



**Department of Public Works
Engineering Division**

W240N3065 Pewaukee Road • Pewaukee, WI 53072

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**PUBLIC WORKS COMMITTEE
MEETING NOTICE AND AGENDA**

Thursday, November 11, 2021

4:00 PM

City Hall Common Council Chambers
W240N3065 Pewaukee Road, Pewaukee, WI

VIDEO

-
1. Call to Order and Pledge of Allegiance
 2. Public Comment - Please limit your comments to 2 minutes, if further time for discussion is needed please contact your local Alderperson prior to the meeting.
 3. Discussion and Action Regarding the Minutes of September 23, 2021
 - 3.1. Discussion and Action Regarding the Minutes of September 23, 2021
 4. Communications
 - 4.1. Discussion and possible action to cancel the regularly scheduled November and December Committee meetings.
 5. Old Buisness
 6. Status Reports
 7. Storm Water Management Division
 - 7.1. Discussion and possible action regarding the request to clean out and re-establish drainage in Springdale Estates within a drainage easement.
 - 7.2. Discussion and possible action regarding the Kathryn Court/Springdale Estates Flood Mitigation project.
 8. Water and Sewer Division
 - 8.1. Discussion and possible action regarding the Well 5 Alternative Study.
 9. Engineering Division
 - 9.1. Discussion and possible action regarding the 2022 Budget for Engineering, Water Utility, Sewer Utility, Storm Water Utility, Bike Trails and Highway.
 - 9.2. Discussion and possible action regarding the intersection of Green Road and Duplainville Road.
 10. Highway Division

- 10.1. Discussion and possible action regarding the request to install a 3-Way Stop at the intersection of Oak Street and Peninsula Drive.
- 10.2. Discussion and possible action regarding the request to create a no parking zone along one side of Rocky Point Road.
- 10.3. Discussion and possible action regarding changing the hours of operations for the Recycling Center.
- 10.4. Discussion and possible action regarding the Milkweed Lane traffic concerns.
11. Public Comment - Please limit your comments to 2 minutes, if further time for discussion is needed please contact your local Alderperson prior to the meeting.
12. Adjournment

Magdelene Wagner
Director of Public Works

November 11, 2021

NOTICE

It is possible that members of other governmental bodies of the municipality may be in attendance to gather information that may form a quorum. At the above stated meeting, no action will be taken by any governmental body other than the governmental body specifically referred to above in this notice.

Any person who has a qualifying disability under the Americans with Disabilities Act that requires the meeting or materials at the meeting to be in an accessible format must contact the DPW Main Office, at (262) 691-0804 by 12:00 p.m. the Tuesday prior to the meeting so that arrangements may be made to accommodate your request.

**CITY OF PEWAUKEE
PUBLIC WORKS COMMITTEE AGENDA ITEM 3.1.**

DATE: November 11, 2021

DEPARTMENT: PW - Water/Sewer

PROVIDED BY:

SUBJECT:

Discussion and Action Regarding the Minutes of September 23, 2021

BACKGROUND:

FINANCIAL IMPACT:

RECOMMENDED MOTION:

ATTACHMENTS:

Description

9-23-2021 Meeting Minutes

In Attendance:

Mayor S. Bierce, Alderman J. Wamser, Committee Members: M. Kreiter, D. Swan, J. Tormey

Also in Attendance:

DPW Director M. Wagner, Chief Engineer-Utilities R. Wirtz, Utility Billing Specialist R. Reed, Administrative Assistant S. Smaxwill

1. Call to Order and Pledge of Allegiance

Mayor Bierce called the meeting to order at 4:00 p.m. and requested everyone stand for the Pledge of Allegiance.

2. Public Comment - None

3. Discussion and Action Regarding the Minutes of August 26, 2021

3.1. Discussion and Action Regarding the Minutes of August 26, 2021

A motion was made and seconded, (D. Swan, J. Tormey) to approve the August 26, 2021 meeting minutes.

Motion Passed: 5-For, 0-Against.

4. Communications - None

5. Old Business

5.1. Discussion regarding the Glacier Road Light Request.

Ms. Wagner provided a follow-up to Mr. Swan's request at the June 24th meeting for accident report information where the streetlight was requested. She reported 15 crashes between Hickory and Roger Road since 2010, and 18 crashes within that corridor. She also provided the report information in the committee packets.

Mayor Bierce stated that is 1.5 crashes per year, but was unable to judge if that is a lot or not. Ms. Wagner said it's more than average, but not by much.

Mr. Tormey asked if the crashes were contributed to a lack of lighting, or if it is because of the time of day. Ms. Wagner stated that most appeared to be at night.

Ms. Wagner said the new chevrons were put up. Mr. Wamser asked if there were any extra chevrons for Tacoma Hills before the ground freezes. Ms. Wagner said no, and it would be a safety hazard because of the slope of the road.

Mayor Bierce feels the light was not warranted, and the committee agreed.

Mr. Tormey asked if there were in any changes in the crash rate since the chevrons were installed. Ms. Wagner said it's only been a month so it's probably too soon to know, but time will tell. Ms. Wagner doesn't recommend doing anything else at this time.

6. Status Reports - None

7. Storm Water Management Division

7.1. Discussion and possible action regarding the 2021 Wisconsin Department of Natural Resources MS4 Permit Audit.

Ms. Wagner reported that earlier this month the Department of Natural Resources (DNR) performed a periodic audit on our NR216 Permit. The DNR said there are a few changes and recommendations that will be provided to us in an audit letter. She reported they are mostly recommendations regarding documenting our program and procedures, with a few requirements and items to follow-up on, but they said overall we are doing a good job on the pieces of the audit performed. Ms. Wagner said this is promising and that our staff is doing what they are expecting us to do. There will be additional changes with the new permit, but until we get it our existing permit will remain in effect even though it has expired.

Mr. Wirtz stated the new permit should come out within the next two years. Once we get the new permit there will be more items and programs we will need to add to meet the compliance with the TMDLs; and then it will be another five years before the next audit.

Mayor Bierce asked if the DNR finds something where we are lacking will we get time to fix it? Mr. Wirtz said yes. Ms. Wagner stated that we will have 30 days to respond to the audit letter and provide a compliance schedule which they will solidify on their end. Mayor Bierce asked if we know of anything where we are out of compliance based on the preliminary audit. Ms. Wagner said there are a few things she is aware of that we are working towards but have not yet finished. She stated that nothing she learned surprised us.

8. Water and Sewer Division

8.1. Discussion and possible action regarding the payment of the reserve capacity assessments and interceptor capacity assessments.

Ms. Wagner stated this item came to us by way of Mr. Swan who recently connected to our municipal water system.

Ms. Wagner reported on the annual RCA/ICA rates for 2021: Water RCA is \$5,015.00, due upon connection to the system; Sewer RCA is \$3,140.00, due upon connection to the system. In addition, on the sewer side there may be a sewer ICA fee which ranges from \$307 to \$6,200 based on location, also due at time of connection. (ICA is for payment of oversizing of pipes downstream to accommodate flows). These rates are adjusted annually based on the construction cost index.

Mr. Swan asked if these fees could be paid over 10 years rather than up front, to be more appealing to people to make these connections. Ms. Wagner replied that our current ordinance has a provision that allows for payments over 10 years if there is a hardship or a reason why the customer cannot pay the fees in full. This hardship request would go before this committee, and then before the council for final approval.

Ms. Wagner stated that RCA/ICA fees are used to pay our debt payments. The way the debt payments are scheduled and what we bring in are paying for those debt payments. There isn't a lot of extra, so allowing customers to opt-in without a hardship could potentially cause issues on the water/sewer utility budgets. Publicizing this option is not something we would recommend. We feel there is already a provision in place in cases of hardship to make that appeal, and customers with hardships reach out to us and are provided with that information.

Mr. Tormey stated that if someone connects, and then the council adopts the 10-year plan, and then customer sells the property after 5 years, the new owner could have a property with a lien on it. Ms. Wagner stated that we disclose all special assessments and provide balances due on the assessments on all property title searches,

and most assessments are due at time of sale. Banks can still require payment due at time of sale if there is a lien on a property even if it is not due at time of sale. She said that if we changed our RCAs, we would make it that they would all be due at time of sale. We are trying to make all our assessments the same so it is easier to manage their accounting.

Mr. Tormey stated that if there is already a provision for a hardship, he tends to agree with Ms. Wagner's assessment.

Mr. Swan asked how do people know if there is a hardship option unless they ask? Ms. Wagner discussed the process for hardship requests.

Mr. Swan asked if it is still the county's goal for individuals to hook up to water and sewer versus well and septic, and if that is the case, the city should look for ways to make it possible for everyone to hook up eventually.

A discussion took place regarding the City of Waukesha and their requirements for mandatory connection to water and sewer. Ms. Wagner stated that if there are any areas left annexed, when the roads are improved they must connect. The City of Waukesha has its own RCA/ICA connection fees that are paid as part of the connection process, and they don't offer an option to stay on septic or well; when it comes through they must connect within a year, which is what our city policy used to be until it was changed.

The committee discussed issues related to hardships. Mayor Bierce suggested that if people have concerns and express them at a meeting, they will be directed to staff after the meeting; so there is an avenue already in place.

Ms. Wagner reported that we are contracting for a facility plan study of the sewer and water utility, and part of that is a septic and well relief plan. Part of the plan will be to decide if there are areas in the community where we are not going to serve them with sewer or water or both. It was the utility's intent to serve entire the community. Ultimately, it is the body's decision on how they want the community to develop. We are going through that process and will have discussions going forward on what parts of the community will or will not be served.

Mr. Swan asked what if we changed the special assessment payment plans from 10 years to 5 years? Ms. Wagner stated we normally allow 10-year plans for road and utility assessments, but not for connection fees because of how it would adversely affect our debt payments as they are strictly paid from the RCA and ICA income. She said she would not recommend that, stating assessments are typically 10 years. She said the committee could discuss this at a future meeting, but first she would have to look at the debt payments versus what is coming in every year.

Mr. Swan asked how many people would hook up if you gave them 10 years to pay the connection fees? Ms. Wagner stated most only connect if they need to or want to.

Mr. Swan asked what is the present rule? Ms. Wagner stated that current assessments vary and provided a few examples. Many of the older assessments do not have specific end dates requiring them to connect to the system. The latest trend is to pay the assessment fees, but not the connection fees until the home connects or is sold. She said that the sewer has a 15-year mandate, and that the DNR used to mandate connection within 1 year, but when the requirement went away the council opted for a 15-year plan to allow for those who added new septic get some use out of it. Water main has never had a mandatory connection until just recently when we reopened the discussion to require payment of assessments and connection; originally it was 15 years, same as the sewer, but the council directed to change it to mandatory connection at the time of sale instead of 15 years.

Mr. Swan asked if there is a provision for selling to family? Ms. Wagner said not yet, but it is being discussed and provisions will be worked out.

9.1. Discussion and possible action regarding the 2022 Garbage and Recycling Fee Rate and the amendment of the Yard Waste Pick Up procedures.

Ms. Wagner said the council did not take action on the 2022 garbage and recycling contract because their meeting was canceled. She said the way the contract reads the garbage rate is allowed to increase by 1.682% for 2022. Johns Disposal (Johns) originally disagreed and said it was a 2.65% increase, the maximum increase allowed. Ms. Wagner expects a representative from Johns to attend the council meeting scheduled for 9/27/21 to plead their case for the 2.65% increase. Ms. Wagner's recommendation to committee is for the \$165.00 (annual) rate, versus the \$166.00. She said she could take the recommendation verbally to the council on 9/27/2021.

The committee discussed how rates dropped in 2014 when the city switched from Advanced Disposal's up-the-drive service to Johns Disposal's curbside only (except for hardship or age-related cases) and how it affected hardships.

Mayor Bierce asked if we have a lot of people applying for hardships and if they know how to request a hardship? Ms. Wagner stated the annual bill explains what qualifies for free up-the-drive hardships and said there are not a huge amount of hardships in the city.

The committee discussed the problem of leaving the carts on the driveway which is contrary to the ordinance, that all containers shall be brought back to the house within 24-hours after collection.

The committee unanimously agreed to Ms. Wagner's recommendation for the 2022 garbage rate of \$165.00 be taken to the council.

A motion was made and seconded (J. Tormey, D. Swan) for staff to recommend the rate of \$165.00 for the 2022 Garbage and Recycling Fee. Motion passed: 5-For, 0-Against.

Mr. Swan suggested the city's recycle center hours be changed or extended by one hour to keep the center open later. After discussion, Mayor Bierce directed Ms. Wagner to discuss with staff the possibility of changing the hours of the recycle center.

9.2. Discussion and possible action regarding the 5-year Road Paving Program and 10-year Bike and Pedestrian Program.

Ms. Wagner presented an updated 10-year plan to the Bike & Pedestrian Committee (BPC) on 9/22/21 and tweaked some of projects to correlate with our road construction projects. The BPC agreed that if we are doing the roads, that would be the time to do the bike paths. There are a few projects they would like us to move up if possible, such as the pedestrian crossing project (signals and landing ramps) at Hwy 164 at Ridgeview to accommodate the Hawk's Meadow subdivision. In general, the BPC was okay with the bike and pedestrian capital plan as I had laid it out. The BPC also had some discussion about looking for grants for these programs, as many have to be applied for ahead of time to secure funding. Ms. Wagner offered to look into the grant cycles and see if any of these projects might figure in with the bike and pedestrian projects moving forward.

Ms. Wagner reported on the 5-year road program for the road projects they are anticipating for the next several years. She presented it to council and put it into the 2022 budget. The council will be going through her recommendations to determine what will get funded. She asked the committee for thoughts or concerns for the capital program as laid out between the road program and the bike and pedestrian program. She stated once the Finance Committee has had a chance to review the budget, she will bring it back to this committee for more input.

Mr. Swan asked what the city uses to determine the road conditions. He discussed the possibility of hiring a company that drives the roads and gets information road conditions in a relatively short time, and reports when they should be redone. Ms. Wagner said we do have that. Our roads are required to be rated once every two

years. Our staff is trained to evaluate the condition of road segments using the PASER (Pavement Surface Evaluation Rating) system, with a 0-10 road rating. The county uses a PCI Index with a 0-100 road rating. She said the PASER ratings are factored in when looking at future road programs and our staff is always trying to beat the curve. The city has beefed up our crack filling program to make sure we are maintaining our roadways. The intent is to keep the good roads good. Many of the roads with a lower rating are on the cusp of having sewer and water extended to them. Some roads are in very old subdivisions on septic without a lot of room for replacement of septic fields or mounds. We correlate road projects with the utilities, though some of them have been extended because we need to work with the City of Waukesha. Waukesha has moved the connection point to three miles from our connection point, so we are working through some of those issues.

Mr. Wamser asked if the properties would be served with water by Waukesha? Ms. Wagner said Waukesha won't allow to extend their water because of the Great Lakes Compact. The PSC made a ruling that Waukesha cannot put the water return rate on their customers, so that cost is entirely on the sewer customers and that is why we are seeing significant increases in sewer rates both for their customers and ours.

Mr. Kreiter asked how our staff rates the road conditions. Ms. Wagner responded they use visual ratings based on guidance and training from the PASER system.

The committee discussed the bridge on Watertown Road between SR and M. Ms. Wagner said the county does not want the bridge.

10. Highway Division

10.1. Discussion and possible action regarding the DPW Facility Bid.

Ms. Wagner reported that she received 5 bids for the new DPW building and opened them in exact order as shown on the bid summary sheet, from high bid to low. On 9/13/21 the council awarded the lowest bid to Absolute Construction for everything but concrete and steel. We have had good luck with Absolute in the past with our fire station and a well house. She is going through the contracts right now, and plans are to start construction in early to mid-October with occupancy anticipated for the end of 2022. Plans are available to review.

Mr. Tormey asked if there was anything being torn down behind City Hall. Ms. Wagner said that it has yet to be determined what will happen to the existing yard once they move out. She mentioned suggestions of cold storage or possible rehabbing, but plans to get through the move first.

11. Public Comment

Ms. Wagner said she spoke with the city attorney and there is no issue with a private citizen donating American flag stickers to the city. DPW and Parks do not have an issue with applying a sticker to the approximately 60 city vehicles in the fleet. Ms. Wagner did not contact the fire department. Mr. Kreiter provided 40 stickers and offered more if needed.

12. Adjournment

A motion was made and seconded (J. Tormey, M. Kreiter) to adjourn the meeting at 4:50 p.m.

Motion passed: 5-For, 0-Against.

Respectfully Submitted,

Magdelene Wagner
Director of Public Works

**CITY OF PEWAUKEE
PUBLIC WORKS COMMITTEE AGENDA ITEM 4.1.**

DATE: November 11, 2021

DEPARTMENT: Public Works

PROVIDED BY: Magdelene Wagner

SUBJECT:

Discussion and possible action to cancel the regularly scheduled November and December Committee meetings.

BACKGROUND:

The next regularly scheduled meeting for the Public Works Committee would be on November 25th, which is Thanksgiving.

The December meeting date would be scheduled for December 23rd, which is a holiday for City Hall due to Christmas Day being on Saturday.

Since the October meeting was delayed, Staff recommends canceling the regularly scheduled meetings for November and December. The January meeting would be scheduled for January 27, 2022 at 4:00 pm.

FINANCIAL IMPACT:

RECOMMENDED MOTION:

Committee Members cancel the regularly scheduled meetings in November and December.

CITY OF PEWAUKEE
PUBLIC WORKS COMMITTEE AGENDA ITEM 7.1.

DATE: November 11, 2021

DEPARTMENT: PW - Stormwater

PROVIDED BY: Magdelene Wagner

SUBJECT:

Discussion and possible action regarding the request to clean out and re-establish drainage in Springdale Estates within a drainage easement.

BACKGROUND:

On September 23, 2021, Matt Stevens, Alderperson Brian Dziwulski and I met with several property owners near Ridgewood Lane and Oakwood Lane to discuss a drainage issue in the area. What we found is the drainage easement has become blocked and is blocking or slowing the drainage downstream which in turn is causing flooding onto the adjacent properties. The property owners would like to see this drainage issue fixed.

In researching the plats for the subdivision, we do have a 30 foot drainage easement along the rear sides of the properties. See attached maps which show easements within Springdale Estates in yellow boxes.

This issue is before this body due to the challenges in exercising the City's right to clean out these drainage areas. These drainage easements have not been cleaned or maintained by the City since their inception. Over time, substantial trees and understory have filled in this area. In addition, we have many encroachments (retaining walls, sheds, etc.) into the easement.

In order to re-establish the drainage within this easement area, we will need to clear out all of these encroachments and foliage to the full extent of our 30 foot drainage easement. As you can imagine, this task will be difficult and likely largely unpopular. As such, we want to ensure all governing bodies are prepared for this and are part of developing a strategy to move forward with this potential maintenance project.

Our proposed process would be:

1. Gather buy-in from Public Works Committee and Common Council for completing this work.
2. Obtain survey of easement areas (will notice affected property owners).
3. Preliminary determine extent of the project to address the current flooding complaint. Complete analysis of impacts to complete maintenance on the entire length of this easement.
4. Using the information obtained above, develop a plan to complete maintenance on all easements within the subdivision.
5. Hold a Public Information Meeting to discuss with residence the impacts of the project and the need to clear out easements from all encumbrances.
6. Confirm Public Works Committee and Common Council support after public information comments.
7. Include funding in 2023 budget to complete the maintenance projects.

FINANCIAL IMPACT:

RECOMMENDED MOTION:

Committee recommend staff's approach to the Common Council to complete the clean out and re-establish drainage in Springdale Estates within the drainage easements.

ATTACHMENTS:

Description

Springdale Estates Drainage Easement Map





**CITY OF PEWAUKEE
PUBLIC WORKS COMMITTEE AGENDA ITEM 7.2.**

DATE: November 11, 2021

DEPARTMENT: PW - Stormwater

PROVIDED BY: Magdelene Wagner/Richard Wirtz

SUBJECT:

Discussion and possible action regarding the Kathryn Court/Springdale Estates Flood Mitigation project.

BACKGROUND:

The City's consultant, AECOM, has proceeded with the field work and engineering design for the drainage improvements to alleviate ponding within the existing ditch system which conveys storm water runoff around the Kathryn Court Subdivision. The plans included in your packet are 50 percent complete and were provided to City staff for review and comment in early October 2021. AECOM is currently refining the design and will provide City staff with 90 percent plans in early November 2021. About that time City staff and AECOM anticipate scheduling a public information meeting with the residents of the subdivision to review the proposed drainage system improvements as well as the variety of structures, gardens and landscaping placed within the outlot and drainage easement.

The project is tentatively scheduled to be advertised in January 2022, with a bid opening in February 2022.

FINANCIAL IMPACT:

RECOMMENDED MOTION:

ATTACHMENTS:

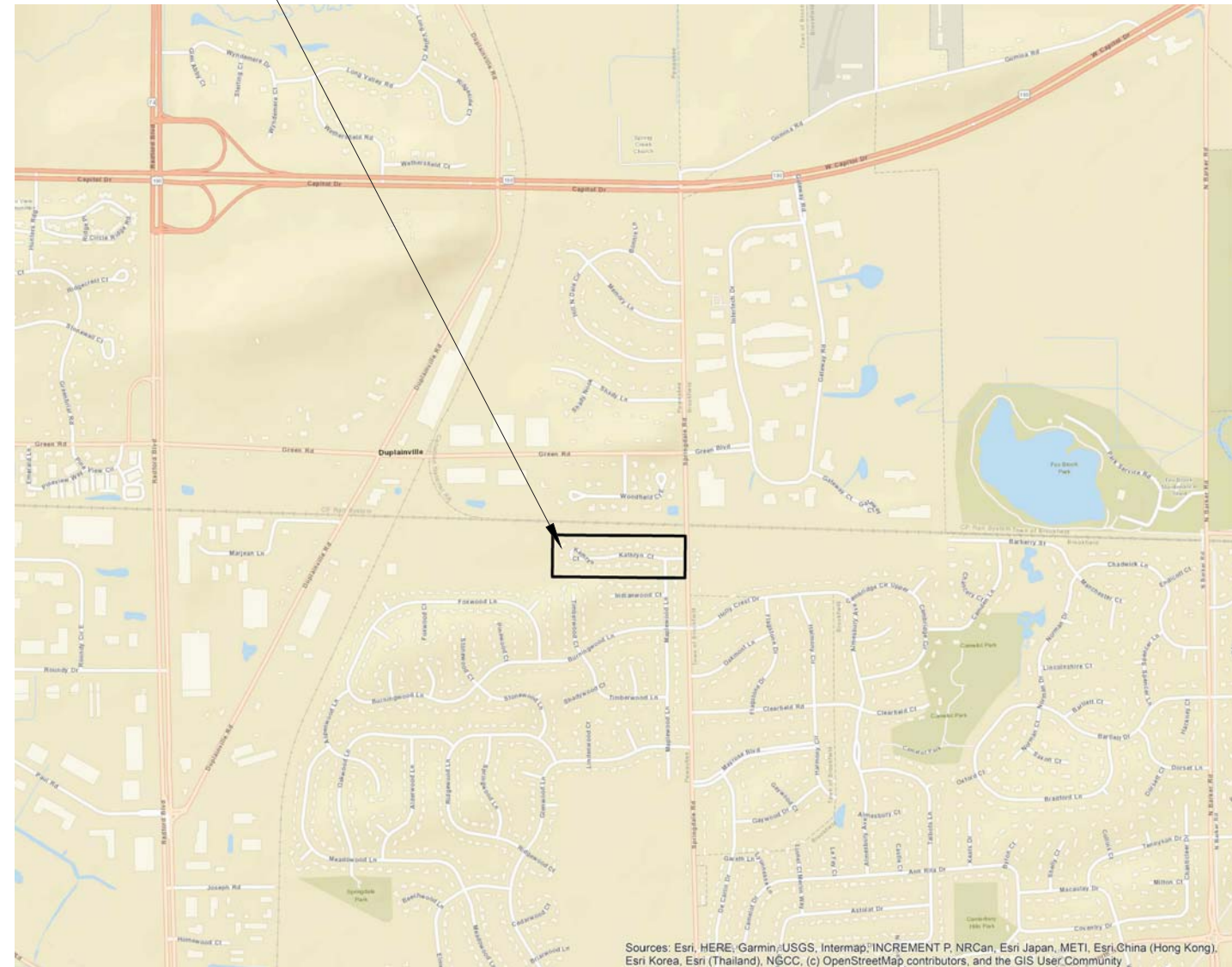
Description
Preliminary Plans

KATHRYN COURT DRAINAGE IMPROVEMENTS

50% PLANS

**CITY OF PEWAUKEE
PEWAUKEE, WI
SEPTEMBER 17, 2021**

PROJECT LOCATION-



NOTE: MAP NOT TO SCALE



INDEX OF DRAWINGS

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
1	COVER SHEET
2	LEGEND AND PROJECT INFORMATION
3	SITE PLAN OVERVIEW
4-8	PLANS AND PROFILES
9-11	EROSION CONTROL PLAN AND RESTORATION
12-14	DETAILS

AECOM

PROJECT

KATHYRN CT DRAINAGE IMPROVEMENTS

CLIENT

CITY OF PEWAUKEE

W240 N3065 PEWAUKEE ROAD
PEWAUKEE, WI 53072
TELE: 262-691-0770

CONSULTANT

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1555 NORTH RIVERCENTER DRIVE
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MILWAUKEE, WI 53212
414.944.6080 tel 414.944.6081 fax
www.aecom.com

REGISTRATION

	9/17/2021	50% DRAFT
I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER

60339891

SHEET TITLE

COVER SHEET

SHEET NUMBER

1

Filename: C:\USER\VINCE.CHRISTENSEN\ONEDRIVE - AECOM\DIRECTORY\DOCUMENTS - SWM\REVIEWS\PEWAUKEE\20.1 KATHRYN CT DRAINAGE\900_CAD_GIS\910_CAD\SHETS\KATHRYN_CT_LEGEND.DWG Last saved by: VINCE.CHRISTENSEN Last Plotted: 2021-09-20

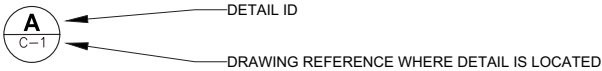
ABBREVIATIONS

B.M.	BENCH MARK
CB	CATCH BASIN
CL	CENTER LINE
C.O.	CLEAN OUT
CONC	CONCRETE
CP	CONTROL POINT
DB	DRAINAGE BASIN
EL	ELEVATION
EX	EXISTING
I.E.	INVERT ELEVATION
L.F.	LINEAL FEET
MH	MANHOLE
PVC	POLYVINYL CHLORIDE PIPE
R	RIM ELEVATION
RCP	REINFORCED CONCRETE PIPE
R/W	RIGHT OF WAY
PPOL	POWER POLE
SAN	SANITARY SEWER
SB	SOIL BORING
SS	STORM SEWER
STA	STATION
TEMP	TEMPORARY
TC	TOP OF CURB
UD	UNDERDRAIN
UG	UNDERGROUND
WDNR	WISCONSIN DEPARTMENT OF NATURAL RESOURCES
WISDOT	WISCONSIN DEPARTMENT OF TRANSPORTATION
WM	WATER MAIN

LEGEND

	SANITARY MANHOLE	-----	1' CONTOUR
	CONCRETE END SECTION	-----	5' CONTOUR
	HYDRANT	---SAN---SAN---SAN---	SANITARY SEWER LINE
	WATER VALVE	-----ST-----	STORM SEWER LINE
	POWER POLE	-----OH-----OH-----	OVERHEAD ELECTRIC LINE
	GUY WIRE	-----ELEC-----	UNDERGROUND ELECTRIC
	ELECTRIC METER/PEDESTAL	-----PHON-----	UNDERGROUND PHONE
	TELEPHONE PEDESTAL	-----	CENTERLINE ROAD
	SIGN	-----	EDGE OF GRAVEL
	BIRD HOUSE POST	-----	CENTERLINE OF DITCH
	PROPOSED STORM MANHOLE	~~~~~	TREELINE/BRUSH LINE
	FOUND IRON PIPE	-----	LANDSCAPE AREA
	FOUND REBAR	-----	CULVERT LINE
	AECOM TRAVERSE POINT	-----PL-----	DATA PRODUCED FROM SUBDIVISION PLAT
	BUSH		DRAINAGE EASEMENT
	DECIDUOUS TREE		LANDSCAPE EASEMENT AND BERM AREA
	CONIFEROUS TREE		SANITARY SEWER EASEMENT
	ROCK		CONCRETE FLUME
	EX. STORM SEWER INLET	-----7+00-----	PROPOSED SEWER CENTERLINE ALIGNMENT
	EX STORM SEWER CATCH BASIN	-----	PROPOSED SMALL DIAMETER STORM SEWER
	EXISTING RUMBLE (BROKEN CONC.)		
	REMOVE TREE		

DETAIL REFERENCE SYSTEM



PROJECT
KATHYRN CT
DRAINAGE
IMPROVEMENTS

CLIENT
CITY OF PEWAUKEE

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PEWAUKEE, WI 53072
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REGISTRATION

ISSUE/REVISION

	9/17/2021	50% DRAFT
I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER

60339891

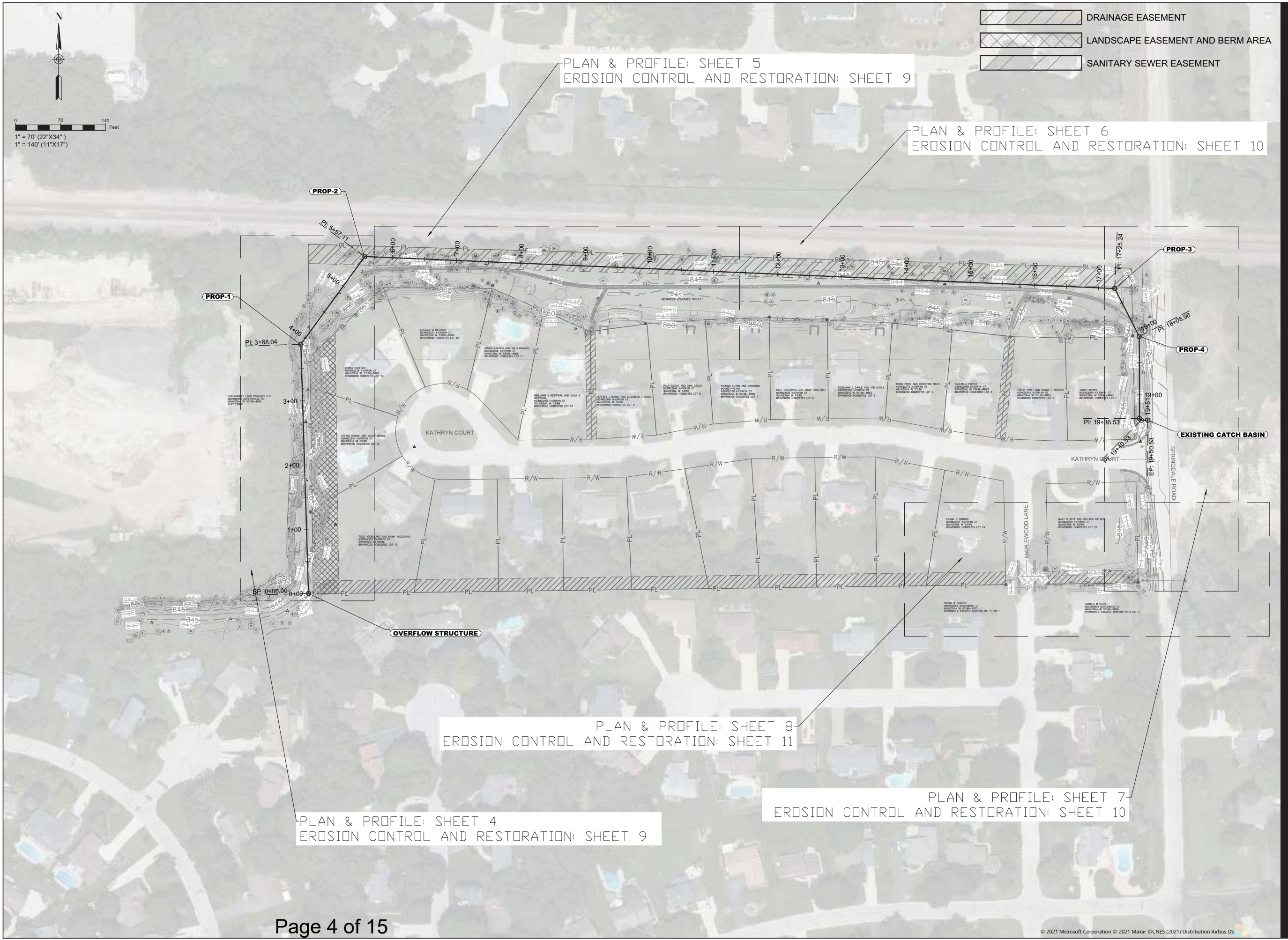
SHEET TITLE

LEGEND AND PROJECT
INFORMATION

SHEET NUMBER

2

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VINCE CHRISTENSEN
Last saved by: Vince Christensen
Last Plotted: 2021-09-20



- DRAINAGE EASEMENT
- LANDSCAPE EASEMENT AND BERM AREA
- SANITARY SEWER EASEMENT

AECOM

PROJECT

**KATHRYN CT
DRAINAGE
IMPROVEMENTS**

CLIENT

CITY OF PEWAUKEE

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PEWAUKEE, WI 53072
TELE: 262-691-0770

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REGISTRATION

ISSUE/REVISION

	9/17/2021	50% DRAFT
I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER

60339891

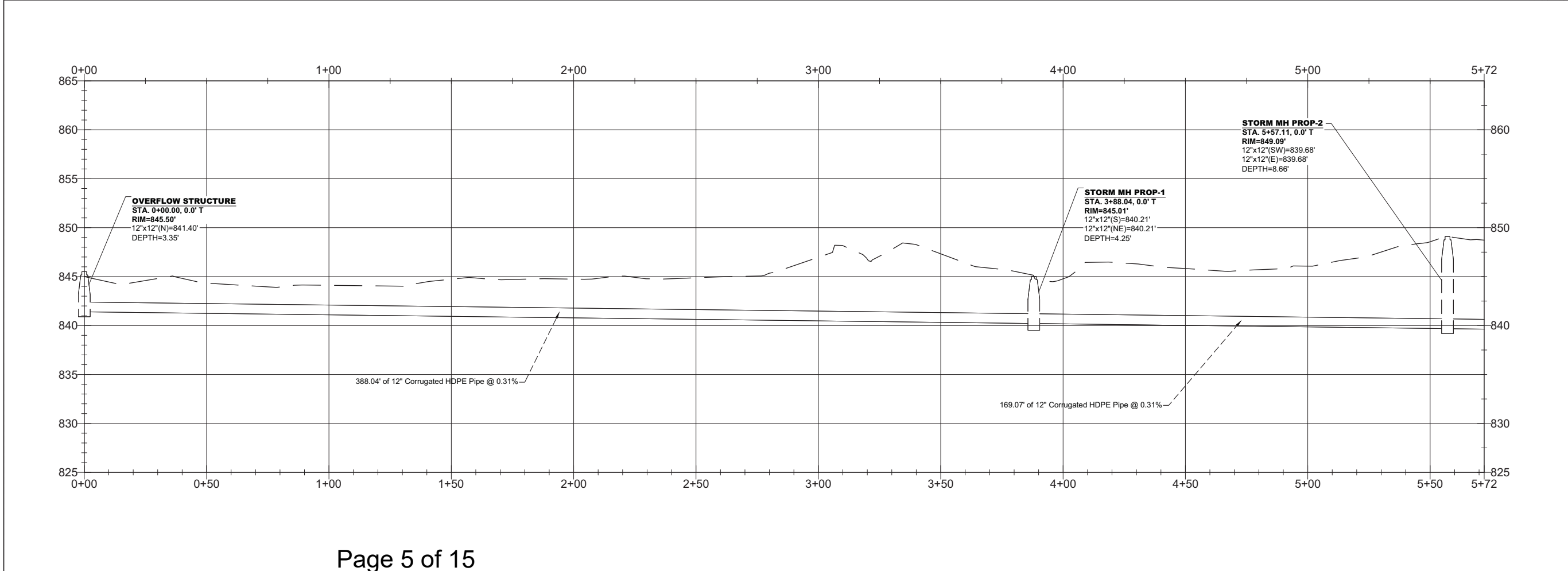
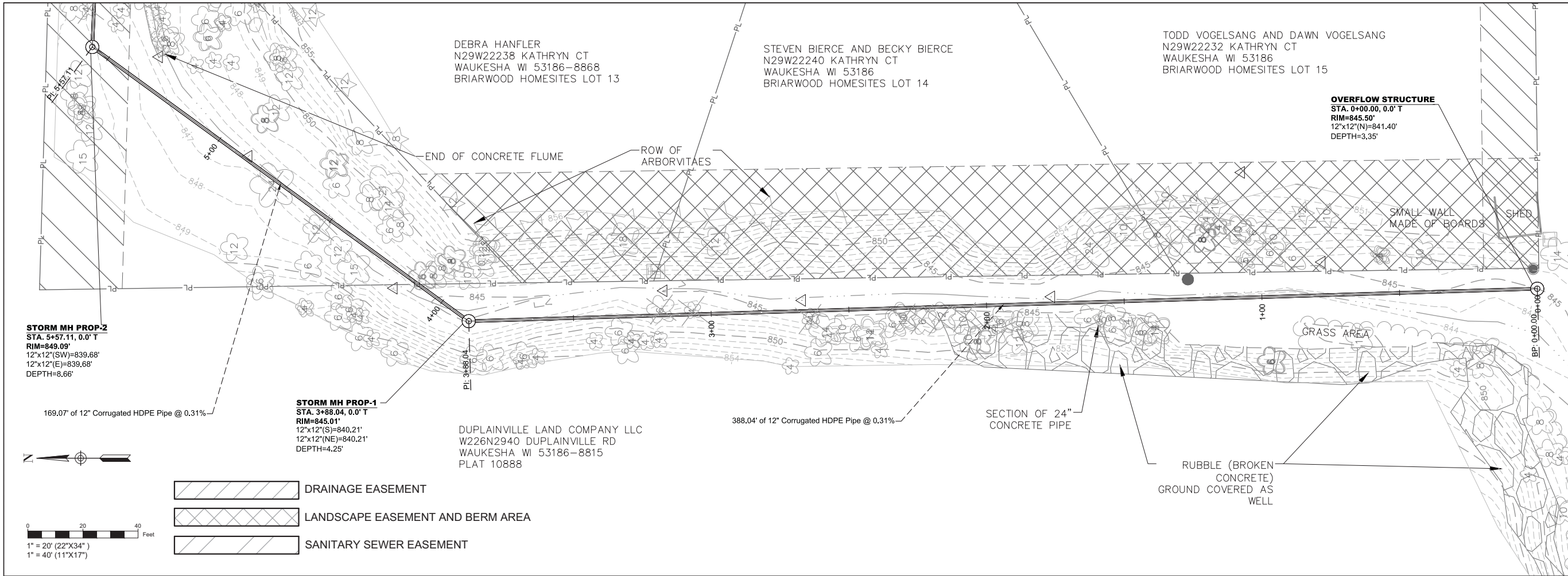
SHEET TITLE

OVERVIEW

SHEET NUMBER

3

Filename: C:\USERS\VINCE CHRISTENSEN\ONE\DRIVE - AECOM\DIRECTOR\DOCUMENTS - SWM\REVIEWS\PEWAUKEE\20.1 KATHRYN CT DRAINAGE\900_CAD_GIS\910_CAD\SHETS\KATHRYN CT_P&PS.DWG
VINCE CHRISTENSEN Last saved by: Vince Christensen 2021-09-20



PROJECT

**KATHRYN CT
DRAINAGE
IMPROVEMENTS**

CLIENT

CITY OF PEWAUKEE

W240 N3065 PEWAUKEE ROAD
PEWAUKEE, WI 53072
TELE: 262-691-0770

CONSULTANT

AECOM
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4

KATHYRN CT DRAINAGE IMPROVEMENTS

CLIENT

CITY OF PEWAUKEE

W240 N3065 PEWAUKEE ROAD
PEWAUKEE, WI 53072
TELE: 262-691-0770

CONSULTANT

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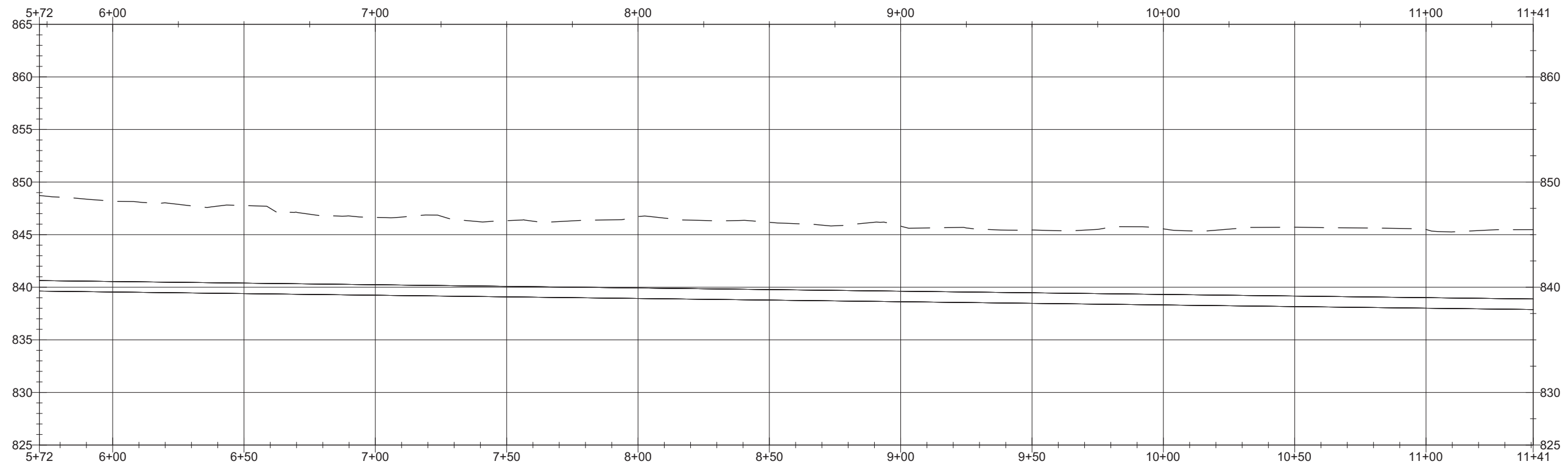
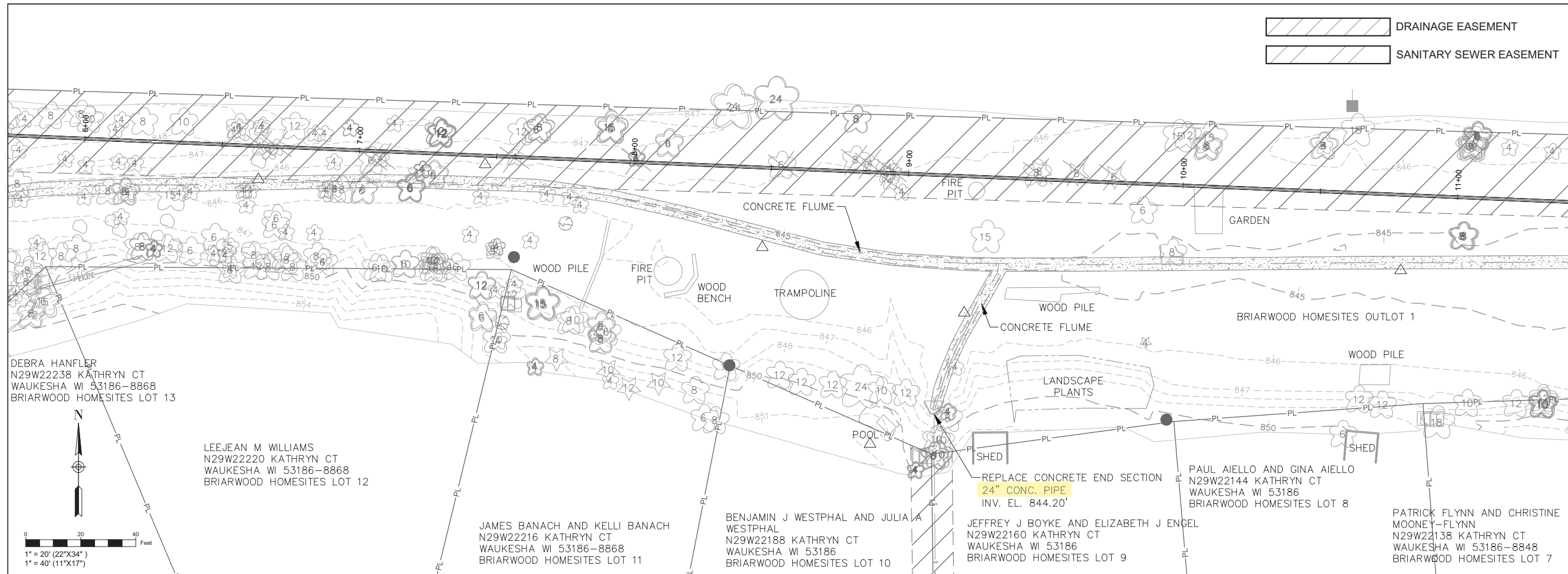
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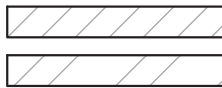
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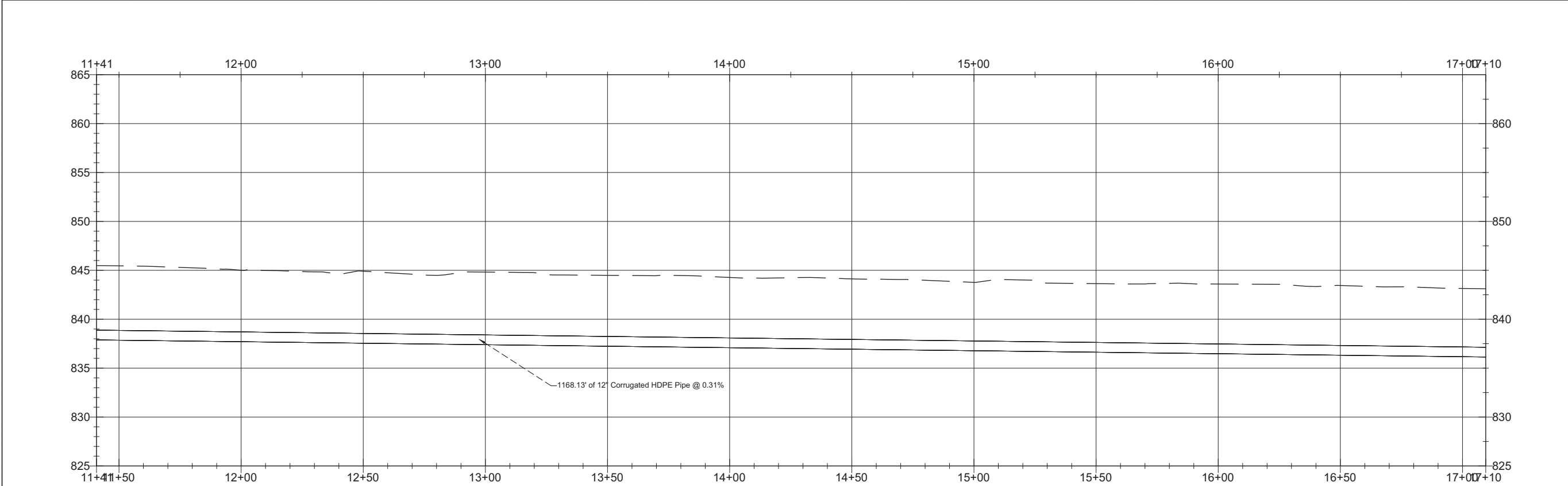
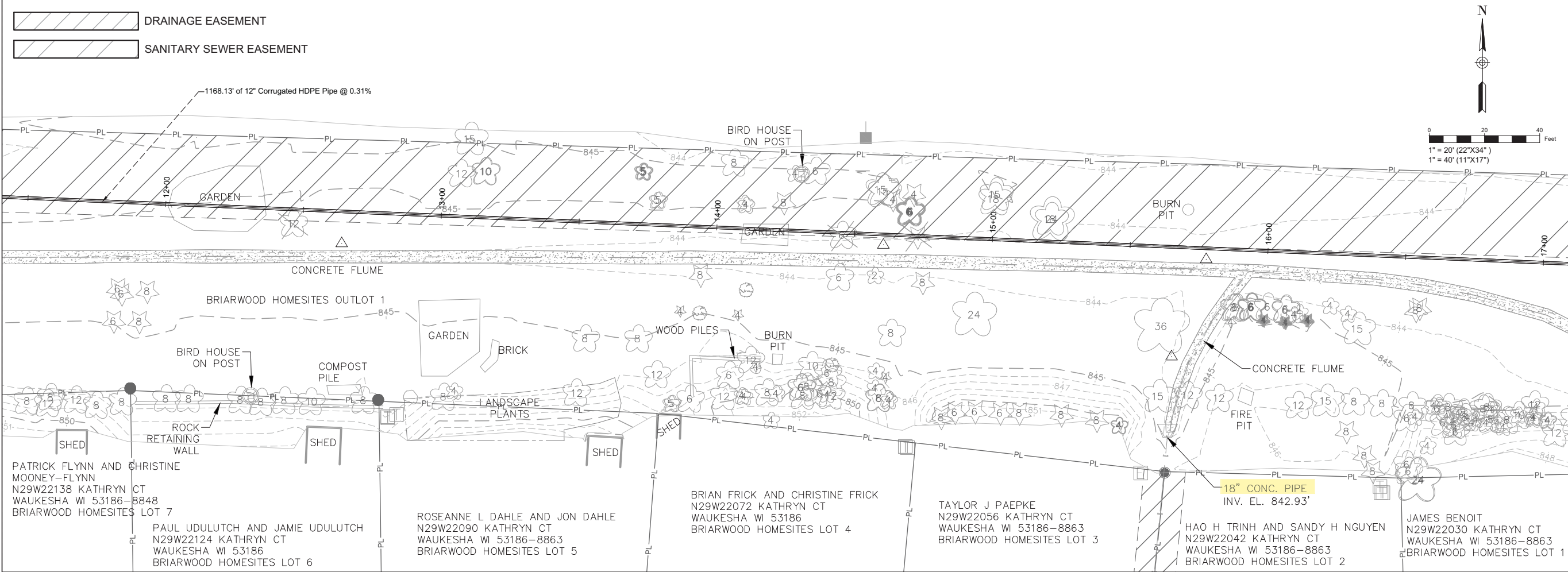
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DRAINAGE EASEMENT
SANITARY SEWER EASEMENT



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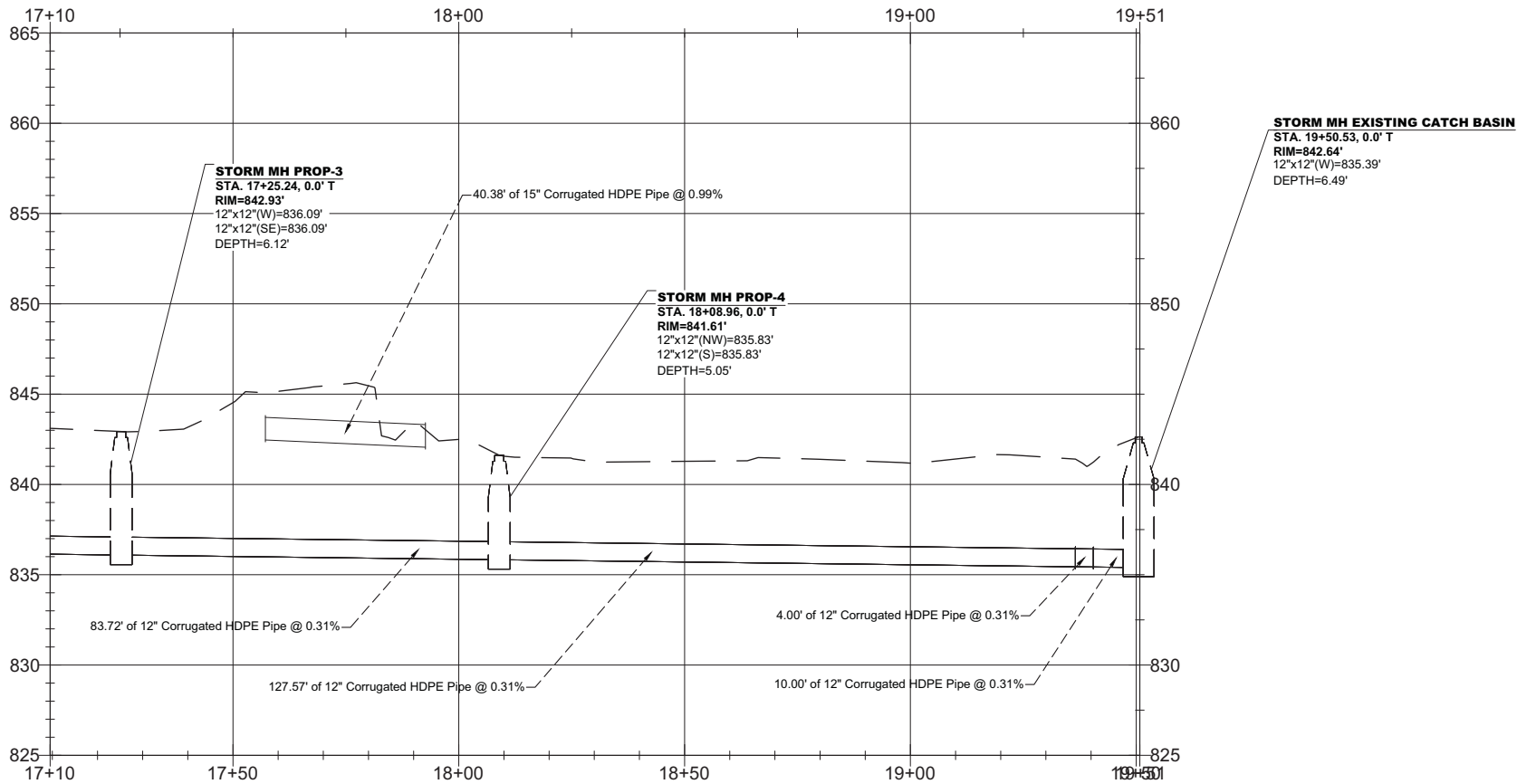
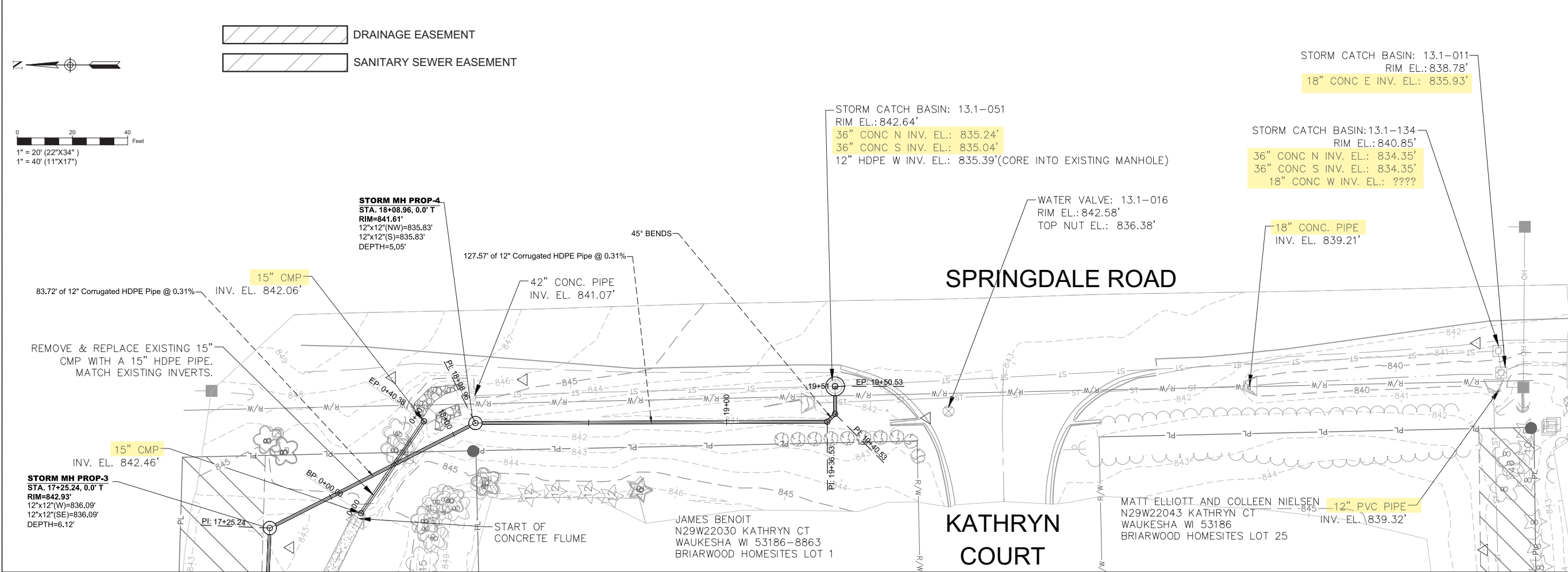
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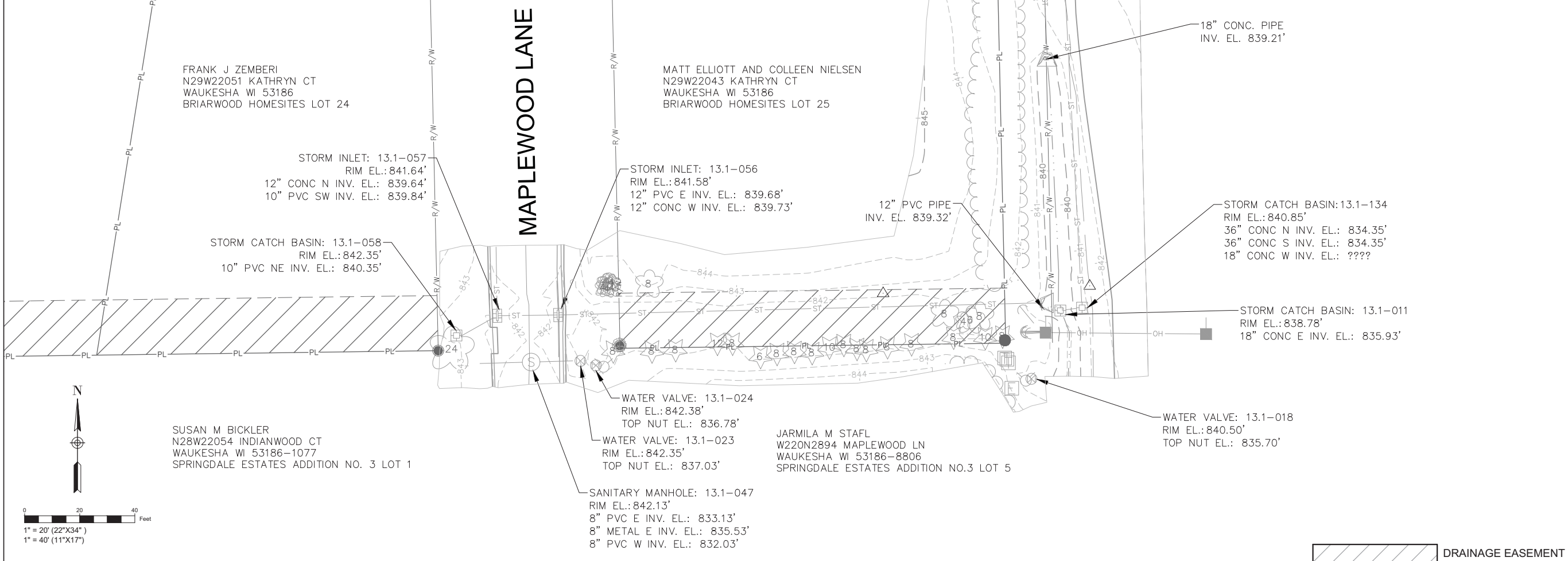
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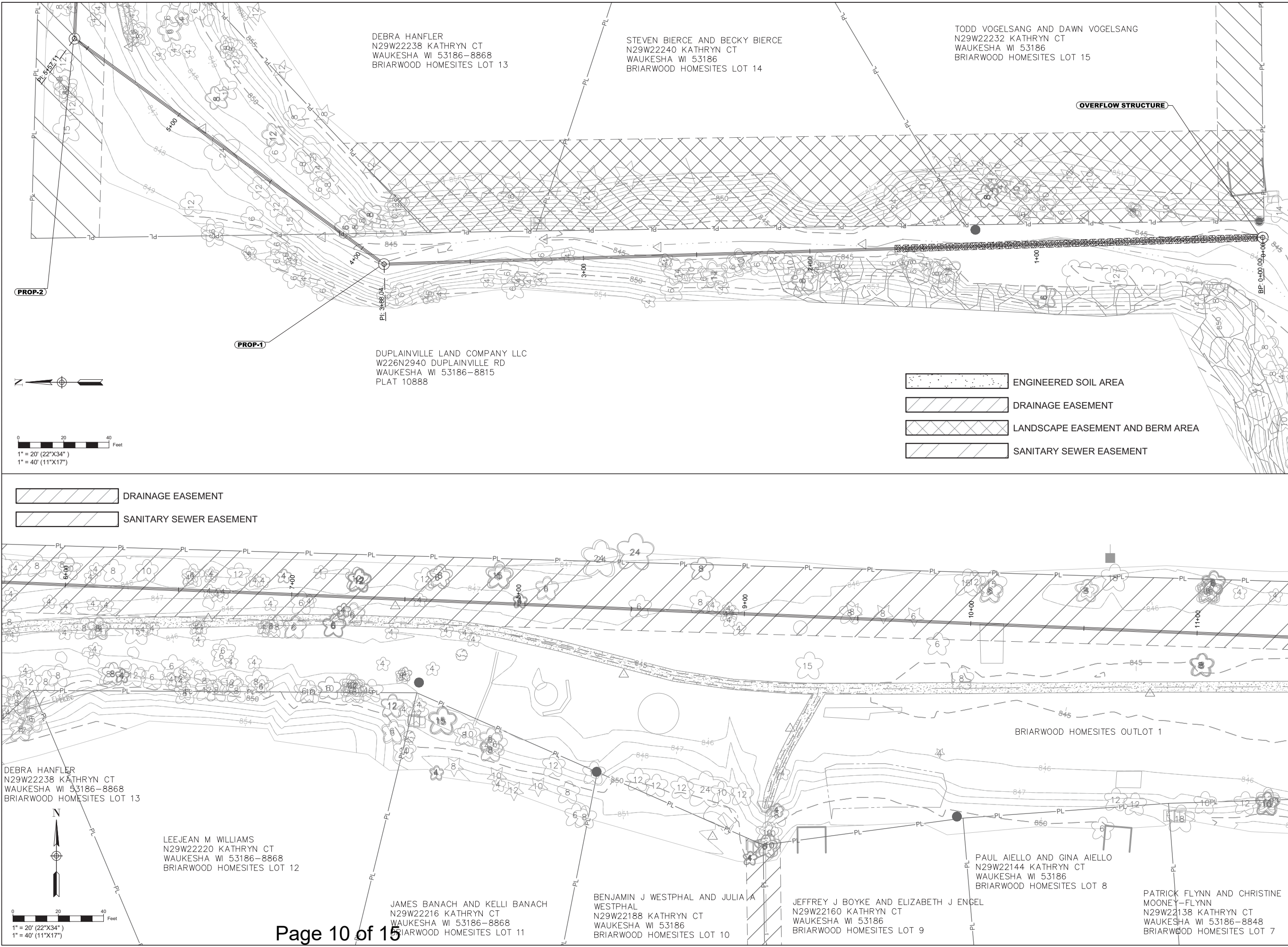
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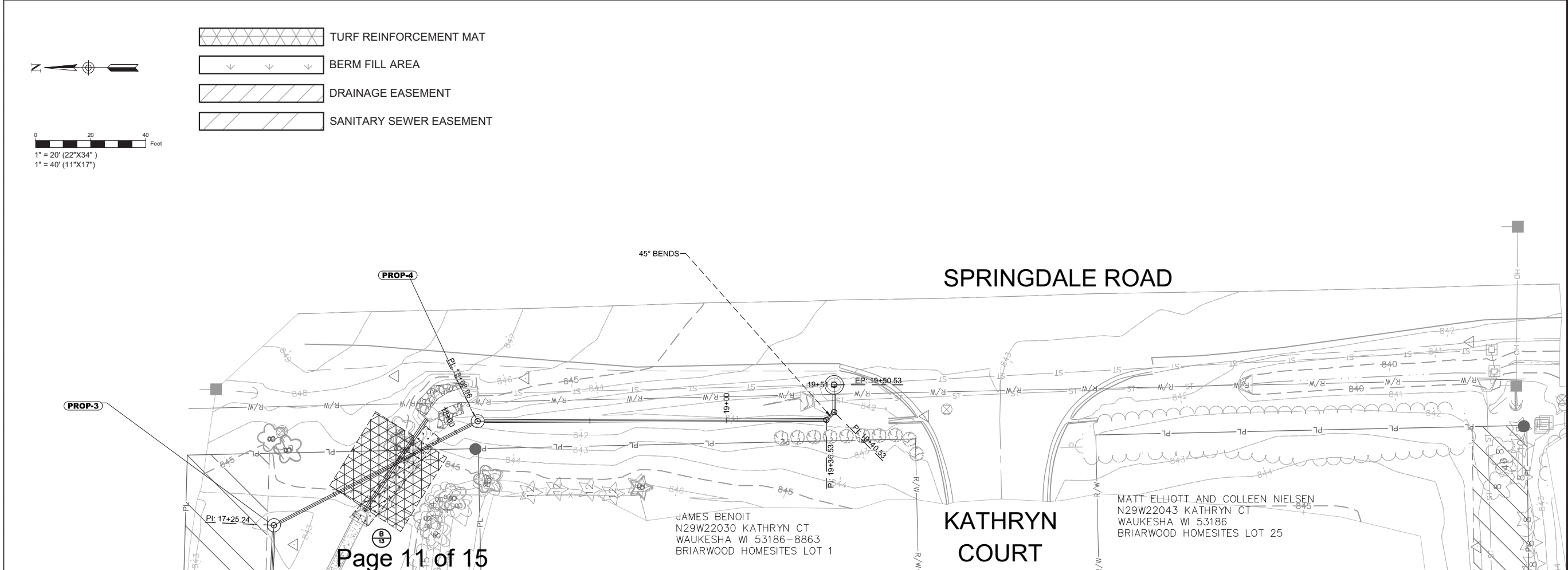
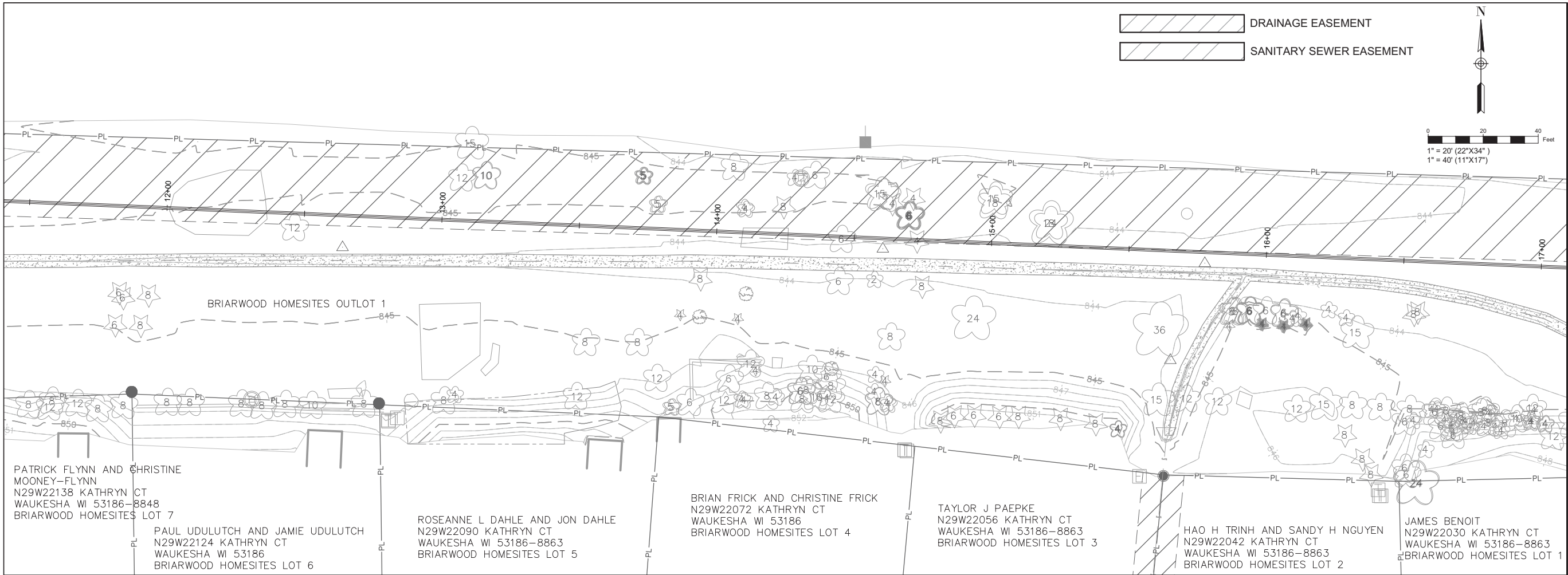
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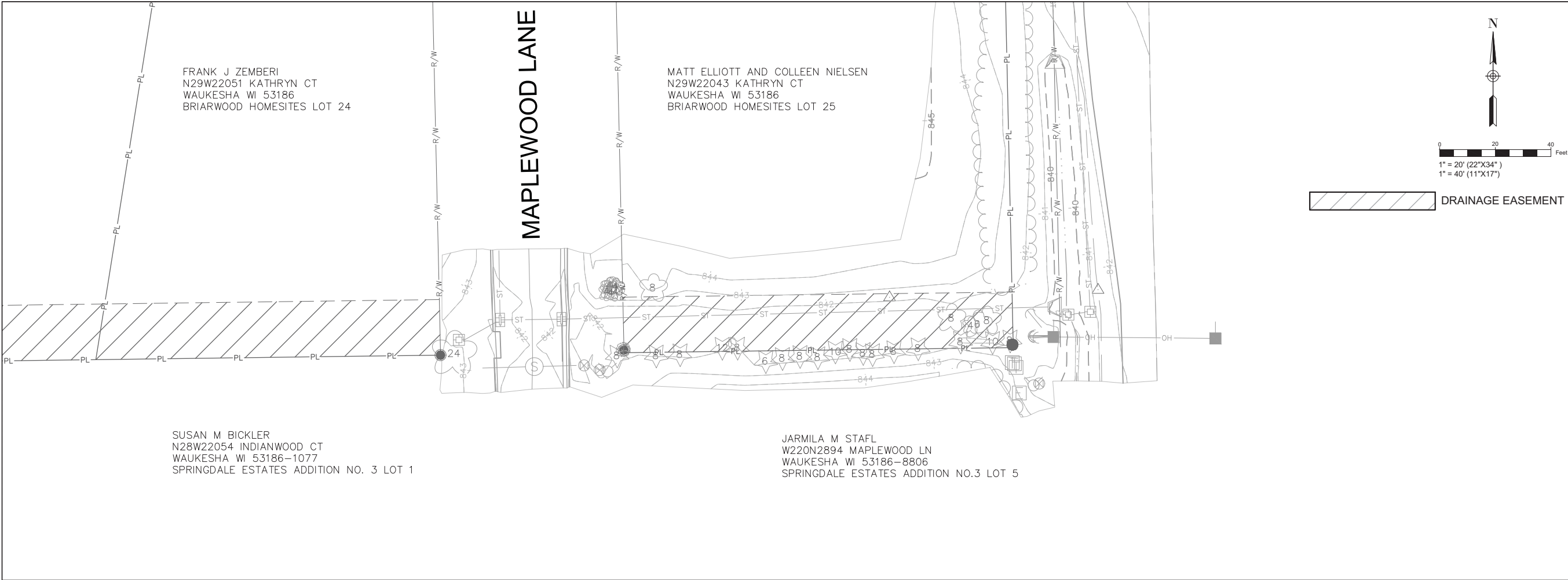
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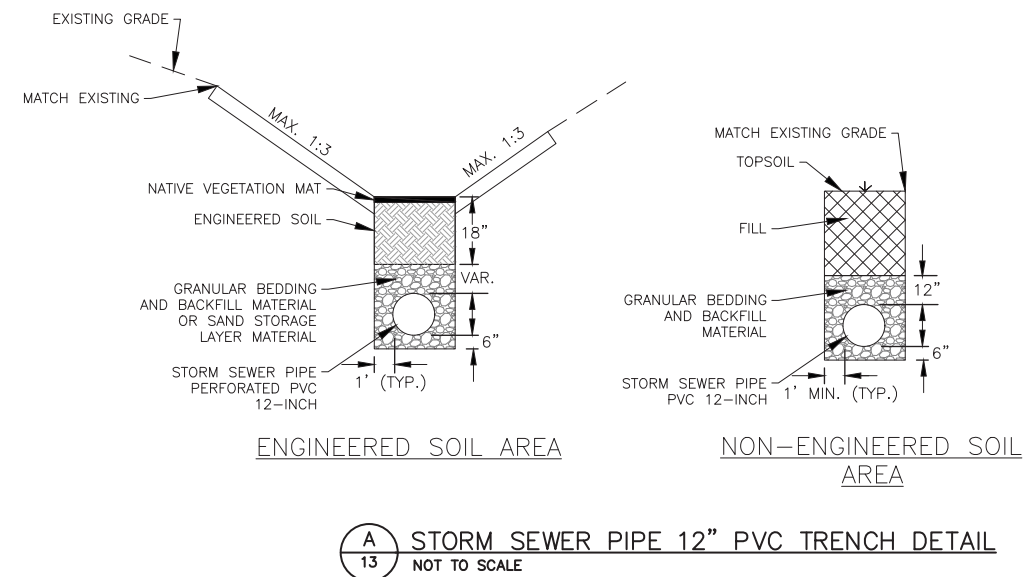
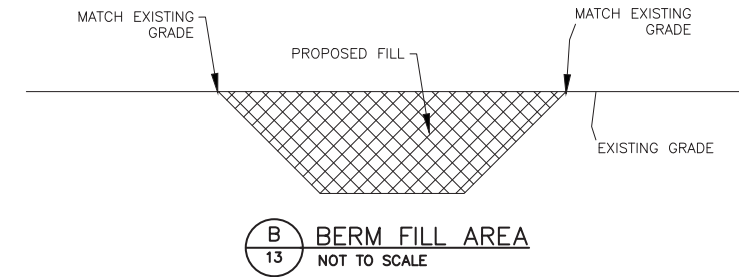
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DETAILS SHEET

SHEET NUMBER

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DETAILS SHEET

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14

CITY OF PEWAUKEE
PUBLIC WORKS COMMITTEE AGENDA ITEM 8.1.

DATE: November 11, 2021

DEPARTMENT: Public Works

PROVIDED BY: Jane Mueller

SUBJECT:

Discussion and possible action regarding the Well 5 Alternative Study.

BACKGROUND:

As you may recall, the Utility is under a DNR Consent Order to come into compliance with the Maximum Contaminant Level requirements for Radium at Well #5. Well #5 has had varying levels of radium and gross alpha exceedances since 2014.

The Utility completed pilot testing and design of a radium treatment system and bid out the project in the fall of 2020. Last fall the Utility also prepared a plan for preventive maintenance on the pump and well rehabilitation prior to the onset of the installation of the water treatment system. During these preparations it was discovered that the well bore hole had collapsed. Subsequently, attempts to remove rubble and rehabilitate the well failed. Further work with hydrogeologists identified that the well was sighted on the Waukesha Fault line; an unstable geological formation.

The Utility engaged the assistance of our consultants, along with Ruekert & Mielke to prepare an alternatives analysis to determine whether a viable well site within this water service area could be located. Due to the location of the quarries and the limited land availability, this alternative was quickly eliminated. The focus of the search then turned to water main extension alternatives.

Attached is the Northmound Drive Water Main Extension Alternatives Analysis. Four alternative water main extensions were evaluated for system reliability with water pressure and fire flow capabilities, costs and (relative) ease of construction.

Our consultant recommends pursuing Alternative #1. This alternative would provide a 12" water main extension that would connect westerly at the intersection of Bluemound Road and Busse Road, and an easterly connection at the intersection of Foster Court and Bluemound Road. Though there are many obstacles and difficulties with crossing Redford Boulevard, the Fox River, the Canadian National Railroad, historic lime kilns, and bedrock at 5 feet, this alternative provides the best pressure and fire flow capacity to this service area.

Also recommended throughout each water main alternative is the additional connections of 8" water main to connect the existing dead end mains from Westmound to Eastmound to Takoma and Saratoga. This recommendation is consistent throughout the report for an estimated cost of \$625,300.

Two sub-alternatives are identified for installing the water main across the Fox River.

#1.1	Bluemound Rd from Busse Rd to Foster Ct., Buried, and Directional drill the water main under the Fox River.	
	12" Extension estimate	\$1,892,000
	8" Extension estimate	625,300
	Contingency 10%	251,700

Engineering services 20%	503,500
Geotechnical Exploration	<u>15,000</u>
Estimated Total Project Cost	\$3,287,500

#1.2 Bluemound Rd. from Busse Rd. to Foster Ct., Buried, Open Cut across Fox River

12" Extension estimate	\$1,842,000
8" Extension estimate	625,300
Contingency 10%	246,700
Engineering services 20%	493,500
Geotechnical Exploration	<u>15,000</u>
Estimated Total Project Cost	\$3,222,500

FINANCIAL IMPACT:

The original estimates for the installation of the HMO radium treatment plant was \$3.4 million. The estimates for each of the alternatives are within the current budget estimates. The Utility will likely seek a Safe Drinking Water Loan for this project.

RECOMMENDED MOTION:

Recommend pursuing Alternative #1.2 to the Common Council to install 12" water main extension along Bluemound Road from Busse Road to Foster Court. Additionally, connecting the water main along Bluemound Road from Westmound Drive to Eastmound Drive to Takoma Drive and to Saratoga Drive, for an estimate cost of \$3,222,500.

ATTACHMENTS:

Description

Well 5 Alternative Analysis Report

**NORTHMOUND DRIVE WATER MAIN
EXTENSION ALTERNATIVES**

**CITY OF PEWAUKEE
WAUKESHA COUNTY, WISCONSIN
NOVEMBER/2021**

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RUEKERT & MIELKE, INC
W233 N2080 Ridgeview Parkway
Waukesha, Wisconsin 53188-1020

BACKGROUND

At the City of Pewaukee's request, Ruekert & Mielke, Inc. (R/M) has undertaken a study to examine various water main route alternatives and make a recommendation in the interest of removing the City's Well No. 5 from the City's water system. The water from Well 5 is drawn from the City's deep sandstone aquifer, and contains radium in excess of the allowable Maximum Contaminant Level (MCL) for gross alpha emissions. Wisconsin DNR has ordered the City to either abandon the well, or treat the contaminants to achieve compliance with the MCL by June, 2023. These orders, along with concerns related to the potential further collapse of the well, have instigated the need for this study to explore the benefits of different routes for a potential water main extension.

R/M completed a study in February of 2016 which examined two different treatment options to remove contaminants from Well 5 and achieve compliance with the MCL. The study also weighed the benefits and cost of the treatment options against a water main extension alternative along Bluemound Road (CTH JJ) between Busse Road and Foster Court, which would allow the well to be abandoned. While this would be a challenging and expensive construction project, the decision was initially made to go with an HMO treatment system and building expansion. Subsequent to that time, overall issues with the Well No. 5 geological formation made the review of multiple water main route extensions possible. Four alternate routes were investigated with the results of those routes presented in this report.

Each route will be compared by overall estimated cost, as well as an evaluation of available fire flows at key hydrant locations using the City's hydraulic water system model for each potential scenario. A recommendation will be made using the costs and data conveyed within the report. Figures displaying each proposed route are attached to this report. This report also includes a summary of R/M's brief exploration of Waukesha's Well 10 and the potential opportunities presented by its location and availability. A general overall system map of the service area is shown in Exhibit 1.

ALTERNATIVE WATER MAIN ROUTES AND ESTIMATED COSTS

ALTERNATIVE 1 – BLUEMOUND ROAD FROM BUSSE ROAD TO FOSTER COURT

Routes 1.1 and 1.2 – Buried Water Main along Bluemound Road

The first water main extension route explored is the same route considered as part of R/M's 2016 study, which would connect existing 12-inch water main at Busse Road and Bluemound Road to the existing 12-inch water main at Foster Court by installing new 12-inch water main along Bluemound Road (CTH JJ), as shown in Exhibit 2. The first option along this route is to install the entire length of water main underground. There are a number of items which would increase the cost of this route.

The property directly northeast of Busse Road and Bluemound Road is owned by Waukesha Lime & Stone has five historic lime kilns. Due to the existing water main on Bluemound Road west of Busse Road being placed outside of the roadway limits on the north side of the road and Bluemound Road's status as a 4-lane highway, the proposed water main to the east would likely be installed outside of the roadway's limits in an easement on the north side of the County right of way as it passes the kilns. At its nearest, the water main has the potential to be as close as 75-feet away from the easternmost kiln. Preliminary conversations were held with Waukesha County regarding this potential project, it was mentioned that the use of seismographs during this portion of installation may be required to monitor the stability of the kilns. It should be noted that the lime kilns will present a challenge for installation for Alternative 1.1 and 1.2.

As the installation nears the CTH JJ bridge across Redford Blvd. (CTH F) and the existing ground profile decreases about 30-feet in elevation. The excavation for the water main would reach the bedrock layer under the bridge. According to soil boring logs received from Waukesha County

taken for the installation of the bridge in the late 1980s, bedrock was found at an average depth of 5.2 feet for borings taken under the bridge. Appendix C, attached to this report, tabulates data received for each boring location in Table 1 and includes a map of each boring taken along the bridge. Based on this data, it is assumed that bedrock would need to be excavated for all open cut area along the length of the bridge, approximately 1,000 lineal feet.

As the installation would continue east along Bluemound Road, crossings of Redford Blvd., the Fox River, and Canadian National Railroad tracks would be required. Each crossing may require jack and bore or horizontal directional drilling operations. For each operation, it is assumed that bedrock would be bored or drilled through for the entire length of the crossing. Approval from CN Railroad would be required for underground utility crossing of their tracks. Historically, permitting for this type of crossing can take up to six months. Recent permit applications have required contractor input, which can delay construction. Additional costs for the contractor to prepare approval materials and coordinate flagging operations should be expected.

For all of the Fox River crossing routes explored in this report, two alternative methods were considered. First, horizontal directional drilling or jack and bore in a casing pipe, would be a crossing option by drilling a path for the pipe about 3-4 feet below the riverbed, and then pulling the pre-assembled pipe sections back through the drilled path. Second, open cut installation across the river would be an option by temporarily blocking flow with coffer dams and bypassing flow from the river with culvert pipes and a series of pumps. Feasibility and cost information about each crossing option has been gathered through discussions with the Waukesha Water Utility, who completed a similar water main project crossing the Fox River in 2017.

When Waukesha Water Utility planned their Fox River Crossing Project near the intersection of Wisconsin Ave. and Saint Paul Ave., their goals were to complete a critical extension to connect two distribution systems, boost capacity, and improve overall flow and hydraulics for their system. A number of alternative crossing methods were considered, and the project was bid with the contractor's option of crossing the river with a directional drilling base bid, or an open cut alternate bid. Ultimately, the crossing was completed by open cutting the new encased water main pipe across the river using inflatable Aqua Barrier coffer dams, a 48-Inch bypass culvert, and encasing the water main extension in concrete 3 to 4-feet below the riverbed. Open cut installation in this instance saved Waukesha Water Utility approximately \$350,000 when compared to the cost for horizontal directional drilling.

Many similarities exist between Waukesha Water Utility's Fox River Crossing Project and the Fox River crossing that would be necessary to construct the City of Pewaukee's water main extension, and can help inform the City of the benefits, challenges, and permit approvals required for this type of crossing. At Waukesha Water Utility's crossing location, the Fox River is 75 feet wide, 2 to 4 feet deep, and has a flow rate of 70 to 80 cfs. Bedrock was encountered and excavated throughout the length of the crossing below the riverbed. The project was bid in March, 2017, all approvals from Wisconsin DNR and Army Corps of Engineers were received by August, 2017. Construction of the crossing began in late November, 2017, with completion less than 2 weeks later in early December. The success of this project are bid flexibility and early engagement with regulatory agencies. Overall, the open cut river crossing method came highly recommended by Waukesha Water Utility because of the cost savings, and should be considered an option for the City of Pewaukee for any extension route requiring a crossing of the Fox River.

Two cost estimates for the underground installation along Bluemound Road were prepared; one assuming the Fox River would be crossed via horizontal directional drilling (Route 1.1), and the other assuming open cut installation (Route 1.2). In addition to the expected costs for extending water main in Bluemound Road from Busse Road, under the CTH JJ bridge, and connecting to existing water main at Foster Court, each cost estimate for Alternative 1, and every other route considered in this report, also includes expected costs for extending an 8-inch water main further to the east on Bluemound Road, and connecting to existing water main stubs at Westmound Road, Eastmound Road, and Saratoga Drive. This additional extension would further improve

system reliability in the area. Total costs for each Route 1.1 and 1.2 option are listed below, and can be found in more detail in the cost estimates attached to this report (Appendix B).

Route 1.1 – Buried, Directional Drill Across Fox River, with Additional 8-Inch Extension

\$3,287,500.00

Route 1.2 – Buried, Open Cut Across Fox River, with Additional 8-Inch Extension

\$3,222,500.00

Route 1.3 – Buried Water Main along Bluemound Road, Hung from CTH JJ Bridge

In addition to underground installation for the water main along the Bluemound Road corridor, a third option would be to hang the proposed water main from Waukesha County's CTH JJ bridge structure for approximately 1,100 lineal feet. Benefits to this installation method include avoiding underground crossings of Redford Blvd., the Fox River, and Canadian National Railroad Tracks, but would require Waukesha County's approval. In a preliminary discussion regarding this option earlier this year, an engineer for Waukesha County stated that while the County would listen to and discuss any water main extension option, their preferred method of installation along this route would be underground. Additional consideration would need to be taken during design to determine load impacts of the water main pipe on the bridge, insulation required for the pipe, and hanging location of the pipe so as not to affect vertical clearance required for the bridge. Additional considerations would include annual or bi-annual inspection costs of the water main, hanger system and insulation.

Total costs for Route 1.3 are listed below, and can be found in more detail in the cost estimates attached to this report.

Route 1.3 – Buried, Hung from CTH JJ Bridge, with Additional 8-Inch Extension

\$2,917,500.00

ALTERNATIVE 2 – NORTHMOUND DRIVE NORTH TO I-94 AND WEST ACROSS CTH F

Routes 2.1 and 2.2 – Steinhafels east to Northmound

The second water main extension route would commence at the existing 12-inch water main located on the Steinhafels parcel thence east across Redford Boulevard (CTH F), north to I-94 and easterly along I-94 to Well No. 5, as shown in Exhibit 3.

There is an existing 12-inch water main approximately 550 feet west of Redford Boulevard (CTH F) in the Steinhafels parcel. From this connection point the 12-inch water main would go easterly under the Pewaukee River and associated wetlands. The water main would continue easterly under Redford Boulevard (CTH F) and thence northerly along the park and ridge lot or access road to Sunbelt Rentals. The route would then continue northerly to I-94 and easterly along I-94 to Well No. 5.

The proposed 12-inch water main would need to traverse through easements of at least 4 separate property owners, wetlands, cross under the CN Railroad and the Fox River. Exhibit 3 in Appendix C details the project route.

Two cost estimates for Alternative 2 were prepared; one assuming the Fox River would be crossed via horizontal directional drilling (Route 2.1), and the other assuming open cut installation (Route 2.2). As previously noted, the projected costs also includes expected costs for extending

8-inch water main further to the east on Bluemound Road, connecting water main stubs at Westmound Road, Eastmound Road, and Saratoga Drive. Total costs for each Route 2.1 and 2.2 option are listed below, and can be found in more detail in the cost estimates attached to this report. Easement costs are not included in the cost estimate.

Route 2.1 – Buried, Directional Drill Across Fox River, with Additional 8-Inch Extension

\$3,978,500.00

Route 2.2 – Buried, Open Cut Across Fox River, with Additional 8-Inch Extension

\$3,894,000.00

ALTERNATIVE 3 – NORTHMOUND DRIVE NORTH CROSSING I-94 TO WATERTOWN ROAD

Routes 3.1 and 3.2 – Northmound to Watertown Road

The third water main extension route would extend the existing main at Northmound Drive north crossing I-94 and then northwest to North Avenue, connecting to the existing main at the intersection with Watertown Road, as shown in Exhibit 4.

Starting at the City's site for Well 5, the new main would connect to the existing 12-inch water main at this location and travel north by means of open cut up to I-94. The open cut excavation limits would be adjacent to Payne & Dolan's Waukesha North Quarry Site. However, according to the exhibit provided by Payne & Dolan showing the top of bedrock elevations on their quarry site (Appendix C), we do not anticipate any rock removal will be required for the installation of the water main in this area. The crossing of I-94 would require jack and bore or horizontal directional drilling, which will require permitting and project approval from the Wisconsin Department of Transportation.

From the north side of I-94, the water main would then go north and westerly to North Avenue. Additional trenchless construction may be required to cross existing wetlands and the Fox River, approximately 950 lineal feet. As with the previous alternatives, it is assumed that bedrock would be bored or drilled through with a steel casing for the entire length of the crossing, or removed if open cut installation is selected. After crossing the wetlands west of the river, the water main would then be installed within the North Avenue right-of-way by open cut excavation, and then connected to the existing 12" water main at the intersection of North Avenue and Watertown Road. Unlike Alternatives 1 and 2, Routes 3.1 and 3.2 would not require crossing CN Railroad track. An easement would be required from 3 different property owners. A private bridge would need to be assessed to determine adequacy for construction and maintenance.

Similar to the first two alternatives, two cost estimates were prepared for Alternative 3; one assuming the Fox River would be crossed via horizontal directional drilling (Route 3.1), and the other assuming open cut installation (Route 3.2). The project costs also includes costs for extending 8-inch water main further to the east on Bluemound Road, connecting water main stubs at Westmound Road, Eastmound Road, and Saratoga Drive. Total costs for each Route 3.1 and 3.2 option are listed below, and can be found in more detail in the cost estimates attached to this report. The cost of improvements to the existing private bridge are not included in the cost estimates.

Route 3.1 – Buried, Directional Drill Across Fox River, with Additional 8-Inch Extension

\$3,128,900.00

Route 3.2 – Buried, Open Cut Across Fox River, with Additional 8-Inch Extension

\$3,062,600.00

ALTERNATIVE 4 – NORTHMOUND DRIVE NORTH CROSSING I-94 TO JERICO DRIVE

The final water main extension route explored would extend the existing main at Northmound Drive north crossing I-94 and thence northeast to connect to the existing main at the intersection of Watertown Road and Jericho Dr, as shown in Exhibit 5.

Beginning at the City's site for Well 5, and similar to Alternative 3, the new 12-inch water main would connect to the existing 12-inch water main at this location and travel north by means of open cut up to the south side of I-94. The open cut excavation limits would be adjacent to Payne & Dolan's Waukesha North Quarry Site. According to the exhibit provided by Payne & Dolan showing the top of bedrock elevations on their quarry site (Appendix C), we do not anticipate any rock removal will be required for the installation of the water main in this area. The water main would cross I-94 and would need to be installed by jack and bore or horizontal directional drilling. Crossing of I-94 would require permitting and project approval from the Wisconsin Department of Transportation.

After crossing I-94, the water main would be installed by open cut excavation through two private properties (H Coleman Norris Trust), and then by horizontal directional drilling through the existing wetlands, south of Watertown Road, approximately 950 lineal feet. The new water main will then be connected to the existing 12-inch water main at the intersection of Watertown Road and Jericho Drive. Unlike Alternatives 1, 2 and 3, this route would not require crossing the Fox River or the CN Railroad tracks, making this the most cost-effective option. One major consideration of this alternate is that once an easement route is chosen, it will possibly dictate the development options for the parcel. This could require a longer negotiation time for easements.

The estimated project cost also includes expected costs for extending the 8-inch water main further to the east on Bluemound Road and connecting water main stubs at Westmound Road, Eastmound Road, and Saratoga Drive. Total costs for Route 4 option are listed below, and can be found in more detail in the cost estimates attached to this report.

Route 4 – Buried, with Additional 8-Inch Extension

\$2,946,000.00

HYDRAULIC WATER MODEL EVALUATION

In order to determine the best water main route alternative, a source supply analysis should be conducted. This will assist in determining the most long term effective solution, which may not be the least cost option.

An evaluation was performed using the City of Pewaukee's hydraulic water system model to determine the available fire flow, static pressure, and residual pressure under maximum day demand conditions for the scenarios detailed below.

Scenario 1: Scenario 1 consists of an evaluation of the existing water distribution system. This could be for the existing system shown in Exhibit 1.

Scenario 2: Scenario 2 consists of an evaluation of the water distribution system assuming that an 8-inch diameter water main is constructed along Bluemound Road, from Saratoga Drive to Westmound Drive. Additionally, 12-inch diameter water main would be extended along Bluemound Road, under the Fox River, from Busse Road to Foster Court. This modeled scenario corresponds with each Route listed under Alternative 1 above. See Exhibit 2 for the approximate proposed water main layout of Alternative 1.

Scenario 3: Scenario 3 consists of an evaluation of the water distribution system assuming that an 8-inch diameter water main is constructed along Bluemound Road, from Saratoga Drive to Westmound Drive. Additionally, the 12-inch diameter water main as described in Alternate 2.1 and 2.2 from the Steinhafels parcel easterly under Redford Boulevard to Northmound Drive is included in this scenario. This modeled scenario corresponds with each Route listed under Alternative 2. See Exhibit 3 for the approximate proposed water main layout of Alternative 2.

Scenario 4: Scenario 4 consists of an evaluation of the water distribution system assuming that an 8-inch diameter water main is constructed along Bluemound Road, from Saratoga Drive to Westmound Drive. Additionally, the 12-inch diameter water main along Northmound Drive would be extended north, crossing under I-94 and along North Avenue to its intersection with Watertown Road. This modeled scenario corresponds with each Route listed under Alternative 3 above. See Exhibit 4 for the approximate proposed water main layout of Alternative 3.

Scenario 5: Scenario 5 consists of an evaluation of the water distribution system assuming that an 8-inch diameter water main is constructed along Bluemound Road, from Saratoga Drive to Westmound Drive. Additionally, the 12-inch diameter water main along Northmound Drive would be extended north, crossing under I-94 and then northeast to connect to the 12-inch diameter water main at the intersection of Watertown Road and Jericho Dr. This modeled scenario corresponds with the Route listed under Alternative 4 above. See Exhibit 5 for the approximate proposed water main layout of Alternative 4.

Scenario 6: Scenario 6 consisted of an evaluation of the potential opportunities presented by the location and possible availability of Waukesha Well 10. Three options were explored for the use of Waukesha Well 10. First, the option of pumping directly from Waukesha Well 10 to the City's system was explored. Second, the option of pumping to the existing reservoir at Pewaukee Well 5 was explored. For this option, a pressure sustaining valve would be required to maintain pressure in the water main at the high point between Waukesha Well 10 and Pewaukee Well 5. Third, the option of pumping to a new reservoir at a local high point on Allen Road was explored. All three options were found to likely require modification of the Waukesha Well 10 pumps in order to not over pressurize the City's system. Ultimately, Scenario 6 was not further pursued due to Waukesha's allowance to use Lake Michigan water. This agreement stipulates that Waukesha Well 10 is required to be taken out of service at this time.

The model was run under maximum day demand conditions with no well pumps in operation. For Scenarios 1 through 5, the model was run with the hydraulic grade line (HGL) set at both the low end of the operating range and set at the high end of the operating range. This data was compiled in Table 1 for six key modeled nodes within the system, as shown in Exhibit 1. Each Scenario listed in the table has an option A and an option B. Option A indicates the modeled results for the high pressure condition and option B indicates the results for the low pressure condition.

The low pressure scenario assumed the elevated storage tank hydraulic grade line was 1040. This is the lowest hydraulic grade that is able to be run in the model while maintaining a system pressure of greater than 20 PSI in all areas within the system. The high pressure scenario assumed a hydraulic grade line of 1055, one foot less than the overflow elevation.

The results of the evaluation are based on calculated values determined using a hydraulic modeling software, WaterGEMS by Bentley Systems, Inc. Although the overall system model is calibrated, it is possible that modeling results do not accurately reflect actual results in isolated locations within the distribution system. Potential discrepancies in modeled results versus actual results can be due to closed system valves, damaged or deteriorating water main, demand changes, etc. The hydraulic water system model used in the evaluation was last updated in January, 2021.

AVAILABLE FIRE FLOW EVALUATION

The available fire flow at the modeled nodes for Scenarios 1 through 5 are listed in Table 1. The available fire flow is the maximum flow that can be provided at individual hydrants while maintaining a minimum

pressure of 20 PSI in the system. Table 1 also lists static pressures for both the high pressure and low pressure conditions. The static pressure is the pressure in the system at the modeled node with no flow.

Table 1 – Available Fire Flow During Maximum Day Demands

Modeled Node Number	Static Pressure – High (PSI)	Static Pressure – Low (PSI)	Elevation (FT)	Scenario Available Fire Flows (GPM)									
				Current Condition		Bluemound East		Steinhafels		North Avenue		Jericho Connection	
				1a	1b	2a	2b	3a	3b	4a	4b	5a	5b
504	86	83	837.96	1,100	1,000	2,500	1,700	2,300	1,700	2,200	1,800	1,800	1,500
J-346	79	77	853.64	1,800	1,600	2,400	1,600	2,300	1,600	2,100	1,600	2,100	1,600
J-639	47	44	928.00	1,000	900	1,900	1,700	1,900	1,600	1,800	1,500	1,500	1,300
J-745	92	89	824.73	2,200	1,800	2,600	1,800	2,600	1,800	2,700	1,800	2,700	1,800
J-833	91	89	826.00	1,800	1,700	2,500	1,700	2,500	1,700	2,600	1,800	2,000	1,700
J-1204	76	73	861.57	900	800	2,500	1,700	1,900	1,700	1,900	1,600	1,600	1,300

Table 2 – Increase in Available Fire Flow Compared to Scenario 1, Existing Conditions

Junction	Available Fire Flow Increase (GPM)							
	Bluemound East		Steinhafels		North Avenue		Jericho Connection	
	2a	2b	3a	3b	4a	4b	5a	5b
504	1,400	600	1,200	600	1,100	800	600	400
J-346	500	0	400	0	200	0	200	0
J-639	900	700	800	600	700	500	500	300
J-745	300	0	300	0	400	0	400	0
J-833	700	0	700	0	800	100	200	0
J-1204	1,500	800	1,000	800	900	700	600	400

RECOMMENDATION

Table 3 below summarizes the cost information related to each of the recommended alternatives. Appendix B breaks down the cost formulation for each of the alternatives in more detail for reference.

Table 3 – Summary of Estimated Project Costs

Location	Alternative Route	Construction Type Across Fox River	12-inch Water Main (LF)	Project Cost
Bluemound Rd (CTH JJ) from Busse Rd to Foster Ct	1.1	Jack and Bore	3,200	\$3,287,500
	1.2	Open Cut		\$3,222,500
	1.3	Hung from CTH JJ Bridge		\$2,917,500
Steinhafels east to Redford Boulevard, north to I-94, east to Northmound	2.1	Jack and Bore	4,325	\$3,978,500
	2.2	Open Cut		\$3,894,000
Northmound Dr north across I-94 to North Ave/Watertown Rd	3.1	Jack and Bore	4,200	\$3,128,900
	3.2	Open Cut		\$3,062,600
Northmound Dr north across I-94 to Watertown Rd/Jericho Dr	4	N/A	4,000	\$2,946,000

The recommended route of the installation of a new 12-inch water main is the Bluemound East alternative (Alternative 1). The method by which the Fox River will be crossed on this route, either by directional drilling or open cutting (Routes 1.1 and 1.2), should be chosen during the bidding process based upon cost. Hanging the proposed water main from the existing CTH JJ bridge is not a recommended crossing method due to the requirement of Waukesha County's approval and ongoing inspection and maintenance costs.

Although the Bluemound East alternative does not have the lowest estimated cost of the analyzed routes, the total estimated project cost is within 10-12% of the least expensive alternative (Alternative 4). Additionally, as shown in Table 2 under scenarios 2a and 2b, the Bluemound East alternative provides the greatest increase in available fire flow at many of the key modeled nodes for both the high and low pressure conditions.

APPENDIX A

PROPOSED WATER MAIN ALTERNATIVE EXHIBITS



Exhibit 1
Water Distribution System
City of Pewaukee

Legend

- ★ Modeled Nodes
- Existing Supply, Pumping & Storage Facilities**
 - Well
 - Repump Tank
 - ◆ Emergency Interconnection
 - ▲ Hydrant
- Existing Water Main**
 - 6"
 - 8"
 - - - 10"
 - - - 12"
 - 16"
- Pressure Boosting Recommended
- CITY OF BROOKFIELD
- CITY OF PEWAUKEE
- CITY OF WAUKESHA
- TOWN OF BROOKFIELD

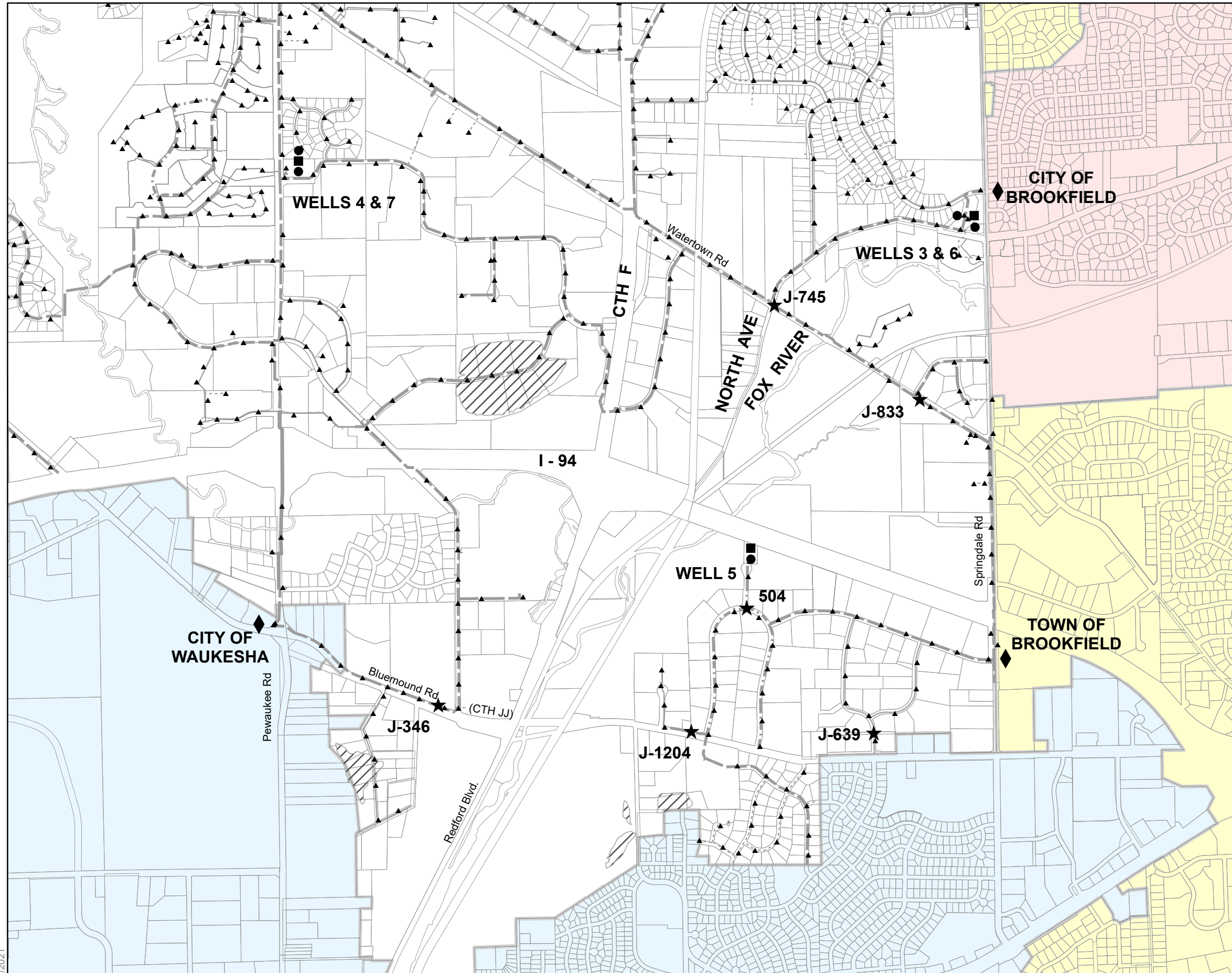
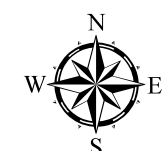




Exhibit 2

**Northmound Drive
Water Main Alternative 1**

City of Pewaukee

Legend

Proposed Main

— 8"

- - 12"

Existing Supply, Pumping & Storage Facilities

● Well

■ Repump Tank

▲ Hydrant

Existing Water Main

- - - 6"

— 8"

- · - · 10"

- - - 12"

▨ Pressure Boosting Recommended

▭ CITY OF PEWAUKEE

▭ CITY OF WAUKESHA

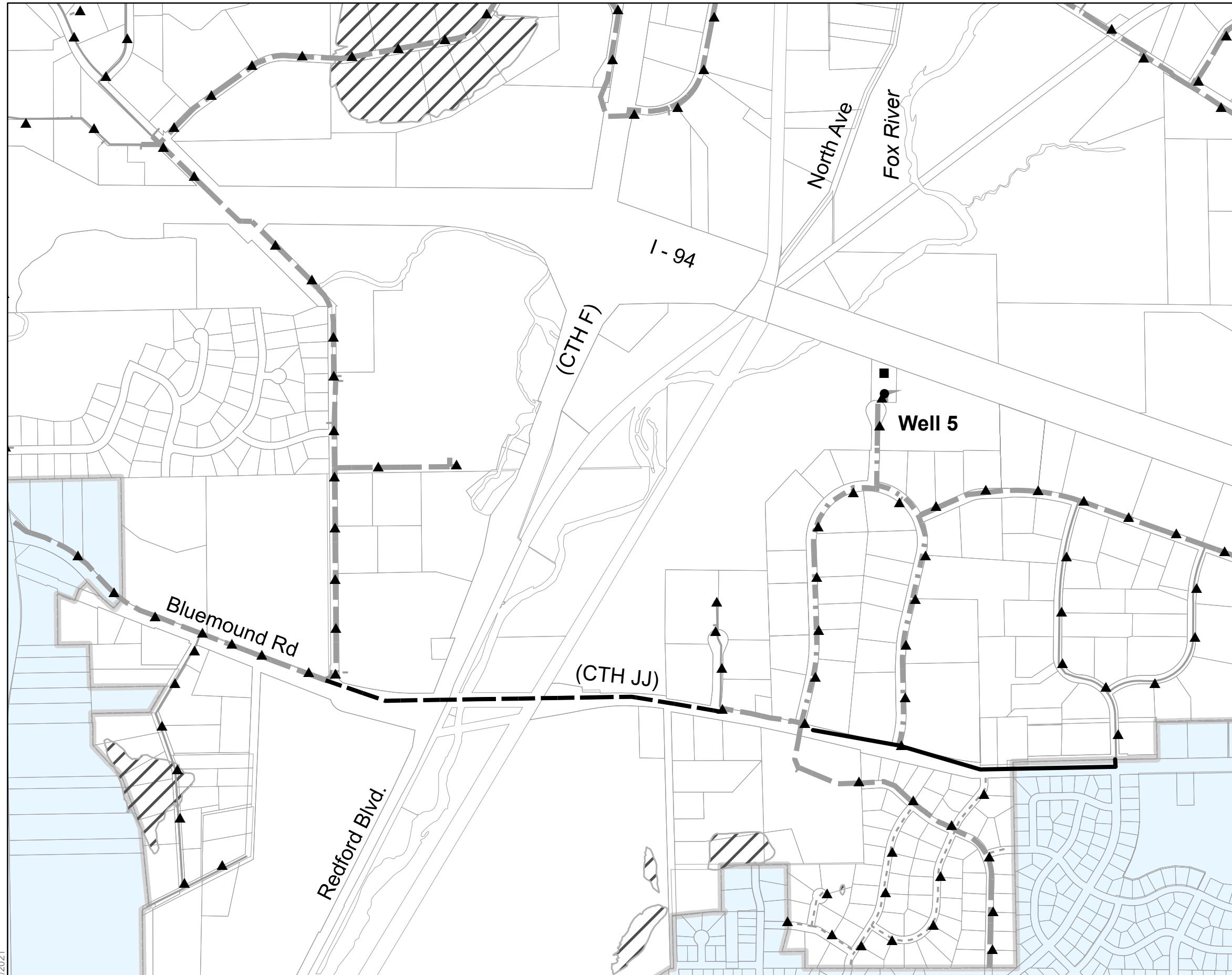
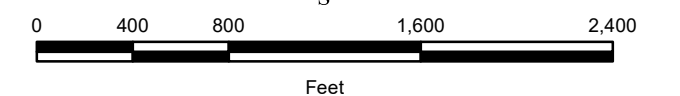
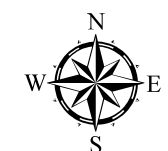




Exhibit 3

**Northmound Drive
Water Main Alternative 2**

City of Pewaukee

Legend

Proposed Main

- 8"
- 12"

Existing Supply, Pumping & Storage Facilities

- Well
- Repump Tank
- Hydrant

Existing Water Main

- 6"
- 8"
- 10"
- 12"

Pressure Boosting Recommended

CITY OF PEWAUKEE

CITY OF WAUKESHA

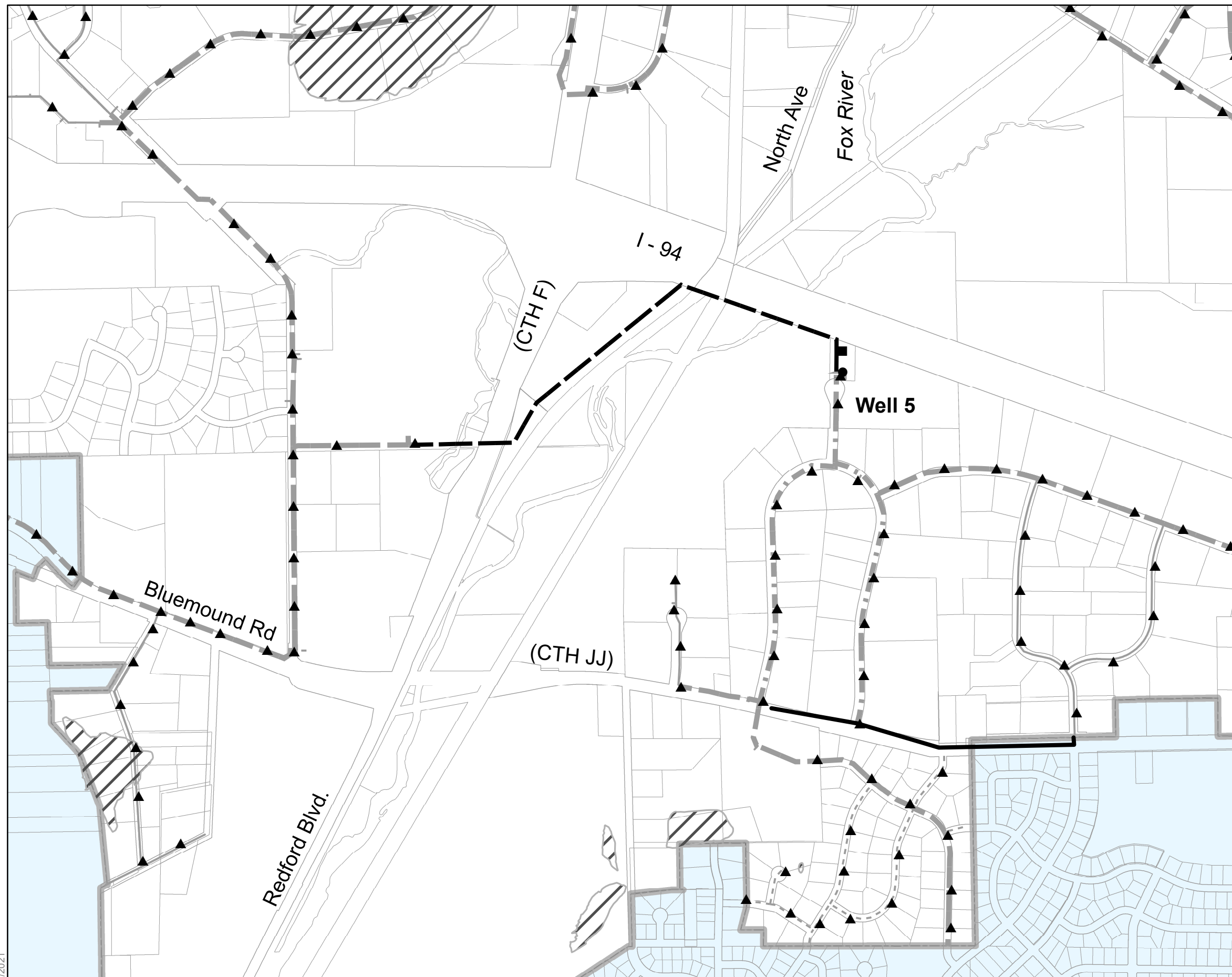
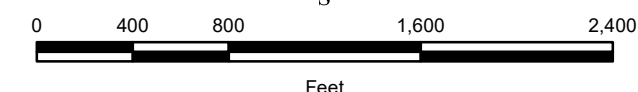




Exhibit 4

**Northmound Drive
Water Main Alternative 3**

City of Pewaukee

Legend

Proposed Main

— 12"

Existing Supply, Pumping & Storage Facilities

- Well
- Repump Tank
- ◆ Emergency Interconnection
- ▲ Hydrant

Existing Water Main

- - - 6"
- 8"
- - - 10"
- - - 12"
- ▨ Pressure Boosting Recommended
- CITY OF BROOKFIELD
- CITY OF PEWAUKEE
- CITY OF WAUKESHA
- TOWN OF BROOKFIELD

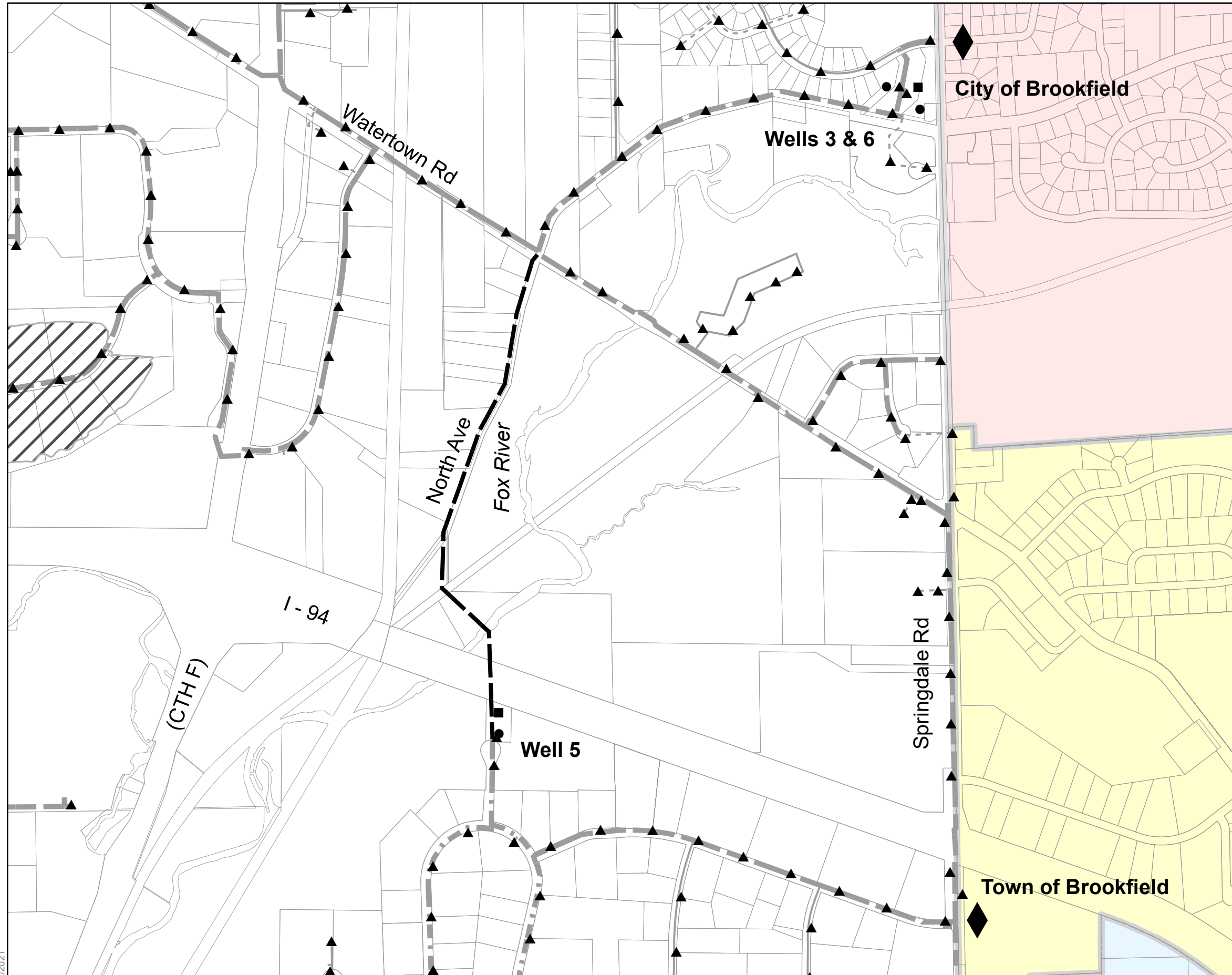
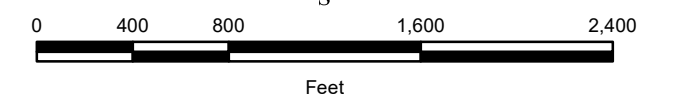
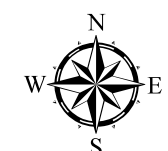




Exhibit 5

**Northmound Drive
Water Main Alternative 4**

City of Pewaukee

Legend

Proposed Main

— 12"

Existing Supply, Pumping & Storage Facilities

● Well

■ Repump Tank

◆ Emergency Interconnection

▲ Hydrant

Existing Water Main

- - - 6"

— 8"

- · - 10"

— 12"

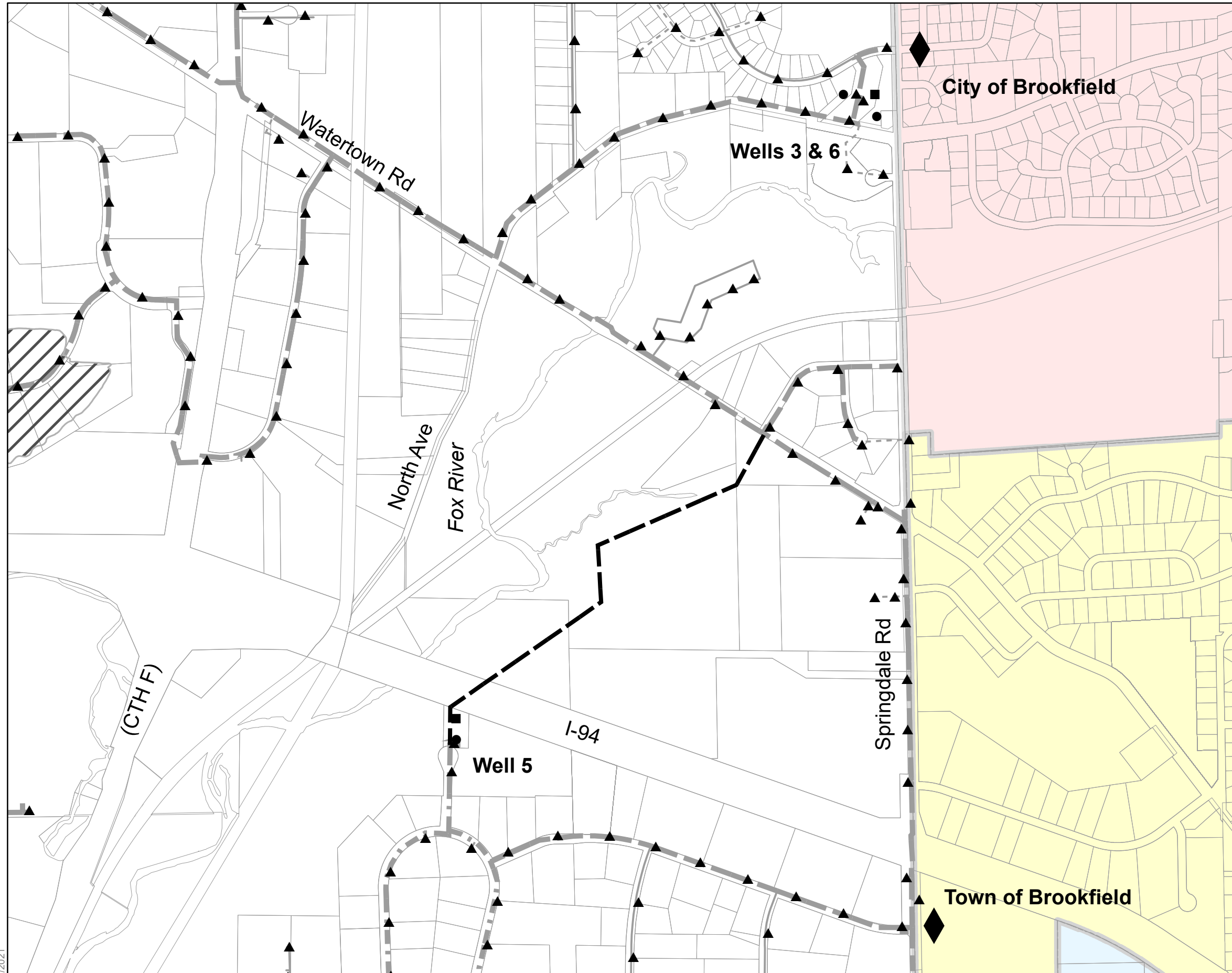
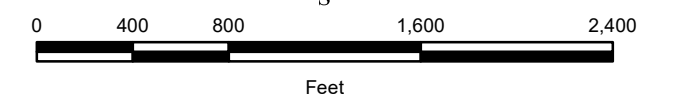
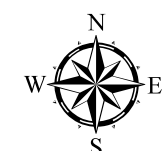
▨ Pressure Boosting Recommended

CITY OF BROOKFIELD

CITY OF PEWAUKEE

CITY OF WAUKESHA

TOWN OF BROOKFIELD



APPENDIX B

COST INFORMATION

ESTIMATED PROJECT COST

Project Name: Northmound Drive Water Main Alternatives
 Client Name: City of Pewaukee
 Project #: 26-10139

Date Modified: 8/9/2021

Item No.	Description	Unit	Quantity	Unit Price	Total
Alternative 1.1 - Bluemound Rd from Busse Rd to Foster Ct, Buried, Directional Drill across Fox River					
12" Extension					
1	Traffic Control	L.S.	1	\$ 10,000.00	\$ 10,000.00
2	Erosion Control	L.S.	1	\$ 10,000.00	\$ 10,000.00
3	12-inch Water Main - Open Cut w/ Granular Backfill	L.F.	2,650	\$ 200.00	\$ 530,000.00
4	12-inch Water Main, 24-inch Steel Casing, Bore across Redford Blvd.	L.F.	175	\$ 1,800.00	\$ 315,000.00
5	12-inch Water Main, 24-inch Steel Casing, Bore across Fox River	L.F.	200	\$ 1,800.00	\$ 360,000.00
6	12-inch Water Main, 24-inch Steel Casing, Bore across CN Railroad	L.F.	175	\$ 1,800.00	\$ 315,000.00
7	Rock Removal	L.F.	1,000	\$ 50.00	\$ 50,000.00
8	12-inch Gate Valve	EA.	7	\$ 3,000.00	\$ 21,000.00
9	Valve Vault Manhole	L.S.	1	\$ 20,000.00	\$ 20,000.00
10	Hydrant Assembly with 6-inch Valve	EA.	8	\$ 6,000.00	\$ 48,000.00
11	6-inch Hydrant Lead	L.F.	64	\$ 150.00	\$ 9,600.00
12	Connection to Existing Water System	EA.	2	\$ 5,000.00	\$ 10,000.00
13	HMA Pavement Replacement	S.F.	3,750	\$ 8.00	\$ 30,000.00
14	Topsoil, Fertilizer, Seed and Erosion Mat	S.Y.	11,400	\$ 6.00	\$ 68,400.00
15	Easements	EA.	3	\$ 25,000.00	\$ 75,000.00
16	CN Railroad Permit Items, Flagging	EA.	1	\$ 20,000.00	\$ 20,000.00
12" Extension Subtotal					\$ 1,892,000.00
8" Extension					
1	Traffic Control	L.S.	1	\$ 10,000.00	\$ 10,000.00
2	Erosion Control	L.S.	1	\$ 5,000.00	\$ 5,000.00
3	8-inch Water Main - Open Cut w/ Granular Backfill	L.F.	2,550	\$ 150.00	\$ 382,500.00
3	6-inch Water Main - Open Cut w/ Slurry Backfill	L.F.	60	\$ 175.00	\$ 10,500.00
4	8-inch Gate Valve	EA.	6	\$ 2,000.00	\$ 12,000.00
4	6-inch Gate Valve	EA.	1	\$ 2,000.00	\$ 2,000.00
5	Valve Vault Manhole	L.S.	1	\$ 20,000.00	\$ 20,000.00
6	Hydrant Assembly with 6-inch Valve	EA.	4	\$ 6,000.00	\$ 24,000.00
7	6-inch Hydrant Lead	L.F.	50	\$ 150.00	\$ 7,500.00
8	Connection to Existing Water System	EA.	3	\$ 5,000.00	\$ 15,000.00
9	HMA Pavement Replacement	S.F.	2,200	\$ 8.00	\$ 17,600.00
10	Topsoil, Fertilizer, Seed and Erosion Mat	S.Y.	3,200	\$ 6.00	\$ 19,200.00
11	Easements	EA.	4	\$ 25,000.00	\$ 100,000.00
8" Extension Subtotal					\$ 625,300.00
Subtotal					\$ 2,517,300.00
Contingency				10%	\$ 251,700.00
Design and Construction Engineering Services				20%	\$ 503,500.00
Geotechnical Exploration					\$ 15,000.00
Estimated Total Project Cost					\$ 3,287,500.00
Assumptions - Transmission main does not follow hydrant and valve spacing per NR 811. - Rock removal anticipated for excavations below bridge structure. - Railroad, river and highway crossings require boring through rock with a steel casing. - Service connections not included.					

ESTIMATED PROJECT COST

Project Name: Northmound Drive Water Main Alternatives
 Client Name: City of Pewaukee
 Project #: 26-10139

Date Modified: 8/9/2021

Item No.	Description	Unit	Quantity	Unit Price	Total
Alternative 1.2 - Bluemound Rd from Busse Rd to Foster Ct, Buried, Open Cut across Fox River					
12" Extension					
1	Traffic Control	L.S.	1	\$ 10,000.00	\$ 10,000.00
2	Erosion Control	L.S.	1	\$ 10,000.00	\$ 10,000.00
3	12-inch Water Main - Open Cut w/ Granular Backfill	L.F.	2,650	\$ 200.00	\$ 530,000.00
4	12-inch Water Main, 24-inch Steel Casing, Bore across Redford Blvd.	L.F.	175	\$ 1,800.00	\$ 315,000.00
5	12-inch Water Main, 24-inch Steel Casing, Open Cut across Fox River	L.F.	200	\$ 1,500.00	\$ 300,000.00
6	12-inch Water Main, 24-inch Steel Casing, Bore across CN Railroad	L.F.	175	\$ 1,800.00	\$ 315,000.00
7	Rock Removal	L.F.	1,200	\$ 50.00	\$ 60,000.00
8	12-inch Gate Valve	EA.	7	\$ 3,000.00	\$ 21,000.00
9	Valve Vault Manhole	L.S.	1	\$ 20,000.00	\$ 20,000.00
10	Hydrant Assembly with 6-inch Valve	EA.	8	\$ 6,000.00	\$ 48,000.00
11	6-inch Hydrant Lead	L.F.	64	\$ 150.00	\$ 9,600.00
12	Connection to Existing Water System	EA.	2	\$ 5,000.00	\$ 10,000.00
13	HMA Pavement Replacement	S.F.	3,750	\$ 8.00	\$ 30,000.00
14	Topsoil, Fertilizer, Seed and Erosion Mat	S.Y.	11,400	\$ 6.00	\$ 68,400.00
15	Easements	EA.	3	\$ 25,000.00	\$ 75,000.00
16	CN Railroad Permit Items, Flagging	EA.	1	\$ 20,000.00	\$ 20,000.00
12" Extension Subtotal					\$ 1,842,000.00
8" Extension					
1	Traffic Control	L.S.	1	\$ 10,000.00	\$ 10,000.00
2	Erosion Control	L.S.	1	\$ 5,000.00	\$ 5,000.00
3	8-inch Water Main - Open Cut w/ Granular Backfill	L.F.	2,550	\$ 150.00	\$ 382,500.00
3	6-inch Water Main - Open Cut w/ Slurry Backfill	L.F.	60	\$ 175.00	\$ 10,500.00
4	8-inch Gate Valve	EA.	6	\$ 2,000.00	\$ 12,000.00
4	6-inch Gate Valve	EA.	1	\$ 2,000.00	\$ 2,000.00
5	Valve Vault Manhole	L.S.	1	\$ 20,000.00	\$ 20,000.00
6	Hydrant Assembly with 6-inch Valve	EA.	4	\$ 6,000.00	\$ 24,000.00
7	6-inch Hydrant Lead	L.F.	50	\$ 150.00	\$ 7,500.00
8	Connection to Existing Water System	EA.	3	\$ 5,000.00	\$ 15,000.00
9	HMA Pavement Replacement	S.F.	2,200	\$ 8.00	\$ 17,600.00
10	Topsoil, Fertilizer, Seed and Erosion Mat	S.Y.	3,200	\$ 6.00	\$ 19,200.00
11	Easements	EA.	4	\$ 25,000.00	\$ 100,000.00
8" Extension Subtotal					\$ 625,300.00
Subtotal					\$ 2,467,300.00
Contingency				10%	\$ 246,700.00
Design and Construction Engineering Services				20%	\$ 493,500.00
Geotechnical Exploration					\$ 15,000.00
Estimated Total Project Cost					\$ 3,222,500.00
Assumptions - Transmission main does not follow hydrant and valve spacing per NR 811. - Rock removal anticipated for excavations below bridge structure. - Railroad and highway crossings require boring through rock with a steel casing. - River crossing requires excavation of rock below river bed. - Service connections not included.					

ESTIMATED PROJECT COST

Project Name: Northmound Drive Water Main Alternatives

Client Name: City of Pewaukee

Project #: 26-10139

Date Modified:

8/9/2021

Item No.	Description	Unit	Quantity	Unit Price	Total
Alternative 1.3 - Bluemound Rd from Busse Rd to Foster Ct, Hung from CTH JJ Bridge					
12" Extension					
1	Traffic Control	L.S.	1	\$ 15,000.00	\$ 15,000.00
2	Erosion Control	L.S.	1	\$ 6,000.00	\$ 6,000.00
3	12-inch Water Main - Open Cut w/ Granular Backfill	L.F.	2,100	\$ 200.00	\$ 420,000.00
4	12-inch Steel Water Main Hung on Bridge Structure with Fiberglass Insulation and Aluminum Jacket	L.F.	1,100	\$ 800.00	\$ 880,000.00
5	12-inch Gate Valve	EA.	6	\$ 3,000.00	\$ 18,000.00
6	Valve Vault Manhole	L.S.	1	\$ 20,000.00	\$ 20,000.00
7	Hydrant Assembly with 6-inch Valve	EA.	8	\$ 6,000.00	\$ 48,000.00
8	6-inch Hydrant Lead	L.F.	64	\$ 150.00	\$ 9,600.00
9	Connection to Existing Water System	EA.	2	\$ 5,000.00	\$ 10,000.00
10	HMA Pavement Replacement	S.F.	3,750	\$ 8.00	\$ 30,000.00
11	Topsoil, Fertilizer, Seed and Erosion Mat	S.Y.	7,500	\$ 6.00	\$ 45,000.00
12	Easements	EA.	3	\$ 25,000.00	\$ 75,000.00
12" Extension Subtotal					\$ 1,576,600.00
8" Extension					
1	Traffic Control	L.S.	1	\$ 10,000.00	\$ 10,000.00
2	Erosion Control	L.S.	1	\$ 5,000.00	\$ 5,000.00
3	8-inch Water Main - Open Cut w/ Granular Backfill	L.F.	2,550	\$ 150.00	\$ 382,500.00
3	6-inch Water Main - Open Cut w/ Slurry Backfill	L.F.	60	\$ 175.00	\$ 10,500.00
4	8-inch Gate Valve	EA.	6	\$ 2,000.00	\$ 12,000.00
4	6-inch Gate Valve	EA.	1	\$ 2,000.00	\$ 2,000.00
5	Valve Vault Manhole	L.S.	1	\$ 20,000.00	\$ 20,000.00
6	Hydrant Assembly with 6-inch Valve	EA.	4	\$ 6,000.00	\$ 24,000.00
7	6-inch Hydrant Lead	L.F.	50	\$ 150.00	\$ 7,500.00
8	Connection to Existing Water System	EA.	3	\$ 5,000.00	\$ 15,000.00
9	HMA Pavement Replacement	S.F.	2,200	\$ 8.00	\$ 17,600.00
10	Topsoil, Fertilizer, Seed and Erosion Mat	S.Y.	3,200	\$ 6.00	\$ 19,200.00
11	Easements	EA.	4	\$ 25,000.00	\$ 100,000.00
8" Extension Subtotal					\$ 625,300.00
Subtotal					\$ 2,201,900.00
Contingency				10%	\$ 220,200.00
Design and Construction Engineering Services				20%	\$ 440,400.00
Structural Design					\$ 40,000.00
Geotechnical Exploration					\$ 15,000.00
Estimated Total Project Cost					\$ 2,917,500.00
Assumptions					
- Transmission main does not follow hydrant and valve spacing per NR 811.					
- External heating of hung water main is not required.					
- Service connections not included.					

ESTIMATED PROJECT COST

Project Name: Northmound Drive Water Main Alternatives
 Client Name: City of Pewaukee
 Project #: 26-10139

Date Modified: 8/9/2021

Item No.	Description	Unit	Quantity	Unit Price	Total
Alternative 2.1 - Northmound Dr north to I-94 and west across CTH F, Directional Drill across Fox River					
12" Extension					
1	Traffic Control	L.S.	1	\$ 5,000.00	\$ 5,000.00
2	Erosion Control	L.S.	1	\$ 10,000.00	\$ 10,000.00
3	12-inch Water Main - Open Cut w/ Granular Backfill	L.F.	1,900	\$ 150.00	\$ 285,000.00
4	12-inch Water Main, 24-inch Steel Casing, Bore across Redford Blvd.	L.F.	200	\$ 1,800.00	\$ 360,000.00
5	12-inch Water Main, 24-inch Steel Casing, Bore across Fox River	L.F.	250	\$ 1,800.00	\$ 450,000.00
6	12-inch Water Main, 24-inch Steel Casing, Bore across CN Railroad	L.F.	175	\$ 1,800.00	\$ 315,000.00
7	12-inch Water Main, HDD through Wetlands	L.F.	1,700	\$ 400.00	\$ 680,000.00
8	12-inch Water Main, HDD across Pewaukee River	L.F.	100	\$ 400.00	\$ 40,000.00
9	12-inch Gate Valve	EA.	10	\$ 2,800.00	\$ 28,000.00
10	Valve Vault Manhole	L.S.	1	\$ 20,000.00	\$ 20,000.00
11	Hydrant Assembly with 6-inch Valve	EA.	7	\$ 4,500.00	\$ 31,500.00
12	6-inch Hydrant Lead	L.F.	60	\$ 100.00	\$ 6,000.00
13	Connection to Existing Water System	EA.	2	\$ 5,000.00	\$ 10,000.00
14	Topsoil, Fertilizer, Seed and Erosion Mat	S.Y.	3,000	\$ 6.00	\$ 18,000.00
15	Easements	EA.	5	\$ 25,000.00	\$ 125,000.00
16	CN Railroad Permit Items, Flagging	EA.	2	\$ 20,000.00	\$ 40,000.00
12" Extension Subtotal					\$ 2,423,500.00
8" Extension					
1	Traffic Control	L.S.	1	\$ 10,000.00	\$ 10,000.00
2	Erosion Control	L.S.	1	\$ 5,000.00	\$ 5,000.00
3	8-inch Water Main - Open Cut w/ Granular Backfill	L.F.	2,550	\$ 150.00	\$ 382,500.00
3	6-inch Water Main - Open Cut w/ Slurry Backfill	L.F.	60	\$ 175.00	\$ 10,500.00
4	8-inch Gate Valve	EA.	6	\$ 2,000.00	\$ 12,000.00
4	6-inch Gate Valve	EA.	1	\$ 2,000.00	\$ 2,000.00
5	Valve Vault Manhole	L.S.	1	\$ 20,000.00	\$ 20,000.00
6	Hydrant Assembly with 6-inch Valve	EA.	4	\$ 6,000.00	\$ 24,000.00
7	6-inch Hydrant Lead	L.F.	50	\$ 150.00	\$ 7,500.00
8	Connection to Existing Water System	EA.	3	\$ 5,000.00	\$ 15,000.00
9	HMA Pavement Replacement	S.F.	2,200	\$ 8.00	\$ 17,600.00
10	Topsoil, Fertilizer, Seed and Erosion Mat	S.Y.	3,200	\$ 6.00	\$ 19,200.00
11	Easements	EA.	4	\$ 25,000.00	\$ 100,000.00
8" Extension Subtotal					\$ 625,300.00
Subtotal					\$ 3,048,800.00
Contingency				10%	\$ 304,900.00
Design and Construction Engineering Services				20%	\$ 609,800.00
Geotechnical Exploration					\$ 15,000.00
Estimated Total Project Cost					\$ 3,978,500.00
Assumptions - Transmission main does not follow hydrant and valve spacing per NR 811. - Rock removal not anticipated for excavations near P&D North Quarry Site - Fox River crossing requires boring through rock with a steel casing. - Service connections not included.					

ESTIMATED PROJECT COST

Project Name: Northmound Drive Water Main Alternatives
 Client Name: City of Pewaukee
 Project #: 26-10139

Date Modified: 8/9/2021

Item No.	Description	Unit	Quantity	Unit Price	Total
Alternative 2.2 - Northmound Dr north to I-94 and west to CTH F, Open Cut across Fox River					
12" Extension					
1	Traffic Control	L.S.	1	\$ 5,000.00	\$ 5,000.00
2	Erosion Control	L.S.	1	\$ 10,000.00	\$ 10,000.00
3	12-inch Water Main - Open Cut w/ Granular Backfill	L.F.	1,900	\$ 150.00	\$ 285,000.00
4	12-inch Water Main, 24-inch Steel Casing, Bore across Redford Blvd.	L.F.	200	\$ 1,800.00	\$ 360,000.00
5	12-inch Water Main, 24-inch Steel Casing, Open Cut across Fox River	L.F.	250	\$ 1,500.00	\$ 375,000.00
6	12-inch Water Main, 24-inch Steel Casing, Bore across CN Railroad	L.F.	175	\$ 1,800.00	\$ 315,000.00
7	12-inch Water Main, HDD through Wetlands	L.F.	1,700	\$ 400.00	\$ 680,000.00
8	12-inch Water Main, HDD across Pewaukee River	L.F.	100	\$ 400.00	\$ 40,000.00
9	Rock Removal	L.F.	250	\$ 40.00	\$ 10,000.00
10	12-inch Gate Valve	EA.	10	\$ 2,800.00	\$ 28,000.00
11	Valve Vault Manhole	L.S.	1	\$ 20,000.00	\$ 20,000.00
12	Hydrant Assembly with 6-inch Valve	EA.	7	\$ 4,500.00	\$ 31,500.00
13	6-inch Hydrant Lead	L.F.	60	\$ 100.00	\$ 6,000.00
14	Connection to Existing Water System	EA.	2	\$ 5,000.00	\$ 10,000.00
15	Topsoil, Fertilizer, Seed and Erosion Mat	S.Y.	3,000	\$ 6.00	\$ 18,000.00
16	Easements	EA.	5	\$ 25,000.00	\$ 125,000.00
17	CN Railroad Permit Items, Flagging	EA.	2	\$ 20,000.00	\$ 40,000.00
12" Extension Subtotal					\$ 2,358,500.00
8" Extension					
1	Traffic Control	L.S.	1	\$ 10,000.00	\$ 10,000.00
2	Erosion Control	L.S.	1	\$ 5,000.00	\$ 5,000.00
3	8-inch Water Main - Open Cut w/ Granular Backfill	L.F.	2,550	\$ 150.00	\$ 382,500.00
3	6-inch Water Main - Open Cut w/ Slurry Backfill	L.F.	60	\$ 175.00	\$ 10,500.00
4	8-inch Gate Valve	EA.	6	\$ 2,000.00	\$ 12,000.00
4	6-inch Gate Valve	EA.	1	\$ 2,000.00	\$ 2,000.00
5	Valve Vault Manhole	L.S.	1	\$ 20,000.00	\$ 20,000.00
6	Hydrant Assembly with 6-inch Valve	EA.	4	\$ 6,000.00	\$ 24,000.00
7	6-inch Hydrant Lead	L.F.	50	\$ 150.00	\$ 7,500.00
8	Connection to Existing Water System	EA.	3	\$ 5,000.00	\$ 15,000.00
9	HMA Pavement Replacement	S.F.	2,200	\$ 8.00	\$ 17,600.00
10	Topsoil, Fertilizer, Seed and Erosion Mat	S.Y.	3,200	\$ 6.00	\$ 19,200.00
11	Easements	EA.	4	\$ 25,000.00	\$ 100,000.00
8" Extension Subtotal					\$ 625,300.00
Subtotal					\$ 2,983,800.00
Contingency				10%	\$ 298,400.00
Design and Construction Engineering Services				20%	\$ 596,800.00
Geotechnical Exploration					\$ 15,000.00
Estimated Total Project Cost					\$ 3,894,000.00
Assumptions - Transmission main does not follow hydrant and valve spacing per NR 811. - Rock removal not anticipated for excavations near P&D North Quarry Site - River crossing requires excavation of rock below river bed. - Service connections not included.					

ESTIMATED PROJECT COST

Project Name: Northmound Drive Water Main Alternatives

Client Name: City of Pewaukee

Project #: 26-10139

Date Modified:

8/9/2021

Item No.	Description	Unit	Quantity	Unit Price	Total
Alternative 3.1 - Northmound Dr north crossing I-94 along North Ave to Watertown Rd, Directional Drill across Fox River					
12" Extension					
1	Traffic Control	L.S.	1	\$ 10,000.00	\$ 10,000.00
2	Erosion Control	L.S.	1	\$ 10,000.00	\$ 10,000.00
3	12-inch Water Main - Open Cut w/ Granular Backfill	L.F.	2,950	\$ 150.00	\$ 442,500.00
4	12-inch Water Main, 24-inch Steel Casing, Bore across I-94	L.F.	300	\$ 1,800.00	\$ 540,000.00
5	12-inch Water Main, 24-inch Steel Casing, Bore across Fox River	L.F.	150	\$ 1,800.00	\$ 270,000.00
6	12-inch Water Main, HDD Through Wetlands	L.F.	800	\$ 400.00	\$ 320,000.00
7	12-inch Gate Valve	EA.	10	\$ 2,800.00	\$ 28,000.00
8	Valve Vault Manhole	L.S.	1	\$ 20,000.00	\$ 20,000.00
9	Hydrant Assembly with 6-inch Valve	EA.	7	\$ 4,500.00	\$ 31,500.00
10	6-inch Hydrant Lead	L.F.	60	\$ 100.00	\$ 6,000.00
11	Connection to Existing Water System	EA.	2	\$ 5,000.00	\$ 10,000.00
12	HMA Pavement Replacement	S.F.	1,000	\$ 8.00	\$ 8,000.00
13	Topsoil, Fertilizer, Seed and Erosion Mat	S.Y.	4,000	\$ 6.00	\$ 24,000.00
14	Easements	EA.	2	\$ 25,000.00	\$ 50,000.00
12" Extension Subtotal					\$ 1,770,000.00
8" Extension					
1	Traffic Control	L.S.	1	\$ 10,000.00	\$ 10,000.00
2	Erosion Control	L.S.	1	\$ 5,000.00	\$ 5,000.00
3	8-inch Water Main - Open Cut w/ Granular Backfill	L.F.	2,550	\$ 150.00	\$ 382,500.00
3	6-inch Water Main - Open Cut w/ Slurry Backfill	L.F.	60	\$ 175.00	\$ 10,500.00
4	8-inch Gate Valve	EA.	6	\$ 2,000.00	\$ 12,000.00
4	6-inch Gate Valve	EA.	1	\$ 2,000.00	\$ 2,000.00
5	Valve Vault Manhole	L.S.	1	\$ 20,000.00	\$ 20,000.00
6	Hydrant Assembly with 6-inch Valve	EA.	4	\$ 6,000.00	\$ 24,000.00
7	6-inch Hydrant Lead	L.F.	50	\$ 150.00	\$ 7,500.00
8	Connection to Existing Water System	EA.	3	\$ 5,000.00	\$ 15,000.00
9	HMA Pavement Replacement	S.F.	2,200	\$ 8.00	\$ 17,600.00
10	Topsoil, Fertilizer, Seed and Erosion Mat	S.Y.	3,200	\$ 6.00	\$ 19,200.00
11	Easements	EA.	4	\$ 25,000.00	\$ 100,000.00
8" Extension Subtotal					\$ 625,300.00
Subtotal					\$ 2,395,300.00
Contingency				10%	\$ 239,500.00
Design and Construction Engineering Services				20%	\$ 479,100.00
Geotechnical Exploration					\$ 15,000.00
Estimated Total Project Cost					\$ 3,128,900.00
Assumptions					
- Transmission main does not follow hydrant and valve spacing per NR 811.					
- Rock removal not anticipated for excavations near P&D North Quarry Site					
- River crossing requires boring through rock with a steel casing.					
- Service connections not included.					

ESTIMATED PROJECT COST

Project Name: Northmound Drive Water Main Alternatives

Client Name: City of Pewaukee

Project #: 26-10139

Date Modified:

8/9/2021

Item No.	Description	Unit	Quantity	Unit Price	Total
Alternative 3.2 - Northmound Dr north crossing I-94 along North Ave to Watertown Rd, Open Cut across Fox River					
12" Extension					
1	Traffic Control	L.S.	1	\$ 10,000.00	\$ 10,000.00
2	Erosion Control	L.S.	1	\$ 10,000.00	\$ 10,000.00
3	12-inch Water Main - Open Cut w/ Granular Backfill	L.F.	2,950	\$ 150.00	\$ 442,500.00
4	12-inch Water Main, 24-inch Steel Casing, Bore across I-94	L.F.	300	\$ 1,800.00	\$ 540,000.00
5	12-inch Water Main, 24-inch Steel Casing, Open Cut across Fox River	L.F.	150	\$ 1,500.00	\$ 225,000.00
6	12-inch Water Main, HDD Through Wetlands	L.F.	800	\$ 400.00	\$ 320,000.00
7	12-inch Gate Valve	EA.	10	\$ 2,800.00	\$ 28,000.00
8	Valve Vault Manhole	L.S.	1	\$ 20,000.00	\$ 20,000.00
9	Hydrant Assembly with 6-inch Valve	EA.	7	\$ 4,500.00	\$ 31,500.00
10	6-inch Hydrant Lead	L.F.	60	\$ 100.00	\$ 6,000.00
11	Connection to Existing Water System	EA.	2	\$ 5,000.00	\$ 10,000.00
12	HMA Pavement Replacement	S.F.	1,000	\$ 8.00	\$ 8,000.00
13	Topsoil, Fertilizer, Seed and Erosion Mat	S.Y.	3,000	\$ 6.00	\$ 18,000.00
14	Easements	EA.	2	\$ 25,000.00	\$ 50,000.00
12" Extension Subtotal					\$ 1,719,000.00
8" Extension					
1	Traffic Control	L.S.	1	\$ 10,000.00	\$ 10,000.00
2	Erosion Control	L.S.	1	\$ 5,000.00	\$ 5,000.00
3	8-inch Water Main - Open Cut w/ Granular Backfill	L.F.	2,550	\$ 150.00	\$ 382,500.00
3	6-inch Water Main - Open Cut w/ Slurry Backfill	L.F.	60	\$ 175.00	\$ 10,500.00
4	8-inch Gate Valve	EA.	6	\$ 2,000.00	\$ 12,000.00
4	6-inch Gate Valve	EA.	1	\$ 2,000.00	\$ 2,000.00
5	Valve Vault Manhole	L.S.	1	\$ 20,000.00	\$ 20,000.00
6	Hydrant Assembly with 6-inch Valve	EA.	4	\$ 6,000.00	\$ 24,000.00
7	6-inch Hydrant Lead	L.F.	50	\$ 150.00	\$ 7,500.00
8	Connection to Existing Water System	EA.	3	\$ 5,000.00	\$ 15,000.00
9	HMA Pavement Replacement	S.F.	2,200	\$ 8.00	\$ 17,600.00
10	Topsoil, Fertilizer, Seed and Erosion Mat	S.Y.	3,200	\$ 6.00	\$ 19,200.00
11	Easements	EA.	4	\$ 25,000.00	\$ 100,000.00
8" Extension Subtotal					\$ 625,300.00
Subtotal					\$ 2,344,300.00
Contingency				10%	\$ 234,400.00
Design and Construction Engineering Services				20%	\$ 468,900.00
Geotechnical Exploration					\$ 15,000.00
Estimated Total Project Cost					\$ 3,062,600.00
Assumptions					
- Transmission main does not follow hydrant and valve spacing per NR 811.					
- Rock removal not anticipated for excavations near P&D North Quarry Site					
- River crossing requires boring through rock with a steel casing.					
- Service connections not included.					

ESTIMATED PROJECT COST

Project Name: Northmound Drive Water Main Alternatives

Client Name: City of Pewaukee

Project #: 26-10139

Date Modified:

8/9/2021

Item No.	Description	Unit	Quantity	Unit Price	Total
Alternative 4 - Northmound Dr north crossing I-94 and NE to Watertown Rd and Jericho Dr					
12" Extension					
1	Traffic Control	L.S.	1	\$ 5,000.00	\$ 5,000.00
2	Erosion Control	L.S.	1	\$ 10,000.00	\$ 10,000.00
3	12-inch Water Main - Open Cut w/ Granular Backfill	L.F.	2,700	\$ 150.00	\$ 405,000.00
4	12-inch Water Main, 24-inch Steel Casing, Bore across I-94	L.F.	350	\$ 1,800.00	\$ 630,000.00
5	12-inch Water Main, HDD Through Wetlands	L.F.	950	\$ 400.00	\$ 380,000.00
6	12-inch Gate Valve	EA.	10	\$ 2,800.00	\$ 28,000.00
7	Valve Vault Manhole	L.S.	1	\$ 20,000.00	\$ 20,000.00
8	Hydrant Assembly with 6-inch Valve	EA.	7	\$ 4,500.00	\$ 31,500.00
9	6-inch Hydrant Lead	L.F.	60	\$ 100.00	\$ 6,000.00
10	Connection to Existing Water System	EA.	2	\$ 5,000.00	\$ 10,000.00
11	HMA Pavement Replacement	S.F.	600	\$ 8.00	\$ 4,800.00
12	Topsoil, Fertilizer, Seed and Erosion Mat	S.Y.	4,000	\$ 6.00	\$ 24,000.00
13	Easements	EA.	3	\$ 25,000.00	\$ 75,000.00
12" Extension Subtotal					\$ 1,629,300.00
8" Extension					
1	Traffic Control	L.S.	1	\$ 10,000.00	\$ 10,000.00
2	Erosion Control	L.S.	1	\$ 5,000.00	\$ 5,000.00
3	8-inch Water Main - Open Cut w/ Granular Backfill	L.F.	2,550	\$ 150.00	\$ 382,500.00
3	6-inch Water Main - Open Cut w/ Slurry Backfill	L.F.	60	\$ 175.00	\$ 10,500.00
4	8-inch Gate Valve	EA.	6	\$ 2,000.00	\$ 12,000.00
4	6-inch Gate Valve	EA.	1	\$ 2,000.00	\$ 2,000.00
5	Valve Vault Manhole	L.S.	1	\$ 20,000.00	\$ 20,000.00
6	Hydrant Assembly with 6-inch Valve	EA.	4	\$ 6,000.00	\$ 24,000.00
7	6-inch Hydrant Lead	L.F.	50	\$ 150.00	\$ 7,500.00
8	Connection to Existing Water System	EA.	3	\$ 5,000.00	\$ 15,000.00
9	HMA Pavement Replacement	S.F.	2,200	\$ 8.00	\$ 17,600.00
10	Topsoil, Fertilizer, Seed and Erosion Mat	S.Y.	3,200	\$ 6.00	\$ 19,200.00
11	Easements	EA.	4	\$ 25,000.00	\$ 100,000.00
8" Extension Subtotal					\$ 625,300.00
Subtotal					\$ 2,254,600.00
Contingency				10%	\$ 225,500.00
Design and Construction Engineering Services				20%	\$ 450,900.00
Geotechnical Exploration					\$ 15,000.00
Estimated Total Project Cost					\$ 2,946,000.00
Assumptions					
- Transmission main does not follow hydrant and valve spacing per NR 811.					
- Service connections not included.					

APPENDIX C

ADDITIONAL INFORMATION

ABBREVIATIONS
F — Fine M — Medium C — Coarse
Ws — Weathered So — Sound

MATERIAL SYMBOLS
Topsoil Silt Sandstone
Sand Peat Limestone
Gravel Clay Igneous Rock

LEGEND OF PROBING
Probing No.
Sta.
Elevation
95/6=95 Blows for 6" Penetration
Probing taken with a 350# wt. Falling 18" on a 2" O. D. Point.
7 Average Blows Per Foot
Refusal 95/6

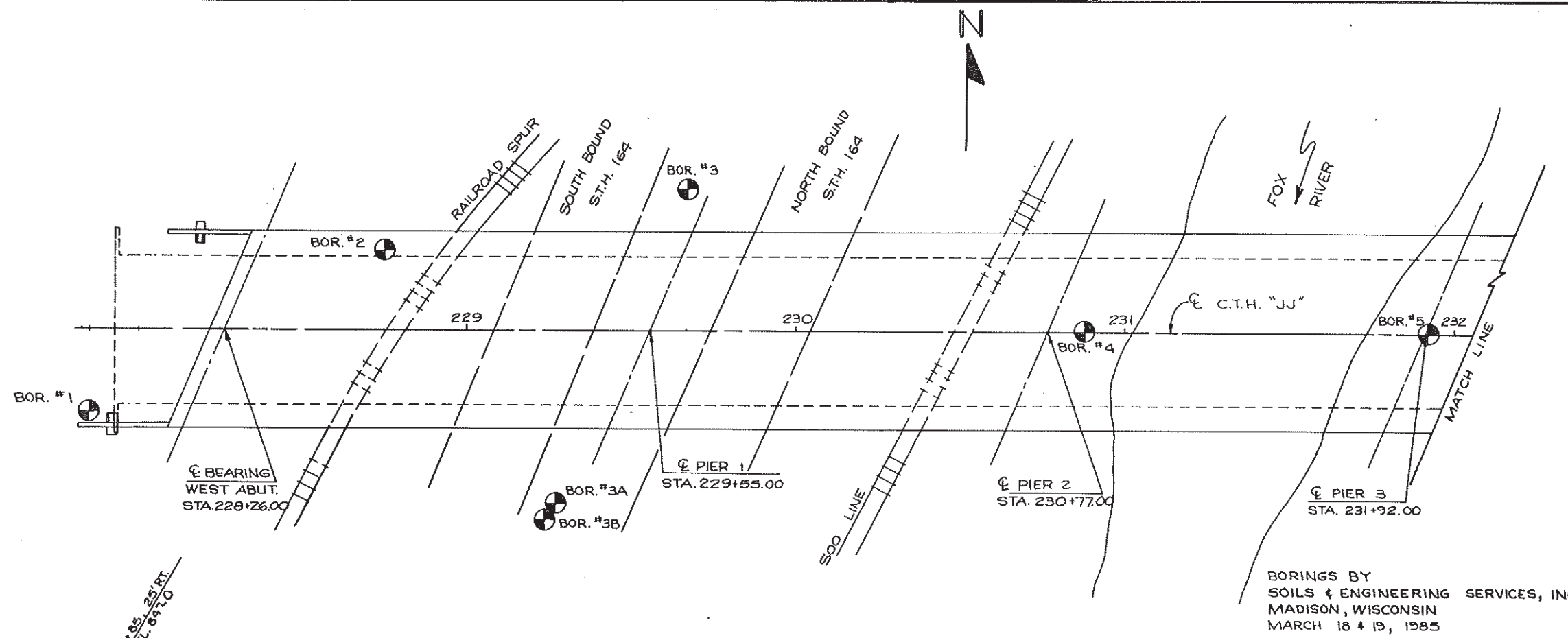
LEGEND OF BORING
Boring No.
Sta.
Elev.
Unconfined Strength 7.7
Blows Per Ft. 7
Using 140# Wt. Falling 30"
Wash Sample
Shelby Tube — S. T.
Ground Water Elevation
No Ground Water Observed Above This Elevation
Sandy Gravel
F.
Boulders or Cobbles
Sand
Silty Clay
So
Limestone

Unless otherwise specified, the blows per foot at the locations indicated are based on driving a 2" O. D. x 1.4" I. D. split spoon sampler with a 140# hammer having a free fall of 30". The blow count is taken in undisturbed soil immediately below a cased or open hole eliminating side friction on the drive pipe.

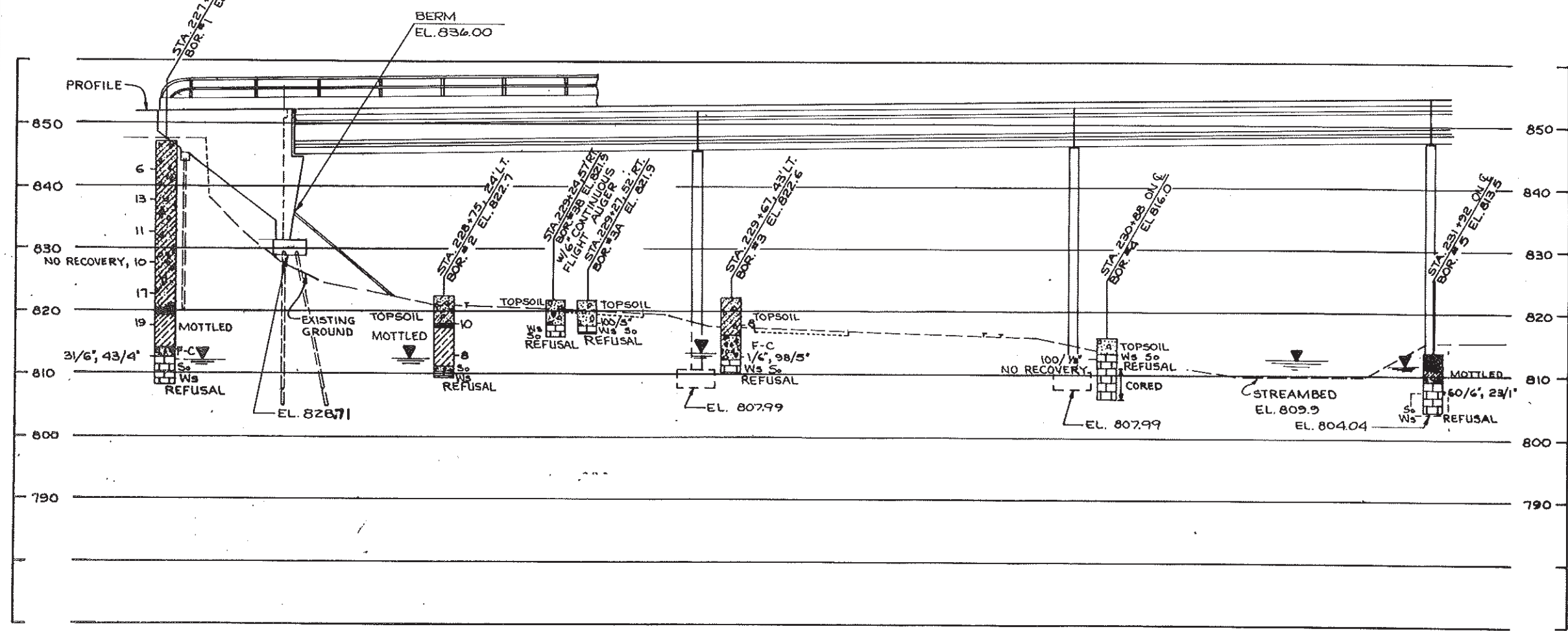
SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

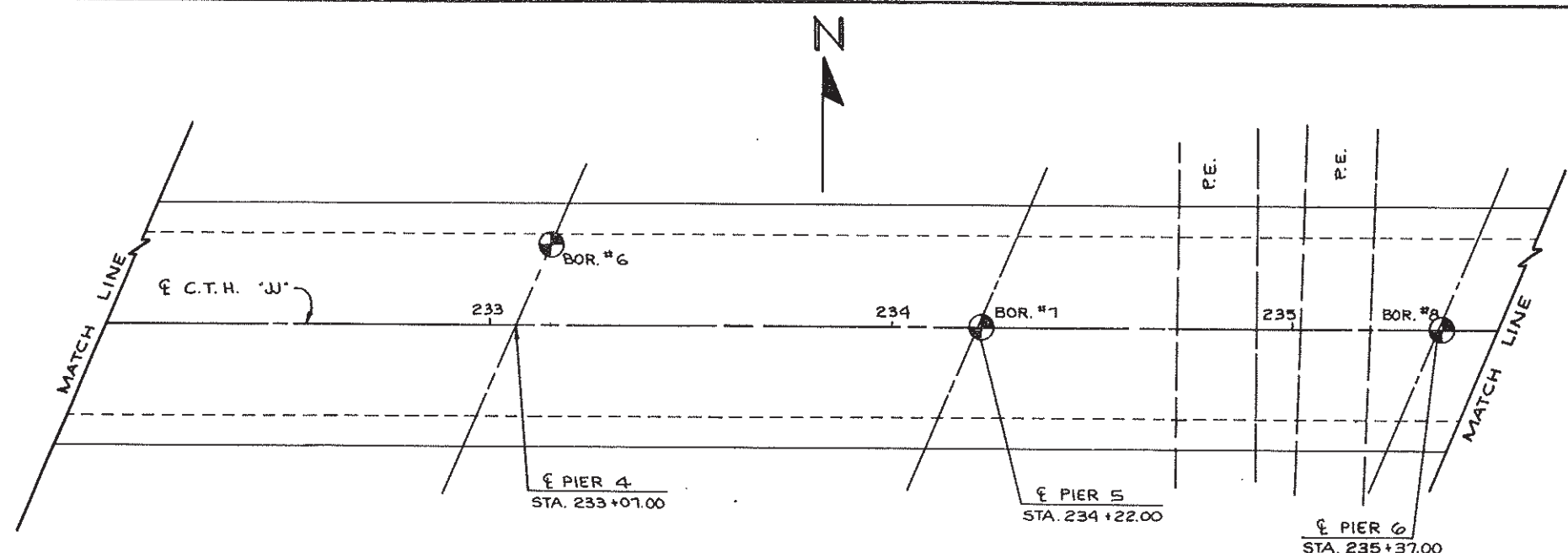
To obtain relative data concerning the character of material in and upon which the foundation might be built, borings and/or soundings were made at points approximately as indicated on this drawing. The data presented herein represents the findings of the subsurface explorations made. However, because the depths investigated are limited and the area of the borings and/or soundings is very small in relation to the entire area, the Division of Highways does not warrant conditions below the depths investigated or that the classification of material encountered in these investigations is necessarily typical of the entire site.

No.	Date.	Revision	By
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-67-215			
Const. Spec. 1981	Drawn By MCB	Plans Checked NJA,DLB	
SUBSURFACE EXPLORATION			SHEET 4 OF 36
			X80853

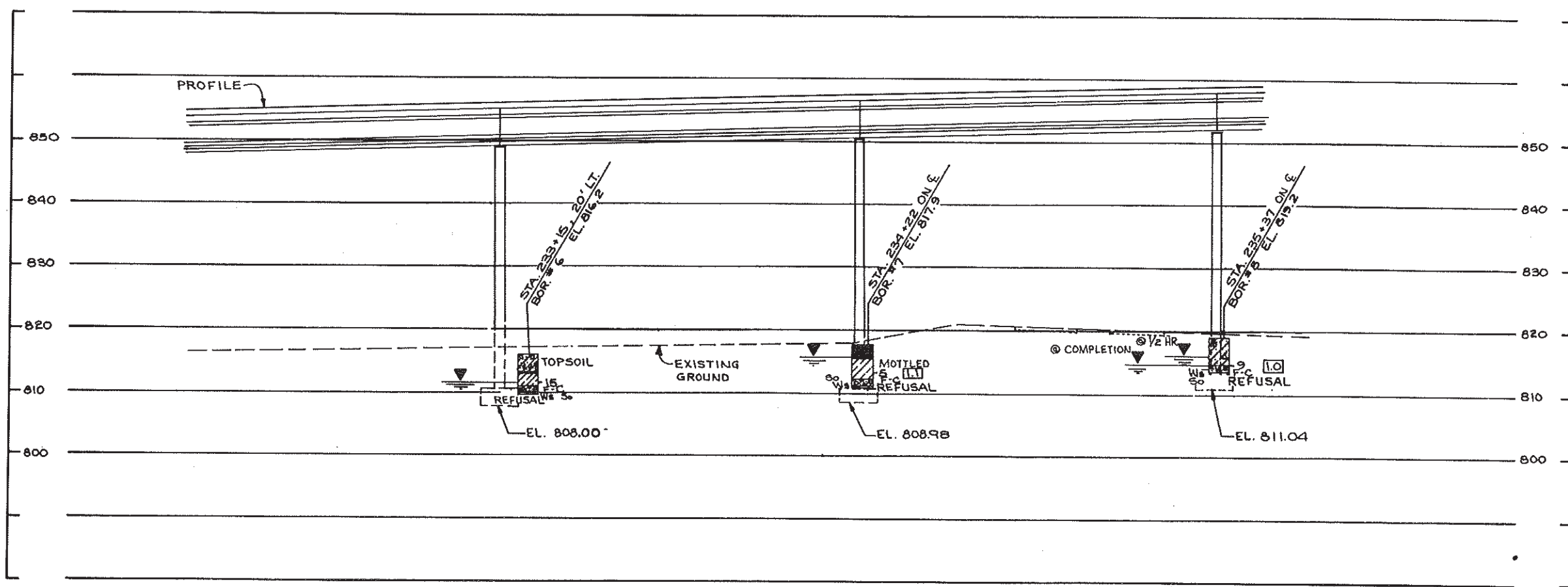


BORINGS BY
SOILS & ENGINEERING SERVICES, INC.
MADISON, WISCONSIN
MARCH 18 & 19, 1985





BORINGS BY
SOILS & ENGINEERING SERVICES, INC.
MADISON, WISCONSIN
MARCH 18 & 19, 1985



STATE PROJECT NUMBER	SHEET NO.
2158-03-70	8.7

ABBREVIATIONS		
F — Fine	M — Medium	C — Coarse
Ws — Weathered	So — Sound	

MATERIAL SYMBOLS		
Topsoil	Silt	Sandstone
Sand	Peat	Limestone
Gravel	Clay	Igneous Rock

LEGEND OF PROBING	
95/6=95 Blows for 6" Penetration Probing taken with a 350# wt. Falling 18" on a 2" O. D. Point.	Probing No. Sta. Elevation 7 Average Blows Per Foot Refusal 95/6

LEGEND OF BORING	
Unconfined Strength → 7.7 Blows Per Ft. Using 140# Wt. Falling 30" Wash Sample Shelby Tube — S. T. Ground Water Elevation No Ground Water Observed Above This Elevation	Boring No. Sta. Elev. Sandy Gravel F. Boulders or Cobbles Sand Silty Clay So Limestone

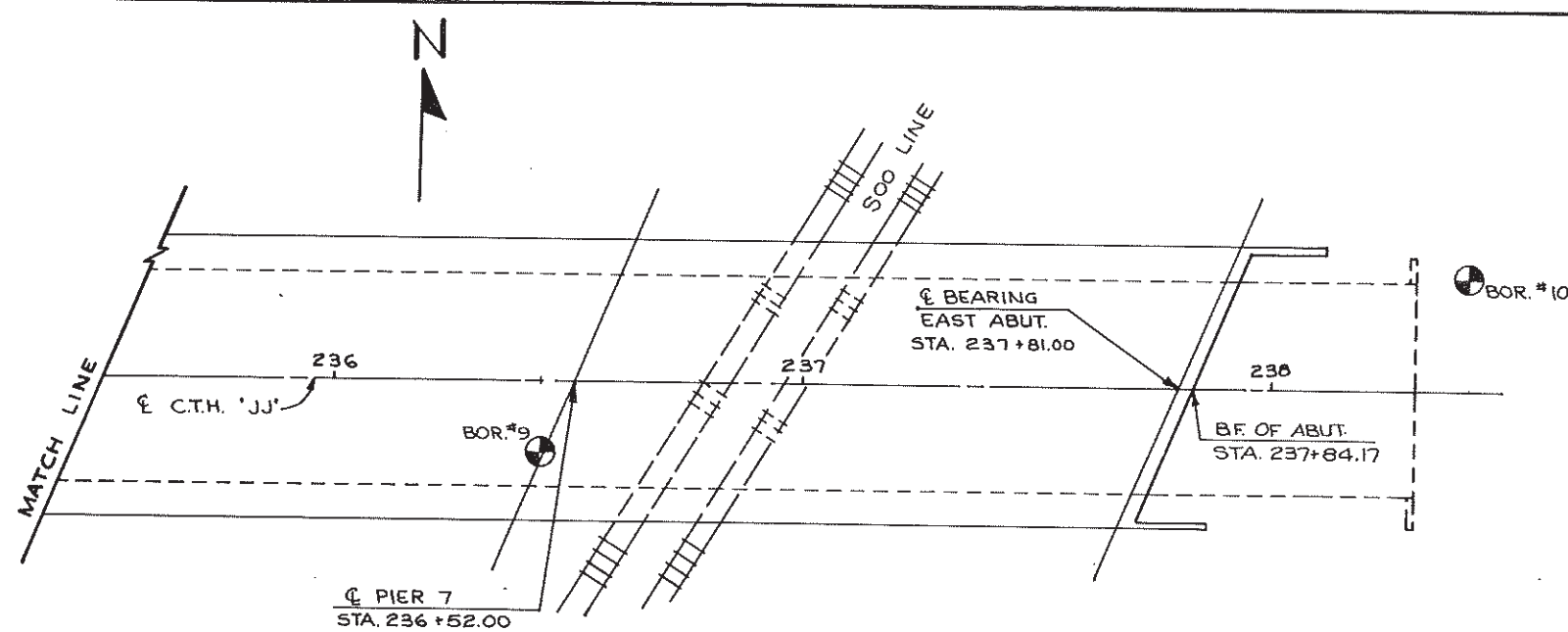
Unless otherwise specified, the blows per foot at the locations indicated are based on driving a 2" O. D. x 1.4" I. D. split spoon sampler with a 140# hammer having a free fall of 30". The blow count is taken in undisturbed soil immediately below a cased or open hole eliminating side friction on the drive pipe.

SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

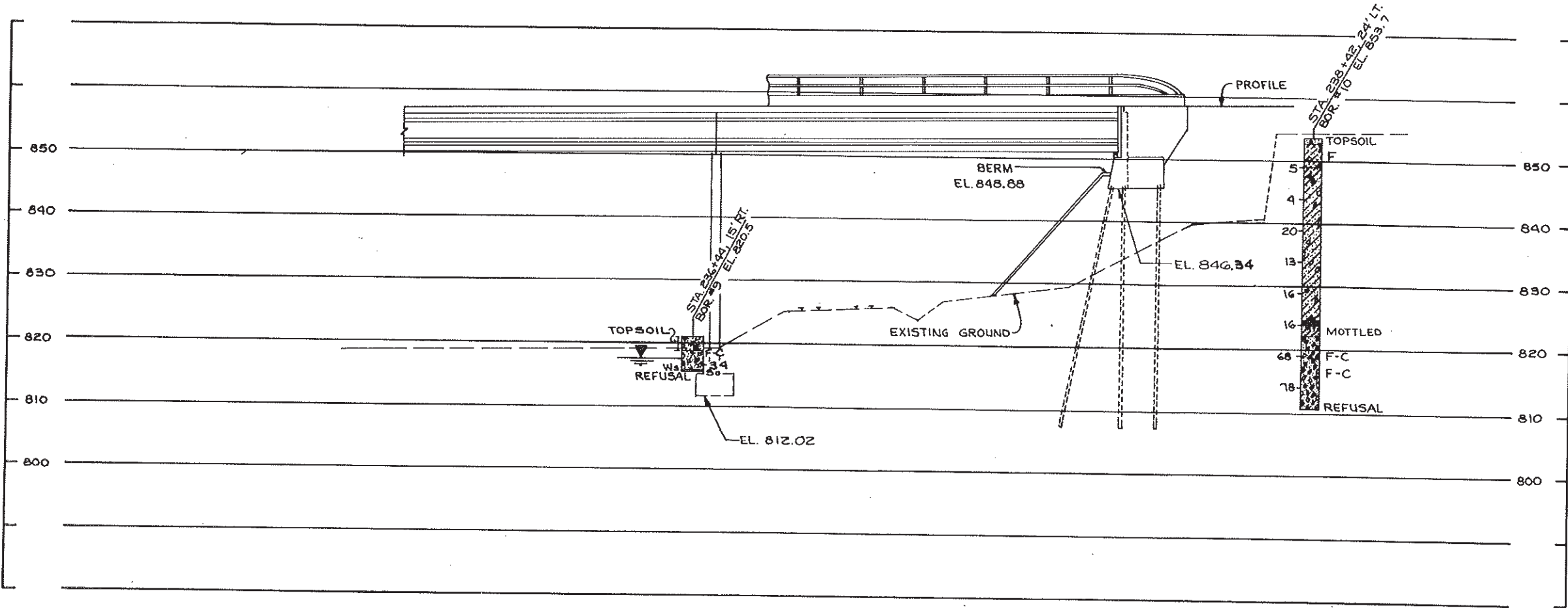
To obtain relative data concerning the character of material in and upon which the foundation might be built, borings and/or soundings were made at points approximately as indicated on this drawing. The data presented herein represents the findings of the subsurface explorations made. However, because the depths investigated are limited and the area of the borings and/or soundings is very small in relation to the entire area, the Division of Highways does not warrant conditions below the depths investigated or that the classification of material encountered in these investigations is necessarily typical of the entire site.

No.	Date.	Revision	By

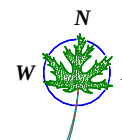
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION		
STRUCTURE B-67-215		
Const. Spec. 1981	Drawn By MCB	Plans Checked NJA, DLB
SUBSURFACE EXPLORATION		SHEET 5 OF 36
		X80854



BORINGS BY
SOILS & ENGINEERING SERVICES, INC.
MADISON, WISCONSIN
MARCH 18 & 19, 1985



STATE PROJECT NUMBER		SHEET NO.	
2758-03-70		8.8	
ABBREVIATIONS			
F — Fine	M — Medium	C — Coarse	
Ws — Weathered	So — Sound		
MATERIAL SYMBOLS			
Topsoil	Silt	Sandstone	
Sand	Peat	Limestone	
Gravel	Clay	Igneous Rock	
LEGEND OF PROBING			
95/6=95 Blows for 6" Penetration		Probing No.	
Probing taken with a 350# wt. Falling 18" on a 2" O. D. Point.		Sta.	
		Elevation	
		7 Average Blows Per Foot	
		Refusal 95/6	
LEGEND OF BORING			
Unconfined Strength		Boring No.	
Blows Per Ft. Using 140# Wt. Falling 30"		Sta.	
Wash Sample		Elev.	
Shelby Tube — S. T.			
Ground Water Elevation		Sandy Gravel	
No Ground Water Observed Above This Elevation		F.	
		Boulders or Cobbles	
		Sand	
		Silty Clay	
		So	
		Limestone	
Unless otherwise specified, the blows per foot at the locations indicated are based on driving a 2" O. D. x 1.4" I. D. split spoon sampler with a 140# hammer having a free fall of 30". The blow count is taken in undisturbed soil immediately below a cased or open hole eliminating side friction on the drive pipe.			
SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION			
To obtain relative data concerning the character of material in and upon which the foundation might be built, borings and/or soundings were made at points approximately as indicated on this drawing. The data presented herein represents the findings of the subsurface explorations made. However, because the depths investigated are limited and the area of the borings and/or soundings is very small in relation to the entire area, the Division of Highways does not warrant conditions below the depths investigated or that the classification of material encountered in these investigations is necessarily typical of the entire site.			
No.	Date.	Revision	By
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-67-215			
Const. Spec. 1981	Drawn By MCB	Plans Checked HJA, DLB	
SUBSURFACE EXPLORATION			SHEET 8 OF 36
			X80856



PAYNE AND DOLAN, INC.
 6295 Lacy Road
 Verona, WI 53593
 Phone: 608.845.8900
 Fax: 608.845.8884



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 THE COMPANY WITHOUT
 PERMISSION.

Top of Bedrock Elevations
Waukesha North Quarry Site
City of Pewaukee, Waukesha County, Wisconsin

DATE	BY	DATE	REVISION
June-08-2021	CGW		

DATE: June-08-2021
 DRAWN BY: CGW
 DRAWING #: 87000-02-101
 SCALE: As shown

1



*DRAWN AND PREPARED FOR PAYNE & DOLAN, INC. BY:
 CLINT G. WENINGER, P.E.
 CONSTRUCTION RESOURCES MANAGEMENT, INC.
 P.O. BOX 1632
 WAUKESHA, WI 53187



**CITY OF PEWAUKEE
PUBLIC WORKS COMMITTEE AGENDA ITEM 9.1.**

DATE: November 11, 2021

DEPARTMENT: Public Works

PROVIDED BY: Magdelene Wagner

SUBJECT:

Discussion and possible action regarding the 2022 Budget for Engineering, Water Utility, Sewer Utility, Storm Water Utility, Bike Trails and Highway.

BACKGROUND:

Attached is the proposed 2022 Budget for your review.

FINANCIAL IMPACT:

RECOMMENDED MOTION:

Committee recommend approval of the budgets to the Common Council.

ATTACHMENTS:

Description

2022 Bike Pedestrian Budget

2022 Engineering and Highway Budget

2022 Storm Water Utility Budget

2022 Road Budget

2022 Engineering and Highway Capital Budget

2022 Storm Water Utility Capital Budget

2022 Sewer & Water Operating Budget

2022 Water & Sewer Capital Budget

CITY OF PEWAUKEE
2022 BUDGET
CAPITAL PROJECTS FUND - BIKE & PEDESTRIAN

2020 Actual	2021		2021 Budget	2022 Budget
	6 Month Actual	Year End Forecast		

Revenues

440-00000-49222	Transfer from Impact Fees	-	-	20,000	84,000	64,000
440-00000-49210	Transfer from General Fund	9,340	-	246,000	246,000	-
	Proceeds of Long-Term Debt			960,000		-
	Total Revenues	9,340	-	1,226,000	330,000	64,000

Projects

440-53550-58200	Bike Path Study	-	-	-	-	-
	Maintneance of Trails	-	-	-	-	10,000
440-53550-58210	Green Road Path	-	-	-	-	-
440-53550-58220	Fieldhack	527	-	20,000	150,000	150,000
440-53550-58230	Northview Road Sidewalk	8,813	12,232	30,000	150,000	200,000
440-53550-58240	Duplainville Road			30,000	30,000	450,000
440-53550-58250	Lindsay Road Trail			75,000		325,000

Total Expenditures and Other Uses	9,340	12,232	155,000	330,000	1,135,000
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Change in Fund Balance	-	(12,232)	1,071,000	-	(1,071,000)
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Fund Balance:

Beginning of Period	-	-	-	1,178	1,071,000
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End of Period	-	(12,232)	1,071,000	1,178	-
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**CITY OF PEWAUKEE
2022 BUDGET
GENERAL FUND EXPENDITURES**

CONSOLIDATED

2020	2021			2022	COMMENTS
	6 Month	Year End	2021		

Fire & Ambulance Services

Fire Administration

Wages	367,478	172,009	387,017	435,445	447,370	
Benefits	142,355	71,063	170,046	184,523	196,998	
Attorney	514	628	3,500	5,000	7,500	
Contract for Services	89,701	46,469	91,500	89,000	94,000	
Utilities	71,480	30,573	71,100	82,100	79,500	
Training/Conferences/Membership	5,357	371	5,500	9,500	7,000	
Supplies, Equipment, Grounds Ma	50,039	22,930	76,500	66,500	73,000	
Total Fire Administration	726,924	344,043	805,163	872,068	905,368	

Fire Protective Services

Wages	2,577,834	1,159,604	2,715,787	2,795,787	2,950,906	
Benefits	986,363	477,384	1,154,244	1,272,437	1,305,934	
Conferences/Memberships/Dues	12,602	4,278	13,000	25,000	25,000	
Supplies & Equipment	254,286	139,431	376,000	345,000	363,000	
Liability & Workers Comp	166,058	119,707	158,566	175,000	173,462	
Total Fire Ambo/Suppressi	3,997,143	1,900,404	4,417,597	4,613,224	4,818,302	
Total Fire Services	4,724,067	2,244,447	5,222,760	5,485,292	5,723,670	

Community Services (Bldg Insp)

Wages	284,421	126,667	281,285	288,354	299,182	
Benefits	124,443	60,649	146,834	146,794	155,485	
Attorney Fees	3,998	822	2,000	4,500	4,000	
Contract for Services	-	-	4,530	15,000	10,000	
Training/Conferences/Membership	1,994	2,401	3,460	6,000	6,200	
Supplies & Equipment	14,530	7,028	15,300	24,000	24,000	
Total Community Services	429,386	197,567	453,409	484,648	498,867	

Public Works

Engineering

Wages	210,192	72,477	224,735	305,353	319,691	
Benefits	76,921	31,998	57,826	107,156	113,779	
Outside Engineering	238,633	83,093	150,000	35,000	35,000	
Training/Conferences/Membership	1,955	705	3,200	5,400	5,400	
Supplies & Equipment	6,273	2,922	18,950	20,000	33,000	\$12k Radar speed signs, \$3k newsletter (50/50 Storm)
Total Engineering Services	533,974	191,195	454,711	472,909	506,870	

**CITY OF PEWAUKEE
2022 BUDGET
GENERAL FUND EXPENDITURES**

CONSOLIDATED

2020	2021			2022	COMMENTS
	6 Month	Year End	2021		

Highway Administration

Wages	484,901	241,396	465,339	522,056	551,792	Add FT Laborer September (33%)
Benefits	199,217	104,111	192,610	232,500	267,411	
Training/Conferences/Membership	330	70	50	3,500	3,500	
Utilities	11,109	5,902	13,800	13,800	54,100	\$12k expense; \$20k LED Conversion \$10k new DPW Facility
Building & Ground Maint	-	-	-	-	6,000	New DPW Facility - Occupancy Oct 2022
Sand & Salt	144,615	145,783	225,000	225,000	225,000	
Road Signs & Repairs	101,896	13,135	128,500	128,500	129,400	
Supplies & Equipment	208,023	47,917	196,283	196,000	234,750	New DPW Facility, Spider Lift
Quiet Zone	1,373	-	-	-	-	
Total Highway Administration	1,151,464	558,314	1,221,582	1,321,356	1,471,953	

Refuse Collection and Recycling

Wages	8,090	3,190	9,251	9,251	9,503	
Benefits	619	1,505	2,208	708	727	
Garbage Collection	814,972	315,416	826,000	826,000	849,588	
Hauling Recyclables	60,197	13,927	60,000	60,000	60,000	
Supplies & Equipment	118	-	-	1,500	-	
Total Garbage Collection and Recycling	883,996	334,038	897,459	897,459	919,818	

Environmental Management

COVID 19	60,861	138	500	25,000	10,000	
Lake Management	192,000	198,000	198,000	198,000	203,940	
HAWS Contracted Services	6,699	6,699	6,699	6,699	6,699	
Deer Control	1,150	16,375	21,000	14,500	16,000	
Forestry	20,494	875	25,400	31,350	41,400	
Total Environmental	281,204	222,087	251,599	275,549	278,039	

CITY OF PEWAUKEE
2022 BUDGET
SPECIAL REVENUE - STORM WATER MANAGEMENT

SPECIAL REVENUE - STORM WATER MANAGEMENT

CONSOLIDATED

	2020 Actual	2021			2022 Budget	COMMENTS
	6 Month Actual	Year End Forecast	2021 Budget			
Revenues and Other Sources						
Engineering Fees Reimb	126,217	82,604	120,000	70,000	70,000	
Miscellaneous	2,826	37,219	38,380	700	3,700	
Storm Water Management Fee	1,599,883	1,614,192	1,614,192	1,595,000	1,605,354	
Interest on Investments	33,371	216	2,432	-	2,400	
Proceeds of Long-term Debt	-	-	3,150,000	2,600,000	-	
Transfer from General Fund	17,520	17,568	17,568	17,496	19,152	
Transfer from Cemetery Fund	420	420	420	420	420	
Total Revenue and Other Sources	1,780,237	1,752,219	4,942,992	4,283,616	1,701,026	
ADMINISTRATION						
Wages	106,002	55,222	108,506	103,506	112,078	
Benefits	37,233	20,794	43,774	41,915	45,592	
Attorney & Accounting Fees	5,734	3,706	13,771	13,000	13,000	
Outside Engineering	89,113	47,590	95,000	60,000	60,000	
Supplies & Equipment	27,748	9,596	34,900	35,800	46,600	
Training/Conferences/Memberships	582	679	2,400	5,400	5,400	
Worker's Compensation	5,735	1,991	6,500	6,500	6,500	
Property & Liability Insurance	3,925	3,498	5,000	5,000	5,000	
TOTAL	276,072	143,076	309,851	271,121	294,170	
STORM SEWER MAINTENANCE						
Wages	25,511	12,518	26,033	27,033	27,976	
Benefits	575	-	450	1,000	900	
Maintenance of Storm Sewers	35,558	15,946	48,185	110,485	127,983	
TOTAL	61,644	28,464	74,668	138,518	156,859	
DITCH & CULVERT MAINTENANCE						
Wages	122,230	49,320	119,859	119,859	120,588	
Benefits	53,636	21,484	53,437	58,437	53,837	
Maintenance of Ditch & Culvert	69,762	21,788	101,500	94,500	119,500	
TOTAL	245,628	92,592	274,796	272,796	293,925	
STREET SWEEPING						
Wages	9,416	6,426	12,000	13,000	13,000	
Benefits	3,907	2,311	5,400	6,500	5,850	
Sediment Diposal/Sweeping	3,966	-	4,000	1,500	4,000	
TOTAL	17,289	8,737	21,400	21,000	22,850	
CATCH BASIN CLEANING & MAINTENANCE						
Wages	20,791	437	10,000	20,000	20,000	
Benefits	7,864	232	4,500	10,000	9,000	
Catch Basin Cleaning/Maintenance/Repairs	476	749	8,000	15,000	15,000	
TOTAL	29,131	1,418	22,500	45,000	44,000	

CITY OF PEWAUKEE

2022 BUDGET

SPECIAL REVENUE - STORM WATER MANAGEMENT

CONSOLIDATED

		2020 Actual	2021			2022 Budget	COMMENTS
			6 Month Actual	Year End Forecast	2021 Budget		
PERMIT COMPLIANCE							
Wages		50,998	26,078	52,158	52,158	54,163	
Benefits		17,677	10,496	20,992	20,992	21,968	
Inspections, Education & Permits		4,931	3,600	8,500	23,200	23,200	
	TOTAL	73,606	40,174	81,650	96,350	99,331	

PROJECTS

230-57301-58210	Hill 'n Dale Subdivision	3,824	14,398	450,000	950,000	550,000	Flood
230-57305-58210	Emerald Acres/Green Road	1,169,747	(7,146)	10,000	10,000	-	Flood
230-57320-58210	Public Works Yard Bio-Infiltration Swale	-	-	-	25,000	25,000	Water Quality
230-57322-58210	Tacoma Storm Sewer	-	-	5,000	50,000	50,000	Road project
230-57329-58210	Lexington Drive Ditch Enclosure	-	-	5,000	50,000	50,000	Flood-Design
230-57330-58210	Woodside Drive Ditch Enclosure	-	-	-	50,000	15,000	Maintenance-coordinate with road project 2023
230-57333-58210	Shady Lane/Shady Nook	-	-	50,000	250,000	250,000	Road
230-57334-58210	Hillside Grove Storm Sewer	-	-	-	50,000	10,000	Maintenance-Wetland Mapping
230-57335-58210	TMDL Reduction Projects	-	-	50	2,500	2,500	Water Quality
230-57338-58210	Storm Inlets & Catch Basins	192,955	5,926	670,000	250,000	75,000	Maintenance / Glenwood Lane Inlets/pipe \$36,000
230-57340-58210	City Storm Water Study	-	6,883	50,000	350,000	350,000	Operations/Study
230-57341-58210	Rocky Point Oak/Peninsula #3	-	-	-	20,000	-	Road/Flood
230-57347-58210	Duplainville Bridge (50R/50S)	6,733	1,667	5,000	95,000	150,000	Replacement 100,000 design '19 350,000 const. '21
230-57348-58210	Busse Rd. Bridge Culvert Repl. (50R/50S)	3,809	17,355	45,000	350,000	350,000	Maintenance-Road
230-57351-58210	Roundys Park II	12,663	-	230,000	75,000	20,000	-
230-57353-58210	Steeplechase #1	18,547	-	18,547	-	-	closeout 1/2021
230-57354-58210	Valley Brook Sub. Ditch enclosure	636	1,803	25,000	350,000	350,000	Replace Failed Ditch Enclosure Pipe
230-57355-58210	Yench Road Culvert Replacement	-	-	30,000	30,000	400,000	permit for culvert replacement on Coco Creek
230-57356-58210	Five Fields Pond Drainage	939	-	40,000	5,000	-	Maintenance - replace pipe to pond from inlet in easement
230-57357-58210	Facilities Plan (Storm portion)	-	-	1,000	10,000	10,000	Study
230-57358-58210	Foxwood/Kathrine Court	32,505	-	100,000	500,000	500,000	Ponding
230-57359-58210	Joseph Rd Reconstruction	-	-	40,000	350,000	275,000	Road - delayed from 2021
230-57360-58210	Meadowbrook Farms Ph 1	-	-	80,000	98,000	10,000	Road - retainage
230-57361-58210	Duplainville Road	-	-	50,000	15,000	1,000,000	Road reconstruction project
230-57364-58210	Steeplechase #2	25,826	-	4,500	-	-	Retainage - Closeout in 2021
230-57365-58210	Fox View Court	21,225	-	4,500	-	-	Retainage - Closeout in 2021
230-XXXX-58210	Wagner Park POND Dredge/Rehab					45,000	Design / Construction 2022
230-XXXX-58210	Kopmeier Road					250,000	Replace sanitary sewer so add road/drainage project in 2022
230-XXXX-58210	Lasko Drainage Issue					150,000	Per PWC, add as project in 2022 to address drainage from fire station
230-57366-58210	Oak/Peninsula	171,371	-	-	-	10,000	Retainage - closeout in 2022
TOTAL	1,660,780	40,886	1,913,597	3,935,500	4,897,500		

CAPITAL EXPENDITURES

Capital Equipment Expenditures	49,325	2,500	-	360,000	350,000	
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OTHER EXPENDITURES

Debt Issue Costs	-	-	-	-	-	
Transfer to Debt Service Fund	257,577	24,326	198,652	198,652	200,652	
TOTAL EXPENDITURES	2,671,052	382,173	2,897,114	5,338,937	6,359,287	

Change in Fund Balance	(890,815)	1,370,046	2,045,878	(1,055,321)	(4,658,261)
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Fund Balance:

Beginning of Year	3,616,102	2,725,287	2,725,287	1,117,883	4,771,165
End of Year	2,725,287	4,095,333	4,771,165	62,562	112,904

CAPITAL PROJECT FUND - Road Projects

CITY OF PEWAUKEE
TEN YEAR CAPITAL BUDGET
2022 BUDGET
CAPITAL ASSETS COSTING \$5,000 OR MORE

Purchase Replacement in Highlighted Year

ITEM DESCRIPTION	Dept	Est Life	Replace Year	Cost	Assign Bal 12/31/20	2021 Adds	2021 Estimated Purchases/ Adjustments	2021 Estimated Balance	2022 Proposed Adds	2022 Budgeted Purchases	2022 Budgeted Balance	2023
Mobile Data Communication Systems (9)	FIRE	3	2023	30,000	48,313	10,000		58,313	10,000		68,313	10,000
Replacement Hose/Large Diameter	FIRE	3	2022	5,000	1,667	1,666		3,333	1,667	5,000	-	1,667
SCBA Upgrades	FIRE	10	2021	205,507	262,500	(56,993)	205,507	-	-		-	
SCBA Upgrades new	FIRE	10	2030	370,000	-	37,000		37,000	37,000		74,000	37,000
Thermal Imaging Cameras -2029 #1	FIRE	10	2030	52,700	2,700	5,000		7,700	5,000		12,700	5,000
Thermal Imaging Cameras -2012 #2	FIRE	10	2031	55,000	25,000	(25,000)		-	5,000		5,000	5,000
Thermal Imaging Cameras -2021 #3	FIRE	10	2021	25,000		move 25K budget to radios		-	5,000		5,000	5,000
TOTAL CAPITAL OUTLAYS				6,903,015	3,037,772	695,471	971,800	2,761,443	655,623	1,595,808	1,821,258	632,168
Inspection Vehicle	Bldg Insp	10	2030	30,000	-	3,000		3,000	3,000		6,000	3,000
Inspection Vehicle	Bldg Insp	10	2030	30,000	-	3,000		3,000	3,000		6,000	3,000
TOTAL CAPITAL OUTLAYS					-	6,000	-	6,000	6,000	-	12,000	6,000
01- 1-Ton Dump Truck 2026 (75k) 2037 (88K)	HWY	8	2026	75,000			moved to #53	-	15,000		15,000	15,000
53- 1 Ton Dump Truck - fleet addition (80k) 20	HWY	8	2029	80,000	66,000	7,000	73,000		10,000		10,000	10,000
02- 1-Ton Dump Truck 2028 (80K) 2036 (84K)	HWY	8	2028	80,000	-	10,000		10,000	10,000		20,000	10,000
03- Boom Mower 2038 (127K)	HWY	12	2026	113,000 W/Trade	43,500	11,600		55,100	11,600		66,700	11,600
04- Road Grader 2039	HWY	20	2039	170,000 W/Trade	8,750	8,100		16,850	8,500		25,350	8,500
05- Back Hoe 2033 (55k)	HWY	10	2023	50,000 W/Trade	46,666	1,000		47,666	1,000		48,666	1,334
06- Plow Truck 2036 (222k)	HWY	10	2026	201,000	82,500	19,750		102,250	19,750		122,000	19,750
07- Plow truck 2036 (222k)	HWY	10	2026	200,000			moved to #15		40,000		40,000	40,000
15-Plow Truck - fleet addition	HWY	10	2031	216,000	166,667	25,333	192,000		21,600		21,600	21,600
08- Plow Truck 2038 (227K)	HWY	10	2028	205,000	42,000	20,375		62,375	20,375		82,750	20,375
09- Plow Truck 2033 (216k)	HWY	10	2023	195,000	130,680	21,500		152,180	21,500		173,680	21,320
10- Plow Truck 2035 (221k)	HWY	10	2025	200,000	104,286	20,000		124,286	20,000		144,286	20,000
11- Plow Truck 2035 (223k)	HWY	10	2024	200,000	117,144	21,000		138,144	21,000		159,144	21,000
12- Replace Plow Truck 2030 (212k) 2040(235	HWY	10	2020	192,000	-	21,200		21,200	21,200		42,400	21,200
13- Pavement Roller 2038 (14k)	HWY	10	2028	12,000 W/Trade	3,600	1,050		4,650	1,050		5,700	1,050
14- Broom 2038(15k)	HWY	10	2028	14,000	3,000	1,400		4,400	1,400		5,800	1,400
16- Plow Truck 2037 (225k)	HWY	10	2027	203,000	62,000	20,000		82,000	20,000		102,000	20,000
17- Tandem Plow Truck 2039 (243k)	HWY	10	2029	220,000	22,500	22,000		44,500	22,000		66,500	22,000
18-Front End Loader 2036 (125k)	HWY	8	2026	116,000 W/Trade	31,250	14,125		45,375	14,125		59,500	14,125
19- Plow Truck 2032 (216K)	HWY	10	2022	195,000	149,000	23,000		172,000	48,000	220,000	-	21,600
20- Asphalt Hot Box 2033 (35K)	HWY	10	2023	31,000	20,800	3,400		24,200	3,400		27,600	3,400
24- Air Compressor	HWY	20	2021	TBD	13,777	1,000		14,777	1,000		15,777	1,000
25- 4x4 Pickup Truck 2028 (52K) 2038 (60k)	HWY	8	2020	45,000	-	6,500		6,500	6,500		13,000	6,500
27 - Pre-storm Pre-Wet Unit 2035 (14k)	HWY	15	2025	12,000		2,400		2,400	2,400		4,800	2,400
28- Highway Mower 2042 (91k)	HWY	12	2030	80,000 W/Trade	17,500	6,250		23,750	6,250		30,000	6,250
29- Chipper 2034 (35K)	HWY	10	2024	32,000 W/Trade	22,334	2,400		24,734	2,400		27,134	2,400
35- Shop Compressor 2042 (9,8k)	HWY	15	2032	8,400	2,400	500		2,900	500		3,400	500
39-Walk Behind Concrete Saw 2037 (7.5k)	HWY	10	2027	7,000		1,000		1,000	1,000		2,000	1,000
52- Shop Pressure Washer 2028 (9K) 2040 (1	HWY	12	2028	9,000 W/Trade	3,584	677		4,261	677		4,938	677
54- Fork lift 2025 (25K) 2040 (30K)	HWY	15	2025	25,000	14,284	2,144		16,428	2,144		18,572	2,144
55- 1-Ton Dump Truck 2023 (75K) 2031 (82K)	HWY	8	2023	75,000	46,875	9,375		56,250	9,375		65,625	9,375
56- Sign Truck 2025 (94K) 2033 (102K)	HWY	8	2025	94,000	31,430	12,515		43,945	12,515		56,460	12,515
58- Skidsteer 2029 (34K)trade 2039 (37k)	HWY	10	2029	34,000	4,500	3,280		7,780	3,280		11,060	3,280

CITY OF PEWAUKEE
TEN YEAR CAPITAL BUDGET
2022 BUDGET
CAPITAL ASSETS COSTING \$5,000 OR MORE

Purchase Replacement in Highlighted Year

ITEM DESCRIPTION	Dept	Est Life	Replace Year	Cost	Assign Bal 12/31/20	2021 Adds	2021 Estimated Purchases/ Adjustments	2021 Estimated Balance	2022 Proposed Adds	2022 Budgeted Purchases	2022 Budgeted Balance	2023
301- Compact Tractor/Multi-Unit (1/2 with SWN	HWY	10	2029	28,000	2,550	2,830		5,380	2,830		8,210	2,830
302- Spider Lift (1/2 Storm 1/2 Hwy) 2036 (85.4	HWY	15	2021	67,000		72,721	72,721	-	5,700		5,700	5,700
303 Trailer for Spider Lift (1/2 Storm 1/2 Hwy)	HWY	10	2021	7,300		7,279	7,279	-	800		800	800
TOTAL CAPITAL OUTLAYS				2,909,700	1,259,577	402,704	345,000	1,317,281	408,871	220,000	1,506,152	382,625
GIS system/asset management-split w/Storm	ENG		2022	100,000					100,000	100,000		
Total Station Survey-split eng,storm,w/s	ENG	10	2027	13,000					2,200		2,200	2,200
Pickup/SUV (1/2 Storm Water)- cost \$35k	ENG	5	2023	17,500	7,000	3,500		10,500			14,000	3,500
TOTAL CAPITAL OUTLAYS				130,500	7,000	3,500	-	10,500	105,700	100,000	16,200	5,700
Tennis Court/BB Court Resurfacing *	PRCOP			20k per park/ye	60,000	20,000	18,000	62,000	20,000	20,000	62,000	
Dog park conversion	PRCOP			16,000	-			-			-	30,000
Kitchen Update at Wagner Park	PRCOP			6,000	6,000		-	6,000	-		6,000	
4 Permanent Pickleball Courts (tennis convers	PRCOP		2022	45,500	-			-	45,500	45,500	-	
Wagner Playground Resurface	PRCOP			26,000	-	6,500		6,500	6,500		13,000	6,500
Scoreboards (2) Nettesheim Park (\$8,500)	PRCOP			sponsorship?	-			-			-	
#155 2016 Kifco Sprinkler-was #152	PRCOP	10	2026	9,500	-	1,583		1,583	1,583		3,166	1,583
#153 2016 Kifco Sprinkler	PRCOP	10	2026	9,500	-	1,583		1,583	950		2,533	1,583
Sports Complex Driveway Asphalt top coat	PRCOP					21,862	21,862	-			-	
Sports Complex Bleacher Pads & ADA paths	PRCOP					27,896	27,896	-			-	
TOTAL CAPITAL OUTLAYS					66,000	79,424	67,758	77,666	74,533	65,500	86,699	39,666
PLAYGROUND EQUIPMENT	PRPLAY							-				
Add to Assigned Balance						17,571			17,916			15,411
Current Year to be Expensed							38,494		-			25,000
Assigned Balance					139,799			118,876	17,916	-	136,792	8,327
TOTAL CAPITAL OUTLAYS					-							
#72 GMC 2020 3500	PRSHARE	10	2030	37,000	-	900		900	1,500		2,400	4,000
#73 GMC 2019 1/2 ton 4x4	PRSHARE	10	2029	45,000	-	1,000		1,000	4,000		5,000	5,000
#74 GMC 1/2 ton 4x4	PRSHARE	10	2028	33,000	3,000	3,375		6,375	3,375		9,750	3,375
#75 2012 4x4 Pick-Up (net of 15k trade)	PRSHARE	10	2022	40,000	22,300	2,700		25,000	-	25,000	-	4,000
#76 2013 Utility Truck/Diamond Trailer	PRSHARE	10	2023	41,500	23,750	5,950		29,700	5,950		35,650	5,850
Diamond Trailer (break out from #76)	PRSHARE	10	2023	8,500	-	2,800		2,800	2,800		5,600	2,900
#77 2014 1-Ton Dump	PRSHARE	10	2024	51,000	13,000	8,000		21,000	10,000		31,000	10,000
#78 2014 Pickup Salter and Plow	PRSHARE	10	2024	48,500	11,164	9,310		20,474	9,310		29,784	9,310
#79 2016 Utility Van	PRSHARE	10	2026	32,000	3,500	2,084		5,584	2,084		7,668	6,084
#80 2018 One Ton Pickup	PRSHARE	10	2028	46,000	1,500	2,500		4,000	6,000		10,000	6,000
#81 2010 4x4 Pick-Up and Plow	PRSHARE	10	2030	45,000	-	5,000		5,000	4,500		9,500	4,500
#82 2016 1-Ton Dump	PRSHARE	10	2026	51,000	-	8,500		8,500	8,500		17,000	8,500
#83 2017 Wing Mower	PRSHARE	3	2023	42,000	-	14,000		14,000	14,000		28,000	14,000
#85 2013 Utility Dump	PRSHARE	10	2023	14,000	4,200	-		4,200	-		4,200	9,800
#86 2018 Wing Mower	PRSHARE	3	2021	42,000	28,000	14,000	42,000	-	14,000		14,000	14,000
#87 2008 Tractor/Loader	PRSHARE	10	2023	45,000	21,000	8,000		29,000	8,000		37,000	8,000
#88 2017 60" 2-Turn Mower	PRSHARE	3	2023	8,000	-	-		-	-		-	8,000
#89 2012 Trailer	PRSHARE	10	2022	15,000	1,750	6,626		8,376	6,626	15,002	-	1,650

CITY OF PEWAUKEE
TEN YEAR CAPITAL BUDGET
2022 BUDGET
CAPITAL ASSETS COSTING \$5,000 OR MORE

Purchase Replacement in Highlighted Year

ITEM DESCRIPTION	Dept	Est Life	Replace Year	Cost	Assign Bal 12/31/20	2021 Adds	2021 Estimated Purchases/ Adjustments	2021 Estimated Balance	2022 Proposed Adds	2022 Budgeted Purchases	2022 Budgeted Balance	2023
#91 2018 Sand pro	PRSHARE	3	2021	13,050	8,700	4,350	13,050	-	4,500		4,500	4,500
#96 2013 Wing Mower (net of trade in)	PRSHARE	6	2026	61,000	-	3,750		3,750	6,750		10,500	12,550
#99 2017 Zero Turn Mower	PRSHARE	3	2023	8,000	-	2,667		2,667	2,667		5,334	2,667
#100 2016 Trailer	PRSHARE	10	2026	10,000	2,100	1,317		3,417	1,317		4,734	1,317
#101 2014 Trailer	PRSHARE	10	2024	8,000	3,500	1,800		5,300	900		6,200	900
#102 2010 Pressure Washer	PRSHARE	8	2021	6,000	3,000	(3,000)		-				
#110 Preseeder 2017	PRSHARE	10	2027	10,500	2,100	900		3,000	1,250		4,250	1,250
#114 2017 Trailer	PRSHARE	10	2027	10,000	834	2,292		3,126	1,146		4,272	1,146
#130 Top Dresser (smaller)* 2015	PRSHARE	10	2025	11,000	4,400	1,200		5,600	1,350		6,950	1,350
#133 2018 Trailer Mounted Water Tank	PRSHARE	10	2028	7,000	-	788		788	788		1,576	908
#149 Aerator 687 - 2015	PRSHARE	10	2025	22,000	1,200	4,161		5,361	4,161		9,522	4,161
#151 2017 5900 Wing Mower	PRSHARE	6	2028	75,000	26,250	13,125		39,375	28,125	67,500	-	12,500
#154 2017 Slit Seeder	PRSHARE	10	2027	8,200	-	1,171		1,171	1,171		2,342	1,171
#156 Toro Dingo	PRSHARE	10	2023	34,000	8,500	8,500		17,000	8,500		25,500	8,500
Joint Park/Open Space Plan Update	PRSHARE	6	2019	5,000	-	2,000		2,000	1,000		3,000	1,000
TOTAL CAPITAL OUTLAYS				933,250	193,748	139,766	55,050	278,464	164,270	107,502	335,232	178,889
Village 30%					(58,124)	(41,930)	(16,515)	(83,539)	(49,281)	(32,251)	(100,570)	(53,667)
City 70%					135,624	97,836	38,535	194,925	114,989	75,251	234,662	125,222
TOTAL PARK OUTLAYS					341,423	194,831	144,787	391,467	207,438	140,751	458,153	205,299

TOTAL CITY CAPITAL OUTLAYS (ALL DEPTS)

\$ 5,382,113 \$ 1,000,588 \$ 1,541,797 \$ 4,650,904 \$ 1,448,225 \$ 2,096,559 \$ 4,002,569 \$ 1,291,385
5,382,113 1,000,588 1,541,797 4,650,904 1,448,225 2,096,559 4,002,569

STORM WATER FUND

#201 Sweeper 2031 (275k)	SWM	10	2021	260,000	133,334	126,666	260,000	-	27,500		27,500	27,500
#202 Rubber Tire Excavator 2026 (180k) trade	SWM	15	2026	180k W/Trade	35,000	24,200		59,200	24,200		83,400	24,200
#204 Hydro Seeder (Storm Water) 2029 (16k)	SWM	15	2029	16,000	2,544	1,496		4,040	1,496		5,536	1,496
#205 Tandem Truck (Storm Water) 2025 (206k)	SWM	10	2025	206,000	64,286	28,343		92,629	28,343		120,972	28,343
#207 Mini Excavator 2029(82k)2039(91k)	SWM	10	2029	82k W/Trade	8,000	8,225		16,225	8,225		24,450	8,225
#208 Excavator Trailer 2029(20k) 2039 (23k)	SWM	10	2029	20,000	2,300	1,980		4,280	1,965		6,245	1,965
#209 Portable Traffic Control Devices 2035 (5)	SWM	15	2035	50,000	-	3,870		3,870	3,870		7,740	3,870
#211-Equip. Trailer 2021 (20k) 2031 (22k) 204	SWM	10	2021	20,000	-	20,000	20,000	-	2,200		2,200	2,200
212 - Catch Basin Trailer 2031 (11k) 2041 (14)	SWM	10	2021	11,000	-	9,863	9,863	-	1,100		1,100	1,100
301- Compact Tractor/Multi-Unit (1/2 with SW)	HWY	10	2029	28,000	2,550	2,830		5,380	2,830		8,210	2,830
302- Spider Lift (1/2 Storm 1/2 Hwy) 2036 (85	HWY	15	2021	67,000		72,721	72,721	-	5,700		5,700	5,700
303 Trallier for Spider Lift (1/2 Storm 1/2 Hwy)	HWY	10	2021	7,300		7,279	7,279	-	800		800	800
Pickup/SUV (1/2 Engineering)- cost \$35k 2023	SWM	5	2023	17,500	7,000	3,500		10,500	3,500		14,000	3,500
Televising Equipment - share with Sewer	SWM	10	2028	25,000	5,000	2,500		7,500	2,500		10,000	2,500
Total Station Survey-split eng,storm,w/s	SWM	10	2027	13,000	22,500	(9,500)		13,000			13,000	
Sewer Jetter (1/2 Sewer)	SWM		2022						250,000	250,000		
GIS system/asset management-split w/Eng	SWM		2022	100,000					100,000	100,000	-	
TOTAL CAPITAL OUTLAYS				840,800	282,514	303,973	369,863	216,624	464,229	350,000	330,853	114,229

**CITY OF PEWAUKEE
WATER UTILITY
2022 OPERATING BUDGET SUMMARY**

	2020 Actual	2021			2022 Budget
		6 Month Actual	Year End Forecast	2021 Budget	
Operating Revenues	2,271,457	1,192,451	2,525,455	2,539,160	2,653,200
Operating Expenses					
Wages Not Charged to Projects	207,280	105,594	258,391	265,667	241,073
Fringe Benefits	168,141	64,119	243,306	249,195	249,852
Source of Supply Expenses	31,509	43,130	97,625	106,275	106,275
Pumping Expenses	290,199	154,468	368,300	349,600	349,750
Water Treatment Expenses	155,607	61,627	158,900	163,500	168,500
Transmission & Distribution	196,211	39,399	206,850	213,200	283,800
Consultants & Studies	17,845	3,901	-	20,000	35,000
Shared Transportation & Maintenance	40,088	24,377	50,650	73,550	54,365
Shared Administrative Expenses	179,100	115,175	159,439	188,214	193,200
PSC Remainder Tax	2,230	-	2,500	2,500	2,500
Property Tax Equivlent	570,155	-	585,000	620,000	620,000
Total Operating Expenses	1,858,365	611,790	2,130,961	2,251,701	2,304,315
Operating Profit before Depreciation	413,092	580,661	394,494	287,459	348,885
Depreciation Expense	1,307,869	650,000	1,300,000	1,300,000	1,325,000
Net (Loss) from Operations	(894,777)	(69,339)	(905,506)	(1,012,541)	(976,115)
Non-Operating Revenue					
Interest on Investments/AR	1,729	24	1,815	2,600	2,050
Long Term Debt Premium	11,649	-	11,649	11,649	11,649
Interest on Special Assessments	4,153	-	4,200	5,500	4,300
Water Construction	481,186	736,413	550,000	450,000	395,000
Gain/Loss on Fixed Asset Disposal	8,425	12,000	12,000	3,000	5,000
Total Non-Operating Revenues	507,142	748,437	579,664	472,749	417,999
Non-Operating Expenses					
Interest on Long Term Debt and Debt Ex	250,663	82,984	244,112	304,881	309,112
Net Profit (Loss)	(638,298)	596,114	(569,954)	(844,673)	(867,228)

**CITY OF PEWAUKEE
WATER UTILITY
2022 OPERATING BUDGET**

		2020 Actual	2021			2022 Budget
			6 Month Actual	Year End Forecast	2021 Budget	
Operating Revenues						
600-00432-46241	Private Fire Protection	75,229	37,795	75,500	75,500	76,000
600-00461-46450	Metered Sales-Residential	1,040,330	523,164	1,067,000	1,067,000	1,150,000
600-00461-46451	Metered Sales-Industrial	85,532	50,350	95,000	112,000	112,000
600-00461-46452	Metered Sales-Commercial	396,688	183,110	500,000	515,000	517,000
600-00461-46453	Metered Sales-Public	5,080	3,337	4,955	4,955	5,200
600-00461-46454	Metered Sales-Multi Family	179,663	103,065	205,000	205,000	208,000
600-00463-46242	Public Fire Protection	471,542	279,436	559,000	538,705	566,000
Total Operating Revenues		2,254,064	1,180,257	2,506,455	2,518,160	2,634,200

Other Revenues

600-00470-45111	Late Payment Penalty	4,056	4,224	8,000	8,000	8,000
600-00474-48901	Other Water Revenues	4,838	5,170	6,000	8,000	6,000
600-00474-46191	Other Revenue-Spec Assmt Ltr	8,499	2,800	5,000	5,000	5,000
Total Other Revenues		17,393	12,194	19,000	21,000	19,000

Total Revenues

2,271,457	1,192,451	2,525,455	2,539,160	2,653,200
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Expenses

Wages Not Charged to Projects

600-00600-51100	Wages	19,201	10,280	22,450	22,450	23,500
600-00620-51100	Wages	42,268	24,588	65,410	65,410	51,700
600-00630-51100	Wages	12,909	5,449	20,277	20,277	15,780
600-00640-51100	Wages	21,181	7,802	29,890	29,890	26,000
600-00902-51220	Meter Reading Wages	4,622	1,639	5,894	5,894	5,650
600-00920-51200	Salaries - Administrative	89,003	41,380	92,970	92,970	95,000
600-00920-51220	Internal Engineering Wages	18,096	14,456	21,500	28,776	23,443
Total Wages		207,280	105,594	258,391	265,667	241,073

**CITY OF PEWAUKEE
WATER UTILITY
2022 OPERATING BUDGET**

2020 Actual	2021			2022 Budget
	6 Month Actual	Year End Forecast	2021 Budget	

Fringe Benefits

600-00408-51300	Fica Expense	25,677	11,634	31,027	31,027	30,120
600-00926-51310	Benefits - Health Insurance	44,995	20,293	73,841	73,841	79,285
600-00926-51320	Benefits - Dental Insurance	3,462	1,472	4,860	4,860	5,347
600-00926-51330	Benefits - Optical Insurance	641	233	697	697	697
600-00926-51360	Benefits - Pension	22,295	11,536	26,627	26,627	25,593
600-00926-51340	Benefits - Life Insurance	779	469	873	873	921
600-00926-51350	Benefits - Disability Insurance	1,173	711	1,381	1,381	1,394
600-00926-51390	Vac/Sick Liability Expense	57,894	10,897	65,000	48,100	71,500
600-00926-51950	Benefits - Charged To/From Other Depts	7,701	6,874	22,750	32,539	18,745
600-00926-51361	Pension Expenses GASB 68	3,524	-	16,250	29,250	16,250
Total Fringe Benefits		168,141	64,119	243,306	249,195	249,852

Plant Operation & Maintenance

Source of Supply Expenses

600-00600-53400	Source of Supply- Repairs	1,744	39,999	75,000	75,000	75,000
600-00601-53200	Purchased Water	-	-	-	300	300
600-00602-53400	Operating Supplies & Expenses	269	105	500	850	850
600-00602-52310	Building and Grounds	29,371	2,901	22,000	30,000	30,000
600-00603-52200	Water Withdrawal Fee - DNR	125	125	125	125	125
Total Source of Supply Expenses		31,509	43,130	97,625	106,275	106,275

Pumping Expenses

600-00622-52210	Power Purchased/Pumping	235,433	98,177	245,000	248,000	248,000
600-00623-53400	Operating Supplies & Expense	164	52	300	400	400
600-00623-52310	Building and Grounds	7,057	190	11,000	11,000	11,000
600-00623-52200	Utilities	3,941	4,042	52,000	5,200	5,350
600-00625-52400	Repairs-Pumping Equipment	43,604	52,007	60,000	85,000	85,000
Total Pumping Expenses		290,199	154,468	368,300	349,600	349,750

**CITY OF PEWAUKEE
WATER UTILITY
2022 OPERATING BUDGET**

2020 Actual	2021			2022 Budget
	6 Month Actual	Year End Forecast	2021 Budget	

Water Treatment Expenses

600-00631-53200	Chemicals	85,876	30,001	87,000	80,000	90,000
600-00631-52210	Radium Treatment	43,665	21,541	44,400	46,000	46,000
600-00632-53400	Operating Supplies & Expenses	231	-	1,000	1,000	1,000
600-00632-52310	Water Testing	10,852	3,651	10,000	20,000	15,000
600-00635-52400	Repairs and Maintenance	14,983	6,434	16,500	16,500	16,500
Total Water Treatment Expenses		155,607	61,627	158,900	163,500	168,500

Transmission & Distribution

600-00641-53400	Operating Supplies and Expense	1,316	544	3,500	3,500	3,500
600-00641-53320	Meter Supplies	69	345	800	800	800
600-00641-52381	Cross Connection Inspection	13,008	5,420	14,400	14,400	15,000
600-00650-52400	Repairs - Reservr & Standpipes	11,504	564	25,000	30,000	40,000
600-00651-52400	Repairs - Transmission Lines	68,507	863	75,000	45,000	80,000
600-00651-52410	Repairs - Leak Detection	375	-	400	2,000	2,000
600-00652-52400	Repairs - Maintenance of Services	41,913	2,166	15,000	35,000	35,000
600-00653-52400	Repairs - Meters	13,497	21,379	22,000	20,000	20,000
600-00654-52400	Repairs - Hydrants	44,179	8,118	50,000	60,000	85,000
600-00655-52400	Repairs - Miscellaneous	1,843	-	750	2,500	2,500
Total Transmission & Distribution		196,211	39,399	206,850	213,200	283,800

Consultants & Studies

600-00900-52100	Water Facilities Plan	17,845	3,901	20,000	20,000	35,000
Total Consultants & Studies		17,845	3,901	20,000	20,000	35,000

Shared Transportation and Maintenance Expenses

600-00933-53340	Transporation Expense - Vehicle Fuel	5,132	3,765	5,500	7,000	5,500
600-00933-55370	Transportation Expense - Vehicle Insurance	1,970	2,150	2,150	2,050	2,365
600-00933-52400	Transportation Expense - Repair & Maintenanc	5,366	4,693	7,000	7,000	6,500
600-00950-52100	Scada/Telemetry	7,471	3,051	10,000	15,000	12,500
600-00950-52200	Safety	533	32	1,750	2,000	2,000
600-00950-52440	Diggers Hotline	19,616	10,686	24,250	40,000	25,000
600-00950-52445	GIS Software Maintenance	-	-	-	500	500
Total Shared Transportation and Maintenance		40,088	24,377	50,650	73,550	54,365

**CITY OF PEWAUKEE
WATER UTILITY
2022 OPERATING BUDGET**

2020 Actual	2021			2022 Budget
	6 Month Actual	Year End Forecast	2021 Budget	

Shared Administrative Expenses

600-00901-52200	Meter Reading Expenses	10,383	5,159	3,394	3,394	4,000
600-00903-53300	Billing	20,143	7,759	18,500	18,500	20,000
600-00904-57420	Water Utility Uncollectible	-		45	25	25
600-00906-53300	Conservation/Public Relations	-		-	250	1,000
600-00921-53100	Office Supplies & Expenses	2,736	1,048	2,250	3,000	2,500
600-00921-52301	Office Equipement Maintenance	9,607	1,235	6,000	6,000	6,000
600-00921-53305	Books & Periodicals	-		50	50	50
600-00921-53306	Postage	129	23	200	375	375
600-00921-53307	Notices & Publications	339	-	200	300	300
600-00921-52330	Telephone	3,572	1,035	3,500	2,400	3,500
600-00921-52331	Answering Service	416	189	500	500	500
600-00921-53300	Mileage	76	34	350	350	350
600-00921-53210	Meals & Incidentals	-	40	100	250	250
600-00923-52380	OPS - Engineer	5,291	-	1,500	4,250	4,250
600-00923-52100	OPS - Attorney	1,623	-	1,750	2,250	2,500
600-00923-52120	OPS - Auditor/Accountant	28,016	22,825	37,500	37,500	37,500
600-00923-52160	General Management	40,000	40,000	40,000	40,000	40,000
600-00924-55120	Insurance - Property & Liability	11,224	11,581	12,500	14,000	14,000
600-00924-55110	Insurance - Workers Compensation	4,485	3,825	4,500	8,820	5,000
600-00924-55121	Insurance - Boiler & Machinery	889	-	1,100	1,100	1,200
600-00928-52381	Regulatory & Commission Expense	7,501	183	3,000	15,000	5,000
600-00928-52382	PSC Water RCA Study	10,130	-	1,500	5,000	20,000
600-00930-53200	Uitlity Memberships & Continuing Education	1,274	621	1,500	4,250	4,250
600-00930-55391	Rent	18,000	18,000	18,000	18,000	18,000
600-00930-53399	Miscellaneous General Expense	3,266	1,618	1,500	2,650	2,650
Total Shared Administrative Expenses		179,100	115,175	159,439	188,214	193,200

**CITY OF PEWAUKEE
WATER UTILITY
2022 OPERATING BUDGET**

		2020 Actual	2021			2022 Budget
			6 Month Actual	Year End Forecast	2021 Budget	
600-00408-55200	PSC Remainder Tax	2,230	-	2,500	2,500	2,500
600-00408-55300	Property Tax Equivlent	570,155	-	585,000	620,000	620,000
Total Operating Expenses		1,858,365	611,790	2,150,961	2,251,701	2,304,315
Operating Profit (Loss) before Depreciation		413,092	580,661	374,494	287,459	348,885
600-00403-55000	Depreciation Exp.	1,307,869	650,000	1,300,000	1,300,000	1,325,000
Net Operating Profit (Loss) - Water		(894,777)	(69,339)	(925,506)	(1,012,541)	(976,115)
Non-Operating Revenue						
600-00419-48100	Interest Income	1,778	15	1,780	2,500	2,000
600-00419-48102	Interest/Special Assmts.	4,153		4,200	5,500	4,300
600-00429-49120	Long Term Debt Premium	11,649		11,649	11,649	11,649
600-00432-46161	Accounts Receivable Finance Charges	(49)	9	35	100	50
600-00464-46313	Water Construction	481,186	736,413	550,000	450,000	395,000
600-00475-48300	Gain/Loss on Fixed Asset Disposal	8,425	12,000	12,000	3,000	5,000
Total Non-Operating Revenues		507,142	748,437	579,664	472,749	417,999
Non-Operating Expenses						
600-00407-55100	Amort Property Loss	-	-		60,769	
600-00427-56100	Interest/Long Term Debt	172,551	82,984	166,000	166,000	156,000
600-00428-56200	Bond Issue Costs	-	-		-	75,000
600-00430-55400	Amort/Debt Expense Still River	78,112	-	78,112	78,112	78,112
Total Non-Operating Expenses		250,663	82,984	244,112	304,881	309,112
Net Profit (Loss) - Water		(638,298)	596,114	(589,954)	(844,673)	(867,228)

**CITY OF PEWAUKEE
SEWER UTILITY
2022 OPERATING BUDGET SUMMARY**

	2020 Actual	2021			2022 Budget
		6 Month Actual	Year End Forecast	2021 Budget	
Operating Revenues	3,453,508	2,036,634	1,815,570	3,565,334	4,134,648
Operating Expenses					
Wages	159,864	84,227	188,970	196,246	182,944
Fringe Benefits	88,988	37,699	131,010	134,181	134,535
Plant Operation & Maintenance	2,536,348	327,956	2,075,200	2,187,900	2,335,800
Consultants & Studies	36,847	5,468	57,500	127,000	92,500
Shared Transportation & Maintenance	39,261	23,630	50,650	73,550	54,365
Shared Administrative Expenses	117,438	101,813	155,424	168,214	168,200
Total Operating Expenses	2,978,746	580,793	2,658,754	2,887,091	2,968,344
Operating Profit before Depreciation	474,762	1,455,841	(843,184)	678,243	1,166,304
Depreciation Expense	787,184	475,000	950,000	950,000	800,000
Net Profit (Loss) from Operation	(312,422)	980,841	(1,793,184)	(271,757)	366,304
Non-Operating Revenue					
Interest on Investments/AR	24,512	2,273	10,000	36,050	10,050
Interest on Special Assessments	23,629	58	21,500	30,000	20,000
Sewer Service Connection Fees	268,102	411,186	1,297,000	722,637	419,973
Other Non-Operating Revenue	8,425	12,000	12,000	3,500	5,000
Total Non-Operating Revenue	324,668	425,517	1,340,500	792,187	455,023
Non-Operating Expenses					
Interest on Long Term Debt and Bonds	28,561	15,730	29,000	29,603	27,500
Bond Discount					
Amortization of Premium	(2,514)	-	-	-	-
Net Profit (Loss) - Sewer	(16,315)	1,390,628	(481,684)	490,827	793,827

**CITY OF PEWAUKEE
SEWER UTILITY
2022 OPERATING BUDGET**

2020 Actual	2021			2022 Budget
	Actual	Year End Forecast	2021 Budget	

Sewer

Revenues

Operating Revenues - Sewer

650-01621-46410	Residential Revenue Sewer	2,055,655	1,251,718	243,170	2,127,302	2,481,000
650-01621-46411	Industrial Revenue - Sewer	175,887	91,382	184,000	189,545	180,510
650-01621-46412	Commerical Revenue - Sewer	785,483	444,096	897,000	796,328	967,173
650-01621-46413	Public Revenue - Sewer	7,794	4,676	9,352	7,825	9,365
650-01621-46414	Multi Family Revenue - Sewer	417,849	235,050	462,948	424,234	476,000
Total Operating Revenues		3,442,668	2,026,922	1,796,470	3,545,234	4,114,048

Other Revenues - Sewer

650-01631-45112	Late Payment Penalty - Sewer	5,755	6,912	14,000	14,000	15,500
650-01635-48902	Other Sewer Revenues	247		100	100	100
650-01635-46191	Other Revenue - Special Assessment Letters	4,838	2,800	5,000	6,000	5,000
Total Other Revenues		10,840	9,712	19,100	20,100	20,600

Total Revenues

3,453,508	2,036,634	1,815,570	3,565,334	4,134,648
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Expenses

Wages

650-01820-51100	Wages	52,771	28,391	74,500	74,500	64,501
650-00920-51200	Salaries - Administrative	88,997	41,380	92,970	92,970	95,000
650-00920-51220	Internal Engineering Wages	18,096	14,456	21,500	28,776	23,443
Total Wages		159,864	84,227	188,970	196,246	182,944

**CITY OF PEWAUKEE
SEWER UTILITY
2022 OPERATING BUDGET**

		2020 Actual	2021			2022 Budget
			Actual	Year End Forecast	2021 Budget	
Fringe Benefits						
650-01820-51300	Fica Expense	13,944	6,265	16,707	16,707	16,219
650-00926-51310	Benefits - Health Insurance	24,224	10,927	39,761	39,761	42,692
650-00926-51320	Benefits - Dental Insurance	1,864	793	2,617	2,617	2,879
650-00926-51330	Benefits - Optical Insurance	345	125	375	375	375
650-00926-51360	Benefits - Pension	12,116	6,212	14,337	14,337	13,781
650-00926-51340	Benefits - Life Insurance	419	252	470	470	496
650-00926-51350	Benefits - Disability Insurance	631	383	743	743	750
650-00926-51390	Vac/Sick Liability Expense	31,173	5,868	35,000	25,900	38,500
650-00926-51950	Benefits - Charged To/From Other Depts	6,623	6,874	12,250	17,521	10,093
650-00926-51361	Pension Expense GASB 68	(2,351)		8,750	15,750	8,750
Total Fringe Benefits		88,988	37,699	131,010	134,181	134,535
Plant Operation & Maintenance						
650-01821-52200	Power/Electricity	39,498	17,825	40,000	53,000	45,000
650-01821-52210	Power/Natural Gas	1,526	199	2,000	2,200	2,200
650-01821-53215	Power/Other Fuel	-	239	400	400	300
650-01827-53400	Supplies and Expenses	263,513	499	2,000	2,800	28,000
650-01827-52340	Sewer Service Charge - Brookfield	1,314,595	20,344	850,000	950,000	950,000
650-01827-52341	Sewer Service Charge - LPSD	500,057	127,620	511,000	517,000	526,000
650-01827-52342	Sewer Service Charge - Village of Pewaukee	128,073	22,571	132,000	125,000	136,000
650-01827-52343	Sewer Service Charge - SD #4	7,874	987	8,300	8,600	8,300
650-01827-52344	Sewer Service Charge - WCC	219,697	120,627	265,000	240,400	290,000
650-01831-52400	Maintenance of Collection System	31,320	5,434	150,000	150,000	200,000
650-01831-52410	Maintenance SCS Sewer Cleaning	-		75,000	75,000	85,000
650-01831-52420	Maintenance/SCS - Flowmeter	9,417	1,980	8,500	8,500	10,000
650-01831-52430	Maintenance/SCS - Control Panel	-	134	3,500	5,000	5,000
650-01832-52400	Maintenance of Pumping Equipment	3,497	10	5,500	20,000	20,000
650-01834-52400	Maintenance of General Plant Structure	17,281	9,487	22,000	30,000	30,000
Total Plant Operation & Maintenance		2,536,348	327,956	2,075,200	2,187,900	2,335,800

**CITY OF PEWAUKEE
SEWER UTILITY
2022 OPERATING BUDGET**

2020 Actual	2021			2022 Budget
	Actual	Year End Forecast	2021 Budget	

Consultants & Studies

650-01850-52100	OPS - Sewer Studies	28,802	5,278	15,000	25,000	10,000
650-01850-52100	Sewer Rate Study	-		500	18,000	3,500
650-01850-52100	Sewer Facility System Plan/Study	-		40,000	65,000	65,000
650-01850-52100	Fox River Water Pollution Control Center Capa	-		-	1,000	1,000
650-01852-52380	OPS - Engineer - Sewer	3,795	190	1,000	10,000	5,000
650-01852-52382	OPS - Attorney - Sewer	-		1,000	5,500	5,500
650-01852-52383	OPS - Auditor/Accountant - Sewer	4,250	-	-	2,500	2,500
Total Consultants & Studies		36,847	5,468	57,500	127,000	92,500

Shared Transportation and Maintenance Expenses

650-00933-53340	Transporation Expense - Vehicle Fuel	4,767	3,765	5,500	7,000	5,500
650-00933-55370	Transportation Expense - Vehicle Insurance	1,970	2,150	2,150	2,050	2,365
650-00933-52400	Transportation Expense - Repair & Maintenance	5,066	4,679	7,000	7,000	6,500
650-00950-52100	Scada/Telemetry	7,309	2,292	10,000	15,000	12,500
650-00950-52200	Safety	533	58	1,750	2,000	2,000
650-00950-52440	Diggers Hotline	19,616	10,686	24,250	40,000	25,000
650-00950-52445	GIS Software Maintenance	-			500	500
Total Shared Transportation and Maintenance Exp		39,261	23,630	50,650	73,550	54,365

**CITY OF PEWAUKEE
SEWER UTILITY
2022 OPERATING BUDGET**

		2020 Actual	2021			2022 Budget
			Actual	Year End Forecast	2021 Budget	
Shared Administrative Expenses						
650-00901-52200	Meter Reading Expenses	2,000	-	3,394	3,394	4,000
650-00903-53300	Billing	14,187	5,559	18,500	18,500	20,000
650-00904-46419	Sewer Utility Uncollectible	-		530	25	25
650-00906-53300	Conservation/Public Relations	-		-	250	1,000
650-00921-53100	Office Supplies & Expenses	1,441	901	2,250	3,000	2,500
650-00921-52301	Office Equipment Maintenance	7,932	1,235	6,000	6,000	6,000
650-00921-53305	Books & Periodicals	-		50	50	50
650-00921-53306	Postage	129	23	200	375	375
650-00921-53307	Notices & Publications	339	215	200	300	300
650-00921-52330	Telephone	2,677	871	3,500	2,400	3,500
650-00921-52331	Answering Service	366	189	500	500	500
650-00921-53300	Mileage	-		350	350	350
650-00921-53210	Meals & Incidentals	-	40	100	250	250
650-00923-52380	OPS - Engineer	183	-	1,500	4,250	4,250
650-00923-52100	OPS - Attorney	4,509	160	1,750	2,250	2,500
650-00923-52120	OPS - Auditor/Accountant	8,594	18,257	37,500	37,500	37,500
650-00923-52160	General Management	40,000	40,000	40,000	40,000	40,000
650-00924-55120	Insurance - Property & Liability	11,224	11,582	12,500	14,000	14,000
650-00924-55110	Insurance - Workers Compensation	4,482	3,825	4,500	8,820	5,000
650-00924-55121	Insurance - Boiler & Machinery	889		1,100	1,100	1,200
650-00930-53200	Uitlity Memberships & Continuing Education	459	23	1,500	4,250	4,250
650-00930-55391	Rent	18,000	18,000	18,000	18,000	18,000
650-00930-53399	Miscellaneous General Expense	27	933	1,500	2,650	2,650
Total Shared Administrative Expenses		117,438	101,813	155,424	168,214	168,200
Total Operating Expenses		2,978,746	580,793	2,658,754	2,887,091	2,968,344
Operating Profit (Loss) before Depreciation		474,762	1,455,841	(843,184)	678,243	1,166,304

**CITY OF PEWAUKEE
SEWER UTILITY
2022 OPERATING BUDGET**

	2020 Actual	2021			2022 Budget
		Actual	Year End Forecast	2021 Budget	
650-01403-55410 Depreciation Exp. - Sewer	787,184	475,000	950,000	950,000	800,000

Net Operating Profit (Loss) - Sewer

(312,422) 980,841 (1,793,184) (271,757) 366,304

Non-Operating Revenue

650-01623-46314 Sewer Construction	129,869	171,536	1,020,000	555,387	220,000
650-01622-46315 ICA-Bluemound Road	-	5,425	7,000	17,000	13,573
650-01622-46316 ICA - Green Road	-		-	15,250	25,600
650-01622-46317 ICA - West Side	1,170	-			-
650-01622-46318 ICA Capitol Drive North	137,063	234,225	270,000	135,000	160,800
650-01660-48100 Interest Income	24,615	2,273	10,000	36,000	10,000
650-01660-48102 Interest/Special Assmts.	23,629	58	21,500	30,000	20,000
650-01660-46161 Accounts Receivable Finance Charges	(103)	-	-	50	50
650-01660-48300 Gain or Loss on Sale of Assets	8,425	12,000	12,000	3,500	5,000
650-01660-48900 Other Revenues	-			-	-
Total Non-Operating Revenues	324,668	425,517	1,340,500	792,187	455,023

Non-Operating Expenses

650-01880-56100 Interest/Long Term Debt	31,075	15,730	29,000	29,603	27,500
650-01900-56981 Bond Discount					
650-01690-55400 Amortization of Premium	(2,514)				
Total Non-Operating Expenses	28,561	15,730	29,000	29,603	27,500

Net Profit (Loss) - Sewer

(16,315) 1,390,628 (481,684) 490,827 793,827

2019 - 2026 WATER SEWER CAPITAL IMPROVEMENTS PLAN

<u>WATER FACILITIES</u>									
<u>Water--Wells and Pumphouses</u>		<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>
Well No. 1--City Hall Mitigation	\$	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Well No. 2--Green Rd. pump & motor repl.	\$	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Well No. 4	\$	-	\$ -	\$ -	\$ -	\$ 85,000			
Well No. 5 - Northmound pump & motor repl.	\$	-	\$ 100,000	\$ 324,000	\$ -	\$ -	\$ -	\$ -	\$ -
Well No. 6 - North Ave Deep pump & motor	\$	150,000	\$ -	\$ -	\$ -	\$ -	\$ 85,000	\$ -	\$ -
Well No. 8--Still River I add vacuum prime system	\$	-	\$ -		\$ -	\$ 35,000	\$ -	\$ -	\$ -
Well No. 11 & 12-- Deer Haven pump & motor	\$	-	\$ -	\$ 140,000	\$ -	\$ -	\$ -	\$ -	\$ -
BLUEMOUND WELL 5 COMPLIANCE ALTERNATIVES***	\$	50,000	\$ -	\$ -	\$ 3,400,000	\$ -	\$ -	\$ -	\$ -
Well No. 13 - Still River II	\$	-	\$ -	\$ -	\$ -	\$ -	\$ 250,000	\$ 500,000	\$ -
Well No. 14	\$	-	\$ -	\$ -	\$ -	\$ -	\$ 50,000	\$ 75,000	\$ 700,000
North Ave. Well #3 MCC/Electrical replacement & upgrade	\$	-	\$ -	\$ 357,900	\$ -	\$ -	\$ -	\$ -	\$ -
Appletree & North shallow Roof Replacement	\$	23,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Deer Haven Roof Replacement	\$	-	\$ -	\$ -	\$ 12,000	\$ -	\$ -	\$ -	\$ -
City Hall Well Roof Repairs	\$	10,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Well Inspections and Repairs	\$	75,000	\$ 75,000	\$ -	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000
Chemical feed pump upgrades	\$	10,000	\$ 10,000	\$ -	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000
Subtotal	\$	318,000	\$ 185,000	\$ 821,900	\$ 3,522,000	\$ 230,000	\$ 495,000	\$ 685,000	\$ 810,000
<u>Water--Storage Facilities</u>		<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>
City Hall Tower	\$	-	\$ -	\$ -	\$ -	\$ -	\$ 50,000	\$ -	\$ -
City Hall Tower Foundation	\$	-	\$ -	\$ -	\$ -	\$ -	\$ 100,000	\$ -	\$ -
Carmelite Standpipe rehab/paint	\$	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 150,000	\$ -
Green Rd Reservoir Paint & Repairs	\$	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 300,000
Old City Hall Tower Removal - foundation	\$	-	\$ -	\$ -	\$ -	\$ 75,000	\$ -	\$ -	\$ -
Subtotal	\$	-	\$ -	\$ -	\$ -	\$ 75,000	\$ 150,000	\$ 150,000	\$ 300,000
		<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>
<u>Water--Transmission Mains</u>									
Paul Rd Water Main Relay	\$	-	\$ 0	\$ -	\$ 425,000	\$ -	\$ -	\$ -	\$ -
Oak St. & Peninsula Dr. Watermain	\$	-	\$ 1,550,000	\$ -	\$ -	\$ -	\$ -	\$ -	
Prospect Avenue & Spring Creek	\$	-	\$ -	\$ -	\$ -	\$ 50,000	\$ 20,000	\$ 800,000	\$ -
Bluemound Road (Busse Rd. to Foster Ct)** Well 5 Alternative***	\$	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Lindsay Rd. (Balmer Park/Swan Vw. Farms to Sports Com.)	\$	-	\$ -	\$ -	\$ -	\$ 500,000	\$ -	\$ -	\$ -
Lindsay Road (Swan Road to Balmer Park)	\$	-	\$ -	\$ -		\$ -	\$ -	\$ -	\$ 500,000
			\$ -	\$ -					
Water --Facilities Infrastructure Study			\$ 50,000	\$ 20,000	\$ 15,000	\$ 15,000	\$ 10,000	\$ 10,000	\$ 10,000
Subtotal	\$	-	\$ 1,600,000	\$ 20,000	\$ 440,000	\$ 565,000	\$ 30,000	\$ 810,000	\$ 510,000
Water Pumping Stations	\$	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<u>Water Meter Program</u>		<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>
Water Meter Program	\$	48,500	\$ 49,000	\$ 49,000	\$ 49,500	\$ 49,500	\$ 50,000	\$ 50,000	\$ 50,500
Trimble Handheld Meter Reader	\$	-	\$ -	\$ -	\$ -	\$ -	\$ 7,200	\$ -	\$ -
Meter Reading Software & Hardware Upgrade			\$ 12,000						
Subtotal	\$	48,500	\$ 61,000	\$ 49,000	\$ 49,500	\$ 49,500	\$ 57,200	\$ 50,000	\$ 50,500

2019 - 2026 WATER SEWER CAPITAL IMPROVEMENTS PLAN

<u>Sewer Facilities</u>		<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>
Gun Club Rehab or replacement			\$ -	\$ -	\$ 300,000	\$ 3,500,000	\$ -	\$ -	\$ -
Spice Creek Lift Station Rehab		\$ -		\$ -		\$ -	\$ 75,000	\$ -	\$ -
Lift Station Inspections & Repairs		\$ 45,000	\$ 45,000	\$ 45,000	\$ 45,000	\$ 45,000	\$ 45,000	\$ 45,000	\$ 45,000
Subtotal		\$ 45,000	\$ 45,000	\$ 45,000	\$ 345,000	\$ 3,545,000	\$ 120,000	\$ 45,000	\$ 45,000
<u>Equipment</u>		<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>
Trailer - Tools/equipment				\$ 10,000	\$ -	\$ -	\$ -	\$ -	\$ -
Sewer Jetter(Shared w/stormwater)			\$ -	\$ 250,000	\$ 250,000	\$ -	\$ -	\$ -	\$ -
Replacement Valve Vac /Automatic Valve turner				\$ -	\$ -	\$ 150,000	\$ -	\$ -	\$ -
Subtotal		\$ -	\$ -	\$ 260,000	\$ 250,000	\$ 150,000	\$ -	\$ -	\$ -
Fox River Water Polution Control Center (17.48% of full cost)	17.48%								
Influent splitter gate improvements		\$ -	\$ -	\$ -	\$ 5,244	\$ 48,944	\$ -	\$ -	\$ -
Primary Clarifier Launder Cover Replacement		\$ -	\$ 173,700	\$ -	\$ -				
Rehab Clarifiers		\$ -	\$ -	\$ -	\$ 26,220	\$ 244,720	\$ -	\$ -	\$ -
Relocate/replace waste gas burners		\$ -	\$ -	\$ 45,000	\$ -	\$ -	\$ -	\$ -	\$ -
Replace Digester Mixing Systems		\$ -	\$ -	\$ 10,000	\$ 323,380	\$ -	\$ -	\$ -	\$ -
Phosphrus reduction		\$ 84,000	\$ 1,470,000	\$ 10,000	\$ -	\$ -	\$ -	\$ -	\$ -
Vehicle Replacement		\$ 8,500	\$ 7,350	\$ 9,400	\$ 24,067	\$ -	\$ 6,817	\$ -	\$ 7,342
Laboratory, HVAC and plant lighting upgrades		\$ 7,560	\$ 4,410	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Treatment Plant Building Rehab		\$ 42,000	\$ -	\$ 25,000	\$ -	\$ -	\$ 17,480	\$ 17,480	\$ -
Treatment Plant Pump Replacements		\$ -	\$ -	\$ -	\$ 47,196	\$ -	\$ -	\$ -	\$ -
Subtotal		\$ 142,060	\$ 1,655,460	\$ 99,400	\$ 426,107	\$ 293,664	\$ 24,297	\$ 17,480	\$ 7,342
<u>Sewer Projects</u>		<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>
Manhole Repair I & I Incorporated in Operations budget		\$ 17,000	\$ 20,000	\$ 20,000	\$ -	\$ -	\$ -	\$ -	\$ -
Springdale South Manhole Rehabilitation-NOT BILLED YET		\$ 175,000		\$ 509,000					
Kopmeier sewer re-lay under Pewaukee Lake		\$ -		\$ -	\$ 300,000				
Rockwood & Busse Sewer Lining		\$ 290,000							
Village of Pewaukee Kopmeier -LS upgrade vs gravity install		\$ -	\$ -	\$ -	\$ 500,000	\$ -	\$ -	\$ -	
<u>Sewer--Facilities Infrastructure Study</u>			\$ 75,000	\$ 50,000	\$ 25,000	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000
Southwest Sewer Study			\$ 20,000	\$ 10,000	\$ -	\$ -	\$ -	\$ -	\$ -
Northwest Sewer Study - Village of Pewaukee		\$ -	\$ -	\$ 25,000	\$ -	\$ -	\$ -	\$ -	\$ -
Subtotal		\$ 482,000	\$ 115,000	\$ 614,000	\$ 825,000	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000
<u>Citv Road Projects-Adjustments & Repairs</u>		<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>
Water Main Repairs (Takoma Hills) **Moved to O & M budget		\$ 10,000	\$ 15,000	\$ 15,000	\$ -	\$ -	\$ -	\$ -	\$ -
Sanitary Sewer Repairs (Takoma Hills)**Moved to O&M budget		\$ 10,000	\$ 20,000	\$ 15,000	\$ -	\$ -	\$ -	\$ -	\$ -
Bluemound Ind. Park Paving		\$ -	\$ 40,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Pewaukee Woods Ind. Park Paving/Roundy's Business Park		\$ 20,000	\$ 20,000						
Residential Subdivision Paving		\$ 25,000	\$ 25,000	\$ 30,000	\$ -	\$ -	\$ -	\$ -	\$ -
Subtotal		\$ 65,000	\$ 120,000	\$ 60,000	\$ -	\$ -	\$ -	\$ -	\$ -
COMBINED SEWER & WATER FACILITIES		2019	2020	2021	2022	2023	2024	2025	2026

2019 - 2026 WATER SEWER CAPITAL IMPROVEMENTS PLAN

Facilities study -- Buildings & Grounds	\$ -	\$ 25,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
SCADA software upgrade (Split W/S)	\$ 30,000	\$ 30,000	\$ 75,000	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000
PLC & Control Upgrades @ Stations	\$ 25,000	\$ 25,000	\$ 55,000	\$ 45,000	\$ 45,000	\$ 45,000	\$ 30,000	\$ 35,000	
Radio Upgrade-SCADA	\$ 20,000	\$ 30,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Surveying equipment	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 26,000
Mapping GIS	\$ 6,500	\$ 6,500	\$ 6,500	\$ 6,500	\$ 6,500	\$ 6,500	\$ 6,500	\$ 6,500	\$ 6,500
	\$ 81,500	\$ 116,500	\$ 136,500	\$ 71,500	\$ 71,500	\$ 71,500	\$ 56,500	\$ 87,500	
Vehicle purchase									
Utility Truck	\$ 50,000	\$ 56,000	\$ 42,000	\$ 56,000	\$ 56,000	\$ 60,000	\$ 57,000	\$ 58,000	
Sewer Jetter shared with Stormwater				\$ 250,000					
Shared City purchases									
Utility Billing Software	\$ 20,000	\$ 8,000	\$ 8,000	\$ 47,000	\$ 3,900	\$ 4,000	\$ 4,200	\$ 4,400	
Cashiering Acct, & Special Assess. Software	\$ 8,400	\$ 24,600	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
ESRI - Software for GIS	\$ -	\$ -	\$ -	\$ 150,000	\$ -	\$ -	\$ -	\$ -	
Asset Management	\$ -	\$ -	\$ -	\$ 150,000	\$ -	\$ -	\$ -	\$ -	
Furniture/Remodel	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 20,000	\$ -	\$ -	
Total Shared City Purchases	\$ 28,400	\$ 32,600	\$ 8,000	\$ 347,000	\$ 3,900	\$ 24,000	\$ 4,200	\$ 4,400	
Local Sewer & Water Extensions	2019	2020	2021	2022	2023	2024	2025	2026	
Hickory Grove Estates Area			\$ -	\$ -	\$ -	\$ 50,000	\$ 750,000	\$ -	
Sherwood Forest Subdivision		\$ -	\$ -	\$ -	\$ -	\$ 30,000	\$ 2,030,000	\$ -	
Shady Ln. & Shady Nook	\$ -	\$ -	\$ -	\$ 1,035,000	\$ -	\$ -	\$ -	\$ -	
Joseph Rd (\$405K Water \$163K Sewer)	\$ -	\$ -	\$ -	\$ 586,000	\$ -	\$ -	\$ -	\$ -	
Total Combined Local Sewer & Water	\$ -	\$ -	\$ -	\$ 1,621,000	\$ -	\$ 80,000	\$ 2,780,000	\$ -	
SUMMARY									
	2019	2020	2021	2022	2023	2024	2025	2026	
Water--Wells and Pumphouses	\$ 318,000	\$ 185,000	\$ 821,900	\$ 3,522,000	\$ 230,000	\$ 495,000	\$ 685,000	\$ 810,000	
Water--Storage Facilities	\$ -	\$ -	\$ -	\$ -	\$ 75,000	\$ 150,000	\$ 150,000	\$ 300,000	
Water--Transmission Mains	\$ -	\$ 1,600,000	\$ 20,000	\$ 440,000	\$ 565,000	\$ 30,000	\$ 810,000	\$ 510,000	
Water Pumping Stations	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Water Meter Program	\$ 48,500	\$ 61,000	\$ 49,000	\$ 49,500	\$ 49,500	\$ 57,200	\$ 50,000	\$ 50,500	
Sewer Facilities	\$ 45,000	\$ 45,000	\$ 45,000	\$ 345,000	\$ 3,545,000	\$ 120,000	\$ 45,000	\$ 45,000	
Equipment	\$ -	\$ -	\$ 260,000	\$ 250,000	\$ 150,000	\$ -	\$ -	\$ -	
Fox River Water Pollution Control Center (RCA's)	\$ 142,060	\$ 1,655,460	\$ 99,400	\$ 426,107	\$ 293,664	\$ 24,297	\$ 17,480	\$ 7,342	
Sewer Projects	\$ 482,000	\$ 115,000	\$ 614,000	\$ 825,000	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000	
City Road Projects-Adjustments & Repairs	\$ 65,000	\$ 120,000	\$ 60,000	\$ -	\$ -	\$ -	\$ -	\$ -	
COMBINED SEWER & WATER FACILITIES	\$ 81,500	\$ 116,500	\$ 136,500	\$ 71,500	\$ 71,500	\$ 71,500	\$ 56,500	\$ 87,500	
Vehicle purchase	\$ 50,000	\$ 56,000	\$ 42,000	\$ 56,000	\$ 56,000	\$ 60,000	\$ 57,000	\$ 58,000	
Shared City purchases	\$ 28,400	\$ 32,600	\$ 8,000	\$ 347,000	\$ 3,900	\$ 24,000	\$ 4,200	\$ 4,400	
Local S/W Main Extensions	\$ -	\$ -	\$ -	\$ 1,621,000	\$ -	\$ 80,000	\$ 2,780,000	\$ -	
TOTAL	\$ 1,260,460	\$ 3,986,560	\$ 2,155,800	\$ 7,953,107	\$ 5,059,564	\$ 1,131,997	\$ 4,675,180	\$ 1,892,742	

CITY OF PEWAUKEE
PUBLIC WORKS COMMITTEE AGENDA ITEM 9.2.

DATE: November 11, 2021

DEPARTMENT: PW - Engineering

PROVIDED BY: Magdelene Wagner

SUBJECT:

Discussion and possible action regarding the intersection of Green Road and Duplainville Road.

BACKGROUND:

As part of the Duplainville Road Reconstruction project, Staff had the intersection of Green Road studied to determine if any changes are warranted. Please find the attached intersection study completed by Traffic Analysis & Design, Incorporated (TADI).

The study has a two-part recommendation.

The first recommendation is to keep the intersection as a 2-way stop, assuming the conditions within the report can be met. The most important condition is improving the sight distance by trimming trees on private property. When reviewing these trees with Wachtel Tree Science, the trees are in great condition and were recommended to limit the impact of the road improvements to avoid damaging the trees. Since these trees are on private property, the City does not control these trees.

The second recommendation is to install a 4-way stop at this intersection with some conditions outlined in the report. Most of these are the same as the first recommendation and include adding stop ahead signs, adding a stop sign to the left side of the road, and moving the stop signs to align with the stop line.

Given that 1) the City does not control the trees and they are very healthy trees and therefore the sight distance can't be rectified, 2) the trail will likely increase pedestrian traffic in the area, and 3) the traffic accidents that occur here are typically pretty severe, we are commending a 4-way stop be installed at this intersection.

FINANCIAL IMPACT:

RECOMMENDED MOTION:

Committee members recommend a 4-way stop at the intersection of Duplainville Road and Green Road intersection as part of the Duplainville Road Reconstruction project.

ATTACHMENTS:

Description

Intersection Study

Date: September 3, 2021

Technical Memorandum

To: Maggie Wagner, P.E.
City of Pewaukee Department of Public Works

From: Michael May, P.E. PTOE

cc List:

Subject: Duplainville Road & Green Road – Traffic Operations
City of Pewaukee, Wisconsin

PART A – INTRODUCTION

This technical memorandum has been prepared to provide recommendations to the City on the operation of Duplainville Road & Green Road based on the layout of the existing intersection, intersection turning movement traffic counts, intersection crash analysis, intersection capacity analysis, and warrants for traffic signal and all-way stop control. The location of the study area intersection is shown in [Exhibit 1](#).

PART B – EXISTING INTERSECTION LAYOUT

A transportation detail illustrating existing intersection lane configurations and speed limits is shown in [Exhibit 2](#).

Duplainville Road is a two-lane north/south road with a posted speed limit of 35 mph. According to WisDOT, the Year 2009 annual average daily traffic (AADT) volumes on Duplainville Road were approximately 2,100 vehicles per day (vpd) north of Green Road and 4,400 vpd south of Green Road. Based on the Year 2021 turning movement counts and using WisDOT expansion factors, the estimated Year 2021 AADTs were approximately 3,190 vpd north of Green Road and 3,020 vpd south of Green Road. Exclusive right-turn lanes exist on the Duplainville Road approaches to Green Road. No pedestrian or bicycle accommodations currently exist. A trail is planned by the City of Pewaukee along the west side of Duplainville Road from south of Green Road to north of the study area with a connection to the Pewaukee Sports Complex.

Green Road is a two-lane undivided east/west road with a posted speed limit of 35 mph west of Duplainville Road and 30 mph east of Duplainville Road. The WisDOT Year 2009 AADT volumes were approximately 1,200 vpd west of Duplainville Road and 1,900 vpd east of Duplainville Road. Based on the Year 2021 turning movement counts and using WisDOT expansion factors, the estimated Year 2021 AADTs were approximately 1,620 vpd east of Duplainville Road and 2,340 vpd east of Duplainville Road. Exclusive right-turn lanes and stop signs exist on the Green Road approaches to Duplainville Road. Paved shoulders along Green Road serve as a bicycle accommodation. No pedestrian accommodations exist.

TADI

Two railroad tracks cross Duplainville Road approximately 705-feet south of Green Road (center-to-center). A railroad track also crosses Green Road approximately 455-feet east of Duplainville Road (center-to-center). The two sets of tracks cross southeast of the study intersection.

PART C – TRAFFIC VOLUMES

C1. Year 2021 Existing Traffic Volumes

An intersection turning movement traffic count was performed at Duplainville Road & Green Road from 6:00am to 7:00pm on Thursday, July 8, 2021. The weekday morning, midday, and evening peak hours were identified as being 7:00 to 8:00am, 11:30-12:30pm, and 4:30 to 5:30pm. Weather conditions were favorable for walking and bicycling for the time of year with temperatures in the mid-60s-F and partly cloudy to mostly cloudy skies. The Year 2021 existing traffic volumes are shown in [Exhibit 3](#).

C2. Year 2022 Forecast & Year 2042 Forecast Traffic Volumes

TADI plotted the historical traffic counts from Year 1994 through Year 2021 to estimate the annual linear growth rate within the study area. The only site location with historical data was Duplainville Road north of Green Road. The historical trends show that along Duplainville Road have trended downward.

For the purpose of this study, rather than show a negative annual linear growth, TADI assumed a 1.0% annual linear growth rate to estimate Year 2022 forecast and Year 2042 forecast traffic volumes. The Year 2022 forecast and Year 2042 forecast traffic volumes are shown in [Exhibit 4](#) and [Exhibit 5](#), respectively.

C3. Year 2022 Opening & Year 2042 Design Traffic Volumes

To address any potential future traffic impacts at the study area intersection, it is necessary to identify the hourly volume of traffic generated by anticipated development. The traffic volumes expected to be generated by anticipated development are based on the size and type of the proposed uses and on trip rates and fitted curve equations as published in the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*, 10th Edition, 2017. The following development is anticipated.

- The Interstate Partners Development is an anticipated 164,800-sf general light industrial development to be located along the south side of Green Road, east of Duplainville Road.
- The DPW Development is an anticipated 51,600-sf public works facility to be located along the north side of Green Road, west of Duplainville Road. Per discussions with the DPW director, the site will include 12 full time, 2 part time, and 2 seasonal employees. Parts and deliveries will also occur here, as will public recycling access on Wednesdays from 1:00 to 6:00pm April through November and Saturdays year-round from 9:00am to 3:00pm.
- Trinity Academy is a private K-12 school located in the northwest corner of Duplainville Road & Green Road. The academy services 40 students and was on summer break at the time turning movement counts were collected.

The Interstate Partners, DPW, and Trinity Academy trip generation tables are shown in [Exhibits 6A, 6B, and 6C](#), respectively. The new trips generated by these developments are shown in [Exhibits 7A, 7B, and 7C](#), respectively.

The Year 2022 opening year traffic volumes, shown in [Exhibit 8](#), were determined by summing the Year 2022 forecast traffic volumes ([Exhibit 4](#)) and the development new trips ([Exhibits 7A, 7B, & 7C](#)).

The Year 2042 design year traffic volumes, shown in [Exhibit 9](#), were determined by summing the Year 2042 forecast traffic volumes ([Exhibit 5](#)) and the development new trips ([Exhibits 7A, 7B, & 7C](#)).

PART D – CRASH ANALYSIS

TADI collected crash statistics and crash reports for the Duplainville Road & Green Road intersection for January 1, 2015 through December 31, 2019. This represents five years of data. Year 2020 was excluded due to lower travel that year due to the pandemic.

A crash diagram is included in [Exhibit 10](#) and crash statistics are summarized in the report [appendix](#). As shown:

- 17 crashes occurred in the five-year period. Of these crashes, 12 were property damage only crashes, 2 were possible injury crashes, 2 were non-incapacitating injury crashes, and 1 was an incapacitating crash. No fatal crashes occurred. The estimate crash rate is 1.94 crashes per million entering vehicles (MEV).
- 13 of the 17 crashes were angle crashes, 3 crashes were westbound rear-end crashes, and 1 crash occurred west of the intersection and involved an exiting motorist from Trinity Academy.
- Year 2017 experienced 11 of the 17 crashes. 7 of the 11 crashes in Year 2017 were angle crashes and 3 involved westbound rear-end crashes. There were 3 or fewer crashes in the other four years analyzed.
- The most frequent times when crashes occurred was weekdays during the morning and afternoon rush hours. Failure to yield right-of-way for eastbound and westbound traffic from Green Road was the most reported explanation for a crash (9 crashes).

The following outlines potential factors that may have contributed to crashes.

- TADI noticed trees with low growing or low hanging branches along Duplainville Road. These branches obstruct the view of motorists on Green Road who require adequate sight distance down Duplainville Road to see oncoming vehicles and make proper judgements about gaps in traffic to safely cross.
- Inability of drivers to see the stop signs eastbound and westbound on the Green Road approaches to Duplainville Road.

Mitigation measures to address safety and operations are discussed later in this technical memorandum.

PART E – WARRANT ANALYSIS

The 13-hour Year 2021 turning movement counts were forecast to Year 2022 and Year 2042 using the same growth rate identified in *Part C – Traffic Volumes*. In addition, WisDOT hourly estimates for development were used to estimate 13-hour volumes for the three identified developments. The sum of these volumes provided 13-hour volume estimates for Year 2022 opening and Year 2042 design traffic.

E1. Traffic Signal Warrant Analysis

TADI analyzed the Year 2042 design 13-hour volumes against traffic signal warrants as outlined in the Manual on Uniform Traffic Control Devices (MUTCD). Based on the warrant analysis, traffic signals are not expected to be warranted through Year 2042. Traffic volumes would need to more than double for traffic signal warrants to be met.

E2. All-Way Stop Control Warrant Analysis

TADI analyzed the Year 2042 design 13-hour volumes against traffic signal warrants as outlined in the Manual on Uniform Traffic Control Devices (MUTCD). The Federal Highway Administration's *Manual on Uniform Traffic Control Devices (MUTCD)* provides the following guidance for the installation of all-way stop control:

- All-way stop control should be considered if five or more reported crashes within a 12-month period are susceptible to correction by an all-way stop (left-turn and angle crashes). *This criterion is met. There were seven (7) such crashes within the 12-month period between January 1, 2017 and December 31, 2017.*
- All-way stop control should be considered when for each of the same eight-hours the volumes on the major street approaches (Duplainville Road) is greater than 300 vehicles per hour and the side street approaches (Green Road) is greater than 200 vehicles per hour. *This criterion is not met, as only four of the required eight hours meet this criterion.*
- All-way stop control may be considered at locations that generate high pedestrian volumes. *This criterion is not met. Ten pedestrians were observed to cross the intersection over the duration of the 13-hour count.*
- All-way stop control may be considered at locations where a road user cannot see conflicting traffic unless conflicting traffic does not also stop. *This criterion is met. Sight lines at the intersection were observed to be poor due to low growing or low hanging tree branches outside of City right-of-way. This criterion is not met if adequate sight distance can be obtained by the trimming of trees on existing private property.*
- All-way stop control may be considered where two neighborhood collector streets of similar design/operating characteristics intersect and the installation of all-way stop control would improve operations. *This criterion is not met. The two roads are indeed collector streets, but do not operate as neighborhood collector streets.*

Based on the warrant analysis, all-way stop control may be warranted considering the angle crash history in Year 2017 and the existing sight distance issues created by low growing or low hanging tree branches outside of City right-of-way. However, meeting warrants does not

translate to a legal requirement for all-way stop control. With crashes down considerably since Year 2017, and with proper trimming of trees that otherwise block adequate sight distance, warrants for all-way stop control may no longer be met.

PART F – INTERSECTION CAPACITY ANALYSIS

The intersection was analyzed based on the procedures set forth in the *Highway Capacity Manual, 6th Edition*. Intersection operation is defined by “Level of Service”. Level of Service (LOS) is a quantitative measure that refers to the overall quality of flow at an intersection ranging from very good, represented by LOS ‘A’, to very poor, represented by LOS ‘F’. For the purpose of this study, and as is standard for use in urban communities, LOS D (35-seconds or less of average vehicle delay) or better was used to define desirable peak hour operating conditions.

F1. Traffic Operations with Two-Way Stop Control

[Exhibit 11](#) shows the Year 2022 opening and Year 2042 design traffic operations and traffic queues at Duplainville Road & Green Road under existing two-way stop control.

As shown, the intersection is expected to operate desirably at LOS C or better operations through Year 2042 under its existing layout with two-way stop control.

F2. Traffic Operations with All-Way Stop Control

[Exhibit 12](#) shows the Year 2022 opening and Year 2042 design traffic operations and traffic queues at Duplainville Road & Green Road under potential all-way stop control.

As shown, the intersection is expected to operate desirably at LOS C or better operations through Year 2042 under its existing layout with all-way stop control.

PART G – RECOMMENDATION & CONCLUSION

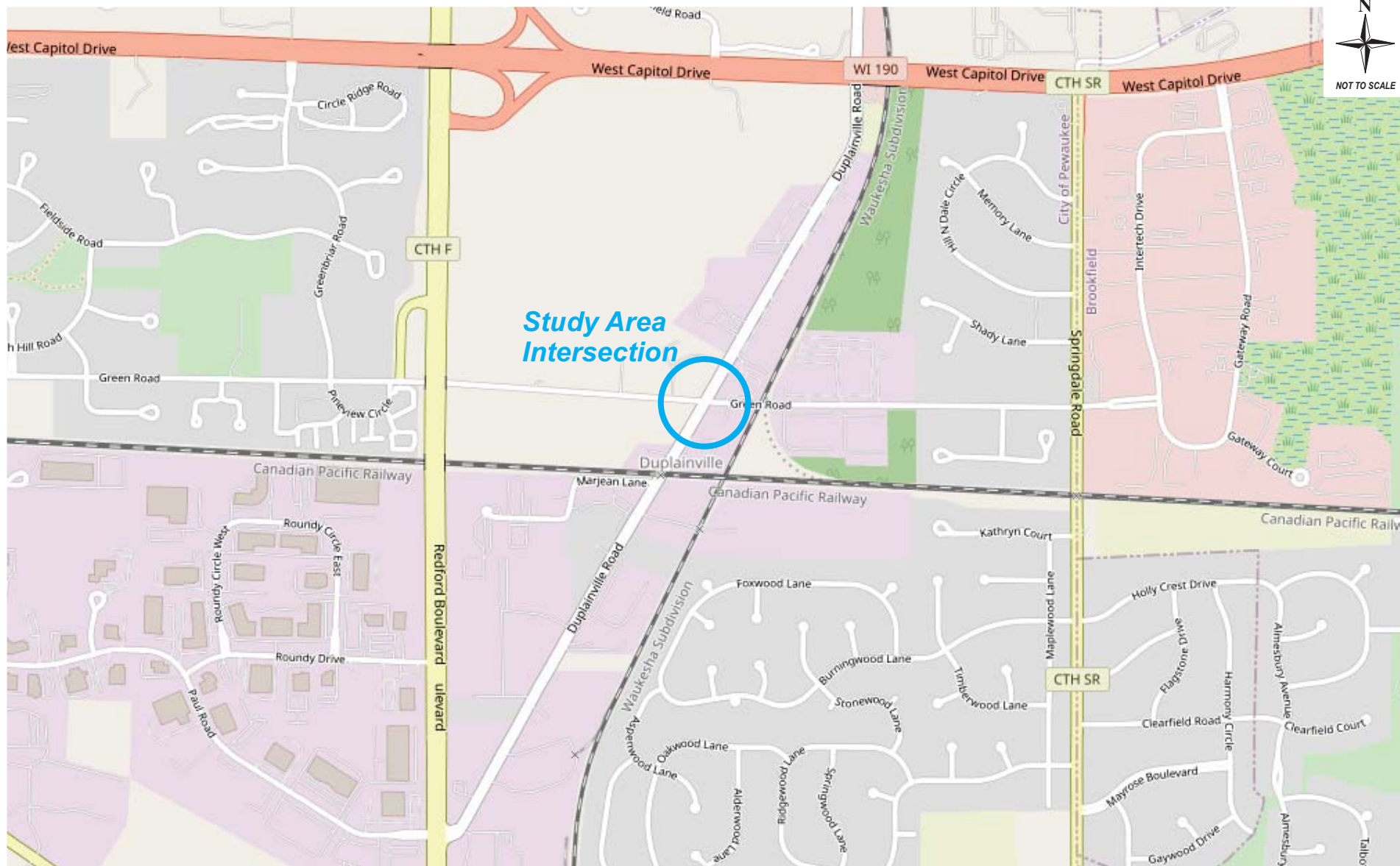
Two alternatives exist for the City of Pewaukee to consider: retain two-way stop control or install all-way stop control. The following outlines the recommendations for each alternative.

- *Two-Way Stop Control Alternative*
 - Trim the low growing and low hanging tree branches on public and private property along Duplainville Road to improve lines of sight for motorists entering the intersection from Green Road.
 - The existing stop signs are installed upstream of the Green Road approach stop lines. Move the stop signs to the stop lines.
 - Install “Cross Traffic Does Not Stop” plaques under the stop signs on the right side of the Green Road approaches.
 - Consider adding stop signs on the left side the Green Road approaches to further draw attention to the traffic control of the intersection.
 - Consider installing “Stop Ahead” signs on the left and right sides of Green Road in advance of the intersection.

- *All-Way Stop Control Alternative*
 - All-way stop control may be considered if the low growing and low hanging tree branches on public and private property along Duplainville Road cannot be trimmed to improve lines of sight.
 - If all-way stop control is installed, move the stop signs to the stop lines. Install “All-Way” plaques under the stop signs on the right side of each approach.
 - Consider adding stop signs on the left side of the intersection approaches to further draw attention to the traffic control of the intersection.
 - Consider installing “Stop Ahead” signs on the left and right sides of Duplainville Road and Green Road in advance of the intersection.

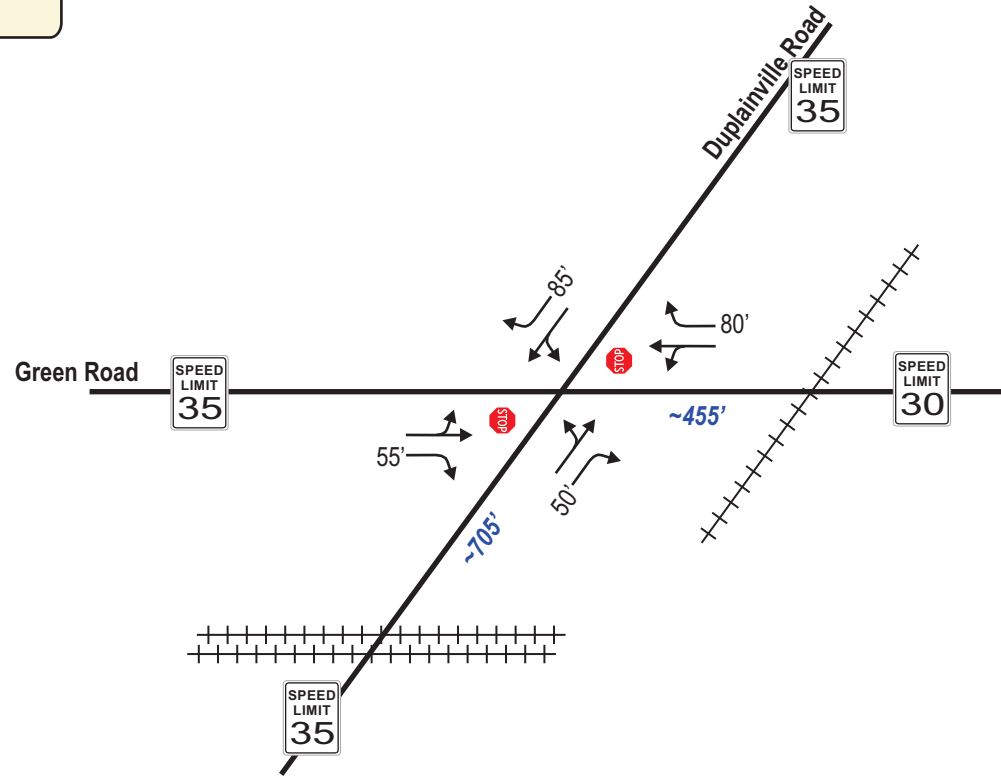
Lastly, a trail is planned by the City of Pewaukee along the west side of Duplainville Road from south of Green Road to north of the study area with a connection to the Pewaukee Sports Complex. It is recommended that the crossing of Green Road is constructed following ADA design standards and include a striped crosswalk. Ample capacity exists at the Duplainville Road & Green Road intersection to accommodate all users.

Should any questions or comments arise, please feel free to contact Michael May, P.E. PTOE of TADI at 414-807-1912 or mmay@tadi-us.com.



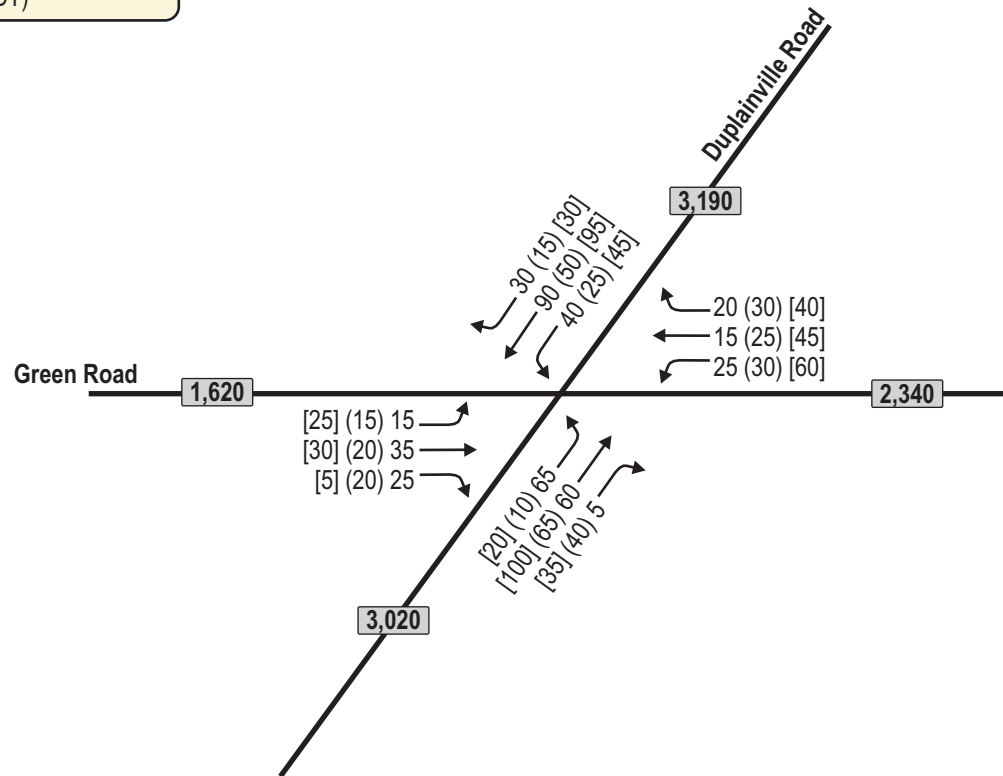
LEGEND

-  Stop Sign
-  Lane Configuration
- XX Turn Lane Storage (Feet)
- +++ Railroad
- XX'** Approximate Centerline-to-Centerline Intersection Spacing (Feet)



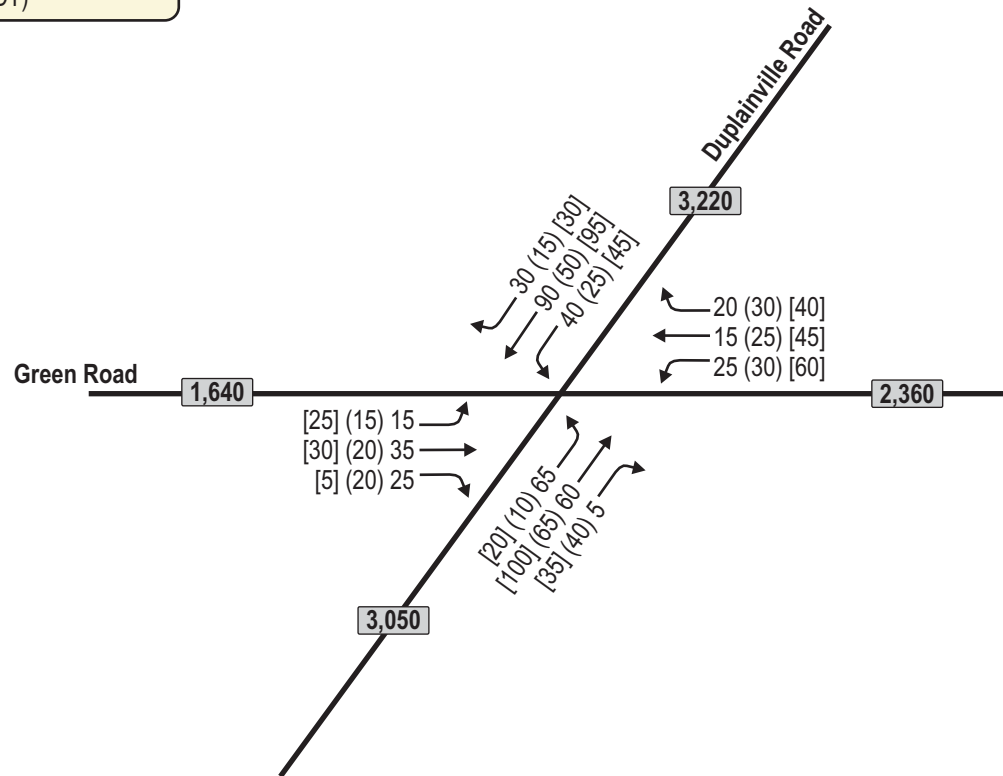
LEGEND

- XX AM Peak Hour Volumes (7:00-8:00 AM)
- (XX) Midday Peak Hour Volumes (11:30AM-12:30 PM)
- [XX] PM Peak Hour Volumes (4:30-5:30 PM)
- Negligible Traffic Volumes (Fewer than 3 vph)
- X,XXX** Annual Average Daily Traffic (AADT)



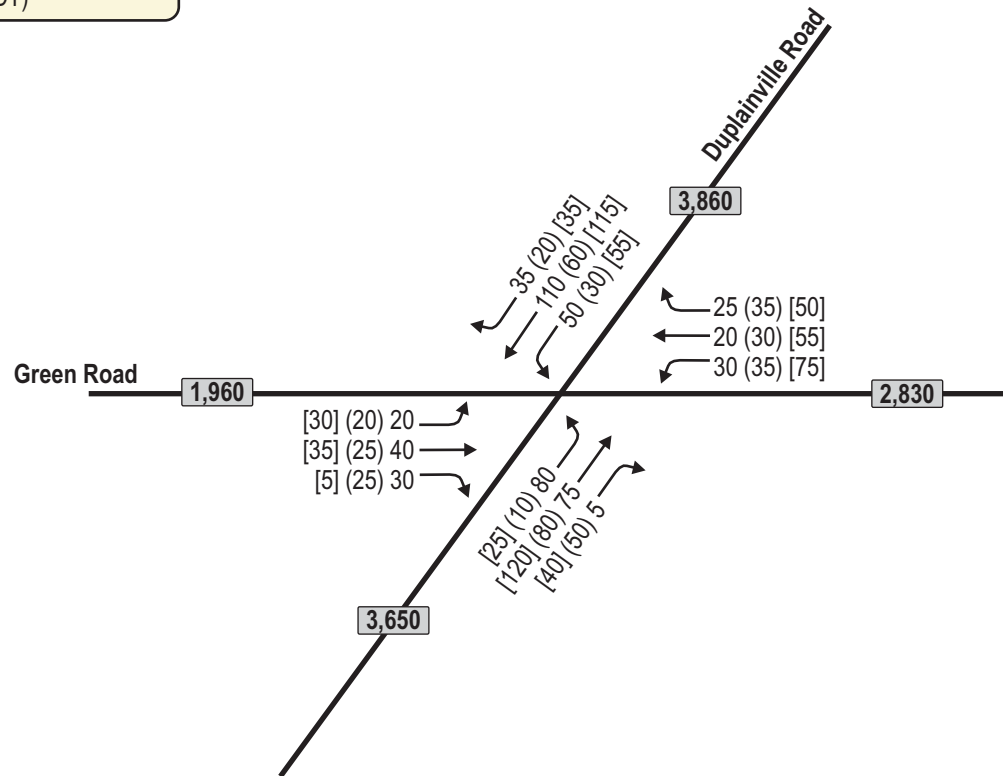
LEGEND

- XX AM Peak Hour Volumes (7:00-8:00 AM)
- (XX) Midday Peak Hour Volumes (11:30AM-12:30 PM)
- [XX] PM Peak Hour Volumes (4:30-5:30 PM)
- Negligible Traffic Volumes (Fewer than 3 vph)
- X,XXX** Annual Average Daily Traffic (AADT)



LEGEND

- XX AM Peak Hour Volumes (7:00-8:00 AM)
- (XX) Midday Peak Hour Volumes (11:30AM-12:30 PM)
- [XX] PM Peak Hour Volumes (4:30-5:30 PM)
- Negligible Traffic Volumes (Fewer than 3 vph)
- X,XXX** Annual Average Daily Traffic (AADT)



Interstate Partners Development Trip Generation Table

Land Use	ITE Code	Proposed Size	Weekday Daily	AM Peak			MID Peak			PM Peak		
				In	Out	Total	In	Out	Total	In	Out	Total
General Light Industrial	110	164.8 x 1,000 SF	680	55	10	65	35	35	70	5	45	50
			FCE	(88%)	(12%)	FCE	(50%)	(50%)	*	(13%)	(87%)	FCE
Total New Trips			680	55	10	65	35	35	70	5	45	50

FCE = Fitted Curve Equation

Daily FCE: $T = 3.79(X) + 57.96$. AM FCE: $\ln(T) = 0.74 \ln(X) + 0.39$. PM FCE: $\ln(T) = 0.69 \ln(X) + 0.43$

*Per ITE, the midday peak hour generates approximately 10.3% of the daily trip generation.

TRIP DISTRIBUTION

North on Duplainville	20%	140	10	0	5	5	0	10
South on Duplainville	40%	270	20	5	15	15	5	20
West on Green	15%	100	10	0	5	5	0	5
East on Green	25%	170	15	5	10	10	0	10
	100%	680	55	10	35	35	5	45

DPW Trip Generation Table

Land Use	ITE Code	Proposed Size	Weekday Daily	AM Peak			MID Peak			PM Peak		
				In	Out	Total	In	Out	Total	In	Out	Total
Pewaukee DPW	110/ TADI	51.6 x 1,000 SF	250 FCE	15 (51%)	10 (49%)	25 FCE	15 (50%)	10 (50%)	25 *	10 (49%)	15 (51%)	25 FCE
Total New Trips			250	15	10	25	15	10	25	10	15	25

FCE = Fitted Curve Equation

Daily FCE: $T = 3.79(X) + 57.96$. AM FCE: $\ln(T) = 0.74 \ln(X) + 0.39$. PM FCE: $\ln(T) = 0.69 \ln(X) + 0.43$

*Per ITE, the midday peak hour generates approximately 10.3% of the daily trip generation.

Based on discussions with City Engineering, the DPW Yard will include 12 full time, 2 part time, and 2 seasonal employees. Parts & deliveries will also occur here, as will public recycling access on Wednesdays 3-9pm. The ITE 110 trip generation rates and FCE are reasonable based on this description. The in/out splits were adjusted to more closely reflect more in/out turn-over the course of each hour.

TRIP DISTRIBUTION

North on Duplainville	5%	10	0	0	0	0	0	0	0
South on Duplainville	50%	120	10	5	10	5	5	10	10
West on Green	35%	90	5	5	5	5	5	5	5
East on Green	10%	30	0	0	0	0	0	0	0
	100%	250	15	10	15	10	10	15	15

Trinity Academy Trip Generation Table

Land Use	ITE Code	Proposed Size	Weekday Daily	AM Peak			MID Peak			PM Peak		
				In	Out	Total	In	Out	Total	In	Out	Total
Private School (K-12)	536	40 Students	100 (2.48)	20 (61%)	10 (39%)	30 (0.80)	5 (50%)	5 (50%)	10 *	0 (43%)	5 (57%)	5 (0.17)
Total New Trips			100	20	10	30	5	5	10	0	5	5

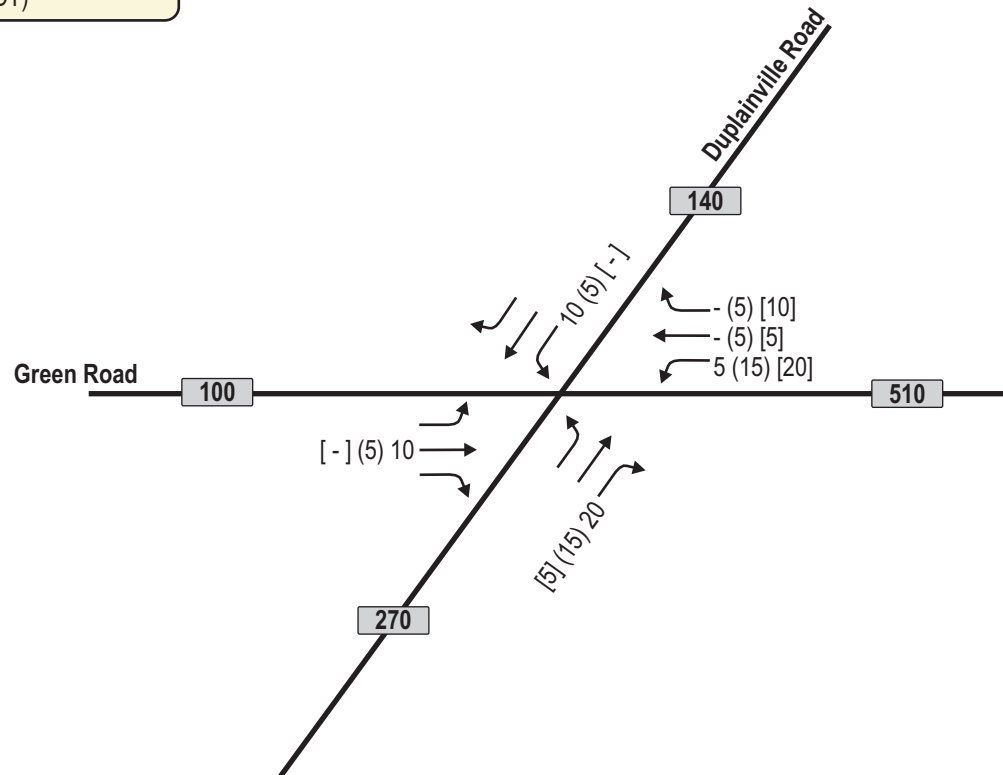
*Per ITE, the MID peak hour generates approximately 2% of the daily trip generation. This rounds to zero. Assumed 5 in/5 out during MID Peak.
Based on discussions with the City, Trinity Academy services approximately 40 students and 10-12 staff.

TRIP DISTRIBUTION

North on Duplainville	15%	10	0	0	0	0	0	0	0
South on Duplainville	40%	40	10	5	5	5	5	0	5
West on Green	25%	30	5	5	0	0	0	0	0
East on Green	20%	20	5	0	0	0	0	0	0
	100%	100	20	10	5	5	0	5	

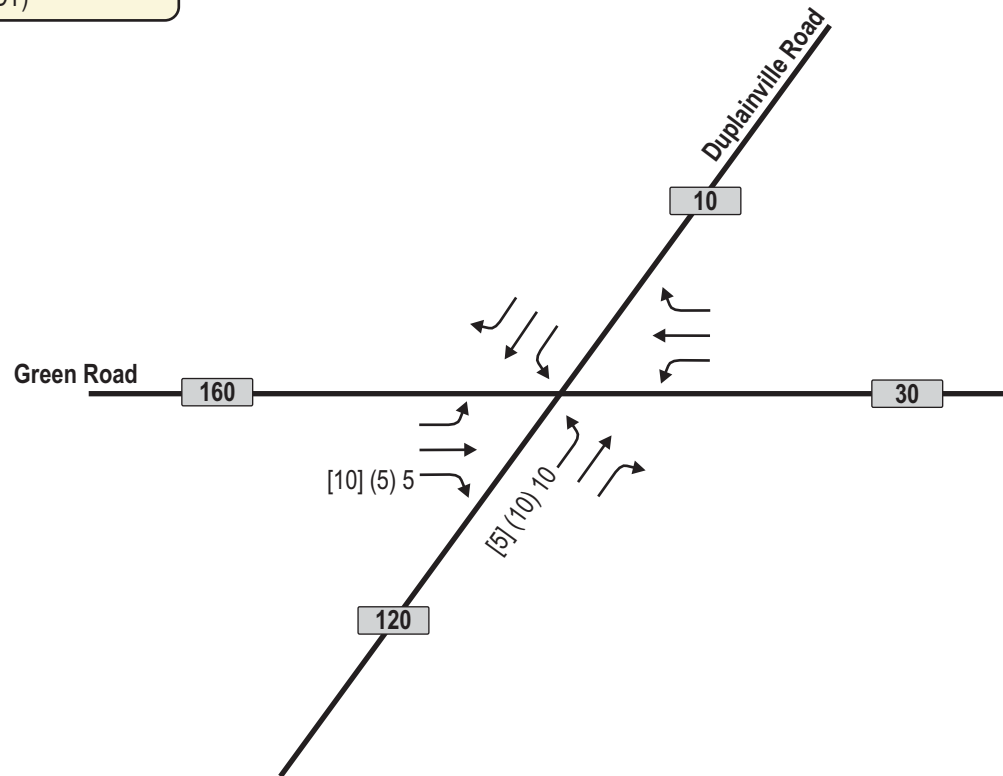
LEGEND

- XX AM Peak Hour Volumes (7:00-8:00 AM)
- (XX) Midday Peak Hour Volumes (11:30AM-12:30 PM)
- [XX] PM Peak Hour Volumes (4:30-5:30 PM)
- Negligible Traffic Volumes (Fewer than 3 vph)
- X,XXX** Annual Average Daily Traffic (AADT)



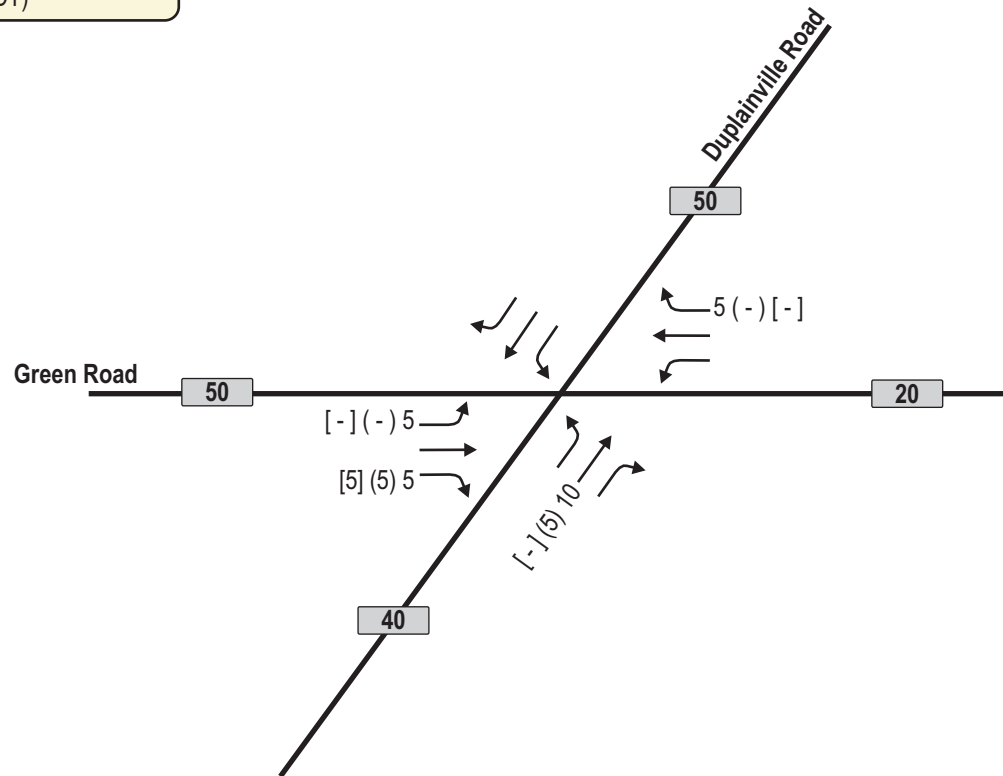
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- XX AM Peak Hour Volumes (7:00-8:00 AM)
- (XX) Midday Peak Hour Volumes (11:30AM-12:30 PM)
- [XX] PM Peak Hour Volumes (4:30-5:30 PM)
- Negligible Traffic Volumes (Fewer than 3 vph)
- X,XXX** Annual Average Daily Traffic (AADT)



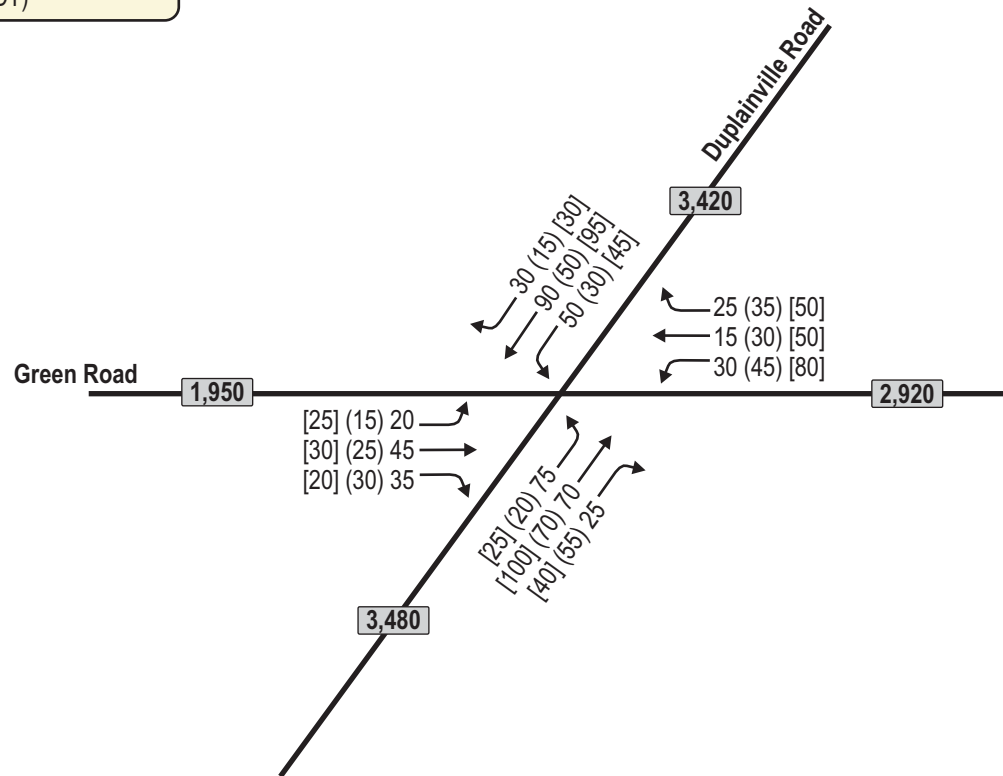
LEGEND

- XX AM Peak Hour Volumes (7:00-8:00 AM)
- (XX) Midday Peak Hour Volumes (11:30AM-12:30 PM)
- [XX] PM Peak Hour Volumes (4:30-5:30 PM)
- Negligible Traffic Volumes (Fewer than 3 vph)
- X,XXX** Annual Average Daily Traffic (AADT)



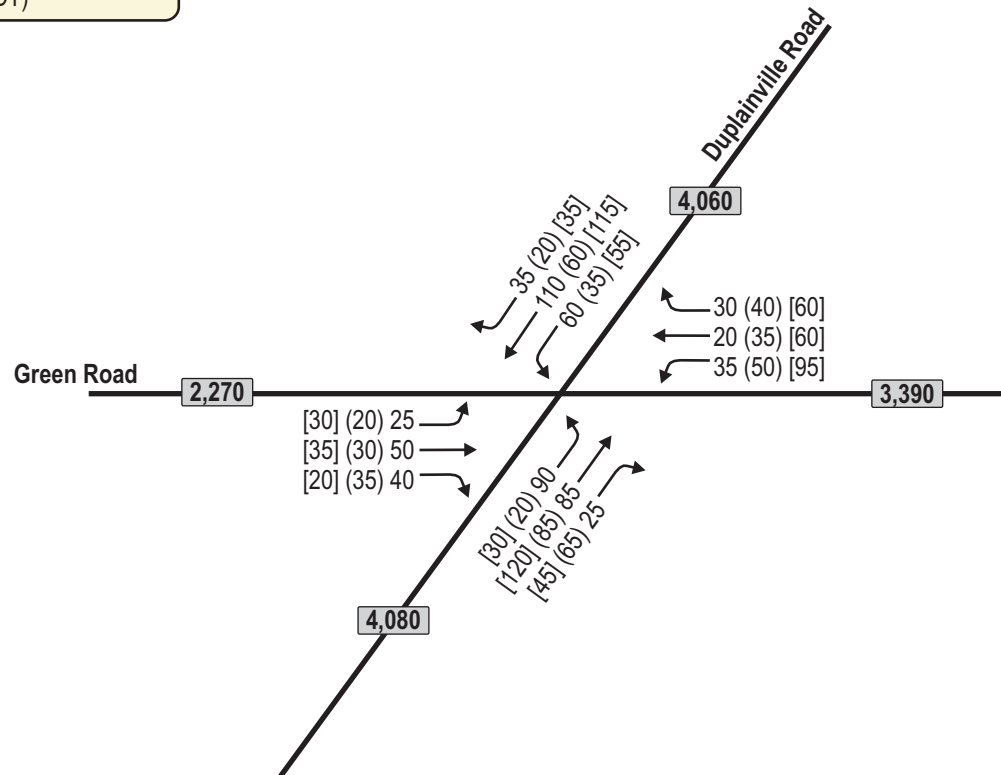
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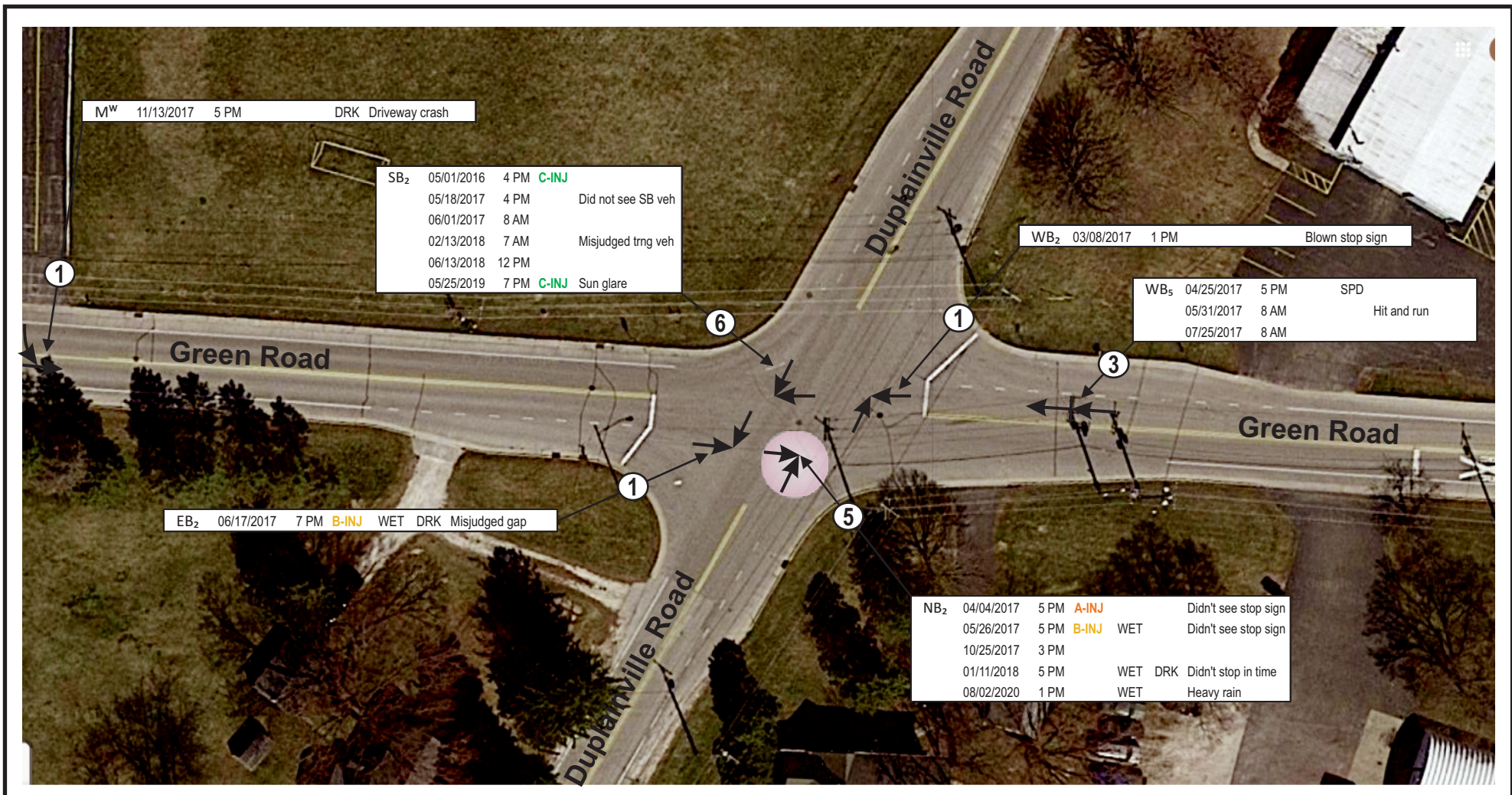
- XX AM Peak Hour Volumes (7:00-8:00 AM)
- (XX) Midday Peak Hour Volumes (11:30AM-12:30 PM)
- [XX] PM Peak Hour Volumes (4:30-5:30 PM)
- Negligible Traffic Volumes (Fewer than 3 vph)
- X,XXX** Annual Average Daily Traffic (AADT)



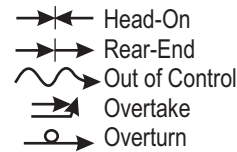
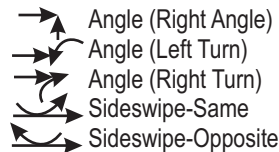
LEGEND

- XX AM Peak Hour Volumes (7:00-8:00 AM)
- (XX) Midday Peak Hour Volumes (11:30AM-12:30 PM)
- [XX] PM Peak Hour Volumes (4:30-5:30 PM)
- Negligible Traffic Volumes (Fewer than 3 vph)
- X,XXX** Annual Average Daily Traffic (AADT)





LEGEND



= CRASH FREQUENCY (if > 1 NON-PED/BIKE)

LABEL, DATE OF CRASH, TIME, SEVERITY, ROAD CONDITIONS, LIGHT, ALCOHOL, DRUGS, SPEED-RELATED, NOTES ABOUT CRASH

Note: Deer Crashes Not Included

*Economic Loss = \$85k (KAB), \$25k (C), \$4k (PDO)



CRASH STATISTICS

17
Crashes

1.94 Crashes Per Million Entering Vehicles

0 Fatal Crash (K)
 1 Incapacitating (Type A)
 2 Non-Incapacitating (Type B)
 2 Possible (Type C)
 12 Property Damage Only

CRASH SEVERITY DEFINITIONS

K-Inj = Fatal Crash
 A-Inj = Incapacitating Injury Crash
 B-Inj = Non-Incapacitating Injury Crash
 C-Inj = Possible Injury Crash
 = Property Damage Only Crash

HIGHLIGHTED CRASHES

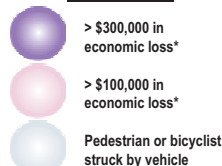


EXHIBIT 10 CRASH HISTORY (2016-2020) DUPLAINVILLE ROAD & GREEN ROAD

PEWAUKEE, WISCONSIN

**Year 2022 Opening Traffic Peak Hour Operating Conditions
With Two-Way Stop Control**

Intersection	Peak Hour	Metric	Level of Service (LOS) per Movement by Approach												I/S
			Eastbound			Westbound			Northbound			Southbound			LOS & Delay
			↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙	
Duplainville Road & Green Road Stop Sign Control (EB/WB)		Lanes->	1	1	1	1	1	1	1	1	1	1	1		
	AM	LOS	C	A	C	A	A	*	A	*				A	
		Delay	17	9	18	9	7	*	7	*				6	
		Queue	20'	20'	20'	20'	20'	*	20'	*					
	MID	LOS	B	A	B	A	A	*	A	*				A	
		Delay	11	8	11	8	7	*	7	*				5	
		Queue	20'	20'	20'	20'	20'	*	20'	*					
	PM	LOS	B	A	C	A	A	*	A	*				A	
		Delay	13	8	15	9	7	*	7	*				6	
Queue		20'	20'	30'	20'	20'	*	20'	*						

(-) indicates a movement that is prohibited or does not exist; (*) indicates a freeflow movement.
Delay is reported in seconds. Queue is the maximum of the 50th & 95th percentile queue, measured in feet.

**Year 2042 Design Traffic Peak Hour Operating Conditions
With Two-Way Stop Control**

Intersection	Peak Hour	Metric	Level of Service (LOS) per Movement by Approach												I/S
			Eastbound			Westbound			Northbound			Southbound			LOS & Delay
			↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙	
Duplainville Road & Green Road Stop Sign Control (EB/WB)		Lanes->	1	1	1	1	1	1	1	1	1	1	1		
	AM	LOS	C	A	C	A	A	*	A	*				A	
		Delay	21	9	24	9	7	*	7	*				7	
		Queue	35'	20'	30'	20'	20'	*	20'	*					
	MID	LOS	B	A	B	A	A	*	A	*				A	
		Delay	12	8	12	8	7	*	7	*				5	
		Queue	20'	20'	20'	20'	20'	*	20'	*					
	PM	LOS	C	A	C	A	A	*	A	*				A	
		Delay	15	9	18	9	7	*	7	*				7	
		Queue	20'	20'	45'	20'	20'	*	20'	*					

(-) indicates a movement that is prohibited or does not exist; (*) indicates a freeflow movement.
Delay is reported in seconds. Queue is the maximum of the 50th & 95th percentile queue, measured in feet.

Year 2022 Opening Traffic Peak Hour Operating Conditions
With All-Way Stop Control

Intersection	Peak Hour	Metric	Level of Service (LOS) per Movement by Approach												I/S
			Eastbound			Westbound			Northbound		Southbound				LOS & Delay
			↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙	
Duplainville Road & Green Road <i>All-Way Stop Control</i>	Lanes->		1	1	1	1	1	1	1	1	1				
	AM	LOS	A	A	A	A	B	A	B	A					
		Delay	9	8	9	8	10	7	10	7					
		Queue	20'	20'	20'	20'	30'	20'	30'	20'					
	MID	LOS	A	A	A	A	A	A	A	A					
		Delay	8	7	9	7	9	7	9	7					
		Queue	20'	20'	20'	20'	20'	20'	20'	20'					
	PM	LOS	A	A	B	A	B	A	B	A					
		Delay	9	8	10	8	10	7	10	7					
Queue		20'	20'	20'	20'	20'	20'	20'	20'						

(-) indicates a movement that is prohibited or does not exist; (*) indicates a freeflow movement.
 Delay is reported in seconds. Queue is the maximum of the 50th & 95th percentile queue, measured in feet.

Year 2042 Design Traffic Peak Hour Operating Conditions
With All-Way Stop Control

Intersection	Peak Hour	Metric	Level of Service (LOS) per Movement by Approach												I/S
			Eastbound			Westbound			Northbound		Southbound				LOS & Delay
			↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙	
Duplainville Road & Green Road <i>All-Way Stop Control</i>		Lanes->	1	1	1	1	1	1	1	1	1				
	AM	LOS	B	A	B	A	B	A	B	A				B	
		Delay	10	8	10	8	12	8	11	8				11	
		Queue	20'	20'	20'	20'	45'	20'	40'	20'					
	MID	LOS	A	A	A	A	A	A	A	A				A	
		Delay	9	7	9	7	9	8	9	7				8	
		Queue	20'	20'	20'	20'	20'	20'	20'	20'					
	PM	LOS	B	A	B	A	B	A	B	A				B	
		Delay	10	8	11	8	10	8	11	8				10	
		Queue	20'	20'	30'	20'	30'	20'	35'	20'					

(-) indicates a movement that is prohibited or does not exist; (*) indicates a freeflow movement.
 Delay is reported in seconds. Queue is the maximum of the 50th & 95th percentile queue, measured in feet.

APPENDIX

Traffic Counts

Intersection Traffic Volume Report

Count Basics		Version 2013.14.1	Page 1 of 13
Start Date:	Thursday, July 8, 2021	Weekday	Schools Not in Session
Total Number of Hours Counted:	13	Non-Holiday	No Special Events

Base Information, Observed (13) Hour and Estimated (24) Hour Volume Summaries

Intersection of: Duplainville Road and Green Road

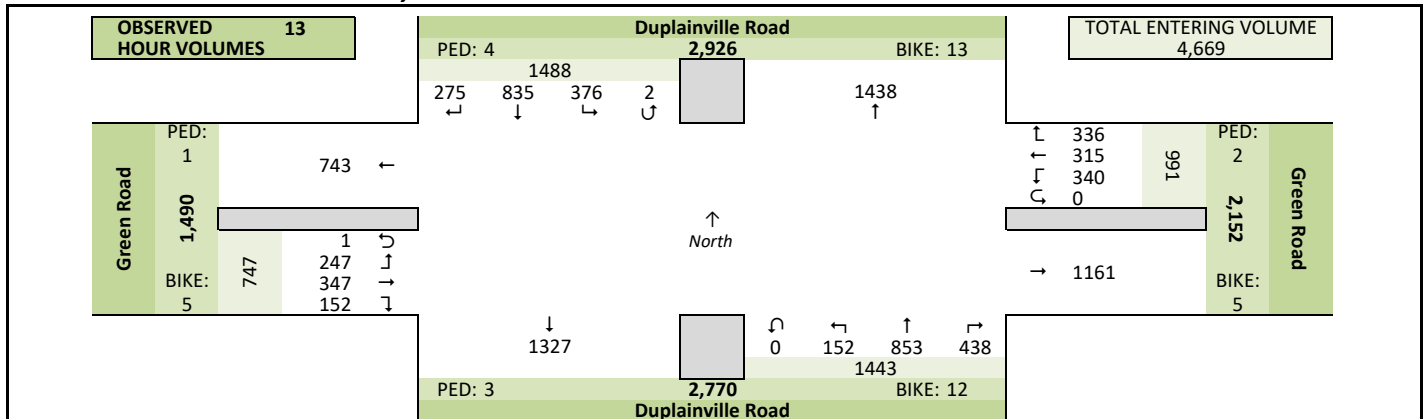
Site Information

Municipality	City of Pewaukee		
County	Waukesha	WisDOT Region	SE
Traffic Control	Partial Stop Control		
Roadway Names	North Direction		↑
North Leg	Duplainville Road		
East Leg	Green Road		
South Leg	Duplainville Road		
West Leg	Green Road		
Special Considerations			
Schools	Not in Session		
Holidays	None		
Special Events	None		
Special Pedestrians Observed			
	Pre-school children	None	
	Elementry school age children	None	
	Visually impaired (white cane/helper dog)	None	
	Elderly/disabled (except wheelchairs)	None	
	Wheelchairs/electric scooters	None	
	Other (describe)	None	None

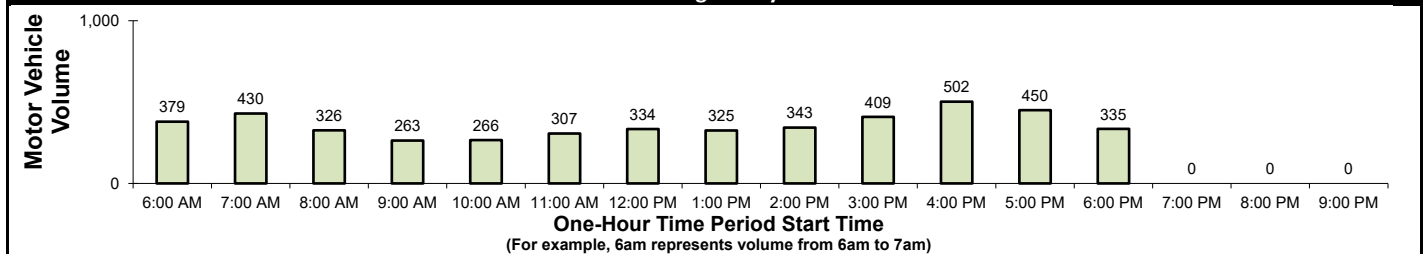
Count Information

Hrs Counted: 6:00 AM-7:00 PM					
1st Day of Count		Thursday, July 8, 2021		Weather	
AM Peak Period		Thursday, July 8, 2021		Clear & Dry	
Midday Peak Period		Thursday, July 8, 2021		Clear & Dry	
PM Peak Period		Thursday, July 8, 2021		Clear & Dry	
Calculated Peak Hours					
	AM	7:00-8:00am	MD	11:30-12:30am	PM 4:30-5:30pm
Peak Hours Selected for Analysis					
	AM	7:00-8:00am	MD	11:30-12:30am	PM 4:30-5:30pm
Daily/Seasonal Adjustment Group			(2) Urban Arterials & Collectors		
Count Expansion Group			(2) Urban Arterials & Collectors		
Daily/Seasonal Adjustment Factor			0.925	Count Expansion Factor	1.178
Company Name			TADI, Inc.		Manual Adj. 1.000
Observers	AM Peak Period		Amy Scheuerlein		
	Midday Peak Period		Lee Oestreich		
	PM Peak Period		Larry Numerich		
Comments	2019 DOT Seasonal Factors				

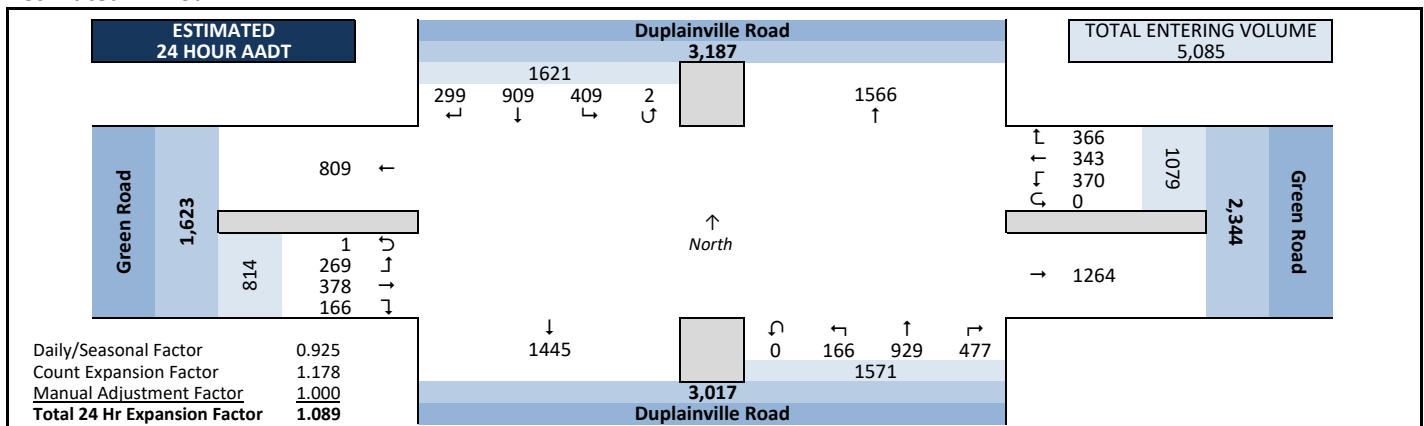
Observed 13 Hour Volume Summary



Total Entering Hourly Volume



Estimated 24 Hour AADT



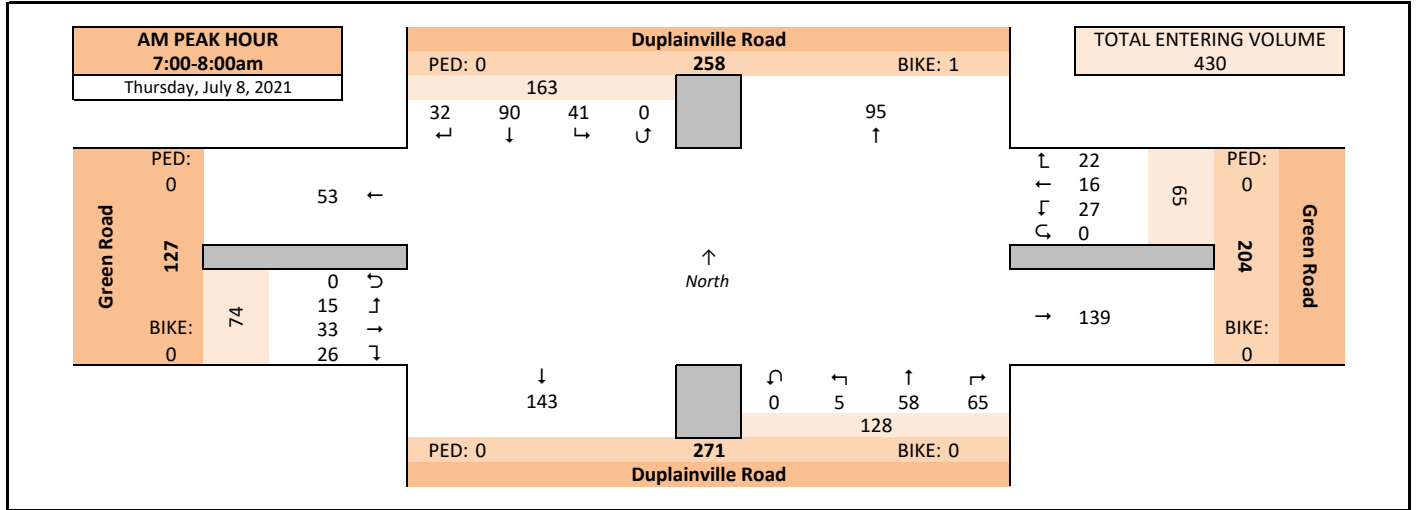
Intersection Traffic Volume Report

Peak Hour Volume Graphical Summary

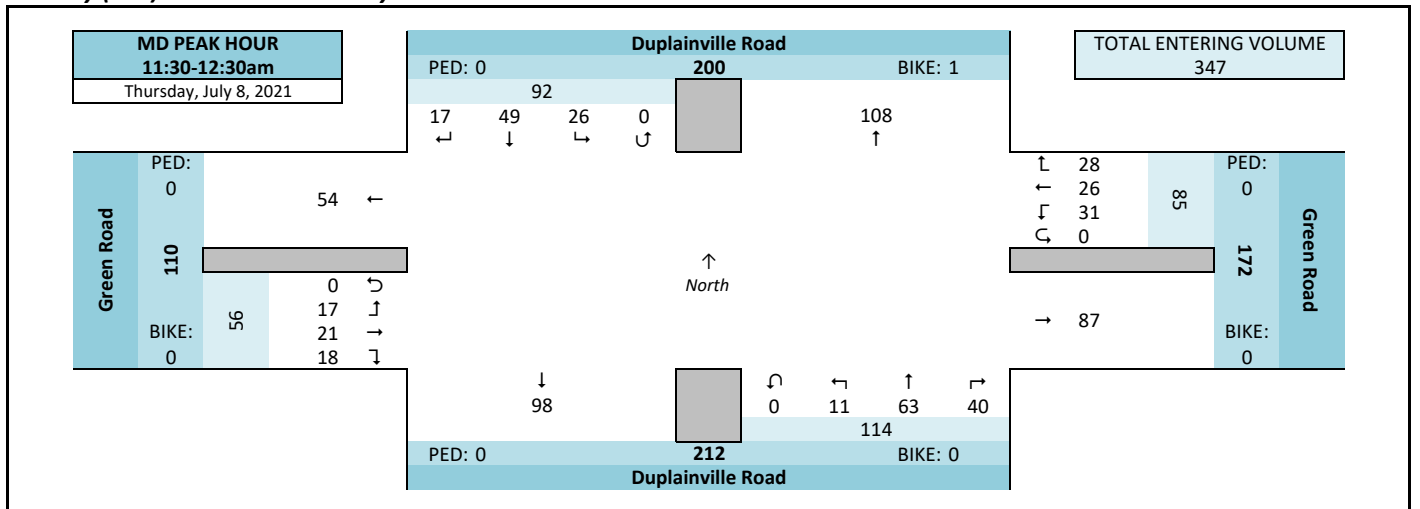
Duplainville Road and Green Road

AM Peak Hour Summary

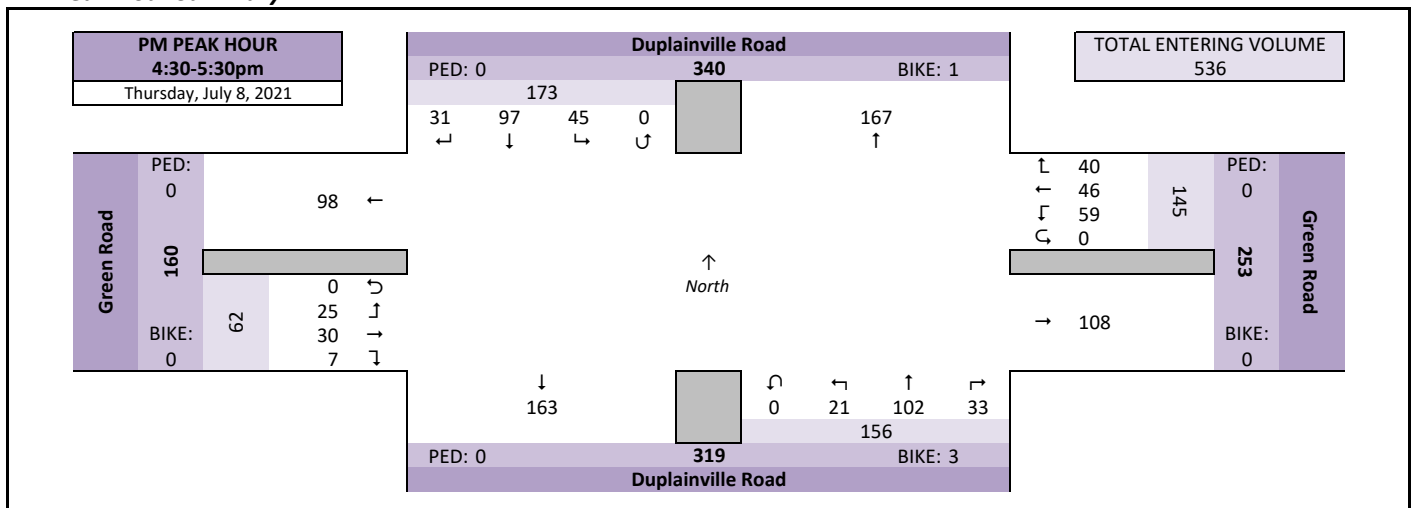
Count Basics		Page 2 of 13	
Start Date:	Thursday, July 8, 2021	Weekday	Schools Not in Session
Total Number of Hours Counted:	13	Non-Holiday	No Special Events



Midday (MD) Peak Hour Summary



PM Peak Hour Summary



Intersection Traffic Volume Report

Count Basics			Page 3 of 13
Start Date:	Thursday, July 8, 2021	Weekday	Schools Not in Session
Total Number of Hours Counted:	13	Non-Holiday	No Special Events

Peak Hour Volume Summary

Duplainville Road and Green Road

Peak Hour Volumes, Truck Percentages, and PHFs

Thursday, July 8, 2021		↴					↶					↴					↷					
		From North					From East					From South					From West					
		Duplainville Road					Green Road					Duplainville Road					Green Road					
AM Peak Hour	AM Peak Hour																					Totals
	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	26	13	0	48	3	1	6	0	10	11	19	1	0	31	5	5	3	0	13	102
	7:15 AM	7	17	5	0	29	2	3	6	0	11	18	13	1	0	32	3	5	3	0	11	83
	7:30 AM	7	20	10	0	37	7	5	11	0	23	15	10	2	0	27	8	11	2	0	21	108
	7:45 AM	9	27	13	0	49	10	7	4	0	21	21	16	1	0	38	10	12	7	0	29	137
	Peak Hour Volume	32	90	41	0	163	22	16	27	0	65	65	58	5	0	128	26	33	15	0	74	430
	Rounded Hourly Volume	30	90	40	0	160	20	15	25	0	60	65	60	5	0	130	25	35	15	0	75	425
	% Single Unit Trucks	0.0	10.0	2.4	0.0	6.1	0.0	12.5	25.9	0.0	13.8	3.1	6.9	0.0	0.0	4.7	0.0	0.0	0.0	0.0	0.0	5.8
	% Heavy Trucks	0.0	2.2	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	3.4	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.9
% Trucks (Total)	0.0	12.2	2.4	0.0	7.4	0.0	12.5	25.9	0.0	13.8	3.1	10.3	0.0	0.0	6.2	0.0	0.0	0.0	0.0	0.0	6.7	
Peak Hour Factor (PHF)	0.89	0.83	0.79	0.00	0.83	0.55	0.57	0.61	0.00	0.71	0.77	0.76	0.62	0.00	0.84	0.65	0.69	0.54	0.00	0.64	0.78	

Thursday, July 8, 2021		↓ From North					← From East					↑ From South					→ From West					Totals
Midday (MD) Peak Hour	MD Peak Hour	Duplainville Road					Green Road					Duplainville Road					Green Road					
	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	
	11:30 AM	9	9	4	0	22	2	5	8	0	15	13	12	1	0	26	3	5	5	0	13	76
	11:45 AM	4	12	8	0	24	14	6	9	0	29	8	16	4	0	28	5	6	3	0	14	95
	12:00 PM	3	11	6	0	20	8	6	7	0	21	12	17	5	0	34	8	3	5	0	16	91
	12:15 PM	1	17	8	0	26	4	9	7	0	20	7	18	1	0	26	2	7	4	0	13	85
	Peak Hour Volume	17	49	26	0	92	28	26	31	0	85	40	63	11	0	114	18	21	17	0	56	347
	Rounded Hourly Volume	15	50	25	0	90	30	25	30	0	85	40	65	10	0	115	20	20	15	0	55	345
	% Single Unit Trucks	0.0	14.3	7.7	0.0	9.8	0.0	3.8	3.2	0.0	2.4	12.5	9.5	0.0	0.0	9.6	5.6	0.0	0.0	0.0	1.8	6.6
	% Heavy Trucks	0.0	6.1	0.0	0.0	3.3	3.6	0.0	3.2	0.0	2.4	5.0	3.2	0.0	0.0	3.5	0.0	0.0	0.0	0.0	0.0	2.6
% Trucks (Total)	0.0	20.4	7.7	0.0	13.0	3.6	3.8	6.5	0.0	4.7	17.5	12.7	0.0	0.0	13.2	5.6	0.0	0.0	0.0	1.8	9.2	
Peak Hour Factor (PHF)	0.47	0.72	0.81	0.00	0.88	0.50	0.72	0.86	0.00	0.73	0.77	0.87	0.55	0.00	0.84	0.56	0.75	0.85	0.00	0.87	0.91	

Thursday, July 8, 2021		↓					←					↑					→					
		From North					From East					From South					From West					
PM Peak Hour	PM Peak Hour	Duplainville Road					Green Road					Duplainville Road					Green Road					
	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
	4:30 PM	8	21	15	0	44	11	19	20	0	50	6	24	6	0	36	2	6	7	0	15	145
	4:45 PM	10	28	16	0	54	8	6	11	0	25	9	24	6	0	39	3	9	4	0	16	134
	5:00 PM	8	20	4	0	32	5	10	13	0	28	12	37	6	0	55	1	6	7	0	14	129
	5:15 PM	5	28	10	0	43	16	11	15	0	42	6	17	3	0	26	1	9	7	0	17	128
	Peak Hour Volume	31	97	45	0	173	40	46	59	0	145	33	102	21	0	156	7	30	25	0	62	536
	Rounded Hourly Volume	30	95	45	0	170	40	45	60	0	145	35	100	20	0	155	5	30	25	0	60	530
	% Single Unit Trucks	0.0	7.2	0.0	0.0	4.0	0.0	0.0	1.7	0.0	0.7	3.0	6.9	0.0	0.0	5.1	0.0	0.0	0.0	0.0	0.0	3.0
	% Heavy Trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.7	0.0	1.0	0.0	0.0	0.6	0.0	3.3	0.0	0.0	1.6	0.6
% Trucks (Total)	0.0	7.2	0.0	0.0	4.0	0.0	0.0	3.4	0.0	1.4	3.0	7.8	0.0	0.0	5.8	0.0	3.3	0.0	0.0	1.6	3.5	
Peak Hour Factor (PHF)	0.77	0.87	0.70	0.00	0.80	0.62	0.61	0.74	0.00	0.72	0.69	0.69	0.87	0.00	0.71	0.58	0.83	0.89	0.00	0.91	0.92	

Peak Hour Pedestrian and Bicyclist Volumes

Pedestrians and Bicyclists		Crossing 			Crossing 			Crossing 			Crossing 			Total Ped & Bike Volume
		North Approach			East Approach			South Approach			West Approach			
		Duplainville Road			Green Road			Duplainville Road			Green Road			
15-Minute Start Time		Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	
AM	7:00 AM	0	1	1	0	0	0	0	0	0	0	0	0	
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	
	7:30 AM	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	
	Total	0	1	1	0	0	0	0	0	0	0	0	1	
MD	11:30 AM	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	
	12:00 PM	0	1	1	0	0	0	0	0	0	0	0	1	
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	
	Total	0	1	1	0	0	0	0	0	0	0	0	1	
PM	4:30 PM	0	0	0	0	0	0	0	1	1	0	0	1	
	4:45 PM	0	0	0	0	0	0	0	1	1	0	0	1	
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	
	5:15 PM	0	1	1	0	0	0	0	1	1	0	0	2	
	Total	0	1	1	0	0	0	0	3	3	0	0	4	

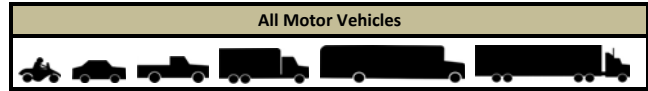
Intersection Traffic Volume Report

Count Basics			Page 4 of 13	
Start Date:	Thursday, July 8, 2021	Weekday	Schools Not in Session	
Total Number of Hours Counted:	13	Non-Holiday	No Special Events	

Hourly Volume Summary - Motor Vehicle Data

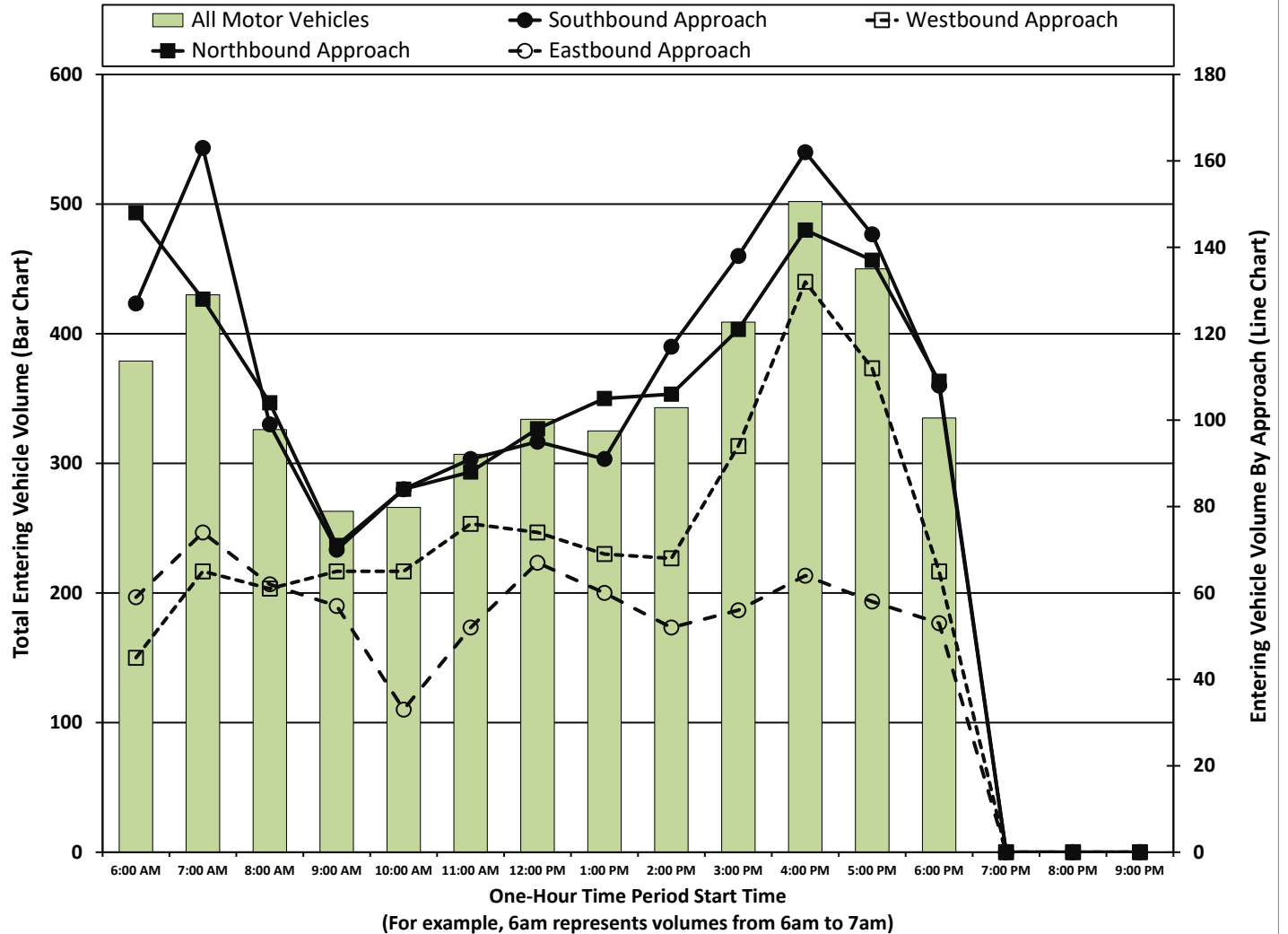
Duplainville Road and Green Road

One-Hour Motor Vehicle Data



One-Hour Time Period	Start Time	From North Duplainville Road					From East Green Road					From South Duplainville Road					From West Green Road					Total Vehicle Volume	Directional Volume Totals	
		Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total			
																							E/W	N/S
AM	6:00 AM	10	93	24	0	127	27	9	9	0	45	35	105	8	0	148	15	18	26	0	59	379	104	275
	7:00 AM	32	90	41	0	163	22	16	27	0	65	65	58	5	0	128	26	33	15	0	74	430	139	291
	8:00 AM	19	47	33	0	99	20	12	29	0	61	45	50	9	0	104	11	32	19	0	62	326	123	203
	9:00 AM	19	27	24	0	70	24	25	16	0	65	32	33	6	0	71	12	31	14	0	57	263	122	141
MD	10:00 AM	15	42	27	0	84	16	23	26	0	65	23	50	11	0	84	6	16	11	0	33	266	98	168
	11:00 AM	24	45	22	0	91	23	21	32	0	76	26	48	14	0	88	10	23	19	0	52	307	128	179
	12:00 PM	13	51	31	0	95	22	31	21	0	74	30	59	9	0	98	18	34	15	0	67	334	141	193
	1:00 PM	16	49	25	1	91	25	26	18	0	69	35	55	15	0	105	20	26	13	1	60	325	129	196
PM	2:00 PM	22	66	29	0	117	26	19	23	0	68	29	67	10	0	106	7	28	17	0	52	343	120	223
	3:00 PM	24	83	31	0	138	24	34	36	0	94	29	74	18	0	121	6	24	26	0	56	409	150	259
	4:00 PM	34	78	50	0	162	40	42	50	0	132	33	82	29	0	144	9	29	26	0	64	502	196	306
	5:00 PM	24	93	26	0	143	34	41	37	0	112	32	93	12	0	137	4	26	28	0	58	450	170	280
	6:00 PM	23	71	13	1	108	33	16	16	0	65	24	79	6	0	109	8	27	18	0	53	335	118	217
	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		275	835	376	2	1488	336	315	340	0	991	438	853	152	0	1443	152	347	247	1	747	4669	1738	2931

Graphical Summary of Hourly Volumes



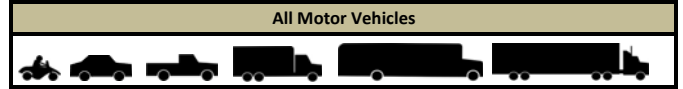
Intersection Traffic Volume Report

15-Minute Motor Vehicle Data

Duplainville Road and Green Road

15-Minute Motor Vehicle Data

Count Basics			Page 5 of 13	
Start Date:	Thursday, July 8, 2021	Weekday	Schools Not in Session	
Total Number of Hours Counted:	13	Non-Holiday	No Special Events	



15-Minute Time Period Start Time	From North					From East					From South					From West					15-Min Totals	Hourly Sum	PHF	
	Duplainville Road					Green Road					Duplainville Road					Green Road								
	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 Peak Period	6:00 AM	2	17	7	0	26	4	1	1	0	6	5	14	2	0	21	3	2	3	0	8	61	379	0.71
	6:15 AM	2	25	4	0	31	7	1	3	0	11	6	28	2	0	36	2	2	4	0	8	86	420	0.78
	6:30 AM	2	23	5	0	30	7	2	1	0	10	11	29	1	0	41	3	6	8	0	17	98	417	0.78
	6:45 AM	4	28	8	0	40	9	5	4	0	18	13	34	3	0	50	7	8	11	0	26	134	427	0.80
	7:00 AM	9	26	13	0	48	3	1	6	0	10	11	19	1	0	31	5	5	3	0	13	102	430	0.78
	7:15 AM	7	17	5	0	29	2	3	6	0	11	18	13	1	0	32	3	5	3	0	11	83	413	0.75
	7:30 AM	7	20	10	0	37	7	5	11	0	23	15	10	2	0	27	8	11	2	0	21	108	412	0.75
	7:45 AM	9	27	13	0	49	10	7	4	0	21	21	16	1	0	38	10	12	7	0	29	137	377	0.69
	8:00 AM	6	14	9	0	29	3	3	4	0	10	13	14	2	0	29	3	10	4	0	17	85	326	0.95
	8:15 AM	5	8	5	0	18	3	1	10	0	14	11	18	2	0	31	2	9	8	0	19	82	311	0.90
	8:30 AM	4	14	7	0	25	7	3	5	0	15	11	9	1	0	21	5	4	3	0	12	73	299	0.87
	8:45 AM	4	11	12	0	27	7	5	10	0	22	10	9	4	0	23	1	9	4	0	14	86	301	0.88
Midday Peak Period	9:00 AM	4	8	6	0	18	6	5	3	0	14	6	10	2	0	18	3	12	5	0	20	70	263	0.88
	9:15 AM	5	7	5	0	17	11	4	6	0	21	6	11	1	0	18	2	6	6	0	14	70	238	0.79
	9:30 AM	4	11	7	0	22	5	7	7	0	19	14	8	3	0	25	4	4	1	0	9	75	233	0.78
	9:45 AM	6	1	6	0	13	2	9	0	0	11	6	4	0	0	10	3	9	2	0	14	48	248	0.69
	10:00 AM	2	9	5	0	16	4	4	5	0	13	2	7	2	0	11	0	4	1	0	5	45	266	0.74
	10:15 AM	2	7	9	0	18	3	6	8	0	17	4	14	3	0	21	3	2	4	0	9	65	282	0.78
	10:30 AM	2	19	8	0	29	4	5	7	0	16	11	19	3	0	33	2	7	3	0	12	90	292	0.81
	10:45 AM	9	7	5	0	21	5	8	6	0	19	6	10	3	0	19	1	3	3	0	7	66	278	0.91
	11:00 AM	4	12	2	0	18	1	7	10	0	18	1	10	3	0	14	1	6	4	0	11	61	307	0.81
	11:15 AM	7	12	8	0	27	6	3	5	0	14	4	10	6	0	20	1	6	7	0	14	75	337	0.89
	11:30 AM	9	9	4	0	22	2	5	8	0	15	13	12	1	0	26	3	5	5	0	13	76	347	0.91
	11:45 AM	4	12	8	0	24	14	6	9	0	29	8	16	4	0	28	5	6	3	0	14	95	343	0.90
PM Peak Period	12:00 PM	3	11	6	0	20	8	6	7	0	21	12	17	5	0	34	8	3	5	0	16	91	334	0.92
	12:15 PM	1	17	8	0	26	4	9	7	0	20	7	18	1	0	26	2	7	4	0	13	85	311	0.90
	12:30 PM	3	9	8	0	20	4	5	2	0	11	5	13	2	0	20	5	12	4	0	21	72	323	0.83
	12:45 PM	6	14	9	0	29	6	11	5	0	22	6	11	1	0	18	3	12	2	0	17	86	337	0.87
	1:00 PM	5	7	5	0	17	3	7	2	0	12	7	16	3	0	26	5	6	2	0	13	68	325	0.84
	1:15 PM	5	14	5	0	24	10	5	5	0	20	11	18	3	0	32	6	10	4	1	21	97	360	0.87
	1:30 PM	3	15	7	0	25	3	6	10	0	19	13	12	5	0	30	4	4	4	0	12	86	354	0.86
	1:45 PM	3	13	8	1	25	9	8	1	0	18	4	9	4	0	17	5	6	3	0	14	74	345	0.84
	2:00 PM	6	21	10	0	37	7	8	8	0	23	7	18	3	0	28	1	8	6	0	15	103	343	0.83
	2:15 PM	7	18	8	0	33	4	4	4	0	12	7	24	1	0	32	2	7	5	0	14	91	341	0.84
	2:30 PM	3	10	6	0	19	13	4	6	0	23	12	12	3	0	27	2	4	2	0	8	77	356	0.84
	2:45 PM	6	17	5	0	28	2	3	5	0	10	3	13	3	0	19	2	9	4	0	15	72	369	0.87
3:00 PM	6	21	4	0	31	7	12	8	0	27	8	15	3	0	26	0	11	6	0	17	101	409	0.91	
3:15 PM	8	18	7	0	33	8	8	10	0	26	9	21	3	0	33	3	3	8	0	14	106	428	0.89	
3:30 PM	6	24	6	0	36	6	9	10	0	25	4	7	4	0	15	3	5	6	0	14	90	425	0.89	
3:45 PM	4	20	14	0	38	3	5	8	0	16	8	31	8	0	47	0	5	6	0	11	112	480	0.83	
4:00 PM	11	15	8	0	34	9	9	10	0	28	11	18	11	0	40	4	6	8	0	18	120	502	0.87	
4:15 PM	5	14	11	0	30	12	8	9	0	29	7	16	6	0	29	0	8	7	0	15	103	511	0.88	
4:30 PM	8	21	15	0	44	11	19	20	0	50	6	24	6	0	36	2	6	7	0	15	145	536	0.92	
4:45 PM	10	28	16	0	54	8	6	11	0	25	9	24	6	0	39	3	9	4	0	16	134	496	0.93	
5:00 PM	8	20	4	0	32	5	10	13	0	28	12	37	6	0	55	1	6	7	0	14	129	450	0.87	
5:15 PM	5	28	10	0	43	16	11	15	0	42	6	17	3	0	26	1	9	7	0	17	128	406	0.79	
5:30 PM	6	30	5	0	41	8	10	4	0	22	8	19	2	0	29	2	9	2	0	13	105	370	0.88	
5:45 PM	5	15	7	0	27	5	10	5	0	20	6	20	1	0	27	0	2	12	0	14	88	336	0.91	
6:00 PM	4	16	2	0	22	3	2	6	0	11	6	25	1	0	32	2	16	2	0	20	85	335	0.91	
6:15 PM	6	20	6	0	32	13	4	3	0	20	9	19	2	0	30	2	3	5	0	10	92			
6:30 PM	7	14	1	1	23	9	9	2	0	20	4	16	1	0	21	0	3	4	0	7	71			
6:45 PM	6	21	4	0	31	8	1	5	0	14	5	19	2	0	26	4	5	7	0	16	87			
7:00 PM	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0			
7:30 PM	0	0	0	0	0	0	0	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	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			
8:15 PM	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0			
8:45 PM	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			
9:15 PM	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0			
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Totals		275	835	376	2	1488	336	315	340	0	991	438	853	152	0	1443	152	347	247	1	747	4669		

Intersection Traffic Volume Report

15-Minute Automobile Data

Count Basics			Page 6 of 13
Start Date:	Thursday, July 8, 2021	Weekday	Schools Not in Session
Total Number of Hours Counted:	13	Non-Holiday	No Special Events

Duplainville Road and Green Road



15-Minute Automobile Data

15-Minute Time Period Start Time	From North						From East					From South						From West						15-Min Totals	Hourly Sum
	Duplainville Road						Green Road					Duplainville Road						Green Road							
	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 Peak Period	6:00 AM	2	12	7	0	21	4	1	1	0	6	5	14	2	0	21	3	2	3	0	8	56	339		
	6:15 AM	2	14	3	0	19	7	1	3	0	11	6	26	2	0	34	2	2	4	0	8	72	374		
	6:30 AM	2	15	5	0	22	7	2	1	0	10	11	26	1	0	38	3	6	8	0	17	87	382		
	6:45 AM	4	22	8	0	34	9	5	3	0	17	13	31	3	0	47	7	8	11	0	26	124	396		
	7:00 AM	9	22	13	0	44	3	1	2	0	6	11	16	1	0	28	5	5	3	0	13	91	401		
	7:15 AM	7	15	5	0	27	2	3	5	0	10	18	13	1	0	32	3	5	3	0	11	80	388		
	7:30 AM	7	18	10	0	35	7	4	10	0	21	14	8	2	0	24	8	11	2	0	21	101	374		
	7:45 AM	9	24	12	0	45	10	6	3	0	19	20	15	1	0	36	10	12	7	0	29	129	339		
	8:00 AM	6	12	9	0	27	3	3	4	0	10	12	10	2	0	24	3	10	4	0	17	78	287		
	8:15 AM	5	6	4	0	15	3	1	7	0	11	11	10	2	0	23	2	9	6	0	17	66	270		
	8:30 AM	4	13	6	0	23	6	3	5	0	14	9	7	1	0	17	5	4	3	0	12	66	263		
	8:45 AM	4	9	11	0	24	4	5	10	0	19	9	8	4	0	21	1	8	4	0	13	77	257		
9:00 AM	3	6	6	0	15	6	4	3	0	13	5	7	2	0	14	3	12	4	0	19	61	220			
9:15 AM	5	4	4	0	13	9	3	6	0	18	6	9	1	0	16	1	6	5	0	12	59	196			
9:30 AM	3	8	6	0	17	3	7	6	0	16	10	6	3	0	19	3	4	1	0	8	60	194			
9:45 AM	6	1	5	0	12	1	8	0	0	9	5	2	0	0	7	2	8	2	0	12	40	205			
Midday Peak Period	10:00 AM	2	5	5	0	12	3	4	5	0	12	2	4	2	0	8	0	4	1	0	5	37	224		
	10:15 AM	2	7	9	0	18	3	6	8	0	17	4	9	2	0	15	1	2	4	0	7	57	240		
	10:30 AM	2	11	6	0	19	4	5	6	0	15	7	15	3	0	25	2	7	3	0	12	71	251		
	10:45 AM	9	6	2	0	17	5	6	6	0	17	6	9	3	0	18	1	3	3	0	7	59	246		
	11:00 AM	4	10	2	0	16	1	7	8	0	16	1	8	2	0	11	1	6	3	0	10	53	272		
	11:15 AM	6	10	8	0	24	5	3	3	0	11	4	9	6	0	19	1	6	7	0	14	68	305		
	11:30 AM	9	5	4	0	18	2	5	7	0	14	8	12	1	0	21	3	5	5	0	13	66	315		
	11:45 AM	4	8	7	0	19	13	5	9	0	27	7	14	4	0	25	5	6	3	0	14	85	314		
	12:00 PM	3	10	6	0	19	8	6	6	0	20	12	15	5	0	32	7	3	5	0	15	86	305		
	12:15 PM	1	16	7	0	24	4	9	7	0	20	6	14	1	0	21	2	7	4	0	13	78	282		
	12:30 PM	3	8	8	0	19	4	5	2	0	11	5	8	2	0	15	5	12	3	0	20	65	284		
	12:45 PM	6	11	8	0	25	5	11	4	0	20	6	8	1	0	15	2	12	2	0	16	76	294		
	1:00 PM	5	7	5	0	17	3	7	2	0	12	6	14	2	0	22	4	6	2	0	12	63	286		
	1:15 PM	5	9	5	0	19	6	4	5	0	15	10	14	3	0	27	4	10	4	1	19	80	310		
	1:30 PM	3	10	5	0	18	3	6	9	0	18	12	11	4	0	27	4	4	4	0	12	75	308		
	1:45 PM	3	12	8	1	24	9	8	1	0	18	3	5	4	0	12	5	6	3	0	14	68	306		
	PM Peak Period	2:00 PM	6	16	9	0	31	7	7	7	0	21	4	15	3	0	22	1	7	5	0	13	87	303	
2:15 PM		7	12	8	0	27	4	3	2	0	9	7	21	1	0	29	2	6	5	0	13	78	308		
2:30 PM		3	10	6	0	19	12	3	6	0	21	10	12	3	0	25	2	4	2	0	8	73	326		
2:45 PM		6	14	4	0	24	1	3	4	0	8	3	12	3	0	18	2	9	4	0	15	65	337		
3:00 PM		6	19	4	0	29	7	12	6	0	25	7	14	3	0	24	0	9	5	0	14	92	379		
3:15 PM		8	14	7	0	29	7	8	9	0	24	9	18	3	0	30	3	3	7	0	13	96	401		
3:30 PM		6	22	5	0	33	6	9	8	0	23	4	6	4	0	14	3	5	6	0	14	84	402		
3:45 PM		4	20	14	0	38	3	5	8	0	16	7	29	7	0	43	0	5	5	0	10	107	458		
4:00 PM		11	14	8	0	33	8	9	9	0	26	10	16	11	0	37	4	6	8	0	18	114	482		
4:15 PM		5	12	10	0	27	12	8	9	0	29	6	15	6	0	27	0	7	7	0	14	97	492		
4:30 PM		8	20	15	0	43	11	19	19	0	49	6	22	6	0	34	2	5	7	0	14	140	517		
4:45 PM		10	26	16	0	52	8	6	10	0	24	9	24	6	0	39	3	9	4	0	16	131	480		
5:00 PM		8	19	4	0	31	5	10	13	0	28	11	34	6	0	51	1	6	7	0	14	124	432		
5:15 PM		5	25	10	0	40	16	11	15	0	42	6	14	3	0	23	1	9	7	0	17	122	384		
5:30 PM		6	29	5	0	40	8	10	4	0	22	7	19	2	0	28	2	9	2	0	13	103	348		
5:45 PM		4	14	7	0	25	5	10	5	0	20	6	17	1	0	24	0	2	12	0	14	83	313		
6:00 PM		4	15	2	0	21	3	2	6	0	11	6	19	1	0	26	2	14	2	0	18	76	316		
6:15 PM		6	19	6	0	31	11	2	3	0	16	9	18	2	0	29	2	3	5	0	10	86			
6:30 PM		7	13	1	1	22	9	8	2	0	19	4	15	1	0	20	0	3	4	0	7	68			
6:45 PM		6	20	4	0	30	8	1	5	0	14	5	19	2	0	26	4	5	7	0	16	86			
7:00 PM		0	0	0	0	0	0	0	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	0	0	0	0	0	0	0			
7:30 PM		0	0	0	0	0	0	0	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	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				
8:15 PM	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0				
8:45 PM	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				
9:15 PM	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0				
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Totals	271	699	354	2	1326	313	300	307	0	920	400	736	147	0	1283	142	337	237	1	717	4246				

Peak Hour Automobile Volume Summary

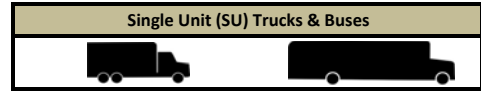
Hourly Time Period Start Time	↓ From North					← From East					↑ From South					→ From West					Total Hourly Volume
	Duplainville Road					Green Road					Duplainville Road					Green Road					
	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	
AM 7:00 AM	32	79	40	0	151	22	14	20	0	56	63	52	5	0	120	26	33	15	0	74	401
MD 11:30 AM	17	39	24	0	80	27	25	29	0	81	33	55	11	0	99	17	21	17	0	55	315
PM 4:30 PM	31	90	45	0	166	40	46	57	0	143	32	94	21	0	147	7	29	25	0	61	517

Intersection Traffic Volume Report

15-Minute Single Unit (SU) Truck & Bus Data

Count Basics			Page 7 of 13
Start Date:	Thursday, July 8, 2021	Weekday	Schools Not in Session
Total Number of Hours Counted:	13	Non-Holiday	No Special Events

Duplainville Road and Green Road



15-Minute Single Unit (SU) Truck & Bus Data

15-Minute Time Period Start Time	From North						From East					From South					From West					15-Min Totals	Hourly Sum
	Duplainville Road						Green Road					Duplainville Road					Green Road						
	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 Peak Period	6:00 AM	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	38
	6:15 AM	0	10	1	0	11	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	13	41
	6:30 AM	0	8	0	0	8	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	11	31
	6:45 AM	0	5	0	0	5	0	0	1	0	1	0	3	0	0	3	0	0	0	0	0	9	27
	7:00 AM	0	2	0	0	2	0	0	4	0	4	0	2	0	0	2	0	0	0	0	0	8	25
	7:15 AM	0	2	0	0	2	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	3	22
	7:30 AM	0	2	0	0	2	0	1	1	0	2	1	2	0	0	3	0	0	0	0	0	7	33
	7:45 AM	0	3	1	0	4	0	1	1	0	2	1	0	0	0	1	0	0	0	0	0	7	33
	8:00 AM	0	1	0	0	1	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	5	32
	8:15 AM	0	2	1	0	3	0	0	1	0	1	0	8	0	0	8	0	0	2	0	2	14	34
	8:30 AM	0	1	1	0	2	1	0	0	0	1	2	2	0	0	4	0	0	0	0	0	7	30
	8:45 AM	0	1	1	0	2	2	0	0	0	2	0	1	0	0	1	0	1	0	0	1	6	36
9:00 AM	1	1	0	0	2	0	1	0	0	1	1	2	0	0	3	0	0	1	0	1	7	38	
9:15 AM	0	2	1	0	3	2	1	0	0	3	0	2	0	0	2	1	0	1	0	2	10	37	
9:30 AM	1	2	1	0	4	2	0	1	0	3	4	2	0	0	6	0	0	0	0	0	13	35	
9:45 AM	0	0	1	0	1	1	1	0	0	2	1	2	0	0	3	1	1	0	0	2	8	39	
Midday Peak Period	10:00 AM	0	4	0	0	4	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	6	38
	10:15 AM	0	0	0	0	0	0	0	0	0	0	5	1	0	6	2	0	0	0	2	8	38	
	10:30 AM	0	7	2	0	9	0	0	1	0	1	4	3	0	0	7	0	0	0	0	0	17	36
	10:45 AM	0	1	3	0	4	0	2	0	0	2	0	1	0	0	1	0	0	0	0	0	7	27
	11:00 AM	0	1	0	0	1	0	0	2	0	2	0	1	1	0	2	0	0	1	0	1	6	25
	11:15 AM	1	2	0	0	3	1	0	2	0	3	0	0	0	0	0	0	0	0	0	0	6	22
	11:30 AM	0	3	0	0	3	0	0	1	0	1	4	0	0	0	4	0	0	0	0	0	8	23
	11:45 AM	0	2	1	0	3	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	5	20
	12:00 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	3	21
	12:15 PM	0	1	1	0	2	0	0	0	0	0	1	4	0	0	5	0	0	0	0	0	7	23
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	0	1	0	1	5	32
	12:45 PM	0	1	1	0	2	1	0	1	0	2	0	1	0	0	1	1	0	0	0	1	6	35
1:00 PM	0	0	0	0	0	0	0	0	0	0	1	2	1	0	4	1	0	0	0	1	5	34	
1:15 PM	0	5	0	0	5	4	1	0	0	5	1	3	0	0	4	2	0	0	0	2	16	41	
1:30 PM	0	2	2	0	4	0	0	1	0	1	1	1	1	0	3	0	0	0	0	0	8	37	
1:45 PM	0	1	0	0	1	0	0	0	0	0	1	3	0	0	4	0	0	0	0	0	5	32	
PM Peak Period	2:00 PM	0	5	1	0	6	0	1	0	0	1	2	1	0	0	3	0	1	1	0	2	12	33
	2:15 PM	0	5	0	0	5	0	1	2	0	3	0	3	0	0	3	0	1	0	0	1	12	29
	2:30 PM	0	0	0	0	0	1	1	0	0	2	1	0	0	0	1	0	0	0	0	0	3	25
	2:45 PM	0	3	1	0	4	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	6	25
	3:00 PM	0	2	0	0	2	0	0	2	0	2	0	1	0	0	1	0	2	1	0	3	8	22
	3:15 PM	0	4	0	0	4	1	0	1	0	2	0	1	0	0	1	0	0	1	0	1	8	17
	3:30 PM	0	1	0	0	1	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	3	13
	3:45 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0	1	0	1	3	13
	4:00 PM	0	0	0	0	0	1	0	0	0	1	1	1	0	0	2	0	0	0	0	0	3	13
	4:15 PM	0	1	0	0	1	0	0	0	0	0	1	1	0	0	2	0	1	0	0	1	4	14
	4:30 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3	16
	4:45 PM	0	2	0	0	2	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	3	15
	5:00 PM	0	1	0	0	1	0	0	0	0	0	1	2	0	0	3	0	0	0	0	0	4	16
	5:15 PM	0	3	0	0	3	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	6	21
	5:30 PM	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2	20
	5:45 PM	1	1	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	4	20
	6:00 PM	0	1	0	0	1	0	0	0	0	0	0	6	0	0	6	0	2	0	0	2	9	17
	6:15 PM	0	1	0	0	1	1	2	0	0	3	0	1	0	0	1	0	0	0	0	0	5	
	6:30 PM	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	2	
	6:45 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
7:00 PM	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0		
7:30 PM	0	0	0	0	0	0	0	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	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		
8:15 PM	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0		
8:45 PM	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		
9:15 PM	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0		
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Totals		4	111	20	0	135	20	15	26	0	61	30	93	5	0	128	9	9	10	0	28	352	

Peak Hour Single Unit (SU) Truck & Buses Volume Summary

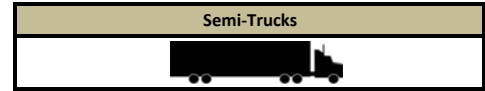
Hourly Time Period Start Time	↓ From North					← From East					↑ From South					→ From West					Total Hourly Volume
	Duplainville Road					Green Road					Duplainville Road					Green Road					
	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	
AM 7:00 AM	0	9	1	0	10	0	2	7	0	9	2	4	0	0	6	0	0	0	0	0	25
MD 11:30 AM	0	7	2	0	9	0	1	1	0	2	5	6	0	0	11	1	0	0	0	1	23
PM 4:30 PM	0	7	0	0	7	0	0	1	0	1	1	7	0	0	8	0	0	0	0	0	16

Intersection Traffic Volume Report

Count Basics			Page 8 of 13
Start Date:	Thursday, July 8, 2021	Weekday	Schools Not in Session
Total Number of Hours Counted:	13	Non-Holiday	No Special Events

15-Minute Semi-Truck Data

Duplainville Road and Green Road



15-Minute Semi-Truck Data

15-Minute Time Period Start Time	From North						From East					From South					From West					15-Min Totals	Hourly Sum
	Duplainville Road						Green Road					Duplainville Road					Green Road						
	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 Peak Period	6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
	6:15 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5
	6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
	6:45 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4
	7:00 AM	0	2	0	0	2	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	3	4
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
	7:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	5
	8:00 AM	0	1	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	7
	8:15 AM	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	2	7
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
	8:45 AM	0	1	0	0	1	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0	3	8
Midday Peak Period	9:00 AM	0	1	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	5
	9:15 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5
	9:30 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	4	
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
	10:00 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	4
	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
	10:30 AM	0	1	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	5
	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
	11:00 AM	0	1	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	10
	11:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	10
	11:30 AM	0	1	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	9
	11:45 AM	0	2	0	0	2	1	0	0	0	1	1	1	0	0	2	0	0	0	0	0	5	9
PM Peak Period	12:00 PM	0	0	0	0	0	0	0	1	1	0	1	0	0	1	0	0	0	0	0	0	2	8
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
	12:30 PM	0	1	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	7
	12:45 PM	0	2	0	0	2	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	4	8
	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
	1:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	9
	1:30 PM	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	9
	1:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	7
	2:00 PM	0	0	0	0	0	0	0	1	0	1	1	2	0	0	3	0	0	0	0	0	4	7
	2:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4
	2:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1	5
	2:45 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	7
3:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1	8	
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2	10	
3:30 PM	0	1	1	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3	10	
3:45 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	2	9	
4:00 PM	0	1	0	0	1	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	3	7	
4:15 PM	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	5	
4:30 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0	0	1	2	3	
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	2	
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	3	
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
6:15 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1		
6:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1		
6:45 PM	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		
7:15 PM	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0		
7:45 PM	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		
8:15 PM	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0		
8:45 PM	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		
9:15 PM	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0		
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Totals		0	25	2	0	27	3	0	7	0	10	8	24	0	0	32	1	1	0	0	2	71	

Peak Hour Semi-Truck Volume Summary

Hourly Time Period Start Time	From North					From East					From South					From West					Total Hourly Volume	
	Duplainville Road					Green Road					Duplainville Road					Green Road						
	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 7:00 AM	0	2	0	0	2	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	4
MD 11:30 AM	0	3	0	0	3	1	0	1	0	2	2	2	0	0	4	0	0	0	0	0	9	
PM 4:30 PM	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	0	1	0	0	1	3	

Intersection Traffic Volume Report

Count Basics			Page 9 of 13
Start Date:	Thursday, July 8, 2021	Weekday	Schools Not in Session
Total Number of Hours Counted:	13	Non-Holiday	No Special Events

15-Minute Heavy Vehicle Data

Duplainville Road and Green Road



15-Minute Heavy Vehicle Data

15-Minute Time Period Start Time	From North						From East					From South					From West					15-Min Totals	Hourly Sum
	Duplainville Road						Green Road					Duplainville Road					Green Road						
	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 Peak Period	6:00 AM	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	40
	6:15 AM	0	11	1	0	12	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	14	46
	6:30 AM	0	8	0	0	8	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	11	35
	6:45 AM	0	6	0	0	6	0	0	1	0	1	0	3	0	0	3	0	0	0	0	0	10	31
	7:00 AM	0	4	0	0	4	0	0	4	0	4	0	3	0	0	3	0	0	0	0	0	11	29
	7:15 AM	0	2	0	0	2	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	3	25
	7:30 AM	0	2	0	0	2	0	1	1	0	2	1	2	0	0	3	0	0	0	0	0	7	38
	7:45 AM	0	3	1	0	4	0	1	1	0	2	1	1	0	0	2	0	0	0	0	0	8	38
	8:00 AM	0	2	0	0	2	0	0	0	0	0	1	4	0	0	5	0	0	0	0	0	7	39
	8:15 AM	0	2	1	0	3	0	0	3	0	3	0	8	0	0	8	0	0	2	0	2	16	41
Midday Peak Period	8:30 AM	0	1	1	0	2	1	0	0	0	1	2	2	0	0	4	0	0	0	0	0	7	36
	8:45 AM	0	2	1	0	3	3	0	0	0	3	1	1	0	0	2	0	1	0	0	1	9	44
	9:00 AM	1	2	0	0	3	0	1	0	0	1	1	3	0	0	4	0	0	1	0	1	9	43
	9:15 AM	0	3	1	0	4	2	1	0	0	3	0	2	0	0	2	1	0	1	0	2	11	42
	9:30 AM	1	3	1	0	5	2	0	1	0	3	4	2	0	0	6	1	0	0	0	1	15	39
	9:45 AM	0	0	1	0	1	1	1	0	0	2	1	2	0	0	3	1	1	0	0	2	8	43
	10:00 AM	0	4	0	0	4	1	0	0	0	1	0	3	0	0	3	0	0	0	0	0	8	42
	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	5	1	0	6	2	0	0	0	2	8	42
	10:30 AM	0	8	2	0	10	0	0	1	0	1	4	4	0	0	8	0	0	0	0	0	19	41
	10:45 AM	0	1	3	0	4	0	2	0	0	2	0	1	0	0	1	0	0	0	0	0	7	32
PM Peak Period	11:00 AM	0	2	0	0	2	0	0	2	0	2	0	2	1	0	3	0	0	1	0	1	8	35
	11:15 AM	1	2	0	0	3	1	0	2	0	3	0	1	0	0	1	0	0	0	0	0	7	32
	11:30 AM	0	4	0	0	4	0	0	1	0	1	5	0	0	0	5	0	0	0	0	0	10	32
	11:45 AM	0	4	1	0	5	1	1	0	0	2	1	2	0	0	3	0	0	0	0	0	10	29
	12:00 PM	0	1	0	0	1	0	0	1	0	1	0	2	0	0	2	1	0	0	0	1	5	29
	12:15 PM	0	1	1	0	2	0	0	0	0	0	1	4	0	0	5	0	0	0	0	0	7	29
	12:30 PM	0	1	0	0	1	0	0	0	0	0	0	5	0	0	5	0	0	1	0	1	7	39
	12:45 PM	0	3	1	0	4	1	0	1	0	2	0	3	0	0	3	1	0	0	0	1	10	43
	1:00 PM	0	0	0	0	0	0	0	0	0	0	1	2	1	0	4	1	0	0	0	1	5	39
	1:15 PM	0	5	0	0	5	4	1	0	0	5	1	4	0	0	5	2	0	0	0	2	17	50
PM Peak Period	1:30 PM	0	5	2	0	7	0	0	1	0	1	1	1	1	0	3	0	0	0	0	0	11	46
	1:45 PM	0	1	0	0	1	0	0	0	0	0	1	4	0	0	5	0	0	0	0	0	6	39
	2:00 PM	0	5	1	0	6	0	1	1	0	2	3	3	0	0	6	0	1	1	0	2	16	40
	2:15 PM	0	6	0	0	6	0	1	2	0	3	0	3	0	0	3	0	1	0	0	1	13	33
	2:30 PM	0	0	0	0	0	1	1	0	0	2	2	0	0	0	2	0	0	0	0	0	4	30
	2:45 PM	0	3	1	0	4	1	0	1	0	2	0	1	0	0	1	0	0	0	0	0	7	32
	3:00 PM	0	2	0	0	2	0	0	2	0	2	1	1	0	0	2	0	2	1	0	3	9	30
	3:15 PM	0	4	0	0	4	1	0	1	0	2	0	3	0	0	3	0	0	1	0	1	10	27
	3:30 PM	0	2	1	0	3	0	0	2	0	2	0	1	0	0	1	0	0	0	0	0	6	23
	3:45 PM	0	0	0	0	0	0	0	0	0	0	1	2	1	0	4	0	0	1	0	1	5	22
	4:00 PM	0	1	0	0	1	1	0	1	0	2	1	2	0	0	3	0	0	0	0	0	6	20
	4:15 PM	0	2	1	0	3	0	0	0	0	0	1	1	0	0	2	0	1	0	0	1	6	19
	4:30 PM	0	1	0	0	1	0	0	1	0	1	0	2	0	0	2	0	1	0	0	1	5	19
	4:45 PM	0	2	0	0	2	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	3	16
	5:00 PM	0	1	0	0	1	0	0	0	0	0	1	3	0	0	4	0	0	0	0	0	5	18
	5:15 PM	0	3	0	0	3	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	6	22
	5:30 PM	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2	22
	5:45 PM	1	1	0	0	2	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	5	23
	6:00 PM	0	1	0	0	1	0	0	0	0	0	0	6	0	0	6	0	2	0	0	2	9	19
	6:15 PM	0	1	0	0	1	2	2	0	0	4	0	1	0	0	1	0	0	0	0	0	6	
	6:30 PM	0	1	0	0	1	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	3	
	6:45 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
	7:00 PM	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	
	7:30 PM	0	0	0	0	0	0	0	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	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		
8:15 PM	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0		
8:45 PM	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		
9:15 PM	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0		
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Totals		4	136	22	0	162	23	15	33	0	71	38	117	5	0	160	10	10	10	0	30	423	

Peak Hour Heavy Vehicle Volume Summary

Hourly Time Period Start Time	From North					From East					From South					From West					Total Hourly Volume
	Duplainville Road					Green Road					Duplainville Road					Green Road					
	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 7:00 AM	0	11	1	0	12	0	2	7	0	9	2	6	0	0	8	0	0	0	0	0	29
MD 11:30 AM	0	10	2	0	12	1	1	2	0	4	7	8	0	0	15	1	0	0	0	1	32
PM 4:30 PM	0	7	0	0	7	0	0	2	0	2	1	8	0	0	9	0	1	0	0	1	31

15-Minute Heavy Vehicle Percentages

%	Heavy Vehicles (Single-Unit Trucks, Buses & Semi-Trucks)		
			

15-Minute Heavy Vehicle Percentages

Peak Hour Heavy Vehicle Percentages Summary

Hourly Time Period Start Time		From North					From East					From South					From West					Hourly Heavy Vehicle Percent
		Duplainville Road					Green Road					Duplainville Road					Green Road					
		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	7:00 AM	0.0	12.2	2.4	0.0	7.4	0.0	12.5	25.9	0.0	13.8	3.1	10.3	0.0	0.0	6.2	0.0	0.0	0.0	0.0	0.0	6.7
MD	11:30 AM	0.0	20.4	7.7	0.0	13.0	3.6	3.8	6.5	0.0	4.7	17.5	12.7	0.0	0.0	13.2	5.6	0.0	0.0	0.0	1.8	9.2
PM	4:30 PM	0.0	7.2	0.0	0.0	4.0	0.0	0.0	3.4	0.0	1.4	3.0	7.8	0.0	0.0	5.8	0.0	3.3	0.0	0.0	1.6	3.2

Intersection Traffic Volume Report

Count Basics			Page 11 of 13
Start Date:	Thursday, July 8, 2021	Weekday	Schools Not in Session
Total Number of Hours Counted:	13	Non-Holiday	No Special Events

15-Minute Pedestrian and Bicyclist Data

Duplainville Road and Green Road



15-Minute Pedestrian and Bicyclist Data

15-Minute Time Period Start Time		Crossing 			Crossing 			Crossing 			Crossing 			15-Min Totals	Hourly Sum
		Duplainville Road			Green Road			Duplainville Road			Green Road				
		Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total		
AM Peak Period	6:00 AM	0	0	0	0	0	0	1	5	6	0	5	5	11	14
	6:15 AM	0	0	0	0	0	0	1	0	0	0	0	0	2	3
	6:30 AM	0	0	0	0	2	2	0	0	0	0	0	0	0	1
	6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:00 AM	0	1	1	0	0	0	0	0	0	0	0	0	1	1
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	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	1
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Midday Peak Period	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	7
	8:45 AM	0	1	1	0	0	0	0	0	0	0	0	0	1	9
	9:00 AM	0	0	0	2	0	2	0	0	0	0	0	0	2	11
	9:15 AM	1	0	1	0	1	1	0	1	1	1	0	1	4	9
	9:30 AM	0	2	2	0	0	0	0	0	0	0	0	0	2	5
	9:45 AM	0	1	1	0	1	1	0	1	1	0	0	0	3	3
	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	1
	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
	12:00 PM	0	1	1	0	0	0	0	0	0	0	0	0	1	3
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3
	12:30 PM	0	1	1	0	0	0	0	0	0	0	0	0	1	4
	12:45 PM	0	1	1	0	0	0	0	0	0	0	0	0	1	4
	1:00 PM	1	0	1	0	0	0	0	0	0	0	0	0	1	4
	1:15 PM	0	0	0	0	0	0	0	1	1	0	0	0	1	3
PM Peak Period	1:30 PM	0	1	1	0	0	0	0	0	0	0	0	0	1	2
	1:45 PM	0	0	0	0	0	0	0	1	1	0	0	0	1	1
	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
	2:45 PM	0	1	1	0	0	0	0	0	0	0	0	0	1	2
	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	3:15 PM	0	0	0	0	1	1	0	0	0	0	0	0	1	2
	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	2
	4:00 PM	0	1	1	0	0	0	0	0	0	0	0	0	1	3
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
	4:30 PM	0	0	0	0	0	0	0	1	1	0	0	0	1	4
	4:45 PM	0	0	0	0	0	0	0	1	1	0	0	0	1	3
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3
	5:15 PM	0	1	1	0	0	0	0	1	1	0	0	0	2	3
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3
	5:45 PM	0	0	0	0	0	0	1	0	1	0	0	0	1	3
	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3
	6:15 PM	1	1	2	0	0	0	0	0	0	0	0	0	2	
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0		
6:45 PM	1	0	1	0	0	0	0	0	0	0	0	0	1		
7:00 PM	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		
7:30 PM	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		
8:00 PM	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		
8:30 PM	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		
9:00 PM	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		
9:30 PM	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		
Totals		4	13	17	2	5	7	3	12	15	1	5	6	45	

Special Pedestrians

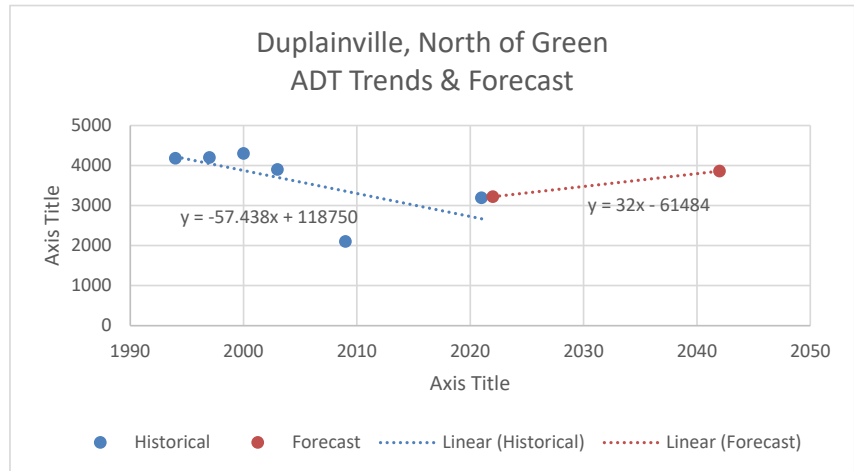
Pedestrian Type	None	1 or 2	A Few	Several	Many	Unknown
Pre-school Children	x					
Elementary School Age Children	x					
Visually Impaired (white cane/helper dog)	x					
Elderly/Disabled (except wheelchairs)	x					
Wheelchairs/Electric Scooters	x					
Other (None)	x					

Historical Traffic Trend

671142 (Duplainville, North of Green)

Year ADT

1994	4180	
1997	4200	
2000	4300	
2003	3900	
2009	2100	
2021	3190	<--Est. from TMC
2022	3220	0.94%
2042	3860	0.99%



Crash Statistics

Intersection Collision Diagram



Location: Duplainville Road & Green Road
Municipality: City of Pewaukee
County: Waukesha County
Traffic Control: Minor Street Stop

From: 1/1/2016 5 Years
To: 12/31/2020 0 Months
AADT: 4,800
Area Type: Urban
GPS Coordinates: 43.000000, -88.000000

TOTAL CRASHES: 17
AVG. CRASHES/YEAR: 3.4
CRASH RATE: 1.94 per MEV
KAB CRASH RATE: 0.34 per MEV
ECONOMIC LOSS*: \$ 353,000

*KAB = \$85K, C=\$25K, PDO=\$4K

YEAR	K	A	B	C	PDO	TOT.	ECON. LOSS
2016	0	0	0	1	0	1	\$ 25,000
2017	0	1	2	0	8	11	\$ 287,000
2018	0	0	0	0	3	3	\$ 12,000
2019	0	0	0	1	0	1	\$ 25,000
2020	0	0	0	0	1	1	\$ 4,000

TOTAL 0 1 2 2 12 17 \$ 353,000

K = Fatal, A = Incapacitating Injury, B = Non-Incapacitating Injury, C = Possible Injury, PDO = Property Damage Only



Misc. Crashes West Leg 1

SB₂ 6

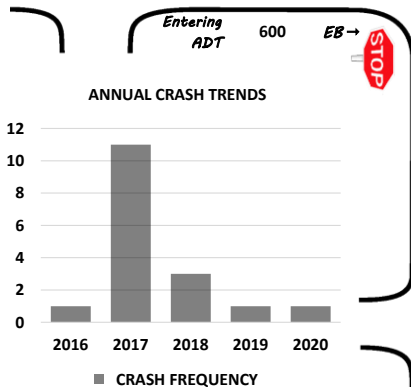
WB₂ 1

WB₅ 3

EB₂ 1

NB₂ 5

ECON. LOSS COLOR SCALE
> \$300 K
> \$100 K
Ped/Bike



CRASH TYPE	K	A	B	C	PDO	TOT.	ECON. LOSS
LT-ANGLE	0	0	0	0	0	0	\$ -
RT-ANGLE	0	1	2	2	8	13	\$ 337,000
PEDESTRIAN	0	0	0	0	0	0	\$ -
RT-TURN REAR-END	0	0	0	0	0	0	\$ -
REAR-END	0	0	0	0	3	3	\$ 12,000
SIDE-SWIPE-SAME	0	0	0	0	0	0	\$ -
BICYCLE-RELATED	0	0	0	0	0	0	\$ -
PARKED-VEHICLE	0	0	0	0	0	0	\$ -
FIXED-OBJECT	0	0	0	0	0	0	\$ -
DRIVEWAY-RELATED	0	0	0	0	0	0	\$ -
HEAD-ON	0	0	0	0	0	0	\$ -
MISC. OTHER	0	0	0	0	1	1	\$ 4,000
TOTAL	0	1	2	2	12	17	\$ 353,000

ROAD CONDITIONS		
DRY	13	76%
WET	4	24%
SNOW	0	0%
ICE	0	0%
OTH.	0	0%
TOT.	17	

LIGHT CONDITIONS		
DAY	14	82%
DARK	3	18%
TOT.	17	

DRIVER BEHAVIOR		
ALCOHOL	0	0%
DRUGS	0	0%
SPEED	1	6%

SEASON		
SPRING	8	47%
SUMMER	5	29%
FALL	2	12%
WINTER	2	12%
TOT.	17	

FAILURE TO YIELD		
NB	0	0%
SB	0	0%
EB	4	24%
WB	5	29%
TBD	0	0%
TOT.	9	53%

DISRGRD. CONTROL		
NB	0	0%
SB	0	0%
EB	2	12%
WB	1	6%
TBD	0	0%
TOT.	3	18%

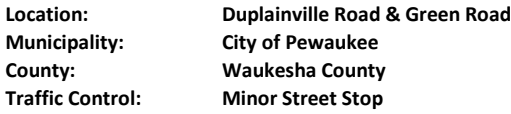
VEHICLE DAMAGE		
OTHER/UNK.	1	3%
NONE	1	3%
VERY MINOR	0	0%
MINOR	8	24%
MODERATE	8	24%
SEVERE	16	47%
VERY SEVERE	0	0%
TOTAL VEHICLES	34	

TBD = verification from crash report needed for direction

DAY/TIME TRENDS

	12 AM	1 AM	2 AM	3 AM	4 AM	5 AM	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	UNK		TOT.
MON	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	MON	1
TUE	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	TUE	4
WED	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	WED	4
THU	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	THU	3
FRI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	FRI	1
SAT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	SAT	2
SUN	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	SUN	2
TOT.	0	0	0	0	0	0	0	1	3	0	0	0	1	2	0	1	2	5	0	2	0	0	0	0	0	TOT.	17

Corresponds to Collision Diagram



From: 1/1/2016
To: 12/31/2020
AADT: 4,800
Area Type: Urban

Duration
5 Years
0 Months

[illegible]

Traffic Signal Warrant Worksheet

Wisconsin Department of Transportation Traffic Signal Warrant Summary Worksheet

100%

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

Intersection: Duplainville Road & Green Road

County: Waukesha

City: Pewaukee

Major Street: Duplainville Road

Minor Street: Green Road

Critical Approach Speed: 35 mph

Critical Approach Speed: 35 mph

Lanes: 1 lane

Lanes: 1 lane

% Right Turns Included

In built-up area of isolated community of < 10,000 population? No

From North (SB) 100%

Total number of approaches at intersection? 4 or more

From East (WB) 0%

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

From South (NB) 100%

Manually set volume level?

From West (EB) 0%

Analysis based on PROJECTED volume data.

Forecast Year	Within 5 Years of Construction?	Time (HH:MM)			
		From	AM / PM	To	AM / PM
Year 2042	No	6:00	AM	19:00	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	No
Warrant 3: Peak Hour Volume	N/A
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	No

Warrant Analysis Conducted By:

Name: Michael May, PE PTOE

Agency: TADI

Date: 7/13/2021

Warrant 1: Eight - Hour Vehicular Volume

100%

Warrant Evaluated? Yes

Condition A : Min. Veh. Volume		
Volume Level	100%	80%
Major Rd. Req	500	400
Minor Rd. Req	150	120
Number of Hours	0	0

Satisfied? No

Condition B: Interruption of Continuous Traffic		
Volume Level	100%	80%
Major Rd. Req	750	600
Minor Rd. Req	75	60
Number of Hours	0	0

Satisfied? No

Condition C: Combination of A & B at 80%		
---	--	--

Satisfied? No

Warrant Satisfied? No

Manually Set To:

6:00 AM		Enter Start Time (Military Time) (HH:MM)			Total
Time Period	From	To	Major Road: Both App. (VPH)	Minor Road: High App. (VPH)	
1	6:00	7:00	370	65	435
2	7:00	8:00	395	85	480
3	8:00	9:00	265	70	335
4	9:00	10:00	190	55	245
5	10:00	11:00	220	65	285
6	11:00	12:00	230	80	310
7	12:00	13:00	250	80	330
8	13:00	14:00	255	55	310
9	14:00	15:00	290	75	365
10	15:00	16:00	340	115	455
11	16:00	17:00	385	130	515
12	17:00	18:00	355	110	465
13	18:00	19:00	265	55	320
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

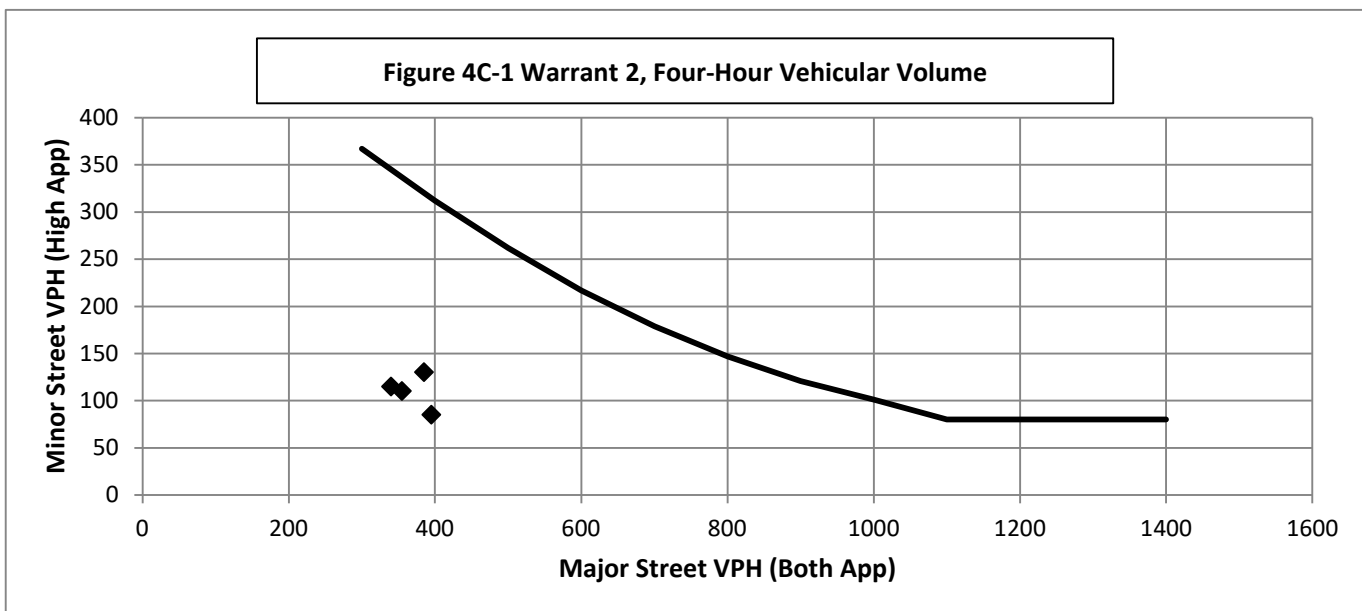
100%

Warrant Evaluated? Yes

Warrant Satisfied? No

Manually Set To:

Hour Start	16:00	15:00	17:00	7:00
Major Road Vol.	385	340	355	395
Minor Road Vol.	130	115	110	85



Warrant 3: Peak Hour Volume

100%

Warrant Evaluated? No

Warrant Satisfied? N/A

Manually Set To:

Condition justifying use of warrant:

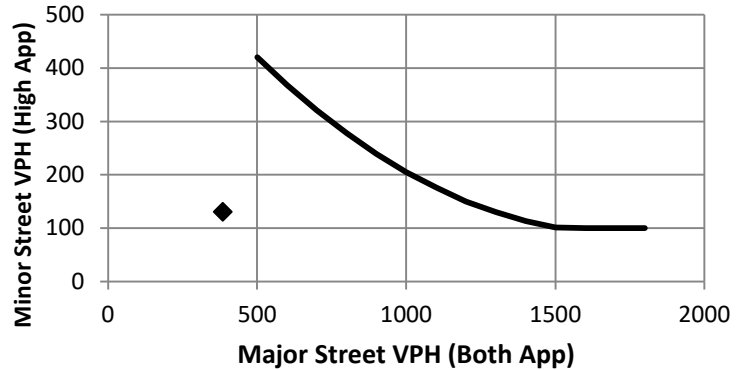
None

Criteria		Met?
Delay on Minor Approach	4	
Volume on Minor Approach	100	
Total Entering Volume (veh/h)	800	

Manually Set Peak Hour?

Peak Hour	Major Road Vol. (Both App.)	Minor Road Vol. (High App.)
16:00	385	130

Figure 4C-3 Warrant 3, Peak Hour



Warrant 4: Pedestrian Volume

100%

Warrant Evaluated? No

Warrant Satisfied? N/A

Manually Set To:

Criterion A: Four Hour

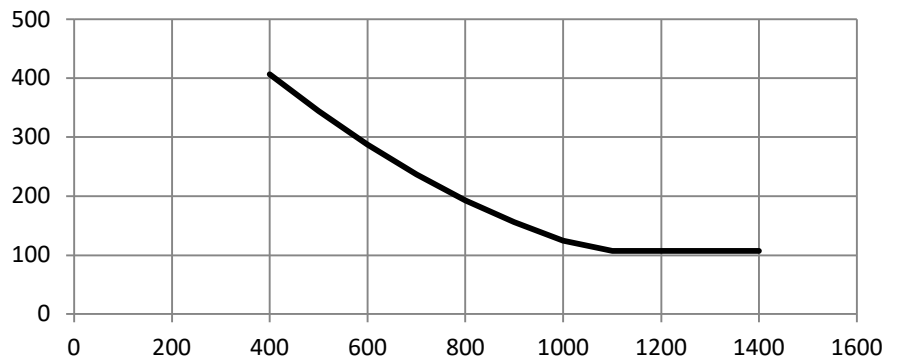
Hour (Start)	Pedestrian Volume	Major Road Vol.
		0
		0
		0
		0

Manually Set Major Rd Vol?

Avg. walk speed less than 3.5 ft/s?

Criterion A Satisfied?

Figure 4C-5 Warrant 4, Pedestrian Four-Hour Volume

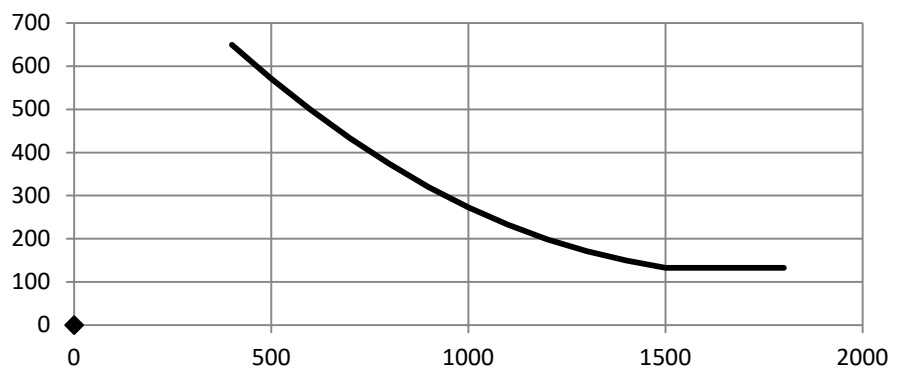


Criterion B: Peak Hour

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

Criterion B Satisfied?

Figure 4C-7 Warrant 4, Pedestrian Peak Hour



Warrant 5: School Crossing

100%

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

100%

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

100%

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.			No
	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	No
3	Warrant 1, Condition A (80%)		No	Yes
	Warrant 1, Condition B (80%)		No	
	Warrant 4, Criterion A (80%)		No	
	Warrant 4, Criterion B (80%)		Yes	

Warrant 8: Roadway Network

100%

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		515	No	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

100%

Warrant Evaluated? Yes

Warrant Satisfied? Yes

Manually Set To: No

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	2.6% to 7.5%	390	16:00	385	130	65.325

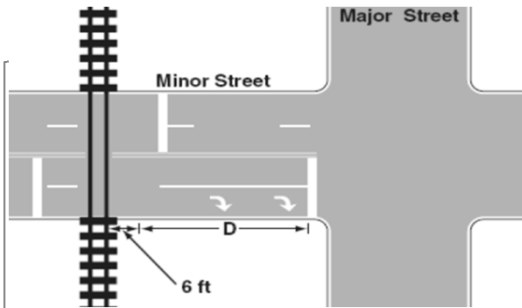
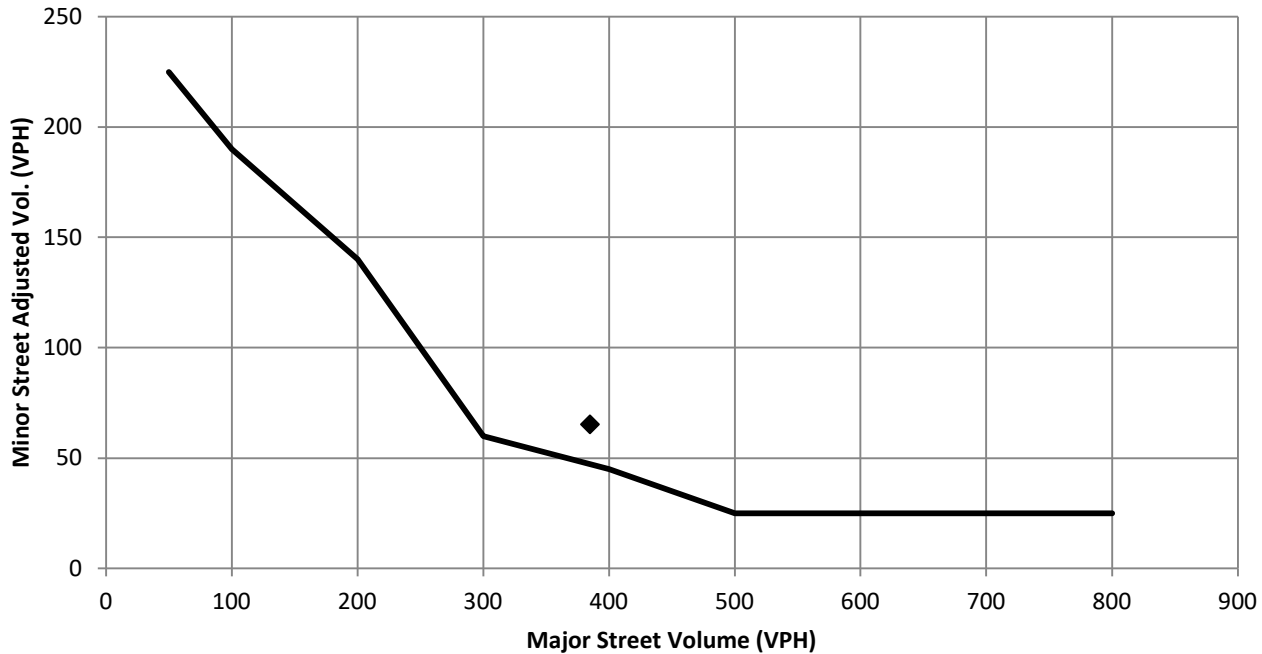


Figure 4C-9 Warrant9, Intersection Near a grade Crossing (One Approach Lane at the Track Crossing)



Conclusions/Comments:

Traffic signal warrants are not expected to be met through Year 2042 design year.

Note that Warrant 9 was manually set to "no" because, per the MUTCD, the distance "D" in the diagram must be 140-feet or less. The distance D on Green Road is 390-feet.

Updated: 12/6/2017

SIGNAL WARRANT: Duplainville Road & Green Road

EXISTING TRAFFIC VOLUMES (2021 Hourly Volumes)

Start Time	EB					WB					Total	NB					SB					Total
	Rt	Th	Lt	Lt + Th	ALL	Rt	Th	Lt	Lt + Th	ALL		Rt	Th	Lt	Lt + Th	ALL	Rt	Th	Lt	Lt + Th	ALL	
6-7a	15	18	26	44	59	27	9	9	18	45	104	35	105	8	113	148	10	93	24	117	127	275
7-8a	26	33	15	48	74	22	16	27	43	65	139	65	58	5	63	128	32	90	41	131	163	291
8-9a	11	32	19	51	62	20	12	29	41	61	123	45	50	9	59	104	19	47	33	80	99	203
9-10a	12	31	14	45	57	24	25	16	41	65	122	32	33	6	39	71	19	27	24	51	70	141
10-11a	6	16	11	27	33	16	23	26	49	65	98	23	50	11	61	84	15	42	27	69	84	168
11-12p	10	23	19	42	52	23	21	32	53	76	128	26	48	14	62	88	24	45	22	67	91	179
12-1p	18	34	15	49	67	22	31	21	52	74	141	30	59	9	68	98	13	51	31	82	95	193
1-2p	20	26	13	39	59	25	26	18	44	69	128	35	55	15	70	105	16	49	25	74	90	195
2-3p	7	28	17	45	52	26	19	23	42	68	120	29	67	10	77	106	22	66	29	95	117	223
3-4p	6	24	26	50	56	24	34	36	70	94	150	29	74	18	92	121	24	83	31	114	138	259
4-5p	9	29	26	55	64	40	42	50	92	132	196	33	82	29	111	144	34	78	50	128	162	306
5-6p	4	26	28	54	58	34	41	37	78	112	170	32	93	12	105	137	24	93	26	119	143	280
6-7p	8	27	18	45	53	33	16	16	32	65	118	24	79	6	85	109	23	71	13	84	107	216

2042 FORECAST TRAFFIC VOLUMES (Assumes 1.0% growth)

Start Time	EB					WB					Total	NB					SB					Total
	Rt	Th	Lt	Lt + Th	ALL	Rt	Th	Lt	Lt + Th	ALL		Rt	Th	Lt	Lt + Th	ALL	Rt	Th	Lt	Lt + Th	ALL	
6-7a	20	20	30	50	70	35	10	10	20	55	125	40	125	10	135	175	10	115	30	145	155	330
7-8a	30	40	20	60	90	25	20	35	55	80	170	80	70	5	75	155	40	110	50	160	200	355
8-9a	15	40	25	65	80	25	15	35	50	75	155	55	60	10	70	125	25	55	40	95	120	245
9-10a	15	40	15	55	70	30	30	20	50	80	150	40	40	5	45	85	25	35	30	65	90	175
10-11a	5	20	15	35	40	20	30	30	60	80	120	30	60	15	75	105	20	50	35	85	105	210
11-12p	10	30	25	55	65	30	25	40	65	95	160	30	60	15	75	105	30	55	25	80	110	215
12-1p	20	40	20	60	80	25	40	25	65	90	170	35	70	10	80	115	15	60	40	100	115	230
1-2p	25	30	15	45	70	30	30	20	50	80	150	40	65	20	85	125	20	60	30	90	110	235
2-3p	10	35	20	55	65	30	25	30	55	85	150	35	80	10	90	125	25	80	35	115	140	265
3-4p	5	30	30	60	65	30	40	45	85	115	180	35	90	20	110	145	30	100	40	140	170	315
4-5p	10	35	30	65	75	50	50	60	110	160	235	40	100	35	135	175	40	95	60	155	195	370
5-6p	5	30	35	65	70	40	50	45	95	135	205	40	115	15	130	170	30	115	30	145	175	345
6-7p	10	35	20	55	65	40	20	20	40	80	145	30	95	5	100	130	30	85	15	100	130	260

Interstate Partners Industrial Off-Site

Start Time	EB					WB					Total	NB					SB					Total
	Rt	Th	Lt	Lt + Th	ALL	Rt	Th	Lt	Lt + Th	ALL		Rt	Th	Lt	Lt + Th	ALL	Rt	Th	Lt	Lt + Th	ALL	
6-7a	0	10	0	10	10	0	0	5	5	5	15	20	0	0	0	20	0	0	10	10	10	30
7-8a	0	5	0	5	5	5	0	5	5	10	15	15	0	0	0	15	0	0	5	5	5	20
8-9a	0	5	0	5	5	0	0	5	5	5	10	10	0	0	0	10	0	0	5	5	5	15
9-10a	0	0	0	0	0	0	0	5	5	5	5	5	0	0	0	5	0	0	5	5	5	10
10-11a	0	0	0	0	0	5	0	5	5	10	10	5	0	0	0	5	0	0	0	0	5	10
11-12p	0	0	0	0	0	5	5	10	15	20	20	5	0	0	0	5	0	0	5	5	5	10
12-1p	0	5	0	5	5	5	5	10	15	20	25	10	0	0	0	10	0	0	5	5	5	15
1-2p	0	5	0	5	5	5	0	5	5	10	15	10	0	0	0	10	0	0	5	5	5	15
2-3p	0	5	0	5	5	5	5	10	15	20	25	10	0	0	0	10	0	0	5	5	5	15
3-4p	0	5	0	5	5	10	10	20	30	40	45	10	0	0	0	10	0	0	5	5	5	15
4-5p	0	0	0	0	0	10	5	15	20	30	30	5	0	0	0	5	0	0	5	5	5	10
5-6p	0	0	0	0	0	5	5	10	15	20	20	5	0	0	0	5	0	0	0	0	0	5
6-7p	0	0	0	0	0	5	0	5	5	10	10	0	0	0	0	0	0	0	0	0	0	0

15% In

20% Out

15% Out

40% Out

40% In

20% In

DPW Off-Site

Start Time	EB					WB					Total	NB					SB					Total
	Rt	Th	Lt	Lt + Th	ALL	Rt	Th	Lt	Lt + Th	ALL		Rt	Th	Lt	Lt + Th	ALL	Rt	Th	Lt	Lt + Th	ALL	
6-7a	5	0	0	0	5	0	0	0	0	0	5	0	0	5	5	5	0	0	0	0	0	5
7-8a	5	0	0	0	5	0	0	0	0	0	5	0	0	5	5	5	0	0	0	0	0	5
8-9a	5	0	0	0	5	0	0	0	0	0	5	0	0	5	5	5	0	0	0	0	0	5
9-10a	5	0	0	0	5	0	0	0	0	0	5	0	0	5	5	5	0	0	0	0	0	5
10-11a	5	0	0	0	5	0	0	0	0	0	5	0	0	5	5	5	0	0	0	0	0	5
11-12p	5	0	0	0	5	0	0	0	0	0	5	0	0	5	5	5	0	0	0	0	0	5
12-1p	5	0	0	0	5	0	0	0	0	0	5	0	0	5	5	5	0	0	0	0	0	5
1-2p	5	0	0	0	5	0	0	0	0	0	5	0	0	5	5	5	0	0	0	0	0	5
2-3p	5	0	0	0	5	0	0	0	0	0	5	0	0	5	5	5	0	0	0	0	0	5
3-4p	10	0	0	0	10	0	0	0	0	0	10	0	0	10	10	10	0	0	0	0	0	10
4-5p	5	0	0	0	5	0	0	0	0	0	5	0	0	5	5	5	0	0	0	0	0	5
5-6p	5	0	0	0	5	0	0	0	0	0	5	0	0	5	5	5	0	0	0	0	0	5
6-7p	5	0	0	0	5	0	0	0	0	0	5	0	0	5	5	5	0	0	0	0	0	5

50% Out 10% Out 5% Out

10% In

50% In

5% In

Daily In	Daily Out
340	340
0%	0%
340	340

<--% Reduction (Test)

IN	OUT
50	10
35	15
25	10
15	10
10	15
10	15
25	25
20	15
25	25
20	50
15	40
10	30
5	15

14.5%	2.6%	<WisDOT Light Industr
10.8%	4.1%	<WisDOT Light Industr
6.9%	3.0%	<WisDOT Light Industr
3.7%	3.1%	<WisDOT Light Industr
3.5%	3.9%	<WisDOT Light Industr
4.7%	5.9%	<WisDOT Light Industr
7.0%	7.0%	<WisDOT Light Industr
5.5%	3.9%	<WisDOT Light Industr
6.7%	7.9%	<WisDOT Light Industr
6.3%	15.1%	<WisDOT Light Industr
3.7%	11.2%	<WisDOT Light Industr
2.8%	8.4%	<WisDOT Light Industr
1.4%	4.2%	<TADI Estimate

Daily In	Daily Out
125	125
0%	0%
125	125

<--% Reduction (Test)

IN	OUT
10	10
10	5
5	5
5	5
5	5
5	5
5	5
10	10
10	15
15	10
10	10
5	5

8.6%	8.6%	<WisDOT Light Ind. at
7.5%	7.5%	<WisDOT Light Ind. at
5.0%	5.0%	<WisDOT Light Ind. at
3.4%	3.4%	<WisDOT Light Ind. at
3.7%	3.7%	<WisDOT Light Ind. at
5.3%	5.3%	<WisDOT Light Ind. at
7.0%	7.0%	<WisDOT Light Ind. at
4.7%	4.7%	<WisDOT Light Ind. at
7.3%	7.3%	<WisDOT Light Ind. at
10.7%	10.7%	<WisDOT Light Ind. at
7.5%	7.5%	<WisDOT Light Ind. at
5.6%	5.6%	<WisDOT Light Ind. at
2.8%	2.8%	<TADI Estimate at 50/

Trinity Off-Site																						
	EB					WB						NB					SB					
Start Time	Rt	Th	Lt	Lt + Th	ALL	Rt	Th	Lt	Lt + Th	ALL	Total	Rt	Th	Lt	Lt + Th	ALL	Rt	Th	Lt	Lt + Th	ALL	Total
6-7a	5	0	5	5	10	0	0	0	0	0	10	0	5	0	5	5	0	0	0	0	0	5
7-8a	15	5	15	20	35	10	0	0	0	10	45	0	15	0	15	15	0	0	0	0	0	15
8-9a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9-10a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10-11a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11-12p	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12-1p	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-2p	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2-3p	5	5	10	15	20	5	0	0	0	5	25	0	5	0	5	5	0	0	0	0	0	5
3-4p	0	0	5	5	5	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0
4-5p	0	0	5	5	5	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0
5-6p	0	0	5	5	5	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0
6-7p	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40% Out 20% Out 25% In 20% In 15% Out 40% In																						

IN	OUT
10	5
40	20
5	5
5	5
0	5
0	5
5	5
5	5
15	30
5	10
5	10
5	10
5	10
5	5

Daily In 50	Daily Out 50	
0%	0%	<--% Reduction (Test)
50	50	
8.0%	3.5%	<WisDOT 'ITE 530"
32.6%	15.1%	<WisDOT 'ITE 530"
2.0%	2.8%	<WisDOT 'ITE 530"
2.3%	2.1%	<WisDOT 'ITE 530"
1.8%	2.1%	<WisDOT 'ITE 530"
1.9%	3.0%	<WisDOT 'ITE 530"
3.2%	3.1%	<WisDOT 'ITE 530"
2.2%	3.3%	<WisDOT 'ITE 530"
10.0%	22.0%	<WisDOT 'ITE 530"
4.2%	9.0%	<WisDOT 'ITE 530"
4.7%	6.2%	<WisDOT 'ITE 530"
6.0%	7.0%	<WisDOT 'ITE 530"
3.0%	3.5%	<TADI Estimate

Year 2042 Design Year Traffic Estimate																						
Start Time	EB					WB					Total	NB					SB					Total
	Rt	Th	Lt	Lt + Th	ALL	Rt	Th	Lt	Lt + Th	ALL		Rt	Th	Lt	Lt + Th	ALL	Rt	Th	Lt	Lt + Th	ALL	
6-7a	30	30	35	65	95	35	10	15	25	60	155	60	130	15	145	205	10	115	40	155	165	370
7-8a	50	50	35	85	135	40	20	40	60	100	235	95	85	10	95	190	40	110	55	165	205	395
8-9a	20	45	25	70	90	25	15	40	55	80	170	65	60	15	75	140	25	55	45	100	125	265
9-10a	20	40	15	55	75	30	30	25	55	85	160	45	40	10	50	95	25	35	35	70	95	190
10-11a	10	20	15	35	45	25	30	35	65	90	135	35	60	20	80	115	20	50	35	85	105	220
11-12p	15	30	25	55	70	35	30	50	80	115	185	35	60	20	80	115	30	55	30	85	115	230
12-1p	25	45	20	65	90	30	45	35	80	110	200	45	70	15	85	130	15	60	45	105	120	250
1-2p	30	35	15	50	80	35	30	25	55	90	170	50	65	25	90	140	20	60	35	95	115	255
2-3p	20	45	30	75	95	40	30	40	70	110	205	45	85	15	100	145	25	80	40	120	145	290
3-4p	15	35	35	70	85	40	50	65	115	155	240	45	90	30	120	165	30	100	45	145	175	340
4-5p	15	35	35	70	85	60	55	75	130	190	275	45	100	40	140	185	40	95	65	160	200	385
5-6p	10	30	40	70	80	45	55	55	110	155	235	45	115	20	135	180	30	115	30	145	175	355
6-7p	15	35	20	55	70	45	20	25	45	90	160	30	95	10	105	135	30	85	15	100	130	265

All-Way Stop Warrant Worksheet

ASWC Warrant Criteria

MUTCD Yes
B,

WisDOT Yes
3,

MUTCD

Met? Criteria

- | | | | |
|-----|---|----|---|
| No | A. Is a signal justified? | No | |
| Yes | B. # of crashes in a 12 month period that can be corrected by multi-way stop control: | | 7 |
| No | C. Minimum Volumes | | |
1. Major road approach volume (total of both) at least 300 vph for min 8 hours?
 2. Combined ped, bike, and veh volume on minor approach (total of both) at least 200 units per hour for the same 8 hours as criteria C-1?
 3. If the 85th percentile speed on the major road exceeds 40 mph, may use 70% of the values in C-1 and C-2

Major Street 85th percentile mph:

Time Period	From	To	Major Road: Both App.	Minor Road: Both App. (VPH)	C-1	C-2	Both Met?	D (80%)		Both Met?
1	6:00	7:00	370	155	Yes	No	No	No	No	No
2	7:00	8:00	395	235	Yes	Yes	Yes	No	No	No
3	8:00	9:00	265	170	No	No	No	No	No	No
4	9:00	10:00	190	160	No	No	No	No	No	No
5	10:00	11:00	220	135	No	No	No	No	No	No
6	11:00	12:00	230	185	No	No	No	No	No	No
7	12:00	13:00	250	200	No	Yes	No	No	No	No
8	13:00	14:00	255	170	No	No	No	No	No	No
9	14:00	15:00	290	205	No	Yes	No	No	No	No
10	15:00	16:00	340	240	Yes	Yes	Yes	No	No	No
11	16:00	17:00	385	275	Yes	Yes	Yes	No	No	No
12	17:00	18:00	355	235	Yes	Yes	Yes	No	No	No
13	18:00	19:00	265	160	No	No	No	No	No	No
14	19:00	20:00								
15	20:00	21:00								
16	21:00	22:00								

No

 D. Use when previous criteria have not been met:

If 80% minimum values of Criteria B, C-1, and C-2 (C-3 excluded) are satisfied, warrant is met.

Traffic Analysis Outputs

Two-Way Stop Control

Lanes, Volumes, Timings
100: Duplainville Road & Green Road

07/13/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	45	35	30	15	25	75	70	25	50	90	30
Future Volume (vph)	20	45	35	30	15	25	75	70	25	50	90	30
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)	0	60		0	90		0	50		0	75	
Storage Lanes	0	1		0	1		0	1		0	1	
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	0.850			0.850			0.850			0.850		
Flt Protected	0.985				0.968		0.975				0.982	
Satd. Flow (prot)	0	1853	1599	0	1613	1417	0	1748	1524	0	1744	1509
Flt Permitted	0.985				0.968		0.975				0.982	
Satd. Flow (perm)	0	1853	1599	0	1613	1417	0	1748	1524	0	1744	1509
Link Speed (mph)	35			30			35			35		
Link Distance (ft)	709			451			709			467		
Travel Time (s)	13.8			10.3			13.8			9.1		
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	1%	14%	14%	14%	6%	6%	6%	7%	7%	7%
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)	26	58	45	38	19	32	96	90	32	64	115	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	84	45	0	57	32	0	186	32	0	179	38
Sign Control	Stop			Stop			Free			Free		

Intersection Summary

Area Type: Other

Control Type: Unsignalized

AM Peak 7:00 am 07/12/2021 Baseline

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Synchro 11 Report

HCM 6th TWSC
100: Duplainville Road & Green Road

07/13/2021

Intersection

Int Delay, s/veh	6.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔	↔		↔	↔		↔	↔
Traffic Vol, veh/h	20	45	35	30	15	25	75	70	25	50	90	30
Future Vol, veh/h	20	45	35	30	15	25	75	70	25	50	90	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	60	-	-	90	-	-	50	-	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	1	1	1	14	14	14	6	6	6	7	7	7
Mvmt Flow	26	58	45	38	19	32	96	90	32	64	115	38

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	567	557	115	596	563	90	153	0	0	122	0	0
Stage 1	243	243	-	282	282	-	-	-	-	-	-	-
Stage 2	324	314	-	314	281	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.51	6.21	7.24	6.64	6.34	4.16	-	-	4.17	-	-
Critical Hdwy Stg 1	6.11	5.51	-	6.24	5.64	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.51	-	6.24	5.64	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309	3.626	4.126	3.426	2.254	-	-	2.263	-	-
Pot Cap-1 Maneuver	436	440	940	398	419	936	1403	-	-	1435	-	-
Stage 1	763	707	-	700	656	-	-	-	-	-	-	-
Stage 2	690	658	-	672	657	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	368	388	940	306	369	936	1403	-	-	1435	-	-
Mov Cap-2 Maneuver	368	388	-	306	369	-	-	-	-	-	-	-
Stage 1	707	672	-	648	607	-	-	-	-	-	-	-
Stage 2	598	609	-	556	625	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	14.2		15.1		3.4		2.2	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1403	-	-	382	940	324	936	1435	-	-
HCM Lane V/C Ratio	0.069	-	-	0.218	0.048	0.178	0.034	0.045	-	-
HCM Control Delay (s)	7.8	0	-	17	9	18.5	9	7.6	0	-
HCM Lane LOS	A	A	-	C	A	C	A	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.8	0.1	0.6	0.1	0.1	-	-

AM Peak 7:00 am 07/12/2021 Baseline

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Synchro 11 Report

Lanes, Volumes, Timings
100: Duplainville Road & Green Road

07/13/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	25	30	45	30	35	20	70	55	30	50	15
Future Volume (vph)	15	25	30	45	30	35	20	70	55	30	50	15
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)	0	60		0	90		0	50		0	75	
Storage Lanes	0	1		0	1		0	1		0	1	
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	0.850			0.850			0.850			0.850		
Flt Protected	0.982				0.971		0.989				0.982	
Satd. Flow (prot)	0	1829	1583	0	1757	1538	0	1663	1429	0	1651	1429
Flt Permitted	0.982				0.971		0.989				0.982	
Satd. Flow (perm)	0	1829	1583	0	1757	1538	0	1663	1429	0	1651	1429
Link Speed (mph)	35			30			35			35		
Link Distance (ft)	709			451			709			467		
Travel Time (s)	13.8			10.3			13.8			9.1		
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	5%	5%	5%	13%	13%	13%	13%	13%	13%
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)	16	27	33	49	33	38	22	77	60	33	55	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	43	33	0	82	38	0	99	60	0	88	16
Sign Control	Stop			Stop			Free			Free		

Intersection Summary

Area Type: Other
Control Type: Unsignalized

MID Peak 11:30 am 07/12/2021

Synchro 11 Report

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HCM 6th TWSC
100: Duplainville Road & Green Road

07/13/2021

Intersection

Int Delay, s/veh	5.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔	↔		↔	↔		↔	↔
Traffic Vol, veh/h	15	25	30	45	30	35	20	70	55	30	50	15
Future Vol, veh/h	15	25	30	45	30	35	20	70	55	30	50	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	60	-	-	90	-	-	50	-	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	5	5	5	13	13	13	13	13	13
Mvmt Flow	16	27	33	49	33	38	22	77	60	33	55	16

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	308	302	55	280	258	77	71	0	0	137	0	0
Stage 1	121	121	-	121	121	-	-	-	-	-	-	-
Stage 2	187	181	-	159	137	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.15	6.55	6.25	4.23	-	-	4.23	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.15	5.55	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.15	5.55	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.545	4.045	3.345	2.317	-	-	2.317	-	-
Pot Cap-1 Maneuver	644	611	1012	666	641	976	1462	-	-	1382	-	-
Stage 1	883	796	-	876	790	-	-	-	-	-	-	-
Stage 2	815	750	-	836	777	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	575	586	1012	602	615	976	1462	-	-	1382	-	-
Mov Cap-2 Maneuver	575	586	-	602	615	-	-	-	-	-	-	-
Stage 1	869	776	-	862	777	-	-	-	-	-	-	-
Stage 2	738	738	-	761	758	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.4		10.9		1		2.4	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1462	-	-	582	1012	607	976	1382	-	-
HCM Lane V/C Ratio	0.015	-	-	0.076	0.033	0.136	0.039	0.024	-	-
HCM Control Delay (s)	7.5	0	-	11.7	8.7	11.9	8.8	7.7	0	-
HCM Lane LOS	A	A	-	B	A	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0.5	0.1	0.1	-	-

MID Peak 11:30 am 07/12/2021

Synchro 11 Report

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Lanes, Volumes, Timings
100: Duplainville Road & Green Road

07/13/2021

															
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR			
Lane Configurations															
Traffic Volume (vph)	25	30	20	80	50	50	25	100	40	45	95	30			
Future Volume (vph)	25	30	20	80	50	50	25	100	40	45	95	30			
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)	0		60	0		90	0		50	0		75			
Storage Lanes	0		1	0		1	0		1	0		1			
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		0.850				0.850				0.850					
Flt Protected		0.978			0.970			0.990			0.984				
Satd. Flow (prot)	0	1822	1583	0	1825	1599	0	1775	1524	0	1798	1553			
Flt Permitted		0.978			0.970			0.990			0.984				
Satd. Flow (perm)	0	1822	1583	0	1825	1599	0	1775	1524	0	1798	1553			
Link Speed (mph)		35			30			35			35				
Link Distance (ft)		709			451			709			467				
Travel Time (s)		13.8			10.3			13.8			9.1				
Confl. Peds. (#/hr)															
Confl. Bikes (#/hr)															
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%			
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	6%	6%	6%	4%	4%	4%			
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)	27	33	22	87	54	54	27	109	43	49	103	33			
Shared Lane Traffic (%)															
Lane Group Flow (vph)	0	60	22	0	141	54	0	136	43	0	152	33			
Sign Control	Stop			Stop			Free			Free					

Intersection Summary

Area Type: Other
Control Type: Unsignalized

PM Peak 4:30 pm 07/12/2021

Synchro 11 Report

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HCM 6th TWSC
100: Duplainville Road & Green Road

07/13/2021

Intersection												
Int Delay, s/veh	6.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	30	20	80	50	50	25	100	40	45	95	30
Future Vol, veh/h	25	30	20	80	50	50	25	100	40	45	95	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	60	-	-	90	-	-	50	-	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	1	1	1	6	6	6	4	4	4
Mvmt Flow	27	33	22	87	54	54	27	109	43	49	103	33

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	440	407	103	408	397	109	136	0	0	152	0	0
Stage 1	201	201	-	163	163	-	-	-	-	-	-	-
Stage 2	239	206	-	245	234	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.11	6.51	6.21	4.16	-	-	4.14	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.11	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.11	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.509	4.009	3.309	2.254	-	-	2.236	-	-
Pot Cap-1 Maneuver	527	533	952	555	542	947	1424	-	-	1417	-	-
Stage 1	801	735	-	841	765	-	-	-	-	-	-	-
Stage 2	764	731	-	761	713	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	436	502	952	493	511	947	1424	-	-	1417	-	-
Mov Cap-2 Maneuver	436	502	-	493	511	-	-	-	-	-	-	-
Stage 1	784	707	-	823	749	-	-	-	-	-	-	-
Stage 2	654	716	-	682	686	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.5		13.3		1.1		2	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1424	-	-	470	952	500	947	1417	-	-
HCM Lane V/C Ratio	0.019	-	-	0.127	0.023	0.283	0.057	0.035	-	-
HCM Control Delay (s)	7.6	0	-	13.8	8.9	15	9	7.6	0	-
HCM Lane LOS	A	A	-	B	A	C	A	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.1	1.2	0.2	0.1	-	-

PM Peak 4:30 pm 07/12/2021

Synchro 11 Report

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Lanes, Volumes, Timings
100: Duplainville Road & Green Road

07/13/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	50	40	35	20	30	90	85	25	60	110	35
Future Volume (vph)	25	50	40	35	20	30	90	85	25	60	110	35
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)	0	60		0	90		0	50		0	75	
Storage Lanes	0	1		0	1		0	1		0	1	
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	0.850			0.850			0.850			0.850		
Flt Protected	0.984			0.969			0.975			0.983		
Satd. Flow (prot)	0	1851	1599	0	1615	1417	0	1748	1524	0	1746	1509
Flt Permitted	0.984			0.969			0.975			0.983		
Satd. Flow (perm)	0	1851	1599	0	1615	1417	0	1748	1524	0	1746	1509
Link Speed (mph)	35			30			35			35		
Link Distance (ft)	709			451			709			467		
Travel Time (s)	13.8			10.3			13.8			9.1		
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	1%	14%	14%	14%	6%	6%	6%	7%	7%	7%
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)	32	64	51	45	26	38	115	109	32	77	141	45
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	96	51	0	71	38	0	224	32	0	218	45
Sign Control	Stop			Stop			Free			Free		

Intersection Summary

Area Type: Other

Control Type: Unsignalized

AM Peak 7:00 am 07/12/2021 Baseline

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Synchro 11 Report

HCM 6th TWSC
100: Duplainville Road & Green Road

07/13/2021

Intersection

Int Delay, s/veh 7.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔	↔		↔	↔		↔	↔
Traffic Vol, veh/h	25	50	40	35	20	30	90	85	25	60	110	35
Future Vol, veh/h	25	50	40	35	20	30	90	85	25	60	110	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	60	-	-	90	-	-	50	-	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	1	1	1	14	14	14	6	6	6	7	7	7
Mvmt Flow	32	64	51	45	26	38	115	109	32	77	141	45

Major/Minor	Minor2	Minor1	Major1	Major2								
Conflicting Flow All	682	666	141	714	679	109	186	0	0	141	0	0
Stage 1	295	295	-	339	339	-	-	-	-	-	-	-
Stage 2	387	371	-	375	340	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.51	6.21	7.24	6.64	6.34	4.16	-	-	4.17	-	-
Critical Hdwy Stg 1	6.11	5.51	-	6.24	5.64	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.51	-	6.24	5.64	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309	3.626	4.126	3.426	2.254	-	-	2.263	-	-
Pot Cap-1 Maneuver	365	381	910	331	359	913	1365	-	-	1412	-	-
Stage 1	716	671	-	651	619	-	-	-	-	-	-	-
Stage 2	639	621	-	622	618	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	291	325	910	236	306	913	1365	-	-	1412	-	-
Mov Cap-2 Maneuver	291	325	-	236	306	-	-	-	-	-	-	-
Stage 1	650	630	-	591	562	-	-	-	-	-	-	-
Stage 2	530	564	-	495	580	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.2	18.9	3.5	2.3
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1365	-	-	313	910	257	913	1412	-	-
HCM Lane V/C Ratio	0.085	-	-	0.307	0.056	0.274	0.042	0.054	-	-
HCM Control Delay (s)	7.9	0	-	21.5	9.2	24.2	9.1	7.7	0	-
HCM Lane LOS	A	A	-	C	A	C	A	A	A	-
HCM 95th %tile Q(veh)	0.3	-	-	1.3	0.2	1.1	0.1	0.2	-	-

AM Peak 7:00 am 07/12/2021 Baseline

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Synchro 11 Report

Lanes, Volumes, Timings
100: Duplainville Road & Green Road

07/13/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	30	35	50	35	40	20	85	65	35	60	20
Future Volume (vph)	20	30	35	50	35	40	20	85	65	35	60	20
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)	0	60		0	90		0	50		0	75	
Storage Lanes	0	1		0	1		0	1		0	1	
Taper Length (ft)	25	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	0.850			0.850			0.850			0.850		
Flt Protected	0.980			0.971			0.991			0.982		
Satd. Flow (prot)	0	1825	1583	0	1757	1538	0	1666	1429	0	1651	1429
Flt Permitted	0.980			0.971			0.991			0.982		
Satd. Flow (perm)	0	1825	1583	0	1757	1538	0	1666	1429	0	1651	1429
Link Speed (mph)	35			30			35			35		
Link Distance (ft)	709			451			709			467		
Travel Time (s)	13.8			10.3			13.8			9.1		
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	5%	5%	5%	13%	13%	13%	13%	13%	13%
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)	22	33	38	55	38	44	22	93	71	38	66	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	55	38	0	93	44	0	115	71	0	104	22
Sign Control	Stop			Stop			Free			Free		

Intersection Summary

Area Type: Other
Control Type: Unsignalized

MID Peak 11:30 am 07/12/2021

Synchro 11 Report

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HCM 6th TWSC
100: Duplainville Road & Green Road

07/13/2021

Intersection												
Int Delay, s/veh	5.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔	↔		↔	↔		↔	↔
Traffic Vol, veh/h	20	30	35	50	35	40	20	85	65	35	60	20
Future Vol, veh/h	20	30	35	50	35	40	20	85	65	35	60	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	60	-	-	90	-	-	50	-	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	5	5	5	13	13	13	13	13	13
Mvmt Flow	22	33	38	55	38	44	22	93	71	38	66	22

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	356	350	66	326	301	93	88	0	0	164	0	0
Stage 1	142	142	-	137	137	-	-	-	-	-	-	-
Stage 2	214	208	-	189	164	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.15	6.55	6.25	4.23	-	-	4.23	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.15	5.55	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.15	5.55	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.545	4.045	3.345	2.317	-	-	2.317	-	-
Pot Cap-1 Maneuver	599	574	998	621	607	956	1441	-	-	1350	-	-
Stage 1	861	779	-	859	777	-	-	-	-	-	-	-
Stage 2	788	730	-	806	757	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	524	548	998	550	579	956	1441	-	-	1350	-	-
Mov Cap-2 Maneuver	524	548	-	550	579	-	-	-	-	-	-	-
Stage 1	846	756	-	844	764	-	-	-	-	-	-	-
Stage 2	702	718	-	719	734	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	11		11.5		0.9		2.4	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1441	-	-	538	998	562	956	1350	-	-
HCM Lane V/C Ratio	0.015	-	-	0.102	0.039	0.166	0.046	0.028	-	-
HCM Control Delay (s)	7.5	0	-	12.5	8.8	12.7	8.9	7.7	0	-
HCM Lane LOS	A	A	-	B	A	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	0.6	0.1	0.1	-	-

MID Peak 11:30 am 07/12/2021

Synchro 11 Report

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Lanes, Volumes, Timings
100: Duplainville Road & Green Road

07/13/2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR			
Lane Configurations															
Traffic Volume (vph)	30	35	20	95	60	60	30	120	45	55	115	35			
Future Volume (vph)	30	35	20	95	60	60	30	120	45	55	115	35			
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)	0		60	0		90	0		50	0		75			
Storage Lanes	0		1	0		1	0		1	0		1			
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			0.850			0.850			0.850			0.850			
Flt Protected		0.977			0.970			0.990			0.984				
Satd. Flow (prot)	0	1820	1583	0	1825	1599	0	1775	1524	0	1798	1553			
Flt Permitted		0.977			0.970			0.990			0.984				
Satd. Flow (perm)	0	1820	1583	0	1825	1599	0	1775	1524	0	1798	1553			
Link Speed (mph)		35			30			35			35				
Link Distance (ft)		709			451			709			467				
Travel Time (s)		13.8			10.3			13.8			9.1				
Confl. Peds. (#/hr)															
Confl. Bikes (#/hr)															
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%			
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	6%	6%	6%	4%	4%	4%			
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)	33	38	22	103	65	65	33	130	49	60	125	38			
Shared Lane Traffic (%)															
Lane Group Flow (vph)	0	71	22	0	168	65	0	163	49	0	185	38			
Sign Control		Stop			Stop			Free			Free				
Intersection Summary															
Area Type:	Other														
Control Type:	Unsignalized														

PM Peak 4:30 pm 07/12/2021

Synchro 11 Report

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HCM 6th TWSC
100: Duplainville Road & Green Road

07/13/2021

Intersection												
Int Delay, s/veh	7.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	35	20	95	60	60	30	120	45	55	115	35
Future Vol, veh/h	30	35	20	95	60	60	30	120	45	55	115	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	60	-	-	90	-	-	50	-	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	1	1	1	6	6	6	4	4	4
Mvmt Flow	33	38	22	103	65	65	33	130	49	60	125	38

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	531	490	125	490	479	130	163	0	0	179	0	0
Stage 1	245	245	-	196	196	-	-	-	-	-	-	-
Stage 2	286	245	-	294	283	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.11	6.51	6.21	4.16	-	-	4.14	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.11	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.11	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.509	4.009	3.309	2.254	-	-	2.236	-	-
Pot Cap-1 Maneuver	459	479	926	490	487	922	1392	-	-	1385	-	-
Stage 1	759	703	-	808	740	-	-	-	-	-	-	-
Stage 2	721	703	-	716	679	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	358	444	926	422	451	922	1392	-	-	1385	-	-
Mov Cap-2 Maneuver	358	444	-	422	451	-	-	-	-	-	-	-
Stage 1	739	669	-	787	721	-	-	-	-	-	-	-
Stage 2	594	685	-	628	646	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.3	15.9	1.2	2.1
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1392	-	-	400	926	433	922	1385	-	-
HCM Lane V/C Ratio	0.023	-	-	0.177	0.023	0.389	0.071	0.043	-	-
HCM Control Delay (s)	7.6	0	-	15.9	9	18.5	9.2	7.7	0	-
HCM Lane LOS	A	A	-	C	A	C	A	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.1	1.8	0.2	0.1	-	-

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Synchro 11 Report

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Traffic Analysis Outputs

All-Way Stop Control

Lanes, Volumes, Timings
100: Duplainville Road & Green Road

07/13/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	45	35	30	15	25	75	70	25	50	90	30
Future Volume (vph)	20	45	35	30	15	25	75	70	25	50	90	30
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)	0		60	0		90	0		50	0		75
Storage Lanes	0		1	0		1	0		1	0		1
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	0.850			0.850			0.850			0.850		
Flt Protected	0.985			0.968			0.975			0.982		
Satd. Flow (prot)	0	1853	1599	0	1613	1417	0	1748	1524	0	1744	1509
Flt Permitted	0.985			0.968			0.975			0.982		
Satd. Flow (perm)	0	1853	1599	0	1613	1417	0	1748	1524	0	1744	1509
Link Speed (mph)	35			30			35			35		
Link Distance (ft)	709			451			709			467		
Travel Time (s)	13.8			10.3			13.8			9.1		
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	1%	14%	14%	14%	6%	6%	6%	7%	7%	7%
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)	26	58	45	38	19	32	96	90	32	64	115	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	84	45	0	57	32	0	186	32	0	179	38
Sign Control	Stop			Stop			Stop			Stop		

Intersection Summary

Area Type: Other

Control Type: Unsignalized

AM Peak 7:00 am 07/12/2021 Baseline

Synchro 11 Report

Z:\Shared\W\12714 - Duplainville & Green Pewaukee\Analysis\1. 2022 Open\MODS\1. 2022 Open - MOD.syn

HCM 6th AWSC
100: Duplainville Road & Green Road

07/13/2021

Intersection

Intersection Delay, s/veh 9.9

Intersection LOS A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	45	35	30	15	25	75	70	25	50	90	30
Future Vol, veh/h	20	45	35	30	15	25	75	70	25	50	90	30
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles, %	1	1	1	14	14	14	6	6	6	7	7	7
Mvmt Flow	26	58	45	38	19	32	96	90	32	64	115	38
Number of Lanes	0	1	1	0	1	1	0	1	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	9.2	9.4	10.3	10.1
HCM LOS	A	A	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	52%	0%	31%	0%	67%	0%	36%	0%
Vol Thru, %	48%	0%	69%	0%	33%	0%	64%	0%
Vol Right, %	0%	100%	0%	100%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	145	25	65	35	45	25	140	30
LT Vol	75	0	20	0	30	0	50	0
Through Vol	70	0	45	0	15	0	90	0
RT Vol	0	25	0	35	0	25	0	30
Lane Flow Rate	186	32	83	45	58	32	179	38
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.294	0.042	0.137	0.063	0.102	0.047	0.281	0.051
Departure Headway (Hd)	5.689	4.724	5.928	5.066	6.377	5.333	5.629	4.745
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	628	751	600	700	558	664	634	748
Service Time	3.462	2.497	3.711	2.848	4.166	3.122	3.402	2.517
HCM Lane V/C Ratio	0.296	0.043	0.138	0.064	0.104	0.048	0.282	0.051
HCM Control Delay	10.8	7.7	9.7	8.2	9.9	8.4	10.6	7.8
HCM Lane LOS	B	A	A	A	A	A	B	A
HCM 95th-tile Q	1.2	0.1	0.5	0.2	0.3	0.1	1.1	0.2

AM Peak 7:00 am 07/12/2021 Baseline

Synchro 11 Report

Z:\Shared\W\12714 - Duplainville & Green Pewaukee\Analysis\1. 2022 Open\MODS\1. 2022 Open - MOD.syn

Lanes, Volumes, Timings
100: Duplainville Road & Green Road

07/13/2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔	↔		↔	↔		↔	↔
Traffic Volume (vph)	15	25	30	45	30	35	20	70	55	30	50	15
Future Volume (vph)	15	25	30	45	30	35	20	70	55	30	50	15
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)	0		60	0		90	0		50	0		75
Storage Lanes	0		1	0		1	0		1	0		1
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	0.850			0.850			0.850			0.850		
Flt Protected	0.982			0.971			0.989			0.982		
Satd. Flow (prot)	0	1829	1583	0	1757	1538	0	1663	1429	0	1651	1429
Flt Permitted	0.982			0.971			0.989			0.982		
Satd. Flow (perm)	0	1829	1583	0	1757	1538	0	1663	1429	0	1651	1429
Link Speed (mph)		35			30			35			35	
Link Distance (ft)		709			451			709			467	
Travel Time (s)		13.8			10.3			13.8			9.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	5%	5%	5%	13%	13%	13%	13%	13%	13%
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)	16	27	33	49	33	38	22	77	60	33	55	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	43	33	0	82	38	0	99	60	0	88	16
Sign Control	Stop			Stop			Stop			Stop		

Intersection Summary

Area Type: Other

Control Type: Unsignalized

MID Peak 11:30 am 07/12/2021

Synchro 11 Report

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HCM 6th AWSC
100: Duplainville Road & Green Road

07/13/2021

Intersection

Intersection Delay, s/veh 8.6

Intersection LOS A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔	↔		↔	↔		↔	↔
Traffic Vol, veh/h	15	25	30	45	30	35	20	70	55	30	50	15
Future Vol, veh/h	15	25	30	45	30	35	20	70	55	30	50	15
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	2	2	2	5	5	5	13	13	13	13	13	13
Mvmt Flow	16	27	33	49	33	38	22	77	60	33	55	16
Number of Lanes	0	1	1	0	1	1	0	1	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	8.2	8.7	8.6	8.9
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	22%	0%	38%	0%	60%	0%	38%	0%
Vol Thru, %	78%	0%	62%	0%	40%	0%	62%	0%
Vol Right, %	0%	100%	0%	100%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	90	55	40	30	75	35	80	15
LT Vol	20	0	15	0	45	0	30	0
Through Vol	70	0	25	0	30	0	50	0
RT Vol	0	55	0	30	0	35	0	15
Lane Flow Rate	99	60	44	33	82	38	88	16
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.15	0.078	0.068	0.042	0.129	0.05	0.136	0.021
Departure Headway (Hd)	5.451	4.636	5.53	4.637	5.642	4.636	5.578	4.686
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	658	772	647	770	635	771	643	763
Service Time	3.184	2.369	3.271	2.378	3.379	2.374	3.315	2.423
HCM Lane V/C Ratio	0.15	0.078	0.068	0.043	0.129	0.049	0.137	0.021
HCM Control Delay	9.1	7.8	8.7	7.6	9.2	7.6	9.2	7.5
HCM Lane LOS	A	A	A	A	A	A	A	A
HCM 95th-tile Q	0.5	0.3	0.2	0.1	0.4	0.2	0.5	0.1

MID Peak 11:30 am 07/12/2021

Synchro 11 Report

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Lanes, Volumes, Timings
100: Duplainville Road & Green Road

07/13/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	30	20	80	50	50	25	100	40	45	95	30
Future Volume (vph)	25	30	20	80	50	50	25	100	40	45	95	30
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)	0	60		0	90		0	50		0	75	
Storage Lanes	0	1		0	1		0	1		0	1	
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	0.850			0.850			0.850			0.850		
Flt Protected	0.978				0.970		0.990				0.984	
Satd. Flow (prot)	0	1822	1583	0	1825	1599	0	1775	1524	0	1798	1553
Flt Permitted	0.978				0.970		0.990				0.984	
Satd. Flow (perm)	0	1822	1583	0	1825	1599	0	1775	1524	0	1798	1553
Link Speed (mph)	35			30			35			35		
Link Distance (ft)	709			451			709			467		
Travel Time (s)	13.8			10.3			13.8			9.1		
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	6%	6%	6%	4%	4%	4%
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)	27	33	22	87	54	54	27	109	43	49	103	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	60	22	0	141	54	0	136	43	0	152	33
Sign Control	Stop			Stop			Stop			Stop		

Intersection Summary

Area Type: Other

Control Type: Unsignalized

PM Peak 4:30 pm 07/12/2021

Synchro 11 Report

Z:\Shared\W\12714 - Duplainville & Green Pewaukee\Analysis\1. 2022 Open\MODS\1. 2022 Open - MOD.syn

HCM 6th AWSC
100: Duplainville Road & Green Road

07/13/2021

Intersection

Intersection Delay, s/veh 9.6

Intersection LOS A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	30	20	80	50	50	25	100	40	45	95	30
Future Vol, veh/h	25	30	20	80	50	50	25	100	40	45	95	30
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	1	1	1	6	6	6	4	4	4
Mvmt Flow	27	33	22	87	54	54	27	109	43	49	103	33
Number of Lanes	0	1	1	0	1	1	0	1	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	9	9.7	9.5	9.8
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	20%	0%	45%	0%	62%	0%	32%	0%
Vol Thru, %	80%	0%	55%	0%	38%	0%	68%	0%
Vol Right, %	0%	100%	0%	100%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	125	40	55	20	130	50	140	30
LT Vol	25	0	25	0	80	0	45	0
Through Vol	100	0	30	0	50	0	95	0
RT Vol	0	40	0	20	0	50	0	30
Lane Flow Rate	136	43	60	22	141	54	152	33
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.213	0.059	0.099	0.03	0.23	0.073	0.24	0.044
Departure Headway (Hd)	5.652	4.846	5.95	5.014	5.867	4.852	5.67	4.803
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	630	732	597	706	608	732	628	739
Service Time	3.427	2.62	3.741	2.804	3.644	2.628	3.444	2.576
HCM Lane V/C Ratio	0.216	0.059	0.101	0.031	0.232	0.074	0.242	0.045
HCM Control Delay	10	7.9	9.4	8	10.4	8	10.2	7.8
HCM Lane LOS	A	A	A	A	B	A	B	A
HCM 95th-tile Q	0.8	0.2	0.3	0.1	0.9	0.2	0.9	0.1

PM Peak 4:30 pm 07/12/2021

Synchro 11 Report

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Lanes, Volumes, Timings
100: Duplainville Road & Green Road

07/13/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	50	40	35	20	30	90	85	25	60	110	35
Future Volume (vph)	25	50	40	35	20	30	90	85	25	60	110	35
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)	0		60	0		90	0		50	0		75
Storage Lanes	0		1	0		1	0		1	0		1
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		0.850				0.850				0.850		
Flt Protected		0.984				0.969				0.975		
Satd. Flow (prot)	0	1851	1599	0	1615	1417	0	1748	1524	0	1746	1509
Flt Permitted		0.984				0.969				0.975		
Satd. Flow (perm)	0	1851	1599	0	1615	1417	0	1748	1524	0	1746	1509
Link Speed (mph)		35				30				35		
Link Distance (ft)		709				451				709		
Travel Time (s)		13.8				10.3				13.8		
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	1%	14%	14%	14%	6%	6%	6%	7%	7%	7%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%				0%				0%		
Adj. Flow (vph)	32	64	51	45	26	38	115	109	32	77	141	45
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	96	51	0	71	38	0	224	32	0	218	45
Sign Control		Stop				Stop				Stop		

Intersection Summary

Area Type: Other

Control Type: Unsignalized

AM Peak 7:00 am 07/12/2021 Baseline
Z:\Shared\W\12714 - Duplainville & Green Pewaukee\Analysis\2. 2042 Design\MODS\2. 2042 Design - MOD.syn

Synchro 11 Report

HCM 6th AWSC
100: Duplainville Road & Green Road

07/13/2021

Intersection

Intersection Delay, s/veh 11

Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	50	40	35	20	30	90	85	25	60	110	35
Future Vol, veh/h	25	50	40	35	20	30	90	85	25	60	110	35
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles, %	1	1	1	14	14	14	6	6	6	7	7	7
Mvmt Flow	32	64	51	45	26	38	115	109	32	77	141	45
Number of Lanes	0	1	1	0	1	1	0	1	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	9.8	9.9	11.7	11.3
HCM LOS	A	A	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	51%	0%	33%	0%	64%	0%	35%	0%
Vol Thru, %	49%	0%	67%	0%	36%	0%	65%	0%
Vol Right, %	0%	100%	0%	100%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	175	25	75	40	55	30	170	35
LT Vol	90	0	25	0	35	0	60	0
Through Vol	85	0	50	0	20	0	110	0
RT Vol	0	25	0	40	0	30	0	35
Lane Flow Rate	224	32	96	51	71	38	218	45
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.373	0.045	0.169	0.078	0.133	0.061	0.359	0.063
Departure Headway (Hd)	5.989	5.023	6.336	5.457	6.77	5.737	5.922	5.037
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	601	714	566	656	530	624	608	712
Service Time	3.714	2.747	4.068	3.19	4.504	3.472	3.646	2.761
HCM Lane V/C Ratio	0.373	0.045	0.17	0.078	0.134	0.061	0.359	0.063
HCM Control Delay	12.2	8	10.4	8.7	10.5	8.8	11.9	8.1
HCM Lane LOS	B	A	B	A	B	A	B	A
HCM 95th-tile Q	1.7	0.1	0.6	0.3	0.5	0.2	1.6	0.2

AM Peak 7:00 am 07/12/2021 Baseline
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Synchro 11 Report

Lanes, Volumes, Timings
100: Duplainville Road & Green Road

07/13/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	30	35	50	35	40	20	85	65	35	60	20
Future Volume (vph)	20	30	35	50	35	40	20	85	65	35	60	20
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)	0		60	0		90	0		50	0		75
Storage Lanes	0		1	0		1	0		1	0		1
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	0.850			0.850			0.850			0.850		
Flt Protected	0.980			0.971			0.991			0.982		
Satd. Flow (prot)	0	1825	1583	0	1757	1538	0	1666	1429	0	1651	1429
Flt Permitted	0.980			0.971			0.991			0.982		
Satd. Flow (perm)	0	1825	1583	0	1757	1538	0	1666	1429	0	1651	1429
Link Speed (mph)	35			30			35			35		
Link Distance (ft)	709			451			709			467		
Travel Time (s)	13.8			10.3			13.8			9.1		
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	5%	5%	5%	13%	13%	13%	13%	13%	13%
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)	22	33	38	55	38	44	22	93	71	38	66	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	55	38	0	93	44	0	115	71	0	104	22
Sign Control	Stop			Stop			Stop			Stop		

Intersection Summary

Area Type: Other

Control Type: Unsignalized

MID Peak 11:30 am 07/12/2021

Synchro 11 Report

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HCM 6th AWSC
100: Duplainville Road & Green Road

07/13/2021

Intersection

Intersection Delay, s/veh 8.9

Intersection LOS A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	30	35	50	35	40	20	85	65	35	60	20
Future Vol, veh/h	20	30	35	50	35	40	20	85	65	35	60	20
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	2	2	2	5	5	5	13	13	13	13	13	13
Mvmt Flow	22	33	38	55	38	44	22	93	71	38	66	22
Number of Lanes	0	1	1	0	1	1	0	1	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	8.5	9	8.9	9.3
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	19%	0%	40%	0%	59%	0%	37%	0%
Vol Thru, %	81%	0%	60%	0%	41%	0%	63%	0%
Vol Right, %	0%	100%	0%	100%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	105	65	50	35	85	40	95	20
LT Vol	20	0	20	0	50	0	35	0
Through Vol	85	0	30	0	35	0	60	0
RT Vol	0	65	0	35	0	40	0	20
Lane Flow Rate	115	71	55	38	93	44	104	22
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.178	0.094	0.087	0.051	0.15	0.059	0.165	0.029
Departure Headway (Hd)	5.557	4.757	5.703	4.797	5.793	4.792	5.704	4.814
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	644	750	626	743	617	745	626	740
Service Time	3.305	2.505	3.456	2.549	3.541	2.54	3.457	2.567
HCM Lane V/C Ratio	0.179	0.095	0.088	0.051	0.151	0.059	0.166	0.03
HCM Control Delay	9.5	8	9	7.8	9.6	7.8	9.6	7.7
HCM Lane LOS	A	A	A	A	A	A	A	A
HCM 95th-tile Q	0.6	0.3	0.3	0.2	0.5	0.2	0.6	0.1

MID Peak 11:30 am 07/12/2021

Synchro 11 Report

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Lanes, Volumes, Timings
100: Duplainville Road & Green Road

07/13/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	35	20	95	60	60	30	120	45	55	115	35
Future Volume (vph)	30	35	20	95	60	60	30	120	45	55	115	35
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)	0	60		0	90		0	50		0	75	
Storage Lanes	0	1		0	1		0	1		0	1	
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	0.850			0.850			0.850			0.850		
Flt Protected	0.977				0.970		0.990				0.984	
Satd. Flow (prot)	0	1820	1583	0	1825	1599	0	1775	1524	0	1798	1553
Flt Permitted	0.977				0.970		0.990				0.984	
Satd. Flow (perm)	0	1820	1583	0	1825	1599	0	1775	1524	0	1798	1553
Link Speed (mph)	35			30			35			35		
Link Distance (ft)	709			451			709			467		
Travel Time (s)	13.8			10.3			13.8			9.1		
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	6%	6%	6%	4%	4%	4%
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)	33	38	22	103	65	65	33	130	49	60	125	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	71	22	0	168	65	0	163	49	0	185	38
Sign Control	Stop			Stop			Stop			Stop		

Intersection Summary

Area Type: Other

Control Type: Unsignalized

PM Peak 4:30 pm 07/12/2021

Synchro 11 Report

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HCM 6th AWSC
100: Duplainville Road & Green Road

07/13/2021

Intersection

Intersection Delay, s/veh 10.5

Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	35	20	95	60	60	30	120	45	55	115	35
Future Vol, veh/h	30	35	20	95	60	60	30	120	45	55	115	35
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	1	1	1	6	6	6	4	4	4
Mvmt Flow	33	38	22	103	65	65	33	130	49	60	125	38
Number of Lanes	0	1	1	0	1	1	0	1	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	9.6	10.6	10.3	10.8
HCM LOS	A	B	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	20%	0%	46%	0%	61%	0%	32%	0%
Vol Thru, %	80%	0%	54%	0%	39%	0%	68%	0%
Vol Right, %	0%	100%	0%	100%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	150	45	65	20	155	60	170	35
LT Vol	30	0	30	0	95	0	55	0
Through Vol	120	0	35	0	60	0	115	0
RT Vol	0	45	0	20	0	60	0	35
Lane Flow Rate	163	49	71	22	168	65	185	38
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.271	0.07	0.125	0.033	0.29	0.094	0.307	0.054
Departure Headway (Hd)	5.974	5.166	6.36	5.416	6.197	5.18	5.984	5.113
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	602	694	565	661	581	692	602	701
Service Time	3.701	2.893	4.092	3.149	3.925	2.908	3.711	2.84
HCM Lane V/C Ratio	0.271	0.071	0.126	0.033	0.289	0.094	0.307	0.054
HCM Control Delay	10.9	8.3	10	8.3	11.4	8.4	11.4	8.1
HCM Lane LOS	B	A	A	A	B	A	B	A
HCM 95th-tile Q	1.1	0.2	0.4	0.1	1.2	0.3	1.3	0.2

PM Peak 4:30 pm 07/12/2021

Synchro 11 Report

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CITY OF PEWAUKEE
PUBLIC WORKS COMMITTEE AGENDA ITEM 10.1.

DATE: November 11, 2021

DEPARTMENT: PW - Streets

PROVIDED BY: Magdelene Wagner

SUBJECT:

Discussion and possible action regarding the request to install a 3-Way Stop at the intersection of Oak Street and Peninsula Drive.

BACKGROUND:

Alderson Clark has requested stop signs at the intersection of Oak Street and Peninsula Drive to slow down speeding traffic in the area. A request for information/feedback was sent to the Sheriff and the Fire Departments. The Sheriff's Department response is attached. The Fire Department did not respond as of the time the packets were created.

As the Sheriff's reports indicate, the warrants for additional stop signs at this intersection are not met. There have been no reported accidents at this intersection and excessive speed does not appear to be an issue in this area. In addition, studies have shown that stop signs do not address speeding concerns in neighborhoods.

For these reasons, we do not support creating a 3-way stop at the intersection of Oak Street and Peninsula Drive.

Alderson Clark requested an alternative of a permanent radar speed sign. We have requested funds in the 2022 budget to purchase radar speed signs. We would support installing one of these radar speed signs in this neighborhood, however, we do not recommend it be a permanent installation. The intent of these signs would be to make drivers aware of their speed while traveling on the roadway. We feel the best way to do this is to periodically remove and rotate the signs throughout the community. We feel this will help keep the signs "fresh" so drivers do not become "blind" to the signs.

FINANCIAL IMPACT:

RECOMMENDED MOTION:

Committee Members recommend denial of the installation of a 3-way stop at the intersection of Oak Street and Peninsula Drive and further recommend the installation of a radar speed sign for a period of time near this area.

ATTACHMENTS:

Description

Alderson Request

Alderson Letter

Wagner, Magdelene

From: Clark, Ian
Sent: Tuesday, September 7, 2021 3:27 PM
To: Wagner, Magdelene
Cc: Klein, Scott
Subject: Constituents on Oak/Peninsula and Rocky Point

Follow Up Flag: Follow up
Flag Status: Flagged

Maggie and Scott,

Constituents on Oak, Peninsula, and Rocky Point have requested 2 things: (1) a 3-way stop sign at the intersection of Oak and Peninsula; and (2) single-side parking along Rocky Point Road.

Peninsula is notorious for speeders, especially when rounding the corner near Peninsula. Residents have noted to me that they would appreciate additional stop signs, particularly because it is a popular corner for children on bikes to stop and play.

As to Rocky Point: it is a relatively narrow road, and residents have noted that they have to weave in and out to avoid parked cars, particularly when a resident is hosting a party. They have no preference as to which side of the road has the mandated parking, for they are mostly concerned with the flow of traffic.

Let me know if you have any other questions or concerns, I'd be happy to help.

Best,

Ian

To the Public Works Committee:

Citizens have reported speeding and parking concerns along Oak Street and Rocky Point Road. I would like to address their concerns through this letter, which is divided into two parts:

(1) Speeding on Oak Street and (2) Single-Sided Parking on Rocky Point Road.

(1) SPEEDING ON OAK STREET.

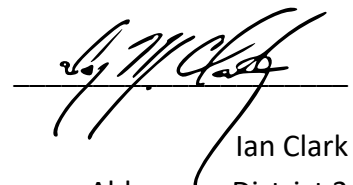
Residents on Oak Street and its arterial streets are seriously concerned about speeding. Particularly, drivers “slingshot” around the corner between W274N2822 Oak St and N28W27683 Peninsula Dr, using the momentum generated from the curve to race down Oak Street. Residents request additional stop signs at the intersection between Oak and Peninsula, as they think it will help moderate speed between the curve and residential properties. There is a stop sign at this intersection already, but it is to moderate drivers on Peninsula, not Oak Street. Please consider adding an additional stop sign, or a permanent, radar speed sign to better regulate speed in the area.

(2) SINGLE-SIDED PARKING ON ROCKY POINT ROAD.

Other residents request single-sided parking along Rocky Point Road. Rocky Point is relatively narrow, especially between W278N2946 and W279N2862 Rocky Point Rd.

Recently, Rocky Point Road residents have hosted several large gatherings, causing their guests to park on either side of the road. By parking on both sides of the road, pedestrians have little room to walk, and other drivers must weave in-and-out between parked cars. Cars passing through must travel one at a time, effectively turning Oak Street into a one way. Cars are parked so close together that residents are concerned that fire trucks and ambulances cannot pass through safely and arrive in time to their intended destination. Single-sided parking already exists along Rocky Point Road near the intersection of Rocky Point and Oak Street. Extending this single-sided parking could alleviate the resident’s concerns.

In sum, I request that this Committee consider providing Oak Street with additional stop signs or radar equipment and provide single-sided parking on Rocky Point Road.


Ian Clark
Alderman, District 2



Waukesha County Sheriff's Office
City of Pewaukee Contract
Lieutenant Marc Moonen
Lieutenant Anthony Sheckles

Sheriff Eric Severson

To: City of Pewaukee Director of Public Works/Engineer Magdelene Wagner

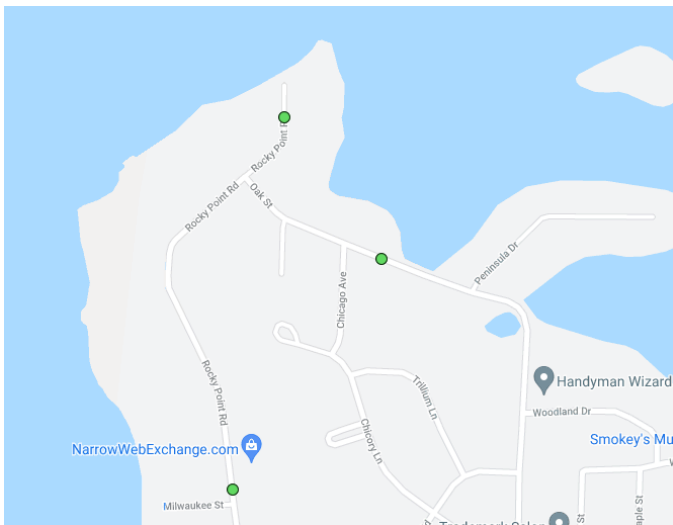
From: Lieutenant Marc R. Moonen

Ref: Feedback on a 3-way stop sign at the intersection of Oak and Peninsula; and single-side parking along Rocky Point Road

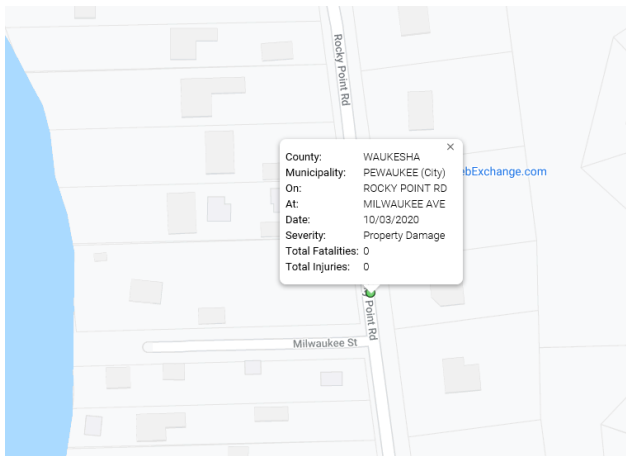
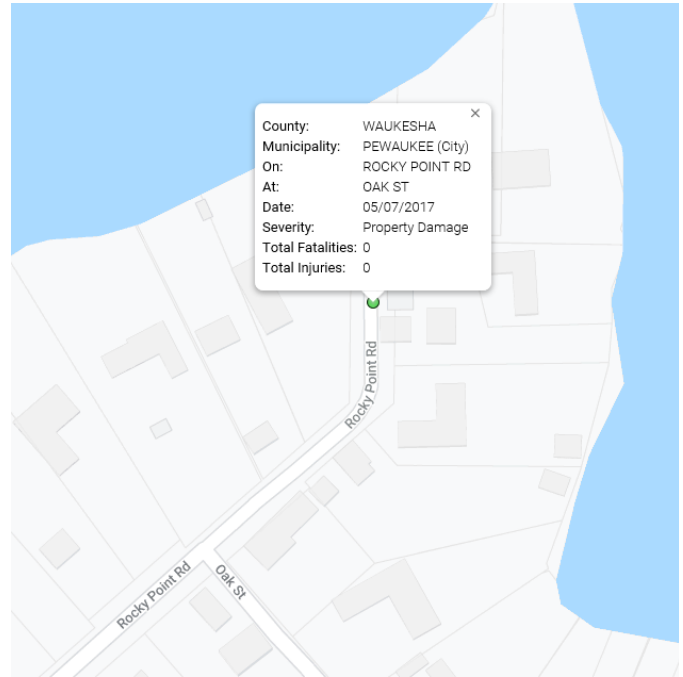
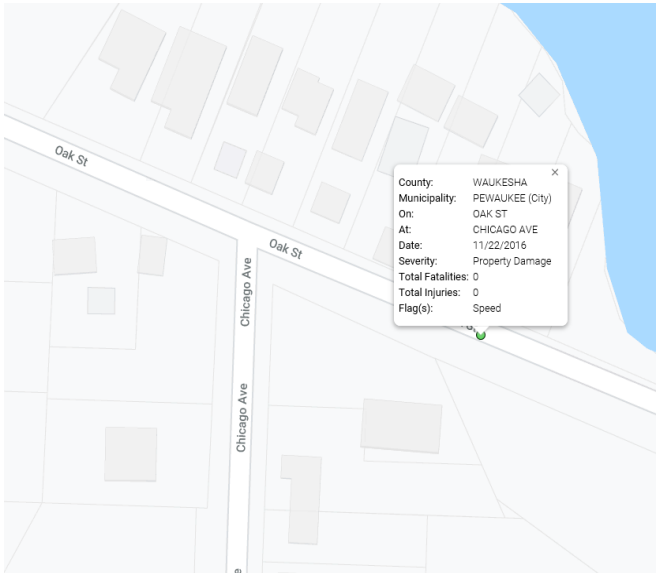
Date: October 14, 2021

SCOPE: This document shall serve as an official response to provide comment for the consideration of a 3-way stop sign at the intersection of Oak and Peninsula; and single-side parking along Rocky Point Road. I have considered sources of public records relating to traffic count volumes and motorist speed data collection, along with traffic crash frequency and severity.

RESEARCH & FINDINGS: This area of focus has long been an area of study for the Waukesha Sheriff's Office while serving the residents in the City of Pewaukee with police services. Residents of the Rocky Point have previously made complaints of speeding violations in the subdivision. These complaints have been researched and most always found to be infrequent, isolated incidents with the very low propensity of constant traffic law violations.



The area of review was focused on the Rocky Point subdivision; Rocky Point Road north of Milwaukee Street, all of Peninsula Drive, and Oak Street north of Wildflower Road.



Crash Data was evaluated for the last five years and the above three crashes occurred. No fatalities or injuries resulted from the crashes and one listed speed as a contributing factor in 2016.

Speed analysis was also completed on Oak Street near Chicago Avenue from Friday, October 1, 2021 thru Monday, October 11, 2021. The posted speed limit is 25 MPH and the enforcement limit recorded violations at 31+ MPH. Of all vehicles that passed this recorder, 5.1% were recorded above the enforcement limit, which is considered a low need for enforcement. Please see the attached report for additional information.

Speed analysis was also completed on Oak Street near Peninsula Drive from Friday, September 17, 2021 thru Monday, September 27, 2021. The posted speed limit is 25 MPH and the enforcement limit recorded violations at 31+ MPH. Of all vehicles that passed this recorder, 5.6% were recorded above the enforcement limit, which is considered a low need for enforcement. Please see the attached report for additional information.

Speed analysis was also completed on Oak Street near Woodland Drive from Sunday, July 11, 2021 thru Thursday, July 22, 2021. The posted speed limit is 25 MPH and the enforcement limit recorded violations at 31+ MPH. Of all vehicles that passed this recorder, 6.7% were recorded above the enforcement limit,

which is considered a low need for enforcement. Please see the attached report for additional information.

Speed analysis was also completed on Oak Street near Woodland Drive from Sunday, December 6, 2020 thru Wednesday, December 16, 2020. The posted speed limit is 25 MPH and the enforcement limit recorded violations at 32+ MPH. Of all vehicles that passed this recorder, 1.4% were recorded above the enforcement limit, which is considered a low need for enforcement. Please see the attached report for additional information.

Speed analysis was also completed on Rocky Point Road near Milwaukee Street from Monday, November 16, 2020 thru Friday, November 27, 2020. The posted speed limit is 25 MPH and the enforcement limit recorded violations at 32+ MPH. Of all vehicles that passed this recorder, 7.2% were recorded above the enforcement limit, which is considered a low need for enforcement. Please see the attached report for additional information.

Speed analysis was also completed on Oak Street near Wildflower Road from Sunday, November 1, 2020 thru Wednesday, November 11, 2020. The posted speed limit is 25 MPH and the enforcement limit recorded violations at 32+ MPH. Of all vehicles that passed this recorder, 2.7% were recorded above the enforcement limit, which is considered a low need for enforcement. Please see the attached report for additional information.

Speed analysis was also completed on Rocky Point Road near Milwaukee Street from Friday, September 25, 2020 thru Monday, October 5, 2020. The posted speed limit is 25 MPH and the enforcement limit recorded violations at 32+ MPH. Of all vehicles that passed this recorder, 6.9% were recorded above the enforcement limit, which is considered a low need for enforcement. Please see the attached report for additional information.

RECOMMENDATION: This response will provide comment for the consideration of a 3-way stop sign at the intersection of Oak and Peninsula; and single-side parking along Rocky Point Road.

It is recommended that the current single stop sign on Peninsula Road remain and no additional stop signs be installed on Oak Street. The location was studied, and reports indicate that this is considered a low need for enforcement. The location yields a low frequency of speeding and no instances of vehicular and/or pedestrian related crashes.

It is recommended that the current dual-side parking along Rocky Point Road remain, and no additional restrictions imposed. The location was studied, and reports indicate that this is considered a low need for enforcement. The location yields a low frequency of speeding and only one instance of vehicular and zero pedestrian related crashes. Ample off-street parking exists in the area, which yields a low volume of vehicles that are parked on the road. In the instances of on street utilization of parking, this likely causes motorists to slow their vehicle speeds as peripheral traffic and pedestrian scanning is limited to the motorists.

**Waukesha County Sheriff
City of Pewaukee
Pewaukee, WI**

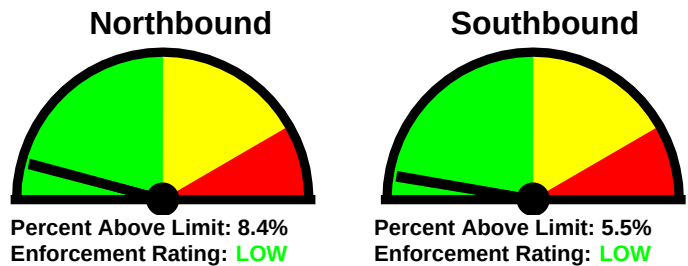
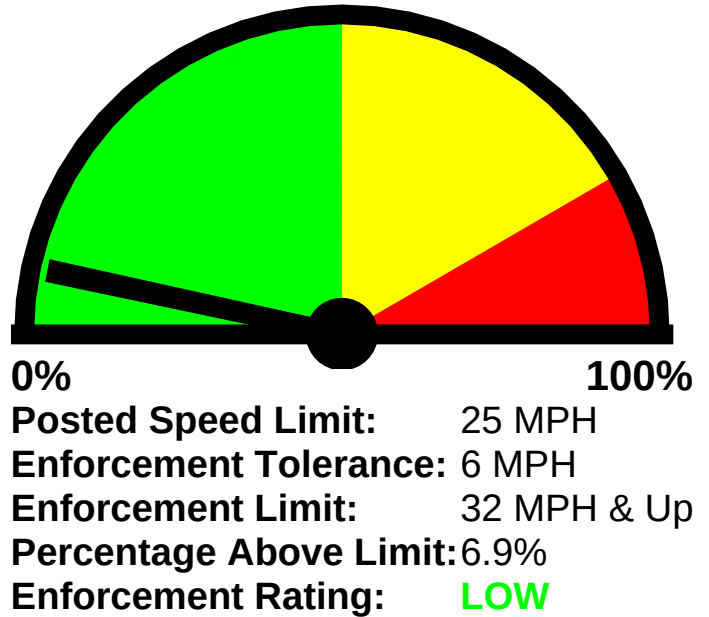
Speed Enforcement Evaluator

Location:
Rocky Point Rd

**Total Percentage of
Enforceable Violations**

Closest Cross Street:
Milwaukee St

Analysis Dates:
Friday, September 25, 2020
Monday, October 05, 2020



Combined

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
5	77	260	501	1390	1463	347	36	7	5	0	1	0	18

85 percentile = 29

Northbound

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
5	55	111	255	655	701	191	26	4	5	0	1	0	12

85 percentile = 29

Southbound

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
0	22	149	246	735	762	156	10	3	0	0	0	0	6

85 percentile = 28

**Waukesha County Sheriff
City of Pewaukee
Pewaukee, WI**

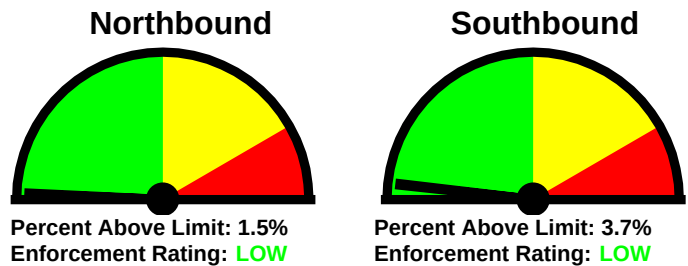
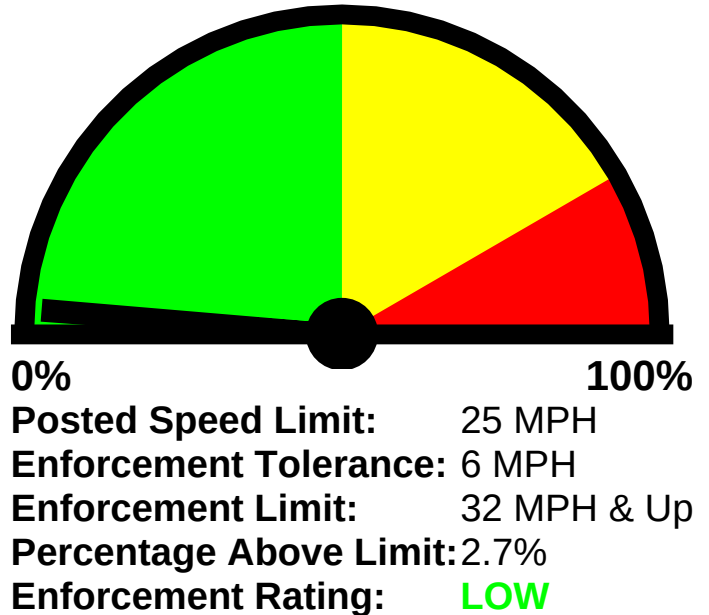
Speed Enforcement Evaluator

Location:
Oak Street

**Total Percentage of
Enforceable Violations**

Closest Cross Street:
Wildflower Road

Analysis Dates:
Sunday, November 01, 2020
Wednesday, November 11, 2020



Combined

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
2	151	656	779	629	485	96	14	1	0	1	0	0	0

85 percentile = 26

Northbound

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
2	142	347	372	277	168	25	3	0	0	0	0	0	0

85 percentile = 25

Southbound

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
0	9	309	407	352	317	71	11	1	0	1	0	0	0

85 percentile = 27

**Waukesha County Sheriff
City of Pewaukee
Pewaukee, WI**

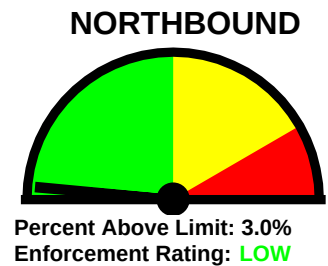
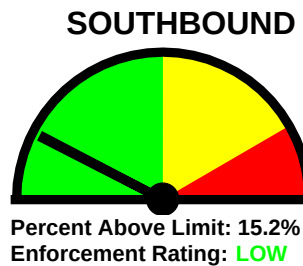
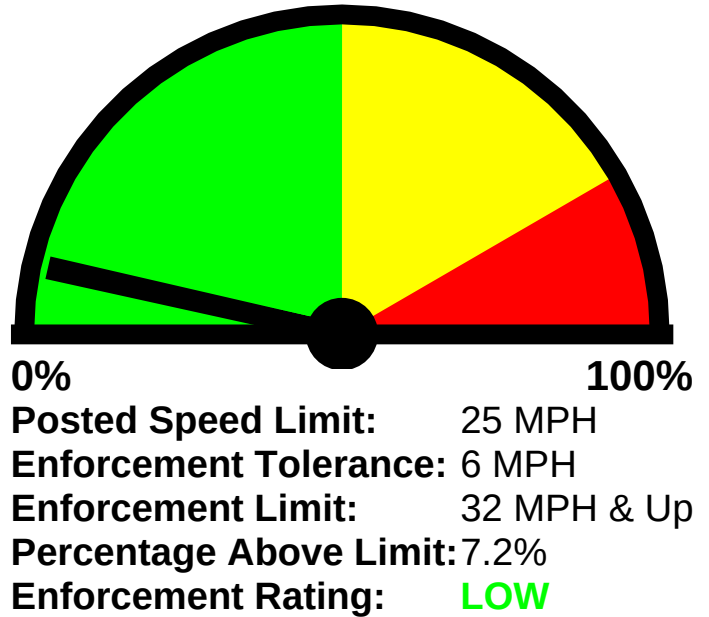
Speed Enforcement Evaluator

Location:
ROCKY POINT RD

**Total Percentage of
Enforceable Violations**

Closest Cross Street:
MILWAUKEE AV

Analysis Dates:
Monday, November 16, 2020
Friday, November 27, 2020



Combined

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
1	16	46	215	584	561	133	13	0	0	1	0	0	4

85 percentile = 28

SOUTHBOUND

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
1	13	18	49	187	174	82	9	0	0	1	0	0	4

85 percentile = 31

NORTHBOUND

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
0	3	28	166	397	387	51	4	0	0	0	0	0	0

85 percentile = 28

**Waukesha County Sheriff
City of Pewaukee
Pewaukee, WI**

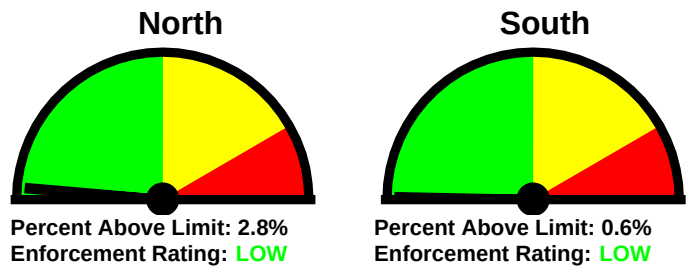
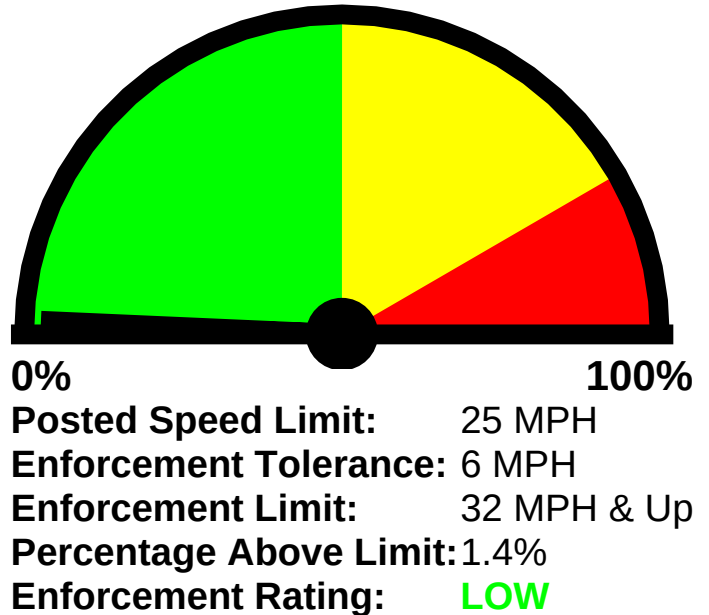
Speed Enforcement Evaluator

Location:
Oak St

**Total Percentage of
Enforceable Violations**

Closest Cross Street:
Woodland Dr

Analysis Dates:
Sunday, December 06, 2020
Wednesday, December 16, 2020



Combined

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
0	22	180	276	680	315	32	2	0	1	1	0	0	0

85 percentile = 26

North

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
0	10	24	116	260	116	15	0	0	1	1	0	0	0

85 percentile = 26

South

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
0	12	156	160	420	199	17	2	0	0	0	0	0	0

85 percentile = 26

**Waukesha County Sheriff
City of Pewaukee
Pewaukee, WI**

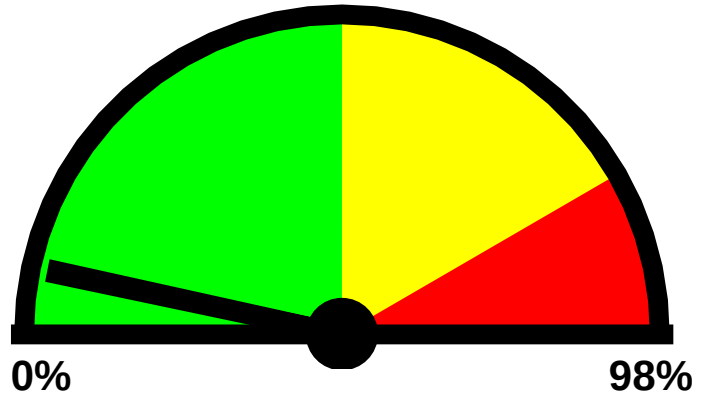
Speed Enforcement Evaluator

Location:
Oak Street

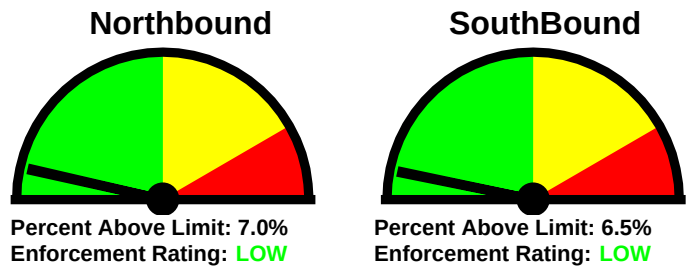
**Total Percentage of
Enforceable Violations**

Closest Cross Street:
Woodland Drive

Analysis Dates:
Sunday, July 11, 2021
Thursday, July 22, 2021



Posted Speed Limit: 25 MPH
Enforcement Tolerance: 5 MPH
Enforcement Limit: 31 MPH & Up
Percentage Above Limit: 6.7%
Enforcement Rating: **LOW**



Combined

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
5	69	289	779	2490	2136	386	24	1	1	2	1	0	2

85 percentile = 28

Northbound

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
5	60	206	383	1218	1013	200	11	1	1	2	1	0	2

85 percentile = 28

SouthBound

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
0	9	83	396	1272	1123	186	13	0	0	0	0	0	0

85 percentile = 28

**Waukesha County Sheriff
City of Pewaukee
Pewaukee, WI**

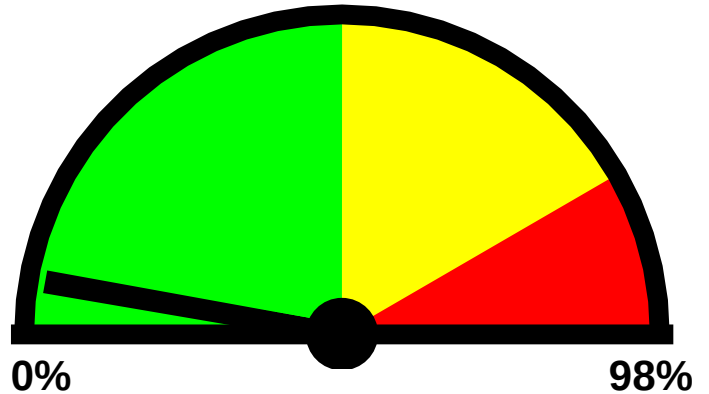
Speed Enforcement Evaluator

Location:
Oak Street

**Total Percentage of
Enforceable Violations**

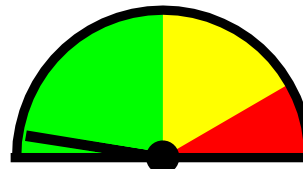
Closest Cross Street:
Peninsula Dr

Analysis Dates:
Friday, September 17, 2021
Monday, September 27, 2021



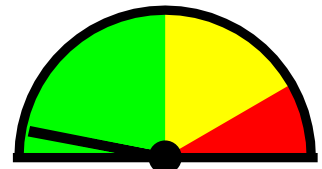
Posted Speed Limit: 25 MPH
Enforcement Tolerance: 5 MPH
Enforcement Limit: 31 MPH & Up
Percentage Above Limit: 5.6%
Enforcement Rating: **LOW**

Eastbound



Percent Above Limit: 5.0%
Enforcement Rating: LOW

Westbound



Percent Above Limit: 6.1%
Enforcement Rating: LOW

Combined

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
3	129	338	513	879	441	117	14	2	2	0	0	0	1

85 percentile = 26

Eastbound

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
3	93	177	249	401	170	50	6	0	1	0	0	0	1

85 percentile = 26

Westbound

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
0	36	161	264	478	271	67	8	2	1	0	0	0	0

85 percentile = 27

**Waukesha County Sheriff
City of Pewaukee
Pewaukee, WI**

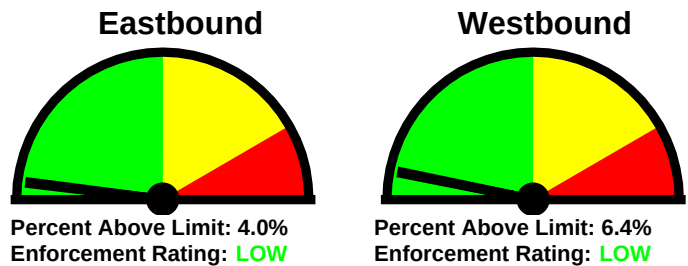
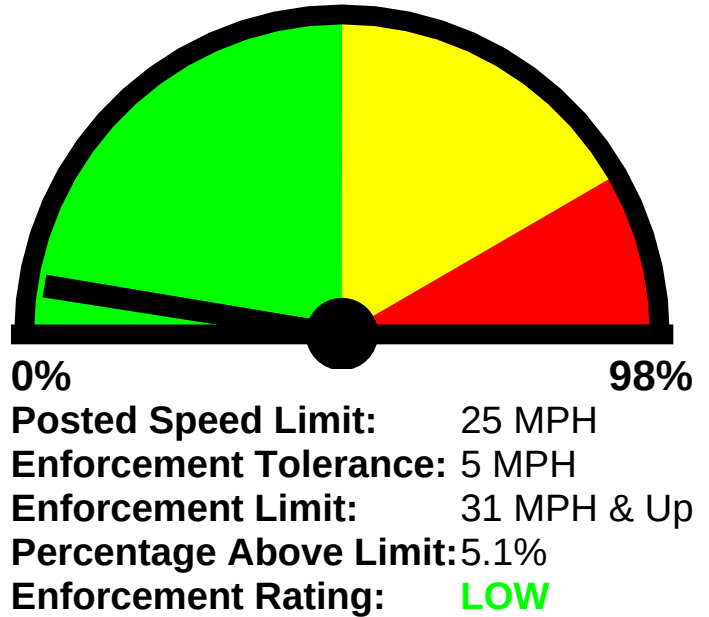
Speed Enforcement Evaluator

Location:
Oak Street

**Total Percentage of
Enforceable Violations**

Closest Cross Street:
Chicago Av

Analysis Dates:
Friday, October 01, 2021
Monday, October 11, 2021



Combined

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
5	67	269	543	756	378	95	8	0	3	3	0	0	0

85 percentile = 26

Eastbound

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
5	42	125	320	402	168	37	4	0	1	2	0	0	0

85 percentile = 25

Westbound

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
0	25	144	223	354	210	58	4	0	2	1	0	0	0

85 percentile = 27

**CITY OF PEWAUKEE
PUBLIC WORKS COMMITTEE AGENDA ITEM 10.2.**

DATE: November 11, 2021

DEPARTMENT: PW - Streets

PROVIDED BY: Magdelene Wagner

SUBJECT:

Discussion and possible action regarding the request to create a no parking zone along one side of Rocky Point Road.

BACKGROUND:

Aldersperson Clark

FINANCIAL IMPACT:

RECOMMENDED MOTION:

Committee members recommend a survey of the Rocky Point Road area be conducted to determine feedback from the residents on the change to no parking on one side of the street.

ATTACHMENTS:

Description

Aldersperson Request

Aldersperson Letter

Sheriff Report

Ordinance Chapter 5.04

Wagner, Magdelene

From: Clark, Ian
Sent: Tuesday, September 7, 2021 3:27 PM
To: Wagner, Magdelene
Cc: Klein, Scott
Subject: Constituents on Oak/Peninsula and Rocky Point

Follow Up Flag: Follow up
Flag Status: Flagged

Maggie and Scott,

Constituents on Oak, Peninsula, and Rocky Point have requested 2 things: (1) a 3-way stop sign at the intersection of Oak and Peninsula; and (2) single-side parking along Rocky Point Road.

Peninsula is notorious for speeders, especially when rounding the corner near Peninsula. Residents have noted to me that they would appreciate additional stop signs, particularly because it is a popular corner for children on bikes to stop and play.

As to Rocky Point: it is a relatively narrow road, and residents have noted that they have to weave in and out to avoid parked cars, particularly when a resident is hosting a party. They have no preference as to which side of the road has the mandated parking, for they are mostly concerned with the flow of traffic.

Let me know if you have any other questions or concerns, I'd be happy to help.

Best,

Ian

To the Public Works Committee:

Citizens have reported speeding and parking concerns along Oak Street and Rocky Point Road. I would like to address their concerns through this letter, which is divided into two parts:

(1) Speeding on Oak Street and (2) Single-Sided Parking on Rocky Point Road.

(1) SPEEDING ON OAK STREET.

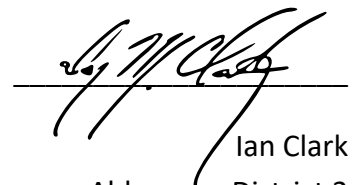
Residents on Oak Street and its arterial streets are seriously concerned about speeding. Particularly, drivers “slingshot” around the corner between W274N2822 Oak St and N28W27683 Peninsula Dr, using the momentum generated from the curve to race down Oak Street. Residents request additional stop signs at the intersection between Oak and Peninsula, as they think it will help moderate speed between the curve and residential properties. There is a stop sign at this intersection already, but it is to moderate drivers on Peninsula, not Oak Street. Please consider adding an additional stop sign, or a permanent, radar speed sign to better regulate speed in the area.

(2) SINGLE-SIDED PARKING ON ROCKY POINT ROAD.

Other residents request single-sided parking along Rocky Point Road. Rocky Point is relatively narrow, especially between W278N2946 and W279N2862 Rocky Point Rd.

Recently, Rocky Point Road residents have hosted several large gatherings, causing their guests to park on either side of the road. By parking on both sides of the road, pedestrians have little room to walk, and other drivers must weave in-and-out between parked cars. Cars passing through must travel one at a time, effectively turning Oak Street into a one way. Cars are parked so close together that residents are concerned that fire trucks and ambulances cannot pass through safely and arrive in time to their intended destination. Single-sided parking already exists along Rocky Point Road near the intersection of Rocky Point and Oak Street. Extending this single-sided parking could alleviate the resident’s concerns.

In sum, I request that this Committee consider providing Oak Street with additional stop signs or radar equipment and provide single-sided parking on Rocky Point Road.


Ian Clark
Alderman, District 2



Waukesha County Sheriff's Office
City of Pewaukee Contract
Lieutenant Marc Moonen
Lieutenant Anthony Sheckles

Sheriff Eric Severson

To: City of Pewaukee Director of Public Works/Engineer Magdelene Wagner

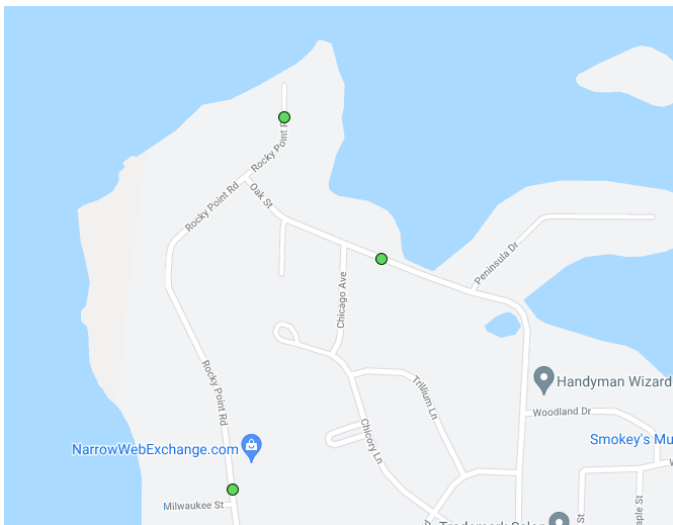
From: Lieutenant Marc R. Moonen

Ref: Feedback on a 3-way stop sign at the intersection of Oak and Peninsula; and single-side parking along Rocky Point Road

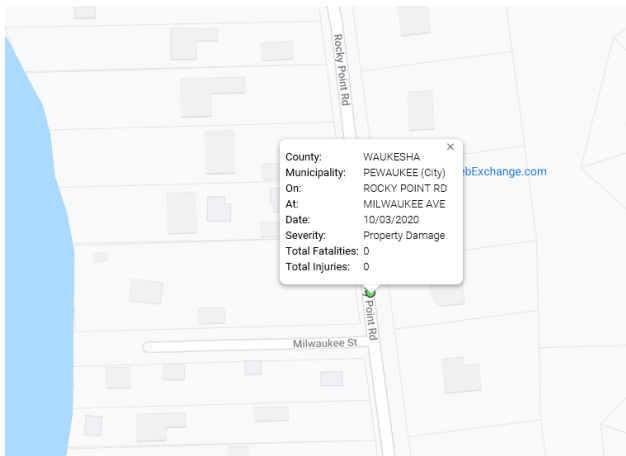
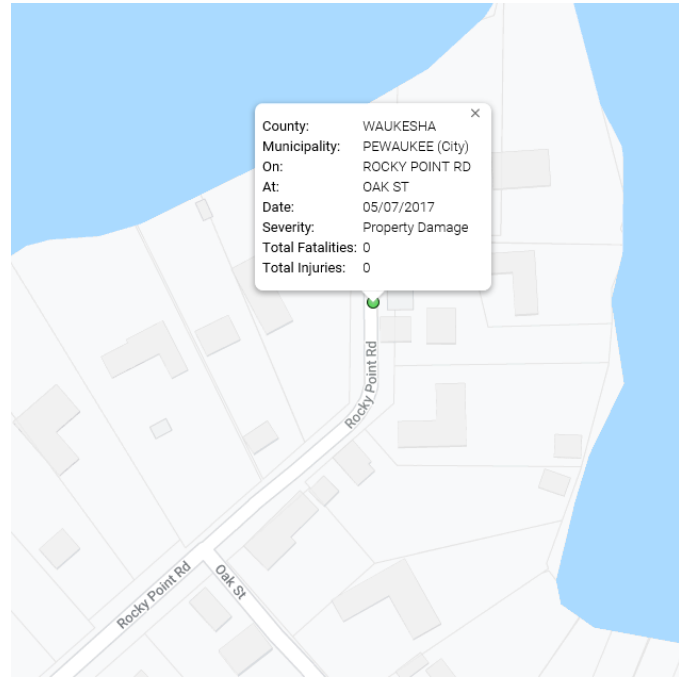
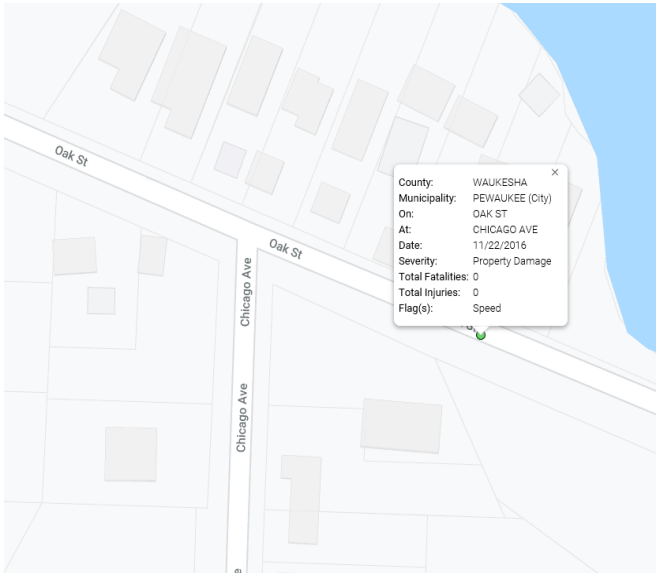
Date: October 14, 2021

SCOPE: This document shall serve as an official response to provide comment for the consideration of a 3-way stop sign at the intersection of Oak and Peninsula; and single-side parking along Rocky Point Road. I have considered sources of public records relating to traffic count volumes and motorist speed data collection, along with traffic crash frequency and severity.

RESEARCH & FINDINGS: This area of focus has long been an area of study for the Waukesha Sheriff's Office while serving the residents in the City of Pewaukee with police services. Residents of the Rocky Point have previously made complaints of speeding violations in the subdivision. These complaints have been researched and most always found to be infrequent, isolated incidents with the very low propensity of constant traffic law violations.



The area of review was focused on the Rocky Point subdivision; Rocky Point Road north of Milwaukee Street, all of Peninsula Drive, and Oak Street north of Wildflower Road.



Crash Data was evaluated for the last five years and the above three crashes occurred. No fatalities or injuries resulted from the crashes and one listed speed as a contributing factor in 2016.

Speed analysis was also completed on Oak Street near Chicago Avenue from Friday, October 1, 2021 thru Monday, October 11, 2021. The posted speed limit is 25 MPH and the enforcement limit recorded violations at 31+ MPH. Of all vehicles that passed this recorder, 5.1% were recorded above the enforcement limit, which is considered a low need for enforcement. Please see the attached report for additional information.

Speed analysis was also completed on Oak Street near Peninsula Drive from Friday, September 17, 2021 thru Monday, September 27, 2021. The posted speed limit is 25 MPH and the enforcement limit recorded violations at 31+ MPH. Of all vehicles that passed this recorder, 5.6% were recorded above the enforcement limit, which is considered a low need for enforcement. Please see the attached report for additional information.

Speed analysis was also completed on Oak Street near Woodland Drive from Sunday, July 11, 2021 thru Thursday, July 22, 2021. The posted speed limit is 25 MPH and the enforcement limit recorded violations at 31+ MPH. Of all vehicles that passed this recorder, 6.7% were recorded above the enforcement limit,

which is considered a low need for enforcement. Please see the attached report for additional information.

Speed analysis was also completed on Oak Street near Woodland Drive from Sunday, December 6, 2020 thru Wednesday, December 16, 2020. The posted speed limit is 25 MPH and the enforcement limit recorded violations at 32+ MPH. Of all vehicles that passed this recorder, 1.4% were recorded above the enforcement limit, which is considered a low need for enforcement. Please see the attached report for additional information.

Speed analysis was also completed on Rocky Point Road near Milwaukee Street from Monday, November 16, 2020 thru Friday, November 27, 2020. The posted speed limit is 25 MPH and the enforcement limit recorded violations at 32+ MPH. Of all vehicles that passed this recorder, 7.2% were recorded above the enforcement limit, which is considered a low need for enforcement. Please see the attached report for additional information.

Speed analysis was also completed on Oak Street near Wildflower Road from Sunday, November 1, 2020 thru Wednesday, November 11, 2020. The posted speed limit is 25 MPH and the enforcement limit recorded violations at 32+ MPH. Of all vehicles that passed this recorder, 2.7% were recorded above the enforcement limit, which is considered a low need for enforcement. Please see the attached report for additional information.

Speed analysis was also completed on Rocky Point Road near Milwaukee Street from Friday, September 25, 2020 thru Monday, October 5, 2020. The posted speed limit is 25 MPH and the enforcement limit recorded violations at 32+ MPH. Of all vehicles that passed this recorder, 6.9% were recorded above the enforcement limit, which is considered a low need for enforcement. Please see the attached report for additional information.

RECOMMENDATION: This response will provide comment for the consideration of a 3-way stop sign at the intersection of Oak and Peninsula; and single-side parking along Rocky Point Road.

It is recommended that the current single stop sign on Peninsula Road remain and no additional stop signs be installed on Oak Street. The location was studied, and reports indicate that this is considered a low need for enforcement. The location yields a low frequency of speeding and no instances of vehicular and/or pedestrian related crashes.

It is recommended that the current dual-side parking along Rocky Point Road remain, and no additional restrictions imposed. The location was studied, and reports indicate that this is considered a low need for enforcement. The location yields a low frequency of speeding and only one instance of vehicular and zero pedestrian related crashes. Ample off-street parking exists in the area, which yields a low volume of vehicles that are parked on the road. In the instances of on street utilization of parking, this likely causes motorists to slow their vehicle speeds as peripheral traffic and pedestrian scanning is limited to the motorists.

Waukesha County Sheriff
City of Pewaukee
Pewaukee, WI

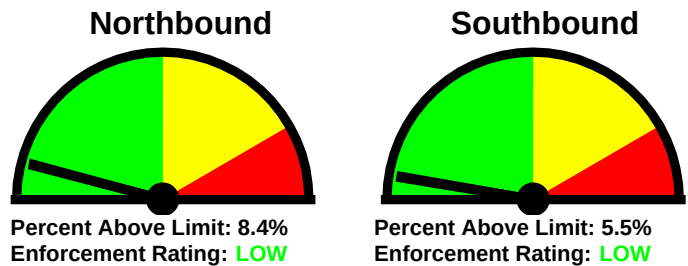
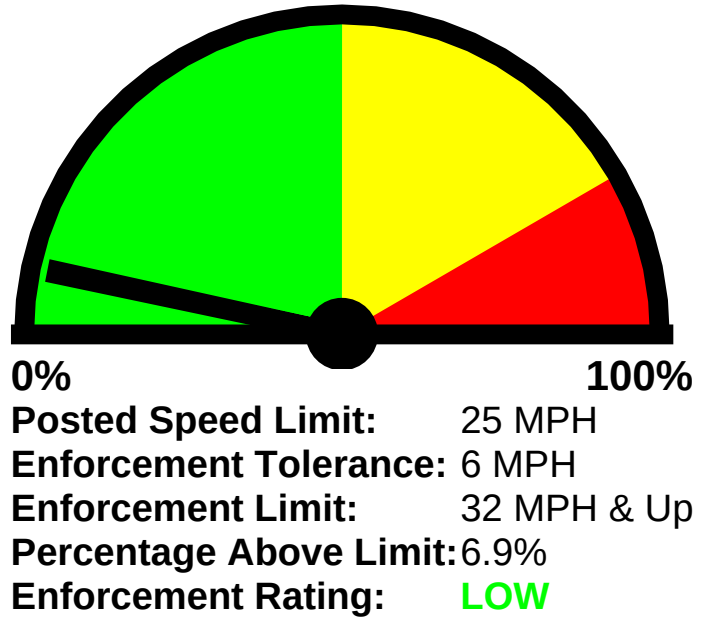
Speed Enforcement Evaluator

Location:
Rocky Point Rd

**Total Percentage of
Enforceable Violations**

Closest Cross Street:
Milwaukee St

Analysis Dates:
Friday, September 25, 2020
Monday, October 05, 2020



Combined

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
5	77	260	501	1390	1463	347	36	7	5	0	1	0	18

85 percentile = 29

Northbound

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
5	55	111	255	655	701	191	26	4	5	0	1	0	12

85 percentile = 29

Southbound

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
0	22	149	246	735	762	156	10	3	0	0	0	0	6

85 percentile = 28

Waukesha County Sheriff
City of Pewaukee
Pewaukee, WI

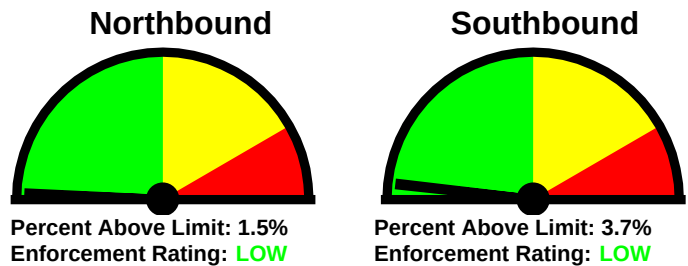
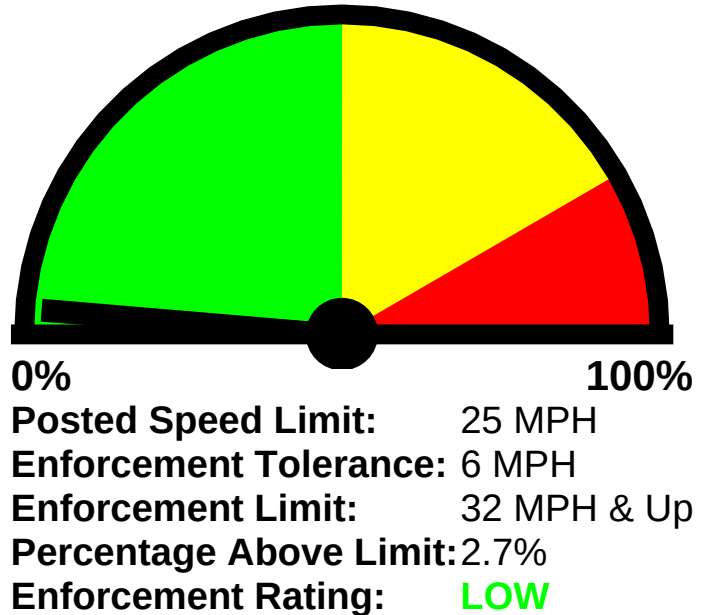
Speed Enforcement Evaluator

Location:
Oak Street

**Total Percentage of
Enforceable Violations**

Closest Cross Street:
Wildflower Road

Analysis Dates:
Sunday, November 01, 2020
Wednesday, November 11, 2020



Combined

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
2	151	656	779	629	485	96	14	1	0	1	0	0	0

85 percentile = 26

Northbound

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
2	142	347	372	277	168	25	3	0	0	0	0	0	0

85 percentile = 25

Southbound

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
0	9	309	407	352	317	71	11	1	0	1	0	0	0

85 percentile = 27

**Waukesha County Sheriff
City of Pewaukee
Pewaukee, WI**

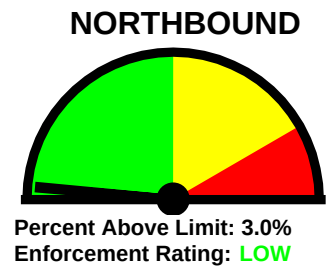
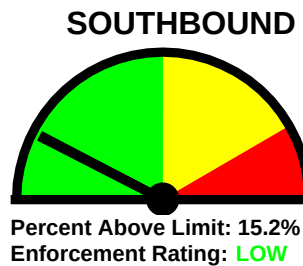
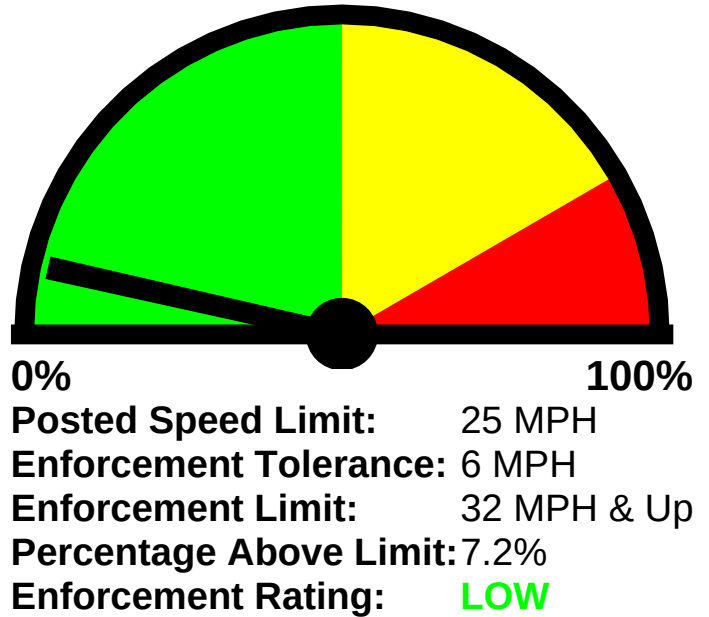
Speed Enforcement Evaluator

Location:
ROCKY POINT RD

**Total Percentage of
Enforceable Violations**

Closest Cross Street:
MILWAUKEE AV

Analysis Dates:
Monday, November 16, 2020
Friday, November 27, 2020



Combined

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
1	16	46	215	584	561	133	13	0	0	1	0	0	4

85 percentile = 28

SOUTHBOUND

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
1	13	18	49	187	174	82	9	0	0	1	0	0	4

85 percentile = 31

NORTHBOUND

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
0	3	28	166	397	387	51	4	0	0	0	0	0	0

85 percentile = 28

**Waukesha County Sheriff
City of Pewaukee
Pewaukee, WI**

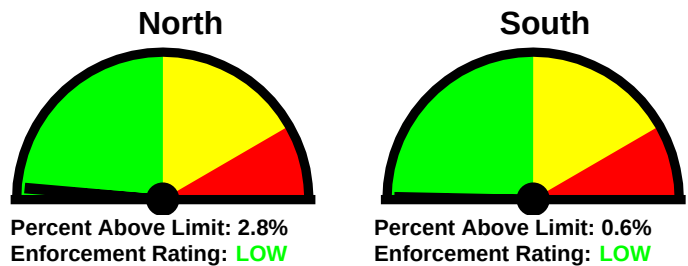
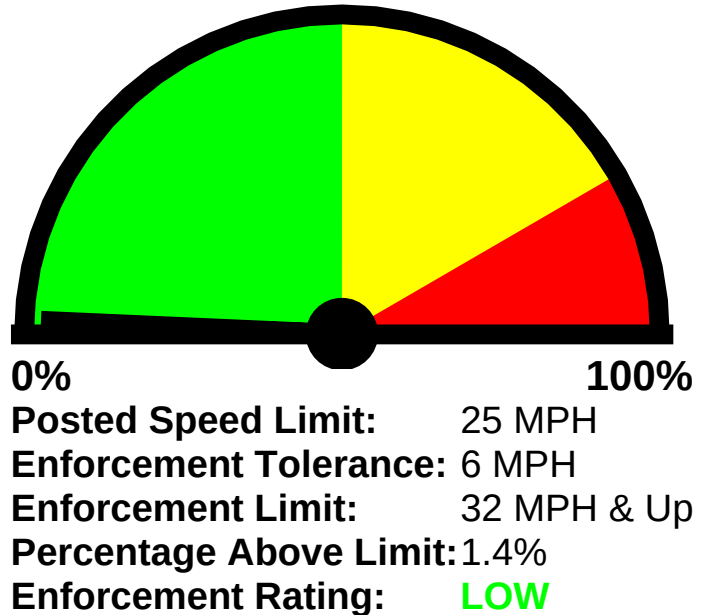
Speed Enforcement Evaluator

Location:
Oak St

**Total Percentage of
Enforceable Violations**

Closest Cross Street:
Woodland Dr

Analysis Dates:
Sunday, December 06, 2020
Wednesday, December 16, 2020



Combined

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
0	22	180	276	680	315	32	2	0	1	1	0	0	0

85 percentile = 26

North

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
0	10	24	116	260	116	15	0	0	1	1	0	0	0

85 percentile = 26

South

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
0	12	156	160	420	199	17	2	0	0	0	0	0	0

85 percentile = 26

**Waukesha County Sheriff
City of Pewaukee
Pewaukee, WI**

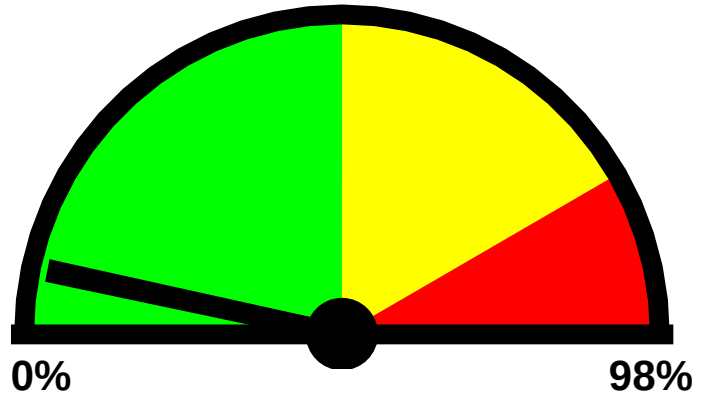
Speed Enforcement Evaluator

Location:
Oak Street

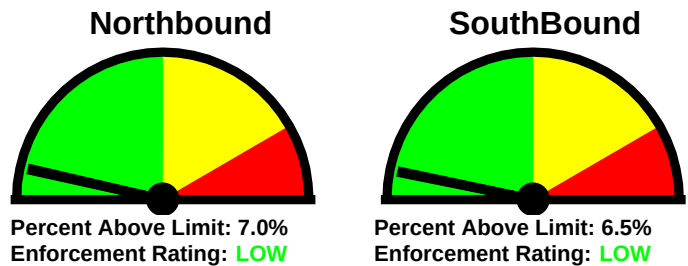
**Total Percentage of
Enforceable Violations**

Closest Cross Street:
Woodland Drive

Analysis Dates:
Sunday, July 11, 2021
Thursday, July 22, 2021



Posted Speed Limit: 25 MPH
Enforcement Tolerance: 5 MPH
Enforcement Limit: 31 MPH & Up
Percentage Above Limit: 6.7%
Enforcement Rating: **LOW**



Combined

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
5	69	289	779	2490	2136	386	24	1	1	2	1	0	2

85 percentile = 28

Northbound

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
5	60	206	383	1218	1013	200	11	1	1	2	1	0	2

85 percentile = 28

SouthBound

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
0	9	83	396	1272	1123	186	13	0	0	0	0	0	0

85 percentile = 28

**Waukesha County Sheriff
City of Pewaukee
Pewaukee, WI**

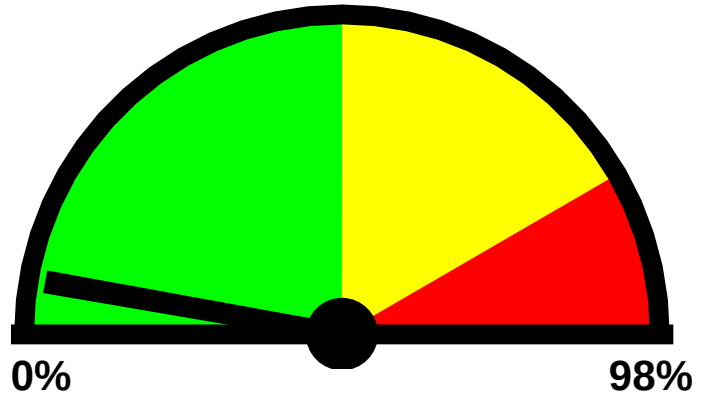
Speed Enforcement Evaluator

Location:
Oak Street

**Total Percentage of
Enforceable Violations**

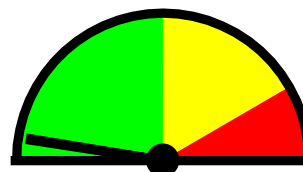
Closest Cross Street:
Peninsula Dr

Analysis Dates:
Friday, September 17, 2021
Monday, September 27, 2021



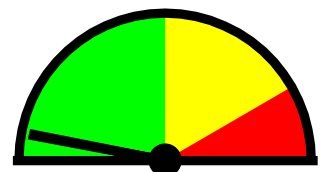
Posted Speed Limit: 25 MPH
Enforcement Tolerance: 5 MPH
Enforcement Limit: 31 MPH & Up
Percentage Above Limit: 5.6%
Enforcement Rating: **LOW**

Eastbound



Percent Above Limit: 5.0%
Enforcement Rating: **LOW**

Westbound



Percent Above Limit: 6.1%
Enforcement Rating: **LOW**

Combined

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
3	129	338	513	879	441	117	14	2	2	0	0	0	1

85 percentile = 26

Eastbound

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
3	93	177	249	401	170	50	6	0	1	0	0	0	1

85 percentile = 26

Westbound

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
0	36	161	264	478	271	67	8	2	1	0	0	0	0

85 percentile = 27

**Waukesha County Sheriff
City of Pewaukee
Pewaukee, WI**

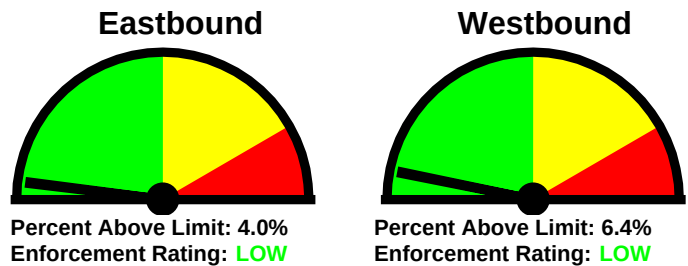
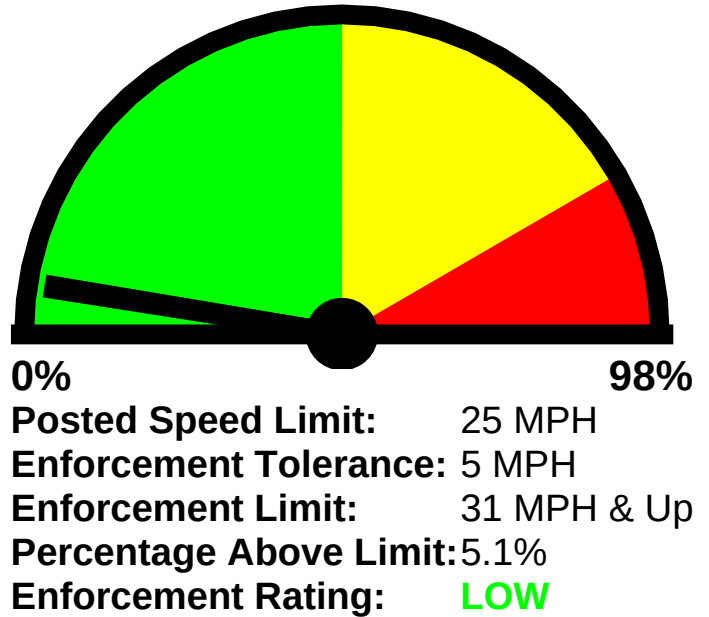
Speed Enforcement Evaluator

Location:
Oak Street

**Total Percentage of
Enforceable Violations**

Closest Cross Street:
Chicago Av

Analysis Dates:
Friday, October 01, 2021
Monday, October 11, 2021



Combined

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
5	67	269	543	756	378	95	8	0	3	3	0	0	0

85 percentile = 26

Eastbound

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
5	42	125	320	402	168	37	4	0	1	2	0	0	0

85 percentile = 25

Westbound

1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65
0	25	144	223	354	210	58	4	0	2	1	0	0	0

85 percentile = 27

- (b) **Violations Prohibited.** When official traffic control devices giving notice of the restrictions, prohibitions and limitations shown on the Official Traffic Map are erected and maintained in accordance with the provisions of this section a violation of the restriction, prohibition or limitation shown on the Official Traffic Map shall be a violation of the provisions of this code. Nothing herein shall be interpreted to require that all signs be shown on the Official Traffic Map, or to exempt compliance with applicable laws in the event the actual signage is not reflected in the Official Traffic Map.
- (c) **Map to be Maintained.** A copy of the Official Traffic Map shall be maintained and displayed in the office of the City Clerk.
- (d) **Additions to Map.** The Common Council may from time to time make additions to or deletions from the Official Traffic Map by resolution and the City Engineer or designated representative shall keep such Official Traffic Map current.
- (e) Nothing herein shall be interpreted to restrict the locations where signs may be placed to only those places depicted on the Official Traffic Map. Signs shall be erected in such locations and manner as to give adequate warning to users of the street, alley or highway in question.
- (4) **Prohibited Signs and Markers in Highways.** No person, other than an officer authorized by this Code to erect and maintain official traffic control devices or his or her designee, shall place within the limits of any street or highway maintained by the community any sign, signal, marker, mark or monument unless permission is first obtained from the Public Works Department or State Highway Commission. Any sign, signal, marker, mark or monument placed or maintained in violation of this subsection shall be subject to removal as provided in Section 5.03, Subsection 5.
- (5) **Removal of Unofficial Signs, Markers, Signals and Traffic Control Devices.** The Public Works Department may remove any sign, signal, marking or other device which is placed, maintained or displayed in violation of this Code or state law. Any charge imposed against premises for removal of a prohibited or illegal sign, signal, marking or device shall be reported by the Police Chief to the City Common Council for review and certification at its next regular meeting following the imposition of the charge. Any charge not paid on or before the next succeeding November 15 shall be placed upon the tax roll for collection as other special municipal charge.
- (6) **Vehicles must Stop.** It shall be unlawful in the City of Pewaukee for the operator of any vehicle, and every device in, upon or by which any person or property is or may be transported or drawn upon a public highway, to fail to come to a full and complete stop within thirty (30) feet of the main limits of the intersection, at which has been erected an "official stop sign" or traffic signal, designating an artery for through traffic.

5.04 PARKING ZONES LIMITATIONS AND REGULATIONS.

- (1) **General Parking Restrictions.** (Rep.&Rec.#10-06)
 - (a) It shall be unlawful in the City of Pewaukee for the owner, person, firm, partnership or corporation nor any officer, member, agent, servant, employee of any firm, partnership or corporation or operator of any vehicle or any device in, upon or by which any person or property is or may be transported or drawn upon a public highway to park, stop, leave standing, or suffer any such vehicle or devise at the curb, shoulder, or edge of any highway

area, roadway or fire lane in the City of Pewaukee upon which or upon a portion of which any sign has been erected restricting, limiting or prohibited in any way the same.

(2) General "No Parking" Zones. No owner, person, firm, partnership or corporation nor any officer, member, agent, servant, employee of any firm, partnership or corporation or operator shall:

- (a) Stop or leave standing any vehicle, whether attended or unattended and whether temporarily or otherwise, in any of the following places:
 - 1. Within the driving lane.
 - 2. Alongside another vehicle properly parked along such highway.
 - 3. On a sidewalk or sidewalk area.
 - 4. Alongside or opposite any highway excavation or obstruction, when such stopping would obstruct traffic or when pedestrian traffic would be required to travel in the roadway.
 - 5. Upon any portion of highway where and at the time when stopping or standing is prohibited by official traffic signs indicating the prohibition of any stopping or standing.
 - 6. No truck, tractor, trailer, or semi trailer as defined by Section 340.01 vehicle code definition (73) (71) and (57) W.S.A. shall be parked on any residential street between the hours of 2:00 A.M. and 6:00 A.M. on any day of the week.
- (b) Stop or leave standing any vehicle in any of the following places except temporarily for the purpose of and while actually engaged in loading or unloading or in receiving or discharging passengers and while the vehicle is attended by a licensed operator so that it may promptly be moved in case of an emergency or to avoid obstruction of traffic:
 - 1. In a loading zone.
 - 2. Within fifteen (15) feet of a fire hydrant, unless a greater distance is indicated by an official traffic sign.
 - 3. Within four (4) feet of the entrance to any alley or private driveway.
 - 4. Closer than thirty (30) feet to the driveway entrance to a fire station.
 - 5. Upon any portion of a highway where and at the time when parking is prohibited, limited or restricted by official traffic signs.
 - 6. With the wheels more than twelve (12) inches from the curb.
 - 7. Closer than two (2) feet to a vehicle parked to the front or rear.
 - 8. Upon any portion of a highway any vehicle displayed for sale.
 - 9. Without the permission of the owner or lessee of any public or private property, contrary to a posted sign thereon, if there is in plain view on such property a "No Parking" sign or a sign indicating limited or restricted parking.
- (c) Stop or leave standing any vehicle which in any way blocks the entrance to any private driveway or garage, without the consent of the owner of said driveway, so as to prevent free passage of vehicles.

- (d) Stop or leave standing any vehicle on a street in such a manner as to obstruct the free flow of traffic. Any such obstruction shall constitute an emergency condition detrimental to the health, safety, welfare, and good order of the general public in that the movement of food, fuel supplies, medical care, fire, health and police protection is impaired, as provided for in Section 66.325(2) of the Wis. Stats., and said vehicle may, at the direction of a law enforcement officer, be removed by the City or its representative after first attempting to give notice to the owner of said vehicle that the same must be removed. (Rep. & Rec. 09-21)
 - (e) The Director of Public Works or their designee may establish and direct the posting of temporary “no parking” zones within the City of Pewaukee as necessary. The Director shall provide notice to the Common Council regarding the temporary no parking zones, within 10 business days of making such decisions. (Cr. 10-02)
- (3) Specific "No Parking" Zones. No owner, person, firm, partnership, or corporation, nor any officer, member or agent, servant, employee of any firm, partnership, corporation or operation shall: (Rep. & Rec. 06-18)
- (a) To put or leave a vehicle or equipment for a time in a certain area unattended:
 - 1. On the east side of C.T.H. "SS" between Edgewater Drive on the south and Lehman (Edgewood Avenue) on the north.
 - 2. On either side of Duplainville Road from its intersection with Green Road to its intersection with Capitol Drive (S.T.H. "190"), with the exception that a loading zone will be provided on said Duplainville Road on the east side of the road where posted by the City Highway Department with the appropriate "Loading Zone" signs.
 - 3. On WEPCO easements and right-of-way in the City of Pewaukee. The City Highway Superintendent is authorized and instructed to place "No Parking" signs at all locations where he deems necessary to warn the public of this parking restriction. This Code shall not apply to WEPCO trucks and other vehicles owned or authorized by the WEPCO.
 - 4. On either side of North Avenue from its intersection with Watertown Road south to its end.
 - 5. On either side of Oak Street from Woodland Drive to Rocky Point Road.
 - 6. On the east side of Oakwood Lane from Springdale Park north to Aspenwood Lane.
 - 7. On the south side of Meadowood Lane from Emberwood Court to Alderwood Lane.
 - 8. On the west side of Springdale Road.
 - 9. On Lindsay Road.
 - 10. On either side of Milwaukee Avenue.
 - 11. On either side of Hillside Grove Road and the south side of Parkside Lane. (Rep. & Rec. 09-09)
 - 12. On either side of Meadowood Lane from Elmwood Drive to Alderwood Lane.
 - 13. On the west side of Oakridge Drive 450 feet south of Bluemound Road (C.T.H. "JJ").
 - 14. Silvernail Road in the City from University Drive east to Grandview Blvd.

(C.T.H. “T”).

15. On the west side of Chicago Avenue.
 16. On the west side of Oak Street from Prospect Avenue (C.T.H. “SS”) south to end.
 17. On either side of Coachman Drive from Steeplechase Drive to Pewaukee School District parcel.
 18. On Edgewater Drive – on the south side of the road east of C.T.H. “SS”, on the north side of the road from two hundred thirty five feet (235’) east of C.T.H. “SS” to Lakeview Drive, on the north side of the road from west of C.T.H. “SS” to the City Limits, and on Both Sides of Edgewater Drive from Lakeview Drive easterly to Spring Creek Drive. (Cr. 09-14; Rep. & Rec. 10-16, 13-15)
 19. Along both sides of Lakeview Drive from Edgewater Drive southerly approximately 370’ ending at the north side of the driveway to W277 N2146 Lakeview Drive (on east side of Lakeview Drive). (Cr. 13-14)
 20. No Parking on E. Fieldhack Drive between Meadowbrook Road (CTH G) and Milkweed Lane (easterly intersection of E. Fieldhack Drive and Milkweed Lane), further described as: (Cr. 15-01)
 - a. No Parking on both sides of E. Fieldhack Drive from Meadowbrook Road (CTH G) easterly approximately 1,200 feet to the intersection with Conservancy Drive.
 - b. No Parking on the north side of E. Fieldhack Drive from the intersection of Conservancy Drive easterly approximately 435 feet to the intersection of Tall Reeds Lane (the westerly intersection of E. Fieldhack Drive and Tall Reeds Lane).
 - c. No Parking on both sides of E. Fieldhack Drive from the westerly intersection of E. Fieldhack Drive and Tall Reeds Lane easterly approximately 615 feet to the driveway entrance to the Spice Creek Rec Center.
 - d. No Parking on the north side/westerly side of E. Fieldhack Drive from the driveway entrance to the Spice Creek Rec Center easterly approximately 850 feet to the intersection with Golf View Lane (the northerly intersection of E. Fieldhack Drive and Golf View Lane).
 - e. No Parking on the east side of E. Fieldhack Drive from the northerly intersection of Golf View Lane and E. Fieldhack Drive northerly approximately 1,400 feet to the intersection of E. Fieldhack Drive and Milkweed Lane (the easterly intersection of E. Fieldhack Drive and Milkweed Lane).
- (b) Park or leave an item designed or constructed to be towed or hauled by a motor vehicle on*: (Rep. & Rec. 09-16)
1. Lakeview Boulevard
 2. Woodland Drive
 3. Ash Street
 4. Maple Street (north of C.T.H. “SS”)
 5. Front Street
 6. Elm Avenue/Street

7. Arlington Drive
8. Arlington Court
9. Fairmount Court
10. Covington Court
11. Orchard Lane (from Arlington Court to 575 feet east of Arlington Court)

* Except trucks or trailers owned by persons or companies which hold an active building permit and are engaged in construction on adjacent property.

- (c) Park or leave any motor vehicle standing on either side for the entire length of the following industrial/commercial development streets without permission of a law enforcement officer or in the case of local temporary construction, the Building Inspector/Zoning Administrator: (Rep. & Recr. 09-21)

1. All streets in Bluemound Industrial Park (Westmound, Eastmound, Northmound, Saratoga Rd., Cheaney Rd., Johnson Drive or Johnson Road).
2. All streets in Jericho Industrial Park (Jericho Drive, Jericho Court).
3. All streets in Roundys/Opus Industrial Park (Paul Road, Roundys Drive, Woodgate Rd, Creative Way, Roundy Circle).
4. Westwood Drive.
5. Tower Place.
6. All streets in WEPCO Stone Ridge Development area (Rockwood Drive, Busse Road, Stoneridge Dr. (east of Busse Rd.), Corporate Court, Ridgeview Parkway, and Ridgeview Parkway Court).
7. Badinger Road.
8. Marjean Lane.
9. Joseph Road.
10. Foster Court.
11. Nancy's Court.
12. Riverwood Drive.
13. Paul Court.
14. Highfield Drive.
15. Schuett Drive.

(4) Parked in a Tow-away Zone.

- (a) Any vehicle parked or stopped on a section of highway marked as a tow-away zone during the time in which such parking or stopping is prohibited, may, at the direction of a law enforcement officer, be removed by the towing company under contract with the City of Pewaukee to the storage area maintained by such company and kept there until the owner shall present to the towing company a release from a law enforcement officer. (Rep. & Recr. 09-21)

- (b) The following areas of the City of Pewaukee public streets and highways are hereby

designated as tow-away zones: (Rep. & Ren. 09-14)

1. Edgewood Avenue, both sides, from C.T.H. "SS" east to intersection of Edgewood Avenue (north-south portion of Edgewood Avenue).
 2. The east side of the north bound lane of Lakeview Boulevard from C.T.H. "SS" to the intersection of Woodland Drive and the west side of the south bound lane of Lakeview Boulevard from C.T.H. "65" to the intersection of Woodland Drive.
- (5) Winter Parking Regulations. It shall be unlawful in the City of Pewaukee for the owner, person, firm, partnership or corporation nor any officer, member, agent, servant, employee of any firm, partnership or corporation or operator of any vehicle or any device in, upon or by which any person or property is or may be transported or drawn upon a public highway to park, stop, leave standing, or suffer any such vehicle or device at the curb, shoulder, or edge or any highway area, roadway or fire lane in the City of Pewaukee during the months of November, December, January, February and March of each year.
- (6) Other "Parking" Limitations.
- (a) Open parking of automobiles accessory to a residential use shall be limited to no more than those actually owned or leased by the residents. Temporary parking of guests shall be permitted, not to exceed three (3) days. In the event the owner of the premises requires parking for additional automobiles, the owner may make application to the City of Pewaukee on forms provided by the City and if good cause is shown for the need for additional vehicle parking other than allowed herein a permit will be issued on a yearly basis. Law enforcement officers for the City shall administer the provisions of this paragraph. (Rep. & Recr. 09-21)
 - (b) No trucks, commercial trailers, mobile homes, camping trailers, campers, buses, or other vehicles not commonly known of as an automobile shall be parked on a lot in any district except where permitted as a use in an industrial or commercial district, as hereinafter provided or as follows:
 1. Parking of agricultural equipment shall be permitted without limitation where accessory to a permitted agricultural use.
 2. Parking of one panel or pickup truck on the owner's premises shall be permitted in any district.
 3. Unenclosed parking of no more than one mobile home, camper home, camping trailer or camper on an occupied residential lot where the length of said vehicle is twenty-four (24) feet or less (excluding therefrom the length of the trailer's tongue) shall be permitted in any district and only when the vehicle is actually owned or leased by the resident. All other vehicles other than trucks and commercial trailers prohibited in this Code shall be permitted to temporarily park on a residential lot for no more than three (3) consecutive or ten (10) cumulative days in any twelve (12) month period. Those vehicles described above longer than twenty-four (24) feet in length (excluding tongue or draw-bar) may be permitted for longer periods of time by special permission of the City Common Council. Applicant shall make application for longer parking of those

vehicles by filing with the City Clerk a sketch of his lot, the location of the proposed unit to be parked, the location of his neighbor's buildings. The City Common Council, after recommendation of the Building Inspector/Zoning Administrator and after on-site observation, may grant a yearly parking permit to those units described herein where it appears that the parking of that mobile home, camper home, camping trailer or camper in excess of twenty-four (24) feet in length will not be an eyesore, nuisance or hazard to any adjoining properties or to the residential neighborhood in which it shall exist. No such vehicle units may be used as living quarters.

4. Parking of trucks and commercial trailers shall be permitted in those districts where not permitted as a use only when making deliveries or pickups to the building where parked and then only during the hours of 7:00 a.m. to 7:00 p.m. and, only while actually making said delivery or pickup. The temporary, overnight parking of truck-trailers may be permitted in a residential zoning district when the owner/operator of the truck-trailer is being temporarily parked, and the City law enforcement office is duly notified of the time(s) in advance of such overnight parking. For the purposes of this Code, "temporary, overnight parking" is defined as not more than one continuous twenty-four (24) hour period twice a month. (Rep. & Rec. 09-21)
- (7) Registration record of vehicle as evidence. When any vehicle is found upon a street or highway in violation of any provision of this code regulating the stopping, standing or parking of vehicles and the identity of the operator cannot be determined, the owner as shown by the ownership registration of the vehicle supplied by the Wisconsin Department of Transportation, or a comparable authority of any other State, shall be deemed to have committed the violation for purposes of enforcement of this Code and shall be subject to the applicable forfeiture penalty; provided the defenses defined and described in Section 346.485(5)(b), Wis. Stats., shall be a defense for an owner charged with such violation. (Renumbered 09-21)

5.05 VEHICULAR WEIGHT LIMITATIONS. (Rep. & Rec. 10-15)

- (1) **CLASS "B" HIGHWAYS DESIGNATED.** All streets and alleys within the City except the following enumerated streets and alleys are hereby designated Class "B" highways and shall be subject to the weight limitations imposed by § 348.16, Wis. Stats.:
 - (a) All State Trunk Highways and connecting streets and all County Trunk Highways, unless otherwise designated by the County Board.
 - (b) Silvernail Road between Meadowbrook Road and CTH SS.
- (2) **SPECIAL AND SEASONAL WEIGHT LIMITATIONS. (Rep. & Rec. 16-05)**
 - (a) Section 349.16, Wis. Stats., is hereby adopted by reference. The City's Highway Superintendent (or Director of Public Works) shall have the authority to impose special or seasonal weight limits to prevent injury to the roadway of any highway, bridge or culvert within the jurisdiction of the City or for the safety of users of such highway, bridge or culvert and shall be responsible for erecting signs giving notice thereof in accordance with § 349.16, Wis. Stats.

**CITY OF PEWAUKEE
PUBLIC WORKS COMMITTEE AGENDA ITEM 10.3.**

DATE: November 11, 2021

DEPARTMENT: Public Works

PROVIDED BY: Magdelene Wagner

SUBJECT:

Discussion and possible action regarding changing the hours of operations for the Recycling Center.

BACKGROUND:

Committee Member Swan requested a discussion of the Recycling Center hours be discussed at a meeting.

The current hours of operation for the Recycling Center is Saturdays from 9 am to 3 pm year round, and Wednesdays from 1 pm to 6 pm from the 1st week of April through November.

Due to budget constraints and employee hour limits, the number of hours the Recycling Center operates must remain the same. For example, if it is the desire to have the Recycling Center close 1 hour later, then it must open 1 hour later.

In discussion with Recycling Center Staff, they reported drop-offs typically slow down between 2:30 and 2:45 pm. They have not had any residents complain about closing at 3:00 pm.

City Hall has also not received complaints about the Recycling Center closing at 3:00 pm.

Staff recommendation is to keep the hours of the Recycling Center as they currently are with no change.

FINANCIAL IMPACT:

RECOMMENDED MOTION:

Committee members concur with Staff recommendation of keeping recycling hours on Saturday from 9:00 am to 3:00 pm.

**CITY OF PEWAUKEE
PUBLIC WORKS COMMITTEE AGENDA ITEM 10.4.**

DATE: November 11, 2021

DEPARTMENT: Public Works

PROVIDED BY: Magdelene Wagner

SUBJECT:

Discussion and possible action regarding the Milkweed Lane traffic concerns.

BACKGROUND:

On October 18, 2021, we received a request from Alderperson Clark to investigate reports of speeding on Milkweed Lane. See attached email from the Alderperson who forwards the email from a resident. The Sheriff responded by placing monitoring equipment at this location (see his attached report). After discussing the results, the Sheriff moved the jamar equipment to Fieldhack to determine traffic counts along this roadway. Results are not in yet, but I will update as soon as they are available.

The resident has requested additional speed humps or stop signs. The speed humps that were installed were installed by special assessment in this area. If additional speed humps were to be installed, we would need a request from the homeowner's association (I believe there are multiple ones in this area) requesting these. In addition, the location of the speed humps will be difficult to site due to the multiple driveways and intersections throughout this corridor. This is one of the reasons the current speed humps are located where they are.

Stop signs are not effective in slowing down traffic. Due to the configuration of the intersections, stop signs would be excessive as they would likely need to be located at each leg of the horseshoe roadways.

Given the continuing complaints within the area, I recommend the area have a traffic study completed which could offer some recommendations to resolve the issue. This was not included in the 2022 budget. I would give a rough estimate to complete this study at \$25,000 to \$35,000, but would need to confirm this with a consultant who could complete this analysis.

FINANCIAL IMPACT:

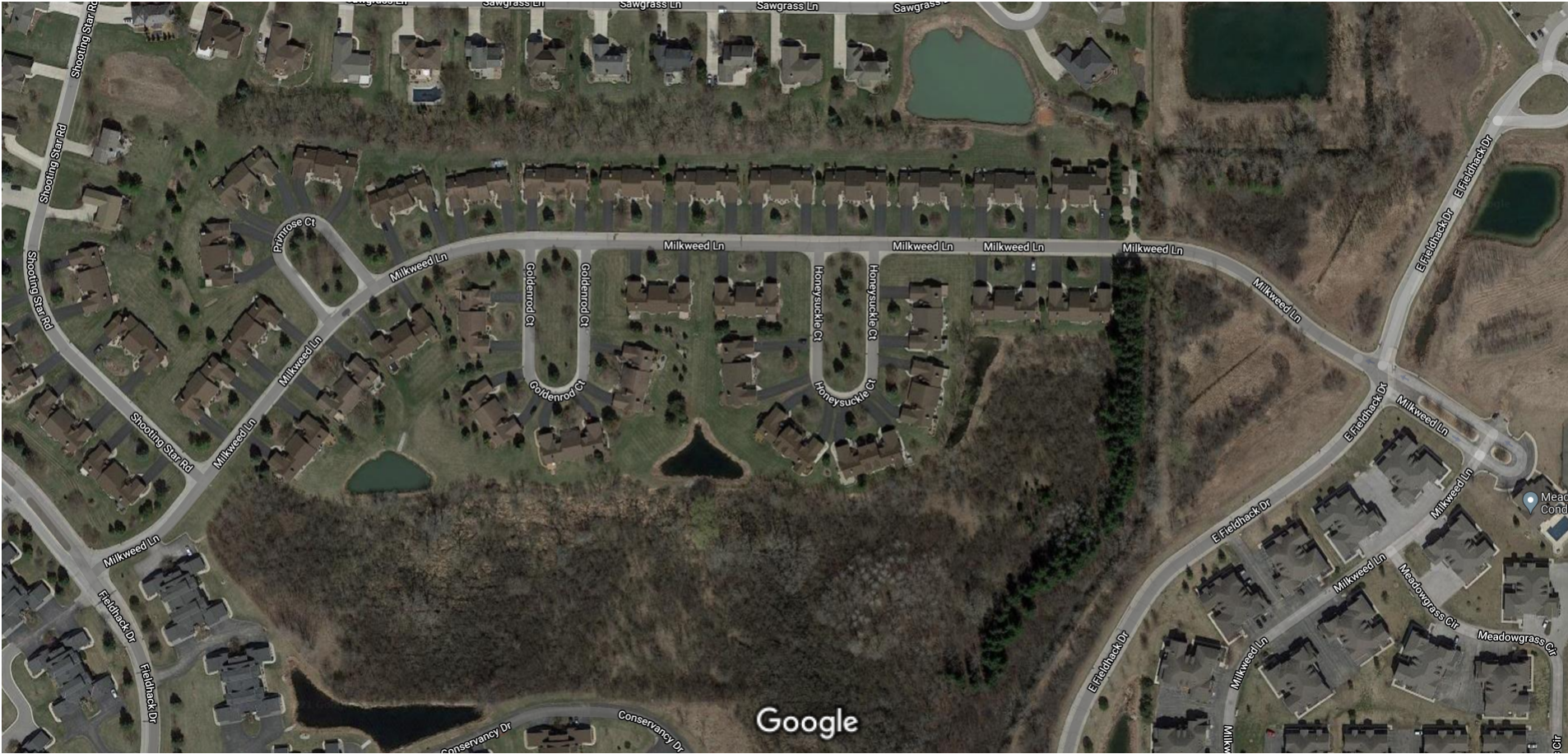
RECOMMENDED MOTION:

ATTACHMENTS:

Description

Map of Area

Alderperson Request



Imagery ©2021 Maxar Technologies, U.S. Geological Survey, USDA Farm Service Agency, Map data ©2021 100 ft

Wagner, Magdelene

From: Clark, Ian
Sent: Monday, October 18, 2021 11:09 AM
To: Wagner, Magdelene
Subject: Fwd: Speeding Traffic on Milkweed Lane

Hi Maggie,

Is there anyway that this issue could be brought before the planning commission this week?

I know that the speeding concerns & parking concerns on Oak and Peninsula was sent earlier this month.

Is there anyway that this information be included, too?

Best,

Ian

Begin forwarded message:

From: Ian Clark <clark@pewaukee.wi.us>
Subject: Re: Speeding Traffic on Milkweed Lane
Date: October 18, 2021 at 11:07:49 AM CDT
To: "Brown, Colleen" <brown@pewaukee.wi.us>
Cc: Bill or Sue Wroblewski <wroble5@hotmail.com>, Marc Moonen <mmoonen@waukeshacounty.gov>

Lt. Moonen, Alderwoman Brown, and Mr. & Mrs. Wroblewski,

Thank you for the email & forward.

I will forward your concerns to the planning commission, as they oversee the installation of safety signs and speed requirements.

They will debate this issue at either the next planning commission meeting on Oct. 21st, or the following one on Nov. 18th, depending on whether this email was sent prior to the deadline for the most upcoming meeting.

Thank you all for your time, and let me know if you need anything else.

Best,

Ian

On Oct 18, 2021, at 10:38 AM, Brown, Colleen <brown@pewaukee.wi.us> wrote:

Morning Bill.

I forwarded your email to Lt. Moonen as he has taken over our contract for Lt. Ripplinger (he retired). I also added Ian Clark as he is your new alderman as Jeff Kara didn't seek re-election this year. I am sorry that your area has continued to have speeding issues. This seems to be a theme all through Pewaukee and Waukesha county. I know that I am dealing with this issue in my neighborhood as well.

Regards Colleen Brown

Sent from my iPhone

On Oct 15, 2021, at 2:43 PM, Bill or Sue Wroblewski <wroble5@hotmail.com> wrote:

Hello Lt Ripplinger,

I am writing to you again, because of a serious problem with speeding on Milkweed lane.

I live on the corner of Milkweed land and Honeysuckle court

This morning and also 3 weeks ago there were 2 cars drag racing on Milkweed past my window on Honeysuckle ct . They start right after they come over the speed humps on the west end on Milkweed lane.

Three weeks ago, they were side by side past my window well over 60mph. This morning they went by at probably 50mph and climbing.

I have been trying to get stop sign installed, but someone said they may not help. But they could put 3 more speed bumps in, one at Honeysuckle ct, one at Goldenrod ct, and one at Primrose ct.

I have occasionally seen your cruisers in the area and I know they cannot be here all the time, but Thank You for their presence.

Can we get the speed trailer set up until a decision is made how to combat this new problem?

As always, Thank You for any help you can provide.

Bill Wroblewski
262-696-8072

From: Bill or Sue Wroblewski <wroble5@hotmail.com>
Sent: Wednesday, May 15, 2019 4:50 PM
To: Ripplinger, Brian E <BRipplinger@waukeshacounty.gov>
Cc: Brown, Colleen <brown@pewaukee.wi.us>; Kara, Jeff <kara@pewaukee.wi.us>
Subject: Re: Speeding Traffic on Milkweed Lane

Hello Lt Ripplinger,

Can we Please get some help with speeding cars on Milkweed In in princeton homes Meadowbrook Farms. In the morning they race to the west and someone this morning was going well over 50mph and probably close to 60 past my window. In the evening going east starting at about 4pm, they race as well and this has been going on for over 5 years. Some go so fast they are passing each other down milkweed. The motorcycles are just as bad also. Something has to be done. Stop signs or speed bumps should be installed and not the little bumps that were installed to the east end. They come over those little bumps and you can hear there engines as they soar past honeysuckle court. Someone walking is going to be killed.

Please Please Please can you help us

Please Help

Respectively,

Bill Wroblewski
N19W26583 Honeysuckle Ct
262-696-8072

From: Ripplinger, Brian E <BRipplinger@waukeshacounty.gov>
Sent: Friday, June 29, 2018 7:39 AM
To: 'Bill or Sue Wroblewski'
Cc: Brown, Colleen
Subject: RE: Speeding Traffic on Milkweed Lane

It is currently out but will place it on the list for deployment.

Lieutenant Brian Ripplinger
Waukesha County Sheriff's Department
City of Pewaukee Contract Supervisor
W240 N3065 Pewaukee Rd.
Office (262) 691-5730
Cell (262) 424-9106
briplinger@waukeshacounty.gov

From: Bill or Sue Wroblewski <wroble5@hotmail.com>
Sent: Thursday, June 28, 2018 1:49 PM
To: Ripplinger, Brian E <BRipplinger@waukeshacounty.gov>
Cc: Brown, Colleen <brown@pewaukee.wi.us>
Subject: Speeding Traffic on Milkweed Lane

Hello Lt Ripplinger,

Is it possible to have the speed trailer set up again on Milkweed Lane in Meadowbrook Farms princeton homes. Lots of speeding cars and motorcycles and many people are reaching speeds well over 45 mph

Still waiting for stop signs to be installed for over 4 years now. I hope I'm still alive to see them put in.

Thanks,

Bill Wroblewski

Wagner, Magdelene

From: Marc Moonen <MMoonen@waukeshacounty.gov>
Sent: Thursday, October 28, 2021 1:03 PM
To: Clark, Ian; Brown, Colleen
Cc: Lt Marc Moonen; Lt Anthony Sheckles; Wagner, Magdelene
Subject: RE: Speeding Traffic on Milkweed Lane

Keeping everyone informed on how we are doing with this request.

Yesterday, I had the pleasure to speak with Mr. Wroblewski about the issues he is seeing on Milkweed. He has a very reasonable position to this complaint and will continue to be a good community partner for us. I believe that he has some merits to his complaint that we can and are actively addressing within his neighborhood.

The JAMAR speed enforcement evaluator was deployed to Milkweed/Honeysuckle area for a week. The speed trailer continues to be stationed on Milkweed for the near future. Overall, the vehicle speed "percentage above the limits" only slightly increased from our last study of the area. (7% in 2017, 11% in 2019, and increased to 17% last week). In terms of percentage increase and overall speeding percentage, these numbers are low. Our traffic software program sees that anything less than 50% is a low enforcement rating. Obviously, we see that is a large range and aim to have the low rating below 25%.

With this being said, in evaluating the data, I will go back to the merits of Mr. Wroblewski's complaint. He is seeing more speeding and it is attributed to the drastic increase in traffic volume that his road is seeing, almost 3 times the traffic volume over the course of 5 years. Let me illustrate this in the table below using 2017 as a starting point and comparing the counts;

	2017 (Apr.)	2017 (Nov.)	2018 (Jun)	2019 (May)	2019 (Jun)	2021 (Oct)
Traffic Count	2117	3048	4746	5561	5420	5503
Days	10	8	10	10	9	9
Vehicles per day	212	381	475	556	602	611
Traffic volume increase from 2017	0%	80%	124%	163%	184%	189%
Percentage above limit	7.7%	7.2%	13.8%	10.6%	11.0%	17.0%
Vehicles above limit per day	16	27	65	59	66	104
Vehicles above limit per hour	0.7	1.1	2.7	2.5	2.8	4.3
Enforcement Rating	LOW	LOW	LOW	LOW	LOW	LOW

Here are our action points to address Mr. Wroblewski's complaint;

- JAMAR speed enforcement evaluator (Milkweed/Honeysuckle). deployed 10/18/21-10/26/21
- Speed Trailer deployment (Milkweed). 10/18/21-present
- Targeted patrol squad, enforcement hours based on data collected from JAMAR. 10/27/21-present
- JAMAR speed enforcement evaluator (E. Fieldhack/Milkweed). Deployment scheduled 10/30/21-11/6/21
- Mr. Wroblewski was invited to the 11/11/21 committee meeting
- Apprising Mr. Wroblewski of our short and long term progress on the matter

If you have any questions or requests, please do not hesitate to contact me.

Marc R. Moonen

Lieutenant of Patrol – City of Pewaukee
Waukesha County Sheriff's Office
515 W. Moreland Blvd., Waukesha, WI 53188
(262) 691-5730 Office
mmoonen@waukeshacounty.gov



From: Marc Moonen

Sent: Monday, October 18, 2021 12:35 PM

To: 'Wagner, Magdelene' <wagner@pewaukee.wi.us>; Clark, Ian <clark@pewaukee.wi.us>

Cc: Brown, Colleen <brown@pewaukee.wi.us>; Marc Moonen <MMoonen@waukeshacounty.gov>

Subject: RE: Speeding Traffic on Milkweed Lane

The speed collection recorder is going out today for a period of 7 days. I will compare this to the handful of previous studies to report any findings.

Marc R. Moonen

Lieutenant of Patrol – City of Pewaukee
Waukesha County Sheriff's Office
515 W. Moreland Blvd., Waukesha, WI 53188
(262) 691-5730 Office
mmoonen@waukeshacounty.gov



From: Wagner, Magdelene <wagner@pewaukee.wi.us>

Sent: Monday, October 18, 2021 12:28 PM

To: Clark, Ian <clark@pewaukee.wi.us>

Cc: Brown, Colleen <brown@pewaukee.wi.us>; Marc Moonen <MMoonen@waukeshacounty.gov>

Subject: RE: Speeding Traffic on Milkweed Lane

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Ian,

Thank you for your email. Just to clarify. These issues are going to the Public Works Committee not the Planning Commission. We will be meeting next on October 28th at 4 pm. The meetings are typically the 4th Thursday of the month.

I can add this item to the agenda, however, we will not have any information to provide the Committee members, other than this email and maybe some history, to make a recommendation for this area. I would prefer to allow Lt. Moonen to conduct his speed study and create a report similar to the one he has completed on Oak & Peninsula which would put this item on a future agenda. Is that acceptable to you?

Thank you,
Maggie Wagner

Magdelene Wagner, P.E.
Director of Public Works/City Engineer
City of Pewaukee
W240N3065 Pewaukee Road
Pewaukee, WI 53072
262-691-0804

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From: Clark, Ian
Sent: Monday, October 18, 2021 11:09 AM
To: Wagner, Magdelene <wagner@pewaukee.wi.us>
Subject: Fwd: Speeding Traffic on Milkweed Lane

Hi Maggie,

Is there anyway that this issue could be brought before the planning commission this week?

I know that the speeding concerns & parking concerns on Oak and Peninsula was sent earlier this month.

Is there anyway that this information be included, too?

Best,

Ian

Begin forwarded message:

From: Ian Clark <clark@pewaukee.wi.us>
Subject: Re: Speeding Traffic on Milkweed Lane
Date: October 18, 2021 at 11:07:49 AM CDT
To: "Brown, Colleen" <brown@pewaukee.wi.us>
Cc: Bill or Sue Wroblewski <wroble5@hotmail.com>, Marc Moonen <mmoonen@waukeshacounty.gov>

Lt. Moonen, Alderwoman Brown, and Mr. & Mrs. Wroblewski,

Thank you for the email & forward.

I will forward your concerns to the planning commission, as they oversee the installation of safety signs and speed requirements.

They will debate this issue at either the next planning commission meeting on Oct. 21st, or the following one on Nov. 18th, depending on whether this email was sent prior to the deadline for the most upcoming meeting.

Thank you all for your time, and let me know if you need anything else.

Best,

Ian

On Oct 18, 2021, at 10:38 AM, Brown, Colleen <brown@pewaukee.wi.us> wrote:

Morning Bill.

I forwarded your email to Lt. Moonen as he has taken over our contract for Lt. Ripplinger (he retired). I also added Ian Clark as he is your new alderman as Jeff Kara didn't seek re-election this year. I am sorry that your area has continued to have speeding issues. This seems to be a theme all through Pewaukee and Waukesha county. I know that I am dealing with this issue in my neighborhood as well.

Regards Colleen Brown

Sent from my iPhone

On Oct 15, 2021, at 2:43 PM, Bill or Sue Wroblewski <wroble5@hotmail.com> wrote:

Hello Lt Ripplinger,

I am writing to you again, because of a serious problem with speeding on Milkweed lane.

I live on the corner of Milkweed land and Honeysuckle court

This morning and also 3 weeks ago there were 2 cars drag racing on Milkweed past my window on Honeysuckle ct . They start right after they come over the speed humps on the west end on Milkweed lane.

Three weeks ago, they were side by side past my window well over 60mph. This morning they went by at probably 50mph and climbing.

I have been trying to get stop sign installed, but someone said they may not help. But they could put 3 more speed bumps in, one at Honeysuckle ct, one at Goldenrod ct, and one at Primrose ct.

I have occasionally seen your cruisers in the area and I know they cannot be here all the time, but Thank You for their presence.

Can we get the speed trailer set up until a decision is made how to combat this new problem?

As always, Thank You for any help you can provide.

Bill Wroblewski
262-696-8072

From: Bill or Sue Wroblewski <wroble5@hotmail.com>
Sent: Wednesday, May 15, 2019 4:50 PM
To: Ripplinger, Brian E <BRipplinger@waukeshacounty.gov>
Cc: Brown, Colleen <brown@pewaukee.wi.us>; Kara, Jeff <kara@pewaukee.wi.us>
Subject: Re: Speeding Traffic on Milkweed Lane

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