

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 5.0 (JANUARY 2009)

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Run with file:-
"j:\122000\122374-00\4 Internal Project Data\4-40 Calculations\Transport\Junction Assessments\
10.Broad St_Gladstone Rd\Gladstone Bridge Roundabout\Broad St_Gladstone Rd.vai"
(drive-on-the-left) at 13:55:49 on Tuesday, 14 July 2009

.FILE PROPERTIES

RUN TITLE: Broad St / Gladstone Road
LOCATION:
DATE: 14/07/09
CLIENT:
ENUMERATOR: Ryan.Hopkins [WACMSJQ2J]
JOB NUMBER: 122374
STATUS:
DESCRIPTION:

.INPUT DATA

ARM A - Gladstone Rd (N)
ARM B - Holton Rd Loop (E)
ARM C - Gladstone Bridge (S)
ARM D - Broad St (W)

.GEOMETRIC DATA

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	5.80	I	5.80	I	0.00	I	25.40	I	43.00	I	30.0	I	0.652	I	29.595	I
I	ARM B	I	6.80	I	6.80	I	0.00	I	20.00	I	42.00	I	27.0	I	0.716	I	34.697	I
I	ARM C	I	6.63 *	I	6.63	I	7.60	I	23.00	I	43.00	I	28.0	I	0.704	I	33.927	I
I	ARM D	I	6.10	I	6.10	I	0.00	I	40.00	I	43.00	I	13.0	I	0.719	I	33.375	I

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

WARNING ARM C - INPUT VALUE OF V (6.63) OUTSIDE ACCEPTABLE RANGE -
HAS BEEN RESET AS INDICATED ABOVE (*). (AG17 REF. 6.3.1).

.TRAFFIC DEMAND DATA

Only sets included in the current run are shown

.SCALING FACTORS

----- T13

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(08.15)AND ENDS(09.45)
.LENGTH OF TIME PERIOD - (90) MINUTES
.LENGTH OF TIME SEGMENT - (15) MINUTES

.DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

.DEMAND SET TITLE: AM 2020 with Development

----- T15

I	ARM	I	NUMBER OF MINUTES FROM START WHEN	I	RATE OF FLOW (VEH/MIN)	I								
I	I	I	FLOW STARTS I TOP OF PEAK I FLOW STOPS	I	BEFORE I AT TOP I AFTER	I								
I	I	I	I TO RISE I IS REACHED I FALLING	I	PEAK I OF PEAK I PEAK	I								
I	ARM A	I	15.00	I	45.00	I	75.00	I	9.80	I	14.70	I	9.80	I
I	ARM B	I	15.00	I	45.00	I	75.00	I	7.04	I	10.56	I	7.04	I
I	ARM C	I	15.00	I	45.00	I	75.00	I	7.50	I	11.25	I	7.50	I
I	ARM D	I	15.00	I	45.00	I	75.00	I	8.43	I	12.64	I	8.43	I

DEMAND SET TITLE: AM 2020 with Development

T33

TIME	FROM/TO	TURNING PROPORTIONS (PERCENTAGE OF H.V.S)			
		ARM A	ARM B	ARM C	ARM D
08.15 - 09.45	ARM A	0.000	0.337	0.503	0.161
		0.0	264.0	394.0	126.0
		(0.0)	(2.0)	(4.0)	(1.0)
	ARM B	0.185	0.000	0.345	0.471
		104.0	0.0	194.0	265.0
		(7.0)	(0.0)	(7.0)	(4.0)
	ARM C	0.568	0.180	0.000	0.252
		341.0	108.0	0.0	151.0
		(5.0)	(20.0)	(0.0)	(7.0)
	ARM D	0.298	0.306	0.396	0.000
		201.0	206.0	267.0	0.0
		(3.0)	(3.0)	(5.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/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	9.84	23.84	0.413	-	0.0	0.7	10.1	-	0.071
ARM B	7.06	25.94	0.272	-	0.0	0.4	5.5	-	0.053
ARM C	7.53	27.17	0.277	-	0.0	0.4	5.6	-	0.051
ARM D	8.46	26.97	0.314	-	0.0	0.5	6.7	-	0.054
08.30-08.45									
ARM A	11.75	22.87	0.514	-	0.7	1.0	15.2	-	0.090
ARM B	8.44	24.58	0.343	-	0.4	0.5	7.7	-	0.062
ARM C	8.99	26.35	0.341	-	0.4	0.5	7.6	-	0.058
ARM D	10.10	25.95	0.389	-	0.5	0.6	9.3	-	0.063
08.45-09.00									
ARM A	14.39	21.55	0.668	-	1.0	2.0	27.7	-	0.137
ARM B	10.33	22.73	0.454	-	0.5	0.8	12.0	-	0.080
ARM C	11.01	25.23	0.436	-	0.5	0.8	11.3	-	0.070
ARM D	12.37	24.56	0.504	-	0.6	1.0	14.6	-	0.082
09.00-09.15									
ARM A	14.39	21.54	0.668	-	2.0	2.0	29.6	-	0.140
ARM B	10.33	22.70	0.455	-	0.8	0.8	12.4	-	0.081
ARM C	11.01	25.22	0.437	-	0.8	0.8	11.6	-	0.070
ARM D	12.37	24.55	0.504	-	1.0	1.0	15.1	-	0.082
09.15-09.30									
ARM A	11.75	22.85	0.514	-	2.0	1.1	16.7	-	0.091
ARM B	8.44	24.53	0.344	-	0.8	0.5	8.1	-	0.062
ARM C	8.99	26.33	0.341	-	0.8	0.5	8.0	-	0.058
ARM D	10.10	25.93	0.389	-	1.0	0.6	9.9	-	0.063
09.30-09.45									
ARM A	9.84	23.82	0.413	-	1.1	0.7	10.9	-	0.072
ARM B	7.06	25.90	0.273	-	0.5	0.4	5.7	-	0.053
ARM C	7.53	27.15	0.277	-	0.5	0.4	5.9	-	0.051
ARM D	8.46	26.95	0.314	-	0.6	0.5	7.0	-	0.054

QUEUE AT ARM A

TIME SEGMENT NO. OF VEHICLES IN QUEUE

```

08.30      0.7  *
08.45      1.0  *
09.00      2.0  **
09.15      2.0  **
09.30      1.1  *
09.45      0.7  *
    
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.QUEUE AT ARM B

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TIME SEGMENT NO. OF
ENDING        VEHICLES
              IN QUEUE

08.30      0.4  *
08.45      0.5  *
09.00      0.8  *
09.15      0.8  *
09.30      0.5  *
09.45      0.4
    
```

.QUEUE AT ARM C

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TIME SEGMENT NO. OF
ENDING        VEHICLES
              IN QUEUE

08.30      0.4  *
08.45      0.5  *
09.00      0.8  *
09.15      0.8  *
09.30      0.5  *
09.45      0.4
    
```

.QUEUE AT ARM D

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TIME SEGMENT NO. OF
ENDING        VEHICLES
              IN QUEUE

08.30      0.5  *
08.45      0.6  *
09.00      1.0  *
09.15      1.0  *
09.30      0.6  *
09.45      0.5
    
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.QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

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I  ARM  I  TOTAL DEMAND  I  * QUEUEING *  I  * INCLUSIVE QUEUEING *  I  T75
I  I      I  I          I  I  * DELAY *  I  I  * DELAY *  I  I
I  I      I  I          I  I  (MIN)  (MIN/VEH)  I  I  (MIN)  (MIN/VEH)  I  I
I  I      I  I          I  I  -----
I  A  I  1079.1  I  719.4  I  110.2  I  0.10  I  110.2  I  0.10  I  I
I  B  I  774.9  I  516.6  I  51.4  I  0.07  I  51.4  I  0.07  I  I
I  C  I  825.9  I  550.6  I  49.9  I  0.06  I  49.9  I  0.06  I  I
I  D  I  927.7  I  618.5  I  62.6  I  0.07  I  62.6  I  0.07  I  I
I  ALL  I  3607.6  I  2405.1  I  274.1  I  0.08  I  274.1  I  0.08  I  I
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* 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