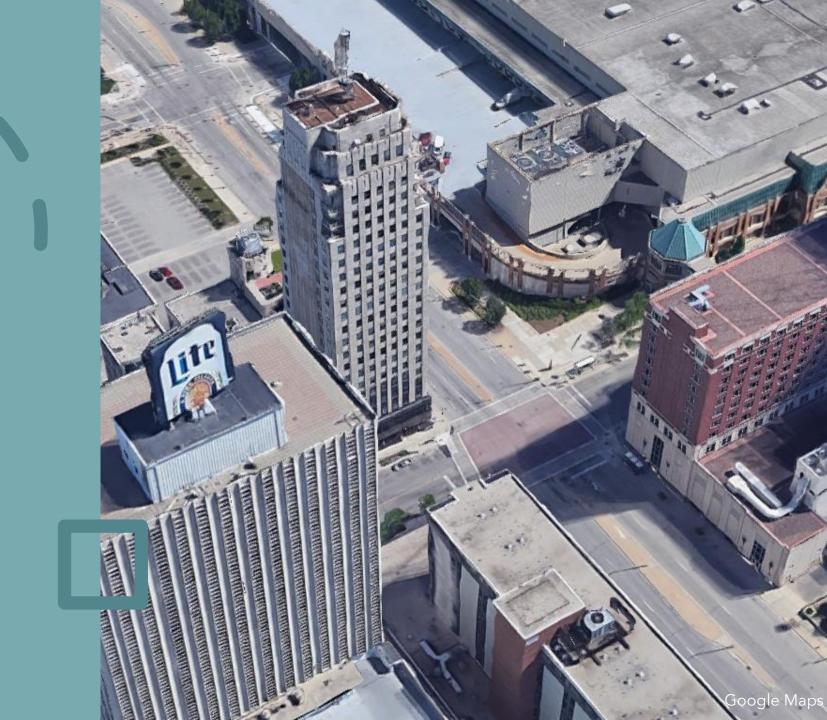
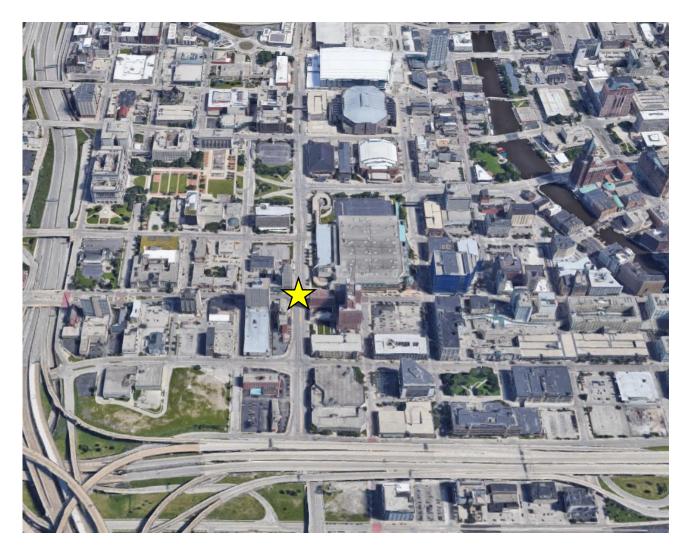
6th and Wisconsin Intersection Improvement Project

Isabel Gunderson
Leah Redding
Zac Roder
Bernard Apeku
Michael Lewis

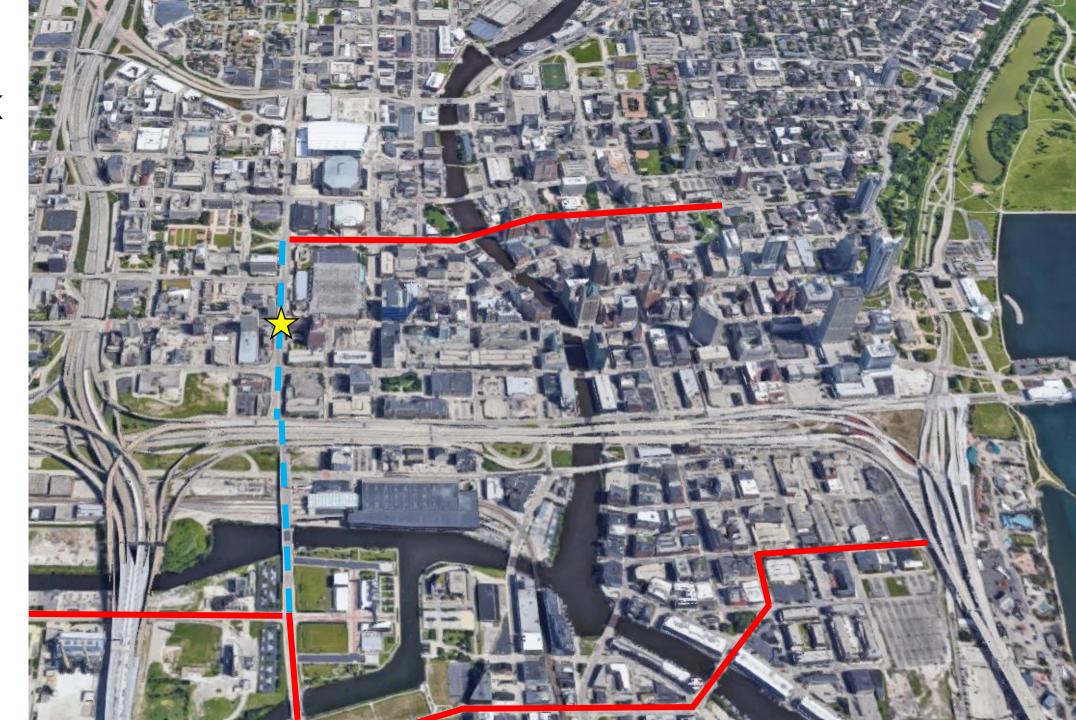


Neighborhood Characteristics

- Westown neighborhood
 - Wisconsin Center
 - Hotels
 - Parking
- Transporation
 - Transit hub
 - Future BRT site
 - Pedestrian activity

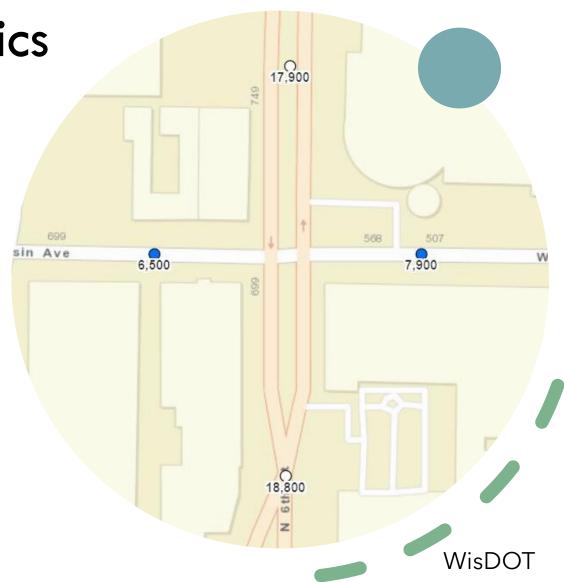


Bicycle Network



Intersection Characteristics

- Traffic volumes
 - But use of intersection isn't limited to cars alone!
- Estimated 58,000 pedestrian crossings annually



Levels of Service & Stress

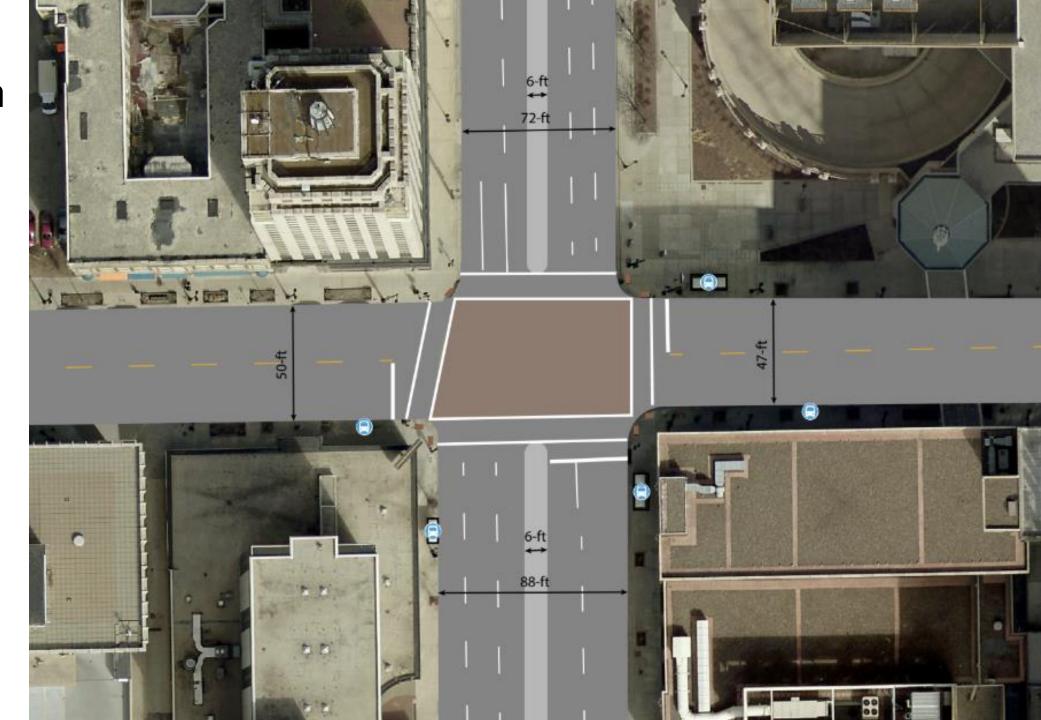
6th Street before improvement

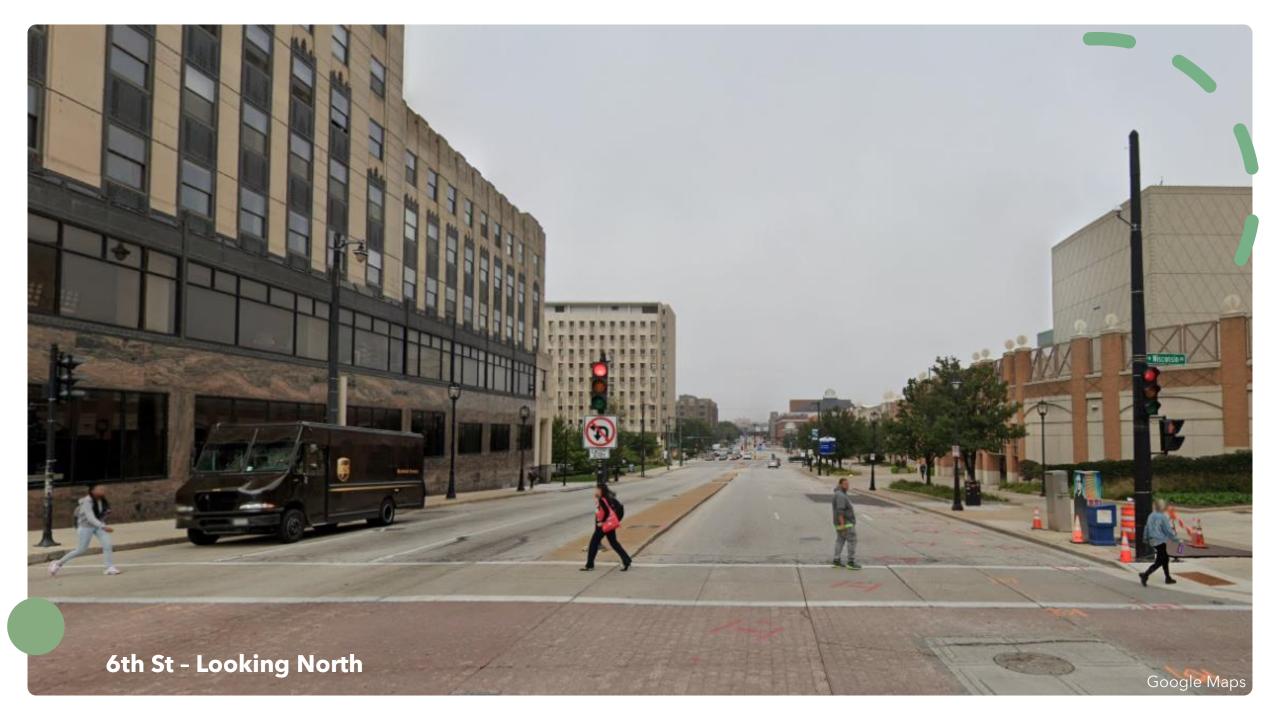
- Pedestrian Grade: A (largely impacted by sidewalk size)
- Bicycle Grade: D
- Bicycle Level of Traffic Stress: 4

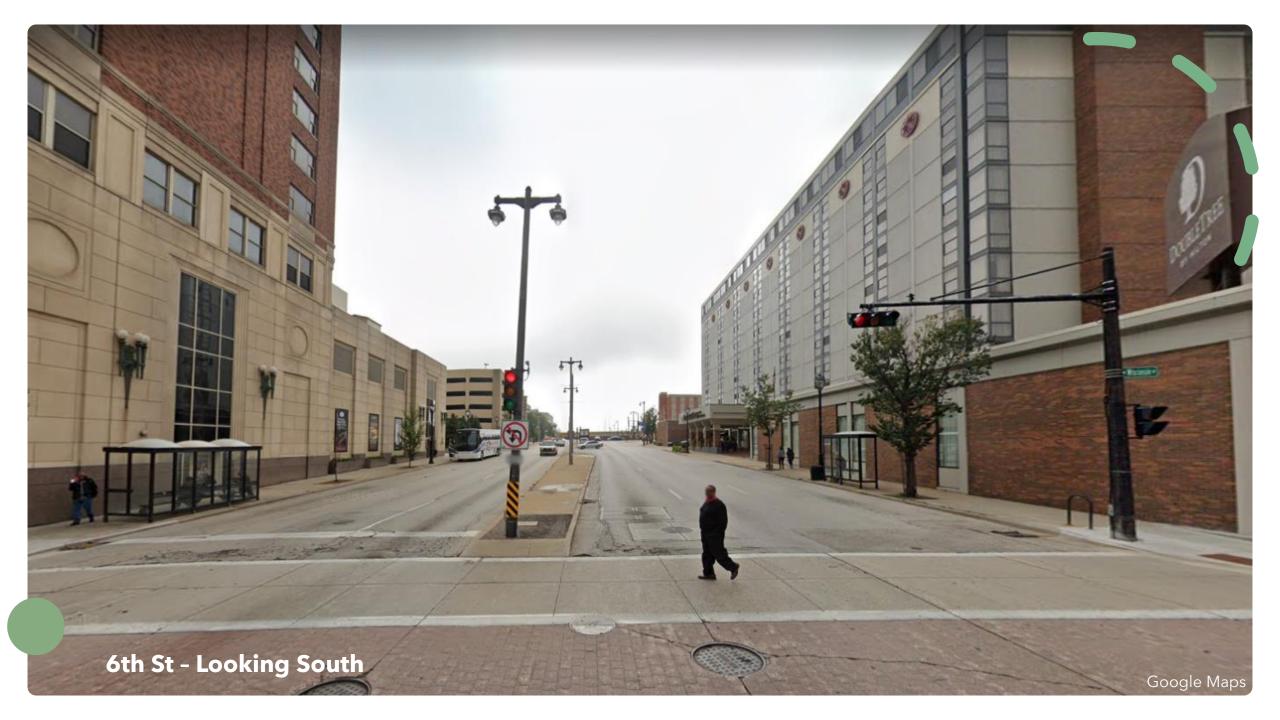
Wisconsin Avenue before improvement

- Pedestrian Grade: A (impacted by street planters & size of sidewalk)
- Bicycle Grade: D
- Bicycle Level of Traffic Stress: 3

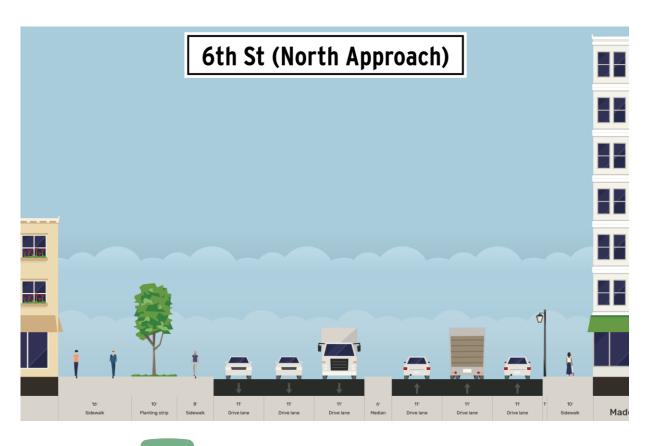
Existing Intersection Design

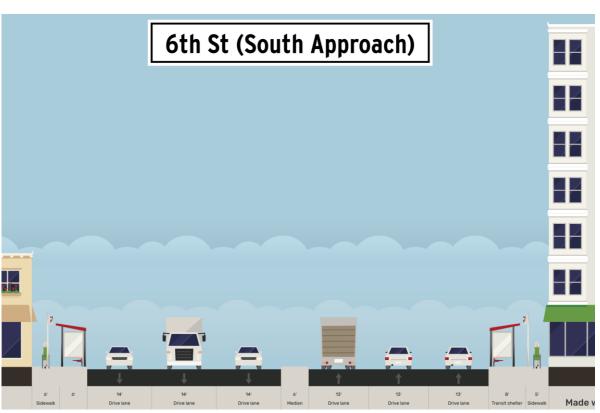




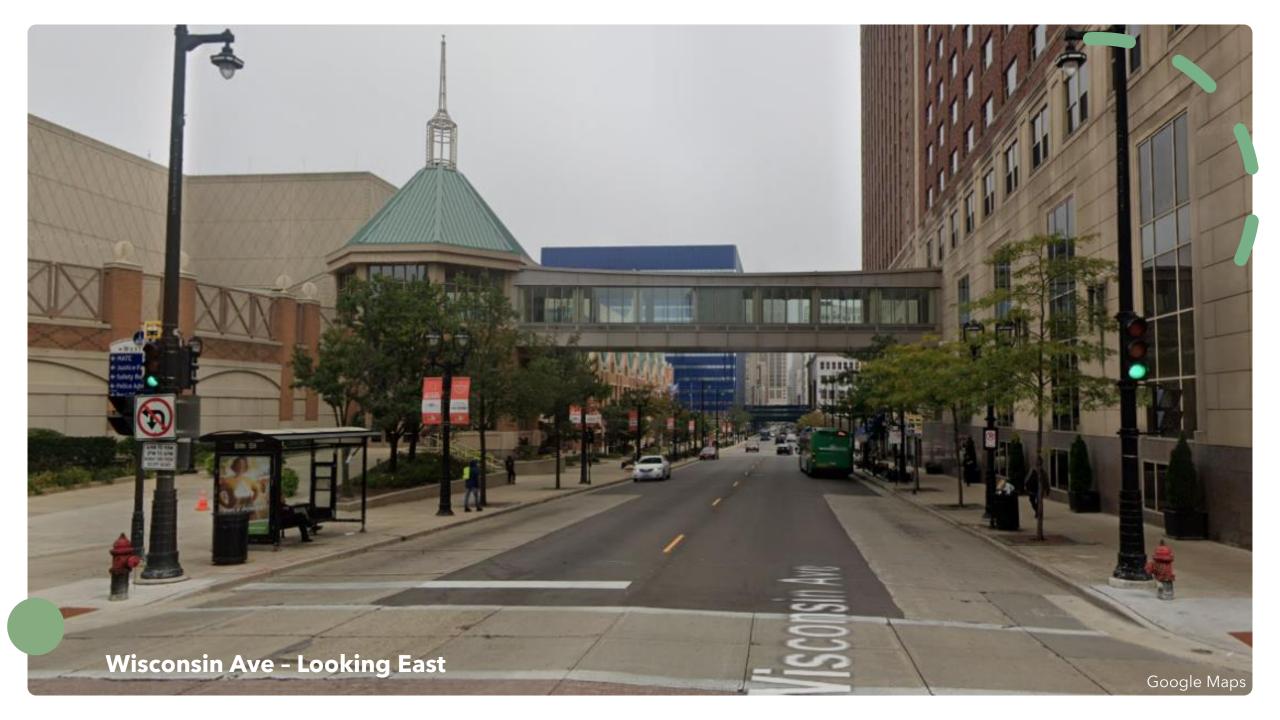


6th St Cross-Sections



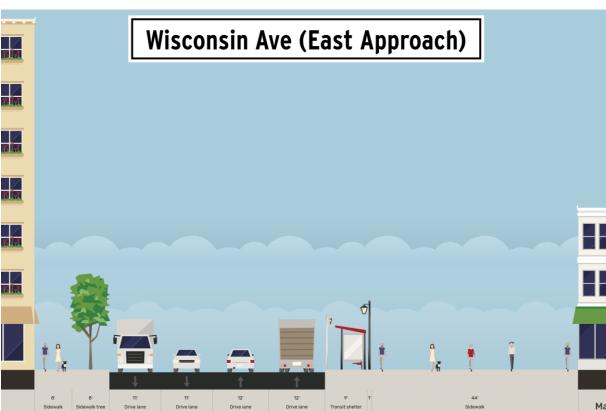






Wisconsin Ave Cross-Sections





Problems with Intersection



Wide roads and lanes

Long crossing distance
Encourages speeding
Excessive space designated for cars



No designated space for bicyclists



Poorly marked crosswalks



Transit mixed with car traffic



Stop bars too close to the crosswalks (less than 6 feet)

Project Goals

1

Improve safety of vulnerable road users

2

Increase number of people walking, biking and taking transit

3

Create economic benefits by increasing accessibility of neighborhood

Design Alternatives



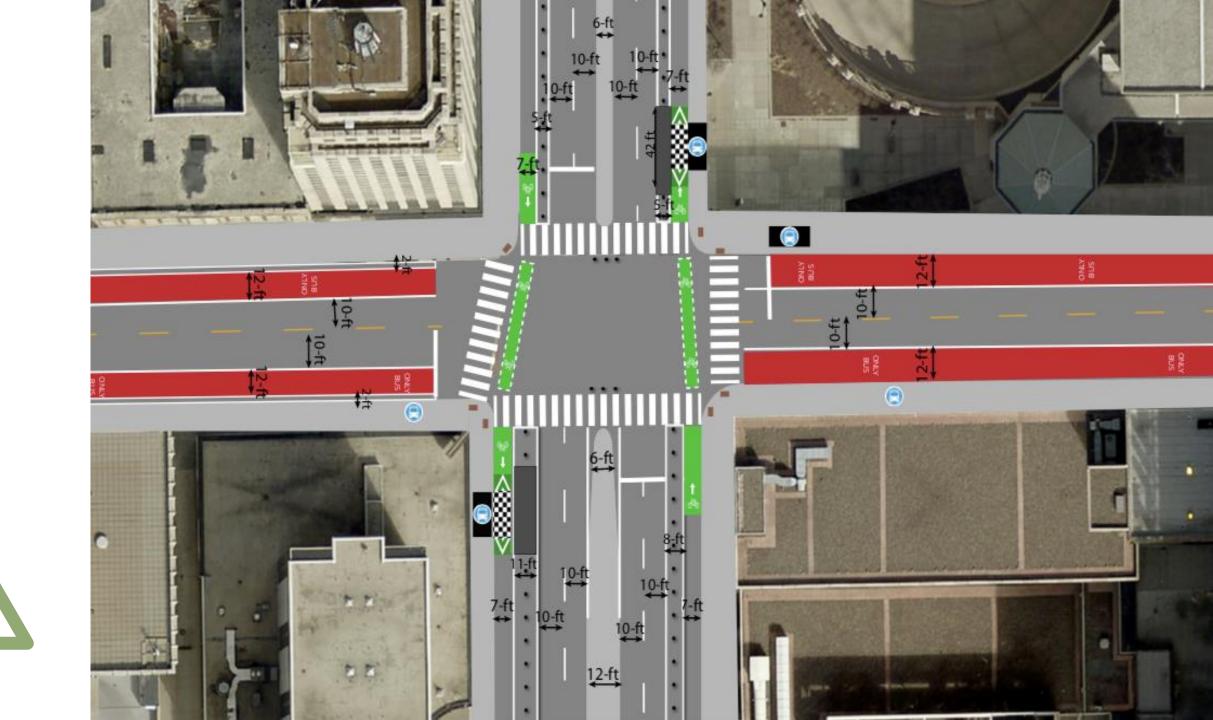




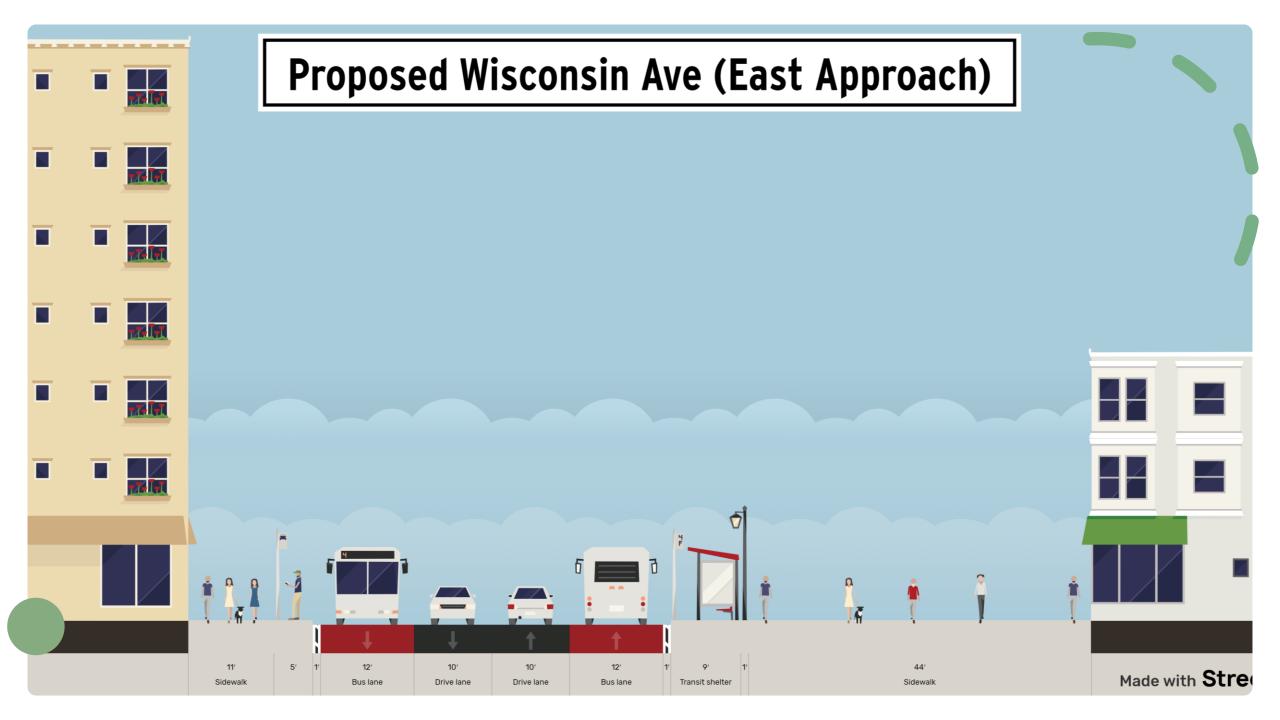
FUTURE - TRANSIT OPTION



FUTURE - BICYCLE OPTION







Zicla

BIKE LANE BOARDER WITH ACCESS BRIDGE 40ft BUS (42 ft 2 7/8 in x 14 ft 5 3/8 in).

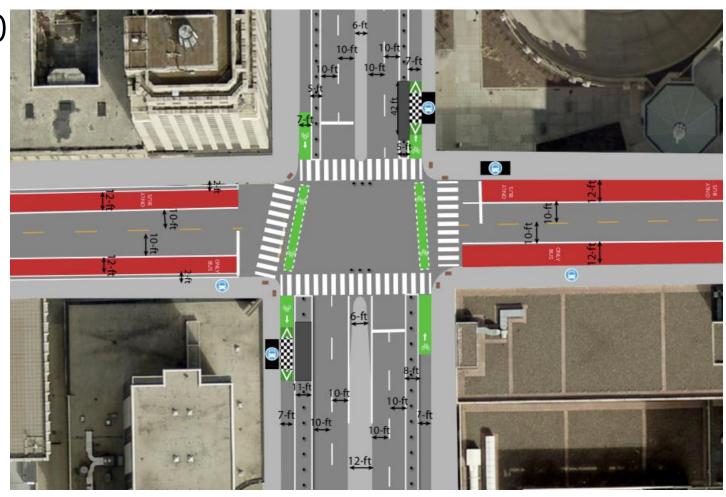
Key Elements

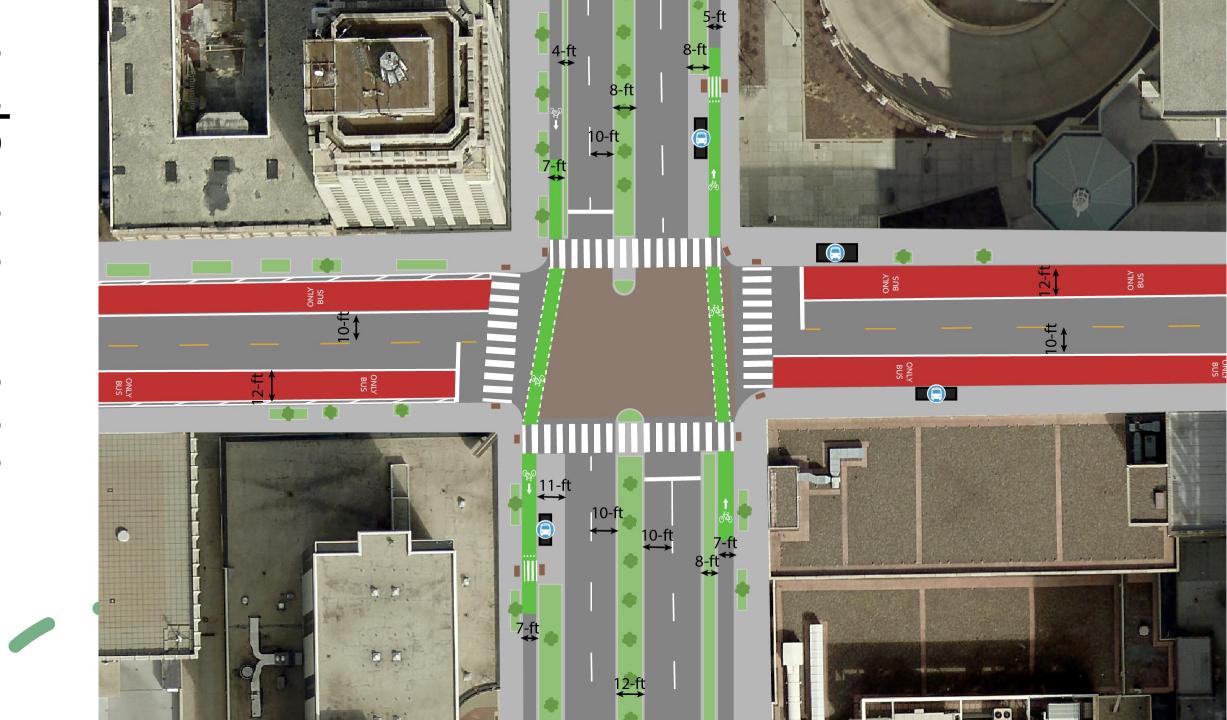
- Bus only lanes on Wisconsin
- Separated bike lanes on 6th
- Bus pads

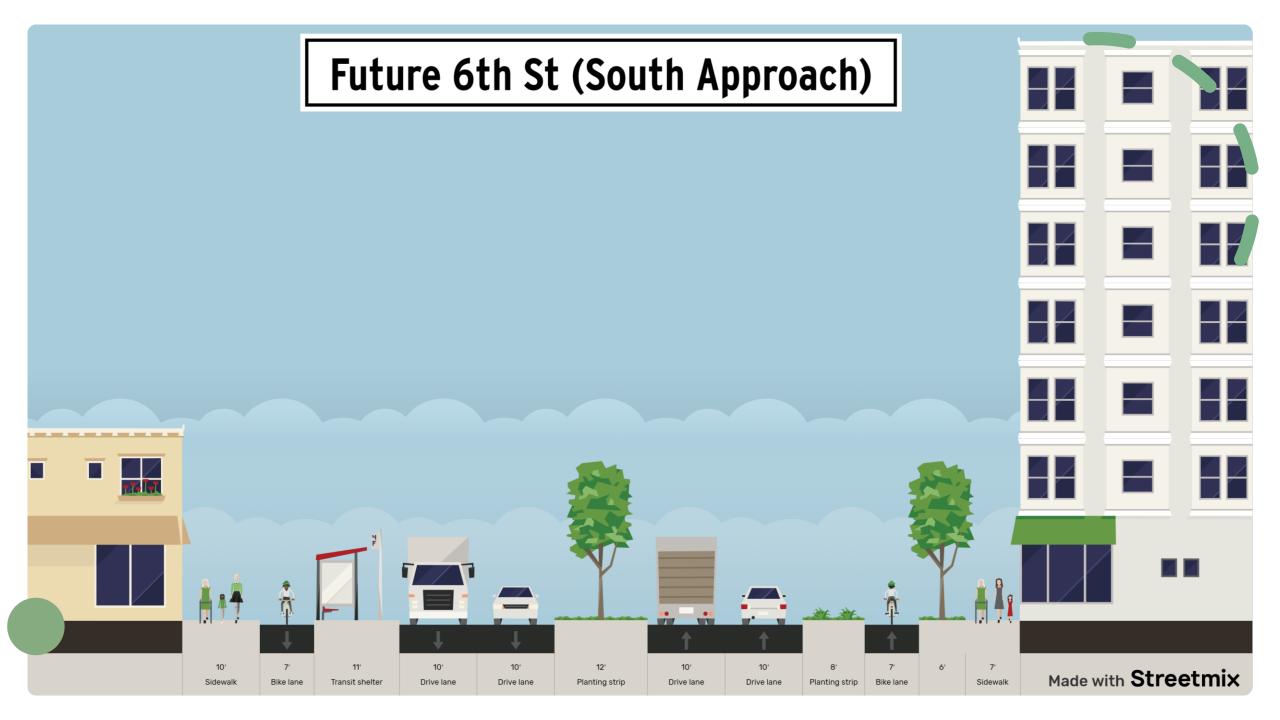
Immediate Redesign

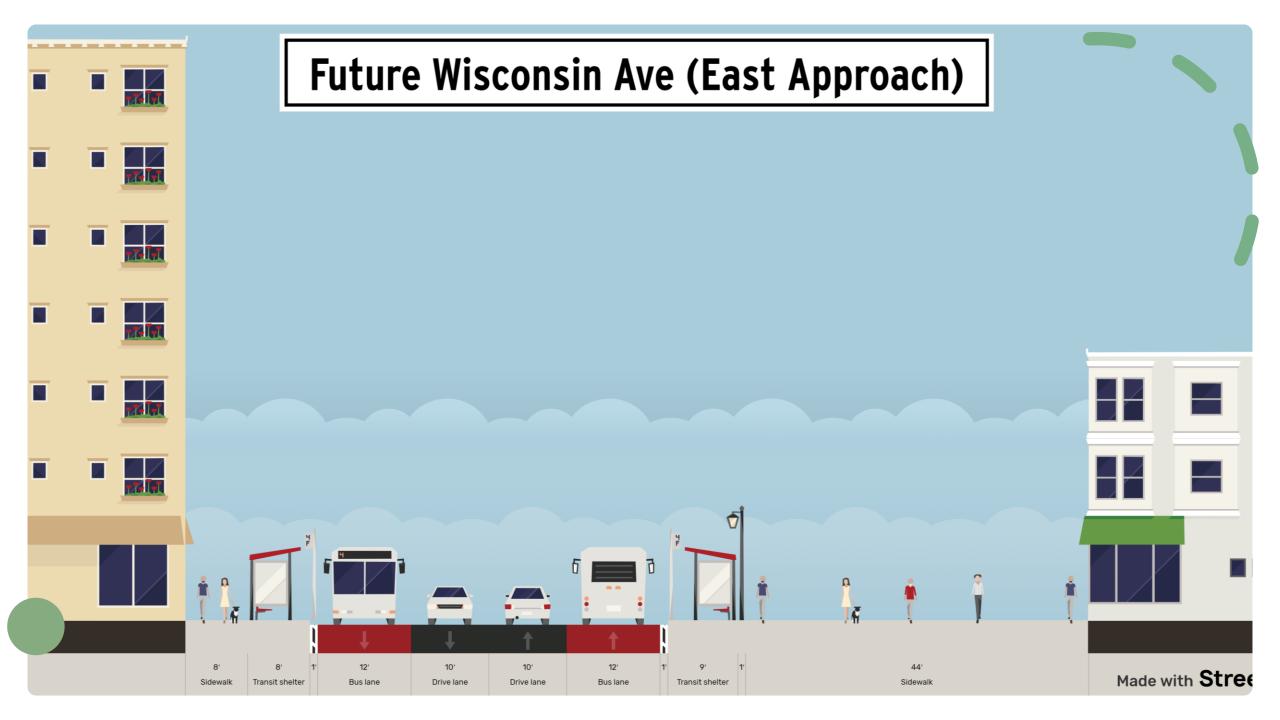


- Estimated Cost: \$180,000
- Level of service
 - Wisconsin Ave
 - Pedestrian Grade: A
 - Bicycle Grade: NA
 - 6th Street
 - Pedestrian Grade: A
 - Bicycle Grade: A*
 - LOS is unable to account for separated bike lanes
- Bicycle Level of Traffic Stress
 - Wisconsin Ave: 3
 - 6th Street: 1









Key Elements



- Permanent bus stops on 6th
- Reconstructed medians with plantings
- Bike lanes separated by bioswales on 6th
- Bus only lanes on Wisconsin
- Plan for future bike lanes on W Michigan St

Future – Transit Option

- Estimated Cost: \$490,000
- Level of service
 - Wisconsin Ave
 - Pedestrian Grade: A
 - Bicycle Grade: NA
 - 6th Street
 - Pedestrian Grade: A
 - Bicycle Grade: A*
- Level of Traffic Stress
 - Wisconsin Ave: 3
 - 6th Street: 1







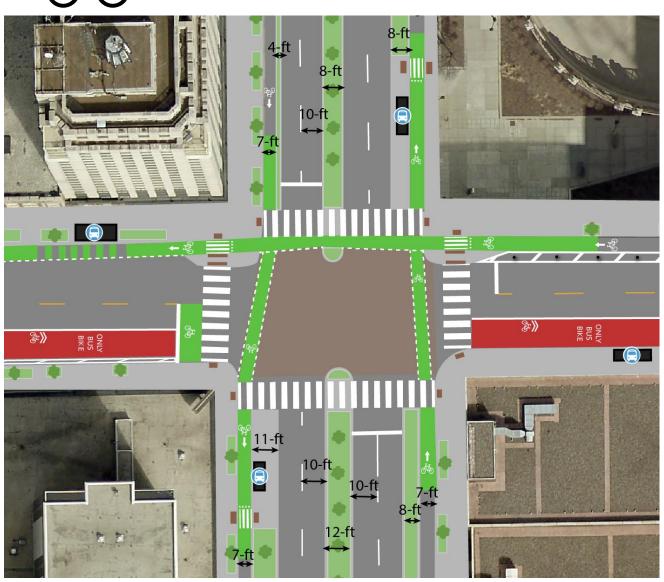


Key Elements

- Separated bike lane WB on Wisconsin
- Shared Bus and Bike lane EB on Wisconsin
- Curb Extensions
- Bike Box for turning from Wisconsin

Future – Bicycle Option O

- Estimated Cost: \$500,000
- Level of service
 - Wisconsin Ave
 - Pedestrian Grade: A
 - Bicycle Grade: A
 - 6th Street
 - Pedestrian Grade: A
 - Bicycle Grade: A*
- Level of Traffic Stress
 - Wisconsin Ave: 2 WB, 3 EB
 - 6th Street: 1



Recommended Plan



Phase 1: Immediate Redesign



Phase 2: Future – Transit Option

Design Challenges

- Cost project implementation and maintenance
- Opposition from road users / resistance to change
- Confusion by road users
- Need for education
- Need for enforcement



Image Sources

- Bus Pad Rendering https://www.zicla.com/
- Bus Stop Island Rendering https://altaplanning.com/separated-bike-lanes/
- Bike Box Photo https://nacto.org/publication/urban-bikeway-design-guide/intersection-treatments/bike-boxes/
- Google Maps (October 2019)
- Approach Cross Sections made with Streetmix
- Cost Estimates Dr Schneider's excel document

Level of Service Calculations

			Intersection	Before Improvements		
			W	isconsin Ave		
Link-Based Pedestrian Level of Service Evaluation				Link-Based Bicycle Level of Service Evaluation		
		(Measure to the closest 0.5 feet)				e to the closest
Input Variable Description	Variable	Measurement	(Typical range)	Input Variable Description	Variable	surement
Number of through lanes in the study direction of travel	N _{th}	1.0	(1-4)	Number of through lanes in the study direction of travel	N _{th}	1.0
Character of cross-section (1= divided by median; 0 = undivided)	D	0.0	(0-1)	Character of cross-section (1 = divided by median; 0 = undivided)	D	0.0
Motorized vehicle running speed (miles/hour)	Sr	30.0	(5-55)	Pavement condition rating (5 = excellent to 1 = poor)	Pc	3.0
Midsegment automobile flow rate (vehicles/hour)	V _m	329.2	(100-3000)	Motorized vehicle running speed (miles/hour)	Sr	30.0
Width of the outside through lane (feet)	Wol	13.0	(9-16)	Adjusted motorized vehicle running speed (miles/hour)	Sra	30.0
Width of the bicycle lane (feet) (use 0 if doesn't exist)	Wbl	0.0	(0-7)	Midsegment automobile flow rate (vehicles/hour)	V _m	329.2
Width of the paved outside shoulder or parking area (feet)	Wos	12.0	(0-10)	Adjusted midsegment demand flow rate (vehicles/hour)	V _{ma}	329.2
Curb is present (1 = yes; 0 = no)	С	1.0	(0-1)	Percent heavy vehicle volume (percentage)	P _{HV}	4.0
Adjusted Width of the paved outside shoulder (feet)	W _{os} *	10.5		Adjusted percent heavy vehicle volume (percentage)	P _{HVa}	4.0
Proportion of on-street parking occupied (decimal)	P _{pk}	0.50	(0-0.9)	Width of the outside through lane (feet)	Wol	12.0
Effective width of combined bicycle lane and shoulder or parking area (feet)	W ₁	10.0		Width of the bicycle lane (feet) (use 0 if doesn't exist)	W _{bl}	0.0
Total width of outside through lane, bicycle lane, & paved shoulder (feet)	Wt	13.0		Width of the paved outside shoulder or parking area (feet)	Wos	13.0
Effective will be an hide through law, DL & abundles an familian of leaffic and one [feet]	W _v	13.0		Curb is present (1 = yes; 0 = no)	С	1.0
Buffer width between roadway and sidewalk (ft) (use 0 if no SW)	W _{buf}	5.0	(0-12)	Adjusted Width of the paved outside shoulder or parking area (feet)	W _{os} *	11.5
Continuous barrier (1 = Y; 0 = N)	В	0.0	(0-1)	Proportion of on-street parking occupied (decimal)	Ppk	0.50
Buffer area coefficient	f _b	1.0		Total width of outside through lane, bicycle lane, & paved shoulder (feet)	Wt	12.0
Sidewalk width <i>(not including buffer)</i> (feet) (use 0 if doesn't exist)	W _{sw}	6.0	(0-16)	Effective width of outside through lane, BL & shoulder as function of traffic volume (feet)	W _v	12.0
Adjusted available sidewalk width	Was	6.0		Effective width of outside through lane (feet)	W _e	15.0
Sidewalk width coefficient	f _{sw}	4.2		Cross-section adjustment factor	F _w	-1.13
Pedestrian LOS score for the roadway link	I _{p,link}	1.89		Bicycle LOS score for the roadway link	I _{b,link}	4.01
Pedestrian LOS grade for the roadway link	Grade	A		Bicycle LOS grade for the roadway link	Grade	D
	_					

				6th Street		
Link-Based Pedestrian Level of Service Evaluation				Link-Based Bicycle Level of Service Evaluation		
		(Measure to the closest 0.5 feet)			 	(Measu e to the closes 0.5 feet
Input Variable Description	Variable	Measurement	(Typical range)	Input Variable Description	Variable	suremen
Number of through lanes in the study direction of travel	N _{th}	3.0	(1-4)	Number of through lanes in the study direction of travel	N _{th}	3.
Character of cross-section (1 = divided by median; 0 = undivided)	D	1.0	(0-1)	Character of cross-section (1 = divided by median; 0 = undivided)	D	1.0
Motorized vehicle running speed (miles/hour)	Sr	30.0	(5-55)	Pavement condition rating (5 = excellent to 1 = poor)	Pc	3.0
Midsegment automobile flow rate (vehicles/hour)	V _m	745.8	(100-3000)	Motorized vehicle running speed (miles/hour)	Sr	30.0
Width of the outside through lane (feet)	Wol	11.0	(9-16)	Adjusted motorized vehicle running speed (miles/hour)	Sra	30.0
Width of the bicycle lane (feet) (use 0 if doesn't exist)	W _{bl}	0.0	(0-7)	Midsegment automobile flow rate (vehicles/hour)	V _m	745.8
Width of the paved outside shoulder or parking area (feet)	Wos	11.0	(0-10)	Adjusted midsegment demand flow rate (vehicles/hour)	V _{ma}	745.8
Curb is present (1 = yes; 0 = no)	С	1.0	(0-1)	Percent heavy vehicle volume (percentage)	P _{HV}	4.0
Adjusted Width of the paved outside shoulder (feet)	W _{os} *	9.5		Adjusted percent heavy vehicle volume (percentage)	P _{HVa}	4.0
Proportion of on-street parking occupied (decimal)	P _{pk}	0.50	(0-0.9)	Width of the outside through lane (feet)	Wol	11.0
Effective width of combined bicycle lane and shoulder or parking area (feet)	W_1	10.0		Width of the bicycle lane (feet) (use 0 if doesn't exist)	Wbl	0.0
Total width of outside through lane, bicycle lane, & paved shoulder (feet)	Wt	11.0		Width of the paved outside shoulder or parking area (feet)	Wos	12.0
Essonino vidik os nalnido lkonnyk knor, DL k nkunldos na sanalina os konstinantano (sosti	W _v	11.0		Curb is present (1 = yes; 0 = no)	С	1.0
Buffer width between roadway and sidewalk (ft) (use 0 if no SW)	W _{buf}	0.0	(0-12)	Adjusted Width of the paved outside shoulder or parking area (feet)	W _{cs} *	10.5
Continuous barrier (1 = Y; 0 = N)	В	0.0	(0-1)	Proportion of on-street parking occupied (decimal)	P _{pk}	0.50
Buffer area coefficient	f _b	1.0		Total width of outside through lane, bicycle lane, & paved shoulder (feet)	Wt	11.0
Sidewalk width <i>/nor including buffer)</i> (feet) (use 0 if doesn't exist)	W _{sw}	12.0	(0-16)	Effective width of outside through lane, BL & shoulder as function of traffic volume (feet)	W _v	11.0
Adjusted available sidewalk width	Was	10.0		Effective width of outside through lane (feet)	We	13.0
Sidewalk width coefficient	f _{sw}	3.0		Cross-section adjustment factor	F _w	-0.85
Cross-section adjustment factor	F _w	-5.23		Motorized vehicle volume adjustment factor	F _v	2.09
Motorized vehicle volume adjustment factor	F _v	0.57		Motorized vehicle speed adjustment factor	Fs	1.35
Motorized vehicle speed adjustment factor	Fs	0.36		Motorized vehicle speed adjustment factor	Fp	0.79
Pedestrian LOS score for the roadway link	I _{p,link}	1.74		Bicycle LOS score for the roadway link	I _{b,link}	4.14
Pedestrian LOS grade for the roadway link	Grade	A		Bicycle LOS grade for the roadway link	Grade	

Level of Service Calculations

			Imme	diate Redesign		
				Visconsin Ave		
Link-Based Pedestrian Level of Service Evaluation				Link-Based Bicycle Level of Service Evaluation		
		(Measure to the closest 0.5 feet)				to the closest
Input Variable Description	Variable	Measurement	(Typical range)	Input Variable Description	Variable	asurement
Number of through lanes in the study direction of travel	N _{th}	1.0	(1-4)	Number of through lanes in the study direction of travel	N _{th}	
Character of cross-section (1= divided by median; 0 = undivided)	D	0.0	(0-1)	Character of cross-section (1 = divided by median; 0 = undivided)	D	
Motorized vehicle running speed (miles/hour)	Sr	30.0	(5-55)	Pavement condition rating (5 = excellent to 1 = poor)	Pc	
Midsegment automobile flow rate (vehicles/hour)	V _m	329.2	(100-3000)	Motorized vehicle running speed (miles/hour)	Sr	
Width of the outside through lane (feet)	Wol	10.0	(9-16)	Adjusted motorized vehicle running speed (miles/hour)	Sra	
Width of the bicycle lane (feet) (use 0 if doesn't exist)	W _{bl}	0.0	(0-7)	Midsegment automobile flow rate (vehicles/hour)	V _m	
Width of the paved outside shoulder or parking area (feet)	Wos	12.0	(0-10)	Adjusted midsegment demand flow rate (vehicles/hour)	V _{ma}	
Curb is present (1 = yes; 0 = no)	С	1.0	(0-1)	Percent heavy vehicle volume (percentage)	P _{HV}	
Adjusted Width of the paved outside shoulder (feet)	W _{cs} *	10.5		Adjusted percent heavy vehicle volume (percentage)	P _{HVa}	
Proportion of on-street parking occupied (decimal)	p _{pk}	0.50	(0-0.9)	Width of the outside through lane (feet)	Wol	
Effective width of combined bicycle lane and shoulder or parking area (feet)	W ₁	10.0		Width of the bicycle lane (feet) (use 0 if doesn't exist)	Wы	
Total width of outside through lane, bioycle lane, & paved shoulder (feet)	W _t	10.0		Width of the paved outside shoulder or parking area (feet)	Wos	
Effective uidth of outride through lane, BL & rhoulder ar function of traffic valume (feet)	W _v	10.0		Curb is present (1 = yes; 0 = no)	С	
Buffer width between roadway and sidewalk (ft) (use 0 if no SW)	W _{buf}	5.0	(0-12)	Adjusted Width of the paved outside shoulder or parking area (feet)	W _{os} *	
Continuous barrier (1 = Y; 0 = N)	В	0.0	(0-1)	Proportion of on-street parking occupied (decimal)	p _{pk}	
Buffer area coefficient	fis	1.0		Total width of outside through lane, bicycle lane, & paved shoulder (feet)	W.	
Sidewalk width <i>(not including buffer)</i> (feet) (use 0 if doesn't exist)	Way	7.0	(0-16)	Effective width of outside through lane, BL & shoulder as function of traffic volume (feet)	W.,	_
Adjusted available sidewalk width	Was	7.0	(/	Effective width of outside through lane (feet)	W _e	+
Pedestrian LOS score for the roadway link	Intlok	1.90		Bicycle LOS score for the roadway link	lb tlek	+
Pedestrian LOS grade for the roadway link	Grade	A		Bicycle LOS grade for the roadway link	Grade	NA
Link Board Body Aries Lovel of Coming Surkey line				6th Street		
Link-Based Pedestrian Level of Service Evaluation		(Measure to the closest 0.5 leet)		Link-Based Bicycle Level of Service Evaluation		(Measure to the closest 0.5 feet)
Input Variable Description	Variable	Measurement	(Typical range)	Input Variable Description	Variable	asurement
Number of through lanes in the study direction of travel	N _{th}	2.0	(1-4)	Number of through lanes in the study direction of travel	N _{th}	2.0
Character of cross-section (1= divided by median; 0 = undivided)	D	1.0	(0-1)	Character of cross-section (1 = divided by median; 0 = undivided)	D	1.0
Motorized vehicle running speed (miles/hour)	S _r	30.0	(5-55)	Pavement condition rating (5 = excellent to 1 = poor)	Pc	5.0
Midsegment automobile flow rate (vehicles/hour)	V _m	745.8	(100-3000)	Motorized vehicle running speed (miles/hour)	Sr	30.0
Width of the outside through lane (feet)	Wol	10.0	(9-16)	Adjusted motorized vehicle running speed (miles/hour)	S _{ra}	30.0
Width of the bicycle lane (feet) (use 0 if doesn't exist)		7.0	(0-7)	Midsegment automobile flow rate (vehicles/hour)	V _m	745.8
Width of the paved outside shoulder or parking area (feet)	W _{os}	11.0	(0-10)	Adjusted midsegment demand flow rate (vehicles/hour)	V _{ma}	745.8
Curb is present (1 = yes; 0 = no)	С	1.0	(0-1)	Percent heavy vehicle volume (percentage)	P _{HV}	4.0
Adjusted Width of the paved outside shoulder (feet)	W _{cs} *	9.5		Adjusted percent heavy vehicle volume (percentage)	P _{HVa}	4.0
Proportion of on-street parking occupied (decimal)	p_{pk}	0.50	(0-0.9)	Width of the outside through lane (feet)	Wol	10.0
Effective width of combined bicycle lane and shoulder or parking area (feet)	W ₁	10.0		Width of the bicycle lane (feet) (use 0 if doesn't exist)	W _{bl}	7.0
Total width of outside through lane, bicycle lane, & paved shoulder (feet)	Wt	17.0		Width of the paved outside shoulder or parking area (feet)	Wos	11.0
Effective width of outride through lane, BL % zhoulder ar function of traffic valume (feet)	W _v	17.0		Curb is present (1 = yes; 0 = no)	С	1.0
Buffer width between roadway and sidewalk (ft) (use 0 if no SW)	W _{buf}	5.0	(0-12)	Adjusted Width of the paved outside shoulder or parking area (feet)	W _{os} *	9.5
Continuous barrier (1 = Y; 0 = N)	В	0.0	(0-1)	Proportion of on-street parking occupied (decimal)	p _{pk}	0.50
Buffer area coefficient	f _b	1.0		Total width of outside through lane, bicycle lane, & paved shoulder (feet)	Wt	17.0
Buffer area coefficient Sidewalk width /not including buffer/ (feet) (use 0 if doesn't exist)	f _b W _{sw}	1.0 6.0	(0-16)	Total width of outside through lane, bicycle lane, & paved shoulder (feet) Effective width of outside through lane, BL & shoulder as function of traffic volume (feet)	W _t	17

Effective width of outside through lane (feet)

Motorized vehicle volume adjustment factor

Motorized vehicle speed adjustment factor

Motorized vehicle speed adjustment factor

Cross-section adjustment factor

Bicycle LOS score for the roadway link

Bicycle LOS grade for the roadway link

-5.34

0.85

0.36

Adjusted available sidewalk width

Motorized vehicle volume adjustment factor

Motorized vehicle speed adjustment factor

Pedestrian LOS score for the roadway link

Pedestrian LOS grade for the roadway link

Cross-section adjustment factor

Sidewalk width coefficient

Level of Service Calculations

				Transit Design	
				Wisconsin Ave	
Link-Based Pedestrian Level of Service Evaluation				Link-Based Bicycle Level of Service Evaluation	,
		(Measure to the closest 0.5 feet)			to the closest
Input Variable Description	Variable	Measurement	(Typical range)	Input Variable Description Variable	asurement
Number of through lanes in the study direction of travel	N _{th}	1.0	(1-4)	Number of through lanes in the study direction of travel N _{th}	
Character of cross-section (1= divided by median; 0 = undivided)	D	0.0	(0-1)	Character of cross-section (1 = divided by median; 0 = undivided)	
Motorized vehicle running speed (miles/hour)	Sr	30.0	(5-55)	Pavement condition rating (5 = excellent to 1 = poor) Pc	
Midsegment automobile flow rate (vehicles/hour)	v _m	329.2	(100-3000)	Motorized vehicle running speed (miles/hour) S _r	
Width of the outside through lane (feet)	Wol	10.0	(9-16)	Adjusted motorized vehicle running speed (miles/hour) S _{ra}	
Width of the bicycle lane (feet) (use 0 if doesn't exist)	W _{bl}	0.0	(0-7)	Midsegment automobile flow rate (vehicles/hour) v _m	
Width of the paved outside shoulder or parking area (feet)	Wos	12.0	(0-10)	Adjusted midsegment demand flow rate (vehicles/hour) v _{ma}	
Curb is present (1 = yes; 0 = no)	С	1.0	(0-1)	Percent heavy vehicle volume (percentage) P _{HV}	
Adjusted Width of the paved outside shoulder (feet)	W _{os} *	10.5		Adjusted percent heavy vehicle volume (percentage) P _{HVa}	
Proportion of on-street parking occupied (decimal)	p _{pk}	0.50	(0-0.9)	Width of the outside through lane (feet) W _{ol}	
Effective width of combined bicycle lane and shoulder or parking area (feet)	W ₁	10.0		Width of the bicycle lane (feet) (use 0 if doesn't exist) W _{bl}	
Total width of outside through lane, bicycle lane, & paved shoulder (feet)	Wt	10.0		Width of the paved outside shoulder or parking area (feet) W _{cs}	
Effective width of outride through lane, BL &zhoulder ar function of traffic valume (feet)	W _v	10.0		Curb is present (1 = yes; 0 = no)	
Buffer width between roadway and sidewalk (ft) (use 0 if no SW)	W _{buf}	5.0	(0-12)	Adjusted Width of the paved outside shoulder or parking area (feet) Wood*	
Continuous barrier (1 = Y; 0 = N)	В	0.0	(0-1)	Proportion of on-street parking occupied (decimal) ppk	
Buffer area coefficient	f _b	1.0		Total width of outside through lane, bicycle lane, & paved shoulder (feet) W _t	
Sidewalk width <i>(not including buffer)</i> (feet) (use 0 if doesn't exist)	W _{sw}	6.0	(0-16)	Effective width of outside through lane, BL & shoulder as function of traffic volume (feet) W _v	
Adjusted available sidewalk width	Was	6.0		Effective width of outside through lane (feet) W _e	
Pedestrian LOS score for the roadway link	I _{p,link}	1.94		Bicycle LOS score for the roadway link	
Pedestrian LOS grade for the roadway link	Grade	Α		Bicycle LOS grade for the roadway link Grade	NA

				6th	Street		
Link-Based Pedestrian Level of Service Evaluation					Link-Based Bicycle Level of Service Evaluation		
		(Measure to the closest 0.5 feet)					(Measure to the closest 0.5 feet)
Input Variable Description	Variable	Measurement	(Typical range)		Input Variable Description	Variable	surement
Number of through lanes in the study direction of travel	N _{th}	2.0	(1-4)		Number of through lanes in the study direction of travel	N _{th}	2.0
Character of cross-section (1= divided by median; 0 = undivided)	D	1.0	(0-1)		Character of cross-section (1 = divided by median; 0 = undivided)	D	1.0
Motorized vehicle running speed (miles/hour)	Sr	30.0	(5-55)		Pavement condition rating (5 = excellent to 1 = poor)	Pc	5.0
Midsegment automobile flow rate (vehicles/hour)	v _m	745.8	(100-3000)		Motorized vehicle running speed (miles/hour)	Sr	30.0
Width of the outside through lane (feet)	Wol	10.0	(9-16)		Adjusted motorized vehicle running speed (miles/hour)	S _{ra}	30.0
Width of the bicycle lane (feet) (use 0 if doesn't exist)	W _{bl}	7.0	(0-7)		Midsegment automobile flow rate (vehicles/hour)	V _m	745.8
Width of the paved outside shoulder or parking area (feet)	Wos	11.0	(0-10)		Adjusted midsegment demand flow rate (vehicles/hour)	V _{ma}	745.8
Curb is present (1 = yes; 0 = no)	С	1.0	(0-1)		Percent heavy vehicle volume (percentage)	P _{HV}	4.0
Adjusted Width of the paved outside shoulder (feet)	W _{cs} *	9.5			Adjusted percent heavy vehicle volume (percentage)	P _{HVa}	4.0
Proportion of on-street parking occupied (decimal)	p _{pk}	0.50	(0-0.9)		Width of the outside through lane (feet)	Wol	10.0
Effective width of combined bicycle lane and shoulder or parking area (feet)	W_1	10.0			Width of the bicycle lane (feet) (use 0 if doesn't exist)	W _{bl}	7.0
Total width of outside through lane, bicycle lane, & paved shoulder (feet)	Wt	17.0			Width of the paved outside shoulder or parking area (feet)	Wos	11.0
Effective width of outride through lane, BL & zhoulder ar function of traffic volume (feet)	W _v	17.0			Curb is present (1 = yes; 0 = no)	С	1.0
Buffer width between roadway and sidewalk (ft) (use 0 if no SW)	W _{buf}	5.0	(0-12)		Adjusted Width of the paved outside shoulder or parking area (feet)	W _{cs} *	9.5
Continuous barrier (1 = Y; 0 = N)	В	0.0	(0-1)		Proportion of on-street parking occupied (decimal)	P _{pk}	0.50
Buffer area coefficient	f _b	1.0			Total width of outside through lane, bicycle lane, & paved shoulder (feet)	Wt	17.0
Sidewalk width /not including buffer/ (feet) (use 0 if doesn't exist)	W _{sw}	8.0	(0-16)		Effective width of outside through lane, BL & shoulder as function of traffic volume (feet)	W _v	17.0
Adjusted available sidewalk width	Was	8.0			Effective width of outside through lane (feet)	We	25.0
Sidewalk width coefficient	f _{sw}	3.6			Cross-section adjustment factor	F _w	-3.13
Cross-section adjustment factor	F _w	-5.39			Motorized vehicle volume adjustment factor	F _v	2.30
Motorized vehicle volume adjustment factor	F _v	0.85			Motorized vehicle speed adjustment factor	Fs	1.35
Motorized vehicle speed adjustment factor	Fs	0.36			Motorized vehicle speed adjustment factor	Fp	0.28
Pedestrian LOS score for the roadway link	I _{p,link}	1.86			Bicycle LOS score for the roadway link	I _{b,link}	1.57
Pedestrian LOS grade for the roadway link	Grade	A			Bicycle LOS grade for the roadway link	Grade	А

Level of Service Calculations

				Bicycle	Design		
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Link-Based Pedestrian Level of Service Evaluation					Link-Based Bicycle Level of Service Evaluation		Measure
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		(Measure to the closest 0.5 feet)					alosest 0.5 feet/
Input Variable Description	Variable	Measurement	(Typical range)	Ir	nput Variable Description	Variable	esurement
Number of through lanes in the study direction of travel	N _{th}	1.0	(1-4)		Number of through lanes in the study direction of travel	N _{th}	1.0
Character of cross-section (1= divided by median; 0 = undivided)	D	0.0	(0-1)	C	Character of cross-section (1 = divided by median; 0 = undivided)	D	0.0
Motorized vehicle running speed (miles/hour)	Sr	25.0	(5-55)	P	Pavement condition rating (5 = excellent to 1 = poor)	Pc	5.0
Midsegment automobile flow rate (vehicles/hour)	v _m	329.2	(100-3000)	N	Motorized vehicle running speed (miles/hour)	Sr	25.0
Width of the outside through lane (feet)	Wol	11.0	(9-16)	А	Adjusted motorized vehicle running speed (miles/hour)	Sra	25.0
Width of the bicycle lane (feet) (use 0 if doesn't exist)	W _{bl}	7.0	(0-7)	N	Midsegment automobile flow rate (vehicles/hour)	V _m	745.8
Width of the paved outside shoulder or parking area (feet)	W _{os}	12.0	(0-10)	А	Adjusted midsegment demand flow rate (vehicles/hour)	V _{ma}	745.8
Curb is present (1 = yes; 0 = no)	С	1.0	(0-1)	P	Percent heavy vehicle volume (percentage)	P _{HV}	4.0
Adjusted Width of the paved outside shoulder (feet)	W _{cs} *	10.5		А	Adjusted percent heavy vehicle volume (percentage)	P _{HVa}	4.0
Proportion of on-street parking occupied (decimal)	Pok	0.50	(0-0.9)	_	Width of the outside through lane (feet)	Wol	10.0
Effective width of combined bicycle lane and shoulder or parking area (feet)	W,	10.0			Width of the bicycle lane (feet) (use 0 if doesn't exist)	Wbi	7.0
Total width of outside through lane, bicycle lane, & paved shoulder (feet)	W.	18.0			Width of the paved outside shoulder or parking area (feet)	Wos	12.0
Effective width of autride through lane, BL 8 shoulder as function of traffic valume (feet)	W	18.0			Curb is present (1 = yes; 0 = no)	C	1.0
Buffer width between roadway and sidewalk (ft) (use 0 if no SW)	W _{buf}	5.0	(0-12)	_	Adjusted Width of the paved outside shoulder or parking area (feet)	W*	10.5
Continuous barrier (1 = Y; 0 = N)	R B	0.0	(0-12)		Proportion of on-street parking occupied (decimal)	P _{pk}	0.50
Buffer area coefficient		1.0	(0-1)	_		W.	17.0
Sidewalk width (not including buffer) (feet) (use 0 if doesn't exist)	16		(0.15)		Fotal width of outside through lane, bicycle lane, & paved shoulder (feet)		_
	W _{sw}	8.0	(0-16)	_	Effective width of outside through lane, BL & shoulder as function of traffic volume (feet)	W _v	17.0
Motorized vehicle speed adjustment factor	F _a	0.25			Motorized vehicle speed adjustment factor	F _p	0.28
Pedestrian LOS score for the roadway link	p,link	1.64			Bicycle LOS score for the roadway link	b,link	1.35
		I Al					
Pedestrian LOS grade for the roadway link	Grade	^		В	Bicycle LOS grade for the roadway link	Grade	A
	Grade	,		6th St	treet	Grade	A
Pedestrian LOS grade for the roadway link Link-Based Pedestrian Level of Service Evaluation	drade	^		6th St		Grade	Alarma.
	Grade	^		6th St	treet	Grade	(Measure to the
	Grade	(Measure to the		6th St	treet	Grade	to the alosest
Link-Based Pedestrian Level of Service Evaluation		(Measure to the closest 0.5 feet)	(Trained space)	6th Sti	treet .ink-Based Bicycle Level of Service Evaluation		to the alosest 0.5 feet/
Link-Based Pedestrian Level of Service Evaluation	Variable	(Measure to the closest 0.5 feet) Measurement	(Typical range)	6th Sti	ink-Based Bicycle Level of Service Evaluation nput Variable Description	Variable	to the closest 0.5 feet/ asurement
Link-Based Pedestrian Level of Service Evaluation Input Variable Description Number of through lanes in the study direction of travel	Variable N _{th}	(Measure to the closest 0.5 feet) Measurement 2.0	(1-4)	6th Sti	nret ink-Based Bicycle Level of Service Evaluation nput Variable Description Number of through lanes in the study direction of travel	Variable N _{th}	to the olosest 0.5 feet/ asurement 2.0
Link-Based Pedestrian Level of Service Evaluation Input Variable Description Number of through lanes in the study direction of travel Character of cross-section (1 = divided by median; 0 = undivided)	Variable	(Measure to the closest 0.5 feet) Measurement 2.0 1.0	(1-4) (0-1)	6th Sti	Ink-Based Bicycle Level of Service Evaluation Input Variable Description Number of through lanes in the study direction of travel Character of cross-section (1 = divided by median; 0 = undivided)	Variable N _{th}	to the alosest 0.5 feet/ asurement 2.0
Link-Based Pedestrian Level of Service Evaluation Input Variable Description Number of through lanes in the study direction of travel Character of cross-section (1 = divided by median; 0 = undivided) Motorized vehicle running speed (miles/hour)	Variable N _{th} D S _r	(Measure to the closest 0.5 feet) Measurement 2.0 1.0 30.0	(1-4) (0-1) (5-55)	6th Sti	Ink-Based Bicycle Level of Service Evaluation Input Variable Description Itumber of through lanes in the study direction of travel Character of cross-section (1 = divided by median; 0 = undivided) Pavement condition rating (5 = excellent to 1 = poor)	Variable N _{th} D P _c	to the alosest 0.5 feet/ asurement 2.0 1.0 5.0
Link-Based Pedestrian Level of Service Evaluation Input Variable Description Number of through lanes in the study direction of travel Character of cross-section (1= dwided by median; 0 = undivided) Motorized vehicle running speed (miles/hour) Midsegment automobile flow rate (vehicles/hour)	Variable Nth D Sr	/Measure to the closest 0.5 feet) Measurement 2.0 1.0 30.0 745.8	(1-4) (0-1) (5-55) (100-3000)	6th St	In the state of th	Variable N _{th}	to the olosest 0.5 feet/ ssurement 2.0 1.0 5.0 30.0
Link-Based Pedestrian Level of Service Evaluation Input Variable Description Number of through lanes in the study direction of travel Character of cross-section (1= divided by median; 0 = undivided) Motorized vehicle running speed (miles/hour) Midsegment automobile flow rate (vehicles/hour) Width of the outside through lane (feet)	Variable Nth D Sr Vm Wol	(Measure to the closes A.5 feet) Measurement 2.0 1.0 30.0 745.8	(1-4) (0-1) (5-55) (100-3000) (9-16)	In N C P P N A	Input Variable Description Imput Variable Description Number of through lanes in the study direction of travel Character of cross-section (1 = divided by median; 0 = undivided) Pavement condition rating (5 = excellent to 1 = poor) Motorized vehicle running speed (miles/hour) Indigusted motorized vehicle running speed (miles/hour)	Variable Nth D Pc Sr	to the closest 0.5 feet/ surement 2.0 1.0 5.0 30.0 30.0
Link-Based Pedestrian Level of Service Evaluation Input Variable Description Number of through lanes in the study direction of travel Character of cross-section (1 = divided by median; 0 = undivided) Motorized vehicle running speed (miles/hour) Midsegment automobile flow rate (vehicles/hour) Width of the outside through lane (feet) Width of the bicycle lane (feet) (use 0 if doesn't exist)	Variable Nth D Sr Vm Wol Wbl	//Measure to the closest 0.5 feet/ Measurement 2.0 1.0 30.0 745.8 10.0 7.0	(1-4) (0-1) (5-55) (100-3000) (9-16) (0-7)	6th St	Input Variable Description Input Variable Description Number of through lanes in the study direction of travel Character of cross-section (1 = divided by median; 0 = undivided) Pavement condition rating (5 = excellent to 1 = poor) Motorized vehicle running speed (miles/hour) Adjusted motorized vehicle running speed (miles/hour) Midsegment automobile flow rate (vehicles/hour)	Variable N _{th} D P _c	to the closest 0.5 feet/ surement 2.0 1.0 5.0 30.0 745.8
Link-Based Pedestrian Level of Service Evaluation Input Variable Description Number of through lanes in the study direction of travel Character of cross-section (1 = divided by median; 0 = undivided) Motorized vehicle running speed (miles/hour) Midsegment automobile flow rate (vehicles/hour) Width of the outside through lane (feet) Width of the bicycle lane (feet) (use 0 if doesn't exist) Width of the paved outside shoulder or parking area (feet)	Variable Nth D Sr Vm Wol	(Measure to the closest 0.5 keet) Measurement 1.0 30.0 745.8 10.0 7.0	(1-4) (0-1) (5-55) (100-3000) (9-16) (0-7) (0-10)	In N C C P P M A A M A	Innet Variable Description Number of through lanes in the study direction of travel Character of cross-section (1 = divided by median; 0 = undivided) Pavement condition rating (5 = excellent to 1 = poor) Motorized vehicle running speed (miles/hour) digusted motorized vehicle running speed (miles/hour) Midsegment automobile flow rate (vehicles/hour) digusted midsegment demand flow rate (vehicles/hour)	Variable Nth D Pc Sr Sra Vm	to the alosest 0.5 feet) surement 2.0 1.0 5.0 30.0 745.8 745.8
Link-Based Pedestrian Level of Service Evaluation Input Variable Description Number of through lanes in the study direction of travel Character of cross-section (1= divided by median; 0 = undivided) Motorized vehicle running speed (miles/hour) Midsegment automobile flow rate (vehicles/hour) Width of the outside through lane (feet) Width of the bicycle lane (feet) (use 0 if doesn't exist) Width of the paved outside shoulder or parking area (feet) Curb is present (1 = yes; 0 = no)	Variable Nth D S r Vm Wol Wol C C	(Measure to the closest 0.5 feet) Measurement 2.0 1.0 30.0 745.8 10.0 7.0 11.0	(1-4) (0-1) (5-55) (100-3000) (9-16) (0-7)	In N C C P P M A A P P	Input Variable Description Number of through lanes in the study direction of travel Character of cross-section (1 = divided by median; 0 = undivided) Evement condition rating (5 = excellent to 1 = poor) Motorized vehicle running speed (miles/hour) Adjusted motorized vehicle running speed (miles/hour) Midsegment automobile flow rate (vehicles/hour) Midstegment demand flow rate (vehicles/hour) Everent heavy vehicle volume (percentage)	Variable Nth D Pc Sr	to the alosest 0.5 feet) surement 2.0 1.0 5.0 30.0 745.8 745.8 4.0
Link-Based Pedestrian Level of Service Evaluation Input Variable Description Number of through lanes in the study direction of travel Character of cross-section (1= divided by median; 0 = undivided) Motorized vehicle running speed (miles/hour) Midsegment automobile flow rate (vehicles/hour) Width of the outside through lane (feet) Width of the bicycle lane (feet) (use 0 if doesn't exist) Width of the paved outside shoulder or parking area (feet) Curb is present (1 = yes; 0 = no) Adjusted Width of the paved outside shoulder (feet)	Variable Nth D Sr Vm Wol Wol Wol C Woo	/Measure to the closest 0.5 feet/ Measurement 2.0 100 30.0 745.8 10.0 7.0 11.0 1.0	(1-4) (0-1) (5-55) (100-3000) (9-16) (0-7) (0-10) (0-1)	In I	Input Variable Description In	Variable Nth D C S _r S _{ra} V _m V _{ma} P _{reV}	to the obsess of 5.5 feet/ surement 2.0 1.0 5.0 30.0 745.8 745.8 4.0 4.0
Link-Based Pedestrian Level of Service Evaluation Input Variable Description Number of through lanes in the study direction of travel Character of cross-section (1= divided by median; 0 = undivided) Motorized vehicle running speed (miles/hour) Midsegment automobile flow rate (vehicles/hour) Width of the outside through lane (feet) Width of the bicycle lane (feet) (use 0 if doesn't exist) Width of the paved outside shoulder or parking area (feet) Curb is present (1 = yes; 0 = no)	Variable Nth D S r Vm Wol Wol C C	//leasure to the closest 0.5 feet/ Measurement 2.0 1.0 30.0 745.8 10.0 7.0 11.0 9.5 0.50	(1-4) (0-1) (5-55) (100-3000) (9-16) (0-7) (0-10)	In N N C C P P N N A A P P N A A W W	Input Variable Description Imput Variable Description Sumber of through lanes in the study direction of travel Character of cross-section (1 = divided by median; 0 = undivided) Chavement condition rating (5 = excellent to 1 = poor) Motorized vehicle running speed (miles/hour) Adjusted motorized vehicle running speed (miles/hour) Midsegment automobile flow rate (vehicles/hour) Adjusted midsegment demand flow rate (vehicles/hour) Percent heavy vehicle volume (percentage) Adjusted percent heavy vehicle volume (percentage) Midst of the outside through lane (feet)	Variable Nth D Pc Sr Sva Vm Vma Prev Pervs Wool	to the closest (7.5/sex) asurement 2.0 1.0 5.0 30.0 745.8 745.8 4.0 10.0
Link-Based Pedestrian Level of Service Evaluation Input Variable Description Number of through lanes in the study direction of travel Character of cross-section (1= divided by median; 0 = undivided) Motorized vehicle running speed (miles/hour) Midsegment automobile flow rate (vehicles/hour) Width of the outside through lane (feet) Width of the bicycle lane (feet) (use 0 if doesn't exist) Width of the paved outside shoulder or parking area (feet) Curb is present (1 = yes; 0 = no) Adjusted Width of the paved outside shoulder (feet)	Variable Nth D Sr Vm Wol Wol Wol C Woo	//Measure to the closest 0.5 heed: Measurement 2.0 1.0 30.0 745.8 10.0 7.0 11.0 0.0 0.50 0.50	(1-4) (0-1) (5-55) (100-3000) (9-16) (0-7) (0-10) (0-1)	In N N C C P P N N A A P P N A A W W	Input Variable Description In	Variable Nth D Pc Sr Sra Vm Vma Prev Prev Wol Wol Wbl	no the observed for the
Link-Based Pedestrian Level of Service Evaluation Input Variable Description Number of through lanes in the study direction of travel Character of cross-section (1= divided by median; 0 = undivided) Midsegment automobile flow rate (vehicles/hour) Width of the outside through lane (feet) Width of the bicycle lane (feet) (use 0 if doesn't exist) Width of the paved outside shoulder or parking area (feet) Curb is present (1 = yes; 0 = no) Adjusted Width of the paved outside shoulder (feet) Proportion of on-street parking occupied (decimal)	Variable Neh D Sr Vm Wool Wool C C	(Measure to the classes a 5 feet) Measurement 20 10 30.0 745.8 10.0 7.0 11.0 9.5 0.50 10.0 17.0	(1-4) (0-1) (5-55) (100-3000) (9-16) (0-7) (0-10) (0-1)	6th St.	Input Variable Description Imput Variable Description Sumber of through lanes in the study direction of travel Character of cross-section (1 = divided by median; 0 = undivided) Chavement condition rating (5 = excellent to 1 = poor) Motorized vehicle running speed (miles/hour) Adjusted motorized vehicle running speed (miles/hour) Midsegment automobile flow rate (vehicles/hour) Adjusted midsegment demand flow rate (vehicles/hour) Percent heavy vehicle volume (percentage) Adjusted percent heavy vehicle volume (percentage) Midst of the outside through lane (feet)	Variable Nth D Pc Sr Sva Vm Vma Prev Pervs Wool	no the obsesser (2.5 feet) 1.0 2.0 30.0 30.0 745.8 745.8 4.0 10.0 7.0 11.0
Link-Based Pedestrian Level of Service Evaluation Input Variable Description Number of through lanes in the study direction of travel Character of cross-section (1= divided by median; 0 = undivided) Motorized vehicle running speed (miles/hour) Midsegment automobile flow rate (vehicles/hour) Width of the outside through lane (feet) Width of the bicycle lane (feet) (use 0 if doesn't exist) Width of the paved outside shoulder or parking area (feet) Curb is present (1 = yes; 0 = no) Adjusted Width of the paved outside shoulder (feet) Proportion of on-street parking occupied (decimal) Effective width of combined bicycle has and shoulder or parking arcs (feet)	Variable Nth D Sr Vm Wol Wol C C Woo Pps W1	(Measure to the closest 0.5 feet) Measurement 2.0 1.0 30.0 745.8 10.0 7.0 11.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	(1-4) (0-1) (5-55) (100-3000) (9-16) (0-7) (0-10) (0-1)	In N N A A A P P A A V V V V V V V	Innext Variable Description Number of through lanes in the study direction of travel Character of cross-section (1 = divided by median; 0 = undivided) Pavement condition rating (5 = excellent to 1 = poor) Motorized vehicle running speed (miles/hour) Adjusted motorized vehicle running speed (miles/hour) Midsegment automobile flow rate (vehicles/hour) Adjusted midsegment demand flow rate (vehicles/hour) Percent heavy vehicle volume (percentage) Midth of the outside through lane (feet) Width of the outside through lane (feet) Width of the bicycle lane (feet) (use 0 if doesn't exist)	Variable Nth D Pc Sr Sr Vm Vm Vm Perv Wo d b W o C	olosses / O. Sóses / O. Sóse / O
Link-Based Pedestrian Level of Service Evaluation Input Variable Description Number of through lanes in the study direction of travel Character of cross-section (1 = divided by median; 0 = undivided) Motorized vehicle running speed (miles/hour) Midsegment automobile flow rate (vehicles/hour) Width of the outside through lane (feet) Width of the bicycle lane (feet) (use 0 if doesn't exist) Width of the paved outside shoulder or parking area (feet) Curb is present (1 = yes; 0 = no) Adjusted Width of the paved outside shoulder (feet) Proportion of on-street parking occupied (decimal) Effective width of combined bicycle has de shoulder or pulsag area (feet) Total width of outside through lane, is paved shoulder (feet)	Variable Nth D Sr Vm Wol Wol C C Woo Pps W1	(Measure to the classes a 5 feet) Measurement 20 10 30.0 745.8 10.0 7.0 11.0 9.5 0.50 10.0 17.0	(1-4) (0-1) (5-55) (100-3000) (9-16) (0-7) (0-10) (0-1)	6th St.	Input Variable Description Number of through lanes in the study direction of travel Character of cross-section (1 = divided by median; 0 = undivided) Pavement condition rating (5 = excellent to 1 = poor) Motorized vehicle running speed (miles/hour) Adjusted motorized vehicle running speed (miles/hour) Midsegment automobile flow rate (vehicles/hour) Adjusted midsegment demand flow rate (vehicles/hour) Percent heavy vehicle volume (percentage) Midsh of the outside through lane (feet) Width of the bicycle lane (feet) (use 0 if doesn't exist) Width of the paved outside shoulder or parking area (feet)	Variable Nth D Pc Sr Sra Vm Vma Prev Prev Wol Wol Wbl	no the obsesser (2.5 feet) 1.0 2.0 30.0 30.0 745.8 745.8 4.0 10.0 7.0 11.0
Link-Based Pedestrian Level of Service Evaluation Input Variable Description Number of through lanes in the study direction of travel Character of cross-section (1 = divided by median; 0 = undivided) Motorized vehicle running speed (miles/hour) Midsegment automobile flow rate (vehicles/hour) Width of the outside through lane (feet) Width of the bicycle lane (feet) (use 0 if doesn't exist) Width of the paved outside shoulder or parking area (feet) Curb is present (1 = yes; 0 = no) Adjusted Width of the paved outside shoulder (feet) Proportion of on-street parking occupied (decimal) Total width of outside through lane, biogole lane, is paved shoulder (feet) Total width of outside through lane, biogole lane, is paved shoulder (feet)	Variable Nen D Sr Vm Wool Wool C C Woo Vm Woo Woo Woo Woo Woo Woo	(Measure to the closest 0.5 feet) Measurement 2.0 1.0 30.0 745.8 10.0 7.0 11.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	(1-4) (0-1) (5-55) (100-3000) (9-16) (0-7) (0-10) (0-1) (0-0-9)	6th St.	Input Variable Description Number of through lanes in the study direction of travel Character of cross-section (1 = divided by median; 0 = undivided) Pavement condition rating (5 = excellent to 1 = poor) Motorized vehicle running speed (miles/hour) Midjusted motorized vehicle running speed (miles/hour) Midjusted motorized vehicle running speed (miles/hour) Midjusted midsegment automobile flow rate (vehicles/hour) Midjusted midsegment demand flow rate (vehicles/hour) Percent heavy vehicle volume (percentage) Midth of the outside through lane (feet) Midth of the bicycle lane (feet) (use 0 if doesn't exist) Midth of the paved outside shoulder or parking area (feet) Durb is present (1 = yes; 0 = no)	Variable Nth D Pc Sr Sr Vm Vm Vm Perv Wo d b W o C	olosses / O. Sóses / O. Sóse / O
Link-Based Pedestrian Level of Service Evaluation Input Variable Description Number of through lanes in the study direction of travel Character of cross-section (1= divided by median; 0 = undivided) Motorized vehicle running speed (miles/hour) Midsegment automobile flow rate (vehicles/hour) Width of the outside through lane (feet) Width of the bicycle lane (feet) (use 0 if doesn't exist) Width of the paved outside shoulder or parking area (feet) Curb is present (1 = yes; 0 = no) Adjusted Width of the paved outside shoulder (feet) Proportion of on-street parking occupied (decimal) Effective width of combined bicycle lane, shoulder or parking was (feet) Total width of outside through lane, biogole lane, & paved shoulder (feet) Effective width after weektine, & R. Shadder or hearing after inden (feet) Effective width after weektine, & R. Shadder or hearing after inden (feet) Effective width between roadway and sidev alk (ft) (use 0 if no SW)	Variable Neh D Sr Vm Wold Wood C Wood Wy Wood Wy Wood Wy Wy Wy Wy Wood	//Measure to the closest 0.5 feet/ Measurement 2.0 1.0 30.0 745.8 10.0 7.0 11.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	(1-4) (0-1) (5-55) (100-3000) (9-16) (0-7) (0-10) (0-1) (0-0.9)	In N N A A N W W W W W C C A A P P	Input Variable Description In	Variable Nth D Pc Sr Sra Vm Vm Prev Wool Wol Wbis Woo C Wose*	20 Per 20
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Cost Calculations

Immediate Redesign

	ediate r	Redesign		
Туре	Units	Cost/unit	Tota	l Cost
Restripe Road	0.263	\$50000/Mile	\$	13,150
High visibility crosswalk	830	\$6/LF	\$	4,980
Stop Bar	84	\$13/LF	\$	1,092
Stop Bar Removals	84	\$2.50/LF	\$	210
Edge Line	835	\$0.65/LF	\$	543
Bicycle Lane	0.158	\$22500/Mile	\$	3,555
Green Bike Lane Paint	1288	\$6.50/sqft	\$	8,372
Bicycle marking	8	\$125/unit	\$	1,000
Red Bus Lane Paint	5550	\$6.50/sqft	\$	36,075
Words	16	\$125/word	\$	2,000
Plastic delineators	60	\$90/unit	\$	5,040
Bicycle lane buffer	835	\$0.65/LF	\$	543
Bus Shelter	1	\$7500/shelter	\$	7,500
Bus Pad	2	\$50,000/pad	\$	100,000
Total			\$	184,060

Future - Transit Option

Туре	Units	Cost/unit	Total Cost
Restripe Road	0.263	\$50000/Mile	13150
High visibility crosswalk	830	\$6/LF	4,980
Stop Bar	84	\$13/LF	1092
Stop Bar Removals	84	\$2.50/LF	210
Edge Line	500	\$0.65/LF	325
Bicycle Lane	0.158	\$22500/Mile	3555
Green Bike Lane Paint	1288	\$6.50/sqft	8372
Bicycle marking	8	\$125/unit	1000
Red Bus Lane Paint	5550	\$6.50/sqft	36075
Words	16	\$125/word	2000
Bus Shelter	2	\$7500/shelter	15000
Street tree	20	\$350/tree	7000
Continuous raised median	0.447	\$792000/mile	354024
New curb and gutter	0.447	\$90,000/mile	40230
New ADA curb ramp	2	1500/ramp	3000
Total			490013

Future - Bicycle Option

i utur	e - Dicy	cie Option	
Туре	Units	Cost/unit	Total Cost
Restripe Road	0.263	\$50000/Mile	13150
High visibility crosswalk	830	\$6/LF	4,980
Stop Bar	84	\$13/LF	1092
Stop Bar Removals	84	\$2.50/LF	210
Edge Line	500	\$0.65/LF	325
Bicycle Lane	0.158	\$22500/Mile	3555
Green Bike Lane Paint	2128	\$6.50/sqft	13832
Bicycle marking	13	\$125/unit	1625
Red Bus Lane Paint	2775	\$6.50/sqft	18037.5
Words	12	\$125/word	1500
Plastic delineators	17	\$90/unit	952
Bicycle lane buffer paint	500	\$0.65/LF	325
Bus Shelter	3	\$7500/shelter	22500
Street tree	20	\$350/tree	7000
Continuous raised median	0.447	\$792000/mile	354024
New curb and gutter	0.447	\$90,000/mile	40230
New ADA curb ramp	2	1500/ramp	3000
Curb extension (no drainage	2	\$7500/unit	15000
Bike box	1	\$3750/unit	3750
Total			505087.5

