

- 7:00 p.m. Call to Order.
- Invocation.
- Pledge of Allegiance.
1. BSA Scout Troop #244.
- A. Current City Council:
1. Roll Call.
 2. Proclamations:
 - a. Small Business Saturday.
 3. Approval of City Council Meeting Minutes:
 - a. Regular Meeting of November 1, 2023.
 4. Receive the preliminary results of the November 7, 2023, City General Election from the City Clerk as information only.
 5. Comments from Councilmembers.
 6. Adjournment Sine Die of Retiring City Council.
- B. New City Council:
1. Oaths of Office.
 2. Seating of Mayor and Councilmembers.
 3. Roll Call of 30th City Council.
 4. Election of Mayor Pro Tempore.
 5. Adopt the City Council *Rules of Order and Procedure*.
 6. Resolution of Respect for Lori Knapp.
 7. Petitions & Statements of Citizens.
 8. Consent Agenda:
 - a. Approve the Accounts Payable Register of November 14, 2023, as presented.
 - b. Adopt and sign the updated *City Council Code of Ethics and Values Policy*.
 - c. Approve the Final Preliminary Condominium Plan (engineering plans) for McConley Cove Planned Development, 1075 Bacon Avenue.
 - d. Accept for first reading an ordinance amendment to grant River Caddis Communities a tax exemption and establish a Payment in Lieu of Taxes for Portage Caddis, a Proposed 180-unit multiple-family residential development to be constructed at 412 W. Centre Ave., being Parcel Number 00016-740-E, and 7860 Shaver Road, being Parcel Number 06451-001-O, in the City of Portage and take final action on December 5, 2023.
 - e. Approve a one-year (base) contract with Allied Mechanical Services, in the amount of \$430,728.20 for heat, ventilation, and air conditioning (HVAC) maintenance of city-owned facilities, with five optional one-year extensions, and authorize the City Manager to execute all documents related to this action on behalf of the city.
 - f. Approve a one-year contract with Flock Safety for the provision of a network of Automatic License Plate

Readers in the amount of \$82,500, with the option of four one-year renewals, and authorize the City Manager to execute all documents related to this matter on behalf of the city.

- g. Award a contract to perform engineering services to Wightman & Associates, Incorporated, of Kalamazoo, Michigan in the amount not to exceed \$320,284 for the reconstruction of West Centre Avenue from Oakland Drive to Shaver Road and authorize the City Manager to execute all documents related to the contract on behalf of the city.
- h. Receive the communication from the City Manager scheduling a parliamentary procedure training session for the various boards and commissions on December 12, 2023, from 4:00 to 7:00 p.m. in Council Chambers.
- i. Materials Transmitted.
- j. Minutes of Boards and Commissions.
- k. Calendar of Meetings:
 - Senior Citizens Advisory Board: Wednesday, November 15, 2023, at 2:30 p.m. at the Portage Zhang Senior Center.
 - City Council Annual Goal Setting Session: Thursday, November 16, 2023, at 9:00 a.m. at the Portage Zhang Senior Center.
 - Planning Commission: Thursday, November 16, 2023, at 7:00 p.m. in the City Council Chambers.

C. Communications:

D. Public Hearings:

- 1. Subsequent to the public hearing, consider approving the Tentative Plan Amendment of the River Caddis proposed mixed-use development at 412 West Centre Avenue and 7860 Shaver Road, 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; and,
 - b. the utility and engineering review comments should be addressed in detail in the PD Final Plan.

E. Regular Business Agenda:

F. Unfinished Business:

G. Council Committee Reports:

H. New Business:

- 1. Appoint three City Council volunteers to read the essays submitted as part of the "I Love Portage" Essay Contest and determine the contest winner(s).

I. Statements of Citizens:

J. Statements of City Council and City Manager.

Adjournment.



CITY OF PORTAGE PROCLAMATION

Small Business Saturday 2023

- WHEREAS,** the City of Portage celebrates our local small businesses and the contributions they make to our local economy and community; and
- WHEREAS,** according to the United States Small Business Administration, there are 33 million small businesses in the United States, small businesses represent 99.9% of firms with paid employees, small businesses are responsible for 62% of net new jobs created since 1995, and small businesses employ 46.4% of the employees in the private sector in the United States; and
- WHEREAS,** 72% report the day makes them want to shop small and dine at small, independently-owned retailers and restaurants all year long; and
- WHEREAS,** Sixty-eight cents of every dollar spent at a small business stays within the local community and generates an additional forty-eight cents worth in local business activity from small business employees and owners; and
- WHEREAS,** 95% of consumers who plan to shop on Small Business Saturday said the day inspires them to go to small, independently-owned retailers or restaurants that they have not been to before, or would not have otherwise tried; and
- WHEREAS,** Small Business Saturday supports our local businesses that create jobs, boost our local economy, and preserve our communities; and
- WHEREAS,** advocacy groups, as well as public and private organizations across the country have endorsed the Saturday after Thanksgiving as Small Business Saturday.

NOW, THEREFORE, BE IT RESOLVED THAT I, Patricia M. Randall, Mayor of the City of Portage, do hereby proclaim November 25, 2023, as SMALL BUSINESS SATURDAY and urge the residents of our community, and communities across the country, to support small businesses and merchants on Small Business Saturday and throughout the year.

Signed this 14th day of November 2023.

Patricia M. Randall, Mayor

CITY COUNCIL MEETING MINUTES FROM NOVEMBER 1, 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, Victor Ledbetter, Mike Quinn, Terry Urban, Mayor Pro Tem Jim Pearson, and Mayor Patricia Randall were present.

ABSENT: None.

ALSO PRESENT: City Manager Pat McGinnis, Chief Operating Officer Adam Herringa, Chief Development Officer Peter Dame, City Attorney Catherine Kaufman, and Deputy City Clerk Tammy Durian.

At the request of Mayor Randall, the audience observed a moment of silence to recognize organizations that educate and promote health and child safety in our community. Following the moment of silence, the City Council recited the Pledge of Allegiance

PROCLAMATIONS:

At the request of Mayor Randall, City Manager McGinnis presented the three winners of the second annual Tricked Out Home contest.

Lung Cancer Awareness 2023: City Manager McGinnis read the proclamation.

Family Court Awareness Month: Lisa, a Family Court advocate, read the proclamation.

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.

Motion by Quinn, seconded by Knapp, to approve the Consent Agenda as presented. Upon a roll call vote, motion carried 7 to 0.

Approval of Minutes: Motion by Quinn, seconded by Knapp, to approve the City Council Meeting Minutes of the Regular Meeting of October 17, 2023. Upon a roll call vote, motion carried 7 to 0.

Accounts Payable Register: Motion by Quinn, seconded by Knapp, to approve the Accounts Payable Register of November 1, 2023 as presented. Upon a roll call vote, motion carried 7 to 0.

2024 City Council Meeting Schedule: Motion by Quinn, seconded by Knapp, to approve the 2024 schedule of regular City Council meetings. Upon a roll call vote, motion carried 7 to 0.

Health Insurance Contract Renewals: Motion by Quinn, seconded by Knapp, to 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; and 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. Upon a roll call vote, motion carried 7 to 0.

Tentative Plan Amendment for River Caddis: Motion by Quinn, seconded by Knapp, to 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 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; and, the utility and engineering review comments should be addressed in detail in the PD Final Plan. Upon a roll call vote, motion carried 7 to 0.

Ordinance Amendment #23/24-2: Motion by Quinn, seconded by Knapp, to 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. Upon a roll call vote, motion carried 7 to 0.

Amend the General Appropriations Act (budget): Motion by Quinn, seconded by Knapp, to amend the General Appropriations Act (budget) for the fiscal year ending June 30, 2024. Upon a roll call vote, motion carried 7 to 0.

Materials Transmitted: Motion by Quinn, seconded by Knapp, to receive the Materials Transmitted of October 20, 2023. Upon a roll call vote, motion carried 7 to 0.

Minutes of Boards & Commissions: Motion by Quinn, seconded by Knapp, to receive the minutes of the Environmental Board of August 9 and September 13, 2023. Upon a roll call vote, motion carried 7 to 0.

Calendar of Meetings: Motion by Quinn, seconded by Knapp, to receive the Calendar of Meetings as presented. Upon a roll call vote, motion carried 7 to 0.

PETITIONS AND STATEMENTS OF CITIZENS:

Jihan Young, Vice Chair of the Human Services Board, provided a closeout update to Red Ribbon Week. She also read a pledge taken by Portage Public School students about the importance of being healthy and drug-free and shared that the Human Services Board had the opportunity to meet with the student-led Red Ribbon Week Committee.

Mark McKeon (6825 Cromwell Street) expressed his concern about the lack of playground equipment at Lexington Green Park. City Manager McGinnis replied that the playground equipment has been ordered and is set for delivery this spring.

UNFINISHED BUSINESS:

Farmer's Market Site Selection: City Manager McGinnis provided a brief background of the Farmer's Market and the goal set by the City Council to find a permanent home for the market. He then invited Director of Parks and Recreation, Kathleen Hoyle, and Recreation Program Manager, Annie Pryor, to the podium for questions. City Manager McGinnis noted that several potential locations have been discussed and the recommendation is to focus on the property that is owned by the City of Portage located in direct proximity to the Charles and Lynn Zhang Portage Community Senior Center. At Mayor Randall's direction, Director Hoyle provided highlights and the next steps of the proposed location. The next steps include hiring an architectural engineering firm while staying within budget, noting the grant received by the State of Michigan.

Councilmember Urban expressed concerns with the proposed location due to the size, potential future growth of the market, and lack of parking. He suggested the city consider an alternate site at the city-owned property located at the corner of Romence Road and Lovers Lane and provided a brief history of the suggested property, highlighting the size of the property, its undeveloped location providing a blank slate, and parking possibilities.

Discussion regarding the alternate location on the corner of Lovers Lane and Romence Road followed, with topics including startup costs, time frame, and preservation of trees. There was further discussion regarding the advantages of the City Center property in direct proximity to the Senior Center which included existing bathrooms, walkability, visibility, meeting the needs of the community, as well as fiscal responsibility. Councilmember Burns asked for clarification of the next steps, the costs for an engineering firm to design an undeveloped site, as well as growth and accommodation of the market. City Manager McGinnis replied with an explanation of costs, professional services from construction to completion, and the process of gathering information and research. Director Hoyle addressed the question regarding the size of the market and the estimated growth. Additional comments from council included proximity of the proposed location to sites identified in the survey, repurposing, expansion, and grant monies versus costs to the taxpayers.

Motion by Pearson, seconded by Burns, to 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. Councilmember Urban reiterated his reservations regarding the proposed location and asked for an amendment. Councilmember Ledbetter expressed favor of researching the alternate property, and Councilmember Knapp and Mayor Pro Tem Pearson asked for clarification on the amendment. City Manager McGinnis shared the process and the next steps, which would include a consultant to present a cursory evaluation of both sites providing a physical and fiscal feasibility. He noted asking staff to reach out to the vendors as well.

At the Mayor's request, Deputy City Clerk Durian restated Councilmember Urban's earlier amendment to the motion with assistance from City Manager McGinnis. Motion by Urban, seconded by Ledbetter, to amend the motion and add a cursory review of the City owned property located on the corner of Romence Road and Lovers Lane. Upon a roll call vote, motion carried 4 to 3, with Councilmember Quinn, Mayor Pro Tem Pearson, and Mayor Randall voting no.

At the Mayor's request, Deputy City Clerk Durian restated the amended motion with assistance from City Manager McGinnis. Motion by Pearson, seconded by Burns, to 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; with the amendment to request a cursory review of the property owned by the City of Portage located at the corner of Romence Road and Lovers Lane. Upon a roll call vote, motion carried 7 to 0.

Mayor Randall asked City Manager McGinnis for a list of all vacant property located in the City of Portage and thanked Councilmember Urban.

COUNCIL COMMITTEE REPORTS: None.

STATEMENTS OF CITIZENS:

Robert Williams (10930 S. Westnedge Avenue) shared alternative options for the Farmer's Market and concern with the amount of open space in Portage.

Arlene Lancaster (614 LaSalle Street) expressed concerns with hunting and speed limits near her residence. Councilmember Urban asked for clarification on hunting and firearms, and Mayor Randall confirmed that the City Manager would reach out to Ms. Lancaster.

STATEMENTS OF CITY COUNCIL AND CITY MANAGER:

Councilmember Urban extended his apologies for not bringing his suggested alternate site to the Council sooner.

Councilmember Ledbetter shared that November 1st is the first day of Indigenous Heritage Month, and recognized the Day of the Dead and explained that Día de los Muertos is a celebration, paying respects to loved ones who have passed. He then expressed his appreciation for the Family Court Awareness Month proclamation.

Councilmember Knapp had no comment.

Councilmember Quinn thanked City Manager McGinnis for his presentation to visitors from South and Central America. In honor of All Saints Day, November 1st, a day to remember those who passed away, Councilmember Quinn remembered a fellow Marine who took his own life. He commented on the effects of traumatic brain injury and the veterans who suffer from it. In addition, Councilmember Quinn noted that Marine Corps Birthday is celebrated on November 10th and Veterans Day, honoring military veterans, is observed on November 11th.

Councilmember Burns shared his excitement for the future improvement of the farmers market, and thanked our State Representative for the additional financial resources.

City Manager McGinnis recognized Deputy Director of Revenue and Treasury, Grant Taylor, for his appointment to serve as Membership Director on the Michigan Municipal Treasurers Association (MMTA) Board. He then introduced Finance Director Lauren VanderVeen who shared that the City of Portage had been awarded the Certificate of Achievement for Excellence in Financial Reporting by the Government Finance Officer Association (GFOA) for its annual comprehensive financial report for the fiscal year ending June 30, 2022, noting this is the 36th year that the City of Portage has received this award. Additionally, the City of Portage, one of three municipalities in Michigan, was recognized as a Government Finance Officer Association (GFOA) Triple Crown recipient. City Manager McGinnis then explained a request presented by Councilmember Knapp to receive an update of goals throughout the year versus once a year was implemented and presented a Fiscal Year City Council Priorities update to the Council, and noted this will be available on the website. He also discussed he and Councilmember Quinn's meeting with Central and South American visitors. Lastly, City Manager McGinnis shared the importance of resolutions, they are worth passing and can make a difference in the community.

Mayor Pro Tem Pearson also commented on the proposed farmers market facility adding that it's not common to have a 3-4 vote, but ultimately council has conversation and delivers for the citizens.

Mayor Randall reported on upcoming events at the Senior Center. She then shared that a resident from another community learned about Portage's request for transparency from trash removal services and indicated they plan to contact their local municipality and County about requiring the same standards and posting rates for services. Next, Mayor Randall said that she, Councilmember Quinn, and City Manager McGinnis visited with U.S. Representative Bill Huizenga, noting his office is located in the City of Portage. This visit was one day prior to receiving information regarding possible service and distribution changes to the Post Office located in the City of Portage and is concerned this could affect services, therefore she asked that a letter is sent to U.S. Representative Bill Huizenga's office on behalf of the City Council.

Councilmembers reminded everyone that November 7th there is an election and encouraged everyone to vote.

ADJOURNMENT: Mayor Randall adjourned the meeting at 8:51PM.

Tammy Durian, Deputy City Clerk

DRAFT

TO: Honorable Mayor and City Council

FROM: Pat McGinnis, City Manager

SUBJECT: November 7, 2023, City General Election - preliminary results

SUPPORTING PERSONNEL: Erica Eklov, City Clerk

ACTION RECOMMENDED: Receive the preliminary results of the November 7, 2023, City General Election from the City Clerk as information only.

The Kalamazoo County Board of Canvassers began its canvass of the November 7, 2023 City General Election on November 9, 2023. It is expected that the Board will finish by Thursday, November 16, 2023, and certify the results as official at that time. In the interim, the preliminary results from the election are provided to the City Council as information. It is recommended that the City Council receive the November 7, 2023 City General Election results in their preliminary format as information only.

FUNDING: N/A

Attachments:

1. November 7, 2023 General Election Details - Preliminary Election Results - Kalamazoo County (Portage Mayor)
2. November 7, 2023 General Election Details - Preliminary Election Results - Kalamazoo County (Portage City Council)



Election Results

November 7, 2023 General Election

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/ November 7, 2023 General Election Details

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Portage City Mayor (elect 1)

	# Reg. Voters	Poll Book Totals	Patricia Randall			Write-in		
			AV	Election Day	TOTAL	AV	Election Day	TOTAL
Portage City, Precinct 1	1520	385	226	69	295	20	22	42
Portage City, Precinct 2	1422	171	102	47	149	2	5	7
Portage City, Precinct 3	1861	520	323	51	374	36	43	79
Portage City, Precinct 4 & 6	3545	1148	503	181	684	141	184	325
Portage City, Precinct 5 & 12	3477	1177	667	154	821	125	100	225
Portage City, Precinct 7	1352	165	93	39	132	4	11	15
Portage City, Precinct 8 & 14	4163	1250	676	275	951	67	86	153
Portage City, Precinct 9 & 15	3765	876	544	166	710	36	43	79
Portage City, Precinct 10 & 13	4160	1161	703	165	868	65	72	137
Portage City, Precinct 11 & 19	3789	912	528	181	709	26	57	83
Portage City, Precinct 16 & 18	4379	1167	712	235	947	41	50	91
Portage City, Precinct 17	1790	634	317	127	444	49	62	111
Totals	35223	9566	5394	1690	7084	612	735	1347



Election Results

November 7, 2023 General Election

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Portage City Council (elect 3)

	# Reg. Voters	Poll Book Totals	Christopher Burns			Charley Coss			Anton Lorentz			Mark Mckeon		
			AV	Election Day	TOTAL	AV	Election Day	TOTAL	AV	Election Day	TOTAL	AV	Election Day	TOTAL
Portage City, Precinct 1	1520	385	145	45	190	27	19	46	41	19	60	84	38	122
Portage City, Precinct 2	1422	171	39	18	57	16	11	27	17	13	30	41	17	58
Portage City, Precinct 3	1861	520	159	29	188	38	28	66	63	44	107	118	20	138
Portage City, Precinct 4 & 6	3545	1148	266	127	393	75	90	165	126	139	265	216	94	310
Portage City, Precinct 5 & 12	3477	1177	398	111	509	97	70	167	161	85	246	241	79	320
Portage City, Precinct 7	1352	165	42	20	62	10	11	21	16	8	24	30	14	44
Portage City, Precinct 8 & 14	4163	1250	412	160	572	87	105	192	83	77	160	218	114	332
Portage City, Precinct 9 & 15	3765	876	302	92	394	69	51	120	72	35	107	215	65	280
Portage City, Precinct 10 & 13	4160	1161	452	97	549	125	87	212	112	69	181	214	80	294
Portage City, Precinct 11 & 19	3789	912	345	116	461	62	72	134	58	53	111	174	70	244
Portage City, Precinct 16 & 18	4379	1167	464	152	616	131	75	206	98	50	148	206	68	274
Portage City, Precinct 17	1790	634	178	78	256	34	56	90	60	81	141	113	55	168
Totals	35223	28698	3202	1045	4247	771	675	1446	907	673	1580	1870	714	2584

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November 7, 2023 General Election

Complete Unofficial Results

Portage City Council (elect 3)

n	Nicole Miller			Kathleen Olmsted			James Pearson			Steven Pieczko			Jihan Young			Write-in		
		Election			Election			Election			Election			Election			Election	
TOTAL	AV	Day	TOTAL	AV	Day	TOTAL	AV	Day	TOTAL	AV	Day	TOTAL	AV	Day	TOTAL	AV	Day	TOTAL
122	97	40	137	79	29	108	127	25	152	26	10	36	89	23	112	0	0	0
58	44	25	69	35	12	47	44	23	67	12	5	17	28	20	48	0	3	3
138	195	40	235	134	32	166	150	27	177	51	17	68	108	17	125	2	0	2
310	417	210	627	163	111	274	305	112	417	155	120	275	187	58	245	1	3	4
320	415	127	542	249	96	345	419	76	495	133	52	185	218	63	281	0	1	1
44	53	28	81	43	13	56	46	16	62	16	8	24	30	11	41	0	1	1
332	268	140	408	199	132	331	468	140	608	99	50	149	298	108	406	8	3	11
280	250	90	340	153	68	221	271	66	337	98	26	124	229	78	307	1	7	8
294	283	102	385	214	96	310	402	69	471	126	41	167	292	56	348	2	1	3
244	230	98	328	143	98	241	276	104	380	56	29	85	255	89	344	3	2	5
274	282	122	404	221	86	307	421	130	551	74	42	116	318	111	429	2	2	4
168	172	81	253	94	73	167	191	63	254	42	30	72	116	46	162	2	0	2
2584	2706	1103	3809	1727	846	2573	3120	851	3971	888	430	1318	2168	680	2848	21	23	44

RULES OF ORDER AND PROCEDURE
FOR THE CITY COUNCIL
PORTAGE, MICHIGAN

Section 1. Convening of Meeting; Quorum:

The Mayor, or in his/her absence or at his/her direction, the Mayor Pro Tem, shall, at the time fixed for meeting, take the chair for convening the Council. The presence of four (4) members of the meeting shall constitute a quorum for the transacting of business.

Section 2. Order of Business:

The Business of all regular meetings shall be transacted as far as possible in the following order:

- | | |
|---------------------------------------|--|
| CALL TO ORDER | D. Public Hearings |
| Invocation | E. Regular Business Agenda |
| Pledge of Allegiance | F. Unfinished Business |
| Roll Call | G. Council Committee Reports |
| Proclamations | H. New Business |
| A. Consent Agenda | I. Statements of Citizens |
| B. Petitions & Statements of Citizens | J. Statements of City Council & City Manager |
| C. Communications | ADJOURNMENT |

Section 3. Reading of Minutes:

Unless a reading of the minutes of a meeting is requested by a member of the Council, such minutes may be approved or corrected without reading if the City Clerk has previously furnished each member with a true copy thereof.

Section 4. Agenda for Meeting:

Any Councilmember, Mayor or City Manager may prepare items for consideration on the agenda of Council meetings. The Clerk shall prepare copies of the agenda of the business to be

considered at each regular Council meeting. No business shall be placed on the agenda by the Clerk unless received not later than 12:00 o'clock noon on the Friday preceding the meeting, except upon the approval of four (4) or more members of the Council.

Section 5. Consent Agenda:

The Consent Agenda motions shall be provided to City Council. The Consent Agenda and related motions shall not be read into the record unless a motion to do so is passed by Council. Items may be removed from the Consent Agenda by a member of City Council or the audience. If an item is removed from the Consent Agenda, the item automatically moves from the Consent Agenda to the end of the Regular Business Agenda section. Routine items on the Consent Agenda include, but are not limited to, City Council Meeting Minutes, Minutes of Boards and Commissions, Accounts Payable Register, Materials Transmitted and Calendar of Meetings.

Councilmembers shall make every effort to request removal of items from the Consent Agenda prior to 12 noon on the day of the meeting. This does not preclude members of Council from requesting removal of an item from the Consent Agenda during the meeting itself.

The Consent Agenda items will then be enacted by the following motion: *“The Consent Agenda is available for review by visiting the City of Portage website, where it is available both in written and audio format on the City Council “Agenda and Minutes” web page – or - by visiting the Office of the City Clerk the day before or the day of a Regular Meeting. Does any Councilmember wish to remove an item from the Consent Agenda for individual consideration? Does anyone in the audience wish to remove an item from the Consent Agenda for individual consideration? I would consider a motion to approve the Consent Agenda as presented by City Council (– or – with the exception of Item(s) ____).”*

Section 6. Regular Meetings; Time-Place:

The Council shall meet regularly every other Tuesday at 7:00 o'clock p.m. in the Council Chambers of the Portage City Hall, 7900 S. Westnedge Ave., Portage, Michigan; however, the Council may cancel all but two Tuesday meetings in each month by giving notice of said cancellation as required by Act 267 of the Public Acts of 1976. When the day fixed for any regular meeting falls upon a national holiday, or the eve of a national holiday, or upon any regular or special

election day, the Council may determine to hold such meeting at the same hour within a week preceding or succeeding the regular day or cancel the meeting as provided above. Notice of the time and place of the changed meeting date or cancellation shall be given in accordance with Act 267 of Public Acts of 1976. Meetings may be held in other locations provided notice is given pursuant to Act 267 of Public Acts of 1976.

The Council shall hold an organizational meeting, which may be combined with, but in no event shall be later than its first regular meeting in November immediately following the regular City election. At such meeting, or within one week thereafter, Council shall elect from its membership a Mayor Pro-Tempore who shall serve for a period of two years and thereafter until a successor is appointed. Nominations for Mayor Pro Tem shall be entertained by the presiding officer and after all nominations desired are made, the nominations shall be closed by motion. Voting by the Council shall be by a signed ballot. The City Clerk shall announce and record in the record each Councilmember's vote. A majority of Councilmembers present shall be required to elect the Mayor Pro Tem. If the first vote does not result in a majority, voting shall continue until a majority is achieved.

Section 7. Meetings; Notice Required:

The City Clerk shall call a special meeting on the written request of the Mayor, or any three members of the Council. Notice required for the special meeting will be given in accordance with Section 5 of Act 267 of the Public Acts of 1976, and the business to be transacted at such meeting will be limited to that stated or given in the notice.

Section 8. Presiding Officer; Powers and Duties:

- (a) The Mayor shall be the presiding officer of the Council. He/she shall state every question coming before the Council, announce the decision of the Council on all matters, and decide all questions of order; provided, however, that upon an appeal to the Council, a majority vote of the Council shall conclusively determine such question of order. He/she shall vote on all questions. He/she shall, at the request of a Councilmember divide any question, if such

question in his/her opinion is subject to division, and he/she shall submit it as divided.

- (b) The Mayor may refer any communication, question or petition to the City Manager of the City for action, reply or procedure to dispose of such matter.

Section 9. Statements of Citizens:

All citizens shall have an opportunity to be heard during the course of each meeting after standing and being recognized by the presiding officer, and stating their name, street address and city. No citizen shall speak for longer than three (3) minutes unless the rules are suspended in accordance with Section 12(a).

Section 10. Rules of Debate:

- (a) There shall be no debate or discussion of any issue prior to the proper introduction of said issue.
- (b) When a motion is under debate, only the following motions shall be in order:
 1. Motion to adjourn.
 2. Motion to take a recess.
 3. Motion to lay on the table.
 4. Motion for the previous question.
 5. Motion to postpone to a day certain.
 6. Motion to refer to a committee of the council.
 7. Motion to amend or substitute.
 8. Motion to postpone indefinitely.
- (c) A motion to adjourn and a motion to lay on the table shall always be in order and without debate.
- (d) After a motion is made to close debate, the presiding officer shall poll the Council on the question of closing the debate. If the yes's prevail, the presiding officer shall immediately poll the Council on the principal question, or questions, without further debate.
- (e) All votes shall be taken by yes and no, and be entered upon the journal to show the names of those voting in the affirmative and in the negative, except if the vote is unanimous, the record need merely so state.

- (f) When a question has once been decided, it shall be in order for any member who voted on the prevailing side of the question or a member who did not vote by reason of absence to move reconsideration thereof.

Section 11. Ordinances, Resolution, Motions, Contracts:

- (a) All ordinances, resolution and contract documents shall, before presentation to the Council, have been approved as to form and legality by the City Attorney.
- (b) Ordinances, resolutions and other matters that are subjects requiring action by the Council, shall be introduced and sponsored by the Mayor or a member of the Council; otherwise, they shall not be considered.
- (c) Each proposed ordinance shall be introduced in written form. Reading of the title shall be sufficient for the introduction of an ordinance unless a member of the Council requests that the proposed ordinance be read in full. The Council may also request that the introducer give an explanation of the proposed ordinance. Upon the introduction of an ordinance, the Council may:
 - 1. Postpone the proposed ordinance for consideration at the next regular meeting of the Council or at a later regular Council meeting specified in the motion to postpone; or
 - 2. Refer the proposed ordinance to an ad hoc committee of three (3) Councilmembers named by the Mayor for study and recommendation to the Council. When such committee reports back to the Council, the ordinance may then be adopted or postponed as above. Any proposed ordinance may be amended by the Council at any time prior to its adoption by the vote of four (4) or more of its members.
 - 3. When an emergency ordinance is introduced for adoption at any meeting, it shall be read in full before the Council and may be passed at such meeting in accordance with the provisions of Section 5.3 (b) of the City Charter.

Section 12. Suspending; Amending Rules:

- (a) These rules may be suspended by a vote of five (5) members of the City Council present and voting.
- (b) These rules may be amended by a vote of five (5) members of the City Council present and

voting.

Section 13. Roll Call Votes:

All roll call votes are to rotate in staggered alphabetical order, such that no member of the City Council, including the presiding officer, votes in the same position for consecutive roll call votes.

Section 14. Attendance:

Councilmembers who will be absent shall, if possible, notify the City Clerk prior to meeting.

Section 15. Governing Rules of Order:

Roberts Rules of Order may apply to all other items not provided for in these rules, except where they may be inconsistent with said rules.

Section 16. Vacancies

If a vacancy occurs on the City Council, except in the case of recall, the Council shall fill the vacancy by appointment within 60 days thereafter. In making its appointment Council may consider appointing any eligible person.

Resolution Honoring

Lori A. Knapp

- WHEREAS,** Lori Knapp has served the City of Portage as a member of the Portage City Council from 2017 – 2023; and
- WHEREAS,** prior to her service on the City Council, Lori Knapp served on the City of Portage Board of Review from 2014 – 2017; and
- WHEREAS,** Lori Knapp has served on numerous City Council committees including, but not limited to, the Utility Rate Committee, the Community Survey Committee, the City Council Property Committee, the Communications/Social Media Committee, the Senior Center Committee, and as Chair of the Lake Center District Corridor and Placemaking Study; and
- WHEREAS,** Lori Knapp has served on a variety of committees within our wider community including, but not limited to, the Portage Community Center Board and the Kalamazoo County Public Arts Commission, where she worked to help bring arts and artists to the City of Portage; and
- WHEREAS,** Lori Knapp has always been committed to the City Council and helped guide the City through the significant disruptions caused by the COVID-19 Pandemic; and
- WHEREAS,** Lori Knapp, in her role as a member of the Portage City Council, has contributed to the City for the benefit of the residents of the City of Portage.

NOW, THEREFORE, BE IT RESOLVED THAT the City Council of the City of Portage, Michigan, acknowledge the many contributions Lori Knapp to the City Council and citizens of the City of Portage and acknowledge nine years of faithful and valuable service to this community; and

BE IT FURTHER RESOLVED that a copy of this resolution be placed in the Local History Room of the Portage District Library so the contributions of Lori Knapp to the Portage community may be continually recognized by future generations of Portage citizens.

Mayor Patricia Randall

Councilmember Terry Urban

Councilmember Chris Burns

Councilmember Jihan Ain Young

Councilmember Vic Ledbetter

Councilmember Nicole Miller

Councilmember Jim Pearson



Dated November 14, 2023

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 14, 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, electronic payments and credit card payments. The attached Accounts Payable Register covers the period October 22, 2023 through November 4, 2023 and notes \$1,042,194.14 in automated clearing house payments, \$781,819.95 in paper checks, \$77,288.50 in auto-pay payments, \$2,731,776.06 in electronic payments and \$10,583.03 in credit card payments (October) for a grand total of \$4,643,661.68.

FUNDING: Not Applicable

Attachments: 1. Accounts Payable Register of November 14, 2023

ACCOUNTS PAYABLE REGISTER
Check Dates From: 10/22/2023 to 11/04/2023

Page 1 of 10

Check Type: ACH Transaction

Check Date	Check	Vendor Name	Description	Amount
10/27/2023	20322(A)	A NEW LEAF	CITY HALL PLANT CARE	108.50
10/27/2023	20323(A)	ABONMARCHE CONSULTANTS, INC	ENGINEERING SERVICES - MULT LOCS	1,705.00
10/27/2023	20324(A)	ADP, INC.	ADP WORKFORCE NOW SERVICES	3,267.50
10/27/2023	20325(A)	ADVANTAGE ROOFING & EXTERIORS	CDBG, KAL CO-REROOFING OF HOUSE/GARAGE	36,624.00
10/27/2023	20326(A)	AIRGAS USA LLC	WELDING SUPPLIES	102.30
10/27/2023	20327(A)	ALL CITY MANAGEMENT SERVICES, INC.	CROSSING GUARD CONTRACT	4,359.60
10/27/2023	20328(A)	ALL-TRONICS, INC.	QUARTERLY SERVICE MONITORING	159.00
10/27/2023	20329(A)	ALRO STEEL CORPORATION	REPAIR & MAINT SUPPLIES	1,439.13
10/27/2023	20330(A)	AMAZON.COM SALES, INC.	FIRE ST SUP-FD; MOMASH CANDY-PD; FITNESS-PZSC	2,511.47
10/27/2023	20331(A)	AMERICAN SAFETY & FIRST AID	FIRST AID SUPPLIES	216.80
10/27/2023	20332(A)	ARMOLD, NICHOLAS	REIMB EXP-IACP SUMMER CONFERENCE	2,544.58
10/27/2023	20333(A)	AUNALYTICS INC	MONTHLY DISASTER RECOVERY SVCS	1,572.00
10/27/2023	20334(A)	AXON ENTERPRISES, INC.	TASER 7 CERTIFICATION BUNDLE	11,520.00
10/27/2023	20335(A)	AXON ENTERPRISES, INC.	TASER INSTRUCTOR RECERTIFICATION	495.00
10/27/2023	20336(A)	BAREITHER, CHAD	STRATEGIC PLANNING	3,683.33
10/27/2023	20337(A)	BATTERIES PLUS	BATTERIES/RECYCLE FEES	183.73
10/27/2023	20338(A)	BEST WAY DISPOSAL, INC.	PORTABLE RESTROOMS	671.40
10/27/2023	20339(A)	BLUE CARE NETWORK-GREAT LAKES	HEALTH INSURANCE	156,230.11
10/27/2023	20340(A)	C C I SOUTH, INC.	CABLING CLEANUP PROJECT	910.00
10/27/2023	20341(A)	C M P DISTRIBUTORS, INC.	MISC POLICE SUPPLIES	144.95
10/27/2023	20342(A)	CARDINAL BUS, INC.	TRIP VENDOR PAYMENT GRAND HOTEL 231016	6,845.00
10/27/2023	20343(A)	CHARTER COMMUNICATIONS	INTERNET/VOICE	676.06
10/27/2023	20344(A)	CIVICPLUS	ANNUAL RENEWAL FEE	13,854.45
10/27/2023	20345(A)	CLARK, RONALD	REIMB EXP-POLICE SCHOOL OF STAFF & COMMAND	703.50
10/27/2023	20346(A)	CLARK, STEVEN	REIMB-NIGHT LOCK RELEASE KEYS	65.48
10/27/2023	20347(A)	CLEARNETWORK, INC.	UNIFIED MONITORING SERVICES	975.00
10/27/2023	20348(A)	COMPLETE LANDSCAPING SOLUTIONS	CONTRACT LAWN MOWING	197.28
10/27/2023	20349(A)	CONSOLIDATED ELECTRICAL DIST INC	REPAIR & MAINT SUPPLIES	890.04
10/27/2023	20350(A)	CROWN TROPHY	NAME PLATES/TAGS	20.00
10/27/2023	20351(A)	DATA CONSTRUCTS LLC	WEBSITE HOSTING, DNS FAILOVER SVC	178.45
10/27/2023	20352(A)	DELTA DENTAL PLAN OF MICHIGAN	DENTAL INSURANCE	16,457.45
10/27/2023	20353(A)	DEPATIE FLUID POWER CO., INC.	HYDRAULIC REPAIRS	304.31

ACCOUNTS PAYABLE REGISTER
Check Dates From: 10/22/2023 to 11/04/2023

Page 2 of 10

Check Date	Check	Vendor Name	Description	Amount
10/27/2023	20354(A)	EARLE, SHELIA L	FITNESS INSTRUCTION	340.00
10/27/2023	20355(A)	ED & TED'S EXCELLENT ADVENTURES	TRIP VENDOR PAYMENT 231127 LANCASTER	34,276.00
10/27/2023	20356(A)	EKLOV, ERICA	REIMB EXPENSES - MAMC MASTERS	967.18
10/27/2023	20357(A)	ENGINEERED PROTECTION SYSTEMS, INC.	ALARM MONITORING	1,039.02
10/27/2023	20358(A)	ENVIRONMENTAL SYSTEMS RESEARCH	ARGIS/ONLINE HUB ANNUAL SUBSCRIPTION	17,372.47
10/27/2023	20359(A)	ESCAPE FIRE & SAFETY SERVICES, INC.	LEAF CHUTES	3,240.00
10/27/2023	20360(A)	ETNA SUPPLY, INC.	REPAIR & MAINT SUPPLIES	11.77
10/27/2023	20361(A)	FEDERAL RESOURCES SUPPLY COMPANY	TRUNARC SOLUTION KIT	704.45
10/27/2023	20362(A)	FISHBECK THOMPSON CARR & HUBER, INC	PHASE 1 ENVIRONMENTAL SITE ASSESSMENT	4,000.00
10/27/2023	20363(A)	FOREMOST SALES COMPANY LLC	PARK FACILITY CLEANING	6,615.00
10/27/2023	20364(A)	FULL CIRCLE FARM	FOOD ASSISTANCE REIMBURSEMENT	313.00
10/27/2023	20365(A)	GORDON WATER SYSTEMS	WATER SERVICES	568.16
10/27/2023	20366(A)	GOVOS INC	SEAMLESS DOCS RENEWAL	18,481.38
10/27/2023	20367(A)	GREATER KALAMAZOO UNITED WAY	UNITED WAY DEDUCTIONS FOR OCTOBER 2023	75.78
10/27/2023	20368(A)	GRIFFIN PEST SOLUTIONS	PEST CONTROL SVCS	348.00
10/27/2023	20369(A)	HESS, DERECK	PER DIEM - INVESTIGATION	236.00
10/27/2023	20370(A)	HOFFMAN BROTHERS, INC.	2023 LOCAL STREETS RECONSTRUCTION	344,445.41
10/27/2023	20371(A)	HOUSEAL LAVIGNE ASSOCIATES, LLC	PROFESSIONAL SERVICES - MASTER PLAN	4,571.25
10/27/2023	20372(A)	INCREDIBLE KETTLE	FOOD ASSISTANCE REIMBURSEMENT	78.00
10/27/2023	20373(A)	INDUSCO SUPPLY CO., INC.	JANITORIAL SUPPLIES	1,056.64
10/27/2023	20374(A)	INSIGHT PUBLIC SECTOR, INC.	MICROSOFT CLOUD SVC, APPLE MAC MINI/MONITOR	9,896.83
10/27/2023	20375(A)	J & H OIL COMPANY	FUEL PURCHASES	225.71
10/27/2023	20376(A)	J & J LAWN SERVICE, INC.	UTILITY MOWING AND TRIMMING	8,797.22
10/27/2023	20377(A)	JACK DOHENY SUPPLIES INC.	VACTOR REPAIR SUPPLIES	1,144.03
10/27/2023	20378(A)	JONS TO GO PORTABLE RESTROOM	PORTABLE RESTROOM	485.00
10/27/2023	20379(A)	KREITNER, JAMES	FOOD ASSISTANCE REIMBURSEMENT	150.00
10/27/2023	20380(A)	LAWSON PRODUCTS, INC	REPAIR & MAINT SUPPLIES	812.97
10/27/2023	20381(A)	LORD, JAMES	PER DIEM - INVESTIGATION	147.50
10/27/2023	20382(A)	MACQUEEN EQUIPMENT LLC	FIRE HOSE REPLACEMENT	9,208.13
10/27/2023	20383(A)	MAIL MANAGEMENT, INC.	MAIL MACHINE LABELS	44.00
10/27/2023	20384(A)	MATTAWAN MUSHROOM CO	FOOD ASSISTANCE REIMBURSEMENT	15.00
10/27/2023	20385(A)	MATTISON, MEGAN	ACTIVITIES, INSTRUCTION COOKING DEMO	360.00
10/27/2023	20386(A)	MCNALLY ELEVATOR CO.	ELEVATOR MAINTENANCE	159.56

ACCOUNTS PAYABLE REGISTER
Check Dates From: 10/22/2023 to 11/04/2023

Page 3 of 10

Check Date	Check	Vendor Name	Description	Amount
10/27/2023	20387(A)	MEJEUR ELECTRIC LLC	MISC ELECTRICAL SERVICES	1,006.00
10/27/2023	20388(A)	MIDWEST ENERGY & COMMUNICATIONS	STREETLIGHT ENERGY COSTS	334.36
10/27/2023	20389(A)	MOTOR PARTS AND EQUIPMENT CORP	REPAIR & MAINT SUPPLIES	1,347.92
10/27/2023	20390(A)	NORMAN CAMERA CO.	FIRE OPERATING SUPPLIES	172.00
10/27/2023	20391(A)	OFF THE CUFF CATERING	MURDER MYSTERY EVENT CATERING	5,931.25
10/27/2023	20392(A)	ONSTAFF USA INC	TEMPORARY EMPLOYEE SVCS	10,835.20
10/27/2023	20393(A)	PARIS CLEANERS	LAUNDRY SERVICES	878.98
10/27/2023	20394(A)	PEOPLEFACTS, LLC	SECURITY MONITORING FEE	16.67
10/27/2023	20395(A)	PERCEPTIVE CONTROLS, INC.	SCADA SYSTEM MAINT	12,610.00
10/27/2023	20396(A)	PHILLIPS, KIMBERLY	REIMBURSE FOR EXPENSES	420.79
10/27/2023	20397(A)	PLASKO, PATRICIA MARIE	FITNESS INSTRUCTION	390.00
10/27/2023	20398(A)	PLAYFORD, LOUIE	REIMB EXPS & PER DIEM-STAFF & COMMAND SCHL	1,031.71
10/27/2023	20399(A)	PORTAGE FIREFIGHTERS	IAFF UNION DUES FOR OCTOBER 2023	1,740.00
10/27/2023	20400(A)	PORTAGE ON-CALL FIREFIGHTERS	ON CALL FIREFIGHTERS UNION DUES FOR OCT 2023	20.00
10/27/2023	20401(A)	PORTAGE POLICE OFFICERS ASSOC	PPOA UNION DUES FOR OCTOBER 2023	658.00
10/27/2023	20402(A)	PRECISION PRINTER SERVICES INC	PRINTER SUPPORT SERVICES	776.89
10/27/2023	20403(A)	PRINTING SERVICES INC	PRINTING SERVICES	57.25
10/27/2023	20404(A)	REPUBLIC SERVICES OF WEST MICHIGAN	WASTE SERVICES	71.30
10/27/2023	20405(A)	ROSE, SANDRA K.	CARDIO DRUMMING	200.00
10/27/2023	20406(A)	S B F ENTERPRISES, INC.	PRINT, PROCESS & MAIL QTLY WATER/SEWER BILLS	659.39
10/27/2023	20407(A)	SARKOZY BAKERY LLC	FOOD ASSISTANCE REIMBURSEMENT	57.00
10/27/2023	20408(A)	SEVERANCE ELECTRIC COMPANY, INC	TRAFFIC SIGNAL MAINTENANCE	4,836.67
10/27/2023	20409(A)	SHINY BRITE WASHING SYSTEMS LLC	VEHICLE CAR WASHES	90.00
10/27/2023	20410(A)	SLAVIN, NATHAN	PER DIEM-MIDWEST GANG INVESTIGATORS CONF	88.50
10/27/2023	20411(A)	SMITH DAWSON & ANDREWS, INC.	FEDERAL ADVOCACY SERVICES	5,000.00
10/27/2023	20412(A)	STEELE, DANA	REIMB-FIRE SUPPLIES	58.41
10/27/2023	20413(A)	TMK WORLDWIDE, LLC	METER SERVICE	466.89
10/27/2023	20414(A)	TREYSTAR HOLDINGS, LLC	BROWNFIELD SUMMER 2023	27,751.97
10/27/2023	20415(A)	TRUCK & TRAILER SPECIALTIES	VEHICLE PARTS & MAINTENANCE	10,770.15
10/27/2023	20416(A)	UNITED AUTO. IMPLEMENT WORKERS 2290	UAW UNION DUES FOR OCTOBER 2023	531.03
10/27/2023	20417(A)	VANDERWIJERE, JEFFREY P.	REIMB EXP-IACP CONFERENCE	1,507.94
10/27/2023	20418(A)	VEOLIA WATER CONTRACT OPERATIONS	UTILITY SYSTEM OPERATION	204,969.84
10/27/2023	20419(A)	VIRIDIS DESIGN GROUP	A&E EAST CENTRAL TRAIL	2,000.00

ACCOUNTS PAYABLE REGISTER
Check Dates From: 10/22/2023 to 11/04/2023

Page 4 of 10

Check Date	Check	Vendor Name	Description	Amount
10/27/2023	20420(A)	WARNER NORCROSS & JUDD LLP	LEGAL SERVICES	610.00
10/27/2023	20421(A)	WEST MICHIGAN STAMP & SEAL,INC	BADGES AND NAME PLATES	298.50
10/27/2023	20422(A)	WORLDPOINT ECC	FIRE TRAINING SUPPLIES	411.50
10/27/2023	20423(A)	XEROX CORPORATION	XEROX COPIER FEES	180.81
11/03/2023	20424(A)	COX, ELISA ROSE	FITNESS INSTRUCTION	180.00
11/03/2023	20425(A)	EARLE, SHELIA L	FITNESS INSTRUCTION	870.00
11/03/2023	20426(A)	FIDELITY SECURITY LIFE INSURANCE CO	VISION INSURANCE	1,423.94
11/03/2023	20427(A)	FISHER, LACEY	REIMB EXP-BLOODSTAIN PATTERN ANALYSIS TR	115.40
11/03/2023	20428(A)	KAHN, WILMA	WRITING INSTRUCTION	377.00
11/03/2023	20429(A)	KEHOE, EDWARD J	FITNESS INSTRUCTION	540.00
11/03/2023	20430(A)	NOTT, SARAH	ART INSTRUCTION	100.00
Total ACH				1,042,194.14

Check Type: Paper

10/27/2023	325542	7900 MOORSBRIDGE LLC	TEMPORARY PUMPING PERMIT 2ND & 3RD QTRS	5,490.00
10/27/2023	325543	AAA SLING & INDUSTRIAL SUPPLY	NEW CHUTES	866.68
10/27/2023	325544	ALLEGRA PRINT & IMAGING	PRINTING SERVICES	347.00
10/27/2023	325545	ALS ASSOCIATION MICHIGAN CHAPTER	GRAIN ELEVATOR DEPOSIT REFUND	150.00
10/27/2023	325546	ASCENSION BORGESS HOSPITAL	POST-COE PHYSICAL	880.00
10/27/2023	325547	BADGER EVERGREEN NURSERY LLC	BADGER TREES TRAD HOLIDAY	540.00
10/27/2023	325548	BAILEY'S MEATS	FOOD ASSISTANCE REIMBURSEMENT	25.00
10/27/2023	325549	BAILEY, AUDREY	GRAIN ELEVATOR DEPOSIT REFUND	150.00
10/27/2023	325550	BARRETT, TIM	REIMBURSEMENT FOR IRRIGATION DAMAGES	800.00
10/27/2023	325551	BEARING SERVICE	BEARINGS FOR SANDERS	825.74
10/27/2023	325552	BELSON OUTDOORS, LLC	PARK BENCH REPLACEMENT SLATS	699.73
10/27/2023	325553	BLAIN SUPPLY, INC.	REPAIR & MAINT SUPPLIES	127.54
10/27/2023	325554	BONAMEGO, LOUIS	FOOD ASSISTANCE REIMBURSEMENT	132.00
10/27/2023	325555	BROGAN, EMILY	SCHOOLHOUSE DEPOSIT REFUND	50.00
10/27/2023	325556	BRUSH, BENJAMIN	FOOD ASSISTANCE REIMBURSEMENT	8.00
10/27/2023	325557	BYRON, BRENDA	HAYLOFT THEATRE DEPOSIT REFUND	150.00
10/27/2023	325558	CAPITOL STRATEGIES, LLC	CONSULTING SERVICES	6,000.00
10/27/2023	325559	CENTRAL TILE & TERRAZZO CO.	SCHRIER PARK TILE REPAIR	985.00
10/27/2023	325560	CINTAS CORPORATION NO. 2	UNIFORMS CHARGES	162.50

ACCOUNTS PAYABLE REGISTER
Check Dates From: 10/22/2023 to 11/04/2023

Page 5 of 10

Check Date	Check	Vendor Name	Description	Amount
10/27/2023	325561	CITY OF KALAMAZOO TREASURER	WATER SERVICES	41.45
10/27/2023	325562	CREATIVE SERVICES OF NEW ENGLAND	JUNIOR RANGER STICKERS	318.95
10/27/2023	325563	DASCHNER-SIMMONS, LAURIE	TRIP REFUND SEPT SURPRISE 230928	180.00
10/27/2023	325564	DAVE'S CONCRETE PRODUCTS, INC.	CEMETERY FOUNDATIONS & SIDEWALK REPAIR	1,129.00
10/27/2023	325565	DELISLE ASSOCIATES LTD	ASBESTOS TESTING	1,455.00
10/27/2023	325566	DETROIT SALT CO.	ICE CONTROL SALT	156,288.26
10/27/2023	325567	DICK, ROBERT	FOOD ASSISTANCE REIMBURSEMENT	55.00
10/27/2023	325568	DIXON ENGINEERING, INC	HAVERHILL WATER TOWER REHAB	1,250.00
10/27/2023	325569	DOGTEAMPRO	K-9 TEAM TRACKER SVC SUBSCRIPTION	600.00
10/27/2023	325570	DORRANCE FORD INC	FIRE APPARATUS MAINT	485.68
10/27/2023	325571	DRIESEN & ASSOCIATES INC	BOUNDARY SURVEY	5,650.00
10/27/2023	325572	EMERGENCY VEHICLE PRODUCTS	POLICE VEH CHANGEOVERS, REPAIR & MAINT	75,325.01
10/27/2023	325573	ENERGY SOLUTIONS OF MICHIGAN LLC	KAL CO. - HOME INSULATION	5,870.00
10/27/2023	325574	ENG., INC.	CONSOLIDATED DRAIN REHABILITATION	2,035.00
10/27/2023	325575	ENVIRONMENTAL RESOURCES GROUP, LLC	STORM WATER MONITORING PROGRAM	1,949.32
10/27/2023	325576	ESMAN, JUDY	TRIP REFUND 240228 GULF COAST	100.00
10/27/2023	325577	FISH WINDOW CLEANING	FALL WINDOW CLEANING	935.00
10/27/2023	325578	FLETCHER ENTERPRISES	PAINTING - MULT PARK LOCS	3,935.00
10/27/2023	325579	GAGNIER, MAVIS	TRIP REFUND 230928 SEPT SURPRISE	100.00
10/27/2023	325580	GARDEN SPOT GREENHOUSE, LLC	CELERY FLATS PLANTERS-ADDTL CHRG	105.35
10/27/2023	325581	GORDON FOOD SERVICE	OPERATING SUPPLIES	344.00
10/27/2023	325582	GREATER KALAMAZOO FOP LODGE 98	FOP PORTION OF PPOA UNION DUES FOR OCT 2023	3,130.44
10/27/2023	325583	GROTHAUSE, DAVID	FOOD ASSISTANCE REIMBURSEMENT	67.00
10/27/2023	325584	HALLAHAN & ASSOCIATES, P.C.	ASSESSING LEGAL SERVICES	18.19
10/27/2023	325585	HARPER, ROBERT OR NANCY	REFUND DUE TO 2020-2022 ASSESSOR PRE CHANGE	181.29
10/27/2023	325586	HARRINGTON, DEBORAH	SCHRIER PARK DEPOSIT REFUND	150.00
10/27/2023	325587	HEID, NATE	HAYLOFT THEATRE DEPOSIT REFUND	150.00
10/27/2023	325588	HEYWOOD, TROY	SCHRIER PARK DEPOSIT REFUND	150.00
10/27/2023	325589	HOLCOMB, JOSHUA BARBER	UKULELE CLASSES	900.00
10/27/2023	325590	HOME DEPOT	REPAIR & MAINT SUPPLIES	5,221.85
10/27/2023	325591	VOID		0.00
10/27/2023	325592	VOID		0.00
10/27/2023	325593	HOMEWARD HEALTH	RENTAL DAMAGE DEPOSIT REFUND	150.00

ACCOUNTS PAYABLE REGISTER
Check Dates From: 10/22/2023 to 11/04/2023

Page 6 of 10

Check Date	Check	Vendor Name	Description	Amount
10/27/2023	325594	HOUSING RESOURCES, INC.	RENTAL ASSISTANCE CDBG JULY-SEPT	6,113.00
10/27/2023	325595	J & J LOCKSMITHS	LOCK-DPW HALLWAY	27.09
10/27/2023	325596	JAMB, LLC	BD BOND REFUND	3,780.00
10/27/2023	325597	JOHNSON, DENNIS	SWP FIELD RENTAL FEES REFUND	45.00
10/27/2023	325598	KALAMAZOO COUNTY TREASURER'S ASSN	2024 MEMBERSHIP DUES	50.00
10/27/2023	325599	KALAMAZOO FLAG COMPANY, LLC	DISPLAY FLAGS - FIRE TRAINING ROOM	835.00
10/27/2023	325600	KALAMAZOO PICKLEBALL	BEGINNER CLINICS	437.50
10/27/2023	325601	KALAMAZOO VALLEY COMMUNITY COL	TECHNOLOGY INSTRUCTION - PZSC	450.00
10/27/2023	325602	KALLEWARD GROUP	BD BOND REFUND	4,017.00
10/27/2023	325603	KALLIO, THOMAS	REFUND FOR PICKLEBALL MEMBERSHIP	50.00
10/27/2023	325604	KANTOLA PRODUCTIONS	TRAINING CONTRACT	5,504.05
10/27/2023	325605	KEENAN, STEPHANIE	RAMONA SOCCER NORTH DEPOSIT REFUND	100.00
10/27/2023	325606	KELLOGG COMMUNITY COLLEGE	POLICE ACADEMY TUITION OFC GONZALEZ	13,163.04
10/27/2023	325607	KLOBUCHER, BESS	TRIP REFUND GULF COAST 240228	100.00
10/27/2023	325608	KONICA MINOLTA BUSINESS SOLUTIONS	COPIER CONTRACT	474.00
10/27/2023	325609	KROL, BRIAN & CLOUSE, KELLY L	BD BOND REFUND	500.00
10/27/2023	325610	KSS ENTERPRISES	JANITORIAL SUPPLIES	117.88
10/27/2023	325611	KUZMITOWICZ, JOYCE	TRIP REFUND LANCASTER PA	100.00
10/27/2023	325612	KZOO TIRE COMPANY	POLICE VEHICLE REPAIR/MAINTENANCE	846.80
10/27/2023	325613	LEATHERMAN, ROB	PER DIEM-ENGINE COMPANY OPERATIONS II TR	258.75
10/27/2023	325614	LEYANNA, LINDA	PROGRAM REFUND	40.00
10/27/2023	325615	LOVERS LANE PROPERTIES LLC	2023 SUMMER BROWNFIELD DISBURSE 6666 LOVERS	12,482.27
10/27/2023	325616	LYNCH, JORDAN MICHAEL	ARBORIST SERVICES	400.00
10/27/2023	325617	MASLACK, EVAN	FOOD ASSISTANCE REIMBURSEMENT	120.00
10/27/2023	325618	MCCANN INDUSTRIES, INC.	VEH ENGINE REPAIRS	874.41
10/27/2023	325619	MCDONALD'S TOWING & RESCUE, INC.	POLICE TOWING SERVICES	238.50
10/27/2023	325620	MENARDS	RAIN GEAR	406.38
10/27/2023	325621	MI ASSOC. OF CHIEFS OF POLICE	MACP MEMBERSHIP	100.00
10/27/2023	325622	MICH MUNICIPAL POLICE & FIRE REPAIR	POLICE VEHICLE REPAIR & MAINT	444.56
10/27/2023	325623	MIDWEST CUSTOM EMBROIDERY COMPANY	EMBROIDERY STAFF UNIFORMS	544.00
10/27/2023	325624	MILLER, CANFIELD, PADDOCK & STONE	LEGAL CONSULTING SERVICES	17,610.42
10/27/2023	325625	MILLER, CONNIE	TRIP REFUND SEPT SURPRISE 230928	90.00
10/27/2023	325626	MITCAVISH, HEATHER	REIMBURSEMENT FOR TREE REPLACEMENT	517.99

ACCOUNTS PAYABLE REGISTER
Check Dates From: 10/22/2023 to 11/04/2023

Page 7 of 10

Check Date	Check	Vendor Name	Description	Amount
10/27/2023	325627	MUEHLEISE, PAT	REFUND FINAL UB OVERPAYMENT	68.35
10/27/2023	325628	MUETHER, ALLISON	GRAIN ELEVATOR DEPOSIT REFUND	150.00
10/27/2023	325629	NATIONAL FIRE PROTECTION ASSOC	FIRE INSPECTOR I TRAINING	399.00
10/27/2023	325630	NOREGON SYSTEMS LLC	HEAVY DUTY TRUCK CODE SCANNER	9,420.00
10/27/2023	325631	O'REILLY AUTO PARTS	FIRE APPARATUS MAINT	14.98
10/27/2023	325632	OFFICE DEPOT, INC.	OFFICE SUPPLIES	577.57
10/27/2023	325633	ON DUTY GEAR, LLC	BALLISTIC VESTS & CARRIERS	1,022.00
10/27/2023	325634	OPEN ROADS BIKE PROGRAM	EARN A BIKE WORKSHOPS	1,500.00
10/27/2023	325635	PETERMAN CONCRETE CO.	REPAIRING SINKING INLET	180.00
10/27/2023	325636	PETITE BAKERY LLC	FOOD ASSISTANCE REIMBURSEMENT	45.00
10/27/2023	325637	PETTY CASH-JANET GATES	REPLENISHMENT CHECK	280.03
10/27/2023	325638	PURITY CYLINDER GASES, INC	WELDING SUPPLIES	143.53
10/27/2023	325639	RATH, JOHN R.	ART IN THE PARK GLASSBLOWING WORKSHOP	2,048.00
10/27/2023	325640	RATHCO SAFETY SUPPLY, INC.	ROAD SIGNS	4,098.00
10/27/2023	325641	REY, JOHN	REIMBURSE FOR NEW CORNHOLE BAGS	180.00
10/27/2023	325642	ROAD COMMISSION OF KALAMAZOO COUNTY	ENERGY & MAINTENANCE CHARGES	358.21
10/27/2023	325643	ROWERDINK, INC.	MAINTENANCE SUPPLIES	47.45
10/27/2023	325644	SAFE HIRING SOLUTIONS	SCHOOL RESOURCE OFC APP	250.00
10/27/2023	325645	SANDERSON DEHAAN IRRIGATION	FIRE FACILITY MAINT	297.00
10/27/2023	325646	SDV DEVELOPMENT, LLC	BD BOND REFUND	5,920.00
10/27/2023	325647	SIVAK, JUDY	DAMAGE DEPOSIT REFUND	250.00
10/27/2023	325648	SPARTAN DISTRIBUTORS INC.	REPAIR & MAINT SUPPLIES	624.12
10/27/2023	325649	SPIRIT SHOPPE, INC.	EMBROIDERY FIRE UNIFORMS	1,344.50
10/27/2023	325650	STATE OF MICHIGAN (DOT)	S WESTNEDGE IMPRV, PORTAGE RD RECONST	352,132.70
10/27/2023	325651	STATE SYSTEMS RADIO, INC	RADIO SERVICES FEES	561.00
10/27/2023	325652	STRYKER SALES CORPORATION	FIRE DEFIBRILLATOR TRAINERS/SUPPLIES	3,132.13
10/27/2023	325653	STRYKER SALES CORPORATION	FIRE EMS SUPPLIES	468.00
10/27/2023	325654	T-MOBILE USA INC	MISC CELL PHONE CHARGES	1,177.55
10/27/2023	325655	TARNAS, CAMERON	KAL CO. - REPLACE FURNACE	4,125.00
10/27/2023	325656	TEAM SUPPORT SERVICES, LLC	DOCUMENT SCANNING	1,018.12
10/27/2023	325657	TRUGREEN AND ACTION PEST CONTROL	KNOTWEED SPRAYING AT OAKLAND/KILGORE	655.00
10/27/2023	325658	ULINE, INC.	JANITORIAL/MISC SUPPLIES	647.36
10/27/2023	325659	UNITED PARCEL SERVICE	UPS WEEKLY	12.00

ACCOUNTS PAYABLE REGISTER
Check Dates From: 10/22/2023 to 11/04/2023

Page 8 of 10

Check Date	Check	Vendor Name	Description	Amount
10/27/2023	325660	VECMAR CORPORATION	EPSON CAPTURE CHECK SCANNER	733.49
10/27/2023	325661	VERSALIFT MIDWEST, LLC	AERIAL TRUCK TRAINING	2,270.00
10/27/2023	325662	VICTORY FILMS	LICENSE/FILM SCREENING FEE	150.00
10/27/2023	325663	WALKER, JEAN	VETERANS LUNCH SUPPLIES	222.99
10/27/2023	325664	WASHCO, LLC	ANGLING ROAD BOARDWALK POWER WASH	4,290.00
10/27/2023	325665	WASTE RECOVERY SYSTEMS, INC.	INSTALL SEWER LATERAL LINER	19,220.04
10/27/2023	325666	WEIR, ROBERT MARTIN	PRESENTATION FEE HOLOCAUST MEMORIAL	100.00
10/27/2023	325667	WELLER AUTO PARTS INC.	TRUCK 36 WHEELS	250.00
10/27/2023	325668	WENDLING-OSBORN, JANE	TRIP REFUND 231213 CHRISKINDL	20.00
10/27/2023	325669	WEST MICHIGAN CAPITAL INVESTMENTS	BD PAYMENT REFUND	2,890.75
10/27/2023	325670	WILD, JED	FIRE REIMBURSEMENTS/STATION PICS	8.46
10/27/2023	325671	ZANTJER, BRUCE	RENTAL DEPOSIT REFUND	250.00
10/27/2023	325672	ZHANG FINANCIAL	REFUND DAMAGE DEPOSIT FOR RENTAL	250.00
11/03/2023	325673	ELLIS, STEVEN RICHARD	EDUCATIONAL PRESENTATION	100.00
11/03/2023	325674	REITZ, DARLENE K.	CLASS INSTRUCTION	200.00
11/03/2023	325675	SMART SOURCE, LLC	MISC OFFICE SUPPLIES	220.00
Total Paper Checks				781,819.95

Check Type: Auto-Pay Payments

10/23/2023	CITY OF PORTAGE	WATER/SEWER BILLING	64.74
10/23/2023	GREAT LAKES WINE	PZSC PROGRAM SUPPLIES	128.16
10/30/2023	BLUE CROSS/BLUE SHIELD OF MI	HEALTH INSURANCE	9,142.04
10/31/2023	CONSUMERS AUTOPAY	GAS-ELECTRIC	282.82
11/02/2023	CONSUMERS AUTOPAY	GAS-ELECTRIC	73.41
11/02/2023	CITY OF PORTAGE	WATER/SEWER BILLING	2,061.43
11/03/2023	MISSIONSQUARE	EMPLOYEE RETIREMENT WITHHOLDINGS	60,501.11
11/03/2023	CONSUMERS AUTOPAY	GAS-ELECTRIC	3,710.32
11/03/2023	CARD CONNECT	PROCESSING FEES	1,324.47
Total Auto-Pay Payments			77,288.50

Check Type: Electronic Payments

10/27/2023	MULTIPLE	DPP TAX DISBURSEMENT 9/29/23	6,999.97
10/27/2023	MULTIPLE	WEEKLY TAX DISBURSEMENT 10/20/23	137,088.11

ACCOUNTS PAYABLE REGISTER
Check Dates From: 10/22/2023 to 11/04/2023

Page 9 of 10

Check Date	Check	Vendor Name	Description	Amount
10/31/2023		COMERICA	INVESTMENT PURCHASE	500,000.00
10/31/2023		SBF	POSTAGE - WATER/SEWER BILLS	1,899.27
11/02/2023		HUNTINGTON NATIONAL BANK	INVESTMENT PURCHASE	993,273.96
11/02/2023		FIFTH THIRD BANK	INVESTMENT PURCHASE	994,650.24
11/02/2023		ASU GROUP	WORKERS COMP FUNDING	22,555.60
11/03/2023		MULTIPLE	WEEKLY TAX DISBURSEMENT 10/27/23	75,308.91
			Total Electronic Payments	2,731,776.06

Check Type: Credit Card

10/02/2023		ADOBE STOCK	STOCK PHOTO/VIDEO/MUSIC LIBRARY PUB INFO	19.99
10/02/2023		BUZZSPROUT BUZZSPROUT	MONTHLY PODCAST SUBSCRIPTION	24.00
10/09/2023		GRAND TRAV RESORT	COM DEV CONFERENCE HOTEL STAY	836.60
10/10/2023		MOUNTAIN GRD LODGE	FINANCE CONFERENCE HOTEL STAY	266.31
10/11/2023		EPIC SPORTS	HR APPAREL RETURN REFUND	(15.91)
10/11/2023		EPIC SPORTS	HR RESTOCKING FEE REFUND	(3.98)
10/11/2023		RENTALEX EVENTS	ITEMS FOR SENIOR CENTER EVENT	272.63
10/11/2023		DRURY INN COLUMBIA	POLICE TRAINING HOTEL STAY	241.76
10/12/2023		A RIFKIN CO	ELECTION SUPPLIES	162.93
10/12/2023		TERRACYCLE US LLC	K-CUP RECYCLING PROGRAM	236.00
10/13/2023		WALMART.COM	ITEMS FOR PARKS EVENT	415.52
10/13/2023		COURSRA7E67MFOTLJG2OG	ONLINE LEARNING PLATFORM FOR CITY EMPLOYEES	1,995.00
10/13/2023		YOURMEMBERSHIP	HR JOB POSTING	199.00
10/13/2023		A RIFKIN CO	ELECTION SUPPLIES TAX REFUND	(9.22)
10/16/2023		NEOGOV	HR JOB POSTING	199.00
10/16/2023		HAMPTON INN CINCINNATI-N	POLICE TRAINING HOTEL STAY	380.25
10/16/2023		AMERICAN PLANNING A	HR JOB POSTING	395.00
10/16/2023		WEBMLIVE.COM	CMO ANNUAL SUBSCRIPTION RENEWAL	100.00
10/17/2023		SQ FORENSIC TRAINING FOU	POLICE TRAINING REGISTRATION	950.00
10/18/2023		FAIRFIELD INN & SUITES	POLICE TRAINING HOTEL STAY	145.95
10/19/2023		THE WEBSTaurant STORE INC	SENIOR CENTER KITCHEN SUPPLIES	225.78
10/20/2023		HILTON HOTELS	POLICE TRAINING HOTEL STAY	188.70
10/23/2023		SIGNUPGENIUS	SENIOR CENTER ANNUAL SUBSCRIPTION	269.89
10/23/2023		DROPBOX Q6GXH5Q8H58X	ANNUAL SUBSCRIPTION	540.00

ACCOUNTS PAYABLE REGISTER
Check Dates From: 10/22/2023 to 11/04/2023

Page 10 of 10

Check Date	Check	Vendor Name	Description	Amount
10/23/2023		FREE CONFERENCE CALL GLOB	CONFERENCE CALL CHARGES	26.50
10/23/2023		GRAND TRAV RESORT	SENIOR CENTER TRAINING HOTEL STAY	317.80
10/25/2023		EB 2023 ANNUAL MEETIN	COM DEV CONFERENCE REGISTRATION	230.00
10/26/2023		COURTYARD INDIANAPOLIS	SENIOR CENTER TRAINING HOTEL STAY	489.06
10/26/2023		EB SUPERVISING AN INV	POLICE TRAINING REGISTRATION	206.98
10/26/2023		EB MIDWEST GANG INVES	POLICE TRAINING REGISTRATION	100.00
10/26/2023		MSU PAYMENTS	POLICE TRAINING REGISTRATION	75.00
10/30/2023		PARK PLACE HOTEL	HOTEL TAX REFUND	(71.40)
10/30/2023		SMK SURVEYMONKEY.COM	ANNUAL SUBSCRIPTION FOR PUBLIC INFORMATION	468.00
10/30/2023		HOME2 SUITES	POLICE TRAINING HOTEL STAY	674.20
10/30/2023		MICROSOFT 365	CANCELLATION OF AUDIO CONFERENCING	(12.30)
10/31/2023		BUZZSPROUT BUZZSPROUT	MONTHLY PODCAST SUBSCRIPTION	24.00
10/31/2023		ADOBE INC.	STOCK PHOTO/VIDEO/MUSIC LIBRARY PUB INFO	19.99
Total Credit Card Payments				10,583.03
Grand Total				4,643,661.68

TO: Honorable Mayor and City Council

FROM: Pat McGinnis, City Manager

SUBJECT: City Council Code of Ethics and Values Policy

SUPPORTING PERSONNEL: Erica Eklov, City Clerk

ACTION RECOMMENDED: Adopt and sign the updated *City Council Code of Ethics and Values Policy*.

The current *City Council Code of Ethics and Values Policy* was adopted by the Council in January 2009. It was drafted by the then-City Council Ethics Policy Committee alongside the City Administration and City Attorney, following the Council discussion at the 2008 City Council Goal Retreat. It was created to fulfill an important step in upholding, promoting, and demonstrating high ethical standards for all Councilmembers using examples of ethics policies from several other communities, both in Michigan and throughout the United States, as well as the Ethics Handbook for Michigan Municipalities developed by the Michigan Municipal League. In researching various ethics policies, the Committee found many different types that addressed numerous issues. The 2008-09 Committee opted to take an approach where the ethics policy provides proactive ethical guidance rather than a list of prohibitions and sanctions. In that spirit, Councilmember Burns and Mayor Randall recommended an update to the 14-year-old policy to address a change in residency while serving in elected office. The update includes a definition of “residence” and a clause requiring reporting of any change while serving in elected office.

The Portage City Council, in the conduct of public business, strives to act in a manner that proactively promotes integrity, responsibility, fairness, and accountability. The Ethics Policy is intended to encourage all Councilmembers to place the public interest above self-interest and maintain independence, impartiality, and fairness in the judgment, decisions, and conduct of the City Council. As such, it is recommended that the City Council adopt and sign the updated *City Council Code of Ethics and Values Policy* attached herein.

FUNDING: N/A

Attachments:

1. CC Ethics Policy (2009)
2. City Council Code of Ethics and Values Policy draft 2023

CITY OF PORTAGE

CITY COUNCIL CODE OF ETHICS AND VALUES POLICY

1. **Purpose.** The Code of Ethics and Values Policy ("Policy") of the Portage City Council is intended to establish standards of integrity, fair dealing, responsibility, accountability and disinterested conduct, which are an essential part of a fiduciary duty owed to the public by its elected officials. The Policy is intended to encourage all councilmembers to place the public interest above self-interest and maintain independence, impartiality and fairness in their judgment, decisions and conduct. It is the policy of the City of Portage City Council to uphold, promote and demand the highest standards of ethics from all councilmembers. All members of the City Council share a commitment to ethical conduct in the service to their community. This Policy has been established to provide guidance for councilmembers so that the performance of their duties will be carried out in an ethical manner. In furtherance of this goal, the following general principles will apply:

- A. Councilmembers shall comply with the laws of the United States of America, the State of Michigan and City of Portage in the performance of their public duties.
- B. Councilmembers shall work for the common good of Portage residents and not be motivated by their own personal or financial interests.
- C. Councilmembers will endeavor to treat all members of the public and issues before them in a fair and equitable manner.
- D. Councilmembers shall be committed to the concepts of effective and democratic local government.
- E. Councilmembers shall encourage communication between residents, City Council and the City Administration and endeavor to keep the community informed on municipal matters, not otherwise made confidential.
- F. Councilmembers shall safeguard public confidence by being honest, fair and respectful of all persons with whom they have official contact and will follow the rules and laws that govern the deliberation of public policy issues and meaningful involvement of the public.
- G. Councilmembers have an obligation to attend City Council meetings and other meetings necessary for the performance of their official duties. Councilmembers should be prepared for meetings they attend, review materials, listen to the public discussions before them, keep comments and questions relevant to the business at hand, participate in discussions and make informed decisions based on the merits of each question.

2. **Definitions.**

- A. **Councilmember** means a member of the City Council.

- B. **Confidential information** means information, written or non-written, that has been obtained by a councilmember in the course of acting as such, that is not available to members of the public pursuant to the Michigan Freedom of Information Act, being MCL 15.231 *et. seq.*, or pursuant to other law, regulation, policy or procedure recognized by law, and that the councilmember is unauthorized to disclose:
- C. **Immediate family** means:
1. A councilmember's spouse or domestic partner;
 2. A councilmember's relative by lineal descent, parent, brother, sister or a person who resides in the councilmember's household; or
 3. An individual claimed by a councilmember or a councilmembers spouse as a dependent under the United States Internal Revenue Code, being 26 USC 1 *et. seq.*
- D. **Ownership Interest** means financial or pecuniary interest that a councilmember has in the affairs of 1) any business entity in which the councilmember or a member of his or her immediate family is an officer, director, member, or employee; 2) any business entity in which the councilmember or a member of his or her immediate family controls, or directly or indirectly owns, in excess of 5% of the total stock; or 3) any person or business entity with whom the councilmember has a contract.
- E. **Personal Gain or Benefit** means any benefit which is accepted or received by a councilmember or the councilmember's immediate family, or is perceived by a reasonable person to be accepted or received by a councilmember or the councilmember's immediate family, as remuneration for the purpose of improperly influencing an official action in a specific manner or for refraining from the performance of an official action in a specific manner, or as inducement for the councilmember to act in favor of some interest other than in the public interest.

3. **Conflict of Interest – Standards of Conduct.**

- A. A councilmember shall not divulge to an unauthorized person confidential information acquired by the councilmember in the course of his or her duties as a councilmember in advance of the time prescribed for its authorized release to the public, if it is to be released to the public.
- B. Councilmembers shall represent the official policies and positions of the City Council to the best of their ability when designated as delegates or City representatives for this purpose. When presenting their individual opinions and positions, a councilmember may not represent, nor allow the inference of, his or her personal opinion or position as that of the City Council or the City of Portage.

- C. A councilmember shall not appear or advocate on behalf of the private interest of third parties, including the councilmember's immediate family members, before the City Council or any City board, committee or commission or other proceeding of the City.
- D. A councilmember shall not solicit or accept a gift or loan of money, goods, services or other things of value for the benefit of a person or organization other than the City which tends to influence the manner in which the councilmember or another public officer or employee of the City performs official duties.
- E. Except as permitted by state law, a councilmember shall not engage in a business transaction in which the councilmember may derive a personal profit or gain, directly or indirectly, from his or her official position or authority or benefit financially from confidential information which the councilmember has obtained or may obtain by reason of that position or authority.
- F. Except as permitted by state law, a councilmember shall not engage in or accept employment or render services for a private or public interest when that employment or service is incompatible or in conflict with the discharge of the councilmember's official duties or when that employment may tend to impair his or her independence or judgment or action in the performance of official duties.
- G. Except as provided by state law, a councilmember shall not participate in the negotiation or execution of contracts, making of loans, granting of subsidies, fixing of rates, issuance of permits or certificates or other regulation or supervision relating to a business entity in which the councilmember has a personal or ownership interest.
- H. Except as permitted by state law, a councilmember shall not vote or participate in any other question on which the councilmember has a substantial direct or indirect financial, personal or ownership interest other than an interest similar to that of other citizens affected.

4. **Disclosure.** Whenever the performance of official duties shall require a councilmember to deliberate and vote on any matter involving the councilmember's financial or personal interest, the councilmember shall publicly disclose the nature and extent of the interest and is disqualified from participating in the deliberations and voting on the matter. The disclosure shall be made public at a meeting of the City Council before the matter is voted upon or in any other manner required by law.

5. **Gifts.** Councilmembers and their immediate family members shall not directly or indirectly solicit or accept a gift or loan of money, goods, services or other things of value which tend to influence the manner in which the councilmember or other public officer or employee of the City performs his or her official duties. Councilmembers are not prohibited from receiving money, goods, services or other items of value if not given to influence the councilmember in the performance of his or her official duties. The following list includes, but are not limited to, examples not prohibited:

- A. The solicitation and acceptance of campaign contributions in accordance with state law.
- B. Admission or registration fees, travel expenses, entertainment, meals or refreshments that are furnished to a councilmember by the sponsor of an event which is related to official local government business in connection with the event to which one or more members of the public are invited or are furnished to the councilmember in connection with a speaking engagement, teaching or the provision of assistance to an organization or another governmental entity as long as the City does not compensate the councilmember for the same items.
- C. An award publicly presented to a councilmember by an individual or a non-governmental entity or organization in recognition of the councilmember's public service, acts of heroism, crime solving or other similar recognition.
- D. Any gift or loan of money, goods, services or other things of value paid for by the federal, state, local government or other public agency authorized by law.

6. **Use of City Property.** No councilmember shall request, use, or permit the use of any city owned or supported property, vehicle, equipment, material, labor, or service for the personal convenience or the private advantage or personal gain of the councilmember or any other person which is not available to the public at-large.

7. **Nepotism.** A councilmember shall not influence or cause, directly or indirectly, the employment or any favorable employment action of an immediate family member, or participate in any employment decision about such family member.

8. **Political Activity.** Councilmembers shall not use any city owned property, vehicle, equipment, material, labor or services for the councilmember's own political benefit or for the political benefit of any other person seeking elective office, which is not available to the public at large on an equal basis. No political activity of the councilmember shall interfere with the performance of the usual duties of any city officer or employee.

9. **Compliance.**

- A. This Policy is intended to encourage and promote the highest standards of ethical conduct and behavior by members of the Portage City Council and is not intended to be a code of conduct enforceable by punitive measures. Violations of this Policy are not intended to subject councilmembers to reprimand or censure by the City Council. A violation of this Policy shall not be considered a basis for challenging the validity of a councilmember's decision or position as a councilmember.
- B. It is not the intent of this Code to in any way limit the right or ability of any councilmember to exercise his or her discretion in making legitimate policy decisions which are within their discretion so long as such action does not provide a special benefit to that person, relieve the

councilmember of a particular duty, or treat that person differently than other similarly situated city residents.

10. **Delivery of Policy to Councilmembers.** The City Clerk shall deliver a copy of this Policy to each councilmember as soon as practicable after the enactment of this Policy and to each new councilmember at the time of taking office. The City Clerk shall also request that each councilmember sign and return an acknowledgement the receipt of this Policy.

11. **Amendments.** This Policy may be amended to remain consistent with state law regarding the local code of ethics and the standards required therein.

12. **Ethics Committee.** If a councilmember requests an interpretation of this Policy, the Mayor shall select three (3) councilmembers to convene an Ethics Committee meeting who will provide its opinion to the councilmember requesting the interpretation.

Effective date: January 13, 2009



Peter J. Strazdas, Mayor

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CITY OF PORTAGE

CITY COUNCIL CODE OF ETHICS AND VALUES POLICY

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- F. Councilmembers shall safeguard public confidence by being honest, fair and respectful of all persons with whom they have official contact and will follow the rules and laws that govern the deliberation of public policy issues and meaningful involvement of the public.
- G. Councilmembers have an obligation to attend Council meetings and other meetings necessary for the performance of their official duties. Councilmembers should be prepared for meetings they attend, review materials, listen to the public discussions before them, keep comments and questions relevant to the business at hand, participate in discussions and make informed decisions based on the merits of each question.

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- C. **Immediate family** means:
1. A councilmember's spouse or domestic partner, or
 2. A councilmember's relative by lineal descent, parent, brother, sister or a person who resides in the councilmember's household; or
 3. An individual claimed by a councilmember or a councilmembers spouse as a dependent under the United States Internal Revenue Code, being 26 USC 1 *et. seq.*
- D. **Ownership Interest** means financial or pecuniary interest that a councilmember has in the affairs of 1) any business entity in which the councilmember or a member of his or her immediate family is an officer, director, member, or employee; 2) any business entity in which the councilmember or a member of his or her immediate family controls, or directly or indirectly owns, in excess of 5% of the total stock; or 3) any person or business entity with whom the councilmember has a contract.
- E. **Personal Gain or Benefit** means any benefit which is accepted or received by a councilmember or the councilmember's immediate family, or is perceived by a reasonable person to be accepted or received by a councilmember or the councilmember's immediate family, as remuneration for the purpose of improperly influencing an official action in a specific manner or for refraining from the performance of an official action in a specific manner, or as inducement for the councilmember to act in favor of some interest other than in the public interest.
- F. **Residence** means that location the councilmember habitually sleeps, keeps their personal effects, has a regular place of lodging and matches the address listed in Michigan Qualified Voter files as used on the councilmember's affidavit of identity.

3. **Conflict of Interest – Standards of Conduct.**

- A. A councilmember shall not divulge to an unauthorized person confidential information acquired by the councilmember in the course of his or her duties as a councilmember in advance of the time prescribed for its authorized release to the public, if it is to be released to the public.
- B. Councilmembers shall represent the official policies and positions of the City Council to the best of their ability when designated as delegates or City representatives for this purpose. When presenting their individual

opinions and positions, a councilmember may not represent, nor allow the inference of, his or her personal opinion or position as that of the City Council or the City of Portage.

- C. A councilmember shall not appear or advocate on behalf of the private interest of third parties, including the councilmember's immediate family members, before the City Council or any City board, committee or commission or other proceeding of the City.
- D. A councilmember shall not solicit or accept a gift or loan of money, goods, services or other things of value for the benefit of a person or organization other than the City which tends to influence the manner in which the councilmember or another public officer or employee of the City performs official duties.
- E. Except as permitted by state law, a councilmember shall not engage in a business transaction in which the councilmember may derive a personal profit or gain, directly or indirectly, from his or her official position or authority or benefit financially from confidential information which the councilmember has obtained or may obtain by reason of that position or authority.
- F. Except as permitted by state law, a councilmember shall not engage in or accept employment or render services for a private or public interest when that employment or service is incompatible or in conflict with the discharge of the councilmember's official duties or when that employment may tend to impair his or her independence or judgment or action in the performance of official duties.
- G. Except as provided by state law, a councilmember shall not participate in the negotiation or execution of contracts, making of loans, granting of subsidies, fixing of rates, issuance of permits or certificates or other regulation or supervision relating to a business entity in which the councilmember has a personal or ownership interest.
- H. Except as permitted by state law, a councilmember shall not vote or participate in any other question on which the councilmember has a substantial direct or indirect financial, personal or ownership interest other than an interest similar to that of other citizens affected.
- I. Councilmembers shall reside in the City of Portage throughout their elected term. Should their declared residence change during their term in office, they shall notify the city manager and city clerk no later than 30 days following the change in address.

4. **Disclosure.** Whenever the performance of official duties shall require a councilmember to deliberate and vote on any matter involving the councilmember's financial or personal interest, the councilmember shall publicly disclose the nature and extent of the interest and is disqualified from participating in the deliberations and voting on the matter. The

disclosure shall be made public at a meeting of the City Council before the matter is voted upon or in any other manner required by law.

5. **Gifts.** Councilmembers and their immediate family members shall not directly or indirectly solicit or accept a gift or loan of money, goods, services or other things of value which tend to influence the manner in which the councilmember or other public officer or employee of the City performs his or her official duties. Councilmembers are not prohibited from receiving money, goods, services or other items of value if not given to influence the councilmember in the performance of his or her official duties. The following list includes, but are not limited to, examples not prohibited:

- A. The solicitation and acceptance of campaign contributions in accordance with state law.
- B. Admission or registration fees, travel expenses, entertainment, meals or refreshments that are furnished to a councilmember by the sponsor of an event which is related to official local government business in connection with the event to which one or more members of the public are invited or are furnished to the councilmember in connection with a speaking engagement, teaching or the provision of assistance to an organization or another governmental entity as long as the City does not compensate the councilmember for the same items.
- C. An award publicly presented to a councilmember by an individual or a non-governmental entity or organization in recognition of the councilmember's public service, acts of heroism, crime solving or other similar recognition.
- D. Any gift or loan of money, goods, services or other things of value paid for by the federal, state, local government or other public agency authorized by law.

6. **Use of City Property.** No councilmember shall request, use, or permit the use of any city owned or supported property, vehicle, equipment, material, labor, or service for the personal convenience or the private advantage or personal gain of the councilmember or any other person which is not available to the public at-large.

7. **Nepotism.** A councilmember shall not influence or cause, directly or indirectly, the employment or any favorable employment action of an immediate family member, or participate in any employment decision about such family member.

8. **Political Activity.** Councilmembers shall not use any city owned property, vehicle, equipment, material, labor or services for the councilmember's own political benefit or for the political benefit of any other person seeking elective office, which is not available to the public at large on an equal basis. No political activity of the councilmember shall interfere with the performance of the usual duties of any city officer or employee.

9. **Compliance.**

- A. This Policy is intended to encourage and promote the highest standards of ethical conduct and behavior by members of the Portage City Council

and is not intended to be a code of conduct enforceable by punitive measures. Violations of this Policy are not intended to subject councilmembers to reprimand or censure by the City Council. A violation of this Policy shall not be considered a basis for challenging the validity of a councilmember's decision or position as a councilmember.

- B. It is not the intent of this Code to in any way limit the right or ability of any councilmember to exercise his or her discretion in making legitimate policy decisions which are within their discretion so long as such action does not provide a special benefit to that person, relieve the councilmember of a particular duty, or treat that person differently than other similarly situated city residents.

10. **Delivery of Policy to Councilmembers.** The City Clerk shall deliver a copy of this Policy to each councilmember as soon as practicable after the enactment of this Policy and to each new councilmember at the time of taking office. The City Clerk shall also request that each councilmember sign and return an acknowledgement the receipt of this Policy.

11. **Amendments.** This Policy may be amended to remain consistent with state law regarding the local code of ethics and the standards required therein.

12. **Ethics Committee.** If a councilmember requests an interpretation of this Policy, the Mayor shall select three (3) councilmembers to convene an Ethics Committee meeting who will provide its opinion to the councilmember requesting the interpretation.

Adopted & Effective: November 14, 2023

TO: Honorable Mayor and City Council

FROM: Pat McGinnis, City Manager

SUBJECT: Final Preliminary Condominium Plan (engineering plans) for McConley Cove Planned Development

SUPPORTING PERSONNEL: Peter Dame, Chief Development Officer
Jonathon Hallberg, Deputy Director of Economic Development

ACTION RECOMMENDED: Approve the Final Preliminary Condominium Plan (engineering plans) for McConley Cove Planned Development, 1075 Bacon Avenue.

The Final Preliminary Condominium Plan (engineering plans) for McConley Cove Planned Development located at 1075 Bacon Avenue has been submitted for review by American Village Development II, LLC (also known as AVB). The subject site was planned as Phase III of the Pines by Anthony & Ing-Britt Argondelis when a preliminary plat for Phase I of the Pines was approved by the Planning Commission on July 29, 1997. However, the developer did not pursue the development of Phase III. The current developer, AVB, acquired the subject site from Wolverine Holding Co, LLC on September 1, 2021, to pursue the proposed project 'McConley Cove'.

The proposal consists of 40 new lots for future single-family detached homes on 16.25 acres with a density of 2.46 units/acre. The development is expected to be constructed in two phases, each consisting of approximately 20+/- homesites. Currently, the developer has not indicated if construction will begin in the northern or southern half of the project.

The Rezoning and Tentative Plan for the proposed development was recommended for approval by the Planning Commission on March 17, 2022, and approved by the City Council on May 10, 2022. The Preliminary Condominium Plan is in substantial compliance with the previously approved Tentative Plan with the following variations:

- The design of two new stormwater retention basins and smaller lot sizes around those basins. The developer is no longer pursuing the use of the city's stormwater basin to the east of the subject site.
- Planned landscaping in the area of the stormwater retention basins will no longer be designed in the manner depicted in the Tentative Plan but will be provided throughout the development. A landscape plan is not required to be provided at the Preliminary Condominium Plan permitting step, but will be submitted for the Final Preliminary Condominium Plan step.

The above variations do not exceed the limits outlined in [subsection H, under Sec. 42-375](#) - Plan review and approval (PD, planned development), nor in other important ways.

The Preliminary Condominium Plan was recommended for approval by the Planning Commission on

December 1, 2022, and approved by City Council on January 10, 2023. The developer, AVB, has submitted and is now requesting that the City Council approve final engineering design and construction plans that include the following public improvements:

- McConley Cove will be accessed via a southern extension of Gulfport Trail named McConley Cove Way when entering the development. It will be perpendicularly connected to Chaucer Avenue in the south.
- The existing stub street pavement to Chaucer Avenue will be removed and a new curb and sidewalk on Chaucer Avenue will be built. Lawn seed for the area of pavement removal will be applied and maintained per [Sec. 24 -114 - weeds and grasses](#).
- A stub street of 60-foot-wide right-of-way pavement will be built on the southwest edge of the development to be connected to future development to the west.
- Four-foot-wide concrete sidewalks will be constructed along both sides of the proposed streets and connected between Aberlour Court and Teeling Trail. Additionally, McConley Cove Way will be constructed at the unique width of a 100-foot-wide Parkway (inclusive of the 60-foot-wide right of way) to accommodate a landscape strip as open space with curved four-foot-wide sidewalks.
- The sanitary sewer and the water system will connect to the existing city sewer and water system.
- Stormwater retention basins are private and will be maintained by the condominium association. A detailed landscaping plan for screening storm water basins was submitted.

The approval of the Final Preliminary Condominium Plan (engineering plans) will allow the developer to proceed with the construction of the infrastructure improvements. When construction is complete, the developer will request final approval from City Council and acceptance of the water and sanitary sewer mains as public facilities.

The Development Review Team (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. The review of the DRT ensures that the proposed development is consistent with the city's infrastructure, engineering, and other requirements including streets, sewers, water mains, storm water, parking, landscaping, and others. The DRT has reviewed the engineering drawings and determined that the plans are in conformance with city requirements and recommends the approval of the Final Preliminary Condominium Plan (engineering plans).

It is recommended that City Council approve the Final Preliminary Condominium Plan (engineering plans) for McConley Cove Planned Development, 1075 Bacon Avenue.

FUNDING: Not Applicable

Attachments:

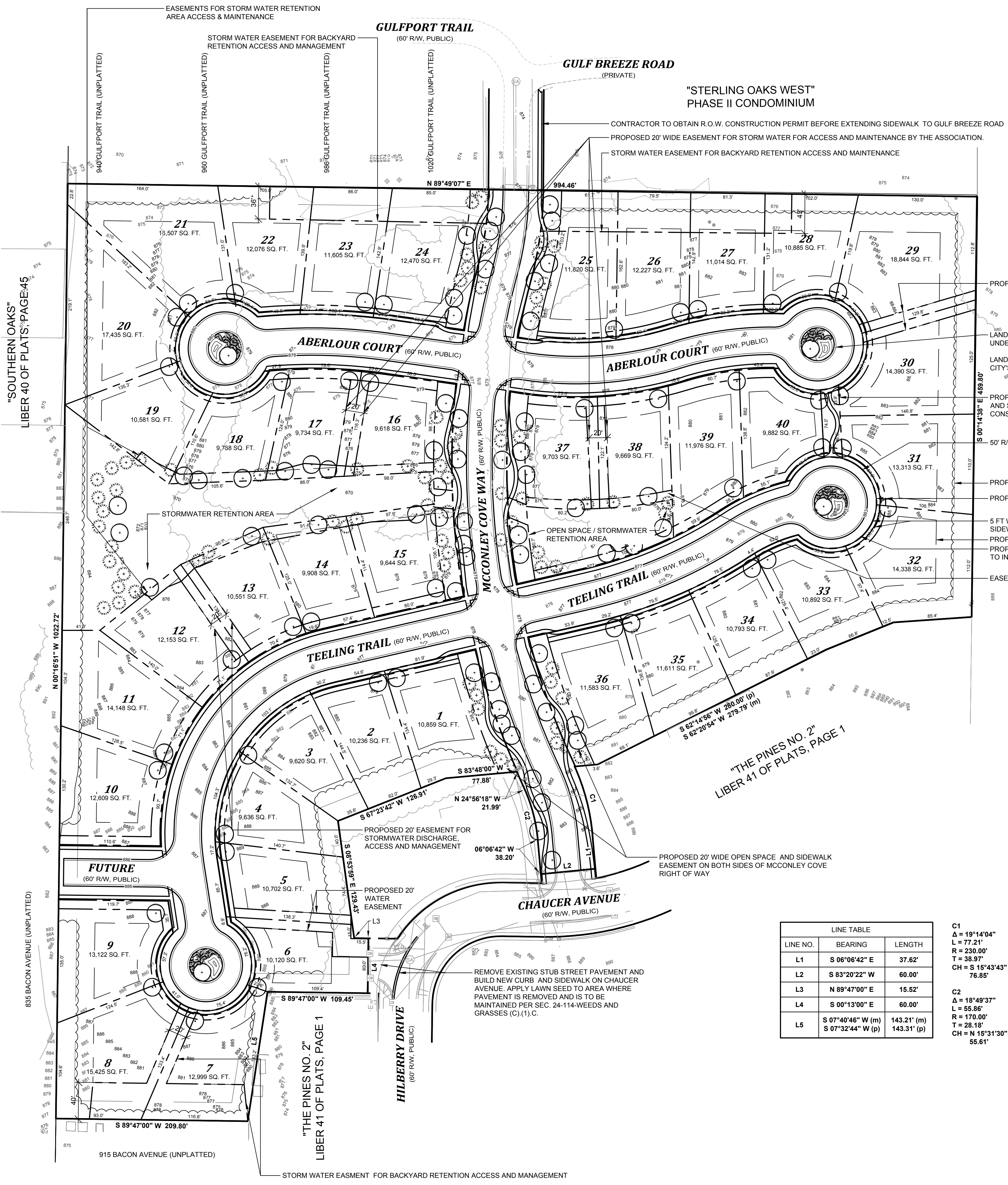
1. McConley Cove Final Preliminary Plan (engineering plans)
2. Exhibit A-C McConley Cove Final Preliminary Plan (engineering plans)

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433 E. RANSOM ST.
KALAMAZOO, MI. 49007
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11/3/23
PAUL D. SCHRAM
ENGINEER
No. 6201067420

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**AMERICAN
VILLAGE
DEVELOPMENT II**
4200 WEST CENTRE AVENUE
PORTAGE, MI 49024

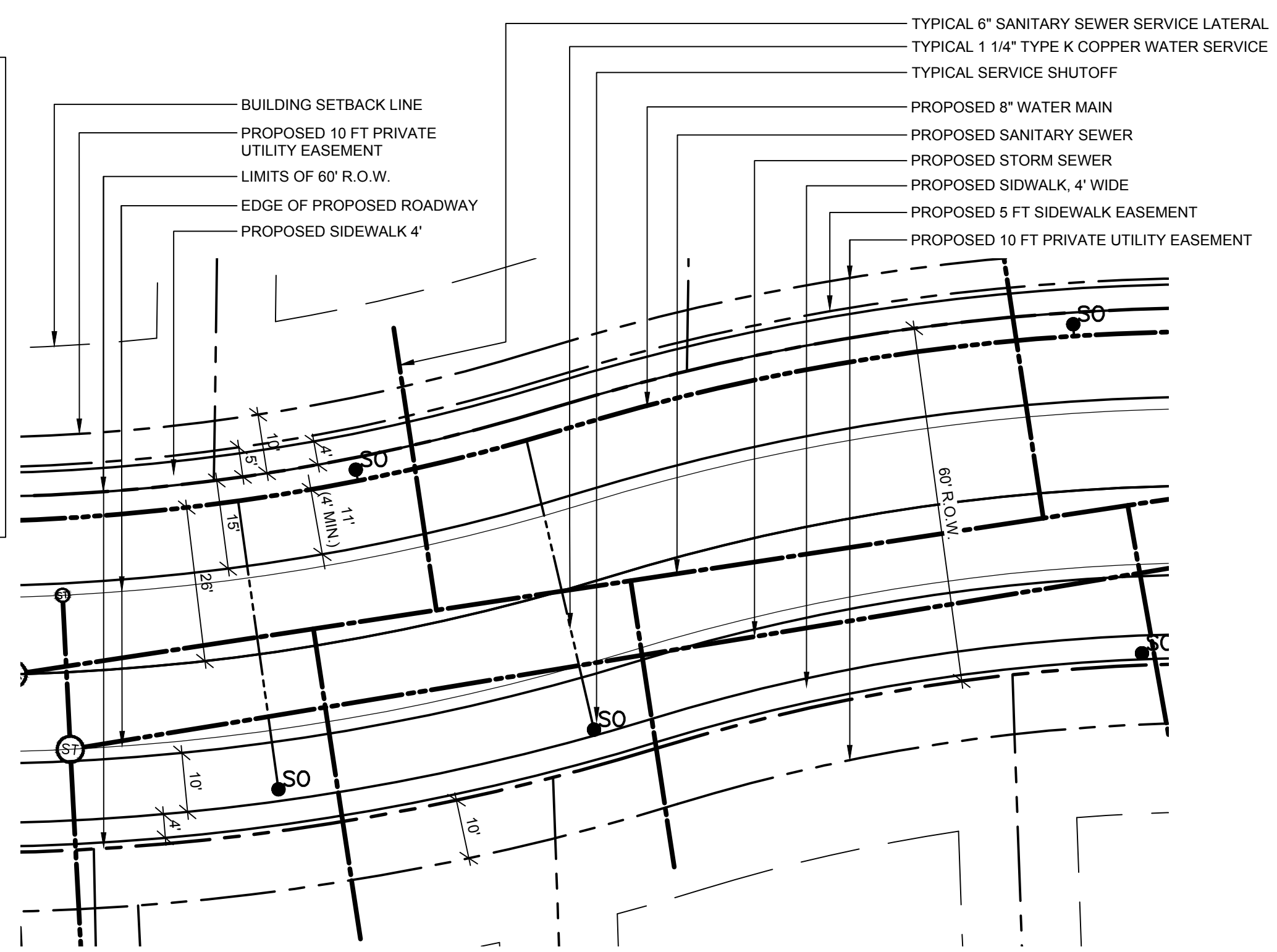
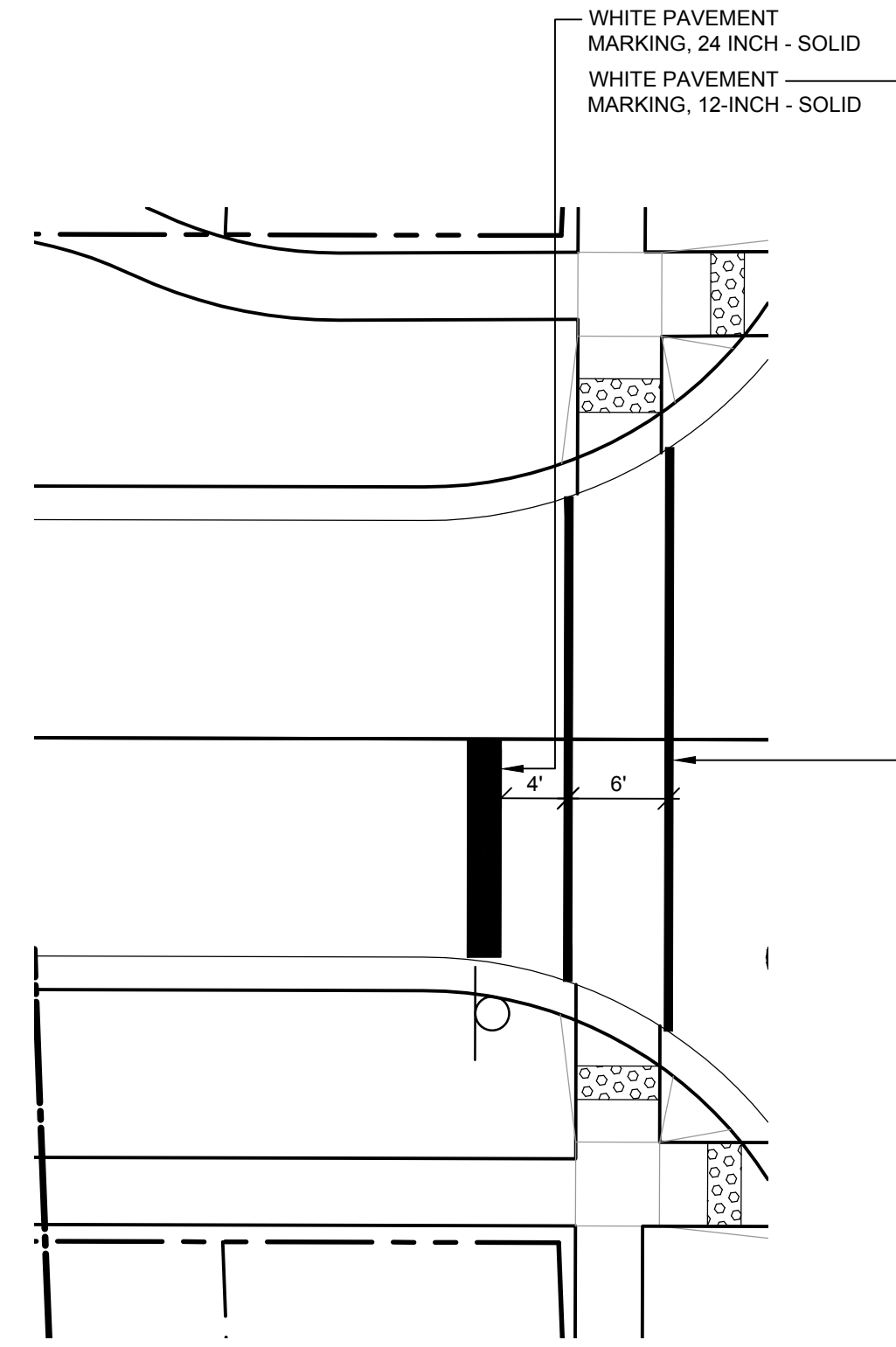
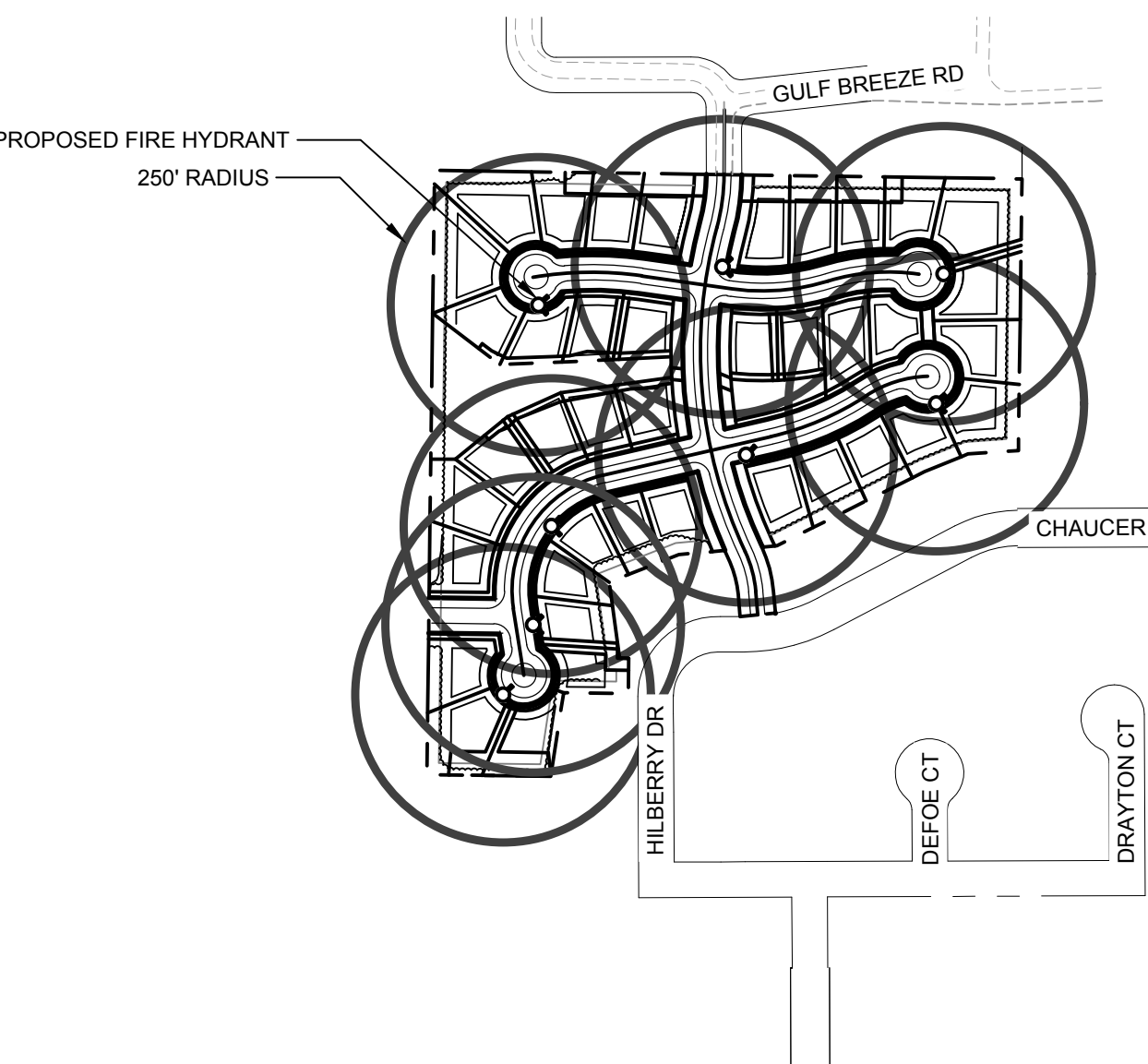
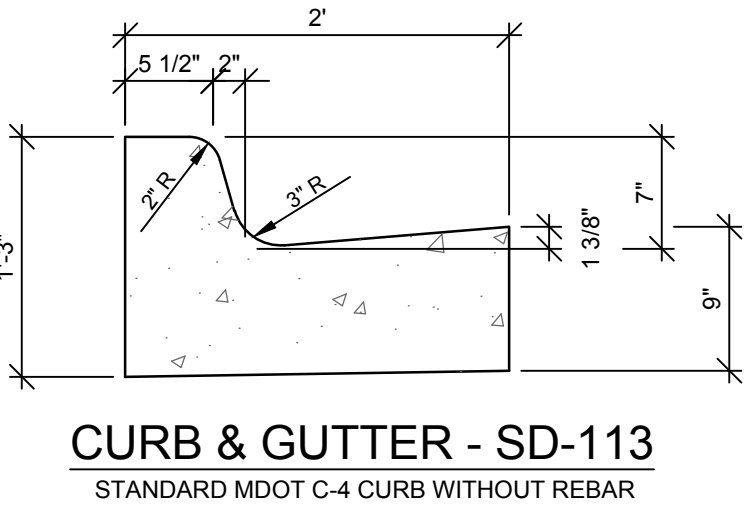


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OF 14

PROJECT NOTES

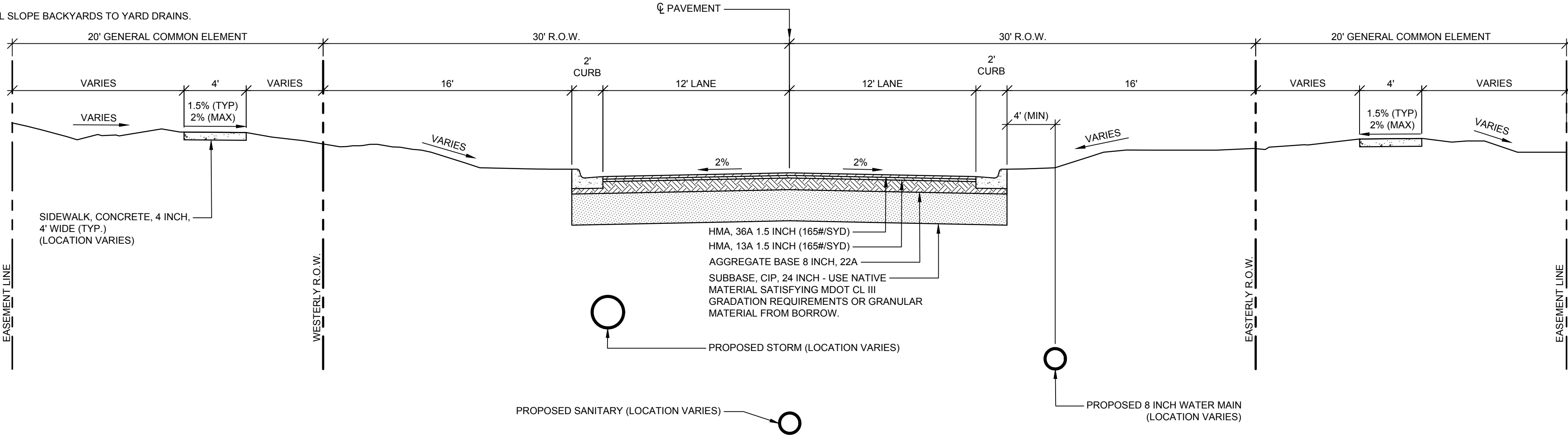
- THE "2020 STANDARD SPECIFICATIONS FOR CONSTRUCTION" AND "STANDARD PLANS" BY THE MICHIGAN DEPARTMENT OF TRANSPORTATION (MDOT) ARE HEREBY INCORPORATED INTO THESE CONTRACT DOCUMENTS. COPIES OF THESE STANDARDS ARE AVAILABLE FOR INSPECTION AT THE OFFICE OF THE ENGINEER.
- THE "2016 CITY OF PORTAGE GENERAL SPECIFICATIONS AND STANDARD DETAILS" ARE HEREBY INCORPORATED INTO THESE CONTRACT DOCUMENTS. COPIES OF THESE STANDARDS ARE AVAILABLE FOR INSPECTION AT THE OFFICE OF THE ENGINEER.
- THE PLACING OF TRAFFIC CONTROL SIGNS AND PAVEMENT MARKINGS SHALL BE DONE IN ACCORDANCE WITH THE CURRENT EDITION OF THE MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD), AS AMENDED.
- ALL WORK SHALL CONFORM TO ALL LOCAL, STATE AND FEDERAL LAWS, RULES AND REGULATIONS IN FORCE AT THE TIME OF CONSTRUCTION.
- THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL CONSTRUCTION WITH OTHER CONTRACTORS INVOLVED WITH CONSTRUCTION OF THE PROPOSED DEVELOPMENT AND FOR REPORTING ANY ERRORS OR DISCREPANCIES BETWEEN THESE PLANS AND/OR PLANS PREPARED BY OTHERS. IF ANY ERRORS, DISCREPANCIES, OR OMISSIONS BECOME APPARENT, THESE SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO CONSTRUCTION OF ANYTHING AFFECTED SO THAT CLARIFICATION OR REDESIGN MAY OCCUR.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR POSTING ALL BONDS AND INSURANCE CERTIFICATES AND SUBMITTING TRAFFIC CONTROL PLANS FOR REVIEW AND APPROVAL WHICH MAY BE REQUIRED BY THE CITY FOR THE CONSTRUCTION OF THIS PROJECT WITHIN THE RESPECTIVE ROAD RIGHT-OF-WAY. THE CONTRACTOR SHALL APPLY FOR THESE PERMITS UNLESS OTHERWISE NOTED.
- IN CONFORMANCE WITH PUBLIC ACT 174 OF 2013, ALL CONTRACTORS SHALL CALL MISS DIG @ 811 OR 800-482-7171 FOR PROTECTION OF UNDERGROUND UTILITIES. A MINIMUM OF THREE FULL WORKING DAYS (EXCLUDING SATURDAYS, SUNDAYS AND HOLIDAYS) PRIOR TO BEGINNING EACH EXCAVATION IN ANY AREA. MEMBERS WILL THUS BE ROUTINELY NOTIFIED. THIS DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF NOTIFYING UTILITY OWNERS WHO MAY NOT BE A PART OF THE "MISS DIG" ALERT SYSTEM.
- IF SOIL OR GROUNDWATER CONTAMINATION IS ENCOUNTERED OR SUSPECTED DURING CONSTRUCTION THE FOLLOWING STEPS SHALL BE FOLLOWED:
 - CONTRACTOR SHALL STOP WORK IMMEDIATELY AND NOTIFY OWNER AND/OR OWNER'S REPRESENTATIVE.
 - OWNER AND/OR OWNER'S REPRESENTATIVE SHALL NOTIFY THE CITY.
 - OWNER SHALL ENGAGE THE SERVICES OF A QUALIFIED ENVIRONMENTAL CONSULTANT. (CONSULTANT).
 - CONSULTANT SHALL CONDUCT A SITE ASSESSMENT AND REPORT TO THE ABOVE PARTIES.
 - CONSULTANT SHALL DEVELOP A PLAN TO ADDRESS ANY CONTAMINATION WHICH MAY BE FOUND DURING CONSTRUCTION.
 - THE CONSULTANT TOGETHER WITH THE DESIGN ENGINEER SHALL COMPLETE A SITE EVALUATION PROCESS FOLLOWING THE DOCUMENT ENTITLED *IMPLEMENTING STORMWATER INFILTRATION PRACTICES AT VACANT PARCELS AND BROWNFIELD SITES* (EPA, 2013) TO DETERMINE IF THE STORMWATER MANAGEMENT SYSTEM REQUIRES REDESIGN AND RESUBMITTAL TO THE CITY FOR REVIEW AND APPROVAL.
 - OWNER AND/OR OWNER'S REPRESENTATIVE SHALL SUBMIT TO THE CITY SUPPORTING DOCUMENTATION OF THE SITE EVALUATION PROCESS. A REVISED STORMWATER REVIEW PACKAGE MUST ALSO BE SUBMITTED IF IT BECOMES NECESSARY TO CHANGE THE DESIGN OF THE STORMWATER MANAGEMENT SYSTEM.
 - MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY (EGLE) REMEDIATION AND REDEVELOPMENT DIVISION (RRD) STAFF SHALL BE NOTIFIED AS APPLICABLE."
- THE CONTRACTOR SHALL LOCATE ALL ACTIVE UNDERGROUND UTILITIES PRIOR TO STARTING WORK AND SHALL CONDUCT HIS OPERATIONS IN A MANNER AS TO ENSURE THAT THOSE UTILITIES NOT REQUIRING RELOCATION WILL NOT BE DISTURBED.
- FILL SHALL BE PLACED AND ADEQUATELY KEYED INTO STRIPPED AND SCARIFIED SOILS PER THE MDOT 2020 STANDARD SPECIFICATIONS FOR CONSTRUCTION. ALL FILL MATERIAL SHOULD BE AT APPROXIMATELY THE OPTIMUM MOISTURE CONTENT DURING COMPACTION. FURTHERMORE, FILL MATERIAL SHOULD NOT BE FROZEN NOR BE PLACED ON A FROZEN BASE. IT IS RECOMMENDED THAT ALL EARTHWORK AND SITE PREPARATION ACTIVITIES BE CONDUCTED UNDER ADEQUATE SUPERVISION AND PROPERLY CONTROLLED IN THE FIELD BY A GEOTECHNICAL ENGINEERING TESTING FIRM.
- YIELD CALCULATIONS AND DENSITY TESTS OF THE ROAD MATERIAL SHALL BE PROVIDED. EXTRACTION/GRADATION/ANALYSIS SHALL BE DOCUMENTED TO CONFIRM THE MATERIAL MEETS MDOT SPECIFICATIONS. THE ENGINEER, TESTING FIRM, OR BOTH NEED TO BE PRESENT DURING PAVING OPERATIONS.
- COMPACTION OF ANY FILL BY FLOODING IS NOT ACCEPTABLE. THIS METHOD WILL GENERALLY NOT ACHIEVE THE DESIRED COMPACTION, AND THE LARGE QUANTITIES OF WATER WILL TEND TO SOFTEN THE FOUNDATION SOILS.
- COMPACTION TESTS OR PROOF ROLLING OF EXISTING SUBSOIL SHALL BE PERFORMED BEFORE ANY FILL MATERIAL IS PLACED WITHIN THE PROPOSED PUBLIC STREET RIGHT OF WAYS.
- ALL FILL FOR THIS PROJECT MUST BE OBTAINED AND FURNISHED BY THE CONTRACTOR. ALL REQUIRED FILL SHALL BE SELECTED EXCAVATED MATERIAL FROM THE SITE APPROVED BY THE ENGINEER, OR MDOT CLASS II GRANULAR MATERIAL FROM BORROW. EXCESS FILL SHALL BE STOCKPILED ON SITE BY THE CONTRACTOR AT THE OWNER'S DIRECTION. NOTE: NO BORROW OR SOIL REMOVAL ARRANGEMENTS HAVE BEEN PREARRANGED FOR THIS PROJECT, AND SHALL BE THE TOTAL RESPONSIBILITY OF THE CONTRACTOR.
- SLOPE ALL BANKS AND GRADE UNIFORMLY FROM BACK OF CURB AND GUTTER AT STREET TO EXISTING OR PROPOSED GRADES; OR FROM CURB AND GUTTER TO PROPOSED/EXISTING SIDEWALKS. IN AREAS WHERE NO GUTTER IS PROPOSED, UNIFORMLY SLOPE GRADE FROM TOP OF PAVEMENT TO EXISTING GRADE AT A MAXIMUM SLOPE OF 1 ON 4, UNLESS OTHERWISE NOTED.
- THE CONTRACTOR SHALL INSTALL A PEDESTRIAN FENCE AROUND ALL EXCAVATIONS TO BE LEFT OPEN OVERNIGHT, AS REQUIRED.
- THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING EXISTING DRAINAGE PATTERNS, AND SHALL RESOLVE ANY DRAINAGE PROBLEMS ON ADJACENT PROPERTIES WHICH MAY RESULT FROM THE CONTRACTOR'S ACTIVITIES.
- MULCH BLANKET HIGH VELOCITY SHALL BE PLACED ON THE BOTTOM OF ALL DITCHES WHEN THE LONGITUDINAL GRADE IS GREATER THAN OR EQUAL TO 2.00% UNLESS OTHERWISE NOTED, OR AS DIRECTED BY THE ENGINEER IN THE FIELD.
- MATERIAL FOR AGGREGATE BASE SHALL BE MDOT 22A GRAVEL, 22A SLAG, 22A LIMESTONE, 22A RECYCLED CONCRETE, OR COLD MILLED, HMA MATERIAL WHICH APPROXIMATES THE GRADATION OF 22A MATERIAL. IF MILLED HMA MATERIAL IS USED, IT MAY BE USED FULL DEPTH OR ON TOP OF 22A AGGREGATE TO OBTAIN THE REQUIRED THICKNESS. 22A GRAVEL SHALL NOT BE USED ON TOP OF MILLED HMA MATERIAL TOE. A MIX GREATER THAN 50% MILLED HMA MATERIAL SHALL NOT BE USED AS AN AGGREGATE FROM SEPTEMBER 15 TO MAY 1 WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER.
- DATUM REFERS TO NAVD 88 DATUM.
- ALL SCALES FOR DRAWINGS AND DETAILS ARE BASED ON 24"x36" PRINTED PLANS. DIMENSIONS TAKE PRECEDENCE OVER SCALE. CONTRACTOR TO VERIFY ALL DIMENSIONS IN FIELD.
- TAPER THE CURBS TO ZERO HEIGHT AT SIDEWALKS. SIDEWALK RAMPS SHALL BE BARRIER FREE AND CONSTRUCTED IN ACCORDANCE WITH THE MDOT SIDEWALK RAMP AND DETECTABLE WARNING DETAILS (R-26-J SERIES). DETECTABLE WARNING PLATES TO BE ASPHALT COATED CAST IRON. SIDEWALK JOINTS SHALL BE IN ACCORDANCE WITH THE MDOT DRIVEWAY OPENINGS & APPROACHES AND CONCRETE SIDEWALKS (R-29 SERIES) UNLESS NOTED OTHERWISE.
- STORM SEWER PIPING SHALL BE CLASS C76-IV CONCRETE, ADS - N12 OR HANCOR HI-Q HDPE UNLESS INDICATED. OTHERWISE, SEE PLAN FOR SIZES AND LOCATIONS OF PIPING. HDPE PIPE SHALL HAVE A MINIMUM COVER OF 3 FEET. ALL PIPE JOINTS SHALL BE PREMIUM JOINTS AS TO PROVIDE A WATERTIGHT SEAL IN ACCORDANCE WITH THE CITY OF PORTAGE CONSTRUCTION SPECIFICATIONS AND STORM WATER DESIGN CRITERIA MANUAL.
- ALL WATER MAINS, WATER SERVICES, STORM SEWERS, SANITARY SEWERS, SANITARY SEWER SERVICES, AND THEIR APPURTENANCES SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF PORTAGE SPECIFICATIONS AND REQUIREMENTS.
- DEFLECTION TESTING IS REQUIRED FOR ALL FLEXIBLE PIPE (SANITARY AND STORM SEWER) IN ACCORDANCE WITH SECTION 208.2.4 OF THE CITY OF PORTAGE SPECIFICATIONS.
- SANITARY AND STORM SEWER REQUIRE TELEVISION INSPECTION IN ACCORDANCE WITH SECTION 208.2.6 OF THE CITY OF PORTAGE SPECIFICATIONS.
- ALL WATER MAINS AND THEIR APPURTENANCES SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF PORTAGE SPECIFICATIONS AND AWWA C600.
- ALL HYDRANTS SHALL BE INSTALLED IN A MANNER SUCH THAT THE CENTER OF THE PUMPER CONNECTION IS A MINIMUM OF 21" AND A MAXIMUM OF 36" ABOVE THE ADJACENT FINISHED GRADE. THE HYDRANT SHALL HAVE AN AREA OF 36" CLEAR OF OBSTRUCTIONS SURROUNDING THE OUTLET NOZZLES AND OPERATING NUT.
- WATER MAINS AND THEIR APPURTENANCES SHALL BE WRAPPED IN POLYETHYLENE MATERIAL IN ACCORDANCE WITH AWWA C105. AT THE DEVELOPER'S OPTION WITH THE CITY'S APPROVAL, POLYETHYLENE WRAP MAY BE OMITTED IF WATER MAIN BEDDING SOILS ARE TESTED IN ACCORDANCE WITH APPENDIX A OF AWWA C105. SOIL EVALUATION IS TO BE TAKEN AT PIPE DEPTH AT 500 FOOT INTERVALS ALONG THE WATER MAIN ROUTE. TESTS NEED TO BE PERFORMED BY QUALIFIED ENGINEERS OR TECHNICIANS EXPERIENCED IN SOIL ANALYSIS AND EVALUATION. THE TESTING NEEDS TO BE CONDUCTED IN ACCORDANCE WITH ASTM TESTS: G51 - PH, G 200 - REDOX, 4500 S METHYL BLUE METHOD FOR SULFIDE, AND G187 - RESISTIVITY. THE TESTING AND EVALUATION TO DETERMINE WHETHER POLYETHYLENE ENCASEMENT SHOULD BE USED NEEDS TO BE COMPLETED AND A COPY OF THE EVALUATION PROVIDED TO THE CITY. SOIL TESTING NEED TO BE PERFORMED AFTER THE EARTHWORK IS COMPLETED AND BEFORE ANY WORK ON THE WATER MAIN MAY BEGIN.
- WATER MAIN FLUSHING SHALL PROVIDE A MINIMUM WATER VELOCITY OF 3.0 FEET PER SECOND IN ACCORDANCE WITH AWWA C651.
- PROJECT SANITARY SEWER SHALL CONFORM TO THE REQUIREMENTS OF THE LATEST REVISION OF ASTM SPECIFICATION D3034 TYPE PSM POLY VINYL CHLORIDE (PVC) SEWER PIPE AND FITTINGS AND HAVE A MINIMUM WALL THICKNESS OF SDR 26.

- ALL WATER MAIN 4 INCHES TO 10 INCHES IN DIAMETER SHALL BE CEMENT LINED CLASS 52 DUCTILE IRON AND 12-INCH DIAMETER AND LARGER SHALL BE CEMENT LINED CLASS 53 DUCTILE IRON CONFORMING TO AWWA C151.
- MAINTAIN 10 FOOT MINIMUM HORIZONTAL SEPARATION BETWEEN THE SANITARY OR STORM SEWER AND WATER MAIN UTILITIES. PROVIDE 18" MINIMUM VERTICAL SEPARATION WHERE THE WATER MAIN CROSSES A SANITARY OR STORM SEWER.
- ANY SANITARY SEWER, SANITARY SEWER SERVICE LEADS, WATER MAIN, WATER SERVICES, OR STORM SEWER THAT IS DAMAGED BY THE CONTRACTOR DURING THEIR OPERATIONS SHALL BE REPAIRED TO THE OWNER'S AND CITY OF PORTAGE'S SATISFACTION AND AT THE CONTRACTOR'S EXPENSE.
- THE TELEPHONE, GAS, AND CABLE COMPANIES SHALL PROVIDE UNDERGROUND SERVICES TO THE BUILDINGS AT THE OWNER'S EXPENSE. THE ELECTRIC UTILITY COMPANY SHALL PROVIDE SERVICE TO THE RIGHT-OF-WAY LINE. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF THESE UTILITIES WITH THEIR WORK.
- ALL PERMANENT SIGNAGE SHALL COMPLY WITH THE MICHIGAN'S BARRIER FREE DESIGN REQUIREMENTS AND THE AMERICANS WITH DISABILITIES ACT.
- ALL ELECTRICAL WORK SHALL BE PERFORMED BY A STATE OF MICHIGAN LICENSED ELECTRICIAN ACCORDING TO THE NATIONAL ELECTRICAL CODE AS MODIFIED BY THE STATE OF MICHIGAN. FURNISH AND INSTALL ALL MATERIALS AND LABOR TO PROVIDE A COMPLETE WORKING SYSTEM.
- ALL PLUMBING WORK SHALL BE PERFORMED BY A STATE OF MICHIGAN LICENSED PLUMBER AND ACCORDING TO THE NATIONAL PLUMBING CODE AS MODIFIED BY THE STATE OF MICHIGAN AND LOCAL HEALTH DEPARTMENT. FURNISH AND INSTALL ALL MATERIALS AND LABOR TO PROVIDE A COMPLETE WORKING SYSTEM.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS INCLUDING PERMIT COSTS, TAP FEES, METER DEPOSITS, BONDS, INSPECTIONS AND ALL FEES REQUIRED FOR PROPOSED WORK TO OBTAIN OCCUPANCY. THE CONTRACTOR SHALL MAKE ALL PERMANENT UTILITY APPLICATIONS AND SHALL BE RESPONSIBLE FOR ALL APPLICABLE FEES AND UTILITY SERVICE INSTALLATION FEES. THIS INCLUDES BUT IS NOT LIMITED TO PRIMARY AND SECONDARY ELECTRICAL SERVICES, PERTAINING TO SUCH, ON BEHALF OF THE OWNER.
- THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL PRE-EXISTING ON-SITE IMPROVEMENTS WITHIN LIMITS OF CONSTRUCTION UNLESS OTHERWISE NOTED. THIS INCLUDES BUT IS NOT LIMITED TO BUILDINGS, FOUNDATIONS, FOOTINGS, CURBS, ASPHALT, TREES, SHRUBS, EXISTING UTILITY LINES, DEBRIS AND ALL OTHER ITEMS AND UTILITIES TO BE ABANDONED.
- SOILS EXPOSED IN THE BASE OF ALL SATISFACTORY FOUNDATION EXCAVATIONS SHOULD BE PROTECTED AGAINST ANY DETRIMENTAL CHANGES IN CONDITION SUCH AS FROM DISTURBANCE, RAIN, AND FREEZING. SURFACE RUN-OFF WATER SHOULD BE DRAINED AWAY FROM THE EXCAVATION AND NOT ALLOWED TO POND. IF POSSIBLE, THE FOOTING CONCRETE SHOULD BE POURED THE SAME DAY THE EXCAVATION IS MADE. IF THIS IS NOT PRACTICAL, THE FOOTING EXCAVATIONS SHOULD BE ADEQUATELY PROTECTED.
- EXTERIOR CONCRETE SHALL BE 3500 PSI, LIMESTONE AGGREGATE AND 6.5% AIR ENTRAINMENT WITH A TOLERANCE OF 1.5% AND A LIGHT BROOM FINISH.
- SIDEWALK WITHIN THE CONDOMINIUM SHALL BE INSTALLED AT THE SAME TIME AS THE UNIT IT FRONTS.
- CONCRETE TESTING - CONTRACTOR SHALL EMPLOY AN INDEPENDENT TESTING ENGINEER TO VERIFY THE SLUMP, AIR ENTRAINMENT AND PROVIDE (3) CYLINDER SAMPLES FOR EACH DAYS POUR, OR 50 C.Y. OF CONCRETE, WHICHEVER OCCURS MORE OFTEN.
- TESTING REQUIREMENTS (ALL CONTRACTORS) SOIL AND AGGREGATE DENSITY TESTING - CONTRACTOR SHALL EMPLOY AN INDEPENDENT TESTING CONSULTANT TO VERIFY THE DENSITY OF ALL FILL EXCAVATION AS SPECIFIED AND ALL SLAB, FOUNDATIONS, AND FOOTING SURFACES AS RECOMMENDED BY ENGINEER. TESTING SHALL TAKE PLACE PRIOR TO INSTALLATION OF THE AGGREGATE BASE. COPIES OF ALL COMPACTION TEST RESULTS SHALL BE FORWARDED TO THE ENGINEER.
- HMA TESTING - CONTRACTOR MUST SUBMIT MIX DESIGN FROM SUPPLIER. EXTRACTION TESTS AND MATERIAL YIELD SHALL BE PERFORMED IN ACCORDANCE WITH 208.3.2 OF CITY OF PORTAGE SPECS AND STANDARD DETAILS. YIELD CALCULATIONS AND DENSITY TESTS OF THE MATERIAL PLACED NEEDS TO BE PROVIDED. EXTRACTION, GRADATION, AND ANALYSIS ALSO NEEDS TO BE PROVIDED TO CONFIRM THAT THE MATERIAL PLACED MEETS MDOT SPECIFICATIONS. THE ENGINEER, AND OR TESTING FIRM WILL BE PRESENT DURING PAVING OPERATIONS.
- PROPERTY OWNER'S NAMES, WHERE SHOWN, ARE FOR INFORMATION ONLY, AND THEIR ACCURACY IS NOT GUARANTEED.
- FOLLOWING FOUNDATION BACKFILL, CONTRACTOR SHALL SLOPE BACKYARDS TO YARD DRAINS.

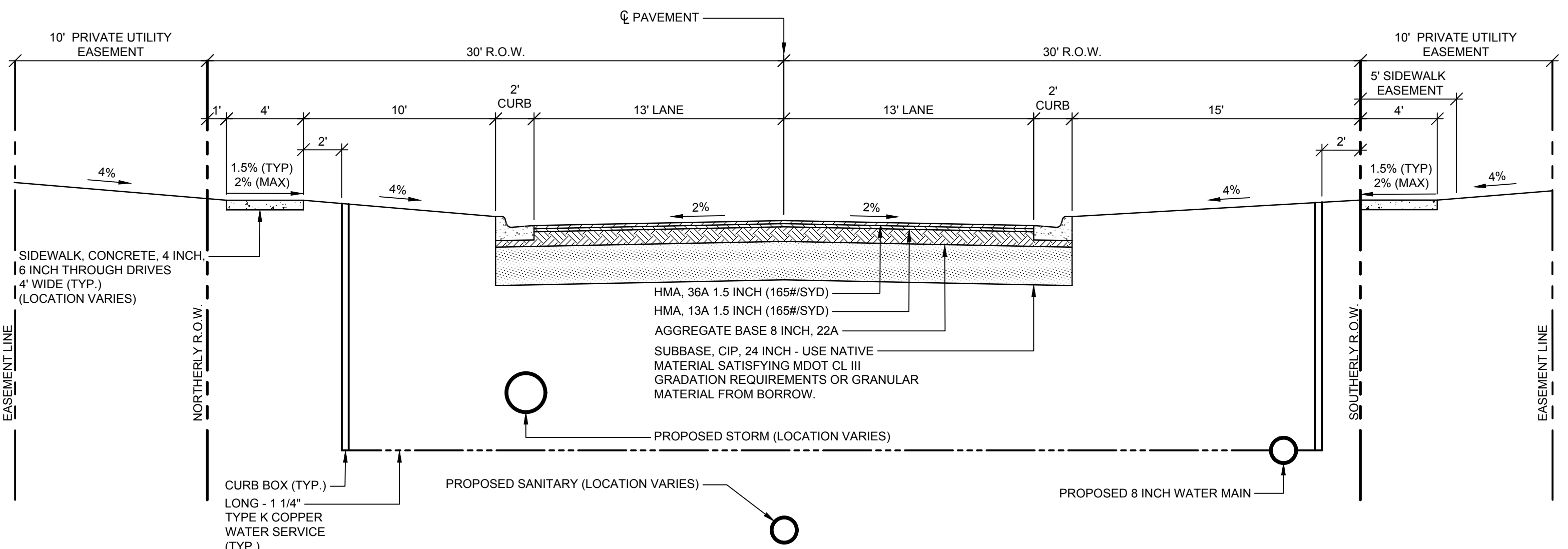


TYPICAL INTERSECTION STRIPING
SCALE: 1" = 10'

TYPICAL WATER AND SEWER SERVICE
SCALE: 1" = 20'



PROPOSED TYPICAL SECTION - MCCONLEY COVE WAY
SCALE: 1" = 5'



PROPOSED TYPICAL SECTION - ABERLOUR COURT & TEELING TRAIL
SCALE: 1" = 5'



WIGHTMAN

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KALAMAZOO, MI. 49007
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PAUL D. SCHRAM
6201067420

PROJECT NAME:
MCCONLEY COVE
1075 BACON AVENUE
PORTAGE, MI 49024

AMERICAN VILLAGE DEVELOPMENT II
4200 WEST CENTRE AVENUE
PORTAGE, MI 49024

04/11/2023
CITY COMMENTS
RESUBMITTAL - V3

03/09/25/2023
CITY COMMENTS
RESUBMITTAL - V2

02/08/15/2023
CITY COMMENTS
RESUBMITTAL

01/04/21/2023
ISSUED FOR STEP 2
APPROVAL

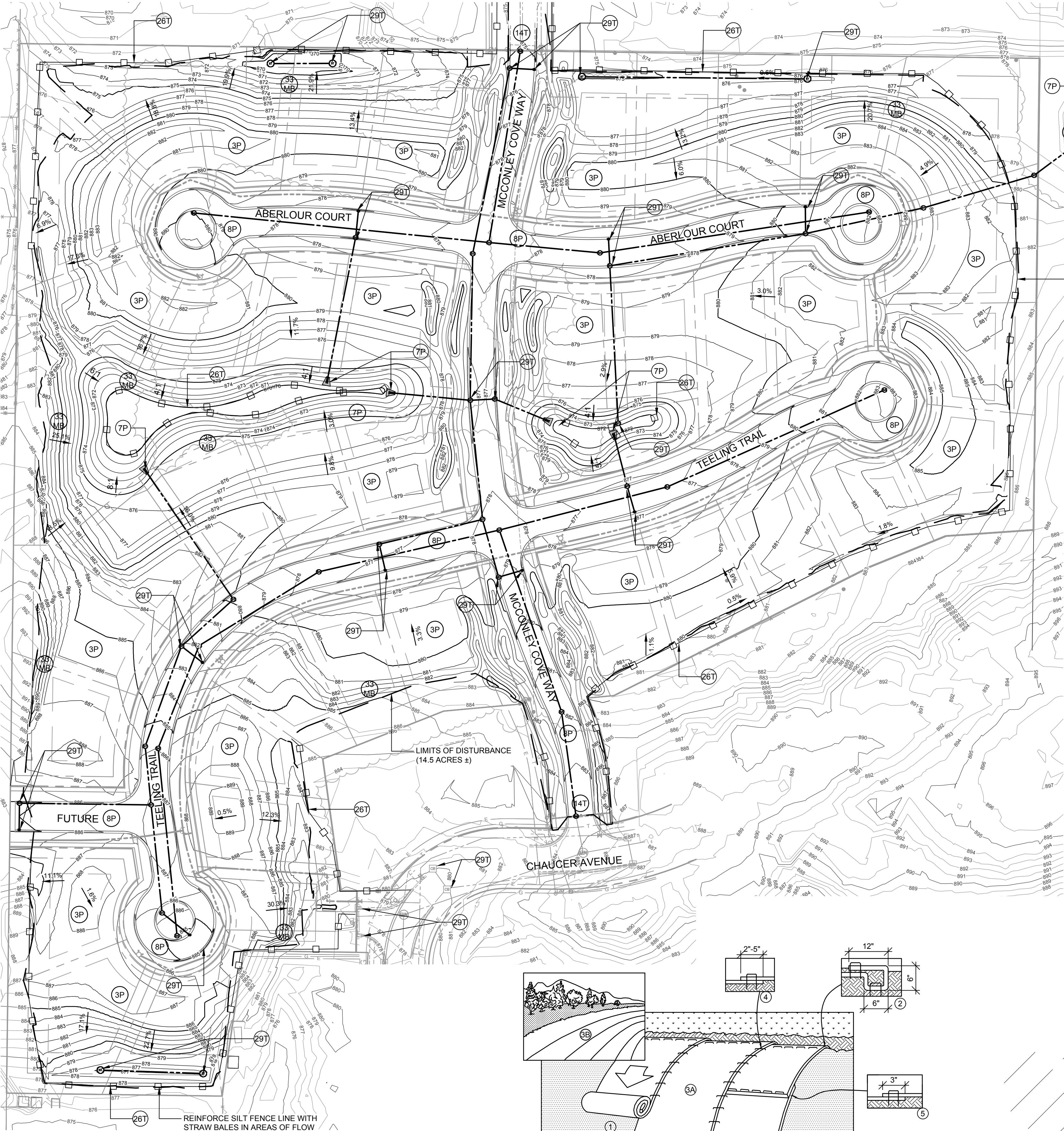
REVISIONS

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DATE: MARCH 2023
SCALE: AS NOTED

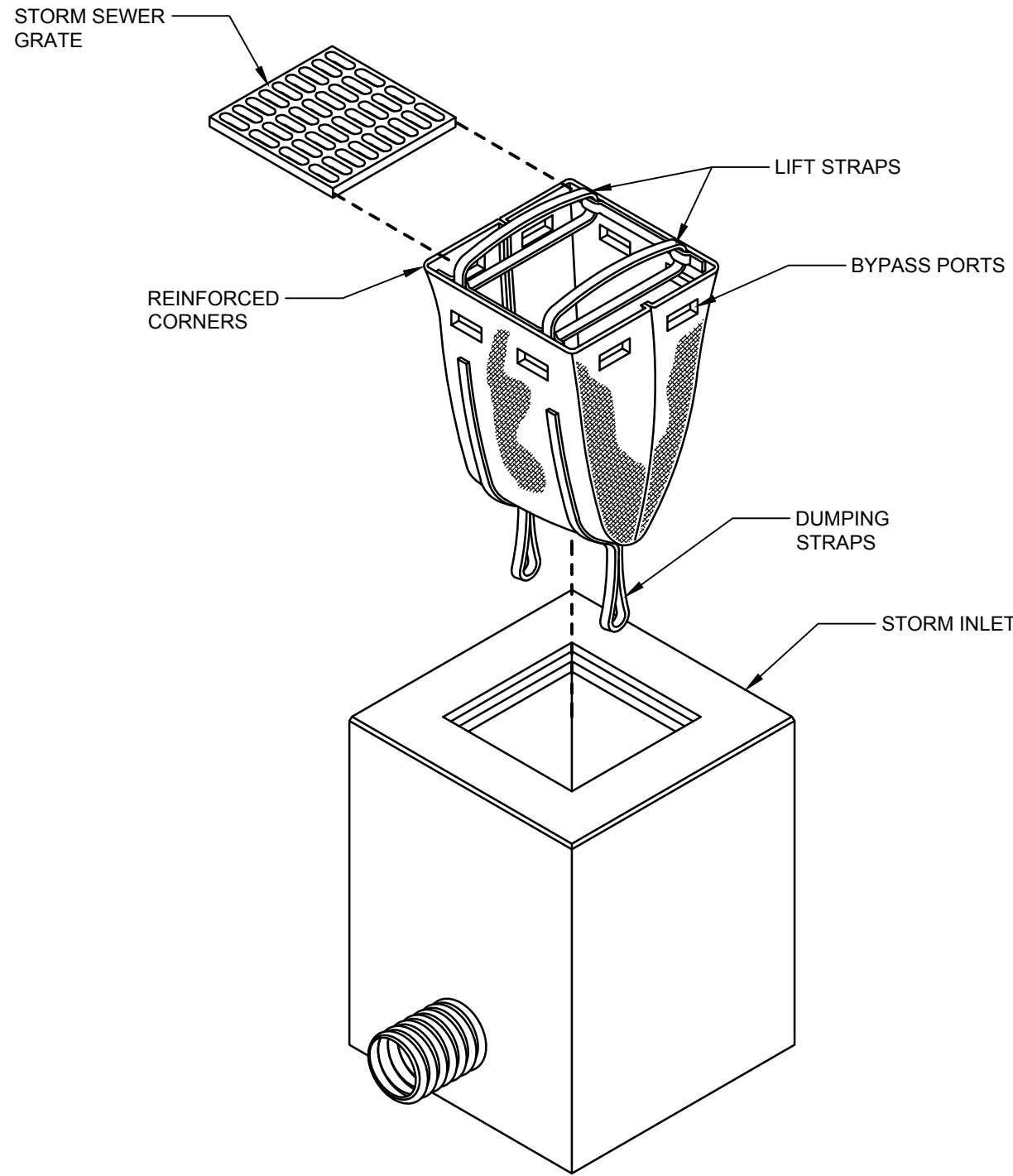
PROJECT NOTES, TYPICAL SECTIONS, AND DETAILS

JOB No. 214110
214110-02
OF 14



1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's) WITH TOPSOIL AND FERTILIZER PER RESTORATION AND SEEDING NOTES.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECP's IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF RECP's EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP's WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF RECP'S BACK OVER SEED AND COMPACTED SOIL. SECURE RECP'S OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE RECP's.
3. ROLL THE RECP's (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. RECP's WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP's MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. THE EDGES OF PARALLEL RECP's MUST BE STAPLED WITH APPROXIMATELY 2" - 5" OVERLAP DEPENDING ON RECP's TYPE.
5. CONSECUTIVE RECP's SPICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE RECP's WIDTH. NOTE: "IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE RECP's."

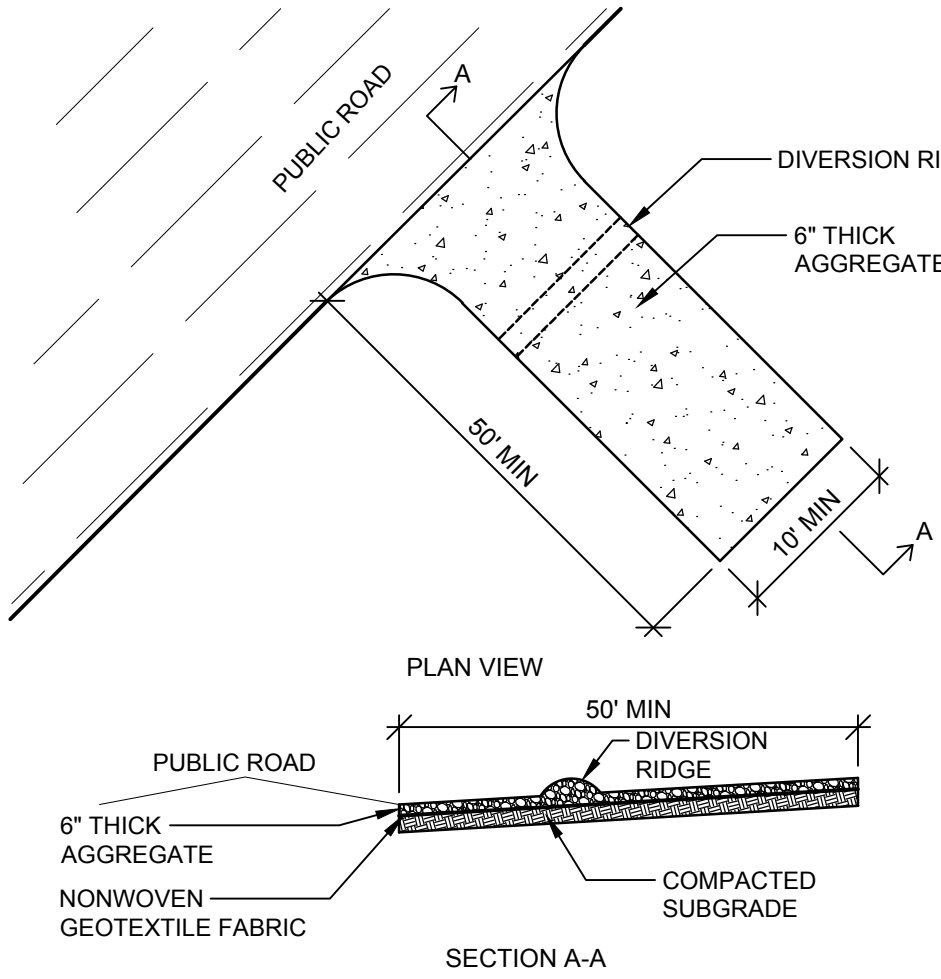
MULCH BLANKET SLOPE PATTERN
SCALE: NONE



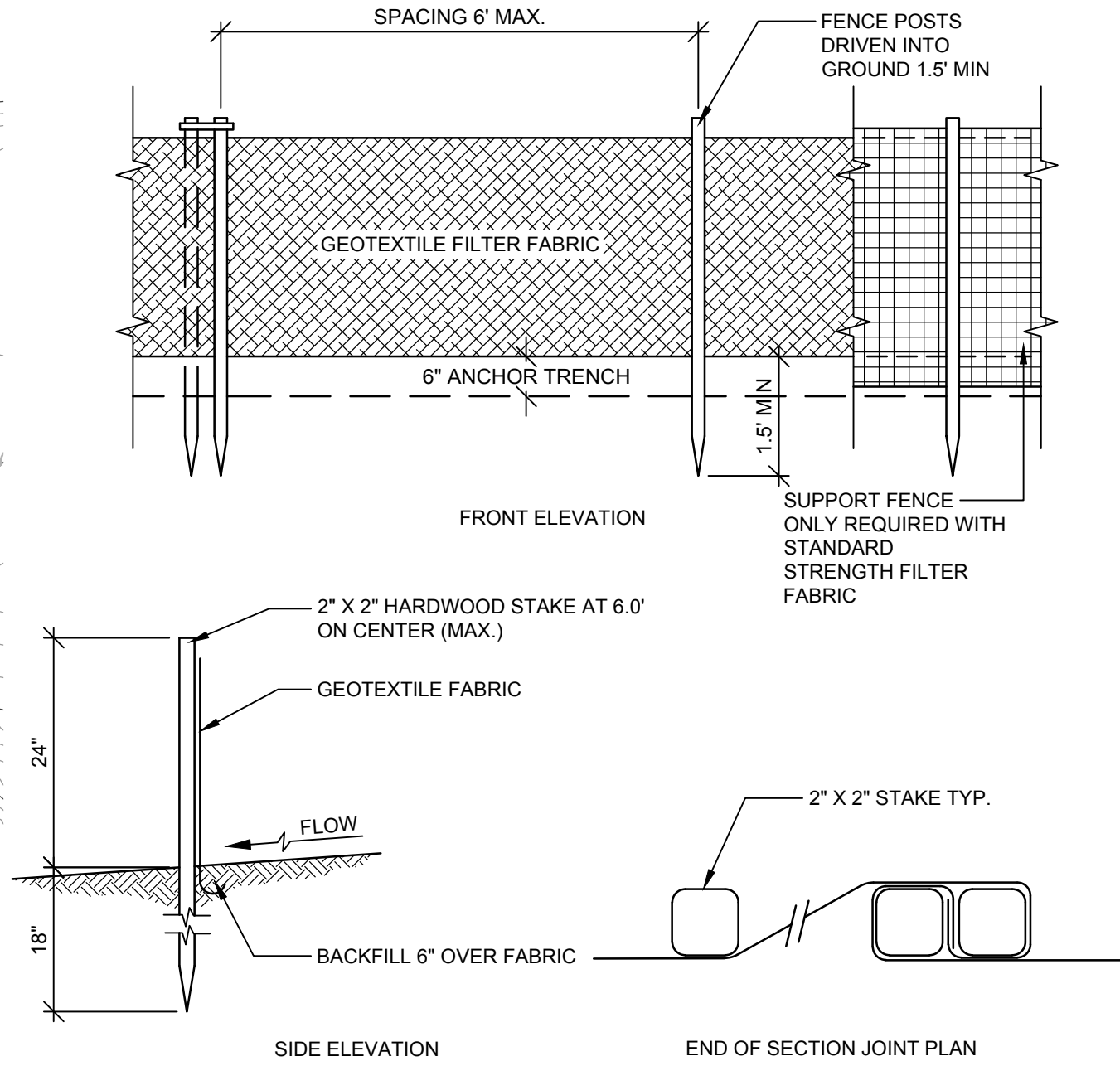
INLET PROTECTION DETAIL
SCALE: NONE

NOTES

1. UTILIZE EXISTING DRIVEWAY AND ADD STONE AS REQUIRED WHEN POSSIBLE.
2. AGGREGATE SHALL CONSIST OF 2-4 INCH DIAMETER OPEN GRADED OR WASHED ANGULAR AGGREGATE.
3. PLACE GEOTEXTILE OVER ENTIRE AREA PRIOR TO AGGREGATE PLACEMENT.
4. THE ENTRANCE SHALL BE MAINTAINED TO PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO THE PUBLIC ROAD. PERIODIC PLACEMENT OF ADDITIONAL AGGREGATE MAY BE REQUIRED.
5. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC ROAD SHALL BE REMOVED IMMEDIATELY.
6. WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTERING PUBLIC ROADS. IF WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE. PROVIDE PERIODIC INSPECTION AND MAINTENANCE, INCLUDING AFTER EACH RAIN EVENT.
- 7.



TEMPORARY CONSTRUCTION ENTRANCE
SCALE: NONE



SILT FENCE NOTES

1. THE HEIGHT OF SILT FENCE SHALL NOT EXCEED 36 INCHES ABOVE GROUND.
2. THE FILTER FABRIC SHALL BE PURCHASED IN A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID THE USE OF JOINTS. WHEN JOINTS ARE NECESSARY, FILTER CLOTH SHALL BE SPLICED TOGETHER ONLY AT A SUPPORT POST, WITH A MINIMUM OF A 6 INCH OVERLAP, AND SECURELY SEALED.
3. POSTS SHALL BE SPACED A MAXIMUM OF 8 FEET APART AT THE BARRIER LOCATION AND DRIVEN SECURELY INTO THE GROUND (MINIMUM OF 18 INCHES).
4. A TRENCH SHALL BE EXCAVATED APPROXIMATELY 4-INCHES WIDE AND 4 INCHES DEEP ALONG THE LINE OF POSTS AND UPSLOPE FROM THE BARRIER.
5. WHEN STANDARD STRENGTH FILTER FABRIC IS USED, A WIRE MESH SUPPORT FENCE SHALL BE FASTENED SECURELY TO THE UPSLOPE SIDE OF THE POSTS USING HEAVY DUTY WIRE STAPLES AT LEAST 1-INCH LONG, TIE WIRES OR HOG RINGS. THE WIRE SHALL EXTEND INTO THE TRENCH A MINIMUM OF 2-INCHES.
6. THE STANDARD STRENGTH FILTER FABRIC SHALL BE STAPLED OR WIRED TO THE FENCE, AND 6-INCHES OF THE FABRIC SHALL BE EXTENDED INTO THE TRENCH.
7. FILTER FABRIC SHALL NOT BE STAPLED TO EXISTING TREES.
8. WHEN EXTRA STRENGTH FILTER FABRIC IS USED, THE WIRE MESH SUPPORT FENCE MAY BE ELIMINATED. IN SUCH A CASE, THE FILTER FABRIC IS STAPLED OR WIRED DIRECTLY TO THE POSTS.
9. THE TRENCH SHALL BE BACKFILLED AND SOIL COMPACTED OVER THE FILTER FABRIC.
10. SILT FENCES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFUL PURPOSE, BUT NOT BEFORE THE UPSLOPE AREA HAS BEEN PERMANENTLY STABILIZED.
11. SILT FENCES AND FILTER BARRIERS SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.
12. SEDIMENT DEPOSITS SHALL BE REMOVED AFTER EACH STORM EVENT. THEY MUST BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER.
13. SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE IS NO LONGER REQUIRED SHALL BE DRESSED TO CONFORM WITH THE EXISTING GRADE, PREPARED AND SEED

SEDIMENT CONTROL FENCE
SCALE: NONE

SOIL EROSION & SEDIMENTATION CONTROL NOTES

1. ALL CONSTRUCTION METHODS SHALL BE DONE IN COMPLIANCE WITH THE MICHIGAN SOIL EROSION AND SEDIMENTATION CONTROL ACT. THE OWNER SHALL BE RESPONSIBLE FOR OBTAINING A "SOIL EROSION PERMIT" FROM THE CITY OF PORTAGE AND A "PERMIT BY RULE/NOTICE OF COVERAGE" FROM THE EGLE PRIOR TO START OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH ALL REQUIREMENTS OF THE CITY OF PORTAGE "SOIL EROSION PERMIT" AND FOR ALL CERTIFIED STORM WATER INSPECTION SERVICE REQUIRED BY THE "PERMIT BY RULE." EROSION CONTROL MEASURES SHOWN ON THE PLANS ARE THE MINIMUM REQUIREMENTS AND SHALL NOT RELIEVE THE CONTRACTOR'S RESPONSIBILITY FOR PROVIDING ALL REQUIRED EROSION CONTROL MEASURES.
 2. AVOID UNNECESSARY DISTURBING OR REMOVING OF EXISTING VEGETATED TOPSOIL OR EARTH COVER. THESE COVER AREAS ACT AS SEDIMENT FILTERS.
 3. ALL TEMPORARY SOIL EROSION PROTECTION SHALL REMAIN IN PLACE UNTIL REMOVAL IS REQUIRED FOR FINAL CLEAN UP AND APPROVAL.
 4. MAINTENANCE, CLEANING, AND REMOVAL OF THE VARIOUS SEDIMENT CONTROL MEASURES SHALL BE INCLUDED IN THE VARIOUS EROSION CONTROL ITEMS.
- NUMBER IN CIRCLE REFERS TO NUMBERED DETAILS ON MDOOT STANDARD PLAN R-96 SERIES, SOIL EROSION & SEDIMENTATION CONTROL MEASURES. "P" DENOTES PERMANENT MEASURE AND "T" DENOTES TEMPORARY MEASURE. SOIL EROSION CONTROL PLANS DENOTE MINIMUM EROSION MEASURES REQUIRED AS DESCRIBED BELOW.

- (3P) DENOTES PERMANENT SEEDING. ALL DISTURBED AREAS NOT PAVED OR GRAVELED SHALL BE RESTORED. PLACE TOPSOIL SURFACE, SALV, 6 INCH, PERENNIAL GRASS SEED MIX BY OWNER. WHERE NECESSARY, MULCH AT A RATE OF 2 TON/ACRE AND MULCH ANCHORING. (APPLIES TO ENTIRE PROJECT)
- (4T) DENOTES DUST CONTROL. DUST CONTROL MAY BE REQUIRED ON THE SUBGRADE CONSTRUCTION AND WILL INCLUDE APPLYING FRESH WATER TO BE INCLUDED IN THE ITEM OF EMBANKMENT. DUST CONTROL ON THE AGGREGATE BASE COURSE WILL BE ACCOMPLISHED BY APPLYING FRESH WATER (INCLUDED IN THE ITEM OF AGGREGATE BASE, 6 INCH) AND APPLYING DUST PALLIATIVE, APPLIED, CaCl₂ (TON) AS DIRECTED BY THE PROJECT ENGINEER.
- (7P) DENOTES RIPRAP. PLAIN. INSTALL RIPRAP. PLAIN AS DIRECTED BY THE ENGINEER IN THE FIELD. THE RIPRAP, PLAIN PAY ITEM SHALL INCLUDE A GEOTEXTILE UNDERLAYMENT.
- (8P) DENOTES AGGREGATE COVER/PERMANENT PAVEMENT RESTORATION
- (14T) DENOTES GRAVEL ACCESS APPROACH. APPROACH SHALL BE INSTALLED TO PROVIDE STABLE ACCESS TO ROADWAYS AND MINIMIZE DUST AND TRACKING OF MATERIALS ONTO PUBLIC STREETS AND HIGHWAYS. THE APPROACH SHALL BE A MINIMUM OF 10' WIDE, 6" DEEP, AND CONSIST OF 2"-4" AGGREGATE
- (26T) DENOTES TEMPORARY SILT FENCE. SILT FENCE SHALL BE INSTALLED ADJACENT TO ALL WETLANDS AND SURFACE WATERS, AND OTHER LOCATIONS AS DIRECTED BY THE ENGINEER. EACH SILT FENCE SHALL BE INSTALLED GENERALLY ALONG THE SAME CONTOUR ELEVATION.
- (29T) DENOTES INLET PROTECTION FABRIC DROP. SHALL BE INSTALLED AT EXISTING AND PROPOSED STORM SEWER INLETS TO PROVIDE SETTLING AND FILTERING OF SILT LADEN WATER PRIOR TO ENTRY INTO THE DRAINAGE SYSTEM.
- (35MP) DENOTES MULCH BLANKETS. MULCH BLANKET SHALL BE PROVIDED AT LOCATIONS SHOWN ON THE PLANS, AT SLOPES GREATER THAN 1:3, AREAS WITH CONCENTRATED FLOWS, AND AS DIRECTED BY THE ENGINEER IN THE FIELD, TO PREVENT RUNOFF AND EROSION.

POST-CONSTRUCTION SOIL EROSION & SEDIMENTATION CONTROL MANAGEMENT PLAN

1. FOLLOWING CITY OF PORTAGE ACCEPTANCE OF PUBLIC INFRASTRUCTURE, THE DEVELOPER (AVB) WILL ASSIGN A PROJECT MANAGER (AVB EMPLOYEE) TO THE DEVELOPMENT. THE PROJECT MANAGER WILL VISIT THE SITE REGULARLY AND IS RESPONSIBLE FOR INSPECTING AND MAINTAINING THE SESC SYSTEMS IN PLACE.
2. REPAIRS AND MAINTENANCE TO THE SESC SYSTEM WILL BE COMPLETED ON AN AS NEEDED BASIS INCLUDING REPAIRING AND REPLACING SILT FENCE, ADJUSTING STRAW BALES AND REMOVING BUILDUP OF SILT.
3. INITIALLY, THE SITE WILL BE SEEDDED WITH A FAST GROWING STABILIZING MATERIAL SUCH AS RYE GRASS AS CONSTRUCTION IS COMPLETED. THE ROADSIDE WILL BE MANICURED ON A REGULAR BASIS TO ASSURE STABILIZATION OF THE SITE AND CREATE A NICER ENVIRONMENT FOR CLIENTS.

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PROJECT NAME:
MCCONLEY COVE
1075 BACON AVENUE
PORTAGE, MI 49024

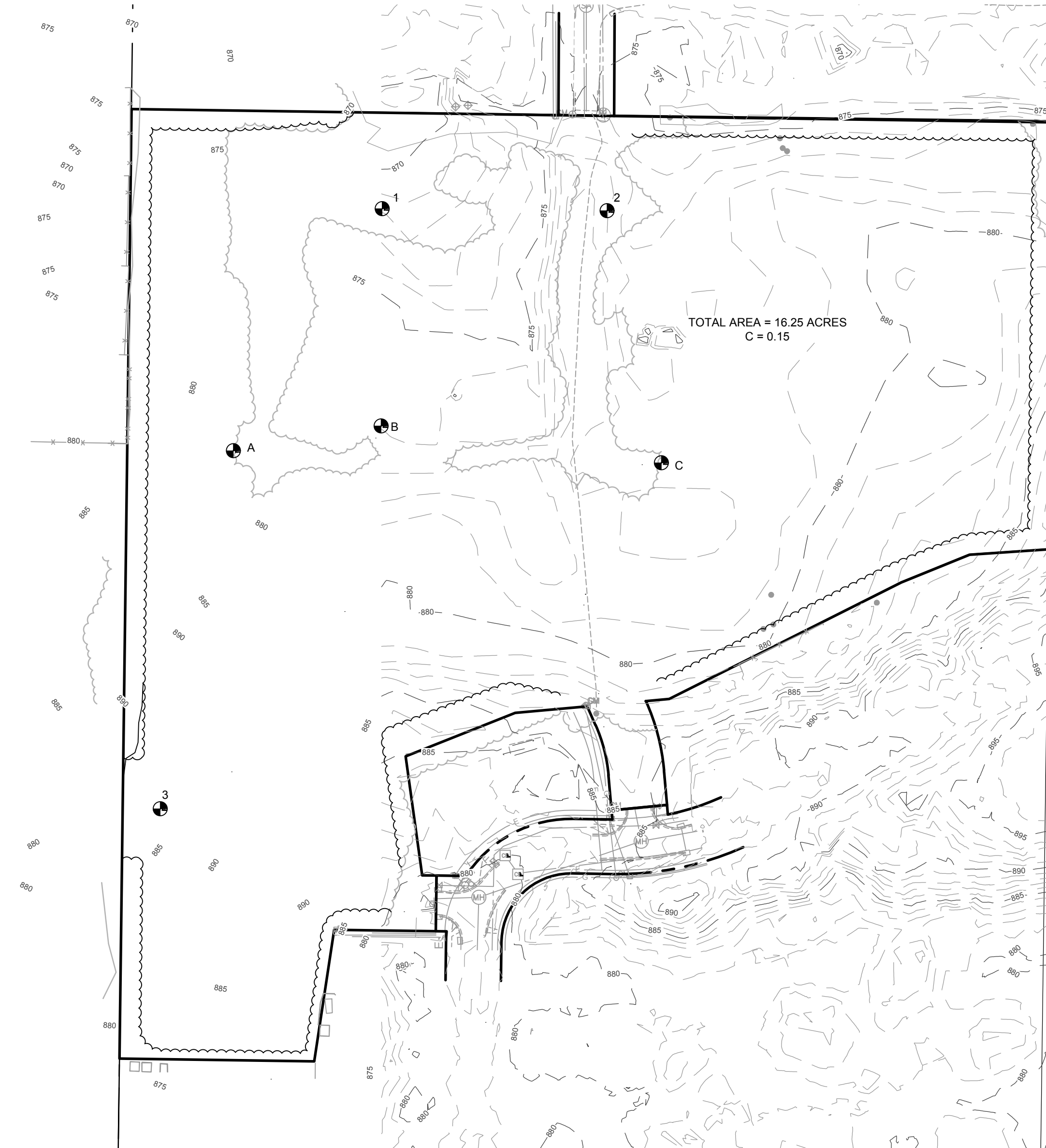
AMERICAN VILLAGE DEVELOPMENT II
4200 WEST CENTRE AVENUE
PORTAGE, MI 49024

04/11/2023	PDS
CITY COMMENTS	
RESUBMITTAL - V3	
03/09/25/2023	PDS
CITY COMMENTS	
RESUBMITTAL - V2	
02/08/15/2023	PDS
CITY COMMENTS	
RESUBMITTAL	
01/04/21/2023	PDS
ISSUED FOR STEP 2	
APPROVAL	
REVISIONS	
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DATE: MARCH 2023	
SCALE: 1" = 60'	

SOIL EROSION AND SEDIMENTATION CONTROL PLAN

JOB No. 214110
214110-03
OF 14

PRE-DEVELOPMENT AREA

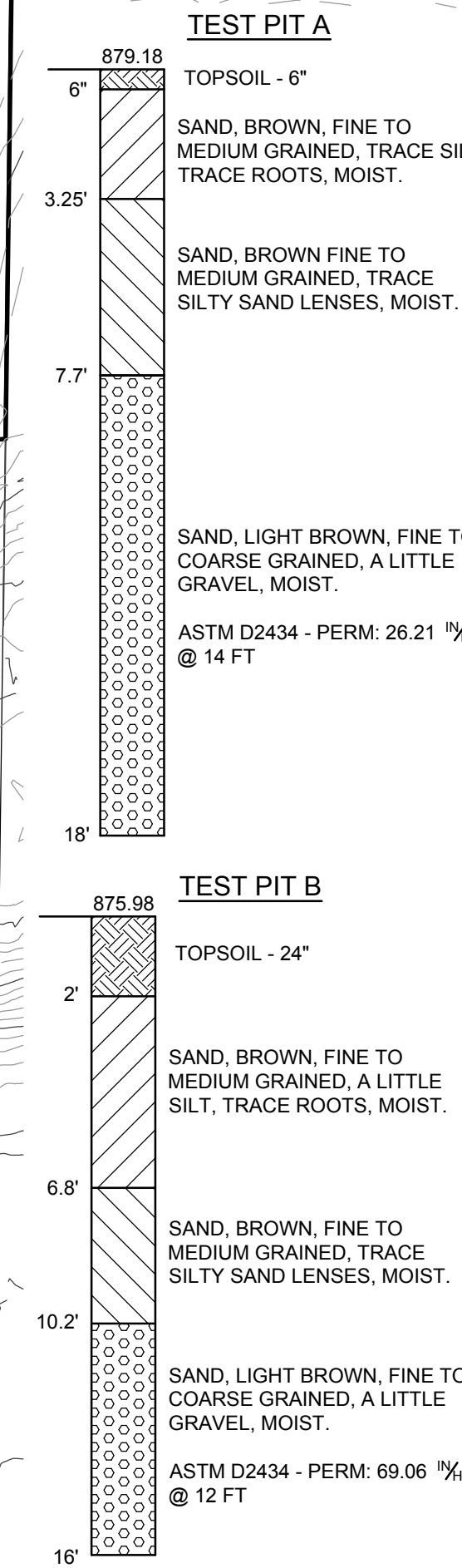


PONDING VOLUME LB01					
ELEV	AREA (sq. ft.)	DEPTH (ft)	AVG END INC. VOL. (cu. ft.)	AVG END TOTAL VOL. (cu. ft.)	REMARK
869.5	1,049	N/A	N/A	0.00	BOTTOM
869.6	1,161	0.1	110	110	N/A
869.7	1,260	0.1	121	232	N/A
869.8	1,369	0.1	131	363	N/A
869.9	1,492	0.1	143	506	N/A
870.0	1,645	0.1	157	663	N/A
870.1	1,789	0.1	172	835	TOP

PONDING VOLUME LB03					
ELEV	AREA (sq. ft.)	DEPTH (ft)	AVG END INC. VOL. (cu. ft.)	AVG END TOTAL VOL. (cu. ft.)	REMARK
877.0	419	N/A	N/A	0.00	BOTTOM
877.1	528	0.1	47	47	N/A
877.2	647	0.1	59	106	N/A
877.3	770	0.1	71	177	N/A
877.4	901	0.1	84	260	N/A
877.5	1,035	0.1	97	357	N/A
877.6	1,177	0.1	111	468	N/A
877.7	1,324	0.1	125	593	N/A
877.8	1,478	0.1	140	733	N/A
877.9	1,637	0.1	156	889	N/A
878.0	1,803	0.1	172	1,061	TOP

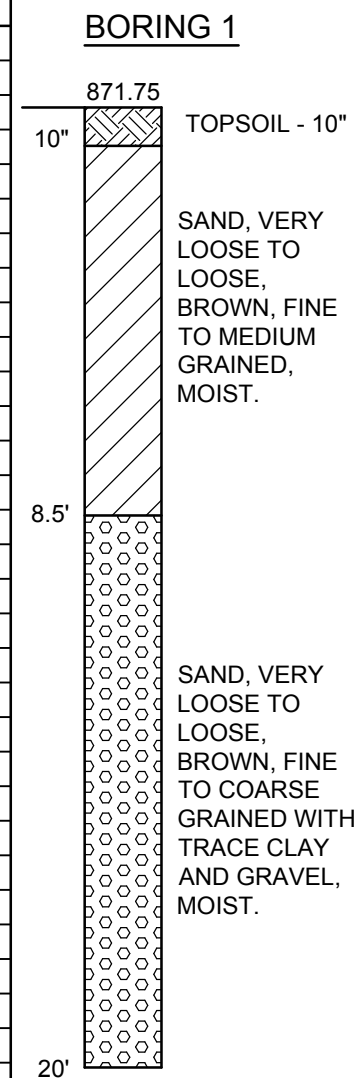
WATER TOWER BASIN VOLUME (EMERGENCY OVERFLOW)

ELEV	AREA (sq. ft.)	DEPTH (ft)	AVG END INC. VOL. (cu. ft.)	AVG END TOTAL VOL. (cu. ft.)
866.0	1,260	N/A	N/A	0
867.0	3,383	1.0	2,322	2,322
868.0	4,876	1.0	4,130	6,452
869.0	6,358	1.0	5,617	12,069
870.0	7,918	1.0	7,138	19,207
871.0	9,588	1.0	8,753	27,960
872.0	11,401	1.0	10,495	38,455
873.0	13,338	1.0	12,369	50,824
874.0	15,386	1.0	14,362	65,186
875.0	17,547	1.0	16,467	81,653
876.0	19,816	1.0	18,682	100,334



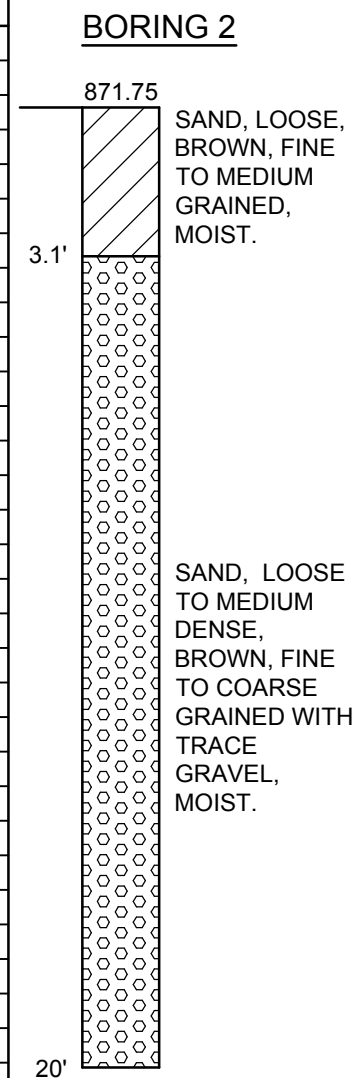
Catchment Area - LB01	43,068	SFT	0.99	AC
Surface Type	Area (SFT)	Area (AC)	C	Rv
Roadway	0	0.00	0.9	0.98
Sidewalk	0	0.00	0.9	0.98
Pitched Roof	5,625	0.13	0.9	0.965
Driveways	0	0.00	0.9	0.98
Open Space	37,443	0.86	0.2	0.035
Composite Value			0.29	0.16
Flood Control Volume	2,510	C*A*P*3,360		
Flood Control Check - 3,360 cft/acre	3,589	A*3,360		
Proposed Ponding Volume	5,564	CFT		
Proposed Leaching System Volume	1,171	CFT		
Total Storage Volume	6,735	CFT		

Backyard Retention System - LB01		3,589
Required Storage Volume (CFT)		3,589
LEACHING BASINS		
Inner Diameter (FT)	6	
Storage Height (FT)	10	
Total Storage Per Structure (CFT)	282.74	
STRUCTURE STONE STORAGE		
Inner Diameter (FT)	7	
Outer Diameter (FT)	11	
Storage Height (FT)	10	
Internal Storage (CFT)	125.66	
Porosity	0.33	
Stone Storage (CFT)	41.47	
Total Storage (CFT)	324.21	
Number of Structures	2.00	
Total Structure Storage	648	
CONNECTING PIPES		
Pipe Diameter (FT)	2	
Pipe Area per Linear Foot (CFT)	3.14	
TRENCH		
Total Trench Width (FT)	4	
Total Trench Depth (FT)	5	
Perimeter Wall Area (SFT)	1,080	
Porosity	0.33	
Stone Volume Per Linear Foot (CFT)	16.88	
Stone Pore Volume Per Linear Foot (CFT)	5.56	
Total Volume Per Linear Foot of Trench (CFT)	8.70	
Trench Length (FT)	60	
Total Trench Volume (CFT)	522	
Underground System Volume (CFT)	2,563	
Required Storage Volume (CFT)	3,589	
Proposed Pond Volume (CFT)	5,564	
Total System Volume (CFT)	6,735	



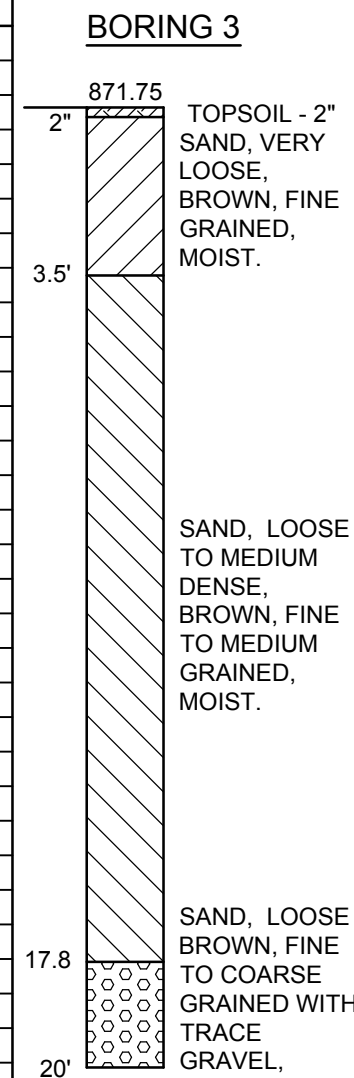
Catchment Area - LB02	30,103	SFT	0.69	AC
Surface Type	Area (SFT)	Area (AC)	C	Rv
Roadway	0	0.00	0.9	0.98
Sidewalk	0	0.00	0.9	0.98
Pitched Roof	5,000	0.11	0.9	0.965
Driveways	0	0.00	0.9	0.98
Open Space	25,103	0.58	0.2	0.035
Composite Value			0.32	0.19
Flood Control Volume	1,904	C*A*P*3,360		
Flood Control Check - 3,360 cft/acre	2,509	A*3,360		
Proposed Ponding Volume	328	CFT		
Proposed Leaching System Volume	2,563	CFT		
Total Storage Volume	2,891	CFT		

Backyard Retention System - LB02		2,509
Required Storage Volume (CFT)		2,509
LEACHING BASINS		
Inner Diameter (FT)	6	
Storage Height (FT)	10	
Total Storage Per Structure (CFT)	282.74	
STRUCTURE STONE STORAGE		
Inner Diameter (FT)	7	
Outer Diameter (FT)	11	
Storage Height (FT)	10	
Internal Storage (CFT)	125.66	
Porosity	0.33	
Stone Storage (CFT)	41.47	
Total Storage (CFT)	324.21	
Number of Structures	2.00	
Total Structure Storage	648	
CONNECTING PIPES		
Pipe Diameter (FT)	2	
Pipe Area per Linear Foot (CFT)	3.14	
TRENCH		
Total Trench Width (FT)	4	
Total Trench Depth (FT)	5	
Perimeter Wall Area (SFT)	3,960	
Porosity	0.33	
Stone Volume Per Linear Foot (CFT)	16.88	
Stone Pore Volume Per Linear Foot (CFT)	5.56	
Total Volume Per Linear Foot of Trench (CFT)	8.70	
Trench Length (FT)	220	
Total Trench Volume (CFT)	1,915	
Underground System Volume (CFT)	1,519	
Required Storage Volume (CFT)	2,509	
Proposed Pond Volume (CFT)	328	
Total System Volume (CFT)	2,891	



Catchment Area - LB03	33,216	SFT	0.76	AC
Surface Type	Area (SFT)	Area (AC)	C	Rv
Roadway	0	0.00	0.9	0.98
Sidewalk	0	0.00	0.9	0.98
Pitched Roof	7,500	0.17	0.9	0.965
Driveways	0	0.00	0.9	0.98
Open Space	25,716	0.59	0.2	0.035
Composite Value			0.36	0.24
Flood Control Volume	2,379	C*A*P*3,360		
Flood Control Check - 3,360 cft/acre	2,768	A*3,360		
Proposed Ponding Volume	1,303	CFT		
Proposed Leaching System Volume	1,519	CFT		
Total Storage Volume	2,822	CFT		

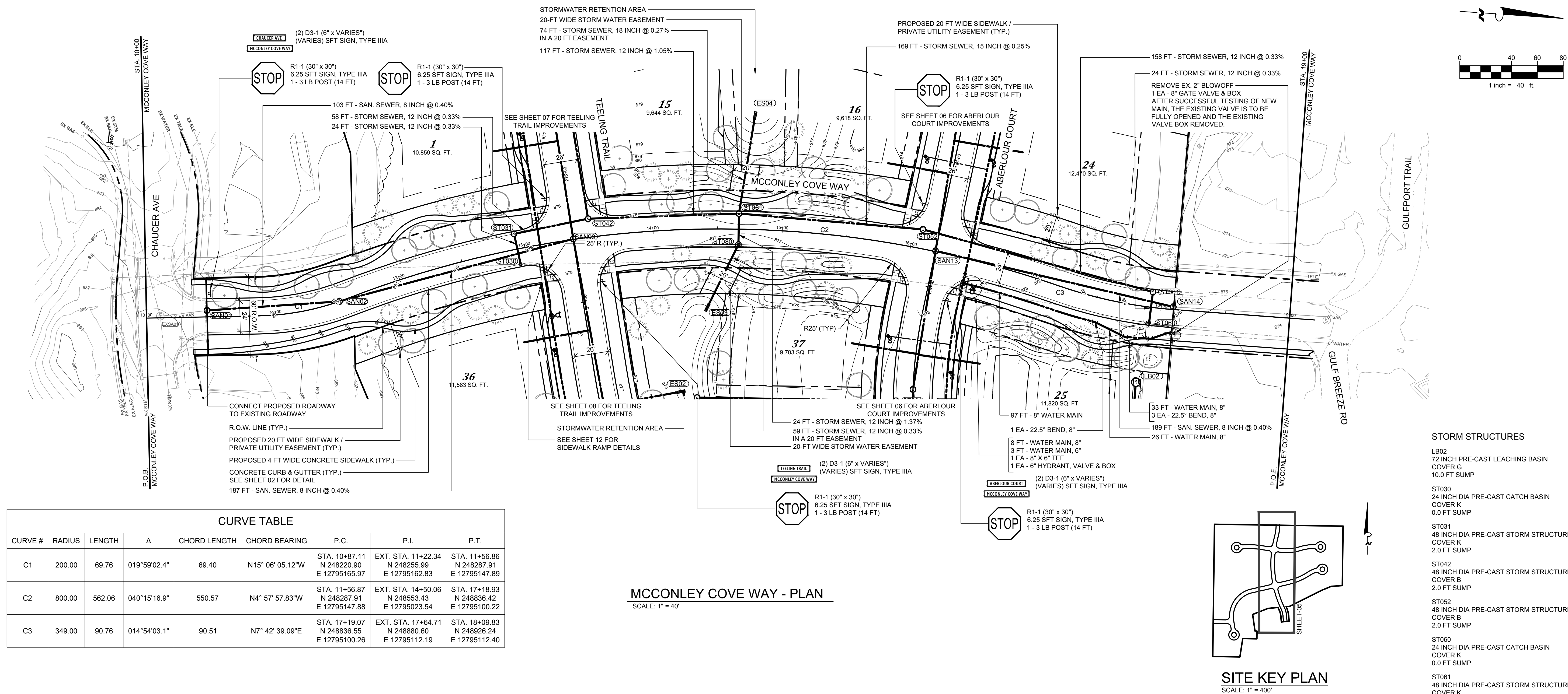
Backyard Retention System - LB03		2,768
Required Storage Volume (CFT)		2,768
LEACHING BASINS		
Inner Diameter (FT)	6	
Storage Height (FT)	10	
Total Storage Per Structure (CFT)	282.74	
STRUCTURE STONE STORAGE		
Inner Diameter (FT)	7	
Outer Diameter (FT)	11	
Storage Height (FT)	10	
Internal Storage (CFT)	125.66	
Porosity	0.33	
Stone Storage (CFT)	41.47	
Total Storage (CFT)	324.21	
Number of Structures	2.00	
Total Structure Storage	648	
CONNECTING PIPES		
Pipe Diameter (FT)	2	
Pipe Area per Linear Foot (CFT)	3.14	
TRENCH		
Total Trench Width (FT)	4	
Total Trench Depth (FT)	5	
Perimeter Wall Area (SFT)	1,800	
Porosity	0.33	
Stone Volume Per Linear Foot (CFT)	16.88	
Stone Pore Volume Per Linear Foot (CFT)	5.56	
Total Volume Per Linear Foot of Trench (CFT)	8.70	
Trench Length (FT)	100	
Total Trench Volume (CFT)	870	
Underground System Volume (CFT)	1,519	
Required Storage Volume (CFT)	2,768	
Proposed Pond Volume (CFT)	1,061	
Total System Volume (CFT)	2,580	



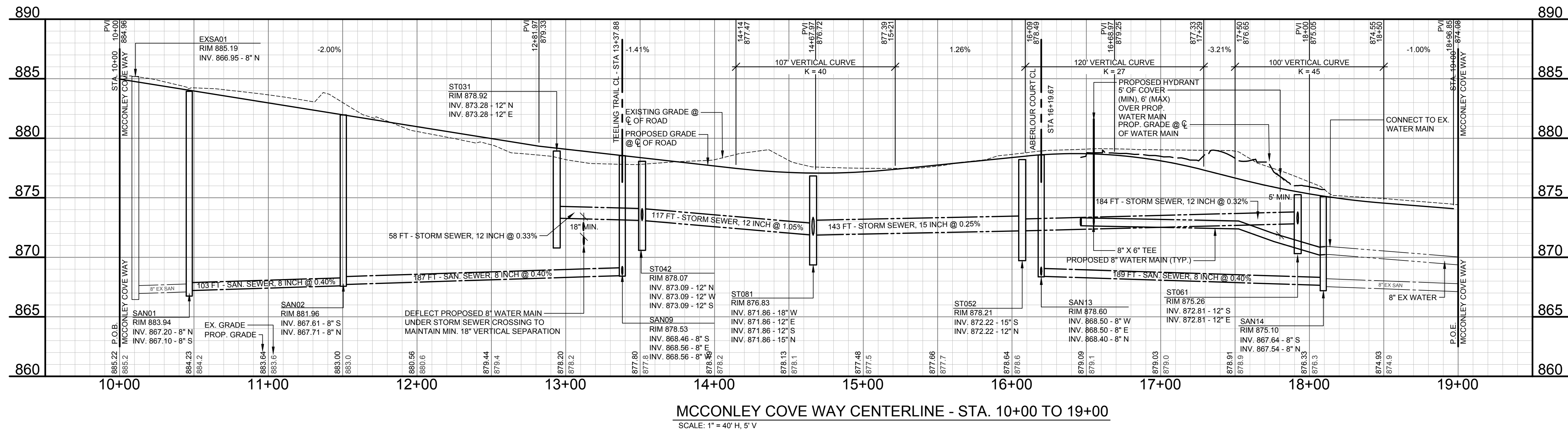
Outlet Discharge Pipe Sizing				
Lowest Structure Rim Elev. (ft)	a			875.3
MH09 Invert Elev. (ft)	b			866.9
ST092 Invert Elev. Out (ft)	c			874.3
ST092 Invert Elev. In (ft)	d			868.29
Headwater Depth (ft)	HW0	a-b	8.4	
Drop Through Culvert (ft)	LS	b-d	-1.39	
Friction Loss Coefficient	Ku		29	
Entrance Loss Coefficient	Ke		0.9	
Manning's Coefficient	n		0.013	
Gravity (ft/s2)	g		32.2	
Culvert Barrel Length, MH09-ST092 (ft)	L		347	
Culvert Barrel Diameter (in)	d		15	
Culvert Barrel Diameter (ft)	D		1.25	
X-sectional Area of Barrel (sq ft)	A		1.23	
Perimeter of Barrel (ft)	p		3.93	
Hydraulic Radius (ft)	A/p		0.3125	
Friction Loss in Barrel (ft)	Hf	(Kun2L/R1.33)V2/2g	0.899	
Entrance Loss (ft)	He	keV2/2g	0.101	
Sum of Losses (ft)	HL	Hf+He	1.000	
Tailwater Depth (ft)	TW	c-d	6.01	
Headwater Depth Calc Check (ft)	HW0	TW+HL-L	8.400	
Flow Velocity Through Barrel (ft/s)	V		2.69	
Flow Rate Through Barrel (ft3/s)	Q	V*A	3.30	
Orifice Restricted Discharge Check	Qd	a-b-D/2	7.77	
Head Differential (ft)	Hd	a-b-D/2	7.77	
Orifice Restricted Discharge (ft3/s)	Qr	0.62A(2ghD)1/2	17.03	
Calculated Max. Outflow (CFS)**	Q10		22.40	
Calculated using equations 3.4a, 3.4b, and 3.6b from HDS-5 "Hydraulic Design of Highway Culverts."				

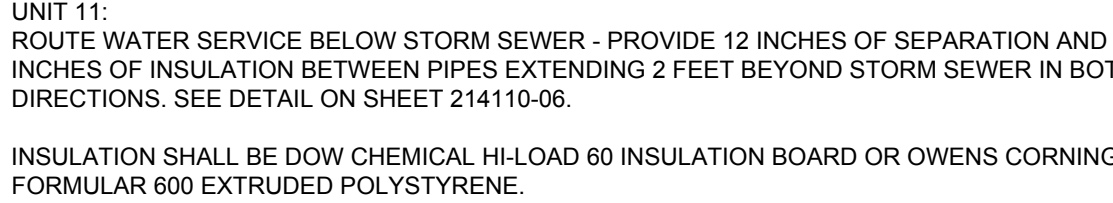
OVERFLOW PIPE SIZING CONFORMATION CHART TO THE RIGHT: Qout IS CALCULATED FLOW RATE THROUGH OUTLET DISCHARGE PIPE FOR THE GIVEN HEAD CONDITION. EXAMPLE CALCULATION FOR 875.30 (1 FT HEAD) IS IN THE ABOVE OUTLET DISCHARGE PIPE SIZING CHART. RATIONAL METHOD 10 YEAR RUNOFF CALCULATIONS ACROSS THE TOP OF THE TABLE PROVIDE FLOW RATE AND TOTAL VOLUME FROM THE PROPOSED POND CATCHMENT (12.03 AC, 0.49 C) FOR A GIVEN STORM DURATION. DESIGN EMERGENCY OVERFLOW CONDITION IS CONVEYANCE OF THE 10 YEAR STORM BEGINNING WITH A POND FLOW CONDITION ASSUMING NO INFILTRATION. FLOW IN 15 INCH DISCHARGE PIPE IS ADEQUATE TO CONVEY THE 10 MINUTE STORM WITHOUT OVERFLOW ONTO THE STREET AT ST060 AND ST061 (875.30).

	10-YEAR EVENT RUNOFF CALCULATIONS		TIME HRS (t) INCHES IN/Hr Q (CFS) VOL (CFT)		5	10	15	30	1	2	3	6				
					min	min	min	min	hr	hr	hr	hr				
FREEBOARD WATER ELEVATION	HEAD (FT)	Qout (CFS)	POND STORAGE VOLUME (Vp) CUMFT		(Q-Qout)**3600-Vp											
	0	0	0	8,913	15,703	20,160	27,587	35,015	43,291	47,747	56,023					
	874.3	0.1	1.04	2,454	6,147	12,625	16,770	23,261	28,817	33,249	34,061	31,105				
	874.5	0.2	1.48	4,979	3,499	9,845	13,858	19,953	24,717	27,665	26,793	19,085				
	874.6	0.3	1.81	7,546	8,242	7,071	10,985	16,783	20,953	22,173	20,653	9,981				
874.7	0.4	2.09	10,198	1,900	4,263	8,093	13,639	17,305	18,005	14,869	6,391					
874.8	0.5	2.34	12,886	-4,675	1,413	5,168	10,489	13,705	13,557	9,589	-7,407					
874.9	0.6	2.56	15,650	-7,505	-1,483	2,206	7,329	10,149	9,209	4,449	-14,923					
875	0.7	2.76	18,146	-10,391	-4,429	-800	4,143	6,603	4,943	-537	-22,029					
875.1	0.8	2.95	21,428	-13,400	-7,495	-3,923	849	2,967	623	-5,541	-29,165					
875.2	0.9	3.13	25,366	-17,392	-11,541	-8,023	-3,413	-1,619	-4,611	-11,423	-36,951					
875.3	1	3.3	27,891	-19,968	-14,168	-10,701	-6,244	-4,756	-8,360	-15,784	-43,184					



CURVE TABLE								
CURVE #	RADIUS	LENGTH	Δ	CHORD LENGTH	CHORD BEARING	P.C.	P.I.	P.T.
C1	200.00	69.76	019°59'02.4"	69.40	N15° 06' 05.12"W	STA. 10+87.11 N 248220.90 E 12795165.97	EXT. STA. 11+22.34 N 248255.99 E 12795162.83	STA. 11+56.86 N 248287.91 E 12795147.89
C2	800.00	562.06	040°15'16.9"	550.57	N4° 57' 57.83"W	STA. 11+56.87 N 248287.91 E 12795147.88	EXT. STA. 14+50.06 N 248553.43 E 127955023.54	STA. 17+18.93 N 248836.42 E 12795100.22
C3	349.00	90.76	014°54'03.1"	90.51	N7° 42' 39.09"E	STA. 17+19.07 N 248836.55 E 12795100.26	EXT. STA. 17+64.71 N 248880.60 E 12795112.19	STA. 18+09.83 N 248926.24 E 12795112.40



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01/04/21/2023
ISSUED FOR STEP 2
APPROVAL

REVISIONS

DATE: MARCH 2023
SCALE: 1" = 40'H, 5'V

TEELING TRAIL
STA. 216+00 TO STA. 221+80

JOB No. 214110
214110-08
OF 14

CURVE TABLE								
CURVE #	RADIUS	LENGTH	Δ	CHORD LENGTH	CHORD BEARING	P.C.	P.I.	P.T.
C8	500.00	176.62	020°14'21.4"	175.70	N66° 53' 27.54"E	STA. 217+54.76 N 248482.47 E 12795191.61	EXT. STA. 218+44 N 248502.53 E 12795278.57	STA. 219+31.38 N 248551.43 E 12795353.22
C9	200.00	109.84	031°27'57.9"	108.46	N72° 30' 15.79"E	STA. 219+31.38 N 248551.43 E 12795353.22	EXT. STA. 219+87.72 N 248582.31 E 12795400.35	STA. 220+41.21 N 248584.04 E 12795456.66

TEELING TRAIL - PLAN
SCALE: 1" = 40'

TEELING TRAIL TO ABERLOUR - PLAN
SCALE: 1" = 40'

SITE KEY PLAN
SCALE: 1" = 400'

TEELING TRAIL CENTERLINE - STA. 216+00 TO 221+80
SCALE: 1" = 40' H, 5' V

TEELING TRL - ABERLOUR CRT WM STA. 410+00 TO 413+00
SCALE: 1" = 40' H, 5' V

SAN. STRUCTURES

SAN07	RIM 883.25 INV. 870.27 - 8" SW	04/11/2023 CITY COMMENTS RESUBMITTAL - V3	PDS
SAN08	RIM 876.80 INV. 869.34 - 8" NE INV. 869.24 - 8" W	03/09/2023 CITY COMMENTS RESUBMITTAL - V2	PDS
SAN09	RIM 878.53 INV. 868.46 - 8" S INV. 868.56 - 8" E INV. 868.56 - 8" W	02/08/15/2023 CITY COMMENTS RESUBMITTAL	PDS

STORM STRUCTURES

MH09	48 INCH DIA PRE-CAST PERFORATED OUTLET STRUCTURE BAR GRATE 2.0 FT SUMP	RIM 873.53 INV. 866.90 - 15" N	01/04/21/2023 ISSUED FOR STEP 2 APPROVAL	PDS
ST030	24 INCH DIA PRE-CAST CATCH BASIN COVER K 0.0 FT SUMP	RIM 878.92 INV. 873.36 - 12" W	DATE: MARCH 2023 SCALE: 1" = 40'H, 5'V	
ST042	48 INCH DIA PRE-CAST STORM STRUCTURE COVER B 2.0 FT SUMP	RIM 878.07 INV. 873.09 - 12" W INV. 873.09 - 12" S INV. 873.09 - 12" N		
ST070	24 INCH DIA PRE-CAST CATCH BASIN COVER K 0.0 FT SUMP	RIM 876.36 INV. 873.08 - 12" N		
ST071	48 INCH DIA PRE-CAST STORM STRUCTURE COVER K 2.0 FT SUMP	RIM 876.36 INV. 873.00 - 12" S INV. 873.00 - 12" N		

END SECTIONS

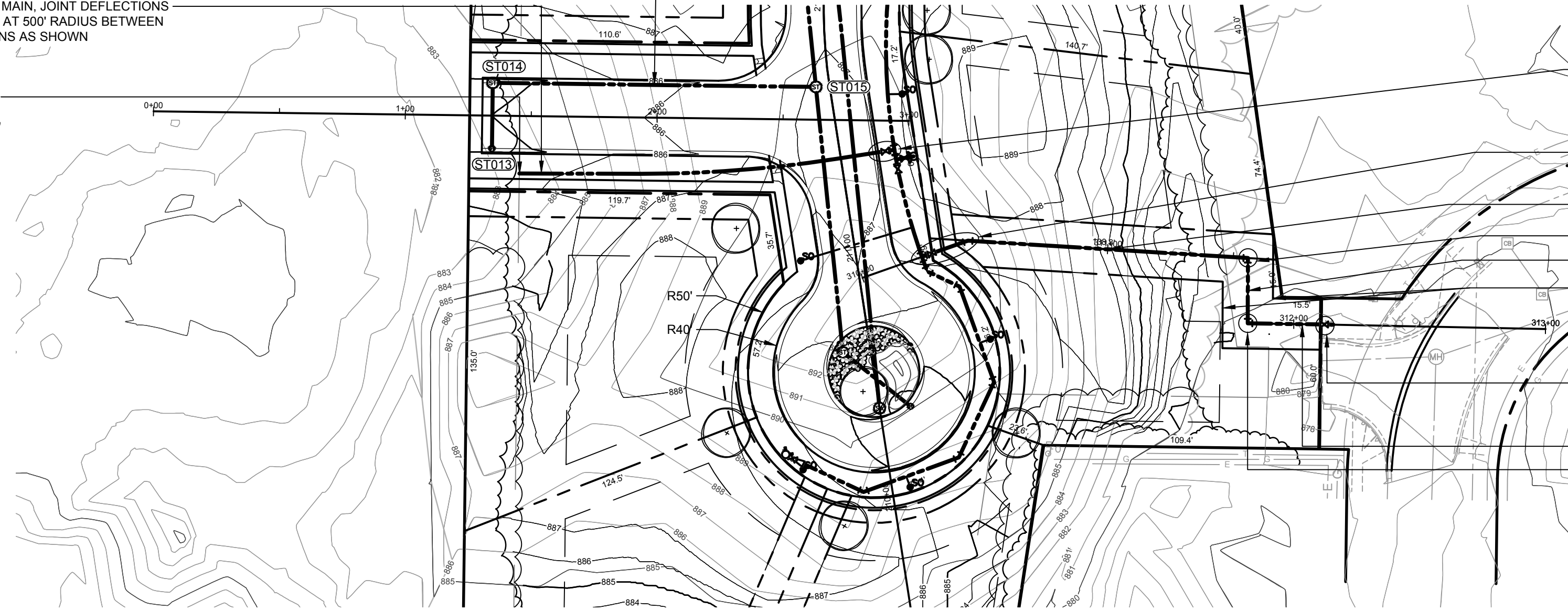
ES02	PROPOSED CONC END SECTION	INV. 872.72 - 12" S
ES03	PROPOSED CONC END SECTION	INV. 872.36 - 12" W

(51)

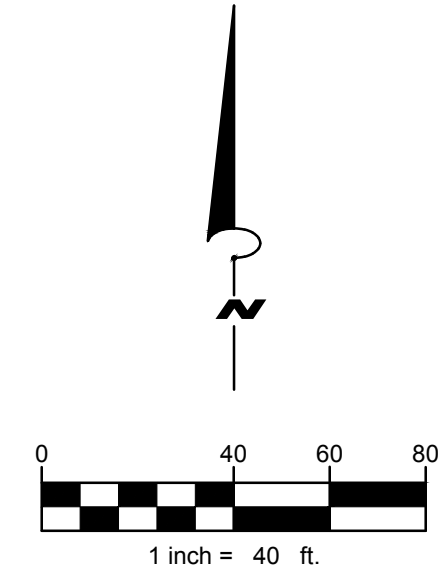
128 FT - STORM SEWER, 12 INCH @ 0.32%

150 FT - 8" WATER MAIN, JOINT DEFLECTIONS
TO APPROXIMATE AT 500' RADIUS BETWEEN
TANGENT SECTIONS AS SHOWN

END WATER MAIN
INSTALLATION
1 EA - 8" PLUG & 2"
BLOW OFF
ASSEMBLY

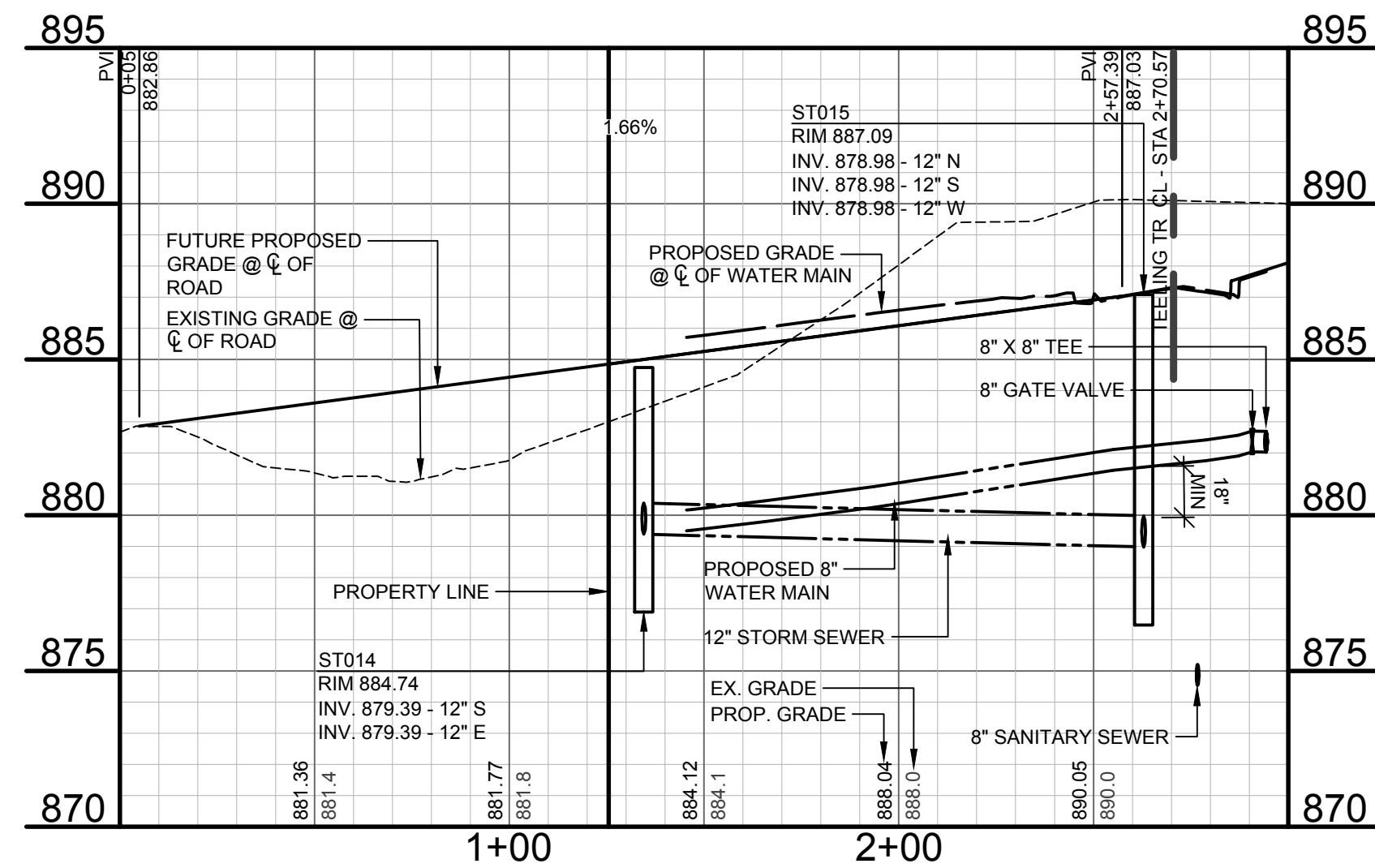


- 1 EA - 8" X 8" TEE
- 2 EA - 8" VALVE & BOX
- 20 FT - 8" WATER MAIN
- 1 EA - 8" VALVE & BOX
- 1 EA - 8" X 8" TEE
- 1 EA - 8" 22.5" BEND
- 115 FT - 8" WATER MAIN
- 1 EA - 8" 90" BEND
- 25 FT - 8" WATER MAIN
- PROPOSED 20 FT WATER MAIN EASEMENT
- 1 EA - CONNECT TO EXISTING 8" WATER MAIN
- 1 EA - 8" GATE VALVE & BOX
- AFTER SUCCESSFUL TESTING OF NEW MAIN, THE EXISTING VALVE IS TO BE FULLY OPENED AND THE EXISTING VALVE BOX REMOVED.
- 35 FT - 8" WATER MAIN
- 1 EA - 8" 90" BEND



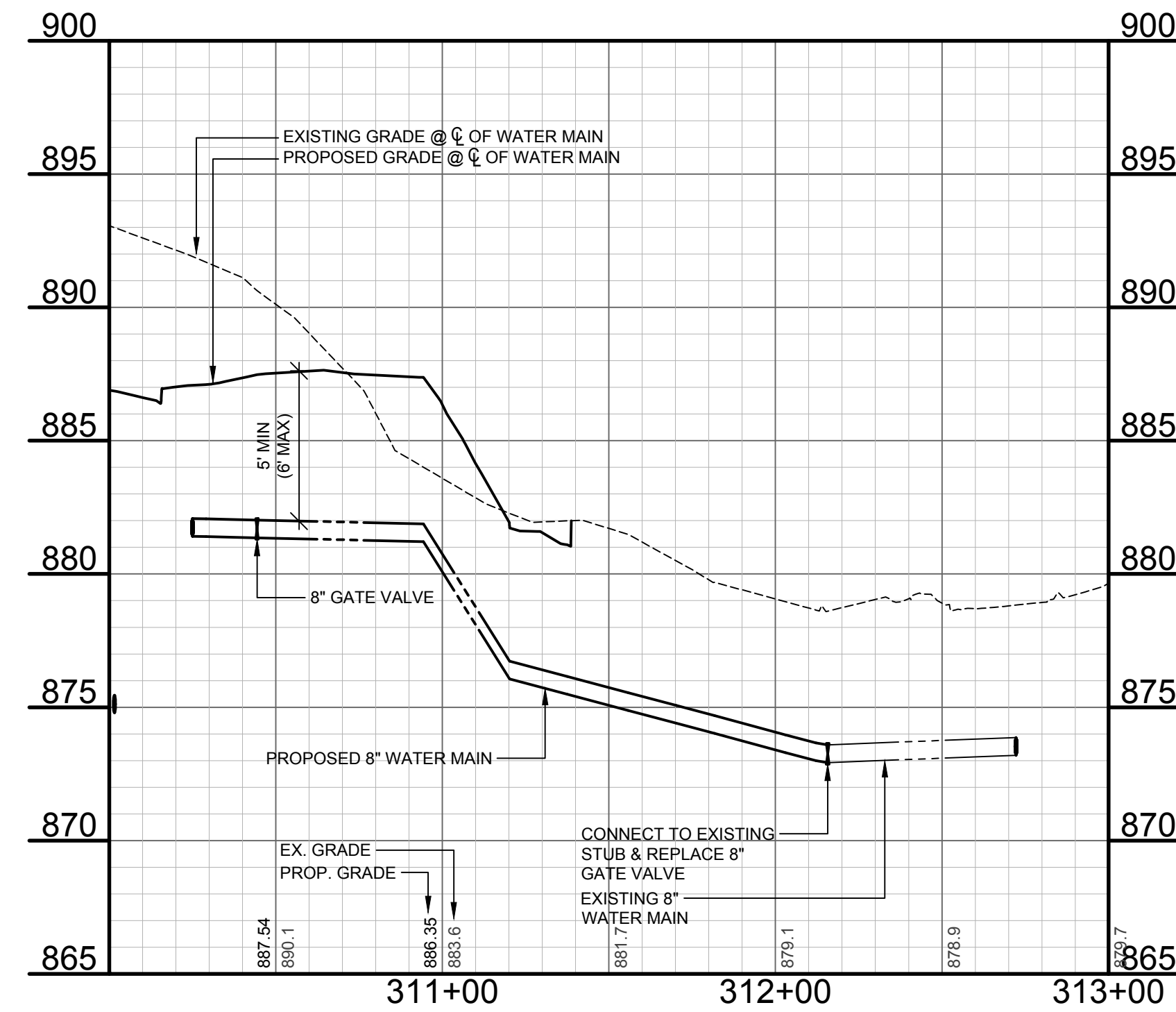
FUTURE ROAD - PLAN

SCALE: 1" = 40'



FUTURE ROAD CENTERLINE - STA. 0+00 TO 2+00

SCALE: 1" = 40' H, 5' V



TEELING TO CHAUCER WM CENTERLINE - STA. 310+00 TO 313+00

SCALE: 1" = 40' H, 5' V



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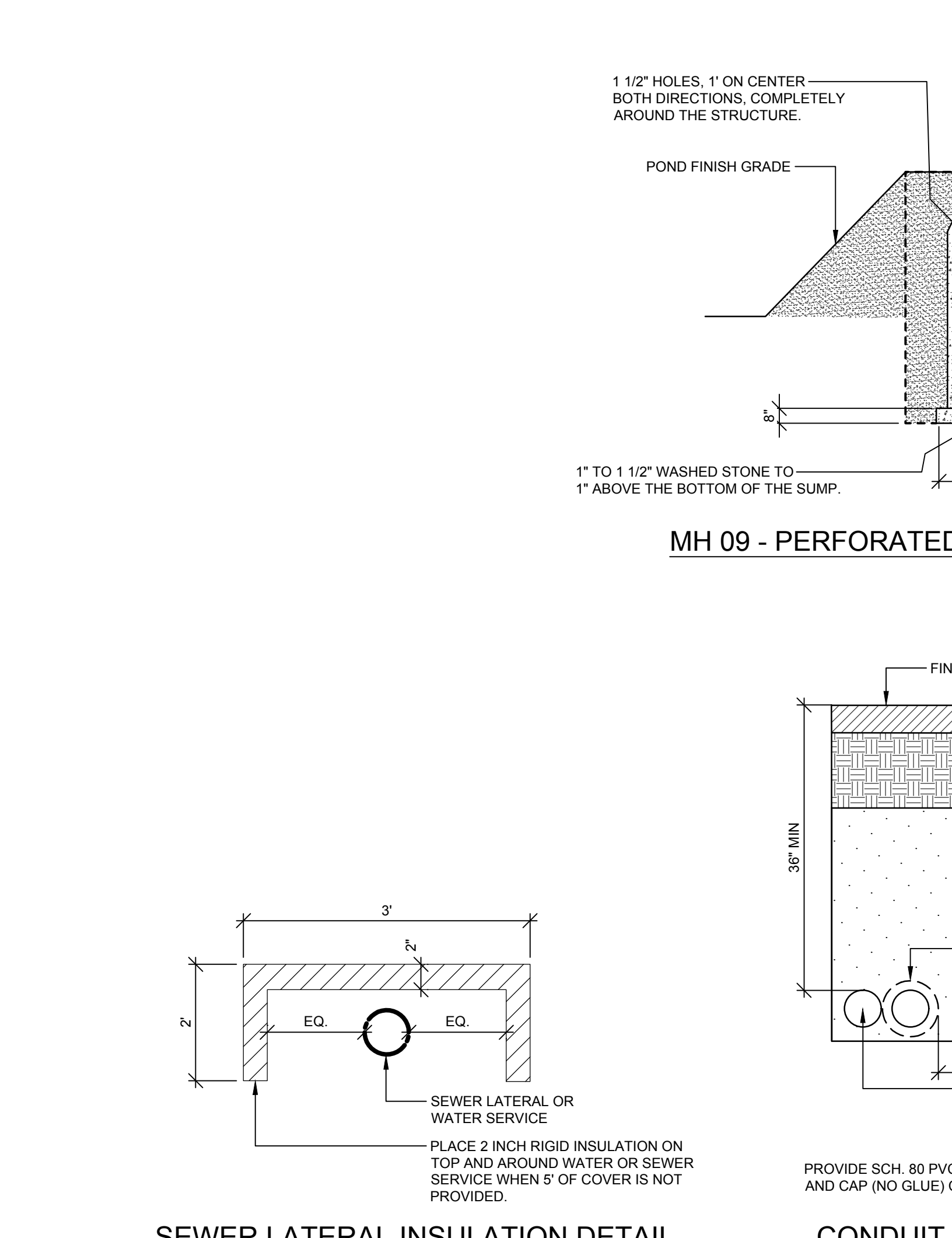
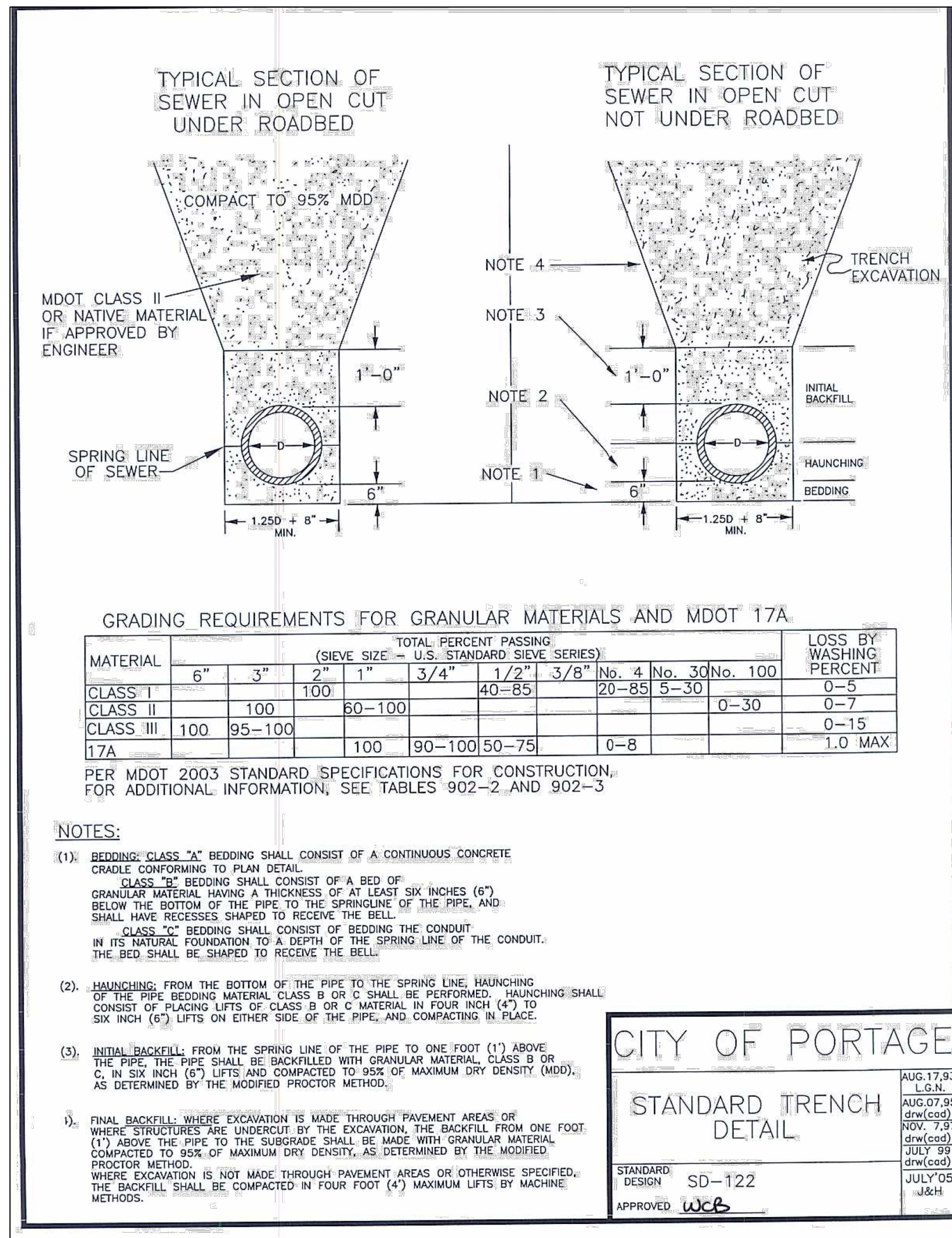
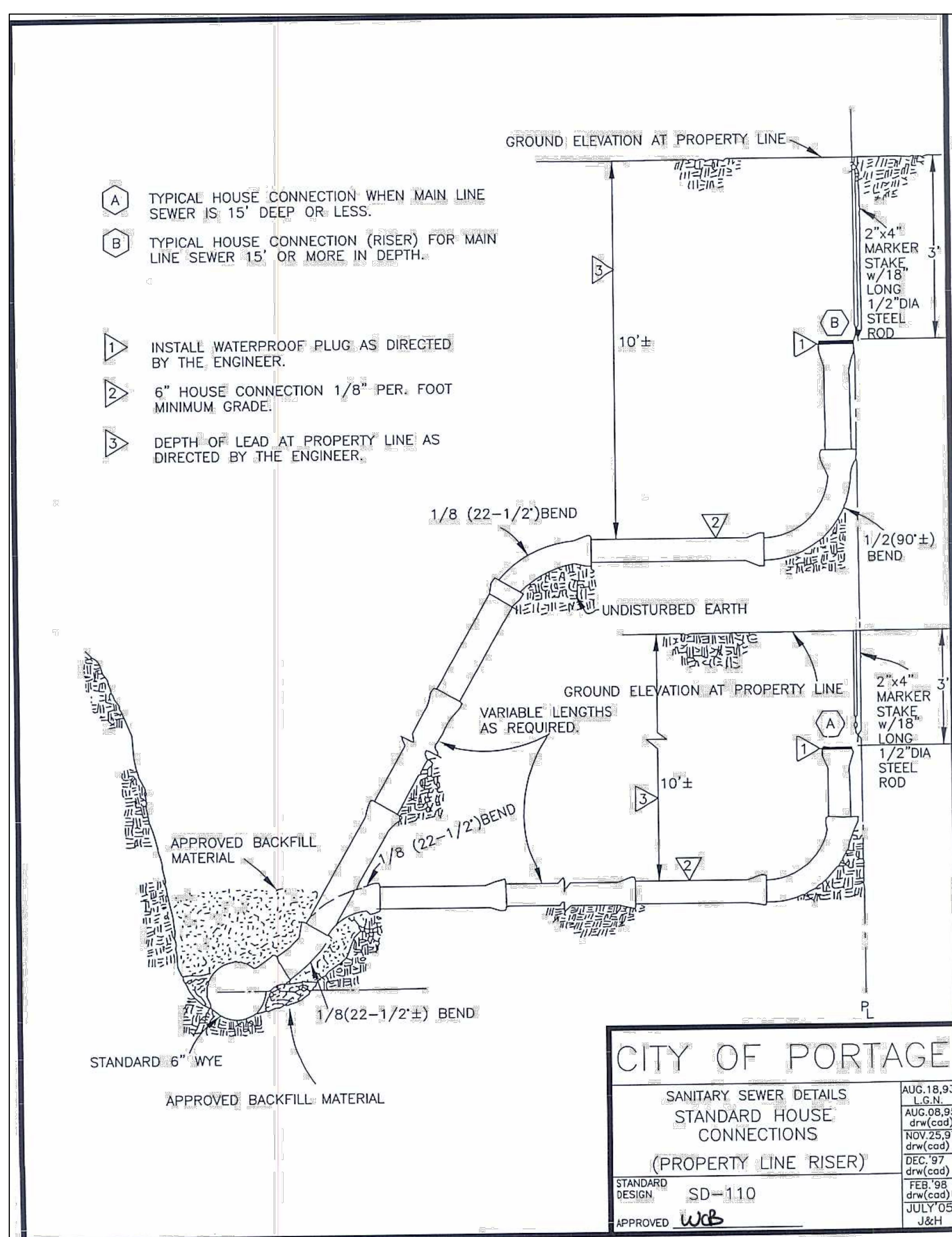
REVISIONS

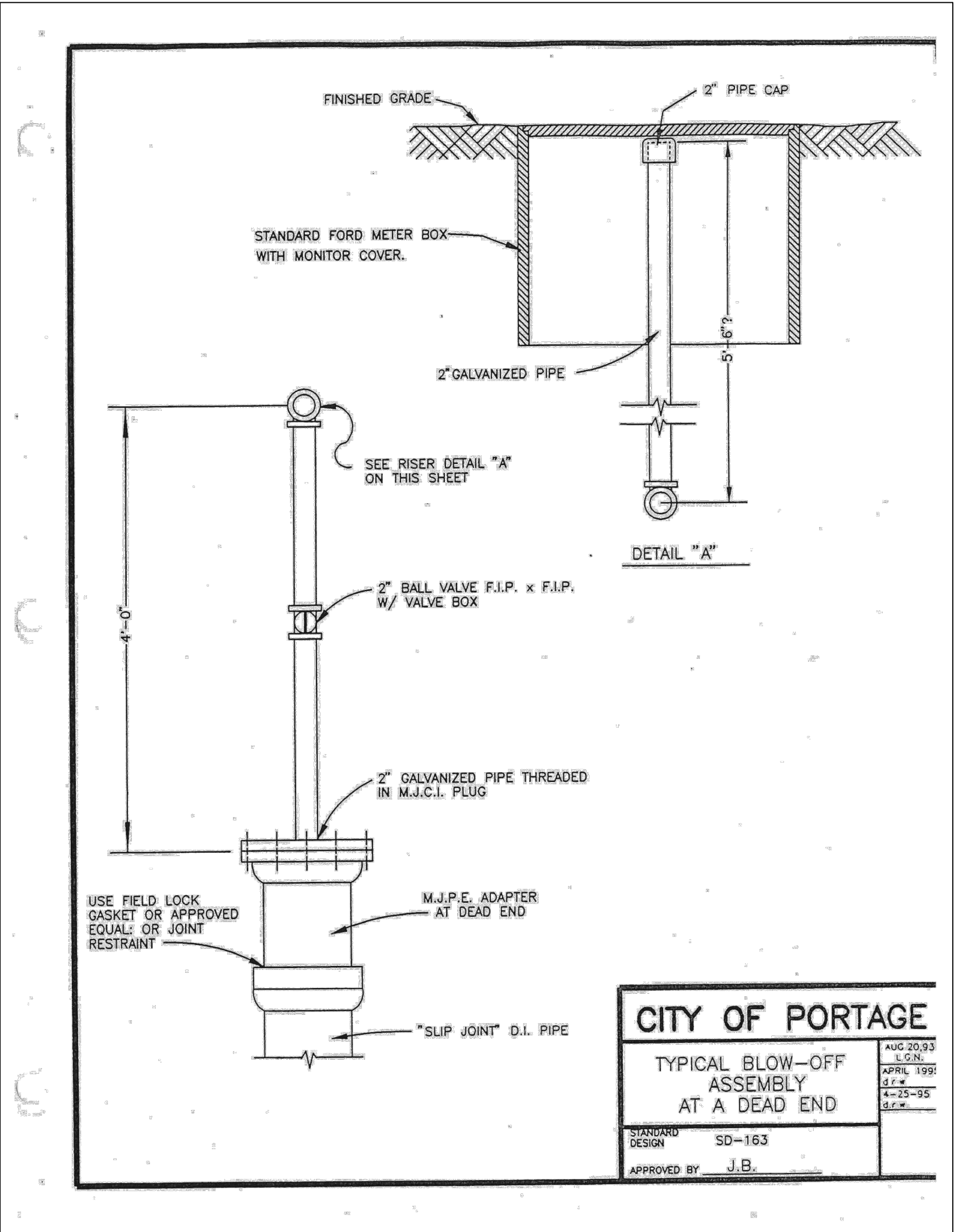
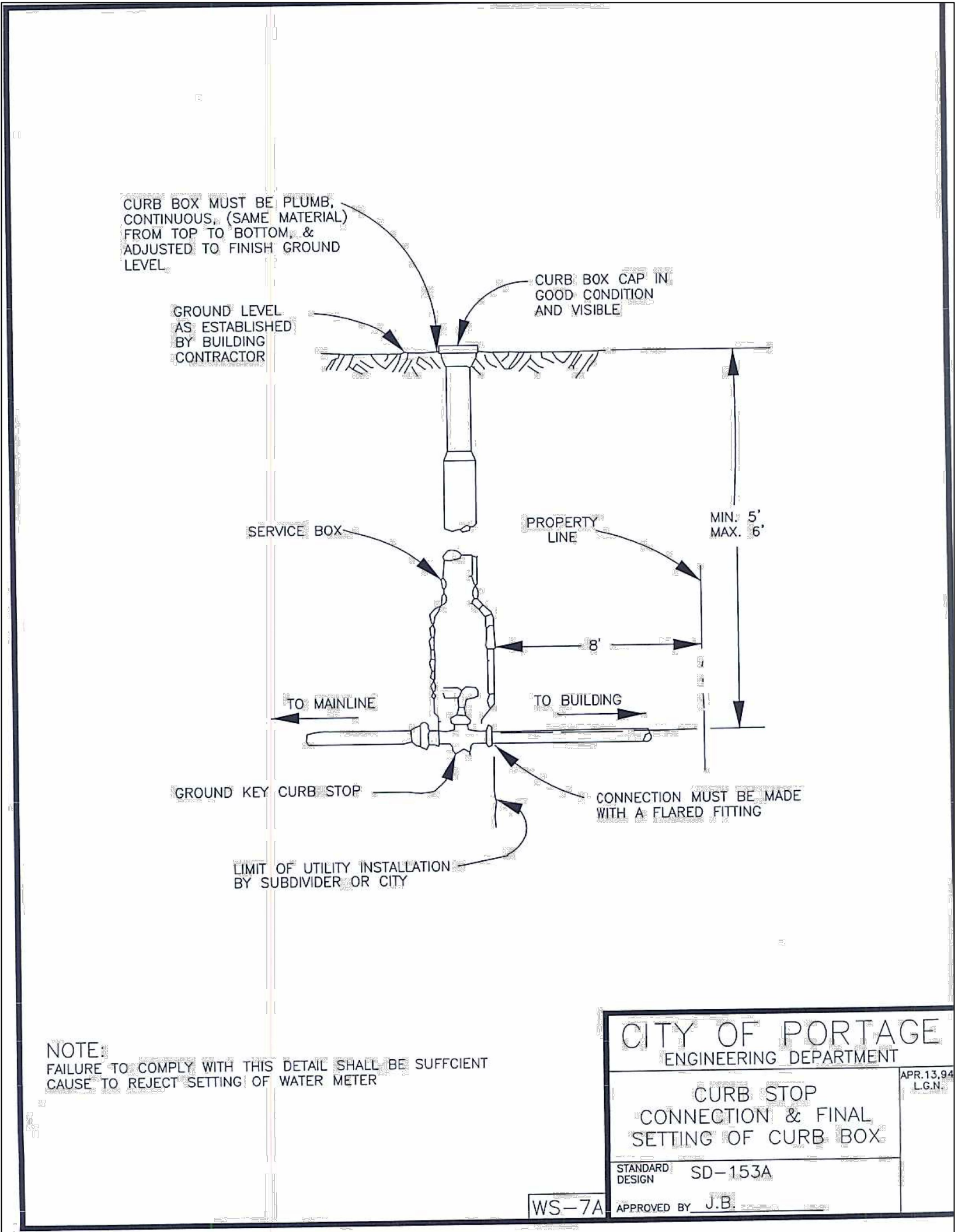
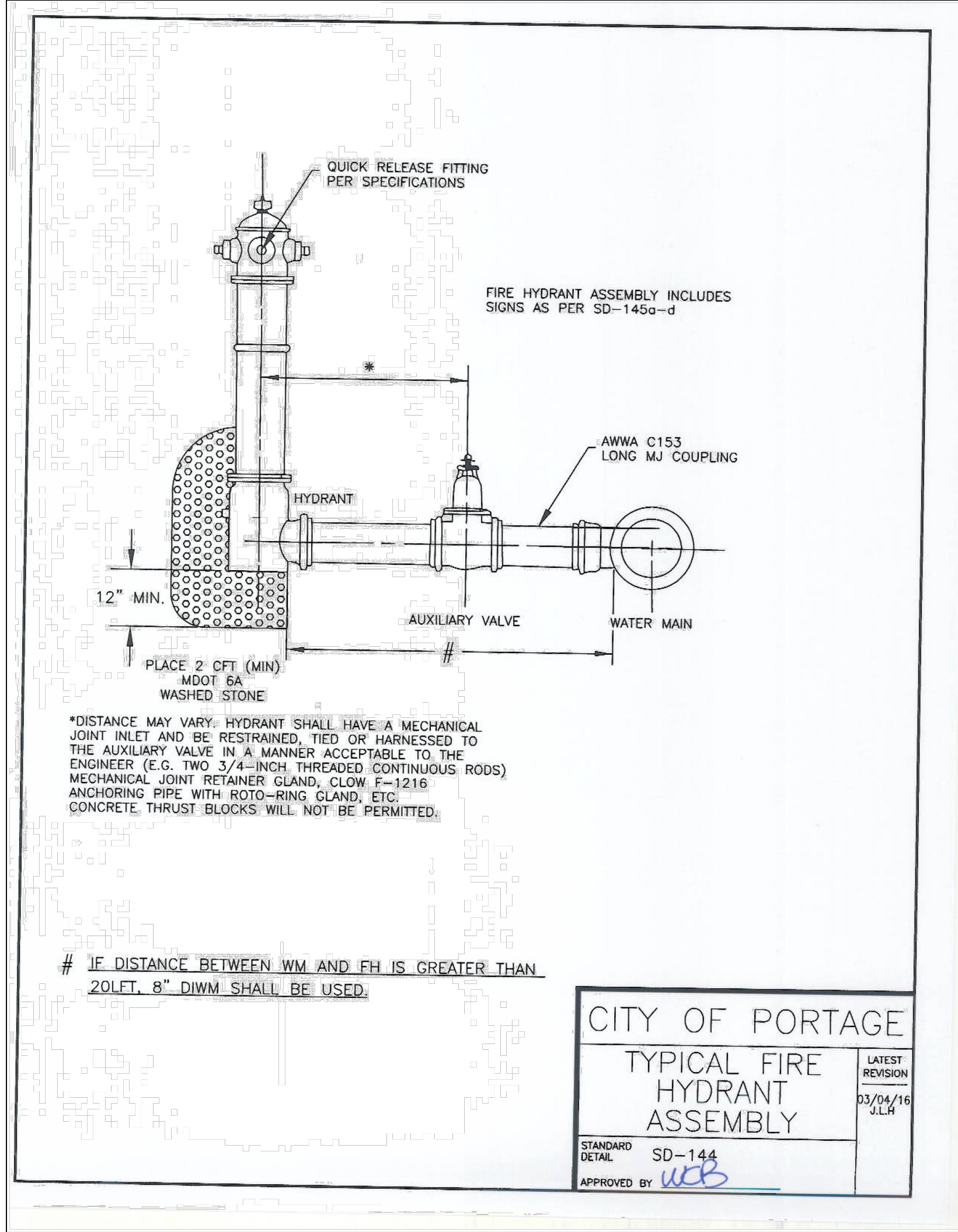
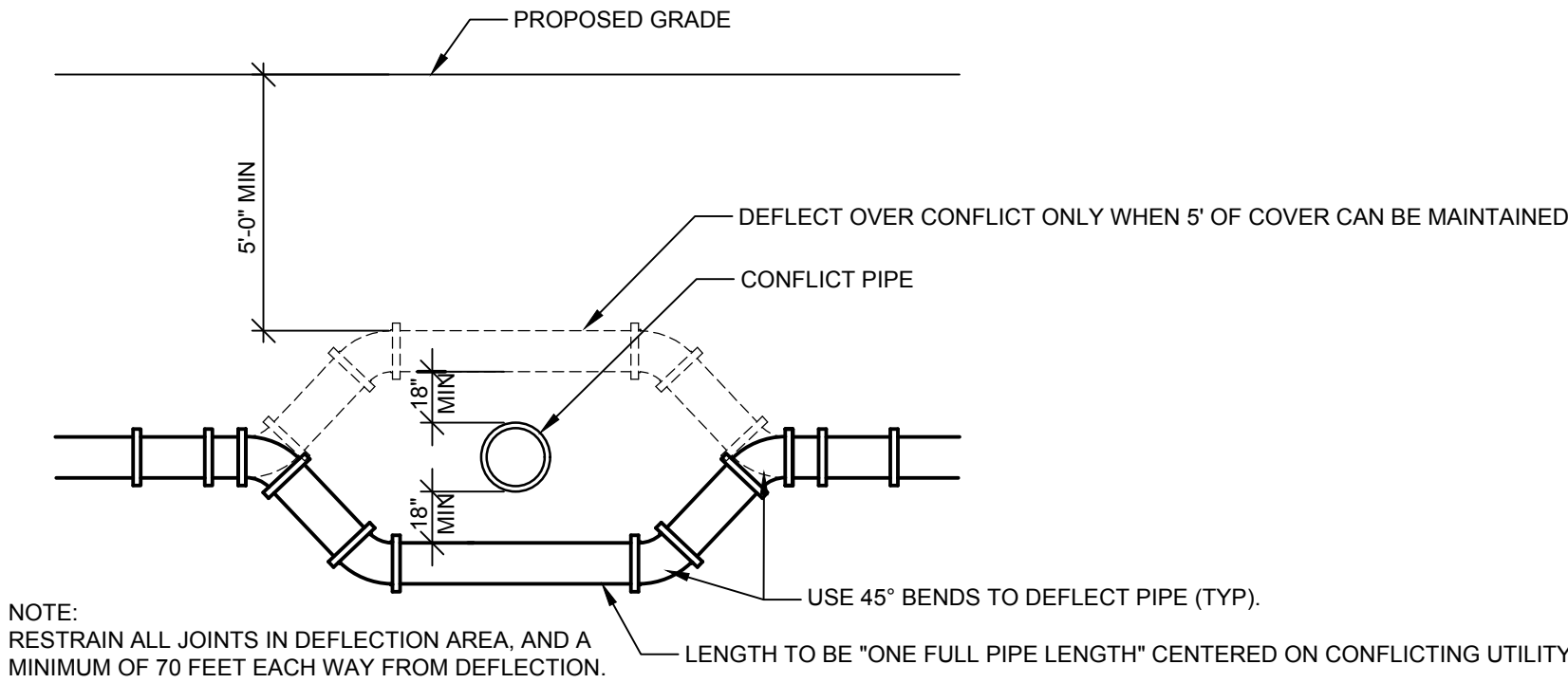
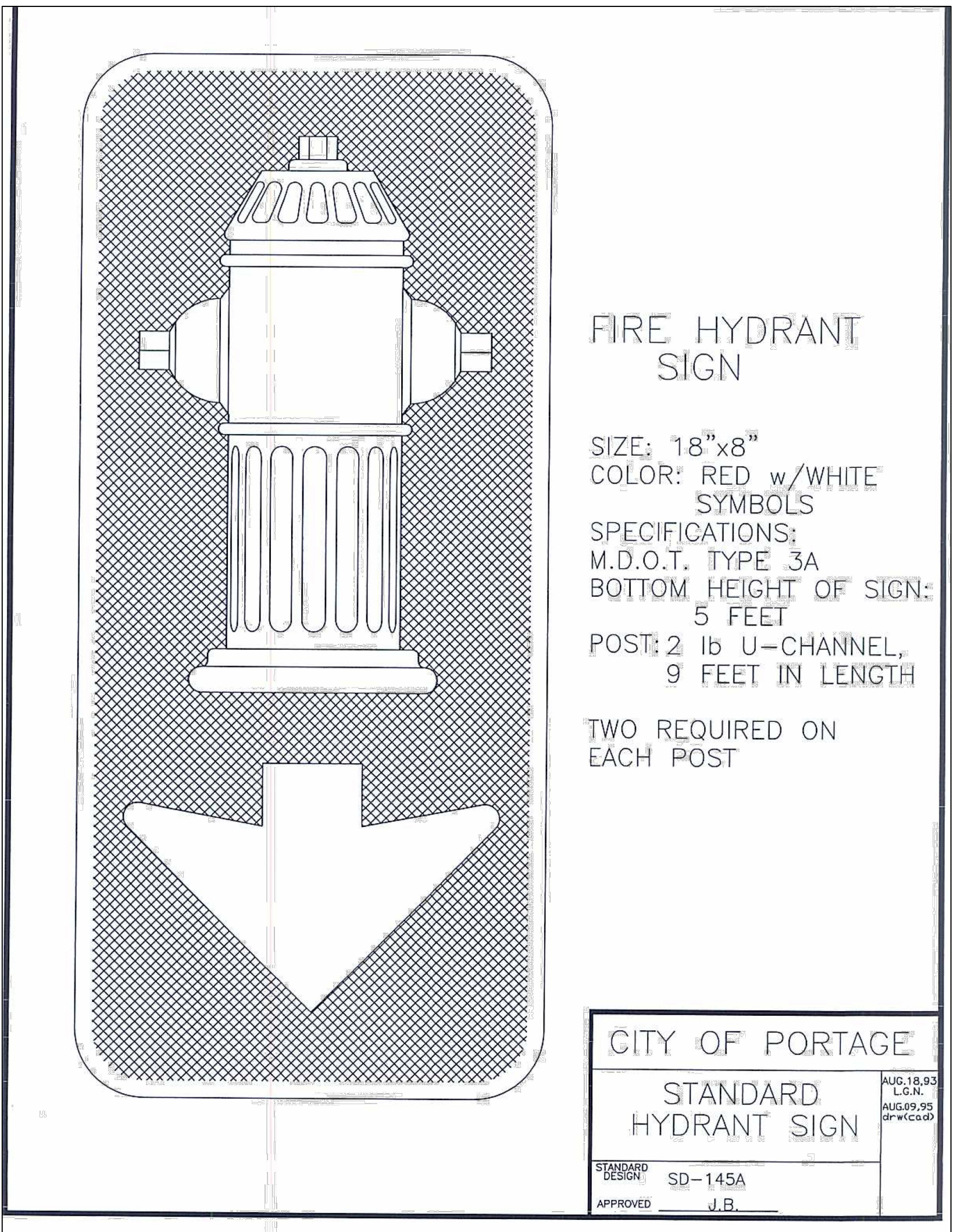
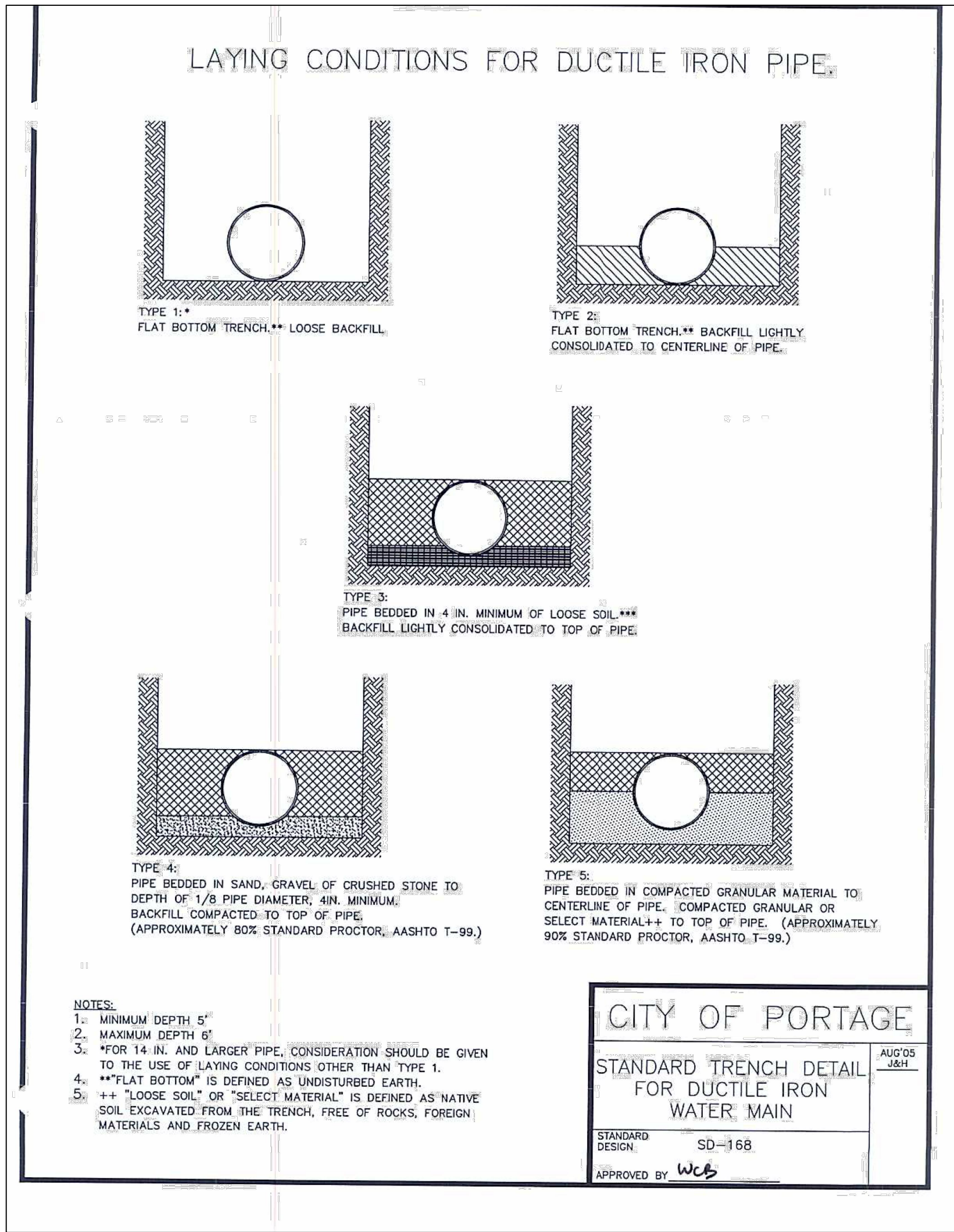
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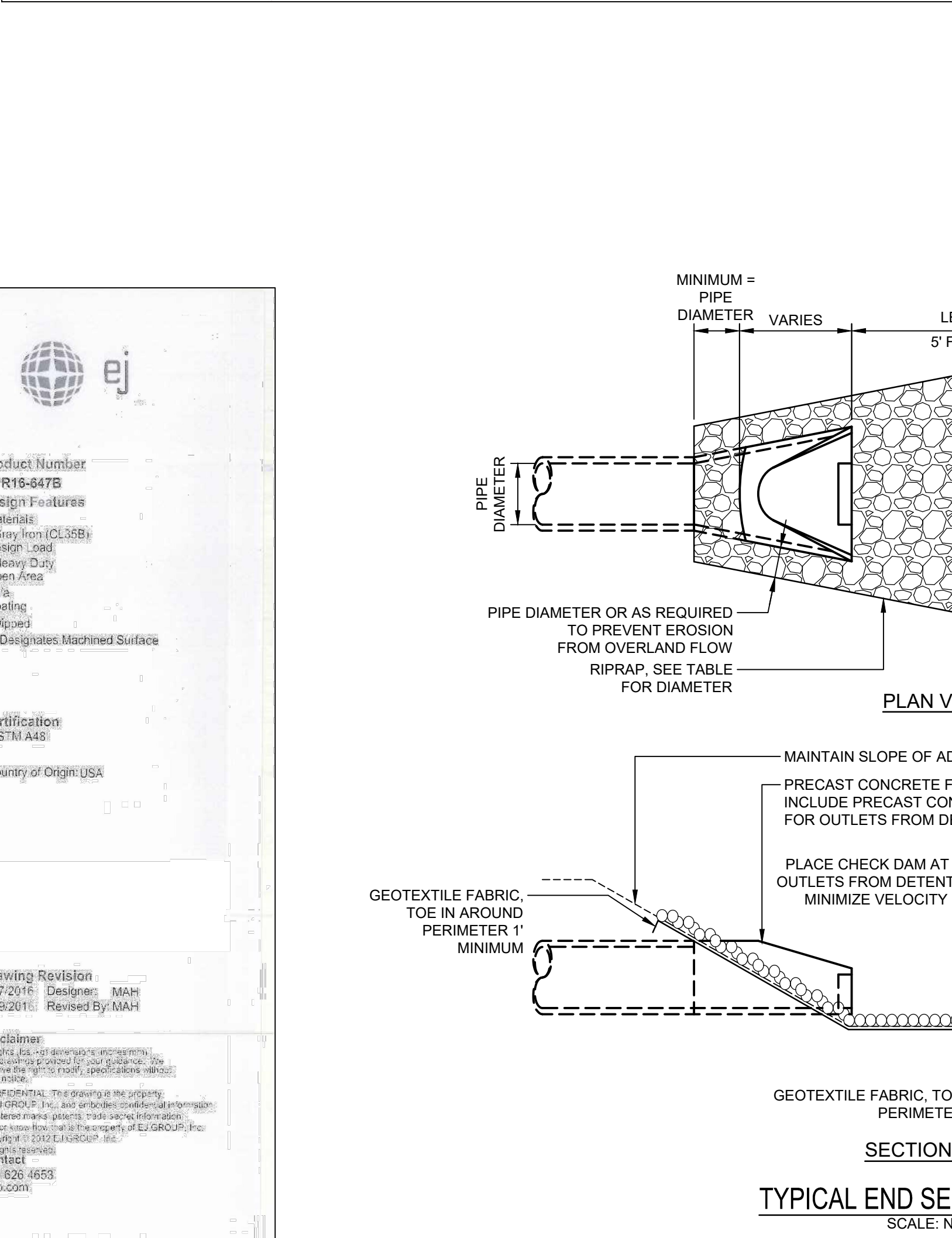
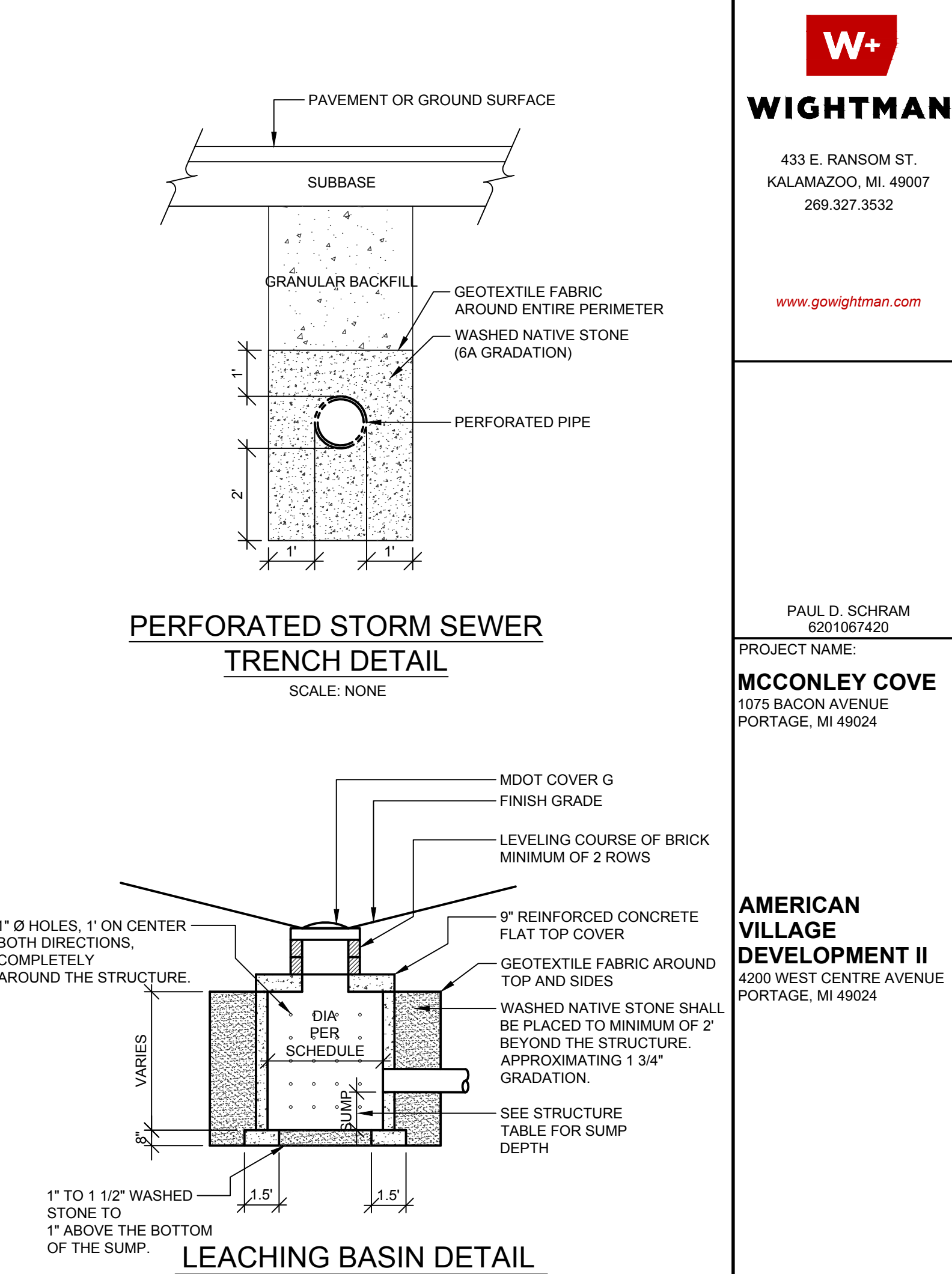
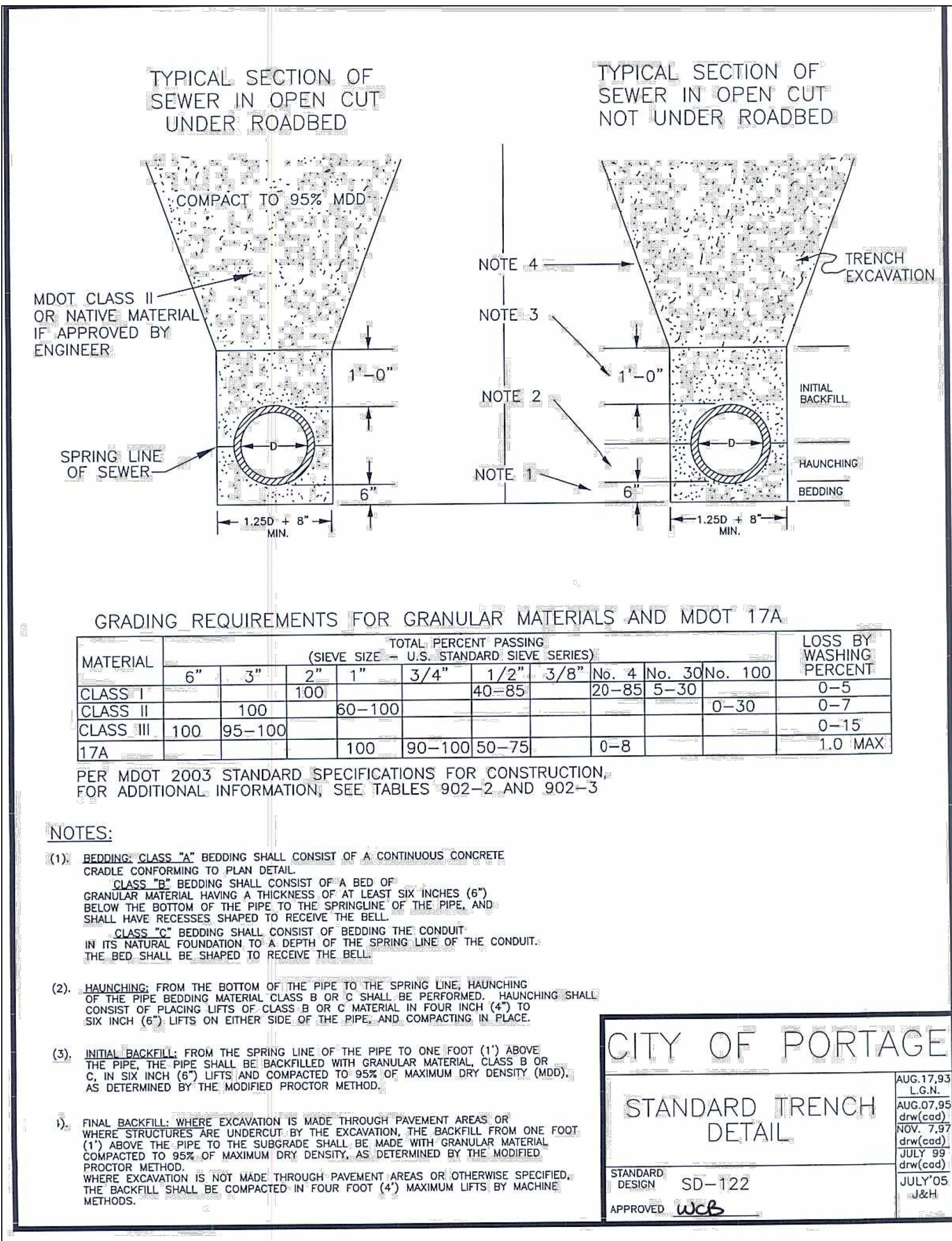
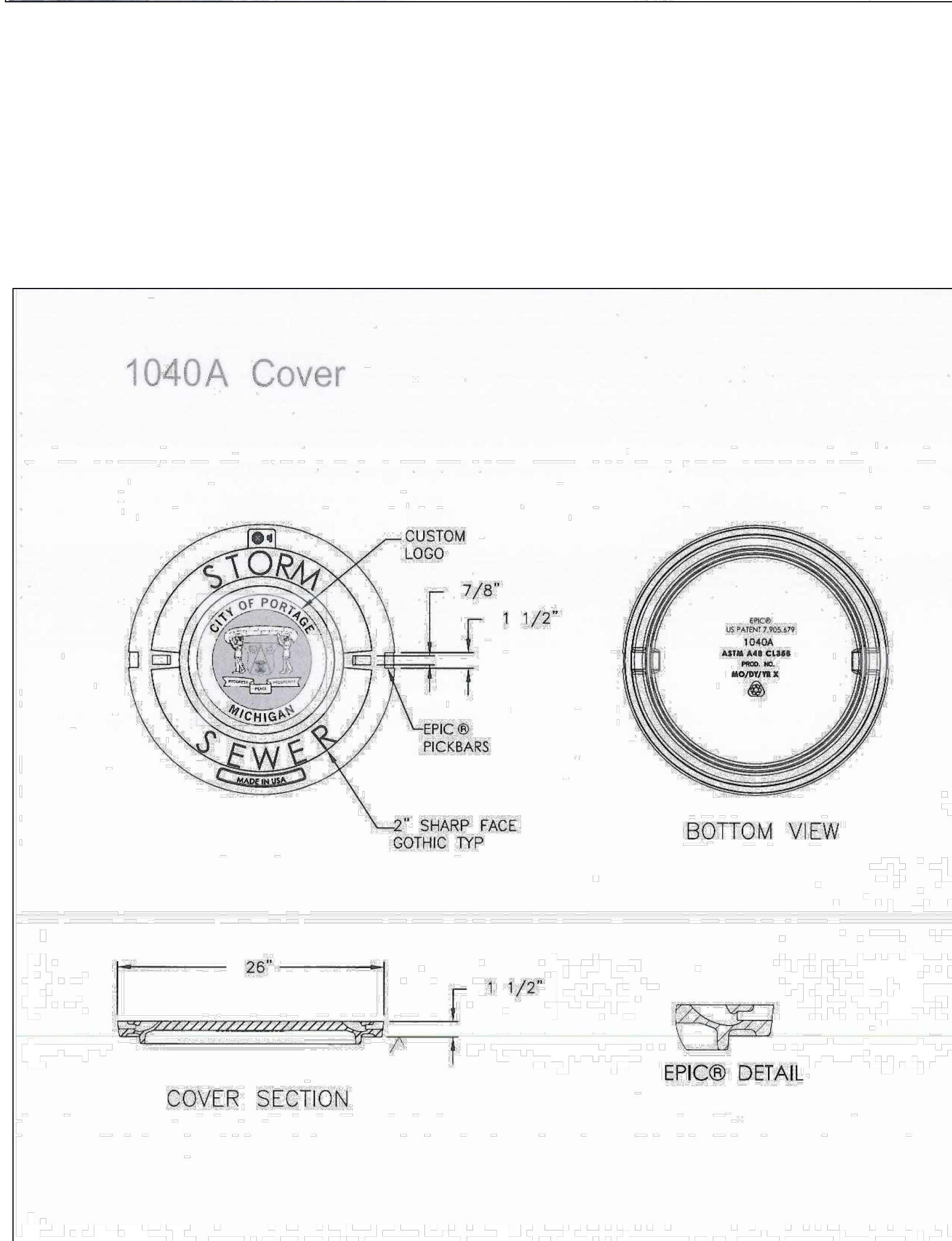
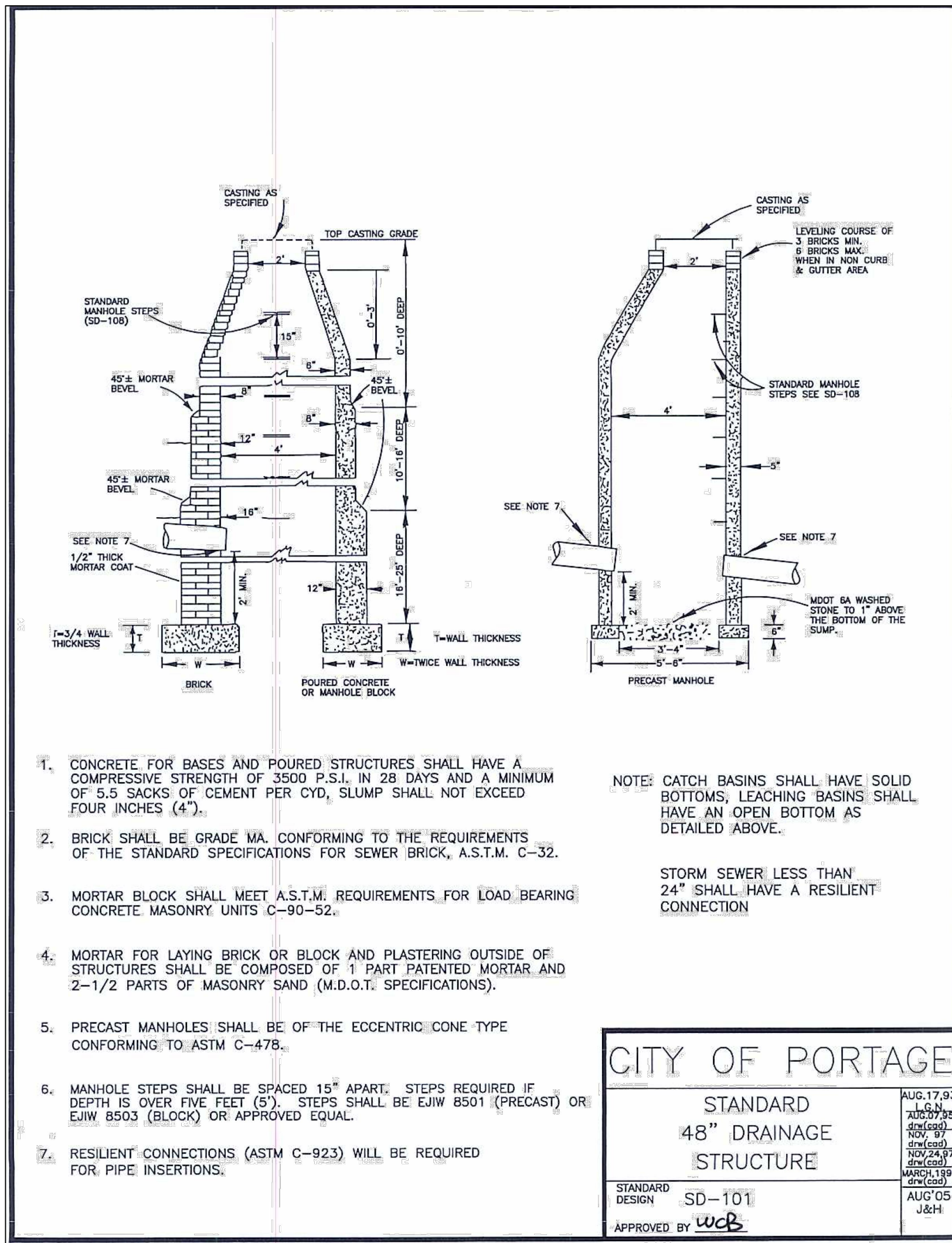
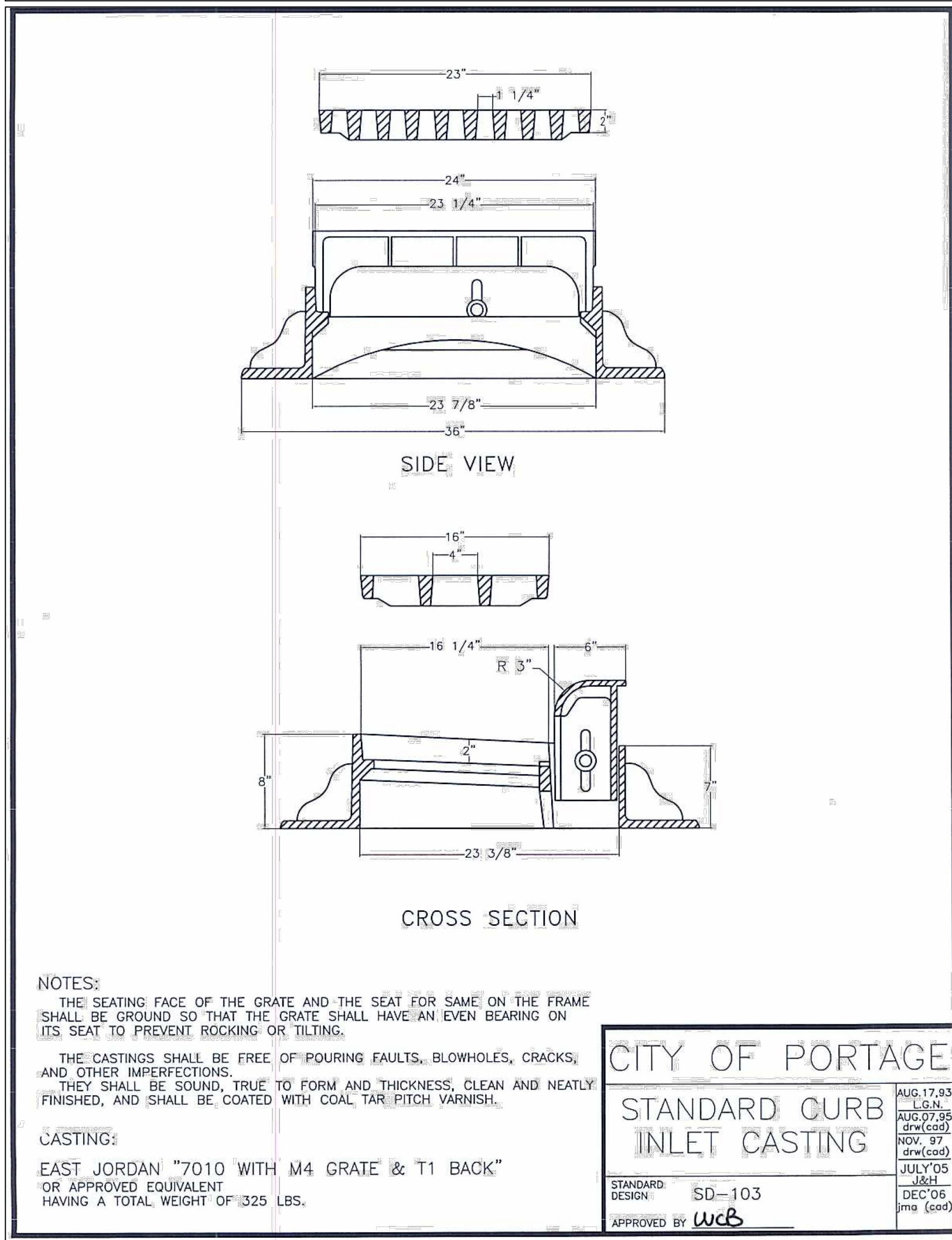
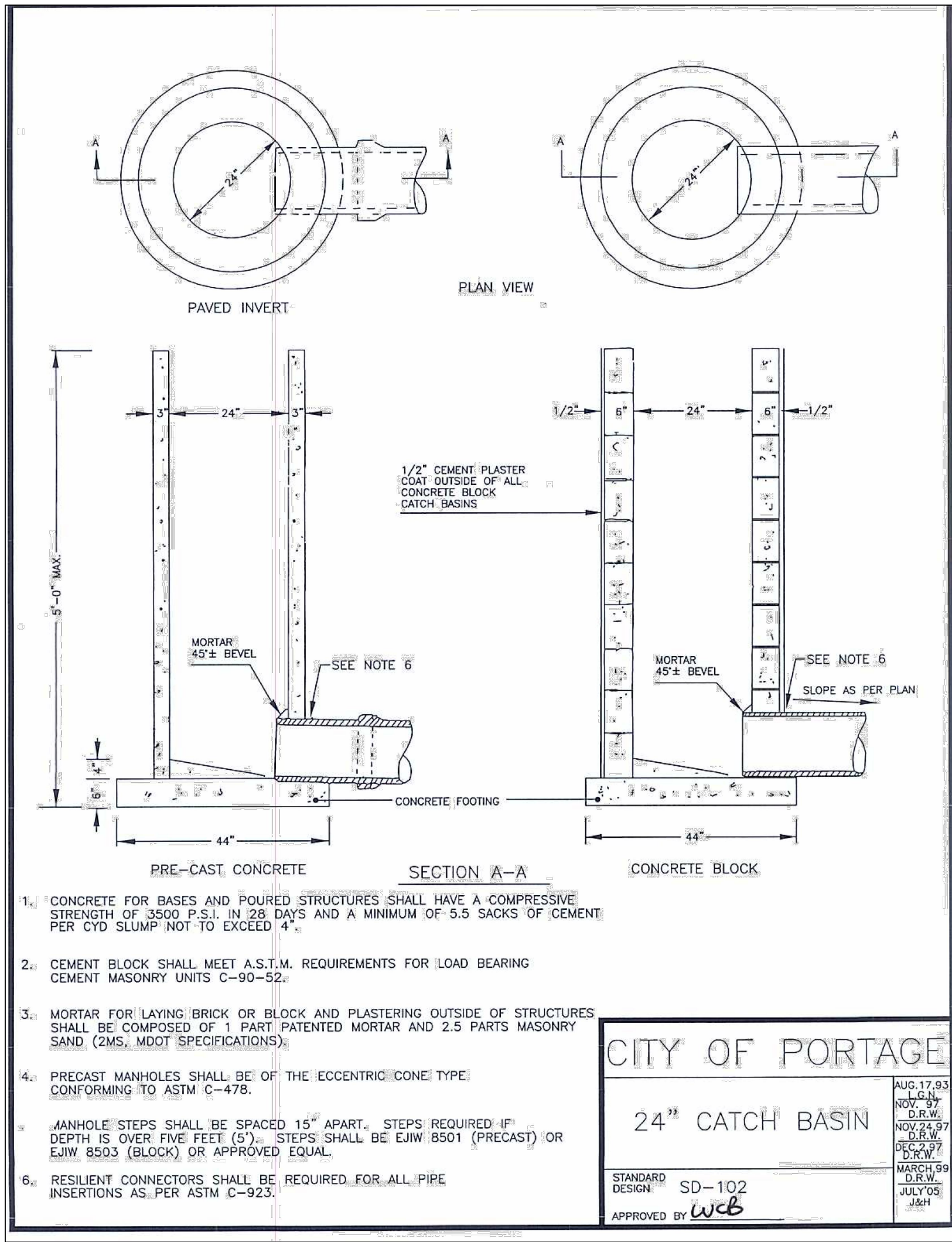
DATE: MARCH 2023
SCALE: 1" = 40'H, 5'V

MISC. PLAN AND
PROFILES

JOB No. 214110
214110-09
OF 14







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PORTAGE, MI 49024

AMERICAN VILLAGE DEVELOPMENT II
4200 WEST CENTRE AVENUE
PORTAGE, MI 49024

04/11/2023
CITY COMMENTS
RESUBMITTAL - V3

03/09/2023
CITY COMMENTS
RESUBMITTAL - V2

02/08/15/2023
CITY COMMENTS
RESUBMITTAL

01/04/21/2023
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CITY COMMENTS
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01/04/21/2023
ISSUED FOR STEP 2
APPROVAL

DATE: MARCH 2023
SCALE: NONE

STORM WATER DETAILS

JOB No. 214110
214110-12
OF 14



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**AMERICAN
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DEVELOPMENT II**

4200 WEST CENTRE AVENUE
PORTAGE, MI 49024

04 11/2/2023 PD
CITY COMMENTS
RESUBMITTAL - V3

03 09/25/2023 PD
CITY COMMENTS
RESUBMITTAL - V2

02 08/15/2023 PD
CITY COMMENTS
RESUBMITTAL

01 04/21/2023 PD
ISSUED FOR STEP 2
APPROVAL

REVISIONS

\\G200FILE\Projects\Kalamazoo\214193\XRF - 1275 Bacon Ave Cond\214193-1275 Bacon Ave Cond.dwg Drawing\850 AutoCAD\214193-13.dwg 214193-13 11/03/2023 11:26:06 AM

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DATE: MARCH 2023

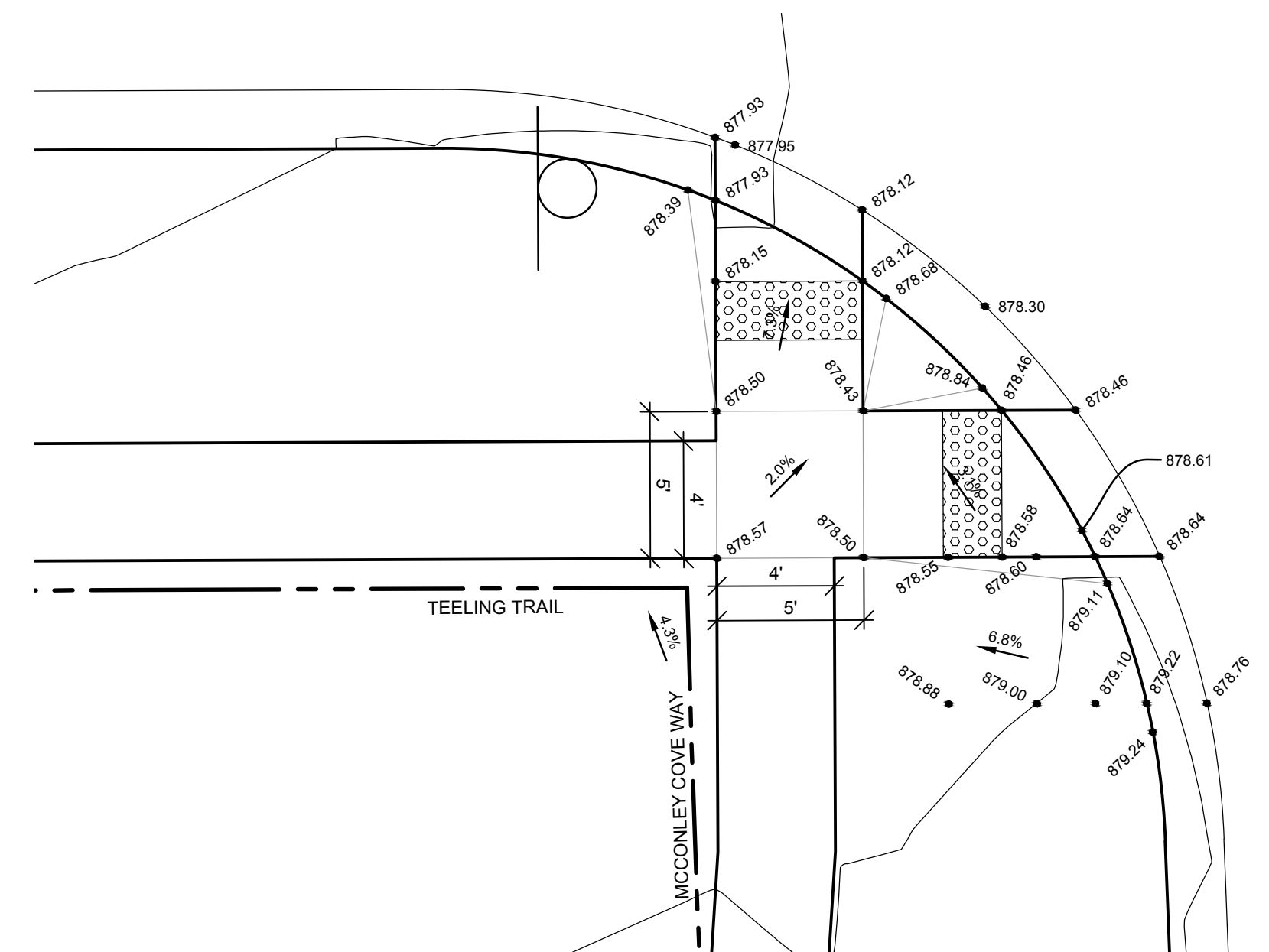
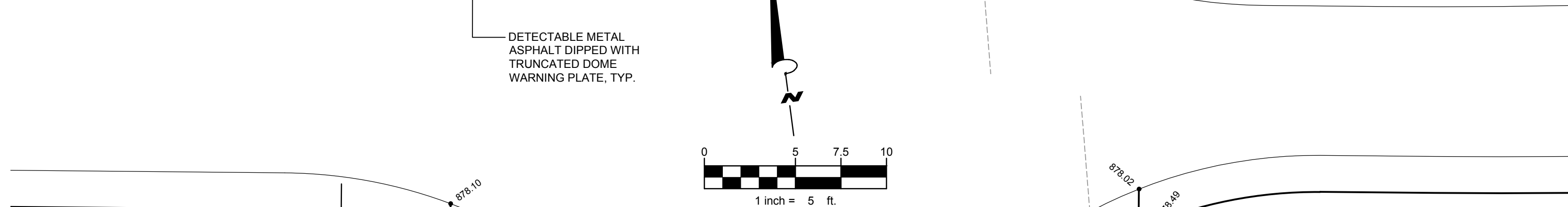
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SIDEWALK RAMP DETAILS

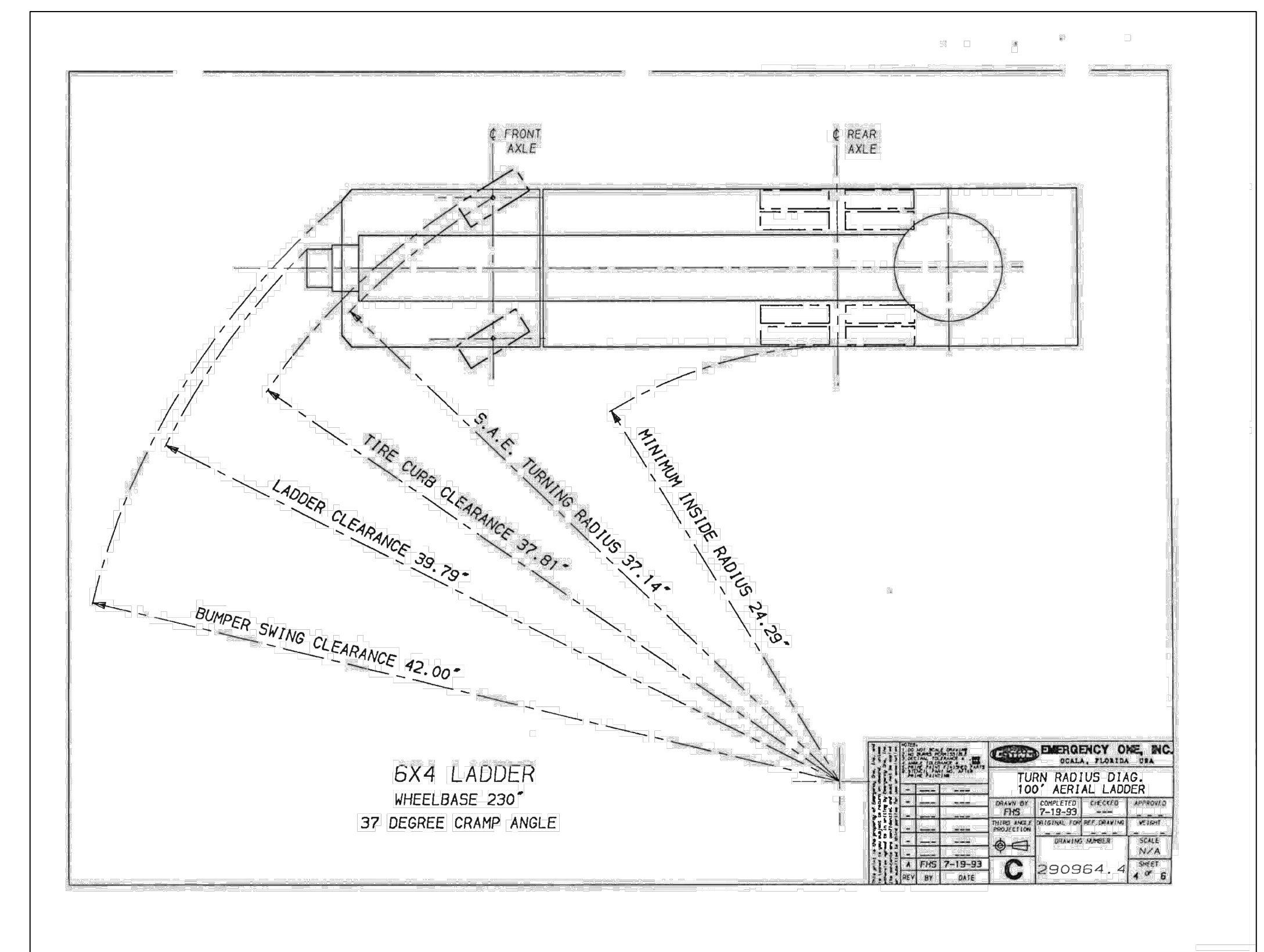
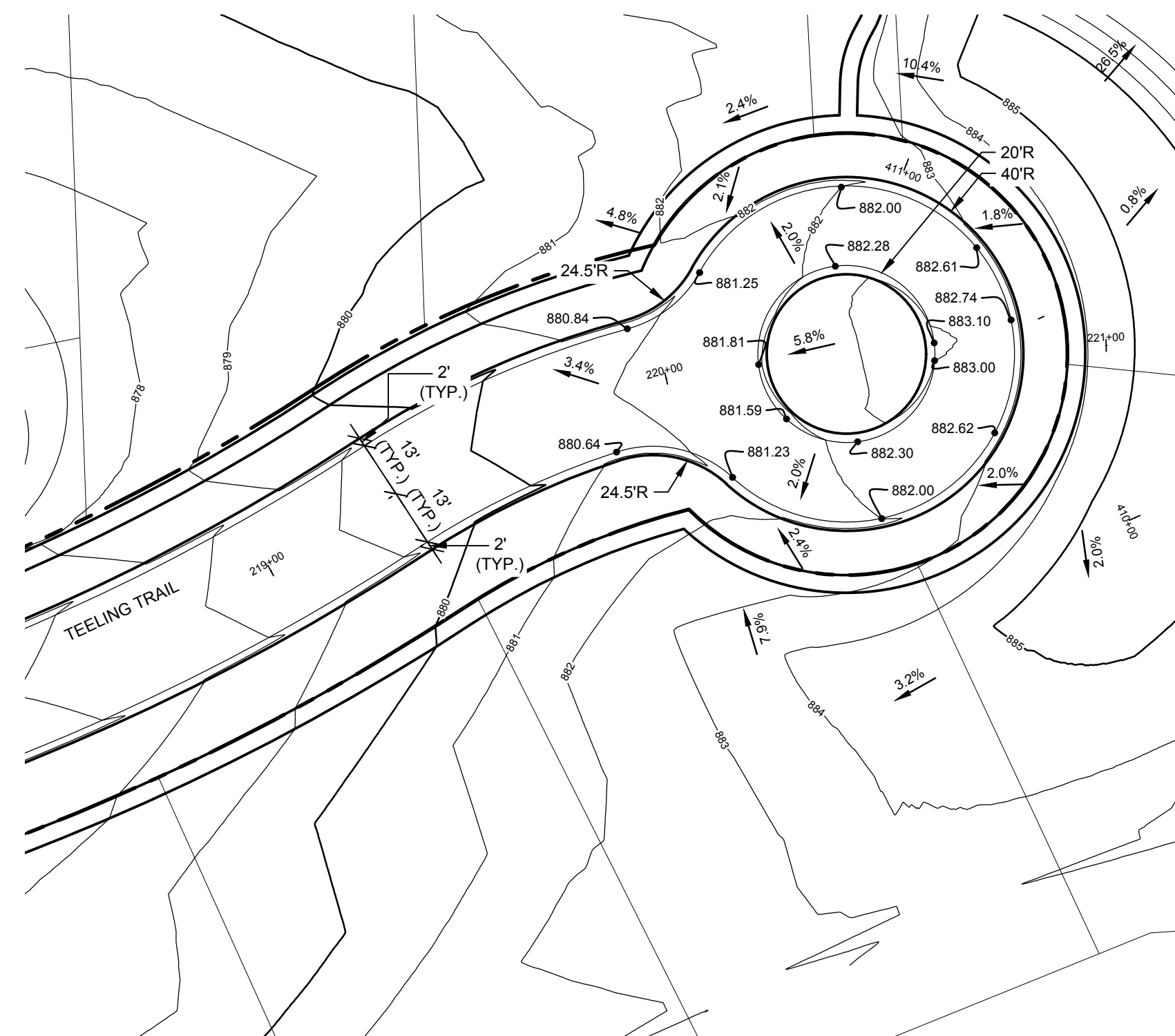
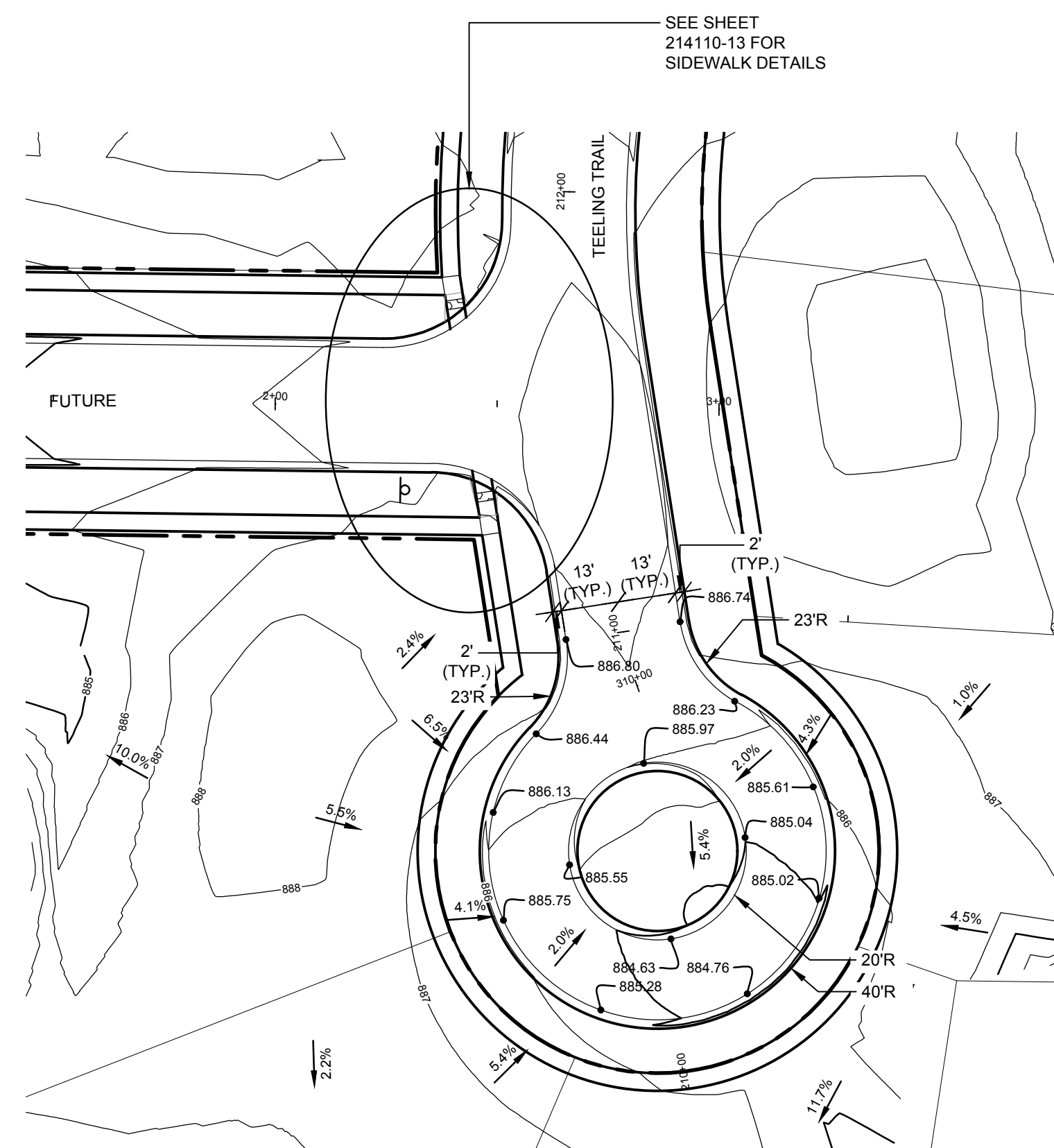
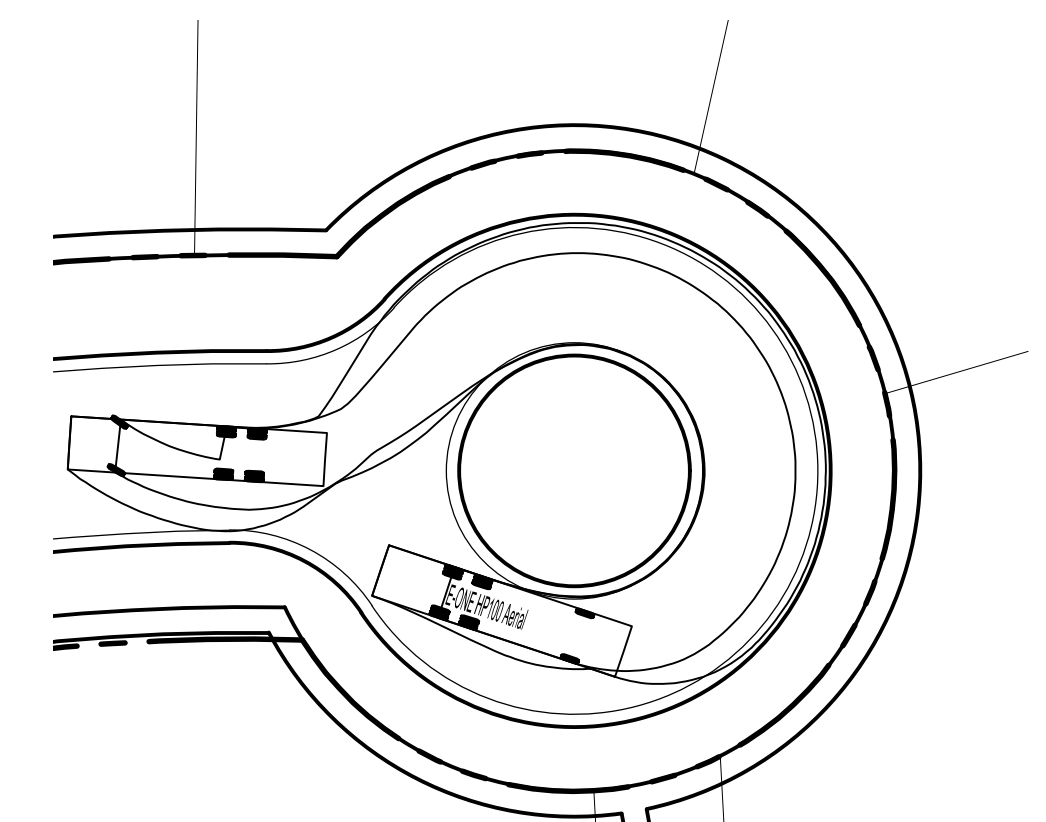
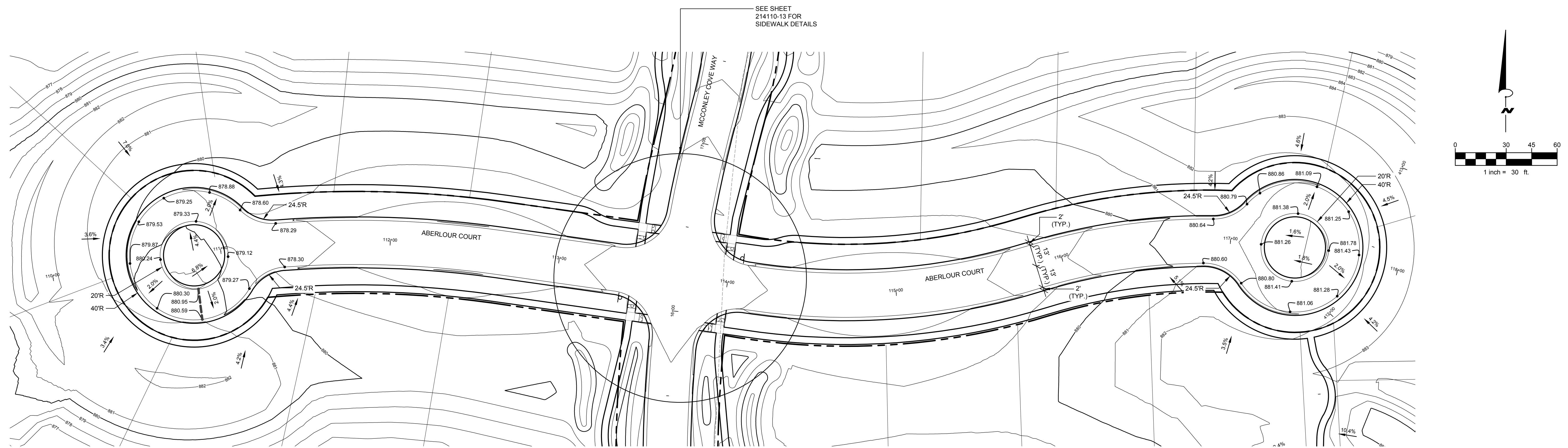
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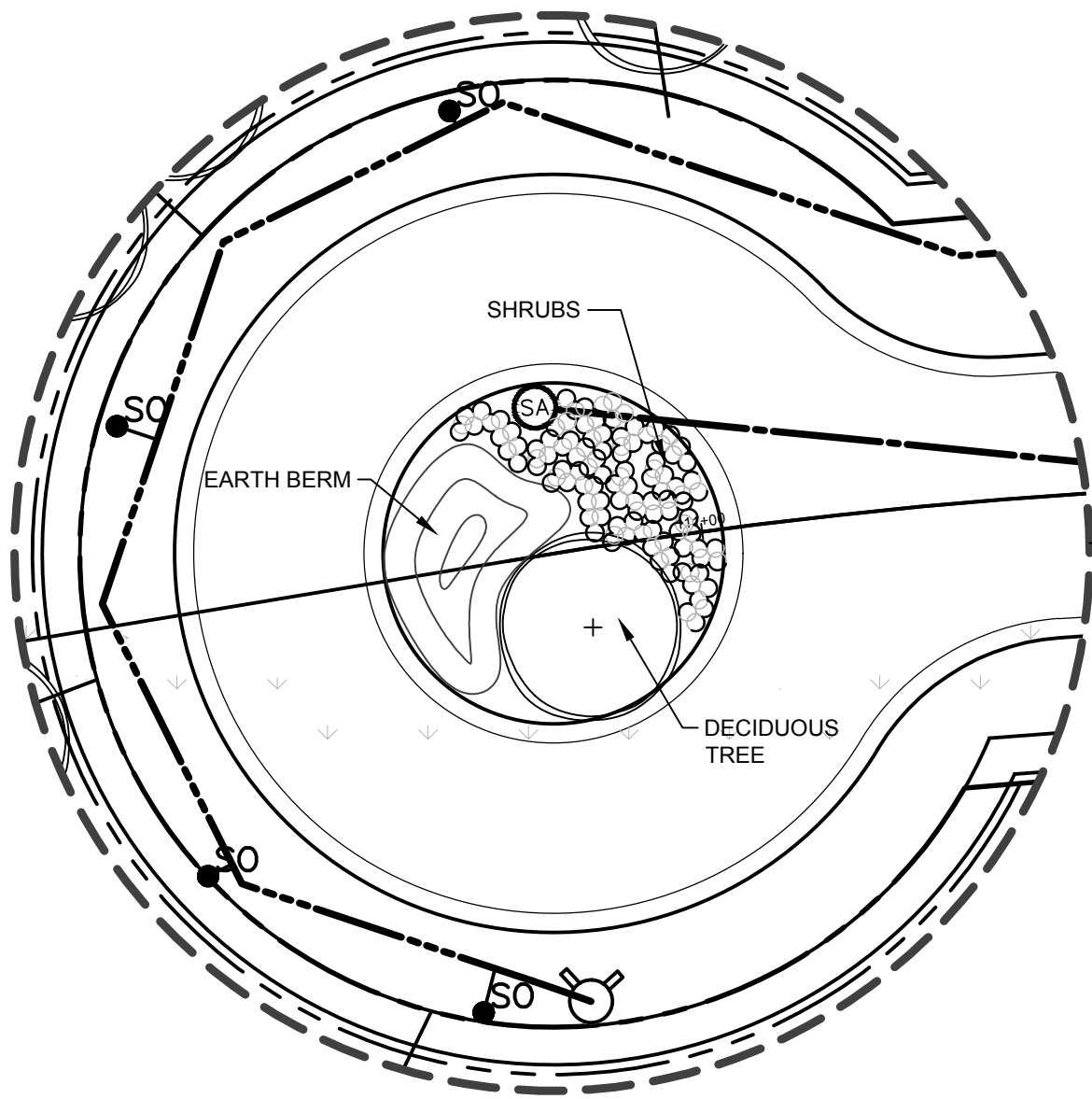
214110-13
OF 14

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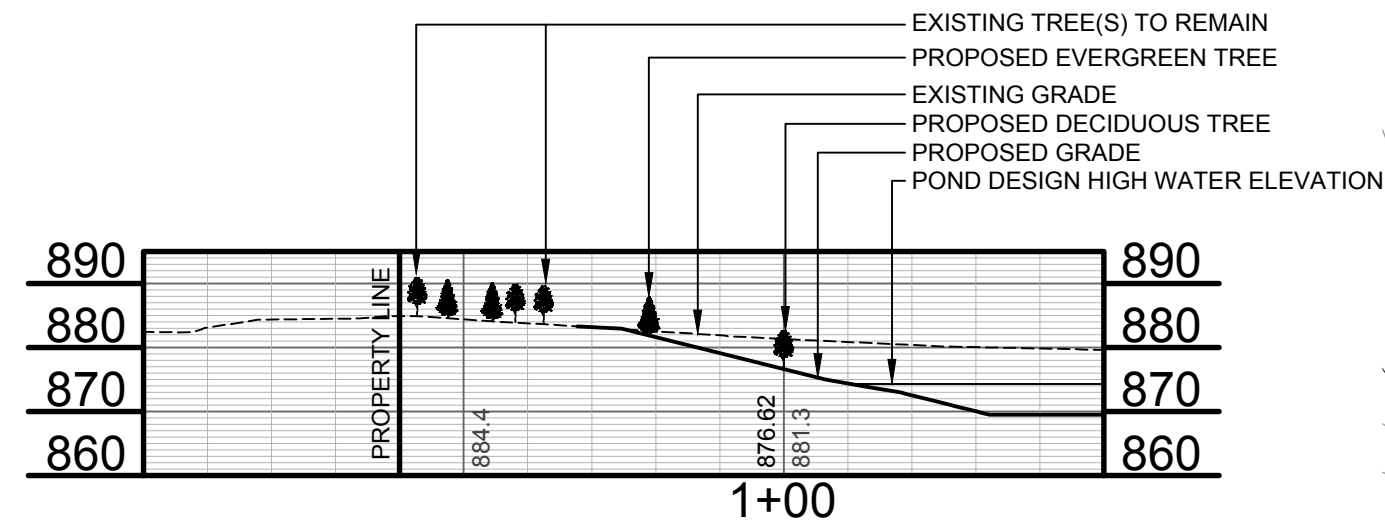


NOTE:
ALL DETECTABLE WARNING PLATES SHALL BE METAL
ASPHALT DIPPED WITH TRUNCATED DOMES





TYPICAL CULDESAC LANDSCAPE PLAN
NTS

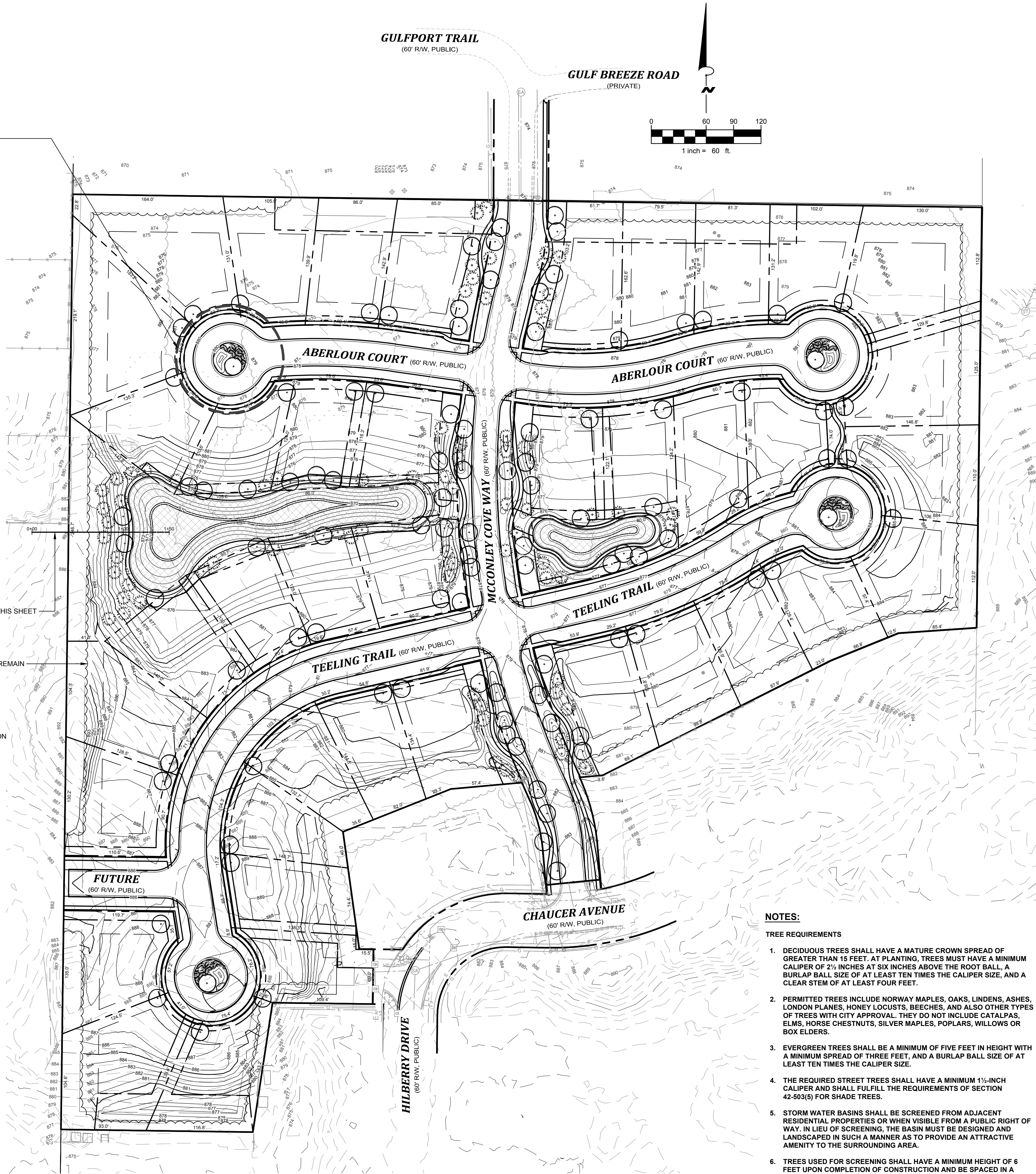


POND LANDSCAPE PROFILE
SCALE: 1" = 30' H, 30' V

PER THE STORMWATER DESIGN SCREENING CRITERIA IN APPENDIX 7 OF THE STORM WATER DESIGN CRITERIA MANUAL, THE STORM WATER AREAS ARE DESIGNED TO PROVIDE AN ATTRACTIVE AMENITY TO THE SURROUNDING AREA. SCREENING SHALL CONSIST OF TREES AND BERMS OF ORGANIC DESIGN WITH UNDULATING AND NATURAL-LOOKING FEATURES TO CREATE AN ATTRACTIVE MAINTAINED GREENSPACE. TREES USED FOR SCREENING WILL HAVE A MINIMUM HEIGHT OF 6'.

THE DESIGN OF THE BASIN ADJACENT THE EXISTING RESIDENTIAL NEIGHBORHOOD SATISFIES THE REQUIREMENTS OF APPENDIX 7 AND HAS SIGNIFICANT TOPOGRAPHICAL CHARACTERISTICS, A 20 FOOT WIDE GRADING AND TREE CLEARING BUFFER PRESERVING EXISTING VEGETATION, AND THE ADDITION OF EVERGREEN TREES.

THE ABOVE PROFILE IS PROVIDED TO DEMONSTRATE THE AGGREGATE VALUE OF THE THREE SCREENING MEASURES.

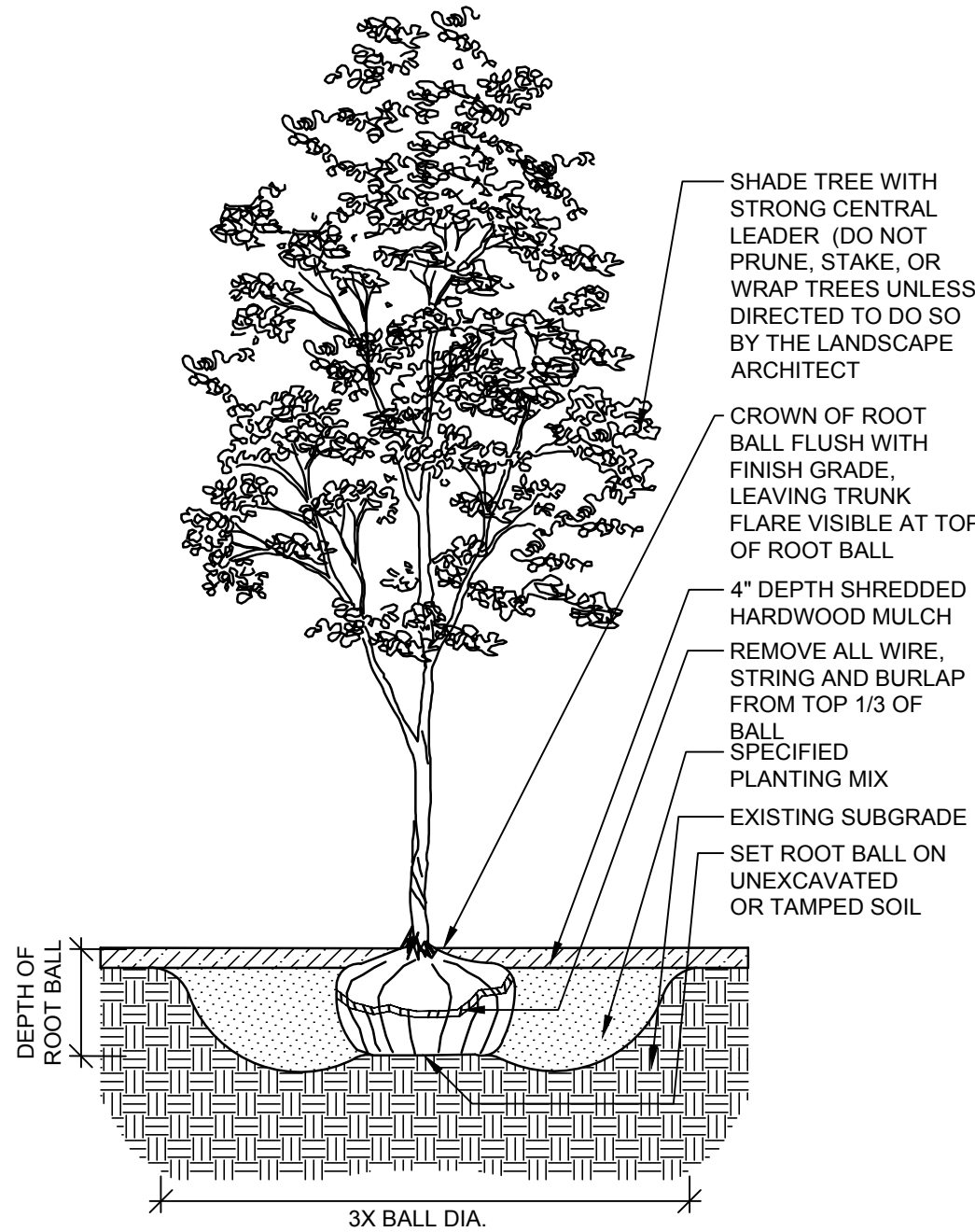


LANDSCAPE PLAN
SCALE: 1" = 60'

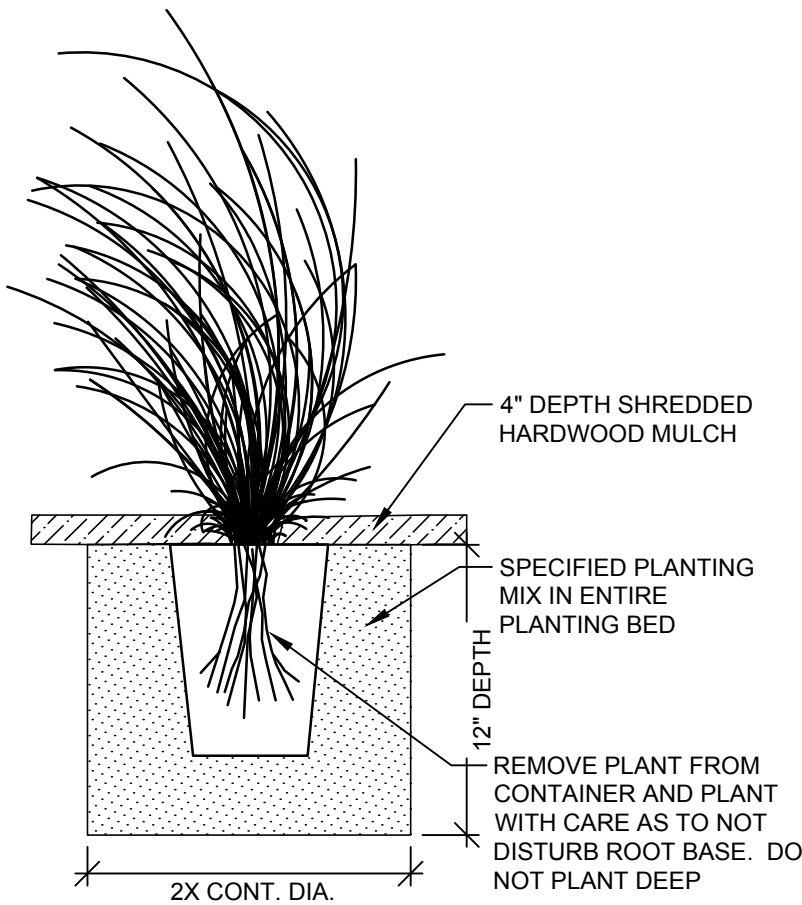
NOTES:

TREE REQUIREMENTS

- DECIDUOUS TREES SHALL HAVE A MATURE CROWN SPREAD OF GREATER THAN 15 FEET. AT PLANTING, TREES MUST HAVE A MINIMUM CALIPER OF 2 1/2 INCHES AT SIX INCHES ABOVE THE ROOT BALL, A BURLAP BALL SIZE OF AT LEAST TEN TIMES THE CALIPER SIZE, AND A CLEAR STEM OF AT LEAST FOUR FEET.
- PERMITTED TREES INCLUDE NORWAY MAPLES, OAKS, LINDENS, ASHES, LONDON PLANES, HONEY LOCUSTS, BEECHES, AND ALSO OTHER TYPES OF TREES WITH CITY APPROVAL. THEY DO NOT INCLUDE CATALPAS, ELMS, HORSE CHESTNUTS, SILVER MAPLES, POPLARS, WILLOWS OR BOX ELDERS.
- EVERGREEN TREES SHALL BE A MINIMUM OF FIVE FEET IN HEIGHT WITH A MINIMUM SPREAD OF THREE FEET, AND A BURLAP BALL SIZE OF AT LEAST TEN TIMES THE CALIPER SIZE.
- THE REQUIRED STREET TREES SHALL HAVE A MINIMUM 1 1/2-INCH CALIPER AND SHALL FULFILL THE REQUIREMENTS OF SECTION 42-503(5) FOR SHADE TREES.
- STORM WATER BASINS SHALL BE SCREENED FROM ADJACENT RESIDENTIAL PROPERTIES OR WHEN VISIBLE FROM A PUBLIC RIGHT OF WAY. IN LIEU OF SCREENING, THE BASIN MUST BE DESIGNED AND LANDSCAPED IN SUCH A MANNER AS TO PROVIDE AN ATTRACTIVE AMENITY TO THE SURROUNDING AREA.
- TREES USED FOR SCREENING SHALL HAVE A MINIMUM HEIGHT OF 6 FEET UPON COMPLETION OF CONSTRUCTION AND BE SPACED IN A STAGGERED ROW 10 FEET ON CENTER.



TREE/SHRUB PLANTING SECTION
NOT TO SCALE



SHRUB PLANTING SECTION
NOT TO SCALE

STORM WATER BASIN LANDSCAPING			
LEGEND	APPLICATION	GRASS	PERCENT
	BUFFER AREAS MAINTAINED AS A LAWN	MANHATTAN RYE	40
		CREeping RED FESCUE	20
		RED TOP	20
		COMMON BLUEGRASS	20
	TEMPORARILY INUNDATED AREAS AND POND EDGES MAINTAINED AS A LAWN (COARSE-TEXTURED SOILS).	CREeping RED FESCUE	55
		KENTUCKY BLUEGRASS	40
		SEASIDE BENTGRASS	5

- DECIDUOUS TREE
- EVERGREEN TREE
- SHRUBS

04/11/2023	PDS
CITY COMMENTS	
RESUBMITTAL - V3	
03/09/25/2023	PDS
CITY COMMENTS	
RESUBMITTAL - V2	
02/08/15/2023	PDS
CITY COMMENTS	
RESUBMITTAL	
01/04/21/2023	PDS
ISSUED FOR STEP 2	
APPROVAL	

REVISIONS
DATE: MARCH 2023
SCALE: 1" = 60'

LANDSCAPE PLAN &
DETAILS

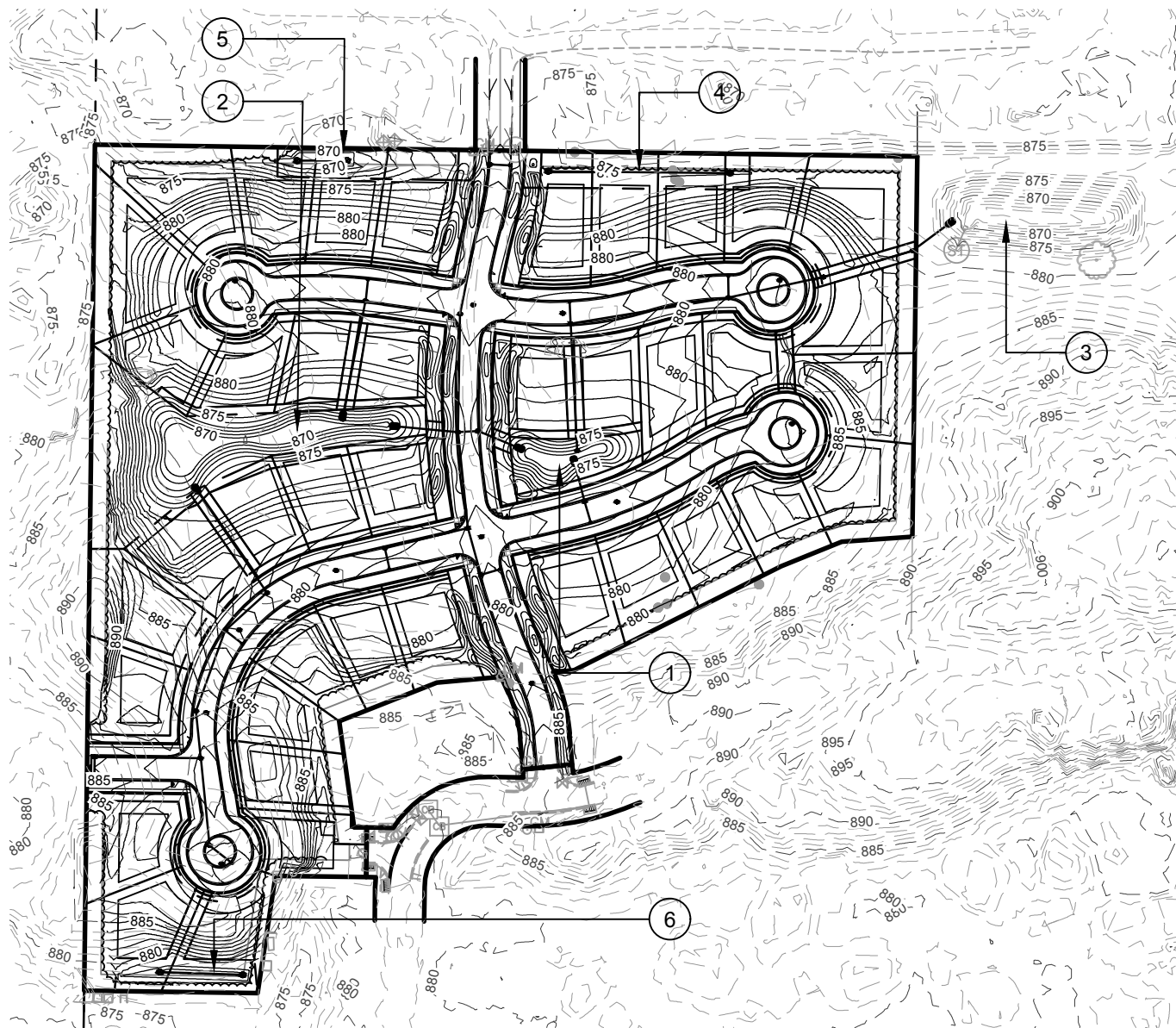
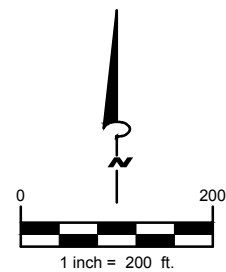
McConley Cove

EXHIBIT A:

THAT PART OF THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 3 SOUTH, RANGE 11 WEST, CITY OF PORTAGE, KALAMAZOO COUNTY, MICHIGAN, DESCRIBED AS: BEGINNING AT A POINT ON THE NORTH AND SOUTH QUARTER LINE OF SAID SECTION 27 THAT IS 660.00 FEET NORTH 00° 16' 51" WEST OF THE SOUTH QUARTER CORNER OF SAID SECTION 27; THENCE NORTH 00° 16' 51" WEST ON SAID NORTH AND SOUTH QUARTER LINE 1022.72 FEET TO THE NORTH LINE OF THE SOUTH 1683.00 FEET OF THE SOUTHEAST QUARTER OF SAID SECTION 27, AS MONUMENTED; THENCE NORTH 89° 49' 07" EAST ON SAID NORTH LINE 994.46 FEET TO THE WEST LINE OF THE EAST 338 FEET OF THE WEST HALF OF THE SOUTHEAST QUARTER OF SAID SECTION 27; THENCE SOUTH 00° 14' 38" EAST ON SAID WEST LINE 459.80 FEET TO THE NORTHEAST CORNER OF LOT 31 OF "THE PINES NO. 2", BEING A SUBDIVISION RECORDED IN LIBER 41 OF PLATS, PAGE 1 KALAMAZOO COUNTY RECORDS; THENCE SOUTH 85° 02' 04" WEST ON THE NORTHERLY LINE OF SAID "THE PINES NO. 2" A DISTANCE OF 85.44 FEET; THENCE CONTINUING ON SAID NORTHERLY LINE THE FOLLOWING 11 COURSES; THENCE SOUTH 66° 55' 44" WEST 79.35 FEET; THENCE SOUTH 62° 20' 54" WEST (PLATTED SOUTH 62° 14' 56" WEST) 279.79 FEET (PLATTED 280.00 FEET); THENCE SOUTH 83° 48' 00" WEST 25.41 FEET; THENCE SOUTHEASTERLY 77.21 FEET ON A 230.00 FOOT RADIUS CURVE TO THE RIGHT WHOSE CHORD BEARS SOUTH 15° 43' 43" EAST 76.85 FEET; THENCE SOUTH 06° 06' 42" EAST 37.62 FEET; THENCE SOUTH 83° 20' 22" WEST 60.00 FEET; THENCE NORTH 06° 06' 42" WEST 38.20 FEET; THENCE NORTHWESTERLY 55.86 FEET ON A 170.00 FOOT RADIUS CURVE THE LEFT WHOSE CHORD BEARS NORTH 15° 31' 30" WEST 55.61 FEET; THENCE NORTH 24° 56' 18" WEST 21.99 FEET; THENCE SOUTH 83° 48' 00" WEST 77.88 FEET; THENCE SOUTH 67° 23' 42" WEST 126.91 FEET TO THE WESTERLY LINE OF SAID "THE PINES NO. 2"; THENCE SOUTH 08° 53' 59" EAST ON SAID WESTERLY LINE 129.43 FEET; THENCE CONTINUING ON SAID WESTERLY LINE THE FOLLOWING 4 COURSES; THENCE NORTH 89° 47' 00" EAST 15.52 FEET; THENCE SOUTH 00° 13' 00" EAST 60.00 FEET; THENCE SOUTH 89° 47' 00" WEST 109.45 FEET; THENCE SOUTH 07° 40' 46" WEST (PLATTED SOUTH 07° 32' 44" WEST) 143.21 FEET (PLATTED 143.31 FEET) TO THE NORTH LINE OF THE SOUTH 660.00 FEET OF THE SOUTHEAST QUARTER OF SAID SECTION 27; THENCE SOUTH 89° 47' 00" WEST ON SAID NORTH LINE 209.80 FEET TO THE POINT OF BEGINNING. CONTAINING 16.25 ACRES MORE OR LESS.

SUBJECT TO ANY AND ALL EASEMENTS AND RESTRICTIONS OF RECORD, OR OTHERWISE.

BEARINGS ARE RELATED TO "THE PINES NO. 2" AS RECORDED IN LIBER 41 OF PLATS, PAGE 1, KALAMAZOO COUNTY RECORDS.



433 E. RANSOM ST. KALAMAZOO, MI. 49007
269.327.3532
www.gowightman.com

CLIENT: AMERICAN VILLAGE DEVELOPMENT II
PROJECT: MCCONLEY COVE

JOB No: 214110
DATE: 2023
SCALE: 1" = 200'

EXHIBIT B

McConley Cove

EXHIBIT C:

Stormwater BMPS As Indicated on Exhibit B:

1. East Pond, Volume = 8,877 CFT, High Water Level @ 874.3
2. West Pond, Volume = 54,149 CFT, High Water Level @ 874.3
3. Water Tower Basin for emergency overflow, Volume = 81,653 CFT @ Elevation 875.0.
4. Northeast leaching basins and infiltration trench.
5. Northwest leaching basins and infiltration trench.
6. Southwest leaching basins and infiltration trench.

STORMWATER MAINTENANCE SCHEDULE			
BMP	MAINTENANCE FREQUENCY	MAINTENANCE ACTIVITY	RESPONSIBLE PARTY
LEACHING BASINS AND INFILTRATION TRENCHES	ANNUAL	INSPECT STRUCTURE, REMOVE SEDIMENT WHEN MORE THAN 12 INCHES DEEP.	HOMEOWNERS ASSOCIATION
INFILTRATION BASIN (EAST POND & WEST POND)	ANNUAL	INSPECT BASIN, REMOVE SEDIMENT WHEN MORE THAN 12 INCHES DEEP, REPAIR EROSION AND TILL. MOW AND REMOVE DEBRIS AS NEEDED.	HOMEOWNERS ASSOCIATION

TO: Honorable Mayor and City Council

FROM: Pat McGinnis, City Manager

SUBJECT: Tax Exemption (Payment in Lieu of Taxes) for River Caddis Communities

SUPPORTING PERSONNEL: Peter Dame, Chief Development Officer

ACTION RECOMMENDED: Accept for first reading an ordinance amendment to grant River Caddis Communities a tax exemption and establish a Payment in Lieu of Taxes for Portage Caddis, a Proposed 180-unit multiple-family residential development to be constructed at 412 W. Centre Ave., being Parcel Number 00016-740-E, and 7860 Shaver Road, being Parcel Number 06451-001-O, in the City of Portage and take final action on December 5, 2023.

River Caddis Communities, LLC (the “Developer”) has an option to purchase the property located at 412 W. Centre Ave., being Parcel Number 00016-740-E, and 7860 Shaver Road, being Parcel Number 06451-001-O, in the City of Portage and has concurrently requested a tax exemption and Payment in Lieu of Taxes to aid in the acquisition, construction, and management of affordable housing on this property. As shown in the tentative plan attached, the development will provide one and two bedroom apartments as well as live/work units for rent.

The Developer desires to provide these housing units to individuals and families that fall within the state definition of low, moderate, and middle income, and will be seeking local, state, and federal funding sources to finance the development.

The Developer plans to apply for significant funding from the Low-Income Housing Tax Credit (LIHTC) Program administered by the Michigan State Housing Development Authority (MSHDA). To receive LIHTC, MSHDA requires cities to enter into agreements to allow the developers of affordable housing to offer payments to cities in lieu of property taxes to help support the financing of the project. The developer has submitted a letter (attached) requesting a payment in lieu of taxes agreement (PILOT) from the City of Portage. This PILOT will amount to an annual service fee equal to 1% of the annual shelter rents that are actually collected by the developer on the project. This 1% will be split amongst all taxing jurisdictions. In addition, the Developer has agreed to pay the City of Portage a Municipal Services Fee that will total \$40,000 when fully complete and increase by 3% annually. Since the developer intends to build the project in two roughly equal-sized phases, the Developer will form two separate partnerships that will qualify as limited divided housing associations (LDHA) under state law to separately own the 1st phase of the Project (Portage Caddis I Limited Dividend Housing Association, LLC) and the 2nd phase of the Project (Portage Caddis II Limited Dividend Housing Association, LLC), respectively. The Developer will be the general partner in each of the partnerships and a mission-driven tax credit investor will be the limited partner of each of the Partnerships. The Municipal Services Fee will be paid annually by the respective LDHA in proportion to the number of units per phase.

BACKGROUND

The need for more units that are “attainable” to individuals and families that fall below 120% of the area median income (AMI), has been laid out in the 2021-2025 Consolidated Plan, and the City of Portage further committed to addressing this need by adopting the Nine-Point Attainable Housing Plan in December of 2022.

Tax exemptions such as PILOTs are an important tool in the development of attainable housing and are authorized by PA 346 of 1966 for certain housing developments. The City of Portage has approved PILOT ordinances in the past for similar affordable rental housing developments including: the Spring Manor Apartments, The Crossings II, Milham Meadows, Hearthside I and II, Barrington Woods, The Centre Street Village, and Selinon Park, as well as a single-family affordable rental dwelling at 1506 Schuring Road (owned by the Kalamazoo Family Non-Profit Housing Corporation).

PROJECT BENEFIT AND COST

There is a documented need for more attainable housing in the City of Portage. According to the 2023 United Way report on Michigan’s ALICE population (Asset Limited, Income Constrained, Employed), 34% of total households in the City of Portage are below the ALICE threshold, meaning they earn more than the Federal Poverty Level, but less than the basic cost of living for the County. This population tends to be housing cost burdened; spending more than 30% of their gross monthly income on their rent/mortgage and utilities. Furthermore, there is a shortage of rental housing in Portage and throughout the County, as detailed in the 2022 Kalamazoo County Housing Plan. This shortage is making it difficult for low-income individuals and families, as well as renters who fall in the moderate and middle income bands, to find quality, safe, and affordable housing options.

This development proposes 180 new multi-family residential units that will be affordable to individuals and families earning between 40% and 120%AMI for Kalamazoo County. The unit breakdown is as follows:

Area Median Income	Proposed Units
40%	9 One-Bedroom 10 Two-Bedroom
60%	87 One-Bedroom 37 Two-Bedroom
80%	0 One-Bedroom 15 Two- Bedroom
120%	14 One-Bedroom 0 Two-Bedroom 8 Live/Work

Based on information submitted by River Caddis Communities, the City Assessor has estimated the annual taxes without the requested PILOT in comparison to the proposed PILOT. The estimates below assume the live/work units would qualify for the PILOT. However, this is only an assumption as the legislation is clear on the determination of PILOT status for a unit. While this estimate is provided, the

actual determination will be made when the units are complete, and the occupancy is known. Legislation may change live/work requirements by the date of completion. The estimated PILOT payment is calculated as follows:

Proposed Units:

180 units are used to calculate the estimated ad valorem taxes

180 of the units will be at a 1% PILOT, including the 8 units that are listed as live/work units.

Duration of the proposed PILOT is estimated at 50 years (the maximum allowable).

Estimated PILOT revenue to the City of Portage, based on estimated shelter rents for the 180 units at the 1% PILOT

Estimated Annual Shelter Rent = \$2,263,044

Estimated Vacancy Loss (part at 6% and part at 7%) = \$146,072

Estimated Shelter Rents (Rent Minus Vacancy) = \$2,116,972

(note: the utilities portion of the shelter rents was not calculated at this time)

Estimated Yearly PILOT Payment for the parcel (\$2,116,972 X 1%) = \$21,170

City's Share of PILOT (at 17.846%): \$3,805

Estimated Total for 50 Year Period: \$3,805 X 50 Years = \$190,250 (without considering inflation)

Estimated PILOT Payment for Phase 1: \$9,562

Estimated PILOT Payment for Phase 2: \$11,608

The table below illustrates the annual foregone tax revenue based on the 1% PILOT which amounts to an annual loss to the City of approximately \$91,394. The total tax burden for the developer is reduced by \$508,471 per year:

	2023 Estimated Revenue Without the PILOT	Estimated Revenue with 1% PILOT
Total	\$526,641	\$21,070
City of Portage share	\$95,199	\$3,805
Total for 50-year period	\$26,482,050	\$1,053,500 (without considering utilities or vacancy changes)
City of Portage total for 50-year period	\$4,749,950 (without considering inflation or increased taxable values)	\$190,250

As with all developments, there are costs to the City of Potage to provide municipal services such as public safety and general government services, and the cost of these services may be in excess of the total revenue generated through the PILOT. In order to assist in the provision of municipal services to the development, the Developer has agreed to pay the City of Portage an annual "Municipal Services Fee" (MSF) of \$40,000, which shall increase by 3% annually. *This payment is of exclusive benefit to the City of Portage and will not be split amongst the other taxing jurisdictions.* The Fee will be paid by the

respective LDHAs in proportion to the number of units per phase. The Municipal Service Fee for Phase 1 will be \$16,000, and the Municipal Service Fee for Phase 2 will be \$24,000.

Therefore:

Total Estimated Annual Payments to the City of Portage= \$3,805 1% PILOT + \$40,000 MSF = \$43,805

Past PILOT agreements with the City have ranged between 4% and 6.5%. The City has not previously entered into a PILOT in combination with an MSA for a MSHDA financed project. It is, however, an accepted practice in Michigan. The MSA payment more than offsets the lower than City of Portage standard 1% PILOT. Between the PILOT and the MSA, the City would receive in excess of what would be paid by a 11% PILOT.

REVIEW AND RECOMMENDATION

The Department of Community Development has reviewed the application and discussed the project with the applicant, the City Attorney, and the City Assessor. In addition, the City Attorney has approved the proposed ordinance amendment establishing a tax abatement and PILOT for City Council review and consideration. A tax exemption with a one percent PILOT, along with a total Municipal Services Fee paid to the City of Portage from both phases of \$40,000 per year with an annual increase of 3%, is recommended as referenced in the attached amendment to Chapter 70, Article 2, Division 13 of the Code of Ordinances.

FUNDING: Not Applicable

Attachments:

1. River Caddis Communities PILOT request
2. Tentative Plan
3. PILOT Ordinance Amendment
4. Municipal Services Agreement



November 9, 2023

Portage City Council
7900 South Westnedge Avenue
Portage, MI 49024

RE: Request for the Establishment of a Payment in Lieu of Taxes (PILOT) for the proposed phase I and phase II of the project located at 412 West Centre Avenue and 7860 Shaver Road, Portage, Kalamazoo County, Michigan for River Caddis Communities, LLC

Honorable City Council:

Please accept this letter and attachments as a request to establish a Payment in Lieu of Taxes (PILOT) for phase I and phase II of the property located at 412 West Centre Avenue and 7860 Shaver Road, Portage, Kalamazoo County, Michigan (the “Projects”).

Projects Summary

The proposed projects contain two parcels, which spans approximately 10.6 acres, along with two established easements. The property is currently occupied by two single-story buildings, containing 2,700 square feet and 2,400 square feet, respectively. The buildings are vacant, with no current business operations and are planned for demolition.



These Projects will offer desirable, high quality one- and two-bedroom flats, as well as live/work units with independent, exterior doors and decks. With 180 units, 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 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.

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.

In total, 180 residential units are currently planned. The development will offer live/work units and stacked flat apartments. The Projects have a combined 110 one-bedrooms, 62 two-bedrooms and 8 Live/work units that have one bedroom.

The Projects will be considered for 4% Low Income Housing Tax Credits. The Low-Income Housing Tax Credit (LIHTC) program was created by the Tax Reform Act of 1986 to incentivize the construction or rehabilitation of affordable rental housing stock for low-income households. LIHTC developments utilize competitive financing that is made available annually by the Michigan State Housing Development Authority (MSHDA) through federal funding allocations. This financing results in greater equity than most conventionally-financed developments, which in turn means less debt-service from the beginning of a project. This program has become the most enduring and prolific source of funding for new affordable rental units and a key resource since its creation. Recent data show that Michigan is short by hundreds of thousands of homes. Amid this housing crisis, adding to the housing supply by providing new accessible, affordable housing is more important than ever. Today, the program plays a major role in filling this gap. It isn't the only source of new construction funds for affordable rental housing in the country, but it is the largest by far has received strong bi-partisan support.



Ownership Structure

River Caddis Communities, LLC will be the developer of the project (the “Developer”). River Caddis Communities, LLC is the affordable housing affiliate of River Caddis Development, LLC. The Developer will form two separate partnerships that will qualify as a limited divided housing associations under state law (the “Partnerships”) to separately own the 1st phase of the Project and the 2nd phase of the Project, respectively. The Developer will be the general partner in each of the Partnerships and a mission driven tax credit investor will be the limited partner of each of the Partnerships.

River Caddis Communities, LLC, based in Michigan, is a mission-driven affordable housing development company founded by John McGraw, who drew inspiration from his involvement with River Caddis Development, established by his father, Kevin McGraw. They are dedicated to addressing the nationwide housing crisis and creating affordable housing solutions, with a



core mission of providing safe, sustainable, and inclusive communities. With a strong track record in various development sectors, they are committed to making a positive impact by offering affordable housing options and advocating for change in housing policies. River Caddis Communities aims to transform lives and build a brighter future for all.

River Caddis Communities routinely handles a wide range of projects, from complex Brownfield Redevelopment to unique mixed-use, retail, and multi-family projects. Their portfolio spans across multiple states, including Michigan, Texas, Ohio, Florida, Minnesota, Colorado, Iowa, and Idaho, where they have acquired, developed, or redeveloped several hundred million dollars of multi-family and commercial assets. Notably, one of River Caddis Development's enduring projects is East End in Downtown Midland, which is a class A office space housing Dow Chemical. This project stands as a testament to their success in economic development and environmental cleanup, far exceeding expectations since its inception. With a proven track record of collaborating at all levels of the planning process, the team is routinely sought after to evaluate complex real estate development opportunities.

Unit Information – Combined and Phased

PROPOSED UNIT CONFIGURATION & RENTS (PHASE I & II COMBINED)								
# of Units	Bedrooms	Baths	Unit Style	Square Footage	Percent of AMHI	Collected Rent	Utility Allowance	Gross Rent
4	One-Br.	1.0	Garden/Apts	624	40%	\$571	\$87	\$658
5	One-Br.	1.0	Garden/Apts	700	40%	\$571	\$87	\$658
40	One-Br.	1.0	Garden/Apts	700	60%	\$898	\$87	\$985
47	One-Br.	1.0	Garden/Apts	624	60%	\$898	\$87	\$985
6	One-Br.	1.0	Garden/Apts	821	120%	\$1,600	\$87	\$1,687
8	One-Br.	1.0	Garden/Apts	730	120%	\$1,600	\$87	\$1,687
One-Br. Total		110						
6	One-Br.	1.0	Live/work	1,000	120%	\$1,851	\$116	\$1,967
2	One-Br.	1.0	Live/work	865	120%	\$1,851	\$116	\$1,967
Live/Work Total		8						
8	Two-Br.	2.0	Garden/Apts	926	80%	\$1,459	\$116	\$1,575
7	Two-Br.	2.0	Garden/Apts	966	80%	\$1,459	\$116	\$1,575
20	Two-Br.	2.0	Garden/Apts	966	60%	\$1,067	\$116	\$1,183
10	Two-Br.	2.0	Garden/Apts	832	40%	\$675	\$116	\$791
17	Two-Br.	2.0	Garden/Apts	832	60%	\$1,067	\$116	\$1,183
Two-Br. Total		62						
Grand Total		180						

Income Restricted Units

40% AMI	19	11%
60% AMI	124	69%
80% AMI	15	8%
120% AMI	22	12%



PROPOSED UNIT CONFIGURATION & RENTS PHASE I

# of Units	Bedrooms	Baths	Unit Style	Square Footage (NET)	Percent of AMHI	Collected Rent	Utility Allowance	Gross Rent
4	One-Br.	1.0	Garden/Apts	624	40%	\$571	\$87	\$658
12	One-Br.	1.0	Garden/Apts	700	60%	\$898	\$87	\$985
14	One-Br.	1.0	Garden/Apts	624	60%	\$898	\$87	\$985
6	One-Br.	1.0	Garden/Apts	821	120%	\$1,600	\$87	\$1,687
8	One-Br.	1.0	Garden/Apts	730	120%	\$1,600	\$87	\$1,687
One-Br. Total		44						
6	One-Br.	1.0	Live/work	1,000	120%	\$1,851	\$87	\$1,938
2	One-Br.	1.0	Live/work	865	120%	\$1,851	\$87	\$1,938
Live Work Total		8						
6	Two-Br.	2.0	Garden/Apts	966	60%	\$1,067	\$116	\$1,183
4	Two-Br.	2.0	Garden/Apts	832	40%	\$675	\$116	\$791
2	Two-Br.	2.0	Garden/Apts	832	60%	\$1,067	\$116	\$1,183
8	Two-Br.	2.0	Garden/Apts	926	80%	\$1,459	\$116	\$1,575
Two-Br. Total		20						
Grand Total		72						

Income Restricted Units

40% AMI	8	11%
60% AMI	34	47%
80% AMI	8	11%
120% AMI	22	31%

PROPOSED UNIT CONFIGURATION & RENTS PHASE II

# of Units	Bedrooms	Baths	Unit Style	Square Footage (NET)	Percent of AMHI	Collected Rent	Utility Allowance	Gross Rent
33	One-Br.	1.0	Garden/Apts	624	60%	\$898	\$87	\$985
5	One-Br.	1.0	Garden/Apts	700	40%	\$571	\$87	\$658
28	One-Br.	1.0	Garden/Apts	700	60%	\$898	\$87	\$985
One-Br. Total		66						
14	Two-Br.	2.0	Garden/Apts	966	60%	\$1,067	\$116	\$1,183
6	Two-Br.	2.0	Garden/Apts	832	40%	\$675	\$116	\$791
15	Two-Br.	2.0	Garden/Apts	832	60%	\$1,067	\$116	\$1,183
7	Two-Br.	2.0	Garden/Apts	966	80%	\$1,459	\$116	\$1,575
Two-Br. Total		42						
Grand Total		108						

Income Restricted Units

40% AMI	11	10%
60% AMI	90	83%
80% AMI	7	6%
120% AMI	0	0%



Community Amenities

Property Amenities/Features					
Basic Common Amenities		Recreation		Security Features	
Bike Racks/Storage	Yes	Firepit	Yes	CCTV/Cameras	Yes
Bus/Computer Center	No	Fitness Center	Yes	Courtesy Ofcr	No
Café/Coffee Bar	Yes	Game Room	Yes	Security Gate	No
Car Charging Station	No	Grilling Area	Yes	Other:	
Car Wash Area	No	Hot Tub	No	Social Services	
Clubhouse/Comm. Room	Yes	Library	No	After School Program	No
Community Kitchen	Yes	Media Room/Theater	No	Classes	Yes
Multipurpose Room	Yes	Playground	Yes	Health Screen.	No
Common Area Wi-Fi	Yes	Swimming Pool-In	No	Parties/Picnics	No
Common Patio/Porch	Yes	Swimming Pool-Out	Yes	Social Svc. Coord.	No
Community Garden	No	Tanning Beds	No	Wellness Center	No
Dog Park/Pet Care	Yes	Walking Path	Yes	Transportation	No
Dry Cleaning	No	Sports Court		Optional/Other Amenities	
Elevator	No	Basketball	No	Pickleball Court	No
Gazebo/Pavilion	No	Bocce Ball	No		
Laundry Room	No	Putting Green	No		
On-Site Management	Yes	Shuffleboard	No		
Rooftop Terrace	No	Tennis Court	No		
Salon/Barber	No	Volleyball	No		

Requested Assistance

In order to facilitate the financing and development of the Projects, the Developers are requesting approval for a Payment in Lieu of Taxes (PILOT) and two Municipal Service Agreements (MSAs), concurrently. A PILOT is an agreed fee, based on a percentage of shelter rents collected from the Projects, that is paid annually to the taxing authority in lieu of ad valorem property taxes. For this proposal, the City is the taxing authority that has jurisdiction to grant a PILOT.

The PILOT is based on the following formula:

$$\text{Fee} = (\text{Rents collected from eligible units} - \text{eligible utility costs}) \times \text{the PILOT rate}$$

The requested rate for the PILOT is 1% and the Developer requests that the PILOT apply to 100% of the residential units at the Projects. The City has the authority to extend the PILOT to 100% of the residential units by making a determination that all units at the Projects are eligible. Although the Projects are 100% residential, certain units at the Projects will be constructed as "Live/Work" units, which contain commercial space for use by the tenants for office or retail purposes. The PILOT payment due from the Projects would include a special allocation to account for ad valorem taxes attributable to any such commercial areas. The PILOT would



have a maximum term of 50 years, which is necessary to cover the full period of affordability restrictions that will be imposed under the LIHTC program (expected to be 45 years). The revenues resulting from the PILOT is to be distributed by the City to all taxing jurisdictions in the same manner as ad valorem taxes.

The Municipal Services Fees requested is \$40,000 (cumulatively between both Phases), increasing each year by 3%. The term of the Municipal Services Fee would be concurrent with the term of the PILOT. Unlike a PILOT, the City may capture the entire Municipal Services Fee and allocate it towards services that are administered through the City, including emergency medical services, ambulance, fire protection, police protection, snow removal, maintenance for publicly-owned City streets adjacent to the Projects, and other governmental services as the City deems necessary. Because the Projects will be developed as two separate phases the requested MSA amounts will be separated proportionately by unit into two resolutions.

Necessity for PILOT and Municipal Service Fee

A PILOT and Municipal Service Fee agreement is essential to the financing of the proposed development to meet the debt service and return requirements for senior lenders and equity investors. A PILOT is also required by MSHDA in order for the project to be underwritten, because a PILOT is an operating expense that is fixed to rent capacity rather than a fluctuating expense based on assessed value and millage rate. Establishing taxes as a fixed expense is critical to creating a sustainable financing model for rent-restricted affordable housing projects.

Through a Michigan Land Bank Authority grant, the *Housing IS Economic Development: Community Housing Solutions Guidebook* was published. According to the guidebook, in most “local housing markets, a financial gap exists between households at or below area median income who want to purchase/rent, and the actual cost for market developers to deliver product at a point achieving minimum investment return”. This problem is referred to as the “affordable/attainable housing dilemma.”

The combination of reduced rents, high construction costs, insurance rate hikes and high interest rates, along with the goal of developing attainable and affordable housing products, creates a higher gap in financing. Creativity in building a capital stack to ensure the project is a success is vital, and something the Development team is experienced in and dedicated to.

Additional Assistance to be Requested and Financial Gap

Developers are unified in their belief that it is not economically feasible to develop affordable housing in Michigan with the absence of a PILOT agreement. The primary reasons being the suppressed rents make it difficult to afford the full tax amount; the added ability to attract investors when a PILOT agreement is in place; and the concerns developers have regarding how municipal assessors will value affordable housing projects in the absence of a tax abatement. Parameters and restrictions within which affordable housing developments must operate are complex. This unfamiliarity leads to assessments based on comparable market-rate



structures, which look at the cost of construction and the land value, but do not account for the revenue restrictions property owners face, which would be extraordinarily punitive.

These critical factors exist that drive our financial gap. These factors include:

1. Escalating Construction Costs: The construction industry has witnessed a significant increase in costs over the past few years, making it increasingly challenging to deliver a project while maintaining affordability for potential tenants.
2. Rising Interest Rates: Interest rates on construction and perm loans have also risen substantially, which impacts the overall feasibility and reduces the debt sizing. The increased borrowing costs put additional financial strain on the project.
3. Surging operational costs: Increasing operating expenses, specifically insurance rates, labor, and utilities, reduces the ability for the project to service its debts. In addition to the aforementioned, these expenses greatly reduce the amount a lender will loan to build.
4. Investor and Lender Sentiment: the sentiment from our capital providers to market headwinds has been to prepare for an economic downturn. This means they are tightening credit, underwriting carefully and people are holding their cash.

At River Caddis, we remain steadfast in our dedication to being a solutions-oriented developer and a reliable partner to both the state and the Portage community. Our primary goal is to contribute to the resolution of the housing challenges our region faces, and we believe that by leveraging local and state funding, we can make a more substantial and positive impact.

The project will be seeking up to \$1,000,000 grant from the Michigan Department of Environment, Great Lakes, and Energy, to assist in mitigating costs associated with proper management of contamination identified onsite. These funds will have to be structured as a low interest loan to attract investor capital.

A Community Revitalization Program Loan and/or a Revitalization and Placemaking Grant will be pursued through the Michigan Economic Development Corporation to assist with filling financing gaps for the project. These funds will have to be structured as a low interest loan to attract investor capital.

The project will likely pursue a Kalamazoo County grant awarded through their special millage established by the County to increase development of and access to affordable and attainable housing. These funds will have to be structured as a low interest loan to attract investor capital.

If ad valorem tax applies to any of the units, Public Act 381 Tax Increment Financing may be requested to further assist with cash flow and gap financing.

Lastly, we will be seeking to maximize our debt and equity sources. It is critical to demonstrate that we have a PILOT and MSA in place to underwrite to those amounts and fill the gap.



River Caddis COMMUNITIES

Taxes are the highest operational expense of a rental housing community. The chart below demonstrates the necessity for tax relief on this development.

	<u>1% PILOT and MSA</u>	<u>9% PILOT</u>	<u>No PILOT</u>
Income	\$ 2,284,521	\$ 2,284,521	\$ 2,284,521
Taxes	\$ (61,170)	\$ (178,827)	\$ (585,000)
Operating Expenses	\$ (995,731)	\$ (997,031)	\$ (997,031)
NOI	\$ 1,227,620	\$ 1,108,663	\$ 702,490
Debt Service (Includes I/O Soft Funds)	\$ (1,173,329)	\$ (1,173,329)	\$ (1,173,329)
Project CF	\$ 54,291	\$ (64,666)	\$ (470,839)
Operating Reserves and LP Fees	\$ (20,000)	\$ (20,000)	\$ (20,000)
Net CF	\$ 34,291	\$ (84,666)	\$ (490,839)
Additional Gap Implications	\$ -	\$ (1,334,558)	\$ (5,956,113)

Note that on-site tenant services and additional investor reserves have not been budgeted into the operating reserves line. The terms for these items would further reduce Net CF.

Economic Impact

The economic impact of 180 new apartment homes in Portage is profound. While, over 50 years, there are \$24,974,000 of “forgone” tax revenue, if the site is developed with mixed income (supported by a PILOT) as opposed to market rate housing with full, ad valorem taxes, it should be compared to the economics below.

	<u>Construction & Rehab</u>	<u>Operations</u>	<u>Residents</u>	<u>Total</u>
Dollars Spent (over 50 yrs)	\$ 49,093,216	\$ 49,730,550	\$ 82,235,950	\$ 181,059,716
Total Economic Contribution	\$ 85,746,047	\$ 1,037,190	\$ 22,726,561	\$ 109,509,798
Total Jobs Supported	447	2	128	577



The National Apartment Association (NAA) and National Multi Housing Council (NMHC) developed this data which spotlights the economic impact of the apartment industry on a local, state and national level. It also demonstrates how the economic boost goes beyond the jobs created through construction of new units – it's sustained over the long-term through ongoing operations and resident spending. The combined direct and indirect contribution of apartment construction, operations and resident spending to the local economy is over \$180,000,000. The total number of direct and indirect jobs supported by apartment construction, operations and resident spending within the local economy is 577. There is a significant economic benefit when vacant land is developed. By offering a PILOT, the community can support quality housing opportunities and have a tangential impact on the economy through additional jobs and spending among a diverse range of incomes. It creates more disposable income in the area improving the local economy through jobs, goods and services. The construction contractors and laborers will increase local business revenue through purchase of materials and supplies. The proposed development will generate more students and state funding for local school districts, a place for seniors who are downsizing on fixed incomes and high quality affordably priced workforce housing. The physical improvements and quality build will stimulate others to improve their properties in the surrounding area, creating a ripple effect of beautification in the neighborhood.

Financial Limitations

It is important to note that a PILOT is applied to the qualified development – and not to its ownership entity. Developers own .01% of the property for the first 15 years of compliance. A mission-driven investor makes up the majority ownership to receive tax credits. Rents are restricted and increases are capped year over year, thereby suppressing revenues. There are layers of hard and soft debts, all of which have debt service to cover. Further, projects are required to be structured as a limited dividend housing association, and true to its name, will limit the cash distributions that are allowed to be taken as profit. Moreover, cash flow will be required to fund reserves that will serve to address capital needs of the project into the future. LIHTC developers by and large hold their investments and do not sell the project for a profit. This is because there are rarely proceeds. Net operating incomes are modest, there are layers of subordinate debts and approvals of state and federal agencies are onerous. Instead, LIHTC developers are incentivized to purchase the entire partnership interest and continue owning the project, keeping it affordable to rehab and reapply for tax credits through what is referred to as a resyndication. This ensures that the owners are long-term community members and vested in its interests.

The LIHTC developer is incentivized to build affordable housing by a developer fee that is determined and managed by MSHDA. The fees are further restricted by agencies like MEDC. These fees are required by the investor, who represents the largest source of the capital stack. Investors will underwrite the fee to generate basis for their tax credits. As such, the main source of payment for the developer fees is not from the PILOT. Instead, it is primarily funded from investor capital payments directly to the developer as construction and lease up benchmarks are met. It is a mechanism to ensure that the project is delivered on schedule and to specification. As of the date of this correspondence, all developer fees of these Projects will have to be deferred as a way to reduce the initial financing gap. They cannot be demonstrated



to be repaid until 2045. This presents a serious issue for investors, exposing them to risk of tax credit recapture since the basis for those credits were determined on repayment of such fees. By not paying a bona fide debt, it undermines the basis for investor benefits. Therefore, it is required that deferred developer fees are paid within 12-15 years. Therefore, without such a fee, the developers will have a challenge raising enough capital to fill the gap.

Below are the stakeholders who will actually benefit from the PILOT

Teachers	Hospital Support Staff
Teachers Aids	Emergency Service Providers
Nursing Assistants	Law Enforcement
Medical Technicians	Entrepreneurs
Retail Workers	Licensed Practical Nurses
Government Employees	Day Care Providers
Bank Employees	Retirees
Engineers	People with Disabilities

Closing

River Caddis Communities' Development team, with its wealth of experience, excels in various projects, spanning from new developments to redevelopments. They collaborate closely with stakeholders, ensuring a comprehensive approach that benefits the communities they serve. As a mission-driven Affordable Housing Development Company, River Caddis Communities is dedicated to creating affordable housing and fostering inclusive communities in the adjacent neighborhood. Their mission revolves around the promise of safe, clean, and mission-based living, ultimately enhancing the lives of residents, supporting local industries such as hospitals, schools, and businesses.

In addition to their commitment to affordable housing, River Caddis Communities is making a substantial financial investment in the City, solidifying themselves as long-term owners and operators of the same asset previously planned. This complex endeavor signifies their unwavering commitment to the City of Portage. Their dedication to the community's future is reflected in this significant undertaking, ensuring stability, economic growth, and the creation of safe, clean, and mission-based living environments. River Caddis Communities commits to being a steadfast partner to the City of Portage, collaborating to build a brighter, more prosperous future for all residents and stakeholders.

Respectfully submitted,

Attachment A: Parcel Map
Attachment B: Legal Description
Attachment C: Operating Projections

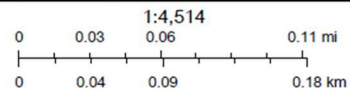


River Caddis
COMMUNITIES
Attachment A: Parcel Map
Kalamazoo County GIS



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Address Points City Minor Street
Street Centerlines Private/Non-Certified Road
City Major Street Parcels



Esri Community Maps Contributors, City of Portage, MI, © OpenStreetMap, Microsoft, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc., METI/ NASA, USGS, EPA, NPS, US Census Bureau, USDA, Maxar

Kalamazoo County
This map is for reference purposes only, and does not represent a survey or legal document. Data layers on this map are generated from individual local sources. The County makes no



River Caddis COMMUNITIES

Attachment B: Legal Description

LEGAL DESCRIPTION

The Land referred to in this commitment is described as follows:

Land situated in the City of Portage, Kalamazoo County, Michigan:

Parcel 1:

Unit 1, Portage Creek Landings City Centre Condominium, according to the Master Deed recorded in Instrument No. 2013-010912, and any amendments thereto, and designated as Kalamazoo County Condominium Subdivision Plan No. 256, together with rights in the general common elements and the limited common elements as set forth in the above Master Deed, and as described in Act 59 of the Public Acts of 1978, as amended.

39-10-06451-001-O

Parcel 2:

Part of the Southeast 1/4 of Section 16, Township 3 South, Range 11 West, described as: Commencing at the South 1/4 post of said Section 16; thence North 89 degrees 58 minutes 40 seconds East 1493.62 feet; thence South 00 degrees 01 minutes 20 seconds East 459.88 feet to the Point of Beginning; thence North 00 degrees 00 minutes 25 seconds West 308.00 feet; thence North 24 degrees 37 minutes 11 seconds West 134.38 feet; thence North 17 degrees 48 minutes 06 seconds East 452.67 feet; thence South 89 degrees 55 minutes 18 seconds East 278.08 feet more or less to Reference Point "A" and the centerline of Portage Creek; thence Southwesterly on said centerline 195 feet more or less to a point which is 189.62 feet South 49 degrees 09 minutes 53 seconds West of said Reference Point "A"; thence South 65 degrees 35 minutes 20 seconds East 503.00 feet; thence South 24 degrees 18 minutes 40 seconds West 279.04 feet; thence North 65 degrees 35 minutes 20 seconds West 10.78 feet; thence South 24 degrees 31 minutes 48 seconds West 309.29 feet; thence North 65 degrees 33 minutes 56 seconds West 113.72 feet; thence South 64 degrees 11 minutes 12 seconds West 102.52 feet; thence South 89 degrees 58 minutes 40 seconds West 226.09 feet to the Point of Beginning.

39-10-00016-740-E

39-10-00016-740-E, 39-10-06451-001-O

If provided above, any address and tax parcel number are solely for informational purposes, without warranty as to accuracy or completeness. If inconsistent in any way with the legal description above, the legal description shall control.



Attachment C: Operating Projections

Phase I

Total Development Income Potential

	Per Unit	Total
Annual Rental Income	14,290	1,028,862
Annual Non-Rental Income	138	9,900
Total Project Revenue	14,427	1,038,762

Total Development Expenses

Vacancy Loss	7.00% of annual rent potential	1,000	72,020
Management Fee	500 per unit per year	500	36,000
Administration		283	20,376
Project-paid Fuel		164	11,808
Common Electricity		272	19,584
Water and Sewer		295	21,240
Operating and Maintenance		375	27,000
Municipal Service Payment&Tax on Live/Work		222	16,000
Payment in Lieu of Taxes (PILOT)	1.00% Applied to: All Units	133	9,562
Insurance		760	54,720
Replacement Reserve	300 per unit per year	300	21,600
Other: Payroll		1,305	93,960
Other: Contract Services		473	34,056

	% of Revenue		
Total Expenses	42.16%	6,082	437,926
Base Net Operating Income		8,345	600,836
Part A Mortgage Payment	0.00%	0	0
Part A Mortgage		0	0
Non MSHDA Financing Mortgage Payment		7,256	522,466
Non MSHDA Financing Type:		94,654	6,815,117
Base Project Cash Flow (excludes ODR)	7.54%	1,088	78,370



Phase II

Total Development Income Potential

	Per Unit	Total
Annual Rental Income	11,443	1,235,859
Annual Non-Rental Income	92	9,900
Total Project Revenue	11,535	1,245,759

Total Development Expenses

Vacancy Loss	6.00% of annual rent potential	687	74,152
Management Fee	500 per unit per year	500	54,000
Administration		283	30,564
Project-paid Fuel		164	17,712
Common Electricity		272	29,376
Water and Sewer		295	31,860
Operating and Maintenance		375	40,500
Municipal Service Payment		222	24,000
Payment in Lieu of Taxes (PILOT)	1.00% Applied to: All Units	107	11,608
Insurance		760	82,080
Replacement Reserve	300 per unit per year	300	32,400
Other: Payroll		1,305	140,940
Other: Contract Services		473	51,084

	% of Revenue		
Total Expenses	49.79%	5,743	620,275
Base Net Operating Income		5,792	625,484
Part A Mortgage Payment	0.00%	0	0
Part A Mortgage		0	0
Non MSHDA Financing Mortgage Payment		5,036	543,899
Non MSHDA Financing Type:		65,692	7,094,696
Base Project Cash Flow (excludes ODR)	6.55%	755	81,585

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



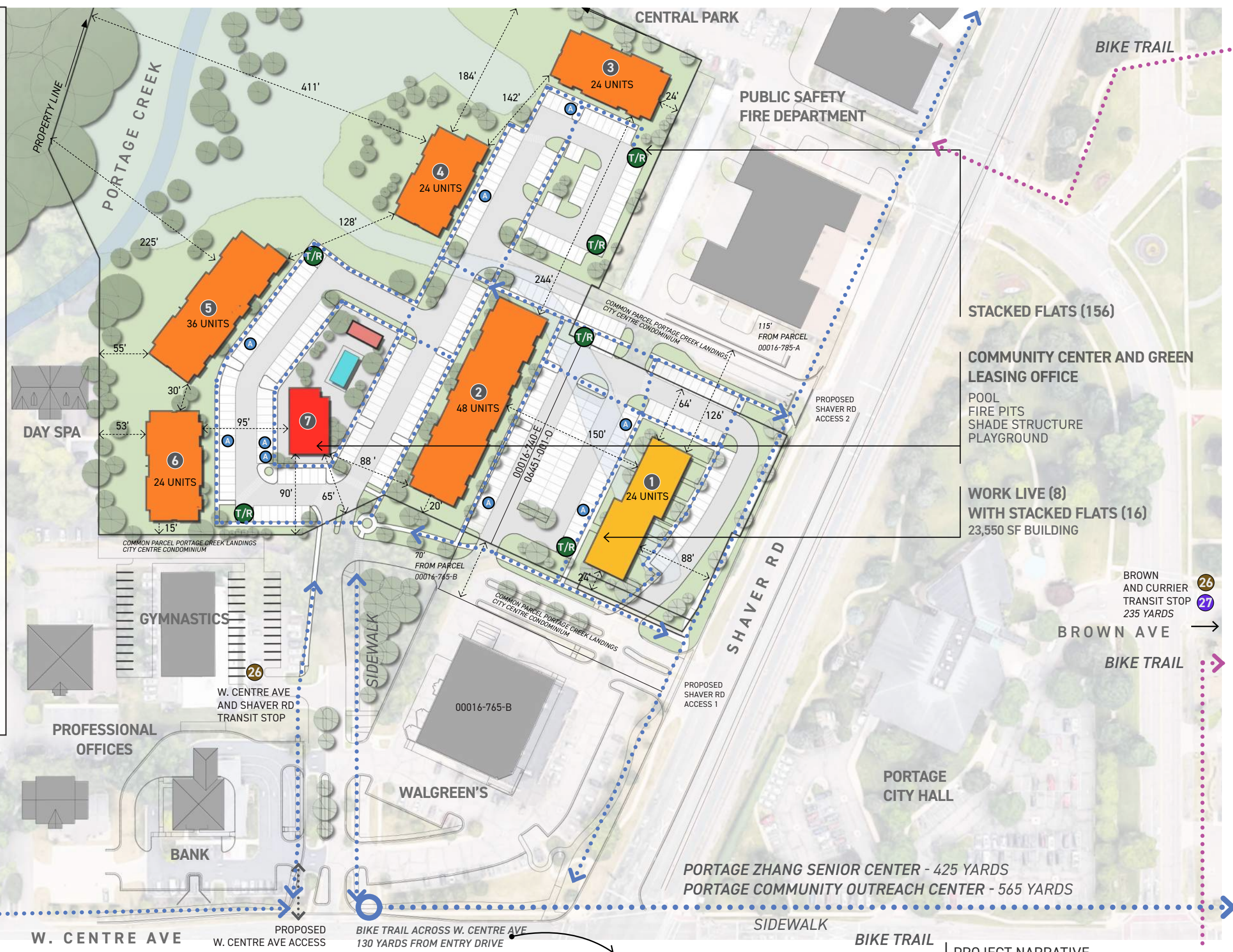
	BLDG 2-6	WK/LV (2)	TOTAL	NOTES	
WORK/LIVE	-	8	-	8	980 SF
1 BR UNIT	96	8	-	104	3 SIZES
2 BR UNIT	60	8	-	68	-
-	-	-	-	-	-
TOTAL	156	24	-	180	ESTIMATED

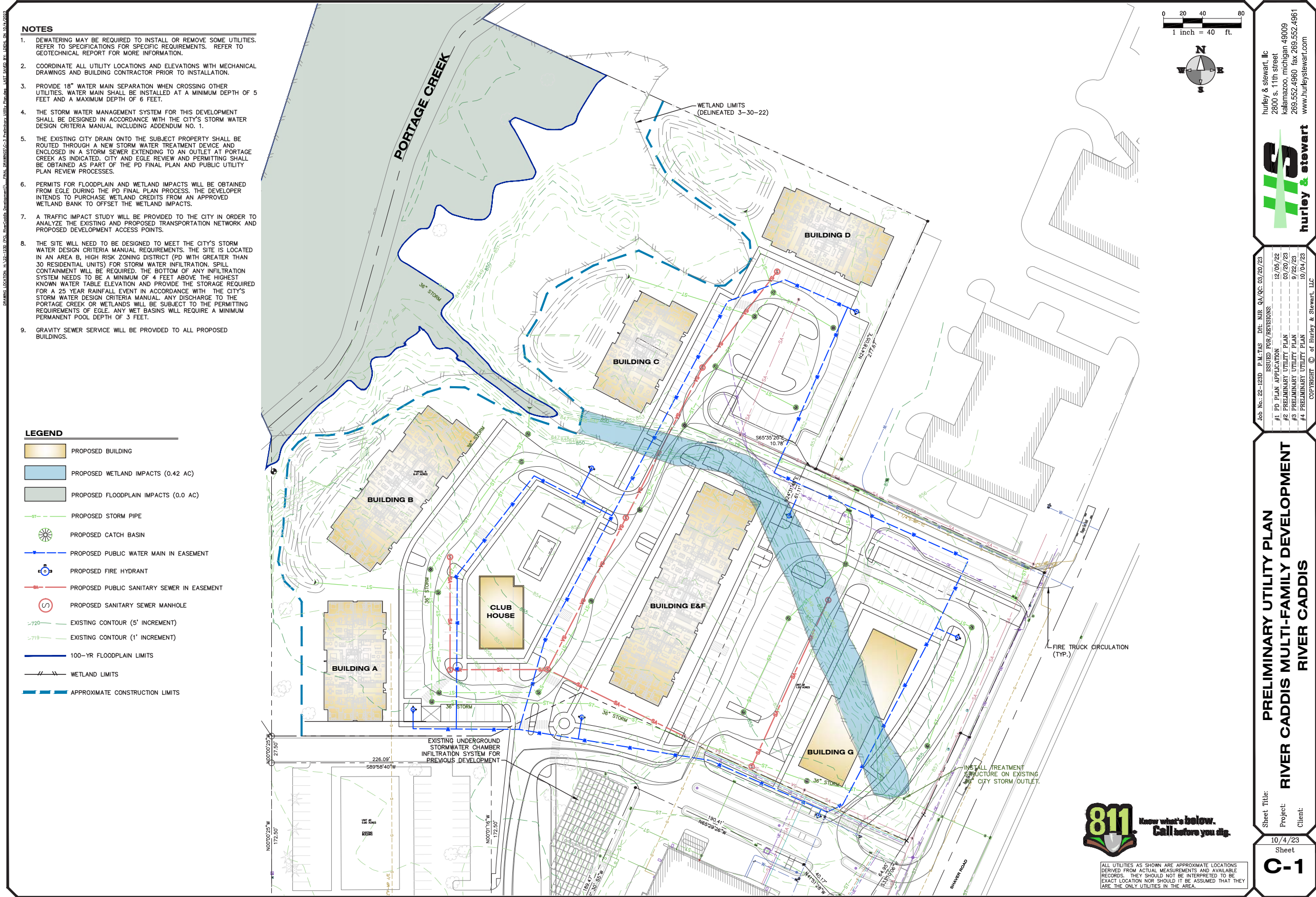
(1) WORK/LIVE	23,550 SF	23,550 SF
(1) BUILDING 36	32,895 SF	32,895 SF
(3) BUILDING 24	20,790 SF	62,370 SF
(1) BUILDING 48	41,580 SF	41,580 SF
COMMUNITY BUILDING	3,350 SF	3,350 SF
TOTAL GSF		163,745 GSF
PARKING	294 SPACES (9 ACCESSIBLE SPACES, 8 REQUIRED)	
	1.51 SPACES/UNIT - ESTIMATED	
SITE AREA		~462,170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





ORDINANCE TO AMEND THE CODE OF ORDINANCES OF THE CITY OF PORTAGE, MICHIGAN BY AMENDING ARTICLE 2 OF CHAPTER 70, TAXATION, TO ADD DIVISION 13, RIVER CADDIS PROVIDING FOR A SERVICE CHARGE IN LIEU OF TAXES

THE CITY OF PORTAGE ORDAINS:

That Article 2 of Chapter 70, Taxation, is hereby amended to add Division 13, River Caddis

Sec. 70-321. - Preamble and intent.

- (a) It is acknowledged that it is a proper public purpose of the State of Michigan and its political subdivisions to provide housing for low-income persons and families and to encourage the development of such housing by providing for a service charge in lieu of property taxes in accordance with the State Housing Development Authority Act of 1966 (1966 PA 346, as amended), being MCL 125.1401 *et seq.* The City of Portage is authorized by this Act to establish or change the service charge to be paid in lieu of taxes by any or all classes of housing exempt from taxation under this Act at any amount it chooses, not to exceed the taxes that would be paid but for the Act. It is further acknowledged that such housing for low-income persons and families is a public necessity, and as the City will be benefited and improved by such housing, the encouragement of the same by providing real estate tax exemption for such housing is a valid public purpose. It is further acknowledged that the continuance of the provisions of this Ordinance for tax exemption and the service charge in lieu of all *ad valorem* taxes during the period contemplated in this Ordinance are essential to the determination of economic feasibility of the housing projects that are constructed or rehabilitated with financing extended in reliance on such tax exemption.
- (b) The City of Portage acknowledges that Portage Caddis I Limited Dividend Housing Association, LLC and Portage Caddis II Limited Dividend Housing Association, LLC (the "sponsors") have offered, subject to receipt of an allocation under the LIHTC Program by the Michigan State Housing Development Authority, to acquire and construct, own and operate a housing development identified as Portage Caddis on certain property located at 412 W. Centre Ave., being Parcel Number 00016-740-E, and 7860 Shaver Road, being Parcel Number 06451-001-O, in the City of Portage to serve persons or families of low income, and that the Sponsors have offered to pay the City on account of this housing development an annual service charge for public services in lieu of all *ad valorem* property taxes.

Sec. 70-322. - Definitions.

The following words, terms and phrases, when used in this division, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

Act means the State Housing Development Authority Act of 1966, as amended, (1966 PA 346) being (MCL 125.1401 *et. seq.*).

Annual Shelter Rent means the total collection as defined during an agreed annual period received from all occupants of a housing development representing rent or occupancy charges, exclusive of charged for gas, electric, heat, water, sewer or other utilities furnished to the occupants.

Authority means the Michigan State Housing Development Authority.

Housing development means a development or project which meets the qualifications of, and is eligible for, a service charge payment in lieu of taxes under the Act and in this section.

LIHTC Program means the Low-Income Housing Tax Credit program administered by the Authority under Section 42 of the Internal Revenue Code of 1986, as amended.

Low to moderate income persons and/or families shall have the same meaning as individuals and families whose household income does not exceed 120% of the Area Median Income.

Mortgage Loan means a loan that is Federally-aided (as defined in Section 11 of the Act) or a loan or grant made or to be made by the Authority, for the construction, rehabilitation, acquisition and/or permanent financing of a housing project and secured by a mortgage on the housing project.

Sponsor(s) means persons who have applied to the Authority for a mortgage loan (an allocation of Low-Income Housing Tax Credits) to finance a housing development. The term "sponsor(s)" includes all transferees, successors, assigns or heirs. Herein, both Portage Caddis I Limited Dividend Housing Association, LLC and Portage Caddis II Limited Dividend Housing Association, LLC are a sponsor.

Utilities means charges for gas, electric, water, sanitary sewer and other utilities furnished to occupants that are paid by the housing project.

Sec. 70-323. – Class of Housing Developments Exempt from Taxation.

It is hereby determined that the class of housing developments to which the tax exemption shall apply and for which a service charge shall be paid in lieu of such taxes shall be housing for low to moderate income persons and families which are financed or assisted pursuant to the Act. It is further determined that the housing development proposed for 412 W Centre Ave., being Parcel Number 00016-740-E, and 7860 Shaver Road, being Parcel Number 06451-001-O, is of this class. Passage of the ordinance from which this division is derived shall not be deemed precedent for other similar PILOT ordinances.

Sec. 70-324. – Establishment of an Annual Service Charge.

The housing project proposed by Portage Caddis I Limited Dividend Housing Association, LLC and Portage Caddis II Limited Dividend Housing Association, LLC, which may be developed in two phases, and the property on which it shall be located shall be exempt from all *ad valorem* property taxes from and after the issuance of a certificate of occupancy. The City, acknowledging that the Sponsors and the Authority have established the economic feasibility of the housing development in reliance upon the enactment and continuing effect of this division and the qualification of the housing development for exemption from all property taxes and a payment in lieu of taxes as established in this division and in consideration of the Sponsors' acquisition of the property and offer to construct and operate the housing development, subject to the receipt of an allocation from the Authority through the LIHTC Program and the satisfaction of all the terms and conditions of its loan commitment to the sponsor(s), hereby agrees to accept the payment of an annual service charge for public services in lieu of all property taxes from the sponsor(s). The

annual service charge shall be equal to one percent (1%) of the annual shelter rents actually collected by the housing development during each operating year on the part of the housing development that is occupied by low to moderate income individuals and/or families whose household income does not exceed 120% of the Area Median Income.

Sec. 70-325. – Limitation on the Payment of Annual Service Charge.

Notwithstanding Section 70-324, the service charge to be paid each year in lieu of taxes for that part of the housing development which is tax exempt, and which is occupied by other than low to moderate income individuals and families shall be equal to the full amount of taxes which would be paid on that portion of the housing development if the housing development were not tax exempt.

Sec. 70-326. – Payment of service charge

The service charge in lieu of taxes, as determined according to this division, shall be payable, enforceable and, if not paid timely, collectible in the same manner as general property taxes are payable to the City, except that the annual payment for each operating year shall be made as follows:

- (1) The minimum payment is due on or before December 31 of each year.
- (2) All additional amounts owing from the December 31 payment of the previous year, as determined to be owing based on an audit, is due on or before by July 1 of each year.

Sec. 70-327. - Verification of annual shelter rent.

The Sponsor(s) shall verify annual shelter rent revenues to the City with a statement of profit and loss as reported to the Authority or other form of financial confirmation deemed suitable to the City.

Sec. 70-328. – Contractual effect of Ordinance

Notwithstanding the provisions of section 15(a)(5) [MCL 125.1514a(5)] to the contrary, a contract between the City and Sponsor(s) with the Authority as a third-party beneficiary under the contract, to provide tax exemption and accept payments in lieu of taxes, as previously described, is effectuated by the enactment of this Ordinance from which this division is derived.

Sec. 70-329. - Effective period of division.

This division shall:

- (1) Become effective only after Sponsor(s) acquires the property, receives and closes a mortgage loan from Authority, and shall commence at the beginning of the tax year immediately after the property (or part of the property) has satisfied all the requirements under the Act; and
- (2) This Ordinance shall remain in effect and shall not terminate so long as the housing development is supported by a federal or Authority-aided mortgage and remains

subject to income and rent restrictions pursuant to Section 42 of the Internal Revenue Code of 1986, as amended, but not to exceed fifty (50) years.

- (3) It is specifically acknowledged by City and Sponsor that if Sponsor does not obtain a mortgage loan from the Authority for the proposed housing development, the Ordinance will not take effect.
- (4) It is specifically acknowledged by City and Sponsor(s) that if City and Sponsor(s) do not reach agreement (through two separate Municipal Services Agreements) regarding provision of municipal services to the housing development within 15 days of the date of adoption of this Ordinance by City Council, the Ordinance will not become effective.
- (5) It is specifically acknowledged by City and Sponsor(s) that at least one Sponsor must commence construction within two (2) calendar years of the date of adoption of this Ordinance by City Council and the second Sponsor must commence construction within four (4) calendar years of the date of adoption of this Ordinance by City Council, otherwise the Ordinance will be repealed
- (6) Notwithstanding the above, the exemption shall cease for that portion of the project which is not operated consistent with Section 70-323 above.

Sec. 70-330 – Termination.

Notwithstanding anything contained herein to the contrary, should the Sponsor(s) fail to pay the final adjusted service charge in lieu of taxes granted hereunder, or fail to provide the verification of the calculations used to make the payment, the service charge in lieu of taxes granted by the Ordinance shall automatically be terminated, retroactive to January 1 of that year. The City shall file a Notice of Termination to the Sponsor(s) of the Housing Development and the Authority, by certified mail, within thirty (30) days of such termination.

Sec. 70-331. - Severability.

The various sections and provisions of this division shall be deemed to be severable, and should any section or provision of this division be declared by any court of competent jurisdiction to be unconstitutional or invalid the same shall not affect the validity of the division as a whole or any section or provision of this division, other than the section or provision so declared to be unconstitutional or invalid.

Sec. 70-332. – Inconsistent ordinances.

All divisions or parts of divisions inconsistent or in conflict with the provisions of this division are repealed to the extent of such inconsistency or conflict.

Patricia M. Randall, Mayor

FIRST READING: _____
SECOND READING: _____
ORDINANCE #: _____
EFFECTIVE DATE: _____

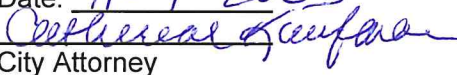
CERTIFICATION:

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

Approved as to Form:

Date: 11-9-2023


City Attorney

MUNICIPAL SERVICES AGREEMENT

THIS MUNICIPAL SERVICES AGREEMENT, entered into this day of , 2023 between Portage Caddis I Limited Dividend Housing Association, LLC, a Michigan limited liability corporation, of 294 Germany Rd., Williamston, MI, (hereinafter referred to as the "Owner") and the CITY OF PORTAGE, a Michigan municipal corporation, of 7900 S. Westnedge, Portage MI 49002 (hereinafter referred to as the "City"), witnesses that:

WHEREAS, Owner intends to construct a housing development that is for low to moderate income families on land legally described on Exhibit "A", (hereinafter referred to as the "Projects"); and

WHEREAS, Owner desires to ensure that certain municipal services will be provided to the Project during the term that the Tax Abatement Ordinance, Article 2 of Chapter 70, Taxation, Division 13, Portage Caddis (the "PILOT Ordinance") for this Project is in effect; and

WHEREAS, City deems it in the best interest of the City of Portage to maintain the majority of the Project as affordable rental residences for low to moderate income individuals and families by providing the assurance desired by Owner,

NOW, THEREFORE, the parties hereto agree as follows:

1. City shall, for the life of this Agreement, provide services that are specifically administered through the City, including without limitation, emergency medical services, ambulance, fire protection, police protection, snow removal for publicly-owned city streets and maintenance for publicly-owned city streets adjacent to the Project; and other miscellaneous governmental services as may, from time to time, be mutually agreed to for the benefit of the Projects (the "Municipal Services").
2. Municipal Services shall be provided in the customary way, in a competent and workmanlike manner, and in accordance with all applicable laws, rules and regulations.
3. The payment for Municipal Services shall be computed as follows: Sixteen Thousand (\$16,000) for the first year, which shall commence concurrently with the commencement of Article 2 of Chapter 70, Taxation, Division 13, Portage Caddis, and in each year thereafter increased by three percent (3%) over the amount due in the prior year.
4. Payment will be made on or before December 31st of each year following the first year following the date hereof and continuing through the period that the PILOT Ordinance remains in effect.
4. This agreement is governed by the laws of the State of Michigan. This agreement constitutes the entire understanding and agreement between the parties and supersedes all prior or contemporaneous agreements, representations, warranties and understandings of the parties, whether oral or written. This agreement may be amended only by written agreement, signed by the parties.

[signature page follows]

IN WITNESS WHEREOF, this Municipal Services Agreement is executed by the parties hereto through their duly authorized representatives as of the day and year first written above.

Portage Caddis 1 Limited Dividend Housing Association, LLC, a Michigan limited liability corporation

By:

John McGraw, Resident Agent

CITY OF PORTAGE

By: _____

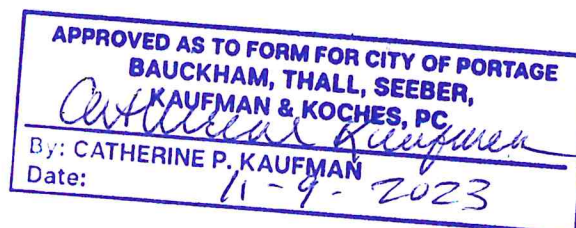


EXHIBIT A

Parcel 00016-740-E

412 W Centre Avenue

Part of the Southeast 1/4 of Section 16, Town 3 South Range 11 West described as follows: Commencing at the South 1/4 Post of Section 16; thence North 89 degrees 58 minutes 40 seconds East 1493.62 feet; thence North 00 degrees 01 minutes 20 seconds West 459.88 feet to the point of beginning; thence North 00 degrees 00 minutes 25 seconds West 308 feet; thence North 24 degrees 37 minutes 11 seconds West 134.38 feet; thence North 17 degrees 48 minutes 06 seconds East 452.67 feet; thence South 89 degrees 55 minutes 18 seconds East 278 feet more-or-less to a reference point 'A' and the centerline of Portage Creek; thence Southeasterly along the centerline of Portage Creek 195 feet more-or-less to a point which is 189.62 feet South 49 degrees 9 minutes 53 seconds West of said reference point 'A'; thence South 65 degrees 35 minutes 20 seconds East 503 feet; thence South 24 degrees 18 minutes 40 seconds West 279.04 feet; thence North 65 degrees 35 minutes 20 seconds West 10.78 feet; thence South 24 degrees 31 minutes 48 seconds West 309.29 feet; thence North 65 degrees 33 minutes 56 seconds West 113.72 feet; thence South 64 degrees 11 minutes 12 seconds West 102.52 feet; thence South 89 degrees 58 minutes 40 seconds West 226.09 feet to the point of beginning. Parcel contains approximately 9.47 Acres

Parcel 06451-001-O

7860 Shaver Road

PORTAGE CREEK LANDINGS CITY CENTRE CONDOMINIUM, PLAN #256, recorded at the Kalamazoo County Register of Deeds on Document 2013-010912; UNIT #1

MUNICIPAL SERVICES AGREEMENT

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2. Municipal Services shall be provided in the customary way, in a competent and workmanlike manner, and in accordance with all applicable laws, rules and regulations.
3. The payment for Municipal Services shall be computed as follows: Twenty-Four Thousand (\$24,000) for the first year, which shall commence concurrently with the commencement of Article 2 of Chapter 70, Taxation, Division 13, Portage Caddis, and in each year thereafter increased by three percent (3%) over the amount due in the prior year.
4. Payment will be made on or before December 31st of each year following the first year following the date hereof and continuing through the period that the PILOT Ordinance remains in effect.
4. This agreement is governed by the laws of the State of Michigan. This agreement constitutes the entire understanding and agreement between the parties and supersedes all prior or contemporaneous agreements, representations, warranties and understandings of the parties, whether oral or written. This agreement may be amended only by written agreement, signed by the parties.

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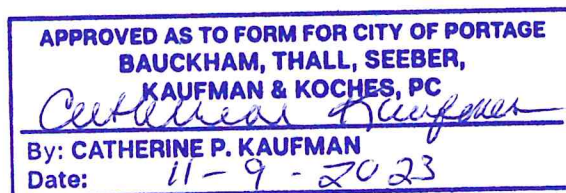


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Parcel 06451-001-O

7860 Shaver Road

PORTAGE CREEK LANDINGS CITY CENTRE CONDOMINIUM, PLAN #256, recorded at the Kalamazoo County Register of Deeds on Document 2013-010912; UNIT #1

TO: Honorable Mayor and City Council

FROM: Pat McGinnis, City Manager

SUBJECT: Contract for HVAC services at City facilities

SUPPORTING PERSONNEL: Rodney Russell, Director of Public Works

ACTION RECOMMENDED: Approve a one-year (base) contract with Allied Mechanical Services, in the amount of \$430,728.20 for heat, ventilation, and air conditioning (HVAC) maintenance of city-owned facilities, with five optional one-year extensions, and authorize the City Manager to execute all documents related to this action on behalf of the city.

The city has contracted for scheduled maintenance and repairs of heat, ventilation, and air conditioning (HVAC) systems in city facilities since 1999. The contract covers HVAC maintenance at City Hall, the Department of Public Works, the Portage Zhang Senior Center, Parks & Recreation, Police, and Fire Stations #1, #2 and #3. The contract also includes HVAC services for park buildings at Schrier, Ramona, Celery Flats, and Millennium parks. Contracting for HVAC maintenance ensures that the heating and cooling systems are properly maintained and remain efficient. The most recent contract for these services with R.W. LaPine has expired.

On October 16, 2023, bids were opened for HVAC maintenance for all City of Portage facilities with HVAC systems as described above. The bid was structured for a one-year (base) contract, with the option for five one-year renewals following the successful completion of the initial period. Interested vendors provided an annual price for quarterly maintenance, as well as an hourly price for necessary repairs. The potential six-year contract term is favored as it will provide continuity with a qualified, experienced HVAC vendor and familiarity with city heating and cooling systems by the chosen vendor.

A Request for Proposal (RFP) was advertised in the Kalamazoo Gazette, on the City of Portage website, and social media, as well as on BidNet where 585 suppliers were matched and notified of the project. Additionally, 13 local contractors were also notified.

A total of two bids were received, with Allied Mechanical Services submitting the low bid for \$430,728.20. Although the firm has not previously provided this service for the city, references for Allied Mechanical Services indicate that the company is a reliable and capable HVAC contractor.

It is recommended that City Council approve a one-year (base) contract with Allied Mechanical Services, in the amount of \$430,728.20 for heat, ventilation, and air conditioning (HVAC) maintenance of city-owned facilities, with five optional one-year extensions, and authorize the City Manager to execute all documents related to this action on behalf of the city.

FUNDING: Funds have been budgeted for the cost of HVAC services in FY 2023-2024 Building Maintenance funds and will be programmed for future years of the contract.

Attachments: 1. 2023 RFB HVAC Maintenance_Bid Tabulation

2023 RFB HVAC MAINTENANCE, REPAIRS AND ON CALL SERVICES

BID TABULATION

BID OPENING ON OCTOBER 16, 2023 AT 3 PM

PREVENTATIVE MAINTENANCE LABOR RATES

ANNUAL UNIT PRICES	Base Year	Option Year 1	Option Year 2	Option Year 3	Option Year 4	Option Year 5
Allied Mechanical Service	\$96.00	\$98.00	\$100.00	\$102.00	\$104.00	\$108.00
R.W. LaPine	\$95.00	\$99.00	\$103.00	\$107.00	\$111.00	\$115.00

CALL IN RATES

ANNUAL UNIT PRICES	Base Year	Option Year 1	Option Year 2	Option Year 3	Option Year 4	Option Year 5
Allied Mechanical Service	\$100.00	\$103.00	\$103.00		\$113.00	\$116.00
R.W. LaPine	\$95.00	\$99.00	\$103.00	\$107.00	\$111.00	\$115.00

MARK UP %

ANNUAL UNIT PRICES	Base Year	Option Year 1	Option Year 2	Option Year 3	Option Year 4	Option Year 5
Allied Mechanical Service	10%	10%	10%	10%	10%	10%
R.W. LaPine	10%	10%	10%	10%	10%	10%

AFTER HOURS

ANNUAL UNIT PRICES	Base Year	Option Year 1	Option Year 2	Option Year 3	Option Year 4	Option Year 5
Allied Mechanical Service	\$150.00	\$154.00	\$158.00	\$162.00	\$166.00	\$170.00
R.W. LaPine	\$95.00	\$99.00	\$103.00	\$107.00	\$111.00	\$115.00

TRUCK CHARGE

ANNUAL UNIT PRICES	Base Year	Option Year 1	Option Year 2	Option Year 3	Option Year 4	Option Year 5
Allied Mechanical Service*	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00
R.W. LaPine	\$0	\$0	\$0	\$0	\$0	\$0

Allied Mechanical Service Note*

This only applies to call-in events. In the event we send multiple technicians, or the call-in events takes multiple trips to complete the repair, only a single truck charge will be applied.

Estimated Contract Total

Allied Mechanical Service
5688 East ML Ave
Kalamazoo, Michigan, 49048

\$430,728.20

R.W. LaPine
PO BOX 2045
Kalamazoo, Michigan, 49003

\$498,510.00

Opened by: 
Victoria Barboza, Purchasing Manager

TO: Honorable Mayor and City Council

FROM: Pat McGinnis, City Manager

SUBJECT: Flock Safety ALPR System

SUPPORTING PERSONNEL: Nicholas Arnold, Director of Public Safety - Police / Fire Chief

ACTION RECOMMENDED: Approve a one-year contract with Flock Safety for the provision of a network of Automatic License Plate Readers in the amount of \$82,500, with the option of four one-year renewals, and authorize the City Manager to execute all documents related to this matter on behalf of the city.

In June 2022, the Department of Public Safety – Police Division received authorization to purchase automatic license plate readers (ALPR) from Flock Safety. Flock Safety’s mission is to eliminate non-violent crime. This is possible with citywide coverage of automatic license plate readers. When a crime occurs, Flock Safety cameras can assist in delivering the actionable evidence the Department of Public Safety needs to prosecute a case.

The original two-year contract with Flock Safety included the provision of a 20-camera network at a total cost of \$59,500. When the program was initiated, it was anticipated that to provide camera coverage of the entire city, additional cameras would be needed. It has since been determined that citywide coverage would require the addition of ten cameras, bringing the total to 30 Flock ALPR cameras.

The original contract is set to expire on December 31, 2023. It was anticipated that there would be an increase in the cost of the Flock system due to nationwide demand (taking the current cost of \$2,500 per camera, to \$3,000 per camera). The Department of Public Safety negotiated with Flock Safety and was successful in freezing the cost of the original system (20 cameras) at \$2,500 per camera per year, but also for the addition of ten new cameras, under a new five-year contract. This represents a savings of \$75,000 over the life of the contract.

The first-year cost would be \$82,500, which includes the addition of ten new cameras, with subsequent annual renewals at \$78,500. The total cost of a 5-year contract would be \$396,500.

Year 1	\$82,500
Year 2	\$78,500
Year 3	\$78,500
Year 4	\$78,500
Year 5	\$78,500

5-Year Contract Total	\$396,500
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It should be noted that the Kalamazoo Department of Public Safety, the Kalamazoo Township Police Department, the Kalamazoo County Sheriff's Office, and Western Michigan University Public Safety are all currently, or soon will be, users of the Flock ALPR System. Through the implementation of this citywide system, the Portage Department of Public Safety and its law enforcement partners can better collaborate and share data in our efforts to make Kalamazoo County a safer place.

It is recommended that City Council approve a one-year contract with Flock Safety for the provision of a network of Automatic License Plate Readers in the amount of \$82,500, with the option of four one-year renewals, and authorize the City Manager to execute all documents related to this matter on behalf of the city.

FUNDING: The Department of Public Safety has sufficient funds in its FY23/24 budget.

Attachments: 1. 2022 05 24 NA-AH Purchase of Flock ALPR Cameras from Flock Safety

TO: Adam Herringa, Acting City Manager**DATE:** May 24, 2022**FROM:** Nicholas J. Arnold, Director of Public Safety**SUBJECT:** Purchase of Flock ALPR Cameras from Flock Safety

The Portage Department of Public Safety requests approval for the sole source purchase of Flock ALPR Cameras from Flock Safety in the amount of \$59,500.

Flock Safety's mission is to eliminate non-violent crime. This is possible with citywide coverage of automatic license plate readers (ALPRs). When a crime occurs, Flock Safety cameras can assist in delivering the actionable evidence we need to prosecute a case. The Portage Department of Public Safety needs a scalable solution to increase clearance rates and deter crime. The Flock Safety camera sees like a detective to make actionable evidence available when needed that is easily searchable by car type, model, color, timeframe, and plate details.

Flock's ALPR camera system is the only completely wireless system designed for citywide protection. This fully infrastructure-free setup with options for solar or direct power, allows for flexible and affordable pricing. This purchase includes coverage of the first-year subscription for 20 cameras and the implementation of the system. The ALPR cameras include a 2-year maintenance warranty, the hosting, analytics, and mounting of equipment in this initial investment. Recurring annual costs for each camera is currently \$2,500.

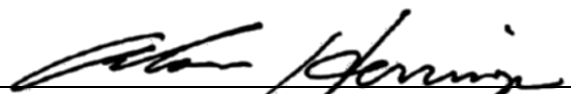
The ALPRs from Flock Safety qualify as a single source purchase because Flock Safety is the sole manufacturer and developer of the Flock Safety ALPR Camera. Flock Safety is also the sole provider of the comprehensive monitoring, processing, and machine vision services which integrate with the Flock Safety ALPR Camera.

It should be noted that the Kalamazoo Department of Public Safety, the Kalamazoo Township Police Department, the Kalamazoo County Sheriff's Office, and the Western Michigan University Public Safety are all currently, or soon will be, users of the Flock ALPR System. Once implemented, the Portage Department of Public Safety and its law enforcement partners will be working in collaboration to share data in our efforts to make Kalamazoo County a safer place.

Portage Department of Public Safety has sufficient funds in its FY21/22 budget (101-3005-731.8520).

c: Michael Carroll, Deputy City Manager

Recommended:

Victoria Barboza, Purchasing Manager**Approved:**

Adam Herringa, Acting City Manager

TO: Honorable Mayor and City Council

FROM: Pat McGinnis, City Manager

SUBJECT: West Centre Avenue Reconstruction Project - Tabulation of Proposals

SUPPORTING PERSONNEL: Kendra Gwin, Director of Transportation & Utilities

ACTION RECOMMENDED: Award a contract to perform engineering services to Wightman & Associates, Incorporated, of Kalamazoo, Michigan in the amount not to exceed \$320,284 for the reconstruction of West Centre Avenue from Oakland Drive to Shaver Road and authorize the City Manager to execute all documents related to the contract on behalf of the city.

The proposed Fiscal Year 2025–2026 Capital Improvement Program budget includes funding for the Major Street Reconstruction Program. Major street reconstruction projects are selected based on pavement condition, average daily traffic, federal aid eligibility, as well as potential development activities. The West Centre Avenue Reconstruction Project includes the installation of sidewalk and necessary retaining walls on the south side of the street in conformance with the city’s complete streets initiative and the resurfacing of the existing roadway from Oakland Drive to Shaver Road.

The West Centre Avenue Reconstruction project has been approved by the Kalamazoo Area Transportation Study Policy Committee for federal funding. The project is receiving Federal Transportation Funds for \$2,170,000. The project’s estimated cost is \$2,900,000. The remaining city share of \$730,000 will be financed through the Municipal Street Fund.

On November 2, 2023, four proposals were received for design and construction engineering services for the West Centre Avenue Reconstruction project. Based on a review of the proposals, staff has determined that the proposal from Wightman & Associates, Incorporated for \$320,284 best fits the needs of the project. Wightman & Associates, Incorporated has significant experience with the Michigan Department of Transportation and city policies and procedures. Wightman & Associates, Incorporated has successfully completed engineering services for many projects in the city. Although Wightman & Associates submitted the second-lowest proposal, the City Administration believes it would be in the best interest of all stakeholders to engage Wightman for this project because of the firm's particular expertise and prior experience with the widening of this very section of West Centre Avenue in 1993 and its resurfacing in 2012.

It is recommended that City Council award a contract to perform engineering services to Wightman & Associates, Incorporated in the amount not to exceed \$320,284 for the West Centre Avenue Reconstruction project from Oakland Drive to Shaver Road and authorize the City Manager to execute all documents related to the contract on behalf of the city.

FUNDING: Sufficient funding exists in the FY 2023-2024 Capital Improvement Program budget.

Attachments: 1. Proposal Tabulation PES - West Centre Avenue Reconstruction

**2023 RFP WEST CENTRE AVENUE RECONSTRUCTION
(OAKLAND DRIVE TO SHAVER ROAD)
PROFESSIONAL ENGINEERING SERVICES
PROPOSAL TABULATION
PROPOSAL OPENING ON NOVEMBER 2, 2023 AT 3 PM**

Williams & Works	\$	294,169.00
549 Ottawa Ave NW, Ste 310 Grand Rapids, Michigan, 49503		

Wightman & Associates, Inc.	\$	320,284.00
433 E. Ransom St Kalamazoo, Michigan, 49007		

DLZ Michigan, Inc.	\$	344,000.00
535 South Burdick, Suite 248 Kalamazoo, Michigan, 49007		

Prein&Newhof	\$	353,000.00
3355 Evergreen Drive NE Grand Rapids, Michigan, 49525		

Opened by:  _____
Victoria Barboza, Purchasing Manager

TO: Honorable Mayor and City Council

FROM: Pat McGinnis, City Manager

SUBJECT: Scheduling of Parliamentary Procedure Training for Boards and Commissions

SUPPORTING PERSONNEL: Adam Herringa, Chief Operating Officer
Erica Eklov, City Clerk

ACTION RECOMMENDED: Receive the communication from the City Manager scheduling a parliamentary procedure training session for the various boards and commissions on December 12, 2023, from 4:00 to 7:00 p.m. in Council Chambers.

Recently, the chairperson of a board approached city leadership with a request for training on parliamentary procedure. It was discussed and determined that all boards and commissions could benefit from such training. The Office of the City Clerk reached out to the Michigan Municipal League as they offer a variety of training programs. One of these programs is on parliamentary procedure and is offered on-site. The training session has been scheduled for Tuesday, December 12, 2023, from 4:00 – 7:00 p.m. in Council Chambers. All board and commission members, staff liaisons and the City Council are invited to attend. Provision of this type of training for the boards and commissions will be the first of its kind for the City of Portage.

According to the Michigan Municipal League, the training will:

- Provide a basic guide to fair and orderly procedures in meetings and help keep discussions focused; and
- Explain and demonstrate quorums and types of motions; and
- Teach the basic principles and objectives of parliamentary procedure, knowledge of charters, amendments, handling motions, debate, public hearings, voting requirements, and agendas.

FUNDING: Funding is available in the training budget of the Office of the City Manager.

Attachments: None

TO: Honorable Mayor and City Council

FROM: Pat McGinnis, City Manager

SUBJECT: Amendment to Tentative Plan Application at 412 West Centre Avenue and 7860 Shaver Road

SUPPORTING PERSONNEL: Peter Dame, Chief Development Officer

ACTION RECOMMENDED: Subsequent to the public hearing, consider approving the Tentative Plan Amendment of the River Caddis proposed mixed-use development at 412 West Centre Avenue and 7860 Shaver Road, 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; and,
- b. 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:

- Reduction of overall dwelling units from 228 to 180 units (48-unit reduction).
- Reduction of density from 21.5 to 16.9 units/acre.
- Revision of the number of bedrooms to 104 1-bedroom units and 68 2-bedroom units.
- Combination of the two 'Live/Work' buildings into one building.
- Combination of two apartment buildings for a new overall total of five apartment buildings.
- Relocation of two proposed apartment buildings outside of mapped wetlands.
- Reduction of the central common area and expansion of naturalized areas.
- Reduction of overall parking spaces from 359 to 294 spaces (63-space reduction).
- Increase of 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. The applicant intends to build the project in two phases, the first of which would include approximately half of the units and the required infrastructure.

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.

Planning Commission 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 with the 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.

It is therefore recommended that City Council, after the public hearing, consider approving 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. Planning Commission Transmittal Letter
 7. Planning Commission October 19, 2023 meeting minutes



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
---	--

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.

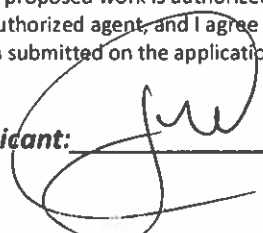
Note: Additional plan review fee(s) required of all non-concurrent plan submittals

APPLICANT INFORMATION

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

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

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			







OUR TEAM



DEVELOPER

+



CIVIL ENGINEER

+



ARCHITECT

TENTATIVE PD APPROVAL REQUESTED

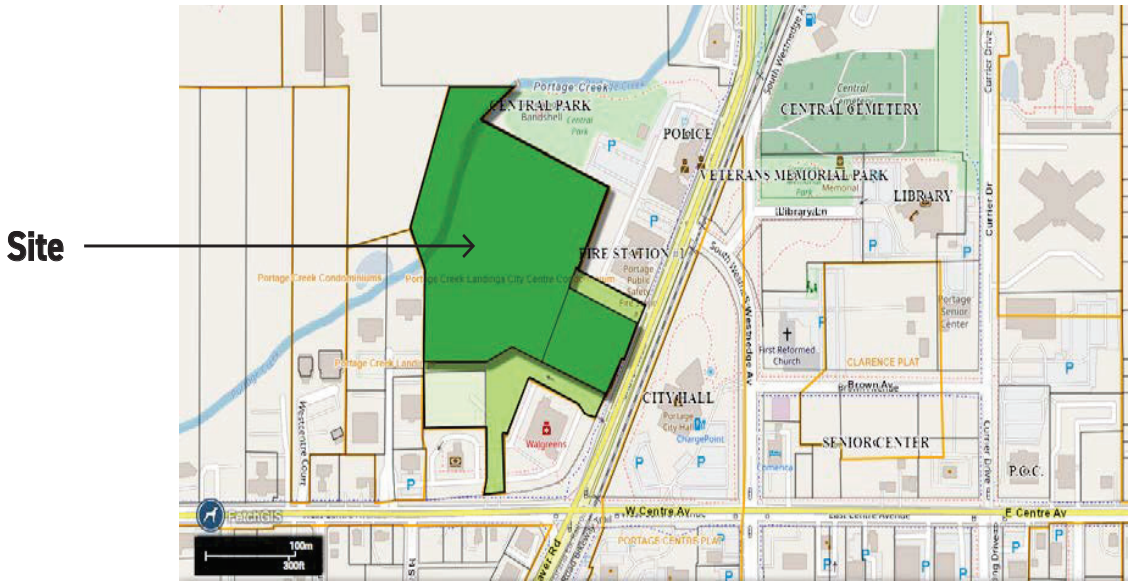
Our project aligns with City objectives/trajectory

- 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.

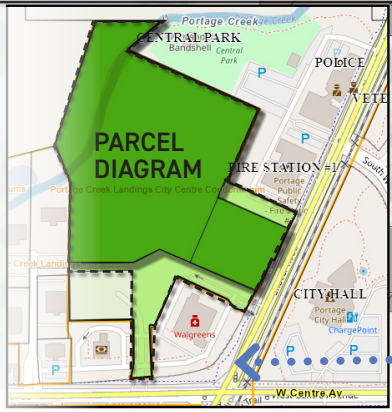
- LEGEND**
- ◇ COORDINATE LOCATION
 - ▨ GENERAL COMMON ELEMENT
 - IRON FOUND
 - IRON SET
 - ⊗ SET "X" IN CONCRETE
 - ⊕ MONUMENT FOUND
 - (R) RECORD
 - (M) MEASURED
 - ▲ P.K. NAIL FOUND
 - △ P.K. NAIL SET
 - ⊕ PROPOSED CONDO MONUMENTS



	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



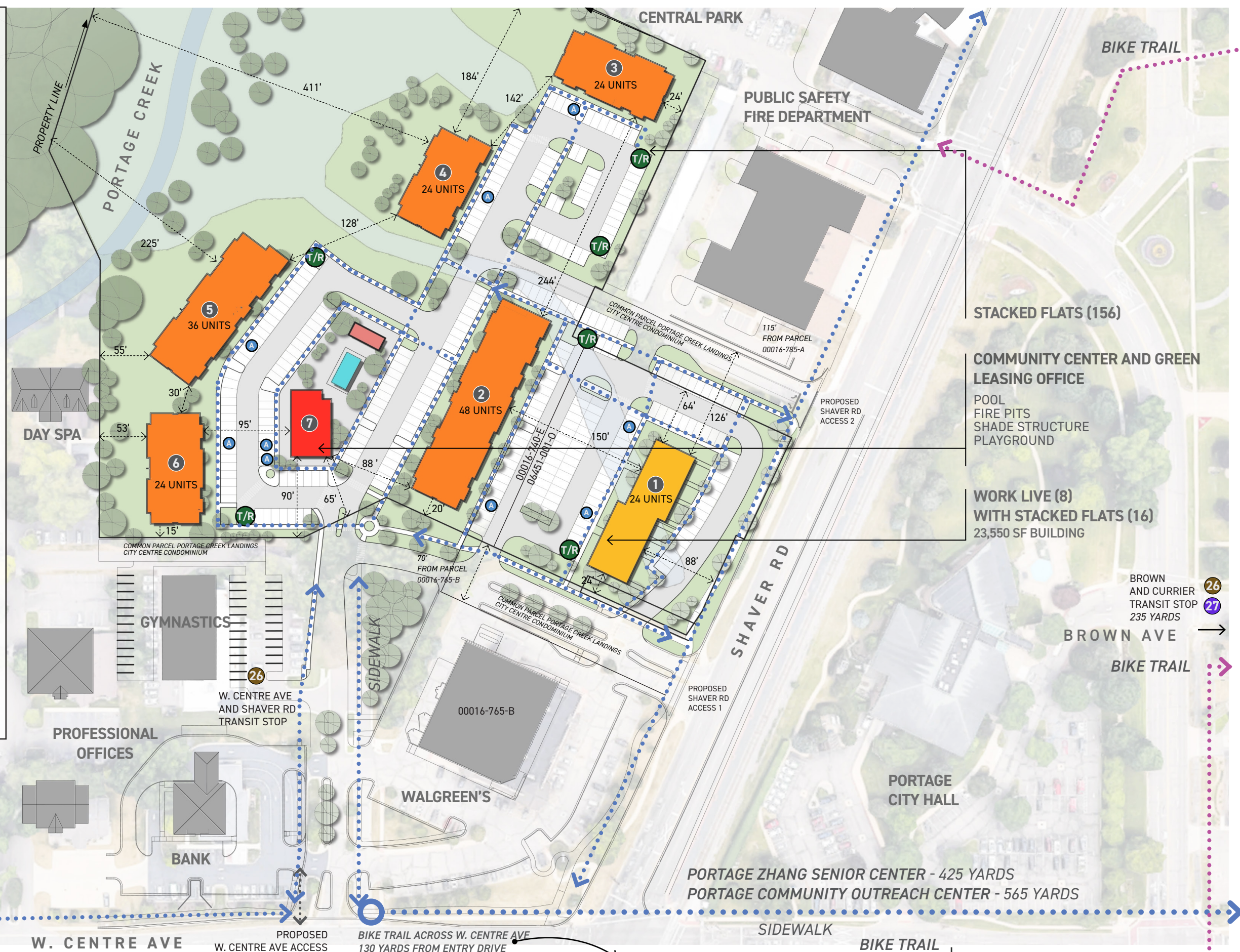
SITE PLAN A | SCHEMATIC DESIGN - SCALE 1" = 120'



RIVER CADDIS MULTI-FAMILY DEVELOPMENT | PD APPLICATION

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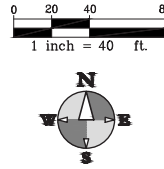
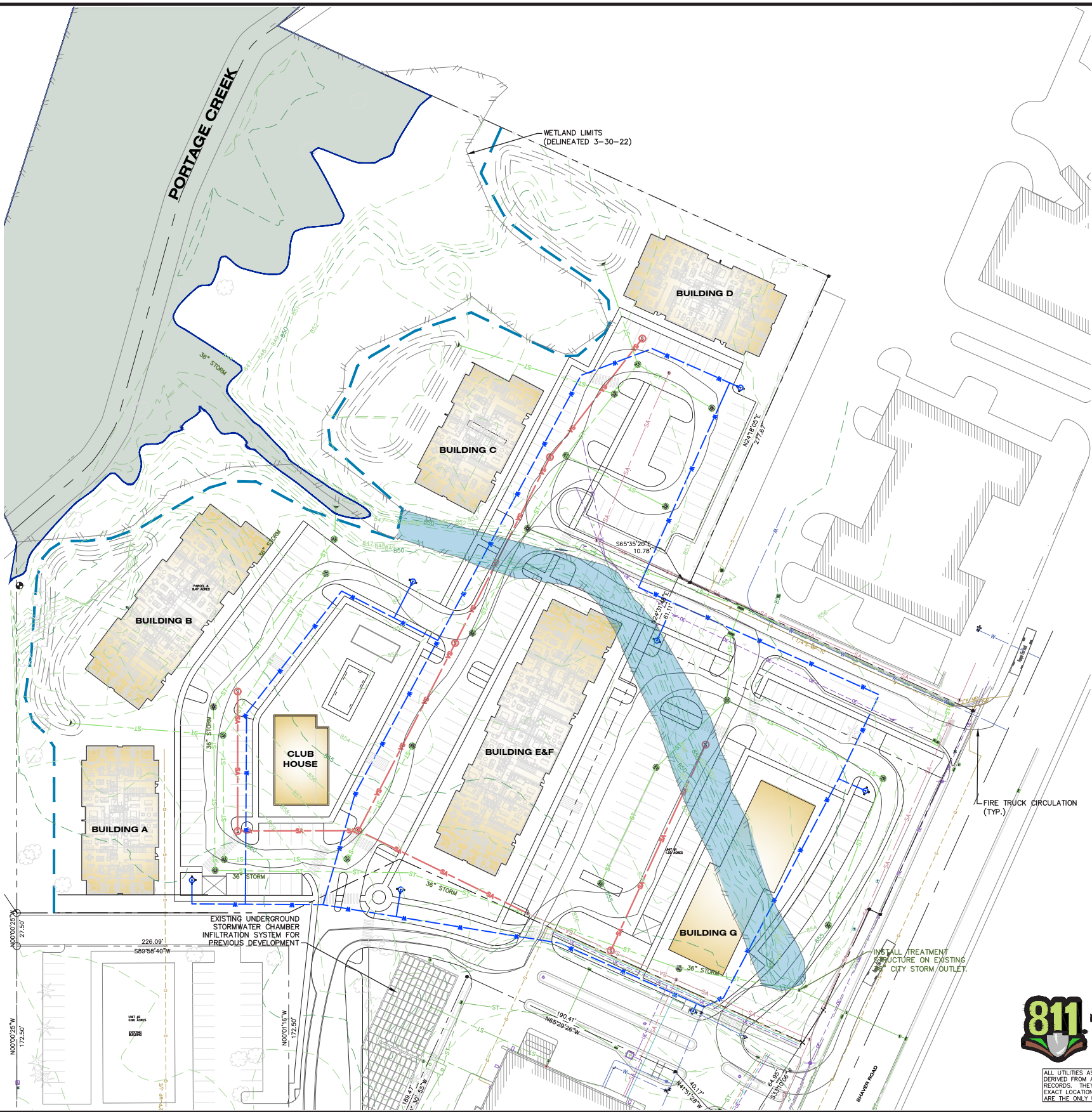
PLANNING LOCATION: 11372-1378 (RIVER CADDIS DEVELOPMENT) - FINAL EXHIBIT C-3 PRELIMINARY UTILITY PLAN - DATE: 04/23/2023

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



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www.hurleystewart.com



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



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.



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



- 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

ELEVATIONS | SCHEMATIC DESIGN - LIVE WORK



PROJECT NARRATIVE
RIVER CADDIS MULTI-FAMILY DEVELOPMENT | PD APPLICATION
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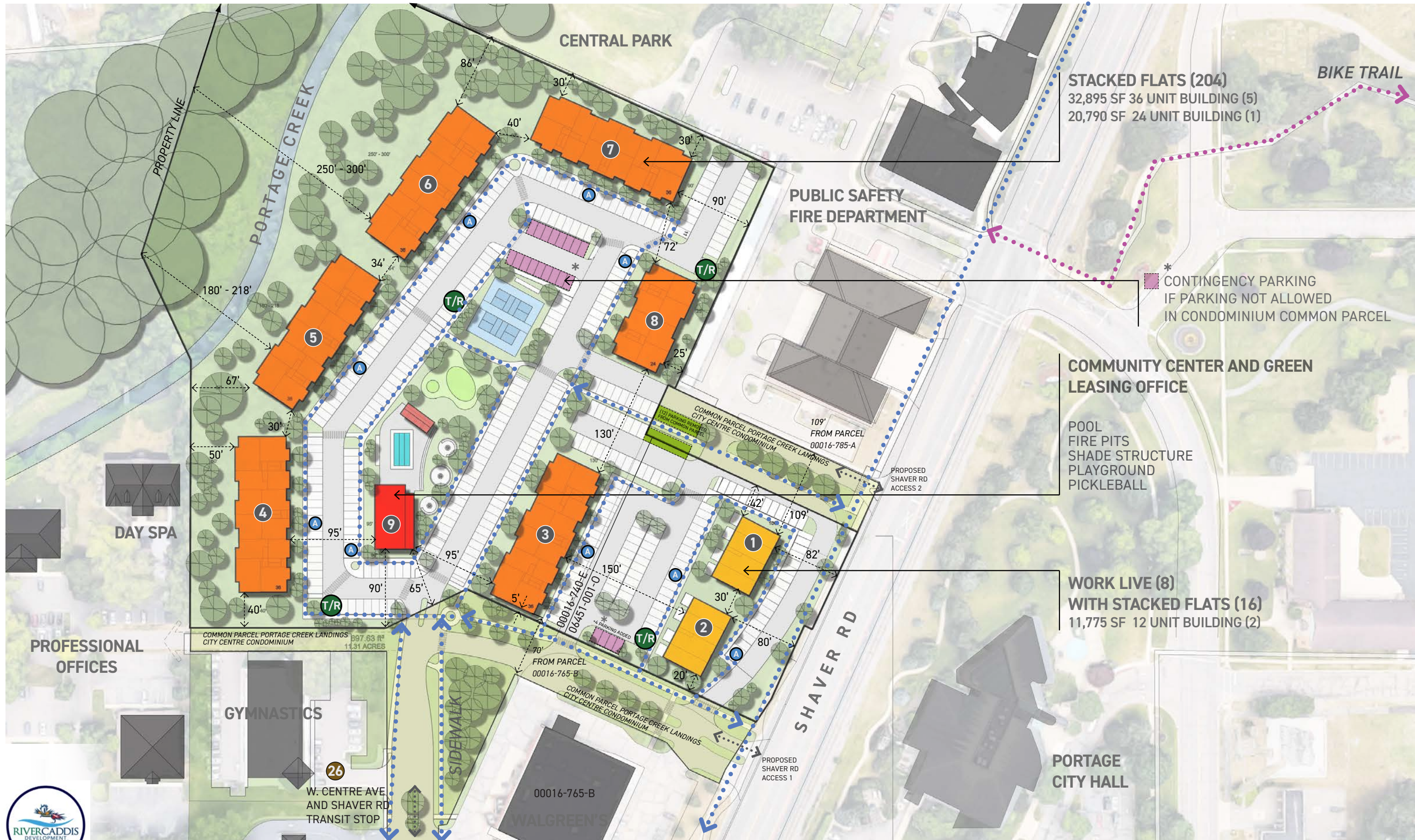


SITE PLAN A | SCHEMATIC DESIGN - SCALE 1" = 100'



RIVER CADDIS MULTI-FAMILY DEVELOPMENT

PROJECT NARRATIVE	1	17	2023
PD APPLICATION	1	10	2023
	12	5	2022
	20	21	002



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

CONTINGENCY PARKING PLAN
IF PARKING NOT ALLOWED IN CONDOMINIUM COMMON PARCEL



RIVER CADDIS MULTI-FAMILY DEVELOPMENT | PD APPLICATION

PROJECT NARRATIVE	1	17	2023
	1	10	2023
	12	5	2022
	20	21	002

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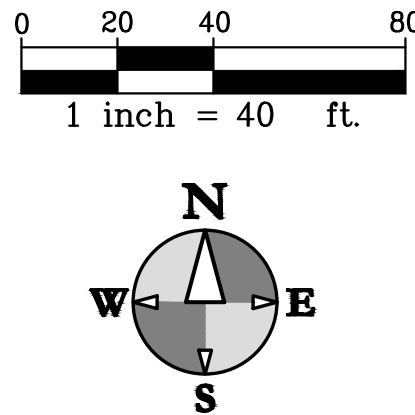
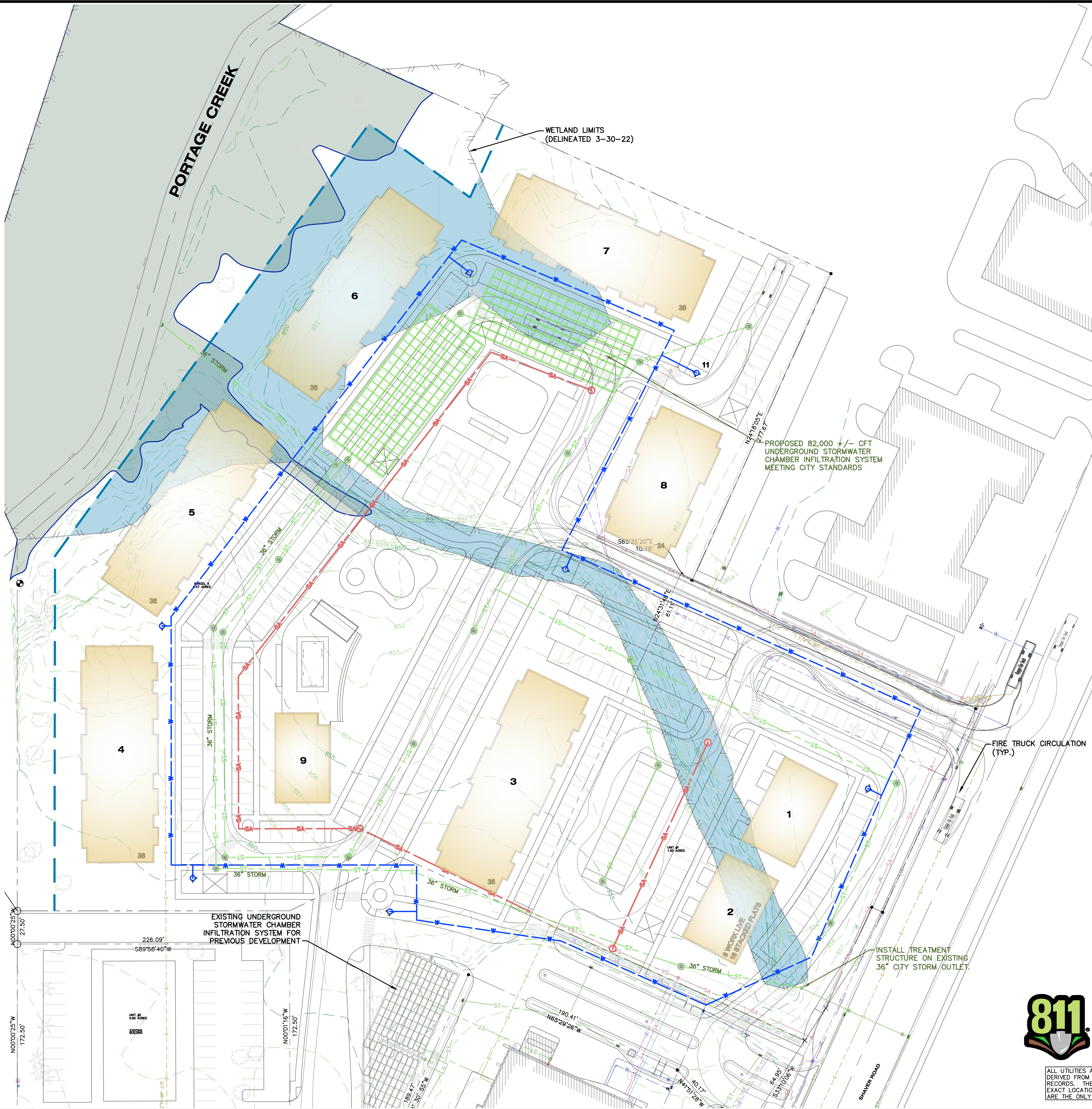
DRAWING LOCATION: IN 122-1230 (C-1 River Caddis Multi-Family Development) - FINAL DRAWINGS - C-1 Preliminary Utility Plan.dwg, LAST SAVED BY: MRSCHMIDT ON 12/26/2022

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. 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.
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.

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. 22-123D 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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Sheet Title: **PRELIMINARY UTILITY PLAN**
Project: **RIVER CADDIS MULTI-FAMILY DEVELOPMENT**
Client: **RIVER CADDIS**
Sheet: **C-1**
Date: 03/20/23

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

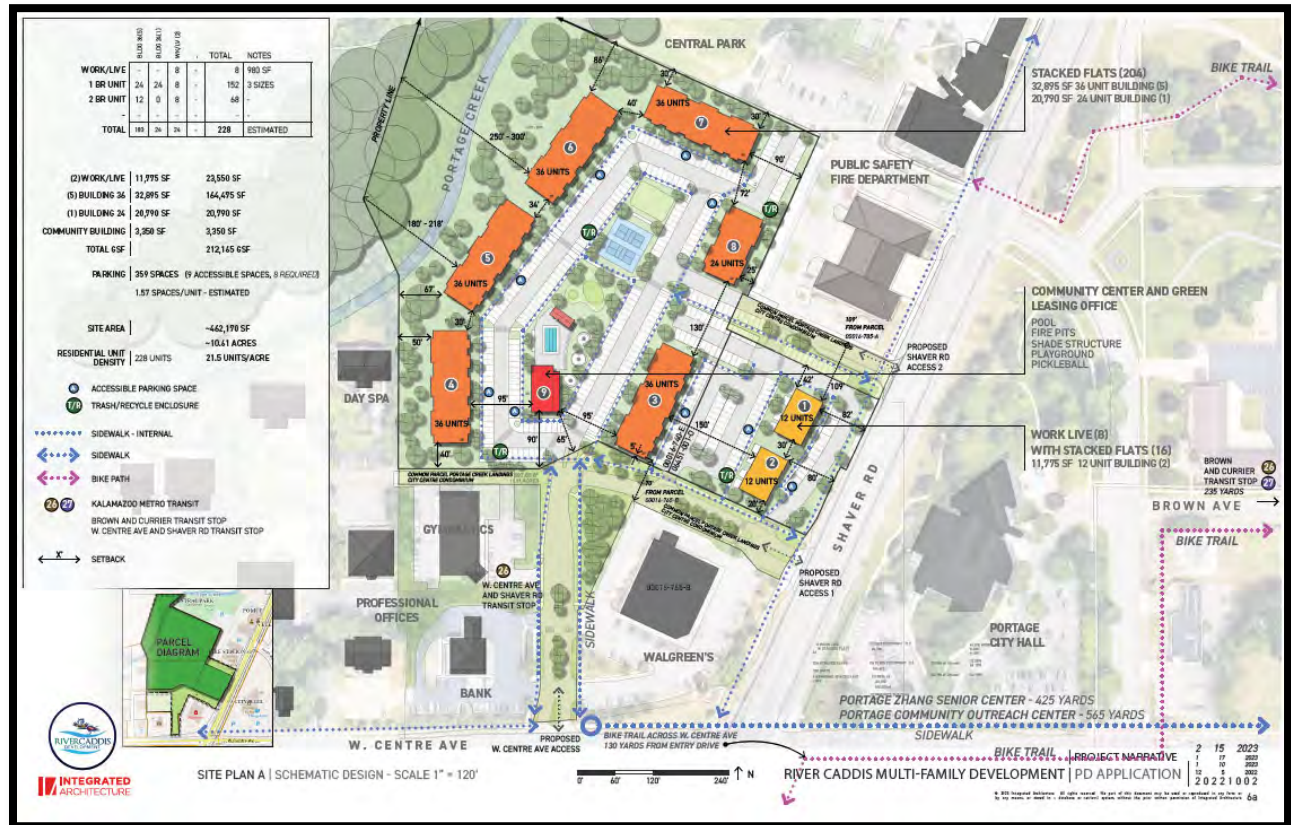
The proposed Portage Creek site plan was provided by River Caddis Development. The proposed site plan will develop 228 units of residential buildings with 2 work-live buildings on the existing wooded land. Per the ITE Trip Generation Manual (11th Ed.), the Multi-Family Housing (Low Rise) calculates an 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.

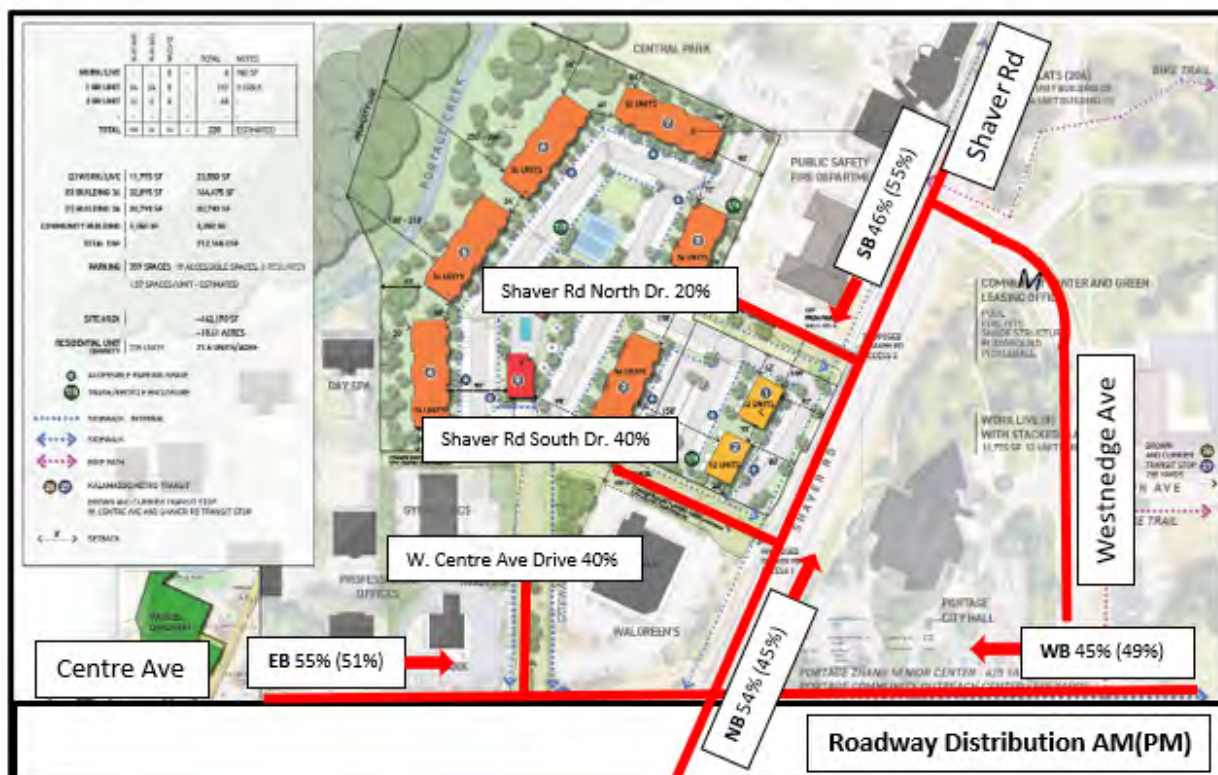
3.3 Trip Distribution

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											
	Entering						Exiting					
Enter/Exit												
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

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

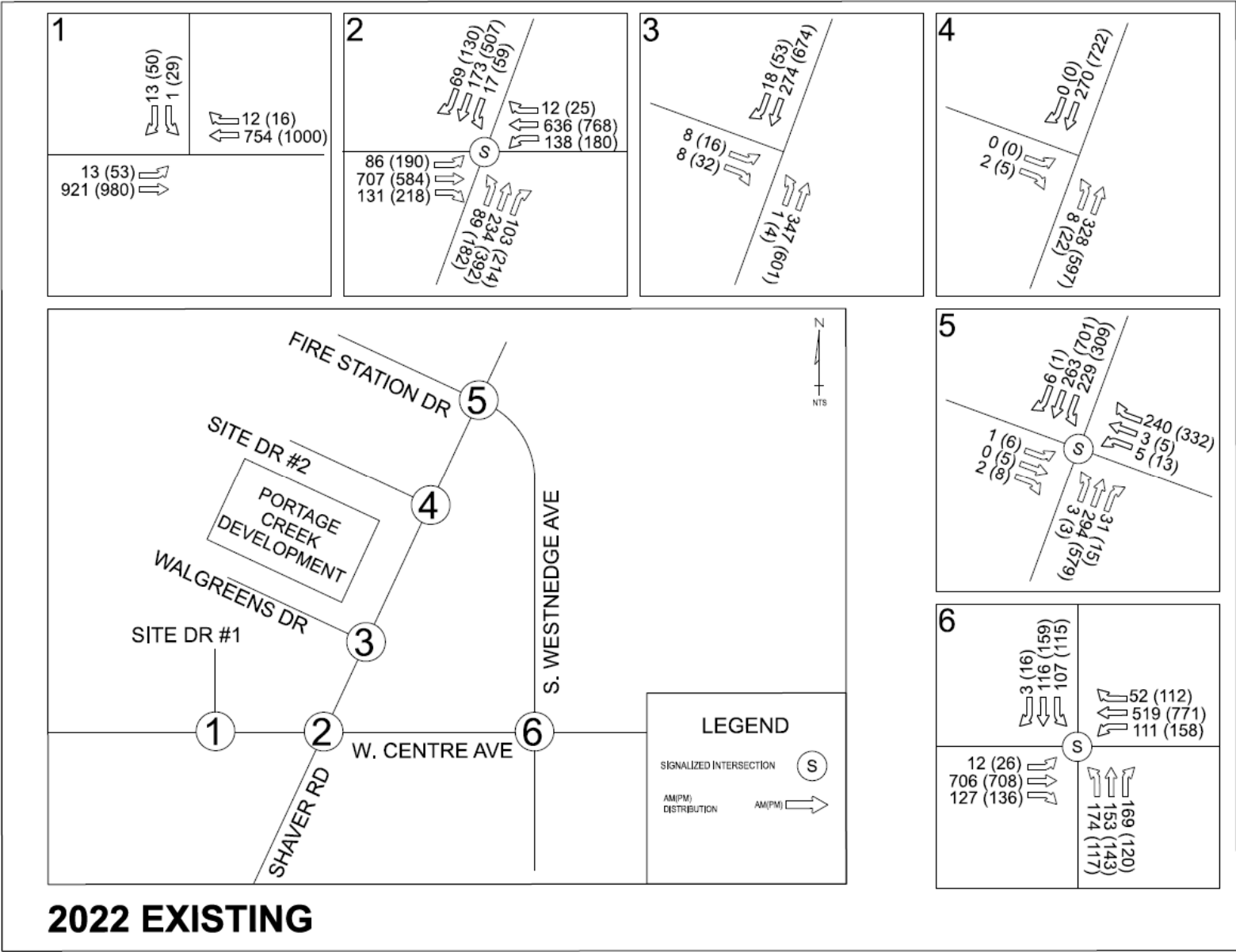


EXHIBIT 6: 2024 NO-BUILD TRAFFIC VOLUMES DIAGRAM

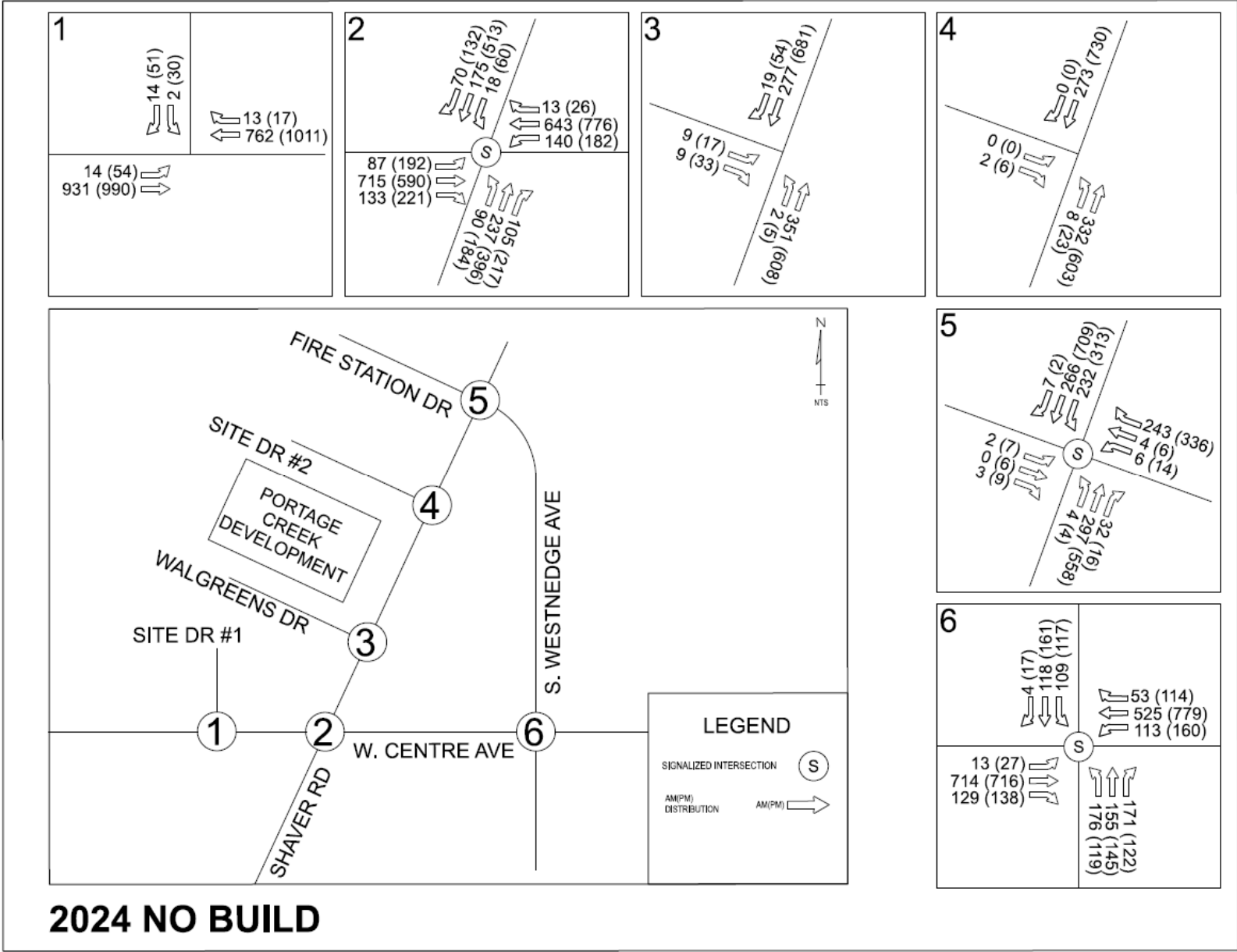


EXHIBIT 7: TRIP DISTRIBUTION DIAGRAM

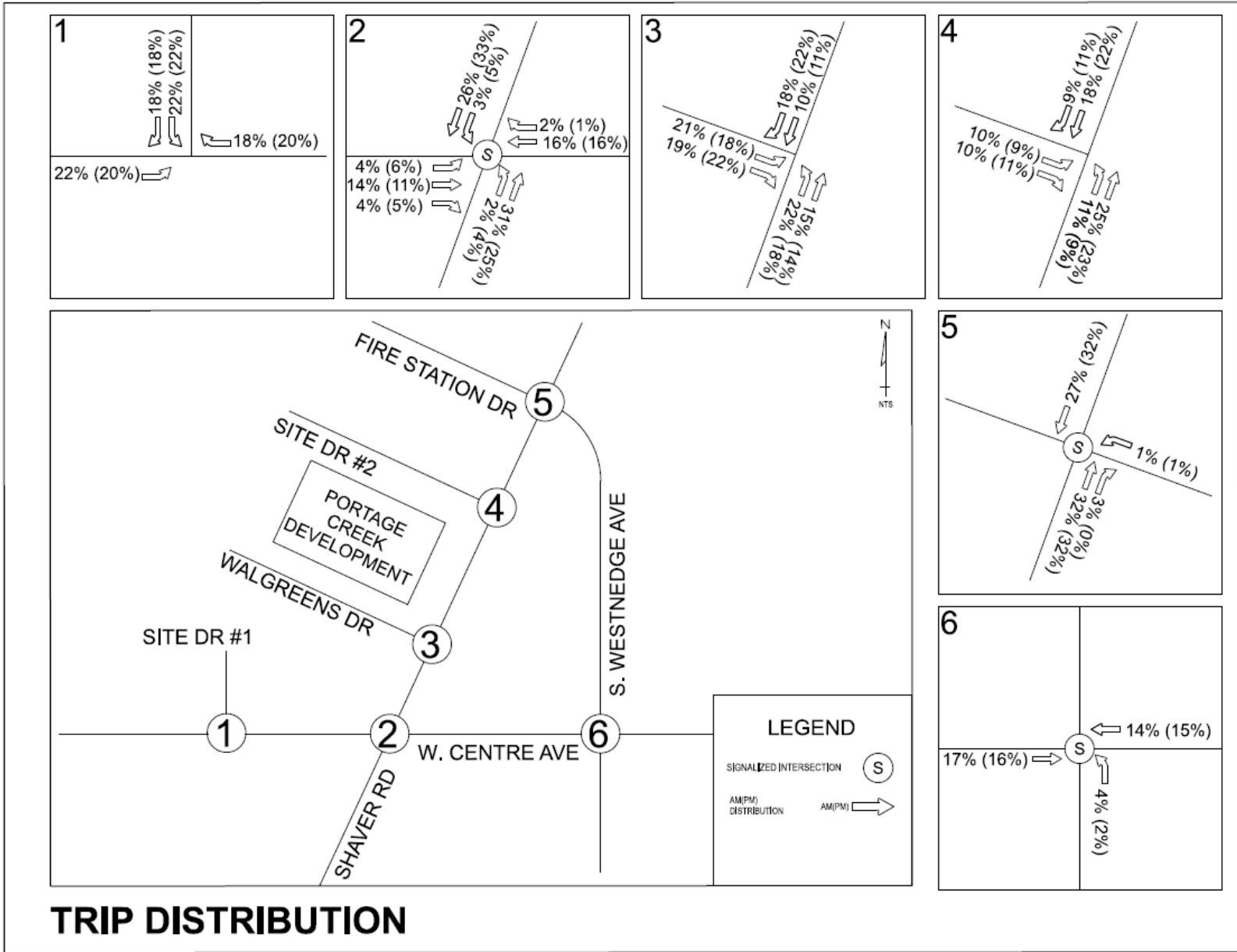


EXHIBIT 8: TRIP GENERATION DIAGRAM

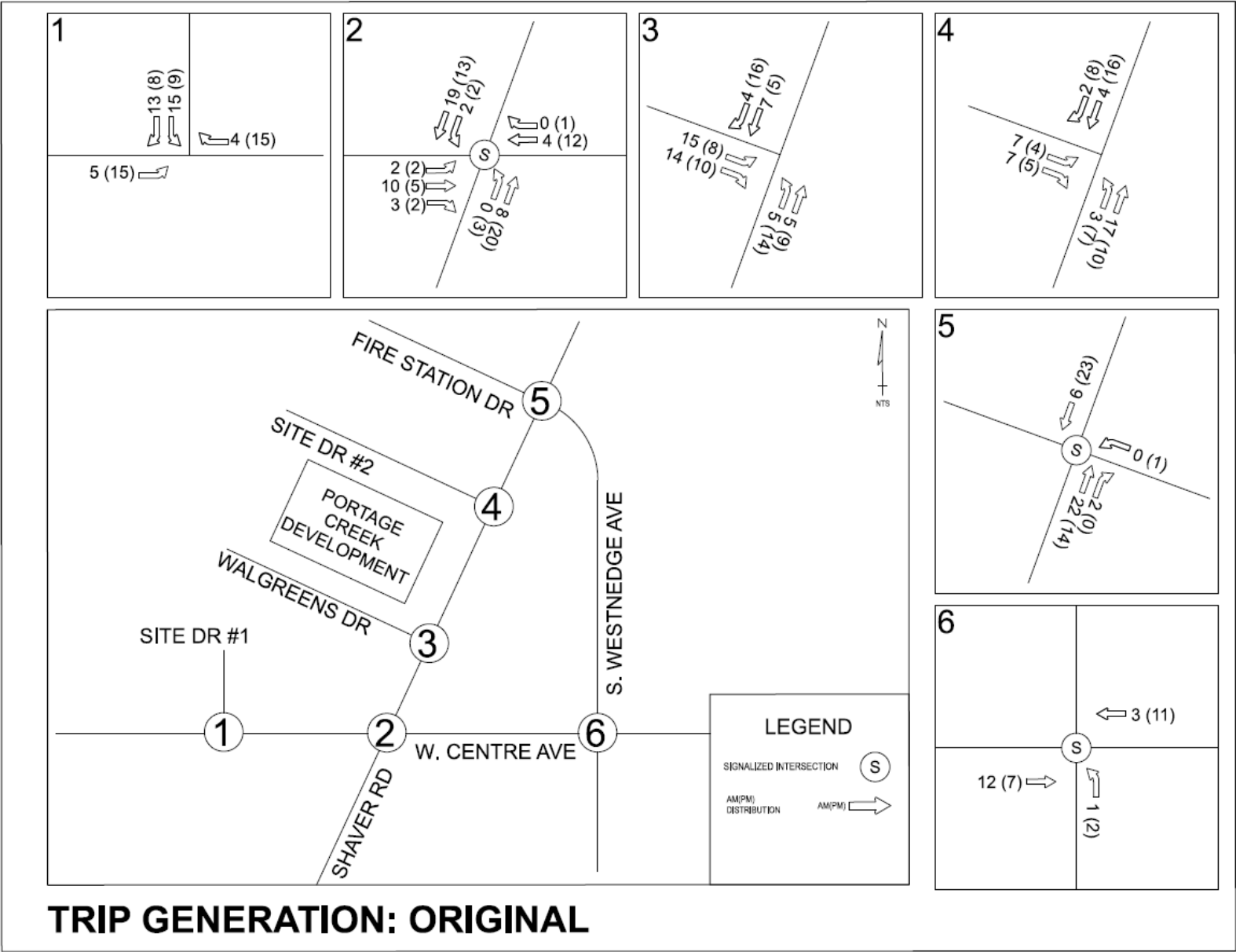


EXHIBIT 9: TRIP GENERATION DIAGRAM: SCENARIO #1

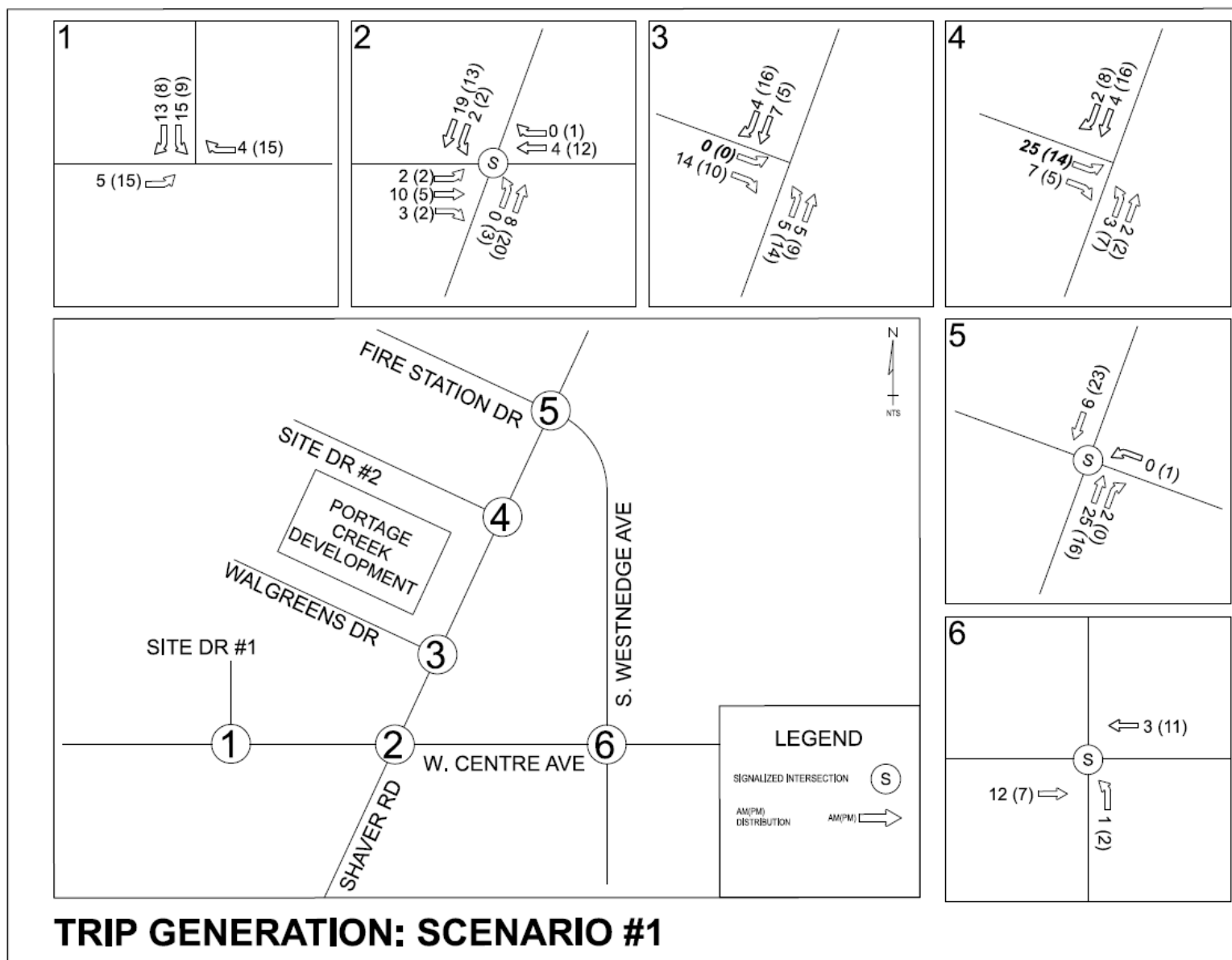


EXHIBIT 10: TRIP GENERATION DIAGRAM: SCENARIO #2

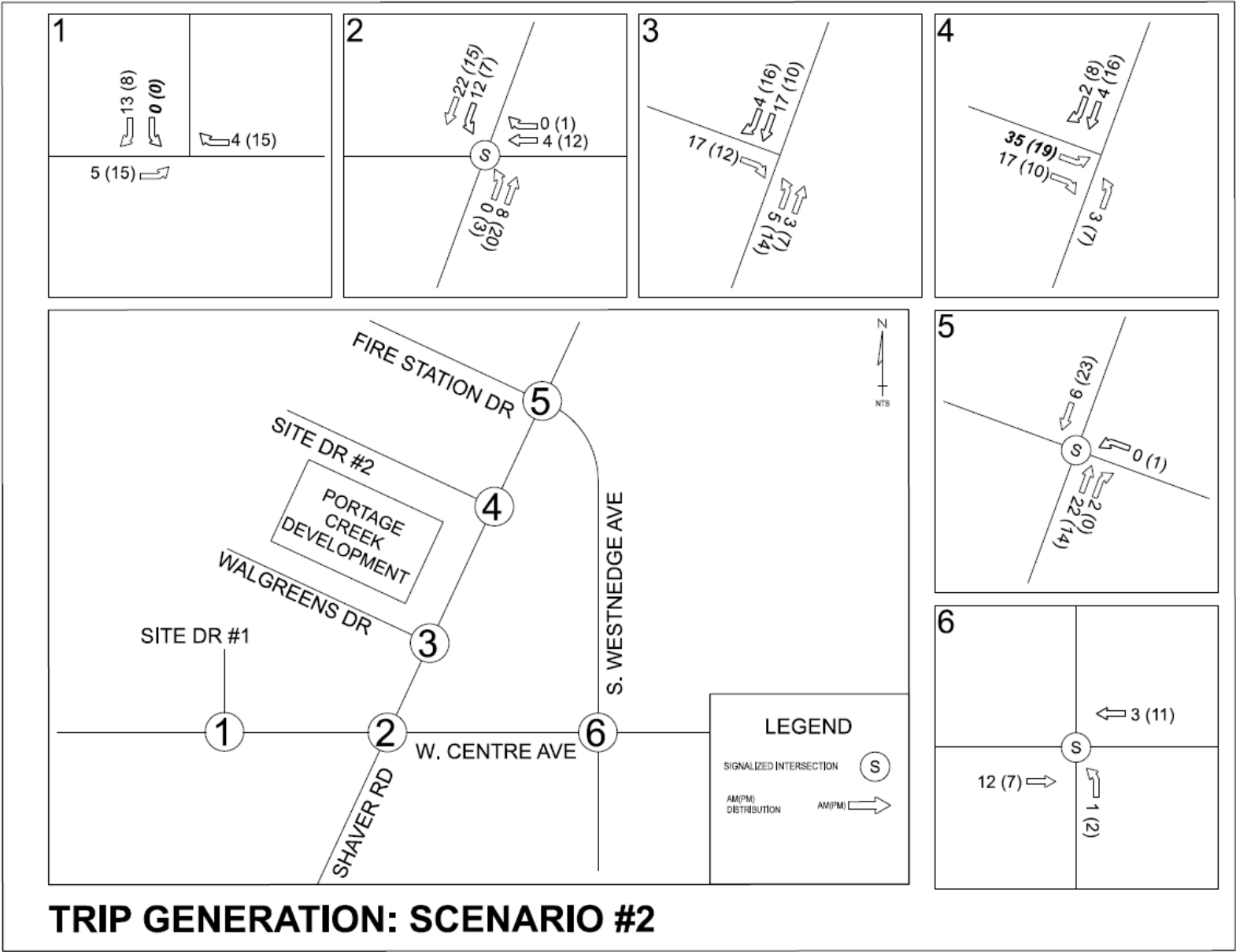


EXHIBIT 11: 2024 FUTURE BUILD-OUT DIAGRAM

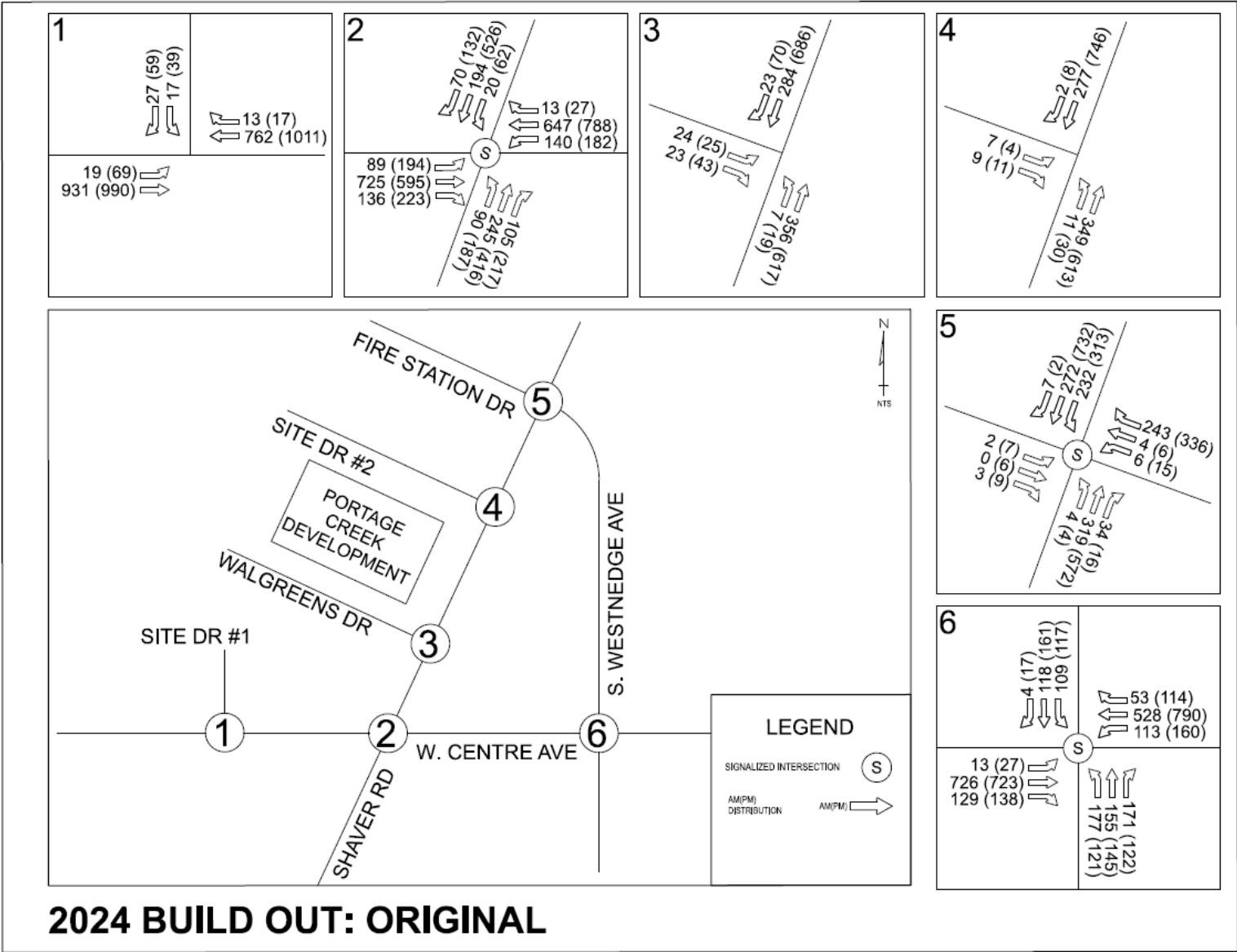


EXHIBIT 12: 2024 FUTURE BUILD-OUT DIAGRAM: SCENARIO #1

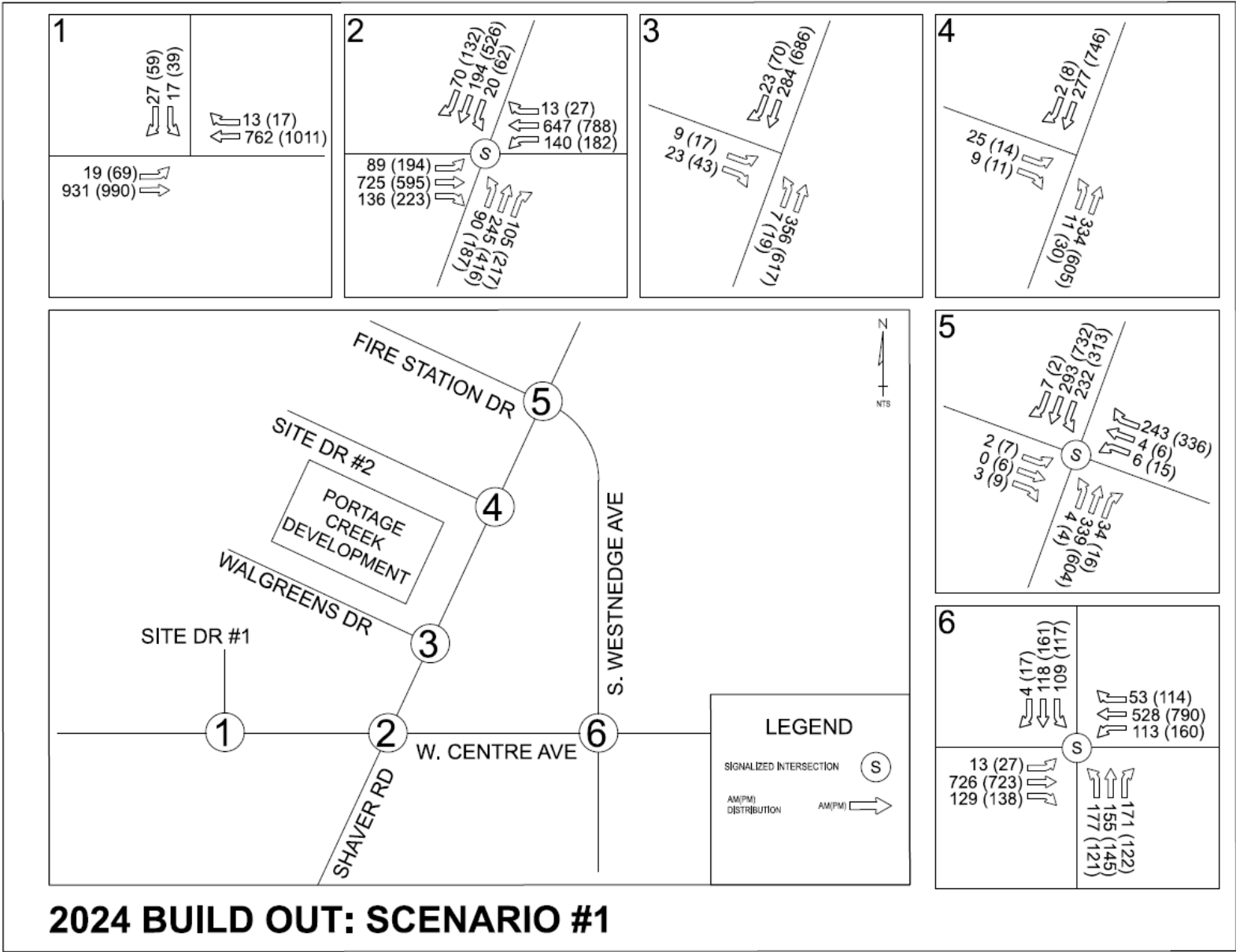
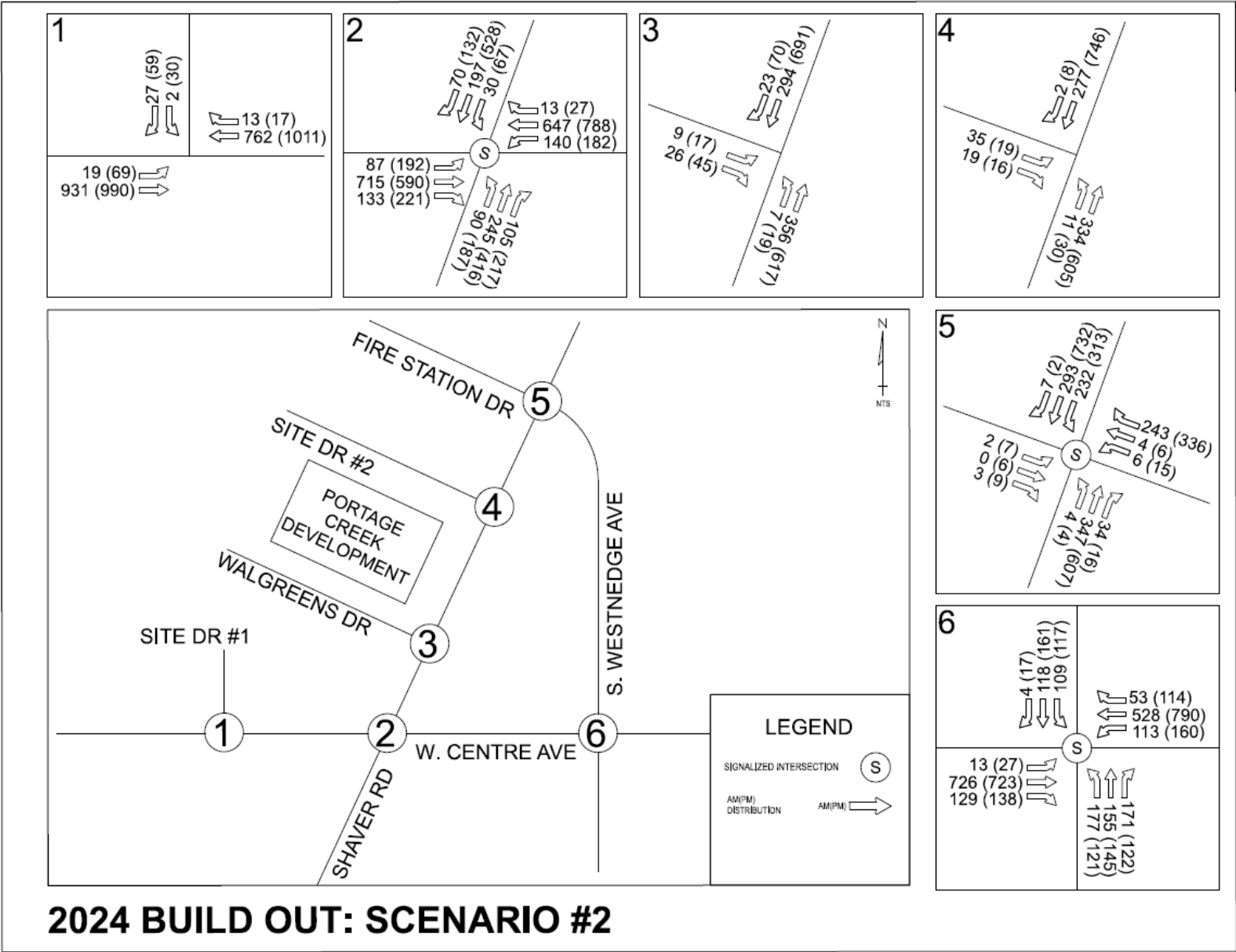


EXHIBIT 13: 2024 FUTURE BUILD-OUT DIAGRAM: SCENARIO #2



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

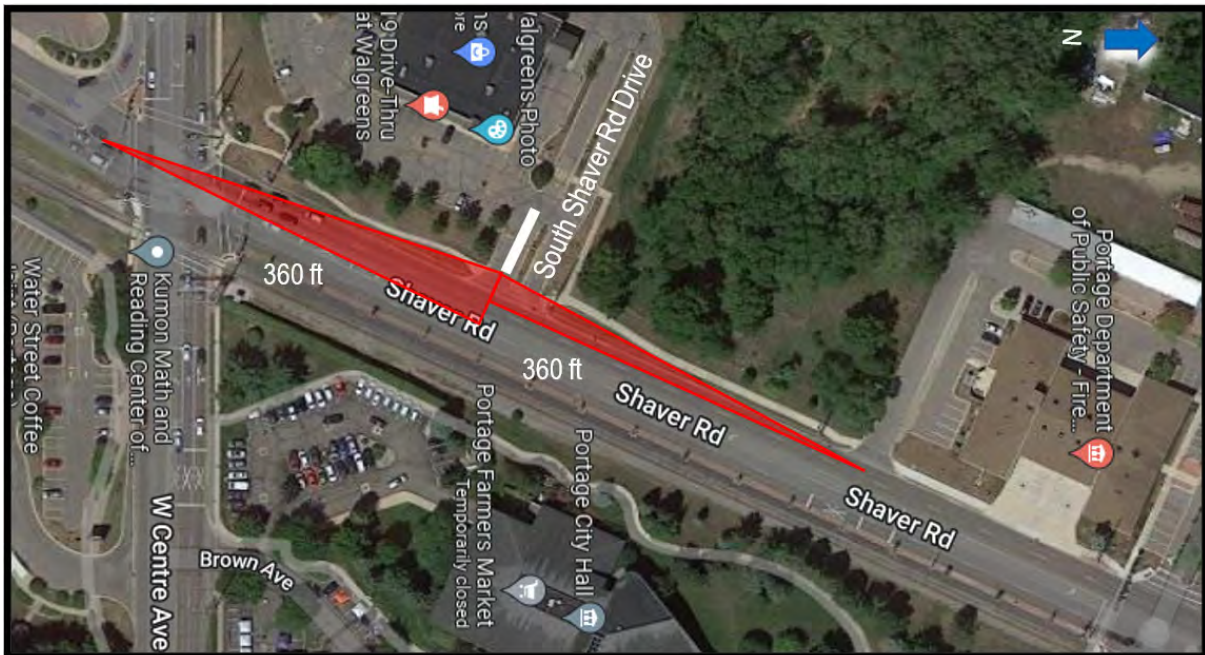


EXHIBIT 16: SIGHT DISTANCE TRIANGLE AT SHAVER RD AND NORTH SITE DRIVEWAY

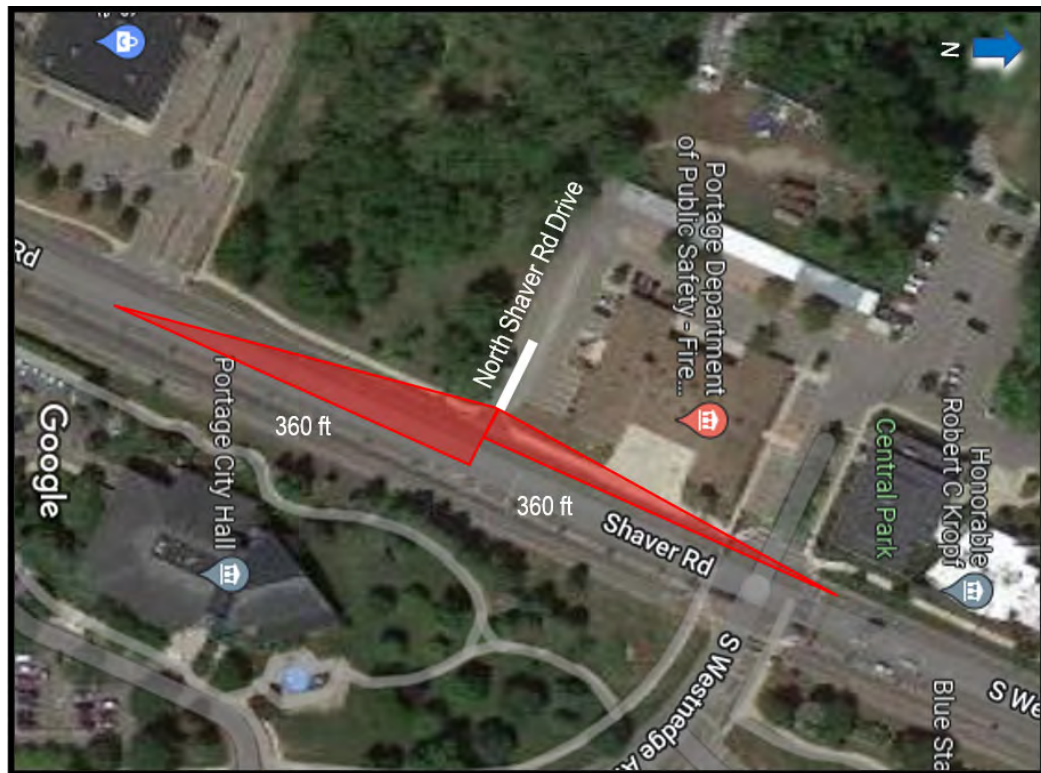
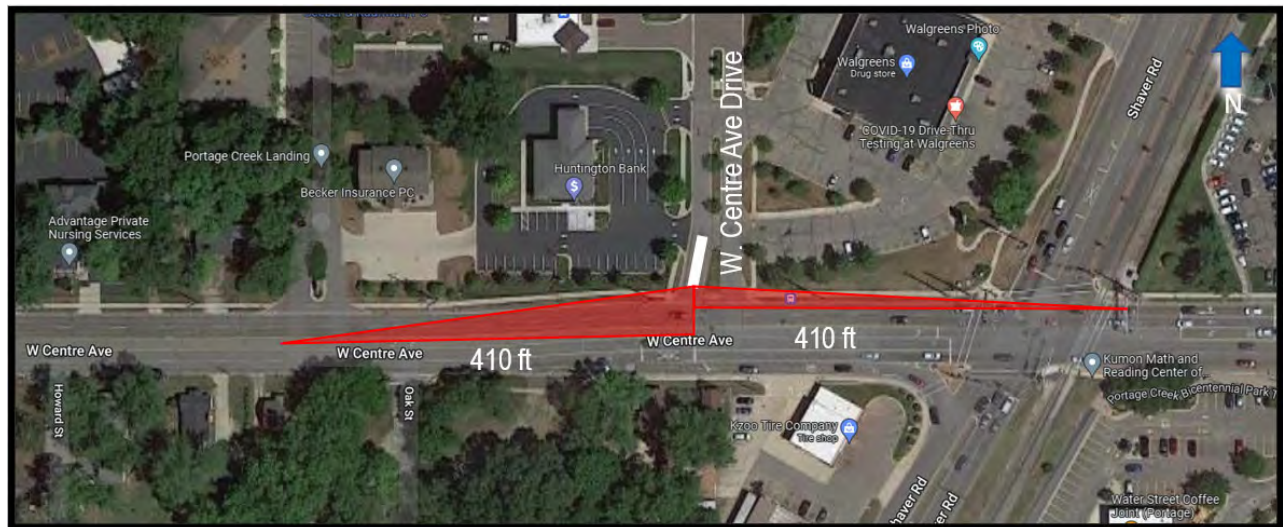


EXHIBIT 17: SIGHT DISTANCE TRIANGLE AT W. CENTRE AVE AND SITE DRIVEWAY



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

FHWA, MDOT, Michigan State Police. (2011). *Michigan Manual on Uniform Traffic Control Devices*.
Institute of Transportation Engineers. (2012). *Trip Generation Handbook, 2nd Edition*. Washington, DC.
Institute of Transportation Engineers. (2012). *Trip Generation Manual, 9th Edition*. Washington DC.
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

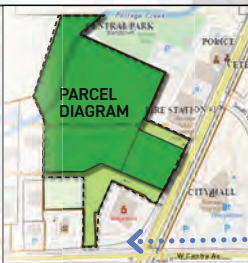
SIDEWALK

BIKE PATH

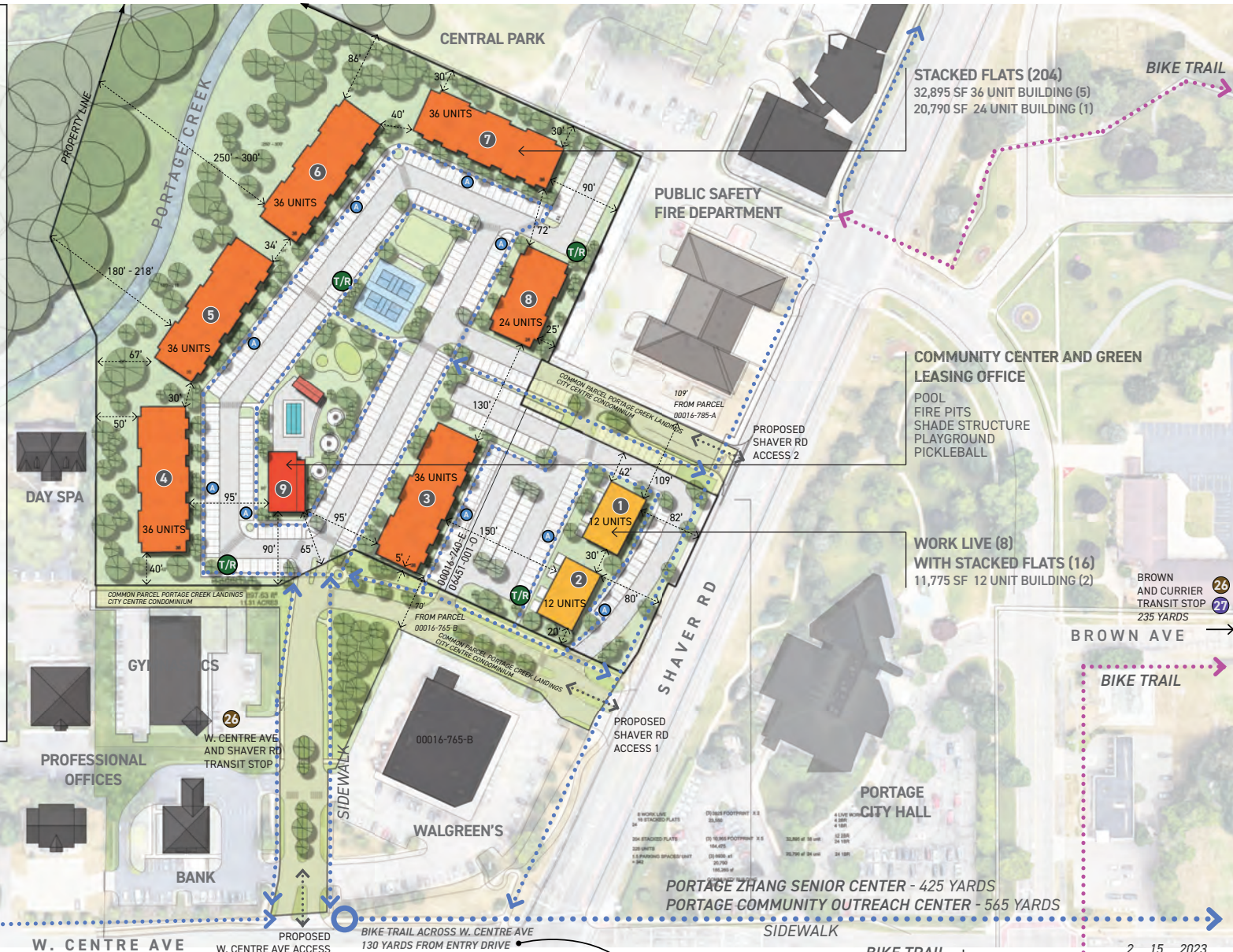
KALAMAZOO METRO TRANSIT

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

SETBACK



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



0' 60' 120' 240' ↑ N

RIVER CADDIS MULTI-FAMILY DEVELOPMENT | PD APPLICATION

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

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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

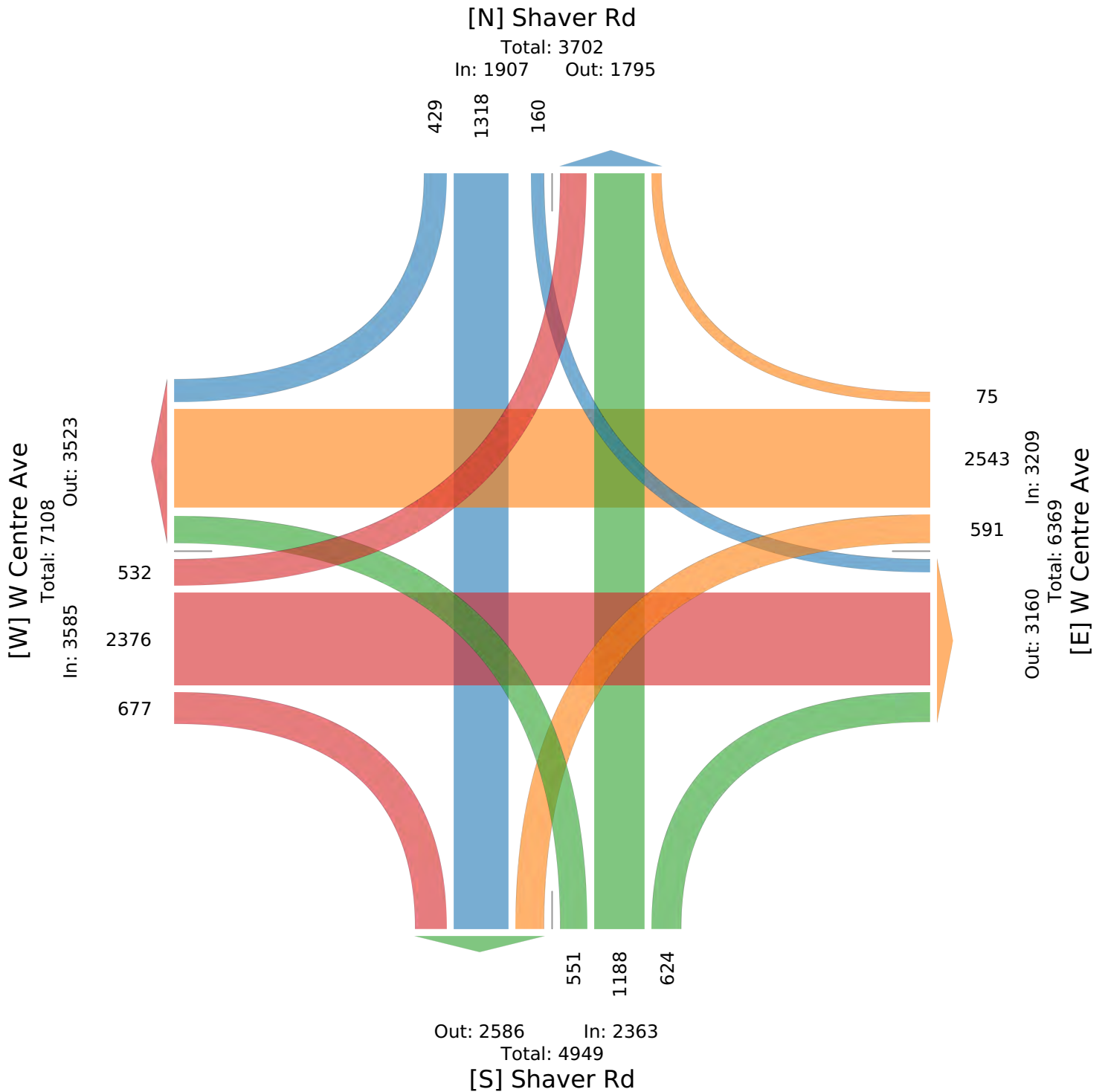
Full Length (7 AM-9 AM, 4 PM-6 PM)

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

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

86
707
131

12
636
138

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

Out: 442 In: 426
Total: 868

[S] Shaver Rd

89
234
103

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

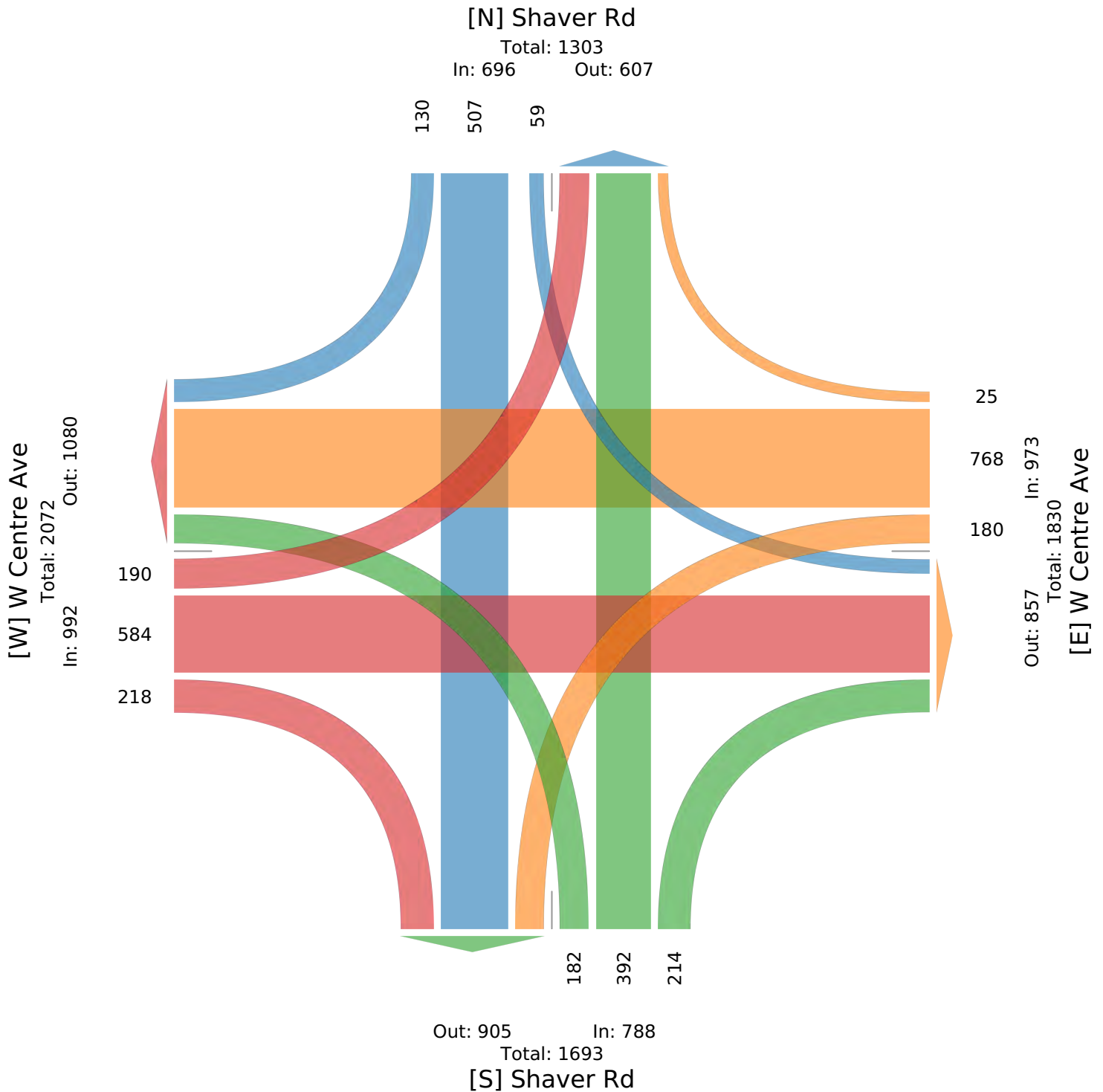
PM Peak (4 PM - 5 PM) - Overall Peak Hour

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

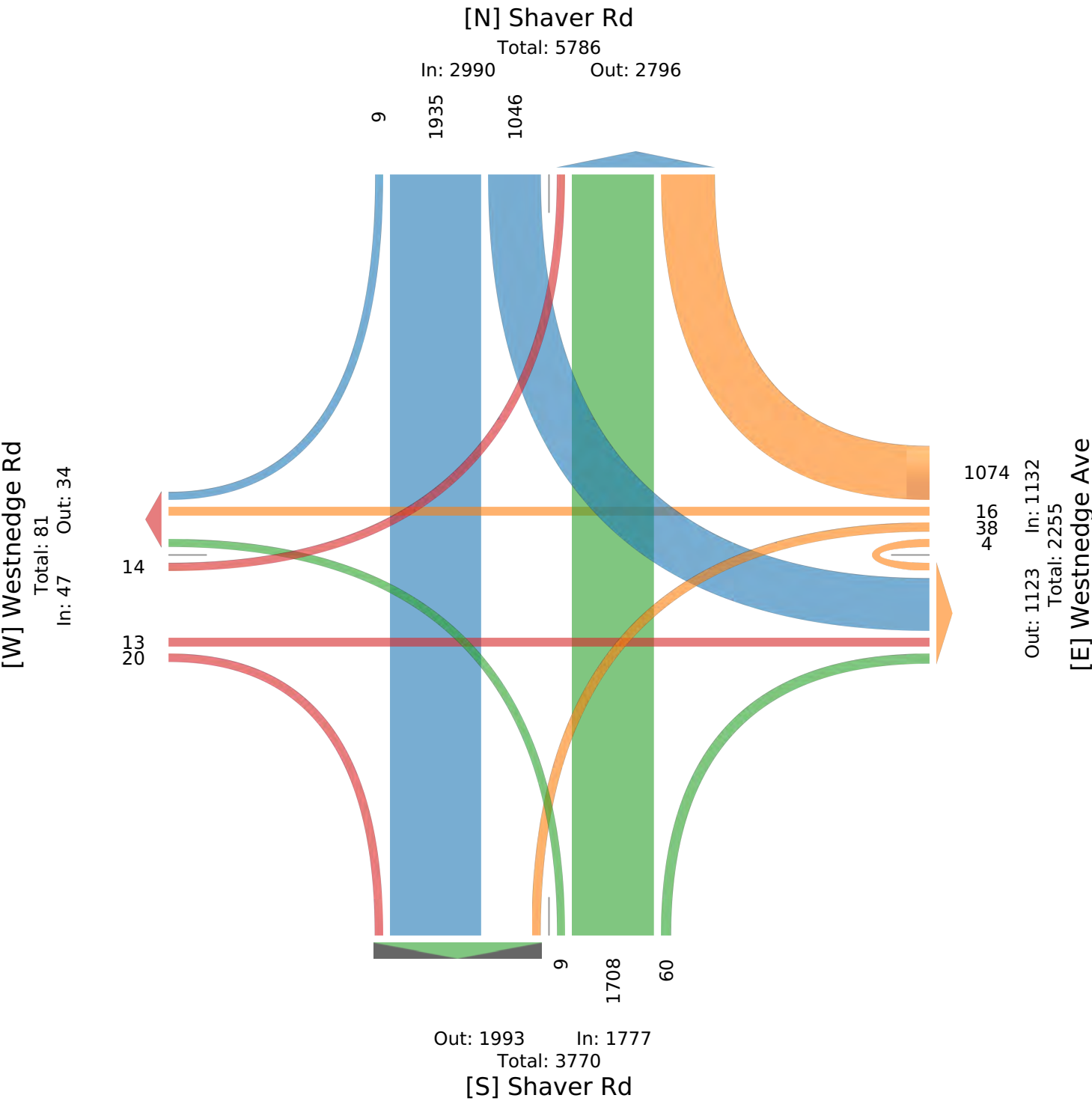
Provided by: RS Engineering LLC
6709 Centurion Drive Suite 300, Lansing, MI, 48917, US

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)

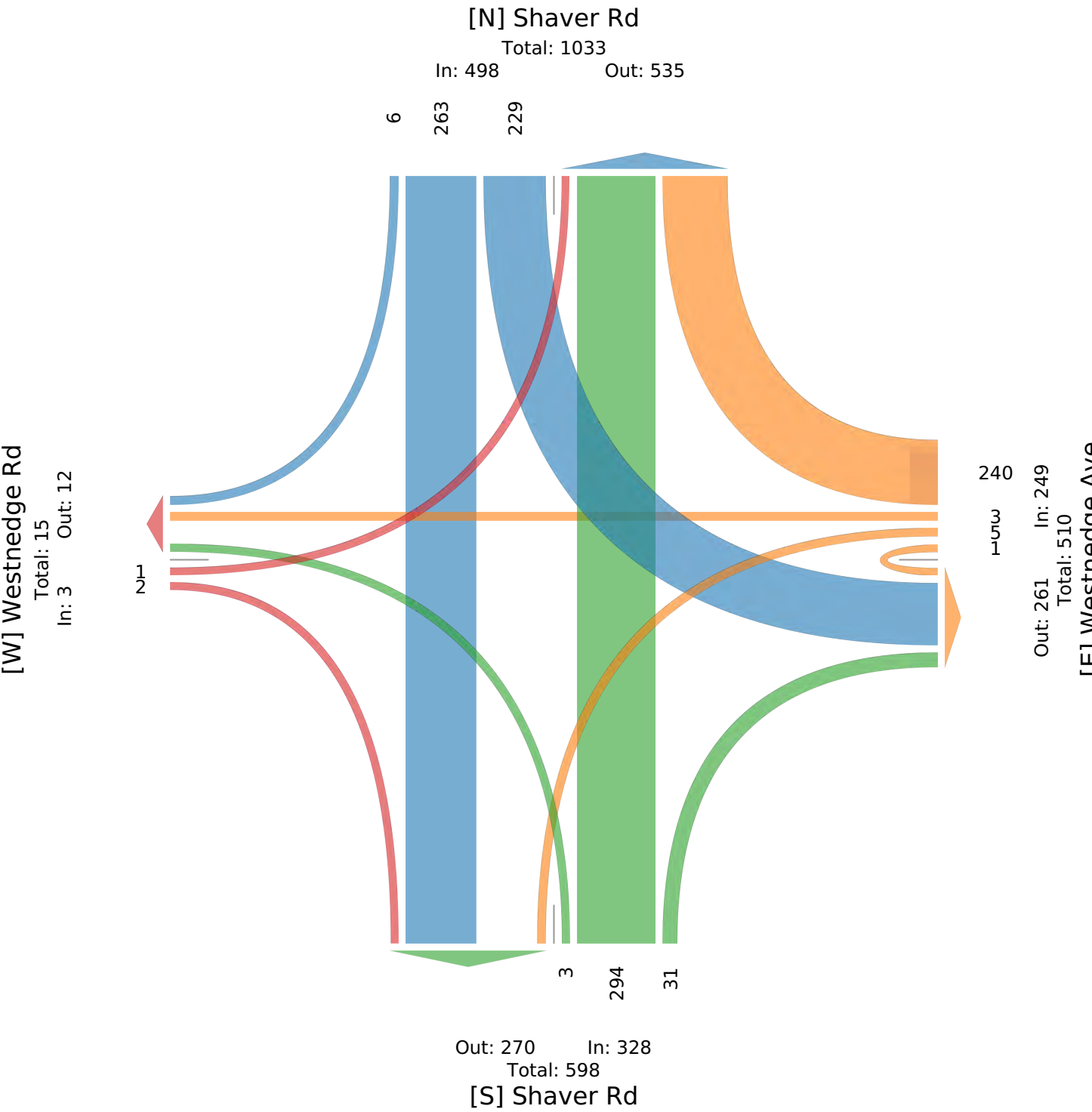
All Movements

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

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

All Classes (Lights and Motorcycles, Heavy)

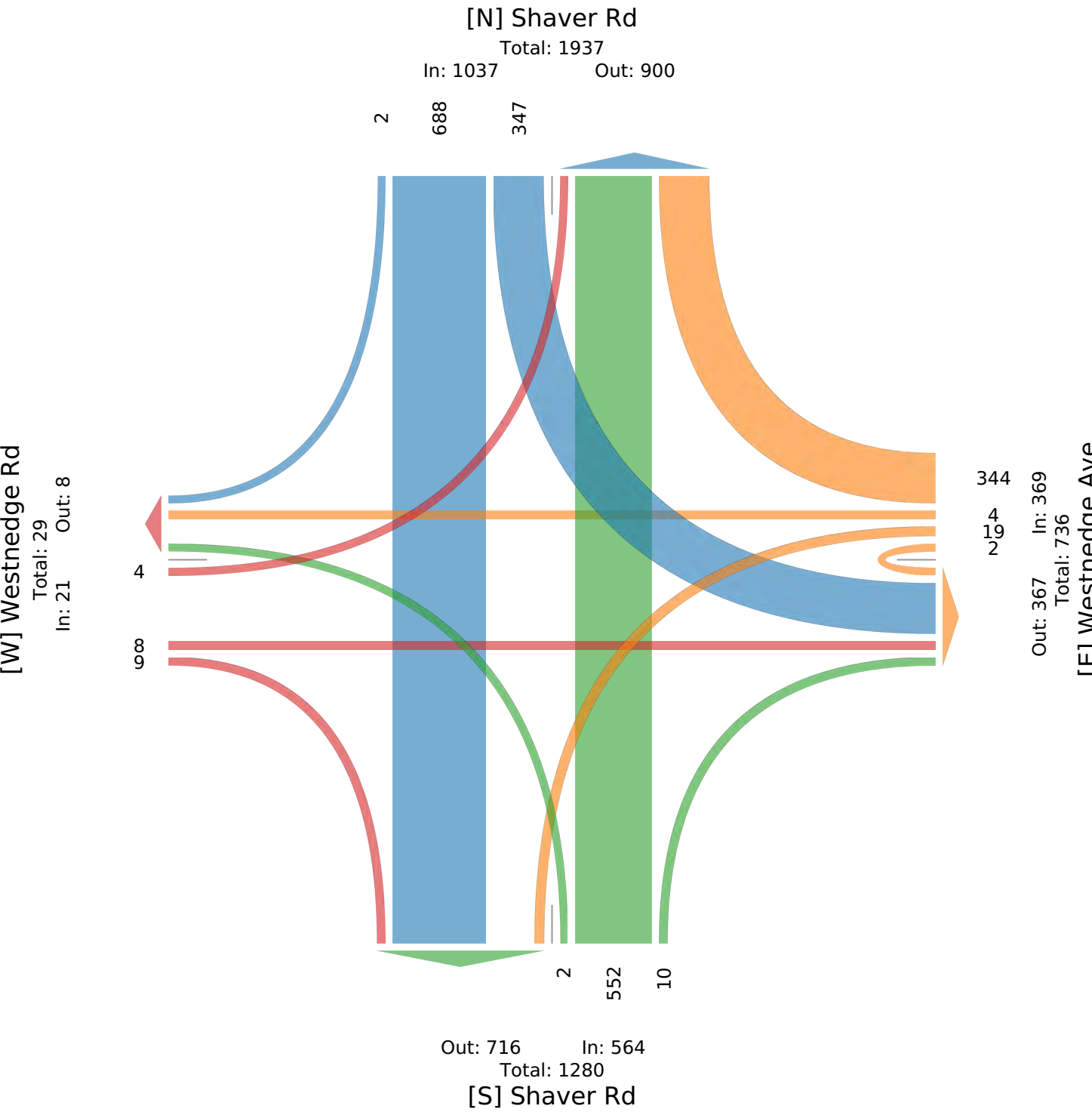
All Movements

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

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

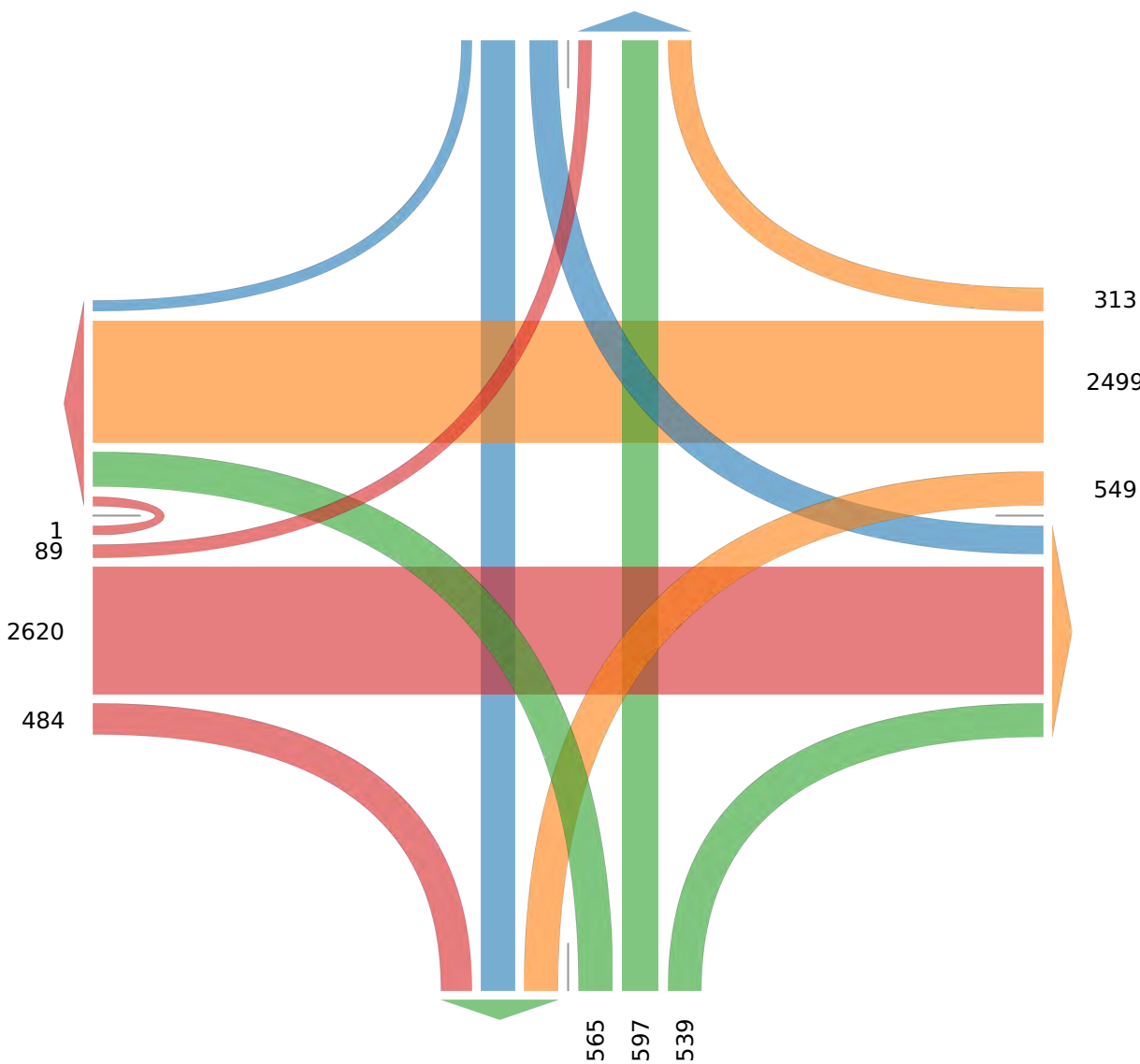
[N] Westnedge Ave

Total: 1986

In: 987 Out: 999

32
534
421

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



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

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

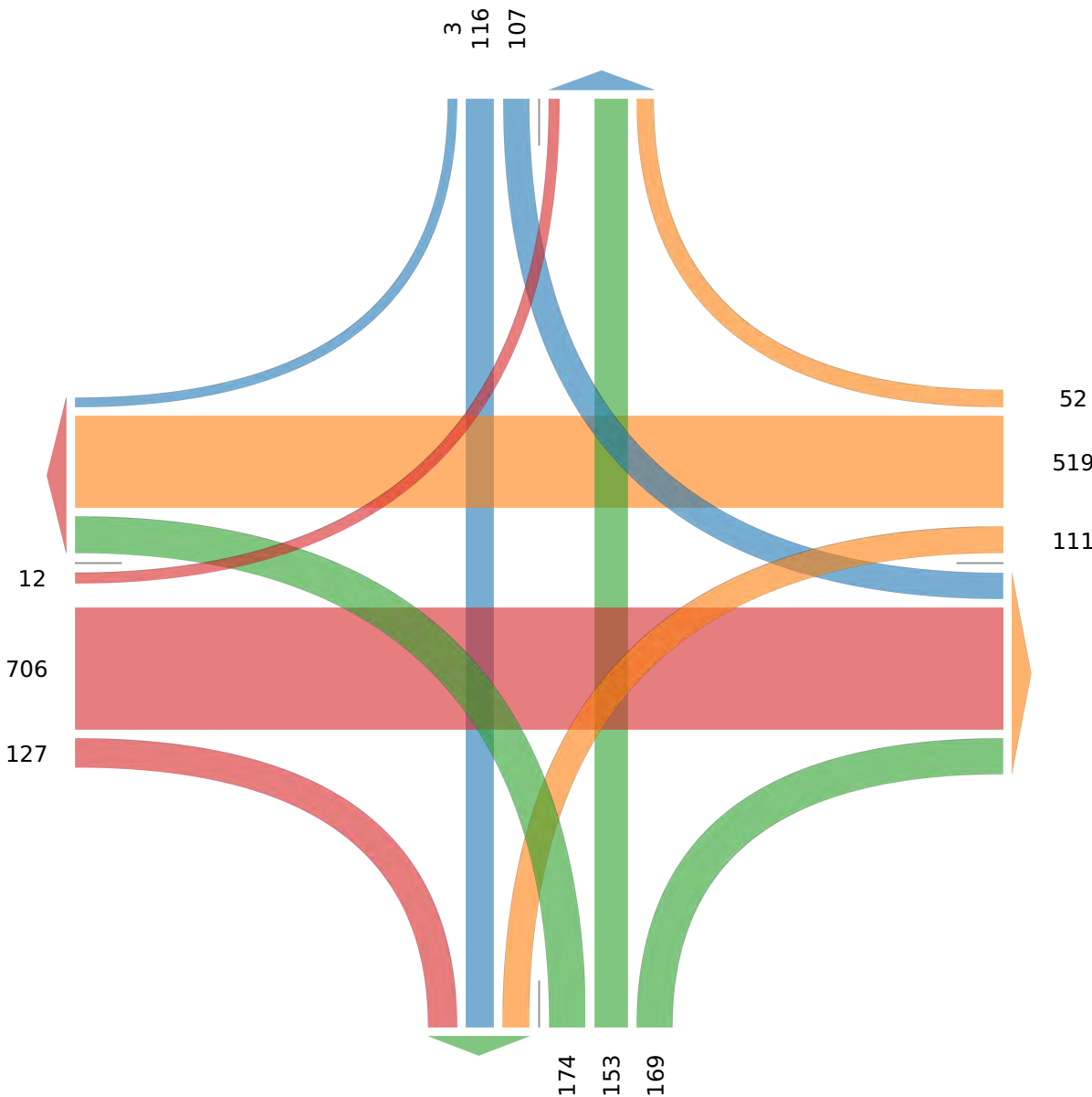
Total: 1664

[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

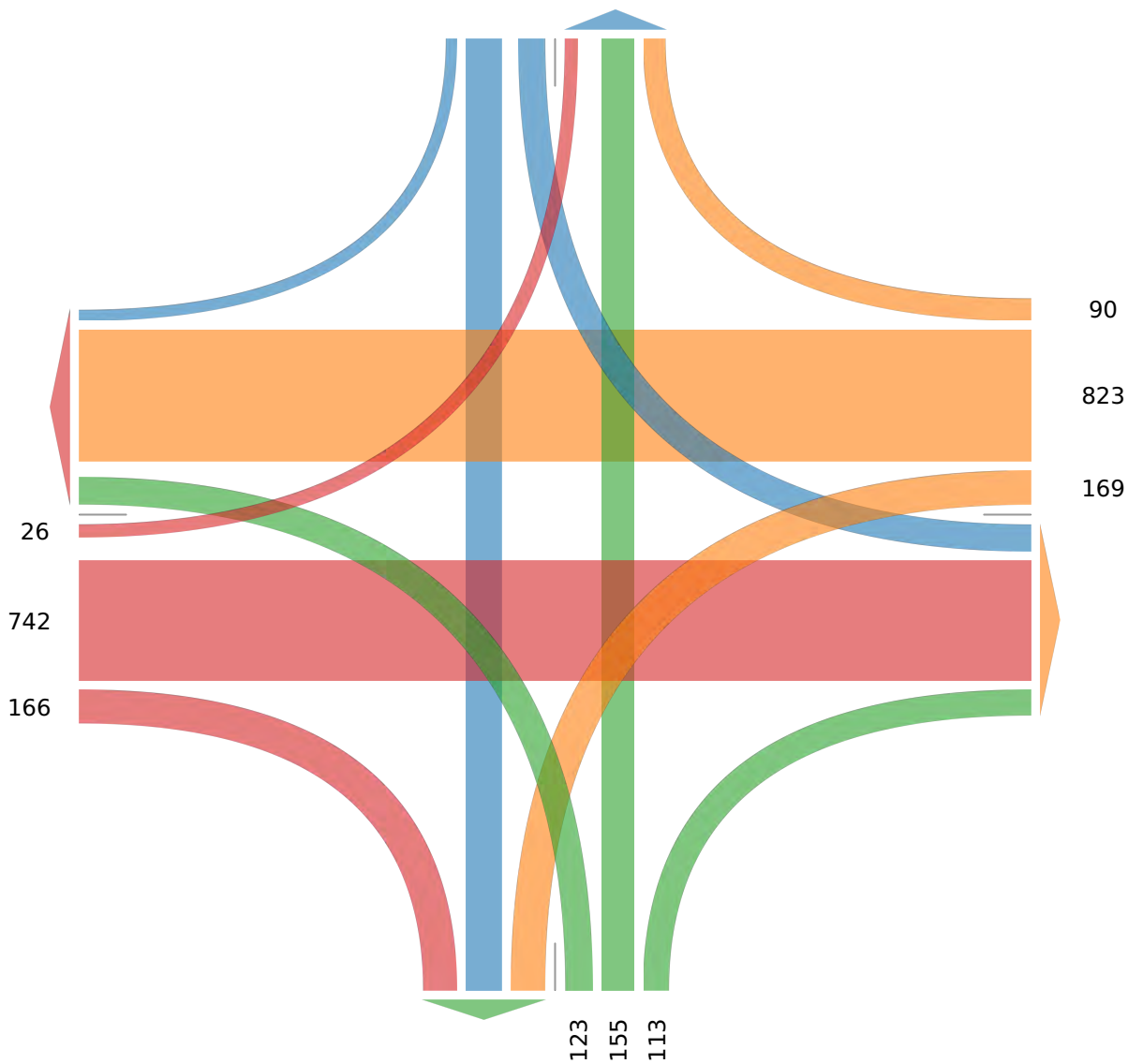
[N] Westnedge Ave

Total: 581

In: 310 Out: 271

13
177
120

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



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

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

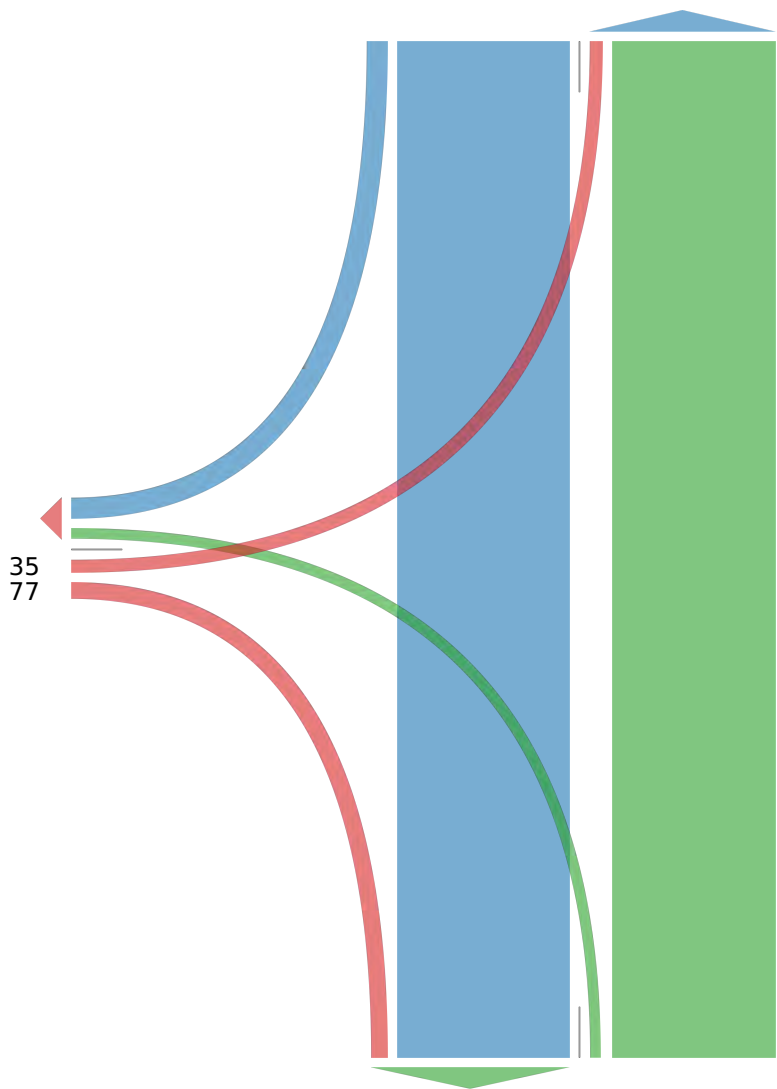
Total: 3718

[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

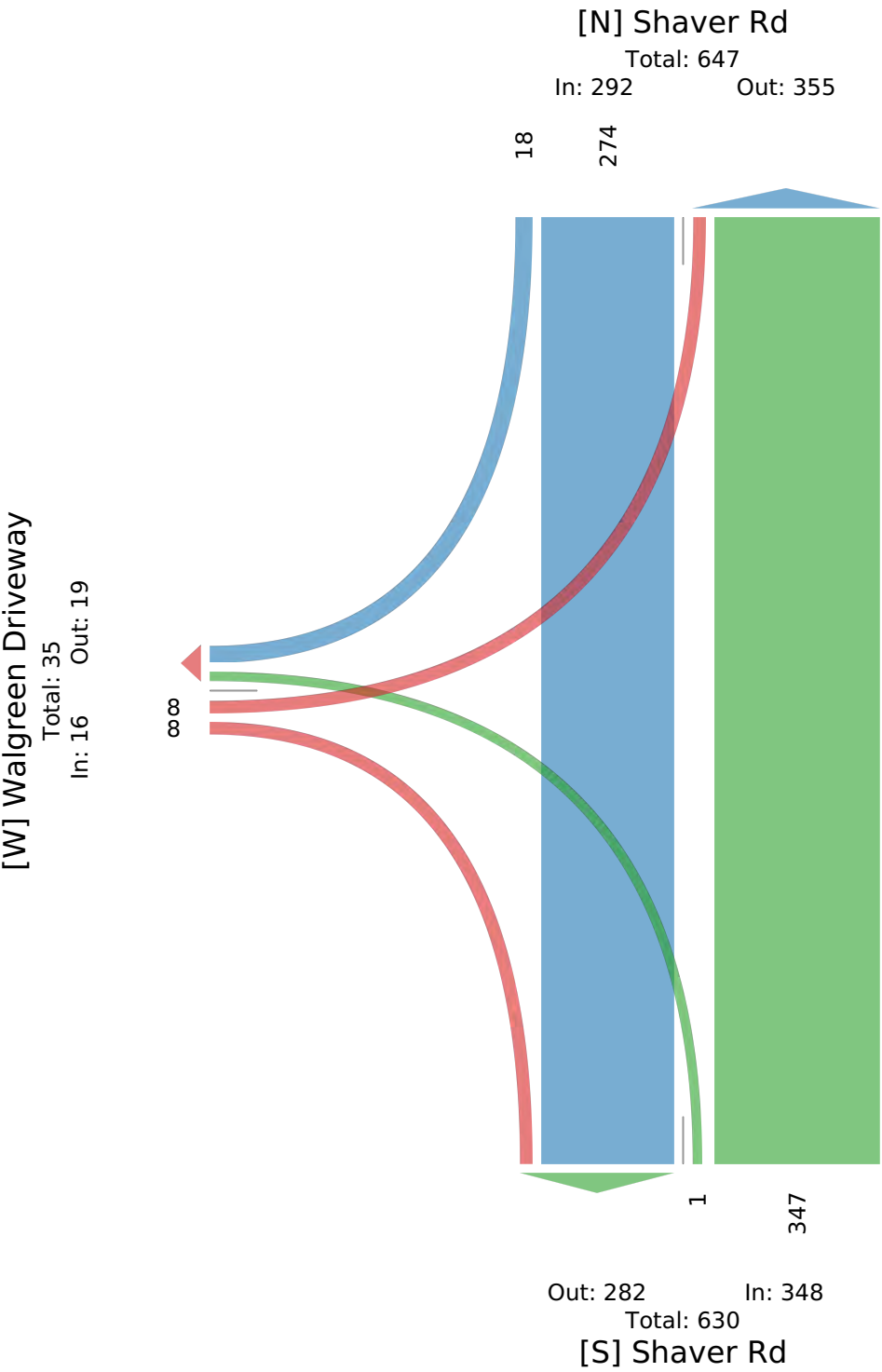
AM Peak (8 AM - 9 AM)

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

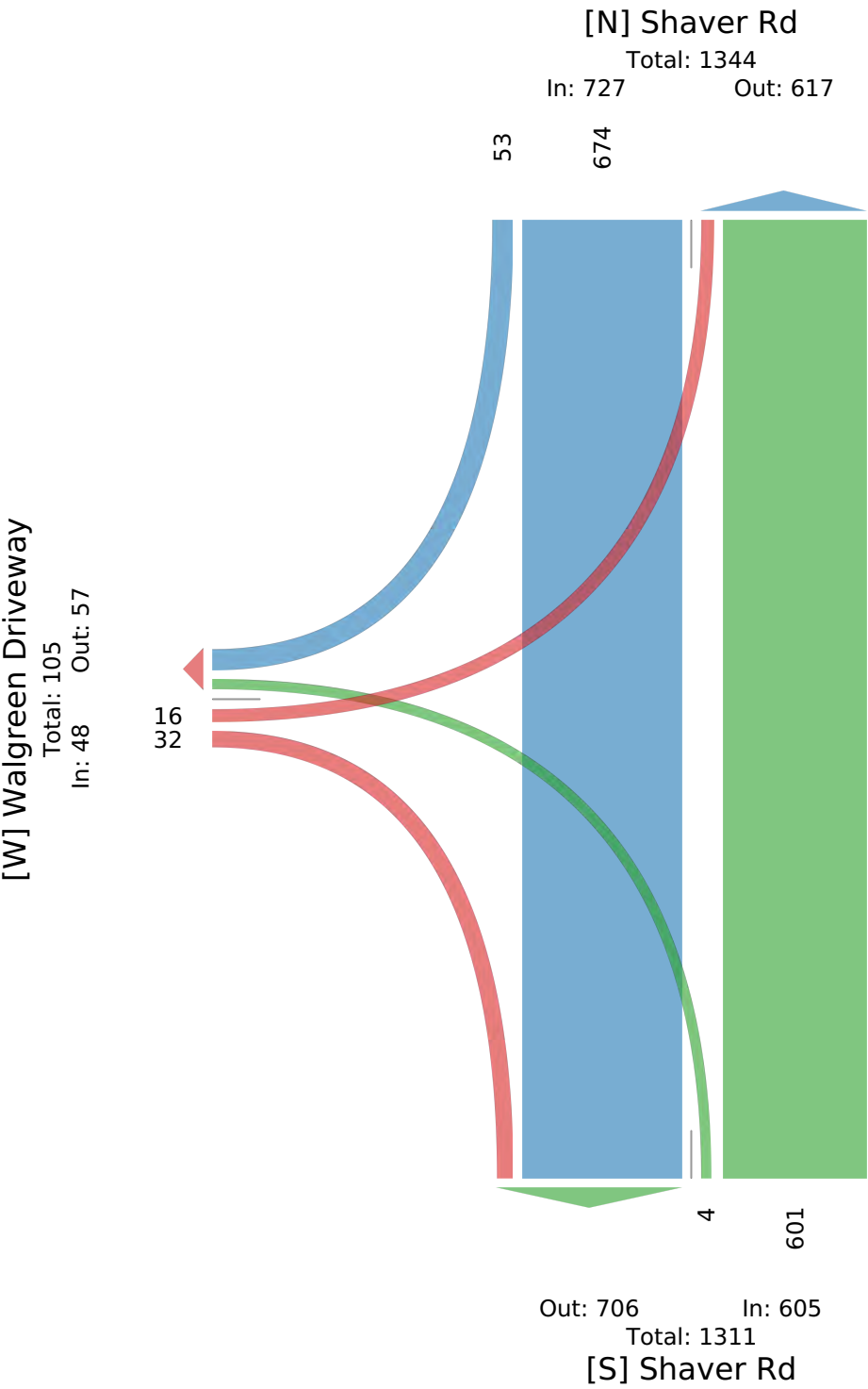
PM Peak (4 PM - 5 PM) - Overall Peak Hour

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)

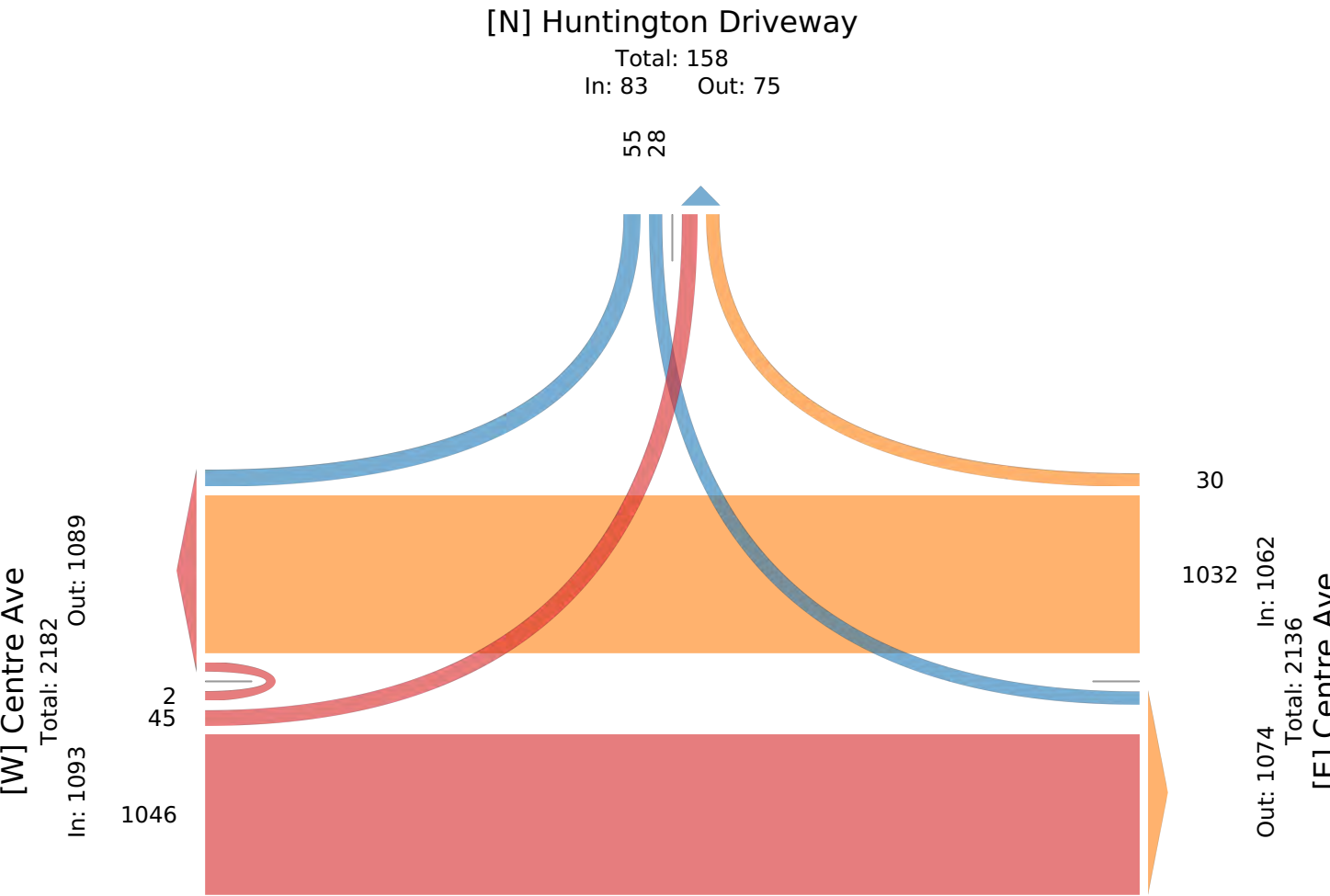
All Movements

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

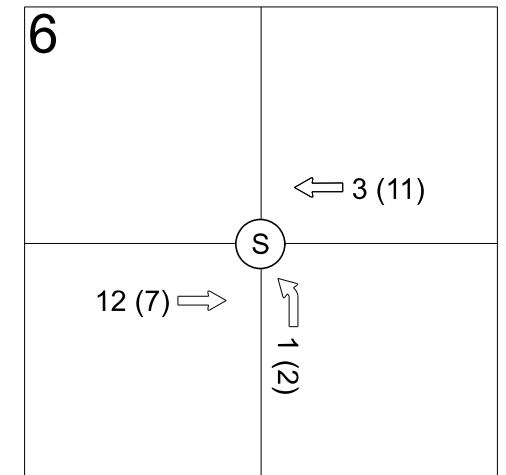
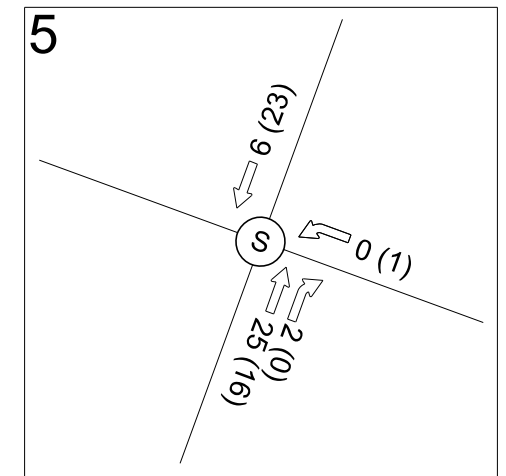
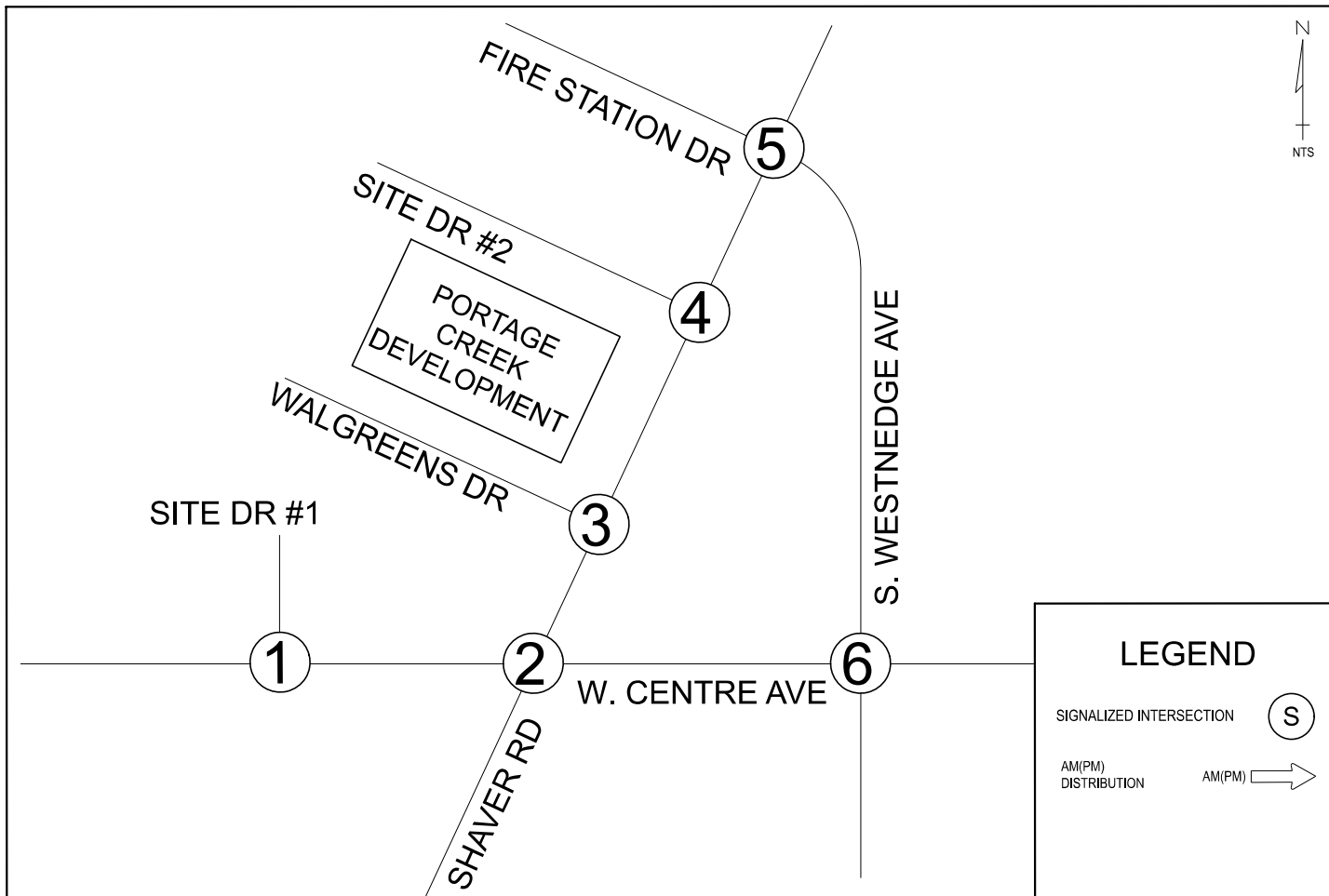
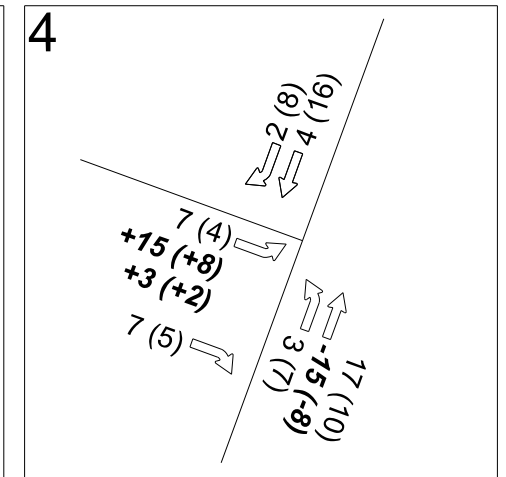
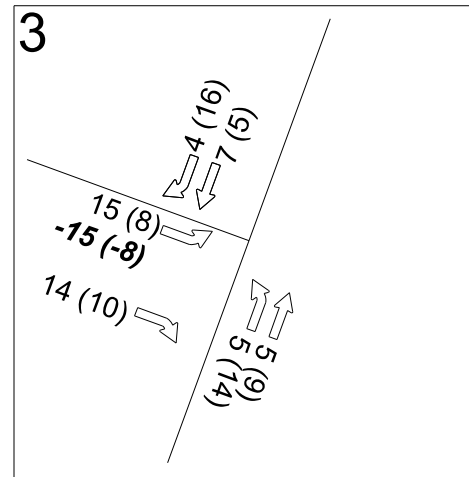
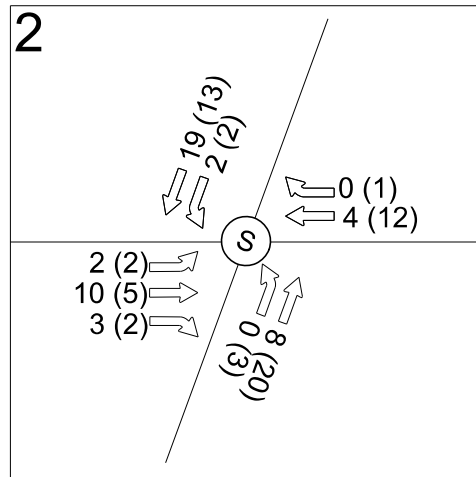
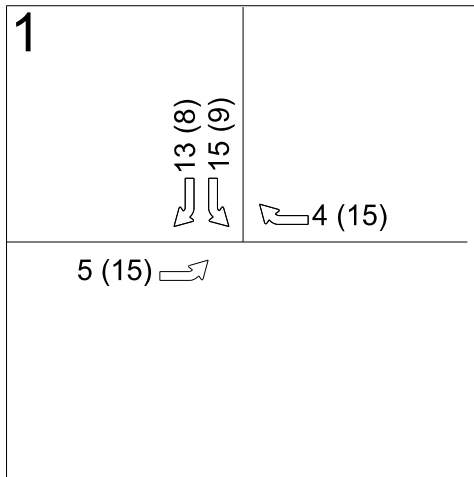
EXISTING VOLUME SPLITS (W. Centre Ave)				
			AM	PM
W. Centre Ave at Site Driveway	Eastbound	Left	13	45
		Thru	921	1046
	Westbound	Thru	754	1032
		Right	12	30
EXISTING VOLUME SPLITS (Shaver Rd)				
Shaver Rd at Walgreens Driveway	Northbound	Left	1	4
		Thru	347	601
	Southbound	Thru	274	674
		Right	18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

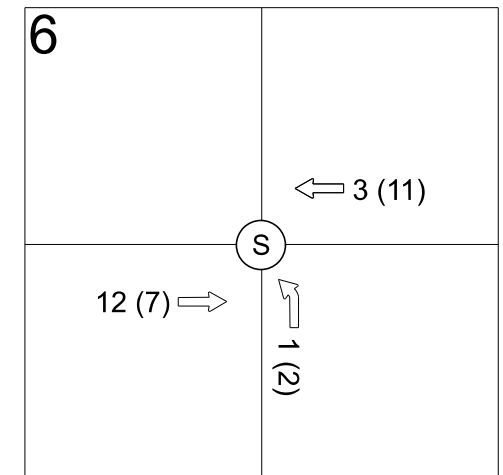
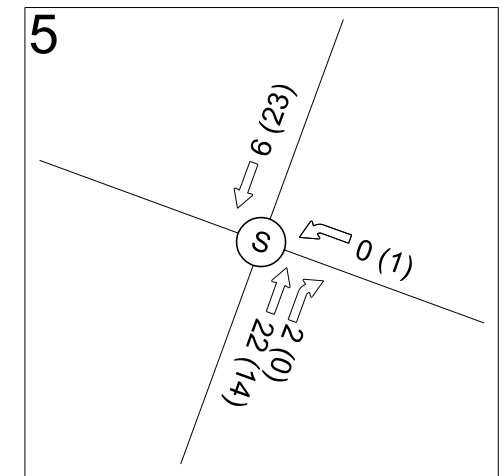
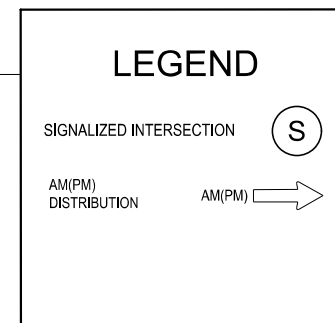
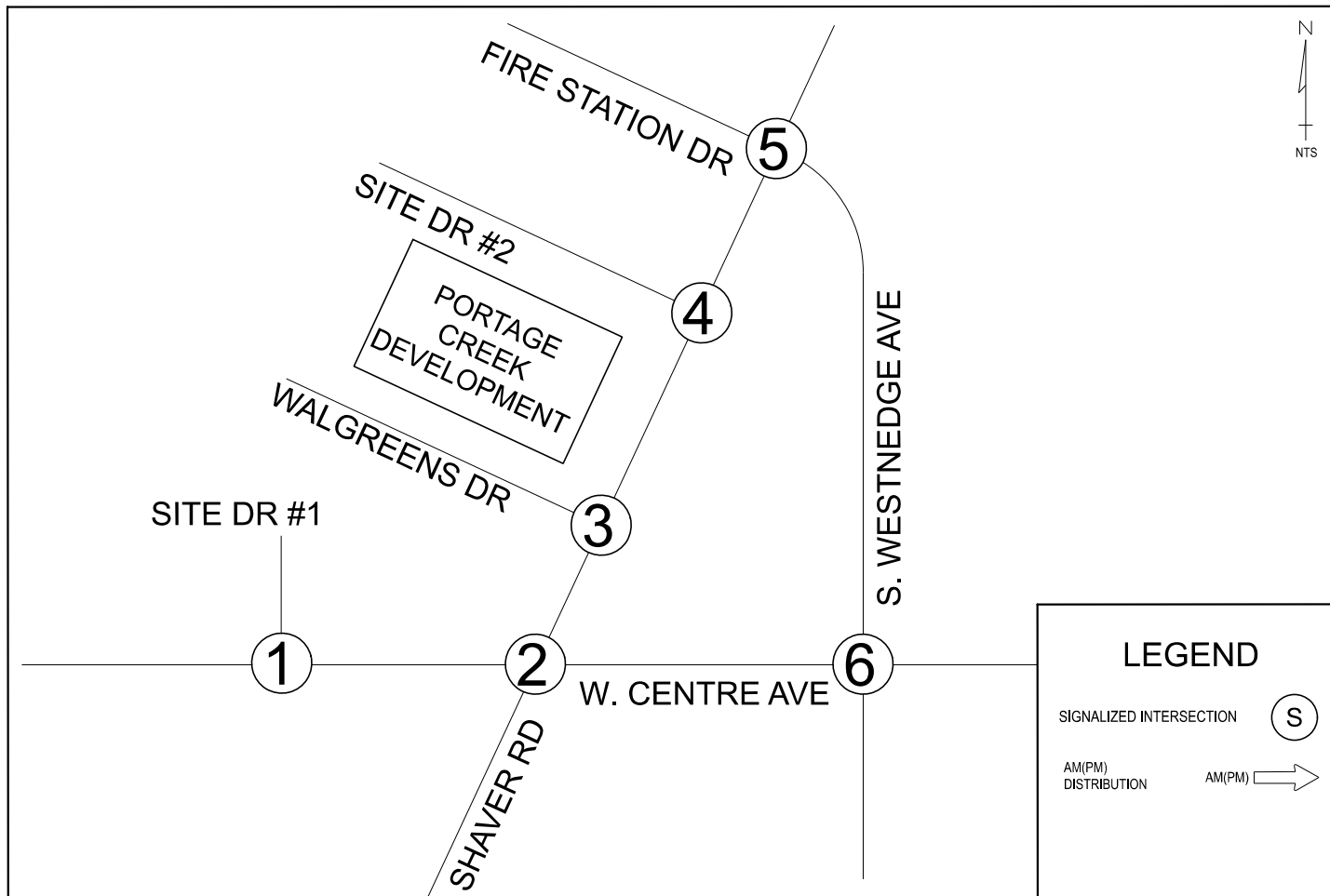
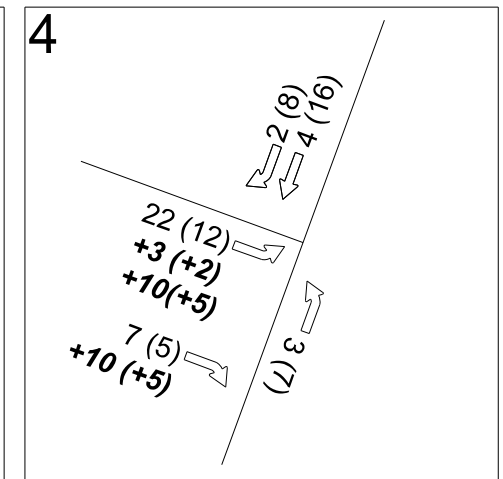
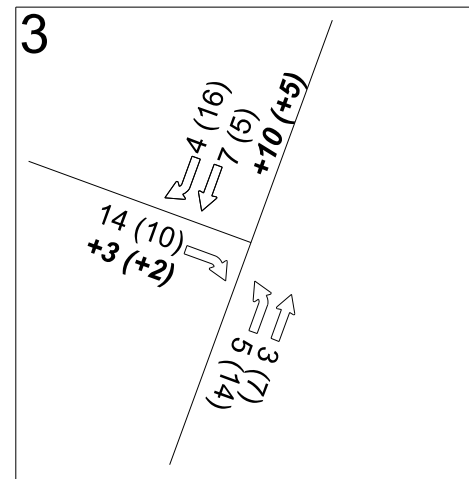
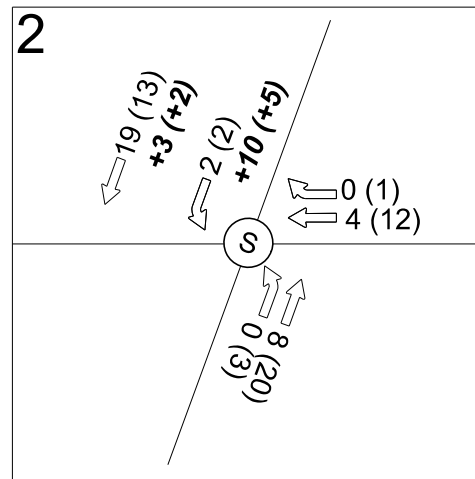
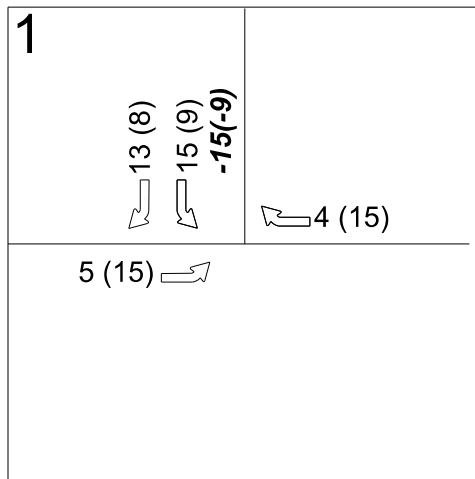
Trip distributions on W. Centre Rd and Shaver Rd

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											
Notes												

HCM 6th Signalized Intersection Summary

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

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				
Intersection Summary												
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+I), 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	A
Analysis Period (min)			15			

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

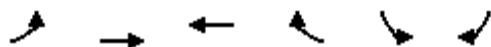
02/19/2023

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	TWLTL					
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+1.2), 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

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
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	-	-	-	-	-

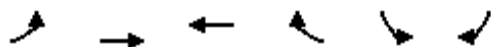
Approach	EB	NB	SB
HCM Control Delay, s	14.1	0.1	0
HCM LOS	B		

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		TWLTL						
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			346			378			646	
Approach Delay, s/veh		26.7			39.9			13.7			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	7.5		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(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	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+12.0), 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				TWLTL	TWLTL	
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	A
Analysis Period (min)			15			

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



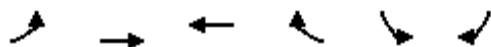
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations							
Traffic Volume (veh/h)	9	9	2	351	277	18	
Future Volume (Veh/h)	9	9	2	351	277	18	
Sign Control	Stop			Free	Free		
Grade	0%			0%	0%		
Peak Hour Factor	0.60	0.60	0.94	0.94	0.87	0.87	
Hourly flow rate (vph)	15	15	2	373	318	21	
Pedestrians							
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	TWLT					
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(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	19.8	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(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	39.7	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+I), 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	TWLT					
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

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 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				

Intersection Summary

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 O(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	-	-

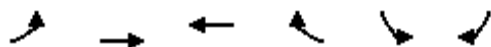
Approach	EB	NB	SB
HCM Control Delay, s	10.9	0.2	0
HCM LOS	B		

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	TWTLT						
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											

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(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	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	17.5	42.5	11.5	22.5	17.5	42.5	11.5	22.5				
Max Q Clear Time (g_c+1), 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
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	-	-

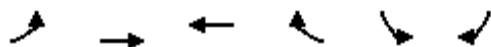
Approach	EB	NB	SB
HCM Control Delay, s	12.6	0.5	0
HCM LOS	B		

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 O(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	0	-	0
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 O(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 O(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	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	17.5	42.5	11.5	22.5	17.5	42.5	11.5	22.5				
Max Q Clear Time (g_c+1), 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

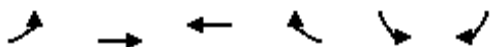
02/06/2023

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			

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

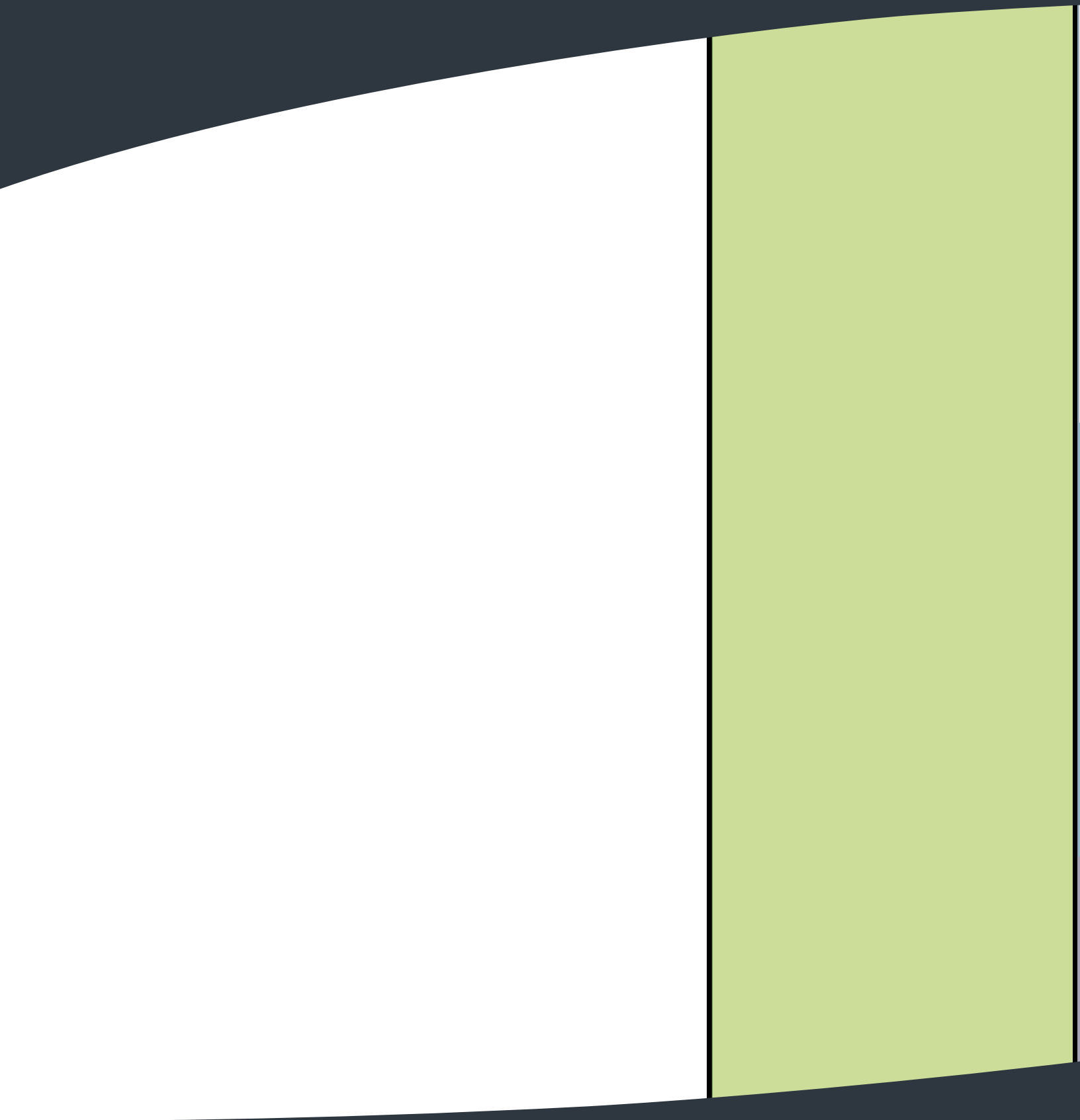
Movement	EB	WB	WB	NB	SB
Directions Served	TR	T	TR	R	R
Maximum Queue (ft)	37	139	121	30	92
Average Queue (ft)	1	16	14	10	37
95th Queue (ft)	12	74	53	33	73
Link Distance (ft)	220	240	240	140	132
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing 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: City of Portage Planning Commission
DATE: October 24, 2023

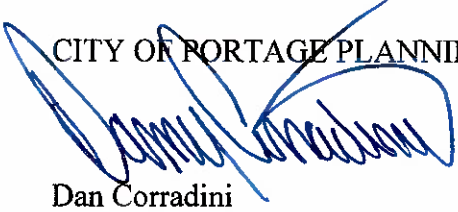
SUBJECT: An Amendment to the previously-approved Tentative Plan Application of the River Caddis proposed mixed-use development at 412 W. Centre Avenue and 7860 Shaver Road.

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

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.

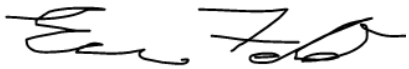
Commissioner Freiman asked about the format of the future Master Plan subcommittees subsections. Ms. Zhao indicated that the subcommittee meetings may last 1.5 hours long, the Master Plan consultants (Housel Lavigne) will lead discussion based on the framework and discuss with/ ask the subcommittee's 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,

A handwritten signature in black ink, appearing to read "Eric Feldt". The signature is fluid and cursive, with the first name "Eric" and last name "Feldt" clearly distinguishable.

Eric Feldt, AICP, CFM
Senior City Planner

TO: Honorable Mayor and City Council

FROM: Pat McGinnis, City Manager

SUBJECT: "I Love Portage" Essay Contest - Council Volunteers

SUPPORTING PERSONNEL: Kathleen Hoyle, Director of Parks & Recreation

ACTION RECOMMENDED: Appoint City Council volunteers to read the essays submitted as part of the "I Love Portage" Essay Contest and determine the contest winner(s).

For more than ten years, the City of Portage has conducted the "I Love Portage" essay contest. The contest encourages Portage students to write a one-page essay about what they love about Portage. Traditionally, the winner(s) of the contest has been selected by three members of the Council who read the essays over the Thanksgiving holiday. The winner(s) are then invited to read aloud their essay and "flip the switch" to illuminate the lights on the Mayor's Tree and the holiday lighting in the City Centre as part of the Traditional Holiday and Tree Lighting Ceremony.

The city received 92 entries as part of the 2023 "I Love Portage" essay. It is recommended that City Council appoint three volunteers to read the essays submitted as part of the "I Love Portage" Essay Contest and determine the contest winner(s). A selection of the winning essays by Monday, November 27 will allow city staff to notify the winner(s) and arrange for their attendance at the Traditional Holiday and Tree Lighting Ceremony on Saturday, December 2, beginning at 6 PM.

FUNDING: Not Applicable

Attachments: None