APPENDIX G: Signal Clearance Time Calculations

Publication 46 (1/13)

COUNTY: Union
MUNICIPALITY: Lewisburg Borough
INTERSECTION: Market Street (S,R, 0045) & 2nd Street)

	VEHICLE CHANGE AND CLEAR	ANCE IN	NTERVALS	(§4.3)
1 4 7 1/	Where: Y = Yellow change interval; s (tunically	3 to 6 seconds)	
$Y = t + \frac{1.47V}{2a \pm 64.4g}$	AR = All-red clearance interval	,,	3 to 6 seconds)	
2a ± 64.4g	t = Perception-reaction time; s	, -	ly 1 second)	
$W \pm I$	V = Approach speed of roadways		iy i second)	
$AR = \frac{W + L}{1.47W}$	$a = \text{Deceleration rate; ft/s}^2$ (type) ft/s²)	
1.477	g = Grade of approach; %/100	•	, 100)	
			n bar to the end	of the farthest traveled lane); ft
	L = Length of vehicle; ft (typical)			or the farmost traveled lane); it
	Sum = Y + AR rounded up to r		,	
MAJOR STREET: Marke	•		-	
Approach: EB			USE	COMMENTS
V (mph) = 25	Yellow (sec) =	2.8	3	
g (%/100) = 0	Red (sec) =	2.3	3	
W (feet) = 65	Sum (sec) =	6		
Approach: <u>WB</u>			USE	COMMENTS
V (mph) = 25	Yellow (sec) =	2.8	3	
g (%/100) = 0	Red (sec) =	2.5	3	
W (feet) = 73	Sum (sec) =	6		
MINOR STREET: 2nd S	treet		-	
Approach: <u>NB</u>			USE	COMMENTS
V (mph) = 25	Yellow (sec) =	2.8	3	
g (%/100) = 0	Red (sec) =	2.7	3	
W (feet) = 81	Sum (sec) =	6		
Approach: <u>SB</u>			USE	COMMENTS
V (mph) = 25	Yellow (sec) =	2.8	3	
g (%/100) = 0	Red (sec) =	2.7	3	
W (feet) = 81	Sum (sec) =	6		

PI	EDESTRIAN INTERVALS	(§4.3)
	<u>ovided</u>	
$T_{\rm w} = \frac{L}{3} - T_{\rm pc}$ or 7 seconds, whichever	is greater	
$T_{pc} = \frac{L}{S_w}$ Where: $T_w = \text{WALF}$ $T_{pc} = \text{Pede}$	K intervals (at least 7 seconds) strian change (flashing DON'T WALK) interval; s um green interval without pedestrian signals; s	
$T_p = \frac{D}{S_w} + 3$ $L = \text{Pedest}$ (per Dis	rian walking distance from curb to curb; ft strict 6 guidance) ng speed; ft/s (typically 3,5 ft/s)	
TO CROSS MAJOR STREET: Market Stre		
Leg: East		
L (feet) = 42	T_w (sec) = 7	
Sw (fps) = 3.5	T_{pc} (sec) = 12	
	T_p (sec) = N/A	
Leg: West	·	
L (feet) = 28	T_w (sec) = 7	
Sw (fps) = 3.5	T_{pc} (sec) = 8	
	T_p (sec) = N/A	
TO CROSS MINOR STREET: 2nd Street Leg: North	· · ·	
L (feet) = 28	T_w (sec) = 7	
Sw (fps) = 3.5	T_{pc} (sec) = 8	
	T_p (sec) = N/A	
Leg: South		
L (feet) = 32	T_w (sec) = 7	
Sw (fps) = 3.5	T_{pc} (sec) = 10	
	T_p (sec) = N/A	

Publication 46 (1/13)

COUNTY: Union
MUNICIPALITY: Lewisburg Borough
INTERSECTION: Market Street (S.R. 0045) & 3rd Street)

	VEHICLE CHANGE AND CLEAR	RANCE IN	NTERVALS	(§4.3)	
$Y = t + \frac{1.47V}{2a \pm 64.4g}$	Where: $Y = \text{Yellow change interval}$; s (typically 3 to 6 seconds)				
$2a \pm 64.4g$	AR = All-red clearance interva	, -			
	t = Perception-reaction time;		ly 1 second)		
$AR = \frac{W + L}{1.47V}$	V = Approach speed of roadw				
1.47V	$a = \text{Deceleration rate; ft/s}^2$ (ty) ft/s²)		
	g = Grade of approach; %/10				
				of the farthest traveled lane); ft	
	L = Length of vehicle; ft (typic		,		
	Sum = Y + AR rounded up to	nearest v	vnole number		
	et Street				
Approach: <u>EB</u>		0.0	USE	COMMENTS	
V (mph) = 25	Yellow (sec) =	2.8	3		
g (%/100) = 0	Red (sec) =	2.6	3		
W (feet) = 75	Sum (sec) =	6			
Approach: <u>WB</u>			USE	COMMENTS	
V (mph) = 25	Yellow (sec) =	2.8	3		
g (%/100) = 0	Red (sec) =	2.6	3		
W (feet) = 76 Sum (sec) = 6					
MINOR STREET: 3rd S	<u>Street</u>				
Approach: <u>NB</u>	· · · · · · · · · · · · · · · · · · ·	0.0	USE	COMMENTS	
V (mph) = 25	Yellow (sec) =	2.8	3		
g (%/100) = 0	Red (sec) =	2.5	3		
W (feet) = 72	Sum (sec) =	6			
Approach: <u>SB</u>			USE	COMMENTS	
V (mph) = 25	Yellow (sec) =	2.8	3		
g (%/100) = 0	Red (sec) =	2.4	3		
W (feet) = 68	Sum (sec) =	6			

Р	EDESTRIAN INTERVALS	(§4.3)
	ovided	
$T_{\rm w} = \frac{L}{3} - T_{pc}$ or 7 seconds, whichever	is greater	
$T_{pc} = rac{L}{S_w}$ Where: $T_w = \text{WAL}$ $T_{pc} = \text{Pede}$	K intervals (at least 7 seconds) strian change (flashing DON'T WALK) interval; s	
$T_p = \frac{E}{S_w} + 3$ $L = \text{Pedes}$ (per Di	num green interval without pedestrian signals; s trian walking distance from curb to curb; ft strict 6 guidance) ing speed; ft/s (typically 3.5 ft/s)	
TO CROSS MAJOR STREET: Market Str		
Leg: <u>East</u>	<u>5501</u>	
L (feet) = 28	T_w (sec) = 7	
Sw (fps) = 3.5	T_{pc} (sec) = 8	
	T_p (sec) = N/A	
Leg: West	• • • •	
L (feet) = 28	T_w (sec) = 7	
Sw (fps) = 3.5	T_{pc} (sec) = 8	
	T_p (sec) = N/A	
TO CROSS MINOR STREET: <u>3rd Street</u> Leg: <u>North</u>		
L (feet) = 37	T_w (sec) = 7	
Sw (fps) = 3.5	T_{pc} (sec) = 11	
	T_{ρ} (sec) = N/A	
Leg: South		
L (feet) = 35	T_w (sec) = 7	
Sw (fps) = 3.5	T_{pc} (sec) = 10	
	T_p (sec) = N/A	

Publication 46 (1/13)

COUNTY: Union
MUNICIPALITY: Lewisburg Borough
INTERSECTION: Market Street (S.R. 0045) & 4th Street)

	VEHICLE CHANGE AND CLEAR	ANCE IN	ITERVALS	(§4.3)
. 1.47 <i>V</i> V	Vhere: <i>Y</i> = Yellow change interval; s	(typically	3 to 6 seconds)	
$Y = t + \frac{1.47V}{2a \pm 64.4g}$ V	AR = All-red clearance interva	İ; s		
	t = Perception-reaction time;	(typicall	y 1 second)	
W + L	V = Approach speed of roadw	ay; mph		
$AR = \frac{W + L}{1.47V}$	a = Deceleration rate; ft/s2 (type)	oically 10	ft/s²)	
	g = Grade of approach; %/100			
	W = Width of intersection (from	n the sto	p bar to the end	of the farthest traveled lane); ft
	L = Length of vehicle; ft (typic	•		
	Sum = Y + AR rounded up to	nearest v	vhole number	
	t Street			
Approach: <u>EB</u>			USE	COMMENTS
V (mph) = 25	Yellow (sec) =	2.8	3	
g (%/100) = 0	Red (sec) =	2.0	3	
W (feet) = 55	Sum (sec) =	5		
Approach: <u>WB</u>	_		USE	COMMENTS
V (mph) = 25	Yellow (sec) =	2.8	3	
g (%/100) = 0	Red (sec) =	2.3	3	
W (feet) = 63	Sum (sec) =	6		
MINOR STREET: 4th St	reet			
Approach: <u>NB</u>	_		USE	COMMENTS
V (mph) = 25	Yellow (sec) =	2.8	3	
g (%/100) = 0	Red (sec) =	3.0	3	
W (feet) = 90	Sum (sec) =	6		
Approach: <u>SB</u>			USE	COMMENTS
V (mph) = 25	Yellow (sec) =	2.8	3	
g (%/100) = 0	Red (sec) =	2.3	3	
W (feet) = 64	Sum (sec) =	6		

P	PEDESTRIAN INTERVALS	(§4.3)
Pedestrian indications are: Pr	<u>rovided</u>	
$T_{w} = \frac{L}{3} - T_{pc}$ or 7 seconds, whichever	r is greater	
$T_{pc} = \frac{1}{S_w}$ $T_{pc} = \text{Pede}$.K intervals (at least 7 seconds) estrian change (flashing DON'T WALK) interval; s	
$T_p = \frac{D}{S_w} + 3$ $L = \text{Pedes}$ (per Di	num green interval without pedestrian signals; s strian walking distance from curb to curb; ft istrict 6 guidance)	
	king speed; ft/s (typically 3.5 ft/s)	
TO CROSS MAJOR STREET: Market Str Leg: East	<u>reet</u>	
L (feet) = 29	T_w (sec) = 7	
Sw (fps) = 3.5	T_{pc} (sec) = 9	
\ 1 <i>/</i>	T_p (sec) = N/A	
Leg: West		
L (feet) = 37	T_w (sec) = 7	
Sw (fps) = 3.5	T_{pc} (sec) = 11	
	T_p (sec) = N/A	
TO CROSS MINOR STREET: 4th Street Leg: North		
L (feet) = 32	T_w (sec) = 7	
Sw (fps) = 3.5	T_{pc} (sec) = 10	
	T_{ρ} (sec) = N/A	
Leg: <u>South</u>	<u> </u>	
L (feet) = 30	T_w (sec) = 7	
Sw (fps) = 3.5	T_{pc} (sec) = 9	
	T_{ρ} (sec) = N/A	

Publication 46 (1/13)

COUNTY: Union
MUNICIPALITY: Lewisburg Borough
INTERSECTION: Market Street (S.R. 0045) & 7th Street)

	VEHICLE CHANGE AND CLEAR	ANCE IN	ITERVALS	(§4.3)	
$Y = t + \frac{1.47V}{2a \pm 64.4g}$ W	Where: $Y = Yellow$ change interval; s (typically 3 to 6 seconds)				
$2a \pm 64.4g$	AR = All-red clearance interva	, -			
TT7 T	t = Perception-reaction time; s		y 1 second)		
$AR = \frac{W + L}{1.47V}$	V = Approach speed of roadw		64.2		
1.47V	$a = \text{Deceleration rate; ft/s}^2 \text{ (typerson)}$	•	π/s²)		
	g = Grade of approach; %/100			of the feathers two velocities	
				I of the farthest traveled lane); ft	
	L = Length of vehicle; ft (typic Sum = Y + AR rounded up to I	,			
MA IOD STREET. Manuara	· ·	ilearest W	moje mamber		
MAJOR STREET: <u>Market</u> Approach: EB	<u>Street</u>		USE	COMMENTS	
• • • • • • • • • • • • • • • • • • • •	Valley (e.e.)	2.0	3	COMMENTS	
V (mph) = 25 g (%/100) = 0	Yellow (sec) = Red (sec) =	2.8 1.7	3		
y (767100) = 0 W (feet) = 43	Sum (sec) =	5	3		
Approach: WB	Suili (sec) –	<u> </u>		COMMENTS	
• • • • • • • • • • • • • • • • • • • •	Valley (e.e.)	2.0	USE	COMMENTS	
V (mph) = 25 g (%/100) = 0	Yellow (sec) = Red (sec) =	2.8 1.7	3		
y (767100) = 0 W (feet) = 43	Sum (sec) =	5	3		
MINOR STREET: 7th Stre	\ /	<u> </u>			
Approach: NB	301		USE	COMMENTS	
V (mph) = 25	Yellow (sec) =	2.8	3	COMMENTS	
g (%/100) = 0	Red (sec) =	2.3	3		
W (feet) = 63	Sum (sec) =	6	3		
Approach: SB	Guin (GGG)		USE	COMMENTS	
V (mph) = 25	Yellow (sec) =	2.8	3	- Comment o	
g (%/100) = 0	Red (sec) =	2.3	3		
W (feet) = 63	Sum (sec) =	6			
(.55.)	Su (300)		1		

P	PEDESTRIAN INTERVALS	(§4.3)
Pedestrian indications are: Pr	<u>rovided</u>	
$T_{w} = \frac{L}{3} - T_{pc}$ or 7 seconds, whichever	r is greater	
$T_{pc} = \frac{1}{S_w}$ $T_{pc} = \text{Pede}$.K intervals (at least 7 seconds) estrian change (flashing DON'T WALK) interval; s	
$T_p = \frac{D}{S_w} + 3$ $L = \text{Pedes}$ (per Di	num green interval without pedestrian signals; s strian walking distance from curb to curb; ft istrict 6 guidance)	
	king speed; ft/s (typically 3.5 ft/s)	
TO CROSS MAJOR STREET: Market Str Leg: East	<u>reet</u>	
L (feet) = 34	T_w (sec) = 7	
Sw (fps) = 3.5	T_{pc} (sec) = 10	
	T_{p} (sec) = N/A	
Leg: West	<u> </u>	
L (feet) = 34	T_w (sec) = 7	
Sw (fps) = 3.5	T_{pc} (sec) = 10	
	T_{p} (sec) = N/A	
TO CROSS MINOR STREET: <u>7th Street</u> Leg: <u>North</u>	<u> </u>	
L (feet) = 26	T_w (sec) = 7	
Sw (fps) = 3.5	T_{pc} (sec) = 8	
	T_{ρ} (sec) = N/A	
Leg: <u>South</u>	<u> </u>	
L (feet) = 27	T_w (sec) = 7	
Sw (fps) = 3.5	$T_{\rho c}$ (sec) = 8	
	T_p (sec) = N/A	