WisDOT TMP Documentation and Request for Approval

TMP ID: 4255

Current Version

This is a request for approval of the Transportation Management Plan (TMP) for the project detailed below. Impacts resulting from project activities meet the current work zone policies of the Wisconsin Department of Transportation.

1A. Project Information:

TMP Type:	Type 2
Region:	NC
Local Program:	No
Created Comment:	
Federal Oversight:	No
Design ID:	6270-00-04
Project Title:	V IOLA, MAIN STREET
County:	WAUPACA
Highway:	WIS 49
AADT:	4700
AADT Year:	2020
Construction ID:	6270-00-74
Project Type:	BRIDGE REPLACEMENT, PRESERVATION
Project Limits:	S BR LITTLE WOLF, B-68-0133
Project Length:	0.04 Mile(s)
Project Duration:	100 Day(s)
Engineer's Estimate:	less than $1 Million
PS&E Date:	11/01/2019
LET Date:	03/10/2020
NHS Route:	No

1B. Project Impacts:

Anticipated Begin:	06/2020
Anticipated End:	10/2020
OSOW Route:	No

1C. Location:

Highway

Location #	1
Begin County:	WAUPACA
End County:	WAUPACA
Highway:	WIS 49 NB
Closure Type:	Mainline

Begin Landmark:	STATE ST W | WIS 49 NB/WIS 161 WB | WAUPACA
Direction From:	At Landmark
Distance From:	0.00 Mile(s)
End Landmark:	WIS 49 | WIS 49 NB/WIS 161 WB | WAUPACA
Direction From:	At Landmark
Distance From:	0.00 Mile(s)

Location #	2
Begin County:	WAUPACA
End County:	WAUPACA
Highway:	WIS 49 SB
Closure Type:	Mainline
Begin Landmark:	MILL ST | WIS 49 SB | WAUPACA
Direction From:	At Landmark
Distance From:	0.00 Mile(s)
End Landmark:	STATE ST W | WIS 49 SB/WIS 161 EB | WAUPACA
Direction From:	At Landmark
Distance From:	0.00 Mile(s)

2. Brief description of work activities.

STH 49 is two-lane undivided urban roadway through the Village of Iola in Waupaca County. The STH 49 bridge (B-68-29) over the South Branch of the Little Wolf River in the Village will be reconstructed. Traffic will be detoured during construction because the existing structure type will not allow for removal of half of the structure at a time to maintain one lane of traffic over the structure.

3. Briefly describe the staging planned for maintaining traffic.

Maintain local access on STH 49 adjacent to the construction area at all times from south and north or as directed by the engineer. Implement the following staged traffic control: Stage 1: Shoulder closures and single lane closures utilizing flaggers are allowed while performing work in this stage. Stage 2: Close STH 49 between Depot Street and Mill Street. Implement vehicular and pedestrian detour and close STH 49 and Iola Riverwalk trail. Maintain two 12-foot travel lanes on detour route using the details in the plan or as directed by the engineer. Stage 3: STH 49 and the Iola Riverwalk trail shall be opened to traffic once Stage 2 is complete. Stage 3 work should be completed with shoulder closures and single lane closures utilizing flaggers. Do not restrict traffic on STH 49 prior to 6:00 AM July 13, 2020. Attachment 1 shows a project location map with the proposed detour route.

4. Will there be restrictions on pedestrian/bicycle access?

☑ Yes ☐ No

If Yes:

a) Will sidewalk/multiuse path be closed?

☑ Yes ☐ No

b) Describe how pedestrian and bicyclists will be accommodated

There are existing sidewalks crossing the Little Wolf River within the project area that will be closed during the bridge construction. A pedestrian route will be provided along the same route as detoured vehicular traffic. At the intersection of State Street and Main Street, pedestrians will use existing sidewalk located along the north side of W. State Street to begin the detour around the project. Pedestrians will travel approximately 1,900 feet to the west to the intersection of Town Line Road and W. State Street where they will turn right and travel north along the paved shoulder marked with a pavement marking edgeline along the east side of Town Line Road. The pedestrian walkway will extend from W. State Street north for approximately 700 feet to Mill Street where pedestrians will be able to exit the paved shoulder and use new curb ramps and sidewalk constructed with this project to cross Mill Street to the north and use the existing sidewalk located along the north side of Mill Street. Pedestrians will travel east along the existing sidewalk for approximately 1,800 feet to the existing intersection of Mill Street and N. Main Street which is approximately 150 feet north of the STH 49 bridge replacement project limits. Alternative routes and their potential impacts to pedestrian/bicycle traffic during construction were evaluated and are included in the attached bicycle/pedestrian memo.

c) Will crosswalks be provided? What is the spacing of crosswalks?

Crosswalks will be provided at existing locations. New curb ramps, sidewalk, and crosswalk will be provided at the STH 161 and Town Line Road intersection.

d) Are the strategies in compliance with ADA?

All strategies comply with ADA.

5. Briefly describe how access to traffic generators, businesses, school buses, garbage trucks, postal services, and transit impacts will be mitigated (alternate routes, etc.).

a) Are the strategies in compliance with ADA?

Access will be maintained to all businesses and residences. School bus stops, garbage stops, and postal services will be required to follow the detour route. Features added to the existing infrastructure and strategies implemented to facilitate the detour route will be ADA compliant.

b) Is access to bus stops affected?

☐ Yes ☑ No

6. Will the project have lane closures?

☑ Yes ☐ No

If Yes:

a) Are there restrictions on when lane closures are allowed?

☐ Yes ☑ No

b) What hours/days are lane closures permitted?

Lane closures are permitted on all days and hours.

c) How were traffic counts used in determining permitted lane closure times?(For multi-lane roadways, indicate peak hour volume per direction of travel. For two-lane, two-way roadways indicate AADT)?

The 2020 forecast AADT is 4,700 in the project area. The low volume of traffic will experience minimal delay using the detour route.

7. Please provide the following.

a) Minimum lane width to be maintained.

The minimum lane along the detour route will be 12 feet.

b) Minimum lane width plus shoulder width to accommodate OSOW.

The minimum lane plus shoulder width will be 12 feet. The minimum width will occur on Town Line Road on the bridge over the South Branch of the Little Wolf River. The distance is the clear width between the center lane line and the outside shoulder line.

c) Minimum height (if less than typically available)

There are no reductions to vertical clearance during construction.

8. Will the project be detoured?

☑ Yes ☐ No

a) Explain length of detour, travel times, improvements required for signal timing, surface and shoulder conditions, capacity, etc

The length of the STH 49 (Main Street) road closure due to the bridge replacement is 0.18 miles from STH 49(State Street) to STH 161(Mill Street). The Village of Iola requested that the detour route be kept on local roadways within the Village instead of a detour on State routes. The detour route follows State Street, Town Line Road and STH 161. Attachment 5 shows the vehicular and pedestrians detour overviews. Traffic data and travel times were analyzed to determine the effect of the detour route on the traveling public. The existing STH 49 travel time is 26 seconds from State Street to STH 161. The travel time on the proposed detour route is approximately 96 seconds. The proposed detour route results in additional travel distance of 0.67 miles and additional travel time of 70 seconds. The proposed detour will affect the operations at four intersections. The existing conditions of the four intersections are shown in Attachment 2 Existing Intersection Configurations. At the intersection of State Street and Town Line Road, the westbound right turn is anticipated to be the tightest truck turning movement. The turning movement cannot be made within the existing roadway. It will require encroachment into the departing lane and temporary asphalt widening along the west side of Town Line Road. The geometry for the intersection of State Street and Main Street will be adequate as the detour route will be straight through the intersection. At the intersection of STH 161 and Town Line Road, the northbound right turn will be the tightest for trucks, but the movement can be accomplished without encroachment into adjacent lanes. Alternative routes and their potential impacts to vehicle traffic during construction were evaluated and are included in the attached traffic detour memo.

b) Are there width and height restrictions on the detour?

☑ Yes ☐ No

9. List major special events and holidays, and how traffic disruptions will be minimized.

Do not perform work on, nor haul materials of any kind along or across any portion of the highway carrying STH 49 or STH 161 traffic, and entirely clear the traveled way and shoulders of such portions of the highway of equipment, barricades, signs, lights, and any other material that might impede the free flow of traffic during the following holiday or periods: - From noon Friday, May 22, 2020 to 6:00 AM Tuesday, May 26, 2020, Memorial Day; - From noon Thursday, July 2, 2020 to 6:00 AM Monday, July 6, 2020; 4th of July; - From noon Wednesday, July 8, 2020 to 6:00 AM Monday, July 13, 2020; Iola Car Show; Do not perform work on, nor haul materials of any kind along or across any portion of the highway carrying STH 49 or STH 161 traffic during the following holiday periods: - From noon Friday, September 4, 2020 to 6:00 AM Tuesday, September 8, 2020; Labor Day; Do not close STH 49 and detour traffic prior to 6:00 AM July 13, 2020.

10. Describe the method(s) (LCAT, Quadro, FDM 11-50-30, etc.) used to estimate motorist delays or queue length (Applicable only for freeways, expressways, and signalized corridors).

A Synchro model was created to evaluate intersection delays during the design hour on the existing route and the proposed detour route. The highest hourly volume percentage and Average Annual Daily Traffic (AADT) from 2018 were obtained from the WisDOT Traffic Forecast Report. K30 percentages of AADT volumes were used to distribute the turning movement volumes through the network. Attachment 3 shows the turning movement volumes for the existing and detour routes. Attachment 4 shows the delay the road user will experience on the detour route relative to the existing route.

11. What is the anticipated travel delay during the project for each impacted roadway? The Regional Work Zone Engineer can assist you in determining your delay. If the project anticipates using Lane Rental, Enhance Liquidated Damages, Interim Liquidated Damages, or other alternative contracting method that uses road user costs, include what the delay will be from the impacts. For a Lane Rental, what will be the queuing and additional delay if the roadway is not reopen?

The results at the intersection of STH 49 and State Street show that if only State Street is stop controlled, the delay at each of the four approaches along the detour route is less than that for the existing route. All-way stop control at the intersection results in three of the approaches operated with a slight increase in delay along the detour route. The intersections of West State Street & Town Line Road and STH 161 & Town Line Road are expected to have an increased delay for SBL and WBL respectively along the detour route. The delay for the eastbound approach at STH 49 and STH 161 is expected to decrease due to the major decrease in conflicting movements volumes (NBT, NBL and SBT). The total network delay due to the detour is 73 seconds.

Delay and Queue Information

#	Location Description	Delay (min)	Queue (mi)	Delay Cause
1	WIS 49 NB From STATE ST W to WIS 49	1	0.0	Full closure with detour
2	WIS 49 SB From MILL ST to STATE ST W	1	0.0	Full closure with detour

12. Identify alternate routes anticipated, and any alternate route improvements or signing planned.

No alternate route improvements or signing is planned. It is likely that an increased number of vehicles will utilize Depot Street as a route around the construction project.

13. Are any intersection traffic control changes proposed such as temporary signals, temporary changes to an all way stop, etc?

No changes to existing traffic control at any of the intersections on the detour route are expected.

14. Are there anticipated traffic impacts from the proposed project on other roads/routes in the region/corridor? Identify other projects in the corridor (only if delay anticipated on this project).

There are minimal anticipated traffic impacts from this project on other roads/routes in the region due to the low volumes along STH 49. There are no other known projects in the area planned during the construction period.

15. Does the project affect other regions/states?

☐ Yes ☑ No

16. Check mitigation strategies planned

STRATEGY	COMMENTS
☐ Public information campaigns	
☐ Off-peak lane closures	
☑ Temporary widening to maintain traffic lanes	Pavement will be widened to accommodate truck turning at State Street and Town Line Road.
☐ Changeable message signs (PCMS)	
☐ Ramp closures	
☐ Temporary signals/timing revisions	
☐ Coordination with adjacent projects	
☐ Innovative contracting, (lane rental, A+B, etc)	
☐ Temporary Emergency Pullouts	

- ☐ Motorist service patrols
- ☐ Nighttime Work
- ☐ Enhanced Traffic control devices (Wet reflective pavement marking, temp concrete barrier, etc)
- ☐ Reduced regulatory speed limit (requires declaration approved by Regional Traffic Engineer, & by BTO if 65-mph hwy or higher speed facility.)

17. Describe public information strategies planned (coordinate this activity with your Regional Communications Manager).

A Local Officials Meeting was held on December 19, 2017. A Public Involvement Meeting was held on February 6, 2018 in Iola. The vehicle and pedestrian detours were also discussed at a July 2018 meeting with Village officials. Additional public involvement will be addressed through a project website. The website will be updated after the design is completed to provide the anticipated construction schedule and any updates to the project design. Local officials will be coordinated with through e-mail. A pre-construction meeting will be held including WisDOT, the contractor, local officials, agencies, emergency responders and utilities during which construction staging and traffic control information will be provided. This meeting will provide line of communication plan to all stakeholders for any unscheduled delays or lane closures caused by incidents or other unforeseen events. An initial news release will be prepared as part of the PS&E submittal and be distributed by the RCM prior to construction beginning. The engineer will provide weekly construction updates to be provided on the 511 website.The contractor will be required to provide advance notice of requested lane closures and implementation of the proposed detour to the engineer. The engineer will input requested lane closures and detour information into the WisDOT Lane Closure System (LCS). The LCS is linked to the 511 System and the WisDOT website.

18. Describe incident management strategies planned.

An incident management plan is not required. Local officials, state patrol, and emergency response units will be informed of the construction work and traffic impacts. Contractor requirements regarding coordination with local officials, residents, law enforcement, state patrol, and emergency response units will be provided in the special provisions. The contractor will be responsible for contacting the Waupaca County Sheriff's Department and the Sheriff's Department will then notify all emergency services. The contractor will be responsible for contacting the appropriate people and addressing any incidents that occur. Incidents will be handled as outlined in WisDOT's Emergency Traffic Operations Plan (ETO).

19. Describe how transit impacts will be mitigated.

There is no transit service in the project area.

Attachments:

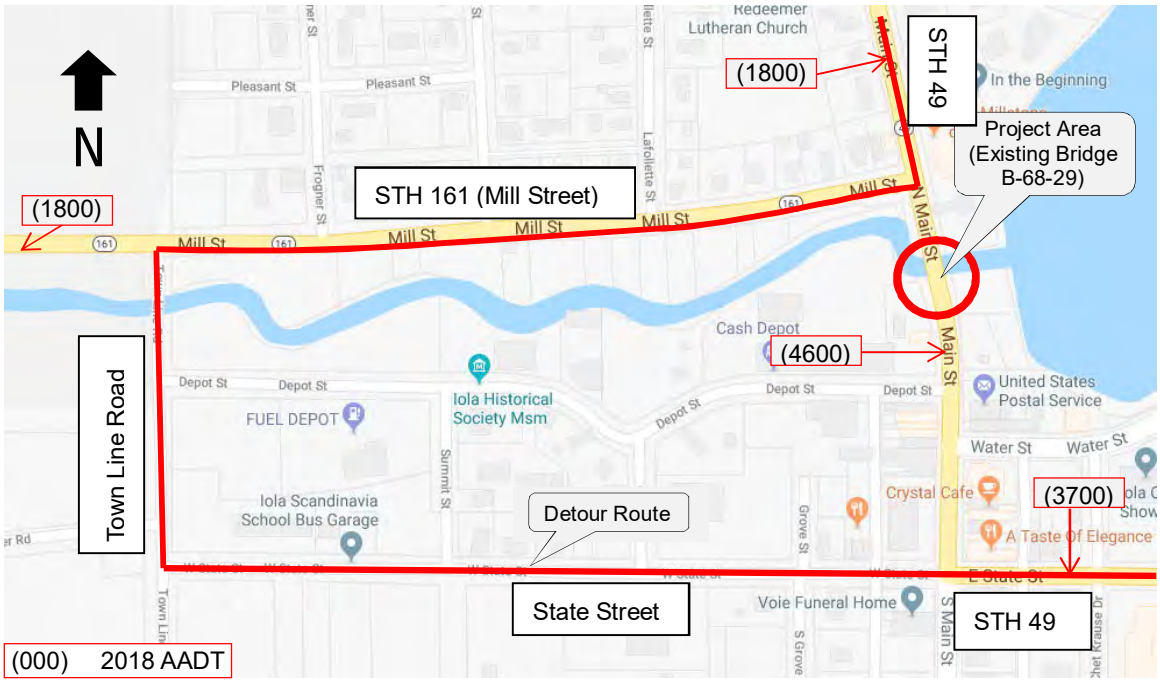
Attachments for TMP ID 4255 are listed below.

- [F] Section_3
  - [f] Attachment 1 Project Location Map with Proposed Detour Route.pdf
- [F] Section_10
  - [f] Attachment 3 Turning Movement Volumes for Existing Route and Proposed Detour Route.pdf
  - [f] Attachment 4 Road User Existing Route Detour Delay.pdf
- [F] Section_8
  - [f] Attachment 2 Existing Intersection Configuration.pdf
  - [f] 62700004_TrafficDetourMemo.pdf
  - [f] Attachment 5 Detour Overviews.pdf
- [F] Section_4
  - [f] 62700004_tmp_BikePedMemo.pdf

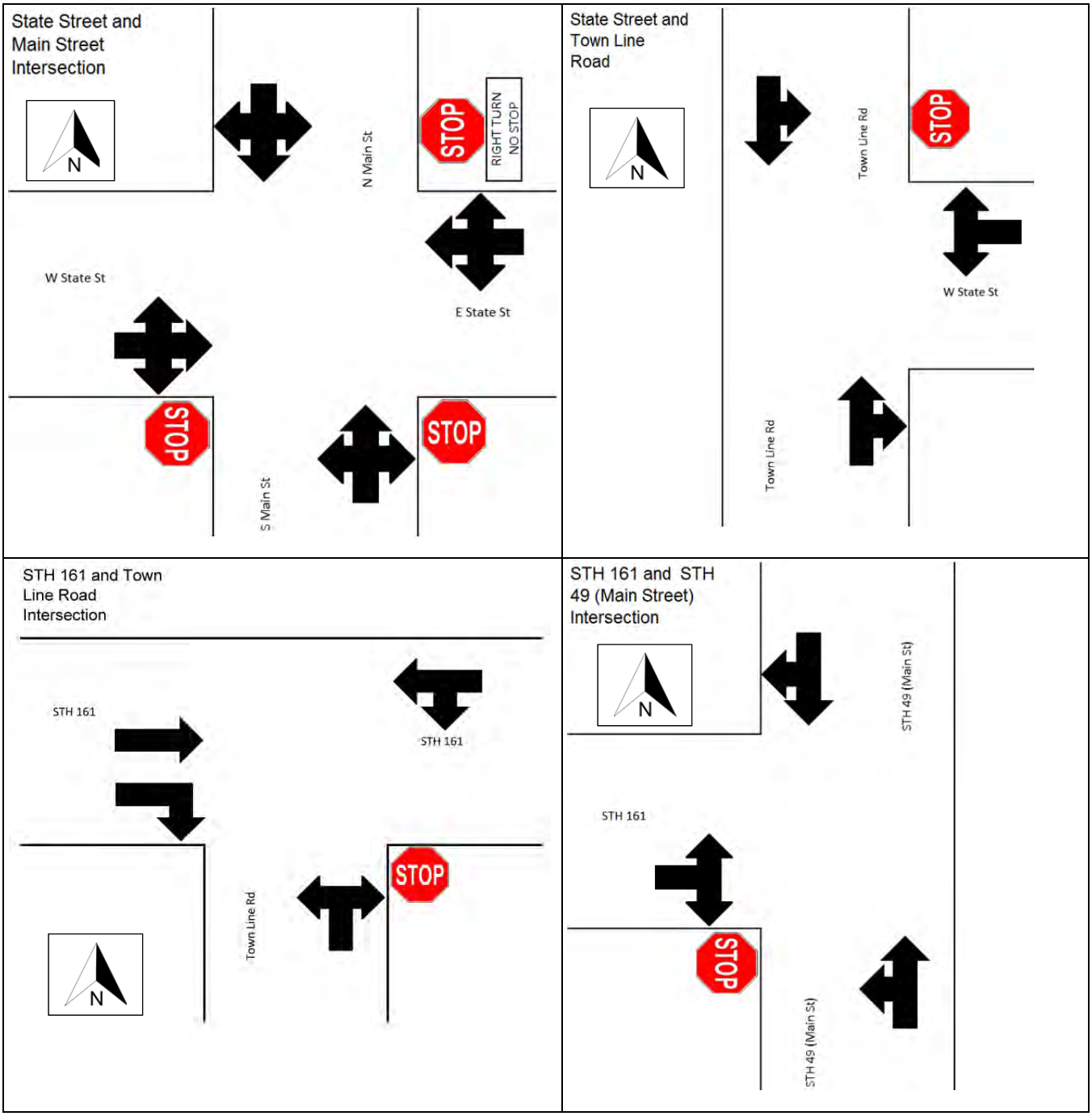
*** [F] represents folder and [f] represents file.**

Approvals:

Attachment 1 Project Location Map With Proposed Detour Route



Attachment 2 Existing Intersection Configurations



Attachment 3 Turning Movement Volumes for Existing Route and Proposed Detour Route

Existing Route Traffic Volumes

Local Detour Route Traffic Volumes

Attachment 4 Road User Existing Route / Detour Delay

State Street & STH 49								
Two-Way Stop Controlled								
	Eastbound	Westbound	Northbound			Southbound		
			L	T	R	L	T	R
Existing Route								
Delay (s)	22	17	7.4	0	-	7.8	0	-
HCM LOS	C	C	A	A	-	A	A	-
Local Detour Route								
Delay (s)	9.1	9.3	8.6	0	-	8.7	0	-
HCM LOS	A	A	A	A	-	A	A	-
All-Way Stop Controlled								
Existing Route								
	Eastbound	Westbound	Northbound			Southbound		
Delay (s)	9.7	10	9			11.1		
HCM LOS	A	A	A			B		
Local Detour Route								
Delay (s)	11.6	10.6	9.6			11.0		
HCM LOS	B	B	A			B		

State Street & Town Line Road							
	Westbound	Northbound			Southbound		
		L	T	R	L	T	R
Existing Route							
Delay (s)	8.4	-	-	-	7.3	0	-
HCM LOS	A	-	-	-	A	A	-
Local Detour Route							
Delay (s)	9.2	-	-	-	7.5	0	-
HCM LOS	A	-	-	-	A	A	-

STH 161 & Town Line Road							
	Eastbound			Westbound			Northbound
	L	T	R	L	T	R	
Existing Route							
Delay (s)	-	-	-	7.4	0	-	9.7
HCM LOS	-	-	-	A	A	-	A
Local Detour Route							
Delay (s)	-	-	-	7.7	0	-	11.7
HCM LOS	-	-	-	A	A	-	B

STH 49 & STH 161							
	Eastbound	Northbound			Southbound		
		L	T	R	L	T	R
Existing Route							
Delay (s)	10.7	7.7	0	-	-	-	-
HCM LOS	B	A	A	-	-	-	-
Local Detour Route							
Delay (s)	8.9	-	-	-	-	-	-
HCM LOS	A	-	-	-	-	-	-

2

2

N

FROGNER ST

PINE ST

LAFOLLETTE ST

STH 49

IOLA LAKE

DETOUR
M4-9BL
30"X24"

DETOUR
M4-9BR
30"X24"

STH 161 / MILL ST

SIDEWALK CLOSED
R9-9
24"X12"

SEE STANDARD DETAIL DRAWING "TRAFFIC CONTROL PEDESTRIAN ACCOMMODATION" FOR BARRICADES AND SIDEWALK CLOSED SIGNS

TOWN LINE RD

DEPOT ST

TEMPORARY PEDESTRIAN CURB RAMP
DETECTABLE WARNING FIELD ONLY

CTH G

W STATE ST

STH 49 / STH 161

7.0'

12.0'

5.0'

10.0'
(TYP)

SIDEWALK CLOSED AHEAD
CROSS HERE
R9-11
48"X24"

S MAIN ST

W IOLA ST

E IOLA ST

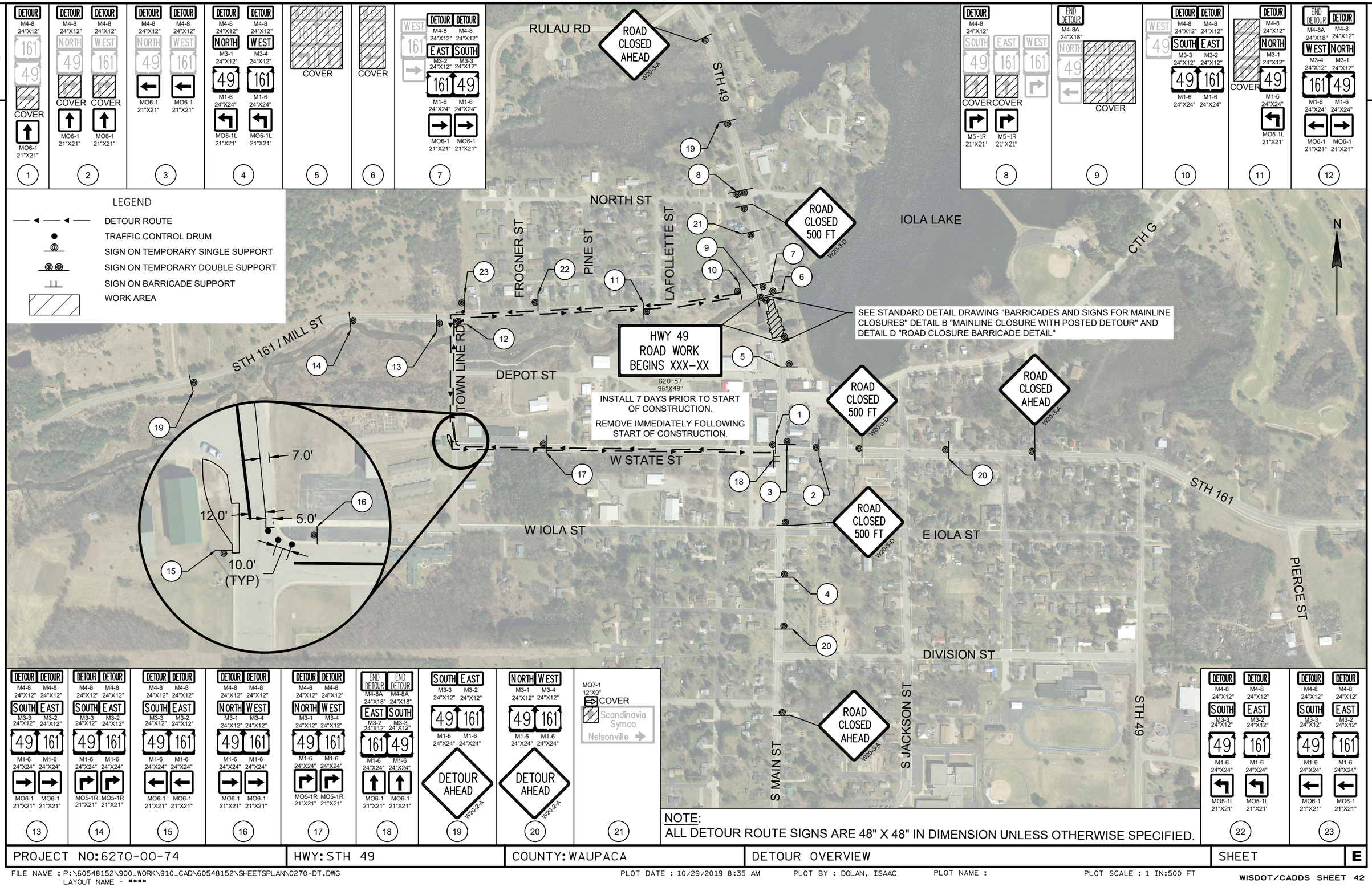
LEGEND

- PEDESTRIAN DETOUR ROUTE
- TEMPORARY PEDESTRIAN BARRICADE
- TRAFFIC CONTROL DRUM
- SIGN ON TEMPORARY SINGLE SUPPORT
- TYPE 3 BARRICADE AND TYPE A WARNING LIGHT WITH/WITHOUT SIGN
- TRAFFIC DIRECTION
- WORK AREA

PROJECT NO: 6270-00-74	HWY: STH 49	COUNTY: WAUPACA	PEDESTRIAN DETOUR OVERVIEW	SHEET	E

FILE NAME : P:\60548152\900_WORK\910_CAD\60548152\SHEETSPLAN\0270-DT-PED.DWG
LAYOUT NAME - ****

PLOT DATE : 10/30/2019 9:12 AM PLOT BY : DOLAN, ISAAC PLOT NAME : PLOT SCALE : 1 IN:200 FT



LEGEND

- DETOUR ROUTE
- TRAFFIC CONTROL DRUM
- SIGN ON TEMPORARY SINGLE SUPPORT
- SIGN ON TEMPORARY DOUBLE SUPPORT
- SIGN ON BARRICADE SUPPORT
- WORK AREA

NOTE:
ALL DETOUR ROUTE SIGNS ARE 48" X 48" IN DIMENSION UNLESS OTHERWISE SPECIFIED.

PROJECT NO: 6270-00-74	HWY: STH 49	COUNTY: WAUPACA	DETOUR OVERVIEW	SHEET E

FILE NAME : P:\60548152\900_WORK\910_CAD\60548152\SHEETSPLAN\0270-DT.DWG
LAYOUT NAME - ****
PLOT DATE : 10/29/2019 8:35 AM PLOT BY : DOLAN, ISAAC PLOT NAME : PLOT SCALE : 1 IN:500 FT

AECOM Imagine it. Delivered.

AECOM
200 Indiana Avenue
Stevens Point, WI 54481
aecom.com

March 21, 2019

Project Name:
V Iola, Main Street
S Br Little Wolf, B-68-29
STH 49
Waupaca County

Project ID: 6270-00-04
AECOM PN: 60548152

From:
Ryan Barz, PE
AECOM

To:
Wendy Arneson, PE
WisDOT NC Region

CC:
Nathan Lipinski, PE

Memorandum

Subject: Traffic Detour Analysis

STH 49 is two-lane undivided urban roadway through the Village of Iola (Village) in Waupaca County. The STH 49 bridge (B-68-29) over the South Branch of the Little Wolf River in the village will be reconstructed. Traffic will be detoured during construction because the existing structure type will not allow for removal of half of the structure at a time to maintain one lane of traffic over the structure. Village officials have requested that local roads within the village be utilized for the signed detour instead of using state trunk highways that would take traffic away from the village. The purpose of this memo is to evaluate the local detour route and compare it to a state trunk highway detour route. This evaluation estimates the traffic operations and safety impacts of the intersections along the proposed local detour route and compares the cost of implementing the two detour route alternatives.

The length of the STH 49 (Main Street) road closure due to the bridge replacement is 0.18 miles from STH 49 (State Street) to STH 161 (Mill Street). The Village requested that the local detour route follows State Street, Town Line Road and STH 161. The state detour route would follow US 10 and STH 161. Figure 1 and Figure 2 respectively show a project location map with the proposed local detour route and the proposed state detour route.

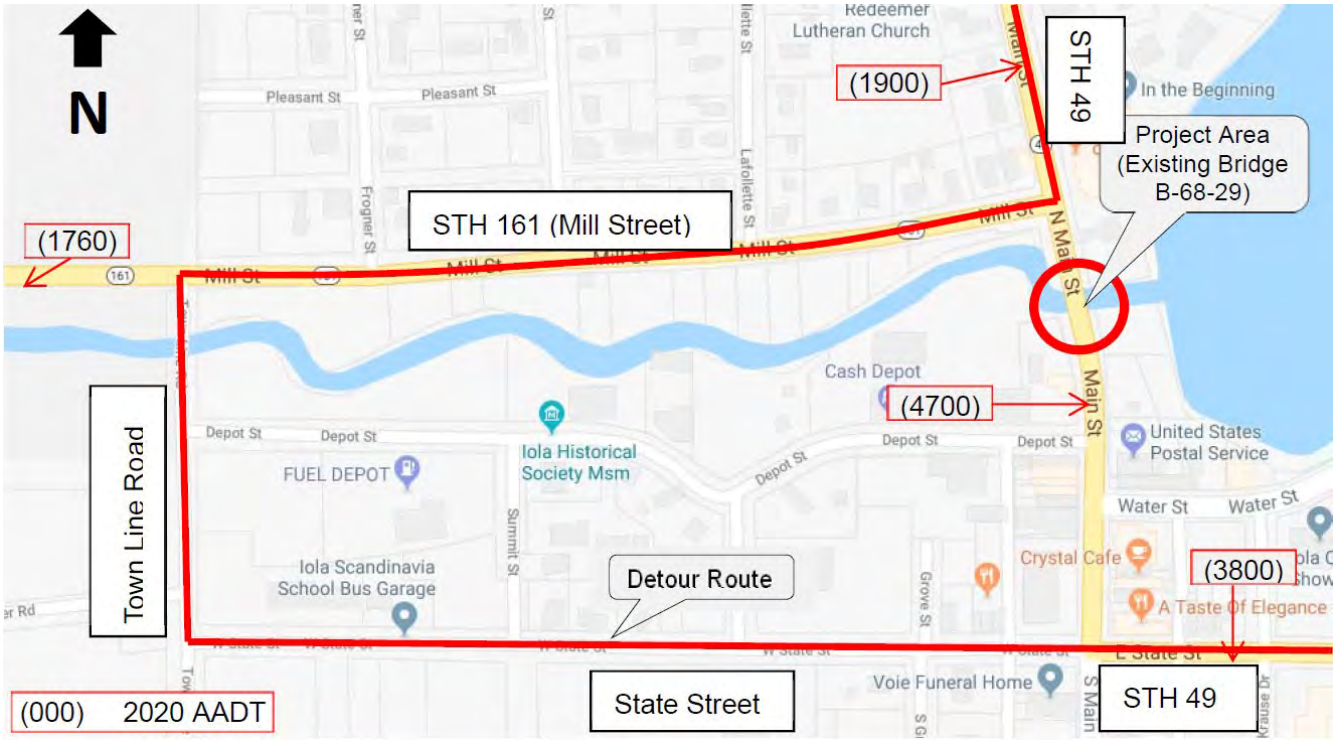


Figure 1: Local Detour Route

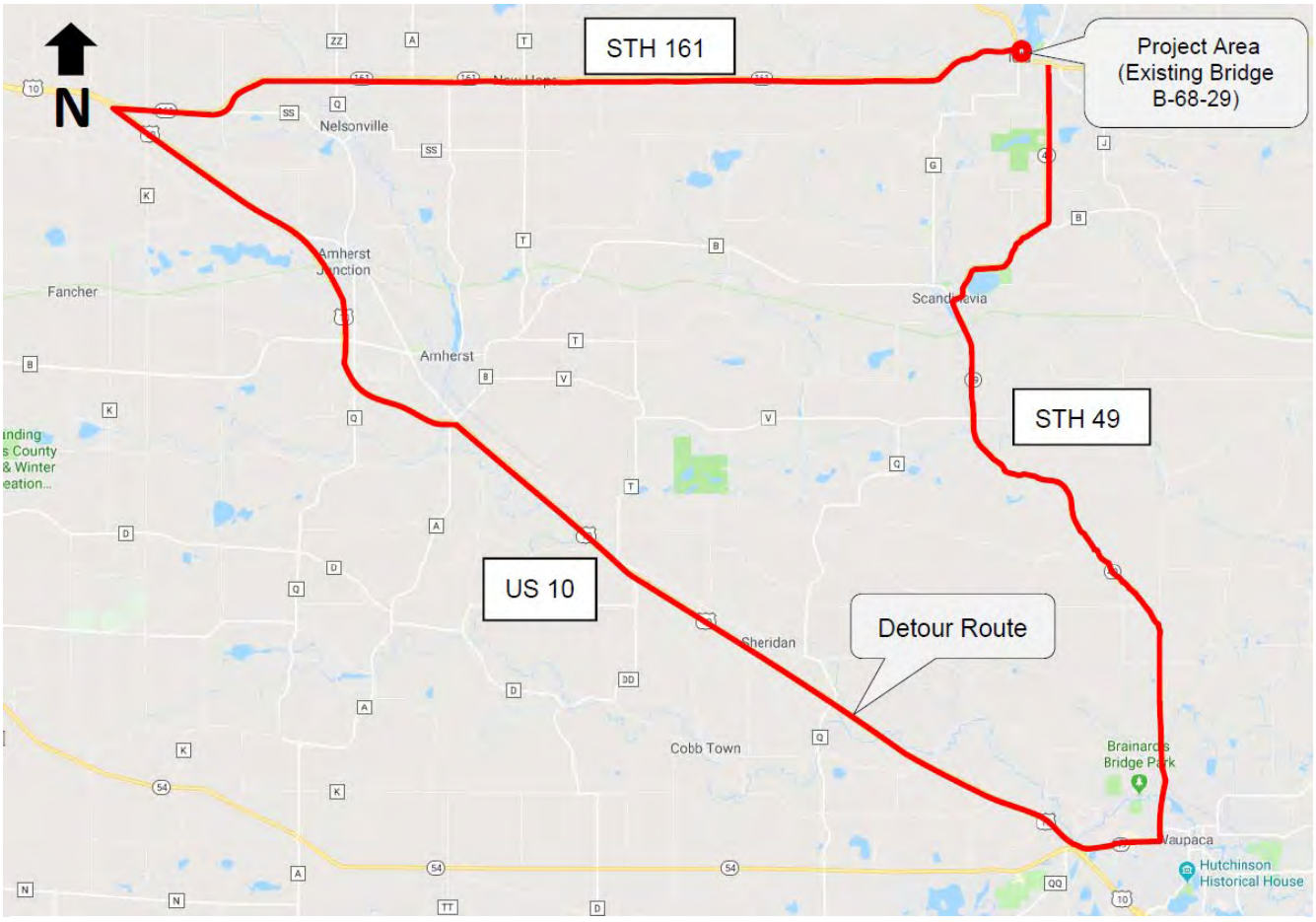


Figure 2: State Detour Route

Traffic data and travel times were analyzed to determine the effect of the detour route on the traveling public. Table 1 compares the travel times for the existing route, the local detour route and the state detour route. The travel times do not include intersection delay.

Table 1: Existing and Detour Route Travel Data

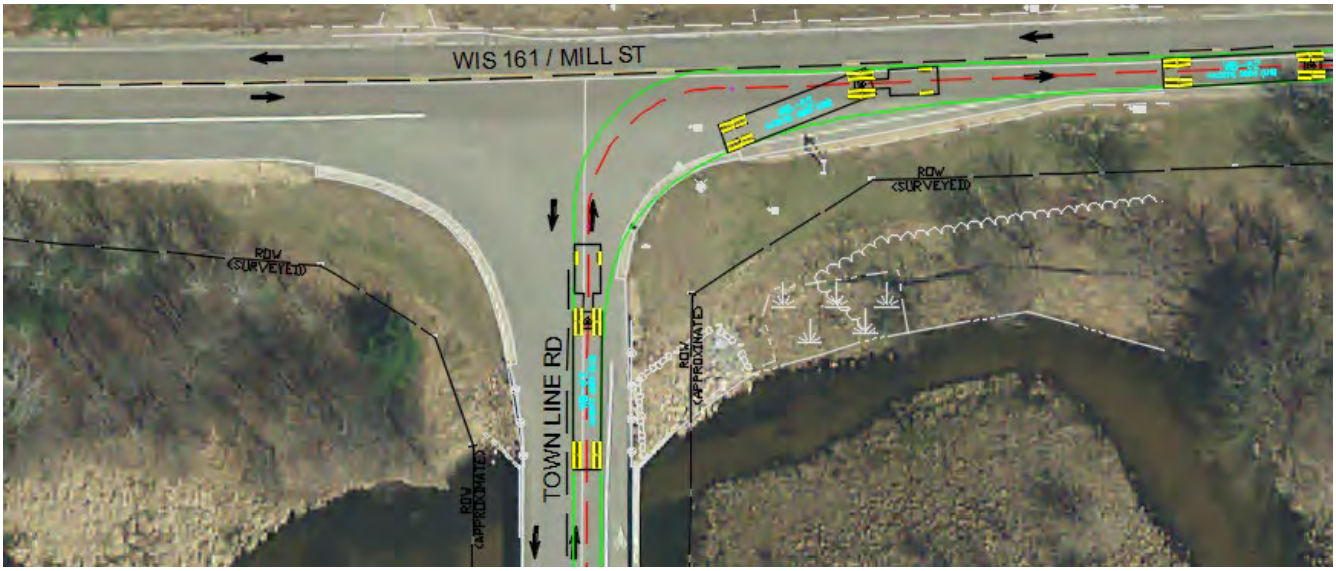
Route	Description	Distance (mi)	Travel Time	Comments
Existing	STH 49 from State Street to STH 161 (Mill Street)	0.18	26 seconds	2-lane undivided roadway (25 mph from STH 161 to State Street)
Local Detour	State Street to Town Line Road (0.36 mi) to STH 161 (0.14 mi) to Main Street (0.35 mi)	0.85	96 seconds	2-lane undivided roadway (30 mph from STH 49 to Town Line Road, 30 mph from West State Street to STH 161 and 35 mph from Town Line Road to STH 49)
State Detour	STH 49 to US 10 to STH 161	42	47 minutes	US 10 is a 4-lane divided roadway (65 mph) STH 49 and STH 161 are 2-lane undivided 55 mph rural and 30 mph through Scandinavia and Waupaca

The purpose of the following evaluation is to determine how traffic operation and safety would be affected by implementing the local detour route. The local detour would affect the operations at four intersections. The existing conditions of the four intersections are described below.

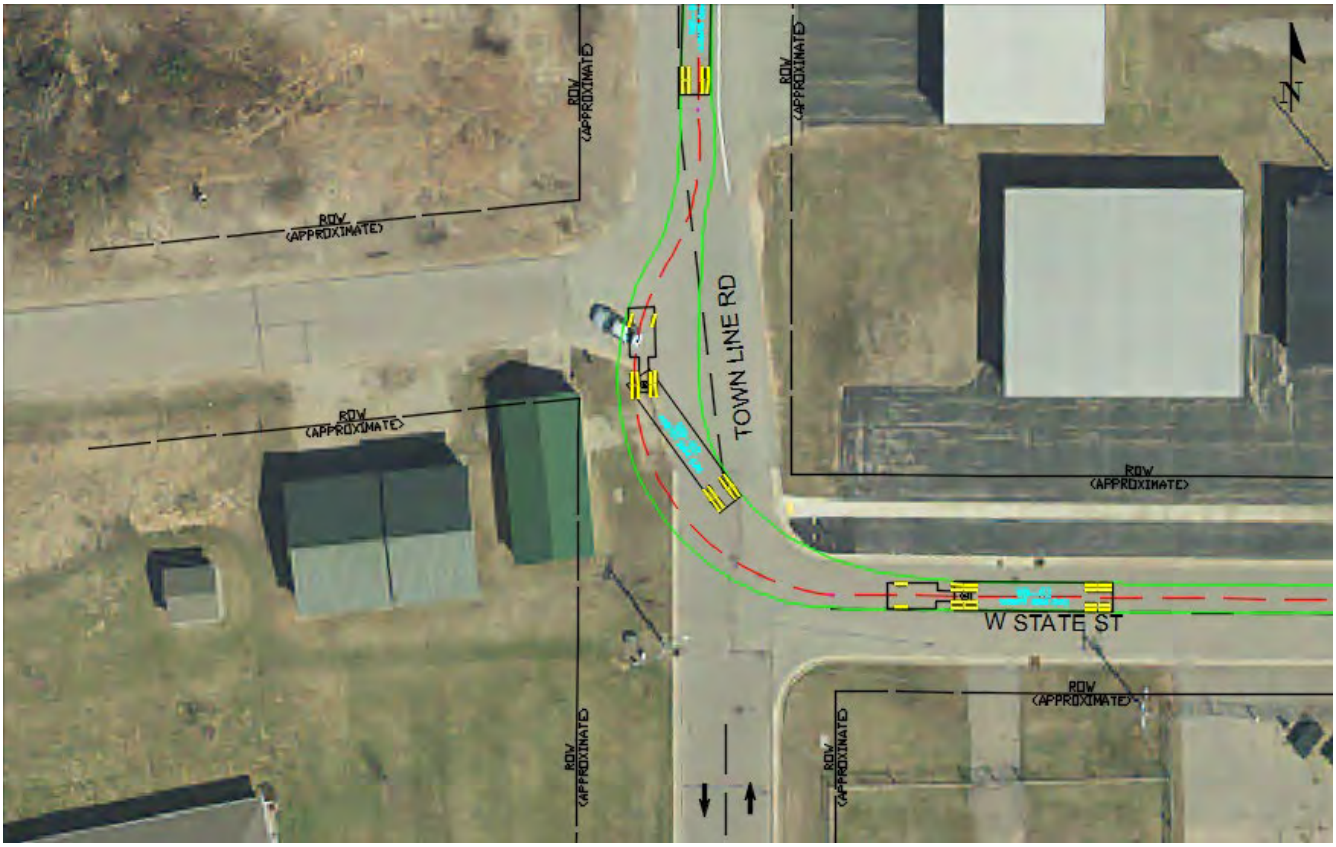
Intersection Geometry

The four intersections along the proposed detour route will need to accommodate state highway traffic including large trucks. The geometry for the intersection of STH 49 and STH 161 was not reviewed as it is an intersection of two state highways and the traffic stream and pattern using the intersection will not change when the detour is in effect. The geometry for the intersection of State Street and Main Street will be adequate as the detour route will be straight through the intersection.

At the intersection of STH 161 and Town Line Road, the northbound right turn will be the tightest for trucks. The graphic below shows a WB-62 completing the right turn without encroachment into the adjacent lanes. The turning movement shows that the WB-62 would require some encroachment to be able to make the turn without off-tracking.

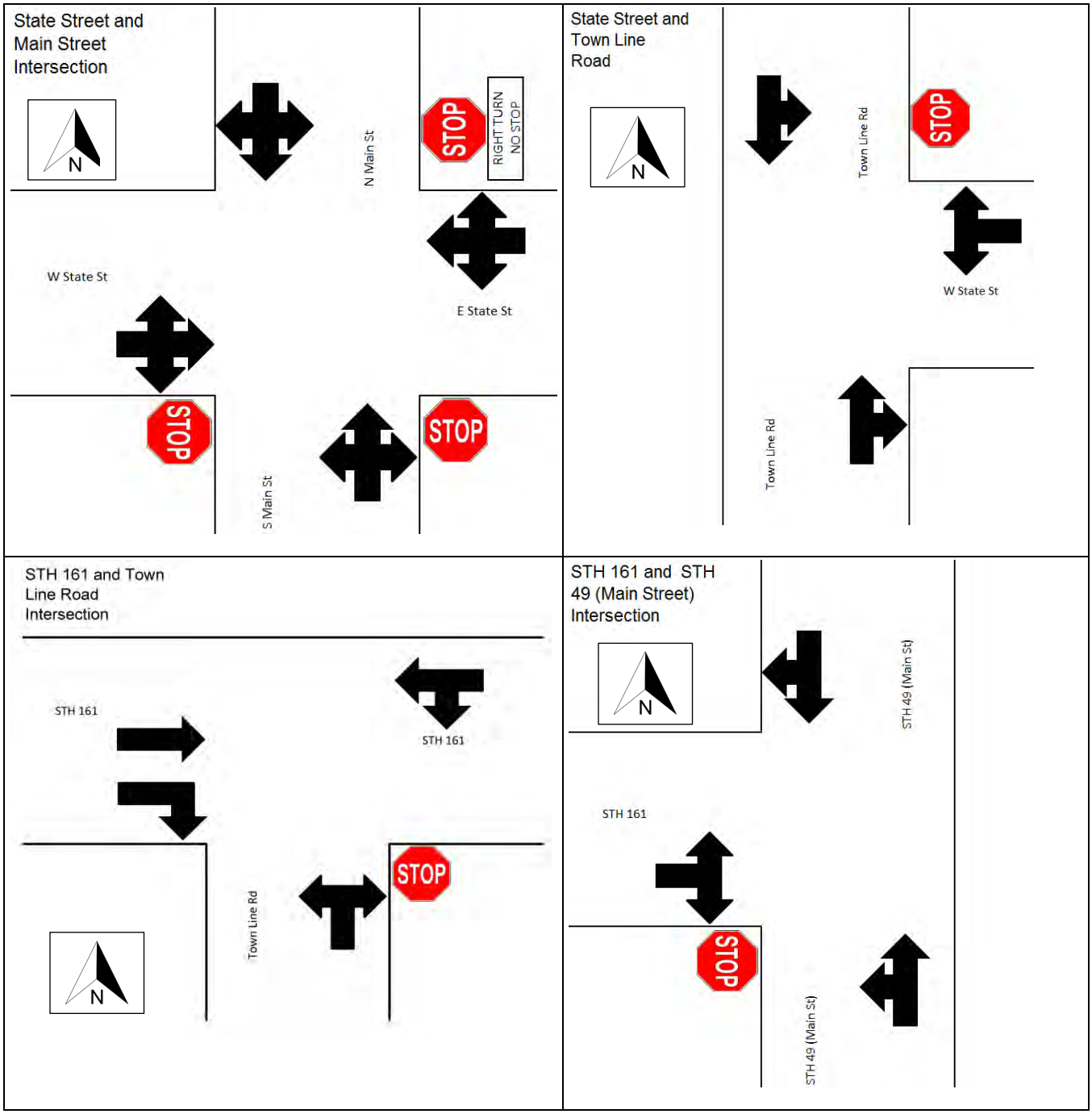


At the intersection of State Street and Town Line Road, the westbound right turn is anticipated to be the tightest truck turning movement. The graphic below shows a WB-62 completing the westbound right turn. The turning movement cannot be made within the existing roadway. It will require encroachment into the departing lane and temporary asphalt widening along the west side of Town Line Road. Large trucks would need to wait for an appropriate gap in traffic to make this maneuver. This delay is expected to be nine seconds as identified in Table 3.



Traffic Analysis

The table below depicts the lane configuration and traffic control for each of the intersections on the local detour route.



A Synchro model was created to evaluate intersection delays during the design hour on the existing route and the local detour route. The highest hourly volume percentage and Average Annual Daily Traffic (AADT) from 2018 were obtained from the WisDOT Traffic Forecast Report. Percentages of AADT volumes were used to distribute the turning movement volumes through the network. Appendix A shows the turning movement volumes for the existing and detour routes.

The traffic analysis results for the four intersections along the local detour route are listed in Tables 2-5 below. The results displayed are for unsignalized intersections using the 2010 Highway Capacity Manual (HCM).

The intersection of STH 49 and State Street is a three-way stop-controlled intersection. The HCM doesn't support three-way stop-controlled intersection configurations so both a two-way stop

controlled and an all-way stop controlled configuration were analyzed and the results are presented in Table 2.

Table 2: State Street & STH 49 Results - Existing Route / Local Detour Route

State Street & STH 49								
Two-Way Stop Controlled								
	Eastbound	Westbound	Northbound			Southbound		
			L	T	R	L	T	R
Existing Route								
Delay (s)	22	17	7.4	0	-	7.8	0	-
HCM LOS	C	C	A	A	-	A	A	-
Local Detour Route								
Delay (s)	9.1	9.3	8.6	0	-	8.7	0	-
HCM LOS	A	A	A	A	-	A	A	-
All-Way Stop Controlled								
Existing Route								
	Eastbound	Westbound	Northbound			Southbound		
Delay (s)	9.7	10	9			11.1		
HCM LOS	A	A	A			B		
Local Detour Route								
Delay (s)	11.6	10.6	9.6			11.0		
HCM LOS	B	B	A			B		

Table 3: State Street & Town Line Road Results - Existing Route / Local Detour Route

State Street & Town Line Road							
	Westbound	Northbound			Southbound		
		L	T	R	L	T	R
Existing Route							
Delay (s)	8.4	-	-	-	7.3	0	-
HCM LOS	A	-	-	-	A	A	-
Local Detour Route							
Delay (s)	9.2	-	-	-	7.5	0	-
HCM LOS	A	-	-	-	A	A	-

Table 4: STH 161 & Town Line Road Results - Existing Route / Local Detour Route

STH 161 & Town Line Road							
	Eastbound			Westbound			Northbound
	L	T	R	L	T	R	
Existing Route							
Delay (s)	-	-	-	7.4	0	-	9.7
HCM LOS	-	-	-	A	A	-	A
Local Detour Route							
Delay (s)	-	-	-	7.7	0	-	11.7
HCM LOS	-	-	-	A	A	-	B

Table 5: STH 49 & STH 161 Results – Existing Route / Local Detour Route

STH 49 & STH 161							
	Eastbound	Northbound			Southbound		
		L	T	R	L	T	R
Existing Route							
Delay (s)	10.7	7.7	0	-	-	-	-
HCM LOS	B	A	A	-	-	-	-
Local Detour Route							
Delay (s)	8.9	-	-	-	-	-	-
HCM LOS	A	-	-	-	-	-	-

The results at the intersection of STH 49 and State Street show that if only State Street is stop controlled, the delay at each of the four approaches along the local detour route is less than that for the existing route. All-way stop control at the intersection results in three of the approaches operated with a slight increase in delay along the local detour route.

The intersections of West State Street & Town Line Road and STH 161 & Town Line Road are expected to have an increased delay for southbound left turn (SBL) and westbound left turn (WBL) respectively along the local detour route.

The delay for the eastbound approach at STH 49 and STH 161 is expected to decrease due to the major decrease in conflicting movement volumes [northbound through (NBT), northbound left turn (NBL) and southbound through (SBT)].

Safety Impacts

The crash history of the existing route and detour route were evaluated to determine if either route had safety concerns. Two crashes occurred on STH 49 between State Street and STH 161 from 2012 to 2016. No crashes occurred on the detour route.

The STH 161 and Town Line Road intersection has an eastbound right turn lane. Vehicles in the eastbound right turn lane can hide eastbound through vehicles. The detour route will increase the number of right turning vehicles and the exposure to a crash caused by a northbound vehicle pulling into the path of a hidden eastbound vehicle. However, traffic volumes along STH 161 are low, reducing the likelihood of this type of crash.

WB-62 trucks turning at the intersections of STH 161 & Town Line Road and State Street & Town Line Road will encroach on adjacent departure lanes. STH 161 & Town Line Road is a Type B1 intersection and is designed to allow a WB-50 to perform a right turn movement without encroaching into the

adjacent lane. The Type B1 intersection is a common intersection design along rural state highways and is properly used at this location based on WisDOT guidance.

At the intersection of State Street & Town Line Road, turning trucks will need to wait for appropriate gaps in traffic to complete their turning movements. Approximately 6.6 percent trucks are anticipated to use the local detour route.

Costs

A cost analysis was completed to evaluate the financial burden associated with each detour route alternative to assist in determining the most cost-effective solution. The selected detour route alternative will be implemented during the entire time the STH 49 bridge crossing the South Branch Little Wolf River is being reconstructed.

Alternative Detour Route Costs

For each of the alternative detour routes that were evaluated, the method used to calculate additional costs was the method used by the FHWA Highway Economic Requirements System (HERS), an economic analysis tool used to identify cost effective improvements. Various costs and predictions used in this model are shown in the tables below.

Scenario 1: Local Detour Route

This scenario anticipates that 100% of the projected traffic volume for 2020 will utilize the designated local detour route. See Table 6 below for the costs to roadway users for this scenario.

Table 6: Additional Costs to Roadway Users

Scenario 1 – Traffic Uses Local Detour Route

Factor	Passenger Vehicles	Heavy Vehicles	Source
Increased Distance	0.67 miles	0.67 miles	Additional distance due to detour
Mileage Rate	$0.58 / mile	$1.04 / mile	2019 IRS standard mileage rate
Increased Delay	1.2 min / vehicle	1.2 min / vehicle	Approximate based on travel times and posted speed limits
Cost of Delay	$19.46 / person-hour	$26.92 / person-hour	FHWA HERS
Vehicle Occupancy	1.69	1.12	FHWA HERS
Percentage of Total Volume	93.4%	6.6%	STH 49 Traffic Forecast
Total Cost Per Day:	**$4,500/day**	**$400/day**	
	$4,900/day		

Notes:

- AADT for STH 49 in 2020 is projected to be 4,700 vpd. 100% of the traffic volume on STH 49 is estimated to utilize the detour route.

The bridge reconstruction will take an estimated 100 calendar days. Construction costs are estimated to increase by $11,000 for local route improvements including signing, pavement marking and temporary pavement widening. The roadway user costs for the duration of the project will equate to an estimated $490,000. Therefore, the overall total cost for Scenario 1 is estimated at **$501,000**.

Scenario 2: State Detour Route

This scenario anticipates that 100% of the projected traffic volume for 2020 will utilize the designated state detour route. See Table 7 below for the costs to roadway users for this scenario.

Table 7: Additional Costs to Roadway Users

Scenario 2 – Traffic Uses State Detour Route

Factor	Passenger Vehicles	Heavy Vehicles	Source
Increased Distance	41.64 miles	41.64 miles	Additional distance due to detour
Mileage Rate	$0.58 / mile	$1.04 / mile	2019 IRS standard mileage rate
Increased Delay	46.6 min / vehicle	46.6 min / vehicle	Approximate based on travel times and posted speed limits
Cost of Delay	$19.46 / person-hour	$26.92 / person-hour	FHWA HERS
Vehicle Occupancy	1.69	1.12	FHWA HERS
Percentage of Total Volume	93.4%	6.6%	STH 49 Traffic Forecast
Total Cost Per Day:	**$218,100/day**	**$20,700/day**	
	$238,800/day		

Notes:

- AADT for STH 49 in 2020 is projected to be 4,700 vpd. 100% of the traffic volume on STH 49 is estimated to utilize the detour route.

The bridge reconstruction will take an estimated 100 calendar days. Construction costs are estimated to increase by $8,500 for signing the state detour route. The roadway user costs for the duration of the project will equate to an estimated $23,880,000. Therefore, the overall total cost for Scenario 2 is estimated at **$23,888,500**.

Recommendations

Village officials have requested that local roads within the village be utilized for the signed detour instead of using state trunk highways that would take traffic away from the village. The above traffic analysis for the local detour route identified short delays at the four intersections. One concern with the local detour route is the existing geometry at the intersection of State Street and Town Line Road. Temporary asphalt widening would be required to facilitate truck encroachment into the departing lane of the intersection and as a result the trucks would need to wait for an appropriate gap in traffic to complete the turning maneuver.

Although there are some minor safety concerns related to trucks using the local detour route, it is the recommended route due to adequate traffic operation, village preference and cost effectiveness.

Appendix A

Existing Route Traffic Volumes

Local Detour Route Traffic Volumes

Intersection	
Int Delay, s/veh	17.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	95	108	56	43	126	27	36	28	43	125	14	62
Future Vol, veh/h	95	108	56	43	126	27	36	28	43	125	14	62
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	103	117	61	47	137	29	39	30	47	136	15	67

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	536	476	49	542	486	54	82	0	0	77	0	0
Stage 1	321	321	-	132	132	-	-	-	-	-	-	-
Stage 2	215	155	-	410	354	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	455	488	1020	451	481	1013	1515	-	-	1522	-	-
Stage 1	691	652	-	871	787	-	-	-	-	-	-	-
Stage 2	787	769	-	619	630	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	303	430	1020	306	424	1013	1515	-	-	1522	-	-
Mov Cap-2 Maneuver	303	430	-	306	424	-	-	-	-	-	-	-
Stage 1	672	591	-	847	766	-	-	-	-	-	-	-
Stage 2	611	748	-	423	571	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	29.6	21.9	2.5	4.7
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1515	-	-	418	422	1522	-	-
HCM Lane V/C Ratio	0.026	-	-	0.673	0.505	0.089	-	-
HCM Control Delay (s)	7.4	0	-	29.6	21.9	7.6	0	-
HCM Lane LOS	A	A	-	D	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	4.8	2.8	0.3	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	74	24	10	117	19	10
Future Vol, veh/h	74	24	10	117	19	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	80	26	11	127	21	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	107	0	242	93
Stage 1	-	-	-	-	93	-
Stage 2	-	-	-	-	149	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1484	-	746	964
Stage 1	-	-	-	-	931	-
Stage 2	-	-	-	-	879	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1484	-	740	964
Mov Cap-2 Maneuver	-	-	-	-	740	-
Stage 1	-	-	-	-	931	-
Stage 2	-	-	-	-	872	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	804	-	-	1484	-
HCM Lane V/C Ratio	0.039	-	-	0.007	-
HCM Control Delay (s)	9.7	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	4.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	19	10	4	24	20
Future Vol, veh/h	0	19	10	4	24	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	21	11	4	26	22

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	87	13	0	0	15	0
Stage 1	13	-	-	-	-	-
Stage 2	74	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	914	1067	-	-	1603	-
Stage 1	1010	-	-	-	-	-
Stage 2	949	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	899	1067	-	-	1603	-
Mov Cap-2 Maneuver	899	-	-	-	-	-
Stage 1	1010	-	-	-	-	-
Stage 2	934	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.4	0	4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1067	1603	-
HCM Lane V/C Ratio	-	-	0.019	0.016	-
HCM Control Delay (s)	-	-	8.4	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	49	25	68	38	98	49
Future Vol, veh/h	49	25	68	38	98	49
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	53	27	74	41	107	53

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	322	133	160	0	-	0
Stage 1	133	-	-	-	-	-
Stage 2	189	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	672	916	1419	-	-	-
Stage 1	893	-	-	-	-	-
Stage 2	843	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	636	916	1419	-	-	-
Mov Cap-2 Maneuver	636	-	-	-	-	-
Stage 1	893	-	-	-	-	-
Stage 2	798	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.7	4.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1419	-	709	-	-
HCM Lane V/C Ratio	0.052	-	0.113	-	-
HCM Control Delay (s)	7.7	0	10.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.4	-	-

Intersection	
Int Delay, s/veh	11.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	53	67	16	43	62	100	8	54	43	166	54	20
Future Vol, veh/h	53	67	16	43	62	100	8	54	43	166	54	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	58	73	17	47	67	109	9	59	47	180	59	22

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	618	553	70	575	540	82	80	0	0	105	0	0
Stage 1	430	430	-	99	99	-	-	-	-	-	-	-
Stage 2	188	123	-	476	441	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	402	441	993	429	449	978	1518	-	-	1486	-	-
Stage 1	603	583	-	907	813	-	-	-	-	-	-	-
Stage 2	814	794	-	570	577	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	279	383	993	325	390	978	1518	-	-	1486	-	-
Mov Cap-2 Maneuver	279	383	-	325	390	-	-	-	-	-	-	-
Stage 1	599	509	-	902	808	-	-	-	-	-	-	-
Stage 2	659	789	-	419	504	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	22	17	0.6	5.4
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1518	-	-	357	521	1486	-	-
HCM Lane V/C Ratio	0.006	-	-	0.414	0.428	0.121	-	-
HCM Control Delay (s)	7.4	0	-	22	17	7.8	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	2	2.1	0.4	-	-

AECOM Imagine it. Delivered.

AECOM
200 Indiana Avenue
Stevens Point, WI 54481
aecom.com

March 22, 2019

Project Name:
V Iola, Main Street
S Br Little Wolf, B-68-29
STH 49
Waupaca County

Project ID: 6270-00-04
AECOM PN: 60548152

From:
Ryan Barz, PE
AECOM

To:
Wendy Arneson, PE
WisDOT NC Region

CC:
Nathan Lipinski, PE

Memorandum

Subject: Bicycle and Pedestrian Accommodations Analysis

Introduction

Federal surface transportation law (23 U.S.C 217(g) (1)) requires that due consideration be given to establishing bikeways and pedestrian ways in all new highway construction and reconstruction projects funded in whole or in part from Federal funds. The purpose of this report is to identify the existing bicycle and pedestrian accommodations and document the proposed bicycle and pedestrian accommodations included in this project.

Project Background

The bridge replacement project is located on STH 49 (Main Street) over the South Branch Little Wolf River, in the Village of Iola (village), Section 35 of Township 24 North, Range 11 East, Waupaca County, Wisconsin. See Exhibits 1 and 2 for project location maps. STH 49 is functionally classified as a Minor Arterial with a forecasted traffic volume of 4,700 vehicles per day for 2020.

The project is located in an urban portion of the northwest side of Iola. A multi-use path is located along the South Branch Little Wolf River and terminates at STH 49 just north of the existing bridge. Veterans Memorial Park is located in the southeast quadrant of the bridge. Land use in the surrounding area is predominantly commercial development and recreational land. Residential development is just north of the project area.

The existing typical section of STH 49 consists of two 12-foot wide travel lanes with 8-foot parking lanes and curb & gutter. A 5-foot sidewalk separated by a 5-foot terrace exists on the west side of the roadway and a 6-foot sidewalk directly at the back of curb exists on the east side of the roadway from the south project limits through the existing bridge where the sidewalk terminates.

Proposed Bicycle and Pedestrian Accommodations

According to the traffic volumes anticipated for the roadway, STH 49 is a WisDOT Urban Design Class 2b. Therefore, the proposed typical section on the roadway will maintain the existing typical section: two 12-foot wide travel lanes with 8-foot parking lanes and curb & gutter. A 5-foot sidewalk separated by a 5-foot terrace will be reconstructed on the west side of the roadway. A 6-foot sidewalk directly at the back of curb will be reconstructed on the east side of the roadway from the southern project limits to the northern bridge limits, a slight extension from the existing sidewalk limits. At this northern sidewalk limit, curb ramps and a marked crosswalk are included to provide access to the multi-use path to the west, along the South Branch Little Wolf River. See Exhibit 3 for existing and proposed typical sections and Exhibit 4 for preliminary plans.

Bicycles will not be accommodated by officially designated or marked on-street facilities. This is because the bridge replacement project is considered a spot improvement where the typical roadway section will be replaced in-kind. No bicycle accommodations exist on either side of the bridge and therefore, no connecting facilities exist for on-street bicycle accommodations at the bridge. However, an 8-foot parking lane is included, which connects existing parking lanes on STH 49 to the north and south of the bridge and could be used by bicycles when clear of parked cars. The bridge is in the downtown area of the village where maintaining on-street parking is seen as an important feature for businesses in the area. Accommodations to directly access the multi-use path to the west along the South Branch Little Wolf River are included in the project.

Pedestrians will be accommodated with sidewalks on both sides of the roadway. The marked crosswalk on the north side of the bridge will provide a safe crossing for pedestrian traffic using the multi-use path along the South Branch Little Wolf River.

The comprehensive plan for bicycle and pedestrian facilities in Waupaca County was updated in 2018. A map of recommended bicycle and pedestrian facilities from the plan is included as Exhibit 5. No facilities are identified on the plan for STH 49 in the project area. The only part of STH 49 identified in the plan within the village of Iola is the short segment running concurrent with CTH G in the downtown area.

Coordination with the village has been ongoing throughout the project. They are aware of and agree with the proposed pedestrian facilities. They are also aware that during construction pedestrians will need to be rerouted around the project.

Pedestrian Accommodations During Construction

There are existing sidewalks crossing the South Branch Little Wolf River within the project area that will be closed during bridge construction. Two temporary pedestrian routes were considered to accommodate pedestrians during construction.

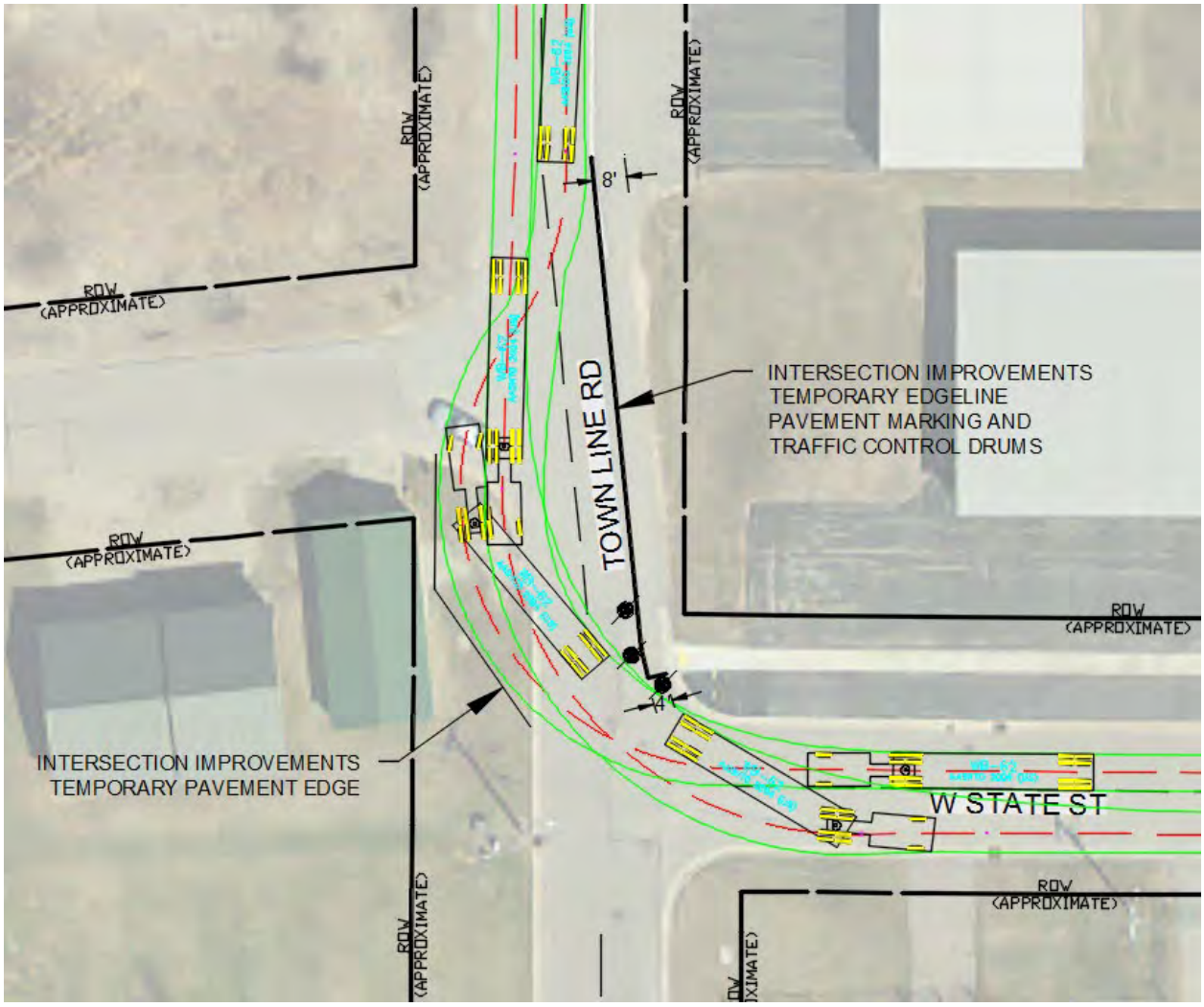
Alternative Route 1

Alternative Route 1 is depicted in Exhibit 6. This pedestrian route aims at keeping the temporary pedestrian route as short as possible. It would direct pedestrians on the south side of the bridge to the west across private property with an easement, then on village property across the existing pedestrian bridge back to STH 49 sidewalk north of the bridge. This route is short in length and would minimize pedestrian inconvenience and delay, but safety is the biggest concern with this alternative. This route would put pedestrians directly adjacent to the structure excavation and within the swing zone of cranes and excavators. This heavy equipment will be utilized for much of the construction time frame.

The existing sidewalk north of the bridge will also need to be replaced which would require pedestrians to be on a different route during that time. This route would add approximately one minute of travel time for pedestrians. Since this route places pedestrians directly adjacent to and within the construction zone, this is not the preferred alternative route.

Alternative Route 2

Alternative Route 2 is depicted in Exhibit 7. This pedestrian route would utilize the existing sidewalks along Main Street, State Street and STH 161. It would also utilize existing paved shoulder accommodations along Townline Road. The roadway width along Town Line Road widens from a 28 foot width to 32 foot width within 100 feet of the Town Line and State Street intersection. The typical roadway cross section provides enough width for two 12-foot travel lanes and a paved shoulder accommodation ranging in width from 4 feet to 8 feet. The majority of the paved shoulder is already marked with an edgeline for use by pedestrians. It is proposed to continue the edgeline to the State Street intersection for pedestrians. Temporary intersection improvements will be made to allow truck traffic to make the turning maneuvers along Town Line Road and State Street without impeding on the pedestrian route.

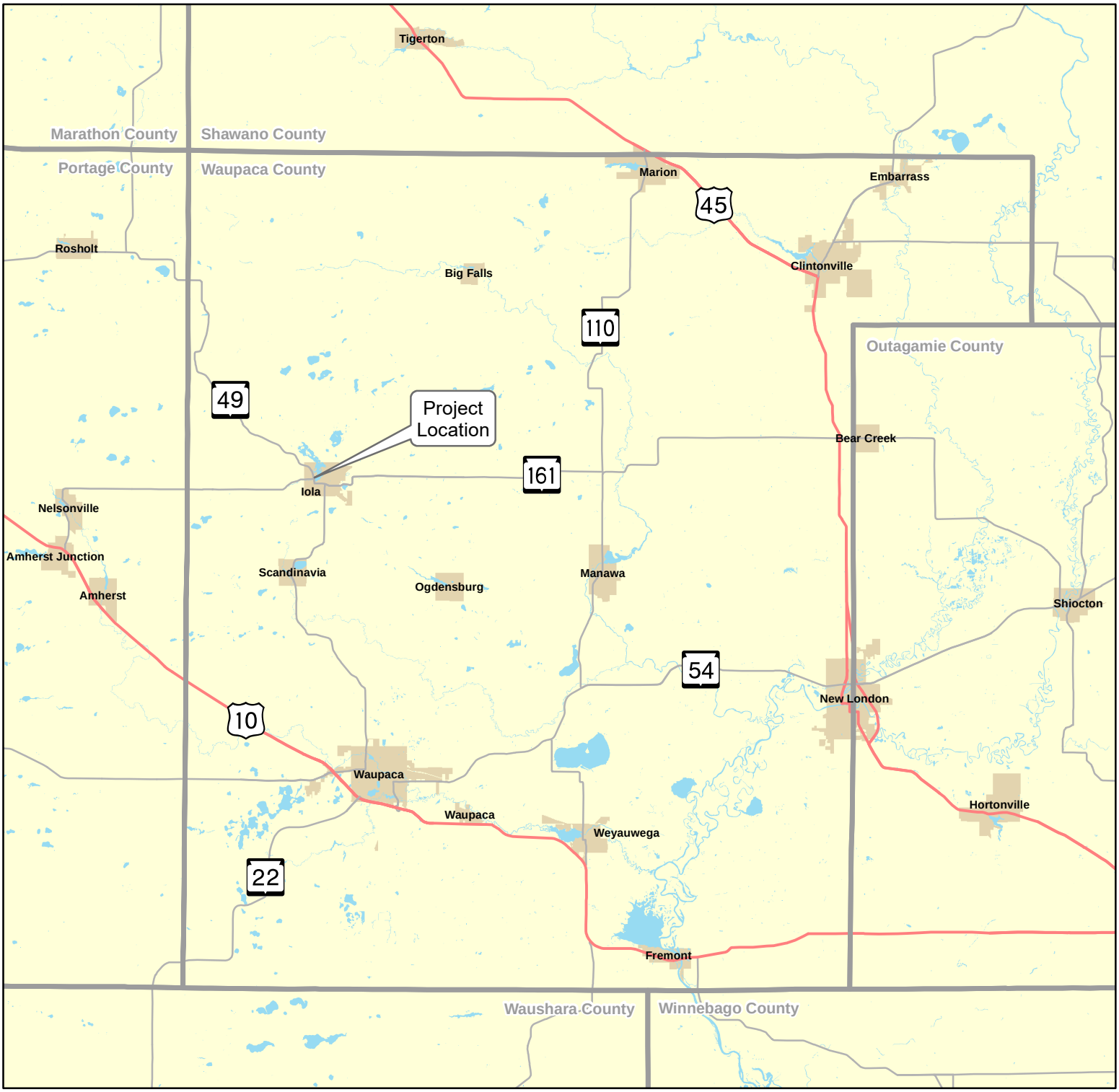


Alternative Route 2 would require a short stretch of temporary sidewalk be constructed at the intersection of Townline Road and STH 161. The estimated cost of this temporary sidewalk is $4,000. The village has indicated they would like to have sidewalk at the intersection of Townline Road and STH 161 so it may become permanent sidewalk instead of just temporarily constructed for this project. This route would add approximately 17 minutes of travel time for pedestrians. Although this alternative route is significantly longer than Alternative Route 1, Alternative Route 2 is the preferred route due to the safety concerns associated with Alternative Route 1.

Attachments

Attachments include:

- Exhibit 1 – Project Location Map (County)
- Exhibit 2 – Project Location Map (Project Area)
- Exhibit 3 – Existing and Proposed Typical Sections
- Exhibit 4 – Preliminary Plan and Profile Sheet
- Exhibit 5 – Waupaca County Bike and Pedestrian Plan Map
- Exhibit 6 – Temporary Alternative Route 1
- Exhibit 7 – Temporary Alternative Route 2 (Preferred)



N

Exhibit 1:
Project Location Map (County)
STH 49 (Main Street)
WisDOT I.D. 6270-00-04

0 2.5 5 Miles

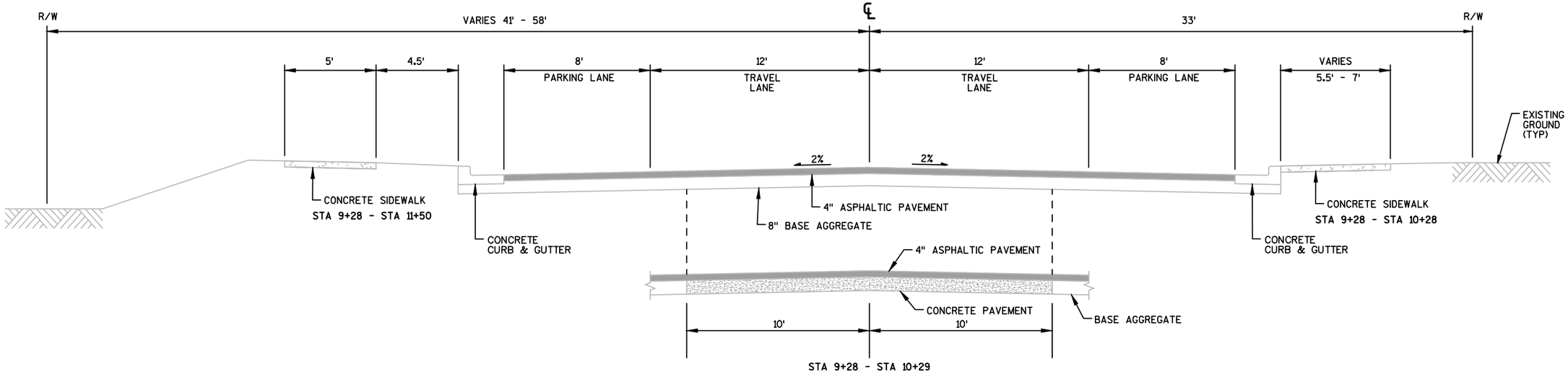
Waupaca County

N

0 100 200 Feet

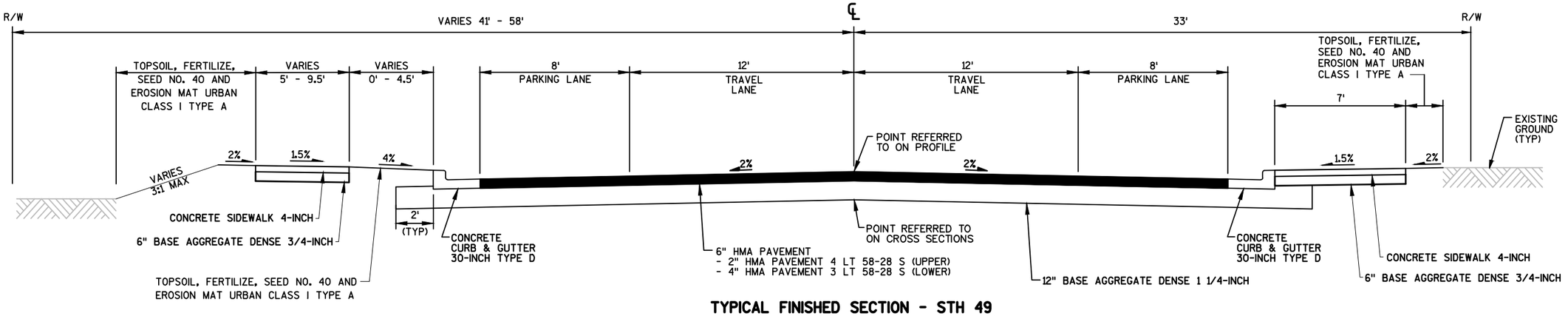
Exhibit 2:
Project Location Map (Project Area)
STH 49 (Main Street)
WisDOT I.D. 6270-00-04

Waupaca County



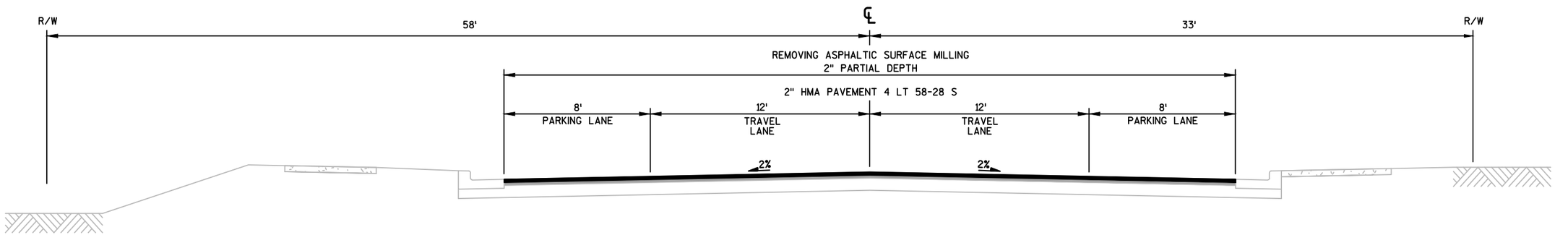
TYPICAL EXISTING SECTION - STH 49

STA 9+28 - STA 11+50



TYPICAL FINISHED SECTION - STH 49

STA 9+28 - STA 10+85



TYPICAL FINISHED SECTION - STH 49

STA 10+85 - STA 11+50

PROJECT NO: 6270-00-74	HWY: STH 49	COUNTY: WAUPACA	TYPICAL SECTION	SHEET E

PRE_4

Exhibit 4: Plan and Profile Temporary Widening

TEMPORARY WIDENING (TYPICAL CROSS SECTION)
ASPHALTIC SURFACE TEMPORARY = 4 INCHES
BASE AGGREGATE DENSE 1 1/4-INCH = 8 INCHES
PAVEMENT CROSS SLOPE = -2.0%

CAUTION

SLOPE INTERCEPT

R/W

R79.

BM 5

+67.24, -31.93' LT

PI: 202+12.33

CONTROL POINT 12
Y=397,191.69
X=523,143.45

AMHERST TELEPHONE COMPANY
(COMMUNICATION)

MEDIACOM WISCONSIN LLC
(COMMUNICATION)

BP: 200+00.00

VILLAGE OF IOLA
(WATER)

+96.94, -16.30' LT

+90.41, -10.88' LT

REMOVING CURB
& GUTTER

+29.89, -9.12' LT

TOWN LINE RD

202+00

203+00

204+00

N0° 13' 55"E

N8° 08' 15"W

201+00

N0° 16' 34"W

BP: 100+00.00

PI: 201+16.40

CONTROL POINT 11
Y=396,496.66
X=523,134.18

ALLIANT ENERGY
(GAS)

VILLAGE OF IOLA
(SEWER)

R/W

AMHERST TELEPHONE COMPANY
(COMMUNICATION)

ALLIANT ENERGY
(ELECTRIC)

MEDIACOM WISCONSIN LLC
(COMMUNICATION)

W. STATE ST

S89° 19' 36"E

101+00

R/W

ALLIANT ENERGY
(GAS)

AMHERST TELEPHONE COMPANY
(COMMUNICATION)

AMHERST TELEPHONE COMPANY
(COMMUNICATION)

Ⓐ IMMEDIATELY FOLLOWING REOPENING OF STH 49 TO TRAFFIC, RESTORE THE AREA IMPACTED BY TEMPORARY WIDENING TO ITS PRE-EXISTING CONDITION.

WORK TO INCLUDE, BUT IS NOT LIMITED TO:
REMOVE ASPHALTIC SURFACE TEMPORARY, REMOVE BASE AGGREGATE DENSE 1 1/4-INCH, REPLACE CURB AND GUTTER IN KIND AND RESTORE REMAINING DISTURBED AREA WITH TOPSOIL, FERTILIZER TYPE B, SEED NO. 40 AND EROSION MAT URBAN CLASS I TYPE A.

W. STATE ST
PI STA = 100+00.00
Y = 396,453.152
X = 523,120.630
PI STA = 118+93.98
Y = 396,430.891
X = 525,014.483

TOWN LINE RD
PI STA = 200+00.00
Y = 396,370.285
X = 523,120.935
PI STA = 201+16.40
Y = 396,486.680
X = 523,120.374
PI STA = 202+12.33
Y = 396,581.644
X = 523,106.795
PI STA = 208+49.98
Y = 397,219.293
X = 523,109.377

N

BENCH MARKS

NO.	STATION	DESCRIPTION	ELEV.
5	201+58,LT	SE FLANGE (BURY) BOLT ON HYDRANT	948.09

965 960 955 950 945 940 935 930

EXISTING GROUND @ REFERENCE LINE

EXISTING ELEVATION
PROPOSED ELEVATION

951.55 949.05 948.09 947.52 947.17 946.54 946.09

199+00 200+00 201+00 202+00 203+00 204+00 205+00

PROJECT NO: 6270-00-74	HWY: STH 49	COUNTY: WAUPACA	PLAN AND PROFILE: W. STATE ST / TOWN LINE RD TEMP. WIDENING	SHEET E

FILE NAME : P:\60548152\900_WORK\910_CAD\60548152\SHEETSPLAN\0501-PP.DWG
LAYOUT NAME - ****
PLOT DATE : 7/1/2019 6:19 AM PLOT BY : DOLAN, ISAAC PLOT NAME : PLOT SCALE : **********

Exhibit 4: Plan and Profile Sidewalk

AMHERST TELEPHONE COMPANY (COMMUNICATION)
REMOVING SMALL PIPE CULVERTS
GRADE DITCH TO MAINTAIN DRAINAGE TO EXISTING DOWNSTREAM CULVERT
ALLIANT ENERGY (GAS)
CAUTION
EP: 51+28.44
STA 301+35 LT
PIPE ARCH CORRUGATED STEEL 24X18-INCH
W/ APRON ENDWALLS
INV_{AEW} = 949.36 (E)
INV_{AEW} = 949.20 (W)
AMHERST TELEPHONE COMPANY (COMMUNICATION)
N
R/W
BP: 300+00.00
PI: 303+15.96
PI: 300+71.53
N88° 30' 47"E
301+00
51+00
302+00
N87° 54' 53"E
303+00
EP: 208+49.98
STH 161 / MILL ST
VILLAGE OF IOLA (WATER)
CONTROL POINT 12
Y=397,191.69
X=523,143.45
BM 4
AMHERST TELEPHONE COMPANY (COMMUNICATION)
R/W
208+00
5'
CONCRETE
CAUTION
PI: 50+66.19
PT: 50+55.13
PC: 50+37.04
PI: 50+06.22
BP: 50+00.00
CONCRETE SIDEWALK 4-INCH
N0° 13' 55"E
TOWN LINE RD
SLOPE INTERCEPT
WETLAND BOUNDARY

STH 161 SIDEWALK

PI STA = 50+00.00
Y = 397,149.835
X = 523,127.509

PI STA = 50+06.22
Y = 397,149.805
X = 523,133.731

PC STA = 50+37.04
Y = 397,175.275
X = 523,150.396

PI STA = 50+46.50
Y = 397,183.508
X = 523,155.784
DELTA = 41°27'28"
D = 229°10'59"
T = 9.46'
L = 18.09'
R = 25.00'
PC STA = 50+37.04
PT STA = 50+55.13

PT STA = 50+55.13
Y = 397,186.012
X = 523,164.908

PI STA = 50+66.19
Y = 397,188.940
X = 523,175.579

PI STA = 51+28.44
Y = 397,251.158
X = 523,173.697

CONTROL POINT 11
Y=396,496.66
X=523,134.18

BEGIN CONSTRUCTION
STA 50+00.00

END CONSTRUCTION
STA 51+25.40

STH 161 / MILL ST

PI STA = 300+00.00
Y = 397,217.437
X = 523,037.872

PI STA = 300+71.53
Y = 397,219.293
X = 523,109.377

PI STA = 303+15.96
Y = 397,228.187
X = 523,353.650

PC STA = 311+65.29
Y = 397,262.791
X = 524,202.267

PI STA = 314+07.50
Y = 397,272.659
X = 524,444.277
DELTA = 8°27'00"
D = 1°44'51"
T = 242.21'
L = 483.54'
R = 3278.65'
PC STA = 311+65.29
PT STA = 316+48.83

PT STA = 316+48.83
Y = 397,317.983
X = 524,682.209

PI STA = 319+07.74
Y = 397,366.433
X = 524,936.547

BENCH MARKS

NO.	STATION	DESCRIPTION	ELEV.
4	301+11,RT	SW FLANGE (BURY) BOLT ON HYDRANT	952.98

PROPOSED GRADE @ REFERENCE LINE
EXISTING GROUND @ REFERENCE LINE
EXISTING ELEVATION
PROPOSED ELEVATION

STA 50+00.00 EL 948.98
STA 50+06.68 EL 949.08
STA 50+66.20 EL 951.08
STA 50+74.89 EL 951.21
STA 51+00.00 EL 951.85
STA 51+11.02 EL 951.66
STA 51+24.33 EL 951.83
STA 51+31.78 EL 951.83

1.50%
3.36%
1.50%
2.54%
1.76%
1.31%
0.00%

949.02
950.11
951.84

960 955 950 945 940 935 930 925

47+00 48+00 49+00 50+00 51+00 52+00 53+00

PROJECT NO: 6270-00-74	HWY: STH 49	COUNTY: WAUPACA	PLAN AND PROFILE: STH 161 / TOWN LINE RD SIDEWALK	SHEET E

PRE_27

FILE NAME : P:\60548152\900_WORK\910_CAD\60548152\SHEETSPLAN\0501-PP.DWG
LAYOUT NAME - ****
PLOT DATE : 7/1/2019 6:19 AM
PLOT BY : DOLAN, ISAAC
PLOT NAME :
PLOT SCALE : 1 IN:40 FT

Exhibit 4: Plan and Profile STH 49

DEPOT STREET STATION, LLC

VILLAGE OF IOLA (WATER)

STRUCTURE B-68-0133 REQUIRED

STRUCTURE B-68-0029 (TO BE REPLACED)

VILLAGE OF IOLA

SOUTH BRANCH LITTLE WOLF

EXISTING PEDESTRIAN BRIDGE

CONTROL POINT 5
Y=397,296.51
X=524,915.96

MILL STREET (STH 161)

DEPOT STREET

PC: 7+25.59

STA 9+46, LT CONSTRUCT ASPHALT CE

CAUTION

ALLIANT ENERGY (GAS)

BM 1

7+00
N01°18'36"E

8+00

STH 49

9+00

10+00

11+00

12+00

13+00

319+00

EP: 319+07.74
N12°26'57"W

SLOPE INTERCEPT

CONCRETE

ASPHALT

ASPHALT

20'

20'

CURB & GUTTER TO REMAIN

END PROJECT
STA 11+50.00
MATCH EXISTING
SAWCUT REQUIRED

PT: 8+93.22

REMOVING CONCRETE SIDEWALK
CONCRETE SIDEWALK 4-INCH
SEE LIGHTING PLAN FOR MORE DETAIL

PI: 8+09.81

AMERICAN LEGION

R/W

CONTROL POINT 4
Y=397,046.48
X=525,037.85

BM 3

PROPOSED R/W

TLE

SLOPE INTERCEPT

ALLIANT ENERGY (ELECTRIC)

CAUTION

PARK

BEGIN PROJECT
STA 9+28.00
MATCH EXISTING
SAWCUT REQUIRED
Y = 397,095.145
X = 524,996.245

MEDIACOM WISCONSIN LLC (COMMUNICATION)

ALLIANT ENERGY (ELECTRIC)

VILLAGE OF IOLA

BM 2

THOMAS R. FUCIK & MELODY K. M. FUCIK

WORK AROUND EXISTING WOOD FENCE TO REMAIN

PI STA = 6+00.00
Y = 396,769.180
X = 525,017.022

PC STA = 7+25.59
Y = 396,894.739
X = 525,019.893

PI STA = 8+09.81
Y = 396,978.932
X = 525,021.818
DELTA = 13°43'13"
D = 8°11'06"
T = 84.22'
L = 167.63'
R = 700.00'
PC STA = 7+25.59
PT STA = 8+93.22

PT STA = 8+93.22
Y = 397,061.180
X = 525,003.719

PI STA = 13+50.00
Y = 397,507.289
X = 524,905.551

- A CONCRETE PAVEMENT APPROACH SLAB
- B CONCRETE DRIVEWAY 6-INCH
- C 3-INCH ASPHALTIC SURFACE OVER 6-INCH BASE AGGREGATE DENSE 3/4-INCH
- D 2-INCH ASPHALTIC SURFACE OVER 6-INCH BASE AGGREGATE DENSE 3/4-INCH
- E BASE AGGREGATE DENSE 3/4-INCH

BENCH MARKS

NO.	STATION	DESCRIPTION	ELEV.
1	8+98, LT	TOP OF NE BOLT ON BASE OF "CENEX" SIGN	949.64
2	10+14, RT	BRASS DISK IN NE WING WALL IN IOLA POND DAM	950.54
3	9+74, RT	BRASS DISK IN SE ABUT OF BRIDGE	947.99

VCL = 50.00
K = 123.99

STA 9+28.00
EL 948.31

PROPOSED GRADE @ REFERENCE LINE

STA 10+85.00
EL 947.79

END RECONSTRUCTION
BEGIN RESURFACE
STA 10+85.00
SAWCUT REQUIRED

-0.40%

0.01%

EXISTING GROUND @ REFERENCE LINE

VPC STA 10+35.00
VPC EL 947.88

VPI STA 10+60.00
VPI EL 947.79

VPT STA 10+85.00
VPT EL 947.79

EXISTING ELEVATION
PROPOSED ELEVATION

955 950 945 940 935 930 925 920

949.53 949.30 948.96 948.67 948.44 948.23 948.22 948.11 948.02 947.84 947.83 947.82 948.02 948.49

7+00 8+00 9+00 10+00 11+00 12+00 13+00

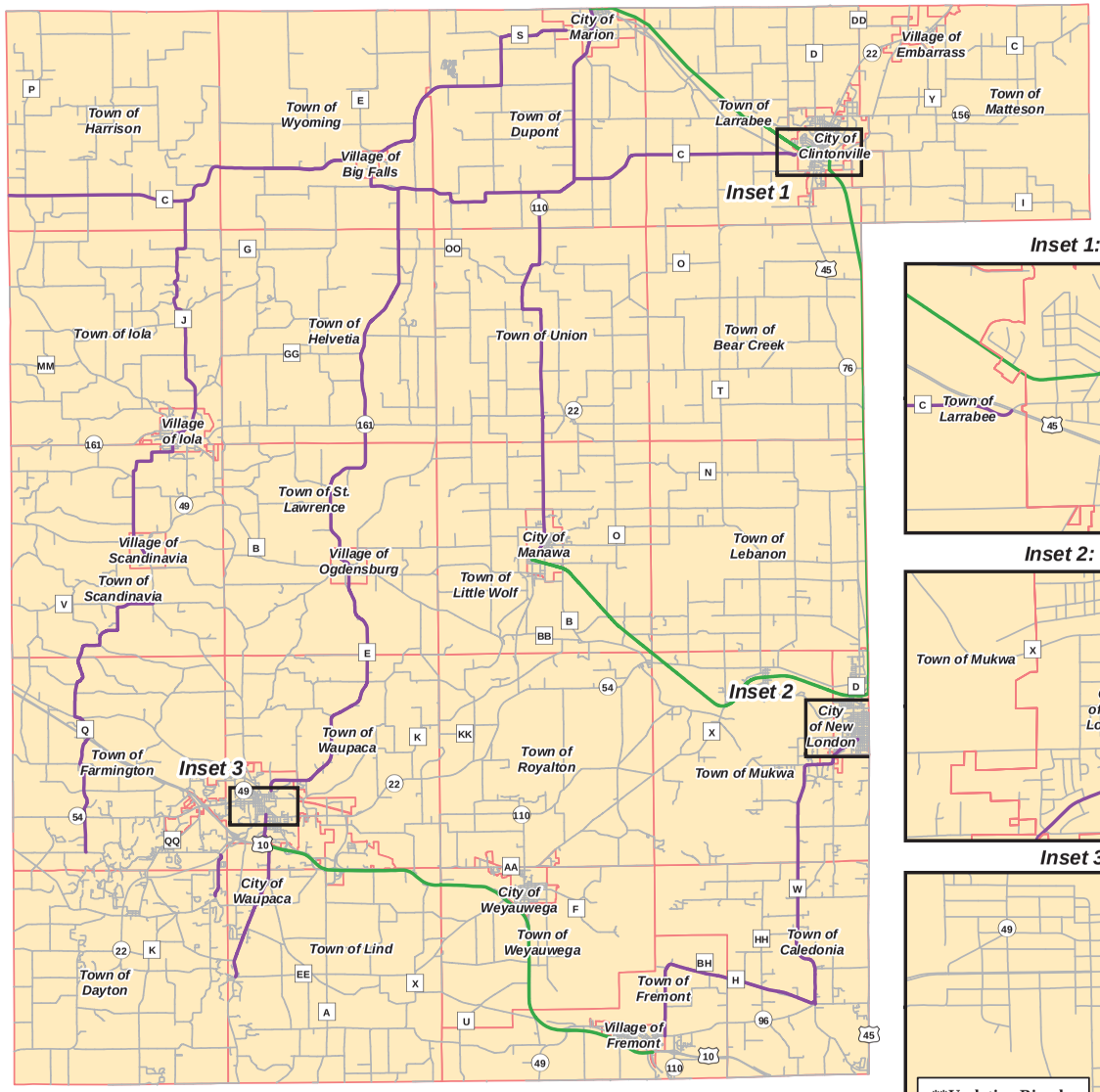
PROJECT NO: 6270-00-74	HWY: STH 49	COUNTY: WAUPACA	PLAN AND PROFILE: STH 49 (B-68-0133)	SHEET E

PRE_28

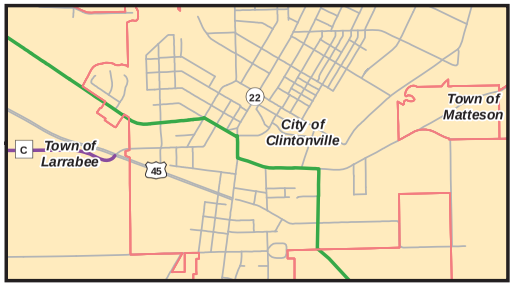
FILE NAME : P:\60548152\900_WORK\910_CAD\60548152\SHEETSPLAN\0501-PP.DWG
LAYOUT NAME - ####

PLOT DATE : 7/1/2019 6:19 AM PLOT BY : DOLAN, ISAAC PLOT NAME : PLOT SCALE : 1 IN:40 FT

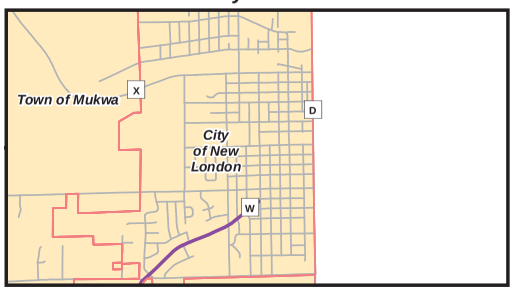
WISDOT/CADDS SHEET 44



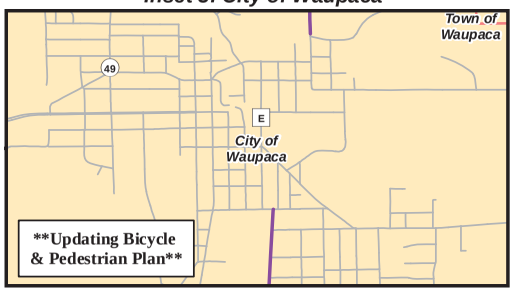
Inset 1: City of Clintonville



Inset 2: City of New London



Inset 3: City of Waupaca



Map 5
Waupaca County
Bicycle & Pedestrian Plan

Waupaca County
Recommended Facilities

Legend

- Recommended Road Routes
- Recommended Trail Routes

Source:
Base data provided by Waupaca County 2015.
Recommendations provided by ECWRPC 2018.

N
W E
S

0 1 2 4
Scale in Miles

PREPARED JUNE 2018 BY:

ECWRPC

TD O:\Tyler\2017\WaupacaBicycle_Pedestrian\Report\New\MXD\Map_5_Recommended_Facilities.mxd

Exhibit 5: Waupaca County Bike and Pedestrian Map

IOLA BRIDGE STH 4/9

Exhibit 6: Temporary Alternative Route 1

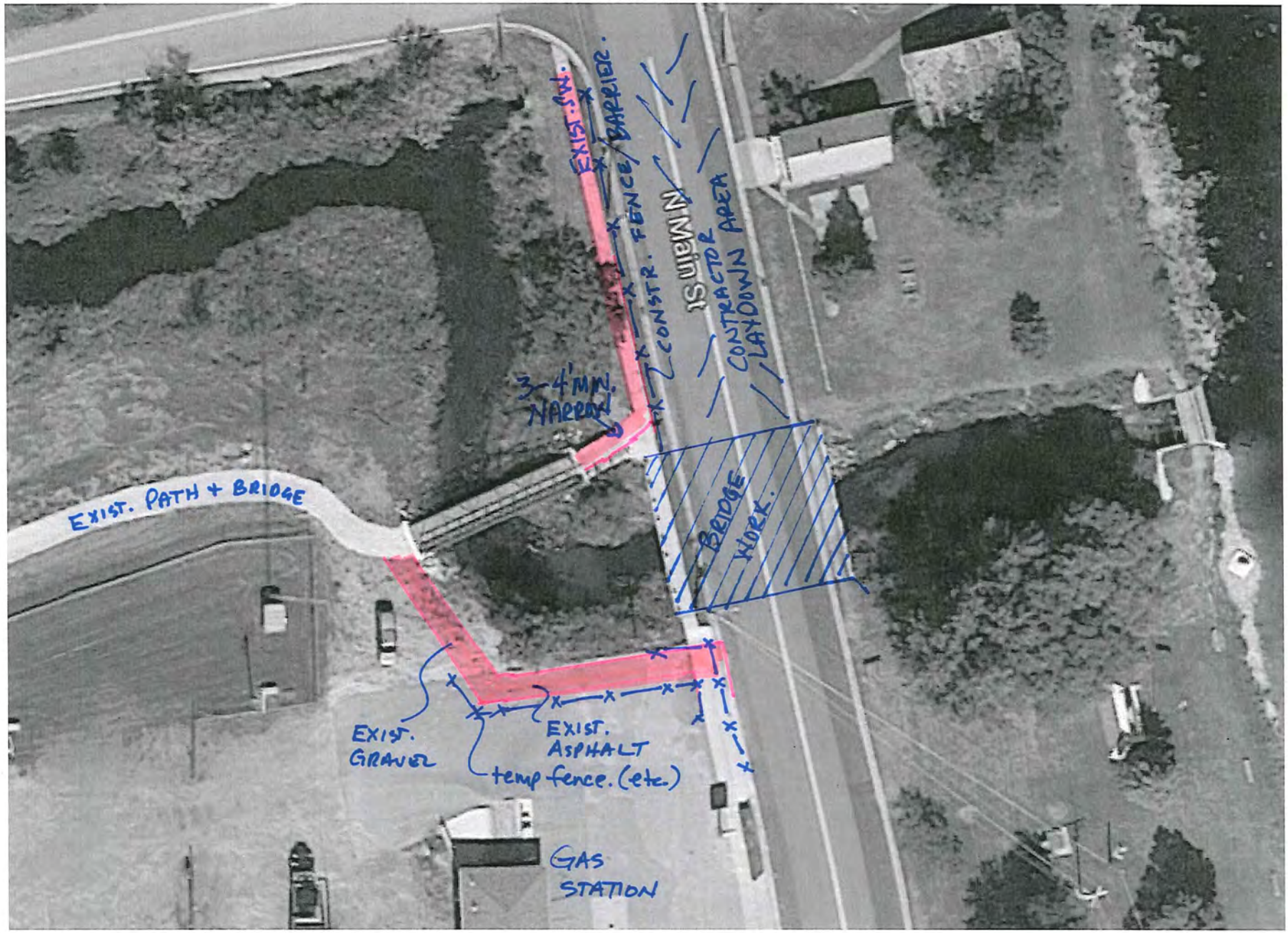


Exhibit 7: Temporary Alternative Route 2 (Preferred)