



*"... meeting community needs ... enhancing quality of life."*

**DEPARTMENT OF PUBLIC WORKS**  
**Engineering Division – Traffic Section**  
**2625 E. Glendale Avenue**  
**Appleton, WI 54911**  
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**To:** Municipal Services Committee & Finance Committee  
**From:** Mike Hardy, Assistant City Traffic Engineer  
**Date:** August 15, 2023  
**Re:** Grant Application Request - Signals and ITS Standalone Program (SISP)

The DPW-Traffic Section is requesting authorization to apply for grant funds through the Wisconsin Department of Transportation (WisDOT) SISP program. Our grant application is to replace twenty-one (21) existing traffic signal computers/controllers and software along WisDOT connecting highways through Appleton. The total estimated cost is \$220,750, of which the City's cost share would be 10% (\$22,075). If awarded, the City's matching funds would be included in the 2025 City budget proposal. The deadline for this grant application submission is September 8, 2023.

These grant funds are made available for traffic signal improvements along WisDOT roadway facilities within the City limits that are under Connecting Highway Agreement. In Appleton, this involves State Highways 47, 96 and 125 as detailed in the grant application. Discussions with WisDOT this summer introduced us to this grant opportunity. City of Lacrosse was successfully awarded this grant to replace and upgrade their traffic signal control system.

The DPW-Traffic Section sees this as the start of a much-needed migration to a new traffic signal control system. As recently as the 2021, a CIP sheet was included in the approved City budget to initiate this migration in 2022. It was removed in the subsequent year due to budget constraints.

The basis for this proposed system replacement is our experience with Siemens brand control equipment and software has had a steady decline. The result of this decline is increased time and operational costs. There continues to be a growing number of significant operational concerns, leaving us with diminished functionality and impeding our ability to properly operate our system. More importantly, we have experienced a growing lack of response to the issues we identify and bring to their attention, and little to no updating of the software, which presents a risk that our system could become unstable or unusable.

In recent months, the situation has worsened to the point that a trusted traffic control vendor in our state broke off their agreement with Siemens and has taken on a new product line. Based on this experience and our research, we feel it is in the City's best interest to move away from Siemens as soon as possible to minimize the risk of a system failure. It is worth noting that WisDOT has transitioned away from Siemens to a different manufacturer across the entire state for the same reasons. Many other large communities in Wisconsin have either already made this transition, or in the process of making the change.

The City owns and maintains eighty-two (82) signal-controlled intersections. This grant would procure over half of the software/licensing needs for the city (prorated cost structure), and about twenty-five percent of the intersection computers/controllers. At a cost of \$22,075, this would be a cost-effective way to start this much-needed migration. DPW would include in our 2025 budget proposal the necessary funds for the remaining software licenses and intersection computers/controllers (\$350,000).



*Wisconsin Department of Transportation (WisDOT)*  
**Signals and ITS Standalone Program Project Application Form**

**GENERAL INSTRUCTIONS**

**MUNICIPAL APPLICATIONS DUE TO REGIONAL LIAISON: September 8, 2023**

**\*\*Municipalities may submit a maximum of two applications per calendar year.\*\***

**REGIONAL APPLICATIONS DUE: September 22, 2023**

The following application will be used to evaluate and determine award of Signals and ITS projects to be funded as budget permits. Each applicant requesting funds from the Signals and ITS Standalone Program must submit the following information:

- Completed Signals and ITS Standalone Program Project Application Form (one for each project request)
- Any supporting materials deemed necessary by the Region or municipalities

**Project Application Form:**

- 1 Project Identification – Fill in those areas that are applicable to your project.
- 2 Project Type – Identify the proposed project type.
- 3 Project Information – Describe the project in as much detail as possible. Detailed descriptions explaining how the project will address the identified need(s) are essential for application review and evaluation.
- 4 Project Cost and Schedule – Provide the project costs in the requested fiscal year. When developing project costs account for additional costs for Accessible Pedestrian Signals (APS), Traffic Signal Detection, and Emergency Vehicle Preemption (EVP) systems if your project is proposing them. Provide anticipated project schedule and proposed resources to accomplish implementation. Geometric improvements must not exceed 50% of the TOTAL COST funded by this appropriation.

**\*\*Maximum project award is limited to \$1,250,000.\*\***

**\*\*Municipal projects require 10% funding commitment from the requesting agency. Requesting municipal agency will also be responsible for any project costs more than the approved appropriation funding amount asked for in this application.\*\***

- 5 Additional Project Information – Complete the various questions as they relate to the proposed project.
- 6 Contact Information and Signature – Provide contact information. Application must be signed by the WisDOT Regional Operations Chief (WisDOT managed projects only) or the Municipal Sponsor to certify application and commit funds.

**Supporting Materials:** Each completed application shall include the following, *if applicable*:

- Map of location or general sketch of project proposal or site photo(s). *An adequate sketch is the minimum requirement. Preliminary plan layout sheets or study reports should be provided if available.*
- Project Evaluation Factor (PEF) worksheet and/or Interactive Highway Safety Design Model (IHSDM) benefit-cost analysis.
- TSMO-TIP package (one for each project request as required based on project type).
- New Traffic Signal – Warrant Documentation, required **only** for proposals to install new traffic signals (example worksheet available upon request. Ref: Manual on Uniform Traffic Control Devices [MUTCD], Chapter 4C). Approved Traffic Control Signal Approval Request [Form DT1199](#) (Required with application for all proposals to install new traffic signals on the State Trunk Highway System, including Connecting Highways and ramp terminals).
- New Pedestrian Hybrid Beacon – Warrant Documentation, required **only** for proposals to install new pedestrian hybrid beacons (example worksheet available upon request. Ref: Manual on Uniform Traffic Control Devices [MUTCD], Chapter 4F). Approved Pedestrian Hybrid Beacon Approval Request [Form DT1196](#) (Required with application for all proposals to install new pedestrian hybrid beacons on the State Trunk Highway System, including Connecting Highways).
- Systems Engineering Analysis. *A SEA may be needed for certain types of projects funded by this Program.*

**Submittal Instructions & General Questions:**

Program Contact – Amy Worzella | Bureau of Traffic Operations | [amy.worzella@dot.wi.gov](mailto:amy.worzella@dot.wi.gov) | 414-224-1947

Projects requested by a municipality should be coordinated with and submitted to their Regional liaisons (found at link below):

<https://wisconsindot.gov/Pages/doing-bus/local-gov/astnce-pgms/highway/sisp.aspx>.

Wisconsin Department of Transportation (WisDOT)  
**Signals and ITS Standalone Program**  
**Project Application Form**

**1. Project Identification**

PROJECT NAME (consistent with TSMO-TIP documentation if applicable) City of Appleton Traffic Signal Controller Replacement		
FUNDING REQUEST TOTAL \$ 01_AppletonCabinetReplacement_SISPAApplication_09082023.docx		
COUNTY <b>Outagamie</b>	CITY/TOWN <b>Appleton</b>	REGION <b>NE Region</b>
STATE TRANSPORTATION IMPROVEMENT PROGRAM (STIP) ELIGIBLE (Is this project eligible to be integrated with an existing STIP project?)		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
MUNICIPAL* <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	MUNICIPAL PRIORITIES (If two (2) applications are submitted, select priority) <input type="checkbox"/> 1 <sup>ST</sup> <input type="checkbox"/> 2 <sup>ND</sup>	
*Municipal projects require a 10% funding commitment from the requesting agency. The requesting municipal agency will also be responsible for any project costs more than the approved appropriation funding amount based on this application.		

**2. Project Type**

Identify the proposed project type: Check boxes that apply below.	
<input type="checkbox"/> 1. New Signal Installation*	Install new traffic signal.
<input checked="" type="checkbox"/> 2. Signal Rehabilitation*	Upgrade or replace existing signal infrastructure (poles, wiring, detection, cabinet, controller, etc.); Construct minor geometric improvements.
<input type="checkbox"/> 3. Signal Retrofit*	Install monotubes, flashing yellow arrows, or other safety improvements at existing traffic signal; Install adaptive signal systems; Replacement of TS1 cabinets, controllers, etc.
<input type="checkbox"/> 4. Signal Retiming	Collect and evaluate data; Develop signal timing plan; Develop and implement corridor coordination plan. <b>Municipal owned signals not eligible for this project type per <a href="#">Form DT1199</a>.</b>
<input type="checkbox"/> 5. Intersection Communication	Construct and integrate fiber communication for signals; Install and integrate wireless communication, including cellular modems and radios for signals.
<input type="checkbox"/> 6. New ITS Device Installation	Install new ITS infrastructure including cameras, backbone fiber, network equipment, etc.
<input type="checkbox"/> 7. ITS Device Rehabilitation	Upgrade, install or replace existing detection, controllers, battery backup, cameras, ramp meter LED's, etc.
<input checked="" type="checkbox"/> 8. System Software	Upgrade, install, or replace software.
<input type="checkbox"/> 9. Life-Cycle Replacement	Replace existing end-of-life signals and/or ITS equipment including cameras, controllers, LED's, etc. <b>Municipal owned signals not eligible for this project type per <a href="#">Form DT1199</a>.</b>
<input type="checkbox"/> 10. Other	Examples include: <ul style="list-style-type: none"> <li>• Performance Measures Applications</li> <li>• Research and Development Projects</li> <li>• CAV Deployments and Applications</li> <li>• Studies, Plans, and Evaluations</li> </ul>
*Items not covered by SISP program funds: all lighting infrastructure, enhanced signs (ex: RRFB, Dynamic Speed Displays), decorative signal poles, decorative cabinets, and decorative signal infrastructure. Other items may also not be covered as deemed appropriate by the SISP evaluation committee.	

### 3. Project Information

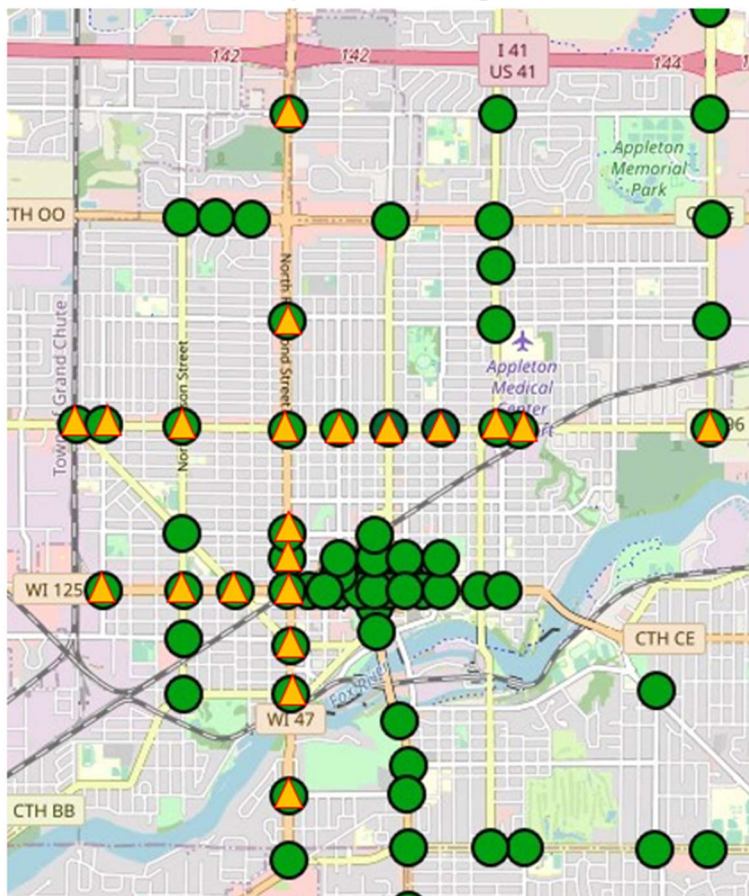
#### 3a. Project Description

Project description should include location specific information.

See attached TSMO-TIP Application

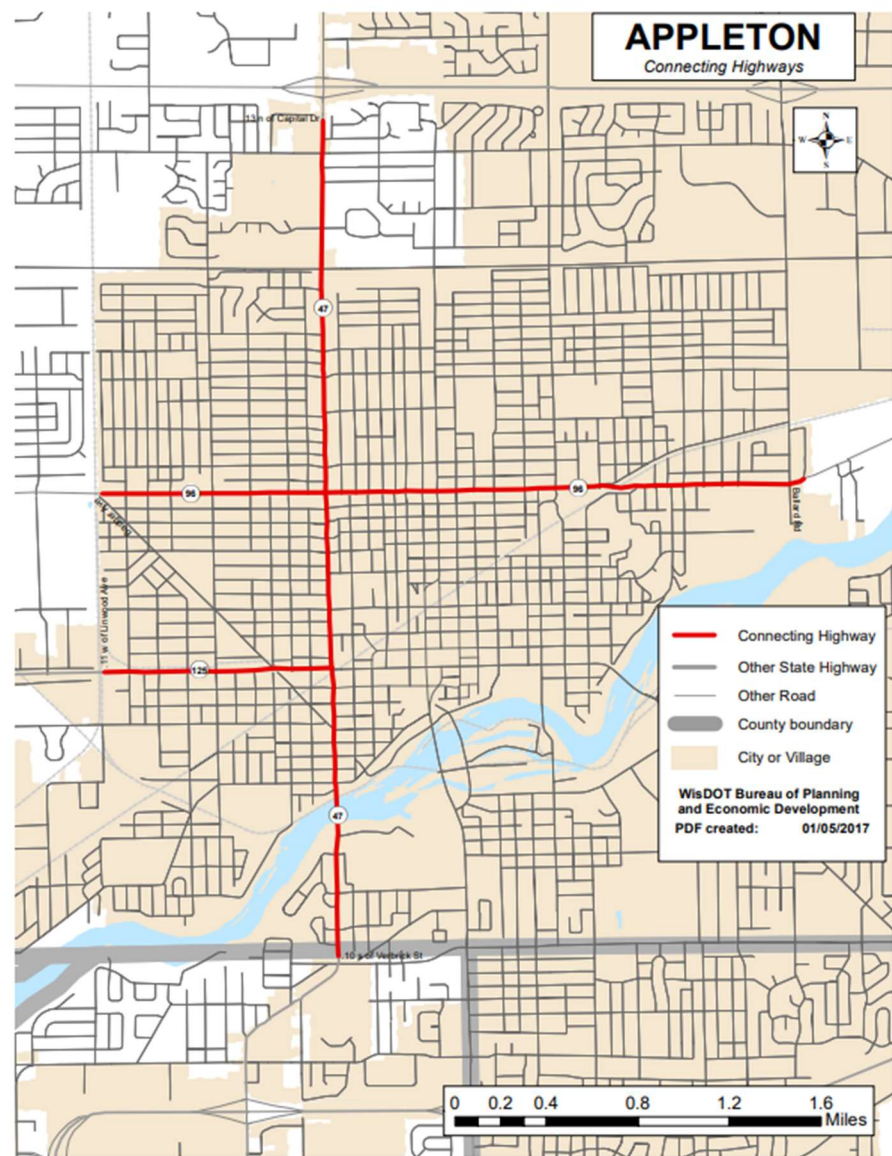
This project will replace the 21 existing controllers with Econolite controllers and Centrac control software. These 21 locations are along the existing Connecting Highway routes within the Appleton. The existing locations are Siemens controllers with Tactics control software. This project is to address the combination of aged equipment and shortcoming for Siemens products, equivalent to Wisconsin DOT's recent transitions to Econolite in the Regions.

Illustration: Proposed Traffic Signal Locations



 Proposed Traffic Signal Locations

# City of Appleton Connecting Highway Limits



### 3b. Mobility Improvements

In some detail, describe the anticipated mobility improvements of the proposed project and how they will be measured (i.e., detection will be used to determine before and after peak hour delay).

See attached TSMO-TIP Application, if applicable.

Indicate your expected benefits below and provide documentation to support your analysis.

Annual mobility benefits are expected to be greater than the capital cost of the project.

Annual mobility benefits are expected to be greater than half of the capital cost of the project.

Annual mobility benefits are expected to be greater than \$0.

No expected mobility improvements.

Although there is not a direct mobility benefit expected, the Centrac software will lead to more robust signal management, specifically a more trusted and stable product for operating and monitoring signal performance.

### 3c. Operations and Maintenance Impacts

In some detail, describe how the proposed project is anticipated to impact operations and maintenance funds. For example, is the project replacing infrastructure that has been regularly out-of-service and has required increased maintenance?

See attached TSMO-TIP Application, if applicable.

There is a demonstrated history of maintenance issues that will be corrected with this project.

Include specific number of knockdowns, service calls, outages, etc., below.

Maintenance may be reduced due to this project.

No expected operations and maintenance impacts.

Signal operations and maintenance will be improved with the more robust and stable capabilities of Econolite equipment and Centrac software. A reliable system will improve operations and allow more prompt response to concerns and complaints.

### 3d. Existing Conditions

Describe the conditions of the existing infrastructure. For example, condition of current infrastructure could be described as fair, disrepair, or out of commission. List any components NOT meeting current WMUTCD standards.

Existing age of the current infrastructure could be described as 5 years past end-of-life, within 5 years past end-of-life, within 3 years of expected end-of-life, or current/new installation. Typical lifecycles of common infrastructure include communications (20 years), signal poles (25 years), controller (16 years), cabinet (20 years), DMS (20 years), CCTV (10 years), and detection (10 years).

Existing Siemens controllers have experienced above average failures, especially the newer M60 units due to supposed power supply issues. The Tactics software has experienced shortcomings, a lack of support for bug fixes, and lack of modern development. The Tactics software notifications and alerts do not work reliably and there are continual flaws with software programming of controllers.

Appleton has been progressive with controller replacements in the interest of having the most advanced features (i.e. phase banks, IP communications) to optimize performance and operations. Numerous controllers have been replaced since cabinet's last construction or upgrade.

Intersection Name	Cabinet (Controller) Age
STH 47 - Memorial Dr & Seymour St (TS1)	1996 (2018)
STH 47 – Memorial Dr & Prospect Av (TS2)	2010 (2010)
STH 47 – Memorial Dr & Badger Av (TS2)	2010 (2010)
STH 47 – Memorial Dr & College Av (TS2)	2002 (2022)
STH 47 – Richmond St & Franklin St (TS1)	1993 (2010)
STH 47 – Richmond St & Packard Av (TS2)	2015 (2015)
STH 47 – Richmond St & Wisconsin Av (TS1)	2003 (2011)
STH 47 – Richmond St & Glendale Av (TS2)	2021 (2021)
STH 47 – Richmond St & Capitol Dr (TS2)	2003 (2010)
STH 96 – Wisconsin Av & Badger Av (TS1)	1998 (2015)
STH 96 – Wisconsin Av & Linwood Av (TS1)	1998 (2012)

Intersection Name	Cabinet (Controller) Age
STH 96 – Wisconsin Av & Mason St (TS1)	1998 (2010)
STH 96 – Wisconsin Av & Division St (TS2)	2011 (2011)
STH 96 – Wisconsin Av & Oneida St (TS2)	2011 (2011)
STH 96 – Wisconsin Av & Drew St (TS2)	2011 (2011)
STH 96 – Wisconsin Av & Meade St (TS2)	2011 (2011)
STH 96 – Wisconsin Av & Appvion Hybrid Beacon (TS2)	2011 (2011)
STH 96 – Wisconsin Av & Ballard Rd (TS2)	2011 (2011)
STH 125 – College Av & Linwood Av (TS2)	2006 (2014)
STH 125 – College Av & Mason St (TS2)	2006 (2014)
STH 125 – College Av & Badger Av (TS2)	2006 (2020)

### 3e. Energy and Environmental Impacts

In some detail, describe the anticipated energy and environmental impacts of the proposed project. For example, is the project expected to replace existing infrastructure with infrastructure that may be accessed from a central location rather than driving to the field location for manual access?

See attached TSMO-TIP Application, if applicable.

Indicate your expected benefits below.

Annual energy and environmental benefits are expected to be greater than the capital cost of the project (provide documentation).

Annual energy and environmental benefits are expected to be greater than \$0.

Project is not expected to impact the natural environment.

Project is expected to negatively impact the natural environment.

Although there is not a direct environmental benefit expected, the Econolite equipment and Centrac software will lead to more robust performance. This will reduce the number of trips and time allocation to each intersection for shortcomings and failures.



### 3f. Safety Improvements

In some detail, describe current safety concerns and the anticipated safety improvements of the proposed project.

See attached TSMO-TIP Application, if applicable.

No expected safety impacts.

Although there is not a direct safety benefit, upgrading to Econolite controllers and Centrac software will result in increased efficiencies in special programming to accommodate various traffic patterns. This will allow the signals to operate more responsive to traffic conditions, which will reduce delays, queues, and ultimately crashes.

#### 4. Project Cost and Schedule

List major construction items and associated estimates such as new traffic signal installation, intersection channelization, etc. When developing project costs account for additional costs for Accessible Pedestrian Signals (APS), Traffic Signal Detection, and Emergency Vehicle Preemption (EVP) systems if your project is proposing them. Project expense is considered during the evaluation of the projects. Therefore, **ALL COSTS** (including design, utilities, and R/E) should be provided regardless of whether awarded project funds will be used for all elements of the project. **Maximum project award is limited to a total of \$1,250,000.**

<b>Cost</b>	FY25 (07/24 – 06/25)	FY26 (07/25 – 06/26)	FY27 (07/26 – 06/27)	FY28 (07/27 – 06/28)
<b>Design:</b>				
WisDOT Staff Delivery/Design				
Consultant Work Order				
<b>Real Estate:</b> (Note: Real estate acquisition CANNOT be funded by this appropriation.) Identify funding source:				
<b>Construction:</b>				
Procurement: State Furnished Materials	\$190,000			
Procurement: Service and Installation	\$30,750			
LET Construction				
<b>Other Costs:</b>				
<b>*TOTAL PROJECT COST PER FY =</b>	<b>\$220,750</b>			
<b>MUNICIPAL FUNDING COMMITMENT (10%) =</b>	<b>\$22,075</b>			

\* Awarded project funds must be encumbered during the FY identified unless coordinated with the Regional Program Liaison. Requested funds will not be increased beyond the amount asked for in this application after the award of the project.

<b>Schedule</b>		
Task	Months (MM/YY – MM/YY)	Anticipated Required Resources (Region PDS, Region Traffic Ops, consultant, procurement contracts, etc.)
1. Design		
2. Real Estate		
3. Procurement	01/25-05/25	State Procurement Contract
4. Construction	05/25-09/25	
5. Other		

## 5. Additional Project Information

### 5a. Performance Improvement Program Goals


<p>Does this project help with achieving WisDOT's performance goals? Refer to <a href="http://dotnet/mapss/index.htm">http://dotnet/mapss/index.htm</a></p> <ul style="list-style-type: none"> <li>– <i>Mobility</i>: Delivering transportation choices that result in efficient trips and no unexpected delays.</li> <li>– <i>Accountability</i>: The continuous effort to use public dollars in the most efficient and cost-effective way.</li> <li>– <i>Preservation</i>: Protecting, maintaining, and operating Wisconsin's transportation system efficiently by making sound investments that preserve and extend the life of our infrastructure, while protecting our natural environment.</li> <li>– <i>Safety</i>: Moving toward minimizing the number of deaths, injuries, and crashes on our roadways.</li> <li>– <i>Service</i>: High quality and accurate products and services delivered in a timely fashion by a professional and proactive workforce.</li> </ul>	<p>Select all that apply:</p> <p><input checked="" type="checkbox"/> Mobility</p> <p><input checked="" type="checkbox"/> Accountability</p> <p><input checked="" type="checkbox"/> Preservation</p> <p><input type="checkbox"/> Safety</p> <p><input checked="" type="checkbox"/> Service</p>
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### 5b. Additional Justification

Provide additional detail that should be considered during the evaluation of this project. This may include the consequences of what would happen should the project not be implemented.

Existing Siemens controllers have experienced above average failures. The Tactics software has experienced shortcomings, a lack of support for bug fixes, and lack of modern development. The city no longer retains active licensing with Siemens for support.

## 6. Contact Information and Signature

PRIMARY CONTACT NAME (Responsible for Project Delivery) Michael Hardy	TITLE Assistant City Traffic Engineer
EMAIL ADDRESS <a href="mailto:mike.hardy@appleton.org">mike.hardy@appleton.org</a>	TELEPHONE (920)832-6478
WISDOT REGIONAL LIAISON CONTACT NAME (Municipal Only) Michael Hardy	MUNICIPAL SPONSOR EMAIL ADDRESS <a href="mailto:mike.hardy@appleton.org">mike.hardy@appleton.org</a>
MUNICIPAL SPONSOR SIGNATURE (Responsible for 10% funding – Municipal Only) 	DATE 09/01/2023
SIGNATURE OF WISDOT REGIONAL OPERATIONS CHIEF (WisDOT Projects Only)	DATE

REVISED 07/20/2023