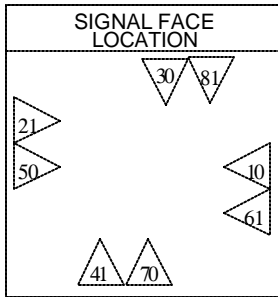


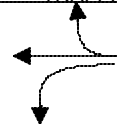

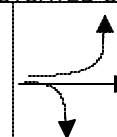
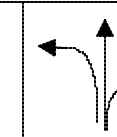
SIGNAL PHASING AND LAYOUT EXAMPLES

The following examples show typical signal phasing configurations and intersection layouts. While there are a number of examples shown, these are not all-encompassing. There are many more variations possible. Each intersection needs to be evaluated on its own merits. Every aspect of the intersection layout and phasing needs to be reviewed using the guidelines in this manual, the MUTCD, and sound engineering judgement to assure that it is appropriate for the actual conditions.

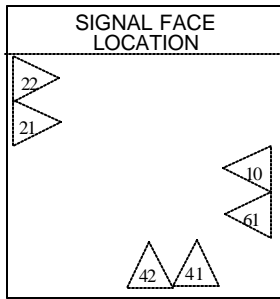
This section contains examples of actuated phasing configurations. While these examples are based on standard signal controller operations, variations between brands and types of equipment may require a different phasing setup than that shown.




The intersection layouts are basic and are only intended to show basic lane configurations and possible signal indications for that layout. These are not scaled drawings and only show general locations of the equipment and features directly related to the phasing examples. There are numerous other features and pieces of equipment of signalized intersections that are not shown on these drawings. See the Project Development Manual for more complete information on signal and intersection design.



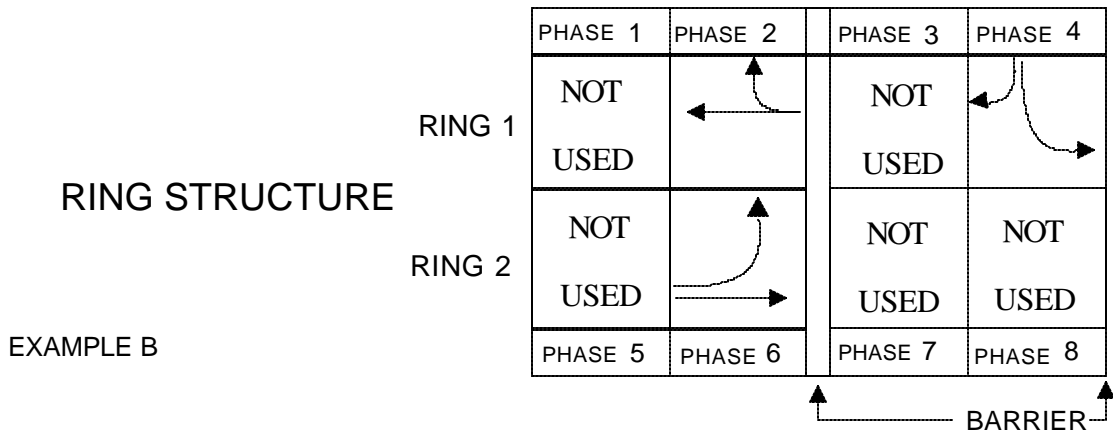
<div>50</div> <div><div>41</div><div>70</div></div> <div><div>10</div><div>61</div></div>		TRAFFIC PHASING AND COLOR SEQUENCE - ACTUATED CONTROLLERS																															
		<div>NOT USED</div>								<div>NOT USED</div>								<div>NOT USED</div>								<div>NOT USED</div>							
		PHASE 1				PHASE 2				PHASE 3				PHASE 4				PHASE 5				PHASE 6				PHASE 7				PHASE 8			
<div>FACE NUMBERS</div> <div>LOAD SWITCH CONTROL</div>					21	50							41	70							61	10							81	30			
	R				R	R							R	R							R	R							R	R			
	Y				Y	Y							Y	Y							Y	Y							Y	Y			
<div>SIGNAL INDICATIONS</div>	G				G	G							G	G						G	G							G	G				
DETECTOR ASSIGNMENTS					21	50							41	70						61	10							81	30				

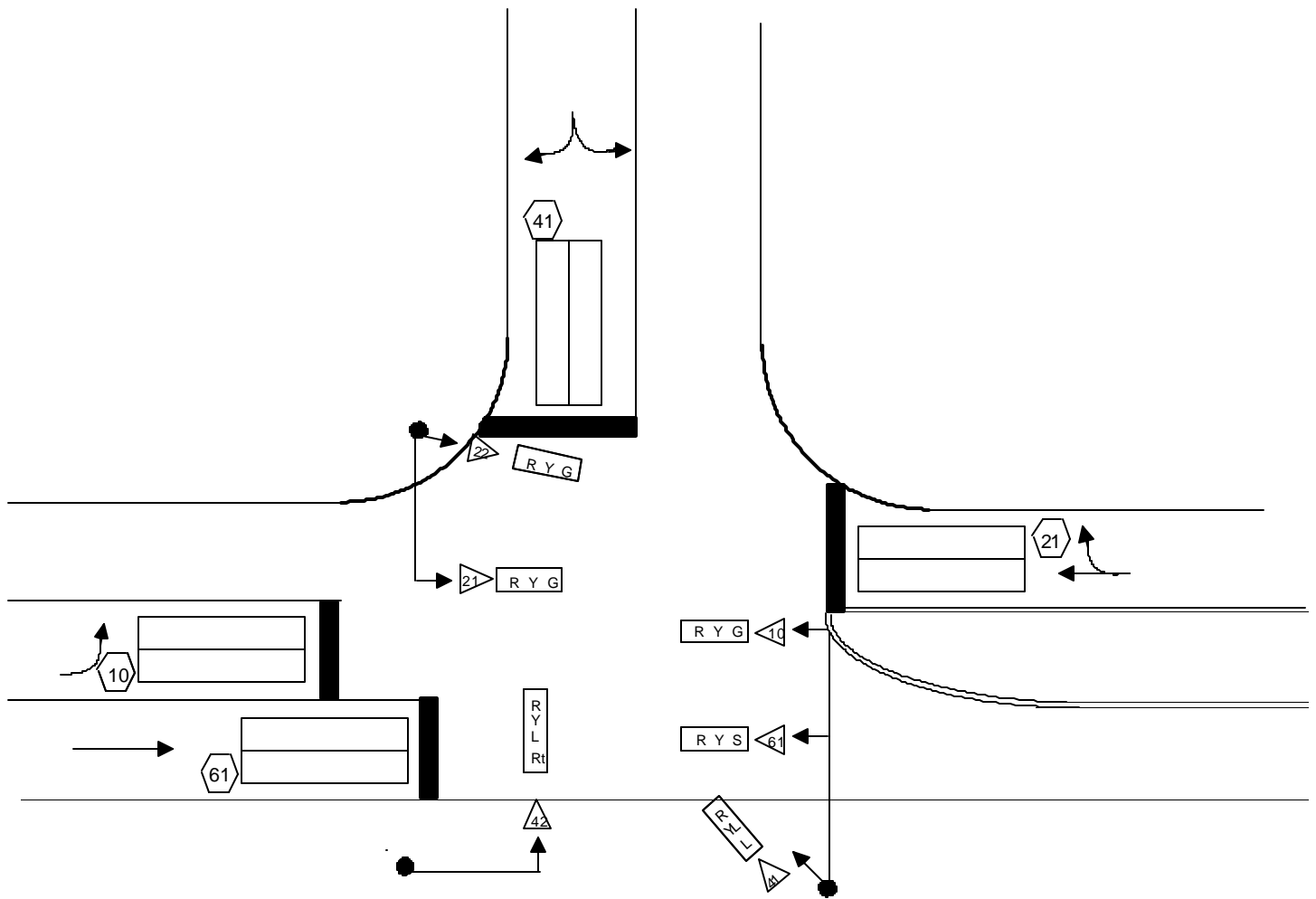




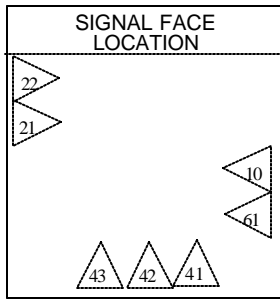
<div><div><div>42</div><div>41</div></div><div>61</div></div>		TRAFFIC PHASING AND COLOR SEQUENCE - ACTUATED CONTROLLERS															
		NOT USED				NOT USED				NOT USED				NOT USED		NOT USED	
		PHASE 1		PHASE 2		PHASE 3		PHASE 4		PHASE 5		PHASE 6		PHASE 7		PHASE 8	
	FACE NUMBERS	LOAD SWITCH CONTROL				21					41	42				61	10
						22											
	SIGNAL INDICATIONS	R			R					R	R			R	R		
		Y			Y					YL	Y			Y	Y		
		G			G					L	L			S	G		
											Rt						
DETECTOR ASSIGNMENTS					21					41				61	10		



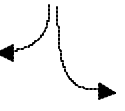
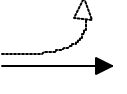
		TRAFFIC PHASING AND COLOR SEQUENCE - ACTUATED CONTROLLERS															
		PED ϕ OVERLAP A				PED ϕ OVERLAP				PED ϕ OVERLAP				PED ϕ OVERLAP			
	FACE NUMBERS	LOAD SWITCH CONTROL															
	SIGNAL INDICATIONS	R															
		Y															
		G															
OVERLAP PARENT PHASES																	
DETECTOR ASSIGNMENT (PEDS ONLY)																	






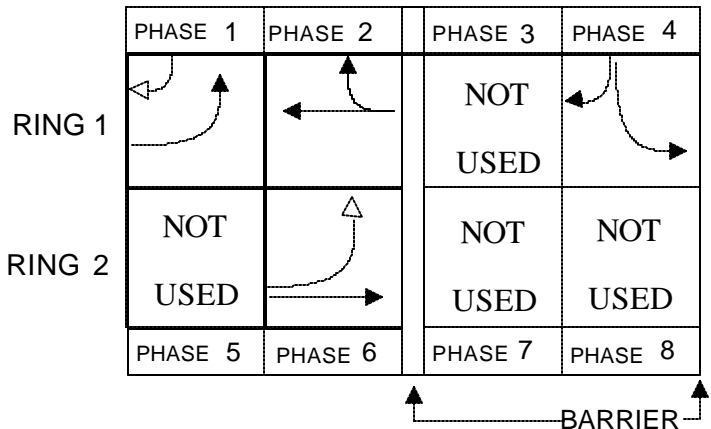
EXAMPLE B



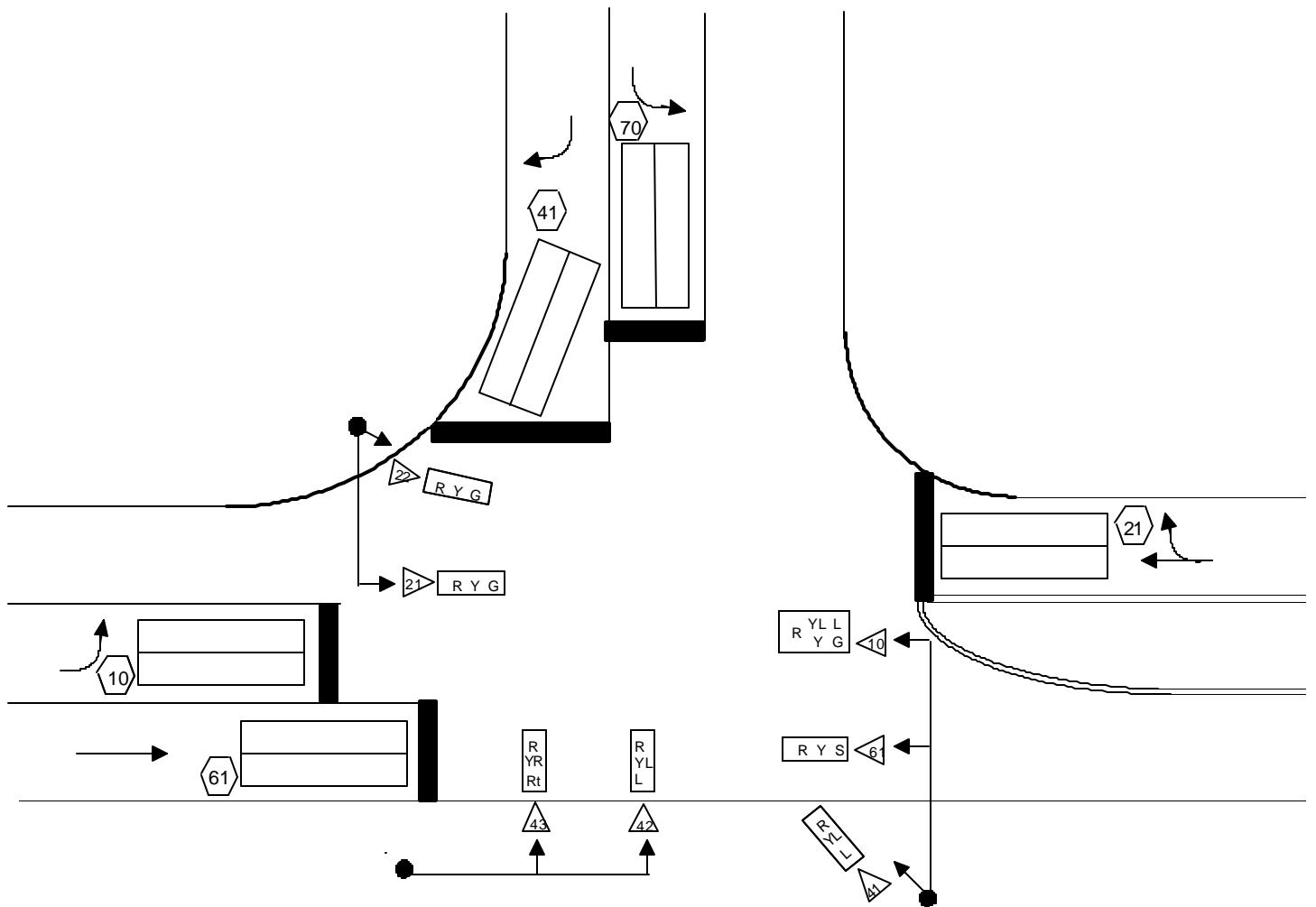
TRAFFIC PHASING AND COLOR SEQUENCE - ACTUATED CONTROLLERS																					
<div><div><div>43</div><div>42</div><div>41</div></div><div>61</div></div>						NOT USED				NOT USED				NOT USED		NOT USED					
		PHASE 1		PHASE 2		PHASE 3		PHASE 4		PHASE 5		PHASE 6		PHASE 7		PHASE 8					
	FACE NUMBERS	LOAD SWITCH CONTROL	10			21					41	42			61	10					
	SIGNAL INDICATIONS		R			R				R	R			R	R						
			Y	YL		Y				YL	YL			Y	Y						
			G	L		G				L	L			S	G						
DETECTOR ASSIGNMENTS			10			21					41	70			61						

		TRAFFIC PHASING AND COLOR SEQUENCE - ACTUATED CONTROLLERS																
																		
		PED ϕ		PED ϕ		PED ϕ		PED ϕ										
		OVERLAP A		OVERLAP		OVERLAP		OVERLAP										
	FACE NUMBERS	LOAD SWITCH CONTROL	43															
	SIGNAL INDICATIONS		R	R														
			Y	YRt														
			Rt															
G																		
	OVERLAP PARENT PHASES		1	4														
	DETECTOR ASSIGNMENT (PEDS ONLY)																	

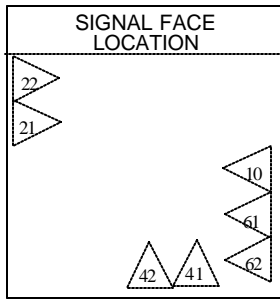
RING STRUCTURE



EXAMPLE C

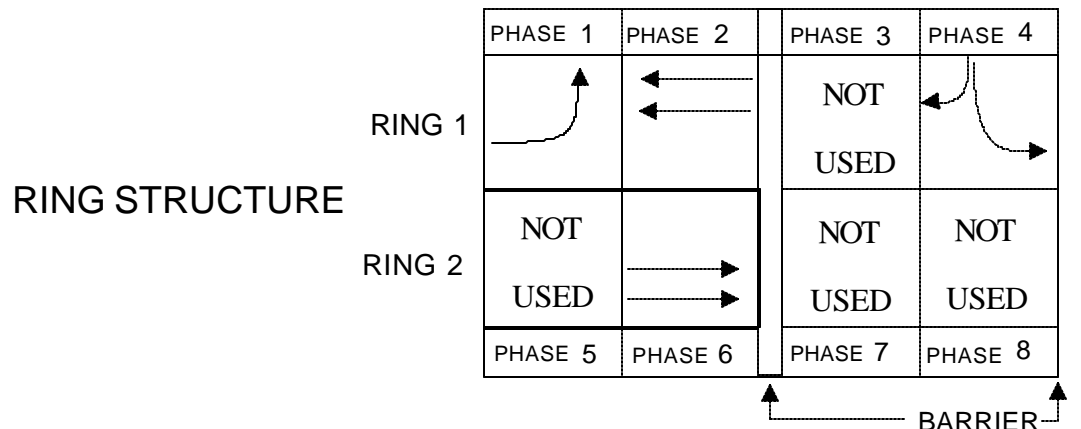


EXAMPLE C

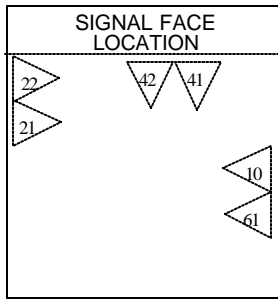





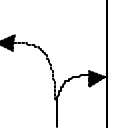
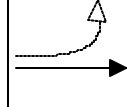
			TRAFFIC PHASING AND COLOR SEQUENCE - ACTUATED CONTROLLERS																																				
											NOT USED								NOT USED								NOT USED				NOT USED								
			PHASE 1				PHASE 2				PHASE 3				PHASE 4				PHASE 5				PHASE 6				PHASE 7				PHASE 8								
	FACE NUMBERS		LOAD SWITCH CONTROL	10				21								41								61															
								22								42								62															
	SIGNAL INDICATIONS		R	R				R								R								R															
				Y	YL				Y								YL								Y														
			G		L				S								L								S														
	DETECTOR ASSIGNMENTS			10				21 22								41								61 62															

		TRAFFIC PHASING AND COLOR SEQUENCE - ACTUATED CONTROLLERS																															
		PED ϕ				PED ϕ				PED ϕ				PED ϕ																			
		OVERLAP A				OVERLAP				OVERLAP				OVERLAP																			
EXAMPLE	FACE NUMBERS	LOAD SWITCH CONTROL																															
	SIGNAL INDICATIONS	R																															
		Y																															
		G																															
	OVERLAP PARENT PHASES																																
DETECTOR ASSIGNMENT (PEDS ONLY)																																	



EXAMPLE D



				TRAFFIC PHASING AND COLOR SEQUENCE - ACTUATED CONTROLLERS																																		
												NOT USED								NOT USED								NOT USED				NOT USED						
				PHASE 1				PHASE 2				PHASE 3				PHASE 4				PHASE 5				PHASE 6				PHASE 7				PHASE 8						
	FACE NUMBERS		LOAD SWITCH CONTROL	10				21								41	42												61	10								
	SIGNAL INDICATIONS		R				R									R	R											R	R									
			Y	YL			Y									Y	YL											Y	Y									
			G	L			G									L	L											S	G									
															Rt																							
DETECTOR ASSIGNMENTS				10				21								41												61										

		TRAFFIC PHASING AND COLOR SEQUENCE - ACTUATED CONTROLLERS																									
		PED ϕ OVERLAP A				PED ϕ OVERLAP				PED ϕ OVERLAP																	
	FACE NUMBERS	LOAD SWITCH CONTROL																									
	SIGNAL INDICATIONS		R																								
			Y																								
			G																								
OVERLAP PARENT PHASES																											
DETECTOR ASSIGNMENT (PEDS ONLY)																											

RING STRUCTURE

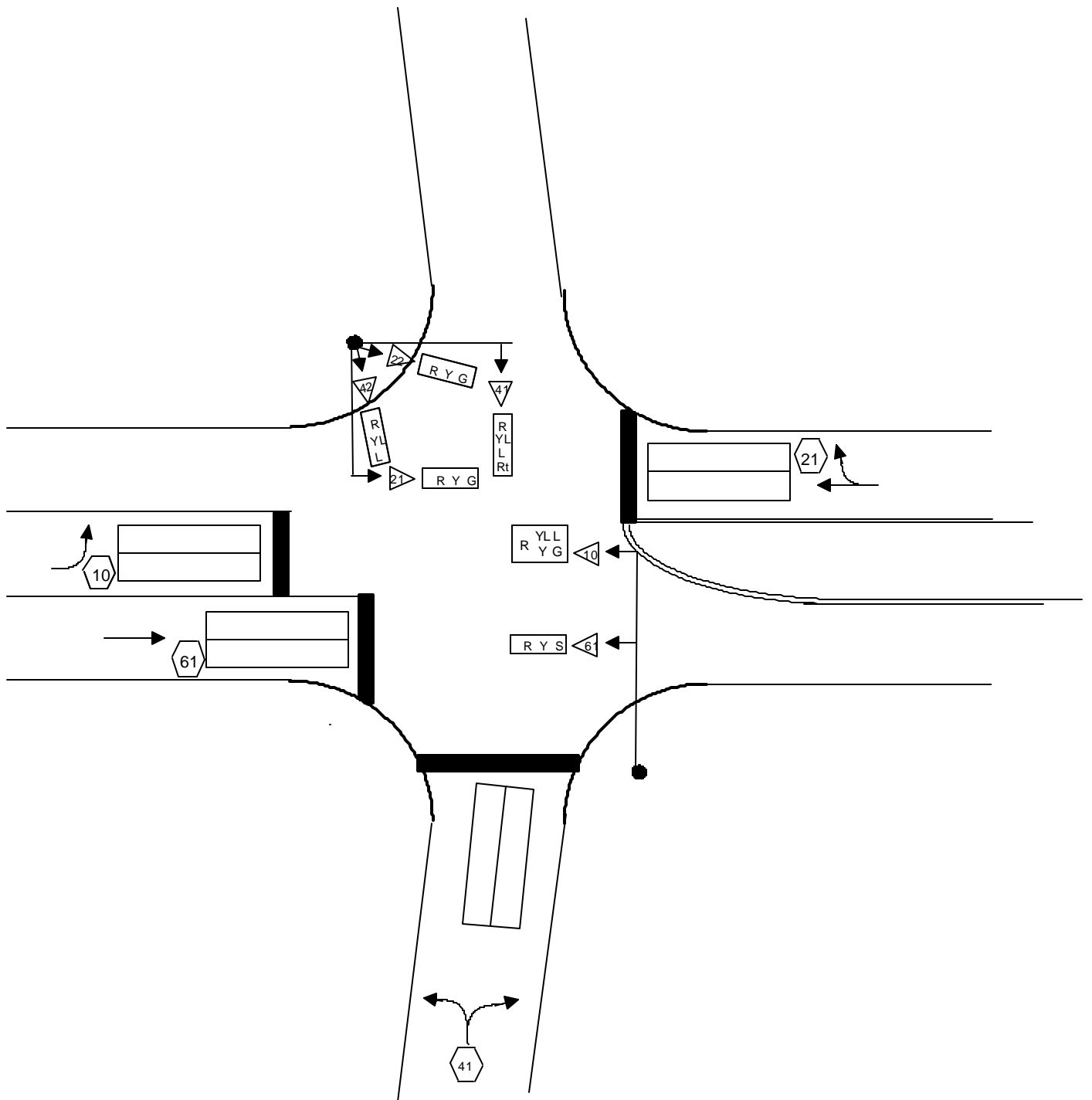
RING 1

RING 2

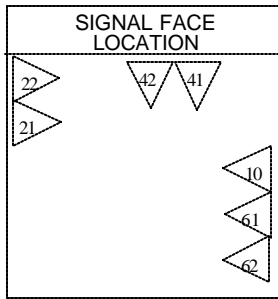
PHASE 1	PHASE 2	PHASE 3	PHASE 4
		NOT USED	
NOT USED		NOT USED	NOT USED
PHASE 5	PHASE 6	PHASE 7	PHASE 8

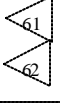

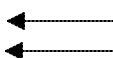
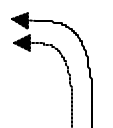
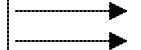
BARRIER

EXAMPLE E

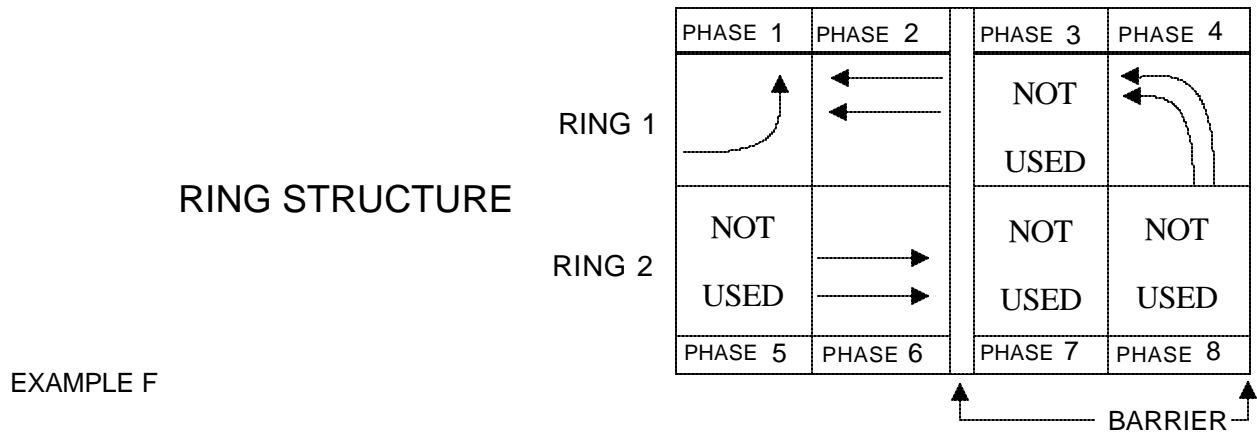


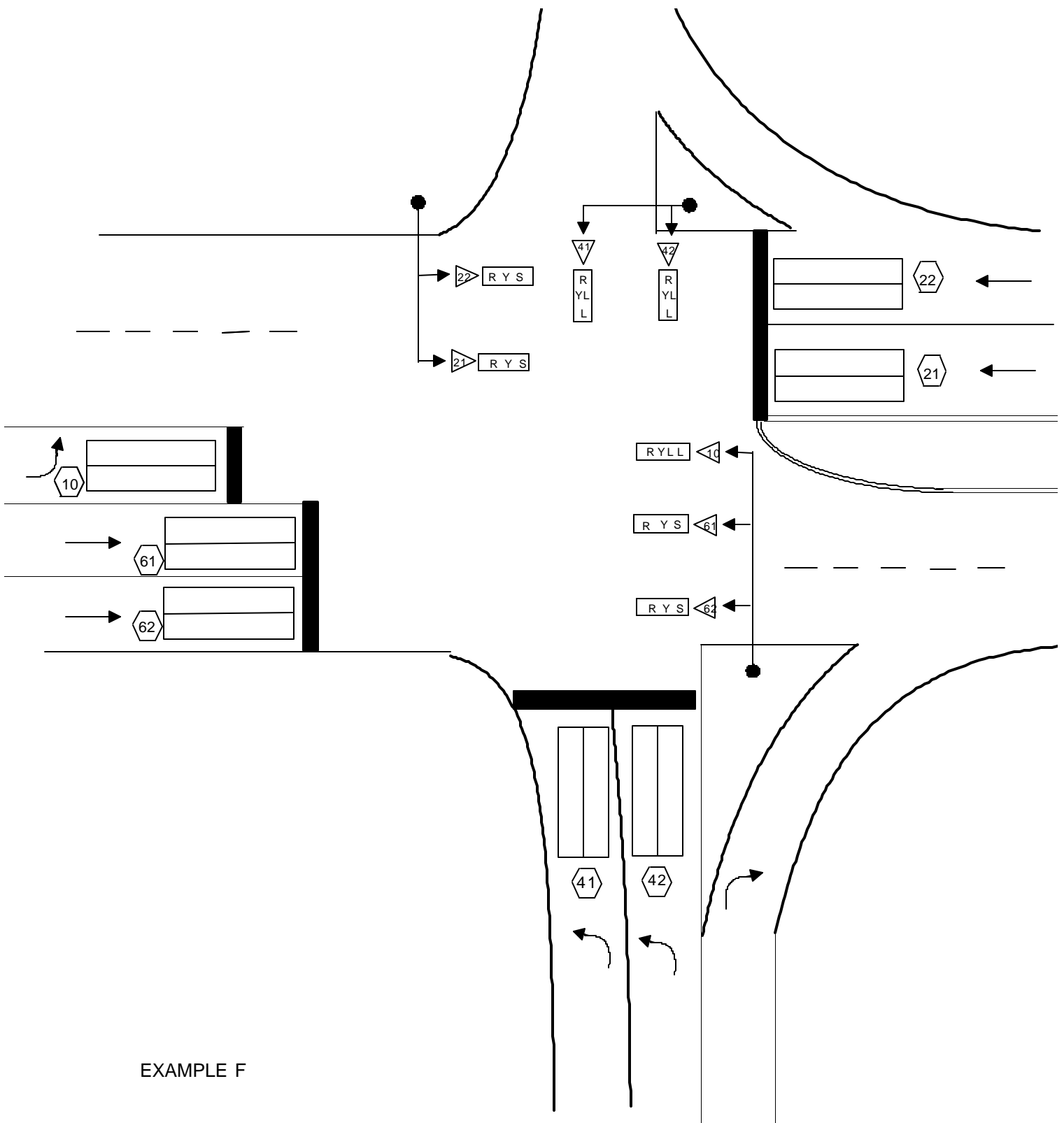
EXAMPLE E



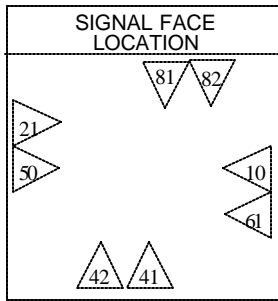
				TRAFFIC PHASING AND COLOR SEQUENCE - ACTUATED CONTROLLERS																															
						NOT USED					NOT USED					NOT USED				NOT USED															
				PHASE 1				PHASE 2				PHASE 3				PHASE 4				PHASE 5				PHASE 6				PHASE 7				PHASE 8			
	FACE NUMBERS		LOAD SWITCH CONTROL	10				21							41								61												
																								62											
	SIGNAL INDICATIONS		R	R				R							R								R												
				Y	YL					Y						YL									Y										
			G		L					S							L									S									
DETECTOR ASSIGNMENTS				10				21	22						41	42							61	62											


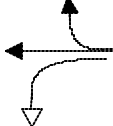
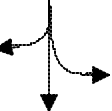


		TRAFFIC PHASING AND COLOR SEQUENCE - ACTUATED CONTROLLERS															
		PED ϕ OVERLAP A				PED ϕ OVERLAP				PED ϕ OVERLAP							
	FACE NUMBERS	LOAD SWITCH CONTROL															
	SIGNAL INDICATIONS	R															
		Y															
		G															
		OVERLAP PARENT PHASES															
DETECTOR ASSIGNMENT (PEDS ONLY)																	





EXAMPLE F

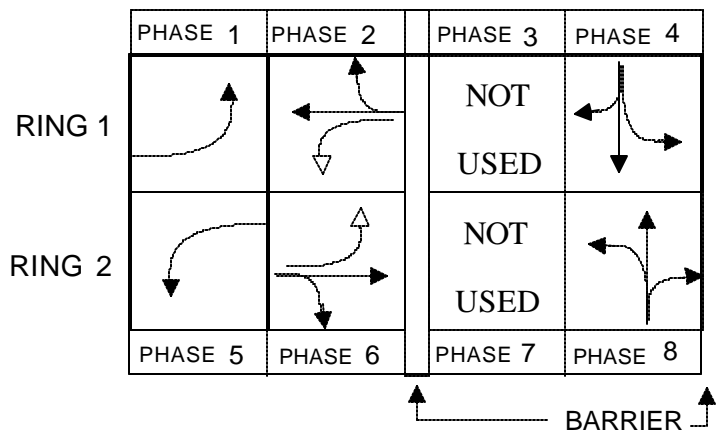


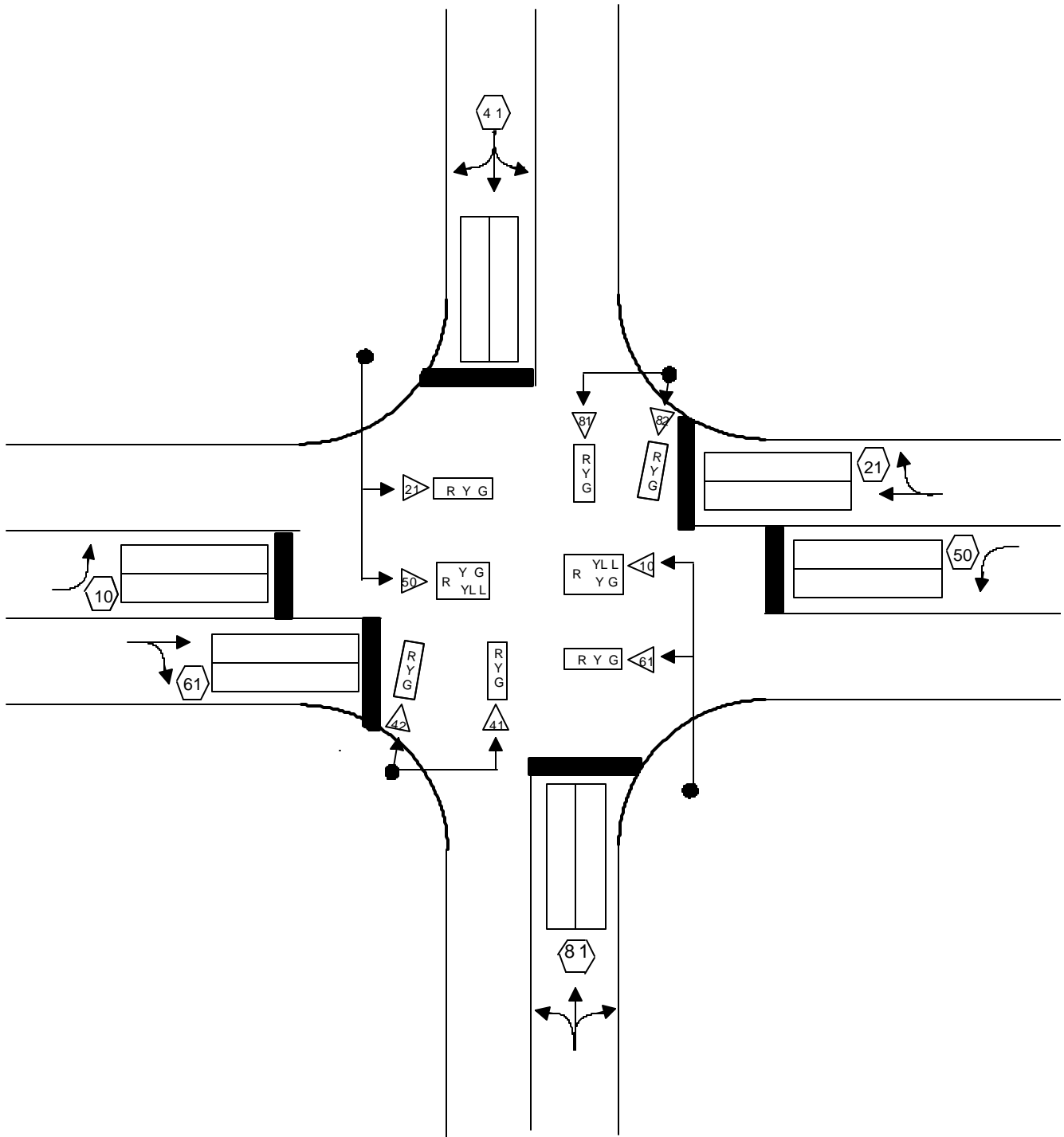
<div><div><div><div>42</div><div>41</div></div><div>61</div></div></div>																TRAFFIC PHASING AND COLOR SEQUENCE - ACTUATED CONTROLLERS																		
											NOT USED												NOT USED											
			PHASE 1				PHASE 2				PHASE 3				PHASE 4				PHASE 5				PHASE 6				PHASE 7				PHASE 8			
	FACE NUMBERS		LOAD SWITCH CONTROL	10				21	50						41				50									81						
														42																82				
	SIGNAL INDICATIONS		R				R	R						R														R						
			Y	YL			Y	Y						Y				YL										Y						
			G	L			G	G						G				L										G						
DETECTOR ASSIGNMENTS			10				21							41				50									61				81			

		TRAFFIC PHASING AND COLOR SEQUENCE - ACTUATED CONTROLLERS															
		PED ϕ OVERLAP				PED ϕ OVERLAP				PED ϕ OVERLAP				PED ϕ OVERLAP			
	FACE NUMBERS	LOAD SWITCH CONTROL															
	SIGNAL INDICATIONS	R															
		Y															
		G															
		OVERLAP PARENT PHASES															
DETECTOR ASSIGNMENT (PEDS ONLY)																	

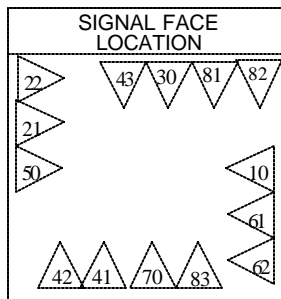
RING STRUCTURE

EXAMPLE G





EXAMPLE G

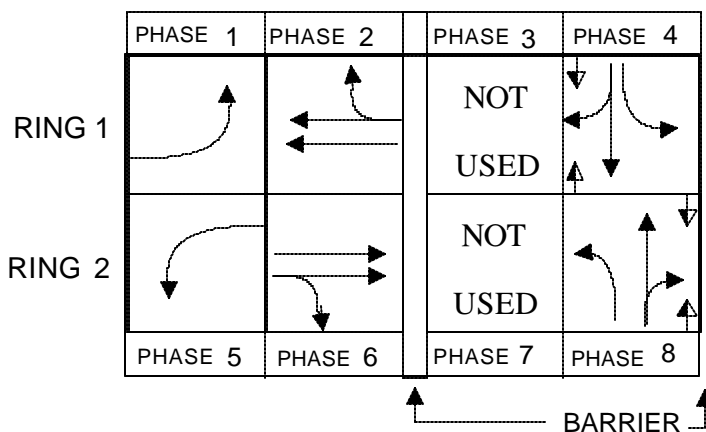


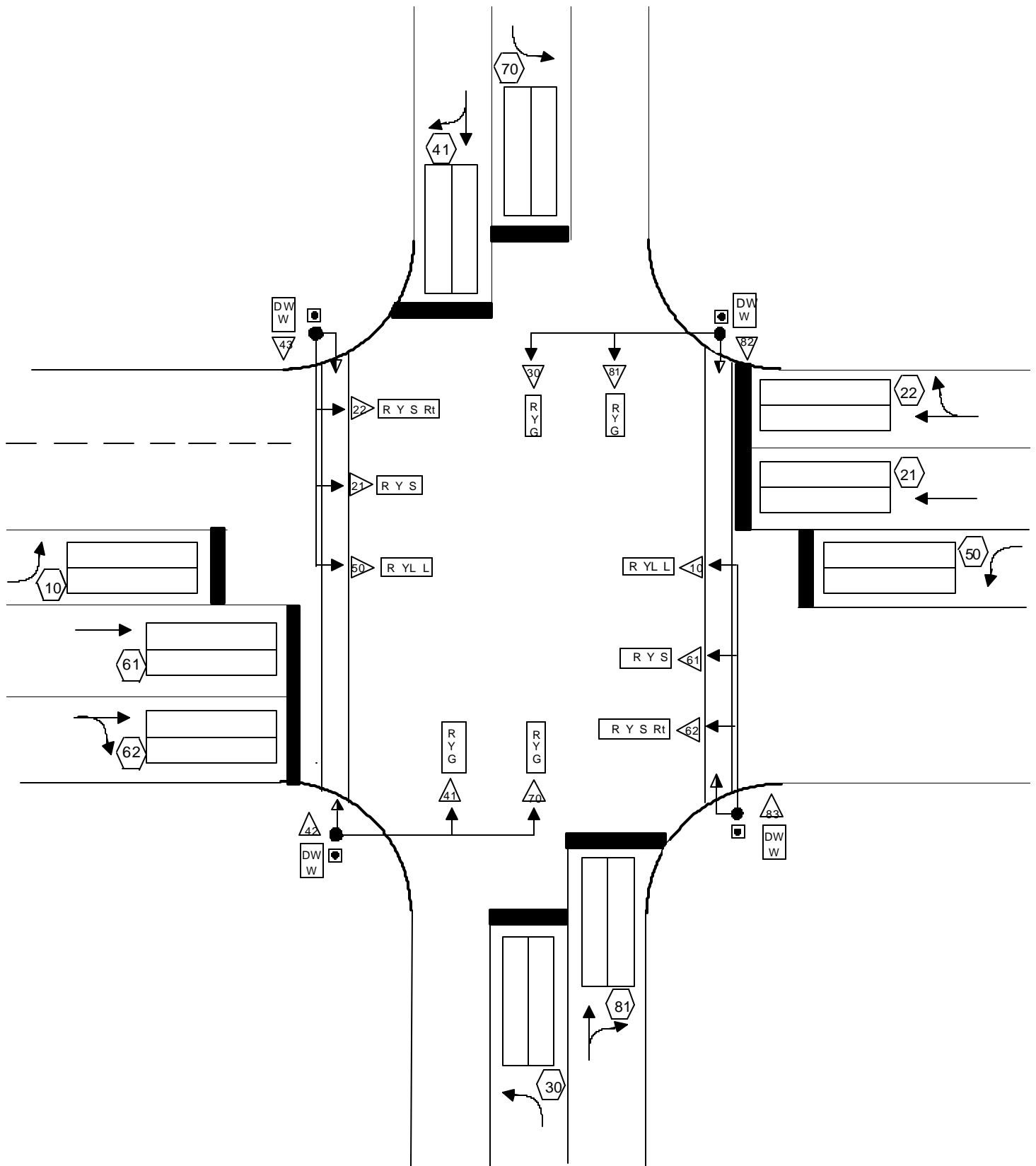
			TRAFFIC PHASING AND COLOR SEQUENCE - ACTUATED CONTROLLERS																															
											NOT USED												NOT USED											
			PHASE 1				PHASE 2				PHASE 3				PHASE 4				PHASE 5				PHASE 6				PHASE 7				PHASE 8			
	FACE NUMBERS	LOAD SWITCH CONTROL	10				21	22						41	70			50					61	62						81	30			
	SIGNAL INDICATIONS	R	R			R	R						R	R			R				R	R							R	R				
		Y	YL			Y	Y						Y	Y			YL				Y	Y							Y	Y				
		G	L			S	S						G	G			L				S	S							G	G				
							Rt																											
DETECTOR ASSIGNMENTS			10				21	22						41	70			50					61	62						81	30			

		TRAFFIC PHASING AND COLOR SEQUENCE - ACTUATED CONTROLLERS																			
		PED ϕ 4 OVERLAP		PED ϕ 8 OVERLAP		PED ϕ OVERLAP		PED ϕ OVERLAP													
	FACE NUMBERS	LOAD SWITCH CONTROL	42			82															
			43			83															
	SIGNAL INDICATIONS	R	DW			DW															
		Y																			
		G	W			W															
	OVERLAP PARENT PHASES																				
DETECTOR ASSIGNMENT (PEDS ONLY)		42	43			82	83														

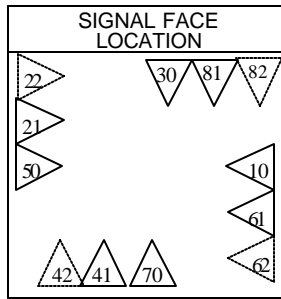
RING STRUCTURE


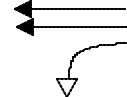



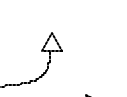
EXAMPLE H





EXAMPLE H

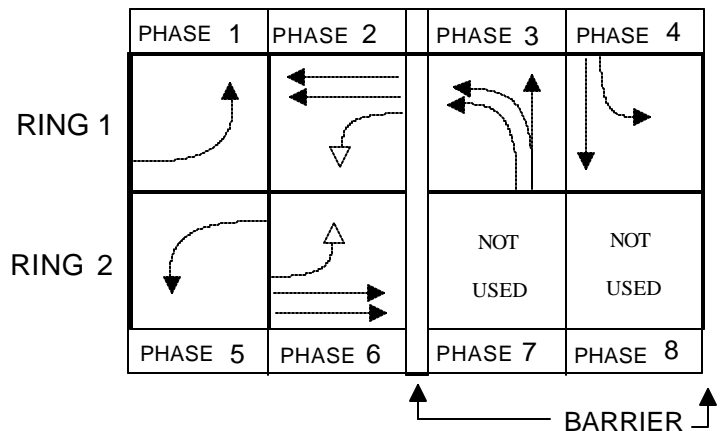


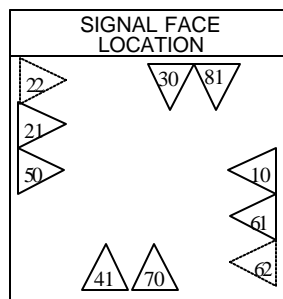
		TRAFFIC PHASING AND COLOR SEQUENCE - ACTUATED CONTROLLERS																															
																										NOT USED				NOT USED			
		PHASE 1				PHASE 2				PHASE 3				PHASE 4				PHASE 5				PHASE 6				PHASE 7				PHASE 8			
FACE NUMBERS	LOAD SWITCH CONTROL	10				21	50			81	82	30	41	70		50				61	10												
						22							42							62													
		R				R	R			R	R	R	R	R						R	R												
		Y	YL			Y	Y			Y	Y	YL	Y	YL			YL			Y	Y												
		G	L			G	G			S	S	L	S	L			L			G	G												
DETECTOR ASSIGNMENTS		10				21	22			81	82	30	41	70		50			61	62													


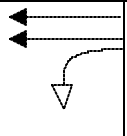
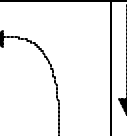
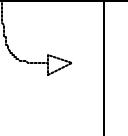
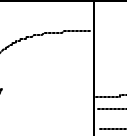
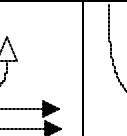
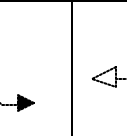
TRAFFIC PHASING AND COLOR SEQUENCE - ACTUATED CONTROLLERS															
PED ϕ				PED ϕ				PED ϕ				PED ϕ			
OVERLAP				OVERLAP				OVERLAP				OVERLAP			
FACE NUMBERS	LOAD SWITCH CONTROL														
SIGNAL INDICATIONS	R														
	Y														
	G														
OVERLAP PARENT PHASES															
DETECTOR ASSIGNMENT (PEDS ONLY)															

RING STRUCTURE

EXAMPLE I



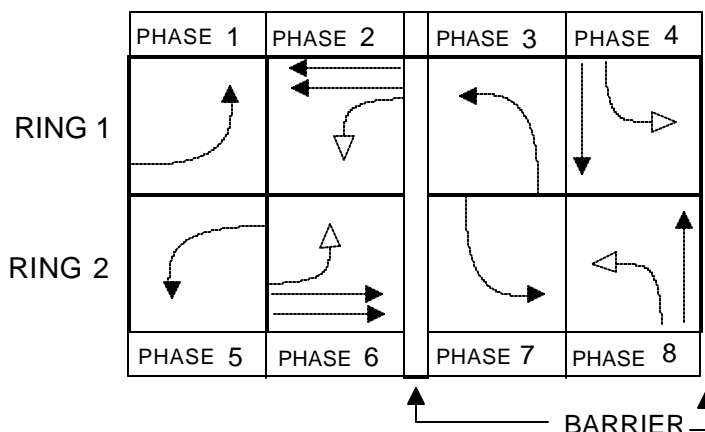


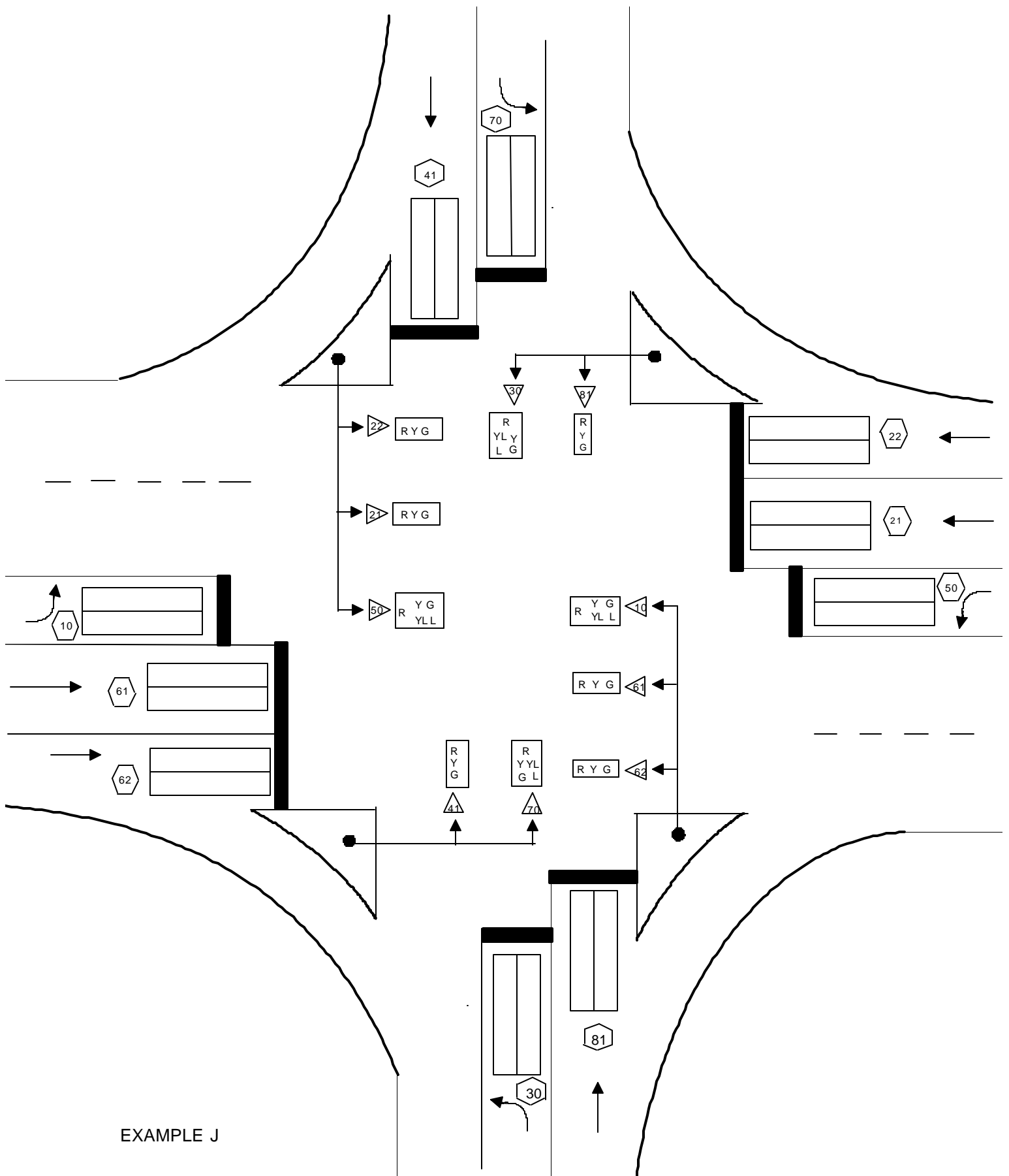
TRAFFIC PHASING AND COLOR SEQUENCE - ACTUATED CONTROLLERS																															
																															
PHASE 1				PHASE 2				PHASE 3				PHASE 4				PHASE 5				PHASE 6				PHASE 7				PHASE 8			
10				21	50			30				41	70			50				61	10			70				81	30		
				22																62											
				R	R							R	R							R	R							R	R		
YL				Y	Y			YL				Y	Y			YL				Y	Y			YL				Y	Y		
L				G	G			L				G	G			L				G	G			L				G	G		
10				21	22			30				41				50				61	62			70				81			

			TRAFFIC PHASING AND COLOR SEQUENCE - ACTUATED CONTROLLERS																												
			PED \emptyset OVERLAP				PED \emptyset OVERLAP				PED \emptyset OVERLAP				PED \emptyset OVERLAP																
	FACE NUMBERS	LOAD SWITCH CONTROL																													
	SIGNAL INDICATIONS	R																													
		Y																													
		G																													
		OVERLAP PARENT PHASES																													
		DETECTOR ASSIGNMENT (PEDS ONLY)																													

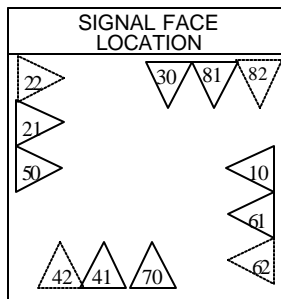
RING STRUCTURE


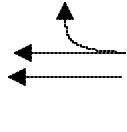
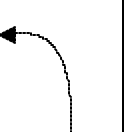

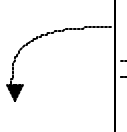
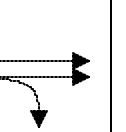
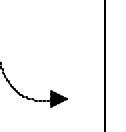
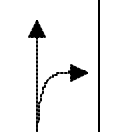
EXAMPLE J



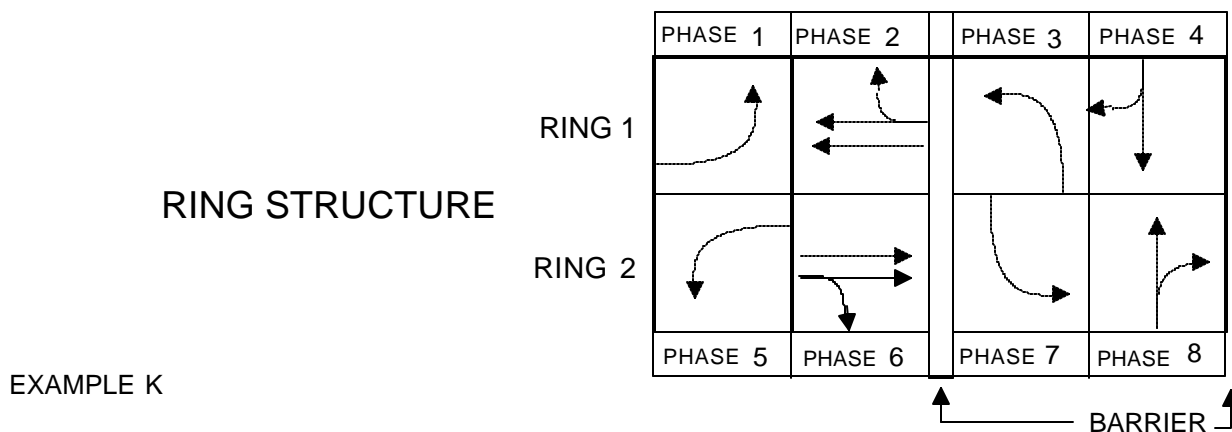


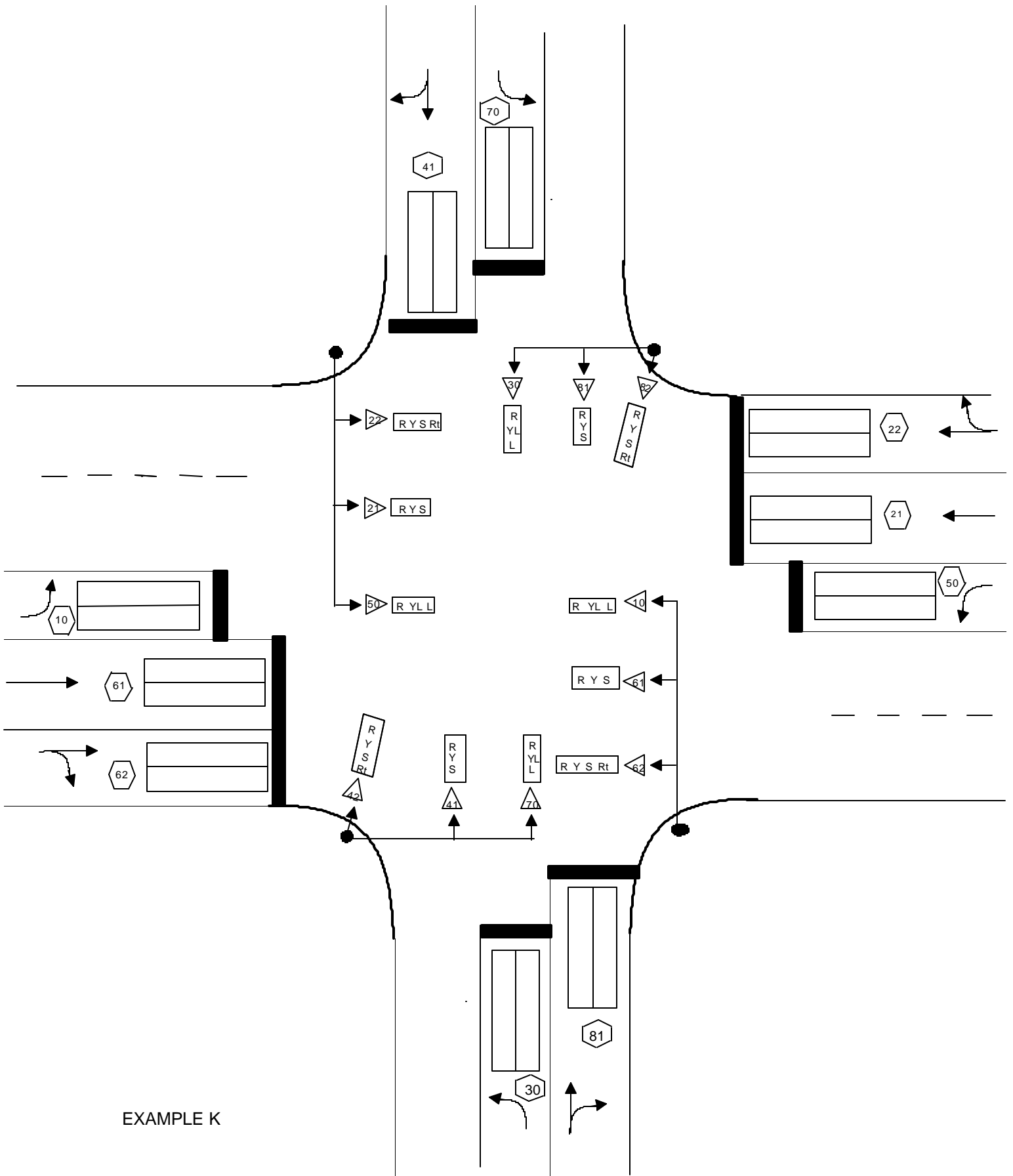
EXAMPLE J



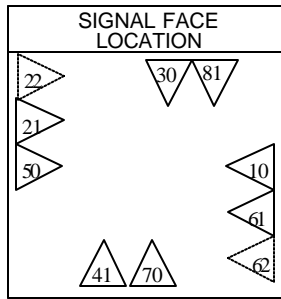
TRAFFIC PHASING AND COLOR SEQUENCE - ACTUATED CONTROLLERS																															
																															
PHASE 1				PHASE 2				PHASE 3				PHASE 4				PHASE 5				PHASE 6				PHASE 7				PHASE 8			
10				21	22			30				41	42			50				61	62			70				81	82		
R				R	R			R				R	R			R				R	R			R				R	R		
YL				Y	Y			YL				Y	Y			YL				Y	Y			YL				Y	Y		
L				S	S			L				S	S			L				S	S			L				S	S		
					Rt								Rt								Rt								Rt		
10				21	22			30				41				50				61	62			70				81			


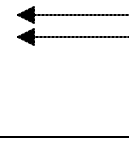
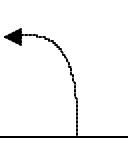
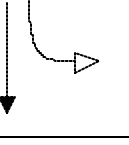
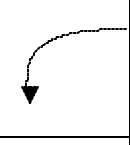
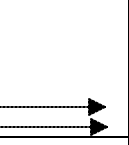
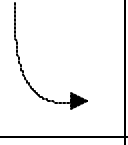
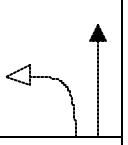
			TRAFFIC PHASING AND COLOR SEQUENCE - ACTUATED CONTROLLERS																													
			PED ϕ OVERLAP				PED ϕ OVERLAP				PED ϕ OVERLAP				PED ϕ OVERLAP																	
	FACE NUMBERS	LOAD SWITCH CONTROL																														
	SIGNAL INDICATIONS		R																													
			Y																													
		G																														
	OVERLAP PARENT PHASES																															
	DETECTOR ASSIGNMENT (PEDS ONLY)																															



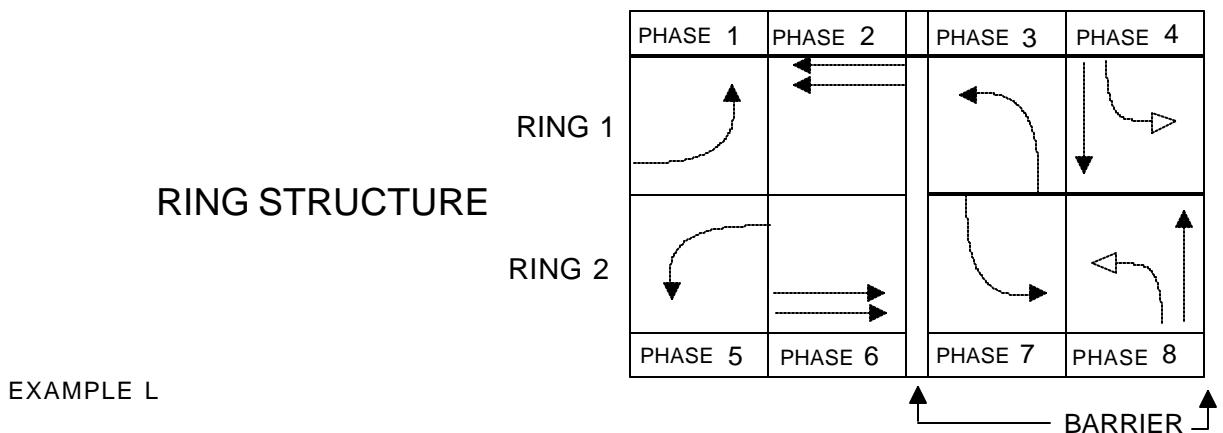


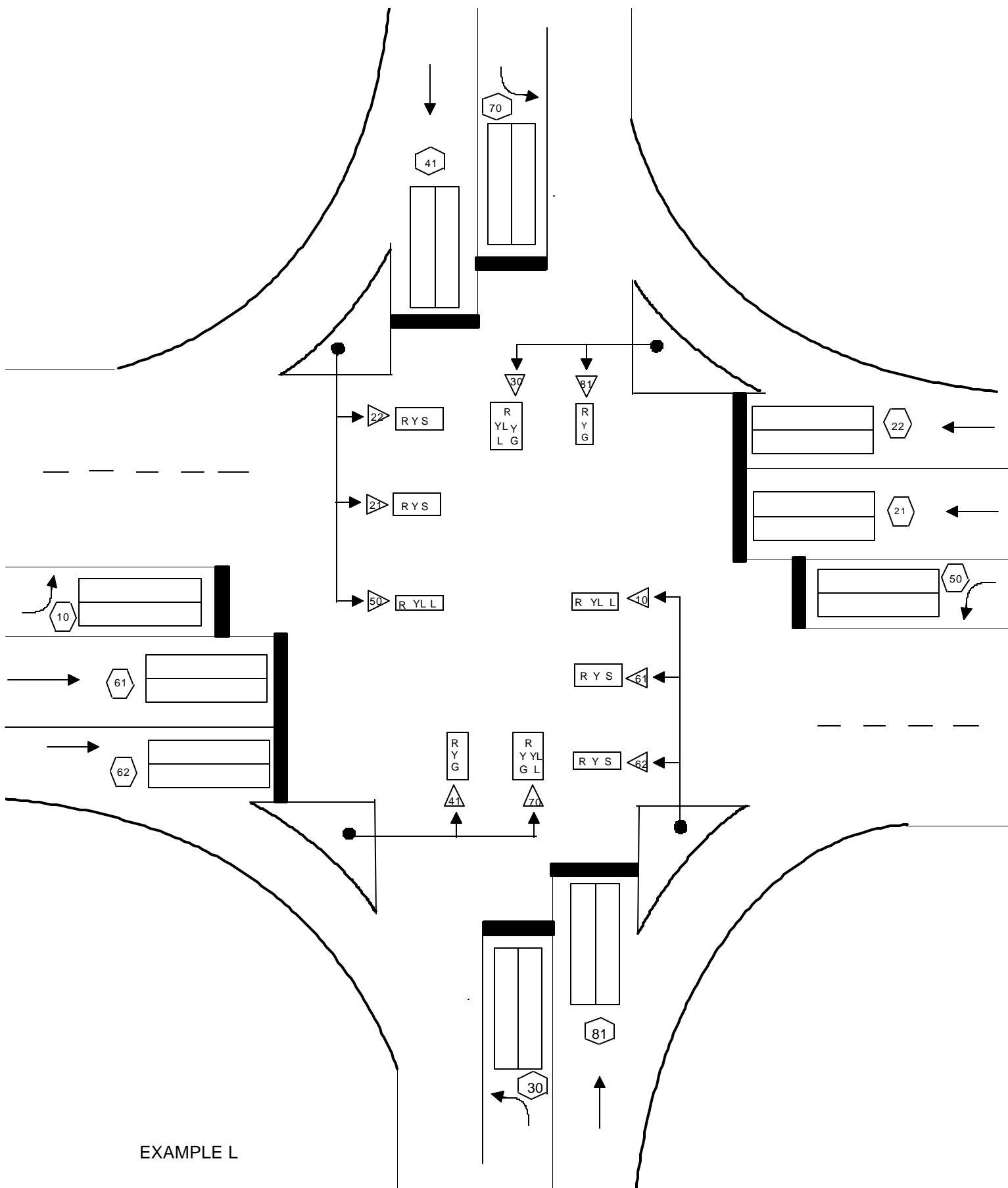
EXAMPLE K

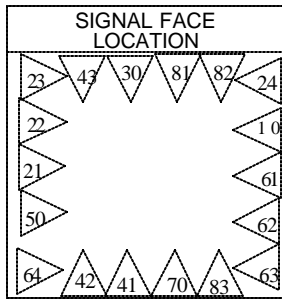


TRAFFIC PHASING AND COLOR SEQUENCE - ACTUATED CONTROLLERS																															
																															
PHASE 1				PHASE 2				PHASE 3				PHASE 4				PHASE 5				PHASE 6				PHASE 7				PHASE 8			
10				21				30				41	70			50				61				70				81	30		
				22																62											
R				R								R	R			R				R								R	R		
YL				Y				YL				Y	Y			YL				Y				YL				Y	Y		
L				S				L				G	G			L				S				L				G	G		
10				21	22			30				41				50				61	62			70				81			

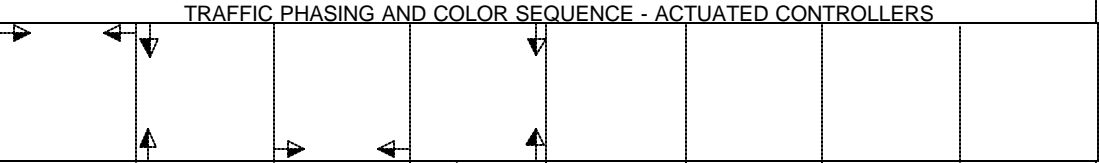
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		PED ϕ OVERLAP				PED ϕ OVERLAP				PED ϕ OVERLAP				PED ϕ OVERLAP																			
	FACE NUMBERS	LOAD SWITCH CONTROL																															
	SIGNAL INDICATIONS	R																															
		Y																															
		G																															
OVERLAP PARENT PHASES																																	
DETECTOR ASSIGNMENT (PEDS ONLY)																																	

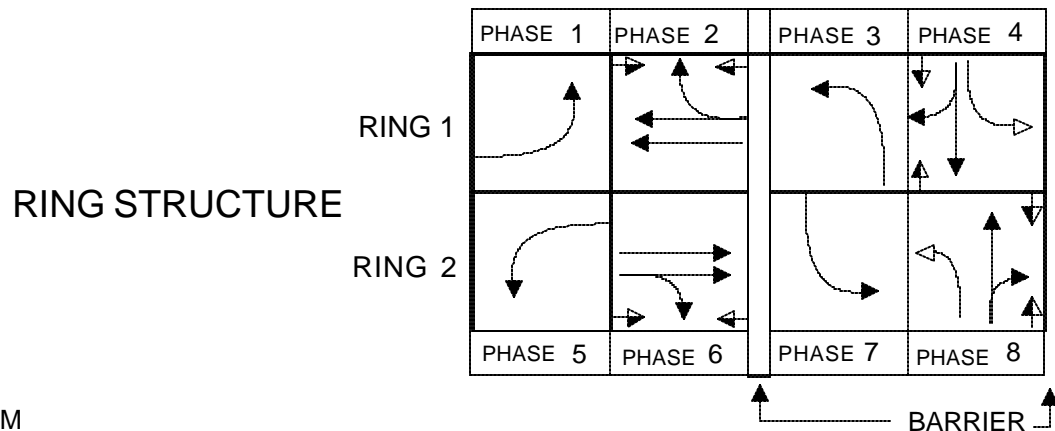




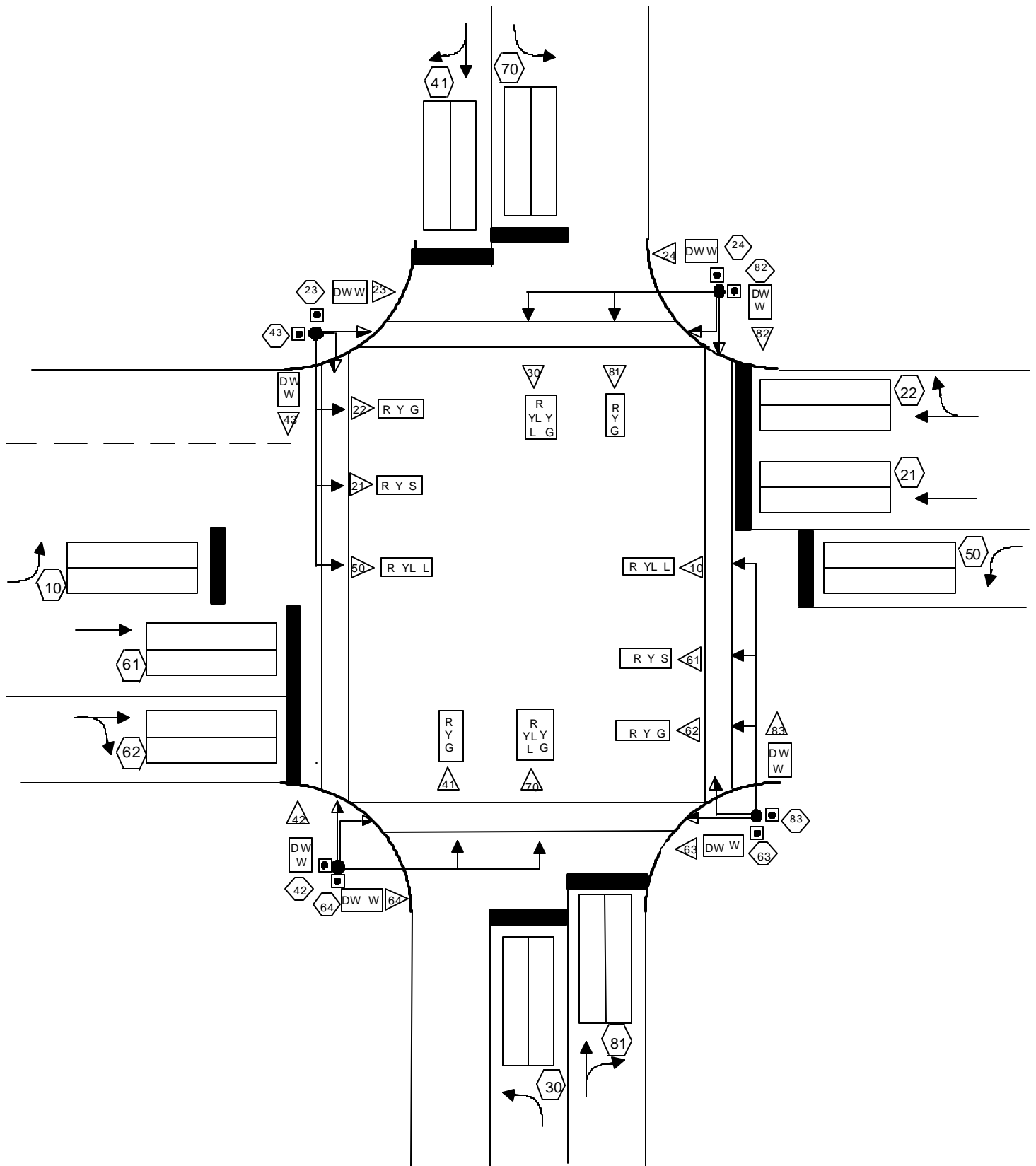


		TRAFFIC PHASING AND COLOR SEQUENCE - ACTUATED CONTROLLERS																																																			
		PHASE 1				PHASE 2				PHASE 3				PHASE 4				PHASE 5				PHASE 6				PHASE 7				PHASE 8																							
	FACE NUMBERS	LOAD SWITCH CONTROL	10				21	22			30				41	70			50				61	62			70				81	30																					
	SIGNAL INDICATIONS	R	R			R	R					R	R			R						R	R							R	R																						
		Y	YL			Y	Y				YL		Y	Y			YL					Y	Y				YL			Y	Y																						
		G	L			S	G				L		G	G			L					S	G				L			G	G																						
DETECTOR ASSIGNMENTS																																																					
		10								21		22						30										41		70				50				61		62						81		30					

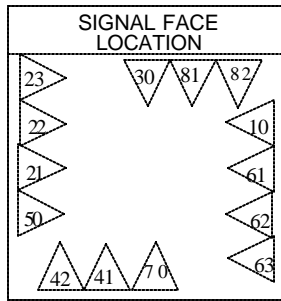
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		PED 0 2				PED 0 4				PED 0 6				PED 0 8															
		OVERLAP				OVERLAP				OVERLAP				OVERLAP															
	FACE NUMBERS	LOAD SWITCH CONTROL	23			42			63			82																	
			24			43			64			83																	
	SIGNAL INDICATIONS	R	DW		DW			DW			DW																		
		Y																											
		G	W			W			W			W																	
	OVERLAP PARENT PHASES																												
	DETECTOR ASSIGNMENT (PEDS ONLY)		23	24		42	43		63	64		82	83																





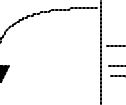
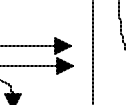
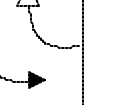




EXAMPLE M

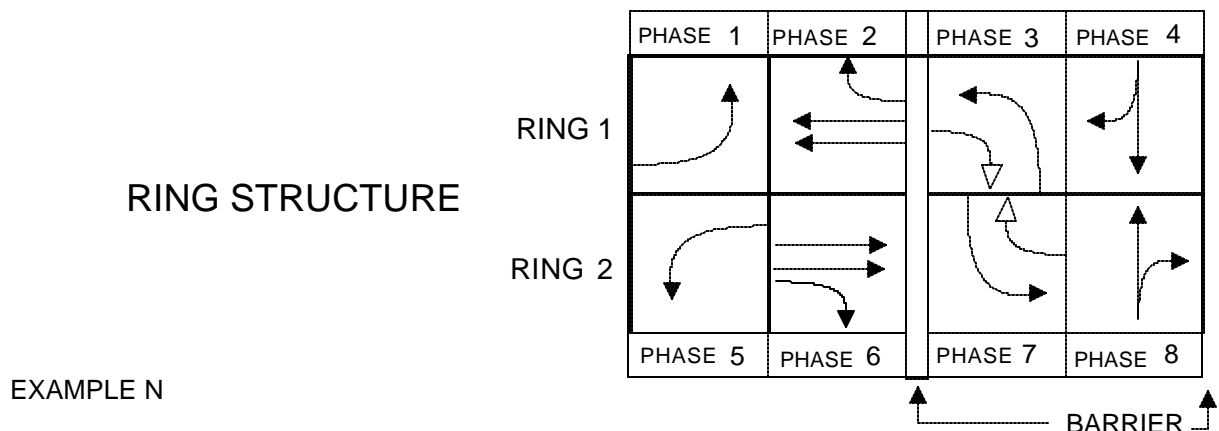


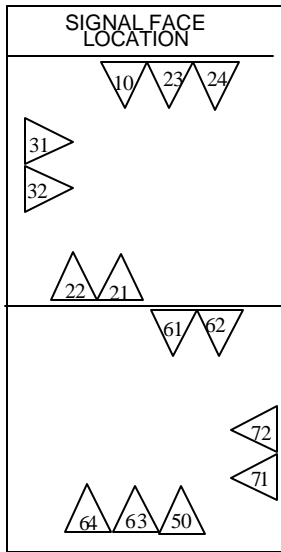
EXAMPLE M



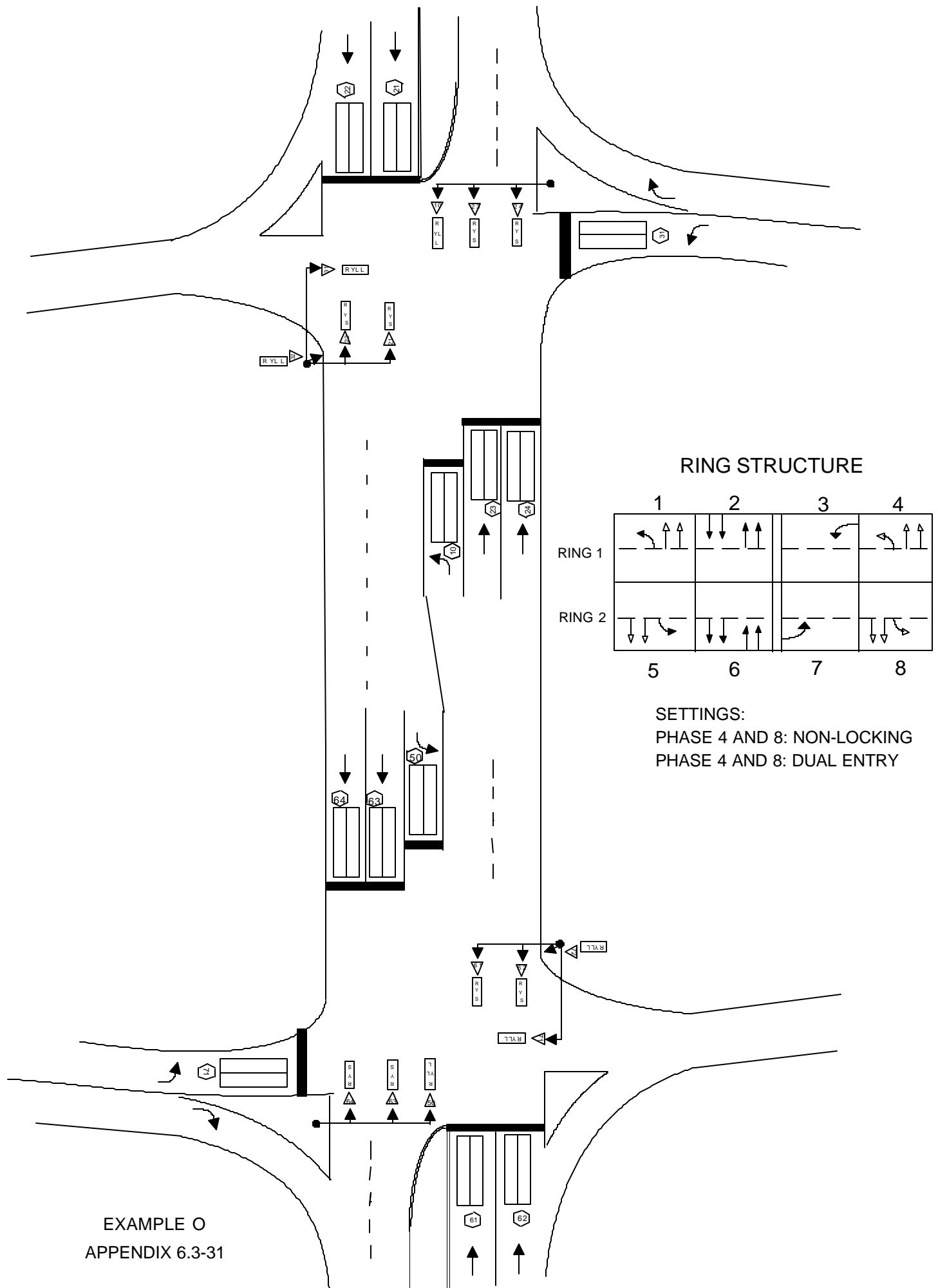
		TRAFFIC PHASING AND COLOR SEQUENCE - ACTUATED CONTROLLERS																															
																																	
		PHASE 1				PHASE 2				PHASE 3				PHASE 4				PHASE 5				PHASE 6				PHASE 7				PHASE 8			
FACE NUMBERS	LOAD SWITCH CONTROL	10				21				30				41	42			50				61				70				81	82		
						22																62											
	SIGNAL INDICATIONS	R	R			R				R				R	R			R				R				R				R	R		
		Y	YL			Y				YL				Y	Y			YL				Y				YL				Y	Y		
		G	L			S				L				G	S			L				S				L				S	S		
DETECTOR ASSIGNMENTS		10				21	22	23		30				41				50				61	62	63		70				81			

		TRAFFIC PHASING AND COLOR SEQUENCE - ACTUATED CONTROLLERS																
																		
		PED ϕ		PED ϕ		PED ϕ		PED ϕ										
		OVERLAP A		OVERLAP B		OVERLAP		OVERLAP										
FACE NUMBERS	LOAD SWITCH CONTROL	63				23												
		R	R			R												
		Y	YRt			YRt												
SIGNAL INDICATIONS		Rt				Rt												
OVERLAP PARENT PHASES		3	6			2	7											
DETECTOR ASSIGNMENT (PEDS ONLY)																		

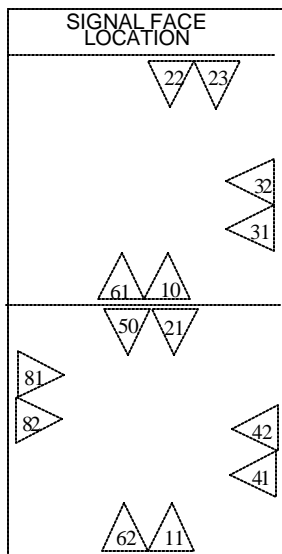





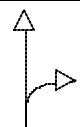


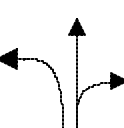
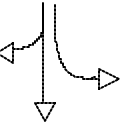
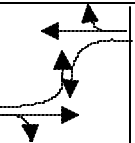
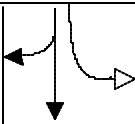


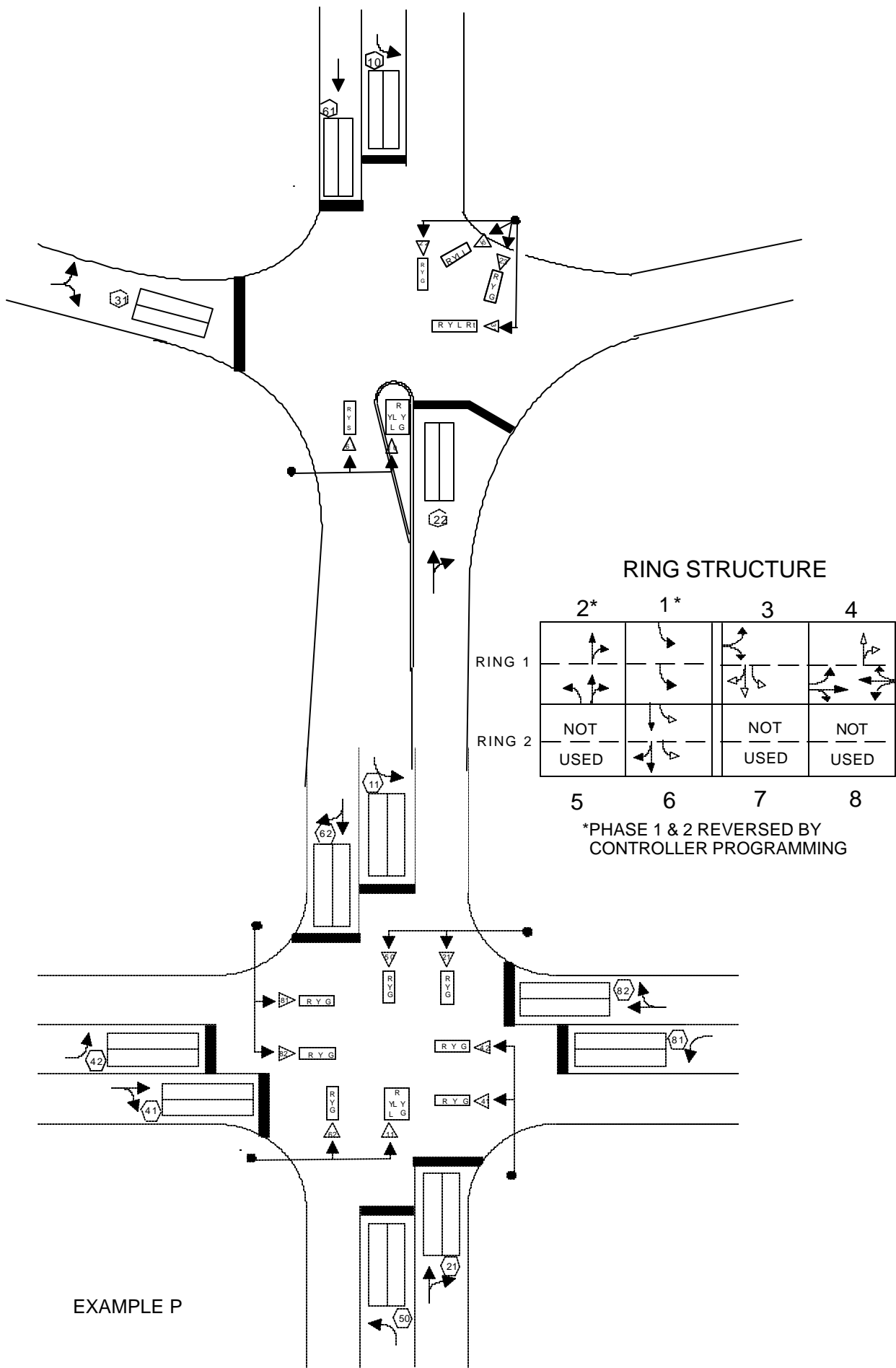
TRAFFIC PHASING AND COLOR SEQUENCE - ACTUATED CONTROLLERS																			
<div><div><div><div>22</div><div>21</div></div><div><div>61</div><div>62</div></div><div><div>72</div><div>71</div></div><div><div>64</div><div>63</div><div>50</div></div></div></div>																			
				PHASE 1				PHASE 2				PHASE 3				PHASE 4			
								21				31				61			
DUMMY				22				32				DUMMY							
												DUMMY							
				</															

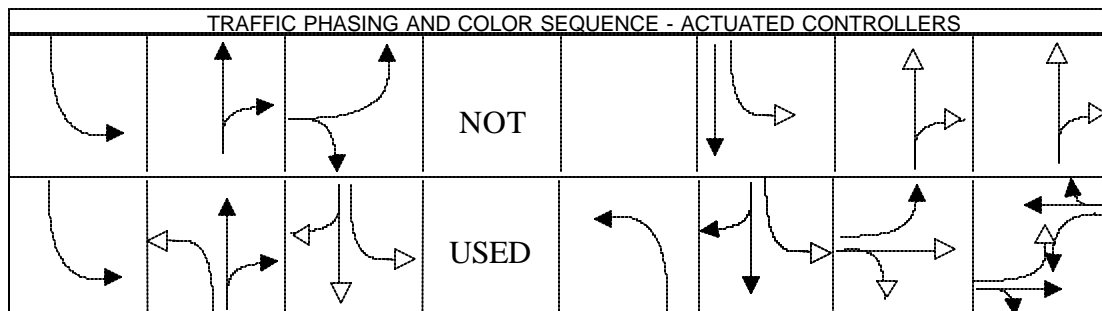
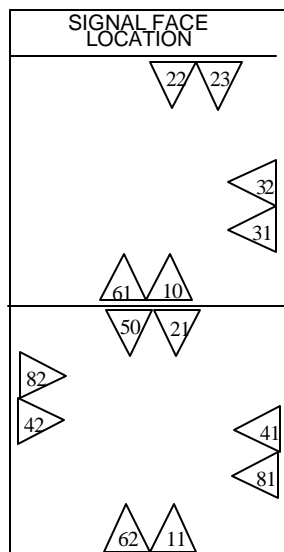


EXAMPLE O
 APPENDIX 6.3-31

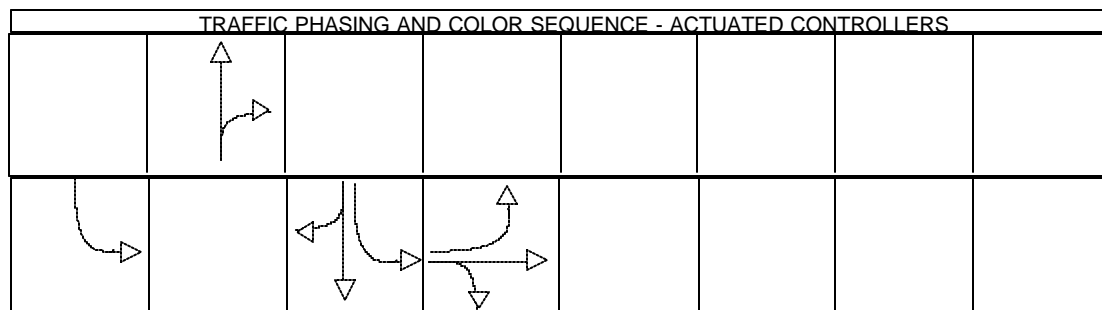


TRAFFIC PHASING AND COLOR SEQUENCE - ACTUATED CONTROLLERS																															
																NOT								NOT				NOT			
																USED								USED				USED			
PHASE 1				PHASE 2				PHASE 3				PHASE 4				PHASE 5				PHASE 6				PHASE 7				PHASE 8			
10				21	50			31	32			41	81					61	10												
												42	82																		
				R	R			R	R			R	R					R	R												
YL				Y	Y			Y	YL			Y	Y					Y	Y												
L				G	G			L	L			G	G					S	G												
								Rt																							
10	11			21	22	50		31				41	42	81	82			61	62												





			PHASE 1			PHASE 2			PHASE 3			PHASE 4			PHASE 5			PHASE 6			PHASE 7			PHASE 8								
	FACE NUMBERS	LOAD SWITCH CONTROL	10				21	50			31	32					50				61	10			71				82	83		
	SIGNAL INDICATIONS	R					R	R			R	R									R	R							R	R		
		Y	YL				Y	Y			Y	YL					YL				Y	Y			YL				Y	Y		
		G	L				G	G			L	L					L				S	G			L				G	G		
												Rt																				
DETECTOR ASSIGNMENTS							21	22			31						50				61	62			71				81	82	83	



			PED ϕ			PED ϕ			PED ϕ			PED ϕ											
			OVERLAP A			OVERLAP B			OVERLAP C			OVERLAP D											
	FACE NUMBERS	LOAD SWITCH CONTROL	11			22			62	11		71	81										
						23																	
	SIGNAL INDICATIONS	R			R			R	R		R	R											
		Y	YL		Y			Y	Y		Y	Y											
		L			G			G	G		G	G											
		G																					
OVERLAP PARENT PHASES		1	3		2	7	8		3	6		7	8										
DETECTOR ASSIGNMENT (PEDS ONLY)																							
EXAMPLE Q																							

EXAMPLE Q

