EXAMPLE APPLICATION

FY 2025 HIGHWAY SAFETY IMPROVEMENT PROGRAM GRANT APPLICATION

HSIP Roadway Segment Improvements

City of Springfield, Carpenter Street Intersection Improvements at 5th and 6th Streets





June 30, 2023

Illinois Department of Transportation
Local Roads and Streets / Region 4/ District 6
Brian Wright
126 East Ash Street
Springfield, IL 62704
(217) 782-4690
Brian.Wright@illinois.gov

Re: FY 2025 Local Highway Safety Improvement Program

Carpenter Street Intersection Improvements at 5th Street and 6th Streets

City of Springfield

Dear Mr. Wright,

Carpenter Street is a local, minor arterial that runs east-west just north of Downtown Springfield. It extends from N Walnut Street on the west and to 19th Street approximately two miles to the east. The eastern section is bounded by residential neighborhoods. The western and middle sections are surrounded by residential areas, businesses, and also two large medical campuses which are major employment centers within the City. Accordingly, Carpenter Street services exceptionally heavy traffic at the start and conclusion of the typical business day.

Over the five-year study period, there have been 78 total crashes at the intersection of Carpenter Street at 5th Street, and 38 total crashes at the intersection of Carpenter Street at 6th Street. Each intersection has experienced 1 pedal cyclist and 1 pedestrian crash resulting in A, B, and C injuries.

The crashes at the intersection of Carpenter at 5th Street include 48 angle crashes, 16 turning crashes, 7 front to rear crashes, 5 sideswipe same direction crashes, along with the 1 pedestrian and pedal cyclist crash. Of these crashes, five resulted in A-injuries crashes, eleven were B-injury crashes, ten were C-injuries crashes, and 52 resulted in property damage only.

The intersection of Carpenter Street at 6th Street experienced 38 total crashes, made up of 22 angle crashes, 6 turning and front to rear crashes, and 1 each of sideswipe same direction, front to side, pedestrian, and pedal cyclist. These crashes resulted in two A-injury crashes, 5 B-injury crashes, 8 C-injury crashes, and 23 property damage only crashes.

It is evident why the two intersections landed on the Safety Tier listing and intersection initiative.

Mr. Brian Wright June 28, 2023 Page 2

To reduce the number of crashes, in particular the significant number of angle crashes, the proposed project will reconstruct the N 5th Street and N 6th Street intersections with Carpenter Street and incorporate improvements including dedicated left turn lanes, mast arms for all approaches to replace existing pole mounted signals, pedestrian countdown timer signal heads, adjusting all red and yellow clearance intervals, retroreflective back plates on signal heads, and fiber optic installation to facilitate signal interconnectivity.

The benefit-cost ratio for the five-year analysis period was calculated to be 3.07.

The total estimated cost for this project is \$2,229,101.00 and the City of Springfield is prepared to provide the local match of 10% (\$222,910.10) for these improvements. The City of Springfield is requesting \$2,006,190.90, 90% of the improvement cost, in funding from the Highway Safety Improvement Program. In response to Circular Letter 2023-14 requesting project applications for the FY 2025 Highway Safety Improvement Program (HSIP) Program, please reference the following safety improvement funding application from Springfield, Illinois for Carpenter Street at 5th and 6th Streets.

Sincerely,

Lochmueller Group

Prepared on the behalf of: City of Springfield, Office of Public Works

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- 7. Project photographs
- 8. Estimated project cost breakdown
- 9. Project timeline
- 10. Project narrative
- 11. BLR 04101 LRS Risk Assessment
- 12. BoBS 2831 Disclosure of Conflict of Interest

SECTION 2 LRS GRANT APPLICATION

	Loc	cal Roads & Streets Grant Application
Pro	gram Information	
1.	IDOT Grant Program	Local Highway Safety Improvement Program
2.	Solicitation Cycle	Fiscal Year 2025
App	licant Information	
3.	Lead Applicant Name (Local Public Agency)	City of Springfield
4.	Partners/Co-Applicants	
5.	Employer / Taxpayer Identification Number (EIN, TIN) for Lead Applicant	
6.	Organizational UEI Number (SAM.GOV) for Lead Applicant	
7.	Business Address for Lead Appliant	Street address: 300 S 7 th Street, Municipal Center West City: Springfield State: IL County: Sangamon Zip + 4: 62701-1681
App	licant's Name and Contact	Information for Person to be involving this Application
8.	First Name	Nathan
9.	Last Name	Bottom
10.	Suffix	
11.	Title	City Engineer
12.	Organizational Affiliation	City of Springfield – Office of Public Works
13.	Telephone Number	217-789-2255
14.	Fax Number	
15.	Email address	Nathan.bottom@springfield.il.us
App	olicant's Project	
16.	Description of	Traffic Signal Improvements/Modernization on Carpenter Street at 5 th and 6 th
	Applicant's Project	Streets – Including widnening for turn lanes

SECTION 3 BSPE HS1 – HSIP CANDIDATE FORM



HSIP Candidate Form

											FY 2025	
ID:			Contrac	t:		Awar	d Date:			Completi	on Date:	
Distric	t: 6		County:	Sangamon		•			City:	Springfie	d	
Key ro	ute:		Marked I	oute: FAU								
Road N	lame: Ca	arpenter S	treet		Intersect N/A	ting Road	way: 5 th Str	eet and 6 th S	treet			
Length	: 0.2 mile	es			□ N/A			Mile st	ation:	to		
Location	on Descr	iption: Ca	arpenter S	treet at 5 th S	Street and 6 th	Street						
Rur	al	⊠ Urban		Lanes: 4								
AADT(Segment): 8628		Total Enter	ring AADT (I	ntersectio	n): 15600			Speed L	imit: 30 mpł	1
Friction	n Test Re	esults:		⊠ N	I/A			Lightir	ng Prese	nt: 🛛 Y	□N	
CHSP	Emphasi	s Area(s):	Intersect	ions		□ Distri	ict Documer	itation	Syste	matic Imp	ovements [2] N/A
		· Urban Sig				1					□ N/A	
Other:												
						(Crashes Det	ails				
Year	Total Crashe	Fatal	Fatalities	A-Injury	A-Injuries	B-Injury	B-Injuries	C-Injury	C-Injurie:	s PDO	Wet-Weather	Darkness (Not lighted)
	s	Crashes		Crashes	-	Crashes		Crashes			Crashes	Crashes
2016	16 24	0	0	4	7	1	3	2	3	13	2	0
2017	24	0	0	1	2	4	6	5	7	14	1	1
2019	31	0	0	0	0		9	5	7	19	7	0
2020	21	0	0	1	1	4	5	4	5	12	1	1
Total	Total 116 0 0 7 12 16 23 18 27 75 13 2											
Location Description: 2 adjacent suburban intersections with 2 lanes in each direction on the main road and one-way minor cross roads.												
Problem Description: Angle crashes due to turning vehicles from major route, low visibility of post mounted signal heads.												
Previous Safety Improvements: None known												
		am: 🛛 Y						Image	s: 🛛 Y	□ N		
Predor	ninant Cı	rash Type	s: Angle	and turning	crashes at ea	ach interse	ction					
Propos	sed Impro	ovement(s	s): Adding	ı dedicated	left turn lanes	s and new	mast arm m	ounted sign	al heads	with retror	eflective backp	lates.
Estima	ted Proje	ect Cost (\$000's): \$	52229				Benefi	t-Cost R	atio: 3.07		
Local F	Projects:							•				
Annua	l Fatal Cr	ash Rate	(Fatal Cra	shes/100 N	Miles): 0		Annual A-lı	njury Crasl	h Rate (A	\-Injury Cr	ashes/100 Mil	es): 700
Local F	Roads Ru	ıral Funct	ional Clas	ss: Minor A	Arterial							
Approv	/ed:							Centra	I HSIP A	pproval D	ate:	
Signed	l: Safety En	aineer						Funding:	⊠H	SIP 🗌 HF	RRR 🗌 RAIL	
Comm	_	J										
Distrib	ution:	☐ OP	Р 🗆	District	BSPE	□LRS	BDE					

SECTION 4 BENEFIT TO COST RATIO FORM

PROJECT DESCRIPTION - PROJECT DATA INPUT (LOCAL INTERSECTIONS)

Project:	Springfield Carpenter Street Reconstruction	nter Street R	econstruction				Pre	epared b <u>y:</u>	Lochmueller Group
District:	6		County:	Sangamon	City:	Springfield	<u>Date</u>	<u>te</u>	6/19/2023
Key Route:	FAU7975		Marked Route:	Marked Route: Carpenter Street	MilePost:			Major Street	t 8628
Location:	Carpenter Street at 5th and 6th Streets	at 5th and 6t	n Streets		٠		<u> </u>	Minor Street	4200
							ì		
Crash data:	5	Years					Tra	affic Growth factor:	1.0%
	From	2016	to	2020			Int	iterest rate:	4.0%
									•
Peer Group:	Peer Group 7 - Urban Signalized Intersection	rban Signaliz	ed Intersection						

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provide a detailed cost estimation for all countermeasures along with this summary sheet.	MCGGGGGG
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3.4.47.17.1 - Signalization - Convert signal from pedestal-mounted to mast arm does not fully match HSM Setting/Facility Type Criteria 3.2.11.17.1 - Pavement - Add Left Turn Lane (Existing Signalized, Four-Leg Intersection) AADT is not within HSM limits

LOCAL INTERSECTION CRASH SEVERITY DISTRIBUTION BY CRASH TYPE FOR ANALYSIS PERIOD

DO Crashes	:-Injury Crashes	Injury Crashes	-Injury Crashes	atal Crashes	rash Severity	<u>Crash Type</u>	
					ALL	All Crashes (Aggregated crash input o	only
43	10	11	6	0	AG	Angle	
0	0	0	0	0	AN	Animal	
0	0	0	0	0	FO	Fixed Object	
0	0	0	0	0	НО	Head On	
0	0	0	0	0	LT	Left Turn	
0	0	0	0	0	OtherNC	Other Noncollision	
0	0	0	0	0	OtherO	Other Object	
0	0	0	0	0	OVT	Overturned	
0	0	_	_	0	PD	Pedestrian	CKASHITE
0	2	0	0	0	PDC	Pedalcyclist	
0	0	0	0	0	PKV	Parked Vehicle	
1	2	1	0	0	RE	Rear End	
0	0	0	0	0	RT	Right Turn	
5	1	0	0	0	SSD	Sideswipe Same Direction	
0	0	0	0	0	SOD	Sideswipe Opposite Direction	
16	ω	ω	0	0	T	Turning	
0	0	0	0	0	7R	Train	
0	0	0	0	0	NGT	Night Time	SPECIAL CASE
0	0	0	0	0	WP	Wet Pavement	CASE
75	18	16	7	0	707	Total	

LOCAL INTERSECTION BENEFIT COST ANALYSIS

0.00	REVENTED	TOTAL FATALITIES PREVENTED	TOTAL FA		0.00	REVENTED	ANNUAL NUMBER OF FATALITIES POTENTIALLY PREVENTED		BENEFIT/ COST 13.63	
\$24,300			COST	TOTAL COST				00°	TOTAL BENEFIT \$331,200	
		_					à			
		_					A			
		_					A			
\$24,300	\$270,000	15	\$270,000	Unit Onty	6	\$45,000	All	0.71	3.4.47.I7.1 - Signalization - Convert signal from pedestal-mounted to mast arm	3.4.47.17.1 -
EUAC **	Present Worth	Service Life	Total Cost	Units	Quantity	Unit Cost	Crash Type affected by this improvement	CMF *	COUNTERMEASURE	
		LCULATIONS	COUNTERMEASURE COST CALCULATIONS	COUNTERMEA				CULATIONS	BENEFIT CALCULATIONS	
						2	רטכטר וואן רויסרכ ווטוא טרוארו ווי ססטן לואלרו טוס			

***NOTE: IF THE NUMBER OF LEGS AFFECTED VARIES BY COUNTERMEASURES SELECTED, THEN CALCULATE THE BENEFIT-COST RATIO FOR EACH COUNTERMEASURE SEPARATELY (Use separate spreadsheets for each countermeasure applied)

^{*} CMF = Crash Modification Factor

** EUAC = Estimated Uniform Annual Cost

PROJECT DESCRIPTION - PROJECT DATA INPUT (LOCAL INTERSECTIONS)

Droipot:	Corrected Corporter Street Decoretriction	tor Stroot Do	Opera letion				Propared by:	_	Shanneller Group
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District:	6		County:	Sangamon	<u>City:</u>	Springfield	<u>Date</u>		6/21/2023
Key Route:	FAU7975		Marked Route: (Marked Route: Carpenter Street	MilePost:		Current AADT.	Major Street	8628
Location:	Carpenter Street at 5th and 6th Streets	t 5th and 6th	Streets				Callelli AADI.	Minor Street	4200
Crash data:	5	Years					Traffic Growth factor	factor:	1.0%
	From	2016	to	2020			Interest rate:		4.0%
Peer Group:	Peer Group 7 - Urban Signalized Intersection	ນan Signalizeເ	d Intersection						

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a detailed	
cost	
estimation fo	
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vide a detailed cost estimation for all countermeasures along with this summary sheet.	
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sheet.	<u>les</u>

Please provic

3.4.47.17.1 - Signalization - Convert signal from pedestal-mounted to mast arm does not fully match HSM Setting/Facility Type Criteria 3.2.11.17.1 - Pavement - Add Left Turn Lane (Existing Signalized, Four-Leg Intersection) AADT is not within HSM limits The analysis contains a User Defined Countermeasure (please provide supporting documentation)

LOCAL INTERSECTION CRASH SEVERITY DISTRIBUTION BY CRASH TYPE FOR ANALYSIS PERIOD

DO Crashes	C-Injury Crashes	B-Injury Crashes	A-Injury Crashes	Fatal Crashes	Crash Severity	<u>Crash Type</u>	
					ALL	All Crashes (Aggregated crash input only	/)
43	10	11	6	0	AG	Angle	
0	0	0	0	0	AN	Animal	
0	0	0	0	0	FO	Fixed Object	
0	0	0	0	0	НО	Head On	
0	0	0	0	0	LT	Left Turn	
0	0	0	0	0	OtherNC	Other Noncollision	
0	0	0	0	0	OtherO	Other Object	
0	0	0	0	0	OVT	Overturned	
0	0	_	_	0	PD	Pedestrian	CRACHITE
0	2	0	0	0	PDC	Pedalcyclist	
0	0	0	0	0	PKV	Parked Vehicle	
1	2	_	0	0	RE	Rear End	
0	0	0	0	0	RT	Right Turn	
Ŋ	_	0	0	0	SSD	Sideswipe Same Direction	
0	0	0	0	0	SOD	Sideswipe Opposite Direction	
16	З	З	0	0	7	Turning	
0	0	0	0	0	TR	Train	
0	0	0	0	0	NGT	Night Time	OFFICIA
0	0	0	0	0	WP	Wet Pavement	OFFICIAL CASE
75	18	16	7	0	707	Total	

LOCAL INTERSECTION BENEFIT COST ANALYSIS

0.00	EVENTED	TOTAL FATALITIES PREVENTED	TOTAL F.		0.00	REVENTED	ANNUAL NUMBER OF FATALITIES POTENTIALLY PREVENTED		1.62	BENEFIT/ COST
#11 0,E00			1 000						***************************************	
\$176.250			TOTAL COST	7074					\$285.500	TOTAL BENEFIT
							All			
							All			
							All			
\$176,250	\$1,959,101	15	\$1,959,101	Unit Qnty	2	\$979,551	All	0.75		3.5.101.UD.1 - User Defined - Install left-turn lane
EUAC **	Present Worth	Service Life	Total Cost	Units	Quantity	Unit Cost	Crash Type affected by this improvement	CMF *		COUNTERMEASURE
		COUNTERMEASURE COST CALCULATIONS	MEASURE COST	COUNTER				ATIONS	BENEFIT CALCULATIONS	

***NOTE: IF THE NUMBER OF LEGS AFFECTED VARIES BY COUNTERMEASURES SELECTED, THEN CALCULATE THE BENEFIT-COST RATIO FOR EACH COUNTERMEASURE SEPARATELY (Use separate spreadsheets for each countermeasure applied).

CMF = Crash Modification Factor

^{**} EUAC = Estimated Uniform Annual Cost



CRASH MODIFICATION FACTORS CLEARINGHOUSE

ABOUT THE CLEARINGHOUSE USING CMFs DEVELOPING CMFs ADDITIONAL

Home » CMF / CRF Details

CMF / CRF DETAILS

CMF ID: 7996

INSTALL LEFT-TURN LANE

DESCRIPTION:

PRIOR CONDITION: INTERSECTIONS WITHOUT LEFT TURN LANES

CATEGORY: INTERSECTION GEOMETRY

STUDY: SAFETY EVALUATION OF SIGNAL INSTALLATION WITH AND WITHOUT LEFT TURN LANES ON TWO LANE ROADS IN RURAL AND SUBURBAN AREAS, SRINIVASAN ET AL., 2

Star Quality Rating:	(VIEW SCORE DETAILS)
Rating Points Total:	115
	Crash Modification Factor (CMF)
Value:	0.748
Adjusted Standard Error:	
Unadjusted Standard Error:	0.095
	Crash Reduction Factor (CRF)
Value:	25.2 (This value indicates a decrease in crashes)
Adjusted Standard Error:	
Unadjusted Standard Error:	9.5
	Applicability
Crash Type:	All
Crash Severity:	All
Roadway Types:	Not specified
Street Type:	
Minimum Number of Lanes:	2
Maximum Number of Lanes:	2
Number of Lanes Direction:	
Number of Lanes Comment:	

Road Division Type: Minimum Speed Limit:	
Maximum Speed Limit:	
Speed Unit:	
Speed Limit Comment:	
Area Type: Al	NII
Traffic Volume:	
Average Traffic Volume:	
Time of Day: Al	MI
	If countermeasure is intersection-based
Intersection Type: N	Not specified
Intersection Geometry: 3-	8-leg
Traffic Control: Si	ignalized
Major Road Traffic Volume: M	dinimum of 2981 to Maximum of 18248 Annual Average Daily Traffic (AADT)
Minor Road Traffic Volume: M	dinimum of 972 to Maximum of 13880 Annual Average Daily Traffic (AADT)
Average Major Road Volume: 93	2199 Annual Average Daily Traffic (AADT)
Average Minor Road Volume: 48	847 Annual Average Daily Traffic (AADT)
	Development Details
Date Range of Data Used:	.992 to 2012
Municipality:	
State: N	NC
Country:	
Type of Methodology Used: Bo	Before/after using empirical Bayes or full Bayes
Sample Size (crashes): 57	76 crashes before, 388 crashes after
Sample Size (sites): 36	86 sites before, 36 sites after
Sample Size (site-years): 18	80 site-years before, 174 site-years after
	Other Details
Included in Highway Safety Manual? N	
	Nov 10, 2016
Comments: st	The CMF was developed for both rural and suburban areas. The number of crashes in the after period were not report tudy, however, they have been recorded as 300 to give 10 points as a beneift of doubt for one or more of the following number of miles/sites in the reference/treatment group, (2) number of crashes in the references/treatment group, (3 NADTs for the aggregate dataset but not for the disaggragate dataset used for CMF development.

VIEW THE FULL STUDY DETA

EXPORT DETAIL PAGE AS PDF

This site is funded by the U.S. Department of Transportation Federal Highvand maintained by the University of North Carolina Highway Safe

For more information, contact Matt Hinshaw at ${\bf matthew}$

The information contained in the Crash Modification Factors (CMF) Clearinghouse is disseminated under the sponsorship of the U.S. Department of Transportation in the interest of information exchange. The U.S. Government assumes no lial the information contained in the CMF Clearinghouse. The information contained in the CMF Clearinghouse does not constitute a standard, specification, or regulation, nor is it a substitute for sound engineering judgment.

FY 2025 Highway Safety Improvement Program

Carpenter Street Intersection Improvements at 5th and 6th Streets

City of Springfield, IL

CMF	Benefit	Cost
Convert Signal from Pedestal-Mounted to Mast Arm	\$331,200	\$24,300
Install Left Turn Lane	\$285,500	\$176,250
Total	\$616,700	\$200,550
Total B/C	3	.07

SECTION 5 RAW CRASH DATA

			Carpenter	Street & 5 th	Street Crashe	s & Injuries b	y year (2016-2	2020)		
Year	Total	Fatal Crashes	Fatal Injuries	A-Injury Crashes	A-Injuries	B-Injury Crashes	B-Injuries	C-Injury Crashes	C-Injuries	Property Damage
2016	10	0	0	0	0	0	0	1	1	9
2017	14	0	0	3	6	1	3	1	2	9
2018	16	0	0	1	2	2	4	3	5	10
2019	21	0	0	0	0	5	7	2	3	14
2020	17	0	0	1	1	3	4	3	3	10
Total=	78	0	0	5	9	11	18	10	14	52

			Carpente	r Street 8	k 5 th Stree	t Raw (Crash Da	ata (201	6-2020)	
Case ID	# Veh	Year	Month	Day	Hour	К	Α	В	С	0	Collision Type
201601225558	2	16	9	26	23					1	Angle
201601362030	2	16	3	26	11					1	Turning
201601382201	2	16	4	20	13					1	Angle
201601430575	2	16	7	18	18					1	Angle
201601431496	2	16	7	11	14					1	Sideswipe Same direction
201601463967	2	16	9	8	10					1	Angle
201601467862	2	16	10	2	20					1	Front to Rear
201601488128	2	16	11	9	23					1	Angle
201601496901	2	16	12	6	12					1	Front to Rear
201601500738	2	16	12	22	11				1		Turning
201701365181	2	17	1	10	15					1	Angle
201701378457	2	17	3	1	9		3				Angle
201701388277	2	17	3	7	16		1				Angle
201701390548	2	17	3	24	13					1	Angle
201701435155	2	17	6	20	7			3			Angle
201701439939	2	17	4	27	12					1	Front to Rear
201701444886	2	17	7	19	16					1	Angle
201701451816	2	17	8	10	14					1	Angle
201701453249	2	17	8	15	15		2				Angle
201701454188	2	17	8	18	7				1		Angle
201701455937	2	17	8	24	17					1	Turning
201701462232	2	17	9	15	17					1	Turning
201701470159	2	17	10	16	14					1	Turning
201701485510	2	17	12	17	13					1	Angle
201801415554	2	18	1	25	8					1	Sideswipe Same direction
201801426836	2	18	3	12	23					1	Angle
201801427221	2	18	3	15	17			3			Angle
201801428428	2	18	3	21	8					1	Angle
201801429910	2	18	3	28	13					1	Angle
201801432114	2	18	4	7	9					1	Sideswipe Same direction
201801434963	2	18	4	19	13		2				Angle
201801436014	2	18	4	24	11					1	Angle
201801437521	2	18	5	1	11					1	Turning
201801451537	2	18	7	1	11					1	Angle
201801451850	2	18	6	29	20			1			Angle
201801462873	2	18	8	22	1					1	Angle

			Carpente	r Street 8	\$ 5 th Stree	t Raw (Crash D	ata (201	6-2020)	
Case ID	# Veh	Year	Month	Day	Hour	К	Α	В	С	0	Collision Type
201801474768	2	18	10	8	11				1		Turning
201801489857	2	18	12	3	15				2		Angle
201801491993	2	18	12	11	12					1	Turning
201801493091	2	18	12	15	17				2		Turning
201901152293	2	19	1	11	10					1	Angle
201901175127	2	19	1	25	7					1	Turning
201901204749	2	19	2	27	13			1			Turning
201901244994	2	19	3	30	12				1		Angle
201901286385	2	19	5	23	4					1	Angle
201901290877	2	19	5	29	10			1			Angle
201901303298	2	19	6	19	8					1	Angle
201901313311	2	19	7	14	12					1	Angle
201901343496	2	19	8	15	20					1	Angle
201901392601	2	19	9	25	11			1			Turning
201901435268	2	19	9	10	9				2		Angle
201901456876	2	19	9	28	11			3			Angle
201901476885	2	19	10	26	12					1	Angle
201901479609	2	19	11	7	13					1	Front to Rear
201901480340	2	19	11	12	10			1			Angle
201901480417	2	19	11	12	15					1	Front to Rear
201901484233	2	19	12	7	11					1	Turning
201901485879	2	19	12	15	11					1	Angle
201901486927	2	19	12	20	19					1	Turning
202001095551	2	20	3	31	15			2			Angle
202001102892	2	20	1	2	7				1		Sideswipe Same direction
202001103616	2	20	4	21	8					1	Angle
202001103746	2	20	4	14	3					1	Angle
202001137237	2	20	6	4	8					1	Angle
202001155287	2	20	6	23	6			1			Angle
202001159949	1	20	6	28	9		1				Pedestrian
202001160707	2	20	2	22	16					1	Angle
202001199765	2	20	7	14	8					1	Angle
202001249281	2	20	9	21	12				1		Front to Rear
202001261264	2	20	10	6	6			1			Turning
202001267330	1	20	10	5	4				1		Pedalcyclist
202001270467	2	20	10	15	2					1	Angle
202001280573	2	20	10	26	1					1	Angle
202001297654	2	20	5	27	17					1	Turning
202001316282	2	20	11	28	10					1	Angle
202001316718	2	20	11	28	3					1	Angle
201901126992	2	19	3	19	7					1	Sideswipe Same Direction
201901389566	2	19	9	24	8					1	Front to Rear

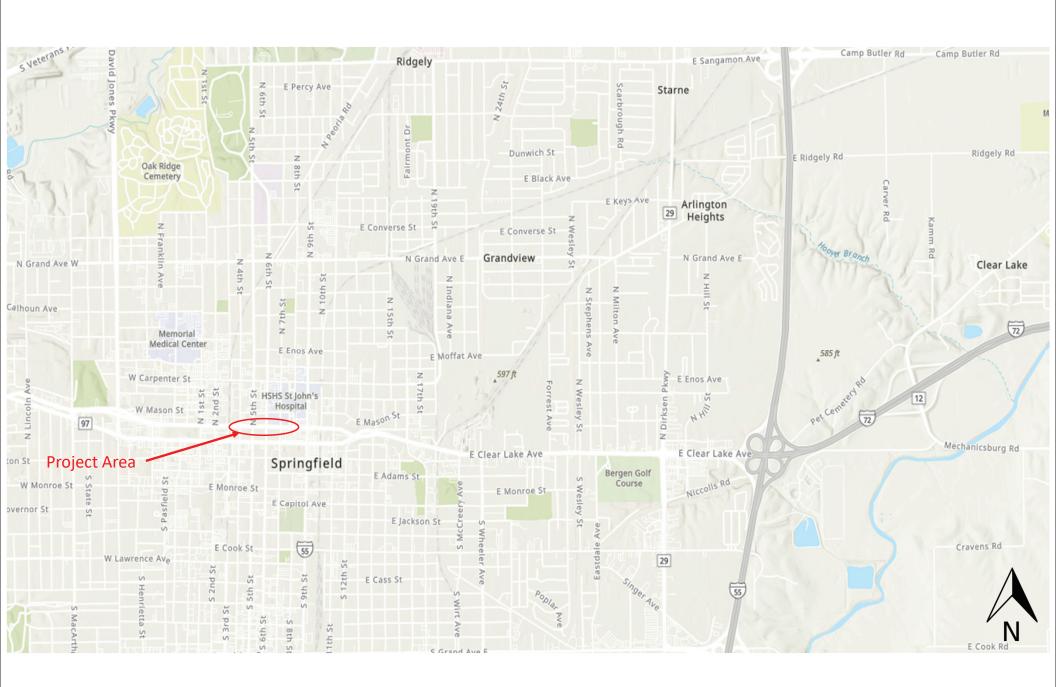
			Carpenter	Street & 6 th	Street Crashe	s & Injuries b	y year (2016-2	2020)		
Year	Total	Fatal Crashes	Fatal Injuries	A-Injury Crashes	A-Injuries	B-Injury Crashes	B-Injuries	C-Injury Crashes	C-Injuries	Property Damage
2016	6	0	0	1	2	0	0	1	2	4
2017	10	0	0	1	1	0	0	1	1	8
2018	8	0	0	0	0	2	2	2	2	4
2019	10	0	0	0	0	2	2	3	4	5
2020	4	0	0	0	0	1	1	1	1	2
Total=	38	0	0	2	3	5	5	8	10	23

			Carpenter	Street 8	6 th Stree	t Raw C	rash Da	ta (201	6-2020)		
Case ID	# Veh	Year	Month	Day	Hour	К	Α	В	С	0	Collision Type
201601359259	2	16	3	2	23					1	Turning
201601405205	2	16	6	7	11		2				Angle
201601440370	2	16	8	11	12				2		Angle
201601488796	2	16	11	19	14					1	Turning
201601498852	2	16	12	15	12					1	Front to Rear
201601502244	2	16	12	25	12					1	Angle
201701380648	2	17	2	26	10					1	Angle
201701387737	2	17	3	4	10					1	Angle
201701391079	2	17	3	30	14					1	Angle
201701406354	2	17	4	17	10					1	Turning
201701439647	2	17	7	3	10		1				Angle
201701445248	2	17	7	18	11				1		Angle
201701449699	2	17	8	3	15					1	Angle
201701452454	2	17	8	12	12					1	Angle
201701464620	2	17	9	22	11					1	Sideswipe Same Direction
201801340189	2	18	10	31	10				1		Angle
201801409860	2	18	1	8	19					1	Angle
201801439301	2	18	5	8	14					1	Front to Rear
201801439744	2	18	5	10	14				1		Angle
201801457254	2	18	7	26	10			1			Angle
201801494904	2	18	12	22	12					1	Angle
201901170806	2	19	1	21	14					1	Turning
201901198919	2	19	2	21	21			1			Angle
201901236327	1	19	3	21	16			1			Pedestrian
201901285223	2	19	5	20	13				2		Angle
201901303305	2	19	6	19	16					1	Angle
201901309239	2	19	6	28	13					1	Angle
201901452167	2	19	9	22	20					1	Angle
201901456376	2	19	9	27	11					1	Turning
201901474623	2	19	10	10	13				1		Rear to Side
202001142904	2	20	2	10	8				1		Angle
202001176584	2	20	7	14	1			1			Angle
202001239766	2	20	9	16	8					1	Front to Rear
202001308353	2	20	11	17	4					1	Front to Rear

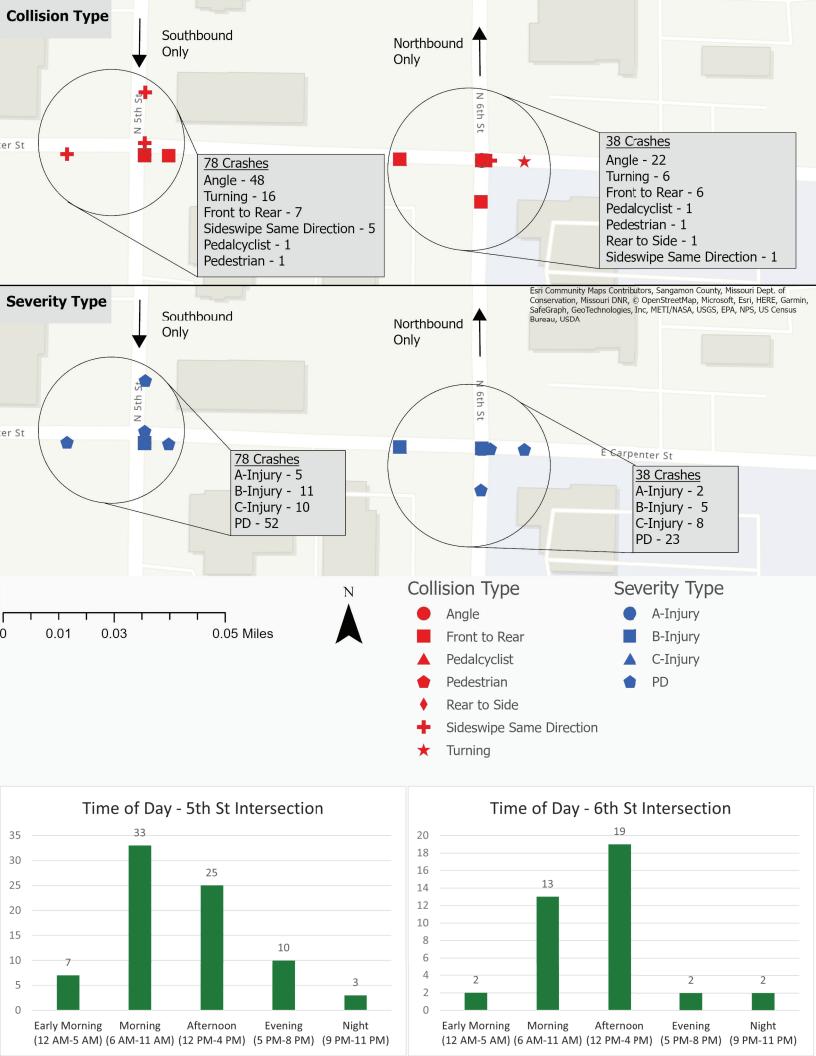
			Carpenter	Street &	6 th Stree	t Raw C	rash Da	ta (201	6-2020)		
Case ID	# Veh	Year	Month	Day	Hour	К	Α	В	С	0	Collision Type
201701454623	2	17	8	19	14					1	Turning
201801431697	2	18	4	5	11			1			Front to Rear
201901162113	1	19	1	12	14				1		Pedalcyclist
201801490184	2	18	12	4	15					1	Front to Rear

		COMBI	NED Carpen	ter Street &	5 th & 6 th Stree	et Crashes & I	njuries by yea	r (2016-2020	0)	
Year	Total	Fatal Crashes	Fatalities	A-Injury Crashes	A-Injuries	B-Injury Crashes	B-Injuries	C-Injury Crashes	C-Injuries	Property Damage
2016	16	0	0	1	2	0	0	2	3	13
2017	24	0	0	4	7	1	3	2	2	17
2018	24	0	0	1	2	4	6	5	7	14
2019	31	0	0	0	0	7	9	5	7	19
2020	21	0	0	1	1	4	5	4	4	12
Total	116	0	0	7	12	16	23	18	23	75

SECTION 6 PROJECT LOCATION MAP







SECTION 7 PROJECT PHOTOGRAPHS





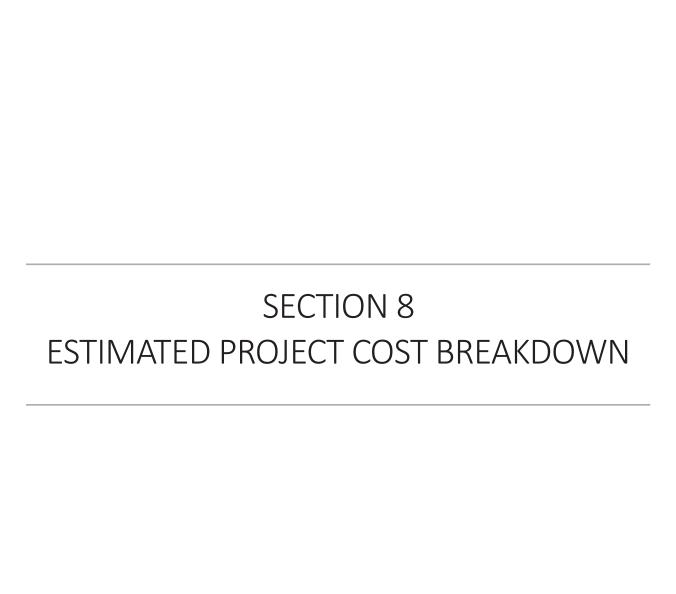
Eastbound view of 5th Street at Carpenter Street. The westbound Carpenter Street queue extends the distance between 5th Street and 6th Street. In order to utilize the green time, it is not uncommon for the northbound 6th Street left turning vehicles (to westbound Carpenter) enter the queue and block the intersection during peak hours.



Westbound view of westbound Carpenter Street queue.



Carpenter Street at 6^{th} Street with queueing in the eastbound and westbound approaches.



- CARPENTER STREET INTERSECTION IMPROVEMENTS AT 5TH AND 6TH STREETS PROJECT PRELIMINARY OPINION OF PROBABLE CONSTRUCTION COSTS SPRINGFIELD, ILLINOIS

DATE: 6/14/2023

Lochmueller Group	
Lochmueller Grou	

TOTAL PRICE \$3,300.00 \$352,607.64 \$2,010.86 \$548.42 \$6,480.00 \$12,000.00 \$99,180.00 \$24,988.50 \$3,824.40 \$33,600.00 \$5,200.00 \$7,500.00 \$2,500.00 **UNIT PRICE** LINO QUANTITY 421-2002 ELECTRIC CABLE IN CONDUIT, SIGNAL NO. 14 7C

ELECTRIC CABLE IN CONDUIT, COMMUNICATION NO. 18 3 PAIR

ELECTRIC CABLE IN CONDUIT, SERVICE, NO. 6 2 C

ELECTRIC CABLE IN CONDUIT, EQUIPMENT GROUNDING CONDUCTOR, NO.

TRAFFIC SIGNAL POST, ALUMINUM 10 FT.

TRAFFIC SIGNAL POST, ALUMINUM 15 FT. DESCRIPTION METAL POST - TYPE A
MODIFIED URETHANE PAVEMENT MARKING - LETTERS AND SYMBOLS
MODIFIED URETHANE PAVEMENT MARKING - LINE 4"
MODIFIED URETHANE PAVEMENT MARKING - LINE 12" ELECTRIC CABLE IN CONDUIT, 600V (XLP-TYPE USE) 1/C NO. LIGHT POLE FOUNDATION, METAL, 11 1/2" BOLT CIRCLE, 8 5/ SAL OF UNSUITABLE MATERIAL MODIFIED URETHANE PAVEMENT MARKING - LINE 22
PAVEMENT MARKING REMOVAL - WATER BLASTING
UNDERGROUND CONDUIT, PVC, 2" DIA. SHORT TERM PAVEMENT MARKING REMOVAL
TEMPORARY PAVEMENT MARKING - LINE 4"- PAINT ELECTRIC CABLE IN CONDUIT, SIGNAL NO. 14 2C ELECTRIC CABLE IN CONDUIT, SIGNAL NO. 14 3C STEEL MAST ARM ASSEMBLY AND POLE, 40 FT.

STEEL MAST ARM ASSEMBLY AND POLE, 42 FT.

STEEL MAST ARM ASSEMBLY AND POLE, 44 FT.

STEEL MAST ARM ASSEMBLY AND POLE, 46 FT.

STEEL MAST ARM ASSEMBLY AND POLE, 54 FT.

STEEL MAST ARM ASSEMBLY AND POLE, 62 FT. BASE COURSE WILL....
AGGREGATE FOR TEMPORARY ACCESS
HOT-MIX ASPHALT BINDER COURSE, IL-19.6, N70 MULCH, METHOD 2
TEMPORARY EROSION CONTROL SEEDING
INLET AND PIPE PROTECTION
AGGREGATE SUBGRADE IMPROVEMENT
SUBBASE GRANULAR MATERIAL, TYPE C 8"
AGGREGATE BASE COURSE, TYPE A 4"
AGGREGATE BASE COURSE, TYPE A 8" PORTLAND CEMENT CONCRETE DRIVEWAY P
PORTLAND CEMENT CONCRETE SIDEWALK 5 INLETS, TYPE B, TYPE 11 FRAME AND GRATE HOT-MIX ASPHALT SURFACE REMOVAL, V
CLASS B PATCHES, TYPE I, 16 INCH
CLASS B PATCHES, TYPE II, 16 INCH
CLASS B PATCHES, TYPE III, 16 INCH
CLASS B PATCHES, TYPE III, 16 INCH 60240310 72400310 PAY ITEM

87800420	CONCRETE FOUNDATION, TYPE E 42-INCH DIAMETER	15	FOOT	\$500.00	\$7,500.00
88040070	SIGNAL HEAD, POLYCARBONATE, LED, 1-FACE, 3-SECTION, BRACKET MOUNTED	4	EACH	\$1,300.00	\$5,200.00
88040090	SIGNAL HEAD, POLYCARBONATE, LED, 1-FACE, 3-SECTION, MAST ARM MOUNTED	15	EACH	\$1,000.00	\$15,000.00
88040120	SIGNAL HEAD, POLYCARBONATE, LED, 1-FACE, 4-SECTION, MAST ARM MOUNTED	4	EACH	\$1,300.00	\$5,200.00
88040250	SIGNAL HEAD, POLYCARBONATE, LED, 2-FACE, 1-3 SECTION, 1-4 SECTION, BRACKET MOUNTED	4	EACH	\$2,000.00	\$8,000.00
88102825	PEDESTRIAN SIGNAL HEAD, POLYCARBONATE, LED, 1-FACE, BRACKET MOUNTED WITH COUNT DOWN TIMER	16	EACH	\$1,000.00	\$16,000.00
88200100	TRAFFIC SIGNAL BACKPLATE	27	EACH	\$250.00	\$6,750.00
89000100	TEMPORARY TRAFFIC SIGNAL INSTALLATION	2	EACH	\$45,000.00	\$90,000.00
89500400	RELOCATE EXISTING PEDESTRIAN PUSH-BUTTON	16	EACH	\$400.00	\$6,400.00
89502300	REMOVE ELECTRIC CABLE FROM CONDUIT	8,000	FOOT	\$0.50	\$4,000.00
89502375	REMOVE EXISTING TRAFFIC SIGNAL EQUIPMENT	2	EACH	\$2,500.00	\$5,000.00
89502380	REMOVE EXISTING HANDHOLE	6	EACH	\$400.00	\$3,600.00
89502382	REMOVE EXISTING DOUBLE HANDHOLE	2	EACH	\$500.00	\$1,000.00
89502385	REMOVE EXISTING CONCRETE FOUNDATION	14	EACH	\$650.00	\$9,100.00
X1400012	REMOVE AND REINSTALL FIBER OPTIC CABLE IN CONDUIT	1,720	FOOT	\$4.00	\$6,880.00
X1400356	UNIT DUCT, 600V, 2-1/C NO.6, 1/C NO.8 GROUND, (XLP-TYPE USE), 2" DIAMETER POLYETHYLENE	700	FOOT	\$4.00	\$2,800.00
X1400399	VIDEO DETECTION SYSTEM COMPLETE	2	EACH	\$15,000.00	\$30,000.00
X1700021	BRICK PAVER REMOVAL AND REINSTALLATION, SPECIAL	200.0	SQ FT	\$25.00	\$5,000.00
X2090215	SELECT GRANULAR BACKFILL, SPECIAL	138.0	CU YD	\$41.00	\$5,658.00
X2600000	REMOVE SIGN AND POST	1	EACH	\$150.00	\$150.00
X2600011	REMOVE AND RELOCATE SIGN PANEL	36	EACH	\$205.00	\$7,380.00
X2600012	REMOVE AND RELOCATE SIGN PANEL AND POLE ASSEMBLY	3	EACH	\$350.00	\$1,050.00
X5510100	STORM SEWER REMOVAL	3.0	FOOT	\$27.00	\$81.00
X6026050	SANITARY MANHOLES TO BE ADJUSTED	2	EACH	\$1,500.00	\$3,000.00
X7010216	TRAFFIC CONTROL AND PROTECTION, (SPECIAL)	1	L SUM	\$35,000.00	\$35,000.00
X8100105	CONDUIT SPLICE	1	EACH	\$500.00	\$500.00
X8100863	INTERCEPT EXISTING CONDUIT	4	EACH	\$1,000.00	\$4,000.00
X8140115	HANDHOLE TO BE ADJUSTED	2	EACH	\$500.00	\$1,000.00
X8440110	RELOCATE EXISTING LIGHT POLE WITH LUMINAIRE	5	EACH	\$2,000.00	\$10,000.00
X8950301	REMOVE EXISTING TRAFFIC SIGNAL POST	14	EACH	\$350.00	\$4,900.00
X8950305	REMOVE EXISTING SIGNAL HEAD	17	EACH	\$250.00	\$4,250.00
X8950307	REMOVE EXISTING PEDESTRIAN HEAD	16	EACH	\$100.00	\$1,600.00
Z0013798	CONSTRUCTION LAYOUT	1	MUS J	\$12,000.00	\$12,000.00
Z0018901	DRILL AND GROUT DOWEL BARS AT 12" CENTERS	193	FOOT	\$22.00	\$4,246.00
Z0018911	DRILL AND GROUT #6 TIE BARS	723	EACH	\$19.00	\$13,737.00
Z0062002	SAW CUTTING, (FULL DEPTH)	2,517	FOOT	\$8.00	\$20,136.00
	WATER METER PITS TO BE ADJUSTED	3	EACH	\$500.00	\$1,500.00

\$2,229,101.00

TOTAL PRELIMINARY OPNION OF PROBABLE CONSTRUCTION COST

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SECTION 9 PROJECT TIMELINE

FY 2025 Highway Safety Improvement Program

Carpenter Street Intersection Improvements at $\mathbf{5}^{th}$ and $\mathbf{6}^{th}$ Streets

City of Springfield, IL

Stage	Start Date	Completion Date
NTP	December 2022	December 2022
Traffic Data Collection and Survey	January 2023	March 2023
Phase I & II Engineering	March 2023	July 2024
Proposed Letting	November 2024	November 2024
Construction	May 2025	October 2025

SECTION 10 PROJECT NARRATIVE

City of Springfield FY 2025 Highway Safety Improvement Project Narrative Carpenter Street Intersection Improvements at N 5th and N 6th Streets Project

History

Carpenter Street is a local, minor arterial that runs east-west just north of Downtown Springfield. It extends from N Walnut Street on the west to 19th Street approximately two miles to the east carrying between two and four lanes. The eastern section is bounded by residential neighborhoods. The western and middle sections are surrounded by residential areas, businesses, and also two large medical campuses which are major employment centers within the City. Accordingly, Carpenter Street services exceptionally heavy traffic at the start and conclusion of the typical business day.

Between the medical campuses, N 5th Street and N 6th Street intersect with Carpenter Street with one block (approximately 0.1 mile) between them. In combination they serve as a one-way coupler throughout Springfield. N 5th Street is a southbound-only minor arterial, and N 6th Street is a northbound-only minor arterial.

The Carpenter Street 2022 average annual daily traffic (AADT) ranges from 4,750 to 8,500 vehicles per day (vpd), and the section from 4th Street to 9th street services the highest AADT throughout the corridor. Furthermore, this section is heavily traveled by vulnerable road users (VRU) and services multiple mass transit routes.

According to the 2022 Local Safety Tiers (released in 2023), the N 5th Street intersection was rated High and the N 6th Street intersection was rated Medium. Both were flagged at 95% for Angle crashes. Furthermore, both intersections were identified for their angle crash representations as part of the Sangamon County Intersection Initiative.

Crashes

In reviewing crash data for the years 2016-2020, it is it is evident why the two intersections landed on the Safety Tier and intersection initiative lists. Over the five-year study period, there have been 78 total crashes at the intersection of Carpenter Street at 5th Street, and 38 total crashes at the intersection of Carpenter Street at 6th Street. Both intersections experienced 1 pedal cyclist and 1 pedestrian crash during the analysis period.

The 78 crashes at the intersection of Carpenter at 5th Street include 48 angle crashes, 16 turning crashes, 7 front to rear crashes, 5 sideswipe same direction crashes, along with the 1 pedestrian and pedal cyclist crash. Of these crashes, 5 were A-injury crashes, 11 were B-injury crashes, 10 were C-injury crashes, and 52 resulted in property damage only. 74% of the crashes occurred between 6am and 4pm, and the majority also occurred during clear weather, indicating a need for geometric, conspicuity, and operational improvements.

The intersection of Carpenter Street at 6th Street experienced 38 total crashes, made up of 22 angle crashes, 6 turning and front to rear crashes, and 1 each of sideswipe same direction, front to side, pedestrian, and pedal cyclist. Of these crashes, 2 were A-injury crashes, 5 were B-injury crashes, 8 were C-injury crashes, and 23 were property damage only crashes. 84% of the crashes occurred between 6am

and 4pm, and, as was documented at the adjacent intersection, the vast majority occurred during clear weather again indicating a need for geometric, conspicuity, and operational improvements.

Safety Improvements

To reduce the number of crashes, in particular the significant number of angle crashes, the proposed project will reconstruct the N 5th Street and N 6th Street intersections with Carpenter Street and incorporate the following improvements:

- Install a dedicated left turn lane for west to south left turning traffic at Carpenter Street & N 5th
 Street,
- Install a dedicated left turn lane for east to north left turning traffic at Carpenter Street & N 6th
 Street,
- Install signal mast arms with signal heads for each movement on all approaches to replace the existing pedestal mounted signals,
- Install pedestrian countdown timer pedestrian signal heads across all legs of the intersection of Carpenter Street & N 5th Street and the intersection of Carpenter Street & N 6th Street,
- Adjust signal timings such that all red and yellow clearance intervals satisfy current standards,
- Provide retroreflective back plates on all vehicle signal heads, and
- Implement crosswalk markings and Americans with Disabilities Act (ADA) accessibility updates as required. Pedestrian signals will also be fully ADA compliant.
- Either protected only turn phasing or flashing yellow arrow permissive/protected turn phasing will be provided for westbound left turns at Carpenter Street & N 5th Street, and eastbound left turns at Carpenter Street & N 6th Street, as determined by the capacity analysis results.
- Additionally, fiber optic installation connecting at 4th Street/7th Street along Carpenter Avenue will facilitate signal interconnectivity and improve traffic signal management and operations into the future.

The benefit-cost ratio for the 5-year analysis period was calculated to be 3.07.

The total estimated cost for this project is \$2,229,101.00, and the City of Springfield is prepared to provide the local match of 10% (\$222,910.10) for these improvements. The City of Springfield is requesting \$2,006,190.90, 90% of the improvement cost, in funding from the Highway Safety Improvement Program.

SECTION 11 BLR 04101 – LRS RISK ASSESSMENT



Local Roads & Streets Federal Funds Application Risk Assessment

Local Public Agency

City of Springf	ield			
Risk Factor	Description		Definition of Scale (time frames are based on LPA fiscal year)	Points
	Have there been any changes in key organizational s leadership, such as Fiscal and Administrative Manage Transportation Related Program/Project Managemen Elected Officials?	ement,	0 points - No significant changes in the last 4 or more years; 1 point - Minor changes, but majority of key staff and officials have not changed in the last 4 years; 2 points - Significant key staff or elected leadership changes within the last 3 years; 3 points - Significant key staff and elected leadership changes within the last 3 years.	ı
General History	What is the LPA's history with federal-aid funded transprojects?	sportation	0 points - One or more federal-aid funded transportation projects per year; 1 point - At least one project within the past three years; 2 points - At least one project within the past 5 years; 3 points - None or more than 5 years	
of Performance	Does LPA have qualified technical staff with experien managing federal-aid funded transportations through		O points - Full-time employee with experience designated as being in "responsible charge"; 1 point - LPA has qualified technical staff, but will be utilizing an engineering consultant to manage day-to-day with LPA technical staff oversight; 2 points - LPA has no technical staff and all technical work will be completed by consultant, but LPA staff has prior experience with federal-aid projects; 3 points - LPA staff have no prior experience or technical expertise and relying solely on consultant.	•
	Has the LPA been untimely in submitting invoicing, refederal-aid projects as required in <u>2 CFR 200</u> , and or required?		0 points - No; 1 point - Delays of 6 or more months; 2 points - Delays of up to 1 year; 3 points - 1 year or more years of delay.	
	Are the annual financial statements prepared in accordence of Generally Accepted Accounting Principles or on a base acceptable by the regulatory agency?		0 points - Yes; 3 points - no	
Financial Controls	What is the LPA's accounting system?		0 points -Automated accounting software; 1 point - Spreadsheets; 2 points - Paper only; 3 points- None.	
	Does the organization have written policies and proce- regarding proper segregation of duties for fiscal activi include but are not limited to: a) authorization of trans record keeping for receipts and payments; and c) cas management?	ties that actions; b)	0 points - Yes; 3 points - no	•
	When was the last time a financial statement audit was conducted?	as	0 points - In the past year; 1 point - In the past 2 years; 2 points - In the past three years; 3 points - 4 years or more or never.	
Audits	What type of financial statement audit has the organiz conducted?	zation had	0 points - Single Audit/Program Specific Audit in accordance with <u>2 CFR 200.501</u> or Financial audit conducted in accordance with Generally Accepted Auditing Standards or Generally Accepted Government Auditing Standards; 1 point -Financial review; 3 points - Other type or none	
	Did the most recent audit disclose findings considered significant deficiencies or material weaknesses?	d to be	0 points - No; 3 points - yes, or no audits required	
	Have the findings been resolved?		0 points - Yes or no findings; 1 point - In progress; 3 points - No	
	Summary of Risk	Completed	d By	
General History o		Ramona	Metzger	
Financial Controls	· •		Signature & Date	
Audits		Title/Role	<u> </u>	
	Total	Director-	Office of Budget & Management	

Completed 06/20/23 BLR 04101 (04/26/23)

SECTION 12 BoBS 2831 – DISCLOSURE OF CONFLICT OF INTEREST



Uniform Grant Agreement Affidavit of Disclosure of Conflicts of Interest-Grantee



06.068.0148

Agreement No.	
Employee Name	Position of Employee
Misty Buscher	Mayor
and Audit Requirements for Federal Awards published in Title 2, Pa Admin Code 7000.40(b)(3). As an Employee or Officer of Grantee, Grant Agreement. Pursuant to the above referenced Uniform Guida have, or have had, of a family, political, financial, or social nature w wait for direction from the Grants Unit Manager and the Departmen award process. After submittal of this Disclosure to the Department provide this form to the Ethics Officer if a conflict is noted.	equired by the Uniform Administrative Requirements, Cost Principles, art 200 of the Code of Federal Regulations, 2 CFR 200.112, and 44 III. I will remain bias-free before, during and after the award process of the ance and Administrative Rules, I have identified below any relationship with any of Grantor's employees related to this Grant Agreement, and int's Ethics Officer before proceeding to participate with Grantor in the t's Bureau of Business Services, the Bureau of Business Services will
Check statement 1 or 2. If you check statement 1, please sign and information and then sign and date the form.	date the form. If you check statement 2, please complete the
 I do not have, nor have I had, any relationship describ employees for this Grant Agreement. 	ped above nor any other conflict of interest with any of Grantor's
 I have, or have had, a relationship described above or this Grant Agreement. 	r other conflict of interest with the following employees of Grantor for
Name of Grantor's employee or officer	
Nature of Potential Conflict	
☑ By checking this box and typing my name below, I verify this do	ocument has been reviewed and approved by the owner and myself.