This should be the 4SG fields not the stop controlled. Please verify all results ran with the 4SG not 4ST

Required Manual Input	Optional Manual Input	*Select from Drop-Down List*

Click to Reset Sheet

Method 1

General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst:	**Paige Begin**	City:	**Medfield**
Agency or Company:	**BETA Group, Inc**	Intersection:	**Route 27 at West Street**
Date Performed (MM/DD/YYYY):	**10/28/24**	Jurisdiction:	**District 3**
Study Period (Years, 1 minimum, 10 maximum):	**5**	Analysis Year:	**2024**

Intersection Data

Intersection Type:	*4SG MassDOT*
Intersection Lighting (Present/Not Present):	*Present*

Stop Controlled

Number of major-road approaches with left-turn lanes (0,1,2):	*0*
Number of major-road approaches with right-turn lanes (0,1,2):	*0*

Step 1 – Expected Change in Safety Performance

Years

Step 1.1A - Observed Crash Data for Intersection

Crash Type, Severity	Total	Average per Year	2017 Year 1	2018 Year 2	2019 Year 3	2020 Year 4	2021 Year 5
MV, FI	7	1.40	**2**	**2**	**0**	**0**	**3**
MV, PDO	19	3.80	**5**	**5**	**5**	**1**	**3**
SV, FI	0	0.00	**0**	**0**	**0**	**0**	**0**
SV, PDO	0	0.00	**0**	**0**	**0**	**0**	**0**
Ped, FI	0	0.00	**0**	**0**	**0**	**0**	**0**
Ped, PDO	0	0.00	**0**	**0**	**0**	**0**	**0**
Bike, FI	1	0.20	**0**	**0**	**0**	**0**	**1**
Bike, PDO	0	0.00	**0**	**0**	**0**	**0**	**0**

Step 1.1B - Traffic Data

	Year 1	Year 2	Year 3	Year 4	Year 5
Present AADT(Major):	**9,856**	**9,856**	**9,856**	**9,856**	9,856
AADT Check	AADT OK	AADT OK	AADT OK	AADT OK	AADT OK
Present AADT(Minor):	**7,647**	**7,647**	**7,647**	**7,647**	7,647
AADT Check	AADT OK	AADT OK	AADT OK	AADT OK	AADT OK

Design Year AADT(Major):	**12,015**
AADT Check	AADT OK
Design Year AADT(Minor):	**9,799**
AADT Check	AADT OK

Step 2 – Expected Change in Safety Performance

Facility Type:	U4SG	Urban Four-Leg Signalized Intersection	
Discount Rate (i)	7%	**Number of Proposed Alternatives:**	2

	Alternative 1	**Alternative 2**	**Alternative 3**	**Alternative 4**
Name of Countermeasure 1	**Roundabout**	**Installing Left Turn Lanes**		
Name of Countermeasure 2 (If Desired)	Adding Shared Use Path	Adding Shared Use Path		
Estimated Service Life (Years)	**20**	**20**		
Estimated Improvement Cost	**$3,170,000**	**$2,090,000**		

CMF Input - Use CMFs Tab to Calculate - If no CMF Adjustment being made leave the default value of 1.000; **PDO CMF Not required - PDO crash reductions calculated by subtracting FI crashes from ALL crashes**

Alternative 1	**CMF Combination Method (If Applicable):**	**Countermeasure 1:**	**Countermeasure 2 (Select CMF Combination Method to Unlock):**
Name		Roundabout	Adding Shared Use Path
Crash Type, Severity		**CMF**	**CMF**
MV, ALL	Not Applicable	**0.239**	1.000
MV, FI	Not Applicable	**0.239**	1.000
SV, ALL	Not Applicable	**0.239**	1.000
SV, FI	Not Applicable	**0.239**	1.000
Ped, ALL	Not Applicable	**0.239**	1.000
Bike, ALL	Additive	**0.239**	**0.750**

Alternative 2	**CMF Combination Method (If Applicable):**	**Countermeasure 1:**	**Countermeasure 2 (Select CMF Combination Method to Unlock):**
Name		Installing Left Turn Lanes	Adding Shared Use Path
Crash Type, Severity		**CMF**	**CMF**
MV, ALL	Not Applicable	**0.656**	1.000
MV, FI	Not Applicable	**0.656**	1.000
SV, ALL	Not Applicable	**0.656**	1.000
SV, FI	Not Applicable	**0.656**	1.000
Ped, ALL	Not Applicable	**0.656**	1.000
Bike, ALL	Additive	**0.656**	**0.750**

Alternative 3	CMF Combination Method (If Applicable):	Countermeasure 1:	Countermeasure 2 (Select CMF Combination Method to Unlock):
Name			
Crash Type, Severity		CMF	CMF
MV, ALL	Not Applicable	1.000	1.000
MV, FI	Not Applicable	1.000	1.000
SV, ALL	Not Applicable	1.000	1.000
SV, FI	Not Applicable	1.000	1.000
Ped, ALL	Not Applicable	1.000	1.000
Bike, ALL	Not Applicable	1.000	1.000

Alternative 4	CMF Combination Method (If Applicable):	Countermeasure 1:	Countermeasure 2 (Select CMF Combination Method to Unlock):
Name			
Crash Type, Severity		CMF	CMF
MV, ALL	Not Applicable	1.000	1.000
MV, FI	Not Applicable	1.000	1.000
SV, ALL	Not Applicable	1.000	1.000
SV, FI	Not Applicable	1.000	1.000
Ped, ALL	Not Applicable	1.000	1.000
Bike, ALL	Not Applicable	1.000	1.000

Where did these CMF values come from? MassDOT CMF 74 "Convert Signalized intersection to Roundabout" shows 0.792 and 0.342 for All Crashes and FI

Results

Step 1.1C - Predicted Crash Frequency for the Sample Intersection

Crash Type, Severity	Total Predicted Crashes during the Study Period ($N_{pr,study}$)	Average Crash Frequency per Year	Predicted Crash Frequency per Year (From Prediction Spreadsheet [Predicted Nb])									
			Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
MV, FI	4.63	0.93	0.93	0.93	0.93	0.93	0.93					
MV, PDO	12.19	2.44	2.44	2.44	2.44	2.44	2.44					
SV, FI	0.31	0.06	0.06	0.06	0.06	0.06	0.06					
SV, PDO	0.66	0.13	0.13	0.13	0.13	0.13	0.13					
Ped, FI	0.00	0.00	0.00	0.00	0.00	0.00	0.00					
Ped, PDO												
Bike, FI	0.11	0.02	0.02	0.02	0.02	0.02	0.02					
Bike, PDO												

Step 1.1D - Expected number of crashes during the study period, calculated using EB

Crash Type, Severity	Predicted Crashes during the Study Period ($N_{pr,study}$)	Observed Crashes during the Study Period ($N_{obs,study}$)	Overdispersion Parameter (K)	Weight (w)	Expected Crashes during the Study Period ($N_{exp,study}$)	
MV, FI	4.63	7	0.44	0.33	6.22	
MV, PDO	12.19	19	0.27	0.23	17.41	
SV, All	*0.97*	*0*	*0.8*	*0.56*	*0.55*	Row used only for 3ST and 4ST calculation of SV, FI (see formula in cell F19)
SV, FI	0.31	0	0.79	0.80	0.25	
SV, PDO	0.66	0	0.2	0.88	0.58	
Ped, FI	0.00	0	0.13	1.00	0.00	
Ped, PDO						
Bike, FI	0.11	1	0.1	0.99	0.12	
Bike, PDO						
Total (FI)	**5.06**	**8.00**	-	-	**6.59**	
Total (PDO)	**12.85**	**19.00**	-	-	**17.99**	

Step 1.1E - Calculate Expected Number of Crashes in the Design Year

Crash Type, Severity	Predicted Crashes during the Study Period ($N_{pr,study}$)	Predicted Crashes during the Design Year ($N_{pr,design}$)	Growth Ratio ($N_{pr,design}/N_{pr,study}$)	Expected Crashes during the Study Period ($N_{exp,study}$)	Estimated Crashes during the Design Year ($N_{estimated,design,nobuild}$)
MV, FI	4.634	1.103	0.24	6.22	1.48
MV, PDO	12.192	2.821	0.23	17.41	4.03
SV, FI	0.311	0.075	0.24	0.25	0.06
SV, PDO	0.656	0.159	0.24	0.58	0.14
Ped, FI	0.002	0.000	0.21	0.00	0.00
Ped, PDO					
Bike, FI	0.108	0.025	0.23	0.12	0.03
Bike, PDO					
Total (FI)	**5.06**	**1.20**	-	-	**1.57**
Total (PDO)	**12.85**	**2.98**	-	-	**4.17**
Total	**17.90**	**4.183**	-	-	**5.74**

Step 2 – Expected Change in Safety Performance

Alternative 1					**Estimated Lifetime of Alternative 1:**	20
Countermeasure 1:	**Roundabout**		**Countermeasure 2:**	Adding Shared Use Path		
Crash Type, Severity	**Estimated Crashes during the Design Year**	**CMF1**	**CMF2 (If Applicable)**	**Resultant CMF**	**Estimated Crashes during the Design Year for Alternative 1**	**Reduced Crashes for Alternative 1**
MV, ALL	5.51	0.239		0.239	1.32	4.19
MV, FI	1.48	0.239		0.239	0.35	1.13
MV, PDO	4.03				0.96	3.07
SV, ALL	0.20	0.239		0.239	0.05	0.15
SV, FI	0.06	0.239		0.239	0.01	0.05
SV, PDO	0.14				0.03	0.11
Ped, ALL	0.00	0.239		0.239	0.00	0.00
Ped, FI	0.00				0.00	0.00
Ped, PDO						
Bike, ALL	0.03	0.239	0.750	-0.011	0.00	0.03
Bike, FI	0.03				0.00	0.03
Bike, PDO						
Total, FI	1.57				0.37	1.20
Total, PDO	4.17				1.00	3.17

Alternative 2					**Estimated Lifetime of Alternative 2:**	20
Countermeasure 1:	**Installing Left Turn Lanes**		**Countermeasure 2:**	Adding Shared Use Path		
Crash Type, Severity	**Estimated Crashes during the Design Year**	**CMF1**	**CMF2 (If Applicable)**	**Resultant CMF**	**Estimated Crashes during the Design Year for Alternative 2**	**Reduced Crashes for Alternative 2**
MV, ALL	5.51	0.656		0.656	3.62	1.89
MV, FI	1.48	0.656		0.656	0.97	0.51
MV, PDO	4.03				2.64	1.39
SV, ALL	0.20	0.656		0.656	0.13	0.07
SV, FI	0.06	0.656		0.656	0.04	0.02
SV, PDO	0.14				0.09	0.05
Ped, ALL	0.00	0.656		0.656	0.00	0.00
Ped, FI	0.00				0.00	0.00
Ped, PDO						
Bike, ALL	0.03	0.656	0.750	0.406	0.01	0.02
Bike, FI	0.03				0.01	0.02
Bike, PDO						
Total, FI	1.57				1.02	0.55
Total, PDO	4.17				2.74	1.43

Alternative 3					**Estimated Lifetime of Alternative 3:**	
Countermeasure 1:			**Countermeasure 2:**			
Crash Type, Severity	**Estimated Crashes during the Design Year**	**CMF1**	**CMF2 (If Applicable)**	**Resultant CMF**	**Estimated Crashes during the Design Year for Alternative 3**	**Reduced Crashes for Alternative 3**
MV, ALL		1.000		1.000		
MV, FI		1.000		1.000		
MV, PDO						
SV, ALL		1.000		1.000		
SV, FI		1.000		1.000		
SV, PDO		1.000		1.000		
Ped, ALL		1.000		1.000		
Ped, FI						
Ped, PDO						
Bike, ALL		1.000		1.000		
Bike, FI						
Bike, PDO						
Total, FI						
Total, PDO						

Alternative 4					**Estimated Lifetime of Alternative 4:**	
Countermeasure 1:			**Countermeasure 2:**			
Crash Type, Severity	**Estimated Crashes during the Design Year**	**CMF1**	**CMF2 (If Applicable)**	**Resultant CMF**	**Estimated Crashes during the Design Year for Alternative 4**	**Reduced Crashes for Alternative 4**
MV, All		1.000		1.000		
MV, FI		1.000		1.000		
MV, PDO		1.000		1.000		
SV, ALL		1.000		1.000		
SV, FI		1.000		1.000		
SV, PDO		1.000		1.000		
Ped, ALL		1.000		1.000		
Ped, FI						
Ped, PDO						
Bike, ALL		1.000		1.000		
Bike, FI						
Bike, PDO						
Total, FI						
Total, PDO						

Step 3 – Economic Analysis

	Roundabout		**Installing Left Turn Lanes**					
	Reduction	**Benefits**	**Reduction**	**Benefits**				
Total, FI	1.20	$392,896	0.55	$178,783				
Total, PDO	3.17	$52,989	1.43	$23,946				
Total, All	4.37	$445,885	1.98	$202,729				

	Roundabout	**Installing Left Turn Lanes**		
Design Year Benefit	$445,885	$202,729		
Present Value Conversion Factor (from Equation 13)	10.59	10.59		
Lifetime Present Value	$4,723,717	$2,147,717		
Cost	$3,170,000	$2,090,000		
Benefit-Cost Ratio	1.5	1.0		

This should be the 4SG fields not the stop controlled. Please verify all results ran with the 4SG not 4ST

Required Manual Input	Optional Manual Input	*Select from Drop-Down List*

Click to Reset Sheet

Method 1

General Information and Input Data for Urban and Suburban Arterial Intersections

General Information		Location Information	
Analyst:	**Paige Begin**	City:	**Medfield**
Agency or Company:	**BETA Group, Inc**	Intersection:	**Route 27 at West Street**
Date Performed (MM/DD/YYYY):	**10/28/24**	Jurisdiction:	**District 3**
Study Period (Years, 1 minimum, 10 maximum):	**5**	Analysis Year:	**2024**

Intersection Data

Intersection Type:	*4SG MassDOT*
Intersection Lighting (Present/Not Present):	*Present*

Stop Controlled

Number of major-road approaches with left-turn lanes (0,1,2):	*0*
Number of major-road approaches with right-turn lanes (0,1,2):	*0*

Step 1 - Expected Change in Safety Performance

Step 1.1A - Observed Crash Data for Intersection

			Years				
			2017	2018	2019	2020	2021
Crash Type, Severity	**Total**	**Average per Year**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
MV, FI	7	1.40	**2**	**2**	**0**	**0**	**3**
MV, PDO	19	3.80	**5**	**5**	**5**	**1**	**3**
SV, FI	0	0.00	**0**	**0**	**0**	**0**	**0**
SV, PDO	0	0.00	**0**	**0**	**0**	**0**	**0**
Ped, FI	0	0.00	**0**	**0**	**0**	**0**	**0**
Ped, PDO	0	0.00	**0**	**0**	**0**	**0**	**0**
Bike, FI	1	0.20	**0**	**0**	**0**	**0**	**1**
Bike, PDO	0	0.00	**0**	**0**	**0**	**0**	**0**

Step 1.1B - Traffic Data

	Year 1	Year 2	Year 3	Year 4	Year 5
Present AADT(Major):	**9,856**	**9,856**	**9,856**	**9,856**	9,856
AADT Check	AADT OK	AADT OK	AADT OK	AADT OK	AADT OK
Present AADT(Minor):	**7,647**	**7,647**	**7,647**	**7,647**	7,647
AADT Check	AADT OK	AADT OK	AADT OK	AADT OK	AADT OK

Design Year AADT(Major):	**13,674**
AADT Check	AADT OK
Design Year AADT(Minor):	**11,152**
AADT Check	AADT OK

Step 2 – Expected Change in Safety Performance

Facility Type:	U4SG	Urban Four-Leg Signalized Intersection	
Discount Rate (i)	7%	Number of Proposed Alternatives:	2

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Name of Countermeasure 1	Roundabout	Installing Left Turn Lanes		
Name of Countermeasure 2 (If Desired)	Adding Shared Use Path	Adding Shared Use Path		
Estimated Service Life (Years)	20	20		
Estimated Improvement Cost	$3,170,000	$2,090,000		

CMF Input - Use CMFs Tab to Calculate - If no CMF Adjustment being made leave the default value of 1.000; **PDO CMF Not required - PDO crash reductions calculated by subtracting FI crashes from ALL crashes**

Alternative 1	CMF Combination Method (If Applicable):	Countermeasure 1:	Countermeasure 2 (Select CMF Combination Method to Unlock):
Name		Roundabout	Adding Shared Use Path
Crash Type, Severity		CMF	CMF
MV, ALL	Not Applicable	0.239	1.000
MV, FI	Not Applicable	0.239	1.000
SV, ALL	Not Applicable	0.239	1.000
SV, FI	Not Applicable	0.239	1.000
Ped, ALL	Not Applicable	0.239	1.000
Bike, ALL	Additive	0.239	0.750

Alternative 2	CMF Combination Method (If Applicable):	Countermeasure 1:	Countermeasure 2 (Select CMF Combination Method to Unlock):
Name		Installing Left Turn Lanes	Adding Shared Use Path
Crash Type, Severity		CMF	CMF
MV, ALL	Not Applicable	0.656	1.000
MV, FI	Not Applicable	0.656	1.000
SV, ALL	Not Applicable	0.656	1.000
SV, FI	Not Applicable	0.656	1.000
Ped, ALL	Not Applicable	0.656	1.000
Bike, ALL	Additive	0.656	0.750

Alternative 3	CMF Combination Method (If Applicable):	Countermeasure 1:	Countermeasure 2 (Select CMF Combination Method to Unlock):
Name			
Crash Type, Severity		CMF	CMF
MV, ALL	Not Applicable	1.000	1.000
MV, FI	Not Applicable	1.000	1.000
SV, ALL	Not Applicable	1.000	1.000
SV, FI	Not Applicable	1.000	1.000
Ped, ALL	Not Applicable	1.000	1.000
Bike, ALL	Not Applicable	1.000	1.000

Alternative 4	CMF Combination Method (If Applicable):	Countermeasure 1:	Countermeasure 2 (Select CMF Combination Method to Unlock):
Name			
Crash Type, Severity		CMF	CMF
MV, ALL	Not Applicable	1.000	1.000
MV, FI	Not Applicable	1.000	1.000
SV, ALL	Not Applicable	1.000	1.000
SV, FI	Not Applicable	1.000	1.000
Ped, ALL	Not Applicable	1.000	1.000
Bike, ALL	Not Applicable	1.000	1.000

Where did these CMF values come from? MassDOT CMF 74 "Convert Signalized intersection to Roundabout" shows 0.792 and 0.342 for All Crashes and FI

Results

Step 1.1C - Predicted Crash Frequency for the Sample Intersection

Crash Type, Severity	Total Predicted Crashes during the Study Period ($N_{pr,study}$)	Average Crash Frequency per Year	Predicted Crash Frequency per Year (From Prediction Spreadsheet [Predicted Nb])									
			Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
MV, FI	4.63	0.93	0.93	0.93	0.93	0.93	0.93					
MV, PDO	12.19	2.44	2.44	2.44	2.44	2.44	2.44					
SV, FI	0.31	0.06	0.06	0.06	0.06	0.06	0.06					
SV, PDO	0.66	0.13	0.13	0.13	0.13	0.13	0.13					
Ped, FI	0.00	0.00	0.00	0.00	0.00	0.00	0.00					
Ped, PDO												
Bike, FI	0.11	0.02	0.02	0.02	0.02	0.02	0.02					
Bike, PDO												

Step 1.1D - Expected number of crashes during the study period, calculated using EB

Crash Type, Severity	Predicted Crashes during the Study Period ($N_{pr,study}$)	Observed Crashes during the Study Period ($N_{obs,study}$)	Overdispersion Parameter (K)	Weight (w)	Expected Crashes during the Study Period ($N_{exp,study}$)	
MV, FI	4.63	7	0.44	0.33	6.22	
MV, PDO	12.19	19	0.27	0.23	17.41	
SV, All	*0.97*	*0*	*0.8*	*0.56*	*0.55*	Row used only for 3ST and 4ST calculation of SV, FI (see formula in cell F19)
SV, FI	0.31	0	0.79	0.80	0.25	
SV, PDO	0.66	0	0.2	0.88	0.58	
Ped, FI	0.00	0	0.13	1.00	0.00	
Ped, PDO						
Bike, FI	0.11	1	0.1	0.99	0.12	
Bike, PDO						
Total (FI)	**5.06**	**8.00**	-	-	**6.59**	
Total (PDO)	**12.85**	**19.00**	-	-	**17.99**	

Step 1.1E - Calculate Expected Number of Crashes in the Design Year

Crash Type, Severity	Predicted Crashes during the Study Period ($N_{pr,study}$)	Predicted Crashes during the Design Year ($N_{pr,design}$)	Growth Ratio ($N_{pr,design}/N_{pr,study}$)	Expected Crashes during the Study Period ($N_{exp,study}$)	Estimated Crashes during the Design Year ($N_{estimated,design,nobuild}$)
MV, FI	4.634	1.232	0.27	6.22	1.65
MV, PDO	12.192	3.090	0.25	17.41	4.41
SV, FI	0.311	0.083	0.27	0.25	0.07
SV, PDO	0.656	0.176	0.27	0.58	0.16
Ped, FI	0.002	0.001	0.22	0.00	0.00
Ped, PDO					
Bike, FI	0.108	0.028	0.26	0.12	0.03
Bike, PDO					
Total (FI)	**5.06**	**1.34**	-	-	**1.75**
Total (PDO)	**12.85**	**3.27**	-	-	**4.57**
Total	**17.90**	**4.609**	-	-	**6.32**

Step 2 – Expected Change in Safety Performance

Alternative 1					**Estimated Lifetime of Alternative 1:**	20
Countermeasure 1:	**Roundabout**		**Countermeasure 2:**	Adding Shared Use Path		
Crash Type, Severity	**Estimated Crashes during the Design Year**	**CMF1**	**CMF2 (If Applicable)**	**Resultant CMF**	**Estimated Crashes during the Design Year for Alternative 1**	**Reduced Crashes for Alternative 1**
MV, ALL	6.07	0.239		0.239	1.45	4.62
MV, FI	1.65	0.239		0.239	0.40	1.26
MV, PDO	4.41				1.05	3.36
SV, ALL	0.22	0.239		0.239	0.05	0.17
SV, FI	0.07	0.239		0.239	0.02	0.05
SV, PDO	0.16	0.239		0.239	0.04	0.12
Ped, ALL	0.00	0.239		0.239	0.00	0.00
Ped, FI	0.00				0.00	0.00
Ped, PDO						
Bike, ALL	0.03	0.239	0.750	-0.011	0.00	0.03
Bike, FI	0.03				0.00	0.03
Bike, PDO						
Total, FI	1.75				0.41	1.34
Total, PDO	4.57				1.09	3.48

Alternative 2					**Estimated Lifetime of Alternative 2:**	20
Countermeasure 1:	**Installing Left Turn Lanes**		**Countermeasure 2:**	Adding Shared Use Path		
Crash Type, Severity	**Estimated Crashes during the Design Year**	**CMF1**	**CMF2 (If Applicable)**	**Resultant CMF**	**Estimated Crashes during the Design Year for Alternative 2**	**Reduced Crashes for Alternative 2**
MV, ALL	6.07	0.656		0.656	3.98	2.09
MV, FI	1.65	0.656		0.656	1.09	0.57
MV, PDO	4.41				2.90	1.52
SV, ALL	0.22	0.656		0.656	0.15	0.08
SV, FI	0.07	0.656		0.656	0.04	0.02
SV, PDO	0.16	0.656		0.656	0.10	0.05
Ped, ALL	0.00	0.656		0.656	0.00	0.00
Ped, FI	0.00				0.00	0.00
Ped, PDO						
Bike, ALL	0.03	0.656	0.750	0.406	0.01	0.02
Bike, FI	0.03				0.01	0.02
Bike, PDO						
Total, FI	1.75				1.14	0.61
Total, PDO	4.57				3.00	1.57

Alternative 3					**Estimated Lifetime of Alternative 3:**	
Countermeasure 1:			**Countermeasure 2:**			
Crash Type, Severity	**Estimated Crashes during the Design Year**	**CMF1**	**CMF2 (If Applicable)**	**Resultant CMF**	**Estimated Crashes during the Design Year for Alternative 3**	**Reduced Crashes for Alternative 3**
MV, ALL		1.000		1.000		
MV, FI		1.000		1.000		
MV, PDO						
SV, ALL		1.000		1.000		
SV, FI		1.000		1.000		
SV, PDO		1.000		1.000		
Ped, ALL		1.000		1.000		
Ped, FI						
Ped, PDO						
Bike, ALL		1.000		1.000		
Bike, FI						
Bike, PDO						
Total, FI						
Total, PDO						

Alternative 4					**Estimated Lifetime of Alternative 4:**	
Countermeasure 1:			**Countermeasure 2:**			
Crash Type, Severity	**Estimated Crashes during the Design Year**	**CMF1**	**CMF2 (If Applicable)**	**Resultant CMF**	**Estimated Crashes during the Design Year for Alternative 4**	**Reduced Crashes for Alternative 4**
MV, All		1.000		1.000		
MV, FI		1.000		1.000		
MV, PDO		1.000		1.000		
SV, ALL		1.000		1.000		
SV, FI		1.000		1.000		
SV, PDO		1.000		1.000		
Ped, ALL		1.000		1.000		
Ped, FI						
Ped, PDO						
Bike, ALL		1.000		1.000		
Bike, FI						
Bike, PDO						
Total, FI						
Total, PDO						

Step 3 – Economic Analysis

	Roundabout		**Installing Left Turn Lanes**					
	Reduction	**Benefits**	**Reduction**	**Benefits**				
Total, FI	1.34	$438,532	0.61	$199,532				
Total, PDO	3.48	$58,070	1.57	$26,242				
Total, All	4.82	$496,601	2.18	$225,774				

	Roundabout	Installing Left Turn Lanes		
Design Year Benefit	$496,601	$225,774		
Present Value Conversion Factor (from Equation 13)	10.59	10.59		
Lifetime Present Value	$5,261,002	$2,391,848		
Cost	$3,170,000	$2,090,000		
Benefit-Cost Ratio	1.7	1.1		