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CAPACITIES, QUEUES AND DELAYS AT ROUNDABOUTS

ARCADY 5.0 ANALYSIS PROGRAM
RELEASE 1.1 (MAY 2001)

ADAPTED FROM ARCADY/3 WHICH IS CROWN COPYRIGHT
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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:-

"C:\DWP\KIG\May 2007\A20 M20 Link Rbt\A20-M20 link AM peak 2026 base+ dev.vai"
(drive-on-the-left) at 15:18:21 on Tuesday, 22 May 2007

.ROUNDAABOUT CAPACITY AND DELAY

.RUN TITLE

A20-M20 link AM peak 2026 base plus development

.INPUT DATA

ARM A - A20 west
ARM B - M20 link
ARM C - A20 east

.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 5.00 I 8.00 I 25.00 I 34.00 I 60.00 I
45.0 I 0.618 I 35.041 I

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I ARM B I 10.00 I 12.00 I 10.00 I 32.00 I 60.00 I
32.0 I 0.861 I 57.304 I
I ARM C I 9.00 I 10.00 I 10.00 I 45.00 I 60.00 I
50.0 I 0.742 I 47.195 I

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

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.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

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-----
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 6.75 I 10.13 I 6.75 I
I ARM B I 15.00 I 45.00 I 75.00 I 20.75 I 31.13 I 20.75 I
I ARM C I 15.00 I 45.00 I 75.00 I 22.99 I 34.48 I 22.99 I
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I          I          TURNING PROPORTIONS          I
I          I          TURNING COUNTS (VEH/HR)        I
I          I          (PERCENTAGE OF H.V.S)          I
I          I          -----
I          I  TIME          I  FROM/TO I  ARM A I  ARM B I  ARM C I
-----
I  07.45 - 09.15 I          I          I          I          I
I          I  ARM A I  0.000 I  1.000 I  0.000 I
I          I          I  0.0 I  540.0 I  0.0 I
I          I          I  ( 0.0)I  ( 15.9)I  ( 0.0)I
I          I          I          I          I
I          I  ARM B I  0.420 I  0.000 I  0.580 I
I          I          I  698.0 I  0.0 I  962.0 I
I          I          I  ( 10.9)I  ( 0.0)I  ( 6.9)I
I          I          I          I          I
I          I  ARM C I  0.268 I  0.732 I  0.000 I
I          I          I  492.0 I  1347.0 I  0.0 I
I          I          I  ( 3.3)I  ( 5.5)I  ( 0.0)I
I          I          I          I          I
-----

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TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

I	TIME	DEMAND	CAPACITY	DEMAND/ CAPACITY	PEDESTRIAN FLOW	START QUEUE	END QUEUE	DELAY (VEH.MIN/ TIME)
GEOMETRIC DELAY								
I	(VEH.MIN/ SEGMENT)	(VEH/MIN)	(VEH/MIN)	(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	
I	07.45-08.00							
I	ARM A	6.75	20.80	0.325		0.0	0.5	7.0
I	ARM B	20.75	52.78	0.393		0.0	0.6	9.5
I	ARM C	22.99	38.16	0.602		0.0	1.5	21.7

I	TIME	DEMAND	CAPACITY	DEMAND/ CAPACITY	PEDESTRIAN FLOW	START QUEUE	END QUEUE	DELAY (VEH.MIN/ TIME)
GEOMETRIC DELAY								
I	(VEH.MIN/ SEGMENT)	(VEH/MIN)	(VEH/MIN)	(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	
I	08.00-08.15							
I	ARM A	8.06	18.95	0.425		0.5	0.7	10.7
I	ARM B	24.78	52.78	0.469		0.6	0.9	13.0
I	ARM C	27.45	36.82	0.746		1.5	2.9	40.5

I	TIME	DEMAND	CAPACITY	DEMAND/ CAPACITY	PEDESTRIAN FLOW	START QUEUE	END QUEUE	DELAY (VEH.MIN/ TIME)
GEOMETRIC DELAY								
I	(VEH.MIN/ SEGMENT)	(VEH/MIN)	(VEH/MIN)	(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	
I	08.15-08.30							
I	ARM A	9.87	16.69	0.591		0.7	1.4	20.2

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I ARM B      30.35    52.78    0.575          0.9    1.3    19.7
I
I ARM C      33.62    34.99    0.961          2.9   14.2   160.6
I
I
I

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.
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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 (RFC) (PEDS/MIN) (VEHS) (VEHS) TIME
I SEGMENT) TIME SEGMENT) I
I 08.30-08.45
I
I ARM A      9.87     16.46    0.600          1.4    1.5    21.8
I
I ARM B      30.35    52.78    0.575          1.3    1.3    20.2
I
I ARM C      33.62    34.98    0.961          14.2   17.2   238.3
I
I
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 (RFC) (PEDS/MIN) (VEHS) (VEHS) TIME
I SEGMENT) TIME SEGMENT) I
I 08.45-09.00
I
I ARM A      8.06     18.53    0.435          1.5    0.8    12.1
I
I ARM B      24.78    52.78    0.469          1.3    0.9    13.6
I
I ARM C      27.45    36.80    0.746          17.2   3.0    61.1
I
I
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 (RFC) (PEDS/MIN) (VEHS) (VEHS) TIME
I SEGMENT) TIME SEGMENT) I

```

I 09.00-09.15							
I	ARM A	6.75	20.72	0.326	0.8	0.5	7.5
I	ARM B	20.75	52.78	0.393	0.9	0.7	9.9
I	ARM C	22.99	38.14	0.603	3.0	1.5	23.8
I							
I							
I							

 .QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.5
08.15	0.7 *
08.30	1.4 *
08.45	1.5 *
09.00	0.8 *
09.15	0.5

 .QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.6 *
08.15	0.9 *
08.30	1.3 *
08.45	1.3 *
09.00	0.9 *
09.15	0.7 *

 .QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	1.5 *
08.15	2.9 ***
08.30	14.2 *****
08.45	17.2 *****
09.00	3.0 ***
09.15	1.5 **

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Run with file:-

"C:\DWP\KIG\May 2007\A20 M20 Link Rbt\A20-M20 link PM peak 2026 base+dev.vai"
(drive-on-the-left) at 15:20:27 on Tuesday, 22 May 2007

.ROUNDAABOUT CAPACITY AND DELAY

.RUN TITLE

A20-M20 link PM peak 2026 base plus development

.INPUT DATA

ARM A - A20 west
ARM B - M20 link
ARM C - A20 east

.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 5.00 I 8.00 I 25.00 I 34.00 I 60.00 I
45.0 I 0.618 I 35.041 I

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

I	TIME	DEMAND	CAPACITY	DEMAND/ CAPACITY	PEDESTRIAN FLOW	START QUEUE	END QUEUE	DELAY (VEH.MIN/ TIME)
GEOMETRIC	DELAY	(VEH/MIN)	(VEH/MIN)	(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	(VEH.MIN/ TIME)
(VEH.MIN/ SEGMENT)	TIME	SEGMENT)	I					
I	16.45-17.00							
I	ARM A	7.89	24.18	0.326		0.0	0.5	7.0
I	ARM B	18.71	52.88	0.354		0.0	0.5	8.1
I	ARM C	17.95	42.21	0.425		0.0	0.7	10.8

I	TIME	DEMAND	CAPACITY	DEMAND/ CAPACITY	PEDESTRIAN FLOW	START QUEUE	END QUEUE	DELAY (VEH.MIN/ TIME)
GEOMETRIC	DELAY	(VEH/MIN)	(VEH/MIN)	(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	(VEH.MIN/ TIME)
(VEH.MIN/ SEGMENT)	TIME	SEGMENT)	I					
I	17.00-17.15							
I	ARM A	9.42	22.81	0.413		0.5	0.7	10.2
I	ARM B	22.34	52.88	0.423		0.5	0.7	10.8
I	ARM C	21.43	41.45	0.517		0.7	1.1	15.6

I	TIME	DEMAND	CAPACITY	DEMAND/ CAPACITY	PEDESTRIAN FLOW	START QUEUE	END QUEUE	DELAY (VEH.MIN/ TIME)
GEOMETRIC	DELAY	(VEH/MIN)	(VEH/MIN)	(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	(VEH.MIN/ TIME)
(VEH.MIN/ SEGMENT)	TIME	SEGMENT)	I					
I	17.15-17.30							
I	ARM A	11.54	20.95	0.551		0.7	1.2	17.4

I	ARM B	27.37	52.88	0.518	0.7	1.1	15.7
I							
I	ARM C	26.25	40.41	0.650	1.1	1.8	26.5
I							
I							

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY
I	GEOMETRIC DELAY	(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/
I	(VEH.MIN/	I		(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME
I	SEGMENT)	TIME	SEGMENT)	I				

I 17.30-17.45

I	ARM A	11.54	20.93	0.551	1.2	1.2	18.2
I							
I	ARM B	27.37	52.88	0.518	1.1	1.1	16.0
I							
I	ARM C	26.25	40.40	0.650	1.8	1.8	27.6
I							
I							

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY
I	GEOMETRIC DELAY	(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/
I	(VEH.MIN/	I		(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME
I	SEGMENT)	TIME	SEGMENT)	I				

I 17.45-18.00

I	ARM A	9.42	22.79	0.413	1.2	0.7	11.0
I							
I	ARM B	22.34	52.88	0.423	1.1	0.7	11.2
I							
I	ARM C	21.43	41.44	0.517	1.8	1.1	16.6
I							
I							

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY
I	GEOMETRIC DELAY	(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/
I	(VEH.MIN/	I		(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME
I	SEGMENT)	TIME	SEGMENT)	I				

I	18.00-18.15						
I							
I	ARM A	7.89	24.15	0.327	0.7	0.5	7.5
I							
I	ARM B	18.71	52.88	0.354	0.7	0.5	8.3
I							
I	ARM C	17.95	42.20	0.425	1.1	0.7	11.3
I							
I							
I							

.QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.5
17.15	0.7 *
17.30	1.2 *
17.45	1.2 *
18.00	0.7 *
18.15	0.5

.QUEUE AT ARM B

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 *

.QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.7 *
17.15	1.1 *
17.30	1.8 **
17.45	1.8 **
18.00	1.1 *
18.15	0.7 *

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Run with file:-
"C:\DWP\KIG\May 2007\Gt Danes Hotel Rbt\Great Danes Hotel AM peak 2026
base+dev.vai"
(drive-on-the-left) at 15:46:36 on Tuesday, 22 May 2007

.ROUNDABOUT CAPACITY AND DELAY

.RUN TITLE

Great Danes Hotel Rbt 2026 AM Base plus development

.INPUT DATA

ARM A - A20 west
ARM B - B2163
ARM C - A20 east
ARM D - Hotel

.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	8.25	I	10.25	I	20.00	I	45.00	I	36.50	I
42.5		I	0.889	I	48.515		I					
I	ARM B	I	3.75	I	5.00	I	10.00	I	45.00	I	36.50	I
35.0		I	0.596	I	23.677		I					
I	ARM C	I	8.50	I	9.75	I	10.00	I	60.00	I	36.50	I
32.0		I	0.903	I	48.651		I					
I	ARM D	I	4.75	I	5.25	I	5.00	I	20.00	I	36.50	I
58.0		I	0.559	I	23.384		I					

V = approach half-width inscribed circle diameter
 E = entry width
 angle

L = effective flare length
 R = entry radius

D =
 PHI = entry angle

.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

I	ARM	I	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	I	TOP OF PEAK IS REACHED	I	FLOW STOPS IF FALLING	I	RATE OF FLOW (VEH/MIN) BEFORE PEAK	I	AT TOP OF PEAK	I	AFTER PEAK
I	ARM A	I	15.00	I	45.00	I	75.00	I	16.74	I	25.11	I	16.74
I	ARM B	I	15.00	I	45.00	I	75.00	I	4.50	I	6.75	I	4.50
I	ARM C	I	15.00	I	45.00	I	75.00	I	21.36	I	32.04	I	21.36
I	ARM D	I	15.00	I	45.00	I	75.00	I	0.63	I	0.94	I	0.63

		TURNING PROPORTIONS				TURNING COUNTS (VEH/HR)				(PERCENTAGE OF H.V.S)			
		FROM/TO		ARM A	ARM B	ARM C	ARM D						
I 07.45 - 09.15		I		I	I	I	I	I		I		I	
I		I ARM A		I 0.000	I 0.104	I 0.865	I 0.031	I		I		I	
I		I		I 0.0	I 139.0	I 1158.0	I 42.0	I		I		I	
I		I		I (0.0)	I (3.3)	I (6.3)	I (5.4)	I		I		I	
I		I		I	I	I	I	I		I		I	
I		I ARM B		I 0.683	I 0.000	I 0.311	I 0.006	I		I		I	
I		I		I 246.0	I 0.0	I 112.0	I 2.0	I		I		I	
I		I		I (3.2)	I (0.0)	I (4.0)	I (0.0)	I		I		I	
I		I		I	I	I	I	I		I		I	
I		I ARM C		I 0.956	I 0.037	I 0.000	I 0.008	I		I		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 (RFC) (PEDS/MIN) (VEHS) (VEHS) TIME
I SEGMENT) TIME SEGMENT) I
I 08.15-08.30
I
I ARM A 24.48 44.68 0.548 0.8 1.2 17.7
I
I ARM B 6.58 9.43 0.698 0.8 2.2 29.0
I
I ARM C 31.24 41.64 0.750 1.5 2.9 41.7
I
I ARM D 0.91 2.56 0.357 0.1 0.5 7.0
I
I
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 (RFC) (PEDS/MIN) (VEHS) (VEHS) TIME
I SEGMENT) TIME SEGMENT) I
I 08.30-08.45
I
I ARM A 24.48 44.67 0.548 1.2 1.2 18.1
I
I ARM B 6.58 9.41 0.699 2.2 2.2 33.1
I
I ARM C 31.24 41.59 0.751 2.9 3.0 44.4
I
I ARM D 0.91 2.47 0.370 0.5 0.6 8.2
I
I
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 (RFC) (PEDS/MIN) (VEHS) (VEHS) TIME
I SEGMENT) TIME SEGMENT) I
I 08.45-09.00
I

```

I	ARM A	19.99	44.87	0.445	1.2	0.8	12.3
I							
I	ARM B	5.37	11.87	0.453	2.2	0.8	13.5
I							
I	ARM C	25.51	42.39	0.602	3.0	1.5	23.6
I							
I	ARM D	0.75	6.03	0.124	0.6	0.1	2.3
I							
I							
I							

 .-----

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY
I	GEOMETRIC DELAY	(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/
I	(VEH.MIN/	I		(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME
I	SEGMENT)	TIME	SEGMENT)	I				
I	09.00-09.15							
I								
I	ARM A	16.74	45.02	0.372		0.8	0.6	9.0
I								
I	ARM B	4.50	13.67	0.329		0.8	0.5	7.7
I								
I	ARM C	21.36	43.06	0.496		1.5	1.0	15.2
I								
I	ARM D	0.63	8.74	0.072		0.1	0.1	1.2
I								
I								
I								

.QUEUE AT ARM A

TIME SEGMENT	NO. OF	
ENDING	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	*

.QUEUE AT ARM B

TIME SEGMENT	NO. OF	
ENDING	VEHICLES	
	IN QUEUE	

08.00	0.5	
08.15	0.8	*
08.30	2.2	**
08.45	2.2	**
09.00	0.8	*
09.15	0.5	

.QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.00	1.0	*
08.15	1.5	*
08.30	2.9	***
08.45	3.0	***
09.00	1.5	**
09.15	1.0	*

.QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.00	0.1	
08.15	0.1	
08.30	0.5	*
08.45	0.6	*
09.00	0.1	
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
I		I	(VEH)	I	(MIN)	I	(MIN)	I
I		I	(VEH/H)	I	(MIN/VEH)	I	(MIN/VEH)	I
I	A	I	1836.1	I	77.6	I	77.6	I
I	B	I	493.6	I	101.9	I	101.9	I
I	C	I	2343.4	I	160.9	I	160.9	I
I	D	I	68.6	I	21.8	I	21.8	I
I	ALL	I	4741.6	I	362.2	I	362.3	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

***** ARCADY 5 run completed.

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CAPACITIES, QUEUES AND DELAYS AT ROUNDABOUTS

ARCADY 5.0 ANALYSIS PROGRAM
RELEASE 1.1 (MAY 2001)

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EMAIL: SoftwareBureau@trl.co.uk

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Run with file:-
"C:\DWP\KIG\May 2007\Gt Danes Hotel Rbt\Great Danes Hotel PM peak 2026
base+dev.vai"
(drive-on-the-left) at 15:48:08 on Tuesday, 22 May 2007

.ROUNDABOUT CAPACITY AND DELAY

.RUN TITLE

Great Danes Hotel Rbt 2026 PM Base plus development

.INPUT DATA

ARM A - A20 west
ARM B - B2163
ARM C - A20 east
ARM D - Hotel

.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	8.25	I	10.25	I	20.00	I	45.00	I	36.50	I
42.5	I	0.889	I	48.515	I					
I ARM B I	3.75	I	5.00	I	10.00	I	45.00	I	36.50	I
35.0	I	0.596	I	23.677	I					
I ARM C I	8.50	I	9.75	I	10.00	I	60.00	I	36.50	I
32.0	I	0.903	I	48.651	I					
I ARM D I	4.75	I	5.25	I	5.00	I	20.00	I	36.50	I
58.0	I	0.559	I	23.384	I					

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

.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

I	I	NUMBER OF MINUTES FROM START WHEN			RATE OF FLOW (VEH/MIN)			I					
		I	I	I	I	I	I						
I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER
I		I	TO RISE	I	IS REACHED	I	IF FALLING	I	PEAK	I	OF PEAK	I	PEAK
I	ARM A	I	15.00	I	45.00	I	75.00	I	20.24	I	30.36	I	20.24
I	ARM B	I	15.00	I	45.00	I	75.00	I	1.98	I	2.96	I	1.98
I	ARM C	I	15.00	I	45.00	I	75.00	I	16.90	I	25.35	I	16.90
I	ARM D	I	15.00	I	45.00	I	75.00	I	0.47	I	0.71	I	0.47

I	I	TURNING PROPORTIONS				I					
		I	I	I	I						
I		I	TURNING COUNTS (VEH/HR)			I					
I		I	(PERCENTAGE OF H.V.S)			I					
I	TIME	I	FROM/TO	I	ARM A	I	ARM B	I	ARM C	I	ARM D
I	16.45 - 18.15	I		I		I		I		I	
I		I	ARM A	I	0.000	I	0.081	I	0.907	I	0.012
I		I		I	0.0	I	131.0	I	1469.0	I	19.0
I		I		I	(0.0)	I	(2.6)	I	(3.7)	I	(5.8)
I		I		I		I		I		I	
I		I	ARM B	I	0.684	I	0.000	I	0.310	I	0.006
I		I		I	108.0	I	0.0	I	49.0	I	1.0
I		I		I	(1.0)	I	(0.0)	I	(4.5)	I	(0.0)
I		I		I		I		I		I	
I		I	ARM C	I	0.916	I	0.072	I	0.000	I	0.012

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I           I           I 1238.0 I   98.0 I   0.0 I   16.0 I
I           I           I ( 2.6)I ( 0.0)I ( 0.0)I ( 7.1)I
I           I           I           I           I           I
I           I   ARM D   I 0.842 I 0.000 I 0.158 I 0.000 I
I           I           I 32.0 I 0.0 I 6.0 I 0.0 I
I           I           I ( 0.0)I ( 0.0)I ( 0.0)I ( 0.0)I
I           I           I           I           I           I

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TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA
THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

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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 16.45-17.00
I
I ARM A      20.24    45.70    0.443                0.0    0.8      11.6
I
I ARM B      1.98     11.92    0.166                0.0    0.2       2.9
I
I ARM C     16.90     46.06    0.367                0.0    0.6       8.5
I
I ARM D      0.47     13.08    0.036                0.0    0.0       0.5
I
I
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 17.00-17.15
I
I ARM A      24.17    45.48    0.531                0.8    1.1      16.6
I
I ARM B      2.36     9.71     0.243                0.2    0.3       4.6
I
I ARM C     20.18     45.77    0.441                0.6    0.8      11.6
I
I ARM D      0.57     11.06    0.051                0.0    0.1       0.8
I
I
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 (RFC) (PEDS/MIN) (VEHS) (VEHS) TIME
I SEGMENT) TIME SEGMENT) I
I 17.15-17.30
I
I ARM A 29.60 45.18 0.655 1.1 1.9 27.3
I
I ARM B 2.89 6.69 0.431 0.3 0.7 10.4
I
I ARM C 24.72 45.40 0.544 0.8 1.2 17.4
I
I ARM D 0.69 8.30 0.084 0.1 0.1 1.3
I
I
I
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 (RFC) (PEDS/MIN) (VEHS) (VEHS) TIME
I SEGMENT) TIME SEGMENT) I
I 17.30-17.45
I
I ARM A 29.60 45.18 0.655 1.9 1.9 28.2
I
I ARM B 2.89 6.67 0.433 0.7 0.8 11.2
I
I ARM C 24.72 45.38 0.545 1.2 1.2 17.8
I
I ARM D 0.69 8.28 0.084 0.1 0.1 1.4
I
I
I
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 (RFC) (PEDS/MIN) (VEHS) (VEHS) TIME
I SEGMENT) TIME SEGMENT) I
I 17.45-18.00
I
I
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I	ARM A	24.17	45.48	0.531	1.9	1.1	17.5
I	ARM B	2.36	9.67	0.244	0.8	0.3	5.1
I	ARM C	20.18	45.75	0.441	1.2	0.8	12.1
I	ARM D	0.57	11.02	0.051	0.1	0.1	0.8

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY
I	GEOMETRIC DELAY	(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/
I	SEGMENT)	TIME	SEGMENT)	(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME
I	18.00-18.15							
I	ARM A	20.24	45.70	0.443		1.1	0.8	12.2
I	ARM B	1.98	11.88	0.166		0.3	0.2	3.1
I	ARM C	16.90	46.04	0.367		0.8	0.6	8.8
I	ARM D	0.47	13.04	0.036		0.1	0.0	0.6

.QUEUE AT ARM A

TIME SEGMENT	NO. OF	
ENDING	VEHICLES	
	IN QUEUE	
17.00	0.8	*
17.15	1.1	*
17.30	1.9	**
17.45	1.9	**
18.00	1.1	*
18.15	0.8	*

.QUEUE AT ARM B

TIME SEGMENT	NO. OF	
ENDING	VEHICLES	
	IN QUEUE	

17.00	0.2
17.15	0.3
17.30	0.7 *
17.45	0.8 *
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	1.2 *
18.00	0.8 *
18.15	0.6 *

.QUEUE AT ARM D

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

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						
I		I	(VEH)	I	(MIN)	I	(MIN)	I						
I		I	(VEH/H)	I	(MIN/VEH)	I	(MIN/VEH)	I						
I	A	I	2220.0	I	1480.0	I	113.4	I	0.05	I	113.4	I	0.05	I
I	B	I	216.7	I	144.4	I	37.2	I	0.17	I	37.2	I	0.17	I
I	C	I	1853.9	I	1235.9	I	76.3	I	0.04	I	76.3	I	0.04	I
I	D	I	52.1	I	34.7	I	5.4	I	0.10	I	5.4	I	0.10	I
I	ALL	I	4342.6	I	2895.1	I	232.4	I	0.05	I	232.4	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

***** ARCADY 5 run completed.

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CAPACITIES, QUEUES AND DELAYS AT ROUNDABOUTS

ARCADY 5.0 ANALYSIS PROGRAM
RELEASE 1.1 (MAY 2001)

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Run with file:-
"C:\DWP\KIG\May 2007\B2163 Penfold Hill Rbt\B2163 Penfold Hill AM peak 2026
base+dev.vai"
(drive-on-the-left) at 16:30:06 on Tuesday, 22 May 2007

.ROUNABOUT CAPACITY AND DELAY

.RUN TITLE

B2163 Penfold Hill Rbt 2026 AM peak base plus development

.INPUT DATA

ARM A - A20 east
ARM B - B2163 Penfold Hill
ARM C - A20 west

.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 5.00 I 8.00 I 25.00 I 34.00 I 60.00 I
45.0 I 0.618 I 35.041 I

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY
GEOMETRIC	DELAY	(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/
(VEH.MIN/	I			(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME
SEGMENT)	TIME	SEGMENT)	I					
I	07.45-08.00							
I	ARM A	13.73	29.61	0.463		0.0	0.9	12.5
I	ARM B	10.50	42.49	0.247		0.0	0.3	4.8
I	ARM C	15.95	43.38	0.368		0.0	0.6	8.5

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY
GEOMETRIC	DELAY	(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/
(VEH.MIN/	I			(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME
SEGMENT)	TIME	SEGMENT)	I					
I	08.00-08.15							
I	ARM A	16.39	28.87	0.568		0.9	1.3	18.9
I	ARM B	12.54	40.41	0.310		0.3	0.4	6.6
I	ARM C	19.05	43.17	0.441		0.6	0.8	11.6

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY
GEOMETRIC	DELAY	(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/
(VEH.MIN/	I			(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME
SEGMENT)	TIME	SEGMENT)	I					
I	08.15-08.30							
I	ARM A	20.07	27.85	0.721		1.3	2.5	35.4

```

I ARM B      15.36    37.61    0.408                0.4    0.7    10.1
I
I ARM C      23.33    42.87    0.544                0.8    1.2    17.4
I
I
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

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```

I
I ARM A      20.07    27.85    0.721                2.5    2.5    37.9
I
I ARM B      15.36    37.55    0.409                0.7    0.7    10.3
I
I ARM C      23.33    42.86    0.544                1.2    1.2    17.8
I
I
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

```

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I
I ARM A      16.39    28.86    0.568                2.5    1.3    20.7
I
I ARM B      12.54    40.33    0.311                0.7    0.5     6.9
I
I ARM C      19.05    43.16    0.441                1.2    0.8    12.1
I
I
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 09.00-09.15							
I	ARM A	13.73	29.60	0.464	1.3	0.9	13.4
I	ARM B	10.50	42.42	0.248	0.5	0.3	5.0
I	ARM C	15.95	43.38	0.368	0.8	0.6	8.9

 .QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.00	0.9	*
08.15	1.3	*
08.30	2.5	***
08.45	2.5	***
09.00	1.3	*
09.15	0.9	*

 .QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.00	0.3	
08.15	0.4	
08.30	0.7	*
08.45	0.7	*
09.00	0.5	
09.15	0.3	

 .QUEUE AT ARM C

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	*

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CAPACITIES, QUEUES AND DELAYS AT ROUNDABOUTS

ARCADY 5.0 ANALYSIS PROGRAM
RELEASE 1.1 (MAY 2001)

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Run with file:-
"C:\DWP\KIG\May 2007\B2163 Penfold Hill Rbt\B2163 Penfold Hill PM peak 2026
base+dev.vai"
(drive-on-the-left) at 16:32:11 on Tuesday, 22 May 2007

.ROUNDABOUT CAPACITY AND DELAY

.RUN TITLE

B2163 Penfold Hill Rbt 2026 PM peak base plus development

.INPUT DATA

ARM A - A20 east
ARM B - B2163 Penfold Hill
ARM C - A20 west

.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 5.00 I 8.00 I 25.00 I 34.00 I 60.00 I
45.0 I 0.618 I 35.041 I

I	ARM B	I	10.00	I	12.00	I	10.00	I	32.00	I	60.00	I
32.0		I	0.861	I	57.304		I					
I	ARM C	I	9.00	I	10.00	I	10.00	I	45.00	I	60.00	I
50.0		I	0.742	I	47.195		I					

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

.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

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	I	IF FALLING	I	PEAK	I	OF PEAK	I	PEAK	I
I	ARM A	I	15.00	I	45.00	I	75.00	I	10.00	I	15.00	I	10.00	I
I	ARM B	I	15.00	I	45.00	I	75.00	I	9.15	I	13.72	I	9.15	I
I	ARM C	I	15.00	I	45.00	I	75.00	I	19.01	I	28.52	I	19.01	I

		TURNING PROPORTIONS								
		TURNING COUNTS (VEH/HR)								
		(PERCENTAGE OF H.V.S)								
I	TIME	I	FROM/TO	I	ARM A	I	ARM B	I	ARM C	I
I	16.45 - 18.15	I		I		I		I		I
I		I	ARM A	I	0.000	I	0.069	I	0.931	I
I		I		I	0.0	I	55.0	I	745.0	I
I		I		I	(0.0)	I	(2.0)	I	(3.1)	I
I		I		I		I		I		I
I		I	ARM B	I	0.173	I	0.000	I	0.827	I
I		I		I	127.0	I	0.0	I	605.0	I
I		I		I	(3.6)	I	(0.0)	I	(1.7)	I
I		I		I		I		I		I
I		I	ARM C	I	0.659	I	0.341	I	0.000	I
I		I		I	1003.0	I	518.0	I	0.0	I
I		I		I	(3.5)	I	(3.8)	I	(0.0)	I
I		I		I		I		I		I

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY
GEOMETRIC	DELAY	(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/
(VEH.MIN/	I			(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME
SEGMENT)	TIME	SEGMENT)	I					
I	16.45-17.00							
I	ARM A	10.00	29.99	0.333		0.0	0.5	7.3
I	ARM B	9.15	48.09	0.190		0.0	0.2	3.5
I	ARM C	19.01	44.38	0.428		0.0	0.7	11.0

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY
GEOMETRIC	DELAY	(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/
(VEH.MIN/	I			(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME
SEGMENT)	TIME	SEGMENT)	I					
I	17.00-17.15							
I	ARM A	11.94	29.20	0.409		0.5	0.7	10.1
I	ARM B	10.93	46.50	0.235		0.2	0.3	4.6
I	ARM C	22.70	44.15	0.514		0.7	1.1	15.5

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY
GEOMETRIC	DELAY	(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/
(VEH.MIN/	I			(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME
SEGMENT)	TIME	SEGMENT)	I					
I	17.15-17.30							
I	ARM A	14.62	28.12	0.520		0.7	1.1	15.7

```

I ARM B      13.38    44.33    0.302          0.3    0.4          6.4
I
I ARM C      27.81    43.83    0.634          1.1    1.7          25.0
I
I
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 (RFC) (PEDS/MIN) (VEHS) (VEHS) TIME
I SEGMENT) TIME SEGMENT) I
I 17.30-17.45
I

```

```

I ARM A      14.62    28.11    0.520          1.1    1.1          16.1
I
I ARM B      13.38    44.31    0.302          0.4    0.4          6.5
I
I ARM C      27.81    43.83    0.634          1.7    1.7          25.8
I
I
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 (RFC) (PEDS/MIN) (VEHS) (VEHS) TIME
I SEGMENT) TIME SEGMENT) I
I 17.45-18.00
I

```

```

I ARM A      11.94    29.19    0.409          1.1    0.7          10.7
I
I ARM B      10.93    46.47    0.235          0.4    0.3          4.7
I
I ARM C      22.70    44.15    0.514          1.7    1.1          16.3
I
I
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 (RFC) (PEDS/MIN) (VEHS) (VEHS) TIME
I SEGMENT) TIME SEGMENT) I

```

I 18.00-18.15
I
I ARM A 10.00 29.97 0.334 0.7 0.5 7.7
I
I ARM B 9.15 48.05 0.190 0.3 0.2 3.6
I
I ARM C 19.01 44.38 0.428 1.1 0.8 11.5
I
I
I

.QUEUE AT ARM A

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 *

.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	0.7 *
17.15	1.1 *
17.30	1.7 **
17.45	1.7 **
18.00	1.1 *
18.15	0.8 *

 QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I	
I	I	I	I	I	* DELAY *	I	* DELAY *	I	
I	I	I	I	I	I	I	I	I	
I	I	(VEH)	(VEH/H)	I	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)	I
I	A	I 1097.0	I 731.3	I	67.6	I 0.06	I 67.6	I 0.06	I
I	B	I 1003.7	I 669.2	I	29.1	I 0.03	I 29.1	I 0.03	I
I	C	I 2085.6	I 1390.4	I	105.1	I 0.05	I 105.1	I 0.05	I
I	ALL	I 4186.3	I 2790.9	I	201.8	I 0.05	I 201.8	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

***** ARCADY 5 run completed.

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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:-

"C:\DWP\KIG\May 2007\A20 Roundwell Jcn\Roundwell 2026 AM base+dev.vpi"
at 19:02:08 on Tuesday, 22 May 2007

RUN TITLE

A20 / Roundwell Jcn 2026 AM Base plus development

.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 A20 West
ARM B IS Roundwell
ARM C IS A20 East

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

I	DATA ITEM	I	MINOR ROAD B	I
I	TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	I (W)	7.30 M.	I
I	CENTRAL RESERVE WIDTH	I (WCR)	0.00 M.	I
I		I		I
I	MAJOR ROAD RIGHT TURN - WIDTH	I (WC-B)	3.00 M.	I
I	- VISIBILITY	I (VC-B)	120.0 M.	I
I	- BLOCKS TRAFFIC	I	NO	I
I		I		I
I	MINOR ROAD - VISIBILITY TO LEFT	I (VB-C)	120.0 M.	I
I	- VISIBILITY TO RIGHT	I (VB-A)	120.0 M.	I
I	- LANE 1 WIDTH	I (WB-C)	-	I
I	- LANE 2 WIDTH	I (WB-A)	-	I
I	- WIDTH AT 0 M FROM JUNC.	I	10.00 M.	I
I	- WIDTH AT 5 M FROM JUNC.	I	8.00 M.	I
I	- WIDTH AT 10 M FROM JUNC.	I	6.00 M.	I
I	- WIDTH AT 15 M FROM JUNC.	I	6.00 M.	I
I	- WIDTH AT 20 M FROM JUNC.	I	5.00 M.	I
I	- LENGTH OF FLARED SECTION	I	2 VEHS	I

.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

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	TO RISE	I	IS REACHED	I	FALLING	I	PEAK	I	OF PEAK	I	PEAK
I	ARM A	I	15.00	I	45.00	I	75.00	I	9.66	I	14.49	I	9.66
I	ARM B	I	15.00	I	45.00	I	75.00	I	3.16	I	4.74	I	3.16
I	ARM C	I	15.00	I	45.00	I	75.00	I	8.77	I	13.16	I	8.77

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

TIME	FROM/TO	ARM A	ARM B	ARM C
07.45 - 09.15	ARM A	0.000	0.044	0.956
		0.0	34.0	739.0
		(0.0)	(3.1)	(2.9)
	ARM B	0.229	0.000	0.771
		58.0	0.0	195.0
		(3.6)	(0.0)	(1.1)
	ARM C	0.839	0.161	0.000
		589.0	113.0	0.0
		(3.8)	(2.8)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

TIME SEGMENT)	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/TIME)
07.45-08.00							
B-C	2.44	10.17	0.240		0.0	0.3	4.5
B-A	0.73	4.95	0.147		0.0	0.2	2.4
C-A	7.36						
C-B	1.41	8.87	0.159		0.0	0.2	2.7
A-B	0.43						
A-C	9.24						

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

VISIBILITY MARGINAL CHANGE:	MAJOR RD. LANE WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	TO RIGHT (M)

I	B-C	0.089	0.013			0.009
I						
I	B-A	0.055	0.018	0.020	0.003	0.005
I						
I	C-B	0.091	0.012		0.008	
I						

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY
I	GEOMETRIC DELAY	(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/
I	(VEH.MIN/	I		(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME
I	SEGMENT)	TIME	SEGMENT)	I				
I	08.00-08.15							
I	B-C	2.91	9.47	0.307		0.3	0.4	6.4
I	B-A	0.87	4.20	0.206		0.2	0.3	3.6
I	C-A	8.79						
I	C-B	1.69	8.39	0.201		0.2	0.2	3.6
I	A-B	0.51						
I	A-C	11.03						

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

I	VISIBILITY	MAJOR RD.	CENT RES	VIS TO LEFT		
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)
I	B-C	0.083	0.015			0.009
I	B-A	0.047	0.021	0.020	0.003	0.004
I	C-B	0.086	0.014		0.008	

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY
I	GEOMETRIC DELAY							

I	(VEH./MIN)	(VEH./MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH./MIN/
(VEH./MIN/	I		(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME
SEGMENT)	TIME	SEGMENT)	I				
I	08.15-08.30						
I	B-C	3.56	8.37	0.426	0.4	0.7	10.4
I	B-A	1.06	3.16	0.335	0.3	0.5	6.7
I	C-A	10.77					
I	C-B	2.07	7.72	0.267	0.2	0.4	5.2
I	A-B	0.62					
I	A-C	13.51					

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

I	MAJOR RD.	CENT RES	VIS TO LEFT	
VISIBILITY	I	WIDTH	TO RIGHT	
I	MARGINAL	LANE WIDTH	WIDTH	(AHEAD FOR MAJOR)
I	CHANGE:	(.1M)	(.1M)	(M)
I				(M)
I	B-C	0.074	0.018	0.008
I	B-A	0.035	0.026	0.002
I	C-B	0.079	0.017	0.007

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY
GEOMETRIC DELAY	I	(VEH./MIN)	(VEH./MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH./MIN/
(VEH./MIN/	I		(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME	
SEGMENT)	TIME	SEGMENT)	I					
I	08.30-08.45							
I	B-C	3.56	8.35	0.427	0.7	0.7	11.0	
I	B-A	1.06	3.16	0.335	0.5	0.5	7.3	
I	C-A	10.77						
I	C-B	2.07	7.72	0.267	0.4	0.4	5.4	

I A-B 0.62

I
I A-C 13.51

I
I

I
I

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

I
I

VISIBILITY	MARGINAL	LANE WIDTH	MAJOR RD. WIDTH	CENT RES WIDTH	VIS TO LEFT (AHEAD FOR MAJOR)	TO RIGHT
------------	----------	------------	-----------------	----------------	-------------------------------	----------

	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)
--	---------	-------	-------	-------	-----	-----

I
I

	B-C	0.074	0.018			0.008
--	-----	-------	-------	--	--	-------

	B-A	0.035	0.026	0.020	0.002	0.003
--	-----	-------	-------	-------	-------	-------

	C-B	0.079	0.017		0.007	
--	-----	-------	-------	--	-------	--

I
I

TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY
GEOMETRIC DELAY	(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/
(VEH.MIN/	I		(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME

SEGMENT)	TIME SEGMENT)	I					
I	08.45-09.00						

	B-C	2.91	9.45	0.308	0.7	0.5	7.0
--	-----	------	------	-------	-----	-----	-----

	B-A	0.87	4.20	0.206	0.5	0.3	4.2
--	-----	------	------	-------	-----	-----	-----

	C-A	8.79					
--	-----	------	--	--	--	--	--

	C-B	1.69	8.39	0.201	0.4	0.3	3.9
--	-----	------	------	-------	-----	-----	-----

	A-B	0.51					
--	-----	------	--	--	--	--	--

	A-C	11.03					
--	-----	-------	--	--	--	--	--

I
I

I
I

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

I
I

VISIBILITY	MARGINAL	LANE WIDTH	MAJOR RD. WIDTH	CENT RES WIDTH	VIS TO LEFT (AHEAD FOR MAJOR)	TO RIGHT
------------	----------	------------	-----------------	----------------	-------------------------------	----------

	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)
--	---------	-------	-------	-------	-----	-----

I
I

I							
I							
I	B-C	0.082	0.015				0.009
I							
I	B-A	0.047	0.022	0.020	0.003		0.004
I							
I	C-B	0.086	0.014		0.008		
I							

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY
I	GEOMETRIC DELAY	(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/
I	(VEH.MIN/	I		(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME
I	SEGMENT)	TIME	SEGMENT)	I				
I	09.00-09.15							
I								
I	B-C	2.44	10.16	0.240		0.5	0.3	4.9
I								
I	B-A	0.73	4.94	0.147		0.3	0.2	2.7
I								
I	C-A	7.36						
I								
I	C-B	1.41	8.87	0.159		0.3	0.2	2.9
I								
I	A-B	0.43						
I								
I	A-C	9.24						

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

I	VISIBILITY	MAJOR RD.	CENT RES	VIS TO LEFT	TO RIGHT
I	MARGINAL	LANE WIDTH	WIDTH	(AHEAD FOR MAJOR)	
I	CHANGE:	(.1M)	(.1M)	(M)	(M)
I					
I					
I	B-C	0.088	0.013		0.009
I					
I	B-A	0.055	0.018	0.020	0.003
I					
I	C-B	0.091	0.012		0.008

QUEUE FOR STREAM B-C

TIME SEGMENT NO. OF

ENDING	VEHICLES IN QUEUE	
08.00	0.3	
08.15	0.4	
08.30	0.7	*
08.45	0.7	*
09.00	0.5	
09.15	0.3	

QUEUE FOR STREAM B-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

QUEUE FOR STREAM C-B

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

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	STREAM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I		
I	I	I	I	I	* DELAY *	I	* DELAY *	I		
I	I	I	I	I	I	I	I	I		
I	I	(VEH)	(VEH/H)	I	(MIN)	(MIN/VEH)	I	(MIN)	(MIN/VEH)	I
I	B-C	I 267.4	I 178.3	I	44.2	I 0.17	I	44.2	I 0.17	I
I	B-A	I 79.5	I 53.0	I	27.0	I 0.34	I	27.0	I 0.34	I
I	C-A	I 807.6	I 538.4	I		I	I		I	I
I	C-B	I 154.9	I 103.3	I	23.9	I 0.15	I	23.9	I 0.15	I
I	A-B	I 46.6	I 31.1	I		I	I		I	I
I	A-C	I 1013.3	I 675.6	I		I	I		I	I
I	ALL	I 2369.5	I 1579.6	I	95.1	I 0.04	I	95.1	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

***** PICADY 4 run completed.

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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:-

"C:\DWP\KIG\May 2007\A20 Roundwell Jcn\Roundwell 2026 PM base+dev.vpi"
at 19:02:43 on Tuesday, 22 May 2007

RUN TITLE

A20 / Roundwell Jcn 2026 PM Base plus development

.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 A20 West

ARM B IS Roundwell

ARM C IS A20 East

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	
I	TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	I (W)	7.30 M.
I	CENTRAL RESERVE WIDTH	I (WCR)	0.00 M.
I	MAJOR ROAD RIGHT TURN - WIDTH	I (WC-B)	3.00 M.
I	- VISIBILITY	I (VC-B)	120.0 M.
I	- BLOCKS TRAFFIC	I	NO
I	MINOR ROAD - VISIBILITY TO LEFT	I (VB-C)	120.0 M.
I	- VISIBILITY TO RIGHT	I (VB-A)	120.0 M.
I	- LANE 1 WIDTH	I (WB-C)	-
I	- LANE 2 WIDTH	I (WB-A)	-
I	- WIDTH AT 0 M FROM JUNC.	I	10.00 M.
I	- WIDTH AT 5 M FROM JUNC.	I	8.00 M.
I	- WIDTH AT 10 M FROM JUNC.	I	6.00 M.
I	- WIDTH AT 15 M FROM JUNC.	I	6.00 M.
I	- WIDTH AT 20 M FROM JUNC.	I	5.00 M.
I	- LENGTH OF FLARED SECTION	I	2 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

I	I	NUMBER OF MINUTES FROM START WHEN			RATE OF FLOW (VEH/MIN)		
		I	I	I	I	I	I
I	ARM	I	I	I	I	I	I
I		I	I	I	I	I	I
		TO RISE	IS REACHED	FALLING	BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
I	ARM A	I 15.00	I 45.00	I 75.00	I 8.86	I 13.29	I 8.86
I	ARM B	I 15.00	I 45.00	I 75.00	I 2.24	I 3.36	I 2.24
I	ARM C	I 15.00	I 45.00	I 75.00	I 10.49	I 15.73	I 10.49

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

TIME	FROM/TO	ARM A	ARM B	ARM C
16.45 - 18.15	ARM A	0.000 0.0 (0.0)	0.090 64.0 (4.9)	0.910 645.0 (0.7)
	ARM B	0.235 42.0 (0.0)	0.000 0.0 (0.0)	0.765 137.0 (0.7)
	ARM C	0.841 706.0 (2.0)	0.159 133.0 (3.1)	0.000 0.0 (0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA
 THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

TIME	DEMAND	CAPACITY	DEMAND/ CAPACITY	PEDESTRIAN FLOW	START QUEUE	END QUEUE	DELAY
GEOMETRIC DELAY (VEH.MIN/	(VEH/MIN)	(VEH/MIN)	(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	(VEH.MIN/ TIME
16.45-17.00							
B-C	1.71	10.66	0.161		0.0	0.2	2.8
B-A	0.52	5.14	0.102		0.0	0.1	1.6
C-A	8.82						
C-B	1.66	9.09	0.183		0.0	0.2	3.2
A-B	0.80						
A-C	8.06						

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)	TO RIGHT (M)
---------------------	---------------------	-----------------------------	----------------------------	---	-----------------

I	B-C	0.093	0.011			0.010
I						
I	B-A	0.055	0.018	0.020	0.003	0.005
I						
I	C-B	0.094	0.011		0.008	
I						

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY
I	GEOMETRIC DELAY	(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/
I	(VEH.MIN/	I		(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME
I	SEGMENT)	TIME SEGMENT)	I					
I	17.00-17.15							
I	B-C	2.04	10.08	0.203		0.2	0.3	3.7
I	B-A	0.63	4.38	0.143		0.1	0.2	2.4
I	C-A	10.54						
I	C-B	1.99	8.65	0.229		0.2	0.3	4.3
I	A-B	0.96						
I	A-C	9.63						

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

I	VISIBILITY	MAJOR RD.	CENT RES	VIS TO LEFT		
I	MARGINAL	LANE WIDTH	WIDTH	WIDTH	(AHEAD FOR MAJOR)	TO RIGHT
I	CHANGE:	(.1M)	(.1M)	(.1M)	(M)	(M)
I	B-C	0.088	0.013			0.009
I	B-A	0.047	0.022	0.020	0.003	0.004
I	C-B	0.089	0.013		0.008	

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY
I	GEOMETRIC DELAY							

SEGMENT)	TIME	(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/
		I		(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME
I	17.15-17.30							
I	B-C	2.50	9.20	0.272		0.3	0.4	5.4
I	B-A	0.77	3.33	0.231		0.2	0.3	4.1
I	C-A	12.91						
I	C-B	2.43	8.06	0.302		0.3	0.4	6.2
I	A-B	1.17						
I	A-C	11.79						

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

VISIBILITY	MARGINAL	LANE WIDTH	MAJOR RD.	CENT RES	VIS TO LEFT	TO RIGHT
	CHANGE:	(.1M)	WIDTH	WIDTH	(AHEAD FOR MAJOR)	(M)
			(.1M)	(.1M)	(M)	(M)
I	B-C	0.080	0.016			0.008
I	B-A	0.035	0.026	0.020	0.002	0.003
I	C-B	0.083	0.015		0.007	

GEOMETRIC	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY
DELAYI		(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/
(VEH.MIN/	SEGMENT)	I		(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME
I	17.30-17.45							
I	B-C	2.50	9.19	0.273		0.4	0.4	5.6
I	B-A	0.77	3.32	0.231		0.3	0.3	4.4
I	C-A	12.91						
I	C-B	2.43	8.06	0.302		0.4	0.4	6.4

I A-B 1.17
 I
 I A-C 11.79
 I

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

VISIBILITY	MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD.	CENT RES	VIS TO LEFT	
			WIDTH (.1M)	WIDTH (.1M)	(AHEAD FOR MAJOR)	TO RIGHT (M)
I	B-C	0.080	0.016			0.008
I	B-A	0.035	0.026	0.020	0.002	0.003
I	C-B	0.083	0.015		0.007	

TIME SEGMENT)	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/TIME)
I 17.45-18.00							
I B-C	2.04	10.07	0.203		0.4	0.3	4.0
I B-A	0.63	4.37	0.143		0.3	0.2	2.7
I C-A	10.54						
I C-B	1.99	8.65	0.229		0.4	0.3	4.7
I A-B	0.96						
I A-C	9.63						

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

VISIBILITY	MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD.	CENT RES	VIS TO LEFT	
			WIDTH (.1M)	WIDTH (.1M)	(AHEAD FOR MAJOR)	TO RIGHT (M)

```

I
I
I      B-C      0.087      0.013      0.009
I
I      B-A      0.047      0.022      0.020      0.003      0.004
I
I      C-B      0.089      0.013      0.008
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 18.00-18.15
I
I  B-C      1.71      10.66      0.161      0.3      0.2      3.0
I
I  B-A      0.52      5.14      0.102      0.2      0.1      1.8
I
I  C-A      8.82
I
I  C-B      1.66      9.09      0.183      0.3      0.2      3.5
I
I  A-B      0.80
I
I  A-C      8.06
I

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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          CHANGE:    (.1M)      (.1M)      (.1M)      (M)          (M)
I
I
I
I  B-C      0.093      0.011      0.010
I
I  B-A      0.055      0.018      0.020      0.003      0.005
I
I  C-B      0.094      0.011      0.008
I

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QUEUE FOR STREAM  B-C
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TIME SEGMENT    NO. OF

```

ENDING	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 FOR STREAM B-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 FOR STREAM C-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

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	STREAM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I		
I	I	I	I	I	* DELAY *	I	* DELAY *	I		
I	I	I	I	I	I	I	I	I		
I	I	(VEH)	(VEH/H)	I	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)		
I	B-C	I	187.9	I	125.2	I	24.3	I	0.13	I
I	B-A	I	57.6	I	38.4	I	17.0	I	0.29	I
I	C-A	I	968.1	I	645.4	I		I		I
I	C-B	I	182.4	I	121.6	I	28.2	I	0.15	I
I	A-B	I	87.8	I	58.5	I		I		I
I	A-C	I	884.4	I	589.6	I		I		I
I	ALL	I	2368.1	I	1578.7	I	69.5	I	0.03	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

***** PICADY 4 run completed.

2026 AM base + dev

1

TRANSTY Traffic Network Study Tool

(C) COPYRIGHT 1996,2001 - TRL Limited, Crowthorne, Berkshire, RG45 6AU, UK
Implementation for IBM-PC or compatible
Program TRNSYT 11, Analysis Program Version 1.3
Run with file:- "KIG SITE ACCESS.DAT" at 18:24 on 22/05/07
Oxent International Gateway Access

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :

```

NUMBER OF NODES      = 2
NUMBER OF LINKS      = 18
NUMBER OF OPTIMISED NODES = 2
MAXIMUM NUMBER OF GRAPHIC PLOTS = 8
NUMBER OF STEPS IN CYCLE = 45
MAXIMUM NUMBER OF SHARED STOPLINES = 0
MAXIMUM NUMBER OF TIMING POINTS = 3
MAXIMUM LINKS AT ANY NODE = 8
    
```

CORE REQUESTED = 5031 WORDS
CORE AVAILABLE = 72000 WORDS

DATA INPUT :-

```

OCARD  CARD  TITLE:- Kent International Gateway Access
NO.    TYPE
( 1)= 1 1 90 45 60 2 3 1 1 100 100 0 2 0 0 0 0
OCARD  CARD  NO. OF TIME EFFECTIVE-GREEN EQUISAT 0=UNEQUAL FLOW CRUISE-SPEEDS OPTIMISE EXTRA HILL- DELAY STOP
NO.    TYPE  CYCLE PERIOD DISPLACEMENTS SETTINGS CYCLE SCALE SCALE CARD32 0=NONE COPIES CLIMB VALUE VALUE
( 2)= 1 1 90 45 60 2 3 1 1 100 100 0 2 0 0 0 0 1420 260
OCARD  CARD  LIST OF NODES TO BE OPTIMISED
NO.    TYPE
( 3)= 1 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0
OCARD  CARD  NODE STAGE 1 STAGE 2 STAGE 3 STAGE 4 STAGE 5 STAGE 6 STAGE 7
NO.    TYPE  CHANGE MIN CHANGE MIN CHANGE MIN CHANGE MIN CHANGE MIN CHANGE MIN
( 4)= 13 1 80 16 49 17 66 14 0 0 0 0 0 0 0
( 5)= 13 2 7 13 67 10 77 16 0 0 0 0 0 0 0
OCARD  CARD  LINK PRIORITY LINKS LINK1 GIVEWAY COEFFS. LINK STOP MAX DELAY DISPSH
NO.    TYPE  NO. NO. % FLOW X100 X100 LENGTH WT.X100 FLOW WT.X100
( 6)= 30 12 14 0 0 0 0 0 0 0 160 0 1000 0 0
OCARD  CARD  LINK FIRST GREEN SECOND GREEN LINK STOP SAT DELAY DISPSH
NO.    TYPE  NO. EXIT NODE STAGE LAG STAGE LAG STAGE LAG STAGE LAG STAGE LAG LENGTH WT.X100 FLOW WT.X100
( 7)= 31 10 1 3 5 1 3 0 0 0 0 200 0 1800 0 0
( 8)= 31 11 1 2 10 1 3 0 0 0 0 200 0 1800 0 0
( 9)= 31 12 1 1 9 3 0 0 0 0 0 160 0 1850 0 0
(10)= 31 13 1 1 9 3 0 0 0 0 0 160 0 1950 0 0
(11)= 31 14 1 1 9 3 0 0 0 0 0 200 0 1950 0 0
(12)= 31 15 1 1 9 2 3 0 0 0 0 200 0 3600 0 0
(13)= 31 16 1 1 9 2 3 0 0 0 0 200 0 1950 0 0
(14)= 31 18 0 0 0 0 0 0 0 0 0 200 0 3600 0 0
(15)= 31 19 0 0 0 0 0 0 0 0 0 200 0 1950 0 0
(16)= 31 20 2 1 6 2 1 0 0 0 0 170 0 1950 0 0
(17)= 31 21 2 2 6 1 1 0 0 0 0 200 0 1800 0 0
(18)= 31 22 2 3 9 1 0 0 0 0 0 200 0 1850 0 0
(19)= 31 23 0 0 0 0 0 0 0 0 0 200 0 1950 0 0
(20)= 31 24 0 0 0 0 0 0 0 0 0 200 0 3600 0 0
(21)= 31 25 0 0 0 0 0 0 0 0 0 200 0 1950 0 0
(22)= 31 26 0 0 0 0 0 0 0 0 0 8 0 9000 0 0
(23)= 31 27 1 1 8 2 0 0 0 0 0 9 0 9000 0 0
(24)= 31 28 2 2 8 3 0 0 0 0 0 9 0 9000 0 0
(25)= 31 29 2 1 6 2 0 0 0 0 0 6 0 9000 0 0
OCARD  CARD  LINK ENTRY 1 ENTRY 2 ENTRY 3 ENTRY 4
NO.    TYPE  NO. TOTAL UNIFORM LINK CRUISE LINK CRUISE LINK CRUISE LINK CRUISE
(25)= 32 10 10 0 0 0 0 16 0 0 0 0 0 0 0 0
(26)= 32 11 10 0 0 0 0 16 0 0 0 0 0 0 0 0
(27)= 32 12 347 0 23 347 13 0 0 0 0 0 0 0 0 0
(28)= 32 13 792 0 23 792 13 0 0 0 0 0 0 0 0 0
(29)= 32 14 857 0 0 0 16 0 0 0 0 0 0 0 0 0
(30)= 32 15 95 0 0 0 16 0 0 0 0 0 0 0 0 0
(31)= 32 18 442 0 12 347 16 15 95 16 0 0 0 0 0 0
(32)= 32 19 792 0 10 10 16 13 792 16 0 0 0 0 0 0
(33)= 32 20 857 0 11 10 14 14 857 14 0 0 0 0 0 0
(34)= 32 21 156 0 0 0 16 0 0 0 0 0 0 0 0 0
(35)= 32 22 142 0 0 0 16 0 0 0 0 0 0 0 0 0
(36)= 32 23 1139 0 0 0 16 0 0 0 0 0 0 0 0 0
(37)= 32 24 142 0 22 142 16 0 0 0 0 0 0 0 0 0
(38)= 32 25 1013 0 20 857 16 21 156 16 0 0 0 0 0 0
(39)= 32 100 50 0 0 0 7 0 0 0 0 0 0 0 0 0
(40)= 32 101 50 0 0 0 7 0 0 0 0 0 0 0 0 0
(41)= 32 200 50 0 0 0 7 0 0 0 0 0 0 0 0 0
(42)= 32 201 50 0 0 0 5 0 0 0 0 0 0 0 0 0
OCARD  CARD  LINK LINK LINK LINK LINK LINK LINK LINK LINK LINK
NO.    TYPE  NO. NO. NO. NO. NO. NO. NO. NO. NO. NO.
(43)= 35 14 12 20 0 0 0 0 0 0 0 0 0 0 0 0
0*****END OF SUBROUTINE TINPUT*****
0
0 90 SECOND CYCLE 45 STEPS
0 INITIAL SETTINGS
0 (SECONDS)
0 NODE NUMBER STAGE STAGE STAGE STAGE STAGE STAGE STAGE
NO OF STAGES 1 2 3 4 5 6 7
1 3 80 49 66
2 3 7 69 79
0 LINK FLOW SAT DEGREE MEAN TIMES -----DELAY----- ---STOPS--- ---QUEUE--- PERFORMANCE EXIT GREEN TIMES
NUMBER INTO FLOW OF PER PCU UNIFORM RANDOM+ COST MEAN COST MEAN AVERAGE WEIGHTED SUM NODE START START
LINK SAT CRUISE OVERSAT OF STOPS OF MAX. AVERAGE EXCESS OF ( ) VALUES 1ST END
(PCU/H) (PCU/H) (%) (SEC) DELAY (U+R+O=MEAN Q) DELAY /PCU STOPS (PCU) (PCU) (PCU) (PCU) (PCU) (PCU) (PCU) (PCU) (PCU) (PCU) (PCU) (PCU)
(SEC) (SEC) (PCU-H/H) ($/H) ($/H) ($/H) ($/H) ($/H) ($/H) ($/H) ($/H) ($/H) ($/H) ($/H) ($/H) ($/H) ($/H) ($/H) ($/H) ($/H) ($/H)
10 10 1800 4 16 40 0.1 + 0.0 ( 1.6) 90 ( 0.2) 0 1.8 1 71 83
11 10 1800 2 16 27 0.1 + 0.0 ( 1.1) 72 ( 0.2) 0 1.3 1 59 83
12 346 1850 75 13 42 2.5 + 1.5 ( 57.2) 104 ( 9.7) 9 66.9 1 89 66
13 793 1950 54 13 7 1.0 + 0.6 ( 22.4) 38 ( 8.0) 8 30.4 1 89 66
    
```

14	857	1950	73	16	19	3.1 +	1.4	(62.7)	71	(16.4)	16	79.1	1	89	52
15	95	1800	9	16	9	0.2 +	0.0	(3.5)	40	(1.0)	1	4.6	1	89	52
18	441	3600	12	16	1	0.0 +	0.1	(1.0)	1	(0.1)	0	1.1			
19	793	1950	41	16	2	0.0 +	0.3	(4.9)	2	(0.4)	0	5.2			
20	857	1950	68	14	5	0.2 +	1.1	(17.6)	10	(2.1)	3	19.8	2	13	70
21	156	1800	35	16	34	1.2 +	0.3	(21.2)	85	(3.6)	3	24.8	2	77	8
22	142	1850	69	16	66	1.5 +	1.1	(36.9)	121	(4.6)	4	41.6	2	88	7
23	1139	1950	58	16	2	0.0 +	0.7	(10.0)	2	(0.8)	1	10.7			
28	142	3600	4	16	1	0.0 +	0.0	(0.3)	1	(0.0)	0	0.3			
29	1013	1950	52	16	2	0.0 +	0.5	(7.7)	2	(0.6)	1	8.2			
100	50	9000	6	7	40	0.5 +	0.0	(7.8)	92	(0.0)	1	7.5	1	73	80
101	50	9000	1	7	9	0.1 +	0.0	(1.7)	42	(0.0)	1	1.7	1	86	48
200	50	9000	17	7	49	0.6 +	0.1	(5.7)	103	(0.0)	1	9.7	2	77	75
201	50	9000	1	5	6	0.1 +	0.0	(1.3)	36	(0.0)	0	1.3	2	13	69

0	TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL
	DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	COST	FOR	PERFORMANCE
	TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	OF	EXCESS	INDEX
				DELAY	DELAY	DELAYS	STOPS	QUEUES		
	(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
0	1289.1	48.0	26.8	11.2	7.7	(268.5)	+ (47.8)	+ (0.0)	=	316.3
TOTALS										

0	CRUISE	DELTA	STOPS	TOTALS
	LITRES PER HOUR	LITRES PER HOUR	LITRES PER HOUR	LITRES PER HOUR
0	69.0	+ 21.7	+ 21.8	= 112.5

NO. OF ENTRIES TO SUBPT = 1
 NO. OF LINKS RECALCULATED= 18
 90 SECOND CYCLE 45 STEPS
 OINTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 13

1	3	80	49	66						
2	3	7	69	79						
0	TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL	
	DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE	
	TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	EXCESS	INDEX	
				DELAY	DELAY	DELAYS	STOPS	QUEUES		
	(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
0	1289.1	48.0	26.8	11.2	7.7	(268.5)	+ (47.8)	+ (0.0)	=	316.3
TOTALS										

NO. OF ENTRIES TO SUBPT = 5
 NO. OF LINKS RECALCULATED= 66
 90 SECOND CYCLE 45 STEPS
 OINTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 13 36

1	3	80	49	66						
2	3	7	69	79						
0	TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL	
	DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE	
	TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	EXCESS	INDEX	
				DELAY	DELAY	DELAYS	STOPS	QUEUES		
	(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
0	1289.1	48.0	26.8	11.2	7.7	(268.5)	+ (47.8)	+ (0.0)	=	316.3
TOTALS										

NO. OF ENTRIES TO SUBPT = 5
 NO. OF LINKS RECALCULATED= 66
 90 SECOND CYCLE 45 STEPS
 OINTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 13 36 -1

1	3	80	49	66						
2	3	8	69	79						
0	TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL	
	DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE	
	TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	EXCESS	INDEX	
				DELAY	DELAY	DELAYS	STOPS	QUEUES		
	(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
0	1289.1	47.8	27.0	11.1	7.5	(265.3)	+ (48.3)	+ (0.0)	=	313.5
TOTALS										

NO. OF ENTRIES TO SUBPT = 8
 NO. OF LINKS RECALCULATED= 86
 90 SECOND CYCLE 45 STEPS
 OINTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 13 36 -1 13

1	3	80	49	66						
2	3	8	69	79						
0	TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL	
	DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE	
	TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	EXCESS	INDEX	
				DELAY	DELAY	DELAYS	STOPS	QUEUES		
	(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
0	1289.1	47.8	27.0	11.1	7.5	(265.3)	+ (48.3)	+ (0.0)	=	313.5
TOTALS										

NO. OF ENTRIES TO SUBPT = 5
 NO. OF LINKS RECALCULATED= 66
 90 SECOND CYCLE 45 STEPS
 OINTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 13 36 -1 13 36

1	3	80	49	66						
2	3	8	69	79						
0	TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL	
	DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE	
	TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	EXCESS	INDEX	
				DELAY	DELAY	DELAYS	STOPS	QUEUES		
	(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
0	1289.1	47.8	27.0	11.1	7.5	(265.3)	+ (48.3)	+ (0.0)	=	313.5
TOTALS										

NO. OF ENTRIES TO SUBPT = 5
 NO. OF LINKS RECALCULATED= 66
 90 SECOND CYCLE 45 STEPS
 OINTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 13 36 -1 13 36 1

1	3	82	51	68						
2	3	8	69	79						
0	TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL	
	DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE	
	TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	EXCESS	INDEX	
				DELAY	DELAY	DELAYS	STOPS	QUEUES		
	(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
0	1289.1	47.8	27.0	11.2	7.5	(265.4)	+ (47.5)	+ (0.0)	=	312.9
TOTALS										

NO. OF ENTRIES TO SUBPT = 6
 NO. OF LINKS RECALCULATED= 78

2026 PM base + dev

1

TRANSTYT Traffic Network Study Tool

(C) COPYRIGHT 1996,2001 - TRL Limited, Crowthorne, Berkshire, RG45 6AU, UK
 OImplementation for IBM-PC or compatible
 OProgram TRANSTYT 11, Analysis Program Version 1.3
 ORun with file:- "RIG SITE ACCESS.DAT" at 18:24 on 22/05/07
 OKent International Gateway Access

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :

```

NUMBER OF NODES           = 2
NUMBER OF LINKS           = 18
NUMBER OF OPTIMISED NODES = 2
MAXIMUM NUMBER OF GRAPHIC PLOTS = 8
NUMBER OF STEPS IN CYCLE = 45
MAXIMUM NUMBER OF SHARED STOPLINES = 0
MAXIMUM NUMBER OF TIMING POINTS = 3
MAXIMUM LINKS AT ANY NODE = 8
  
```

CORE REQUESTED = 5031 WORDS
 CORE AVAILABLE = 72000 WORDS

DATA INPUT :-

```

OCARD  CARD  TITLE:- Kent International Gateway Access
NO.    TYPE
( 1)= 1  Kent International Gateway Access
OCARD  CARD  NO. OF TIME EFFECTIVE-GREEN EQUISAT 0=UNEQUAL FLOW CRUISE-SPEEDS OPTIMISE EXTRA HILL- DELAY STOP
NO.    TYPE  CYCLE PERIOD DISPLACEMENTS SETTINGS 0=NO 1=EQUAL 10-200 50-200 0=TIMES 1=0/SET FINAL OUTPUT P PER F PER
          (SEC) PER MINS. (SEC) (SEC) 1=YES CYCLE $ $ 1=SPEEDS 2=FULL OUTPUT 1=FULL PCU-H 100
2)= 1      90      45      60      2      3      1      1      100      100      0      2      0      0      1420      260
OCARD  CARD  LIST OF NODES TO BE OPTIMISED
NO.    TYPE
3)= 2      1      2      0      0      0      0      0      0      0      0      0      0      0      0      0
OCARD  CARD  NODE STAGE 1 STAGE 2 STAGE 3 STAGE 4 STAGE 5 STAGE 6 STAGE 7
NO.    TYPE  NO.  CHANGE MIN  CHANGE MIN  CHANGE MIN  CHANGE MIN  CHANGE MIN  CHANGE MIN  CHANGE MIN
4)= 13     1      7      16     64     17     82     14     0      0      0      0      0      0      0      0
5)= 13     2      0      13     63     10     73     16     0      0      0      0      0      0      0      0
OCARD  CARD  LINK STAGE 1 STAGE 2 STAGE 3 STAGE 4 STAGE 5 STAGE 6 STAGE 7
NO.    TYPE  NO.  CHANGE MIN  CHANGE MIN  CHANGE MIN  CHANGE MIN  CHANGE MIN  CHANGE MIN  CHANGE MIN
6)= 30     12     14     0      0      0      0      0      0      0      0      0      0      0      0
OCARD  CARD  LINK EXIT STAGE 1 STAGE 2 STAGE 3 STAGE 4 STAGE 5 STAGE 6 STAGE 7
NO.    TYPE  NO.  NODE  STAGE 1 LAG STAGE 2 LAG STAGE 3 LAG STAGE 4 LAG STAGE 5 LAG STAGE 6 LAG STAGE 7 LAG
7)= 31     10     1      3      5      1      3      0      0      0      0      0      0      0      0
8)= 31     11     1      2      10     1      3      0      0      0      0      0      0      0      0
9)= 31     12     1      1      9      3      0      0      0      0      0      0      0      0      0
10)= 31    13     1      1      9      3      0      0      0      0      0      0      0      0      0
11)= 31    14     1      1      9      2      3      0      0      0      0      0      0      0      0
12)= 31    15     1      1      9      2      3      0      0      0      0      0      0      0      0
13)= 31    18     0      0      0      0      0      0      0      0      0      0      0      0      0
14)= 31    19     0      0      0      0      0      0      0      0      0      0      0      0      0
15)= 31    20     2      1      6      2      1      0      0      0      0      0      0      0      0
16)= 31    21     2      2      8      1      1      0      0      0      0      0      0      0      0
17)= 31    22     2      3      9      1      0      0      0      0      0      0      0      0      0
18)= 31    23     0      0      0      0      0      0      0      0      0      0      0      0      0
19)= 31    26     0      0      0      0      0      0      0      0      0      0      0      0      0
20)= 31    29     0      0      0      0      0      0      0      0      0      0      0      0      0
21)= 31   100     1      3      7      1      0      0      0      0      0      0      0      0      0
22)= 31   101     1      1      8      2      0      0      0      0      0      0      0      0      0
23)= 31   200     2      2      8      3      0      0      0      0      0      0      0      0      0
24)= 31   201     2      1      6      2      0      0      0      0      0      0      0      0      0
OCARD  CARD  LINK FIRST GREEN SECOND GREEN LINK STOP SAT DELAY DISPSH
NO.    TYPE  NO.  START END START END LENGTH WT.X100 FLOW WT.X100 WT.X100
25)= 32     10     100     0      0      16     0      0      0      0      0      0      0      0      0
26)= 32     11     365     0      0      16     0      0      0      0      0      0      0      0      0
27)= 32     12     30      0      0      13     0      0      0      0      0      0      0      0      0
28)= 32     13     698     0      0      13     0      0      0      0      0      0      0      0      0
29)= 32     14     784     0      0      16     0      0      0      0      0      0      0      0      0
30)= 32     15     10      0      0      16     0      0      0      0      0      0      0      0      0
31)= 32     18     38      0      12     30     16     15     10     16     0      0      0      0      0
32)= 32     19     798     0      10     100    16     13     698    16     0      0      0      0      0
33)= 32     20     1149    0      11     365     14     14     784     14     0      0      0      0      0
34)= 32     21     160      0      0      16     0      0      0      0      0      0      0      0      0
35)= 32     22     154      0      0      16     0      0      0      0      0      0      0      0      0
36)= 32     23     728      0      0      16     0      0      0      0      0      0      0      0      0
37)= 32     26     154      0      22     154     16     0      0      0      0      0      0      0      0
38)= 32     29     1309    0      20     1149    16     21     160     16     0      0      0      0      0
39)= 32     100     50      0      0      7      0      0      0      0      0      0      0      0      0
40)= 32     101     50      0      0      7      0      0      0      0      0      0      0      0      0
41)= 32     200     50      0      0      7      0      0      0      0      0      0      0      0      0
42)= 32     201     50      0      0      5      0      0      0      0      0      0      0      0      0
OCARD  CARD  LINK LINK LINK LINK LINK LINK LINK LINK LINK LINK LINK LINK LINK LINK LINK LINK LINK LINK LINK LINK
NO.    TYPE  NO.  NO.  NO.  NO.  NO.  NO.  NO.  NO.  NO.  NO.  NO.  NO.  NO.  NO.  NO.  NO.  NO.  NO.  NO.  NO.
43)= 35     14     12     20     0      0      0      0      0      0      0      0      0      0      0      0      0      0
O*****END OF SUBROUTINE TINPUT*****
O
O 90 SECOND CYCLE 45 STEPS
OINITIAL SETTINGS
O-(SECONDS)
O NODE NUMBER STAGE STAGE STAGE STAGE STAGE STAGE STAGE
NO OF STAGES 1 2 3 4 5 6 7
1 3 7 64 63
2 3 0 63 73
O LINK FLOW SAT DEGREE MEAN TIMES ~~~~~DELAY~~~~~ ---STOPS--- ---QUEUE--- PERFORMANCE EXIT GREEN TIMES
NUMBER INTO FLOW OF PER PCU UNIFORM RANDOM+ COST MEAN COST MEAN AVERAGE INDEX. NODE START START END
LINK LINK SAT CRUISE OVERSAT OF STOPS OF MAX. AVERAGE WEIGHTED SUM OF ( ) VALUES 1ST 2ND
(PCU/H) (PCU/H) (t) (SEC) DELAY (U+R+O=MEAN Q) DELAY ($/H) (t) STOPS ($/H) (PCU) EXCESS ($/H) ($/H) ($/H) (SECONDS)
10 100 1800 38 16 46 1.0 + 0.3 ( 18.2) 99 ( 2.7) 3 20.9 1 88 10
11 365 1800 68 16 38 2.8 + 1.0 ( 54.5) 94 ( 9.2) 9 63.7 1 74 10
12 31 1850 6 13 12 0.1 + 0.0 ( 1.6) 56 ( 9.5) 0 2.1 1 16 83
13 697 1950 47 13 7 0.8 + 0.4 ( 17.9) 35 ( 6.5) 7 24.4 1 16 83
  
```

14	784	1950	70	16	19	2.9 +	1.1	(57.6)	70	(14.8)	15	72.5	1	16	67
15	10	1800	1	16	10	0.0 +	0.0	(0.4)	41	(0.1)	0	0.5	1	16	67
18	39	3600	1	16	1	0.0 +	0.0	(0.1)	1	(0.0)	0	0.1			
19	797	1950	41	16	2	0.0 +	0.3	(4.9)	2	(0.4)	0	5.3			
20	1149	1950	90	14	21	2.5 +	4.2	(94.7)	60	(17.7)	18	112.4	2	6	64
21	160	1800	38	16	36	1.3 +	0.3	(22.7)	87	(3.8)	4	26.4	2	71	1
22	154	1850	83	16	91	1.7 +	2.2	(55.1)	143	(6.0)	6	61.1	2	82	0
23	728	1950	37	16	1	0.0 +	0.3	(4.2)	2	(0.3)	0	4.5			
28	154	3600	4	16	1	0.0 +	0.0	(0.3)	1	(0.0)	0	0.3			
29	1309	1950	67	16	3	0.0 +	1.0	(14.5)	3	(1.1)	1	15.5			
100	50	9000	6	7	41	0.5 +	0.0	(8.0)	93	(0.0)	1	8.0	1	0	7
101	50	9000	1	7	5	0.1 +	0.0	(1.8)	43	(0.0)	1	1.8	1	35	64
200	50	9000	17	7	49	0.6 +	0.1	(9.7)	103	(0.0)	1	9.7	2	71	73
201	50	9000	1	5	6	0.1 +	0.0	(1.3)	36	(0.0)	0	1.3	2	6	63

0	TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL
0	DISTANCE	TRAVELLED	TIME	JOURNEY	SPEED	UNIFORM	RANDOM*	OVERSAT	OF	OF	OF	EXCESS	FOR	PERFORMANCE	INDEX	
0	(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	TOTALS
0	1233.4	53.8	22.9	14.4	11.5	(367.5)	+ (63.1)	+ (0.0)	=	430.6						

0 CRUISE DELAY STOPS TOTALS
 0 LITRES PER HOUR LITRES PER HOUR LITRES PER HOUR LITRES PER HOUR
 0 FUEL CONSUMPTION PREDICTIONS 66.0 + 29.8 + 28.7 = 124.5

0 NO. OF ENTRIES TO SUBPT = 1
 0 NO. OF LINKS RECALCULATED= 18

0 90 SECOND CYCLE 45 STEPS
 0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 13
 - (SECONDS)

1	3	7	64	83												
2	3	0	63	73												
0	TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL
0	DISTANCE	TRAVELLED	TIME	JOURNEY	SPEED	UNIFORM	RANDOM*	OVERSAT	OF	OF	OF	EXCESS	FOR	PERFORMANCE	INDEX	
0	(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	TOTALS
0	1233.4	53.8	22.9	14.4	11.5	(367.5)	+ (63.1)	+ (0.0)	=	430.6						

0 NO. OF ENTRIES TO SUBPT = 5
 0 NO. OF LINKS RECALCULATED= 66

0 90 SECOND CYCLE 45 STEPS
 0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 13 36
 - (SECONDS)

1	3	7	64	83												
2	3	0	63	73												
0	TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL
0	DISTANCE	TRAVELLED	TIME	JOURNEY	SPEED	UNIFORM	RANDOM*	OVERSAT	OF	OF	OF	EXCESS	FOR	PERFORMANCE	INDEX	
0	(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	TOTALS
0	1233.4	53.8	22.9	14.4	11.5	(367.5)	+ (63.1)	+ (0.0)	=	430.6						

0 NO. OF ENTRIES TO SUBPT = 5
 0 NO. OF LINKS RECALCULATED= 65

0 90 SECOND CYCLE 45 STEPS
 0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 13 36 -1
 - (SECONDS)

1	3	7	65	83												
2	3	0	63	73												
0	TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL
0	DISTANCE	TRAVELLED	TIME	JOURNEY	SPEED	UNIFORM	RANDOM*	OVERSAT	OF	OF	OF	EXCESS	FOR	PERFORMANCE	INDEX	
0	(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	TOTALS
0	1233.4	53.8	22.9	14.4	11.5	(367.3)	+ (63.2)	+ (0.0)	=	430.5						

0 NO. OF ENTRIES TO SUBPT = 6
 0 NO. OF LINKS RECALCULATED= 75

0 90 SECOND CYCLE 45 STEPS
 0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 13 36 -1 13
 - (SECONDS)

1	3	7	65	83												
2	3	0	63	73												
0	TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL
0	DISTANCE	TRAVELLED	TIME	JOURNEY	SPEED	UNIFORM	RANDOM*	OVERSAT	OF	OF	OF	EXCESS	FOR	PERFORMANCE	INDEX	
0	(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	TOTALS
0	1233.4	53.8	22.9	14.4	11.5	(367.3)	+ (63.2)	+ (0.0)	=	430.5						

0 NO. OF ENTRIES TO SUBPT = 5
 0 NO. OF LINKS RECALCULATED= 66

0 90 SECOND CYCLE 45 STEPS
 0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 13 36 -1 13 36
 - (SECONDS)

1	3	7	65	83												
2	3	0	63	73												
0	TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL
0	DISTANCE	TRAVELLED	TIME	JOURNEY	SPEED	UNIFORM	RANDOM*	OVERSAT	OF	OF	OF	EXCESS	FOR	PERFORMANCE	INDEX	
0	(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	TOTALS
0	1233.4	53.8	22.9	14.4	11.5	(367.3)	+ (63.2)	+ (0.0)	=	430.5						

0 NO. OF ENTRIES TO SUBPT = 5
 0 NO. OF LINKS RECALCULATED= 66

0 90 SECOND CYCLE 45 STEPS
 0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 13 36 -1 13 36 1
 - (SECONDS)

1	3	8	66	84												
2	3	0	63	73												
0	TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL
0	DISTANCE	TRAVELLED	TIME	JOURNEY	SPEED	UNIFORM	RANDOM*	OVERSAT	OF	OF	OF	EXCESS	FOR	PERFORMANCE	INDEX	
0	(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	TOTALS
0	1233.4	53.7	22.9	14.3	11.5	(367.0)	+ (63.1)	+ (0.0)	=	430.2						

0 NO. OF ENTRIES TO SUBPT = 5
 0 NO. OF LINKS RECALCULATED= 66

User	Denis Wilson Partnership	Project	Kent International Gateway 2005-180				Page 24
Location	Maidstone	File	A20-Willington St.LSG	SCN		Chkd	
Title	A20 / Willington St Junction			Controller	Generic	Appvd	

Parameters Selected

Parameters Selected	
Flow Group	2026 AM Base + Dev
Flow Group Period	08:00 to 09:00
Phase Minimum Type	Street
CycleTime	90
Flow Factor	1.00
Sat Flows Used	RR67

Stage Results

Stage Timings			
Stage Sequence	1	2	3
Stage Duration	26	32	12
Stage Change Point	0	32	72

User	Denis Wilson Partnership	Project	Kent International Gateway 2005-180				Page 25
Location	Maidstone	File	A20-Willington St.LSG	SCN		Chkd	
Title	A20 / Willington St Junction			Controller	Generic	Appvd	

Link Results

Link Results												
Link Ref	Link Name	Link Type	Full Phs	Arw Phs	Tot Grn (s)	Dem Flow pcu	Max Satn pcu/h	Cap pcu	Deg Sat %	Tot Del s/pcu	TDel pcuh	Que' pcu
1/1	A20 (East) Left Ahead	U	B		26	629	1944	583	107.9	137.9	24.1	29.7
2/1	Willington St Left	U	D		50	776	1781	1009	76.9	21.4	4.6	8.9
2/2	Willington St Right	U	C		12	299	1958	283	105.7	160.8	13.4	16.6
3/1	A20 (West) Ahead	U	A		66	376	1965	1463	25.7	4.4	0.5	2.5
3/2	A20 (West) Right	O	A	E	66	810	1868	746	108.6	119.4	26.9	29.6
Cycle Time 90 s				PRC -20.7 %				Total Delay 69.4 PCUh				

Opposed Link Results

Opposed Movement Detail				
Link Ref	Link Name	Arr Grn	Gaps /cyc	Ign /cyc
3/2	A20 (West) Right	33	0.0	1.0

User	Denis Wilson Partnership	Project	Kent International Gateway 2005-180				Page 26
Location	Maidstone	File	A20-Willington St.LSG	SCN		Chkd	
Title	A20 / Willington St Junction			Controller	Generic	Appvd	

Parameters Selected

Parameters Selected	
Flow Group	2026 PM Base + Dev
Flow Group Period	17:00 to 18:00
Phase Minimum Type	Street
CycleTime	90
Flow Factor	1.00
Sat Flows Used	RR67

Stage Results

Stage Timings			
Stage Sequence	1	2	3
Stage Duration	27	31	12
Stage Change Point	0	33	72

User	Denis Wilson Partnership	Project	Kent International Gateway 2005-180				Page 27
Location	Maidstone	File	A20-Willington St.LSG	SCN		Chkd	
Title	A20 / Willington St Junction			Controller	Generic	Appvd	

Link Results

Link Results												
Link Ref	Link Name	Link Type	Full Phs	Arw Phs	Tot Grn (s)	Dem Flow pcu	Max Satn pcu/h	Cap pcu	Deg Sat %	Tot Del s/pcu	TDel pcuh	Que' pcu
1/1	A20 (East) Left Ahead	U	B		27	679	1944	605	112.3	168.2	31.7	37.7
2/1	Willington St Left	U	D		49	873	1781	989	88.2	30.8	7.5	12.4
2/2	Willington St Right	U	C		12	297	1958	283	105.0	157.9	13.0	16.2
3/1	A20 (West) Ahead	U	A		66	469	1965	1463	32.1	4.8	0.6	3.1
3/2	A20 (West) Right	O	A	E	66	795	1868	725	109.7	128.0	28.3	30.9
Cycle Time 90 s				PRC -24.7 %				Total Delay 81.1 PCUh				

Opposed Link Results

Opposed Movement Detail				
Link Ref	Link Name	Arr Grn	Gaps /cyc	Ign /cyc
3/2	A20 (West) Right	32	0.0	1.0