

AGENDA
BOARD OF PUBLIC WORKS MEETING
Tuesday, February 22, 2022 at 6:00 p.m.
Jackson Municipal Complex
Village Board Room
N168W19851 Main Street
Jackson, WI 53037

1. Call to Order and Roll Call
2. Approval of the Board of Public Works Minutes of January 25, 2022
3. Presentation Phase 1 of Findings Facility Plan WWTP – Town & Country
4. Kerry Ingredients Discharge Agreement
5. Engineering Services – Jackson Park Tennis Court Reconstruction Project
6. Engineering Services – STH 60 (Main Street) Utility Reconstruction Project
7. Engineering Services – CTH P Utility Project
8. Pay Request #4 – Coffee Connection Trail Project – Poblocki Paving
9. Resolution #22-03 Accepting Sanitary and Water System – Laurel Springs Villas
10. Update of ICE Study Eagle Drive and STH 60 – Information Only
11. Director of Public Works Report
12. Citizens/Village Staff to address the Board
13. Adjourn

Persons with disabilities requiring special accommodations for attendance at the meeting should contact the Village Hall at least one (1) business day prior to the meeting.

It is possible that members of the Village Board may attend the above meeting. No action will be taken by any governmental body at this meeting other than the governmental body specifically referred to in this meeting notice. This notice is given so that members of the Village Board may attend the meeting without violating the open meeting law.

DRAFT Minutes
Board of Public Works Meeting
Tuesday, January 25, 2022 at 7:00 p.m.
Jackson Municipal Complex
Village Board Room
N168W19851 Main Street
Jackson, WI 53037

1. Call to Order and Roll Call

Chair Heckendorf called the meeting to order at 7:00 p.m.

Members Present: Tr. Engelhardt, Tr. Matter, Steve Schoen, and Gloria Teifke

Members Excused: Tim Meffert

Members Absent: Sarah Malchow

Staff Present: Administrator Jen Keller, Director of Public Works Brian Kober, and Clerk Jilline Dobratz

2. Approval of the Board of Public Works Minutes of November 30, 2021

Motion by Gloria Teifke, second by Chair Heckendorf to approve the Board of Public Works minutes of November 30, 2021.

Vote: 5 ayes, 0 nays. Motion carried.

3. Discussion on Winter Parking Regulations

Director Kober gave information and stated residents are allowed to park overnight in the parks. Jackson Police Department issues warning tickets prior to the start date. Discussion ensued on parking regulations. No changes were purposed.

4. Resolution #22-01 Discontinuing Chateau Drive Right of Way

Director Kober explained during last year's Willow Ridge Drive Reconstruction Project, the dead end was removed. The Resolution continues the process of discontinuing the Right of Way. 33 feet of the road will go back to each property owner, Lot 16 and Lot 17.

Motion by Chair Heckendorf, second by Gloria Teifke to recommend Village Board approve Resolution #22-01 Discontinuing Chateau Drive Right of Way.

Vote: 5 ayes, 0 nays. Motion carried.

5. Review of Certified Survey Map (CSM) for Property Around Well #5 – Northwest Passage

Director Kober commented Jim Blise of D2C/GC Jackson, LLC is creating a new CSM to convey Lot 2 to the Village. It is two acres in which the Village will mow and maintain the property. Currently, there is no proposed used for the property. Discussion ensued on the parcel being taken off of the tax roll.

Motion by Chair Heckendorf, second by Steve Schoen to recommend Village Board approve Certified Survey Map (CSM) for Property Around Well #5 – Northwest Passage and take ownership of Lot 2 with a Quick Claim Deed.

Vote: 5 ayes, 0 nays. Motion carried.

6. Pay Request #3 – Coffee Connection Trail Project – Poblocki Paving

Director Kober provided a status update of the project. Items not completed are pavement markings, signs and landscaping. Everything has been seeded.

Motion by Chair Heckendorf, second by Tr. Engelhardt to recommend Budget & Finance and Village Board approve Pay Request #3 – Coffee Connection Trail Project – Poblocki Paving in the amount of \$196,799.84.

Vote: 5 ayes, 0 nays. Motion carried.

7. Pay Request #4 – Coffee Connection Trail Project – Poblocki Paving

Discussion on incorrect retainage amount.

Motion by Chair Heckendorf, second by Tr. Engelhardt to refer Pay Request #4 – Coffee Connection Trail Project – Poblocki Paving to the February 22, 2022 Board of Public Works meeting.

Vote: 5 ayes, 0 nays. Motion carried.

8. Pay Request #4 – Willow Ridge Drive Reconstruction Project – Soper LLC

Director Kober gave an update of the project. The retainage amount is \$19,720.82.

Motion by Chair Heckendorf, second by Tr. Matter to recommend Budget & Finance and Village Board approve the Pay Request #4 – Willow Ridge Drive Reconstruction Project – Soper LLC in the amount of \$190,109.18.

Vote: 5 ayes, 0 nays. Motion carried.

9. Pay Request #5 – (Final) 2020 Road and Utility Project (Hunters Road)

Director Kober provided a status update of the project. This will close out the project.

Motion by Tr. Matter, second by Tr. Engelhardt to recommend Budget & Finance and Village Board approve Pay Request #5 – (Final) 2020 Road and Utility Project (Hunters Road) in the amount of \$23,436.56.

Vote: 5 ayes, 0 nays. Motion carried.

10. Announcing Spring Cleanup Day and Yard Waste Pickup Schedule

Director Kober stated Spring Clean-up will be on Saturday, April 30, 2022 from 9:00 a.m. to Noon. The proposed schedule for chipping and bag pickup for the year was given.

11. Discussion on Meeting Start Time

Chair Heckendorf discussed changing the meeting start time to 6:00 p.m. beginning on February 22, 2022. The body had no objections.

12. Director of Public Works Report

Director Kober gave the report.

Motion by Chair Heckendorf, second by Gloria Teifke to place the Director of Public Works Report on file.

Vote: 5 ayes, 0 nays. Motion carried.

13. Citizens/Village Staff to Address the Board

None.

14. Adjourn

Motion by Chair Heckendorf, second by Tr. Matter to adjourn.

Vote: 5 ayes, 0 nays. Meeting was adjourned at 8:03 p.m.

Respectfully submitted,

Jilline Dobratz, *CMC/WCPC*
Village Clerk

DRAFT

Memo

To: Jen Keller, Village Administrator
From: Brian W. Kober, P. E., Director of Public Works
Subject: Kerry Inc. Sanitary Sewage Discharge Agreement
Date: February 17, 2022
CC: Board of Public Works; Village Board

The Jackson Sewer Utility and Kerry Inc. has been meeting to discuss changes to the thirty-one (31) year old agreement of sanitary sewage discharge between the Village of Jackson and Kerry Inc. The first agreement was approved on February 14, 1991. The agreement was reviewed and updated to the current proposed agreement.

A Resolution (#22-04) has been created to track the document for future Village staff.

The Board of Public Works will review the proposed agreement at the February 22, 2022, meeting.

If you have any questions, please let me know.

Brian W. Kober, P.E.

RESOLUTION #22-04

A RESOLUTION ACCEPTING THE AGREEMENT FOR THE TREATMENT OF SANITARY SEWAGE ASSOCIATED WITH KERRY INC.

The Village Board of the Village of Jackson, Washington County, Wisconsin, does resolve as follows:

BE IT RESOLVED that the Village hereby accepts, pursuant to the provisions of Exhibit A – Agreement between the Village of Jackson, a municipal corporation, with principal offices at N168 W19851 Main Street, Jackson, Wisconsin, and Kerry Inc., with offices at N168 W21455 Main Street, Jackson, Washington County, Wisconsin.

Introduced by: _____

Seconded by: _____

Vote: _____ Ayes _____ Nays

Passed and Approved: _____

Michael E. Schwab – Village President

Attest: _____
Jilline S. Dobratz – Village Clerk

Proof of Posting:

I, the undersigned, certify that I posted this Resolution on bulletin boards at the Village Hall, Post Office, and one other location in the Village.

Village Official

Date

Exhibit A - Agreement

This agreement entered into this ____ day of _____, 2022, by the Village of Jackson, a municipal corporation, with principal offices at N168 W19851 Main Street, Jackson, Wisconsin, hereinafter called "Village," and Kerry Inc., with offices at N168 W21455 Main Street, Jackson, Wisconsin, hereinafter called "Kerry".

1. The Village shall bill Kerry applicable sewage charges in effect by the Village on a "gallon out," not a "gallon in" basis, which "gallon out" basis shall be metered at the Kerry plant by a meter installed and maintained by Kerry, which meter shall be made available for inspection and testing by the Village at all reasonable times upon reasonable notice at the Village's request, however, that the Village shall notify the front desk receptionist and sign in as a visitor at the time the Village enters Kerry's property to conduct the tests. This meter shall be fully calibrated on an annual basis by an appropriate outside calibration service and calibration documentation will be provided to the Village upon completion.
2. Kerry shall not discharge into the sewer system any amount of the following constituents exceeding the concentrations listed below:

Substance (mg/L)	Average Monthly Concentration	Daily Maximum Concentration
Biochemical oxygen demand	238	600
Suspended Solids	233	700
Phosphorus	10	30
Ammonia	30	50
pH (s.u.)	6.5 – 8.0	6.0 – 9.0

The flow limits are 60,000 gpd and 5,000 gph.

3. Kerry shall also comply with all other provisions of Village of Jackson Municipal Code Chapter 44 of the Village Code of Ordinances as amended from time to time; however, in case of conflict, this Agreement shall supersede.
4. Any discharge by Kerry in excess of the monthly average limits set forth herein are subject to surcharge as set forth in the Village Code, which may be amended yearly. The Village shall charge Kerry for exceeding the average concentration limit pursuant to the surcharge provisions of its ordinances.
5. The Village shall have the right to disconnect Kerry's sewer service upon violation of this agreement or applicable ordinances. The timing of disconnection will be based on the severity of the violation. If the Village deems necessary, they have the right to disconnect immediately in an emergency situation.
6. In addition, the Village may disconnect Kerry's sewer service upon any discharge into the system of any unknown element (toxic or nontoxic).
7. In determining whether Kerry has exceeded the discharge limits contained in this Agreement, the Village shall utilize the services of a WDNR Wastewater Certified Analytical Lab or its own registered lab. The results of these tests shall be the sole determining criteria to establish any violation of this discharge permit. COD or BOD, TSS, Phosphorus, Ammonia and pH shall be tested from a flow proportional sample. Such sampling shall be done at random on a quarterly basis consisting of 4 days of testing and such tests shall be at Kerry's expense. The Village may conduct further random tests as a follow-up to the quarterly random tests and if such tests indicate a violation of the restrictions of this Agreement, Kerry shall pay for such additional tests, however, if said tests do not indicate a violation of the terms of this Agreement, then such test shall be paid for by the Village.
8. Kerry shall monitor the discharge flow and wastewater constituents into the Village's sewer system on a flow proportional weekly basis. All analytical tests shall be run in accordance with the latest edition of "Standard Methods." The monitoring results shall be furnished to the Village upon request. The Village shall have the right to enter Kerry on a daily basis to verify tests, monitoring, and discharge quality required by this

Agreement. Kerry hereby consents to the Village's right to enter upon its property to conduct any tests authorized herein provided, however, that the Village shall notify the front desk receptionist and sign in as a visitor at the time the Village enters Kerry's property to conduct the tests.

9. Kerry shall monitor the chemical oxygen demand (COD) of its wastewater which is discharged into the sewer system on a flow proportional basis weekly. Based upon these tests, Kerry shall maintain a record of the BOD/COD ratio. These monitoring results and ratios shall be furnished to the Village upon written request. The Village may use the BOD/COD ratio to judge excessive discharges, in lieu of other procedures authorized by this Agreement.
10. Kerry will accept as accurate all of the Village's test results with respect to the discharge limits and measurements required by this Agreement with respect to the Village's decision to disconnect Kerry's industrial discharge from its sewer treatment facilities. By this paragraph, however, Kerry does not waive any rights it may have to seek damages against the tester furnishing the results to the Village if such tests prove to be inaccurate.
11. Kerry shall control odors issuing from its pretreatment facility to the degree practicable. The Village may disconnect industrial sewer service to the property at its sole discretion if the Village determines that the odors emanating from Kerry's pretreatment facility constitute a public nuisance and Kerry has failed to correct the problem.
12. If any of the maximum daily or monthly flow limits are exceeded by Kerry, the Village may require Kerry to install a non-manual method to control flow into the sewer system. This non-manual method to control flow shall be installed within forty-five (45) days of notification by the Village. If the Village requires such a non-manual method to control the flow, the system shall be designed and installed by Kerry at its expense.
13. If Kerry exceeds the limits established by this Agreement of discharge into the Village's sewer system and as a result thereof, the Village is fined by the DNR for violating its discharge permit with the DNR, Kerry shall pay such penalty to the DNR and make any ordered stream rehabilitation on behalf of the Village.

14. The Village will not handle, at any time, any sludge generated by the Kerry pretreatment facility. It shall be the sole responsibility of Kerry to make adequate arrangements to dispose of the sludge generated by its pretreatment facility.
15. Kerry will employ a competent person to serve as the Wastewater Operator at an appropriate level and subclass to operate Kerry's pretreatment facility.
16. If at any time there are major changes in production that could impact the chemistry of the wastewater, this agreement shall be reviewed with the Village to determine if any changes/updates are necessary.

Village of Jackson

Kerry Inc.

Village President

Kerry Inc Senior Management

Village Clerk

AGREEMENT FOR THE TREATMENT OF SANITARY SEWAGE
FROM BEATREME FOODS, INC. AT THE VILLAGE OF JACKSON,
WISCONSIN, SEWAGE TREATMENT FACILITY

THIS AGREEMENT entered into this 12th day of February, 1991, by the VILLAGE OF JACKSON, a municipal corporation, with principal offices at N168 W20833 Main Street, Jackson, Wisconsin, hereinafter called "Village", and BEATREME FOODS, INC., a Delaware corporation, with offices at N168 W21455 Main Street, Jackson, Wisconsin, hereinafter called "Beatreme".

W I T N E S S E T H :

WHEREAS, a dispute has arisen between Beatreme and the Village as to the amount of the billing from the Village to Beatreme for treating waste discharged by Beatreme into the Village's system, and

WHEREAS, Beatreme is in the process of preparing to build a new pretreatment sewer facility and wishes to discharge into the Village of Jackson Wastewater Collection System, and

WHEREAS, the Village wishes to accept wastewater from Beatreme's facilities,

NOW, THEREFORE, IN CONSIDERATION OF THE PREMISES AND MUTUAL PROMISES CONTAINED HEREIN, VILLAGE AND BEATREME CONTRACT AND AGREE AS FOLLOWS:

1. The Village shall pay, subject to Paragraph 7, to Beatreme the sum of \$23,500.00 in settlement of the dispute between the Village and Beatreme for past wastewater treatment services rendered by the Village to Beatreme.

2. That, by the signing of this Agreement by the Village and by Beatreme, all claims by Beatreme against the Village for wastewater treatment services rendered by the Village to Beatreme to the date of this Agreement are satisfied and extinguished, except as to payment as set forth in Paragraph 7. Further, all of the Village's and Beatreme's obligations under an Agreement between the Village and Beatreme dated June 14, 1988, are hereby completely waived and fully extinguished.

3. Beatreme shall begin construction of a pretreatment facility to pretreat the waste generated by Beatreme on or before April 1, 1991. This pretreatment facility construction shall be completed by July 1, 1991, and Beatreme shall connect the pretreatment facility to the Village's wastewater system by that date. The Village shall expeditiously cooperate with such construction including, by way of illustration only, issuing of necessary permits and conducting necessary inspections.

4. If Beatreme does not finish their pretreatment facility and connect to the Village's wastewater system by July 1, 1991, Beatreme shall pay to the Village a penalty fee of \$66.00 per day for each and every day after July 1, 1991, that Beatreme has not connected its new pretreatment facility to the Village's wastewater system. Any act of God which delays the connection of Beatreme shall relieve it of its obligation to pay any penalty or damages to the Village.

5. The Village will reserve for Beatreme the capacity of 60,000 gallons per day as a monthly average, and 5,000 gallons per hour as a daily maximum. These capacities will be reserved by the

Village until January 1, 1993. On or before that date, Beatreme shall notify the Village that it wishes the Village to continue to reserve the above capacity and Beatreme shall pay to the Village an appropriate charge per day based upon the current sewer rates of the Village (as amended from time to time) for the use of 60,000 gallons per day as compared to actual use or any lesser gallonage that may be reserved by Beatreme on January 1, 1993. If Beatreme does not reserve said capacity, Beatreme shall, on or before that date, release the Village from any obligation to reserve any future capacity for Beatreme. The Village shall not pay the sum of \$23,500.00 it is obligated to pay Beatreme under this Agreement at this time. If, on January 1, 1993, Beatreme requests the Village to reserve the above capacities, then the charges for reserving such capacity as set forth above shall be credited against the \$23,500.00. If Beatreme releases the Village of reserving said capacities, the Village shall pay Beatreme the sum of \$23,500.00 at that time. The \$23,500.00 held by the Village shall not bear interest.

6. When Beatreme has connected its pretreatment facility to the Village's system, the Village shall bill Beatreme applicable sewage charges then in effect by the Village "on a gallon out", not "a gallon in" basis, which "gallon out" basis shall be metered at the Beatreme plant by a meter installed and maintained by Beatreme, which meter shall be made available for inspection and testing by the Village at all reasonable times upon reasonable notice at the Village's request, however, that the Village shall notify the front desk receptionist and sign in as a visitor at the time the Village

enters Beatreme's property to conduct the tests. This meter shall be recalibrated on an annual basis.

7. Beatreme shall not discharge into the sewer system any amount of the following constituents exceeding that listed below:

	<u>AVERAGE MONTHLY CONCENTRATION</u>	<u>DAILY MAXIMUM CONCENTRATION</u>
BIOCHEMICAL OXYGEN DEMAND (MG/L)	300	600
SUSPENDED SOLIDS (MG/L)	350	700
PHOSPHORUS (MG/L)	15	30
AMMONIA (MG/L)	30	50
PH (DAILY MINIMUM AND MAXIMUM)	6.5-8.0	6.0-9.0

Beatreme shall also comply with all other provisions of Chapter 18 of the Village Code of Ordinances as amended from time to time; however, in case of conflict, this Agreement shall supersede.

Any discharge by Beatreme in excess of the limits set forth herein are subject to surcharge as set forth in the Village Code, which may be amended yearly. The Village waives the average monthly concentration and daily maximum concentrations set forth herein for 1 year from the start up date of Beatreme's pretreatment facility, provided such concentrations do not adversely affect the Village's sewage treatment operation. If such concentrations adversely affect the wastewater treatment plant's operation, the Village shall have the right to use all necessary remedies provided by this Agreement (except the fines of \$250.00 and \$500.00, or prescribed by its ordinances.) The Village shall charge Beatreme

for exceeding the average concentration pursuant to the surcharge provisions of its ordinances.

Any discharge by Beatreme in excess of the daily maximum concentrations listed above are subject to an additional daily charge of \$250.00 per violation and/or disconnection if instructed by the Village Board.

Any discharge by Beatreme in excess of the average monthly concentrations listed above are subject to additional quarterly charges of \$500.00 per violation and/or disconnection if instructed by the Village Board.

Timing of disconnections will be based on the severity of the violation. However, the Village shall have the right to disconnect immediately in an emergency situation.

In addition, the Village may disconnect Beatreme's sewer service upon any discharge into the system of any unknown element (toxic or nontoxic). Upon disconnection, the Village will charge Beatreme \$100.00/day until they are reconnected.

In determining whether Beatreme has exceeded the discharge limits contained in this Agreement, the Village shall utilize the services of a WDNR Wastewater Certified Analytical Lab or its own registered lab. The results of these tests shall be the sole determining criteria to establish any violation of this discharge permit. BOD, TSS, Phosphorus, Ammonia, and pH shall be tested from a flow proportional sample. Such sampling shall be done at random on a quarterly basis consisting of 4 days of testing and such tests shall be at Beatreme's expense. The Village may conduct further random tests as a follow-up to the quarterly random tests and if

such tests indicate a violation of the restrictions of this Agreement, Beatreme shall pay for such additional tests, however, if said tests do not indicate a violation of the terms of this Agreement, then such test shall be paid for by the Village. The start up of Beatreme's pretreatment facility will require the continual testing by the Village until the Village determines that the waste discharged into its system by Beatreme is acceptable. Said start up testing is in addition to all other testing referred to in this paragraph. The costs of start up testing are to be borne by Beatreme. Beatreme hereby consents to the Village's right to enter upon its property to conduct any tests authorized herein provided, however, that the Village shall notify the front desk receptionist and sign in as a visitor at the time the Village enters Beatreme's property to conduct the tests.

8. Beatreme shall monitor the discharge flow and wastewater constituents into the Village's sewer system on a flow proportional daily basis. All analytical tests shall be run in accordance with the latest edition of "Standard Methods". The monitoring results shall be furnished to the Village upon request. The Village shall have the right to enter Beatreme on a daily basis to verify tests monitoring and discharge quality required by this Agreement. Beatreme hereby consents to the Village's right to enter upon its property to conduct any tests authorized herein provided, however, that the Village shall notify the front desk receptionist and sign in as a visitor at the time the Village enters Beatreme's property to conduct the tests.

9. Beatreme shall monitor the chemical oxygen demand (COD) of its wastewater which is discharged into the sewer system on a flow proportional basis at least 3 times per week. Based upon these tests, Beatreme shall maintain a record of the BOD/COD ratio. These monitoring results and ratios shall be furnished to the Village upon written request. The Village may use the BOD/COD ratio to judge excessive discharges, in lieu of other procedures authorized by this Agreement.

10. Beatreme will accept as accurate all of the Village's test results with respect to the discharge limits and measurements required by this Agreement in Paragraphs 5, and 7 with respect to the Village's decision to disconnect Beatreme's industrial discharge from its sewer treatment facilities. By this paragraph, however, Beatreme does not waive any rights it may have to seek damages against the tester furnishing the results to the Village if such tests prove to be inaccurate. Beatreme contemplates entering into an independent agreement with the tester selected by the Village. The Village agrees to aid Beatreme in securing such agreement.

11. Beatreme shall control all continual odors issuing from its pretreatment facility. The Village may disconnect industrial sewer service to the property at its sole discretion if the Village determines that the continual odors emanating from Beatreme's pretreatment facility constitute a public nuisance and Beatreme has failed to correct the problem. "Continual" for purposes of this paragraph is defined as 10 consecutive days.

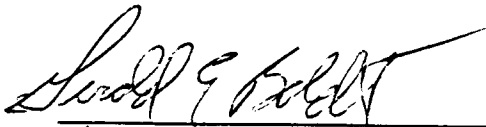
12. If any of the maximum daily or monthly flow limits are exceeded by Beatreme, the Village may require Beatreme to install a non-manual method to control flow into the sewer system. This non-manual method to control flow shall be installed within forty-five (45) days of notification by the Village. If the Village requires such a non-manual method to control the flow, the system shall be designed and installed by Beatreme at its expense.

13. If Beatreme exceeds the limits established by this Agreement of discharge into the Village's sewer system and as a result thereof, the Village is fined by the DNR for violating its discharge permit with the DNR, Beatreme shall pay such penalty to the DNR and make any ordered stream rehabilitation on behalf of the Village.

14. The Village will not handle, at any time, any sludge generated by the Beatreme pretreatment facility. It shall be the sole responsibility of Beatreme to make adequate arrangements to dispose of the sludge generated by its pretreatment facility.

15. Beatreme will employ a Wastewater Operator for its pretreatment facility consistent with DNR requirements.

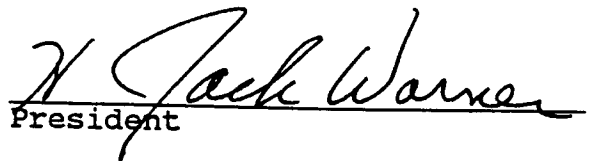
VILLAGE OF JACKSON

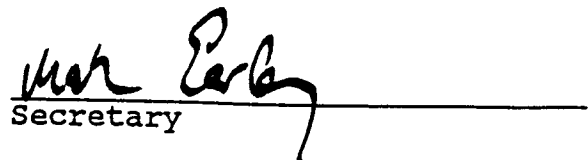

Village President

Attest:

 2/14/91
Village Clerk

BEATREME FOODS, INC.


President


Secretary

Memo

To: Jen Keller, Village Administrator
From: Brian W. Kober, P. E., Director of Public Works
Subject: Jackson Park - Tennis Court Conversion to Pickle Ball Courts
Date: February 17, 2022
CC: Board of Public Works; Village Board

The tennis ball courts in Jackson Park have been scheduled for years to be updated or replaced with something new. The ideas with the Park and Rec Committee and the Park and Rec Director Kelly Valentino was a conversion to include tennis and pickle ball courts together. A plan and design specifications are necessary to achieve the ideas.

Cedar Corp has been requested to give a proposal for engineering services for plans and specification to bid the project. Cedar Corp recently created a similar plan for the Village of Richfield. The plan is attached. This is an example on what could be, and not the plan that will be.

During the development of plans, information will be collected to have a master plan for the southeast corner of the park. For future discussion and projects, recommend a full master plan be created for the entire Jackson Park.

If you have any questions, please let me know.

Brian W. Kober, P.E.

Washington County, Wisconsin



1/11/2022, 4:21:43 PM

1:868

Current Parcel

Railroad Centerlines

Road Centerline I, USH

Interstate Highway, I-41

US Highway, FOND DU LAC AV; US Highway, HY 45

Road Centerline STH, CTH

On/Off Ramp

State Highway

County Highway

Address Point

Parcel Taxkey & Acreage

Leader Lines

Subdivision Name

Condominium Name

Certified Survey Number

Lot Number

Landhook

Meander Line

PLSS Monument

Local Road Labels

Township Road

City/Village Street

Private Street

Municipality

Plat

Unknown

Certified Survey Map

Condominium

Assessor Plat; Cemetery Plat; Subdivision

Lot

Retired Parcel

Right-of-Way

PLSS Quarter

PLSS Section

00

0.01

0.02

0.04

0

0.015

0.03

0.06

mi

km

Washington County GIS
Washington County | Southeast Wisconsin Regional Planning Commission | Washington County, US Census Bureau |

**Confirmation of Client Request for Services
between Cedar Corporation (ENGINEER)
and Village of Jackson (CLIENT)**

**Authorization to Perform Professional Engineering Services
for Jackson Park Tennis-Pickleball Courts Project**

ENGINEER is hereby authorized to proceed with the project listed below. The services are to be completed in a timely manner mutually agreeable with the CLIENT and ENGINEER.

Project: Jackson Park Tennis-Pickleball Courts Project

Scope of Work: ENGINEER will complete Design Services for the Jackson Park Tennis-Pickleball Courts Project as defined in the Project Scope. ENGINEER has attached a copy of this Project Scope as Attachment A.

Method of Compensation: Design work will be completed for an estimated fee of \$20,000.00. ENGINEER will not exceed the estimated Design fee amount without authorization from the CLIENT.

Payments are due and payable thirty (30) days from the date of the ENGINEER's invoice. Amounts unpaid thirty (30) days after the invoice date shall bear interest at the rate of one percent (1%) per month from invoice date.

THIS AGREEMENT is hereby approved and executed this ____ day of _____, 2022.

VILLAGE OF JACKSON

CEDAR CORPORATION

By: _____

By:  _____

Name: _____

Name: Ronald Dalton, P.E.

Title: _____

Title: Director

By: _____

By:  _____

Name: _____

Name: Douglas Kroes

Title: _____

Title: Construction Manager

STANDARD CONDITIONS

PART I - DESCRIPTION OF SERVICES

- 1.1 CEDAR CORPORATION** agrees to provide professional services for the PROJECT as more completely described in this Agreement.
- 1.2 CEDAR CORPORATION** agrees to provide all professional services within a reasonable period of time following the date of authorization to proceed by OWNER. If a special time schedule must be met for a PROJECT, it shall be specifically set forth in this Agreement.

PART II - CLIENT'S RESPONSIBILITIES

Client, at its expense, shall do the following in a timely manner so as not to delay the services,

2.1 INFORMATION/REPORTS

Furnish Cedar Corporation with all reports, studies, site characterizations, regulatory orders, and similar information in its possession relating to the Project. Unless otherwise specified in Part I, Cedar Corporation may rely upon Client-furnished information without independent verification in performing the Service.

2.2 REPRESENTATIVE

Designate a representative for the project who shall have the authority to transmit instructions, receive information, interpret and define Client's policies, and make decisions with respect to the services.

2.3 GIVE NOTICE

Give prompt written notice to Cedar Corporation whenever Client observes or otherwise becomes aware of any defect in the Project or other event which may substantially affect performance of services under this Agreement.

PART III - BILLING, AND PAYMENT

- 3.1** Cedar Corporation will periodically bill the client with net payment due in 30 days. Unless Client provides Cedar Corporation with a written objection to the bill within 15 days of receipt, Client shall be deemed to accept the bill as submitted.

- 3.2** Where Client disputes some portion of the charges contained in Cedar Corporation's bill for services, he shall make payment of that portion of the bill which is undisputed. In no case may Client elect to withhold payment to Cedar Corporation of the entire amount due.

- 3.3** If Client fails to make any payment due Cedar Corporation for services and expenses after receipt of Cedar Corporation's bill therefore, the amounts due Cedar Corporation shall bear interest from invoice date at the rate set forth in this agreement, or in the absence thereof at the legal rate prevailing from time to time at the principal place of business of Cedar Corporation. In addition Cedar Corporation may, after giving ten (10) days written notice to Client, suspend services under this agreement until paid in full all amounts due under this agreement. In the event Client does not pay, or does not pay timely, Cedar Corporation shall be entitled to collect from Client all amounts due plus expenses, including but not limited to attorney fees, incurred by Cedar Corporation in connection with collection efforts, in addition, the reasonable value of Cedar Corporation's time spent in connection with collection efforts, computed at Cedar Corporation's prevailing fee schedule.

PART IV - STANDARD TERMS AND CONDITIONS

- 4.1 STANDARD OF CARE.** Services shall be performed in accordance with the standard of professional practice ordinarily exercised by the applicable profession at the time and within the locality where the services are performed. Professional services are not subject to, and Cedar Corporation cannot provide any warranty or guarantee, either express or implied. Any such warranties or guarantees contained in any purchase orders, Client action, requisitions or notices to proceed issued by Client are specifically objected to by Cedar Corporation.

- 4.2 CHANGE OF SCOPE.** The Scope of Services set forth in this Agreement and in any addenda to the Agreement is based on facts known at the time of execution of this Agreement, including, if applicable, information supplied by Client. For some projects involving conceptual or process development services, scope may not be fully definable during

initial phases. As the project progresses, facts discovered may indicate that scope must be redefined.

- 4.3 SAFETY.** Cedar Corporation has established and maintains corporate programs and procedures for the safety of its employees. Unless specifically included as a service to be provided under this Agreement, Cedar Corporation specifically disclaims any authority or responsibility for general job site safety and safety of persons other than Cedar Corporation employees.

- 4.4 DELAYS.** If events beyond the control of Client or Cedar Corporation, including, but not limited to, fire, flood, explosion, riot, strike, war, process shutdown, act of god or the public enemy, and act or regulation of any government agency, result in delay to any schedule established in this Agreement or in any Addenda to this Agreement, then such schedule shall be amended to the extent necessary to compensate for such delay. In the event such delay exceeds 60 days, Cedar Corporation shall be entitled to an equitable adjustment in compensation.

- 4.5 TERMINATION.** Either party may terminate this Agreement at the end of the term hereof, or any extension thereof, upon 30 days written notice to the other party as provided at PART I above.

Also, this Agreement may be terminated by either party if the other party fails to fulfill its obligations under this Agreement through no fault of the terminating party. No such termination may be effected unless the other party is given not less than ten calendar day's written notice of intent to terminate and an opportunity for correcting the default and for consultation with the terminating party before termination. If Cedar Corporation terminates as a result of Client default or the Client terminates for cause, Cedar Corporation shall be paid for services performed to the termination date including reimbursable expenses due. Upon receipt of the terminating action, Cedar Corporation shall promptly discontinue all services unless the notice directs otherwise, and upon receipt of final compensation make available to Client all appropriate documents prepared under the Agreement whether completed or in process.

- 4.6 OPINIONS OF PROBABLE CONSTRUCTION COST.** Any opinion of probable construction costs prepared by Cedar Corporation is supplied for the general guidance of the Client only. Since Cedar Corporation has no control over competitive bidding or market conditions, Cedar Corporation cannot guarantee the accuracy of such opinions as compared to contract bids or actual costs to Client.

- 4.7 RELATIONSHIP WITH CONTRACTORS.** Cedar Corporation shall serve as Client's professional representative for the services, and may make recommendations to Client concerning action relating to Client's contractors. However, Cedar Corporation specifically disclaims any authority to direct or supervise the means, methods, techniques, sequences or procedures of construction selected by Client's contractors.

- 4.8 CONSTRUCTION REVIEW.** For projects involving construction, Client acknowledges that under generally accepted professional practice, interpretations of construction documents in the field are normally required, and that performance of construction-related services by the design professional for the municipal project permits errors or omissions to be identified and corrected at comparatively low cost. Client agrees to hold Cedar Corporation harmless from any claims resulting from performance of municipal services by persons other than Cedar Corporation.

- 4.9 INSURANCE.** Cedar Corporation will maintain insurance coverage for Professional Liability, Comprehensive General, Automobile, Workers Compensation, and Employer's Liability in amounts in accordance with applicable legal requirements as well as Cedar Corporation's business requirements. Certificates evidencing such coverage will be provided to Client upon request.

- 4.10 ALLOCATION OF RISKS.** To the fullest extent permitted by law, Cedar Corporation shall indemnify and hold harmless, Client, Client's officers, directors, partners, and employees from and against any and all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all

court or arbitration or other dispute resolution costs) caused solely by the negligent acts or omissions of Cedar Corporation or Cedar Corporation's officers, directors, partners, employees, and Cedar Corporation's consultants in the performance and furnishing of Cedar Corporation's services under this Agreement.

To the fullest extent permitted by law, Client shall indemnify and hold harmless Cedar Corporation, Cedar Corporation's officers, directors, partners, employees, and Cedar Corporation's consultants from and against any and all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) caused solely by the negligent acts or omissions of Client or Client's officers, directors, partners, employees, and Client's consultants with respect to this Agreement or the Project.

To the fullest extent permitted by law, Cedar Corporation's total liability to Client and anyone claiming by, through, or under Client for any cost, loss, or damages caused in part by the negligence of Cedar Corporation and in part by the negligence of Client or any other negligent entity or individual, shall not exceed the percentage share that Cedar Corporation's negligence bears to the total negligence of Client, Cedar Corporation, and all other negligent entities and individuals.

4.11

HAZARDOUS MATERIAL. Hazardous materials may exist at a site where there is no reason to believe they could or should be present. Cedar Corporation and Client agree that the discovery of unanticipated hazardous materials constitutes a changed condition mandating a renegotiation of the Project scope of work. Cedar Corporation agrees to notify Client as soon as practically possible should unanticipated hazardous materials or suspected hazardous materials be encountered. Client acknowledges and agrees that it retains title to all hazardous

material existing on the site and shall report to the appropriate federal, state or local public agencies, as required, any conditions at the site may present a potential danger to the public health, safety or the environment. Client shall execute any manifests or forms in connection with transporting or storage and disposal of hazardous materials resulting from the site or work on the site or shall authorize Cedar Corporation to execute such documents as Client's agent. Client waives any claim against Cedar Corporation and agrees to defend, indemnify, and save Cedar Corporation harmless from any claim or liability for injury or loss arising from Cedar Corporation's discovery of unanticipated hazardous materials or suspected hazardous materials.

4.12 ACCESS. Client shall provide Cedar Corporation safe access to any premises necessary for Cedar Corporation to provide the services.

4.13 REUSE OF PROJECT DELIVERABLES. Reuse of any documents or other deliverables, including electronic media, pertaining to the project by Client for any purpose other than that for which such documents or deliverables were originally prepared, or alteration of such documents or deliverables without written verification or adaptation by Cedar Corporation for the specific purpose intended, shall be at the Client's risk. Further, all title blocks and the engineer's seal, if applicable, shall be removed if and when Client provides deliverables in electronic media to another entity. Client agrees that relevant analyses, findings and reports provided in electronic media shall also be provided in "hard copy" and that the hard copy shall govern in the case of a discrepancy between the two versions, and shall be held as the official set of drawings, as signed and sealed. Client shall be afforded a period of thirty (30) days in which to check the hard copy against the electronic media. In the event that any error or inconsistency is discovered within such thirty (30) day period it shall be corrected at no additional cost to Client. Following the expiration of this thirty (30) day

period, Client shall bear all responsibility for the care, custody and control of the electronic media. In addition, Client represents that it shall retain the necessary mechanisms to read the electronic media, which Client acknowledges to be of only limited duration. Client agrees to defend, indemnify, and hold harmless Cedar Corporation from all claims, damages, and expenses (including reasonable litigation costs), arising out of such reuse or alteration by Client or others acting through Client. Cedar Corporation agrees that all plans, engineering designs, electronic and computer data and imagery relating to Client's projects are the property of the Client and shall be presented to Client at no additional cost upon written request.

4.14 AMENDMENT. This Agreement, upon execution by both parties hereto, can be amended only by a written instrument signed by both parties.

4.15 ASSIGNMENT. Except for assignments (a) to entities which control, or are controlled by, the parties hereto or (b) resulting from operation of law, the rights and obligations of this Agreement cannot be assigned by either party without written permission of the other party. This Agreement shall be binding upon and inure to the benefit of any permitted assigns.

4.16 DISPUTE RESOLUTION. Parties shall attempt to settle disputes arising under this agreement by discussion between the parties senior representatives of management. If any dispute cannot be resolved in this manner within a reasonable length of time, parties agree to attempt non-binding mediation or any other method of alternative dispute resolution prior to filing any legal proceedings. In the event any actions are brought to enforce this Agreement, the prevailing party shall be entitled to collect its litigation costs, including attorneys' fees from the other party.

4.17 NO WAIVER. No waiver by either party of any default by the other party in the performance of any particular section of this Agreement shall invalidate any

other section of this Agreement or operate as a waiver of any future default, whether like or different in character.

4.18 NO THIRD-PARTY BENEFICIARY. Nothing contained in this Agreement, nor the performance of the parties hereunder, is intended to benefit, nor shall inure to the benefit of, any third party, including Client's municipal project contractors.

4.19 SEVERABILITY. The various terms, provisions and covenants contained in this Agreement or any addenda shall be deemed to be separate and severable, and the invalidity or unenforceability of any of them shall not affect or impair the validity or enforceability of the remainder.

4.20 AUTHORITY. The persons signing this Agreement warrant that they have the authority to sign as, or on behalf of, the party for whom they are signing.

4.21 OTHER. Cedar Corporation reserves the right to enter into agreements with other design professionals for portions of the work included under this Agreement. Where this subagreement would represent a major portion of the design work, Cedar Corporation shall receive approval of Client for this subagreement.

ATTACHMENT A

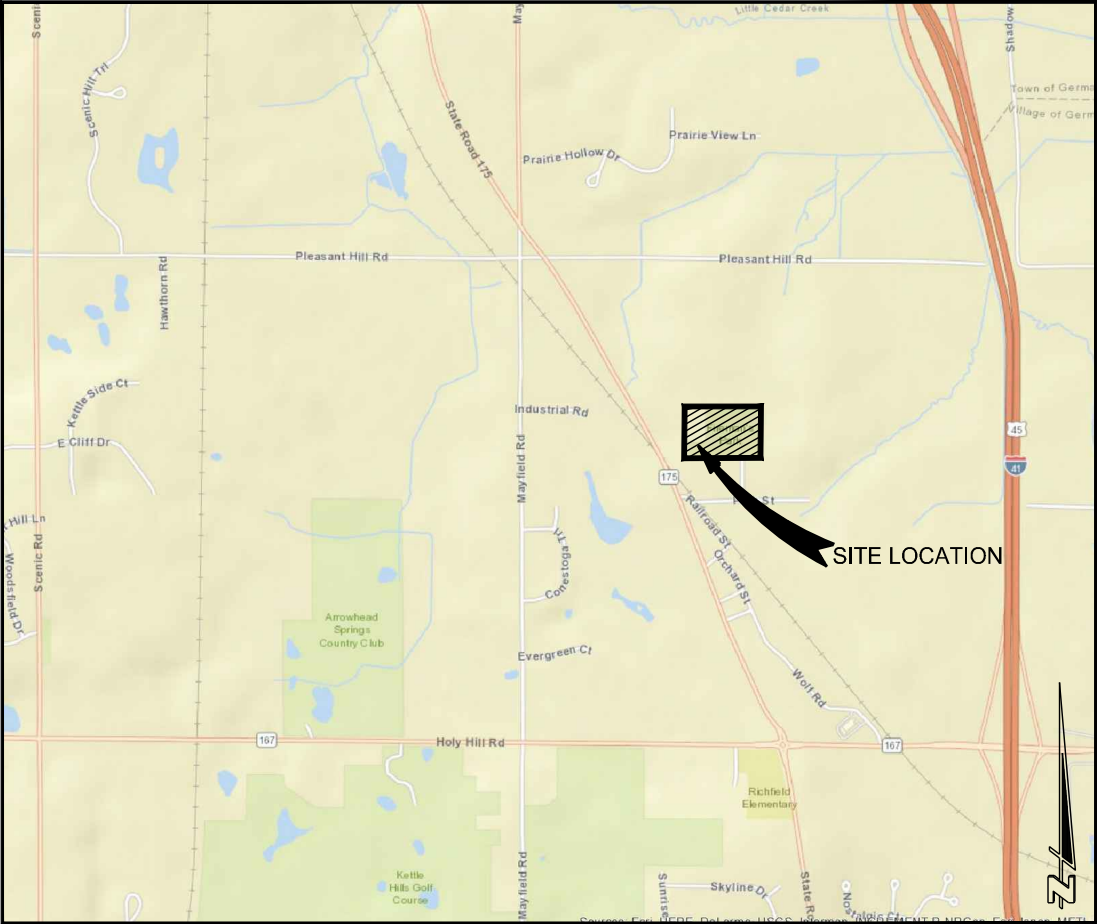
Project Scope

Reconstruction of the four (4) tennis courts in Jackson Park west of the intersection of Jackson Drive and Georgetown Drive. The project will include the removal of current asphalt surface, fencing and nets. The new courts will roughly match the footprint of the existing courts and include pickleball and tennis courts.

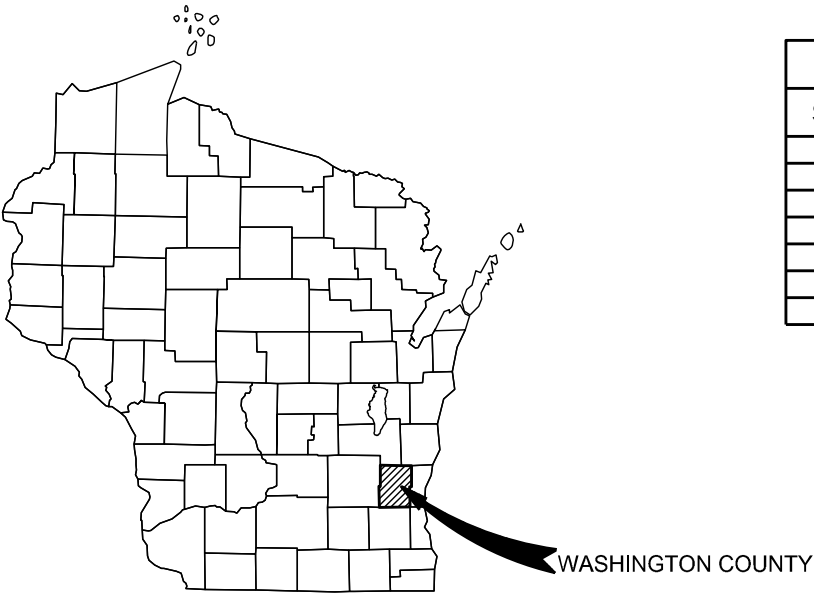
Design, permitting, and bidding

1. Meet with Village staff to determine the objectives of the project.
2. Perform a topographic survey of the project area.
3. Prepare plans for new tennis/pickleball courts including grading, erosion control, new asphalt, fencing, nets and posts, and restoration.
4. Create specifications, bid documents, and engineer's estimate. Answer any questions during the bid process and attend bid opening. Meet with Village staff as necessary throughout the design process.

CONSTRUCTION DRAWINGS
FOR
FIREMAN'S PARK PICKLEBALL/TENNIS COURTS
VILLAGE OF RICHFIELD
WASHINGTON COUNTY, WI
FEBRUARY 5, 2021



SITE LOCATION MAP



COUNTY LOCATION MAP

INDEX TO DRAWINGS	
SHEET NO.	DESCRIPTION
1 of 7	TITLE SHEET
2 of 7	EXISTING CONDITIONS
3 of 7	REMOVAL PLAN
4 of 7	SITE PLAN
5 of 7	GRADING PLAN & EROSION CONTROL
6 of 7	DETAILS
7 of 7	DETAILS

ATTENTION:
DOWNLOADED PLANS ARE NOT SCALABLE, NEITHER THE OWNER NOR THE
ENGINEER SHALL BE HELD RESPONSIBLE FOR THE SCALE OR PRINT
QUALITY OF DOWNLOADED PLANS. ONLY PRINTED PLANS FROM CEDAR
CORPORATION SHALL BE CONSIDERED TO BE SCALEABLE PLANS.

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FIREMAN'S PARK PICKLEBALL/TENNIS COURTS
VILLAGE OF RICHFIELD, WISCONSIN

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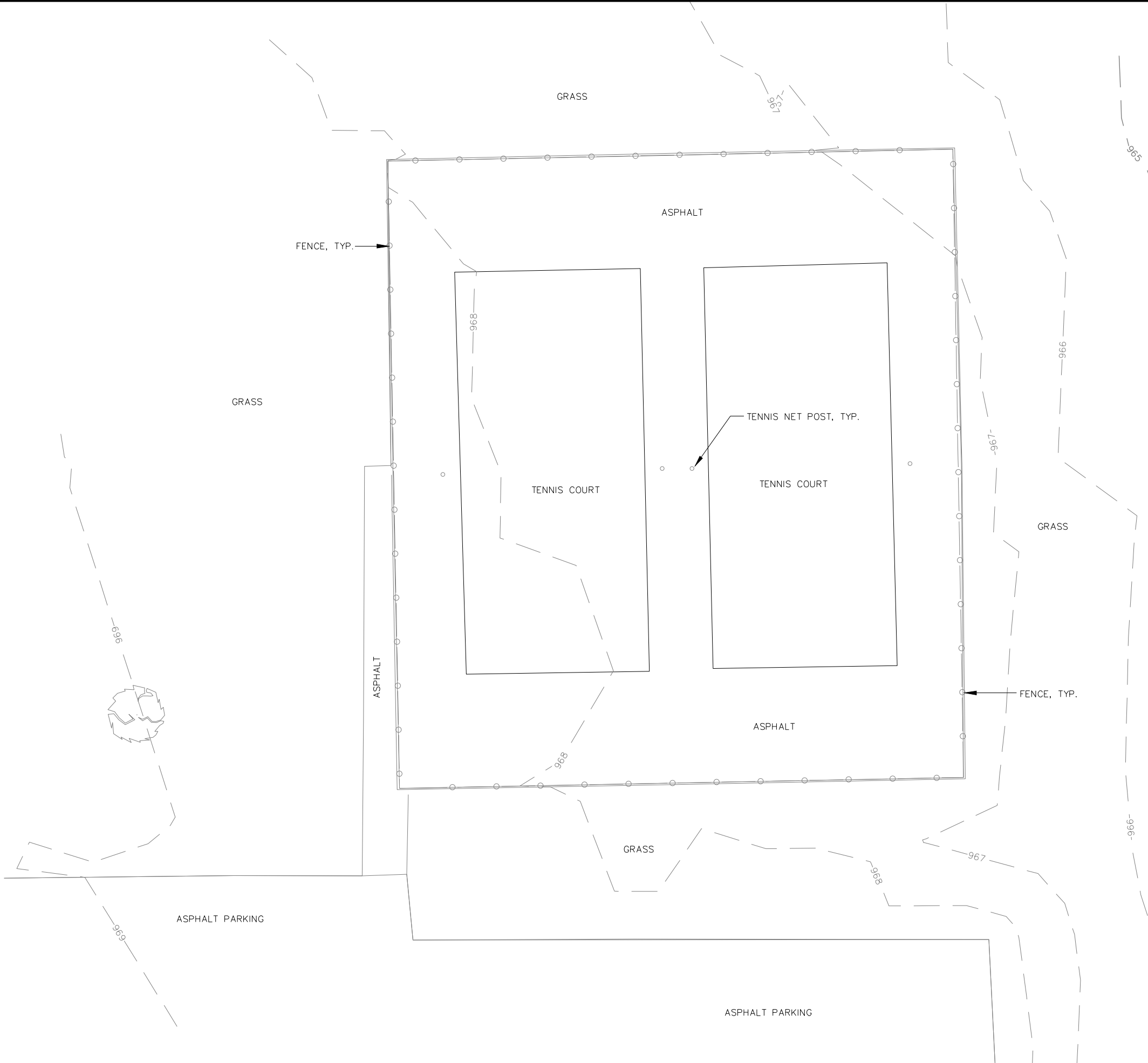


LEGEND

- 965 — EXISTING CONTOUR LINE
- 966 —
- □ — WOOD FENCE
- ○ — WOVEN WIRE FENCE
- ~ — TREE LINE
- DECIDUOUS TREE
- EVERGREEN TREE
- IRON PIPE
- REBAR

ABBREVIATIONS

- | | |
|--------|--------------------------|
| CONC. | CONCRETE |
| CMP. | CORRUGATED METAL PIPE |
| ELEV. | ELEVATION |
| EXIST. | EXISTING |
| EX. | EXISTING |
| HYD. | HYDRANT |
| INL. | STORM INLET |
| INV. | INVERT |
| FL | FLOW LINE |
| FF | FIRST FLOOR |
| LAT. | LATERAL |
| MH | MANHOLE |
| PVC | POLYVINYL CHLORIDE PIPE |
| RCP | REINFORCED CONCRETE PIPE |
| R/W | RIGHT OF WAY |
| SAN. | SANITARY |
| SDWK. | SIDEWALK |
| SEW. | SEWER |
| STM. | STORM |
| TC | TOP OF CURB |
| TYP. | TYPICAL |
| VAR. | VARIABLE |



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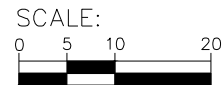
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VILLAGE OF RICHFIELD, WISCONSIN
EXISTING CONDITIONS

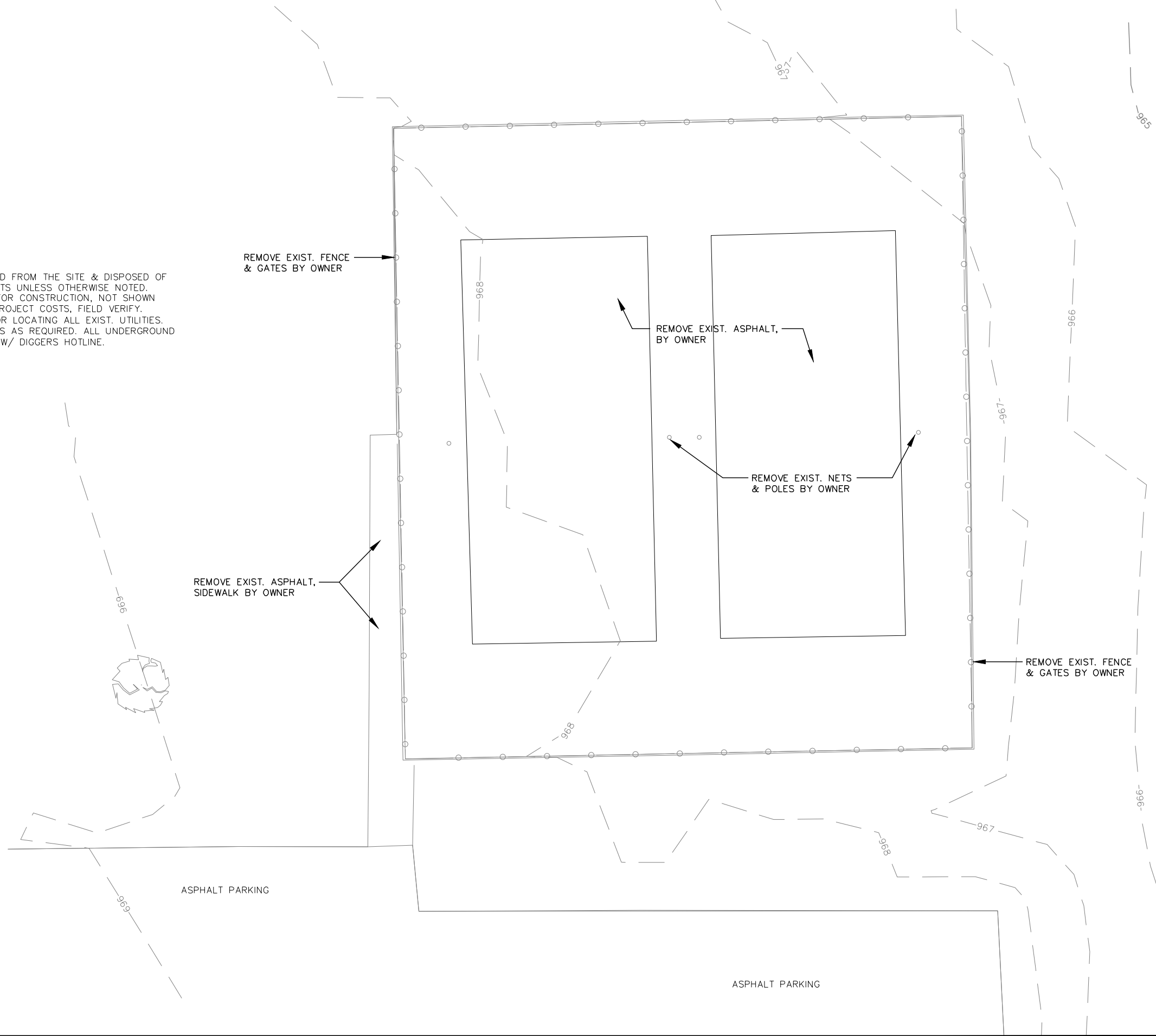
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2 OF 7

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NOTES:

- * ALL DEMOLITION MATERIAL SHALL BE REMOVED FROM THE SITE & DISPOSED OF OFF SITE AS PER CITY & STATE REQUIREMENTS UNLESS OTHERWISE NOTED.
- * ANY REMOVALS OR RELOCATIONS REQUIRED FOR CONSTRUCTION, NOT SHOWN SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT COSTS, FIELD VERIFY.
- * THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL EXIST. UTILITIES. REMOVE, ABANDON, RELOCATE EXIST. UTILITIES AS REQUIRED. ALL UNDERGROUND UTILITIES MAY NOT BE SHOWN, FIELD VERIFY W/ DIGGERS HOTLINE.



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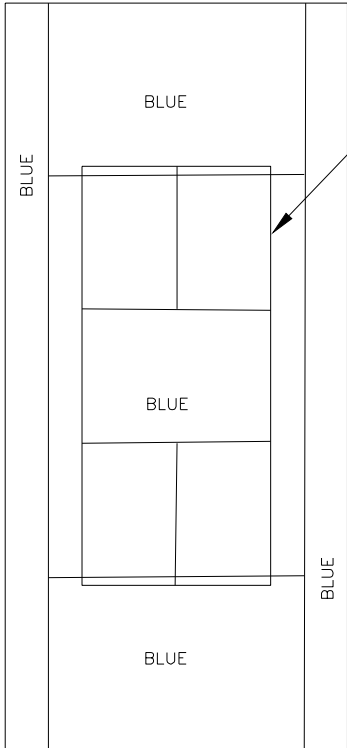
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FIREMANS PARK PICKLEBALL/TENNIS COURTS
VILLAGE OF RICHFIELD, WISCONSIN
REMOVAL PLAN

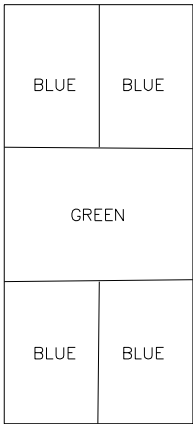
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NOTES:

- * THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO CONSTRUCTION & NOTIFY THE ENGINEER OF ANY DIFFERENCES.
- * THE CONTRACTOR SHALL VERIFY ALL PLAN DIMENSIONS BEFORE INSTALLATION & NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
- * THE CONTRACTOR SHALL FIELD VERIFY THE LOCATIONS & SIZES OF ALL EXISTING UTILITIES.
- * ALTERNATE, INSTALL WINDSCREEN ON ALL EXTERIOR 10' & 6' CHAIN LINK FENCE & GATES.
- * ALTERNATE, DECREASE POST SPACING TO 8.0' O.C. ON 10' HIGH FENCE FOR WINDSCREEN. INSTALLATION.
- * ALTERNATE, WINDSCREEN SHALL BE VINYL COATED POLYESTER (VCP) BY DOUGLAS INDUSTRIES, INC. 3441 S 11th AVE., ELDRIDGE, IA, 52748, 1-800-553-8907, OR APPROVED EQUAL.
- * ALTERNATE, INSTALL WINDSCREEN AS PER MANUFACTURER'S SPECIFICATIONS.



ALTERNATE BID:
YELLOW PICKLEBALL COURT LINES
OVERLAID ON TENNIS COURT,
VERIFY COLOR W/ OWNER



PICKLEBALL COURT
COLORS

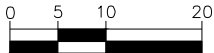
NOTE: ALL LINES, 2" WIDE, WHITE.
AREAS OUTSIDE OF COURTS, GREEN.

TENNIS COURT COLORS

NOTE: ALL LINES, 2" WIDE, WHITE.
AREAS OUTSIDE OF COURTS, GREEN.

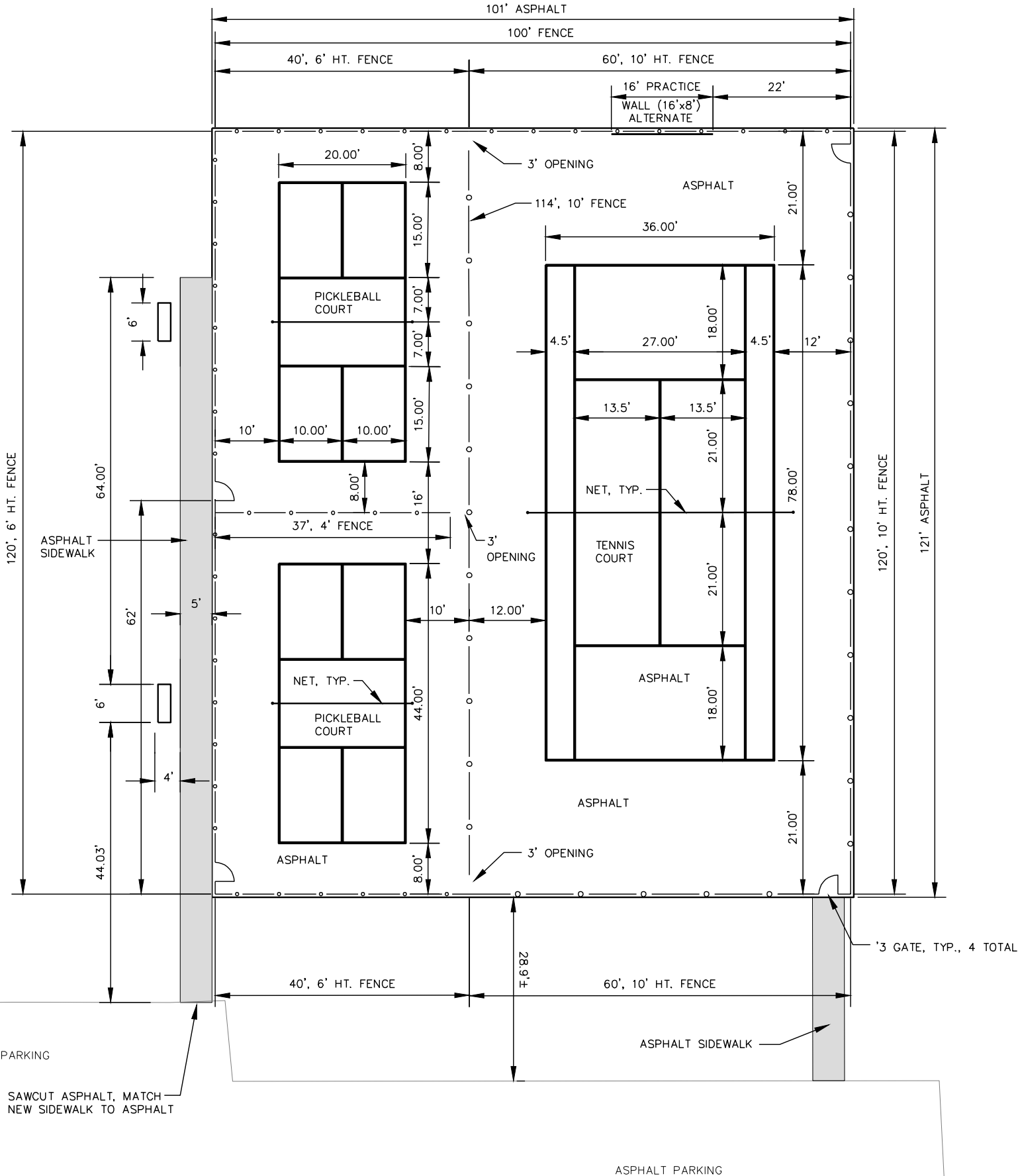


SCALE:



ASPHALT PARKING

SAWCUT ASPHALT, MATCH
NEW SIDEWALK TO ASPHALT



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VILLAGE OF RICHFIELD
FIREMANS PARK PICKLEBALL/TENNIS COURTS
VILLAGE OF RICHFIELD, WISCONSIN
SITE PLAN

SHEET NO.
4 OF 7

- * THE CONTRACTOR SHALL VERIFY ALL EXIST. CONDITIONS.
- * THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING LOCATIONS OF EXIST. UTILITIES.
- * PROPOSED CONTOUR LINE LOCATIONS ARE APPROXIMATE, SPOT ELEVATIONS SHALL BE USED FOR EXACT ELEVATIONS.
- * RESTORE ALL DISTURBED AREAS NOT COVERED BY HARD SURFACES W/ 5" OF TOPSOIL, SEED, MULCH & FERTILIZER.

- * THE CONTRACTOR SHALL INSTALL APPROPRIATE EROSION CONTROL MEASURES AS THE FIRST CONSTRUCTION ACTIVITY.
- * SEED & MULCH & FERTILIZE ALL DISTURBED AREAS OVER 5" OF TOPSOIL.
- * ADJUST OR ADD SILT FENCE AS NEEDED TO PREVENT SEDIMENT FROM LEAVING THE CONSTRUCTION SITE.
- * INSTALL SILT FENCE AS NEEDED AROUND ANY TEMPORARY SOIL STORAGE PILES.
- * ALL DISTURBED AREAS LEFT FOR MORE THAN 14 DAYS SHALL BE STABILIZE W/ SEED & MULCH TO PREVENT EROSION.
- * ALL WASTE & UNUSED BUILDING MATERIAL SHALL BE REMOVED FROM THE SITE & DISPOSED OF & NOT ALLOWED TO BE CARRIED OFF BY STORM WATER RUNOFF.
- * THE CONTRACTOR SHALL FOLLOW ALL PRACTICES AS DEFINED IN THE WI DNR TECHNICAL STANDARDS FOR CONSTRUCTION SITE EROSION & SEDIMENT CONTROL.

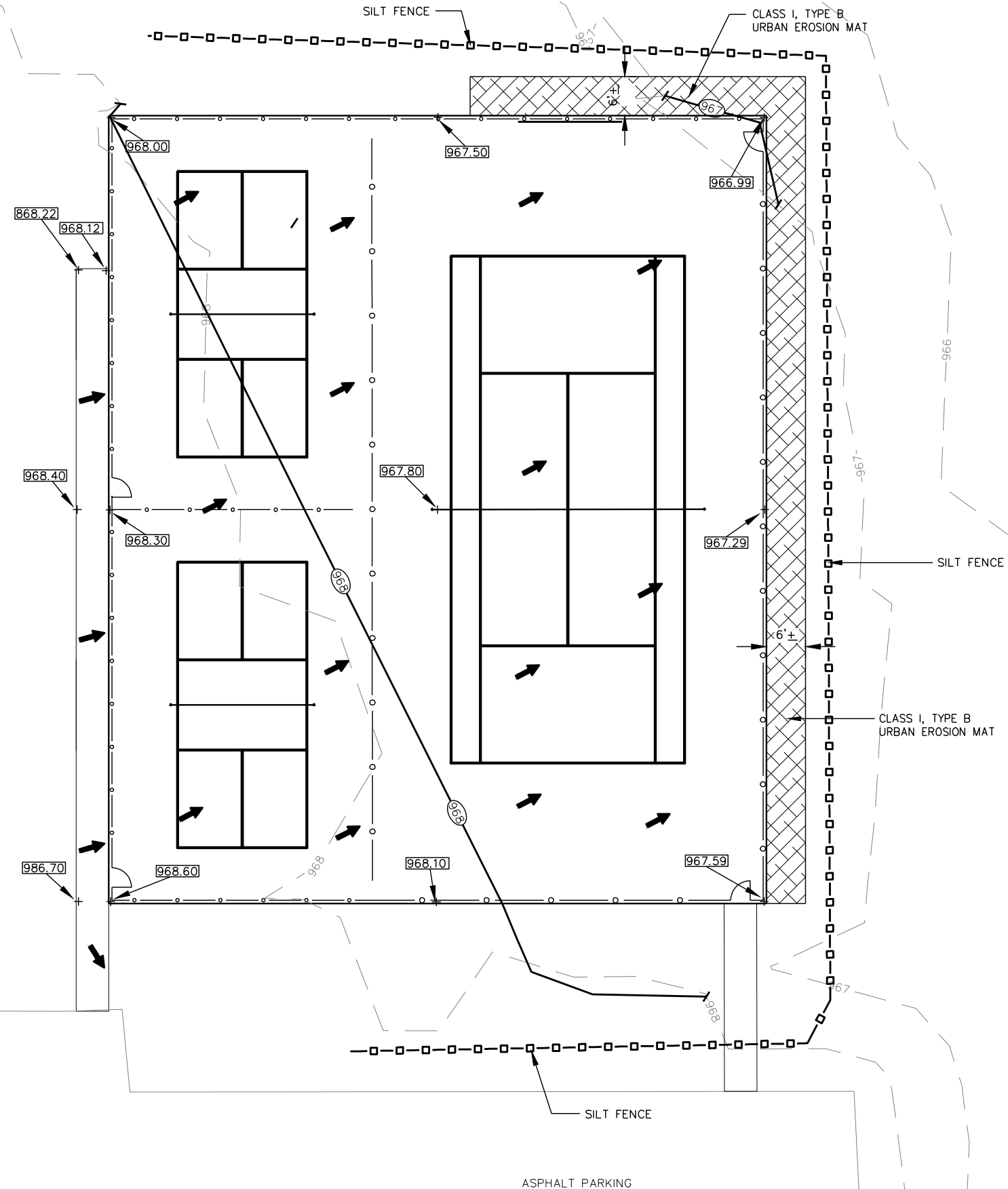
	DENOTES EXISTING CONTOUR LINE.
	DENOTES PROPOSED CONTOUR LINE, FINISHED GRADE.
	DENOTES PROPOSED SPOT ELEVATION, FINISHED GRADE.
	DENOTES DIRECTION OF PROPOSED SURFACE WATER FLOW.



SCALE:



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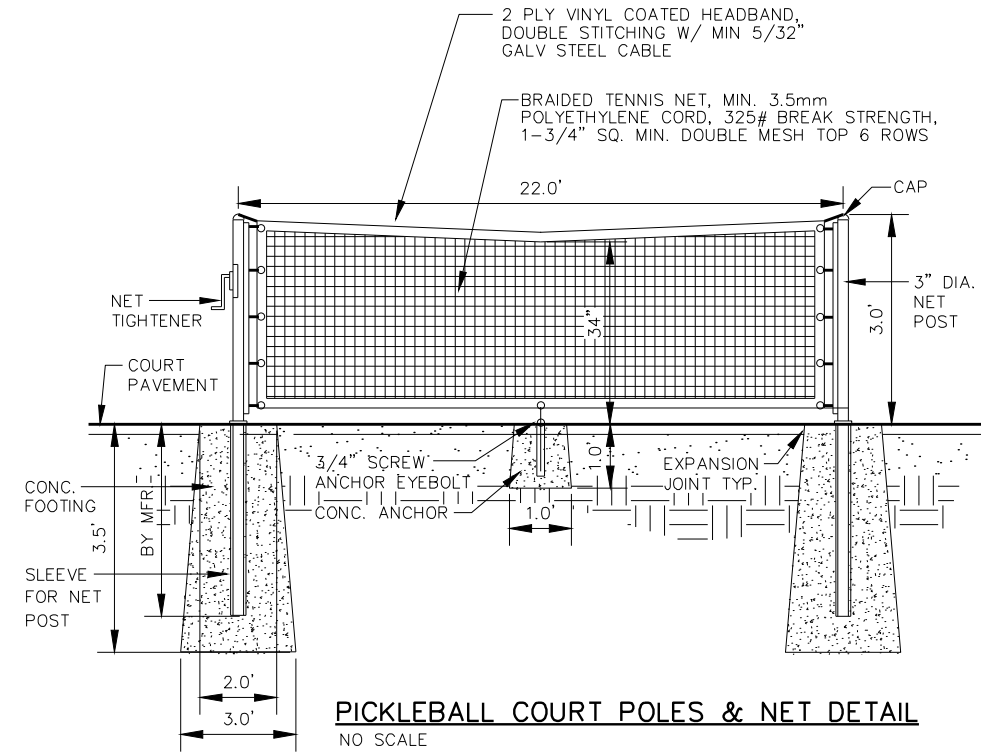
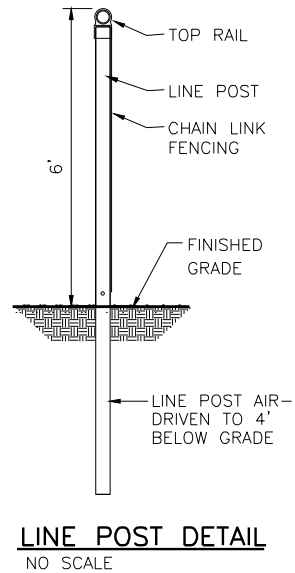
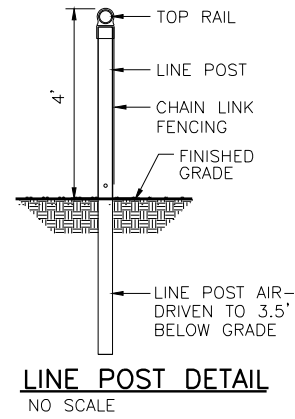
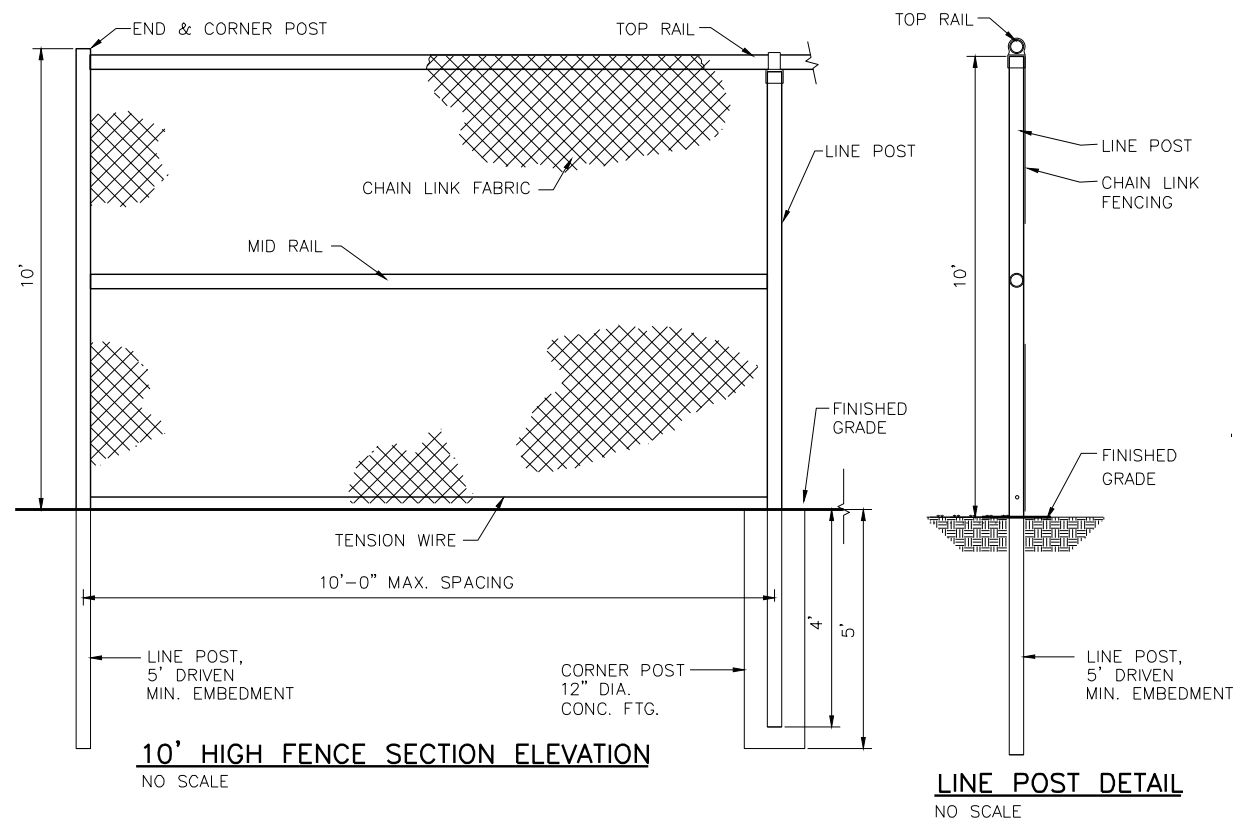
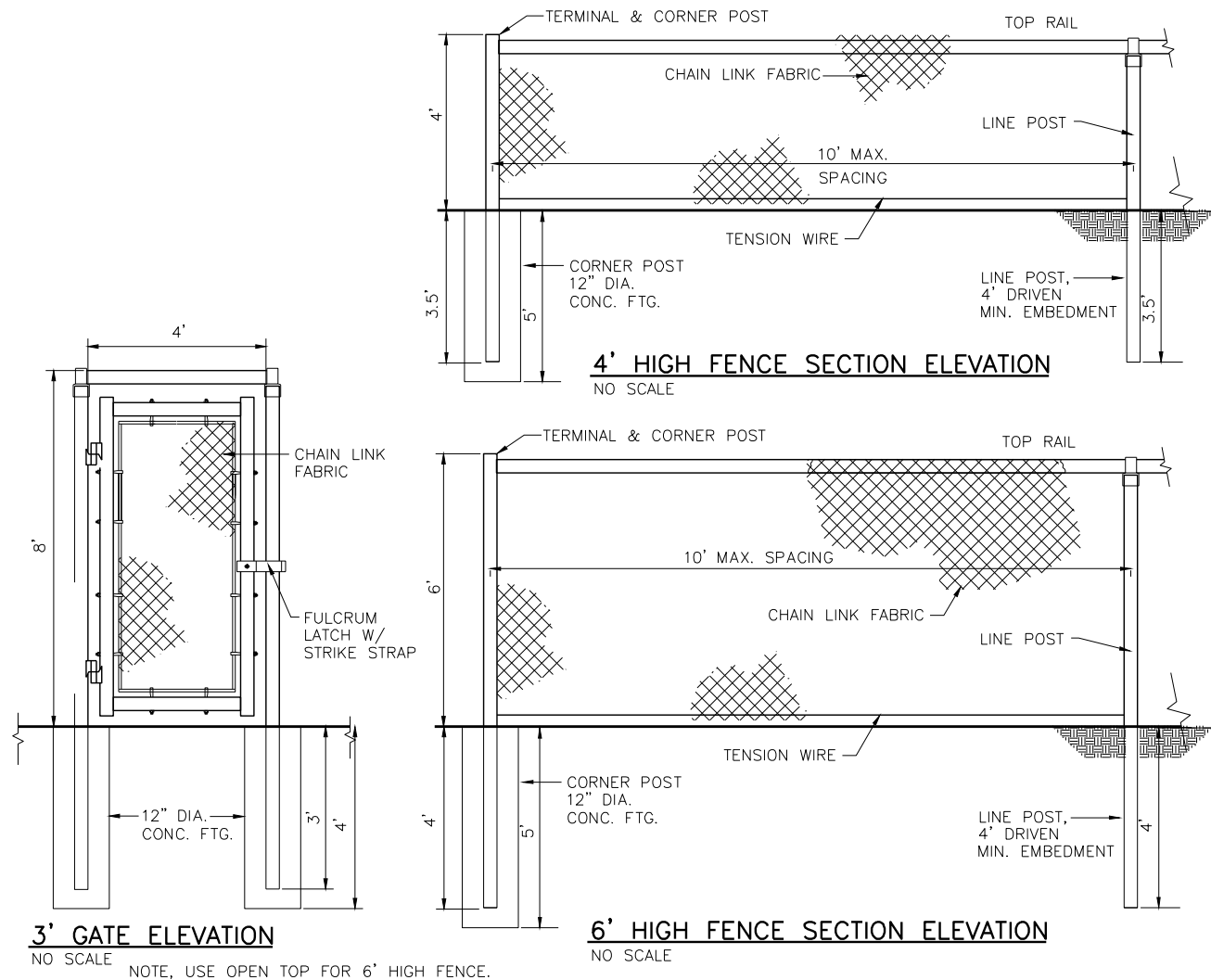
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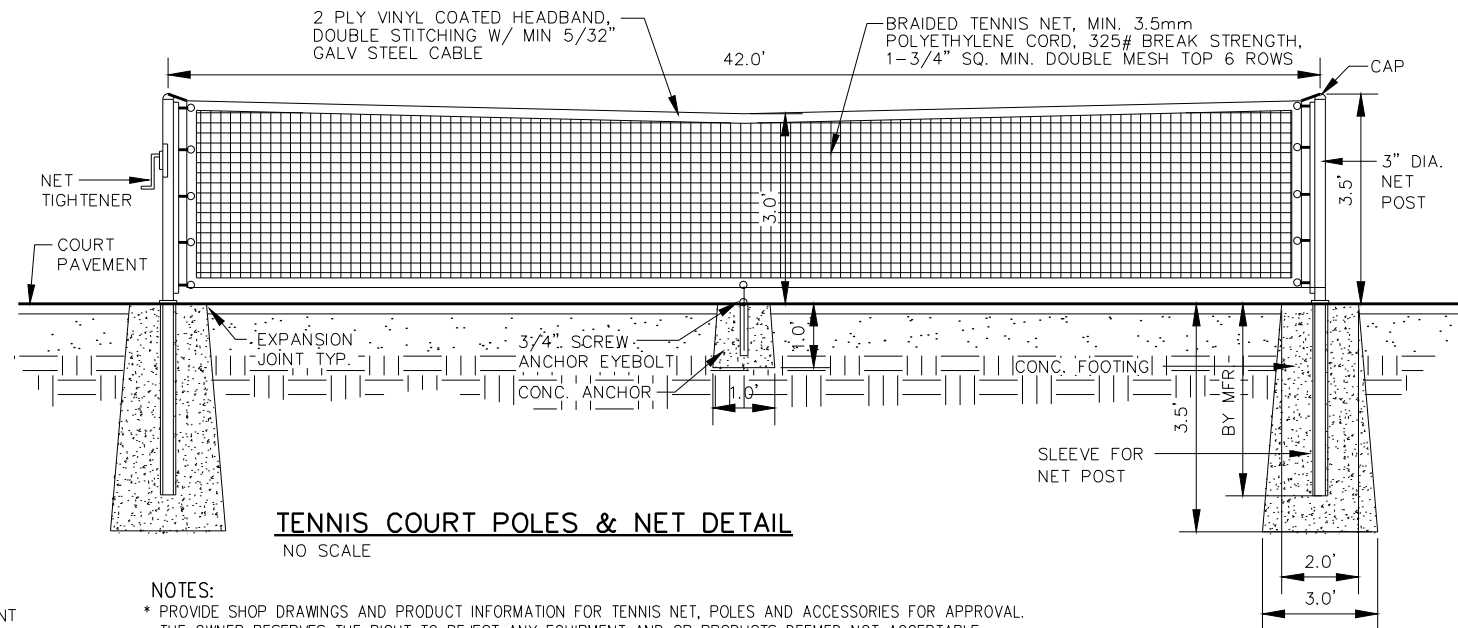
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VILLAGE OF RICHFIELD, WISCONSIN
GRADING PLAN & EROSION CONTROL

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- NOTES:
- * PROVIDE SHOP DRAWINGS AND PRODUCT INFORMATION FOR PICKLEBALL NET, POLES AND ACCESSORIES FOR APPROVAL. THE OWNER RESERVES THE RIGHT TO REJECT ANY EQUIPMENT AND OR PRODUCTS DEEMED NOT ACCEPTABLE.
 - * ALL COMPONENTS SHALL BE UV, ROT, MILDEW & RUST RESISTANT.
 - * PROVIDE SYSTEM FOR ADJUSTING THE TENTION OF THE NET.



- NOTES:
- * PROVIDE SHOP DRAWINGS AND PRODUCT INFORMATION FOR TENNIS NET, POLES AND ACCESSORIES FOR APPROVAL. THE OWNER RESERVES THE RIGHT TO REJECT ANY EQUIPMENT AND OR PRODUCTS DEEMED NOT ACCEPTABLE.
 - * ALL COMPONENTS SHALL BE UV, ROT, MILDEW & RUST RESISTANT.
 - * PROVIDE SYSTEM FOR ADJUSTING THE TENTION OF THE NET.

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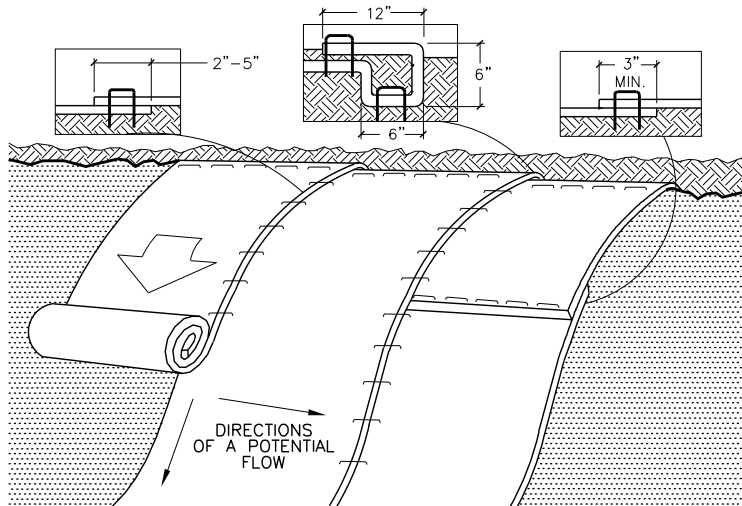
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FAX 920-491-9020

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FAX 715-235-2727

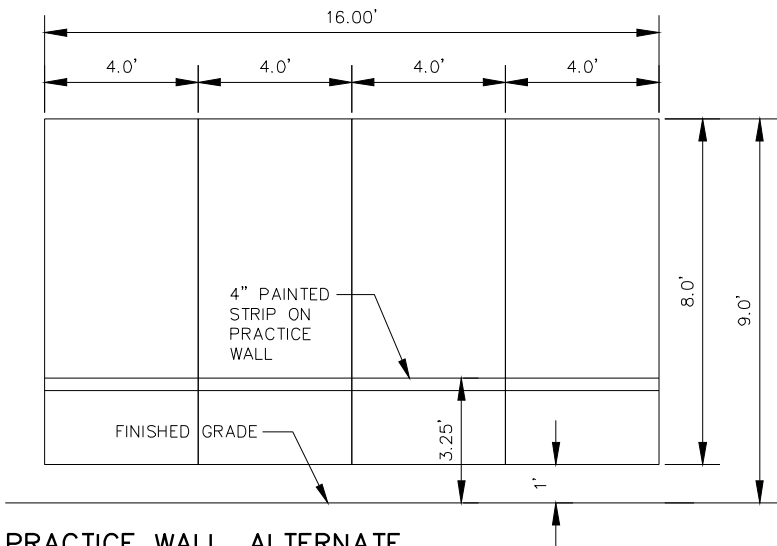
VILLAGE OF RICHFIELD
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VILLAGE OF RICHFIELD, WISCONSIN
DETAILS

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- * PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL MAT, INCLUDING GRADING, TOPSOIL, SEED & FERTILIZER.
- * BEGIN AT TOP OF SLOPE, BY ANCHORING MAT IN TRENCH, INSTALL STAPLES 12" APART, SEE DETAIL.
- * ROLL MAT DOWN SLOPE AS SHOWN. FASTEN MAT TO SOIL SURFACE W/ STAPLES. STAPLE PATTERN GUIDE BY MFR.
- * OVERLAP MAT AS PER MFRS. SPEC.

EROSION CONTROL MAT DETAIL NO SCALE



PRACTICE WALL, ALTERNATE

NO SCALE

NOTES:

- * PRACTICE WALL, 4, 8'x4', 1-7/5" THICK METAL REINFORCED FIBERGLASS PANELS.
- * PANELS SHALL BE GREEN IN COLOR, UV RESISTANCE, BE SOUND-DEADENING & HAVE NO HOLES OR PROTRUSIONS ON FACE OF PANELS
- * INSTALL PANELS TO FENCE AS PER MANUFACTURERS RECOMMENDATIONS.

2" x 2" x 4' POSTS, 3' O.C. FOR
GEOTEXTILE FABRIC ONLY, 8' O.C.
FOR GEOTEXTILE FABRIC WITH
ALTERNATE SUPPORT COMPONENTS

STAPLE FILTER FABRIC TO POSTS

GEOTEXTILE FABRIC

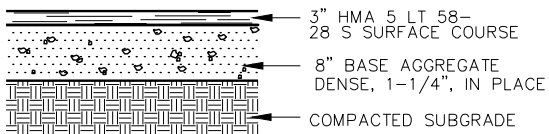
GRADE RUNOFF

BURY FILTER FABRIC 6" BELOW
FINISHED GRADE, COMPACT

SILT FENCE DETAIL

NOTES: NO SCALE

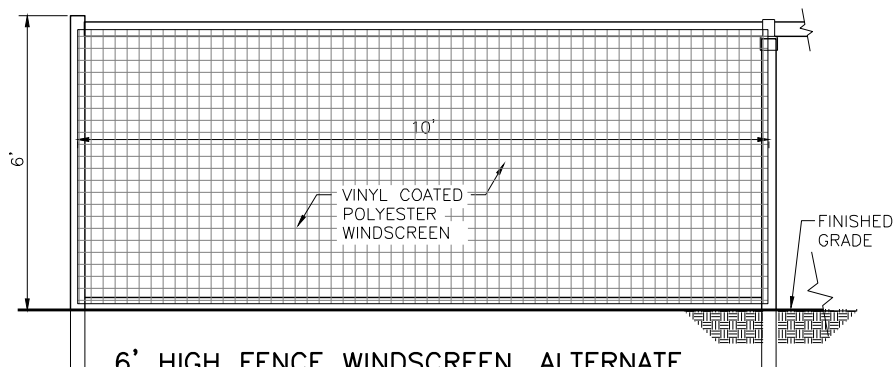
- * SILT FENCE SHALL BE SUPPLIED & INSTALLED AS PER THE WI DOT STANDARD SPECIFICATIONS FOR HIGHWAY & STRUCTURE CONSTRUCTION.



ASPHALT TYPICAL SECTION

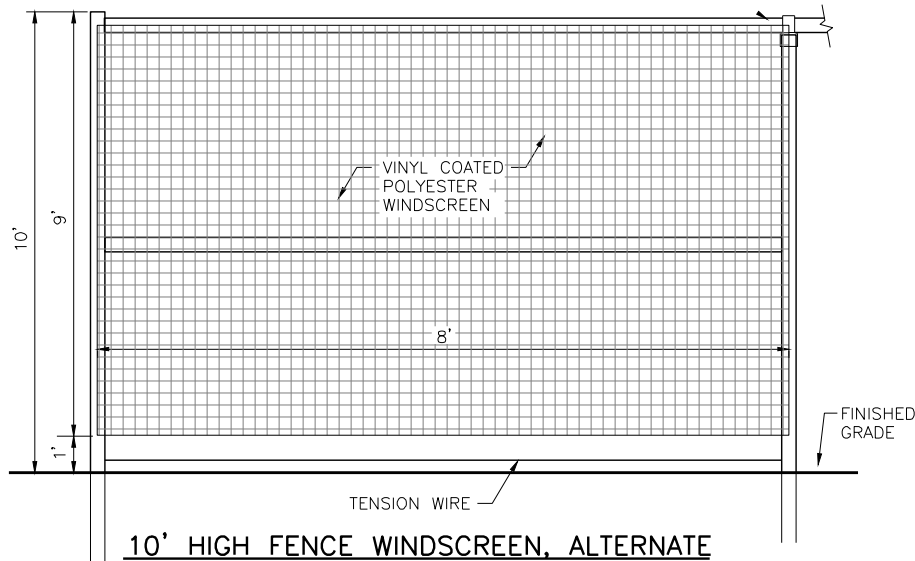
NO SCALE

NOTE: ASPHALT, BASE COURSE & COMPACTION SHALL BE SUPPLIED & INSTALLED AS PER WI DOT STANDARD SPEC. FOR HWY & STRUCTURE CONSTRUCTION, LATEST ED.



6' HIGH FENCE WINDSCREEN, ALTERNATE

NO SCALE



10' HIGH FENCE WINDSCREEN, ALTERNATE

NO SCALE

NOTES:

- * DECREASE POST SPACING TO 8.0' O.C. FOR 10' HIGH FENCE FOR WINDSCREEN ALTERNATE INSTALLATION.
- * WINDSCREEN SHALL BE VINYL COATED POLYESTER (VCP) BY DOUGLAS INDUSTRIES, INC. 3441 S 11th AVE., ELDRIDGE, IA, 52748, 1-800-553-8907, OR APPROVED EQUAL.
- * INSTALL AS PER MANUFACTURER'S SPECIFICATIONS.

JOB NO. 05771-0004
BOOK NO.
DRAWN BY BJG
CHECKED BY RDD
DATE FEBRUARY, 2021
REVISIONS
REFERENCE FILE
DRAWING FILE Design_Firemans Park.dwg

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608-245-5046
FAX 920-491-9020

604 Wilson Ave.
W51N497
715-235-9081
FAX 715-235-2727

VILLAGE OF RICHFIELD
FIREMANS PARK PICKLEBALL/TENNIS COURTS
VILLAGE OF RICHFIELD, WISCONSIN
DETAILS



February 16, 2022

Village of Jackson
W194 N16660 Eagle Drive
PO Box 637
Jackson, WI 53037

Attention: Mr. Brian Kober
Director of Public Works

Subject: Engineering Services Proposal
STH 60 – CTH P to Eagle Drive
Sanitary Sewer and Water Main

Dear Mr. Kober:

Thank you for the opportunity to work with you in providing engineering services for the STH 60 sanitary sewer and water main project in the Village of Jackson. We look forward to maintaining our good working relationship with you by providing quality and efficient service that the Village can expect when working with Gremmer & Associates. The following is our proposal to provide engineering services for the project. Herein after the Village of Jackson will be referred to as the OWNER/VILLAGE, and Gremmer & Associates, Inc. as the ENGINEER.

SCOPE OF SERVICES

The ENGINEER will provide the following services. Items of work not specifically mentioned below shall be considered extra services.

1. Field survey:
 - a. All sanitary manholes, water valves, hydrants, and water curb stops within the project limits.
 - b. Topo survey of existing houses, walks, etc. in areas where the sanitary laterals need to be replaced to buildings.
2. Sanitary sewer – preliminary and final design/plans:
 - a. Replace all sanitary manhole castings, adjustment rings and chimney seals within the limits of the STH 60 resurface project.
 - b. Replace the sanitary sewer main and laterals from the railroad tracks east to where sanitary goes to south side of roadway (east of Coffeerville). Approximately 2,400'. Laterals will be replaced from the main to the house/building.
3. Water main – preliminary and final design/plans:
 - a. Replace all hydrants within the limits of the STH 60 resurfacing project.
 - b. Replace all water service curb stop boxes within the limits of the STH 60 resurfacing project.
 - c. Replace select water service curb stops and water valves, as identified by the VILLAGE.
 - d. Replacement of the water main trunk line is not included in the scope, and if required, shall be considered extra services.

4. Detour/Traffic Control. Scope assumes a combination of road closed to through traffic and open with traffic control.
5. Specifications and bid documents for a local let project. QuestCDN bidding service will be utilized.
6. Agency/Utility Coordination/Permitting
 - a. Prepare/submit a WDNR Notice of Intent (NOI) for stormwater discharges permit application (if required).
 - b. Prepare/submit a WDNR sanitary sewer extension permit application.
 - c. WisDOT utility permit.
 - d. Coordinate with WisDOT design consultant.
 - e. Coordinate with other utility companies regarding the proposed work.
7. Meet with the Village of Jackson Engineering Department as necessary throughout the duration of the project.

COMPENSATION

ENGINEER will be compensated by the OWNER for Construction Services provided under this CONTRACT on a time and materials basis, estimated at \$53,960. Work will be billed in accordance with the attached Professional Services Fee Schedule, dated January 1, 2022 to April 30, 2023, and labeled Exhibit A.

Additional services, at the request of the OWNER, will be billed according to the attached Professional Services Fee Schedule, dated January 1, 2022 to April 30, 2023, and labeled Exhibit A.

The ENGINEER shall prepare monthly invoices for services performed during the billing cycle. Invoices shall be paid by the OWNER within 30 days of OWNER'S receipt of said invoice.

OWNER'S RESPONSIBILITY

1. Provide sanitary sewer sizing requirements.
2. Provide sanitary sewer televising reports.
3. Provide sanitary sewer structure inspection reports.
4. Provide water main fire flows and sizing requirements (if required).
5. Prior to field survey, locate/flag locations of curb stop boxes and water valves.
6. Provide locations of curb stops and water valves that require replacement.
7. Payment of any required permit fees.

ADDITIONAL SERVICES/OUT OF SCOPE WORK

1. Wetland delineation/determination.
2. DNR/USACE coordination/permitting outside of the items listed in the scope of services section.
3. Preparation of any easement or right-of-way documents/descriptions.
4. Preconstruction meeting, construction staking, and construction observation.

GENERAL TERMS & CONDITIONS

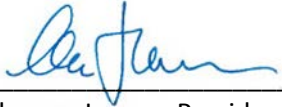
ENGINEER services will be performed in accordance with the attached General Terms and Conditions, dated January 1, 2022 to April 30, 2023, and labeled Exhibit B.

AUTHORIZATION AND TIMING

A receipt of a signed copy of the CONTRACT shall be considered as authorization to proceed with the services described.

For the ENGINEER

Accepted by the OWNER



Thomas Lanser, President
Gremmer & Associates, Inc.

Brian Kober
Director of Public Works

2/16/22
Date

Date

Exhibit A



PROFESSIONAL SERVICES FEE SCHEDULE

January 1, 2022 to April 30, 2023

Project Manager.....	\$150.00/hour
Project Engineer / Senior Designer	\$130.00/hour
Civil Engineer V.....	\$115.00/hour
Professional Land Surveyor / Survey Crew Chief.....	\$105.00/hour
One-man Survey Crew with GPS/Robotic Total Station	\$130.00/hour
Civil Engineer IV / Engineering Specialist V	\$105.00/hour
Civil Engineer III / Engineering Specialist IV	\$95.00/hour
Civil Engineer II / Engineering Specialist III.....	\$88.00/hour
Civil Engineer I / Engineering Specialist II.....	\$81.00/hour
Engineering Specialist I / Civil Engineering Technician III	\$74.00/hour
Civil Engineering Technician II	\$66.00/hour
Civil Engineering Technician I	\$58.00/hour
Office Services	\$57.00/hour
Mileage	Current IRS rate
Meals, lodging, air travel, telephone, supplies, postage.....	At Cost
Printing Services (In-house)	
Photocopies-letter size (black & white).....	\$0.10/impression
Photocopies-letter size (color).....	\$0.25/impression
Large Format Plots (black & white)	\$1.00/S.F.
Large Format Plots (color).....	\$2.00/S.F.
Printing Services (Outside Service).....	At Cost
Expert Witness	\$200.00/hour

Note: Office Services, Civil Engineering Technician, and Engineering Specialist I-III are paid time and one-half their actual wage for overtime. The respective billed rate will be approximately 19% higher than the published rate to account for the overtime rate.

Exhibit B



GENERAL TERMS AND CONDITIONS

January 1, 2022 to April 30, 2023

1. This agreement, upon execution by both parties hereto, can be amended only by written instrument signed by both parties. As the project progresses, facts uncovered may reveal a change in direction, which may alter the scope. Gremmer & Associates, Inc., will promptly inform the Owner in writing of such situations so that changes in this agreement can be negotiated as required. In the event the Owner orders additional work to be performed and a written instrument is not executed by both parties, the Owner shall be responsible for all costs associated with the additional work.
2. Costs and schedule commitments shall be subject to renegotiation for delays caused by the Owner's failure to provide specified facilities or information, or for delays caused by unpredictable occurrences, including without limitation, fires, floods, riots, strikes, unavailability of labor or materials, delays or defaults by suppliers of materials or services, shutdowns, acts of God or the public enemy, or acts or regulations of any governmental agency. Temporary delay of services caused by any of the above, which results in additional costs beyond those outlined, may require renegotiation of this agreement.
3. Payment is due to Gremmer & Associates, Inc., upon 30 days of receipt of the invoice for professional services rendered. Failure to make any payment when due is a breach of this Agreement and will entitle Gremmer & Associates, Inc., at its option, to suspend or terminate the Agreement and the provisions of the Scope of Work. Interest of 1.5 percent per month (18 percent per annum) will accrue on accounts overdue by 30 days.
4. The Owner shall make available to Gremmer & Associates, Inc., all relevant information or data pertaining to the project which is required to perform the Scope of Work.
5. Gremmer & Associates, Inc., will provide and exercise the standard of care, skill and diligence required by customarily accepted professional practices normally provided in the performance of the services at the time and the location in which the services were performed.
6. Gremmer & Associates, Inc., will maintain insurance coverage in the following amounts:

Worker's Compensation	Statutory
General Liability	
General Aggregate	\$2,000,000
Operations / Injury	\$1,000,000
Automobile Liability	
Liability / Injury	\$1,000,000
Property Damage	Value or Repair
Professional Liability Insurance	\$1,000,000
Umbrella Liability Insurance	\$2,000,000

7. Termination of the agreement by the Owner or Gremmer & Associates, Inc., shall be effective upon seven (7) days written notice to the other party. The written notice shall include the reasons and details for termination. Gremmer & Associates, Inc., will prepare a final invoice showing all charges incurred through the date of termination. The Owner agrees to pay Gremmer & Associates, Inc., for the services performed to the date of termination.
8. Gremmer & Associates, Inc., intends to serve as the Owner's professional representative for those services as defined in this agreement and to provide advice and consultation to the Owner as a professional. Any opinions of probable project costs, approvals, and other decisions made by Gremmer & Associates, Inc., for the owner are rendered on the basis of experience and qualifications and represent our professional judgment. The Owner recognizes that Gremmer & Associates, Inc., does not have control over the costs of labor, materials or equipment, or over competitive bidding methods. Accordingly, Gremmer & Associates, Inc., does not make any commitment or assume any duty to assure that bids or negotiated prices will not vary from any cost opinions prepared by Gremmer & Associates, Inc.
9. This agreement shall not be construed as giving Gremmer & Associates, Inc., the responsibility or authority to direct or supervise construction means, methods, techniques, sequence, or procedures of construction selected by contractor or subcontractors, or the safety precautions and programs incident to the work of the contractors or subcontractors.
10. The Owner releases Gremmer & Associates, Inc., from any liability and agrees to defend, indemnify and hold Gremmer & Associates, Inc., harmless from any and all claims, damages, losses, and/or expenses, direct or indirect, or consequential damages, including but not limited to attorney's fees and charges, and court and arbitration costs, arising out of, or claimed to arise out of, the performance of the services, except liability arising from the negligence of Gremmer & Associates, Inc.



February 16, 2022

Village of Jackson
W194 N16660 Eagle Drive
PO Box 637
Jackson, WI 53037

Attention: Mr. Brian Kober
Director of Public Works

Subject: Engineering Services Proposal
CTH P – Sherman Road to STH 60
Sanitary Sewer and Water Main

Dear Mr. Kober:

Thank you for the opportunity to work with you in providing engineering services for the CTH P sanitary sewer and water main project from Sherman Road to STH 60. We look forward to maintaining our good working relationship with you by providing quality and efficient service that the Village can expect when working with Gremmer & Associates. The following is our proposal to provide engineering services for the project. Herein after the Village of Jackson will be referred to as the OWNER/VILLAGE, and Gremmer & Associates, Inc. as the ENGINEER.

SCOPE OF SERVICES

The ENGINEER will provide the following services. Items of work not specifically mentioned below shall be considered extra services.

1. Limited field survey at STH 60.
2. Preliminary and final sanitary sewer plans from Morning Meadows Phase 3 entrance north to approximately 200' north of the Kerry Ingredients driveway (approximately 2400').
3. Preliminary and final water main plans for the water main extension from Morning Meadows Phase 3 entrance north to STH 60 (approximately 3,400').
4. Specifications and bid documents for a local let project. QuestCDN bidding service will be utilized.
5. Agency/Utility Coordination/Permitting
 - a. Prepare/submit a WDNR Notice of Intent (NOI) for stormwater discharges permit application.
 - b. Prepare/submit a WDNR water main extension permit application.
 - c. Prepare/submit a WDNR sanitary sewer extension permit application.
 - d. WisDOT utility permit.
 - e. Washington County utility permit (if required).
 - f. Coordinate with other utility companies regarding the proposed work.
6. Meet with the Village of Jackson Engineering Department as necessary throughout the duration of the project.

COMPENSATION

ENGINEER will be compensated by the OWNER for Design Services provided under this CONTRACT, a lump sum of \$24,983.

Additional services, at the request of the OWNER, will be billed according to the attached Professional Services Fee Schedule, dated January 1, 2022 to April 30, 2023, and labeled Exhibit A.

The ENGINEER shall prepare monthly invoices for services performed during the billing cycle. Invoices shall be paid by the OWNER within 30 days of OWNER'S receipt of said invoice.

OWNER'S RESPONSIBILITY

1. Provide sanitary sewer sizing requirements.
2. Provide water main fire flows and sizing requirements.
3. Payment of any required permit fees.

ADDITIONAL SERVICES/OUT OF SCOPE WORK

1. Wetland delineation/determination.
2. DNR/USACE coordination/permitting outside of the items listed in the scope of services section.
3. Preparation of any easement or right-of-way documents/descriptions.
4. Preconstruction meeting, construction staking, and construction observation.

GENERAL TERMS & CONDITIONS

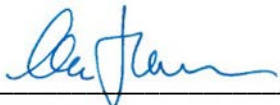
ENGINEER services will be performed in accordance with the attached General Terms and Conditions, dated January 1, 2022 to April 30, 2023, and labeled Exhibit B.

AUTHORIZATION AND TIMING

A receipt of a signed copy of the CONTRACT shall be considered as authorization to proceed with the services described.

For the ENGINEER

Accepted by the OWNER



Thomas Lanser, President
Gremmer & Associates, Inc.

Brian Kober
Director of Public Works

2/16/22
Date

Date

Exhibit A



PROFESSIONAL SERVICES FEE SCHEDULE

January 1, 2022 to April 30, 2023

Project Manager.....	\$150.00/hour
Project Engineer / Senior Designer	\$130.00/hour
Civil Engineer V	\$115.00/hour
Professional Land Surveyor / Survey Crew Chief	\$105.00/hour
One-man Survey Crew with GPS/Robotic Total Station	\$130.00/hour
Civil Engineer IV / Engineering Specialist V	\$105.00/hour
Civil Engineer III / Engineering Specialist IV	\$95.00/hour
Civil Engineer II / Engineering Specialist III	\$88.00/hour
Civil Engineer I / Engineering Specialist II	\$81.00/hour
Engineering Specialist I / Civil Engineering Technician III	\$74.00/hour
Civil Engineering Technician II	\$66.00/hour
Civil Engineering Technician I	\$58.00/hour
Office Services	\$57.00/hour
Mileage	Current IRS rate
Meals, lodging, air travel, telephone, supplies, postage	At Cost
Printing Services (In-house)	
Photocopies-letter size (black & white)	\$0.10/impression
Photocopies-letter size (color)	\$0.25/impression
Large Format Plots (black & white)	\$1.00/S.F.
Large Format Plots (color)	\$2.00/S.F.
Printing Services (Outside Service)	At Cost
Expert Witness	\$200.00/hour

Note: Office Services, Civil Engineering Technician, and Engineering Specialist I-III are paid time and one-half their actual wage for overtime. The respective billed rate will be approximately 19% higher than the published rate to account for the overtime rate.

Exhibit B



GENERAL TERMS AND CONDITIONS

January 1, 2022 to April 30, 2023

1. This agreement, upon execution by both parties hereto, can be amended only by written instrument signed by both parties. As the project progresses, facts uncovered may reveal a change in direction, which may alter the scope. Gremmer & Associates, Inc., will promptly inform the Owner in writing of such situations so that changes in this agreement can be negotiated as required. In the event the Owner orders additional work to be performed and a written instrument is not executed by both parties, the Owner shall be responsible for all costs associated with the additional work.
2. Costs and schedule commitments shall be subject to renegotiation for delays caused by the Owner's failure to provide specified facilities or information, or for delays caused by unpredictable occurrences, including without limitation, fires, floods, riots, strikes, unavailability of labor or materials, delays or defaults by suppliers of materials or services, shutdowns, acts of God or the public enemy, or acts or regulations of any governmental agency. Temporary delay of services caused by any of the above, which results in additional costs beyond those outlined, may require renegotiation of this agreement.
3. Payment is due to Gremmer & Associates, Inc., upon 30 days of receipt of the invoice for professional services rendered. Failure to make any payment when due is a breach of this Agreement and will entitle Gremmer & Associates, Inc., at its option, to suspend or terminate the Agreement and the provisions of the Scope of Work. Interest of 1.5 percent per month (18 percent per annum) will accrue on accounts overdue by 30 days.
4. The Owner shall make available to Gremmer & Associates, Inc., all relevant information or data pertaining to the project which is required to perform the Scope of Work.
5. Gremmer & Associates, Inc., will provide and exercise the standard of care, skill and diligence required by customarily accepted professional practices normally provided in the performance of the services at the time and the location in which the services were performed.
6. Gremmer & Associates, Inc., will maintain insurance coverage in the following amounts:

Worker's Compensation	Statutory
General Liability	
General Aggregate	\$2,000,000
Operations / Injury	\$1,000,000
Automobile Liability	
Liability / Injury	\$1,000,000
Property Damage	Value or Repair
Professional Liability Insurance	\$1,000,000
Umbrella Liability Insurance	\$2,000,000

7. Termination of the agreement by the Owner or Gremmer & Associates, Inc., shall be effective upon seven (7) days written notice to the other party. The written notice shall include the reasons and details for termination. Gremmer & Associates, Inc., will prepare a final invoice showing all charges incurred through the date of termination. The Owner agrees to pay Gremmer & Associates, Inc., for the services performed to the date of termination.
8. Gremmer & Associates, Inc., intends to serve as the Owner's professional representative for those services as defined in this agreement and to provide advice and consultation to the Owner as a professional. Any opinions of probable project costs, approvals, and other decisions made by Gremmer & Associates, Inc., for the owner are rendered on the basis of experience and qualifications and represent our professional judgment. The Owner recognizes that Gremmer & Associates, Inc., does not have control over the costs of labor, materials or equipment, or over competitive bidding methods. Accordingly, Gremmer & Associates, Inc., does not make any commitment or assume any duty to assure that bids or negotiated prices will not vary from any cost opinions prepared by Gremmer & Associates, Inc.
9. This agreement shall not be construed as giving Gremmer & Associates, Inc., the responsibility or authority to direct or supervise construction means, methods, techniques, sequence, or procedures of construction selected by contractor or subcontractors, or the safety precautions and programs incident to the work of the contractors or subcontractors.
10. The Owner releases Gremmer & Associates, Inc., from any liability and agrees to defend, indemnify and hold Gremmer & Associates, Inc., harmless from any and all claims, damages, losses, and/or expenses, direct or indirect, or consequential damages, including but not limited to attorney's fees and charges, and court and arbitration costs, arising out of, or claimed to arise out of, the performance of the services, except liability arising from the negligence of Gremmer & Associates, Inc.



January 12, 2022

Village of Jackson
W194 N16660 Eagle Drive
Jackson, WI 53037

Attention: Brian Kober, P.E.
Director of Public Works

Subject: Project: VOJ 21-01
Coffee Connection Trail
Jackson Drive – Eagle Drive
Pay Request #4

Dear Mr. Kober:

Enclosed you will find Pay Request #4 for the Coffee Connection Trail project in the Village of Jackson. The total amount, due to the contractor, has been reduced by five percent (5%) for retainage but not to exceed maximum retainage; which was met with pay request #3. This is per Article 6.02.A.1 Progress Payments; Retainage, of Contract Document 00500, Agreement:

Total work completed to date	= \$ 374,944.54
Work completed, Pay Request #4	= \$ 14,256.47
Total Retainage	= \$ 8,964.32
Amount due to Contractor, Pay Request #4	= \$ 14,256.47
Work to be completed	= \$ 26,127.14

Work to be completed:
Pavement Markings, Signs, Lawn Restoration and any miscellaneous items.

If you have any questions or comments, please contact me at (920) 924-5720.

Sincerely,

Todd Drew
Project Engineer
Gremmer & Associates, Inc.

Project VOJ 21-01
Coffee Connection Trail
Jackson Drive - Eagle Drive

Pay Request #4
Poblocki Paving - Prime Contractor

Item No.	Description	Unit s	Total	Poblocki Paving		Pay Request #1		Pay Request #2		Pay Request #3		Pay Request #4		Cumulative Totals		% Complete
				Unit Price	Bid Total	Actual Quantity	Total	Actual Quantity	Total	Actual Quantity	Total	Actual Quantity	Total	Actual Quantity	Total	
100-01	Removing Small Pipe Culverts	EACH	1	\$200.00	\$200.00		\$0.00		\$0.00	1.00	\$200.00		\$0.00	1	\$200.00	100%
100-02	Removing Concrete Pavement	SY	65	\$30.00	\$1,950.00		\$0.00		\$0.00	63.00	\$1,890.00		\$0.00	63	\$1,890.00	97%
100-03	Removing Asphaltic Surface	SY	35	\$12.00	\$420.00		\$0.00		\$0.00	84.00	\$1,008.00		\$0.00	84	\$1,008.00	240%
100-04	Removing Curb & Gutter	LF	350	\$11.00	\$3,850.00		\$0.00		\$0.00	350.00	\$3,850.00		\$0.00	350	\$3,850.00	100%
100-05	Removing Concrete Sidewalk	SY	65	\$30.00	\$1,950.00		\$0.00		\$0.00	47.00	\$1,410.00		\$0.00	47	\$1,410.00	72%
100-06	Excavation Common	CY	637	\$66.00	\$42,042.00		\$0.00	550	\$36,300.00	316.00	\$20,856.00		\$0.00	866	\$57,156.00	136%
100-07	Base Aggregate Dense 3/4-Inch	TON	104	\$32.00	\$3,328.00		\$0.00		\$0.00	105.12	\$3,363.84		\$0.00	105	\$3,363.84	101%
100-08	Base Aggregate Dense 1 1/4-Inch	TON	1,135	\$29.00	\$32,915.00		\$0.00	1252.94	\$36,335.26	270.40	\$7,841.60		\$0.00	1523.34	\$44,176.86	134%
100-09	Breaker Run	TON	180	\$29.00	\$5,220.00		\$0.00		\$0.00		\$0.00		\$0.00	0	\$0.00	0%
100-10	Concrete Driveway 6-Inch	SY	31	\$90.00	\$2,790.00		\$0.00		\$0.00	31.33	\$2,819.70		\$0.00	31	\$2,819.70	101%
100-11	Drilled Tie Bars	EACH	36	\$15.00	\$540.00		\$0.00		\$0.00	47.00	\$705.00		\$0.00	47	\$705.00	131%
100-12	Asphaltic Surface	TON	370	\$114.00	\$42,180.00		\$0.00		\$0.00	433.30	\$49,396.20		\$0.00	433	\$49,396.20	117%
100-13	Concrete Curb & Gutter 30-Inch Type D	LF	350	\$66.00	\$23,100.00		\$0.00		\$0.00	350.00	\$23,100.00		\$0.00	350	\$23,100.00	100%
100-14	Concrete Curb Pedestrian	LF	25	\$78.00	\$1,950.00		\$0.00		\$0.00	25.00	\$1,950.00		\$0.00	25	\$1,950.00	100%
100-15	Concrete Sidewalk 4-Inch	SF	2,910	\$6.30	\$18,333.00		\$0.00		\$0.00	2000.00	\$12,600.00	95.57	\$602.09	2096	\$13,202.09	72%
100-16	Concrete Sidewalk 6-Inch	SF	755	\$8.80	\$6,644.00		\$0.00		\$0.00	1380.00	\$12,144.00	171.20	\$1,506.56	1551	\$13,650.56	205%
100-17	Curb Ramp Detectable Warning Field Yellow	SF	135	\$30.00	\$4,050.00		\$0.00		\$0.00	154.00	\$4,620.00		\$0.00	154	\$4,620.00	114%
100-18	Curb Ramp Detectable Warning Field Radial Yellow	SF	101	\$30.00	\$3,030.00		\$0.00		\$0.00	106.00	\$3,180.00		\$0.00	106	\$3,180.00	105%
100-19	Lawn Restoration	SY	4,456	\$10.14	\$45,183.84		\$0.00		\$0.00	4010.00	\$40,661.40	1198.01	\$12,147.82	5208	\$52,809.22	117%
100-20	Silt Fence	LF	1,895	\$2.00	\$3,790.00	1956	\$3,912.00	260	\$520.00		\$0.00		\$0.00	2216	\$4,432.00	117%
100-21	Inlet Protection Type A	EACH	1	\$105.00	\$105.00		\$0.00		\$0.00		\$0.00		\$0.00	0	\$0.00	0%
100-22	Inlet Protection Type C	EACH	6	\$105.00	\$630.00	6	\$630.00		\$0.00		\$0.00		\$0.00	6	\$630.00	100%
100-23	Temporary Ditch Checks	LF	24	\$30.00	\$720.00	24	\$720.00		\$0.00		\$0.00		\$0.00	24	\$720.00	100%
100-24	Culvert Pipe Checks	EACH	8	\$185.00	\$1,480.00		\$0.00		\$0.00		\$0.00		\$0.00	0	\$0.00	0%
100-25	Posts Wood 4x6-Inch X 14-FT	EACH	20	\$390.00	\$7,800.00		\$0.00		\$0.00		\$0.00		\$0.00	0	\$0.00	0%
100-26	Signs Type II Reflective F	SF	135.0	\$26.00	\$3,510.00		\$0.00		\$0.00		\$0.00		\$0.00	0	\$0.00	0%
100-27	Traffic Control	LS	1	\$8,556.00	\$8,556.00	1	\$8,556.00		\$0.00		\$0.00		\$0.00	1	\$8,556.00	100%
100-28	Geotextile Type SAS	SY	600	\$2.40	\$1,440.00		\$0.00	397	\$952.80		\$0.00		\$0.00	397	\$952.80	66%
100-29	Marking Crosswalk Epoxy Transverse Line 6-Inch	LF	621	\$10.86	\$6,744.06		\$0.00		\$0.00	148.00	\$1,607.28		\$0.00	148	\$1,607.28	24%
100-30	Marking Crosswalk Epoxy Ladder Pattern 24-Inch	LF	88	\$44.36	\$3,903.68		\$0.00		\$0.00		\$0.00		\$0.00	0	\$0.00	0%
100-31	Sawing Asphalt	LF	225	\$2.50	\$562.50		\$0.00	465.5	\$1,163.75		\$0.00		\$0.00	465.5	\$1,163.75	207%
100-32	Sawing Concrete	LF	115	\$3.00	\$345.00		\$0.00	54	\$162.00		\$0.00		\$0.00	54	\$162.00	47%
200-01	Culvert Pipe Reinforced Concrete Horizontal Elliptical Class HE-III 14x23-Inch	LF	--	\$180.00	\$0.00		\$0.00		\$0.00		\$0.00		\$0.00	0	\$0.00	NA
200-02	Apron Endwalls for Culvert Pipe Reinforced Concrete Horizontal Elliptical 14x23-Inch	EACH	--	\$1,060.00	\$0.00		\$0.00		\$0.00		\$0.00		\$0.00	0	\$0.00	NA
200-03	Storm Sewer Pipe Class III-A 12-Inch	LF	51	\$138.00	\$7,038.00	51	\$7,038.00		\$0.00		\$0.00		\$0.00	51	\$7,038.00	100%
200-04	Inlet Covers Type MS	EACH	1	\$748.00	\$748.00	1	\$748.00		\$0.00		\$0.00		\$0.00	1	\$748.00	100%
200-05	Inlets Median 1 Grate	EACH	1	\$748.00	\$748.00	1	\$748.00		\$0.00		\$0.00		\$0.00	1	\$748.00	100%
200-06	Connect to Existing Storm Sewer Structure	EACH	1	\$900.00	\$900.00	1	\$900.00		\$0.00		\$0.00		\$0.00	1	\$900.00	100%
200-07	Storm Sewer Pipe PVC SDR-35 6-Inch	LF	36	\$53.00	\$1,908.00	36	\$1,908.00		\$0.00		\$0.00		\$0.00	36	\$1,908.00	100%
300-01	Adjusting Sanitary Sewer Manhole	EACH	9	\$1,620.00	\$14,580.00	9	\$14,580.00		\$0.00		\$0.00		\$0.00	9	\$14,580.00	100%
400-01	Adjusting Water Valves	EACH	9	\$600.00	\$5,400.00	8	\$4,800.00		\$0.00		\$0.00		\$0.00	8	\$4,800.00	89%
400-02	Adjusting Hydrants	EACH	1	\$1,734.00	\$1,734.00	1	\$1,734.00		\$0.00		\$0.00		\$0.00	1	\$1,734.00	100%
400-03	Relocating Hydrant	EACH	1	\$8,370.00	\$8,370.00	1	\$8,370.00		\$0.00		\$0.00		\$0.00	1	\$8,370.00	100%
500-01	Posts Wood 4x6-Inch X 16-FT	EACH	1	\$410.00	\$410.00		\$0.00		\$0.00		\$0.00		\$0.00	0	\$0.00	0%
500-02	Posts Tubular Steel 2x2 X 16-FT	EACH	1	\$410.00	\$410.00		\$0.00		\$0.00		\$0.00		\$0.00	0	\$0.00	0%
500-03	Signs Type II Reflective H	SF	10.5	\$26.00	\$273.00		\$0.00		\$0.00		\$0.00		\$0.00	0	\$0.00	0%
500-04	Relocate Sign	EACH	1	\$350.00	\$350.00		\$0.00		\$0.00		\$0.00		\$0.00	0	\$0.00	0%
500-05	Marking Line Epoxy 4-Inch	LF	141	\$5.34	\$752.94		\$0.00		\$0.00	173.00	\$923.82		\$0.00	173	\$923.82	123%
500-06	Marking Stop Line Epoxy 18-Inch	LF	76	\$25.00	\$1,900.00		\$0.00		\$0.00	96.00	\$2,400.00		\$0.00	96	\$2,400.00	126%
500-07	Removing Pavement Marking	LF	337	\$2.34	\$788.58		\$0.00		\$0.00	463.00	\$1,083.42		\$0.00	463	\$1,083.42	137%
600-01	Sanitary Sewer Pipe PVC SDR-35 6-Inch, including all fittings (VOJ 21-02)	LF	50	\$660.00	\$33,000.00	50	\$33,000.00		\$0.00		\$0.00		\$0.00	50	\$33,000.00	100%
TOTAL					\$358,572.60		\$87,644.00		\$75,433.81		\$197,610.26		\$14,256.47		\$374,944.54	104.57%

Pay Quantity differs from Requested Quantity
Total Difference of \$ 574.25

Work completed, previous estimate \$197,610.26
Work completed, this estimate \$14,256.47
Total work completed \$374,944.54
Retainage, this estimate \$0.00
Total retainage, previous estimates \$0.00
Total retainage \$8,964.32
Amount due to contractor, this estimate \$14,256.47

\$4,382.20 Retainage Est #1
\$3,771.69 Retainage Est #2
\$810.42 Retainage Est #3

Max retainage to hold= \$8,964.32



P.O. Box 13456
Wauwatosa, WI 53213-0456

Ph: 414.476.9130 Fax: 414.476.9132

INVOICE: 109659A

Date: 12/31/2021

Your PO:

Terms: Upon Completion

Salesperson: KOUTNICK

Contract #: C29212 P1

Job #: 21CK0024

BILL Village of Jackson
N168 W20733 Main Street
Jackson, WI 53037

SITE Coffee Connection Trail
Asphalt Paving Project
Jackson, WI 53037

Project #: VOJ-21-01

DESCRIPTION

PRICE

Work completed per attached detail

374,944.54

Less pay application #1

-87,644.00

Less pay application #2

-75,433.81

Less pay application #3

-197,610.26

TOTAL AMOUNT DUE

14,256.47

RESOLUTION #22-03

A RESOLUTION ACCEPTING THE SANITARY SEWER AND WATER SYSTEM ASSOCIATED WITH THE LAUREL SPRINGS VILLAS DEVELOPMENT.

The Village Board of the Village of Jackson, Washington County, Wisconsin, does resolve as follows:

BE IT RESOLVED that the Village hereby accepts, pursuant to the provisions of Chapter 44 of the Village Code, the Sanitary Sewer and Water System associated with the Laurel Springs Villas Development in the Village of Jackson, Washington County, Wisconsin.

Introduced by: _____

Seconded by: _____

Vote: _____ Ayes _____ Nays

Passed and Approved: _____

Michael E. Schwab – Village President

Attest: _____
Jilline S. Dobratz – Village Clerk

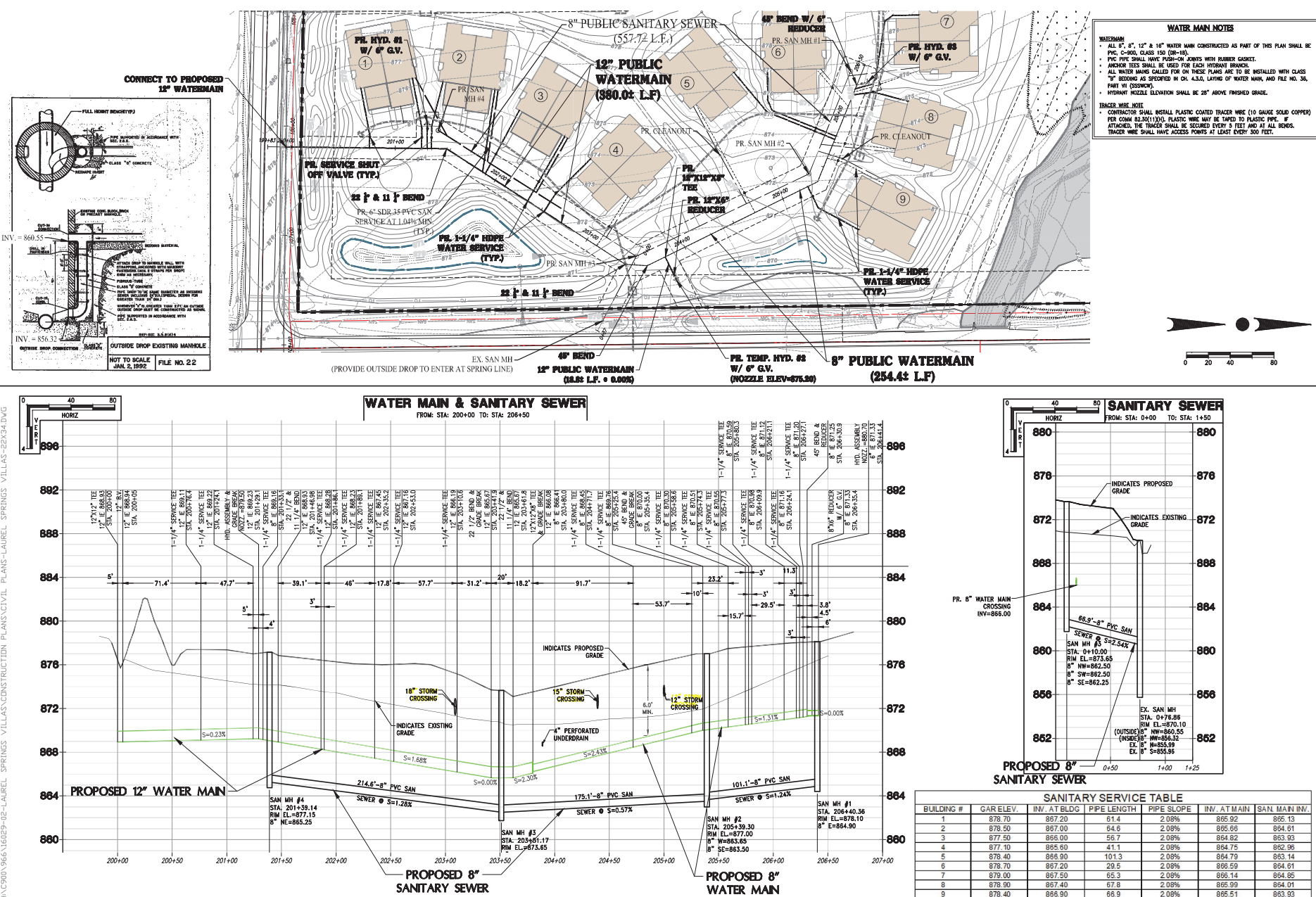
Proof of Posting:

I, the undersigned, certify that I posted this Resolution on bulletin boards at the Village Hall, Post Office, and one other location in the Village.

Village Official

Date

H:\C900\966\16029-02-LAUREL SPRINGS VILLAS\CONSTRUCTION PLANS\LAUREL SPRINGS VILLAS-20234.DWG





Project and Analyst Information:

Project ID:	N/A
Project Type:	Other
Location:	WIS 60 and Eagle Drive
	Village of Jackson, Washington County
	Washington County
	SE Region
Analyst:	Jeff Knudson, PE, PTOE and Matt Flanagan
Agency:	SRF Consulting
Date:	02/10/2021

Background Information:

Project Need:	There is anticipated need for capacity and safety improvements at the intersection.
Project Objective(s):	In reviewing operations analysis at WIS 60 and Eagle Drive, it was determined that the minor approaches currently experience failing LOS under existing two-way stop control conditions. This ICE analysis is being conducted to determine the best intersection control to potentially improve operations and safety.
Additional Information:	A Traffic Impact Analysis (TIA) was conducted for the Village of Jackson on June 9, 2020. This TIA projected significant development growth which will impact operations at the intersection of WIS 60 and Eagle Drive. The results of the recently completed TIA prompted this Phase II ICE Analysis. WisDOT has an ongoing design project (WIS 60 (Main Street) Resurfacing Project - County P to Eagle Drive). This project is scheduled for 2024 resurfacing. On this 1.85-mile segment of WIS 60, the current AADT ranges from 8,700 to 15,700 and is forecasted to grow to 9,900 to 17,800 by 2044. WIS 60 is a commercial and residential corridor with 17.3% trucks. Recent construction in summer of 2021 added new sidewalk and path on the southside of WIS 60. This includes new curb ramps at Eagle Drive.



PHASE II: ICE REPORT

Existing Crash Information:

Observed Crash History:

Years: 2016-2020

Crash Type	Fatal	Injury A	Injury B	Injury C	KABC	PDO	Total
Angle	0	0	3	1	4	0	4
Rear-End	0	0	0	0	0	2	2
Sideswipe	0	0	0	0	0	1	1
Total	0	0	3	1	4	3	7

Fatal: Injury from crash which results in death

Injury A: Suspected Serious Injury

Injury B: Suspected Minor Injury

Injury C: Possible Injury

KABC: Fatal + Injury A + Injury B + Injury C

PDO: Property Damage Only/No apparent Injury

Total: Fatal + Injury A + Injury B + Injury C + PDO

Crash Trends:

Three of the four KABC crashes involved right angle crashes between motorists traveling through on Eagle Drive and through on WIS 60. The fourth KABC crash includes a motorist making a left turn from Eagle Drive with a through motorist on WIS 60.

Contributing Factors:

Two-Way Stop Controlled Intersections with delay may encourage motorists to lower their gap acceptance, which increases the probability of collisions.

Near the intersection of WIS 60 and Eagle Drive, WIS 60 has a change in posted speed limit. This intersection is near the location of the speed transition location, and this may contribute to crashes at this intersection by motorists unable to judge this transitional speed.



Additional Modes of Transportation:

Mode	Need? Yes/No	Nearby Generators and Existing Facilities	Volume	
			#	Unit
PED/BIKE	Yes	In summer of 2021, Village of Jackson added new sidewalk and path on the south side of WIS 60. This includes new curb ramps at Eagle Drive.	There is no significant volume of bikes or pedestrians at this intersection in the existing conditions. With the addition of bike and pedestrian facilities as part of this project, it is anticipated bike and pedestrian volumes will increase.	
OSOW	No	WIS 60 is also not listed as an OSOW Truck Route, a High Clearance Route, or a Wind Tower Corridor. WIS 60 is however listed as a Designated Long Truck Route. Per TRANS 276.07, it is not a 65' Restricted Truck Route.	N/A	N/A

Summary Tables:

Descriptions:

Alt.	Traffic Control	Description of Alternative
1	Traffic Signal	Install Traffic Signal at the intersection of WIS 60 and Eagle Drive. Each approach on WIS 60 will have left turn storage lanes for turning vehicles and medians prior to entering the signalized intersection. Pedestrian and bicyclist facilities will be present.
2	Roundabout	Single-lane roundabout at the intersection of WIS 60 and Eagle Drive. Pedestrian and bicyclist facilities will be present.

*** Construction of the Roundabout alternative is 55K less expensive than the Traffic Signal alternative.**

Costs and Impacts:

Alt.	Traffic Control	Construction Cost	Real Estate Impacts			Environmental Impacts	
			# Build	# Acres	Cost	Impact Type	# Acres
1	Traffic Signal	\$1,240,000	0	0.041 Acre	\$7,700	N/A	N/A
2	Roundabout	\$1,350,000	0	0.067 Acre	\$12,200	N/A	N/A

Safety Performance:

Alt.	Traffic Control	Analysis Period	KABC	PDO	Total
-	Existing Conditions	2016-2020	4	3	7
-	Future No-Build	2025-2034	2.59	5.61	8.20
1	Traffic Signal	2025-2034	4.37	24.56	28.93
2	Roundabout	2025-2034	4.96	11.64	16.60

Note: This table does not include qualitative safety indicators such as the safety benefits due to reductions in stops and reduced queues under each alternative or the relatively unimpeded flow that is offered by each alternative.

- The No-Build conditions show the lowest number of total crashes and the lowest number of fatal and injury crashes as compared to Alternative 1 (Signal) and Alternative 2 (RAB). However, due to the need for operational improvements, the No-Build conditions may not meet the needs of motorists.

- The predicted decrease in fatal crashes between Alternative 1 (Signal) and Alternative 2 (RAB) may be attributed to lower travel speeds, reduction in need for vehicles to stop and geometric nature of roundabouts which have shown the ability to reduce angle and head-on collisions.

Additional Information:

The following trends are not captured in the Safety Performance table (above) but are relevant in the overall discussion of safety performance of all analyzed conditions.

- Alternative 2 (RAB) shows a predicted 32% reduction in fatal crashes as compared to the No-Build conditions.
- Alternative 2 (RAB) shows a 57% reduction in predicted fatal crashes as compared to Alternative 1 (Signal).
- Alternative 2 (RAB) shows a 12% reduction in fatal and injury crashes as compared to Alternative 1 (Signal).
- Alternative 1 (Signal) is predicted to result in an additional total associated crash cost of more than \$200,000 as compared to Alternative 2 (RAB) over the 10-year analysis period.

Recommendation:

- Alternative: The **Roundabout** is recommended for this intersection. This recommendation is based on the analysis and comparison metrics outlined in this Phase II ICE report
- Influencing Factors: Nine primary factors were used to compare alternatives: Cost, Operational Factors, Off-Peak Operations, Right-of-Way (ROW), Predicted Motorist Safety Performance, Pedestrians, Bikes, Local Opinion, and Access.

Metric	Selection Notes	Preference
Cost	The construction costs of the two alternatives are similar. The projected construction cost of the signalized alternative is approximately \$1,240,000 and the cost of the roundabout alternative is approximately \$1,350,000. Additional operational and maintenance costs associated with the traffic signal alternative are anticipated to be greater than that of the roundabout alternative. The predicted crash costs associated with the roundabout alternative are approximately \$200,000 less than that of the traffic signal alternative over the 10-year analysis period (2025-2034).	
Operational Factors	Both alternatives have excess capacity to accommodate fluctuations in future traffic volumes. The traffic signal alternative has 45% excess capacity and the RAB alternative has 75% excess capacity. Queues will not impact access points adjacent to the intersection.	
Off Peak Operations	Off peak operations would generally be more desirable with the Roundabout alternative because a roundabout would offer very little delay when faced with minimal other traffic. Unlike a signal, which needs to cycle to waiting motorists, a roundabout would operate in a nearly free-flow manner outside of the main commuting peaks. The roundabout alternative has additional benefits of traffic calming which may improve safety performance along WIS 60 as traffic enters the municipality from the east.	

ROW	The Roundabout alternative requires 0.067 acres of ROW. The Traffic Signal alternative requires .041 acres of ROW acquisition.	
Predicted Motorist Safety Performance	The roundabout is anticipated to have less severe crashes but more frequent crashes. Roundabouts reduce the frequency of angle and head-on crashes, the two most severe crash types. They also slow traffic within the intersection and that reduces severity when crashes occur. These benefits of a roundabout are tempered by the fact that they are anticipated to produce more frequent crashes than a Traffic Signal Alternative.	
Pedestrian	There is widespread debate when comparing pedestrian safety and operations between a roundabout and signal alternative. Both will provide facilities for pedestrians to cross the approaches and final design would strive to provide the safest and most efficient facilities with either alternative. The benefits of the Traffic Signal alternative include positive control of the traffic flow, allowing pedestrians the confidence they can cross the road with forced-stopped traffic rather than relying on yielding motorists. Only one pedestrian was observed at this intersection during both the AM and PM peak hours. With the high volume of traffic on the approaches to this intersection, and the relative infrequency of pedestrians (meaning the traveling public will not readily anticipate pedestrian conflicts as they might in an urban setting), including forced stops with a traffic signal is desirable. This could also be accommodated with a pedestrian hybrid beacon signal with the roundabout alternative. This positive control ability gives the traffic signal alternative a slight benefit over the roundabout.	
Bicyclists	There is widespread debate when comparing bike safety and operations between a roundabout and signal alternative. Both will provide facilities for pedestrians to cross the approaches and final design would strive to provide the safest and most efficient facilities with either alternative. Only one bicyclist was observed at this intersection during both the AM and PM peak hours. Bike facilities would be accommodated for both alternatives and there is no widespread uniform opinion on which is "better" for bikers. See previous note about traffic signal ability to provide positive control over pedestrian movements. If bikers choose to use side-paths to traverse "through" the roundabout, the traffic signal may provide additional confidence in these movements.	
Local Opinion	Village input needed.	Not Available
Access	Alternatives have no access impacts	



Existing & Future No-Build Conditions:

Practical Feasibility:

Public Opinion:	No formal public input has been received.
Business Impacts:	No physical or access-related business impacts are anticipated.
ROW Impacts:	No ROW impacts are anticipated.
Utility Impacts:	Utility impacts are not anticipated.
Cost Estimate:	N/A
Additional Info:	There is anticipated need for capacity and safety improvements at the intersection.

Safety Analysis:

Crash Trend(s) and Contributing Factors:	Three of the four KABC crashes involved right angle crashes between motorists traveling through on Eagle Drive and through on WIS 60. The fourth KABC crash includes a motorist making a left turn from Eagle Drive with a through motorist on WIS 60.
Conflict Points:	There are 32 conflict points at the existing intersection.
Vulnerable Users:	This intersection currently has pedestrian curb ramps on the Northwest, Northeast and Southwest quadrants. A sidewalk is present on the north side of the west leg and on the west side of the north leg. There are no marked crosswalks at this intersection. A paved multi-use path is present on the south side of the west leg.
Additional Info:	This intersection does not currently have advanced pedestrian warnings or signage. Refer to Attachment 3, Collision Diagram and Attachment 5, Predictive Safety Analysis.

Safety Performance Measures:

	Analysis Period	KABC	PDO	Total
Existing Conditions	2016-2020	4	3	7
Future No-Build	2025-2034	2.59	5.61	8.20

*The total number of observed crashes for the Existing Conditions (2016-2020) is similar to the total number of predicted crashes for the No-Build Conditions (2025-2034). This suggests that the Empirical Bayes weighting method could be used at this intersection to get a more accurate understanding of future conditions. The Empirical Bayes weighting method is not used in this ICE analysis because it is not applicable to other control types that are analyzed in this report.



PHASE II: ICE REPORT

Operational Analysis:

Warrant Analysis:	Under existing conditions, a four-hour warrant is met. Four-hour and peak hour warrants are met by year 2035.
Queue Impacts:	The Piggly Wiggly access drive on Eagle Drive is anticipated to be impacted by queuing on the northbound approach (95 percentile queues would reach the access driveway). The Piggly Wiggly grocery store is in the Southeast quadrant of WIS 60 and Eagle Drive. The access drive on Eagle Drive for the BP Gas station will also be impacted by queuing on the southbound approach.
Additional Capacity:	No excess capacity exists at this intersection during peak hours.
Railroad Impacts:	No - This intersection is not near a railroad.
Additional Info:	Refer to Attachment 4 for Existing Volumes and Traffic Forecasts, Attachment 6 for Traffic Operations Analysis Outputs and Attachment 7 for Signal Warrant Analysis Worksheets.

Operational Performance Measures:

Year: 2020	Existing Conditions											
AM Peak	EB (WIS 60)			WB (WIS 60)			NB (Eagle Drive)			SB (Eagle Drive)		
	L	T/R	-	L	T	R	-	All	-	L	T/R	-
# Lanes	1	1>	-	1	1	1	-	<1>	-	1	1>	-
Volume	70	345	35	15	235	85	25	20	25	80	15	65
Delay (s)	8.4	*	*	8.3	*	*	*	27.0	*	40.2	13.2	*
LOS	A	*	*	A	*	*	*	D	*	E	B	*
V/C Ratio	0.07	*	*	0.02	*	*	*	0.34	*	0.49	0.18	*
Queue (ft)	5	*	*	5	*	*	*	35	*	60	15	*
Storage (ft.)	175	-	-	150	-	125	-	-	-	100	-	-
PM Peak	EB (WIS 60)			WB (WIS 60)			NB (Eagle Drive)			SB (Eagle Drive)		
	L	T/R	-	L	T	R	-	All	-	L	T/R	-
# Lanes	1	1>	-	1	1	1	-	<1>	-	1	1>	-
Volume	55	275	100	35	310	80	50	40	20	55	35	55
Delay (s)	8.5	*	*	8.4	*	*	*	67.6	*	45.7	19.6	*
LOS	A	*	*	A	*	*	*	F	*	E	C	*
V/C Ratio	0.06	*	*	0.04	*	*	*	0.75	*	0.44	0.31	*
Queue (ft)	5	*	*	5	*	*	*	120	*	50	35	*
Storage (ft.)	175	-	-	150	-	125	-	-	-	100	-	-
Additional Information	<1 = Indicates shared left through lane present 1> = Indicates shared right through lane present <1> = Indicates shared left through right lane present - = Indicates zero * = Indicates HCM6th edition methodology does not calculate measures of effectiveness for this movement.											



PHASE II: ICE REPORT

Year: 2035	Future No-Build Conditions (2035)											
AM Peak	EB (WIS 60)			WB (WIS 60)			NB (Eagle Drive)			SB (Eagle Drive)		
	L	T/R	-	L	T	R	-	All	-	L	T/R	-
# Lanes	1	1>	-	1	1	1	-	<1>	-	1	1>	-
Volume	75	350	35	15	235	90	25	20	25	85	15	70
Delay (s)	8.4	*	*	8.4	*	*	*	28.4	*	44.5	13.3	*
LOS	A	*	*	A	*	*	*	D	*	E	B	*
V/C Ratio	0.08	*	*	0.02	*	*	*	0.35	*	0.54	0.19	*
Queue (ft)	10	*	*	5	*	*	*	40	*	70	20	*
Storage (ft.)	175	-	-	150	-	125	-	-	-	100	-	-
PM Peak	EB (WIS 60)			WB (WIS 60)			NB (Eagle Drive)			SB (Eagle Drive)		
	L	T/R	-	L	T	R	-	All	-	L	T/R	-
# Lanes	1	1>	-	1	1	1	-	<1>	-	1	1>	-
Volume	55	280	105	35	315	85	50	45	20	60	35	55
Delay (s)	8.6	*	*	8.4	*	*	*	77.9	*	54.6	20	*
LOS	A	*	*	A	*	*	*	F	*	F	C	*
V/C Ratio	0.06	*	*	0.04	*	*	*	.80	*	0.52	0.32	*
Queue (ft)	5	*	*	5	*	*	*	135	*	55	20	*
Storage (ft.)	175	-	-	150	-	125	-	-	-	100	-	-
Additional Information	<1 = Indicates shared left through lane present 1> = Indicates shared right through lane present <1> = Indicates shared left through right lane present - = Indicates zero * = Indicates HCM6th edition methodology does not calculate measures of effectiveness for this movement.											
	This analysis does not consider the way some motorists may alter their route or travel time to avoid extreme congested conditions.											

Alt. 1: Traffic Signal:

Practical Feasibility:

Public Opinion:	No formal public input has been received.
Business Impacts:	No physical or access-related business impacts are anticipated.
ROW Impacts:	This alternative will likely require approximately 0.041 acres of ROW.
Utility Impacts:	Utility impacts are not known at this time, but they are not anticipated to be useful as a comparison metric because all alternatives will have similar impacts.
Cost Estimate:	\$1,240,000
Additional Info:	Refer to Attachment 2 for Concept Alternatives and Cost Estimates.



PHASE II: ICE REPORT

Safety Analysis:

Crash Trend(s) being Improved with Alt.:	Installation of a traffic signal will minimize angle crashes by allocating green time to the side-street and requiring mainline (WIS 60) motorists to stop for the permissive side-street movements. It should be noted that mainline (WIS 60) rear-end crashes may increase as a result of the need to stop for the traffic signal.
Geometric Concerns:	There are 32 conflict points at the proposed signalized intersection.
Additional Info:	Refer to Attachment 3, Collision Diagram and Attachment 5, Predictive Safety Analysis.

Safety Performance Measures:

	Analysis Period	KABC	PDO	Total
Existing Conditions	2016-2020	4	3	7
Future No-Build	2025-2034	2.59	5.61	8.20
Alt. 1: Traffic Signal:	2025-2034	4.96	11.64	16.60

Operational Analysis:

Warrant Analysis:	Four-hour and Peak hour warrants are met by year 2035.
Queue Impacts:	No immediately adjacent access points impacted by potential queues.
Additional Capacity:	This signalized intersection is anticipated to operate with excess capacity in year 2035. In year 2035, this alternative is projected to have 45% excess capacity.
Railroad Impacts:	No - This intersection is not near a railroad.
Additional Info:	Refer to Attachment 4 for Existing Volumes and Traffic Forecasts, Attachment 6 for Traffic Operations Analysis Outputs and Attachment 7 for Signal Warrant Analysis Worksheets.



PHASE II: ICE REPORT

Operational Performance Measures:

Year: 2035

Alt. 1: Traffic Signal

AM Peak	EB (WIS 60)			WB (WIS 60)			NB (Eagle Drive)			SB (Eagle Drive)		
	L	T/R	-	L	T	R	L	T/R	-	L	T/R	-
# Lanes	1	1>	-	1	1	1	1	1>	-	1	1>	-
Volume	75	390	40	30	280	90	30	25	40	85	15	75
Delay (s)	9.0	0	9.0	11.5	6.9	5.6	12.3	0	11.2	12.5	0	11.8
LOS	A	A	A	B	A	A	B	A	B	B	A	B
V/C Ratio	0.18	0.00	0.72	0.10	0.45	0.10	0.09	0.00	0.27	0.24	0.00	0.38
Queue (ft)	15	0	80	10	40	10	10	0	20	25	0	25
Storage (ft.)	200	-	-	200	-	200	125	-	-	125	-	-
PM Peak	EB (WIS 60)			WB (WIS 60)			NB (Eagle Drive)			SB (Eagle Drive)		
	L	T/R	-	L	T	R	L	T/R	-	L	T/R	-
# Lanes	1	1>	-	1	1	1	1	1>	-	1	1>	-
Volume	60	335	130	65	355	85	75	45	40	60	40	55
Delay (s)	10.6	0	10.2	14.3	7.8	5.8	15.8	0	13.8	15.2	0	14.1
LOS	B	A	B	B	A	A	B	A	B	B	A	B
V/C Ratio	0.16	0.00	0.73	0.23	0.52	0.09	0.25	0.00	0.33	0.20	0.00	0.37
Queue (ft)	20	0	120	25	75	10	30	0	35	25	0	35
Storage (ft.)	200	-	-	200	-	200	125	-	-	125	-	-

Additional
Information

<1 = Indicates shared left through lane present
1> = Indicates shared right through lane present
<1> = Indicates shared left through right lane present
- = Indicates zero
* = Indicates HCM6th edition methodology does not calculate measures of effectiveness for this movement.

Storage/deceleration lengths were determined using guidelines found in the Facilities Development Manual (FDM).



Alt. 2: Roundabout:

Practical Feasibility:

Public Opinion:	No formal public input has been received.
Business Impacts:	ROW acquisition for areas in the Southwest and Southeast quadrants of WIS 60 and Eagle Drive is required. The total ROW required is approximately .058 acres. In addition, access impacts are expected on the north and south legs of the intersection due to the presence of splitter islands.
ROW Impacts:	This alternative will likely require approximately 0.067 acres of ROW.
Utility Impacts:	Utility impacts are not known at this time, but they are not anticipated to be useful as a comparison metric because all alternatives will have similar impacts.
Cost Estimate:	\$1,350,000
Additional Info:	Refer to Attachment 3, Collision Diagram and Attachment 5, Predictive Safety Analysis.

Safety Analysis:

Crash Trend(s) being Improved with Alt.:	Alternative 2 shows a predicted 32% reduction in fatal crashes as compared to the No-Build conditions.
Geometric Concerns:	There are 8 conflict points at the proposed 4-leg roundabout.
Additional Info:	Refer to Attachment 3, Collision Diagram and Attachment 5, Predictive Safety Analysis.

Safety Performance Measures:

	Analysis Period	KABC	PDO	Total
Existing Conditions	2016-2020	4	3	7
Future No-Build	2025-2034	2.59	5.61	8.20
Alt. 2: Roundabout:	2025-2034	4.96	11.64	16.60

Operational Analysis:

Warrant Analysis:	N/A
Queue Impacts:	No adjacent access points impacted by potential queues.
Additional Capacity:	This roundabout controlled intersection is anticipated to operate with excess capacity in year 2035. In year 2035, this alternative is projected to have 75% excess capacity.
Railroad Impacts:	No - This intersection is not near a railroad.
Additional Info:	Refer to Attachment 4 for Existing Volumes and Traffic Forecasts and Attachment 6 for Traffic Operations Outputs.



PHASE II: ICE REPORT

Operational Performance Measures:

Year: 2035

Alt. 2: Roundabout

AM Peak	EB (WIS 60)			WB (WIS 60)			NB (Eagle Drive)			SB (Eagle Drive)		
	-	All	-	-	All	-	-	All	-	-	All	-
# Lanes	-	<1>	-	-	<1>	-	-	<1>	-	-	<1>	-
Volume	75	390	40	30	280	90	30	25	40	85	15	75
Delay (s)	*	9.6	*	*	7.5	*	*	7.3	*	*	6.6	*
LOS	*	A	*	*	A	*	*	A	*	*	A	*
V/C Ratio	*	0.54	*	*	0.42	*	*	0.17	*	*	0.23	*
Queue (ft)	*	85	*	*	55	*	*	15	*	*	25	*
Storage (ft.)	-	-	-	-	-	-	-	-	-	-	-	-
PM Peak	EB (WIS 60)			WB (WIS 60)			NB (Eagle Drive)			SB (Eagle Drive)		
	-	All	-	-	All	-	-	All	-	-	All	-
# Lanes	-	<1>	-	-	<1>	-	-	<1>	-	-	<1>	-
Volume	60	335	130	65	355	85	75	45	40	60	40	55
Delay (s)	*	10.3	*	*	10.2	*	*	7.1	*	*	7.5	*
LOS	*	B	*	*	B	*	*	A	*	*	A	*
V/C Ratio	*	0.57	*	*	0.56	*	*	0.24	*	*	0.25	*
Queue (ft)	*	95	*	*	90	*	*	25	*	*	25	*
Storage (ft.)	-	-	-	-	-	-	-	-	-	-	-	-

Additional
Information

<1 = Indicates shared left through lane present
1> = Indicates shared right through lane present
<1> = Indicates shared left through right lane present
- = Indicates zero
* = Indicates HCM6th edition methodology does not calculate measures of effectiveness for this movement.



PHASE II: ICE REPORT

Attachments:

The following attachments are provided for documentation:

1. Project Location Map
2. Concept Alternatives and Cost Estimates
3. Collision Diagram
4. Existing Volumes and Traffic Forecasts
5. Predictive Safety Analysis
6. Traffic Operations Outputs
7. Traffic Signal Warrant Analysis Worksheets

Attachment 1 – Project Location Map

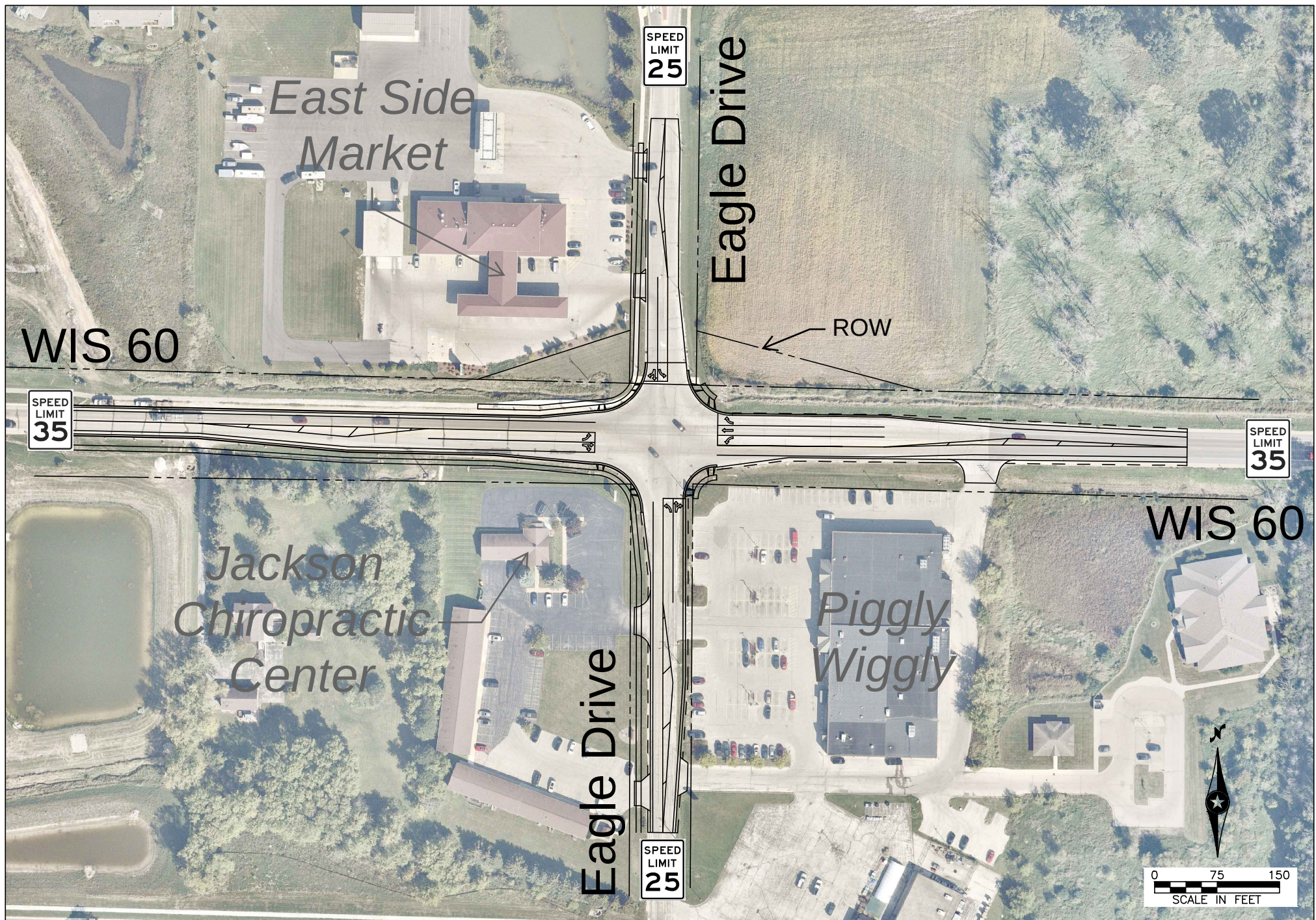


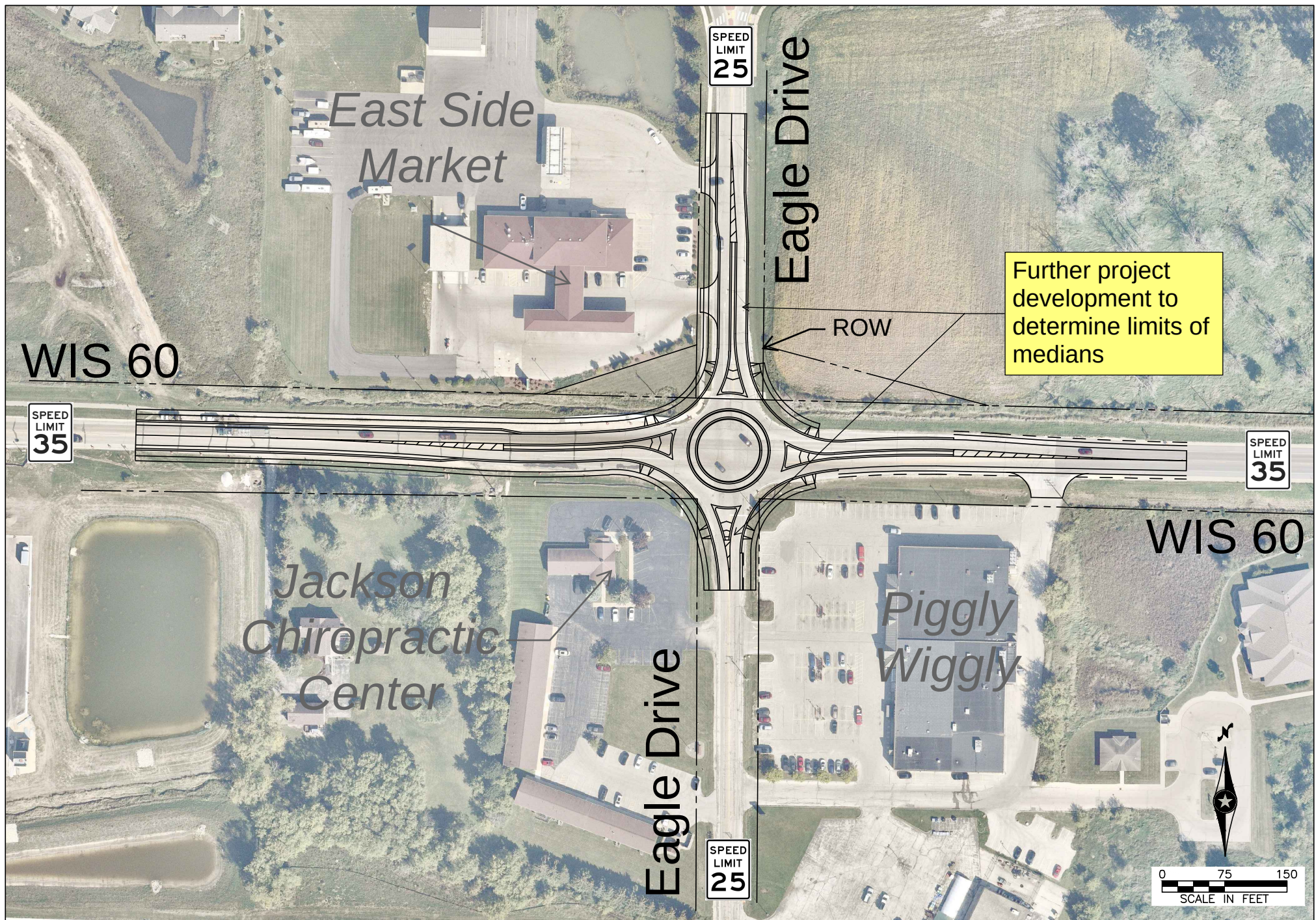
Project Location Map

WIS 60 & Eagle Drive - Phase II ICE
Village of Jackson, WI

Figure 1

Attachment 2 – Concept Alternatives and Cost Estimates





Concept Cost Estimate Summary - Alternative 1: Traffic Signal
WIS 60 & Eagle Drive
Village of Jackson, Wisconsin
Washington County
February 2022

Project Segment Type: (R=Rural, S=Suburban, U=Urban)

Summary Item	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL
1	EXCAVATION COMMON	CY	Included in Incidentals		
2	MILLING	SY	10240	\$5.00	\$51,200
3	BASE AGGREGATE DENSE 1 1/4-INCH	TON	1560	\$20.00	\$31,200
4	SIDEWALK	SF	10364	\$7.00	\$72,500
5	HMA PAVEMENT	TON	3700	\$80.00	\$296,000
6	CONCRETE CURB AND GUTTER 30-INCH	LF	1590	\$18.00	\$28,600
7	Major Roadway Items Detailed Subtotal (Items 1 to 6)				\$479,500
8	SIGNALIZE INTERSECTION	LS	1	\$180,000.00	\$180,000
9	DRAINAGE	LS	% of Item 6	15%	\$71,900
10	EROSION CONTROL AND RESTORATION	LS	% of Item 6	7%	\$33,600
11	TRAFFIC CONTROL AND STAGING	LS	% of Item 6	8%	\$38,400
12	SIGNING/MARKING	LS	% of Item 6	6%	\$28,800
13	ROADWAY INCIDENTALS	LS	% of Item 6	20%	\$95,900
14	Construction Costs Subtotal (Items 7 to 13)				\$928,100
15	MOBILIZATION	LS	% of Item 13	7%	\$60,000
16	PRELIMINARY ENGINEERING	LS	% of Item 13+14	10%	\$98,800
17	FINAL ENGINEERING				
18	CONSTRUCTION ENGINEERING	LS	% of Item 13+14	15%	\$148,200
19	REAL ESTATE - SOUTHWEST QUADRANT	AC	0.023	\$141,500.00	\$3,300
20	REAL ESTATE - SOUTHEAST QUADRANT	AC	0.018	\$250,000.00	\$4,400
TOTAL PROJECT COST (2022 DOLLARS)					\$1,242,800

**Concept Cost Estimate Summary - Alternative 2: Roundabout
WIS 60 & Eagle Drive
Village of Jackson, Wisconsin
Washington County
February 2022**

Project Segment Type: (R=Rural, S=Suburban, U=Urban)

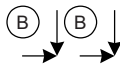
Summary Item	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL
1	EXCAVATION COMMON	CY	Included in Incidentals		
2	BASE AGGREGATE DENSE 1 1/4-INCH	TON	6580	\$20.00	\$131,600
3	SIDEWALK	SF	19920	\$7.00	\$139,440
4	HMA PAVEMENT	TON	2230	\$80.00	\$178,400
5	CONCRETE CURB AND GUTTER 30-INCH	LF	4510	\$18.00	\$81,200
6	Major Roadway Items Detailed Subtotal (Items 1 to 5)				\$530,600
7	DRAINAGE	LS	% of Item 6	25%	\$132,700
8	EROSION CONTROL AND RESTORATION	LS	% of Item 6	7%	\$37,100
9	TRAFFIC CONTROL AND STAGING	LS	% of Item 6	12%	\$63,700
10	LIGHTING	LS	1	\$32,000.00	\$32,000
11	SIGNING/MARKING	LS	% of Item 6	8%	\$42,400
12	ROADWAY INCIDENTALS	LS	% of Item 6	30%	\$159,200
13	Construction Costs Subtotal (Items 6 to 12)				\$997,700
14	MOBILIZATION	LS	% of Item 14	7%	\$70,000
15	PRELIMINARY ENGINEERING	LS	% of Item 14+15	10%	\$106,800
16	FINAL ENGINEERING				
17	CONSTRUCTION ENGINEERING	LS	% of Item 14+15	15%	\$160,200
18	REAL ESTATE - SOUTHWEST QUADRANT	AC	0.042	\$141,500.00	\$5,900
19	REAL ESTATE - SOUTHEAST QUADRANT	AC	0.025	\$250,000.00	\$6,300
TOTAL PROJECT COST (2022 DOLLARS)					\$1,346,900

Attachment 3 – Collision Diagram

East Side
Market

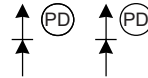


WIS 60



Jackson
Chiropractic
Center

Eagle Drive



Piggly
Wiggly

DOCUMENTATION CONVENTION

(XX) CRASH FREQUENCY (2016 - 2020)

CRASH RATE

.43 Crashes
Per One Million
Entering Vehicles

Entering Vehicles: 8,950/day

CRASH FREQUENCY/SEVERITY

7
Crashes

0 Fatal Crash (K)
0 Incapacitating (A-level)
3 Non-Incapacitating (B-level)
1 Possible Injury (C-level)
3 Property Damage Only

LEGEND

→ Moving Vehicle
←↔ Backing Vehicle
- - - Pedestrian
-B→ Bicyclist
▭ Parked Vehicle

Ⓢ/Ⓨ Stop/Yield Sign
Ⓣ Tree
Ⓤ Utility Pole
ⓕ Fixed Object
Ⓝ Non-Fixed Object

↗ Angle (Right Angle)
↖ Angle (Left Turn)
↘ Angle (Right Turn)
↔ Sideswipe-Same
↔ Sideswipe-Opposite

↔ Head-On
↔ Rear-End
↗ Out of Control
↔ Overtake
↔ Overturn

Years: 2016 - 2020

FIGURE 4
COLLISION DIAGRAM
WIS 60 & EAGLE DRIVE
VILLAGE OF JACKSON, WISCONSIN

Attachment 4 – Existing Volumes and Traffic Forecasts

Base Information, Observed (9) Hour and Estimated (24) Hour Volume Summaries

Count Basics		Version 2013.J4.1	Page 1 of 11
Start Date:	Wednesday, February 12, 2020	Weekday/Weekend	Schools Not in Session
Total Number of Hours Counted: 9		Non-Holiday	No Special Events



Count Information

Municipality	Village of Jackson		
County	Washington	WisDOT Region	SE
Traffic Control	Partial Stop Control		
Roadway Names		North Direction	↑
North Leg	Eagle Dr		
East Leg	STH 60		
South Leg	Eagle Dr		
West Leg	STH 60		
Special Considerations			
Schools	Not in Session		
Holidays	None		
Special Events	None		
Special Pedestrians Observed			
	Pre-school children	None	
	Elementary school age children	None	
	Visually impaired (white cane/helper dog)	None	
	Elderly/disabled (except wheelchairs)	None	
	Wheelchairs/electric scooters	None	
	Other (describe)	None	

Hrs Counted:				6:00 AM-9:00 AM, 11:00 AM-2:00 PM, and 3:00 PM-6:00 PM			
1st Day of Count		Wednesday, February 12, 2020			Weather		
AM Peak Period		Wednesday, February 12, 2020			Cloudy & Dry		
Midday Peak Period		Saturday, February 22, 2020			Cloudy & Dry		
PM Peak Period		Wednesday, February 12, 2020			Cloudy & Dry		
Calculated Peak Hours							
	AM	6:45-7:45am	MD	11:00-12:00am	PM	4:15-5:15pm	
Peak Hours Selected for Analysis							
	AM	7:00-8:00am	MD	11:00-12:00am	PM	4:45-5:45pm	
Daily/Seasonal Adjustment Group							
Count Expansion Group							
Daily/Seasonal Adjustment Factor				1	Count Expansion Factor		#N/A
Company Name				SRF Consulting, Inc.		Manual Adj.	
Observers		AM Peak Period		Matt Flanagan/Gabby Hellman			
		Midday Peak Period		Matt Flanagan/Gabby Hellman			
		PM Peak Period		Matt Flanagan/Gabby Hellman			
Comments							

OBSERVED HOUR VOLUMES 9

Eagle Dr 2,123

BIKE: 1

TOTAL ENTERING VOLUME 7,549

STH 60

STH 60

Eagle Dr 1,795

BIKE: 1

North

Diagram showing traffic volumes for the intersection of Eagle Drive and State Highway 60 during the PM peak hour. The diagram includes a north arrow and labels for 'Observed Hour Volumes' and 'Total Entering Volume'.

Observed Hour Volumes (Eagle Dr):

- Northbound: 2,123 (Total)
- Southbound: 1,795 (Total)

Observed Hour Volumes (STH 60):

- Eastbound: 5,892 (Total)
- Westbound: 5,288 (Total)

Observed Hour Volumes (Bike):

- Northbound: 1
- Southbound: 1
- Eastbound: 1
- Westbound: 1

Observed Hour Volumes (Pedestrian):

- Northbound: 7
- Southbound: 0
- Eastbound: 0
- Westbound: 0

Observed Hour Volumes (Other):

- Northbound: 411 (Left), 244 (Through), 375 (Right), 0 (U-turn)
- Southbound: 989 (Through), 0 (Left), 386 (Through), 263 (Right), 157 (U-turn)
- Eastbound: 2785 (Through), 0 (Left), 377 (Through), 2150 (Right), 580 (U-turn)
- Westbound: 453 (Through), 1988 (Right), 165 (Left), 0 (U-turn)

Total Entering Volume: 7,549

One-Hour Time Period Start Time	Motor Vehicle Volume
6:00 AM	570
7:00 AM	963
8:00 AM	676
9:00 AM	0
10:00 AM	0
11:00 AM	880
12:00 PM	798
1:00 PM	796
2:00 PM	0
3:00 PM	908
4:00 PM	973
5:00 PM	985
6:00 PM	0
7:00 PM	0
8:00 PM	0
9:00 PM	0

[illegible]

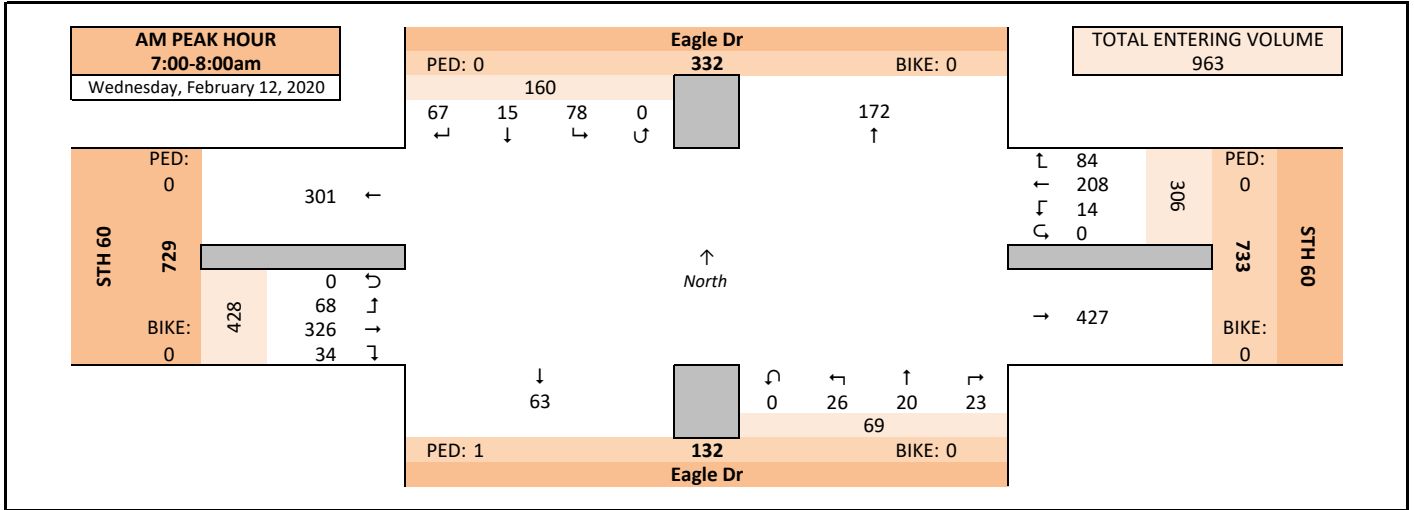
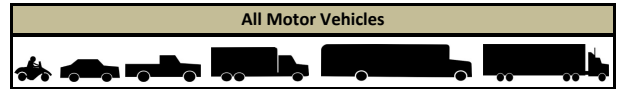
Intersection Traffic Volume Report

Count Basics			Page 2 of 11
Start Date:	Wednesday, February 12, 2020	Weekday/Weekend	Schools Not in Session
Total Number of Hours Counted: 9		Non-Holiday	No Special Events

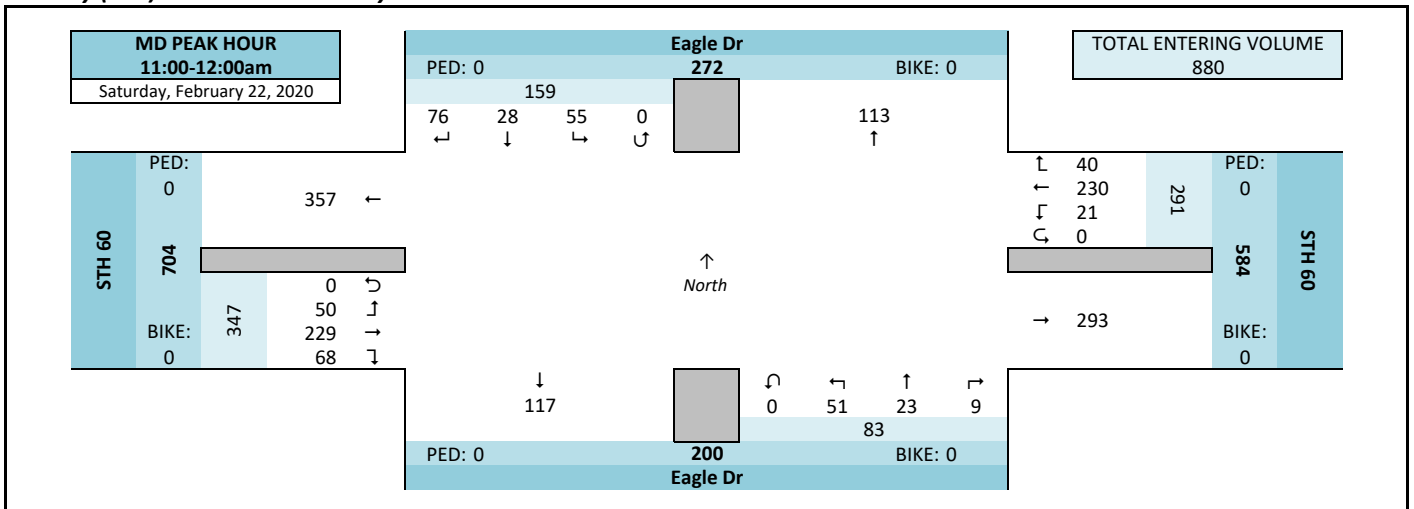
Peak Hour Volume Graphical Summary

Eagle Dr and STH 60

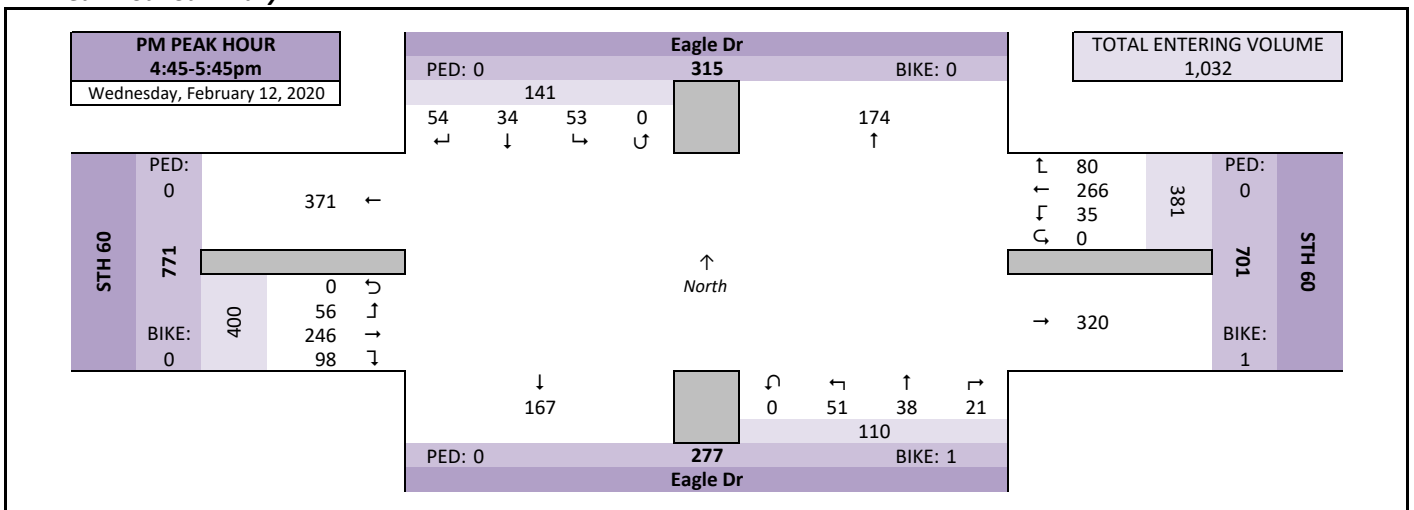
AM Peak Hour Summary



Midday (MD) Peak Hour Summary



PM Peak Hour Summary



Intersection Traffic Volume Report

Peak Hour Volume Summary

Eagle Dr and STH 60



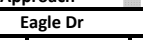
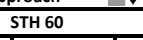
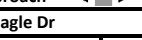
Peak Hour Volumes, Truck Percentages, and PHFs

Wednesday, February 12, 2020		↓					←					↑					→					
		From North					From East					From South					From West					
AM Peak Hour	AM Peak Hour	Eagle Dr					STH 60					Eagle Dr					STH 60					
	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Totals
	7:00 AM	9	4	11	0	24	17	46	3	0	66	4	6	6	0	16	6	95	17	0	118	224
	7:15 AM	19	2	25	0	46	39	48	4	0	91	6	4	6	0	16	9	95	29	0	133	286
	7:30 AM	29	5	22	0	56	20	70	3	0	93	11	5	7	0	23	12	81	18	0	111	283
	7:45 AM	10	4	20	0	34	8	44	4	0	56	2	5	7	0	14	7	55	4	0	66	170
	Peak Hour Volume	67	15	78	0	160	84	208	14	0	306	23	20	26	0	69	34	326	68	0	428	963
	Rounded Hourly Volume	65	15	80	0	160	85	210	15	0	310	25	20	25	0	70	35	325	70	0	430	970
	% Single Unit Trucks	3.0	0.0	6.4	0.0	4.4	1.2	3.4	0.0	0.0	2.6	4.3	5.0	7.7	0.0	5.8	5.9	3.1	4.4	0.0	3.5	3.5
% Heavy Trucks	3.0	0.0	1.3	0.0	1.9	0.0	1.9	7.1	0.0	1.6	0.0	0.0	3.8	0.0	1.4	2.9	2.8	0.0	0.0	2.3	2.0	
% Trucks (Total)	6.0	0.0	7.7	0.0	6.2	1.2	5.3	7.1	0.0	4.2	4.3	5.0	11.5	0.0	7.2	8.8	5.8	4.4	0.0	5.8	5.5	
Peak Hour Factor (PHF)	0.58	0.75	0.78	0.00	0.71	0.54	0.74	0.87	0.00	0.82	0.52	0.83	0.93	0.00	0.75	0.71	0.86	0.59	0.00	0.80	0.84	

Saturday, February 22, 2020		↓ From North					← From East					↑ From South					→ From West					Totals
Midday (MD) Peak Hour	MD Peak Hour	Eagle Dr					STH 60					Eagle Dr					STH 60					
	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	
	11:00 AM	38	7	28	0	73	8	53	5	0	66	2	5	11	0	18	11	61	9	0	81	
	11:15 AM	13	8	9	0	30	9	70	6	0	85	3	7	14	0	24	17	59	19	0	95	
	11:30 AM	13	6	8	0	27	17	62	6	0	85	2	5	13	0	20	20	49	11	0	80	
	11:45 AM	12	7	10	0	29	6	45	4	0	55	2	6	13	0	21	20	60	11	0	91	
	Peak Hour Volume	76	28	55	0	159	40	230	21	0	291	9	23	51	0	83	68	229	50	0	347	
	Rounded Hourly Volume	75	30	55	0	160	40	230	20	0	290	10	25	50	0	85	70	230	50	0	350	
	% Single Unit Trucks	0.0	0.0	0.0	0.0	0.0	2.5	2.6	0.0	0.0	2.4	0.0	0.0	2.0	0.0	1.2	0.0	1.3	0.0	0.0	0.9	
	% Heavy Trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.3	0.0	0.0	2.0	0.0	1.2	0.0	1.7	2.0	0.0	1.4	
% Trucks (Total)	0.0	0.0	0.0	0.0	0.0	2.5	3.0	0.0	0.0	2.7	0.0	0.0	3.9	0.0	2.4	0.0	3.1	2.0	0.0	2.3		
Peak Hour Factor (PHF)	0.50	0.87	0.49	0.00	0.54	0.59	0.82	0.87	0.00	0.86	0.75	0.82	0.91	0.00	0.86	0.85	0.94	0.66	0.00	0.91		

Wednesday, February 12, 2020		↓ From North					← From East					↑ From South					→ From West					Totals
PM Peak Hour	PM Peak Hour	Eagle Dr					STH 60					Eagle Dr					STH 60					
	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	
	4:45 PM	12	8	14	0	34	21	63	5	0	89	4	10	8	0	22	25	59	12	0	96	
	5:00 PM	22	8	23	0	53	26	80	7	0	113	4	10	16	0	30	27	71	20	0	118	
	5:15 PM	11	10	7	0	28	14	58	11	0	83	5	9	19	0	33	24	54	14	0	92	
	5:30 PM	9	8	9	0	26	19	65	12	0	96	8	9	8	0	25	22	62	10	0	94	
	Peak Hour Volume	54	34	53	0	141	80	266	35	0	381	21	38	51	0	110	98	246	56	0	400	
	Rounded Hourly Volume	55	35	55	0	145	80	265	35	0	380	20	40	50	0	110	100	245	55	0	400	
	% Single Unit Trucks	0.0	0.0	0.0	0.0	0.0	1.2	1.5	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.2	
	% Heavy Trucks	0.0	0.0	1.9	0.0	0.7	1.2	1.1	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	3.6	0.0	1.5	
% Trucks (Total)	0.0	0.0	1.9	0.0	0.7	2.5	2.6	0.0	0.0	2.4	0.0	0.0	0.0	0.0	0.0	0.0	2.0	3.6	0.0	1.7		
Peak Hour Factor (PHF)	0.61	0.85	0.58	0.00	0.67	0.77	0.83	0.73	0.00	0.84	0.66	0.95	0.67	0.00	0.83	0.91	0.87	0.70	0.00	0.85		

Peak Hour Pedestrian and Bicyclist Volumes

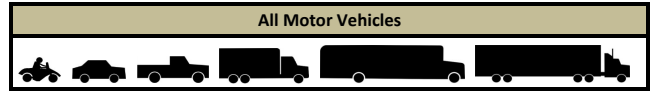
Pedestrians and Bicyclists		Crossing North Approach			Crossing East Approach			Crossing South Approach			Crossing West Approach			Total Ped & Bike Volume
														
15-Minute Start Time		Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	1	0	1	0	0	0	1
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	1	0	1	0	0	0	1
MD	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	1	1	0	1	1	0	0	0	2
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	1	1	0	1	1	0	0	0	2

Intersection Traffic Volume Report

Count Basics			Page 4 of 11
Start Date:	Wednesday, February 12, 2020	Weekday/Weekend	Schools Not in Session
Total Number of Hours Counted:	9	Non-Holiday	No Special Events

Hourly Volume Summary - Motor Vehicle Data

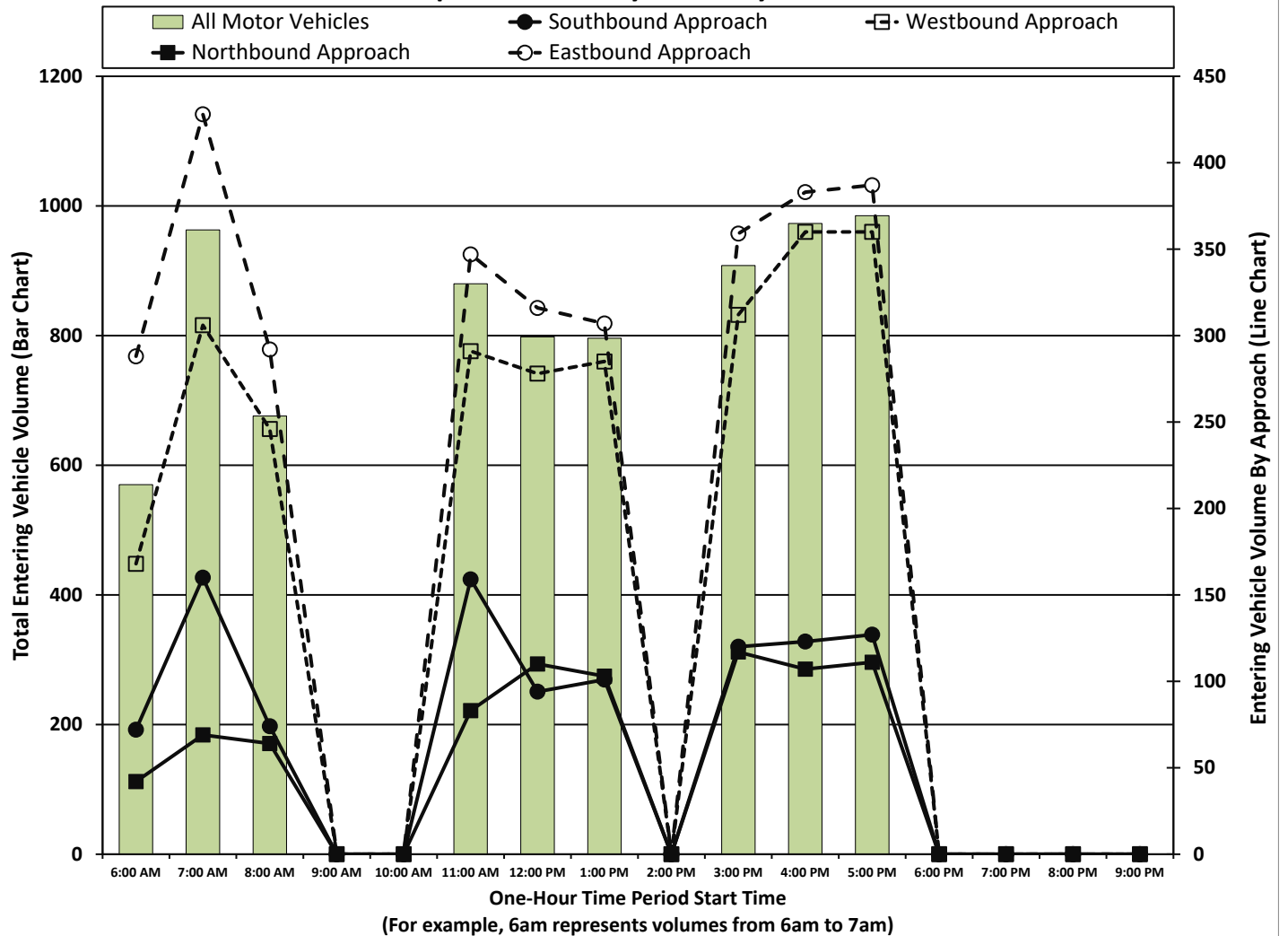
Eagle Dr and STH 60



One-Hour Motor Vehicle Data

One-Hour Time Period Start Time	From North					From East					From South					From West					Total Vehicle Volume	Directional Volume Totals		
	Eagle Dr					STH 60					Eagle Dr					STH 60								
	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total				
AM	6:00 AM	24	13	35	0	72	23	138	7	0	168	9	16	17	0	42	27	230	31	0	288	570	456	114
	7:00 AM	67	15	78	0	160	84	208	14	0	306	23	20	26	0	69	34	326	68	0	428	963	734	229
	8:00 AM	32	15	27	0	74	35	204	7	0	246	16	21	27	0	64	46	222	24	0	292	676	538	138
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MD	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:00 AM	76	28	55	0	159	40	230	21	0	291	9	23	51	0	83	68	229	50	0	347	880	638	242
	12:00 PM	37	30	27	0	94	31	231	16	0	278	18	38	54	0	110	68	215	33	0	316	798	594	204
	1:00 PM	32	38	31	0	101	39	228	18	0	285	18	30	55	0	103	66	204	37	0	307	796	592	204
PM	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:00 PM	49	32	39	0	120	60	226	26	0	312	28	38	51	0	117	100	225	34	0	359	908	671	237
	4:00 PM	42	39	42	0	123	70	267	23	0	360	14	41	52	0	107	76	257	50	0	383	973	743	230
	5:00 PM	52	34	41	0	127	71	256	33	0	360	22	36	53	0	111	95	242	50	0	387	985	747	238
	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Totals	411	244	375	0	1030	453	1988	165	0	2606	157	263	386	0	806	580	2150	377	0	3107	7549	5713	1836

Graphical Summary of Hourly Volumes



Intersection Traffic Volume Report

Count Basics			Page 11 of 11
Start Date:	Wednesday, February 12, 2020	Weekday/Weekend	Schools Not in Session
Total Number of Hours Counted:	9	Non-Holiday	No Special Events

15-Minute Pedestrian and Bicyclist Data

Eagle Dr and STH 60



15-Minute Pedestrian and Bicyclist Data

15-Minute Time Period Start Time		Crossing 			Crossing 			Crossing 			Crossing 			15-Min Totals	Hourly Sum
		North Approach			East Approach			South Approach			West Approach				
		Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total		
AM Peak Period	6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	7:15 AM	0	0	0	0	0	0	1	0	1	0	0	0	1	1
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Midday Peak Period	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM Peak Period	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	3
	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	3
	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	3
	12:00 PM	0	0	0	0	0	0	0	0	3	0	3	3	3	3
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4
	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:30 PM	0	1	1	0	0	0	0	0	0	1	0	1	2	2
	1:45 PM	0	0	0	0	0	0	0	0	2	0	2	2	2	2
	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
	4:15 PM	0	0	0	0	0	0	0	0	1	0	1	1	1	2
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	4:45 PM	0	0	0	0	0	0	0	0	0	1	1	1	1	3
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
	5:15 PM	0	0	0	0	1	1	0	1	1	0	0	0	2	2
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Totals		0	1	1	0	1	1	1	1	2	7	1	8	12	

Special Pedestrians

Pedestrian Type	None	1 or 2	A Few	Several	Many	Unknown
Pre-school Children	x					
Elementary School Age Children	x					
Visually Impaired (white cane/helper dog)	x					
Elderly/Disabled (except wheelchairs)	x					
Wheelchairs/Electric Scooters	x					
Other (None)	x					

WisDot Southeast Region
Planning Unit 1
Forecast by: Brent DesRoches
Phone: 262-548-5611
Email: brent.desroches@dot.wi.gov

Projected SAT Midday Design Hour Traffic Volumes

Design Hour: 11:00am-12:00pm

Forecast Completed: 4/16/2020

Project Description

Project ID(s): Jackson TIA
Route(s): STH 60
Region/COUNTY(IES): SE / Washington
Location: Jackson Dr to Eagle Dr

Indicates roundabout

Design Hour Turning Movement Data

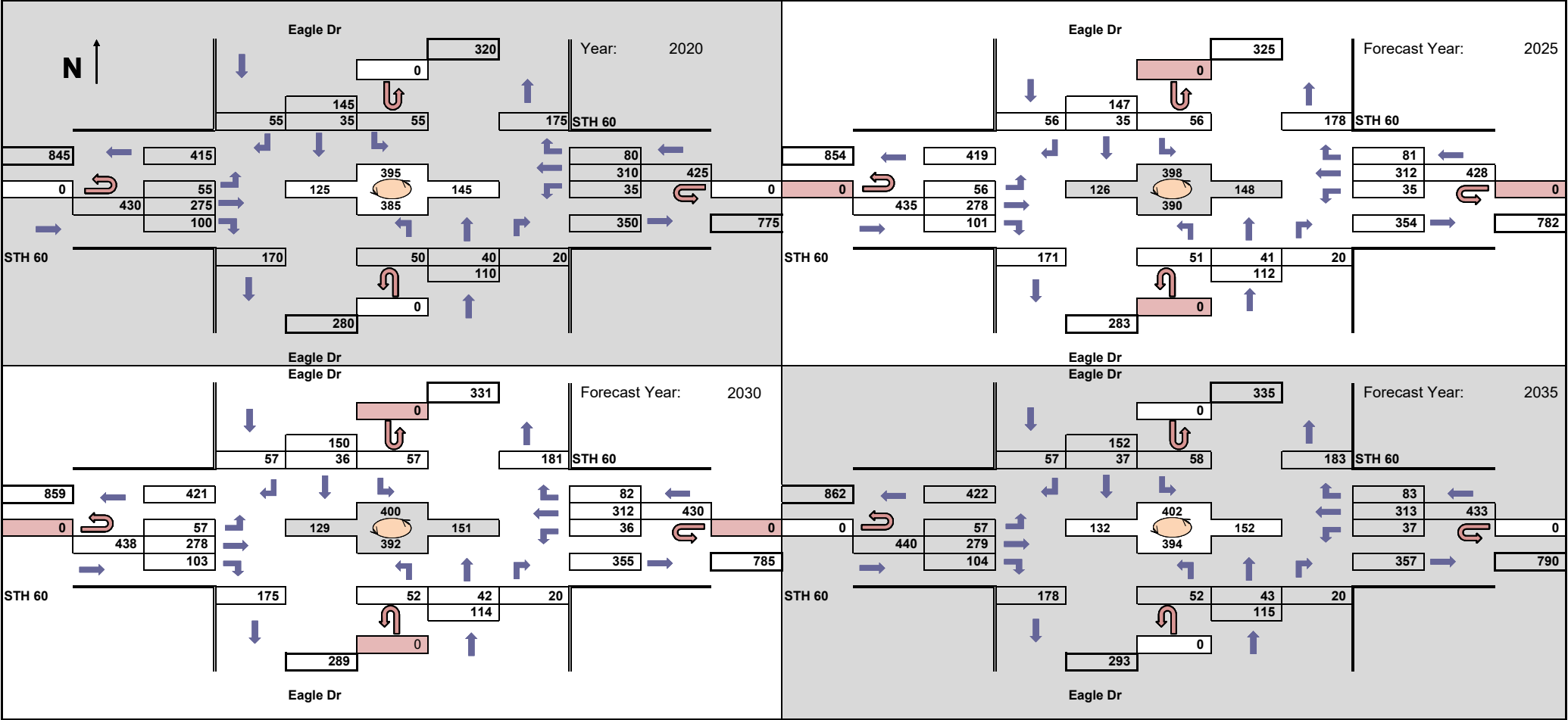
The figure displays four traffic volume diagrams for the intersection of Eagle Dr and STH 60, showing projected SAT Midday Design Hour Traffic Volumes for the years 2020, 2025, 2030, and 2035. Each diagram includes a north arrow and a legend indicating that a circle with a dot represents a roundabout.

2020 Diagram: Shows traffic flow with roundabouts at Eagle Dr and STH 60. Volumes are provided for all approaches and movements. Key volumes include 735, 380, 160, 75, 30, 55, 275, 0, 115, 40, 255, 315, 0, 355, 235, 70, 105, 325, 340, 125, 300, 615, 120, 50, 25, 10, 85, 205, and 0.

2025 Diagram: Shows projected traffic flow for 2025. Key volumes include 740, 382, 163, 76, 31, 56, 281, 0, 118, 41, 256, 317, 0, 358, 236, 71, 107, 326, 343, 127, 302, 619, 122, 50, 26, 10, 86, 208, and 0.

2030 Diagram: Shows projected traffic flow for 2030. Key volumes include 745, 386, 165, 77, 31, 57, 284, 0, 119, 41, 258, 319, 0, 359, 237, 71, 108, 329, 345, 129, 304, 623, 122, 51, 27, 10, 88, 210, and 0.

2035 Diagram: Shows projected traffic flow for 2035. Key volumes include 750, 387, 168, 78, 32, 58, 290, 0, 122, 42, 258, 321, 0, 363, 238, 73, 111, 330, 348, 131, 306, 627, 126, 51, 28, 10, 89, 215, and 0.



Attachment 5 – Predictive Safety Analysis

Interactive Highway Safety Design Model

Crash Prediction Evaluation Report

February 8, 2022

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Report Overview

Report Generated: Feb 8, 2022 2:41 PM

Report Template: System: Multi-Page [System] (sscpm2, Jun 24, 2021 3:45 PM)

Evaluation Date: Tue Feb 08 09:51:34 CST 2022

IHS DM Version: v16.0.0 (Sep 30, 2020)

Site Set Crash Prediction Module: v[ModuleInfo.moduleVersion] ([ModuleInfo.moduleDate])

User Name: Matt Flanagan

Organization Name: SRF Consulting Group

Phone: 608.298.5400

E-Mail: mflanagan@srfconsulting.com

Project Title: WIS 60 & Eagle Drive

Project Comment: -

Project Unit System: U.S. Customary

Site Set: No-Build Conditions

Site Set Comment: -

Site Set Version: v4

Evaluation Title: 2025-2034 No Build Conditions - WIS 60 & Eagle Drive

Evaluation Comment: Created Tue Feb 08 09:51:21 CST 2022

Policy for Superelevation: AASHTO 2011 U.S. Customary

Calibration: WisDOTCalibration_v16-0

Crash Distribution: WisDOTDistribution_v16-0

Model/CMF: WisDOTConfiguration_v16-0

Note: A Model Data Set other than the HSM (Highway Safety Manual) Configuration was selected for this Evaluation. If Crash Modification Factors (CMFs) were modified, then the results will not be in accordance with the HSM (see HSM Appendix to Part C, section A.1.3).

First Year of Analysis: 2025

Last Year of Analysis: 2034

Empirical-Bayes Analysis: None

Disclaimer Regarding Crash Prediction Method

IMPORTANT NOTICE ABOUT COMPARING RESULTS FROM HIGHWAY SAFETY MANUAL FIRST EDITION (2010) MODELS TO RESULTS FROM NEW MODELS DEVELOPED UNDER NCHRP PROJECTS 17-70 AND 17-58

Since the publication of the Highway Safety Manual - First Edition (HSM-1), in 2010 by the American Association of State

Highway and Transportation Officials (AASHTO), multiple research efforts have been undertaken through the National Cooperative Highway Research Program (NCHRP) to develop safety performance models for road segment and intersection facility types that were not initially reflected in the HSM-1, in order to expand the breadth and depth of the HSM in the future.

The IHSDM Crash Prediction Module (CPM) is intended as a faithful implementation of HSM Part C predictive methods. As NCHRP projects to develop new predictive methods for the HSM are completed, FHWA works to incorporate the new methods into IHSDM, sometimes in advance of publication in the HSM. The following new crash predictive methods have been accepted by NCHRP project panels and incorporated into IHSDM, while pending AASHTO's approval for incorporation into a future edition of the HSM:

- Roundabouts: completed in 2018 under NCHRP Project 17-70, the new methods will provide improved outcomes for the safety analysis of roundabouts.
- 6+ lane and one-way urban/suburban arterials (including models for segments and intersections): completed under NCHRP Project 17-58.

However, in the absence of local calibration factors (see HSM-1 Part C, Appendix A for guidance on calibration of the predictive models), it is neither appropriate nor advisable to directly compare the results from new models (from NCHRP Projects 17-58 and 17-70) to results from HSM-1 models, as the models were not calibrated to the same base state data sets, and consequently can produce unexpected results. If local calibration factors are available and applied to both new models and HSM-1 models, then it may be appropriate to directly compare the results. [Note: Work being performed under NCHRP Project 17-72 (Update of Crash Modification Factors for the Highway Safety Manual) is expected to re-calibrate many of the old (HSM-1) and new (e.g., NCHRP 17-70) models to data from a single (or small number of) states, that would allow results from all models to be directly compared.]

The models produced for NCHRP Project 17-70 have independent value in terms of informing the design of a roundabout and assessing the effects of different design characteristics on the expected safety performance of a roundabout.

The HSM-1 interim method previously included in IHSDM for evaluating roundabouts on urban/suburban arterials (i.e., evaluating an existing intersection and then applying a Crash Modification Factor for replacing the existing intersection with a roundabout) has been deactivated in IHSDM, to minimize any confusion with the new roundabout methodology.

Section Types

Urban Arterial Site Set CPM Evaluation

Site Type

Type: 4ST

Calibration Factor: 1

Table 1. Evaluation and Crash Data (CSD) (if applicable) Intersection Sites

Site No.	Type	Highway	Site Description	Major AADT	Minor AADT	Number of Approaches with Left-Turn Lanes	Number of Approaches with Right-Turn Lanes	Presence of Lighting
1	4ST2x2le5	WIS 60 & Eagle Drive	No-Build Conditions	2025: 8908; 2026: 8943; 2027: 8978; 2028: 9013; 2029: 9048; 2030: 9082; 2031: 9117; 2032: 9152; 2033: 9187; 2034: 9222	2025: 4710; 2026: 4728; 2027: 4747; 2028: 4765; 2029: 4784; 2030: 4802; 2031: 4820; 2032: 4839; 2033: 4857; 2034: 4876	2	1	yes

Table 2. Predicted Crash Frequencies and Rates by Site

Site No.	Type	Highway	Site Description	Total Predicted Crashes for Evaluation Period	Predicted Total Crash Frequency (crashes/yr)	Predicted FI Crash Frequency (crashes/yr)	Predicted PDO Crash Frequency (crashes/yr)	Predicted Intersection Travel Crash Rate (crashes/million veh)	Intersection Crash Rate (crashes/yr)
1	4ST	WIS 60 & Eagle Drive	No-Build Conditions	8.203	0.8203	0.2590	0.5613	0.16	0.8203
		Total	Total	8.203	0.8203	0.2590	0.5613	0.16	0.8203

Table 3. Predicted Crash Frequencies by Year (4ST)

Year	Total Crashes	FI Crashes	Percent FI (%)	PDO Crashes	Percent PDO (%)
2025	0.81	0.25	31.499	0.55	68.501
2026	0.81	0.26	31.516	0.55	68.484
2027	0.81	0.26	31.534	0.56	68.466
2028	0.82	0.26	31.551	0.56	68.449
2029	0.82	0.26	31.568	0.56	68.432
2030	0.82	0.26	31.585	0.56	68.415
2031	0.82	0.26	31.602	0.56	68.398
2032	0.83	0.26	31.619	0.57	68.381
2033	0.83	0.26	31.636	0.57	68.364
2034	0.83	0.26	31.653	0.57	68.347
Total	8.20	2.59	31.577	5.61	68.423
Average	0.82	0.26	31.577	0.56	68.423

Note: *Fatal and Injury Crashes* and *Property Damage Only Crashes* do not necessarily sum up to *Total Crashes* because the distribution of these three crashes had been derived independently.

Table 4. Predicted 4ST Crash Type Distribution

Element Type	Crash Type	Fatal and Injury		Property Damage Only		Total	
		Crashes	Crashes (%)	Crashes	Crashes (%)	Crashes	Crashes (%)
Intersection	Collision with Animal	0.00	0.0	0.02	0.3	0.02	0.3
Intersection	Collision with Bicycle	0.14	2.3	0.00	0.0	0.14	2.3
Intersection	Collision with Fixed Object	0.00	0.0	0.00	0.0	0.00	0.0
Intersection	Non-Collision	0.00	0.0	0.00	0.0	0.00	0.0
Intersection	Collision with Other Object	0.00	0.0	0.00	0.0	0.00	0.0
Intersection	Other Single-vehicle Collision	0.03	0.4	0.14	2.3	0.17	2.7
Intersection	Collision with Parked Vehicle	0.00	0.0	0.00	0.0	0.00	0.0
Intersection	Collision with Pedestrian	0.17	2.8	0.00	0.0	0.17	2.8
Intersection	Total Intersection Single Vehicle Crashes	0.34	5.6	0.16	2.6	0.50	8.2
Intersection	Angle Collision	1.00	16.3	1.55	25.4	2.55	41.7
Intersection	Head-on Collision	0.00	0.0	0.00	0.0	0.00	0.0
Intersection	Other Multi-vehicle Collision	0.04	0.6	0.09	1.5	0.13	2.1
Intersection	Rear-end Collision	0.59	9.6	1.29	21.1	1.88	30.7
Intersection	Sideswipe	0.16	2.6	0.90	14.7	1.06	17.3
Intersection	Total Intersection Multiple Vehicle Crashes	1.78	29.1	3.84	62.7	5.62	91.8
Intersection	Total Intersection Crashes	2.13	34.7	4.00	65.3	6.12	100.0
	Total Crashes	2.13	34.7	4.00	65.3	6.12	100.0

Note: *Fatal and Injury Crashes* and *Property Damage Only Crashes* do not necessarily sum up to *Total Crashes* because the distribution of these three crashes had been derived independently.

Interactive Highway Safety Design Model

Crash Prediction Evaluation Report

February 8, 2022

Disclaimer

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Report Overview

Report Generated: Feb 8, 2022 2:39 PM

Report Template: System: Multi-Page [System] (sscpm2, Jun 24, 2021 3:45 PM)

Evaluation Date: Tue Feb 08 14:31:34 CST 2022

IHSMD Version: v16.0.0 (Sep 30, 2020)

Site Set Crash Prediction Module: v[ModuleInfo.moduleVersion] ([ModuleInfo.moduleDate])

User Name: Matt Flanagan

Organization Name: SRF Consulting Group

Phone: 608.298.5400

E-Mail: mflanagan@srfconsulting.com

Project Title: WIS 60 & Eagle Drive

Project Comment: -

Project Unit System: U.S. Customary

Site Set: Build - Signal

Site Set Comment: -

Site Set Version: v6

Evaluation Title: 2025-2034 Build Signal - WIS 60 & Eagle Drive

Evaluation Comment: Created Tue Feb 08 14:31:13 CST 2022

Policy for Superelevation: AASHTO 2011 U.S. Customary

Calibration: WisDOTCalibration_v16-0

Crash Distribution: WisDOTDistribution_v16-0

Model/CMF: WisDOTConfiguration_v16-0

Note: A Model Data Set other than the HSM (Highway Safety Manual) Configuration was selected for this Evaluation. If Crash Modification Factors (CMFs) were modified, then the results will not be in accordance with the HSM (see HSM Appendix to Part C, section A.1.3).

First Year of Analysis: 2025

Last Year of Analysis: 2034

Empirical-Bayes Analysis: None

Disclaimer Regarding Crash Prediction Method

IMPORTANT NOTICE ABOUT COMPARING RESULTS FROM HIGHWAY SAFETY MANUAL FIRST EDITION (2010) MODELS TO RESULTS FROM NEW MODELS DEVELOPED UNDER NCHRP PROJECTS 17-70 AND 17-58

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Highway and Transportation Officials (AASHTO), multiple research efforts have been undertaken through the National Cooperative Highway Research Program (NCHRP) to develop safety performance models for road segment and intersection facility types that were not initially reflected in the HSM-1, in order to expand the breadth and depth of the HSM in the future.

The IHSDM Crash Prediction Module (CPM) is intended as a faithful implementation of HSM Part C predictive methods. As NCHRP projects to develop new predictive methods for the HSM are completed, FHWA works to incorporate the new methods into IHSDM, sometimes in advance of publication in the HSM. The following new crash predictive methods have been accepted by NCHRP project panels and incorporated into IHSDM, while pending AASHTO's approval for incorporation into a future edition of the HSM:

- Roundabouts: completed in 2018 under NCHRP Project 17-70, the new methods will provide improved outcomes for the safety analysis of roundabouts.
- 6+ lane and one-way urban/suburban arterials (including models for segments and intersections): completed under NCHRP Project 17-58.

However, in the absence of local calibration factors (see HSM-1 Part C, Appendix A for guidance on calibration of the predictive models), it is neither appropriate nor advisable to directly compare the results from new models (from NCHRP Projects 17-58 and 17-70) to results from HSM-1 models, as the models were not calibrated to the same base state data sets, and consequently can produce unexpected results. If local calibration factors are available and applied to both new models and HSM-1 models, then it may be appropriate to directly compare the results. [Note: Work being performed under NCHRP Project 17-72 (Update of Crash Modification Factors for the Highway Safety Manual) is expected to re-calibrate many of the old (HSM-1) and new (e.g., NCHRP 17-70) models to data from a single (or small number of) states, that would allow results from all models to be directly compared.]

The models produced for NCHRP Project 17-70 have independent value in terms of informing the design of a roundabout and assessing the effects of different design characteristics on the expected safety performance of a roundabout.

The HSM-1 interim method previously included in IHSDM for evaluating roundabouts on urban/suburban arterials (i.e., evaluating an existing intersection and then applying a Crash Modification Factor for replacing the existing intersection with a roundabout) has been deactivated in IHSDM, to minimize any confusion with the new roundabout methodology.

Section Types

Urban Arterial Site Set CPM Evaluation

Site Type

Type: 4SG

Calibration Factor: 1

Table 1. Evaluation and Crash Data (CSD) (if applicable) Intersection Sites

Site No.	Type	Highway	Site Description	Major AADT	Minor AADT	Number of Approaches with Left-Turn Lanes	Number of Approaches with Right-Turn Lanes	Presence of Lighting	Number of Approaches with Permissive Left-Turn Phasing	Number of Approaches with Permitted or Protected/Permissive Left-Turn Phasing	Number of Approaches with Protected Left-Turn Phasing	Number of Approaches on which Right Turn on Red is Prohibited	Presence of Red-Light Cameras	Pedestrian Volumes Crossing all Intersection Legs (crossings/day)	Max. Number of Lanes Crossed by Pedestrians	Number of Bus Stops within 1000 ft of Intersection	Number of Schools within 1000 ft of Intersection	Number of Alcohol Sales Establishments within 1000 ft of Intersection
1	4SG2x2le5	WIS 60 & Eagle Drive	Build - Signal	2025: 8908; 2026: 8943; 2027: 8978; 2028: 9013; 2029: 9048; 2030: 9082; 2031: 9117; 2032: 9152; 2033: 9187; 2034: 9222	2025: 4710; 2026: 4728; 2027: 4747; 2028: 4765; 2029: 4784; 2030: 4802; 2031: 4820; 2032: 4839; 2033: 4857; 2034: 4876	4	2	yes	4	0	0	0	no	50	4	0	0	0

Table 2. Predicted Crash Frequencies and Rates by Site

Site No.	Type	Highway	Site Description	Total Predicted Crashes for Evaluation Period	Predicted Total Crash Frequency (crashes/yr)	Predicted FI Crash Frequency (crashes/yr)	Predicted PDO Crash Frequency (crashes/yr)	Predicted Intersection Travel Crash Rate (crashes/million veh)	Intersection Crash Rate (crashes/yr)
1	4SG	WIS 60 & Eagle Drive	Build - Signal	16.603	1.6603	0.4964	1.1639	0.33	1.6603
		Total	Total	16.603	1.6603	0.4964	1.1639	0.33	1.6603

Table 3. Predicted Crash Frequencies by Year (4SG)

Year	Total Crashes	FI Crashes	Percent FI (%)	PDO Crashes	Percent PDO (%)
2025	1.62	0.48	29.859	1.14	70.141
2026	1.63	0.49	29.867	1.15	70.133
2027	1.64	0.49	29.876	1.15	70.124
2028	1.65	0.49	29.885	1.16	70.115
2029	1.66	0.49	29.893	1.16	70.107
2030	1.66	0.50	29.901	1.17	70.099
2031	1.67	0.50	29.910	1.17	70.090
2032	1.68	0.50	29.918	1.18	70.082
2033	1.69	0.51	29.927	1.18	70.073
2034	1.70	0.51	29.935	1.19	70.065
Total	16.60	4.96	29.898	11.64	70.103
Average	1.66	0.50	29.898	1.16	70.103

Note: Fatal and Injury Crashes and Property Damage Only Crashes do not necessarily sum up to Total Crashes because the distribution of these three crashes had been derived

independently.

Table 4. Predicted 4SG Crash Type Distribution

Element Type	Crash Type	Fatal and Injury		Property Damage Only		Total	
		Crashes	Crashes (%)	Crashes	Crashes (%)	Crashes	Crashes (%)
Intersection	Collision with Animal	0.00	0.0	0.02	0.1	0.02	0.1
Intersection	Collision with Bicycle	0.24	1.6	0.00	0.0	0.24	1.6
Intersection	Collision with Fixed Object	0.00	0.0	0.00	0.0	0.00	0.0
Intersection	Non-Collision	0.00	0.0	0.00	0.0	0.00	0.0
Intersection	Collision with Other Object	0.00	0.0	0.00	0.0	0.00	0.0
Intersection	Other Single-vehicle Collision	0.01	0.0	0.02	0.2	0.03	0.2
Intersection	Collision with Parked Vehicle	0.00	0.0	0.00	0.0	0.00	0.0
Intersection	Collision with Pedestrian	0.19	1.3	0.00	0.0	0.19	1.3
Intersection	Total Intersection Single Vehicle Crashes	0.44	3.0	0.04	0.3	0.48	3.3
Intersection	Angle Collision	1.84	12.5	3.18	21.5	5.03	34.0
Intersection	Head-on Collision	0.00	0.0	0.00	0.0	0.00	0.0
Intersection	Other Multi-vehicle Collision	0.10	0.7	0.91	6.1	1.01	6.8
Intersection	Rear-end Collision	2.06	14.0	4.16	28.1	6.22	42.1
Intersection	Sideswipe	0.19	1.3	1.85	12.5	2.04	13.8
Intersection	Total Intersection Multiple Vehicle Crashes	4.20	28.4	10.10	68.4	14.30	96.7
Intersection	Total Intersection Crashes	4.63	31.3	10.15	68.7	14.78	100.0
	Total Crashes	4.63	31.3	10.15	68.7	14.78	100.0

Note: *Fatal and Injury Crashes* and *Property Damage Only Crashes* do not necessarily sum up to *Total Crashes* because the distribution of these three crashes had been derived independently.

Interactive Highway Safety Design Model

Crash Prediction Evaluation Report

February 8, 2022

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Report Overview

Report Generated: Feb 8, 2022 2:40 PM

Report Template: System: Multi-Page [System] (sscpm2, Jun 24, 2021 3:45 PM)

Evaluation Date: Tue Feb 08 14:35:41 CST 2022

IHSDM Version: v16.0.0 (Sep 30, 2020)

Site Set Crash Prediction Module: v[ModuleInfo.moduleVersion] ([ModuleInfo.moduleDate])

User Name: Matt Flanagan

Organization Name: SRF Consulting Group

Phone: 608.298.5400

E-Mail: mflanagan@srfconsulting.com

Project Title: WIS 60 & Eagle Drive

Project Comment: -

Project Unit System: U.S. Customary

Site Set: Build - RAB

Site Set Comment: -

Site Set Version: v6

Evaluation Title: 2025-2034 Build RAB - WIS 60 & Eagle Drive

Evaluation Comment: Created Tue Feb 08 14:35:25 CST 2022

Policy for Superelevation: AASHTO 2011 U.S. Customary

Calibration: WisDOTCalibration_v16-0

Crash Distribution: WisDOTDistribution_v16-0

Model/CMF: WisDOTConfiguration_v16-0

Note: A Model Data Set other than the HSM (Highway Safety Manual) Configuration was selected for this Evaluation. If Crash Modification Factors (CMFs) were modified, then the results will not be in accordance with the HSM (see HSM Appendix to Part C, section A.1.3).

First Year of Analysis: 2025

Last Year of Analysis: 2034

Empirical-Bayes Analysis: None

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Section Types

Roundabout Site Set CPM Evaluation

Site Type

Type: Roundabout USA 41R

Calibration Factor: USA 41R = 1.0

Table 1. Evaluation and Crash Data (CSD) (if applicable) Roundabout - Homogeneous Sites

Site No.	Type	Roundabout	Site Description	Area Type	Entering AADT
1	41R - Roundabout with 4 legs and a single circulating lane	WIS 60 & Eagle Drive	Build RAB	Urban	Leg 1:2025: 2213; 2026: 2222; 2027: 2230; 2028: 2239; 2029: 2248; 2030: 2256; 2031: 2265; 2032: 2273; 2033: 2282; 2034: 2291; Leg 2:2025: 3538; 2026: 3552; 2027: 3566; 2028: 3580; 2029: 3594; 2030: 3607; 2031: 3621; 2032: 3635; 2033: 3649; 2034: 3663; Leg 3:2025: 675; 2026: 678; 2027: 680; 2028: 683; 2029: 686; 2030: 688; 2031: 691; 2032: 693; 2033: 696; 2034: 699; Leg 4:2025: 4899; 2026: 4918; 2027: 4937; 2028: 4956; 2029: 4976; 2030: 4995; 2031: 5014; 2032: 5033; 2033: 5052; 2034: 5071

Table 2. Predicted Crash Frequencies and Rates by Site

Site No.	Type	Roundabout	Site Description	Total Predicted Crashes for Evaluation Period	Predicted Total Crash Frequency (crashes/yr)	Predicted FI Crash Frequency (crashes/yr)	Predicted PDO Crash Frequency (crashes/yr)	Predicted Intersection Travel Crash Rate (crashes/million veh)	Intersection Crash Rate (crashes/yr)
1	41R - Roundabout with 4 legs and a single circulating lane	WIS 60 & Eagle Drive	Build RAB	28.934	2.8934	0.4371	2.4563	1.38	2.8934
		Total	Total	28.934	2.8934	0.4371	2.4563	1.38	2.8934

Table 3. Predicted Crash Frequencies by Year (Roundabout USA 41R)

Year	Total Crashes	FI Crashes	Percent FI (%)	PDO Crashes	Percent PDO (%)
2025	2.86	0.43	15.060	2.43	84.940
2026	2.87	0.43	15.070	2.43	84.930
2027	2.87	0.43	15.081	2.44	84.919
2028	2.88	0.43	15.091	2.45	84.909
2029	2.89	0.44	15.102	2.45	84.898
2030	2.90	0.44	15.112	2.46	84.888
2031	2.91	0.44	15.123	2.47	84.877
2032	2.91	0.44	15.133	2.47	84.867
2033	2.92	0.44	15.144	2.48	84.856
2034	2.93	0.44	15.154	2.49	84.846
Total	28.93	4.37	15.107	24.56	84.893
Average	2.89	0.44	15.107	2.46	84.893

Note: *Fatal and Injury Crashes* and *Property Damage Only Crashes* do not necessarily sum up to *Total Crashes* because the distribution of these three crashes had been derived independently.

Table 4. Predicted Roundabout USA 41R Crash Severity

Site No.	Fatal (K) Crashes (crashes)	Incapacitating Injury (A) Crashes (crashes)	Non-Incapacitating Injury (B) Crashes (crashes)	Possible Injury (C) Crashes (crashes)	No Injury (O) Crashes (crashes)
1	0.0153	0.2441	1.6617	2.4501	24.5626
Total	0.0153	0.2441	1.6617	2.4501	24.5626

Table 5. Predicted Roundabout USA 41R Crash Type Distribution

Element Type	Crash Type	Fatal and Injury		Property Damage Only		Total	
		Crashes	Crashes (%)	Crashes	Crashes (%)	Crashes	Crashes (%)
Intersection	Collision with Animal	0.00	0.0	0.11	0.4	0.11	0.4
Intersection	Collision with Fixed Object	0.95	3.3	8.86	30.7	9.81	33.9
Intersection	Collision with Other Object	0.04	0.1	0.04	0.1	0.08	0.3
Intersection	Other Single-vehicle Collision	1.07	3.7	1.44	5.0	2.51	8.7
Intersection	Collision with Parked Vehicle	0.00	0.0	0.04	0.1	0.04	0.1
Intersection	Total Single Vehicle Crashes	2.06	7.1	10.48	36.3	12.54	43.4
Intersection	Angle Collision	0.54	1.9	4.03	14.0	4.57	15.8
Intersection	Head-on Collision	0.00	0.0	0.07	0.2	0.07	0.2
Intersection	Other Multiple-vehicle Collision	0.04	0.1	0.07	0.2	0.11	0.4
Intersection	Rear-end Collision	1.07	3.7	4.93	17.1	6.01	20.8
Intersection	Sideswipe	0.62	2.1	4.97	17.2	5.59	19.3
Intersection	Total Multiple Vehicle Crashes	2.27	7.8	14.08	48.7	16.35	56.6
Intersection	Total Intersection Crashes	4.33	15.0	24.56	85.0	28.89	100.0
	Total Crashes	4.33	15.0	24.56	85.0	28.89	100.0

Note: Fatal and Injury Crashes and Property Damage Only Crashes do not necessarily sum up to Total Crashes because the distribution of these three crashes had been derived independently.

Attachment 6 – Traffic Operations Outputs

Lanes and Geometrics
6: Eagle Dr & WIS 60

Existing Conditions - AM
Phase II ICE

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)	0%			0%			0%			0%		
Storage Length (ft)	175		0	150		125	0		0	100		0
Storage Lanes	1		0	1		1	0		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt	0.986			0.850			0.952			0.878		
Flt Protected	0.950			0.950				0.982		0.950		
Satd. Flow (prot)	1703	1767	0	1736	1827	1553	0	1660	0	1703	1574	0
Flt Permitted	0.950			0.950				0.982		0.950		
Satd. Flow (perm)	1703	1767	0	1736	1827	1553	0	1660	0	1703	1574	0
Link Speed (mph)	35			35			25			25		
Link Distance (ft)	551			1005			508			593		
Travel Time (s)	10.7			19.6			13.9			16.2		
Intersection Summary												
Area Type:	Other											

Volume
6: Eagle Dr & WIS 60

Existing Conditions - AM
Phase II ICE

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	70	345	35	15	235	85	25	20	25	80	15	65
Future Volume (vph)	70	345	35	15	235	85	25	20	25	80	15	65
Confl. Peds. (#/hr)			1	1								
Confl. Bikes (#/hr)												
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	6%	6%	4%	4%	4%	7%	7%	7%	6%	6%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	83	411	42	18	280	101	30	24	30	95	18	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	83	453	0	18	280	101	0	84	0	95	95	0
Intersection Summary												

Intersection												
Int Delay, s/veh	6.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	70	345	35	15	235	85	25	20	25	80	15	65
Future Vol, veh/h	70	345	35	15	235	85	25	20	25	80	15	65
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	150	-	125	-	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	6	6	6	4	4	4	7	7	7	6	6	6
Mvmt Flow	83	411	42	18	280	101	30	24	30	95	18	77

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	381	0	0	454	0	0	1013	1016	433	941	936	280
Stage 1	-	-	-	-	-	-	599	599	-	316	316	-
Stage 2	-	-	-	-	-	-	414	417	-	625	620	-
Critical Hdwy	4.16	-	-	4.14	-	-	7.17	6.57	6.27	7.16	6.56	6.26
Critical Hdwy Stg 1	-	-	-	-	-	-	6.17	5.57	-	6.16	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.17	5.57	-	6.16	5.56	-
Follow-up Hdwy	2.254	-	-	2.236	-	-	3.563	4.063	3.363	3.554	4.054	3.354
Pot Cap-1 Maneuver	1156	-	-	1096	-	-	213	233	612	239	261	749
Stage 1	-	-	-	-	-	-	480	483	-	687	648	-
Stage 2	-	-	-	-	-	-	606	583	-	466	474	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1156	-	-	1095	-	-	168	212	611	194	238	749
Mov Cap-2 Maneuver	-	-	-	-	-	-	168	212	-	194	238	-
Stage 1	-	-	-	-	-	-	445	448	-	638	638	-
Stage 2	-	-	-	-	-	-	520	574	-	390	439	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.3			0.4			27			26.7		
HCM LOS							D			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	246	1156	-	-	1095	-	-	194	534
HCM Lane V/C Ratio	0.339	0.072	-	-	0.016	-	-	0.491	0.178
HCM Control Delay (s)	27	8.4	-	-	8.3	-	-	40.2	13.2
HCM Lane LOS	D	A	-	-	A	-	-	E	B
HCM 95th %tile Q(veh)	1.4	0.2	-	-	0.1	-	-	2.4	0.6

Lanes and Geometrics
6: Eagle Dr & WIS 60

Existing Conditions - PM
Phase II ICE

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)	0%			0%			0%			0%		
Storage Length (ft)	175		0	150		125	0		0	100		0
Storage Lanes	1		0	1		1	0		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt	0.960					0.850		0.976		0.909		
Flt Protected	0.950			0.950				0.978		0.950		
Satd. Flow (prot)	1770	1788	0	1770	1863	1583	0	1796	0	1787	1710	0
Flt Permitted	0.950			0.950				0.978		0.950		
Satd. Flow (perm)	1770	1788	0	1770	1863	1583	0	1796	0	1787	1710	0
Link Speed (mph)	35			35			25			25		
Link Distance (ft)	551			1005			508			593		
Travel Time (s)	10.7			19.6			13.9			16.2		
Intersection Summary												
Area Type:	Other											

Volume
6: Eagle Dr & WIS 60

Existing Conditions - PM
Phase II ICE

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	55	275	100	35	310	80	50	40	20	55	35	55
Future Volume (vph)	55	275	100	35	310	80	50	40	20	55	35	55
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)						1			1			
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	67	335	122	43	378	98	61	49	24	67	43	67
Shared Lane Traffic (%)												
Lane Group Flow (vph)	67	457	0	43	378	98	0	134	0	67	110	0
Intersection Summary												

Intersection												
Int Delay, s/veh	11.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	55	275	100	35	310	80	50	40	20	55	35	55
Future Vol, veh/h	55	275	100	35	310	80	50	40	20	55	35	55
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	150	-	125	-	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2	1	1	1	1	1	1
Mvmt Flow	67	335	122	43	378	98	61	49	24	67	43	67
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	476	0	0	457	0	0	1098	1092	396	1031	1055	378
Stage 1	-	-	-	-	-	-	530	530	-	464	464	-
Stage 2	-	-	-	-	-	-	568	562	-	567	591	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.11	6.51	6.21	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.509	4.009	3.309	3.509	4.009	3.309
Pot Cap-1 Maneuver	1086	-	-	1104	-	-	191	215	656	212	227	671
Stage 1	-	-	-	-	-	-	534	528	-	580	565	-
Stage 2	-	-	-	-	-	-	509	511	-	510	496	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1086	-	-	1104	-	-	134	194	656	153	205	671
Mov Cap-2 Maneuver	-	-	-	-	-	-	134	194	-	153	205	-
Stage 1	-	-	-	-	-	-	501	495	-	544	543	-
Stage 2	-	-	-	-	-	-	406	491	-	415	465	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.1			0.7			67.6			29.5		
HCM LOS							F			D		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2			
Capacity (veh/h)	180	1086	-	-	1104	-	-	153	356			
HCM Lane V/C Ratio	0.745	0.062	-	-	0.039	-	-	0.438	0.308			
HCM Control Delay (s)	67.6	8.5	-	-	8.4	-	-	45.7	19.6			
HCM Lane LOS	F	A	-	-	A	-	-	E	C			
HCM 95th %tile Q(veh)	4.8	0.2	-	-	0.1	-	-	2	1.3			

Lanes and Geometrics
6: Eagle Dr & WIS 60

2035 No-Build Conditions - AM
Phase II ICE

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)	0%			0%			0%			0%		
Storage Length (ft)	175		0	150		125	0		0	100		0
Storage Lanes	1		0	1		1	0		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt	0.986					0.850	0.952			0.877		
Flt Protected	0.950			0.950				0.982		0.950		
Satd. Flow (prot)	1703	1767	0	1736	1827	1553	0	1660	0	1703	1572	0
Flt Permitted	0.950			0.950				0.982		0.950		
Satd. Flow (perm)	1703	1767	0	1736	1827	1553	0	1660	0	1703	1572	0
Link Speed (mph)	40			40			30			30		
Link Distance (ft)	551			1005			508			593		
Travel Time (s)	9.4			17.1			11.5			13.5		
Intersection Summary												
Area Type:	Other											

Volume
6: Eagle Dr & WIS 60

2035 No-Build Conditions - AM
Phase II ICE

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	75	350	35	15	235	90	25	20	25	85	15	70
Future Volume (vph)	75	350	35	15	235	90	25	20	25	85	15	70
Confl. Peds. (#/hr)			1	1								
Confl. Bikes (#/hr)												
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	6%	6%	4%	4%	4%	7%	7%	7%	6%	6%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	89	417	42	18	280	107	30	24	30	101	18	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	89	459	0	18	280	107	0	84	0	101	101	0
Intersection Summary												

Intersection												
Int Delay, s/veh	7.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	75	350	35	15	235	90	25	20	25	85	15	70
Future Vol, veh/h	75	350	35	15	235	90	25	20	25	85	15	70
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	150	-	125	-	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	6	6	6	4	4	4	7	7	7	6	6	6
Mvmt Flow	89	417	42	18	280	107	30	24	30	101	18	83
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	387	0	0	460	0	0	1037	1040	439	959	954	280
Stage 1	-	-	-	-	-	-	617	617	-	316	316	-
Stage 2	-	-	-	-	-	-	420	423	-	643	638	-
Critical Hdwy	4.16	-	-	4.14	-	-	7.17	6.57	6.27	7.16	6.56	6.26
Critical Hdwy Stg 1	-	-	-	-	-	-	6.17	5.57	-	6.16	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.17	5.57	-	6.16	5.56	-
Follow-up Hdwy	2.254	-	-	2.236	-	-	3.563	4.063	3.363	3.554	4.054	3.354
Pot Cap-1 Maneuver	1150	-	-	1091	-	-	205	226	607	233	255	749
Stage 1	-	-	-	-	-	-	469	474	-	687	648	-
Stage 2	-	-	-	-	-	-	601	579	-	455	465	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1150	-	-	1090	-	-	159	205	606	188	231	749
Mov Cap-2 Maneuver	-	-	-	-	-	-	159	205	-	188	231	-
Stage 1	-	-	-	-	-	-	432	437	-	634	637	-
Stage 2	-	-	-	-	-	-	511	569	-	377	429	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.4			0.4			28.4			28.9		
HCM LOS							D			D		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2			
Capacity (veh/h)	236	1150	-	-	1090	-	-	188	537			
HCM Lane V/C Ratio	0.353	0.078	-	-	0.016	-	-	0.538	0.188			
HCM Control Delay (s)	28.4	8.4	-	-	8.4	-	-	44.5	13.3			
HCM Lane LOS	D	A	-	-	A	-	-	E	B			
HCM 95th %tile Q(veh)	1.5	0.3	-	-	0.1	-	-	2.8	0.7			

Lanes and Geometrics
6: Eagle Dr & WIS 60

2035 No-Build Conditions - PM

Phase II ICE

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)	0%			0%			0%			0%		
Storage Length (ft)	175		0	150		125	0		0	100		0
Storage Lanes	1		0	1		1	0		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt	0.959					0.850		0.977		0.909		
Flt Protected	0.950			0.950				0.979		0.950		
Satd. Flow (prot)	1770	1786	0	1770	1863	1583	0	1799	0	1787	1710	0
Flt Permitted	0.950			0.950				0.979		0.950		
Satd. Flow (perm)	1770	1786	0	1770	1863	1583	0	1799	0	1787	1710	0
Link Speed (mph)	40			40			30			30		
Link Distance (ft)	551			1005			508			593		
Travel Time (s)	9.4			17.1			11.5			13.5		
Intersection Summary												
Area Type:	Other											

Volume
6: Eagle Dr & WIS 60

2035 No-Build Conditions - PM
Phase II ICE

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	55	280	105	35	315	85	50	45	20	60	35	55
Future Volume (vph)	55	280	105	35	315	85	50	45	20	60	35	55
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)						1			1			
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	67	341	128	43	384	104	61	55	24	73	43	67
Shared Lane Traffic (%)												
Lane Group Flow (vph)	67	469	0	43	384	104	0	140	0	73	110	0
Intersection Summary												

Intersection												
Int Delay, s/veh	13											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	55	280	105	35	315	85	50	45	20	60	35	55
Future Vol, veh/h	55	280	105	35	315	85	50	45	20	60	35	55
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	150	-	125	-	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2	1	1	1	1	1	1
Mvmt Flow	67	341	128	43	384	104	61	55	24	73	43	67
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	488	0	0	469	0	0	1116	1113	405	1049	1073	384
Stage 1	-	-	-	-	-	-	539	539	-	470	470	-
Stage 2	-	-	-	-	-	-	577	574	-	579	603	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.11	6.51	6.21	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.509	4.009	3.309	3.509	4.009	3.309
Pot Cap-1 Maneuver	1075	-	-	1093	-	-	186	209	648	206	221	666
Stage 1	-	-	-	-	-	-	528	523	-	576	562	-
Stage 2	-	-	-	-	-	-	504	505	-	503	490	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1075	-	-	1093	-	-	129	188	648	142	199	666
Mov Cap-2 Maneuver	-	-	-	-	-	-	129	188	-	142	199	-
Stage 1	-	-	-	-	-	-	495	491	-	540	540	-
Stage 2	-	-	-	-	-	-	401	485	-	403	460	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.1			0.7			77.9			33.8		
HCM LOS							F			D		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2			
Capacity (veh/h)	175	1075	-	-	1093	-	-	142	348			
HCM Lane V/C Ratio	0.801	0.062	-	-	0.039	-	-	0.515	0.315			
HCM Control Delay (s)	77.9	8.6	-	-	8.4	-	-	54.6	20			
HCM Lane LOS	F	A	-	-	A	-	-	F	C			
HCM 95th %tile Q(veh)	5.4	0.2	-	-	0.1	-	-	2.5	1.3			

Lanes, Volumes, Timings
6: Eagle Dr & WIS 60

2035 Build Signal Conditions - AM

Phase II ICE

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	390	40	30	280	90	30	25	40	85	15	75
Future Volume (vph)	75	390	40	30	280	90	30	25	40	85	15	75
Ideal Flow (vphpl)	1900	1791	1900	1900	1830	1900	1900	1750	1900	1900	1750	1900
Storage Length (ft)	200		0	200		200	125		0	125		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	100			150			100			100		
Right Turn on Red			No			No			No			No
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		551			1005			508			593	
Travel Time (s)		10.7			19.6			13.9			16.2	
Confl. Peds. (#/hr)			1	1								
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Growth Factor	100%	100%	100%	100%	100%	62%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	6%	6%	4%	4%	4%	7%	7%	7%	6%	6%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	89	512	0	36	333	66	36	78	0	101	107	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	27.5	27.5		27.5	27.5	27.5	29.5	29.5		29.5	29.5	
Total Split (s)	30.0	30.0		30.0	30.0	30.0	30.0	30.0		30.0	30.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	24.0	24.0		24.0	24.0	24.0	24.0	24.0		24.0	24.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.5	3.5		3.5	3.5	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.5	2.5		2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min	Min	None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0	14.0	16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
v/c Ratio	0.15	0.53		0.08	0.33	0.07	0.13	0.23		0.36	0.33	
Control Delay	7.4	10.5		6.9	8.0	6.5	14.8	15.6		18.0	17.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	7.4	10.5		6.9	8.0	6.5	14.8	15.6		18.0	17.1	
Queue Length 50th (ft)	10	76		4	42	7	6	14		18	19	
Queue Length 95th (ft)	30	157		15	90	22	23	40		51	52	
Internal Link Dist (ft)		471			925			428			513	
Turn Bay Length (ft)	200			200		200	125			125		
Base Capacity (vph)	638	1057		507	1119	987	777	944		804	918	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	

Lanes, Volumes, Timings
6: Eagle Dr & WIS 60

2035 Build Signal Conditions - AM

Phase II ICE

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.14	0.48		0.07	0.30	0.07	0.05	0.08		0.13	0.12	

Intersection Summary

Area Type: Other

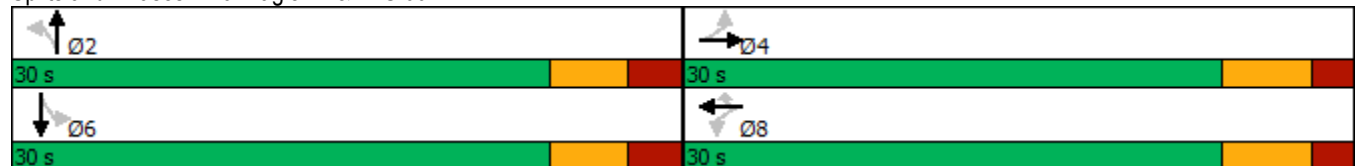
Cycle Length: 60

Actuated Cycle Length: 39.1

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Splits and Phases: 6: Eagle Dr & WIS 60



HCM 6th Signalized Intersection Summary 6: Eagle Dr & WIS 60

2035 Build Signal Conditions - AM
Phase II ICE

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	390	40	30	280	90	30	25	40	85	15	75
Future Volume (veh/h)	75	390	40	30	280	90	30	25	40	85	15	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1811	1707	1811	1841	1773	1841	1796	1654	1796	1811	1668	1811
Adj Flow Rate, veh/h	89	464	48	36	333	66	36	30	48	101	18	89
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	6	6	6	4	4	4	7	7	7	6	6	6
Cap, veh/h	503	640	66	375	746	656	393	113	180	424	48	237
Arrive On Green	0.42	0.42	0.42	0.42	0.42	0.42	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	954	1521	157	874	1773	1558	1236	573	917	1279	244	1207
Grp Volume(v), veh/h	89	0	512	36	333	66	36	0	78	101	0	107
Grp Sat Flow(s),veh/h/ln	954	0	1679	874	1773	1558	1236	0	1489	1279	0	1451
Q Serve(g_s), s	2.3	0.0	8.0	1.1	4.2	0.8	0.8	0.0	1.4	2.3	0.0	2.0
Cycle Q Clear(g_c), s	6.5	0.0	8.0	9.1	4.2	0.8	2.8	0.0	1.4	3.7	0.0	2.0
Prop In Lane	1.00		0.09	1.00		1.00	1.00		0.62	1.00		0.83
Lane Grp Cap(c), veh/h	503	0	707	375	746	656	393	0	293	424	0	285
V/C Ratio(X)	0.18	0.00	0.72	0.10	0.45	0.10	0.09	0.00	0.27	0.24	0.00	0.38
Avail Cap(c_a), veh/h	832	0	1285	676	1357	1192	1096	0	1140	1152	0	1110
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.8	0.0	7.6	11.4	6.5	5.5	12.2	0.0	10.7	12.2	0.0	10.9
Incr Delay (d2), s/veh	0.2	0.0	1.4	0.1	0.4	0.1	0.1	0.0	0.5	0.3	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.6	0.0	3.1	0.3	1.6	0.3	0.3	0.0	0.7	1.0	0.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.0	0.0	9.0	11.5	6.9	5.6	12.3	0.0	11.2	12.5	0.0	11.8
LnGrp LOS	A	A	A	B	A	A	B	A	B	B	A	B
Approach Vol, veh/h	601			435			114			208		
Approach Delay, s/veh	9.0			7.1			11.5			12.1		
Approach LOS	A			A			B			B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	12.2			19.2			12.2			19.2		
Change Period (Y+Rc), s	6.0			6.0			6.0			6.0		
Max Green Setting (Gmax), s	24.0			24.0			24.0			24.0		
Max Q Clear Time (g_c+I1), s	4.8			10.0			5.7			11.1		
Green Ext Time (p_c), s	0.5			3.2			0.9			1.9		
Intersection Summary												
HCM 6th Ctrl Delay	9.1											
HCM 6th LOS	A											

Lanes, Volumes, Timings
6: Eagle Dr & WIS 60

2035 Build Signal Conditions - PM

Phase II ICE

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	335	130	65	355	85	75	45	40	60	40	55
Future Volume (vph)	60	335	130	65	355	85	75	45	40	60	40	55
Ideal Flow (vphpl)	1900	1791	1900	1900	1830	1900	1900	1750	1900	1900	1750	1900
Storage Length (ft)	200		0	200		200	125		0	125		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	100			150			100			100		
Right Turn on Red			No			No			No			No
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		551			1005			508			593	
Travel Time (s)		10.7			19.6			13.9			16.2	
Confl. Bikes (#/hr)						1			1			
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Growth Factor	100%	100%	100%	100%	100%	62%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	73	568	0	79	433	64	91	104	0	73	116	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	27.5	27.5		27.5	27.5	27.5	29.5	29.5		29.5	29.5	
Total Split (s)	30.0	30.0		30.0	30.0	30.0	30.0	30.0		30.0	30.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	23.5	23.5		23.5	23.5	23.5	23.5	23.5		23.5	23.5	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.5	3.5		3.5	3.5	
All-Red Time (s)	2.5	2.5		2.5	2.5	2.5	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5	6.5	6.5	6.5		6.5	6.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min	Min	None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0	14.0	16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
v/c Ratio	0.13	0.57		0.18	0.41	0.07	0.35	0.32		0.27	0.36	
Control Delay	7.3	11.5		8.2	8.8	6.6	19.2	17.9		17.8	18.5	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	7.3	11.5		8.2	8.8	6.6	19.2	17.9		17.8	18.5	
Queue Length 50th (ft)	8	93		10	62	7	19	22		15	25	
Queue Length 95th (ft)	25	176		29	119	21	46	49		38	54	
Internal Link Dist (ft)		471			925			428			513	
Turn Bay Length (ft)	200			200		200	125			125		
Base Capacity (vph)	600	1060		465	1131	977	742	922		751	915	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	

Lanes, Volumes, Timings
6: Eagle Dr & WIS 60

2035 Build Signal Conditions - PM
Phase II ICE

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.12	0.54		0.17	0.38	0.07	0.12	0.11		0.10	0.13	

Intersection Summary

Area Type: Other

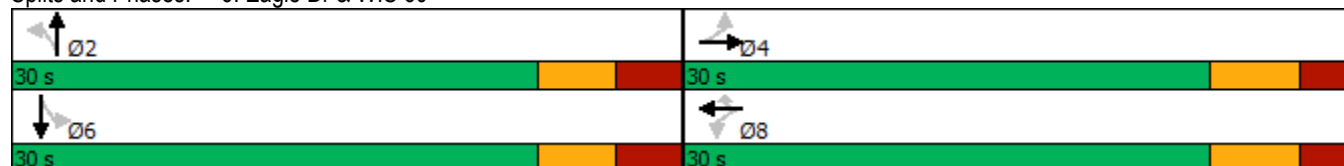
Cycle Length: 60

Actuated Cycle Length: 41.6

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Splits and Phases: 6: Eagle Dr & WIS 60



HCM 6th Signalized Intersection Summary 6: Eagle Dr & WIS 60

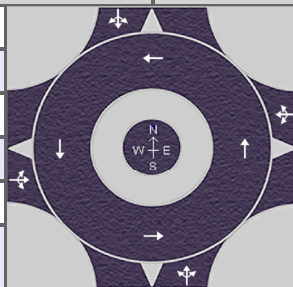
2035 Build Signal Conditions - PM
Phase II ICE

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	335	130	65	355	85	75	45	40	60	40	55
Future Volume (veh/h)	60	335	130	65	355	85	75	45	40	60	40	55
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1763	1870	1870	1801	1870	1885	1736	1885	1885	1736	1885
Adj Flow Rate, veh/h	73	409	159	79	433	64	91	55	49	73	49	67
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	2	2	2	2	2	2	1	1	1	1	1	1
Cap, veh/h	452	560	218	347	835	719	360	166	148	372	132	180
Arrive On Green	0.46	0.46	0.46	0.46	0.46	0.46	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	901	1209	470	843	1801	1552	1286	837	746	1300	664	908
Grp Volume(v), veh/h	73	0	568	79	433	64	91	0	104	73	0	116
Grp Sat Flow(s),veh/h/ln	901	0	1678	843	1801	1552	1286	0	1582	1300	0	1573
Q Serve(g_s), s	2.4	0.0	10.5	3.2	6.5	0.9	2.5	0.0	2.2	2.0	0.0	2.5
Cycle Q Clear(g_c), s	8.9	0.0	10.5	13.8	6.5	0.9	5.0	0.0	2.2	4.1	0.0	2.5
Prop In Lane	1.00		0.28	1.00		1.00	1.00		0.47	1.00		0.58
Lane Grp Cap(c), veh/h	452	0	778	347	835	719	360	0	314	372	0	312
V/C Ratio(X)	0.16	0.00	0.73	0.23	0.52	0.09	0.25	0.00	0.33	0.20	0.00	0.37
Avail Cap(c_a), veh/h	585	0	1027	472	1102	949	892	0	968	910	0	962
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	10.4	0.0	8.4	13.9	7.3	5.8	15.5	0.0	13.2	15.0	0.0	13.3
Incr Delay (d2), s/veh	0.2	0.0	1.9	0.3	0.5	0.1	0.4	0.0	0.6	0.3	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.7	0.0	4.8	0.9	2.9	0.3	1.2	0.0	1.3	0.9	0.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.6	0.0	10.2	14.3	7.8	5.8	15.8	0.0	13.8	15.2	0.0	14.1
LnGrp LOS	B	A	B	B	A	A	B	A	B	B	A	B
Approach Vol, veh/h		641			576			195			189	
Approach Delay, s/veh		10.3			8.5			14.8			14.5	
Approach LOS		B			A			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		14.1		24.3		14.1		24.3				
Change Period (Y+Rc), s		6.5		6.5		6.5		6.5				
Max Green Setting (Gmax), s		23.5		23.5		23.5		23.5				
Max Q Clear Time (g_c+I1), s		7.0		12.5		6.1		15.8				
Green Ext Time (p_c), s		0.8		3.1		0.8		2.0				
Intersection Summary												
HCM 6th Ctrl Delay				10.7								
HCM 6th LOS				B								

HCS7 Roundabouts Report

General Information

Analyst	Matt Flanagan
Agency or Co.	SRF Consulting
Date Performed	11/12/2021
Analysis Year	2035
Time Analyzed	AM Peak
Project Description	Phase II ICE



Site Information

Intersection	WIS 60 & Eagle Drive
E/W Street Name	WIS 60
N/S Street Name	Eagle Drive
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.84
Jurisdiction	-

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment	LTR				LTR				LTR				LTR			
Volume (V), veh/h	0	75	390	40	0	30	280	90	0	30	25	40	0	85	15	75
Percent Heavy Vehicles, %	6	6	6	6	4	4	4	4	7	7	7	7	6	6	6	6
Flow Rate (V_{PCE}), pc/h	0	95	492	50	0	37	347	111	0	38	32	51	0	107	19	95
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.7000			4.7000			4.7000			4.7000	
Follow-Up Headway (s)		2.6000			2.6000			2.6000			2.6000	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		637			495			121			221	
Entry Volume, veh/h		601			476			113			208	
Circulating Flow (v_c), pc/h	163			165			694			422		
Exiting Flow (v_{ex}), pc/h	650			480			238			106		
Capacity (C_{PCE}), pc/h		1187			1185			719			929	
Capacity (c), veh/h		1120			1139			672			877	
v/c Ratio (x)		0.54			0.42			0.17			0.24	

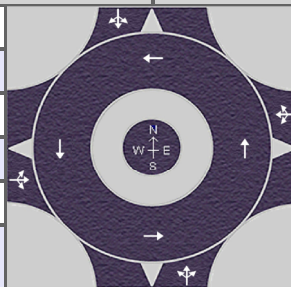
Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		9.6			7.5			7.3			6.6	
Lane LOS		A			A			A			A	
95% Queue, veh		3.3			2.1			0.6			0.9	
Approach Delay, s/veh	9.6			7.5			7.3			6.6		
Approach LOS	A			A			A			A		
Intersection Delay, s/veh LOS	8.2						A					

HCS7 Roundabouts Report

General Information

Analyst	Matt Flanagan
Agency or Co.	SRF Consulting
Date Performed	11/12/2021
Analysis Year	2035
Time Analyzed	PM Peak
Project Description	Phase II ICE



Site Information

Intersection	WIS 60 & Eagle Drive
E/W Street Name	WIS 60
N/S Street Name	Eagle Drive
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.82
Jurisdiction	-

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment	LTR				LTR				LTR				LTR			
Volume (V), veh/h	0	60	335	130	0	65	355	85	0	75	45	40	0	60	40	55
Percent Heavy Vehicles, %	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1
Flow Rate (V_{PCE}), pc/h	0	75	417	162	0	81	442	106	0	92	55	49	0	74	49	68
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.7000			4.7000			4.7000			4.7000	
Follow-Up Headway (s)		2.6000			2.6000			2.6000			2.6000	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		654			629			196			191	
Entry Volume, veh/h		641			617			194			189	
Circulating Flow (v_c), pc/h	204			222			566			615		
Exiting Flow (v_{ex}), pc/h	540			602			236			292		
Capacity (C_{PCE}), pc/h		1142			1123			811			775	
Capacity (c), veh/h		1120			1101			803			767	
v/c Ratio (x)		0.57			0.56			0.24			0.25	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		10.3			10.2			7.1			7.5	
Lane LOS		B			B			A			A	
95% Queue, veh		3.8			3.6			0.9			1.0	
Approach Delay, s/veh	10.3			10.2			7.1			7.5		
Approach LOS	B			B			A			A		
Intersection Delay, s/veh LOS	9.5						A					

Attachment 7 – Traffic Signal Warrant Analysis Worksheets

Wisconsin Department of Transportation Traffic Signal Warrant Summary Worksheet

70%

The Worksheet(s) attached are provided as an attachment to the Engineering Investigation Study for:

Intersection: WIS 60 and Eagle Drive

County: Washington

Village: Jackson

Major Street: WIS 60

Critical Approach Speed: 40 mph

Lanes: 1 lane

Minor Street: Eagle Drive

Critical Approach Speed: 30 mph

Lanes: 2 or more lanes

% Right Turns Included

From North (SB) 100%

From East (WB) 100%

From South (NB) 100%

From West (EB) 100%

In built-up area of isolated community of < 10,000 population? Yes

Total number of approaches at intersection? 4 or more

If it is a "T" intersection, inflate minor threshold to 150%?

Manually set volume level? No

Analysis based on **EXISTING** volume data.

Date	Day of the Week	Time (HH:MM)			
		From	AM / PM	To	AM / PM
2020	Wednesday	6	AM	9	AM
2020	Wednesday	3	PM	6	PM

Warrant Evaluation Summary	Warrant Met:
Warrant 1: Eight - Hour Vehicular Volume	No
Condition A: Minimum Vehicular Volume	No
Condition B: Interruption of Continuous Traffic	No
Condition C: Combination: 80% of A and B	No
Warrant 2: Four-Hour Volume	Yes
Warrant 3: Peak Hour Volume	No
Warrant 4: Pedestrian Volume	N/A
Criterion A: Four-Hour	
Criterion B: Peak-Hour	
Warrant 5: School Crossing	N/A
Warrant 6: Coordinated Signal System	N/A
Warrant 7: Crash Experience	N/A
Warrant 8: Roadway Network	N/A
Warrant 9: Intersection Near a Grade Crossing	N/A

Warrant Analysis Conducted By:

Name: Sandra Herbers

Agency: SRF Consulting

Date: 2/9/2022

Warrant 1: Eight - Hour Vehicular Volume

70%

Warrant Evaluated? Yes

Warrant Satisfied? No

Manually Set To:

Condition A : Min. Veh. Volume		
Volume Level	70%	56%
Major Rd. Req	350	280
Minor Rd. Req	140	112
Number of Hours	1	4

Satisfied? No

Condition B: Interruption of Continuous Traffic		
Volume Level	70%	56%
Major Rd. Req	525	420
Minor Rd. Req	70	56
Number of Hours	5	6

Satisfied? No

Condition C: Combination of A & B at 56%		
---	--	--

Satisfied? No

6:00 AM		Enter Start Time (Military Time) (HH:MM)		Major Road: Both		Minor Road: High	Total
Time Period	From	To		App. (VPH)	App. (VPH)	App. (VPH)	
1	6:00	7:00		456		72	528
2	7:00	8:00		734		160	894
3	8:00	9:00		538		74	612
4	9:00	10:00		0		0	0
5	10:00	11:00		0		0	0
6	11:00	12:00		0		0	0
7	12:00	13:00		0		0	0
8	13:00	14:00		0		0	0
9	14:00	15:00		0		0	0
10	15:00	16:00		671		120	791
11	16:00	17:00		743		123	866
12	17:00	18:00		747		127	874
13	18:00	19:00		0		0	0
14	19:00	20:00		0		0	0
15	20:00	21:00		0		0	0
16	21:00	22:00		0		0	0

Warrant 2: Four-Hour Volume

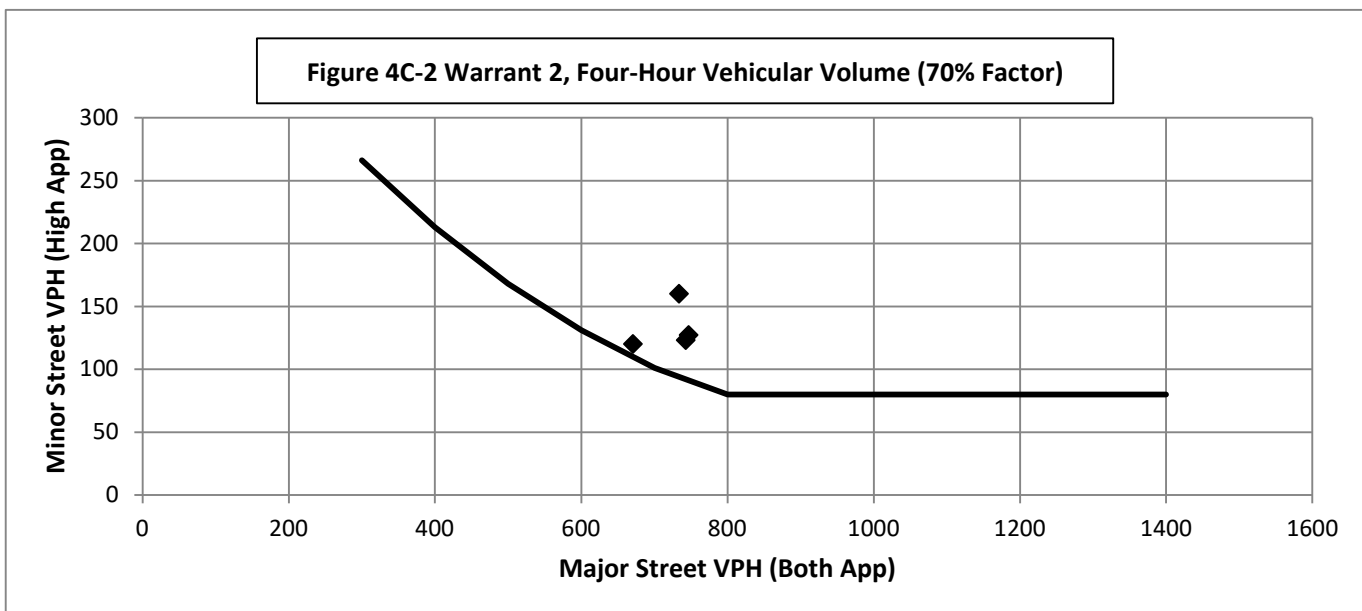
70%

Warrant Evaluated? Yes

Warrant Satisfied? Yes

Manually Set To:

Hour Start	7:00	17:00	16:00	15:00
Major Road Vol.	734	747	743	671
Minor Road Vol.	160	127	123	120



Warrant 3: Peak Hour Volume

70%

Warrant Evaluated? Yes

Condition justifying use of warrant:

Criteria		Met?
Delay on Minor Approach	5	Yes
Volume on Minor Approach	150	Yes
Total Entering Volume (veh/h)	800	

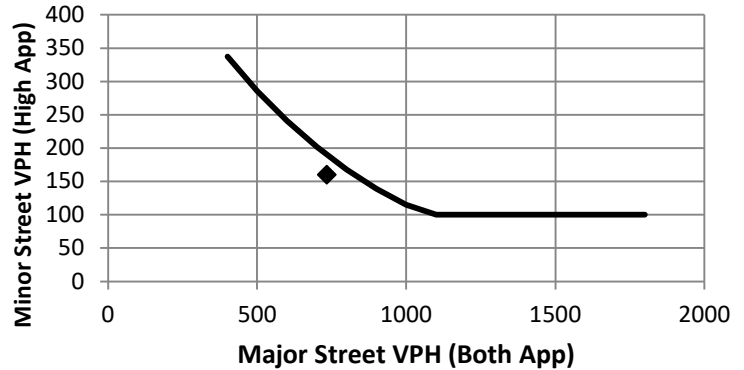
Manually Set Peak Hour? No

Peak Hour	Major Road Vol. (Both App.)	Minor Road Vol. (High App.)
7:00	734	160

Warrant Satisfied? No

Manually Set To:

Figure 4C-4 Warrant 3, Peak Hour (70% Factor)



Warrant 4: Pedestrian Volume

70%

Warrant Evaluated? No

Warrant Satisfied? N/A

Manually Set To:

Criterion A: Four Hour

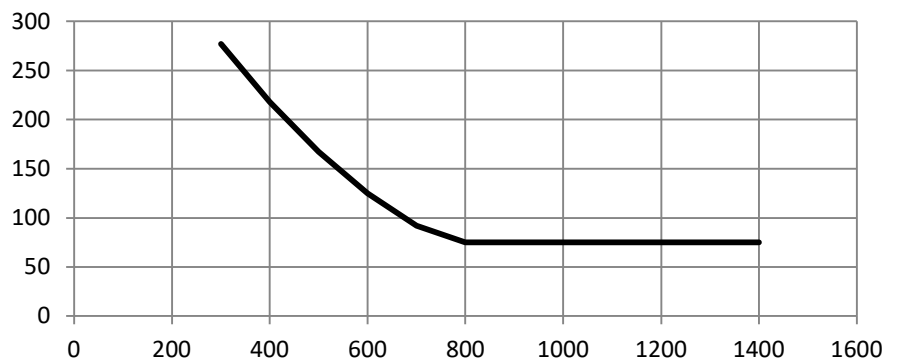
Hour (Start)	Pedestrian Volume	Major Road Vol.
		0
		0
		0
		0

Manually Set Major Rd Vol?

Avg. walk speed less than 3.5 ft/s?

Criterion A Satisfied?

Figure 4C-6 Warrant 4, Pedestrian Four-Hour Volume (70% Factor)

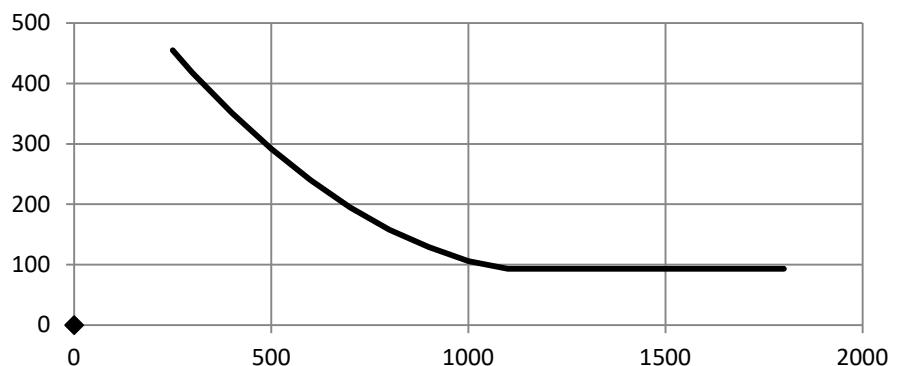


Criterion B: Peak Hour

Peak Hour	Pedestrian Vol.	Major Road Vol.
0:00	0	0

Criterion B Satisfied?

Figure 4C-8 Warrant 4, Pedestrian Peak Hour (70% Factor)



Warrant 5: School Crossing

70%

Warrant Evaluated? No

Warrant Satisfied? N/A

Manually Set To:

Criteria	Fulfilled?
1 There are a MINIMUM of 20 school children during the highest crossing hour.	
2 There are fewer adequate gaps in the major road traffic stream during the period when the school children are using the crossing than the number of minutes in the same period.	
3 The nearest traffic signal along the major road is located more than 300 ft away. Or, the nearest traffic signal is within 300 ft but the proposed traffic signal will not restrict the progressive movement of traffic.	

Warrant 6: Coordinated Signal System

70%

Warrant Evaluated? No

Warrant Satisfied? N/A

Manually Set To:

Criteria	Fulfilled?
1 Signal spacing > 1000 ft	
2 On a one-way road or a road that has traffic predominantly in one direction, the adjacent signals are so far apart that they do not provide the necessary degree of vehicle platooning.	
3 On a two-way road, adjacent signals do not provide the necessary degree of platooning and the proposed and the adjacent signals will collectively provide a progressive operation.	

Warrant 7: Crash Experience

70%

Warrant Evaluated? No

Warrant Satisfied? N/A

Manually Set To:

Criteria	Met?	Fulfilled?
1 Adequate trial of other remedial measures has failed to reduce crash frequency. Measures Tried:		
2 Five or more reported crashes, of types susceptible to correction by signal, have occurred within a 12 month period.	# of crashes per 12 months	
3 Warrant 1, Condition A (80%)	No	No
Warrant 1, Condition B (80%)	No	
Warrant 4, Criterion A (80%)	No	
Warrant 4, Criterion B (80%)	No	

Warrant 8: Roadway Network

70%

Warrant Evaluated? No

Warrant Satisfied? N/A

Manually Set To:

Criteria	Met?	Fulfilled?
1 Total entering volume of at least 1,000 veh/h during typical weekday peak hour	894	No
Five-year projected volumes that satisfy one or more of Warrants 1, 2, or 3.		No
2 Total entering vol. of at least 1,000 veh/h for each of any 5 hrs of non-normal business day (Sat. or Sun.)		
Hour		
Volume		

Characteristics of Major Routes - Select yes if all intersecting routes have characteristic	Fulfilled?
1 Part of the road or highway system that serves as the principal roadway network for through traffic flow	
2 Rural or suburban highway outside of, entering, or traversing a city	
3 Appears as a major route on an official plan	

Warrant 9: Intersection Near a Grade Crossing

70%

Warrant Evaluated?

Warrant Satisfied? N/A

Manually Set To:

Adjustment Factors			Manually Set Peak Hour?				
Rail Traffic per Day	% High Occupancy Buses on Minor Road	% Tractor-Trailer Trucks on Minor Road	D	Peak Hour	Major Road Vol.	Minor Road Vol.	Adjusted Minor Vol.
1	0	0% to 2.5%	660	7:00	734	160	53.6

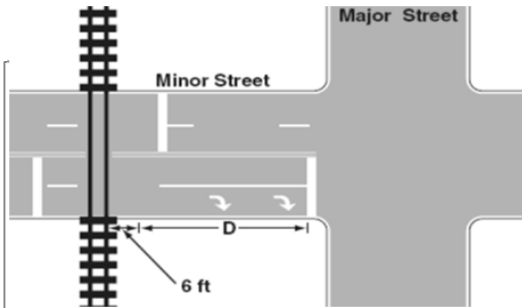
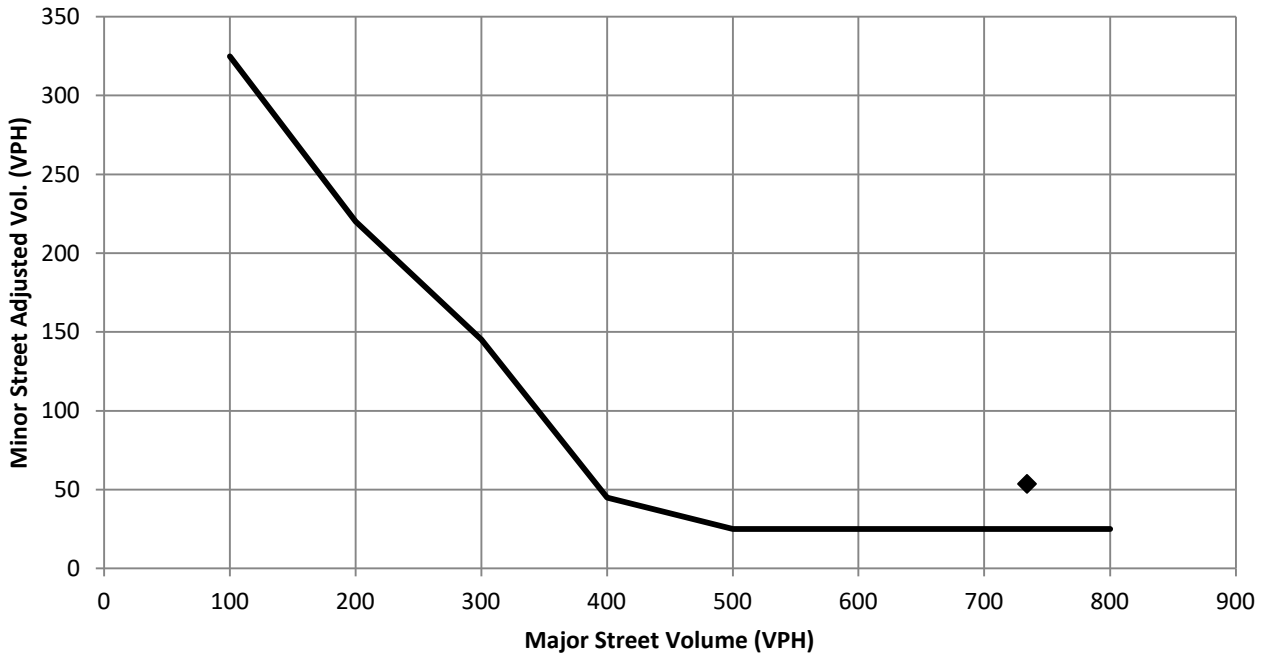


Figure 4C-10 Warrant 9, Intersection Near a grade Crossing
(Two or More Approach Lanes at the Track Crossing)



Conclusions/Comments:

Using Year 2040 projected volumes (0.5% growth/year) and rerouting traffic from Grand Avenue through Clough.

Updated: 2/18/2016

Hourly Volume Data																						
One Hour Time Period Start Time		↓ From North (SB)					← From East (WB)					↑ From South (NB)					→ From West (EB)					Total Vehicle Volume
		Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	
AM	6:00	24	13	35		72	23	138	7		168	9	16	17		42	27	230	31		288	570
	7:00	67	15	78		160	84	208	14		306	23	20	26		69	34	326	68		428	963
	8:00	32	15	27		74	35	204	7		246	16	21	27		64	46	222	24		292	676
	9:00	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0
MD	10:00																				0	0
	11:00																				0	0
	12:00																				0	0
	13:00																				0	0
PM	14:00	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0
	15:00	49	32	39		120	60	226	26		312	28	38	51		117	100	225	34		359	908
	16:00	42	39	42		123	70	267	23		360	14	41	52		107	76	257	50		383	973
	17:00	52	34	41		127	71	256	33		360	22	36	53		111	95	242	50		387	985
	18:00					0					0					0					0	0
	19:00					0					0					0					0	0
	20:00					0					0					0					0	0
	21:00					0					0					0					0	0
Totals		266	148	262	0	676	343	1299	110	0	1752	112	172	226	0	510	378	1502	257	0	2137	5075

Note: Copy volume data and paste into cells using paste special -> values

Note: U-Turns are counted as Left Turns in the Volume Totals

Please Select the Major Road:

Major Road Left Turn as Minor Approach?

% Right Turns Included (Default 0%)

From North (SB)	100%
From East (WB)	100%
From South (NB)	100%
From West (EB)	100%

Major Road Volume Totals: East/West				
Right	Thru	Left	T+LT	Total
50	368	38	406	456
118	534	82	616	734
81	426	31	457	538
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
721	2801	367	3168	3889

Minor Road Highest Volume: North/South				
Right	Thru	Left	T+LT	Total
24	13	35	48	72
67	15	78	93	160
32	15	27	42	74
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
266	148	262	410	676

Wisconsin Department of Transportation Traffic Signal Warrant

Summary Worksheet

70%

The Worksheet(s) attached are provided as an attachment to the Engineering Investigation Study for:

Intersection: WIS 60 and Eagle Drive

County: Washington

Village: Jackson

Major Street: WIS 60

Critical Approach Speed: 40 mph

Lanes: 1 lane

Minor Street: Eagle Drive

Critical Approach Speed: 30 mph

Lanes: 2 or more lanes

% Right Turns Included

From North (SB) 100%

From East (WB) 100%

From South (NB) 100%

From West (EB) 100%

In built-up area of isolated community of < 10,000 population? Yes

Total number of approaches at intersection? 4 or more

If it is a "T" intersection, inflate minor threshold to 150%?

Manually set volume level? No

Analysis based on **PROJECTED** volume data.

Forecast Year	Within 5 Years of Construction?	Time (HH:MM)			
		From	AM / PM	To	AM / PM
2035	Yes	6	AM	9	AM
2035	Yes	3	PM	6	PM

Warrant Evaluation Summary	Warrant Met:
Warrant 1: Eight - Hour Vehicular Volume	No
Condition A: Minimum Vehicular Volume	No
Condition B: Interruption of Continuous Traffic	No
Condition C: Combination: 80% of A and B	No
Warrant 2: Four-Hour Volume	Yes
Warrant 3: Peak Hour Volume	Yes
Warrant 4: Pedestrian Volume	N/A
Criterion A: Four-Hour	
Criterion B: Peak-Hour	
Warrant 5: School Crossing	N/A
Warrant 6: Coordinated Signal System	N/A
Warrant 7: Crash Experience	N/A
Warrant 8: Roadway Network	N/A
Warrant 9: Intersection Near a Grade Crossing	N/A

Warrant Analysis Conducted By:

Name: Sandra Herbers

Agency: SRF Consulting

Date: 2/9/2022

Warrant 1: Eight - Hour Vehicular Volume

70%

Warrant Evaluated? Yes

Warrant Satisfied? No

Manually Set To:

Condition A : Min. Veh. Volume		
Volume Level	70%	56%
Major Rd. Req	350	280
Minor Rd. Req	140	112
Number of Hours	4	4

Satisfied? No

Condition B: Interruption of Continuous Traffic		
Volume Level	70%	56%
Major Rd. Req	525	420
Minor Rd. Req	70	56
Number of Hours	5	6

Satisfied? No

Condition C: Combination of A & B at 56%		
---	--	--

Satisfied? No

6:00 AM		Enter Start Time (Military Time) (HH:MM)			
Time Period	From	To	Major Road: Both	Minor Road: High	Total
			App. (VPH)	App. (VPH)	
1	6:00	7:00	500	80	580
2	7:00	8:00	800	170	970
3	8:00	9:00	590	75	665
4	9:00	10:00	0	0	0
5	10:00	11:00	0	0	0
6	11:00	12:00	0	0	0
7	12:00	13:00	0	0	0
8	13:00	14:00	0	0	0
9	14:00	15:00	0	0	0
10	15:00	16:00	795	150	945
11	16:00	17:00	875	150	1025
12	17:00	18:00	890	155	1045
13	18:00	19:00	0	0	0
14	19:00	20:00	0	0	0
15	20:00	21:00	0	0	0
16	21:00	22:00	0	0	0

Warrant 2: Four-Hour Volume

70%

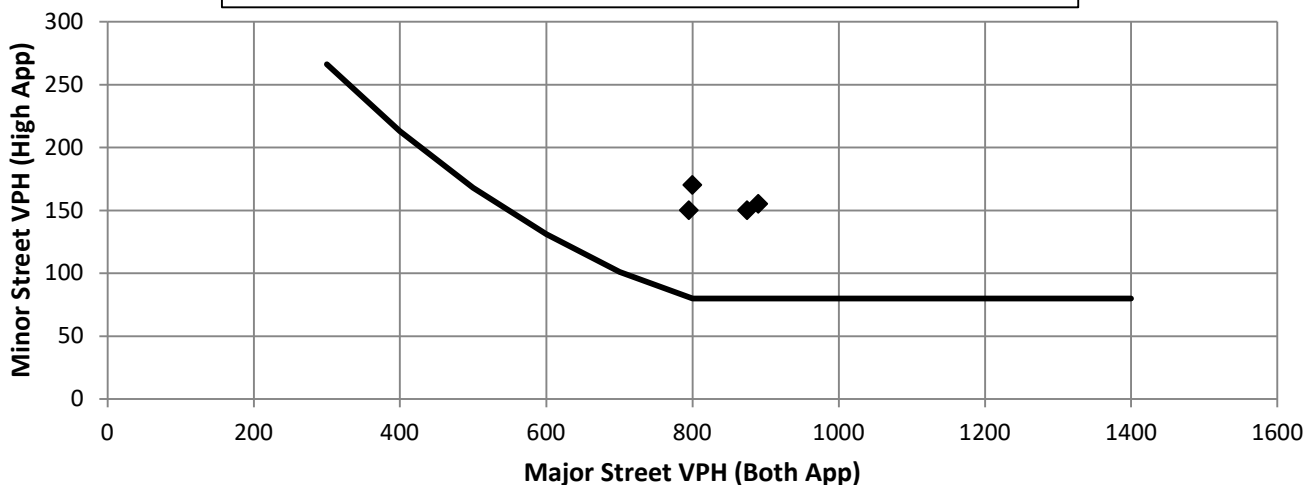
Warrant Evaluated? Yes

Warrant Satisfied? Yes

Manually Set To:

Hour Start	17:00	16:00	7:00	15:00
Major Road Vol.	890	875	800	795
Minor Road Vol.	155	150	170	150

Figure 4C-2 Warrant 2, Four-Hour Vehicular Volume (70% Factor)



Warrant 3: Peak Hour Volume

70%

Warrant Evaluated? Yes

Warrant Satisfied? Yes

Manually Set To:

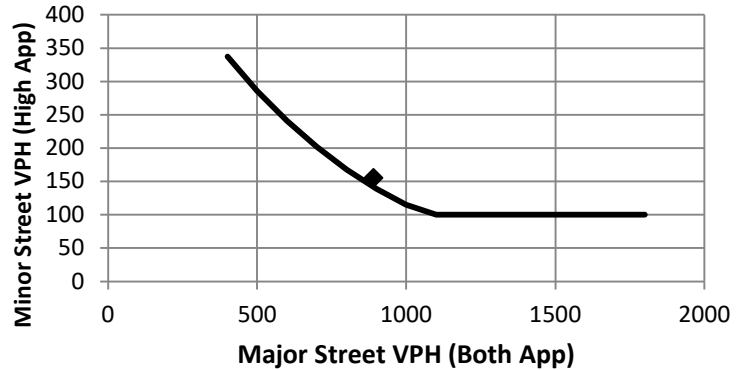
Condition justifying use of warrant:

Criteria		Met?
Delay on Minor Approach	5	Yes
Volume on Minor Approach	150	Yes
Total Entering Volume (veh/h)	800	

Manually Set Peak Hour? No

Peak Hour	Major Road Vol. (Both App.)	Minor Road Vol. (High App.)
17:00	890	155

Figure 4C-4 Warrant 3, Peak Hour (70% Factor)



Warrant 4: Pedestrian Volume

70%

Warrant Evaluated? No

Warrant Satisfied? N/A

Manually Set To:

Criterion A: Four Hour

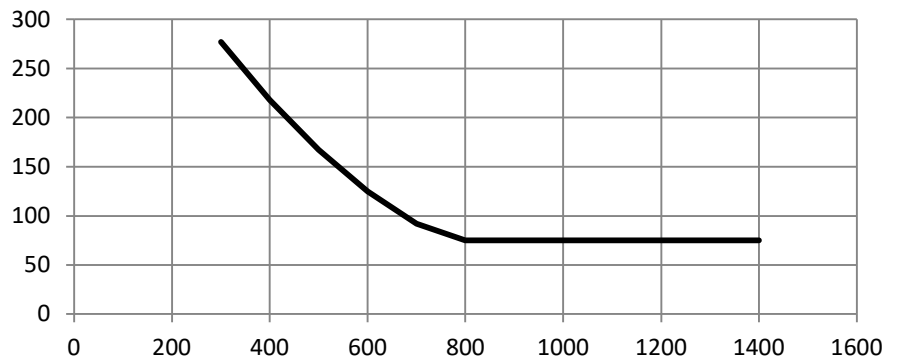
Hour (Start)	Pedestrian Volume	Major Road Vol.
		0
		0
		0
		0

Manually Set Major Rd Vol?

Avg. walk speed less than 3.5 ft/s?

Criterion A Satisfied?

Figure 4C-6 Warrant 4, Pedestrian Four-Hour Volume (70% Factor)

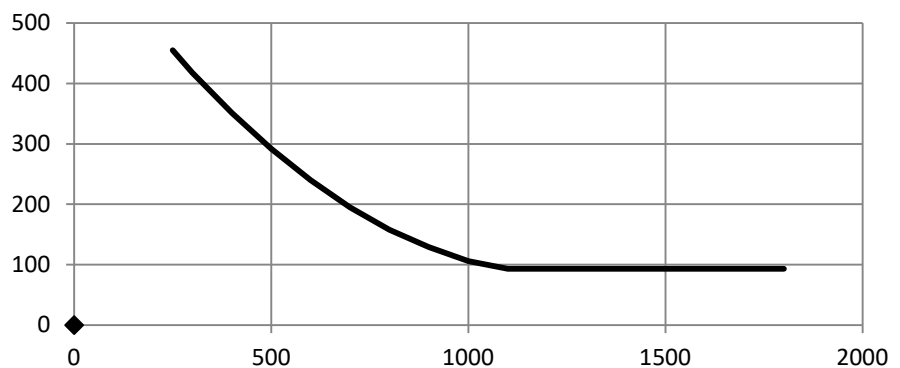


Criterion B: Peak Hour

Peak Hour	Pedestrian Vol.	Major Road Vol.
0:00	0	0

Criterion B Satisfied?

Figure 4C-8 Warrant 4, Pedestrian Peak Hour (70% Factor)



Warrant 5: School Crossing

70%

Warrant Evaluated? No

Warrant Satisfied? N/A

Manually Set To:

Criteria				Fulfilled?
1	There are a MINIMUM of 20 school children during the highest crossing hour.			
2	There are fewer adequate gaps in the major road traffic stream during the period when the school children are using the crossing than the number of minutes in the same period.			
3	The nearest traffic signal along the major road is located more than 300 ft away. Or, the nearest traffic signal is within 300 ft but the proposed traffic signal will not restrict the progressive movement of traffic.			

Warrant 6: Coordinated Signal System

70%

Warrant Evaluated? No

Warrant Satisfied? N/A

Manually Set To:

Criteria				Fulfilled?
1	Signal spacing > 1000 ft			
2	On a one-way road or a road that has traffic predominantly in one direction, the adjacent signals are so far apart that they do not provide the necessary degree of vehicle platooning.			
3	On a two-way road, adjacent signals do not provide the necessary degree of platooning and the proposed and the adjacent signals will collectively provide a progressive operation.			

Warrant 7: Crash Experience

70%

Warrant Evaluated? No

Warrant Satisfied? N/A

Manually Set To:

Criteria				Met?	Fulfilled?
1	Adequate trial of other remedial measures has failed to reduce crash frequency.				
	Measures Tried:				
2	Five or more reported crashes, of types susceptible to correction by signal, have occurred within a 12 month period.		# of crashes per 12 months		
3	Warrant 1, Condition A (80%)		No	No	
	Warrant 1, Condition B (80%)		No		
	Warrant 4, Criterion A (80%)		No		
	Warrant 4, Criterion B (80%)		No		

Warrant 8: Roadway Network

70%

Warrant Evaluated? No

Warrant Satisfied? N/A

Manually Set To:

Criteria				Met?	Fulfilled?
1	Total entering volume of at least 1,000 veh/h during typical weekday peak hour		1045	Yes	No
	Five-year projected volumes that satisfy one or more of Warrants 1, 2, or 3.			No	
2	Total entering vol. of at least 1,000 veh/h for each of any 5 hrs of non-normal business day (Sat. or Sun.)				
	Hour				
	Volume				

Characteristics of Major Routes - Select yes if all intersecting routes have characteristic				Fulfilled?
1	Part of the road or highway system that serves as the principal roadway network for through traffic flow			
2	Rural or suburban highway outside of, entering, or traversing a city			
3	Appears as a major route on an official plan			

Warrant 9: Intersection Near a Grade Crossing

70%

Warrant Evaluated?

Warrant Satisfied? N/A

Manually Set To:

Adjustment Factors			Manually Set Peak Hour?				
Rail Traffic per Day	% High Occupancy Buses on Minor Road	% Tractor-Trailer Trucks on Minor Road	D	Peak Hour	Major Road Vol.	Minor Road Vol.	Adjusted Minor Vol.
1	0	0% to 2.5%	660	17:00	890	155	51.925

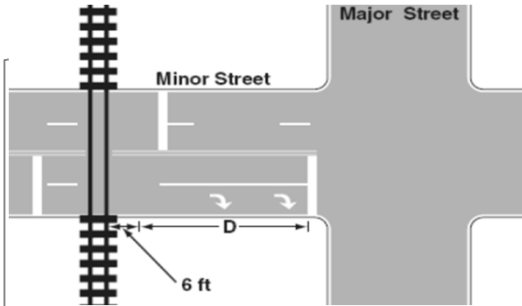
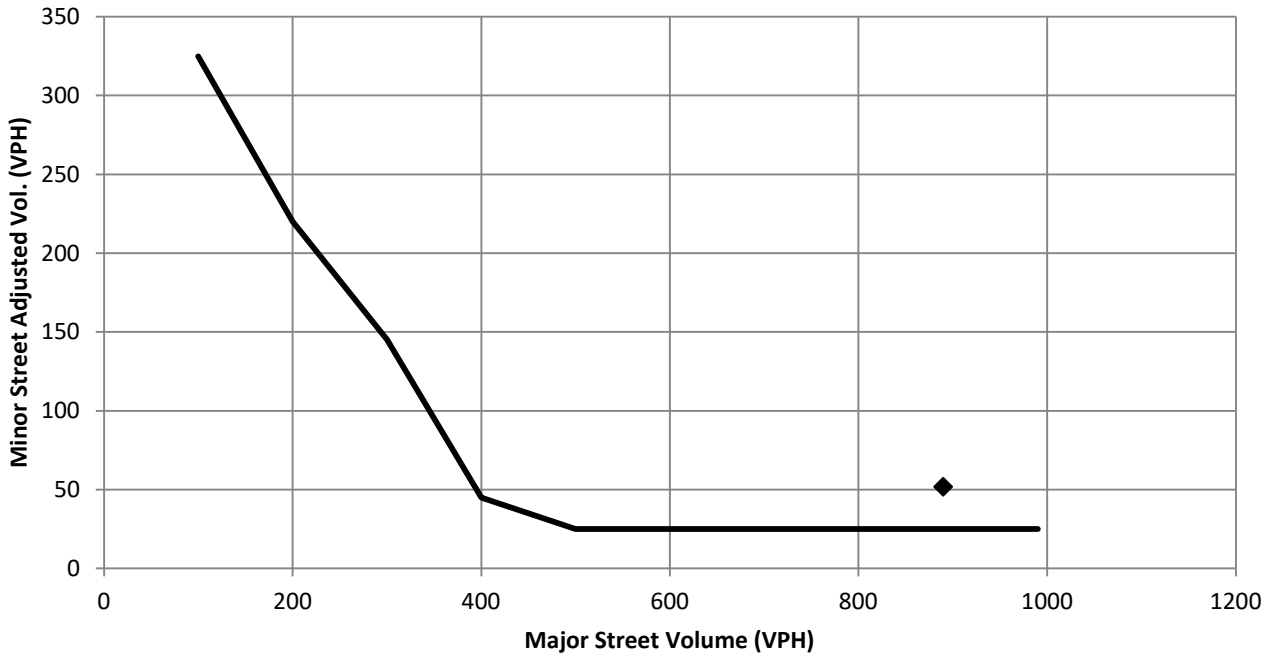


Figure 4C-10 Warrant 9, Intersection Near a grade Crossing
(Two or More Approach Lanes at the Track Crossing)



Conclusions/Comments:

Using Year 2040 projected volumes (0.5% growth/year) and rerouting traffic from Grand Avenue through Clough.

Updated: 2/18/2016

Hourly Volume Data																						
One Hour Time Period Start Time		↓ From North (SB)					← From East (WB)					↑ From South (NB)					→ From West (EB)					Total Vehicle Volume
		Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	
AM	6:00	25	15	40		80	25	155	10		190	10	15	15		40	30	245	35		310	620
	7:00	70	15	85		170	90	235	15		340	25	20	25		70	35	350	75		460	1040
	8:00	30	15	30		75	35	230	10		275	15	20	25		60	50	240	25		315	725
	9:00					0					0					0					0	0
MD	10:00					0					0					0					0	0
	11:00					0					0					0					0	0
	12:00					0					0					0					0	0
	13:00					0					0					0					0	0
PM	14:00					0					0					0					0	0
	15:00	65	30	55		150	70	265	40		375	40	40	50		130	135	245	40		420	1075
	16:00	55	35	60		150	85	315	35		435	20	45	50		115	105	280	55		440	1140
	17:00	70	30	55		155	85	300	55		440	30	40	55		125	130	265	55		450	1170
	18:00					0					0					0					0	0
	19:00					0					0					0					0	0
	20:00					0					0					0					0	0
	21:00					0					0					0					0	0
Totals		315	140	325	0	780	390	1500	165	0	2055	140	180	220	0	540	485	1625	285	0	2395	5770

Note: Copy volume data and paste into cells using paste special -> values

Note: U-Turns are counted as Left Turns in the Volume Totals

Please Select the Major Road:

E/W

Major Road Left Turn as Minor Approach?

No

% Right Turns Included (Default 0%)

From North (SB)	100%
From East (WB)	100%
From South (NB)	100%
From West (EB)	100%

Major Road Volume Totals: East/West				
Right	Thru	Left	T+LT	Total
55	400	45	445	500
125	585	90	675	800
85	470	35	505	590
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
875	3125	450	3575	4450

Minor Road Highest Volume: North/South				
Right	Thru	Left	T+LT	Total
25	15	40	55	80
70	15	85	100	170
30	15	30	45	75
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
315	140	325	465	780

Public Works Report

February 22, 2022

Treatment Plant - Designed Capacity – 1.67 million gallons per day
 Peak Flow Capacity – 6.0 million gallons per day

Year 2020

January	Avg. Flow 1.280 MGD	Min. Flow 1.055 MGD	Max. 1.720 MGD
February	Avg. Flow 1.221 MGD	Min. Flow 1.000 MGD	Max. 1.630 MGD
March	Avg. Flow 1.581 MGD	Min. Flow 1.010 MGD	Max. 2.290 MGD
April	Avg. Flow 1.283 MGD	Min. Flow 940,000 g.p.d.	Max. 2.210 MGD
May	Avg. Flow 1.607 MGD	Min. Flow 1.010 MGD	Max. 4.090 MGD
June	Avg. Flow 1.178 MGD	Min. Flow 980,000 g.p.d.	Max. 1.510 MGD
July	Avg. Flow 1.269 MGD	Min. Flow 800,000 g.p.d.	Max. 2.370 MGD
August	Avg. Flow 1.042 MGD	Min. Flow 760,000 g.p.d.	Max. 1.510 MGD
September	Avg. Flow 1.148 MGD	Min. Flow 810,000 g.p.d.	Max. 1.850 MGD
October	Avg. Flow 1.172 MGD	Min. Flow 870,000 g.p.d.	Max. 2.210 MGD
November	Avg. Flow 1.122 MGD	Min. Flow 860,000 g.p.d.	Max. 1.770 MGD
December	Avg. Flow 1.164 MGD	Min. Flow 940,000 g.p.d.	Max. 1.480 MGD

Year 2021

January	Avg. Flow 1.075 MGD	Min. Flow 880,000 g.p.d.	Max. 1.460 MGD
February	Avg. Flow 1.015 MGD	Min. Flow 830,000 g.p.d.	Max. 1.590 MGD
March	Avg. Flow 1.525 MGD	Min. Flow 1.160 MGD	Max. 1.970 MGD
April	Avg. Flow 1.264 MGD	Min. Flow 1.020 MGD	Max. 1.950 MGD
May	Avg. Flow 1.108 MGD	Min. Flow 880,000 g.p.d.	Max. 1.450 MGD
June	Avg. Flow 1.091 MGD	Min. Flow 810,000 g.p.d.	Max. 1.670 MGD
July	Avg. Flow 983,226 g.p.d.	Min. Flow 780,000 g.p.d.	Max. 1.410 MGD
August	Avg. Flow 1.281 MGD	Min. Flow 800,000 g.p.d.	Max. 2.530 MGD
September	Avg. Flow 932,333 g.p.d.	Min. Flow 710,000 g.p.d.	Max. 1.170 MGD
October	Avg. Flow 930,000 g.p.d.	Min. Flow 770,000 g.p.d.	Max. 1.140 MGD
November	Avg. Flow 853,667 g.p.d.	Min. Flow 720,000 g.p.d.	Max. 970,000 g.p.d.
December	Avg. Flow 952,581 g.p.d.	Min. Flow 720,000 g.p.d.	Max. 1.330 MGD

Year 2022

January	Avg. Flow 839,968 g.p.d.	Min. Flow 720,000 g.p.d.	Max. 960,000 g.p.d.
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Years Summary of Water Consumption

2006 Total Pumpage 207,719,000 gallons	2007 Total Pumpage 217,224,000 gallons
2008 Total Pumpage 229,613,000 gallons	2009 Total Pumpage 231,160,000 gallons
2010 Total Pumpage 239,326,000 gallons	2011 Total Pumpage 240,268,000 gallons
2012 Total Pumpage 253,492,000 gallons	2013 Total Pumpage 228,371,000 gallons
2014 Total Pumpage 230,973,000 gallons	2015 Total Pumpage 222,621,000 gallons
2016 Total Pumpage 254,531,000 gallons	2017 Total Pumpage 251,387,000 gallons
2018 Total Pumpage 241,322,000 gallons	2019 Total Pumpage 253,427,000 gallons
2020 Total Pumpage 259,413,000 gallons	2021 Total Pumpage 242,216,000 gallons

Year 2020

Jan.	Avg.	662,650 g.p.d.	Highest Day 769,000 gals.	Total	20,542,000 gallons
Feb	Avg.	682,280 g.p.d.	Highest Day 886,000 gals.	Total	19,786,000 gallons
March	Avg.	702,030 g.p.d.	Highest Day 837,000 gals.	Total	21,763,000 gallons
April	Avg.	731,070 g.p.d.	Highest Day 1.153 MGD	Total	21,932,000 gallons
May	Avg.	691,030 g.p.d.	Highest Day 915,000 gals.	Total	21,422,000 gallons
June	Avg.	806,030 g.p.d.	Highest Day 1.057 MGD	Total	24,181,000 gallons
July	Avg.	841,970 g.p.d.	Highest Day 1.431 MGD	Total	26,101,000 gallons
August	Avg.	878,710 g.p.d.	Highest Day 1.437 MGD	Total	27,240,000 gallons
Sept	Avg.	696,370 g.p.d.	Highest Day 1.058 MGD	Total	20,891,000 gallons
October	Avg.	677,160 g.p.d.	Highest Day 963,000 gals.	Total	20,992,000 gallons
Nov	Avg.	567,100 g.p.d.	Highest Day 850,000 gals.	Total	17,013,000 gallons
Dec	Avg.	566,130 g.p.d.	Highest Day 815,000 gals.	Total	17,550,000 gallons

Year 2021

Jan.	Avg.	565,650 g.p.d.	Highest Day 789,000 gals.	Total	17,535,000 gallons
Feb	Avg.	517,650 g.p.d.	Highest Day 913,000 gals.	Total	16,047,000 gallons
March	Avg.	583,770 g.p.d.	Highest Day 1.303 MGD	Total	18,097,000 gallons
April	Avg.	642,770 g.p.d.	Highest Day 1.190 MGD	Total	19,283,000 gallons
May	Avg.	659,610 g.p.d.	Highest Day 1.103 MGD	Total	20,448,000 gallons
June	Avg.	825,730 g.p.d.	Highest Day 1.311 MGD	Total	24,772,000 gallons
July	Avg.	750,190 g.p.d.	Highest Day 1.529 MGD	Total	23,256,000 gallons
August	Avg.	768,940 g.p.d.	Highest Day 1.920 MGD	Total	23,837,000 gallons
Sept	Avg.	633,060 g.p.d.	Highest Day 1.775 MGD	Total	19,625,000 gallons
Oct	Avg.	753,030 g.p.d.	Highest Day 1.992 MGD	Total	23,344,000 gallons
Nov	Avg.	619,870 g.p.d.	Highest Day 1.059 MGD	Total	18,596,000 gallons
Dec	Avg.	560,520 g.p.d.	Highest Day 1.167 MGD	Total	17,376,000 gallons

Year 2022

Jan.	Avg.	553,580,650 g.p.d.	Highest Day 707,000 gals.	Total	17,161,000 gallons
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Pump Capacity Well #1- 400 g.p.m. Well #3 -900 g.p.m. Well #4 - 1200 g.p.m. Well #5 – 1,100 g.p.m. Well #6 – 800 g.p.m.

WWTP – Holding & Septage Receiving

2005	\$ 87,562.01	2006	\$101,115.11	2007	\$152,201.07	2008	\$210,441.47
2009	\$183,815.34	2010	\$197,653.66	2011	\$220,576.28	2012	\$236,224.70
2013	\$235,336.46	2014	\$203,938.32	2015	\$210,644.47	2016	\$220,473.17
2017	\$232,358.23	2018	\$245,767.74	2019	\$219,822.80	2020	\$204,656.11
2021	\$209,083.10						

2020	Holdings (gals)	Grease (gals)	G Decant (gals)	Septage (gals)	S Decant (gals)	Total Billings
January	1,426,900				71,000	\$11,872.50
February	1,310,500			2,250	88,500	\$12,786.50
March	1,471,600	900		5,000	173,650	\$16,429.05
April	1,263,950			29,000	326,170	\$19,570.85
May	1,168,670			4,450	308,250	\$17,255.86
June	1,253,900			9,900	196,550	\$15,390.45
July	1,459,700			16,450	212,650	\$17,734.10
August	1,148,750			4,250	168,530	\$13,594.50
September	1,276,950			22,700	299,450	\$18,723.35
October	1,372,200	2,200		39,750	456,000	\$24,386.35
November	1,231,850			33,650	301,700	\$18,911.55
December	1,489,450			16,950	160,200	\$16,683.35

2021	Holdings (gals)	Grease (gals)	G Decant (gals)	Septage (gals)	S Decant (gals)	Total Billings
January	1,284,600			6,650	77,250	\$12,507.30
February	1,386,475			3,000	44,450	\$12,338.05
March	1,633,050			27,600	206,050	\$19,457.65
April	1,425,850			38,000	268,500	\$19,829.30
May	1,297,900			34,550	232,100	\$17,740.45
June	1,392,350			52,800	258,500	\$19,977.30
July	1,338,500			31,600	245,050	\$18,256.25
August	1,499,450			31,200	196,250	\$18,305.85
September	1,389,200			23,900	213,400	\$17,524.10
October	1,275,550			16,250	297,260	\$18,367.15
November	1,249,400			22,400	224,200	\$16,608.20
December	1,448,000			32,000	205,900	\$18,171.50

2022	Holdings (gals)	Grease (gals)	G Decant (gals)	Septage (gals)	S Decant (gals)	Total Billings
January	1,311,750	2,700			40,650	\$11,780.25

CTH P and STH 60 Intersection Project and old Park-n-Lot Property

WisDOT was using the area for a job trailer location during the STH 45 resurfacing project this year. Due to limited power on the site, the contractor has moved the job trailers to the new park-n-ride lot on Apple Lane. Once the resurfacing project is completed, the Village will restart the process of purchasing the property again. This is a place holder for the item. We will look to contact WisDOT for a meeting this Spring or 2022.

Morning Meadows Subdivision

Streetlights are being planned by the Village for installation. Phase 3 plans are being finalized for a Spring of 2022 start on the last phase.

Little Lambs Subdivision (Glen Brooke Drive)

Plans are being finalized for DNR submittal.

Jackson Municipal Complex

March 9th is the next meeting with the contractor and designer to address the punch list items.

Willow Ridge Drive Reconstruction Project

The project has now been completed with the remaining item being new streetlights.

Spruce Street/Ridgeway Drive Extension Project

We are working a streetlight layout for the two streets. No change.

Coffee Connection Trail Project

Signage, painting of crosswalks, and landscaping are the remaining items to be accomplished in 2022.

Eagle Drive & STH 60 Intersection Improvement

SRF Consulting Group, Inc has updated the ICE (Intersection Control Evaluation) Study for the intersection of Eagle Drive and STH 60 per the WisDOT first review. The deadline of resubmittal (Friday, February 11, 2022) to WisDOT was met by the Village. Waiting on the second review for WisDOT to provide the next steps of what happens to the intersection.

Midwest Fiber Installation

Cable Comm and Midwest is continuing to work of the Village loop to connect all Village owned buildings with fiber. The first projection of completion was November 2021. Now the schedule has moved to February. Now maybe March?

Stormwater Ponds Management Inspection Program

The Village has started the program by having a kickoff meeting with CDM Smith consulting. Letters will be sent to pond owners in the Spring of 2022 with a completion date sometime if the Fall of 2022.

Main Street (STH 60) Sewer and Water Replacement

The Jackson Sewer and Water Utilities are working on collecting data for the utility replacement in Main Street (STH 60) for this year of 2022 ahead of the resurfacing project by WisDOT in 2024. The Jackson Sewer and Water Utilities is working with Gremmer and Associates on the design.

CTH P (Sherman Road to STH 60) Utility Project

Gremmer & Associates is the engineering firm hired by Washington County for the design of the 2024 CTH P Reconstruction Project. If utility is going to be installed in the right of way of CTH P, the Jackson Water and Sewer Utilities will need to decide now where the utilities are installed. The design will be created this year with construction to be done in 2023.

Respectfully submitted, Brian W. Kober, P.E.