Illinois Department of Transportation
2300 South Dirksen Parkway / Springfield, Illinois / 62764

February 5, 2018

CIRCULAR LETTER 2018-02

FY 2020 LOCAL HIGHWAY SAFETY IMPROVEMENT PROGRAM

COUNTY ENGINEERS / SUPERINTENDENTS OF HIGHWAYS
MUNICIPAL ENGINEERS / PUBLIC WORKS DIRECTORS / MAYORS
METROPOLITAN PLANNING ORGANIZATIONS – DIRECTORS
TOWNSHIP HIGHWAY COMMISSIONERS
CONSULTING ENGINEERS

The Department has recently published the 2017 Local Safety Tiers which includes 5%, high, medium, and low lists for both intersection and segment locations. Also, please note that several resources, including the Benefit Cost Tool, have been revised. An additional circular letter will be distributed detailing these changes.

The Department intends to add a FY 2020 local increment to the Highway Safety Improvement Program (HSIP) as we develop the FY2020 - 2025 proposed Multi-Year Highway Improvement Program. Applications for this funding program will be received through Friday, March 30, 2018. Announcement of the selected projects for funding will be made by June 15, 2018.

The anticipated funding level is approximately $15 million for FY 2020. The federal funding level per project is a maximum 90 percent of the total eligible improvement cost for the project with the local public agency responsible for the ten (10) percent matching funds and any non-participating items. All phases of a safety improvement project are eligible for this program, including preliminary engineering, design, construction and construction engineering. Right-of-way costs are typically not eligible to be covered by this funding program. Local public agencies are expected to obligate these funds within two (2) years of the fiscal year for which they are announced.

HSIP funds may be used to address safety issues without completely reconstructing entire roadway segments or intersections to the latest policies and standards. Fatal and serious injury crashes associated with roadway departure, intersections, and pedestrians are high priority emphasis areas based on the current Illinois Strategic Highway Safety Plan. Several resources have been developed to aid local public agencies in identifying locations and emphasis areas. These include county emphasis area tables, heat maps, data trees, pedestrian corridors, top 50 curves, and the 2017 Local Safety Tier List. Use of these resources is important and strong consideration

will be given to projects that demonstrate a safety issue based on the use of these documents. Attached is the memorandum entitled "*Guidelines for Local Agencies in Using the 2017 Local System Safety Tier Analysis Results*."

Strong consideration will also be given to specific safety strategies that offer significant benefit to the reduction of fatal and serious injury crashes. The key is to identify the issue(s) contributing to the fatal and serious injury crashes and how the safety strategy will address these issues. Please note if the roadway(s) you are improving is a rural major collector, rural minor collector, or rural local road, as these will potentially qualify as a High Risk Rural Road (HRRR) project. Please contact your applicable IDOT District Local Roads and Streets office for further assistance and to coordinate HSIP applications.

HSIP funds may also be used for system-wide, systemic, safety improvements. These may include items such as guardrail improvements / upgrades, guardrail end terminal upgrades, signage, pavement markings, rumble strips, etc. The funding limitation on guardrail improvements / upgrades and guardrail end treatments will be a maximum of $1,000,000 of federal HSIP funds (plus the ten (10) percent local match) per local public agency per fiscal year.

The local HSIP application form is attached along with the benefit to cost ratio spreadsheet. Each candidate project must have a completed application form, benefit to cost ratio form, raw crash data in an Excel spreadsheet, project location map, photographs of the project location, estimated project cost breakdown (including contingencies and non-participating items), estimated project timeline, and a project narrative describing the details of the project.

The project narrative should be a brief one to two page summary of the project history, crash locations, and desired improvements. The project narrative should not include information on every aspect of every crash on the project, every aspect of the desired improvement, or letters of support from other entities concerned about the project.

Projects with a benefit to cost ratio less than one may be submitted for consideration. These may be project locations that do not have a fatal crash, but the crash data would support the likelihood of a future fatal or serious injury crash. The project narrative should be used in these cases to explain the proactive countermeasures that will be used at the project location.

The application form should be completed with as much information as possible about the subject project. The crash table should be completely filled in with crash totals or zeros if no crash types were present. The estimated project cost should be the total cost for the completed project. If a lesser amount should be used to calculate the HSIP funding (due to contingencies and non-participating items), please indicate this reduced amount on the application form.

The project location map should include information on the map as to where any fatal or A-injury crashes occurred within the project limits during the crash evaluation period. The estimated project timeline should include information on time requirements for Phase I engineering, Phase II design, a target letting date, and an estimated construction completion date.

To aid in the application process, an example of a concise, successfully completed application is attached here. Please refer to this example as you complete the paperwork required for the FY 2020 HSIP application.

In addition, under the Grant Accountability and Transparency Act (GATA), each candidate project must also complete the Uniform Application for State Grant Assistance, a Uniform Grant Budget Template, a Programmatic Risk Assessment Questionnaire, and a Conflict of Interest Form which are also attached.

The HSIP website contains additional information on the IDOT HSIP Policy and analysis tools which may be used to guide the applicant through the application process.

In summary, each candidate application submittal should contain the following information:

1. BSPE HS1 – Application form
2. Benefit to Cost Ratio form
3. Raw crash data in Excel spreadsheet
4. Project location map
5. Project photographs
6. Estimated project cost breakdown
7. Project timeline
8. Project narrative
9. Uniform Application for State Grant Assistance
10. Uniform Grant Budget Template
11. Programmatic Risk Assessment Questionnaire
12. Conflict of Interest Form

Completed applications should be sent electronically to the appropriate District Local Roads and Streets Engineer by March 30, 2018. Questions concerning the Local HSIP may be directed to Mr. Thomas Winkelman, Local Program Development Engineer, by telephone at (217) 782-0675 or by email at Tom.Winkelman@illinois.gov.

Sincerely,

Maureen E. Kastl, P.E.
Engineer of Local Roads and Streets
TW/
Attachments

cc: Alan Ho, FHWA – Illinois Division
Erin Aleman, Director, Office of Programming and Planning
Paul Lorton, Bureau of Safety Programs and Engineering
David Marth, Illinois Association of County Engineers
Joseph McCoy, Illinois Municipal League
Bryan Smith, Township Officials of Illinois
Charlie Montgomery, Township Highway Commissioners of Illinois

Illinois Department of Transportation

HSIP Candidate Form

	FY

ID:	**Contract:**	**Award Date:**	**Completion Date:**
District:	**County:**		**City:**
Key route:	**Marked route:**		
Road Name:	**Intersecting Roadway:** N/A		☐
Length:	☐ N/A	**Mile station:** to	

Location Description:			
☐ **Rural**	☐ **Urban**	**Lanes:**	
AADT(Segment):	**Total Entering AADT (Intersection):**		**Speed Limit:** mph
Friction Test Results:	☐ N/A	**Lighting Present:** ☐ Y ☐ N	

CHSP Emphasis Area(s):	☐ District Documentation	☐ Systematic Improvements	☐ N/A
Peer Group:			☐ N/A
Other:			

Crashes Details

Year	Total Crashes	Fatal Crashes	Fatalities	A-Injury Crashes	A-Injuries	B-Injury Crashes	B-Injuries	C-Injury Crashes	C-Injuries	PDO	Wet-Weather Crashes	Darkness (Not lighted) Crashes
Total												

Location Description:	
Problem Description:	
Previous Safety Improvements:	
Collision Diagram: ☐ Y ☐ N	**Images:** ☐ Y ☐ N
Predominant Crash Types:	

Proposed Improvement(s):	

Estimated Project Cost ($000's): $	**Benefit-Cost Ratio:**
Local Projects:	
Annual Fatal Crash Rate (Fatal Crashes/100 Miles):	**Annual A-Injury Crash Rate (A-Injury Crashes/100 Miles**):
Local Roads Rural Functional Class:	
Approved:	**Central HSIP Approval Date:**
Signed: **State Safety Engineer**	**Funding:** ☐ HSIP ☐ HRRR ☐ RAIL
Comment:	

Distribution:	☐ OPP	☐ District	☐ BSPE	☐ LRS	☐ BDE

TECHNICAL MEMORANDUM

Guidelines for Local Agencies in Using the 2017 Local System Safety Tier Analysis Results

PREPARED FOR:	Illinois Department of Transportation, Bureau of Safety Programs and Engineering
PREPARED BY:	CH2M HILL, Inc. (CH2M)
DATE:	January 19, 2018

1.0 Introduction

The Illinois Department of Transportation (IDOT) conducted a safety tier analysis for the local system in 2017, and assigned the safety road index (SRI) for roadway segments and intersections. The local system safety tier analysis focuses on segments under the jurisdiction of county, township, municipality, or private sector, and the intersected points between them. The safety tier categorizes roadway segments and intersections into different SRIs based on their potential for safety improvements, providing a rating for relative comparison. The safety tier analysis results can help local agencies incorporate safety into their transportation management process and be used to identify locations for safety improvements. The 2017 local system safety tier analysis results are provided in the following file formats:

- Microsoft Excel file for all local intersections
- Microsoft Excel file for local intersections with critical SRI ratings
- Microsoft Excel file for all local segments
- Microsoft Excel file for local segments with critical SRI ratings
- Microsoft Access file for all local intersections and local intersections with critical SRI ratings
- Microsoft Access file for all local segments and local segments with critical SRI ratings
- PDF files of maps by county for all local intersections
- PDF files of maps by county for all local segments
- KMZ file for local intersections with critical, high, and medium SRI ratings
- KMZ file for local segments with critical, high, and medium SRI ratings

The technical memorandum summarizes the local system safety tier analysis results provided in the above-listed files, and presents guidelines for local agencies on how to use the safety tier analysis results.

2.0 Safety Tier Analysis Results

The local system safety tier analysis results are provided as Microsoft Excel files, Microsoft Access files, PDF maps, and KMZ files for diversified application scenarios and personalized users. The following subsections summarize results provided by the different files, as well as instructions for using the analysis results.

2.1 Safety Tier Analysis Results in Microsoft Excel Files

The Microsoft Excel files provide the safety tier analysis results for local intersections and segments. The results are provided in separate rows for individual intersections and segments.

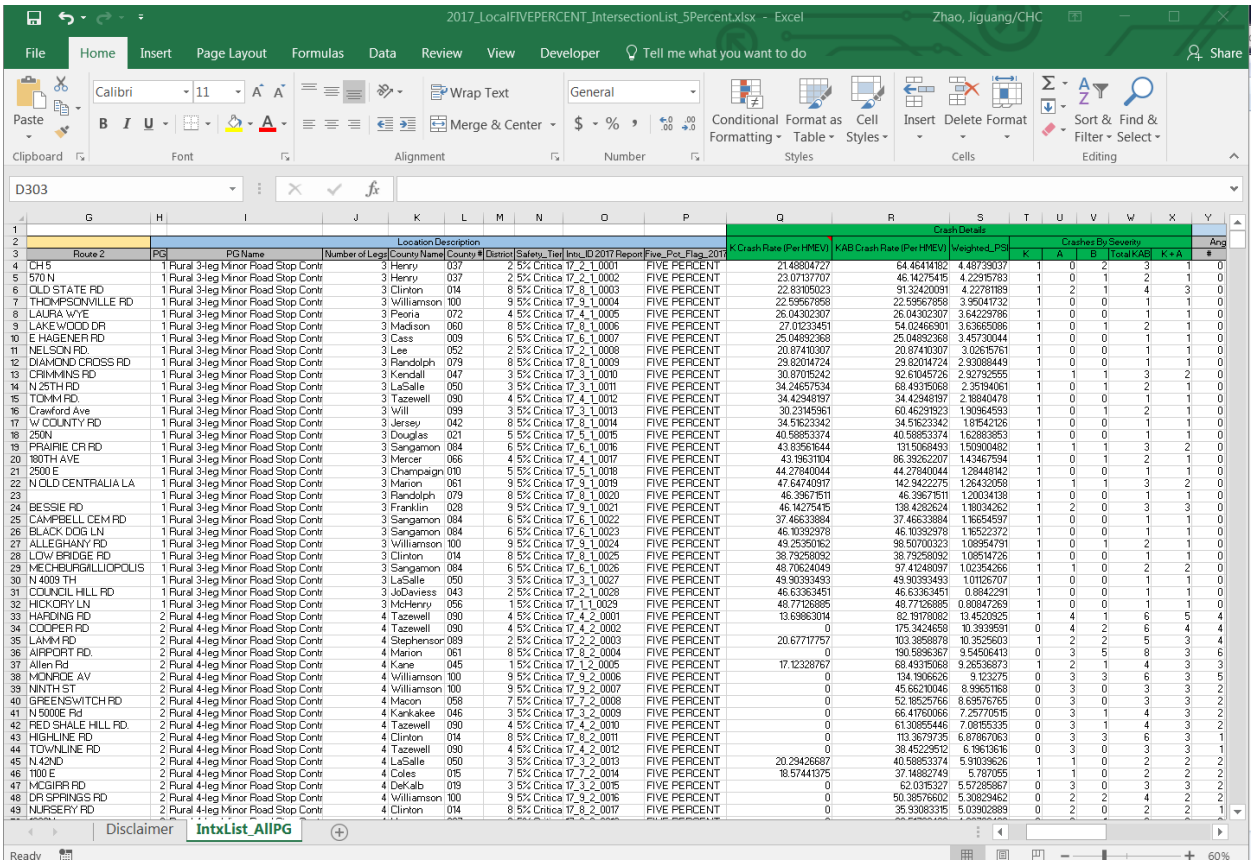
2.1.1 Intersections

For each intersection, the following information is provided in the Microsoft Excel spreadsheet:

- Roadway inventory number and intersection mile station

- Intersection X and Y coordinates
- Major and minor road average annual daily traffic
- Major and minor road name
- Intersection peer group (both code and text)
- Intersection number of legs
- County (both text and code) and IDOT district where the intersection is located
- Intersection SRI rating
- Intersection ID and SRI flag (only for intersections with critical SRI ratings)
- Intersection K (fatal) and KAB (fatal, incapacitating, and non-incapacitating) crash rate (per hundred million equivalent vehicles)
- Intersection weighted potential for safety improvements (PSI)
- Number of K, A (incapacitating), B (non-incapacitating), KAB and KA (fatal and incapacitating) crashes
- Number of KAB crashes by collision type, emphasis area, and surface condition at time of crashes

The SRI for local segments and intersections is categorized by peer group into critical, high, medium, low, or minimal, based on their PSI from high to low, where “critical” means the location has the highest potential for safety improvements, and “minimal” indicates the location is less likely to have safety benefits from treatments. Figure 2-1 is a screenshot of the safety tier analysis results for local intersections in the Microsoft Excel spreadsheet. Each row represents the analysis results for each local intersection. The same information is also provided for local intersections with critical SRI ratings in a separate Microsoft Excel file.



Route 2	PG	PG Name	Number of Legs	County Name	County #	District	Safety_Tier	Ints_ID 2017 Report	Five_Pct_Flag_2017	K Crash Rate (Per HMEV)	KAB Crash Rate (Per HMEV)	Weighted_PSI	K	A	B	Total KAB	K+A	Ang #
										Crash Details								
		Location Description											Crashes By Severity					
CH 5	1	Rural 3-leg Minor Road Stop Contr	3	Henry	037	2	5% Critica	17_2_1_0001	FIVE PERCENT	21.48804727	64.46414182	4.48739037	1	0	2	3	1	0
570 N	1	Rural 3-leg Minor Road Stop Contr	3	Henry	037	2	5% Critica	17_2_1_0002	FIVE PERCENT	23.07137707	46.14275415	4.22915783	1	0	1	2	1	0
OLD STATE RD	1	Rural 3-leg Minor Road Stop Contr	3	Clinton	014	8	5% Critica	17_8_1_0003	FIVE PERCENT	22.83105023	91.32420091	4.22781189	1	2	1	4	3	0
THOMPSONVILLE RD	1	Rural 3-leg Minor Road Stop Contr	3	Williamson	100	9	5% Critica	17_9_1_0004	FIVE PERCENT	22.59567858	22.59567858	3.95041732	1	0	0	1	1	0
LAURA WYE	1	Rural 3-leg Minor Road Stop Contr	3	Peoria	072	4	5% Critica	17_4_1_0005	FIVE PERCENT	26.04302307	26.04302307	3.64229786	1	0	0	1	1	0
LAKEWOOD DR	1	Rural 3-leg Minor Road Stop Contr	3	Madison	060	8	5% Critica	17_8_1_0006	FIVE PERCENT	27.01233451	54.02466901	3.63665086	1	0	1	2	1	0
E HAGENER RD	1	Rural 3-leg Minor Road Stop Contr	3	Cass	009	6	5% Critica	17_6_1_0007	FIVE PERCENT	25.04892368	25.04892368	3.45730044	1	0	0	1	1	0
NELSON RD.	1	Rural 3-leg Minor Road Stop Contr	3	Lee	052	2	5% Critica	17_2_1_0008	FIVE PERCENT	20.87410307	20.87410307	3.02615761	1	0	0	1	1	0
DIAMOND CROSS RD	1	Rural 3-leg Minor Road Stop Contr	3	Randolph	079	8	5% Critica	17_8_1_0009	FIVE PERCENT	29.82014724	29.82014724	2.93089449	1	0	0	1	1	0
CRIMMINS RD	1	Rural 3-leg Minor Road Stop Contr	3	Kendall	047	3	5% Critica	17_3_1_0010	FIVE PERCENT	30.87015242	92.61045726	2.92732595	1	1	1	3	2	0
N 25TH RD	1	Rural 3-leg Minor Road Stop Contr	3	LaSalle	050	3	5% Critica	17_3_1_0011	FIVE PERCENT	34.24657534	68.49315068	2.35194061	1	0	1	2	1	0
TOMM RD.	1	Rural 3-leg Minor Road Stop Contr	3	Tazewell	090	4	5% Critica	17_4_1_0012	FIVE PERCENT	34.42948197	34.42948197	2.18840478	1	0	0	1	1	0
Crawford Ave	1	Rural 3-leg Minor Road Stop Contr	3	Will	099	3	5% Critica	17_3_1_0013	FIVE PERCENT	30.23145961	60.46291923	1.90964593	1	0	1	2	1	0
W COUNTY RD	1	Rural 3-leg Minor Road Stop Contr	3	Jersey	042	8	5% Critica	17_8_1_0014	FIVE PERCENT	34.51623342	34.51623342	1.81542126	1	0	0	1	1	0
250N	1	Rural 3-leg Minor Road Stop Contr	3	Douglas	021	5	5% Critica	17_5_1_0015	FIVE PERCENT	40.58853374	40.58853374	1.62883853	1	0	0	1	1	0
PRAIRIE CR RD	1	Rural 3-leg Minor Road Stop Contr	3	Sangamon	084	6	5% Critica	17_6_1_0016	FIVE PERCENT	43.83561644	131.5068493	1.50900482	1	1	1	3	2	0
180TH AVE	1	Rural 3-leg Minor Road Stop Contr	3	Mercer	066	4	5% Critica	17_4_1_0017	FIVE PERCENT	43.19631104	86.39262207	1.43467594	1	0	1	2	1	0
2500 E	1	Rural 3-leg Minor Road Stop Contr	3	Champaign	010	5	5% Critica	17_5_1_0018	FIVE PERCENT	44.27840044	44.27840044	1.28449142	1	0	0	1	1	0
N OLD CENTRALIA LA	1	Rural 3-leg Minor Road Stop Contr	3	Marion	061	9	5% Critica	17_9_1_0019	FIVE PERCENT	47.64740917	142.9422275	1.26432058	1	1	1	3	2	0
	1	Rural 3-leg Minor Road Stop Contr	3	Randolph	079	8	5% Critica	17_8_1_0020	FIVE PERCENT	46.39671511	46.39671511	1.20034138	1	0	0	1	1	0
BESSIE RD	1	Rural 3-leg Minor Road Stop Contr	3	Franklin	028	9	5% Critica	17_9_1_0021	FIVE PERCENT	46.14275415	138.4282624	1.18034262	1	2	0	3	3	0
CAMPBELL CEM RD	1	Rural 3-leg Minor Road Stop Contr	3	Sangamon	084	6	5% Critica	17_6_1_0022	FIVE PERCENT	37.46633884	37.46633884	1.16654597	1	0	0	1	1	0
BLACK DOG LN	1	Rural 3-leg Minor Road Stop Contr	3	Sangamon	084	6	5% Critica	17_6_1_0023	FIVE PERCENT	46.10392978	46.10392978	1.16522372	1	0	0	1	1	0
ALLEGHANY RD	1	Rural 3-leg Minor Road Stop Contr	3	Williamson	100	9	5% Critica	17_9_1_0024	FIVE PERCENT	49.25350162	98.50700323	1.08954791	1	0	1	2	1	0
LOW BRIDGE RD	1	Rural 3-leg Minor Road Stop Contr	3	Clinton	014	8	5% Critica	17_8_1_0025	FIVE PERCENT	38.79258092	38.79258092	1.08514726	1	0	0	1	1	0
MECHBURGILLIOPOLIS	1	Rural 3-leg Minor Road Stop Contr	3	Sangamon	084	6	5% Critica	17_6_1_0026	FIVE PERCENT	48.70624049	97.41248097	1.02354266	1	1	0	2	2	0
N 4009 TH	1	Rural 3-leg Minor Road Stop Contr	3	LaSalle	050	3	5% Critica	17_3_1_0027	FIVE PERCENT	49.90393493	49.90393493	1.01126707	1	0	0	1	1	0
COUNCIL HILL RD	1	Rural 3-leg Minor Road Stop Contr	3	JoDaviess	043	2	5% Critica	17_2_1_0028	FIVE PERCENT	46.63363451	46.63363451	0.8842291	1	0	0	1	1	0
HICKORY LN	1	Rural 3-leg Minor Road Stop Contr	3	McHenry	056	1	5% Critica	17_1_1_0029	FIVE PERCENT	48.77126885	48.77126885	0.80847269	1	0	0	1	1	0
HARDING RD	2	Rural 4-leg Minor Road Stop Contr	4	Tazewell	090	4	5% Critica	17_4_2_0001	FIVE PERCENT	13.69863014	82.19178082	13.4520925	1	4	1	6	5	4
COOPER RD	2	Rural 4-leg Minor Road Stop Contr	4	Tazewell	090	4	5% Critica	17_4_2_0002	FIVE PERCENT	0	175.3424658	10.3939591	0	4	2	6	4	4
LAMM RD	2	Rural 4-leg Minor Road Stop Contr	4	Stephenson	089	2	5% Critica	17_2_2_0003	FIVE PERCENT	20.67717757	103.3858878	10.3525603	1	2	2	5	3	4
AIRPORT RD.	2	Rural 4-leg Minor Road Stop Contr	4	Marion	061	8	5% Critica	17_8_2_0004	FIVE PERCENT	0	190.5896367	9.54506413	0	3	5	8	3	6
Allen Rd	2	Rural 4-leg Minor Road Stop Contr	4	Kane	045	1	5% Critica	17_1_2_0005	FIVE PERCENT	17.12328767	68.49315068	9.26536873	1	2	1	4	3	3
MONROE AV	2	Rural 4-leg Minor Road Stop Contr	4	Williamson	100	9	5% Critica	17_9_2_0006	FIVE PERCENT	0	134.1906626	9.123275	0	3	3	6	3	5
NINTH ST	2	Rural 4-leg Minor Road Stop Contr	4	Williamson	100	9	5% Critica	17_9_2_0007	FIVE PERCENT	0	45.66210046	8.99651168	0	3	0	3	3	2
GREENSWITCH RD	2	Rural 4-leg Minor Road Stop Contr	4	Macon	058	7	5% Critica	17_7_2_0008	FIVE PERCENT	0	52.18525766	8.69576765	0	3	0	3	3	2
N 5000E Rd	2	Rural 4-leg Minor Road Stop Contr	4	Kankakee	046	3	5% Critica	17_3_2_0009	FIVE PERCENT	0	66.41760066	7.25770515	0	3	1	4	3	2
RED SHALE HILL RD.	2	Rural 4-leg Minor Road Stop Contr	4	Tazewell	090	4	5% Critica	17_4_2_0010	FIVE PERCENT	0	61.30855446	7.08155335	0	3	1	4	3	2
HIGHLINE RD	2	Rural 4-leg Minor Road Stop Contr	4	Clinton	014	8	5% Critica	17_8_2_0011	FIVE PERCENT	0	113.3679735	6.87867063	0	3	3	6	3	1
TOWNLINE RD	2	Rural 4-leg Minor Road Stop Contr	4	Tazewell	090	4	5% Critica	17_4_2_0012	FIVE PERCENT	0	38.45229512	6.19613616	0	3	0	3	3	1
N 42ND	2	Rural 4-leg Minor Road Stop Contr	4	LaSalle	050	3	5% Critica	17_3_2_0013	FIVE PERCENT	20.29426687	40.58853374	5.91039626	1	1	0	2	2	2
1100 E	2	Rural 4-leg Minor Road Stop Contr	4	Coles	015	7	5% Critica	17_7_2_0014	FIVE PERCENT	18.57441375	37.14882749	5.787055	1	1	0	2	2	2
MCGIRR RD	2	Rural 4-leg Minor Road Stop Contr	4	DeKalb	019	3	5% Critica	17_3_2_0015	FIVE PERCENT	0	62.0315327	5.57285867	0	3	0	3	3	2
DR SPRINGS RD	2	Rural 4-leg Minor Road Stop Contr	4	Williamson	100	9	5% Critica	17_9_2_0016	FIVE PERCENT	0	50.38576602	5.30829462	0	2	2	4	2	2
NURSERY RD	2	Rural 4-leg Minor Road Stop Contr	4	Clinton	014	8	5% Critica	17_8_2_0017	FIVE PERCENT	0	35.93083315	5.03902889	0	2	0	2	2	1

Figure 2-1. Screenshot of Safety Tier Analysis Results for Local Intersections in the Microsoft Excel Spreadsheet

2.1.2 Segments

The following information is provided for local segments in the Microsoft Excel spreadsheet:

- Roadway inventory number
- Roadway segment beginning and ending station
- Segment length
- Annual vehicle mileage travelled (VMT)
- Segment peer group (both text and code)
- County (both text and code) and IDOT district where the segment is located
- Road name
- Segment SRI rating
- Segment ID and SRI flag (only for segments with critical SRI ratings)
- K (per hundred million VMT) and KAB (per million VMT) crash rates
- Roadway segment weighted PSI
- Number of K, A, B, KAB, and KA crashes
- Number of KAB crashes by collision type, emphasis area, and surface condition at time of crashes

Figure 2-2 is a screenshot of safety tier analysis results for local segments in the Microsoft Excel spreadsheet. Each row represents the analysis results for one local segment. It should be mentioned that the safety tier analysis results are presented for the sliding windows created in the safety tier analysis, not the original roadway segments in the Illinois Roadway Information Systems database. Users interested in the sliding window analysis can refer to the IDOT technical memorandum *Network Screening Analysis for the Illinois Local Roadways (Local Safety Tier Process)* for more details. The same information is also provided for local segments with critical SRI ratings in a separate Microsoft Excel file.

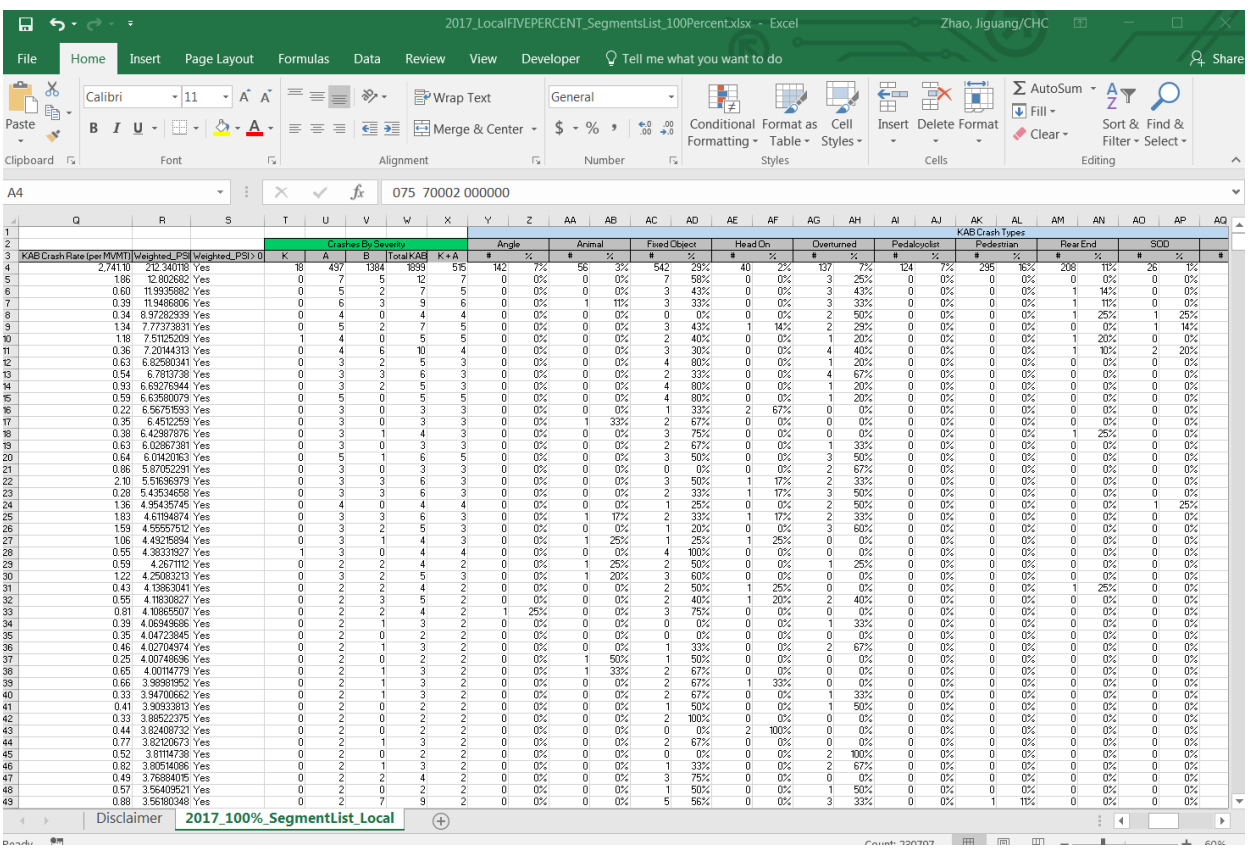


Figure 2-2. Screenshot of Safety Tier Analysis Results for Local Segments in the Microsoft Excel Spreadsheet

2.2 Safety Tier Analysis Results in Microsoft Access Files

The Microsoft Access files also provide the safety tier analysis results for local intersections and segments. The data items provided by the Microsoft Access files are the same items as in the Microsoft Excel spreadsheets. The benefit of Microsoft Access file is that geographic information for roadway segments and intersections can also be provided so that users can easily identify the roadway locations in a geographic information system (GIS) environment. Accordingly, a GIS platform (usually ArcGIS 10 or higher version) is required for reviewing the analysis results.

2.2.1 Intersections

Figure 2-3 is a screenshot of the safety tier analysis results for local intersections in a GIS environment. Users can find the safety tier analysis results for all local intersections in the corresponding attribute table, and they can even zoom to any intersections by clicking on the related row in that table. Two attribute tables are included in the Microsoft Access file, one for all local intersections and the other for local intersections with critical SRI ratings.

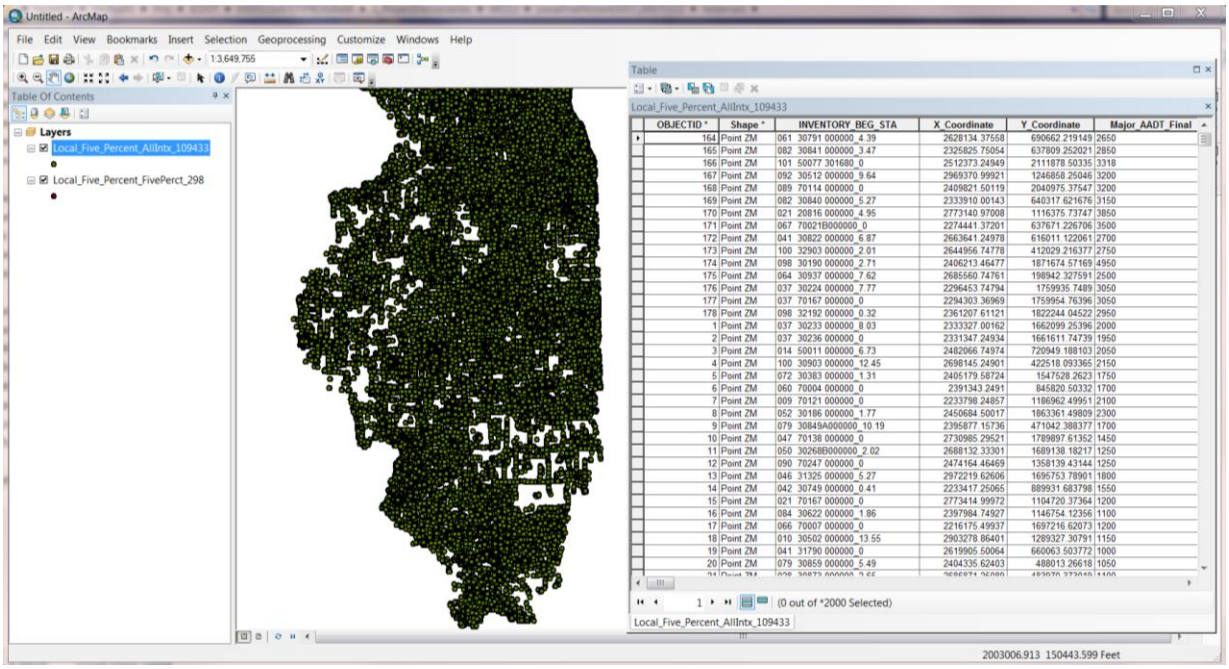


Figure 2-3. Screenshot of the Safety Tier Analysis Results for Local Intersections in the GIS Environment

2.2.2 Segments

Figure 2-4 is a screenshot of the safety tier analysis results for local segments in the GIS environment. As with local intersections, users can check the safety tier analysis results for all local segments in the attribute table. Again, two attribute tables are included in the Microsoft Access file, one for all local segments and the other for local segments with critical SRI ratings.

2.3 Safety Tier Analysis Results in KMZ Files

Many state and local agencies still do not have access to a GIS platform or are not experienced in applying the tool in their engineering practices. The provided KMZ files allow users to locate the local segments and intersections outside of a GIS platform. Google Earth is required to open the KMZ files.

2.3.1 Intersections

For file size limitation, only intersections with critical, high, and medium SRI ratings are included in the KMZ file. In the KMZ file, users are directed to the intersection after clicking the intersection ID on the left side. The detailed intersection safety tier information is visible in a pop-up view, as shown in

Figure 2-5. For convenience, users can place their cursors on the file name in the list on the left side of the screen, and sort the list from A to Z, to more easily locate the intersection under investigation.

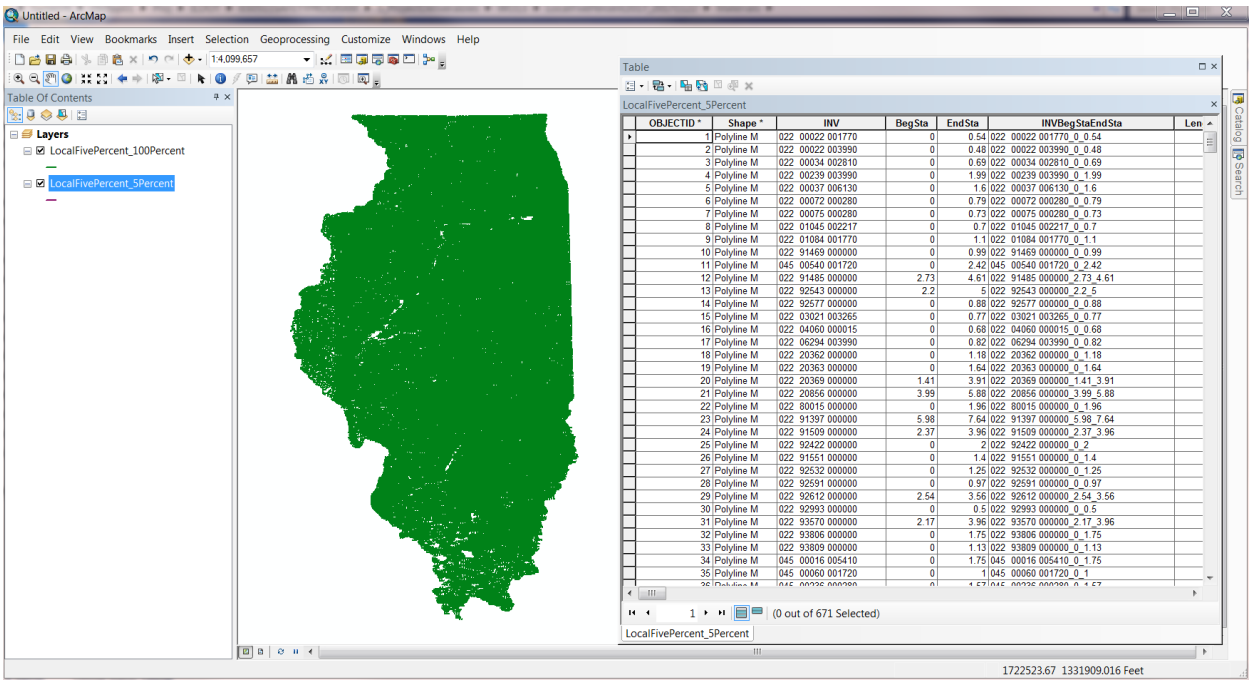


Figure 2-4. Screenshot of the Safety Tier Analysis Results for Local Segments in the GIS Environment

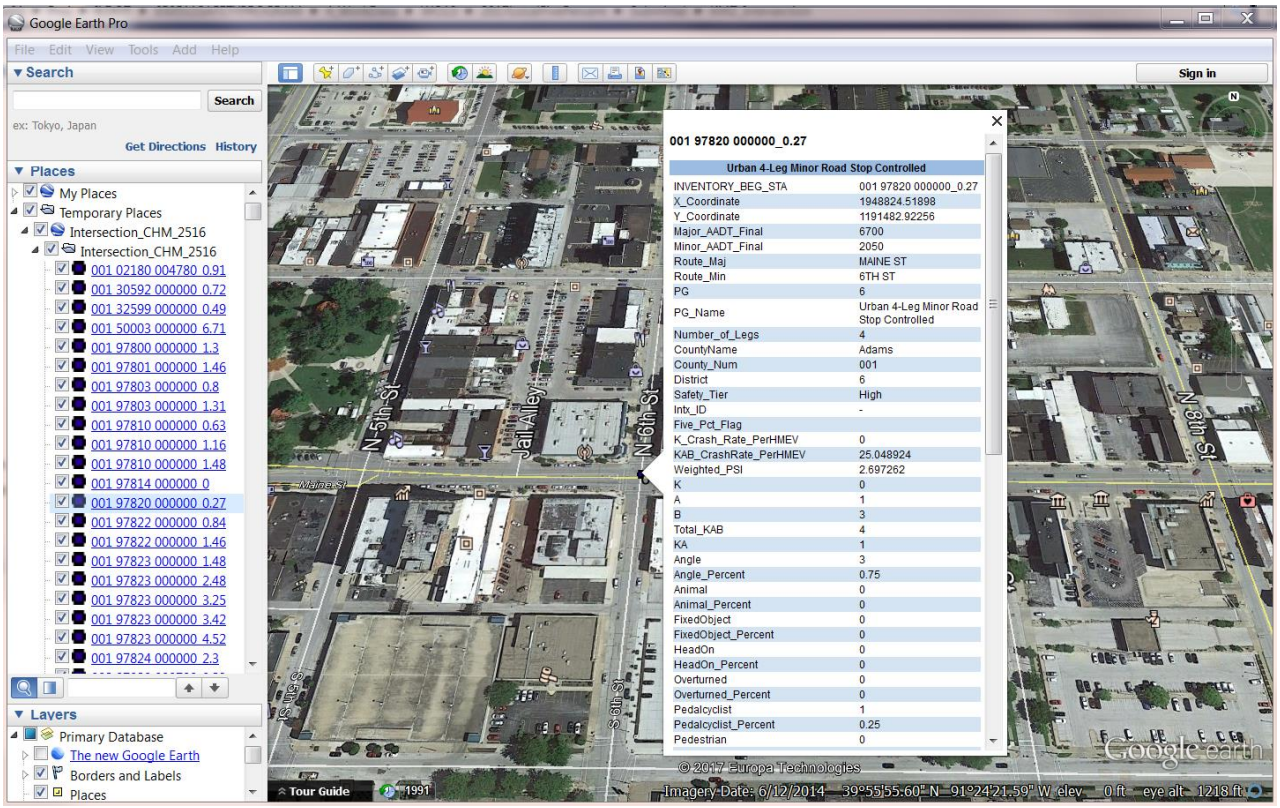


Figure 2-5. Screenshot of the Safety Tier Analysis Results for Local Intersections in KMZ File

2.3.2 Segments

Figure 2-6 is a screenshot of the safety tier analysis results for local segments in KMZ File. As a result of file size limitations, only segments with critical, high, and medium SRI ratings are included in the KMZ file. The KMZ file can help users locate the roadway segments and check relevant information. The data items shown alongside the segment are identical to the data items in the Microsoft Access file.

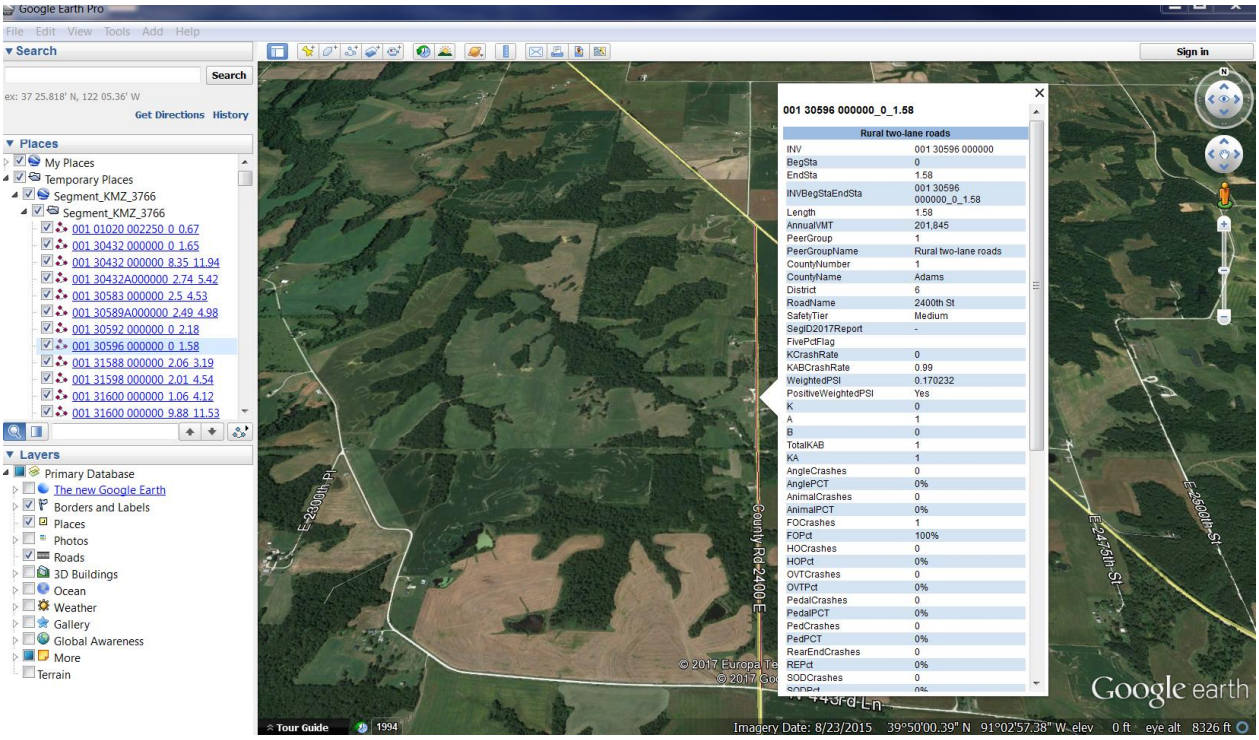


Figure 2-6. Screenshot of the Safety Tier Analysis Results for Local Segments in KMZ File

2.4 Safety Tier Analysis Results on Maps

To help local agencies use the local system safety tier analysis results, maps are created by county in ArcGIS and printed into PDF files. Two maps are created for each county, one for segments and the other for intersections. In each map, the local segments and intersections are color-coded by their safety tier, and major state routes are plotted on the map for reference. Specifically, IDs are provided for all locations with critical SRI ratings and printed in red. Local agencies can use the map to evaluate the safety performance of all facilities within their jurisdictions and pinpoint the locations with potential for safety improvements.

2.4.1 Intersections

Figure 2-7 is a screenshot of the safety tier analysis results map for local intersections in one county. It should be pointed out that the map is selected for illustration purpose only and does not necessarily indicate any safety concerns for that county. In the map, intersections with different SRI ratings are coded in different colors and point sizes. Specifically, intersections with critical SRI ratings are coded with big red points, and intersection IDs are printed alongside the intersections.

For the selected county, the SRI rating is “minimal” for the majority intersections. The traffic control information for many points is not available or the points are not intersections; therefore, those points are not included in the local intersection safety tier analysis. For those intersections, no SRI ratings are provided.

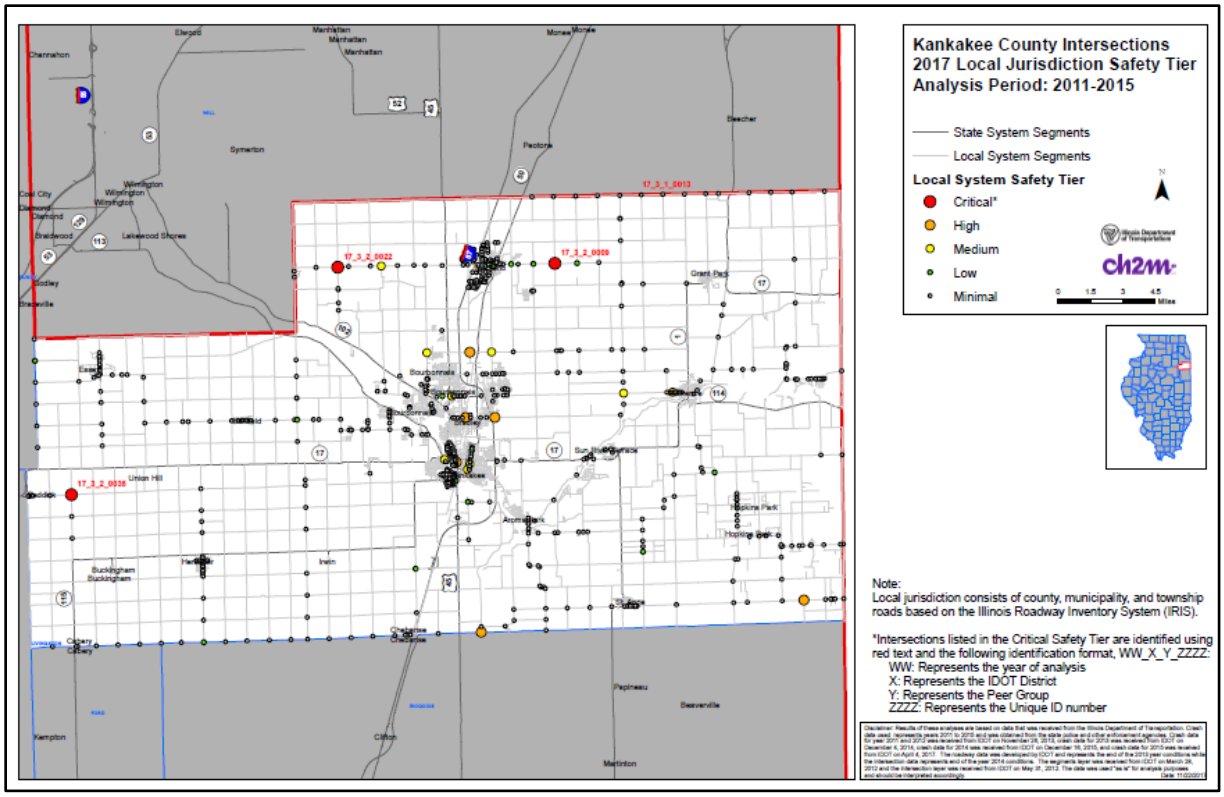


Figure2-7. Screenshot of the Safety Tier Analysis Results for Local Intersections in PDF Map

2.4.2 Segments

Figure 2-8 is a screenshot of the safety tier analysis results map for local segments in one county.

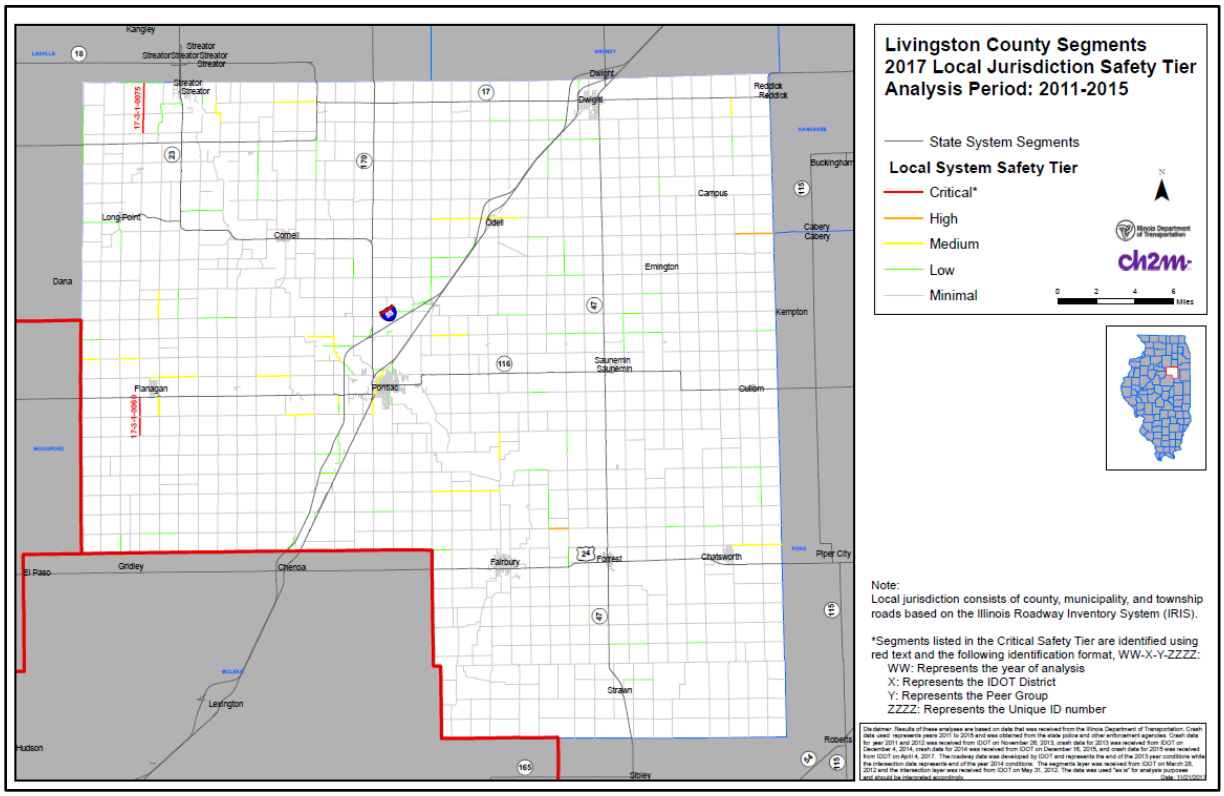


Figure 2-8. Screenshot of the Safety Tier Analysis Results for Local Segments in PDF Map

As with local intersections, roadway segments with different SRI ratings are coded in different colors. Local agencies can use the map to evaluate safety concerns within their jurisdiction and identify projects for safety improvement.

3.0 Guidelines for Local Agencies in Using the Analysis Results

IDOT provided local safety tier analysis result data in a number of document formats. Local agencies are encouraged to use the quantitative safety performance in their transportation project planning and programming process. The following guidelines are intended to facilitate local agency access to and use of results:

1. **Apply the analysis results to prioritize safety improvement projects.** The total number of intersections and overall mileage of segments for local system are high; therefore, the safety funding cannot address or alleviate the safety concerns for all of them. Local agencies can prioritize the locations for safety improvements based on the location's SRI rating and focus on those locations with high potential for safety improvements (specifically those locations with a critical SRI rating).
2. **Double-check roadway geometric, traffic control, and other data**. The local system safety tier analysis was conducted based on the data provided by IDOT. Numerous efforts have been endeavored to enhance accuracy of the analysis results. However, because sample sizes are very large, it is possible that some errors exist within the data and on the maps. As candidate safety improvement projects are identified by local agencies, they are encouraged to double-check peer group classifications, geometric features, and other aspects of the data. Please notify the IDOT Bureau of Safety Programs and Engineering (BSPE) if substantial concerns are identified with the data.
3. **Identify safety improvement projects with systemic approach**. Local segments with critical or high SRI ratings are sometimes short and sparsely distributed along a corridor. Under such circumstances, local agencies can apply the systemic approach to identify projects for safety improvements. The IDOT guideline *Systemic Safety Improvements: Analysis, Guidelines and Procedures* (2014) can be referred for more details.
4. **Use the analysis results to identify high risk rural roads.** A high-risk rural road (HRRR) is defined as any roadway functionally classified as a rural major or minor collector, or a rural local road with significant safety risks. Local agencies can use the local safety tier analysis results to identify HRRR locations for funding through the HRRR program.
5. **Refer to results from other safety analysis tool**. IDOT has developed a series of tools, such as Safety Portal, Data Trees, Heat Maps, Emphasis Area Tables and Top 50 Curves, to implement a data-driven roadway safety-management process in Illinois. Local agencies are recommended to check results from these tools and other references when using the local safety tier analysis results in the HSIP application.
6. **Conduct project-level safety analysis for short-list locations**. The local safety tier analysis assigned SRI ratings for segments and intersections. To maximize benefits for safety dollars, it is suggested that local agencies prioritize their investment on locations with critical or high SRI ratings. For the short-list locations with high potential for safety improvements, it is suggested that local agencies conduct project-level safety analysis to identify the crash-contributing factors and propose appropriate countermeasures for alleviating safety concerns. Local agencies can apply tools, such as the IDOT HSM Crash Prediction Tool and Benefit/Cost Tool that IDOT developed previously for the project-level safety analysis.
7. **Update the HSIP status in the response form.** IDOT has developed the "Local System Safety Tier Response Form" to track the HSIP status of locations with critical SRI ratings. It is suggested that

local agencies update the location's HSIP status and return the results back to IDOT annually. The information will be used to evaluate effectiveness of HSIP projects in future.

8. **Reach out to IDOT for additional guidance**. Local agencies are encouraged to reach out to IDOT District Local Roads Engineers, District Safety Committees and BSPE for guidance on HSIP application process. Local agencies can also contact IDOT BSPE by telephone at 217-782-3568 for technical guidance on application of local system safety tier analysis results. IDOT BSPE will guide the local agencies to the appropriate resources to help resolve their technical challenges.

McHenry County
Division of Transportation

Joseph R. Korpalski, Jr., P.E.
Director of Transportation/County Engineer

Example Application

July 12, 2017

Mr. Anthony Quigley, P.E.
Region 1 Engineer
Illinois Department of Transportation
201 West Center Court
Schaumburg, IL 60196

Attention Mr. Christopher Holt, Bureau Chief of Local Roads and Streets

Re: HSIP Application FY 2019
Wilmot Road (V44) at Main Street (A17)
Intersection Improvements
McHenry County

Dear Mr. Quigley:

The County desires to improve the safety of the Wilmot Road at Main Street intersection. Between 2012 and 2016, a total of 11 crashes occurred at the intersection. The intersection also appears on McHenry County 5% Location Maps. The injuries are classified as follows: Type A (2), Type B (1), and Type C (3). To reduce the number of crashes, the intersection will be upgraded with Flashing Yellow Arrows and high visibility Traffic Signal Backplates with Retroreflective Borders. Currently all four approaches allow protected permissive lefts.

The HSIP application and forms are attached and contain the following information:

1. BSPE HS1 – Application form
2. Benefit to Cost Ratio form
3. Project location maps
4. Project photographs
5. Estimate of Cost
6. Project timeline
7. Uniform Application for State Grant Assistance
8. Programmatic Risk Assessment Questionnaire

This submittal addresses comments previously received from the IDOT Safety Committee on the initial application. The County appreciates your consideration of this funding request and looks forward to working with IDOT staff to implement this safety project. If you have any questions or need additional information, please contact me at baredding@co.mchenry.il.us or (815) 334-4980.

Sincerely,

Ben Redding

Benjamin Redding, P.E.
Design Manager

16111 Nelson Road • Woodstock • IL • 60098
Phone (815) 334-4960 • Fax (815) 334-4989

Illinois Department of Transportation

HSIP Candidate Form

FY 2019

ID:	**Contract:**	**Award Date:**	**Completion Date:**
District: 1	**County:** McHenry		**City:** Spring Grove
Key route: 9-168	**Marked route:** County Highway V44		
Road Name: Wilmot Road	**Intersecting Roadway:** N/A Main Street		☐
Length:	■ N/A	**Mile station:** to	

Location Description: (See below)

☐ **Rural**	■ **Urban**	**Lanes:** Wilmot Rd - 2 lanes; Main St - 2 lanes	
AADT(Segment):	**Total Entering AADT (Intersection):** Wilmot- 8,785; Main- 5,733		**Speed Limit:** Wilmot-50 mph; Main-40 mph
Friction Test Results:	■ N/A	**Lighting Present:** ■ Y ☐ N	

CHSP Emphasis Area(s): Intersections ☐ District Documentation ☐ Systematic Improvements ☐ N/A

Peer Group: Peer Group 7 - Urban Signalized Intersection ☐ N/A

Other:

		Crashes Details										
Year	Total Crashes	Fatal Crashes	Fatalities	A-Injury Crashes	A-Injuries	B-Injury Crashes	B-Injuries	C-Injury Crashes	C-Injuries	PDO	Wet-Weather Crashes	Darkness (Not lighted) Crashes
2012	2	0	0	0	0	0	0	0	0	2	0	1
2013	5	0	0	1	2	0	0	1	1	4	2	0
2014	2	0	0	0	0	1	1	0	1	1	0	0
2015	2	0	0	0	0	0	0	1	1	1	0	0
2016	0	0	0	0	0	0	0	0	0	0	0	0
Total	11	0	0	1	2	1	1	2	3	8	2	1

Location Description: Signalized intersection with protected-permitted left turn phasing in all four directions. Each intersection approach has two lanes; a exclusive left turn lane and a through / right turn lane.

Problem Description: The Wilmot Rd and Main St intersection is on McHenry County's Local 5% Most Severe Safety Needs List.

Previous Safety Improvements: None known

Collision Diagram: ☐ Y ■ N **Images:** ■ Y ☐ N

Predominant Crash Types: Rear-end and angle crashes

Proposed Improvement(s): Changing left turn phasing from protected-permissive to flashing yellow arrow (FYA) by replacing all the left turn signal heads at each intersection approach. Replacing all the mast arm traffic signal backplates with backplates that have yellow micro-prismatic retroreflective sheeting along the outer edge in order to frame the traffic signal head and make them more visible to roadway users.

Estimated Project Cost ($000's): $ 126,900 **Benefit-Cost Ratio:** 1.58

Local Projects:

Annual Fatal Crash Rate (Fatal Crashes/100 Miles): **Annual A-Injury Crash Rate (A-Injury Crashes/100 Miles):**

Local Roads Rural Functional Class: Wilmot- Minor Arterial; Main - Major Collector

Approved: **Central HSIP Approval Date:**

Signed:

State Safety Engineer

Funding: ■ HSIP ☐ HRRR ☐ RAIL

Comment:

Distribution: ☐ OPP ☐ District ☐ BSPE ☐ LRS ☐ BDE

PROJECT DESCRIPTION - PROJECT DATA INPUT (INTERSECTIONS)

Project:	Wilmot Road at Main Street					*Prepared by:*	TranSystems
District:	1	*County:*	McHenry	*City:*	Spring Grove	*Date*	5/16/2017
Key Route:	9-188	*Marked Route:*		*MilePost:*		*Current AADT:* Major Street	8785
Location Description:	Wilmot Road at Main Street					Minor Street	5733

Crash data:	5	Years		
	From	2012	to	2016

Traffic Growth factor:	1.3%
Interest rate:	4.0%

Peer Group 7 - Urban Signalized Intersection

Peer Group:

Messages (See Manual for Details)

INTERSECTION CRASH SEVERITY DISTRIBUTION BY CRASH TYPE FOR ANALYSIS PERIOD

Crash Type	All Crashes	Angle	Animal	Fixed Object	Head On	Left Turn	Other Noncollision	Other Object	Overturned	Pedestrian	Pedalcyclist	Parked Vehicle	Rear End	Right Turn	Sideswipe Same Direction	Sideswipe Opposite Direction	Turning	Train	Night Time	Wet Pavement	Total
Crash Severity	*ALL*	*AG*	*AN*	*FO*	*HO*	*LT*	*OtherNC*	*OtherO*	*OVT*	*PD*	*PDC*	*PKV*	*RE*	*RT*	*SSD*	*SOD*	*T*	*TR*	*NGT*	*WP*	*TOT*
Fatal Crashes																					0
A-Injury Crashes		1																			1
B-Injury Crashes		1																			1
C-Injury Crashes													2								2
PDO Crashes		1			1								5				1				8

INTERSECTION BENEFIT COST ANALYSIS

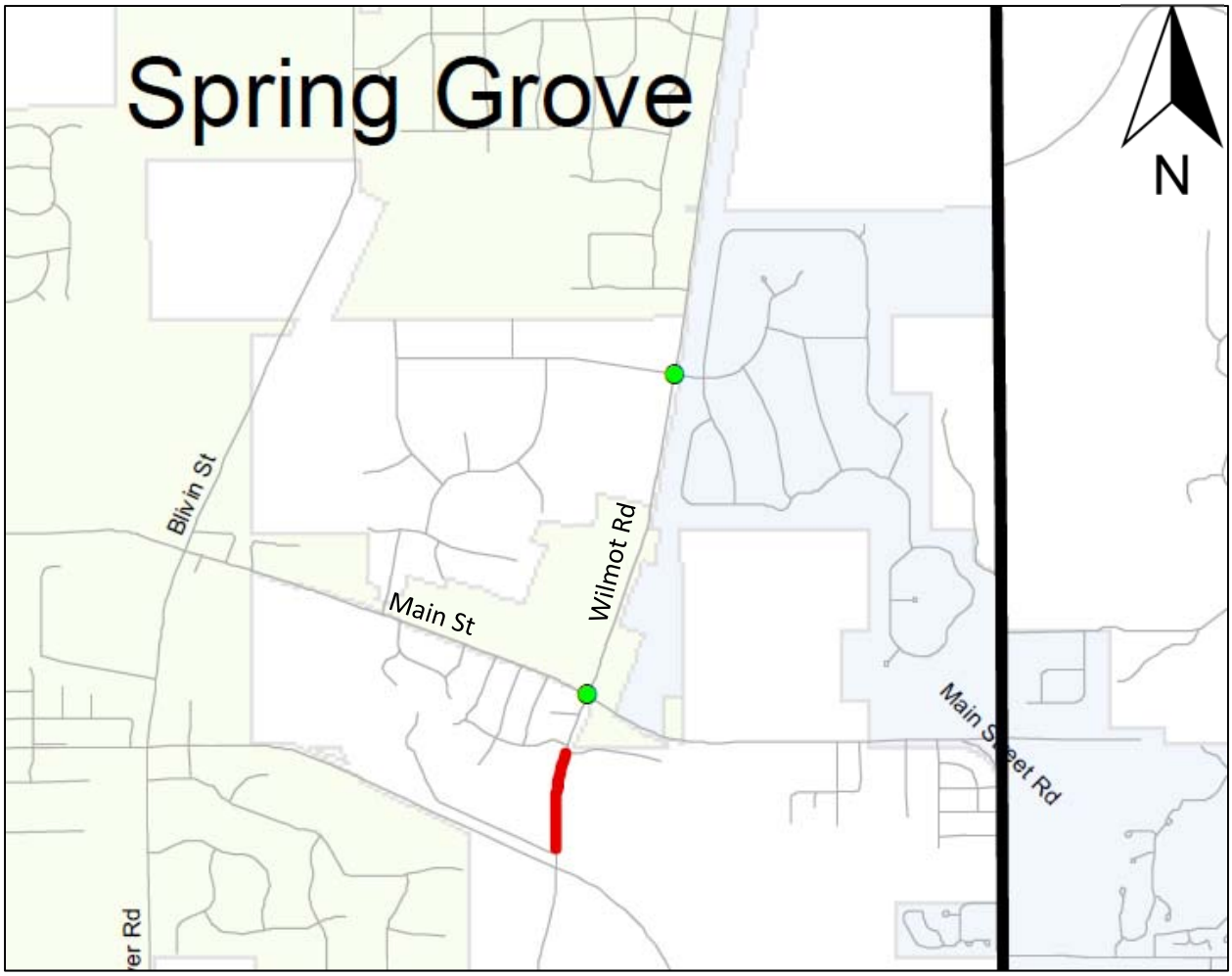
BENEFIT CALCULATIONS			COUNTERMEASURE COST CALCULATIONS						
COUNTERMEASURE	*CMF **	*Crash Type affected by this improvement*	*Unit Cost*	*Quantity*	*Units*	*Total Cost*	*Service Life*	*Present Worth*	*EUAC ***
1.4.14.AL.1 3 inch Yelow Retroreflective Sheeting to Signal Backplates	0.85	All	$16,927	1	Unit Qnty	$16,927	10	$28,362	$2,551
1.4.15.AL.1 Change LT Phasing from Protected-Permissive to Flashing Yellow Arrows	0.98	All	$27,493	4	Unit Qnty	$109,972	15	$109,972	$9,891
		All							
		All							
TOTAL BENEFIT	*$19,629*		*TOTAL COST*						*$12,442*

BENEFIT/ COST	1.58	ANNUAL NUMBER OF FATALITIES POTENTIALLY PREVENTED	0.00

****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

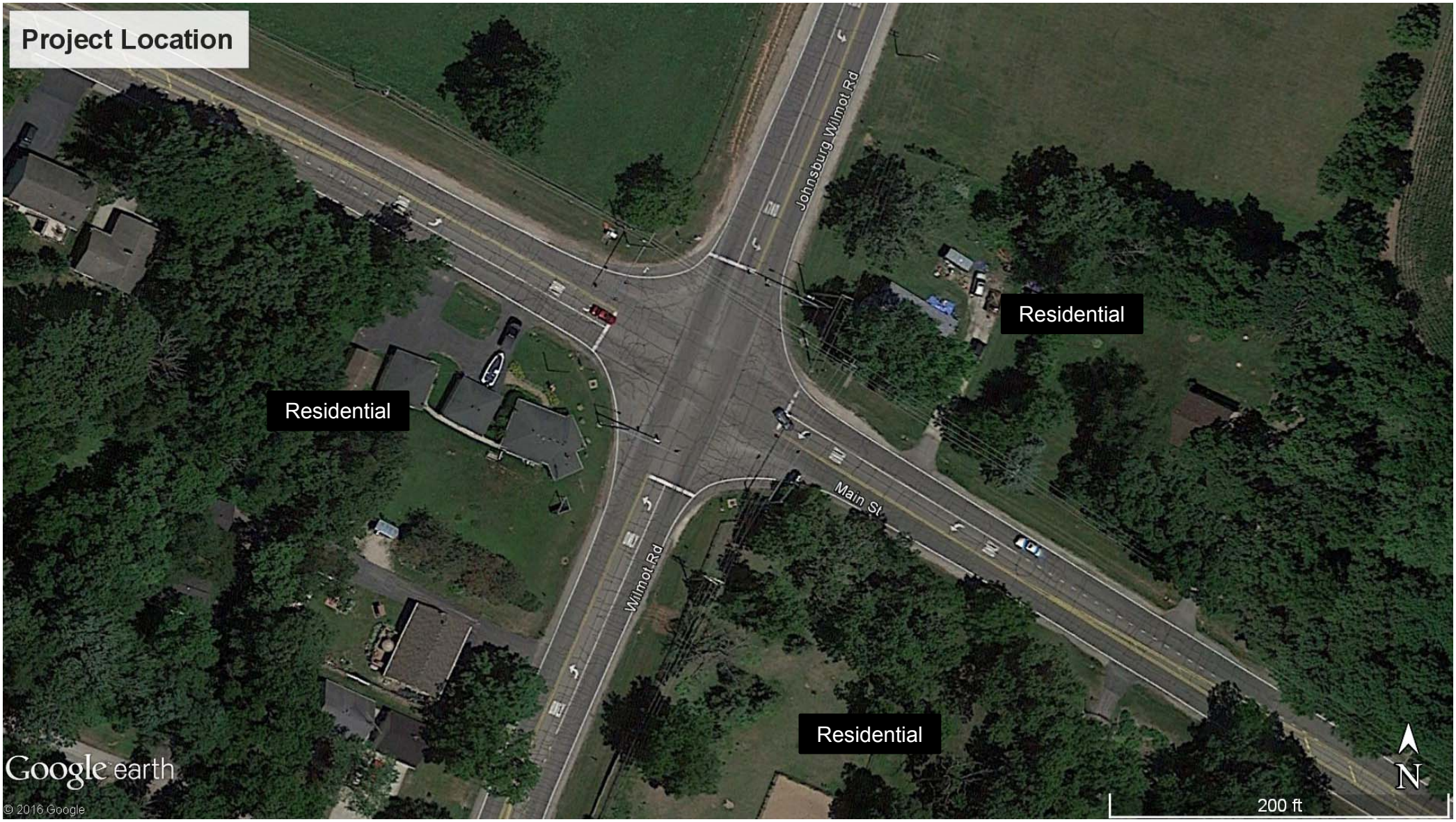


Legend

- Local Five Percent Intersections
- Local Five Percent Segments

Chicago Metropolitan Agency for Planning

This map was produced by The Chicago Metropolitan Agency for Planning based on information provided by the Illinois Department of Transportation Bureau of Safety Engineering. The data represents an IDOT analysis of crashes that occurred between 2007 and 2011 on the local roads. All Tier and Criteria levels have been aggregated and included. The map is only intended to be used to determine if a proposed CMAQ project includes a road segment or intersection that has been identified as a Five-Percent location. Produced 12/02/2014.


Project Location
Johnsburg Wilmot Rd
Residential
Residential
Main St
Wilmot Rd
Residential
Google earth
© 2016 Google
N
200 ft

NB Wilmot Rd
ONLY
EAST
MAIN ST
END
DETOUR
A 17
Main St
Google earth
© 2016 Google
© 2017 Google
N

SB Wilmot Rd
ONLY
Google earth
© 2016 Google
© 2017 Google
N

WB Main St
ONLY
Google earth
© 2016 Google
© 2017 Google

EB Main St
ONLY
Google earth
© 2016 Google
© 2017 Google

HSIP FUNDING
INTERSECTION IMPROVEMENTS
WILMOT ROAD AT MAIN STREET
MCHENRY COUNTY, ILLINOIS

June 2, 2017

PRELIMINARY ESTIMATE OF COST

1. CONSTRUCTION

	TOTAL QTY.	UNIT	UNIT PRICE	TOTAL	HSIP	LOCAL MATCH
Intersection Improvements				$ 56,600		
SIGNAL HEAD, LED, 1-FACE, 4-SECTION, BRACKET MOUNTED	4	EACH	$ 900	$ 3,600		
SIGNAL HEAD, LED, 1-FACE, 4-SECTION, MAST ARM MOUNTED	4	EACH	$ 1,100	$ 4,400		
STEEL COMBINATION MAST ARM ASSEMBLY & POLE < 28 FT	1	EACH	$ 7,000	$ 7,000		
STEEL COMBINATION MAST ARM ASSEMBLY & POLE < 40 FT		EACH	$ 9,000	$ -		
CABLE AND CONDUIT	2,000	FOOT	$ 2.00	$ 4,000		
CONCRETE FOUNDATION	10	FOOT	$ 300	$ 3,000		
REMOVE EXISTING TRAFFIC SIGNAL EQUIPMENT	1	EACH	$ 1,500	$ 1,500		
TRAFFIC SIGNAL BACKPLATE, RETROREFLECTIVE	8	EACH	$ 850	$ 6,800		
MAINTENANCE OF EXISTING TRAFFIC SIGNAL INSTALLATION	1	EACH	$ 500	$ 500		
TEMPORARY TRAFFIC SIGNALS	1	EACH	$ 25,000	$ 25,000		
CONTROLLER SOFTWARE UPGRADE	1	EACH	$ 300	$ 300		
MODIFY EXISTING CONTROLLER CABINET	1	EACH	$ 500	$ 500		
Construction Layout (2%)	1	LSUM	$ 1,100	$ 1,100		
Mobilization (6%)	1	LSUM	$ 3,300	$ 3,300		
Traffic Control & Protection (5%)	1	LSUM	$ 2,800	$ 2,800		
Contingency (20%)				$ 12,800		
Subtotal -- Construction (2017$)				$ 76,600		
Subtotal -- Construction (2019$)*				$ 82,100	$ 73,890	$ 8,210
* 3.5% annual increase				100%	90%	10%
2. ENGINEERING						
Phase I & II Engineering	320	HRS	$ 140	$ 44,800		
Phase III Engineering				IN HOUSE		
Subtotal -- Engineering				$ 44,800	$ 40,320	$ 4,480
				100%	90%	10%
PROJECT TOTAL:				$ 126,900	$ 114,210	$ 12,690
				100%	90%	10%

NOTE: Replace Westbound Mast Arm

Wilmot Road at Main Street
HSIP Intersection Improvements
McHenry County Illinois

Project Timeline
May 26, 2017

	Begin	End	Duration (Months)
Application Approval	June 2, 2017	August 1, 2017	2
Phase I Engineering	January 2, 2018	July 1, 2018	6
Phase II Engineering	July 1, 2018	October 29, 2018	4
Letting	December 14, 2018	January 18, 2019	1
Secure Materials	March 19, 2019	May 18, 2019	2
Construction	May 19, 2019	September 16, 2019	4
		Total	**19**