

- 7:00 p.m. Call to Order.
- Invocation.
- Pledge of Allegiance.
- Roll Call.
- Proclamations:
1. Lung Cancer Awareness 2023
 2. Family Court Awareness Month
- A. Consent Agenda:
1. Approve the City Council Meeting Minutes of the:
 - a. Regular Meeting of October 17, 2023
 2. Approve the Accounts Payable Register of November 1, 2023 as presented.
 3. Approve the 2024 schedule of regular City Council meetings.
 4. Approve:
 - a. a one-year contract with Blue Cross Blue Shield of Michigan at a cost of \$223,309, and a one-year contract with Blue Care Network at a cost of \$1,980,908, for employee health insurance;
 - b. maintaining current employer/employee cost-sharing practices by taking action to exempt the city from requirements of P.A. 152 for the 2024 medical benefits plan year;and authorize the City Manager to execute all documents related to this action on behalf of the city.
 5. Accept the Tentative Plan Amendment of the River Caddis proposed mixed-use development at 412 W. Centre Avenue and 7860 Shaver Road and set the public hearing for November 14, 2023 subject to the following conditions:
 - a. The proposed live/work units shall be consistent with the requirements of Building Code Section 419 Live/Work Units and Zoning Code Sec. 42-137 Work/Live Accommodations.
 - b. The utility and engineering review comments should be addressed in detail in the PD Final Plan.
 6. Accept Ordinance Amendment #23/24-2 to amend the Zoning Code to establish an Accessory Dwelling Unit regulation and permitting process and set a Public Hearing for December 5, 2023.
 7. Amend the General Appropriations Act (budget) for the fiscal year ending June 30, 2024.
 8. Materials Transmitted of October 20, 2023
 9. Minutes of Boards & Commissions:
 - a. Environmental Board of August 9, 2023.
 - b. Environmental Board of September 13, 2023.
 10. Calendar of Meetings:
 - Human Services Board: Thursday, November 2 at 5:30 p.m. in Conference Room 1.
 - Planning Commission: Thursday, November 2 at 7:00 p.m. in the City Council Chambers.
 - Environmental Board: Wednesday, November 8 at 7:00 p.m. in Conference Room 1.
 - Zoning Board of Appeals: Monday, November 13 at 7:00 p.m. in the City Council Chambers.

B. Petitions and Statements of Citizens:

C. Communications:

D. Public Hearings:

E. Regular Business Agenda:

F. Unfinished Business:

1. Direct the City Administration to pursue a new Portage Farmers Market facility to be located in direct proximity to the Charles and Lynn Zhang Portage Community Senior Center.

G. Council Committee Reports:

H. New Business:

I. Statements of Citizens:

J. Statements of City Council and City Manager.

Adjournment.



CITY OF PORTAGE PROCLAMATION

Lung Cancer Awareness Month

WHEREAS, lung cancer is the leading cause of cancer death among men and women in the United States, accounting for more deaths than colon cancer, breast cancer, and prostate cancer combined; and

WHEREAS, according to the Kalamazoo County Human Services Department there were 161 new lung cancer cases and 128 deaths because of lung cancer in 2020 in Kalamazoo County; and

WHEREAS, the 5-year survival rate for lung cancer is 60%, yet only 24% of lung cancers are diagnosed at this stage; and

WHEREAS, according to estimates by the National Cancer Institute 238,340 patients in the United States will be diagnosed with lung and bronchus cancer in 2023, and 127,070 patients will die of the disease; and

WHEREAS, lung cancer incidence is decreasing twice as fast in men as it is in women, each year, with 60-70% of individuals diagnosed who never smoked being women; and

WHEREAS, African Americans have the highest lung cancer incidence and mortality of all races, and disparities in lung cancer screening, diagnosis, treatment, and mortality are well characterized among African Americans and other racial minorities; and

WHEREAS, lung cancer in individuals who never smoked is the 7th leading cause of cancer-related death and accounts for 17,000 to 26,000 deaths in the U.S. every year; and

WHEREAS, organizations working in Portage such as the American Lung Cancer Screening Initiative and Women's Lung Cancer Forum, are committed to educating about lung cancer, screening, and working to increase lung cancer screening rates in Portage.

NOW, THEREFORE, BE IT RESOLVED THAT I, Patricia M. Randall, do hereby proclaim November 2023 as Lung Cancer Awareness Month in the City of Portage, and recognize the need for research in lung cancer and lung cancer health disparities, and encourage all citizens to learn about lung cancer and early detection through cancer screening.

Signed this 1st day of November, 2023.

Patricia M. Randall, Mayor



CITY OF PORTAGE PROCLAMATION

Family Court Awareness Month

- WHEREAS,** the mission of the Family Court Awareness Month Committee (FCAMC) is to increase awareness on the importance of a family court system that prioritizes child safety and acts in the best interest of children, and;
- WHEREAS,** the mission at the FCAMC is fueled by the desire to create awareness and change in the family court system for the conservatively estimated, 58,000 children a year ordered into unsupervised contact with abusive parents, while honoring the hundreds of children who have been reported as murdered during visitation with a dangerous parent, and;
- WHEREAS,** the mission of the FCAMC is to increase awareness on the importance of empirically-based education and training on domestic violence and child abuse, including emotional, psychological, physical, and sexual abuse, as well as childhood trauma, coercive control, and post separation abuse for judges and all professionals working on cases within the family court system, and;
- WHEREAS,** the mission of the FCAMC is to increase awareness on the importance of using scientifically valid, evidence-based, treatment programs and services that are proven in terms of safety, effectiveness, and therapeutic value, and;
- WHEREAS,** the mission at the FCAMC is to educate judges and other family court professionals on evidence- based, peer-reviewed research. This research includes the Adverse Childhood Experiences Study, Child Custody Evaluators' Beliefs About Domestic Abuse Allegations, and Child Custody Outcomes in Cases Involving alienation and Abuse Allegations. Such research is a critical component to making decisions that are truly in the best interest of children.

NOW, THEREFORE, BE IT RESOLVED THAT I, Patricia M. Randall, as Mayor of Portage, hereby declare the Month of November to be Family Court Awareness Month in the City of Portage and encourage all residents to support our communities' efforts to prevent the harm of children in the hands of family members and honor the value and the lives of children.

Signed this 1st day of November, 2023.

Patricia M. Randall, Mayor

CITY COUNCIL MEETING MINUTES FROM OCTOBER 17, 2023

Mayor Patricia Randall called the Regular Meeting to order at 07:00 PM in the Council Chambers at Portage City Hall.

ROLL CALL: Councilmembers Chris Burns, Lori Knapp, Terry Urban, Mayor Pro Tem Jim Pearson, and Mayor Patricia Randall were present.

ABSENT: Councilmember Vic Ledbetter.

ALSO PRESENT: City Manager Pat McGinnis, Chief Operating Officer Adam Herringa, City Attorney Catherine Kaufman, and City Clerk Erica Eklov.

At the request of Mayor Randall, the audience observed a moment of silence to recognize the work of Rotary International and its work to make lasting change around the world, the work of the community to shepherd our children to healthy, drug-free lifestyles, and the accomplishments of the West Portage Little League members. Following the moment of silence, the City Council recited the Pledge of Allegiance.

PROCLAMATIONS:

Rotary International 2023: Portage Rotary President Josh Goodlock read the proclamation.

2023 Red Ribbon Week: Human Services Board chair Brooke Kolodzieczyk, vice chair Jihan Young, and local Portage Public School students read the proclamation.

Recognition of West Portage Little League's Youth Enrichment and Competitive Success: Jihan Young, Board of Directors All-Star Coordinator, introduced the proclamation and it was read by Portage West Middle School Assistant Principal, Sidney Bailey.

CONSENT AGENDA: Mayor Randall shared where the public can access the meeting agenda and asked if any Councilmember or anyone in the audience would like an item removed from the Consent Agenda. Councilmember Urban removed Item A.3 (City Council Goal Session). Citizen Tina Kuchenbuch removed Item A.4 (Intergovernmental Early Voting Agreement). Motion by Burns, seconded by Pearson, to approve the Consent Agenda as presented with A.3 and A.4 removed. Upon a roll call vote, motion carried 5 to 0.

Approval of Minutes: Motion by Burns, seconded by Pearson, to approve the City Council Meeting Minutes of the Board & Commission Interviews of October 3, 2023, and Regular Meeting of October 3, 2023. Upon a roll call vote, motion carried 5 to 0.

Accounts Payable Register: Motion by Burns, seconded by Pearson, to approve the Accounts Payable Register of October 17, 2023 as presented. Upon a roll call vote, motion carried 5 to 0.

Purchase of Portable Emergency Generators: Motion by Burns, seconded by Pearson, to authorize the purchase of two Generac MDG175DF4 mobile diesel generators through the Sourcewell purchasing program, at a total cost of \$225,700.00 and authorize the City Manager to execute all documents related to these purchases on behalf of the city. Upon a roll call vote, motion carried 5 to 0.

Intergovernmental Vehicle Sale: Motion by Burns, seconded by Pearson, to approve the sale of a 2013 Ford F-250 Super-Duty pickup truck to the Kalamazoo County Medical Control Authority for \$38,000 and authorize the City Manager to execute all necessary documents. Upon a roll call vote, motion carried 5 to 0.

Materials Transmitted: Motion by Burns, seconded by Pearson, to receive the Materials Transmitted of October 3, 2023. Upon a roll call vote, motion carried 5 to 0.

Minutes of Boards & Commission: Motion by Burns, seconded by Pearson, to receive the Minutes of the Human Services Board of September 7, 2023. Upon a roll call vote, motion carried 5 to 0.

Calendar of Meetings: Motion by Burns, seconded by Pearson, to receive the Calendar of Meetings as presented. Upon a roll call vote, motion carried 5 to 0.

PETITIONS AND STATEMENTS OF CITIZENS: Mayor Randall introduced the public comment period and relayed that comments regarding Item F.2 (Amendment to Section 58-33) should occur during this time.

1. Gina Verdera (5217 Green Pine Lane, Kalamazoo) representing Republic Waste Services spoke in opposition to the ordinance amendments proposed in Item F.2.
2. Jean Kimmel (6729 Cypress) spoke in support of Item F.2 noting she recently switched from Republic Waste due to over-pricing and surcharge fee issues. She stated the proposed city amendments were necessary improvements toward leveling pricing for customers and argued the current system is not transparent or regulated.
3. Chris Phillips (2314 Miller Road, Kalamazoo), representing Best Way Disposal spoke in opposition to the proposed ordinance amendments. He noted he was a Portage resident and believed the proposed changes do not offer the transparency provided through the free market model. He highlighted Section F. of the amendments. Mr. Phillips argued that other industries do not get regulated by the city.
4. Kevin Kendall (124 W. Allegan, Lansing), representing the Michigan Waste & Recycling Association, noted his prior letter to City Manager McGinnis and hoped the Council had received it. Mr. Kendall relayed five reasons the association opposed the proposed ordinance, including rate control, mandatory credits, feasibility complaint tracking, excessive local control, and less capital investment. He also argued that no other industry is subject to such price controls.
5. Joe Kuchenbuch (2728 East Shore Drive) echoed Mr. Kendall's argument in opposition to the proposed ordinance amendments for refuse collection, expressing concern about limiting vendors.
6. Tyler White (7634 Spring Brook Drive) cited his educational background in Public Administration with a research focus on mixed-use contracts. He relayed that publishing the pricing information should allow the city and residents to make an informed decision.
7. Lisa Brayton (9336 East Shore Drive) spoke regarding her resignation from the City Council and prior health issues. She highlighted that she had applied to fill the vacant council seat and stated she would be representing the citizens of Portage via a write-in campaign for Mayor. She also expressed opposition to Item F.2 and noted personal success with her garbage service, relaying prior calls to the vendor for price increase issues.
8. Tim Earl (6862 Shallowford Way) relayed his prior residence in Detroit during a time when trash collection was a municipal service, and the practice was not an issue. He noted

government management of the waste system has a precedent. Mr. Earl then expressed concern about the current system's lack of transparency. He closed with a mention of the prior City Council election.

9. Clint Curie (7375 Hampstead Lane) spoke as Finance Manager for Republic Services and stated the additional regulations proposed would increase the vendors' workload, which would then filter to higher rates for residents as the vendors worked to recoup staff costs.
10. Tony Lorentz (8911 Newhouse) opposed the ordinance amendments under Item F.2 and expressed a desire to choose a vendor and welcomed competition.
11. Tina Kuchenbuch (2728 East Shore Drive) stated she was in opposition to the proposed waste hauler ordinance amendments, sympathizing with those residents who spoke of poor experiences. She was insulted that the Council didn't think she or other citizens were able to call the individual companies to negotiate their own prices and expressed concern that regulating waste haulers would lead to regulation of other businesses

PUBLIC HEARINGS:

Industrial Tax Abatement Application from Micro-LAM Inc. (5870 S. Sprinkle Road) – Industrial Development Districts No. 34 and 62: Mayor Randall opened the public hearing at 7:46 p.m. City Manager McGinnis provided a brief summary of the proposed abatement. Brian Simmons and Tony Platsis spoke on behalf of Micro-LAM, Inc., providing a history of the company's development and scope, including a companion location in Keane, New Hampshire. Mayor Randall asked about the training involved for machinists and whether it included the local colleges. Mr. Simmons confirmed that Micro-LAM collaborates with the Western Michigan University (WMU) Engineering School. Mr. Platsis noted the founder's beginnings at WMU and his fondness for recruiting interns from WMU, as well as Kalamazoo Valley Community College (KVCC). Mayor Randall asked whether local trade school programs were considered. Mr. Simmons and Mr. Platsis confirmed.

Motion by Burns, seconded by Knapp, to close the public hearing. Upon a roll call vote, motion carried 5 to 0. Seeing no additional comments, motion by Pearson, seconded by Knapp, to adopt Resolution #4 to approve the proposed Tax Abatement Certificate, Tax Abatement Agreement, and Affidavit of Fees for Micro-LAM, Inc. for shared property located at 5870 S. Sprinkle Road, under existing Industrial Development Districts No. 34 and 62. Councilmember Burns expressed appreciation for the choice by Micro-LAM to expand operations in Portage. Upon a roll call vote, motion carried 5 to 0.

Industrial Tax Abatement Application from Depatie Fluid Power Company (5870 S. Sprinkle Road) – Industrial Development Districts No. 34 and 62: Mayor Randall opened the public hearing at 7:56 pm. City Manager McGinnis recognized the representatives involved in the project from both companies, as well as Southwest Michigan First. Mr. Ryan Thomas of Depatie Fluid Power Company provided a brief history of the company, its scope and varied locations, as well as the industries Depatie Fluid supports. Mr. Thomas also noted that Depatie similarly recruits interns and new staff from WMU and KVCC. Councilmember Burns asked Mr. Thomas to elaborate on Depatie's planned employment expansion. Mr. Thomas relayed that the expansion project would create 48 new jobs with an average salary of \$50,000. City Manager McGinnis asked Mr. Thomas for the location of Depatie's West Branch office.

Motion by Pearson, seconded by Burns, to close the public hearing. Upon a voice vote, motion carried 5 to 0. Seeing no additional comments, motion by Pearson, seconded by Burns, to adopt Resolution #4 to approve the proposed Tax Abatement Certificate, Tax Abatement Agreement, and Affidavit of Fees for Depatie Fluid Power Company (both general and flex space) for shared property

located at 5870 S. Sprinkle Road, under existing Industrial Development Districts No. 34 and 62. Upon a roll call vote, motion carried 5 to 0.

REGULAR BUSINESS AGENDA:

City Council Goal Setting Session: Councilmember Urban noted the proposed date would be the same day as the Southwest Michigan First event all Councilmembers were invited to and expressed concern for a long day. Mayor Randall asked the City Manager about his expectations regarding the tenure of the day. Mr. McGinnis expressed hope for a 4-hour meeting, with additional discussion postponed to a subsequent day. Councilmember Urban noted the length of prior Retreats.

Mayor Pro Tem Pearson asked those Councilmembers planning to attend to voice their interest. Councilmember Burns noted he would like to attend but would defer to his Council business first. Councilmember Knapp noted she would be retired at that point. Mayor Randall expressed a desire to maintain the current date and a shorter timeline for this year's Retreat.

Motion by Burns, seconded by Pearson, to set a special meeting on November 16, 2023, at 9:00 a.m. at the Portage Zhang Senior Center, 203 East Centre Avenue, for the annual City Council Goal Setting Session. Upon a roll call vote, motion carried 5 to 0.

Kalamazoo County Early Voting Agreement: Mayor Randall referred to Mrs. Kuchenbuch, who removed the item from Consent, and asked whether she wanted to explain the reasons she took it off, or have the City Manager McGinnis discuss it. She deferred to the City Manager who highlighted the enactment of Proposal 22-2 by voters, including the introduction of Early Voting and the negotiation efforts over the last several months to create this agreement, deferring to City Clerk Eklov for additional background.

Clerk Eklov explained Proposal 22-2 with its inclusion of allowing Early Voting in Michigan, outlining the parameters subsequently set by the state for government collaboration and potential grant funding favoring intergovernmental agreements.

Mrs. Kuchenbuch inquired about the length of the agreement. Clerk Eklov responded that the Kalamazoo County agreement would serve the state-required minimum of two years, after which it would be reevaluated.

Councilmember Urban noted that the practice of Early Voting would not be in place for the upcoming city election on November 7, and detailed the workload entailed for securing precinct inspectors for all nine days of Early Voting. He stated that Early Voting was approved by voters in November 2022 and would now be required of local municipalities. Mayor Randall echoed Councilmember Urban's comments. Councilmember Burns inquired about election inspector training, to which Clerk Eklov responded.

Motion by Knapp, seconded by Urban, to support the City of Portage's participation in the *Intergovernmental Agreement for Early Voting Election Services between Kalamazoo County and Associated Municipalities* and authorize the City Clerk to sign the Agreement on behalf of the city. Upon a roll call vote, motion carried 5 to 0.

UNFINISHED BUSINESS:

Ordinance Amendments - Chapter 78, Section 78-2, "Parking": City Manager McGinnis summarized the proposed changes to the ordinance, noting that Public Works Director Rod Russell had tracked the weather over the last several years to bring the current date range forward. Mayor Randall asked Director Russell to elaborate. Director Russell explained prior weather history and department practices. Councilmember Burns asked about signage across the city that would need

updating. Director Russell confirmed that fifteen signs would need replacement, which would be ready in time for placement before November 1. Councilmember Urban asked if the Mayor still had the power to declare a snow emergency. Director Russell confirmed and noted the upcoming plan to hold a training session for the area Emergency Coordination Center. Mayor Pro Tem Pearson noted a prior citizen complaint regarding the October 15 start date.

Motion by Burns, seconded by Knapp, to adopt the proposed amendments to the City of Portage Code of Ordinances, Chapter 78, Section 78-2, "Parking." Upon a roll call vote, motion carried 5 to 0.

Ordinance Amendment – Registration of Collectors: Mayor Randall asked City Manager McGinnis to explain the development of the proposed revisions, noting the earlier citizen comments expressed. City Manager McGinnis highlighted the current City Council goal to optimize waste hauling, the City Administration's efforts to improve the vendors' accountability and transparency, his experience from his prior communities, and the variance in existing service models. Mayor Pro Tem Pearson asked Kylar Chandler, Assistant to the City Manager, to present and explain the findings from his research regarding single-provider pricing. Mr. Chandler relayed that single-source waste hauling is more common in eastern Michigan, but his research demonstrated that communities using that model experience improved pricing stability via the municipal bidding and contract process.

Councilmember Knapp asked City Manager McGinnis to explain the difference for citizens from the current practice and should the ordinance proposal be adopted. City Manager McGinnis responded, presenting the resulting bell curve from the variation in current waste hauler rates, but noted that citizens would have an easier option to review all vendor rates at one time. Councilmember Knapp subsequently asked the City Manager to respond to the citizen concerns regarding the city's apparent targeting of waste haulers, and whether the effort to regulate would extend to other markets. City Manager McGinnis replied that state law requires cities to address solid waste removal in their respective Charters as a matter of public health and there was no plan to regulate other businesses.

Councilmember Urban noted several comments during the Citizen Comment period were incorrect or misinformed. He clarified that the city was not seeking a single-hauler model, nor controlling rates or posting customer information.

Motion by Urban, seconded by Knapp, to adopt the proposed amendments to the City of Portage Code of Ordinances, Chapter 58, Section 58-33, "Residential collection schedule; registration of collectors."

Mayor Randall asked Mr. Chandler to display his price research once more and noted that the current pricing couldn't be equitable if the range was so wide. She asked Mr. Chandler how he obtained the data. Mr. Chandler responded that city staff residing in the city had provided their personal waste bills.

Councilmember Burns further inquired about the proposed amendments, noting the changes by Kalamazoo Township to transition to a single waste hauler, with at least one aim to reduce the wear of the township's roads. He expressed concern for the same effect on Portage roads, as well as the environmental impact of additional truck traffic. He then highlighted recent citizen concerns about the cost of living and his desire to find a more economical way to provide waste collection for residents. Councilmember Burns asked the City Manager to explain the current city-sponsored residential recycling program supported via millage funding as a measure of comparison. Public Works Director Rod Russell responded. Councilmember Burns then addressed earlier concerns regarding business competition.

Mayor Pro Tem Pearson responded to the various citizen and vendor comments expressed during the Citizen Comment period.

Mayor Randall closed the discussion with a comparison of current published pricing by cable and internet providers, wellness providers, as well as groceries, and expressed a desire to assist citizens while working toward minimizing truck traffic in the future. Upon a roll call vote, motion carried 5 to 0.

COUNCIL COMMITTEE REPORTS: Councilmember Burns provided an update regarding the Central County Transportation Authority (CCTA), including updates to the Authority's purchasing processes. He highlighted that the CCTA would be participating in the upcoming Human Services Board Open House event on November 2 to provide information including the Metro Connect service.

Councilmember Knapp provided an update about the Portage Community Center Board. She noted the PCOC Strut had 240 runners and made \$3,500, with the race entering its 40th year in 2024. She then stated the annual appeal was beginning, including the holiday food baskets and gift programs. Councilmember Knapp closed with a mention of the Portage Community Center operating as the second-largest food pantry in the community.

Motion by Pearson, seconded by Urban, to receive the Council Committee Reports as presented. Upon a roll call vote, motion carried 5 to 0.

NEW BUSINESS:

Appointment of City Councilmember: Mayor Randall highlighted the plan as outlined at the last City Council meeting and the subsequent receipt of 13 citizen applications. She asked the City Clerk to clarify the term ending date of November 13, with the second Council meeting slated for November 14. Clerk Eklov responded with the City Charter reference and noted the appointee would participate in the November 14th meeting as a matter of ceremony.

Councilmember Burns spoke regarding his review of the applicant pool and his desire for an experienced appointee, explaining that applicant Mike Quinn's background and service on the Kalamazoo County Board of Commissioners stood out. Mayor Randall and Mayor Pro Tem Pearson echoed Councilmember Burns' comments.

Motion by Urban, seconded by Burns, to appoint Mike Quinn as a new City Councilmember effective immediately with a term ending November 13, 2023. Upon a roll call vote, motion carried 5 to 0. With the approval of the Mayor, City Clerk Eklov provided the oath to Mr. Quinn and he was seated at the dais.

STATEMENTS OF CITIZENS:

1. Richard Nellums (9240 East Shore Drive) spoke regarding the helpful provision of answers to citizen questions by CDO Pete Dame. He then noted that the citizen-created SpeakUpPortage.com website would include a platform for City Council candidates in light of the upcoming election.

STATEMENTS OF CITY COUNCIL AND CITY MANAGER:

Councilmember Urban spoke regarding the civil unrest and hateful events recently covered in the news. He urged the local community to be vigilant of hate or bigotry. He encouraged citizens to examine differing viewpoints.

Councilmember Knapp welcomed new Councilmember Quinn.

Councilmember Quinn thanked the City Council for their consideration and stated he takes his oath of office very seriously and will do whatever he can to serve the citizens of Portage.

Councilmember Burns thanked Councilmember Quinn for his willingness to serve, as well as

those who also applied. He then provided an additional update regarding the CCTA, noting a desire to increase the bulk discount for the purchase of bus passes by human service agencies, including the PCC. He then thanked the coordinators of the recent election candidate forum. He provided a reminder regarding the upcoming Monster Mash city event on October 21, including winter attire donations.

City Manager McGinnis stated the city would be signing up for the Portage Community Center holiday programs, including sponsoring a family. He then noted the voter registration drive by the City Clerk's Office at Portage Central High School, registering several new voters. City Manager McGinnis then relayed the receipt of his first full tax bill, of which 23 percent is allocated to the city, and the services rendered for the cost.

Mayor Pro Tem Pearson elaborated on the tax bill. He congratulated the founder of the SpeakUpPortage website and suggested it is one of the reasons for the wider slate of City Council candidates on the November 7th ballot, as well as the number of applicants for the temporary position.

Mayor Randall reminded the City Council candidates for the upcoming election to reserve November 16 for the annual City Council Goal Retreat. She then spoke regarding the recent candidate forums, thanking the local media outlets for attending. Mayor Randall next highlighted the West Portage Little League celebration she attended alongside Councilmember Knapp and commended the parents, kids, and coaches for their performances. She relayed that she would be attending the upcoming Monster Mash with her grandchild and encouraged attendance at the popular event.

ADJOURNMENT: Mayor Randall adjourned the meeting at 9:28 PM.

Erica L. Eklov, City Clerk

TO: Honorable Mayor and City Council

FROM: Pat McGinnis, City Manager

SUBJECT: Accounts Payable Register

SUPPORTING PERSONNEL: Lauren VanderVeen, Finance Director

ACTION RECOMMENDED: Approve the Accounts Payable Register of November 1, 2023 as presented.

The City Council reviews and approves the bi-weekly Accounts Payable Register which includes automated clearing house payments, paper checks, auto-pay payments and electronic payments. The attached Accounts Payable Register covers the period October 8, 2023 through October 21, 2023 and notes \$742,918.40 in automated clearing house payments, \$1,999,956.83 in paper checks, \$145,497.96 in auto-pay payments and \$350,610.74 in electronic payments for a grand total of \$3,238,983.93.

FUNDING: Not Applicable

Attachments: 1. Accounts Payable Register of November 1, 2023

ACCOUNTS PAYABLE REGISTER
Check Dates From: 10/08/2023 to 10/21/2023

Page 1 of 8

Check Type: ACH Transaction

Check Date	Check	Vendor Name	Description	Amount
10/13/2023	20236(A)	ABONMARCHE CONSULTANTS, INC	ENGINEERING SVCS-MULT LOCS	134,022.10
10/13/2023	20237(A)	ALL CITY MANAGEMENT SERVICES, INC.	CROSSING GUARD CONTRACT	4,359.60
10/13/2023	20238(A)	ALRO STEEL CORPORATION	REPAIR/MAINT LEAF CHUTE	3,152.74
10/13/2023	20239(A)	AMAZON.COM SALES, INC.	FIRE EMS SUP-FD; OFC SUP-ASSES; MAINT SUP-FF	4,583.12
10/13/2023	20240(A)	VOID		0.00
10/13/2023	20241(A)	AMERICAN ARBOR LLC	TREE REMOVAL	4,733.00
10/13/2023	20242(A)	ANIMAL REMOVAL SERVICE, LLC	ANIMAL REMOVAL SERVICES	1,275.00
10/13/2023	20243(A)	ARMOLD, NICHOLAS	PER DIEM-IACP SUMMER CONFERENCE	407.00
10/13/2023	20244(A)	BAUCKHAM, THALL, SEEBER, KAUFMAN	ATTORNEY FEES OCT 2023	19,750.32
10/13/2023	20245(A)	BCHS-HELPNET	EMPLOYEE ASSISTANCE SERVICES	1,670.61
10/13/2023	20246(A)	BENNETT, THOMAS L	FOOD ASSISTANCE REIMBURSEMENT	6.00
10/13/2023	20247(A)	BEST WAY DISPOSAL, INC.	CURBSIDE RECYCLING PROGRAM	64,528.96
10/13/2023	20248(A)	BRENNER OIL CO.	BULK FUEL DELIVERY	25,104.75
10/13/2023	20249(A)	BURKE, GREGORY	PER DIEM-ABANDONED VEHICLE LAW & TRAINING	88.50
10/13/2023	20250(A)	C D W GOVERNMENT, INC.	NETWORK SWITCH - NEW SECURITY CAMERA	5,654.76
10/13/2023	20251(A)	CARLETON EQUIPMENT CO.	TINK BLADES - BRUSH PICKUP	8,498.63
10/13/2023	20252(A)	CHARTER COMMUNICATIONS	CABLE TV	352.47
10/13/2023	20253(A)	CLARK, RONALD	PER DIEM-POLICE STAFF & COMMAND SCHOOL	379.50
10/13/2023	20254(A)	COEUR, AARON	REIMB EXPS - MGFOA FALL CONFERENCE	296.06
10/13/2023	20255(A)	COLLIER, MICHAEL	REIMB-MACP MOCK ASSESSMENT REFRESHMENTS	54.23
10/13/2023	20256(A)	COMPLETE LANDSCAPING SOLUTIONS	CONTRACT LAWN MOWING	64.30
10/13/2023	20257(A)	CONKLIN, ALEXIS	MONSTER MASH CANDY REIMBURSEMENT	917.44
10/13/2023	20258(A)	DEPATIE FLUID POWER CO., INC.	HYDRAULIC REPAIRS	697.78
10/13/2023	20259(A)	DOPP, LYNLEY	PER DIEM-MI ASSOC OF HOSTAGE NEGOTIATORS	128.00
10/13/2023	20260(A)	EARLE, SHELIA L	FITNESS INSTRUCTION	305.00
10/13/2023	20261(A)	ELECTION SYSTEMS & SOFTWARE, INC.	ACTIVATION CARDS	43.83
10/13/2023	20262(A)	ENGINEERED PROTECTION SYSTEMS, INC.	BADGE ACCESS INSTALLATION-PARKS DEPT	7,446.40
10/13/2023	20263(A)	ESCAPE FIRE & SAFETY SERVICES, INC.	CROSS OVER RELIEF VALVES	1,029.34
10/13/2023	20264(A)	FISHER, LACEY	PER DIEM-BASIC BLOODSTAIN PATTERN ANALYSIS	352.00
10/13/2023	20265(A)	GARLOW, BARBARA	REIMB RESPECT FOR LAW EVENT SUPPLIES	59.75
10/13/2023	20266(A)	GOLF CARS +	GOLF CART RENTALS	567.50
10/13/2023	20267(A)	GRAINGER INC	SAFETY SUPPLIES	216.00
10/13/2023	20268(A)	GRIFFIN PEST SOLUTIONS	PEST CONTROL SERVICES	224.00

ACCOUNTS PAYABLE REGISTER
Check Dates From: 10/08/2023 to 10/21/2023

Page 2 of 8

Check Date	Check	Vendor Name	Description	Amount
10/13/2023	20269(A)	HAMBRIGHT, JARED	REIMB EXPS-STRUCTURAL COLLAPSE TR	636.24
10/13/2023	20270(A)	HARTFORD LIFE INSURANCE COMPANY	LIFE & LTD INSURANCE	11,379.79
10/13/2023	20271(A)	HOFFMAN BROTHERS, INC.	LOCAL STREETS RECONSTRUCTION	292,174.35
10/13/2023	20272(A)	INDUSCO SUPPLY CO., INC.	JANITORIAL SUPPLIES	540.57
10/13/2023	20273(A)	IRISH AYRES ENTERPRISES, LLC	MOWING SERVICES	16,938.90
10/13/2023	20274(A)	JB PRINTING	OCTOBER PORTAGER	3,487.09
10/13/2023	20275(A)	KAL COUNTY FIRE CHIEFS ASSOC.	DRIVER/OPERATOR ACADEMY	100.00
10/13/2023	20276(A)	KENNEDY INDUSTRIES, INC.	PUMP & GUIDE RAIL REPLACEMENT	24,215.00
10/13/2023	20277(A)	KURZAVA, MATTHEW STEPHEN	TAI CHI FITNESS INSTRUCTION	300.00
10/13/2023	20278(A)	KUSHNER & COMPANY, INC.	COBRA & FSA ADMINISTRATION	275.47
10/13/2023	20279(A)	LANDS END	IC/RECORDS UNIFORMS	43.91
10/13/2023	20280(A)	LAWSON PRODUCTS, INC	REPAIR & MAINTENANCE SUPPLIES	673.04
10/13/2023	20281(A)	MACQUEEN EQUIPMENT LLC	SWEEPER REPAIR/MAINTENANCE	900.00
10/13/2023	20282(A)	MAPLE HILL SPRINKLING, INC.	WINTERIZE SPRINKLER SYSTEMS	3,648.00
10/13/2023	20283(A)	MARTIN SPRING & DRIVE, INC.	TRACKLESS REPAIR	270.00
10/13/2023	20284(A)	MATTAWAN MUSHROOM CO	FOOD ASSISTANCE REIMBURSEMENT	152.00
10/13/2023	20285(A)	MATTISON, MEGAN	CLASS INSTRUCTION	360.00
10/13/2023	20286(A)	MAYHEW, BRYAN	PER DIEM-FBI LEEDA EXECUTIVE LDRSHP INSTITUTE	184.50
10/13/2023	20287(A)	METRONET HOLDINGS LLC	TELEPHONE SERVICE	2,388.16
10/13/2023	20288(A)	METRONET HOLDINGS LLC	MONTHLY INTERNET FIBER SERVICES	1,998.00
10/13/2023	20289(A)	MICHIGAN OFFICE ENVIRONMENTS	OFFICE FURNITURE	5,541.04
10/13/2023	20290(A)	MOTOR PARTS AND EQUIPMENT CORP	FUEL PUMP FILTERS	667.73
10/13/2023	20291(A)	NYE UNIFORMS	MISC UNIFORMS	520.00
10/13/2023	20292(A)	O'BOYLE-COLWELL-BLALOCK & AS.	LAKEVIEW PARK PHASE 1 A&E SERVICES	13,919.48
10/13/2023	20293(A)	ONE WAY PRODUCTS	JANITORIAL SUPPLIES	1,431.28
10/13/2023	20294(A)	ONSTAFF USA INC	TEMPORARY EMPLOYEE SERVICES	9,326.32
10/13/2023	20295(A)	PEERLESS-MIDWEST, INC.	EMERGENCY WELL MAINTENANCE	39,965.00
10/13/2023	20296(A)	PLASKO, PATRICIA MARIE	FITNESS INSTRUCTION	495.99
10/13/2023	20297(A)	POWERDMS, INC.	ANNUAL SUBSCRIPTION RENEWAL	650.00
10/13/2023	20298(A)	PRECISION PRINTER SERVICES INC	PRINTER SUPPORT SERVICES	96.98
10/13/2023	20299(A)	PREMIER SAFETY	FIRE SCBA MAINTENANCE	800.00
10/13/2023	20300(A)	PRINTING SERVICES INC	PRINTING SERVICES	2,080.55
10/13/2023	20301(A)	R W LAPINE INC.	HVAC ON-CALL SERVICES	355.35
10/13/2023	20302(A)	ROBERT LAMSON, LLC	POST-COE PSYCH EVAL	940.00

ACCOUNTS PAYABLE REGISTER
Check Dates From: 10/08/2023 to 10/21/2023

Page 3 of 8

Check Date	Check	Vendor Name	Description	Amount
10/13/2023	20303(A)	ROE-COMM, INC.	MISC RADIO SERVICES	1,045.00
10/13/2023	20304(A)	SAFETY SERVICES, INC.	SAFETY SUPPLIES	1,096.44
10/13/2023	20305(A)	SEVERANCE ELECTRIC COMPANY, INC	TRAFFIC SIGNAL MAINTENANCE	2,605.23
10/13/2023	20306(A)	SIGNATURE WIRING, LLC	KAL CO. - REPLACE ELECTRICAL	4,974.68
10/13/2023	20307(A)	SIMPLIFILE LLC	DOCUMENT RECORDING	240.75
10/13/2023	20308(A)	SNELL, DEBRA	LINE DANCE INSTRUCTION	60.00
10/13/2023	20309(A)	STEELE, DANA	REIMB SUPPLIES-FIRE OPEN HOUSE	115.67
10/13/2023	20310(A)	STOUT, MELISSA JOY	FITNESS INSTRUCTION	245.00
10/13/2023	20311(A)	SYNERGISTIC ONLINE SOLUTIONS	AS400 MAINTENANCE	1,370.00
10/13/2023	20312(A)	TMK WORLDWIDE, LLC	METER SERVICE	486.37
10/13/2023	20313(A)	TRUCK & TRAILER SPECIALTIES	VEHICLE PARTS & MAINTENANCE	200.72
10/13/2023	20314(A)	VANDERWIJERE, JEFFREY P.	PER DIEM-IACP SUMMER CONFERENCE	259.00
10/13/2023	20315(A)	WEST MICHIGAN INT'L LLC	REPAIR & MAINTENANCE SUPPLIES	422.54
10/13/2023	20316(A)	WOLFE, MATTHEW	REIMB-MACP MOCK ASSESSMENT LUNCH	74.01
10/20/2023	20317(A)	BOGARD, SCOTT T	REIMB EXP-NAPCH WORKSHOP	182.55
10/20/2023	20318(A)	HESS, DERECK	REIMB EXP- INVESTIGATION	246.04
10/20/2023	20319(A)	LORD, JAMES	REIMB EXP- INVESTIGATION	143.63
10/20/2023	20320(A)	REYNHOUT, BRENT	REIMB EXP-BALLISTIC SHIELD INSTRUCTOR	67.97
10/20/2023	20321(A)	VANDERVEEN, LAUREN	REIMB EXP-MGFOA FALL TRAINING INSTITUTE	659.37
Total ACH				742,918.40

Check Type: Paper

10/13/2023	325387	A BETTER WAY TREE CARE LLC	TREE WORK/REMOVAL	5,700.00
10/13/2023	325388	ALFIERI, BRIANA	SCHRIER PARK DEPOSIT REFUND	150.00
10/13/2023	325389	ALLEGRA PRINT & IMAGING	PRINTING SERVICES	1,144.95
10/13/2023	325390	ANDREWS, TIM	MONSTER MASH TRACTORS	600.00
10/13/2023	325391	BAADTE, MEREDITH	HAYLOFT THEATRE DEPOSIT REFUND	150.00
10/13/2023	325392	BAILEY'S MEATS	FOOD ASSISTANCE REIMBURSEMENT	77.00
10/13/2023	325393	BAY AREA TOUCHLESS CARWASH LLC	CAR WASHES	212.00
10/13/2023	325394	BLAIN SUPPLY, INC.	REPAIR & MAINT SUPPLIES	289.97
10/13/2023	325395	BODAMER, BRIAN & LAUREN M	BD BOND REFUND	1,150.00
10/13/2023	325396	BRUSH, BENJAMIN	FOOD ASSISTANCE REIMBURSEMENT	105.00
10/13/2023	325397	CAMPBELL AUTO SUPPLY	MISC AUTO SUPPLIES	40.68
10/13/2023	325398	CARON, JARED	LAKEVIEW SOFTBALL DEPOSIT REFUND	100.00

ACCOUNTS PAYABLE REGISTER
Check Dates From: 10/08/2023 to 10/21/2023

Page 4 of 8

Check Date	Check	Vendor Name	Description	Amount
10/13/2023	325399	CHAPIN SERVICES, LLC	TREE REMOVAL SERVICES	10,000.00
10/13/2023	325400	CHAPMAN, CORY	LAKEVIEW VOLLEYBALL DEPOSIT REFUND	100.00
10/13/2023	325401	CHICAGO TITLE OF MICHIGAN, INC.	CDBG - TITLE SEARCH	150.00
10/13/2023	325402	CINTAS CORPORATION NO. 2	UNIFORM CHARGES	89.13
10/13/2023	325403	CITY OF KALAMAZOO TREASURER	SANITARY SEWER CHARGES	395,509.42
10/13/2023	325404	CITY OF PORTAGE	2023 SUMMER TAX PARCEL 04440-002-O	503.57
10/13/2023	325405	CITY OF PORTAGE	CUST MEANT TO PAY 23 SUMMER TAX	3,248.05
10/13/2023	325406	COLE CONCRETE LLC	CDBG - REPLACE DETERIORATED DRIVEWAY	5,100.00
10/13/2023	325407	COOK, JENNIFER	SCHRIER BLD DEPOSIT REFUND	150.00
10/13/2023	325408	CORELOGIC CENTRALIZED REFUNDS	2023 SUMMER TAX REFUND DUE PRE CHANGE	2,136.52
10/13/2023	325409	CRASH DATA GROUP, INC.	NISSAN ACM CABLE	310.00
10/13/2023	325410	CROSSROADS MALL REALTY HOLDING LLC	2022 SUMMER TAX REFUND DUE TO MTT DOCKET	126,031.00
10/13/2023	325411	D L GALLIVAN INC.	COPY MACHINE USAGE CHARGES	108.91
10/13/2023	325412	DAVE'S CONCRETE PRODUCTS, INC.	CONCRETE FOR SIDEWALK/CURB REPAIR	1,416.00
10/13/2023	325413	DAVE'S GLASS SERVICE, INC.	FIRE APPARATUS MAINT	75.00
10/13/2023	325414	DEILMAN, ALEXIS	GRAIN ELEVATOR DEPOSIT REFUND	150.00
10/13/2023	325415	DENNY'S SAW CRIB	CHAINSAW REPAIRS	933.76
10/13/2023	325416	DETROIT SALT CO.	ICE CONTROL SALT	38,559.32
10/13/2023	325417	DEWAAL, BECKY	LAKEVIEW VOLLEYBALL DEPOSIT REFUND	100.00
10/13/2023	325418	DICK, ROBERT	FOOD ASSISTANCE REIMBURSEMENT	244.00
10/13/2023	325419	DRIESEN & ASSOCIATES INC	FIRE FACILITY MAINT	875.00
10/13/2023	325420	EDUCATIONAL ENRICHMENT FOR YOU INC.	BANDSHELL DEPOSIT REFUND	150.00
10/13/2023	325421	EMERGENCY VEHICLE PRODUCTS	FIRE APPARATUS MAINT	930.50
10/13/2023	325422	FLETCHER ENTERPRISES	PAINTING AT WEST LAKE OVERLOOK	1,945.00
10/13/2023	325423	FRIENDS OF PORTAGE SENIOR CENTER	REIMBURSEMENT FOR DONATIONS RECEIVED	505.00
10/13/2023	325424	FUN SERVICES	MOMASH INFLATABLES GAMES & AIR BRUSH	4,021.00
10/13/2023	325425	FUNDINGSLAND, CLAIRE	LAKEVIEW VOLLEYBALL DEPOSIT REFUND	100.00
10/13/2023	325426	GALLS PARENT HOLDINGS, LLC	RANGER UNIFORMS	495.79
10/13/2023	325427	GOMEZ MENDEZ, ISAI	HAVERHILL WATER TOWER REHAB	79,318.36
10/13/2023	325428	GONZLES, ANDREA	SCHRIER BLD DEPOSIT REFUND	150.00
10/13/2023	325429	GORDON FOOD SERVICE	COFFEE BAR & EVENT SUPPLIES	1,395.73
10/13/2023	325430	GRONAU, ANDREW & IRIS	BD BOND REFUND	250.00
10/13/2023	325431	GROTHAUSE, DAVID	FOOD ASSISTANCE REIMBURSEMENT	79.00
10/13/2023	325432	HARRIS, MONICA A	MEDITATIVE DOODLING INSTRUCTION	150.00

ACCOUNTS PAYABLE REGISTER
Check Dates From: 10/08/2023 to 10/21/2023

Page 5 of 8

Check Date	Check	Vendor Name	Description	Amount
10/13/2023	325433	HOLMAN, AMANDA	RAMONA PARKING VOUCHERS REFUND	115.00
10/13/2023	325434	HOLMES, JEFF	HAYLOFT THEATRE DEPOSIT REFUND	150.00
10/13/2023	325435	HOME DEPOT	REPAIR & MAINT SUPPLIES	1,084.97
10/13/2023	325436	VOID		0.00
10/13/2023	325437	HUYNH, PHUONG	REIMBURSEMENT FOR DAMAGED MAILBOX	44.00
10/13/2023	325438	IAVAGNILIO, NICKLAUS	LK VOLLEYBALL DEPOSIT/FEES REFUND	160.00
10/13/2023	325439	ICE CREATIONS	PUMPKIN CARVING & ICE CARVING DEMOS	750.00
10/13/2023	325440	INTERSTATE OFFICE INTERIORS	OFFICE FURNITURE	1,350.00
10/13/2023	325441	JENNINGS, FAWN	ART IN THE PARK GLASSBLOWING REFUND	190.00
10/13/2023	325442	JOHNSON, ALEXANDRA	STUART MANOR DEPOSIT REFUND	150.00
10/13/2023	325443	JOHNSON, DENNIS	SWP SOFTBALL DEPOSIT REFUND	100.00
10/13/2023	325444	JOHNSON, MATTHEW	GRAIN ELEVATOR DEPOSIT REFUND	150.00
10/13/2023	325445	KALAMAZOO AREA TRANSPORTATION STUDY	TRAFFIC TECH SERVICES	1,235.00
10/13/2023	325446	KALAMAZOO COUNTY HEALTH & COMMUNITY	HOUSEHOLD HAZARDOUS WASTE PROGRAM	1,821.98
10/13/2023	325447	KALAMAZOO COUNTY TREASURER	COLONIAL ACRES SEPTEMBER 2023 MOBILE HM	752.50
10/13/2023	325448	KALAMAZOO IN BLOOM, INC.	CITY CENTER FLOWER PLANTING	17,000.00
10/13/2023	325449	KALAMAZOO LANDSCAPE SUPPLIES	RESTORATION SUPPLIES	280.00
10/13/2023	325450	KEENAN, STEPHANIE	RAMONA SOCCER DEPOSIT REFUND	100.00
10/13/2023	325451	KELLYCO METAL DETECTORS	PRO-POINTER METAL DETECTOR	142.94
10/13/2023	325452	KETTEMAN, NANCY	SCHRIER PARK DEPOSIT REFUND	150.00
10/13/2023	325453	KLINE, MICHAEL L	STRAW BALES FOR MOMASH/FALL FEST	125.00
10/13/2023	325454	KONICA MINOLTA BUSINESS SOLUTIONS	PRINTER MAINTENANCE FEES	347.00
10/13/2023	325455	KSS ENTERPRISES	JANITORIAL SUPPLIES/PAPER PROD	506.88
10/13/2023	325456	KZOO TIRE COMPANY	POLICE VEHICLE REPAIR/MAINTENANCE	842.80
10/13/2023	325457	LANGUAGE LINE, INC	LANGUAGE SERVICES	97.75
10/13/2023	325458	LERETA LLC	2023 SUMMER TAX REFUND DUE PRE CHANGE	1,861.38
10/13/2023	325459	LEXISNEXIS RISK DATA MANAGEMENT INC	MONTHLY ACCURINT	150.00
10/13/2023	325460	LIBRA INDUSTRIES, INC. OF MICHIGAN	FIRE OPERATING SUPPLIES	185.00
10/13/2023	325461	LIFE EMS, INC	CPR CARDS	375.00
10/13/2023	325462	LIFE EMS, INC	FIRE TRAINING SUPPLIES	175.00
10/13/2023	325463	LOCEY SWIM POOL CO.	CITY HALL FOUNTAIN SUPPLIES	50.80
10/13/2023	325464	LOTHSCHUTZ, ANDREW	RAMONA SOFTBALL DEPOSIT REFUND	100.00
10/13/2023	325465	M & K QUALITY TRUCK SALES	TIRE PRESSURE SENSORS - PLOWS	3,892.07
10/13/2023	325466	MAGLOCLIN, INC.	ANNUAL MEMBERSHIP FEES	400.00

ACCOUNTS PAYABLE REGISTER
Check Dates From: 10/08/2023 to 10/21/2023

Page 6 of 8

Check Date	Check	Vendor Name	Description	Amount
10/13/2023	325467	MAPLE LAKE BUILDERS	WEST LAKE OVERLOOK FACIA REPAIR	2,700.00
10/13/2023	325468	MARATHON SPORTSWEAR INC.	VACCINATION INITIATIVE T-SHIRTS-PZSC	1,163.97
10/13/2023	325469	MCDONALD'S TOWING & RESCUE, INC.	POLICE TOWING SERVICES	111.00
10/13/2023	325470	MCMORRIS, ELI & TARA	REFUND OP FINAL BILL UTILITY BILL	98.80
10/13/2023	325471	MENARDS	DPW BUILDING FRIDGE-REPAIR	449.00
10/13/2023	325472	MI ASSOC. OF CHIEFS OF POLICE	MACP WINTER CONFERENCE REG	280.00
10/13/2023	325473	MICH MUNICIPAL POLICE & FIRE REPAIR	POLICE VEHICLE REPAIR & MAINT	1,556.86
10/13/2023	325474	MICHIGAN SECURITY AND LOCK LLC	MISC LOCK AND KEY SERVICES	150.00
10/13/2023	325475	MILLER ROAD TRANSFER STATION	DUMPING FROM BISHOPS BOG	513.94
10/13/2023	325476	MLIVE MEDIA GROUP	LEGAL NOTICES AND AFFIDAVITS	1,011.32
10/13/2023	325477	MML UNEMPLOYMENT FUND	UNEMPLOYMENT COMPENSATION 3RD QTR 2023	203.04
10/13/2023	325478	MORRISON LANDSCAPE SERVICES LLC	LANDSCAPE REPAIR	3,500.00
10/13/2023	325479	MOSQUITO BEATERS LLC	MOSQUITO SPRAY SVCS	209.00
10/13/2023	325480	NAHAVANDI, ELIZABETH	RAMONA SOFTBALL DEPOSIT REFUND	100.00
10/13/2023	325481	NOONAN, ALYSSA	REFUND DUPLICATE UTILITY BILLING PMT	542.89
10/13/2023	325482	NUANCE COMMUNICATIONS	WINScribe ANNUAL MAINTENANCE	71.30
10/13/2023	325483	OFFICE DEPOT, INC.	OFFICE SUPPLIES	1,178.82
10/13/2023	325484	PENNZAR PROMOTIONS	BRIAN PENNY MAGIC MOMASH	600.00
10/13/2023	325485	PETERMAN CONCRETE CO.	NEW BASKETBALL HOOP HAVERHILL	169.81
10/13/2023	325486	PETTY CASH-JANET GATES	REPLENISHMENT CHECK	554.01
10/13/2023	325487	PETTY CASH-KIM STEWART	REPLENISHMENT CHECK	261.00
10/13/2023	325488	PETTY CASH-MEGAN HUBER	REPLENISHMENT CHECK	1,101.61
10/13/2023	325489	PROGRESSIVE AE	CONSULTING SERVICES FOR AQUATIC NUISANCE	4,375.00
10/13/2023	325490	PURITY CYLINDER GASES, INC	WELDING SUPPLIES	239.76
10/13/2023	325491	RATHCO SAFETY SUPPLY, INC.	SAFETY FENCE, SIGN REPAIRS	609.50
10/13/2023	325492	RENEWED EARTH, INC.	LEAF AND BRUSH DISPOSAL	8,166.66
10/13/2023	325493	RMUS LLC	AIR DATA RENEWAL	1,526.40
10/13/2023	325494	ROSE, ARCHIE L.	FALL FESTIVAL DEMO	200.00
10/13/2023	325495	ROSE, SANDRA K.	FITNESS INSTRUCTION	100.00
10/13/2023	325496	ROY, MICHAEL	SWP TOURNAMENT DEPOSIT REFUND	100.00
10/13/2023	325497	RUTHERFORD, DONALD E, JR TRUST	BD BOND REFUND	306.00
10/13/2023	325498	SCHOFIELD, IAN A.	VINYL WRAPS FOR CITY TRUCKS	92.00
10/13/2023	325499	SHERRIFF-GOSLIN CO.	CDBG - ROOF REPLACEMENT	12,300.00
10/13/2023	325500	SHI INTERNATIONAL CORP.	WIRELESS UPGRADE PRJ, LUCID CHART RENEWAL	4,794.10

ACCOUNTS PAYABLE REGISTER
Check Dates From: 10/08/2023 to 10/21/2023

Page 7 of 8

Check Date	Check	Vendor Name	Description	Amount
10/13/2023	325501	SIGN SHOP OF WESTERN MICHIGAN	STAFFING BOARD MAGNET	18.00
10/13/2023	325502	SMART SOURCE, LLC	PRINTING SERVICES	442.74
10/13/2023	325503	SMITH, AMY	HAYLOFT THEATRE DEPOSIT REFUND	150.00
10/13/2023	325504	SOLITUDE LAKE MANAGEMENT, LLC	AUSTIN LAKE HERBICIDE APPLICATION	28,942.00
10/13/2023	325505	STATE OF MICHIGAN	MEDC - BROWNFIELD REDEVELOPMENT FUND	1,316.00
10/13/2023	325506	STEENSMA LAWN & POWER EQUIPMENT	SMALL EQUIP REPAIR/MAINT	32.54
10/13/2023	325507	STEVENS, MARK	REIMB-REPAIR TOILET FROM PIPE RELINING PRJ	235.38
10/13/2023	325508	STEWART, JAMAL	MONSTER MASH DJ	800.00
10/13/2023	325509	SWIKOSKI, PETER	ENTERTAINMENT SERVICES	300.00
10/13/2023	325510	TALBOT, MICHAEL J.	FARMERS MARKET MUSICIAN	100.00
10/13/2023	325511	TANNER, STEVE	REIMB EXPS-MFIS FALL CONF	396.27
10/13/2023	325512	TAPLIN, DALE	REIMBURSEMENT FOR IRRIGATION DAMAGES	409.08
10/13/2023	325513	TECH DATA CORPORATION	MASS NOTIFICATION SYSTEM ANNUAL LICENSE	14,000.00
10/13/2023	325514	TELUS COMMUNICATIONS (U.S.) INC	SKYHAWK GPS ACCESS/SERVICE FEES	755.20
10/13/2023	325515	THOMPSON, VENTRA	GRAIN ELEVATOR DEPOSIT REFUND	150.00
10/13/2023	325516	TIETZ, LAURA	LAKEVIEW VOLLEYBALL DEPOSIT REFUND	100.00
10/13/2023	325517	TOP SHELF CATERING	CATERING AT RESPECT FOR LAW EVENT	140.00
10/13/2023	325518	TOWN, DWIGHT A.	LAWN RESTORATIONS	1,225.00
10/13/2023	325519	TRACY CROSS & ASSOCIATES, INC.	COMPREHENSIVE HOUSING ANALYSIS	6,547.68
10/13/2023	325520	TRIFECTA NETWORKS, LLC	REPLACE PHONES	143.46
10/13/2023	325521	U S SIGNAL COMPANY, LLC	MONTHLY INTERNET FIBER SERVICES	900.00
10/13/2023	325522	UNITED PARCEL SERVICE	UPS WEEKLY	89.64
10/13/2023	325523	USPS	REFILL POSTAGE METER	5,000.00
10/13/2023	325524	VESTARON CORPORATION	RAMONA PARKING VOUCHERS REFUND	25.00
10/13/2023	325525	WENDT, KENDRA	SCHRIER PARK DEPOSIT REFUND	150.00
10/13/2023	325526	WESTVIEW CAPITAL, LLC	BD BOND REFUND	4,106.00
10/13/2023	325527	WEYENBERG, SARA	TRIP REFUND WASHINGTON 221023	200.00
10/13/2023	325528	WICKER, ISAIAH	HAYLOFT THEATRE DEPOSIT REFUND	150.00
10/13/2023	325529	WILD, JED	REIMB - FIRE DEPT SUPPLIES	179.44
10/13/2023	325530	WILLIAMS & WORKS	ENG SVCS-S WESTNEDGE RECONSTRUCTION	6,960.84
10/13/2023	325531	WILLIAMS, MARVIN	REIMBURSEMENT FOR IRRIGATION DAMAGES	164.05
10/13/2023	325532	XAVUS SOLUTIONS	ON SITE TRAINING	600.00
10/19/2023	325533	SUN TITLE AGENCY OF MICHIGAN, LLC	PURCHASE OF 9131 PORTAGE INDUSTRIAL DRIVE	101,539.86
10/19/2023	325534	SUN TITLE AGENCY OF MICHIGAN, LLC	PURCH 9245 PORTAGE INDUSTRIAL DR-BLDG & LAND	748,361.87

ACCOUNTS PAYABLE REGISTER
Check Dates From: 10/08/2023 to 10/21/2023

Page 8 of 8

Check Date	Check	Vendor Name	Description	Amount
10/19/2023	325535	SUN TITLE AGENCY OF MICHIGAN, LLC	PURCHASE OF 9996 PORTAGE INDUSTRIAL DRIVE	295,576.02
10/20/2023	325536	AT&T	ELECTRONIC COMMUNICATIONS	128.23
10/20/2023	325537	CITY OF PORTAGE	IRRIGATION 1000 MARTIN LUTHER KING DR	133.09
10/20/2023	325538	CORELOGIC CENTRALIZED REFUNDS	2023 SUMMER TAX REFUND DUE PRE CHANGE	1,075.21
10/20/2023	325539	EAKINS, PRESTON	BALLOON ARTIST MOMASH	1,000.00
10/20/2023	325540	TORRENCE, PHILLIP & SARAH	2023 SUMMER TAX REFUND DUE PRE CHANGE	5,150.86
10/20/2023	325541	VERIZON WIRELESS	CELL PHONE/WIRELESS CARD SVC	3,092.85
Total Paper Checks				1,999,956.83

Check Type: Auto-Pay Payments

10/10/2023	CONSUMERS AUTOPAY	GAS-ELECTRIC	7,253.62
10/10/2023	INVOICE CLOUD	PROCESSING FEES	924.60
10/11/2023	CONSUMERS AUTOPAY	GAS-ELECTRIC	24,034.91
10/13/2023	CONSUMERS AUTOPAY	GAS-ELECTRIC	621.23
10/16/2023	CONSUMERS AUTOPAY	GAS-ELECTRIC	7,212.64
10/16/2023	MISSIONSQUARE	EMPLOYER RETIREMENT CONTRIBUTIONS	89,587.87
10/16/2023	CITY OF PORTAGE	WATER/SEWER BILLING	2,073.33
10/17/2023	CONSUMERS AUTOPAY	GAS-ELECTRIC	371.64
10/17/2023	CITY OF PORTAGE	WATER/SEWER BILLING	5,893.64
10/18/2023	CONSUMERS AUTOPAY	GAS-ELECTRIC	4,430.39
10/19/2023	CONSUMERS AUTOPAY	GAS-ELECTRIC	241.22
10/02/2023	MISSIONSQUARE	EMPLOYEE RETIREMENT WITHHOLDINGS	2,852.87
Total Auto-Pay Payments			145,497.96

Check Type: Electronic Payments

10/13/2023	MULTIPLE	WEEKLY TAX DISBURSEMENT 10/6/23	79,956.77
10/13/2023	MULTIPLE	IAFF, PPCOA, PPOA, UAW PENSION PAYMENTS	91,914.15
10/20/2023	MULTIPLE	WEEKLY TAX DISBURSEMENT 10/13/23	178,739.82
Total Electronic Payments			350,610.74

Grand Total **3,238,983.93**

TO: Honorable Mayor and City Council

FROM: Pat McGinnis, City Manager

SUBJECT: 2024 City Council Meeting Schedule

SUPPORTING PERSONNEL: Erica Eklov, City Clerk

ACTION RECOMMENDED: Approve the 2024 schedule of regular City Council meetings.

Historically, the City Council has met on the 2nd and the 4th Tuesday of the month, apart from holidays, Portage Public Schools Breaks, etc. Proposed City Council meeting dates for 2024 are recommended as noted below.

Tuesday, January 9	Tuesday, July 9
Tuesday, January 23	Tuesday, July 23
Tuesday, February 6	Tuesday, August 13
Tuesday, February 20	Tuesday, August 27
Tuesday, March 5	Tuesday, September 10
Tuesday, March 19	Tuesday, September 24
Tuesday, April 9	Tuesday, October 8
Tuesday, April 23	Tuesday, October 22
Tuesday, May 14	Wednesday, November 6*
Tuesday, May 28	Tuesday, November 19
Tuesday, June 11	Tuesday, December 3
Tuesday, June 25	Tuesday, December 17

*Notably, the proposed meeting dates for November 2024 are Wednesday, November 6, and Tuesday, November 19. These dates for November are suggested to accommodate the national election of Tuesday, November 5, and the week of Thanksgiving. The proposed dates also permit the ability to avoid a meeting during the week of December 23rd.

FUNDING: N/A

Attachments: 1. Proposed 2024 City Council Meeting Dates

Proposed 2024 City Council Meeting Dates

January						
Su	M	T	W	Th	F	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

February						
Su	M	T	W	Th	F	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29		

March						
Su	M	T	W	Th	F	Sa
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

February 27 – Potential Pres. Primary

March 12 – Potential Pres. Primary

April						
Su	M	T	W	Th	F	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

May						
Su	M	T	W	Th	F	Sa
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

June						
Su	M	T	W	Th	F	Sa
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

May 7 – May Election Day

May 24 – All Staff Training

June 7 – Last Day of School

July						
Su	M	T	W	Th	F	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

August						
Su	M	T	W	Th	F	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

September						
Su	M	T	W	Th	F	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

August 6 – Primary Election Day

August 30 – All Staff Training

October						
Su	M	T	W	Th	F	Sa
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

November						
Su	M	T	W	Th	F	Sa
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

December						
Su	M	T	W	Th	F	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

November 5 – Election Day

(Presidential)

1 Council Meeting Date

US holiday (City Hall closed)

Portage Public Schools break

TO: Honorable Mayor and City Council

FROM: Pat McGinnis, City Manager

SUBJECT: Health Insurance Contract Renewals

SUPPORTING PERSONNEL: Shannon Hertz, Director of Human Resources

ACTION RECOMMENDED: Approve:

- a. a one-year contract with Blue Cross Blue Shield of Michigan at a cost of \$223,309, and a one-year contract with Blue Care Network at a cost of \$1,980,908, for employee health insurance;
- b. maintain current employer/employee cost-sharing practices by taking action to exempt the city from requirements of P.A. 152 for the 2024 medical benefits plan year;

and authorize the City Manager to execute all documents related to this action on behalf of the city.

Health insurance is provided by the city to all full-time non-union and union personnel as part of an overall comprehensive benefit package which is key to attracting and retaining quality employees. City employees currently have the opportunity to enroll in health insurance specific to employee groups, offered through Blue Cross Blue Shield (BCBSM) of Michigan Community Blue or Blue Care Network (BCN).

Current health insurance contracts with BCBSM of Michigan and BCN expire on December 31, 2023. As part of the health insurance contract renewal process for the 2024 plan year, the city was advised of decreases in premiums to all employee plans.

Changes to premiums (excluding taxes and fees) are as follows:

BCN \$500/20%	IAFF and UAW	-2.83%
BCN HDHP	IAFF, PPCOA, PPOA, UAW	-1.68%
BCN HDHP	Department Head & Non-Union	-1.71%
BCN \$500/20%	Department Head & Non-Union	-0.33%
BCN \$500/0%	PPCOA, PPPOA and UAW	-0.25%
BCBSM HDHP	IAFF	-6.32%
BCBSM HDHP	Department Head & Non-Union	-6.37%

BCBSM CB \$1000/20%	IAFF	-2.38%
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The state health insurance premium caps for 2024 increased by 4.1%. Taxes and fees decrease of approximately \$4,171.23 from the prior year, with a total estimated cost of \$6,865.45, is expected for the 2024 plan year based upon current enrollment.

Current State Insurance Premium Caps		2024 State Insurance Premium Caps	
Single Coverage	\$7,399.47	Single Coverage	\$ 7,702.85
2 Person Coverage	\$15,474.60	2 Person Coverage	\$16,109.06
Family Coverage	\$20,180.43	Family Coverage	\$21,007.83

City Administration decided to eliminate the BCBSM CB \$3000/\$6000/20% plan currently offered to Department Head & Non-Union employees due to its' significant cost to employees, while continuing to offer the BCN \$500/20% and BCBSM and BCN high deductible health plans (HDHPs) and health savings account (HSA) options.

It is recommended that City Council approve one-year contracts with Blue Cross Blue Shield of Michigan and Blue Care Network for employee health insurance. Estimated contract costs are as follows: BCBSM - \$223,309, with \$162,467 paid by the city; and BCN - \$1,980,908, with \$2,206,713 paid by the city (including HSA contributions).

In 2013, the state legislature amended Public Act 152 to expand the definition of "medical benefit plan cost" to include the amounts public employers pay directly or indirectly for taxes and fees associated with health insurance. Based upon this action, the costs for taxes and fees would have had to be passed directly to employees. P.A. 152 also provides that an exemption to the requirements of the act can be exercised for the next succeeding year by a two-thirds vote of the City Council. As such, the Council took action in December 2013 to exempt the city from P.A. 152 beginning with the 2014 plan year permitting the city to continue to pay up to the caps for health insurance premiums and pay the costs associated with taxes and fees. With the exception of not passing along the cost of health care-related taxes to employees, all other aspects of P.A. 152 continue to be complied with. This same action has been repeated in successive years. If the City Council again takes action to exempt the city from P.A. 152 for the 2024 plan year and allow the city to pay up to the state caps in premium or in HSA contributions plus the associated taxes and fees, this action will simply enable a continuation of current practice in conformance with P.A. 152 as originally enacted in 2011.

It is therefore recommended that City Council approve a one-year contract with Blue Cross Blue Shield of Michigan at a cost of \$223,309, and a one-year contract with Blue Care Network at a cost of \$1,980,908, for employee health insurance; maintain current employer/employee cost-sharing practices by taking action to exempt the city from requirements of P.A. 152 for the 2024 medical benefits plan year; and authorize the City Manager to execute all documents related to this action on behalf of the city.

FUNDING: Funds have been budgeted and are available to support the cost of employee health insurance coverage for the balance of the current fiscal year. Funds will be budgeted for Fiscal Year 2024-2025.

Attachments: None

TO: Honorable Mayor and City Council

FROM: Pat McGinnis, City Manager

SUBJECT: Amendment to Tentative Plan Application at 412 W. Centre Ave. and 7860 Shaver Rd.

SUPPORTING PERSONNEL: Peter Dame, Chief Development Officer

ACTION RECOMMENDED: Accept the Tentative Plan Amendment of the River Caddis proposed mixed-use development at 412 W. Centre Avenue and 7860 Shaver Road and set the public hearing for November 14, 2023 subject to the following conditions:

1. The proposed live/work units shall be consistent with the requirements of Building Code Section 419 Live/Work Units and Zoning Code Sec. 42-137 Work/Live Accommodations.
2. The utility and engineering review comments should be addressed in detail in the PD Final Plan.

The applicant (River Caddis Development, LLC) requests an amendment to their previously approved Tentative Plan for a mixed-use development proposal located at 412 West Centre Avenue and 7860 Shaver Road to avoid mapped wetlands. The originally approved Tentative Plan and associated rezoning applications were supported by the Planning Commission on March 2, 2023, and approved by the City Council on April 18, 2023. The previous applications, drawings, and staff report are attached. The previously approved rezoning application has already changed the underlying zoning district from Commercial Planned Development (CPD) to Planned Development (PD) to allow residential uses. The subject properties are zoned PD and are not affected by the filed amendment proposal; only the plan for the site is being amended.

The proposed amendment consists of the following:

- Reduce overall dwelling units from 228 to 180 units (48-unit reduction).
- Reduce density from 21.5 to 16.9 units/ acre.
- Revise the number of bedrooms to 104 1-bedroom units and 68 2-bedroom units.
- Combine the two 'Live / Work' buildings into one building.
- Combine two apartment buildings for a new overall total of five apartment buildings.
- Relocate two proposed apartment buildings outside of mapped wetlands.
- Reduce central common area and expand naturalized areas.
- Reduce overall parking spaces from 359 to 294 spaces (63-space reduction).
- Increase the parking ratio from 1.51 to 1.63 spaces per unit.

The updated summary of the current proposal:

Building No.	No. of Stories	Height (ft)	No. of Apt. Units	Use	No. 1 Br. Units	No. 2 Br. Units	Building Size (sq ft)	Setback distance (ft) to closest Lot line
1	3	38	24	8 Live/ Work + Apts.	8	8	23,550; 980 (Commercial)	24
2	3	35	48	Apartment			41,580	20
3	3	35	24	Apartment			20,790	24
4	3	35	24	Apartment			20,790	184
5	3	35	36	Apartment			32,895	55
6	3	35	24	Apartment			20,790	15
7	1	16	—	Community Building	—	—	3,350	65
Total			180	8 Live/ Work	104	68		

The developer will continue to seek available development incentives to support the overall project and is seeking MSHDA assistance and hoping to obtain approval of the reduced scale plan by December 1, 2023. Due to this requested approval timeframe and the Wednesday date of the November 1 Council meeting, the legal notice was submitted to the local newspaper in advance of the November 1 meeting to meet the desired November 14 City Council hearing date.

The applicant's traffic impact study was not required to be updated with the proposed lower unit count and subsequently fewer car trips. The previous traffic study is attached. It can be assumed that the traffic impact will be proportionately lowered by the percentage reduction in the number of units.

Due to the revisions, the applicant's anticipated construction start date has changed from late 2023 to Spring/Summer 2024.

Applicable Zoning Regulations

The proposed amendment will follow the same permitting process as the original Tentative Plan. The following sections of Chapter 42. Division 4. Zoning Districts and District Regulations apply and are addressed further in this report:

Subdivision 11 – PD, Planned Development District

The amended Tentative Plan process involves the following two steps, per [Sec. 42-375](#):

Step 1) Tentative Plan review (Items A-G, Sec. 42-375) identifies part(s) or whole project features; analyzes the impact on neighborhoods, streets, utilities, and the natural environment; and determines consistency with adopted local plans. This step does not require detailed engineering drawings. *The filed Amendment is at this step.*

Step 2) Final Plan review (Items H-M, Sec 42-375), identifies and analyzes detailed drawings of project improvements (streets, utilities, lot dimensions, etc.). *A Final Plan application has not been submitted at this time, awaiting approval of the amended Tentative Plan.*

The applicant has submitted a site layout showing the revised location of buildings and parking area, building setback distances, access and adjacent streets, pedestrian pathways, linkages, and open space. The applicant has also submitted a project narrative describing the updated overall project, types of housing units, live/work elements, parking configurations, illustrations depicting various renderings of building elevations, general landscaping plan, etc. These submittals address items A-E within Sec. 42-375. The Planning Commission reviewed the project for consistency with Sec. 42-375 Tentative Plan items A-E during a public hearing on October 19, 2023, and provided a recommendation for approval to the City Council.

Staff find the analysis of the amendment is substantially consistent with staff's analysis of the previously approved Tentative Plan. Therefore, staff find the amendment meets items A-G, Sec 42-375 Tentative Plan 'Planned Development' requirements, is consistent with the Comprehensive Plan and land use considerations, is not out of place with surrounding development patterns, and can be accommodated by existing utilities and street networks in the area. It also removes units previously proposed to be built that would have impacted wetlands.

Preliminary Evaluations from the Development Review Team (DRT)

The amendment was reviewed by the Development Review Team (DRT), which ensures that the proposed development is consistent with the city's infrastructure, engineering, and other requirements including streets, sewers, water mains, stormwater, parking, landscaping, and others. DRT is comprised of representatives from the Department of Transportation and Utilities, Fire Department, Department of Parks and Recreation, Office of the City Assessor, and Department of Community Development. DRT has the following review comments, which do not apply to the Tentative Plan which is conceptual but will need to be addressed in the more detailed PD Final Plan:

1. Any further revisions to the number of units, or similar features, that would affect the results of the Traffic Impact Study may require the Traffic Impact Study to be updated and resubmitted to the City for approval.
2. The proposed water main should be looped to include connections to both Shaver Road and West Centre Avenue for improved water quality, reliability, and fire flow. There are two existing water mains close to the south side of the development that are fed off the West Centre Avenue water main. There is also an existing 8-inch water main stub at the hydrant along the Shaver Road frontage of the parcel. The design engineer will need to confirm the availability of domestic and fire flows given the final design and occupancy of the building concerning applicable codes and standards.
3. The sanitary sewer may need a lift station depending on the proposed ground/building elevations. Based on drawings in GIS, two existing sanitary sewers near/on the site have inverted elevations of approximately 850 and 848. Much of the existing ground elevation on the site per GIS is less than 852 and most of the site is less than 854. The public sanitary sewer main needs to have a minimum of five (5) feet of cover. The developer's engineer needs to confirm whether gravity sewer service can be provided for all the proposed buildings. Sanitary lines that do not meet minimum cover criteria cannot be classified as public mains and will be the responsibility of the development to maintain.
4. A more detailed review will be completed of the proposed storm sewer systems, water main system, and sanitary sewer system when the PD Final Plan is submitted and detailed elevations are provided.
5. Public water main and public sanitary sewer extensions on-site to serve this development will require a Public Utility Plan Review by the city with subsequent submittal to EGLE for a

water supply permit, and to the City of Kalamazoo for approval and EGLE for a wastewater construction permit.

6. The project as proposed will require enclosing a city drain from the storm sewer outlet point near the Shaver Road right-of-way line to the outlet point at Portage Creek. The Narrative and Preliminary Utility Plan indicate enclosing the drain and relocating it as a 36-inch storm sewer. The enclosed drain will need to be appropriately sized to convey the drain's flow without causing the existing enclosed drain to be surcharged or causing flooding upstream of the proposed development. The enclosed drain will need to account for all existing and future anticipated stormwater runoff. The City of Portage and EGLE will need to review this in detail and all applicable permits will need to be obtained as part of the PD Final Plan and Public Utility Plan review processes with the city. The Narrative and Preliminary Utility Plan need to be appropriately revised.

Public Hearing

A public hearing for this tentative plan amendment application was opened at the October 19, 2023, Planning Commission meeting. The Planning Commission reviewed and discussed the proposed tentative plan amendment. The applicant representative, John McGraw, River Caddis Development, LLC, and the applicant's architect, Mike Corby, Integrated Architecture, were present to support the proposed application and explain the project details. No public comments were received at the public hearing. The Planning Commission determined no further discussion was needed and voted to close the public hearing. After careful consideration, the Planning Commission voted 8-0 to recommend to the City Council the approval of the Amendment to the previously approved Tentative Plan Application.

It is therefore recommended that City Council accept the Tentative Plan Amendment of the River Caddis proposed mixed-use development at 412 West Centre Avenue and 7860 Shaver Road, with the following conditions:

1. The proposed 'live/work' units shall be consistent with the requirements of Building Code Section 419 'Live/ Work Units' and Zoning Code Sec. 42-137 'Work/ Live Accommodations'.
2. The utility and engineering review comments should be addressed in detail in the PD Final Plan.

FUNDING: Not Applicable

- Attachments:**
1. Commercial Development Application - Tentative Plan Amendment
 2. Proposed Amendment Plan and Narrative
 3. Previous-approved Tentative Plan
 4. Previous Preliminary Utility Plan
 5. Previous Traffic Impact Study
 6. City Managers Report to CC; 4.18.23
 7. Draft Planning Commission October 19, 2023 meeting minutes
 8. Planning Commission Transmittal Letter



DEVELOPMENT REVIEW APPLICATION

Department of Community Development
7900 South Westnedge Avenue – Portage, Michigan 49002 – (269) 329-4477

Applicant must complete all items in sections 1-9 (if applicable).

Please note: Separate applications must be submitted for Plumbing, Mechanical and Electrical Work Permits

No Work is to Start Prior to the Issuance of Building Permit

1) PROJECT INFORMATION

Project Description PD Planned Development Refer to conceptual plans	Address 412 W Centre Ave 7860 Shaver Avenue
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2) IDENTIFICATION (OWNER)

Name River Caddis Communities, LLC	Address 1038 Trowbridge Rd.
City 1038 Trowbridge Rd.	State MI Zip 48823 Phone 517.420.7393

3) ARCHITECT OR ENGINEER

Name Integrated Architecture	Address 840 Ottawa NW	City Grand Rapids
State MI	Zip 49503	Phone 616.574.0220
License Number	Expiration Date	Email dhuizenga@intarch.com

4) BUILDING CONTRACTOR

Company name Oakwood Construction	Address 2380 Science Parkway #101	City Okemos
State MI	Zip 48864	Phone 517-347-0968
Email dbishop@oakcc.net	Federal Employer ID	
Builder License Number	Expiration Date	
Workers Comp Insurance Carrier	MESC Employer Number	

5) TYPE OF DEVELOPMENT PROJECT

- ☐ Site Plan
 ☐ Building Plan
 ☐ Final Plan in Planned Development
 ☐ Subdivision
 ☐ Condominium
 ☐ Land Division Requiring Public Improvements
 ☐ Landscape Plans
 ☐ Public Water Main
 ☐ Public Sanitary Sewer Main
- ☒ Other: Tentative Plan in Planned Development
 (Note: Please provide a Portable Document Format (PDF) of the plans for the project at time of document submittal. The submitted format shall be CD/DVD or USB. If a PDF is not submitted, an additional \$25 fee plus \$1 for each plan sheet after 20 sheets will apply.)

6) TYPE OF IMPROVEMENT

- ☒ New Building
 ☐ Alteration
 ☐ Addition
 ☐ Repair
 ☐ Demolition
 ☐ Foundation Only
 ☐ Relocation
 ☐ Special Inspection
 ☐ Solar
 ☒ Other: PD Planned Development

7) DESCRIPTION OF WORK

- A) Phase 1 Residential Development Component proposing (5) three story multi-residential apartment structures, (1) "Live Work" three story building, totaling 180 new apartment units. Phase 1 Planned Development also includes club house amenity building and pool and site developments such as parking areas, trails, utilities and storm water management facilities.
- B) Valuation of Project: \$ 31 Million
- C) Any known soil and/or groundwater contamination? ☐ Yes ☒ No

8) CHARACTERISTICS OF THE BUILDING

A) Water Meter Size

☐ 5/8" ☐ 3/4" ☐ 1" ☐ 1 1/2"
☒ Other TBD ☐ Irrigation Size _____ ☐ Fire Sprinkler Size _____

B) Electric Service Size

☐ 200 AMP ☐ 400 AMP ☐ 600 AMP ☐ 800 AMP ☐ 1000 AMP ☒ Other TBD

C) Type of Mechanical

Air Conditioning? ☒ Yes ☐ No Fire Suppression? ☒ Yes ☐ No Hood System? ☐ Yes ☐ No

9) CONSTRUCTION PLANS SUBMITTED

Required submittals for plan review:

- Plans shall be signed and sealed when required in accordance with State of Michigan Act No.299 of Public Acts of 1980.
- All plans shall be drawn on uniform sheets no greater than 30"x42".
- All plans shall be drawn to an architectural scale.
- All plans shall be clear, legible and accurate.
- Plans shall be stapled along the left margin.

Type of Plan Submitted:

☒ Building ☐ Electrical ☐ Plumbing ☐ Mechanical ☐ Energy

Building Code: Site plan, foundation plan, soil bearing capacity, floor plans, building elevations, building sections, framing plan, details, roof plan, roof finish schedule, roof live and dead loads.

Electric Code: Lighting layout, circuiting, switching, conductor and raceway sizes, wattage schedule, service location and riser diagram, load calculations, and appropriate plans showing standard symbols of all electrical equipment.

Plumbing Code: Site plan, floor plans, DWV riser diagrams and water distribution system and roof plan, Show direction of flow, pipe sizes, grade of horizontal piping, elevations, drainage fixture unit loading of both stacks and drains in the DWV system, supply fixture unit load for the water system, branch supplies serving more than one plumbing fixture, appliance or hose outlet, meter locations.

Mechanical Code: Plans indicating heating equipment, air conditioning equipment, ductwork material and layout, fire dampers, ventilation of rooms and areas, location of chimneys and vents, piping layouts, kitchen equipment layout, and combustion air. (Plans for fire suppression systems may be submitted after permit issuance, but are required prior to installation.)

Energy Code: Floor plans, building sections, details, average annual degree days, exterior envelope components materials, "U" values of elements, "R" values of insulating materials, size and type of apparatus and equipment, energy calculations.

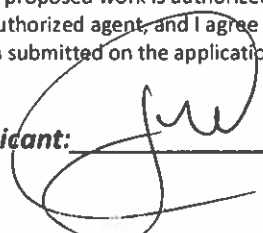
Note: Additional plan review fee(s) required of all non-concurrent plan submittals

APPLICANT INFORMATION

Applicant is responsible for the payment of all fees and charges applicable to this application and must provide the following information:

Name River Caddis Communities, LLC	Phone 517.420.7393
Address 1038 Trowbridge Road	City East Lansing
State MI	Zip 48823

I hereby certify that the proposed work is authorized by the owner of record and that I have been authorized by the owner to make this application as his/her authorized agent, and I agree to conform to all applicable laws of the State of Michigan and ordinances of the City of Portage. All information submitted on the application is accurate to the best of my knowledge.

Signature of Applicant: 

Date: 9-21-23

FOR DEPARTMENTAL USE ONLY

- | | | |
|---|--|--|
| ☐ Vacant | ☐ F-2: Factory (Low Hazard) | ☐ I-4: Institutional (Day Cares, ETC.) |
| ☐ A-1: Assembly (Theaters) | ☐ H-1: High Hazard (Detonation) | ☐ M: Mercantile |
| ☐ A-2: Assembly (Restaurants) | ☐ H-2: High Hazard (Deflagration) | ☐ R-1: Residential (Hotels, Motels, ETC.) |
| ☐ A-3: Assembly (Library, ETC.) | ☐ H-3: High Hazard (Physical) | ☐ R-2: Residential (Multi Family, ETC.) |
| ☐ A-4: Assembly (Indoor Sports) | ☐ H-4: High Hazard (Health) | ☐ R-3: Residential (1 & 2 Fam. Townhomes) |
| ☐ A-5: Assembly (Outdoor Sports) | ☐ H-5: High Hazard (HPM) | ☐ R-4: Residential (Assisted living) |
| ☐ B: Business | ☐ I-1: Institutional (Supervised) | ☐ S-1: Storage (Moderate hazard) |
| ☐ E: Educational | ☐ I-2: Institutional (Hospital) | ☐ S-2: Storage (Low hazard) |
| ☐ F-1: Factory (Moderate hazard) | ☐ I-3: institutional (Prisons) | ☐ U: Utility (Garage, Shed) |

CHARACTERISTICS OF BUILDING

Frame:

- ☐ Masonry
 ☒ Wood Frame
 ☐ Structural Steel
 ☐ Reinforced Concrete
 ☐ Other

Heating System:

- ☒ Gas
 ☒ Electricity
 ☐ Solar
 ☐ Other _____

New Sewer Connection:

- ☒ Yes
 ☐ No

New Water Connection:

- ☒ Yes
 ☐ No

Type of Mechanical:

- ☒ (Y) Air Conditioning
 ☒ (Y) Fire Suppression

DIMENSIONS / DATA

Number of Stories 3 story
 Use groups Residentia
 Construction Type 5

Number of Occupants _____

Floor Area	Existing	Alterations	New
Basement			
1 st Floor			
2 nd Floor			
3 rd Floor			
4 th Floor			
5 th Floor			
Total			



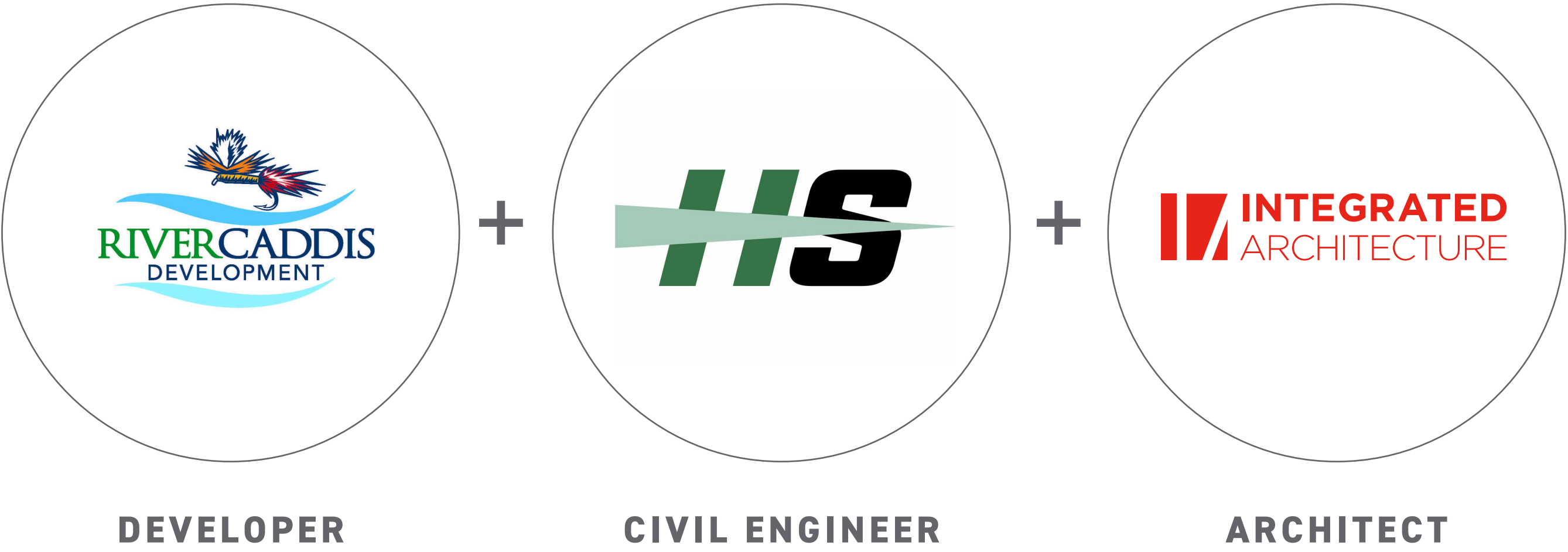


Grand Haven

Market-Rate Housing



OUR TEAM



TENTATIVE PD APPROVAL REQUESTED

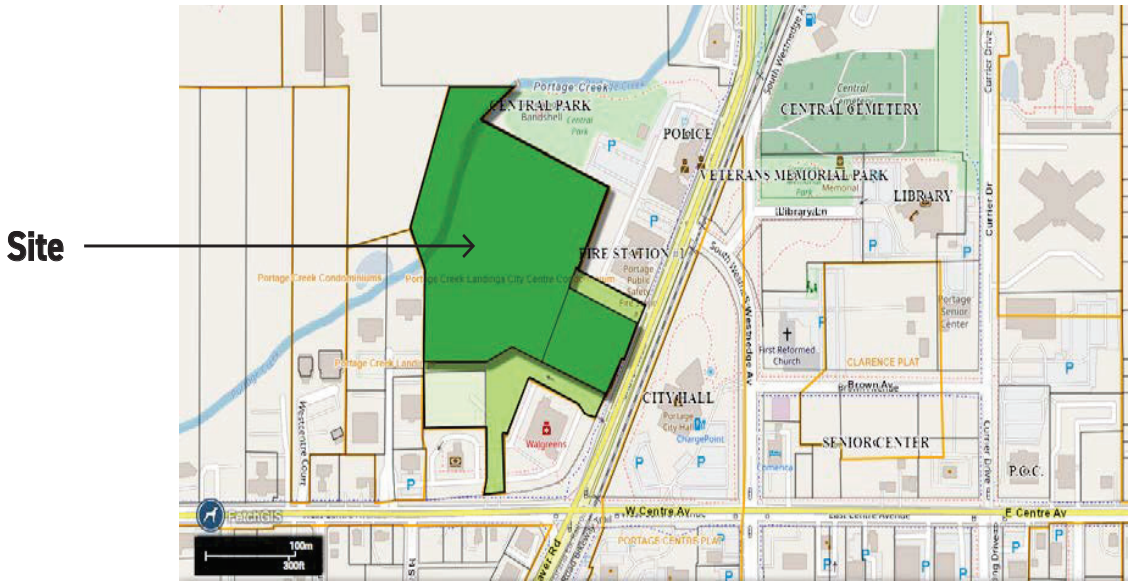
Our project aligns with City objectives/trajectory

- 2022 Attainable Housing Plan
- The City of Portage 2022-2023 Strategic Goals
- The City of Portage 2020 Residential Market Analysis



Statement of Objectives / Amended Plan Highlights

On behalf of River Caddis Development, an experienced multi-disciplinary Lansing based development company, we are excited to present to the City of Portage our concept for a new, high quality, mixed income residential development at West Centre Avenue and Shaver Road within the Portage Creek Landing City Centre Condominium. We are seeking an amendment to our previously approved Tentative PD Plan for parcel numbers 00016-740-E and 06451-001-O.



Statement of Objects / Amended Plan Highlights - Continued

The primary edits to our amended plan were the result of further site investigations and our desire to impact the wetlands less. We are proposing (180) total units with (156) units in our three-story walk-up style buildings and (24) units in our work live building fronting on Shaver Road.

The basic site layout retains the points of entry/egress on both Shaver and Centre as well as the positioning of the clubhouse and amenity area in the center of our community plan.

Our parking unit count ratio on our amended plan is above 1.6 spaces per unit. This is in comparison to the 1.57 space/unit ratio in our previously approved plan.

In addition, we have adjusted the building exteriors slightly to have consistent flat roofs to present a more urban look. All mechanical equipment for the buildings will be located on the roofs and screened from view.

Design Introduction

We are proposing a high quality mixed income, rental community, focused on providing a variety of rental living options in the neighborhood of Central Park and City Hall. The project will include two building types providing live/work units and stacked flats. The live/work buildings offer public storefronts and parking facing Shaver Road, and back porch residential access from the west. Stacked upper-level flats are offered on levels 2 and 3. The three level stacked flats buildings on the interior of the site offer one and two bedroom units of various sizes and price points.

Tree-lined boulevard entry drives off West Centre Avenue and Shaver Road lead residents and guests past the community center and around the central green and recreation areas through the site to each of the main building entries. The community center and green includes a residential pool and terrace, park, and fire pits. As the neighborhood's social hub, this will become a favorite indoor and outdoor hang out for programed activities, walking dogs, connecting to the trails, and meeting neighbors.

The project site is centrally located with walkable access to Central Park, the Portage District Library, schools, childcare facilities, the Portage Zhang Senior Center, the Portage Community Outreach Center, retailers, restaurants, and the Portage Creek Bicentennial Park Trail for walking, jogging, or biking.

With a live/work transitional commercial public side, and an interior of residential stacked flats, this development offers its residents and the City of Portage the elements to become a strong residential community.

Some key qualities of successful residential communities we are targeting with this project include:

1. Sense of Community/Sense of Place - intentionally creating a strong architectural presence and establishing a central social hub on the property supporting a unique and desirable living experience.
2. Connections/Paths - internal movements of both pedestrians and of vehicles have been choreographed to optimize visibility and efficiency.
3. Great accommodations, amenities, and accessibility - A central location, cohesive architecture with quality materials, and connected pathways supporting active lifestyles today and into the future.

Site and Context

The site is the approximately 10.6 acre vacant subdivision of Portage Creek Landings City Centre Condominium. It is accessed from W Center Ave to the south and fronts Shaver Road to the east.

The property is zoned CPD - Commercial Planned Development. The parcel abuts properties zoned OS-1 Office Service District and RM-2 Multifamily Residential to the west, OS-1 and RM-2 to the north, OS-1 to the east, and CPD to the south. Two portions of the parcel provide pedestrian and vehicular access from the south and east.

Building Organization, Size and Heights

7 buildings are placed on the site to optimize their relationships with the surrounding context and create a series of inviting dwellings and amenity areas.

Building 1 is three stories at thirty eight feet in height at the parapet of the flat roof. It includes ground level live/work units and stacked flats on the upper two levels. This building fronts Shaver Road and includes parking adjacent to the store fronts facing east. Building 1 will have 8 live/work and 16 stacked flat units. All units in the development will have in-unit laundry.

Building 3 - 6 include 3 levels of stacked flats accessed by multiple entry points in each building. These buildings are three stories at thirty three to thirty five feet in height to the highest point of the parapet.

Building 7 houses the community room, common spaces, and a leasing office. The single story structure is approximately 16 feet in height.

With 180 units on 10.61 acres of land, the development will total 16.9 (previously approved plan was 21.5 units/acre) units/acre, exceeding the 7 units/acre allowable for the PD district. This density allows the development to offer a variety of unit types at accessible rent rates in this desirable centralized location. This density will also help address the "mismatch" between available rental properties and demand for rental properties that is outlined in the 2020 City of Portage Residential Market Analysis. This project will offer desirable, high quality one and two-bedroom flats, as well as live/work units with independent, exterior doors and decks.

This parcel is well situated to accommodate higher density ratios, within walking distance of nearby businesses and public resources. The majority of the site is an interior parcel abutting natural buffer space of Central Park to the north and commercial and public service uses to the west, south and east.

Unit Types

The development will offer live/work units and stacked flat apartments as residential options. The stacked flats will include several sizes of one and two bedroom units allowing for a range of rental rates.

Exterior Design

The project's architectural aesthetic is clean and refined, with a horizontal emphasis for the stacked flats, and modern commercial facade for the live/work buildings. The material palette will include neutral tones of brick, decorative masonry, and pre-finished composite siding. Large windows, and accents of neutral tones will provide texture, visual interest and character.

Landscaping and Common Open Space

Landscaping across the site will create an inviting outdoor experience. Tree-lined entry boulevards will enhance the arrival experience. Sidewalks at the residential buildings and around common green establish internal connections and access to the public park and trail system. Outdoor fire pits, a swimming pool and terrace complete the social and recreational amenities at the community building. All common open space, walks, drives, and parking areas will be well-maintained by the complex.

The exterior "front yards" and entryway sequences will also receive attractive landscaping and trees. The forms and locations of the building act as visual buffers between the street sightlines and parking areas and will be supplemented with shrubs and other plantings where necessary. Six trash and recycling enclosures will be conveniently positioned with proper architectural and landscape screening.

Setback

Building 1 will have a 80' front setback from Shaver Road to the east, and side yard setbacks of 80' and 30' respectively.

Building 2 has a south side yard setback of 10' to the internal property line defining the roadway access parcel, 80' to parcel 00016-765-B (Wagreen's).

Building 3 has a 25' rear setback abutting the public safety and fire department parcels.

Building 7, the community building, has a side yard setback of 100 to the nearest adjacent buildings.

Please reference the schematic site plan for additional setback information.



Parking, Traffic, and Transit

The site will be accessed from W Centre Ave to the south, and Shaver Road to the east. One additional unlimited access drive onto Shaver Road will be located south of the fire department parcel 375' from the W Centre Ave entry road as measured at the property line. (second remote fire access road based on IFC D106.3.). The longest diagonal drawn accross the site of the area to be served by the fire department is approximately 740' SE to NW.

Concerns with traffic moving north from parcel 0645-001-0 through the west side of the fire department parcel to access the intersection with a traffic light could be addressed with do-not-enter signage facing south, or other solution acceptable to the fire department.

The project provides a total of approximately 286 surface parking spaces on the site, 15 of these spaces are dedicated to the commercial component of the live/work units (3000 usable sf/ 200 = 15 space required). We are compliant with our previously approved ratio of 1.5 spaces per unit. Our experience has indicated that this ratio sufficiently serves the number of 1 BR units and 2 BR units provided in the development. Additionally, this ratio balances the provision of adequate parking with our desire to maximize green space.

Transit needs can also be supplemented with convenient access to the bus system at the W Centre Ave and Shaver Road transit stop, line 26, off the south entry drive.

Utilities

Paved or concrete parking areas and drive aisles will direct storm water run-off to the on-site private storm sewer drains and storm sewer piping. Storm water run-off will be disposed of by a combination of storm water treatment and infiltration. A private storm water management system will be constructed in accordance with the Storm Water Design Criteria Manual, including Addendum No. 1 to the Storm Water Design Criteria Manual. Design of the system is pending, and the design will be subject to City review and approval.

If required, new fire hydrants will be installed on-site at locations approved by the City of Portage. These fire hydrants would be served by public water mains which would be designed and installed in accordance with City requirements, and appropriate easements would be granted to the City. It is anticipated that each building will be served by a six inch private sanitary sewer lead, draining to the City's public sanitary sewer system.

Utilities - Continued

The site will be served with underground natural gas, electric, telephone, and/or cable TV lines and design of these utilities will be completed in the future by each private utility company.

The existing City drain that discharges onto the development property will be directed to a new premanufactured treatment structure for storm water quality improvements and then enclosed in a 36" public storm sewer and conveyed to Portage Creek. The existing City drainage ditch across the property will be filled following the public storm sewer installation. City and EGLE review and permitting shall be obtained as part of the PD final plan and public utility plan review processes.

This development will not encroach into the 100-yr floodplain along Portage Creek.

The development is also anticipated to encroach slightly (less than 0.40 acre of disturbed wetland) into the regulated wetlands adjacent to Portage Creek. Most of these wetland impacts are due to the existing City drainage ditch fill operation. Permits for this work will be obtained from EGLE.

Timeline

After / parallel with entitlements, we will see the following schedule-

BRA and CRA	3 months parallel with entitlements
MEDC Approval	6 – 9 months
Construction documents	3 – 6 months
Estimated construction start	Spring/Summer 2024 (depending on approvals and entitlements)

Staged construction with live/work units, community building, and some stacked flats buildings beginning first, with additional stacked flats buildings added as units are required.



AREA PLAN

- NOTES**
1. SEE SURVEY PLAN ON SHEET 2 FOR GENERAL NOTES PERTAINING TO ALL SHEETS.
 2. ALL IMPROVEMENTS ARE NEED NOT BE BUILT ITEMS.
 3. BEARINGS ARE BASED ON THE SOUTH SECTION LINE OF SECTION 16, T3S, R11W, CITY OF PORTAGE, KALAMAZOO COUNTY BEING N89°58'40"E.
 4. COORDINATES ARE BASED ON THE MICHIGAN SOUTH ZONE STATE PLANE COORDINATES SYSTEM USING THE SOUTH QUARTER POST, SECTION 16, T3S, R11W, CITY OF PORTAGE, KALAMAZOO COUNTY, MICHIGAN AS NORTH 10116.3048 AND EAST 7941.5620.

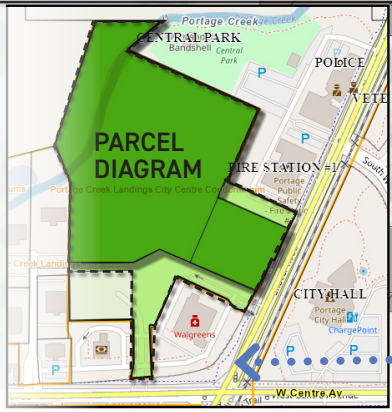
- LEGEND**
- ◇ COORDINATE LOCATION
 - ▨ GENERAL COMMON ELEMENT
 - IRON FOUND
 - IRON SET
 - ⊗ SET "X" IN CONCRETE
 - ⊕ MONUMENT FOUND
 - (R) RECORD
 - (M) MEASURED
 - ▲ P.K. NAIL FOUND
 - △ P.K. NAIL SET
 - ⊕ PROPOSED CONDO MONUMENTS



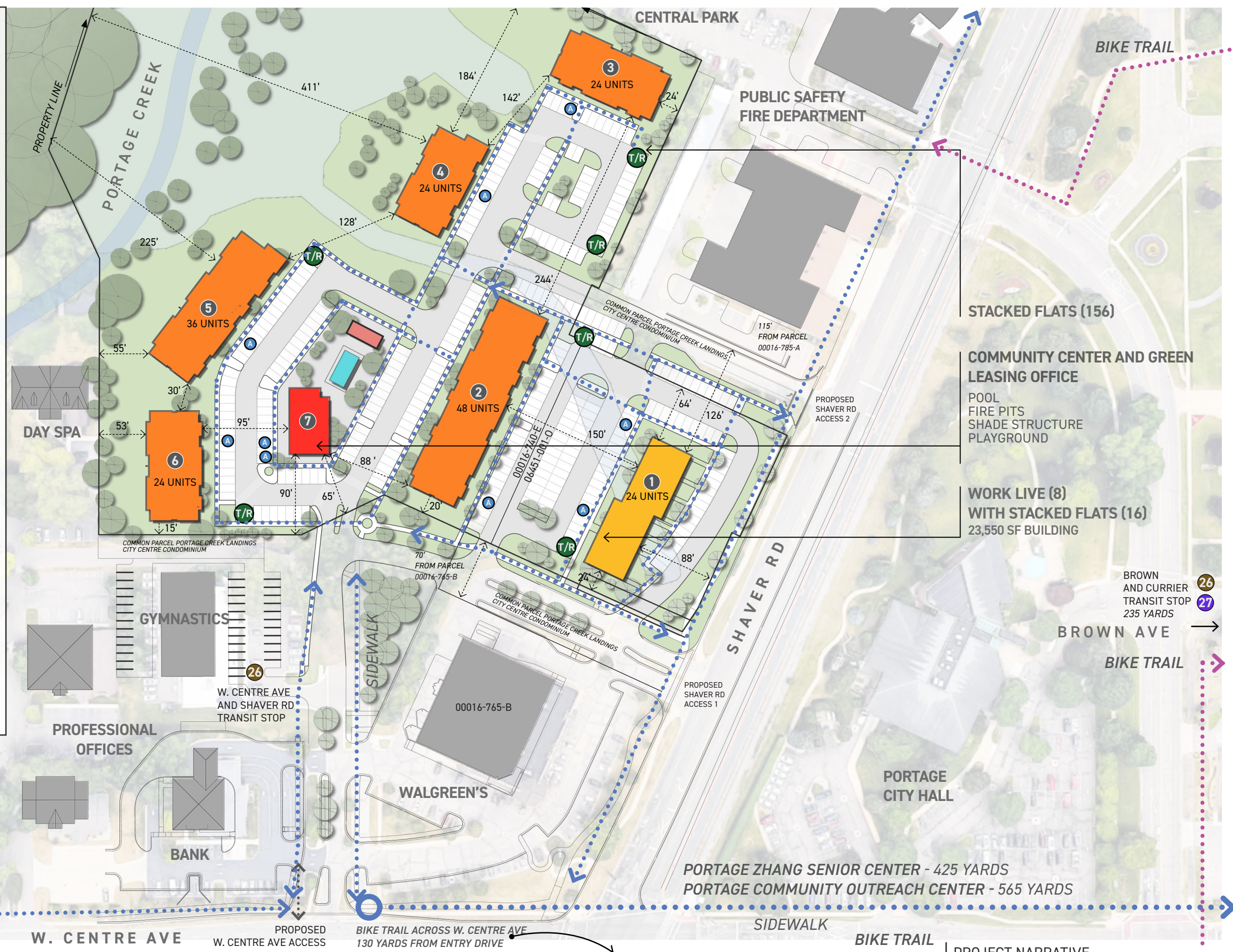
	BLDG 2-6	WK/LV (2)	TOTAL	NOTES
WORK/LIVE	-	8	-	8 980 SF
1 BR UNIT	96	8	-	104 3 SIZES
2 BR UNIT	60	8	-	68
-	-	-	-	-
TOTAL	156	24	-	180 ESTIMATED

(1) WORK/LIVE	23,550 SF	23,550 SF
(1) BUILDING 36	32,895 SF	32,895 SF
(3) BUILDING 24	20,790 SF	62,370 SF
(1) BUILDING 48	41,580 SF	41,580 SF
COMMUNITY BUILDING	3,350 SF	3,350 SF
TOTAL GSF		163,745 GSF
PARKING	294 SPACES (9 ACCESSIBLE SPACES, 8 REQUIRED)	
	1.51 SPACES/UNIT - ESTIMATED	
SITE AREA		~462,170 SF
		~10.61 ACRES
RESIDENTIAL UNIT DENSITY	180 UNITS	16.96 UNITS/ACRE

- ACCESSIBLE PARKING SPACE
- TRASH/RECYCLE ENCLOSURE
- SIDEWALK - INTERNAL
- SIDEWALK
- BIKE PATH
- KALAMAZOO METRO TRANSIT
- BROWN AND CURRIER TRANSIT STOP
- W. CENTRE AVE AND SHAVER RD TRANSIT STOP
- SETBACK



SITE PLAN A | SCHEMATIC DESIGN - SCALE 1" = 120'



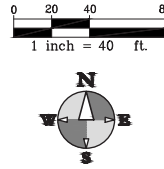
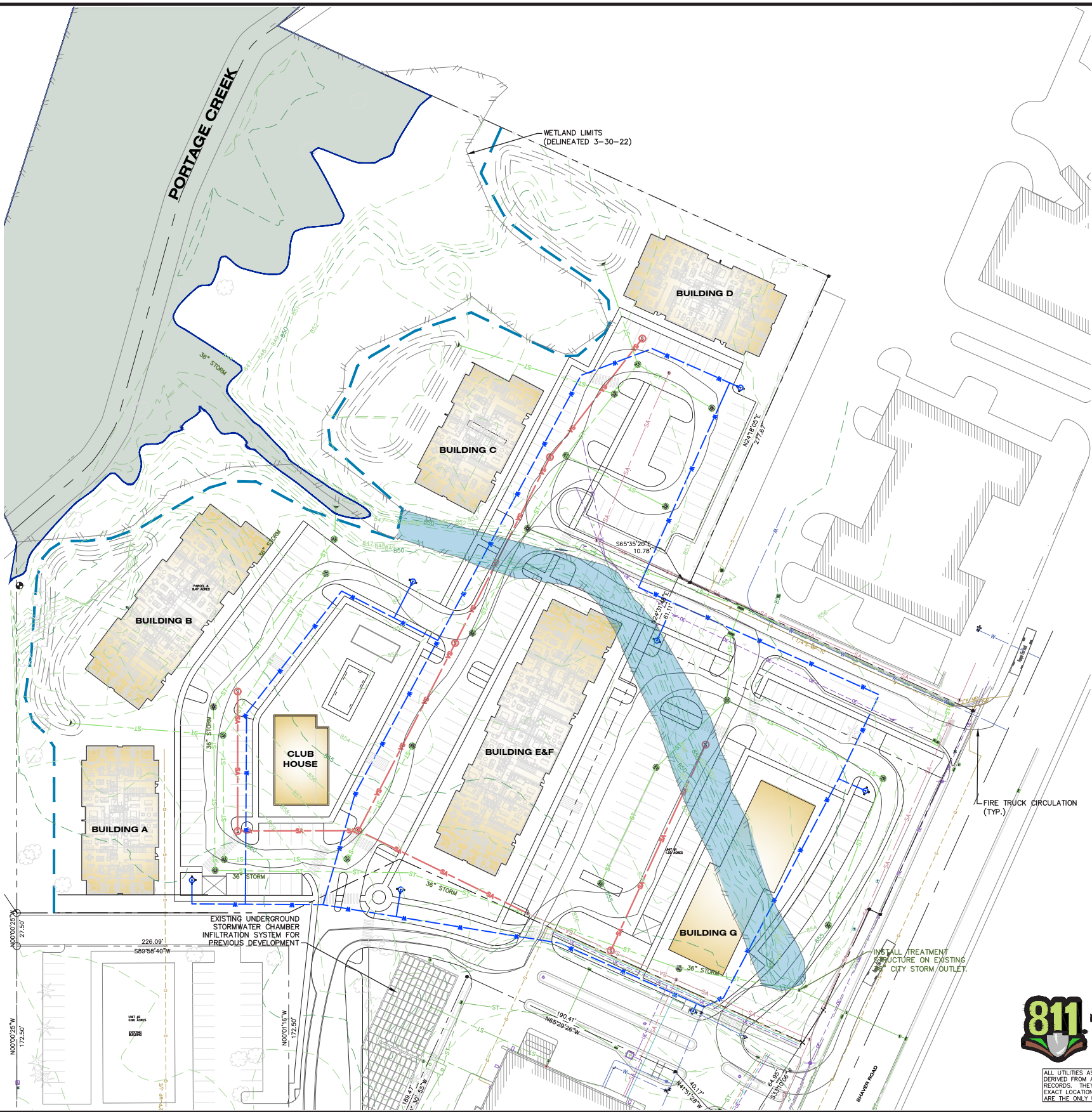
PLANNING LOCATION: 11372-1378 (RIVER CADDIS DEVELOPMENT) - FINAL EXHIBIT C-3 PRELIMINARY UTILITY PLAN - DATE: 04/23/2023

NOTES

1. DEWATERING MAY BE REQUIRED TO INSTALL OR REMOVE SOME UTILITIES. REFER TO SPECIFICATIONS FOR SPECIFIC REQUIREMENTS. REFER TO GEOTECHNICAL REPORT FOR MORE INFORMATION.
2. COORDINATE ALL UTILITY LOCATIONS AND ELEVATIONS WITH MECHANICAL DRAWINGS AND BUILDING CONTRACTOR PRIOR TO INSTALLATION.
3. PROVIDE 18" WATER MAIN SEPARATION WHEN CROSSING OTHER UTILITIES. WATER MAIN SHALL BE INSTALLED AT A MINIMUM DEPTH OF 5 FEET AND A MAXIMUM DEPTH OF 6 FEET.
4. THE STORM WATER MANAGEMENT SYSTEM FOR THIS DEVELOPMENT SHALL BE DESIGNED IN ACCORDANCE WITH THE CITY'S STORM WATER DESIGN CRITERIA MANUAL INCLUDING ADDENDUM NO. 1.
5. THE EXISTING CITY DRAIN ONTO THE SUBJECT PROPERTY SHALL BE ROUTED THROUGH A NEW STORM WATER TREATMENT DEVICE AND ENCLOSED IN A STORM SEWER EXTENDING TO AN OUTLET AT PORTAGE CREEK AS INDICATED. CITY AND EGLE REVIEW AND PERMITTING SHALL BE OBTAINED AS PART OF THE PD FINAL PLAN AND PUBLIC UTILITY PLAN REVIEW PROCESSES.
6. PERMITS FOR FLOODPLAIN AND WETLAND IMPACTS WILL BE OBTAINED FROM EGLE DURING THE PD FINAL PLAN PROCESS. THE DEVELOPER INTENDS TO PURCHASE WETLAND CREDITS FROM AN APPROVED WETLAND BANK TO OFFSET THE WETLAND IMPACTS.
7. A TRAFFIC IMPACT STUDY WILL BE PROVIDED TO THE CITY IN ORDER TO ANALYZE THE EXISTING AND PROPOSED TRANSPORTATION NETWORK AND PROPOSED DEVELOPMENT ACCESS POINTS.
8. THE SITE WILL NEED TO BE DESIGNED TO MEET THE CITY'S STORM WATER DESIGN CRITERIA MANUAL REQUIREMENTS. THE SITE IS LOCATED IN AN AREA B, HIGH RISK ZONING DISTRICT (PD WITH GREATER THAN 30 RESIDENTIAL UNITS) FOR STORM WATER INFILTRATION. SPILL CONTAINMENT WILL BE REQUIRED. THE BOTTOM OF ANY INFILTRATION SYSTEM NEEDS TO BE A MINIMUM OF 4 FEET ABOVE THE HIGHEST KNOWN WATER TABLE ELEVATION AND PROVIDE THE STORAGE REQUIRED FOR A 25 YEAR RAINFALL EVENT IN ACCORDANCE WITH THE CITY'S STORM WATER DESIGN CRITERIA MANUAL. ANY DISCHARGE TO THE PORTAGE CREEK OR WETLANDS WILL BE SUBJECT TO THE PERMITTING REQUIREMENTS OF EGLE. ANY WET BASINS WILL REQUIRE A MINIMUM PERMANENT POOL DEPTH OF 3 FEET.
9. GRAVITY SEWER SERVICE WILL BE PROVIDED TO ALL PROPOSED BUILDINGS.

LEGEND

- PROPOSED BUILDING
- PROPOSED WETLAND IMPACTS (0.42 AC)
- PROPOSED FLOODPLAIN IMPACTS (0.0 AC)
- PROPOSED STORM PIPE
- PROPOSED CATCH BASIN
- PROPOSED PUBLIC WATER MAIN IN EASEMENT
- PROPOSED FIRE HYDRANT
- PROPOSED PUBLIC SANITARY SEWER IN EASEMENT
- PROPOSED SANITARY SEWER MANHOLE
- EXISTING CONTOUR (5' INCREMENT)
- EXISTING CONTOUR (1' INCREMENT)
- 100-YR FLOODPLAIN LIMITS
- WETLAND LIMITS
- APPROXIMATE CONSTRUCTION LIMITS



ALL UTILITIES AS SHOWN ARE APPROXIMATE LOCATIONS DERIVED FROM ACTUAL MEASUREMENTS AND AVAILABLE RECORDS. THEY SHOULD NOT BE INTERPRETED TO BE EXACT LOCATION NOR SHOULD IT BE ASSUMED THAT THEY ARE THE ONLY UTILITIES IN THE AREA.

hurley & stewart

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Job No: 22-123D	P.L.T.A.S.	D.L. N.R.	Q.A./Q.C.	03/20/23
ISSUED FOR REVISIONS				
#1	PD PLAN APPLICATION	12/05/22		
#2	PRELIMINARY UTILITY PLAN	03/20/23		
#3	PRELIMINARY UTILITY PLAN	9/22/23		
#4	PRELIMINARY UTILITY PLAN	10/04/23		
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PRELIMINARY UTILITY PLAN

RIVER CADDIS MULTI-FAMILY DEVELOPMENT

RIVER CADDIS

Sheet Title:

Project:

Client:

10/4/23

Sheet

C-1



PROJECT NARRATIVE
RIVER CADDIS MULTI-FAMILY DEVELOPMENT | PD APPLICATION

10 06 2023
20221002





- ← PREFINISHED ALUMINUM ENTRY CANOPY
- ← BRICK/ COMPOSITE STONE CLADDING
- ← BRICK/ COMPOSITE STONE BASE

FRONT



- 10'-8" ↑ T.O. ROOF 138'-0"
- 10'-8" ↑ TRUSS BEARING 132'-0"
- 10'-8" ↑ 3RD FLOOR 121'-4"
- 10'-8" ↑ 2ND FLOOR 110'-8"
- 10'-8" ↑ 1ST FLOOR 100'-0"

BACK



- ← COMPOSITE TRIM
- ← COMPOSITE HORIZONTAL SIDING, COLOR 2
- ← COMPOSITE HORIZONTAL SIDING, COLOR 1
- ← LOW-E INSULATED GLASS IN COMPOSITE WINDOW
- ← BRICK/ COMPOSITE STONE CLADDING
- ← BRICK/ COMPOSITE STONE BASE

SIDE
OPPOSITE SIMILAR



ELEVATIONS | SCHEMATIC DESIGN - MULTIFAMILY



PROJECT NARRATIVE
RIVER CADDIS MULTI-FAMILY DEVELOPMENT | PD APPLICATION

10 06 2023
20221002





FRONT

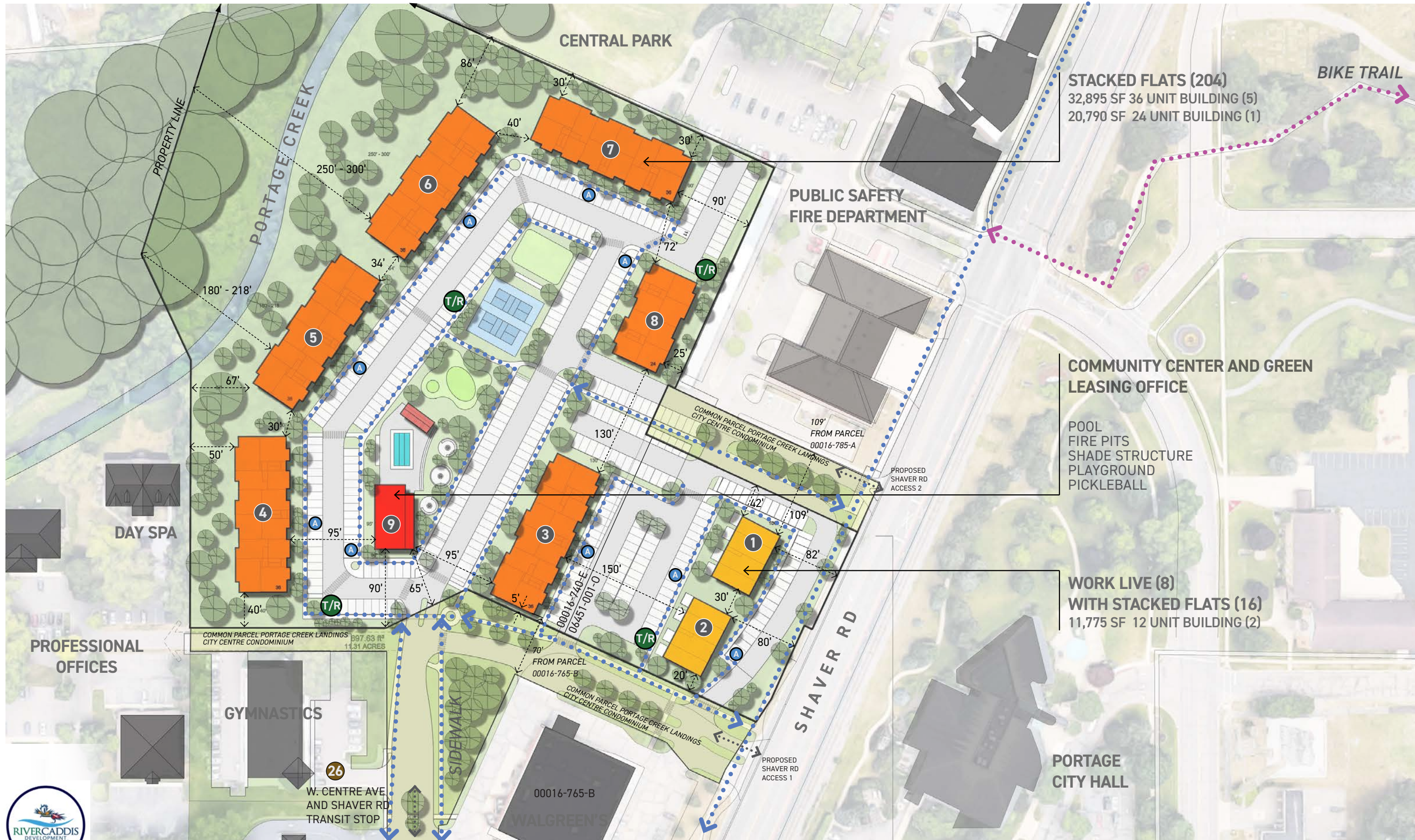


BACK



SIDE
OPPOSITE SIMILAR



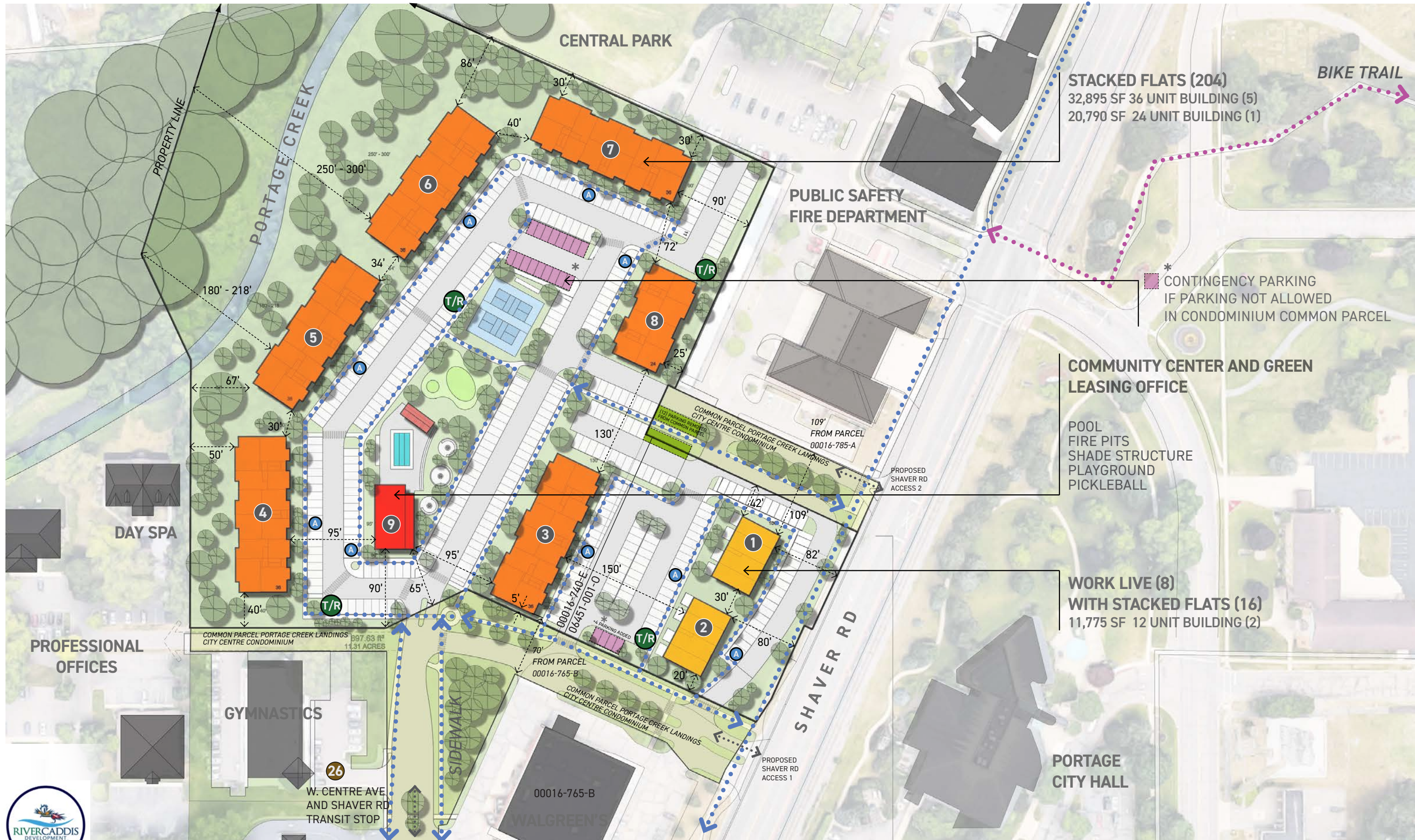


SITE PLAN A | SCHEMATIC DESIGN - SCALE 1" = 100'



RIVER CADDIS MULTI-FAMILY DEVELOPMENT | PD APPLICATION

PROJECT NARRATIVE		
1	17	2023
1	10	2023
12	5	2022
20	21	2002



SITE PLAN B | SCHEMATIC DESIGN - SCALE 1" = 100'
CONTINGENCY PARKING PLAN
IF PARKING NOT ALLOWED IN CONDOMINIUM COMMON PARCEL



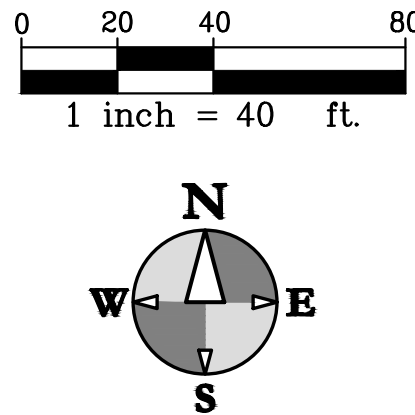
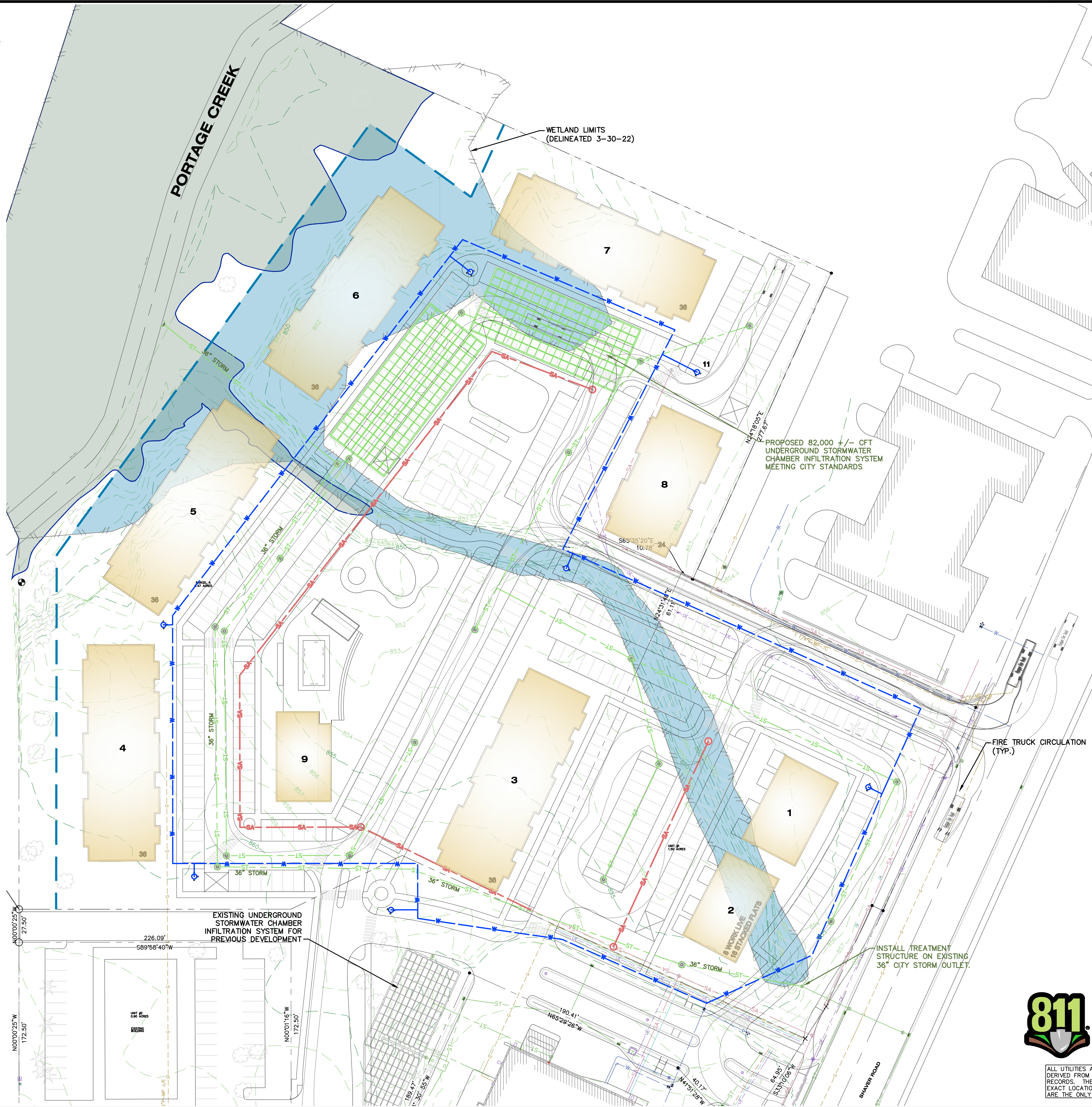
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NOTES

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2. COORDINATE ALL UTILITY LOCATIONS AND ELEVATIONS WITH MECHANICAL DRAWINGS AND BUILDING CONTRACTOR PRIOR TO INSTALLATION.
3. PROVIDE 18" WATER MAIN SEPARATION WHEN CROSSING OTHER UTILITIES. DEFLECT UNDER OTHER UTILITIES W/O USING FITTINGS WHENEVER POSSIBLE. SEE WATER MAIN PROFILE SHEET.
4. THE STORM WATER MANAGEMENT SYSTEM FOR THIS DEVELOPMENT SHALL BE DESIGNED IN ACCORDANCE WITH THE CITY'S STORM WATER DESIGN CRITERIA MANUAL INCLUDING ADDENDUM NO. 1.
5. THE EXISTING CITY DRAIN ONTO THE SUBJECT PROPERTY SHALL BE ROUTED THROUGH A NEW STORM WATER TREATMENT DEVICE AND ENCLOSED IN A STORM SEWER EXTENDING TO AN OUTLET AT PORTAGE CREEK AS INDICATED. CITY AND EGLE REVIEW AND PERMITTING SHALL BE OBTAINED AS PART OF THE PD FINAL PLAN AND PUBLIC UTILITY PLAN REVIEW PROCESSES.
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7. A TRAFFIC IMPACT STUDY WILL BE PROVIDED TO THE CITY IN ORDER TO ANALYZE THE EXISTING AND PROPOSED TRANSPORTATION NETWORK AND PROPOSED DEVELOPMENT ACCESS POINTS.

LEGEND

- PROPOSED BUILDING
- PROPOSED WETLAND IMPACTS (1.60 AC)
- PROPOSED FLOODPLAIN IMPACTS (0.17 AC)
- PROPOSED STORM PIPE
- PROPOSED CATCH BASIN
- PROPOSED PUBLIC WATER MAIN IN EASEMENT
- PROPOSED FIRE HYDRANT
- PROPOSED PUBLIC SANITARY SEWER IN EASEMENT
- PROPOSED SANITARY SEWER MANHOLE
- EXISTING CONTOUR (5' INCREMENT)
- EXISTING CONTOUR (1' INCREMENT)
- 100-YR FLOODPLAIN LIMITS
- WETLAND LIMITS
- APPROXIMATE CONSTRUCTION LIMITS



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Job No. 22-1230 P.M.T.S. Dtl. N.R. 0A/QC. 03/20/23
ISSUED FOR/REVISIONS:
#1 PD PLAN APPLICATION 12/05/22
#2 PRELIMINARY UTILITY PLAN 03/20/23
#3
#4
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PRELIMINARY UTILITY PLAN
RIVER CADDIS MULTI-FAMILY DEVELOPMENT
RIVER CADDIS
Sheet Title:
Project:
Client:
03/20/23
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C-1



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FEBRUARY 24, 2023

PORTAGE CREEK DEVELOPMENT PORTAGE, MICHIGAN



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Agency Review	Date	Comments

TRAFFIC IMPACT STUDY

PORTAGE CREEK DEVELOPMENT
PORTAGE, MI

Table of Contents

1	Project Background	1
2	Data Collection	3
2.1	Existing Roadway System.....	3
2.2	Traffic Counts.....	4
2.3	Background Traffic Growth.....	5
3	Site Analysis	6
3.1	Trip Generation	6
3.2	Internal Trip Capture	7
3.3	Trip Distribution	7
3.4	Pass-By Trips.....	10
3.5	Traffic Volumes	10
4	Traffic Analysis	21
4.1	Intersection Capacity Analysis	21
4.2	Turning Lane and Passing Flare Warrants.....	30
4.3	Sight Distance Analysis.....	31
5	Conclusions and Recommendations	33
6	Bibliography.....	35

Appendices

- A SITE PLAN INFORMATION
- B EXISTING TRAFFIC DATA
- C TRAFFIC ANALYSIS
- D SYNCHRO AND SIM TRAFFIC REPORTS

List of Tables

TABLE 1: INTERSECTION PEAK HOURS	4
TABLE 2: EXISTING 2022 TRAFFIC VOLUMES	5
TABLE 3: FUTURE 2024 TRAFFIC VOLUMES	6
TABLE 4: FUTURE TRIP GENERATION	7
TABLE 5: FUTURE BUILD-OUT AM PEAK HOUR TRIP DISTRIBUTION	9
TABLE 6: FUTURE BUILD-OUT PM PEAK HOUR TRIP DISTRIBUTION	10
TABLE 7: SIGNALIZED AND UNSIGNALIZED INTERSECTION LOS	21
TABLE 8: W. CENTRE AVE AND SHAVER RD – LOS AND DELAYS	23
TABLE 9: W. CENTRE AVE AND SHAVER RD – QUEUES	23
TABLE 10: SHAVER RD AND S. WESTNEDGE AVE – LOS/DELAYS	24
TABLE 11: SHAVER RD AND S. WESTNEDGE AVE – QUEUES	24
TABLE 12: W. CENTRE AVE AND S. WESTNEDGE AVE – LOS/DELAYS.....	25
TABLE 13: W. CENTRE AVE AND S. WESTNEDGE AVE – QUEUES.....	25
TABLE 14: SHAVER RD AND NORTH SITE DRIVEWAY – LOS/DELAYS	26
TABLE 15: SHAVER RD AND NORTH SITE DRIVEWAY – QUEUES	27
TABLE 16: SHAVER RD AND SOUTH SITE DRIVEWAY – LOS/DELAYS.....	28
TABLE 17: SHAVER RD AND SOUTH SITE DRIVEWAY – QUEUES.....	28
TABLE 18: W. CENTRE AVE AND SITE DRIVEWAY – LOS/DELAYS	29
TABLE 19: CENTRE AVE AND SITE DRIVEWAY – QUEUES.....	29

List of Exhibits

EXHIBIT 1: SITE LOCATION MAP	1
EXHIBIT 2: PROPOSED SITE MAP.....	2
EXHIBIT 3: STUDY INTERSECTIONS/DRIVEWAYS.....	3
EXHIBIT 4: TRIP DISTRIBUTION	9
EXHIBIT 5: 2022 EXISTING TRAFFIC VOLUMES DIAGRAM	12
EXHIBIT 6: 2024 NO-BUILD TRAFFIC VOLUMES DIAGRAM	13
EXHIBIT 7: TRIP DISTRIBUTION DIAGRAM	14
EXHIBIT 8: TRIP GENERATION DIAGRAM	15
EXHIBIT 9: TRIP GENERATION DIAGRAM: SCENARIO #1.....	16
EXHIBIT 10: TRIP GENERATION DIAGRAM: SCENARIO #2	17
EXHIBIT 11: 2024 FUTURE BUILD-OUT DIAGRAM	18
EXHIBIT 12: 2024 FUTURE BUILD-OUT DIAGRAM: SCENARIO #1	19
EXHIBIT 13: 2024 FUTURE BUILD-OUT DIAGRAM: SCENARIO #2	20
EXHIBIT 14: RIGHT-TURN LANE WARRANT ANALYSIS	30
EXHIBIT 15: SIGHT DISTANCE TRIANGLE AT SHAVER RD AND SOUTH SITE DRIVEWAY	31
EXHIBIT 16: SIGHT DISTANCE TRIANGLE AT SHAVER RD AND NORTH SITE DRIVEWAY.....	32
EXHIBIT 17: SIGHT DISTANCE TRIANGLE AT W. CENTRE AVE AND SITE DRIVEWAY	32

1 Project Background

The traffic impact study included herein was completed for River Caddis Development for their use in the planning and design approval process for the development including a 228-unit apartment complex and 2 work-live buildings. RSE prepared this analysis to examine the potential traffic impacts of the proposed multi-family housing development on the adjacent roadway network. The proposed development is located near the northwest quadrant of W. Centre Ave and Shaver Rd in Portage, MI. The proposed site will have one access driveway from W. Centre Ave and two access driveways from Shaver Rd. All three proposed access points are existing driveways. The existing site is vacant/wooded. The site location is shown on Exhibit 1.

EXHIBIT 1: SITE LOCATION MAP



Map Data © 2022 Google Maps

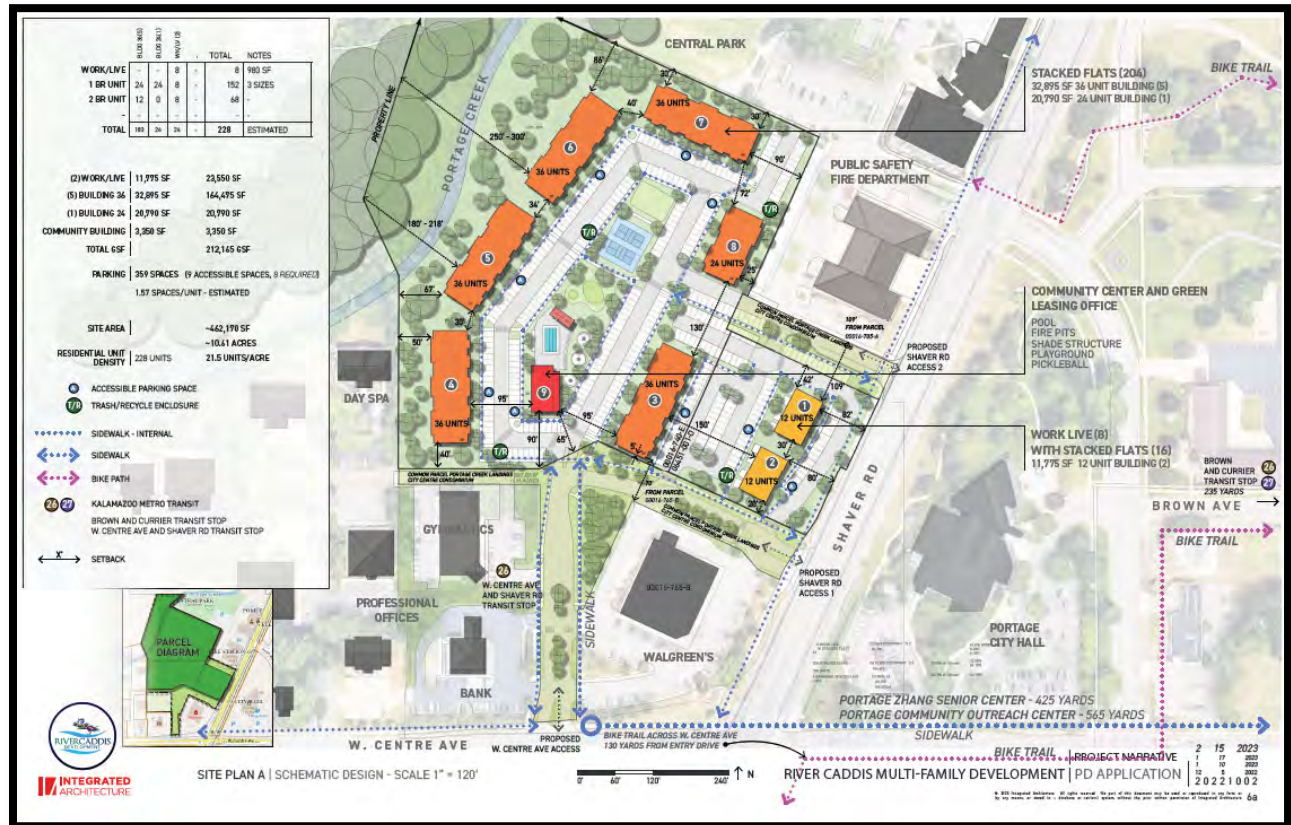
The proposed Portage Creek site plan was provided by River Caddis Development. The proposed site plan will develop 228 units of residential buildings with 2 work-live buildings on the existing wooded land. Per the ITE Trip Generation Manual (11th Ed.), the Multi-Family Housing (Low Rise) calculates an average of 2.72 residents per occupied dwelling unit. Planned completion of the development is in year 2024.

For analysis purposes, the build-out year for the Portage Creek development is projected for year 2024. For trip generation purposes, the following land use was used to represent the development:

- Multifamily Housing (Low Rise) – Dwelling Units

The proposed multi-family housing development with work-live buildings will have three access points (driveways). One driveway is located on W. Centre Ave, west of Walgreens. The second driveway is located on Shaver Rd, north of Walgreens. The third driveway is located on Shaver Rd, south of the Portage Department of Public Safety building. All three driveways are existing. The proposed site map including the access points is shown in Exhibit 2.

EXHIBIT 2: PROPOSED SITE MAP



The traffic analysis will focus on the build-out of the new multi-family housing and work-live development and its impacts on traffic operations at the existing/proposed driveways and on the adjacent roadway network. Traffic operations are evaluated for the existing/proposed driveways and existing intersection locations. Based on coordination with the City of Portage, the site access driveways and intersections listed below will be included in the analysis. These intersections and driveways were included both for traffic modeling purposes and due to the potential impacts of the proposed development. All required study roadways, intersections, and driveways for the proposed site development are shown on Exhibit 3.

Driveways/Intersections

- Shaver Rd at West Centre Ave
- Shaver Rd at Westnedge Ave
- Existing Walgreens Drive (South Site Drive) at Shaver Rd
- Existing North Site Drive at Shaver Rd
- Existing Site Drive at W Centre Ave
- Shaver Rd at S Westnedge Ave

EXHIBIT 3: STUDY INTERSECTIONS/DRIVEWAYS



2 Data Collection

2.1 Existing Roadway System

The proposed site is located at the northwest quadrant of Centre Ave and Shaver Rd in Portage, MI. There are three existing/proposed driveways for the proposed housing development. One driveway is located on W. Centre Ave and two are located on Shaver Rd.

There are three major signalized intersections located within the limits of the study. They include W. Centre Ave at Shaver Rd, Shaver Rd at S Westnedge Ave, and W. Centre Ave at S Westnedge Ave.

W. Centre Ave is an east-west, 4-lane paved roadway with a center left turn lane. It is under the jurisdiction of the City of Portage. It is classified as other principal arterial and has a posted speed limit of 40 mph between Oakland Dr and Shaver Rd, and a posted speed limit of 35 mph between Shaver Rd and Lover's Lane.

Shaver Rd is a north-south, 4-lane paved roadway with a center left turn lane. It is under the jurisdiction of the City of Portage. It is classified as a major arterial and has a posted speed limit of 35 mph.

S Westnedge Ave runs generally north-south and bends at the intersection with Shaver Rd. It is a 4-lane paved roadway. It is under the jurisdiction of the City of Portage. It is classified as a minor arterial and has a posted speed limit of 35 mph between W. Centre Ave and Shaver Rd.

2.2 Traffic Counts

Turning movement counts at the following study intersections were collected by RS Engineering (RSE) using Miovision on Tuesday December 6, 2022, and Thursday December 8, 2022.

- Shaver Rd and Westnedge Rd
- Shaver Rd and Walgreens Driveway (Shaver Rd South Site Dr)
- Shaver Rd and W. Centre Ave
- W. Centre Ave and S. Westnedge Ave
- W. Centre Ave and Site Driveway (Centre Ave Site Dr)

Signal timing information was provided by the City of Portage.

The peak hour traffic counts were conducted during a *typical*¹ work/school day. The client collected turning movement counts during the AM and PM peak hours within the following hours:

AM Peak: 7:00am - 9:00am

PM Peak: 4:00pm - 6:00pm

The Miovision raw traffic data collection summary sheets are provided **Appendix B**. The turning movement count data was reviewed, and it was determined that the AM and PM peak hours at each intersection occur during the following time periods:

TABLE 1: INTERSECTION PEAK HOURS

	Intersections	Actual AM Peak	Actual PM Peak
1	W. Centre Rd and Shaver Ave	7:15-8:15 AM	4:00-5:00PM
2	Shaver Rd and S. Westnedge Ave	7:15-8:15 AM	4:30-5:30 PM
3	W. Centre Rd and S. Westnedge Ave	7:00-8:00 AM	4:30-5:30 PM
4	Shaver Rd and Walgreens Driveway (Shaver Rd South Site Dr)	8:00-9:00 AM	4:00-5:00 PM
5	W. Centre Ave and Site Driveway (Centre Ave Site Dr)	7:15-8:15 AM	4:30-5:30 PM

Per the City of Portage comments received on January 31, 2023 and February 2, 2023, the PM peak hour was revised to 4:00 to 5:00 for all intersections so that the network peak hour would match. The AM peak volumes remained the same the same using the A peak hours as noted on Table 1 above. Per the City of Portage comments on January 31, 2023, the volumes for Shaver and North Site drive were balanced using the same AM Peak (7:15 to 8:15 AM) to make the volumes realistic. The North Site Drive volumes for AM and PM peak uses the same peak hour between the Shaver/Westnedge and Shaver/Centre Ave signals. The

peak hour traffic volumes for the AM and PM peaks used in the analysis for the existing conditions are shown in Table 2.

¹ A "typical" day for traffic data collection purposes is a non-holiday, mid-week (Tuesday, Wednesday, Thursday) and standard traffic and weather conditions.

TABLE 2: EXISTING 2022 TRAFFIC VOLUMES

Intersection	Direction	Turning Movement	Hourly Count		Intersection	Direction	Turning Movement	Hourly Count	
			AM Peak	PM Peak				AM Peak	PM Peak
W. Centre Ave at Shaver Rd	Eastbound	Left	86	190	Shaver Rd North Site Driveway	Eastbound	Left	0	0
		Thru	707	584			Right	2	5
		Right	131	218		Northbound	Left	8	22
	Westbound	Left	138	180			Thru	347	597
		Thru	636	768		Southbound	Thru	290	722
		Right	12	25			Right	0	0
	Northbound	Left	89	182	Shaver Rd South Site Driveway	Eastbound	Left	8	16
		Thru	234	392			Right	8	32
		Right	103	214		Northbound	Left	1	4
	Southbound	Left	17	59			Thru	347	601
		Thru	173	507		Southbound	Thru	274	674
		Right	69	130			Right	18	53
Shaver Rd at S. Westnedge	Eastbound	Left	1	6	W. Centre Ave Site Driveway	Eastbound	Left	13	53
		Thru	0	5			Thru	921	980
		Right	2	8		Westbound	Thru	754	1000
	Westbound	Left	5	13			Right	12	16
		Thru	3	5		Southbound	Left	1	29
		Right	240	332			Right	13	50
	Northbound	Left	3	3	2022 Traffic Volumes				
		Thru	294	579					
		Right	31	15					
	Southbound	Left	229	309					
		Thru	263	701					
		Right	6	1					
W. Centre Ave at S. Westnedge	Eastbound	Left	12	26					
		Thru	706	708					
		Right	127	136					
	Westbound	Left	111	158					
		Thru	519	771					
		Right	52	112					
	Northbound	Left	174	117					
		Thru	153	143					
		Right	169	120					
	Southbound	Left	107	115					
		Thru	116	159					
		Right	3	16					

2.3 Background Traffic Growth

The proposed new multi-family housing and work-live development is projected to be completed by 2024. Since traffic counts were collected in year 2022, a growth rate must be applied to the existing turning movement counts. An annual growth rate of 0.5% was used to calculate the 2024 traffic volumes. The 0.5% growth rate was applied to each of the intersection's turning movement counts. A summary of those results is shown in Table 3.

TABLE 3: FUTURE 2024 TRAFFIC VOLUMES

Intersection	Direction	Turning Movement	Hourly Count		Intersection	Direction	Turning Movement	Hourly Count	
			AM Peak	PM Peak				AM Peak	PM Peak
W. Centre Ave at Shaver Rd	Eastbound	Left	87	192	Shaver Rd North Site Driveway	Eastbound	Left	0	0
		Thru	715	590			Right	2	6
		Right	133	221		Northbound	Left	8	23
	Westbound	Left	140	182			Thru	352	603
		Thru	643	776		Southbound	Thru	293	730
		Right	13	26			Right	0	0
	Northbound	Left	90	184	Shaver Rd South Site Driveway	Eastbound	Left	9	17
		Thru	237	396			Right	9	33
		Right	105	217		Northbound	Left	2	5
	Southbound	Left	18	60			Thru	351	608
		Thru	175	513		Southbound	Thru	277	681
		Right	70	132			Right	19	54
Shaver Rd at S. Westnedge	Eastbound	Left	2	7	W. Centre Ave Site Driveway	Eastbound	Left	14	54
		Thru	0	6			Thru	931	990
		Right	3	9		Westbound	Thru	762	1011
	Westbound	Left	6	14			Right	13	17
		Thru	4	6		Southbound	Left	2	30
		Right	243	336			Right	14	51
	Northbound	Left	4	4	Year 2024 Future Traffic Volumes (0.5% Growth)				
		Thru	297	585					
		Right	32	16					
	Southbound	Left	232	313					
		Thru	266	709					
		Right	7	2					
W. Centre Ave at S. Westnedge	Eastbound	Left	13	27					
		Thru	714	716					
		Right	129	138					
	Westbound	Left	113	160					
		Thru	525	779					
		Right	53	114					
	Northbound	Left	176	119					
		Thru	155	145					
		Right	171	122					
	Southbound	Left	109	117					
		Thru	118	161					
		Right	4	17					

3 Site Analysis

3.1 Trip Generation

The *ITE Trip Generation Manual, 11th Edition* (Institute of Transportation Engineers, 2021) provides equations and rates to calculate the estimated traffic from over 170 different land uses. The proposed site plan is to develop 228 residential units with 8 work-live spaces. The following ITE Trip Generation Land Use was identified and used in the analysis.

- Land Use 220 – Multi-Family Housing (Low Rise)

According to the ITE Trip Generation Manual, low-rise multifamily housing includes apartments, townhouses, and condominiums located within the same building with at least three other dwelling units and that have one or two levels (floors). Trips generated by the housing development are captured using Land Use 220, Multifamily Housing (Low-Rise). This land use was chosen due to similar size and occupancy of the development. The ITE land use and estimated trip generation for the Future Build-Out during the weekday AM and PM peak hours are summarized in Table 4 and Appendix C.

TABLE 4: FUTURE TRIP GENERATION

Portage Creek Development Trip Generation (Trip Generation Manual 11th Edition)											
LUC	Description	Number	Unit	AM Peak				PM Peak			
				Equation	In	Out	Total	Equation	In	Out	Total
220	Multifamily Housing (Low-Rise)	228	Dwelling Unit	$T = 0.31(X) + 22.85$	23	71	94	$T = 0.43(X) + 20.55$	75	44	119
				Total	23	71	94	Total	75	44	119

3.2 Internal Trip Capture

The ITE Trip Generation Manual does not account for a development with two or more complementary land uses or a mixed-use development. At a mixed-use development, there is potential for interaction among those land uses; this is referred to as *Internal Capture*. As a result, the total generation of external trips (trips entering and exiting the overall site) may be less than the simple sum of the trips generated by each individual land use. The methodology to correct this error is presented in the *NCHRP Report 684: Enhancing Internal Trip Capture Estimation for Mixed-Use Developments*.

Based on the proposed development's land use and site layout, internal trip capture was not included during the AM or PM peak hours. Internal trips are not expected for this development and the land uses were not listed on the *NCHRP Report 684*.

The *NCHRP 684* report incorporates non-motorized trips. A non-motorized trip is defined as a person trip that is part of either a walk trip or bicycle trip. The greater the percentage of non-motorized trips the lower the number of vehicles trips. Non-motorized trips are more typical in urban core locations and areas with pedestrian/bike trails. The proposed housing development will not incorporate a percentage of non-motorized trips. This will ensure a more conservative representation of traffic generated by the development into the roadway network.

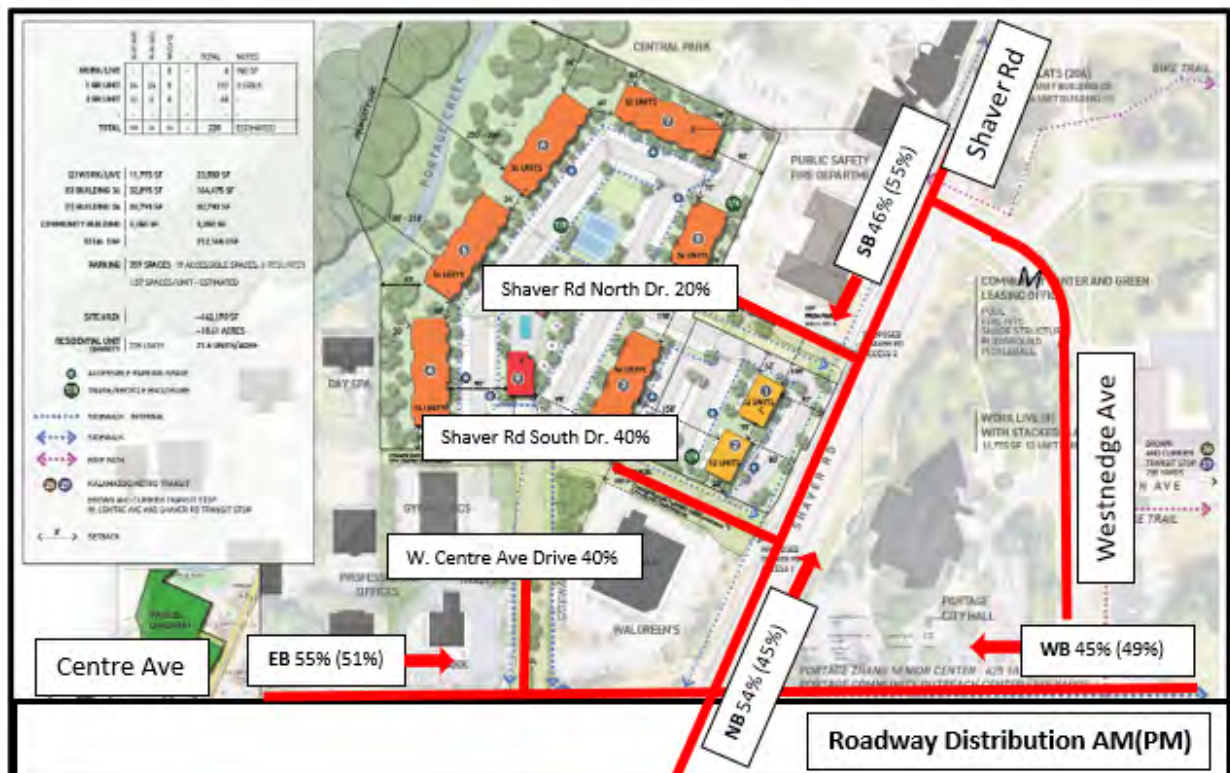
3.3 Trip Distribution

Trips generated by the proposed development must be distributed at the site access point so that the impacts on the existing roadway system and intersections can be evaluated. The total trips generated for the Future Build-Out were distributed at the site access point based on the following factors:

- Existing peak hour traffic distribution along W. Centre Ave
 - AM
 - EB approach: 55%
 - WB approach: 45%

- PM
 - EB approach: 51%
 - WB approach: 49%
- Existing peak hour traffic distribution along Shaver Rd
 - AM
 - NB approach: 54%
 - SB approach: 46%
 - PM
 - NB approach: 45%
 - SB approach: 55%
- The existing roadways and proposed site trip distributions are shown in Exhibit 4.
 - 40% of the new trips will use the Existing Site Driveway on W. Centre Ave
 - 40% of the new trips will use the Existing Walgreens Driveway on Shaver Rd
 - 20% of the new trips will use the Existing North Site Driveway on Shaver Rd
- Based on the location of the driveways relative to the trip origin/destination, existing roadways and traffic signals, the following were assumed for scenarios 1 and 2 based on the comments by the City of Portage:
 - Scenario 1
 - Exiting left turn traffic at Shaver Rd South Driveway will move to the North Driveway (EB Left turn on Shaver Rd).
 - Scenario 2
 - Exiting traffic headed north from the W Centre Ave Driveway will likely use the Shaver Rd North Driveway (EB left turn to Shaver Rd).
 - Exiting traffic headed south from the W Centre Ave Driveway will likely use the Shaver Rd South Driveway (EB right turn to Shaver Rd).
 - Exiting traffic headed east from the W Centre Ave Driveway will likely use the Shaver Rd North Driveway (EB left turn to Shaver Rd, southbound left turn at W Centre Ave and Shaver Rd).
- Peak hour/Time of day

EXHIBIT 4: TRIP DISTRIBUTION



Based on the factors above, the peak hour trip distribution percentages were developed. The trip distribution percentages and the subsequent results for the trips generated by the proposed site are shown in Tables 5 and 6.

TABLE 5: FUTURE BUILD-OUT AM PEAK HOUR TRIP DISTRIBUTION

ITE Trip Generation	AM Peak Hour Distribution											
Enter/Exit	Entering						Exiting					
Site Driveways	W. Centre Ave at Site Driveway		Shaver Rd at South Site Dr		Shaver Rd at North Site Driveway		W. Centre Ave at Site Driveway		Shaver Rd at South Site Dr		Shaver Rd at North Site Driveway	
	Direction	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right
Land Use	Multifamily Housing (Low-Rise)											
Total Enter/Exit	23						71					
Internal Distribution % *	40%		40%		20%		40%		40%		20%	
Access Point Distribution % **	45%	55%	46%	54%	46%	54%	45%	55%	46%	54%	46%	54%
Access Point Volumes	4	5	4	5	2	3	13	15	13	15	7	8
All Land Uses Total	4	5	4	5	2	3	13	15	13	15	7	8

TABLE 6: FUTURE BUILD-OUT PM PEAK HOUR TRIP DISTRIBUTION

ITE Trip Generation	PM Peak Hour Distribution											
Enter/Exit	Entering						Exiting					
Site Driveways	W. Centre Ave at Site Driveway		Shaver Rd at South Site Dr		Shaver Rd at North Site Driveway		W. Centre Ave at Site Driveway		Shaver Rd at South Site Dr		Shaver Rd at North Site Driveway	
Direction	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left
Land Use	Multifamily Housing (Low-Rise)											
Total Enter/Exit	75						44					
Internal Distribution % *	40%		40%		20%		40%		40%		20%	
Access Point Distribution % **	49%	51%	55%	45%	55%	45%	48%	51%	55%	45%	55%	45%
Access Point Volumes	15	15	16	14	8	7	8	9	10	8	5	4
All Land Uses Total	15	15	16	14	8	7	8	9	10	8	5	4

*Internal Distribution: Assumed 40% of the traffic will be using the driveway on W Centre Ave, 40% using the Walgreens driveway on Shaver, and 20% using the north driveway on Shaver.

** The initial access point distribution is based on existing traffic on W. Centre Ave (EB and WB) and Shaver Rd (NB and SB).

*** Typical Diversions: Exiting traffic headed north from the W Centre Ave Driveway will likely use the Shaver Rd North Driveway (EB left turn to Shaver Rd). Exiting traffic headed south from the W Centre Ave Driveway will likely use the Shaver Rd North Driveway (EB right turn to Shaver Rd).

3.4 Pass-By Trips

Pass-by trips are trips generated by the development from the adjacent street traffic. The pass-by trips do not decrease the total trips generated by the development; however, the total *new* trips generated by the development are decreased. A percentage of the trips generated by the site are taken from the existing traffic on the adjacent street. The *ITE Trip Generation Handbook, 3rd Edition (2018)* provides guidance for calculating the pass-by trips for applicable developments. Typically, retail establishments, banks, and fast-food restaurants are specifically located on or adjacent to busy streets to attract motorists already on the roadway. It is expected that the proposed site would generate a portion of its trips from pass-by traffic.

Based on the proposed development's land uses, pass-by trips were not considered during the AM or PM peak hours because pass-by trips are generally not considered for residential developments. In addition, the proposed land uses are not listed in ITE Trip Generation Handbook for consideration of pass-by trips.

3.5 Traffic Volumes

The trips generated by the proposed site for the AM and PM peaks are added to the 2024 No-Build traffic Volumes. The 2022 Existing, 2024 No-Build, Trip Distribution, Trip Generation (original, scenario #1, scenario #2), and 2024 Build-Out (original, scenario #1, scenario #2) traffic volumes for the AM and PM peaks are shown in Exhibit 5 to Exhibit 13.

Existing traffic counts were collected by RS Engineering (RSE) using Miovision in December 2022. RSE applied a growth rate for all intersections to project traffic volumes to year 2024. Synchro dummy nodes were used in the traffic modeling to balance traffic volumes along W. Centre Ave and S. Westnedge Ave to account for uncounted driveways and intersections.

The diagram shown below in Exhibit 5 represents the turning movements during peak hour volumes for 2022 existing volumes for each of the study intersections. Exhibit 6 below shows the 2024 No-Build traffic volumes. This diagram represents the 2022 existing conditions plus a 0.5% growth rate for each year. Exhibit 7 below shows the trip distribution diagram. This diagram represents the percentage of split of the new trips generated by the development. The percentage splits are based on existing traffic volumes. Exhibit 8 - 10 below shows the trip generation diagram with the two additional scenarios per the City of Portage comments. This diagram

represents the number of new trips entering and exiting the development with the origin and destination based on the trip distribution from Exhibit 7. Exhibit 11 - 13 below shows the 2024 future Build-Out diagram with the two additional scenarios. This diagram represents the volume for 2024 with the No-Build and trip generation volumes combined.

EXHIBIT 5: 2022 EXISTING TRAFFIC VOLUMES DIAGRAM

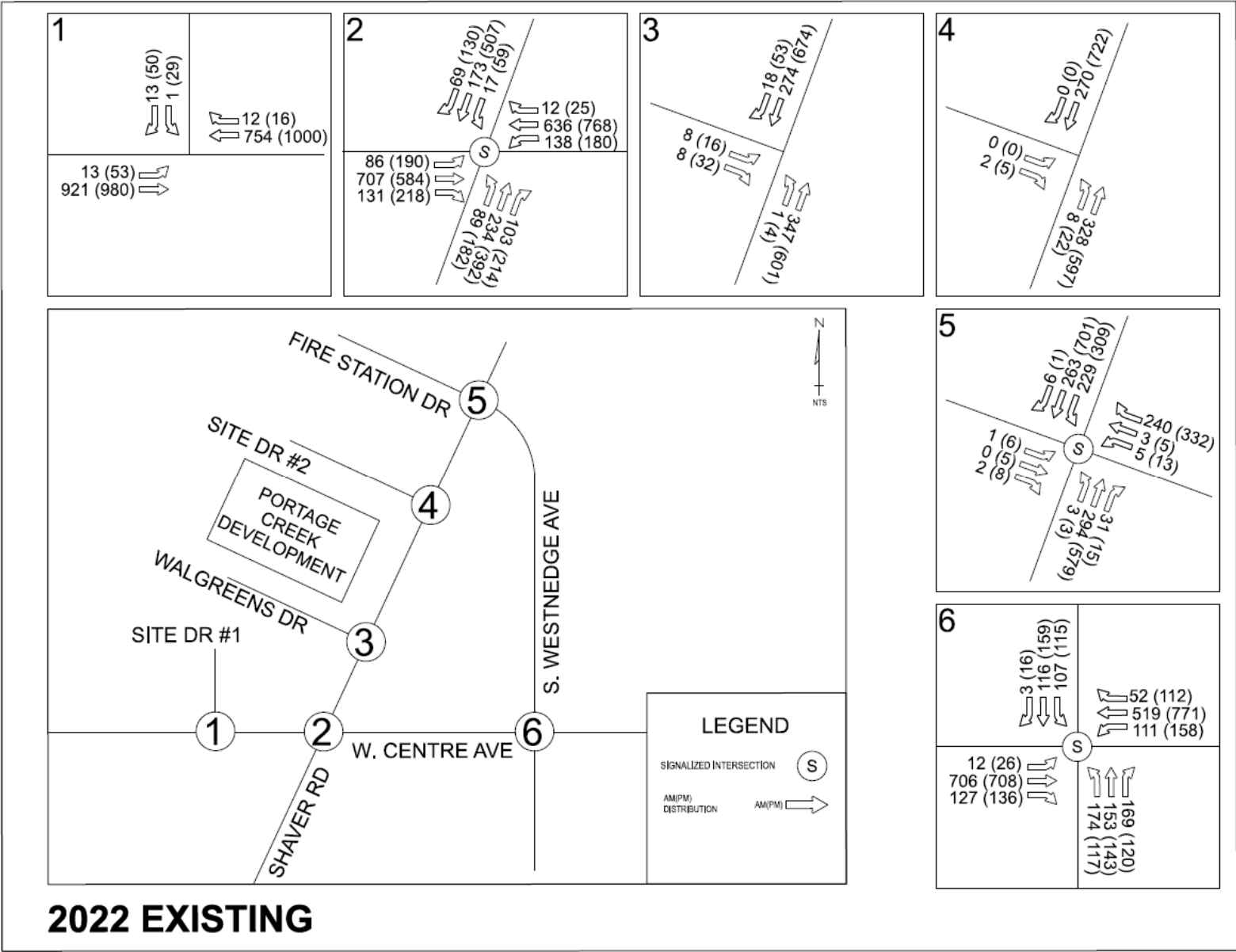


EXHIBIT 6: 2024 NO-BUILD TRAFFIC VOLUMES DIAGRAM

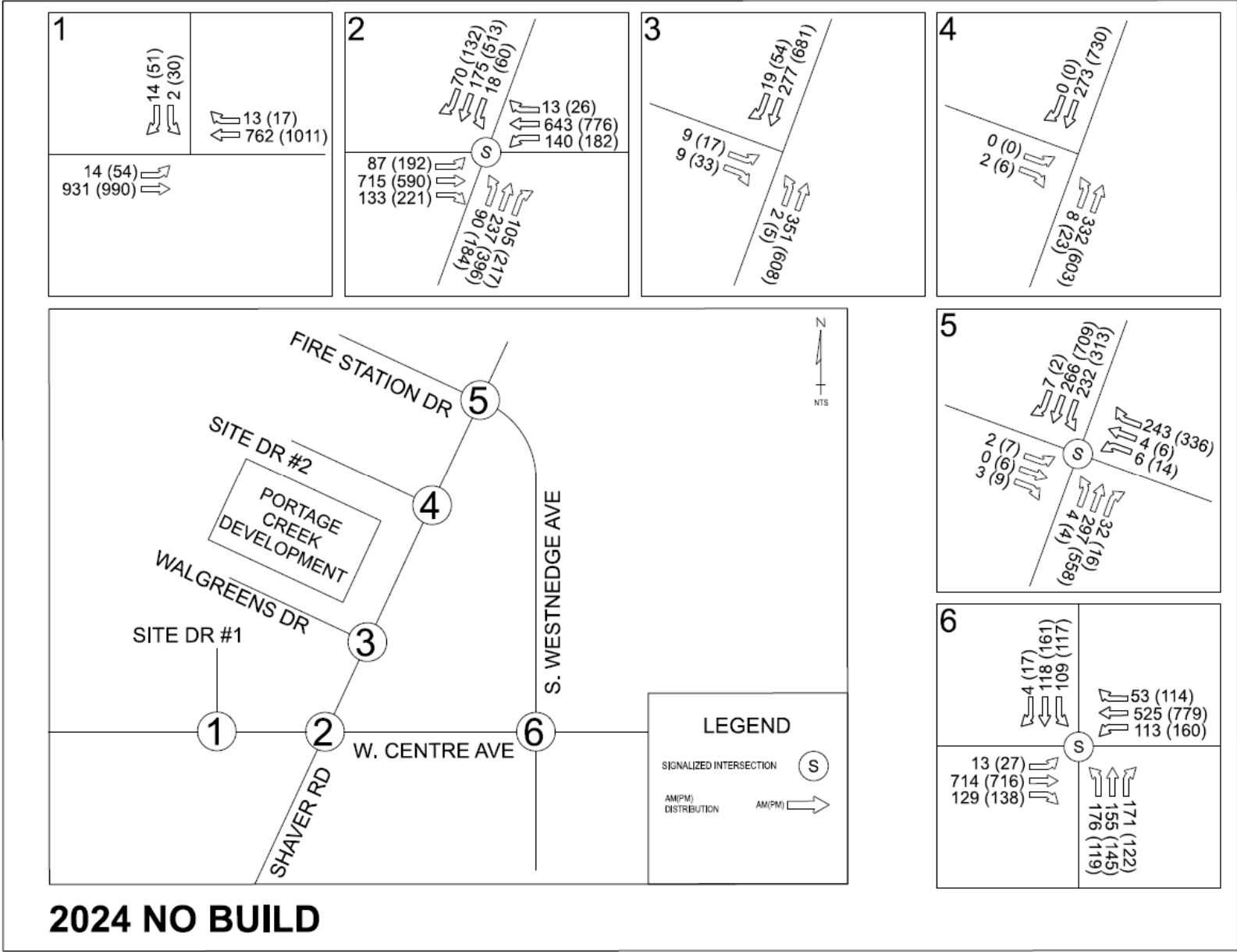


EXHIBIT 7: TRIP DISTRIBUTION DIAGRAM

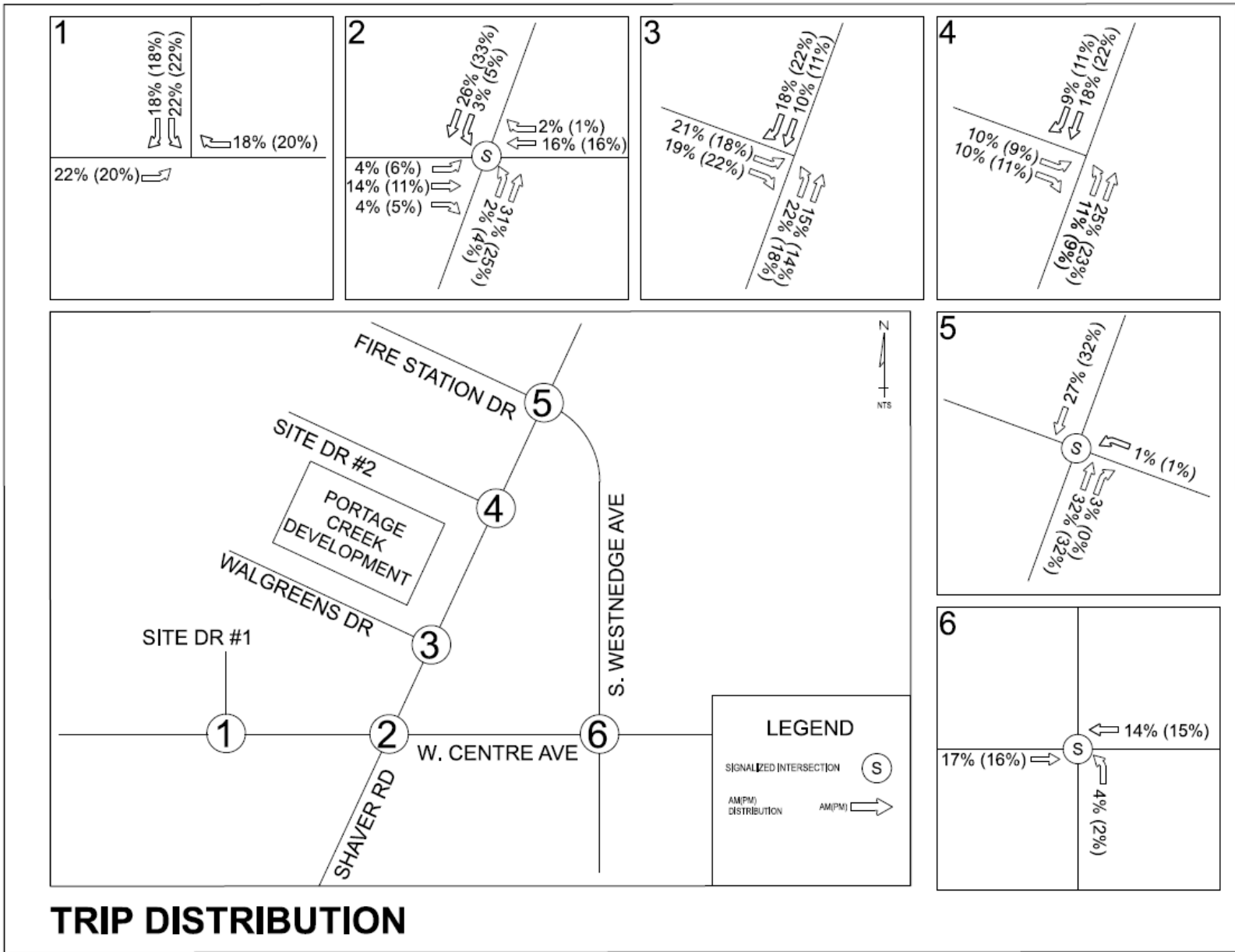


EXHIBIT 8: TRIP GENERATION DIAGRAM

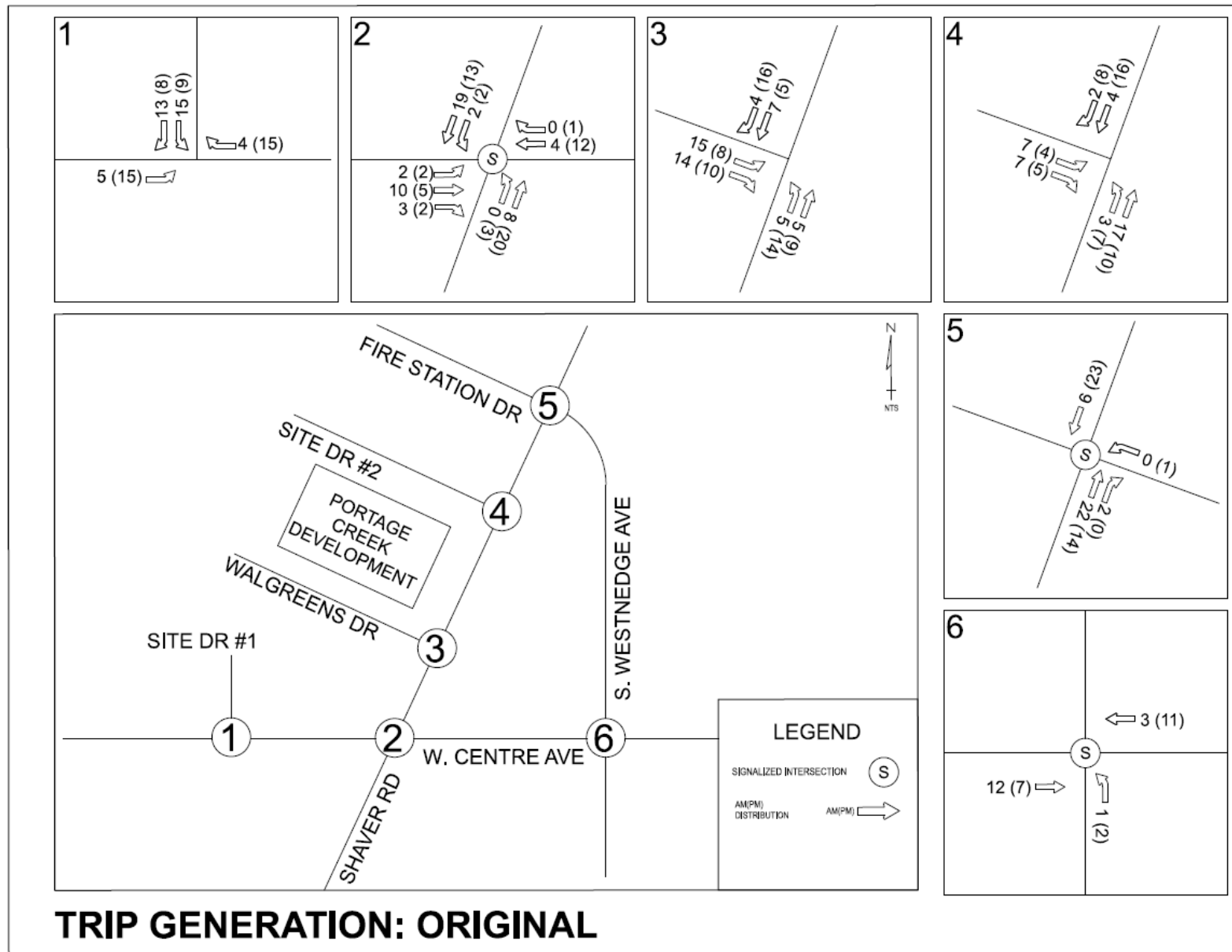


EXHIBIT 9: TRIP GENERATION DIAGRAM: SCENARIO #1

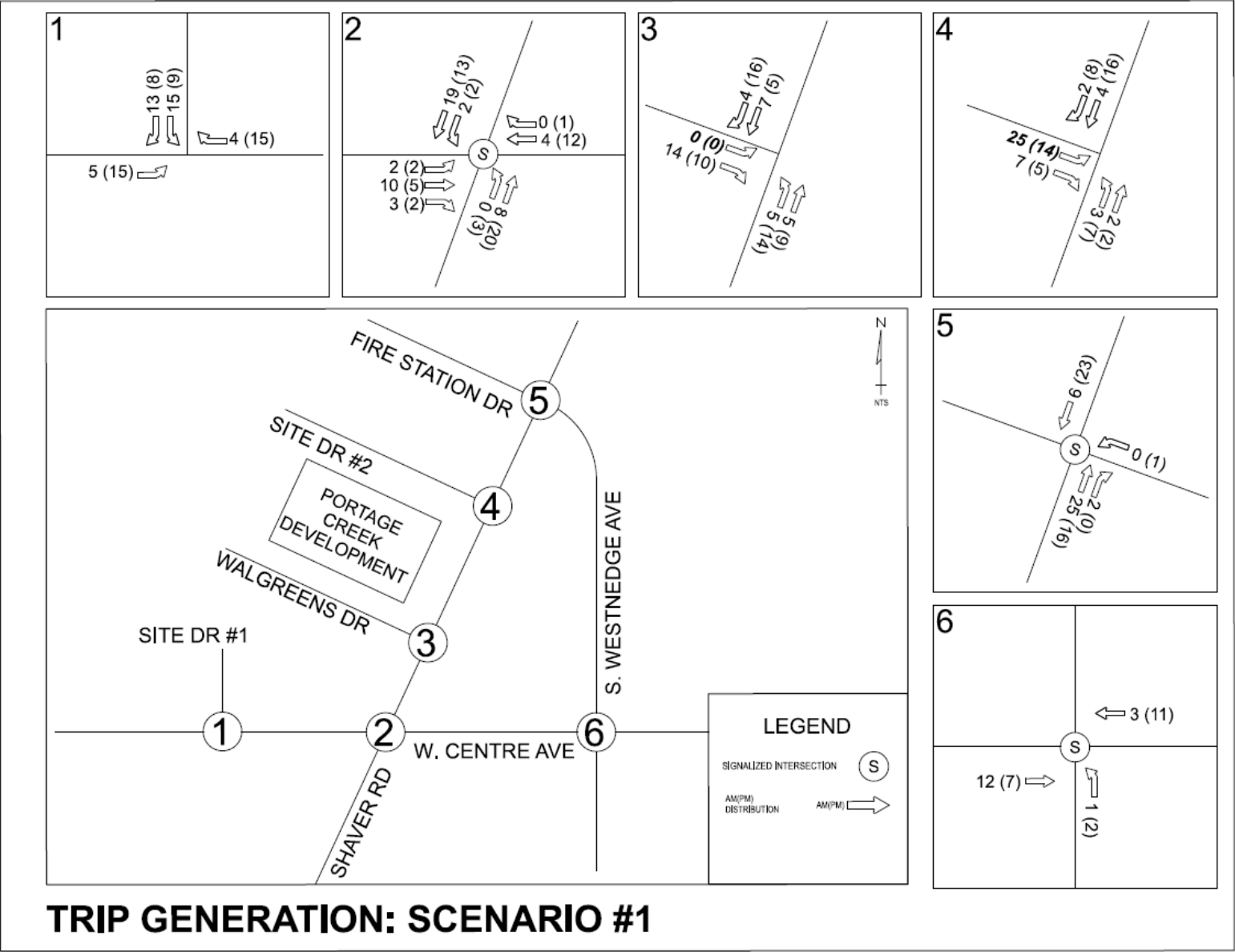


EXHIBIT 10: TRIP GENERATION DIAGRAM: SCENARIO #2

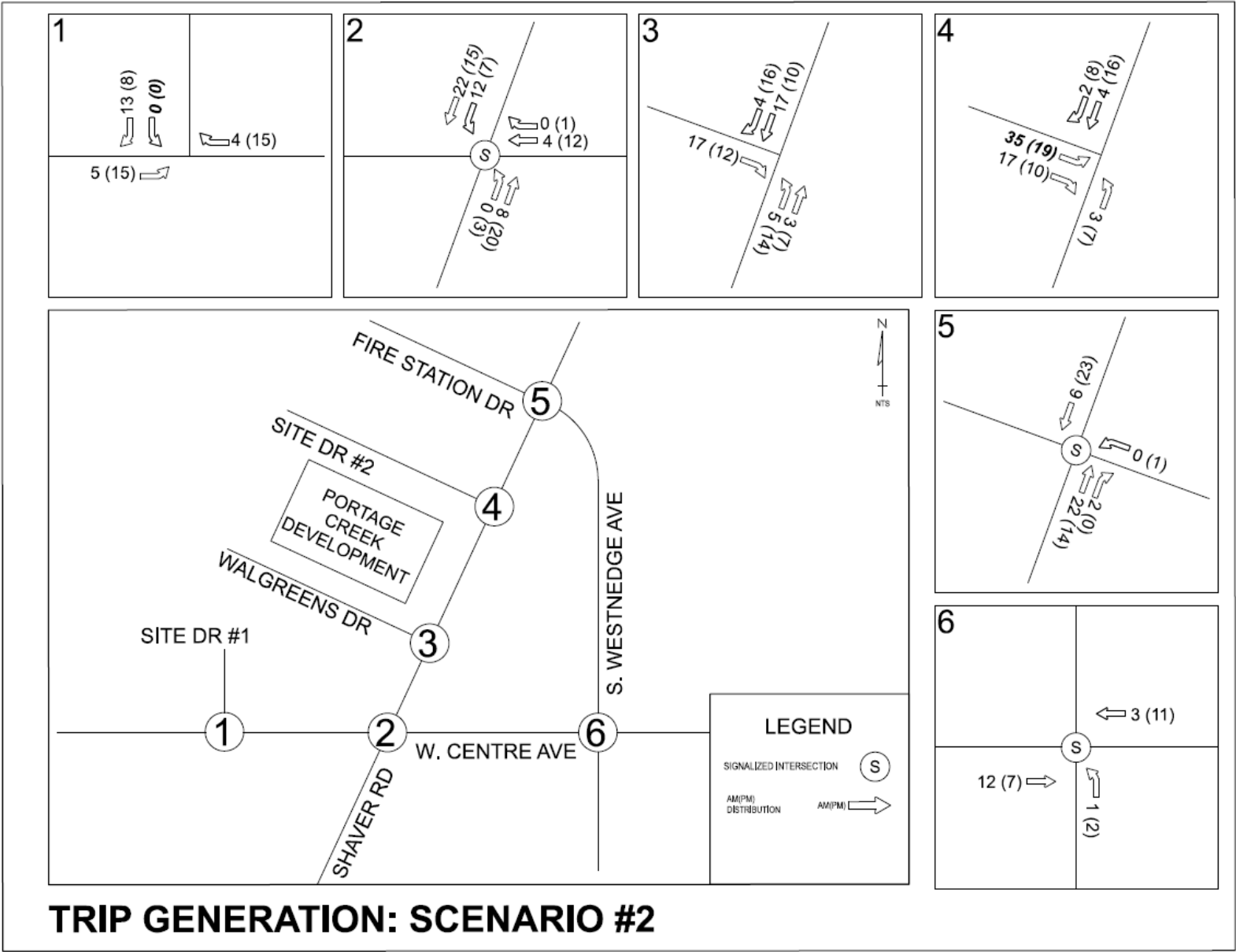


EXHIBIT 11: 2024 FUTURE BUILD-OUT DIAGRAM

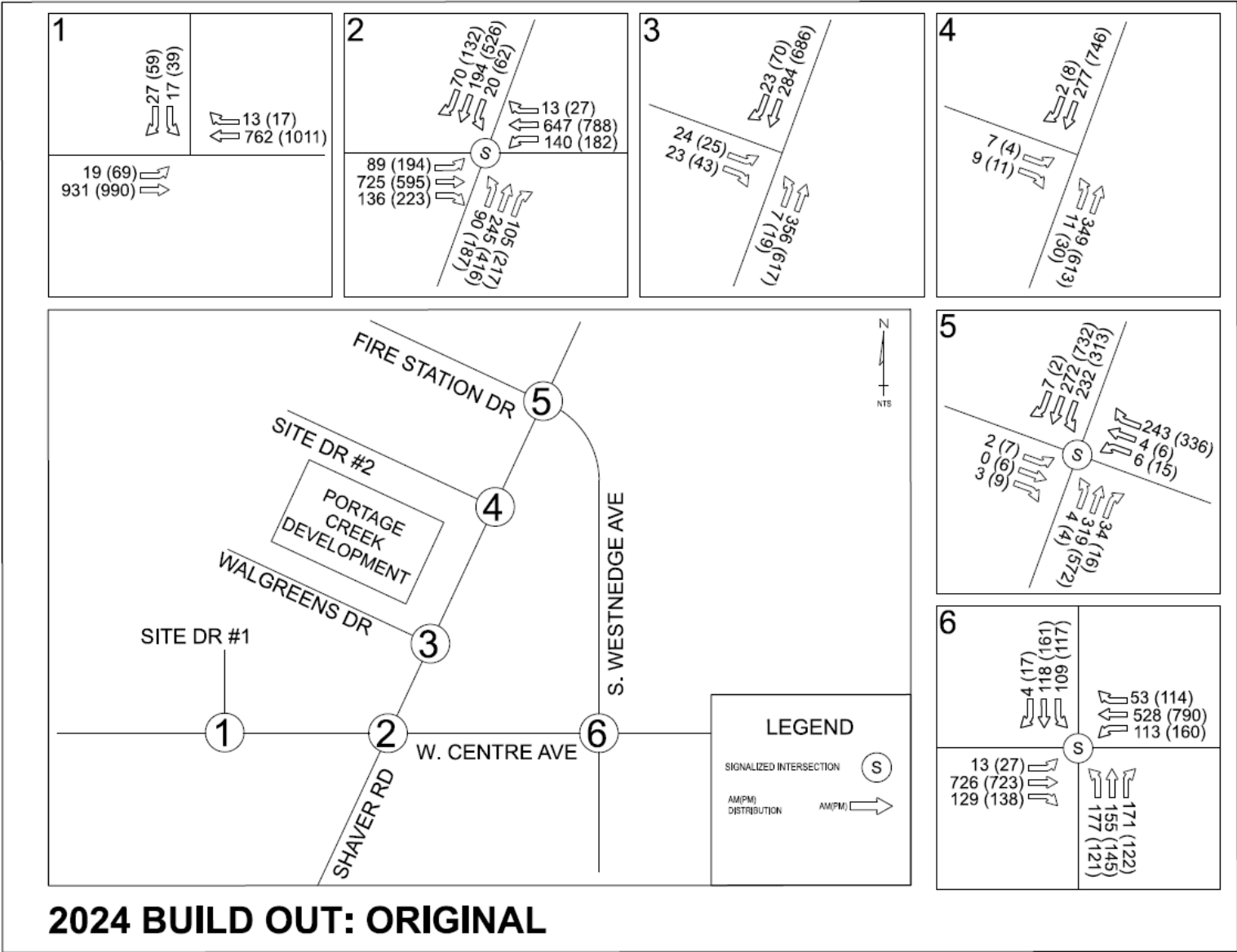


EXHIBIT 12: 2024 FUTURE BUILD-OUT DIAGRAM: SCENARIO #1

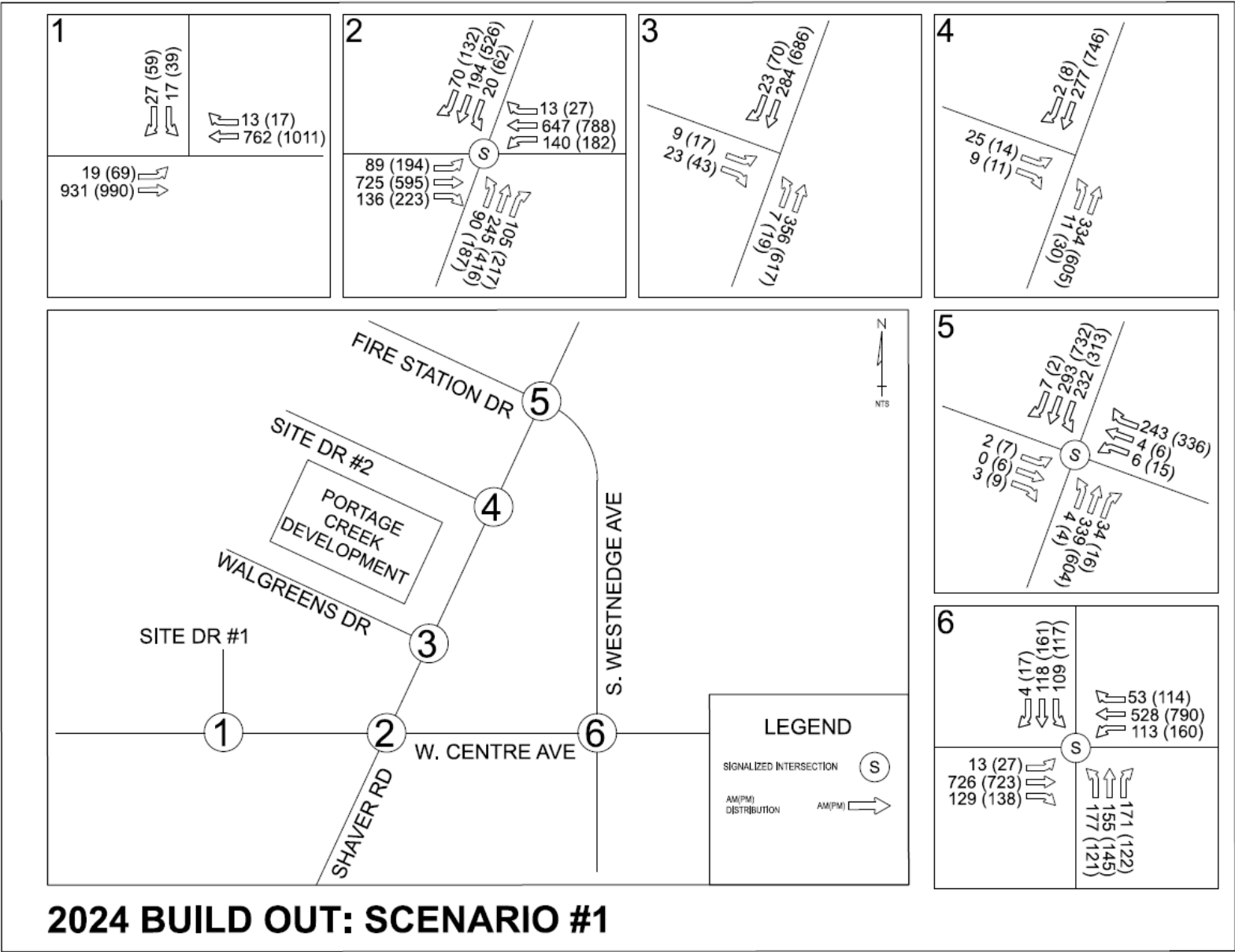
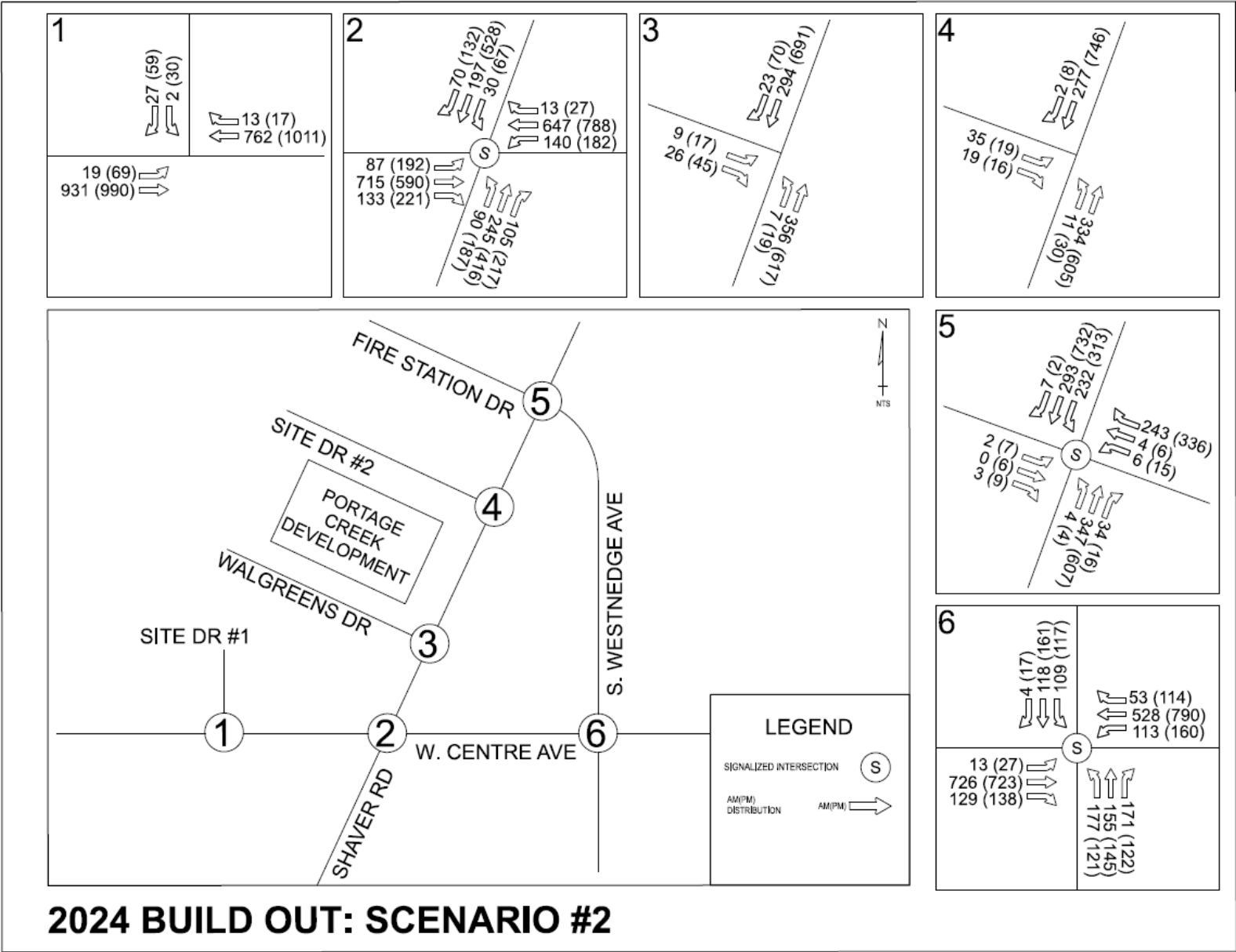


EXHIBIT 13: 2024 FUTURE BUILD-OUT DIAGRAM: SCENARIO #2



4 Traffic Analysis

4.1 Intersection Capacity Analysis

4.1.1 Methodology

The intersection analyses were performed using the Synchro 11/SimTraffic 11 software packages. The 6th Edition Highway Capacity Manual (HCM) and HCM Unsignalized Intersection Capacity Analysis methodologies were used for evaluating intersection operations at the intersections. The methodology uses several variables input into the model to evaluate traffic operations including:

- Volume
- Peak Hour Factor (PHF)
- Speed
- Intersection Controls
- Signal Timing

The level-of service (LOS) criterion for both signalized and unsignalized intersections are summarized in Table 7. Signalized intersections have longer control delay criteria than unsignalized intersections, since drivers can see the traffic control and know that within a set period they will have permitted or protected movement through the intersection. Unsignalized intersections have more uncertainty than signalized intersections, and drivers are less willing to wait for extended periods for gaps in traffic; therefore, the control delay criteria are less than a signalized intersection.

TABLE 7: SIGNALIZED AND UNSIGNALIZED INTERSECTION LOS

Control Delay (sec/vehicle)		Level-of-Service (LOS)	Description
Signalized	Stop Control		
0-10	0-10	A	Minimal control delay
>10-20	>10-15	B	Slightly restricted, not significant delays
>20-35	>15-25	C	Stable operations
>35-55	>25-35	D	Less stable, increased delays
>55-80	>35-50	E	Unstable operations, significant delays
>80	>50	F	Congested, high delay, extensive queues

The SimTraffic 11 software was used to model and simulate the traffic operations at the study intersections. The traffic modeling parameters used in the models are based on the MDOT Electronic Traffic Control Device Guidelines (2017). The existing condition traffic models were developed to reflect actual field conditions prior to analysis of the proposed conditions. Dummy intersections were used in existing and future conditions to balance the volumes between the study intersections based on MDOT Electronic Traffic Control Guidelines. The SimTraffic models were used to evaluate queues at the study intersections. SimTraffic queue lengths show the 95th percentile maximum queue lengths. The 95th percentile queue is

the maximum back of queue with 95th percentile traffic volumes. Adequate level of service is generally defined as LOS D or better.

4.1.2 Analysis Summary

A capacity analysis was completed to determine the impacts of the site generated traffic on the access, mobility, safety, and traffic operations at the proposed site and adjacent roadways. The capacity analysis was conducted for the study intersections for the following conditions during the AM and PM peaks:

- Existing 2022
- Future 2024 No-Build
- Future 2024 Build-Out
- Future 2024 Build-Out Scenario #1 and #2
- Future 2024 Build-Out Mitigation

The Peak Hour Factor (PHF) provided by the turning movement counts was applied when modeling the 2022 Existing, 2024 No-Build, 2024 Build-Out, 2024 Build-Out Scenarios #1 and #2 and 2024 Build-Out mitigation conditions. The HCM Synchro reports were generated to determine the LOS, delay, and 95th percentile queue length for each condition during each peak hour. There were no geometric improvements to the existing roadways. All site driveways are existing. The existing signal timings were used in the analysis for the 2022 Existing, 2024 No-Build, and 2024 Build-Out conditions. The timing for the signal at W. Centre Ave and Shaver Rd was modified for the 2024 Build-Out Mitigation condition. The existing timing permits were provided by the City of Portage. Timing permits can be found in Appendix B.

Tables 8 through 19 provide the results of the capacity analysis for the proposed development by condition, peak hour, and intersection turning movement. The Synchro HCM and SimTraffic reports used in this analysis are provided in Appendix D. Note that free flow thru traffic in unsignalized intersections typically does not have delay values and free flow right turn movements have minimal delay values. The LOS for these free flow movements can be assumed as LOS A with very minimal or no delays.

The existing drive at W. Centre Ave is approximately 21-22 feet wide, and existing traffic counts show that vehicles turn both left and right when exiting the site. The existing and proposed laneage for that driveway is separate right and left turn lanes for exiting traffic. The existing and proposed laneage for the South Site Driveway at Shaver Rd is separate right and left turn lanes for exiting traffic. The existing laneage for the North Site Driveway at Shaver Rd is a shared right and left turn lane for exiting traffic. The proposed development will provide separate right and left turn lanes for exiting traffic at the North Site Driveway.

TABLE 8: W. CENTRE AVE AND SHAVER RD – LOS AND DELAYS

W. CENTRE AVE AND SHAVER RD - LOS and Delays (Sec)											
Condition		Eastbound			Westbound		Northbound		Southbound		TOTAL
		Left	Thru	Right	Left	Thru-Right	Left	Thru-Right	Left	Thru-Right	
AM Peak	2022 Existing	B 12.9	B 17.7		B 13.9	C 31.0	D 36.3	D 44.4	D 36.8	D 47.1	C 28.6
	2024 No Build	B 13.1	B 17.9		B 14.2	C 31.3	D 36.2	D 44.5	D 36.6	D 47.0	C 28.8
	2024 Build Out	B 14.2	B 19.4		B 15.5	C 32.8	D 35.0	D 44.8	D 34.8	D 44.4	C 29.7
PM Peak	2022 Existing	C 22.5	C 23.4		B 18.4	D 41.1	F 130.4	E 61.4	C 34.8	F 84.7	D 54.2
	2024 No Build	C 22.9	C 23.5		B 18.5	D 41.3	F 139.4	E 63.0	C 34.9	F 87.6	E 55.7
	2024 Build Out	C 23.5	C 23.5		B 18.5	D 41.6	F 148.6	E 69.1	D 35.6	F 92.8	E 58.8
	2024 Mitigation	C 27.8	C 24.9		C 20.3	D 43.1	F 98.2	E 52.6	C 33.3	E 72.4	D 49.2

TABLE 9: W. CENTRE AVE AND SHAVER RD – QUEUES

W. CENTRE AVE AND SHAVER RD - Queue (ft)										
Condition		Eastbound			Westbound		Northbound		Southbound	
		Left	Thru	Right	Left	Thru-Right	Left	Thru-Right	Left	Thru-Right
AM Peak	2022 Existing	67	233		115	212	78	154	30	109
	2024 No Build	44	240		109	208	90	145	26	115
	2024 Build Out	79	231		119	242	93	173	33	120
PM Peak	2022 Existing	146	155		228	294	226	259	195	322
	2024 No Build	181	196		233	308	331	543	162	296
	2024 Build Out	174	193		239	312	243	266	142	274
	2024 Mitigation	174	211		225	329	222	240	133	329

W. Centre Ave and Shaver Rd (Tables 8 and 9)

- The intersection of W. Centre Ave and Shaver Rd operates at an acceptable LOS D or better during the AM peak hours for all conditions. During the PM peak hour, the intersection operates at an acceptable LOS D or better for all conditions except the northbound left (LOS F), northbound thru-right (LOS E), and the southbound thru-right (LOS F) movements.
- The existing LOS for northbound left turns for the PM peak hour is LOS F, and remains LOS F after the Build-Out, with an increase in delay of approximately 18.2 seconds.
- The existing LOS for the northbound thru-right movements for the PM peak hour is LOS E, and remains LOS E after the Build-Out, with an increase in delay of approximately 7.7 seconds.

- The existing LOS for the southbound thru-right movement is LOS F and remains LOS F after the Build-Out, with an increase in delay of approximately 5.5 seconds. The SB approach maximum queue extends beyond the site south driveway and the existing left turn storage lane.
- The eastbound right turn movement is channelized and controlled by a yield sign.
- Proposed mitigations to the signal timing and operation were evaluated to improve the northbound movements and the southbound thru-right movement. The mitigation model included adjustments to the signal timing splits (+1 sec for northbound/southbound left turn phase and +2 seconds for southbound/northbound phase; -1 sec for eastbound/westbound left turn phase and -2 sec for eastbound/westbound thru phase). The mitigated LOS and queue lengths are similar to existing conditions.

TABLE 10: SHAVER RD AND S. WESTNEDGE AVE – LOS/DELAYS

SHAVER RD AND S. WESTNEDGE AVE - LOS and Delays (Sec)										
Condition		Eastbound		Westbound		Northbound		Southbound		TOTAL
		Left-Thru	Thru-Right	Left-Thru	Right	Left	Thru-Right	Left	Thru-Right	
AM Peak	2022 Existing	C 26.8	C 26.5	C 26.6	D 40.4	B 11.3	B 13.5	A 8.6	A 8.7	B 17.9
	2024 No Build	C 26.9	C 26.5	C 26.6	D 40.4	B 11.5	B 13.7	A 8.8	A 8.9	B 18.1
	2024 Build Out	C 26.9	C 26.5	C 26.6	D 40.4	B 11.5	B 13.9	A 8.9	A 9.0	B 18.0
PM Peak	2022 Existing	C 26.7	C 26.7	C 26.7	D 44.0	B 14.6	B 19.4	B 12.6	B 12.7	C 20.5
	2024 No Build	C 26.7	C 26.7	C 26.8	D 44.6	B 14.9	B 19.9	B 13.0	B 13.0	C 20.9
	2024 Build Out	C 27.4	C 27.4	C 27.5	D 46.2	B 16.2	C 21.2	B 14.3	B 16.8	C 22.1

TABLE 11: SHAVER RD AND S. WESTNEDGE AVE – QUEUES

SHAVER RD AND S. WESTNEDGE AVE- Queue (ft)									
Condition		Eastbound		Westbound		Northbound		Southbound	
		Left-Thru	Thru-Right	Left-Thru	Right	Left	Thru-Right	Left	Thru-Right
AM Peak	2022 Existing	0	21	24	119	0	118	106	59
	2024 No Build	37	27	19	115	0	133	86	46
	2024 Build Out	22	23	38	117	0	126	81	53
PM Peak	2022 Existing	18	32	43	151	10	173	123	114
	2024 No Build	34	37	43	169	22	203	146	116
	2024 Build Out	26	34	38	134	22	166	193	124

Shaver Rd and S. Westnedge Ave (Tables 10 and 11)

- Shaver Rd and S. Westnedge operates at an acceptable level for all peak hours and conditions. The westbound right turn movement operates with LOS D for all AM and PM conditions, while the rest of the intersection is at LOS C or better for all AM and PM conditions.
- Mitigation is not necessary for this intersection.

TABLE 12: W. CENTRE AVE AND S. WESTNEDGE AVE – LOS/DELAYS

W. CENTRE AVE S. WESTNEDGE AVE - LOS and Delays (Sec)											
Condition		Eastbound		Westbound		Northbound			Southbound		TOTAL
		Left	Thru-Right	Left	Thru-Right	Left	Thru	Right	Left	Thru-Right	
AM Peak	2022 Existing	C 27.8	D 46.6	D 41.7	C 28.6	C 31.4	C 34.8	D 52.0	C 27.8	D 39.0	D 38.7
	2024 No Build	C 28.0	D 47.1	D 42.0	C 28.7	C 31.6	C 34.8	D 52.7	C 28.0	D 39.4	D 39.0
	2024 Build Out	C 28.0	D 48.3	D 42.7	C 28.8	C 31.6	C 34.8	D 52.7	C 28.0	D 39.4	D 39.5
PM Peak	2022 Existing	D 39.4	D 49.5	D 50.0	D 36.9	D 33.8	D 39.8	D 45.4	C 28.3	D 48.9	D 42.6
	2024 No Build	D 39.9	D 49.9	D 50.5	D 37.2	C 34.0	D 39.9	D 45.5	C 28.5	D 49.3	D 42.9
	2024 Build Out	D 40.3	D 50.3	D 50.9	D 37.6	C 34.1	D 39.9	D 45.4	C 28.5	D 49.3	D 43.2

TABLE 13: W. CENTRE AVE AND S. WESTNEDGE AVE – QUEUES

W. CENTRE AVE S. WESTNEDGE AVE - Queue (ft)										
Condition		Eastbound		Westbound		Northbound			Southbound	
		Left	Thru-Right	Left	Thru-Right	Left	Thru	Right	Left	Thru-Right
AM Peak	2022 Existing	71	275	110	160	132	135	109	145	157
	2024 No Build	97	283	110	204	139	123	109	103	107
	2024 Build Out	45	319	104	147	128	144	111	114	133
PM Peak	2022 Existing	138	304	139	201	119	126	69	130	165
	2024 No Build	106	296	214	282	122	158	121	132	169
	2024 Build Out	116	284	161	299	109	100	94	127	201

W. Centre Ave and S. Westnedge Ave (Tables 12 and 13)

- W. Centre Ave and S. Westnedge Ave operates at an acceptable LOS D or better during the AM and PM peak hours for all conditions.
- Mitigation is not necessary for this intersection.

TABLE 14: SHAVER RD AND NORTH SITE DRIVEWAY – LOS/DELAYS

SHAVER RD AND NORTH SITE DRIVEWAY - LOS and Delays (Sec)						
Condition		Eastbound		Northbound		Southbound
		Left	Right	Left	Thru	Thru-Right
AM Peak	2022 Existing	A 9.2		A 7.9	-	-
	2024 No Build	A 9.2		A 7.9	-	-
	2024 Build Out	B 11.7	A 9.3	A 8.0	-	-
	2024 Build Scenario 1	B 11.9	A 9.3	A 8.0	-	-
	2024 Build Scenario 2	B 12.0	A 9.3	A 8.0	-	-
PM Peak	2022 Existing	B 11		A 9.5	-	-
	2024 No Build	B 11		A 9.5	-	-
	2024 Build Out	C 17.7	B 11.3	A 9.7	-	-
	2024 Build Scenario 1	C 18.2	B 11.2	A 9.7	-	-
	2024 Build Scenario 2	C 18.5	B 11.3	A 9.7	-	-

TABLE 15: SHAVER RD AND NORTH SITE DRIVEWAY – QUEUES

SHAVER RD AND NORTH SITE DRIVEWAY - Queue (ft)						
Condition		Eastbound		Northbound		Southbound
		Left	Right	Left	Thru	Thru-Right
AM Peak	2022 Existing	9		14	-	-
	2024 No Build	14		10	-	-
	2024 Build Out	25	34	14	-	-
	2024 Build Scenario 1	45	38	17	-	-
	2024 Build Scenario 2	52	41	15	-	-
PM Peak	2022 Existing	26		38	-	-
	2024 No Build	14		28	-	-
	2024 Build Out	10	32	39	-	-
	2024 Build Scenario 1	33	30	26	-	-
	2024 Build Scenario 2	48	44	43	-	-

Shaver Rd and North Site Driveway (Tables 14 and 15)

- The intersection of Shaver Rd and the North Site Driveway operates well for all peak hours and conditions (LOS C or better for all approaches).
- The proposed driveway operates at LOS C or better for both the AM and PM peak hours with minimal queue lengths (approximately 3 vehicles).
- The northbound left turn traffic entering the north driveway has minimal queues (approximately 3 vehicles), which will not exceed the available left turn lane storage.

TABLE 16: SHAVER RD AND SOUTH SITE DRIVEWAY – LOS/DELAYS

SHAVER RD AND SOUTH SITE DRIVEWAY - LOS and Delays (Sec)						
Condition		Eastbound		Northbound		Southbound
		Left	Right	Left	Thru	Thru-Right
AM Peak	2022 Existing	B 11.4	A 9.3	A 8.0	-	-
	2024 No Build	B 11.5	A 9.3	A 8.0	-	-
	2024 Build Out	B 12.1	A 9.5	A 8.1	-	-
PM Peak	2022 Existing	C 18.3	B 12	A 9.7	-	-
	2024 No Build	C 18.7	B 12.1	A 9.8	-	-
	2024 Build Out	C 20.2	B 12.5	B 10.0	-	-

TABLE 17: SHAVER RD AND SOUTH SITE DRIVEWAY – QUEUES

SHAVER RD AND SOUTH SITE DRIVEWAY - Queue (ft)						
Condition		Eastbound		Northbound		Southbound
		Left	Right	Left	Thru	Thru-Right
AM Peak	2022 Existing	28	31	10	-	-
	2024 No Build	14	27	10	-	-
	2024 Build Out	45	45	8	-	-
PM Peak	2022 Existing	37	58	10	-	58
	2024 No Build	51	49	15	-	94
	2024 Build Out	48	56	27	-	71

Shaver Rd and South Site Driveway (Tables 16 and 17)

- The intersection of Shaver Rd and the South Site Driveway operates at an acceptable LOS C or better for all peak hours and conditions.
- The proposed driveway operates at LOS C or better for both the AM and PM peak hours.
- The existing eastbound storage lengths are sufficient for the queue lengths based on modelling.
- The southbound thru-right movement has a queue length of 71 feet with the 2024 Build-Out conditions. This is mainly due to spillback from southbound approach queues at the Shaver Rd and Centre Rd intersection.
- The northbound left turn traffic entering the south driveway has minimal queues (approximately 2 vehicles), which has adequate left turn lane storage length.

TABLE 18: W. CENTRE AVE AND SITE DRIVEWAY – LOS/DELAYS

W. CENTRE AVE AND SITE DRIVEWAY - LOS and Delays (Sec)						
Condition		Eastbound		Westbound	Southbound	
		Left	Thru	Thru-Right	Left	Right
AM Peak	2022 Existing	A 1.0	-	-	B 14.3	A 9.2
	2024 No Build	A 1.0	-	-	B 14.6	A 9.2
	2024 Build Out	A 1.4	-	-	C 15.1	A 9.4
PM Peak	2022 Existing	A 3.2	-	-	C 17.8	A 9.8
	2024 No Build	A 3.7	-	-	C 18.0	A 9.8
	2024 Build Out	A 4.6	-	-	C 18.8	A 9.8

TABLE 19: CENTRE AVE AND SITE DRIVEWAY – QUEUES

W. CENTRE AVE AND SITE DRIVEWAY - Queue (ft)						
Condition		Eastbound		Westbound	Southbound	
		Left	Thru	Thru-Right	Left	Right
AM Peak	2022 Existing	31	-	-	-	43
	2024 No Build	36	7	-	10	46
	2024 Build Out	44	-	-	40	47
PM Peak	2022 Existing	94	-	-	68	56
	2024 No Build	74	-	11	60	49
	2024 Build Out	91	-	-	128	53

W. Centre Ave and Site Driveway (Tables 18 and 19)

- The intersection of W. Centre Ave and the Site Driveway operates at an acceptable LOS C or better for all peak hours and conditions.
- The proposed driveway operates at LOS C or better for both the AM and PM peak hours with minimal queue lengths (approximately 3 vehicles).
- The eastbound left turn traffic entering the W. Centre Ave driveway has queues up to approximately 91 feet maximum, which will not exceed the available left turn storage.

4.2 Turning Lane and Passing Flare Warrants

After reviewing the site generated trips, existing traffic, and background growth for the 2024 Build-Out, RSE completed an analysis to determine if right turn lanes or tapers or passing flares are warranted at the following locations:

- Shaver Rd and North Site Driveway
- Shaver Rd and South Site Driveway
- W. Centre Ave and Site Driveway

The City of Portage Contract Conditions and Specifications were used to evaluate the need for a right turn lane. All guidelines were reviewed at each location during the PM peak hour.

The City of Portage Contract Conditions and Specifications considers speed limit, number of lanes, average daily traffic on the main street, and right turns per hour to evaluate the need for a right turn lane. The speed limit on Shaver Rd is 35 mph. Since the specification only requires right turn lanes when the speed limit is more than 35 mph, the two driveways on Shaver Rd do not meet the warrants for a right turn lane. The City of Portage requirements for a right turn lane are shown in Exhibit 14.

EXHIBIT 14: RIGHT-TURN LANE WARRANT ANALYSIS

Right turn lanes should be provided when the speed limit is more than 35 mph and the average daily traffic of the main street is more than 10,000 vehicles per day and the number of right turning vehicles meets the criteria listed in Table 9.			
Posted Speed > 45 mph		Posted Speed < 45 mph	
Number of Lanes	Right Turn Vehicles per hour	Number of Lanes	Right Turn Vehicles per hour
2	30	2	80
4	40	4	110

A left turn warrant analysis was not necessary for Shaver Rd and the South Site Driveway since there is an existing center left turn lane on Shaver Rd.

The speed limit on W. Centre Ave is 40 mph. Per MDOT's Transportation Data Management System website, the average daily traffic in the vicinity of the site is more than 10,000 vehicles per day. The maximum number of right turning vehicles per hour is 32 vehicles during the PM peak hour. Based on this data and Exhibit 14 above, the driveway on W. Centre Rd does not meet the warrants for a right turn lane.

A left turn warrant analysis was not necessary for Shaver Rd and the South Site Driveway since there is an existing center left turn lane on Shaver Rd.

4.3 Sight Distance Analysis

RSE reviewed the site access points to determine if the required intersection sight distance will be adequate for the proposed driveways along Shaver Rd and W. Centre Ave. The sight distance was established based on the roadway speed and Tables 4 and 5 of the City of Portage Contract Conditions and Specifications Document. The speed for Shaver Rd is 35 mph, and the speed for W. Centre Ave is 40 mph west of Shaver Rd.

Based on the aerial, the intersection sight distance at all sight access points appears to have no concerns with horizontal and vertical curves. The proposed sight triangles (red areas) need to remain clear of objects or any sight obstruction. The sight distance triangles and the proposed clear sight distance areas for the proposed driveways are shown on Exhibits 15, 16, and 17.

At 35 mph:
SSD = 250 feet, ISD = 360 feet

At 40 mph:
SSD = 305 feet, ISD = 410 feet

EXHIBIT 15: SIGHT DISTANCE TRIANGLE AT SHAVER RD AND SOUTH SITE DRIVEWAY

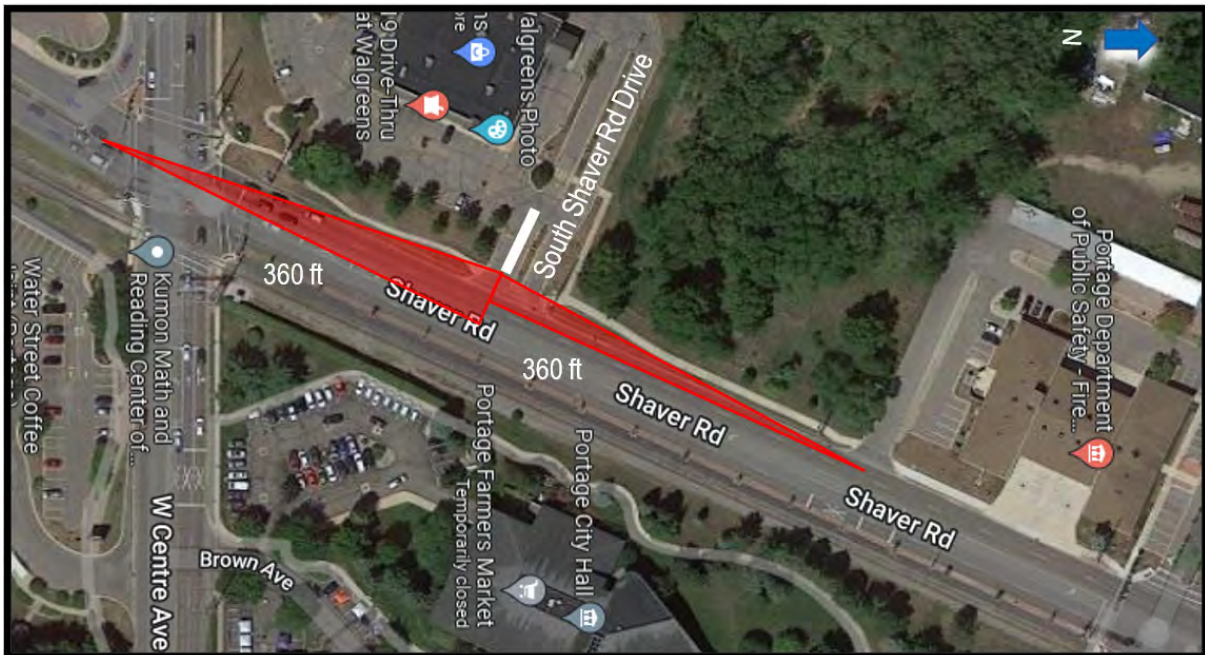


EXHIBIT 16: SIGHT DISTANCE TRIANGLE AT SHAVER RD AND NORTH SITE DRIVEWAY

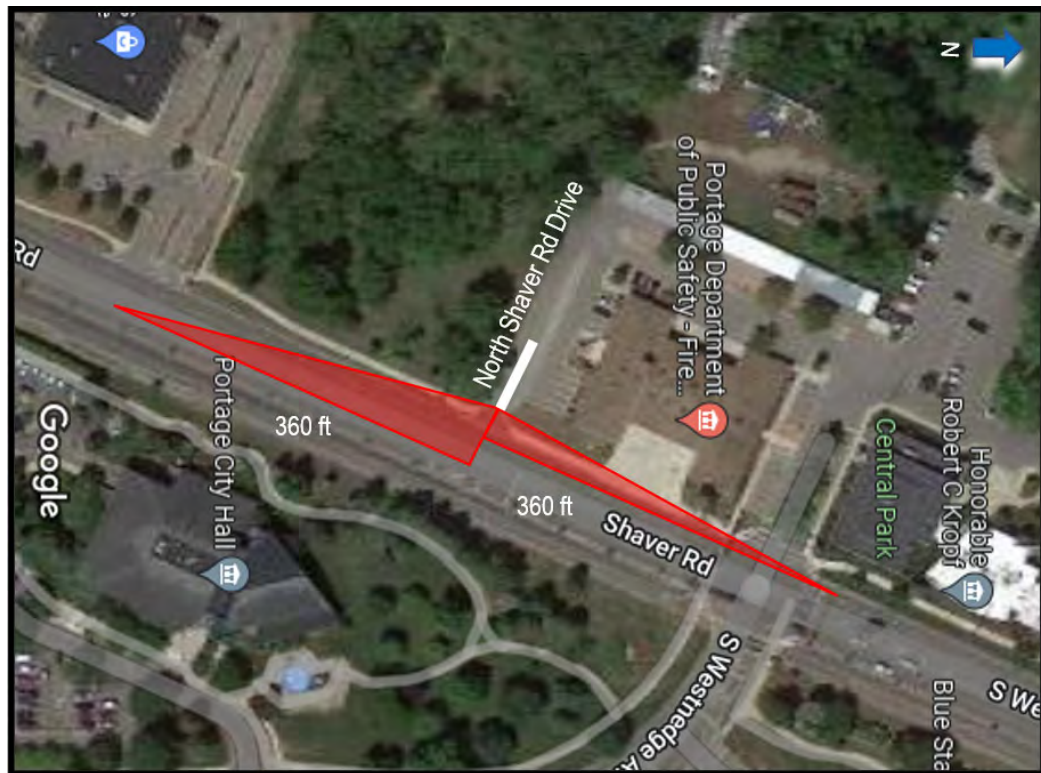
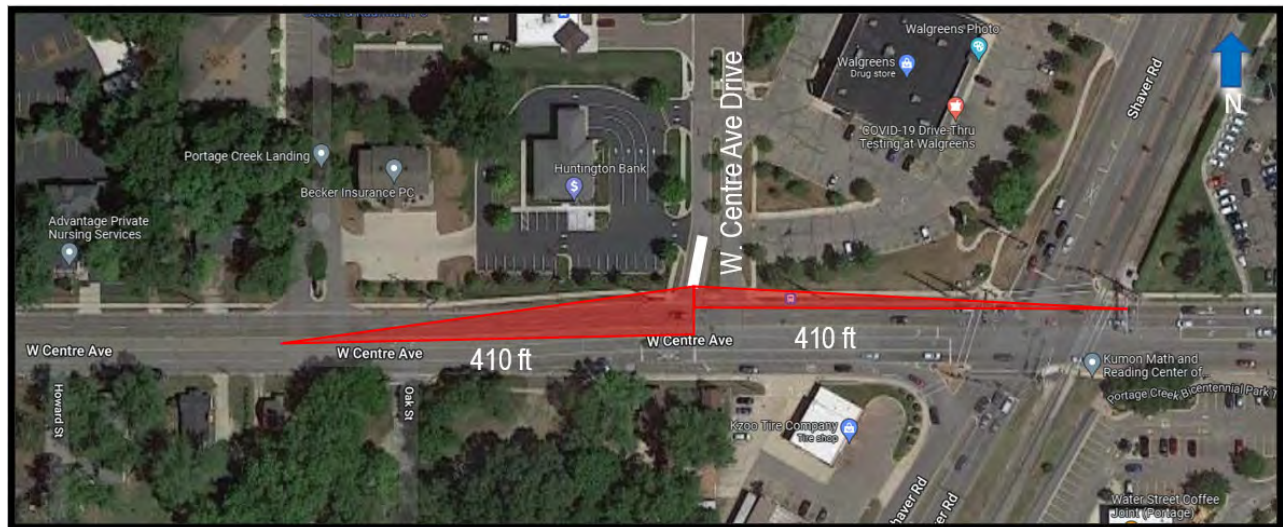


EXHIBIT 17: SIGHT DISTANCE TRIANGLE AT W. CENTRE AVE AND SITE DRIVEWAY



5 Conclusions and Recommendations

Based on the traffic data, the site plans, and the results of the traffic analysis presented herein, RSE has determined that adjacent roadways are expected to accommodate the proposed location of the Portage Creek multi-family housing and work-live development and its projected trip generations with some minor traffic operation and site access improvements. The analysis results and recommendations for the development are summarized below.

- a) All intersections/driveways operate at an acceptable LOS D or better during all peak periods for all conditions, with exception of the following:
 - The northbound left turn at W. Centre Ave and Shaver Rd during the PM peak hour.
 - The northbound thru-right movements at W. Centre Ave and Shaver Rd during the PM peak hour.
 - The southbound thru-right movement at W. Centre Ave and Shaver Rd during the PM peak hour.
- b) Generally, there are minor increases in delays and queues from the 2022 Existing to the 2024 Build-Out conditions during each peak hour for most movements at the study intersections, while generally maintaining the existing LOS.
- c) The W. Centre Ave and Shaver Rd intersection operates with LOS E for the northbound thru-right movement and LOS F for the northbound left and southbound thru-right movements in the existing condition. The delay increases for these movements during the No-Build and Build-Out conditions.
 - A mitigated model was used to evaluate potential improvement for the PM peak hour including the Build-Out. Adjusting the timings and splits (+1 sec for northbound/southbound left turn phase and +2 seconds for southbound/northbound phase; -1 sec for eastbound/westbound left turn phase and -2 sec for eastbound/westbound thru phase) improves the Build-Out LOS and delay similar to existing conditions.
- d) Right turn lanes warrants
 - None of the driveways met the City of Portage requirements for a right turn lane.
- e) Left turn lanes/taper warrants
 - Left turn warrant analysis was not necessary for any of the driveways due to the presence of center left turn lanes on both Shaver Rd and W. Centre Ave.
- f) Separate right and left turn exit lanes are recommended for the driveway on W. Center Ave. This is per the existing driveway/intersection operations, as demonstrated by the existing counts. Separate right and left turn exit lanes are recommended for the South Shaver Drive, which matches the existing condition. Full access should be maintained at the North Shaver Drive and it is recommended that right turn lane with a 100 ft (minimum) storage length should be added.
- g) As noted in the sight distance analysis section, it is recommended that the intersection quadrants within the sight triangle areas always remain clear of objects or any sight obstructions to provide adequate sight distance for the driveways.

- h) All existing intersection signal timings will be adequate of the 2024 Build-Out condition, except for the proposed timing adjustment at W. Centre Ave and Shaver Rd during the PM peak hour as noted below.
- W. Centre Ave/Shaver Rd
 - Adjust signal timing for the northbound/southbound left turn phase from 14 seconds to 15 seconds.
 - Adjust signal timing for the northbound/southbound phase from 31 to 33 seconds.
 - Reduce signal timing for the eastbound/westbound left turn phase from 15 seconds to 14 seconds.
 - Reduce signal timing for the eastbound/westbound phase from 55 to 53 seconds.
 - i) Per the City of Portage comments, the LOS and queues for two additional build-out scenarios were analyzed for North Site Driveway on Shaver Rd. The LOS were all at a LOS C and better and the queue were at a minimal (less than 50 ft).

The geometrics for the driveways and right turn tapers must follow the requirements of the City of Portage standards for commercial driveway openings for roadways with curbs and speeds of 35 mph (Shaver Ave) or 40 mph (Centre Ave) speed limit. All recommended improvements along W. Centre Ave and Shaver Rd should be considered as part of the Portage Creek multi-family housing development design and construction efforts, and should be designed according to the geometric, signing, and pavement marking design standards and guidelines of the City of Portage and the MMUTCD.

6 Bibliography

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Stover, V. G., & Koepke, F. J. (2006). *Transportation and Land Development* (Vol. 2nd Edition).
Washington DC: Institute of Transportation Engineers (ITE).
City of Portage. (2005). *City of Portage Contract Conditions and Specifications*

Appendix A

SITE PLAN INFORMATION

WORK/LIVE	BLDG 36(5)	BLDG 24(1)	WK/LV (2)	TOTAL	NOTES
1 BR UNIT	24	24	8	152	3 SIZES
2 BR UNIT	12	0	8	68	-
TOTAL	180	24	24	228	ESTIMATED

(2) WORK/LIVE	11,775 SF	23,550 SF
(5) BUILDING 36	32,895 SF	164,475 SF
(1) BUILDING 24	20,790 SF	20,790 SF
COMMUNITY BUILDING	3,350 SF	3,350 SF
TOTAL GSF		212,165 GSF

PARKING | 359 SPACES (9 ACCESSIBLE SPACES, 8 REQUIRED)
1.57 SPACES/UNIT - ESTIMATED

SITE AREA | ~462,170 SF
~10.61 ACRES
RESIDENTIAL UNIT DENSITY | 228 UNITS
21.5 UNITS/ACRE

- ACCESSIBLE PARKING SPACE
- TRASH/RECYCLE ENCLOSURE

SIDEWALK - INTERNAL

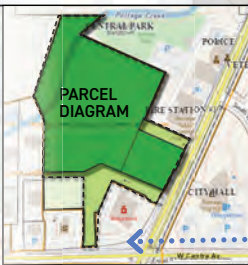
SIDEWALK

BIKE PATH

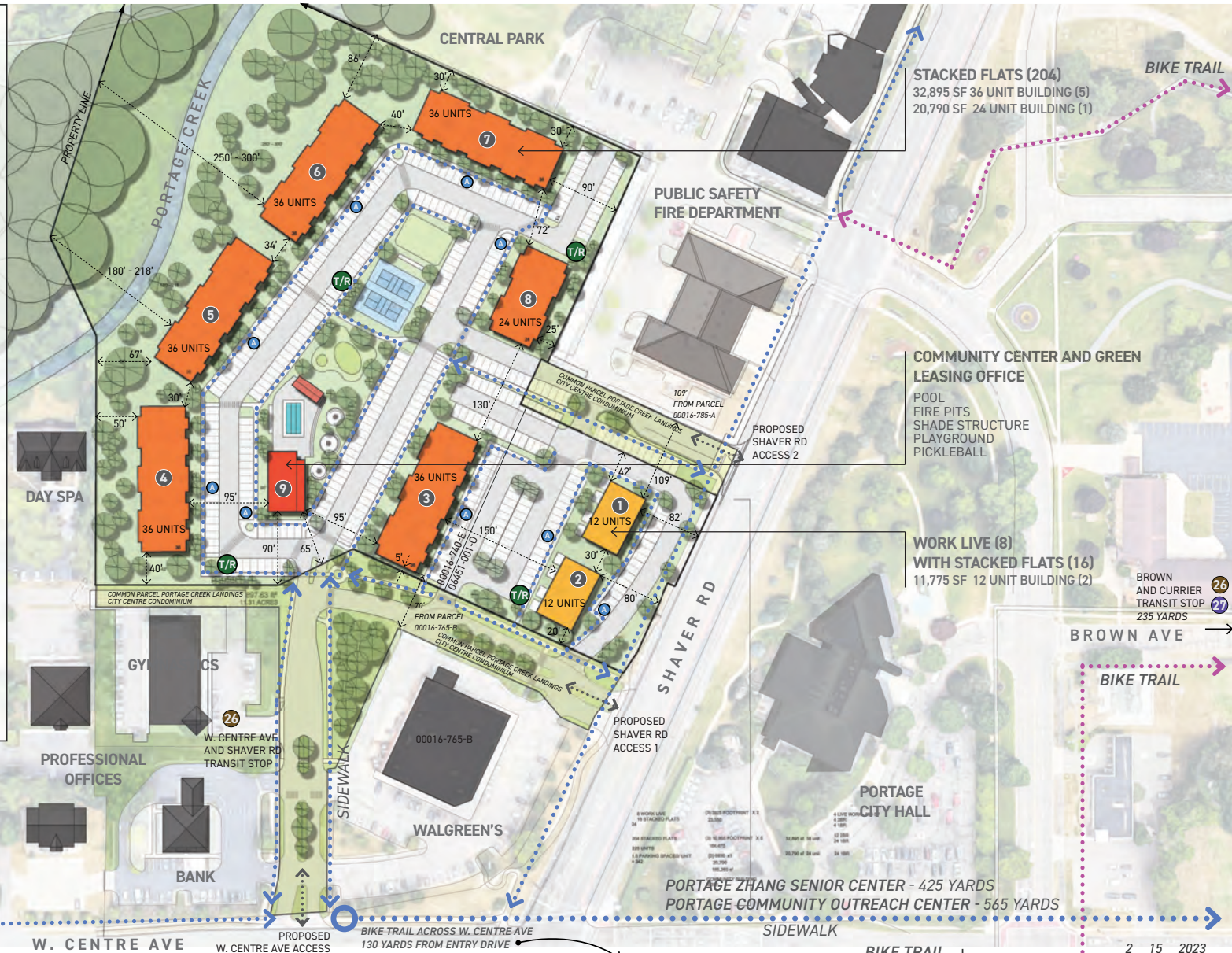
KALAMAZOO METRO TRANSIT

BROWN AND CURRIER TRANSIT STOP
W. CENTRE AVE AND SHAVER RD TRANSIT STOP

SETBACK



SITE PLAN A | SCHEMATIC DESIGN - SCALE 1" = 120'



RIVER CADDIS MULTI-FAMILY DEVELOPMENT | PD APPLICATION

PROJECT NARRATIVE
2 15 2023
1 17 2023
1 10 2023
12 5 2022
20221002

Appendix B

EXISTING TRAFFIC DATA

Portage Creek Dev TIS - TMC

Tue Dec 6, 2022

Full Length (7 AM-9 AM, 4 PM-6 PM)

All Classes (Lights and Motorcycles, Heavy)

All Movements

ID: 1023344, Location: 42.200965, -85.591684

Provided by: RS Engineering LLC
6709 Centurion Drive Suite 300, Lansing, MI, 48917, US

Leg Direction	Shaver Rd Southbound					W Centre Ave Westbound					Shaver Rd Northbound					W Centre Ave Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2022-12-06 7:00AM	10	36	6	0	52	0	88	23	0	111	33	34	20	0	87	18	156	12	0	186	436
7:15AM	13	43	6	0	62	0	189	28	0	217	35	60	29	0	124	33	249	32	0	314	717
7:30AM	11	50	0	0	61	4	222	35	0	261	19	47	25	0	91	25	173	19	0	217	630
7:45AM	28	44	4	0	76	4	124	36	0	164	17	61	18	0	96	38	151	18	0	207	543
Hourly Total	62	173	16	0	251	8	623	122	0	753	104	202	92	0	398	114	729	81	0	924	2326
8:00AM	17	36	7	0	60	4	101	39	0	144	32	66	17	0	115	35	134	17	0	186	505
8:15AM	23	51	7	0	81	3	126	28	0	157	23	54	28	0	105	36	117	23	0	176	519
8:30AM	24	33	12	0	69	7	135	38	0	180	25	66	27	0	118	28	131	21	0	180	547
8:45AM	22	47	8	0	77	4	133	28	0	165	27	46	25	0	98	39	112	42	0	193	533
Hourly Total	86	167	34	0	287	18	495	133	0	646	107	232	97	0	436	138	494	103	0	735	2104
4:00PM	35	160	11	0	206	3	191	51	0	245	72	112	53	0	237	61	134	49	0	244	932
4:15PM	37	129	23	0	189	6	206	45	0	257	48	90	47	0	185	57	150	52	0	259	890
4:30PM	31	102	19	0	152	10	187	43	0	240	60	97	45	0	202	57	135	42	0	234	828
4:45PM	27	116	6	0	149	6	184	41	0	231	34	93	37	0	164	43	165	47	0	255	799
Hourly Total	130	507	59	0	696	25	768	180	0	973	214	392	182	0	788	218	584	190	0	992	3449
5:00PM	52	130	12	0	194	7	181	39	0	227	61	105	54	0	220	67	134	47	0	248	889
5:15PM	43	132	17	0	192	8	200	43	0	251	46	92	52	0	190	54	187	34	0	275	908
5:30PM	31	108	7	0	146	5	160	44	0	209	51	80	49	0	180	42	129	43	0	214	749
5:45PM	25	101	15	0	141	4	116	30	0	150	41	85	25	0	151	44	119	34	0	197	639
Hourly Total	151	471	51	0	673	24	657	156	0	837	199	362	180	0	741	207	569	158	0	934	3185
Total	429	1318	160	0	1907	75	2543	591	0	3209	624	1188	551	0	2363	677	2376	532	0	3585	11064
% Approach	22.5%	69.1%	8.4%	0%	-	2.3%	79.2%	18.4%	0%	-	26.4%	50.3%	23.3%	0%	-	18.9%	66.3%	14.8%	0%	-	-
% Total	3.9%	11.9%	1.4%	0%	17.2%	0.7%	23.0%	5.3%	0%	29.0%	5.6%	10.7%	5.0%	0%	21.4%	6.1%	21.5%	4.8%	0%	32.4%	-
Lights and Motorcycles	426	1287	157	0	1870	73	2506	571	0	3150	617	1158	528	0	2303	664	2316	524	0	3504	10827
% Lights and Motorcycles	99.3%	97.6%	98.1%	0%	98.1%	97.3%	98.5%	96.6%	0%	98.2%	98.9%	97.5%	95.8%	0%	97.5%	98.1%	97.5%	98.5%	0%	97.7%	97.9%
Heavy	3	31	3	0	37	2	37	20	0	59	7	30	23	0	60	13	60	8	0	81	237
% Heavy	0.7%	2.4%	1.9%	0%	1.9%	2.7%	1.5%	3.4%	0%	1.8%	1.1%	2.5%	4.2%	0%	2.5%	1.9%	2.5%	1.5%	0%	2.3%	2.1%

* L: Left, R: Right, T: Thru, U: U-Turn

Portage Creek Dev TIS - TMC

Tue Dec 6, 2022

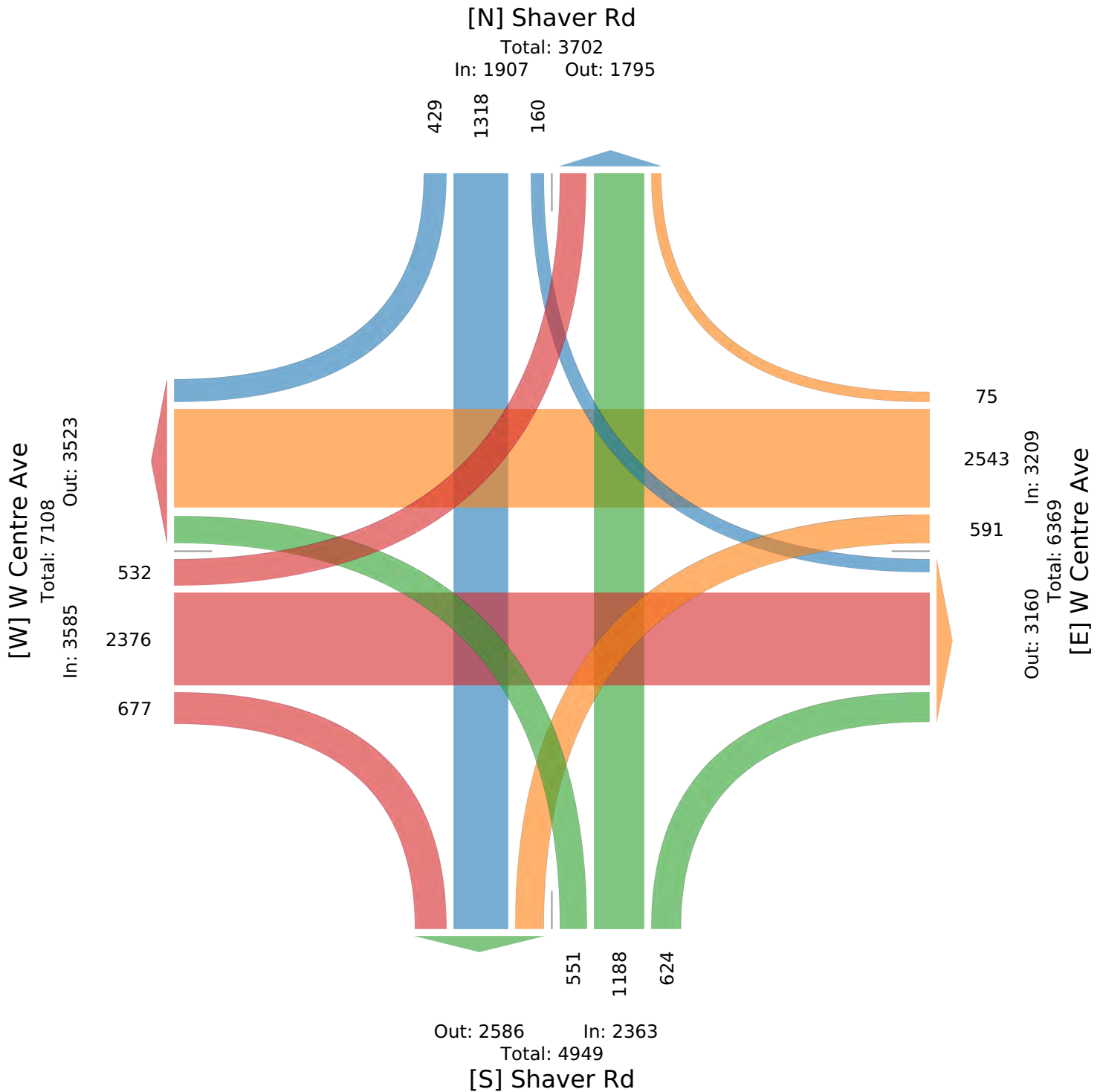
Full Length (7 AM-9 AM, 4 PM-6 PM)

All Classes (Lights and Motorcycles, Heavy)

All Movements

ID: 1023344, Location: 42.200965, -85.591684

Provided by: RS Engineering LLC
6709 Centurion Drive Suite 300, Lansing, MI, 48917, US



Portage Creek Dev TIS - TMC

Tue Dec 6, 2022

AM Peak (7:15 AM - 8:15 AM)

All Classes (Lights and Motorcycles, Heavy)

All Movements

ID: 1023344, Location: 42.200965, -85.591684

Provided by: RS Engineering LLC
6709 Centurion Drive Suite 300, Lansing, MI, 48917, US

Leg Direction	Shaver Rd Southbound					W Centre Ave Westbound					Shaver Rd Northbound					W Centre Ave Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2022-12-06 7:15AM	13	43	6	0	62	0	189	28	0	217	35	60	29	0	124	33	249	32	0	314	717
7:30AM	11	50	0	0	61	4	222	35	0	261	19	47	25	0	91	25	173	19	0	217	630
7:45AM	28	44	4	0	76	4	124	36	0	164	17	61	18	0	96	38	151	18	0	207	543
8:00AM	17	36	7	0	60	4	101	39	0	144	32	66	17	0	115	35	134	17	0	186	505
Total	69	173	17	0	259	12	636	138	0	786	103	234	89	0	426	131	707	86	0	924	2395
% Approach	26.6%	66.8%	6.6%	0%	-	1.5%	80.9%	17.6%	0%	-	24.2%	54.9%	20.9%	0%	-	14.2%	76.5%	9.3%	0%	-	-
% Total	2.9%	7.2%	0.7%	0%	10.8%	0.5%	26.6%	5.8%	0%	32.8%	4.3%	9.8%	3.7%	0%	17.8%	5.5%	29.5%	3.6%	0%	38.6%	-
PHF	0.616	0.865	0.607	-	0.852	0.750	0.716	0.885	-	0.753	0.736	0.886	0.767	-	0.859	0.862	0.710	0.672	-	0.736	0.835
Lights and Motorcycles	69	167	16	0	252	12	620	133	0	765	101	225	80	0	406	128	696	84	0	908	2331
% Lights and Motorcycles	100%	96.5%	94.1%	0%	97.3%	100%	97.5%	96.4%	0%	97.3%	98.1%	96.2%	89.9%	0%	95.3%	97.7%	98.4%	97.7%	0%	98.3%	97.3%
Heavy	0	6	1	0	7	0	16	5	0	21	2	9	9	0	20	3	11	2	0	16	64
% Heavy	0%	3.5%	5.9%	0%	2.7%	0%	2.5%	3.6%	0%	2.7%	1.9%	3.8%	10.1%	0%	4.7%	2.3%	1.6%	2.3%	0%	1.7%	2.7%

* L: Left, R: Right, T: Thru, U: U-Turn

Portage Creek Dev TIS - TMC

Tue Dec 6, 2022

AM Peak (7:15 AM - 8:15 AM)

All Classes (Lights and Motorcycles, Heavy)

All Movements

ID: 1023344, Location: 42.200965, -85.591684

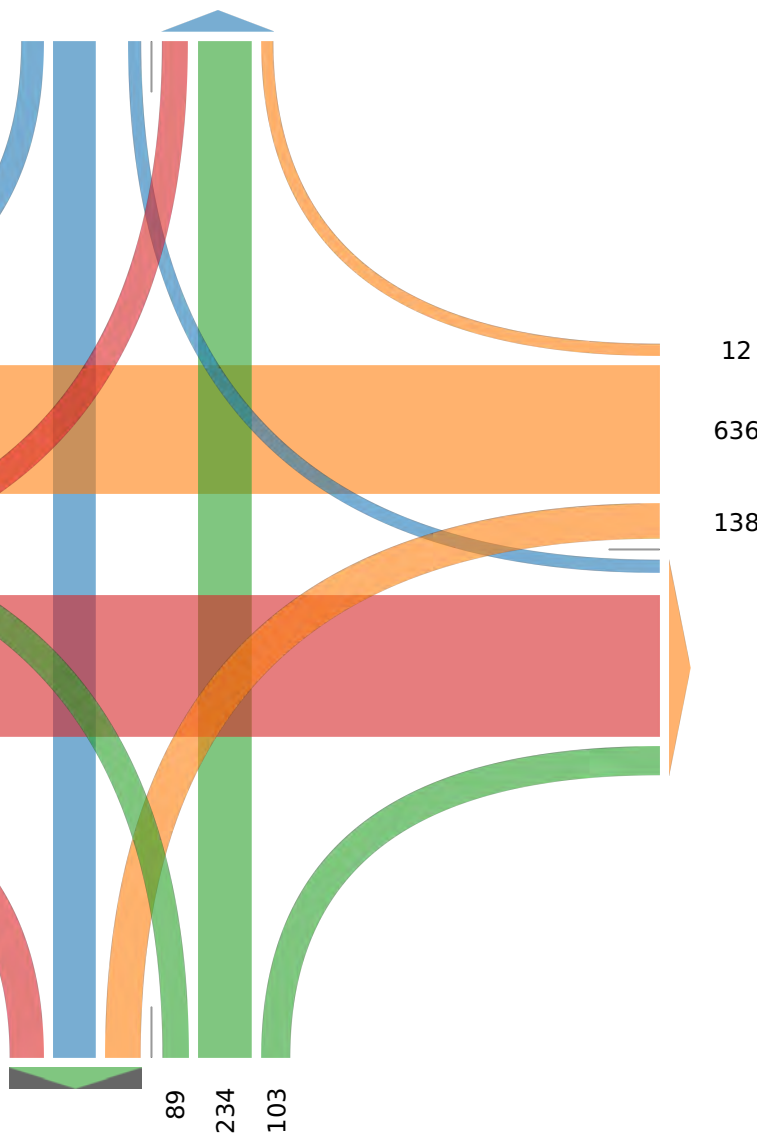
Provided by: RS Engineering LLC
6709 Centurion Drive Suite 300, Lansing, MI, 48917, US

[N] Shaver Rd

Total: 591

In: 259 Out: 332

69 173 17



Out: 442 In: 426

Total: 868

[S] Shaver Rd

[W] W Centre Ave
Total: 1718
In: 924 Out: 794

Out: 827 In: 786
Total: 1613
[E] W Centre Ave

Portage Creek Dev TIS - TMC

Tue Dec 6, 2022

PM Peak (4 PM - 5 PM) - Overall Peak Hour

All Classes (Lights and Motorcycles, Heavy)

All Movements

ID: 1023344, Location: 42.200965, -85.591684

Provided by: RS Engineering LLC
6709 Centurion Drive Suite 300, Lansing, MI, 48917, US

Leg Direction	Shaver Rd Southbound					W Centre Ave Westbound					Shaver Rd Northbound					W Centre Ave Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2022-12-06 4:00PM	35	160	11	0	206	3	191	51	0	245	72	112	53	0	237	61	134	49	0	244	932
4:15PM	37	129	23	0	189	6	206	45	0	257	48	90	47	0	185	57	150	52	0	259	890
4:30PM	31	102	19	0	152	10	187	43	0	240	60	97	45	0	202	57	135	42	0	234	828
4:45PM	27	116	6	0	149	6	184	41	0	231	34	93	37	0	164	43	165	47	0	255	799
Total	130	507	59	0	696	25	768	180	0	973	214	392	182	0	788	218	584	190	0	992	3449
% Approach	18.7%	72.8%	8.5%	0%	-	2.6%	78.9%	18.5%	0%	-	27.2%	49.7%	23.1%	0%	-	22.0%	58.9%	19.2%	0%	-	-
% Total	3.8%	14.7%	1.7%	0%	20.2%	0.7%	22.3%	5.2%	0%	28.2%	6.2%	11.4%	5.3%	0%	22.8%	6.3%	16.9%	5.5%	0%	28.8%	-
PHF	0.878	0.792	0.641	-	0.845	0.625	0.932	0.882	-	0.946	0.743	0.875	0.858	-	0.831	0.893	0.885	0.913	-	0.958	0.925
Lights and Motorcycles	130	501	58	0	689	25	763	177	0	965	211	389	179	0	779	216	558	188	0	962	3395
% Lights and Motorcycles	100%	98.8%	98.3%	0%	99.0%	100%	99.3%	98.3%	0%	99.2%	98.6%	99.2%	98.4%	0%	98.9%	99.1%	95.5%	98.9%	0%	97.0%	98.4%
Heavy	0	6	1	0	7	0	5	3	0	8	3	3	3	0	9	2	26	2	0	30	54
% Heavy	0%	1.2%	1.7%	0%	1.0%	0%	0.7%	1.7%	0%	0.8%	1.4%	0.8%	1.6%	0%	1.1%	0.9%	4.5%	1.1%	0%	3.0%	1.6%

* L: Left, R: Right, T: Thru, U: U-Turn

Portage Creek Dev TIS - TMC

Tue Dec 6, 2022

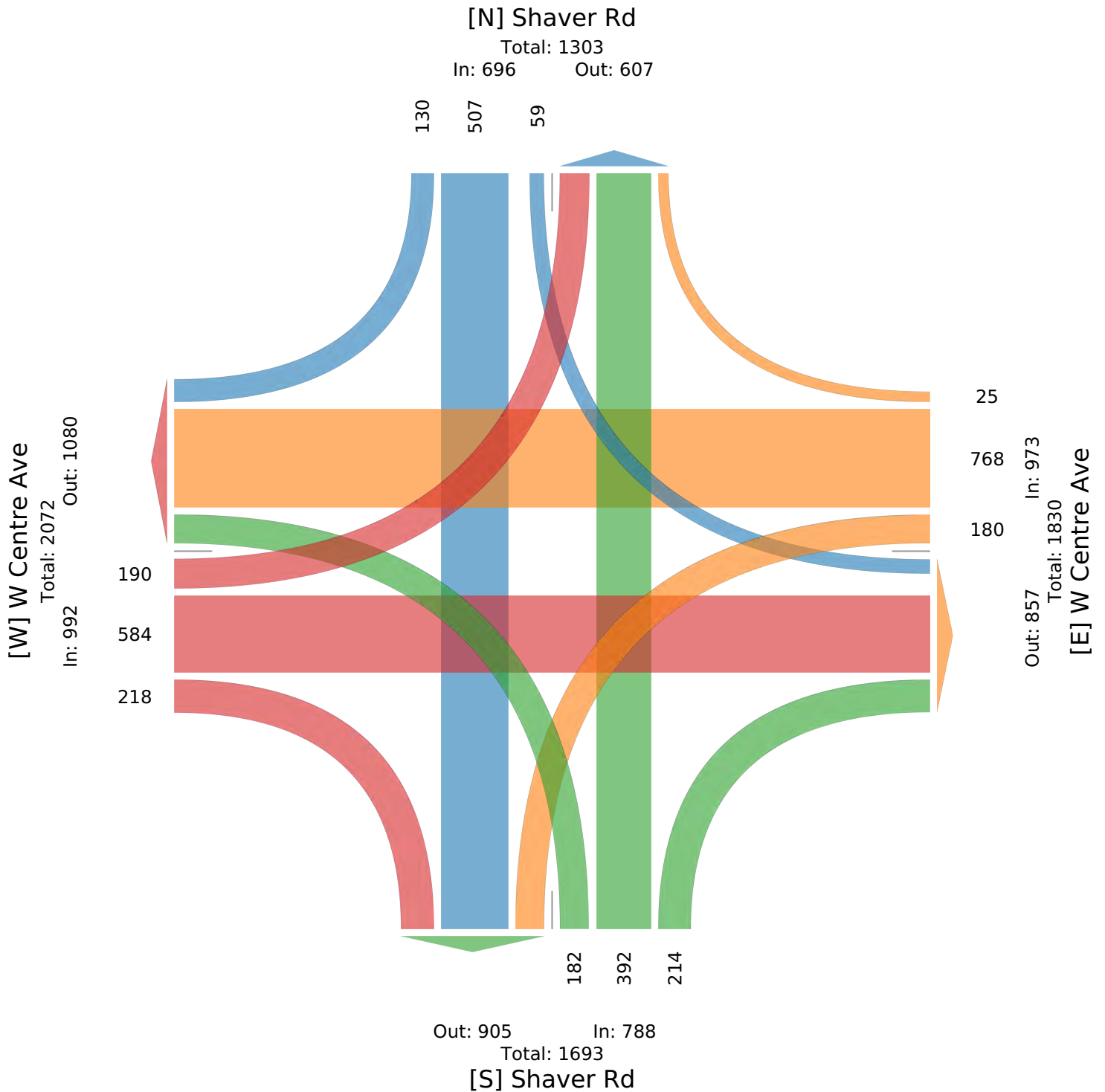
PM Peak (4 PM - 5 PM) - Overall Peak Hour

All Classes (Lights and Motorcycles, Heavy)

All Movements

ID: 1023344, Location: 42.200965, -85.591684

Provided by: RS Engineering LLC
6709 Centurion Drive Suite 300, Lansing, MI, 48917, US



Portage Creek Dev TIS - TMC

Tue Dec 6, 2022

Full Length (7 AM-9 AM, 4 PM-6 PM)

All Classes (Lights and Motorcycles, Heavy)

All Movements

ID: 1023358, Location: 42.203342, -85.590233

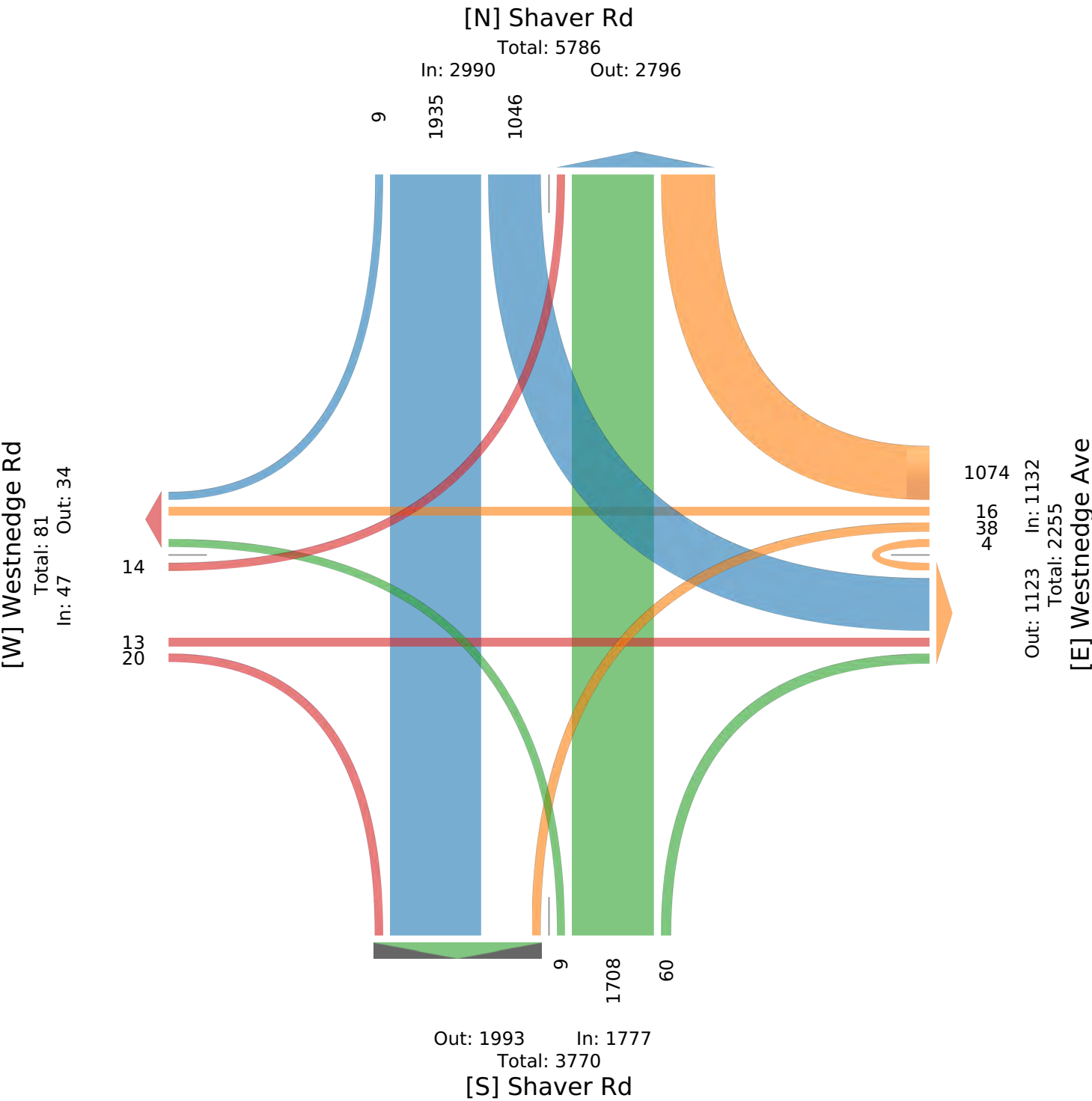
Provided by: RS Engineering LLC
6709 Centurion Drive Suite 300, Lansing, MI, 48917, US

Leg Direction	Shaver Rd Southbound					Westnedge Ave Westbound					Shaver Rd Northbound					Westnedge Rd Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2022-12-06 7:00AM	0	56	54	0	110	32	1	0	0	33	2	43	0	0	45	2	1	3	0	6	194
7:15AM	3	60	91	0	154	82	1	2	0	85	18	69	1	0	88	1	0	0	0	1	328
7:30AM	0	67	51	0	118	75	1	1	1	78	4	68	1	0	73	1	0	0	0	1	270
7:45AM	2	80	44	0	126	43	1	1	0	45	3	75	1	0	79	0	0	0	0	0	250
Hourly Total	5	263	240	0	508	232	4	4	1	241	27	255	3	0	285	4	1	3	0	8	1042
8:00AM	1	56	43	0	100	40	0	1	0	41	6	82	0	0	88	0	0	1	0	1	230
8:15AM	1	79	47	0	127	49	1	1	0	51	0	77	0	0	77	2	1	0	0	3	258
8:30AM	0	73	47	0	120	54	0	0	0	54	2	91	0	0	93	0	1	1	0	2	269
8:45AM	0	82	47	0	129	59	1	1	0	61	5	85	1	0	91	0	0	1	0	1	282
Hourly Total	2	290	184	0	476	202	2	3	0	207	13	335	1	0	349	2	2	3	0	7	1039
4:00PM	0	218	67	0	285	74	1	4	1	80	6	151	0	0	157	3	1	2	0	6	528
4:15PM	0	184	82	0	266	71	2	0	0	73	3	154	2	0	159	0	0	2	0	2	500
4:30PM	1	157	71	0	229	88	2	4	0	94	4	126	1	0	131	1	1	1	0	3	457
4:45PM	0	142	89	0	231	99	0	5	2	106	2	148	0	0	150	4	3	1	0	8	495
Hourly Total	1	701	309	0	1011	332	5	13	3	353	15	579	3	0	597	8	5	6	0	19	1980
5:00PM	1	193	87	0	281	89	0	4	0	93	2	145	0	0	147	3	2	2	0	7	528
5:15PM	0	196	100	0	296	68	2	6	0	76	2	133	1	0	136	1	2	0	0	3	511
5:30PM	0	154	72	0	226	78	3	4	0	85	1	130	0	0	131	0	1	0	0	1	443
5:45PM	0	138	54	0	192	73	0	4	0	77	0	131	1	0	132	2	0	0	0	2	403
Hourly Total	1	681	313	0	995	308	5	18	0	331	5	539	2	0	546	6	5	2	0	13	1885
Total	9	1935	1046	0	2990	1074	16	38	4	1132	60	1708	9	0	1777	20	13	14	0	47	5946
% Approach	0.3%	64.7%	35.0%	0%	-	94.9%	1.4%	3.4%	0.4%	-	3.4%	96.1%	0.5%	0%	-	42.6%	27.7%	29.8%	0%	-	-
% Total	0.2%	32.5%	17.6%	0%	50.3%	18.1%	0.3%	0.6%	0.1%	19.0%	1.0%	28.7%	0.2%	0%	29.9%	0.3%	0.2%	0.2%	0%	0.8%	-
Lights and Motorcycles	9	1901	1018	0	2928	1058	15	38	4	1115	60	1668	9	0	1737	17	13	14	0	44	5824
% Lights and Motorcycles	100%	98.2%	97.3%	0%	97.9%	98.5%	93.8%	100%	100%	98.5%	100%	97.7%	100%	0%	97.7%	85.0%	100%	100%	0%	93.6%	97.9%
Heavy	0	34	28	0	62	16	1	0	0	17	0	40	0	0	40	3	0	0	0	3	122
% Heavy	0%	1.8%	2.7%	0%	2.1%	1.5%	6.3%	0%	0%	1.5%	0%	2.3%	0%	0%	2.3%	15.0%	0%	0%	0%	6.4%	2.1%

* L: Left, R: Right, T: Thru, U: U-Turn

Portage Creek Dev TIS - TMC
Tue Dec 6, 2022
Full Length (7 AM-9 AM, 4 PM-6 PM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1023358, Location: 42.203342, -85.590233

Provided by: RS Engineering LLC
6709 Centurion Drive Suite 300, Lansing, MI, 48917, US



Portage Creek Dev TIS - TMC

Tue Dec 6, 2022

AM Peak (7:15 AM - 8:15 AM)

All Classes (Lights and Motorcycles, Heavy)

All Movements

ID: 1023358, Location: 42.203342, -85.590233

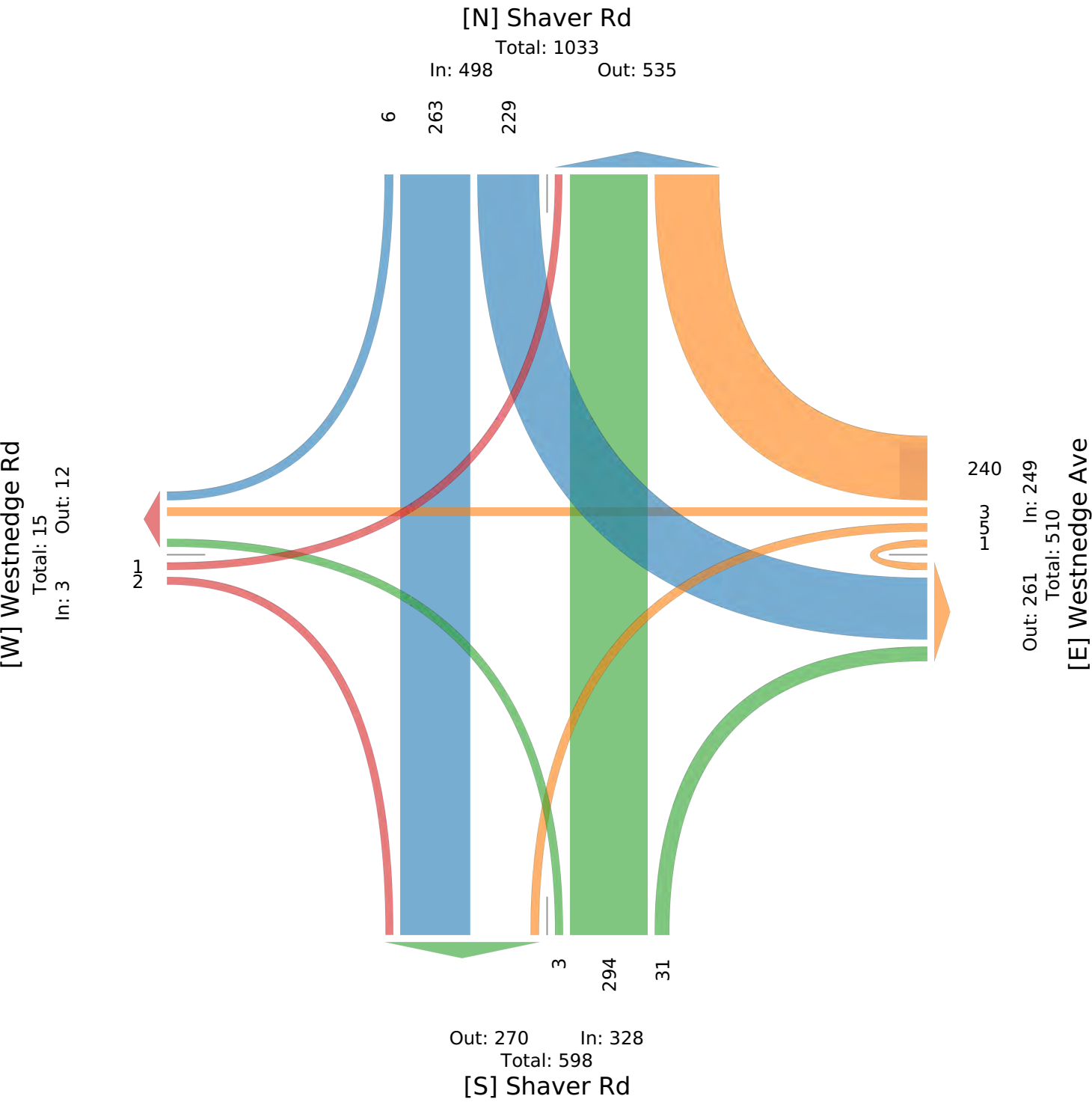
Provided by: RS Engineering LLC
6709 Centurion Drive Suite 300, Lansing, MI, 48917, US

Leg Direction	Shaver Rd Southbound					Westnedge Ave Westbound					Shaver Rd Northbound					Westnedge Rd Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2022-12-06 7:15AM	3	60	91	0	154	82	1	2	0	85	18	69	1	0	88	1	0	0	0	1	328
7:30AM	0	67	51	0	118	75	1	1	1	78	4	68	1	0	73	1	0	0	0	1	270
7:45AM	2	80	44	0	126	43	1	1	0	45	3	75	1	0	79	0	0	0	0	0	250
8:00AM	1	56	43	0	100	40	0	1	0	41	6	82	0	0	88	0	0	1	0	1	230
Total	6	263	229	0	498	240	3	5	1	249	31	294	3	0	328	2	0	1	0	3	1078
% Approach	1.2%	52.8%	46.0%	0%	-	96.4%	1.2%	2.0%	0.4%	-	9.5%	89.6%	0.9%	0%	-	66.7%	0%	33.3%	0%	-	-
% Total	0.6%	24.4%	21.2%	0%	46.2%	22.3%	0.3%	0.5%	0.1%	23.1%	2.9%	27.3%	0.3%	0%	30.4%	0.2%	0%	0.1%	0%	0.3%	-
PHF	0.500	0.822	0.629	-	0.808	0.732	0.750	0.625	0.250	0.732	0.431	0.896	0.750	-	0.932	0.500	-	0.250	-	0.750	0.822
Lights and Motorcycles	6	255	220	0	481	233	3	5	1	242	31	282	3	0	316	1	0	1	0	2	1041
% Lights and Motorcycles	100%	97.0%	96.1%	0%	96.6%	97.1%	100%	100%	100%	97.2%	100%	95.9%	100%	0%	96.3%	50.0%	0%	100%	0%	66.7%	96.6%
Heavy	0	8	9	0	17	7	0	0	0	7	0	12	0	0	12	1	0	0	0	1	37
% Heavy	0%	3.0%	3.9%	0%	3.4%	2.9%	0%	0%	0%	2.8%	0%	4.1%	0%	0%	3.7%	50.0%	0%	0%	0%	33.3%	3.4%

*L: Left, R: Right, T: Thru, U: U-Turn

Portage Creek Dev TIS - TMC
Tue Dec 6, 2022
AM Peak (7:15 AM - 8:15 AM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1023358, Location: 42.203342, -85.590233

Provided by: RS Engineering LLC
6709 Centurion Drive Suite 300, Lansing, MI, 48917, US



Portage Creek Dev TIS - TMC

Tue Dec 6, 2022

PM Peak (4:30 PM - 5:30 PM) - Overall Peak Hour

All Classes (Lights and Motorcycles, Heavy)

All Movements

ID: 1023358, Location: 42.203342, -85.590233

Provided by: RS Engineering LLC
6709 Centurion Drive Suite 300, Lansing, MI, 48917, US

Leg Direction	Shaver Rd Southbound					Westnedge Ave Westbound					Shaver Rd Northbound					Westnedge Rd Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2022-12-06 4:30PM	1	157	71	0	229	88	2	4	0	94	4	126	1	0	131	1	1	1	0	3	457
4:45PM	0	142	89	0	231	99	0	5	2	106	2	148	0	0	150	4	3	1	0	8	495
5:00PM	1	193	87	0	281	89	0	4	0	93	2	145	0	0	147	3	2	2	0	7	528
5:15PM	0	196	100	0	296	68	2	6	0	76	2	133	1	0	136	1	2	0	0	3	511
Total	2	688	347	0	1037	344	4	19	2	369	10	552	2	0	564	9	8	4	0	21	1991
% Approach	0.2%	66.3%	33.5%	0%	-	93.2%	1.1%	5.1%	0.5%	-	1.8%	97.9%	0.4%	0%	-	42.9%	38.1%	19.0%	0%	-	-
% Total	0.1%	34.6%	17.4%	0%	52.1%	17.3%	0.2%	1.0%	0.1%	18.5%	0.5%	27.7%	0.1%	0%	28.3%	0.5%	0.4%	0.2%	0%	1.1%	-
PHF	0.500	0.878	0.868	-	0.876	0.869	0.500	0.792	0.250	0.870	0.625	0.932	0.500	-	0.940	0.563	0.667	0.500	-	0.656	0.943
Lights and Motorcycles	2	682	345	0	1029	343	4	19	2	368	10	545	2	0	557	9	8	4	0	21	1975
% Lights and Motorcycles	100%	99.1%	99.4%	0%	99.2%	99.7%	100%	100%	100%	99.7%	100%	98.7%	100%	0%	98.8%	100%	100%	100%	0%	100%	99.2%
Heavy	0	6	2	0	8	1	0	0	0	1	0	7	0	0	7	0	0	0	0	0	16
% Heavy	0%	0.9%	0.6%	0%	0.8%	0.3%	0%	0%	0%	0.3%	0%	1.3%	0%	0%	1.2%	0%	0%	0%	0%	0%	0.8%

* L: Left, R: Right, T: Thru, U: U-Turn

Portage Creek Dev TIS - TMC

Tue Dec 6, 2022

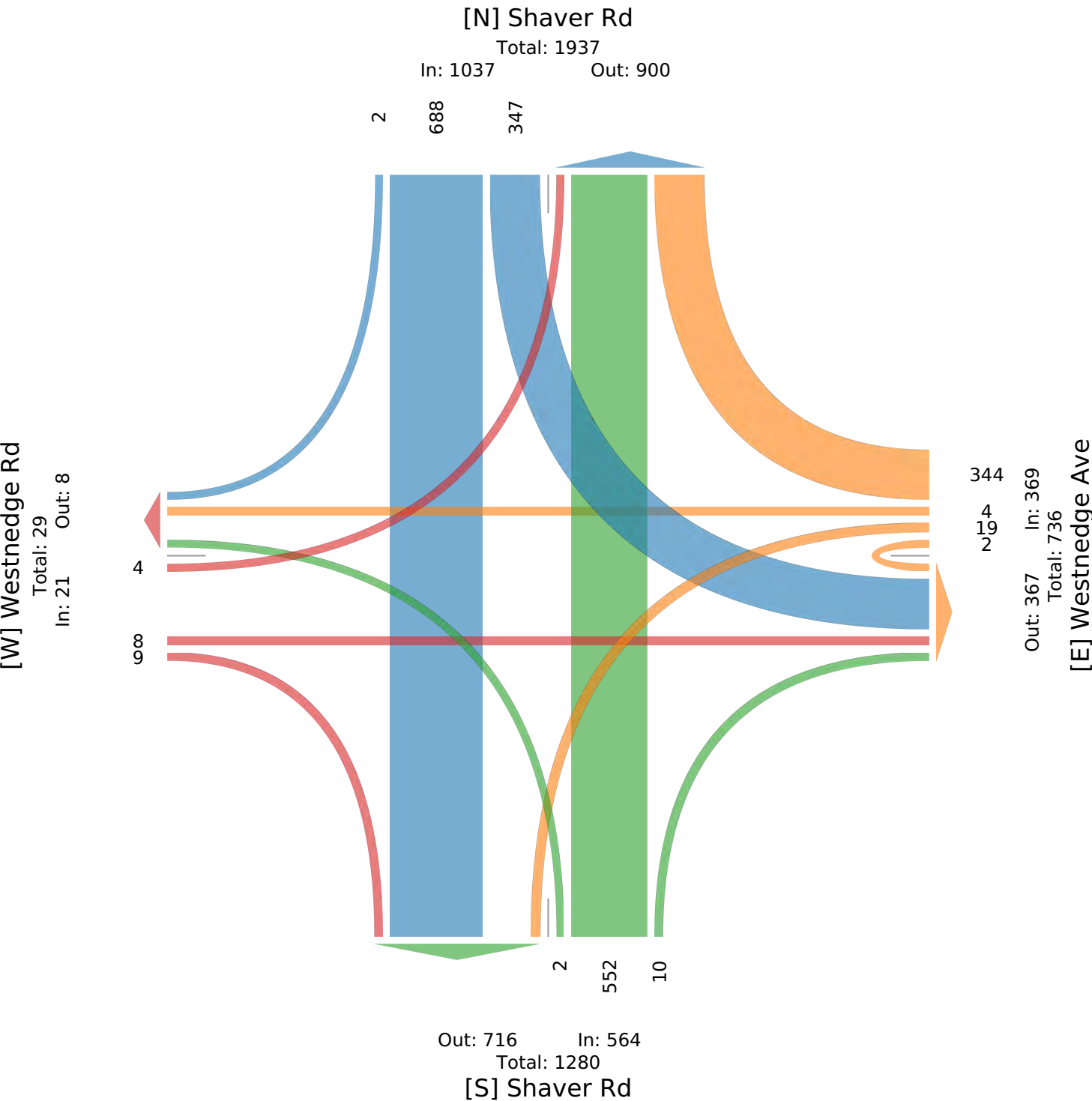
PM Peak (4:30 PM - 5:30 PM) - Overall Peak Hour

All Classes (Lights and Motorcycles, Heavy)

All Movements

ID: 1023358, Location: 42.203342, -85.590233

Provided by: RS Engineering LLC
6709 Centurion Drive Suite 300, Lansing, MI, 48917, US



Portage Creek Dev TIS - TMC

Thu Dec 8, 2022

Full Length (7 AM-9 AM, 4 PM-6 PM)

All Classes (Lights and Motorcycles, Heavy)

All Movements

ID: 1023357, Location: 42.200945, -85.589381

Provided by: RS Engineering LLC
6709 Centurion Drive Suite 300, Lansing, MI, 48917, US

Leg Direction	Westnedge Ave Southbound					Centre Ave Westbound					Westnedge Ave Northbound					Centre Ave Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2022-12-08 7:00AM	1	32	28	0	61	10	79	22	0	111	25	25	27	0	77	40	121	0	0	161	410
7:15AM	0	40	43	0	83	19	124	49	0	192	50	46	58	0	154	41	228	2	0	271	700
7:30AM	1	31	19	0	51	9	180	25	0	214	61	53	62	0	176	30	183	4	0	217	658
7:45AM	1	13	17	0	31	14	136	15	0	165	33	29	27	0	89	16	174	6	0	196	481
Hourly Total	3	116	107	0	226	52	519	111	0	682	169	153	174	0	496	127	706	12	0	845	2249
8:00AM	1	24	13	0	38	16	109	23	0	148	21	37	28	0	86	19	114	2	0	135	407
8:15AM	0	12	13	0	25	13	125	54	0	192	30	31	27	0	88	17	133	7	1	158	463
8:30AM	1	13	23	0	37	19	123	29	0	171	35	28	43	0	106	9	113	3	0	125	439
8:45AM	1	19	21	0	41	11	128	20	0	159	16	24	26	0	66	14	139	14	0	167	433
Hourly Total	3	68	70	0	141	59	485	126	0	670	102	120	124	0	346	59	499	26	1	585	1742
4:00PM	7	48	33	0	88	30	205	35	0	270	37	39	35	0	111	30	179	5	0	214	683
4:15PM	3	34	29	0	66	31	172	45	0	248	27	31	30	0	88	33	162	8	0	203	605
4:30PM	3	44	21	0	68	22	206	35	0	263	29	34	29	0	92	37	184	4	0	225	648
4:45PM	3	33	32	0	68	29	188	43	0	260	27	39	23	0	89	36	183	9	0	228	645
Hourly Total	16	159	115	0	290	112	771	158	0	1041	120	143	117	0	380	136	708	26	0	870	2581
5:00PM	5	51	43	0	99	18	208	35	0	261	29	56	33	0	118	31	185	5	0	221	699
5:15PM	2	49	24	0	75	21	221	56	0	298	28	26	38	0	92	62	190	8	0	260	725
5:30PM	2	38	31	0	71	30	159	38	0	227	39	44	33	0	116	37	192	4	0	233	647
5:45PM	1	53	31	0	85	21	136	25	0	182	52	55	46	0	153	32	140	8	0	180	600
Hourly Total	10	191	129	0	330	90	724	154	0	968	148	181	150	0	479	162	707	25	0	894	2671
Total	32	534	421	0	987	313	2499	549	0	3361	539	597	565	0	1701	484	2620	89	1	3194	9243
% Approach	3.2%	54.1%	42.7%	0%	-	9.3%	74.4%	16.3%	0%	-	31.7%	35.1%	33.2%	0%	-	15.2%	82.0%	2.8%	0%	-	-
% Total	0.3%	5.8%	4.6%	0%	10.7%	3.4%	27.0%	5.9%	0%	36.4%	5.8%	6.5%	6.1%	0%	18.4%	5.2%	28.3%	1.0%	0%	34.6%	-
Lights and Motorcycles	28	523	404	0	955	312	2450	534	0	3296	519	583	557	0	1659	472	2550	89	1	3112	9022
% Lights and Motorcycles	87.5%	97.9%	96.0%	0%	96.8%	99.7%	98.0%	97.3%	0%	98.1%	96.3%	97.7%	98.6%	0%	97.5%	97.5%	97.3%	100%	100%	97.4%	97.6%
Heavy	4	11	17	0	32	1	49	15	0	65	20	14	8	0	42	12	70	0	0	82	221
% Heavy	12.5%	2.1%	4.0%	0%	3.2%	0.3%	2.0%	2.7%	0%	1.9%	3.7%	2.3%	1.4%	0%	2.5%	2.5%	2.7%	0%	0%	2.6%	2.4%

* L: Left, R: Right, T: Thru, U: U-Turn

Portage Creek Dev TIS - TMC

Thu Dec 8, 2022

Full Length (7 AM-9 AM, 4 PM-6 PM)

All Classes (Lights and Motorcycles, Heavy)

All Movements

ID: 1023357, Location: 42.200945, -85.589381

Provided by: RS Engineering LLC
6709 Centurion Drive Suite 300, Lansing, MI, 48917, US

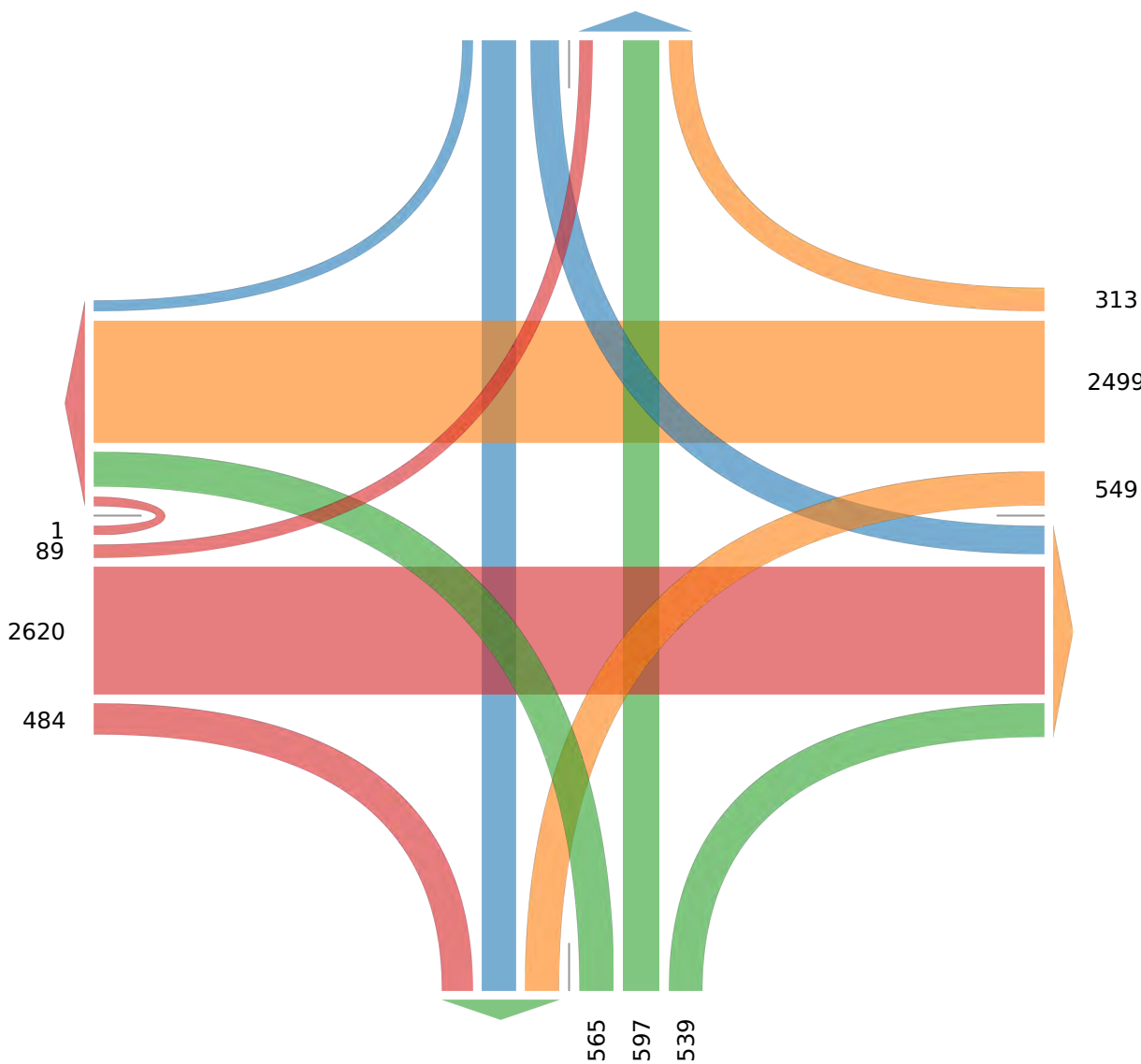
[N] Westnedge Ave

Total: 1986

In: 987 Out: 999

32
534
421

[W] Centre Ave
Total: 6291
In: 3194 Out: 3097



Out: 3580 In: 3361
Total: 6941
[E] Centre Ave

Out: 1567 In: 1701
Total: 3268
[S] Westnedge Ave

Portage Creek Dev TIS - TMC

Thu Dec 8, 2022

AM Peak (7 AM - 8 AM)

All Classes (Lights and Motorcycles, Heavy)

All Movements

ID: 1023357, Location: 42.200945, -85.589381

Provided by: RS Engineering LLC
6709 Centurion Drive Suite 300, Lansing, MI, 48917, US

Leg Direction	Westnedge Ave Southbound					Centre Ave Westbound					Westnedge Ave Northbound					Centre Ave Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2022-12-08 7:00AM	1	32	28	0	61	10	79	22	0	111	25	25	27	0	77	40	121	0	0	161	410
7:15AM	0	40	43	0	83	19	124	49	0	192	50	46	58	0	154	41	228	2	0	271	700
7:30AM	1	31	19	0	51	9	180	25	0	214	61	53	62	0	176	30	183	4	0	217	658
7:45AM	1	13	17	0	31	14	136	15	0	165	33	29	27	0	89	16	174	6	0	196	481
Total	3	116	107	0	226	52	519	111	0	682	169	153	174	0	496	127	706	12	0	845	2249
% Approach	1.3%	51.3%	47.3%	0%	-	7.6%	76.1%	16.3%	0%	-	34.1%	30.8%	35.1%	0%	-	15.0%	83.6%	1.4%	0%	-	-
% Total	0.1%	5.2%	4.8%	0%	10.0%	2.3%	23.1%	4.9%	0%	30.3%	7.5%	6.8%	7.7%	0%	22.1%	5.6%	31.4%	0.5%	0%	37.6%	-
PHF	0.750	0.725	0.622	-	0.681	0.684	0.721	0.566	-	0.797	0.693	0.722	0.702	-	0.705	0.774	0.774	0.500	-	0.780	0.803
Lights and Motorcycles	2	111	104	0	217	52	504	105	0	661	161	149	170	0	480	121	697	12	0	830	2188
% Lights and Motorcycles	66.7%	95.7%	97.2%	0%	96.0%	100%	97.1%	94.6%	0%	96.9%	95.3%	97.4%	97.7%	0%	96.8%	95.3%	98.7%	100%	0%	98.2%	97.3%
Heavy	1	5	3	0	9	0	15	6	0	21	8	4	4	0	16	6	9	0	0	15	61
% Heavy	33.3%	4.3%	2.8%	0%	4.0%	0%	2.9%	5.4%	0%	3.1%	4.7%	2.6%	2.3%	0%	3.2%	4.7%	1.3%	0%	0%	1.8%	2.7%

*L: Left, R: Right, T: Thru, U: U-Turn

Portage Creek Dev TIS - TMC

Thu Dec 8, 2022

AM Peak (7 AM - 8 AM)

All Classes (Lights and Motorcycles, Heavy)

All Movements

ID: 1023357, Location: 42.200945, -85.589381

Provided by: RS Engineering LLC
6709 Centurion Drive Suite 300, Lansing, MI, 48917, US

[N] Westnedge Ave

Total: 443

In: 226 Out: 217

3
116
107

[W] Centre Ave

Total: 1541

In: 845 Out: 696

12
706
127

52
519
111

Out: 982 In: 682

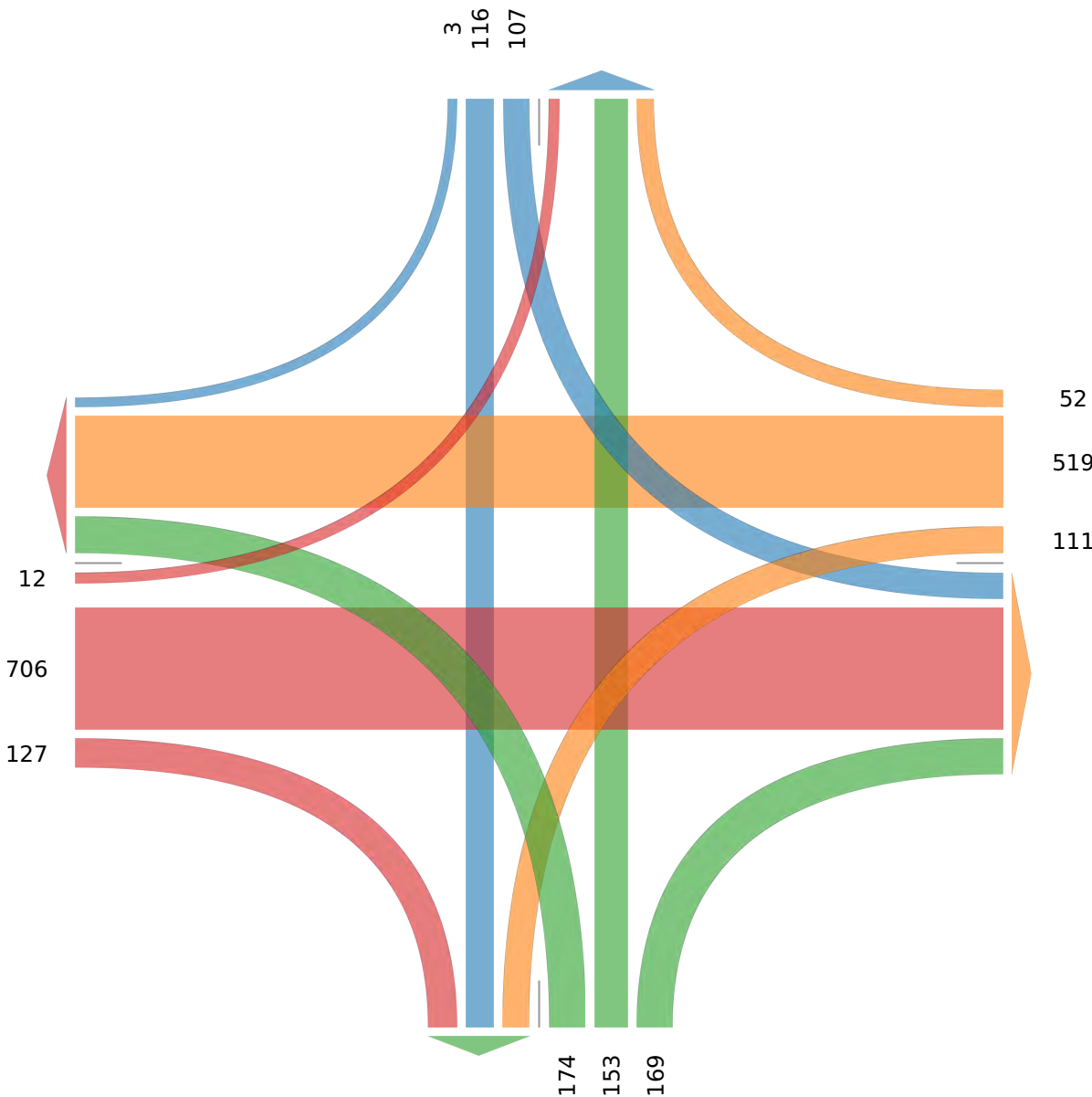
Total: 1664

[E] Centre Ave

[S] Westnedge Ave

Out: 354 In: 496
Total: 850

174
153
169



Portage Creek Dev TIS - TMC

Thu Dec 8, 2022

PM Peak (4:30 PM - 5:30 PM) - Overall Peak Hour

All Classes (Lights and Motorcycles, Heavy)

All Movements

ID: 1023357, Location: 42.200945, -85.589381

Provided by: RS Engineering LLC
6709 Centurion Drive Suite 300, Lansing, MI, 48917, US

Leg Direction	Westnedge Ave Southbound					Centre Ave Westbound					Westnedge Ave Northbound					Centre Ave Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2022-12-08 4:30PM	3	44	21	0	68	22	206	35	0	263	29	34	29	0	92	37	184	4	0	225	648
4:45PM	3	33	32	0	68	29	188	43	0	260	27	39	23	0	89	36	183	9	0	228	645
5:00PM	5	51	43	0	99	18	208	35	0	261	29	56	33	0	118	31	185	5	0	221	699
5:15PM	2	49	24	0	75	21	221	56	0	298	28	26	38	0	92	62	190	8	0	260	725
Total	13	177	120	0	310	90	823	169	0	1082	113	155	123	0	391	166	742	26	0	934	2717
% Approach	4.2%	57.1%	38.7%	0%	-	8.3%	76.1%	15.6%	0%	-	28.9%	39.6%	31.5%	0%	-	17.8%	79.4%	2.8%	0%	-	-
% Total	0.5%	6.5%	4.4%	0%	11.4%	3.3%	30.3%	6.2%	0%	39.8%	4.2%	5.7%	4.5%	0%	14.4%	6.1%	27.3%	1.0%	0%	34.4%	-
PHF	0.650	0.868	0.698	-	0.783	0.776	0.931	0.754	-	0.908	0.974	0.692	0.809	-	0.828	0.669	0.976	0.722	-	0.898	0.937
Lights and Motorcycles	12	177	117	0	306	90	816	169	0	1075	113	154	121	0	388	165	728	26	0	919	2688
% Lights and Motorcycles	92.3%	100%	97.5%	0%	98.7%	100%	99.1%	100%	0%	99.4%	100%	99.4%	98.4%	0%	99.2%	99.4%	98.1%	100%	0%	98.4%	98.9%
Heavy	1	0	3	0	4	0	7	0	0	7	0	1	2	0	3	1	14	0	0	15	29
% Heavy	7.7%	0%	2.5%	0%	1.3%	0%	0.9%	0%	0%	0.6%	0%	0.6%	1.6%	0%	0.8%	0.6%	1.9%	0%	0%	1.6%	1.1%

* L: Left, R: Right, T: Thru, U: U-Turn

Portage Creek Dev TIS - TMC

Thu Dec 8, 2022

PM Peak (4:30 PM - 5:30 PM) - Overall Peak Hour

All Classes (Lights and Motorcycles, Heavy)

All Movements

ID: 1023357, Location: 42.200945, -85.589381

Provided by: RS Engineering LLC
6709 Centurion Drive Suite 300, Lansing, MI, 48917, US

[N] Westnedge Ave

Total: 581

In: 310 Out: 271

13
177
120

[W] Centre Ave
Total: 1893
In: 934 Out: 959

26
742
166

90
823
169

[E] Centre Ave
Total: 2057
In: 1082 Out: 975

123
155
113

Out: 512 In: 391
Total: 903
[S] Westnedge Ave

Portage Creek Dev TIS - TMC

Tue Dec 6, 2022

Full Length (7 AM-9 AM, 4 PM-6 PM)

All Classes (Lights and Motorcycles, Heavy)

All Movements

ID: 1023346, Location: 42.201791, -85.591176

Provided by: RS Engineering LLC
6709 Centurion Drive Suite 300, Lansing, MI, 48917, US

Leg Direction	Shaver Rd Southbound				Shaver Rd Northbound				Walgreen Driveway Eastbound				
Time	R	T	U	App	T	L	U	App	R	L	U	App	Int
2022-12-06 7:00AM	4	48	0	52	44	0	0	44	3	1	0	4	100
7:15AM	0	65	0	65	93	0	0	93	2	0	0	2	160
7:30AM	0	70	0	70	74	0	0	74	0	1	0	1	145
7:45AM	6	75	0	81	84	0	0	84	1	0	0	1	166
Hourly Total	10	258	0	268	295	0	0	295	6	2	0	8	571
8:00AM	2	53	0	55	81	0	0	81	0	2	0	2	138
8:15AM	3	76	0	79	81	0	0	81	5	3	0	8	168
8:30AM	3	71	0	74	92	1	0	93	1	2	0	3	170
8:45AM	10	74	0	84	93	0	0	93	2	1	0	3	180
Hourly Total	18	274	0	292	347	1	0	348	8	8	0	16	656
4:00PM	17	208	0	225	161	2	0	163	5	6	0	11	399
4:15PM	18	167	0	185	146	1	0	147	13	3	0	16	348
4:30PM	10	149	0	159	149	0	0	149	8	3	0	11	319
4:45PM	8	150	0	158	145	1	0	146	6	4	0	10	314
Hourly Total	53	674	0	727	601	4	0	605	32	16	0	48	1380
5:00PM	14	182	0	196	153	0	0	153	8	2	0	10	359
5:15PM	7	196	0	203	133	2	0	135	9	3	0	12	350
5:30PM	11	149	0	160	122	0	0	122	3	3	0	6	288
5:45PM	15	134	0	149	116	0	0	116	11	1	0	12	277
Hourly Total	47	661	0	708	524	2	0	526	31	9	0	40	1274
Total	128	1867	0	1995	1767	7	0	1774	77	35	0	112	3881
% Approach	6.4%	93.6%	0%	-	99.6%	0.4%	0%	-	68.8%	31.3%	0%	-	-
% Total	3.3%	48.1%	0%	51.4%	45.5%	0.2%	0%	45.7%	2.0%	0.9%	0%	2.9%	-
Lights and Motorcycles	128	1832	0	1960	1733	7	0	1740	77	34	0	111	3811
% Lights and Motorcycles	100%	98.1%	0%	98.2%	98.1%	100%	0%	98.1%	100%	97.1%	0%	99.1%	98.2%
Heavy	0	35	0	35	34	0	0	34	0	1	0	1	70
% Heavy	0%	1.9%	0%	1.8%	1.9%	0%	0%	1.9%	0%	2.9%	0%	0.9%	1.8%

* L: Left, R: Right, T: Thru, U: U-Turn

Portage Creek Dev TIS - TMC

Tue Dec 6, 2022

Full Length (7 AM-9 AM, 4 PM-6 PM)

All Classes (Lights and Motorcycles, Heavy)

All Movements

ID: 1023346, Location: 42.201791, -85.591176

Provided by: RS Engineering LLC
6709 Centurion Drive Suite 300, Lansing, MI, 48917, US

[N] Shaver Rd

Total: 3797

In: 1995

Out: 1802

128

1867

35
77

7

1767

Out: 1944

In: 1774

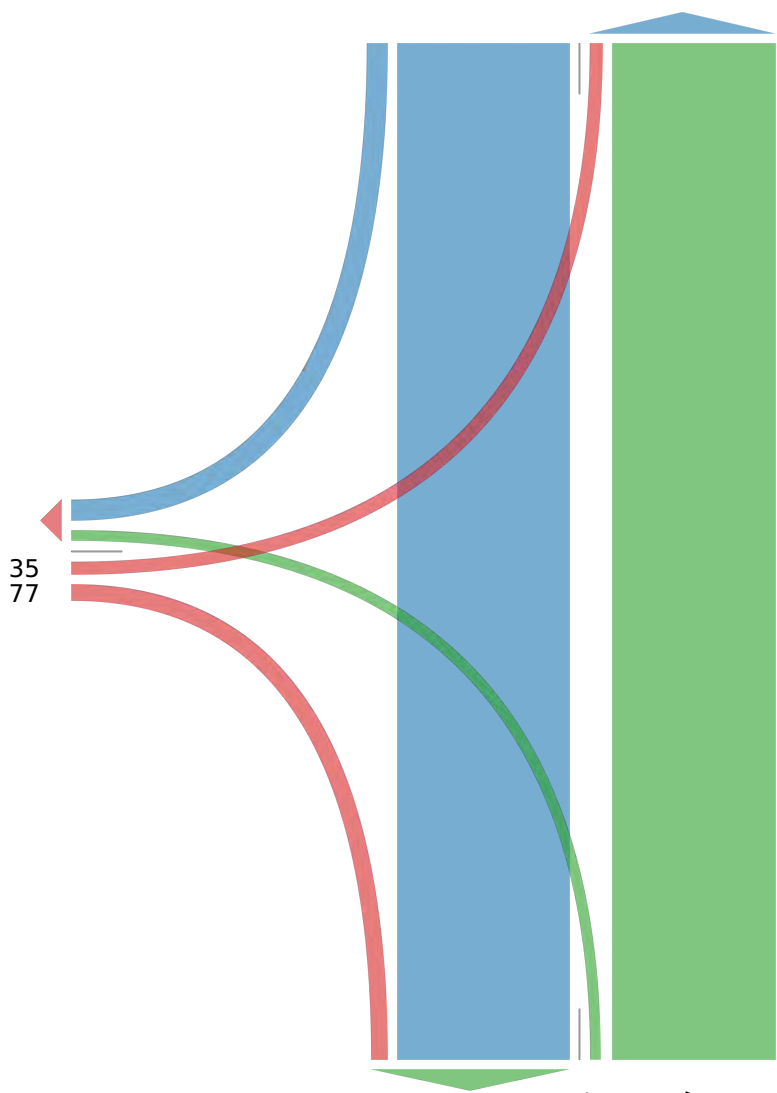
Total: 3718

[S] Shaver Rd

[W] Walgreen Driveway

Total: 247

In: 112 Out: 135



Portage Creek Dev TIS - TMC

Tue Dec 6, 2022

AM Peak (8 AM - 9 AM)

All Classes (Lights and Motorcycles, Heavy)

All Movements

ID: 1023346, Location: 42.201791, -85.591176

Provided by: RS Engineering LLC
6709 Centurion Drive Suite 300, Lansing, MI, 48917, US

Leg Direction	Shaver Rd Southbound				Shaver Rd Northbound				Walgreen Driveway Eastbound				
Time	R	T	U	App	T	L	U	App	R	L	U	App	Int
2022-12-06 8:00AM	2	53	0	55	81	0	0	81	0	2	0	2	138
8:15AM	3	76	0	79	81	0	0	81	5	3	0	8	168
8:30AM	3	71	0	74	92	1	0	93	1	2	0	3	170
8:45AM	10	74	0	84	93	0	0	93	2	1	0	3	180
Total	18	274	0	292	347	1	0	348	8	8	0	16	656
% Approach	6.2%	93.8%	0%	-	99.7%	0.3%	0%	-	50.0%	50.0%	0%	-	-
% Total	2.7%	41.8%	0%	44.5%	52.9%	0.2%	0%	53.0%	1.2%	1.2%	0%	2.4%	-
PHF	0.450	0.901	-	0.869	0.933	0.250	-	0.935	0.400	0.667	-	0.500	0.911
Lights and Motorcycles	18	259	0	277	330	1	0	331	8	8	0	16	624
% Lights and Motorcycles	100%	94.5%	0%	94.9%	95.1%	100%	0%	95.1%	100%	100%	0%	100%	95.1%
Heavy	0	15	0	15	17	0	0	17	0	0	0	0	32
% Heavy	0%	5.5%	0%	5.1%	4.9%	0%	0%	4.9%	0%	0%	0%	0%	4.9%

* L: Left, R: Right, T: Thru, U: U-Turn

Portage Creek Dev TIS - TMC

Tue Dec 6, 2022

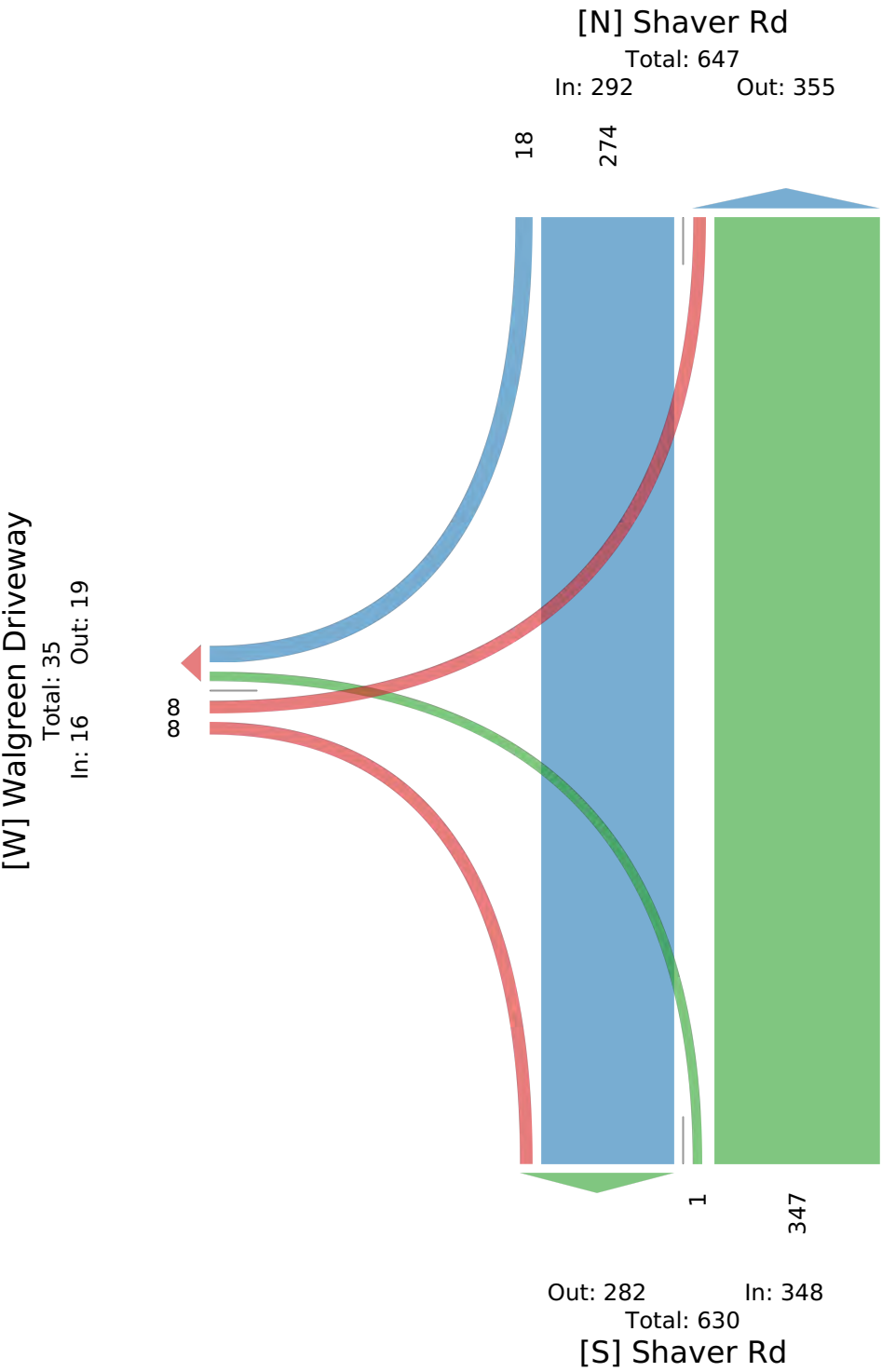
AM Peak (8 AM - 9 AM)

All Classes (Lights and Motorcycles, Heavy)

All Movements

ID: 1023346, Location: 42.201791, -85.591176

Provided by: RS Engineering LLC
6709 Centurion Drive Suite 300, Lansing, MI, 48917, US



Portage Creek Dev TIS - TMC

Tue Dec 6, 2022

PM Peak (4 PM - 5 PM) - Overall Peak Hour

All Classes (Lights and Motorcycles, Heavy)

All Movements

ID: 1023346, Location: 42.201791, -85.591176

Provided by: RS Engineering LLC
6709 Centurion Drive Suite 300, Lansing, MI, 48917, US

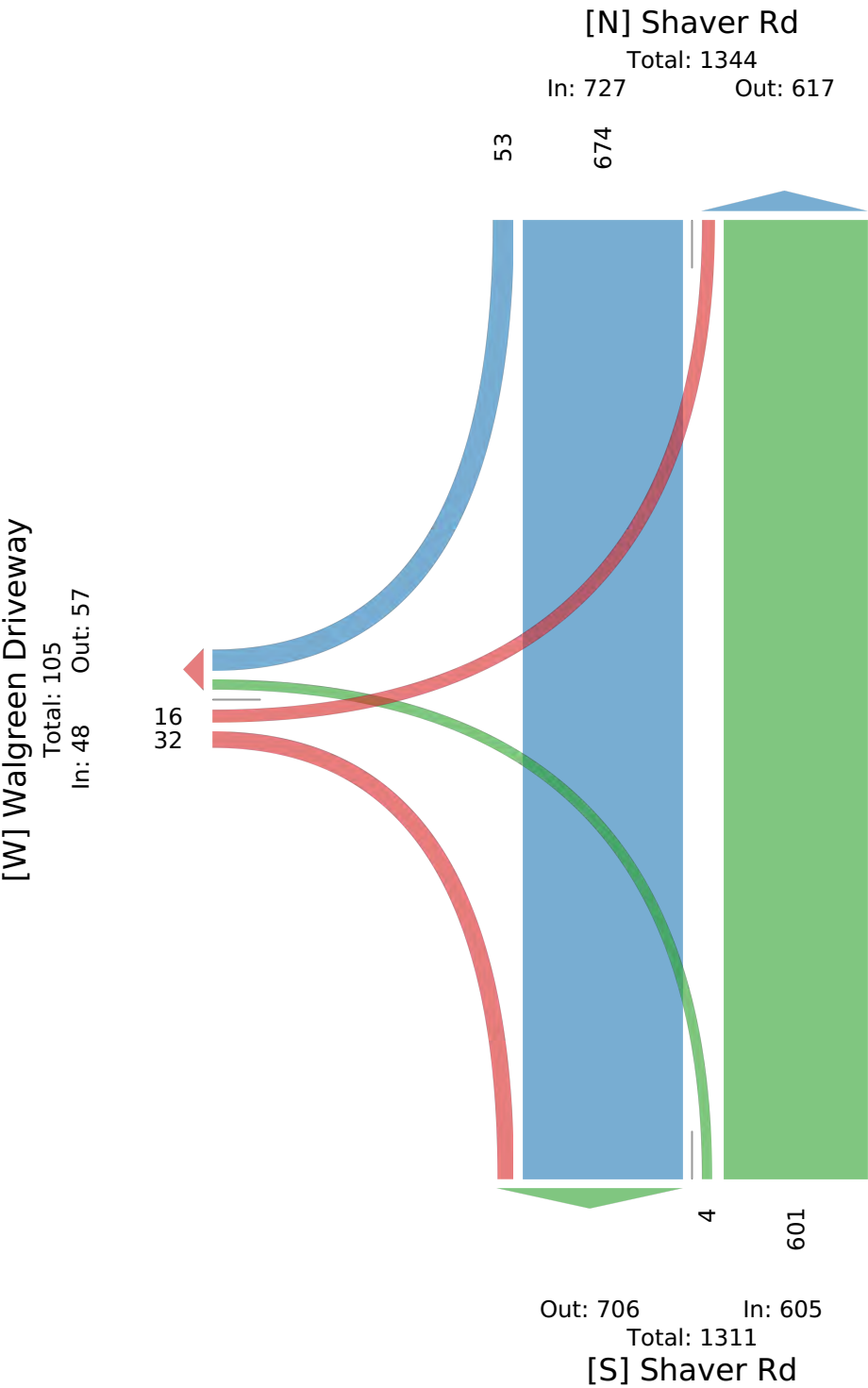
Leg Direction	Shaver Rd Southbound				Shaver Rd Northbound				Walgreen Driveway Eastbound				
Time	R	T	U	App	T	L	U	App	R	L	U	App	Int
2022-12-06 4:00PM	17	208	0	225	161	2	0	163	5	6	0	11	399
4:15PM	18	167	0	185	146	1	0	147	13	3	0	16	348
4:30PM	10	149	0	159	149	0	0	149	8	3	0	11	319
4:45PM	8	150	0	158	145	1	0	146	6	4	0	10	314
Total	53	674	0	727	601	4	0	605	32	16	0	48	1380
% Approach	7.3%	92.7%	0%	-	99.3%	0.7%	0%	-	66.7%	33.3%	0%	-	-
% Total	3.8%	48.8%	0%	52.7%	43.6%	0.3%	0%	43.8%	2.3%	1.2%	0%	3.5%	-
PHF	0.736	0.810	-	0.808	0.933	0.500	-	0.928	0.615	0.667	-	0.750	0.865
Lights and Motorcycles	53	668	0	721	599	4	0	603	32	15	0	47	1371
% Lights and Motorcycles	100%	99.1%	0%	99.2%	99.7%	100%	0%	99.7%	100%	93.8%	0%	97.9%	99.3%
Heavy	0	6	0	6	2	0	0	2	0	1	0	1	9
% Heavy	0%	0.9%	0%	0.8%	0.3%	0%	0%	0.3%	0%	6.3%	0%	2.1%	0.7%

* L: Left, R: Right, T: Thru, U: U-Turn

Portage Creek Dev TIS - TMC

Tue Dec 6, 2022
PM Peak (4 PM - 5 PM) - Overall Peak Hour
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1023346, Location: 42.201791, -85.591176

Provided by: RS Engineering LLC
6709 Centurion Drive Suite 300, Lansing, MI, 48917, US



Portage Creek Dev TIS - TMC

Thu Dec 8, 2022

Full Length (7 AM-9 AM, 4 PM-6 PM)

All Classes (Lights and Motorcycles, Heavy)

All Movements

ID: 1023351, Location: 42.201003, -85.592773

Provided by: RS Engineering LLC
6709 Centurion Drive Suite 300, Lansing, MI, 48917, US

Leg Direction	Huntington Driveway Southbound				Centre Ave Westbound				Centre Ave Eastbound				
Time	R	L	U	App	R	T	U	App	T	L	U	App	Int
2022-12-08 7:00AM	3	0	0	3	1	121	0	122	172	2	1	175	300
7:15AM	2	0	0	2	1	197	0	198	316	2	1	319	519
7:30AM	2	1	0	3	4	245	0	249	202	3	0	205	457
7:45AM	4	0	0	4	2	165	0	167	226	4	0	230	401
Hourly Total	11	1	0	12	8	728	0	736	916	11	2	929	1677
8:00AM	5	0	0	5	5	147	0	152	177	4	0	181	338
8:15AM	5	3	0	8	10	160	0	170	157	3	0	160	338
8:30AM	7	4	0	11	7	166	0	173	140	7	0	147	331
8:45AM	11	2	0	13	13	173	0	186	190	15	0	205	404
Hourly Total	28	9	0	37	35	646	0	681	664	29	0	693	1411
4:00PM	10	10	0	20	7	270	0	277	253	13	1	267	564
4:15PM	15	5	0	20	2	244	0	246	241	17	0	258	524
4:30PM	14	6	0	20	4	262	0	266	234	8	2	244	530
4:45PM	11	8	0	19	3	224	0	227	252	15	0	267	513
Hourly Total	50	29	0	79	16	1000	0	1016	980	53	3	1036	2131
5:00PM	21	8	0	29	10	271	0	281	277	13	0	290	600
5:15PM	9	6	0	15	13	275	0	288	283	9	0	292	595
5:30PM	19	8	0	27	11	228	0	239	218	11	0	229	495
5:45PM	14	10	0	24	11	192	0	203	205	8	0	213	440
Hourly Total	63	32	0	95	45	966	0	1011	983	41	0	1024	2130
Total	152	71	0	223	104	3340	0	3444	3543	134	5	3682	7349
% Approach	68.2%	31.8%	0%	-	3.0%	97.0%	0%	-	96.2%	3.6%	0.1%	-	-
% Total	2.1%	1.0%	0%	3.0%	1.4%	45.4%	0%	46.9%	48.2%	1.8%	0.1%	50.1%	-
Lights and Motorcycles	149	71	0	220	102	3279	0	3381	3472	133	5	3610	7211
% Lights and Motorcycles	98.0%	100%	0%	98.7%	98.1%	98.2%	0%	98.2%	98.0%	99.3%	100%	98.0%	98.1%
Heavy	3	0	0	3	2	61	0	63	71	1	0	72	138
% Heavy	2.0%	0%	0%	1.3%	1.9%	1.8%	0%	1.8%	2.0%	0.7%	0%	2.0%	1.9%

* L: Left, R: Right, T: Thru, U: U-Turn

Portage Creek Dev TIS - TMC
Thu Dec 8, 2022
Full Length (7 AM-9 AM, 4 PM-6 PM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1023351, Location: 42.201003, -85.592773

Provided by: RS Engineering LLC
6709 Centurion Drive Suite 300, Lansing, MI, 48917, US

[N] Huntington Driveway

Total: 461
In: 223 Out: 238

152
71

[W] Centre Ave
Total: 7179
In: 3682 Out: 3497

5
134
3543

104
3340

Out: 3614 In: 3444
Total: 7058
[E] Centre Ave

Portage Creek Dev TIS - TMC

Thu Dec 8, 2022

AM Peak (7:15 AM - 8:15 AM)

All Classes (Lights and Motorcycles, Heavy)

All Movements

ID: 1023351, Location: 42.201003, -85.592773

Provided by: RS Engineering LLC
6709 Centurion Drive Suite 300, Lansing, MI, 48917, US

Leg Direction	Huntington Driveway Southbound				Centre Ave Westbound				Centre Ave Eastbound				
Time	R	L	U	App	R	T	U	App	T	L	U	App	Int
2022-12-08 7:15AM	2	0	0	2	1	197	0	198	316	2	1	319	519
7:30AM	2	1	0	3	4	245	0	249	202	3	0	205	457
7:45AM	4	0	0	4	2	165	0	167	226	4	0	230	401
8:00AM	5	0	0	5	5	147	0	152	177	4	0	181	338
Total	13	1	0	14	12	754	0	766	921	13	1	935	1715
% Approach	92.9%	7.1%	0%	-	1.6%	98.4%	0%	-	98.5%	1.4%	0.1%	-	-
% Total	0.8%	0.1%	0%	0.8%	0.7%	44.0%	0%	44.7%	53.7%	0.8%	0.1%	54.5%	-
PHF	0.650	0.250	-	0.700	0.600	0.769	-	0.769	0.729	0.813	0.250	0.733	0.826
Lights and Motorcycles	12	1	0	13	12	727	0	739	907	12	1	920	1672
% Lights and Motorcycles	92.3%	100%	0%	92.9%	100%	96.4%	0%	96.5%	98.5%	92.3%	100%	98.4%	97.5%
Heavy	1	0	0	1	0	27	0	27	14	1	0	15	43
% Heavy	7.7%	0%	0%	7.1%	0%	3.6%	0%	3.5%	1.5%	7.7%	0%	1.6%	2.5%

* L: Left, R: Right, T: Thru, U: U-Turn

Portage Creek Dev TIS - TMC
Thu Dec 8, 2022
AM Peak (7:15 AM - 8:15 AM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1023351, Location: 42.201003, -85.592773

Provided by: RS Engineering LLC
6709 Centurion Drive Suite 300, Lansing, MI, 48917, US

[N] Huntington Driveway

Total: 39
In: 14 Out: 25

13
1

[W] Centre Ave

Total: 1703
In: 935 Out: 768

13
1

921

12

754

Out: 922 In: 766
Total: 1688

[E] Centre Ave

Portage Creek Dev TIS - TMC

Thu Dec 8, 2022

PM Peak (4:30 PM - 5:30 PM) - Overall Peak Hour

All Classes (Lights and Motorcycles, Heavy)

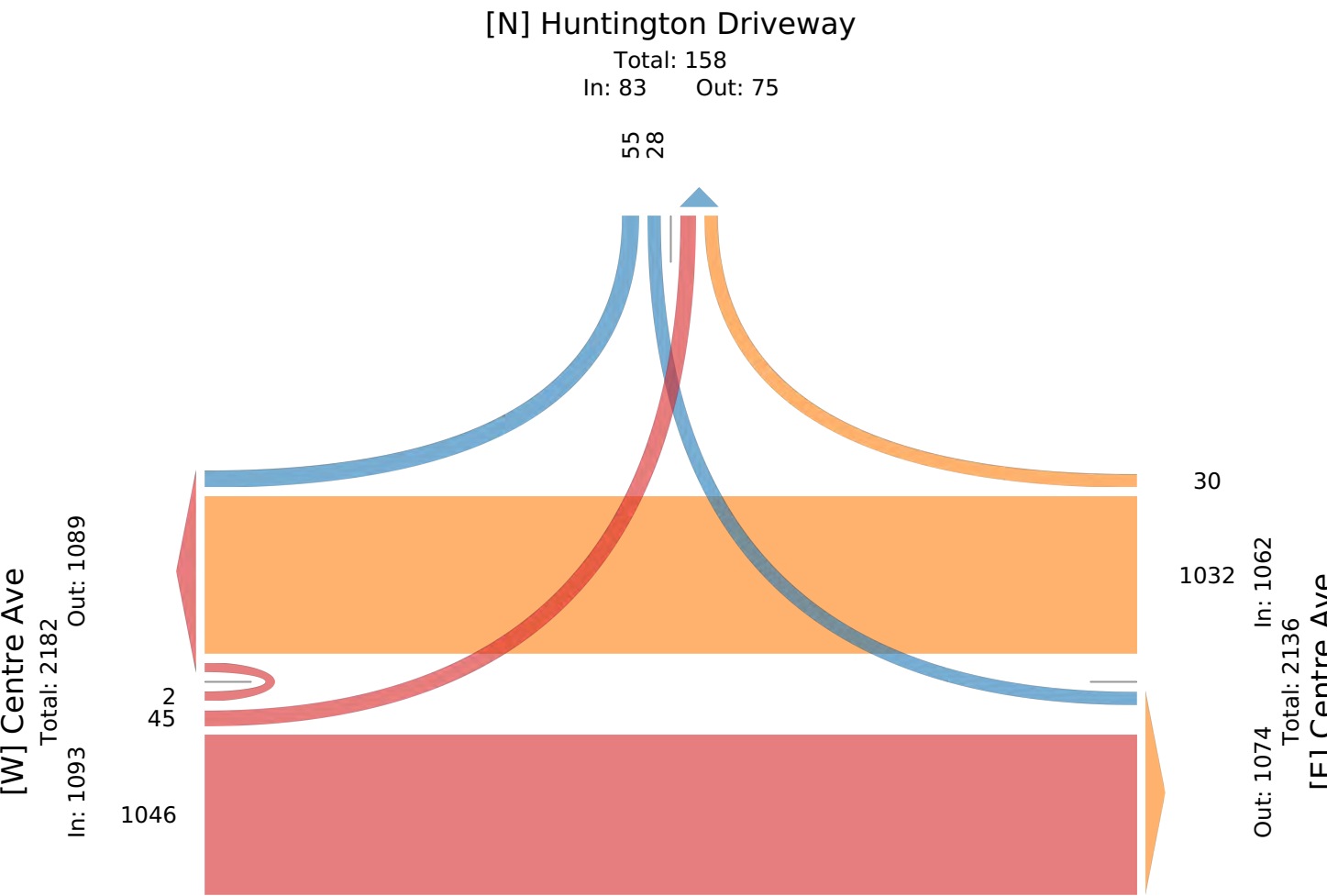
All Movements

ID: 1023351, Location: 42.201003, -85.592773

Provided by: RS Engineering LLC
6709 Centurion Drive Suite 300, Lansing, MI, 48917, US

Leg Direction	Huntington Driveway Southbound				Centre Ave Westbound				Centre Ave Eastbound				
Time	R	L	U	App	R	T	U	App	T	L	U	App	Int
2022-12-08 4:30PM	14	6	0	20	4	262	0	266	234	8	2	244	530
4:45PM	11	8	0	19	3	224	0	227	252	15	0	267	513
5:00PM	21	8	0	29	10	271	0	281	277	13	0	290	600
5:15PM	9	6	0	15	13	275	0	288	283	9	0	292	595
Total	55	28	0	83	30	1032	0	1062	1046	45	2	1093	2238
% Approach	66.3%	33.7%	0%	-	2.8%	97.2%	0%	-	95.7%	4.1%	0.2%	-	-
% Total	2.5%	1.3%	0%	3.7%	1.3%	46.1%	0%	47.5%	46.7%	2.0%	0.1%	48.8%	-
PHF	0.655	0.875	-	0.716	0.577	0.938	-	0.922	0.924	0.750	0.250	0.936	0.933
Lights and Motorcycles	54	28	0	82	29	1027	0	1056	1030	45	2	1077	2215
% Lights and Motorcycles	98.2%	100%	0%	98.8%	96.7%	99.5%	0%	99.4%	98.5%	100%	100%	98.5%	99.0%
Heavy	1	0	0	1	1	5	0	6	16	0	0	16	23
% Heavy	1.8%	0%	0%	1.2%	3.3%	0.5%	0%	0.6%	1.5%	0%	0%	1.5%	1.0%

* L: Left, R: Right, T: Thru, U: U-Turn



Appendix C

TRAFFIC ANALYSIS

Portage Creek Development Trip Generation (Trip Generation Manual 11th Edition)											
LUC	Description	Number	Unit	AM Peak				PM Peak			
				Equation	In	Out	Total	Equation	In	Out	Total
220	Multifamily Housing (Low-Rise)	228	Dwelling Unit	$T = 0.31(X) + 22.85$	23	71	94	$T = 0.43(X) + 20.55$	75	44	119
				Total	23	71	94	Total	75	44	119

ITE Trip Generation		AM Peak Hour Distribution											
Enter/Exit		Entering						Exiting					
Site Driveways		W. Centre Ave at Site Driveway		Shaver Rd at South Site Dr		Shaver Rd at North Site Driveway		W. Centre Ave at Site Driveway		Shaver Rd at South Site Dr		Shaver Rd at North Site Driveway	
Direction		Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left
Land Use		Multifamily Housing (Low-Rise)											
Total Enter/Exit		23						71					
Internal Distribution % *		40%		40%		20%		40%		40%		20%	
Access Point Distribution % **		45%	55%	46%	54%	46%	54%	45%	55%	46%	54%	46%	54%
Access Point Volumes		4	5	4	5	2	3	13	15	13	15	7	8
All Land Uses Total		4	5	4	5	2	3	13	15	13	15	7	8

ITE Trip Generation		PM Peak Hour Distribution											
Enter/Exit		Entering						Exiting					
Site Driveways		W. Centre Ave at Site Driveway		Shaver Rd at South Site Dr		Shaver Rd at North Site Driveway		W. Centre Ave at Site Driveway		Shaver Rd at South Site Dr		Shaver Rd at North Site Driveway	
Direction		Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left
Land Use		Multifamily Housing (Low-Rise)											
Total Enter/Exit		75						44					
Internal Distribution % *		40%		40%		20%		40%		40%		20%	
Access Point Distribution % **		49%	51%	55%	45%	55%	45%	48%	51%	55%	45%	55%	45%
Access Point Volumes		15	15	16	14	8	7	8	9	10	8	5	4
All Land Uses Total		15	15	16	14	8	7	8	9	10	8	5	4

*Internal Distribution: Assumed 40% of the traffic will be using the driveway on W Centre Ave, 40% using the Walgreens driveway on Shaver, and 20% using the north driveway on Shaver.

** The initial access point distribution is based on existing traffic on W. Centre Ave (Eastbound/Westbound) and Shaver Rd (Northbound/Southbound).

*** EB left and EB right at Centre/Shavers traffic is diverted to Shaver Rd North and South Site Dr. EB thru on Centre Ave continue to use Centre Ave Site Driveway exit left

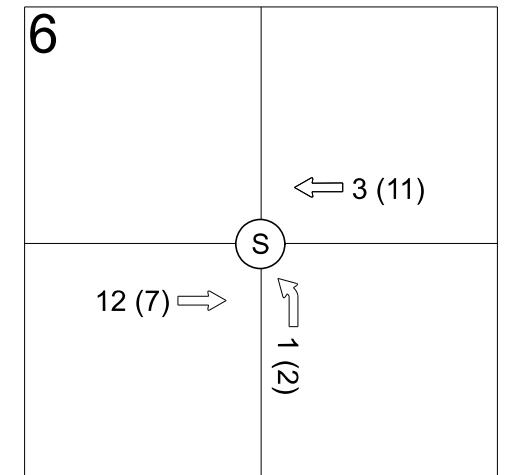
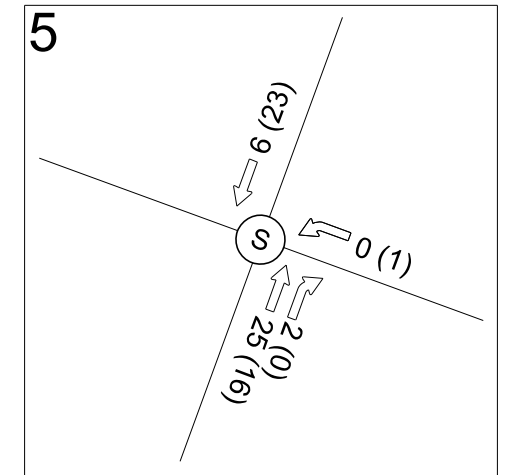
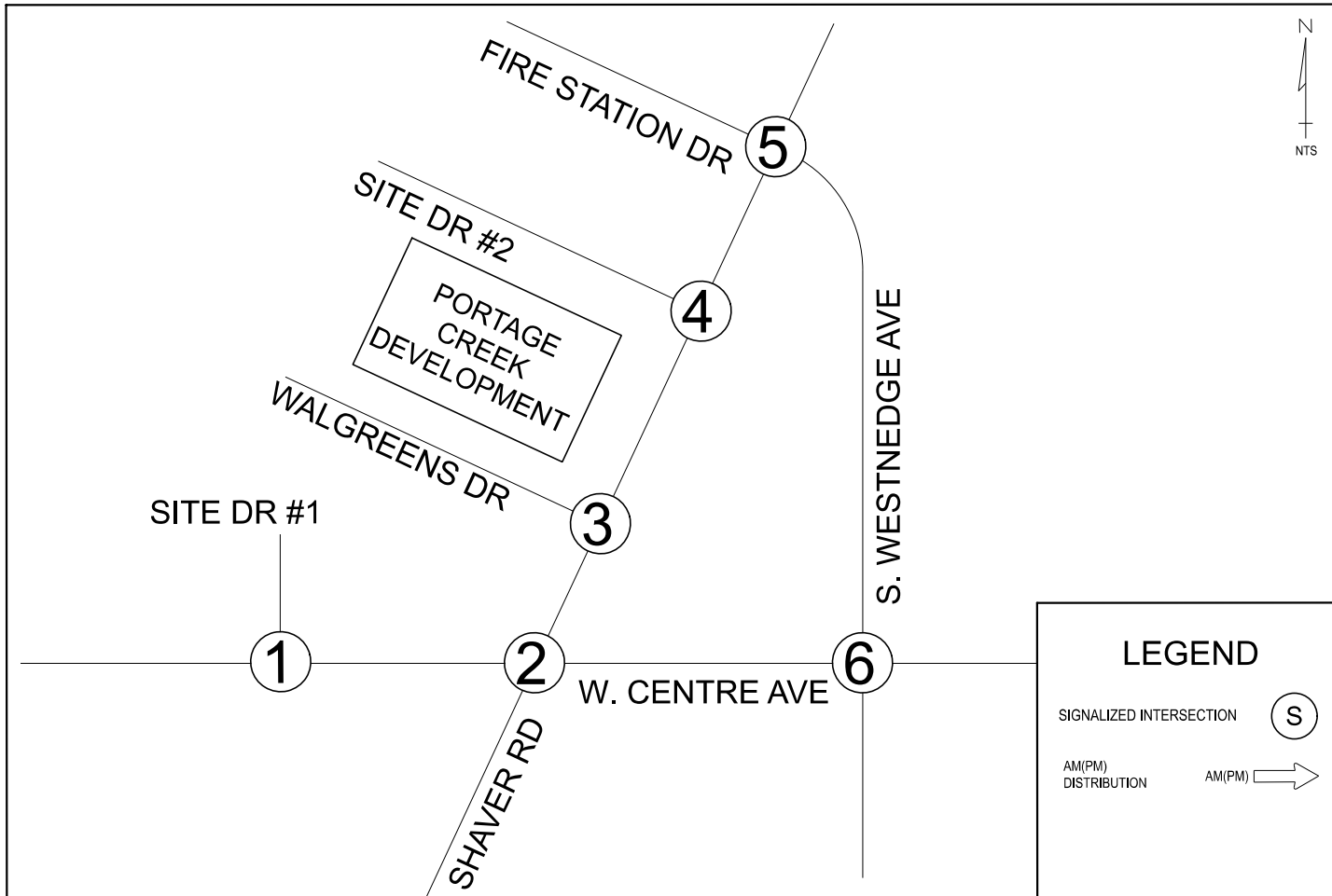
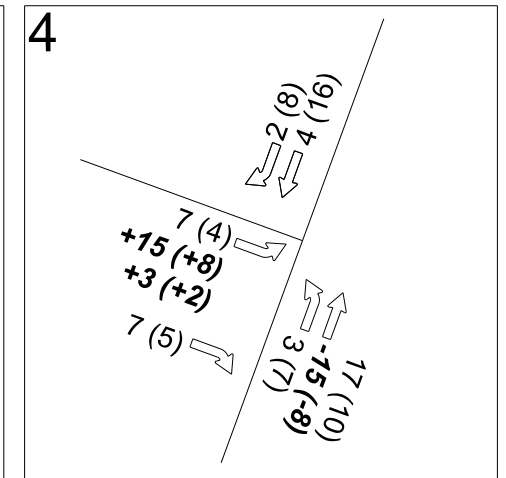
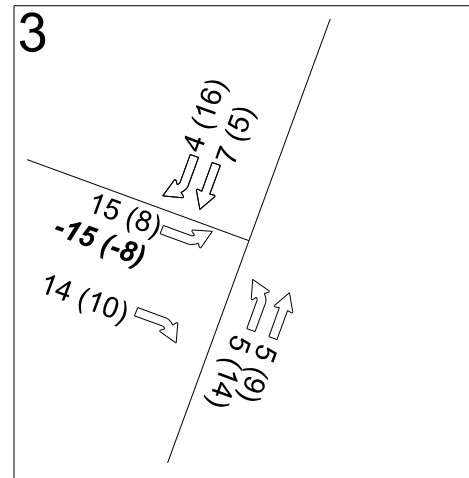
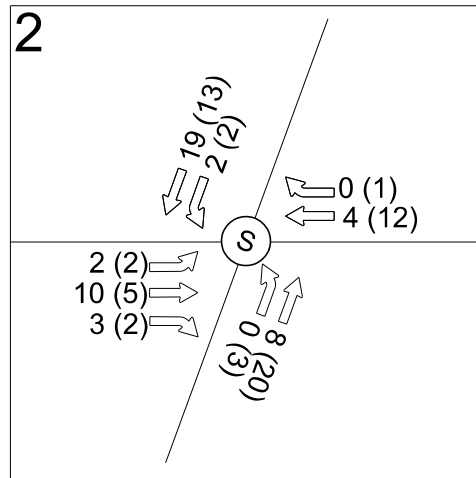
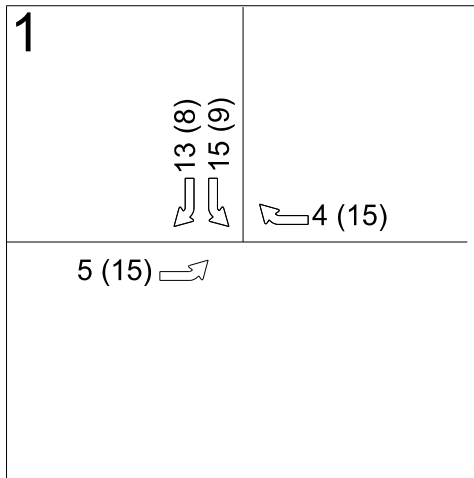
EXISTING VOLUME SPLITS (W. Centre Ave)				
			AM	PM
W. Centre Ave at Site Driveway	Eastbound	Left	13	45
		Thru	921	1046
	Westbound	Thru	754	1032
		Right	12	30
EXISTING VOLUME SPLITS (Shaver Rd)				
Shaver Rd at Walgreens Driveway	Northbound	Left	1	4
		Thru	347	601
	Southbound	Thru	274	674
		Right	18	53

Split for W. Centre Ave		
Direction	AM	PM
Eastbound	55%	51%
Westbound	45%	49%
TOTAL	100%	100%
Split for Shaver Rd		
Direction	AM	PM
Northbound	54%	45%
Southbound	46%	55%
TOTAL	100%	100%

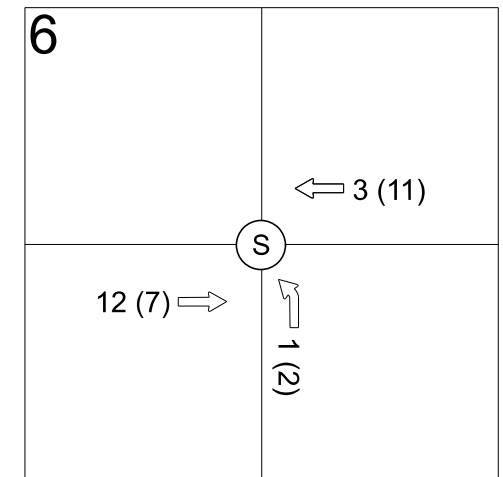
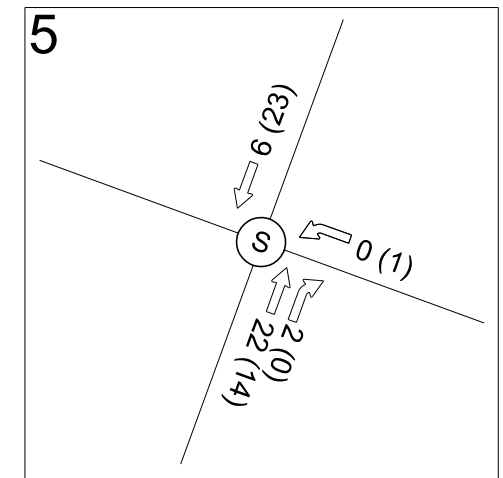
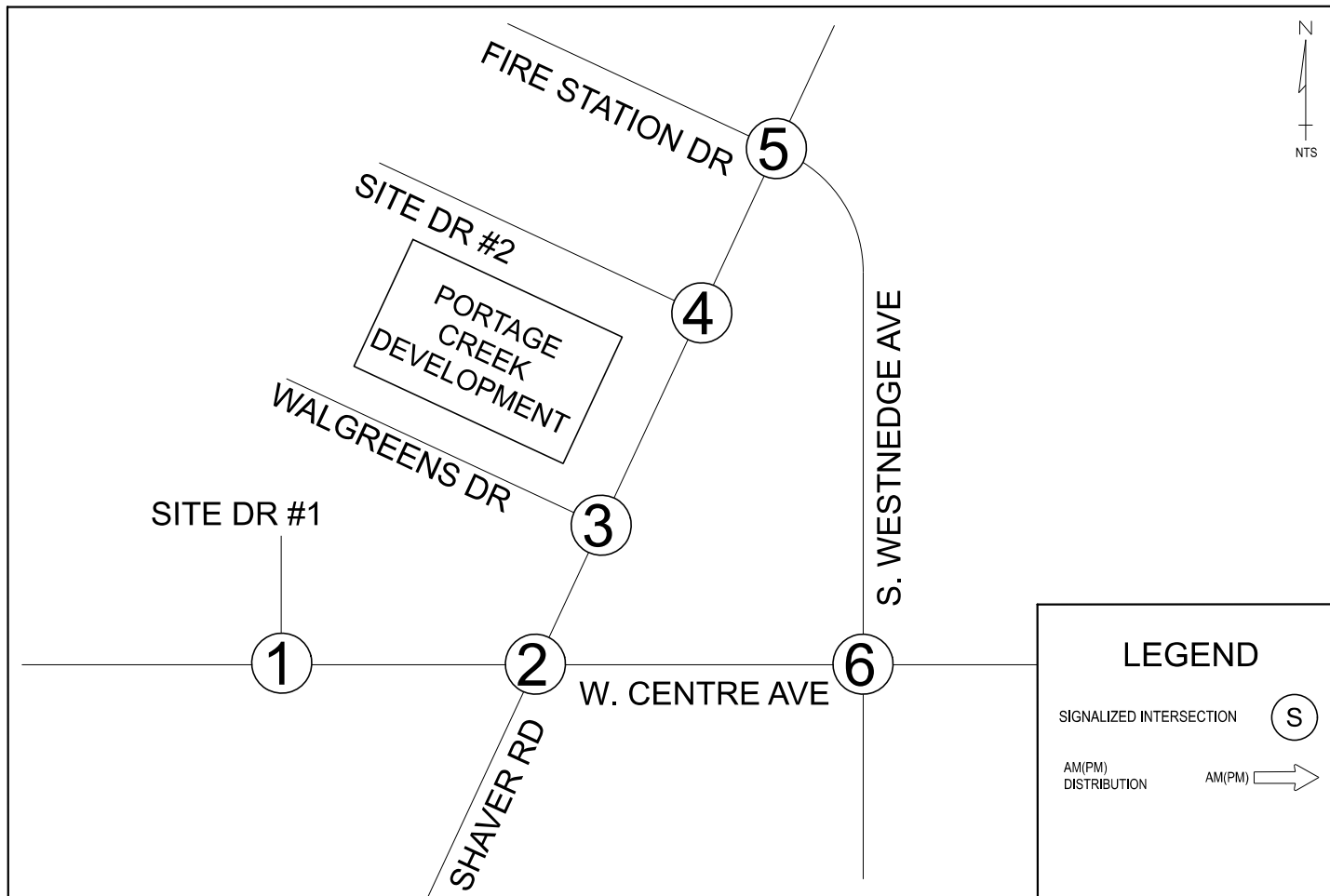
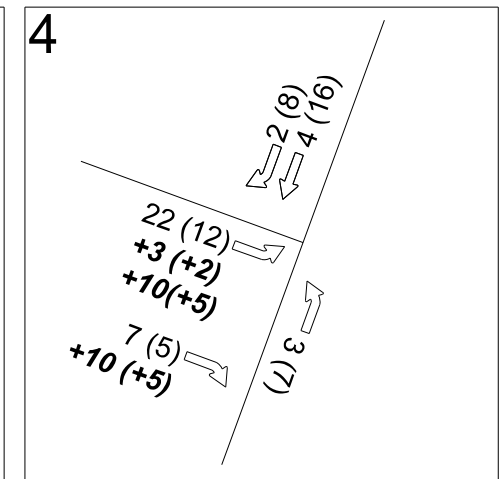
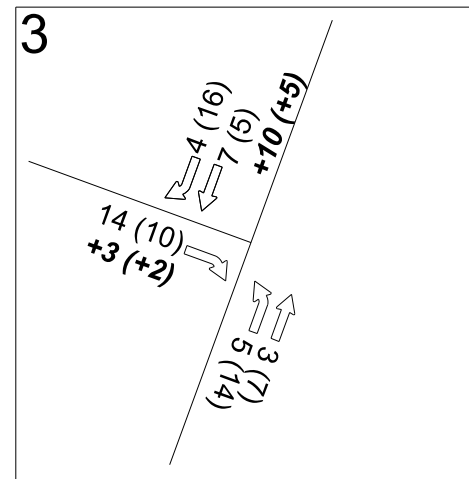
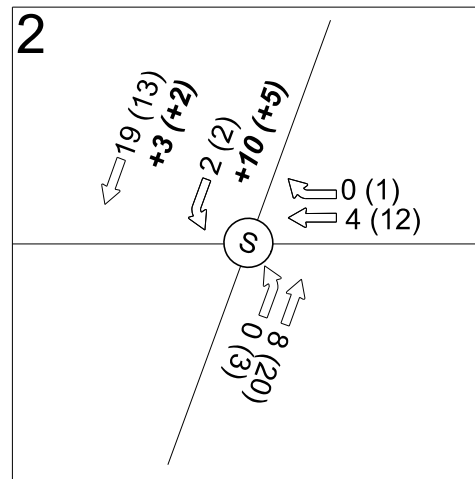
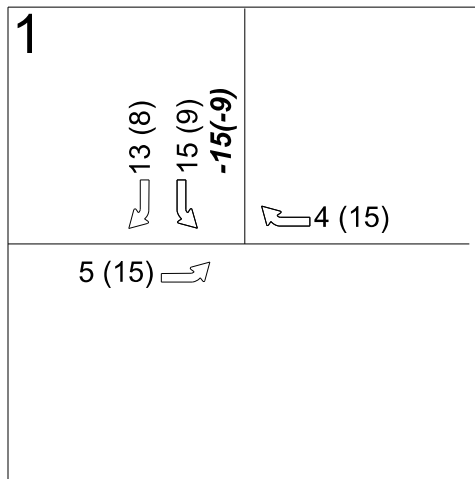
Trip distributions on W. Centre Rd and Shaver Rd

2022 Existing Traffic Volume									
Intersection	Direction	Turning Movement	Hourly Count		Intersection	Direction	Turning Movement	Hourly Count	
			AM Peak	PM Peak				AM Peak	PM Peak
W. Centre Ave at Shaver Rd	Eastbound	Left	86	190	Shaver Rd North Site Driveway	Eastbound	Left	0	0
		Thru	707	584			Right	2	5
		Right	131	218		Northbound	Left	8	22
	Westbound	Left	138	180			Thru	347	597
		Thru	636	768		Southbound	Thru	290	722
		Right	12	25			Right	0	0
	Northbound	Left	89	182	Shaver Rd South Site Driveway	Eastbound	Left	8	16
		Thru	234	392			Right	8	32
		Right	103	214		Northbound	Left	1	4
	Southbound	Left	17	59			Thru	347	601
		Thru	173	507		Southbound	Thru	274	674
		Right	69	130			Right	18	53
Shaver Rd at S. Westnedge	Eastbound	Left	1	6	W. Centre Ave Site Driveway	Eastbound	Left	13	53
		Thru	0	5			Thru	921	980
		Right	2	8		Westbound	Thru	754	1000
	Westbound	Left	5	13			Right	12	16
		Thru	3	5		Southbound	Left	1	29
		Right	240	332			Right	13	50
	Northbound	Left	3	3	2022 Traffic Volumes				
		Thru	294	579					
		Right	31	15					
	Southbound	Left	229	309					
		Thru	263	701					
		Right	6	1					
W. Centre Ave at S. Westnedge	Eastbound	Left	12	26					
		Thru	706	708					
		Right	127	136					
	Westbound	Left	111	158					
		Thru	519	771					
		Right	52	112					
	Northbound	Left	174	117					
		Thru	153	143					
		Right	169	120					
Southbound	Left	107	115						
	Thru	116	159						
	Right	3	16						

2024 Existing Traffic Volume with 0.5% growth														
Intersection	Direction	Turning Movement	Hourly Count		Intersection	Direction	Turning Movement	Hourly Count						
			AM Peak	PM Peak				AM Peak	PM Peak					
W. Centre Ave at Shaver Rd	Eastbound	Left	87	192	Shaver Rd North Site Driveway	Eastbound	Left	0	0					
		Thru	715	590			Right	2	6					
		Right	133	221		Northbound	Left	8	23					
	Westbound	Left	140	182			Thru	352	603					
		Thru	643	776			Southbound	Thru	293	730				
		Right	13	26		Right		0	0					
	Northbound	Left	90	184	Shaver Rd South Site Driveway	Eastbound	Left	9	17					
		Thru	237	396			Right	9	33					
		Right	105	217		Northbound	Left	2	5					
	Southbound	Left	18	60			Thru	351	608					
		Thru	175	513			Southbound	Thru	277	681				
		Right	70	132		Right		19	54					
Shaver Rd at S. Westnedge	Eastbound	Left	2	7	W. Centre Ave Site Driveway	Eastbound	Left	14	54					
		Thru	0	6			Thru	931	990					
		Right	3	9		Westbound	Thru	762	1011					
	Westbound	Left	6	14			Right	13	17					
		Thru	4	6			Southbound	Left	2	30				
		Right	243	336		Right		14	51					
	Northbound	Left	4	4	Year 2024 Future Traffic Volumes (0.5% Growth)									
		Thru	297	585										
		Right	32	16										
	Southbound	Left	232	313										
		Thru	266	709										
		Right	7	2										
W. Centre Ave at S. Westnedge	Eastbound	Left	13	27						Year 2024 Future Traffic Volumes (0.5% Growth)				
		Thru	714	716										
		Right	129	138										
	Westbound	Left	113	160										
		Thru	525	779										
		Right	53	114										
	Northbound	Left	176	119										
		Thru	155	145										
		Right	171	122										
	Southbound	Left	109	117										
		Thru	118	161										
		Right	4	17										



TRIP GENERATION: SCENARIO #1



TRIP GENERATION: SCENARIO #2

Appendix D

SYNCHRO AND SIMTRAFFIC REPORTS

HCM 6th Signalized Intersection Summary

2: Shaver Rd (PB)/Shaver Rd (PB) & Centre Ave (PB)

02/19/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	86	707	131	138	636	12	89	250	103	17	196	69
Future Volume (veh/h)	86	707	131	138	636	12	89	250	103	17	196	69
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1856	1856	1856	1826	1826	1826	1856	1856	1856
Adj Flow Rate, veh/h	116	955	0	184	848	16	103	291	120	20	231	81
Peak Hour Factor	0.74	0.74	0.74	0.75	0.75	0.75	0.86	0.86	0.86	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	3	3	3	5	5	5	3	3	3
Cap, veh/h	380	1806		386	1807	34	227	392	158	168	322	110
Arrive On Green	0.07	0.51	0.00	0.02	0.17	0.17	0.07	0.16	0.16	0.03	0.12	0.12
Sat Flow, veh/h	1781	3554	1585	1767	3540	67	1739	2413	972	1767	2580	880
Grp Volume(v), veh/h	116	955	0	184	422	442	103	207	204	20	156	156
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1767	1763	1844	1739	1735	1651	1767	1763	1697
Q Serve(g_s), s	3.0	18.1	0.0	4.8	21.6	21.6	5.1	11.4	11.8	1.0	8.5	8.9
Cycle Q Clear(g_c), s	3.0	18.1	0.0	4.8	21.6	21.6	5.1	11.4	11.8	1.0	8.5	8.9
Prop In Lane	1.00		1.00	1.00		0.04	1.00		0.59	1.00		0.52
Lane Grp Cap(c), veh/h	380	1806		386	900	941	227	282	268	168	220	212
V/C Ratio(X)	0.31	0.53		0.48	0.47	0.47	0.45	0.74	0.76	0.12	0.71	0.74
Avail Cap(c_a), veh/h	430	1806		431	900	941	310	512	487	318	520	501
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.4	16.5	0.0	13.0	29.3	29.3	34.9	39.8	40.0	36.5	42.0	42.2
Incr Delay (d2), s/veh	0.4	1.1	0.0	0.9	1.8	1.7	1.4	3.7	4.4	0.3	4.2	4.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	7.2	0.0	2.0	10.6	11.0	2.2	5.0	5.0	0.4	3.9	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.9	17.7	0.0	13.9	31.1	31.0	36.3	43.6	44.4	36.8	46.2	47.1
LnGrp LOS	B	B		B	C	C	D	D	D	D	D	D
Approach Vol, veh/h	1071			1048			514			332		
Approach Delay, s/veh	17.1			28.0			42.5			46.0		
Approach LOS	B			C			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.5	21.7	13.2	56.6	12.2	18.0	13.5	56.3				
Change Period (Y+Rc), s	5.5	5.5	6.5	5.5	5.5	5.5	6.5	5.5				
Max Green Setting (Gmax), s	11.5	29.5	9.5	26.5	11.5	29.5	9.5	26.5				
Max Q Clear Time (g_c+I1), s	3.0	13.8	5.0	23.6	7.1	10.9	6.8	20.1				
Green Ext Time (p_c), s	0.0	2.1	0.1	1.4	0.1	1.6	0.1	3.3				
Intersection Summary												
HCM 6th Ctrl Delay	28.6											
HCM 6th LOS	C											

02/19/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔	↔	↔	↔↔		↔	↔↔	
Traffic Volume (veh/h)	1	0	2	5	3	240	3	313	31	229	283	6
Future Volume (veh/h)	1	0	2	5	3	240	3	313	31	229	283	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1411	1411	1411	1856	1856	1856	1841	1841	1841	1856	1856	1856
Adj Flow Rate, veh/h	1	0	3	7	4	329	3	337	33	283	349	7
Peak Hour Factor	0.75	0.75	0.75	0.73	0.73	0.73	0.93	0.93	0.93	0.81	0.81	0.81
Percent Heavy Veh, %	33	33	33	3	3	3	4	4	4	3	3	3
Cap, veh/h	263	0	258	285	149	373	589	1595	155	698	2093	42
Arrive On Green	0.24	0.00	0.24	0.24	0.24	0.24	0.01	0.50	0.50	0.10	0.59	0.59
Sat Flow, veh/h	775	0	1088	927	628	1572	1753	3220	313	1767	3535	71
Grp Volume(v), veh/h	1	0	3	11	0	329	3	182	188	283	174	182
Grp Sat Flow(s),veh/h/ln	775	0	1088	1556	0	1572	1753	1749	1784	1767	1763	1843
Q Serve(g_s), s	0.1	0.0	0.2	0.0	0.0	18.3	0.1	5.3	5.4	6.6	4.1	4.1
Cycle Q Clear(g_c), s	0.5	0.0	0.2	0.4	0.0	18.3	0.1	5.3	5.4	6.6	4.1	4.1
Prop In Lane	1.00		1.00	0.64		1.00	1.00		0.18	1.00		0.04
Lane Grp Cap(c), veh/h	263	0	258	434	0	373	589	866	884	698	1044	1091
V/C Ratio(X)	0.00	0.00	0.01	0.03	0.00	0.88	0.01	0.21	0.21	0.41	0.17	0.17
Avail Cap(c_a), veh/h	467	0	539	831	0	779	1061	866	884	1003	1044	1091
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.8	0.0	26.5	26.6	0.0	33.4	11.3	12.9	12.9	8.2	8.4	8.4
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	6.9	0.0	0.6	0.5	0.4	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.1	0.2	0.0	7.6	0.0	2.1	2.2	2.2	1.5	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.8	0.0	26.5	26.6	0.0	40.4	11.3	13.5	13.5	8.6	8.7	8.7
LnGrp LOS	C	A	C	C	A	D	B	B	B	A	A	A
Approach Vol, veh/h		4			340			373			639	
Approach Delay, s/veh		26.6			39.9			13.5			8.7	
Approach LOS		C			D			B			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.3	50.0		26.5	5.5	58.8		26.5				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	25.0	45.0		45.0	25.0	45.0		45.0				
Max Q Clear Time (g_c+1), s	19.6	7.4		20.3	2.1	6.1		2.5				
Green Ext Time (p_c), s	0.7	2.2		1.2	0.0	2.1		0.0				

HCM 6th Ctrl Delay 17.9

HCM 6th LOS B

HCM 6th Signalized Intersection Summary

8: S. Westnedge Ave (PB) & Centre Ave/Center Ave (PB)

02/19/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	706	127	111	519	52	174	153	169	107	116	3
Future Volume (veh/h)	12	706	127	111	519	52	174	153	169	107	116	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1856	1856	1856	1856	1856	1856	1841	1841	1841
Adj Flow Rate, veh/h	13	743	134	117	546	55	249	219	241	157	171	4
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.70	0.70	0.70	0.68	0.68	0.68
Percent Heavy Veh, %	2	2	2	3	3	3	3	3	3	4	4	4
Cap, veh/h	365	1038	187	258	1116	112	523	723	322	514	367	9
Arrive On Green	0.02	0.11	0.11	0.07	0.34	0.34	0.17	0.20	0.20	0.17	0.20	0.20
Sat Flow, veh/h	1781	3007	542	1767	3235	325	1767	3526	1572	1753	1791	42
Grp Volume(v), veh/h	13	439	438	117	297	304	249	219	241	157	0	175
Grp Sat Flow(s),veh/h/ln	1781	1777	1773	1767	1763	1797	1767	1763	1572	1753	0	1833
Q Serve(g_s), s	0.0	23.8	23.8	0.0	13.3	13.3	0.0	5.3	14.4	0.0	0.0	8.4
Cycle Q Clear(g_c), s	0.0	23.8	23.8	0.0	13.3	13.3	0.0	5.3	14.4	0.0	0.0	8.4
Prop In Lane	1.00		0.31	1.00		0.18	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	365	613	612	258	608	620	523	723	322	514	0	376
V/C Ratio(X)	0.04	0.72	0.72	0.45	0.49	0.49	0.48	0.30	0.75	0.31	0.00	0.47
Avail Cap(c_a), veh/h	396	613	612	289	608	620	523	723	322	514	0	376
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.7	39.6	39.6	40.5	25.8	25.8	30.7	33.7	37.3	27.5	0.0	34.9
Incr Delay (d2), s/veh	0.0	7.0	7.0	1.2	2.8	2.8	0.7	1.1	14.7	0.3	0.0	4.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	12.5	12.4	2.8	5.8	6.0	5.1	2.3	6.8	3.0	0.0	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.8	46.6	46.6	41.7	28.6	28.6	31.4	34.8	52.0	27.8	0.0	39.0
LnGrp LOS	C	D	D	D	C	C	C	C	D	C	A	D
Approach Vol, veh/h	890			718			709			332		
Approach Delay, s/veh	46.3			30.7			39.4			33.7		
Approach LOS	D			C			D			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.2	40.0	22.8	25.0	12.2	40.0	22.8	25.0				
Change Period (Y+Rc), s	5.5	5.5	5.5	4.5	5.5	5.5	5.5	4.5				
Max Green Setting (Gmax), s	34.5	34.5	15.5	20.5	8.5	34.5	15.5	20.5				
Max Q Clear Time (g_c+12, s)	25.8	25.8	2.0	16.4	2.0	15.3	2.0	10.4				
Green Ext Time (p_c), s	0.1	3.5	0.3	0.9	0.0	3.4	0.6	0.6				

Intersection Summary

HCM 6th Ctrl Delay	38.7
HCM 6th LOS	D

HCM Unsignalized Intersection Capacity Analysis

10: Shaver Rd/Shaver Rd (PB) & North Site Dr

02/19/2023

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2	8	347	290	0
Future Volume (Veh/h)	0	2	8	347	290	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2	9	377	315	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLT	TWLT	
Median storage (veh)				2	2	
Upstream signal (ft)				684	282	
pX, platoon unblocked	0.98	0.98	0.98			
vC, conflicting volume	522	158	315			
vC1, stage 1 conf vol	315					
vC2, stage 2 conf vol	206					
vCu, unblocked vol	478	108	268			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	99			
cM capacity (veh/h)	662	909	1270			
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	2	9	188	188	210	105
Volume Left	0	9	0	0	0	0
Volume Right	2	0	0	0	0	0
cSH	909	1270	1700	1700	1700	1700
Volume to Capacity	0.00	0.01	0.11	0.11	0.12	0.06
Queue Length 95th (ft)	0	1	0	0	0	0
Control Delay (s)	9.0	7.9	0.0	0.0	0.0	0.0
Lane LOS	A	A				
Approach Delay (s)	9.0	0.2	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			19.6%		ICU Level of Service	
Analysis Period (min)			15		A	

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2	8	347	290	0
Future Vol, veh/h	0	2	8	347	290	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2	9	377	315	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	522	158	315
Stage 1	315	-	-
Stage 2	207	-	-
Critical Hdwy	6.84	6.94	4.14
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.32	2.22
Pot Cap-1 Maneuver	484	859	1242
Stage 1	713	-	-
Stage 2	807	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	481	859	1242
Mov Cap-2 Maneuver	561	-	-
Stage 1	708	-	-
Stage 2	807	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.2	0.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1242	-	859	-	-
HCM Lane V/C Ratio	0.007	-	0.003	-	-
HCM Control Delay (s)	7.9	-	9.2	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

HCM Unsignalized Intersection Capacity Analysis

13: Shaver Rd (PB)/Shaver Rd & Walgreens Dr

02/19/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations							
Traffic Volume (veh/h)	8	8	1	347	274	18	
Future Volume (Veh/h)	8	8	1	347	274	18	
Sign Control	Stop			Free	Free		
Grade	0%			0%	0%		
Peak Hour Factor	0.60	0.60	0.94	0.94	0.87	0.87	
Hourly flow rate (vph)	13	13	1	369	315	21	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type				TWLTL	TWLTL		
Median storage veh)				2	2		
Upstream signal (ft)				308	658		
pX, platoon unblocked	0.97						
vC, conflicting volume	512	168	336				
vC1, stage 1 conf vol	326						
vC2, stage 2 conf vol	186						
vCu, unblocked vol	442	168	336				
tC, single (s)	6.8	6.9	4.2				
tC, 2 stage (s)	5.8						
tF (s)	3.5	3.3	2.2				
p0 queue free %	98	98	100				
cM capacity (veh/h)	669	853	1199				
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	13	13	1	184	184	210	126
Volume Left	13	0	1	0	0	0	0
Volume Right	0	13	0	0	0	0	21
cSH	669	853	1199	1700	1700	1700	1700
Volume to Capacity	0.02	0.02	0.00	0.11	0.11	0.12	0.07
Queue Length 95th (ft)	1	1	0	0	0	0	0
Control Delay (s)	10.5	9.3	8.0	0.0	0.0	0.0	0.0
Lane LOS	B	A	A				
Approach Delay (s)	9.9		0.0	0.0			
Approach LOS	A						
Intersection Summary							
Average Delay			0.4				
Intersection Capacity Utilization			19.6%		ICU Level of Service		A
Analysis Period (min)			15				

HCM 6th TWSC
13: Shaver Rd (PB)/Shaver Rd & Walgreens Dr

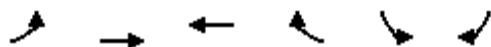
02/19/2023

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	8	8	1	347	274	18
Future Vol, veh/h	8	8	1	347	274	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	75	0	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	60	60	94	94	87	87
Heavy Vehicles, %	0	0	5	5	5	5
Mvmt Flow	13	13	1	369	315	21
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	513	168	336	0	-	0
Stage 1	326	-	-	-	-	-
Stage 2	187	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.2	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.25	-	-	-
Pot Cap-1 Maneuver	496	853	1199	-	-	-
Stage 1	710	-	-	-	-	-
Stage 2	832	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	496	853	1199	-	-	-
Mov Cap-2 Maneuver	572	-	-	-	-	-
Stage 1	709	-	-	-	-	-
Stage 2	832	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.4	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1199	-	572	853	-	-
HCM Lane V/C Ratio	0.001	-	0.023	0.016	-	-
HCM Control Delay (s)	8	-	11.4	9.3	-	-
HCM Lane LOS	A	-	B	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	0	-	-

HCM Unsignalized Intersection Capacity Analysis

15: Centre Ave/Centre Ave (PB) & Site Dr

02/19/2023



Movement	EBL	EBT	WBT	WBR	SBL	SBR			
Lane Configurations		  	 						
Traffic Volume (veh/h)	13	923	782	12	1	13			
Future Volume (Veh/h)	13	923	782	12	1	13			
Sign Control		Free	Free		Stop				
Grade		0%	0%		0%				
Peak Hour Factor	1.00	1.00	0.77	0.77	0.70	0.70			
Hourly flow rate (vph)	13	923	1016	16	1	19			
Pedestrians									
Lane Width (ft)									
Walking Speed (ft/s)									
Percent Blockage									
Right turn flare (veh)									
Median type		None	TWTLT						
Median storage veh)			2						
Upstream signal (ft)			319						
pX, platoon unblocked	0.82				0.82	0.82			
vC, conflicting volume	1032				1281	516			
vC1, stage 1 conf vol					1024				
vC2, stage 2 conf vol					257				
vCu, unblocked vol	589				893	0			
tC, single (s)	4.1				6.9	7.0			
tC, 2 stage (s)					5.9				
tF (s)	2.2				3.6	3.4			
p0 queue free %	98				100	98			
cM capacity (veh/h)	802				388	872			
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	SB 1	SB 2	
Volume Total	145	264	264	264	677	355	1	19	
Volume Left	13	0	0	0	0	0	1	0	
Volume Right	0	0	0	0	0	16	0	19	
cSH	802	1700	1700	1700	1700	1700	388	872	
Volume to Capacity	0.02	0.16	0.16	0.16	0.40	0.21	0.00	0.02	
Queue Length 95th (ft)	1	0	0	0	0	0	0	2	
Control Delay (s)	1.0	0.0	0.0	0.0	0.0	0.0	14.3	9.2	
Lane LOS	A						B	A	
Approach Delay (s)	0.2				0.0		9.5		
Approach LOS							A		
Intersection Summary									
Average Delay			0.2						
Intersection Capacity Utilization			32.3%			ICU Level of Service			A
Analysis Period (min)			15						

Intersection: 2: Shaver Rd (PB)/Shaver Rd (PB) & Centre Ave (PB)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	T	L	T	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	80	265	244	145	291	282	85	180	232	41	116	136
Average Queue (ft)	28	142	126	54	132	129	38	82	63	10	56	54
95th Queue (ft)	67	233	219	115	217	212	78	154	138	30	100	109
Link Distance (ft)	210	210	210		220	220		504	504		209	209
Upstream Blk Time (%)		1	0		1	1						
Queuing Penalty (veh)		3	1		3	3						
Storage Bay Dist (ft)				316			275			150		
Storage Blk Time (%)					1							
Queuing Penalty (veh)					1							

Intersection: 7: Shaver Rd (PB) & Fire Station Dr/S. Westnedge Ave (PB)

Movement	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	TR	LT	R	T	TR	L	T	TR
Maximum Queue (ft)	54	30	139	132	154	137	86	64
Average Queue (ft)	3	5	71	47	50	56	22	11
95th Queue (ft)	21	24	119	101	118	106	59	38
Link Distance (ft)	457	484	484	207	207	868	868	868
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)								
Storage Blk Time (%)				0				
Queuing Penalty (veh)				0				

Intersection: 8: S. Westnedge Ave (PB) & Centre Ave/Center Ave (PB)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	T	R	L	TR
Maximum Queue (ft)	174	299	311	135	170	154	124	226	194	125	202	226
Average Queue (ft)	15	195	203	59	96	52	84	39	66	55	78	68
95th Queue (ft)	71	266	275	110	160	107	132	135	134	109	145	157
Link Distance (ft)		240	240		855	855		178	178		342	342
Upstream Blk Time (%)		2	2					1	1			
Queuing Penalty (veh)		9	9					0	0			
Storage Bay Dist (ft)	150			175			100			100		
Storage Blk Time (%)		15			0		13	0	3	0		
Queuing Penalty (veh)		2			0		12	0	6	0		

Intersection: 10: Shaver Rd/Shaver Rd (PB) & North Site Dr

Movement	EB	NB
Directions Served	LR	L
Maximum Queue (ft)	28	28
Average Queue (ft)	1	2
95th Queue (ft)	9	14
Link Distance (ft)	507	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		125
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 13: Shaver Rd (PB)/Shaver Rd & Walgreens Dr

Movement	EB	EB	NB
Directions Served	L	R	L
Maximum Queue (ft)	31	31	31
Average Queue (ft)	7	8	1
95th Queue (ft)	28	31	10
Link Distance (ft)		222	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	75		50
Storage Blk Time (%)			0
Queuing Penalty (veh)			0

Intersection: 15: Centre Ave/Centre Ave (PB) & Site Dr

Movement	EB	SB
Directions Served	LT	R
Maximum Queue (ft)	31	50
Average Queue (ft)	8	16
95th Queue (ft)	31	43
Link Distance (ft)	80	370
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Zone Summary

Zone wide Queuing Penalty: 51

HCM 6th Signalized Intersection Summary

2: Shaver Rd (PB)/Shaver Rd (PB) & Centre Ave (PB)

02/03/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	190	584	218	180	768	25	182	392	214	59	517	130
Future Volume (veh/h)	190	584	218	180	768	25	182	392	214	59	517	130
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	200	615	0	189	808	26	219	472	258	70	615	155
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.83	0.83	0.83	0.84	0.84	0.84
Percent Heavy Veh, %	3	3	3	1	1	1	1	1	1	1	1	1
Cap, veh/h	336	1518		448	1524	49	199	540	294	187	629	158
Arrive On Green	0.07	0.43	0.00	0.02	0.14	0.14	0.07	0.24	0.24	0.05	0.22	0.22
Sat Flow, veh/h	1767	3526	1572	1795	3542	114	1795	2240	1217	1795	2835	713
Grp Volume(v), veh/h	200	615	0	189	409	425	219	377	353	70	388	382
Grp Sat Flow(s),veh/h/ln	1767	1763	1572	1795	1791	1865	1795	1791	1666	1795	1791	1757
Q Serve(g_s), s	7.3	13.8	0.0	6.5	24.3	24.3	8.5	23.3	23.5	3.4	24.8	24.9
Cycle Q Clear(g_c), s	7.3	13.8	0.0	6.5	24.3	24.3	8.5	23.3	23.5	3.4	24.8	24.9
Prop In Lane	1.00		1.00	1.00		0.06	1.00		0.73	1.00		0.41
Lane Grp Cap(c), veh/h	336	1518		448	771	803	199	432	402	187	397	390
V/C Ratio(X)	0.60	0.41		0.42	0.53	0.53	1.10	0.87	0.88	0.37	0.98	0.98
Avail Cap(c_a), veh/h	336	1518		448	771	803	199	432	402	223	397	390
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.6	22.6	0.0	17.8	38.5	38.5	37.7	41.9	42.0	33.5	44.5	44.5
Incr Delay (d2), s/veh	2.8	0.8	0.0	0.6	2.6	2.5	92.8	17.4	19.3	1.2	39.1	40.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	5.8	0.0	2.9	12.2	12.7	6.6	12.2	11.6	1.5	15.1	15.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.5	23.4	0.0	18.4	41.1	41.0	130.4	59.3	61.4	34.8	83.5	84.7
LnGrp LOS	C	C		B	D	D	F	E	E	C	F	F
Approach Vol, veh/h	815			1023			949			840		
Approach Delay, s/veh	23.2			36.9			76.5			80.0		
Approach LOS	C			D			E			F		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.8	33.2	15.0	55.0	14.0	31.0	15.0	55.0				
Change Period (Y+Rc), s	5.5	5.5	6.5	5.5	5.5	5.5	6.5	5.5				
Max Green Setting (Gmax), s	8.5	25.5	8.5	49.5	8.5	25.5	8.5	49.5				
Max Q Clear Time (g_c+I1), s	5.4	25.5	9.3	26.3	10.5	26.9	8.5	15.8				
Green Ext Time (p_c), s	0.0	0.0	0.0	5.3	0.0	0.0	0.0	4.5				
Intersection Summary												
HCM 6th Ctrl Delay			54.2									
HCM 6th LOS			D									
Notes												

HCM 6th Signalized Intersection Summary

7: Shaver Rd (PB) & Fire Station Dr/S. Westnedge Ave (PB)

02/03/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔	↔	↔		↔	↔	
Traffic Volume (veh/h)	6	5	8	13	5	332	3	579	15	309	701	1
Future Volume (veh/h)	6	5	8	13	5	332	3	579	15	309	701	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	10	8	13	15	6	395	3	616	16	347	788	1
Peak Hour Factor	0.60	0.60	0.60	0.84	0.84	0.84	0.94	0.94	0.94	0.89	0.89	0.89
Percent Heavy Veh, %	0	0	0	0	0	0	1	1	1	1	1	1
Cap, veh/h	250	191	364	349	130	437	396	1613	42	568	2100	3
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.01	0.45	0.45	0.13	0.57	0.57
Sat Flow, veh/h	706	704	1341	1057	479	1610	1795	3567	93	1795	3671	5
Grp Volume(v), veh/h	17	0	14	21	0	395	3	309	323	347	384	405
Grp Sat Flow(s),veh/h/ln	1264	0	1488	1536	0	1610	1795	1791	1869	1795	1791	1884
Q Serve(g_s), s	0.0	0.0	0.7	0.0	0.0	23.6	0.1	11.4	11.4	9.6	11.6	11.6
Cycle Q Clear(g_c), s	0.6	0.0	0.7	0.8	0.0	23.6	0.1	11.4	11.4	9.6	11.6	11.6
Prop In Lane	0.60		0.90	0.71		1.00	1.00		0.05	1.00		0.00
Lane Grp Cap(c), veh/h	401	0	404	479	0	437	396	810	845	568	1024	1078
V/C Ratio(X)	0.04	0.00	0.04	0.04	0.00	0.90	0.01	0.38	0.38	0.61	0.38	0.38
Avail Cap(c_a), veh/h	624	0	673	755	0	728	837	810	845	794	1024	1078
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.6	0.0	26.6	26.7	0.0	35.0	14.6	18.0	18.0	11.6	11.6	11.6
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	9.0	0.0	1.4	1.3	1.1	1.1	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.3	0.4	0.0	10.2	0.0	4.8	5.0	3.6	4.6	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.7	0.0	26.7	26.7	0.0	44.0	14.6	19.4	19.3	12.6	12.7	12.6
LnGrp LOS	C	A	C	C	A	D	B	B	B	B	B	B
Approach Vol, veh/h		31			416			635			1136	
Approach Delay, s/veh		26.7			43.1			19.3			12.6	
Approach LOS		C			D			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	17.5	50.0		32.0	5.6	61.9		32.0				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	25.0	45.0		45.0	25.0	45.0		45.0				
Max Q Clear Time (g_c+1), s	11.6	13.4		25.6	2.1	13.6		2.7				
Green Ext Time (p_c), s	0.9	4.0		1.5	0.0	5.3		0.2				
Intersection Summary												
HCM 6th Ctrl Delay			20.5									
HCM 6th LOS			C									

HCM 6th Signalized Intersection Summary

8: S. Westnedge Ave (PB) & Centre Ave/Center Ave (PB)

02/03/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	708	136	158	771	112	117	143	120	115	159	16
Future Volume (veh/h)	26	708	136	158	771	112	117	143	120	115	159	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	27	745	143	166	812	118	136	166	140	140	194	20
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.86	0.86	0.86	0.82	0.82	0.82
Percent Heavy Veh, %	2	2	2	1	1	1	1	1	1	1	1	1
Cap, veh/h	260	1099	211	253	1160	169	513	701	313	576	329	34
Arrive On Green	0.02	0.12	0.12	0.06	0.37	0.37	0.19	0.20	0.20	0.19	0.20	0.20
Sat Flow, veh/h	1781	2974	571	1795	3138	456	1795	3582	1598	1795	1681	173
Grp Volume(v), veh/h	27	445	443	166	463	467	136	166	140	140	0	214
Grp Sat Flow(s),veh/h/ln	1781	1777	1768	1795	1791	1803	1795	1791	1598	1795	0	1854
Q Serve(g_s), s	0.0	27.6	27.6	0.8	25.3	25.3	0.0	4.5	8.9	0.0	0.0	12.1
Cycle Q Clear(g_c), s	0.0	27.6	27.6	0.8	25.3	25.3	0.0	4.5	8.9	0.0	0.0	12.1
Prop In Lane	1.00		0.32	1.00		0.25	1.00		1.00	1.00		0.09
Lane Grp Cap(c), veh/h	260	657	653	253	662	666	513	701	313	576	0	363
V/C Ratio(X)	0.10	0.68	0.68	0.66	0.70	0.70	0.26	0.24	0.45	0.24	0.00	0.59
Avail Cap(c_a), veh/h	424	657	653	418	662	666	513	701	313	576	0	363
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	39.3	43.9	43.9	47.1	30.8	30.8	33.5	39.0	40.8	28.1	0.0	42.1
Incr Delay (d2), s/veh	0.2	5.6	5.6	2.9	6.1	6.0	0.3	0.8	4.6	0.2	0.0	6.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	14.1	14.1	4.7	11.7	11.8	3.1	2.1	3.9	2.9	0.0	6.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.4	49.5	49.5	50.0	36.9	36.9	33.8	39.8	45.4	28.3	0.0	48.9
LnGrp LOS	D	D	D	D	D	D	C	D	D	C	A	D
Approach Vol, veh/h	915			1096			442			354		
Approach Delay, s/veh	49.2			38.9			39.7			40.8		
Approach LOS	D			D			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.5	48.0	27.5	27.0	12.5	48.0	27.5	27.0				
Change Period (Y+Rc), s	5.5	5.5	5.5	4.5	5.5	5.5	5.5	4.5				
Max Green Setting (Gmax), s	47.5	42.5	11.5	22.5	17.5	42.5	11.5	22.5				
Max Q Clear Time (g_c+I), s	12.8	29.6	2.0	10.9	2.0	27.3	2.0	14.1				
Green Ext Time (p_c), s	0.4	4.6	0.2	1.1	0.0	5.2	0.2	0.7				

Intersection Summary

HCM 6th Ctrl Delay	42.6
HCM 6th LOS	D

HCM 6th TWSC
10: Shaver Rd/Shaver Rd (PB) & North Site Dr

02/03/2023

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	5	22	597	722	0
Future Vol, veh/h	0	5	22	597	722	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	5	24	649	785	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1158	393	785	0	-	0
Stage 1	785	-	-	-	-	-
Stage 2	373	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	189	606	829	-	-	-
Stage 1	410	-	-	-	-	-
Stage 2	666	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	184	606	829	-	-	-
Mov Cap-2 Maneuver	303	-	-	-	-	-
Stage 1	398	-	-	-	-	-
Stage 2	666	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11	0.3		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	829	-	606	-	-	
HCM Lane V/C Ratio	0.029	-	0.009	-	-	
HCM Control Delay (s)	9.5	-	11	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0.1	-	0	-	-	

HCM 6th TWSC
13: Shaver Rd (PB)/Shaver Rd & Walgreens Dr

02/03/2023

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	16	32	4	603	674	53
Future Vol, veh/h	16	32	4	603	674	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	75	0	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	93	93	81	81
Heavy Vehicles, %	2	2	0	0	1	1
Mvmt Flow	21	43	4	648	832	65

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1197	449	897	0	-	0
Stage 1	865	-	-	-	-	-
Stage 2	332	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.1	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.2	-	-	-
Pot Cap-1 Maneuver	179	557	765	-	-	-
Stage 1	373	-	-	-	-	-
Stage 2	699	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	178	557	765	-	-	-
Mov Cap-2 Maneuver	291	-	-	-	-	-
Stage 1	371	-	-	-	-	-
Stage 2	699	-	-	-	-	-

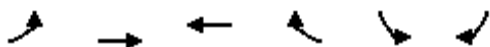
Approach	EB	NB	SB
HCM Control Delay, s	14.1	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	765	-	291	557	-	-
HCM Lane V/C Ratio	0.006	-	0.073	0.077	-	-
HCM Control Delay (s)	9.7	-	18.3	12	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	0.2	-	-

HCM Unsignalized Intersection Capacity Analysis

15: Centre Ave/Centre Ave (PB) & Site Dr

02/03/2023



Movement	EBL	EBT	WBT	WBR	SBL	SBR			
Lane Configurations									
Traffic Volume (veh/h)	53	963	1064	16	29	50			
Future Volume (Veh/h)	53	963	1064	16	29	50			
Sign Control		Free	Free		Stop				
Grade		0%	0%		0%				
Peak Hour Factor	0.95	0.95	0.92	0.92	0.95	0.95			
Hourly flow rate (vph)	56	1014	1157	17	31	53			
Pedestrians									
Lane Width (ft)									
Walking Speed (ft/s)									
Percent Blockage									
Right turn flare (veh)									
Median type		None	TWTLT						
Median storage veh)			2						
Upstream signal (ft)			319						
pX, platoon unblocked	0.82				0.82	0.82			
vC, conflicting volume	1174				1531	587			
vC1, stage 1 conf vol					1166				
vC2, stage 2 conf vol					366				
vCu, unblocked vol	785				1218	73			
tC, single (s)	4.1				6.8	6.9			
tC, 2 stage (s)					5.8				
tF (s)	2.2				3.5	3.3			
p0 queue free %	92				90	93			
cM capacity (veh/h)	684				312	806			
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	SB 1	SB 2	
Volume Total	201	290	290	290	771	403	31	53	
Volume Left	56	0	0	0	0	0	31	0	
Volume Right	0	0	0	0	0	17	0	53	
cSH	684	1700	1700	1700	1700	1700	312	806	
Volume to Capacity	0.08	0.17	0.17	0.17	0.45	0.24	0.10	0.07	
Queue Length 95th (ft)	7	0	0	0	0	0	8	5	
Control Delay (s)	3.7	0.0	0.0	0.0	0.0	0.0	17.8	9.8	
Lane LOS	A						C	A	
Approach Delay (s)	0.7				0.0		12.7		
Approach LOS							B		
Intersection Summary									
Average Delay			0.8						
Intersection Capacity Utilization			58.0%			ICU Level of Service			B
Analysis Period (min)			15						

Intersection: 2: Shaver Rd (PB)/Shaver Rd (PB) & Centre Ave (PB)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	T	L	T	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	189	284	273	220	293	293	236	289	326	175	291	292
Average Queue (ft)	84	155	129	124	213	209	133	133	154	73	213	218
95th Queue (ft)	146	225	205	228	294	289	226	220	259	195	321	322
Link Distance (ft)	210	210	210		220	220		504	504		209	209
Upstream Blk Time (%)		1	1	0	7	9					18	16
Queuing Penalty (veh)		3	1	0	36	43					64	57
Storage Bay Dist (ft)				316			275			150		
Storage Blk Time (%)				0	7			0		0	28	
Queuing Penalty (veh)				0	13			0		0	17	

Intersection: 7: Shaver Rd (PB) & Fire Station Dr/S. Westnedge Ave (PB)

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	TR	LT	R	L	T	TR	L	T	TR
Maximum Queue (ft)	30	30	54	172	29	229	200	157	140	137
Average Queue (ft)	3	10	14	96	1	86	88	73	54	41
95th Queue (ft)	18	32	43	151	10	168	173	123	114	104
Link Distance (ft)	457	457	484	484		207	207	868	868	868
Upstream Blk Time (%)						0	0			
Queuing Penalty (veh)						2	0			
Storage Bay Dist (ft)					150					
Storage Blk Time (%)						2				
Queuing Penalty (veh)						0				

Intersection: 8: S. Westnedge Ave (PB) & Centre Ave/Center Ave (PB)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	T	R	L	TR
Maximum Queue (ft)	174	320	312	148	249	207	124	219	178	96	160	243
Average Queue (ft)	46	196	215	84	131	118	74	33	70	36	77	93
95th Queue (ft)	138	278	304	139	201	191	119	115	126	69	130	165
Link Distance (ft)		240	240		855	855		178	178		342	342
Upstream Blk Time (%)		2	4					2	0			
Queuing Penalty (veh)		8	17					0	0			
Storage Bay Dist (ft)	150			175			100			100		
Storage Blk Time (%)	0	9			3		6	0	2	0		
Queuing Penalty (veh)	0	2			5		5	0	3	0		

Intersection: 10: Shaver Rd/Shaver Rd (PB) & North Site Dr

Movement	EB	NB
Directions Served	LR	L
Maximum Queue (ft)	30	53
Average Queue (ft)	6	10
95th Queue (ft)	26	38
Link Distance (ft)	507	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		125
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 13: Shaver Rd (PB)/Shaver Rd & Walgreens Dr

Movement	EB	EB	NB	SB	SB
Directions Served	L	R	L	T	TR
Maximum Queue (ft)	50	74	30	87	137
Average Queue (ft)	12	24	1	15	9
95th Queue (ft)	37	58	10	58	56
Link Distance (ft)		222		322	322
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	75		50		
Storage Blk Time (%)		1	0		
Queuing Penalty (veh)		0	0		

Intersection: 15: Centre Ave/Centre Ave (PB) & Site Dr

Movement	EB	SB	SB
Directions Served	LT	L	R
Maximum Queue (ft)	119	92	74
Average Queue (ft)	34	31	35
95th Queue (ft)	94	68	56
Link Distance (ft)	80		370
Upstream Blk Time (%)	2		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)		150	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 276

HCM 6th Signalized Intersection Summary

2: Shaver Rd (PB)/Shaver Rd (PB) & Centre Ave (PB)

Portage Creek TIS
No Build 2024 AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	715	133	140	643	13	90	253	105	18	198	70
Future Volume (veh/h)	87	715	133	140	643	13	90	253	105	18	198	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1856	1856	1856	1826	1826	1826	1856	1856	1856
Adj Flow Rate, veh/h	118	966	0	187	857	17	105	294	122	21	233	82
Peak Hour Factor	0.74	0.74	0.74	0.75	0.75	0.75	0.86	0.86	0.86	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	3	3	3	5	5	5	3	3	3
Cap, veh/h	375	1798		381	1797	36	229	394	160	169	324	111
Arrive On Green	0.07	0.51	0.00	0.02	0.17	0.17	0.07	0.16	0.16	0.03	0.13	0.13
Sat Flow, veh/h	1781	3554	1585	1767	3536	70	1739	2408	977	1767	2577	883
Grp Volume(v), veh/h	118	966	0	187	427	447	105	210	206	21	157	158
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1767	1763	1843	1739	1735	1650	1767	1763	1697
Q Serve(g_s), s	3.0	18.4	0.0	4.9	21.9	21.9	5.2	11.5	11.9	1.0	8.6	9.0
Cycle Q Clear(g_c), s	3.0	18.4	0.0	4.9	21.9	21.9	5.2	11.5	11.9	1.0	8.6	9.0
Prop In Lane	1.00		1.00	1.00		0.04	1.00		0.59	1.00		0.52
Lane Grp Cap(c), veh/h	375	1798		381	896	937	229	283	270	169	222	214
V/C Ratio(X)	0.31	0.54		0.49	0.48	0.48	0.46	0.74	0.76	0.12	0.71	0.74
Avail Cap(c_a), veh/h	425	1798		425	896	937	310	512	487	318	520	501
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.6	16.8	0.0	13.3	29.6	29.6	34.8	39.8	40.0	36.3	42.0	42.1
Incr Delay (d2), s/veh	0.5	1.2	0.0	1.0	1.8	1.7	1.4	3.8	4.5	0.3	4.1	4.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	7.3	0.0	2.0	10.7	11.2	2.2	5.1	5.1	0.4	3.9	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.1	17.9	0.0	14.2	31.4	31.3	36.2	43.6	44.5	36.6	46.1	47.0
LnGrp LOS	B	B		B	C	C	D	D	D	D	D	D
Approach Vol, veh/h	1084		1061				521		336			
Approach Delay, s/veh	17.4		28.3				42.5		46.0			
Approach LOS	B		C				D		D			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.6	21.8	13.2	56.3	12.3	18.1	13.5	56.1				
Change Period (Y+Rc), s	5.5	5.5	6.5	5.5	5.5	5.5	6.5	5.5				
Max Green Setting (Gmax), s	11.5	29.5	9.5	26.5	11.5	29.5	9.5	26.5				
Max Q Clear Time (g_c+I1), s	3.0	13.9	5.0	23.9	7.2	11.0	6.9	20.4				
Green Ext Time (p_c), s	0.0	2.1	0.1	1.3	0.1	1.6	0.1	3.2				
Intersection Summary												
HCM 6th Ctrl Delay	28.8											
HCM 6th LOS	C											

HCM 6th Signalized Intersection Summary

7: Shaver Rd (PB) & Fire Station Dr/S. Westnedge Ave (PB)

Portage Creek TIS
No Build 2024 AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔	↔	↔	↔↔		↔	↔↔	
Traffic Volume (veh/h)	2	0	3	6	4	243	4	316	32	232	284	7
Future Volume (veh/h)	2	0	3	6	4	243	4	316	32	232	284	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1411	1411	1411	1856	1856	1856	1841	1841	1841	1856	1856	1856
Adj Flow Rate, veh/h	3	0	4	8	5	333	4	340	34	286	351	9
Peak Hour Factor	0.75	0.75	0.75	0.73	0.73	0.73	0.93	0.93	0.93	0.81	0.81	0.81
Percent Heavy Veh, %	33	33	33	3	3	3	4	4	4	3	3	3
Cap, veh/h	263	0	261	279	160	377	587	1582	157	694	2068	53
Arrive On Green	0.24	0.00	0.24	0.24	0.24	0.24	0.01	0.49	0.49	0.10	0.59	0.59
Sat Flow, veh/h	769	0	1088	898	667	1572	1753	3213	319	1767	3512	90
Grp Volume(v), veh/h	3	0	4	13	0	333	4	184	190	286	176	184
Grp Sat Flow(s),veh/h/ln	769	0	1088	1565	0	1572	1753	1749	1783	1767	1763	1839
Q Serve(g_s), s	0.3	0.0	0.3	0.0	0.0	18.7	0.1	5.5	5.5	6.7	4.2	4.2
Cycle Q Clear(g_c), s	0.8	0.0	0.3	0.5	0.0	18.7	0.1	5.5	5.5	6.7	4.2	4.2
Prop In Lane	1.00		1.00	0.62		1.00	1.00		0.18	1.00		0.05
Lane Grp Cap(c), veh/h	263	0	261	439	0	377	587	861	878	694	1038	1083
V/C Ratio(X)	0.01	0.00	0.02	0.03	0.00	0.88	0.01	0.21	0.22	0.41	0.17	0.17
Avail Cap(c_a), veh/h	462	0	536	830	0	775	1054	861	878	995	1038	1083
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.9	0.0	26.5	26.6	0.0	33.5	11.5	13.1	13.2	8.4	8.6	8.6
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	6.9	0.0	0.6	0.6	0.4	0.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.1	0.2	0.0	7.7	0.0	2.1	2.2	2.3	1.5	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.9	0.0	26.5	26.6	0.0	40.4	11.5	13.7	13.7	8.8	8.9	8.9
LnGrp LOS	C	A	C	C	A	D	B	B	B	A	A	A
Approach Vol, veh/h												
7												
Approach Delay, s/veh												
26.7												
Approach LOS												
C												
D												
B												
A												
Timer - Assigned Phs	1	2	4		5	6	8					
Phs Duration (G+Y+Rc), s	14.5	50.0	26.9		5.7	58.8	26.9					
Change Period (Y+Rc), s	5.0	5.0	5.0		5.0	5.0	5.0					
Max Green Setting (Gmax), s	25.0	45.0	45.0		25.0	45.0	45.0					
Max Q Clear Time (g_c+1.7), s	19.7	7.5	20.7		2.1	6.2	2.8					
Green Ext Time (p_c), s	0.7	2.3	1.2		0.0	2.2	0.0					
Intersection Summary												
HCM 6th Ctrl Delay												
18.1												
HCM 6th LOS												
B												

HCM 6th Signalized Intersection Summary

8: S. Westnedge Ave (PB) & Centre Ave/Center Ave (PB)

Portage Creek TIS
No Build 2024 AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	714	129	113	525	53	176	155	171	109	118	4
Future Volume (veh/h)	13	714	129	113	525	53	176	155	171	109	118	4
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1856	1856	1856	1856	1856	1856	1841	1841	1841
Adj Flow Rate, veh/h	14	752	136	119	553	56	251	221	244	160	174	6
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.70	0.70	0.70	0.68	0.68	0.68
Percent Heavy Veh, %	2	2	2	3	3	3	3	3	3	4	4	4
Cap, veh/h	362	1037	188	255	1115	113	518	723	322	513	363	13
Arrive On Green	0.02	0.11	0.11	0.07	0.34	0.34	0.17	0.20	0.20	0.17	0.20	0.20
Sat Flow, veh/h	1781	3006	543	1767	3233	327	1767	3526	1572	1753	1769	61
Grp Volume(v), veh/h	14	444	444	119	301	308	251	221	244	160	0	180
Grp Sat Flow(s),veh/h/ln	1781	1777	1773	1767	1763	1797	1767	1763	1572	1753	0	1830
Q Serve(g_s), s	0.0	24.2	24.2	0.0	13.5	13.6	0.0	5.3	14.6	0.0	0.0	8.7
Cycle Q Clear(g_c), s	0.0	24.2	24.2	0.0	13.5	13.6	0.0	5.3	14.6	0.0	0.0	8.7
Prop In Lane	1.00		0.31	1.00		0.18	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	362	613	612	255	608	620	518	723	322	513	0	375
V/C Ratio(X)	0.04	0.73	0.73	0.47	0.49	0.50	0.48	0.31	0.76	0.31	0.00	0.48
Avail Cap(c_a), veh/h	393	613	612	286	608	620	518	723	322	513	0	375
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.9	39.7	39.7	40.7	25.9	25.9	30.9	33.7	37.4	27.7	0.0	35.0
Incr Delay (d2), s/veh	0.0	7.3	7.3	1.3	2.9	2.8	0.7	1.1	15.3	0.3	0.0	4.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	12.7	12.6	2.8	6.0	6.1	5.1	2.4	6.9	3.1	0.0	4.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.0	47.0	47.1	42.0	28.7	28.7	31.6	34.8	52.7	28.0	0.0	39.4
LnGrp LOS	C	D	D	D	C	C	C	C	D	C	A	D
Approach Vol, veh/h	902			728			716			340		
Approach Delay, s/veh	46.8			30.9			39.8			34.0		
Approach LOS	D			C			D			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.2	40.0	22.8	25.0	12.2	40.0	22.8	25.0				
Change Period (Y+Rc), s	5.5	5.5	5.5	4.5	5.5	5.5	5.5	4.5				
Max Green Setting (Gmax), s	34.5	34.5	15.5	20.5	8.5	34.5	15.5	20.5				
Max Q Clear Time (g_c+12, s)	26.2	26.2	2.0	16.6	2.0	15.6	2.0	10.7				
Green Ext Time (p_c), s	0.1	3.5	0.3	0.9	0.0	3.5	0.6	0.6				

Intersection Summary

HCM 6th Ctrl Delay	39.0
HCM 6th LOS	D

HCM Unsignalized Intersection Capacity Analysis

10: Shaver Rd/Shaver Rd (PB) & North Site Dr

Portage Creek TIS
No Build 2024 AM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2	8	352	293	0
Future Volume (Veh/h)	0	2	8	352	293	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2	9	383	318	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLT	TWLT	
Median storage veh)				2	2	
Upstream signal (ft)				684	282	
pX, platoon unblocked	0.98	0.98	0.98			
vC, conflicting volume	528	159	318			
vC1, stage 1 conf vol	318					
vC2, stage 2 conf vol	210					
vCu, unblocked vol	484	109	271			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	99			
cM capacity (veh/h)	660	908	1267			
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	2	9	192	192	212	106
Volume Left	0	9	0	0	0	0
Volume Right	2	0	0	0	0	0
cSH	908	1267	1700	1700	1700	1700
Volume to Capacity	0.00	0.01	0.11	0.11	0.12	0.06
Queue Length 95th (ft)	0	1	0	0	0	0
Control Delay (s)	9.0	7.9	0.0	0.0	0.0	0.0
Lane LOS	A	A				
Approach Delay (s)	9.0	0.2			0.0	
Approach LOS	A					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			19.7%		ICU Level of Service	
Analysis Period (min)			15		A	

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2	8	352	293	0
Future Vol, veh/h	0	2	8	352	293	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2	9	383	318	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	528	159	318	0	-	0
Stage 1	318	-	-	-	-	-
Stage 2	210	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	480	858	1239	-	-	-
Stage 1	710	-	-	-	-	-
Stage 2	805	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	477	858	1239	-	-	-
Mov Cap-2 Maneuver	558	-	-	-	-	-
Stage 1	705	-	-	-	-	-
Stage 2	805	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.2	0.2		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1239	-	858	-	-	
HCM Lane V/C Ratio	0.007	-	0.003	-	-	
HCM Control Delay (s)	7.9	-	9.2	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0	-	0	-	-	

HCM Unsignalized Intersection Capacity Analysis

13: Shaver Rd (PB)/Shaver Rd & Walgreens Dr

Portage Creek TIS
No Build 2024 AM Peak



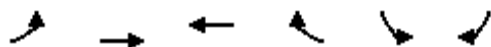
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations							
Traffic Volume (veh/h)	9	9	2	351	277	18	
Future Volume (Veh/h)	9	9	2	351	277	18	
Sign Control	Stop			Free	Free		
Grade	0%			0%	0%		
Peak Hour Factor	0.60	0.60	0.94	0.94	0.87	0.87	
Hourly flow rate (vph)	15	15	2	373	318	21	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type				TWLT	TWLT		
Median storage (veh)				2	2		
Upstream signal (ft)				308	658		
pX, platoon unblocked	0.98						
vC, conflicting volume	519	170	339				
vC1, stage 1 conf vol	328						
vC2, stage 2 conf vol	190						
vCu, unblocked vol	468	170	339				
tC, single (s)	6.8	6.9	4.2				
tC, 2 stage (s)	5.8						
tF (s)	3.5	3.3	2.2				
p0 queue free %	98	98	100				
cM capacity (veh/h)	661	851	1196				
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	15	15	2	186	186	212	127
Volume Left	15	0	2	0	0	0	0
Volume Right	0	15	0	0	0	0	21
cSH	661	851	1196	1700	1700	1700	1700
Volume to Capacity	0.02	0.02	0.00	0.11	0.11	0.12	0.07
Queue Length 95th (ft)	2	1	0	0	0	0	0
Control Delay (s)	10.6	9.3	8.0	0.0	0.0	0.0	0.0
Lane LOS	B	A	A				
Approach Delay (s)	9.9		0.0	0.0			
Approach LOS	A						
Intersection Summary							
Average Delay			0.4				
Intersection Capacity Utilization			19.7%		ICU Level of Service		A
Analysis Period (min)			15				

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	9	9	2	351	277	18
Future Vol, veh/h	9	9	2	351	277	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	75	0	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	60	60	94	94	87	87
Heavy Vehicles, %	0	0	5	5	5	5
Mvmt Flow	15	15	2	373	318	21
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	520	170	339	0	-	0
Stage 1	329	-	-	-	-	-
Stage 2	191	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.2	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.25	-	-	-
Pot Cap-1 Maneuver	491	851	1196	-	-	-
Stage 1	707	-	-	-	-	-
Stage 2	828	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	490	851	1196	-	-	-
Mov Cap-2 Maneuver	568	-	-	-	-	-
Stage 1	706	-	-	-	-	-
Stage 2	828	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.4	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1196	-	568	851	-	-
HCM Lane V/C Ratio	0.002	-	0.026	0.018	-	-
HCM Control Delay (s)	8	-	11.5	9.3	-	-
HCM Lane LOS	A	-	B	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	0.1	-	-

HCM Unsignalized Intersection Capacity Analysis

15: Centre Ave/Centre Ave (PB) & Site Dr

Portage Creek TIS
No Build 2024 AM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations		↑↑↑↑	↑↑		↑	↑		
Traffic Volume (veh/h)	13	933	800	13	2	14		
Future Volume (Veh/h)	13	933	800	13	2	14		
Sign Control		Free	Free		Stop			
Grade		0%	0%		0%			
Peak Hour Factor	1.00	1.00	0.77	0.77	0.70	0.70		
Hourly flow rate (vph)	13	933	1039	17	3	20		
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type		None	TWTLT					
Median storage veh			2					
Upstream signal (ft)			319					
pX, platoon unblocked	0.81				0.81	0.81		
vC, conflicting volume	1056				1307	528		
vC1, stage 1 conf vol					1048			
vC2, stage 2 conf vol					259			
vCu, unblocked vol	607				915	0		
tC, single (s)	4.1				6.9	7.0		
tC, 2 stage (s)					5.9			
tF (s)	2.2				3.6	3.4		
p0 queue free %	98				99	98		
cM capacity (veh/h)	786				378	868		
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	SB 1	SB 2
Volume Total	146	267	267	267	693	363	3	20
Volume Left	13	0	0	0	0	0	3	0
Volume Right	0	0	0	0	0	17	0	20
cSH	786	1700	1700	1700	1700	1700	378	868
Volume to Capacity	0.02	0.16	0.16	0.16	0.41	0.21	0.01	0.02
Queue Length 95th (ft)	1	0	0	0	0	0	1	2
Control Delay (s)	1.0	0.0	0.0	0.0	0.0	0.0	14.6	9.2
Lane LOS	A						B	A
Approach Delay (s)	0.2				0.0		9.9	
Approach LOS							A	
Intersection Summary								
Average Delay			0.2					
Intersection Capacity Utilization			32.5%		ICU Level of Service			A
Analysis Period (min)			15					

Intersection: 2: Shaver Rd (PB)/Shaver Rd (PB) & Centre Ave (PB)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	T	L	T	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	55	280	300	130	243	224	120	161	132	39	163	131
Average Queue (ft)	21	149	133	51	135	134	48	89	65	7	60	56
95th Queue (ft)	44	240	237	109	208	204	90	145	126	26	115	108
Link Distance (ft)	210	210	210		220	220		504	504		209	209
Upstream Blk Time (%)		2	2		1	0						
Queuing Penalty (veh)		6	5		4	2						
Storage Bay Dist (ft)				316			275			150		
Storage Blk Time (%)					1						1	
Queuing Penalty (veh)					1						0	

Intersection: 7: Shaver Rd (PB) & Fire Station Dr/S. Westnedge Ave (PB)

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	TR	LT	R	L	T	TR	L	T	TR
Maximum Queue (ft)	78	48	30	160	31	155	205	93	65	62
Average Queue (ft)	6	6	4	67	2	47	52	52	17	8
95th Queue (ft)	37	27	19	115	14	105	133	86	46	31
Link Distance (ft)	457	457	484	484		207	207	868	868	868
Upstream Blk Time (%)							0			
Queuing Penalty (veh)							0			
Storage Bay Dist (ft)					150					
Storage Blk Time (%)						0				
Queuing Penalty (veh)						0				

Intersection: 8: S. Westnedge Ave (PB) & Centre Ave/Center Ave (PB)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	T	R	L	TR
Maximum Queue (ft)	174	270	312	130	272	150	125	191	148	125	138	119
Average Queue (ft)	25	185	201	68	112	67	85	34	64	57	54	57
95th Queue (ft)	97	255	283	110	204	134	139	119	123	109	103	107
Link Distance (ft)		240	240		855	855		178	178		342	342
Upstream Blk Time (%)		1	2					1				
Queuing Penalty (veh)		6	11					0				
Storage Bay Dist (ft)	150			175			100			100		
Storage Blk Time (%)		12			1		13	0	1	1		
Queuing Penalty (veh)		2			2		10	0	3	1		

Intersection: 10: Shaver Rd/Shaver Rd (PB) & North Site Dr

Movement	EB	NB
Directions Served	LR	L
Maximum Queue (ft)	31	30
Average Queue (ft)	2	1
95th Queue (ft)	14	10
Link Distance (ft)	507	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		125
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 13: Shaver Rd (PB)/Shaver Rd & Walgreens Dr

Movement	EB	EB	NB
Directions Served	L	R	L
Maximum Queue (ft)	31	31	30
Average Queue (ft)	2	6	1
95th Queue (ft)	14	27	10
Link Distance (ft)		222	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	75		50
Storage Blk Time (%)			0
Queuing Penalty (veh)			0

Intersection: 15: Centre Ave/Centre Ave (PB) & Site Dr

Movement	EB	EB	SB	SB
Directions Served	LT	T	L	R
Maximum Queue (ft)	74	22	30	71
Average Queue (ft)	7	1	1	16
95th Queue (ft)	36	7	10	46
Link Distance (ft)	80	80		370
Upstream Blk Time (%)	0			
Queuing Penalty (veh)	0			
Storage Bay Dist (ft)			150	
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 51

HCM 6th Signalized Intersection Summary

2: Shaver Rd (PB)/Shaver Rd (PB) & Centre Ave (PB)

Portage Creek TIS
No Build 2024 PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	192	590	221	182	776	26	184	396	217	60	522	132
Future Volume (veh/h)	192	590	221	182	776	26	184	396	217	60	522	132
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	202	621	0	192	817	27	222	477	261	71	621	157
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.83	0.83	0.83	0.84	0.84	0.84
Percent Heavy Veh, %	3	3	3	1	1	1	1	1	1	1	1	1
Cap, veh/h	333	1518		445	1523	50	197	540	294	185	628	159
Arrive On Green	0.07	0.43	0.00	0.02	0.14	0.14	0.07	0.24	0.24	0.05	0.22	0.22
Sat Flow, veh/h	1767	3526	1572	1795	3538	117	1795	2239	1218	1795	2833	715
Grp Volume(v), veh/h	202	621	0	192	414	430	222	381	357	71	392	386
Grp Sat Flow(s),veh/h/ln	1767	1763	1572	1795	1791	1864	1795	1791	1666	1795	1791	1757
Q Serve(g_s), s	7.4	14.0	0.0	6.7	24.7	24.7	8.5	23.6	23.8	3.4	25.1	25.2
Cycle Q Clear(g_c), s	7.4	14.0	0.0	6.7	24.7	24.7	8.5	23.6	23.8	3.4	25.1	25.2
Prop In Lane	1.00		1.00	1.00		0.06	1.00		0.73	1.00		0.41
Lane Grp Cap(c), veh/h	333	1518		445	771	802	197	432	402	185	397	389
V/C Ratio(X)	0.61	0.41		0.43	0.54	0.54	1.13	0.88	0.89	0.38	0.99	0.99
Avail Cap(c_a), veh/h	333	1518		445	771	802	197	432	402	220	397	389
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.8	22.6	0.0	17.8	38.7	38.7	37.5	42.1	42.1	33.6	44.6	44.6
Incr Delay (d2), s/veh	3.1	0.8	0.0	0.7	2.7	2.6	101.9	18.9	20.9	1.3	41.8	42.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	5.9	0.0	3.0	12.4	12.9	7.0	12.5	11.9	1.5	15.5	15.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.9	23.5	0.0	18.5	41.3	41.2	139.4	60.9	63.0	34.9	86.4	87.6
LnGrp LOS	C	C		B	D	D	F	E	E	C	F	F
Approach Vol, veh/h	823			1036			960			849		
Approach Delay, s/veh	23.3			37.1			79.8			82.6		
Approach LOS	C			D			E			F		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.8	33.2	15.0	55.0	14.0	31.0	15.0	55.0				
Change Period (Y+Rc), s	5.5	5.5	6.5	5.5	5.5	5.5	6.5	5.5				
Max Green Setting (Gmax), s	8.5	25.5	8.5	49.5	8.5	25.5	8.5	49.5				
Max Q Clear Time (g_c+I1), s	5.4	25.8	9.4	26.7	10.5	27.2	8.7	16.0				
Green Ext Time (p_c), s	0.0	0.0	0.0	5.4	0.0	0.0	0.0	4.6				

Intersection Summary

HCM 6th Ctrl Delay 55.7
HCM 6th LOS E

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary

7: Shaver Rd (PB) & Fire Station Dr/S. Westnedge Ave (PB)

Portage Creek TIS
No Build 2024 PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	6	9	14	6	336	4	585	16	313	709	2
Future Volume (veh/h)	7	6	9	14	6	336	4	585	16	313	709	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	12	10	15	17	7	400	4	622	17	352	797	2
Peak Hour Factor	0.60	0.60	0.60	0.84	0.84	0.84	0.94	0.94	0.94	0.89	0.89	0.89
Percent Heavy Veh, %	0	0	0	0	0	0	1	1	1	1	1	1
Cap, veh/h	252	204	357	348	134	442	393	1598	44	564	2084	5
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.01	0.45	0.45	0.13	0.57	0.57
Sat Flow, veh/h	708	742	1300	1045	487	1610	1795	3561	97	1795	3665	9
Grp Volume(v), veh/h	20	0	17	24	0	400	4	313	326	352	389	410
Grp Sat Flow(s),veh/h/ln	1254	0	1495	1533	0	1610	1795	1791	1868	1795	1791	1884
Q Serve(g_s), s	0.0	0.0	0.8	0.1	0.0	24.1	0.1	11.7	11.7	9.9	12.0	12.0
Cycle Q Clear(g_c), s	0.8	0.0	0.8	1.0	0.0	24.1	0.1	11.7	11.7	9.9	12.0	12.0
Prop In Lane	0.61		0.87	0.71		1.00	1.00		0.05	1.00		0.00
Lane Grp Cap(c), veh/h	402	0	411	482	0	442	393	803	838	564	1018	1071
V/C Ratio(X)	0.05	0.00	0.04	0.05	0.00	0.90	0.01	0.39	0.39	0.62	0.38	0.38
Avail Cap(c_a), veh/h	615	0	671	747	0	722	827	803	838	783	1018	1071
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.7	0.0	26.7	26.7	0.0	35.1	14.9	18.5	18.5	11.9	11.9	11.9
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	9.5	0.0	1.4	1.4	1.1	1.1	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.3	0.4	0.0	10.5	0.0	5.0	5.2	3.7	4.7	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.7	0.0	26.7	26.8	0.0	44.6	14.9	19.9	19.8	13.0	13.0	13.0
LnGrp LOS	C	A	C	C	A	D	B	B	B	B	B	B
Approach Vol, veh/h	37					424		643		1151		
Approach Delay, s/veh	26.7					43.6		19.8		13.0		
Approach LOS	C					D		B		B		
Timer - Assigned Phs	1	2	4		5	6	8					
Phs Duration (G+Y+Rc), s	17.8	50.0	32.5		5.7	62.0	32.5					
Change Period (Y+Rc), s	5.0	5.0	5.0		5.0	5.0	5.0					
Max Green Setting (Gmax), s	25.0	45.0	45.0		25.0	45.0	45.0					
Max Q Clear Time (g_c+1), s	11.9	13.7	26.1		2.1	14.0	2.8					
Green Ext Time (p_c), s	0.9	4.1	1.5		0.0	5.4	0.2					

Intersection Summary

HCM 6th Ctrl Delay	20.9
HCM 6th LOS	C

HCM 6th Signalized Intersection Summary

8: S. Westnedge Ave (PB) & Centre Ave/Center Ave (PB)

Portage Creek TIS
No Build 2024 PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	716	138	160	779	114	119	145	122	117	161	17
Future Volume (veh/h)	27	716	138	160	779	114	119	145	122	117	161	17
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	28	754	145	168	820	120	138	169	142	143	196	21
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.86	0.86	0.86	0.82	0.82	0.82
Percent Heavy Veh, %	2	2	2	1	1	1	1	1	1	1	1	1
Cap, veh/h	258	1099	211	250	1159	170	511	701	313	574	327	35
Arrive On Green	0.02	0.12	0.12	0.06	0.37	0.37	0.19	0.20	0.20	0.19	0.20	0.20
Sat Flow, veh/h	1781	2973	572	1795	3135	459	1795	3582	1598	1795	1674	179
Grp Volume(v), veh/h	28	451	448	168	468	472	138	169	142	143	0	217
Grp Sat Flow(s),veh/h/ln	1781	1777	1767	1795	1791	1803	1795	1791	1598	1795	0	1853
Q Serve(g_s), s	0.0	27.9	28.0	1.1	25.7	25.7	0.0	4.6	9.0	0.0	0.0	12.3
Cycle Q Clear(g_c), s	0.0	27.9	28.0	1.1	25.7	25.7	0.0	4.6	9.0	0.0	0.0	12.3
Prop In Lane	1.00		0.32	1.00		0.25	1.00		1.00	1.00		0.10
Lane Grp Cap(c), veh/h	258	657	653	250	662	666	511	701	313	574	0	363
V/C Ratio(X)	0.11	0.69	0.69	0.67	0.71	0.71	0.27	0.24	0.45	0.25	0.00	0.60
Avail Cap(c_a), veh/h	421	657	653	415	662	666	511	701	313	574	0	363
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	39.7	44.1	44.1	47.4	30.9	30.9	33.7	39.0	40.8	28.2	0.0	42.1
Incr Delay (d2), s/veh	0.2	5.8	5.8	3.1	6.3	6.2	0.3	0.8	4.7	0.2	0.0	7.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	14.3	14.3	4.7	12.0	12.0	3.2	2.1	4.0	3.0	0.0	6.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.9	49.9	49.9	50.5	37.2	37.2	34.0	39.9	45.5	28.5	0.0	49.3
LnGrp LOS	D	D	D	D	D	D	C	D	D	C	A	D
Approach Vol, veh/h	927			1108			449			360		
Approach Delay, s/veh	49.6			39.2			39.8			41.0		
Approach LOS	D			D			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.5	48.0	27.5	27.0	12.5	48.0	27.5	27.0				
Change Period (Y+Rc), s	5.5	5.5	5.5	4.5	5.5	5.5	5.5	4.5				
Max Green Setting (Gmax), s	47.5	42.5	11.5	22.5	17.5	42.5	11.5	22.5				
Max Q Clear Time (g_c+1.1s), s	13.1	30.0	2.0	11.0	2.0	27.7	2.0	14.3				
Green Ext Time (p_c), s	0.4	4.6	0.2	1.1	0.0	5.2	0.2	0.7				

Intersection Summary

HCM 6th Ctrl Delay	42.9
HCM 6th LOS	D

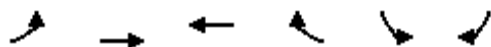
Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	5	21	605	730	2
Future Vol, veh/h	0	5	21	605	730	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	5	23	658	793	2
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1169	398	795	0	-	0
Stage 1	794	-	-	-	-	-
Stage 2	375	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	186	601	822	-	-	-
Stage 1	406	-	-	-	-	-
Stage 2	665	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	181	601	822	-	-	-
Mov Cap-2 Maneuver	301	-	-	-	-	-
Stage 1	395	-	-	-	-	-
Stage 2	665	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11	0.3		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	822	-	601	-	-	
HCM Lane V/C Ratio	0.028	-	0.009	-	-	
HCM Control Delay (s)	9.5	-	11	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0.1	-	0	-	-	

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	17	33	5	609	681	54
Future Vol, veh/h	17	33	5	609	681	54
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	75	0	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	93	93	81	81
Heavy Vehicles, %	2	2	0	0	1	1
Mvmt Flow	23	44	5	655	841	67
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1213	454	908	0	-	0
Stage 1	875	-	-	-	-	-
Stage 2	338	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.1	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.2	-	-	-
Pot Cap-1 Maneuver	174	553	758	-	-	-
Stage 1	368	-	-	-	-	-
Stage 2	694	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	173	553	758	-	-	-
Mov Cap-2 Maneuver	286	-	-	-	-	-
Stage 1	365	-	-	-	-	-
Stage 2	694	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	14.3	0.1		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	758	-	286	553	-	-
HCM Lane V/C Ratio	0.007	-	0.079	0.08	-	-
HCM Control Delay (s)	9.8	-	18.7	12.1	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	0.3	-	-

HCM Unsignalized Intersection Capacity Analysis

15: Centre Ave/Centre Ave (PB) & Site Dr

Portage Creek TIS
No Build 2024 PM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Traffic Volume (veh/h)	54	973	1075	17	30	51		
Future Volume (Veh/h)	54	973	1075	17	30	51		
Sign Control		Free	Free		Stop			
Grade		0%	0%		0%			
Peak Hour Factor	0.95	0.95	0.92	0.92	0.95	0.95		
Hourly flow rate (vph)	57	1024	1168	18	32	54		
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type	None		TWLTL					
Median storage veh)			2					
Upstream signal (ft)			319					
pX, platoon unblocked	0.82				0.82	0.82		
vC, conflicting volume	1186				1547	593		
vC1, stage 1 conf vol					1177			
vC2, stage 2 conf vol					370			
vCu, unblocked vol	792				1231	70		
tC, single (s)	4.1				6.8	6.9		
tC, 2 stage (s)					5.8			
tF (s)	2.2				3.5	3.3		
p0 queue free %	92				90	93		
cM capacity (veh/h)	677				308	806		
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	SB 1	SB 2
Volume Total	203	293	293	293	779	407	32	54
Volume Left	57	0	0	0	0	0	32	0
Volume Right	0	0	0	0	0	18	0	54
cSH	677	1700	1700	1700	1700	1700	308	806
Volume to Capacity	0.08	0.17	0.17	0.17	0.46	0.24	0.10	0.07
Queue Length 95th (ft)	7	0	0	0	0	0	9	5
Control Delay (s)	3.7	0.0	0.0	0.0	0.0	0.0	18.0	9.8
Lane LOS	A						C	A
Approach Delay (s)	0.7				0.0	12.9		
Approach LOS	B							
Intersection Summary								
Average Delay			0.8					
Intersection Capacity Utilization			58.5%	ICU Level of Service			B	
Analysis Period (min)			15					

Intersection: 2: Shaver Rd (PB)/Shaver Rd (PB) & Centre Ave (PB)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	T	L	T	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	247	292	269	220	293	293	300	538	519	174	290	292
Average Queue (ft)	103	132	120	133	232	229	229	258	244	60	175	174
95th Queue (ft)	181	196	192	233	308	301	331	543	496	162	296	289
Link Distance (ft)	210	210	210		220	220		504	504		209	209
Upstream Blk Time (%)	2	1	1	0	13	13		13	0		10	10
Queuing Penalty (veh)	4	3	2	0	64	66		0	0		41	43
Storage Bay Dist (ft)				316			275			150		
Storage Blk Time (%)				0	13		26	0		0	18	
Queuing Penalty (veh)				1	24		57	0		0	12	

Intersection: 7: Shaver Rd (PB) & Fire Station Dr/S. Westnedge Ave (PB)

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	TR	LT	R	L	T	TR	L	T	TR
Maximum Queue (ft)	50	49	51	206	32	204	223	172	152	122
Average Queue (ft)	9	12	16	94	4	95	106	83	57	38
95th Queue (ft)	34	37	43	169	22	177	203	146	116	84
Link Distance (ft)	457	457	484	484		207	207	868	868	868
Upstream Blk Time (%)						0	0			
Queuing Penalty (veh)						0	1			
Storage Bay Dist (ft)					150					
Storage Blk Time (%)						3				
Queuing Penalty (veh)						0				

Intersection: 8: S. Westnedge Ave (PB) & Centre Ave/Center Ave (PB)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	T	R	L	TR
Maximum Queue (ft)	174	305	312	200	282	239	121	105	204	125	180	186
Average Queue (ft)	37	192	207	129	172	131	73	18	82	60	73	95
95th Queue (ft)	106	292	296	214	282	236	122	67	158	121	132	169
Link Distance (ft)		240	240		855	855		178	178		342	342
Upstream Blk Time (%)		4	4						0			
Queuing Penalty (veh)		16	19						0			
Storage Bay Dist (ft)	150			175			100			100		
Storage Blk Time (%)	0	11		1	9		7	0	6	0		
Queuing Penalty (veh)	0	3		2	14		6	0	7	0		

Intersection: 10: Shaver Rd/Shaver Rd (PB) & North Site Dr

Movement	EB	NB
Directions Served	LR	L
Maximum Queue (ft)	30	31
Average Queue (ft)	2	7
95th Queue (ft)	14	28
Link Distance (ft)	507	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		125
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 13: Shaver Rd (PB)/Shaver Rd & Walgreens Dr

Movement	EB	EB	NB	SB	SB
Directions Served	L	R	L	T	TR
Maximum Queue (ft)	72	54	31	181	197
Average Queue (ft)	18	23	2	13	15
95th Queue (ft)	51	49	15	83	94
Link Distance (ft)		222		322	322
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	75		50		
Storage Blk Time (%)	1		0		
Queuing Penalty (veh)	1		0		

Intersection: 15: Centre Ave/Centre Ave (PB) & Site Dr

Movement	EB	WB	SB	SB
Directions Served	LT	T	L	R
Maximum Queue (ft)	93	33	70	53
Average Queue (ft)	28	1	25	27
95th Queue (ft)	74	11	60	49
Link Distance (ft)	80	210		370
Upstream Blk Time (%)	1			
Queuing Penalty (veh)	0			
Storage Bay Dist (ft)			150	
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 386

HCM 6th Signalized Intersection Summary

2: Shaver Rd (PB)/Shaver Rd (PB) & Centre Ave (PB)

Portage Creek TIS
Build Out 2024 _ Original AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	725	136	140	657	13	90	259	113	30	218	70
Future Volume (veh/h)	89	725	136	140	657	13	90	259	113	30	218	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1856	1856	1856	1826	1826	1826	1856	1856	1856
Adj Flow Rate, veh/h	120	980	0	187	876	17	105	301	131	35	256	82
Peak Hour Factor	0.74	0.74	0.74	0.75	0.75	0.75	0.86	0.86	0.86	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	3	3	3	5	5	5	3	3	3
Cap, veh/h	358	1737		366	1743	34	238	394	168	189	376	118
Arrive On Green	0.07	0.49	0.00	0.02	0.16	0.16	0.07	0.17	0.17	0.04	0.14	0.14
Sat Flow, veh/h	1781	3554	1585	1767	3537	69	1739	2371	1008	1767	2642	827
Grp Volume(v), veh/h	120	980	0	187	437	456	105	218	214	35	169	169
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1767	1763	1843	1739	1735	1644	1767	1763	1707
Q Serve(g_s), s	3.2	19.5	0.0	5.1	22.6	22.6	5.1	12.0	12.4	1.6	9.1	9.4
Cycle Q Clear(g_c), s	3.2	19.5	0.0	5.1	22.6	22.6	5.1	12.0	12.4	1.6	9.1	9.4
Prop In Lane	1.00		1.00	1.00		0.04	1.00		0.61	1.00		0.48
Lane Grp Cap(c), veh/h	358	1737		366	868	908	238	289	274	189	251	243
V/C Ratio(X)	0.33	0.56		0.51	0.50	0.50	0.44	0.76	0.78	0.19	0.67	0.70
Avail Cap(c_a), veh/h	407	1737		407	868	908	321	512	485	315	520	503
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.6	18.1	0.0	14.4	30.7	30.7	33.7	39.8	39.9	34.3	40.7	40.8
Incr Delay (d2), s/veh	0.5	1.3	0.0	1.1	2.1	2.0	1.3	4.0	4.8	0.5	3.1	3.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	7.8	0.0	2.1	11.1	11.6	2.2	5.3	5.3	0.7	4.1	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.2	19.4	0.0	15.5	32.8	32.7	35.0	43.8	44.8	34.8	43.8	44.4
LnGrp LOS	B	B		B	C	C	C	D	D	C	D	D
Approach Vol, veh/h	1100			1080			537			373		
Approach Delay, s/veh	18.8			29.7			42.5			43.3		
Approach LOS	B			C			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.9	22.1	13.3	54.8	12.3	19.7	13.6	54.4				
Change Period (Y+Rc), s	5.5	5.5	6.5	5.5	5.5	5.5	6.5	5.5				
Max Green Setting (Gmax), s	11.5	29.5	9.5	26.5	11.5	29.5	9.5	26.5				
Max Q Clear Time (g_c+I1), s	3.6	14.4	5.2	24.6	7.1	11.4	7.1	21.5				
Green Ext Time (p_c), s	0.0	2.2	0.1	1.0	0.1	1.8	0.1	2.8				
Intersection Summary												
HCM 6th Ctrl Delay	29.7											
HCM 6th LOS	C											

Portage Creek TIS
Build Out 2024 _ Original AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔	↔	↔	↔↔		↔	↔↔	
Traffic Volume (veh/h)	2	0	3	6	4	243	4	337	34	232	293	7
Future Volume (veh/h)	2	0	3	6	4	243	4	337	34	232	293	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1411	1411	1411	1856	1856	1856	1841	1841	1841	1856	1856	1856
Adj Flow Rate, veh/h	3	0	4	8	5	333	4	362	37	286	362	9
Peak Hour Factor	0.75	0.75	0.75	0.73	0.73	0.73	0.93	0.93	0.93	0.81	0.81	0.81
Percent Heavy Veh, %	33	33	33	3	3	3	4	4	4	3	3	3
Cap, veh/h	263	0	261	279	160	377	582	1579	160	680	2070	51
Arrive On Green	0.24	0.00	0.24	0.24	0.24	0.24	0.01	0.49	0.49	0.10	0.59	0.59
Sat Flow, veh/h	769	0	1088	898	667	1572	1753	3205	326	1767	3515	87
Grp Volume(v), veh/h	3	0	4	13	0	333	4	197	202	286	181	190
Grp Sat Flow(s),veh/h/ln	769	0	1088	1565	0	1572	1753	1749	1782	1767	1763	1840
Q Serve(g_s), s	0.3	0.0	0.3	0.0	0.0	18.7	0.1	5.9	5.9	6.7	4.3	4.3
Cycle Q Clear(g_c), s	0.8	0.0	0.3	0.5	0.0	18.7	0.1	5.9	5.9	6.7	4.3	4.3
Prop In Lane	1.00		1.00	0.62		1.00	1.00		0.18	1.00		0.05
Lane Grp Cap(c), veh/h	263	0	261	439	0	377	582	861	878	680	1038	1083
V/C Ratio(X)	0.01	0.00	0.02	0.03	0.00	0.88	0.01	0.23	0.23	0.42	0.17	0.18
Avail Cap(c_a), veh/h	462	0	536	830	0	775	1049	861	878	980	1038	1083
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.9	0.0	26.5	26.6	0.0	33.5	11.5	13.3	13.3	8.4	8.6	8.6
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	6.9	0.0	0.6	0.6	0.4	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.1	0.2	0.0	7.7	0.0	2.3	2.4	2.3	1.6	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.9	0.0	26.5	26.6	0.0	40.4	11.5	13.9	13.9	8.9	9.0	9.0
LnGrp LOS	C	A	C	C	A	D	B	B	B	A	A	A
Approach Vol, veh/h		7			346			403			657	
Approach Delay, s/veh		26.7			39.9			13.9			8.9	
Approach LOS		C			D			B			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.5	50.0		26.9	5.7	58.8		26.9				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	25.0	45.0		45.0	25.0	45.0		45.0				
Max Q Clear Time (g_c+1), s	19.7	7.9		20.7	2.1	6.3		2.8				
Green Ext Time (p_c), s	0.7	2.4		1.2	0.0	2.2		0.0				

HCM 6th Ctrl Delay	18.0
HCM 6th LOS	B

HCM 6th Signalized Intersection Summary

8: S. Westnedge Ave (PB) & Centre Ave/Center Ave (PB)

Portage Creek TIS
Build Out 2024 _ Original AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	744	129	113	528	53	177	155	171	109	118	4
Future Volume (veh/h)	13	744	129	113	528	53	177	155	171	109	118	4
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1856	1856	1856	1856	1856	1856	1841	1841	1841
Adj Flow Rate, veh/h	14	783	136	119	556	56	253	221	244	160	174	6
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.70	0.70	0.70	0.68	0.68	0.68
Percent Heavy Veh, %	2	2	2	3	3	3	3	3	3	4	4	4
Cap, veh/h	361	1044	181	248	1116	112	518	723	322	513	363	13
Arrive On Green	0.02	0.11	0.11	0.07	0.34	0.34	0.17	0.20	0.20	0.17	0.20	0.20
Sat Flow, veh/h	1781	3027	526	1767	3235	325	1767	3526	1572	1753	1769	61
Grp Volume(v), veh/h	14	460	459	119	302	310	253	221	244	160	0	180
Grp Sat Flow(s),veh/h/ln	1781	1777	1776	1767	1763	1797	1767	1763	1572	1753	0	1830
Q Serve(g_s), s	0.0	25.1	25.1	0.0	13.6	13.6	0.0	5.3	14.6	0.0	0.0	8.7
Cycle Q Clear(g_c), s	0.0	25.1	25.1	0.0	13.6	13.6	0.0	5.3	14.6	0.0	0.0	8.7
Prop In Lane	1.00		0.30	1.00		0.18	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	361	613	613	248	608	620	518	723	322	513	0	375
V/C Ratio(X)	0.04	0.75	0.75	0.48	0.50	0.50	0.49	0.31	0.76	0.31	0.00	0.48
Avail Cap(c_a), veh/h	392	613	613	279	608	620	518	723	322	513	0	375
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.0	40.1	40.1	41.2	25.9	25.9	30.9	33.7	37.4	27.7	0.0	35.0
Incr Delay (d2), s/veh	0.0	8.2	8.2	1.4	2.9	2.9	0.7	1.1	15.3	0.3	0.0	4.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	13.2	13.2	2.8	6.0	6.1	5.2	2.4	6.9	3.1	0.0	4.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.0	48.3	48.3	42.7	28.8	28.8	31.6	34.8	52.7	28.0	0.0	39.4
LnGrp LOS	C	D	D	D	C	C	C	C	D	C	A	D
Approach Vol, veh/h	933			731			718			340		
Approach Delay, s/veh	48.0			31.0			39.8			34.0		
Approach LOS	D			C			D			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.2	40.0	22.8	25.0	12.2	40.0	22.8	25.0				
Change Period (Y+Rc), s	5.5	5.5	5.5	4.5	5.5	5.5	5.5	4.5				
Max Green Setting (Gmax), s	34.5	34.5	15.5	20.5	8.5	34.5	15.5	20.5				
Max Q Clear Time (g_c+I), s	27.1	27.1	2.0	16.6	2.0	15.6	2.0	10.7				
Green Ext Time (p_c), s	0.1	3.3	0.3	0.9	0.0	3.5	0.6	0.6				

Intersection Summary

HCM 6th Ctrl Delay	39.5
HCM 6th LOS	D

Intersection							
Int Delay, s/veh	0.5						
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations							
Traffic Vol, veh/h	8	19	11	367	300	2	
Future Vol, veh/h	8	19	11	367	300	2	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Stop	Stop	Free	Free	Free	Free	
RT Channelized	-	None	-	None	-	None	
Storage Length	0	100	125	-	-	-	
Veh in Median Storage, #	0	-	-	0	0	-	
Grade, %	0	-	-	0	0	-	
Peak Hour Factor	92	92	92	92	92	92	
Heavy Vehicles, %	2	2	2	2	2	2	
Mvmt Flow	9	21	12	399	326	2	
Major/Minor	Minor2		Major1		Major2		
Conflicting Flow All	551	164	328	0	-	0	
Stage 1	327	-	-	-	-	-	
Stage 2	224	-	-	-	-	-	
Critical Hdwy	6.84	6.94	4.14	-	-	-	
Critical Hdwy Stg 1	5.84	-	-	-	-	-	
Critical Hdwy Stg 2	5.84	-	-	-	-	-	
Follow-up Hdwy	3.52	3.32	2.22	-	-	-	
Pot Cap-1 Maneuver	464	852	1228	-	-	-	
Stage 1	703	-	-	-	-	-	
Stage 2	792	-	-	-	-	-	
Platoon blocked, %				-	-	-	
Mov Cap-1 Maneuver	459	852	1228	-	-	-	
Mov Cap-2 Maneuver	545	-	-	-	-	-	
Stage 1	696	-	-	-	-	-	
Stage 2	792	-	-	-	-	-	
Approach	EB		NB		SB		
HCM Control Delay, s	10		0.2		0		
HCM LOS	B						
Minor Lane/Major Mvmt	NBL		NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1228		-	545	852	-	-
HCM Lane V/C Ratio	0.01		-	0.016	0.024	-	-
HCM Control Delay (s)	8		-	11.7	9.3	-	-
HCM Lane LOS	A		-	B	A	-	-
HCM 95th %tile Q(veh)	0		-	0	0.1	-	-

Intersection

Int Delay, s/veh 1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	24	22	7	354	296	23
Future Vol, veh/h	24	22	7	354	296	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	75	0	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	60	60	94	94	87	87
Heavy Vehicles, %	0	0	5	5	5	5
Mvmt Flow	40	37	7	377	340	26

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	556	183	366
Stage 1	353	-	-
Stage 2	203	-	-
Critical Hdwy	6.8	6.9	4.2
Critical Hdwy Stg 1	5.8	-	-
Critical Hdwy Stg 2	5.8	-	-
Follow-up Hdwy	3.5	3.3	2.25
Pot Cap-1 Maneuver	466	834	1168
Stage 1	688	-	-
Stage 2	817	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	463	834	1168
Mov Cap-2 Maneuver	547	-	-
Stage 1	684	-	-
Stage 2	817	-	-

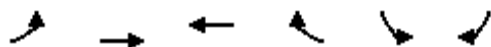
Approach	EB	NB	SB
HCM Control Delay, s	10.9	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1168	-	547	834	-	-
HCM Lane V/C Ratio	0.006	-	0.073	0.044	-	-
HCM Control Delay (s)	8.1	-	12.1	9.5	-	-
HCM Lane LOS	A	-	B	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	0.1	-	-

HCM Unsignalized Intersection Capacity Analysis

15: Centre Ave/Centre Ave (PB) & Site Dr

Portage Creek TIS
Build Out 2024 _ Original AM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR			
Lane Configurations									
Traffic Volume (veh/h)	19	933	800	17	17	27			
Future Volume (Veh/h)	19	933	800	17	17	27			
Sign Control		Free	Free		Stop				
Grade		0%	0%		0%				
Peak Hour Factor	1.00	1.00	0.77	0.77	0.70	0.70			
Hourly flow rate (vph)	19	933	1039	22	24	39			
Pedestrians									
Lane Width (ft)									
Walking Speed (ft/s)									
Percent Blockage									
Right turn flare (veh)									
Median type		None	TWLTL						
Median storage veh)			2						
Upstream signal (ft)			319						
pX, platoon unblocked	0.81				0.81	0.81			
vC, conflicting volume	1061				1321	530			
vC1, stage 1 conf vol					1050				
vC2, stage 2 conf vol					271				
vCu, unblocked vol	599				921	0			
tC, single (s)	4.1				6.9	7.0			
tC, 2 stage (s)					5.9				
tF (s)	2.2				3.6	3.4			
p0 queue free %	98				94	95			
cM capacity (veh/h)	786				379	863			
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	SB 1	SB 2	
Volume Total	152	267	267	267	693	368	24	39	
Volume Left	19	0	0	0	0	0	24	0	
Volume Right	0	0	0	0	0	22	0	39	
cSH	786	1700	1700	1700	1700	1700	379	863	
Volume to Capacity	0.02	0.16	0.16	0.16	0.41	0.22	0.06	0.05	
Queue Length 95th (ft)	2	0	0	0	0	0	5	4	
Control Delay (s)	1.4	0.0	0.0	0.0	0.0	0.0	15.1	9.4	
Lane LOS	A						C	A	
Approach Delay (s)	0.2				0.0		11.6		
Approach LOS							B		
Intersection Summary									
Average Delay			0.5						
Intersection Capacity Utilization			36.8%			ICU Level of Service			A
Analysis Period (min)			15						

Intersection: 2: Shaver Rd (PB)/Shaver Rd (PB) & Centre Ave (PB)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	T	L	T	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	119	235	240	219	293	248	148	227	155	39	140	115
Average Queue (ft)	32	148	138	51	142	141	43	100	71	13	62	58
95th Queue (ft)	79	231	211	119	242	232	93	172	153	33	120	114
Link Distance (ft)	210	210	210		220	220		504	504		209	209
Upstream Blk Time (%)		1	1	0	1	1						
Queuing Penalty (veh)		4	2	0	4	4						
Storage Bay Dist (ft)				316			275			150		
Storage Blk Time (%)				0	1						0	
Queuing Penalty (veh)				0	2						0	

Intersection: 7: Shaver Rd (PB) & Fire Station Dr/S. Westnedge Ave (PB)

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	LT	TR	LT	R	T	TR	L	T	TR
Maximum Queue (ft)	54	54	52	163	137	141	130	82	44
Average Queue (ft)	3	4	11	70	58	52	41	19	9
95th Queue (ft)	22	23	38	117	126	116	81	53	32
Link Distance (ft)	457	457	484	484	207	207	868	868	868
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)									
Storage Blk Time (%)					0				
Queuing Penalty (veh)					0				

Intersection: 8: S. Westnedge Ave (PB) & Centre Ave/Center Ave (PB)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	T	R	L	TR
Maximum Queue (ft)	71	312	312	123	154	138	124	175	180	125	138	145
Average Queue (ft)	14	214	216	54	88	54	84	52	71	60	61	64
95th Queue (ft)	45	319	318	104	147	118	128	144	137	111	114	133
Link Distance (ft)		240	240		855	855		178	178		342	342
Upstream Blk Time (%)		5	5					0	0			
Queuing Penalty (veh)		23	21					0	0			
Storage Bay Dist (ft)	150			175			100			100		
Storage Blk Time (%)		15					11	0	4	0		
Queuing Penalty (veh)		2					9	0	6	0		

Intersection: 10: Shaver Rd/Shaver Rd (PB) & North Site Dr

Movement	EB	EB	NB
Directions Served	L	R	L
Maximum Queue (ft)	31	30	30
Average Queue (ft)	6	10	2
95th Queue (ft)	25	34	14
Link Distance (ft)	507		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		100	125
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 13: Shaver Rd (PB)/Shaver Rd & Walgreens Dr

Movement	EB	EB	NB
Directions Served	L	R	L
Maximum Queue (ft)	50	55	25
Average Queue (ft)	18	15	1
95th Queue (ft)	45	45	8
Link Distance (ft)		222	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	75		50
Storage Blk Time (%)		0	
Queuing Penalty (veh)		0	

Intersection: 15: Centre Ave/Centre Ave (PB) & Site Dr

Movement	EB	SB	SB
Directions Served	LT	L	R
Maximum Queue (ft)	73	30	55
Average Queue (ft)	11	17	18
95th Queue (ft)	44	40	47
Link Distance (ft)	80		354
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)		150	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 76

HCM 6th Signalized Intersection Summary

2: Shaver Rd (PB)/Shaver Rd (PB) & Centre Ave (PB)

Portage Creek TIS
Build Out 2024 _ Original PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	194	595	223	182	788	27	187	416	217	67	535	132
Future Volume (veh/h)	194	595	223	182	788	27	187	416	217	67	535	132
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	204	626	0	192	829	28	225	501	261	80	637	157
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.83	0.83	0.83	0.84	0.84	0.84
Percent Heavy Veh, %	3	3	3	1	1	1	1	1	1	1	1	1
Cap, veh/h	329	1518		443	1522	51	195	546	283	181	632	155
Arrive On Green	0.07	0.43	0.00	0.02	0.14	0.14	0.07	0.24	0.24	0.06	0.22	0.22
Sat Flow, veh/h	1767	3526	1572	1795	3535	119	1795	2280	1183	1795	2849	701
Grp Volume(v), veh/h	204	626	0	192	420	437	225	393	369	80	400	394
Grp Sat Flow(s),veh/h/ln	1767	1763	1572	1795	1791	1864	1795	1791	1672	1795	1791	1759
Q Serve(g_s), s	7.4	14.1	0.0	6.7	25.1	25.1	8.5	24.6	24.8	3.9	25.5	25.5
Cycle Q Clear(g_c), s	7.4	14.1	0.0	6.7	25.1	25.1	8.5	24.6	24.8	3.9	25.5	25.5
Prop In Lane	1.00		1.00	1.00		0.06	1.00		0.71	1.00		0.40
Lane Grp Cap(c), veh/h	329	1518		443	771	802	195	429	401	181	397	390
V/C Ratio(X)	0.62	0.41		0.43	0.54	0.54	1.15	0.92	0.92	0.44	1.01	1.01
Avail Cap(c_a), veh/h	329	1518		443	771	802	195	429	401	213	397	390
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.0	22.7	0.0	17.8	38.9	38.9	37.3	42.6	42.7	33.9	44.8	44.8
Incr Delay (d2), s/veh	3.5	0.8	0.0	0.7	2.8	2.7	111.3	24.3	26.4	1.7	47.1	48.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	5.9	0.0	3.0	12.6	13.1	7.4	13.6	13.0	1.8	16.3	16.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.5	23.5	0.0	18.5	41.6	41.5	148.6	66.9	69.1	35.6	91.8	92.8
LnGrp LOS	C	C		B	D	D	F	E	E	D	F	F
Approach Vol, veh/h	830			1049			987			874		
Approach Delay, s/veh	23.5			37.3			86.3			87.1		
Approach LOS	C			D			F			F		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.0	33.0	15.0	55.0	14.0	31.0	15.0	55.0				
Change Period (Y+Rc), s	5.5	5.5	6.5	5.5	5.5	5.5	6.5	5.5				
Max Green Setting (Gmax), s	8.5	25.5	8.5	49.5	8.5	25.5	8.5	49.5				
Max Q Clear Time (g_c+I1), s	5.9	26.8	9.4	27.1	10.5	27.5	8.7	16.1				
Green Ext Time (p_c), s	0.0	0.0	0.0	5.4	0.0	0.0	0.0	4.6				

Intersection Summary

HCM 6th Ctrl Delay 58.8

HCM 6th LOS E

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary

7: Shaver Rd (PB) & Fire Station Dr/S. Westnedge Ave (PB)

Portage Creek TIS

Build Out 2024 _ Original PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔	↔	↔		↔	↔	
Traffic Volume (veh/h)	7	6	9	15	6	336	4	602	11	351	732	313
Future Volume (veh/h)	7	6	9	15	6	336	4	602	11	351	732	313
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	12	10	15	18	7	400	4	640	12	394	822	352
Peak Hour Factor	0.60	0.60	0.60	0.84	0.84	0.84	0.94	0.94	0.94	0.89	0.89	0.89
Percent Heavy Veh, %	0	0	0	0	0	0	1	1	1	1	1	1
Cap, veh/h	251	203	356	350	127	441	254	1577	30	573	1400	598
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.01	0.44	0.44	0.14	0.57	0.57
Sat Flow, veh/h	709	740	1299	1059	464	1610	1795	3597	67	1795	2445	1044
Grp Volume(v), veh/h	20	0	17	25	0	400	4	319	333	394	601	573
Grp Sat Flow(s),veh/h/ln	1253	0	1495	1523	0	1610	1795	1791	1873	1795	1791	1697
Q Serve(g_s), s	0.0	0.0	0.9	0.3	0.0	24.6	0.1	12.5	12.5	11.6	22.2	22.3
Cycle Q Clear(g_c), s	0.8	0.0	0.9	1.1	0.0	24.6	0.1	12.5	12.5	11.6	22.2	22.3
Prop In Lane	0.61		0.87	0.72		1.00	1.00		0.04	1.00		0.61
Lane Grp Cap(c), veh/h	400	0	410	478	0	441	254	785	821	573	1025	972
V/C Ratio(X)	0.05	0.00	0.04	0.05	0.00	0.91	0.02	0.41	0.41	0.69	0.59	0.59
Avail Cap(c_a), veh/h	601	0	656	727	0	706	678	785	821	757	1025	972
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.3	0.0	27.4	27.4	0.0	36.0	16.2	19.7	19.7	12.6	14.1	14.1
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.0	0.0	10.2	0.0	1.6	1.5	1.7	2.5	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.3	0.5	0.0	10.8	0.1	5.3	5.6	4.4	8.9	8.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.4	0.0	27.4	27.5	0.0	46.2	16.2	21.2	21.2	14.3	16.6	16.8
LnGrp LOS	C	A	C	C	A	D	B	C	C	B	B	B
Approach Vol, veh/h		37			425			656			1568	
Approach Delay, s/veh		27.4			45.1			21.2			16.1	
Approach LOS		C			D			C			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	19.5	50.0		33.1	5.8	63.8		33.1				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	25.0	45.0		45.0	25.0	45.0		45.0				
Max Q Clear Time (g_c+1.6	13.6	14.5		26.6	2.1	24.3		2.9				
Green Ext Time (p_c), s	1.0	4.2		1.5	0.0	8.2		0.2				
Intersection Summary												
HCM 6th Ctrl Delay			22.1									
HCM 6th LOS			C									

HCM 6th Signalized Intersection Summary

8: S. Westnedge Ave (PB) & Centre Ave/Center Ave (PB)

Portage Creek TIS
Build Out 2024 _ Original PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	728	138	160	790	114	122	145	121	117	161	17
Future Volume (veh/h)	27	728	138	160	790	114	122	145	121	117	161	17
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	28	766	145	168	832	120	142	169	141	143	196	21
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.86	0.86	0.86	0.82	0.82	0.82
Percent Heavy Veh, %	2	2	2	1	1	1	1	1	1	1	1	1
Cap, veh/h	254	1102	209	247	1161	167	511	701	313	575	327	35
Arrive On Green	0.02	0.12	0.12	0.06	0.37	0.37	0.19	0.20	0.20	0.19	0.20	0.20
Sat Flow, veh/h	1781	2981	564	1795	3141	453	1795	3582	1598	1795	1674	179
Grp Volume(v), veh/h	28	456	455	168	474	478	142	169	141	143	0	217
Grp Sat Flow(s),veh/h/ln	1781	1777	1769	1795	1791	1804	1795	1791	1598	1795	0	1853
Q Serve(g_s), s	0.0	28.3	28.4	1.4	26.1	26.1	0.0	4.6	9.0	0.0	0.0	12.3
Cycle Q Clear(g_c), s	0.0	28.3	28.4	1.4	26.1	26.1	0.0	4.6	9.0	0.0	0.0	12.3
Prop In Lane	1.00		0.32	1.00		0.25	1.00		1.00	1.00		0.10
Lane Grp Cap(c), veh/h	254	657	654	247	662	667	511	701	313	575	0	363
V/C Ratio(X)	0.11	0.70	0.70	0.68	0.72	0.72	0.28	0.24	0.45	0.25	0.00	0.60
Avail Cap(c_a), veh/h	418	657	654	412	662	667	511	701	313	575	0	363
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	40.1	44.3	44.3	47.6	31.1	31.1	33.8	39.0	40.8	28.2	0.0	42.1
Incr Delay (d2), s/veh	0.2	6.0	6.0	3.3	6.5	6.5	0.3	0.8	4.6	0.2	0.0	7.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	14.6	14.5	4.8	12.2	12.3	3.3	2.1	3.9	3.0	0.0	6.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.3	50.3	50.3	50.9	37.6	37.6	34.1	39.9	45.4	28.5	0.0	49.3
LnGrp LOS	D	D	D	D	D	D	C	D	D	C	A	D
Approach Vol, veh/h	939			1120			452			360		
Approach Delay, s/veh	50.0			39.6			39.8			41.0		
Approach LOS	D			D			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.5	48.0	27.5	27.0	12.5	48.0	27.5	27.0				
Change Period (Y+Rc), s	5.5	5.5	5.5	4.5	5.5	5.5	5.5	4.5				
Max Green Setting (Gmax), s	47.5	42.5	11.5	22.5	17.5	42.5	11.5	22.5				
Max Q Clear Time (g_c+I), s	13.4	30.4	2.0	11.0	2.0	28.1	2.0	14.3				
Green Ext Time (p_c), s	0.4	4.5	0.2	1.1	0.0	5.2	0.2	0.7				

Intersection Summary

HCM 6th Ctrl Delay	43.2											
HCM 6th LOS	D											

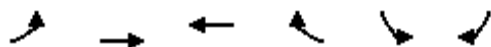
Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	16	30	613	745	11
Future Vol, veh/h	4	16	30	613	745	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	100	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	17	33	666	810	12
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1215	411	822	0	-	0
Stage 1	816	-	-	-	-	-
Stage 2	399	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	174	590	803	-	-	-
Stage 1	395	-	-	-	-	-
Stage 2	647	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	167	590	803	-	-	-
Mov Cap-2 Maneuver	287	-	-	-	-	-
Stage 1	379	-	-	-	-	-
Stage 2	647	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	12.6	0.5		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	803	-	287	590	-	-
HCM Lane V/C Ratio	0.041	-	0.015	0.029	-	-
HCM Control Delay (s)	9.7	-	17.7	11.3	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0	0.1	-	-

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	25	43	19	618	691	70
Future Vol, veh/h	25	43	19	618	691	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	75	0	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	93	93	81	81
Heavy Vehicles, %	2	2	0	0	1	1
Mvmt Flow	33	57	20	665	853	86
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1269	470	939	0	-	0
Stage 1	896	-	-	-	-	-
Stage 2	373	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.1	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.2	-	-	-
Pot Cap-1 Maneuver	160	540	738	-	-	-
Stage 1	359	-	-	-	-	-
Stage 2	666	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	156	540	738	-	-	-
Mov Cap-2 Maneuver	270	-	-	-	-	-
Stage 1	349	-	-	-	-	-
Stage 2	666	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	15.3	0.3	0			
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	738	-	270	540	-	-
HCM Lane V/C Ratio	0.028	-	0.123	0.106	-	-
HCM Control Delay (s)	10	-	20.2	12.5	-	-
HCM Lane LOS	B	-	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	0.4	-	-

HCM Unsignalized Intersection Capacity Analysis

15: Centre Ave/Centre Ave (PB) & Site Dr

Portage Creek TIS
Build Out 2024 _ Original PM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Traffic Volume (veh/h)	69	973	1075	32	39	59		
Future Volume (Veh/h)	69	973	1075	32	39	59		
Sign Control		Free	Free		Stop			
Grade		0%	0%		0%			
Peak Hour Factor	0.95	0.95	0.92	0.92	0.95	0.95		
Hourly flow rate (vph)	73	1024	1168	35	41	62		
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type		None	TWTLT					
Median storage veh			2					
Upstream signal (ft)			319					
pX, platoon unblocked	0.82				0.82	0.82		
vC, conflicting volume	1203				1588	602		
vC1, stage 1 conf vol					1186			
vC2, stage 2 conf vol					402			
vCu, unblocked vol	802				1273	67		
tC, single (s)	4.1				6.8	6.9		
tC, 2 stage (s)					5.8			
tF (s)	2.2				3.5	3.3		
p0 queue free %	89				86	92		
cM capacity (veh/h)	668				301	806		
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	SB 1	SB 2
Volume Total	219	293	293	293	779	424	41	62
Volume Left	73	0	0	0	0	0	41	0
Volume Right	0	0	0	0	0	35	0	62
cSH	668	1700	1700	1700	1700	1700	301	806
Volume to Capacity	0.11	0.17	0.17	0.17	0.46	0.25	0.14	0.08
Queue Length 95th (ft)	9	0	0	0	0	0	12	6
Control Delay (s)	4.6	0.0	0.0	0.0	0.0	0.0	18.8	9.8
Lane LOS	A						C	A
Approach Delay (s)	0.9				0.0		13.4	
Approach LOS							B	
Intersection Summary								
Average Delay			1.0					
Intersection Capacity Utilization			59.2%		ICU Level of Service			B
Analysis Period (min)			15					

Intersection: 2: Shaver Rd (PB)/Shaver Rd (PB) & Centre Ave (PB)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	T	L	T	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	210	231	208	220	293	330	276	234	343	174	291	292
Average Queue (ft)	94	130	107	130	233	237	129	140	140	52	172	179
95th Queue (ft)	174	193	167	239	312	312	243	220	266	142	271	274
Link Distance (ft)	210	210	210		220	220		504	504		209	209
Upstream Blk Time (%)	1	0	0	0	13	17					4	7
Queuing Penalty (veh)	1	1	0	0	65	85					16	31
Storage Bay Dist (ft)				316			275			150		
Storage Blk Time (%)				0	13		1			0	17	
Queuing Penalty (veh)				1	24		1			1	12	

Intersection: 7: Shaver Rd (PB) & Fire Station Dr/S. Westnedge Ave (PB)

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	TR	LT	R	L	T	TR	L	T	TR
Maximum Queue (ft)	52	30	50	138	31	181	188	344	153	153
Average Queue (ft)	6	12	12	88	4	90	85	96	55	65
95th Queue (ft)	26	34	38	134	22	160	166	193	110	124
Link Distance (ft)	457	457	484	484		207	207	868	868	868
Upstream Blk Time (%)							0			
Queuing Penalty (veh)							0			
Storage Bay Dist (ft)					150					
Storage Blk Time (%)						1				
Queuing Penalty (veh)						0				

Intersection: 8: S. Westnedge Ave (PB) & Centre Ave/Center Ave (PB)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	T	R	L	TR
Maximum Queue (ft)	174	312	310	200	411	330	112	82	117	115	156	259
Average Queue (ft)	32	194	198	87	170	144	67	17	59	50	81	101
95th Queue (ft)	116	284	274	161	299	259	109	55	100	94	127	201
Link Distance (ft)		240	240		855	855		178	178		342	342
Upstream Blk Time (%)		3	2									
Queuing Penalty (veh)		13	11									
Storage Bay Dist (ft)	150			175			100			100		
Storage Blk Time (%)		11			8		4	0	3	1		
Queuing Penalty (veh)		3			12		3	0	4	1		

Intersection: 10: Shaver Rd/Shaver Rd (PB) & North Site Dr

Movement	EB	EB	NB
Directions Served	L	R	L
Maximum Queue (ft)	31	30	76
Average Queue (ft)	1	9	10
95th Queue (ft)	10	32	39
Link Distance (ft)	507		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		100	125
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 13: Shaver Rd (PB)/Shaver Rd & Walgreens Dr

Movement	EB	EB	NB	SB	SB
Directions Served	L	R	L	T	TR
Maximum Queue (ft)	53	74	31	116	130
Average Queue (ft)	20	28	6	7	13
95th Queue (ft)	48	56	27	49	71
Link Distance (ft)		222		310	310
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	75		50		
Storage Blk Time (%)		1	0		
Queuing Penalty (veh)		0	0		

Intersection: 15: Centre Ave/Centre Ave (PB) & Site Dr

Movement	EB	SB	SB
Directions Served	LT	L	R
Maximum Queue (ft)	114	164	78
Average Queue (ft)	38	47	32
95th Queue (ft)	91	128	53
Link Distance (ft)	80		354
Upstream Blk Time (%)	2		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)		150	
Storage Blk Time (%)		6	
Queuing Penalty (veh)		4	

Zone Summary

Zone wide Queuing Penalty: 287

HCM 6th TWSC
10: Shaver Rd/Shaver Rd (PB) & North Site Dr

Portage Creek TIS
Build Out 2024 _ Scenario #1 AM Peak

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	25	9	11	352	300	2
Future Vol, veh/h	25	9	11	352	300	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	100	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	27	10	12	383	326	2

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	543	164	328
Stage 1	327	-	-
Stage 2	216	-	-
Critical Hdwy	6.84	6.94	4.14
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.32	2.22
Pot Cap-1 Maneuver	470	852	1228
Stage 1	703	-	-
Stage 2	799	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	465	852	1228
Mov Cap-2 Maneuver	549	-	-
Stage 1	696	-	-
Stage 2	799	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.2	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1228	-	549	852	-	-
HCM Lane V/C Ratio	0.01	-	0.049	0.011	-	-
HCM Control Delay (s)	8	-	11.9	9.3	-	-
HCM Lane LOS	A	-	B	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	0	-	-

HCM 6th TWSC
10: Shaver Rd/Shaver Rd (PB) & North Site Dr

Portage Creek TIS
Build Out 2024 _ Scenario #1 PM Peak

Intersection							
Int Delay, s/veh	0.5						
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations							
Traffic Vol, veh/h	14	11	30	605	745	11	
Future Vol, veh/h	14	11	30	605	745	11	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Stop	Stop	Free	Free	Free	Free	
RT Channelized	-	None	-	None	-	None	
Storage Length	0	100	125	-	-	-	
Veh in Median Storage, #	0	-	-	0	0	-	
Grade, %	0	-	-	0	0	-	
Peak Hour Factor	92	92	92	92	92	92	
Heavy Vehicles, %	2	2	2	2	2	2	
Mvmt Flow	15	12	33	658	810	12	
Major/Minor	Minor2		Major1		Major2		
Conflicting Flow All	1211	411	822	0	-	0	
Stage 1	816	-	-	-	-	-	
Stage 2	395	-	-	-	-	-	
Critical Hdwy	6.84	6.94	4.14	-	-	-	
Critical Hdwy Stg 1	5.84	-	-	-	-	-	
Critical Hdwy Stg 2	5.84	-	-	-	-	-	
Follow-up Hdwy	3.52	3.32	2.22	-	-	-	
Pot Cap-1 Maneuver	175	590	803	-	-	-	
Stage 1	395	-	-	-	-	-	
Stage 2	650	-	-	-	-	-	
Platoon blocked, %				-	-	-	
Mov Cap-1 Maneuver	168	590	803	-	-	-	
Mov Cap-2 Maneuver	287	-	-	-	-	-	
Stage 1	379	-	-	-	-	-	
Stage 2	650	-	-	-	-	-	
Approach	EB		NB		SB		
HCM Control Delay, s	15.1		0.5		0		
HCM LOS	C						
Minor Lane/Major Mvmt	NBL		NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	803		-	287	590	-	-
HCM Lane V/C Ratio	0.041		-	0.053	0.02	-	-
HCM Control Delay (s)	9.7		-	18.2	11.2	-	-
HCM Lane LOS	A		-	C	B	-	-
HCM 95th %tile Q(veh)	0.1		-	0.2	0.1	-	-

Intersection: 10: Shaver Rd/Shaver Rd (PB) & North Site Dr

Movement	EB	EB	NB
Directions Served	L	R	L
Maximum Queue (ft)	52	52	29
Average Queue (ft)	19	12	3
95th Queue (ft)	45	38	17
Link Distance (ft)	507		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		100	125
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 10: Shaver Rd/Shaver Rd (PB) & North Site Dr

Movement	EB	EB	NB
Directions Served	L	R	L
Maximum Queue (ft)	31	30	31
Average Queue (ft)	10	9	6
95th Queue (ft)	33	30	26
Link Distance (ft)	507		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		100	125
Storage Blk Time (%)			
Queuing Penalty (veh)			

HCM 6th TWSC
10: Shaver Rd/Shaver Rd (PB) & North Site Dr

Portage Creek TIS
Build Out 2024 _ Scenario #2 AM Peak

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	35	19	11	350	300	2
Future Vol, veh/h	35	19	11	350	300	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	100	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	38	21	12	380	326	2
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	541	164	328	0	-	0
Stage 1	327	-	-	-	-	-
Stage 2	214	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	471	852	1228	-	-	-
Stage 1	703	-	-	-	-	-
Stage 2	801	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	466	852	1228	-	-	-
Mov Cap-2 Maneuver	550	-	-	-	-	-
Stage 1	696	-	-	-	-	-
Stage 2	801	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11.1	0.2		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1228	-	550	852	-	-
HCM Lane V/C Ratio	0.01	-	0.069	0.024	-	-
HCM Control Delay (s)	8	-	12	9.3	-	-
HCM Lane LOS	A	-	B	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	0.1	-	-

HCM 6th TWSC
10: Shaver Rd/Shaver Rd (PB) & North Site Dr

Portage Creek TIS
Build Out 2024 _ Scenario #2 PM Peak

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	19	16	30	603	745	11
Future Vol, veh/h	19	16	30	603	745	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	100	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	21	17	33	655	810	12
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1210	411	822	0	-	0
Stage 1	816	-	-	-	-	-
Stage 2	394	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	175	590	803	-	-	-
Stage 1	395	-	-	-	-	-
Stage 2	650	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	168	590	803	-	-	-
Mov Cap-2 Maneuver	287	-	-	-	-	-
Stage 1	379	-	-	-	-	-
Stage 2	650	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	15.2	0.5		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	803	-	287	590	-	-
HCM Lane V/C Ratio	0.041	-	0.072	0.029	-	-
HCM Control Delay (s)	9.7	-	18.5	11.3	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	0.1	-	-

Intersection: 10: Shaver Rd/Shaver Rd (PB) & North Site Dr

Movement	EB	EB	NB
Directions Served	L	R	L
Maximum Queue (ft)	53	30	31
Average Queue (ft)	26	17	2
95th Queue (ft)	52	41	15
Link Distance (ft)	507		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		100	125
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 10: Shaver Rd/Shaver Rd (PB) & North Site Dr

Movement	EB	EB	NB
Directions Served	L	R	L
Maximum Queue (ft)	72	52	53
Average Queue (ft)	18	18	15
95th Queue (ft)	48	44	43
Link Distance (ft)	507		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		100	125
Storage Blk Time (%)			
Queuing Penalty (veh)			

HCM 6th Signalized Intersection Summary

2: Shaver Rd (PB)/Shaver Rd (PB) & Centre Ave (PB)

02/06/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	192	590	221	182	788	27	187	416	217	67	537	132
Future Volume (veh/h)	192	590	221	182	788	27	187	416	217	67	537	132
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	202	621	0	192	829	28	225	501	261	80	639	157
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.83	0.83	0.83	0.84	0.84	0.84
Percent Heavy Veh, %	3	3	3	1	1	1	1	1	1	1	1	1
Cap, veh/h	302	1458		413	1462	49	223	604	313	204	680	167
Arrive On Green	0.07	0.41	0.00	0.02	0.14	0.14	0.08	0.26	0.26	0.06	0.24	0.24
Sat Flow, veh/h	1767	3526	1572	1795	3535	119	1795	2280	1183	1795	2851	699
Grp Volume(v), veh/h	202	621	0	192	420	437	225	393	369	80	401	395
Grp Sat Flow(s),veh/h/ln	1767	1763	1572	1795	1791	1864	1795	1791	1672	1795	1791	1759
Q Serve(g_s), s	7.5	14.4	0.0	7.0	25.2	25.2	9.5	23.8	23.9	3.8	25.3	25.3
Cycle Q Clear(g_c), s	7.5	14.4	0.0	7.0	25.2	25.2	9.5	23.8	23.9	3.8	25.3	25.3
Prop In Lane	1.00		1.00	1.00		0.06	1.00		0.71	1.00		0.40
Lane Grp Cap(c), veh/h	302	1458		413	741	771	223	475	443	204	427	420
V/C Ratio(X)	0.67	0.43		0.46	0.57	0.57	1.01	0.83	0.83	0.39	0.94	0.94
Avail Cap(c_a), veh/h	302	1458		413	741	771	223	475	443	251	428	421
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.3	24.0	0.0	19.5	40.0	40.0	36.1	39.8	39.9	32.1	43.0	43.0
Incr Delay (d2), s/veh	5.6	0.9	0.0	0.8	3.1	3.0	62.1	11.6	12.8	1.2	28.6	29.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	6.1	0.0	3.1	12.7	13.2	8.6	11.8	11.2	1.7	14.4	14.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.8	24.9	0.0	20.3	43.1	43.0	98.2	51.4	52.6	33.3	71.6	72.4
LnGrp LOS	C	C		C	D	D	F	D	D	C	E	E
Approach Vol, veh/h	823				1049				987			
Approach Delay, s/veh	25.6				38.9				62.5			
Approach LOS	C				D				E			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.0	36.0	14.0	53.1	15.0	32.9	14.0	53.1				
Change Period (Y+Rc), s	5.5	5.5	6.5	5.5	5.5	5.5	6.5	5.5				
Max Green Setting (Gmax), s	9.5	27.5	7.5	47.5	9.5	27.5	7.5	47.5				
Max Q Clear Time (g_c+I1), s	5.8	25.9	9.5	27.2	11.5	27.3	9.0	16.4				
Green Ext Time (p_c), s	0.0	0.8	0.0	5.3	0.0	0.1	0.0	4.5				

Intersection Summary

HCM 6th Ctrl Delay 49.2

HCM 6th LOS D

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary

7: Shaver Rd (PB) & Fire Station Dr/S. Westnedge Ave (PB)

02/06/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔	↔	↔	↔↔		↔	↔↔	
Traffic Volume (veh/h)	7	6	9	15	6	336	4	602	11	351	732	313
Future Volume (veh/h)	7	6	9	15	6	336	4	602	11	351	732	313
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	12	10	15	18	7	400	4	640	12	394	822	352
Peak Hour Factor	0.60	0.60	0.60	0.84	0.84	0.84	0.94	0.94	0.94	0.89	0.89	0.89
Percent Heavy Veh, %	0	0	0	0	0	0	1	1	1	1	1	1
Cap, veh/h	251	203	356	350	127	441	254	1577	30	573	1400	598
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.01	0.44	0.44	0.14	0.57	0.57
Sat Flow, veh/h	709	740	1299	1059	464	1610	1795	3597	67	1795	2445	1044
Grp Volume(v), veh/h	20	0	17	25	0	400	4	319	333	394	601	573
Grp Sat Flow(s),veh/h/ln	1253	0	1495	1523	0	1610	1795	1791	1873	1795	1791	1697
Q Serve(g_s), s	0.0	0.0	0.9	0.3	0.0	24.6	0.1	12.5	12.5	11.6	22.2	22.3
Cycle Q Clear(g_c), s	0.8	0.0	0.9	1.1	0.0	24.6	0.1	12.5	12.5	11.6	22.2	22.3
Prop In Lane	0.61		0.87	0.72		1.00	1.00		0.04	1.00		0.61
Lane Grp Cap(c), veh/h	400	0	410	478	0	441	254	785	821	573	1025	972
V/C Ratio(X)	0.05	0.00	0.04	0.05	0.00	0.91	0.02	0.41	0.41	0.69	0.59	0.59
Avail Cap(c_a), veh/h	601	0	656	727	0	706	678	785	821	757	1025	972
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.3	0.0	27.4	27.4	0.0	36.0	16.2	19.7	19.7	12.6	14.1	14.1
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.0	0.0	10.2	0.0	1.6	1.5	1.7	2.5	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.3	0.5	0.0	10.8	0.1	5.3	5.6	4.4	8.9	8.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.4	0.0	27.4	27.5	0.0	46.2	16.2	21.2	21.2	14.3	16.6	16.8
LnGrp LOS	C	A	C	C	A	D	B	C	C	B	B	B
Approach Vol, veh/h	37		425			656			1568			
Approach Delay, s/veh	27.4		45.1			21.2			16.1			
Approach LOS	C		D			C			B			
Timer - Assigned Phs	1	2	4		5	6	8					
Phs Duration (G+Y+Rc), s	19.5	50.0	33.1		5.8	63.8	33.1					
Change Period (Y+Rc), s	5.0	5.0	5.0		5.0	5.0	5.0					
Max Green Setting (Gmax), s	25.0	45.0	45.0		25.0	45.0	45.0					
Max Q Clear Time (g_c+1.6), s	13.6	14.5	26.6		2.1	24.3	2.9					
Green Ext Time (p_c), s	1.0	4.2	1.5		0.0	8.2	0.2					
Intersection Summary												
HCM 6th Ctrl Delay			22.1									
HCM 6th LOS			C									

HCM 6th Signalized Intersection Summary 8: S. Westnedge Ave (PB) & Centre Ave/Center Ave (PB)

02/06/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	723	138	160	790	114	122	145	121	117	161	17
Future Volume (veh/h)	27	723	138	160	790	114	122	145	121	117	161	17
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	28	761	145	168	832	120	142	169	141	143	196	21
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.86	0.86	0.86	0.82	0.82	0.82
Percent Heavy Veh, %	2	2	2	1	1	1	1	1	1	1	1	1
Cap, veh/h	254	1100	210	249	1161	167	511	701	313	575	327	35
Arrive On Green	0.02	0.12	0.12	0.06	0.37	0.37	0.19	0.20	0.20	0.19	0.20	0.20
Sat Flow, veh/h	1781	2978	567	1795	3141	453	1795	3582	1598	1795	1674	179
Grp Volume(v), veh/h	28	454	452	168	474	478	142	169	141	143	0	217
Grp Sat Flow(s),veh/h/ln	1781	1777	1768	1795	1791	1804	1795	1791	1598	1795	0	1853
Q Serve(g_s), s	0.0	28.2	28.2	1.3	26.1	26.1	0.0	4.6	9.0	0.0	0.0	12.3
Cycle Q Clear(g_c), s	0.0	28.2	28.2	1.3	26.1	26.1	0.0	4.6	9.0	0.0	0.0	12.3
Prop In Lane	1.00		0.32	1.00		0.25	1.00		1.00	1.00		0.10
Lane Grp Cap(c), veh/h	254	657	653	249	662	667	511	701	313	575	0	363
V/C Ratio(X)	0.11	0.69	0.69	0.68	0.72	0.72	0.28	0.24	0.45	0.25	0.00	0.60
Avail Cap(c_a), veh/h	418	657	653	413	662	667	511	701	313	575	0	363
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	40.1	44.2	44.2	47.5	31.1	31.1	33.8	39.0	40.8	28.2	0.0	42.1
Incr Delay (d2), s/veh	0.2	5.9	5.9	3.2	6.5	6.5	0.3	0.8	4.6	0.2	0.0	7.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	14.5	14.4	4.7	12.2	12.3	3.3	2.1	3.9	3.0	0.0	6.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.3	50.1	50.1	50.7	37.6	37.6	34.1	39.9	45.4	28.5	0.0	49.3
LnGrp LOS	D	D	D	D	D	D	C	D	D	C	A	D
Approach Vol, veh/h	934			1120			452			360		
Approach Delay, s/veh	49.8			39.6			39.8			41.0		
Approach LOS	D			D			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	42.5	48.0	27.5	27.0	12.5	48.0	27.5	27.0				
Change Period (Y+Rc), s	5.5	5.5	5.5	4.5	5.5	5.5	5.5	4.5				
Max Green Setting (Gmax), s	47.5	42.5	11.5	22.5	17.5	42.5	11.5	22.5				
Max Q Clear Time (g_c+1.3), s	13.3	30.2	2.0	11.0	2.0	28.1	2.0	14.3				
Green Ext Time (p_c), s	0.4	4.5	0.2	1.1	0.0	5.2	0.2	0.7				

Intersection Summary

HCM 6th Ctrl Delay	43.1
HCM 6th LOS	D

Intersection

Int Delay, s/veh 0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	16	30	611	745	11
Future Vol, veh/h	6	16	30	611	745	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	100	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	17	33	664	810	12

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1214	411	822
Stage 1	816	-	-
Stage 2	398	-	-
Critical Hdwy	6.84	6.94	4.14
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.32	2.22
Pot Cap-1 Maneuver	174	590	803
Stage 1	395	-	-
Stage 2	647	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	167	590	803
Mov Cap-2 Maneuver	287	-	-
Stage 1	379	-	-
Stage 2	647	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.1	0.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	803	-	287	590	-	-
HCM Lane V/C Ratio	0.041	-	0.023	0.029	-	-
HCM Control Delay (s)	9.7	-	17.8	11.3	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	0.1	-	-

HCM 6th TWSC
13: Shaver Rd (PB)/Shaver Rd & Walgreens Dr

02/06/2023

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	25	45	19	616	691	70
Future Vol, veh/h	25	45	19	616	691	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	75	0	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	93	93	81	81
Heavy Vehicles, %	2	2	0	0	1	1
Mvmt Flow	33	60	20	662	853	86

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1267	470	939	0	-	0
Stage 1	896	-	-	-	-	-
Stage 2	371	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.1	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.2	-	-	-
Pot Cap-1 Maneuver	161	540	738	-	-	-
Stage 1	359	-	-	-	-	-
Stage 2	668	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	157	540	738	-	-	-
Mov Cap-2 Maneuver	271	-	-	-	-	-
Stage 1	349	-	-	-	-	-
Stage 2	668	-	-	-	-	-

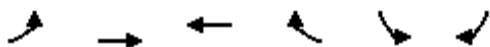
Approach	EB	NB	SB
HCM Control Delay, s	15.2	0.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	738	-	271	540	-	-
HCM Lane V/C Ratio	0.028	-	0.123	0.111	-	-
HCM Control Delay (s)	10	-	20.1	12.5	-	-
HCM Lane LOS	B	-	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	0.4	-	-

HCM Unsignalized Intersection Capacity Analysis

15: Centre Ave/Centre Ave (PB) & Site Dr

02/06/2023



Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations		↑↑↑↑	↑↑↔		↘	↗		
Traffic Volume (veh/h)	69	973	1075	32	30	59		
Future Volume (Veh/h)	69	973	1075	32	30	59		
Sign Control		Free	Free		Stop			
Grade		0%	0%		0%			
Peak Hour Factor	0.95	0.95	0.92	0.92	0.95	0.95		
Hourly flow rate (vph)	73	1024	1168	35	32	62		
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type		None	TWLT					
Median storage veh			2					
Upstream signal (ft)			319					
pX, platoon unblocked	0.81				0.81	0.81		
vC, conflicting volume	1203				1588	602		
vC1, stage 1 conf vol					1186			
vC2, stage 2 conf vol					402			
vCu, unblocked vol	787				1261	47		
tC, single (s)	4.1				6.8	6.9		
tC, 2 stage (s)					5.8			
tF (s)	2.2				3.5	3.3		
p0 queue free %	89				89	92		
cM capacity (veh/h)	672				304	825		
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	SB 1	SB 2
Volume Total	219	293	293	293	779	424	32	62
Volume Left	73	0	0	0	0	0	32	0
Volume Right	0	0	0	0	0	35	0	62
cSH	672	1700	1700	1700	1700	1700	304	825
Volume to Capacity	0.11	0.17	0.17	0.17	0.46	0.25	0.11	0.08
Queue Length 95th (ft)	9	0	0	0	0	0	9	6
Control Delay (s)	4.5	0.0	0.0	0.0	0.0	0.0	18.2	9.7
Lane LOS	A						C	A
Approach Delay (s)	0.9				0.0		12.6	
Approach LOS							B	
Intersection Summary								
Average Delay			0.9					
Intersection Capacity Utilization			59.2%		ICU Level of Service			B
Analysis Period (min)			15					

Intersection: 2: Shaver Rd (PB)/Shaver Rd (PB) & Centre Ave (PB)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	T	L	T	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	204	262	241	220	312	293	252	234	240	174	309	311
Average Queue (ft)	83	140	138	126	228	246	122	146	146	50	202	207
95th Queue (ft)	174	202	211	226	311	329	222	218	240	133	324	329
Link Distance (ft)	210	210	210		220	220		504	504		209	209
Upstream Blk Time (%)	0	1	1	0	13	18					19	20
Queuing Penalty (veh)	0	1	1	0	67	92					81	85
Storage Bay Dist (ft)				316			275			150		
Storage Blk Time (%)				0	13					0	28	
Queuing Penalty (veh)				0	24					0	20	

Intersection: 7: Shaver Rd (PB) & Fire Station Dr/S. Westnedge Ave (PB)

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	TR	LT	R	L	T	TR	L	T	TR
Maximum Queue (ft)	30	30	54	136	31	180	184	128	173	223
Average Queue (ft)	4	10	16	86	3	77	79	72	56	73
95th Queue (ft)	19	33	46	125	18	150	166	117	124	156
Link Distance (ft)	457	457	484	484		207	207	868	868	868
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)					150					
Storage Blk Time (%)						1				
Queuing Penalty (veh)						0				

Intersection: 8: S. Westnedge Ave (PB) & Centre Ave/Center Ave (PB)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	T	R	L	TR
Maximum Queue (ft)	174	308	312	200	350	272	124	161	158	77	138	203
Average Queue (ft)	29	197	222	111	189	144	73	36	61	42	65	87
95th Queue (ft)	100	286	307	204	308	240	120	108	129	72	115	166
Link Distance (ft)		240	240		855	855		178	178		342	342
Upstream Blk Time (%)		3	5					0				
Queuing Penalty (veh)		14	22					0				
Storage Bay Dist (ft)	150			175			100			100		
Storage Blk Time (%)	0	10		1	7		7	0	3			
Queuing Penalty (veh)	0	3		6	12		5	0	4			

Queuing and Blocking Report

Build Out 2024

02/06/2023

Intersection: 10: Shaver Rd/Shaver Rd (PB) & North Site Dr

Movement	EB	EB	NB
Directions Served	L	R	L
Maximum Queue (ft)	31	30	68
Average Queue (ft)	5	9	11
95th Queue (ft)	22	31	39
Link Distance (ft)	507		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		100	125
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 13: Shaver Rd (PB)/Shaver Rd & Walgreens Dr

Movement	EB	EB	NB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	T	TR
Maximum Queue (ft)	100	237	72	153	175	220	255
Average Queue (ft)	29	60	14	8	0	40	45
95th Queue (ft)	89	176	47	61	0	163	175
Link Distance (ft)		222		209	209	310	310
Upstream Blk Time (%)		12					
Queuing Penalty (veh)		0					
Storage Bay Dist (ft)	75		50				
Storage Blk Time (%)	21	14	8				
Queuing Penalty (veh)	12	4	27				

Intersection: 15: Centre Ave/Centre Ave (PB) & Site Dr

Movement	EB	EB	SB	SB
Directions Served	LT	T	L	R
Maximum Queue (ft)	141	80	94	71
Average Queue (ft)	50	3	30	31
95th Queue (ft)	116	27	73	55
Link Distance (ft)	80	80		354
Upstream Blk Time (%)	5	0		
Queuing Penalty (veh)	0	0		
Storage Bay Dist (ft)			150	
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 16: Dummy #1 & Centre Ave (PB)/Centre Ave

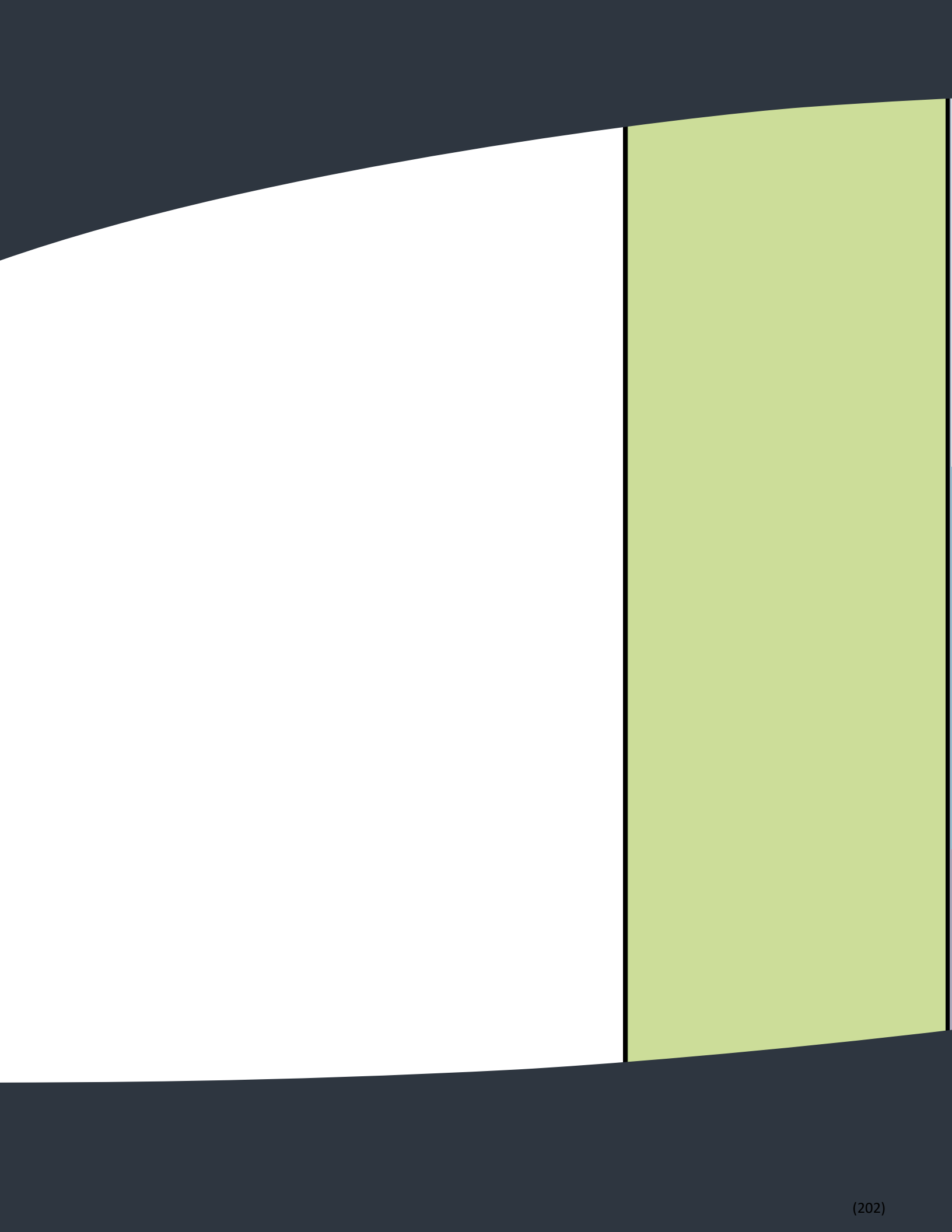
Movement	EB	WB	WB	NB	SB
Directions Served	TR	T	TR	R	R
Maximum Queue (ft)	37	139	121	30	92
Average Queue (ft)	1	16	14	10	37
95th Queue (ft)	12	74	53	33	73
Link Distance (ft)	220	240	240	140	132
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 21: S. Westnedge Ave (PB) & Dummy #2

Movement	WB
Directions Served	R
Maximum Queue (ft)	55
Average Queue (ft)	29
95th Queue (ft)	48
Link Distance (ft)	248
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 481



TO: Honorable Mayor and City Council

FROM: Pat McGinnis, City Manager

SUBJECT: Rezoning Application No. 22/23-7 to rezone 412 W. Centre Avenue and 7860 Shaver Road from Commercial Planned Development (CPD) to Planned Development (PD) for a proposed mixed-use development

SUPPORTING PERSONNEL: Jonathon Hallberg, Interim Director of Community Development

ACTION RECOMMENDED: Subsequent to the public hearing, consider approving the Tentative Plan and Rezoning Application No. 22/23-7 to rezone 412 West Centre Avenue and 7860 Shaver Road from Commercial Planned Development (CPD) to Planned Development (PD) for a proposed mixed-use development, subject to the condition to the Tentative Plan that The proposed live/work units shall be consistent with the requirement of Building Code Section 419 Live/Work Units and Zoning Code Sec. 42-137 Work/Live Accommodations.

River Caddis Development, LLC submitted a mixed-use development proposal at 412 West Centre Avenue and 7860 Shaver Road and has filed a Tentative Plan and Rezoning application to rezone the property from Commercial Planned Development (CPD) to Planned Development (PD). The site is located along the west side of Shaver Road adjacent to Walgreens and City of Portage Fire Station No. 1. Table 1 details the proposed buildings' use, height, and location. Figure 1 illustrates the proposed development.

Table 1. Summary of the proposed buildings' use, height, and location

Building No.	No. of Stories	Height (ft)	Apt. Units	Use	1-BR Units	2-BR Units	Commercial Size (sq ft)	Setback distance (ft) to closest Lot line
1	3	38	12	Live/ Work + Apts.	4	8	980	42
2	3	38	12	Live/ Work + Apts.	4	8	980	30
3	3	45	36	Apartment	24	12	—	5

4	3	45	36	Apartment	24	12	—	40
5	3	45	36	Apartment	24	12	—	67
6	3	45	36	Apartment	24	12	—	86
7	3	45	36	Apartment	24	12	—	30
8	3	45	24	Apartment	24	0	—	25
9	1	24	—	Community Building	—	—	—	65
		Total	228	Total	160	76		

Figure 1. Rendering of Proposed Development



The project proposes two access points along Shaver Road and one along West Centre Avenue. From each driveway, vehicles will navigate a circular layout to reach parking spaces nearby and directly in

front of each apartment building. With a total of 228 proposed apartment units on the overall 10.6-acre site (a combination of 412 West Centre Avenue and 7860 Shaver Road), the project has a density of 21.5 units/acre.

The development consists of a mix of residential and urban mixed-use, generally comprising three-story buildings. The two proposed live/work buildings are designed with an urban commercial presence with tall, glass ground-floor entrances and upper residential floors with multiple windows. The six apartment buildings in the rear of the site form a large circular residential mass, surrounding a community building and outdoor swimming and recreational features. The applicant's conceptual renderings show a modern building appearance with a mix of brick, vinyl, and decorative masonry features.

The applicant has indicated an anticipated start of construction in fall 2023/spring 2024. According to the applicant, both properties comprising the site are currently under contract. The property owner (PCL Curtis, LLC) is expected to sell both subject properties to the applicant (River Caddis Development, LLC) if approvals are obtained. The applicant currently has an active purchase agreement in place with PCL Curtis, LLC, which has been informed of the proposed PD tentative plan review process. A consent letter from the property owner, PCL Curtis, LLC, is attached. Further, the project's three access points are located on two separate parcels, owned by Portage Creek Landings City Centre Condominium. Per the applicant, these parcels are dedicated as common areas for future access to abutting property. These two parcels are expected to remain under existing condominium ownership. The applicant submitted a letter confirming the rights to use the common area for potential parking and access related to the project on March 18, 2023.

The existing site contains two buildings and consists of a variety of natural vegetation, a portion of Portage Creek, and wetlands. The site has been used for miscellaneous temporary staging of construction materials. Table 2 summarizes the existing conditions in the general area.

Table 2. Summary of the existing conditions

Existing Land Use/ Zoning	• The subject site is undeveloped and zoned Commercial Planned Development (CPD). • <u>North</u>: City of Portage Fire & Police Stations, Central Park; 7810 Shaver Rd; Zoned OS-1 Office. • <u>South</u>: Walgreens pharmacy; 7920 Shaver Rd; Zoned CPD. • <u>East (across Shaver Rd)</u>: City of Portage City Hall; 7900 S. Westnedge Ave; Zoned OS-1 Office. • <u>West</u>: Undeveloped rear properties of City of Portage Central Park and Hoeksema Brothers Greenhouses; 7810 Shaver Rd and 515 Schuring Rd; Zoned RM-2 Multifamily Residential and I-1 Light Industrial.
Public Streets	Surrounding roadway network: • Shaver Road (S. Westnedge Ave. - W. Centre Ave.): Public Street, 2021 AADT Trip Count of 13,990 trips.

	• S. Westnedge Ave & Shaver Rd Intersection: Public Street, 2021 ADT Trip Count of 21,196 trips. • W. Centre Street (Shaver Rd. - S. Westnedge Ave.): Public Street, 2017 ADT Trip Count of 17,613 trips Annual Average Daily Trips (AADT) trip counts are provided by Kalamazoo Area Transportation Study (KATS).
Public Utilities	City sanitary sewer and water are available along Shaver Road.
Environment	The subject site contains two buildings but is largely undeveloped, consisting of a forested area with a mix of natural vegetation.
Unique Conditions	Mapped wetlands and flood hazards exist on the site; both are shown on the applicant's drawings. No mapped historic buildings or structures exist on the subject properties.

Applicable Zoning Regulations

The following sections of Chapter 42. Division 4. Zoning Districts and District Regulations apply and are addressed further in this report:

- [Subdivision 11](#) – PD, Planned Development District, and
- [Division 8](#) – Administration and Enforcement (for Rezoning Application)

Proposed Planned Development Tentative Plan

The applicant has submitted a Tentative Plan and Rezoning application seeking approval for a mixed-use development of commercial and multifamily housing facility per Sec. 42-375. The Planned Development review process involves the following two steps, per [Sec. 42-375](#):

Step 1) Tentative Plan review (Items A-G, Sec. 42-375) identifies part(s) or whole project features; analyzes the impact on neighborhoods, streets, utilities, and the natural environment; and determines consistency with adopted local plans. This step does not require detailed engineering drawings. *The filed Tentative Plan is at this step.*

Step 2) Final Plan review (Items H-M, Sec 42-375), identifies and analyzes detailed drawings of project improvements (streets, utilities, lot dimensions, etc.). *A Final Plan application has not been submitted at this time, awaiting approval of the Tentative Plan.*

The Planning Commission reviewed the project for consistency with Sec. 42-375 Tentative Plan items A-E during a public hearing on January 19, 2023, Planning Commission meeting, continued deliberation and provided a recommendation to the City Council on March 2, 2023, Planning Commission meeting. The City Council received it on March 21, 2023 and scheduled a public hearing on April 18, 2023. The applicant has submitted a site layout drawing showing the location of buildings and parking areas, building setback distances, access and adjacent streets, pedestrian pathways and linkages, and open space. The applicant has also submitted a project narrative describing the overall project, types of housing units, live/work elements, parking configuration, etc., and illustrations depicting various

renderings of building elevations, general landscaping plan, etc. These submittals address items A-E within Sec. 42-375.

Per Sec. 42-373 and -374, the Planned Development (PD) allows a variety of housing styles, flexibility in building heights, and yard setbacks. The underlying CPD does not permit any housing units. Therefore, the applicant seeks a rezoning to PD. The following project elements are unique to the PD district and overall project:

1. **Housing Types.** A minimum of two housing types is required under the PD per Sec. 42-374(C). The development consists of the following different housing types:
 - a. Live/ Work units (Buildings 1 & 2). These are designed at the ground-floor level with approximately half of the overall space split between a commercial area facing Shaver Road and the other half as residential facing west (toward Building 3).
 - b. Apartment flats consist of 1- and 2-bedroom options (Buildings 3-8).
2. **Building Setbacks.** Per Sec. 42-374(E), the PD district does not have a defined setback distance. However, a setback distance should be established to create a transitioning area for neighborhood harmony. The proposed building setbacks to adjacent property lines are provided in Table 1.
3. **Density.** The PD district allows an overall maximum density of seven units per acre, per Sec. 42-374(D). The applicant is seeking flexibility in density to allow a project density of 21.5 units per acre. The applicant finds that the proposed density will help achieve rent rates for the location, as noted in their project documents (see attachments). This request is addressed further later in this report.
4. **Parking.** The applicant is providing 359 parking spaces for the overall proposed 228 units, resulting in a 1.51 ratio of spaces/unit. Per Sec 42-521, two parking spaces shall be provided for each unit of a multifamily housing proposal. Therefore, a total of 456 spaces is required. The applicant is seeking approval for a reduction in parking requirements per Sec 42-520(O), as noted in their project documents (see attachments). This request is addressed further later in this report.
5. **Utilities.** The project is expected to connect to existing city water and sewer utilities along Shaver Road. Stormwater will be designed under the parking lot near Buildings 6 and 7, as identified in the site layout drawing. Detailed drawings of utility connections and stormwater infrastructure will be provided in the next step - Final PD (Site) Plan Application.
6. **Access.** The proposal shows access to Shaver Road and West Centre Avenue through three existing access driveways located on adjacent property owned by Portage Creek Landings City Centre Condominium (as mentioned earlier in the report). Due to the anticipated high traffic volume from the proposal and the existing high traffic on the adjacent roads, the City Administration requires the applicant to submit a Traffic Impact Study (TIS). This is discussed in detail later in this report.
7. **Pedestrian Infrastructure.** Pedestrian connections will be provided within the interior of the development, between buildings, and along the perimeter to connect to existing sidewalks along Shaver Road and W. Centre Avenue.

Staff analysis is prepared based on items A-G, Sec 42-375 Tentative Plan 'Planned Development' requirements, Comprehensive Plan, surrounding development patterns, and general land use considerations. Issues to be analyzed include consistency with the Future Land Use Map, suitability of the existing zoning classification, and preliminary evaluations from the Development Review Team (DRT).

Comprehensive Plan

Rezoning applications are reviewed for consistency with the 2014 City of Portage Comprehensive Plan, which establishes long-term land use goals and the Future Land Use Map. The Future Land Use map designates the subject property as “City Centre”, which is characterized as the “downtown” of Portage and provides core activities for public facilities and destinations. Further, the City Centre is envisioned for shopping, dining, financial, residential, and government uses. This designation is located in the center of Portage, stretching from the Portage Public School Central Middle/High School, north to the city’s Department of Public Works building, west to Perry Street & West Centre Avenue, and east to Waylee Street and East Centre Avenue. Most of the City Centre is zoned OS-1 Office and contains a mix of local government offices and commercial uses, such as dining, shopping, and service-oriented businesses.

The subject site is within close proximity to many shopping and dining options. Those businesses are likely to benefit from customers and foot traffic generated by this development. There are existing sidewalks and pathways that connect to and provide recreational opportunities. Metro Transit has an existing bus stop near the subject site offering future residents public transportation options to travel within Portage and the greater Kalamazoo area.

Therefore, staff finds that the proposed Tentative Plan and Rezoning for a mixed-use development which provides a mix of housing types meets the intent of the Comprehensive Plan.

Zoning Map & Impacts

The subject site is currently zoned Commercial Planned Development (CPD), permitting a variety of commercial uses which have a ‘planned’ interconnectedness and mutually supportive compatibility. The adjacent properties to the south (Walgreens pharmacy, Huntington Bank, The Little Gym of Kalamazoo, etc.) are also in the CPD. Those businesses and the subject site were designed with common vehicular access points connecting to Shaver Road and W. Centre Avenue (the three access points mentioned earlier in this report). The project will utilize the existing access points as intended for future development. The adjacent properties to the north (City of Portage Fire Station, Police Station, and Central Park) and to the east, across Shaver Road, (City of Portage City Hall) are zoned OS-1 Office, permitting mainly office-type businesses such as banks, CPAs, real estate/architects, etc. and some service-oriented uses such as salons, spas, etc. The city buildings have varying operations, from typical office settings to emergency access needs.

The applicant is seeking to rezone the site to Planned Development district ‘PD’ to allow for a mix of housing and commercial types, and densities. The PD district permits the proposed type and scale of housing and commercial uses (live/ work). This land use benefit is also aligned with the CPD intent of mutually supportive compatibility. If approved, the future residences of the proposal will benefit the live/work businesses and also existing adjacent and area businesses.

Staff finds the proposed Tentative Plan and Rezoning meets the intent of the Comprehensive Plan, Future Land Use Classification, and Zoning Code.

City Council Goals and Priorities

On December 20, 2022, the City Council approved the City of Portage “[2022 Attainable Housing Plan](#)” comprising a nine-point action plan to facilitate housing in the city. It includes three ideals to guide the plan: enabling Portage workers to live in Portage, enabling Portage residents to age within their house or within Portage, and providing more housing for households with income levels up to 120% AMI (Area Median Income). The current proposal of 228 housing units is found to be in alignment with this housing

plan. The proposed development is also in alignment with the City Council's [2022-2023 Strategic Priorities](#) to "attract residential development that provides a mixture of housing for all income levels."

Environmental Impact

The proposal avoids the majority of wetlands and the flood zone of Portage Creek. However, a small portion of wetlands will be affected, as delineated in the attached site plan. The applicant intends to gain approval to build on the wetlands by purchasing wetland credits from an approved wetland bank per the Michigan Department of Environmental, Great Lakes, and Energy (EGLE). Detailed plans and/or documentation will be provided during the Final PD Plan submittal.

The proposal will also impact a small area of the 100-year flood zone of Portage Creek, which is delineated in the attached site plan. The applicant will seek approval from EGLE and the Federal Emergency Management Agency (FEMA) to fill and build in a manner consistent with the state and federal flood requirements. Detailed plans and/or documentation will be provided during the Final PD Plan submittal.

Planned Development - Sec 42-374 Site Development Requirements and Sec 42-375 Plan review and approval (PD, planned development); Tentative Plan

Staff finds most of these sections of the PD are met with the submitted application. The following addresses in greater detail items not met, but where the applicant is seeking additional support:

1. Increased Density. The applicant is seeking Planning Commission approval to exceed the maximum density to help achieve various rents. The proposed density is 21.5 units/acre, whereas the maximum allowed density in the PD district is 7 units/acre. The applicant has identified an opportunity to bring highly desirable, market-rate housing into the city, based on the following factors:

- Based on the [2022 Kalamazoo County Housing Plan](#), there is a housing shortage of 7,000+ units throughout the county. This proposed development helps fill the gap in housing needs within the City of Portage by providing additional units, diversifying the types of housing opportunities available, and freeing up other units within the housing spectrum.
- The proposed development responds to not only the needs of the community but also market potential, as detailed in the "2020 Residential Market Analysis" prepared by Landuse USA for the City of Portage, which identified a market potential for adding up to 1,094 new units annually in Portage.
- The proposed development is well-supported by services within walking as well as public transportation, which complement and provide a strong environment for increased density:
 - New internal and external sidewalks will connect to existing sidewalks along adjacent streets.
 - Metro Transit has a bus stop within close walking distance to the site adjacent to Walgreens along West Centre Avenue.
 - There are existing connecting sidewalks and pathways to recreational areas and adjacent shopping, dining, and entertainment.
 - Increasing housing density (residents) in this area will support adjacent and nearby businesses.
 - The proposed design and scaled architecture offer ample greenspace and amenities to support the density proposed. The project seeks to create a strong sense of community and

establishes a walkable “neighborhood” that will serve as another attractive living option in the city.

- The City Administration and City Council have approved past multifamily projects exceeding seven units per acre where additional site amenities were provided and/or existing.

Therefore, staff finds the proposed density acceptable, and the Planning Commission granted the approval on March 2, 2023.

2. Reduction in Parking Requirement. The applicant is seeking Planning Commission approval for 359 spaces instead of the required 456 spaces per Sec. 42-520(O). The applicant’s proposal consists of 160 one-bedroom units, 76 two-bedroom units, and 8 units within the ground-floor Live/ Work buildings. The applicant finds that the proposed 359 spaces (1.5 spaces per unit) will adequately meet the parking demand of the proposed 228 units of the above mix of bedrooms, based on the following factors:

- The applicant has extensive recent experience with multi-family developments and, in particular, those developments in a setting such as this that are well served with adjacent services, amenities, a walking network, and public transportation. These types of conditions have confirmed a parking need in the 1.00 to 1.40 vehicle spaces per unit, well below the 2.0 spaces required in Section 42-523.
- Section 42-520(O) allows a 25% reduction (in this case allowing a reduction of up to 114 spaces) for several factors including pedestrian connectivity to adjacent services, proximity to public transportation, and other factors.
- 67% or 2/3rds of the proposed residential development is comprised of one-bedroom units.
- The site has meaningful and extensive pedestrian connectivity as highlighted in the attached concept site plan.
- The site is within close walking distance to a Metro Transit bus stop at West Centre Avenue, offering public transportation choices and reducing reliance on personal cars.
- The site is within walking distance of schools, shopping, dining, and entertainment destinations.
- The proposed development will have ample on-site bike storage and bike repair stations.
- The parking reduction allows for increased greenspace and residential amenities.

Therefore, staff supports the lower parking request of 359 spaces for the proposed development, and the Planning Commission granted the approval on March 2, 2023.

Preliminary Evaluations from the Development Review Team (DRT)

This project was reviewed by the Development Review Team (DRT) which ensures that the proposed development is consistent with the city’s infrastructure, engineering, and other requirements including streets, sewers, water mains, stormwater, parking, landscaping, and others. The DRT is comprised of representatives from the Department of Transportation and Utilities, Fire Department, Department of Parks and Recreation, Office of the City Assessor, and Department of Community Development.

Traffic Review: DRT received a Traffic Impact Study (TIS) on January 17, 2023, for the Tentative Plan review. This was received two days prior to the January 19, 2023, Planning Commission meeting. As a result, staff review of the TIS was not completed nor accepted in time for Commission consideration. As of February 23, 2023, staff has reviewed the TIS, communicated minor changes (e.g. traffic modeling, etc.), and requested an updated TIS. Minor Changes are attached in an email dated February 23, 2023.

The only TIS recommended site plan change was the redesign of the northern driveway along Shaver Road from a 'right-in' and 'right-out' to full access, and to have dedicated left-turn and right-turn egress lanes. No other site plan changes were recommended. The City of Portage Traffic Engineer has accepted the updated TIS for this project based on updated modeling results, per the attached email dated February 23, 2023. The updated TIS reflecting additional narrative changes as a result of the modeling was received on March 20, 2023.

Utilities Review: DRT has made the applicant aware of additional engineering drawing requests pertaining to new city water and sewer, and private stormwater elements. These are detailed engineering plans that will be submitted for the Final PD Site Plan review.

Other Site Plan Elements: DRT has made the applicant aware of a required gate at the southern interior entrance to the Fire Station to prevent public access through the Fire Station site. The applicant will build the requested gate into the project. The Fire Department has informed the applicant they must ensure the site access aisle meets minimum vehicle access requirements. This detailed dimension must be addressed in the Final PD Plan review. DRT has made the applicant aware of anticipated future parking demand related to nearby Central Park events that may overflow onto the adjacent property. Further, information has been provided to the applicant on building code and ordinance requirements related to the design of the live/work units.

January 19, 2023 Planning Commission Meeting

On January 19, 2023, the Planning Commission discussed Tentative Plan and Rezoning Application #22/23-7, from Commercial Planned Development (CPD) to Planned Development (PD) for a proposed mixed-use development at 412 West Centre Avenue and 7860 Shaver Road. The Chairperson opened the public hearing and later closed it after receiving public testimony from one person. This testimony is provided in the meeting minutes. Staff's presentation of the project and staff report concluded that the project is consistent with the intent of the proposed 'Planned Development' district and Master Plan. However, the required Traffic Impact Study (TIS) was submitted late and not reviewed for acceptance by the city in time for the Commission's consideration. Therefore, staff recommended two options, summarized as the following:

1. Provide a recommendation to City Council with conditions; or
2. Postpone action on the project to a future Planning Commission meeting while awaiting staff review of the TIS. These two conditions are provided in the 1/19/23 staff report.

The Planning Commission voted on Option 2. During deliberation, the Planning Commission had the following additional concerns for staff which could not be answered at that time:

- Q. How many dwelling units would be allowed on the property if rezoned to RM-1 Multifamily District?
 - 73 Units (2-bedrooms),
 - 110 Units (1-bedroom), or
 - Mix of 1, 2-bedrooms between 73 and 110 units.
 - No Live/ Work Allowed in RM-1 Districts
- Q. What was the recommended number of housing units needed as noted in a 2016 rental needs study?
 - Staff could not locate a study of this nature related to the City of Portage.

- Q. How many units have been built since 2016?
 - The number of residential dwelling units permitted between January 1, 2016, and December 31, 2022:
 - Single-family detached units: 528
 - Single-family attached units: 288 (typically 2 – 4 units per building)
 - Apartments units: 279 (this does not include Tall Timbers)
- Q. Were pedestrians/ bicyclists considered in the traffic impact study?
 - No, because it is not required under the MDOT TIS Guidelines, which are the standard guidelines used for engineers who prepare a TIS for projects.

March 2, 2023 Planning Commission Meeting

A public meeting for this Tentative Plan and Rezoning application was continued at the March 2, 2023, Planning Commission meeting. During the meeting, the Commission discussed the proposed tentative plan and rezoning. The applicant, John McGraw, River Caddis Development, LLC, and the applicant's architect, Mike Corby, Integrated Architecture, attended virtually to discuss the proposed rezoning and tentative plan and answered the Commission's questions. After careful consideration, the Planning Commission voted unanimously (8-0) to recommend to City Council the approval of the Tentative Plan and Rezoning Application #22/23-7, from Commercial Planned Development (CPD) to Planned Development (PD) for a proposed mixed-use development at 412 W. Centre Avenue and 7860 Shaver Road with the following conditions:

1. A written confirmation of rights to use the condominium common parcels for potential parking and access, which shall be submitted to the City prior to the Final PD Site Plan review and approval.
2. If the proposed parking in the common area is not allowed, approve the submitted alternative plan for contingency parking.
3. The proposed 'live/ work' units shall be consistent with the requirements of Building Code Section 419 'Live/Work Units' and Zoning Code Sec. 42-137 'Work/Live Accommodations'.
4. An updated site plan should be submitted for Final PD Site Plan review showing the northern driveway along Shaver Road as being designed with dedicated left-turn and right-turn egress lanes.

Additional Documentation Received

1. The applicant submitted a support letter dated March 18, 2023 from PCL Curtis, LLC as a written confirmation of rights to use common condominium parcels for potential parking and access for the River Caddis project, and PCL will amend the condominium documents as needed prior to closing once approvals are granted. Therefore, the above conditions #1 & #2 are met.
2. The applicant submitted a revised utility plan dated March 20, 2023 showing the northern driveway along Shaver Road as being designed with dedicated left-turn and right-turn egress lanes. Therefore, the above condition #4 is met.

Recommendation

It is therefore recommended that subsequent to the public hearing, City Council consider approving a

Tentative Plan and Rezoning Application No. 22/23-7 to rezone 412 W. Centre Avenue and 7860 Shaver Road from Commercial Planned Development (CPD) to Planned Development (PD) for a proposed mixed-use development, subject to the condition to the Tentative Plan that the proposed live/work units shall be consistent with the requirement of Building Code Section 419 Live/Work Units and Zoning Code Sec. 42-137 Work/Live Accommodations.

FUNDING: Not Applicable

- Attachments:**
1. Rezoning Application
 2. PD Application
 3. Applicant's Narrative and Proposed Tentative Plan
 4. Comprehensive Plan Future Land Use Map
 5. Vicinity Map
 6. Zoning Map
 7. Applicant's Supplemental Information, Revised Tentative Plan, Alternative Parking Concept; 01.11.23
 8. Staff's Site Pictures
 9. Public Comment Received_011523
 10. Revised Site Plan received_011723
 11. Traffic Impact Study received_011623
 12. City Traffic Engineer Email_022323 (1)
 13. City Traffic Engineer Email_022323 (2)
 14. Revised Traffic Impact Study received_022423
 15. Planning Commission Meeting minutes_011923
 16. 1st Reading
 17. Planning Commission Meeting minutes_030223
 18. Planning Commission Transmittal Letter_031623
 19. PCL Written Confirmation_031823
 20. Revised Preliminary Utility Plan_032023

CITY OF PORTAGE PLANNING COMMISSION

**Thursday, October 19, 2023
7:00 PM Portage
Portage City Hall Council Chamber**

The City of Portage Planning Commission meeting of October 19, 2023, was called to order by Chair Corradini at 7:00 p.m.

IN ATTENDANCE

- Josh Thall, Assistant City Attorney
- Eric Feldt, Senior City Planner
- Biqi Zhao, Deputy Director of Planning and Zoning

ROLL CALL

Mr. Feldt called the roll: Chairman Corradini (yes); Vice Chair Baldwin (yes); Adams (yes); Pezzoli (yes); Joshi (yes); Fries (yes); Youngs (yes); Freiman (yes); and Kasper (absent).

APPROVAL OF MINUTES

1. Minutes dated September 21, 2023.

Motion by Commissioner Youngs, seconded by Vice Chair Baldwin to approve the September 21, 2023, meeting minutes, as submitted. Motion carried 8-0.

PUBLIC HEARINGS

1. An Amendment to the previously-approved Tentative Plan Application of the River Caddis proposed mixed-use development at 412 W. Centre Avenue and 7860 Shaver Road.

Chair Corradini introduced the project.

Mr. Feldt provided a PowerPoint presentation addressing the applicant's proposed amendment, changes in the site plan, changes in the overall project, various maps of the site and neighborhood, and explained the overall permitting process and applicable zoning code and indicated the project's subsequent permitting steps. Mr. Feldt stated that staff have not received any comments from the public. He explained staff's analysis indicating that the project was consistent with the Comprehensive Plan and zoning code and concluded with recommending approval of the request to the City Council with two conditions: 1. The proposed live/work units shall be consistent with the requirements of Building Code Section 419 Live/Work Units and Zoning Code Sec. 42-137 Work/Live Accommodations. 2. The utility and engineering review comments should be addressed in detail in the PD Final Plan.

Commissioners asked various questions about utilities. Mr. Feldt indicated that the applicant is required to submit detailed drawings addressing utilities in the subsequent Final PD Plan.

Commissioner Joshi asked if the traffic chart and overall project was considered in the data for the planning efforts of the City's Master Plan project. Ms. Zhao indicated yes.

Commissioner Joshi asked how the apartment building heights could be lowered but remain at same at three stories. Mr. Feldt deferred the question to the applicant.

Chair Corradini asked if the City's Development Review Team (DRT) will analyze sidewalk and traffic connections between the proposed buildings and parking lot and existing businesses in the area. Mr. Feldt indicated yes during the Final PD Plan step.

The applicant's architect, Mike Corby with Integrated Architecture, 840 Ottawa Avenue, Grand Rapids, MI, stated the following project elements: the amended plan resulted in avoiding the main wetlands near Portage Creek; the project will impact a narrow ditch within the interior of the project which requires State Environmental, Great Lakes, and Energy (EGLE) Department approval to development; the apartment roofs were redesigned from gable to flat roofs resulting in a lower overall building height and urban feel; some of the HVAC elements of the buildings will be located on the roof; increasing more natural area of the plan; removal of the pickleball courts; and the engineering details of the project will be provided later during the Final PD Plan step.

The applicant, John McGraw, President of River Caddis Development, 1038 Trowbridge Rd, East Lansing, MI, addressed that today's project cost gap increases with more apartment units whereas in the past the gap would decrease with more units.

Chair Corradini asked the applicant if the proposed number of parking spaces is enough for the project. Mr. McGraw indicated that all his projects seem to be best designed with 1.5 spaces per unit. Mr. McGraw further confirmed that the required detailed utility and site improvement drawings will be submitted at the subsequent Final PD Plan step for the project.

Commissioner Youngs asked the applicant about the project going through Michigan State Housing Development Authority (MSHDA).

Mr. McGraw indicated yes and all available/applicable incentives to address the current housing crisis assist in today's overall challenges in development.

Chair Corradini opened the Public Hearing.

No public comment was received.

Motion by Vice Chair Baldwin, seconded by Commissioner Joshi to close the Public Hearing. Motion carried 8-0.

Chair Corradini asked for any additional comments from the Commission and asked for a motion on the project. Motion by Commissioner Youngs, seconded by Commissioner Adams to recommend to City Council approval an Amendment to the previously-approved Tentative Plan Application of the River Caddis proposed mixed-use development at 412 W. Centre Avenue and 7860 Shaver Road with two conditions: 1. The proposed live/work units shall be consistent with the requirements of Building Code Section 419 Live/Work Units and Zoning Code Sec. 42-137 Work/Live Accommodations. 2. The utility and engineering review comments should be addressed in detail in the PD Final Plan.

Chair Corradini asked for a voice vote: Chairman Corradini (yes); Vice Chair Baldwin (yes); Adams (yes); Pezzoli (yes); Joshi (yes); Fries (yes); Youngs (yes); Freiman (yes); and Kasper (absent). Motion carried 8-0.

2. Ordinance Amendment #23/24-2: Ordinance to amend the Zoning Code to establish an Accessory Dwelling Unit regulation and permitting process.

Mr. Feldt provided a PowerPoint presentation explaining the past Planning Commission workshops addressing future housing strategies, the Council's housing goals and strategies, recent Planning

Commission workshops on Accessory Dwelling Units (ADU), provided a list of Michigan communities allowing ADUs and stated common ADU standards, showed staff's recommended ADU standards in the draft ordinance, indicated the process for reviewing and approval zoning ordinance changes, and concluded with recommending approval of the draft ordinance.

Commissioner Youngs asked if ADUs require Planning Commission approval or at staff level. Mr. Feldt indicated that ADUs would be reviewed and approved at staff level.

Commissioner Fries asked if ADUs require Planning Commission approval if the applicant of an ADU sought a taller height request, or instead it could be approved by staff. Mr. Feldt indicated yes per the draft ordinance it would require Commission review and approval. He also stated that staff found it more appropriate to use existing zoning process for height increases which results in proving neighborhood harmony and public commenting during Planning Commission meeting rather than creating a new staff-level approval process.

Commissioner Fries also asked if an ADU would be allowed atop of a detached garage on a lot having a single-story house. Mr. Feldt indicated that scenario was not specifically addressed in the ordinance but may be allowed through the height flexibility provided in the draft ADU ordinance.

Commissioner Fries also mentioned a scenario of a 900 square foot single-story house with a converted basement to a 700 square foot ADU with egress.

Commissioner Fries asked about how the ADU ordinance would impact the known properties in Portage having a pre-existing second living space. Mr. Feldt indicated that it is not fully clear if those sites have a second dwelling or just additional living space. Further, he stated since those are pre-existing spaces the ADU ordinance would not apply. Those property owners may voluntarily file an ADU application, however, and meet applicable ADU standards to become an established ADU. Mr. Feldt also stated that the ADU ordinance does not establish any rental registration.

Commissioner Fries indicated support of the ADU ordinance.

Commissioner Adams asked if the ADU ordinance would allow a scenario where an owner of a small house wished to build a larger house and dedicate it as a future primary house and the existing small house become dedicated as an ADU. Mr. Feldt indicated yes if meeting all ADU standards and that the owner showed an overall comprehensive development plan of the lot to ensure staff is aware of how each home would be classified and permitted.

Commissioner Pezzoli asked if the ADU could be located front of the primary house. Mr. Feldt indicated yes, if meeting all yard setbacks and ADU standards.

Commissioner Joshi asked why the draft ADU ordinance requires the ADU applicant to file a Deed Restriction and Affidavit ensuring compliance with all ADU standards. Mr. Feldt indicated that it is required for a few reasons: it is a new form of housing, there are currently no standards ensuring compliance with future operations of the ADU or overall property, and that the City does not have any rental registry or similar that act as a compliance mechanism.

Commissioner Joshi also asked about the prohibition of mobile homes as an ADU, could modular or manufactured home be an ADU, and is there are percentage of the home needing to be built on site to

become an allowed ADU building. She also suggested having the draft ADU ordinance provide more clarity on the term modular home.

Mr. Feldt indicated that a mobile home and manufactured home are the same and both would be prohibited from being an ADU. Manufacture home is the contemporary term for mobile home. Both are fully assembled off site and then transported to the subject site for use. A modular home is built in sections off-site and then assembled fully onsite and would be permitted as an ADU. Mr. Feldt also indicated that a detached ADU shall be designed in harmony with existing homes in the area.

Commissioner Freiman asked if new penalties will be created to enforce any future compliance issues resulting from an ADU.

Mr. Feldt stated no. Existing enforcement policies and procedures will be used.

Chair Corradini stated support for the ADU ordinance. He asked if ADUs are required to have individual connection to City water and sewer or can it be connected and shared with the existing utilities of the primary house.

Mr. Feldt stated that separate utilities connections are not required. Further, he indicated that if the ADU will be served by private on-site utilities, the owner shall gain applicable approvals through Kalamazoo County.

Chair Corradini opened the Public Hearing.

No public comment was received.

Motion by Vice Chair Baldwin, seconded by Commissioner Joshi to close the Public Hearing. Motion carried 8-0.

Chair Corradini asked for any additional comments from the Commission and asked for a motion on the project. Motion by Commissioner Joshi, seconded by Commissioner Adams to recommend to City Council approval of Ordinance Amendment #23/24-2: Ordinance to amend the Zoning Code to establish an Accessory Dwelling Unit regulation and permitting process.

Chair Corradini asked for a voice vote: Chairman Corradini (yes); Vice Chair Baldwin (yes); Adams (yes); Pezzoli (yes); Joshi (yes); Fries (yes); Youngs (yes); Freiman (yes); and Kasper (absent). Motion carried 8-0.

SITE/FINAL PLANS

None.

OLD BUSINESS

None.

STATEMENT OF CITIZENS

None.

NEW BUSINESS

None.

STATEMENT OF COMMISSIONERS/ STAFF

Commissioner Fries stated support of the projects in front of the Commission and suggests in the future that staff provide data to help support future projects that may become controversial.

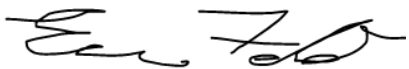
Commissioner Freiman asked about the format of the future Master Plan subcommittees subsections. Ms. Zhao indicated that the subcommittee meetings may last 1.5 hours long, the Master Plan consultants (Housel Lavigne) will lead discussion based on the framework and discuss with/ ask the subcommittee's feedback, and then they will provide a future meeting to discuss a drafted plan for those subsections. The subcommittee meetings will start on November 1; future dates in early November will be announced soon.

Chair Corradini thanked City staff for installing flags along S. Westnedge Avenue in support of Portage public schools football teams.

ADJOURNMENT

There being no further business to come before the Commission, Chair Corradini adjourned the meeting at 8:35 p.m.

Respectfully submitted,



Eric Feldt, AICP, CFM
Senior City Planner

TO: Honorable Mayor and City Council
FROM: City of Portage Planning Commission
DATE: October 24, 2023

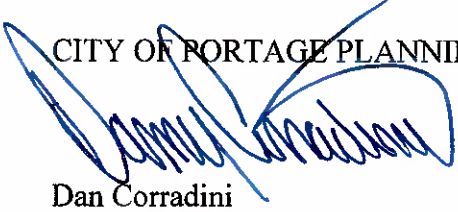
SUBJECT: An Amendment to the previously-approved Tentative Plan Application of the River Caddis proposed mixed-use development at 412 W. Centre Avenue and 7860 Shaver Road.

At the October 19, 2023, the Planning Commission discussed the Amendment to previously-approved Tentative Plan Application of the River Caddis proposed mixed-use development at 412 W. Centre Avenue and 7860 Shaver Road. The applicant representative, John McGraw, River Caddis Development, LLC, and the applicant's architect, Mike Corby, Integrated Architecture, were present to support the proposed application and explain the project details. No public comments were received at the public hearing. The Planning Commission determined no further discussion was needed and voted to close the public hearing.

After careful consideration, the Planning Commission voted 8-0 (unanimously) to recommend to the City Council the approval of the Amendment to previously-approved Tentative Plan Application of the River Caddis proposed mixed-use development at 412 W. Centre Avenue and 7860 Shaver Road. with the following conditions:

1. The proposed 'live/work' units shall be consistent with the requirements of Building Code Section 419 'Live/ Work Units' and Zoning Code Sec. 42-137 'Work/ Live Accommodations'.
2. The utility and engineering review comments should be addressed in detail in the PD Final Plan.

Sincerely,



CITY OF PORTAGE PLANNING COMMISSION

Dan Corradini
Chairman

Attachments: Draft October 19, 2023 Planning Commission meeting minutes

TO: Honorable Mayor and City Council

FROM: Pat McGinnis, City Manager

SUBJECT: Accessory Dwelling Unit Ordinance Amendment

SUPPORTING PERSONNEL: Peter Dame, Chief Development Officer

ACTION RECOMMENDED: Accept Ordinance Amendment #23/24-2 to amend the Zoning Code to establish an Accessory Dwelling Unit regulation and permitting process and set a Public Hearing for December 5, 2023.

The City Council adopted the 2022 Attainable Housing Plan to remain committed to ensuring that the housing supply in Portage is adequate to meet demand. Additionally, the Council approved its FY 23-24 priorities which state to "faithfully follow strategies laid out in the Portage Attainable Housing Plan", and also call for "improvement of Zoning Ordinance to prepare and present amendments to the zoning ordinance that remove obstacles to housing affordability." The proposed 'Accessory Dwelling Unit' ordinance amendment helps meet these goals by providing flexibility and creating standards for a new housing type.

Accessory Dwelling Units

Accessory Dwelling Units (ADU) have become a new method across the US for increasing housing opportunities and offering new housing types at a neighborhood 'in-fill' level. Generally, an ADU is a small attached/detached fully separated living unit having its own kitchen, bathroom, and bedroom. These are sometimes called 'Grannyflats', Mother-in-law Suites, Coach House, etc. This housing type is not entirely new but has become more popular in the past several years.

Purpose

ADUs are being used for a variety of reasons, such as allowing aging or family members with a disability to live partially independently but remain near family members. They can be used as a general rental unit to help offset the mortgage of the primary home or generate additional income. ADUs can be used by grown children of the primary homeowner as a lower-cost rent, allowing the person to save for their own future home or other reasons.

Design & Location

ADUs are located on the same property as a primary home and are designed to be smaller than the primary home as being 'accessory' in overall scale. ADUs can be attached to the house and blended into it, or a detached building with unique or similar architectural style siding and trim. There are a variety of ways to design an ADU. An attached illustration depicts the many ways ADUs can be located.

Things to Consider

ADUs can increase some externalities, such as additional parking needs, adding traffic related to the new unit, increasing noise or activity levels, and other impacts when adding another building with housing within a neighborhood. To help reduce those, a variety of design standards and restrictions can be

established. Further, having policing power at local levels can also address nuisances, parking issues, and more.

Historic Portage ADUs

Through staff research, there may be 20+ properties that have an ADU that had been constructed under prior city codes or during the former Township period. These would need to be individually inspected to determine if the second living space has independent living quarters to be considered an ADU. Likely, some or some of these would not be considered fully independent dwelling units.

ADUs in Michigan

Staff researched over a dozen Michigan communities, such as the City of Kalamazoo, City of Ann Arbor, Grand Rapids, Traverse City, City of Grand Haven, City of Holland, etc. which allow ADUs and have established standards with various limitations. Common standards include having a maximum ADU size and height, disallowing/limiting short-term rental use of ADUs, limiting ADUs to residential zoning districts, and limiting one ADU per parcel. Staff have attached a summary of ADU restrictions for those communities as comparison information.

National Organization Support

The American Association of Retired Persons (AARP) [supports ADUs as a way to provide additional housing options](#). Further, AARP lists unique purposes of ADUs, such as a place for a caregiver to stay, feeling safer by having someone living nearby, and providing housing for relatives or a friend.

Ordinance Amendment Process

The ordinance amendment process involving zoning code amendments provided under [Section 42-651](#) requires a public hearing during Planning Commission and City Council meetings. The Commission will consider the proposed amendment, evaluate it for consistency with adopted City plans, impact on neighborhood conditions, and provide a recommendation to the City Council. After a public hearing during a Council meeting, the Council will vote on the ordinance amendment.

City of Portage - Proposed ADU Standards

After reviewing other Michigan community ADU ordinances and discussing with other city departments, staff proposed an ADU ordinance. On October 19, 2023, the Planning Commission reviewed the proposed ordinance, held a public hearing and voted to recommend the ordinance to the City Council.

Planning Commission – Workshops

Staff provided two workshops (July 6 and August 3, 2023) with the Planning Commission to discuss other Michigan community ADUs, and potential allowances for a Portage ADU ordinance, and to gain feedback. Public comments were also received during those workshops. The Planning Commission generally supported allowing ADUs with two suggestions: adding more flexibility in ADU size and zoning locations. In the current updated and proposed ADU ordinance (attached), staff added flexibility in ADU size. However, staff did not find it best to allow ADUs in the RM-1/2 multifamily districts because ADUs are generally conceived and thought of as an ‘accessory’ to a single-family house. Multifamily housing districts already allow multiple housing units on a property, so an ADU is not needed there. Also, if the Commission desires to increase housing in the Multifamily zoning districts, staff suggests other changes within that district could be made. Therefore, staff recommends limiting ADUs to the R-1(A-D) One Family Districts. The Planning Commission and the general public asked

how to address concerns about enforcing the short-term rental prohibition within the draft ADU ordinance. This is addressed at the front end by requiring the applicant to sign an affidavit and record a Deed Restriction addressing this prohibition. Further, if a complaint is received about operating a short-term rental within an ADU, staff will contact the owner and pursue zoning enforcement procedures. The public also mentioned that many neighborhood Homeowners' Associations (HOA) may prohibit ADUs despite the city allowance. In these cases, the HOA could entirely prevent ADUs from being built within that association if the prohibition exists.

2014 Comprehensive Plan

Although the Comprehensive Plan does not specifically address ADUs, it does list the following goals and recommendations relevant to the ordinance amendment.

Goal LU1

Provide a range of housing opportunities to meet the needs and income levels of current and future residents.

Housing Options for Changing Demographics

'In order for housing to be affordable for multiple income levels and family types, a balance of owner and renter-occupied units for a variety of incomes should continue to be provided. Smaller families and couples may desire alternatives to single-family detached, owner-occupied housing, such as townhomes, flats, and apartments above storefronts. Other households may choose to rent to maintain mobility. In cases where there may be a trend in renter-occupied single-family homes, the City should monitor housing quality to ensure neighborhood stability. Finally, for households looking to purchase a home, the City's housing assistance programs can make homeownership affordable and accessible for lower-income families as an alternative to renting.

Like many other communities, Portage has a growing senior population and other demographic indicators are changing. The housing needs of seniors is an important part of the commitment to provide appropriate housing choices for all of its residents. Viable housing options should include remaining at home as long as possible and is especially important to residents who want to stay in the neighborhoods they are most familiar with and be near family and friends. Retrofitting existing homes to be accessible for seniors desiring to "age in place" could include ramps, wider doorways, and first floor bedrooms and accessible bathrooms. Where "aging in place" is not feasible, special facilities, such as senior independent living, assisted living and congregate care is another important housing option to be provided within the community.'

Future Land Use Map

The Master Plan provides a Future Land Use Map consisting of land use classifications such as 'Medium Density Residential' or 'Local Business Nodes'. These classifications are similar to zoning districts but act as recommended policies that support or maintain a certain density or intensity of development. An ADU may be compatible with the classifications of 'Low-Density Residential' and 'Single Family Detached-Medium Density Residential' depending on the built environment of the neighborhood.

Public Hearing

On October 19, 2023, the Planning Commission discussed Ordinance Amendment #23/24-2: Ordinance to amend the Zoning Code to establish an Accessory Dwelling Unit regulation and permitting process.

Ordinance Amendment #23/24-2: Ordinance to amend the Zoning Code to establish an Accessory Dwelling Unit regulation and permitting process.

Page 4 of 4

No public comments were received at the public hearing. The Planning Commission determined no further discussion was needed and voted to close the public hearing. After careful consideration, the Planning Commission voted 8-0 (unanimously) to recommend to the City Council the approval of Ordinance Amendment #23/24-2.

It is therefore recommended that City Council accept Ordinance Amendment #23/24-2 to amend the Zoning Code to establish an Accessory Dwelling Unit regulation and permitting process and set a Public Hearing for December 5, 2023.

FUNDING: Not Applicable

Attachments:

1. Proposed Codified ADU Ordinance Amendment
2. ADU Frequently Asked Questions
3. Other Michigan Communities Allowing ADUs
4. ADU Design Illustrations
5. Draft Planning Commission October 19, 2023 meeting minutes
6. Planning Commission Transmittal Letter

AN ORDINANCE TO AMEND THE CODE OF ORDINANCES
OF THE CITY OF PORTAGE, MICHIGAN

BY AMENDING ARTICLE 4 ZONING, OF
CHAPTER 42, LAND DEVELOPMENT REGULATIONS,

THE CITY OF PORTAGE ORDAINS:

That Chapter 42 shall be amended as follows:

ARTICLE 4. ZONING, DIVISION 2 DEFINITIONS.

Sec. 42-112. – Definitions *shall be amended as follows, to add a new definitions for Dwelling, Accessory Unit (ADU) and Short-term rental, dwelling:*

Dwelling, Accessory Unit (ADU): is an attached or detached separate dwelling unit independent from but located on the same parcel or zoning lot as a principal residence. The ADU provides for living, sleeping, cooking, and bathroom facilities.

Short-term rental, dwelling: is a dwelling that is leased or rented for a period of 30 days or less.

All other parts of Section 42-112 remain unchanged.

ARTICLE 4. ZONING, DIVISION 4 ZONING DISTRICT AND DISTRICT REGULATIONS

Sec. 42-181. – Principal Permitted Uses *shall be amended by adding new subsection I, which shall read as follows:*

- I. Accessory dwelling units, in accordance with the provisions of section 42-184.

All other parts of Section 42-181 remain unchanged.

ARTICLE 4. ZONING, DIVISION 4 ZONING DISTRICT AND DISTRICT REGULATIONS

Sec. 42-184. – Reserved, *shall be amended to read as follows:*

Section 42-184 Accessory Dwelling Units

It is the intent of this section to allow for Accessory Dwelling Units (ADU's) upon properties within One Family Residential zoning districts to allow homeowners to have a supplemental source of income with a long-term tenant, as well as other nontangible benefits to older residents, such as companionship or a live-in caretaker. It is recognized that ADUs provide an opportunity for affordable housing for family members to reside nearby with independence. It is further recognized that appropriate limitations are necessary so that ADUs are compatible and harmonious within residential neighborhoods.

1. The following provisions shall apply to all ADUs:
 - A. An ADU may only be established on a parcel with a single family dwelling on it and located in a One Family Residential district.
 - B. Not more than one ADU may be established on a single parcel or zoning lot.
 - C. Not less than 150 square feet of sleeping area shall be provided per occupant of the ADU, and no more than two bedrooms.
 - D. An ADU shall not be smaller than 500 square feet and no larger than 900 square feet, but in no circumstances shall it exceed the total square footage of the principle dwelling.
 - E. An ADU shall be furnished with its own kitchen, full bathroom, and sleeping area.
 - F. The principal residence and ADU shall share the same vehicular access to the parcel.
 - G. Short term rentals (30 days or less) shall not be permitted for either the ADU or principle residence.
 - H. ADU must have their own means of egress from the exterior or from a common hallway within a single building.
 - I. At least one on-premise dedicated improved surface parking space shall be provided for the ADU.
 - J. The ADU cannot be sold separately from the primary dwelling, which shall be addressed pursuant to subsection 3 of this section.
 - K. Lot coverage maximums of underlying zoning district shall apply.
 - L. The property owner shall live in either the ADU or principal residence, which shall be addressed pursuant to subsection 3 of this section.
 - M. The ADU shall be connected to public sewer and water supply systems, or to private facilities for potable water and disposal of sewage approved by the city.
 - N. The ADU unit shall comply with all applicable building, electrical, plumbing, fire, energy and other similar codes which are or may be adopted by the city, and with applicable federal or state standards or regulations for construction. Appropriate evidence of compliance with these standards or regulations shall be provided to the building inspector. The following life/ safety aspects apply:
 1. All attached ADUs shall have smoke detectors and carbon monoxide detectors interconnected with those in principal dwelling; if separate, the common wall separating the ADU from the principal dwelling shall consist of a 1-hour fire rated wall.
 2. ADU occupants shall have access to utility shut-off elements, including electricity, gas, and water.
 - O. Shall be subject to the minimum front and side yard setbacks of the underlying zoning district. The rear yard setback shall meet the minimum side yard setback for the underlying zoning district.
 - P. Prior to occupancy of the ADU, the Community Development shall issue a Certificate of Occupancy indicating compliance with all applicable requirements and inspections.
2. The following provisions shall apply to detached ADUs:
 - A. The maximum height shall not exceed the height of the principal dwelling, except after a public hearing the height may be increased if the planning commission determines harmonious relationships and to minimize conflicts between adjacent uses. The commission shall consider the proposed characteristics of the building in relation to existing land uses and to the future land uses as shown in the comprehensive plan. The

- commission may attach requirements to such accessory building and use when it deems necessary to avoid or mitigate adverse impacts on surrounding properties.
- B. Mobile homes, shipping containers, trailers on wheels, tree houses, or any other unit not on a permanent foundation shall not be considered an ADU.
 - C. Shall be firmly attached to a permanent continuous foundation which complies with applicable provisions of the adopted building code.
 - D. Exterior design of an ADU shall be compatible with existing residences. Consistent with primary dwelling and in harmony with the character and scale of the surrounding neighborhood.
3. Applications for an ADU shall be made to the Department of Community Development and shall consist of the following but not limited to:
- A. Plot plan (scaled drawings) showing the following:
 - 1. Location of all existing and proposed structures on the property.
 - 2. Setbacks of the proposed ADU from all property lines and structures.
 - 3. Designated parking area for the ADU and principal residence.
 - 4. Elevation drawings, where necessary.
 - B. Floor plan, elevations, and building plans showing the following:
 - 1. Kitchen, bathroom, sleeping area, entry stairs, and gross square footage,
 - 2. Connecting wall or floor to the principal residence, where necessary
 - 3. Elevations including windows, doors, porches, walls, and other exterior features.
 - C. A Deed Restriction by the owner of record acknowledging the following:
 - 1. One of the two dwelling units will be occupied by the property owner,
 - 2. The ADU cannot be sold separate from the principal residential unit.
 - D. An affidavit by the owner of record indicating the following:
 - 1. Which of the two dwelling units will be occupied by the owner of record.
 - 2. All ADU standards of the City of Portage shall be adhered to.

FIRST READING:
SECOND READING:
EFFECTIVE DATE:

Patricia M. Randall

APPROVED AS TO FORM
DATE 10/26/2023
Joan Tholl
CITY ATTORNEY

CERTIFICATION

STATE OF MICHIGAN)
)SS
COUNTY OF KALAMAZOO ')

I, Erica Eklov, do hereby certify that I am the duly appointed and acting City Clerk of the City of Portage and that the foregoing Ordinance was adopted by the City of Portage on the _____ day of _____, 2023.

Erica Eklov, City Clerk

Accessory Dwelling Units

Frequently Asked Questions

1. Can I rent out my ADU or the primary house?

Yes. Only one of them can be rented, and can only be a long-term rental. Short-term rentals are prohibited within Portage.

2. Can my grown child live in the ADU?

Yes. Family members and non-family members may live in the ADU.

3. Is the ADU required to be connected to utilities (i.e. sewer, water, electricity, gas)?

Yes. The ADU will be required to connect to public sewer and water utilities, if available; or connect to private water and sewer utilities. It must also connect to electricity; gas may be an option if desired by property owner/ applicant.

4. Will my property taxes increase with the ADU?

Yes. The ADU is considered a building and is a taxable improvement. Therefore, the assessed and taxable values will increase when adding an ADU.

5. If I buy a house with an ADU, do I need to register it with the City?

No. The City of Portage does not currently have a registration for ADUs. However, all ADUs must be permitted, inspected, and issued a Certificate of Occupancy for it to be legally occupied. You may contact the City to confirm the ADU has been permitted, inspected, and issued an Occupancy permit.

6. Why must the homeowner live in either the ADU or primary house?

Requiring the property owner to live in either the primary house or ADU helps address the following: ensures close proximity of care, higher degree of maintenance, helps maintain overall neighborhood occupancy, lessens possibility of significant property value fluctuation from using single-family neighborhoods as rental opportunities. Overall, this restriction helps provide balance between rentals and homeownership within single-family neighborhoods.

7. Why is the City considering to allow ADUs now?

The City Council has recently adopted new housing policies at encouraging housing growth, choices, and equity. ADUs offer an overall lower housing cost, allow the property owner to afford the overall property more easily, and allow a unique living situation for greater family/ caretaker needs.

8. Won't ADUs add more denser housing, problems with people partying, people staring into my back yard, etc.?

Overall, there is an expected lower operational use of the ADU compared to traditional houses due to the smaller ADU size. Nuisances such as loud music is currently addressed under City ordinances. Privacy concerns can be minimized through ADU site placement, ADU window/ door location, landscaping, and/ or fencing.

9. Won't ADUs create parking problems in neighborhoods and around the lakes?

No. All ADUs must have at least one on-premise parking space on an improved surface, which should be provided on a site drawing upon applying for an ADU. Where neighborhood streets allow for on-street parking, it can be used for temporary overflow parking.

10. Will ADUs be allowed everywhere?

No. ADUs must be in eligible zoning districts (R-1A thru R-1D), meet specific standards, and comply with all ADU requirements. Keep in mind of any applicable condominium HOA limitations which may prohibit additional dwelling units such as ADUs.

11. Will the ADU have its own address?

Yes, the City will assign an address for the ADU when an ADU application is submitted and approved.

12. Will ADUs be required to be in the back yard?

No. ADUs may be located in the side or front yards, so long as all yard setbacks are met.

13. Can I build several ADUs on a single lot and rent them out?

No. Only one ADU on a single lot is allowed. An ADU may be rented but only long-term.

14. Can the required parking space for the ADU be on my existing driveway?

Likely, yes. If the driveway can accommodate two parking spaces for the primary house and another parking space for the ADU, then the driveway can be used to meet the ADU's parking requirement.

15. Can I convert my garage into an ADU?

Likely, yes. The garage must be converted to living space meeting Building Code standards. All ADU requirements will apply, such as the space cannot exceed 30% of the size of the primary house above ground floor area. Further, the garage will no longer meet the parking requirement for the primary house, so either additional garage space is provided and/ or the driveway will need to accommodate a total of three vehicles (2 – primary house; 1 – ADU).

16. Can I build a second floor space above the detached garage/ pole barn for an ADU?

Yes, if the new total height will not exceed the height of the primary house and the structure is sound to meet Building Codes

However, if the new total height will exceed the height of the primary house, approval by the Planning Commission will be required where they will review it for overall neighborhood harmony.

17. Can a modular building be used as an ADU?

Yes, a modular building which is assembled on site, anchored to a foundation, and meeting local Building Codes. Other forms of dwellings which are built off-site such as Manufactured or Mobile Homes cannot be used as an ADU. Further, metal storage containers, also known as connexes, cannot be used as an ADU.

No.	Community Name	Has ADU Standards?	How many ADUs per lot?	Allows ADU used for Short Term Rental?	Which ZD allows?	No. Allowed Bedrooms	Max. persons per ADU?	Max. Size (sq ft)	No. parking spaces req.?	Must register ADU/ deed restriction?	Allows Both Detached, Attached ADU?	Max. Height	Where restricted on lot?	Any other requ.?	Permitted in past year?	Discussion w/ City	Misc.	Additional ADU FEE?
1	Ann Arbor*	Yes	1	No	Single family districts	n/a	2 + offspring	600-800	n/a	yes, rental register	Yes	21-30'	Not located w/in front yard; allowed in Side, Rear Yards within exceptions.	Must file Deed Restriction	30-40 ADUs	Register as rental (if rented); some ADU resistance during drafting standards; Only a few ADU during initial years	many above garage ADUs; mix of rental use/ office space.	No.
2	Charlevoix	Yes			R1, R2 SFD, Live/work, Dtnw, etc.							look up		above garage access must be exterior	4- in past 3 yrs	Not many, incremental; little push back; 1st ADU resulted in neighboring concerns led to changing ord. to add form-based code and architectural standards	60% homes are second homes - no need for ADU; already +200 ADU built	
3	City of Kalamazoo**	Yes	1	Yes, where allowed				600-950	1	Must register rental	Yes				Only a few			Waiting for email reply.
4	Comstock Twp	Yes	1			1	2	350; 20% ground floor area	1	Yes			Must be in rear yard	Must file Deed Restriction		Only a few permitted		Waiting for email reply.
5	City of Holland	Yes		No	LDR, MDR, TNR, GMU, PUD		2	300-720				16-22	Not located w/in front yard; must meet side yard of primary house; must meet side yard distance for rear yard.	Requires 300' residential mailers; resident may appeal to Board of Appeals	7-8 ADUs; low popularity; not currently used as rentals	ADU program seems fine, no political support for loosening to allow more ADU; little support to allow STR for ADU.		
6	City of Battle Creek	No			Single Family districts, Multifamily									Requires Special Land Use permit				
7	City of Grand Haven	Yes	1	Yes				400-1,000		Yes	Yes	22	Must meet accessory bld setbacks.	Requires Special Land Use permit	5 - in past few years;			
8	Traverse City	Yes	1	No				800		Yes	Yes				80 - in the past few years;	only 15/ year; some concerns about privacy; most are detached or attached to garage	\$100 ADU Annual Registration	
9	Grand Rapids	Yes	1	No	CC, TCC, TBA, TOD, C, NOS, LDR, MDR	2		400-850		Yes	Yes	20-25	Not allowed in front yard		waiting for call back			
10	City of Flint	Yes	1	no		2		400-850		Yes			Not allowed in front yard		waiting for call back			
11	Texas Twp														Only a few			
	City of Lansing	NO - Does not allow ADUs but is exploring this.																

Ann Arbor

Up to 600 sq ft for lots < 7,199 sq ft
Up to 800 sq ft for lots >7,200 sq ft
Up to 21' if attached to Accessory Bld
Up to 30' if part of main house
Allowed ADU since '18
No short-term rental w/in Res. District
In Res. District; one unit must be owner-occupied

Holland

300-720 sq ft but not exceeding 1/3 of primary dwelling above grade area.
1st floor: 16' max height
2nd floor: 22' max height
No Short Term Rental or B&B on same property
One of dwelling units must be owner-occupied
6' tall screening of ADU, when located on ground-floor
ADU cannot be separately metered utilities
ADU cannot be sold separate from primary house
Window placement - address adj. privacy concerns must be owner-occupied (ADU or house)

Kalamazoo

Attached: Up to 600 sq ft/ 30% of house
Detached: Up to 950 sq ft
Overnight, on-street parking can count

Comstock

Both homes must share driveway
Lot must be 1.5 ac.

Grand Haven

Size: no greater than primary home
One of dwelling units must be owner-occupied
Window placement - address adj. privacy conce
General design - compatible w/ neighborhood
22' max. when attached to detached accessory bld.
No taller than primary house - measured to peak
ADU cannot be sold separate from primary house

Lansing - think of adopting ADU

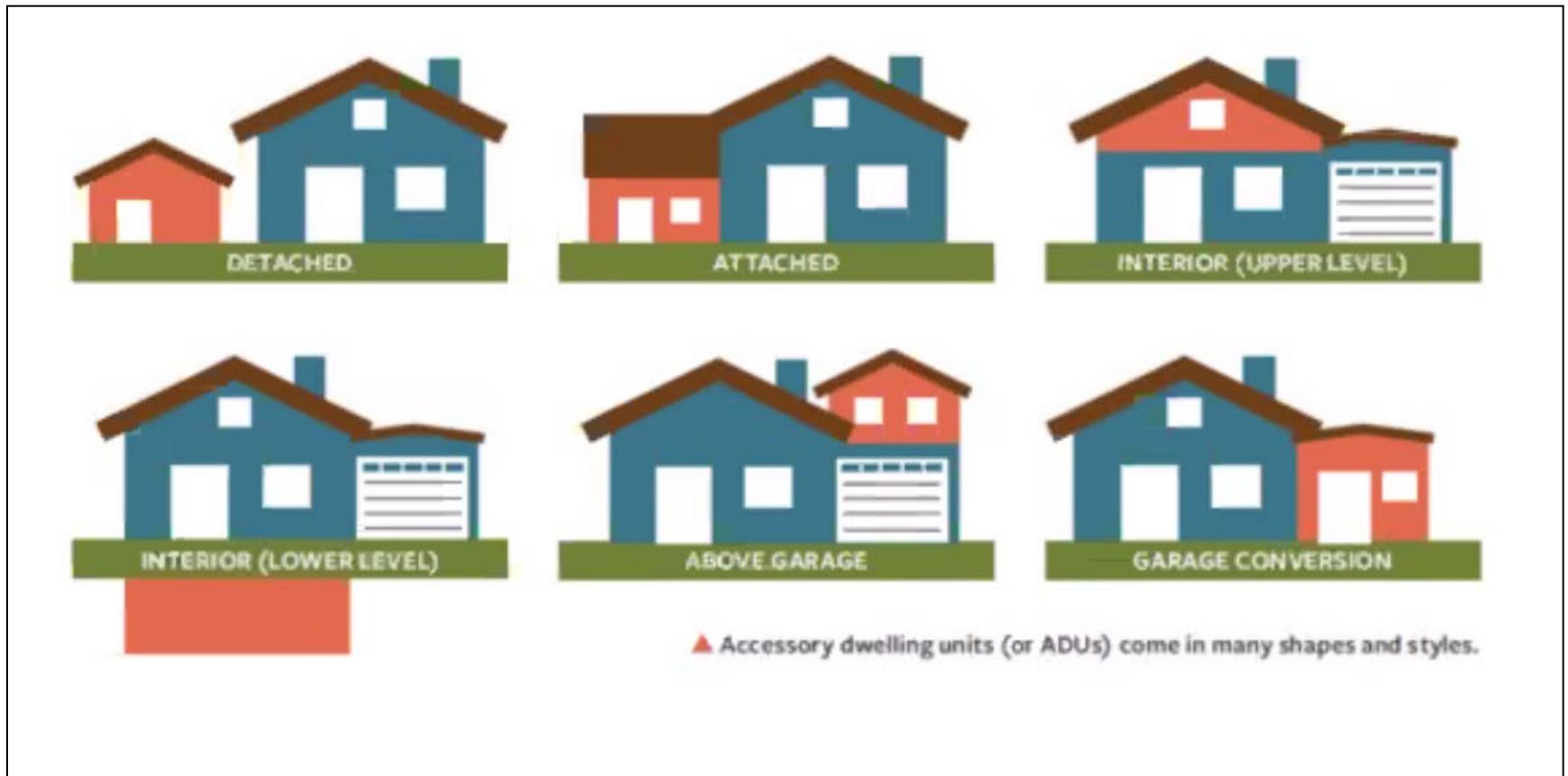
Traverse City

One of dwelling units must be owner-occupied
ADUs cannot be leased less than 3 months at time
Require to renew license ever year - helps determine which house is owner-occupied

Grand Rapids

Max. height for attached ADU: no taller than primary house
Max. height for detached: 20-25
Max. area: Up to 100% of detached accessory structure
Min area: 400 sq ft; Not exceed 40% of primary house; Max. 850 sq ft
Excluded from density calculations

ADU Design Illustrations



CITY OF PORTAGE PLANNING COMMISSION

**Thursday, October 19, 2023
7:00 PM Portage
Portage City Hall Council Chamber**

The City of Portage Planning Commission meeting of October 19, 2023, was called to order by Chair Corradini at 7:00 p.m.

IN ATTENDANCE

- Josh Thall, Assistant City Attorney
- Eric Feldt, Senior City Planner
- Biqi Zhao, Deputy Director of Planning and Zoning

ROLL CALL

Mr. Feldt called the roll: Chairman Corradini (yes); Vice Chair Baldwin (yes); Adams (yes); Pezzoli (yes); Joshi (yes); Fries (yes); Youngs (yes); Freiman (yes); and Kasper (absent).

APPROVAL OF MINUTES

1. Minutes dated September 21, 2023.

Motion by Commissioner Youngs, seconded by Vice Chair Baldwin to approve the September 21, 2023, meeting minutes, as submitted. Motion carried 8-0.

PUBLIC HEARINGS

1. An Amendment to the previously-approved Tentative Plan Application of the River Caddis proposed mixed-use development at 412 W. Centre Avenue and 7860 Shaver Road.

Chair Corradini introduced the project.

Mr. Feldt provided a PowerPoint presentation addressing the applicant's proposed amendment, changes in the site plan, changes in the overall project, various maps of the site and neighborhood, and explained the overall permitting process and applicable zoning code and indicated the project's subsequent permitting steps. Mr. Feldt stated that staff have not received any comments from the public. He explained staff's analysis indicating that the project was consistent with the Comprehensive Plan and zoning code and concluded with recommending approval of the request to the City Council with two conditions: 1. The proposed live/work units shall be consistent with the requirements of Building Code Section 419 Live/Work Units and Zoning Code Sec. 42-137 Work/Live Accommodations. 2. The utility and engineering review comments should be addressed in detail in the PD Final Plan.

Commissioners asked various questions about utilities. Mr. Feldt indicated that the applicant is required to submit detailed drawings addressing utilities in the subsequent Final PD Plan.

Commissioner Joshi asked if the traffic chart and overall project was considered in the data for the planning efforts of the City's Master Plan project. Ms. Zhao indicated yes.

Commissioner Joshi asked how the apartment building heights could be lowered but remain at same at three stories. Mr. Feldt deferred the question to the applicant.

Chair Corradini asked if the City's Development Review Team (DRT) will analyze sidewalk and traffic connections between the proposed buildings and parking lot and existing businesses in the area. Mr. Feldt indicated yes during the Final PD Plan step.

The applicant's architect, Mike Corby with Integrated Architecture, 840 Ottawa Avenue, Grand Rapids, MI, stated the following project elements: the amended plan resulted in avoiding the main wetlands near Portage Creek; the project will impact a narrow ditch within the interior of the project which requires State Environmental, Great Lakes, and Energy (EGLE) Department approval to development; the apartment roofs were redesigned from gable to flat roofs resulting in a lower overall building height and urban feel; some of the HVAC elements of the buildings will be located on the roof; increasing more natural area of the plan; removal of the pickleball courts; and the engineering details of the project will be provided later during the Final PD Plan step.

The applicant, John McGraw, President of River Caddis Development, 1038 Trowbridge Rd, East Lansing, MI, addressed that today's project cost gap increases with more apartment units whereas in the past the gap would decrease with more units.

Chair Corradini asked the applicant if the proposed number of parking spaces is enough for the project. Mr. McGraw indicated that all his projects seem to be best designed with 1.5 spaces per unit. Mr. McGraw further confirmed that the required detailed utility and site improvement drawings will be submitted at the subsequent Final PD Plan step for the project.

Commissioner Youngs asked the applicant about the project going through Michigan State Housing Development Authority (MSHDA).

Mr. McGraw indicated yes and all available/applicable incentives to address the current housing crisis assist in today's overall challenges in development.

Chair Corradini opened the Public Hearing.

No public comment was received.

Motion by Vice Chair Baldwin, seconded by Commissioner Joshi to close the Public Hearing. Motion carried 8-0.

Chair Corradini asked for any additional comments from the Commission and asked for a motion on the project. Motion by Commissioner Youngs, seconded by Commissioner Adams to recommend to City Council approval an Amendment to the previously-approved Tentative Plan Application of the River Caddis proposed mixed-use development at 412 W. Centre Avenue and 7860 Shaver Road with two conditions: 1. The proposed live/work units shall be consistent with the requirements of Building Code Section 419 Live/Work Units and Zoning Code Sec. 42-137 Work/Live Accommodations. 2. The utility and engineering review comments should be addressed in detail in the PD Final Plan.

Chair Corradini asked for a voice vote: Chairman Corradini (yes); Vice Chair Baldwin (yes); Adams (yes); Pezzoli (yes); Joshi (yes); Fries (yes); Youngs (yes); Freiman (yes); and Kasper (absent). Motion carried 8-0.

2. Ordinance Amendment #23/24-2: Ordinance to amend the Zoning Code to establish an Accessory Dwelling Unit regulation and permitting process.

Mr. Feldt provided a PowerPoint presentation explaining the past Planning Commission workshops addressing future housing strategies, the Council's housing goals and strategies, recent Planning

Commission workshops on Accessory Dwelling Units (ADU), provided a list of Michigan communities allowing ADUs and stated common ADU standards, showed staff's recommended ADU standards in the draft ordinance, indicated the process for reviewing and approval zoning ordinance changes, and concluded with recommending approval of the draft ordinance.

Commissioner Youngs asked if ADUs require Planning Commission approval or at staff level. Mr. Feldt indicated that ADUs would be reviewed and approved at staff level.

Commissioner Fries asked if ADUs require Planning Commission approval if the applicant of an ADU sought a taller height request, or instead it could be approved by staff. Mr. Feldt indicated yes per the draft ordinance it would require Commission review and approval. He also stated that staff found it more appropriate to use existing zoning process for height increases which results in proving neighborhood harmony and public commenting during Planning Commission meeting rather than creating a new staff-level approval process.

Commissioner Fries also asked if an ADU would be allowed atop of a detached garage on a lot having a single-story house. Mr. Feldt indicated that scenario was not specifically addressed in the ordinance but may be allowed through the height flexibility provided in the draft ADU ordinance.

Commissioner Fries also mentioned a scenario of a 900 square foot single-story house with a converted basement to a 700 square foot ADU with egress.

Commissioner Fries asked about how the ADU ordinance would impact the known properties in Portage having a pre-existing second living space. Mr. Feldt indicated that it is not fully clear if those sites have a second dwelling or just additional living space. Further, he stated since those are pre-existing spaces the ADU ordinance would not apply. Those property owners may voluntarily file an ADU application, however, and meet applicable ADU standards to become an established ADU. Mr. Feldt also stated that the ADU ordinance does not establish any rental registration.

Commissioner Fries indicated support of the ADU ordinance.

Commissioner Adams asked if the ADU ordinance would allow a scenario where an owner of a small house wished to build a larger house and dedicate it as a future primary house and the existing small house become dedicated as an ADU. Mr. Feldt indicated yes if meeting all ADU standards and that the owner showed an overall comprehensive development plan of the lot to ensure staff is aware of how each home would be classified and permitted.

Commissioner Pezzoli asked if the ADU could be located front of the primary house. Mr. Feldt indicated yes, if meeting all yard setbacks and ADU standards.

Commissioner Joshi asked why the draft ADU ordinance requires the ADU applicant to file a Deed Restriction and Affidavit ensuring compliance with all ADU standards. Mr. Feldt indicated that it is required for a few reasons: it is a new form of housing, there are currently no standards ensuring compliance with future operations of the ADU or overall property, and that the City does not have any rental registry or similar that act as a compliance mechanism.

Commissioner Joshi also asked about the prohibition of mobile homes as an ADU, could modular or manufactured home be an ADU, and is there are percentage of the home needing to be built on site to

(234)

become an allowed ADU building. She also suggested having the draft ADU ordinance provide more clarity on the term modular home.

Mr. Feldt indicated that a mobile home and manufactured home are the same and both would be prohibited from being an ADU. Manufacture home is the contemporary term for mobile home. Both are fully assembled off site and then transported to the subject site for use. A modular home is built in sections off-site and then assembled fully onsite and would be permitted as an ADU. Mr. Feldt also indicated that a detached ADU shall be designed in harmony with existing homes in the area.

Commissioner Freiman asked if new penalties will be created to enforce any future compliance issues resulting from an ADU.

Mr. Feldt stated no. Existing enforcement policies and procedures will be used.

Chair Corradini stated support for the ADU ordinance. He asked if ADUs are required to have individual connection to City water and sewer or can it be connected and shared with the existing utilities of the primary house.

Mr. Feldt stated that separate utilities connections are not required. Further, he indicated that if the ADU will be served by private on-site utilities, the owner shall gain applicable approvals through Kalamazoo County.

Chair Corradini opened the Public Hearing.

No public comment was received.

Motion by Vice Chair Baldwin, seconded by Commissioner Joshi to close the Public Hearing. Motion carried 8-0.

Chair Corradini asked for any additional comments from the Commission and asked for a motion on the project. Motion by Commissioner Joshi, seconded by Commissioner Adams to recommend to City Council approval of Ordinance Amendment #23/24-2: Ordinance to amend the Zoning Code to establish an Accessory Dwelling Unit regulation and permitting process.

Chair Corradini asked for a voice vote: Chairman Corradini (yes); Vice Chair Baldwin (yes); Adams (yes); Pezzoli (yes); Joshi (yes); Fries (yes); Youngs (yes); Freiman (yes); and Kasper (absent). Motion carried 8-0.

SITE/FINAL PLANS

None.

OLD BUSINESS

None.

STATEMENT OF CITIZENS

None.

NEW BUSINESS

None.

STATEMENT OF COMMISSIONERS/ STAFF

Commissioner Fries stated support of the projects in front of the Commission and suggests in the future that staff provide data to help support future projects that may become controversial.

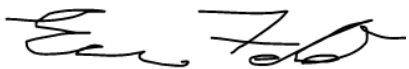
Commissioner Freiman asked about the format of the future Master Plan subcommittees subsections. Ms. Zhao indicated that the subcommittee meetings may last 1.5 hours long, the Master Plan consultants (Housel Lavigne) will lead discussion based on the framework and discuss with/ ask the subcommittee's feedback, and then they will provide a future meeting to discuss a drafted plan for those subsections. The subcommittee meetings will start on November 1; future dates in early November will be announced soon.

Chair Corradini thanked City staff for installing flags along S. Westnedge Avenue in support of Portage public schools football teams.

ADJOURNMENT

There being no further business to come before the Commission, Chair Corradini adjourned the meeting at 8:35 p.m.

Respectfully submitted,



Eric Feldt, AICP, CFM
Senior City Planner



Department of Community Development

TO: Honorable Mayor and City Council

FROM: City of Portage Planning Commission

DATE: October 24, 2023

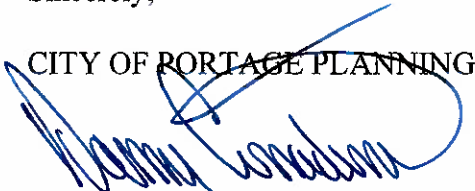
SUBJECT: Ordinance Amendment #23/24-2: Ordinance to amend the Zoning Code to establish an Accessory Dwelling Unit regulation and permitting process.

At the October 19, 2023, the Planning Commission discussed Ordinance Amendment #23/24-2: Ordinance to amend the Zoning Code to establish an Accessory Dwelling Unit regulation and permitting process. No public comments were received at the public hearing. The Planning Commission determined no further discussion was needed and voted to close the public hearing.

After careful consideration, the Planning Commission voted 8-0 (unanimously) to recommend to the City Council the approval of Ordinance Amendment #23/24-2: Ordinance to amend the Zoning Code to establish an Accessory Dwelling Unit regulation and permitting process.

Sincerely,

CITY OF PORTAGE PLANNING COMMISSION


Dan Corradini
Chairman

Attachments: Draft October 19, 2023 Planning Commission meeting minutes

TO: Honorable Mayor and City Council

FROM: Pat McGinnis, City Manager

SUBJECT: Amend the General Appropriations Act (Budget)

SUPPORTING PERSONNEL: Lauren VanderVeen, Finance Director

ACTION RECOMMENDED: Amend the General Appropriations Act (budget) for the fiscal year ending June 30, 2023.

The normal government procurement process involves issuance of purchase orders to obtain goods and services necessary to provide service to citizens. Purchase orders specify description, quantity and price of the required goods. With each purchase order, an encumbrance is entered into the city accounting system to reserve budgeted funds to pay for the goods. As goods are received and the related invoices paid, the encumbrances are relieved. At the end of each fiscal year, open purchase orders (encumbrances) are carried forward to the next fiscal year to reserve funds required to pay for goods and services already ordered. This is completed by adding the encumbered funds to the annual budget of the next fiscal year. The “encumbrance carry forward” process is a standard practice in governmental accounting. The City of Portage Charter, Section 7.6(d), requires the production of this listing for approval by City Council.

For Fiscal Year 2022-2023, the amount recommended to be rolled forward is \$2,955,947, consisting of:

Street Projects	\$1,758,455
Fleet & Facilities Fund	\$679,716
Utility Projects	\$395,077
General Fund	\$120,824
West Lake Weed Fund	\$1,875
Total	\$2,955,947

A significant portion of the funds to be rolled forward for the street funds (\$1,684,882) is included for mill and fill programs and chip sealing programs for major and local streets. The Fleet & Facilities Fund roll forward primarily consists of \$509,975 for a Jet Vactor truck and \$100,069 for new fleet vehicle upfitting. The utility funds primarily consist of \$79,930 in emergency well maintenance; \$44,929 for the Milham Wellfield chemical injection vault; \$44,360 for stormwater monitoring; \$36,248 for local streets storm sewer cleaning; \$33,660 for wellhead protection; and \$30,438 for a PFAS groundwater study. General Fund significant projects include Master Plan professional services (\$33,346), and Fire Department window shades and installation (\$10,672).

The amount rolled forward from Fiscal Year 2021-2022 was \$2,365,240, consisting of \$1,270,220 for streets projects; \$624,772 in equipment for Fleet and Facilities; \$265,416 in utility projects; and \$204,832 for programs and projects in the General Fund.

The attached list shows the dollar value of open purchase orders as of June 30, 2023, all of which are for

necessary supplies and services. Receipt of these goods and services will require subsequent payment by the city. Council action to amend the Fiscal Year 2023-2024 budget will allow payment for goods and services ordered in Fiscal Year 2022-2023 from the Fiscal Year 2023-2024 budget. Therefore, it is recommended that City Council amend the General Appropriations Act (budget) for the fiscal year ending June 30, 2024.

FUNDING: N/A

Attachments: 1. 2022-2023 Purchase Orders to Roll into 2023-2024 Budget

2022-2023 Purchase Orders to Roll into 2023-2024 Budget

	PO Number	Vendor Name	Carry-Forward Amount
1	83815	AMERICAN HYDROGEOLOGY CORP.	6,318.78
2	86446	AMERICAN HYDROGEOLOGY CORP.	30,438.37
3	89402	CLEAN EARTH ENVIRONMENTAL SERV	9,227.52
4	89576	GORNO FORD	27,238.00
5	89968	ABONMARCHE CONSULTANTS, INC	1,195.50
6	90399	GORNO FORD	42,434.00
7	91872	THE SAFETY COMPANY, LLC	509,975.00
8	92716	ENGINEERED PROTECTION SYSTEMS, INC.	5,500.00
9	92716	ENGINEERED PROTECTION SYSTEMS, INC.	5,500.00
10	92749	MICH MUNICIPAL POLICE & FIRE REPAIR	6,082.29
11	92973	PERCEPTIVE CONTROLS, INC.	6,766.00
12	93136	PERCEPTIVE CONTROLS, INC.	3,270.00
13	93197	PERCEPTIVE CONTROLS, INC.	735.00
14	93202	TRUCK & TRAILER SPECIALTIES	100,069.00
15	93225	RESTORATIVE LAKE SCIENCES, LLC	1,875.00
16	93572	FISHBECK THOMPSON CARR & HUBER, INC	33,659.92
17	93750	HOUSEAL LAVIGNE ASSOCIATES, LLC	33,346.40
18	93942	KIESLER POLICE SUPPLY	4,955.41
19	93944	PROGRESSIVE AE	4,375.00
20	94137	KENNEDY INDUSTRIES, INC.	30,616.00
21	94165	MAICO INDUSTRIES, INC.	31,005.00
22	94208	MICHIGAN PAVEMENT MARKINGS LLC	11,029.90
23	94237	ENVIRONMENTAL RESOURCES GROUP, LLC	44,359.64
24	94277	DEER CONTRACTING & LANDSCAPE	2,880.00
25	94292	MOTOROLA SOLUTIONS, INC.	1,557.82
26	94318	MICHIGAN PAVEMENT MARKINGS LLC	16,817.70
27	94319	CT ELECTRICAL SERVICES, INC.	3,205.00
28	94357	WIGHTMAN	3,300.00
29	94369	STRYKER SALES CORPORATION	1,468.13
30	94391	FERGUSON US HOLDINGS, INC	30,169.77
31	94392	PEERLESS-MIDWEST, INC.	39,965.00
32	94392	PEERLESS-MIDWEST, INC.	39,965.00
33	94407	MACQUEEN EQUIPMENT LLC	9,540.00
34	94431	PLUMMER'S ENVIRONMENTAL SERVICES	36,248.30
35	94481	MUNICIPAL EMERGENCY SERVICES INC	2,986.41
36	94563	ST. REGIS CULVERT, INC.	7,800.00
37	94575	TRACY CROSS & ASSOCIATES, INC.	8,000.00
38	94621	CIMCO REFRIGERATION	18,870.40
39	94623	CERTASITE LLC	395.19
40	94640	J & J LAWN SERVICE, INC.	570.00
41	94644	PETERS CONSTRUCTION CO.	17,307.83
42	94691	PETERS CONSTRUCTION CO.	44,928.38
43	94740	WIGHTMAN	2,425.00

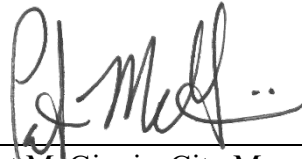
44	94776 DEER CONTRACTING & LANDSCAPE	3,190.00
45	94802 STANTEC CONSULTING SERVICES INC	2,144.00
46	94803 STANTEC CONSULTING SERVICES INC	2,350.00
47	94804 STANTEC CONSULTING SERVICES INC	2,388.00
48	94805 GUIGUE, JANET KAY	10,672.00
49	94882 MICHIGAN PAVING & MATERIALS CO.	1,365,566.40
50	94883 PAVEMENT MAINTENANCE SYSTEMS, LLC	319,315.25
51	94931 JRA FOOD SERVICE CONSULTANTS, LLC	6,650.00
52	94964 SCHLEY NELSON ARCHITECTS, INC.	5,300.00

\$	2,955,947.31
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MATERIALS TRANSMITTED

Friday, October 20, 2023

1. Communication from the City Manager regarding a letter received from a resident concerning MetroNet fiber installation and response from MetroNet – Information Only.



Pat McGinnis, City Manager

cc Adam Herringa, Chief Operating Officer
Peter Dame, Chief Development Officer

TO: Honorable Mayor and City Council

FROM: Pat McGinnis, City Manager

SUBJECT: Resident complaint re: MetroNet fiber installation

On October 10, City Council received the attached letter from resident Joan Moore on Windhaven Court. Ms. Moore was unhappy with the installation of MetroNet internet fiber in the right-of-way at her home.

By the close of business on October 11, Ms. Moore had been contacted and issues were resolved by MetroNet. A follow-up from Ben Ruzick, MetroNet Government Affairs Director, is also attached.

October 6, 2023

Portage City Council
Portage, MI

Re: Metronet



Dear City Council Members:

From the very first letter from Metronet, the company was not friendly. They made their point "they had the right" to invade our property. They also made it clear homeowners would be responsible for those with sprinkler systems, to place lawn flags and paint to indicate where they are located.

At that point, I made a phone call to Metronet and told them I had a sprinkler system. I said I had no idea the exact location. Even if I did, my advanced senior age would make it an impossible chore. I was told I would have to contact the company who installed it which was 25 years ago and unknown to me. I don't think so. Companies don't do work for free.

That changed and they sent a person to mark the entire neighborhood. Two weeks later they began the work. As they chose my lawn to dig a massive hole which was so deep I couldn't see the top of the head of the man standing in the hole. Then they moved a heavy motorized piece of equipment to my lawn that extended very close to my front porch. That was definitely beyond the right of way.

I called the city and voiced my opinion about what was going on. I was told, once again, Metronet "had the right" to do that. When did I lose my rights? Who pays the taxes?

As a former employee of City Hall, many, many moons ago, the management emphasized Portage citizens were of the utmost importance. Obviously it is not the mantra today.

I am not against new business coming to Portage. I have encouraged companies to come to Portage. Had some success too.

Did any of you read the "reviews" online about the company?

Sincerely,

Joan Moore, 7211 Windhaven Ct. Portage, MI 49024

From: [Ben Ruzick](#)
To: [Pat McGinnis](#)
Cc: [Peter Dame](#); [Adam Herringa](#); [Kendra Gwin](#); [Erica Eklov](#); [Kylar Chandler](#)
Subject: RE: Citizen Letter to Council
Date: Wednesday, October 11, 2023 9:50:28 PM
Attachments: [image001.png](#)

CAUTION: THIS EMAIL IS FROM AN EXTERNAL SENDER

Do not click on links or open attachments unless this is from a sender you know and trust.

Pat and team,

I apologize for the length of this response, but we take these matters very seriously.

I spoke with our Project Director and Construction Manager after receiving this message. Normally I would call the resident to try and make first contact, but there was not a phone number included. After discussing, the Construction Manager stated that he would head to the property today to get eyes on the property and attempt to speak with Ms. Moore.

Our Construction Manager, Glen, was able to make contact with Ms. Moore. During the conversation Glen addressed the concerns she notated in her letter. In regard to the large holes, we did place one of our small boxes, which are only 12 inches deep near her property. However, there was a larger terminal placed across the street, which is typically 18 to 20 inches deep and may be the one she thought a guy was digging so deep that she could only see his head. Glen did check both boxes and found the restoration looked good and there were not any needs of additional restoration (Which Ms. Moore agreed).

Regarding the Sprinkler marking, Glen apologized for the confusion with the sprinklers and explained why Sprinklers are not located by USIC, nor do we have an ability to locate them ourselves. We advised that if there is ever any damage to a resident's property, we will absolutely repair and resolve any damages at MetroNets expense. (For your reference, it is not a problem when a resident cannot locate the sprinklers and we do not expect them to incur and expense to do so. Most residents do not advise us of their sprinklers, but it is nice when they do so we can take extra precautions to try and avoid them.)

This led to the drill that was on her property. Glen explained that while we always attempt to avoid ever entering onto private property, there are times like this in which it is the only viable option. However, before the team moves any equipment, they are required to ask if it would be acceptable to do so. If the resident denies access, we will not enter onto the property. If an associate ever ignores the residents request, we will terminate their employment with us. According to Glen, during his conversation Ms. Moore stated she did approve them to move the equipment on the property while doing the work, so I am not sure where the discrepancy is here.

During this part of the conversation, she stated she was concerned at one point how close they had gotten to the front porch as they positioned the drill. They then discussed that the equipment did

leave a few track marks which the team repaired at the time of the work but needed additional care. With the additional rain, Glen found that we needed to do some additional restoration to level out the two track indentations.

After the conversation with Ms. Moore, and her approval, we had our team out to provide additional restoration to the ground and advised her that we would come back out to check on it periodically to ensure it looks great.

While we despise ever frustrating a resident, we will always do everything we can to make them happy. At this point, I believe we have done this for Ms. Moore and she has our contact information. However, I know that sometimes a resident feels uncomfortable making additional complaints to us, so if she approaches the city again, please let us know as we will support her immediately.

Sincerely,



Ben Ruzick
Government Affairs Director | MetroNet
Cell (630) 429-7328
www.metronet.com



From: Ben Ruzick <Ben.Ruzick@metronet.com>

Sent: Wednesday, October 11, 2023 8:11 AM

To: Pat McGinnis <mcginnip@portagemi.gov>

Cc: Peter Dame <damep@portagemi.gov>; Adam Herringa <herringa@portagemi.gov>; Kendra Gwin <gwink@portagemi.gov>; Erica Eklov <eklove@portagemi.gov>; Kylar Chandler <chandlek@portagemi.gov>

Subject: RE: Citizen Letter to Council

Pat,

Thank you for forwarding this to me, I will begin researching and provide a full report back.

Thank you,



Ben Ruzick
Government Affairs Director | MetroNet
Cell (630) 429-7328
www.metronet.com



Minutes of Boards & Commissions

**City of Portage Environmental Board
Minutes for the Meeting on August 9, 2023**

Members present: Justin Gish, Lauren Thompkins, Jason Beasley, David Lancaster, Thomas Schaffer, Jerry Kroehn, Deirdre Courtney, Jamie Harmon (ex officio)

Guests: None present

7:03 p.m. Meeting called to order.

7:01 p.m. Public Comment

- None

7:03 p.m. Approve May 2023 Meeting Minutes

- Motion to approve the May minutes made by Joe C. Seconded by David L. Motion passed.

7:04 p.m. Review Board Operations, Attendance Policy, Board Member Vacancies and Terms Expiring in October.

- The Portage City Clerk states that they and the City Council will take into account the number of both excused and unexcused absences when determining a board member's reappointment to the board.
- Lauren T. raised concerns about the occasionally impolite interactions between board members and asked that the individuals on the board reflect upon how the board members interact with each other.
- Thomas S. asked that Jamie H. provide copies of procedures and regulations that other City of Portage Boards follow.
- Jamie H. suggested the Environmental Board form a committee to draft rules of order and procedure for the Environmental Board. The draft could then be debated upon and adopted by the board.
- Motion made by David L. that once the documents are received Environmental Board Members will review the document before the meeting and ready to discuss. Deirdre C. seconded.

7:57 p.m. Board Member Roles and Assignments

- Reappointments will be made in October. Justin G. and Deirdre C. are up for reappointment and an open board seat will be filled at this time.
- Internal election of officers on the Environmental Board will be held in November. The new member will be allowed to vote.
- Deirdre C. has concerns about the potential problems that annual change in leadership might cause with regards to consistency of projects on the board.

8:14 p.m. Environmental Board Goals and Initiatives for 2023/2024

- Lauren T., Joe C., and David L. will work towards the creation of a Green Week.
- Thomas S. asked about the engagement from the Youth Advisory Committee. Deirdre suggested that once school was in session we could revisit.
- Motion made by Thomas S. to continue this discussion at the next meeting. Deirdre seconded.

8:20 p.m. Member Discussion

- Justin G. will explore the impact of development near Portage Creek and Celery Flats.
- Thomas S. wants to explore the presence of lead in the homes and drinking water of Portage residents.
- Jerry K. asked about the mosquito controls currently be used in the Portage Parks. Thomas S. asked if the board would be interested in hearing from the County Health Department on the topic of insect borne diseases within the City of Portage.

8:27 p.m. Agenda items for consideration at September 2023 meeting.

- Discuss Board Goals and Initiatives
- Bee City Discussion
- Discuss Board Rules of Order
- Talk about Portage Creek and Celery Flats
- Review of site plan and reports for the car wash on the corner of Kilgore and Westnedge
- Review of the cat problem in the City of Portage

8:31 p.m. Motion to adjourn made by Thomas S. Seconded by Lauren T.

**City of Portage Environmental Board
Minutes for the Meeting on September 13, 2023**

Members present: Lauren Tompkins, Joe Chamberlin, David Lancaster, Thomas Schaffer, Jerry Kroehn, Deirdre Courtney, Jamie Harmon (ex officio)

Guests: Kylar Chandler, Assistant to the City Manager

7:03 p.m. Meeting called to order.

7:10: Approve August 2023 Meeting Minutes

- Motion to approve the August minutes made by Thomas. Seconded by David L. Motion passed.

7:29: Training and Procedure

Training regarding decorum and parliamentary procedure is being considered/investigated by the City Clerk's Office.

- Fall is being considered as a date, likely after new appointments in later October.
- Training is expected to take one hour and info is forthcoming.
- Meetings will be recorded so all can benefit.
- Thomas requests show of hands for all members who support this. Lauren, David, Jerry, Deirdre, and Joe support.
- Lauren raises concerns about decorum and suggests members are not present today because of lack of respect. Deirdre states this is an ongoing issue. Thomas states team bonding would help.

7:40: Reading of Article 2.

- Jamie points out importance of groundwater in original formation.
- Environmental Board annual report is due in November (Thomas responsible).
- Rules of operation/rules of procedure are up to the board and must be approved by the city council.
- Topics to consider: how agendas are handled, what constitutes a quorum, process for handling items raised that are not on the agenda.
- The board members used to have 3-5 minutes at the end of the meeting to raise items, but this has fallen out of favor.
- Jamie to forward city council's version of standards and suggests board could draft similar standard.
- Joe suggests return to hand-raising and consideration of section 2 and 10.

7:57: Consideration of City Council's Priorities

- Jamie suggests board review handout of city council's priorities for the coming year and use these to determine the board's focus for the same time frame.
- Thomas proposes further discussion of waste hauling and lead issues.

- Jamie: there are no lead issues known in the city. The city is required to conduct an annual inventory of materials used in services, and a certain percentage must be dug up on both sides of the meter. All water provided by the city does not contain lead.
- Jerry questions whether we should have a single waste hauler.
 - Report was provided about this prior to COVID but no action has been taken.
 - Kylar states that the city council will be discussing the report this week.

8:00: Zoning Concerns regarding Celery Flats Development

- Joe expresses concern that zoning ordinances are focused on growth, not sustainability, and proposes considering how to recommend limitations to city council.
- Joe to draft letter to city manager on behalf of the board. Letter to describe importance of considering Celery Flats path as a “gateway” green space that should be preserved, request consideration of revising zoning for this area.
 - Joe to complete letter by 9/22. Board to provide feedback by 9/25.
 - Joe motions that if quorum supports the letter, then Thomas will sign and send on to city manager. Deirdre adds that five members should agree that it will be sent on to city manager. Thomas seconds. Lauren third. Motion passes.

8:32: Communication Channels

Thomas requests clarification on how the board can communicate with city council and other leadership. Kylar to speak to Adam Herringa, city COO, about channels for speaking to executive, proprietary of funneling information through liaison.

8:36: Green Week

Joe to send lists of Green Week ideas to Lauren, Jerry, and David and suggests bringing ideas to board before the next meeting.

8:38: Thomas motions to adjourn. Joe second. David third. Motion passes.

TO: Honorable Mayor and City Council

FROM: Pat McGinnis, City Manager

SUBJECT: Farmers Market Site Selection

SUPPORTING PERSONNEL: Kathleen Hoyle, Director of Parks & Recreation

ACTION RECOMMENDED: Direct the City Administration to pursue a new Portage Farmers Market facility to be located in direct proximity to the Charles and Lynn Zhang Portage Community Senior Center.

The Portage Farmers Market has experienced significant growth since its inception in 2016 with approximately 5,000 participants to 24,930 in 2023. The vendor base has also grown from 12 vendors in 2016 to a current capacity of 30 businesses in the current City Hall parking lot. The market also implements five state and federal food assistance programs, including SNAP, Double Up Food Bucks, Eat Smart Live Strong, WIC, and Senior Project Fresh, and has a consistent entertainment base of musicians at each market.

City Council recognizes the potential for further growth and improvement of this widely enjoyed asset, so has directed staff to seek a permanent site for the market that will accommodate the increasing demand for vendor participation and offer a wider range of products. A new site would also accommodate other markets, including arts festivals, and craft fairs. Thanks to State Representative Christine Morse, the city received a grant for \$1.75 million from the State of Michigan for the construction of a farmers market. These funds need to be expended by December 25, 2025.

City Council and Administration have held numerous discussions in the past 12 months regarding the future of the Portage Farmers Market. On November 18, 2022, the City Council identified the Farmers Market as a priority for the current fiscal year. Following that designation, the City Council held a Committee of the Whole Meeting on January 24, 2023, at which several potential locations were discussed. The review of potential locations and options continued at the regular meeting on May 9, 2023. At this meeting, there was a motion and an affirmative vote "to table the matter until such time that City Council has had an opportunity to come to a consensus on the concept and the City Administration has more thoroughly investigated all potential sites, including those meeting such concept."

On August 8, 2023, the City Council held a second Committee of the Whole Meeting regarding the farmers market. At this meeting, staff presented survey results that indicated a preference from respondents that the future market be located in the City Centre. The survey also provided insight into preferred amenities and building structure. At the conclusion of this meeting, Mayor Randall provided a summary of the next steps, noting that "the Council desired the current Senior Center with adjacent land; the current DPW location; or South Westnedge Park with partially enclosed designs." Additionally, at the conclusion of this meeting "City Manager McGinnis outlined the anticipated next steps for staff, including hiring a design consultant with expertise specializing in markets."

Following a review of numerous potential sites, the City Administration recommends that a new farmers market be pursued on vacant parcels adjoining the Portage Zhang Senior Center (PZSC) (see attached). Should the City Council support this recommendation, the City Administration will prepare and issue a Request for Proposal (RFP) from design firms. The results of the RFP will be brought before the City Council for selection regardless of the contract amount.

The key advantages of this location include:

- City-owned property
- Proximity to existing city facilities
- No need to build separate restrooms, resulting in significant cost savings
- Matches survey results which indicate a strong preference for the City Center area
- Proximity to public transit
- Visible and easily accessible location

As for the other locations identified at the August 8 Work Session:

DPW Property:

The idea of a future public market on this expansive property is valid, however there are considerable drawbacks:

- Financing and construction of a new garage and the abandonment of the current property will take several years; City Council expects a new market in the relative short term
- The opportunity cost is high - the current location of the DPW garage presents an excellent opportunity for future high density housing investment in the City Center

South Westnedge Park:

Again, a valid idea, however there are considerable drawbacks here as well:

- Visibility is a premium for vendors selling their produce and locally produced products
- Market season is also softball season, and there are tournament games on several Sundays (eight Sundays in 2023)

As we evaluated various sites, the corner of S Westnedge and Garden Lane repeatedly came up as a good site. It could be a very good site, however the asking price is considerably higher than the entire grant we received from the State of Michigan and this would remove more private property from private (taxable) ownership.

We have received several inquiries about several other potential sites. We could continue to evaluate sites, but believe we have a **winner** on property the City already owns in the City Center. Therefore, it is recommended that City Council direct the City Administration to pursue a new Portage Farmers Market facility to be located in direct proximity to the Charles and Lynn Zhang Portage Community Senior Center.

FUNDING: State Grant Funding and FY 23/24 CIP Funding for Architecture and Engineering

Attachments: 1. PZSC Vicinity Map

Imagery Captured, March 2023

