APPENDIX ‘3’

TRANSPORT TECHNICAL NOTE

Site: M25 Junction 6, Godstone, Surrey

Client: Tandridge District Council

Prepared by: DHA

Date: December 2021

1.1 Introduction

1.1.1 This Transport Technical Note (TN) has been prepared on behalf of Tandridge District Council (TDC) to outline the findings of DHA’s further assessment of potential mitigation measures for M25 Junction 6 in support of the Council’s Draft Local Plan.

1.1.2 This TN has been informed by Project Steering Group meetings involving TDC, National Highways (NH) and Surrey County Council (SCC). It follows the submission of a Technical Note (dated September 2021), which outlined the proposed junction capacity assessment methodology, and a TDC Member Briefing held on 11th November 2021.

1.2 Mitigation Scheme Option

1.2.1 The feasibility design of the identified mitigation scheme for the junction is included at **Appendix A**.

1.2.2 The scheme has sought to make use of land within the control of the Local and Strategic Highway Authorities (SCC and NH), to avoid modifications to the motorway overbridges, and to maintain the existing Non-Motorised User (NMU) route alongside the western junction circulatory.

1.2.3 In summary, the interim scheme includes the following principal layout changes:-

- **A22 (N) arm** – increased entry lanes from two to three, with the additional lane measuring approximately 110m in length;
- **M25 eastbound on slip** – remains unchanged;
- **M25 westbound off slip** – localised widening to aid vehicle tracking;
- **A22 (S) arm** – increased entry lanes from two to three, with the additional lane measuring approximately 160m in length;
- **B2235 arm** – remains unchanged;
- **M25 westbound on slip** – remains unchanged;

- **M25 eastbound off slip** – increased entry lanes from two to three, with the additional lane measuring approximately 100m in length;

- **Roundabout gyratory** – increased circulatory lanes from two to three, with the exception of the western overbridge, where the existing Non-Motorised User (NMU) route is retained; and

- **Lane markings** – minor amendments have been made to the lane markings and associated circulation of the junction, following the completion of the revised assessment methodology.

1.3 Junction Capacity Assessment

1.3.1 To assess the capacity benefit of the scheme, LinSig modelling has been undertaken by JCT Consultancy Ltd. This is based on the methodology outlined within the previous TN (dated September 2021). The associated network diagrams are included at **Figures 0-1 to 0-32** appended to this TN.

1.3.2 The methodology assumes that all vehicle trips arising from the proposed Local Plan allocations will be work-based trips. This is a highly robust approach, as other journey purposes (i.e. trips for education, shopping and leisure) will also take place during the weekday peak hours and are likely to be more localised in nature, with a consequently lesser impact on M25 Junction 6.

1.3.3 Moreover, whilst not fully known at the current time, it is likely that the impacts of the COVID-19 pandemic on living and working patterns will continue to reduce peak period commuting in the long-term, for which no allowance has been made.

Base Scenarios

1.3.4 NH has confirmed that the mitigation scheme should seek to achieve at least a 'nil detriment' impact with respect to the impact of Local Plan growth. In this regard, consideration was given to 2018, 2025, 2030, 2035, 2040 and 2045 base scenarios, assuming the existing junction arrangement, in order to test this.

1.3.5 Please note that the 2018 base is derived from Manual Classified Count (MCC) data. A summary of the base performance of the junction in the weekday AM and PM peak hours is shown in Table 1 overleaf, using the existing junction timings. The full LinSig report is included at **Appendix B.**

1.3.6 The outputs of LinSig include the Degree of Saturation (DoS), the Mean Maximum Queue (MMQ) and the Practical Reserve Capacity (PRC) units of measure. The DoS (in percent) is a ratio of demand to capacity for each traffic phase, with a value of 90 percent indicating that an arm is operating at practical capacity. The PRC is calculated from the maximum percentage DoS and is a measure of how much additional traffic could pass through the junction before it reaches full capacity. The MMQ provides an indication of how the overall junction performance may affect adjacent junctions on the highway network.

Year	Junction Arm	Base Flows			
		AM		PM	
		DoS	MMQ	DoS	MMQ
2018	A22 (N)	100.0%	38	112.4%	75
	North Circ	69.8%	9	60.4%	13
	M25 WB Off-Slip	68.1%	11	101.0%	24
	East Circ	99.7%	35	73.7%	11
	A22 (S)	104.1%	38	97.7%	26
	South-East Circ	84.7%	27	71.6%	17
	B2235	87.3%	12	89.0%	12
	South West Circ	91.1%	21	75.3%	9
	M25 EB Off-Slip	79.4%	16	85.0%	18
	West Circ	68.7%	17	83.7%	21
	PRC	-15.7%		-24.8%	
	Average Delay (s/pcu)	108.0		143.4	
2025	A22 (N)	102.5%	46	113.1%	78
	North Circ	72.3%	9	62.6%	13
	M25 WB Off-Slip	70.6%	11	104.8%	31
	East Circ	99.3%	34	76.1%	10
	A22 (S)	104.8%	40	98.3%	27
	South-East Circ	86.0%	28	71.7%	17
	B2235	98.7%	20	89.5%	13
	South West Circ	88.6%	17	78.3%	9
	M25 EB Off-Slip	82.3%	17	88.1%	19
	West Circ	70.3%	18	87.9%	19
	PRC	-16.4%		-25.7%	
	Average Delay (s/pcu)	115.5		151.4	
2030	A22 (N)	103.3%	49	114.1%	81
	North Circ	73.8%	9	64.1%	14
	M25 WB Off-Slip	72.1%	12	107.3%	37
	East Circ	100.2%	38	76.6%	11
	A22 (S)	105.4%	42	99.1%	28
	South-East Circ	86.8%	29	71.7%	17
	B2235	99.3%	22	90.5%	13
	South West Circ	88.7%	17	78.4%	9
	M25 EB Off-Slip	84.0%	18	90.3%	21
	West Circ	70.8%	18	88.4%	19
	PRC	-17.1%		-26.7%	
	Average Delay (s/pcu)	121.5		160.1	
2035	A22 (N)	104.8%	55	115.5%	87
	North Circ	75.8%	9	65.9%	14
	M25 WB Off-Slip	74.1%	12	110.4%	45
	East Circ	101.4%	52	77.2%	11
	A22 (S)	106.5%	45	100.4%	31
	South-East Circ	87.2%	29	71.7%	17

	B2235	100.3%	24	91.5%	14
	South West Circ	88.5%	17	79.0%	9
	M25 EB Off-Slip	86.4%	19	93.0%	23
	West Circ	71.3%	18	88.7%	20
	PRC	`-18.3%		-28.3%	
	Average Delay (s/pcu)	132.1		173.0	
2040	A22 (N)	107.0%	65	117.9%	97
	North Circ	78.0%	9	67.7%	14
	M25 WB Off-Slip	76.3%	13	113.6%	52
	East Circ	102.3%	56	77.8%	11
	A22 (S)	108.8%	52	102.4%	36
	South-East Circ	87.6%	29	71.7%	17
	B2235	102.4%	29	93.4%	15
	South West Circ	88.0%	16	78.8%	9
	M25 EB Off-Slip	89.0%	21	95.5%	25
	West Circ	71.6%	19	88.9%	20
	PRC	-20.9%		-31.0%	
	Average Delay (s/pcu)	152.0		193.3	
2045	A22 (N)	109.4%	76	120.1%	106
	North Circ	79.8%	9	69.2%	14
	M25 WB Off-Slip	78.1%	13	116.1%	59
	East Circ	102.9%	59	78.2%	12
	A22 (S)	111.1%	60	104.2%	41
	South-East Circ	87.9%	29	71.7%	17
	B2235	104.5%	35	95.1%	16
	South West Circ	88.1%	16	78.5%	9
	M25 EB Off-Slip	91.1%	22	97.5%	28
	West Circ	71.9%	19	89.2%	21
	PRC	-23.5%		-33.4%	
	Average Delay (s/pcu)	173.0		212.8	

Table 1: LinSig Summary – Baseline Junction Operation

1.3.7 The following should be noted with respect to the assessment undertaken:-

- There are many combinations of signal timings that may provide desirable results; and

- When optimising timings for the proposed models, the DoS limits were first applied to circulating lanes (90-100%, depending on the initial results from 2018 that were based on site observed timings). Timings were then optimised, flows assigned, timings optimised and so on. In most scenarios, the results do not converge to a final result, as changes in timings result in different delays, thus flows assign differently using delay-based assignment, which then result in different optimised timings. The process was continued to provide as consistent a comparison for all scenarios as possible.

1.3.8 It is noted that the junction already operates over capacity and that this situation will be exacerbated as wider background traffic growth is added in the future year scenarios.

Local Plan Scenarios – Without Mitigation

1.3.9 Table 2 and Table 3 below illustrate the performance of the junction in Local Plan Scenarios 1 and 2[1] without mitigation measures. The LinSig report for these scenarios is included at **Appendix C**.

Year	Junction Arm	Base Flows			
		AM		PM	
		DoS	MMQ	DoS	MMQ
2025	A22 (N)	107.0%	65	116.3%	90
	North Circ	75.2%	9	64.4%	14
	M25 WB Off-Slip	72.7%	12	107.1%	37
	East Circ	101.3%	52	76.8%	11
	A22 (S)	107.2%	47	102.2%	35
	South-East Circ	87.0%	28	72.4%	17
	B2235	100.3%	24	92.2%	14
	South West Circ	89.0%	17	79.4%	9
	M25 EB Off-Slip	85.7%	19	93.0%	23
	West Circ	70.8%	18	88.9%	20
	PRC	-19.2%		-29.2%	
	Average Delay (s/pcu)	145.9		176.3	
2030	A22 (N)	111.6%	87	120.1%	106
	North Circ	81.2%	9	69.6%	14
	M25 WB Off-Slip	76.8%	13	110.8%	46
	East Circ	103.6%	62	78.4%	12
	A22 (S)	110.7%	58	106.5%	49
	South-East Circ	86.5%	26	72.5%	17
	B2235	107.4%	43	98.1%	20
	South West Circ	88.1%	16	79.3%	9
	M25 EB Off-Slip	92.9%	24	98.2%	29
	West Circ	70.9%	18	89.4%	21
	PRC	-24.0%		-33.4%	
	Average Delay (s/pcu)	189.9		216.2	
2035	A22 (N)	115.1%	103	125.1%	126
	North Circ	87.2%	9	71.5%	14
	M25 WB Off-Slip	82.0%	15	114.2%	54
	East Circ	104.7%	69	79.1%	12
	A22 (S)	122.6%	98	114.4%	77
	South-East Circ	85.7%	24	71.7%	17
	B2235	111.3%	59	102.1%	28
	South West Circ	87.2%	16	78.0%	9

[1] Please see the September 2021 methodology TN for housing trajectories used for each scenario.

	M25 EB Off-Slip	101.5%	39	110.1%	69
	West Circ	71.0%	19	89.1%	21
	PRC	-27.9%		-39.0%	
	Average Delay (s/pcu)	256.0		287.6	
2040	A22 (N)	118.2%	119	131.2%	152
	North Circ	87.3%	9	71.5%	14
	M25 WB Off-Slip	86.5%	16	117.1%	62
	East Circ	103.7%	63	79.0%	12
	A22 (S)	137.0%	149	122.8%	109
	South-East Circ	86.3%	26	70.8%	17
	B2235	113.7%	69	103.8%	34
	South West Circ	87.0%	15	77.3%	9
	M25 EB Off-Slip	108.5%	66	122.8%	124
	West Circ	71.4%	19	89.5%	21
	PRC	-31.3%		-45.8%	
	Average Delay (s/pcu)	327.2		365.8	
2045	A22 (N)	121.0%	133	135.5%	170
	North Circ	87.2%	9	71.6%	14
	M25 WB Off-Slip	89.6%	18	119.6%	68
	East Circ	103.2%	60	79.0%	12
	A22 (S)	145.6%	180	128.0%	130
	South-East Circ	87.0%	28	70.3%	17
	B2235	115.8%	78	105.3%	41
	South West Circ	87.2%	16	77.0%	9
	M25 EB Off-Slip	112.9%	86	130.0%	156
	West Circ	71.5%	19	89.2%	21
	PRC	-34.4%		-50.6%	
	Average Delay (s/pcu)	373.5		414.2	

Table 2: LinSig Summary – Local Plan Scenario 1 (Without Mitigation)

Year	Junction Arm	Base Flows			
		AM		PM	
		DoS	MMQ	DoS	MMQ
2025	A22 (N)	107.0%	65	116.3%	90
	North Circ	75.2%	9	64.4%	14
	M25 WB Off-Slip	72.7%	12	107.1%	37
	East Circ	101.3%	52	76.8%	11
	A22 (S)	107.2%	47	102.2%	35
	South-East Circ	87.0%	28	72.4%	17
	B2235	100.3%	24	92.2%	14
	South West Circ	89.0%	17	79.4%	9
	M25 EB Off-Slip	85.7%	19	93.0%	23
	West Circ	70.8%	18	88.9%	20
	PRC	-19.2%		-29.2%	
	Average Delay (s/pcu)	145.9		176.3	
2030	A22 (N)	112.2%	89	121.5%	112
	North Circ	82.7%	9	71.5%	14
	M25 WB Off-Slip	77.7%	13	110.8%	46
	East Circ	103.6%	62	79.1%	12
	A22 (S)	115.3%	73	109.1%	58
	South-East Circ	86.1%	25	72.2%	17
	B2235	107.4%	43	98.1%	20
	South West Circ	87.9%	16	79.5%	10
	M25 EB Off-Slip	94.6%	25	101.0%	36
	West Circ	70.7%	18	89.7%	21
	PRC	-28.1%		-35.0%	
	Average Delay (s/pcu)	208.5		233.2	
2035	A22 (N)	115.5%	106	127.4%	136
	North Circ	87.2%	9	71.5%	14
	M25 WB Off-Slip	83.4%	15	114.2%	54
	East Circ	104.1%	65	79.0%	12
	A22 (S)	129.6%	123	118.2%	92
	South-East Circ	85.6%	25	71.1%	17
	B2235	111.3%	60	102.1%	28
	South West Circ	87.1%	16	77.6%	9
	M25 EB Off-Slip	104.2%	48	116.1%	94
	West Circ	71.1%	19	89.2%	21
	PRC	-28.3%		-41.6%	
	Average Delay (s/pcu)	284.8		318.2	
2040	A22 (N)	118.6%	121	133.6%	161
	North Circ	87.3%	9	71.5%	14
	M25 WB Off-Slip	88.0%	17	117.1%	62
	East Circ	103.0%	60	79.1%	12
	A22 (S)	144.2%	174	126.6%	124
	South-East Circ	86.2%	26	70.3%	17

	B2235	113.7%	70	103.8%	34
	South West Circ	86.8%	15	77.1%	9
	M25 EB Off-Slip	111.1%	77	128.8%	151
	West Circ	71.1%	19	89.0%	21
	PRC	-31.8%		-48.4%	
	Average Delay (s/pcu)	355.7		394.3	
2045	A22 (N)	122.0%	138	139.5%	186
	North Circ	87.2%	9	71.6%	14
	M25 WB Off-Slip	92.2%	19	119.6%	68
	East Circ	102.2%	56	79.0%	12
	A22 (S)	158.5%	228	134.7%	156
	South-East Circ	86.7%	28	69.5%	17
	B2235	115.8%	79	105.5%	42
	South West Circ	86.5%	15	77.0%	8
	M25 EB Off-Slip	117.5%	106	140.4%	203
	West Circ	71.7%	19	88.8%	21
	PRC	-35.5%		-56.0%	
	Average Delay (s/pcu)	421.2		462.2	

Table 3: LinSig Summary – Local Plan Scenario 2 (Without Mitigation)

1.3.10 With the addition of Local Plan growth, the junction continues to operate over its design capacity, albeit the impact of the Plan itself is seen to be relatively modest before 2030.

<u>Local Plan Scenarios – With Mitigation</u>

1.3.11 The results of the equivalent assessment with Local Plan growth (Scenarios 1 and 2) and the identified mitigation scheme in place are summarised in Table 4 and Table 5 overleaf. The full LinSig report is included at **Appendix D**.

Year	Junction Arm	Base Flows			
		AM		PM	
		DoS	MMQ	DoS	MMQ
2025	A22 (N)	62.1%	12	78.3%	14
	North Circ	60.5%	9	67.2%	10
	M25 WB Off-Slip	61.8%	7	70.3%	9
	East Circ	55.8%	9	64.2%	11
	A22 (S)	67.6%	11	66.3%	11
	South-East Circ	68.0%	12	55.0%	13
	B2235	68.7%	9	77.0%	10
	South West Circ	68.3%	16	60.8%	5
	M25 EB Off-Slip	68.9%	11	81.9%	14
	West Circ	67.6%	18	77.9%	20
	PRC	30.6%		9.8%	
	Average Delay (s/pcu)	45.4		48.9	
2030	A22 (N)	64.4%	13	77.8%	14
	North Circ	65.8%	10	72.0%	15
	M25 WB Off-Slip	64.7%	8	65.4%	9
	East Circ	58.7%	10	66.1%	8
	A22 (S)	67.0%	11	65.1%	11
	South-East Circ	70.1%	13	57.1%	10
	B2235	71.5%	10	69.7%	9
	South West Circ	71.2%	17	69.2%	10
	M25 EB Off-Slip	71.4%	12	82.9%	14
	West Circ	71.5%	19	81.5%	17
	PRC	25.9%		8.6%	
	Average Delay (s/pcu)	46.8		48.7	
2035	A22 (N)	69.4%	14	80.9%	15
	North Circ	64.1%	11	77.9%	16
	M25 WB Off-Slip	62.2%	8	78.0%	11
	East Circ	67.0%	15	70.4%	12
	A22 (S)	65.7%	12	58.7%	11
	South-East Circ	75.2%	21	70.8%	13
	B2235	75.7%	10	79.0%	11
	South West Circ	73.0%	11	67.3%	10
	M25 EB Off-Slip	75.8%	13	88.5%	17
	West Circ	77.0%	14	87.3%	19
	PRC	16.8%		1.7%	
	Average Delay (s/pcu)	47.9		52.0	
2040	A22 (N)	73.6%	15	87.6%	18
	North Circ	66.5%	12	77.0%	17
	M25 WB Off-Slip	63.2%	9	72.6%	10
	East Circ	70.7%	16	77.1%	18
	A22 (S)	72.3%	14	65.0%	12
	South-East Circ	79.0%	22	69.0%	13

	B2235	79.2%	11	80.5%	11
	South West Circ	77.5%	12	74.0%	11
	M25 EB Off-Slip	80.7%	14	92.1%	20
	West Circ	79.6%	14	90.4%	20
	PRC	11.6%		-2.4%	
	Average Delay (s/pcu)	50.3		56.21	
2045	A22 (N)	76.2%	16	89.8%	19
	North Circ	68.6%	12	81.8%	18
	M25 WB Off-Slip	64.3%	9	76.2%	10
	East Circ	74.8%	16	79.8%	19
	A22 (S)	75.2%	15	64.6%	12
	South-East Circ	82.9%	23	72.3%	14
	B2235	84.5%	12	82.0%	12
	South West Circ	78.1%	12	74.9%	11
	M25 EB Off-Slip	85.1%	16	93.4%	21
	West Circ	83.8%	15	94.7%	25
	PRC	5.7%		-5.2%	
	Average Delay (s/pcu)	52.7		60.8	

Table 4: LinSig Summary – Mitigation Scheme (Local Plan Scenario 1)

Year	Junction Arm	Base Flows			
		AM		PM	
		DoS	MMQ	DoS	MMQ
2025	A22 (N)	62.1%	12	78.3%	14
	North Circ	60.5%	9	67.2%	10
	M25 WB Off-Slip	61.8%	7	70.3%	9
	East Circ	55.8%	9	64.2%	11
	A22 (S)	67.6%	11	66.3%	11
	South-East Circ	68.0%	12	55.0%	13
	B2235	68.7%	9	77.0%	10
	South West Circ	68.3%	16	60.8%	5
	M25 EB Off-Slip	68.9%	11	81.9%	14
	West Circ	67.6%	18	77.9%	20
	PRC	30.6%		9.8%	
	Average Delay (s/pcu)	45.5		48.9	
2030	A22 (N)	66.3%	13	82.3%	15
	North Circ	65.4%	10	66.8%	12
	M25 WB Off-Slip	60.6%	8	62.5%	9
	East Circ	60.2%	12	67.4%	13
	A22 (S)	73.3%	12	55.6%	10
	South-East Circ	72.5%	19	67.5%	13
	B2235	73.2%	10	83.8%	12
	South West Circ	73.2%	12	63.4%	13
	M25 EB Off-Slip	72.3%	12	82.1%	15

	West Circ	69.6%	12	84.7%	24
	PRC	22.8%		6.2%	
	Average Delay (s/pcu)	46.5		50.9	
2035	A22 (N)	72.0%	15	83.7%	16
	North Circ	63.0%	11	77.0%	17
	M25 WB Off-Slip	61.3%	8	73.2%	10
	East Circ	68.0%	14	72.7%	15
	A22 (S)	70.0%	13	58.2%	11
	South-East Circ	75.7%	21	70.9%	13
	B2235	77.6%	11	80.8%	11
	South West Circ	74.2%	11	69.1%	10
	M25 EB Off-Slip	77.6%	13	90.0%	18
	West Circ	76.5%	14	88.2%	20
	PRC	15.9%		0.0%	
	Average Delay (s/pcu)	48.6		53.2	
2040	A22 (N)	74.9%	16	89.8%	19
	North Circ	66.4%	12	78.3%	17
	M25 WB Off-Slip	74.2%	10	75.6%	10
	East Circ	68.2%	17	79.0%	19
	A22 (S)	73.7%	14	61.6%	11
	South-East Circ	80.3%	16	72.9%	13
	B2235	81.1%	12	82.4%	12
	South West Circ	78.4%	12	71.2%	10
	M25 EB Off-Slip	81.4%	15	92.3%	20
	West Circ	81.0%	15	92.7%	26
	PRC	10.6%		-3.0%	
	Average Delay (s/pcu)	52.3		58.4	
2045	A22 (N)	76.7%	16	91.1%	20
	North Circ	71.1%	13	89.6%	20
	M25 WB Off-Slip	72.0%	10	81.7%	11
	East Circ	74.1%	17	83.6%	21
	A22 (S)	79.8%	17	67.0%	13
	South-East Circ	85.5%	23	72.5%	17
	B2235	84.7%	12	84.0%	12
	South West Circ	82.7%	13	75.6%	11
	M25 EB Off-Slip	86.2%	16	99.1%	31
	West Circ	85.2%	16	95.0%	30
	PRC	4.4%		-10.2%	
	Average Delay (s/pcu)	55.0		72.8	

Table 5: LinSig Summary – Mitigation Scheme (Local Plan Scenario 2)

1.3.12 It is evident that the scheme provides significant overall betterment to the operation of the junction compared to the existing layout. The PRC of the existing and proposed arrangements in the Scenario 1 2045 AM and PM peak hours is seen to reduce by 29.2% and 28.2% respectively, while average delay per vehicle reduces by two minutes and two-and-a-half minutes respectively (when compared with the base scenarios in Table 1). Broadly similar results are seen for Scenario 2 also.

1.3.13 It is common ground between TDC, SCC and NH that the interim scheme adequately mitigates the impact of Local Plan growth on the junction and its approaches.

1.4 Merge / Diverge Assessment

1.4.1 A merge / diverge assessment of the slip roads to and from the M25 has also been completed.

1.4.2 To inform this assessment, the original 2018 Manual Classified Count (MCC) data and the trip generation for the Local Plan allocations have been converted to vehicles.

1.4.3 No data was collected for the M25 mainline carriageways as part of the 2018 survey. Therefore, use has been made of the NH WebTRIS survey database. Count points M25/4419B and M25/4413A were used to inform the mainline assessment, as both contained nearly a complete years' worth of data for 2016. The 2016 data was sourced for each available day, showing an hour-by-hour breakdown.

1.4.4 Only 'neutral' months were considered, namely March, April, May, June, September, October and November. Easter and half term school holidays were removed, along with Fridays, Saturdays and Sundays. The remaining days were then averaged for the AM (08:00-09:00) and PM (17:00-18:00) peak hours. The 2016 flows were then 'growthed' to a 2018 baseline using TEMPRO v7.2b for the 'Motorway' road classification. No alternative planning assumptions were applied, with the resulting growth rates being as follows:-

- AM Peak – 1.0199; and
- PM Peak – 1.0193.

1.4.5 The mainline flows were subsequently grown in line with the TEMPRO factors detailed in the September 2021 TN to provide the future year baselines for all scenarios.

1.4.6 The resulting vehicle flows for the merge / diverge assessment are included at **Figures 0-33 to 0-64** appended to this TN and the merge / diverge assessment is included at **Appendix E**.

1.4.7 The westbound off-slip, westbound on-slip and eastbound on-slip are shown to be suitable to accommodate Local Plan growth to 2035 in their existing configurations.

1.4.8 The eastbound off-slip, which currently takes the form of a 'C' diverge configuration, is shown to require a 'D' configuration from the 2025 PM peak baseline onwards and from the 2035 AM peak Local Plan Scenario 1 onwards (shown in Figure 1 below for reference).[2]

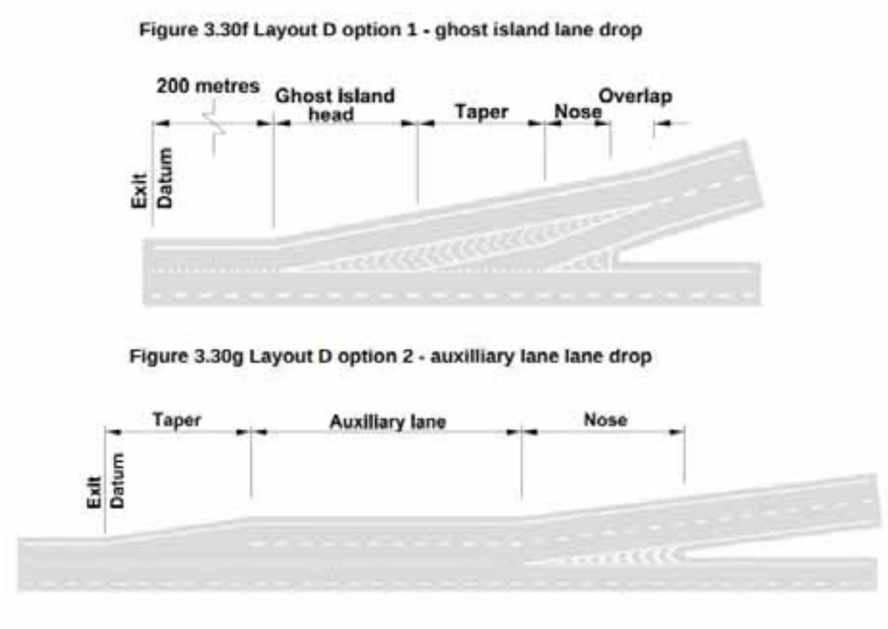


Figure 1: Layout D – Motorway Diverge

1.4.9 This arrangement requires an additional nearside lane of 275m in length on the M25 mainline carriageway from the tip of the nosing of the slip road westwards, which cannot be accommodated within land under the control of NH.

1.4.10 It is nevertheless noted that the 'D' configuration is required in the 2025 PM peak baseline (i.e. without the Local Plan). Moreover, the absolute trip impact of the Local Plan allocations on this slip road are considered to be negligible until 2030, as shown in Table 6 below, being below 100 vehicles in each peak hour.

Year	Period	Base	S1	S2	Difference S1	Difference S2
2025	AM	1,205	1,246	1,246	42	42
	PM	1,350	1,404	1,404	54	54
2030	AM	1,231	1,322	1,335	91	104
	PM	1,383	1,498	1,526	115	143
2035	AM	1,265	1,404	1,425	139	159
	PM	1,424	1,617	1,661	193	237

Table 6: Local Plan Trip Generation – Eastbound Off Slip

1.4.11 On the basis of the revised assessment and engagement with NH to date, it is anticipated that this upgrade would be required in approximately 2027 in order to avoid unacceptable highway safety implications for users of the M25. As such, work would need to commence in the short-term to identify and progress the

[2] Design Manual for Roads and Bridges. (January 2020). CD 122 Geometric design of grade separated junctions.

scheme through the necessary design, planning and legal processes and identify suitable funding opportunities, as the lead-in time for a scheme of this nature would typically be in the region of five years.

1.5 Summary and Conclusion

1.5.1 This Transport Technical Note (TN) has been prepared on behalf of Tandridge District Council (TDC) to outline the findings of DHA's assessment of potential interim mitigation measures for M25 Junction 6 in support of the Council's Draft Local Plan.

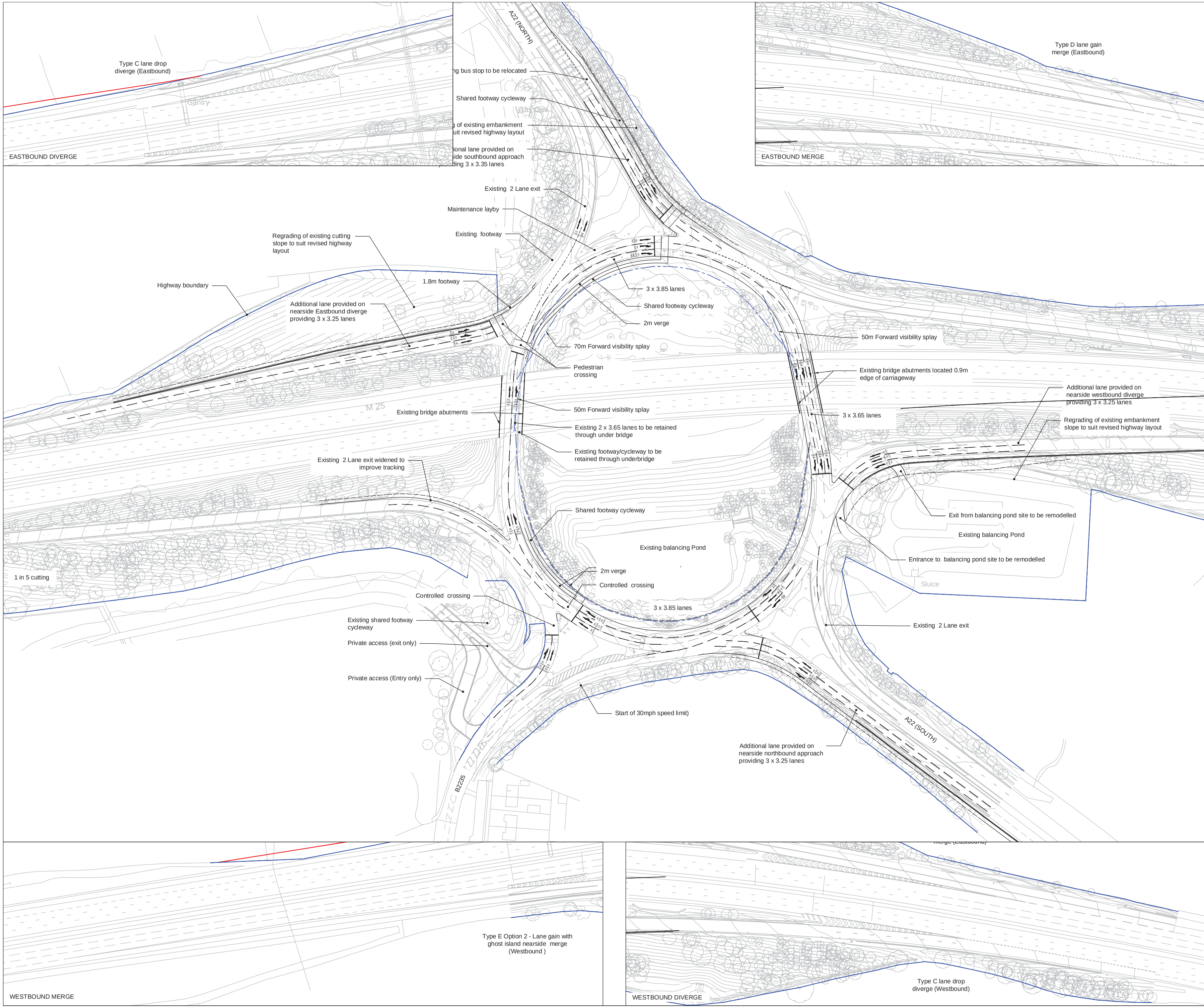
1.5.2 An interim mitigation scheme has been identified which is shown to achieve a 'nil detriment' impact on the operation of the junction and its approaches with the Local Plan in place in the 2035 scenario.

1.5.3 With respect to the M25 merges and diverges, it has been identified that the eastbound off-slip would require upgrading to safely accommodate forecast traffic volumes prior to 2030, regardless of the Local Plan.

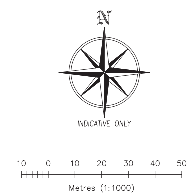
1.5.4 Work would therefore need to commence in the short-term to progress these scheme and identify suitable funding opportunities to enable their timely implementation.

APPENDIX A

Initial Stage 1 Interim Design – M25 Junction 6



NOTES



RISK SCHEDULE

ITEM	DESCRIPTION OF RISK & ACTION
	No risks are associated with the highway improvement works that a competent highways contractor should not otherwise foresee.

REV	AMENDMENTS	DATE	CHK
P3	Lane marking amended	11.11.21	CS
P2	Westbound off slip amended	01.07.21	CS
P1	FIRST ISSUE	18.06.21	CS

Client

TANDRIDGE DISTRICT COUNCIL

Project

M25 JUNCTION 6
CAPACITY IMPROVEMENT FEASIBILITY STUDY

Title

LAYOUT OVERVIEW

Drwg	Rev	Scale	Date
15423-H-01	P3	1:1000	18.06.21

dha

Eclipse House, Eclipse Park. Sittingbourne Road
Maidstone, Kent. ME14 3EN
t: 01622 776226
e: info@dhaplanning.co.uk w: www.dhaplanning.co.uk

CAD Reference:

A1

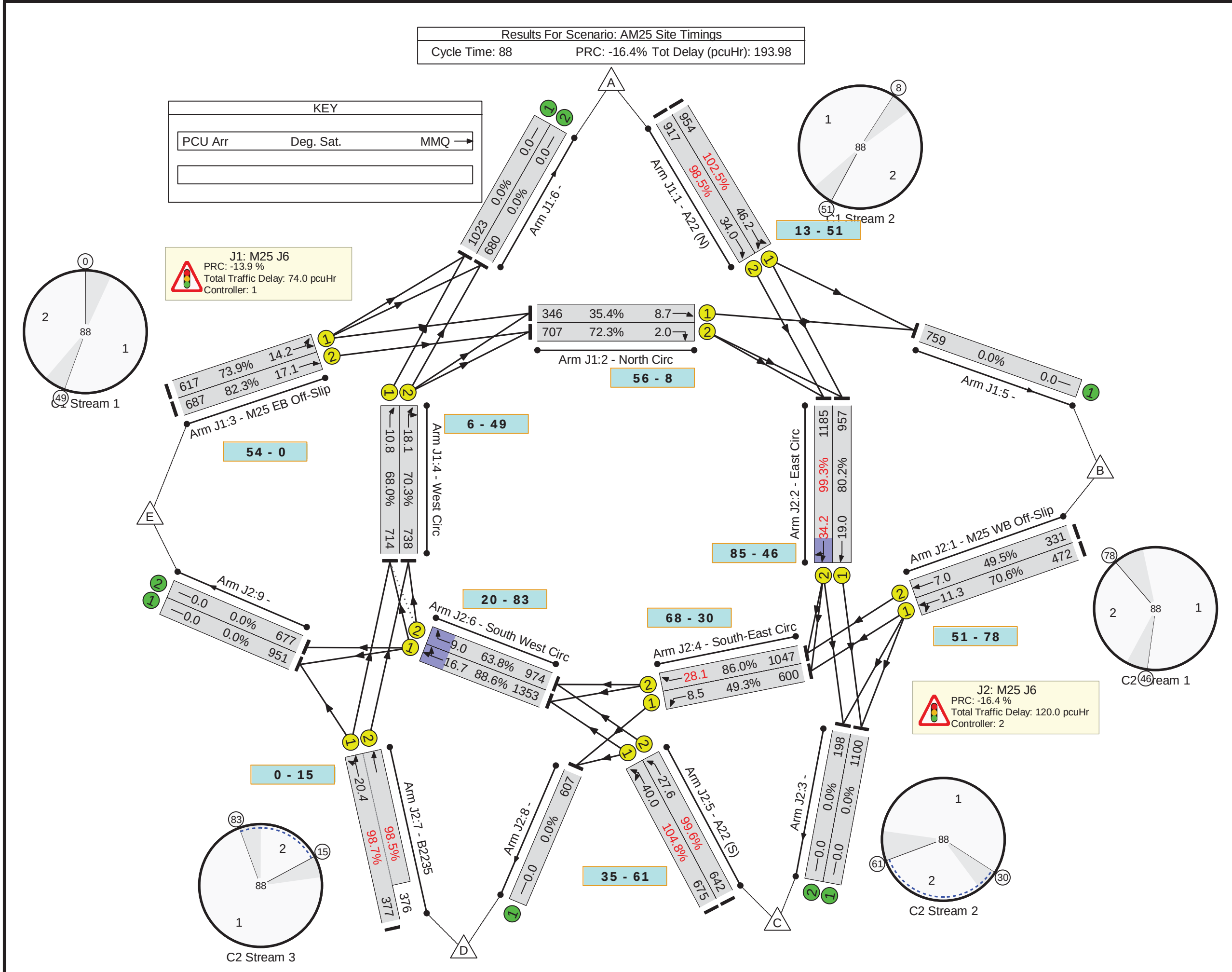
APPENDIX B

LinSig Results – Existing Junction Layout (without Local Plan Growth)

M25 J6 LinSig Results

Network Layout Diagram

Scenario 1: 'AM25 Site Timings' (FG2: 'AM 2025', Plan 1: 'Network Control Plan 1')



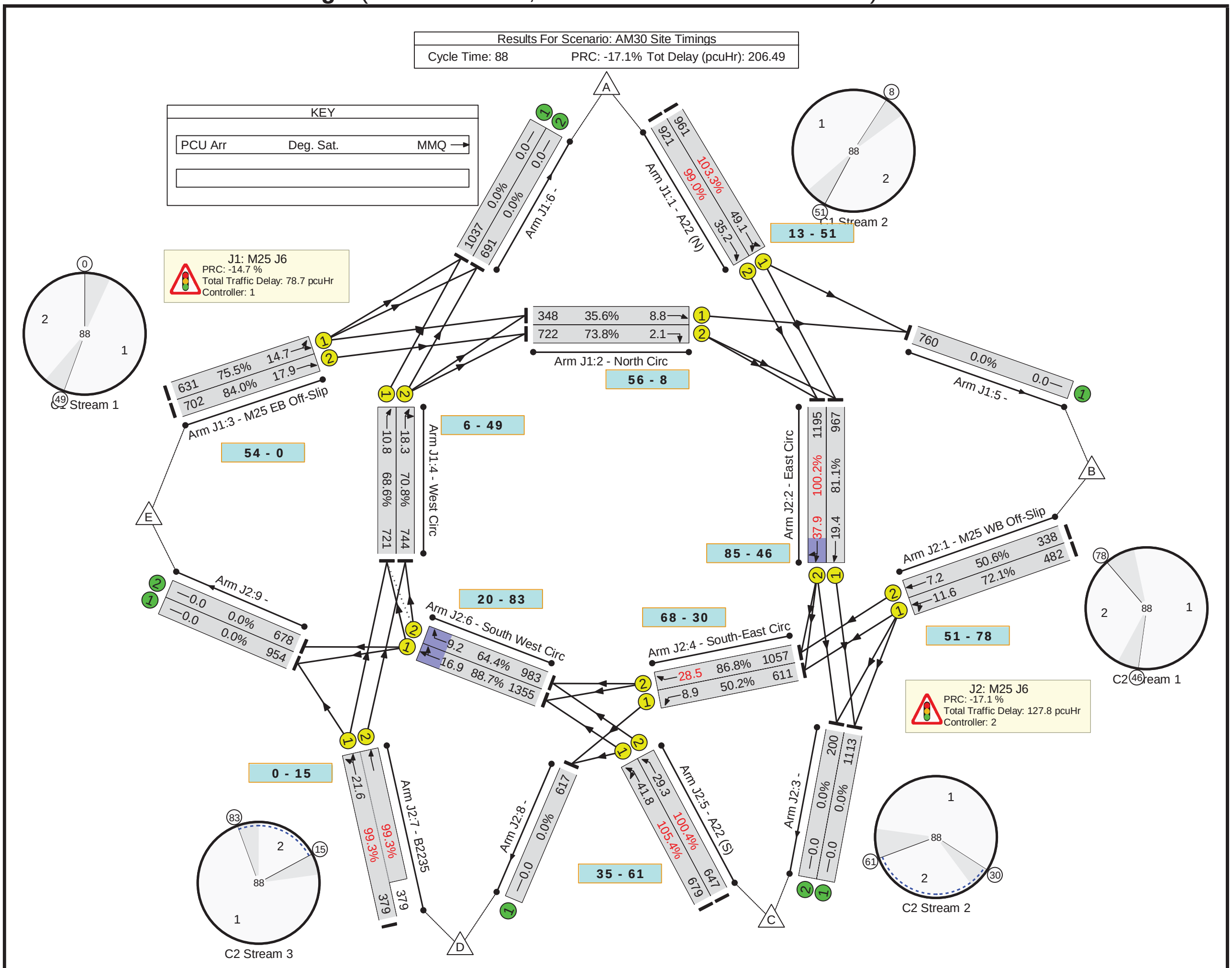
Assumptions:

No controller specification was provided, although daily stage timings, cycle times and intergreen data were sent for each cycle over a 24 hour period. Therefore, these timings were used in the "...(Site)" scenarios, where green splits were set and then the model offsets optimised (although these likely to vary from cycle to cycle). Phase data and stages taken from provided drawing.

Saturation flows were initially set to 1900 pcu/hr per lane as a conservative estimate (experience indicated that grade separated roundabouts often exhibit significantly higher saturation flows. However, this resulted in several degrees of saturation in the 2018 scenarios as being significantly over 100%. This should not be the case, given the traffic flow data was counted as crossing the stopline during the survey, and therefore should be around 100% at most. Therefore saturation flows were increased to 2100 pcu/hr, which resulted in more realistic degrees of saturation, for example the A22 (N) values being around 100%. Note, high degrees of saturation still shown on this arm during the PM 2018 peak period. Although saturation flows above 2300 pcu/hr would result in values closer to 100%, JCT decided these may generally be over-optimistic without further observations, and decided to use 2100 pcu/hr.

DoS Limits applied to circulating lanes, to not exceed DoS originally reported in 2018 scenarios when existing timings were used. Therefore, some of these limits exceeded 90%. When optimising, this was initially done automatically. However, due to significant congestion, this could result in strange results, for example severely restricting green on an entry so that downstream flows are reduced to reduce DoS downstream. It was difficult for automatic optimisatiom to consistently provide timings from one scenario to the next, with an added complication of delay based flow assignment resulting in different route choices as timings change. Therefore, after the inititial optimisation, signal stream timings were automatically adjusted so that the circulatory does not exceed the DoS limit (but as close to it as possible), model re-run and so on iteratively.

Scenario 5: 'AM30 Site Timings' (FG3: 'AM 2030', Plan 1: 'Network Control Plan 1')



Assumptions:

No controller specification was provided, although daily stage timings, cycle times and intergreen data were sent for each cycle over a 24 hour period. Therefore, these timings were used in the "...(Site)" scenarios, where green splits were set and then the model offsets optimised (although these likely to vary from cycle to cycle). Phase data and stages taken from provided drawing.

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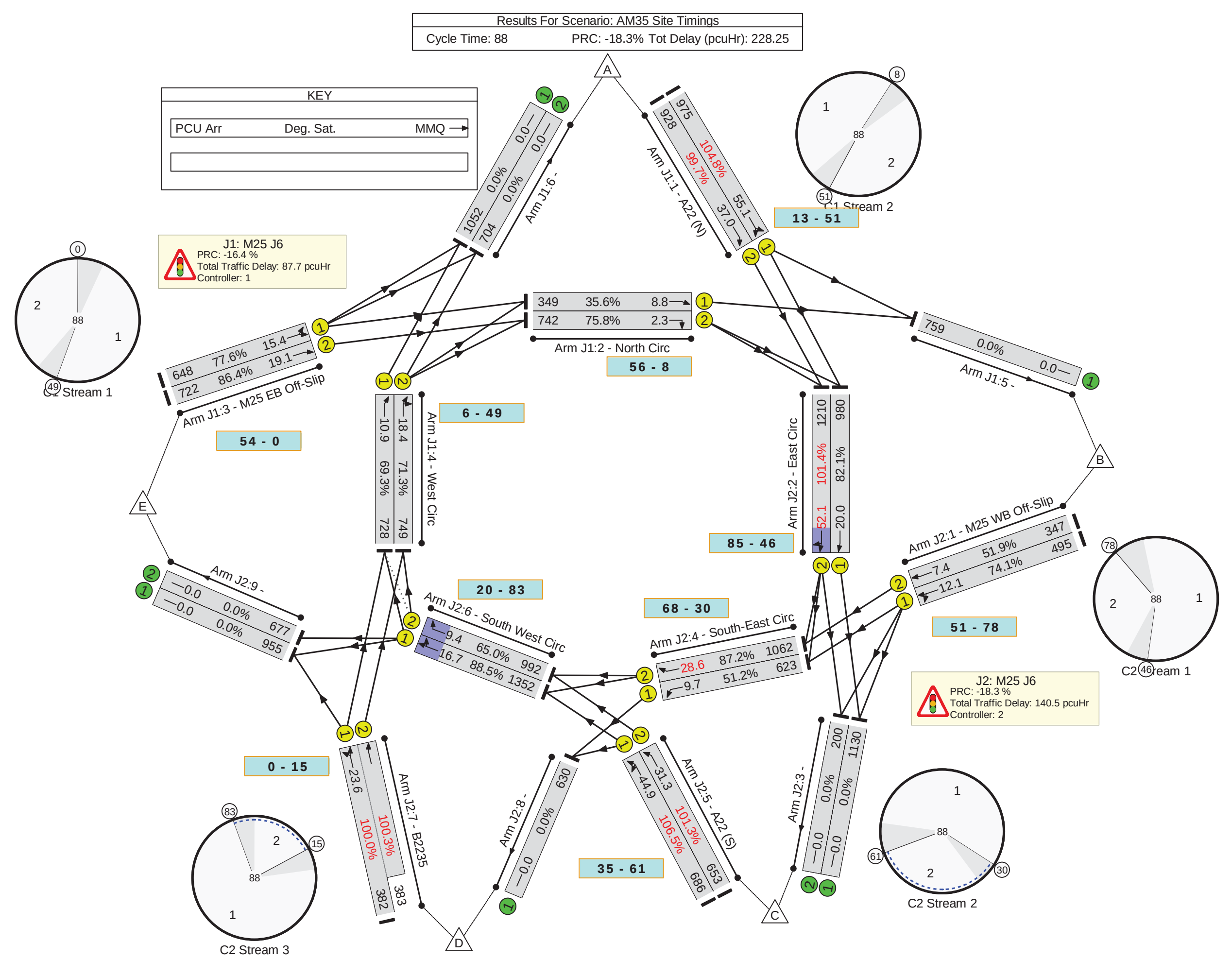
Scenario 9: 'AM35 Site Timings' (FG4: 'AM 2035', Plan 1: 'Network Control Plan 1')



Assumptions:

No controller specification was provided, although daily stage timings, cycle times and intergreen data were sent for each cycle over a 24 hour period. Therefore, these timings were used in the "...(Site)" scenarios, where green splits were set and then the model offsets optimised (although these likely to vary from cycle to cycle). Phase data and stages taken from provided drawing.

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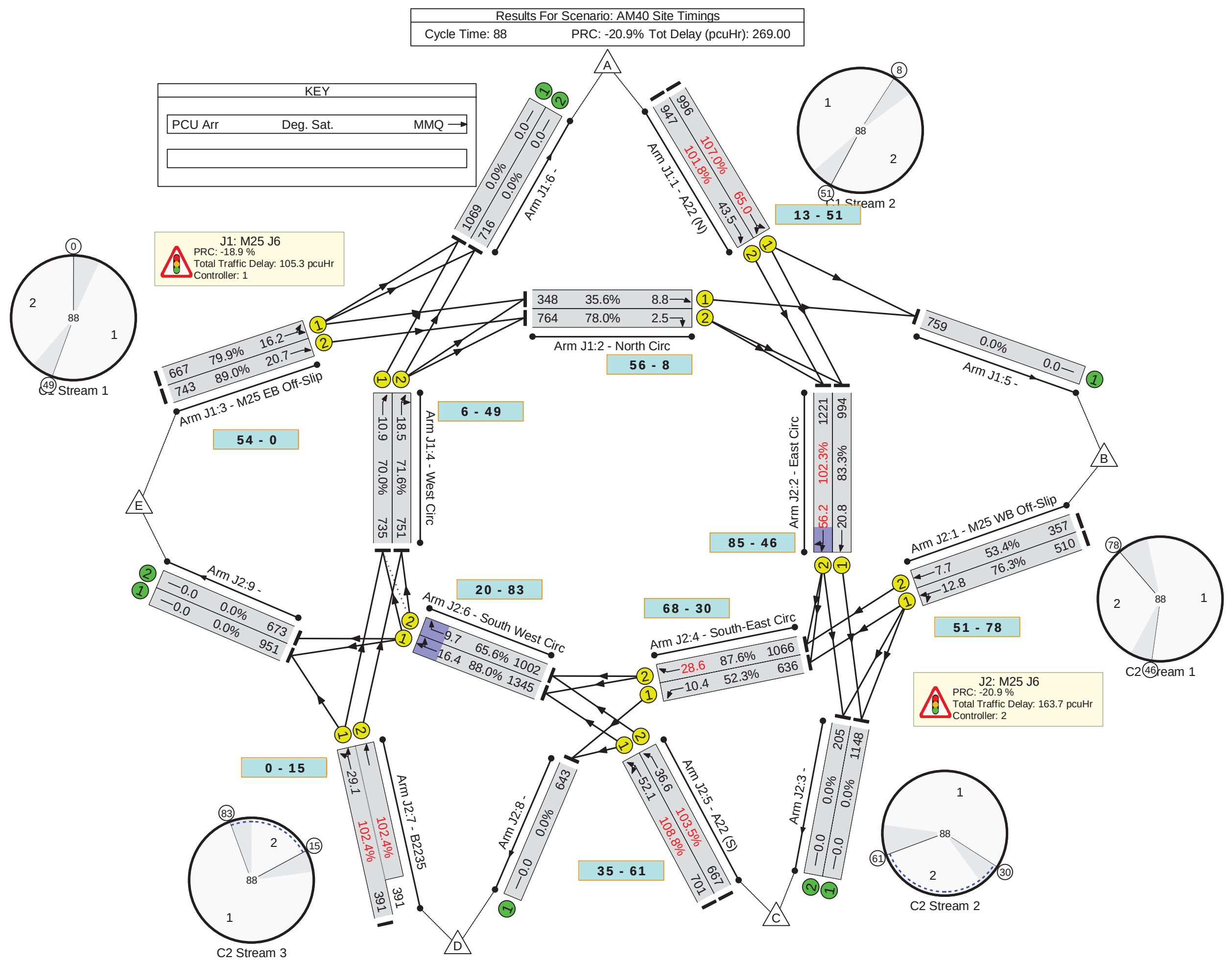
Scenario 13: 'AM40 Site Timings' (FG5: 'AM 2040', Plan 1: 'Network Control Plan 1')



Assumptions:

No controller specification was provided, although daily stage timings, cycle times and intergreen data were sent for each cycle over a 24 hour period. Therefore, these timings were used in the "...(Site)" scenarios, where green splits were set and then the model offsets optimised (although these likely to vary from cycle to cycle). Phase data and stages taken from provided drawing.

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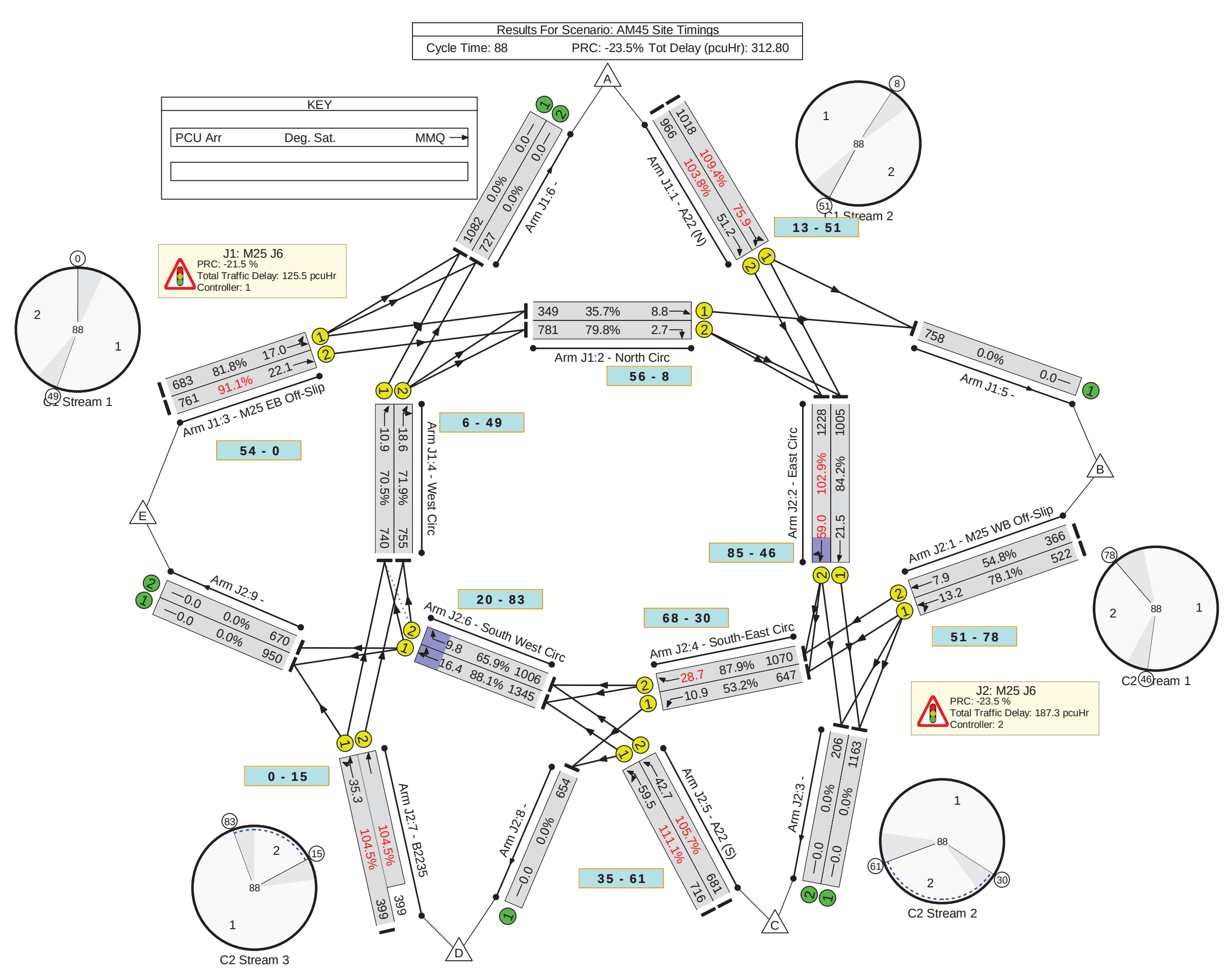
Scenario 17: 'AM45 Site Timings' (FG6: 'AM 2045', Plan 1: 'Network Control Plan 1')



Assumptions:

No controller specification was provided, although daily stage timings, cycle times and intergreen data were sent for each cycle over a 24 hour period. Therefore, these timings were used in the "...(Site)" scenarios, where green splits were set and then the model offsets optimised (although these likely to vary from cycle to cycle). Phase data and stages taken from provided drawing.

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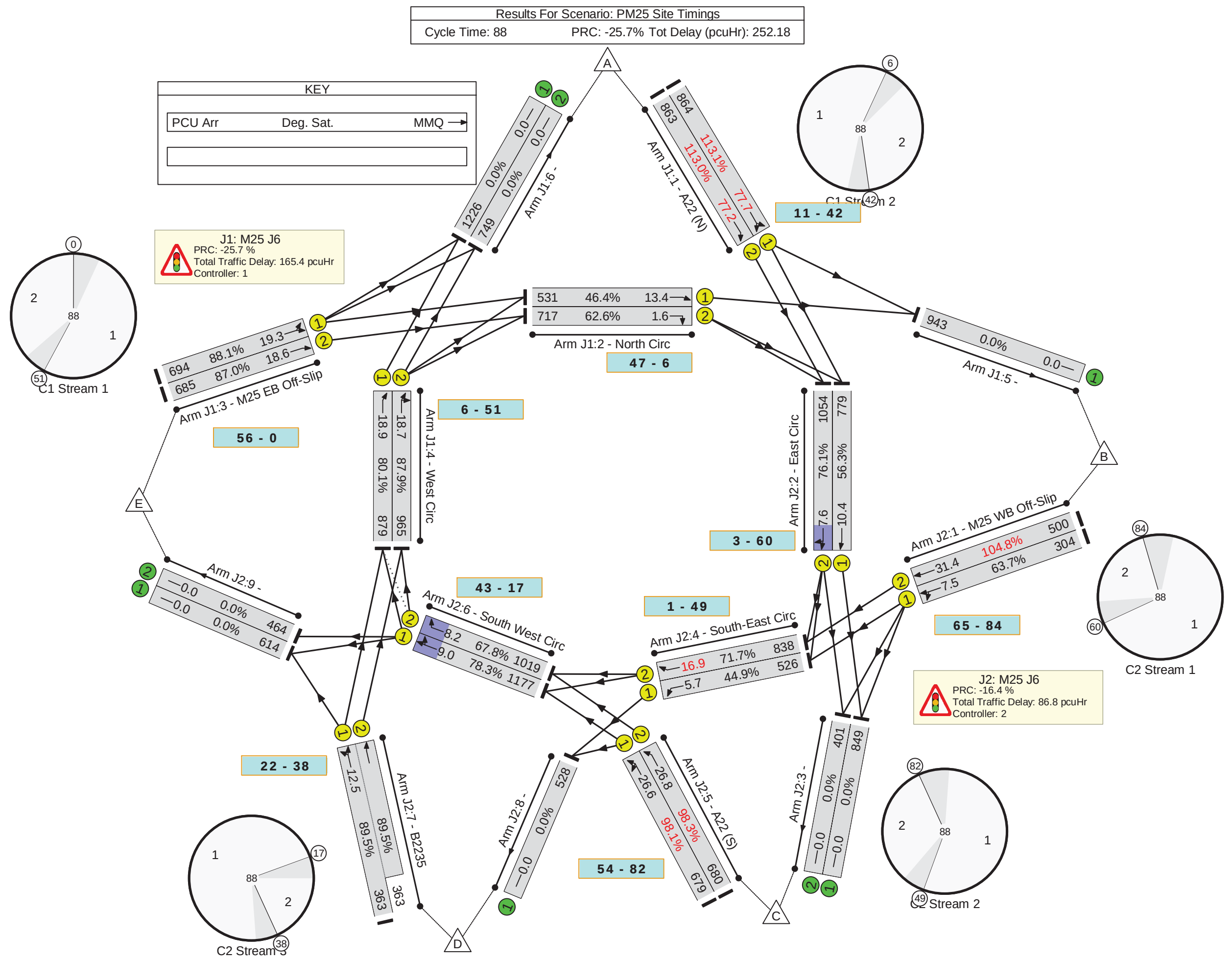
Scenario 21: 'PM25 Site Timings' (FG8: 'PM 2025', Plan 1: 'Network Control Plan 1')



Assumptions:

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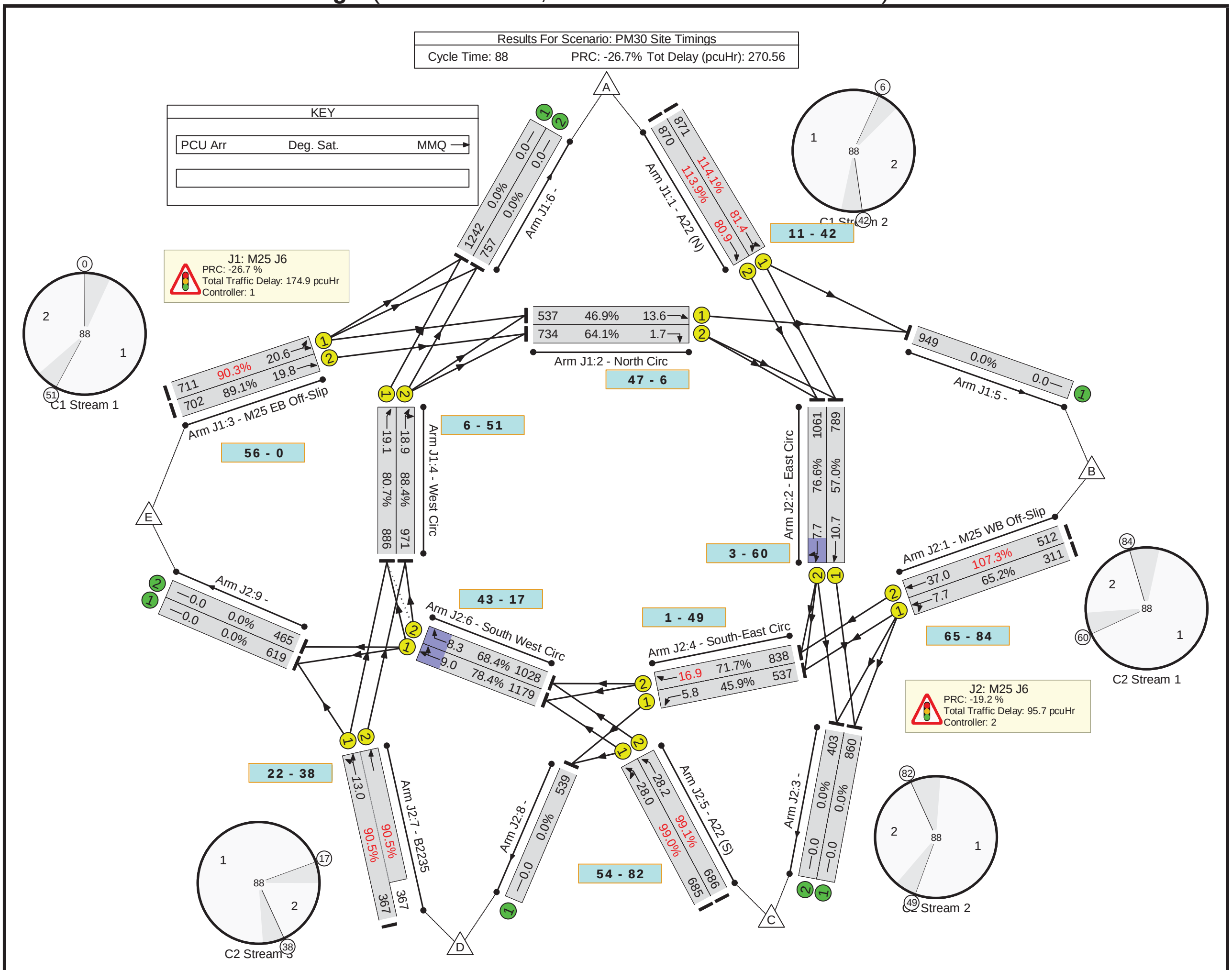
Scenario 25: 'PM30 Site Timings' (FG9: 'PM 2030', Plan 1: 'Network Control Plan 1')



Assumptions:

No controller specification was provided, although daily stage timings, cycle times and intergreen data were sent for each cycle over a 24 hour period. Therefore, these timings were used in the "...(Site)" scenarios, where green splits were set and then the model offsets optimised (although these likely to vary from cycle to cycle). Phase data and stages taken from provided drawing.

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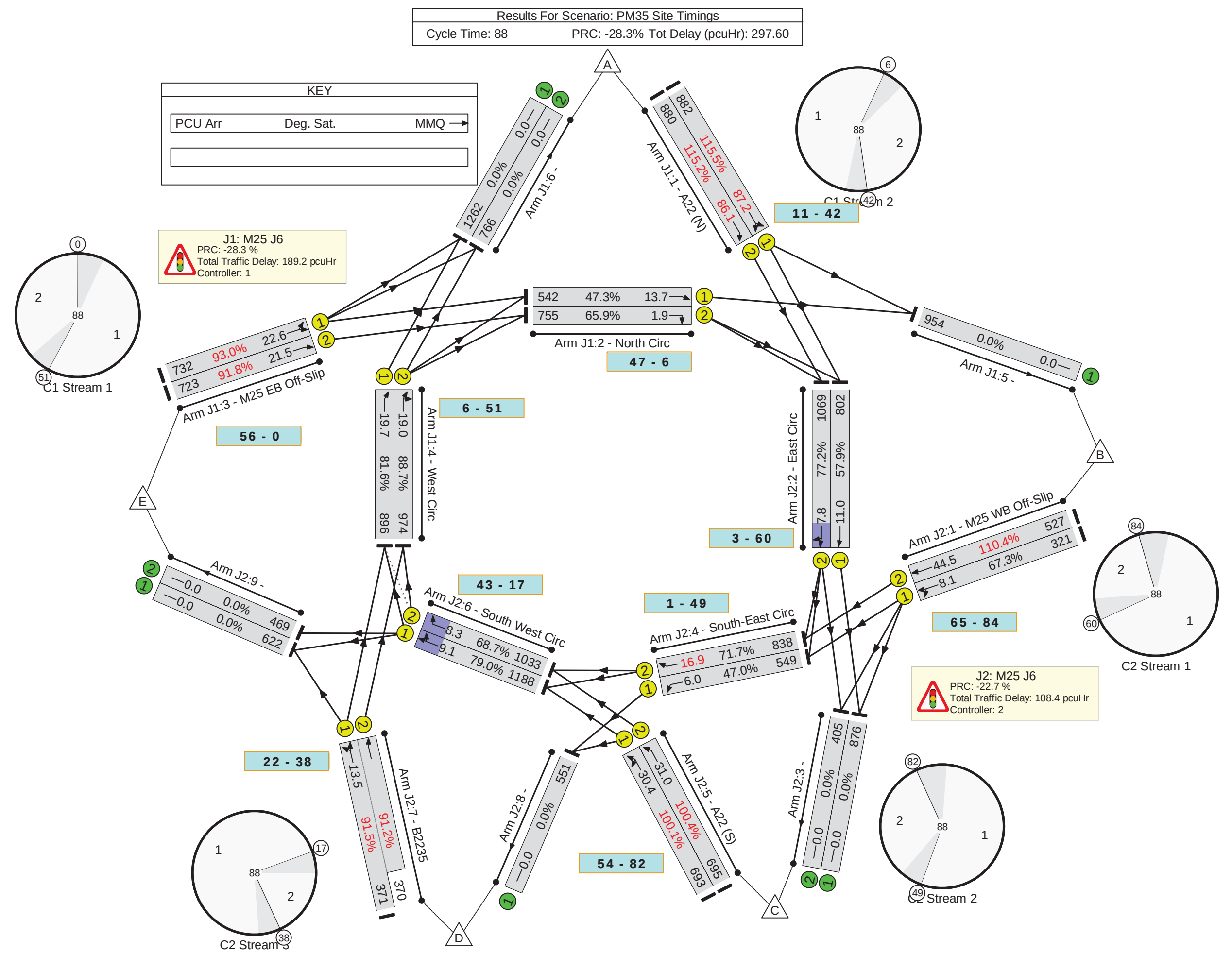
Scenario 29: 'PM35 Site Timings' (FG10: 'PM 2035', Plan 1: 'Network Control Plan 1')



Assumptions:

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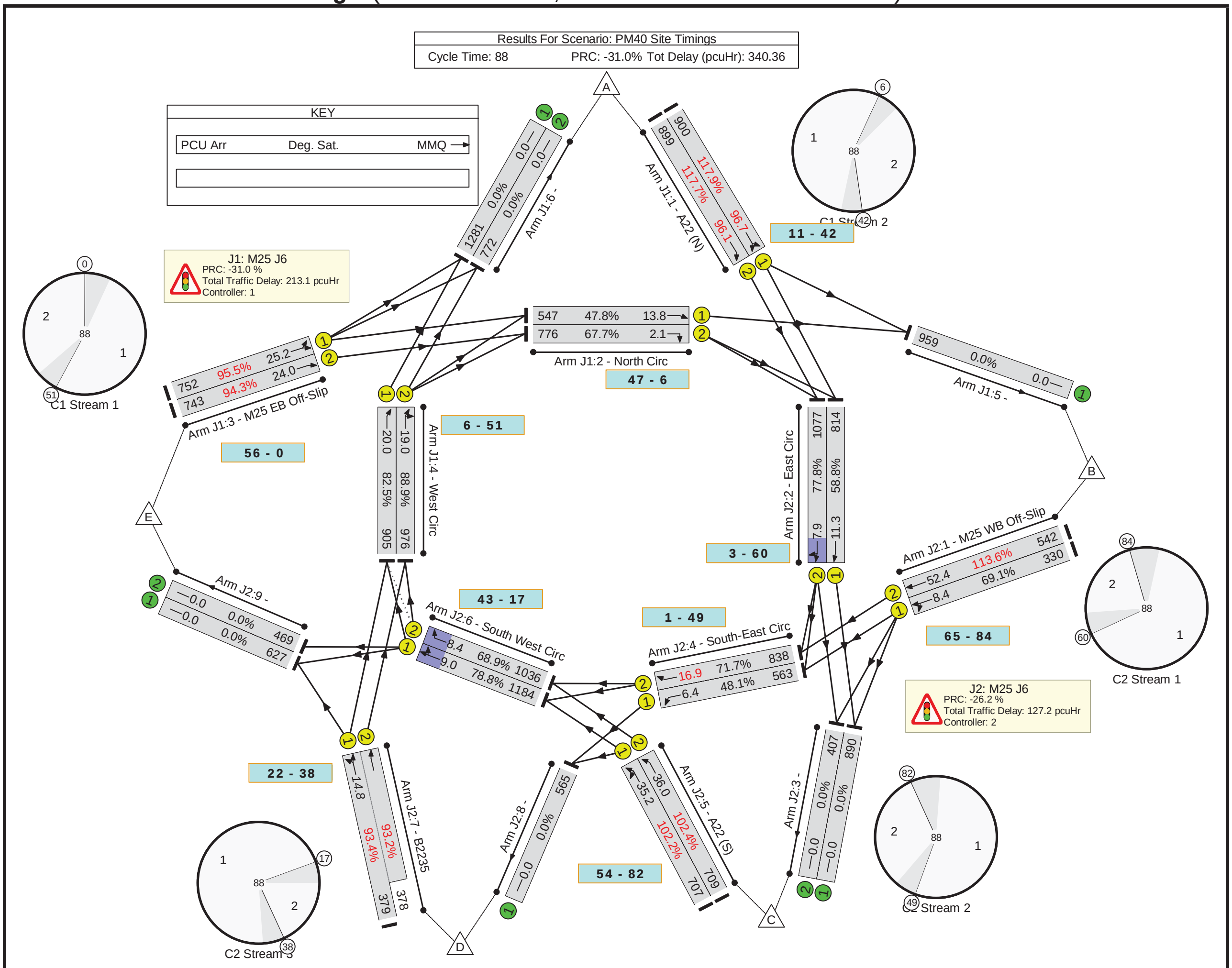
Scenario 33: 'PM40 Site Timings' (FG11: 'PM 2040', Plan 1: 'Network Control Plan 1')



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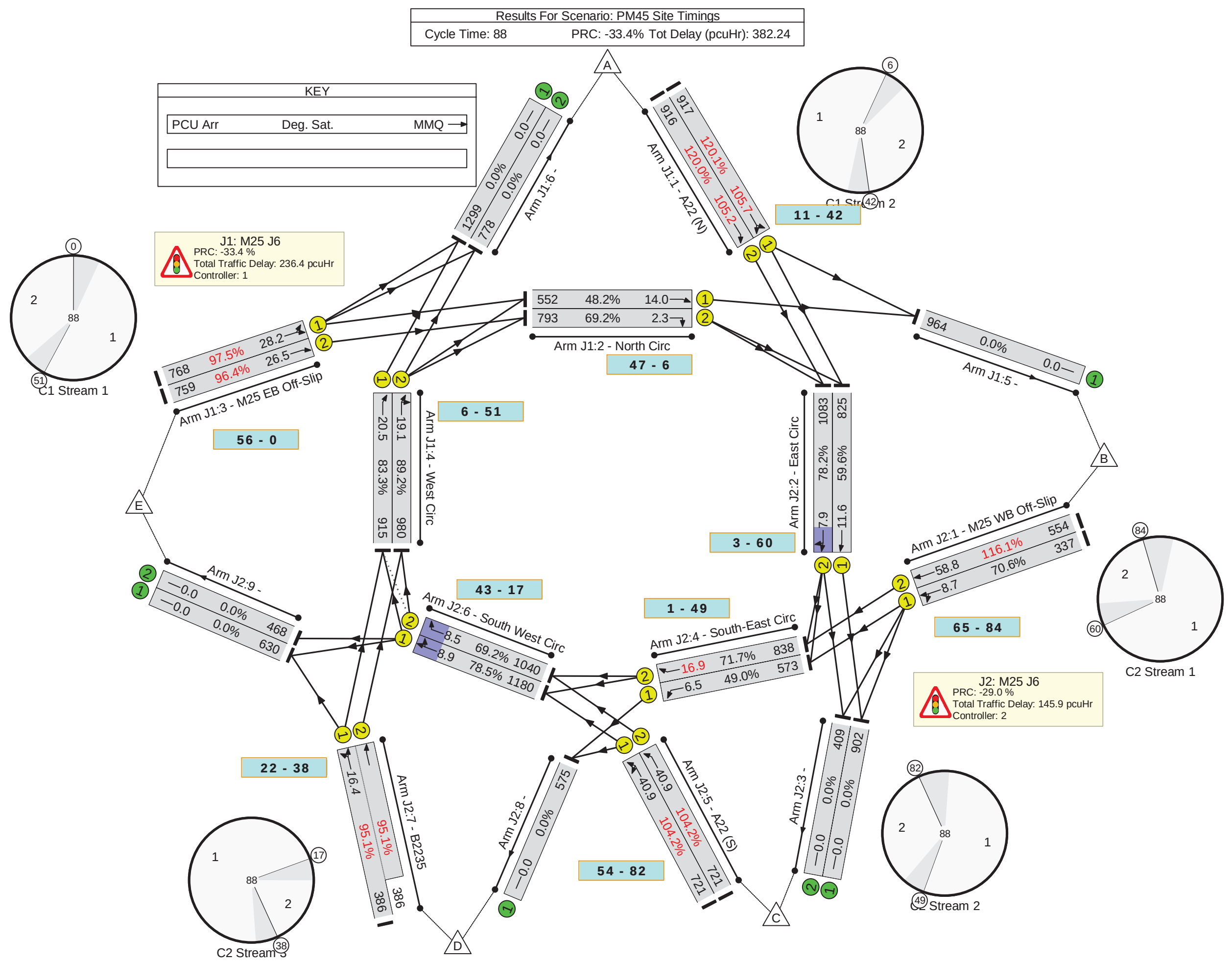
Scenario 37: 'PM45 Site Timings' (FG12: 'PM 2045', Plan 1: 'Network Control Plan 1')



Assumptions:

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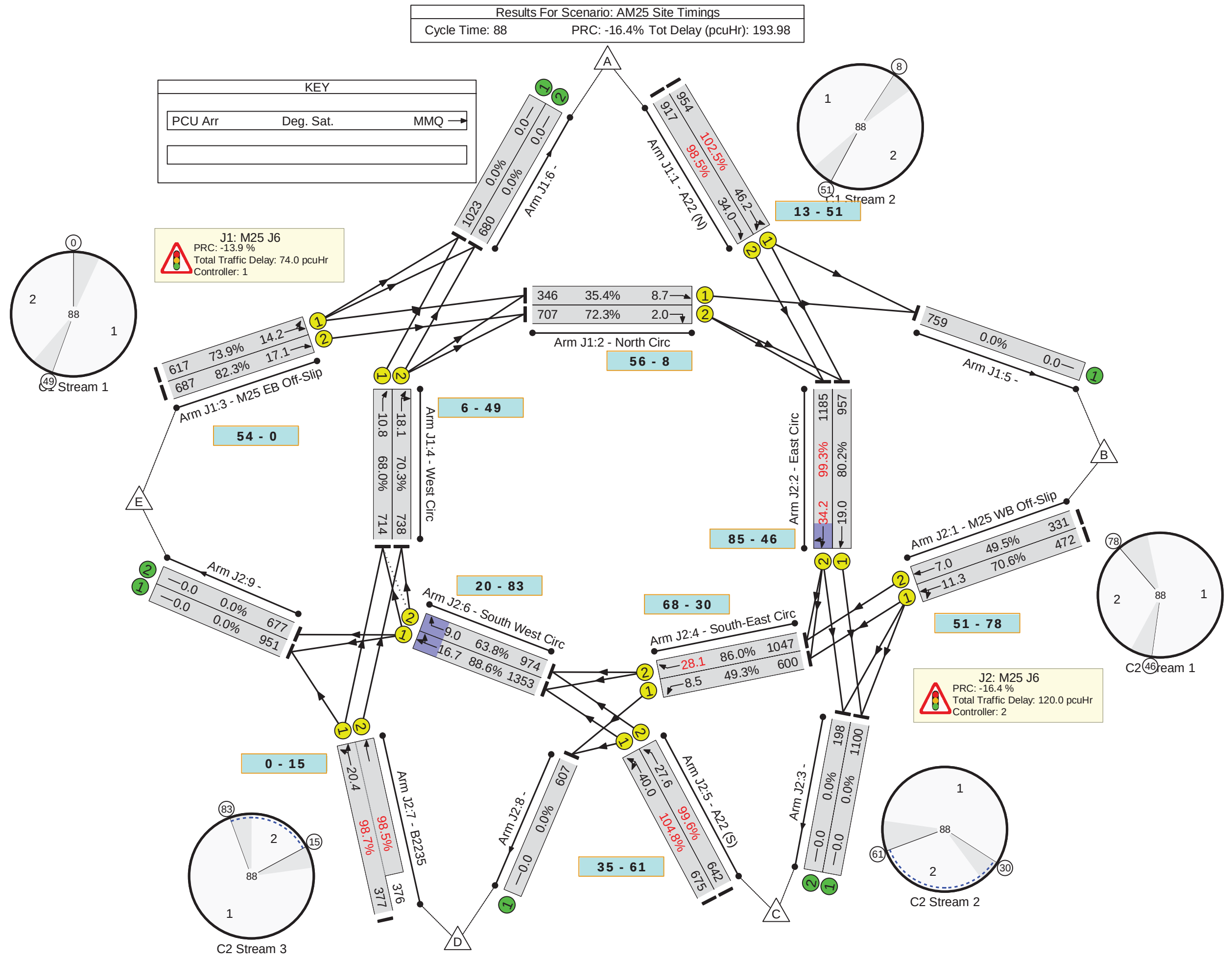
APPENDIX C

LinSig Results – Existing Junction Arrangement (with Local Plan Growth)

M25 J6 LinSig Results Observed Timings

Network Layout Diagram

Scenario 1: 'AM25 Site Timings' (FG2: 'AM 2025', Plan 1: 'Network Control Plan 1')



Assumptions:

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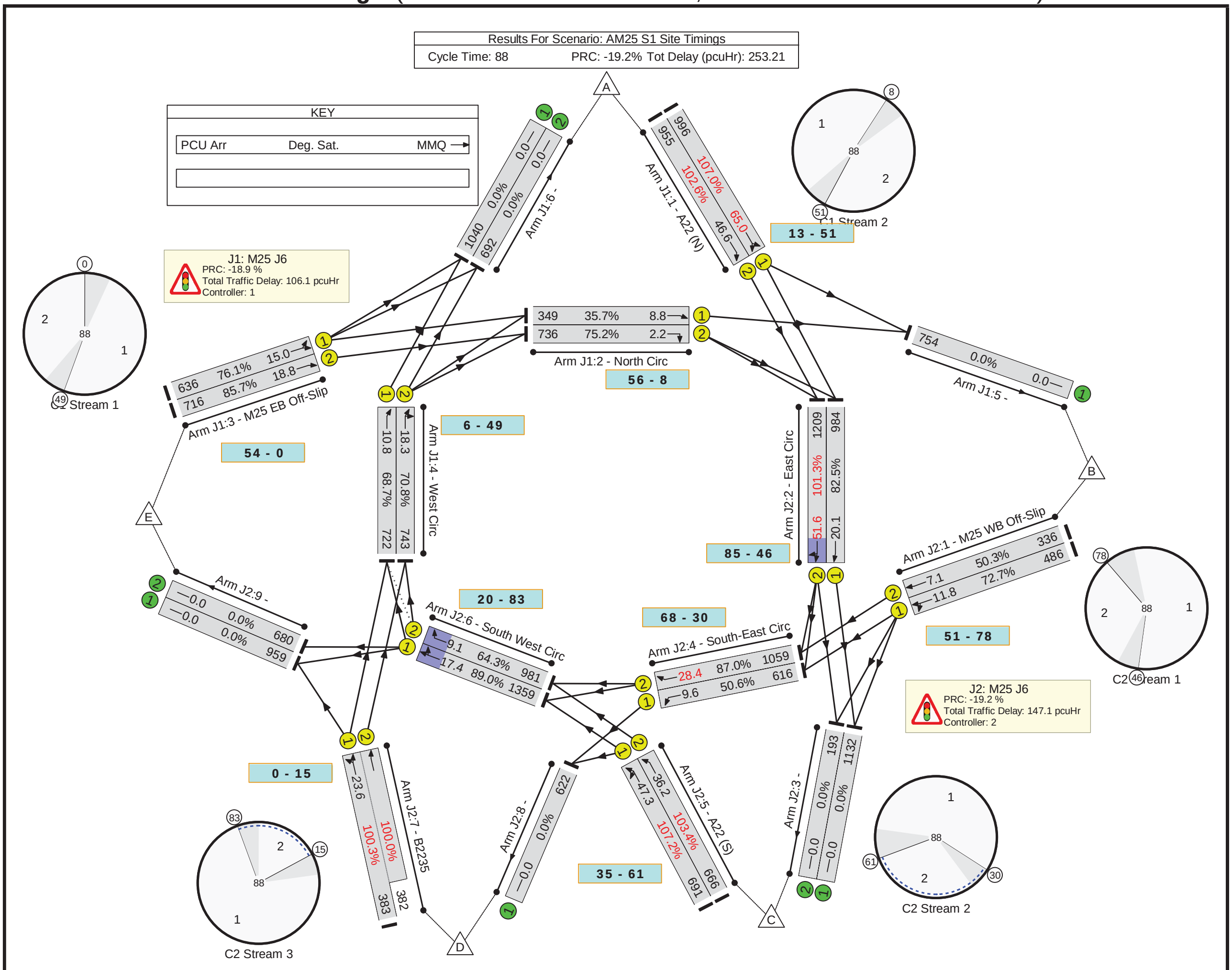
Scenario 2: 'AM25 S1 Site Timings' (FG13: 'AM 2025 Scenario 1', Plan 1: 'Network Control Plan 1')



Assumptions:

No controller specification was provided, although daily stage timings, cycle times and intergreen data were sent for each cycle over a 24 hour period. Therefore, these timings were used in the "...(Site)" scenarios, where green splits were set and then the model offsets optimised (although these likely to vary from cycle to cycle). Phase data and stages taken from provided drawing.

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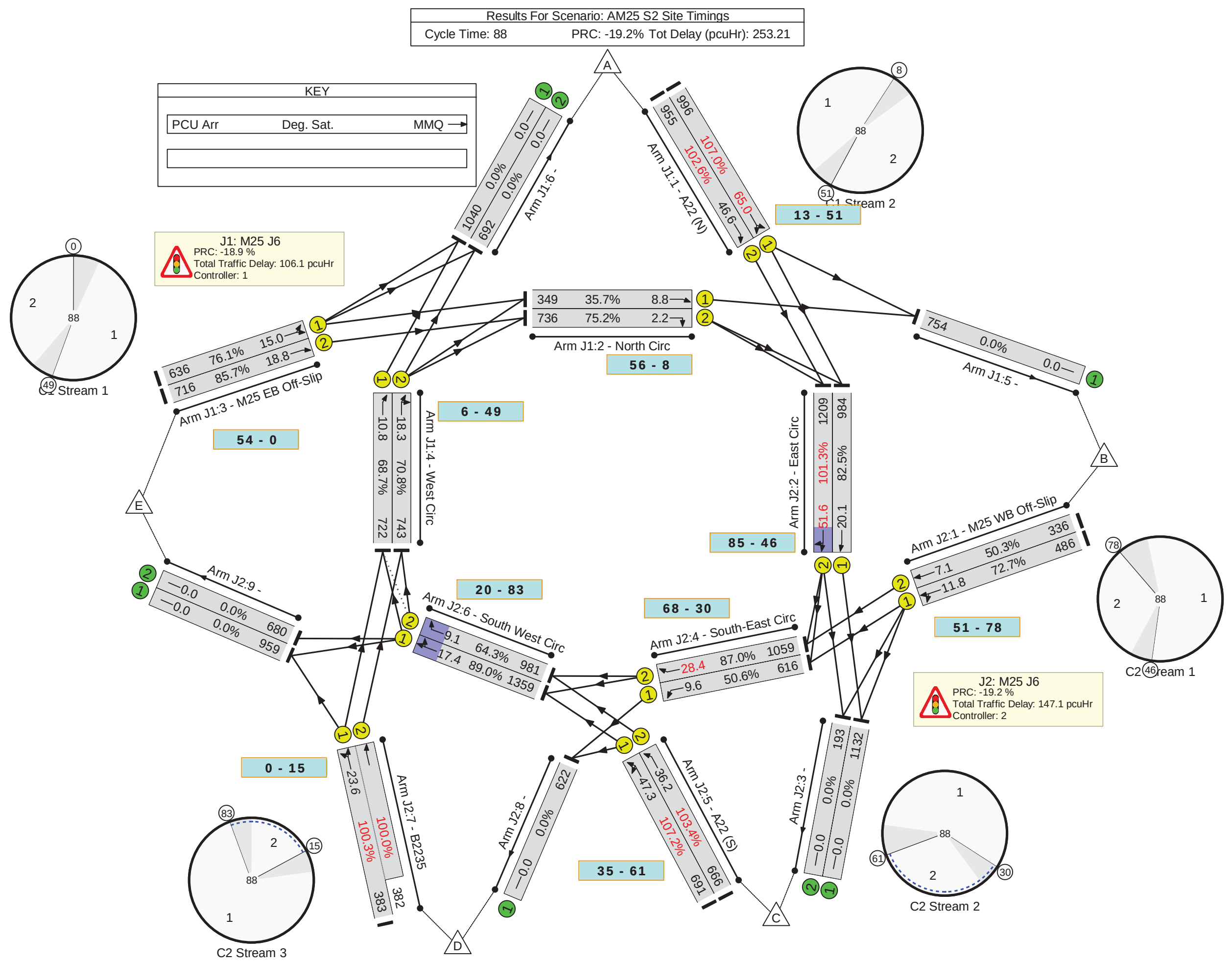
Scenario 3: 'AM25 S2 Site Timings' (FG23: 'AM 2025 Scenario 2', Plan 1: 'Network Control Plan 1')



Assumptions:

No controller specification was provided, although daily stage timings, cycle times and intergreen data were sent for each cycle over a 24 hour period. Therefore, these timings were used in the "...(Site)" scenarios, where green splits were set and then the model offsets optimised (although these likely to vary from cycle to cycle). Phase data and stages taken from provided drawing.

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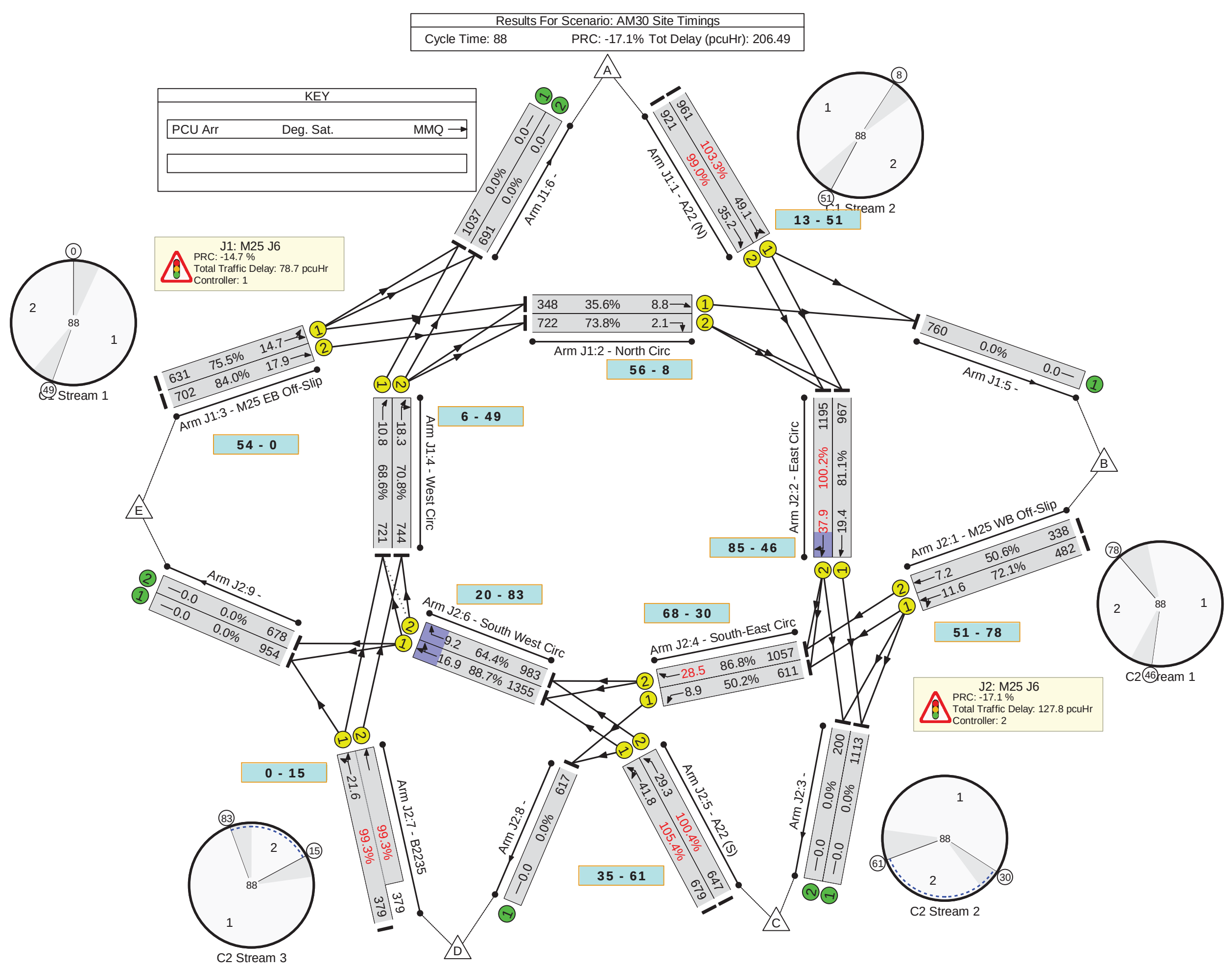
Scenario 7: 'AM30 Site Timings' (FG3: 'AM 2030', Plan 1: 'Network Control Plan 1')



Assumptions:

No controller specification was provided, although daily stage timings, cycle times and intergreen data were sent for each cycle over a 24 hour period. Therefore, these timings were used in the "...(Site)" scenarios, where green splits were set and then the model offsets optimised (although these likely to vary from cycle to cycle). Phase data and stages taken from provided drawing.

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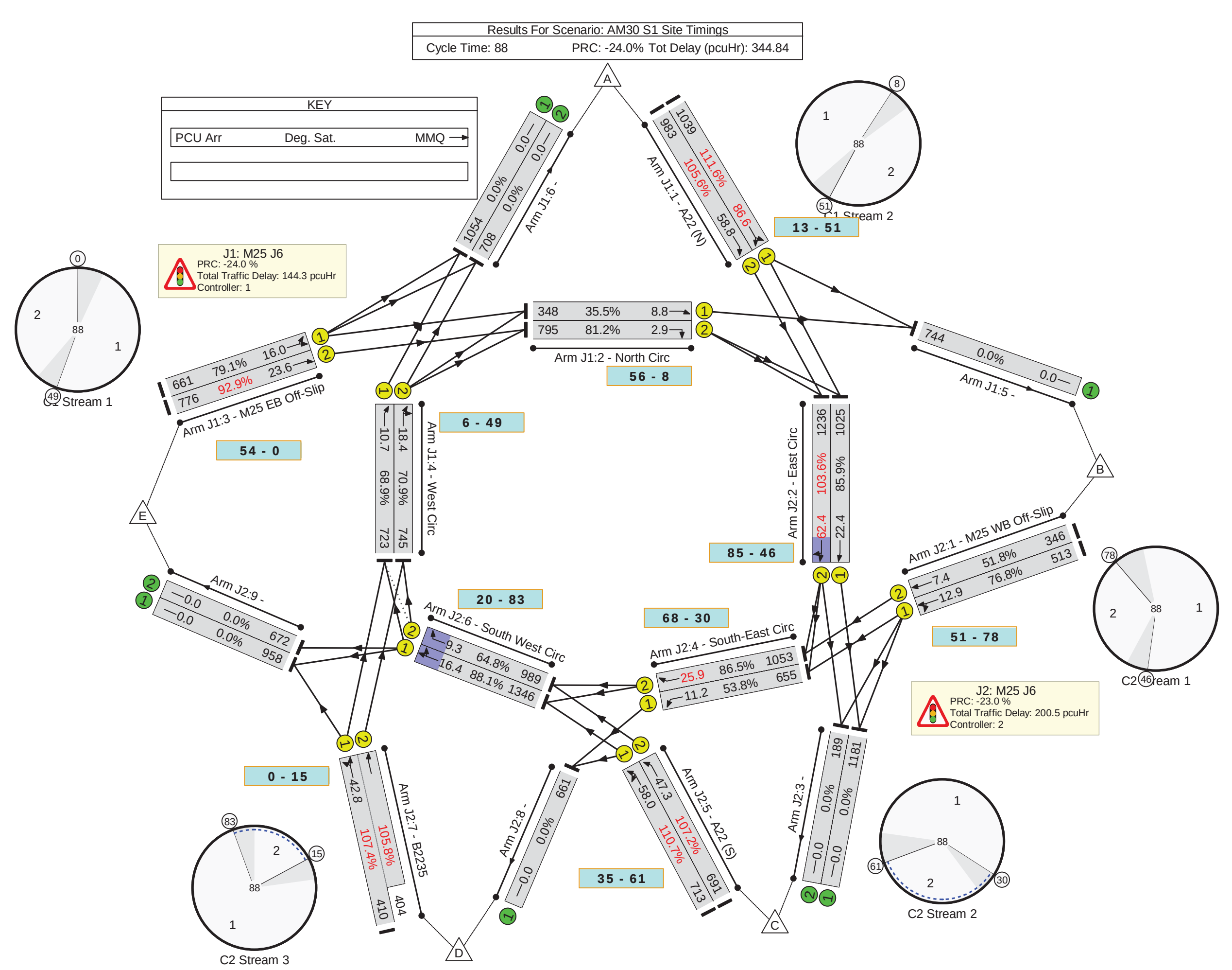
Scenario 8: 'AM30 S1 Site Timings' (FG14: 'AM 2030 Scenario 1', Plan 1: 'Network Control Plan 1')



Assumptions:

No controller specification was provided, although daily stage timings, cycle times and intergreen data were sent for each cycle over a 24 hour period. Therefore, these timings were used in the "...(Site)" scenarios, where green splits were set and then the model offsets optimised (although these likely to vary from cycle to cycle). Phase data and stages taken from provided drawing.

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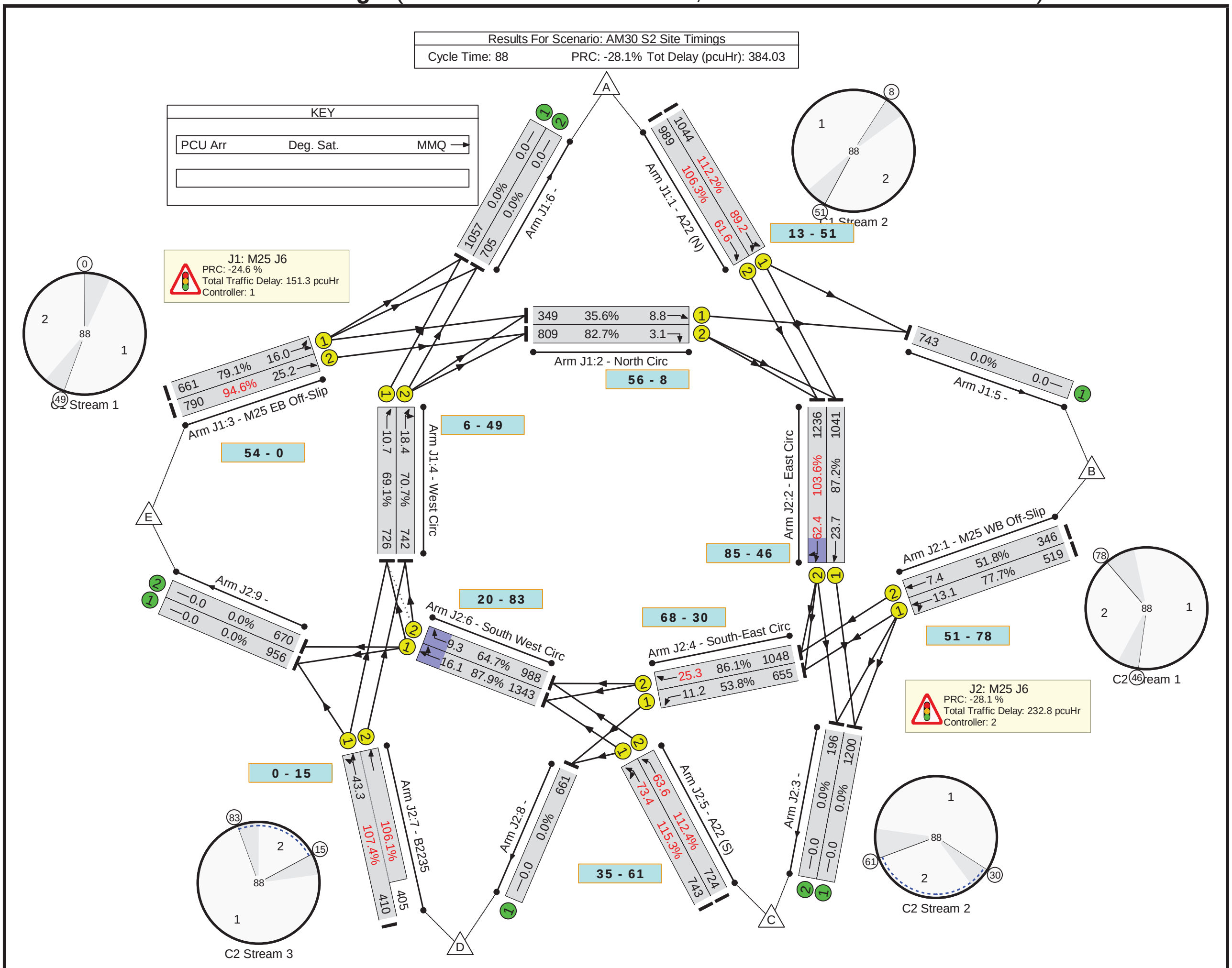
Scenario 9: 'AM30 S2 Site Timings' (FG24: 'AM 2030 Scenario 2', Plan 1: 'Network Control Plan 1')



Assumptions:

No controller specification was provided, although daily stage timings, cycle times and intergreen data were sent for each cycle over a 24 hour period. Therefore, these timings were used in the "...(Site)" scenarios, where green splits were set and then the model offsets optimised (although these likely to vary from cycle to cycle). Phase data and stages taken from provided drawing.

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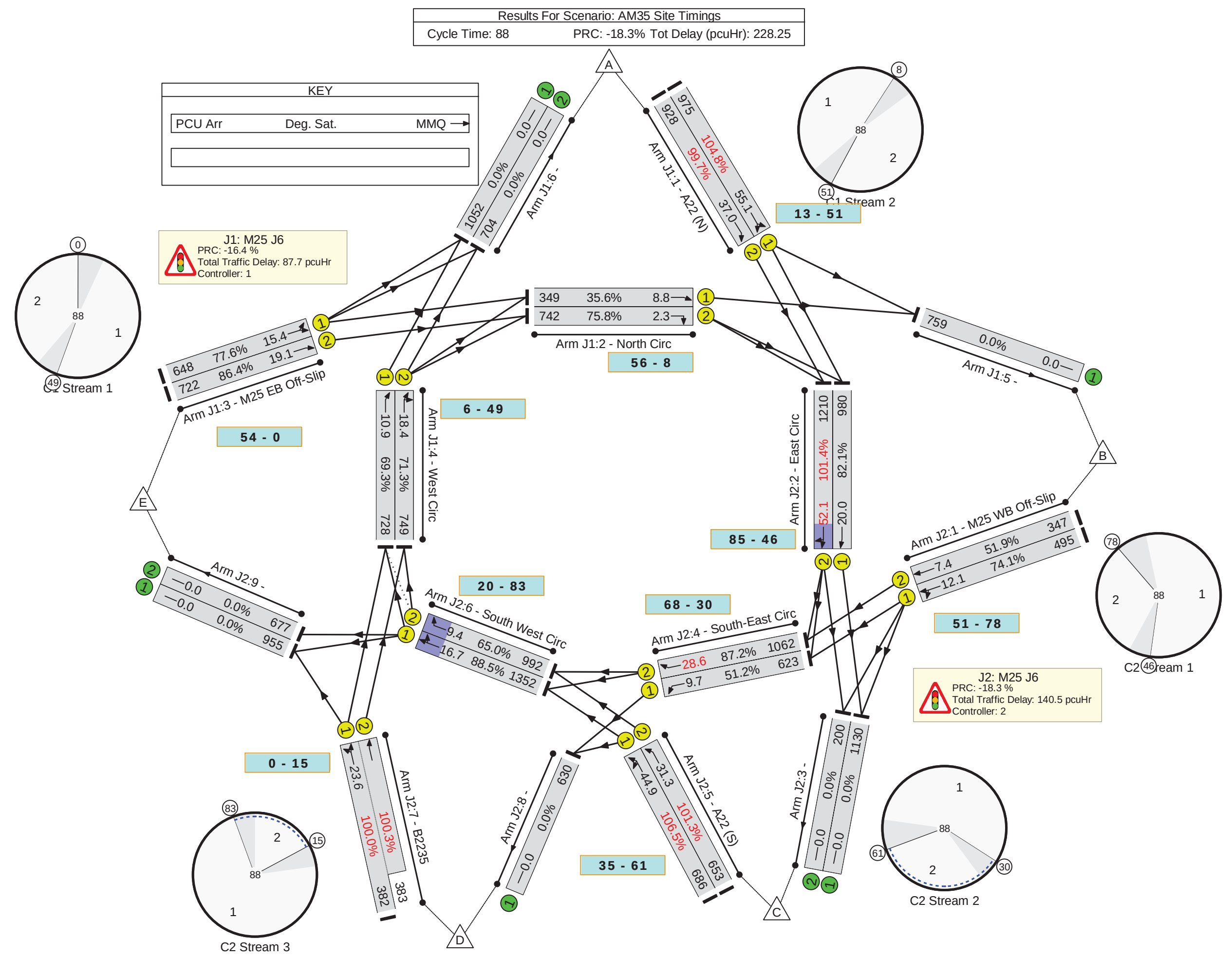
Scenario 13: 'AM35 Site Timings' (FG4: 'AM 2035', Plan 1: 'Network Control Plan 1')



Assumptions:

No controller specification was provided, although daily stage timings, cycle times and intergreen data were sent for each cycle over a 24 hour period. Therefore, these timings were used in the "...(Site)" scenarios, where green splits were set and then the model offsets optimised (although these likely to vary from cycle to cycle). Phase data and stages taken from provided drawing.

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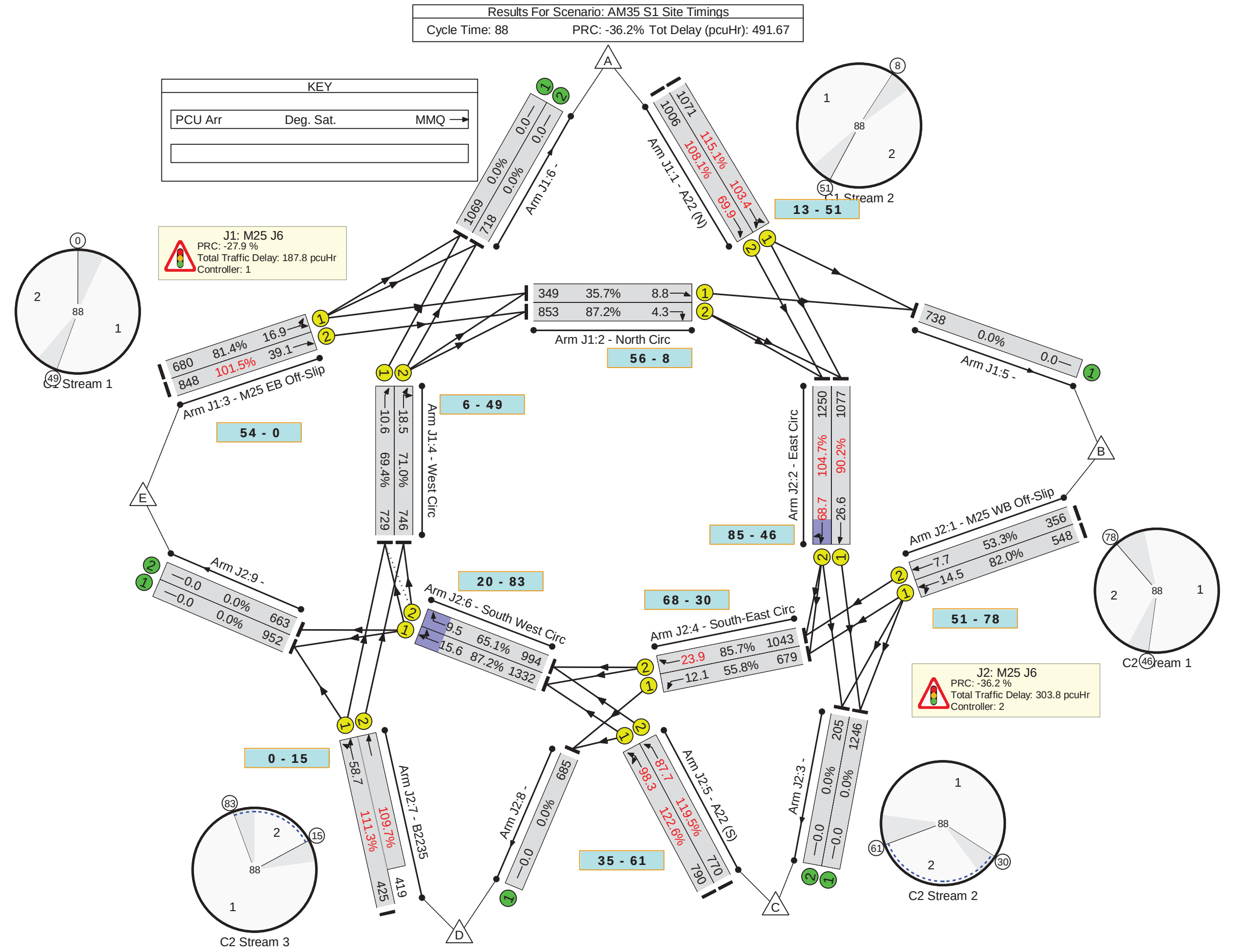
Scenario 14: 'AM35 S1 Site Timings' (FG15: 'AM 2035 Scenario 1', Plan 1: 'Network Control Plan 1')



Assumptions:

No controller specification was provided, although daily stage timings, cycle times and intergreen data were sent for each cycle over a 24 hour period. Therefore, these timings were used in the "...(Site)" scenarios, where green splits were set and then the model offsets optimised (although these likely to vary from cycle to cycle). Phase data and stages taken from provided drawing.

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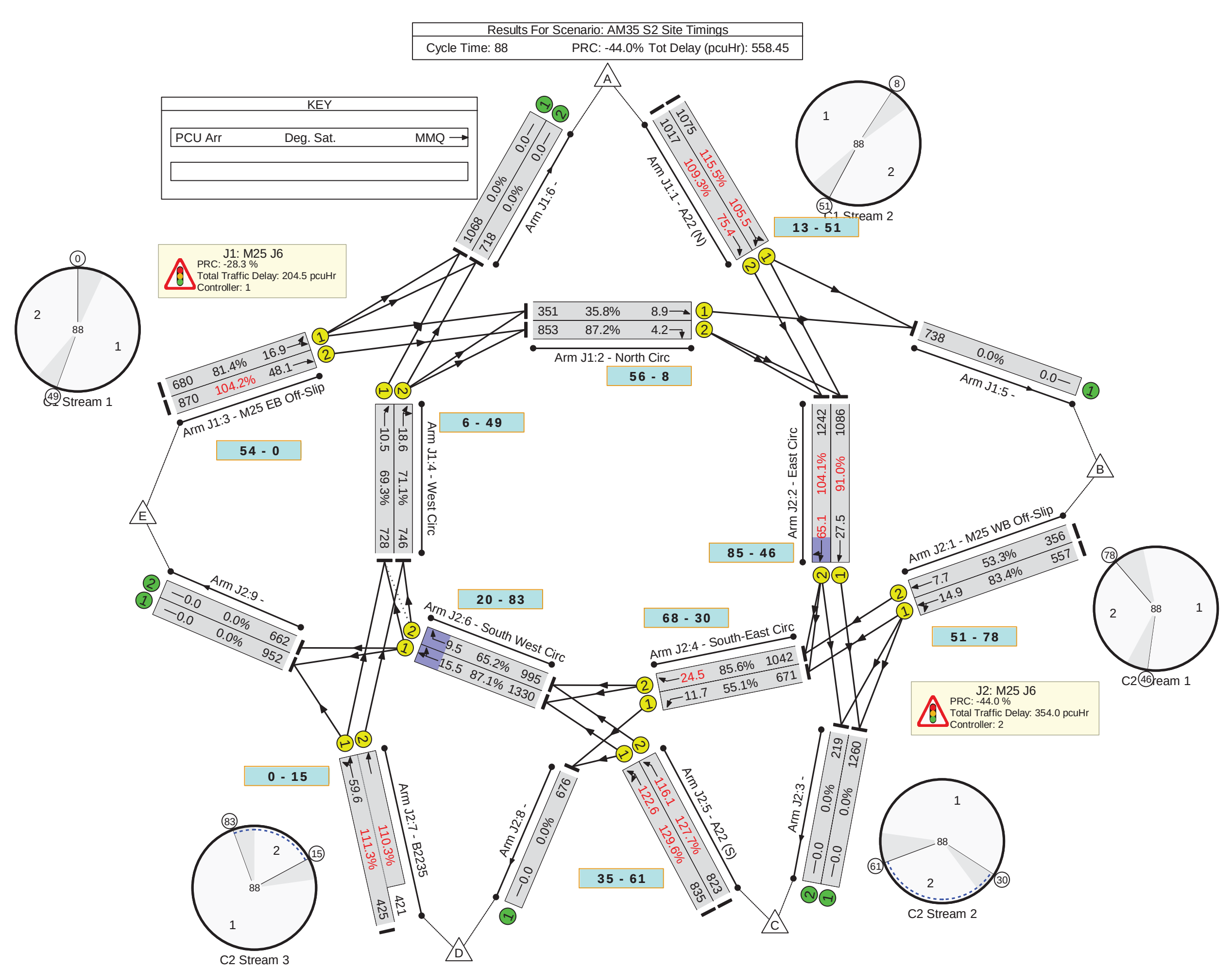
Scenario 15: 'AM35 S2 Site Timings' (FG25: 'AM 2035 Scenario 2', Plan 1: 'Network Control Plan 1')



Assumptions:

No controller specification was provided, although daily stage timings, cycle times and intergreen data were sent for each cycle over a 24 hour period. Therefore, these timings were used in the "...(Site)" scenarios, where green splits were set and then the model offsets optimised (although these likely to vary from cycle to cycle). Phase data and stages taken from provided drawing.

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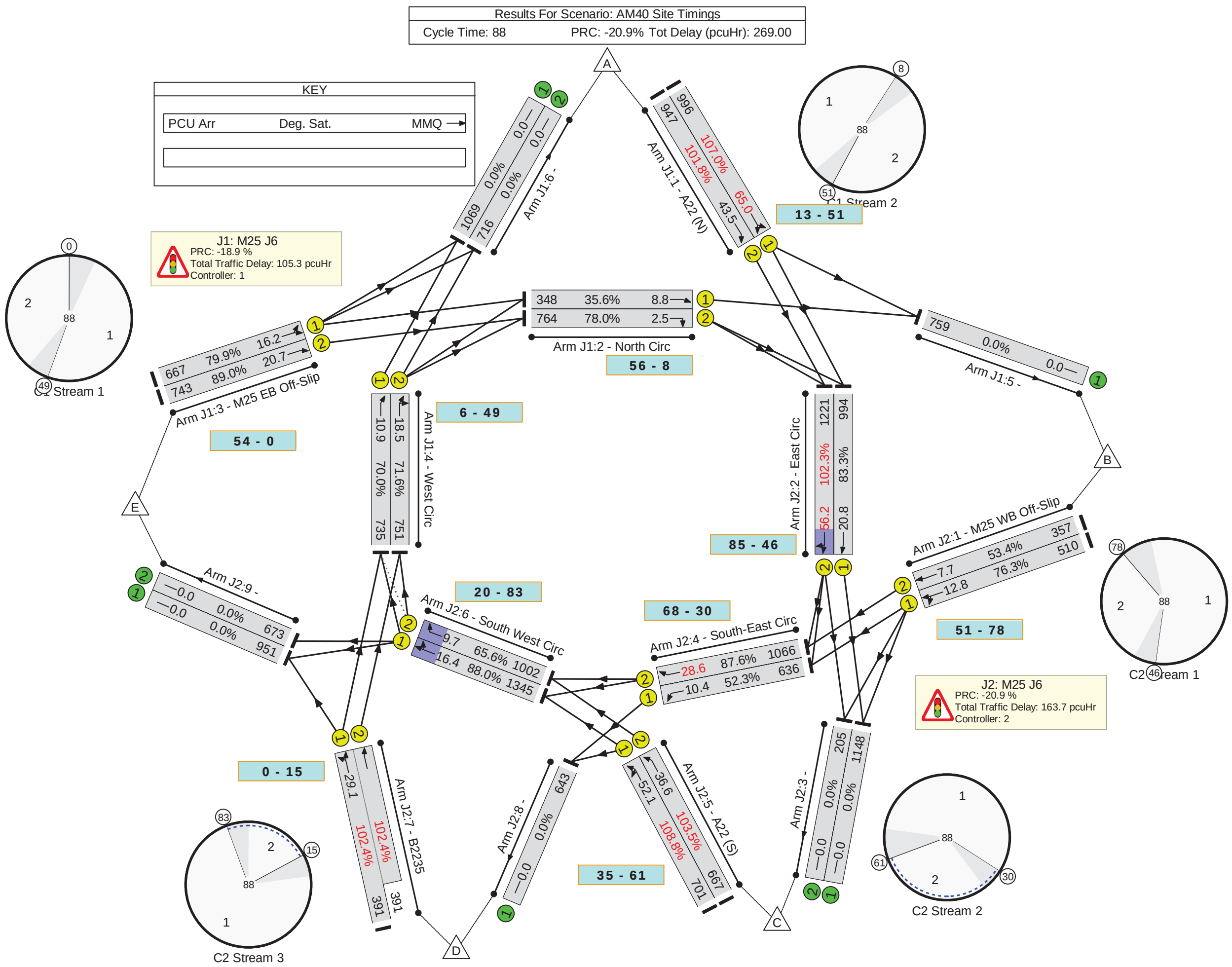
Scenario 19: 'AM40 Site Timings' (FG5: 'AM 2040', Plan 1: 'Network Control Plan 1')



Assumptions:

No controller specification was provided, although daily stage timings, cycle times and intergreen data were sent for each cycle over a 24 hour period. Therefore, these timings were used in the "...(Site)" scenarios, where green splits were set and then the model offsets optimised (although these likely to vary from cycle to cycle). Phase data and stages taken from provided drawing.

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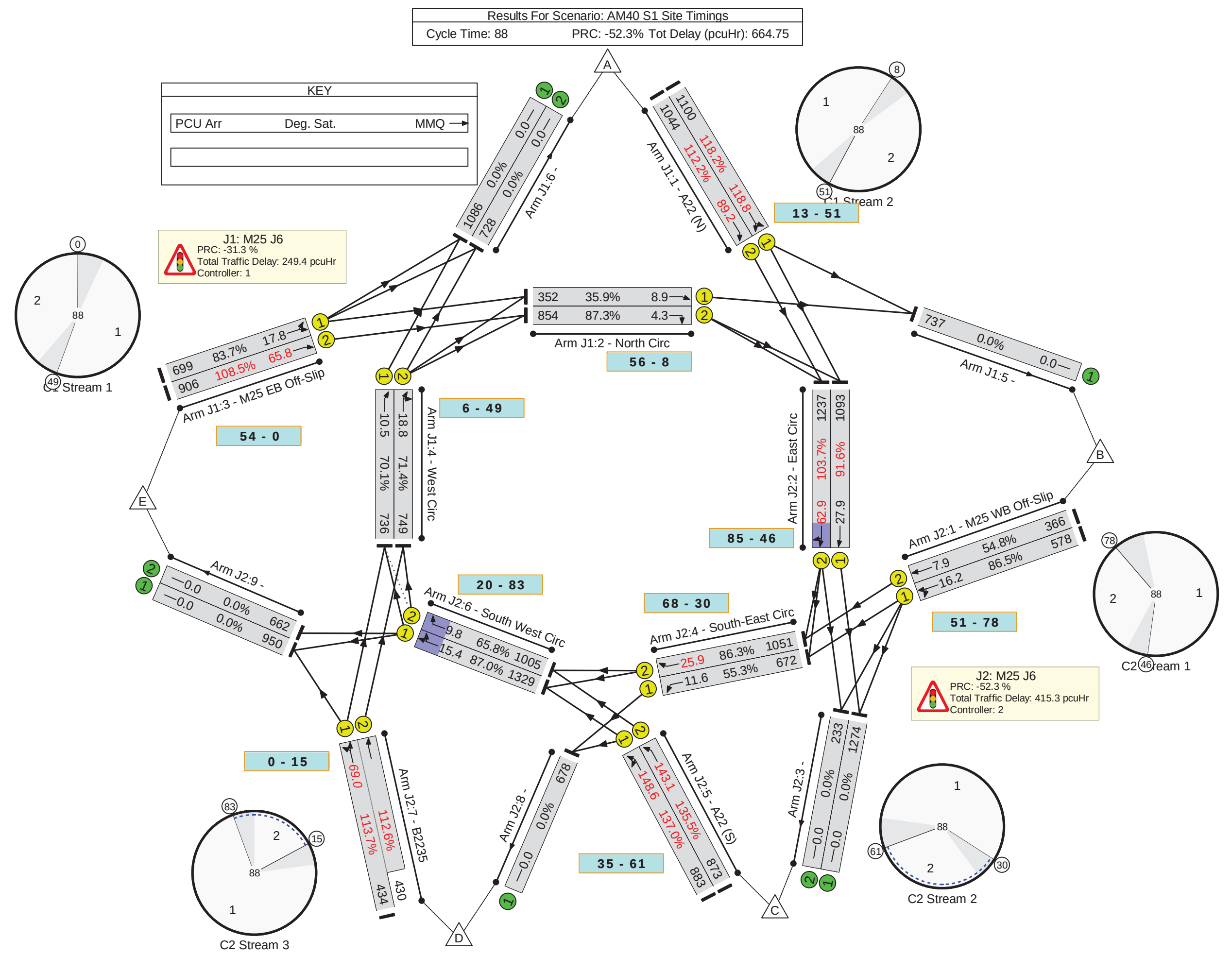
Scenario 20: 'AM40 S1 Site Timings' (FG16: 'AM 2040 Scenario 1', Plan 1: 'Network Control Plan 1')



Assumptions:

No controller specification was provided, although daily stage timings, cycle times and intergreen data were sent for each cycle over a 24 hour period. Therefore, these timings were used in the "...(Site)" scenarios, where green splits were set and then the model offsets optimised (although these likely to vary from cycle to cycle). Phase data and stages taken from provided drawing.

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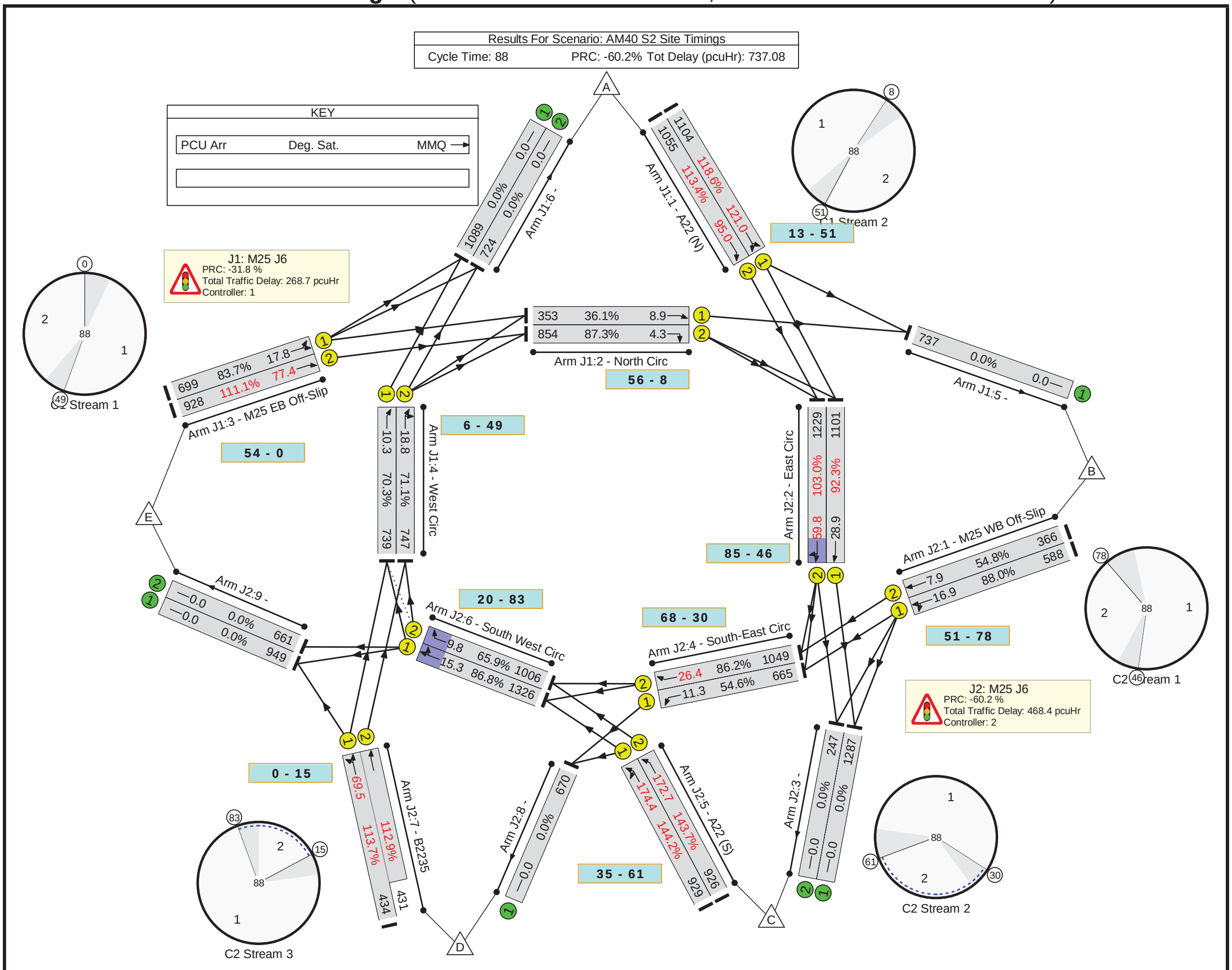
Scenario 21: 'AM40 S2 Site Timings' (FG26: 'AM 2040 Scenario 2', Plan 1: 'Network Control Plan 1')



Assumptions:

No controller specification was provided, although daily stage timings, cycle times and intergreen data were sent for each cycle over a 24 hour period. Therefore, these timings were used in the "...(Site)" scenarios, where green splits were set and then the model offsets optimised (although these likely to vary from cycle to cycle). Phase data and stages taken from provided drawing.

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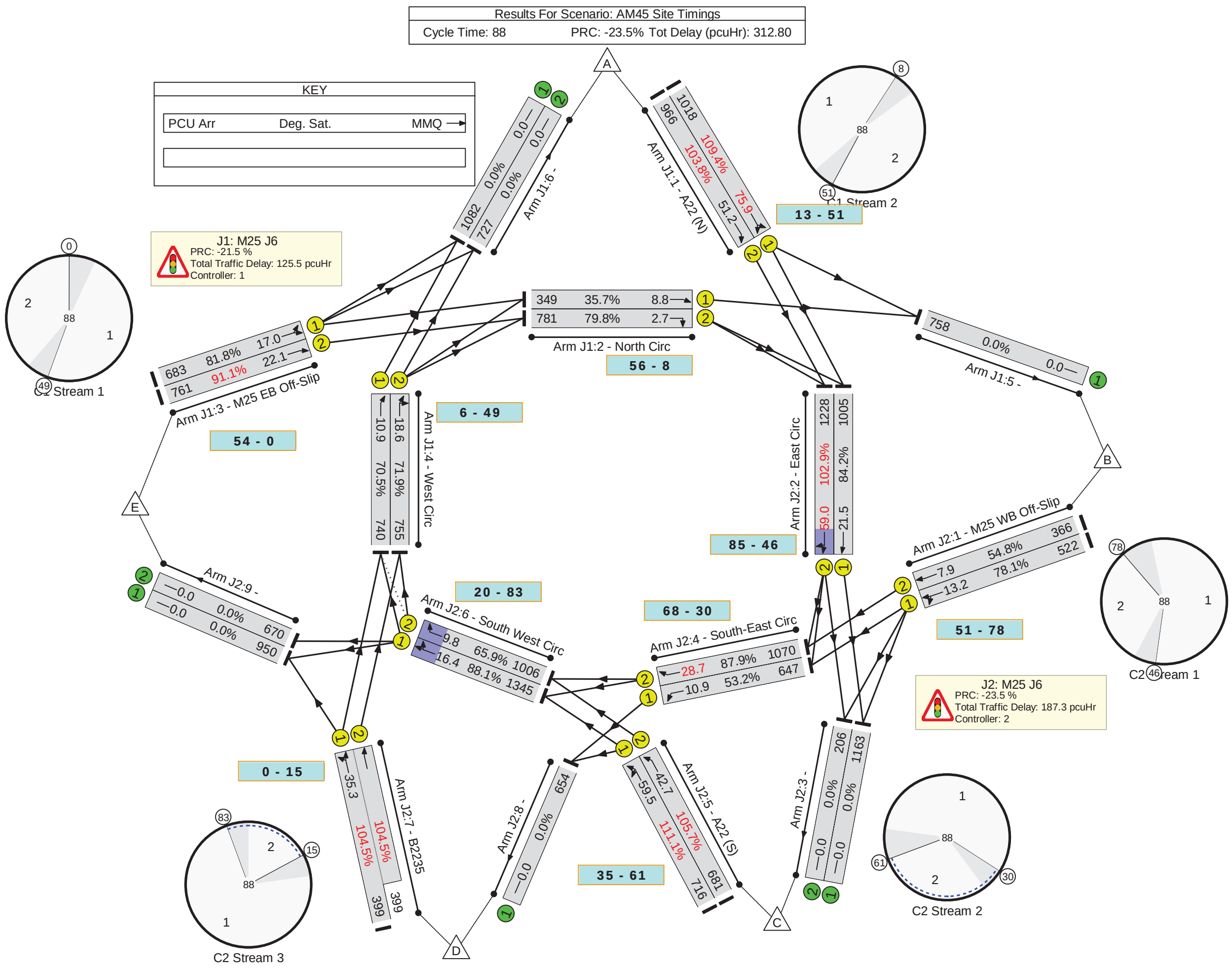
Scenario 25: 'AM45 Site Timings' (FG6: 'AM 2045', Plan 1: 'Network Control Plan 1')



Assumptions:

No controller specification was provided, although daily stage timings, cycle times and intergreen data were sent for each cycle over a 24 hour period. Therefore, these timings were used in the "...(Site)" scenarios, where green splits were set and then the model offsets optimised (although these likely to vary from cycle to cycle). Phase data and stages taken from provided drawing.

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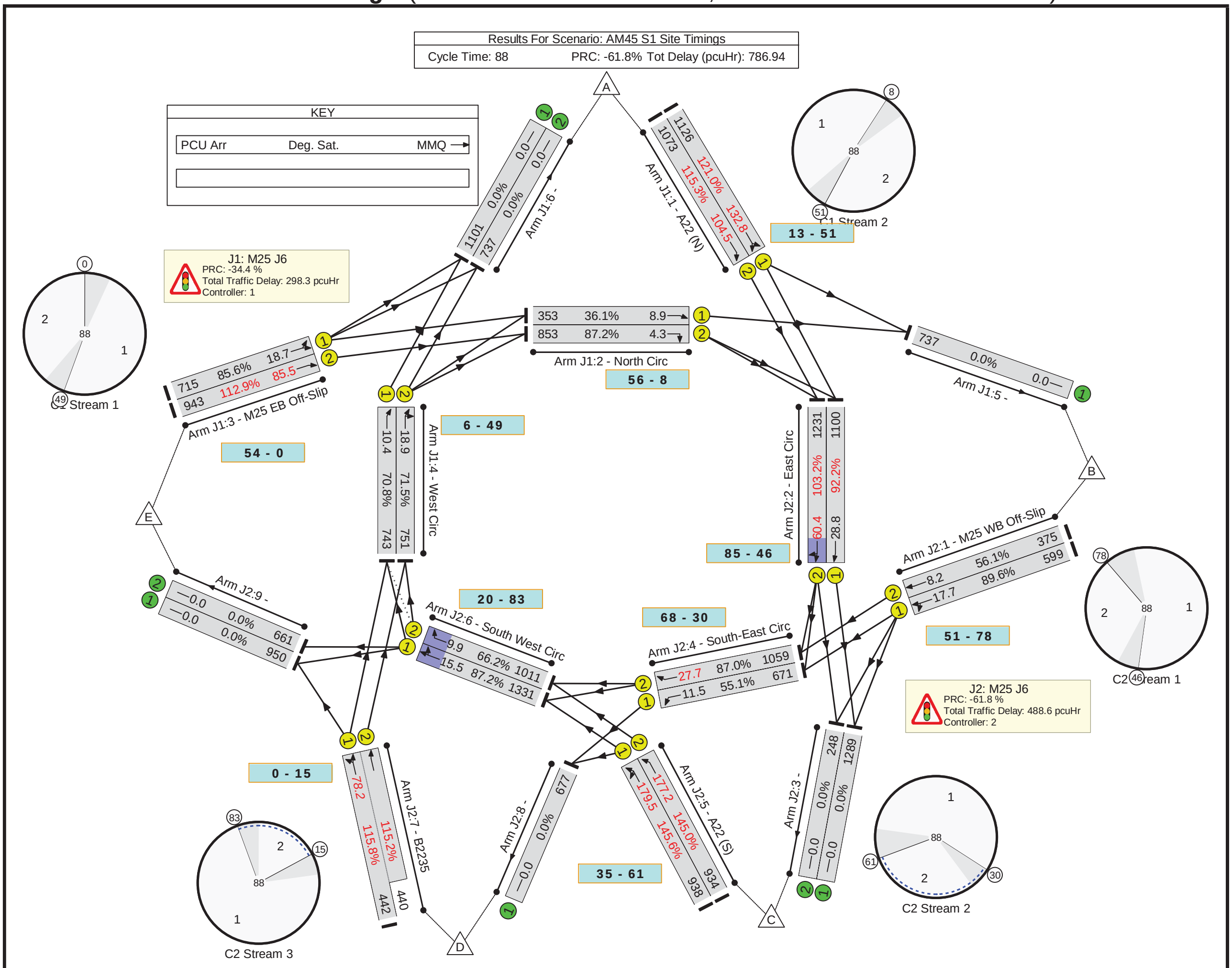
Scenario 26: 'AM45 S1 Site Timings' (FG17: 'AM 2045 Scenario 1', Plan 1: 'Network Control Plan 1')



Assumptions:

No controller specification was provided, although daily stage timings, cycle times and intergreen data were sent for each cycle over a 24 hour period. Therefore, these timings were used in the "...(Site)" scenarios, where green splits were set and then the model offsets optimised (although these likely to vary from cycle to cycle). Phase data and stages taken from provided drawing.

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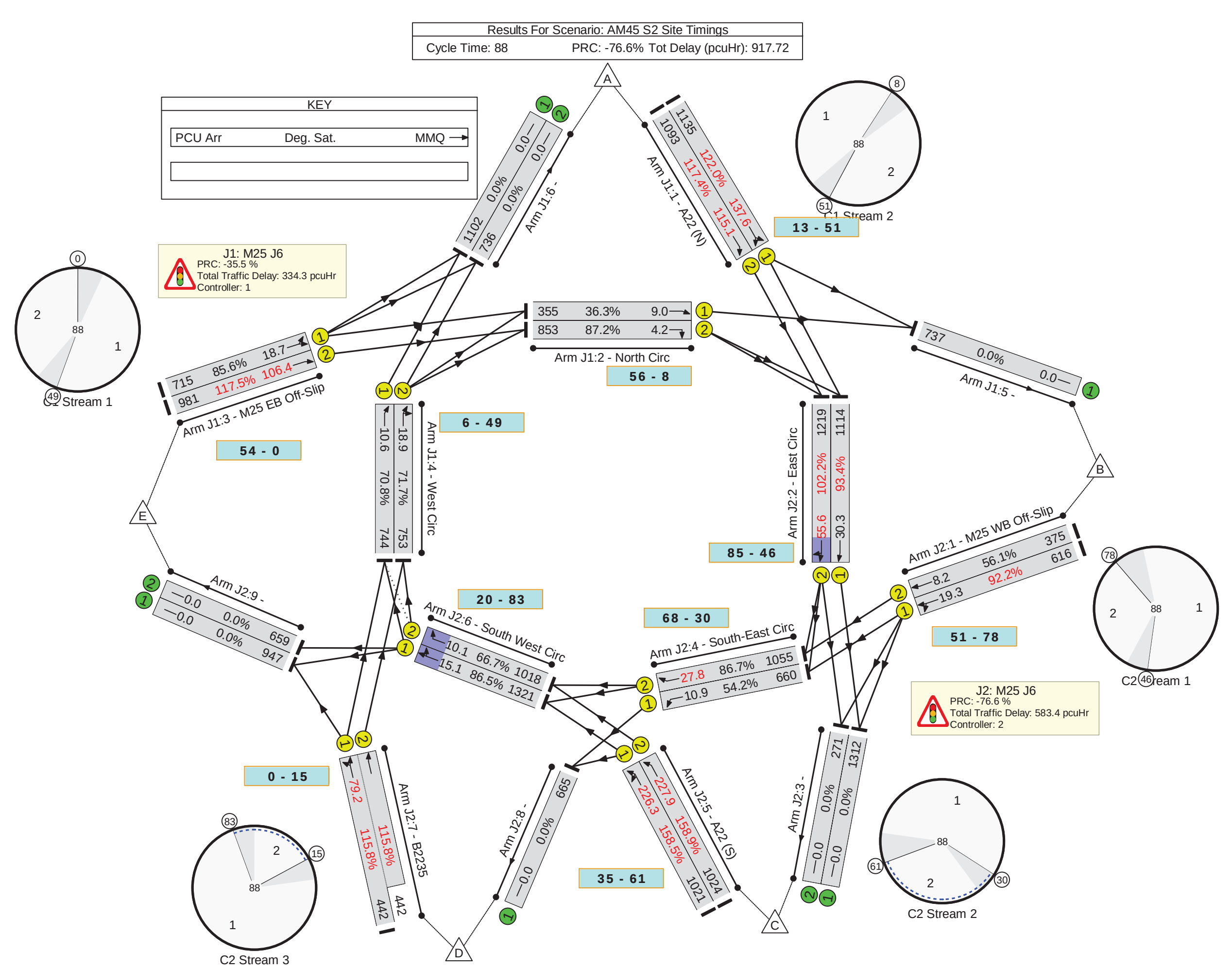
Scenario 27: 'AM45 S2 Site Timings' (FG27: 'AM 2045 Scenario 2', Plan 1: 'Network Control Plan 1')



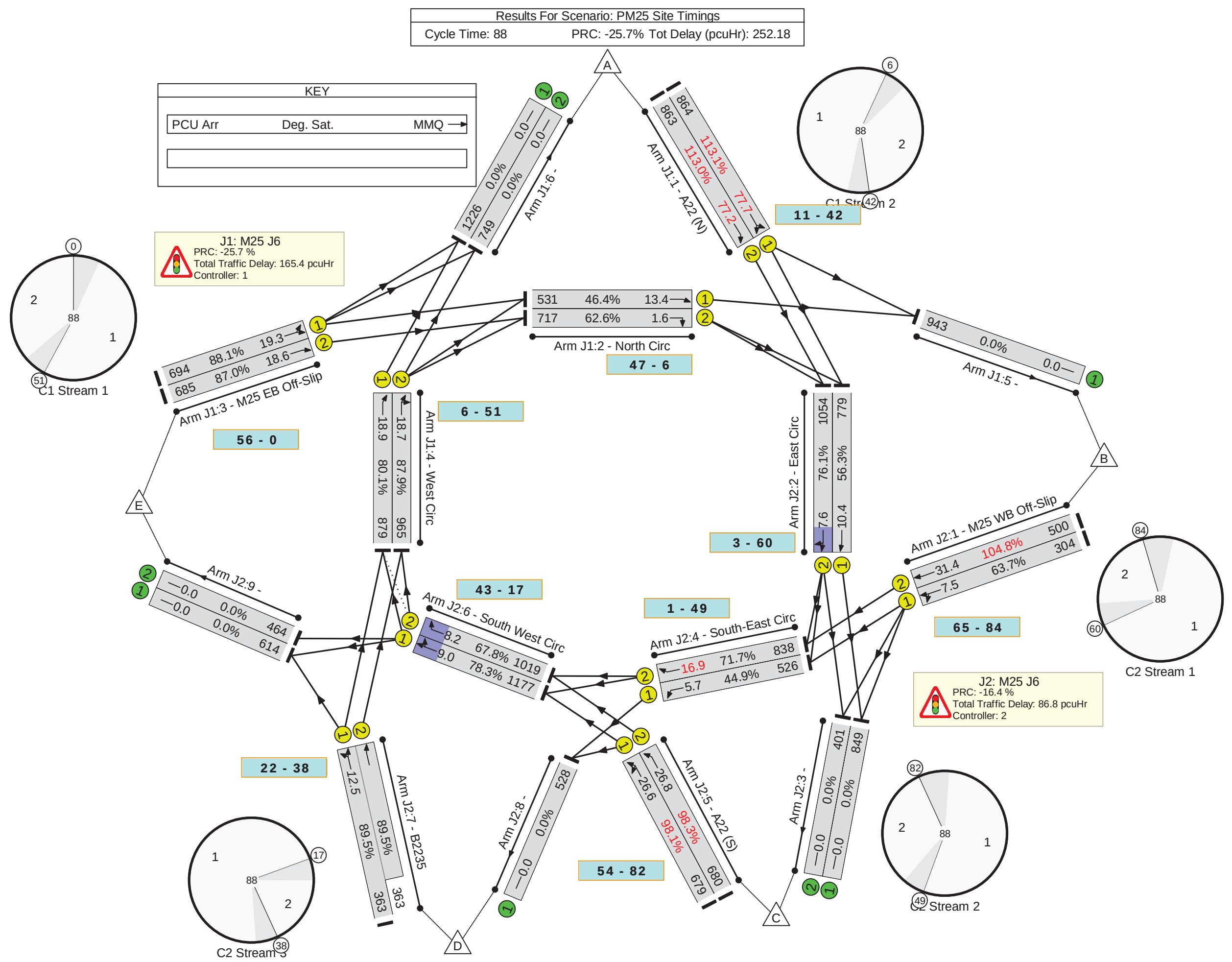
Assumptions:

No controller specification was provided, although daily stage timings, cycle times and intergreen data were sent for each cycle over a 24 hour period. Therefore, these timings were used in the "...(Site)" scenarios, where green splits were set and then the model offsets optimised (although these likely to vary from cycle to cycle). Phase data and stages taken from provided drawing.

Saturation flows were initially set to 1900 pcu/hr per lane as a conservative estimate (experience indicated that grade separated roundabouts often exhibit significantly higher saturation flows. However, this resulted in several degrees of saturation in the 2018 scenarios as being significantly over 100%. This should not be the case, given the traffic flow data was counted as crossing the stopline during the survey, and therefore should be around 100% at most. Therefore saturation flows were increased to 2100 pcu/hr, which resulted in more realistic degrees of saturation, for example the A22 (N) values being around 100%. Note, high degrees of saturation still shown on this arm during the PM 2018 peak period. Although saturation flows above 2300 pcu/hr would result in values closer to 100%, JCT decided these may generally be over-optimistic without further observations, and decided to use 2100 pcu/hr.

DoS Limits applied to circulating lanes, to not exceed DoS originally reported in 2018 scenarios when existing timings were used. Therefore, some of these limits exceeded 90%. When optimising, this was initially done automatically. However, due to significant congestion, this could result in strange results, for example severely restricting green on an entry so that downstream flows are reduced to reduce DoS downstream. It was difficult for automatic optimisatiom to consistently provide timings from one scenario to the next, with an added complication of delay based flow assignment resulting in different route choices as timings change. Therefore, after the initial optimisation, signal stream timings were automatically adjusted so that the circulatory does not exceed the DoS limit (but as close to it as possible), model re-run and so on iteratively.

Scenario 31: 'PM25 Site Timings' (FG8: 'PM 2025', Plan 1: 'Network Control Plan 1')



Assumptions:

No controller specification was provided, although daily stage timings, cycle times and intergreen data were sent for each cycle over a 24 hour period. Therefore, these timings were used in the "...(Site)" scenarios, where green splits were set and then the model offsets optimised (although these likely to vary from cycle to cycle). Phase data and stages taken from provided drawing.

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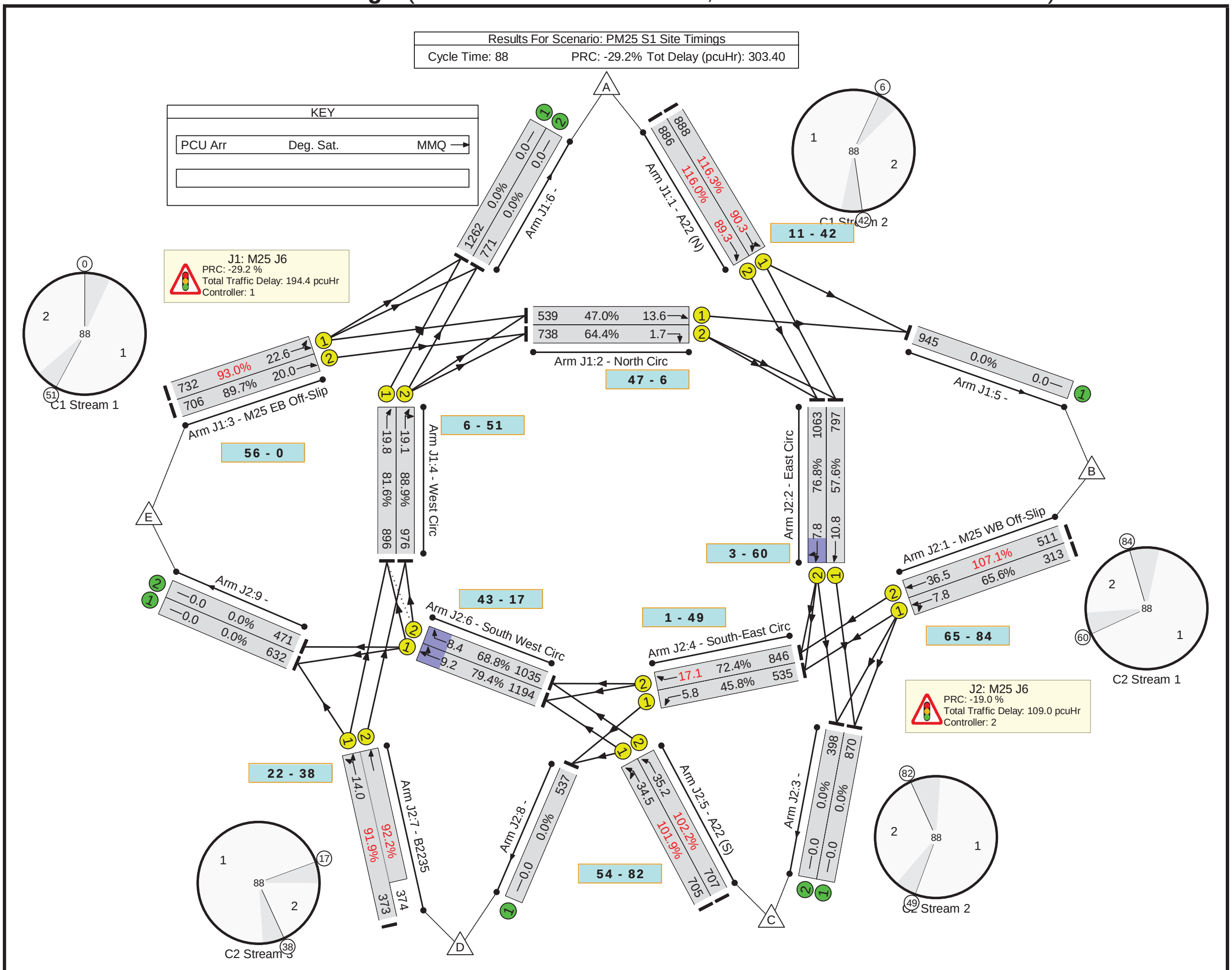
Scenario 32: 'PM25 S1 Site Timings' (FG18: 'PM 2025 Scenario 1', Plan 1: 'Network Control Plan 1')



Assumptions:

No controller specification was provided, although daily stage timings, cycle times and intergreen data were sent for each cycle over a 24 hour period. Therefore, these timings were used in the "...(Site)" scenarios, where green splits were set and then the model offsets optimised (although these likely to vary from cycle to cycle). Phase data and stages taken from provided drawing.

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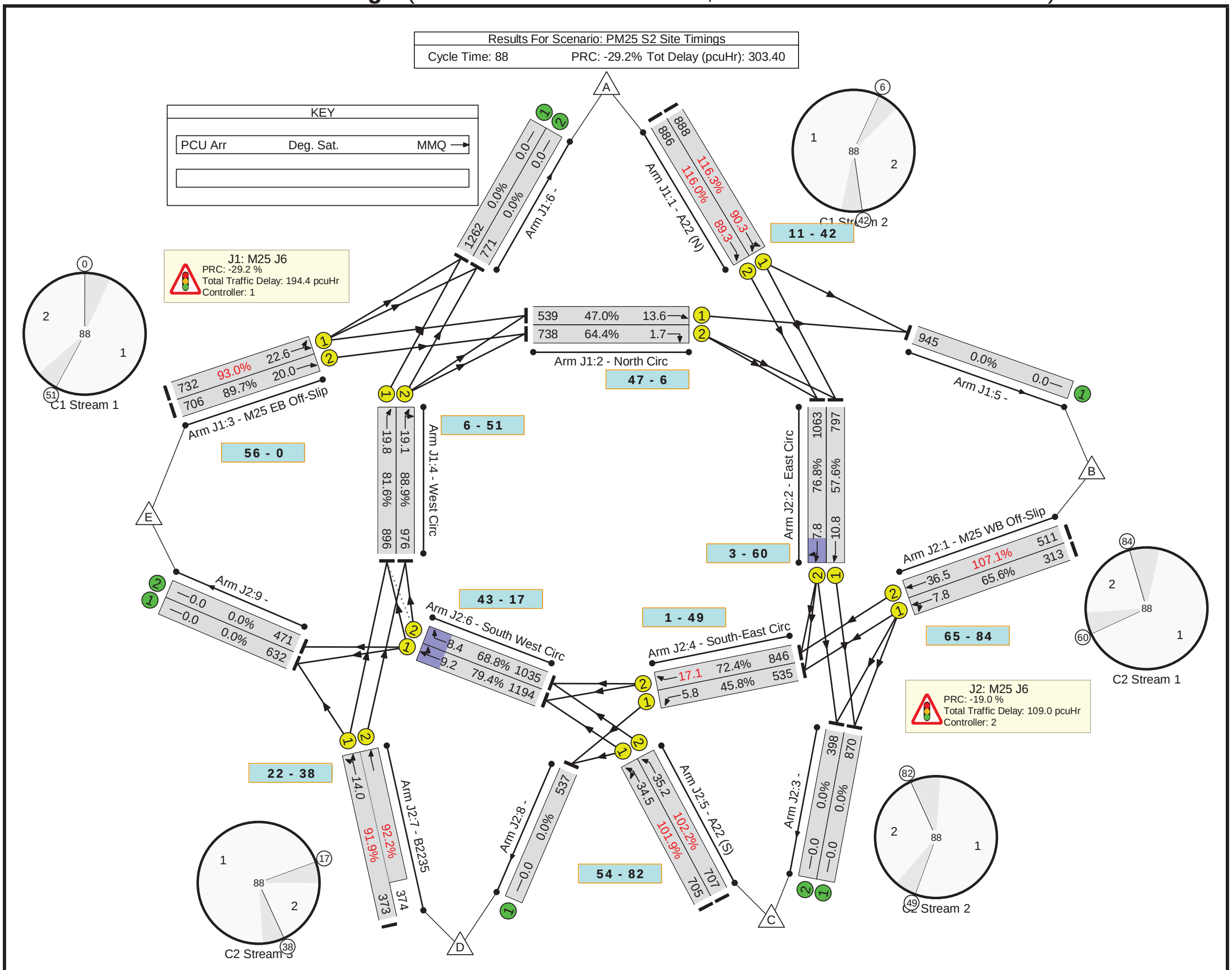
Scenario 33: 'PM25 S2 Site Timings' (FG28: 'PM 2025 Scenario 2', Plan 1: 'Network Control Plan 1')



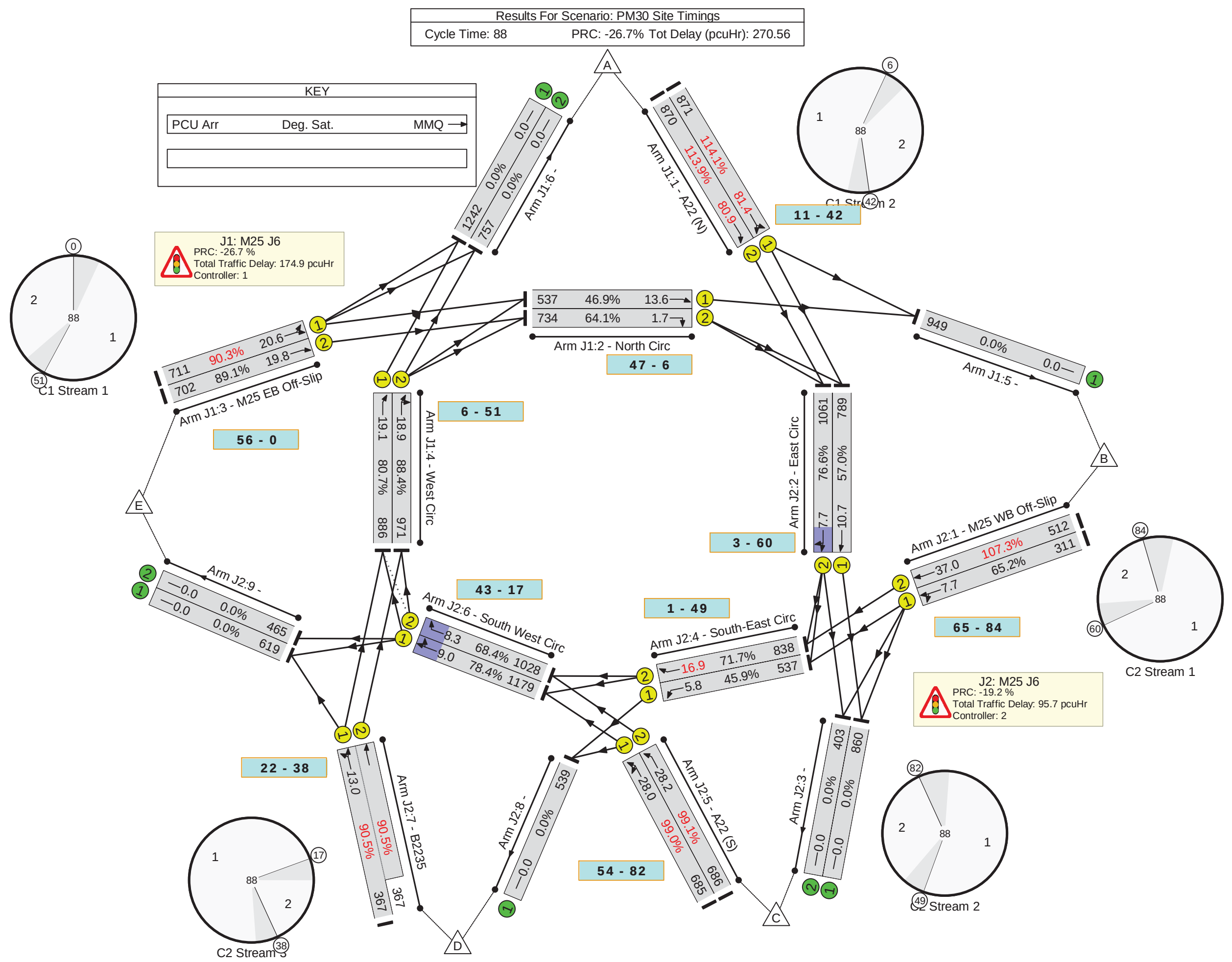
Assumptions:

No controller specification was provided, although daily stage timings, cycle times and intergreen data were sent for each cycle over a 24 hour period. Therefore, these timings were used in the "...(Site)" scenarios, where green splits were set and then the model offsets optimised (although these likely to vary from cycle to cycle). Phase data and stages taken from provided drawing.

Saturation flows were initially set to 1900 pcu/hr per lane as a conservative estimate (experience indicated that grade separated roundabouts often exhibit significantly higher saturation flows. However, this resulted in several degrees of saturation in the 2018 scenarios as being significantly over 100%. This should not be the case, given the traffic flow data was counted as crossing the stopline during the survey, and therefore should be around 100% at most. Therefore saturation flows were increased to 2100 pcu/hr, which resulted in more realistic degrees of saturation, for example the A22 (N) values being around 100%. Note, high degrees of saturation still shown on this arm during the PM 2018 peak period. Although saturation flows above 2300 pcu/hr would result in values closer to 100%, JCT decided these may generally be over-optimistic without further observations, and decided to use 2100 pcu/hr.

DoS Limits applied to circulating lanes, to not exceed DoS originally reported in 2018 scenarios when existing timings were used. Therefore, some of these limits exceeded 90%. When optimising, this was initially done automatically. However, due to significant congestion, this could result in strange results, for example severely restricting green on an entry so that downstream flows are reduced to reduce DoS downstream. It was difficult for automatic optimisatiom to consistently provide timings from one scenario to the next, with an added complication of delay based flow assignment resulting in different route choices as timings change. Therefore, after the initital optimisation, signal stream timings were automatically adjusted so that the circulatory does not exceed the DoS limit (but as close to it as possible), model re-run and so on iteratively.

Scenario 37: 'PM30 Site Timings' (FG9: 'PM 2030', Plan 1: 'Network Control Plan 1')



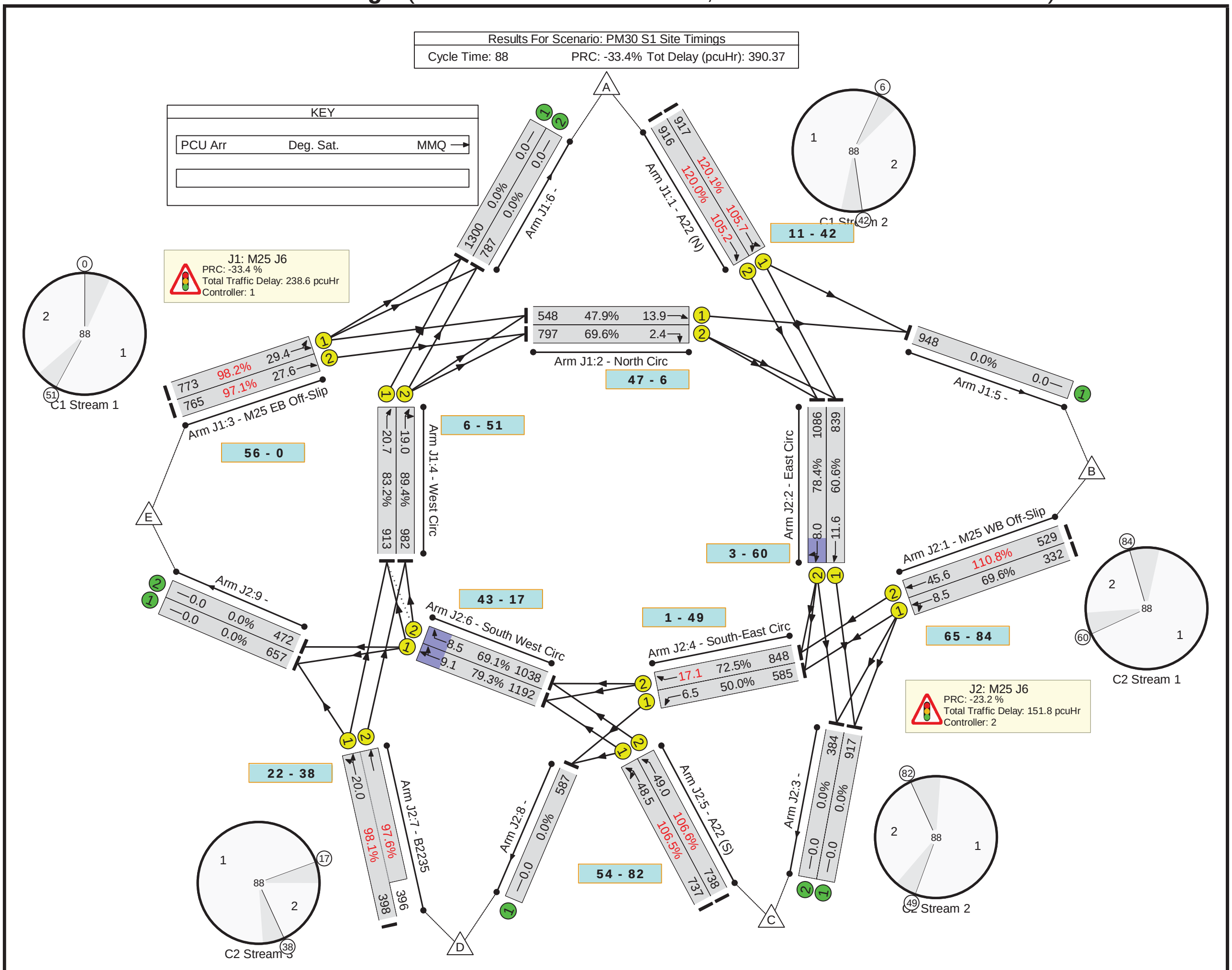
Assumptions:

No controller specification was provided, although daily stage timings, cycle times and intergreen data were sent for each cycle over a 24 hour period. Therefore, these timings were used in the "...(Site)" scenarios, where green splits were set and then the model offsets optimised (although these likely to vary from cycle to cycle). Phase data and stages taken from provided drawing.

Saturation flows were initially set to 1900 pcu/hr per lane as a conservative estimate (experience indicated that grade separated roundabouts often exhibit significantly higher saturation flows. However, this resulted in several degrees of saturation in the 2018 scenarios as being significantly over 100%. This should not be the case, given the traffic flow data was counted as crossing the stopline during the survey, and therefore should be around 100% at most. Therefore saturation flows were increased to 2100 pcu/hr, which resulted in more realistic degrees of saturation, for example the A22 (N) values being around 100%. Note, high degrees of saturation still shown on this arm during the PM 2018 peak period. Although saturation flows above 2300 pcu/hr would result in values closer to 100%, JCT decided these may generally be over-optimistic without further observations, and decided to use 2100 pcu/hr.

DoS Limits applied to circulating lanes, to not exceed DoS originally reported in 2018 scenarios when existing timings were used. Therefore, some of these limits exceeded 90%. When optimising, this was initially done automatically. However, due to significant congestion, this could result in strange results, for example severely restricting green on an entry so that downstream flows are reduced to reduce DoS downstream. It was difficult for automatic optimisatiom to consistently provide timings from one scenario to the next, with an added complication of delay based flow assignment resulting in different route choices as timings change. Therefore, after the intitial optimisation, signal stream timings were automatically adjusted so that the circulatory does not exceed the DoS limit (but as close to it as possible), model re-run and so on iteratively.

Scenario 38: 'PM30 S1 Site Timings' (FG19: 'PM 2030 Scenario 1', Plan 1: 'Network Control Plan 1')



Assumptions:

No controller specification was provided, although daily stage timings, cycle times and intergreen data were sent for each cycle over a 24 hour period. Therefore, these timings were used in the "...(Site)" scenarios, where green splits were set and then the model offsets optimised (although these likely to vary from cycle to cycle). Phase data and stages taken from provided drawing.

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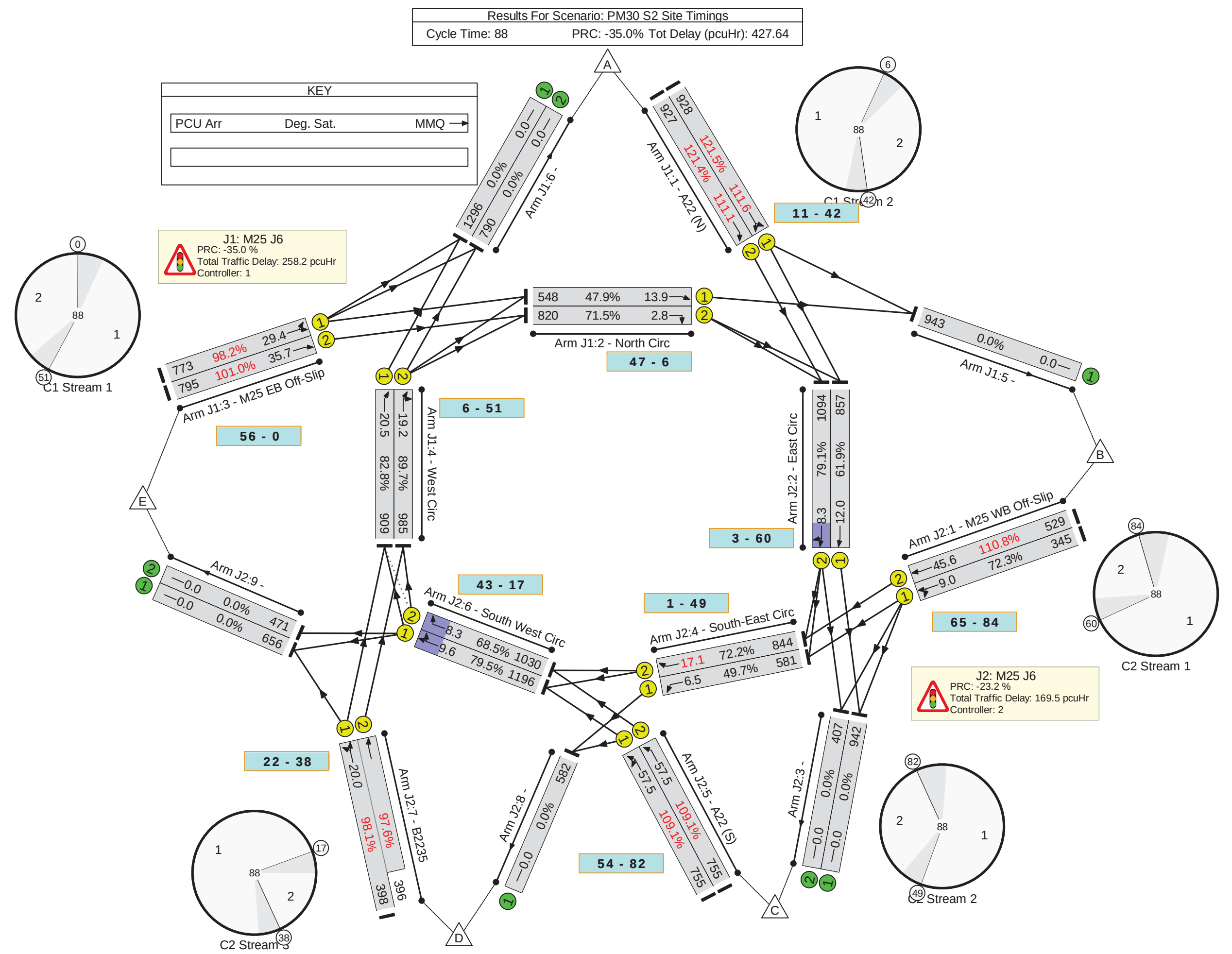
Scenario 39: 'PM30 S2 Site Timings' (FG29: 'PM 2030 Scenario 2', Plan 1: 'Network Control Plan 1')



Assumptions:

No controller specification was provided, although daily stage timings, cycle times and intergreen data were sent for each cycle over a 24 hour period. Therefore, these timings were used in the "...(Site)" scenarios, where green splits were set and then the model offsets optimised (although these likely to vary from cycle to cycle). Phase data and stages taken from provided drawing.

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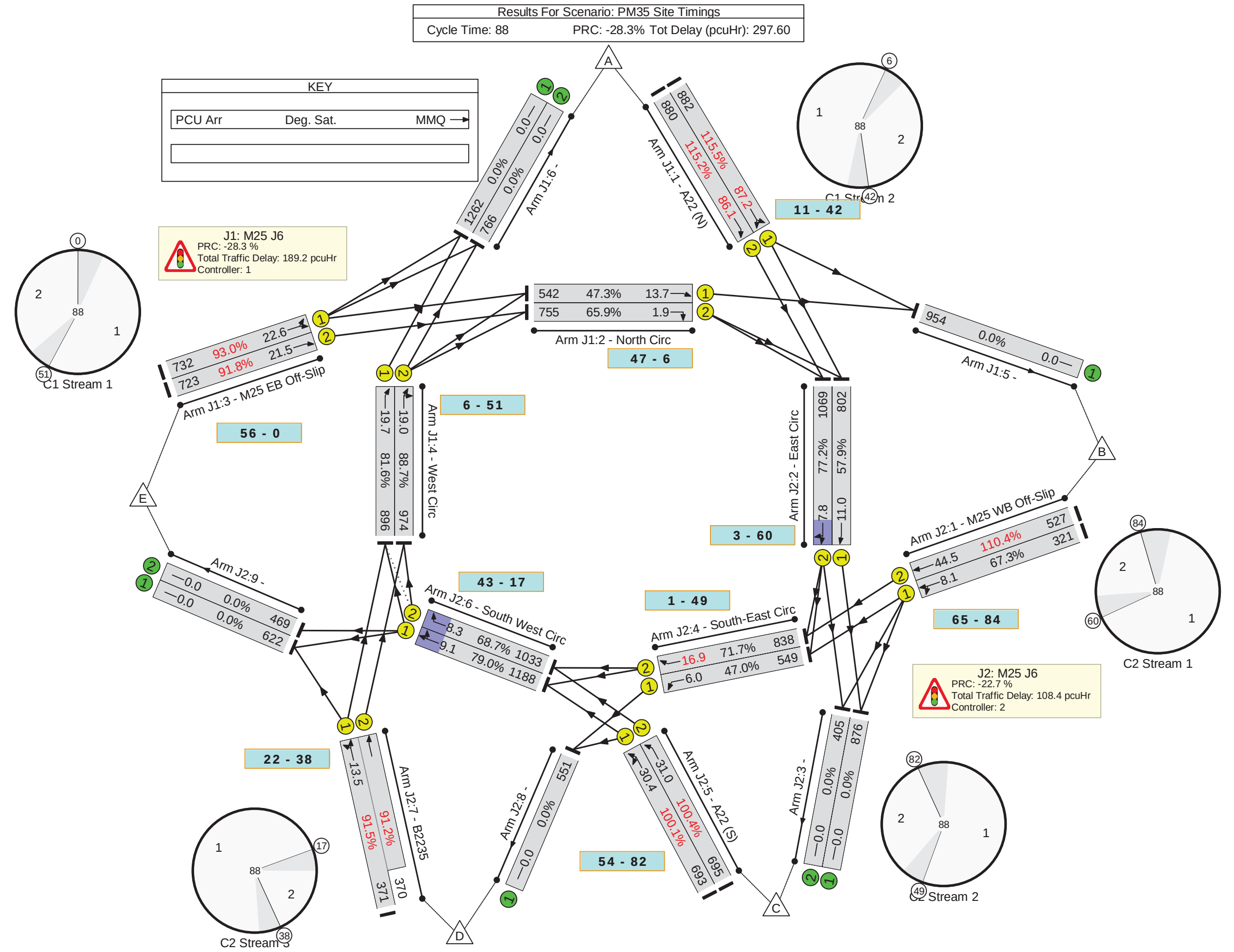
Scenario 43: 'PM35 Site Timings' (FG10: 'PM 2035', Plan 1: 'Network Control Plan 1')



Assumptions:

No controller specification was provided, although daily stage timings, cycle times and intergreen data were sent for each cycle over a 24 hour period. Therefore, these timings were used in the "...(Site)" scenarios, where green splits were set and then the model offsets optimised (although these likely to vary from cycle to cycle). Phase data and stages taken from provided drawing.

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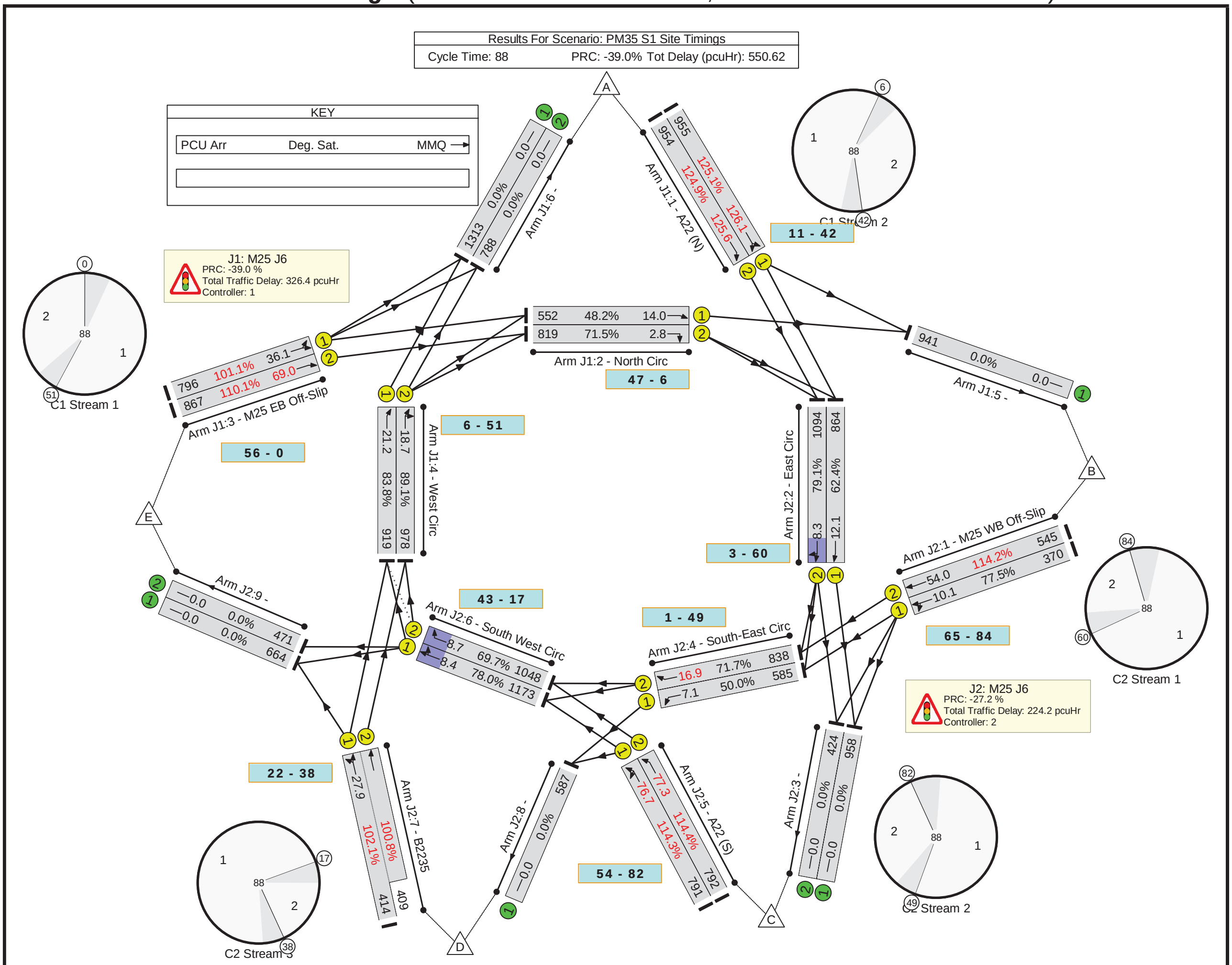
DoS Limits applied to circulating lanes, to not exceed DoS originally reported in 2018 scenarios when existing timings were used. Therefore, some of these limits exceeded 90%. When optimising, this was initially done automatically. However, due to significant congestion, this could result in strange results, for example severely restricting green on an entry so that downstream flows are reduced to reduce DoS downstream. It was difficult for automatic optimisatiom to consistently provide timings from one scenario to the next, with an added complication of delay based flow assignment resulting in different route choices as timings change. Therefore, after the inititial optimisation, signal stream timings were automatically adjusted so that the circulatory does not exceed the DoS limit (but as close to it as possible), model re-run and so on iteratively.

Scenario 44: 'PM35 S1 Site Timings' (FG20: 'PM 2035 Scenario 1', Plan 1: 'Network Control Plan 1')



Assumptions:

No controller specification was provided, although daily stage timings, cycle times and intergreen data were sent for each cycle over a 24 hour period. Therefore, these timings were used in the "...(Site)" scenarios, where green splits were set and then the model offsets optimised (although these likely to vary from cycle to cycle). Phase data and stages taken from provided drawing.

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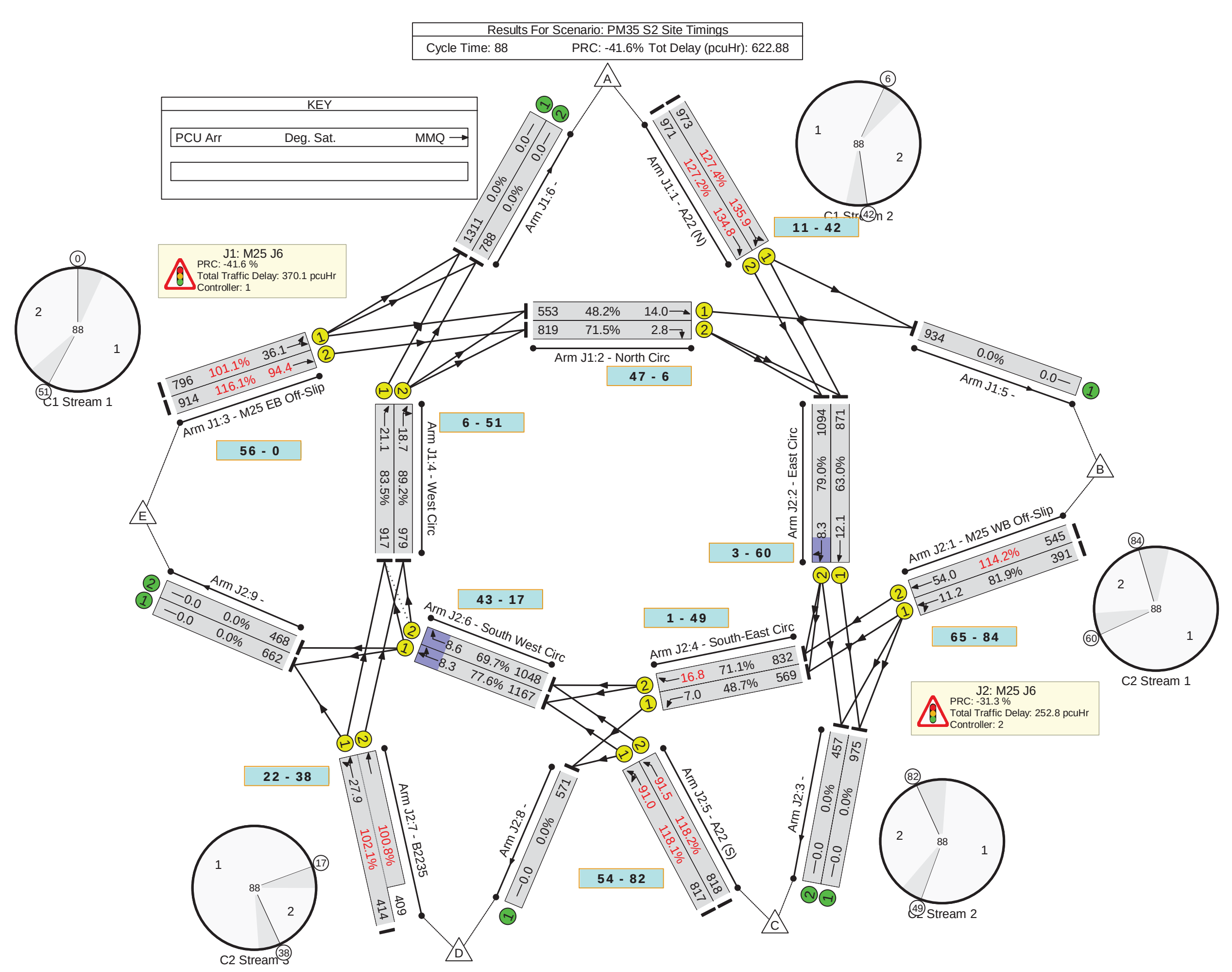
Scenario 45: 'PM35 S2 Site Timings' (FG30: 'PM 2035 Scenario 2', Plan 1: 'Network Control Plan 1')



Assumptions:

No controller specification was provided, although daily stage timings, cycle times and intergreen data were sent for each cycle over a 24 hour period. Therefore, these timings were used in the "...(Site)" scenarios, where green splits were set and then the model offsets optimised (although these likely to vary from cycle to cycle). Phase data and stages taken from provided drawing.

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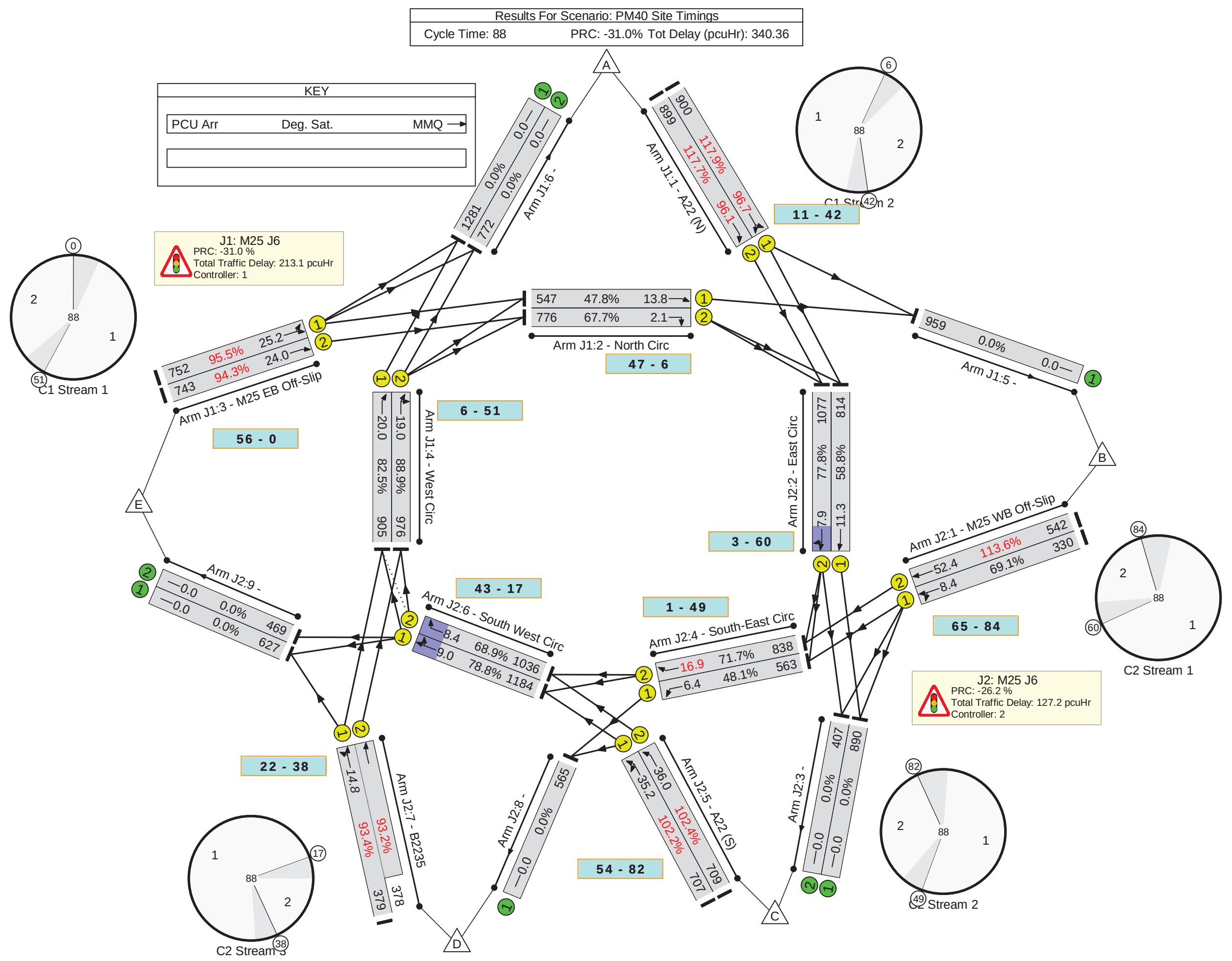
Scenario 49: 'PM40 Site Timings' (FG11: 'PM 2040', Plan 1: 'Network Control Plan 1')



Assumptions:

No controller specification was provided, although daily stage timings, cycle times and intergreen data were sent for each cycle over a 24 hour period. Therefore, these timings were used in the "...(Site)" scenarios, where green splits were set and then the model offsets optimised (although these likely to vary from cycle to cycle). Phase data and stages taken from provided drawing.

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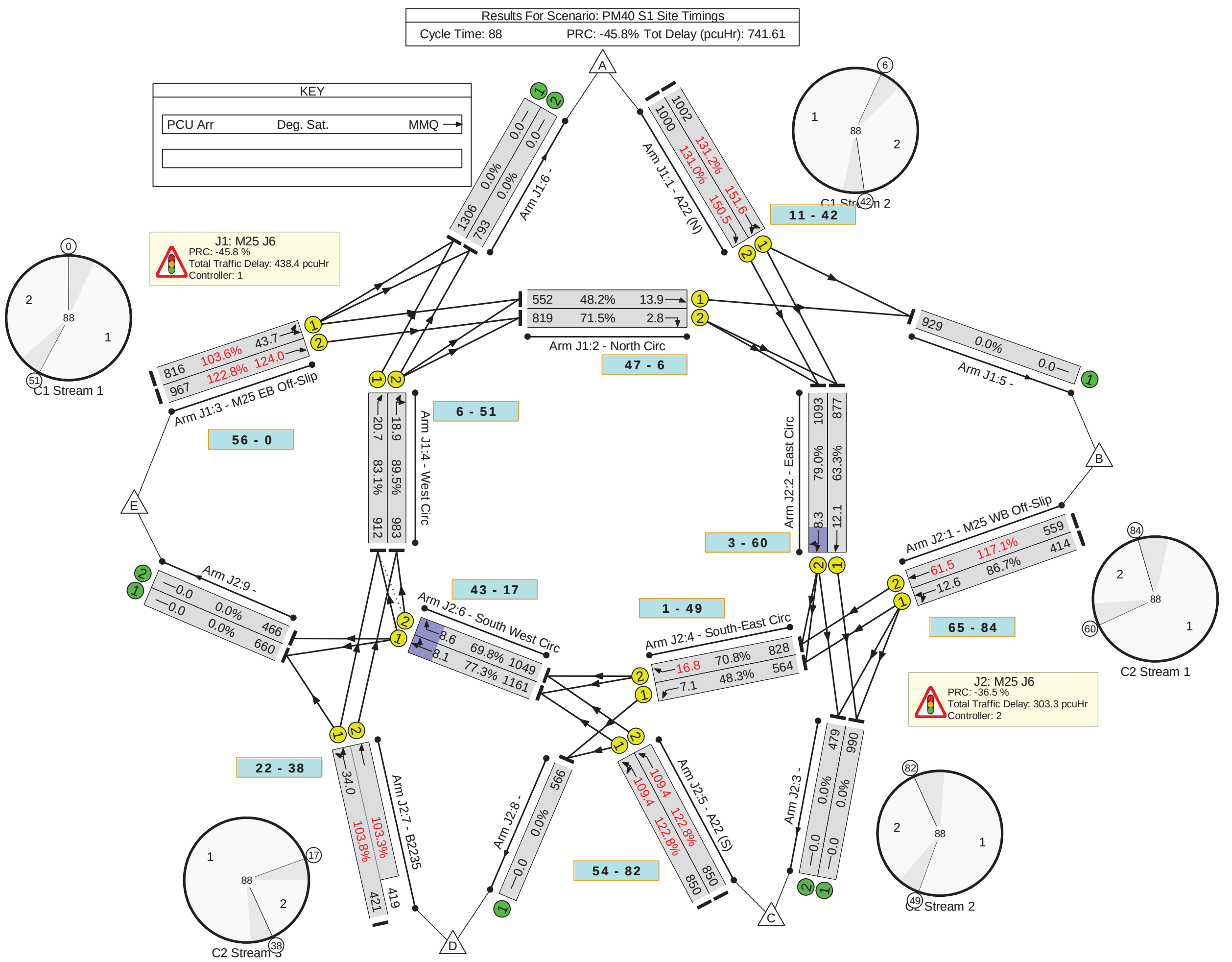
Scenario 50: 'PM40 S1 Site Timings' (FG21: 'PM 2040 Scenario 1', Plan 1: 'Network Control Plan 1')



Assumptions:

No controller specification was provided, although daily stage timings, cycle times and intergreen data were sent for each cycle over a 24 hour period. Therefore, these timings were used in the "...(Site)" scenarios, where green splits were set and then the model offsets optimised (although these likely to vary from cycle to cycle). Phase data and stages taken from provided drawing.

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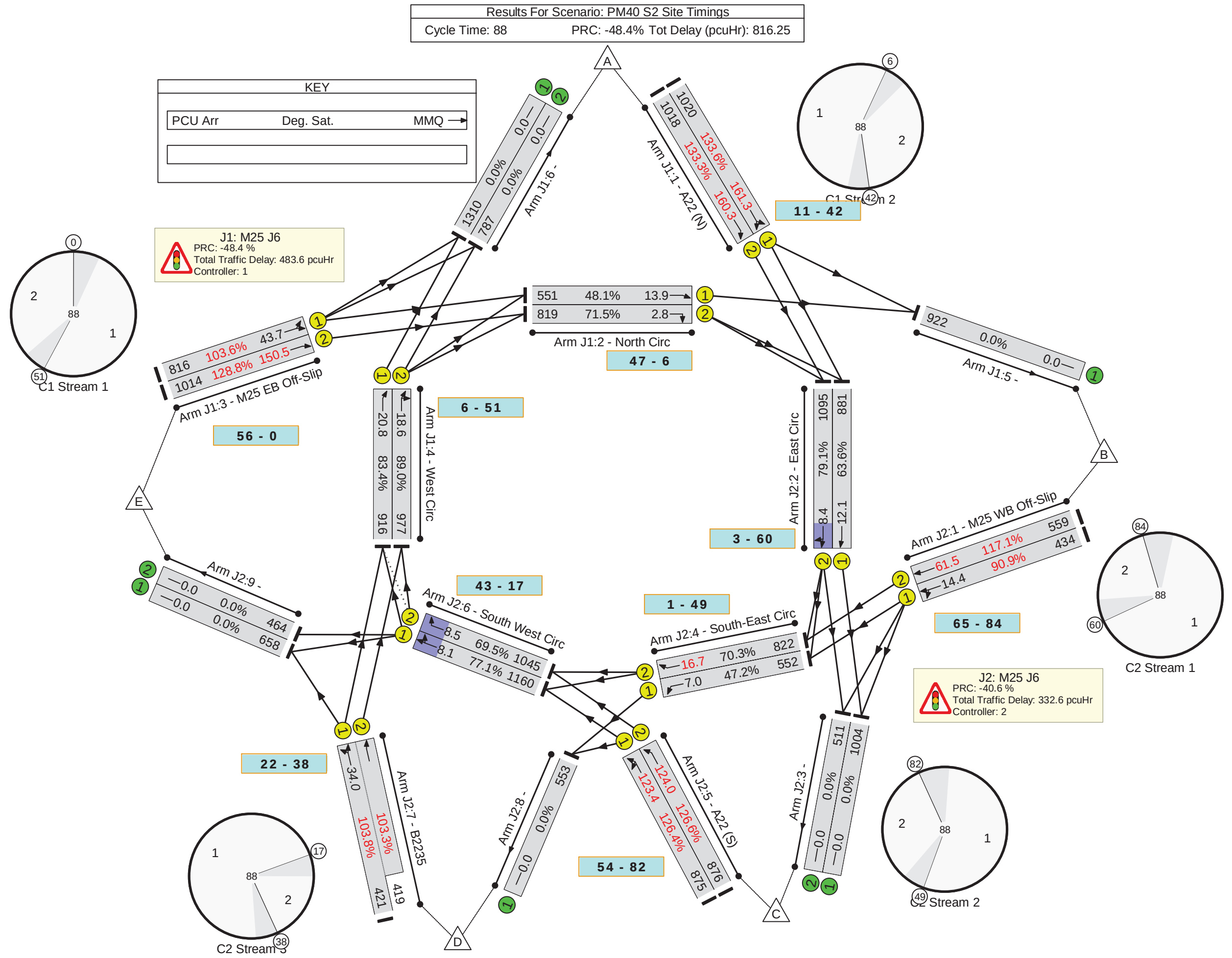
DoS Limits applied to circulating lanes, to not exceed DoS originally reported in 2018 scenarios when existing timings were used. Therefore, some of these limits exceeded 90%. When optimising, this was initially done automatically. However, due to significant congestion, this could result in strange results, for example severely restricting green on an entry so that downstream flows are reduced to reduce DoS downstream. It was difficult for automatic optimisatiom to consistently provide timings from one scenario to the next, with an added complication of delay based flow assignment resulting in different route choices as timings change. Therefore, after the inititial optimisation, signal stream timings were automatically adjusted so that the circulatory does not exceed the DoS limit (but as close to it as possible), model re-run and so on iteratively.

Scenario 51: 'PM40 S2 Site Timings' (FG31: 'PM 2040 Scenario 2', Plan 1: 'Network Control Plan 1')



Assumptions:

No controller specification was provided, although daily stage timings, cycle times and intergreen data were sent for each cycle over a 24 hour period. Therefore, these timings were used in the "...(Site)" scenarios, where green splits were set and then the model offsets optimised (although these likely to vary from cycle to cycle). Phase data and stages taken from provided drawing.

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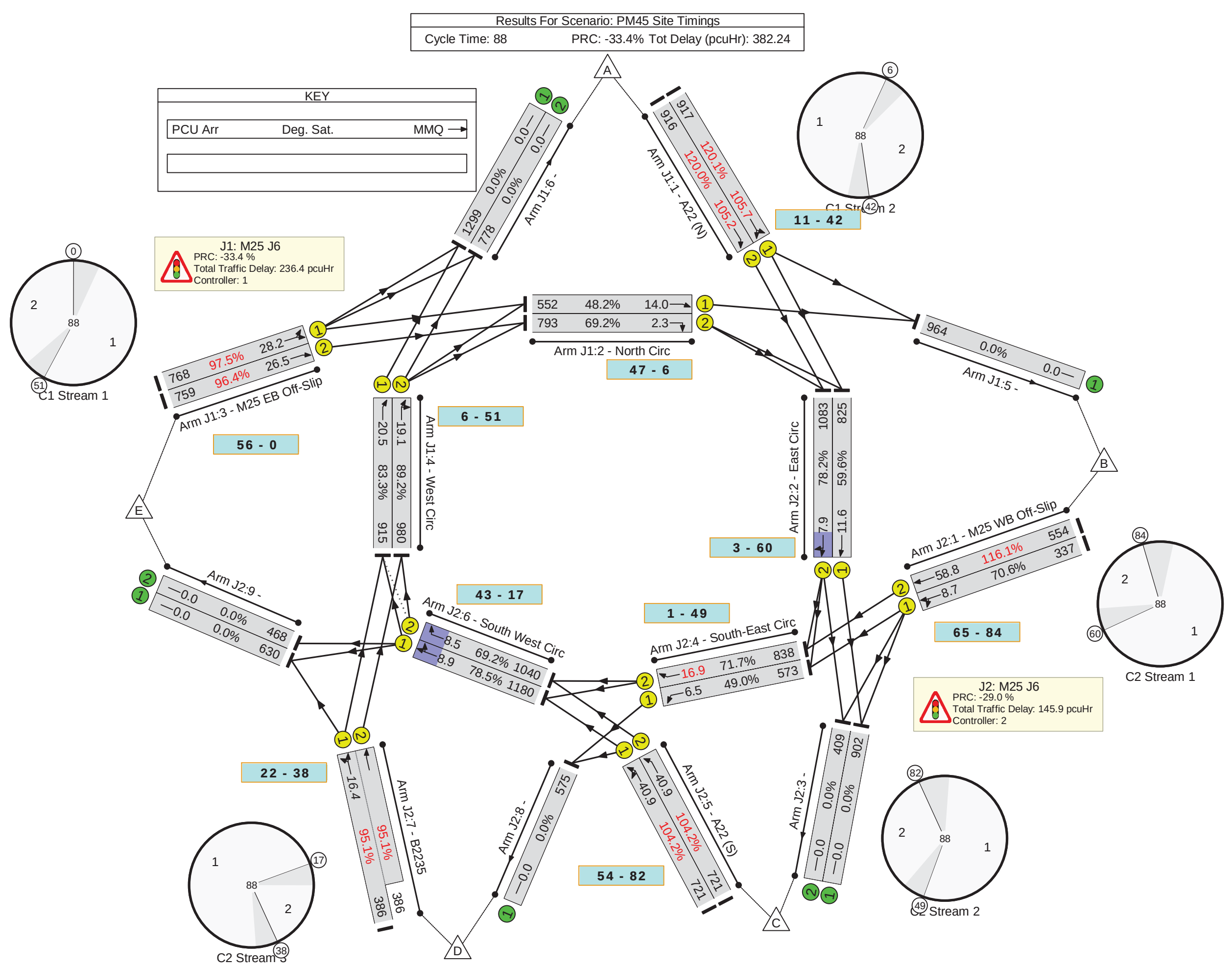
DoS Limits applied to circulating lanes, to not exceed DoS originally reported in 2018 scenarios when existing timings were used. Therefore, some of these limits exceeded 90%. When optimising, this was initially done automatically. However, due to significant congestion, this could result in strange results, for example severely restricting green on an entry so that downstream flows are reduced to reduce DoS downstream. It was difficult for automatic optimisatiom to consistently provide timings from one scenario to the next, with an added complication of delay based flow assignment resulting in different route choices as timings change. Therefore, after the initial optimisation, signal stream timings were automatically adjusted so that the circulatory does not exceed the DoS limit (but as close to it as possible), model re-run and so on iteratively.

Scenario 55: 'PM45 Site Timings' (FG12: 'PM 2045', Plan 1: 'Network Control Plan 1')



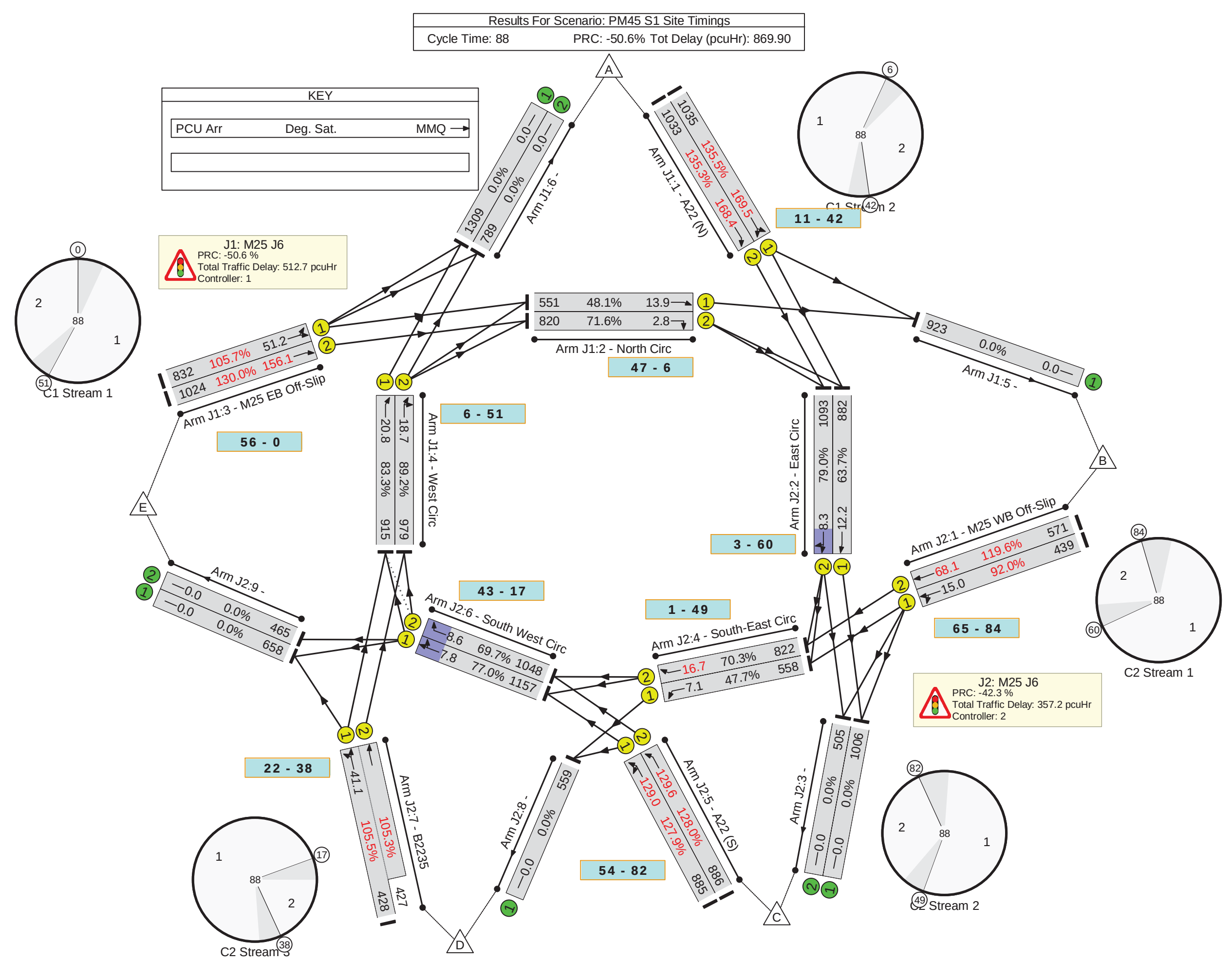
Assumptions:

No controller specification was provided, although daily stage timings, cycle times and intergreen data were sent for each cycle over a 24 hour period. Therefore, these timings were used in the "...(Site)" scenarios, where green splits were set and then the model offsets optimised (although these likely to vary from cycle to cycle). Phase data and stages taken from provided drawing.

Saturation flows were initially set to 1900 pcu/hr per lane as a conservative estimate (experience indicated that grade separated roundabouts often exhibit significantly higher saturation flows. However, this resulted in several degrees of saturation in the 2018 scenarios as being significantly over 100%. This should not be the case, given the traffic flow data was counted as crossing the stopline during the survey, and therefore should be around 100% at most. Therefore saturation flows were increased to 2100 pcu/hr, which resulted in more realistic degrees of saturation, for example the A22 (N) values being around 100%. Note, high degrees of saturation still shown on this arm during the PM 2018 peak period. Although saturation flows above 2300 pcu/hr would result in values closer to 100%, JCT decided these may generally be over-optimistic without further observations, and decided to use 2100 pcu/hr.

DoS Limits applied to circulating lanes, to not exceed DoS originally reported in 2018 scenarios when existing timings were used. Therefore, some of these limits exceeded 90%. When optimising, this was initially done automatically. However, due to significant congestion, this could result in strange results, for example severely restricting green on an entry so that downstream flows are reduced to reduce DoS downstream. It was difficult for automatic optimisatiom to consistently provide timings from one scenario to the next, with an added complication of delay based flow assignment resulting in different route choices as timings change. Therefore, after the initial optimisation, signal stream timings were automatically adjusted so that the circulatory does not exceed the DoS limit (but as close to it as possible), model re-run and so on iteratively.

Scenario 56: 'PM45 S1 Site Timings' (FG22: 'PM 2045 Scenario 1', Plan 1: 'Network Control Plan 1')



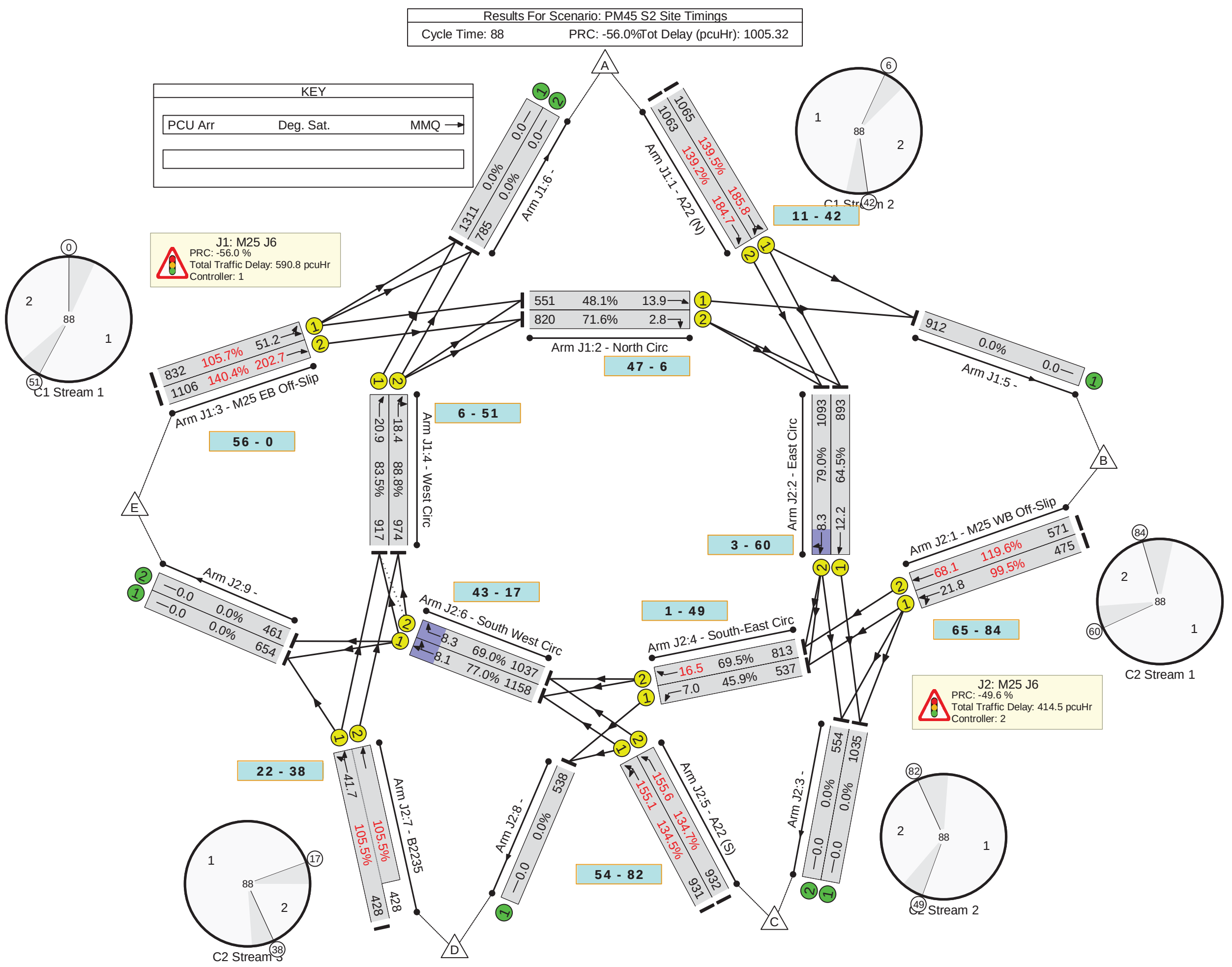
Assumptions:

No controller specification was provided, although daily stage timings, cycle times and intergreen data were sent for each cycle over a 24 hour period. Therefore, these timings were used in the "...(Site)" scenarios, where green splits were set and then the model offsets optimised (although these likely to vary from cycle to cycle). Phase data and stages taken from provided drawing.

Saturation flows were initially set to 1900 pcu/hr per lane as a conservative estimate (experience indicated that grade separated roundabouts often exhibit significantly higher saturation flows. However, this resulted in several degrees of saturation in the 2018 scenarios as being significantly over 100%. This should not be the case, given the traffic flow data was counted as crossing the stopline during the survey, and therefore should be around 100% at most. Therefore saturation flows were increased to 2100 pcu/hr, which resulted in more realistic degrees of saturation, for example the A22 (N) values being around 100%. Note, high degrees of saturation still shown on this arm during the PM 2018 peak period. Although saturation flows above 2300 pcu/hr would result in values closer to 100%, JCT decided these may generally be over-optimistic without further observations, and decided to use 2100 pcu/hr.

DoS Limits applied to circulating lanes, to not exceed DoS originally reported in 2018 scenarios when existing timings were used. Therefore, some of these limits exceeded 90%. When optimising, this was initially done automatically. However, due to significant congestion, this could result in strange results, for example severely restricting green on an entry so that downstream flows are reduced to reduce DoS downstream. It was difficult for automatic optimisatiom to consistently provide timings from one scenario to the next, with an added complication of delay based flow assignment resulting in different route choices as timings change. Therefore, after the initiial optimisation, signal stream timings were automatically adjusted so that the circulatory does not exceed the DoS limit (but as close to it as possible), model re-run and so on iteratively.

Scenario 57: 'PM45 S2 Site Timings' (FG32: 'PM 2045 Scenario 2', Plan 1: 'Network Control Plan 1')



Assumptions:

No controller specification was provided, although daily stage timings, cycle times and intergreen data were sent for each cycle over a 24 hour period. Therefore, these timings were used in the "...(Site)" scenarios, where green splits were set and then the model offsets optimised (although these likely to vary from cycle to cycle). Phase data and stages taken from provided drawing.

Saturation flows were initially set to 1900 pcu/hr per lane as a conservative estimate (experience indicated that grade separated roundabouts often exhibit significantly higher saturation flows. However, this resulted in several degrees of saturation in the 2018 scenarios as being significantly over 100%. This should not be the case, given the traffic flow data was counted as crossing the stopline during the survey, and therefore should be around 100% at most. Therefore saturation flows were increased to 2100 pcu/hr, which resulted in more realistic degrees of saturation, for example the A22 (N) values being around 100%. Note, high degrees of saturation still shown on this arm during the PM 2018 peak period. Although saturation flows above 2300 pcu/hr would result in values closer to 100%, JCT decided these may generally be over-optimistic without further observations, and decided to use 2100 pcu/hr.

DoS Limits applied to circulating lanes, to not exceed DoS originally reported in 2018 scenarios when existing timings were used. Therefore, some of these limits exceeded 90%. When optimising, this was initially done automatically. However, due to significant congestion, this could result in strange results, for example severely restricting green on an entry so that downstream flows are reduced to reduce DoS downstream. It was difficult for automatic optimisatiom to consistently provide timings from one scenario to the next, with an added complication of delay based flow assignment resulting in different route choices as timings change. Therefore, after the initital optimisation, signal stream timings were automatically adjusted so that the circulatory does not exceed the DoS limit (but as close to it as possible), model re-run and so on iteratively.

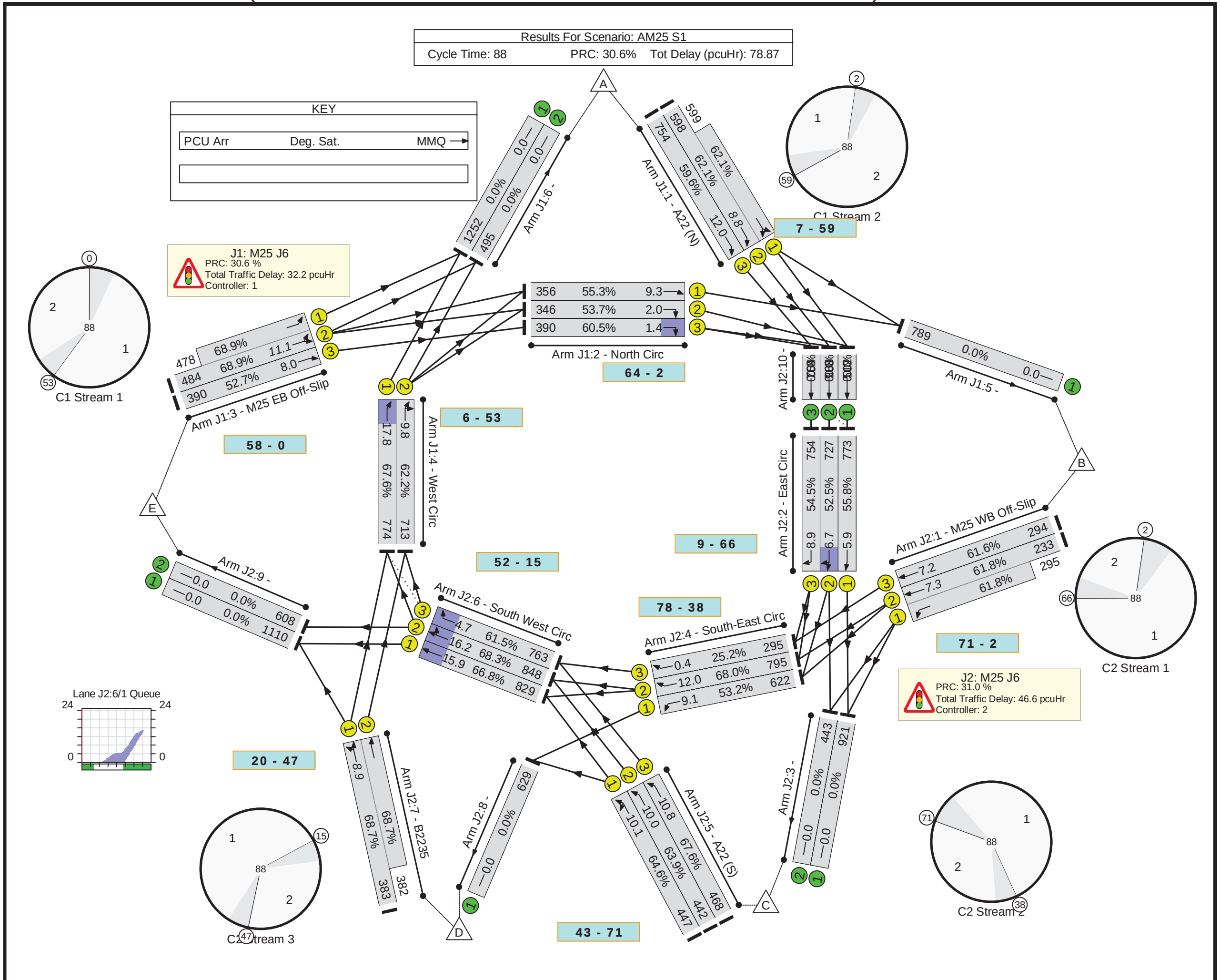
APPENDIX D

LinSig Results – Initial Interim Junction Layout

M25 J6 Option E

Network Layout Diagram

Scenario 1: 'AM25 S1' (FG2: 'AM 2025 Scenario 1', Plan 1: 'Network Control Plan 1')

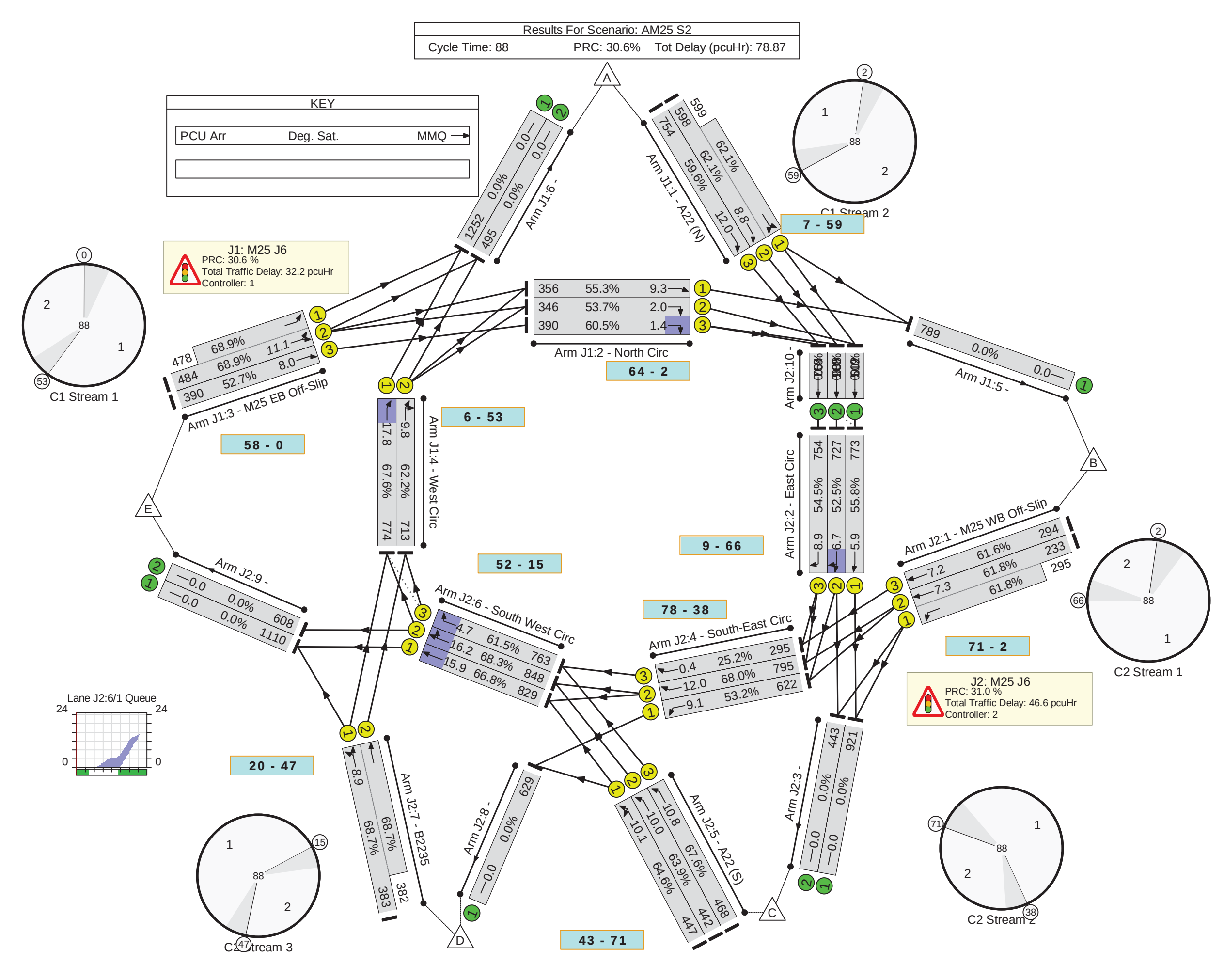


Option E

Option E was derived in Oct 2021, after receiving the latest traffic flows. It assumes the same number of lanes as Option D previously. However, the spiral lane marking was updated to provide better balancing of traffic flows. This was required, because the traffic flows used for Option D were significantly different to the latest flows, both in terms of volume and turning proportions.

DoS limits were applied to the circulating lanes, using the same limits as those in the modelling of the existing layout. It was possible to use automatic optimisation to reduce PRC without any requirement to lock any timings, as the predicted degrees of saturation were low enough not to create any issues of the automatic optimiser constraining entry arms to reduce flows arriving downstream.

Scenario 2: 'AM25 S2' (FG12: 'AM 2025 Scenario 2', Plan 1: 'Network Control Plan 1')



Option E

Option E was derived in Oct 2021, after receiving the latest traffic flows. It assumes the same number of lanes as Option D previously. However, the spiral lane marking was updated to provide better balancing of traffic flows. This was required, because the traffic flows used for Option D were significantly different to the latest flows, both in terms of volume and turning proportions.

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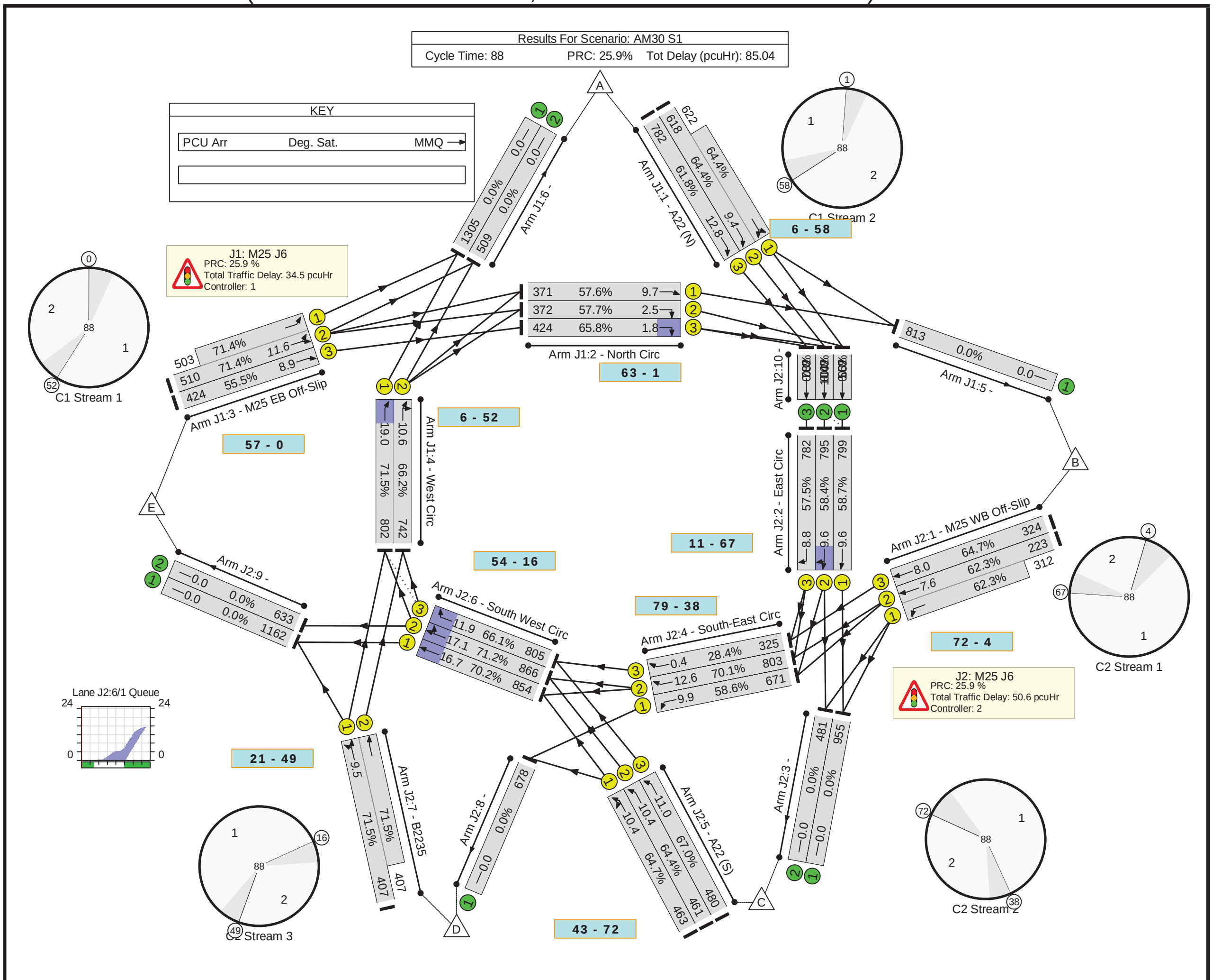
Scenario 3: 'AM30 S1' (FG3: 'AM 2030 Scenario 1', Plan 1: 'Network Control Plan 1')



Option E

Option E was derived in Oct 2021, after receiving the latest traffic flows. It assumes the same number of lanes as Option D previously. However, the spiral lane marking was updated to provide better balancing of traffic flows. This was required, because the traffic flows used for Option D were significantly different to the latest flows, both in terms of volume and turning proportions.

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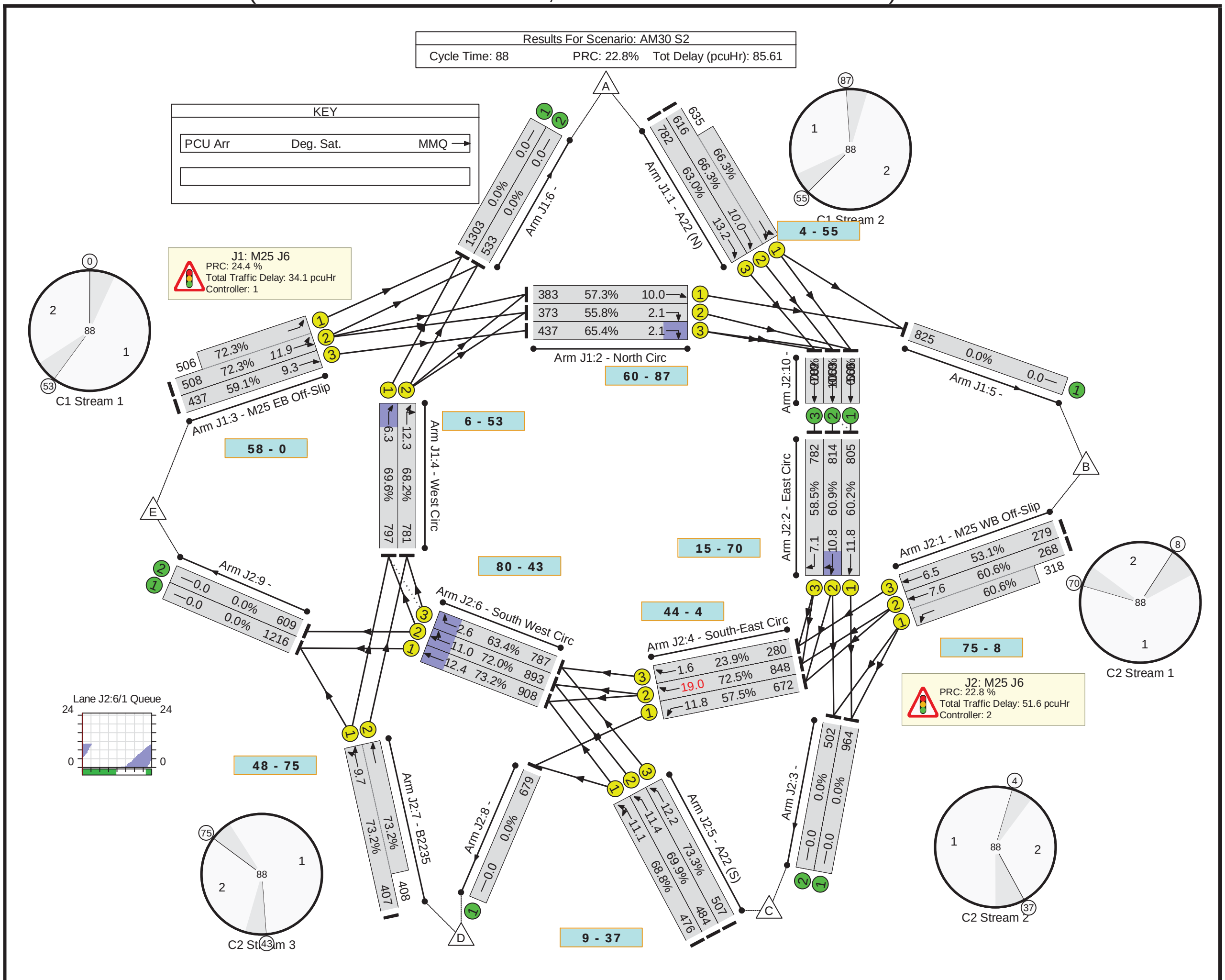
Scenario 4: 'AM30 S2' (FG13: 'AM 2030 Scenario 2', Plan 1: 'Network Control Plan 1')

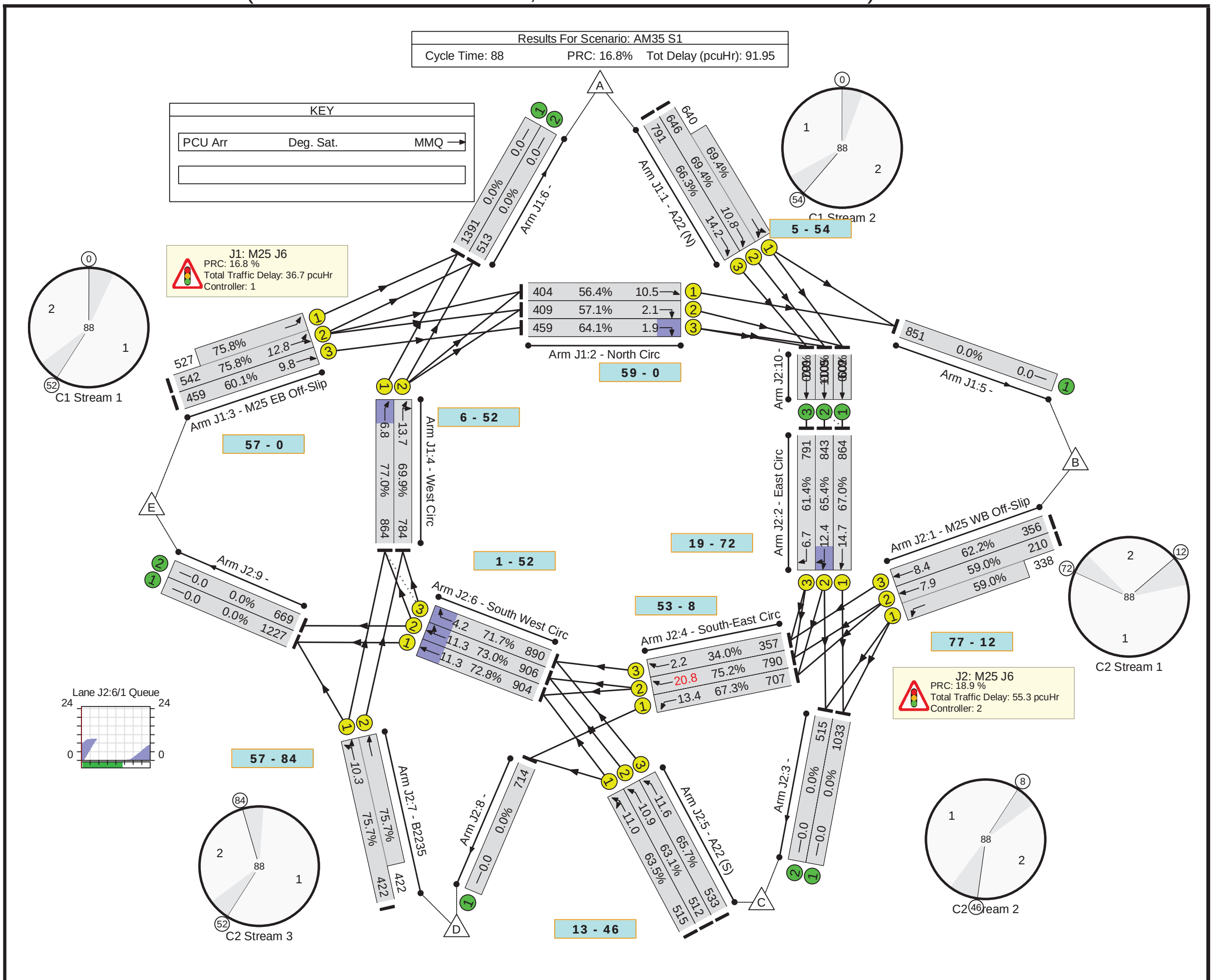


Option E

Option E was derived in Oct 2021, after receiving the latest traffic flows. It assumes the same number of lanes as Option D previously. However, the spiral lane marking was updated to provide better balancing of traffic flows. This was required, because the traffic flows used for Option D were significantly different to the latest flows, both in terms of volume and turning proportions.

DoS limits were applied to the circulating lanes, using the same limits as those in the modelling of the existing layout. It was possible to use automatic optimisation to reduce PRC without any requirement to lock any timings, as the predicted degrees of saturation were low enough not to create any issues of the automatic optimiser constraining entry arms to reduce flows arriving downstream.

Scenario 5: 'AM35 S1' (FG4: 'AM 2035 Scenario 1', Plan 1: 'Network Control Plan 1')

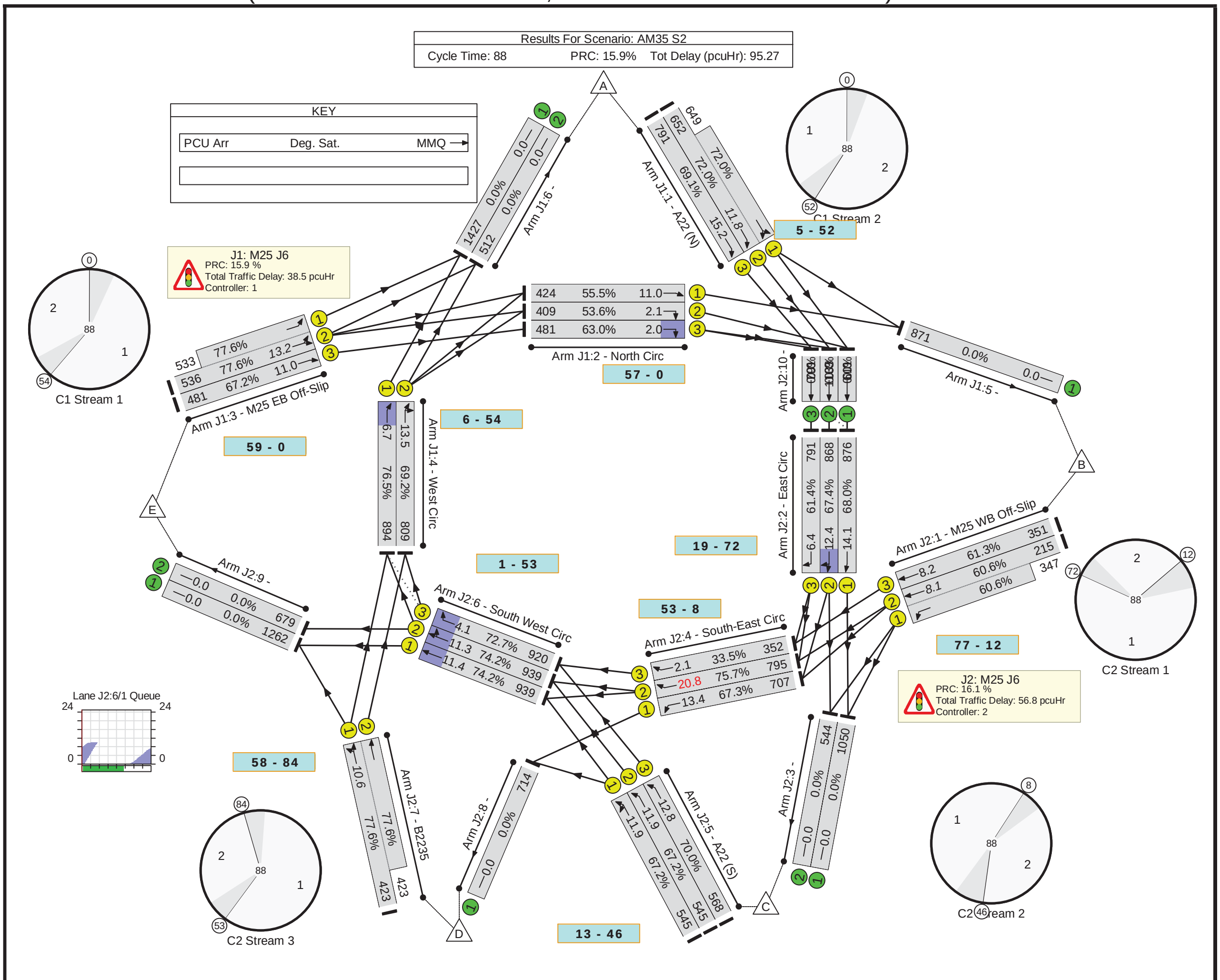


Option E

Option E was derived in Oct 2021, after receiving the latest traffic flows. It assumes the same number of lanes as Option D previously. However, the spiral lane marking was updated to provide better balancing of traffic flows. This was required, because the traffic flows used for Option D were significantly different to the latest flows, both in terms of volume and turning proportions.

DoS limits were applied to the circulating lanes, using the same limits as those in the modelling of the existing layout. It was possible to use automatic optimisation to reduce PRC without any requirement to lock any timings, as the predicted degrees of saturation were low enough not to create any issues of the automatic optimiser constraining entry arms to reduce flows arriving downstream.

Scenario 6: 'AM35 S2' (FG14: 'AM 2035 Scenario 2', Plan 1: 'Network Control Plan 1')

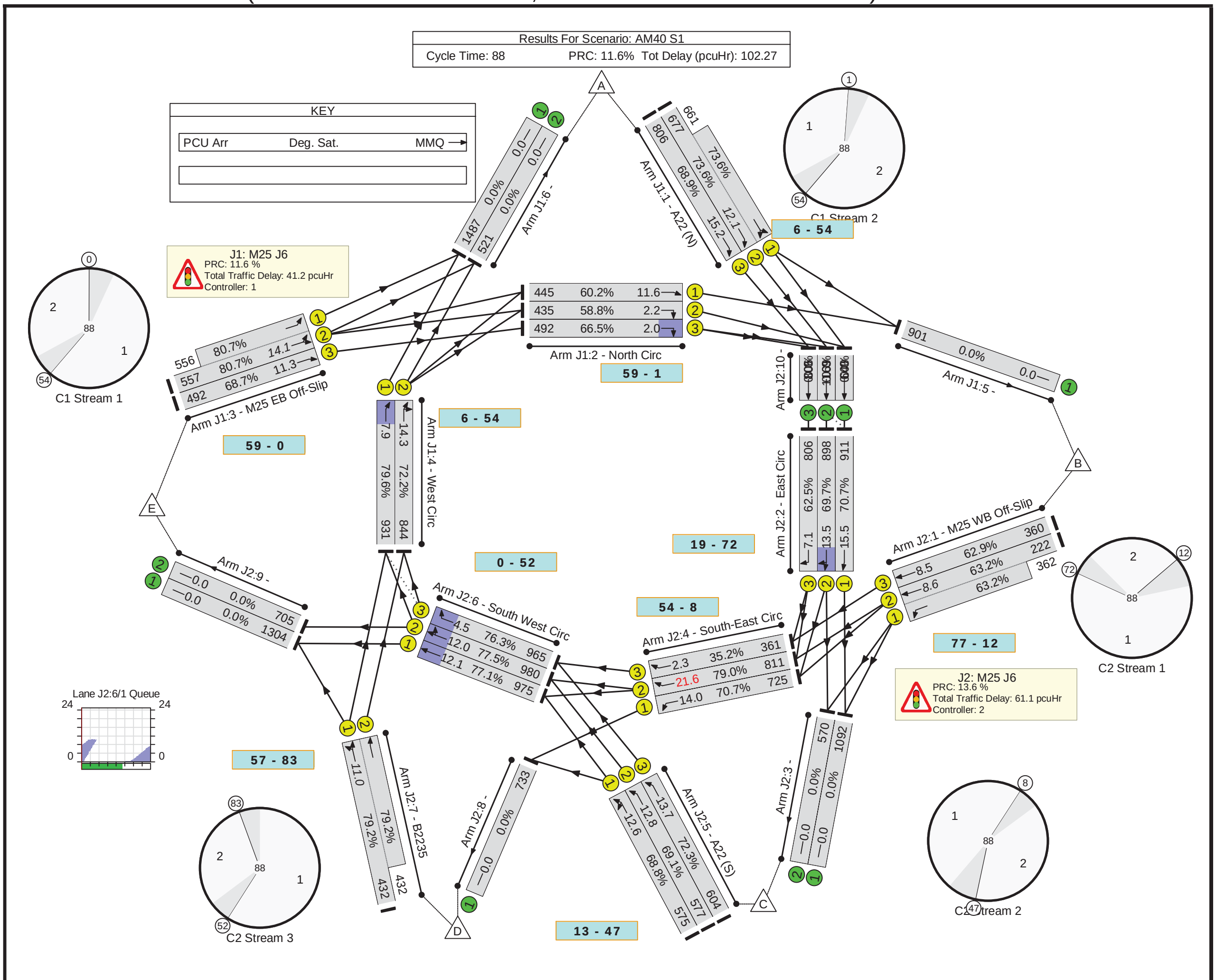


Option E

Option E was derived in Oct 2021, after receiving the latest traffic flows. It assumes the same number of lanes as Option D previously. However, the spiral lane marking was updated to provide better balancing of traffic flows. This was required, because the traffic flows used for Option D were significantly different to the latest flows, both in terms of volume and turning proportions.

DoS limits were applied to the circulating lanes, using the same limits as those in the modelling of the existing layout. It was possible to use automatic optimisation to reduce PRC without any requirement to lock any timings, as the predicted degrees of saturation were low enough not to create any issues of the automatic optimiser constraining entry arms to reduce flows arriving downstream.

Scenario 7: 'AM40 S1' (FG5: 'AM 2040 Scenario 1', Plan 1: 'Network Control Plan 1')

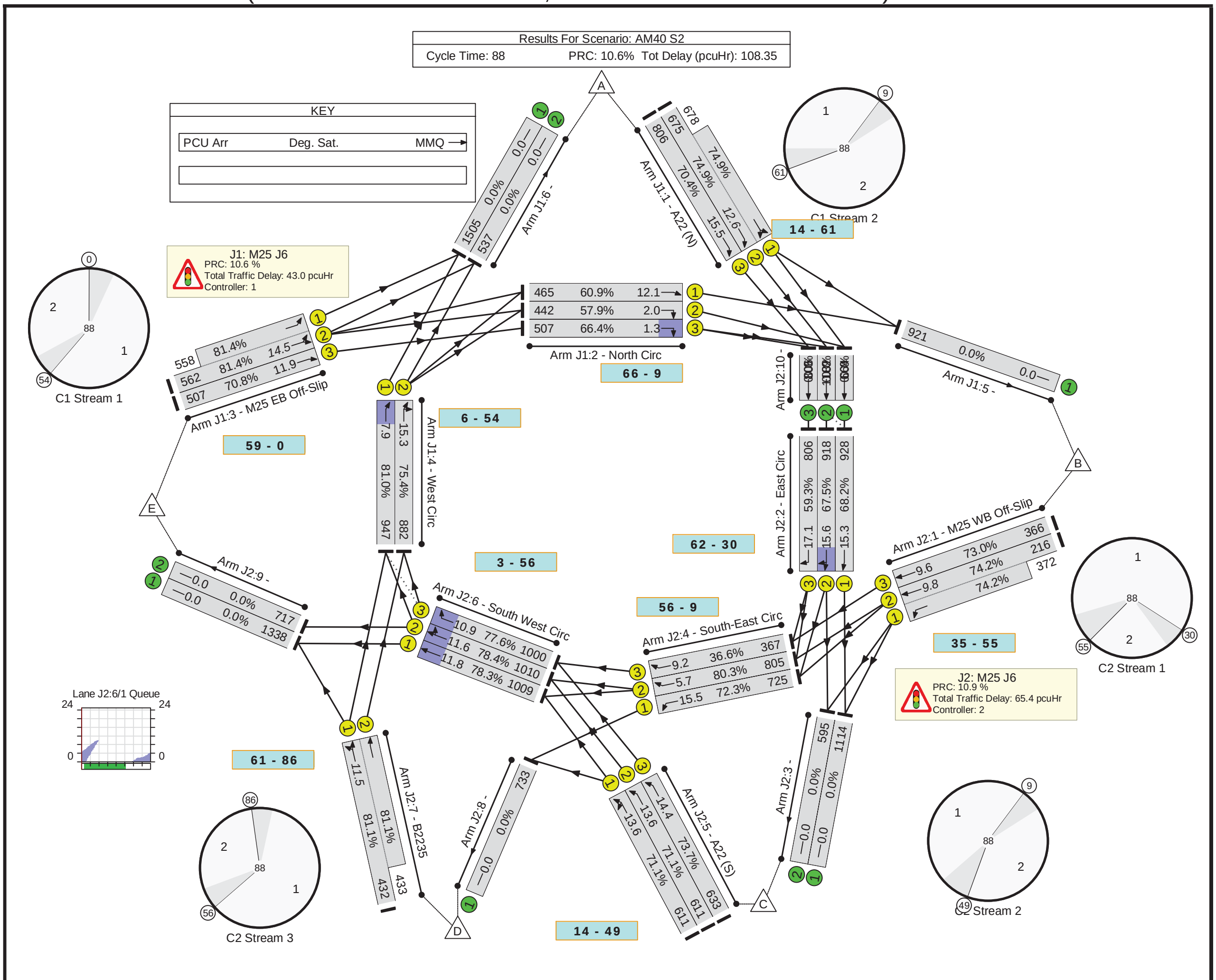


Option E

Option E was derived in Oct 2021, after receiving the latest traffic flows. It assumes the same number of lanes as Option D previously. However, the spiral lane marking was updated to provide better balancing of traffic flows. This was required, because the traffic flows used for Option D were significantly different to the latest flows, both in terms of volume and turning proportions.

DoS limits were applied to the circulating lanes, using the same limits as those in the modelling of the existing layout. It was possible to use automatic optimisation to reduce PRC without any requirement to lock any timings, as the predicted degrees of saturation were low enough not to create any issues of the automatic optimiser constraining entry arms to reduce flows arriving downstream.

Scenario 8: 'AM40 S2' (FG15: 'AM 2040 Scenario 2', Plan 1: 'Network Control Plan 1')

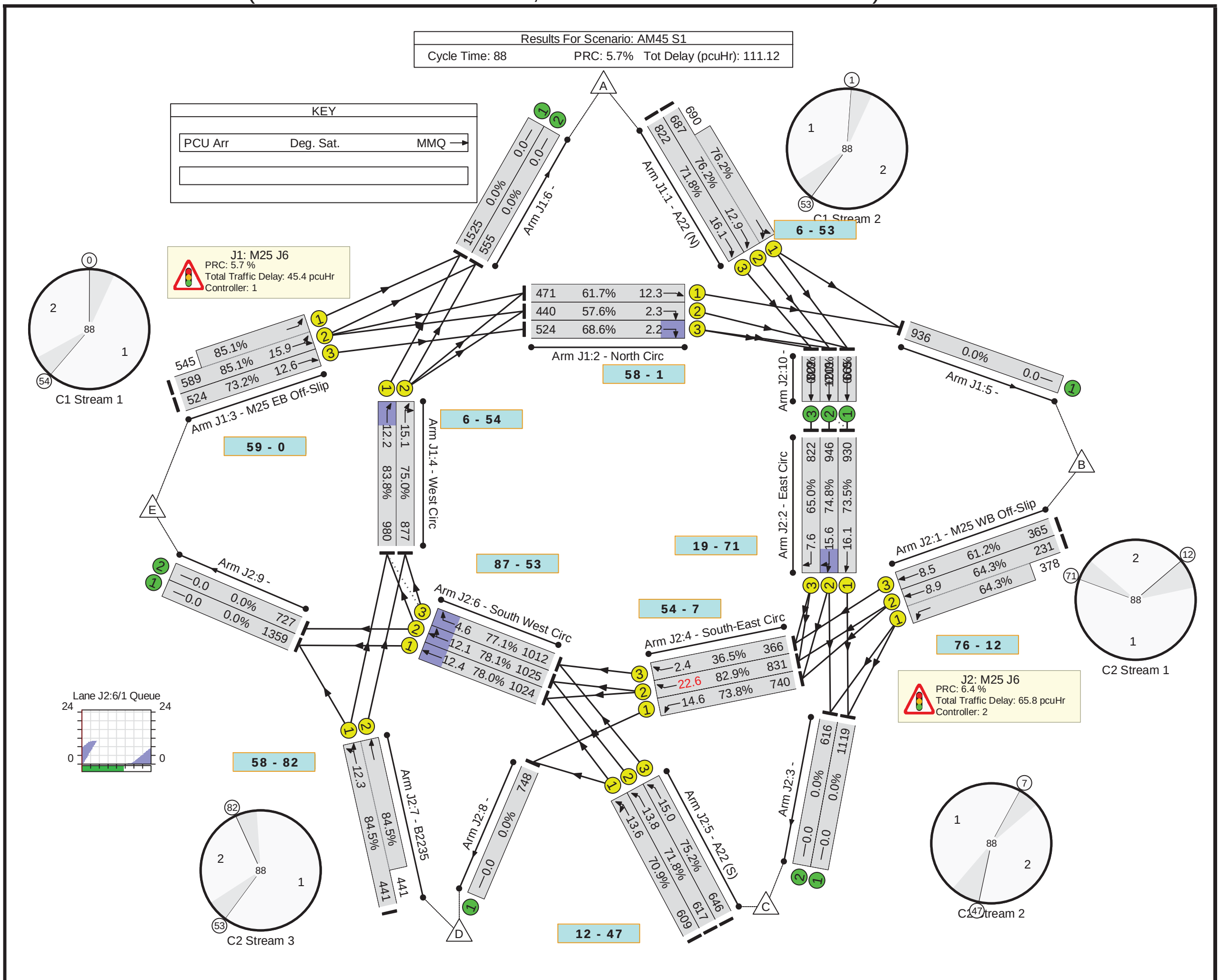


Option E

Option E was derived in Oct 2021, after receiving the latest traffic flows. It assumes the same number of lanes as Option D previously. However, the spiral lane marking was updated to provide better balancing of traffic flows. This was required, because the traffic flows used for Option D were significantly different to the latest flows, both in terms of volume and turning proportions.

DoS limits were applied to the circulating lanes, using the same limits as those in the modelling of the existing layout. It was possible to use automatic optimisation to reduce PRC without any requirement to lock any timings, as the predicted degrees of saturation were low enough not to create any issues of the automatic optimiser constraining entry arms to reduce flows arriving downstream.

Scenario 9: 'AM45 S1' (FG6: 'AM 2045 Scenario 1', Plan 1: 'Network Control Plan 1')

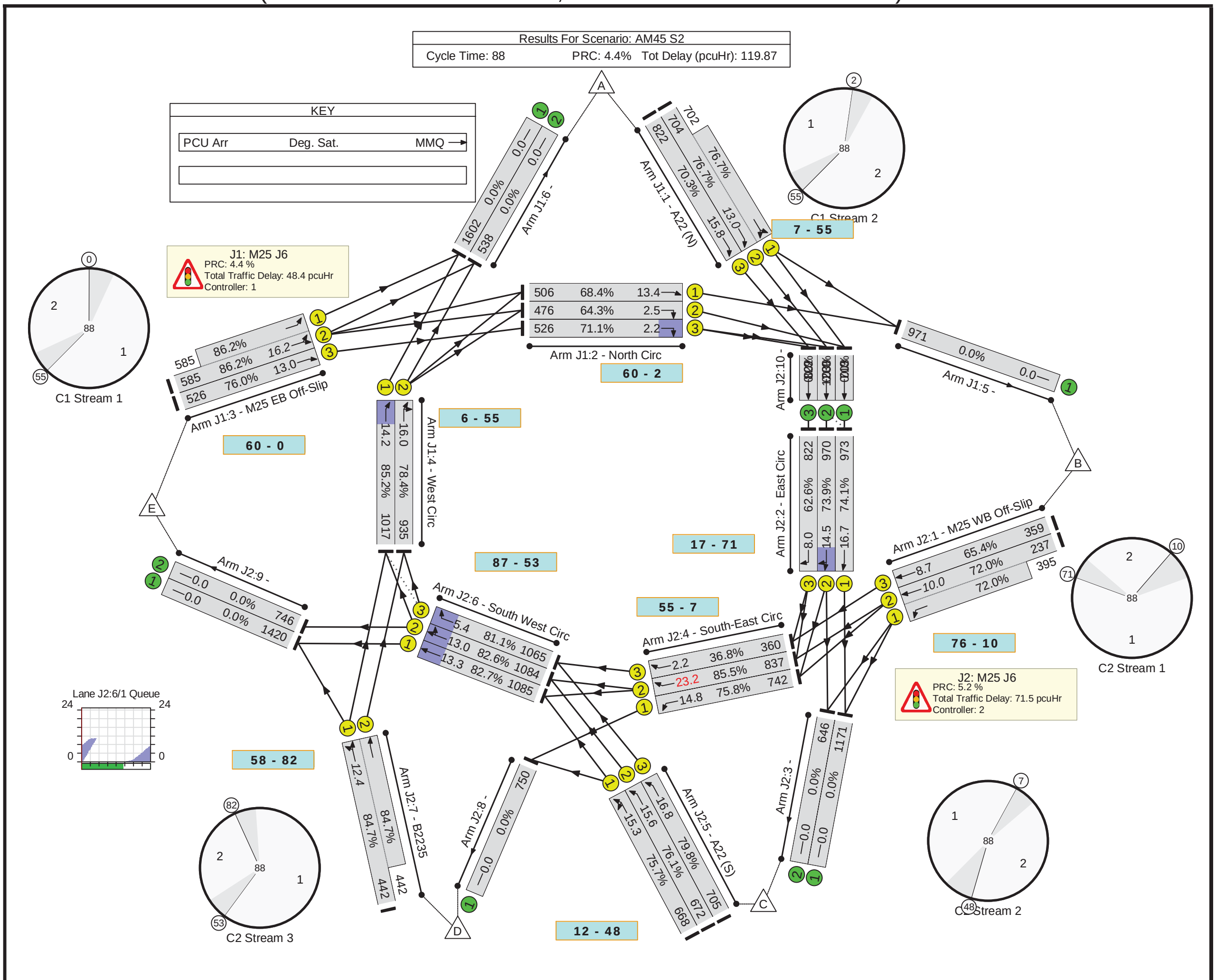


Option E

Option E was derived in Oct 2021, after receiving the latest traffic flows. It assumes the same number of lanes as Option D previously. However, the spiral lane marking was updated to provide better balancing of traffic flows. This was required, because the traffic flows used for Option D were significantly different to the latest flows, both in terms of volume and turning proportions.

DoS limits were applied to the circulating lanes, using the same limits as those in the modelling of the existing layout. It was possible to use automatic optimisation to reduce PRC without any requirement to lock any timings, as the predicted degrees of saturation were low enough not to create any issues of the automatic optimiser constraining entry arms to reduce flows arriving downstream.

Scenario 10: 'AM45 S2' (FG16: 'AM 2045 Scenario 2', Plan 1: 'Network Control Plan 1')

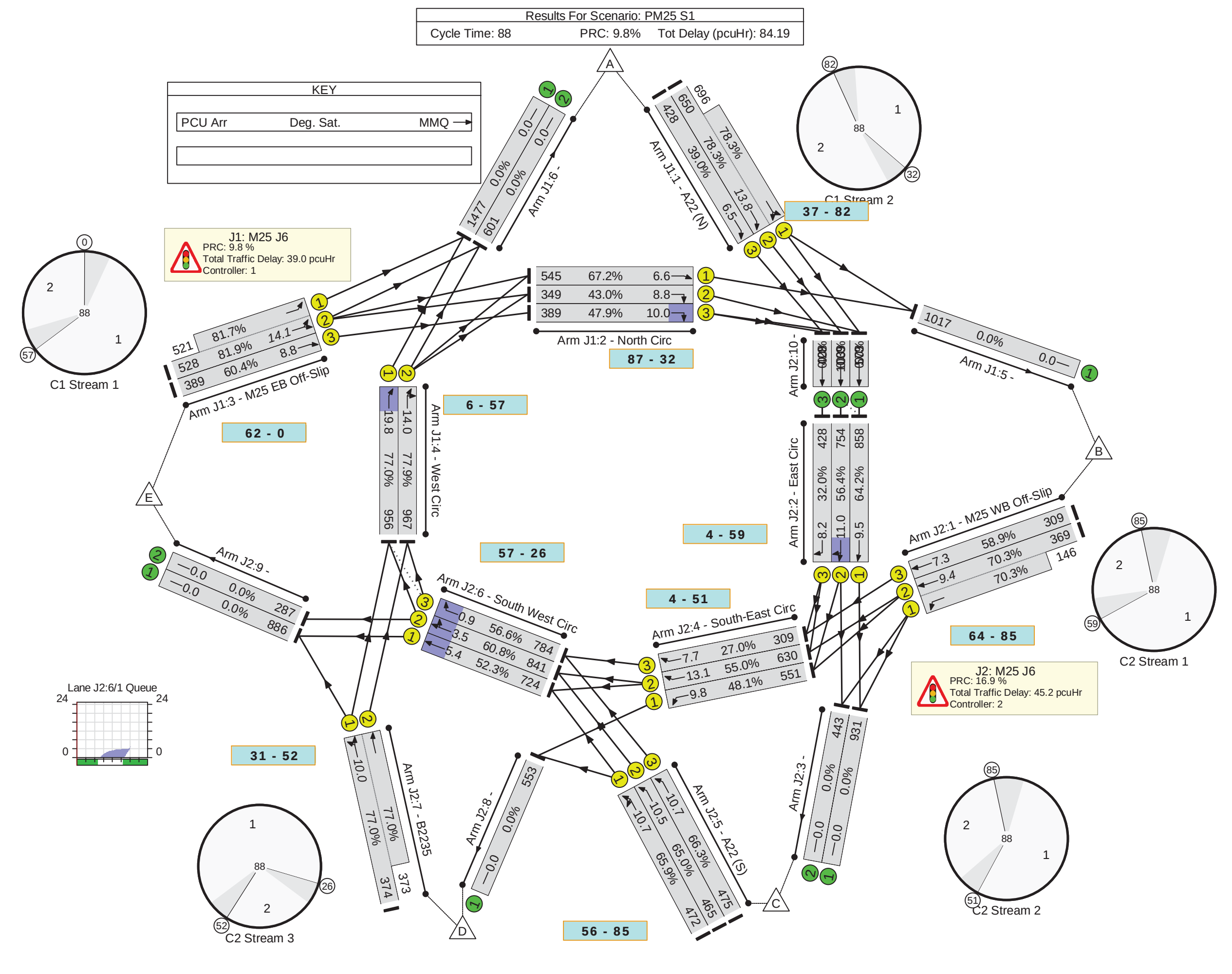


Option E

Option E was derived in Oct 2021, after receiving the latest traffic flows. It assumes the same number of lanes as Option D previously. However, the spiral lane marking was updated to provide better balancing of traffic flows. This was required, because the traffic flows used for Option D were significantly different to the latest flows, both in terms of volume and turning proportions.

DoS limits were applied to the circulating lanes, using the same limits as those in the modelling of the existing layout. It was possible to use automatic optimisation to reduce PRC without any requirement to lock any timings, as the predicted degrees of saturation were low enough not to create any issues of the automatic optimiser constraining entry arms to reduce flows arriving downstream.

Scenario 11: 'PM25 S1' (FG7: 'PM 2025 Scenario 1', Plan 1: 'Network Control Plan 1')

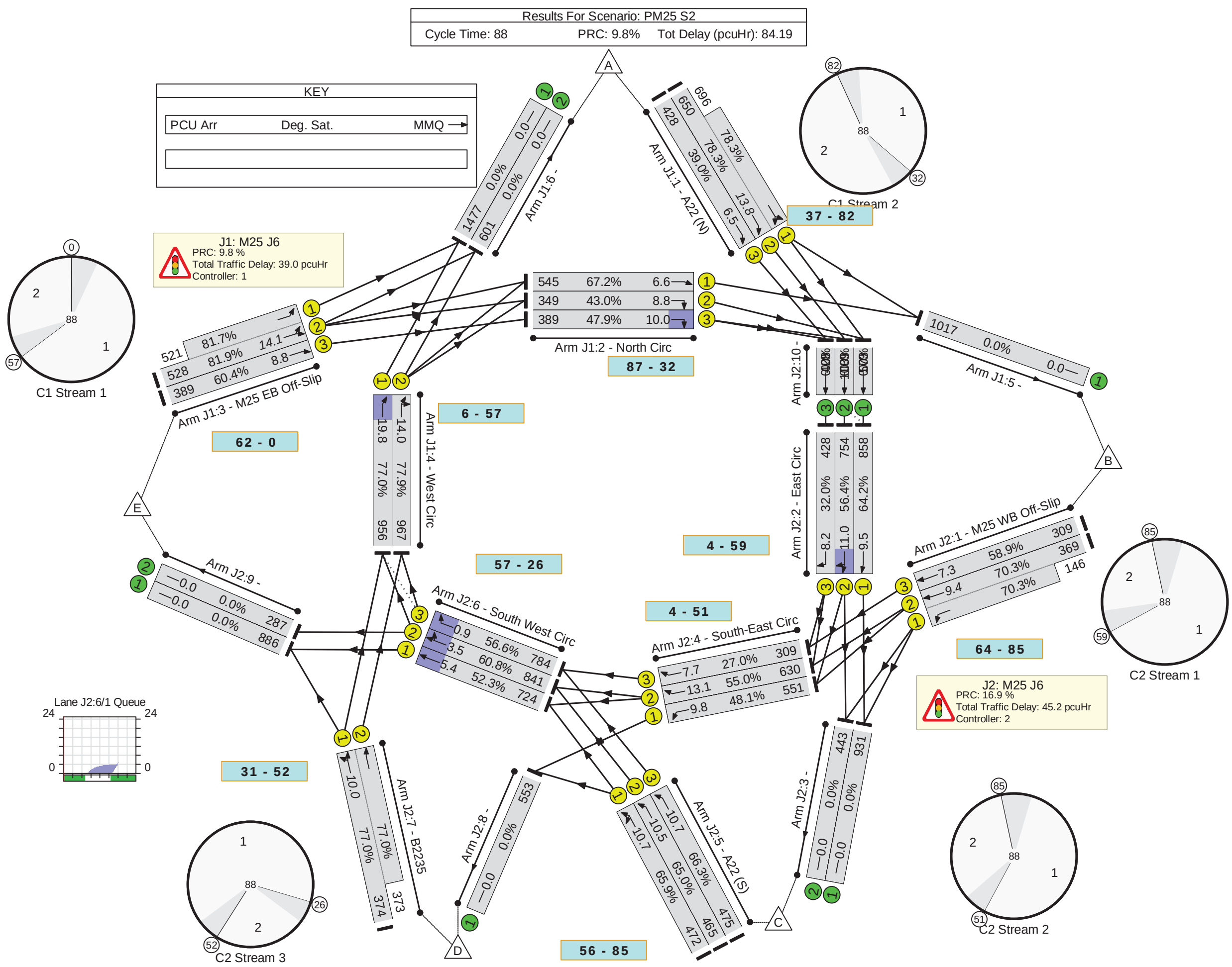


Option E

Option E was derived in Oct 2021, after receiving the latest traffic flows. It assumes the same number of lanes as Option D previously. However, the spiral lane marking was updated to provide better balancing of traffic flows. This was required, because the traffic flows used for Option D were significantly different to the latest flows, both in terms of volume and turning proportions.

DoS limits were applied to the circulating lanes, using the same limits as those in the modelling of the existing layout. It was possible to use automatic optimisation to reduce PRC without any requirement to lock any timings, as the predicted degrees of saturation were low enough not to create any issues of the automatic optimiser constraining entry arms to reduce flows arriving downstream.

Scenario 12: 'PM25 S2' (FG18: 'PM 2025 Scenario 2', Plan 1: 'Network Control Plan 1')

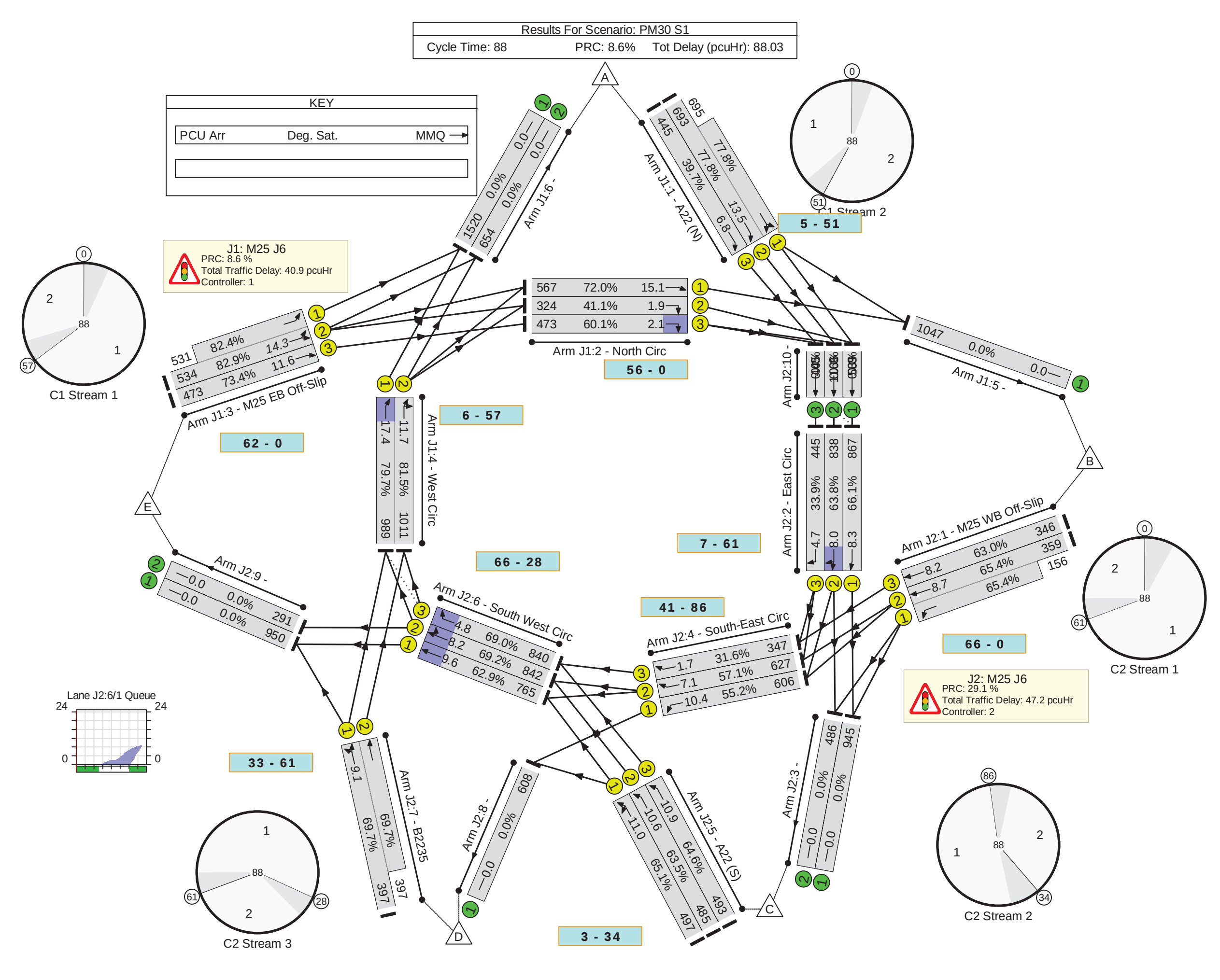


Option E

Option E was derived in Oct 2021, after receiving the latest traffic flows. It assumes the same number of lanes as Option D previously. However, the spiral lane marking was updated to provide better balancing of traffic flows. This was required, because the traffic flows used for Option D were significantly different to the latest flows, both in terms of volume and turning proportions.

DoS limits were applied to the circulating lanes, using the same limits as those in the modelling of the existing layout. It was possible to use automatic optimisation to reduce PRC without any requirement to lock any timings, as the predicted degrees of saturation were low enough not to create any issues of the automatic optimiser constraining entry arms to reduce flows arriving downstream.

Scenario 13: 'PM30 S1' (FG8: 'PM 2030 Scenario 1', Plan 1: 'Network Control Plan 1')



Option E

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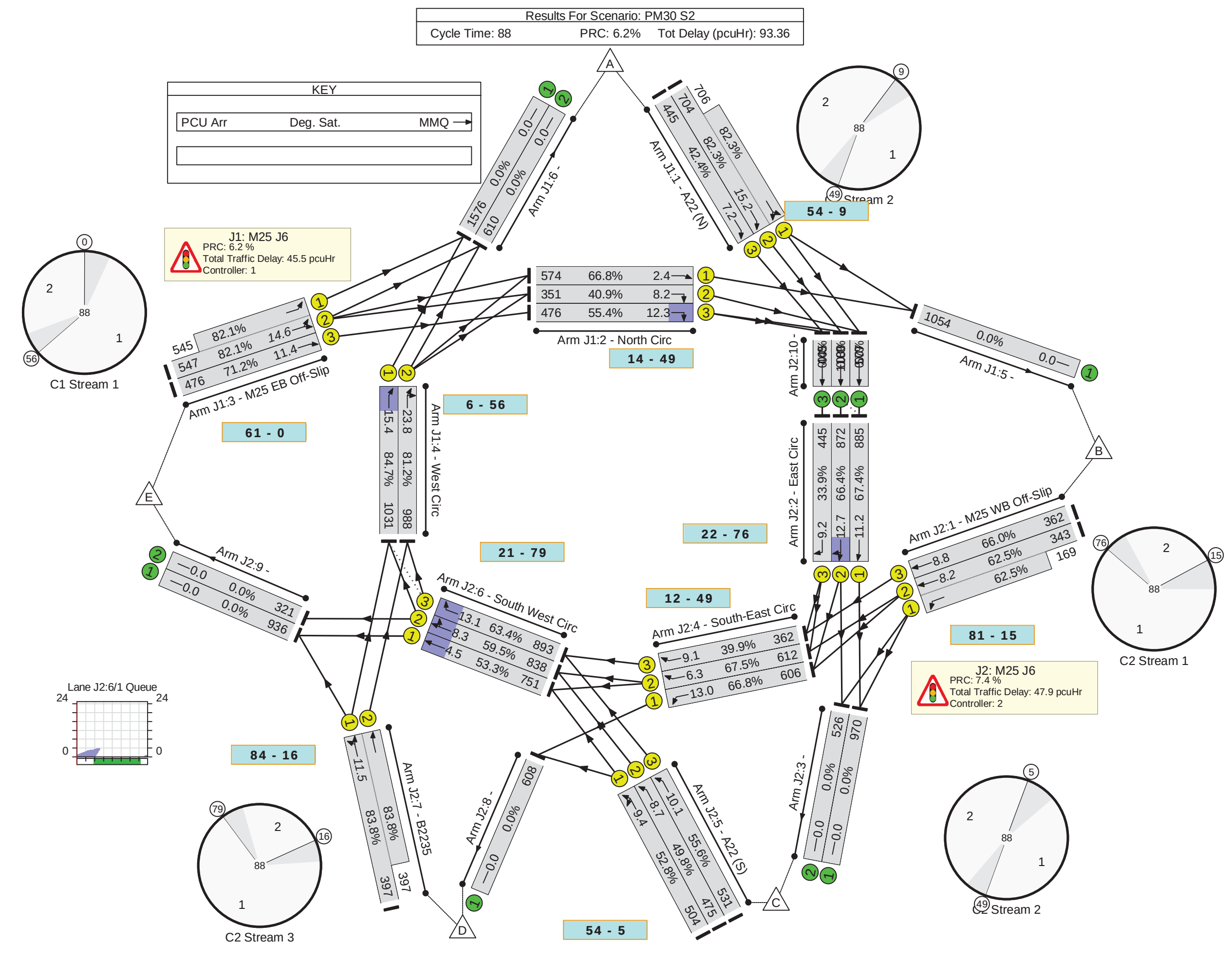
DoS limits were applied to the circulating lanes, using the same limits as those in the modelling of the existing layout. It was possible to use automatic optimisation to reduce PRC without any requirement to lock any timings, as the predicted degrees of saturation were low enough not to create any issues of the automatic optimiser constraining entry arms to reduce flows arriving downstream.

Scenario 14: 'PM30 S2' (FG19: 'PM 2030 Scenario 2', Plan 1: 'Network Control Plan 1')

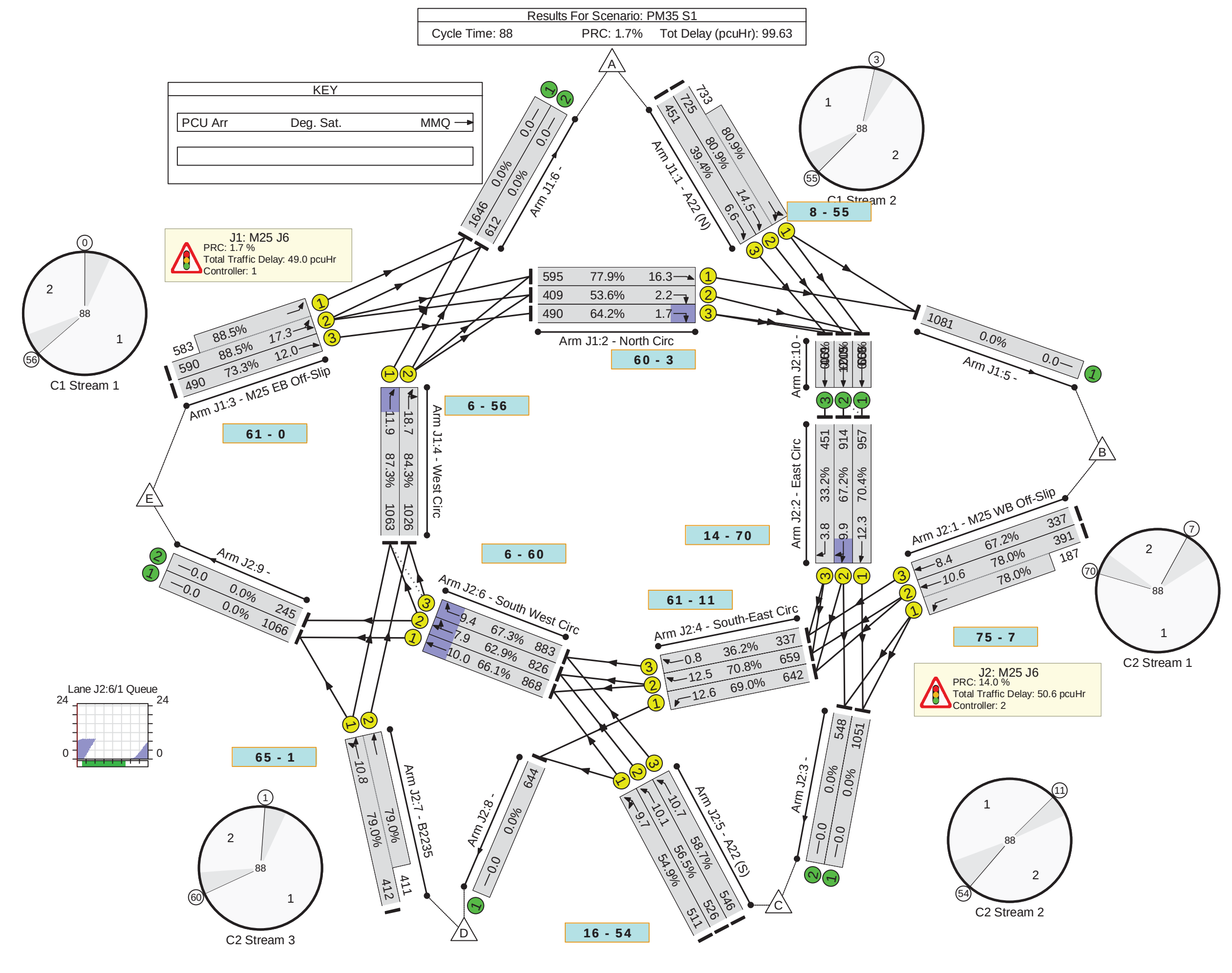


Option E

Option E was derived in Oct 2021, after receiving the latest traffic flows. It assumes the same number of lanes as Option D previously. However, the spiral lane marking was updated to provide better balancing of traffic flows. This was required, because the traffic flows used for Option D were significantly different to the latest flows, both in terms of volume and turning proportions.

DoS limits were applied to the circulating lanes, using the same limits as those in the modelling of the existing layout. It was possible to use automatic optimisation to reduce PRC without any requirement to lock any timings, as the predicted degrees of saturation were low enough not to create any issues of the automatic optimiser constraining entry arms to reduce flows arriving downstream.

Scenario 15: 'PM35 S1' (FG9: 'PM 2035 Scenario 1', Plan 1: 'Network Control Plan 1')



Option E

Option E was derived in Oct 2021, after receiving the latest traffic flows. It assumes the same number of lanes as Option D previously. However, the spiral lane marking was updated to provide better balancing of traffic flows. This was required, because the traffic flows used for Option D were significantly different to the latest flows, both in terms of volume and turning proportions.

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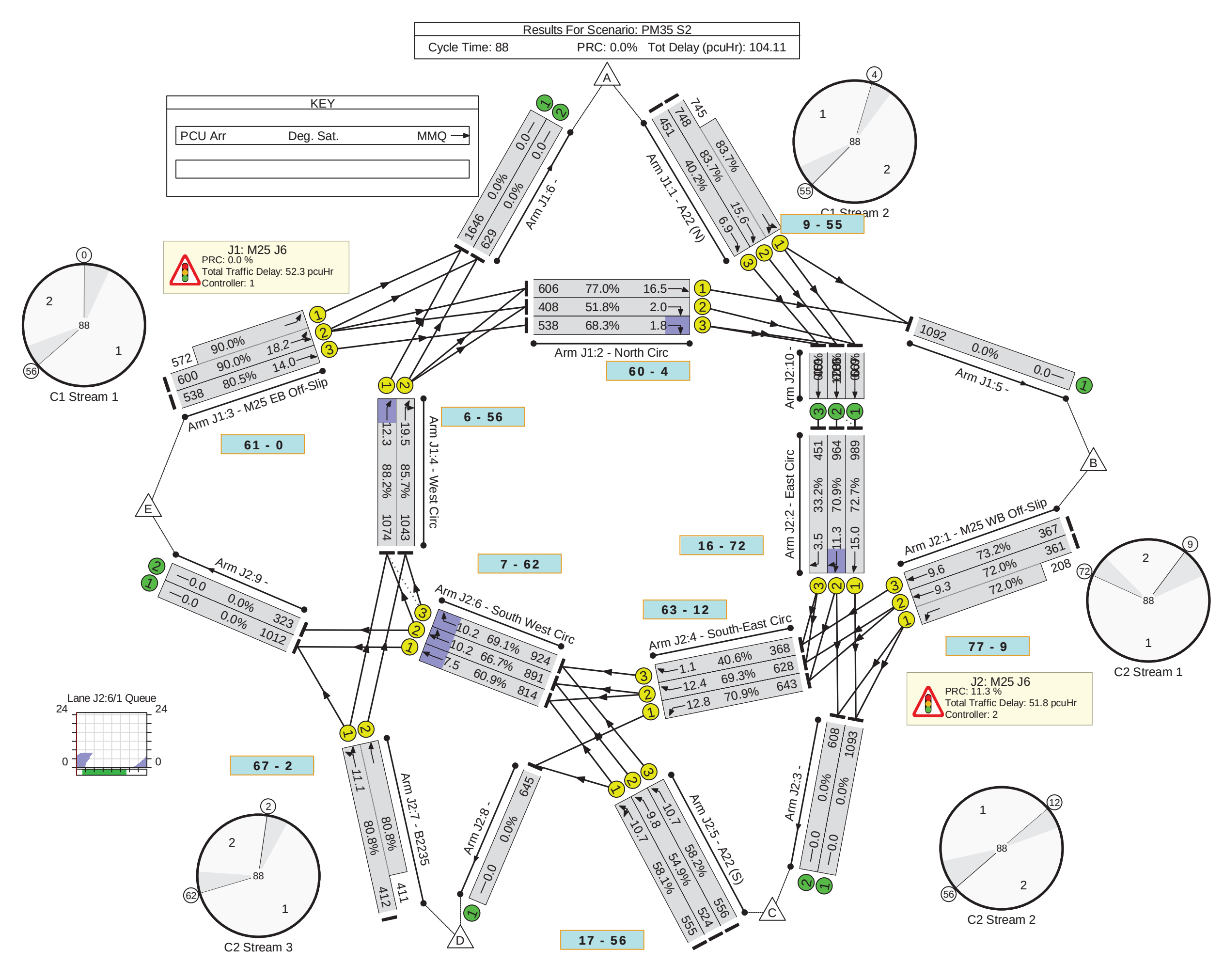
Scenario 16: 'PM35 S2' (FG20: 'PM 2035 Scenario 2', Plan 1: 'Network Control Plan 1')



Option E

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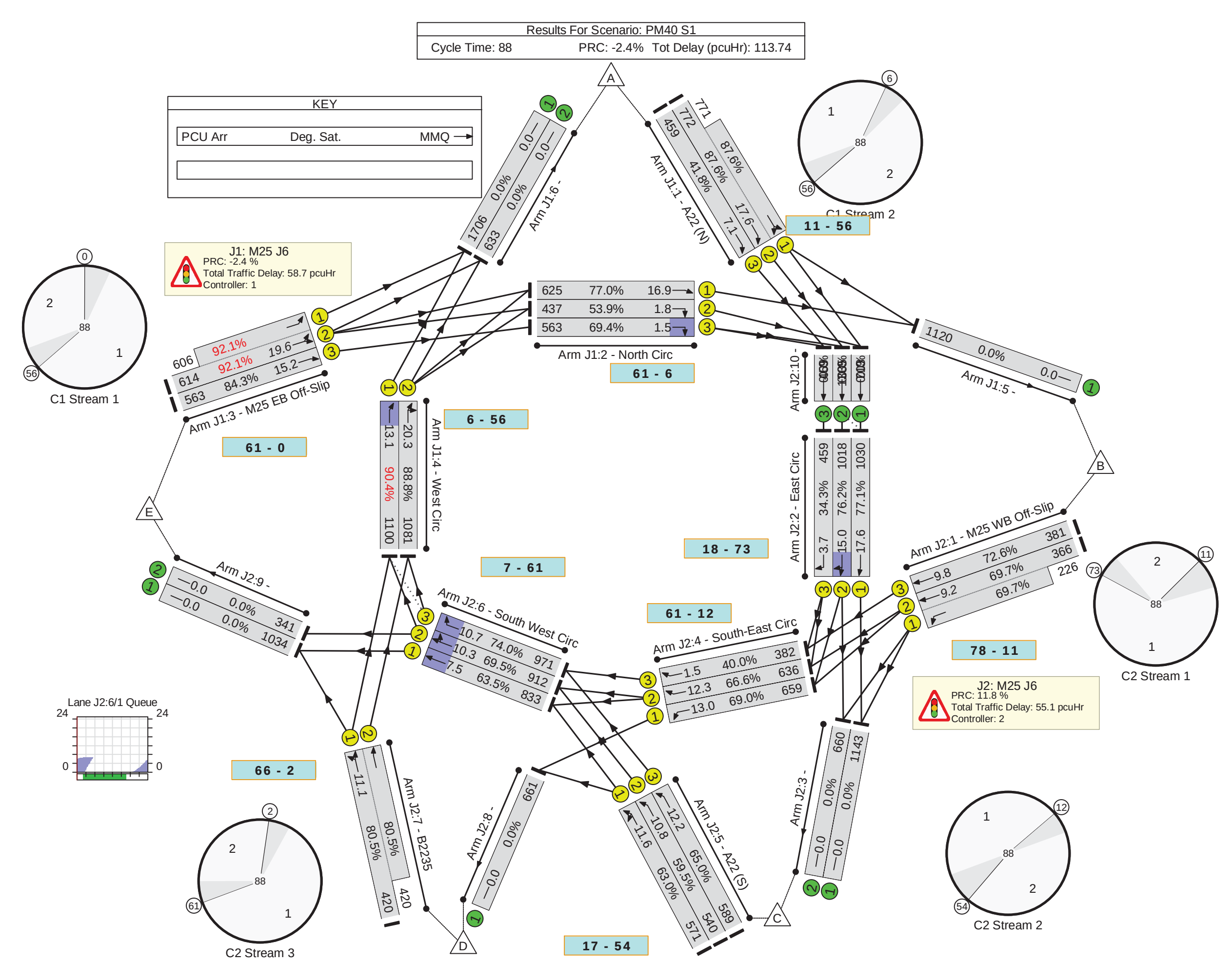
Scenario 17: 'PM40 S1' (FG10: 'PM 2040 Scenario 1', Plan 1: 'Network Control Plan 1')



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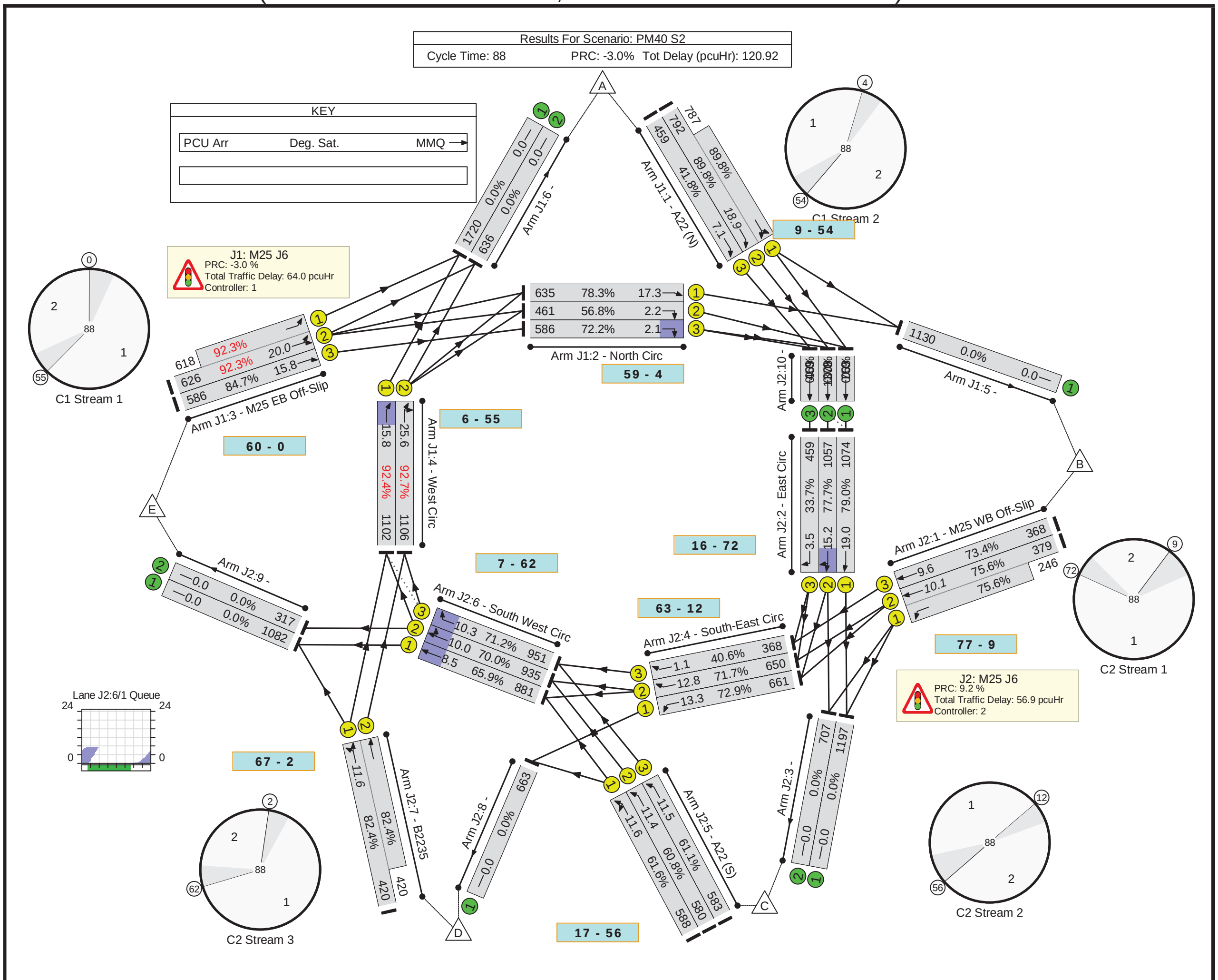
Scenario 18: 'PM40 S2' (FG21: 'PM 2040 Scenario 2', Plan 1: 'Network Control Plan 1')



Option E

Option E was derived in Oct 2021, after receiving the latest traffic flows. It assumes the same number of lanes as Option D previously. However, the spiral lane marking was updated to provide better balancing of traffic flows. This was required, because the traffic flows used for Option D were significantly different to the latest flows, both in terms of volume and turning proportions.

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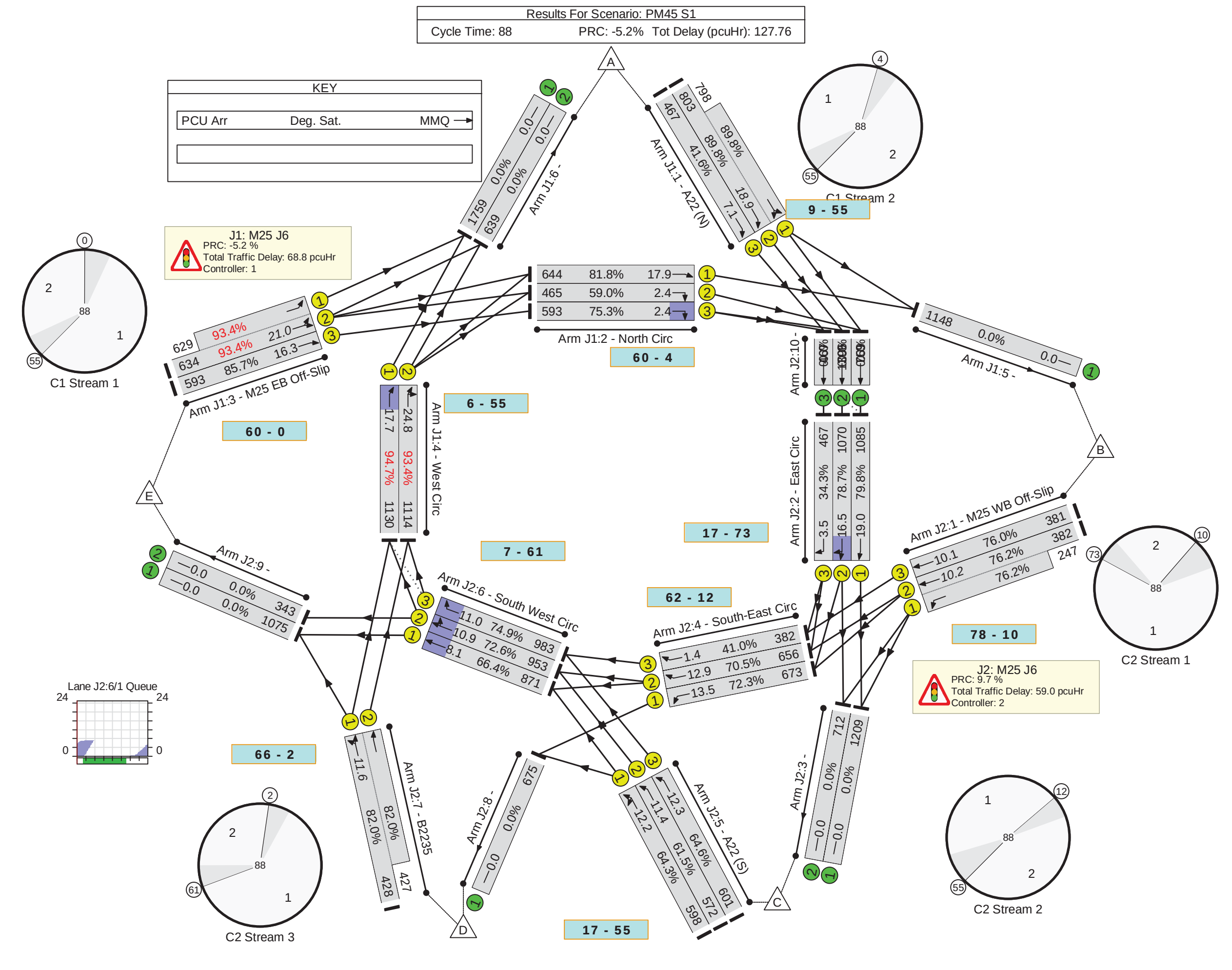
Scenario 19: 'PM45 S1' (FG11: 'PM 2045 Scenario 1', Plan 1: 'Network Control Plan 1')



Option E

Option E was derived in Oct 2021, after receiving the latest traffic flows. It assumes the same number of lanes as Option D previously. However, the spiral lane marking was updated to provide better balancing of traffic flows. This was required, because the traffic flows used for Option D were significantly different to the latest flows, both in terms of volume and turning proportions.

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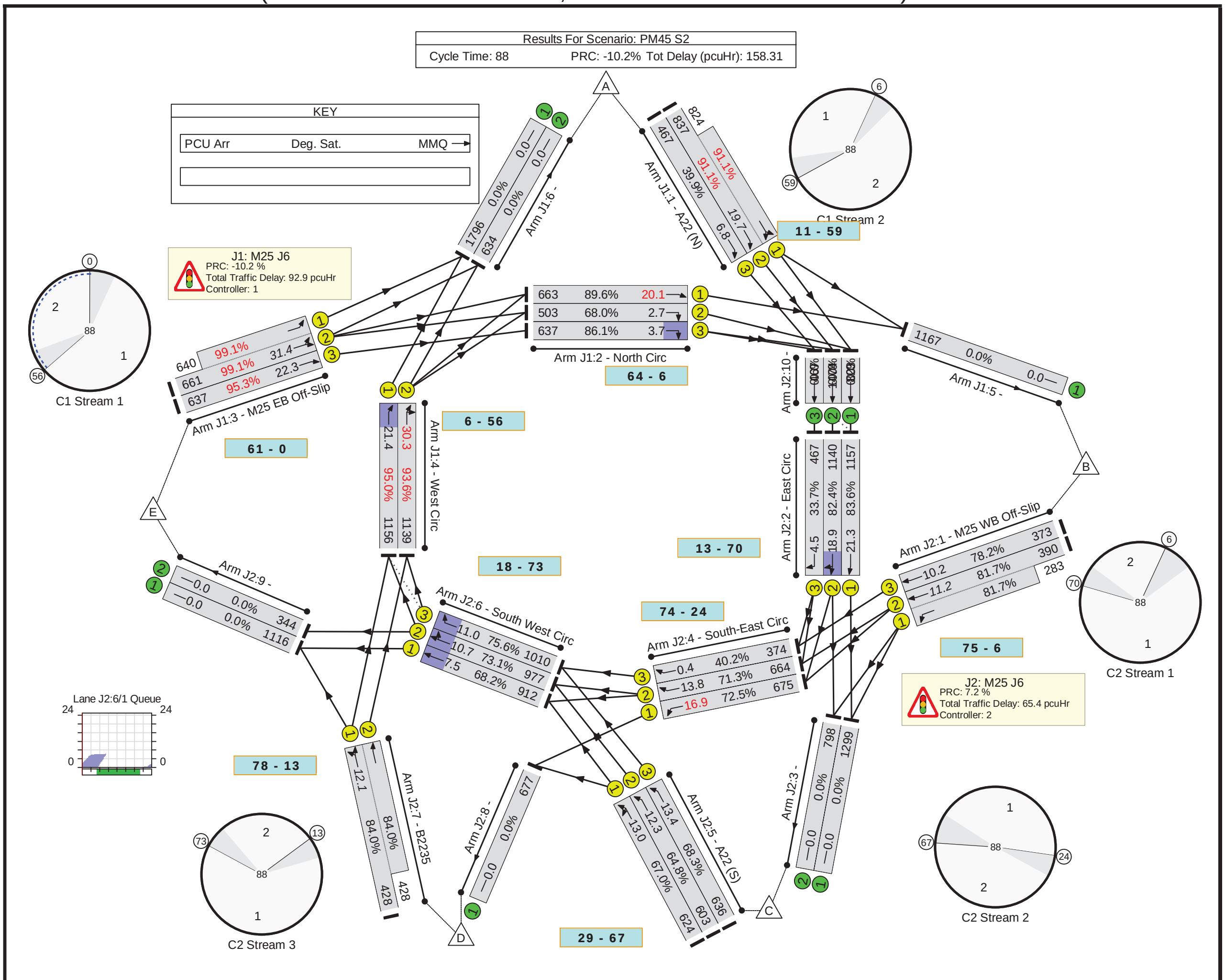
Scenario 20: 'PM45 S2' (FG22: 'PM 2045 Scenario 2', Plan 1: 'Network Control Plan 1')



Option E

Option E was derived in Oct 2021, after receiving the latest traffic flows. It assumes the same number of lanes as Option D previously. However, the spiral lane marking was updated to provide better balancing of traffic flows. This was required, because the traffic flows used for Option D were significantly different to the latest flows, both in terms of volume and turning proportions.

DoS limits were applied to the circulating lanes, using the same limits as those in the modelling of the existing layout. It was possible to use automatic optimisation to reduce PRC without any requirement to lock any timings, as the predicted degrees of saturation were low enough not to create any issues of the automatic optimiser constraining entry arms to reduce flows arriving downstream.

APPENDIX
E

Merge / Diverge Assessment

Nov-21

ID	Link	Current type	2025 AM Base			2025 PM Base		
			Through	Diverge/merge	Type	Through	Diverge/merge	Type
1	EB diverge	C	3223	1205	A	4834	1350	D
2	WB diverge	C	4244	697	A	3545	764	A
3	EB Merge	D	3223	697	A	4834	931	D
4	WB Merge	E (1)	4244	1552	E	3545	1094	D

ID	Link	Current type	2030 AM Base			2030 PM Base		
			Through	Diverge/merge	Type	Through	Diverge/merge	Type
1	EB diverge	C	3294	1231	A	4953	1383	D
2	WB diverge	C	4337	712	A	3632	782	A
3	EB Merge	D	3294	701	A	4953	939	D
4	WB Merge	E (1)	4337	1562	E	3632	1103	D

ID	Link	Current type	2030 AM LP S1			2030 PM LP S1		
			Through	Diverge/merge	Type	Through	Diverge/merge	Type
1	EB diverge	C	3294	1322	A	4953	1498	D
2	WB diverge	C	4337	746	A	3632	816	A
3	EB Merge	D	3294	736	A	4953	973	D
4	WB Merge	E (1)	4337	1678	E	3632	1197	D

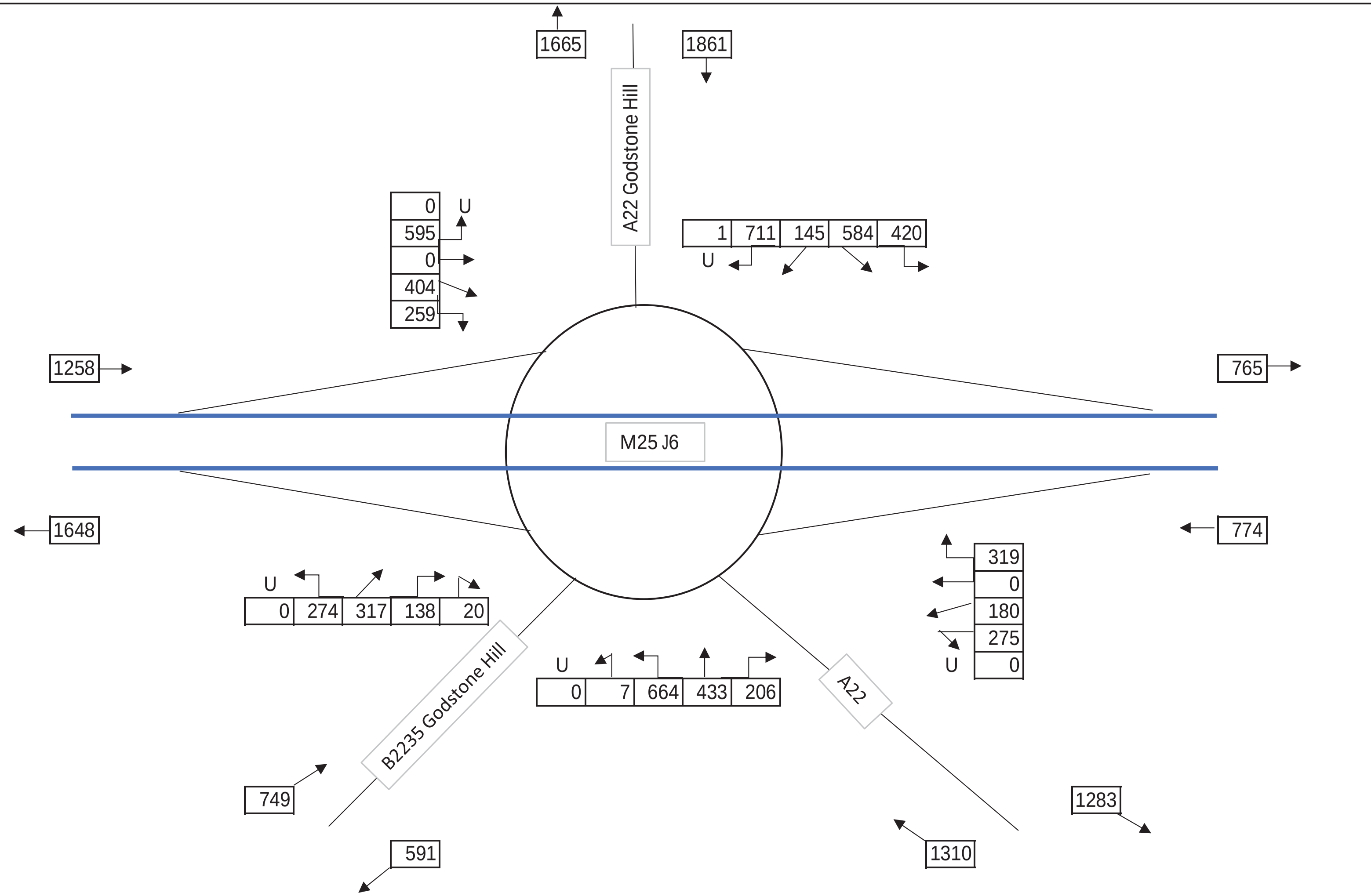
ID	Link	Current type	2030 AM LP S2			2030 PM LP S2		
			Through	Diverge/merge	Type	Through	Diverge/merge	Type
1	EB diverge	C	3294	1335	A	4953	1526	D
2	WB diverge	C	4337	752	A	3632	828	A
3	EB Merge	D	3294	748	A	4953	980	D
4	WB Merge	E (1)	4337	1706	E	3632	1212	D

ID	Link	Current type	2035 AM Base			2035 PM Base		
			Through	Diverge/merge	Type	Through	Diverge/merge	Type
1	EB diverge	C	3385	1265	A	5100	1424	D
2	WB diverge	C	4457	732	A	3739	806	A
3	EB Merge	D	3385	708	A	5100	950	D
4	WB Merge	E (1)	4457	1577	E	3739	1117	D

ID	Link	Current type	2035 AM LP S1			2035 PM LP S1		
			Through	Diverge/merge	Type	Through	Diverge/merge	Type
1	EB diverge	C	3385	1404	D	5100	1617	D
2	WB diverge	C	4457	785	A	3739	868	A
3	EB Merge	D	3385	772	A	5100	1005	D
4	WB Merge	E (1)	4457	1771	E	3739	1262	E

ID	Link	Current type	2035 AM LP S2			2035 PM LP S2		
			Through	Diverge/merge	Type	Through	Diverge/merge	Type
1	EB diverge	C	3385	1425	D	5100	1661	D
2	WB diverge	C	4457	794	A	3739	887	A
3	EB Merge	D	3385	791	A	5100	1015	D
4	WB Merge	E (1)	4457	1814	E	3739	1284	D

FIGURES



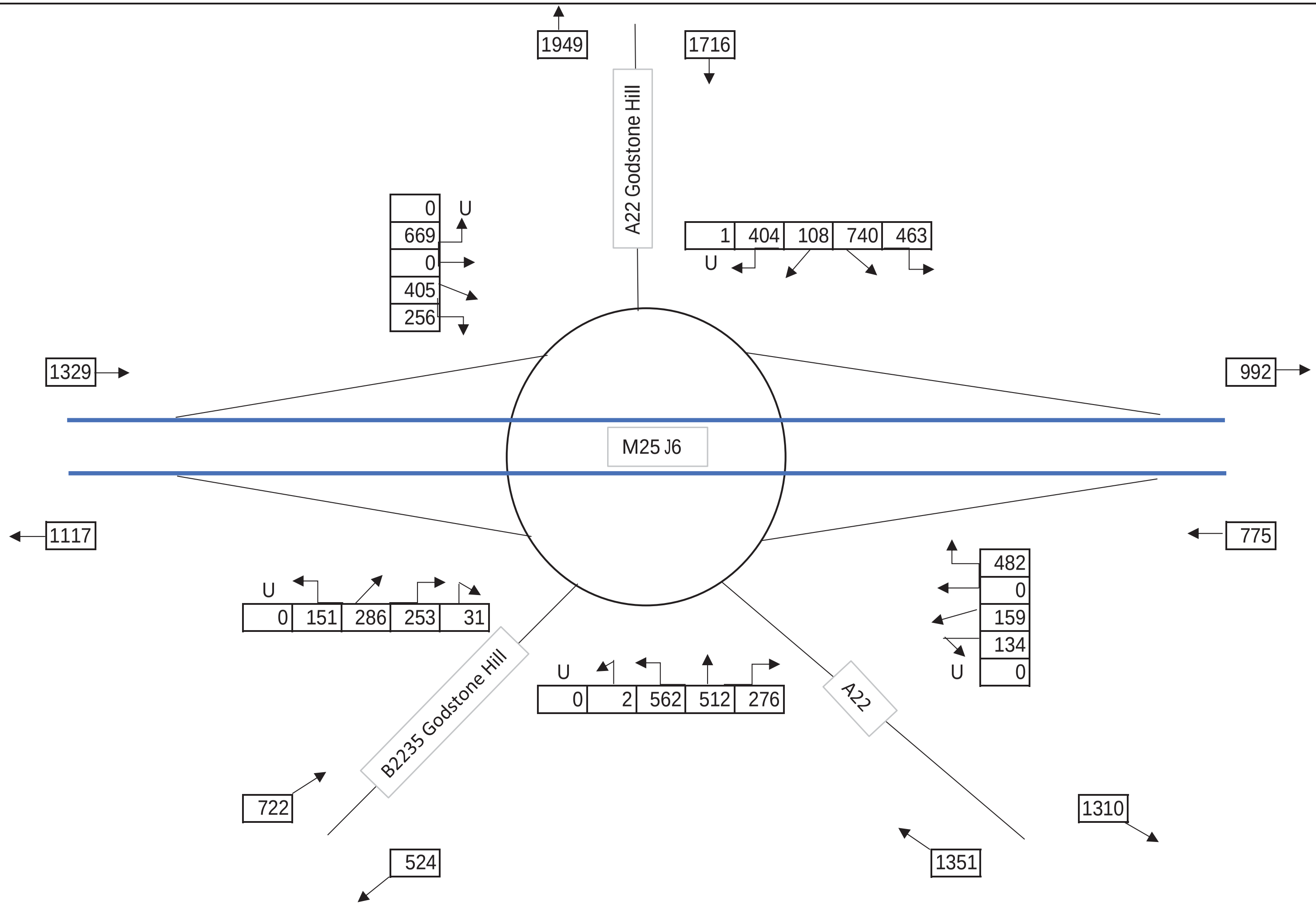
M25 JUNCTION 6

2018 AM Base

07:15-08:15

FIG

0-1



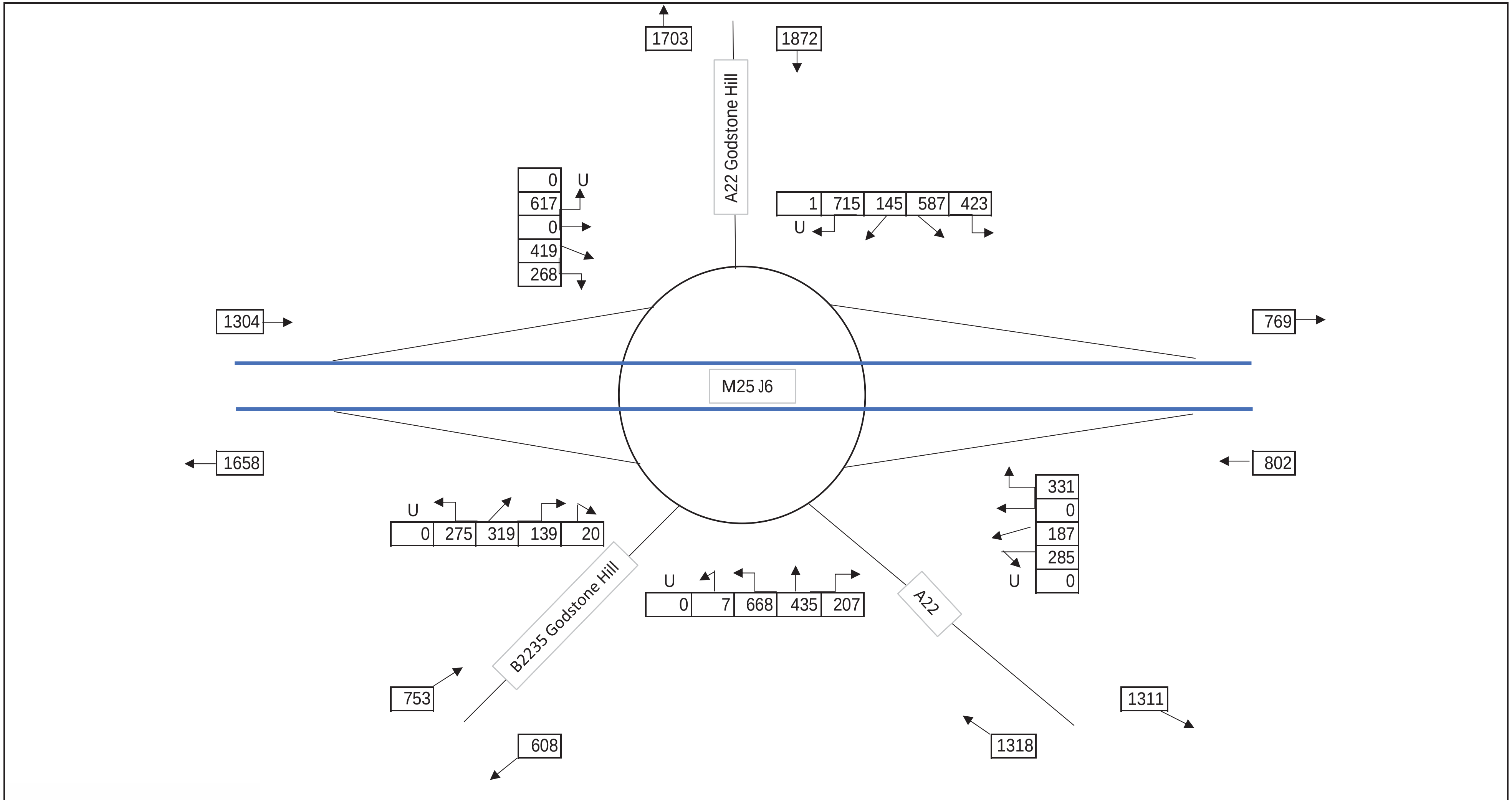
M25 JUNCTION 6

2018 PM Base

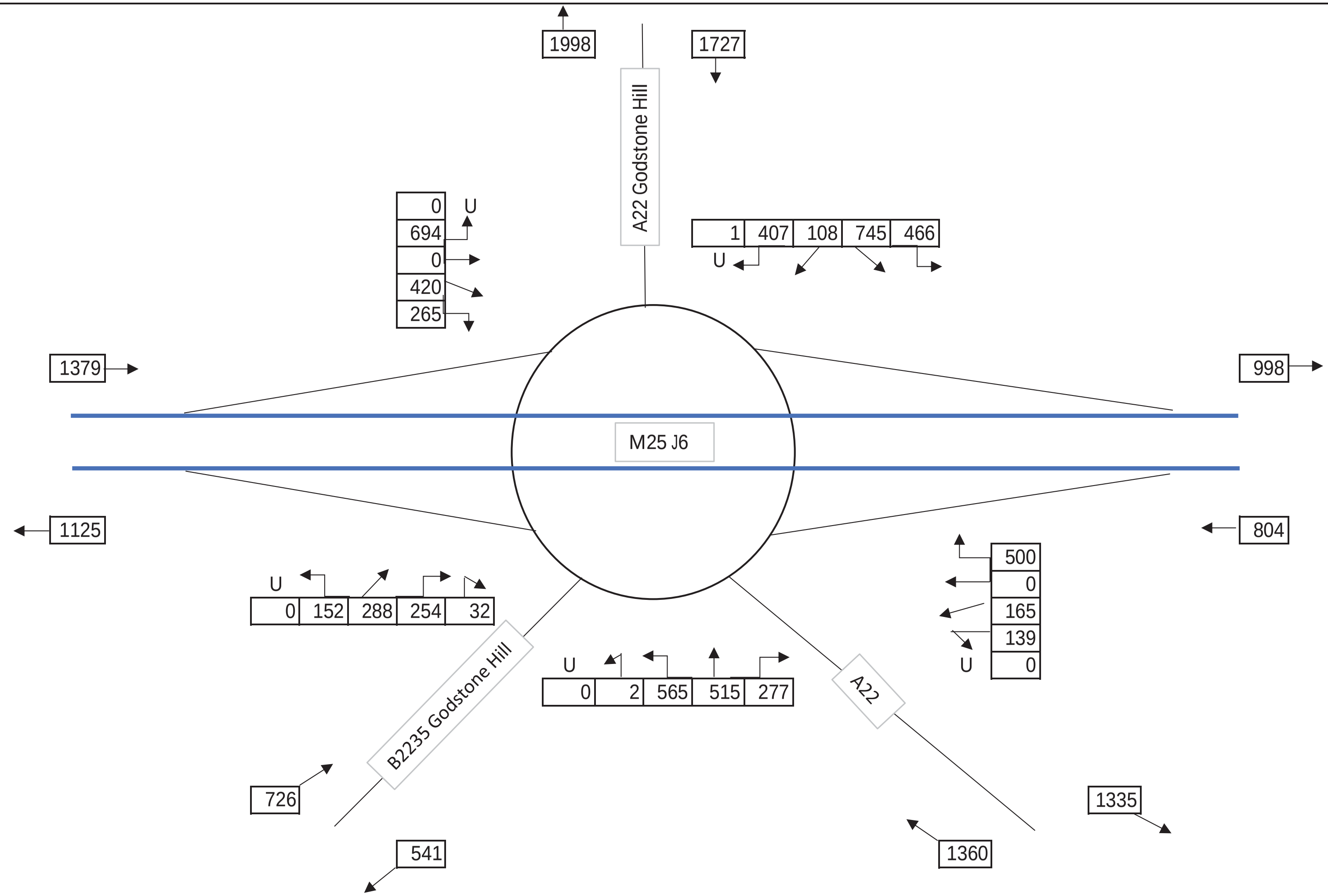
17:00-18:00

FIG

0-2



M25 JUNCTION 6		FIG
2025 Base		0-3
AM Peak		



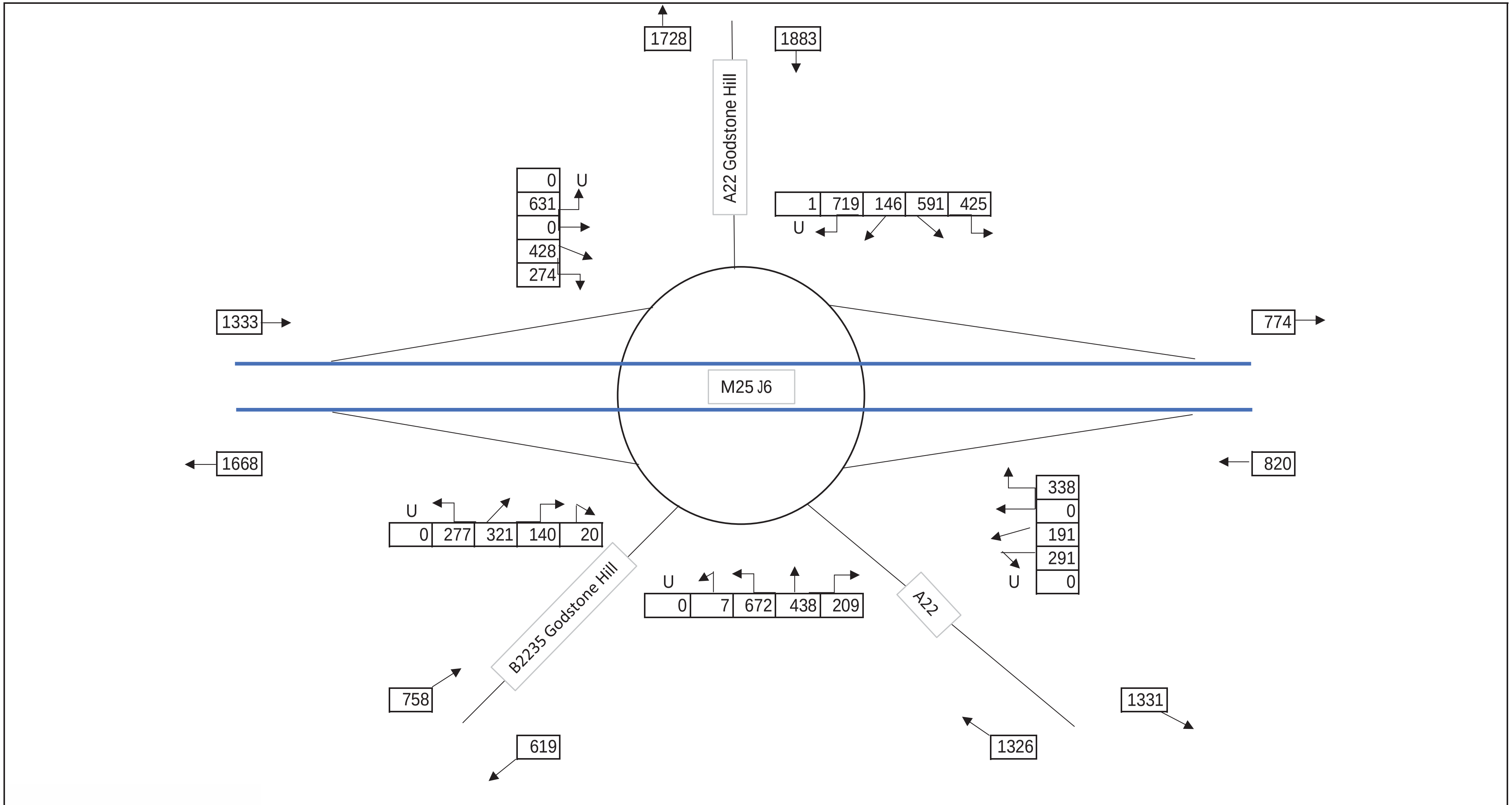
M25 JUNCTION 6

2025 Base

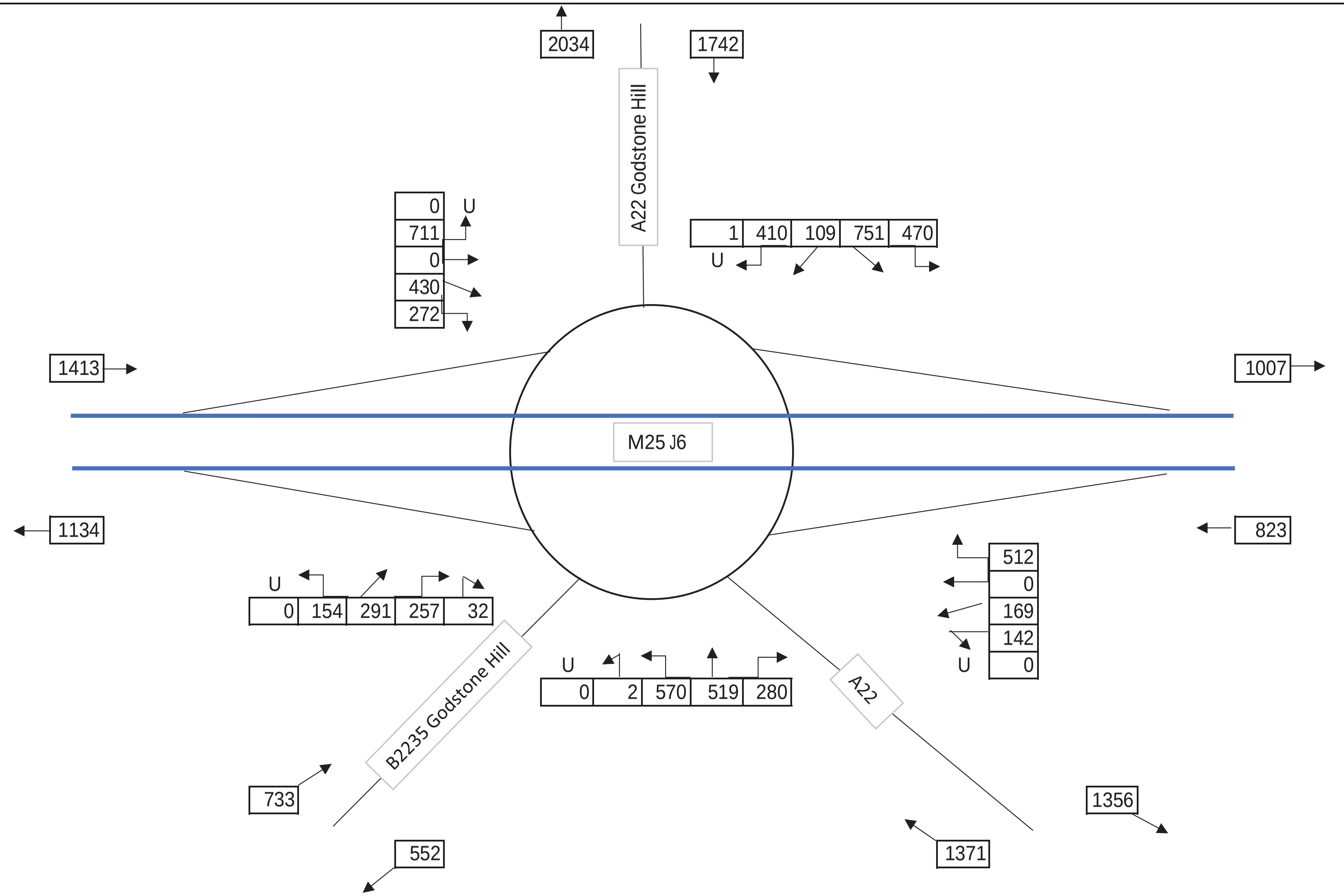
PM Peak

FIG

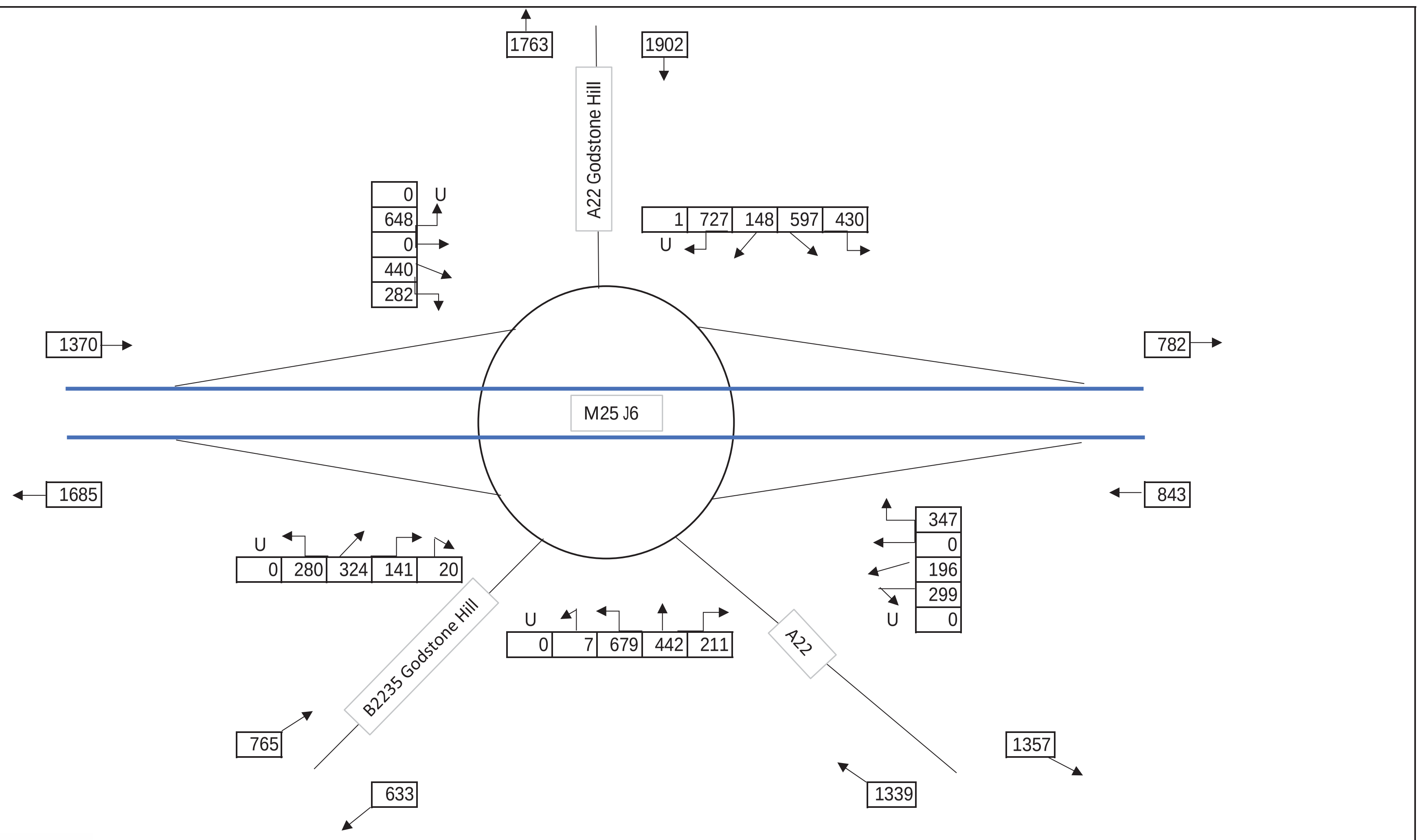
0-4



M25 JUNCTION 6	FIG
2030 Base	0-5
AM Peak	



M25 JUNCTION 6		FIG
2030 Base		0-6
PM Peak		



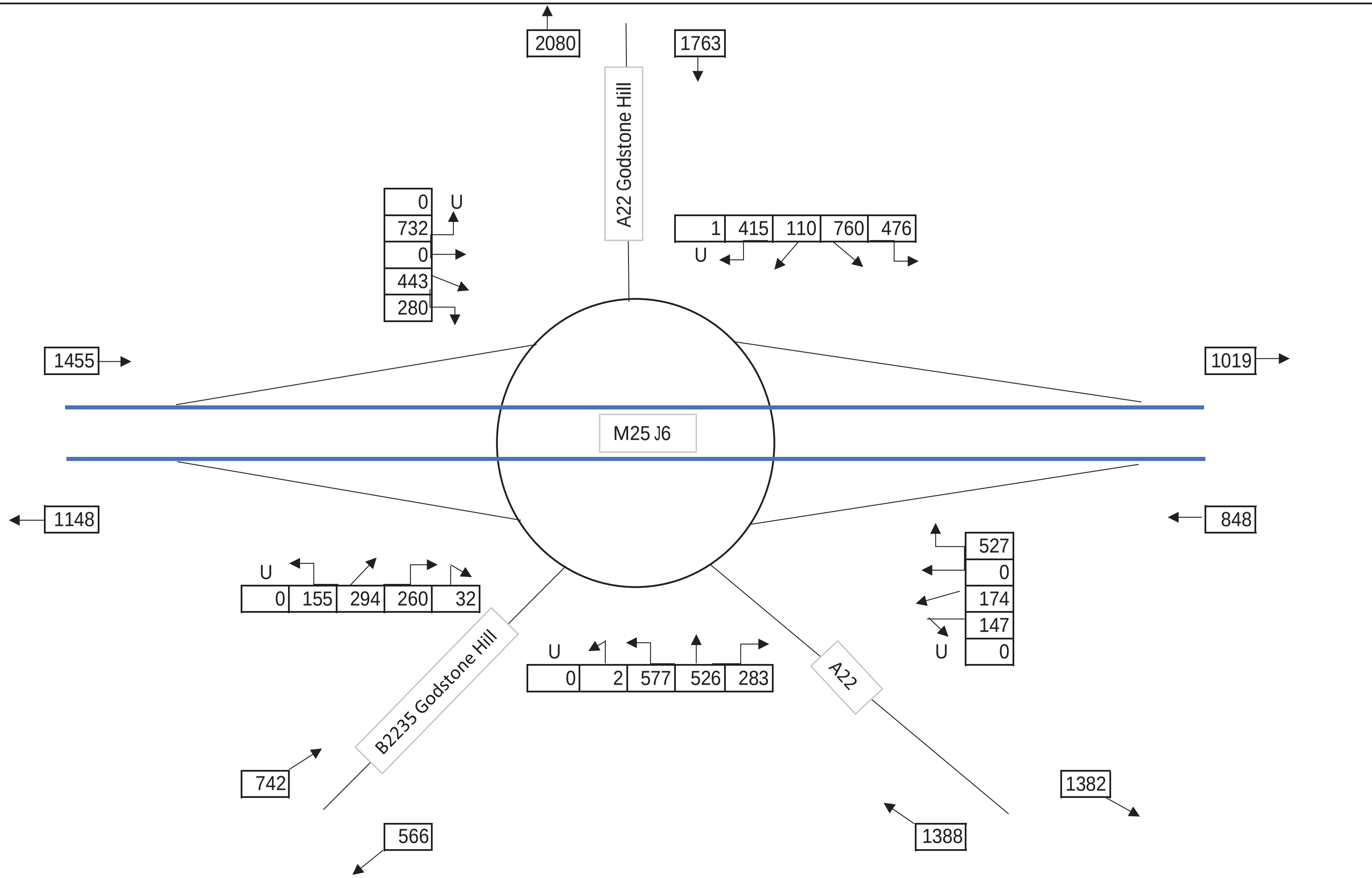
M25 JUNCTION 6

2035 Base

AM Peak

FIG

0-7



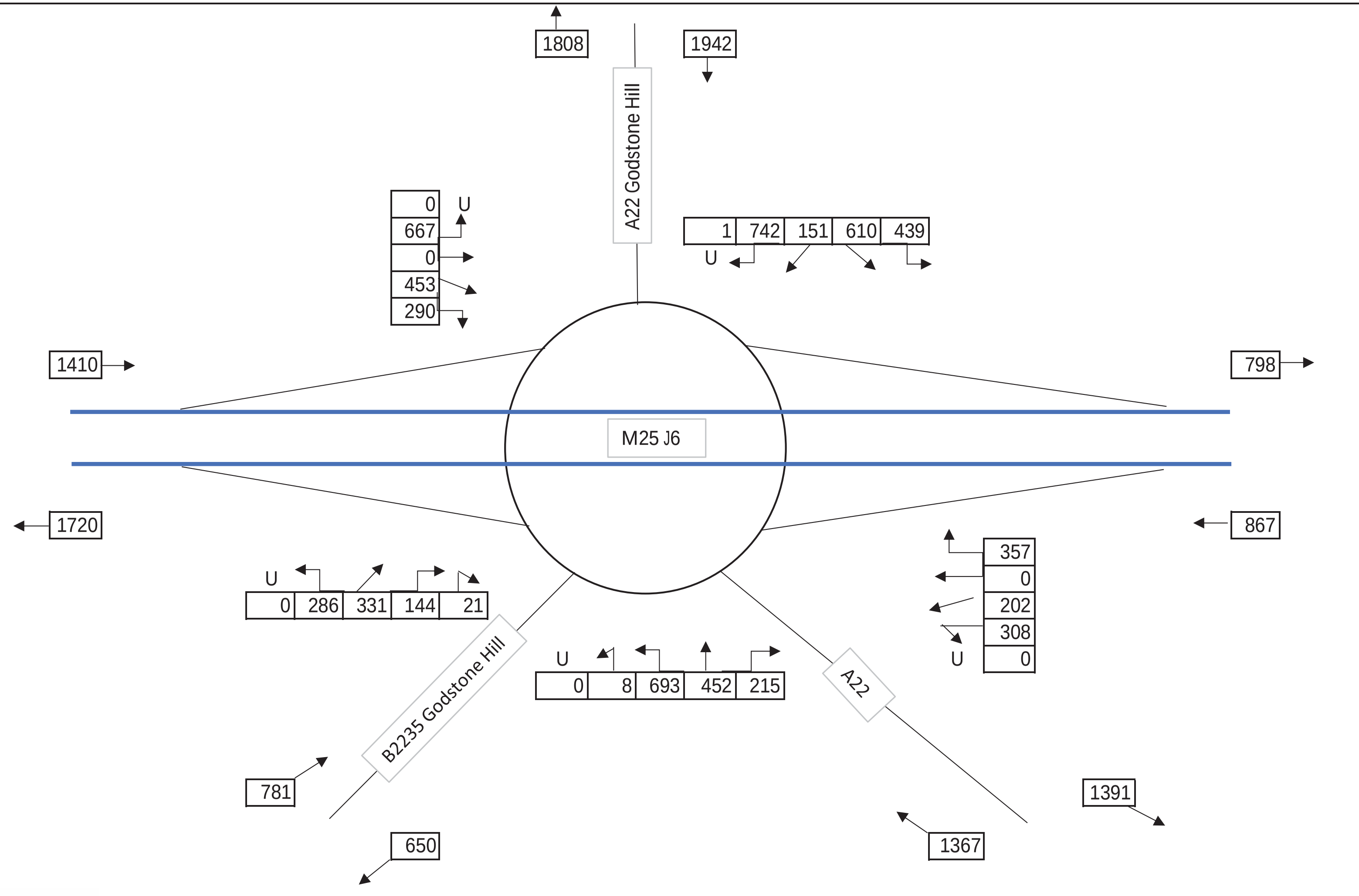
M25 JUNCTION 6

2035 Base

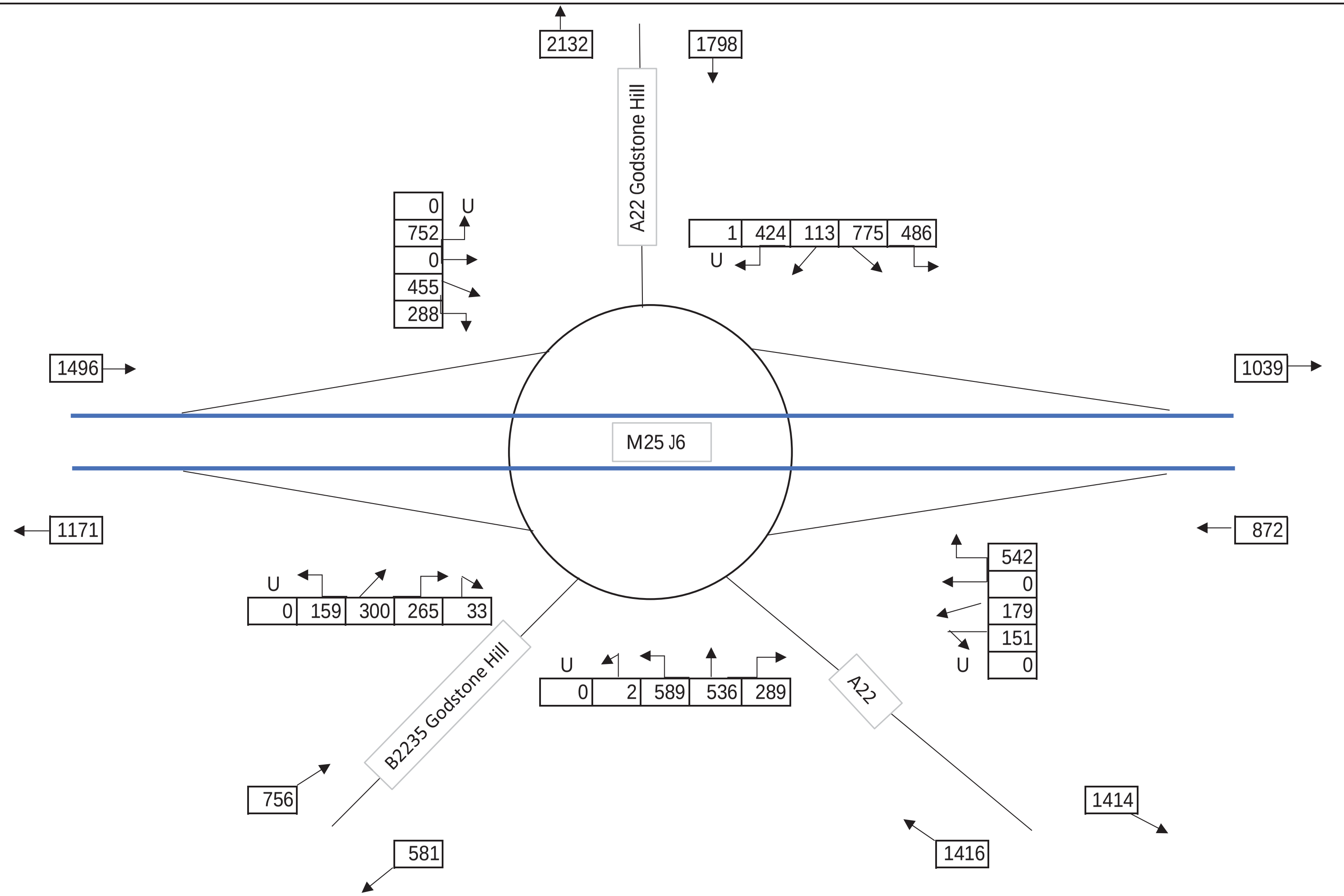
PM Peak

FIG

0-8



M25 JUNCTION 6	FIG
2040 Base	0-9
AM Peak	



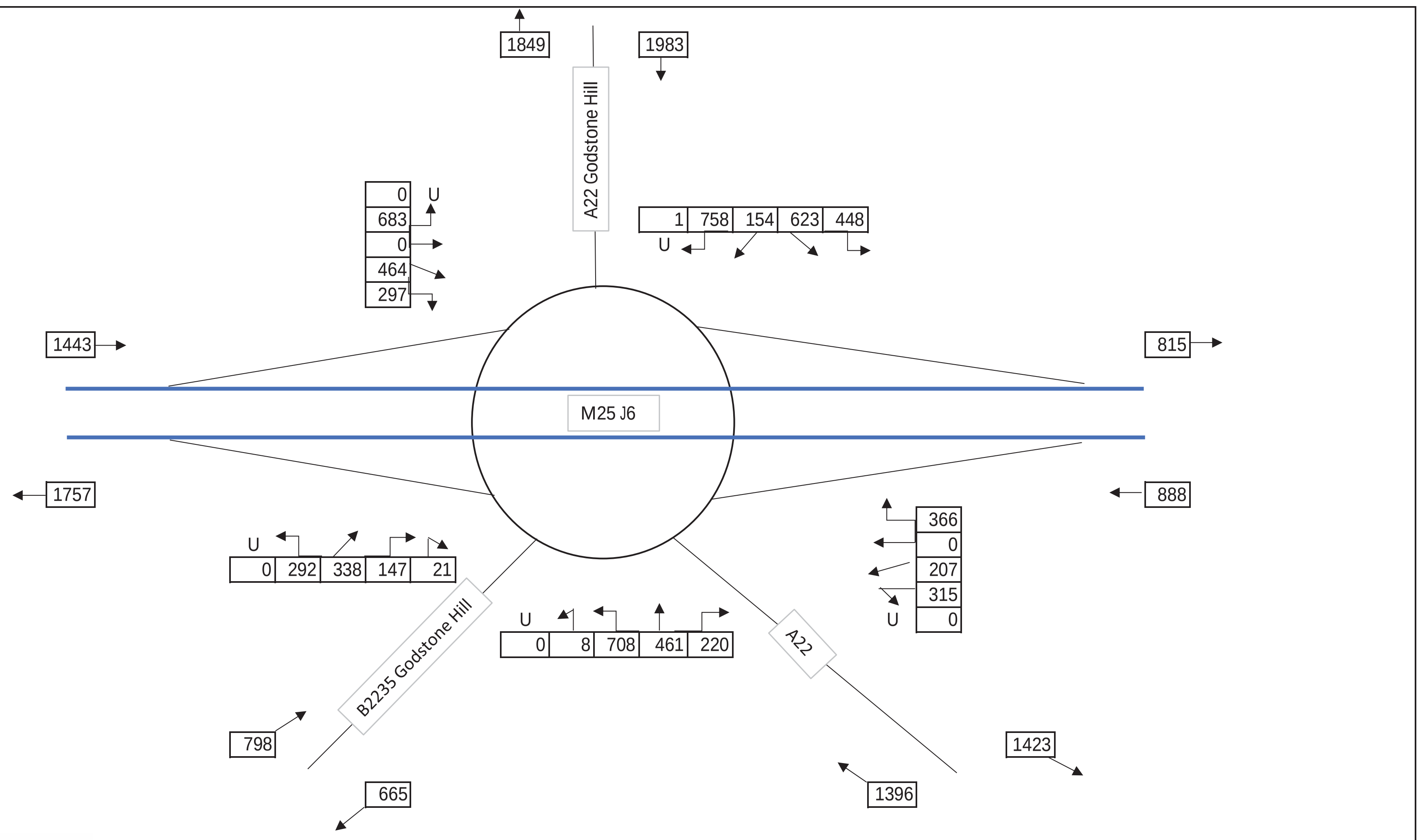
M25 JUNCTION 6

2040 Base

PM Peak

FIG

0-10



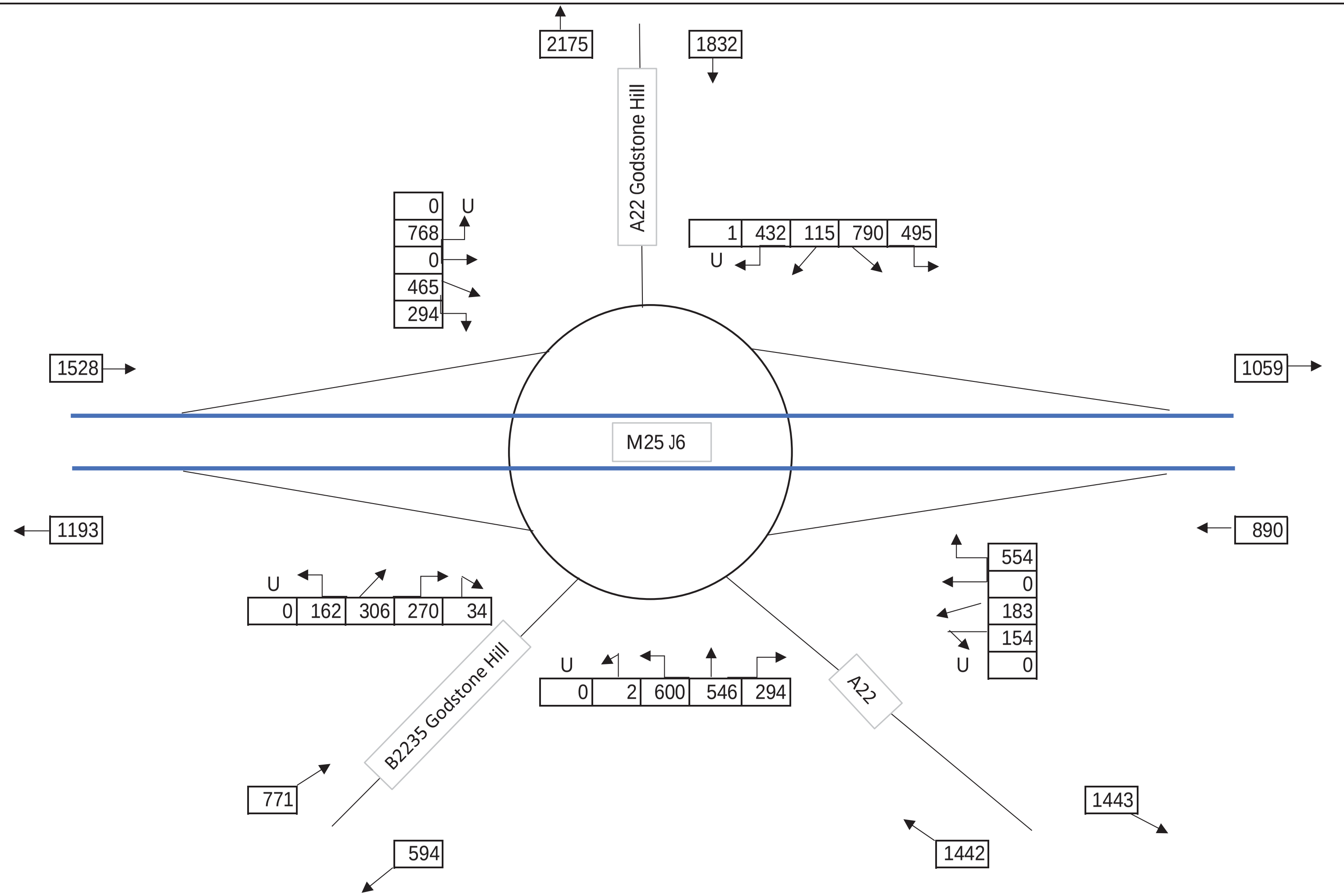
M25 JUNCTION 6

2045 Base

AM Peak

FIG

0-11



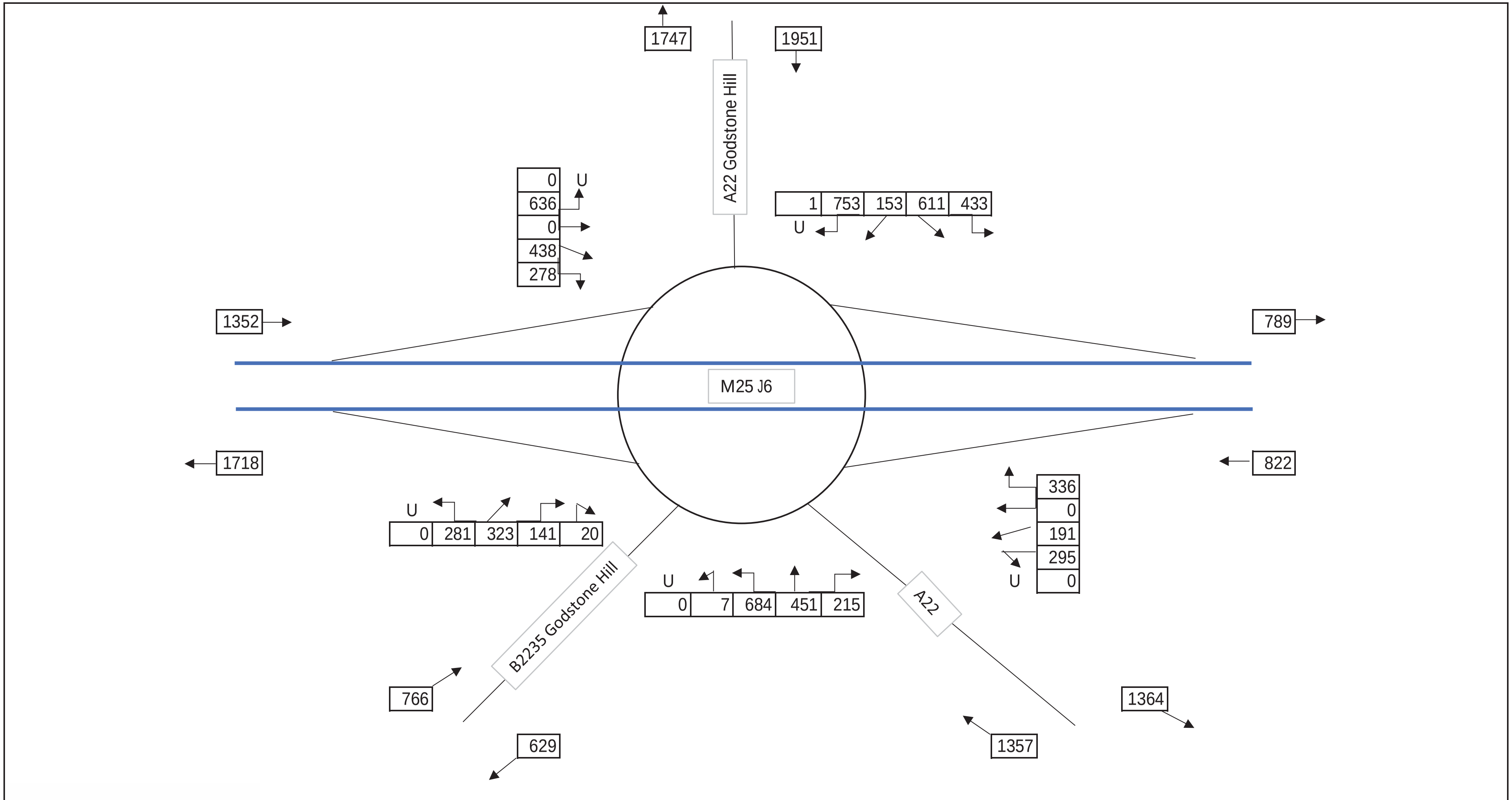
M25 JUNCTION 6

2045 Base

PM Peak

FIG

0-12



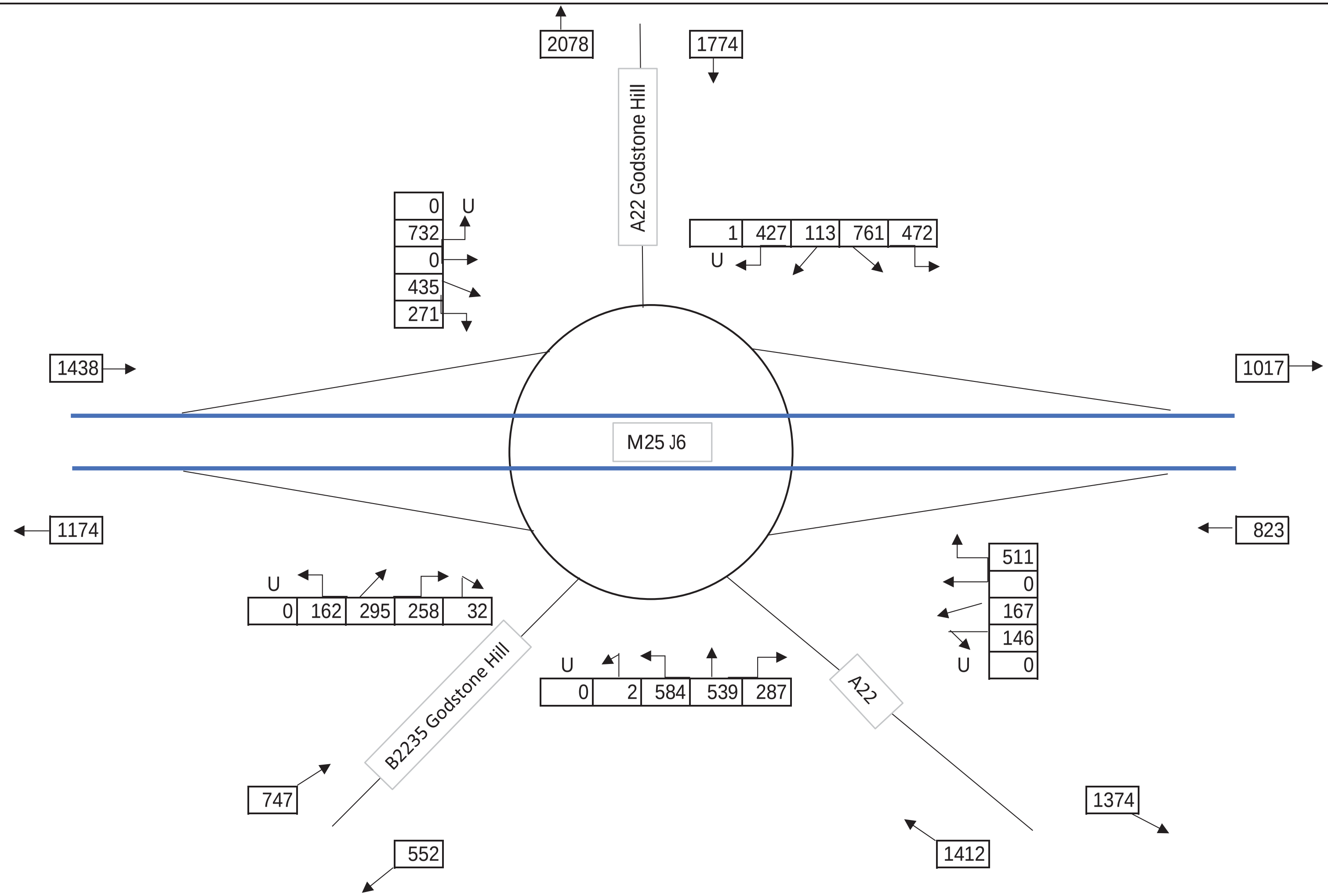
M25 JUNCTION 6

Scenario 1 - 2025

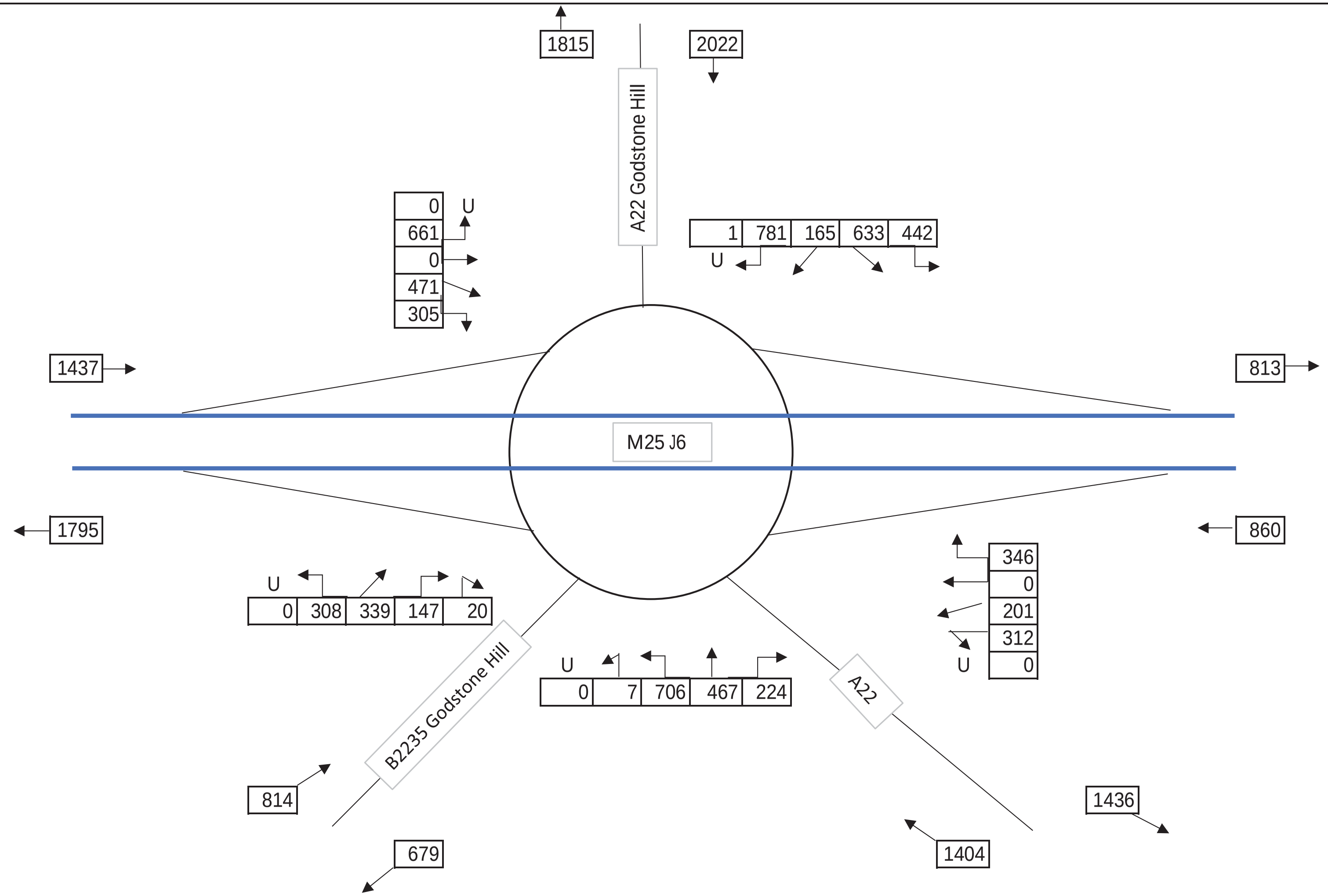
AM Peak

FIG

0-13



M25 JUNCTION 6	FIG
Scenario 1 - 2025	0-14
PM Peak	

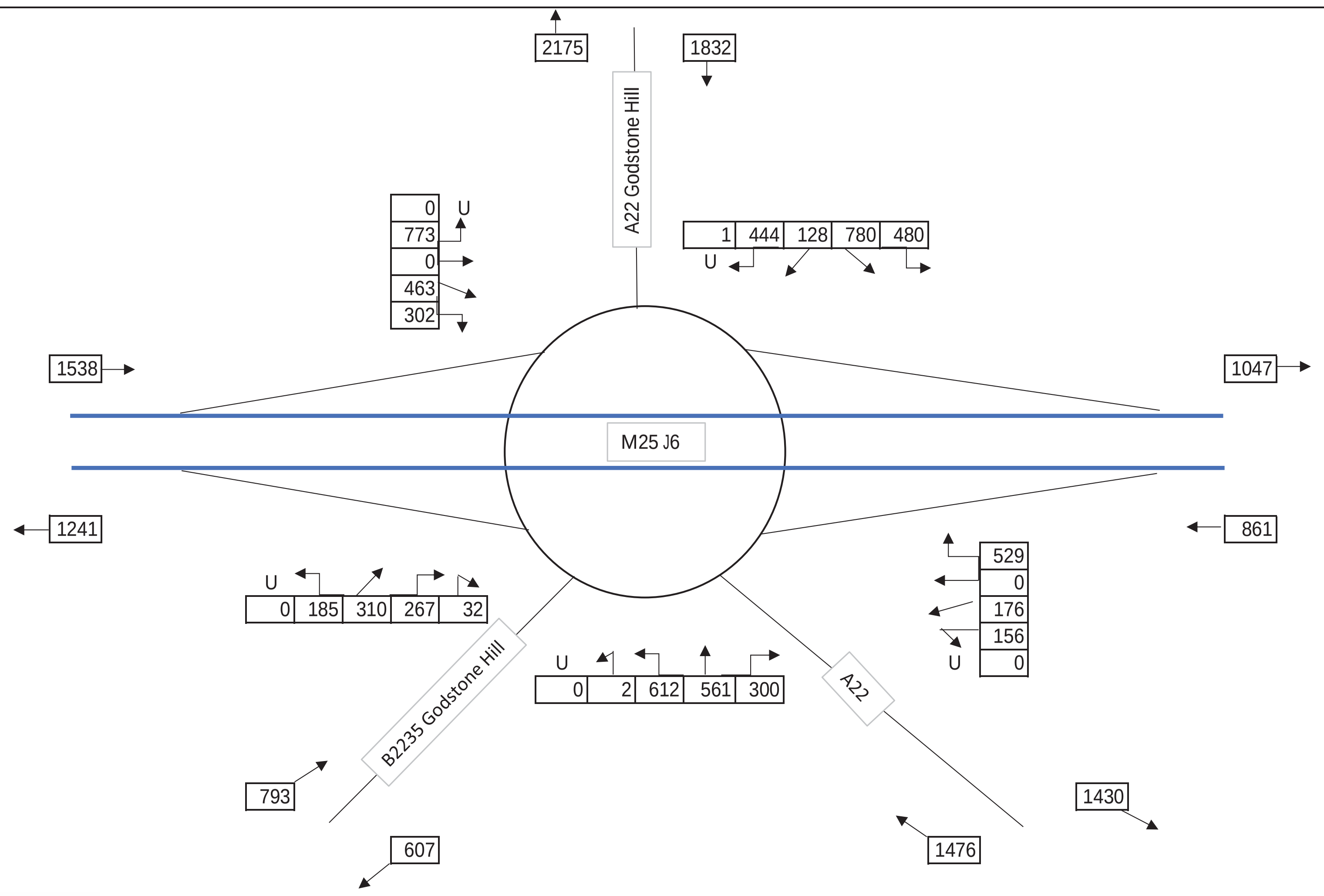


M25 JUNCTION 6

Scenario 1 - 2030

AM Peak

FIG 0-15



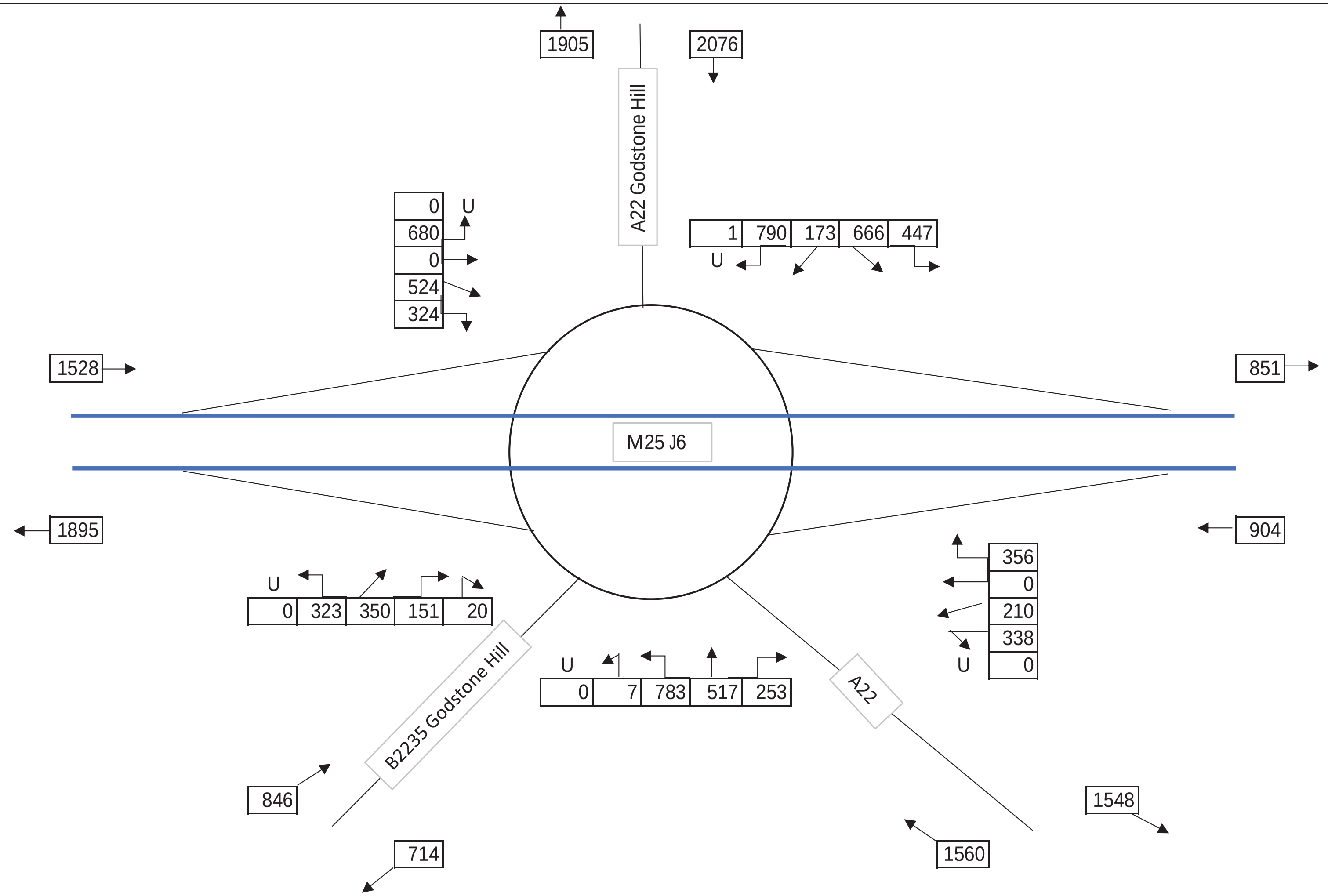
M25 JUNCTION 6

Scenario 1 - 2030

PM Peak

FIG

0-16



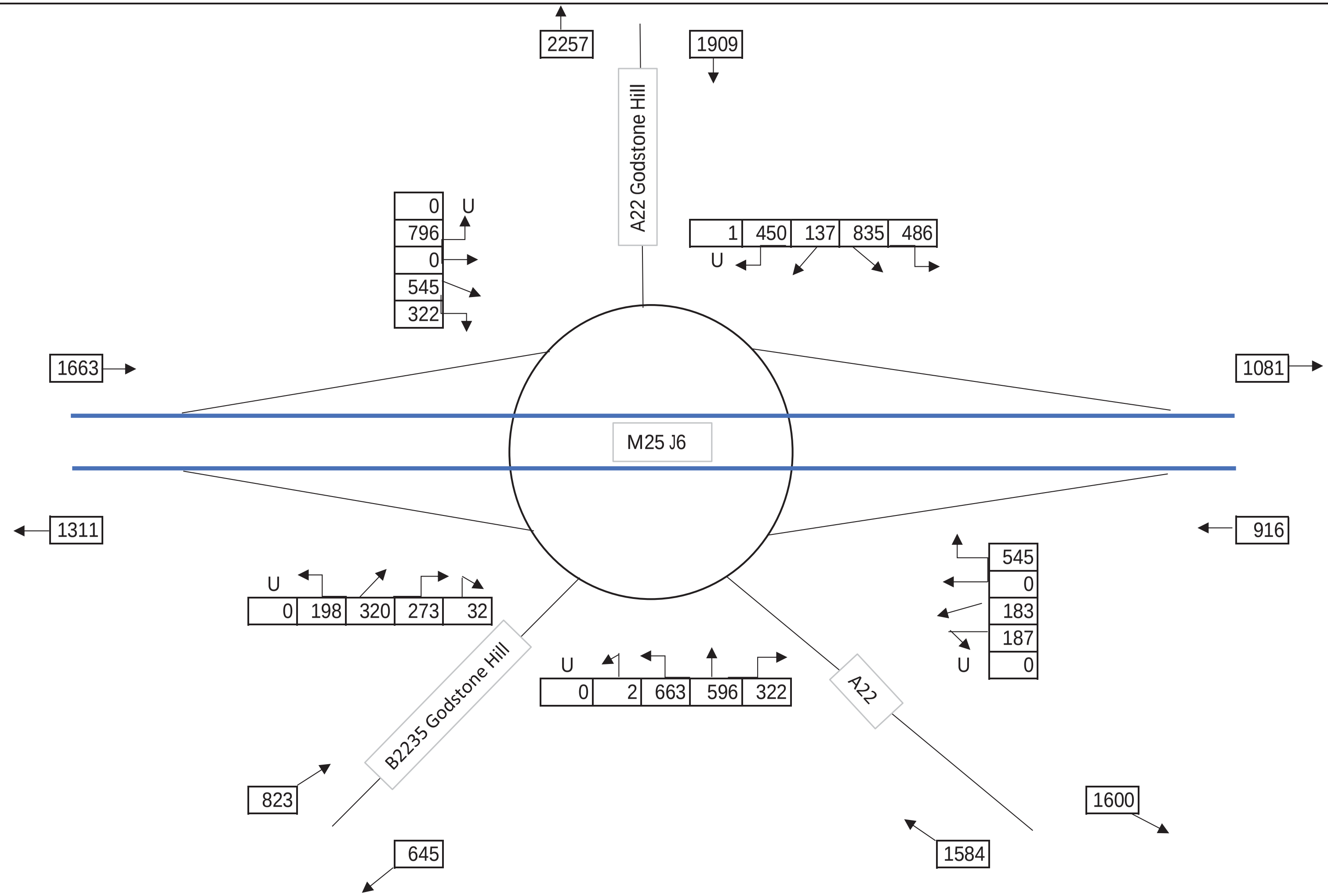
M25 JUNCTION 6

Scenario 1 - 2035

AM Peak

FIG

0-17

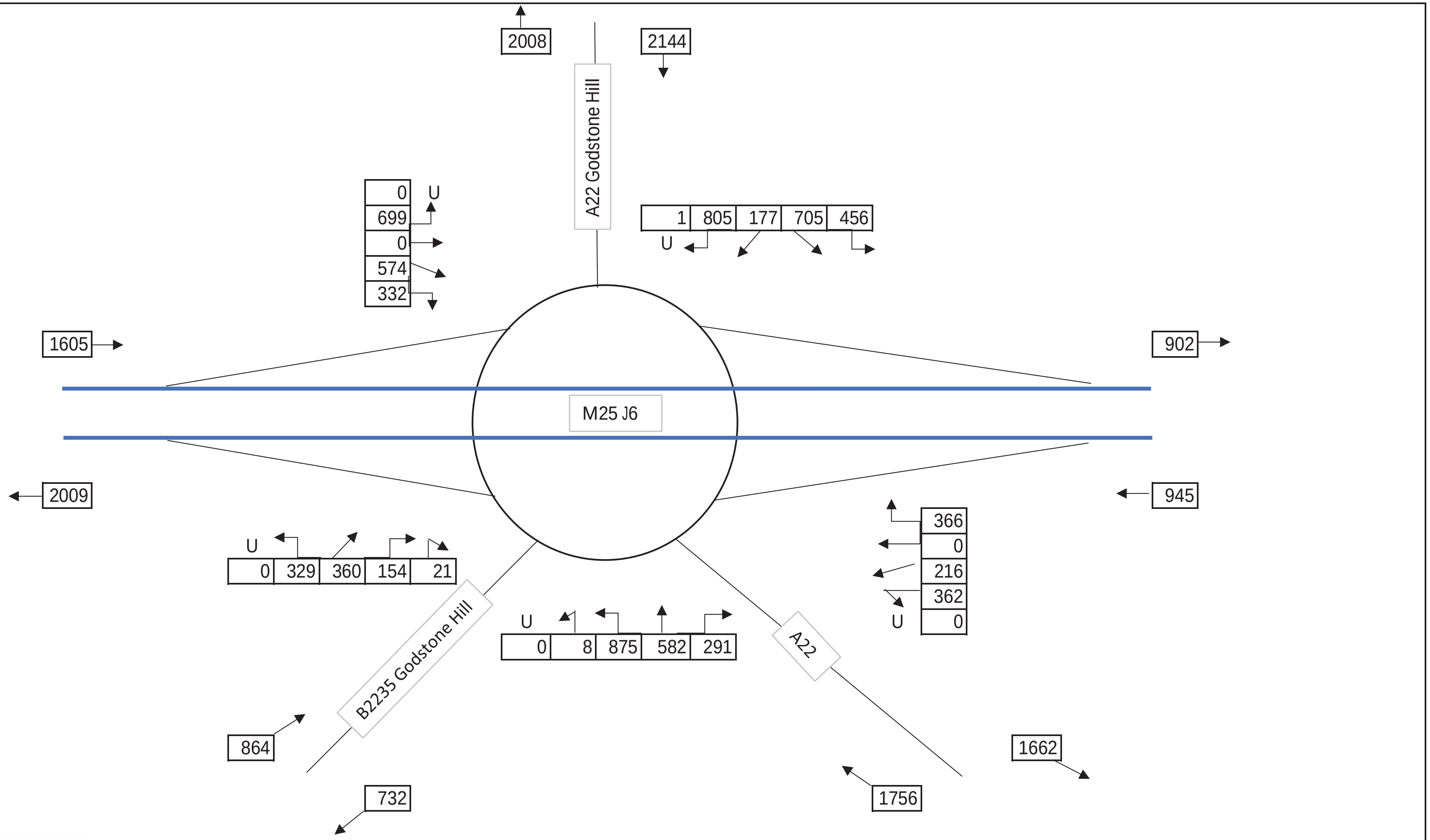


M25 JUNCTION 6

Scenario 1 - 2035

PM Peak

FIG 0-18

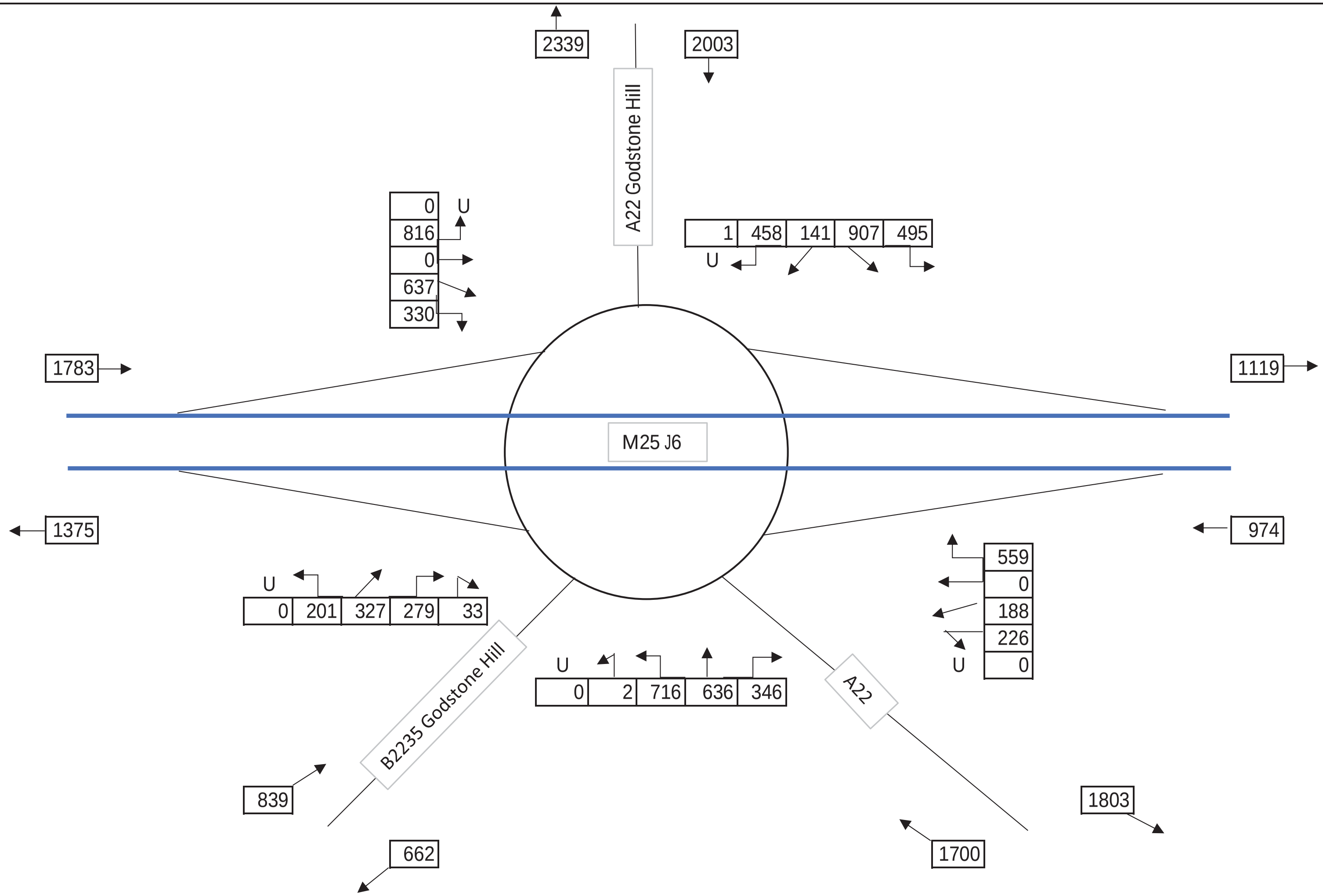


M25 JUNCTION 6

Scenario 1 - 2040

AM Peak

FIG 0-19



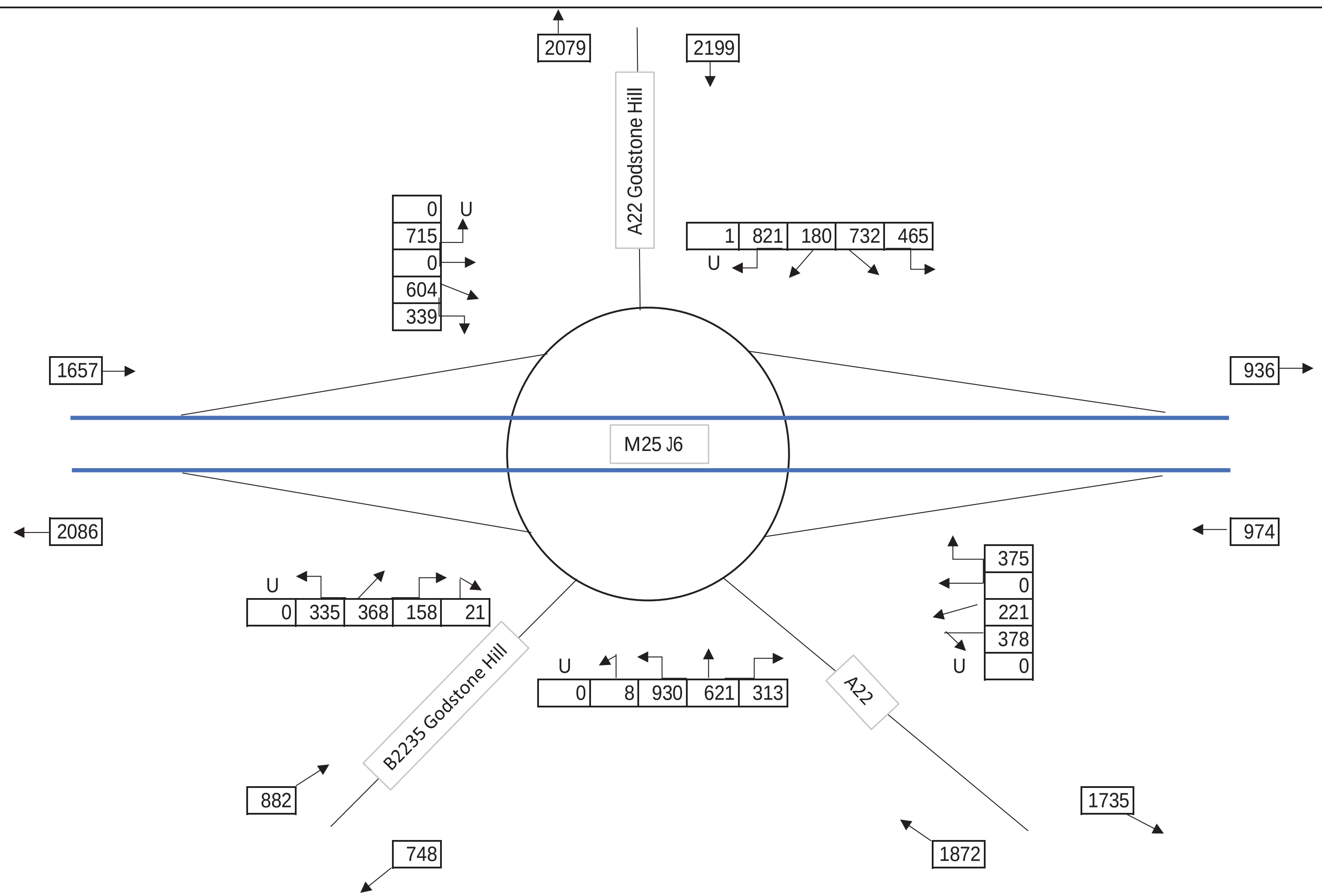
M25 JUNCTION 6

Scenario 1 - 2040

PM Peak

FIG

0-20



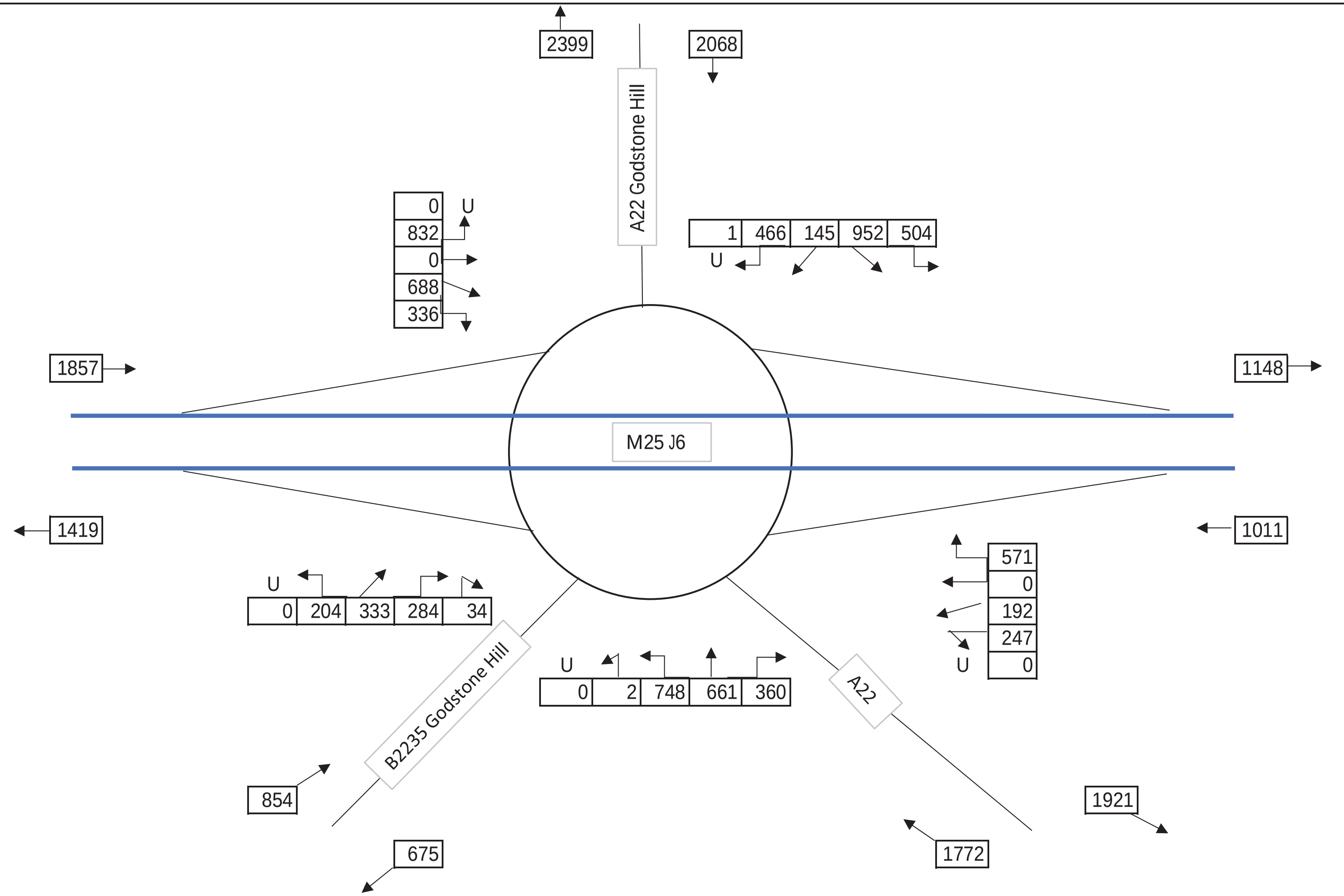
M25 JUNCTION 6

Scenario 1 - 2045

AM Peak

FIG

0-21



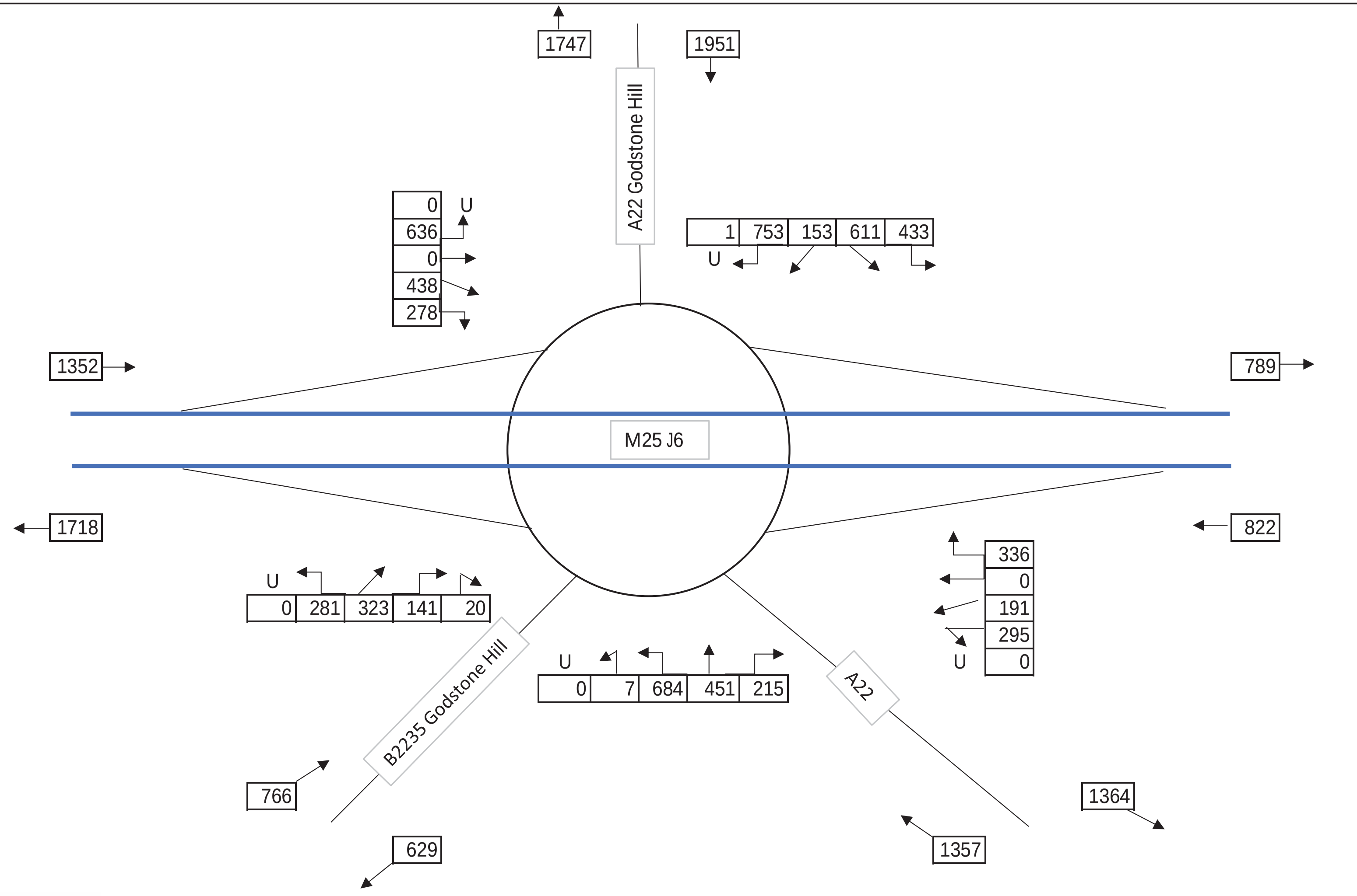
M25 JUNCTION 6

Scenario 1 - 2045

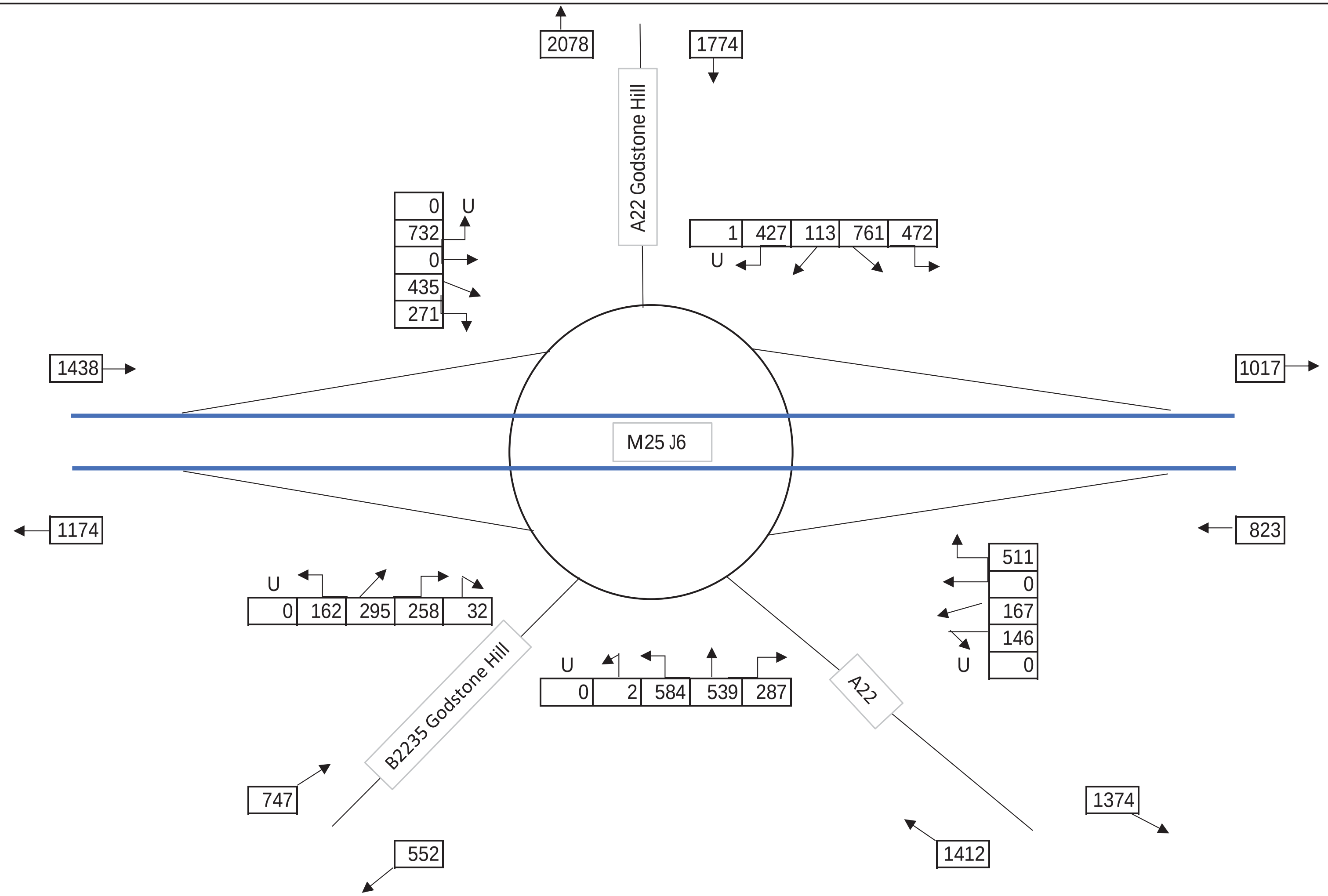
PM Peak

FIG

0-22



dha	M25 JUNCTION 6	FIG
	Scenario 2 - 2025	0-23
	AM Peak	



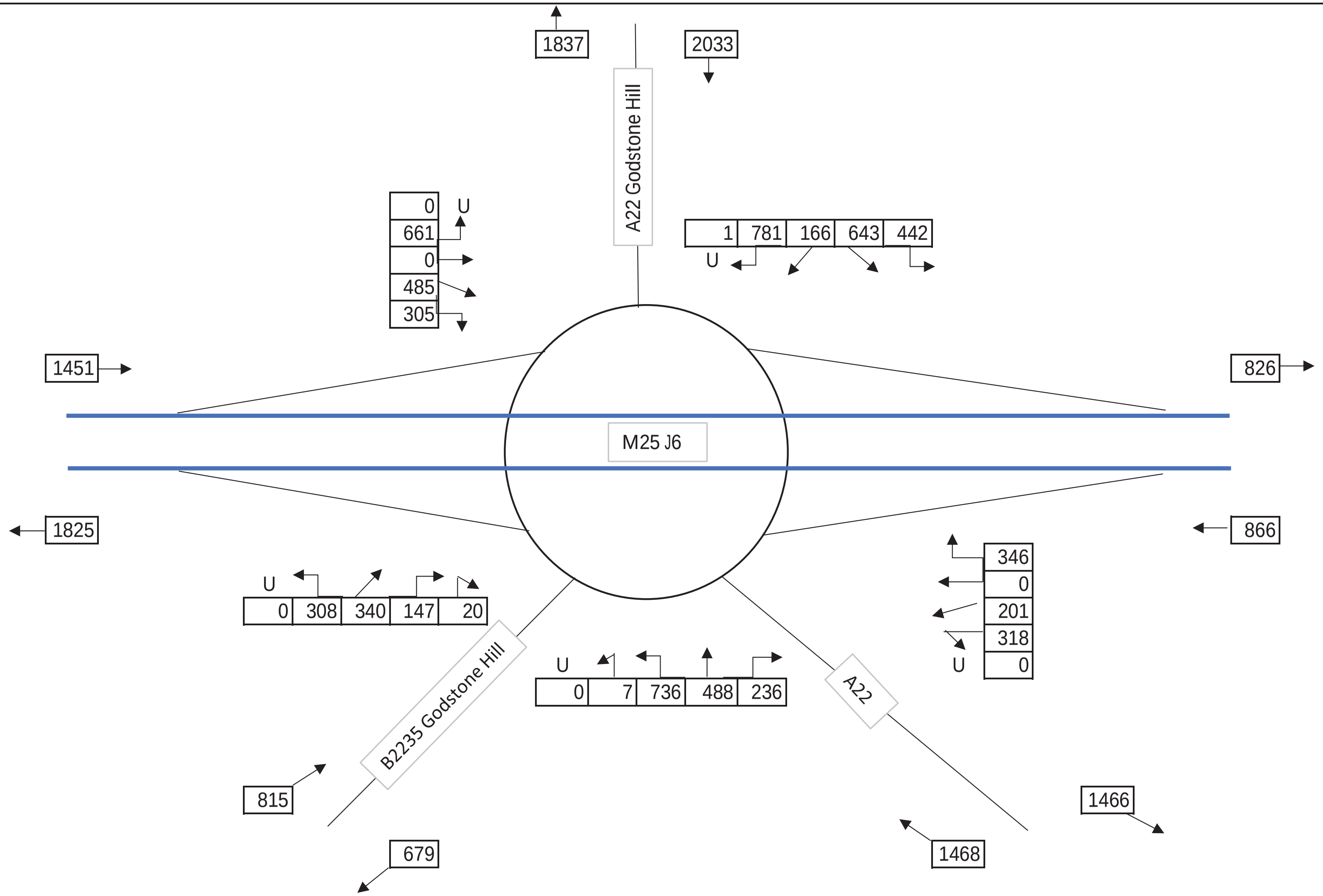
M25 JUNCTION 6

Scenario 2 - 2025

PM Peak

FIG

0-24



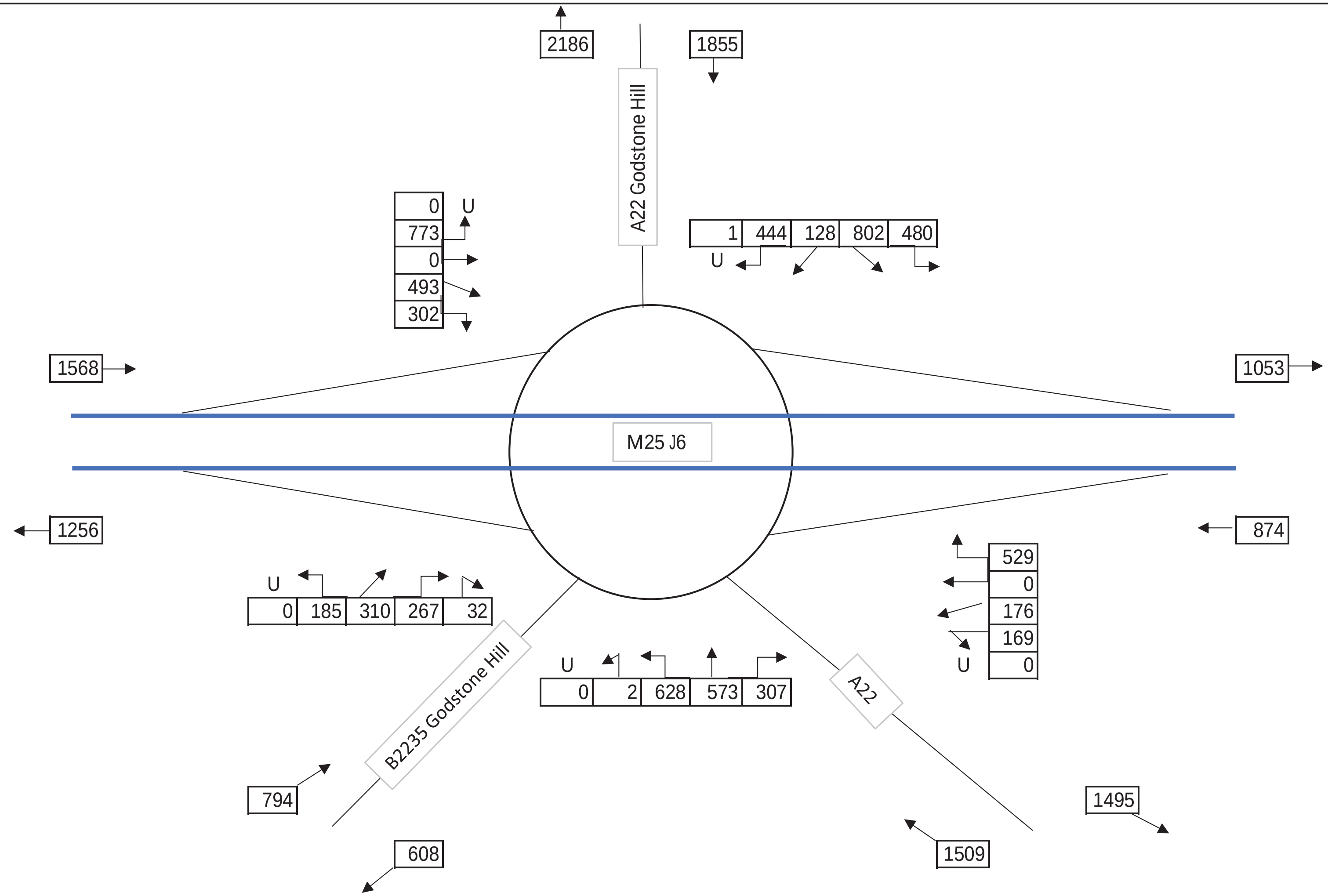
M25 JUNCTION 6

Scenario 2 - 2030

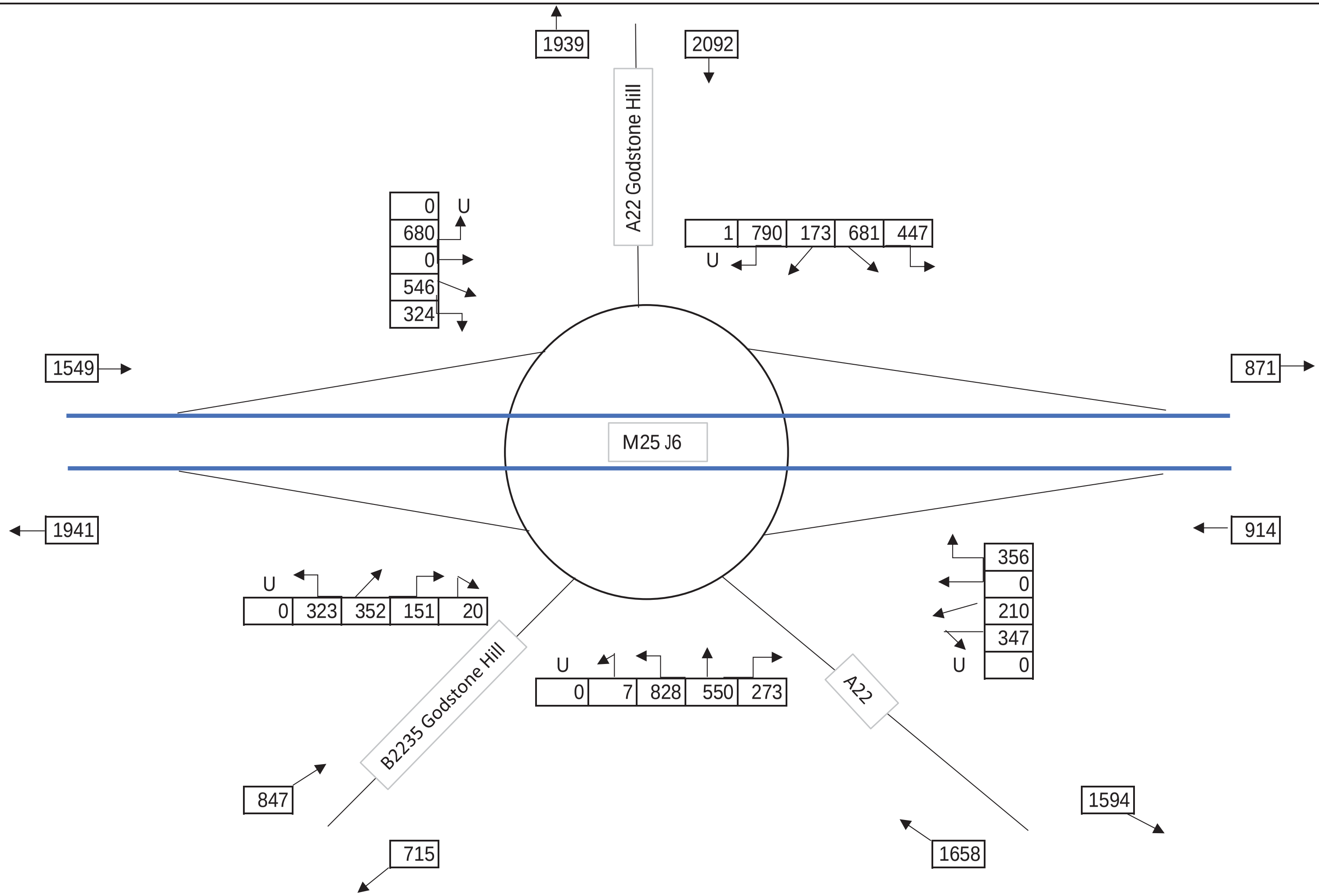
AM Peak

FIG

0-25



M25 JUNCTION 6	FIG
Scenario 2 - 2030	0-26
PM Peak	



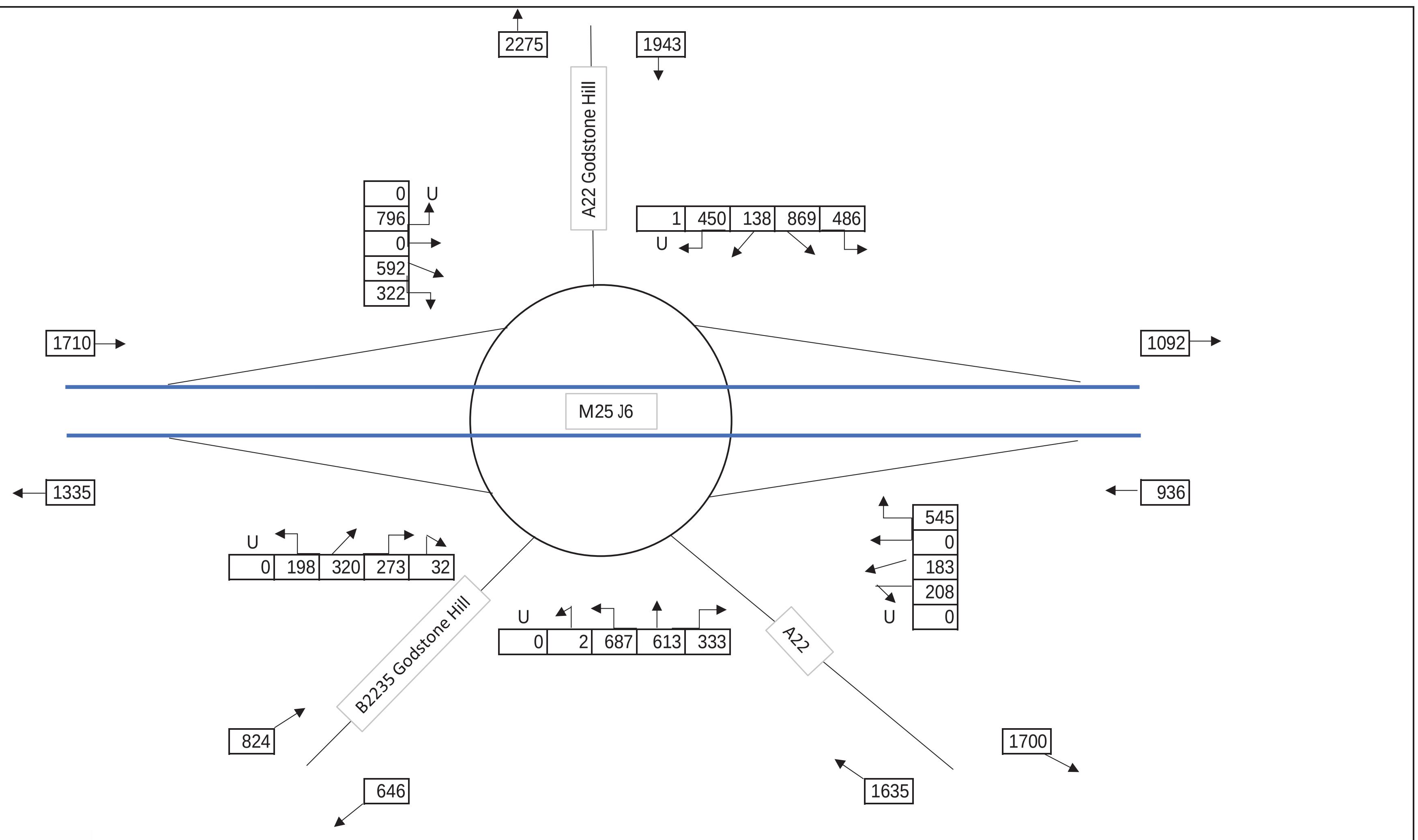
M25 JUNCTION 6

Scenario 2 - 2035

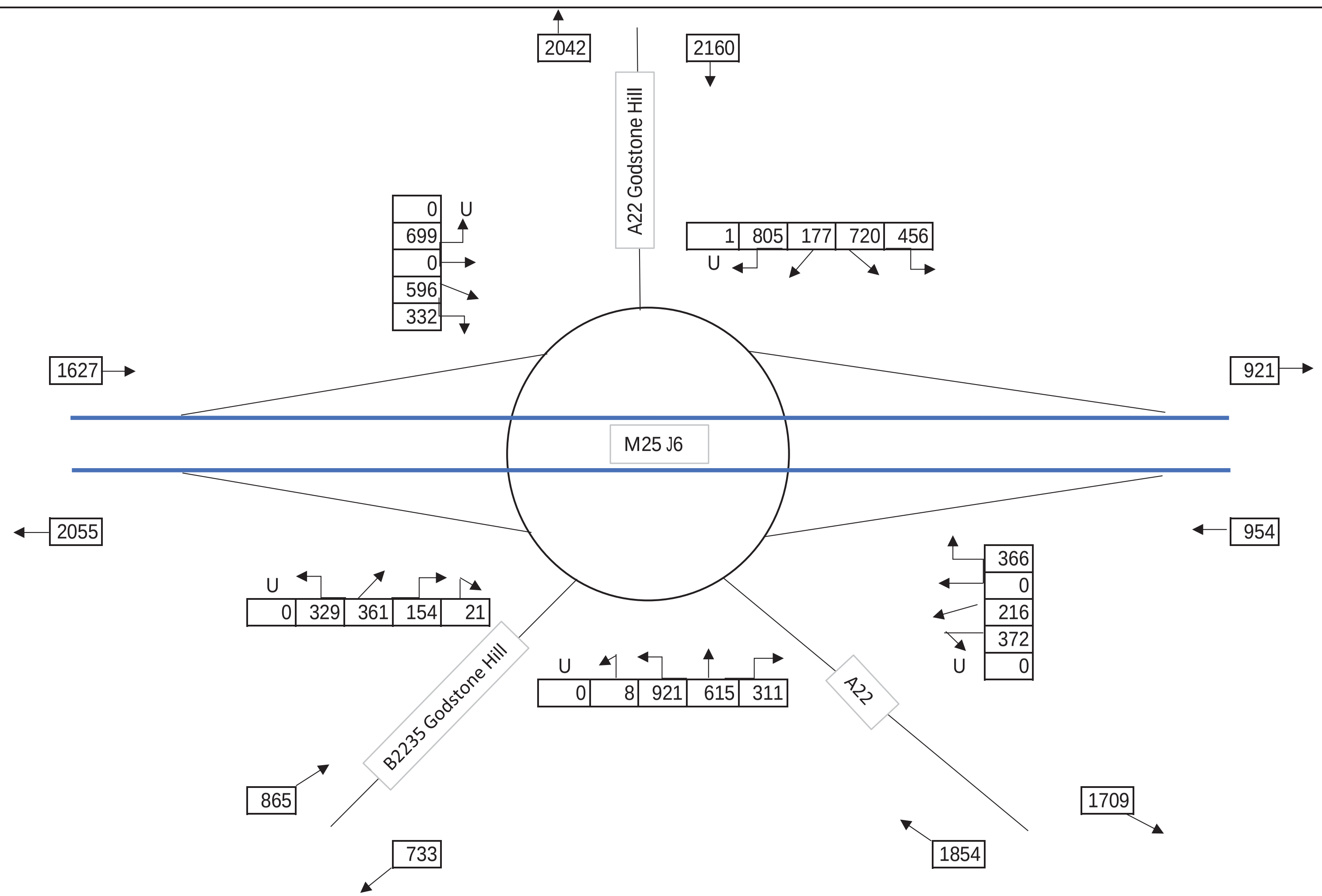
AM Peak

FIG

0-27



M25 JUNCTION 6	FIG
Scenario 2 - 2035	0-28
PM Peak	



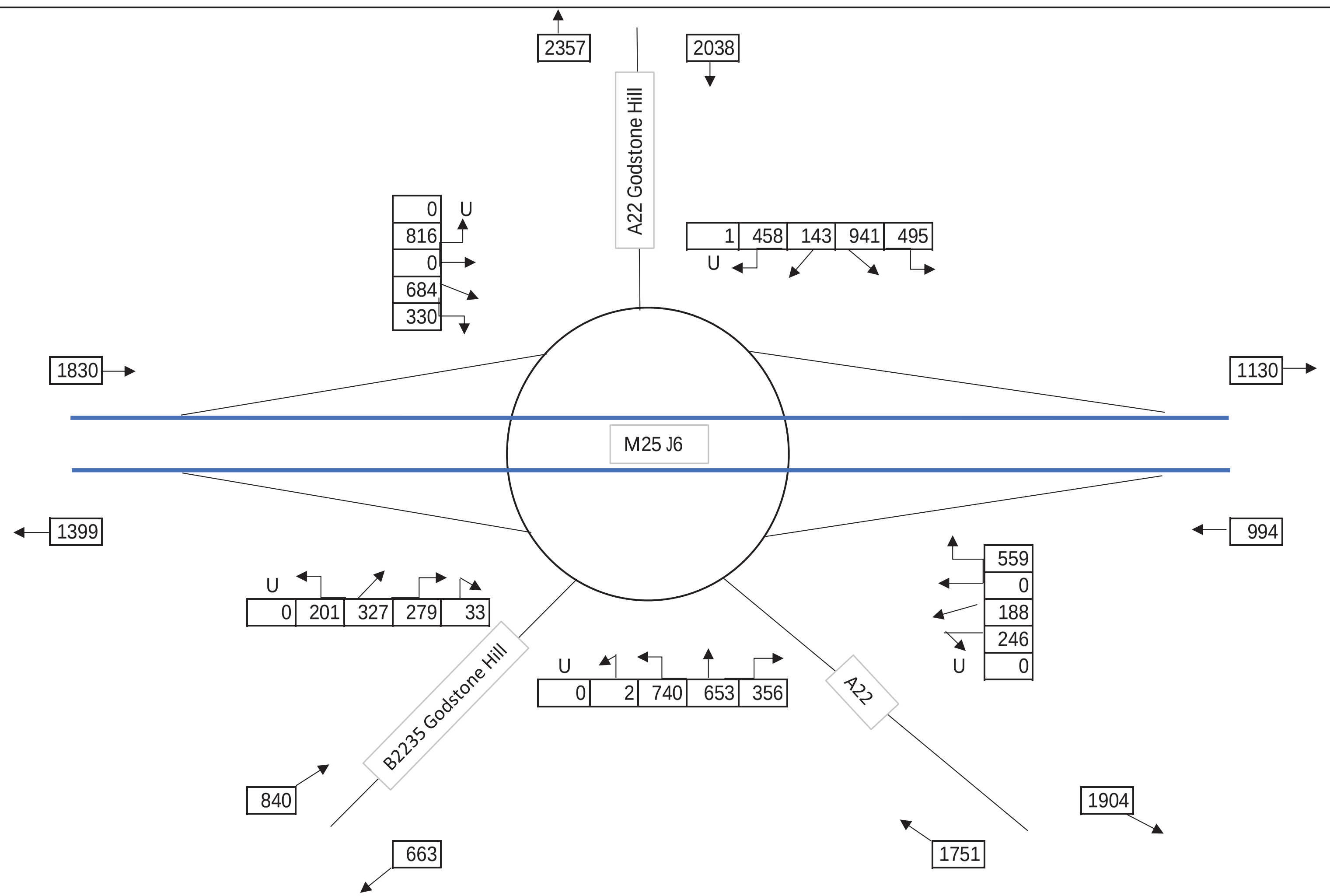
M25 JUNCTION 6

Scenario 2 - 2040

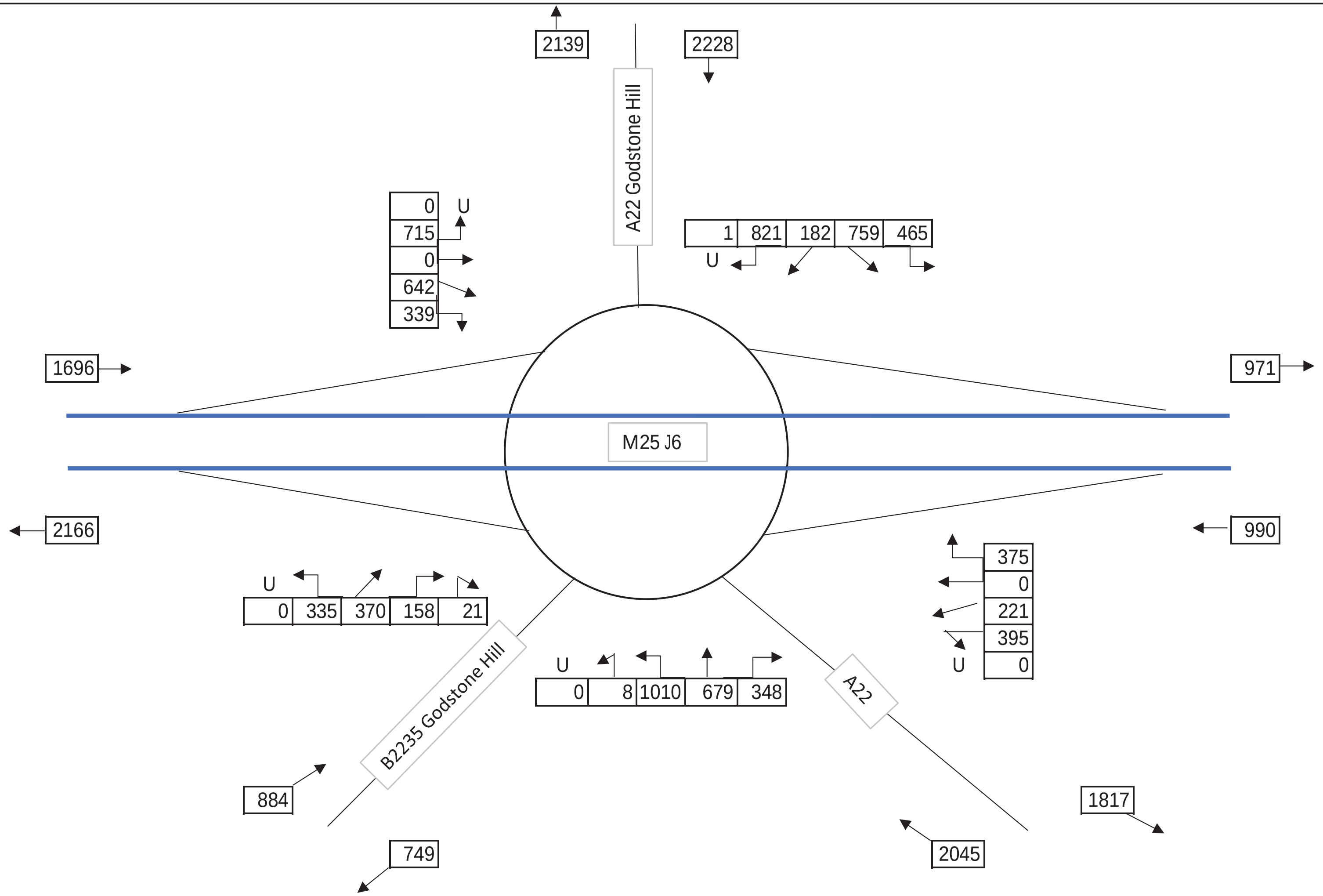
AM Peak

FIG

0-29



M25 JUNCTION 6	FIG
Scenario 2 - 2040	0-30
PM Peak	



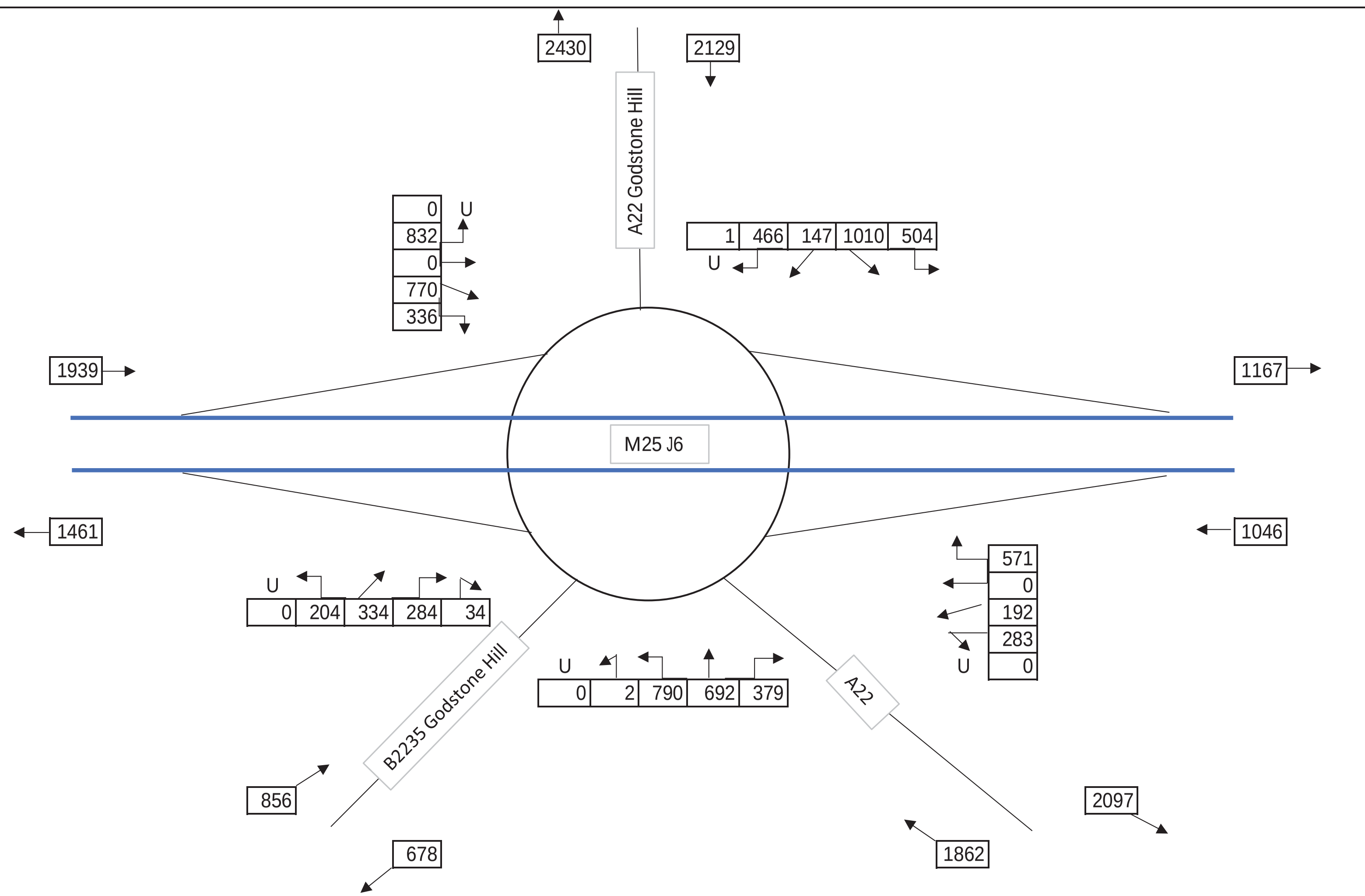
M25 JUNCTION 6

Scenario 2 - 2045

AM Peak

FIG

0-31



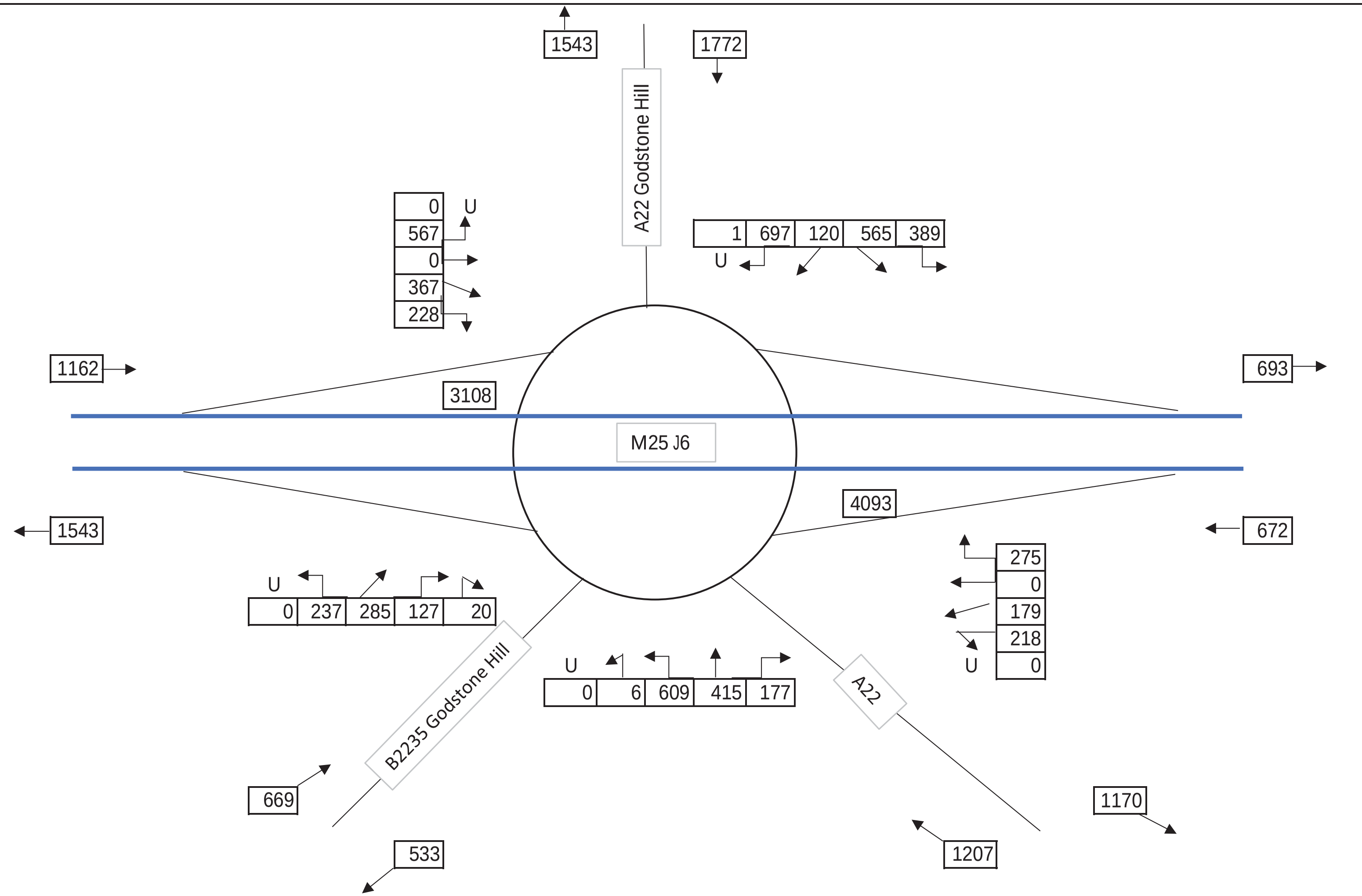
M25 JUNCTION 6

Scenario 2 - 2045

PM Peak

FIG

0-32



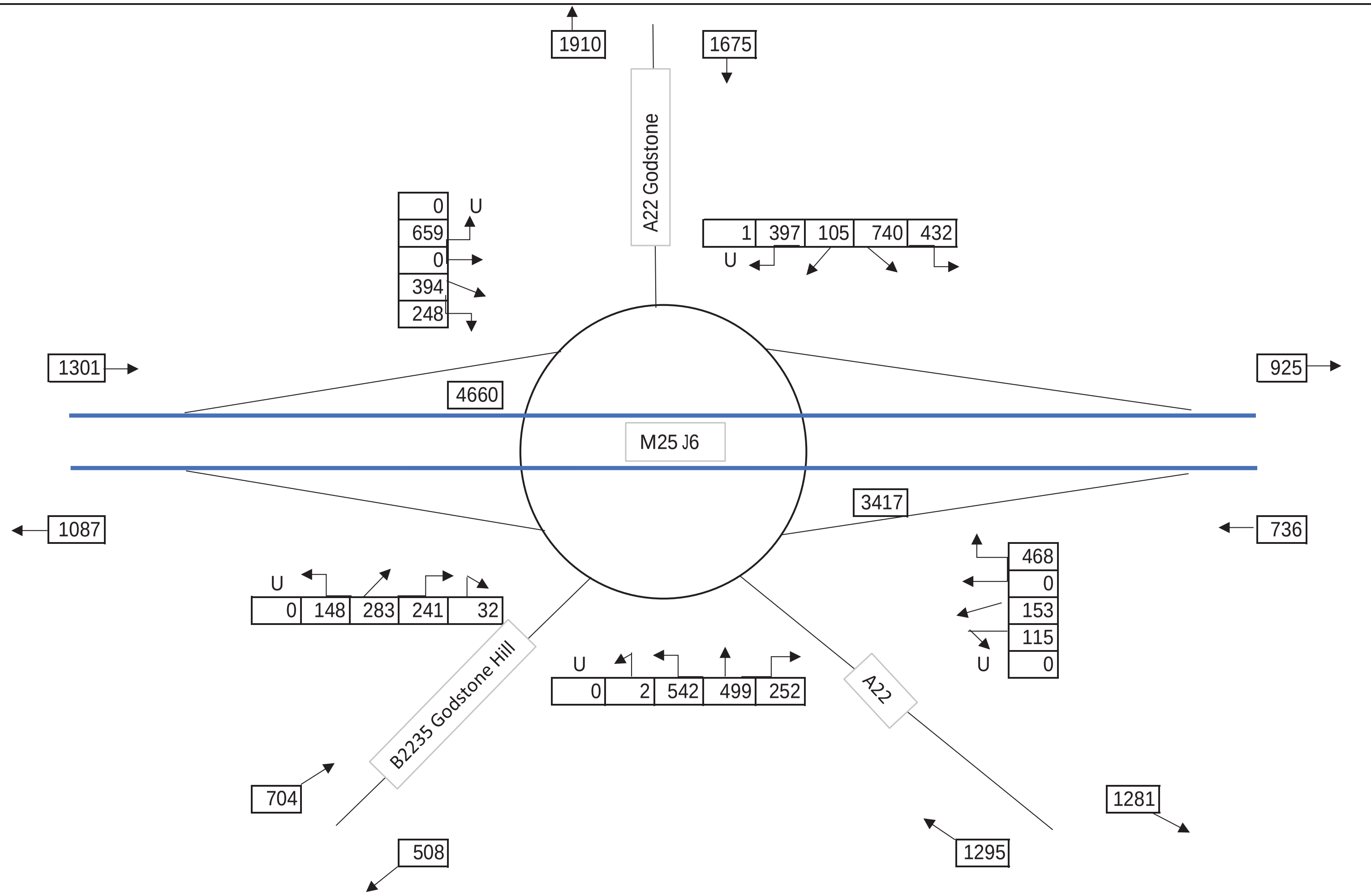
M25 JUNCTION 6

2018 AM Peak

Vehicles

FIG

0-33

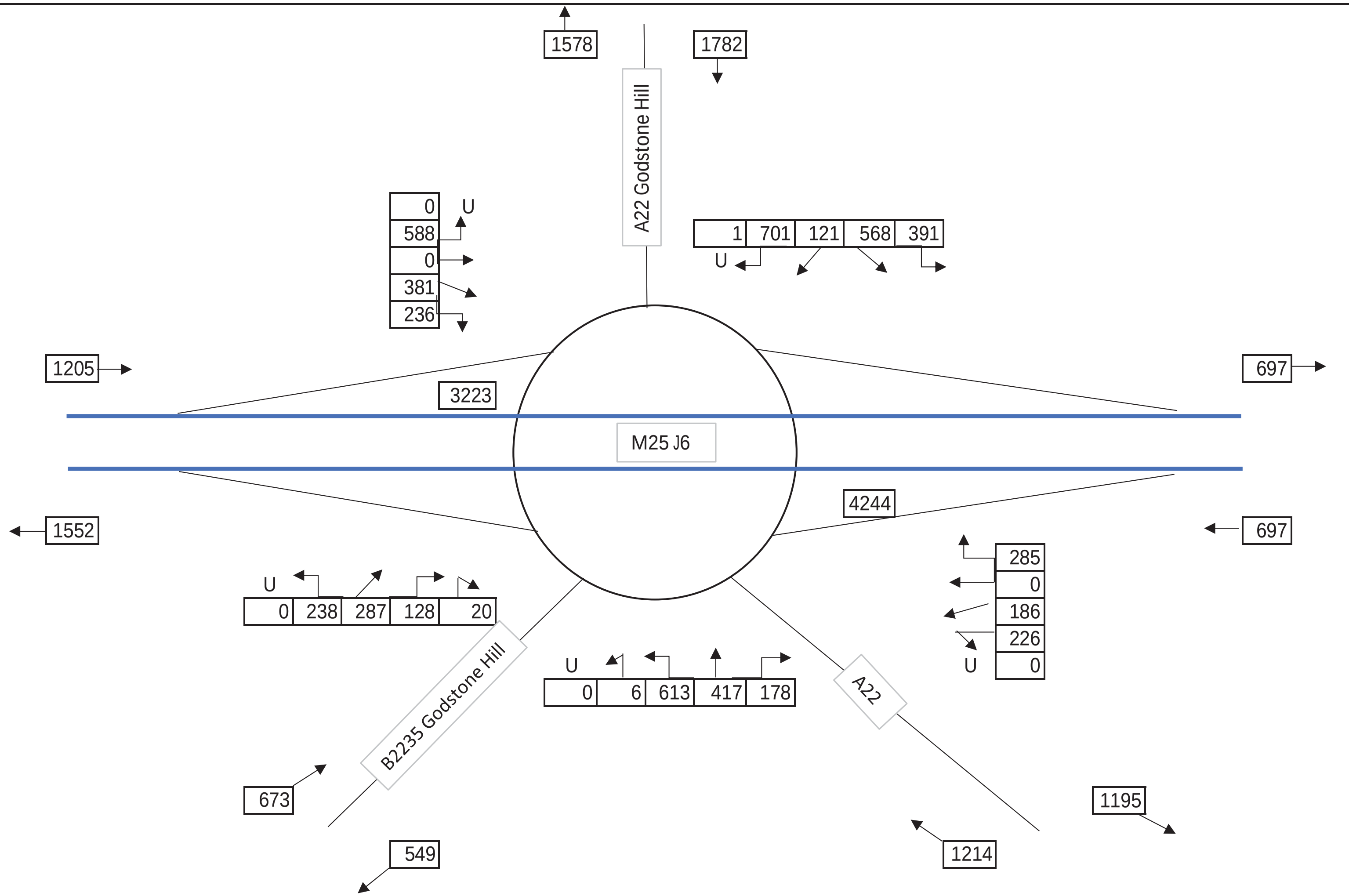


M25 JUNCTION 6

2018 PM Peak

Vehicles

FIG 0-34



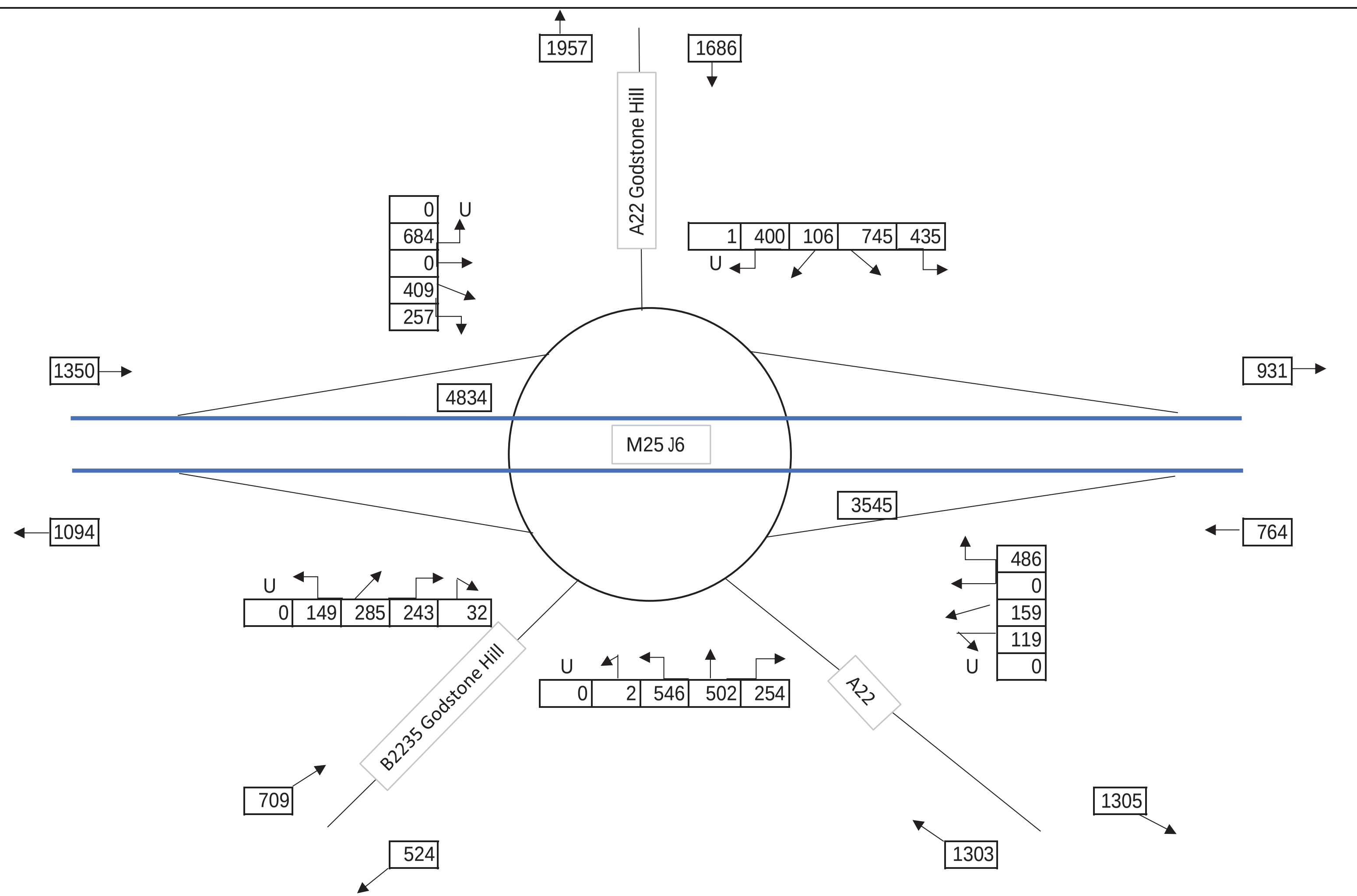
M25 JUNCTION 6

2025 AM Base

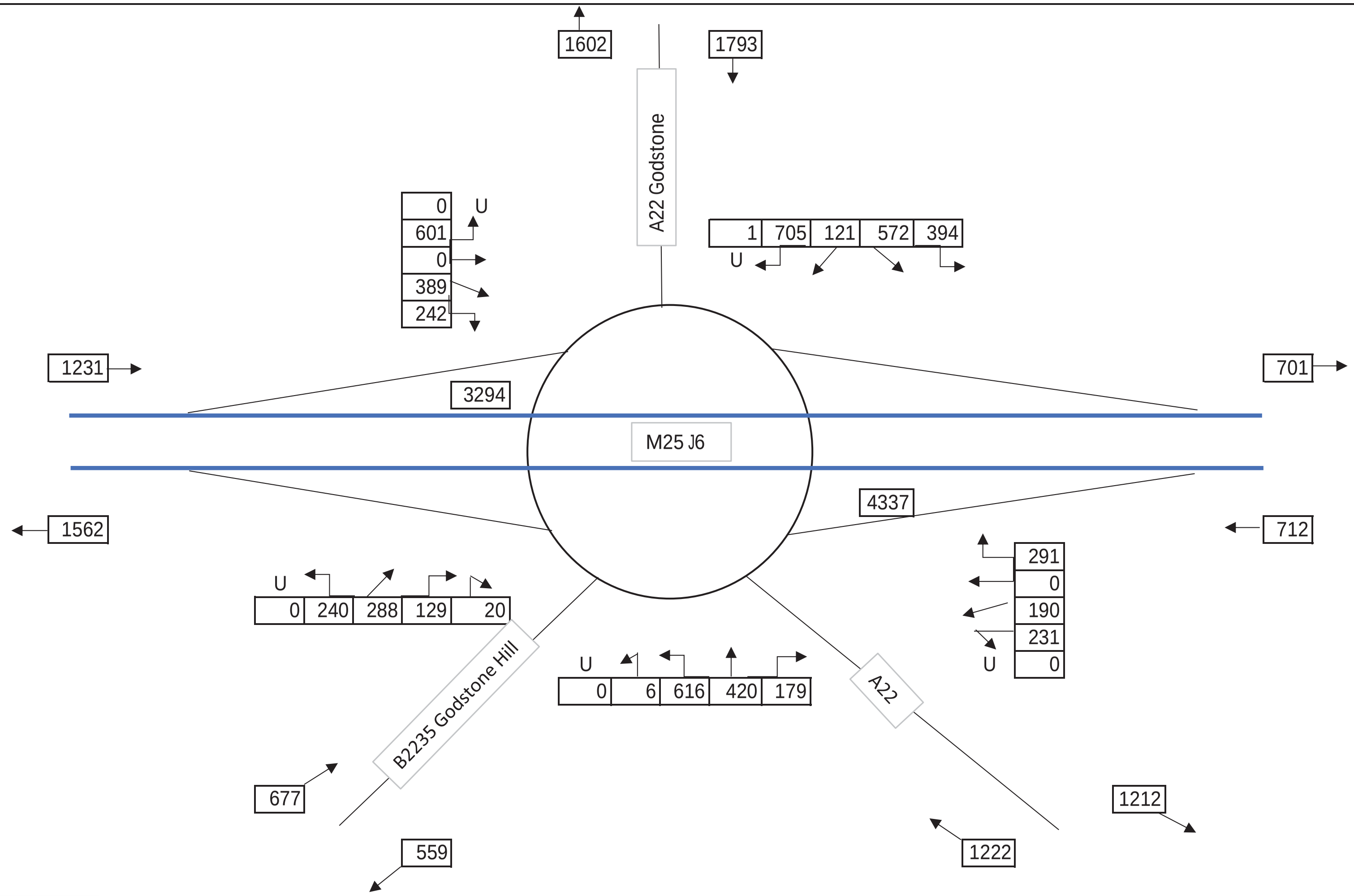
Vehicles

FIG

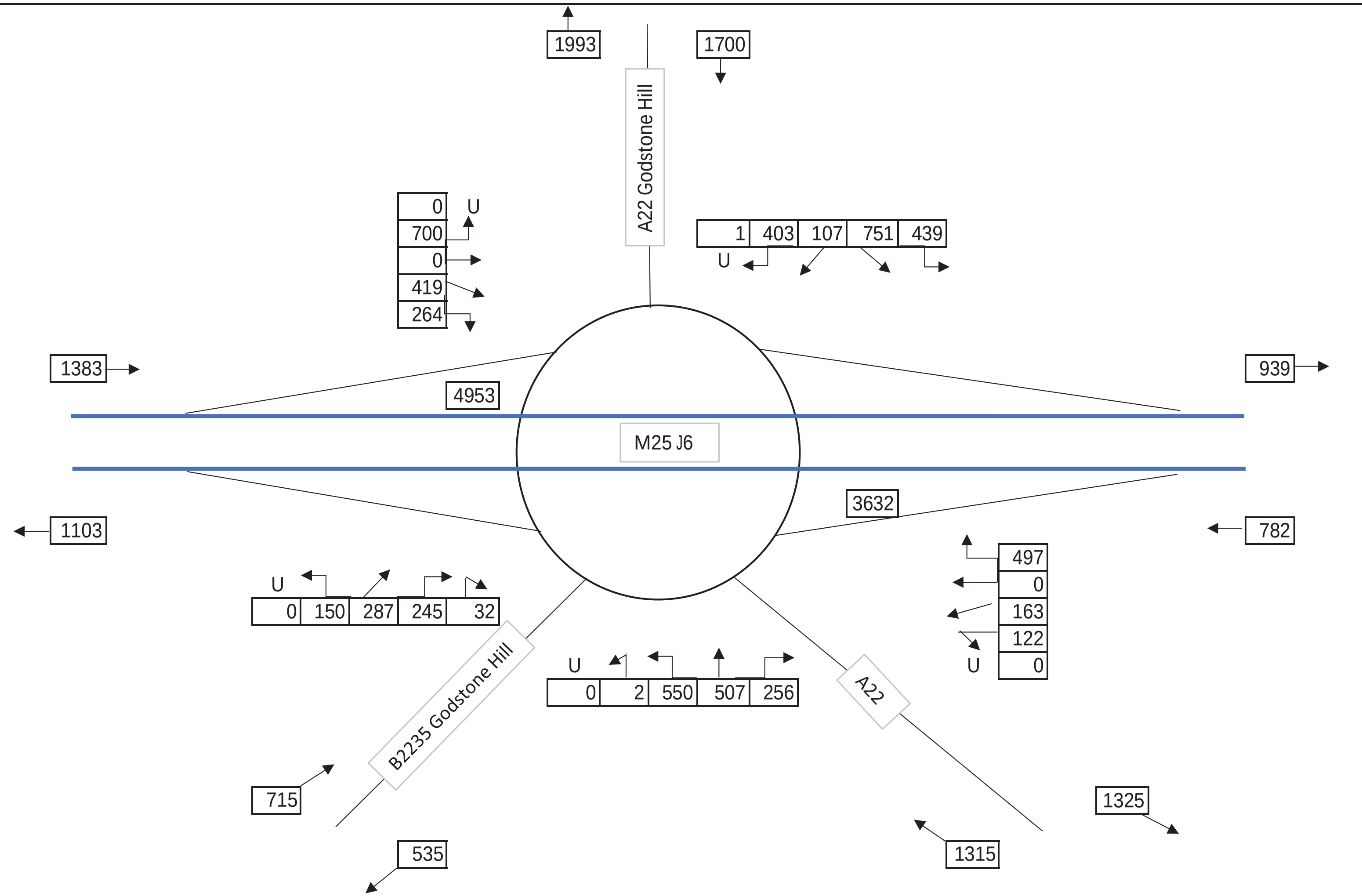
0-35



M25 JUNCTION 6		FIG
2025 PM Peak		0-36
Vehicles		



M25 JUNCTION 6	FIG 0-37
2030 AM Peak	
Vehicles	

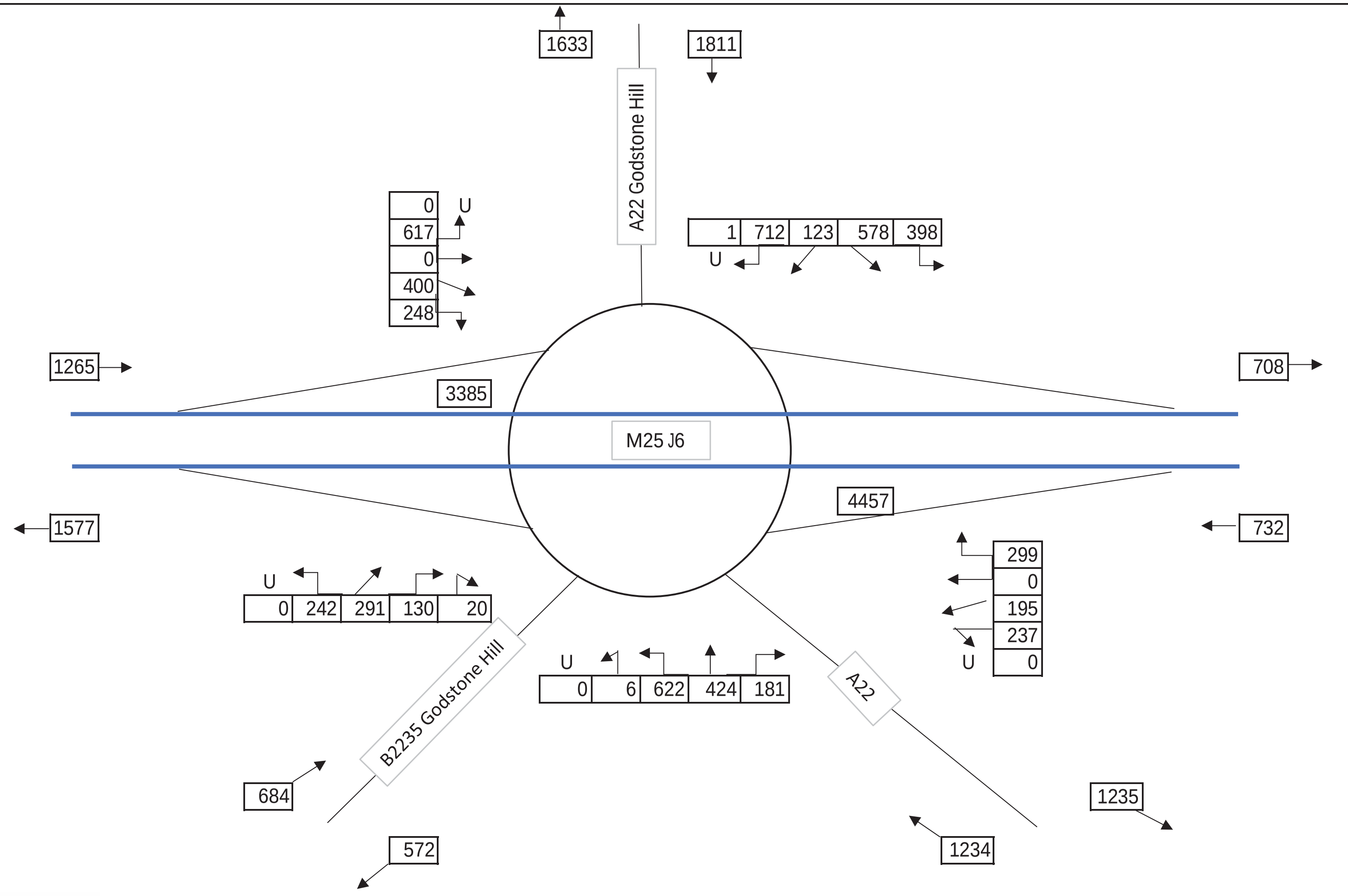


M25 JUNCTION 6

2030 PM Peak

Vehicles

FIG 0-38

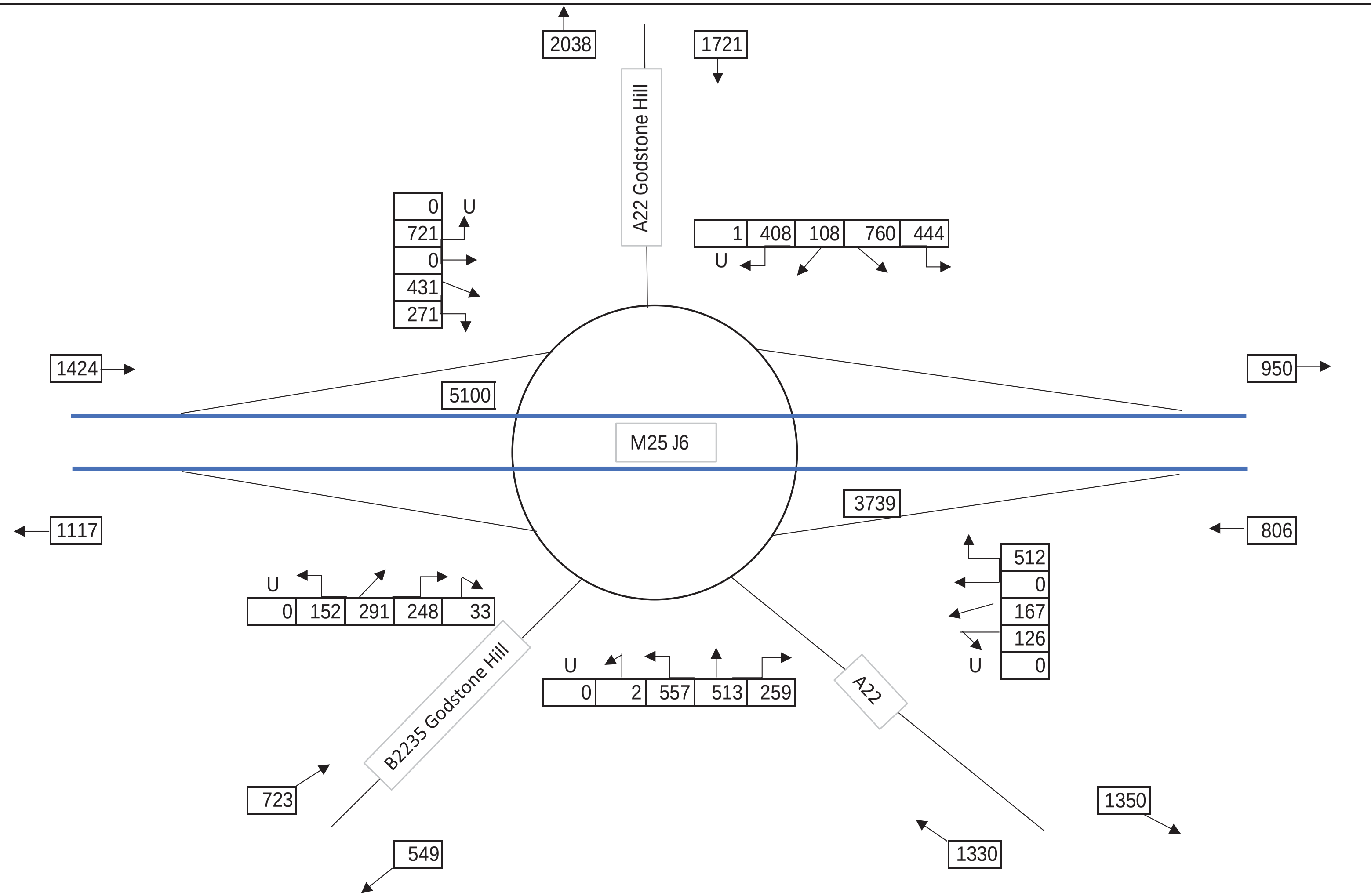


M25 JUNCTION 6

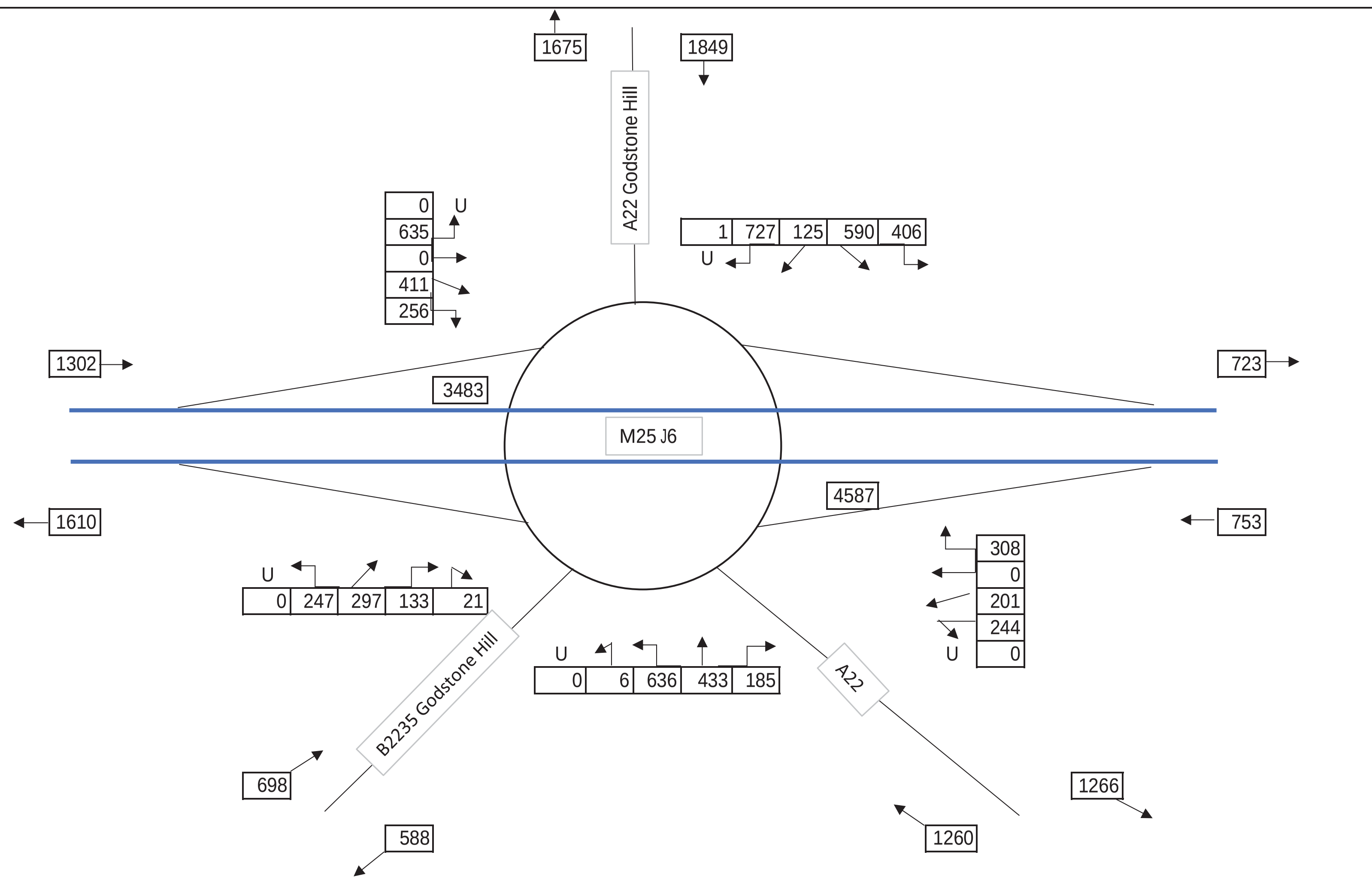
2035 AM Peak

Vehicles

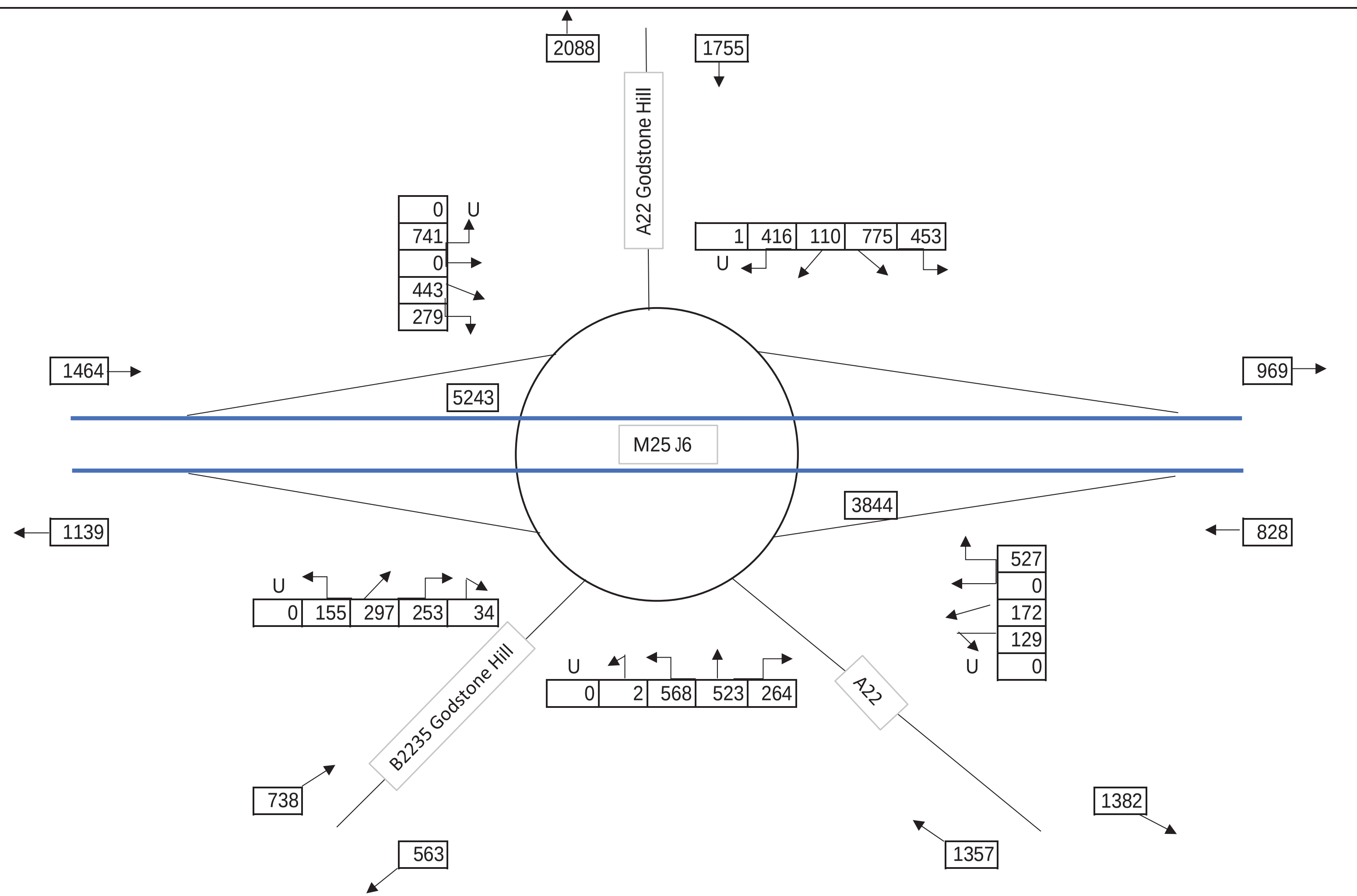
FIG 0-39



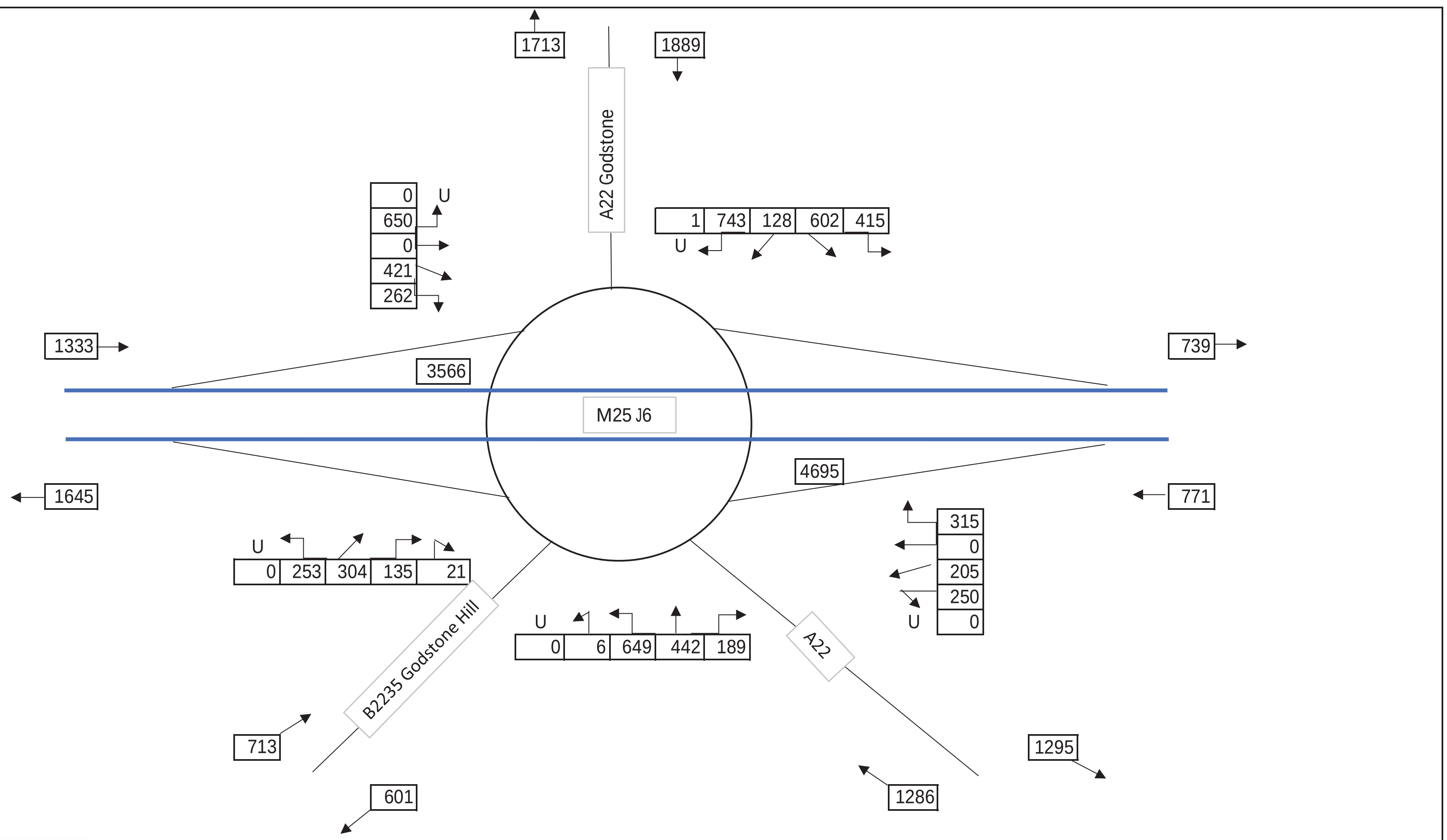
M25 JUNCTION 6		FIG
2035 PM Peak		0-40
Vehicles		



M25 JUNCTION 6		FIG
	2040 AM Base	0-41
	Vehicles	



M25 JUNCTION 6		FIG
	2040 PM Base	0-42
	Vehicles	

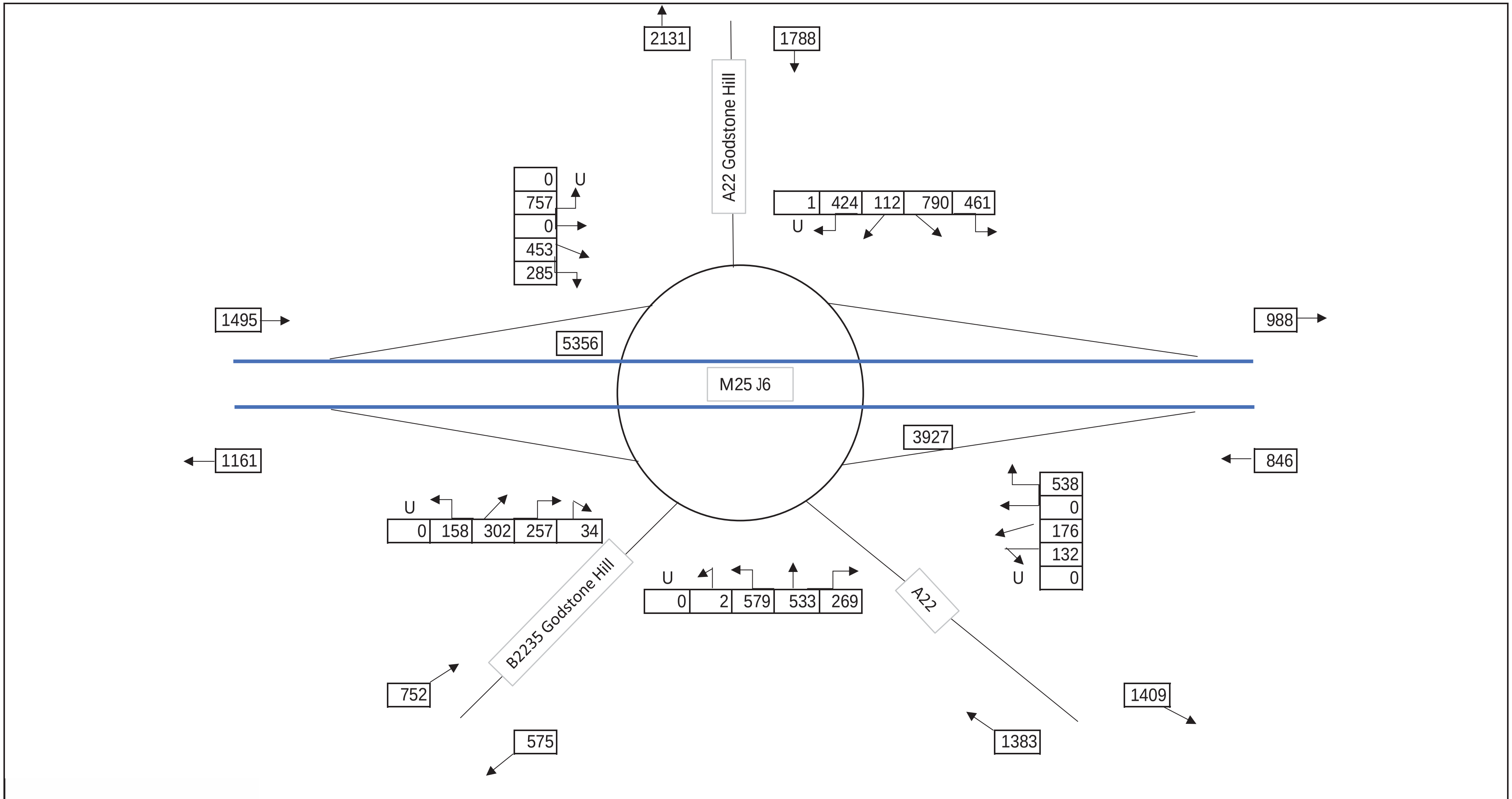


M25 JUNCTION 6

2045 AM Peak

Vehicles

FIG 0-43



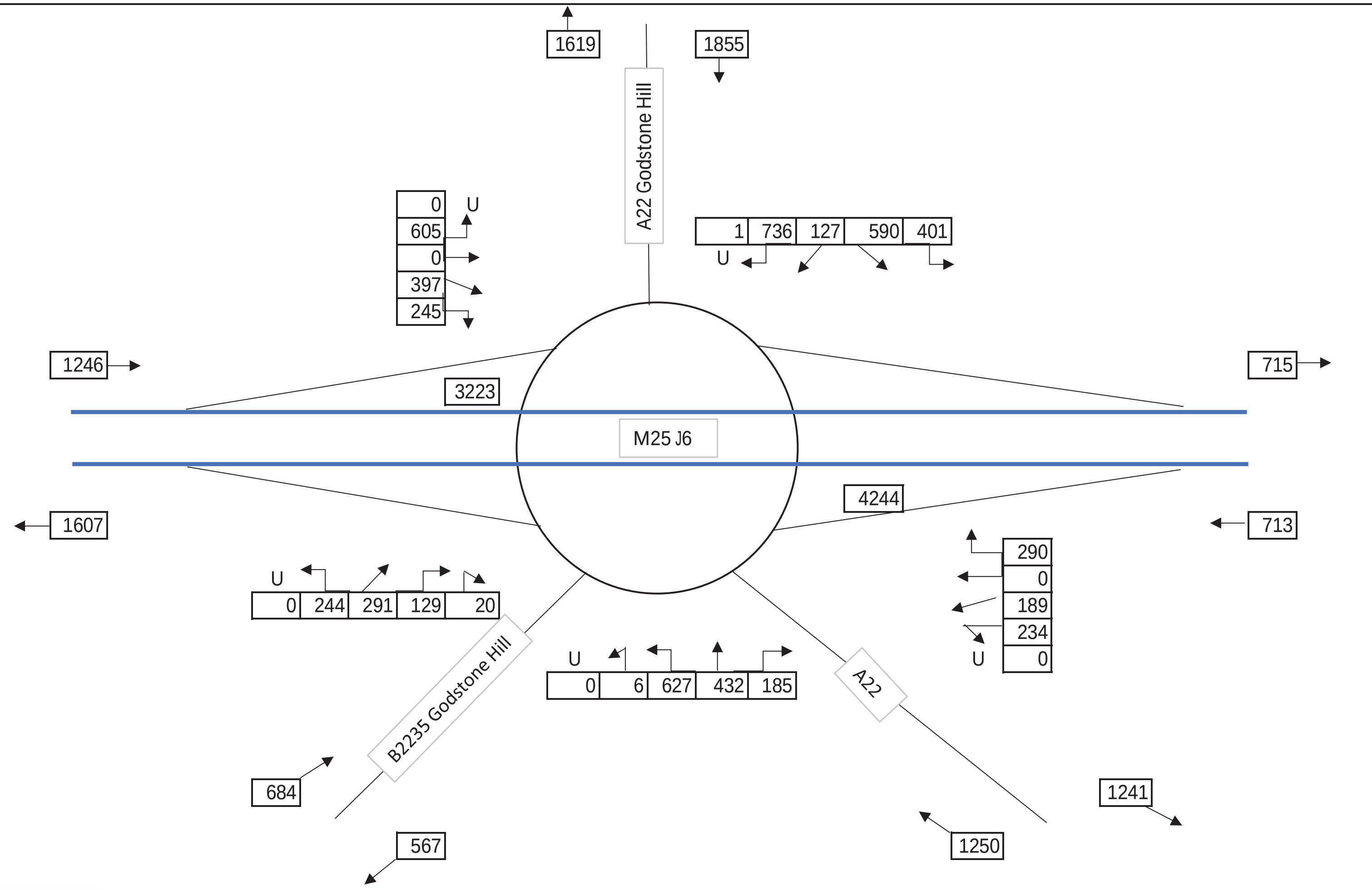
M25 JUNCTION 6

2045 PM Peak

Vehicles

FIG

0-44



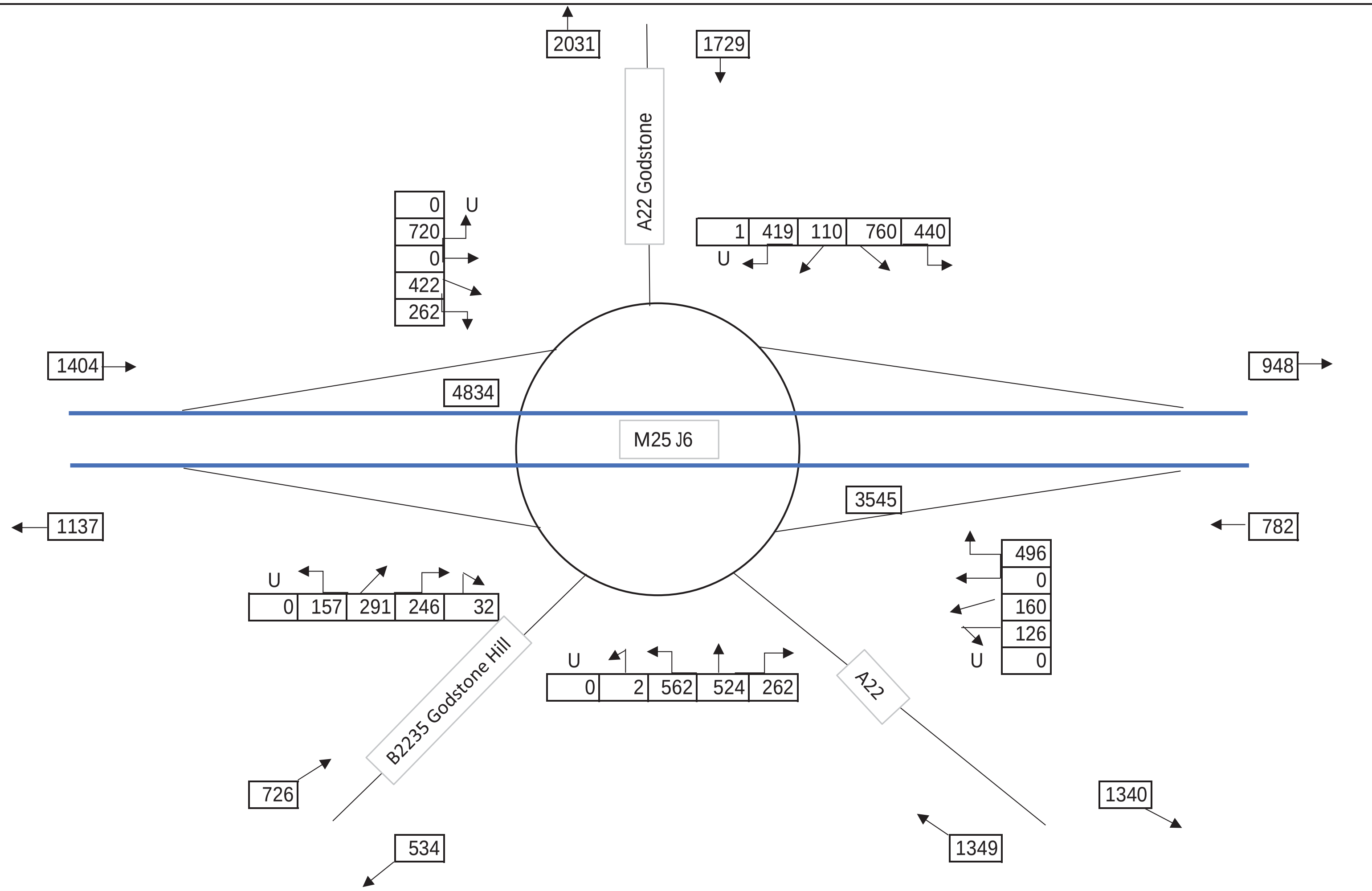
M25 JUNCTION 6

Scenario 1 2025 AM Peak

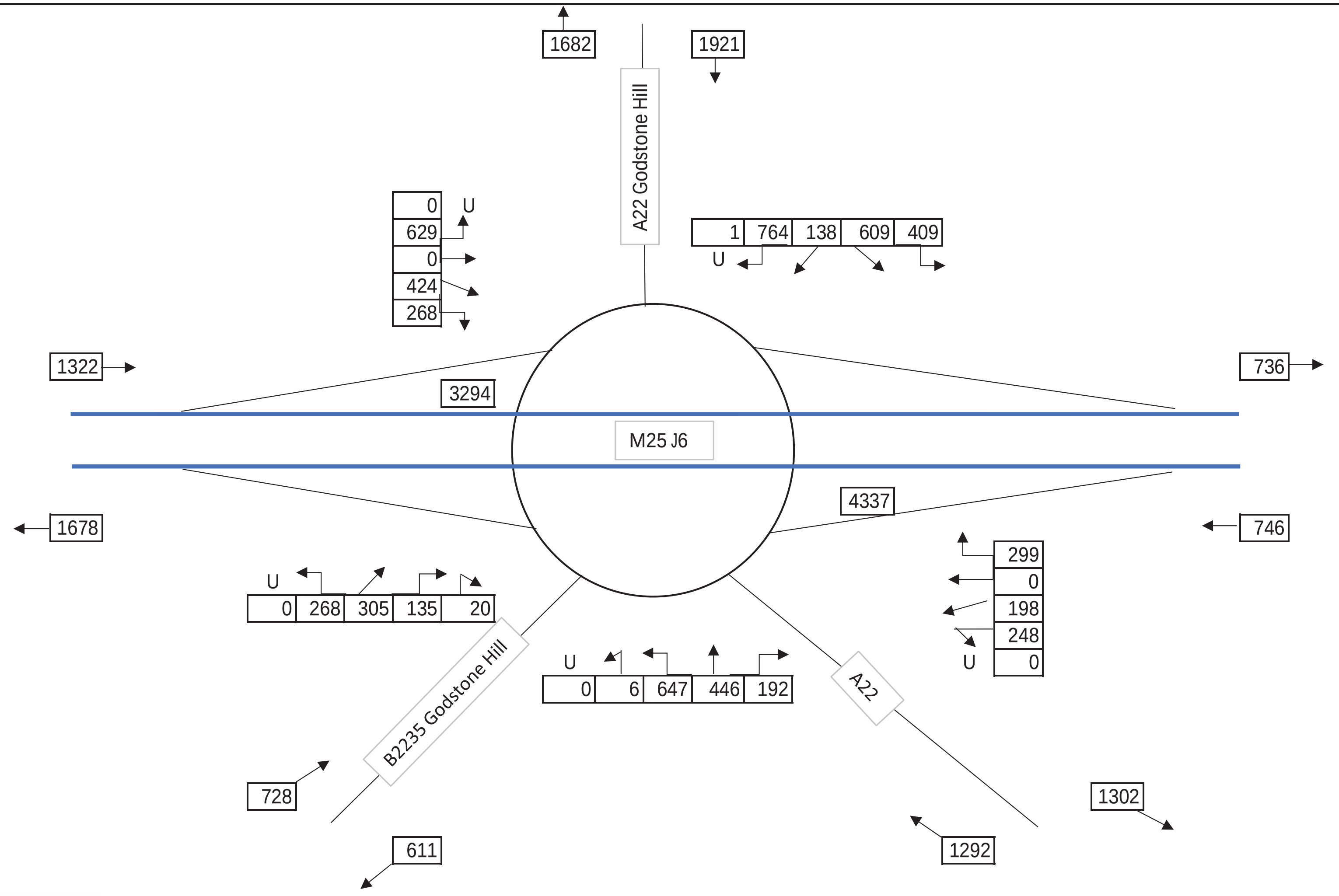
Vehicles

FIG

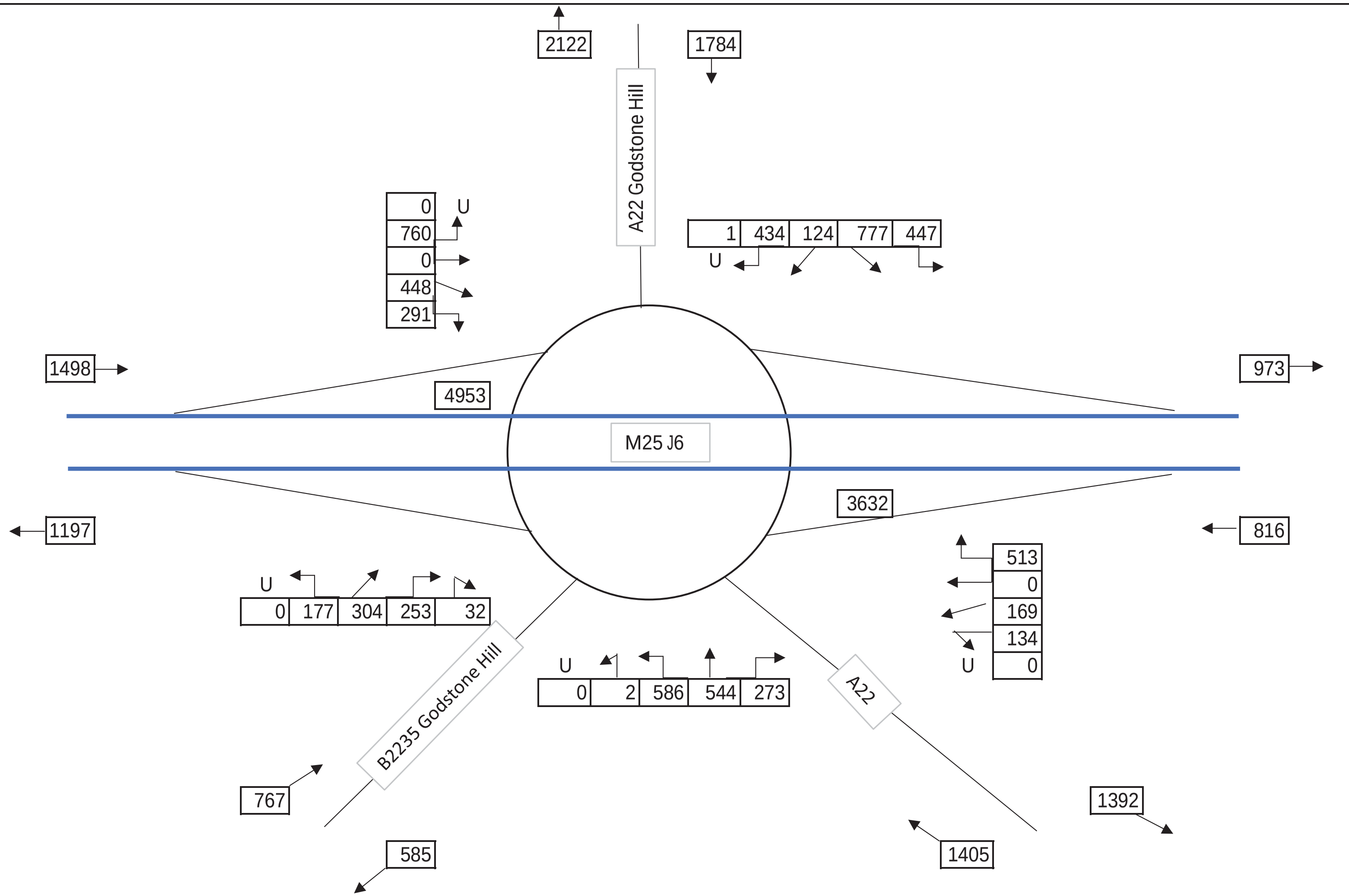
0-45



M25 JUNCTION 6	FIG
Scenario 1 2025 PM Peak	0-46
Vehicles	



M25 JUNCTION 6	FIG
Scenario 1 2030 AM Peak	0-47
Vehicles	



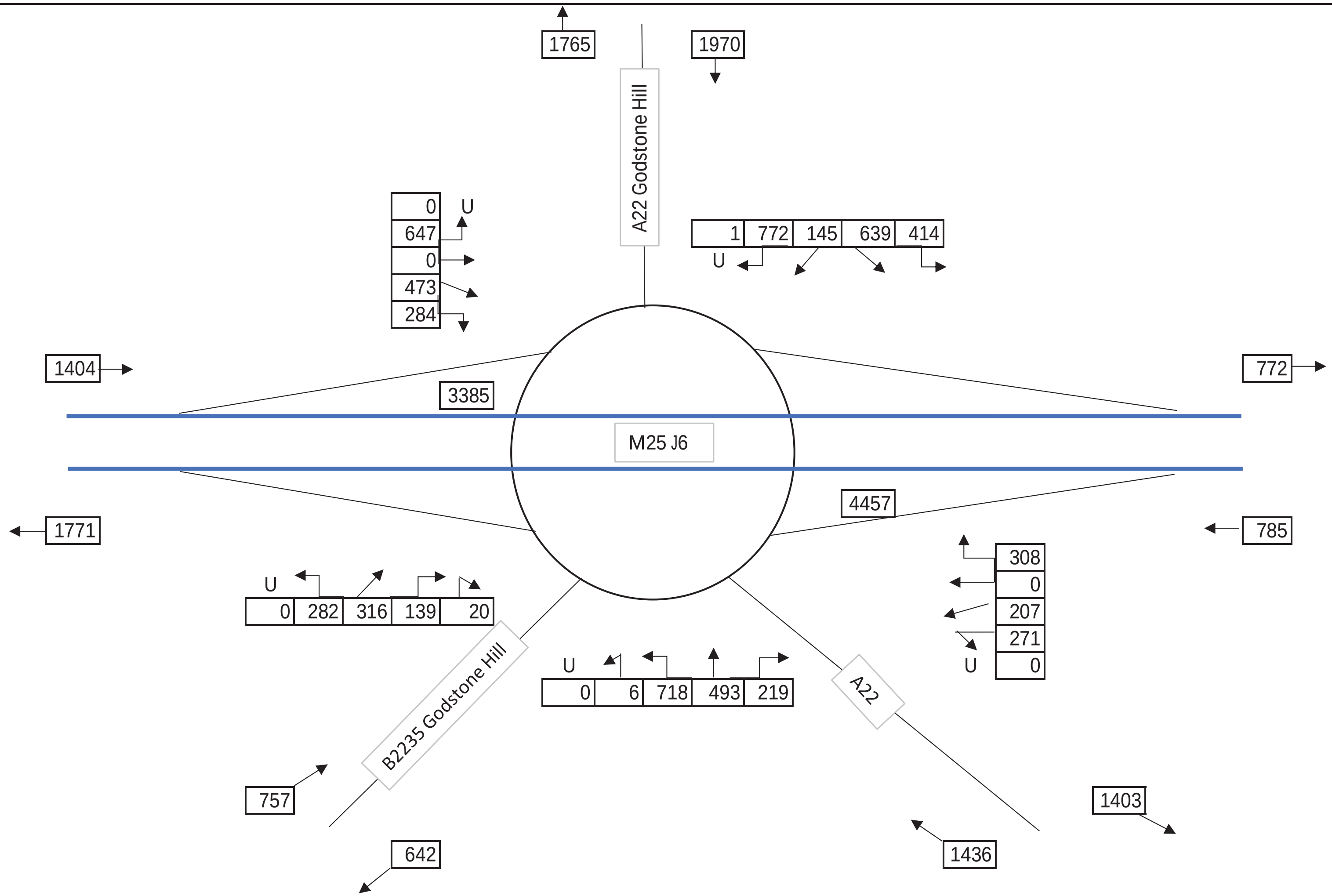
M25 JUNCTION 6

Scenario 1 2030 PM Peak

Vehicles

FIG

0-48



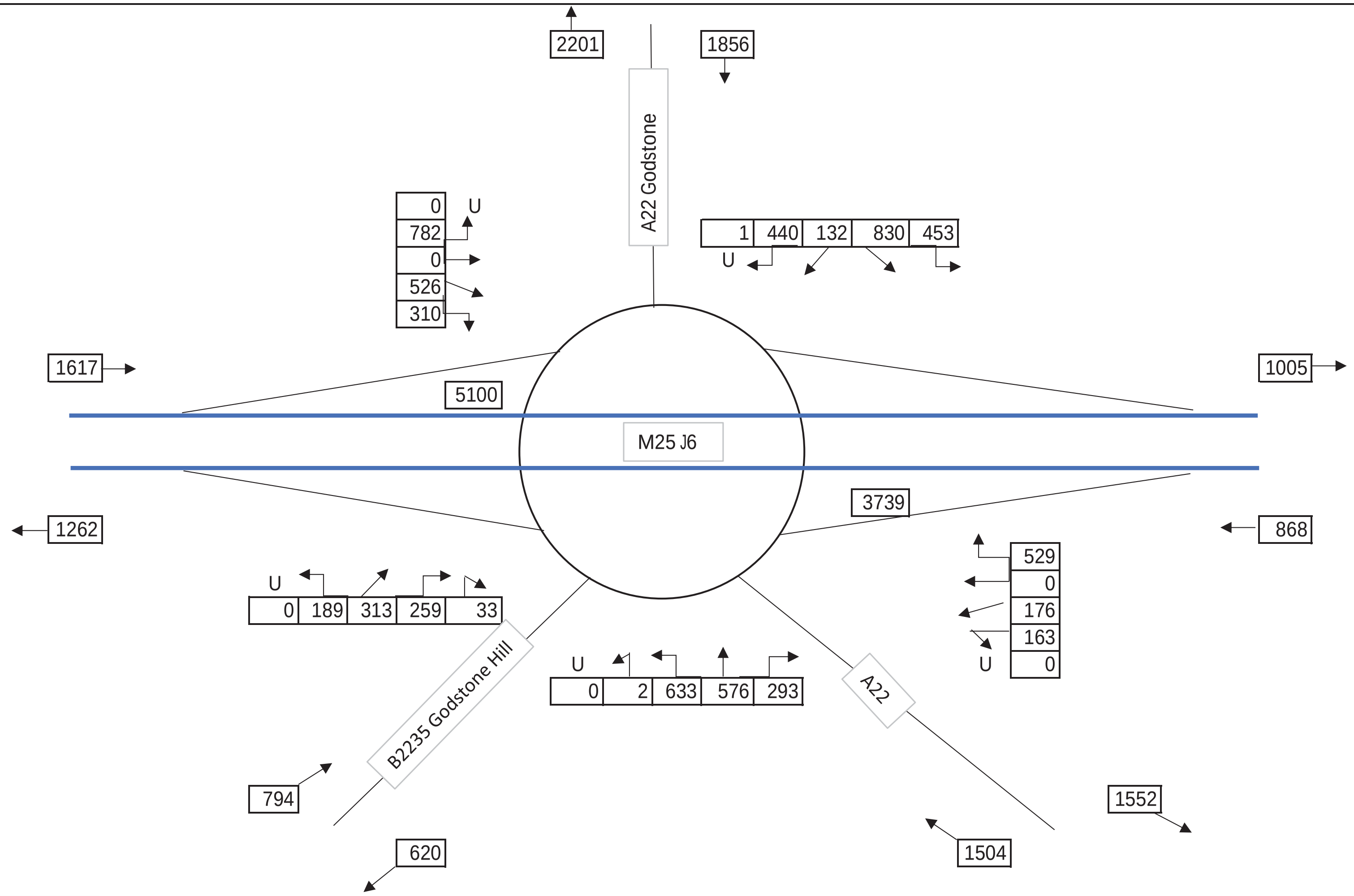
M25 JUNCTION 6

Scenario 1 2035 AM Peak

Vehicles

FIG

0-49



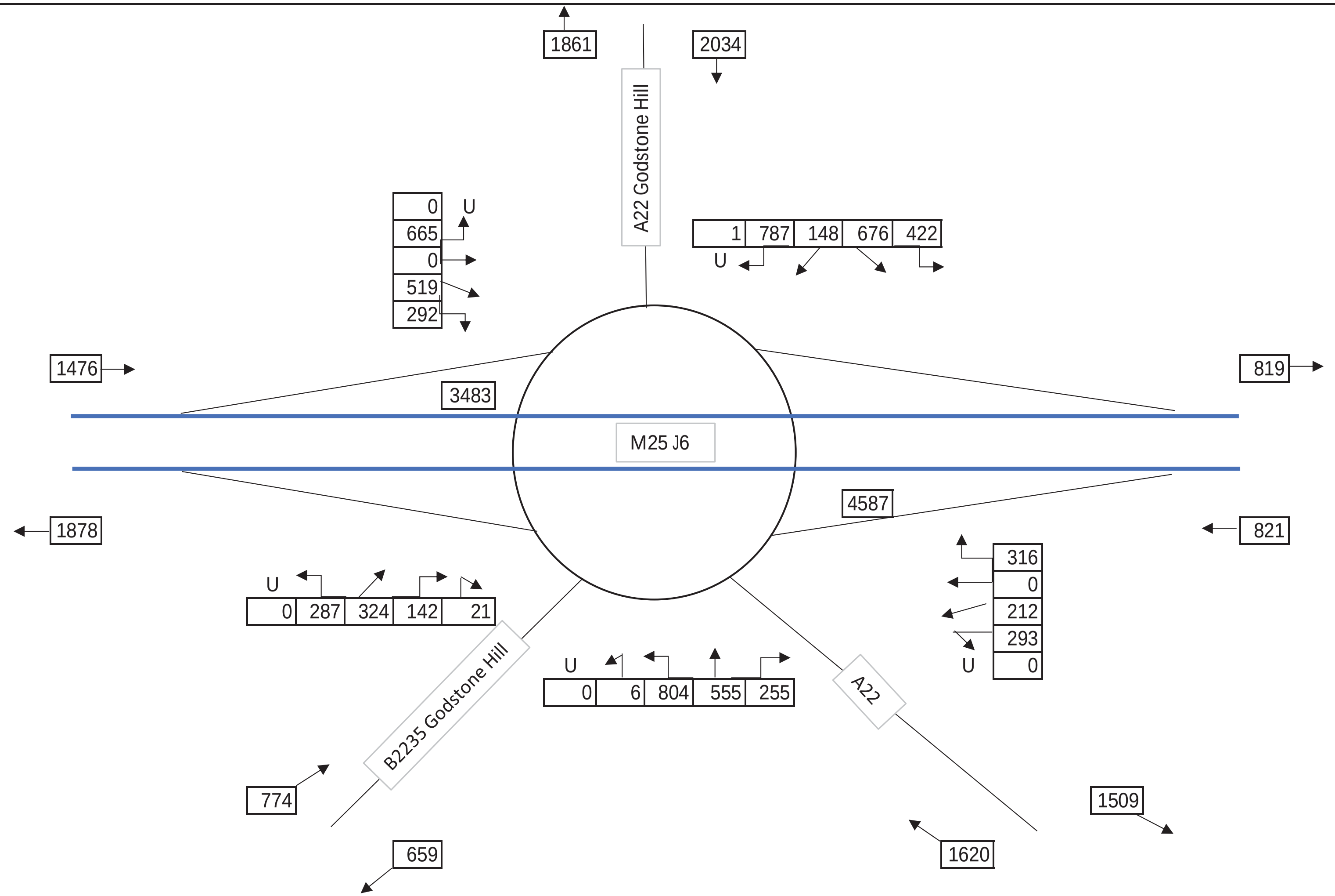
M25 JUNCTION 6

Scenario 1 2035 PM Peak

Vehicles

FIG

0-50



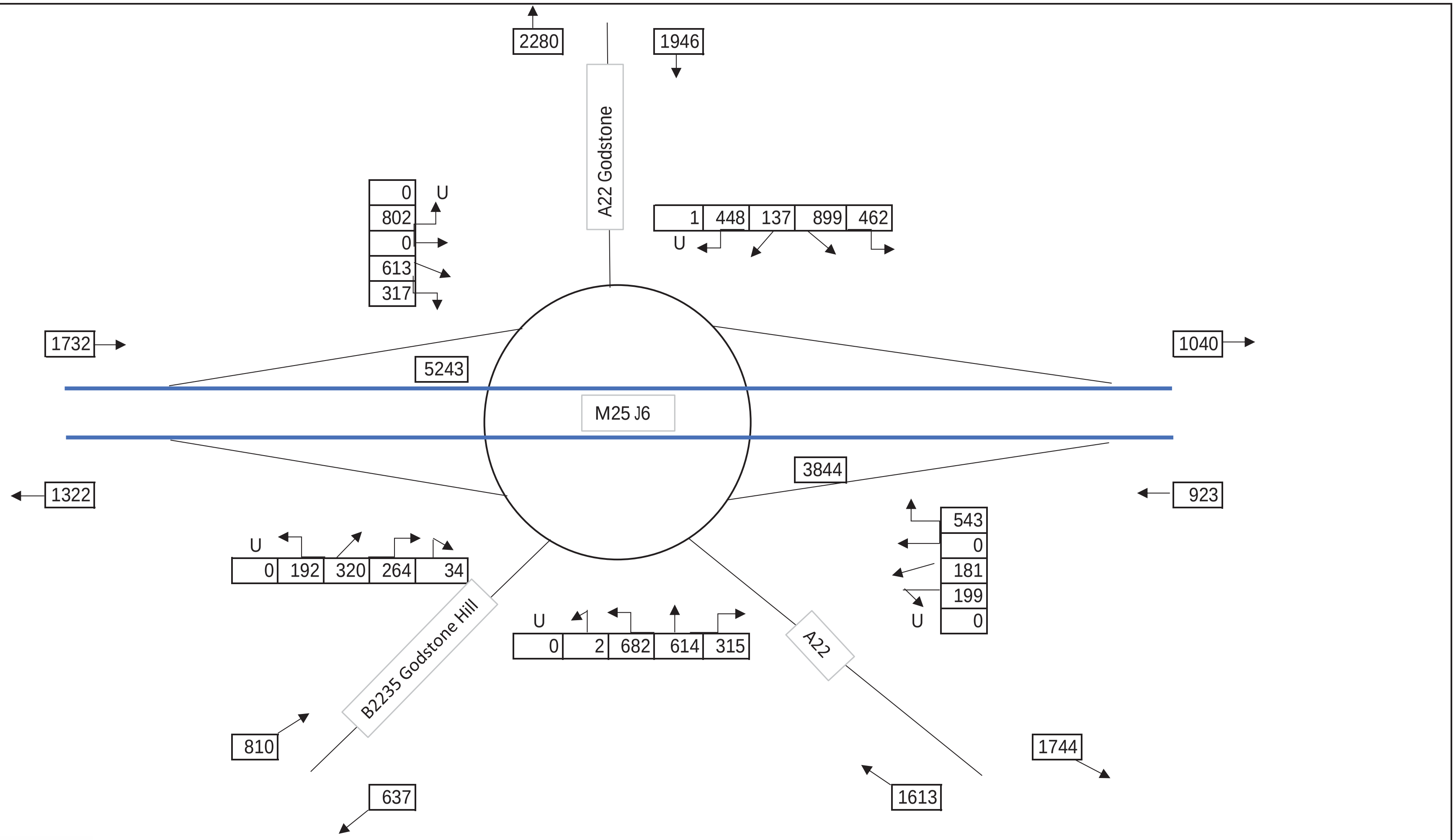
M25 JUNCTION 6

Scenario 1 2040 AM Peak

Vehicles

FIG

0-51

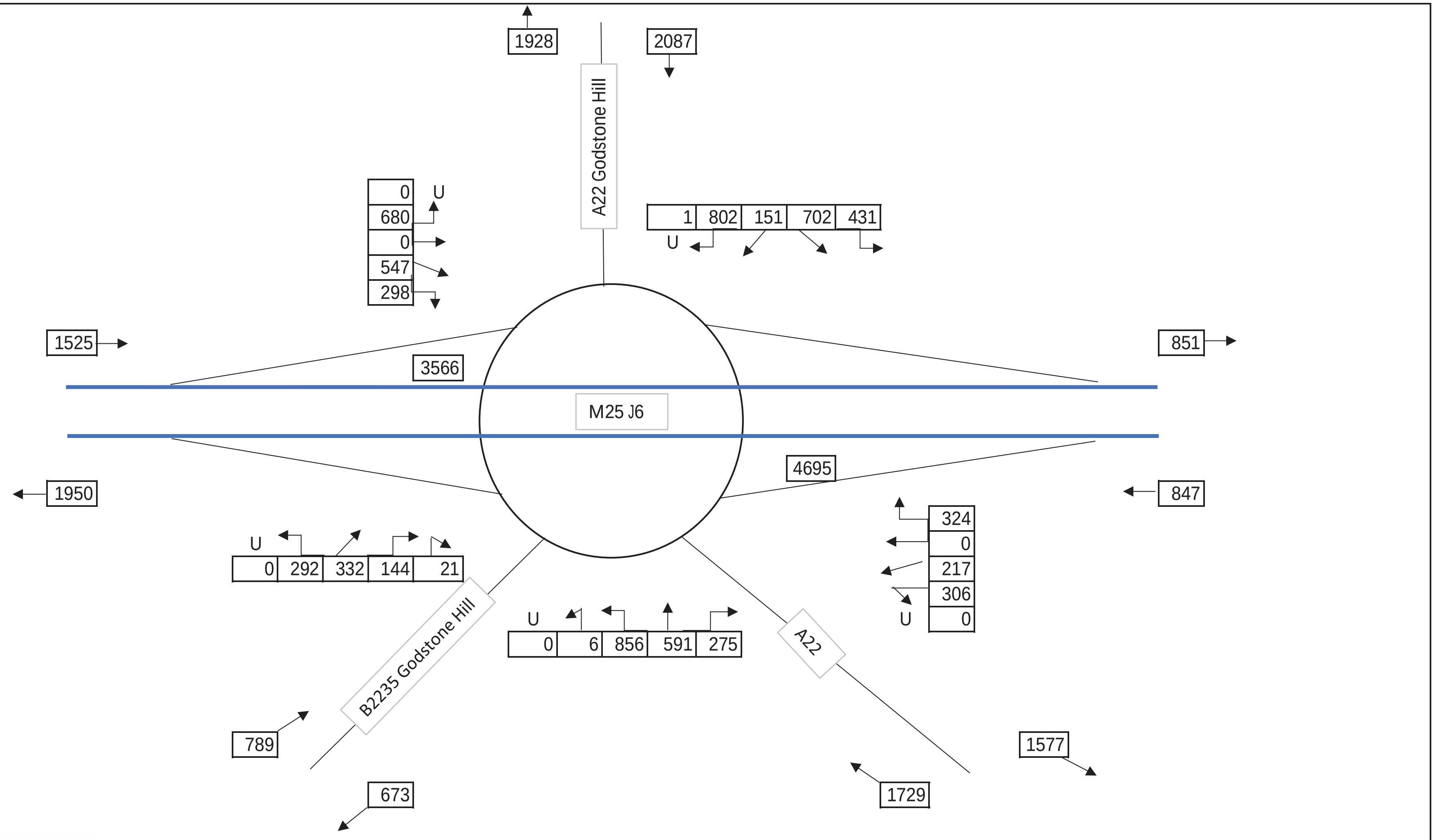


M25 JUNCTION 6

Scenario 1 2040 PM Peak

Vehicles

FIG 0-52

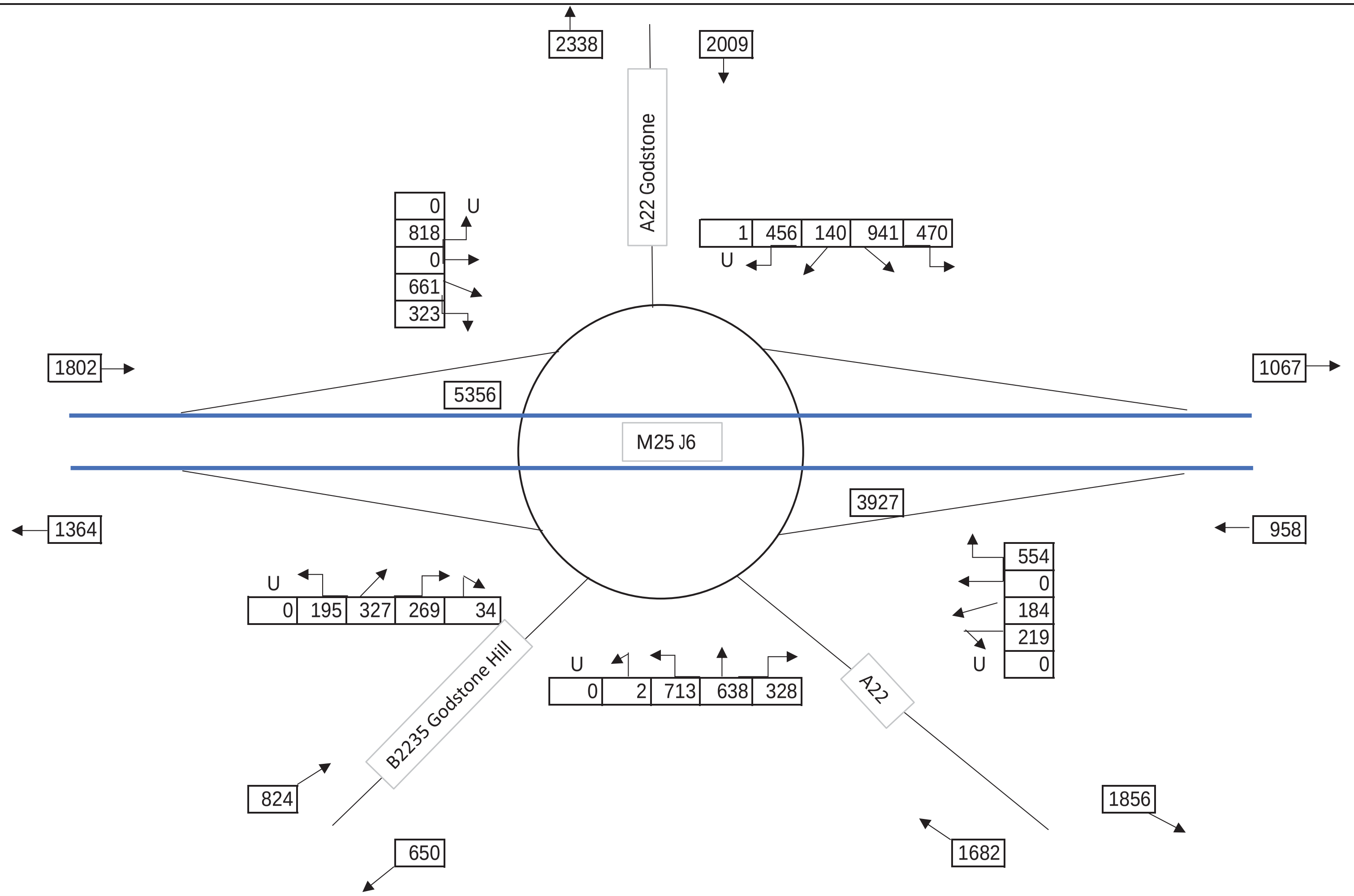


M25 JUNCTION 6

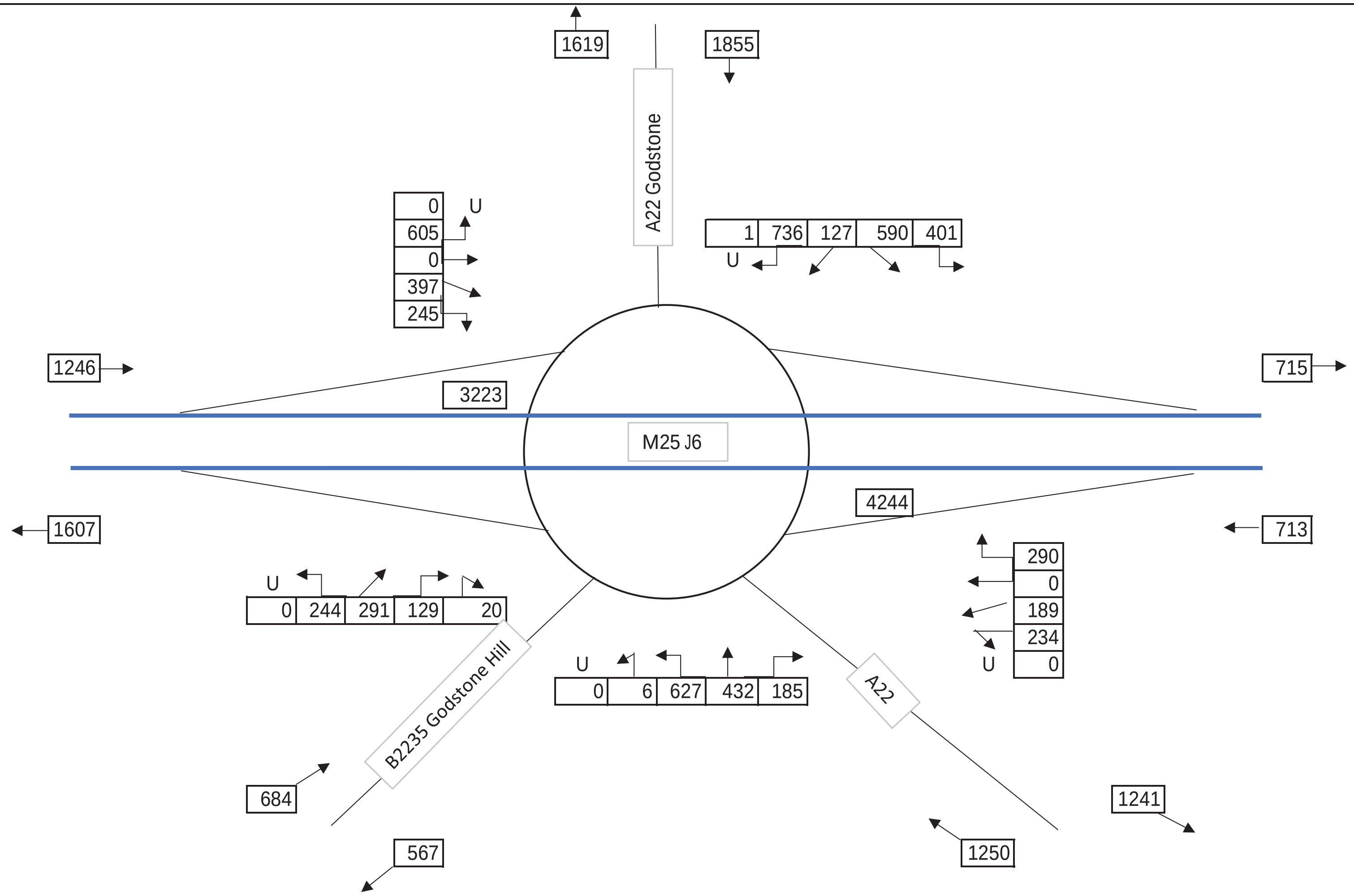
Scenario 1 2045 AM Peak

Vehicles

FIG 0-53



M25 JUNCTION 6	FIG
Scenario 1 2045 PM Peak	0-54
Vehicles	



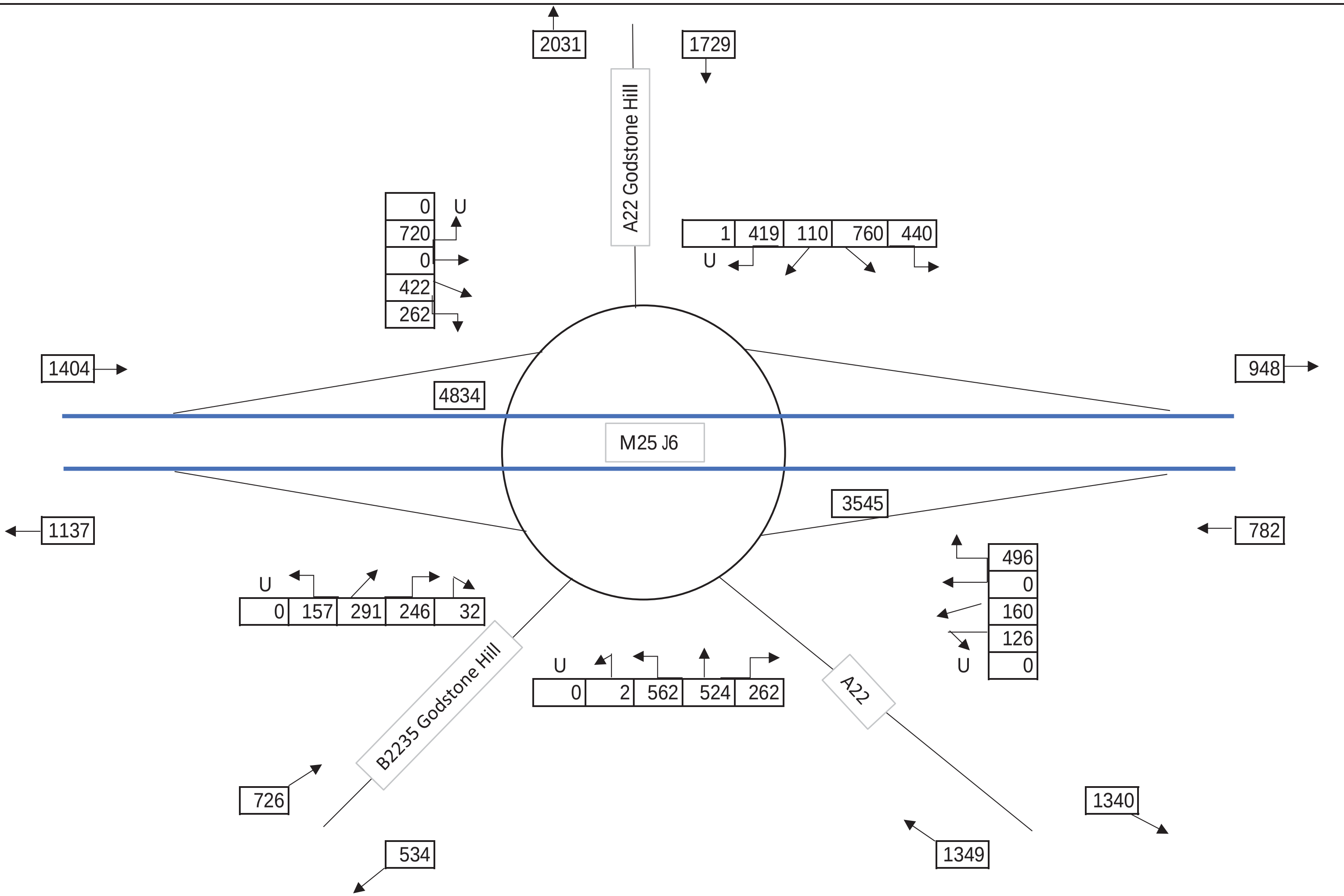
M25 JUNCTION 6

Scenario 2 2025 AM Peak

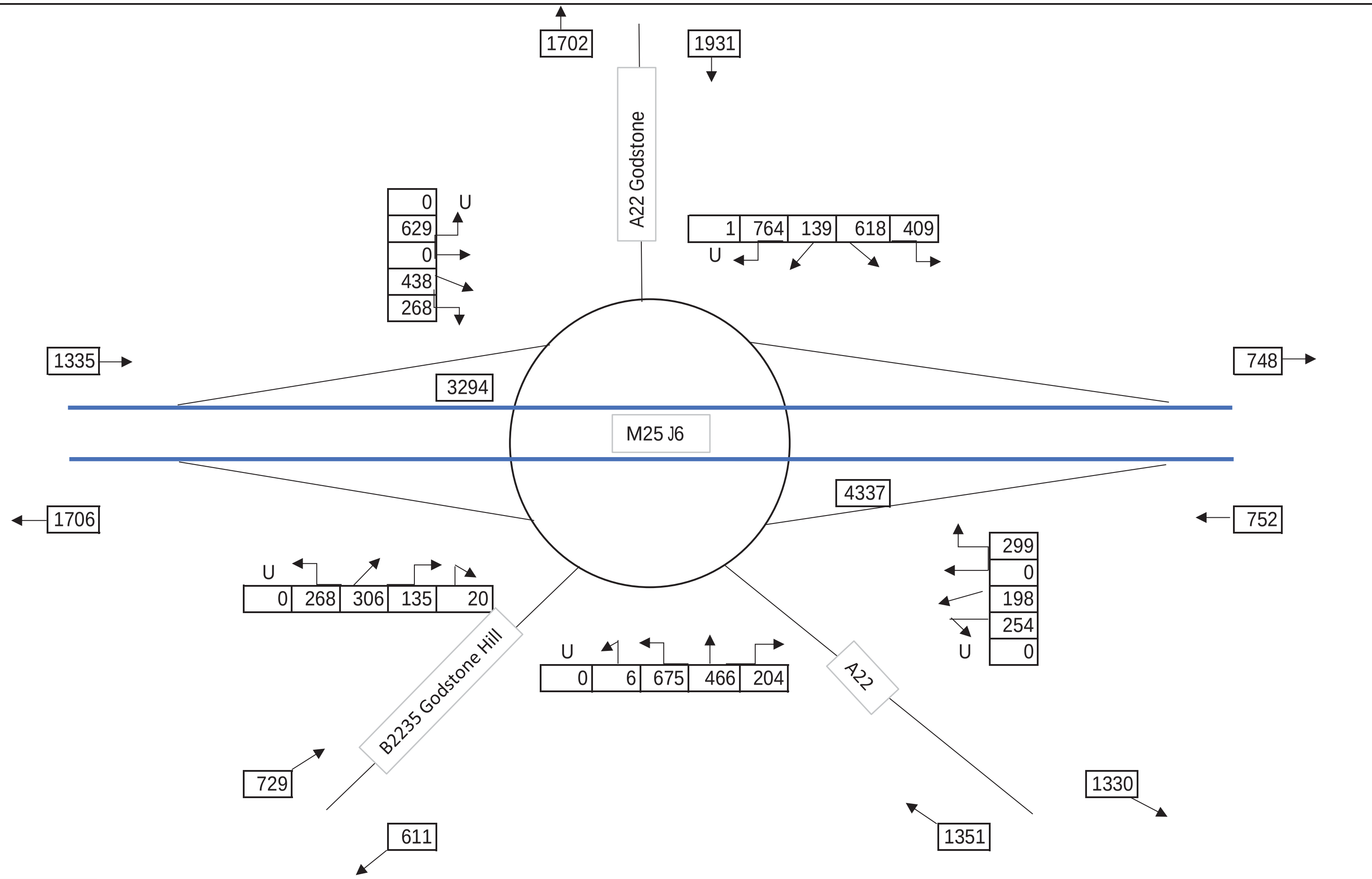
Vehicles

FIG

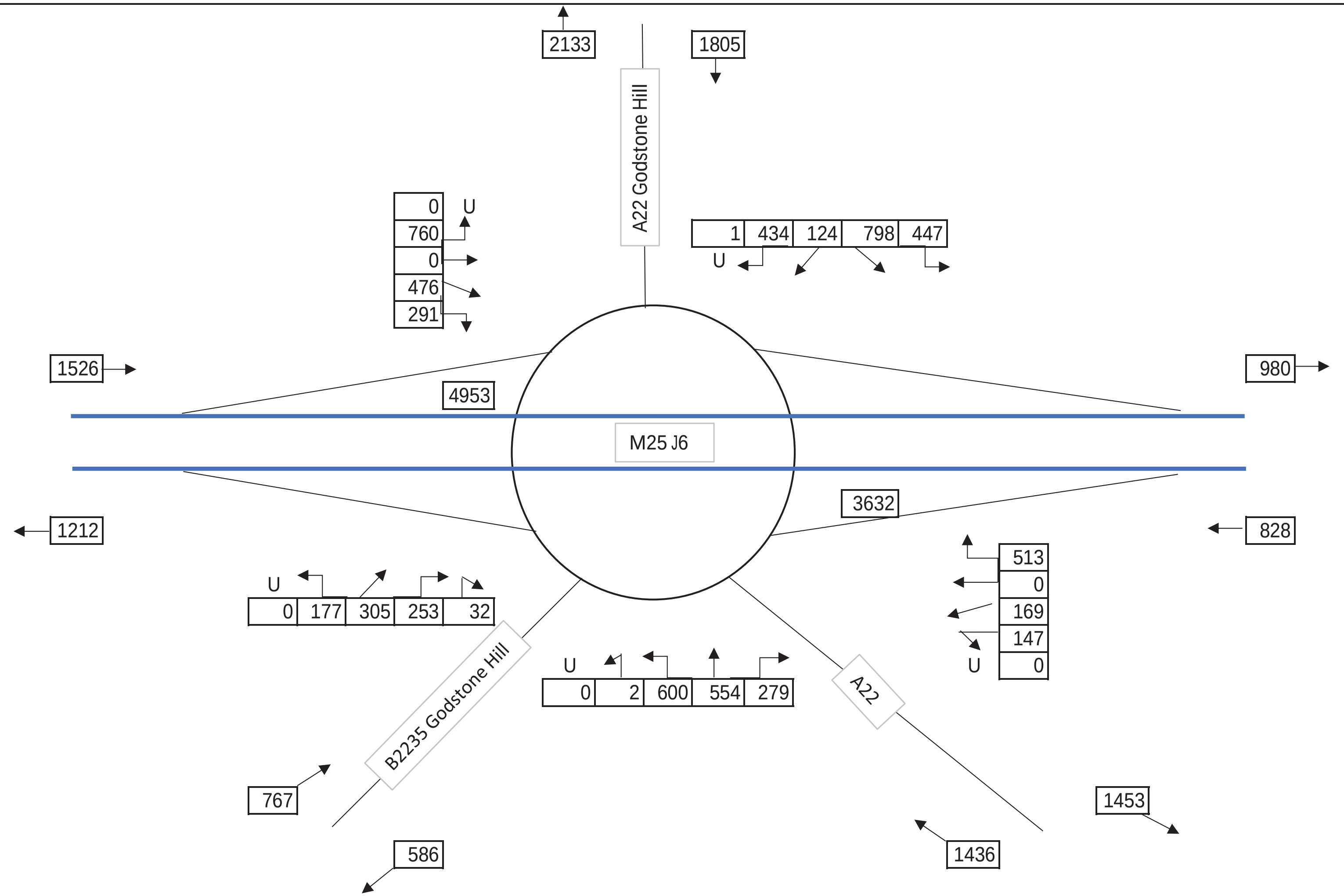
0-55



M25 JUNCTION 6	FIG
Scenario 2 2025 PM Peak	0-56
Vehicles	



M25 JUNCTION 6	FIG
Scenario 2 2030 AM Peak	0-57
Vehicles	



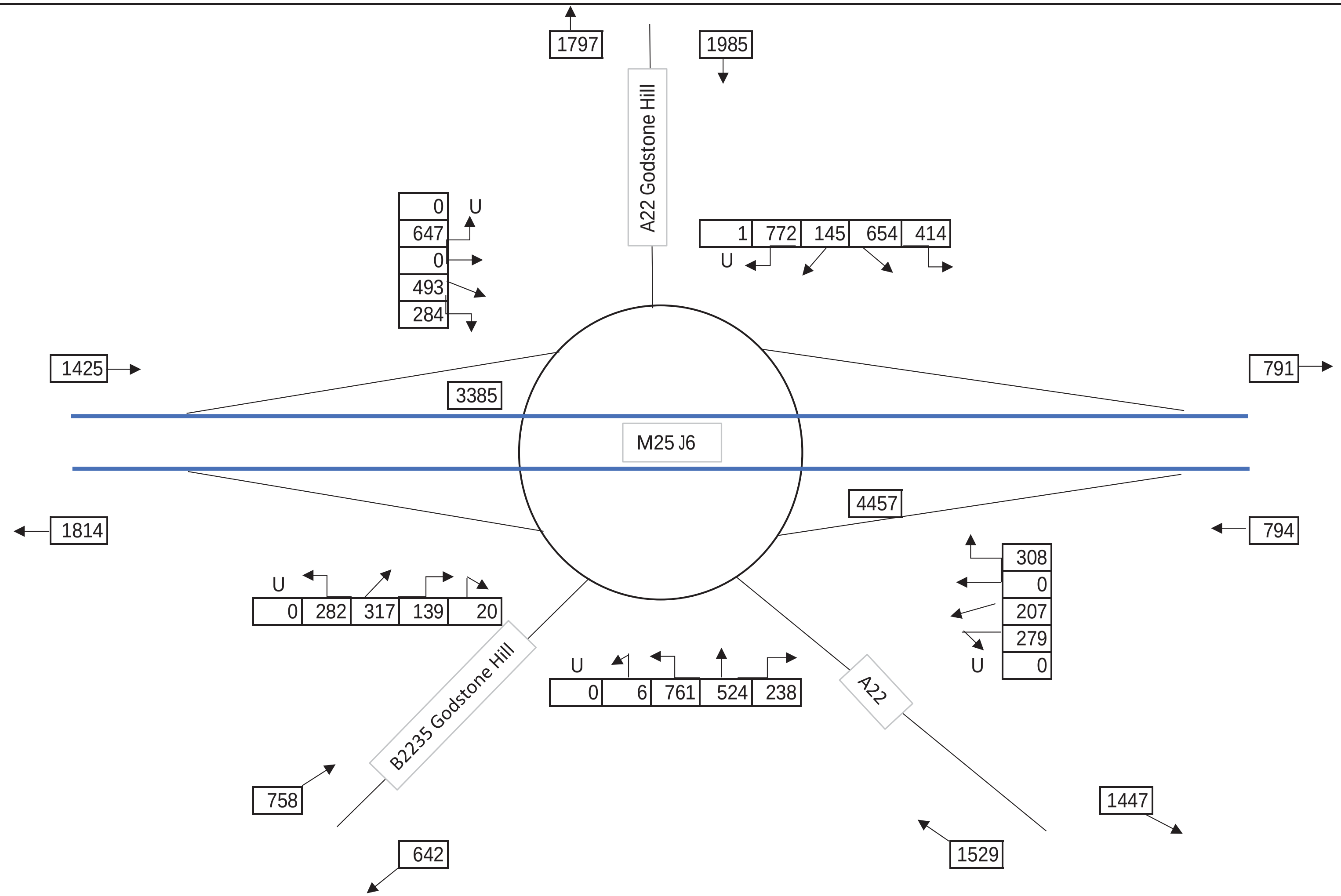
M25 JUNCTION 6

Scenario 2 2030 PM Peak

Vehicles

FIG

0-58



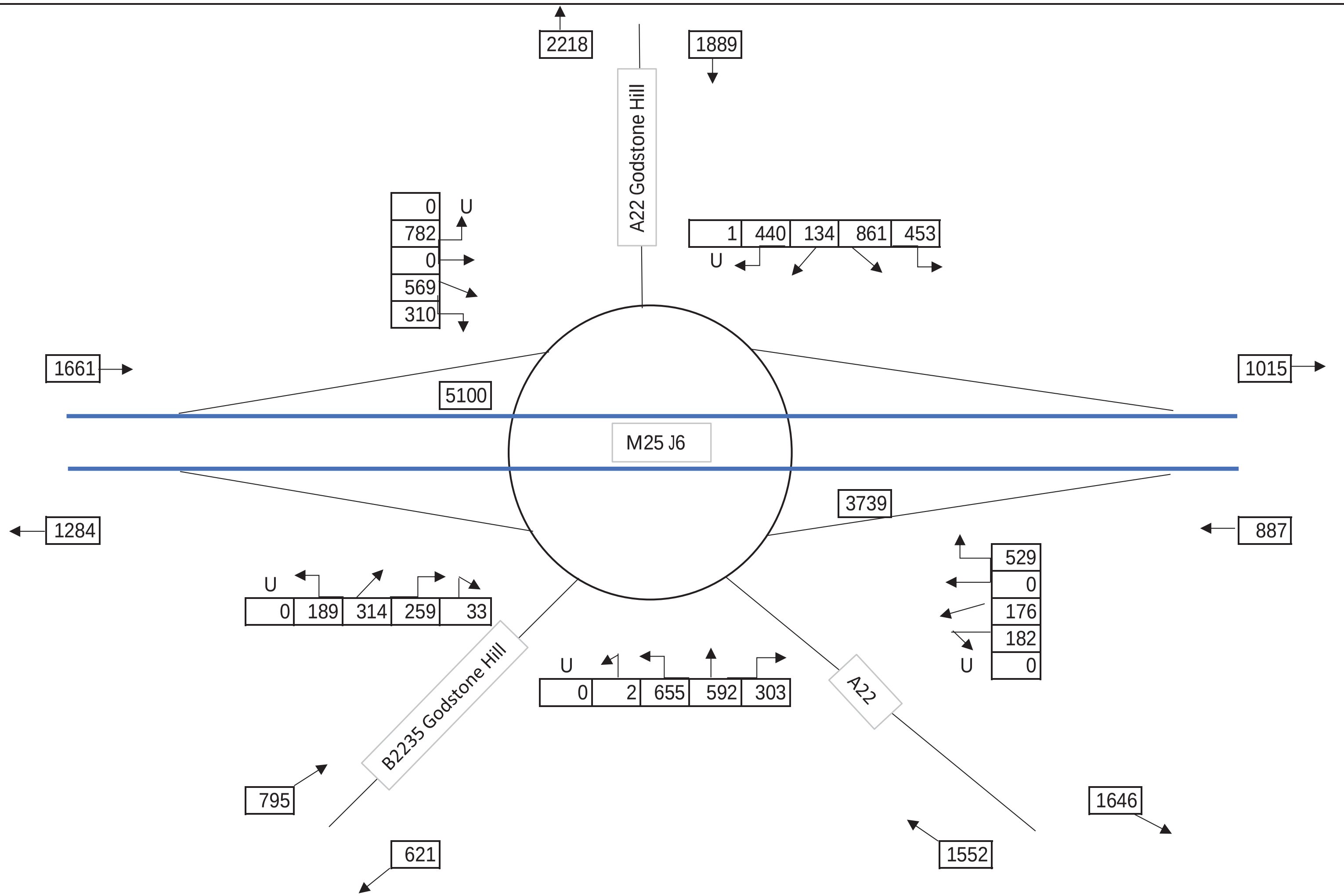
M25 JUNCTION 6

Scenario 2 2035 AM Peak

Vehicles

FIG

0-59

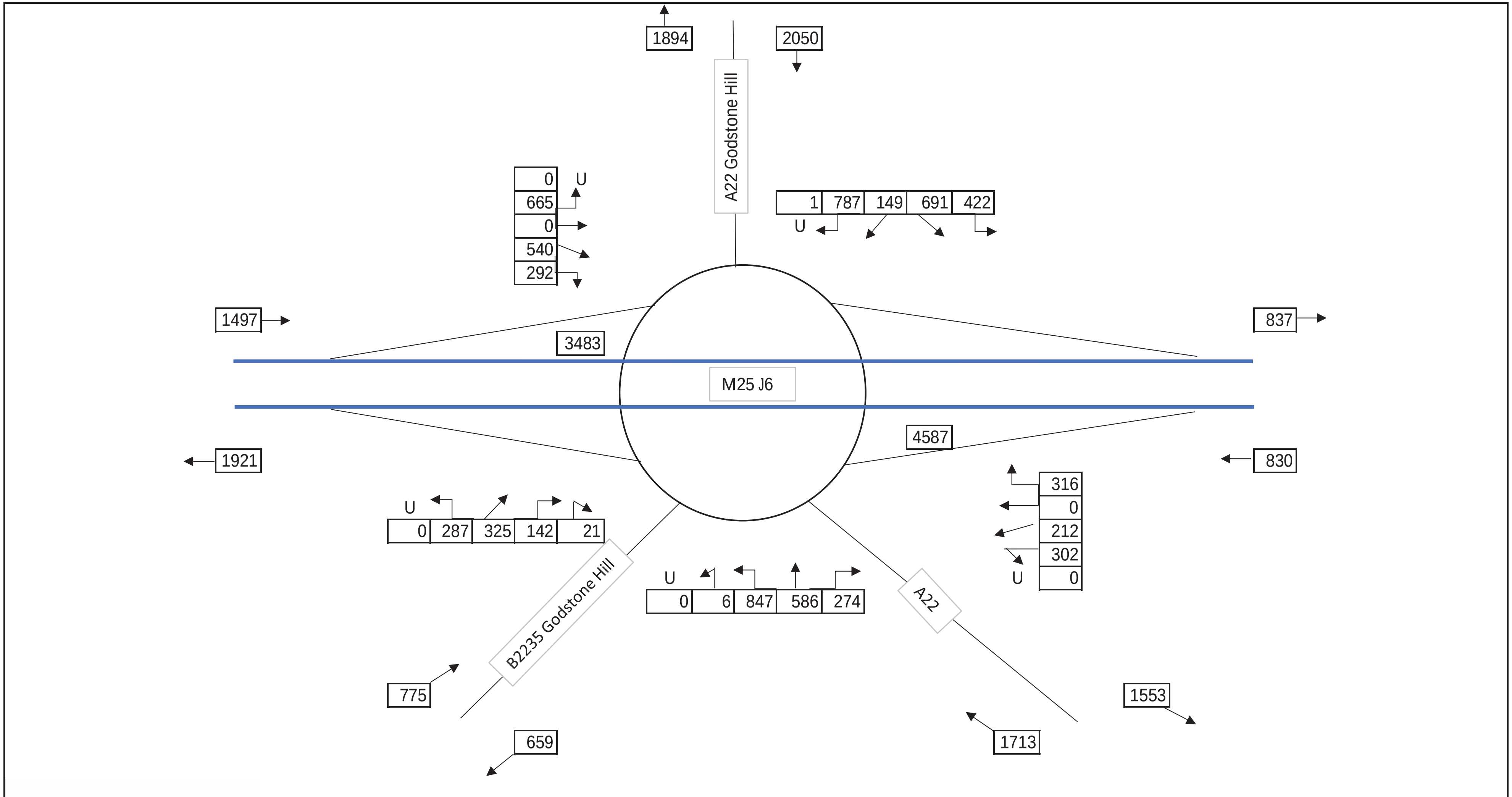


M25 JUNCTION 6

Scenario 2 2035 PM Peak

Vehicles

FIG 0-60

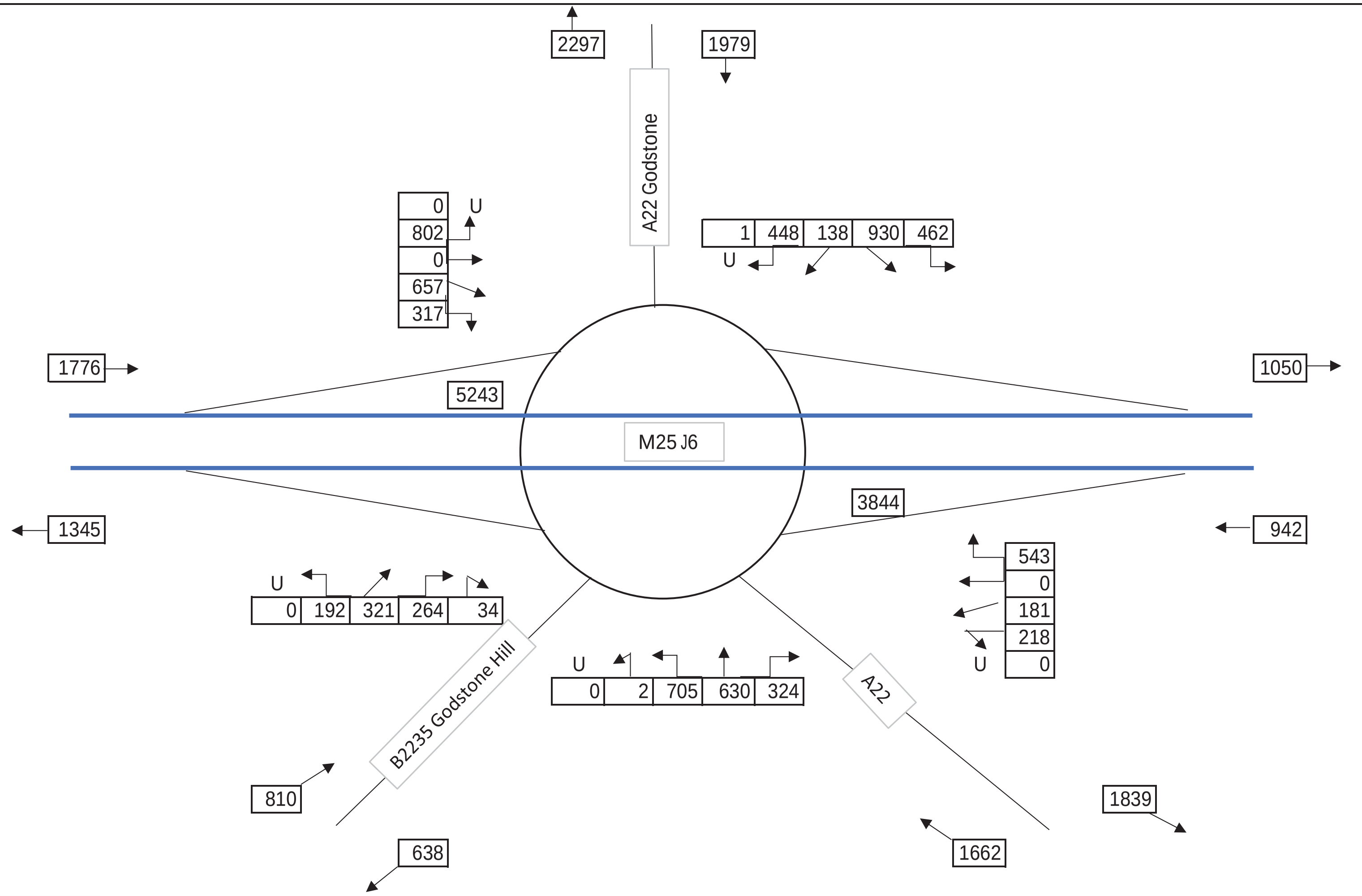


M25 JUNCTION 6

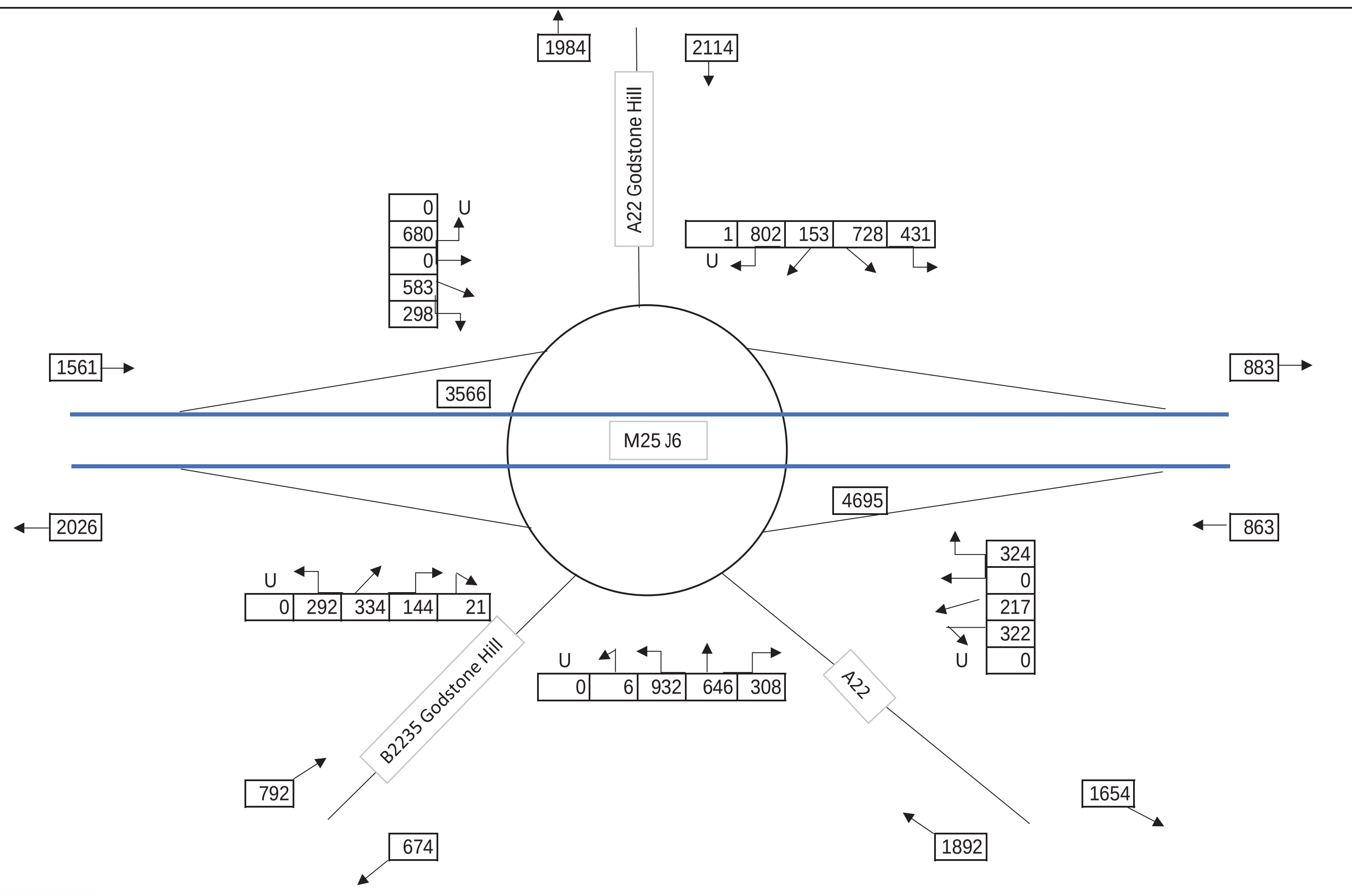
Scenario 2 2040 AM Peak

Vehicles

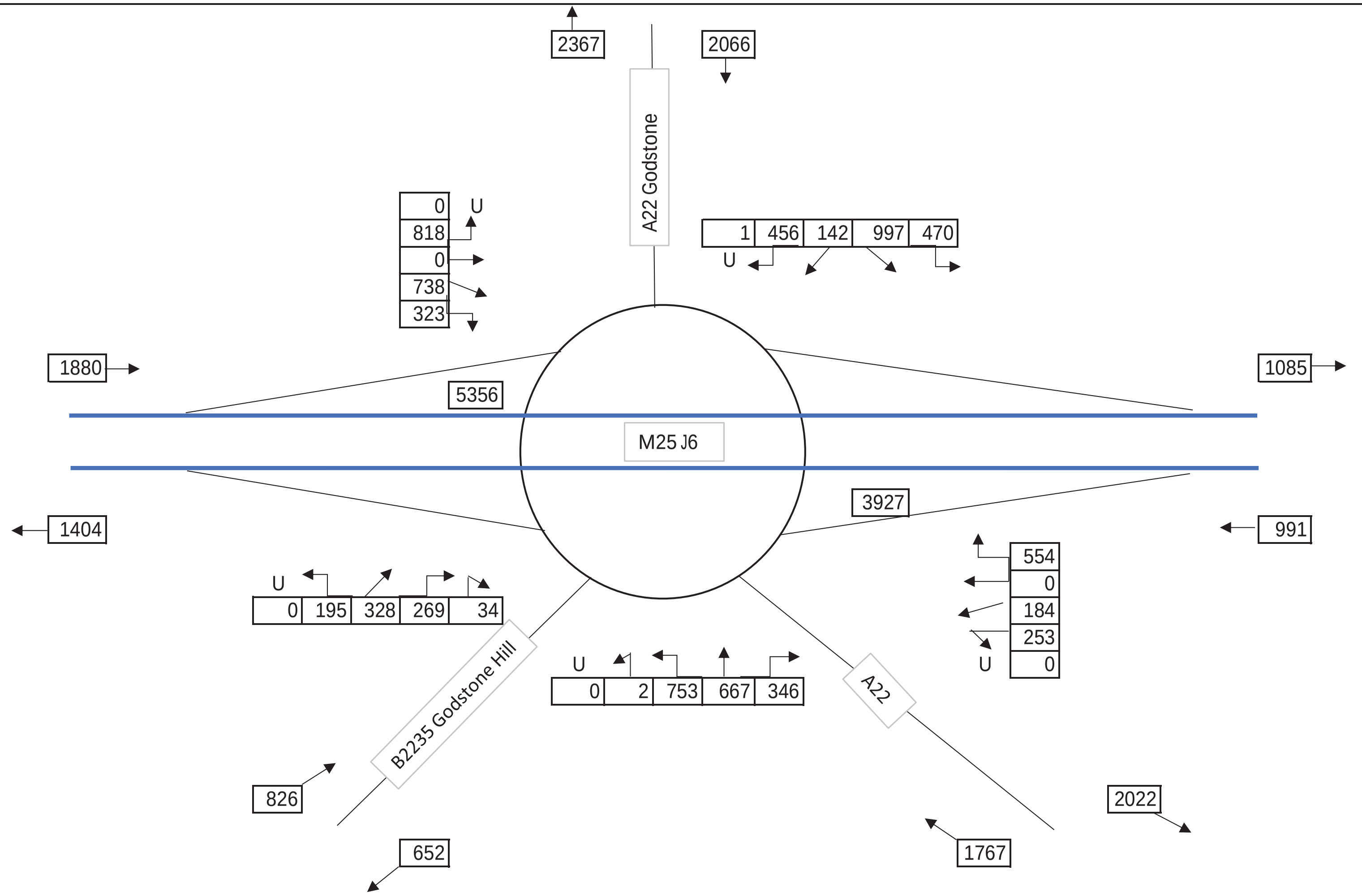
FIG 0-61



M25 JUNCTION 6		FIG
Scenario 2 2040 PM Peak		0-62
Vehicles		



M25 JUNCTION 6		FIG
Scenario 2 2045 AM Peak		0-63
Vehicles		



M25 JUNCTION 6

Scenario 2 2045 PM Peak

Vehicles

FIG

0-64