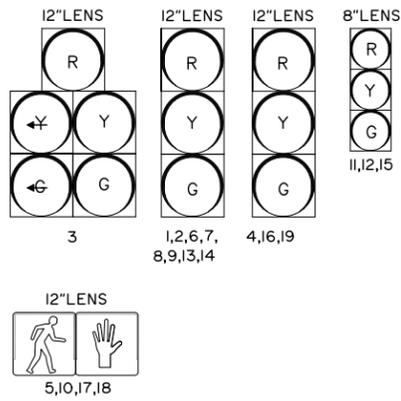


SIGNAL INDICATIONS



SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS 11,12

EMERGENCY PRE-EMPTION NOTES:

CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE NORTHBOUND AND SOUTHBOUND APPROACHES OF MALIN ROAD AND THE EASTBOUND AND WESTBOUND APPROACHES OF WEST CHESTER PIKE WITH A FAIL SAFE DEVICE FOR EACH DIRECTION OF OPERATION.

THIS FAIL SAFE DEVICE SHALL CONSIST OF A FLASHING WHITE FLOOD LIGHT, AND SHALL BEGIN FLASHING WHEN THE PREEMPTION PHASE DISPLAYS PREEMPTION GREEN FOR THE EMERGENCY VEHICLE APPROACH.

THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE, SHALL TERMINATE ALL GREEN INDICATIONS, EXCEPT THE GREEN INDICATIONS FOR THE PHASE GOVERNED BY THE APPROACHING EMERGENCY VEHICLE, FOLLOWED BY SELECTIVE CLEARANCES DEPENDENT UPON THE PHASE IN WHICH THE PRE-EMPTION OCCURS. THE "GREEN" INDICATIONS FOR THE PRE-EMPTED PHASE SHALL REMAIN "GREEN" FOR THE DURATION OF SIGNAL PRE-EMPTION AND "RED" INDICATIONS DISPLAYED FOR ALL OTHER PHASES.

IF THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, ARE FLASHING ALL SIGNALS SHALL REMAIN FLASHING.

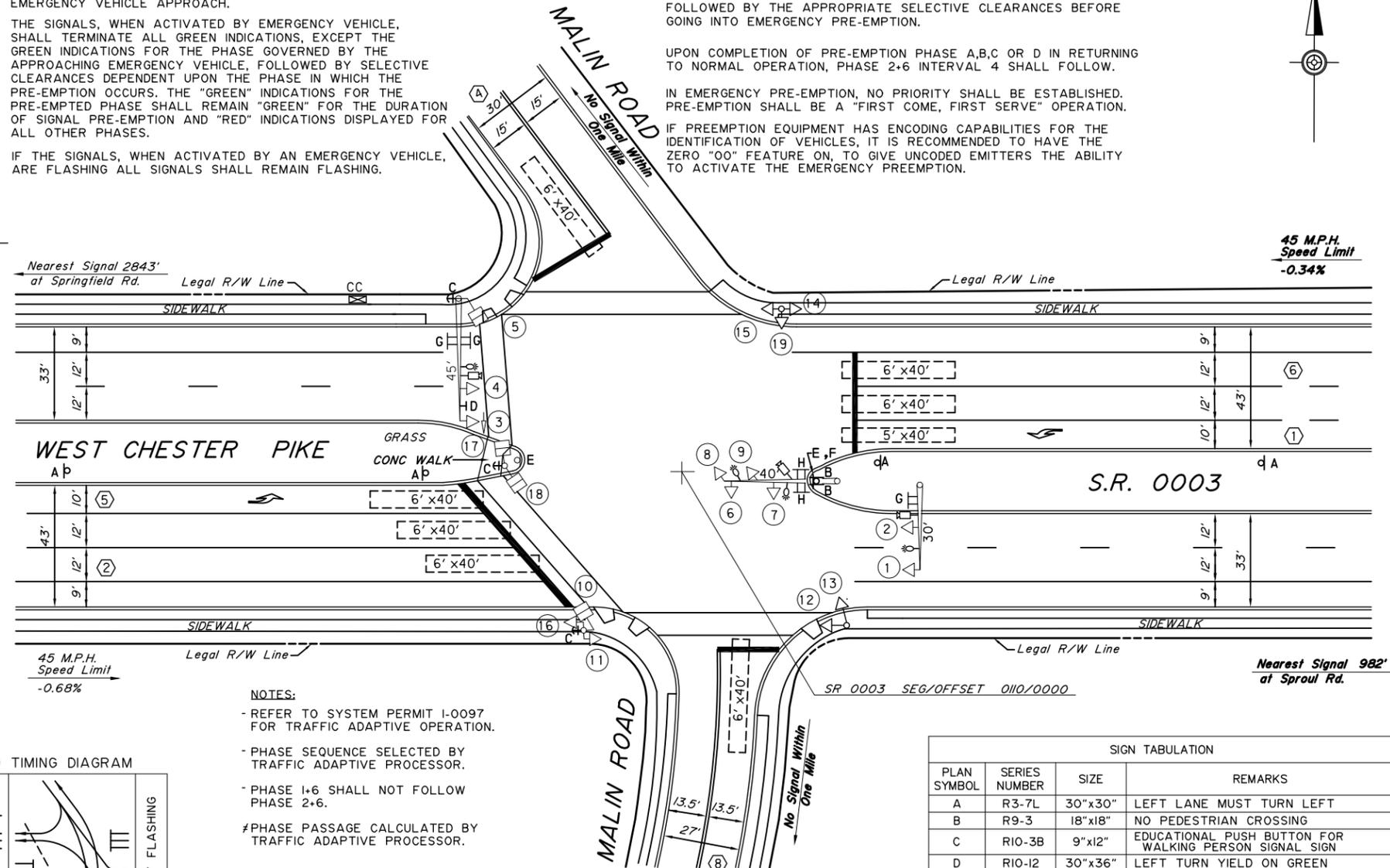
THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE, SHALL TIME OUT ALL YELLOW AND RED INDICATIONS, FOLLOWED BY THE GREEN INTERVAL OF THE PRE-EMPTION PHASE GOVERNED BY THE APPROACHING EMERGENCY VEHICLE.

IF SIGNALS HAVE BEEN ACTUATED BY PEDESTRIAN PUSHBUTTON, AND THE SIGNAL IS PRE-EMPTED DURING THE "MAN" INTERVAL, THE MAN INTERVAL SHALL TERMINATE IMMEDIATELY, FOLLOWED BY THE "FLASHING HAND" INDICATION. THIS INTERVAL SHALL TIME OUT FOLLOWED BY THE APPROPRIATE SELECTIVE CLEARANCES BEFORE GOING INTO EMERGENCY PRE-EMPTION.

UPON COMPLETION OF PRE-EMPTION PHASE A,B,C OR D IN RETURNING TO NORMAL OPERATION, PHASE 2+6 INTERVAL 4 SHALL FOLLOW.

IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED. PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.

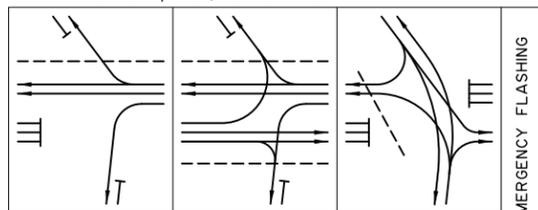
IF PREEMPTION EQUIPMENT HAS ENCODING CAPABILITIES FOR THE IDENTIFICATION OF VEHICLES, IT IS RECOMMENDED TO HAVE THE ZERO "00" FEATURE ON, TO GIVE UNCODED EMITTERS THE ABILITY TO ACTIVATE THE EMERGENCY PREEMPTION.



NOTES:

- REFER TO SYSTEM PERMIT I-0097 FOR TRAFFIC ADAPTIVE OPERATION.
- PHASE SEQUENCE SELECTED BY TRAFFIC ADAPTIVE PROCESSOR.
- PHASE 1+6 SHALL NOT FOLLOW PHASE 2+6.
- PHASE PASSAGE CALCULATED BY TRAFFIC ADAPTIVE PROCESSOR.

MOVEMENT, SEQUENCE AND TIMING DIAGRAM



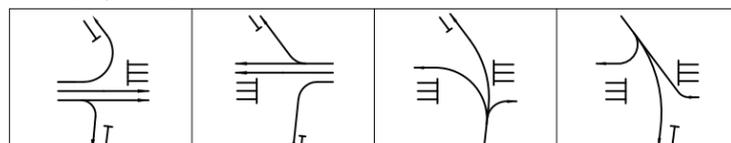
PHASE	1+6			2+6			4+8				EMERGENCY FLASHING
	INTERVAL	1	2	3	4	5	6	7	8	9	
1,2,16	R	R	R	G	Y	R	R	R	R	R	Y
3	G	Y	R	G	Y	R	R	R	R	R	OFF
4,14	G	Y	R	G	Y	R	R	R	R	R	Y
5,10,17,18	H	H	H	H	H	H	M	FH	H	H	OFF
6,7,19	R	R	R	R	R	R	G	G	Y	R	R
8,9,13	R	R	R	R	R	R	G	G	Y	R	R
11,12	R	R	R	G	Y	R	R	R	R	R	OFF
15	G	Y	R	G	Y	R	R	R	R	R	OFF

FIXED	5	2	5	2	3	3	5
MINIMUM PASSAGE	3		25		3		
PASSAGE	≠		≠		≠		
MAXIMUM I	7				31		
MAXIMUM II	8				39		
PEDESTRIAN MEMORY	NL		MN		NL		

* UPON PEDESTRIAN ACTUATION ONLY

- ① IF FOLLOWED BY PHASE 2+6
- ② G IF FOLLOWED BY PHASE 2+6

EMERGENCY PRE-EMPTION PHASING MOVEMENT, SEQUENCE AND TIMING DIAGRAM



PHASE	A					B					C					D					
	INTERVAL	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1,2,16			G	Y	R			R	R	R			R	R	R			R	R	R	
3			R	R	R			G	Y	R			R	R	R			R	R	R	
4,14			R	R	R			R	R	R			R	R	R			R	R	R	
5,10,17,18			H	H	H			H	H	H			H	H	H			H	H	H	
6,7,19			R	R	R			R	R	R			G	Y	R			R	R	R	
8,9,13			R	R	R			R	R	R			R	R	R			G	Y	R	
11,12			R	R	R			R	R	R			R	R	R			R	R	R	
15			R	R	R			R	R	R			R	R	R			R	R	R	
FIXED TIME			①	5	2			①	5	2			①	3	5			①	3	5	

- ① FOR DURATION OF PREEMPTION
- ② TO REMAIN G WHEN RETURNING TO NORMAL OPERATION

SIGN TABULATION			
PLAN SYMBOL	SERIES NUMBER	SIZE	REMARKS
A	R3-7L	30"x30"	LEFT LANE MUST TURN LEFT
B	R9-3	18"x18"	NO PEDESTRIAN CROSSING
C	R10-3B	9"x12"	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON SIGNAL SIGN
D	R10-12	30"x36"	LEFT TURN YIELD ON GREEN
E	OMI-3	18"x18"	HAZARD MARKER
F	R4-7	24"x30"	KEEP RIGHT
G	D3-4	78"x16"	MALIN RD
H	D3-4	84"x16"	W. CHESTER PIKE

LEGEND

- 20' MAST ARM/IDENTIFYING LENGTH
- ② VEHICULAR SIGNAL HEAD/BACKPLATE/VISORS/DIRECTIONAL ARROW/IDENTIFYING NUMBER
- ② PEDESTRIAN SIGNAL HEAD/IDENTIFYING NUMBER
- ⊕ PEDESTRIAN PUSHBUTTON/SIGN
- A SIGN/IDENTIFYING LETTER
- ② 6'x40' DETECTION ZONE/SIZE
- ⊕ EMERGENCY PREEMPTION DEVICE
- ⊕ CURB CUT RAMP
- ⊕ UTILITY POLE
- ② PHASE NUMBER
- ⊕ VIDEO DETECTOR



GENERAL NOTES

NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS PRIOR APPROVAL IS GRANTED IN WRITING BY A REPRESENTATIVE OF THE DEPARTMENT OF TRANSPORTATION.

ALL MAINTENANCE WORK INCLUDING TRIMMING OF TREES, NECESSARY FOR PROPER VISIBILITY OF THE SIGNALS IS THE RESPONSIBILITY OF THE PERMITTEE.

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ON THIS DRAWING ARE CONSIDERED PART OF THE PERMIT AND SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH PUBLICATION NO. 212.

POST MOUNTED SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF CURB OR THE EDGE OF THE SHOULDER. SUPPORT POLES FOR OVERHEAD SIGNALS SHALL ALSO HAVE A MINIMUM CLEARANCE HORIZONTALLY OF 2 FEET.

SIGNALS ERECTED OVER THE ROADWAY SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 16 FT. ABOVE THE ROADWAY. POST MOUNTED SIGNALS SHALL BE A MINIMUM OF 8 FT. ABOVE THE SIDEWALK OR PAVEMENT.

ALL OVERHEAD SIGNALS MUST BE RIGIDLY MOUNTED, TOP AND BOTTOM, AND EQUIPPED WITH BACKPLATES.

THE MINIMUM HORIZONTAL DISTANCE BETWEEN SIGNALS MEASURED AT RIGHT ANGLES TO THE APPROACH SHALL BE 8 FEET.

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

CURBING TO BE INSTALLED BY MUNICIPALITY AND WHERE NOTED, SHALL BE PLAIN CEMENT CONCRETE CURB OR GRANITE CURB, INSTALLED IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS FORM 408.

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF THE LATEST AMENDMENT TO ACT 287, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, EFFECTIVE DATE DECEMBER 20, 1974.

WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT FOR REVIEW PRIOR TO BIDDING.

PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR ANY CHANGES IN INTERSECTION GEOMETRY REGARDING EXCAVATION.

CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-8800 SERIES.

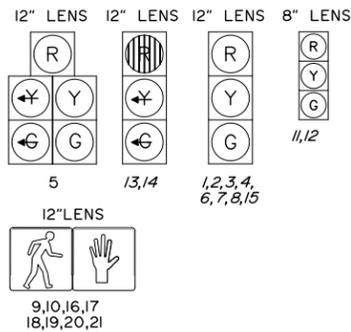
SYSTEM FILE # I-0097

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: DELAWARE
MUNICIPALITY: MARPLE TOWNSHIP
INTERSECTION: WEST CHESTER PIKE (SR 0003) AND MALIN ROAD

REVIEWED:		DATE					
MUNICIPAL OFFICIAL		DATE					
RECOMMENDED:		DATE					
DISTRICT TRAFFIC ENGINEER		DATE					
NO.	REVISION	DES./REVW.	DATE	REVW.	DATE	RECOM.	DATE
1	Modernization						
2	TRAFFIC ADAPTIVE	ORA	1/13/14				
3							
4							
5							
6							
7							
8							

SIGNAL INDICATIONS



SIGNAL HEADS 13 AND 14 SHALL BE EQUIPPED WITH FULL CIRCLE VISORS AND LOUVERS ON THE RED INDICATION.

EMERGENCY PRE-EMPTION NOTES:

CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE NORTHBOUND AND SOUTHBOUND APPROACHES OF SPROUL ROAD AND THE EASTBOUND AND WESTBOUND APPROACHES OF WEST CHESTER PIKE WITH A FAIL SAFE DEVICE FOR EACH DIRECTION OF OPERATION.

THIS FAIL SAFE DEVICE SHALL CONSIST OF A FLASHING WHITE FLOOD LIGHT, AND SHALL BEGIN FLASHING WHEN THE PREEMPTION PHASE DISPLAYS PREEMPTION GREEN FOR THE EMERGENCY VEHICLE APPROACH.

THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE, SHALL TERMINATE ALL GREEN INDICATIONS, EXCEPT THE GREEN INDICATIONS FOR THE PHASE GOVERNED BY THE APPROACHING EMERGENCY VEHICLE, FOLLOWED BY SELECTIVE CLEARANCES DEPENDENT UPON THE PHASE IN WHICH THE PRE-EMPTION OCCURS. THE "GREEN" INDICATIONS FOR THE PRE-EMPTED PHASE SHALL REMAIN "GREEN" FOR THE DURATION OF SIGNAL PRE-EMPTION AND "RED" INDICATIONS DISPLAYED FOR ALL OTHER PHASES.

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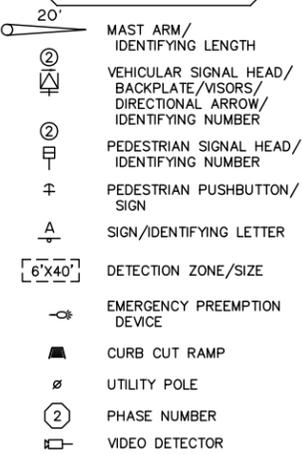
IF SIGNALS HAVE BEEN ACTUATED BY PEDESTRIAN PUSHBUTTON, AND THE SIGNAL IS PRE-EMPTED DURING THE MAN INTERVAL, THE MAN INTERVAL SHALL TERMINATE IMMEDIATELY, FOLLOWED BY THE FLASHING HAND INTERVAL. THIS INTERVAL SHALL TIME OUT FOLLOWED BY THE APPROPRIATE SELECTIVE CLEARANCES, BEFORE GOING INTO EMERGENCY PRE-EMPTION.

UPON COMPLETION OF PRE-EMPTION PHASE A,B,C OR D IN RETURNING TO NORMAL OPERATION, PHASE 2+6 INTERVAL 10 SHALL FOLLOW.

IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED. PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.

IF PREEMPTION EQUIPMENT HAS ENCODING CAPABILITIES FOR THE IDENTIFICATION OF VEHICLES, IT IS RECOMMENDED TO HAVE THE ZERO "00" FEATURE ON, TO GIVE UNCODED EMITTERS THE ABILITY TO ACTIVATE THE EMERGENCY PREEMPTION.

LEGEND



GENERAL NOTES

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POST MOUNTED SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF CURB OR THE EDGE OF THE SHOULDER. SUPPORT POLES FOR OVERHEAD SIGNALS SHALL ALSO HAVE A MINIMUM CLEARANCE HORIZONTALLY OF 2 FEET.

SIGNALS ERECTED OVER THE ROADWAY SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 16 FT. ABOVE THE ROADWAY. POST MOUNTED SIGNALS SHALL BE A MINIMUM OF 8 FT. ABOVE THE SIDEWALK OR PAVEMENT.

ALL OVERHEAD SIGNALS MUST BE RIGIDLY MOUNTED, TOP AND BOTTOM, AND EQUIPPED WITH BACKPLATES.

THE MINIMUM HORIZONTAL DISTANCE BETWEEN SIGNALS MEASURED AT RIGHT ANGLES TO THE APPROACH SHALL BE 8 FEET.

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

CURBING TO BE INSTALLED BY MUNICIPALITY AND WHERE NOTED, SHALL BE PLAIN CEMENT CONCRETE CURB OR GRANITE CURB, INSTALLED IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS FORM 408.

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF THE LATEST AMENDMENT TO ACT 287, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, EFFECTIVE DATE DECEMBER 20, 1974.

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PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR ANY CHANGES IN INTERSECTION GEOMETRY REGARDING EXCAVATION.

CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-8800 SERIES.

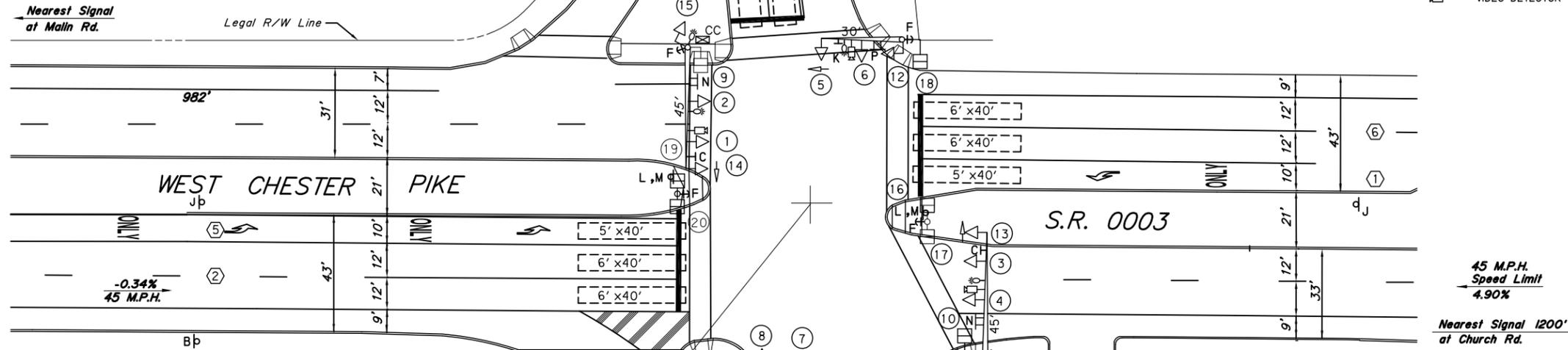
SYSTEM FILE # I-0097

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: DELAWARE
MUNICIPALITY: MARPLE TOWNSHIP
INTERSECTION: WEST CHESTER PIKE (SR 0003)
AND SPROUL ROAD (SR 0320)

REVIEWED: _____ DATE _____
MUNICIPAL OFFICIAL: _____ DATE _____
RECOMMENDED: _____ DATE _____
DISTRICT TRAFFIC ENGINEER: _____ DATE _____

NO.	REVISION	DES./REVW.	DATE	REVW.	DATE	RECOM.	DATE
1	Modernization						
2	TRAFFIC ADAPTIVE	ORA	1/13/14				
3							
4							
5							
6							
7							
8							



- NOTES:**
- REFER TO SYSTEM PERMIT I-0097 FOR TRAFFIC ADAPTIVE OPERATION.
 - PHASE SEQUENCE SELECTED BY TRAFFIC ADAPTIVE PROCESSOR.
 - PHASE 2+5 AND 1+6 SHALL NOT FOLLOW PHASE 2+6.
 - #PHASE PASSAGE CALCULATED BY TRAFFIC ADAPTIVE PROCESSOR.

SR 0003 SEG/OFFSET 0110/ 1077
SR 0320 SEG/OFFSET 0210/ 2699

PLAN SYMBOL	SERIES NUMBER	SIZE	REMARKS
A	R1-2	36"x36"	YIELD SIGN
B	R3-7R	30"x30"	RIGHT LANE MUST TURN RIGHT
C	R10-IOL	24"x30"	LEFT TURN SIGNAL
D	R3-5L	30"x36"	LEFT TURN SIGNAL
E	R3-6SR	30"x36"	OPTIONAL RIGHT TURN SIGN
F	R10-3B	9"x12"	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON SIGNAL SIGN
G	W4-2R	30"x30"	RIGHT LANE ENDS
H	W4-IOR	36"x36"	PAVEMENT WIDTH TRANSITION SIGN- RIGHT LANE ENDS
J	R3-7L	30"x30"	LEFT LANE MUST TURN LEFT
K	R10-I2	30"x36"	LEFT TURN YIELD ON GREEN
L	OMI-3	18"x18"	HAZARD MARKER
M	R4-7	24"x30"	KEEP RIGHT
N	D3-4	66"x16"	Sproul Rd
P	D3-4	84"x16"	W. Chester Pike

MOVEMENT, SEQUENCE AND TIMING DIAGRAM

PHASE	MOVEMENT, SEQUENCE AND TIMING DIAGRAM																				EMERGENCY FLASHING		
	1+5				2+5				1+6				2+6				3+8					4+8	
INTERVAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
1,2	R	R	R	R	R	R	G	Y	R	G	Y	R	R	R	R	R	R	R	R	R	Y		
3,4	R	R	R	G	Y	R	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	Y		
5	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R	G	G	Y	R	R	R		
6	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R		
7,8,15	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R		
10,16,17,18	H	H	H	H	H	H	H	H	H	M	FH	H	H	H	H	M	FH	H	H	H	OUT		
9,19,20,21	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	M	FH	H	H	H	OUT		
11	R	R	R	G	Y	R	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	OUT		
12	R	R	R	R	R	R	G	Y	R	G	Y	R	R	R	R	R	R	R	R	R	OUT		
13	G	Y	R	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	OUT		
14	G	Y	R	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	OUT		

	3	3	4	3	5	2	3	5	2	20	5	2	3	4	3	3	4	3
FIXED MINIMUM PASSAGE	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#
MAXIMUM 1	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
MAXIMUM 2	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
PEDESTRIAN MEMORY	NL	MR	NL															

- ⊕ IF FOLLOWED BY PHASE 2+5
- ⊕ IF FOLLOWED BY PHASE 1+6
- ⊕ IF FOLLOWED BY PHASE 2+6
- G4Y IF FOLLOWED BY PHASE 4+8
- G IF FOLLOWED BY PHASE 4+8
- M IF FOLLOWED BY PHASE 4+8
- ⊕ TIMING AS SHOWN IN PHASE 4+8. INTERVAL MAY TIME OUT IN THIS PHASE OR BE COMPLETED IN PHASE 4+8.

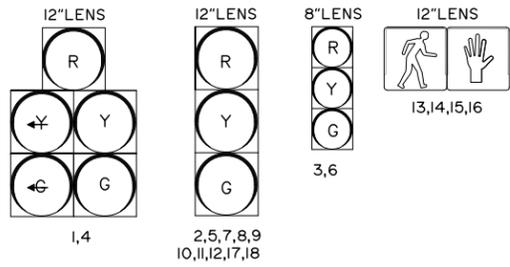
EMERGENCY PRE-EMPTION PHASING MOVEMENT, SEQUENCE AND TIMING DIAGRAM

PHASE	EMERGENCY PRE-EMPTION PHASING MOVEMENT, SEQUENCE AND TIMING DIAGRAM																																							
	A										B										C										D									
INTERVAL	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40																				
1,2	R	R	R	R	R	G	Y	R	G	Y	R	R	R	R	R	R	R	R	R	R	Y																			
3,4	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y																			
5	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y																			
6	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y																			
7,8,15	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y																			
10,16,17,18	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	OUT																			
9,19,20,21	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	OUT																			
11	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	OUT																			
12	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	OUT																			
13	G	Y	R	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	OUT																			
14	G	Y	R	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	OUT																			
FIXED TIME	(1)	5	2	(1)	5	2	(1)	5	2	(1)	5	2	(1)	5	2	(1)	5	2	(1)	5	2																			

- ① FOR DURATION OF PREEMPTION
- ② TO REMAIN G WHEN RETURNING TO NORMAL OPERATION

* UPON PEDESTRIAN ACTUATION ONLY

SIGNAL INDICATIONS



SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS & LOUVERS. 3,6

EMERGENCY PRE-EMPTION NOTES:

CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE NORTHBOUND APPROACH OF CHURCH ROAD, THE SOUTHBOUND APPROACH OF BERKLEY ROAD AND EASTBOUND AND WESTBOUND APPROACHES OF WEST CHESTER PIKE WITH A FAIL SAFE DEVICE FOR EACH DIRECTION OF OPERATION. THIS FAIL SAFE DEVICE SHALL CONSIST OF A FLASHING WHITE FLOOD LIGHT, AND SHALL BEGIN FLASHING WHEN THE PREEMPTION PHASE DISPLAYS PREEMPTION GREEN FOR THE EMERGENCY VEHICLE APPROACH.

THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE, SHALL TERMINATE ALL GREEN INDICATIONS, EXCEPT THE GREEN INDICATIONS FOR THE PHASE GOVERNED BY THE APPROACHING EMERGENCY VEHICLE, FOLLOWED BY SELECTIVE CLEARANCES DEPENDENT UPON THE PHASE IN WHICH THE PRE-EMPTION OCCURS. THE "GREEN" INDICATIONS FOR THE PRE-EMPTED PHASE SHALL REMAIN "GREEN" FOR THE DURATION OF SIGNAL PRE-EMPTION AND "RED" INDICATIONS DISPLAYED FOR ALL OTHER PHASES.

IF THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, ARE FLASHING ALL SIGNALS SHALL REMAIN FLASHING.

THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE, SHALL TIME OUT ALL YELLOW AND RED INDICATIONS, FOLLOWED BY THE GREEN INTERVAL OF THE PRE-EMPTION PHASE GOVERNED BY THE APPROACHING EMERGENCY VEHICLE.

IF SIGNALS HAVE BEEN ACTUATED BY PEDESTRIAN PUSHBUTTON, AND THE SIGNAL IS PRE-EMPTED DURING THE "MAN" INTERVAL, THE MAN INTERVAL SHALL TERMINATE IMMEDIATELY, FOLLOWED BY THE "FLASHING HAND" INDICATION. THIS INTERVAL SHALL TIME OUT FOLLOWED BY THE APPROPRIATE SELECTIVE CLEARANCES BEFORE GOING INTO EMERGENCY PRE-EMPTION.

UPON COMPLETION OF PRE-EMPTION PHASE A,B,C OR D IN RETURNING TO NORMAL OPERATION, PHASE 2+6 INTERVAL IO SHALL FOLLOW.

IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED. PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.

IF PREEMPTION EQUIPMENT HAS ENCODING CAPABILITIES FOR THE IDENTIFICATION OF VEHICLES, IT IS RECOMMENDED TO HAVE THE ZERO "00" FEATURE ON, TO GIVE UNCODED EMITTERS THE ABILITY TO ACTIVATE THE EMERGENCY PREEMPTION.

GENERAL NOTES

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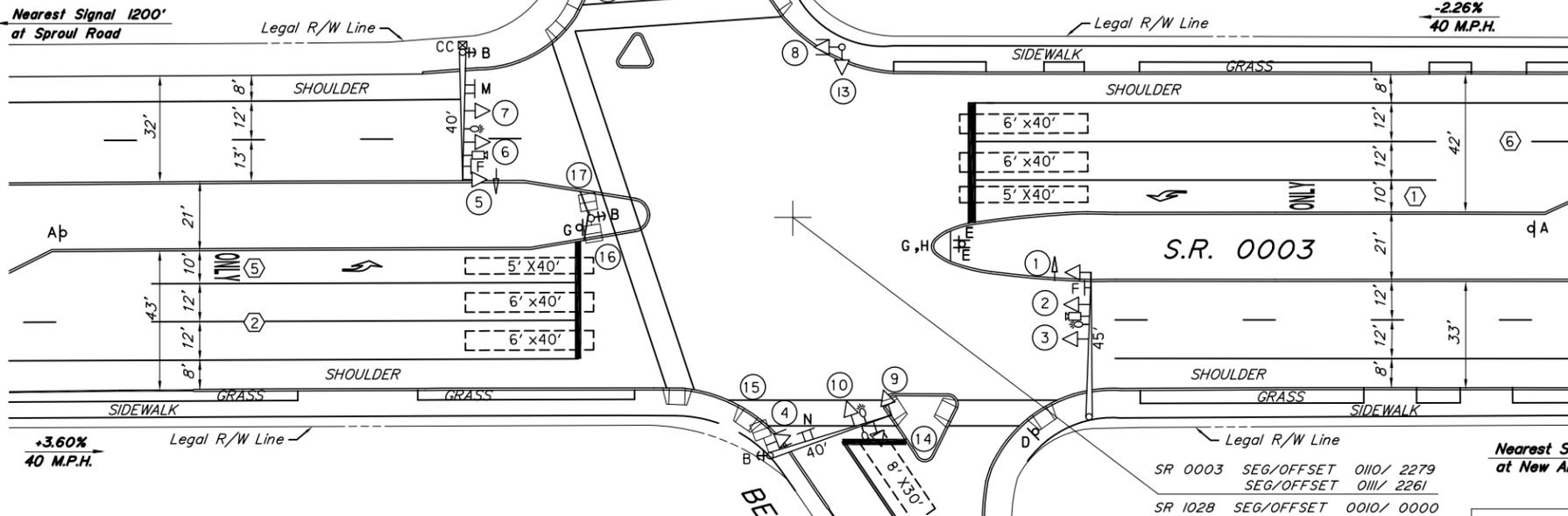
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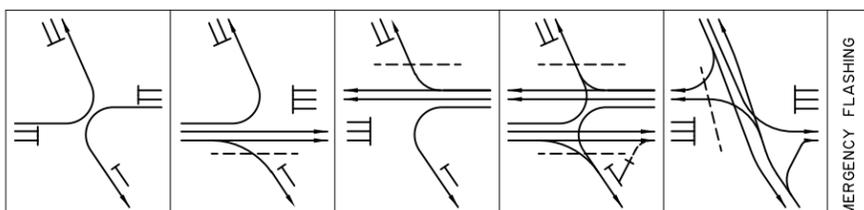
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SYSTEM FILE # 1-0097

WEST CHESTER PIKE



MOVEMENT, SEQUENCE AND TIMING DIAGRAM



- ① R IF 1+6 IS NEXT
- ② R IF 2+5 IS NEXT
- ③ R IF 2+6 IS NEXT
- ④ G IF 2+6 IS NEXT

NOTES:

- REFER TO SYSTEM PERMIT I-0097 FOR TRAFFIC ADAPTIVE OPERATION.
- PHASE SEQUENCE SELECTED BY TRAFFIC ADAPTIVE PROCESSOR.
- PHASE 1+5, 2+5 AND 1+6 SHALL NOT FOLLOW PHASE 2+6.
- PHASE PASSAGE CALCULATED BY TRAFFIC ADAPTIVE PROCESSOR.

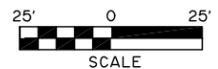
SIGN TABULATION			
PLAN SYMBOL	SERIES NUMBER	SIZE	REMARKS
A	R3-7L	30"x30"	LEFT LANE MUST TURN LEFT
B	R10-3B	9"x12"	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON SIGNAL SIGN
D	R1-2	36"x36"	YIELD SIGN
E	R9-3	18"x18"	NO PEDESTRIAN CROSSING
F	R10-10L	30"x30"	LEFT TURN YIELD ON GREEN
G	OMI-3	18"x18"	HAZARD MARKER
H	R4-7	24"x30"	KEEP RIGHT
J	R4-7	72"x32"	← Church Rd/Berkley Rd →
M	R4-7	72"x32"	← Berkley Rd/Church Rd →
N	R4-7	84"x16"	W. Chester Pike

EMERGENCY PRE-EMPTION PHASING MOVEMENT, SEQUENCE AND TIMING DIAGRAM

PHASE	A				B				C				D							
	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
INTERVAL	G				G				G				G							
1	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
2,17	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
3	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
4,5	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
6	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
7,8,12	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
9,10,11	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
13,14,15,16	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
FIXED TIME	** 5 3				** 5 3				** 4 4				** 4 4							

**FOR DURATION OF PREEMPTION

- LEGEND**
- ② MAST ARM/IDENTIFYING LENGTH
 - ② VEHICULAR SIGNAL HEAD/BACKPLATE/VISORS/DIRECTIONAL ARROW/IDENTIFYING NUMBER
 - ② PEDESTRIAN SIGNAL HEAD/IDENTIFYING NUMBER
 - ② PEDESTRIAN PUSHBUTTON/SIGN
 - ② SIGN/IDENTIFYING LETTER
 - ② DETECTION ZONE/SIZE
 - ② EMERGENCY PREEMPTION DEVICE
 - ② CURB CUT RAMP
 - ② UTILITY POLE
 - ② PHASE NUMBER
 - ② VIDEO DETECTOR



PHASE	1+5			2+5			1+6			2+6			4+8			EMERGENCY FLASHING	
	INTERVAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14		15
1	R	R	R	G	Y	R	R	R	R	G	Y	R	R	R	R	R	Y
2,3	R	R	R	G	Y	R	R	R	R	G	Y	R	R	R	R	R	Y
4	R	R	R	G	Y	R	R	R	R	G	Y	R	R	R	R	R	OUT
5	R	R	R	R	R	R	G	Y	R	R	G	Y	R	R	R	R	Y
6,7	R	R	R	R	R	R	G	Y	R	R	G	Y	R	R	R	R	Y
8	R	R	R	R	R	R	G	Y	R	R	G	Y	R	R	R	R	OUT
9,10,11	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
12,13,14	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
15,16,17,18	H	H	H	H	H	H	H	H	H	H	H	H	M	FH	H	H	OUT

	3	5	3	3	5	3	3	5	3	28	5	3	3	4	4
FIXED															
MINIMUM PASSAGE	≠			≠			≠			≠			≠		
MAXIMUM 1	7			7			7						12		
MAXIMUM 2	7			7			7						40		
PEDESTRIAN * MEMORY	NL			NL			NL			MN			NL		

*UPON PEDESTRIAN ACTUATION ONLY

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: DELAWARE
MUNICIPALITY: MARPLE TOWNSHIP
INTERSECTION: WEST CHESTER PIKE (SR 0003) AND CHURCH ROAD (SR 1028) & BERKLEY RD

REVIEWED: _____ DATE _____
MUNICIPAL OFFICIAL _____ DATE _____
RECOMMENDED: _____ DATE _____
DISTRICT TRAFFIC ENGINEER _____ DATE _____

NO.	REVISION	DES./REVW.	DATE	REVW.	DATE	RECOM.	DATE
1	Modernization						
2	TRAFFIC ADAPTIVE	ORA	1/13/14				
3							
4							
5							
6							
7							
8							

EMERGENCY PRE-EMPTION NOTES:

CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE NORTHBOUND AND SOUTHBOUND APPROACHES OF NEW ARDMORE AVENUE AND THE EASTBOUND AND WESTBOUND APPROACHES OF WEST CHESTER PIKE WITH A FAIL SAFE DEVICE FOR EACH DIRECTION OF OPERATION.

THIS FAIL SAFE DEVICE SHALL CONSIST OF A FLASHING WHITE FLOOD LIGHT, AND SHALL BEGIN FLASHING WHEN THE PREEMPTION PHASE DISPLAYS PREEMPTION GREEN FOR THE EMERGENCY VEHICLE APPROACH.

THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE, SHALL TERMINATE ALL GREEN INDICATIONS, EXCEPT THE GREEN INDICATIONS FOR THE PHASE GOVERNED BY THE APPROACHING EMERGENCY VEHICLE, FOLLOWED BY SELECTIVE CLEARANCES DEPENDENT UPON THE PHASE IN WHICH THE PRE-EMPTION OCCURS. THE "GREEN" INDICATIONS FOR THE PRE-EMPTED PHASE SHALL REMAIN "GREEN" FOR THE DURATION OF SIGNAL PRE-EMPTION AND "RED" INDICATIONS DISPLAYED FOR ALL OTHER PHASES.

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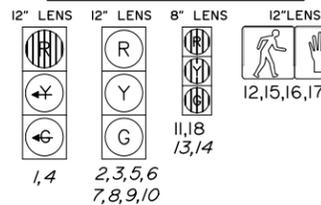
IF SIGNALS HAVE BEEN ACTUATED BY PEDESTRIAN PUSHBUTTON, AND THE SIGNAL IS PRE-EMPTED DURING THE MAIN INTERVAL, THE MAIN INTERVAL SHALL TERMINATE IMMEDIATELY, FOLLOWED BY THE FLASHING HAND INTERVAL. THIS INTERVAL SHALL TIME OUT FOLLOWED BY THE APPROPRIATE SELECTIVE CLEARANCES, BEFORE GOING INTO EMERGENCY PRE-EMPTION.

UPON COMPLETION OF PRE-EMPTION PHASE A,B,C OR D IN RETURNING TO NORMAL OPERATION, PHASE 2+6 INTERVAL 10 SHALL FOLLOW.

IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED. PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.

IF PREEMPTION EQUIPMENT HAS ENCODING CAPABILITIES FOR THE IDENTIFICATION OF VEHICLES, IT IS RECOMMENDED TO HAVE THE ZERO "00" FEATURE ON, TO GIVE UNCODED EMITTERS THE ABILITY TO ACTIVATE THE EMERGENCY PREEMPTION.

SIGNAL INDICATIONS



NOTES:

-REFER TO SYSTEM PERMIT I-0097 FOR TRAFFIC ADAPTIVE OPERATION.

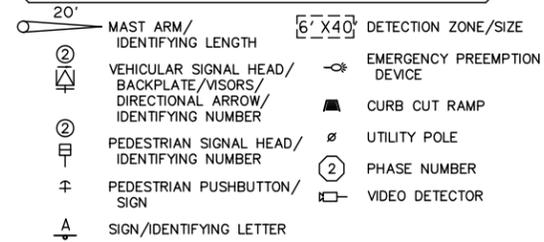
-PHASE SEQUENCE SELECTED BY TRAFFIC ADAPTIVE PROCESSOR.

-PHASE 2+5 AND 1+6 SHALL NOT FOLLOW PHASE 2+6.

PHASE PASSAGE CALCULATED BY TRAFFIC ADAPTIVE PROCESSOR.

SIGN TABULATION			
PLAN SYMBOL	SERIES NUMBER	SIZE	REMARKS
B	R3-9	18"x18"	NO PEDESTRIAN CROSSING
C	R10-3B	9"x12"	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON SIGNAL SIGN
E	R10-11	30"x36"	NO TURN ON RED
F	R10-10L	30"x36"	LEFT TURN SIGNAL
G	R3-7L	30"x30"	LEFT LANE MUST TURN LEFT
K	R3-7R	30"x30"	RIGHT LANE MUST TURN RIGHT
H	OMI-3	18"x18"	HAZARD MARKER
J	R4-7	24"x30"	KEEP RIGHT
K	D3-4	84"x16"	NEW ARDMORE AVE
M	D3-4	84"x16"	W. CHESTER PIKE

LEGEND



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POST MOUNTED SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF CURB OR THE EDGE OF THE SHOULDER. SUPPORT POLES FOR OVERHEAD SIGNALS SHALL ALSO HAVE A MINIMUM CLEARANCE HORIZONTALLY OF 2 FEET.

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SYSTEM FILE # I-0097

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

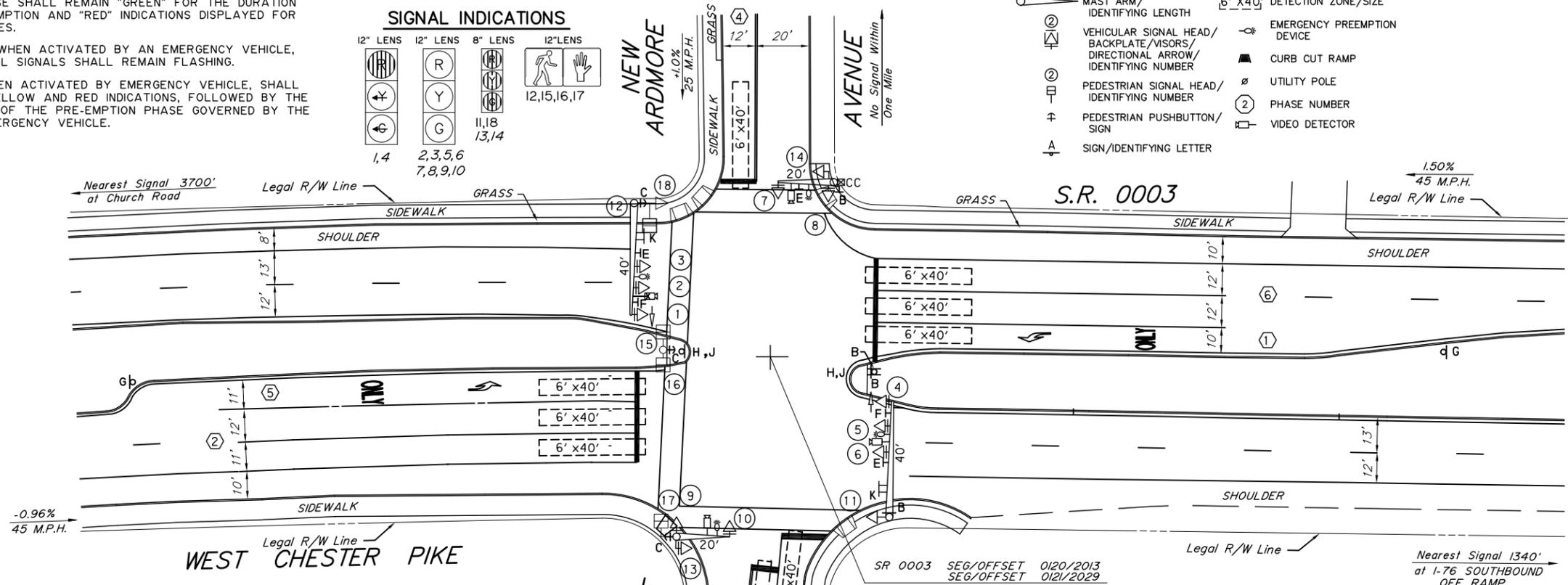
COUNTY: DELAWARE
MUNICIPALITY: MARPLE TOWNSHIP
INTERSECTION: WEST CHESTER PIKE (SR 0003)
AND NEW ARDMORE ROAD

REVIEWED: _____ DATE _____

MUNICIPAL OFFICIAL _____ DATE _____

RECOMMENDED: _____ DATE _____

DISTRICT TRAFFIC ENGINEER							
NO.	REVISION	DES./REVW.	DATE	REVW.	DATE	RECOM.	DATE
1	Modernization						
2	TRAFFIC ADAPTIVE	ORA	1/13/14				
3							
4							
5							
6							
7							
8							



MOVEMENT, SEQUENCE, AND TIMING DIAGRAM

PHASE	MOVEMENT, SEQUENCE, AND TIMING DIAGRAM																EMERGENCY FLASHING
	1+5			2+5			1+6			2+6			4+8				
INTERVAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
1	←	←	←				←	←	←								OUT
2,3																	Y
4	←	←	←	←	←	←											OUT
5,6																	Y
7,8																	Y
9,10																	Y
11,13																	OUT
14,18																	OUT
12,15,16,17																	OUT

FIXED	3	3	5	2	5	2	5	2	3	4
MINIMUM	3		3		3		20		3	
PASSAGE	≠		≠		≠		60		15	
MAXIMUM 1	7		7		7		60		15	
MAXIMUM 2	7		7		7		60		15	
PEDESTRIAN x MEMORY	NL		NL		NL		MR		7 16	

* ON PEDESTRIAN ACTUATION ONLY

① ← IF FOLLOWED BY 1+6
② ← IF FOLLOWED BY 2+6
③ ← IF FOLLOWED BY 2+5
④ ← IF FOLLOWED BY 2+5
⑤ ← IF FOLLOWED BY 1+6

RED SIGNAL INDICATION ON SIGNAL HEADS 1 & 4 SHALL BE EQUIPPED WITH TUNNEL VISORS AND LOUVERS

SIGNAL HEADS 11, 13, 14 & 18 SHALL BE EQUIPPED WITH FULL TUNNEL VISORS AND LOUVERS



EMERGENCY PRE-EMPTION PHASING MOVEMENT, SEQUENCE, AND TIMING DIAGRAM

PHASE	EMERGENCY PRE-EMPTION PHASING MOVEMENT, SEQUENCE, AND TIMING DIAGRAM															
	2			4			6			8						
INTERVAL	17	18	19	20	21	22	23	24	25	26	27	28				
1				←	←	←										
2,3																
4				←	←	←										
5,6																
7,8																
9,10																
11,13																
14,18																
12,15,16,17																
FIXED	▲	5	2	▲	5	2	▲	3	4	▲	3	4				

▲ FOR DURATION OF PRE-EMPTION

NOTE: IF PRE-EMPTION EQUIPMENT HAS ENCODING CAPABILITIES FOR VEHICLE IDENTIFICATION, IT IS RECOMMENDED TO HAVE ZERO "0" FEATURE ON, TO GIVE UNCODED EMITTERS THE ABILITY TO ACTIVATE THE EMERGENCY PRE-EMPTION.

EMERGENCY PRE-EMPTION OPERATION NOTES

Ⓞ SIGNAL TO INDICATE G WHEN RETURNING TO NORMAL OPERATION.

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SYSTEM FILE # I-0097

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: DELAWARE

MUNICIPALITY: MARPLE TOWNSHIP

INTERSECTION: WEST CHESTER PIKE (SR 0003)

AND LANGFORD RUN ROAD

REVIEWED: _____ DATE _____

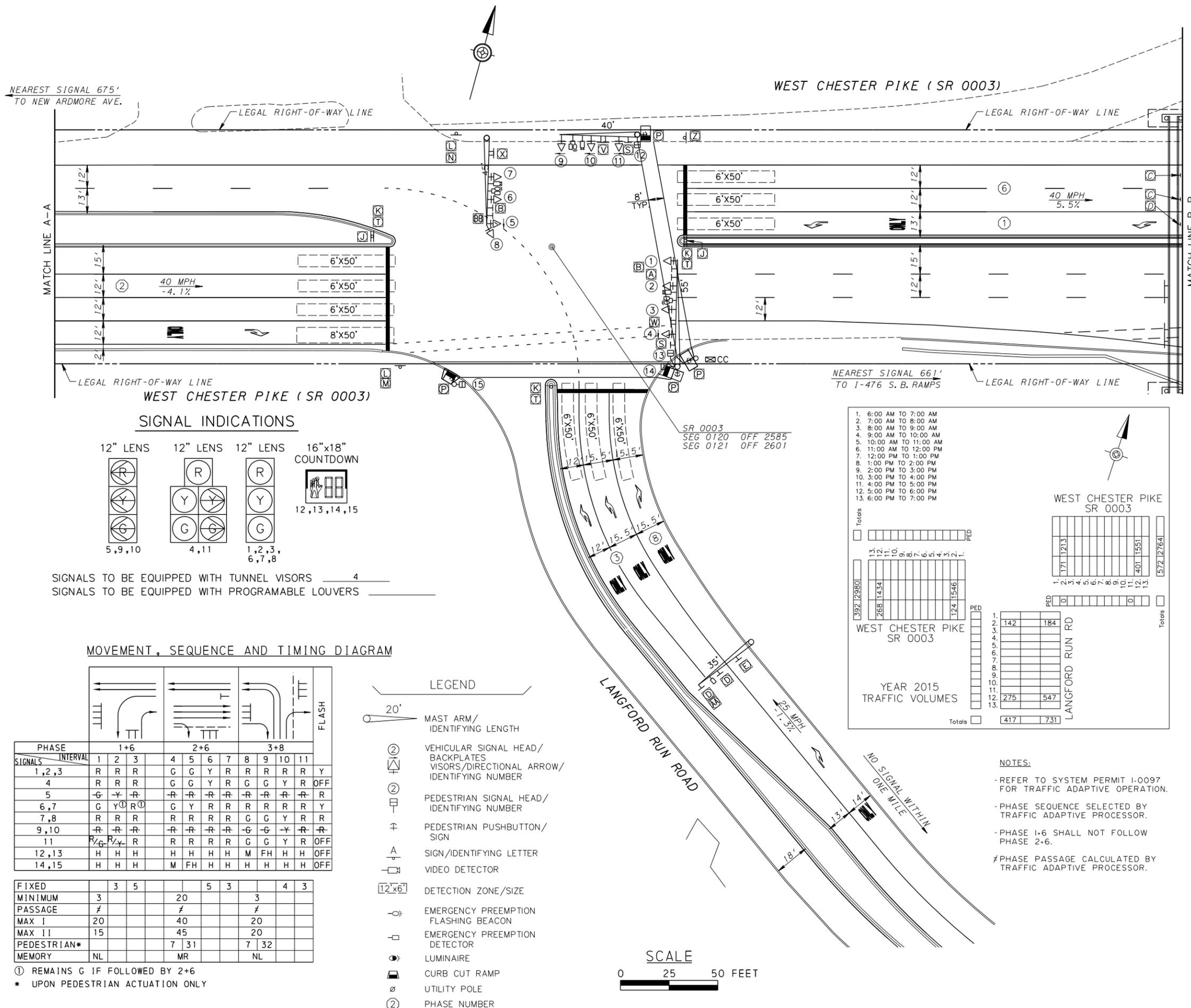
MUNICIPAL OFFICIAL _____ DATE _____

RECOMMENDED: _____

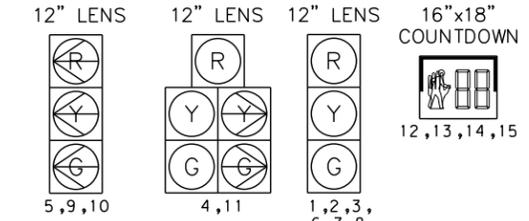
DISTRICT TRAFFIC ENGINEER _____ DATE _____

NO.	REVISION	DES./REVW.	DATE	REVW.	DATE	RECOM.	DATE

SHEET 2 OF 3 PERMIT # _____ FILE # _____



SIGNAL INDICATIONS



SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS 4
SIGNALS TO BE EQUIPPED WITH PROGRAMABLE LOUVERS _____

MOVEMENT, SEQUENCE AND TIMING DIAGRAM

PHASE	1+6	2+6	3+8
1,2,3	R R R	G G Y R R R R R	R R R R Y
4	R R R	G G Y R G G Y R	OFF
5	G Y R	R R R R R R R R	R
6,7	R R R	G Y R R R R R R	R R Y
7,8	R R R	R R R R G G Y R R	R R
9,10	R R R	R R R R G G Y R	OFF
11	R R R	R R R R G G Y R	OFF
12,13	H H H	H H H H M F H H H	OFF
14,15	H H H	M F H H H H H H	OFF

FIXED	3	5	20	5	3	4	3
MINIMUM PASSAGE	≠	≠	≠	≠	≠	≠	≠
MAX I	20		40		20		
MAX II	15		45		20		
PEDESTRIAN*			7 31		7 32		
MEMORY	NL		MR		NL		

① REMAINS G IF FOLLOWED BY 2+6
* UPON PEDESTRIAN ACTUATION ONLY

LEGEND

- 20' MAST ARM/IDENTIFYING LENGTH
- ② VEHICULAR SIGNAL HEAD/BACKPLATES VISORS/DIRECTIONAL ARROW/IDENTIFYING NUMBER
- ② PEDESTRIAN SIGNAL HEAD/IDENTIFYING NUMBER
- ⊕ PEDESTRIAN PUSHBUTTON/SIGN
- A SIGN/IDENTIFYING LETTER
- VIDEO DETECTOR
- ⑫x6' DETECTION ZONE/SIZE
- ☼ EMERGENCY PREEMPTION FLASHING BEACON
- ☼ EMERGENCY PREEMPTION DETECTOR
- ☼ LUMINAIRE
- ☼ CURB CUT RAMP
- ☼ UTILITY POLE
- ② PHASE NUMBER



SR 0003
SEG 0120 OFF 2585
SEG 0121 OFF 2601

WEST CHESTER PIKE SR 0003

YEAR 2015 TRAFFIC VOLUMES

Totals	1	2	3	4	5	6	7	8	9	10	11	12	13
392	129	143	106	106	106	106	106	106	106	106	106	106	106
268	143	143	106	106	106	106	106	106	106	106	106	106	106
124	154	146	106	106	106	106	106	106	106	106	106	106	106

WEST CHESTER PIKE SR 0003

LANGFORD RUN RD

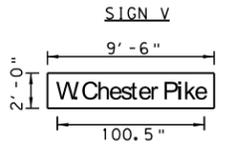
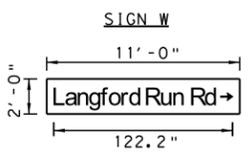
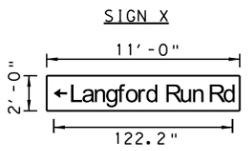
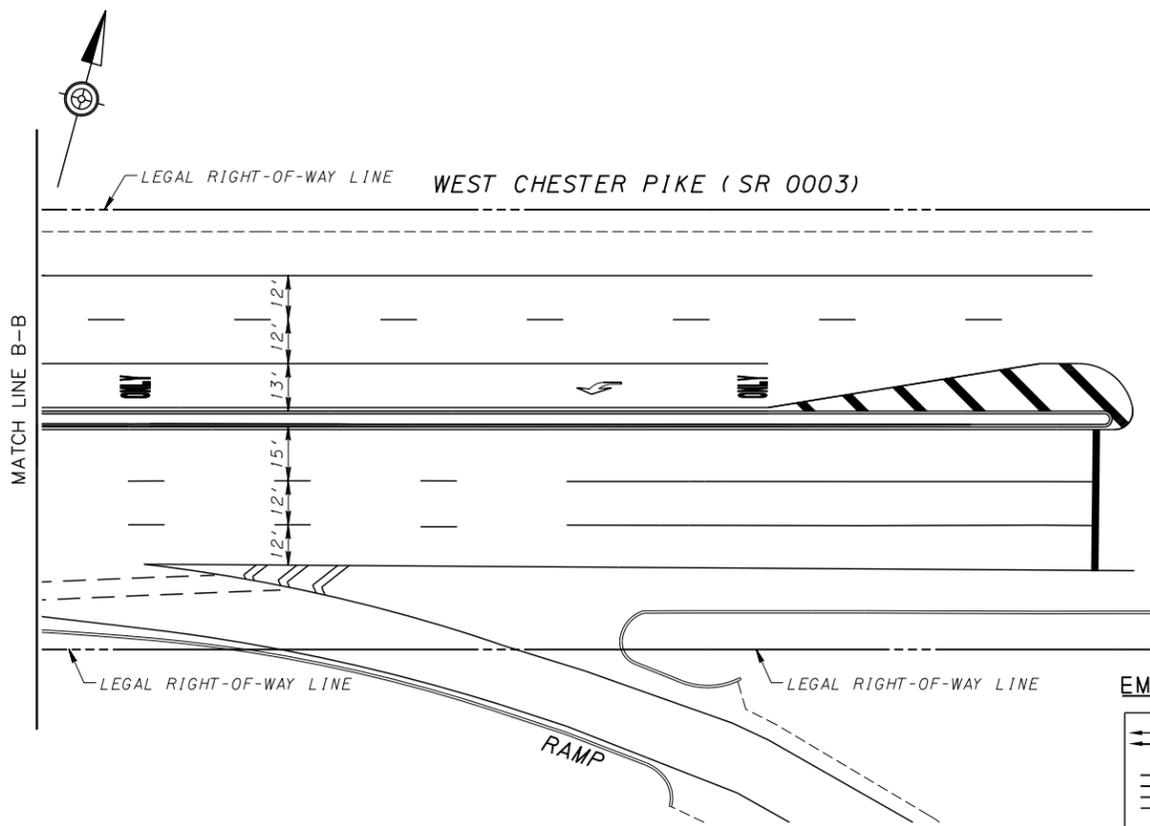
Totals	1	2	3	4	5	6	7	8	9	10	11	12	13
142	142	184											
275	275	547											
417	417	731											

LANGFORD RUN RD

NOTES:
- REFER TO SYSTEM PERMIT I-0097 FOR TRAFFIC ADAPTIVE OPERATION.
- PHASE SEQUENCE SELECTED BY TRAFFIC ADAPTIVE PROCESSOR.
- PHASE 1+6 SHALL NOT FOLLOW PHASE 2+6.
- PHASE PASSAGE CALCULATED BY TRAFFIC ADAPTIVE PROCESSOR.

1/15/2014 2:36:06 PM FILENAME: F:\2013_085_Marple_Township_Highway_CADD\SIGNAL\Permit\1910001.sgn

1/15/2014 2:37:22 PM F:\LEMMING\F12013\083_Mfg.Cty.HQP-CADD\SIGNAL\Permit\19100229.dgn



FONT:
CLEARVIEWHWY 1W
12" UPPER CASE, 9" LOWER CASE

EMERGENCY PRE-EMPTION NOTES
CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE NORTHBOUND AND SOUTHBOUND APPROACHES OF MARKLEY STREET AND THE EASTBOUND APPROACH OF HARDING BOULEVARD AND THE WESTBOUND APPROACH OF SPRUCE STREET WITH A FAIL SAFE DEVICE FOR EACH DIRECTION OF OPERATION.

THIS EMERGENCY BEACON SHALL CONSIST OF A FLASHING WHITE FLOOD LIGHT, AND SHALL FLASH WHEN THE EMERGENCY VEHICLE HAS CONTROL OF THE INTERSECTION FOR THE APPROPRIATE APPROACH.

LOCATION OF EMERGENCY VEHICLE DETECTORS ARE TO BE FIELD-ADJUSTED TO ACHIEVE MAXIMUM OPERATION.

THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, SHALL TERMINATE ALL GREEN INDICATIONS IMMEDIATELY, FOLLOWED BY THE COMPLETE YELLOW AND RED CLEARANCE INTERVALS, ACCORDINGLY. THEN THE GREEN INTERVAL FOR THE PRE-EMPTED PHASE SHALL FOLLOW.

THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, SHALL TIME OUT ALL YELLOW AND RED INDICATIONS, FOLLOWED BY THE GREEN INTERVAL OF THE PRE-EMPTION PHASE GOVERNED BY THE APPROACHING EMERGENCY VEHICLE.

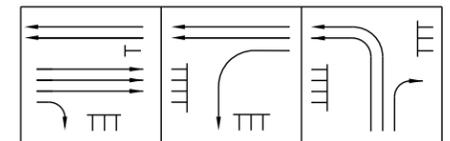
IF THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, ARE FLASHING, ALL SIGNALS SHALL REMAIN FLASHING.

IF ADDITIONAL PRE-EMPTION PHASES ARE ACTIVATED WHILE IN PRE-EMPTION, THE ORIGINAL PRE-EMPTION PHASE SHALL TIME OUT BEFORE PROCEEDING TO THE NEXT PRE-EMPTION PHASE.

UPON COMPLETION OF PRE-EMPTION PHASE 2,4,6, OR 8, IN RETURNING TO NORMAL OPERATION, PHASE 2+6, INTERVAL 4 SHALL FOLLOW.

IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED, PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.

EMERGENCY PRE-EMPTION PHASING



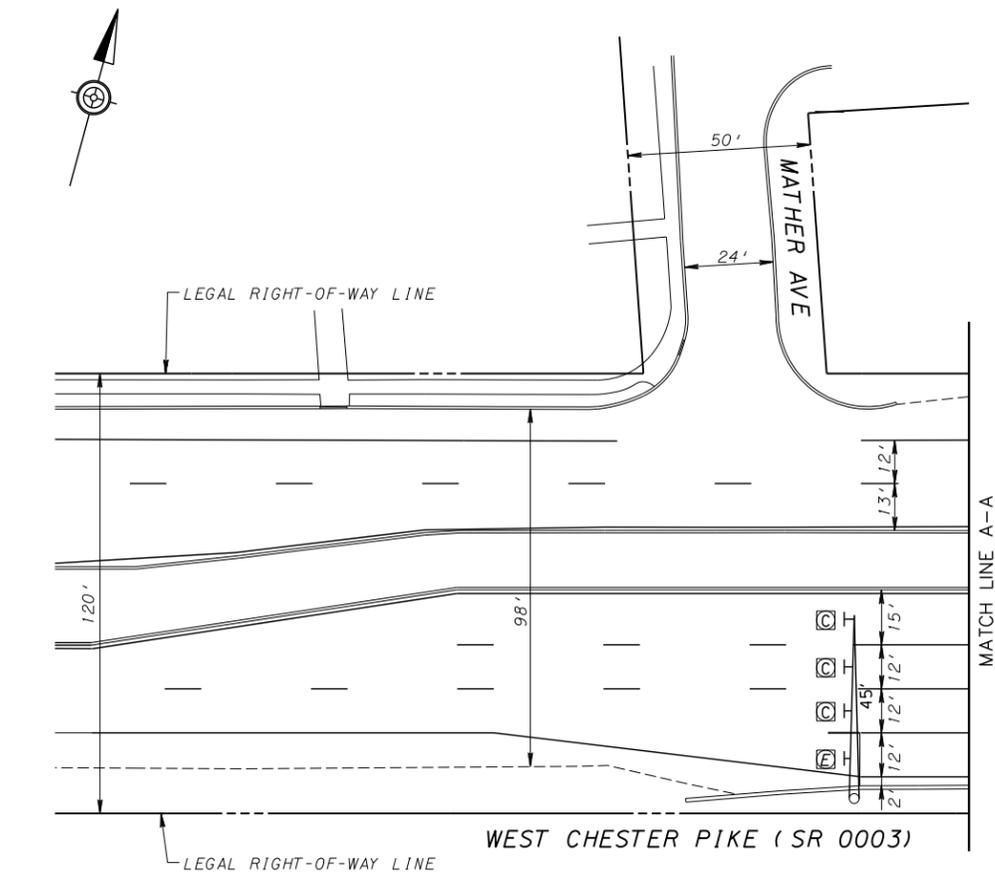
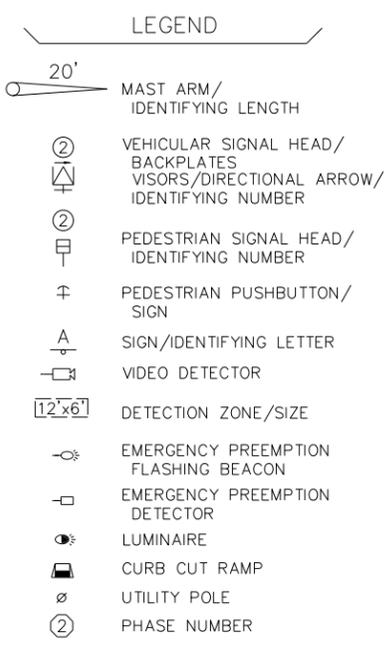
PHASE	2+6			6			8		
	SIGNALS	INTERVAL		SIGNALS	INTERVAL		SIGNALS	INTERVAL	
1,2,3	G	Y	R	R	R	R	R	R	R
4	G	Y	R	R	R	R	R	R	R
5	R	R	R	R	R	R	R	R	R
6,7	G	Y	R	R	R	R	R	R	R
7,8	R	R	R	R	R	R	R	R	R
9,10	R	R	R	R	R	R	R	R	R
11	R	R	R	R	R	R	R	R	R
12,13	H	H	H	H	H	H	H	H	H
14,15	H	H	H	H	H	H	H	H	H

PRE-EMPTION NOTES:
⊙ SIGNAL TO INDICATE G WHEN RETURNING TO NORMAL OPERATION

FIXED	*	5	3	*	3	5	*	4	3
-------	---	---	---	---	---	---	---	---	---

* FOR DURATION OF PRE-EMPTION

SIGN TABULATION				
PLAN SYMBOL	SERIES NUMBER	SIZE	REMARKS	
A	R3-2	30"x30"	NO LEFT TURN	
B	R3-4	30"x30"	NO U-TURN	
C	R3-5A	30"x36"	STRAIGHT-THROUGH	
D	R3-5L	30"x36"	LEFT TURN	
E	R3-5R	30"x36"	RIGHT TURN	
J	R3-4	24"x24"	NO U-TURN	
K	R4-7	24"x30"	KEEP RIGHT	
L	R9-3	24"x24"	NO PEDESTRIAN CROSSING	
M	R9-3BL	18"x12"	USE CROSSWALK LEFT	
N	R9-3BR	18"x12"	USE CROSSWALK RIGHT	
P	R10-3E	9"x15"	EDUCATION PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER SIGN	
S	R10-10R	30"x36"	RIGHT TURN SIGNAL	
T	OM1-3	18"x18"	OBJECT MARKER	
V	D3-4	114"x24"	W. Chester Pike	
W	D3-4	132"x24"	Langford Run Rd	
X	D3-4	132"x24"	Langford Run Rd	
Z	R10-6AL	24"x30"	STOP HERE ON RED, (LEFT)	
AA	SPECIAL	30"x18"	NO TRUCKS	
BB	R10-10L	30"x36"	LEFT TURN SIGNAL	



GENERAL NOTES

NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS PRIOR APPROVAL IS GRANTED IN WRITING BY A REPRESENTATIVE OF THE DEPARTMENT OF TRANSPORTATION.

ALL MAINTENANCE WORK INCLUDING TRIMMING OF TREES, NECESSARY FOR PROPER VISIBILITY OF THE SIGNALS IS THE RESPONSIBILITY OF THE PERMITTEE.

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ON THIS DRAWING ARE CONSIDERED PART OF THE PERMIT AND SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH PUBLICATION NO. 212.

POST MOUNTED SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF CURB OR THE EDGE OF THE SHOULDER. SUPPORT POLES FOR OVERHEAD SIGNALS SHALL ALSO HAVE A MINIMUM CLEARANCE HORIZONTALLY OF 2 FEET.

SIGNALS ERECTED OVER THE ROADWAY SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 16 FT. ABOVE THE ROADWAY. POST MOUNTED SIGNALS SHALL BE A MINIMUM OF 8 FT. ABOVE THE SIDEWALK OR PAVEMENT.

ALL OVERHEAD SIGNALS MUST BE RIGIDLY MOUNTED, TOP AND BOTTOM, AND EQUIPPED WITH BACKPLATES.

THE MINIMUM HORIZONTAL DISTANCE BETWEEN SIGNALS MEASURED AT RIGHT ANGLES TO THE APPROACH SHALL BE 8 FEET.

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

CURBING TO BE INSTALLED BY MUNICIPALITY AND WHERE NOTED, SHALL BE PLAIN CEMENT CONCRETE CURB OR GRANITE CURB, INSTALLED IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS FORM 408.

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF OF THE LATEST AMENDMENT TO ACT 287, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, EFFECTIVE DATE DECEMBER 20, 1974.

WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT FOR REVIEW PRIOR TO BIDDING.

PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR ANY CHANGES IN INTERSECTION GEOMETRY REGARDING EXCAVATION.

CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-8800 SERIES.

SYSTEM FILE # 1-0097

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: DELAWARE
MUNICIPALITY: MARPLE TOWNSHIP
INTERSECTION: WEST CHESTER PIKE (SR 0003)
AND LANGFORD RUN ROAD

REVIEWED:

DATE
MUNICIPAL OFFICIAL
DATE
RECOMMENDED:
DATE
DISTRICT TRAFFIC ENGINEER
DATE

NO.	REVISION	DES./REVW.	DATE	REVW.	DATE	RECOM.	DATE

GENERAL NOTES

NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS PRIOR APPROVAL IS GRANTED IN WRITING BY A REPRESENTATIVE OF THE DEPARTMENT OF TRANSPORTATION.

ALL MAINTENANCE WORK INCLUDING TRIMMING OF TREES, NECESSARY FOR PROPER VISIBILITY OF THE SIGNALS IS THE RESPONSIBILITY OF THE PERMITTEE.

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ON THIS DRAWING ARE CONSIDERED PART OF THE PERMIT AND SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH PUBLICATION NO. 212.

POST MOUNTED SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF CURB OR THE EDGE OF THE SHOULDER. SUPPORT POLES FOR OVERHEAD SIGNALS SHALL ALSO HAVE A MINIMUM CLEARANCE HORIZONTALLY OF 2 FEET.

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ALL OVERHEAD SIGNALS MUST BE RIGIDLY MOUNTED, TOP AND BOTTOM, AND EQUIPPED WITH BACKPLATES.

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EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

CURBING TO BE INSTALLED BY MUNICIPALITY AND WHERE NOTED, SHALL BE PLAIN CEMENT CONCRETE CURB OR GRANITE CURB, INSTALLED IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS FORM 408.

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SYSTEM FILE # I-0097

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: DELAWARE
MUNICIPALITY: MARPLE TOWNSHIP
INTERSECTION: WEST CHESTER PIKE (SR 0003)
AND I-476 SOUTHBOUND OFF RAMP

REVIEWED: _____ DATE _____
MUNICIPAL OFFICIAL: _____ DATE _____
RECOMMENDED: _____ DATE _____
DISTRICT TRAFFIC ENGINEER: _____ DATE _____

NO.	REVISION	DES./REVW.	DATE	REVW.	DATE	RECOM.	DATE
1	TRAFFIC ADAPTIVE	ORA	1/13/14				

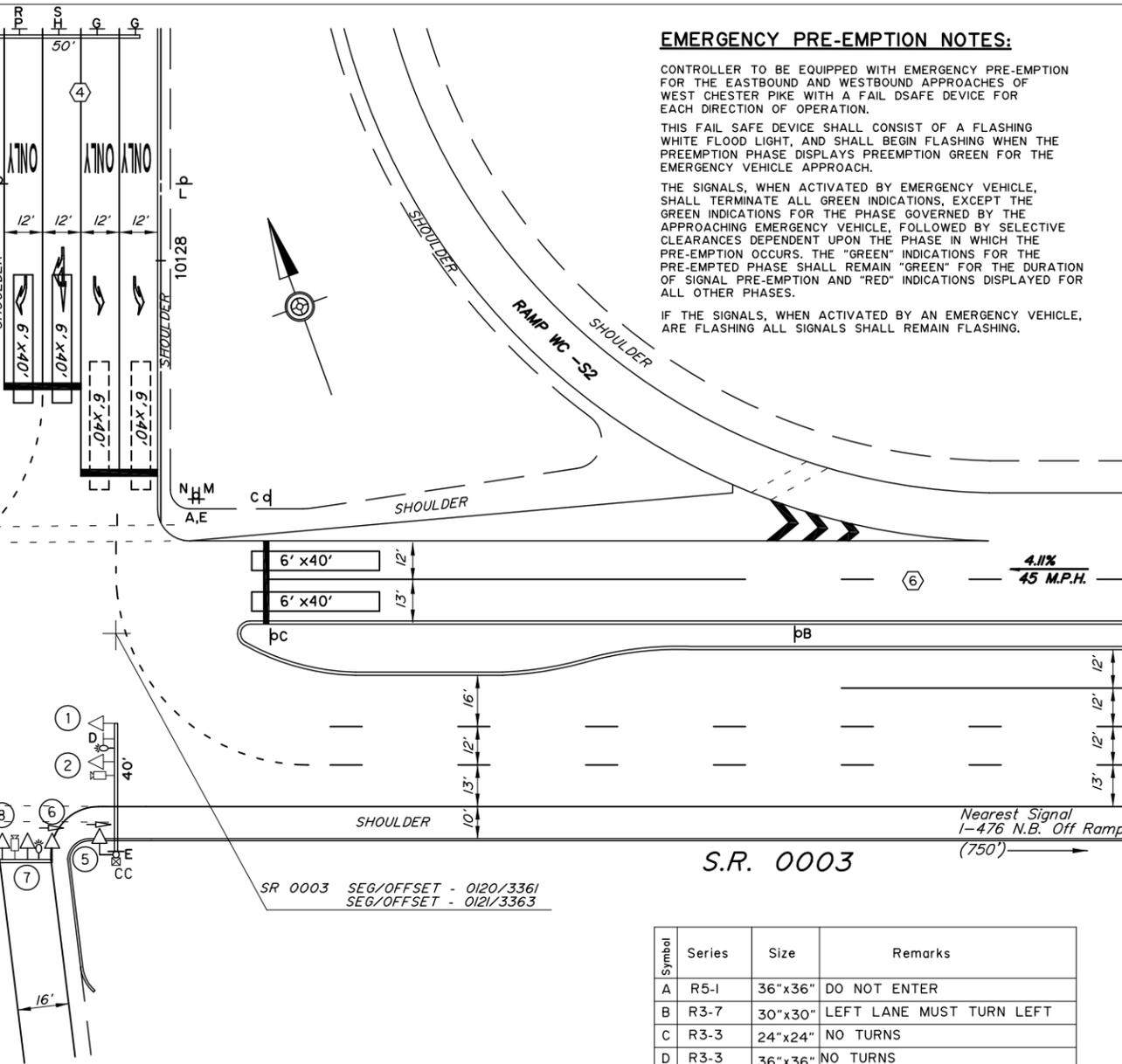
EMERGENCY PRE-EMPTION NOTES:

CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE EASTBOUND AND WESTBOUND APPROACHES OF WEST CHESTER PIKE WITH A FAIL DSAFE DEVICE FOR EACH DIRECTION OF OPERATION.

THIS FAIL SAFE DEVICE SHALL CONSIST OF A FLASHING WHITE FLOOD LIGHT, AND SHALL BEGIN FLASHING WHEN THE PREEMPTION PHASE DISPLAYS PREEMPTION GREEN FOR THE EMERGENCY VEHICLE APPROACH.

THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE, SHALL TERMINATE ALL GREEN INDICATIONS, EXCEPT THE GREEN INDICATIONS FOR THE PHASE GOVERNED BY THE APPROACHING EMERGENCY VEHICLE, FOLLOWED BY SELECTIVE CLEARANCES DEPENDENT UPON THE PHASE IN WHICH THE PRE-EMPTION OCCURS. THE "GREEN" INDICATIONS FOR THE PRE-EMPTED PHASE SHALL REMAIN "GREEN" FOR THE DURATION OF SIGNAL PRE-EMPTION AND "RED" INDICATIONS DISPLAYED FOR ALL OTHER PHASES.

IF THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, ARE FLASHING ALL SIGNALS SHALL REMAIN FLASHING.



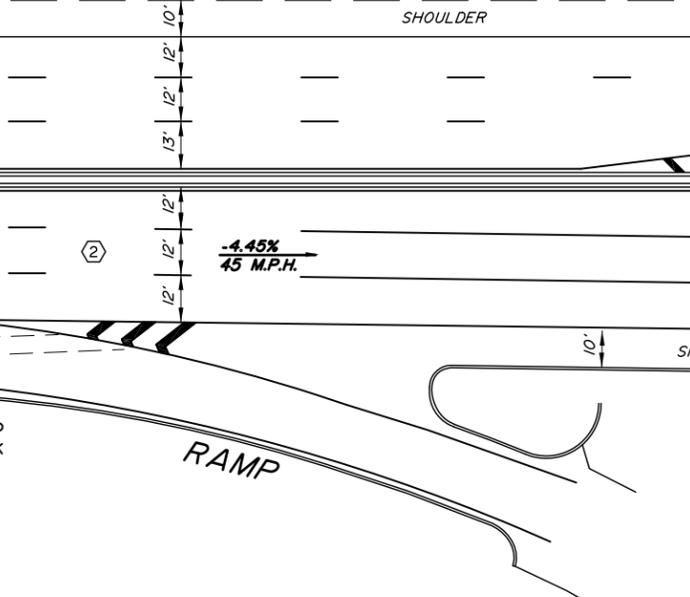
EMERGENCY PRE-EMPTION PHASING MOVEMENT, SEQUENCE AND TIMING DIAGRAM

PHASE	6	2	4
INTERVAL	9	10, 11, 12	13
SIGNALS	G Y R	R R R	R R R
1,2	G	Y	R
3,4	R	R	R
5,6	R	R	R
7,8	R	R	R
9	R	R	R
10,11	H	H	H
FIXED TIME	**	5 2	** 4 3

** FOR DURATION OF PREEMPTION
Ⓞ G IF FOLLOWED BY NORMAL OPERATION

Nearest Signal Langford Run Rd (661')

WEST CHESTER PIKE



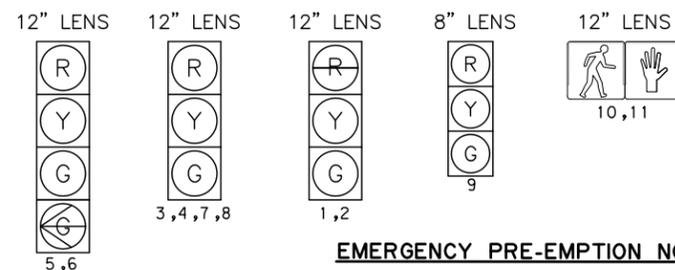
MOVEMENT, SEQUENCE AND TIMING DIAGRAM

PHASE	2+6	4	EMERGENCY FLASHING
INTERVAL	1 2 3 4 5 6 7		
1,2	G Y R R R R R		Y
3,4	G Y R R R R R		Y
5,6	R R R R R R R		R
7,8	R R R R R R R		R
9	G Y R R R R R		OUT
10,11	H H H M FH H H		OUT

FIXED	5	2	4	3
MINIMUM PASSAGE	#	#		
MAXIMUM 1	47		26	
MAXIMUM 2	59		36	
PEDESTRIAN *			7 30	
MEMORY	MR	NL		

UPON PEDESTRIAN ACTUATION ONLY

SIGNAL INDICATIONS



EMERGENCY PRE-EMPTION NOTES CONTINUED:

THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE, SHALL TIME OUT ALL YELLOW AND RED INDICATIONS, FOLLOWED BY THE GREEN INTERVAL OF THE PRE-EMPTION PHASE GOVERNED BY THE APPROACHING EMERGENCY VEHICLE.

IF SIGNALS HAVE BEEN ACTUATED BY PEDESTRIAN PUSHBUTTON, AND THE SIGNAL IS PRE-EMPTED, THE PEDESTRIAN TIME SHALL BE SPLIT BETWEEN PED WALK(MAN) AND PED CLEAR(HAND) INTERVAL. THE PED WALK(MAN) INTERVAL SHALL TERMINATE IMMEDIATELY, FOLLOWED BY THE PED CLEAR(HAND) INTERVAL. THIS INTERVAL SHALL TIME OUT FOLLOWED BY THE APPROPRIATE SELECTIVE CLEARANCES, BEFORE GOING INTO EMERGENCY PRE-EMPTION.

UPON COMPLETION OF PRE-EMPTION PHASE 2,4 OR 6 IN RETURNING TO NORMAL OPERATION, PHASE 2+6 INTERVAL 1 SHALL FOLLOW.

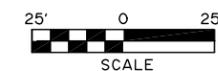
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IF PREEMPTION EQUIPMENT HAS ENCODING CAPABILITIES FOR THE IDENTIFICATION OF VEHICLES, IT IS RECOMMENDED TO HAVE THE ZERO "00" FEATURE ON, TO GIVE UNCODED EMITTERS THE ABILITY TO ACTIVATE THE EMERGENCY PREEMPTION.

NOTES:
- REFER TO SYSTEM PERMIT I-0097 FOR TRAFFIC ADAPTIVE OPERATION.
- PHASE SEQUENCE SELECTED BY TRAFFIC ADAPTIVE PROCESSOR.
PHASE PASSAGE CALCULATED BY TRAFFIC ADAPTIVE PROCESSOR.

LEGEND

- 20' MAST ARM/IDENTIFYING LENGTH
- VEHICULAR SIGNAL HEAD/BACKPLATE/VISORS/DIRECTIONAL ARROW/IDENTIFYING NUMBER
- PEDESTRIAN SIGNAL HEAD/IDENTIFYING NUMBER
- PEDESTRIAN PUSHBUTTON/SIGN
- 6"x40" DETECTION ZONE/SIZE
- EMERGENCY PREEMPTION DEVICE
- CURB CUT RAMP
- UTILITY POLE
- PHASE NUMBER
- VIDEO DETECTOR



EMERGENCY PRE-EMPTION NOTES:

CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE EASTBOUND AND WESTBOUND APPROACHES OF WEST CHESTER PIKE WITH A FAIL SAFE DEVICE FOR EACH DIRECTION OF OPERATION.

THIS FAIL SAFE DEVICE SHALL CONSIST OF A FLASHING WHITE FLOOD LIGHT, AND SHALL BEGIN FLASHING WHEN THE PREEMPTION PHASE DISPLAYS PREEMPTION GREEN FOR THE EMERGENCY VEHICLE APPROACH.

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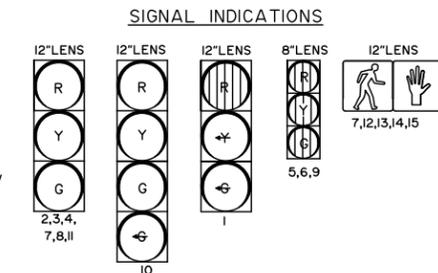
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IF SIGNALS HAVE BEEN ACTUATED BY PEDESTRIAN PUSHBUTTON, AND THE SIGNAL IS PRE-EMPTED, THE PEDESTRIAN TIME SHALL BE SPLIT BETWEEN PED WALK(MAN) AND PED CLEAR(HAND) INTERVAL. THE PED WALK(MAN) INTERVAL SHALL TERMINATE IMMEDIATELY, FOLLOWED BY THE PED CLEAR(HAND) INTERVAL. THIS INTERVAL SHALL TIME OUT FOLLOWED BY THE APPROPRIATE SELECTIVE CLEARANCES, BEFORE GOING INTO EMERGENCY PRE-EMPTION.

UPON COMPLETION OF PRE-EMPTION PHASE A,B OR C IN RETURNING TO NORMAL OPERATION, PHASE 2+6 INTERVAL 4 SHALL FOLLOW.

IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED. PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.

IF PREEMPTION EQUIPMENT HAS ENCODING CAPABILITIES FOR THE IDENTIFICATION OF VEHICLES, IT IS RECOMMENDED TO HAVE THE ZERO "00" FEATURE ON, TO GIVE UNCODED EMITTERS THE ABILITY TO ACTIVATE THE EMERGENCY PREEMPTION.

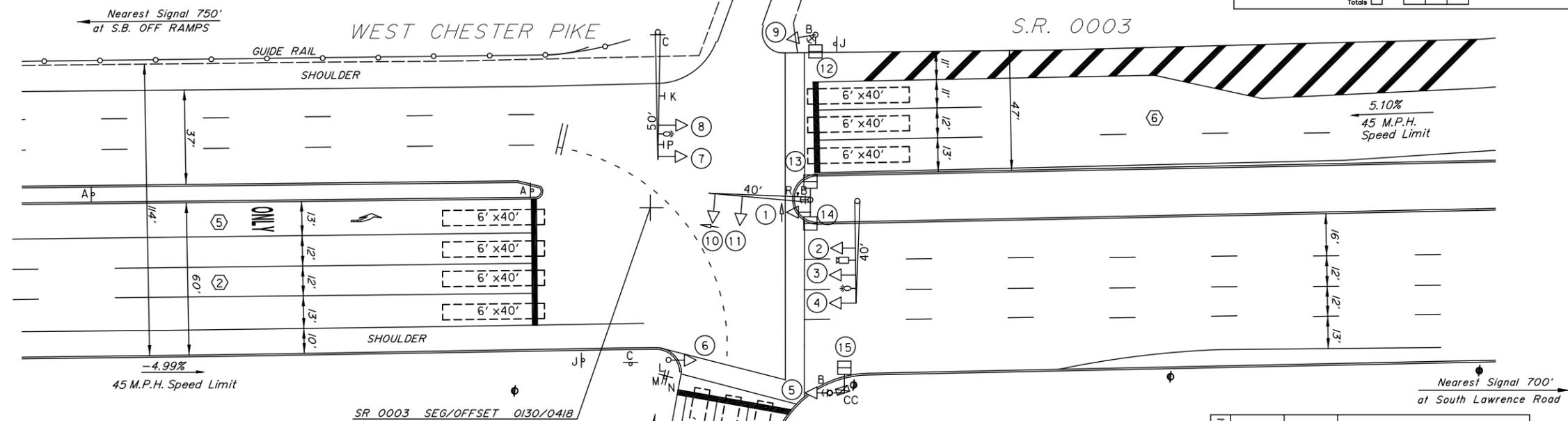


SIGNALS TO BE EQUIPPED WITH STROBE IN RED LENSES
1,2,15

SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS & LOUVERS
9,10,11 & 5 (RED ONLY)

Time	Volume	Volume	Volume	Totals
1. 6:00 AM TO 7:00 AM				
2. 7:00 AM TO 8:00 AM				
3. 8:00 AM TO 9:00 AM				
4. 9:00 AM TO 10:00 AM				
5. 10:00 AM TO 11:00 AM				
6. 11:00 AM TO 12:00 PM				
7. 12:00 PM TO 1:00 PM				
8. 1:00 PM TO 2:00 PM				
9. 2:00 PM TO 3:00 PM				
10. 3:00 PM TO 4:00 PM				
11. 4:00 PM TO 5:00 PM				
12. 5:00 PM TO 6:00 PM				
13. 6:00 PM TO 7:00 PM				
Totals				

YEAR 2015 TRAFFIC VOLUMES



MOVEMENT, SEQUENCE AND TIMING DIAGRAM

PHASE	2+5			2+6			8			EMERGENCY FLASHING	
	1	2	3	4	5	6	7	8	9		10
1	⊕	⊕	R	R	R	R	R	R	R	R	OFF
2,3,4	G	Y	R	G	Y	R	R	R	R	R	Y
5,6	G	Y	R	G	Y	R	R	R	R	R	OFF
7,8	R	R	R	G	Y	R	R	R	R	R	Y
9	R	R	R	G	Y	R	R	R	R	R	OFF
10	R	R	R	R	R	R	G	Y	R	R	R
11	R	R	R	R	R	R	G	Y	R	R	R
12,13,14,15	H	H	H	H	H	H	M	FH	H	H	OFF

FIXED	3	5	2	18	5	2	3	4	3
MINIMUM PASSAGE	≠			≠			≠		
MAXIMUM I	25			30			25		
MAXIMUM II	25			30			25		
PEDESTRIAN MEMORY	NL			MR			NL		

*UPON PEDESTRIAN ACTUATION ONLY
① SIGNAL TO INDICATE G WHEN RETURNING TO NORMAL OPERATION

EMERGENCY PRE-EMPTION PHASING MOVEMENT, SEQUENCE AND TIMING DIAGRAM

PHASE	2+5				6				8			
	11	12	13	14	15	16	17	18	19	20	21	22
1	⊕	⊕	R	R	R	R	R	R	R	R	R	R
2,3,4	G	Y	R	R	R	R	R	R	R	R	R	R
5,6	R	R	R	R	R	R	R	R	R	R	R	R
7,8	R	R	R	R	R	G	Y	R	R	R	R	R
9	R	R	R	R	R	R	R	R	R	R	R	R
10	R	R	R	R	R	R	R	R	R	R	R	R
11	R	R	R	R	R	R	R	R	R	R	R	R
12,13,14,15	H	H	H	H	H	H	H	H	H	H	H	H

** FOR DURATION OF PREEMPTION
① SIGNAL TO INDICATE G WHEN RETURNING TO NORMAL OPERATION

Symbol	Series	Size	Remarks
A	R3-7L	30"x30"	LEFT LANE MUST TURN LEFT
B	R10-3B	9"x12"	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON SIGNAL SIGN
C	R9-3	18"x18"	NO PEDESTRIAN CROSSING
D	W3-3	48"x48"	SIGNAL AHEAD
E	R3-5L	30"x36"	LEFT TURN
F	R3-6LS	30"x36"	LEFT- STRAIGHT OPTION
G	R3-5R	30"x36"	RIGHT TURN
J	R3-1	30"x30"	NO RIGHT TURN
K	R3-3	36"x36"	NO TURNS
L	R5-1	36"x36"	DO NOT ENTER
M	R6-1L	54"x18"	HORIZONTAL LEFT ONE-WAY
N	R6-1R	54"x18"	HORIZONTAL RIGHT ONE-WAY
P	R3-2	30"x30"	NO LEFT TURN
R	R10-10L	30"x36"	LEFT TURN SIGNAL

- LEGEND**
- ② MAST ARM/ IDENTIFYING LENGTH [6"x40"] DETECTION ZONE/SIZE
 - ⊕ VEHICULAR SIGNAL HEAD/ BACKPLATE/VISORS/ DIRECTIONAL ARROW/ IDENTIFYING NUMBER
 - ⊕ PEDESTRIAN SIGNAL HEAD/ IDENTIFYING NUMBER
 - ⊕ PEDESTRIAN PUSHBUTTON/ SIGN
 - ⊕ SIGN/IDENTIFYING LETTER
 - ⊕ EMERGENCY PREEMPTION DEVICE
 - ⊕ CURB CUT RAMP
 - ⊕ UTILITY POLE
 - ⊕ PHASE NUMBER
 - ⊕ VIDEO DETECTOR



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SYSTEM FILE # I-0097

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: DELAWARE
MUNICIPALITY: MARPLE TOWNSHIP
INTERSECTION: WEST CHESTER PIKE (SR 0003) AND 476 NORTHBOUND OFF RAMP

NO.	REVISION	DES./REV.	DATE	REV.	DATE	RECOM.	DATE
1	MODERNIZATION	RMC	3/15/06	PAL	3/16/06	LRB	3/23/06
2	ADD NO RIGHT TURN SIGN	JLH	12/1/09	LUTZ	1/20/10	LRB	1/22/10
3	ADD NO TURN SIGN	JOO	4/29/10				
4	TRAFFIC ADAPTIVE	ORA	1/13/14				
5							
6							
7							
8							

EMERGENCY PRE-EMPTION NOTES:

CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE EASTBOUND AND WESTBOUND APPROACHES OF WEST CHESTER PIKE WITH A FAIL SAFE DEVICE FOR EACH DIRECTION OF OPERATION.

THIS FAIL SAFE DEVICE SHALL CONSIST OF A FLASHING WHITE FLOOD LIGHT, AND SHALL BEGIN FLASHING WHEN THE PREEMPTION PHASE DISPLAYS PREEMPTION GREEN FOR THE EMERGENCY VEHICLE APPROACH.

THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE, SHALL TERMINATE ALL GREEN INDICATIONS, EXCEPT THE GREEN INDICATIONS FOR THE PHASE GOVERNED BY THE APPROACHING EMERGENCY VEHICLE, FOLLOWED BY SELECTIVE CLEARANCES DEPENDENT UPON THE PHASE IN WHICH THE PRE-EMPTION OCCURS. THE "GREEN" INDICATIONS FOR THE PRE-EMPTED PHASE SHALL REMAIN "GREEN" FOR THE DURATION OF SIGNAL PRE-EMPTION AND "RED" INDICATIONS DISPLAYED FOR ALL OTHER PHASES.

IF THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, ARE FLASHING ALL SIGNALS SHALL REMAIN FLASHING.

THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE, SHALL TIME OUT ALL YELLOW AND RED INDICATIONS, FOLLOWED BY THE GREEN INTERVAL OF THE PRE-EMPTION PHASE GOVERNED BY THE APPROACHING EMERGENCY VEHICLE.

IF SIGNALS HAVE BEEN ACTUATED BY PEDESTRIAN PUSHBUTTON, AND THE SIGNAL IS PRE-EMPTED, THE PEDESTRIAN TIME SHALL BE SPLIT BETWEEN PED WALK AND PED CLEAR INTERVAL. THE PED WALK INTERVAL SHALL TERMINATE IMMEDIATELY, FOLLOWED BY THE PED CLEAR INTERVAL. THIS INTERVAL SHALL TIME OUT FOLLOWED BY THE APPROPRIATE SELECTIVE CLEARANCES, BEFORE GOING INTO EMERGENCY PRE-EMPTION.

UPON COMPLETION OF PRE-EMPTION PHASE A,B OR C IN RETURNING TO NORMAL OPERATION, PHASE 2+6 INTERVAL 4 SHALL FOLLOW.

IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED. PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.

IF PREEMPTION EQUIPMENT HAS ENCODING CAPABILITIES FOR THE IDENTIFICATION OF VEHICLES, IT IS RECOMMENDED TO HAVE THE ZERO "00" FEATURE ON, TO GIVE UNCODED EMITTERS THE ABILITY TO ACTIVATE THE EMERGENCY PREEMPTION.

EMERGENCY PRE-EMPTION PHASING MOVEMENT, SEQUENCE AND TIMING DIAGRAM

PHASE	A										B						C														
	INTERVAL		10		11		12		13		14		15		16		17		18		19		20		21		22		23		24
1,2			G	Y		R																									
3,4			R	R	R	R	G	Y																							
5			R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R		
6,11			R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R		
8			R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R		
9			R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R		
7,10			R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R		
FIXED TIME																															

xx FOR DURATION OF PREEMPTION

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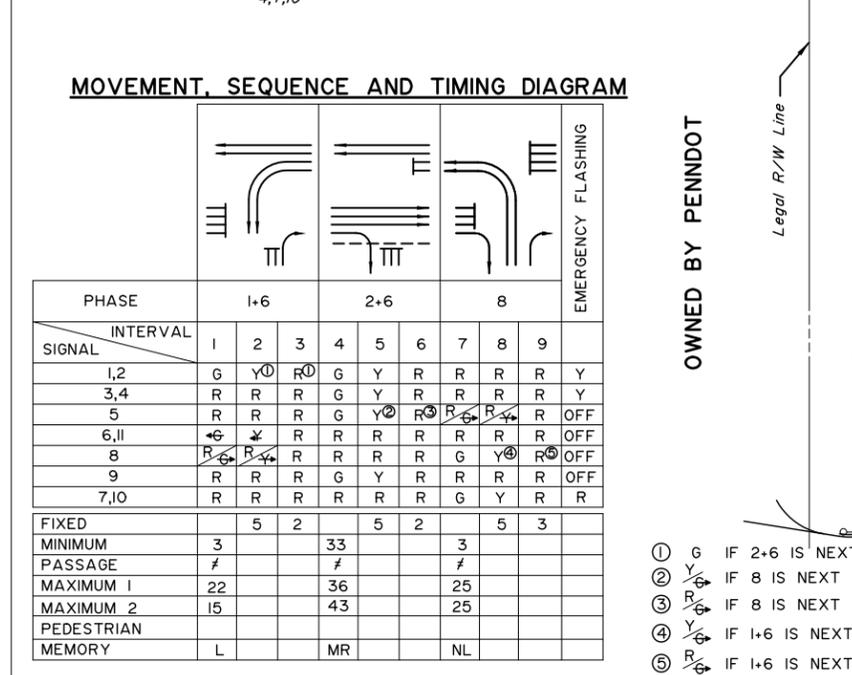
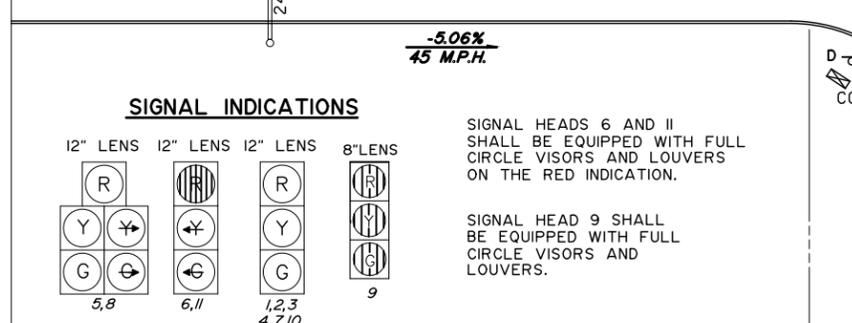
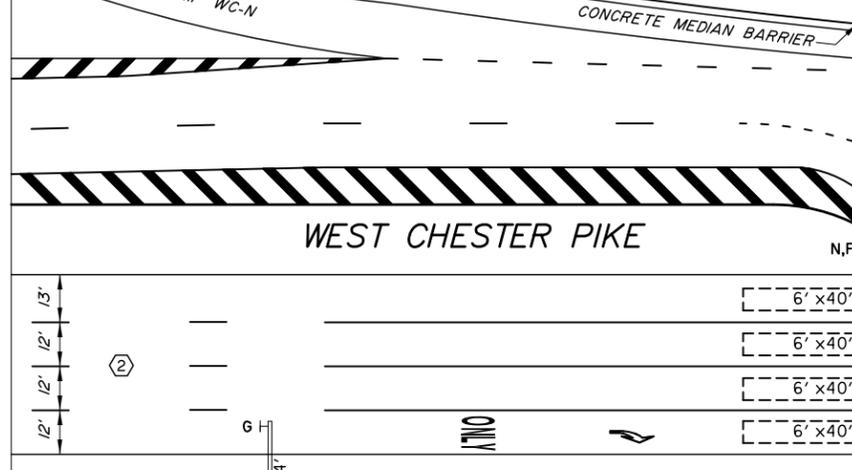
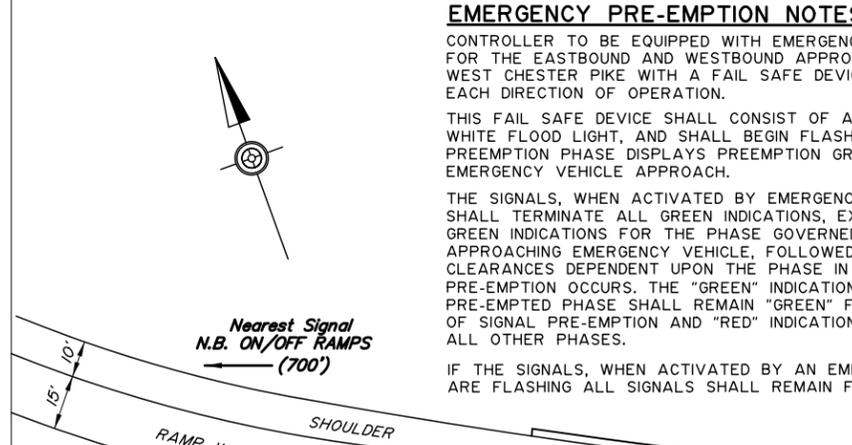
SYSTEM FILE # I-0097

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

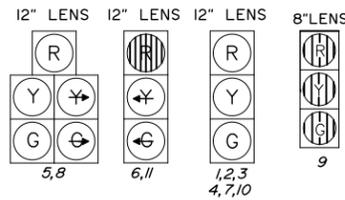
COUNTY: DELAWARE
MUNICIPALITY: MARPLE TOWNSHIP
INTERSECTION: WEST CHESTER PIKE (SR 0003)
AND SOUTH LAWRENCE ROAD (SR 1020)

REVIEWED: _____ DATE _____
MUNICIPAL OFFICIAL _____ DATE _____
RECOMMENDED: _____ DATE _____
DISTRICT TRAFFIC ENGINEER _____ DATE _____

NO.	REVISION	DES./REV.	DATE	REV.	DATE	RECOM.	DATE
1	Modernization	RMC	3/15/06	PAL	3/16/06	LRB	3/23/06
2	Add video detection to WB left turn lanes	JOO	5/12/11				
3	TRAFFIC ADAPTIVE	ORA	1/13/14				



SIGNAL INDICATIONS



SIGNAL HEADS 6 AND 11 SHALL BE EQUIPPED WITH FULL CIRCLE VISORS AND LOUVERS ON THE RED INDICATION.

SIGNAL HEAD 9 SHALL BE EQUIPPED WITH FULL CIRCLE VISORS AND LOUVERS.

MOVEMENT, SEQUENCE AND TIMING DIAGRAM

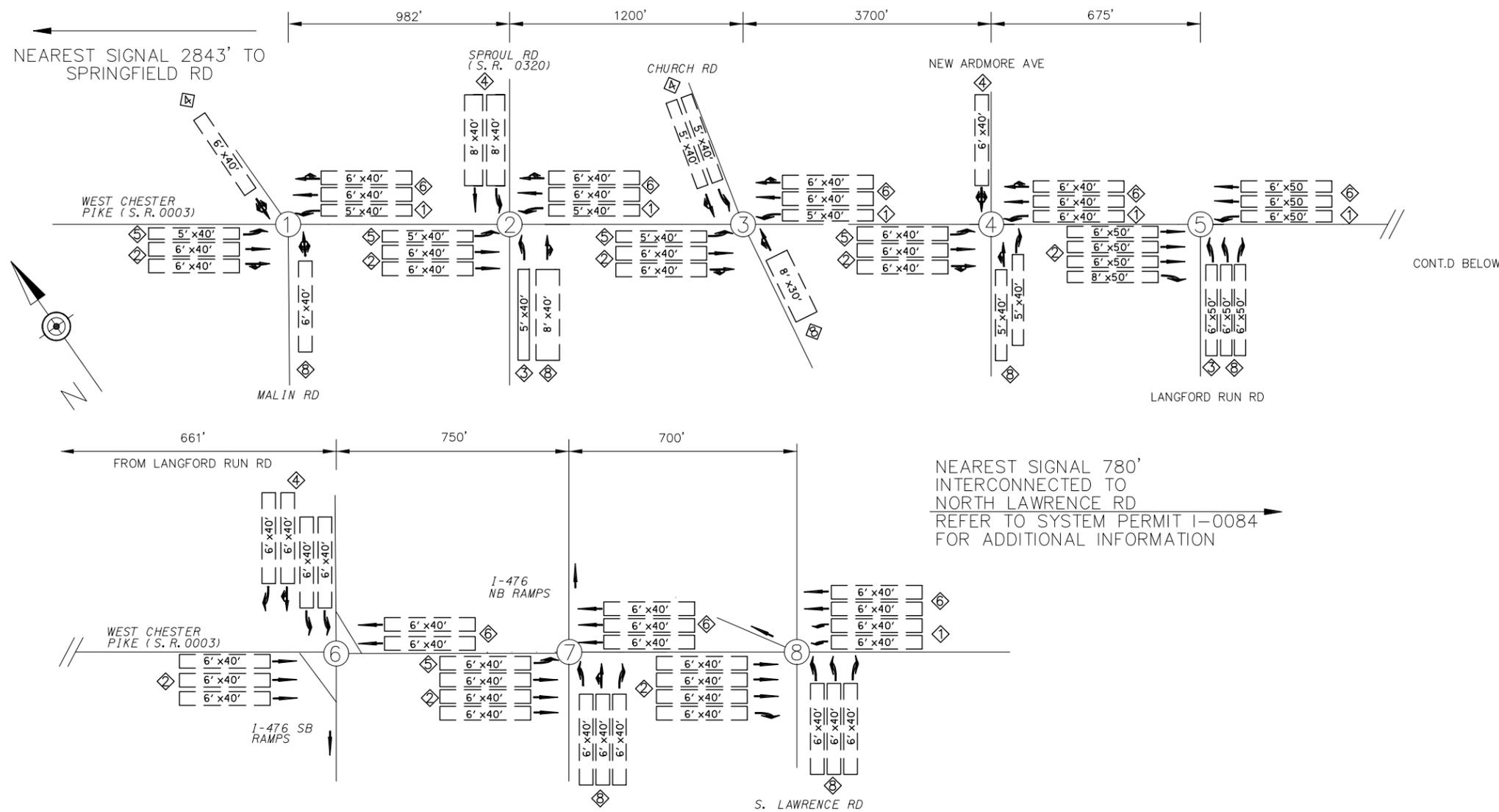
PHASE	EMERGENCY FLASHING								
	1+6			2+6			8		
INTERVAL	1	2	3	4	5	6	7	8	9
1,2	G	Y	R	G	Y	R	R	R	Y
3,4	R	R	R	G	Y	R	R	R	Y
5	R	R	R	G	Y	R	R	R	OFF
6,11	R	R	R	R	R	R	R	R	OFF
8	R	R	R	R	R	R	G	Y	OFF
9	R	R	R	G	Y	R	R	R	OFF
7,10	R	R	R	R	R	R	G	Y	R
FIXED		5	2		5	2		5	3
MINIMUM PASSAGE	3			33				3	
MAXIMUM 1	#			#				#	
MAXIMUM 2	15			36				25	
PEDESTRIAN MEMORY	L			MR				NL	

- ① G IF 2+6 IS NEXT
- ② Y/G IF 8 IS NEXT
- ③ R/G IF 8 IS NEXT
- ④ Y/G IF 1+6 IS NEXT
- ⑤ R/G IF 1+6 IS NEXT

- NOTES:**
- REFER TO SYSTEM PERMIT I-0097 FOR TRAFFIC ADAPTIVE OPERATION.
 - PHASE SEQUENCE SELECTED BY TRAFFIC ADAPTIVE PROCESSOR.
 - PHASE 1+6 SHALL NOT FOLLOW PHASE 2+6.
 - #PHASE PASSAGE CALCULATED BY TRAFFIC ADAPTIVE PROCESSOR.

- LEGEND**
- ② MAST ARM/IDENTIFYING LENGTH
 - ② VEHICULAR SIGNAL HEAD/BACKPLATE/VISORS/DIRECTIONAL ARROW/IDENTIFYING NUMBER
 - ② PEDESTRIAN SIGNAL HEAD/IDENTIFYING NUMBER
 - ⊕ PEDESTRIAN PUSHBUTTON/SIGN
 - A SIGN/IDENTIFYING LETTER
 - ② DETECTION ZONE/SIZE
 - ⊕ EMERGENCY PREEMPTION DEVICE
 - ⊕ CURB CUT RAMP
 - ⊕ UTILITY POLE
 - ② PHASE NUMBER
 - ⊕ VIDEO DETECTOR





CONT.D BELOW

NEAREST SIGNAL 780'
INTERCONNECTED TO
NORTH LAWRENCE RD
REFER TO SYSTEM PERMIT I-0084
FOR ADDITIONAL INFORMATION

- SYSTEM NOTES**
- PROGRAM TO BE SELECTED BY CLOSED LOOP SYSTEM (TIME OF DAY), TRAFFIC ADAPTIVE OR TBC BACKUP.
 - OFFSETS ARE REFERENCED TO TS2 FIRST GREEN (PHASE 2+6), ON WEST CHESTER PIKE.
 - SYSTEM LIMITS:
WEST CHESTER PIKE - FROM MALIN RD TO SOUTH LAWRENCE RD.
MASTER CONTROLLER (FOR BACKUP):
ON STREET MASTER AT: SPROUL RD.
 - PRIMARY COORDINATION: CLOSED LOOP SYSTEM - FIBER OPTIC COMMUNICATION CABLE.
SECONDARY COORDINATION: TBC (DEFAULT TO BACKUP TBC).
 - SYSTEM SERVER LOCATED IN PENNDOT DISTRICT 6 OFFICE. PENNDOT AND TOWNSHIP TO HAVE COMMUNICATION THROUGH SYSTEM SOFTWARE.
 - CYCLES, SPLITS & OFFSETS ARE IN SECONDS.
 - TRAFFIC ADAPTIVE SYSTEM IS DESIGNED FOR THE INSYNC SYSTEM SOFTWARE.
 - SYSTEM TO UTILIZE RHYTHM ENGINEERING INSYNC VIDEO DETECTION/TRAFFIC ADAPTIVE SIGNAL CONTROL SYSTEM AT DESIGNATED INTERSECTIONS. BACKUP SYSTEM PROVIDED BY ARIES.

ADAPTIVE WEEKLY PROGRAM CHART					
EVENT	DAY	TIME	PERIOD	PROGRAM	REMARKS
1	1-5	0600	100	1	AM PEAK
2	1-5	0900	100	2	OFF PEAK
3	1-5	1500	120	3	PM PEAK
4	6,7	0900	100	2	OFF PEAK

▲ DAY 1 = MONDAY

- LEGEND**
- ④ INTERSECTION ADDRESS
 - DETECTION ZONE
 - ◇ PHASE NUMBER

NOT TO SCALE

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**PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0**

COUNTY: DELAWARE
 MUNICIPALITY: MARPLE TOWNSHIP
 INTERSECTION: WEST CHESTER PIKE (SR 0003)
BEWTEEN MALIN RD AND S. LAWRENCE RD

REVIEWED: _____ DATE _____
 MUNICIPAL OFFICIAL _____ DATE _____

RECOMMENDED: _____
 DISTRICT TRAFFIC ENGINEER _____ DATE _____

NO	REVISION	DES/REVW	DATE	REVW	DATE	RECOM	DATE
1	TIMING AND OFFSETS	SM	3/16/06				
2	LANGFORD ADDED	ORA	10/30/13				
3	TRAFFIC ADAPTIVE	ORA	1/13/14				
4							
5							
6							
7							
8							

TRAFFIC ADAPTIVE TIMING PROGRAMS

PERMIT #	PROGRAM 1 = AM PEAK	PHASE / TUNNEL PHASE DURATION								CYCLE / PERIOD	OFFSET	REMARKS	FACILITATOR OFFSET	FORWARD TRAVEL TIME	BACKWARD TRAVEL TIME
		1	2	3	4	5	6	7	8						
FILE #	Intersections										Bal				
0433	1 Malin Rd											TRAFFIC ADAPTIVE			
0432	2 Sproul Rd											TRAFFIC ADAPTIVE			
0480	3 Church Rd/Berkley Rd											TRAFFIC ADAPTIVE			
0002	4 New Ardmore Ave											TRAFFIC ADAPTIVE			
XXXX	5 Langford Run Road											TRAFFIC ADAPTIVE			
2418	6 I-476 Southbound Ramps											TRAFFIC ADAPTIVE			
2419	7 I-476 Northbound Ramps											TRAFFIC ADAPTIVE			
0827	8 South Lawrence Rd											TRAFFIC ADAPTIVE			

FILE #	PROGRAM 2 = OFF PEAK	PHASE / TUNNEL PHASE DURATION								CYCLE / PERIOD	OFFSET	REMARKS	FACILITATOR OFFSET	FORWARD TRAVEL TIME	BACKWARD TRAVEL TIME
		1	2	3	4	5	6	7	8						
0433	1 Malin Rd										Bal	TRAFFIC ADAPTIVE			
0432	2 Sproul Rd											TRAFFIC ADAPTIVE			
0480	3 Church Rd/Berkley Rd											TRAFFIC ADAPTIVE			
0002	4 New Ardmore Ave											TRAFFIC ADAPTIVE			
XXXX	5 Langford Run Road											TRAFFIC ADAPTIVE			
2418	6 I-476 Southbound Ramps											TRAFFIC ADAPTIVE			
2419	7 I-476 Northbound Ramps											TRAFFIC ADAPTIVE			
0827	8 South Lawrence Rd											TRAFFIC ADAPTIVE			

FILE #	PROGRAM 3 = PM PEAK	PHASE / TUNNEL PHASE DURATION								CYCLE / PERIOD	OFFSET	REMARKS	FACILITATOR OFFSET	FORWARD TRAVEL TIME	BACKWARD TRAVEL TIME
		1	2	3	4	5	6	7	8						
0433	1 Malin Rd										Bal	TRAFFIC ADAPTIVE			
0432	2 Sproul Rd											TRAFFIC ADAPTIVE			
0480	3 Church Rd/Berkley Rd											TRAFFIC ADAPTIVE			
0002	4 New Ardmore Ave											TRAFFIC ADAPTIVE			
XXXX	5 Langford Run Road											TRAFFIC ADAPTIVE			
2418	6 I-476 Southbound Ramps											TRAFFIC ADAPTIVE			
2419	7 I-476 Northbound Ramps											TRAFFIC ADAPTIVE			
0827	8 South Lawrence Rd											TRAFFIC ADAPTIVE			

- Notes:**
- ALL SPLIT TIMES INCLUDE YELLOW AND RED TIMES FOR A GIVEN PHASE.
 - REFER TO SIGNAL PERMIT PLAN FOR MAX 1, MAX 2 AND CLEARANCE AND PED TIMES.
 - FACILITATOR OFFSET: VALUE IN SECONDS THAT OFFSETS A TUNNEL FROM THE OPPOSITE DIRECTION TUNNEL AT THE FACILITATOR INTERSECTION. THE TUNNEL OFFSET NOT GIVEN IS ZERO (I.E. PH 2 = 0).
 - FORWARD TRAVEL TIME: TRAVEL TIME MOVING FROM FIRST INTERSECTION TO LAST.
 - BACKWARD TRAVEL TIME: TRAVEL TIME MOVING FROM LAST INTERSECTION TO FIRST.

CYCLE/SPLIT/OFFSET

PERMIT #	Program 1= AM Peak	Phase								Cycle	Offsets			
		1	2	3	4	5	6	7	8		PED	Bal	DR2(WB)	DR1(EB)
FILE #	Intersections													
0433	1 Malin Rd	13(LEAD)	61		26		74		26	100	91(38)			
0432	2 Sproul Rd	13(LEAD)	37	13(LEAD)	27	23(LEAD)	37		40	100	83(47)			
0480	3 Church Rd/Berkley Rd	13(LEAD)	61		26	13(LEAD)	61		26	100	0			
0002	4 New Ardmore Ave	13(LEAD)	62		25	13(LEAD)	62		25	100	70			
XXXX	5 Langford Run Road	27(LEAD)	48				48	27	35	100	52			
2418	6 I-476 Southbound Ramps		53	47			53			100	34			
2419	7 I-476 Northbound Ramps		67			29(LEAD)	38		33	100	23			
0827	8 South Lawrence Rd	21(LEAD)	46				67		33	100	45			

FILE #	Program 2 = MD Peak	Phase								Cycle	Offset # 1	Offset # 2	Offset # 3
		1	2	3	4	5	6	7	8				
0433	1 Malin Rd	13(LEAD)	50		37		63		37	100	12		
0432	2 Sproul Rd	13(LEAD)	46	13(LEAD)	27	14(LEAD)	46		40	100	12		
0480	3 Church Rd/Berkley Rd	13(LEAD)	41		46	13(LEAD)	41		46	100	69		
0002	4 New Ardmore Ave	13(LEAD)	66		21	13(LEAD)	66		21	100	99		
XXXX	5 Langford Run Road	27(LEAD)	48				48	27	35	100	78		
2418	6 I-476 Southbound Ramps		58	42			58			100	56		
2419	7 I-476 Northbound Ramps		69			30(LEAD)	39		31	100	28		
0827	8 South Lawrence Rd	27(LEAD)	42				69		31	100	58		

FILE #	Program 3 = PM Peak	Phase								Cycle	Offset # 1	Offset # 2	Offset # 3
		1	2	3	4	5	6	7	8				
0433	1 Malin Rd	13(LEAD)	76		31		89		31	120	56		
0432	2 Sproul Rd	13(LEAD)	42	13(LEAD)	41	24(LEAD)	41		54	120	79		
0480	3 Church Rd/Berkley Rd	13(LEAD)	75		32	13(LEAD)	75		32	120	115		
0002	4 New Ardmore Ave	18(LEAD)	81		21	18(LEAD)	81		21	120	56		
XXXX	5 Langford Run Road	23(LEAD)	70				70	27	35	120	78		
2418	6 I-476 Southbound Ramps		59	61			59			120	15		
2419	7 I-476 Northbound Ramps		78			31(LEAD)	47		42	120	106		
0827	8 South Lawrence Rd	27(LEAD)	49				76		44	120	118		

- Notes:**
- ALL SPLIT TIMES INCLUDE YELLOW AND RED TIMES FOR A GIVEN PHASE.
 - REFER TO SIGNAL PERMIT PLAN FOR MAX 1, MAX 2 AND CLEARANCE AND PED TIMES.

EVENT	DAY*	TIME	CYCLE	OFFSET	PROGRAM	REMARKS
1	1-5	0000	---	---	---	FREE
2	1-5	0600	100		1	AM PEAK
3	1-5	0900	100		2	MD PEAK
4	1-5	1500	120		3	PM PEAK
5	1-5	1900	---	---	---	FREE
6	6,7	0000	---	---	---	FREE
7	6,7	0900	100		2	MD PEAK
8	6,7	1900	---	---	---	FREE

- ▲ DAY 1 = MONDAY
 * MAX 1 / FREE WHERE NOTED IN CYCLE/SPLIT/OFFSET MATRIX.

- LEGEND**
- ④ INTERSECTION ADDRESS
 - DETECTION ZONE
 - ◆ PHASE NUMBER

NOT TO SCALE

GENERAL NOTES

NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS PRIOR APPROVAL IS GRANTED IN WRITING BY A REPRESENTATIVE OF THE DEPARTMENT OF TRANSPORTATION.

ALL MAINTENANCE WORK INCLUDING TRIMMING OF TREES, NECESSARY FOR PROPER VISIBILITY OF THE SIGNALS IS THE RESPONSIBILITY OF THE PERMITTEE.

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ON THIS DRAWING ARE CONSIDERED PART OF THE PERMIT AND SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH PUBLICATION NO. 212.

POST MOUNTED SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF CURB OR THE EDGE OF THE SHOULDER. SUPPORT POLES FOR OVERHEAD SIGNALS SHALL ALSO HAVE A MINIMUM CLEARANCE HORIZONTALLY OF 2 FEET.

SIGNALS ERECTED OVER THE ROADWAY SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 16 FT. ABOVE THE ROADWAY. POST MOUNTED SIGNALS SHALL BE A MINIMUM OF 8 FT. ABOVE THE SIDEWALK OR PAVEMENT.

ALL OVERHEAD SIGNALS MUST BE RIGIDLY MOUNTED, TOP AND BOTTOM, AND EQUIPPED WITH BACKPLATES.

THE MINIMUM HORIZONTAL DISTANCE BETWEEN SIGNALS MEASURED AT RIGHT ANGLES TO THE APPROACH SHALL BE 8 FEET.

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

CURBING TO BE INSTALLED BY MUNICIPALITY AND WHERE NOTED, SHALL BE PLAIN CEMENT CONCRETE CURB OR GRANITE CURB, INSTALLED IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS FORM 408.

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF THE LATEST AMENDMENT TO ACT 287, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, EFFECTIVE DATE DECEMBER 20, 1974.

WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT FOR REVIEW PRIOR TO BIDDING.

PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR ANY CHANGES IN INTERSECTION GEOMETRY REGARDING EXCAVATION.

CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-8800 SERIES.

**PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0**

COUNTY: DELAWARE
 MUNICIPALITY: MARPLE TOWNSHIP
 INTERSECTION: WEST CHESTER PIKE (SR 0003)
BEWTEEN MALIN RD AND S. LAWRENCE RD

REVIEWED: _____ DATE _____
 MUNICIPAL OFFICIAL _____ DATE _____

RECOMMENDED: _____
 DISTRICT TRAFFIC ENGINEER _____ DATE _____

NO	REVISION	DES/REVW	DATE	REVW	DATE	RECOM	DATE
1	TIMING AND OFFSETS	SM	3/16/06				
2	LANGFORD ADDED	ORA	10/30/13				
3	TRAFFIC ADAPTIVE	ORA	1/13/14				
4							
5							
6							
7							
8							