1.2		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	19.85	40.49	0.490		1.0	1.0	14.4		0.05
ARM B	1.65	10.91	0.151		0.2	0.2	2.6		0.11
ARM C	3.13	26.55	0.118		0.1	0.1	2.0		0.04
ARM D	2.12	28.19	0.075		0.1	0.1	1.2		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	16.21	40.55	0.400		1.0	0.7	10.2		0.04
ARM B	1.34	12.66	0.106		0.2	0.1	1.8		0.09
ARM C	2.55	29.14	0.088		0.1	0.1	1.5		0.04
ARM D	1.73	28.63	0.060		0.1	0.1	1.0		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	13.57	40.59	0.334		0.7	0.5	7.7		0.04
ARM B	1.13	13.93	0.081		0.1	0.1	1.3		0.08
ARM C	2.14	31.02	0.069		0.1	0.1	1.1		0.03
ARM D	1.45	28.95	0.050		0.1	0.1	0.8		0.04

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.00	0.5	*
08.15	0.7	*
08.30	1.0	*
08.45	1.0	*
09.00	0.7	*
09.15	0.5	*

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\AM Peak\Site 9.vao

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QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.1
08.30	0.2
08.45	0.2
09.00	0.1
09.15	0.1

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.1

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.1

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
A	1489.1	992.8	63.5	0.04	63.5	0.04
B	123.4	82.3	11.4	0.09	11.4	0.09
C	234.5	156.3	9.1	0.04	9.1	0.04
D	159.1	106.0	5.9	0.04	5.9	0.04
ALL	2006.1	1337.4	89.9	0.04	89.9	0.04

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

== end of file ==

[Printed at 10:06:01 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\PM Peak\Site 3.vai"
(drive-on-the-left) at 11:49:27 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 PM Do Nothing Site 3 with Courtlough Interchange
LOCATION: Five Roads Roundabout
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - Nevitt Road
ARM B - Cul de Sac
ARM C - Link to R132
ARM D - Link to Hedgestown

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.05	3.95	8.80	20.00	31.60	21.0	0.557	19.415
ARM B	2.71	3.95	6.30	20.00	31.60	36.0	0.513	17.163
ARM C	5.50	5.50	0.00	15.00	31.60	6.0	0.693	29.635
ARM D	3.75	4.80	7.90	25.00	31.60	21.0	0.611	23.587

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\PM Peak\Site 3.vao

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: Site 3 PM

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	1.29	1.93	1.29
ARM B	15.00	45.00	75.00	0.08	0.11	0.08
ARM C	15.00	45.00	75.00	0.39	0.58	0.39
ARM D	15.00	45.00	75.00	0.59	0.88	0.59

DEMAND SET TITLE: Site 3 PM

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.039	0.291	0.670
		0.0	4.0	30.0	69.0
		(0.0)	(0.0)	(3.0)	(1.0)
	ARM B	0.000	0.000	0.500	0.500
		0.0	0.0	3.0	3.0
		(0.0)	(0.0)	(0.0)	(33.0)
	ARM C	0.742	0.129	0.000	0.129
		23.0	4.0	0.0	4.0
		(0.0)	(75.0)	(0.0)	(0.0)
	ARM D	0.489	0.064	0.447	0.000
		23.0	3.0	21.0	0.0
		(26.0)	(33.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	1.29	18.90	0.068		0.0	0.1	1.1		0.06
ARM B	0.08	14.06	0.005		0.0	0.0	0.1		0.07
ARM C	0.39	26.44	0.015		0.0	0.0	0.2		0.04
ARM D	0.59	20.34	0.029		0.0	0.0	0.4		0.05

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\PM Peak\Site 3.vao

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	1.54	18.86	0.082		0.1	0.1	1.3		0.06
ARM B	0.09	13.93	0.006		0.0	0.0	0.1		0.07
ARM C	0.46	26.32	0.018		0.0	0.0	0.3		0.04
ARM D	0.70	20.30	0.035		0.0	0.0	0.5		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	1.88	18.80	0.100		0.1	0.1	1.6		0.06
ARM B	0.11	13.75	0.008		0.0	0.0	0.1		0.07
ARM C	0.57	26.17	0.022		0.0	0.0	0.3		0.04
ARM D	0.86	20.25	0.042		0.0	0.0	0.7		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	1.88	18.80	0.100		0.1	0.1	1.7		0.06
ARM B	0.11	13.75	0.008		0.0	0.0	0.1		0.07
ARM C	0.57	26.17	0.022		0.0	0.0	0.3		0.04
ARM D	0.86	20.25	0.042		0.0	0.0	0.7		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	1.54	18.86	0.082		0.1	0.1	1.4		0.06
ARM B	0.09	13.93	0.006		0.0	0.0	0.1		0.07
ARM C	0.46	26.32	0.018		0.0	0.0	0.3		0.04
ARM D	0.70	20.30	0.035		0.0	0.0	0.5		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	1.29	18.90	0.068		0.1	0.1	1.1		0.06
ARM B	0.08	14.06	0.005		0.0	0.0	0.1		0.07
ARM C	0.39	26.44	0.015		0.0	0.0	0.2		0.04
ARM D	0.59	20.34	0.029		0.0	0.0	0.5		0.05

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1
18.15	0.1

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\PM Peak\Site 3.vao

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	141.2	94.2	8.2	0.06	8.2	0.06
B	8.2	5.5	0.6	0.07	0.6	0.07
C	42.5	28.3	1.6	0.04	1.6	0.04
D	64.4	43.0	3.3	0.05	3.3	0.05
ALL	256.4	170.9	13.7	0.05	13.7	0.05

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

== end of file ==

[Printed at 10:06:29 on 18/04/2006]

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TRL              TRL VIEWER    3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\PM Peak\Site 4.vao

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            ___________________ A R C A D Y  6 ___________________

                ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY


                Analysis Program: Release 3.0 (JUNE 2005)

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 -------------------------------------------------------------------------------
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 -------------------------------------------------------------------------------

 Run with file:-
 "r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\PM Peak\Site 4.vai"
(drive-on-the-left ) at 11:49:59 on Friday, 7 April 2006



 FILE PROPERTIES
 ***************

   RUN TITLE: 2024 PM Do Nothing Site 4 with Courtlough Interchange
    LOCATION: Hedgestown Roundabout
        DATE: 04/04/2006
      CLIENT:
  ENUMERATOR:
  JOB NUMBER:
      STATUS:
 DESCRIPTION:


 INPUT DATA
 **********
 ARM A - R132 Off Slip
 ARM B - Hedgestown Road
 ARM C - R132 On Slip
 ARM D - Link to "Five Roads"


 GEOMETRIC DATA
 --------------


 GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

 ARM C IS JUNCTION EXIT ONLY

 ------------------------------------------------------------------------------------------------------------------------
 I ARM    I   V (M)    I    E (M)    I    L (M)    I    R (M)    I   D (M)    I    PHI (DEG)    I  SLOPE  I INTERCEPT (PCU/MIN) I
 ------------------------------------------------------------------------------------------------------------------------
 I ARM A I    7.70    I     7.70    I     2.00    I    30.00    I   31.70    I      16.0       I  1.789  I        55.923        I
 I ARM B I    3.96    I     5.96    I     5.00    I    30.00    I   31.70    I      27.0       I  1.336  I        39.531        I
 I ARM D I    4.60    I     5.60    I     8.00    I    25.30    I   31.70    I      36.0       I  1.350  I        41.010        I
 ------------------------------------------------------------------------------------------------------------------------

 V = approach half-width       L = effective flare length           D = inscribed circle diameter
 E = entry width               R = entry radius                     PHI = entry angle


 DATA FOR VERY LARGE ROUNDABOUTS
 -------------------------------
 ARM   CIRFLO      SEP
   A      0.0      0.0
   B      0.0      0.0
   C      0.0      0.0
   D      0.0      0.0
```

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\PM Peak\Site 4.vao

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TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: Site 4 PM

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.39	0.58	0.39
ARM B	15.00	45.00	75.00	0.49	0.73	0.49
ARM D	15.00	45.00	75.00	0.95	1.43	0.95

DEMAND SET TITLE: Site 4 PM

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.484	0.097	0.419
		0.0	15.0	3.0	13.0
		(0.0)	(0.0)	(0.0)	(46.0)
	ARM B	0.000	0.000	0.103	0.897
		0.0	0.0	4.0	35.0
		(0.0)	(0.0)	(0.0)	(3.0)
	ARM D	0.000	0.592	0.408	0.000
		0.0	45.0	31.0	0.0
		(0.0)	(2.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	0.39	45.44	0.009		0.0	0.0	0.1		0.02
ARM B	0.49	37.63	0.013		0.0	0.0	0.2		0.03
ARM D	0.95	40.53	0.023		0.0	0.0	0.4		0.03

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\PM Peak\Site 4.vao

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	0.46	45.16	0.010		0.0	0.0	0.2		0.02
ARM B	0.58	37.46	0.016		0.0	0.0	0.2		0.03
ARM D	1.13	40.53	0.028		0.0	0.0	0.4		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	0.57	44.77	0.013		0.0	0.0	0.2		0.02
ARM B	0.71	37.23	0.019		0.0	0.0	0.3		0.03
ARM D	1.39	40.53	0.034		0.0	0.0	0.5		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	0.57	44.77	0.013		0.0	0.0	0.2		0.02
ARM B	0.71	37.23	0.019		0.0	0.0	0.3		0.03
ARM D	1.39	40.53	0.034		0.0	0.0	0.5		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	0.46	45.15	0.010		0.0	0.0	0.2		0.02
ARM B	0.58	37.46	0.016		0.0	0.0	0.2		0.03
ARM D	1.13	40.53	0.028		0.0	0.0	0.4		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	0.39	45.44	0.009		0.0	0.0	0.1		0.02
ARM B	0.49	37.63	0.013		0.0	0.0	0.2		0.03
ARM D	0.95	40.53	0.023		0.0	0.0	0.4		0.03

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\PM Peak\Site 4.vao

---

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	42.5	28.3	1.0	0.02	1.0	0.02
B	53.5	35.7	1.4	0.03	1.4	0.03
D	104.2	69.5	2.6	0.03	2.6	0.03
ALL	200.2	133.5	5.0	0.03	5.0	0.03

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ===

[Printed at 10:06:50 on 18/04/2006]

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\PM Peak\Site 6.vao

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A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
program advice and maintenance, contact:

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Crowthorne House Fax: +44 (0) 1344 770864
Nine Mile Ride Email: softwarebureau@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\PM Peak\Site 6.vai"
(drive-on-the-left) at 11:51:37 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 PM Do Nothing Site 6 with Courtlough Interchange
LOCATION: Courtlough Interchange West
DATE: 05/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****

ARM A - Rowan's Road
ARM B - M1 On Slip
ARM C - M1 Overbridge
ARM D - M1 Off Slip

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM B IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	9.16	12.96	1.70	25.20	60.00	36.0	1.364	58.541
ARM C	8.57	12.28	0.60	26.30	60.00	42.0	1.498	56.767
ARM D	6.00	10.00	5.00	20.00	60.00	27.0	1.243	48.756

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	15.0	17.0
B	26.0	0.0
C	0.0	17.0
D	9.0	0.0

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TRL              TRL VIEWER    3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\PM Peak\Site 6.vao

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 TRAFFIC DEMAND DATA
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(Only sets included in the current run are shown)


 -----------------------
 I ARM I FLOW SCALE(%) I
 -----------------------
 I A   I      100      I
 I B   I      100      I
 I C   I      100      I
 I D   I      100      I
 -----------------------



 TIME PERIOD BEGINS 16.45 AND ENDS 18.15

 LENGTH OF TIME PERIOD  -  90   MINUTES.
 LENGTH OF TIME SEGMENT -  15   MINUTES.


 DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA


 DEMAND SET TITLE: 2024 PM Do Nothing Site 6 with Courtlough Interchange
 -----------------------------------------------------------------------------
 I       I   NUMBER OF MINUTES FROM START WHEN    I   RATE OF FLOW (VEH/MIN) I
 I  ARM  I FLOW STARTS I TOP OF PEAK I FLOW STOPS I BEFORE I AT TOP  I AFTER I
 I       I   TO RISE   I  IS REACHED IFALLING    I  PEAK  I OF PEAK I PEAK  I
 -----------------------------------------------------------------------------
 I ARM A I     15.00   I     45.00   I     75.00  I 14.96  I  22.44  I 14.96 I
 I ARM C I     15.00   I     45.00   I     75.00  I  6.61  I   9.92  I  6.61 I
 I ARM D I     15.00   I     45.00   I     75.00  I  7.69  I  11.53  I  7.69 I
 -----------------------------------------------------------------------------


 DEMAND SET TITLE: 2024 PM Do Nothing Site 6 with Courtlough Interchange

 --------------------------------------------------------------------
 I                    I         TURNING PROPORTIONS                 I
 I                    I         TURNING COUNTS (VEH/HR)             I
 I                    I        (PERCENTAGE OF H.V.S)                I
 I                    ----------------------------------------------
 I        TIME        I FROM/TO I  ARM A I  ARM B I  ARM C I  ARM D I
 --------------------------------------------------------------------
 I   16.45 - 18.15    I         I        I        I        I        I
 I                    I  ARM A  I  0.000 I  0.220 I  0.780 I  0.000 I
 I                    I         I    0.0 I  263.0 I  934.0 I    0.0 I
 I                    I         I (  0.0)I ( 14.1)I ( 12.4)I (  0.0)I
 I                    I         I        I        I        I        I
 I                    I  ARM C  I  0.473 I  0.527 I  0.000 I  0.000 I
 I                    I         I  250.0 I  279.0 I    0.0 I    0.0 I
 I                    I         I ( 14.4)I ( 11.1)I (  0.0)I (  0.0)I
 I                    I         I        I        I        I        I
 I                    I  ARM D  I  0.102 I  0.024 I  0.873 I  0.000 I
 I                    I         I   63.0 I   15.0 I  537.0 I    0.0 I
 I                    I         I ( 12.7)I (  0.0)I (  5.8)I (  0.0)I
 I                    I         I        I        I        I        I
 --------------------------------------------------------------------


          QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT
          --------------------------------------------------------


 -------------------------------------------------------------------------------------------------------------------
 I  TIME      DEMAND   CAPACITY  DEMAND/    PEDESTRIAN  START   END       DELAY      GEOMETRIC DELAY    AVERAGE DELAY I
 I          (VEH/MIN) (VEH/MIN) CAPACITY      FLOW      QUEUE  QUEUE    (VEH.MIN/       (VEH.MIN/       PER ARRIVING  I
 I                                (RFC)     (PEDS/MIN) (VEHS) (VEHS)  TIME SEGMENT)  TIME SEGMENT)     VEHICLE (MIN) I
 I 16.45-17.00                                                                                                      I
 I ARM A       14.96     38.44   0.389                   0.0    0.6        9.3                              0.04      I
 I ARM C        6.61     50.39   0.131                   0.0    0.2        2.2                              0.02      I
 I ARM D        7.69     37.14   0.207                   0.0    0.3        3.9                              0.03      I
 I                                                                                                                  I
 -------------------------------------------------------------------------------------------------------------------
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TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\PM Peak\Site 6.vao

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TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	17.87	35.80	0.499		0.6	1.0	14.5		0.06
ARM C	7.90	50.39	0.157		0.2	0.2	2.8		0.02
ARM D	9.18	35.44	0.259		0.3	0.3	5.2		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	21.88	32.18	0.680		1.0	2.1	29.8		0.10
ARM C	9.67	50.39	0.192		0.2	0.2	3.5		0.02
ARM D	11.24	33.11	0.340		0.3	0.5	7.6		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	21.88	32.17	0.680		2.1	2.1	31.5		0.10
ARM C	9.67	50.39	0.192		0.2	0.2	3.6		0.02
ARM D	11.24	33.11	0.340		0.5	0.5	7.7		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	17.87	35.78	0.499		2.1	1.0	15.5		0.06
ARM C	7.90	50.39	0.157		0.2	0.2	2.8		0.02
ARM D	9.18	35.44	0.259		0.5	0.4	5.3		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	14.96	38.40	0.390		1.0	0.6	9.8		0.04
ARM C	6.61	50.39	0.131		0.2	0.2	2.3		0.02
ARM D	7.69	37.13	0.207		0.4	0.3	4.0		0.03

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.6	*
17.15	1.0	*
17.30	2.1	**
17.45	2.1	**
18.00	1.0	*
18.15	0.6	*

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\PM Peak\Site 6.vao

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QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.2
17.30	0.2
17.45	0.2
18.00	0.2
18.15	0.2

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.3	
17.15	0.3	
17.30	0.5	*
17.45	0.5	*
18.00	0.4	
18.15	0.3	

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
A	1641.3	1094.2	110.4	0.07	110.4	0.07
C	725.4	483.6	17.2	0.02	17.2	0.02
D	843.3	562.2	33.6	0.04	33.6	0.04
ALL	3210.0	2140.0	161.1	0.05	161.1	0.05

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

== end of file ==

[Printed at 10:07:10 on 18/04/2006]

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\PM Peak\Site 7.vao

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A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
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RG40 3GA,UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
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Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\PM Peak\Site 7.vai"
(drive-on-the-left) at 11:52:08 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 PM Do Nothing Site 7 with Courtlough Interchange
LOCATION: Courtlough Interchange East
DATE: 05/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - M1 Off Slip
ARM B - Rowan's Road East
ARM C - M1 On Slip
ARM D - M1 Overbridge

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM C IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	9.64	16.00	2.20	27.20	65.00	48.0	1.117	57.765
ARM B	8.99	16.00	3.60	45.70	65.00	42.0	1.457	61.896
ARM D	8.57	12.28	0.60	22.60	65.00	38.0	1.436	57.113

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	26.0	0.0
B	7.0	17.0
C	9.0	0.0
D	0.0	17.0

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\PM Peak\Site 7.vao

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2024 PM Do Nothing Site 7 with Courtlough Interchange

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	3.49	5.23	3.49
ARM B	15.00	45.00	75.00	11.64	17.46	11.64
ARM D	15.00	45.00	75.00	18.35	27.53	18.35

DEMAND SET TITLE: 2024 PM Do Nothing Site 7 with Courtlough Interchange

TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.781	0.000	0.219
		0.0	218.0	0.0	61.0
		(0.0)	(16.5)	(0.0)	(11.5)
	ARM B	0.000	0.000	0.497	0.503
		0.0	0.0	463.0	468.0
		(0.0)	(0.0)	(9.1)	(12.8)
	ARM D	0.000	0.763	0.237	0.000
		0.0	1120.0	348.0	0.0
		(0.0)	(8.3)	(15.5)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	3.49	30.56	0.114		0.0	0.1	1.9		0.04
ARM B	11.64	48.08	0.242		0.0	0.3	4.7		0.03
ARM D	18.35	51.92	0.353		0.0	0.5	8.1		0.03

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\PM Peak\Site 7.vao

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TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	4.16	26.74	0.156		0.1	0.2	2.7		0.04
ARM B	13.90	46.58	0.298		0.3	0.4	6.3		0.03
ARM D	21.91	51.92	0.422		0.5	0.7	10.8		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	5.10	21.51	0.237		0.2	0.3	4.6		0.06
ARM B	17.02	44.51	0.382		0.4	0.6	9.1		0.04
ARM D	26.84	51.92	0.517		0.7	1.1	15.7		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	5.10	21.49	0.237		0.3	0.3	4.6		0.06
ARM B	17.02	44.50	0.382		0.6	0.6	9.3		0.04
ARM D	26.84	51.92	0.517		1.1	1.1	16.0		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	4.16	26.71	0.156		0.3	0.2	2.8		0.04
ARM B	13.90	46.56	0.298		0.6	0.4	6.5		0.03
ARM D	21.91	51.92	0.422		1.1	0.7	11.2		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	3.49	30.51	0.114		0.2	0.1	2.0		0.04
ARM B	11.64	48.06	0.242		0.4	0.3	4.8		0.03
ARM D	18.35	51.92	0.353		0.7	0.5	8.3		0.03

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.2
17.30	0.3
17.45	0.3
18.00	0.2
18.15	0.1

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\PM Peak\Site 7.vao

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.3	
17.15	0.4	
17.30	0.6	*
17.45	0.6	*
18.00	0.4	
18.15	0.3	

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.5	*
17.15	0.7	*
17.30	1.1	*
17.45	1.1	*
18.00	0.7	*
18.15	0.5	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
A	382.6	255.0	18.6	0.05	18.6	0.05
B	1276.6	851.1	40.7	0.03	40.7	0.03
D	2012.9	1342.0	70.0	0.03	70.0	0.03
ALL	3672.1	2448.1	129.3	0.04	129.3	0.04

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ===

[Printed at 10:07:30 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
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Nine Mile Ride Email: softwarebureau@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\PM Peak\Site 8 Roundabout.vai"
(drive-on-the-left) at 11:52:47 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 PM Do Nothing Site 8 with Courtlough Interchange
LOCATION: Rowans Road East / R132 Roundabout
DATE: 05/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - R132 (Balbriggan Road)
ARM B - R132 (Dublin Road)
ARM C - Rowan's Road East
ARM D - Access to Site C of M1 Business Park

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	5.80	8.20	22.00	32.00	50.00	28.0	0.740	39.241
ARM B	6.00	8.00	30.00	26.00	50.00	19.0	0.761	40.534
ARM C	8.00	10.50	10.00	18.50	50.00	33.0	0.813	46.732
ARM D	7.50	8.00	5.00	20.50	50.00	32.0	0.734	39.559

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2024 PM Do Nothing Site 8 with Courtlough Interchange

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	8.18	12.26	8.18
ARM B	15.00	45.00	75.00	8.46	12.69	8.46
ARM C	15.00	45.00	75.00	16.73	25.09	16.73
ARM D	15.00	45.00	75.00	4.14	6.21	4.14

DEMAND SET TITLE: 2024 PM Do Nothing Site 8 with Courtlough Interchange

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.269	0.613	0.118
		0.0	176.0	401.0	77.0
		(0.0)	(8.0)	(8.0)	(15.6)
	ARM B	0.400	0.000	0.480	0.120
		271.0	0.0	325.0	81.0
		(4.4)	(0.0)	(12.0)	(14.8)
	ARM C	0.605	0.250	0.000	0.145
		810.0	334.0	0.0	194.0
		(6.4)	(14.4)	(0.0)	(14.9)
	ARM D	0.199	0.181	0.619	0.000
		66.0	60.0	205.0	0.0
		(15.6)	(15.0)	(15.1)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	8.18	30.22	0.270		0.0	0.4	5.4		0.05
ARM B	8.46	30.51	0.277		0.0	0.4	5.6		0.05
ARM C	16.73	38.33	0.436		0.0	0.8	11.3		0.05
ARM D	4.14	22.21	0.186		0.0	0.2	3.4		0.06

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\PM Peak\Site 8 Roundal

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	9.76	29.08	0.336		0.4	0.5	7.4		0.05
ARM B	10.11	29.21	0.346		0.4	0.5	7.8		0.05
ARM C	19.97	37.48	0.533		0.8	1.1	16.6		0.06
ARM D	4.94	19.83	0.249		0.2	0.3	4.9		0.07

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	11.96	27.53	0.434		0.5	0.8	11.2		0.06
ARM B	12.38	27.45	0.451		0.5	0.8	11.9		0.07
ARM C	24.46	36.33	0.673		1.1	2.0	29.2		0.08
ARM D	6.05	16.59	0.365		0.3	0.6	8.3		0.09

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	11.96	27.51	0.435		0.8	0.8	11.5		0.06
ARM B	12.38	27.44	0.451		0.8	0.8	12.3		0.07
ARM C	24.46	36.32	0.673		2.0	2.0	30.6		0.08
ARM D	6.05	16.55	0.366		0.6	0.6	8.6		0.10

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	9.76	29.05	0.336		0.8	0.5	7.8		0.05
ARM B	10.11	29.19	0.346		0.8	0.5	8.1		0.05
ARM C	19.97	37.47	0.533		2.0	1.2	17.7		0.06
ARM D	4.94	19.77	0.250		0.6	0.3	5.1		0.07

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	8.18	30.19	0.271		0.5	0.4	5.7		0.05
ARM B	8.46	30.48	0.278		0.5	0.4	5.9		0.05
ARM C	16.73	38.31	0.437		1.2	0.8	11.9		0.05
ARM D	4.14	22.16	0.187		0.3	0.2	3.5		0.06

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.4	
17.15	0.5	*
17.30	0.8	*
17.45	0.8	*
18.00	0.5	*
18.15	0.4	

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.4	
17.15	0.5	*
17.30	0.8	*
17.45	0.8	*
18.00	0.5	*
18.15	0.4	

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.8	*
17.15	1.1	*
17.30	2.0	**
17.45	2.0	**
18.00	1.2	*
18.15	0.8	*

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.2	
17.15	0.3	
17.30	0.6	*
17.45	0.6	*
18.00	0.3	
18.15	0.2	

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
A	896.8	597.8	49.0	0.05	49.0	0.05
B	928.3	618.9	51.6	0.06	51.6	0.06
C	1834.7	1223.1	117.3	0.06	117.3	0.06
D	453.9	302.6	33.7	0.07	33.7	0.07
ALL	4113.6	2742.4	251.6	0.06	251.6	0.06

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ==

[Printed at 10:07:54 on 18/04/2006]

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\PM Peak\Site 9.vao

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A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\PM Peak\Site 9.vai"
(drive-on-the-left) at 11:53:50 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 PM Do Nothing Site 9 with Courtlough Interchange
LOCATION: Rowan's Road West / M1 Business Park
DATE: 05/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - Link to Courtlough Interchange
ARM B - Access to Site F of M1 Business park
ARM C - Rowan's Road West
ARM D - Access to Site A of M1 Business Park

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	8.00	10.50	2.00	23.00	50.00	6.0	0.844	46.774
ARM B	4.00	8.00	2.00	22.00	50.00	22.0	0.565	23.668
ARM C	8.00	10.50	2.00	25.00	50.00	15.0	0.822	45.579
ARM D	4.00	8.00	30.00	23.00	50.00	26.0	0.691	35.055

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\PM Peak\Site 9.vao

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2024 PM Do Nothing Site 9 with Courtlough Interchange

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	3.91	5.87	3.91
ARM B	15.00	45.00	75.00	2.14	3.21	2.14
ARM C	15.00	45.00	75.00	2.74	4.11	2.74
ARM D	15.00	45.00	75.00	11.20	16.80	11.20

DEMAND SET TITLE: 2024 PM Do Nothing Site 9 with Courtlough Interchange

TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.268	0.387	0.345
		0.0	84.0	121.0	108.0
		(0.0)	(15.5)	(12.4)	(14.8)
	ARM B	0.930	0.000	0.070	0.000
		159.0	0.0	12.0	0.0
		(15.1)	(0.0)	(16.7)	(0.0)
	ARM C	0.936	0.027	0.000	0.037
		205.0	6.0	0.0	8.0
		(2.0)	(16.7)	(0.0)	(12.5)
	ARM D	0.930	0.000	0.070	0.000
		833.0	0.0	63.0	0.0
		(15.0)	(0.0)	(14.3)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	3.91	40.28	0.097		0.0	0.1	1.6		0.03
ARM B	2.14	18.51	0.115		0.0	0.1	1.9		0.06
ARM C	2.74	41.28	0.066		0.0	0.1	1.1		0.03
ARM D	11.20	27.51	0.407		0.0	0.7	10.0		0.06

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing with CL\PM Peak\Site 9.vao

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	4.67	40.14	0.116		0.1	0.1	2.0		0.03
ARM B	2.55	18.12	0.141		0.1	0.2	2.4		0.06
ARM C	3.27	40.68	0.080		0.1	0.1	1.3		0.03
ARM D	13.37	26.92	0.497		0.7	1.0	14.3		0.07

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	5.72	39.94	0.143		0.1	0.2	2.5		0.03
ARM B	3.13	17.57	0.178		0.2	0.2	3.2		0.07
ARM C	4.00	39.86	0.100		0.1	0.1	1.7		0.03
ARM D	16.38	26.11	0.627		1.0	1.7	23.8		0.10

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	5.72	39.94	0.143		0.2	0.2	2.5		0.03
ARM B	3.13	17.57	0.178		0.2	0.2	3.2		0.07
ARM C	4.00	39.85	0.100		0.1	0.1	1.7		0.03
ARM D	16.38	26.11	0.627		1.7	1.7	24.9		0.10

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	4.67	40.13	0.116		0.2	0.1	2.0		0.03
ARM B	2.55	18.11	0.141		0.2	0.2	2.5		0.06
ARM C	3.27	40.67	0.080		0.1	0.1	1.3		0.03
ARM D	13.37	26.91	0.497		1.7	1.0	15.4		0.07

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	3.91	40.28	0.097		0.1	0.1	1.6		0.03
ARM B	2.14	18.51	0.115		0.2	0.1	2.0		0.06
ARM C	2.74	41.27	0.066		0.1	0.1	1.1		0.03
ARM D	11.20	27.50	0.407		1.0	0.7	10.6		0.06

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.2
17.45	0.2
18.00	0.1
18.15	0.1

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.2
17.30	0.2
17.45	0.2
18.00	0.2
18.15	0.1

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1
18.15	0.1

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.7	*
17.15	1.0	*
17.30	1.7	**
17.45	1.7	**
18.00	1.0	*
18.15	0.7	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
A	429.2	286.1	12.2	0.03	12.2	0.03
B	234.5	156.3	15.2	0.07	15.2	0.07
C	300.3	200.2	8.1	0.03	8.1	0.03
D	1228.6	819.1	99.0	0.08	99.0	0.08
ALL	2192.6	1461.7	134.5	0.06	134.5	0.06

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

== end of file ==

[Printed at 10:08:11 on 18/04/2006]

2024 Do Nothing without CL

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\AM Peak\Site 3.vao

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\AM Peak\Site 3.vai"
(drive-on-the-left) at 11:59:01 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 AM Do Nothing Site 3 (No Courtlough Interchange Upgrade)
LOCATION: Five Roads Roundabout
DATE: 05/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****

ARM A - Nevitt Road
ARM B - Cul de Sac
ARM C - Link to R132
ARM D - Link to Hedgestown

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.05	3.95	8.80	20.00	31.60	21.0	0.557	19.415
ARM B	2.71	3.95	6.30	20.00	31.60	36.0	0.513	17.163
ARM C	5.50	5.50	0.00	15.00	31.60	6.0	0.693	29.635
ARM D	3.75	4.80	7.90	25.00	31.60	21.0	0.611	23.587

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2024 AM Do Nothing Site 3 (No CIU)

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.79	1.18	0.79
ARM B	15.00	45.00	75.00	0.01	0.02	0.01
ARM C	15.00	45.00	75.00	0.46	0.69	0.46
ARM D	15.00	45.00	75.00	0.35	0.52	0.35

DEMAND SET TITLE: 2024 AM Do Nothing Site 3 (No CIU)

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	0.000	0.238	0.762
		0.0	0.0	15.0	48.0
		(0.0)	(0.0)	(60.0)	(27.1)
	ARM B	1.000	0.000	0.000	0.000
		0.0	0.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.892	0.000	0.000	0.108
		33.0	0.0	0.0	4.0
		(57.6)	(0.0)	(0.0)	(0.0)
	ARM D	0.857	0.000	0.143	0.000
		24.0	0.0	4.0	0.0
		(8.3)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	0.79	14.37	0.055		0.0	0.1	0.8		0.07
ARM B	0.01	16.59	0.001		0.0	0.0	0.0		0.06
ARM C	0.46	19.22	0.024		0.0	0.0	0.4		0.05
ARM D	0.35	21.64	0.016		0.0	0.0	0.2		0.05

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\AM Peak\Site 3.vao

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TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	0.94	14.36	0.065		0.1	0.1	1.0		0.07
ARM B	0.01	16.48	0.001		0.0	0.0	0.0		0.06
ARM C	0.55	19.15	0.029		0.0	0.0	0.4		0.05
ARM D	0.42	21.57	0.019		0.0	0.0	0.3		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	1.15	14.36	0.080		0.1	0.1	1.3		0.08
ARM B	0.02	16.32	0.001		0.0	0.0	0.0		0.06
ARM C	0.68	19.06	0.035		0.0	0.0	0.5		0.05
ARM D	0.51	21.47	0.024		0.0	0.0	0.4		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	1.15	14.36	0.080		0.1	0.1	1.3		0.08
ARM B	0.02	16.32	0.001		0.0	0.0	0.0		0.06
ARM C	0.68	19.06	0.035		0.0	0.0	0.6		0.05
ARM D	0.51	21.47	0.024		0.0	0.0	0.4		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	0.94	14.36	0.065		0.1	0.1	1.1		0.07
ARM B	0.01	16.48	0.001		0.0	0.0	0.0		0.06
ARM C	0.55	19.15	0.029		0.0	0.0	0.5		0.05
ARM D	0.42	21.57	0.019		0.0	0.0	0.3		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	0.79	14.37	0.055		0.1	0.1	0.9		0.07
ARM B	0.01	16.59	0.001		0.0	0.0	0.0		0.06
ARM C	0.46	19.22	0.024		0.0	0.0	0.4		0.05
ARM D	0.35	21.64	0.016		0.0	0.0	0.2		0.05

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.1

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\AM Peak\Site 3.vao

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	86.4	57.6	6.4	0.07	6.4	0.07
B	1.4	0.9	0.1	0.06	0.1	0.06
C	50.7	33.8	2.7	0.05	2.7	0.05
D	38.4	25.6	1.8	0.05	1.8	0.05
ALL	176.9	117.9	11.0	0.06	11.0	0.06

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

==================== end of file ====================

[Printed at 10:09:49 on 18/04/2006]

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TRL              TRL VIEWER    3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\AM Peak\Site 4.vao

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            ___________________ A R C A D Y  6 ___________________

                ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY


                Analysis Program: Release 3.0 (JUNE 2005)

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            ______________________________________________________

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            RG40 3GA,UK

 ---------------------------------------------------------------------------------
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 ---------------------------------------------------------------------------------

 Run with file:-
 "r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\AM Peak\Site 4.vai"
(drive-on-the-left ) at 11:59:30 on Friday, 7 April 2006



 FILE PROPERTIES
 ***************

   RUN TITLE: 2024 AM Do Nothing Site 4 (No Courtlough Interchange Upgrade)
    LOCATION: Hedgestown Roundabout
        DATE: 05/04/2006
      CLIENT:
  ENUMERATOR:
  JOB NUMBER:
      STATUS:
 DESCRIPTION:


 INPUT DATA
 **********
 ARM A - R132 Off Slip
 ARM B - Hedgestown Road
 ARM C - R132 On Slip
 ARM D - Link to "Five Roads"


 GEOMETRIC DATA
 --------------


 GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

 ARM C IS JUNCTION EXIT ONLY

 ----------------------------------------------------------------------------------------------------------------------
 I ARM    I    V (M)    I    E (M)    I    L (M)    I    R (M)    I    D (M)    I    PHI (DEG)   I  SLOPE   I INTERCEPT (PCU/MIN)  I
 ----------------------------------------------------------------------------------------------------------------------
 I ARM A I     7.70    I     7.70    I     2.00    I    30.00    I    31.70    I      16.0      I  1.789   I        55.923        I
 I ARM B I     3.96    I     5.96    I     5.00    I    30.00    I    31.70    I      27.0      I  1.336   I        39.531        I
 I ARM D I     4.60    I     5.60    I     8.00    I    25.30    I    31.70    I      36.0      I  1.350   I        41.010        I
 ----------------------------------------------------------------------------------------------------------------------

 V = approach half-width        L = effective flare length            D = inscribed circle diameter
 E = entry width                R = entry radius                      PHI = entry angle


 DATA FOR VERY LARGE ROUNDABOUTS
 -------------------------------
 ARM   CIRFLO      SEP
   A      0.0      0.0
   B      0.0      0.0
   C      0.0      0.0
   D      0.0      0.0
```

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\AM Peak\Site 4.vao

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2024 AM Do Nothing Site 4 (No CIU)

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.47	0.71	0.47
ARM B	15.00	45.00	75.00	0.22	0.34	0.22
ARM D	15.00	45.00	75.00	0.64	0.96	0.64

DEMAND SET TITLE: 2024 AM Do Nothing Site 4 (No CIU)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
		TURNING PROPORTIONS TURNING COUNTS (VEH/HR) (PERCENTAGE OF H.V.S)			
07.45 - 09.15					
	ARM A	0.000	0.658	0.000	0.342
		0.0	25.0	0.0	13.0
		(0.0)	(12.0)	(0.0)	(7.7)
	ARM B	0.000	0.000	0.167	0.833
		0.0	0.0	3.0	15.0
		(0.0)	(0.0)	(0.0)	(6.7)
	ARM D	0.000	0.490	0.510	0.000
		0.0	25.0	26.0	0.0
		(0.0)	(4.0)	(46.2)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	0.47	49.30	0.010		0.0	0.0	0.1		0.02
ARM B	0.22	36.62	0.006		0.0	0.0	0.1		0.03
ARM D	0.64	32.67	0.020		0.0	0.0	0.3		0.03

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\AM Peak\Site 4.vao

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TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	0.57	49.05	0.012		0.0	0.0	0.2		0.02
ARM B	0.27	36.46	0.007		0.0	0.0	0.1		0.03
ARM D	0.76	32.67	0.023		0.0	0.0	0.4		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	0.69	48.70	0.014		0.0	0.0	0.2		0.02
ARM B	0.33	36.23	0.009		0.0	0.0	0.1		0.03
ARM D	0.93	32.67	0.029		0.0	0.0	0.4		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	0.69	48.70	0.014		0.0	0.0	0.2		0.02
ARM B	0.33	36.23	0.009		0.0	0.0	0.1		0.03
ARM D	0.93	32.67	0.029		0.0	0.0	0.4		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	0.57	49.05	0.012		0.0	0.0	0.2		0.02
ARM B	0.27	36.46	0.007		0.0	0.0	0.1		0.03
ARM D	0.76	32.67	0.023		0.0	0.0	0.4		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	0.47	49.30	0.010		0.0	0.0	0.1		0.02
ARM B	0.22	36.62	0.006		0.0	0.0	0.1		0.03
ARM D	0.64	32.67	0.020		0.0	0.0	0.3		0.03

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

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QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	52.1	34.7	1.1	0.02	1.1	0.02
B	24.7	16.5	0.7	0.03	0.7	0.03
D	69.9	46.6	2.2	0.03	2.2	0.03
ALL	146.7	97.8	3.9	0.03	3.9	0.03

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ==

[Printed at 10:10:14 on 18/04/2006]

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\AM Peak\Site 6.vao

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A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\AM Peak\Site 6.vai"
(drive-on-the-left) at 12:05:52 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 AM Do Nothing Site 6 (No Courtlough nterchange Upgrade)
LOCATION: Courtlough Interchange West
DATE: 05/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - Rowan's Rodd
ARM B - M1 On Slip
ARM C - M1 Overbridge
ARM D - M1 Off Slip

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM B IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.73	6.09	20.00	40.00	35.00	16.0	1.314	41.643
ARM C	4.43	5.59	15.00	17.50	35.00	11.0	1.442	43.128
ARM D	4.00	5.23	5.00	20.00	35.00	27.0	1.176	36.512

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	10.0	0.0
B	8.0	0.0
C	0.0	0.0
D	8.0	0.0

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2024 AM Do Nothing Site 6 (No CIU)

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	1.26	1.89	1.26
ARM C	15.00	45.00	75.00	5.84	8.76	5.84
ARM D	15.00	45.00	75.00	5.68	8.51	5.68

DEMAND SET TITLE: 2024 AM Do Nothing Site 6 (No CIU)

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	0.129	0.871	0.000
		0.0	13.0	88.0	0.0
		(0.0)	(7.7)	(11.4)	(0.0)
	ARM C	0.510	0.490	0.000	0.000
		238.0	229.0	0.0	0.0
		(13.9)	(18.3)	(0.0)	(0.0)
	ARM D	0.207	0.026	0.767	0.000
		94.0	12.0	348.0	0.0
		(13.8)	(0.0)	(6.7)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	1.26	27.85	0.045		0.0	0.0	0.7		0.04
ARM C	5.84	37.16	0.157		0.0	0.2	2.8		0.03
ARM D	5.68	26.43	0.215		0.0	0.3	4.0		0.05

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\AM Peak\Site 6.vao

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	1.51	25.98	0.058		0.0	0.1	0.9		0.04
ARM C	6.97	37.16	0.188		0.2	0.2	3.4		0.03
ARM D	6.78	25.01	0.271		0.3	0.4	5.5		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	1.85	23.39	0.079		0.1	0.1	1.3		0.05
ARM C	8.54	37.16	0.230		0.2	0.3	4.4		0.03
ARM D	8.30	23.03	0.360		0.4	0.6	8.2		0.07

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	1.85	23.37	0.079		0.1	0.1	1.3		0.05
ARM C	8.54	37.16	0.230		0.3	0.3	4.5		0.03
ARM D	8.30	23.02	0.361		0.6	0.6	8.4		0.07

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	1.51	25.96	0.058		0.1	0.1	0.9		0.04
ARM C	6.97	37.16	0.188		0.3	0.2	3.5		0.03
ARM D	6.78	25.00	0.271		0.6	0.4	5.7		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	1.26	27.82	0.045		0.1	0.0	0.7		0.04
ARM C	5.84	37.16	0.157		0.2	0.2	2.8		0.03
ARM D	5.68	26.41	0.215		0.4	0.3	4.2		0.05

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.0

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.2
08.15	0.2
08.30	0.3
08.45	0.3
09.00	0.2
09.15	0.2

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.00	0.3	
08.15	0.4	
08.30	0.6	*
08.45	0.6	*
09.00	0.4	
09.15	0.3	

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	138.5	92.3	5.8	0.04	5.8	0.04
C	640.4	426.9	21.4	0.03	21.4	0.03
D	622.5	415.0	36.0	0.06	36.0	0.06
ALL	1401.4	934.3	63.2	0.05	63.2	0.05

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

== end of file ==

[Printed at 10:10:36 on 18/04/2006]

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\AM Peak\Site 7.vao

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A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
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Nine Mile Ride Email: softwarebureau@trl.co.uk
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RG40 3GA,UK

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\AM Peak\Site 7.vai"
(drive-on-the-left) at 12:00:27 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 AM Do Nothing Site 7 (No Courtlough Interchange Upgrade)
LOCATION: Courtlough Interchange East
DATE: 05/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - M1 Off Slip
ARM B - Rowan's Road East
ARM C - M1 On Slip
ARM D - M1 Overbridge

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM C IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	4.02	8.20	10.00	30.00	32.80	26.0	1.344	42.831
ARM B	3.74	6.38	15.00	70.00	32.80	15.0	1.465	43.805
ARM D	4.53	5.90	15.00	20.00	32.80	40.0	1.350	41.710

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	8.0	0.0
B	2.0	0.0
C	8.0	0.0
D	0.0	0.0

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\AM Peak\Site 7.vao

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2024 AM Do Nothing Site 7 (No CIU)

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	4.72	7.09	4.72
ARM B	15.00	45.00	75.00	11.09	16.63	11.09
ARM D	15.00	45.00	75.00	5.45	8.17	5.45

DEMAND SET TITLE: 2024 AM Do Nothing Site 7 (No CIU)

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	0.738	0.021	0.241
		0.0	279.0	8.0	91.0
		(0.0)	(16.1)	(25.0)	(13.2)
	ARM B	0.000	0.000	0.576	0.424
		0.0	0.0	511.0	376.0
		(0.0)	(0.0)	(5.1)	(16.8)
	ARM D	0.000	0.924	0.076	0.000
		0.0	403.0	33.0	0.0
		(0.0)	(8.2)	(3.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	4.72	30.24	0.156		0.0	0.2	2.7		0.04
ARM B	11.09	37.36	0.297		0.0	0.4	6.2		0.04
ARM D	5.45	38.69	0.141		0.0	0.2	2.4		0.03

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\AM Peak\Site 7.vao

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	5.64	28.90	0.195		0.2	0.2	3.6		0.04
ARM B	13.24	36.88	0.359		0.4	0.6	8.3		0.04
ARM D	6.51	38.69	0.168		0.2	0.2	3.0		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	6.91	27.07	0.255		0.2	0.3	5.0		0.05
ARM B	16.22	36.23	0.448		0.6	0.8	11.9		0.05
ARM D	7.97	38.69	0.206		0.2	0.3	3.8		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	6.91	27.07	0.255		0.3	0.3	5.1		0.05
ARM B	16.22	36.23	0.448		0.8	0.8	12.1		0.05
ARM D	7.97	38.69	0.206		0.3	0.3	3.9		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	5.64	28.89	0.195		0.3	0.2	3.7		0.04
ARM B	13.24	36.88	0.359		0.8	0.6	8.6		0.04
ARM D	6.51	38.69	0.168		0.3	0.2	3.1		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	4.72	30.22	0.156		0.2	0.2	2.8		0.04
ARM B	11.09	37.35	0.297		0.6	0.4	6.4		0.04
ARM D	5.45	38.69	0.141		0.2	0.2	2.5		0.03

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.2
08.15	0.2
08.30	0.3
08.45	0.3
09.00	0.2
09.15	0.2

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\AM Peak\Site 7.vao

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.00	0.4	
08.15	0.6	*
08.30	0.8	*
08.45	0.8	*
09.00	0.6	*
09.15	0.4	

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.2
08.15	0.2
08.30	0.3
08.45	0.3
09.00	0.2
09.15	0.2

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	518.3	345.5	23.0	0.04	23.0	0.04
B	1216.3	810.8	53.4	0.04	53.4	0.04
D	597.8	398.6	18.7	0.03	18.7	0.03
ALL	2332.4	1555.0	95.1	0.04	95.1	0.04

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ===

[Printed at 10:10:53 on 18/04/2006]

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\AM Peak\Site 8.vao

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A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
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THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\AM Peak\Site 8.vai"
(drive-on-the-left) at 12:01:08 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 AM Do Nothing Site 8 (No Courtlough Interchange Upgrade)
LOCATION: Rowan's Road East / R132 Roundabout
DATE: 05/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - R132 (Balbriggan Road)
ARM B - R132 (Dublin Road)
ARM C - Rowan's Road East
ARM D - Access to Site C of M1 Business Park

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	5.80	8.20	22.00	32.00	50.00	28.0	0.740	39.241
ARM B	6.00	8.00	30.00	26.00	50.00	19.0	0.761	40.534
ARM C	7.00	7.50	10.00	18.50	50.00	33.0	0.703	36.987
ARM D	7.50	8.00	5.00	20.50	50.00	32.0	0.734	39.559

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\AM Peak\Site 8.vao

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2024 AM Do Nothing Site 8 (No CIU)

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	9.39	14.08	9.39
ARM B	15.00	45.00	75.00	4.97	7.46	4.97
ARM C	15.00	45.00	75.00	8.52	12.79	8.52
ARM D	15.00	45.00	75.00	3.61	5.42	3.61

DEMAND SET TITLE: 2024 AM Do Nothing Site 8 (No CIU)

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	0.236	0.694	0.071
		0.0	177.0	521.0	53.0
		(0.0)	(13.6)	(4.8)	(15.1)
	ARM B	0.347	0.000	0.533	0.121
		138.0	0.0	212.0	48.0
		(15.2)	(0.0)	(19.3)	(14.6)
	ARM C	0.450	0.277	0.000	0.273
		307.0	189.0	0.0	186.0
		(6.2)	(16.4)	(0.0)	(15.1)
	ARM D	0.218	0.249	0.533	0.000
		63.0	72.0	154.0	0.0
		(14.3)	(15.3)	(14.9)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	9.39	32.36	0.290		0.0	0.4	6.0		0.04
ARM B	4.97	28.21	0.176		0.0	0.2	3.1		0.04
ARM C	8.52	31.03	0.275		0.0	0.4	5.6		0.04
ARM D	3.61	28.82	0.125		0.0	0.1	2.1		0.04

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\AM Peak\Site 8.vao

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	11.21	31.55	0.355		0.4	0.5	8.1		0.05
ARM B	5.94	26.97	0.220		0.2	0.3	4.2		0.05
ARM C	10.18	30.60	0.333		0.4	0.5	7.3		0.05
ARM D	4.31	27.72	0.156		0.1	0.2	2.7		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	13.73	30.44	0.451		0.5	0.8	12.0		0.06
ARM B	7.28	25.26	0.288		0.3	0.4	5.9		0.06
ARM C	12.47	30.02	0.415		0.5	0.7	10.4		0.06
ARM D	5.28	26.21	0.202		0.2	0.3	3.7		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	13.73	30.44	0.451		0.8	0.8	12.3		0.06
ARM B	7.28	25.25	0.288		0.4	0.4	6.0		0.06
ARM C	12.47	30.02	0.415		0.7	0.7	10.6		0.06
ARM D	5.28	26.20	0.202		0.3	0.3	3.8		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	11.21	31.54	0.355		0.8	0.6	8.5		0.05
ARM B	5.94	26.95	0.220		0.4	0.3	4.3		0.05
ARM C	10.18	30.59	0.333		0.7	0.5	7.6		0.05
ARM D	4.31	27.70	0.156		0.3	0.2	2.8		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	9.39	32.34	0.290		0.6	0.4	6.2		0.04
ARM B	4.97	28.19	0.176		0.3	0.2	3.3		0.04
ARM C	8.52	31.02	0.275		0.5	0.4	5.8		0.04
ARM D	3.61	28.80	0.125		0.2	0.1	2.2		0.04

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.00	0.4	
08.15	0.5	*
08.30	0.8	*
08.45	0.8	*
09.00	0.6	*
09.15	0.4	

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TRL             TRL VIEWER    3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\AM Peak\Site 8.vao

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 QUEUE AT ARM B
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  TIME SEGMENT   NO. OF
   ENDING      VEHICLES
               IN QUEUE

   08.00           0.2
   08.15           0.3
   08.30           0.4
   08.45           0.4
   09.00           0.3
   09.15           0.2


 QUEUE AT ARM C
 --------------

  TIME SEGMENT   NO. OF
   ENDING      VEHICLES
               IN QUEUE

   08.00           0.4
   08.15           0.5
   08.30           0.7  *
   08.45           0.7  *
   09.00           0.5  *
   09.15           0.4


 QUEUE AT ARM D
 --------------

  TIME SEGMENT   NO. OF
   ENDING      VEHICLES
               IN QUEUE

   08.00           0.1
   08.15           0.2
   08.30           0.3
   08.45           0.3
   09.00           0.2
   09.15           0.1


                 QUEUEING DELAY INFORMATION OVER WHOLE PERIOD
                 --------------------------------------------

 -----------------------------------------------------------------------------
 I  ARM  I   TOTAL DEMAND  I     * QUEUEING *     I  * INCLUSIVE QUEUEING *  I
 I       I                 I      * DELAY *       I         * DELAY *        I
 I       I-------------------------------------------------------------------I
 I       I  (VEH)  (VEH/H) I  (MIN)    (MIN/VEH)  I    (MIN)      (MIN/VEH)  I
 -----------------------------------------------------------------------------
 I   A   I 1029.8 I  686.5 I    53.0 I    0.05    I      53.0  I     0.05    I
 I   B   I  545.7 I  363.8 I    26.9 I    0.05    I      26.9  I     0.05    I
 I   C   I  935.2 I  623.4 I    47.3 I    0.05    I      47.3  I     0.05    I
 I   D   I  396.3 I  264.2 I    17.3 I    0.04    I      17.3  I     0.04    I
 -----------------------------------------------------------------------------
 I  ALL  I 2907.0 I 1938.0 I   144.6 I    0.05    I     144.6  I     0.05    I
 -----------------------------------------------------------------------------

 * DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
 * INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
 * THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

 END OF JOB

============================================= end of file =============================================


 [Printed at 10:11:15 on 18/04/2006]
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TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\AM Peak\Site 9.vao

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A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770018
Crowthorne House Fax: +44 (0) 1344 770864
Nine Mile Ride Email: softwarebureau@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\AM Peak\Site 9.vai"
(drive-on-the-left) at 12:01:46 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 AM Do Nothing Site 9 (No Courtlough Interchange Upgrade)
LOCATION: Rowan's Road West / M1 Business Park Roundabout
DATE: 05/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - Link to Courtlough Interchange
ARM B - Access to Site F of M1 Business Park
ARM C - Rowan's Road West
ARM D - Access to Site A of M1 Business Park

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	4.00	8.00	2.00	23.00	50.00	6.0	0.596	24.986
ARM B	4.00	8.00	2.00	22.00	50.00	22.0	0.565	23.668
ARM C	4.00	8.00	2.00	25.00	50.00	15.0	0.581	24.347
ARM D	4.00	8.00	2.00	23.00	50.00	26.0	0.558	23.394

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\AM Peak\Site 9.vao

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2024 AM Do Nothing Site 9 (No CIU)

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	4.15	6.23	4.15
ARM B	15.00	45.00	75.00	0.00	0.00	0.00
ARM C	15.00	45.00	75.00	1.10	1.65	1.10
ARM D	15.00	45.00	75.00	0.44	0.66	0.44

DEMAND SET TITLE: 2024 AM Do Nothing Site 9 (No CIU)

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	0.000	0.247	0.753
		0.0	0.0	82.0	250.0
		(0.0)	(0.0)	(9.7)	(15.2)
	ARM B	0.000	0.000	0.000	0.000
		0.0	0.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.784	0.000	0.000	0.216
		69.0	0.0	0.0	19.0
		(8.7)	(0.0)	(0.0)	(15.8)
	ARM D	0.914	0.000	0.086	0.000
		32.0	0.0	3.0	0.0
		(15.6)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	4.15	21.93	0.189		0.0	0.2	3.4		0.06
ARM B	0.00	20.98	0.000		0.0	0.0	0.0		0.00
ARM C	1.10	20.19	0.054		0.0	0.1	0.8		0.05
ARM D	0.44	20.02	0.022		0.0	0.0	0.3		0.05

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\AM Peak\Site 9.vao

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	4.96	21.92	0.226		0.2	0.3	4.3		0.06
ARM B	0.00	20.45	0.000		0.0	0.0	0.0		0.00
ARM C	1.31	19.81	0.066		0.1	0.1	1.0		0.05
ARM D	0.52	19.93	0.026		0.0	0.0	0.4		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	6.07	21.92	0.277		0.3	0.4	5.6		0.06
ARM B	0.00	19.74	0.000		0.0	0.0	0.0		0.00
ARM C	1.61	19.32	0.083		0.1	0.1	1.3		0.06
ARM D	0.64	19.80	0.032		0.0	0.0	0.5		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	6.07	21.92	0.277		0.4	0.4	5.7		0.06
ARM B	0.00	19.73	0.000		0.0	0.0	0.0		0.00
ARM C	1.61	19.31	0.083		0.1	0.1	1.4		0.06
ARM D	0.64	19.80	0.032		0.0	0.0	0.5		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	4.96	21.92	0.226		0.4	0.3	4.5		0.06
ARM B	0.00	20.44	0.000		0.0	0.0	0.0		0.00
ARM C	1.31	19.81	0.066		0.1	0.1	1.1		0.05
ARM D	0.52	19.92	0.026		0.0	0.0	0.4		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	4.15	21.93	0.189		0.3	0.2	3.6		0.06
ARM B	0.00	20.97	0.000		0.0	0.0	0.0		0.00
ARM C	1.10	20.18	0.055		0.1	0.1	0.9		0.05
ARM D	0.44	20.01	0.022		0.0	0.0	0.3		0.05

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.2
08.15	0.3
08.30	0.4
08.45	0.4
09.00	0.3
09.15	0.2

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QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.1

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
A	455.2	303.5	27.1	0.06	27.1	0.06
B	0.0	0.0	0.0	0.00	0.0	0.00
C	120.7	80.4	6.6	0.05	6.6	0.05
D	48.0	32.0	2.5	0.05	2.5	0.05
ALL	623.9	415.9	36.1	0.06	36.1	0.06

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END OF JOB

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[Printed at 10:11:28 on 18/04/2006]

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\PM Peak\Site 3.vao

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A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770018
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Nine Mile Ride Email: softwarebureau@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

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IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\PM Peak\Site 3.vai"
(drive-on-the-left) at 12:02:09 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 PM Do Nothing Site 3 (No Courtlough Interchange Upgrade)
LOCATION: Five Roads Roundabout
DATE: 05/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - Nevitt Road
ARM B - Cul de Sac
ARM C - Link to R132
ARM D - Link to Hedgestown

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.05	3.95	8.80	20.00	31.60	21.0	0.557	19.415
ARM B	2.71	3.95	6.30	20.00	31.60	36.0	0.513	17.163
ARM C	5.50	5.50	0.00	15.00	31.60	6.0	0.693	29.635
ARM D	3.75	4.80	7.90	25.00	31.60	21.0	0.611	23.587

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\PM Peak\Site 3.vao

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2024 PM Do Nothing Site 3 (No CIU)

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	1.29	1.93	1.29
ARM B	15.00	45.00	75.00	0.08	0.11	0.08
ARM C	15.00	45.00	75.00	0.39	0.58	0.39
ARM D	15.00	45.00	75.00	0.59	0.88	0.59

DEMAND SET TITLE: 2024 PM Do Nothing Site 3 (No CIU)

TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.039	0.291	0.670
		0.0	4.0	30.0	69.0
		(0.0)	(0.0)	(3.3)	(0.0)
	ARM B	0.000	0.000	0.500	0.500
		0.0	0.0	3.0	3.0
		(0.0)	(0.0)	(33.3)	(0.0)
	ARM C	0.742	0.129	0.000	0.129
		23.0	4.0	0.0	4.0
		(0.0)	(75.0)	(0.0)	(0.0)
	ARM D	0.489	0.064	0.447	0.000
		23.0	3.0	21.0	0.0
		(26.1)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	1.29	19.02	0.068		0.0	0.1	1.1		0.06
ARM B	0.08	14.05	0.005		0.0	0.0	0.1		0.07
ARM C	0.39	26.45	0.015		0.0	0.0	0.2		0.04
ARM D	0.59	20.71	0.028		0.0	0.0	0.4		0.05

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\PM Peak\Site 3.vao

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	1.54	18.97	0.081		0.1	0.1	1.3		0.06
ARM B	0.09	13.92	0.006		0.0	0.0	0.1		0.07
ARM C	0.46	26.34	0.018		0.0	0.0	0.3		0.04
ARM D	0.70	20.67	0.034		0.0	0.0	0.5		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	1.88	18.92	0.100		0.1	0.1	1.6		0.06
ARM B	0.11	13.74	0.008		0.0	0.0	0.1		0.07
ARM C	0.57	26.19	0.022		0.0	0.0	0.3		0.04
ARM D	0.86	20.62	0.042		0.0	0.0	0.6		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	1.88	18.92	0.100		0.1	0.1	1.7		0.06
ARM B	0.11	13.74	0.008		0.0	0.0	0.1		0.07
ARM C	0.57	26.19	0.022		0.0	0.0	0.3		0.04
ARM D	0.86	20.62	0.042		0.0	0.0	0.7		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	1.54	18.97	0.081		0.1	0.1	1.3		0.06
ARM B	0.09	13.92	0.006		0.0	0.0	0.1		0.07
ARM C	0.46	26.34	0.018		0.0	0.0	0.3		0.04
ARM D	0.70	20.67	0.034		0.0	0.0	0.5		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	1.29	19.02	0.068		0.1	0.1	1.1		0.06
ARM B	0.08	14.04	0.005		0.0	0.0	0.1		0.07
ARM C	0.39	26.45	0.015		0.0	0.0	0.2		0.04
ARM D	0.59	20.71	0.028		0.0	0.0	0.4		0.05

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1
18.15	0.1

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\PM Peak\Site 3.vao

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QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	141.2	94.2	8.1	0.06	8.1	0.06
B	8.2	5.5	0.6	0.07	0.6	0.07
C	42.5	28.3	1.6	0.04	1.6	0.04
D	64.4	43.0	3.2	0.05	3.2	0.05
ALL	256.4	170.9	13.6	0.05	13.6	0.05

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ===

[Printed at 10:12:01 on 18/04/2006]

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\PM Peak\Site 4.vao

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
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THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\PM Peak\Site 4.vai"
(drive-on-the-left) at 12:02:37 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 PM Do Nothing Site 4 (No Courtlough Interchange Upgrade)
LOCATION: Hedgestown Roundabout
DATE: 05/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****

ARM A - R132 Off Slip
ARM B - Hedgestown Road
ARM C - R132 On Slip
ARM D - Link to "Five Roads"

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM C IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	7.70	7.70	2.00	30.00	31.70	16.0	1.789	55.923
ARM B	3.96	5.96	5.00	30.00	31.70	27.0	1.336	39.531
ARM D	4.60	5.60	8.00	25.30	31.70	36.0	1.350	41.010

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	0.0	0.0
B	0.0	0.0
C	0.0	0.0
D	0.0	0.0

```
TRL             TRL VIEWER    3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\PM Peak\Site 4.vao
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TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2024 PM Do Nothing Site 4 (No CIU)

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.39	0.58	0.39
ARM B	15.00	45.00	75.00	0.49	0.73	0.49
ARM D	15.00	45.00	75.00	0.94	1.41	0.94

DEMAND SET TITLE: 2024 PM Do Nothing Site 4 (No CIU)

TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15	ARM A	0.000	0.484	0.097	0.419
		0.0	15.0	3.0	13.0
		(0.0)	(0.0)	(0.0)	(46.2)
	ARM B	0.000	0.000	0.103	0.897
		0.0	0.0	4.0	35.0
		(0.0)	(0.0)	(0.0)	(2.9)
	ARM D	0.000	0.600	0.400	0.000
		0.0	45.0	30.0	0.0
		(0.0)	(2.2)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	0.39	45.42	0.009		0.0	0.0	0.1		0.02
ARM B	0.49	37.68	0.013		0.0	0.0	0.2		0.03
ARM D	0.94	40.48	0.023		0.0	0.0	0.4		0.03

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\PM Peak\Site 4.vao

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	0.46	45.14	0.010		0.0	0.0	0.2		0.02
ARM B	0.58	37.52	0.016		0.0	0.0	0.2		0.03
ARM D	1.12	40.48	0.028		0.0	0.0	0.4		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	0.57	44.76	0.013		0.0	0.0	0.2		0.02
ARM B	0.71	37.29	0.019		0.0	0.0	0.3		0.03
ARM D	1.37	40.48	0.034		0.0	0.0	0.5		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	0.57	44.76	0.013		0.0	0.0	0.2		0.02
ARM B	0.71	37.29	0.019		0.0	0.0	0.3		0.03
ARM D	1.37	40.48	0.034		0.0	0.0	0.5		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	0.46	45.14	0.010		0.0	0.0	0.2		0.02
ARM B	0.58	37.51	0.016		0.0	0.0	0.2		0.03
ARM D	1.12	40.48	0.028		0.0	0.0	0.4		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	0.39	45.42	0.009		0.0	0.0	0.1		0.02
ARM B	0.49	37.68	0.013		0.0	0.0	0.2		0.03
ARM D	0.94	40.48	0.023		0.0	0.0	0.4		0.03

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\PM Peak\Site 4.vao

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	42.5	28.3	1.0	0.02	1.0	0.02
B	53.5	35.7	1.4	0.03	1.4	0.03
D	102.8	68.6	2.6	0.03	2.6	0.03
ALL	198.8	132.6	5.0	0.03	5.0	0.03

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

== end of file ==

[Printed at 10:12:19 on 18/04/2006]

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\PM Peak\Site 6.vao

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A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
program advice and maintenance, contact:

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THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\PM Peak\Site 6.vai"
(drive-on-the-left) at 12:03:11 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 PM Do Nothing Site 6 (No Courtlough Interchange Upgrade)
LOCATION: Courtlough Interchange West
DATE: 05/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - Rowan's Road
ARM B - M1 On Slip
ARM C - M1 Overbridge
ARM D - M1 Off Slip

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM B IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.73	6.09	20.00	40.00	35.00	16.0	1.267	40.947
ARM C	4.43	5.59	15.00	17.50	35.00	11.0	1.442	43.128
ARM D	4.00	5.23	5.00	20.00	35.00	27.0	1.203	36.976

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	13.0	0.0
B	15.0	0.0
C	0.0	0.0
D	6.0	0.0

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\PM Peak\Site 6.vao

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2024 PM Do Nothing Site 6 (No CIU)

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	5.64	8.46	5.64
ARM C	15.00	45.00	75.00	4.32	6.49	4.32
ARM D	15.00	45.00	75.00	6.50	9.75	6.50

DEMAND SET TITLE: 2024 PM Do Nothing Site 6 (No CIU)

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.180	0.820	0.000
		0.0	81.0	370.0	0.0
		(0.0)	(12.3)	(8.9)	(0.0)
	ARM C	0.335	0.665	0.000	0.000
		116.0	230.0	0.0	0.0
		(12.9)	(10.4)	(0.0)	(0.0)
	ARM D	0.038	0.029	0.933	0.000
		20.0	15.0	485.0	0.0
		(5.0)	(0.0)	(5.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	5.64	26.14	0.216		0.0	0.3	4.0		0.05
ARM C	4.32	38.77	0.112		0.0	0.1	1.9		0.03
ARM D	6.50	29.74	0.219		0.0	0.3	4.1		0.04

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\PM Peak\Site 6.vao

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TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	6.73	23.96	0.281		0.3	0.4	5.7		0.06
ARM C	5.16	38.77	0.133		0.1	0.2	2.3		0.03
ARM D	7.76	28.67	0.271		0.3	0.4	5.5		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	8.24	20.95	0.394		0.4	0.6	9.4		0.08
ARM C	6.33	38.77	0.163		0.2	0.2	2.9		0.03
ARM D	9.51	27.19	0.350		0.4	0.5	7.9		0.06

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	8.24	20.94	0.394		0.6	0.6	9.7		0.08
ARM C	6.33	38.77	0.163		0.2	0.2	2.9		0.03
ARM D	9.51	27.19	0.350		0.5	0.5	8.0		0.06

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	6.73	23.94	0.281		0.6	0.4	6.0		0.06
ARM C	5.16	38.77	0.133		0.2	0.2	2.3		0.03
ARM D	7.76	28.67	0.271		0.5	0.4	5.7		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	5.64	26.10	0.216		0.4	0.3	4.2		0.05
ARM C	4.32	38.77	0.112		0.2	0.1	1.9		0.03
ARM D	6.50	29.73	0.219		0.4	0.3	4.3		0.04

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.3	
17.15	0.4	
17.30	0.6	*
17.45	0.6	*
18.00	0.4	
18.15	0.3	

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\PM Peak\Site 6.vao

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.2
17.30	0.2
17.45	0.2
18.00	0.2
18.15	0.1

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.3	
17.15	0.4	
17.30	0.5	*
17.45	0.5	*
18.00	0.4	
18.15	0.3	

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	618.4	412.3	39.1	0.06	39.1	0.06
C	474.4	316.3	14.2	0.03	14.2	0.03
D	713.0	475.4	35.4	0.05	35.4	0.05
ALL	1805.9	1203.9	88.7	0.05	88.7	0.05

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ===

[Printed at 10:12:34 on 18/04/2006]

TRL   TRL VIEWER   3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\PM Peak\Site 7.vao

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A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
program advice and maintenance, contact:

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Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\PM Peak\Site 7.vai"
(drive-on-the-left) at 12:03:44 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 PM Do Nothing Site 7 (No Courtlough Interchange Upgrade)
LOCATION: Courtlough Interchange East
DATE: 05/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - M1 Off Slip
ARM B - Rowan's Road East
ARM C - M1 On Slip
ARM D - M1 Overbridge

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM C IS JUNCTION EXIT ONLY

I ARM	I V (M)	I E (M)	I L (M)	I R (M)	I D (M)	I PHI (DEG)	I SLOPE	I INTERCEPT (PCU/MIN) I
I ARM A	I 4.02	I 8.20	I 10.00	I 30.00	I 32.80	I 26.0	I 1.233	I 41.207 I
I ARM B	I 3.74	I 6.38	I 15.00	I 70.00	I 32.80	I 15.0	I 1.481	I 44.037 I
I ARM D	I 4.53	I 5.90	I 15.00	I 20.00	I 32.80	I 40.0	I 1.350	I 41.710 I

V = approach half-width   L = effective flare length   D = inscribed circle diameter
E = entry width   R = entry radius   PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	15.0	0.0
B	1.0	0.0
C	6.0	0.0
D	0.0	0.0

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\PM Peak\Site 7.vao

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2024 PM Do Nothing Site 7 (No CIU)

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	2.74	4.11	2.74
ARM B	15.00	45.00	75.00	5.20	7.80	5.20
ARM D	15.00	45.00	75.00	10.69	16.03	10.69

DEMAND SET TITLE: 2024 PM Do Nothing Site 7 (No CIU)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
		TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S)			
16.45 - 18.15					
	ARM A	0.000	0.900	0.000	0.100
		0.0	197.0	0.0	22.0
		(0.0)	(16.8)	(0.0)	(4.5)
	ARM B	0.000	0.000	0.221	0.779
		0.0	0.0	92.0	324.0
		(0.0)	(0.0)	(17.4)	(11.7)
	ARM D	0.000	0.903	0.097	0.000
		0.0	772.0	83.0	0.0
		(0.0)	(5.6)	(16.7)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	2.74	23.52	0.116		0.0	0.1	1.9		0.05
ARM B	5.20	37.03	0.140		0.0	0.2	2.4		0.03
ARM D	10.69	39.10	0.273		0.0	0.4	5.5		0.04

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\PM Peak\Site 7.vao

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	3.27	21.14	0.155		0.1	0.2	2.7		0.06
ARM B	6.21	36.64	0.169		0.2	0.2	3.0		0.03
ARM D	12.76	39.10	0.326		0.4	0.5	7.2		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	4.00	17.88	0.224		0.2	0.3	4.2		0.07
ARM B	7.60	36.12	0.211		0.2	0.3	3.9		0.04
ARM D	15.63	39.10	0.400		0.5	0.7	9.8		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	4.00	17.86	0.224		0.3	0.3	4.3		0.07
ARM B	7.60	36.11	0.211		0.3	0.3	4.0		0.04
ARM D	15.63	39.10	0.400		0.7	0.7	10.0		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	3.27	21.12	0.155		0.3	0.2	2.8		0.06
ARM B	6.21	36.64	0.169		0.3	0.2	3.1		0.03
ARM D	12.76	39.10	0.326		0.7	0.5	7.4		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	2.74	23.48	0.117		0.2	0.1	2.0		0.05
ARM B	5.20	37.02	0.140		0.2	0.2	2.5		0.03
ARM D	10.69	39.10	0.273		0.5	0.4	5.7		0.04

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.2
17.30	0.3
17.45	0.3
18.00	0.2
18.15	0.1

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.2
17.30	0.3
17.45	0.3
18.00	0.2
18.15	0.2

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.4
17.15	0.5
17.30	0.7 *
17.45	0.7 *
18.00	0.5
18.15	0.4

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
A	300.3	200.2	18.0	0.06	18.0	0.06
B	570.4	380.3	19.0	0.03	19.0	0.03
D	1172.4	781.6	45.6	0.04	45.6	0.04
ALL	2043.1	1362.1	82.5	0.04	82.5	0.04

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

================ end of file ================

[Printed at 10:12:58 on 18/04/2006]

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\PM Peak\Site 8.vao

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A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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Nine Mile Ride Email: softwarebureau@trl.co.uk
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Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\PM Peak\Site 8.vai"
(drive-on-the-left) at 12:04:19 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 PM Do Nothing Site 8 (No Courtlough Interchange Upgrade)
LOCATION: Rowan's Road East / R132 Roundabout
DATE: 05/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****

ARM A - R132 (Balbriggan Road)
ARM B - R132 (Dublin Road)
ARM C - Rowan's Road East
ARM D - Access to Site C of M1 Business Park

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	5.80	8.20	22.00	32.00	50.00	28.0	0.740	39.241
ARM B	6.00	8.00	30.00	26.00	50.00	19.0	0.761	40.534
ARM C	7.00	7.50	10.00	18.50	50.00	33.0	0.703	36.987
ARM D	7.50	8.00	5.00	20.50	50.00	32.0	0.734	39.559

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\PM Peak\Site 8.vao

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2024 PM Do Nothing Site 8 (No CIU)

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	6.91	10.37	6.91
ARM B	15.00	45.00	75.00	6.40	9.60	6.40
ARM C	15.00	45.00	75.00	12.11	18.17	12.11
ARM D	15.00	45.00	75.00	3.59	5.38	3.59

DEMAND SET TITLE: 2024 PM Do Nothing Site 8 (No CIU)

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.289	0.597	0.114
		0.0	160.0	330.0	63.0
		(0.0)	(6.9)	(6.4)	(14.3)
	ARM B	0.471	0.000	0.389	0.141
		241.0	0.0	199.0	72.0
		(2.9)	(0.0)	(10.6)	(15.3)
	ARM C	0.666	0.175	0.000	0.159
		645.0	170.0	0.0	154.0
		(4.5)	(14.1)	(0.0)	(14.9)
	ARM D	0.185	0.167	0.648	0.000
		53.0	48.0	186.0	0.0
		(15.1)	(14.6)	(15.1)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	6.91	32.55	0.212		0.0	0.3	4.0		0.04
ARM B	6.40	32.04	0.200		0.0	0.2	3.7		0.04
ARM C	12.11	31.03	0.390		0.0	0.6	9.3		0.05
ARM D	3.59	25.52	0.141		0.0	0.2	2.4		0.05

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\PM Peak\Site 8.vao

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	8.25	31.77	0.260		0.3	0.3	5.2		0.04
ARM B	7.64	30.94	0.247		0.2	0.3	4.8		0.04
ARM C	14.46	30.38	0.476		0.6	0.9	13.2		0.06
ARM D	4.28	23.77	0.180		0.2	0.2	3.2		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	10.11	30.70	0.329		0.3	0.5	7.2		0.05
ARM B	9.36	29.43	0.318		0.3	0.5	6.9		0.05
ARM C	17.71	29.50	0.600		0.9	1.5	21.5		0.08
ARM D	5.25	21.39	0.245		0.2	0.3	4.8		0.06

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	10.11	30.69	0.329		0.5	0.5	7.3		0.05
ARM B	9.36	29.42	0.318		0.5	0.5	7.0		0.05
ARM C	17.71	29.50	0.601		1.5	1.5	22.3		0.08
ARM D	5.25	21.37	0.246		0.3	0.3	4.9		0.06

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	8.25	31.75	0.260		0.5	0.4	5.4		0.04
ARM B	7.64	30.92	0.247		0.5	0.3	5.0		0.04
ARM C	14.46	30.37	0.476		1.5	0.9	14.1		0.06
ARM D	4.28	23.73	0.180		0.3	0.2	3.4		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	6.91	32.53	0.212		0.4	0.3	4.1		0.04
ARM B	6.40	32.02	0.200		0.3	0.3	3.8		0.04
ARM C	12.11	31.01	0.391		0.9	0.6	9.9		0.05
ARM D	3.59	25.48	0.141		0.2	0.2	2.5		0.05

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.3
17.15	0.3
17.30	0.5
17.45	0.5
18.00	0.4
18.15	0.3

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QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.3
17.30	0.5
17.45	0.5
18.00	0.3
18.15	0.3

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.6 *
17.15	0.9 *
17.30	1.5 *
17.45	1.5 *
18.00	0.9 *
18.15	0.6 *

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.2
17.30	0.3
17.45	0.3
18.00	0.2
18.15	0.2

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	758.3	505.5	33.2	0.04	33.2	0.04
B	702.1	468.0	31.2	0.04	31.2	0.04
C	1328.7	885.8	90.3	0.07	90.3	0.07
D	393.5	262.4	21.1	0.05	21.1	0.05
ALL	3182.6	2121.7	175.8	0.06	175.8	0.06

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ==

[Printed at 10:13:11 on 18/04/2006]

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\PM Peak\Site 9.vao

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A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\PM Peak\Site 9.vai"
(drive-on-the-left) at 12:04:56 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 PM Do Nothing Site 9 (No Courtlough Interchange Upgrade)
LOCATION: Rowan's Road West / M1 Business Park Roundabout
DATE: 05/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - Link to Courtlough Interchange
ARM B - Access to Site F of M1 Business Park
ARM C - Rowan's Road West
ARM D - Access to Site A of M1 Business Park

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	4.00	8.00	2.00	23.00	50.00	6.0	0.596	24.986
ARM B	4.00	8.00	2.00	22.00	50.00	22.0	0.565	23.668
ARM C	4.00	8.00	2.00	25.00	50.00	15.0	0.581	24.347
ARM D	4.00	8.00	2.00	23.00	50.00	26.0	0.558	23.394

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\PM Peak\Site 9.vao

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2024 PM Do Nothing Site 9 (No CIU)

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	1.70	2.55	1.70
ARM B	15.00	45.00	75.00	0.00	0.00	0.00
ARM C	15.00	45.00	75.00	2.53	3.79	2.53
ARM D	15.00	45.00	75.00	3.36	5.04	3.36

DEMAND SET TITLE: 2024 PM Do Nothing Site 9 (No CIU)

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.000	0.765	0.235
		0.0	0.0	104.0	32.0
		(0.0)	(0.0)	(10.6)	(15.6)
	ARM B	0.000	0.000	0.000	0.000
		0.0	0.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.985	0.000	0.000	0.015
		199.0	0.0	0.0	3.0
		(2.5)	(0.0)	(0.0)	(0.0)
	ARM D	0.929	0.000	0.071	0.000
		250.0	0.0	19.0	0.0
		(15.2)	(0.0)	(15.8)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	1.70	22.21	0.077		0.0	0.1	1.2		0.05
ARM B	0.00	22.44	0.000		0.0	0.0	0.0		0.00
ARM C	2.53	23.50	0.107		0.0	0.1	1.8		0.05
ARM D	3.36	19.06	0.176		0.0	0.2	3.1		0.06

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\PM Peak\Site 9.vao

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TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	2.03	22.18	0.092		0.1	0.1	1.5		0.05
ARM B	0.00	22.20	0.000		0.0	0.0	0.0		0.00
ARM C	3.02	23.45	0.129		0.1	0.1	2.2		0.05
ARM D	4.02	18.82	0.213		0.2	0.3	4.0		0.07

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	2.49	22.14	0.112		0.1	0.1	1.9		0.05
ARM B	0.00	21.87	0.000		0.0	0.0	0.0		0.00
ARM C	3.69	23.38	0.158		0.1	0.2	2.8		0.05
ARM D	4.92	18.50	0.266		0.3	0.4	5.3		0.07

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	2.49	22.14	0.112		0.1	0.1	1.9		0.05
ARM B	0.00	21.87	0.000		0.0	0.0	0.0		0.00
ARM C	3.69	23.38	0.158		0.2	0.2	2.8		0.05
ARM D	4.92	18.49	0.266		0.4	0.4	5.4		0.07

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	2.03	22.18	0.092		0.1	0.1	1.5		0.05
ARM B	0.00	22.19	0.000		0.0	0.0	0.0		0.00
ARM C	3.02	23.45	0.129		0.2	0.1	2.2		0.05
ARM D	4.02	18.82	0.213		0.4	0.3	4.2		0.07

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	1.70	22.21	0.077		0.1	0.1	1.3		0.05
ARM B	0.00	22.43	0.000		0.0	0.0	0.0		0.00
ARM C	2.53	23.50	0.107		0.1	0.1	1.8		0.05
ARM D	3.36	19.06	0.176		0.3	0.2	3.3		0.06

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1
18.15	0.1

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Nothing without CL\PM Peak\Site 9.vao

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QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.2
17.45	0.2
18.00	0.1
18.15	0.1

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.3
17.30	0.4
17.45	0.4
18.00	0.3
18.15	0.2

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	186.5	124.3	9.3	0.05	9.3	0.05
B	0.0	0.0	0.0	0.00	0.0	0.00
C	277.0	184.7	13.6	0.05	13.6	0.05
D	368.9	245.9	25.3	0.07	25.3	0.07
ALL	832.3	554.9	48.1	0.06	48.1	0.06

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ===

[Printed at 10:13:26 on 18/04/2006]

2024 Do Something with CL

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
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RG40 3GA,UK

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\AM Peak\Site 3.vai"
(drive-on-the-left) at 12:07:55 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 AM Do Something Site 3 with Courtlough Interchange
LOCATION: Five Roads Roundabout
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - Nevitt Road
ARM B - Cul de Sac
ARM C - Link to R132
ARM D - Link to Hedgestown

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.05	3.95	8.80	20.00	31.60	21.0	0.557	19.415
ARM B	2.71	3.95	6.30	20.00	31.60	36.0	0.513	17.163
ARM C	5.50	5.50	0.00	15.00	31.60	6.0	0.693	29.635
ARM D	3.75	4.80	7.90	25.00	31.60	21.0	0.611	23.587

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\AM Peak\Site 3.vao

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: Site 3 AM

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.00	0.00	0.00
ARM B	15.00	45.00	75.00	0.01	0.02	0.01
ARM C	15.00	45.00	75.00	0.05	0.08	0.05
ARM D	15.00	45.00	75.00	0.21	0.32	0.21

DEMAND SET TITLE: Site 3 AM

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	0.000	0.000	0.000
		0.0	0.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.000	0.000	1.000	0.000
		0.0	0.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.000	0.000	0.000	1.000
		0.0	0.0	0.0	4.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.000	0.000	1.000	0.000
		0.0	0.0	17.0	0.0
		(0.0)	(0.0)	(6.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	0.00	19.29	0.000		0.0	0.0	0.0		0.00
ARM B	0.01	17.05	0.001		0.0	0.0	0.0		0.06
ARM C	0.05	29.64	0.002		0.0	0.0	0.0		0.03
ARM D	0.21	22.25	0.010		0.0	0.0	0.1		0.05

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\AM Peak\Site 3.vao

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	0.00	19.26	0.000		0.0	0.0	0.0		0.00
ARM B	0.01	17.02	0.001		0.0	0.0	0.0		0.06
ARM C	0.06	29.64	0.002		0.0	0.0	0.0		0.03
ARM D	0.25	22.25	0.011		0.0	0.0	0.2		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	0.00	19.23	0.000		0.0	0.0	0.0		0.00
ARM B	0.02	16.99	0.001		0.0	0.0	0.0		0.06
ARM C	0.07	29.64	0.002		0.0	0.0	0.0		0.03
ARM D	0.31	22.25	0.014		0.0	0.0	0.2		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	0.00	19.23	0.000		0.0	0.0	0.0		0.00
ARM B	0.02	16.99	0.001		0.0	0.0	0.0		0.06
ARM C	0.07	29.64	0.002		0.0	0.0	0.0		0.03
ARM D	0.31	22.25	0.014		0.0	0.0	0.2		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	0.00	19.26	0.000		0.0	0.0	0.0		0.00
ARM B	0.01	17.02	0.001		0.0	0.0	0.0		0.06
ARM C	0.06	29.64	0.002		0.0	0.0	0.0		0.03
ARM D	0.25	22.25	0.011		0.0	0.0	0.2		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	0.00	19.29	0.000		0.0	0.0	0.0		0.00
ARM B	0.01	17.05	0.001		0.0	0.0	0.0		0.06
ARM C	0.05	29.64	0.002		0.0	0.0	0.0		0.03
ARM D	0.21	22.25	0.010		0.0	0.0	0.1		0.05

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\AM Peak\Site 3.vao

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QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	0.0	0.0	0.0	0.00	0.0	0.00
B	1.4	0.9	0.1	0.06	0.1	0.06
C	5.5	3.7	0.2	0.03	0.2	0.03
D	23.3	15.5	1.1	0.05	1.1	0.05
ALL	30.2	20.1	1.3	0.04	1.3	0.04

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

== end of file ==

[Printed at 10:14:12 on 18/04/2006]

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\AM Peak\Site 4.vao

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A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
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RG40 3GA,UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
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Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\AM Peak\Site 4.vai"
(drive-on-the-left) at 12:08:21 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 AM Do Something Site 4 with Courtlough Interchange
LOCATION: Hedgestown Roundabout
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - R132 Off Slip
ARM B - Hedgestown Road
ARM C - R132 On Slip
ARM D - Link to "Five Roads"

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM C IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	7.70	7.70	2.00	30.00	31.70	16.0	1.789	55.923
ARM B	3.96	5.96	5.00	30.00	31.70	27.0	1.336	39.531
ARM D	4.60	5.60	8.00	25.30	31.70	36.0	1.350	41.010

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	0.0	0.0
B	0.0	0.0
C	0.0	0.0
D	0.0	0.0

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\AM Peak\Site 4.vao

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: Site 4 AM

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.34	0.51	0.34
ARM B	15.00	45.00	75.00	0.25	0.38	0.25
ARM D	15.00	45.00	75.00	0.05	0.08	0.05

DEMAND SET TITLE: Site 4 AM

TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	1.000	0.000	0.000
		0.0	27.0	0.0	0.0
		(0.0)	(11.0)	(0.0)	(0.0)
	ARM B	0.000	0.000	0.150	0.850
		0.0	0.0	3.0	17.0
		(0.0)	(0.0)	(0.0)	(6.0)
	ARM D	0.000	0.500	0.500	0.000
		0.0	2.0	2.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	0.34	50.30	0.007		0.0	0.0	0.1		0.02
ARM B	0.25	37.58	0.007		0.0	0.0	0.1		0.03
ARM D	0.05	41.01	0.001		0.0	0.0	0.0		0.02

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\AM Peak\Site 4.vao

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TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	0.40	50.29	0.008		0.0	0.0	0.1		0.02
ARM B	0.30	37.57	0.008		0.0	0.0	0.1		0.03
ARM D	0.06	41.01	0.001		0.0	0.0	0.0		0.02

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	0.49	50.26	0.010		0.0	0.0	0.1		0.02
ARM B	0.37	37.57	0.010		0.0	0.0	0.1		0.03
ARM D	0.07	41.01	0.002		0.0	0.0	0.0		0.02

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	0.49	50.26	0.010		0.0	0.0	0.1		0.02
ARM B	0.37	37.57	0.010		0.0	0.0	0.1		0.03
ARM D	0.07	41.01	0.002		0.0	0.0	0.0		0.02

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	0.40	50.29	0.008		0.0	0.0	0.1		0.02
ARM B	0.30	37.57	0.008		0.0	0.0	0.1		0.03
ARM D	0.06	41.01	0.001		0.0	0.0	0.0		0.02

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	0.34	50.30	0.007		0.0	0.0	0.1		0.02
ARM B	0.25	37.58	0.007		0.0	0.0	0.1		0.03
ARM D	0.05	41.01	0.001		0.0	0.0	0.0		0.02

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\AM Peak\Site 4.vao

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	37.0	24.7	0.7	0.02	0.7	0.02
B	27.4	18.3	0.7	0.03	0.7	0.03
D	5.5	3.7	0.1	0.02	0.1	0.02
ALL	69.9	46.6	1.6	0.02	1.6	0.02

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

== end of file ==

[Printed at 10:14:34 on 18/04/2006]

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\AM Peak\Site 6.vao

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A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\AM Peak\Site 6.vai"
(drive-on-the-left) at 12:08:47 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 AM Do Something Site 6 with Courtlough Interchange
LOCATION: Courtlough Interchange West
DATE: 05/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - Rowan's Road
ARM B - M1 On Slip
ARM C - M1 Overbridge
ARM D - M1 Off Slip

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM B IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	9.16	12.96	1.70	25.20	60.00	36.0	1.416	59.237
ARM C	8.57	12.28	0.60	26.30	60.00	42.0	1.498	56.767
ARM D	6.00	10.00	5.00	20.00	60.00	27.0	1.095	46.436

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	12.0	17.0
B	13.0	0.0
C	0.0	17.0
D	19.0	0.0

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\AM Peak\Site 6.vao

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2024 AM Do Something Site 6 with Courtlough Interchange

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	4.79	7.18	4.79
ARM C	15.00	45.00	75.00	13.25	19.88	13.25
ARM D	15.00	45.00	75.00	10.14	15.21	10.14

DEMAND SET TITLE: 2024 AM Do Something Site 6 with Courtlough Interchange

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	0.154	0.846	0.000
		0.0	59.0	324.0	0.0
		(0.0)	(16.1)	(24.1)	(0.0)
	ARM C	0.764	0.236	0.000	0.000
		810.0	250.0	0.0	0.0
		(15.9)	(18.4)	(0.0)	(0.0)
	ARM D	0.467	0.015	0.518	0.000
		379.0	12.0	420.0	0.0
		(21.1)	(0.0)	(8.3)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	4.79	37.26	0.128		0.0	0.1	2.2		0.03
ARM C	13.25	48.73	0.272		0.0	0.4	5.5		0.03
ARM D	10.14	25.90	0.391		0.0	0.6	9.3		0.06

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\AM Peak\Site 6.vao

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	5.72	35.11	0.163		0.1	0.2	2.9		0.03
ARM C	15.82	48.73	0.325		0.4	0.5	7.1		0.03
ARM D	12.11	23.00	0.526		0.6	1.1	15.9		0.09

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	7.00	32.24	0.217		0.2	0.3	4.1		0.04
ARM C	19.38	48.73	0.398		0.5	0.7	9.7		0.03
ARM D	14.83	19.03	0.779		1.1	3.3	44.5		0.22

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	7.00	32.15	0.218		0.3	0.3	4.2		0.04
ARM C	19.38	48.73	0.398		0.7	0.7	9.9		0.03
ARM D	14.83	19.02	0.779		3.3	3.4	50.5		0.24

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	5.72	34.98	0.163		0.3	0.2	3.0		0.03
ARM C	15.82	48.73	0.325		0.7	0.5	7.3		0.03
ARM D	12.11	22.98	0.527		3.4	1.1	17.9		0.09

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	4.79	37.20	0.129		0.2	0.1	2.2		0.03
ARM C	13.25	48.73	0.272		0.5	0.4	5.7		0.03
ARM D	10.14	25.86	0.392		1.1	0.6	10.0		0.06

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.2
08.30	0.3
08.45	0.3
09.00	0.2
09.15	0.1

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\AM Peak\Site 6.vao

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.00	0.4	
08.15	0.5	
08.30	0.7	*
08.45	0.7	*
09.00	0.5	
09.15	0.4	

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.00	0.6	*
08.15	1.1	*
08.30	3.3	***
08.45	3.4	***
09.00	1.1	*
09.15	0.6	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
A	525.2	350.1	18.5	0.04	18.5	0.04
C	1453.5	969.0	45.2	0.03	45.2	0.03
D	1112.1	741.4	148.2	0.13	148.2	0.13
ALL	3090.7	2060.5	211.9	0.07	212.0	0.07

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ===

[Printed at 10:14:54 on 18/04/2006]

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TRL             TRL VIEWER    3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\AM Peak\Site 7.vao

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            ___________________ A R C A D Y  6 ___________________

                ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY


                Analysis Program: Release 3.0 (JUNE 2005)

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            RG40 3GA,UK

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  IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS  OF THE SOLUTION
 ---------------------------------------------------------------------------------

 Run with file:-
 "r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\AM Peak\Site 7.vai"
(drive-on-the-left ) at 12:09:21 on Friday, 7 April 2006



 FILE PROPERTIES
 ***************

   RUN TITLE: 2024 AM Do Something Site 7 with Courtlough Interchange
    LOCATION: Courtlough Interchange East
        DATE: 05/04/2006
      CLIENT:
  ENUMERATOR:
  JOB NUMBER:
      STATUS:
 DESCRIPTION:


 INPUT DATA
 **********
 ARM A - M1 Off Slip
 ARM B - Rowan's Road East
 ARM C - M1 On Slip
 ARM D - M1 Overbridge


 GEOMETRIC DATA
 --------------


 GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

 ARM C IS JUNCTION EXIT ONLY
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ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	9.64	16.00	2.20	27.20	65.00	48.0	1.333	60.781
ARM B	8.99	16.00	3.60	45.70	65.00	42.0	1.457	61.896
ARM D	8.57	12.28	0.60	22.60	65.00	38.0	1.436	57.113

```
 V = approach half-width       L = effective flare length          D = inscribed circle diameter
 E = entry width               R = entry radius                    PHI = entry angle


 DATA FOR VERY LARGE ROUNDABOUTS
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```

ARM	CIRFLO	SEP
A	13.0	0.0
B	7.0	17.0
C	19.0	0.0
D	0.0	17.0

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\AM Peak\Site 7.vao

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2024 AM Do Something Site 7 with Courtlough Interchange

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	7.68	11.51	7.68
ARM B	15.00	45.00	75.00	16.58	24.86	16.58
ARM D	15.00	45.00	75.00	9.30	13.95	9.30

DEMAND SET TITLE: 2024 AM Do Something Site 7 with Courtlough Interchange

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	0.537	0.013	0.450
		0.0	330.0	8.0	276.0
		(0.0)	(15.8)	(25.0)	(14.5)
	ARM B	0.000	0.000	0.416	0.584
		0.0	0.0	552.0	774.0
		(0.0)	(0.0)	(6.0)	(17.4)
	ARM D	0.000	0.863	0.137	0.000
		0.0	642.0	102.0	0.0
		(0.0)	(11.8)	(36.3)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	7.68	40.34	0.190		0.0	0.2	3.5		0.03
ARM B	16.58	47.44	0.349		0.0	0.5	7.9		0.03
ARM D	9.30	49.59	0.188		0.0	0.2	3.4		0.02

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	9.16	37.92	0.242		0.2	0.3	4.7		0.03
ARM B	19.79	45.97	0.431		0.5	0.8	11.1		0.04
ARM D	11.11	49.59	0.224		0.2	0.3	4.3		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	11.22	34.60	0.324		0.3	0.5	7.1		0.04
ARM B	24.24	43.96	0.551		0.8	1.2	17.9		0.05
ARM D	13.60	49.59	0.274		0.3	0.4	5.6		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	11.22	34.59	0.324		0.5	0.5	7.2		0.04
ARM B	24.24	43.95	0.552		1.2	1.2	18.4		0.05
ARM D	13.60	49.59	0.274		0.4	0.4	5.7		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	9.16	37.91	0.242		0.5	0.3	4.9		0.03
ARM B	19.79	45.96	0.431		1.2	0.8	11.6		0.04
ARM D	11.11	49.59	0.224		0.4	0.3	4.4		0.03

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	7.68	40.31	0.190		0.3	0.2	3.6		0.03
ARM B	16.58	47.42	0.350		0.8	0.5	8.2		0.03
ARM D	9.30	49.59	0.188		0.3	0.2	3.5		0.02

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.2
08.15	0.3
08.30	0.5
08.45	0.5
09.00	0.3
09.15	0.2

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TRL              TRL VIEWER    3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\AM Peak\Site 7.vao

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 QUEUE AT ARM B
 --------------

  TIME SEGMENT   NO. OF
   ENDING      VEHICLES
               IN QUEUE

   08.00           0.5  *
   08.15           0.8  *
   08.30           1.2  *
   08.45           1.2  *
   09.00           0.8  *
   09.15           0.5  *


 QUEUE AT ARM D
 --------------

  TIME SEGMENT   NO. OF
   ENDING      VEHICLES
               IN QUEUE

   08.00           0.2
   08.15           0.3
   08.30           0.4
   08.45           0.4
   09.00           0.3
   09.15           0.2


                QUEUEING DELAY INFORMATION OVER WHOLE PERIOD
                --------------------------------------------

 ----------------------------------------------------------------------------
 I  ARM  I   TOTAL DEMAND   I     * QUEUEING *     I  * INCLUSIVE QUEUEING *  I
 I       I                  I       * DELAY *      I        * DELAY *         I
 I       I-----------------------------------------------------------------I
 I       I  (VEH)   (VEH/H) I  (MIN)     (MIN/VEH) I   (MIN)       (MIN/VEH)  I
 ----------------------------------------------------------------------------
 I   A   I  841.9 I  561.3 I    30.9 I    0.04    I     30.9  I     0.04    I
 I   B   I 1818.2 I 1212.2 I    75.1 I    0.04    I     75.1  I     0.04    I
 I   D   I 1020.2 I  680.1 I    26.8 I    0.03    I     26.8  I     0.03    I
 ----------------------------------------------------------------------------
 I  ALL  I 3680.3 I 2453.6 I   132.8 I    0.04    I    132.8  I     0.04    I
 ----------------------------------------------------------------------------

 * DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
 * INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
 * THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

 END OF JOB

============================================= end of file =============================================


 [Printed at 10:15:15 on 18/04/2006]
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TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\AM Peak\Site 8 Round

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A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
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Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\AM Peak\Site 8 Roundabout.vai"
(drive-on-the-left) at 12:09:57 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 AM Do Something Site 8 with Courtlough Interchange
LOCATION: Rowans Road East / R132 Roundabout
DATE: 05/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****

ARM A - R132 (Balbriggan Road)
ARM B - R132 (Dublin Road)
ARM C - Rowan's Road East
ARM D - Access to Site C of M1 Business Park

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	5.80	8.20	22.00	32.00	50.00	28.0	0.740	39.241
ARM B	6.00	8.00	30.00	26.00	50.00	19.0	0.761	40.534
ARM C	8.00	10.50	10.00	18.50	50.00	33.0	0.813	46.732
ARM D	7.50	8.00	5.00	20.50	50.00	32.0	0.734	39.559

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

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TRL             TRL VIEWER    3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\AM Peak\Site 8 Round

--------------------------------------------------------------------------------

 -----------------------
 I ARM I FLOW SCALE(%) I
 -----------------------
 I A   I      100      I
 I B   I      100      I
 I C   I      100      I
 I D   I      100      I
 -----------------------



 TIME PERIOD BEGINS 07.45 AND ENDS 09.15

 LENGTH OF TIME PERIOD  -  90   MINUTES.
 LENGTH OF TIME SEGMENT -  15   MINUTES.


 DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA


 DEMAND SET TITLE: 2024 AM Do Something Site 8 with Courtlough Interchange
 -----------------------------------------------------------------------------
 I       I   NUMBER OF MINUTES FROM START WHEN    I    RATE OF FLOW (VEH/MIN)  I
 I  ARM  I FLOW STARTS I TOP OF PEAK I FLOW STOPS I BEFORE I AT TOP  I AFTER I
 I       I   TO RISE   I  IS REACHED IFALLING    I  PEAK   I OF PEAK I PEAK  I
 -----------------------------------------------------------------------------
 I ARM A I     15.00   I     45.00   I     75.00   I 12.10  I  18.15  I 12.10 I
 I ARM B I     15.00   I     45.00   I     75.00   I  7.97  I  11.96  I  7.97 I
 I ARM C I     15.00   I     45.00   I     75.00   I 12.27  I  18.41  I 12.27 I
 I ARM D I     15.00   I     45.00   I     75.00   I  4.40  I   6.60  I  4.40 I
 -----------------------------------------------------------------------------


 DEMAND SET TITLE: 2024 AM Do Something Site 8 with Courtlough Interchange

 --------------------------------------------------------------------
 I                   I         TURNING PROPORTIONS                  I
 I                   I         TURNING COUNTS (VEH/HR)              I
 I                   I        (PERCENTAGE OF H.V.S)                 I
 I                   ------------------------------------------------
 I        TIME       I FROM/TO I  ARM A I  ARM B I  ARM C I  ARM D I
 --------------------------------------------------------------------
 I   07.45 - 09.15   I         I        I        I        I        I
 I                   I  ARM A  I  0.000 I  0.200 I  0.731 I  0.068 I
 I                   I         I    0.0 I  194.0 I  708.0 I   66.0 I
 I                   I         I (  0.0)I ( 14.4)I (  7.2)I ( 15.2)I
 I                   I         I        I        I        I        I
 I                   I  ARM B  I  0.241 I  0.000 I  0.665 I  0.094 I
 I                   I         I  154.0 I    0.0 I  424.0 I   60.0 I
 I                   I         I ( 14.9)I (  0.0)I ( 20.8)I ( 15.0)I
 I                   I         I        I        I        I        I
 I                   I  ARM C  I  0.418 I  0.374 I  0.000 I  0.209 I
 I                   I         I  410.0 I  367.0 I    0.0 I  205.0 I
 I                   I         I (  8.0)I ( 17.4)I (  0.0)I ( 15.1)I
 I                   I         I        I        I        I        I
 I                   I  ARM D  I  0.219 I  0.230 I  0.551 I  0.000 I
 I                   I         I   77.0 I   81.0 I  194.0 I    0.0 I
 I                   I         I ( 15.6)I ( 14.8)I ( 14.9)I (  0.0)I
 I                   I         I        I        I        I        I
 --------------------------------------------------------------------


          QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT
          --------------------------------------------------------


 -------------------------------------------------------------------------------------------------------------------
 I  TIME      DEMAND  CAPACITY  DEMAND/    PEDESTRIAN  START   END       DELAY     GEOMETRIC DELAY   AVERAGE DELAY I
 I          (VEH/MIN) (VEH/MIN) CAPACITY     FLOW      QUEUE  QUEUE    (VEH.MIN/      (VEH.MIN/      PER ARRIVING  I
 I                               (RFC)    (PEDS/MIN)  (VEHS)  (VEHS)  TIME SEGMENT)  TIME SEGMENT)   VEHICLE (MIN) I
 I 07.45-08.00                                                                                                     I
 I ARM A      12.10     29.63   0.408                  0.0     0.7      10.0                            0.06       I
 I ARM B       7.97     25.67   0.311                  0.0     0.4       6.6                            0.06       I
 I ARM C      12.27     38.47   0.319                  0.0     0.5       6.9                            0.04       I
 I ARM D       4.40     26.03   0.169                  0.0     0.2       3.0                            0.05       I
 I                                                                                                                 I
 -------------------------------------------------------------------------------------------------------------------
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TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	14.45	28.39	0.509		0.7	1.0	15.0		0.07
ARM B	9.52	24.01	0.397		0.4	0.7	9.6		0.07
ARM C	14.66	37.90	0.387		0.5	0.6	9.3		0.04
ARM D	5.25	24.39	0.215		0.2	0.3	4.0		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	17.70	26.70	0.663		1.0	1.9	27.5		0.11
ARM B	11.66	21.76	0.536		0.7	1.1	16.5		0.10
ARM C	17.95	37.13	0.483		0.6	0.9	13.7		0.05
ARM D	6.43	22.15	0.291		0.3	0.4	6.0		0.06

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	17.70	26.69	0.663		1.9	1.9	29.1		0.11
ARM B	11.66	21.72	0.537		1.1	1.2	17.2		0.10
ARM C	17.95	37.12	0.484		0.9	0.9	14.0		0.05
ARM D	6.43	22.13	0.291		0.4	0.4	6.1		0.06

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	14.45	28.38	0.509		1.9	1.0	16.2		0.07
ARM B	9.52	23.96	0.397		1.2	0.7	10.2		0.07
ARM C	14.66	37.89	0.387		0.9	0.6	9.7		0.04
ARM D	5.25	24.36	0.216		0.4	0.3	4.2		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	12.10	29.61	0.409		1.0	0.7	10.7		0.06
ARM B	7.97	25.62	0.311		0.7	0.5	6.9		0.06
ARM C	12.27	38.46	0.319		0.6	0.5	7.2		0.04
ARM D	4.40	26.00	0.169		0.3	0.2	3.1		0.05

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.00	0.7	*
08.15	1.0	*
08.30	1.9	**
08.45	1.9	**
09.00	1.0	*
09.15	0.7	*

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QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.00	0.4	
08.15	0.7	*
08.30	1.1	*
08.45	1.2	*
09.00	0.7	*
09.15	0.5	

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.00	0.5	
08.15	0.6	*
08.30	0.9	*
08.45	0.9	*
09.00	0.6	*
09.15	0.5	

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.2
08.15	0.3
08.30	0.4
08.45	0.4
09.00	0.3
09.15	0.2

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	1327.3	884.9	108.5	0.08	108.5	0.08
B	874.8	583.2	67.0	0.08	67.0	0.08
C	1346.5	897.7	60.6	0.05	60.6	0.05
D	482.7	321.8	26.5	0.05	26.5	0.05
ALL	4031.4	2687.6	262.6	0.07	262.6	0.07

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ==

[Printed at 10:15:37 on 18/04/2006]

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A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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RG40 3GA,UK

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\AM Peak\Site 9.vai"
(drive-on-the-left) at 12:10:30 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 AM Do Something Site 9 with Courtlough Interchange
LOCATION: Rowan's Road West / M1 Business Park
DATE: 05/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - Link to Courtlough Interchange
ARM B - Access to Site F of M1 Business Park
ARM C - Rowan's Road West
ARM D - Access to Site A of M1 Business Park

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	8.00	10.50	2.00	23.00	50.00	6.0	0.844	46.774
ARM B	4.00	8.00	2.00	22.00	50.00	22.0	0.565	23.668
ARM C	8.00	10.50	2.00	25.00	50.00	15.0	0.822	45.579
ARM D	4.00	8.00	30.00	23.00	50.00	26.0	0.691	35.055

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\AM Peak\Site 9.vao

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2024 AM Do Something Site 9 with Courtlough Interchange

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	14.73	22.09	14.73
ARM B	15.00	45.00	75.00	1.13	1.69	1.13
ARM C	15.00	45.00	75.00	3.29	4.93	3.29
ARM D	15.00	45.00	75.00	1.45	2.18	1.45

DEMAND SET TITLE: 2024 AM Do Something Site 9 with Courtlough Interchange

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	0.135	0.158	0.707
		0.0	159.0	186.0	833.0
		(0.0)	(15.1)	(32.8)	(15.0)
	ARM B	0.933	0.000	0.067	0.000
		84.0	0.0	6.0	0.0
		(15.5)	(0.0)	(16.7)	(0.0)
	ARM C	0.715	0.046	0.000	0.240
		188.0	12.0	0.0	63.0
		(30.1)	(16.7)	(0.0)	(14.3)
	ARM D	0.931	0.000	0.069	0.000
		108.0	0.0	8.0	0.0
		(14.8)	(0.0)	(12.5)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	14.73	39.49	0.373		0.0	0.6	8.7		0.04
ARM B	1.13	13.08	0.086		0.0	0.1	1.4		0.08
ARM C	3.29	27.66	0.119		0.0	0.1	2.0		0.04
ARM D	1.45	27.91	0.052		0.0	0.1	0.8		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	17.58	39.45	0.446		0.6	0.8	11.8		0.05
ARM B	1.34	11.63	0.116		0.1	0.1	1.9		0.10
ARM C	3.93	25.97	0.151		0.1	0.2	2.6		0.05
ARM D	1.73	27.38	0.063		0.1	0.1	1.0		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	21.53	39.40	0.547		0.8	1.2	17.5		0.06
ARM B	1.65	9.65	0.171		0.1	0.2	3.0		0.12
ARM C	4.81	23.66	0.203		0.2	0.3	3.8		0.05
ARM D	2.12	26.67	0.080		0.1	0.1	1.3		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	21.53	39.40	0.547		1.2	1.2	18.0		0.06
ARM B	1.65	9.63	0.171		0.2	0.2	3.1		0.13
ARM C	4.81	23.65	0.203		0.3	0.3	3.8		0.05
ARM D	2.12	26.66	0.080		0.1	0.1	1.3		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	17.58	39.45	0.446		1.2	0.8	12.4		0.05
ARM B	1.34	11.61	0.116		0.2	0.1	2.0		0.10
ARM C	3.93	25.94	0.151		0.3	0.2	2.7		0.05
ARM D	1.73	27.37	0.063		0.1	0.1	1.0		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	14.73	39.49	0.373		0.8	0.6	9.1		0.04
ARM B	1.13	13.06	0.086		0.1	0.1	1.5		0.08
ARM C	3.29	27.63	0.119		0.2	0.1	2.1		0.04
ARM D	1.45	27.90	0.052		0.1	0.1	0.8		0.04

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.00	0.6	*
08.15	0.8	*
08.30	1.2	*
08.45	1.2	*
09.00	0.8	*
09.15	0.6	*

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\AM Peak\Site 9.vao

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QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.1
08.30	0.2
08.45	0.2
09.00	0.1
09.15	0.1

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.2
08.30	0.3
08.45	0.3
09.00	0.2
09.15	0.1

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.1

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	1615.3	1076.9	77.5	0.05	77.5	0.05
B	123.4	82.3	12.8	0.10	12.8	0.10
C	360.6	240.4	17.0	0.05	17.0	0.05
D	159.1	106.0	6.2	0.04	6.2	0.04
ALL	2258.4	1505.6	113.5	0.05	113.5	0.05

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

== end of file ==

[Printed at 10:15:52 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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RG40 3GA,UK

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\PM Peak\Site 3.vai"
(drive-on-the-left) at 12:10:49 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 PM Do Something Site 3 with Courtlough Interchange
LOCATION: Five Roads Roundabout
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****

ARM A - Nevitt Road
ARM B - Cul de Sac
ARM C - Link to R132
ARM D - Link to Hedgestown

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.05	3.95	8.80	20.00	31.60	21.0	0.557	19.415
ARM B	2.71	3.95	6.30	20.00	31.60	36.0	0.513	17.163
ARM C	5.50	5.50	0.00	15.00	31.60	6.0	0.693	29.635
ARM D	3.75	4.80	7.90	25.00	31.60	21.0	0.611	23.587

V = approach half-width   L = effective flare length   D = inscribed circle diameter
E = entry width   R = entry radius   PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\PM Peak\Site 3.vao

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: Site 3 PM

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.00	0.00	0.00
ARM B	15.00	45.00	75.00	0.08	0.11	0.08
ARM C	15.00	45.00	75.00	0.10	0.15	0.10
ARM D	15.00	45.00	75.00	0.44	0.66	0.44

DEMAND SET TITLE: Site 3 PM

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
		TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S)			
16.45 - 18.15	ARM A	0.000	0.000	0.000	0.000
		0.0	0.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.000	0.000	0.500	0.500
		0.0	0.0	3.0	3.0
		(0.0)	(0.0)	(33.0)	(0.0)
	ARM C	0.000	0.500	0.000	0.500
		0.0	4.0	0.0	4.0
		(0.0)	(75.0)	(0.0)	(0.0)
	ARM D	0.000	0.086	0.914	0.000
		0.0	3.0	32.0	0.0
		(0.0)	(33.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	0.00	19.12	0.000		0.0	0.0	0.0		0.00
ARM B	0.08	14.56	0.005		0.0	0.0	0.1		0.07
ARM C	0.10	21.53	0.005		0.0	0.0	0.1		0.05
ARM D	0.44	22.89	0.019		0.0	0.0	0.3		0.04

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\PM Peak\Site 3.vao

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TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	0.00	19.06	0.000		0.0	0.0	0.0		0.00
ARM B	0.09	14.52	0.006		0.0	0.0	0.1		0.07
ARM C	0.12	21.53	0.006		0.0	0.0	0.1		0.05
ARM D	0.52	22.88	0.023		0.0	0.0	0.3		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	0.00	18.98	0.000		0.0	0.0	0.0		0.00
ARM B	0.11	14.47	0.008		0.0	0.0	0.1		0.07
ARM C	0.15	21.53	0.007		0.0	0.0	0.1		0.05
ARM D	0.64	22.86	0.028		0.0	0.0	0.4		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	0.00	18.98	0.000		0.0	0.0	0.0		0.00
ARM B	0.11	14.47	0.008		0.0	0.0	0.1		0.07
ARM C	0.15	21.53	0.007		0.0	0.0	0.1		0.05
ARM D	0.64	22.86	0.028		0.0	0.0	0.4		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	0.00	19.06	0.000		0.0	0.0	0.0		0.00
ARM B	0.09	14.52	0.006		0.0	0.0	0.1		0.07
ARM C	0.12	21.53	0.006		0.0	0.0	0.1		0.05
ARM D	0.52	22.88	0.023		0.0	0.0	0.4		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	0.00	19.11	0.000		0.0	0.0	0.0		0.00
ARM B	0.08	14.56	0.005		0.0	0.0	0.1		0.07
ARM C	0.10	21.53	0.005		0.0	0.0	0.1		0.05
ARM D	0.44	22.89	0.019		0.0	0.0	0.3		0.04

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	0.0	0.0	0.0	0.00	0.0	0.00
B	8.2	5.5	0.6	0.07	0.6	0.07
C	11.0	7.3	0.5	0.05	0.5	0.05
D	48.0	32.0	2.1	0.04	2.1	0.04
ALL	67.2	44.8	3.2	0.05	3.2	0.05

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

== end of file ==

[Printed at 10:16:17 on 18/04/2006]

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\PM Peak\Site 4.vao

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A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
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THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\PM Peak\Site 4.vai"
(drive-on-the-left) at 12:11:17 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 PM Do Something Site 4 with Courtlough Interchange
LOCATION: Hedgestown Roundabout
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****

ARM A - R132 Off Slip
ARM B - Hedgestown Road
ARM C - R132 On Slip
ARM D - Link to "Five Roads"

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM C IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	7.70	7.70	2.00	30.00	31.70	16.0	1.789	55.923
ARM B	3.96	5.96	5.00	30.00	31.70	27.0	1.336	39.531
ARM D	4.60	5.60	8.00	25.30	31.70	36.0	1.350	41.010

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	0.0	0.0
B	0.0	0.0
C	0.0	0.0
D	0.0	0.0

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: Site 4 PM

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.22	0.34	0.22
ARM B	15.00	45.00	75.00	0.49	0.73	0.49
ARM D	15.00	45.00	75.00	0.09	0.13	0.09

DEMAND SET TITLE: Site 4 PM

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.833	0.167	0.000
		0.0	15.0	3.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.000	0.000	0.103	0.897
		0.0	0.0	4.0	35.0
		(0.0)	(0.0)	(0.0)	(3.0)
	ARM D	0.000	0.571	0.429	0.000
		0.0	4.0	3.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	0.22	55.77	0.004		0.0	0.0	0.1		0.02
ARM B	0.49	38.40	0.013		0.0	0.0	0.2		0.03
ARM D	0.09	41.01	0.002		0.0	0.0	0.0		0.02

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	0.27	55.74	0.005		0.0	0.0	0.1		0.02
ARM B	0.58	38.38	0.015		0.0	0.0	0.2		0.03
ARM D	0.10	41.01	0.003		0.0	0.0	0.0		0.02

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	0.33	55.69	0.006		0.0	0.0	0.1		0.02
ARM B	0.71	38.35	0.019		0.0	0.0	0.3		0.03
ARM D	0.13	41.01	0.003		0.0	0.0	0.0		0.02

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	0.33	55.69	0.006		0.0	0.0	0.1		0.02
ARM B	0.71	38.35	0.019		0.0	0.0	0.3		0.03
ARM D	0.13	41.01	0.003		0.0	0.0	0.0		0.02

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	0.27	55.74	0.005		0.0	0.0	0.1		0.02
ARM B	0.58	38.38	0.015		0.0	0.0	0.2		0.03
ARM D	0.10	41.01	0.003		0.0	0.0	0.0		0.02

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	0.22	55.77	0.004		0.0	0.0	0.1		0.02
ARM B	0.49	38.40	0.013		0.0	0.0	0.2		0.03
ARM D	0.09	41.01	0.002		0.0	0.0	0.0		0.02

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

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QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	24.7	16.5	0.4	0.02	0.4	0.02
B	53.5	35.7	1.4	0.03	1.4	0.03
D	9.6	6.4	0.2	0.02	0.2	0.02
ALL	87.8	58.5	2.1	0.02	2.1	0.02

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ===

[Printed at 10:16:34 on 18/04/2006]

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\PM Peak\Site 6.vao

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A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\PM Peak\Site 6.vai"
(drive-on-the-left) at 12:11:45 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 PM Do Something Site 6 with Courtlough Interchange
LOCATION: Courtlough Interchange West
DATE: 05/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****

ARM A - Rowan's Road
ARM B - M1 On Slip
ARM C - M1 Overbridge
ARM D - M1 Off Slip

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM B IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	9.16	12.96	1.70	25.20	60.00	36.0	1.364	58.541
ARM C	8.57	12.28	0.60	26.30	60.00	42.0	1.498	56.767
ARM D	6.00	10.00	5.00	20.00	60.00	27.0	1.228	48.524

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	15.0	17.0
B	28.0	0.0
C	0.0	17.0
D	10.0	0.0

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TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2024 PM Do Something Site 6 with Courtlough Interchange

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	16.44	24.66	16.44
ARM C	15.00	45.00	75.00	7.19	10.78	7.19
ARM D	15.00	45.00	75.00	7.71	11.57	7.71

DEMAND SET TITLE: 2024 PM Do Something Site 6 with Courtlough Interchange

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.200	0.800	0.000
		0.0	263.0	1052.0	0.0
		(0.0)	(14.1)	(14.4)	(0.0)
	ARM C	0.511	0.489	0.000	0.000
		294.0	281.0	0.0	0.0
		(12.6)	(11.0)	(0.0)	(0.0)
	ARM D	0.126	0.024	0.849	0.000
		78.0	15.0	524.0	0.0
		(29.5)	(0.0)	(5.7)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	16.44	38.10	0.431		0.0	0.8	11.1		0.05
ARM C	7.19	50.77	0.142		0.0	0.2	2.4		0.02
ARM D	7.71	35.61	0.217		0.0	0.3	4.1		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	19.63	35.53	0.552		0.8	1.2	17.9		0.06
ARM C	8.58	50.77	0.169		0.2	0.2	3.0		0.02
ARM D	9.21	33.84	0.272		0.3	0.4	5.5		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	24.04	32.01	0.751		1.2	2.9	41.0		0.12
ARM C	10.51	50.77	0.207		0.2	0.3	3.9		0.02
ARM D	11.28	31.40	0.359		0.4	0.6	8.2		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	24.04	32.00	0.751		2.9	3.0	44.3		0.13
ARM C	10.51	50.77	0.207		0.3	0.3	3.9		0.02
ARM D	11.28	31.40	0.359		0.6	0.6	8.4		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	19.63	35.50	0.553		3.0	1.2	19.4		0.06
ARM C	8.58	50.77	0.169		0.3	0.2	3.1		0.02
ARM D	9.21	33.83	0.272		0.6	0.4	5.7		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	16.44	38.06	0.432		1.2	0.8	11.7		0.05
ARM C	7.19	50.77	0.142		0.2	0.2	2.5		0.02
ARM D	7.71	35.60	0.217		0.4	0.3	4.2		0.04

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.8	*
17.15	1.2	*
17.30	2.9	***
17.45	3.0	***
18.00	1.2	*
18.15	0.8	*

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QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.2
17.30	0.3
17.45	0.3
18.00	0.2
18.15	0.2

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.3
17.15	0.4
17.30	0.6 *
17.45	0.6 *
18.00	0.4
18.15	0.3

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	1803.1	1202.1	145.3	0.08	145.3	0.08
C	788.4	525.6	18.8	0.02	18.8	0.02
D	846.0	564.0	36.1	0.04	36.1	0.04
ALL	3437.6	2291.8	200.2	0.06	200.2	0.06

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ==

[Printed at 10:16:48 on 18/04/2006]

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A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
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Crowthorne House Fax: +44 (0) 1344 770864
Nine Mile Ride Email: softwarebureau@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\PM Peak\Site 7.vai"
(drive-on-the-left) at 12:12:16 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 PM Do Something Site 7 with Courtlough Interchange
LOCATION: Courtlough Interchange East
DATE: 05/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - M1 Off Slip
ARM B - Rowan's Road East
ARM C - M1 On Slip
ARM D - M1 Overbridge

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM C IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	9.64	16.00	2.20	27.20	65.00	48.0	1.083	57.301
ARM B	8.99	16.00	3.60	45.70	65.00	42.0	1.457	61.896
ARM D	8.57	12.28	0.60	22.60	65.00	38.0	1.436	57.113

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	28.0	0.0
B	7.0	17.0
C	10.0	0.0
D	0.0	17.0

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TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2024 PM Do Something Site 7 with Courtlough Interchange

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	3.49	5.23	3.49
ARM B	15.00	45.00	75.00	12.21	18.32	12.21
ARM D	15.00	45.00	75.00	19.70	29.55	19.70

DEMAND SET TITLE: 2024 PM Do Something Site 7 with Courtlough Interchange

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.781	0.000	0.219
		0.0	218.0	0.0	61.0
		(0.0)	(16.5)	(0.0)	(11.5)
	ARM B	0.000	0.000	0.474	0.526
		0.0	0.0	463.0	514.0
		(0.0)	(0.0)	(9.1)	(11.9)
	ARM D	0.000	0.775	0.225	0.000
		0.0	1222.0	354.0	0.0
		(0.0)	(9.1)	(21.5)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	3.49	29.00	0.120		0.0	0.1	2.0		0.04
ARM B	12.21	47.79	0.256		0.0	0.3	5.1		0.03
ARM D	19.70	51.05	0.386		0.0	0.6	9.2		0.03

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\PM Peak\Site 7.vao

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	4.16	24.96	0.167		0.1	0.2	3.0		0.05
ARM B	14.58	46.19	0.316		0.3	0.5	6.8		0.03
ARM D	23.52	51.05	0.461		0.6	0.9	12.6		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	5.10	19.42	0.263		0.2	0.4	5.2		0.07
ARM B	17.86	43.99	0.406		0.5	0.7	10.1		0.04
ARM D	28.81	51.05	0.564		0.9	1.3	18.9		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	5.10	19.39	0.263		0.4	0.4	5.3		0.07
ARM B	17.86	43.98	0.406		0.7	0.7	10.2		0.04
ARM D	28.81	51.05	0.564		1.3	1.3	19.3		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	4.16	24.91	0.167		0.4	0.2	3.1		0.05
ARM B	14.58	46.17	0.316		0.7	0.5	7.0		0.03
ARM D	23.52	51.05	0.461		1.3	0.9	13.1		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	3.49	28.94	0.120		0.2	0.1	2.1		0.04
ARM B	12.21	47.77	0.256		0.5	0.3	5.2		0.03
ARM D	19.70	51.05	0.386		0.9	0.6	9.6		0.03

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.2
17.30	0.4
17.45	0.4
18.00	0.2
18.15	0.1

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QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.3	
17.15	0.5	
17.30	0.7	*
17.45	0.7	*
18.00	0.5	
18.15	0.3	

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.6	*
17.15	0.9	*
17.30	1.3	*
17.45	1.3	*
18.00	0.9	*
18.15	0.6	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	382.6	255.0	20.7	0.05	20.7	0.05
B	1339.7	893.1	44.4	0.03	44.4	0.03
D	2161.0	1440.7	82.8	0.04	82.8	0.04
ALL	3883.3	2588.8	147.9	0.04	147.9	0.04

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

== end of file ==

[Printed at 10:17:05 on 18/04/2006]

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\PM Peak\Site 8 Roun

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A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
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RG40 3GA,UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\PM Peak\Site 8 Roundabout.vai"
(drive-on-the-left) at 12:12:57 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 PM Do Something Site 8 with Courtlough Interchange
LOCATION: Rowans Road East / R132 Roundabout
DATE: 05/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - R132 (Balbriggan Road)
ARM B - R132 (Dublin Road)
ARM C - Rowan's Road East
ARM D - Access to Site C of M1 Business Park

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	5.80	8.20	22.00	32.00	50.00	28.0	0.740	39.241
ARM B	6.00	8.00	30.00	26.00	50.00	19.0	0.761	40.534
ARM C	8.00	10.50	10.00	18.50	50.00	33.0	0.813	46.732
ARM D	7.50	8.00	5.00	20.50	50.00	32.0	0.734	39.559

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\PM Peak\Site 8 Roun

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2024 PM Do Something Site 8 with Courtlough Interchange

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	8.18	12.26	8.18
ARM B	15.00	45.00	75.00	8.88	13.31	8.88
ARM C	15.00	45.00	75.00	18.00	27.00	18.00
ARM D	15.00	45.00	75.00	4.14	6.21	4.14

DEMAND SET TITLE: 2024 PM Do Something Site 8 with Courtlough Interchange

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.249	0.633	0.118
		0.0	163.0	414.0	77.0
		(0.0)	(4.9)	(9.2)	(15.6)
	ARM B	0.382	0.000	0.504	0.114
		271.0	0.0	358.0	81.0
		(4.4)	(0.0)	(9.8)	(14.8)
	ARM C	0.583	0.282	0.000	0.135
		840.0	406.0	0.0	194.0
		(6.8)	(15.0)	(0.0)	(14.9)
	ARM D	0.199	0.181	0.619	0.000
		66.0	60.0	205.0	0.0
		(15.2)	(15.0)	(15.1)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	8.18	29.51	0.277		0.0	0.4	5.6		0.05
ARM B	8.88	30.62	0.290		0.0	0.4	6.0		0.05
ARM C	18.00	38.13	0.472		0.0	0.9	13.0		0.05
ARM D	4.14	21.28	0.194		0.0	0.2	3.5		0.06

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	9.76	28.23	0.346		0.4	0.5	7.8		0.05
ARM B	10.60	29.28	0.362		0.4	0.6	8.3		0.05
ARM C	21.49	37.29	0.576		0.9	1.3	19.7		0.06
ARM D	4.94	18.71	0.264		0.2	0.4	5.2		0.07

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	11.96	26.49	0.451		0.5	0.8	12.0		0.07
ARM B	12.98	27.46	0.473		0.6	0.9	13.0		0.07
ARM C	26.32	36.14	0.728		1.3	2.6	37.2		0.10
ARM D	6.05	15.22	0.398		0.4	0.7	9.5		0.11

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	11.96	26.46	0.452		0.8	0.8	12.3		0.07
ARM B	12.98	27.44	0.473		0.9	0.9	13.4		0.07
ARM C	26.32	36.13	0.729		2.6	2.7	39.6		0.10
ARM D	6.05	15.16	0.399		0.7	0.7	9.9		0.11

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	9.76	28.18	0.346		0.8	0.5	8.1		0.05
ARM B	10.60	29.25	0.362		0.9	0.6	8.7		0.05
ARM C	21.49	37.27	0.577		2.7	1.4	21.3		0.06
ARM D	4.94	18.63	0.265		0.7	0.4	5.6		0.07

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	8.18	29.47	0.277		0.5	0.4	5.9		0.05
ARM B	8.88	30.59	0.290		0.6	0.4	6.3		0.05
ARM C	18.00	38.11	0.472		1.4	0.9	13.8		0.05
ARM D	4.14	21.21	0.195		0.4	0.2	3.7		0.06

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.4	
17.15	0.5	*
17.30	0.8	*
17.45	0.8	*
18.00	0.5	*
18.15	0.4	

QUEUE AT ARM B

```
 TIME SEGMENT   NO. OF
   ENDING      VEHICLES
               IN QUEUE

   17.00           0.4
   17.15           0.6  *
   17.30           0.9  *
   17.45           0.9  *
   18.00           0.6  *
   18.15           0.4
```

QUEUE AT ARM C

```
 TIME SEGMENT   NO. OF
   ENDING      VEHICLES
               IN QUEUE

   17.00           0.9  *
   17.15           1.3  *
   17.30           2.6  ***
   17.45           2.7  ***
   18.00           1.4  *
   18.15           0.9  *
```

QUEUE AT ARM D

```
 TIME SEGMENT   NO. OF
   ENDING      VEHICLES
               IN QUEUE

   17.00           0.2
   17.15           0.4
   17.30           0.7  *
   17.45           0.7  *
   18.00           0.4
   18.15           0.2
```


QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
A	896.8	597.8	51.6	0.06	51.6	0.06
B	973.6	649.0	55.7	0.06	55.7	0.06
C	1974.5	1316.4	144.6	0.07	144.6	0.07
D	453.9	302.6	37.4	0.08	37.4	0.08
ALL	4298.7	2865.8	289.3	0.07	289.3	0.07

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

== end of file ==

[Printed at 10:17:18 on 18/04/2006]

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\PM Peak\Site 9.vao

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A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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RG40 3GA,UK

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\PM Peak\Site 9.vai"
(drive-on-the-left) at 12:13:31 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 PM Do Something Site 9 with Courtlough Interchange
LOCATION: Rowan's Road West / M1 Business Park
DATE: 05/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - Link to Courtlough Interchange
ARM B - Access to Site F of M1 Business Park
ARM C - Rowan's Road West
ARM D - Access to Site A of M1 Business Park

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	8.00	10.50	2.00	23.00	50.00	6.0	0.844	46.774
ARM B	4.00	8.00	2.00	22.00	50.00	22.0	0.565	23.668
ARM C	8.00	10.50	2.00	25.00	50.00	15.0	0.822	45.579
ARM D	4.00	8.00	30.00	23.00	50.00	26.0	0.691	35.055

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\PM Peak\Site 9.vao

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: 2024 PM Do Something Site 9 with Courtlough Interchange

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	4.65	6.98	4.65
ARM B	15.00	45.00	75.00	2.14	3.21	2.14
ARM C	15.00	45.00	75.00	4.21	6.32	4.21
ARM D	15.00	45.00	75.00	11.20	16.80	11.20

DEMAND SET TITLE: 2024 PM Do Something Site 9 with Courtlough Interchange

TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.226	0.484	0.290
		0.0	84.0	180.0	108.0
		(0.0)	(15.5)	(17.2)	(14.8)
	ARM B	0.930	0.000	0.070	0.000
		159.0	0.0	12.0	0.0
		(15.1)	(0.0)	(16.7)	(0.0)
	ARM C	0.958	0.018	0.000	0.024
		323.0	6.0	0.0	8.0
		(11.5)	(16.7)	(0.0)	(12.5)
	ARM D	0.930	0.000	0.070	0.000
		833.0	0.0	63.0	0.0
		(15.0)	(0.0)	(14.3)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	4.65	39.57	0.118		0.0	0.1	2.0		0.03
ARM B	2.14	18.06	0.118		0.0	0.1	2.0		0.06
ARM C	4.21	38.02	0.111		0.0	0.1	1.8		0.03
ARM D	11.20	26.37	0.425		0.0	0.7	10.7		0.07

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\PM Peak\Site 9.vao

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	5.55	39.43	0.141		0.1	0.2	2.4		0.03
ARM B	2.55	17.57	0.145		0.1	0.2	2.5		0.07
ARM C	5.03	37.46	0.134		0.1	0.2	2.3		0.03
ARM D	13.37	25.56	0.523		0.7	1.1	15.8		0.08

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	6.80	39.23	0.173		0.2	0.2	3.1		0.03
ARM B	3.13	16.90	0.185		0.2	0.2	3.3		0.07
ARM C	6.16	36.71	0.168		0.2	0.2	3.0		0.03
ARM D	16.38	24.46	0.670		1.1	2.0	28.2		0.12

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	6.80	39.23	0.173		0.2	0.2	3.1		0.03
ARM B	3.13	16.90	0.185		0.2	0.2	3.4		0.07
ARM C	6.16	36.70	0.168		0.2	0.2	3.0		0.03
ARM D	16.38	24.45	0.670		2.0	2.0	28.9		0.12

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	5.55	39.42	0.141		0.2	0.2	2.5		0.03
ARM B	2.55	17.56	0.145		0.2	0.2	2.6		0.07
ARM C	5.03	37.46	0.134		0.2	0.2	2.4		0.03
ARM D	13.37	25.56	0.523		2.0	1.1	17.2		0.08

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	4.65	39.56	0.118		0.2	0.1	2.0		0.03
ARM B	2.14	18.05	0.118		0.2	0.1	2.1		0.06
ARM C	4.21	38.01	0.111		0.2	0.1	1.9		0.03
ARM D	11.20	26.36	0.425		1.1	0.7	11.4		0.07

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.2
17.30	0.2
17.45	0.2
18.00	0.2
18.15	0.1

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TRL              TRL VIEWER    3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something with CL\PM Peak\Site 9.vao

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 QUEUE AT ARM B
 --------------

  TIME SEGMENT   NO. OF
   ENDING      VEHICLES
               IN QUEUE

   17.00           0.1
   17.15           0.2
   17.30           0.2
   17.45           0.2
   18.00           0.2
   18.15           0.1


 QUEUE AT ARM C
 --------------

  TIME SEGMENT   NO. OF
   ENDING      VEHICLES
               IN QUEUE

   17.00           0.1
   17.15           0.2
   17.30           0.2
   17.45           0.2
   18.00           0.2
   18.15           0.1


 QUEUE AT ARM D
 --------------

  TIME SEGMENT   NO. OF
   ENDING      VEHICLES
               IN QUEUE

   17.00           0.7   *
   17.15           1.1   *
   17.30           2.0   **
   17.45           2.0   **
   18.00           1.1   *
   18.15           0.7   *


                 QUEUEING DELAY INFORMATION OVER WHOLE PERIOD
                 --------------------------------------------

 ----------------------------------------------------------------------------
 I  ARM  I   TOTAL DEMAND  I     * QUEUEING *     I  * INCLUSIVE QUEUEING *  I
 I       I                 I      * DELAY *       I         * DELAY *        I
 I       I-----------------------------------------------------------------I
 I       I  (VEH)  (VEH/H) I  (MIN)     (MIN/VEH) I    (MIN)      (MIN/VEH)  I
 ----------------------------------------------------------------------------
 I   A   I  510.1 I  340.1 I    15.2 I     0.03   I      15.2  I     0.03    I
 I   B   I  234.5 I  156.3 I    15.8 I     0.07   I      15.8  I     0.07    I
 I   C   I  462.1 I  308.1 I    14.4 I     0.03   I      14.4  I     0.03    I
 I   D   I 1228.6 I  819.1 I   113.3 I     0.09   I     113.3  I     0.09    I
 ----------------------------------------------------------------------------
 I  ALL  I 2435.3 I 1623.5 I   158.7 I     0.07   I     158.7  I     0.07    I
 ----------------------------------------------------------------------------

 * DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
 * INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
 * THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

 END OF JOB

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 [Printed at 10:17:32 on 18/04/2006]
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2024 Do Something without CL

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770018
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THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something without CL\AM Peak\Site 3.vai"
(drive-on-the-left) at 12:13:56 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 AM Do Something Site 3 without Courtlough Interchange
LOCATION: Five Roads Roundabout
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - Nevitt Road
ARM B - Cul de Sac
ARM C - Link to R132
ARM D - Link to Hedgestown

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.05	3.95	8.80	20.00	31.60	21.0	0.557	19.415
ARM B	2.71	3.95	6.30	20.00	31.60	36.0	0.513	17.163
ARM C	5.50	5.50	0.00	15.00	31.60	6.0	0.693	29.635
ARM D	3.75	4.80	7.90	25.00	31.60	21.0	0.611	23.587

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: Site 3 AM

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.00	0.00	0.00
ARM B	15.00	45.00	75.00	0.01	0.02	0.01
ARM C	15.00	45.00	75.00	0.05	0.08	0.05
ARM D	15.00	45.00	75.00	0.21	0.32	0.21

DEMAND SET TITLE: Site 3 AM

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
		TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S)			
07.45 - 09.15					
	ARM A	0.000	0.000	0.000	0.000
		0.0	0.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.000	0.000	1.000	0.000
		0.0	0.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.000	0.000	0.000	1.000
		0.0	0.0	0.0	4.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.000	0.000	1.000	0.000
		0.0	0.0	17.0	0.0
		(0.0)	(0.0)	(6.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	0.00	19.29	0.000		0.0	0.0	0.0		0.00
ARM B	0.01	17.05	0.001		0.0	0.0	0.0		0.06
ARM C	0.05	29.64	0.002		0.0	0.0	0.0		0.03
ARM D	0.21	22.25	0.010		0.0	0.0	0.1		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	0.00	19.26	0.000		0.0	0.0	0.0		0.00
ARM B	0.01	17.02	0.001		0.0	0.0	0.0		0.06
ARM C	0.06	29.64	0.002		0.0	0.0	0.0		0.03
ARM D	0.25	22.25	0.011		0.0	0.0	0.2		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	0.00	19.23	0.000		0.0	0.0	0.0		0.00
ARM B	0.02	16.99	0.001		0.0	0.0	0.0		0.06
ARM C	0.07	29.64	0.002		0.0	0.0	0.0		0.03
ARM D	0.31	22.25	0.014		0.0	0.0	0.2		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	0.00	19.23	0.000		0.0	0.0	0.0		0.00
ARM B	0.02	16.99	0.001		0.0	0.0	0.0		0.06
ARM C	0.07	29.64	0.002		0.0	0.0	0.0		0.03
ARM D	0.31	22.25	0.014		0.0	0.0	0.2		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	0.00	19.26	0.000		0.0	0.0	0.0		0.00
ARM B	0.01	17.02	0.001		0.0	0.0	0.0		0.06
ARM C	0.06	29.64	0.002		0.0	0.0	0.0		0.03
ARM D	0.25	22.25	0.011		0.0	0.0	0.2		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	0.00	19.29	0.000		0.0	0.0	0.0		0.00
ARM B	0.01	17.05	0.001		0.0	0.0	0.0		0.06
ARM C	0.05	29.64	0.002		0.0	0.0	0.0		0.03
ARM D	0.21	22.25	0.010		0.0	0.0	0.1		0.05

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
A	0.0	0.0	0.0	0.00	0.0	0.00
B	1.4	0.9	0.1	0.06	0.1	0.06
C	5.5	3.7	0.2	0.03	0.2	0.03
D	23.3	15.5	1.1	0.05	1.1	0.05
ALL	30.2	20.1	1.3	0.04	1.3	0.04

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ===

[Printed at 10:18:12 on 18/04/2006]

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something without CL\AM Peak\Site 4

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770018
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Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something without CL\AM Peak\Site 4.vai"
(drive-on-the-left) at 12:14:19 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 AM Do Something Site 4 without Courtlough Interchange
LOCATION: Hedgestown Roundabout
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****

ARM A - R132 Off Slip
ARM B - Hedgestown Road
ARM C - R132 On Slip
ARM D - Link to "Five Roads"

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM C IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	7.70	7.70	2.00	30.00	31.70	16.0	1.789	55.923
ARM B	3.96	5.96	5.00	30.00	31.70	27.0	1.336	39.531
ARM D	4.60	5.60	8.00	25.30	31.70	36.0	1.350	41.010

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	0.0	0.0
B	0.0	0.0
C	0.0	0.0
D	0.0	0.0

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something without CL\AM Peak\Site 4

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: Site 4 AM

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.34	0.51	0.34
ARM B	15.00	45.00	75.00	0.25	0.38	0.25
ARM D	15.00	45.00	75.00	0.05	0.08	0.05

DEMAND SET TITLE: Site 4 AM

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
		TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S)			
07.45 - 09.15					
	ARM A	0.000	1.000	0.000	0.000
		0.0	27.0	0.0	0.0
		(0.0)	(11.0)	(0.0)	(0.0)
	ARM B	0.000	0.000	0.150	0.850
		0.0	0.0	3.0	17.0
		(0.0)	(0.0)	(0.0)	(6.0)
	ARM D	0.000	0.500	0.500	0.000
		0.0	2.0	2.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	0.34	50.30	0.007		0.0	0.0	0.1		0.02
ARM B	0.25	37.58	0.007		0.0	0.0	0.1		0.03
ARM D	0.05	41.01	0.001		0.0	0.0	0.0		0.02

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something without CL\AM Peak\Site 4

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	0.40	50.29	0.008		0.0	0.0	0.1		0.02
ARM B	0.30	37.57	0.008		0.0	0.0	0.1		0.03
ARM D	0.06	41.01	0.001		0.0	0.0	0.0		0.02

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	0.49	50.26	0.010		0.0	0.0	0.1		0.02
ARM B	0.37	37.57	0.010		0.0	0.0	0.1		0.03
ARM D	0.07	41.01	0.002		0.0	0.0	0.0		0.02

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	0.49	50.26	0.010		0.0	0.0	0.1		0.02
ARM B	0.37	37.57	0.010		0.0	0.0	0.1		0.03
ARM D	0.07	41.01	0.002		0.0	0.0	0.0		0.02

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	0.40	50.29	0.008		0.0	0.0	0.1		0.02
ARM B	0.30	37.57	0.008		0.0	0.0	0.1		0.03
ARM D	0.06	41.01	0.001		0.0	0.0	0.0		0.02

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	0.34	50.30	0.007		0.0	0.0	0.1		0.02
ARM B	0.25	37.58	0.007		0.0	0.0	0.1		0.03
ARM D	0.05	41.01	0.001		0.0	0.0	0.0		0.02

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something without CL\AM Peak\Site 4

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	37.0	24.7	0.7	0.02	0.7	0.02
B	27.4	18.3	0.7	0.03	0.7	0.03
D	5.5	3.7	0.1	0.02	0.1	0.02
ALL	69.9	46.6	1.6	0.02	1.6	0.02

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ===

[Printed at 10:18:32 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
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Nine Mile Ride Email: softwarebureau@trl.co.uk
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RG40 3GA,UK

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something without CL\AM Peak\Site 6.vai"
(drive-on-the-left) at 12:14:42 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 AM Do Something Site 6 without Courtlough Interchange
LOCATION: Courtlough Interchange West
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - Rowan's Road
ARM B - M1 On Slip
ARM C - M1 Overbridge
ARM D - M1 Off Slip

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM B IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.73	6.09	20.00	40.00	35.00	16.0	1.314	41.643
ARM C	4.43	5.59	15.00	17.50	35.00	11.0	1.442	43.128
ARM D	4.00	5.23	5.00	20.00	35.00	27.0	1.162	36.280

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	10.0	0.0
B	9.0	0.0
C	0.0	0.0
D	9.0	0.0

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: Site 6 AM

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	2.56	3.84	2.56
ARM C	15.00	45.00	75.00	6.70	10.05	6.70
ARM D	15.00	45.00	75.00	6.06	9.09	6.06

DEMAND SET TITLE: Site 6 AM

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	0.073	0.927	0.000
		0.0	15.0	190.0	0.0
		(0.0)	(20.0)	(29.0)	(0.0)
	ARM C	0.571	0.429	0.000	0.000
		306.0	230.0	0.0	0.0
		(18.0)	(19.0)	(0.0)	(0.0)
	ARM D	0.254	0.025	0.722	0.000
		123.0	12.0	350.0	0.0
		(34.0)	(0.0)	(7.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	2.56	24.02	0.107		0.0	0.1	1.8		0.05
ARM C	6.70	36.42	0.184		0.0	0.2	3.3		0.03
ARM D	6.06	23.82	0.254		0.0	0.3	5.0		0.06

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something without CL\AM Peak\Site 6

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	3.06	22.37	0.137		0.1	0.2	2.3		0.05
ARM C	8.00	36.42	0.220		0.2	0.3	4.2		0.04
ARM D	7.24	22.23	0.326		0.3	0.5	7.1		0.07

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	3.75	20.11	0.186		0.2	0.2	3.4		0.06
ARM C	9.80	36.42	0.269		0.3	0.4	5.4		0.04
ARM D	8.87	20.06	0.442		0.5	0.8	11.4		0.09

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	3.75	20.09	0.187		0.2	0.2	3.4		0.06
ARM C	9.80	36.42	0.269		0.4	0.4	5.5		0.04
ARM D	8.87	20.05	0.442		0.8	0.8	11.8		0.09

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	3.06	22.34	0.137		0.2	0.2	2.4		0.05
ARM C	8.00	36.42	0.220		0.4	0.3	4.3		0.04
ARM D	7.24	22.22	0.326		0.8	0.5	7.5		0.07

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	2.56	23.99	0.107		0.2	0.1	1.8		0.05
ARM C	6.70	36.42	0.184		0.3	0.2	3.4		0.03
ARM D	6.06	23.80	0.255		0.5	0.3	5.2		0.06

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.2
08.30	0.2
08.45	0.2
09.00	0.2
09.15	0.1

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something without CL\AM Peak\Site 6

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.2
08.15	0.3
08.30	0.4
08.45	0.4
09.00	0.3
09.15	0.2

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.00	0.3	
08.15	0.5	
08.30	0.8	*
08.45	0.8	*
09.00	0.5	
09.15	0.3	

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
A	281.1	187.4	15.1	0.05	15.1	0.05
C	735.0	490.0	26.2	0.04	26.2	0.04
D	665.0	443.4	48.0	0.07	48.0	0.07
ALL	1681.1	1120.7	89.3	0.05	89.3	0.05

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ===

[Printed at 10:18:45 on 18/04/2006]

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something without CL\AM Peak\Site 7

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
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RG40 3GA,UK

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something without CL\AM Peak\Site 7.vai"
(drive-on-the-left) at 12:15:10 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 AM Do Something Site 7 without Courtlough Interchange
LOCATION: Courtlough Interchange East
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - M1 Off Slip
ARM B - Rowan's Road East
ARM C - M1 On Slip
ARM D - M1 Overbridge

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM C IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	4.02	8.20	10.00	30.00	32.80	26.0	1.328	42.599
ARM B	3.74	6.38	15.00	70.00	32.80	15.0	1.449	43.573
ARM D	4.53	5.90	15.00	20.00	32.80	40.0	1.350	41.710

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	9.0	0.0
B	3.0	0.0
C	9.0	0.0
D	0.0	0.0

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something without CL\AM Peak\Site 7

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: Site 7 AM

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	4.75	7.13	4.75
ARM B	15.00	45.00	75.00	11.91	17.87	11.91
ARM D	15.00	45.00	75.00	6.75	10.13	6.75

DEMAND SET TITLE: Site 7 AM

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	0.734	0.021	0.245
		0.0	279.0	8.0	93.0
		(0.0)	(16.0)	(25.0)	(15.0)
	ARM B	0.000	0.000	0.535	0.465
		0.0	0.0	510.0	443.0
		(0.0)	(0.0)	(5.0)	(19.0)
	ARM D	0.000	0.883	0.117	0.000
		0.0	477.0	63.0	0.0
		(0.0)	(11.0)	(44.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	4.75	27.88	0.170		0.0	0.2	3.0		0.04
ARM B	11.91	35.71	0.334		0.0	0.5	7.3		0.04
ARM D	6.75	36.32	0.186		0.0	0.2	3.4		0.03

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something without CL\AM Peak\Site 7

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	5.67	26.14	0.217		0.2	0.3	4.1		0.05
ARM B	14.22	35.05	0.406		0.5	0.7	10.0		0.05
ARM D	8.06	36.32	0.222		0.2	0.3	4.2		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	6.95	23.76	0.292		0.3	0.4	6.1		0.06
ARM B	17.42	34.15	0.510		0.7	1.0	15.1		0.06
ARM D	9.87	36.32	0.272		0.3	0.4	5.5		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	6.95	23.76	0.292		0.4	0.4	6.2		0.06
ARM B	17.42	34.14	0.510		1.0	1.0	15.5		0.06
ARM D	9.87	36.32	0.272		0.4	0.4	5.6		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	5.67	26.13	0.217		0.4	0.3	4.2		0.05
ARM B	14.22	35.04	0.406		1.0	0.7	10.5		0.05
ARM D	8.06	36.32	0.222		0.4	0.3	4.3		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	4.75	27.86	0.171		0.3	0.2	3.1		0.04
ARM B	11.91	35.70	0.334		0.7	0.5	7.7		0.04
ARM D	6.75	36.32	0.186		0.3	0.2	3.5		0.03

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.2
08.15	0.3
08.30	0.4
08.45	0.4
09.00	0.3
09.15	0.2

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something without CL\AM Peak\Site 7

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.00	0.5	
08.15	0.7	*
08.30	1.0	*
08.45	1.0	*
09.00	0.7	*
09.15	0.5	*

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.2
08.15	0.3
08.30	0.4
08.45	0.4
09.00	0.3
09.15	0.2

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
A	521.1	347.4	26.7	0.05	26.7	0.05
B	1306.8	871.2	66.2	0.05	66.2	0.05
D	740.5	493.6	26.5	0.04	26.5	0.04
ALL	2568.3	1712.2	119.4	0.05	119.4	0.05

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

== end of file ==

[Printed at 10:18:58 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
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RG40 3GA,UK

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something without CL\AM Peak\Site 8 Roundabout.vai"
(drive-on-the-left) at 12:15:53 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 AM Do Something Site 8 without Courtlough Interchange
LOCATION: Rowan's Road East/R132 Roundabout
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - R132 (Balbriggan Road)
ARM B - R132 (Dublin Road)
ARM C - Rowan's Road East
ARM D - Access to Site C of M1 Business Park

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	5.80	8.20	22.00	32.00	50.00	28.0	0.740	39.241
ARM B	6.00	8.00	30.00	26.00	50.00	19.0	0.761	40.534
ARM C	7.00	7.50	10.00	18.50	50.00	33.0	0.703	36.987
ARM D	7.50	8.00	5.00	20.50	50.00	32.0	0.734	39.559

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something without CL\AM Peak\Site 8

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: Site 8 AM

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	9.46	14.19	9.46
ARM B	15.00	45.00	75.00	5.56	8.34	5.56
ARM C	15.00	45.00	75.00	9.45	14.17	9.45
ARM D	15.00	45.00	75.00	3.61	5.42	3.61

DEMAND SET TITLE: Site 8 AM

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	0.217	0.713	0.070
		0.0	164.0	540.0	53.0
		(0.0)	(14.0)	(5.0)	(15.0)
	ARM B	0.310	0.000	0.582	0.108
		138.0	0.0	259.0	48.0
		(15.0)	(0.0)	(24.0)	(15.0)
	ARM C	0.435	0.319	0.000	0.246
		329.0	241.0	0.0	186.0
		(7.0)	(19.0)	(0.0)	(15.0)
	ARM D	0.218	0.249	0.533	0.000
		63.0	72.0	154.0	0.0
		(14.0)	(15.0)	(15.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	9.46	31.77	0.298		0.0	0.4	6.2		0.04
ARM B	5.56	27.36	0.203		0.0	0.3	3.7		0.05
ARM C	9.45	30.66	0.308		0.0	0.4	6.5		0.05
ARM D	3.61	28.11	0.129		0.0	0.1	2.2		0.04

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something without CL\AM Peak\Site 8

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	11.30	30.85	0.366		0.4	0.6	8.5		0.05
ARM B	6.64	26.11	0.254		0.3	0.3	5.0		0.05
ARM C	11.28	30.24	0.373		0.4	0.6	8.7		0.05
ARM D	4.31	26.86	0.161		0.1	0.2	2.8		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	13.84	29.59	0.468		0.6	0.9	12.8		0.06
ARM B	8.13	24.41	0.333		0.3	0.5	7.3		0.06
ARM C	13.82	29.67	0.466		0.6	0.9	12.7		0.06
ARM D	5.28	25.15	0.210		0.2	0.3	3.9		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	13.84	29.59	0.468		0.9	0.9	13.1		0.06
ARM B	8.13	24.39	0.333		0.5	0.5	7.5		0.06
ARM C	13.82	29.66	0.466		0.9	0.9	13.0		0.06
ARM D	5.28	25.14	0.210		0.3	0.3	4.0		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	11.30	30.84	0.366		0.9	0.6	8.9		0.05
ARM B	6.64	26.09	0.255		0.5	0.3	5.2		0.05
ARM C	11.28	30.23	0.373		0.9	0.6	9.2		0.05
ARM D	4.31	26.84	0.161		0.3	0.2	2.9		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	9.46	31.75	0.298		0.6	0.4	6.5		0.04
ARM B	5.56	27.33	0.204		0.3	0.3	3.9		0.05
ARM C	9.45	30.65	0.308		0.6	0.4	6.8		0.05
ARM D	3.61	28.08	0.129		0.2	0.1	2.2		0.04

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.00	0.4	
08.15	0.6	*
08.30	0.9	*
08.45	0.9	*
09.00	0.6	*
09.15	0.4	

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.3
08.15	0.3
08.30	0.5
08.45	0.5
09.00	0.3
09.15	0.3

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.4
08.15	0.6 *
08.30	0.9 *
08.45	0.9 *
09.00	0.6 *
09.15	0.4

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.2
08.30	0.3
08.45	0.3
09.00	0.2
09.15	0.1

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
A	1038.0	692.0	56.0	0.05	56.0	0.05
B	610.2	406.8	32.7	0.05	32.7	0.05
C	1036.6	691.1	56.9	0.05	57.0	0.05
D	396.3	264.2	18.1	0.05	18.1	0.05
ALL	3081.1	2054.1	163.7	0.05	163.7	0.05

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

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[Printed at 10:19:14 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
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RG40 3GA,UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something without CL\AM Peak\
Site 9 A & F Business Park Roundabout.vai"
(drive-on-the-left) at 12:16:28 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 AM Do Something Site 9 without Courtlough Interchange
LOCATION: Rowan's Road West/M1 Business Park
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - Link to Courtlough Interchange
ARM B - Access to Site F of M1 Business Park
ARM C - Rowan's Road West
ARM D - Access to Site A of M1 Business Park

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	4.00	8.00	2.00	23.00	50.00	6.0	0.596	24.986
ARM B	4.00	8.00	2.00	22.00	50.00	22.0	0.565	23.668
ARM C	4.00	8.00	2.00	25.00	50.00	15.0	0.581	24.347
ARM D	4.00	8.00	2.00	23.00	50.00	26.0	0.558	23.394

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: Site 9 AM

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	5.36	8.04	5.36
ARM B	15.00	45.00	75.00	0.00	0.00	0.00
ARM C	15.00	45.00	75.00	2.33	3.49	2.33
ARM D	15.00	45.00	75.00	0.44	0.66	0.44

DEMAND SET TITLE: Site 9 AM

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	0.000	0.417	0.583
		0.0	0.0	179.0	250.0
		(0.0)	(0.0)	(34.0)	(15.0)
	ARM B	0.000	0.000	0.000	0.000
		0.0	0.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.898	0.000	0.000	0.102
		167.0	0.0	0.0	19.0
		(33.0)	(0.0)	(0.0)	(16.0)
	ARM D	0.914	0.000	0.086	0.000
		32.0	0.0	3.0	0.0
		(16.0)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	5.36	20.31	0.264		0.0	0.4	5.2		0.07
ARM B	0.00	19.94	0.000		0.0	0.0	0.0		0.00
ARM C	2.33	16.96	0.137		0.0	0.2	2.3		0.07
ARM D	0.44	19.06	0.023		0.0	0.0	0.3		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	6.40	20.30	0.315		0.4	0.5	6.7		0.07
ARM B	0.00	19.20	0.000		0.0	0.0	0.0		0.00
ARM C	2.78	16.65	0.167		0.2	0.2	2.9		0.07
ARM D	0.52	18.80	0.028		0.0	0.0	0.4		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	7.84	20.30	0.386		0.5	0.6	9.2		0.08
ARM B	0.00	18.20	0.000		0.0	0.0	0.0		0.00
ARM C	3.40	16.23	0.210		0.2	0.3	3.9		0.08
ARM D	0.64	18.43	0.035		0.0	0.0	0.5		0.06

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	7.84	20.30	0.386		0.6	0.6	9.4		0.08
ARM B	0.00	18.19	0.000		0.0	0.0	0.0		0.00
ARM C	3.40	16.22	0.210		0.3	0.3	4.0		0.08
ARM D	0.64	18.43	0.035		0.0	0.0	0.5		0.06

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
ARM A	6.40	20.30	0.315		0.6	0.5	7.1		0.07
ARM B	0.00	19.19	0.000		0.0	0.0	0.0		0.00
ARM C	2.78	16.65	0.167		0.3	0.2	3.1		0.07
ARM D	0.52	18.79	0.028		0.0	0.0	0.4		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
ARM A	5.36	20.31	0.264		0.5	0.4	5.5		0.07
ARM B	0.00	19.92	0.000		0.0	0.0	0.0		0.00
ARM C	2.33	16.96	0.137		0.2	0.2	2.4		0.07
ARM D	0.44	19.05	0.023		0.0	0.0	0.4		0.05

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.00	0.4	
08.15	0.5	
08.30	0.6	*
08.45	0.6	*
09.00	0.5	
09.15	0.4	

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.2
08.15	0.2
08.30	0.3
08.45	0.3
09.00	0.2
09.15	0.2

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	588.2	392.2	43.1	0.07	43.1	0.07
B	0.0	0.0	0.0	0.00	0.0	0.00
C	255.0	170.0	18.6	0.07	18.6	0.07
D	48.0	32.0	2.6	0.05	2.6	0.05
ALL	891.3	594.2	64.3	0.07	64.4	0.07

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ===

[Printed at 10:19:51 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
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THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something without CL\PM Peak\Site 3.vai"
(drive-on-the-left) at 12:16:47 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 PM Do Something Site 3 without Courtlough Interchange
LOCATION: Five Roads Roundabout
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - Nevitt Road
ARM B - Cul de Sac
ARM C - Link to R132
ARM D - Link to Hedgestown

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.05	3.95	8.80	20.00	31.60	21.0	0.557	19.415
ARM B	2.71	3.95	6.30	20.00	31.60	36.0	0.513	17.163
ARM C	5.50	5.50	0.00	15.00	31.60	6.0	0.693	29.635
ARM D	3.75	4.80	7.90	25.00	31.60	21.0	0.611	23.587

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something without CL\PM Peak\Site 3

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: Site 3 PM

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS IFALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.00	0.00	0.00
ARM B	15.00	45.00	75.00	0.08	0.11	0.08
ARM C	15.00	45.00	75.00	0.10	0.15	0.10
ARM D	15.00	45.00	75.00	0.44	0.66	0.44

DEMAND SET TITLE: Site 3 PM

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.000	0.000	0.000
		0.0	0.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.000	0.000	0.500	0.500
		0.0	0.0	3.0	3.0
		(0.0)	(0.0)	(33.0)	(0.0)
	ARM C	0.000	0.500	0.000	0.500
		0.0	4.0	0.0	4.0
		(0.0)	(75.0)	(0.0)	(0.0)
	ARM D	0.000	0.086	0.914	0.000
		0.0	3.0	32.0	0.0
		(0.0)	(0.0)	(3.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	0.00	19.12	0.000		0.0	0.0	0.0		0.00
ARM B	0.08	14.55	0.005		0.0	0.0	0.1		0.07
ARM C	0.10	21.53	0.005		0.0	0.0	0.1		0.05
ARM D	0.44	22.91	0.019		0.0	0.0	0.3		0.04

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something without CL\PM Peak\Site 3

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	0.00	19.06	0.000		0.0	0.0	0.0		0.00
ARM B	0.09	14.51	0.006		0.0	0.0	0.1		0.07
ARM C	0.12	21.53	0.006		0.0	0.0	0.1		0.05
ARM D	0.52	22.89	0.023		0.0	0.0	0.3		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	0.00	18.98	0.000		0.0	0.0	0.0		0.00
ARM B	0.11	14.47	0.008		0.0	0.0	0.1		0.07
ARM C	0.15	21.53	0.007		0.0	0.0	0.1		0.05
ARM D	0.64	22.88	0.028		0.0	0.0	0.4		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	0.00	18.98	0.000		0.0	0.0	0.0		0.00
ARM B	0.11	14.47	0.008		0.0	0.0	0.1		0.07
ARM C	0.15	21.53	0.007		0.0	0.0	0.1		0.05
ARM D	0.64	22.88	0.028		0.0	0.0	0.4		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	0.00	19.06	0.000		0.0	0.0	0.0		0.00
ARM B	0.09	14.51	0.006		0.0	0.0	0.1		0.07
ARM C	0.12	21.53	0.006		0.0	0.0	0.1		0.05
ARM D	0.52	22.89	0.023		0.0	0.0	0.4		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	0.00	19.11	0.000		0.0	0.0	0.0		0.00
ARM B	0.08	14.55	0.005		0.0	0.0	0.1		0.07
ARM C	0.10	21.53	0.005		0.0	0.0	0.1		0.05
ARM D	0.44	22.91	0.019		0.0	0.0	0.3		0.04

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something without CL\PM Peak\Site 3

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	0.0	0.0	0.0	0.00	0.0	0.00
B	8.2	5.5	0.6	0.07	0.6	0.07
C	11.0	7.3	0.5	0.05	0.5	0.05
D	48.0	32.0	2.1	0.04	2.1	0.04
ALL	67.2	44.8	3.2	0.05	3.2	0.05

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

== end of file ==

[Printed at 10:20:31 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something without CL\PM Peak\Site 4.vai"
(drive-on-the-left) at 12:17:13 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 PM Do Something Site 4 without Courtlough Interchange
LOCATION: Hedgestown Roundabout
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - R132 Off Slip
ARM B - Hedgestown Road
ARM C - R132 On Slip
ARM D - Link to "Five Roads"

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM C IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	7.70	7.70	2.00	30.00	31.70	16.0	1.789	55.923
ARM B	3.96	5.96	5.00	30.00	31.70	27.0	1.336	39.531
ARM D	4.60	5.60	8.00	25.30	31.70	36.0	1.350	41.010

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	0.0	0.0
B	0.0	0.0
C	0.0	0.0
D	0.0	0.0

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something without CL\PM Peak\Site 4

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: Site 4 PM

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.22	0.34	0.22
ARM B	15.00	45.00	75.00	0.49	0.73	0.49
ARM D	15.00	45.00	75.00	0.09	0.13	0.09

DEMAND SET TITLE: Site 4 PM

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.833	0.167	0.000
		0.0	15.0	3.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.000	0.000	0.103	0.897
		0.0	0.0	4.0	35.0
		(0.0)	(0.0)	(0.0)	(3.0)
	ARM D	0.000	0.571	0.429	0.000
		0.0	4.0	3.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	0.22	55.77	0.004		0.0	0.0	0.1		0.02
ARM B	0.49	38.40	0.013		0.0	0.0	0.2		0.03
ARM D	0.09	41.01	0.002		0.0	0.0	0.0		0.02

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something without CL\PM Peak\Site 4

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	0.27	55.74	0.005		0.0	0.0	0.1		0.02
ARM B	0.58	38.38	0.015		0.0	0.0	0.2		0.03
ARM D	0.10	41.01	0.003		0.0	0.0	0.0		0.02

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	0.33	55.69	0.006		0.0	0.0	0.1		0.02
ARM B	0.71	38.35	0.019		0.0	0.0	0.3		0.03
ARM D	0.13	41.01	0.003		0.0	0.0	0.0		0.02

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	0.33	55.69	0.006		0.0	0.0	0.1		0.02
ARM B	0.71	38.35	0.019		0.0	0.0	0.3		0.03
ARM D	0.13	41.01	0.003		0.0	0.0	0.0		0.02

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	0.27	55.74	0.005		0.0	0.0	0.1		0.02
ARM B	0.58	38.38	0.015		0.0	0.0	0.2		0.03
ARM D	0.10	41.01	0.003		0.0	0.0	0.0		0.02

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	0.22	55.77	0.004		0.0	0.0	0.1		0.02
ARM B	0.49	38.40	0.013		0.0	0.0	0.2		0.03
ARM D	0.09	41.01	0.002		0.0	0.0	0.0		0.02

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	24.7	16.5	0.4	0.02	0.4	0.02
B	53.5	35.7	1.4	0.03	1.4	0.03
D	9.6	6.4	0.2	0.02	0.2	0.02
ALL	87.8	58.5	2.1	0.02	2.1	0.02

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

== end of file ==

[Printed at 10:20:49 on 18/04/2006]

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something without CL\PM Peak\Site 6

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something without CL\PM Peak\Site 6.vai"
(drive-on-the-left) at 12:17:39 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 PM Do Something Site 6 without Courtlough Interchange
LOCATION: Courtlough Interchange West
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - Rowan's Road
ARM B - M1 On Slip
ARM C - M1 Overbridge
ARM D - M1 Off Slip

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM B IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.73	6.09	20.00	40.00	35.00	16.0	1.267	40.947
ARM C	4.43	5.59	15.00	17.50	35.00	11.0	1.442	43.128
ARM D	4.00	5.23	5.00	20.00	35.00	27.0	1.190	36.744

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	13.0	0.0
B	17.0	0.0
C	0.0	0.0
D	7.0	0.0

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something without CL\PM Peak\Site 6

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: Site 6 PM

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	7.09	10.63	7.09
ARM C	15.00	45.00	75.00	4.90	7.35	4.90
ARM D	15.00	45.00	75.00	6.69	10.03	6.69

DEMAND SET TITLE: Site 6 PM

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.141	0.859	0.000
		0.0	80.0	487.0	0.0
		(0.0)	(13.0)	(14.0)	(0.0)
	ARM C	0.413	0.587	0.000	0.000
		162.0	230.0	0.0	0.0
		(10.0)	(10.0)	(0.0)	(0.0)
	ARM D	0.065	0.028	0.907	0.000
		35.0	15.0	485.0	0.0
		(46.0)	(0.0)	(5.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	7.09	25.18	0.281		0.0	0.4	5.7		0.06
ARM C	4.90	39.21	0.125		0.0	0.1	2.1		0.03
ARM D	6.69	28.22	0.237		0.0	0.3	4.6		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	8.46	23.06	0.367		0.4	0.6	8.5		0.07
ARM C	5.85	39.21	0.149		0.1	0.2	2.6		0.03
ARM D	7.99	27.05	0.295		0.3	0.4	6.2		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	10.37	20.17	0.514		0.6	1.0	15.1		0.10
ARM C	7.17	39.21	0.183		0.2	0.2	3.3		0.03
ARM D	9.78	25.45	0.384		0.4	0.6	9.1		0.06

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	10.37	20.15	0.514		1.0	1.1	15.7		0.10
ARM C	7.17	39.21	0.183		0.2	0.2	3.3		0.03
ARM D	9.78	25.45	0.384		0.6	0.6	9.3		0.06

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	8.46	23.04	0.367		1.1	0.6	9.0		0.07
ARM C	5.85	39.21	0.149		0.2	0.2	2.7		0.03
ARM D	7.99	27.04	0.295		0.6	0.4	6.4		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	7.09	25.14	0.282		0.6	0.4	6.0		0.06
ARM C	4.90	39.21	0.125		0.2	0.1	2.2		0.03
ARM D	6.69	28.20	0.237		0.4	0.3	4.7		0.05

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.4	
17.15	0.6	*
17.30	1.0	*
17.45	1.1	*
18.00	0.6	*
18.15	0.4	

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.2
17.30	0.2
17.45	0.2
18.00	0.2
18.15	0.1

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.3	
17.15	0.4	
17.30	0.6	*
17.45	0.6	*
18.00	0.4	
18.15	0.3	

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
A	777.5	518.3	60.0	0.08	60.0	0.08
C	537.5	358.3	16.2	0.03	16.2	0.03
D	733.6	489.1	40.3	0.05	40.3	0.05
ALL	2048.6	1365.7	116.5	0.06	116.5	0.06

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

== end of file ==

[Printed at 10:21:03 on 18/04/2006]

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something without CL\PM Peak\Site 7

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
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Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something without CL\PM Peak\Site 7.vai"
(drive-on-the-left) at 12:18:10 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 PM Do Something Site 7 without Courtlough Interchange
LOCATION: Courtlough Interchange East
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - M1 Off Slip
ARM B - Rowan's Road East
ARM C - M1 On Slip
ARM D - M1 Overbridge

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

ARM C IS JUNCTION EXIT ONLY

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	4.02	8.20	10.00	30.00	32.80	26.0	1.265	41.671
ARM B	3.74	6.38	15.00	70.00	32.80	15.0	1.481	44.037
ARM D	4.53	5.90	15.00	20.00	32.80	40.0	1.350	41.710

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	13.0	0.0
B	1.0	0.0
C	5.0	0.0
D	0.0	0.0

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something without CL\PM Peak\Site 7

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: Site 7 PM

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	2.74	4.11	2.74
ARM B	15.00	45.00	75.00	9.51	14.27	9.51
ARM D	15.00	45.00	75.00	12.15	18.22	12.15

DEMAND SET TITLE: Site 7 PM

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.900	0.000	0.100
		0.0	197.0	0.0	22.0
		(0.0)	(17.0)	(0.0)	(5.0)
	ARM B	0.000	0.000	0.514	0.486
		0.0	0.0	391.0	370.0
		(0.0)	(0.0)	(8.0)	(11.0)
	ARM D	0.000	0.899	0.101	0.000
		0.0	874.0	98.0	0.0
		(0.0)	(7.0)	(30.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	2.74	21.52	0.127		0.0	0.1	2.1		0.05
ARM B	9.51	37.69	0.252		0.0	0.3	5.0		0.04
ARM D	12.15	38.15	0.318		0.0	0.5	6.9		0.04

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something without CL\PM Peak\Site 7

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	3.27	18.68	0.175		0.1	0.2	3.1		0.06
ARM B	11.36	37.20	0.305		0.3	0.4	6.5		0.04
ARM D	14.51	38.15	0.380		0.5	0.6	9.0		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	4.00	14.79	0.271		0.2	0.4	5.4		0.09
ARM B	13.91	36.51	0.381		0.4	0.6	9.1		0.04
ARM D	17.77	38.15	0.466		0.6	0.9	12.8		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	4.00	14.77	0.271		0.4	0.4	5.5		0.09
ARM B	13.91	36.51	0.381		0.6	0.6	9.2		0.04
ARM D	17.77	38.15	0.466		0.9	0.9	13.0		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	3.27	18.64	0.175		0.4	0.2	3.3		0.07
ARM B	11.36	37.19	0.305		0.6	0.4	6.7		0.04
ARM D	14.51	38.15	0.380		0.9	0.6	9.4		0.04

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	2.74	21.47	0.128		0.2	0.1	2.2		0.05
ARM B	9.51	37.68	0.252		0.4	0.3	5.1		0.04
ARM D	12.15	38.15	0.318		0.6	0.5	7.1		0.04

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.2
17.30	0.4
17.45	0.4
18.00	0.2
18.15	0.1

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.3	
17.15	0.4	
17.30	0.6	*
17.45	0.6	*
18.00	0.4	
18.15	0.3	

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.5	
17.15	0.6	*
17.30	0.9	*
17.45	0.9	*
18.00	0.6	*
18.15	0.5	

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	300.3	200.2	21.7	0.07	21.7	0.07
B	1043.5	695.7	41.6	0.04	41.6	0.04
D	1332.8	888.5	58.2	0.04	58.2	0.04
ALL	2676.6	1784.4	121.5	0.05	121.5	0.05

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ===

[Printed at 10:21:17 on 18/04/2006]

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something without CL\PM Peak\Site 8

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

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RG40 3GA,UK

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Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something without CL\PM Peak\Site 8 Roundabout.vai"
(drive-on-the-left) at 12:18:50 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 PM Do Something Site 8 without Courtlough Interchange
LOCATION: Rowan's Road East/R132 Roundabout
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - R132 (Balbriggan Road)
ARM B - R132 (Dublin Road)
ARM C - Rowan's Road East
ARM D - Access to Site C of M1 Business Park

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	5.80	8.20	22.00	32.00	50.00	28.0	0.740	39.241
ARM B	6.00	8.00	30.00	26.00	50.00	19.0	0.761	40.534
ARM C	7.00	7.50	10.00	18.50	50.00	33.0	0.703	36.987
ARM D	7.50	8.00	5.00	20.50	50.00	32.0	0.734	39.559

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something without CL\PM Peak\Site 8

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: Site 8 PM

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	6.91	10.37	6.91
ARM B	15.00	45.00	75.00	6.81	10.22	6.81
ARM C	15.00	45.00	75.00	13.39	20.08	13.39
ARM D	15.00	45.00	75.00	3.59	5.38	3.59

DEMAND SET TITLE: Site 8 PM

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
		TURNING PROPORTIONS TURNING COUNTS (VEH/HR) (PERCENTAGE OF H.V.S)			
16.45 - 18.15					
	ARM A	0.000	0.266	0.620	0.114
		0.0	147.0	343.0	63.0
		(0.0)	(3.0)	(8.0)	(14.0)
	ARM B	0.442	0.000	0.426	0.132
		241.0	0.0	232.0	72.0
		(7.0)	(0.0)	(7.0)	(15.0)
	ARM C	0.630	0.226	0.000	0.144
		675.0	242.0	0.0	154.0
		(5.0)	(15.0)	(0.0)	(15.0)
	ARM D	0.185	0.167	0.648	0.000
		53.0	48.0	186.0	0.0
		(15.0)	(15.0)	(15.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	6.91	31.86	0.217		0.0	0.3	4.1		0.04
ARM B	6.81	31.75	0.215		0.0	0.3	4.0		0.04
ARM C	13.39	30.70	0.436		0.0	0.8	11.2		0.06
ARM D	3.59	24.50	0.146		0.0	0.2	2.5		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	8.25	30.93	0.267		0.3	0.4	5.4		0.04
ARM B	8.13	30.62	0.266		0.3	0.4	5.3		0.04
ARM C	15.99	30.05	0.532		0.8	1.1	16.5		0.07
ARM D	4.28	22.55	0.190		0.2	0.2	3.5		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	10.11	29.67	0.341		0.4	0.5	7.6		0.05
ARM B	9.96	29.07	0.343		0.4	0.5	7.7		0.05
ARM C	19.58	29.16	0.671		1.1	2.0	28.7		0.10
ARM D	5.25	19.90	0.264		0.2	0.4	5.2		0.07

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	10.11	29.66	0.341		0.5	0.5	7.7		0.05
ARM B	9.96	29.06	0.343		0.5	0.5	7.8		0.05
ARM C	19.58	29.15	0.672		2.0	2.0	30.2		0.10
ARM D	5.25	19.87	0.264		0.4	0.4	5.4		0.07

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	8.25	30.91	0.267		0.5	0.4	5.6		0.04
ARM B	8.13	30.60	0.266		0.5	0.4	5.5		0.04
ARM C	15.99	30.04	0.532		2.0	1.1	17.8		0.07
ARM D	4.28	22.50	0.190		0.4	0.2	3.6		0.05

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	6.91	31.83	0.217		0.4	0.3	4.2		0.04
ARM B	6.81	31.73	0.215		0.4	0.3	4.2		0.04
ARM C	13.39	30.69	0.436		1.1	0.8	11.9		0.06
ARM D	3.59	24.45	0.147		0.2	0.2	2.6		0.05

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.3	
17.15	0.4	
17.30	0.5	*
17.45	0.5	*
18.00	0.4	
18.15	0.3	

TRL TRL VIEWER 3.0 AC R:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something without CL\PM Peak\Site 8

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.3	
17.15	0.4	
17.30	0.5	*
17.45	0.5	*
18.00	0.4	
18.15	0.3	

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.8	*
17.15	1.1	*
17.30	2.0	**
17.45	2.0	**
18.00	1.1	*
18.15	0.8	*

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.2
17.30	0.4
17.45	0.4
18.00	0.2
18.15	0.2

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
A	758.3	505.5	34.6	0.05	34.6	0.05
B	747.3	498.2	34.5	0.05	34.5	0.05
C	1468.6	979.0	116.3	0.08	116.3	0.08
D	393.5	262.4	22.8	0.06	22.8	0.06
ALL	3367.7	2245.1	208.2	0.06	208.2	0.06

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

=== end of file ===

[Printed at 10:21:31 on 18/04/2006]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 3.0 (JUNE 2005)

For sales and distribution information,
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Run with file:-
"r:\MDR0303\Tr\Junction Analysis 04-04-06\2024 Do Something without CL\PM Peak\
Site 9 A & F Business Park Roundabout.vai"
(drive-on-the-left) at 12:19:25 on Friday, 7 April 2006

FILE PROPERTIES
****

RUN TITLE: 2024 PM Do Something Site 9 without Courtlough Interchange
LOCATION: Rowan's Road West/M1 Business Park
DATE: 04/04/2006
CLIENT:
ENUMERATOR:
JOB NUMBER:
STATUS:
DESCRIPTION:

INPUT DATA
****
ARM A - Link to Courtlough Interchange
ARM B - Access to Site F of M1 Business Park
ARM C - Rowan's Road West
ARM D - Access to Site A of M1 Business Park

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	4.00	8.00	2.00	23.00	50.00	6.0	0.596	24.986
ARM B	4.00	8.00	2.00	22.00	50.00	22.0	0.565	23.668
ARM C	4.00	8.00	2.00	25.00	50.00	15.0	0.581	24.347
ARM D	4.00	8.00	2.00	23.00	50.00	26.0	0.558	23.394

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

(Only sets included in the current run are shown)

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

DEMAND SET TITLE: Site 9 PM

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	2.46	3.69	2.46
ARM B	15.00	45.00	75.00	0.00	0.00	0.00
ARM C	15.00	45.00	75.00	4.00	6.00	4.00
ARM D	15.00	45.00	75.00	3.36	5.04	3.36

DEMAND SET TITLE: Site 9 PM

TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.000	0.838	0.162
		0.0	0.0	165.0	32.0
		(0.0)	(0.0)	(17.0)	(16.0)
	ARM B	0.000	0.000	0.000	0.000
		0.0	0.0	0.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.991	0.000	0.000	0.009
		317.0	0.0	0.0	3.0
		(12.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.929	0.000	0.071	0.000
		250.0	0.0	19.0	0.0
		(15.0)	(0.0)	(16.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	2.46	21.24	0.116		0.0	0.1	1.9		0.05
ARM B	0.00	21.89	0.000		0.0	0.0	0.0		0.00
ARM C	4.00	21.52	0.186		0.0	0.2	3.3		0.06
ARM D	3.36	18.18	0.185		0.0	0.2	3.3		0.07

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	2.94	21.22	0.139		0.1	0.2	2.4		0.05
ARM B	0.00	21.54	0.000		0.0	0.0	0.0		0.00
ARM C	4.78	21.47	0.222		0.2	0.3	4.2		0.06
ARM D	4.02	17.75	0.226		0.2	0.3	4.3		0.07

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	3.60	21.18	0.170		0.2	0.2	3.0		0.06
ARM B	0.00	21.07	0.000		0.0	0.0	0.0		0.00
ARM C	5.85	21.41	0.273		0.3	0.4	5.5		0.06
ARM D	4.92	17.18	0.286		0.3	0.4	5.8		0.08

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	3.60	21.18	0.170		0.2	0.2	3.1		0.06
ARM B	0.00	21.06	0.000		0.0	0.0	0.0		0.00
ARM C	5.85	21.41	0.273		0.4	0.4	5.6		0.06
ARM D	4.92	17.18	0.286		0.4	0.4	6.0		0.08

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	2.94	21.22	0.139		0.2	0.2	2.5		0.05
ARM B	0.00	21.53	0.000		0.0	0.0	0.0		0.00
ARM C	4.78	21.47	0.222		0.4	0.3	4.4		0.06
ARM D	4.02	17.75	0.226		0.4	0.3	4.5		0.07

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	2.46	21.24	0.116		0.2	0.1	2.0		0.05
ARM B	0.00	21.88	0.000		0.0	0.0	0.0		0.00
ARM C	4.00	21.52	0.186		0.3	0.2	3.5		0.06
ARM D	3.36	18.17	0.185		0.3	0.2	3.5		0.07

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.2
17.30	0.2
17.45	0.2
18.00	0.2
18.15	0.1

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.3
17.30	0.4
17.45	0.4
18.00	0.3
18.15	0.2

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.3
17.30	0.4
17.45	0.4
18.00	0.3
18.15	0.2

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * * DELAY *		* INCLUSIVE QUEUEING * * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	270.1	180.1	14.8	0.05	14.8	0.05
B	0.0	0.0	0.0	0.00	0.0	0.00
C	438.8	292.5	26.6	0.06	26.6	0.06
D	368.9	245.9	27.4	0.07	27.4	0.07
ALL	1077.8	718.5	68.8	0.06	68.8	0.06

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
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* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

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