LOCATION CHANGE

THE MEETING WILL BE HELD AT PARKER MIDDLE SCHOOL, 400 WRIGHT ROAD, HOWELL.

GENOA CHARTER TOWNSHIP
PLANNING COMMISSION
PUBLIC HEARING
DECEMBER 9, 2024
MONDAY
6:30 P.M.

AGENDA

CALL TO ORDER:

PLEDGE OF ALLEGIANCE:

APPROVAL OF AGENDA:

DECLARATION OF CONFLICT OF INTEREST:

CALL TO THE PUBLIC: (*Note: The Board reserves the right to not begin new business after 10:00 p.m.)*

OPEN PUBLIC HEARING # 1… Consideration of a rezoning application, PUD agreement, impact assessment, and PUD conceptual plan to rezone 7.44 acres from Country Estates (CE) to ICPUD (Interchange Commercial Planned Unit Development). The property is located on the east side of Latson Road, between Beck Road and the CSX Rail line. The request is petitioned by Todd Wyett.

A. Recommendation of Rezoning Plan
B. Recommendation of PUD agreement
C. Recommendation of Environmental Impact Assessment (9-27-24)
D. Recommendation of Conceptual PUD (11-13-24)

OPEN PUBLIC HEARING #2... Consideration of an environmental impact assessment and site plan for a 200-foot private road and entry signage for the Innovation Interchange Development. The proposed road and signage are located on the west side of S. Latson Road, between the CSX Rail line and Clover Bend Court. The request is petitioned by Todd Wyett.

A. Recommendation of Environmental Impact Assessment (10-17-24)
B. Recommednation of Site Plan (11-11-24)

ADMINISTRATIVE BUSINESS:

- Member discussion
- Adjournment

*Citizen's Comments- In addition to providing the public with an opportunity to address the Township Board at the beginning of the meeting, opportunity to comment on individual agenda items may be offered by the Chairman as they are presented. Anyone speaking on an agenda item will be limited to 2 minutes.

GENOA CHARTER TOWNSHIP APPLICATION
Planned Unit Development (PUD)

APPLICANT NAME: Latson Beck, LLC

APPLICANT EMAIL: todd@versacos.com

APPLICANT ADDRESS & PHONE: 29201 Telegraph Rd., Ste. 410, Southfield, MI 48034, (248) 770-8484

OWNER'S NAME: Latson Beck, LLC

OWNER ADDRESS & PHONE: 29201 Telegraph Rd., Ste. 410, Southfield, MI 48034 , (248)770-8484

TAX CODE(S): 11-09-300-046

QUALIFYING CONDITIONS (To be filled out by applicant)

1. A PUD zoning classification may be initiated only by a petition.

2. It is desired and requested that the foregoing property be rezoned to the following type of PUD designation:

   ☐ Residential Planned Unit Development (RPUD) ☒ ICPUD
   ☐ Planned Industrial District (PID)
   ☐ Mixed Use Planned Unit Development (MUPUD)
   ☐ Redevelopment Planned Unit Development (RDPUD)
   ☐ Non-residential Planned Unit Development (NRPUD)
   ☐ Town Center Planned Unit Development (TCPUD)

3. The planned unit development site shall be under the control of one owner or group of owners and shall be capable of being planned and developed as one integral unit.

EXPLAIN The property is under single control.

4. The site shall have a minimum area of twenty (20) acres of contiguous land, provided such minimum may be reduced by the Township Board as follows:

   A. The minimum area requirement may be reduced to five (5) acres for sites served by both public water and public sewer.

   B. The minimum lot area may be waived for sites zoned for commercial use (NSD, GCD or RCD) where the site is occupied by a nonconforming commercial, office or industrial building, all buildings on such site are proposed to be removed and a new use permitted within the underlying zoning district is to be established. The Township Board shall only permit the PUD on the smaller site where it finds that the flexibility in dimensional standards is necessary to allow for innovative design in redeveloping the site and an existing blighted situation will be eliminated. A parallel plan shall be provided showing how the site could be redeveloped without the use of the PUD to allow the Planning Commission to evaluate whether the modifications to dimensional standards are the

minimum necessary to allow redevelopment of the site, while still meeting the spirit and intent of the ordinance.

C. The PUD site plan shall provide one or more of the following benefits not possible under the standards of another zoning district, as determined by the Planning Commission:

- preservation of significant natural or historic features
- a complementary mixture of uses or a variety of housing types
- common open space for passive or active recreational use
- mitigation to offset impacts
- redevelopment of a nonconforming site where creative design can address unique site constraints.

D. The site shall be served by public sewer and water. The Township may approve a residential PUD that is not served by public sewer or water, provided all lots shall be at least one (1) acre in area and the requirements of the County Health Department shall be met.

Size of property is approximately 7 acres.

DESCRIBE BELOW HOW THE REQUESTED PUD DESIGNATION COMPLIES WITH AFOREMENTIONED MINIMUM LOT SIZE REQUIREMENTS.

The +/-7 acre property is less than 20 acres but will be served by both public water and sewer which allows for the minimum area to be reduced to 5 acres as explained above.

STANDARDS FOR REZONING TO PLANNED UNIT DEVELOPMENT (RESPOND HERE OR WITHIN THE IMPACT STATEMENT)

1. How would the PUD be consistent with the goals, policies and future land use map of the Genoa Township Master Plan, including any subarea or corridor studies. If conditions have changed since the Master Plan was adopted, the consistency with recent development trends in the area;

A detailed response to this question is explained in the attached letter by Alan Greene from Dykema Gossett PLLC. Please refer to response #1 Consistency with Master Plan

2. The compatibility of all the potential uses in the PUD with surrounding uses and zoning in terms of land suitability, impacts on the environment, density, nature of use, traffic impacts, aesthetics, infrastructure and potential influence on property values;

A detailed response to this question is explained in the attached letter by Alan Greene from Dykema Gossett PLLC. Please refer to response #4 Compatibility with Surrounding Use.

3. The capacity of infrastructure and services sufficient to accommodate the uses permitted in the requested district without compromising the "health, safety and welfare" of the Township;

A detailed response to this question is explained in the attached letter by Alan Greene from Dykema Gossett PLLC. Please refer to response #5 Infrastructure Capacity to Accommodate the Uses.

4. The apparent demand for the types of uses permitted in the PUD;

A detailed response to this question is explained in the attached letter by Alan Greene from Dykema Gossett PLLC. Please refer to response #6 Demonstrated Demand for the Uses.

AFFIDAVIT

The undersigned says that they are the owners (owner, lessee, or other specified interest) involved in this petition and that the foregoing answers and statements herein contained and the information herewith submitted are in all respects true and correct to the best of his/her knowledge and belief.

BY: _____

ADDRESS: 29201 Telegraph Rd., Ste. 410, Southfield, MI 48034

***Contact Information** - Review Letters and Correspondence shall be forwarded to the following:*

Todd Wyett (*Name*) of Versa Real Estate (*Business Affiliation*) at todd@versacos.com (*E-mail*)

And Eric Lord of Atwell at elord@atwell-group.com

FEE EXCEEDANCE AGREEMENT

As stated on the site plan review fee schedule, all site plans are allocated two (2) consultant reviews and one (1) Planning Commission meeting. If additional reviews or meetings are necessary, the applicant will be required to pay the actual incurred costs for the additional reviews. If applicable, additional review fee payment will be required concurrent with submittal to the Township Board. By signing below, applicant indicates agreement and full understanding of this policy.

PROJECT NAME: Latson Road / I-96 Interchange Commercial

PROJECT LOCATON & DESCRIPTION: South of Beck and east of Latson Road

SIGNATURE: _____ DATE: _____

PRINT NAME: Todd Wyett PHONE: 248-770-8484

COMPANY NAME & ADDRESS: Versa Real Estate, 29201 Telegraph Rd., Ste. 410, Southfield, MI 48034

GENOA CHARTER TOWNSHIP
Application for Re-Zoning

APPLICANT NAME: Latson Beck, LLC ADDRESS: 29201 Telegraph Rd, ste 410, Southfield, MI 48034

OWNER NAME: Latson Beck, LLC ADDRESS: Same as above

PARCEL #(s): 11-09-300-046 PRIMARY PHONE: (248) 770-8484

EMAIL 1: todd@versacos.com EMAIL 2: elord@atwell-group.com

We, the undersigned, do hereby respectfully make application to and petition the Township Board to amend the Township Zoning Ordinance and change the zoning map of the township of Genoa as hereinafter requested, and in support of this application, the following facts are shown:

A. REQUIRED SUBMITTAL INFORMATION

1. A legal description and street address of the subject property, together with a map identifying the subject property in relation to surrounding properties;
2. The name, signature and address of the owner of the subject property, a statement of the applicant's interest in the subject property if not the owner in fee simple title, and proof of consent from the property owner;
3. It is desired and requested that the foregoing property be rezoned from:

   CE to ICPUD.
4. A site plan illustrating existing conditions on the site and adjacent properties; such as woodlands, wetlands, soil conditions, steep slope, drainage patterns, views, existing buildings, sight distance limitations, relationship to other developed sites. and access points in the vicinity;
5. A conceptual plan demonstrating that the site could be developed with representative uses permitted in the requested zoning district meeting requirements for setbacks, wetland buffers access spacing, any requested service drives and other site design factors;
6. A written environmental impact assessment, a map of existing site features as described in Article 18 describing site features and anticipated impacts created by the host of uses permitted in the requested zoning district;
7. A written description of how the requested rezoning meets Sec. 22.04 “Criteria for Amendment of the Official Zoning Map.”
8. The property in question shall be staked prior to the Planning Commission Public Hearing.

B. DESCRIBE HOW YOUR REQUESTED RE-ZONING MEETS THE ZONING ORDINANCE CRITERIA FOR AMENDING THE OFFICIAL ZONING MAP:

1. How is the rezoning consistent with the goals, policies and future land use map of the Genoa Township Master Plan, including any subareas or corridor studies. If not consistent, describe how conditions have changed since the Master Plan was adopted?

See detailed response in attached letter from Alan Greene with Dykema Gossett PLLC.

2. Are the site's physical, geological, hydrological and other environmental features suitable for the host of uses permitted in the proposed zoning district?

See detailed response in attached letter from Alan Greene with Dykema Gossett PLLC

3. Do you have any evidence that a reasonable return on investment cannot be received by developing the property with one (1) of the uses permitted under the current zoning?

See detailed response in attached letter from Alan Greene with Dykema Gossett PLLC

4. How would all the potential uses allowed in the proposed zoning district be compatible with surrounding uses and zoning in terms of views, noise, air quality, the environment, density, traffic impacts, drainage and potential influence on property values?

See detailed response in attached letter from Alan Greene with Dykema Gossett PLLC

5. Are infrastructure capacity (streets, sanitary sewer, water, and drainage) and services (police and fire protection, etc.) sufficient to accommodate the uses permitted in the requested district?

See detailed response in attached letter from Alan Greene with Dykema Gossett PLLC

6. Is there a demonstrated demand in Genoa Township or the surrounding area for the types of uses permitted in the requested zoning district? If yes, explain how this site is better suited for the zoning than others which may be planned or zoned to accommodate the demand.

See detailed response in attached letter from Alan Greene with Dykema Gossett PLLC

7. If you have a particular use in mind, is another zoning district more appropriate? Why should the Township re-zone the land rather than amend the list of uses allowed in another zoning district to accommodate your intended use?

See detailed response in attached letter from Alan Greene with Dykema Gossett PLLC

8. Describe any deed restrictions which could potentially affect the use of the property.

None

C. AFFIDAVIT

The undersigned says that they are the Owner (owner, lessee, or other specified interest) involved in this petition and that the foregoing answers and statements herein contained and the information herewith submitted are in all respects true and correct to the best of his/her knowledge and belief.

BY: Todd Wyett

ADDRESS: 29201 Telegraph Rd., Ste. 410, Southfield, MI 48034

SIGNATURE

The following contact should also receive review letters and correspondence:

Name: Eric Lord Email: elord@atwell-group.com

Business Affiliation: Engineer

FEE EXCEEDANCE AGREEMENT

As stated on the site plan review fee schedule, all site plans are allocated two (2) consultant reviews and one (1) Planning Commission meeting. If additional reviews or meetings are necessary, the applicant will be required to pay the actual incurred costs for the additional reviews. If applicable, additional review fee payment will be required concurrent with submittal to the Township Board. By signing below, applicant indicates agreement and full understanding of this policy.

PROJECT NAME: Interchange Commercial PUD

PROJECT LOCATON & DESCRIPTION: Latson Road south of I-96

SIGNATURE: DATE: 2/22/2024

PRINT NAME: Todd Wyett PHONE: (248) 770-8484

COMPANY NAME & ADDRESS: Versa Real Estate

GENOA CHARTER TOWNSHIP

Application for Site Plan Review

TO THE GENOA TOWNSHIP PLANNING COMMISSION AND TOWNSHIP BOARD:

APPLICANT NAME & ADDRESS: Todd Wyett 29201 Telegraph Rd., Ste. 410, Southfield, MI 48034

If applicant is not the owner, a letter of Authorization from Property Owner is needed.

OWNER'S NAME & ADDRESS: Todd Wyett 29201 Telegraph Rd., Ste. 410, Southfield, MI 48034

SITE ADDRESS: _____ PARCEL #(s): 11-09-300-046

APPLICANT PHONE: (248)770-8484 OWNER PHONE: (248) 770-8484

OWNER EMAIL: todd@versacos.com

LOCATION AND BRIEF DESCRIPTION OF SITE: _____

The site is located south of the Latson Road Interchange with I-96, east of Latson between Beck Rd and the Railroad.

BRIEF STATEMENT OF PROPOSED USE: _____

The area is intended for supportive commercial use as indicated in the Township Master Plan.

THE FOLLOWING BUILDINGS ARE PROPOSED: To be determined.

I HEREBY CERTIFY THAT ALL INFORMATION AND DATA ATTACHED TO AND MADE PART OF THIS APPLICATION IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

BY: Todd Wyett

ADDRESS: 29201 Telegraph Rd., Ste. 410, Southfield, MI 48034

Contact Information - Review Letters and Correspondence shall be forwarded to the following:

1.) Name	of Business Affiliation	at E-mail Address
Todd Wyett	Versa Real Estate	todd@versacos.com
Eric Lord	Atwell Group	elord@atwell-group.com

FEE EXCEEDANCE AGREEMENT

As stated on the site plan review fee schedule, all site plans are allocated two (2) consultant reviews and one (1) Planning Commission meeting. If additional reviews or meetings are necessary, the applicant will be required to pay the actual incurred costs for the additional reviews. If applicable, additional review fee payment will be required concurrent with submittal to the Township Board. By signing below, applicant indicates agreement and full understanding of this policy.

SIGNATURE: _____ DATE: 2/22/2024

PRINT NAME: Todd Wyett PHONE: 248-770-8484

ADDRESS: 29201 Telegraph Rd., Ste. 410, Southfield, MI 48034

2911 Dorr Road
Brighton, MI 48116
810.227.5225
810.227.3420 fax
genoa.org

MEMORANDUM

TO: Planning Commission

FROM: Kelly VanMarter, Township Manager

DATE: December 5, 2024

RE: Clarifications

Dear Commissioners,

For the record, I offer the following clarifications to statements made in the September 27, 2024 correspondence letter addressed to me from Alan Greene with Dykema Gossett PLLC. A copy of Mr. Greene's letter is attached.

Page 3, Item 5 – 2nd Sentence: "MHOG has improved its sewer plant at substantial cost to serve this Property and the other Township lands along S. Latson Road that have been planned for business development."

Clarification: *The expansion of the Genoa-Oceola sewer plant was necessary regardless of business development on S. Latson Road. Additional capacity for the S. Latson area was included in the expansion, but service to this area was not the purpose of the expansion.*

Page 3, Item 5 – 4th Sentence: "The Utility Agreement entered by the Township with the Innovation Park developer provides that sewer service would be extended to each of the properties within the planned development parcels, including the Property, in connection with final site plans for each such property."

Clarification: *The legal descriptions and survey included as Exhibits 1 and 2 of the "Agreement Regarding Construction of Sanitary Sewer and Water Project" do not include the property that is subject to the current Interchange Commercial PUD rezoning request in the "Property" or "Project Area". Furthermore, section 1 on page 2 of the Utility Agreement indicates that "the scope of the Utility Project shall not include any on-site sewer and water improvements to serve the Project, including the sanitary sewer pump station described in the PUD Agreement, nor shall the scope of this Utility Project include any sewer and water lines extended down Latson or any other public road or private property. Future utility improvements necessary to serve the Project will be designed and installed as part of final site planning and construction of each phase of the Project". Since the "Project" does not include the property that is the subject of the current rezoning request, the Utility Agreement is not sufficient to satisfy Zoning Ordinance standard 10.02.05 which is that the site shall be served by public sewer. The applicant has proposed an amendment to this agreement, however since this property is not within the Project Area of the Innovation Park PUD, a separate agreement for this property shall be provided to satisfy this requirement.*

Page 3, Item 6 - 3rd Sentence: "Indeed, the Township has been soliciting users and developers for this and surrounding Properties on its website."

Clarification: The Township has not solicited users and/or developers for the S. Latson area. We did work with Ann Arbor SPARK to host an informational page on the Township website. This page included maps, graphics and materials created by Ann Arbor SPARK regarding location, demographic, and market information. This page was created to share facts and should not be construed as a solicitation.

Please let me know if you have any questions or concerns.

SUPERVISOR
Kevin Spicher
CLERK
Janene Deaton
TREASURER
Robin L. Hunt
TRUSTEES
Rick Soucy
Bill Reiber
Candie Hovarter
Todd Walker
MANAGER
Kelly VanMarter

Dykema Gossett PLLC
39577 Woodward Avenue
Suite 300
Bloomfield Hills, MI 48304
WWW.DYKEMA.COM
Tel: (248) 203-0700
Fax: (248) 203-0763

Alan M. Greene
Direct Dial: (248) 203-0757
Direct Fax: (855) 236-1206
Email: AGreene@dykema.com

September 27, 2024

Via Hand Delivery

Kelly VanMarter
Planning Director
Genoa Township
2911 Dorr Road
Brighton, Michigan 48116

Re: Commercial PUD (ICPUD)--South Latson Road

Dear Kelly:

As you know, I represent Latson Beck, LLC (the "Applicant") in connection with its application for ICPUD zoning for property located east of Latson Road, along Beck Road (Parcel No. 11-09-300-046, the "Property"). In addition to seeking ICPUD zoning for the Property, Applicant sought to add an adjacent approximate 5 acres of land already zoned ICPUD to the proposed future development. That land is already part of the existing, approved Innovation Park PUD and would have required an amendment to the Innovation Park PUD agreement. Based upon the negative public reaction to amending the Innovation Park PUD apparent at the public hearings held on September 17, 2024, we are no longer seeking to amend the Innovation Park PUD and will just proceed with the request to approve ICPUD zoning on the Property.

Further, we have addressed all of the review comments from Township Staff and planning and engineering consultants dated September 10, 2024, which were made available to Applicant a couple of days before the September 17 public hearings. We made each change requested in those reviews and revised the documents to remove any reference to the 5 acres that are already zoned ICPUD and included in the Innovation Park PUD. In that regard, I am enclosing a redlined PUD agreement that reflects all of the requested review changes. I am also enclosing a letter from our engineer, Atwell, that summarizes all of the other revisions made to the various exhibits to the PUD, including the approved and prohibited uses, design guidelines and Impact Assessments, and includes redlined or highlighted revised documents. In that these were second reviews, there were not many material changes and the matter could have been addressed by the Planning Commission at its last meeting, although it chose to delay the matter so that the comments could be addressed.

This letter is also intended to supplement and address staff comments to the Application for Re-Zoning Form as follows:

1. <u>Consistency with Master Plan.</u> Even though the rezoning request is identical to the future land use classification identified in the Township's Master Plan, which is the epitome of consistency with the Master Plan, the review comment asks for more information on consistency with the Master Plan. However, the Township's own planning consultant reviewed this issue and concluded that, "*The proposed rezoning designation of ICPUD is consistent with the I-96/Latson Road Subarea Plan and goals of the Master Plan.*" (Letter from Safebuilt dated September 10, 2024, emphasis added.) The current zoning of the Property, Country Estates, is inconsistent with all of the surrounding zoning and land uses. This 7-acre island of agricultural, low-density residential zoning abuts land already zoned ICPUD to the east, and east of that is land master-planned for future ICPUD land uses. It abuts active railroad tracks to the south, fronts Beck Road to the north, which is in close proximity to the I-96/Latson Road interchange, with the extensive noise generated by that interchange. It fronts Latson Road to the west and the land on the west side of Latson is zoned for industrial and high-tech uses. The Master Plan calls for the accommodation of a variety of land uses in a logical pattern. For all of the reasons incorporated in the ICPUD future land use designation for the Property, this is the appropriate location for such highway commercial uses. Moreover, the Master Plan indicates that the entirety of all commercial, retail, office and medical office uses in the Township only incorporates about 4% of the Township land area.

2. <u>Suitability of the Site for Uses Permitted in the Zoning District</u>. Again, the suitability of the Property for the ICPUD land uses was evaluated by the Township in connection with the adoption of the Master Plan and designation of the Property for these uses. The Property is generally flat, with minimal natural features, with the exception of two small wetland pockets that, according to the wetland consultant, are not regulated or of rare quality. The Township has allocated public sewer and water capacity to serve the Property and public water has already been constructed to the Property in connection with the neighboring Innovation Park PUD. Sewer has also been brought across I-96 to the Innovation Park PUD property on the west side of Latson and is planned to be brought to the Property in accordance with the Utility Agreement entered into by the Township with the Developer of the Innovation Park PUD. The preliminary site plan included with the Application depicts a gas station, which is ready to move forward with detailed site planning if the rezoning is approved. (*See also*, Safebuilt letter, at p.3)

3. <u>No reasonable Return on Investment if the Property is not Rezoned.</u> One objective of the Master Plan is to "*Provide landowners with reasonable use of the Property in a manner compatible with adjacent land uses and overall land use patterns for the Township*." (Master Plan, at p. 2.15, emphasis added.) The current CE zoning is entirely inappropriate and inconsistent with the surrounding zoning, highway interchange (and the noise, fumes and traffic generated thereby) and railroad tracks. Of all the available land in the Township for low-density residential/agricultural development, this is one of the least appropriate locations for such development, which explains why the Township has designated this land for highway commercial development for over 10 years now. Maintaining the CE zoning of the Property deprives the Applicant of any economically viable use of the Property and would constitute a taking if not changed. In fact, the location and other factors impacting the Property make it entirely inappropriate for the stated purpose of the CE district (one of the low-density single-family and agriculture districts) as set forth in Section 3.01 of the Zoning Ordinance. (*See also*, Safebuilt letter, at p.3.)

4. Whether the Proposed Uses Are Compatible with Surrounding Use. As described in detail in paragraph 2 above, the uses allowed in the ICPUD district are compatible with the surrounding zoning and land influences. Land to the east is zoned ICPUD. Land to the south and west are zoned CAPUD. The Property is sandwiched between railroad tracks and public streets in close proximity to a busy highway interchange. The Township itself considered all of these factors when it master-planned the Property for ICPUD uses.

5. Infrastructure Capacity to Accommodate the Uses. As previously stated, the Township has specifically planned to serve this Property with public utilities and has allocated capacity for such purpose. MHOG has improved its sewer plant at substantial cost to serve this Property and the other Township lands along S. Latson Road that have been planned for business development. Water has recently been extended to the Property and sewer has been extended to the Innovation Park property on the west side of Latson. The Utility Agreement entered by the Township with the Innovation Park developer provides that sewer service would be extended to each of the properties within the planned development parcels, including the Property, in connection with final site plans for each such property.

6. Demonstrated Demand for the Uses. The Township's Master Plan evaluated the amount of land reasonably required for the interchange commercial uses and designated a very limited amount of land for this purpose. The location is unique and being dictated by the proximity to the interchange. Indeed, the Township has been soliciting users and developers for this and surrounding Properties on its website. Although it is not required to have a user in place to justify the rezoning (in fact, most users do not enter agreements for property that is not yet zoned for such use), Applicant has entered into a letter of intent dated August 29, 2024 (copy attached with economics redacted), for the gas station and affiliated commercial use shown on the preliminary plan submitted with the Application. If the rezoning is granted, that project will move forward with final site planning and engineering design.

7. Whether Another Zoning District is More Appropriate. No. The Township created the ICPUD zoning district within the last several years specifically for this Property and a few other limited parcels in the vicinity of the Property. Indeed, the adjacent 5 acres to the east has already by zoned ICPUD. (*See also*, Safebuilt letter, at p.4.)

Thank you for considering these additional comments. We would appreciate it if this matter can be placed on an agenda for a special meeting at the end of October.

Sincerely,

Dykema Gossett PLLC

Alan M. Greene

cc: Todd Wyett
Brad Strader
Eric Lord
Jared Kime
Julie Kroll

August 19, 2024

Todd Wyett
Versa Real Estate
206 Bridge Street
Charlevoix, Michigan 49720

Re: Letter of Intent for the Latson Road & I-96, Howell, Michigan

Dear Todd:

[redacted] on behalf of an entity to be formed and/or assigns ("Purchaser") is submitting this letter of intent ("LOI") to acquire the Property (as hereinafter defined). This LOI is not a binding commitment or agreement by either Purchaser or Seller for the purchase and sale of the Property.

Property:	Latson Road & I-96 Howell, MI (legal description is on the attached survey as Exhibit A) Approximately 4 acres
Purchase Price:	[redacted] Dollars plus or minus customary prorations with cash at Closing.
Deposit:	Within five (5) business days of execution of a Purchase and Sale Agreement ("Agreement"), Purchaser shall deposit [redacted] Dollars ("Deposit") with First American Title Insurance Company, 300 E. Long Lake Road, Suite 300, Bloomfield Hills, MI 48304 Attn: Pat Flinchum ("Title Company").
Purchase and Sale Agreement:	Upon written acknowledgement of the terms of this LOI by Purchaser and Seller, Purchaser will prepare the Agreement for Seller's review within ten (10) days after the full execution of this LOI.
Inspection Period:	Purchaser shall have until 5:00 PM EST on a date that is two hundred seventy (270) days from execution of the Agreement ("Inspection Period") to conduct certain tests and studies, examine title, and otherwise to determine in its sole discretion if it intends to purchase the Property. Purchaser and its representatives shall have reasonable rights to inspect the Property and its improvements in accordance with terms of the Agreement. All Inspection Period expenses shall be paid for by Purchaser.

Closing:	The closing ("Closing") shall take place thirty (30) days after the expiration of the Inspection Period as extended.
Confidentiality:	Except as may be required by law, neither Purchaser nor its respective shareholders, trustees, beneficiaries, affiliates, officers, employees, agents and representatives, shall: (a) make any press release or any public statement concerning the transaction contemplated herein without the prior written consent of the Seller; or (b) disclose either the terms, or existence of this letter of intent and any subsequent Agreement to any person or entity, other than to its attorneys, and to those parties with whom it must communicate in order to consummate the proposed transaction; or (c) disclose the test results from Purchaser's inspections of the Property to any third party other than as permitted hereunder.
Title:	Upon execution of the Agreement, Seller will provide Purchaser a commitment for an ALTA Owner's Title Insurance Policy insuring title to Real Estate without exceptions issued by Title Company (including copies of all recorded exceptions), commitment and the policy to be issued thereto, including any and all endorsements desired by Purchaser. If Seller can locate its owner's title insurance policy, Seller agrees to deliver a copy to Purchaser.
Prorations & Closing Costs:	Taxes and utilities will be prorated as of the closing date. Seller to pay for (i) Owners Title Policy without encumbrances and standard exceptions; (ii) property transfer taxes; (iii) broker fees; and (iv) ½ of closing fees. All other closing costs to be borne by Purchaser as is usual practice (survey, mortgage title insurance if needed, and any third-party reports) and ½ of closing fees. Real estate tax proration will be handled according to local custom ("due-date" assuming that taxes are paid in advance from issue date). At Closing, Seller shall assign and convey to Purchaser all of its right's, title and interest in and to the Property, conveying good and marketable title to the Property. The real property shall be conveyed by a warranty deed free of any encumbrances not accepted by Purchaser. Purchaser understands this is an "as-is" transaction with no representations and warranties of Seller.
Assignment:	Purchaser may assign its rights, duties, and obligations under this Agreement at any time prior to Closing without Seller approval.
Limitations:	Notwithstanding anything to the contrary contained herein or elsewhere, this LOI constitutes only an expression of interest and shall not constitute a binding agreement between the signatories to consummate the transaction discussed herein. This LOI is non-binding and is merely a reflection the parties' understanding of some of the general terms of the proposed transaction and upon which h understanding the parties are willing to proceed with further discussions and negotiations. It is agreed that no party to the proposed transaction will be under any legal obligation with respect to the proposed transaction or any similar

transactions, and no offer, commitment, estoppel, undertaking or obligation of any nature whatsoever shall exist or be implied in fact, law or equity, unless and until a formal written agreement providing for the transaction containing in detailed legal form the terms and conditions of the transaction has been executed and delivered by all parties intended to be bound. Both parties acknowledge and agree that during the course of negotiations the parties may reach agreement on certain points related to the proposed transaction but agree that neither party shall be entitled to rely upon any such agreements, or any statements or representations that may be made during the course of discussions and negotiations, nor shall there be any legal obligations related thereto, until the parties have executed an Agreement. However, by Purchaser's execution of this LOI, Purchaser is representing to Seller that it has a good faith interest in the Property.

Shared Costs: The cost of curb cuts and acceleration/deceleration lanes on Beck Road (if necessary) will be shared equally between Seller and Purchaser. Have to come up with a reimbursement when I build my buildings

Seller's Costs: The cost of providing the sanitary sewer, storm sewer, and water to the property shall be the responsibility of the Seller. Buyer pays for any lift station, etc.

Sincerely,

PURCHASER: [redacted] **on behalf of an entity to be formed**

By: _____
Name: [redacted]
Date: 8/29/24

SELLER: LATSON BECK, LLC

By: _____
Name _____
Date: 8/30/24

EXHIBIT A

December 3, 2024

Planning Commission
Genoa Township
2911 Dorr Road
Brighton, Michigan 48116

Attention:	Amy Ruthig, Planning Director
Subject:	Versa Development – Interchange Commercial PUD (Review #4)
Location:	East side of Latson Road, between Beck Road and the rail line
Zoning:	CE Country Estate and ICPUD Interchange Commercial Planned Unit Development

Dear Commissioners:

At the Township's request, we have reviewed the revised submittal from Versa Development requesting PUD rezoning and conceptual PUD plan review for 7.44 acres of undeveloped land generally located on the east side of Latson Road between Beck Road and the rail line.

A. Summary

1. **PUD Qualifying Conditions (Section 10.02):**
   a. The Township may reduce the minimum site area provided "the design elements of a proposed development are integrated into and consistent with the broader Master Plan Latson Road Subarea Plans with compatible land uses."
   b. The site does not currently have public sewer; however, the revised submittal includes an amended Utilities Agreement for sanitary sewer construction. The applicant must address any comments provided by the Township with respect to the amended Agreement.
   c. The applicant must address any additional comments provided by the Township Engineer and/or Utilities Director.
2. **Rezoning Criteria (Section 22.04):**
   a. The proposed zoning designation of ICPUD is generally consistent with the I-96/Latson Road Subarea Plan and goals of the Township Master Plan; however, the applicant's response to how potential uses will complement, but not duplicate, existing commercial in the area must be to the Township's satisfaction.
   b. We encourage the applicant to blend the wetland area into the overall site design, if possible.
   c. The applicant must address any technical comments provided by the Township's engineering consultant, Utilities Director and/or Brighton Area Fire Authority.
   d. Rezoning is necessary to implement the vision of the I-96/Latson Road Subarea Plan; however, the applicant's response to the comment above regarding complementary uses must be to the Township's satisfaction.
3. **Conceptual PUD Plan, including PUD Agreement and Design Guidelines (Section 10.03.06):**
   a. The proposed maximum height of a hotel (57 feet/4 stories) requires authorization as a dimensional deviation.
   b. The building/fuel pump orientation currently depicted on the conceptual plan should be required and the note indicating that it may change should be removed.
   c. We suggest one of the driveways depicted on the conceptual plan be removed.
   d. The applicant must address any comments provided by the Township's engineering consultant and/or the Livingston County Road Commission with respect to the Traffic Impact Study.
   e. The applicant must address any comments provided by the Utilities Director.
   f. The applicant must address staff and/or Township Attorney comments.
   g. The conceptual plan included with the Design Guidelines must be updated to incorporate the actual property survey.
   h. The Exhibits to the PUD Agreement must be corrected/provided as noted.

Aerial view of site and surroundings (looking north)

B. Proposal/Process

The request is to create an Interchange Commercial Planned Unit Development (ICPUD) for a 7.44 acre parcel located on the east side of Latson Road between Beck Road and the rail line.

At this time, the applicant seeks Planning Commission consideration of ICPUD rezoning for 7.44 acres of land, the conceptual PUD plan, Environmental Impact Assessment and draft PUD Agreement.

Following a public hearing, the Commission may put forth recommendations to the Township Board, who has final approval authority.

C. Qualifying Conditions

We have reviewed the request for compliance with the PUD Qualifying Conditions (Section 10.02), as follows:

1. **Single Ownership.** Per the PUD application form, "the property is under single control."

2. **Initiated by Petition.** The request has been properly initiated by submittal of the required application forms and materials.

3. **Minimum Site Area.** Section 10.02.03 requires a minimum of 20 acres for the establishment of a PUD; however, there are instances where the Township Board may reduce this requirement.

   For Interchange PUDs in particular, the Ordinance states that "the Township Board may waive the minimum lot area where the design elements of a proposed development are integrated into and consistent with the broader Master Plan Latson Road Subarea Plans with compatible land uses."

   Provided the Commission (and ultimately the Board) find this to be the case, the minimum site area may be reduced accordingly.

4. **Benefits.** The PUD will provide for a complementary mix of commercial uses, enhanced streetscaping, building design and site elements, pedestrian and vehicular connectivity, and public infrastructure improvements.

5. **Sewer and Water.** The site is served by public water, but public sewer is not currently available.

   To address this deficiency, the revised submittal includes an amendment to the Utilities Agreement for sanitary sewer construction.

The amended Utilities Agreement is subject to review by Township staff and the Township Attorney. The applicant must address any comments provided.

The applicant must address any technical comments provided by the Township's engineering consultant and/or Utilities Director under this criterion.

D. Rezoning Criteria

We have reviewed the request for compliance with the Criteria for Amendment of the Official Zoning Map (Section 22.04), as follows:

1. Consistency with the goals, policies and future land use map of the Genoa Township Master Plan, including any subarea or corridor studies. If conditions have changed since the Master Plan was adopted, the consistency with recent development trends in the area.

The Township Master Plan and Future Land Use map identify the subject site as Interchange Commercial, which is consistent with the proposed ICPUD zoning designation.

The Latson/I-96 Subarea Plan provides the following statements applicable to the proposal:

- The areas immediately south of the interchange along S. Latson Road are planned for Interchange Commercial. This area is intended to accommodate the needs of interstate traffic and should complement, not duplicate, the commercial areas north along Latson and Grand River.
- A diversified mixture of uses that may include commercial and office/research and development.
- A mixture of uses that will diversify traffic generated from the site by spreading out the peak hour over times that minimize impact to the interchange's peak hour traffic.
- Distinct and prominent architectural features of enhanced character, which reflect the importance of the site's location and create a positive visual landmark for this gateway to the community.
- Extensive landscaping along Latson Road and Grand River Avenue to enhance the appearance of these corridors and the gateway to the community.
- Uniformity in design through coordination of architectural styles, landscaping, ornamental lighting, pedestrian circulation and vehicular access.

Based on the submittal materials, the proposal is generally consistent with the Township Master Plan, including the Latson/I-96 Subarea Plan.

In response to our previous review letter, the applicant has provided additional commentary as to how potential uses will complement, but not duplicate, existing commercial along Latson Road and Grand River Avenue.

The Township must determine whether this response is to their satisfaction.

2. Compatibility of the site's physical, geological, hydrological and other environmental features with the host of uses permitted in the proposed zoning district.

The revised submittal includes a Wetland Delineation Report (included with the revised Impact Assessment) that identifies 2 small wetland areas (less than 1/3 of an acre combined). The findings of the Report are that the wetlands are not regulated by the State.

If it is possible to preserve these small wetlands, we encourage the applicant to blend them into the ultimate site design.

Based on the materials submitted, including the updated Environmental Impact Assessment, we do not foresee any issues under this criterion; however, the applicant must address any concerns raised by the Township's engineering consultant.

3. The ability of the site to be reasonably developed with one (1) of the uses permitted under the current zoning.

In 2013, the Township Master Plan was updated to include an I-96/Latson Road Subarea Plan in anticipation of the new interchange.

The Subarea Plan was developed with an understanding that the new interchange would create development opportunities not allowed under CE zoning.

Accordingly, the Township's vision for the Interchange area cannot be accomplished under CE zoning, which is primarily intended for single-family residential on 5-acre lots.

4. The compatibility of all the potential uses allowed in the proposed zoning district with surrounding uses and zoning in terms of land suitability, impacts on the environment, density, nature of use, traffic impacts, aesthetics, infrastructure and potential influence on property values.

Section 10.03.06(c) of the Zoning Ordinance reads as follows:

> *ICPUD: permitted land uses include restaurants (fast food, sit-down, and take out), auto/gasoline service stations, retail/service, hotels, entertainment (movie theaters, indoor commercial recreation, etc.), conference centers, financial institutions, and offices. The Township may permit additional compatible uses as part of the approval process.*

The revised use table (Exhibit 4 of the draft PUD Agreement) incorporates comments from our previous review letters, and is consistent with the uses allowed in the Zoning Ordinance (as referenced above).

5. The capacity of Township infrastructure and services sufficient to accommodate the uses permitted in the requested district without compromising the "health, safety and welfare" of the Township.

The applicant must address any comments provided by the Township engineering consultant, Utilities Director and/or Brighton Area Fire Authority related to this criterion.

6. The apparent demand for the types of uses permitted in the requested zoning district in the Township in relation to the amount of land in the Township currently zoned to accommodate the demand.

Similar to comments under criterion #3 above, the Township has planned for this area to be developed as an Interchange Commercial PUD in accordance with the I-96/Latson Road Subarea Plan (originally adopted in 2013).

With that being said, the applicant's comments on how the potential uses will complement and not duplicate the existing commercial along Latson Road and Grand River Avenue must be to the Township's satisfaction.

7. Where a rezoning is reasonable given the above criteria, a determination the requested zoning district is more appropriate than another district or amending the list of permitted or Special Land Uses within a district.

Rezoning to ICPUD to implement the Master Plan and I-96/Latson Road Subarea Plan, is more appropriate than rezoning to another district or amending host of allowable uses in CE.

8. The request has not previously been submitted within the past one (1) year, unless conditions have changed or new information has been provided.

No rezoning requests for the subject property have been submitted in the past year.

E. Conceptual PUD Plan

We have reviewed the request for compliance with the standards of Section 10.03.06, as follows:

1. **Land Use.** The revised use table (Exhibit 4 of the PUD Agreement) is consistent with the Zoning Ordinance.

2. **Dimensional Standards.** Per Section 10.06.03(d), ICPUDs are to meet the dimensional standards for the RCD zoning district.

   The Design Guidelines match RCD dimensional standards, save for the proposed height increase allowed specifically for hotels (57 feet/4 stories), which requires approval as a dimensional deviation from the conventional requirement of 45 feet.

3. **Site Design.** The Design Guidelines include site design requirements for the development in terms of landscaping, lighting, and connectivity.

   The conceptual plan in the current submittal depicts the fuel pump canopy for the potential gas station behind the building so that it does not front Latson Road, as requested. However, a note has been added stating that "final gas station pump locations and access to be determined at site plan submittal."

   Based on our previous reviews, which include architectural guidance from the Master Plan, Zoning Ordinance and the proposed Design Guidelines, the building/fuel pump orientation currently depicted should be required and the note referenced above should be removed.

   The PUD Agreement also references site amenities, such as pathway connections, seating areas, and bike racks, as required by the Ordinance.

4. **Architecture.** The Design Guidelines provide detailed descriptions of the building design and material requirements for the development that generally meet or exceed conventional Ordinance standards.

5. **Access Management and Connectivity.** The conceptual PUD site plan depicts 3 drives on the south side of Beck Road, with no direct access to/from Latson Road.

   The proposed spacing between drives on Beck Road must meet the access management standards of the Zoning Ordinance, though it is also important to note that the use conditions applicable to gas stations limit such uses to 1 driveway unless otherwise approved by the Planning Commission.

   As such, we suggest the conceptual plan be revised to remove one of the driveways depicted.

   The plan includes vehicular and pedestrian connections throughout the site.

   The applicant must also implement the recommendations of the Traffic Impact Study, and address comments provided by the Township's engineering consultant.

6. **Utilities.** We defer technical review to the Township's engineering consultant, Brighton Area Fire Authority and Utilities Director.

7. **PUD Agreement.** The applicant must address any comments provided by Township staff and/or the Township Attorney.

8. **Impact Assessment.** The submittal includes an updated Environmental Impact Assessment (dated November 8, 2024) and an updated Traffic Impact Study (dated July 26, 2024).

   The revised Impact Assessment addresses the comments raised in our initial review letter; however, the applicant must address any comments provided by the Township's engineering consultant and/or the Livingston County Road Commission with respect to the Traffic Impact Study.

9. **Design Guidelines.** The current submittal addresses the comments raised in previous review letters.

   As part of its review of the draft PUD Agreement, Township staff raised questions about the actual property dimensions.

   As such, the conceptual plan included with the Design Guidelines must be updated to incorporate the actual property survey.

   Lastly, there are inconsistencies in the Exhibits that must be corrected. Specifically, there are duplicate cover sheets for Exhibits 1-6:

   - 1 – Parcel Map and Legal Description (which is not provided);
   - 2 – Meeting Minutes and Project Area Plan (which is not provided);
   - 3 – Commercial PUD Concept Plan and Parcel Map (which is provided as the 1st Exhibit 1);
   - 4 – Use Table and Utility Engineering and Design Plans (part of which is provided as the 1st Exhibit 7);
   - 5 – Excerpts from Zoning Ordinance and CSX Railroad Crossing Plans (which is not provided); and
   - 6 – Design Guidelines and Project Permit Responsibilities (which is not provided).

Should you have any questions concerning this matter, please do not hesitate to contact our office.

Respectfully,
SAFEBUILT

Brian V. Borden, AICP
Michigan Planning Manager

TETRA TECH

December 3, 2024

Ms. Amy Ruthig
Genoa Township
2911 Dorr Road
Brighton, MI 48116

Re: Latson Road - Versa PUD Rezoning
Conceptual Site Plan Review No. 6

Dear Ms. Ruthig:

Tetra Tech conducted a sixth site plan review of the South Latson Commercial PUD submittals last dated November 8, 2024. The plans and impact assessment were prepared by MKSK, Atwell LLC, and Fleis & Vandenbrink on behalf of Todd Wyett and Latson Partners, LLC. The traffic impact study was prepared by Fleis & Vanderbrink. The project site includes approximately 14 acres and is located south of the Latson Road interchange and east of Latson Road between Beck Road and the railroad. The petitioner is requesting to rezone the property from CE to ICPUD. We offer the following comments:

GENERAL

1. The site plan provided is conceptual and our comments on the engineering design are general in nature.

SANITARY AND WATER SERVICES

1. The impact assessment shows that this development will connect to a proposed gravity sewer along Latson Road to a proposed pump station. If the proposed PUD on the east side of Latson Road is developed prior to the PUD on the west side of Latson Road, the sewer, pump station, and force main would need to be constructed as part of this development. When the sewer system is designed it will need to be coordinated with the Innovation Interchange PUD on the west side of Latson Road to ensure both PUDs can be served by the proposed pump station.

2. The site does not currently have direct access to public sanitary sewer, and rather would need an extension of public sanitary sewer as shown in the Sanitary Sewer Concept in the Impact Assessment. The Petitioner has proposed an amendment to the existing utility agreement that was approved as part of the existing Innovation Interchange PUD on the west side of Latson Road.

DRAINAGE AND GRADING

1. The impact assessment states that a stormwater management system will be designed for the development in accordance with LCDC requirements. The site is tributary to the Marion Genoa Drain that is a county maintained and operated drain. The LCDC office will need to be included in the stormwater master plan development process. The property was also included in the design of the I-96 – Latson Road interchange basins and any requirements from MDOT will need to be reviewed and addressed as part of stormwater management design for the site.

Tetra Tech
3497 Coolidge Road, East Lansing, MI 48823
Tel 517.316.3930 Fax 517.484.8140 www.tetratech.com

TRAFFIC AND ROAD CONCEPTS

1. The traffic impact study for the proposed PUD was previously revised to address all our comments.

Given the conceptual nature and limited detail of the plans, it is difficult to perform an engineering review. Our general findings are presented above. The provided comments are mainly procedural and should be discussed with the applicant and planning commission with any comments incorporated in future submittals as required.

Sincerely,

Shelby Byrne

Shelby Byrne, P.E.
Project Engineer

Amy Ruthig

From: Rick Boisvert <rboisvert@brightonareafire.com>
Sent: Wednesday, October 9, 2024 1:33 PM
To: Amy Ruthig; Sharon Stone-Francis
Subject: Versa PUD

Amy/Sharon,
I don't have any comments on the VERSA revisions that were submitted, as its all conceptual at this point. Most of my comments will be addressed as each phase is submitted for construction.

Do you need another letter form me?

Cordially,

Rick Boisvert, FM, CFPS
Fire Marshal
Brighton Area Fire Authority
615 W. Grand River
Brighton, MI 48116
O:(810)229-6640 D:(810)299-0033
F:(810)229-1619 C:(248)762-7929
rboisvert@brightonareafire.com

PLANNED UNIT DEVELOPMENT AGREEMENT
(LATSON ROAD/I-96 INTERCHANGE COMMERCIAL)

This **Planned Unit Development Agreement** (the "Agreement") is made as of _____, 2024 (the "Effective Date"), by and between Latson Beck, LLC, a Michigan limited liability company ("Latson Beck" or "Developer"), whose address is 29201 Telegraph Road, Suite 410, Southfield, Michigan 48034, and the Charter Township of Genoa, a Michigan municipal corporation (the "Township"), whose address is 2911 Dorr Road, Brighton, Michigan 48116

RECITATIONS

A. Latson Beck is the owner of approximately 7.44 acres of land located on the east side of Latson Road, south of the I-96 expressway (Parcel No. 11-09-300-046), as depicted on the Parcel Map attached hereto as **Exhibit 1** (the "Latson Beck Property").

B. The Latson Road/I-96 interchange was completed in approximately 2013. This new interchange provided the Township with the opportunity to create a new development district for coordinated, well-planned, mixed-use business, light industrial, high tech, office, commercial uses and related development, as described in, among other things, the Township's 2013 Master Plan Update and incorporated by reference in the 2023 Master Plan. The Master Plan designates the Property for use and development as an Interchange Commercial Planned

Unit Development (or "ICPUD") which has been incorporated into Article 10 of the Zoning Ordinance.

C. In 2020, affiliated entities of Latson Beck submitted a request to rezone approximately 177 acres of land located on the west side of Latson Road and another 10 acres on the east side of Latson Road to Campus Planned Unit Development ("CAPUD"); and approximately 5.74 acres of land located immediately adjacent and to the east side of the Latson Beck Property (the "Covenant of Faith Property") to ICPUD (collectively referred to as the "Innovation Park PUD").

D. Affiliated entities of Latson Beck and the Township entered into a Planned Unit Development Agreement (the "Innovation Park PUD Agreement") as of September 30, 2020, which was recorded on October 6, 2020, with the Livingston County Register of Deeds, which among other things, rezoned the Covenant of Faith Property to ICPUD.

E. The Latson Beck Property is currently zoned CE ("country estates"), which is not consistent with the Township's Future Land Use Plan for which the area is designated as Interchange Commercial.

F. Latson Beck has submitted an application for Planned Unit Development and to rezone the Latson Beck Property to ICPUD, consistent with the Township's Master Plan and the adjacent Covenant of Faith Property, which is already zoned ICPUD under the Innovation Park PUD Agreement.

G. The Township Planning Commission reviewed the rezoning request, the Conceptual PUD Site Plan and Community Impact Statement and conducted a public hearing as required under the Zoning Ordinance. At its meeting held on _____, 2024, the Planning Commission recommended approval of the Commercial PUD to the Township Board and

Livingston County Planning Commission as satisfying the requirements of the review standards set forth in the Zoning Ordinance.

H. At its meeting held on _____, 2024, the Livingston County Planning Commission recommended approval of the Commercial PUD to the Township Board.

I. At its regular meeting held on ____, 2024, the Township Board conducted another public hearing on the Project and after finding that the rezoning and Conceptual PUD Site Plan satisfied the standards and objectives of the Zoning Ordinance and Master Plan, approved the Commercial PUD rezoning, the Conceptual PUD Site Plan and execution of this PUD Agreement for the Property, as reflected in the minutes of said meeting attached hereto as **Exhibit 2**, subject to the conditions of this Agreement and other conditions reflected in the meeting minutes.

NOW, THEREFORE, in consideration of the foregoing premises, which shall be incorporated into the parties' obligations set forth herein, the parties intending to be legally bound by this Agreement, agree as follows:

1. **Conceptual Commercial PUD Plan**. The Plan attached hereto as **Exhibit 3** is hereby approved by the Township as the PUD plan for the Project (the "Commercial PUD Plan"). The Commercial PUD Plan is conceptual and illustrative in nature and depicts the general nature and interrelationship of potential uses on the Property. The specific size and nature of any particular building or use and the relationship of such uses and buildings to each other within the Property will be subject to revisions based on the specific uses and businesses that may be attracted to the Property over time.

2. **Permitted Uses**. Notwithstanding anything contained in the Zoning Ordinance to the contrary, but subject to all of the terms and conditions of this Agreement and Exhibits hereto,

the Property may be developed for any of the uses or combination of uses set forth in **Exhibit 4** hereto; provided, however, that: (a) a gas station shall not be in the nature of a truck stop; and (b) while a hotel is a permitted use, it is limited in height to 4 stories (or 57 feet maximum). The uses listed as "Prohibited Uses" on **Exhibit 4** shall not be permitted under any circumstances.

3. **Special Land Uses**. Any of the uses: designated as "S" (or Special Land Use) contained in **Exhibits 4**, or any uses similar to or compatible with other special uses not specifically listed in the ICPUD district, as applicable to the Property, or commercial uses permitted by right or special approval in the RCD Zoning District but not listed in **Exhibit 4**, may be permitted upon determination of the Township Board following a recommendation by the Planning Commission as required by Township ordinance 10.03.06(c) in effect as of 2024, and shall be subject to all of the terms and conditions of this Agreement. (Relevant excerpts from the Zoning Ordinance are attached hereto as **Exhibit 5**.)

4. **Development Standards**. The Project is intended to be a focal point of inter-change oriented commercial and other business activity in the community and to attract various commercial businesses that would take advantage of synergy of location and the expressway access and desire to be a part of a high quality, integrated business development plan. The location, design and uses allowed for the Project are intended to supplement and not compete with the Township's major commercial districts along Grand River Avenue. Individual buildings and site amenities and landscaping are intended to be of high quality and design and include diverse building materials. All development within the Property shall adhere to the Commercial PUD Design Guidelines set forth in **Exhibit 6** hereto.

5. **Road Frontage**. The facades of the sides of all buildings fronting along Latson and Beck Roads shall incorporate materials of enhanced durability, including combinations of

brick, stone, glass, with permissible metal panel accents and such other equally durable and attractive materials as illustrated by the example facades in the PUD Design Guidelines.

6. **Future Road Improvements**. All road access to the Property shall be off of Beck Road and not Latson Road. No limited access driveways will be permitted. A traffic study was undertaken by Flies & Vandenbrink, dated July 26, 2024 (updated as of August 26, 2024), which recommends that a fully actuated and coordinated traffic signal with permissive/protected southbound left turn phasing be installed at the Latson and Beck Road intersection. While the final decision as to whether and when a traffic signal can be installed at the Beck/Latson intersection is within the jurisdiction of the Livingston County Road Commission (the "Road Commission"), Developer agrees that at such time as the traffic signal is approved and authorized, Developer will install the signal and related improvements at its expense.

7. **Greenbelts**. Landscaped greenbelts shall be installed along the perimeter boundaries of the Property as depicted on the Commercial PUD Plan and as described in the Design Guidelines.

8.

Project Amenities. Project amenities, including pathways along road frontage and connecting the various commercial uses, along with seating areas, bike racks, etc. will be included with each site plan submitted for specific development projects with the Project. In connection with the installation of the traffic signal described in paragraph 6 above, Developer shall fund and install one pedestrian crossing at Beck and Latson Roads.

9. **Off-Site Public Utilities**. As provided in an Agreement Regarding Construction of Sanitary Sewer and Water Project, made as of March 2021, between affiliates of Developer and the Township (the "Utility Agreement"), Developer's affiliates paid for and completed the

construction of sewer and water service extensions from north of I-96 from Grand Oaks Drive and Kohl's to points south of the railroad tracks abutting the Property (the "Utility Project"). The Utility Project, which will ultimately be owned and operated by the Genoa-Oceola Sewer and Water Authority (G-O) and the Marion, Howell, Oceola, and Genoa Sewer and Water Authority (MHOG), was constructed in conformance with the Authority's Engineering Design Standards and Connection Manual, including inspection and testing of the utilities. The Utility Project was intended to serve and has the capacity "to serve the Township's 'Interchange Planned Unit Development' districts described in the Township's Zoning Ordinance," including the Property. (Utility Agreement, at pp. 1-2.) The utility plans for connecting sewer and water service to the Property are attached as **Exhibit 7**. As a result of the Utility Project, water service is available at the Property and sewer service is available on Property owned by Developer's affiliates. The further extension of utilities necessary to serve any part of the Interchange Planned Unit Development districts, including the Property, will be designed and installed as part of the final site planning and construction of any part of the districts. (Utility Agreement, at pp. 2-3.) On or before the execution of this Agreement, the Township and Developer agree to execute a First Amendment to the Utility Agreement in a form attached hereto as Exhibit 8 in order to add the Property to the Utility Agreement and the Developer as a party thereto. If a final site plan for development of a building or use on the Property is pursued before the much larger Utility Project is constructed for development within overall Innovation Park PUD, the Parties will work cooperatively and in good faith for an interim connection to the public utilities to serve the development in this Commercial PUD.

10. **Reservation of Utilities and Tap Fees**. The Township has allocated 10 sewer and water taps (residential equivalency units) capacity to serve the Property. If additional utility

The amended utility agreement that was submitted does not satisfy section 10.02.03 (a) or 10.03.05. This agreement cannot agree to amend a different separate agreement involving another project.

capacity is needed in the future to service permitted and/or approved special land uses, the Township shall allocate additional capacity to the extent such capacity is available in the utility systems.

11. **Perimeter and Internal Building Setbacks; Height Limitations**. All setback and height standards are set forth in the PUD Design Guidelines and, regardless of any deviation of the PUD Design Guidelines from any existing or future Zoning Ordinance standard or requirement, the PUD Design Guidelines shall govern and apply to the development of the Project. Modifications from such PUD Design Guidelines in connection with the final site planning and engineering for any building or group of buildings may be requested by the Developer and may be granted in the exercise of reasonable discretion by the Township Board upon recommendation of the Planning Commission and upon a showing that such modifications will result in a development consistent with the terms of this Agreement, the Exhibits hereto and the ICPUD Zoning District.

12. **Final Site Plan/Project Phasing**. The Project, including without limitation, Project roadways, amenities and on-site utilities associated with each phase, may proceed in multiple phases, with any phase being a single building or multiple buildings (a "Phase"), and multiple phases may proceed at the same time. The Project may be established as one or more business/commercial condominiums in accordance with the condominium standards of the Zoning Ordinance. In that event, condominium units or sites may be leased by Developer or sold to other parties, including end-user businesses. Any site or unit leased, sold or developed shall be subject to the terms and conditions of this Agreement, which shall run with the land as described below, and will be subject to condominium documents and/or an agreement regarding covenants, easements and restrictions, in forms approved by the Township for consistency with

this Agreement and applicable Township ordinances. The Township shall review such condominium or covenant agreements, and shall approve them to the extent they are consistent with the terms and conditions of this Agreement and other applicable Township ordinances. Any final site plan for a building or phase within the Property shall contain the information required in Article 10.08.02 of the Zoning Ordinance and such final site plan shall be approved if it is consistent with the terms of this Agreement and satisfies other Ordinance requirements. In the event of any conflict between the terms of this Agreement and Exhibits hereto and any current or future Ordinance provision of the Township, this Agreement and Exhibits hereto shall control.

13. **Maintenance Obligations**. The internal roads, signage, pedestrian amenities, lighting, entry features, storm drainage, sidewalks, landscaping and other common elements installed within the interior of development areas shall be initially maintained by the Developer until a condominium or other property owners' association is created and until such condominium or association takes over such maintenance responsibilities in accordance with the condominium or association agreements. Upon assumption of the association's responsibility of such maintenance, the Developer shall have no further obligation hereunder with respect to maintenance of the common improvements.

14. **Timing of Development**. The Commercial PUD Plan shall operate in effect as a master future land use plan for the Project and the following time periods shall apply to the Project:

a. **Expiration of PUD Agreement** – This Agreement shall expire in two (2) years if Developer has not submitted a final site plan for approval of a building or use within the Commercial PUD Property. This time period may be extended by the Township Board in the exercise of reasonable discretion for up to an additional two (2)

years if requested by the Developer in writing prior to the expiration of initial two-year period. An extension shall be granted if the Developer demonstrates good cause. Once a final site plan is approved for a building or project within the Commercial PUD Property and Developer commences construction, this Agreement shall not terminate except by mutual agreement of the Parties in writing.

b. **Expiration of Site Plans** – Individual site plans as required by Township Ordinance for structures and/or private roads and related infrastructure for each phase of the Project are valid for a period of three (3) years after final approval. The approved site plan must be constructed to substantial completion and issuance of a temporary certificate of occupancy within the three (3) years following final approval; otherwise the approval for that site plan is null and void unless an extension is granted by the Township Board following a recommendation by the Planning Commission. Developer shall be entitled to an extension if, as determined by the Planning Commission in the exercise of reasonable discretion, substantial progress has been made to complete the construction pursuant to a final site plan. Substantial progress is defined to include carrying out the terms of the final site plan in good faith, such as obtaining the necessary engineering approvals and permits for construction and, when permits have been issued, pursuing actual physical construction or development of the required improvements identified in the site plan. Nothing in this paragraph is intended to preclude Developer from pursuing multiple site plans at the same time.

15. **Termination or Expiration of Commercial PUD Plan**. In the event this Agreement expires or terminates for any reason, the rezoning classification shall remain, and any change in the zoning must be by application to the Township and fully compliant with the laws

Does Township agree with, this is contrary to Court of Appeals decision Chestnut Dev. vs Genoa Township Docket Case 317199

of the State of Michigan. The expiration or termination of this Agreement for any reason does not result in the zoning reverting to its previous classification of Country Estates. Developer may at any time after expiration of the Commercial PUD Plan submit and pursue a new Commercial PUD Plan in accordance with the procedural requirements of the Zoning Ordinance in effect at the time of submission.

16. **Entire Agreement**. This Agreement, the exhibits attached hereto, if any, and the instruments which are to be executed in accordance with the requirements hereof set forth all the covenants, agreements, stipulations, promises, conditions, and understandings between the Township and the Developer concerning the Project as of the date hereof, and there are no covenants, agreements, stipulations, promises, conditions or understandings, either oral or written, between them other than as set forth herein.

17. **Relationship Of The Parties**. The relationship of the Township and the Developer shall be defined solely by the expressed terms of this Agreement, including the implementing documents described or contemplated herein, and neither the cooperation of the parties hereunder nor anything expressly or implicitly contained herein shall be deemed or construed to create a partnership, limited or general, or joint venture between the Township and the Developer, nor shall any party or their agent be deemed to be the agent or employee of any other party to this Agreement.

18. **Modification**. Except as provided below, this Agreement can be modified or amended only by a written instrument expressly referring hereto and executed by the Township and the Developer, its successors and assigns. The PUD Design Guidelines are in effect a living document and may be updated or revised as provided in Zoning Ordinance Section 10.11 to reflect specific site conditions, special projects or users, changes in market conditions and future

trends and best practices in planning and design. Any change requires the mutual consent of the Township and Developer. To the extent the Property is subdivided in the future either though a site condominium or land division, modifications with respect to any individual parcel or site within the condominium may be made by the owner of the parcel or site and the Township, provided that any such modification does not adversely impact any other property within the Project area, and complies with the Zoning Ordinance.

19. **Michigan Law To Control**. This Agreement and the rights and obligations of the parties hereunder shall be construed in accordance with Michigan law.

20. **Due Authorization**. The Township and the Developer each warrant and represent to the other that this Agreement and the terms and conditions thereof have been duly authorized and approved by, in the case of the Township, its Board of Trustees, and as to the Developer, by the appropriate officers or members of the companies constituting the Developer, and that the persons who have executed this Agreement below have been duly authorized to do so.

21. **Agreement To Run With The Land; Recording**. This Agreement shall be binding upon and inure to the benefit of the parties to this Agreement and their respective heirs, successors, assigns and transferees, and shall run with the Property. This Agreement shall be recorded by Developer at its expense with the office of the Livingston County Register of Deeds and a copy provided to the Township.

22. **Counterparts**. It is understood and agreed that this Agreement may be executed in several counterparts, each of which, for all purposes, shall be deemed to constitute an original and all of which counterparts, when taken together, shall be deemed to constitute one and the same agreement, even though all of the parties hereto may not have executed the same

counterpart. Delivery via facsimile or PDF transmission of a counterpart of this Agreement as executed by the parties making such delivery shall constitute good and valid execution and delivery of this Agreement for all purposes.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement on the date first set forth above.

[*Signatures on following pages*]

The parties hereto have executed this Agreement as of the year and date set forth above.

"DEVELOPER"

Latson Beck, LLC
a Michigan limited liability company

By: _____

Its: _____

STATE OF MICHIGAN)
) ss.
COUNTY OF OAKLAND)

The foregoing instrument was acknowledged before me this ___ day of _____, 2024, by Todd Wyett, _____ of Latson Beck, LLC, a Michigan limited liability company, on behalf of the company.

_____
Notary Public
_____ County, Michigan
Acting in Oakland County, Michigan
My Commission Expires: _____

"TOWNSHIP"

GENOA TOWNSHIP,
a Michigan municipal corporation

By: _____
Its: Supervisor

STATE OF MICHIGAN)
) ss.
COUNTY OF LIVINGSTON)

The foregoing instrument was acknowledged before me this _____ day of _____, 2024, by _____, Supervisor of Genoa Township, a Michigan municipal corporation, on behalf of the corporation.

_____
Notary Public
Livingston County, Michigan
Acting in Livingston County, Michigan
My Commission Expires: _____

and

By: _____
Its: Clerk

STATE OF MICHIGAN)
) ss.
COUNTY OF LIVINGSTON)

The foregoing instrument was acknowledged before me this _____ day of _____, 2024, by _____, Clerk of Genoa Township, a Michigan municipal corporation, on behalf of the corporation.

_____
Notary Public
Livingston County, Michigan
Acting in Livingston County, Michigan
My Commission Expires: _____

Drafted by and when recorded return to:
Alan M. Greene, Esq.
Dykema Gossett PLLC
39577 Woodward Avenue, Suite 300
Bloomfield Hills, MI 48304

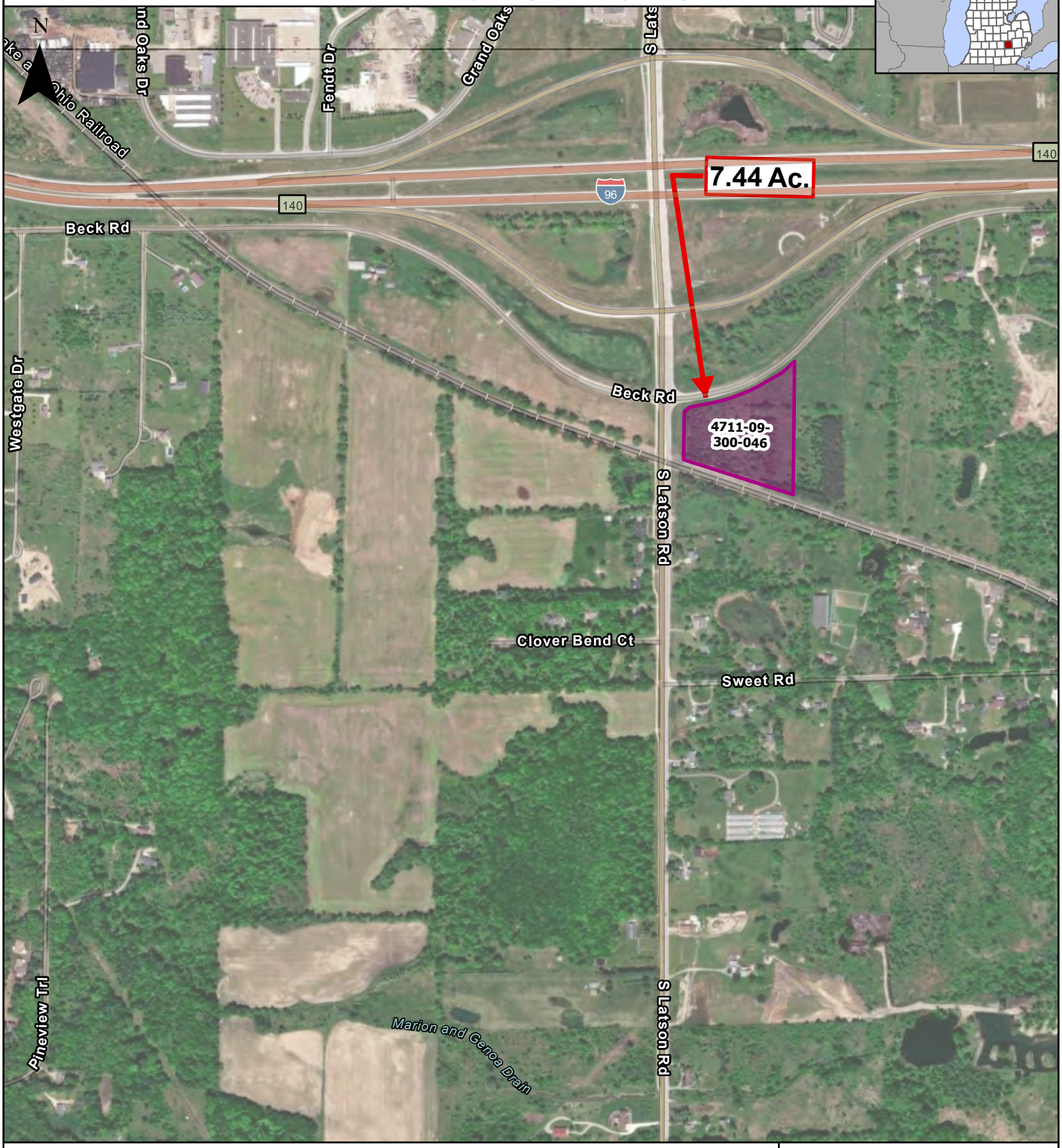
EXHIBIT 1

(Parcel Map)

Interchange Commercial PUD

Parcel Exhibit Map

Genoa Township, Livingston County, Michigan



Interchange Commercial PUD

0 300 600 US Feet

ATWELL

EXHIBIT 2

(Minutes of Township Board Meeting dated _____, 2024)

EXHIBIT 3

(Commercial PUD Concept Plan)

MKSK

Landscape Architecture
Urban Design
Planning

462 SOUTH LUDLOW ALLEY
COLUMBUS, OH 43215
614.621.2796 MKSKSTUDIOS.COM

Drawing Title: SITE PLAN	Project # d23103
	Date: 11.13.2024
Project: COMMERCIAL PUD	Scale: 1 to 200

EXHIBIT 4

(Table of Permitted and Prohibited Uses for Commercial Area)

Commercial PUD Use Table

P= Permitted; S= Special Land Use

Note: Uses shall comply with Section 7.02.02, Use Conditions, in the Genoa Township Zoning Ordinance. Uses over 60,000 square feet of gross floor area require Special Land Use approval in accordance with the general and specific standards of Article 19 Special Land Uses.

Types of Uses (terms as defined in the Zoning Ordinance)	Column1
COMMERCIAL AND SERVICE	
Medical offices -excluding clinics, and urgent care centers	P
Professional Offices	P
Motion picture theaters	P
Recreation (indoor) such as bowling alleys, skating rinks, arcades, indoor golf or softball, indoor shooting/archery ranges, excluding dome structures	P
Auto/gasoline service station, limited to one establishment within the PUD	S
Banks, credit unions, savings and loan establishments and similar financial institutions with up to 3 drive-through teller windows	P
Banks, credit unions, savings and loan establishments and similar financial institutions with more than 3 drive-through teller windows	S
Hotels including accessory convention/meeting facilities and restaurants	P
Health clubs, fitness centers, gyms and aerobic clubs	P
Micro-brewery, small distillery and small winery	P
Pet supplies or grooming	P
Pet day care center	S
Personal and business service establishments, performing services on the premises, but not including dry cleaning.	P
Pharmacies which may include drive through service	P
Standard restaurants and coffee shops	P
Restaurants and bars serving alcoholic beverages	P
Restaurants with open front windows	P
Restaurants with outdoor seating	P
Drive-through restaurants	P
Drive-in restaurants	P
Carry-out restaurants	P
Coffee Shop with drive-through	P
Brewpub	P
Retail establishments and shopping centers	P
Conference Centers	P

LIST OF PROHIBITED USES

Types of Uses
Automobile, motorcycle, boat and recreational vehicle sales, new and used, including the leasing of such vehicles
Dry Cleaning Establishments
Outdoor commercial display, sales or storage
Kennel, commercial
Mini-storage
Auto/Truck Repair (Minor or Major)
Truck Stop

EXHIBIT 5

(Excerpts from Zoning Ordinance)

ARTICLE 10
PLANNED UNIT DEVELOPMENT

Sec. 10.01 PURPOSE

10.01.01 **Purpose.** The purpose of this Section is to permit the coordinated development on larger sites, protect significant natural features present which the property owner and Township wish to preserve, to provide the opportunity to mix compatible uses or residential types, or allow clustering of residential units to preserve common open space and natural features.

10.01.02 **Innovation in Land Use.** The PUD standards are provided as a design option to permit flexibility in the regulation of land development; to encourage innovation in land use, form of ownership and variety in design, layout, and type of structures constructed; to preserve significant natural features and open space; to promote efficient provision of public services and utilities; to minimize adverse traffic impacts; to provide adequate housing and employment; to encourage development of convenient recreational facilities; and to encourage the use and improvement of existing sites when the uniform regulations contained in other zoning districts alone do not provide adequate protection and safeguards for the site or its surrounding areas. The PUD standards are not intended to avoid the imposition of standards and requirements of other zoning classifications rather than to achieve the stated purposes herein set forth.

10.01.03 **Flexibility in Design.** For properties approved for PUD designation, these PUD standards provide the developer with flexibility in design and permit variation of the specific bulk, area, and in some specified situations the density requirements of this Ordinance on the basis of the total PUD plan, subject to the approval of the PUD plan by the Planning Commission and Township Board in accordance with the requirements as herein set forth.

10.01.04 **Types of PUD's.** This article provides for seven (7) types of PUD: a residential overlay, a planned industrial/corporate district, a mixed use PUD district, a redevelopment PUD, a non-residential PUD District, and two separate PUD Districts for the S. Latson Road interchange area. The residential PUD, planned industrial PUD and redevelopment PUD are overlay districts that include supplementary standards, which apply simultaneously, or replace, standards of the underlying residential zoning district. The mixed use PUD, non-residential PUD, and two interchange PUDs are separate zoning districts.

(as amended 12/31/06 and 09/04/18)

Sec. 10.02 QUALIFYING CONDITIONS

The following provisions shall apply to all planned unit developments:

10.02.01 **Single Ownership.** The planned unit development site shall be under the control of one owner or group of owners and shall be capable of being planned and developed as one integral unit.

10.02.02 **Initiated by Petition.** A PUD zoning classification may be initiated only by a petition.

10.02.03 **Minimum Site Area.** The site shall have a minimum area of twenty (20) acres of contiguous land, provided such minimum may be reduced by the Township Board as follows:

(a) The minimum area requirement may be reduced to five (5) acres for sites served by both public water and sanitary sewer.

(b) The minimum lot area may be waived for sites zoned for commercial use (NSD, GCD or RCD) where the site is occupied by a nonconforming commercial, office or industrial building, all buildings on the site are proposed to be removed or rehabilitated and a use permitted within the underlying zoning district is proposed. The Township Board shall only permit the PUD on the smaller site where it finds that the flexibility in dimensional standards is necessary to allow for innovative design in redeveloping the site and an existing blighted situation will be eliminated. (as amended 12/31/06)

(c) Interchange Commercial and Campus PUDs: the Township Board may waive the minimum lot area where the design elements of a proposed development are integrated into and consistent with the broader Master Plan Latson Road Subarea Plans with compatible land uses (as amended 09/04/18)

10.02.04 **Benefits.** The PUD site plan shall provide one or more of the following benefits not possible under the standards of another zoning district, as determined by the Planning Commission:

(a) preservation of significant natural or historic features;

(b) a complementary mixture of uses or a variety of housing types;

(c) common open space for passive or active recreational use;

(d) mitigation to offset impacts; or,

(e) redevelopment of a nonconforming site where creative design can address unique site constraints. (as amended 12/31/06)

10.02.05 **Sewer and Water.** The site shall be served by public sewer and public water. The Township may approve a residential PUD that is not served by public sewer or water, provided all lots shall be at least one (1) acre in area and the requirements of the County Health Department shall be met.

Sec. 10.03 TYPES OF PUD ZONING DESIGNATION

A property meeting the qualifying conditions may be rezoned to an appropriate PUD District, based on the standards shown in the following table and appropriate standards contained elsewhere in this Zoning Ordinance. The rezoning shall be concurrent with the approval of a PUD Conceptual Plan. The PUD designation shall be noted in the application, and on the Official Zoning Map upon approval.

District Name	Type of District	Permitted Uses	Special Land Uses	Additional Provisions
Residential Planned Unit Development (RPUD)	Overlay of a residential district	Open space or cluster housing projects with one or more types of residential uses	Same as underlying residential district	Sec. 10.03.01
Planned Industrial Parks (PID)	Overlay district of an Industrial District	Uses permitted in the Industrial and Office-Service Districts	Special land uses of the Industrial and Office-Service District	Sec. 10.03.02
Mixed Use Planned Unit Development (MU-PUD)	Separate zoning district	A mixture of public, residential, commercial, recreational or open space uses.	Special land uses of the zoning districts applicable to each PUD component.	Sec. 10.03.03
Redevelopment Planned Unit Development (RDPUD)	Overlay of a commercial district	Same as underlying district	Same as underlying district	Sec. 10.03.04
Non-residential Planned Unit Development (NR-PUD)	Separate zoning district	A mixture of public, office, commercial, light industrial, recreational and open space uses. See Sec. 10.03.05(c).	Special land uses of the zoning districts applicable to each PUD component.	Sec. 10.03.05
Interchange Commercial PUD (ICPUD)	Separate zoning district	See Sec. 10.03.06 c	Special land uses of the General Commercial or Regional Commercial District, as may be approved by the Township, except those specifically listed in Sec. 10.03.06 c	Sec. 10.03.06
Interchange Campus PUD (CAPUD)	Separate zoning district	See Sec. 10.03.06 c	See Sec. 10.03.06 c	Sec. 10.03.06

(as amended 12/31/06 and 09/04/18)

10.03.01 Residential PUD

(a) Density: Residential density shall be determined by a parallel plan that illustrates how the site could be developed as a conventional subdivision or site plan, meeting all applicable township and county zoning and subdivision requirements. The Township shall review the design and determine the number of buildable lots that could be feasibly constructed, taking into consideration any wetlands or other non-buildable land. This number shall be the maximum number of dwelling units allowable for the RPUD. Where the underlying zoning is multiple family, density shall be determined based upon the underlying zoning district and the definition of density. Where the Township Master Plan recommends a different zoning district that the current zoning, a rezoning of the underlying zoning district consistent with the Master Plan may be considered concurrently with the Residential PUD overlay.

(b) Dimensional Standards: The dimensional standards of the underlying zoning district shall be complied with, provided the lot area, lot width and setback requirements may be reduced with the resultant area preserved as open space. A table shall be provided on the site plan indicating the cumulative reduction in lot areas and the corresponding

amount of open space being preserved. Wetland setbacks may not be reduced. The Planning Commission may approve an RPUD without public water and sewer provided all lots shall be at least one (1) acre in area and the requirements of the County Health Department are met.

(c) Open Space: All land within an RPUD that is not devoted to a residential unit, roadway or other improvement shall be set aside as common open space for recreation or conservation. The amount of open space shall be at least equal to the total area that proposed lots are reduced below the underlying zoning's minimum lot area; provided a minimum of twenty five percent (25%) of the site shall be open space. Common open space shall be planned in locations that are visible and accessible. The open space shall contain some form of active recreational facility such as a play-area. The common open space shall be located to preserve significant natural features, central to the residents of the development, along the county road frontage, adjacent to adjoining residential or to connect open spaces throughout the development. The open space along the exterior public roads shall generally have a depth of at least one hundred (100) feet, either landscaped or preserved in a natural wooded condition. The PUD agreement shall set forth open space protection measures as provided for in section 10.05.04.

10.03.02 **Planned Industrial District (PID)**

(a) Dimensional Standards: All buildings, structures, accessory structures and parking areas shall meet the minimum setback standards of the Industrial District, as specified in the Table of Dimensional Standards, along the exterior boundaries of the PID site. Internal setbacks shall be determined by the Planning Commission during review of the PID concept plan. Maximum building height shall be consistent with the standards for the Industrial District.

(b) Lot Areas: Minimum lot area shall be two (2) acres except up to twenty five percent (25%) of the total number of lots may be between one and one-half (1-1/2) and two (2) acres in area.

(c) Design Standards: Buildings shall utilize high quality architecture and landscaping that create a research and office-park environment with primary use of masonry material, such as brick, stone or split face block, and glass on buildings and landscaping along internal roadways and around the perimeter of the PID. Metal paneling and plain concrete masonry units shall constitute no more than twenty-five percent (25%) of the facades of buildings visible from the internal roadway or any adjoining public roadway. (as amended 12/31/06)

10.03.03 **Mixed Use PUD**

(a) Uses: A mixed use PUD shall include a mixture of uses that are considered by the Planning Commission to be consistent with the Master Plan. A concept plan shall be prepared for the PUD that divides the PUD into components for various uses. Each component of the PUD shall be designated as a specific zoning district (e.g. Medium Density Residential or Office-Service). Areas devoted to each type of use shall be designated on the PUD Concept Plan. The concept plan may provide for vertical mixture of uses, such as office or residential above commercial. The mixed use PUD can be a mixture of housing types such as single family and multiple family or a mixture of uses such as residential and non-residential. The Planning Commission

shall determine the appropriate mixture of uses and how much of the PUD land area shall be occupied by residential uses, nonresidential uses, recreational area, or open space. The Planning Commission shall make this determination based upon the concept plan's ability to provide an integrated mixture of uses, maintain compatibility with surrounding uses, and meet the standards of section 10.07. The list of permitted uses shall be established by the Planning Commission in the PUD agreement. Not more than fifty percent (50%) of the PUD acreage shall be devoted to commercial, office or industrial and not less than fifty percent (50%) of the PUD acreage shall be devoted to open space, preserved natural features or residential use.

(b) Open Space: A minimum twenty five percent (25%) of the site shall be open space. Such open space shall be dispersed throughout the site and linked through greenway or pedestrian corridors or located along road frontages. A minimum of 50% of the required open space shall be usable upland area.

(c) Dimensional Requirements: All area and bulk dimensional standards shall comply with the dimensional standards for the associated zoning district designated on the PUD concept plan. To encourage flexibility and creativity consistent with the intent of the PUD, the Township may permit specific departures from the requirements of the Zoning Ordinance as a part of the approval process. Any regulatory modification shall be approved through a finding by the Township that the deviation shall result in a higher quality of development than would be possible using conventional zoning standards. Residential portions of a PUD shall comply with section 10.03.01.

(d) Parking. To encourage a true integration of mixed uses and improved efficiency in land use, the Planning Commission may permit the overlap in parking requirements between uses that have alternating peak-parking demands or where the mixture of uses on a site would result in multi-purpose trips. Approval for the parking reduction shall be based upon documentation submitted by the applicant indicating the types of uses, intensity and characteristics of the parking demands for such uses.

10.03.04 **Redevelopment PUD**

(a) A redevelopment PUD overlay shall only be applied to sites that have been previously developed for the purpose of a commercial, office, or industrial use, where redevelopment of the site will be an enhancement to the site and surrounding area, where all buildings on the site are proposed to be removed or renovated and a use permitted within the underlying zoning district is proposed. The redevelopment PUD shall only be applied to a site where the Township determines that flexibility in dimensional standards is necessary to allow for innovative design in redeveloping a site with constraints and where a clear public benefit is being derived.

(b) To encourage flexibility and creativity consistent with the intent of the PUD, the Township may permit specific departures from the requirements of the Zoning Ordinance as a part of the approval process. Any regulatory modification shall be approved through a finding by the Township that the deviation shall result in a higher quality of development than would be possible using conventional zoning standards. A parallel plan shall be provided showing how the site could be redeveloped without the use of the PUD to allow the Planning Commission to evaluate whether the modifications to dimensional standards are the minimum necessary to allow redevelopment of the site, while still meeting the spirit and intent of the ordinance.

(c) A table shall be provided on the site plan that specifically details all deviations from the zoning regulations. This specification should include ordinance provisions from which deviations are sought, the reasons the deviations are necessary and mechanisms to be utilized to mitigate any impacts. Only those deviations consistent with the intent of this ordinance shall be considered. As a condition of approving such deviations, the Township may attach such additional conditions deemed necessary for the protection of the public health, safety, and welfare in lieu of the regulations. (as amended 12/31/06)

10.03.05 **Non-residential Planned Unit Developments**

(a) Size of Uses:

(1) A maximum sixty percent (60%) of the site, exclusive of public rights of way shall contain retail commercial uses such as shopping centers or freestanding retail/department stores including areas required for storm water, setbacks, parking and landscaping associated with such uses. The remainder of the site shall include open space, manufacturing, research and development, office, lodging, restaurants and/or entertainment related uses.

(2) No more than two retail uses shall have an individual floor area of 100,000 square feet or more, and no other individual commercial use shall have a floor area over 60,000 square feet.

(b) A minimum twenty five percent (25%) of the site shall be open space. Such open space shall be dispersed throughout the site and linked through greenway or pedestrian corridors. Open space is defined as undisturbed areas of key natural features, landscaped open space or pedestrian plaza areas, which commonly include outdoor seating and gathering areas. Detention areas shall comprise no more than 50% of the required open space and if visible from the roadway, parking lot, residential dwellings, primary entrances to buildings or other predominant views shall only be counted toward this requirement if designed to provide a natural appearance as described below.

(c) Permitted Uses: All uses permitted by right or by special land use approval in the Commercial, Office and Public and Recreational Facilities Districts (NSD, OS, GCD, RCD and PRF) are permitted by right or special use under the PUD. Permitted uses shall also include Manufacturing Research or Research and Development Uses, defined as low intensity industrial uses that include a large office or laboratory component and that manufacture, package, assemble or treat finished or semi finished products from previously prepared material but do not process raw materials. The following are exceptions to the list of permitted uses:

(1) Auto sales, new and used

(2) Auto/gasoline service stations of any type, principal or accessory

(3) Auto maintenance or repair establishment of any type

(4) Automobile wash, automatic or self serve

(5) Banquet halls, assembly halls, dance halls, private clubs, fraternal order halls, lodge halls or similar places of assembly except where accessory to a permitted office or lodging use

(6) Carnivals, fairs, commercial cider mills and amusement parks

(7) Churches

(8) Convenience stores with gasoline sales

(9) Permanent or temporary dome structures

(10) Fruit stands (outdoor sales of fruit and nursery goods) except when accessory to a permitted use

(11) Kennels, of any kind

(12) Laundromats

(13) Leasing or sales or display of trucks, trailers, boats, recreational vehicles, construction equipment and similar vehicles

(14) Mini storage warehouses

(15) Outdoor commercial display, sales, storage or temporary staging of items as a principal or accessory use, unless screened from public view

(16) Outdoor private recreation facilities such as, but not limited to, miniature golf, driving ranges, batting cages, go cart tracks, and in line skating rinks

(17) Restaurants with drive through facilities, except Township Board may approve up to one upon determination that the project shall be integrated into the design concept for the overall PUD

(18) Educational establishments including public schools, parochial schools, vocational trade schools, colleges, universities and commercial schools such as dance academies or martial arts studios

(19) Industrial uses, except for a research and development uses, and micro breweries associated with a restaurant

(20) Any other use not specifically authorized under the appropriate zoning district

(d) Traffic Circulation, Operations and Access

(1) A traffic impact study shall be provided as described in Article 18. Such study shall evaluate the impact of the project at each access point and existing major intersections where volumes from the PUD are projected increase daily or hourly volumes by 5% or more. The traffic study shall include methods to mitigate impacts, and describe timing and responsibility for funding such improvements.

(2) Access shall be limited to one major entrance along any arterial, excluding an entrance designed solely for truck traffic. Additional access points shall only be considered if spaced at least 500 feet apart and a traffic impact study demonstrates overall traffic operations and safety will be improved.

(3) Access points shall be at least 600 feet from the intersection of arterial roadways or interchange ramps provided the spacing may modified by the Township, with input from road agency staff, to minimize conflicts with traffic operations at intersections or existing access points, or to meet signal spacing standards if it is determined the access may require signalization.

(4) Main access points shall be spaced from existing signalized intersections to ensure proper spacing and progression if the main access point is signalized in the future. The site design shall direct traffic flow to use the main access points.

(5) Interior drives shall provide circulation between uses.

(6) Stacking or queuing depth at site access points shall be sufficient to accommodate expected peak hour volumes without conflict to inbound or internal circulation.

(7) Additional right of way shall be provided to accommodate improvements to the existing arterial roadway system that are planned or required to mitigate traffic associated with the PUD.

(8) A pedestrian circulation system shall be provided throughout the site and along existing arterials.

(e) Site Design. The following site elements shall be provided:

(1) An extensively landscaped greenbelt shall be provided along existing public streets. Said greenbelt shall include closely spaced street trees and hedge rows to screen the parking lot. Low, undulating (horizontal and vertical) berms or an architectural feature (decorative stone or brick wall, wrought iron fencing, or combination) may be permitted.

(2) Site design and landscaping shall diminish the prominence of parking lots as viewed from public streets

(3) A Township entranceway landmark shall be provided near the intersection of any arterial streets or expressway ramps. The type and design of said landmark shall be determined as part of the conceptual plan approval.

(4) Pedestrian gathering and seating plazas, greenways and tree lined drives shall be within parking lots and throughout the site to provide an inviting pedestrian environment, protection of the pedestrian from vehicular circulation for improve traffic operations and views.

(5) One parking lot tree shall be provided for each 2000 square feet of paved parking, including aisles, service areas, driveways and drives. At least 1/2 of

the parking lot trees shall be within the parking lot inside islands or medians. A majority of the islands shall be a minimum 18 feet wide. Landscape areas shall be irrigated.

(6) Ornamental lighting shall be provided along arterials and throughout major circulation drive within the site.

(7) Other site amenities to create a pedestrian scale environment shall be provided such as bike racks, benches, information kiosks, art, planters or streetscape elements to separate mainline buildings from the parking lots.

(8) Any detention areas visible from the roadway, parking lot, residential dwellings, primary entrances to buildings or other predominant views shall have a maximum 6:1 slope and be designed to have a natural appearance, such as variable shape, natural arrangement of landscape materials, aerated fountains, and use of boulder accent walls or other similar design features.

(9) Unless otherwise provided in the PUD agreement, Signs shall comply with the standards of Article 16, provided sign types and materials shall be consistent with the overall architectural design of the PUD, and all freestanding signs shall be monument type with a base to match the building materials and landscaping around the sign integrated into the overall landscape plan. Wall and monument signs shall be channel cut letters on non illuminated background panels. Temporary window signs shall be prohibited.

(f) Architecture. Information on architecture and building design (elevations or perspectives, materials and description of design standards) shall be submitted with the concept plan and comply with the following:

(1) Architecture throughout the development shall be compatible based on a design theme established with the Concept Plan and described in the PUD Agreement.

(2) Buildings shall utilize high quality architecture with variable building lines, peaked roofs, architectural accents, and brick facades. Peaked roof lines shall not be designed to create false, parapet style facades.

(3) The depth of the front building line shall be varied to break up the building massing.

(4) The predominant material utilized on facades that are visible from a public right of way or parking lots shall be brick. Other materials may be used for architectural accents, provided such materials shall have the appearance of wood or cut or cast stone.

(5) A building or buildings shall face (front facade or side elevation with appearance of a front facade) the intersection of existing arterial streets. The building(s) shall have distinct architecture that creates a prominent landmark at the intersection, with no loading or utility areas that face the intersection. There shall be a landscaped plaza in front of the building or between buildings. Parking shall be behind this building where practical.

(g) Utilities. The Concept Plan shall include a Utility Master Plan, based on guidelines provided by the Township Engineer. The Utility Master Plan shall show connection points to existing utilities, and concepts for the layout, size and phasing of utilities.

10.03.06 Interchange Planned Unit Developments (Commercial and Campus)

(a) Intent. The intent of the Interchange PUDs is to promote comprehensive and long-term planning of appropriate land uses, innovative architectural design, high quality building materials, and a walkable environment for pedestrians.

(b) Master Plan and Subarea Plans. All Interchange PUD proposals shall demonstrate conformance to the land use, site design, and access management strategies and recommendations contained within the Genoa Township Master Plan and Subarea Plans.

(c) Land Use.

(1) ICPUD: permitted land uses include restaurants (fast food, sit-down, and take out), auto/gasoline service stations, retail/service, hotels, entertainment (movie theaters, indoor commercial recreation, etc.), conference centers, financial institutions, and offices. The Township may permit additional compatible uses as part of the approval process. The list of permitted uses proposed for a development shall be included in the PUD Agreement for review and approval by the Township. All proposed uses shall comply with the conditions of Section 7.02.02.

(2) CAPUD: The intent of the CAPUD district is to provide locations in the Township to accommodate offices, laboratories, and related "high tech" uses, involved in such activities as engineering, design, research and development, robotics research, prototype development, demonstration and display laboratories, testing laboratories, and other research and high technology activities of similar character and intensity. On a limited basis, complementary uses are permitted, such as restaurants that primarily serve employees in the immediate area.

It is intended that such uses be located in attractive buildings on amply landscaped, carefully planned sites, and preserving significant natural features. The activities of such uses do not generate offensive external impacts and operations that generate high levels of noise, heat or glare, air pollution, odors, wastewater, or truck traffic, are not considered appropriate in this district. The list of permitted uses proposed for a development shall be included in the PUD Agreement for review and approval by the Township.

a. Principal permitted uses include :

i. Research and development facilities.

ii. Research and support laboratories.

iii. Offices for the following occupations: executive, medical, dental, administrative, and professional, including architecture, planning, engineering and engineering sales.

iv. Hospitals, clinics and medical research facilities.

v. Colleges, universities, and other institutions of higher learning.

vi. Corporate and technical education and training facilities.

vii. Multimedia production facilities.

viii. Microbrewer or small distiller.

ix. Data processing and computer centers, including computer programming and software development, training, and service of electronic data processing equipment.

x. Essential pubic services and structures, not including buildings and storage yards.

xi. Accessory uses, buildings, and structures customarily incidental to any of the above. Examples include security work, administration offices, and storage and distribution incidental to the primary use of the site.

b. Special land uses include:

i. Any permitted use over 40,000 square feet.

ii. Prototype manufacturing facilities for engineering, laboratory, scientific, electronic, and research instruments and equipment.

iii. Light industrial uses where activities involve high technology research and development type uses.

iv. Indoor commercial recreation or fitness centers (excluding dome structures).

v. Arenas, stadiums, and skating rinks.

vi. Accessory restaurants, personal and business service uses that are intended to primarily serve the occupants and patrons of the principal use; provided that, any such uses shall be an incidental use. Permitted accessory restaurant and service uses shall be limited to the following:

1. Personal and business service establishments as identified in Table 7.02 that are intended to serve workers and visitors in the district, such as dry cleaning establishments, travel agencies, tailor shops, and similar establishments.

2. Restaurants, cafeterias, and other places serving food and beverages which are permitted by right in the NSD.

c. Compatible Uses: A land use which is not cited by name as a permitted or special land use may be permitted upon determination by the Township Board, following a recommendation by the Planning Commission that such use is clearly similar in nature and has the same character and intensity as those uses listed in this district as either principal permitted uses or special land uses. In making such a determination, all of the following shall be considered:
   i. Specific characteristics of the use in question shall be compared with the characteristics of the uses which are permitted. Such characteristics shall include, but are not limited to, truck and vehicular traffic generation, types of services offered, types of goods produced, methods of operation, impacts from noise, air contaminants, odor, heat, fire hazards, and water contaminants, and building and site characteristics.
   ii. The proposed use shall be compatible and in accordance with the goals, objectives and policies of the Genoa Township Master Plan and promote the intent of the development agreement and Section 10.03.06.
   iii. The land use shall not impair the use and development of other nearby properties.
   iv. If a proposed use is determined to be similar to and compatible with uses in the district the Planning Commission shall decide whether the proposed use shall be permitted by right, as a special land use, or as a permitted accessory use. The Planning Commission shall have the authority to establish additional standards and conditions under which a use may be permitted in the district.

d. Required conditions. Except as otherwise noted, buildings and uses in the CAPUD shall comply with the following requirements:

   i. All uses and business activities shall comply with the use conditions of 7.02.02, 8.02.02, and the performance standards in article 13.05.

   ii. All business activity shall be conducted within a completely enclosed building, unless otherwise specified. Outdoor storage shall be prohibited.

   iii. Any indoor storage must be clearly accessory to the principal permitted use.

   iv. Notwithstanding the limitations on outside storage, commercially used or licensed vehicles used in the normal operation of a permitted use may be parked on the site in the rear only.

(d) Dimensional Standards: All buildings, structures, accessory structures and parking areas shall meet the minimum setback standards of the Industrial District, Section 8.03.01 for the CAPUD and the Regional Commercial District, Section 7.03.01 for the ICPUD as specified in the Table of Dimensional Standards, along the exterior boundaries of the site. Internal setbacks and maximum building height shall be determined by the Planning

Commission during review of the PUD concept plan. To encourage flexibility and creativity consistent with the intent of the PUD, the Township may permit specific departures from the dimensional requirements of the Zoning Ordinance as a part of the approval process. Any regulatory modification shall be approved through a finding by the Township that the deviation shall result in a higher quality of development than would be possible using conventional zoning standards.

(e) Site Design. All Interchange PUD proposals shall comply with the standards of Section 10.03.05 e above.

(f) Architecture. All Interchange PUD proposals shall comply with the standards of Section 10.03.05 f above. The Planning Commission may allow for alternative innovative high quality exterior façade materials such as fiber cement and metal panels for buildings in the CAPUD district to create a research and office-park environment provided that the materials proposed to be used are found by the Planning Commission to be in keeping with the intent and purpose of this Section, in consideration of the character of surrounding uses and the design recommendations of the master plan.

(g) Access Management and Connectivity.

(1) ICPUD:

a. No access points other than Beck Road are permitted along South Latson Road between the interchange and the rail line.

b. Development shall incorporate shared access points to limit the number of driveways along Beck Road and shall comply with Section 15.06 Access Management.

c. Acceptable road levels of service (LOS) shall be maintained by careful access management strategies and road improvements.

d. Sites shall be designed to incorporate cross-access easements and connectivity for vehicular, bicycle, and foot traffic.

(2) CAPUD:

a. The primary access to the area west of South Latson Road, south of the railroad, shall be aligned with Sweet Road.

b. Secondary access points shall be limited and/or restricted. Restricted driveways shall be designed to be intuitive with minimal signage. All access points shall be aligned with access points across the road and shall be separated from other intersections and access points on the same side of the road by at least 500 feet.

c. Sites shall be designed to incorporate frontage roads, service roads, and cross-access easements to allow connectivity for vehicular, bicycle, and foot traffic. The use of landscaped boulevards is encouraged.

(h) Utilities. The Concept Plan shall include a Utility Master Plan, based on guidelines provided by the Township Engineer. The Utility Master Plan shall show connection

points to existing utilities, and adjacent properties where appropriate and concepts for the layout, size, and phasing of utilities, which shall include water, sanitary sewer and stormwater controls.

(i) Future Transition Area. Appropriately timed incremental southward expansion of the CAPUD is anticipated. Evaluation factors for expansion include the following considerations:

(1) The amount and capacity of undeveloped land remaining within the growth framework areas shall be analyzed and a determination shall be made that additional land area is needed to justify expanding boundaries.

(2) Projected population growth within the Township and demand for additional land areas for development.

(3) Present and planned sanitary sewer capacity.

(4) The capacity and condition of the road system.

(5) The ability of the Township, County and other public agencies to provide necessary services to the new growth areas and the additional resulting population.

(6) Impact on public health, safety and welfare.

(7) Changes to conditions considered at the time of the subarea plan.

(8) Inclusion of integrated open space for active and passive recreation.

(9) Environmental constraints and sensitivity.

(10) Adverse impact to adjacent or nearby property.

(11) Sensitive transitions to residential and agricultural land can be achieved.

(12) Other relevant criteria deemed appropriate by the Township.

(as amended 09/04/18)

Sec. 10.04 APPLICATION AND REVIEW PROCEDURE

10.04.01 Process for rezoning to appropriate PUD designation, Conceptual PUD Plan, Environmental Impact Statement and PUD Agreement.

(a) An optional pre-application workshop with the Planning Commission may be requested by the applicant to discuss the appropriateness of a PUD concept, solicit feedback and receive requests for additional materials supporting the proposal. An applicant desiring such a workshop shall request placement on the Planning Commission agenda.

(b) The applicant shall prepare and submit to the Zoning Administrator a request for rezoning to the appropriate PUD designation. The application shall include all

Conceptual Submittal items listed in Section 10.05 and shall be submitted in accordance with the procedures and requirements set by resolution of the Township Board.

(c) The Planning Commission shall review the rezoning request, the Conceptual PUD Site Plan, the Impact Statement and PUD Agreement, conduct a public hearing, and make a recommendation to the Township Board and Livingston County Planning Commission based on the review standards of Section 10.07. Notice of public hearing shall be provided for in accordance with section 21.05.

(d) Within thirty (30) days following receipt of a recommendation from the Planning Commission, the Livingston County Planning Commission shall conduct a public hearing on the requested PUD rezoning and make a recommendation for approval or denial to the Township Board.

(e) The applicant shall make any revisions to incorporate conditions noted by the Planning Commission and submit the required copies to the Zoning Administrator to provide sufficient time for review prior to the Township Board meeting.

(f) Within ninety (90) days following receipt of a recommendation from the Planning Commission and Livingston County, the Township Board shall conduct a public hearing on the requested PUD rezoning, Conceptual PUD Site Plan and PUD Agreement and either approve, deny or approve with a list of conditions made part of the approval. Notice of public hearing shall be provided for in accordance with section 21.05. The Township Board may require a resubmittal of the application reflecting the conditions for approval by the Zoning Administrator, and Township consultants if appropriate. (as amended 12/31/06)

10.04.02 **Expiration:** Approval of the Conceptual PUD Site Plan by the Township Board shall confer upon the owner the right to proceed through the subsequent planning phase for a period not to exceed two (2) years from date of approval. If application for Final PUD Site Plan approval is not requested within this time period, resubmittal of a new PUD concept plan and application shall be required. The Township Board may extend the period up to an additional two (2) years, if requested in writing by the applicant prior to the expiration date.

10.04.03 **Process for Final PUD Site Plan(s)**

(a) The applicant shall submit the required copies of all necessary information meeting the requirements of Section 10.06 of this ordinance to the Zoning Administrator at least thirty (30) days prior to the Planning Commission meeting at which the Planning Commission shall first review the request. If the PUD involves a platted subdivision, the Final Site Plan may be processed concurrently as a Preliminary Plat.

(b) Upon submission of all required materials and fees, the Planning Commission shall review the Final PUD Plan, the Impact Statement, and PUD Agreement and make a recommendation to the Township Board based on the review standards of Section 10.08.

(c) The applicant shall make any revisions to incorporate conditions noted by the Planning Commission and submit the required copies to the Zoning Administrator to provide sufficient time for review prior to the Township Board meeting.

(d) Within ninety (90) days following receipt of a recommendation from the Planning Commission, the Township Board shall conduct a public hearing on the requested Final PUD Plan, the Environmental Impact Statement, and PUD Agreement and either approve, deny or approve with a list of conditions made part of the approval. The Township Board may require a resubmittal of the application reflecting the conditions for approval by the Zoning Administrator, and Township consultants if appropriate. (as amended 3/5/10)

(e) If the Final PUD Site Plan was approved with conditions, the applicant shall submit a revised site plan to the Zoning Administrator for approval prior to the issuance of any building permits.

Sec 10.05 CONCEPTUAL SUBMITTAL REQUIREMENTS

The purpose of the conceptual review is to provide a mechanism whereby the applicant can obtain a substantial review of the proposed project in order to prepare final site engineering and architecture plans, and to execute necessary agreements between the applicant and the Township. The required number of copies of each of the following items shall be submitted by the applicant or as required by the Township:

10.05.01 Current proof of ownership of the land to be utilized or evidence of a contractual ability to acquire such land, such as an option or purchase agreement.

10.05.02 A completed application form, supplied by the Zoning Administrator, and an application fee. A separate escrow deposit may be required for administrative charges to review the PUD submittal.

10.05.03 An Impact Assessment meeting the requirements of Article 18. A traffic impact study may be required at the discretion of the Township or as otherwise stated in this ordinance which meets the requirements of Article 18.

10.05.04 A complete PUD Agreement for review which shall:

(a) Set forth the conditions upon which the approval is based, with reference to the approved Site Plan or Plat Plan and Impact Statement and a description of all deviations from Township regulations that have been requested and approved.

(b) When open space or common areas are indicated in the PUD plan for use by the residents, the open space or common areas shall be conveyed in fee, placed under a conservation easement or otherwise committed by dedication to an association of the residents, and the use shall be irrevocably dedicated in perpetuity and retained as open space for park, recreation, conservation or other common uses.

(c) Set forth a program and financing for maintaining common areas and features, such as walkways, signs, lighting and landscaping.

(d) Assure that trees and woodlands will be preserved as shown on the site plan, or replaced on a caliper for caliper basis.

(e) Assure the construction, improvement and maintenance of all streets and necessary utilities (including public water, wastewater collection and treatment) to mitigate the impacts of the PUD project through construction by the developer, bonds or other

satisfactory means, for any and all phases of the PUD. In the case of phased PUD's this requirement shall be reviewed at the time of any final site plan approval.

(f) Address any other concerns of the Township regarding construction and maintenance.

10.05.05 Sheet size of submitted drawings shall be at least 24-inches by 36 inches, with graphics at an engineer's scale.

10.05.06 Cover Sheet providing:

(a) the applicant's name;

(b) the name of the development;

(c) the preparer's name and professional seal of architect, engineer, surveyor or landscape architect indicating license in the State of Michigan;

(d) date of preparation and any revisions;

(e) north arrow;

(f) property lines and dimensions;

(g) complete and current legal description and size of property in acres;

(h) small location sketch of the subject site and area within one-half mile; and scale;

(i) zoning and current land use of applicant's property and all abutting properties and of properties across any public or private street from the PUD site;

(j) lot lines and all structures on the property and within one-hundred (100) feet of the PUD property lines;

(k) location of any access points on both sides of the street within one-hundred (100) feet of the PUD site along streets where access to the PUD is proposed.

10.05.07 A Plan Sheet(s) labeled Existing Site Conditions, including the location of existing buildings and structures, rights-of-way and easements, significant natural and historical features, existing drainage patterns (by arrow), surface water bodies, floodplain areas, wetlands over two acres in size, the limits of major stands of trees and a tree survey indicating the location, species and caliper of all trees with a caliper over eight (8) inches, measured four feet above grade. This sheet shall also illustrate existing topography of the entire site at two (2) foot contour intervals and a general description of grades within one-hundred (100) feet of the site. A reduced copy of this sheet may be included in the Impact Statement.

10.05.08 For projects with a residential component, a concept plan that illustrates how the site could be practically developed under current zoning standards. This drawing may be used to determine the base density of the project.

10.05.09 A Conceptual PUD Site Plan Sheet including:

(a) Conceptual layout of proposed land use, acreage allotted to each use, residential density overall and by underlying zoning district (calculations shall be provided for both overall and useable acreage), building footprints, structures, roadways, parking areas, drives, driveways, pedestrian paths, gathering areas and identification signs. Calculations of the size of uses to confirm compliance with Section 10.03.04 for the Non-residential PUD option.

Note: Useable area is total area less public road rights-of-way, year-round surface water bodies, and MDNR regulated wetlands.

(b) Building setbacks and spacing.

(c) General location and type of landscaping proposed (evergreen, deciduous, berm, etc.) noting existing trees over eight inches in caliper to be retained, and any woodlands that will be designated as "areas not to be disturbed" in development of the PUD.

(d) A preliminary layout of contemplated storm water drainage, detention pond location, water supply and wastewater disposal systems, any public or private easements, and a note of any utility lines to be removed.

(e) Calculations to demonstrate compliance with minimum open space requirements shall be provided.

(f) Preliminary architectural design information shall be provided to the satisfaction of the Township.

(g) If a multi-phase Planned Unit Development is proposed, identification of the areas included in each phase. For residential uses identify the number, type, and density proposed by phase.

(h) A Utility Master Plan shall be required based on guidelines provided by the Township Engineer. The Utility Master Plan shall show connection points to existing utilities, and concepts for layout, size and phasing of utilities.

Sec. 10.06 FINAL PUD SITE PLAN SUBMITTAL REQUIREMENTS

The final submittal shall include the required number of copies of each of the following items:

(a) All materials required by Article 18, Site Plan Review, including an Impact Statement and Traffic Impact Statement as required.

(b) A hydrologic impact assessment describing the existing ground and surface water resources including, but not limited to, a description of the water table, direction of groundwater flow, recharge and discharge areas, lake levels, surface drainage, floodplains, and water quality as well as the projected impact of the proposed development on such resources, in particular impacts associated with water supply development, wastewater disposal, and storm water management.

(c) A final copy of the approved PUD Agreement that meets the requirements outlined in Section 10.05.04.

(d) Non-Residential Projects: Additional information required for a complete review under the standards of Section 10.03.04.

(e) Any other additional information deemed appropriate by the Township.

Sec. 10.07 STANDARDS FOR APPROVAL OF CONCEPTUAL PUD SITE PLAN

10.07.01 **Standards for Approval.** Based upon the following standards, the Planning Commission may recommend denial, approval, or approval with conditions, and the Township Board may deny, approve, or approve with conditions the proposed planned unit development.

(a) The planned unit development meets the qualification requirements.

(b) The uses proposed shall have a beneficial effect, in terms of public health, safety, welfare, or convenience, on present and future potential surrounding land uses. The uses proposed will not adversely affect the public utility and circulation system, surrounding properties, or the environment. The public benefit shall be one which could not be achieved under the regulations of the underlying district alone, or that of any other zoning district.

(c) The planned unit development is generally consistent with the goals, objectives and land use map of the Master Plan.

(d) Judicious effort has been used to preserve significant natural and historical features, surface and underground water bodies and the integrity of the land.

(e) Public water and sewer facilities are available or shall be provided for by the developer as part of the site development. The Planning Commission may approve an RPUD without public water and sewer, provided all lots shall be at least one (1) acre in area and the requirements of the County Health Department are met.

(f) Safe, convenient, uncongested, and well-defined vehicular and pedestrian circulation within and to the site is provided. Roads and driveways shall comply with the Township Subdivision Control Ordinance, Livingston County Road Commission standards and the private road regulations of Article 15, as applicable. Drives, streets and other elements shall be designed to discourage through traffic, while promoting safe and efficient traffic operations within the site and at its access points. The site shall provide for inter-connection of roads and the future integration of circulation between adjacent sites.

(g) Common open space shall be provided including natural areas, community greens, plazas and recreation areas. The open space and all other elements shall be in an appropriate location, suitably related to each other, the site and surrounding lands. The common open space may either be centrally located along the road frontage of the development, located to preserve significant natural features, or located to connect open spaces throughout the development. Connections with adjacent open space, public land or existing or planned pedestrian/bike paths may be required by the Township. Grading in the open space shall be minimal, with the intent to preserve existing significant topographic features, where such resources exist.

(h) Any deviations from the applicable zoning regulations are reasonable and meet the intent of this Article.

10.07.02 **Conditions.** The Township Board may impose additional reasonable conditions to: 1) insure that public services and facilities affected by a Planned Unit Development will be capable of accommodating increased service and facility loads caused by the Planned Unit Development, 2) protect the natural environment and conserve natural resources and energy, 3) insure compatibility with adjacent uses of land, and 4) promote the use of land in a socially and economically desirable manner.

Sec. 10.08 FINAL PUD SITE PLAN APPROVAL STANDARDS

Based upon the following standards, the Planning Commission may recommend denial, recommend approval, or approval with conditions, and the Township Board may deny, approve with conditions the proposed planned unit development.

10.08.01 **Consistency with Preliminary PUD.** The Final PUD Plan and associated documents shall be reviewed for consistency with the approved Conceptual PUD Plan, PUD Agreement and associated documents and any conditions required by the Township.

10.08.02 **Final Site Plan Review.** The Final PUD Plan and associated documents shall be reviewed in accordance with Article 18 Site Plan Review, Township Subdivision Regulations, Township Condominium Ordinance and any other applicable regulatory document.

10.08.03 **Non-residential.** Non-residential PUD projects shall be reviewed for compliance with the standards set forth in Section 10.03.04.

10.08.04 **Conditions.** The Township may impose additional reasonable conditions to: 1) insure that public services and facilities affected by a Planned Unit Development will be capable of accommodating increased service and facility loads caused by the Planned Unit Development, 2) protect the natural environment and conserve natural resources and energy, 3) insure compatibility with adjacent uses of land, and 4) to promote the use of land in a socially and economically desirable manner.

10.08.05 **Phases.** For a PUD that is being developed in phases, final site plan approval for each phase shall be conditioned upon continued compliance of all phases with the Conceptual PUD Plan and PUD Agreement, as may be amended by the Township. The Township Board may postpone the approval of any final site plan for subsequent phases until previously approved phases of the PUD are brought into compliance with the requirements of the Conceptual PUD Plan and PUD Agreement.

Sec. 10.09 SCHEDULE OF CONSTRUCTION

10.09.02 **Construction.** Final site plan approval of a PUD, PUD phase or a building within a PUD shall be effective for a period of three (3) years. Further submittals under the PUD procedures shall be accepted for review upon a showing of substantial progress in development of previously approved phases, or upon a showing of good cause for not having made such progress.

10.09.04 **Residential Phasing.** In the development of a PUD, the percentage of one-family dwelling units under construction, or lots sold, shall be at least in the same proportion to the percentage of multiple family dwelling units under construction at any one time, provided that this Section shall be applied only if one-family dwelling units comprise twenty-five (25%) percent or more of the total housing stock proposed for the PUD. Non-residential structures

designed to serve the PUD residents shall not be built until the PUD has enough dwelling units built to support such non-residential use. The Planning Commission may modify this requirement in their conceptual or final submittal review process.

Sec. 10.10 APPEALS AND VIOLATIONS

10.10.01 **Zoning Board of Appeals:** The Zoning Board of Appeals shall have the authority to hear and decide appeal requests by individual lot owners for variances from the Genoa Township Zoning Ordinance following final approval of the PUD. However, the Zoning Board of Appeals shall not have the authority to reverse the decision of the Township Board on a PUD concept, or final site plan, change any conditions placed by the Planning Commission, or Township Board or grant variances to the PUD site plan, written PUD agreement or the requirements of this article.

10.10.02 **Violations:** A violation of the PUD plan or agreement shall be considered a violation of this Ordinance.

Sec. 10.11 AMENDMENTS AND DEVIATIONS FROM APPROVED FINAL PUD SITE PLAN

10.11.01 **Deviations following approval:** Deviations following approval of the Final PUD Site Plan may occur only when an applicant or property owner who was granted Final PUD Site Plan approval notifies the Zoning Administrator of the proposed amendment to such approved site plan in writing, accompanied by a site plan illustrating the proposed change. The request shall be received prior to initiation of any construction in conflict with the approved Final PUD Site Plan.

10.11.02 **Procedure:** Within fourteen (14) days of receipt of a request to amend the Final PUD Site Plan, the Zoning Administrator shall determine whether the change is major, warranting review by the Planning Commission, or minor, allowing administrative approval, as noted below.

10.11.03 **Minor changes:** The Zoning Administrator may approve the proposed revision upon finding the change would not alter the basic design nor any conditions imposed upon the original plan approval by the Planning Commission. The Zoning Administrator shall inform the Planning Commission of such approval in writing. The Zoning Administrator shall consider the following when determining a change to be minor.

(a) For residential buildings, the size of structures may be reduced; or increased by five percent (5%), provided the overall density of units does not increase and the minimum square footage requirements are met.

(b) Gross floor area of non-residential buildings may be decreased; or increased by up to five percent (5%) or 10,000 square feet, whichever is smaller.

(c) Floor plans may be changed if consistent with the character of the use.

(d) Horizontal and/or vertical elevations may be altered by up to five percent (5%).

(e) Relocation of a building by up to five (5) feet, if consistent with required setbacks and other standards.

(f) Designated "Areas not to be disturbed" may be increased.

(g) Plantings approved in the Final PUD Landscape Plan may be replaced by similar types of landscaping on a one-to-one or greater basis. Any trees to be preserved which are lost during construction may be replaced by at least two (2) trees of the same or similar species.

(h) Improvements or slight relocation of site access or circulation, such as inclusion of deceleration lanes, boulevards, curbing, pedestrian/bicycle paths, etc.

(i) Changes of building materials to another of higher quality, as determined by the Zoning Administrator.

(j) Slight modification of sign placement or reduction of size.

(k) Internal rearrangement of parking lot which does not affect the number of parking spaces or alter access locations or design.

(l) Changes required or requested by the Township, County or state for safety reasons.

10.11.04 **Major Changes:** Where the Zoning Administrator determines the requested amendment to the approved Final PUD Site Plan is major, resubmittal to the Planning Commission shall be required. Should the Planning Commission determine that the modifications to the Final PUD Site Plan significantly alter the intent of the Conceptual PUD Site Plan, a revised conceptual PUD Site Plan shall be submitted according to the procedures outlined in Section 10.04 illustrating the modification shall be required.

EXHIBIT 6

(Commercial PUD Design Guidelines)


Versa real estate
LATSON ROAD
COMMERCIAL PUD
DESIGN GUIDELINES
GENOA TOWNSHIP, MICHIGAN
UPDATED NOVEMBER 7, 2024

COMMERCIAL DEVELOPMENT INTENT

These guidelines are intended to illustrate the design quality anticipated with the commercial PUD. The "Owner" of the PUD or subsequent purchaser of land will be responsible for providing these guidelines to design professionals who will be involved in the preparation of site plans. Specific compliance will be described in more detail with a site plan that will be submitted to the Township for approval.

In general these guidelines include the following components:

1. A description of architecture supplemented with photographs from similar developments to illustrate the general outcomes expected consistent with the standards to support a deviation from the Township's standards that would otherwise apply.
2. Efforts to share access to reduce the number of driveways and provide good traffic operations along Latson Road and Beck Road.
3. Additional lighting standards to reduce lighting impacts on adjacent homes to the east.
4. Site design and landscaping shall diminsh the prominence of parking lots as viewed from public streets.
5. Pedestrian gathering and seating plazas, greenways and tree lined drives shall be within parking lots and throughout the site to provide an inviting pedestrian environment. These areas will also provide protection of the pedestrian from vehicular circulation for improved traffic operations and views.

GENOA TOWNSHIP, MI

Please also refer to Planning Consultant review letter.

DESIGN GUIDELINES
TABLE OF CONTENTS

LAND DEVELOPER:
Latson Beck, LLC and Latson South, LLC
326 E. Fourth Street, Suite 200, Royal Oak, Michigan 48067

COMMERCIAL DESIGN GUIDELINES

A. Setbacks

- Design for development needs to ensure that building placement is generally oriented towards the street to encourage walkability and a pedestrian-friendly environment.

B. Parking and Access

- Development within such areas should occur within a planned, integrated commercial setting. Site design for parking areas and access points will promote safe and efficient circulation throughout the site and with adjacent parcels.
- Shared driveways and interconnected access is encouraged.
- Access roads shall be a minimum of 26 feet wide FOC and 30 ft inside turning radius (50 ft outside) for emergency vehicle access.
- The amount of parking required for individual uses may be reduced to be efficient so that the peak parking demand is accommodated.
- Parking lots should be connected to promote shared parking and reduce the number of curb cuts and overall amount of impervious surface area.

C. Pedestrian Amenities

- Uses shall be connected with an interior sidewalk system so that pedestrians can walk between the uses and have a crossing to the sidewalk on the west side of Latson Road.
- Sidewalks shall be included along road frontage.

Section 7.02.01 (k)(3), allows for 1 driveway from each street unless the Planning Commission determines additional driveways will be consistenet with the purpose of Article 15.

D. Landscaping

- Plant consistent and plentiful native vegetation to provide an attractive entry into the southern part of Genoa Township and provide generous interior landscape that serves as a buffer between the buildings and parking lots as well as adjacent land uses.
- Street trees planted shall consist of no more than 10% of a single species, no more than 20% of any genus, and no more than 30% of any tree family.

E. Architecture

- Commercial architecture design guidelines are described in detail on the following page.

F. Uses Permitted

- Uses allowed in the interchange commercial area may include retail stores, restaurants, drive-through restaurants, gas station, hotels, and similar commercial uses.

COMMERCIAL DESIGN GUIDELINES

COMMERCIAL DIMENSIONAL STANDARDS	
Minimum setbacks:	
Front Yard	70 feet (or 35 feet if no parking is located in the front yard)
Side Yard	20 feet for each side plus an additional 0.5 feet per foot of height over 45 feet tall[1]
Rear Yard	50 feet
Parking Lot	20 feet front, 10 feet side and rear
Maximum Height	45 feet or 3 stories
Maximum Height of Hotel	57 feet or 4 stories

1 Proposed new standard to provide greater side setbacks for taller buildings.

COMMERCIAL ARCHITECTURAL DESIGN GUIDELINES

The following guidelines apply to all commercial types within the Commercial PUD and are required to comply with 10.03.05(f) of the Genoa Township Zoning Ordinance. These guidelines promote and enforce high-quality architectural design for building sides, including gas stations (see precedent photo), visible from a road or parking lot. Retail uses are anticipated to be predominantly 1 to 2 story flat roofed buildings. Buildings shall utilize high quality architecture with variable building lines, peaked roofs, architectural accents, and brick facades. Peaked roof lines shall not be designed to create false, parapet style facades.

A. General Design Theme.

- These architectural requirements are generally intended to provide consistent architectural quality among buildings and other improvements within the Latson Road corridor.
- These guidelines are intended to generate architectural cohesion, however some architectural variation is allowed that is consistent with the overall design theme.
- All structures shall be thoughtfully designed in a manner that visually and functionally complements the existing context.

B. Building Elevations.

- If more than one story, a different architectural treatment may be employed on the ground floor facade than on the upper floors to enhance the experience of visitors/patrons.
- All building facades shall have a defined base or foundation, a middle or modulated wall, and a top formed by a pitched roof or three-dimensional cornice.
- The predominant material utilized on facades that are visible from a public right of way or parking lots shall be brick. Other materials may be used for architectural accents, provided such materials shall have the appearance of wood or cut or cast stone.
- A building or buildings shall face (front facade or side elevation with appearance of a front facade) the intersection of existing arterial streets. The building(s) shall have distinct architecture that creates a prominent landmark at the intersection, with no loading or utility areas that face the intersection. There shall be a landscape plaza in front of the building or between buildings. Parking shall be behind this building where practical.
- Excluding windows, doorways, and associated decorative trim, 75% of the total area (square feet) of the front facade of commercial buildings shall be brick. This also includes facades visible from Latson Road and Beck Road as well as the site parking lots.
- Excluding windows, doorways, and associated decorative trim, 50% of the total area (square feet) of the side facades of commercial buildings shall be brick. This also includes facades visible from Latson Road and the site parking lots.
- The following items are prohibited: Texture 1-11, aluminum siding or asbestos or asphalt shingles shall not be used on the exterior walls.
- Building facades, which are ninety (90) feet or greater in length, shall be designed with offsets (projecting or recessed) at intervals of not greater than sixty (60) feet.
- Offsets may be met with setbacks of the Building Facade and/or with architectural elements (i.e. arcades, columns, piers, and pilasters), if such architectural elements meet the minimum offset requirements of this requirement.

C. Roofs.

Applicant has stated that the roofs will be flat which is not in compliance with 10.03.05 (f)

1. Pitched Roo

- Shall be simply and symmetrically pitched and only in the configuration of gables and hips, with pitches ranging from 4:12 to 14:12.
- If standing seam panels are used then they shall be: 1) gray, black, or dark brown; and 2) made of a non-reflective material.
- Modulation of the roofs and/or roof lines shall be required in order to eliminate the appearance of box-shaped buildings.

D. Lighting and Signs

1. Site Lighting

- Site lighting, within the commercial area, shall be LED based, consistent in style, color, design in accordance with the Township Zoning Ordinance standards, and be dark sky certified.
- All site lighting fixtures shall have a maximum height of twenty (20) feet. The maximum light levels on these properties shall not exceed 10 footcandles on average (common with new LED lighting systems), except the fueling area for a gas station is allowed an average of 12.4 foot candles. Lighting will otherwise be in accordance with the Township Zoning Ordinance lighting standards.
- With the exception of low intensity architectural lighting, exterior wall mounted lights and pole mounted lights shall incorporate overhead cutoffs or fixtures that direct the light downward.

2. Retail signs and other signs shall conform with the Township Ordinances.
3. Wall signs should be channel cut letters.

E. Pedestrian Amenities

- Uses shall be connected with an interior sidewalk system so that pedestrians can walk between the uses.
- Site shall be connected to existing pathways by pedestrian crossing at Latson and Beck Road to the west side of Latson Road.
- Sidewalks shall be included along road frontage.
- If there is a connection across the railroad tracks that is approved by the railroad operator, sidewalks will be installed on the east side of Latson Road.

COMMERCIAL DESIGN GUIDELINES
BUILDING DESIGN PRECEDENTS

Example of a gas station adhering to greater design standards.

Newer hotels that demonstrate higher quality building design.

Examples of channel cut wall signage

COMMERCIAL OUTDOOR LIGHTING STANDARDS

The purpose and intent of the Outdoor Lighting standards is to:

- Minimize light trespass onto adjacent properties
- Help eliminate artificial lighting that contributes to "sky glow "and disrupts the natural quality of the nighttime sky
- Provide a safe nighttime environment

Any future site plan within the PUD shall be required to submit an outdoor lighting plan to abide by the standards set forth in this section. The site plan shall contain a photometric layout for the exterior lighting which may be subsequently waived if there is no parking area present on the site. Standards generally apply throughout the PUD, but flexibility may be allowed.

The following outdoor lighting types shall be exempt from the provisions of this section:

- Emergency lighting
- Seasonal and holiday lighting provided that the lighting does not create direct glare onto other properties or upon the public rights-of-way.

The following outdoor lighting types shall be prohibited:

- Floodlights or swivel luminaires designed to light a scene or object to a level greater than its surroundings. No fixtures may be positioned at an angle to permit light to be emitted horizontally or above the horizontal plane.
- Unshielded lights that are more intense than 2,250 lumens or a 150 watt incandescent bulb.
- Search lights and any other device designed solely to light the night sky except those used by law enforcement authorities and civil authorities.
- Laser source light or any similar high intensity light when projected above the horizontal plane.
- Mercury vapor lights.
- Metal halide lights, unless used for outdoor sport facilities.
- Quartz lights.
- Neon/LED Strip Lights.

Outdoor Lighting Design Standards – Internal to the Site:

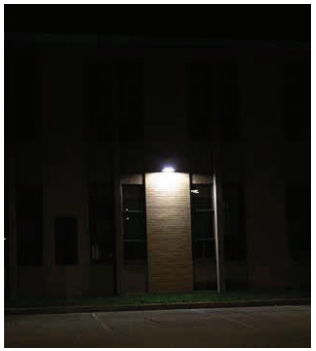
- Direct or reflected outdoor lighting shall be designed and located to be confined to the site for which it is accessory. The maximum lighting levels at the property lines of any other property shall not exceed 0.1 footcandles at residential lot line, 1 at non-residential lot line.
- Lighting of building facades shall be from the top and directed downward with full cut-off shielding.
- The average lighting values for areas intended to be lit shall not exceed 10 footcandles on average. The uniformity ratio (maximum to minimum) for all parking lots shall not exceed the current IESNA RP-20 uniformity ratio guideline. (Note: Current guideline is 15:1)
- Lighting fixtures shall meet the township maximum height of 30 feet and 10 footcandles with the following exceptions:

    1. The Township may permit maximum light levels of 12 footcandles on average (common with new LED lighting systems), designed to have no spillover onto adjacent properties and a maximum pole height of 35 feet to reduce the umber of poles upon a finding that the result will provide more efficient lighting and aesthetics throughout the day.
    2. Provided that when lighting is adjacent to, and visible from, abutting residential properties, the maximum height of lighting poles shall be 20 feet unless the Township approves taller poles with a demonstration that it is an overall better lighting design in terms of aesthetics and impacts.
    3. Site lighting for non-residential uses shall not exceed 1.0 footcandles on average when a use is not open for business.

Outdoor Lighting Design Standards – Public Street Lighting:

- Streetlights in the public rights-of-way shall be the minimum necessary to provide adequate illumination for public safety and be designed to direct lighting downward onto the public rights-of-way.
- Public street illumination shall use the most current American National Standard Practice for Roadway Lighting ANSI/IESNA RP-08 for all public street lighting.

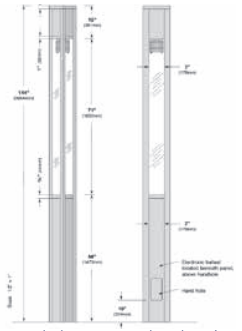
COMMERCIAL OUTDOOR LIGHTING STANDARDS



Example of dark sky building-fixed luminaire.

Roadway lighting to follow Township and other roadway regulation minimums

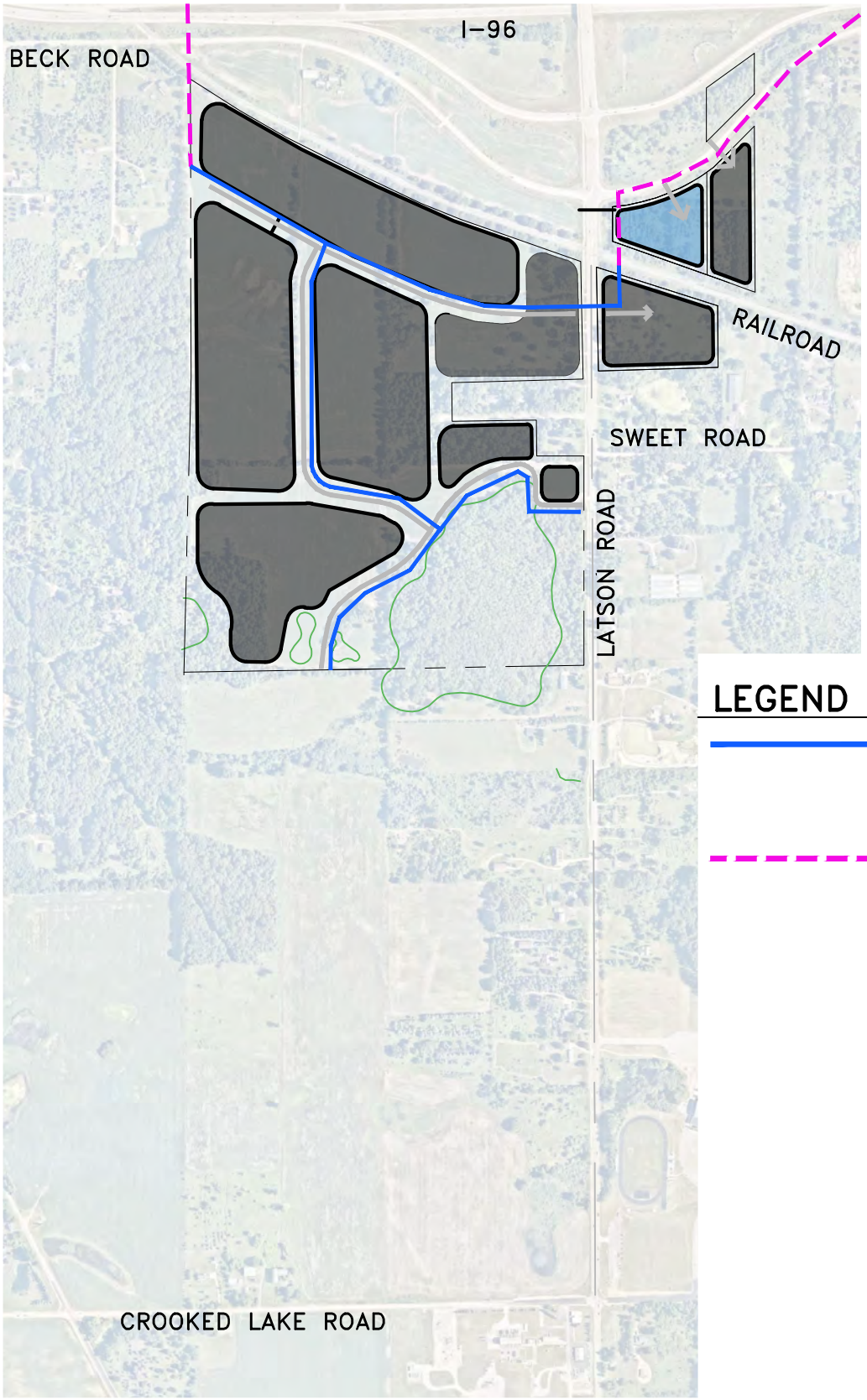
Unshielded lights versus downward shielded



Recommended ornamental pedestrian-scale lighting for northern entry on Latson Rd.

EXHIBIT 7

(Utility Plans)



LEGEND

- PR WATERMAIN (TO BE INSTALLED AS PART OF THE INNOVATION INTERCHANGE PUD)
- EX WATERMAIN

WATERMAIN CONCEPT

NOTE:
WATER MAIN TO BE A COMBINATION OF 8" AND 12" IN DIAMETER

PROJECT NO.: 16001784
DATE: 2024-09-25

DR: MJM
CAD FILE: 16001784EX-03-UTILITY ROUTING-REV2024.09.24.DWG

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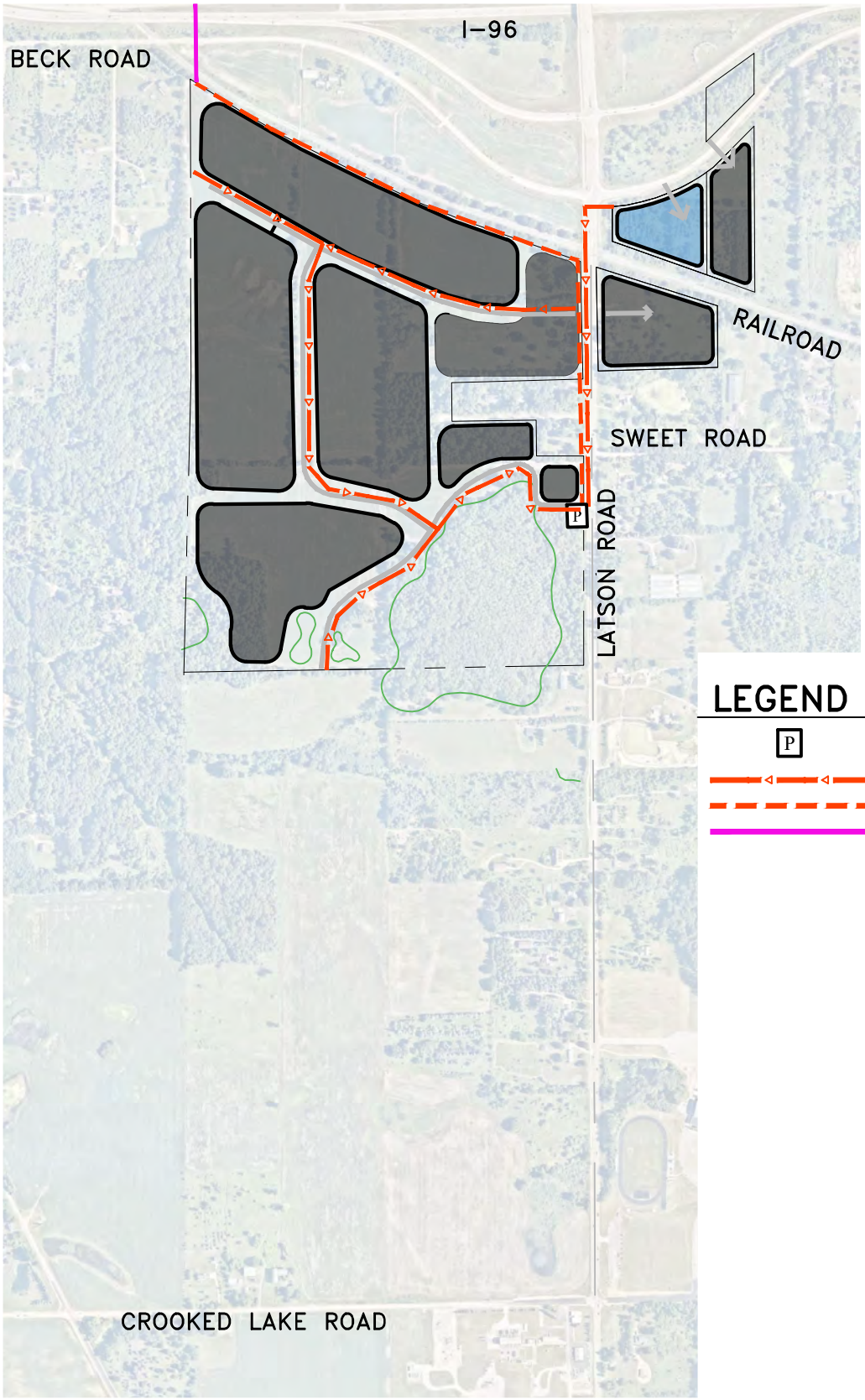


LEGEND

- P — PUMP STATION
- PR GRAVITY SEWER
- PR FORCE MAIN
- EX 8" FORCE MAIN

SANITARY SEWER CONCEPT

PROJECT NO.: 16001784
DATE: 2024-06-25

NOTE:
SANITARY SEWER TO BE A COMBINATION OF 8" AND 10" GRAVITY SEWER AND 8" FORCE MAIN

DR: MJM
CAD FILE: 16001784EX-03-UTILITY ROUTING-REV2024.09.24.DWG

ATWELL
866.850.4200 www.atwell-group.com

EXHIBIT 8

(First Amendment to the Utility Agreement)

102984.000185 4883-5210-1323.1

FIRST AMENDMENT TO AGREEMENT REGARDING CONSTRUCTION OF SANITARY SEWER AND WATER PROJECT

This **First Amendment to Agreement Regarding Construction of Sanitary Sewer And Water Project** (the "Amendment") is made as of _____, 2024 (the "Effective Date"), by and between Latson Partners, LLC, Latson Farms, LLC and Covenant of Faith, LLC (collectively, the "Original Developer"), and Latson Beck, LLC, a Michigan limited liability company (the "Additional Developer"), whose address is 29201 Telegraph Road, Suite 410, Southfield, Michigan 48034, on the one hand, and the Charter Township of Genoa (the "Township"), whose address is 2911 Dorr Road, Brighton, Michigan 48116, on the other hand.

RECITATIONS

A. Original Developer and its affiliated entities are the owners of approximately 200 acres of land located on the west and east sides of Latson Road, south of the I-96 expressway in Genoa Township, as more particularly described on attached **Exhibit 1** and depicted on the Project Area Plan and Survey attached hereto as **Exhibit 2** (the "Innovation Park Property").

B. At its regular meeting held on August 3, 2020, the Township Board approved the PUD rezoning, the Conceptual PUD Site Plan and execution of a PUD Agreement for the Innovation Park Property.

C. The Township, through its consulting engineers, TetraTech, developed a South Latson Road Water and Sanitary Sewer Improvement Plan (the "Utility Plan") in order to extend public sewer and water to serve the Township's "Interchange Planned Unit Development" districts described in the Township's Zoning Ordinance, which districts included the Innovation Park Property. As set forth in the Innovation Park PUD Agreement, the Original Developer and the Township entered into an Agreement Regarding the Construction of Sanitary Sewer and

Water Project dated ____ (the "Utility Agreement"), under which the Original Developer agreed to carry out and pay for the sewer and water infrastructure improvements called for in the Utility Plan and as further described in the Utility Agreement. Original Developer undertook and completed the utility work called for in the Utility Agreement. The Utility Agreement provided that future utility improvements necessary to serve the Innovation Park Property would be designed and installed as part of final site planning and construction of each phase of the development of the Innovation Park Property.

D. Additional Developer is the owner of approximately 7.44 acres of land located on the east side of Latson Road, south of the I-96 expressway (Parcel No. 11-09-300-046), as depicted on the Parcel Map attached hereto as **Exhibit 3** (the "Latson Beck Property"). The Latson Beck Property abuts a portion of the Innovation Park Property and is included in the Township's "Interchange Planned Unit Development" districts described in the Township's Zoning Ordinance and referenced in the Utility Agreement. At its regular meeting held on _____, the Township Board approved Additional Developer's request for ICPUD rezoning and execution of a PUD Agreement for the Latson Beck Property.

E. In that the Utility Plan was designed and intended to also serve the Latson Beck Property, the parties desire to amend the Utility Agreement to include the Latson Beck Property.

NOW, THEREFORE, in consideration of the mutual covenants and promises herein contained, the sufficiency of which the parties hereby acknowledge, Original Developer, Additional Developer and the Township agree as follows:

1. **Addition of Latson Beck Property**. The description of the properties covered by the Utility Agreement is hereby amended to include the Latson Beck Property as described and depicted on **Exhibit 3**. Any future extensions of the utility improvements made in accordance

with the Utility Agreement necessary to serve the Latson Beck Property will be designed and installed as part of final site planning and construction of each phase of the development of the Latson Beck Property.

2. **Scope of Amendment**. Except as specifically amended by the foregoing paragraph 1, all other terms and conditions of the Utility Agreement shall remain in full force and effect.

IN WITNESS WHEREOF, the parties have executed this Agreement on the date written above.

Charter Township of Genoa

By: _____

Its: _____

Dated: _____

STATE OF MICHIGAN)
) ss.
COUNTY OF LIVINGSTON)

On this ____ day of _____, 2024 before me personally appeared _____ who, being by me duly sworn did say the he/she is the _____ of Charter Township of Genoa and has executed the foregoing Agreement on behalf of the Township.

_____
_____, Notary Public
_____ County, Michigan
My Commission Expires:
Acting in the County of _____
_____

Latson Partners, LLC, a Michigan limited liability Company

Signature page to Agreement Regarding Construction of Sanitary Sewer and Water Project

By: _____
Todd Wyett

Its: Manager

Dated: _____

STATE OF MICHIGAN)
) ss.
COUNTY OF OAKLAND)

On this ____ day of _____, 2024 before me personally appeared Todd Wyett who, being by me duly sworn did say he is Manager of Latson Partners, LLC, a Michigan limited liability Company, and that he executed the foregoing Agreement on behalf of the Company.

_____
_____, Notary Public
_____ County, Michigan
My Commission Expires: _____
Acting in the County of _____

Latson Farms, LLC, a Michigan limited liability Company

By: _____
Todd Wyett

Its: Manager

Dated: _____

STATE OF MICHIGAN)
) ss.
COUNTY OF OAKLAND)

On this ____ day of _____, 2024 before me personally appeared Todd Wyett who, being by me duly sworn did say he is the Manager of Latson Farms, LLC, a Michigan limited liability Company, and that he executed the foregoing Agreement on behalf of the Company.

_____
_____, Notary Public
_____ County, Michigan
My Commission Expires: _____
Acting in the County of _____

Covenant of Faith, LLC, a Michigan limited liability Company

By: _____
Todd Wyett

Its: _Member_____

Dated: _____

STATE OF MICHIGAN)
) ss.
COUNTY OF OAKLAND)

On this ____ day of _____, 2024 before me personally appeared _____ who, being by me duly sworn did say he/she is the _____ of Covenant of Faith, LLC, a Michigan limited liability Company, and has executed the foregoing Agreement on behalf of the Company.

_____
_____, Notary Public,
_____ County, Michigan
My Commission Expires: _____
Acting in the County of _____

Latson Beck, LLC, a Michigan limited liability Company

By: _____
Todd Wyett

Its: _Manager_____

Dated: _____

STATE OF MICHIGAN)
) ss.
COUNTY OF OAKLAND)

On this ____ day of _____, 2024 before me personally appeared _____ who, being by me duly sworn did say he/she is the _____ of Covenant of Faith, LLC, a Michigan limited liability Company, and has executed the foregoing Agreement on behalf of the Company.

_____
_____, Notary Public,
_____ County, Michigan
My Commission Expires: _____
Acting in the County of _____

Signature page to Agreement Regarding Construction of Sanitary Sewer and Water Project

EXHIBIT 1

Legal Description

EXHIBIT 2

Project Area Plan

EXHIBIT 3

Parcel Map for Latson Beck, LLC Property

EXHIBIT 4

Utility Engineering and Design Plans

EXHIBIT 5

CSX Railroad Crossing Plans

EXHIBIT 6

Project Permit Responsibilities

COMMUNITY IMPACT ASSESSMENT

INTERCHANGE COMMERCIAL PUD

September 27, 2024

Versa | real estate

Prepared By:

MKSK ATWELL F&V C2G CINCAR CONSULTING GROUP

In accordance with Section 18.07 of the Genoa Township Zoning Ordinance, this impact assessment describes the property, the intended land uses, the potential impacts, and design features to minimize the negative impacts. Given the size of the property and the range of potential land uses, some portions of this report are general in nature. More specific assessments will be provided when more detailed site plans are submitted for a specific project.

The Interchange Commercial PUD is designated for commercial uses. The scale of the commercial development is intended to meet the needs of employees and visitors to the adjacent Innovation Interchange PUD (a planned development for office, research, light industrial, and warehouse uses) and quick on-and-off trips by motorists along I-96.

18.07.01 Preparer.
This statement was prepared by Bradley Strader, AICP, Principal Planner, C2G and Eric Lord, P.E., Vice President, Atwell. A traffic impact study will be submitted separately, prepared by Julie Kroll of Fleis & Vandenbrink.

Cincar Consulting Group (C2G)
17199 N. Laurel Park Drive
Suite #204
Livonia, MI 48152
(313) 652-1101
Bradley Strader, Principal
Brad.Strader@itsc2g.com

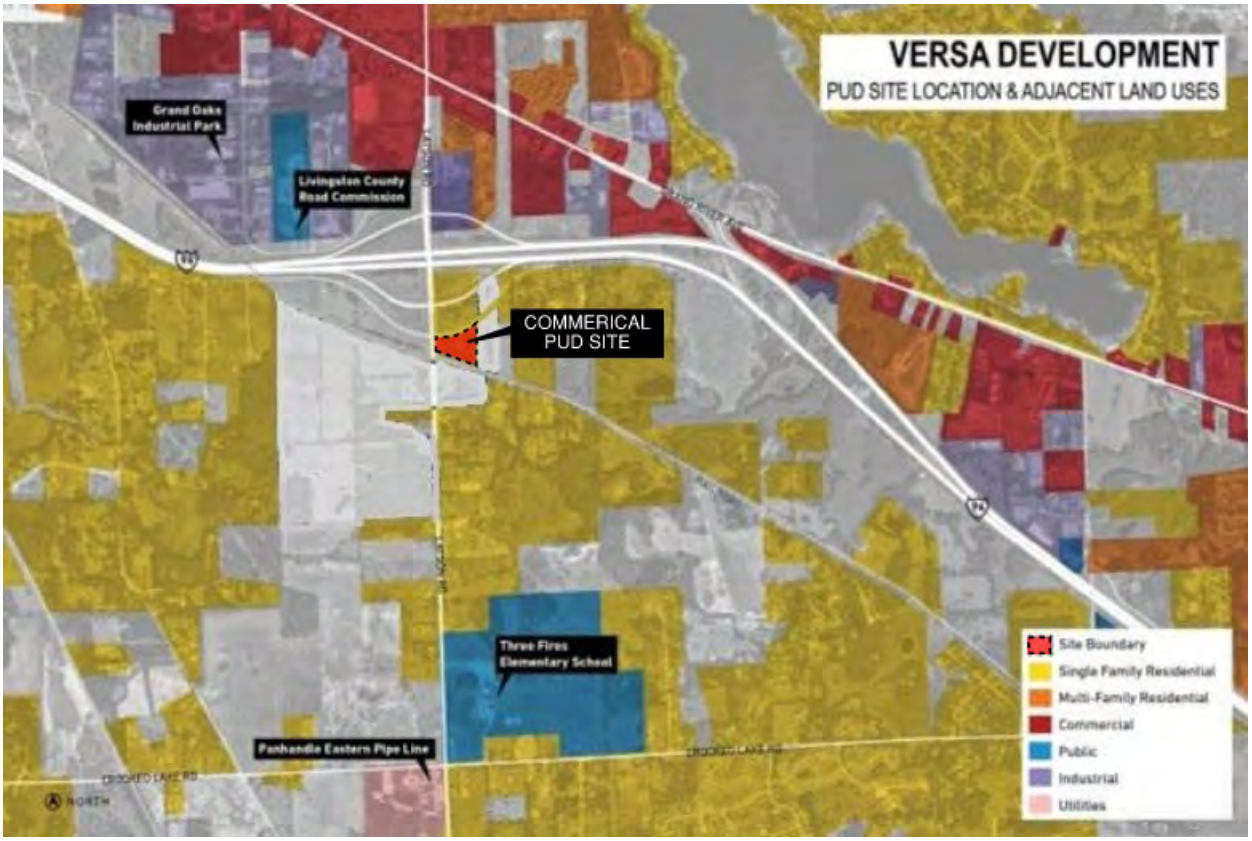
ATWELL, LLC
Two Towne Square, Suite 700
Southfield, MI 48076
(248) 447-2000
Eric Lord, Vice President
elord@atwell-group.com

FLEIS & VANDENBRINK
27725 Stansbury St #195
Farmington Hills, MI 48334
(248) 536-0080
Julie Kroll, Traffic Services Group Manager
jkroll@fveng.com

18.07.02 Location.
The project site includes ±7.44 acres and is located south of the I-96 Interchange and north of the railroad tracks, along the eastern side of Latson Road. Properties adjacent to the PUD site are the Innovation Interchange PUD to the south and east, I-96 to the north, and vacant agricultural land to the west across Latson Road.

The following parcels are included in the PUD:

- 11-09-300-046



18.07.03 Impact on Natural Features.
The subject property is comprised of approximately 7.44 acres of land located on the east side of Latson Road, north of the railroad. The property is primarily open, with some evidence of prior farming activity and a few small stands of trees. Two small, isolated pockets of wetlands are present on the site totaling less than 1/3 acre which were delineated by Barr Engineering on September 23, 2024. Based on Barr's Wetland Delineation Report dated September 25, 2024 neither wetland is State or Township regulated. The Barr report is included in the Appendix of this document.

Topography generally slopes from north to southeastacross the property. We anticipate this property to be developed for commercial use, and as such, will likely see impacts to the trees and wetland located in the interior of the site, though opportunities will be explored to preserve trees around perimeter property lines where possible.

18.07.04 Impact on Stormwater Management.
The topography east of Latson Road generally drains from north to south and continues south to and through a series of low-lying areas and potential wetlands on adjacent property. This area is part of the drainage district for the Marion Genoa Drain.

According to the USDA Natural Resources Conservation Service Soils information, the subject area east of Latson Road is primarily comprised of Miami Loam soil, which is classified as a soils group C. Soils of this type experience low to moderate infiltration with stormwater typically saturating the soil before running off toward lower areas. High groundwater is not anticipated. These soil types do not generally limit development of land.

There is a fair amount of grade change to the property, falling approximately 16 feet from northwest to southeast. Development of the property will be designed to maintain similar drainage patterns to what occurs now. The site's post-development drainage may have already been accounted for within the MDOT interchange basin design, which will be further evaluated during the development process. If determined to be necessary, a stormwater management system will be designed for the development in accordance with the requirements of the Livingston County Drain Commissioner's office, which will include:

- Water quality measures
- Stormwater detention sized for the 100-year storm event
- Soil erosion control

We anticipate the detention basin will be strategically located at or near the existing low points of the property where stormwater is currently leaving the site. The basin will retain the water for a period with a restricted release to maintain the current drainage patterns from the property. As mentioned earlier, the subject area is tributary to the Marion Genoa Drainage District which is the ultimate receiving water course.

A soil erosion control permit will be obtained prior to construction from Livingston County which will require the site to be managed to control erosion created by construction activity. Examples of erosion control measures that are typically deployed during site development include:

- Silt fencing and vegetative buffer strips to keep soil contained within the construction area.
- Mud Mats at construction entrances to avoid tracking onto public roads.
- Inlet protection – silt sacks in catch basins to avoid sediment buildup in storm pipes and ponds.
- Stone Rip Rap – at culvert outlets to reduce scour and erosion.
- Seed and mulch – of graded areas to promote vegetation growth, which is key to controlling erosion. established.

18.07.05 Impact on Surrounding Land Use.

The Genoa Township Master Plan (2023) designates the Latson Road corridor south of the new I-96 Interchange and north of the railroad as an area to concentrate new commercial development, with a goal of a planned development rather than piecemeal of development parcels. Uses contemplated in the Master Plan include fast food, sit-down restaurants, gas stations, retail, entertainment, and other services that are complementary to the overall development. The site is within the Growth Boundary and designated as a "Primary Growth Area" in the Master Plan.

The proposed Commercial PUD accommodates those types of complimentary uses to service employees and visitors to the Interchange Campus area. The developer notes that this location in Genoa Township is very appealing given the proximity to the well-designed I-96 interchange, which is seen as a premier entrance and exit for travelers along I-96. The proposed Commercial PUD is bordered by the adjacent Innovation Interchange Campus PUD to the south and east, with Latson Road and I-96 to the north and west, so the development has no abutting lands that would be negatively impacted by development of this parcel consistent with the Master Plan.

As shown on the concept plan, described in the Design Guidelines, and as prescribed in the PUD Agreement, a number of provisions are included to help ensure the development is compatible with the surrounding area. These include:

- Limited access points located off of Beck Rd and a traffic signal located at Beck and Latson to improve traffic safety.
- An extensive streetscape along Latson Road to provide an attractive gateway to the PUD and Southern Genoa Township proposed as part of the adjacent interchange campus PUD.
- Standards for high quality architectural design for facades visible to the public, including from I-96.
- Lighting standards to help preserve the existing "dark sky" environment.

All of the development is intended to comply with the operational requirements and performance measures in the Genoa Township Zoning Ordinance. More details regarding types of proposed uses, hours of operation, noise for particular uses, activity during construction periods, etc. will be provided once individual site plans are submitted for development.

18.07.06 Impact on Public Facilities and Services.

This section covers the anticipated broad impacts of the Development. Individual uses and site plans submitted in the future may need to provide more information on their particular impacts, depending upon the use. For example, water and sewer needs may vary for a particular use.

Generally, the main impacts will be traffic and public water and sewer, as noted in the sections below. In terms of employees, this will vary depending upon the types of sizes of the individual site plans. It is expected that the impacts on police, fire, emergency response and other Township or County services will be minimal, having similar or smaller demand as the commercial developments north of I-96 due to the limited size of the parcel. The tax benefits of the development is expected to far exceed the impacts to public services, which will benefit the Township.

18.07.07 Impact on Public Utilities.

Utility service to the South Latson Road Service Area is provided by the Marion, Howell, Oceola & Genoa Sewer and Water Authority (MHOG) and the Genoa Oceola Sewer and Water Authority (GO).

Water service is already available to the commercial site via a developer funded extension of 12-inch water main, serviced by MHOG, which has been extended from Kohl's across I-96 to Beck Road then west to Latson and south to the northeast corner of the Latson Farms parcel south of the railroad tracks. Once the developments in the South Latson Road area are constructed, the internal watermain will complete the loop to the west where another developer funded water main extension was brought under I-96, stubbing south of the railroad at the west property line of the Innovation Interchange PUD. This is shown in the attached exhibits, though the loop is not required to service the proposed Commercial PUD.

Sanitary sewer within the proposed South Latson Road development area will consist of gravity sewers that flow to a proposed pump station located internal to the Innovation Interchange PUD development on the west side of Latson Road, south of Cloverbend, the natural low point in the area. A force main will extend north from the pump station through the Innovation Interchange property and connect to an existing developer funded force main that crosses under I-96 before merging into the existing sanitary system at Grand Oaks Drive. The area is ultimately serviced by the GO WWTP, which has recently received system capacity upgrades and is able to service the anticipated load from the entire South Latson Road development area, including the proposed Commercial PUD. The Utility Agreement entered by the Township with the Innovation Park developer provides that sewer service would be extended to each of the properties within the planned development parcels, including the Property, in connection with final site plans for each such property. The overall sanitary system for the South Latson Road Service Area is shown in the attached exhibits.

Each development proposed within the South Latson Road area will be serviced by public water and sewer, designed to local, County and State requirements. Approximately 1,497 Residential Equivalent Units (REU) is anticipated for the South Latson Road development area.

Franchise utilities serving the South Latson Road area will include gas, electric, telephone and data. Coordination with those utility providers to bring service to the area will continue as development plans progress.

Please see the Water Distribution Infrastructure and Sanitary Sewer Collection Infrastructure Maps in Appendix.

18.07.08 Storage and Handling of any Hazardous Materials.

The specific uses of the proposed Commercial PUD are yet to be determined. Due to the intended uses defined in the Master Plan, it is expected that most potential uses will not involve storage or handling of hazardous materials. If a gas station is proposed, it will contain underground fuel storage tanks which will comply with all local, County, State and Federal requirements. Each development proposed within the subject area will be responsible for meeting all storage and handling requirements, as applicable.

18.07.09 Traffic Impact Study.

A separate traffic impact study has been prepared by Fleis and Vandenbrink. The study area and contents of this study has been coordinated with the Livingston County Road Commission with a focus on the intersection of Latson and Beck, the preferred location for access points to the PUD, along with impacted intersections in the surrounding area. Please refer to this report for a detailed analysis of traffic impacts and recommended improvements.

18.07.10 Historic and Cultural Resources.

There are no Historic or Cultural Resources located on the vacant Commercial PUD property.

18.07.11 Special Provisions.

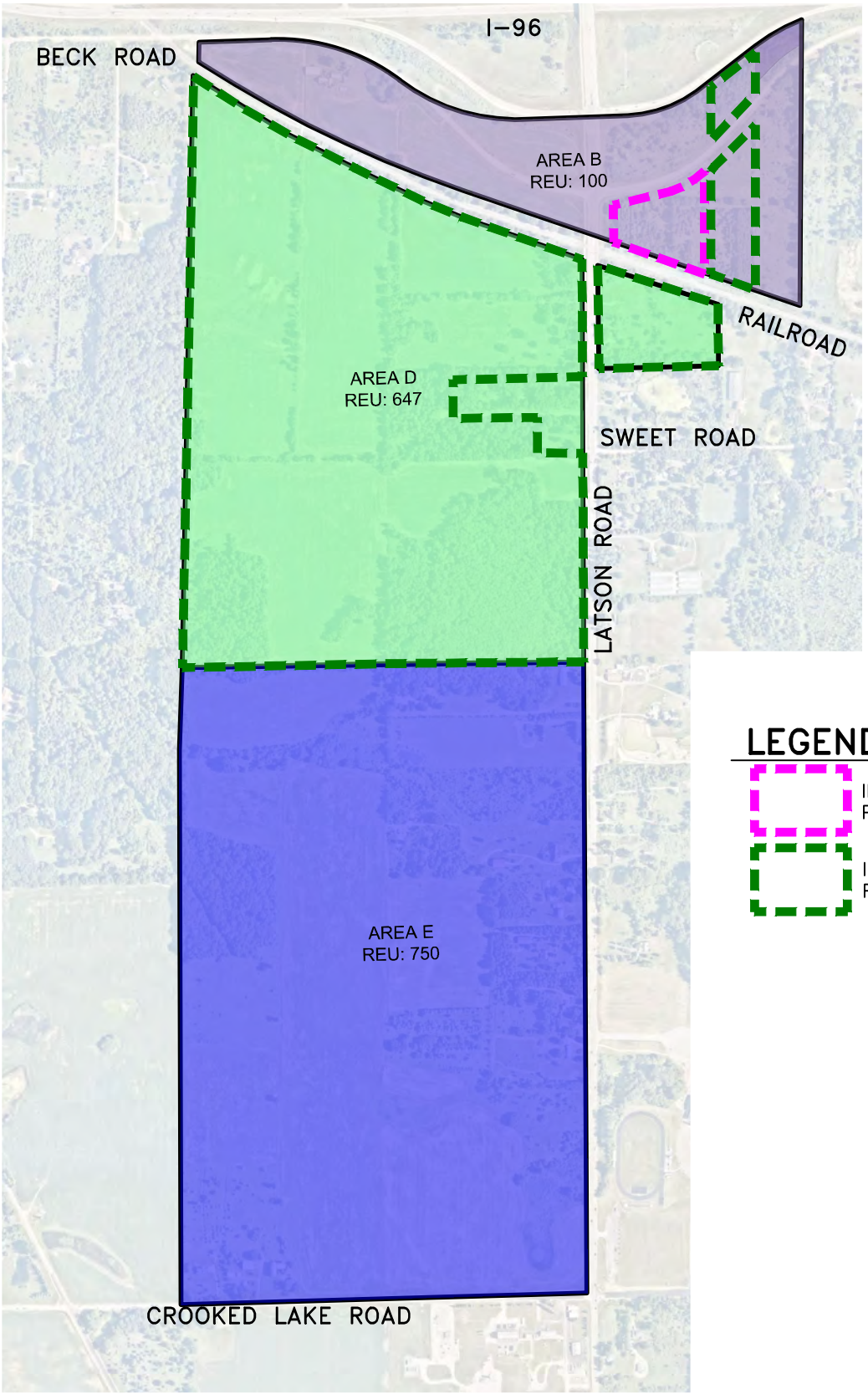
The PUD Agreement contains several provisions regarding the uses, operations, design and other standards that will apply to the Development and future site plans and owners.

Sources:

- Genoa Township Master Plan
- I-96 Interchange Environmental Impact Statement
- Conversations with the Township and Livingston County Road Commission staff

Appendix:

- South Latson Road Service Area Map
- Figure 1: Water Distribution Infrastructure Map
- Water Main Concept Map
- Figure 2: Sanitary Sewer Collection Infrastructure Map
- Sanitary Sewer Concept Map
- Soils and Wetlands Site Map
- Topography and Natural Features Site Map
- Barr Wetland Delineation Report



LEGEND

- INTERCHANGE COMMERCIAL PUD
- INNOVATION INTERCHANGE PUD

SOUTH LATSON ROAD SERVICE AREA

PROJECT NO.: 16001784
DATE: 2024-09-27

DR: MJM
CAD FILE: 16001784EX-04-REU.DWG

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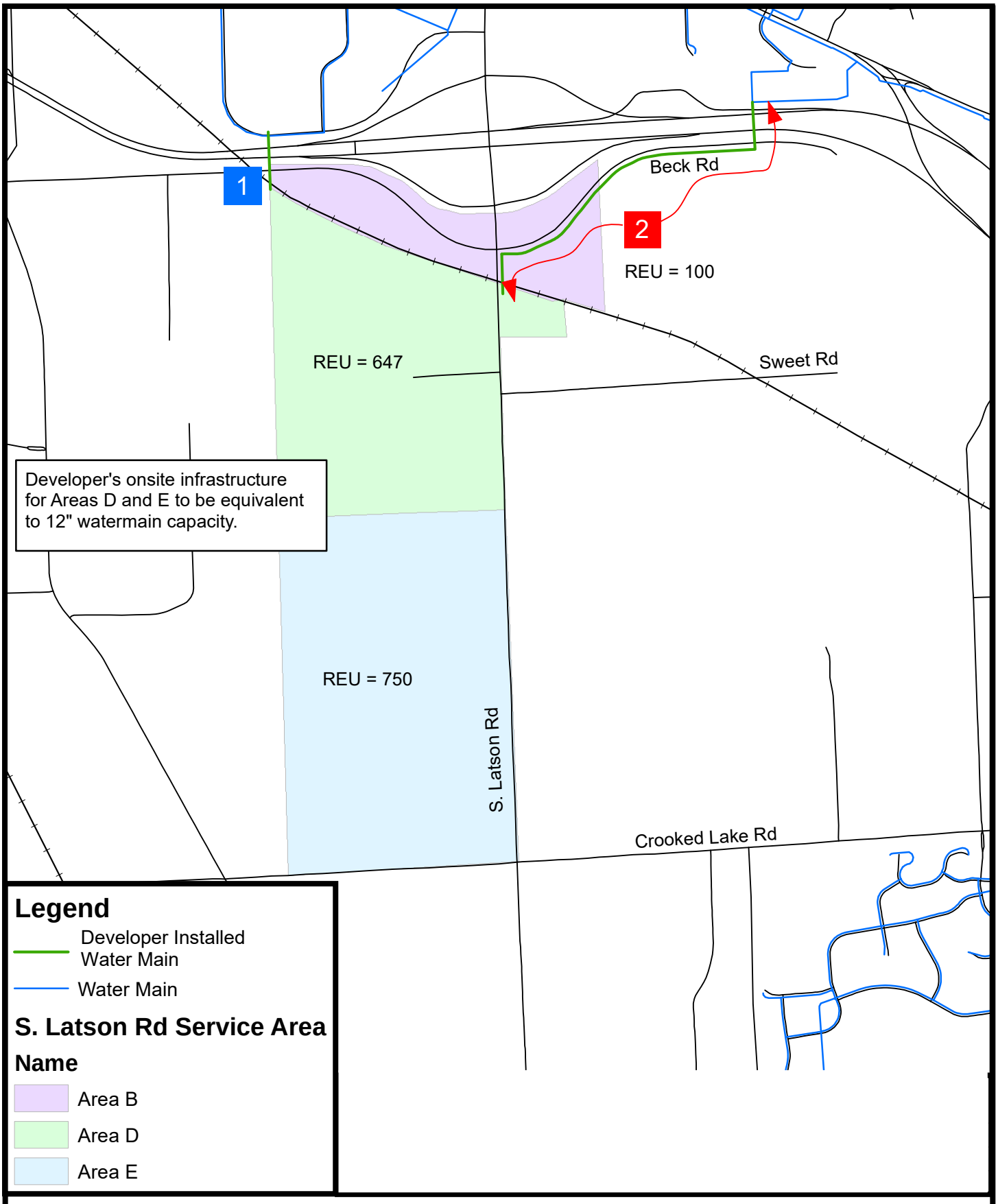


1 inch = 1,500 feet

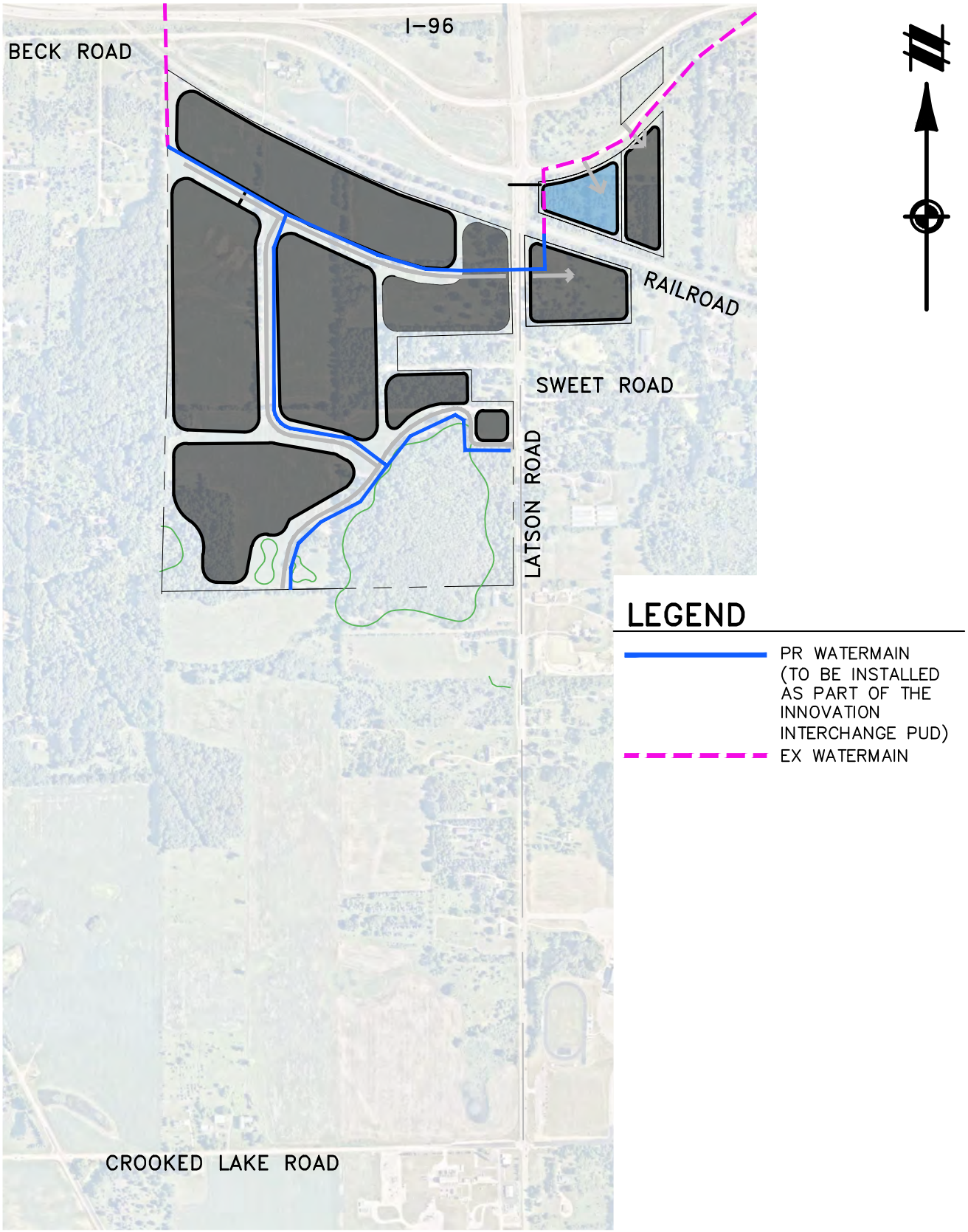
Date: 3/2/2018

N

Figure 1

Water Distribution Infrastructure

Note: This is a graphical representation of the required improvements. Final routing and location will be required during the design phase.



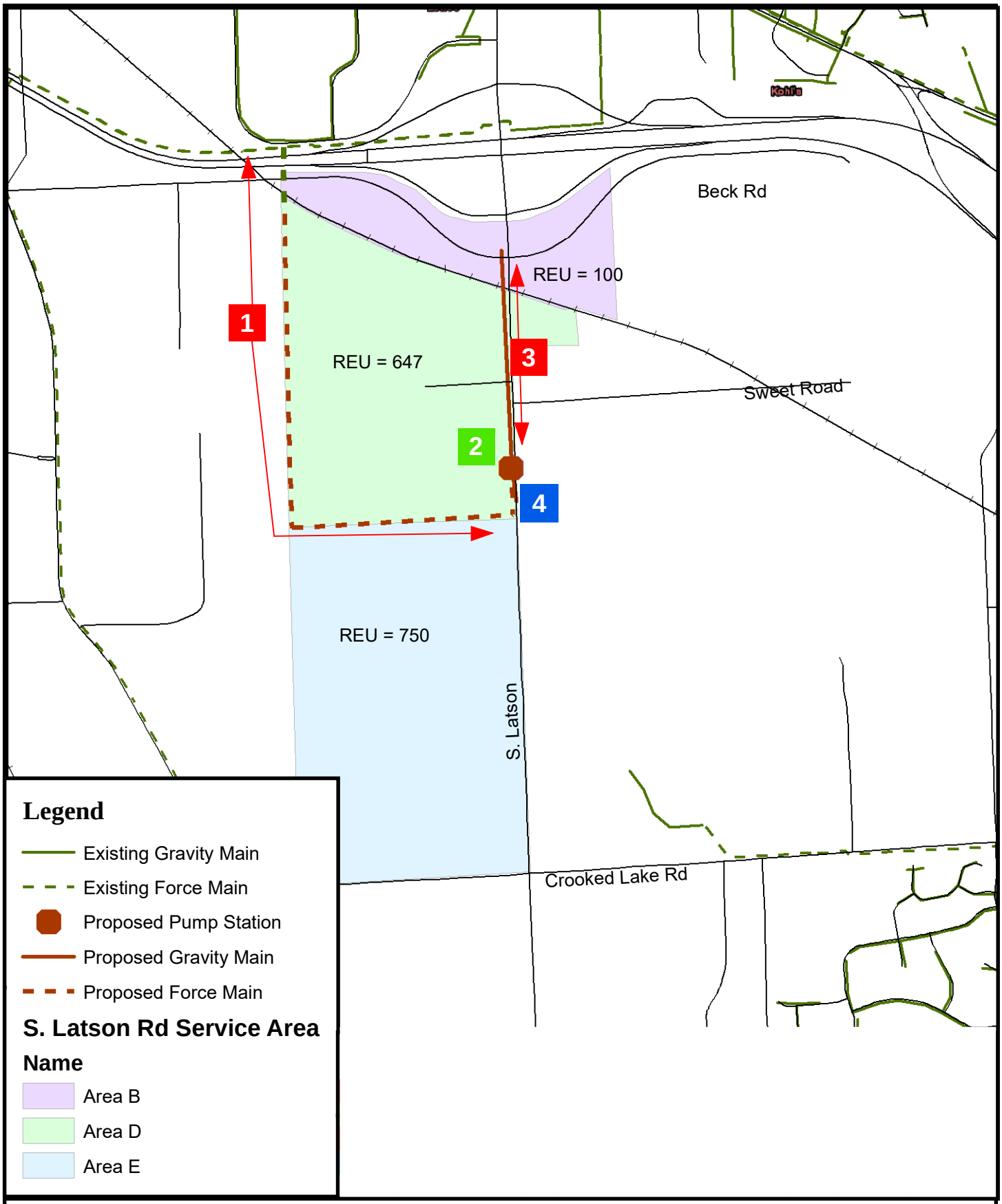
WATERMAIN CONCEPT

NOTE:
WATER MAIN TO BE A COMBINATION OF 8" AND 12" IN DIAMETER

PROJECT NO.: 16001784
DATE: 2024-09-25

DR: MJM
CAD FILE: 16001784EX-03-UTILITY ROUTING-REV2024.09.24.DWG

ATWELL
866.850.4200 www.atwell-group.com



1 inch = 1,500 feet

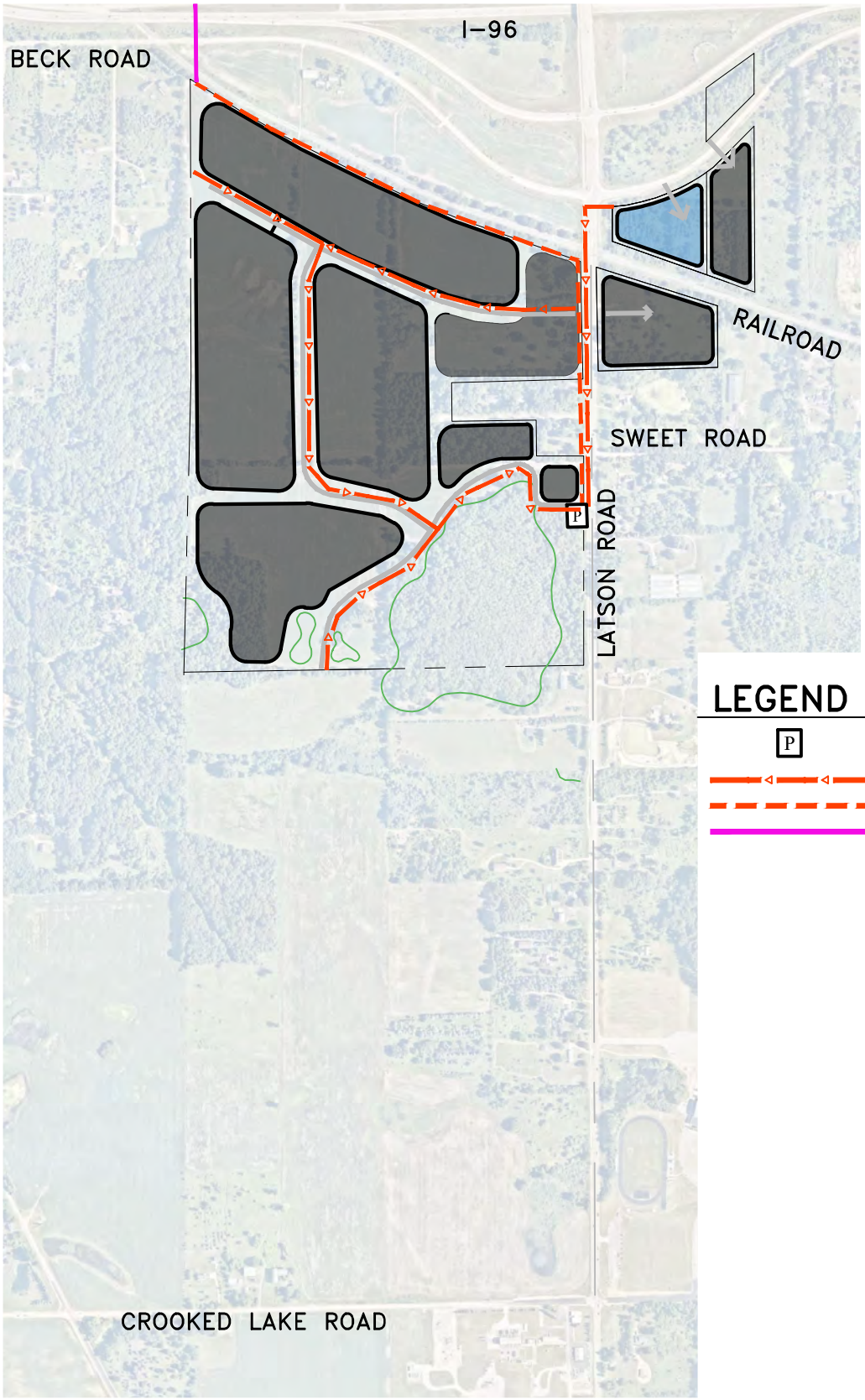
Date: 3/2/2018

Figure 2

Sanitary Sewer Collection Infrastructure

Note: This is a graphical representation of the required improvements. Final routing and location will be required during the design phase

N



LEGEND

- P — PUMP STATION
- PR GRAVITY SEWER
- PR FORCE MAIN
- EX 8" FORCE MAIN

SANITARY SEWER CONCEPT

PROJECT NO.: 16001784
DATE: 2024-06-25

NOTE:
SANITARY SEWER TO BE A COMBINATION OF 8" AND 10" GRAVITY SEWER AND 8" FORCE MAIN

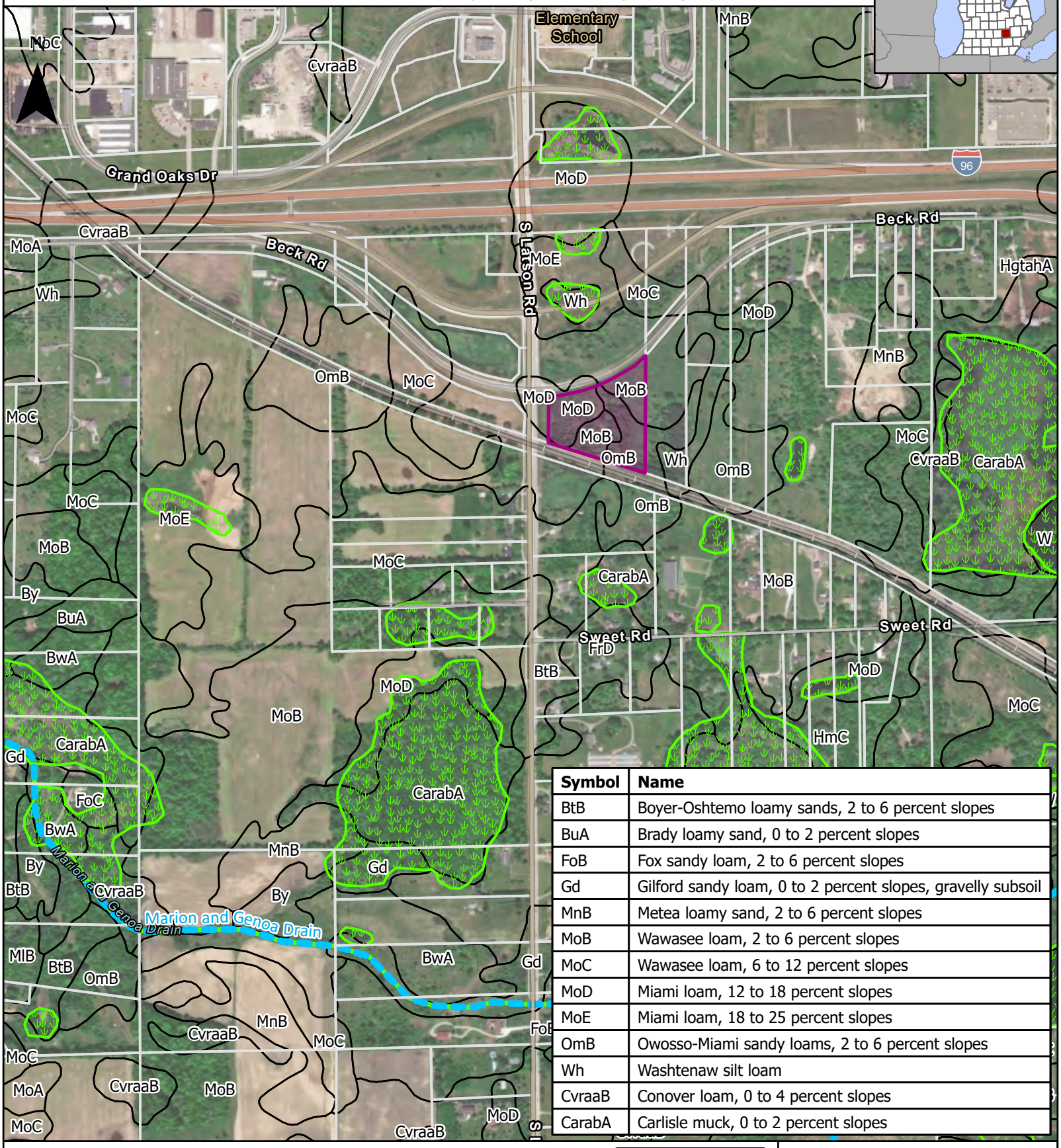
DR: MJM
CAD FILE: 16001784EX-03-UTILITY ROUTING-REV2024.09.24.DWG

ATWELL
866.850.4200 www.atwell-group.com

Interchange Commercial PUD

Site Map - Soils and Wetlands

Genoa Township, Livingston County, Michigan



Symbol	Name
BtB	Boyer-Oshtemo loamy sands, 2 to 6 percent slopes
BuA	Brady loamy sand, 0 to 2 percent slopes
FoB	Fox sandy loam, 2 to 6 percent slopes
Gd	Gilford sandy loam, 0 to 2 percent slopes, gravelly subsoil
MnB	Metea loamy sand, 2 to 6 percent slopes
MoB	Wawasee loam, 2 to 6 percent slopes
MoC	Wawasee loam, 6 to 12 percent slopes
MoD	Miami loam, 12 to 18 percent slopes
MoE	Miami loam, 18 to 25 percent slopes
OmB	Owosso-Miami sandy loams, 2 to 6 percent slopes
Wh	Washtenaw silt loam
CvraaB	Conover loam, 0 to 4 percent slopes
CarabA	Carlisle muck, 0 to 2 percent slopes

Interchange Commercial PUD

Parcel Boundary

NWI Wetlands

Soil Types

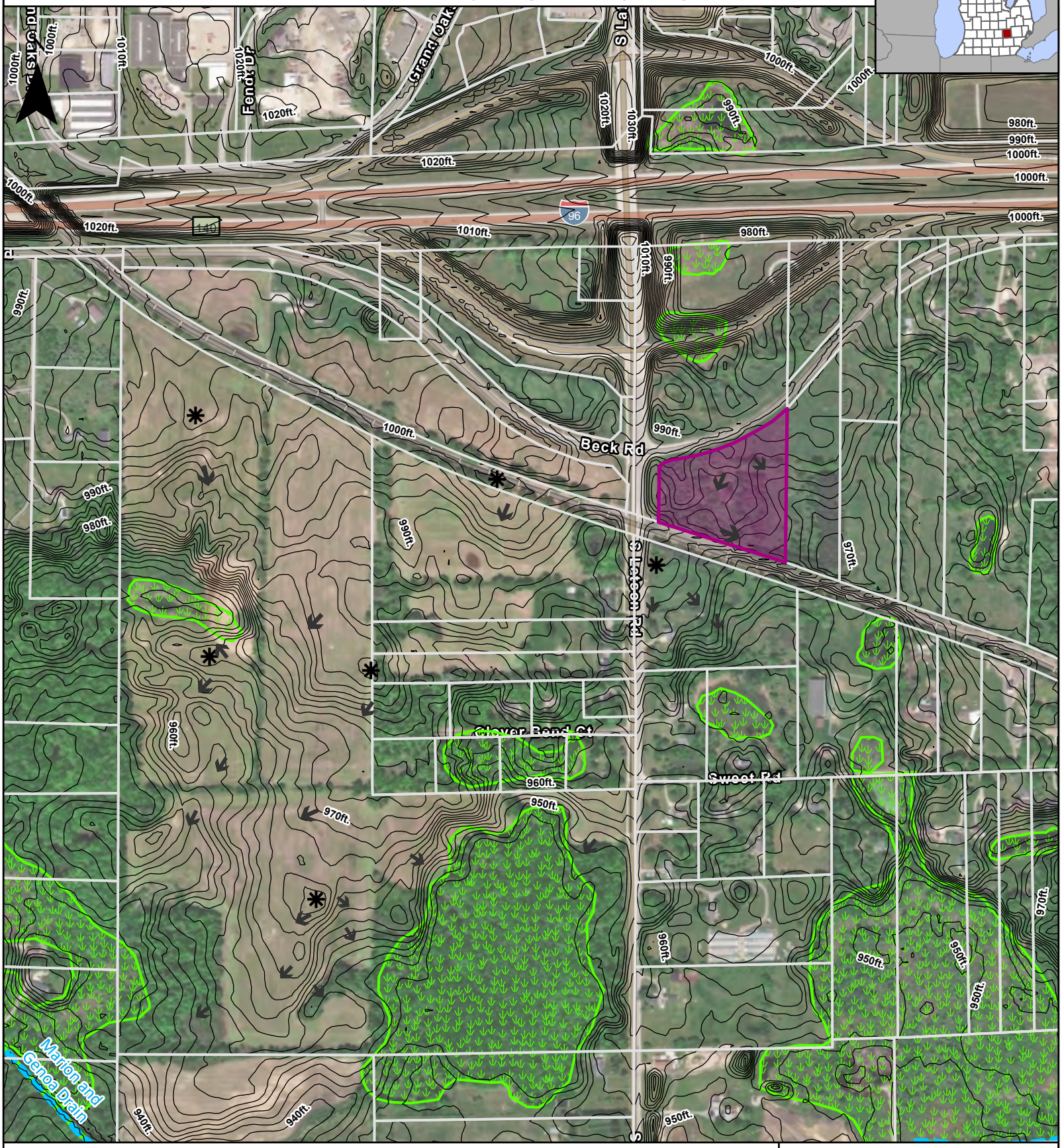
0 300 600 US Feet

ATWELL

Interchange Commercial PUD

Topography & Natural Features

Genoa Township, Livingston County, Michigan



- Interchange Commercial PUD
- Parcel Boundary
- Local High Point
- NWI Wetlands
- 2 Ft Contour
- Estimated Flow Direction
- Watercourse NHD

0 300 600 US Feet

ATWELL

September 25, 2024

Todd Wyett
VERSA Development
336 E 4th Street
Royal Oak, MI 48067

Re: Wetland Delineation Report – Southeast Corner Beck Road & Latson Road
Genoa Township, Livingston County

Dear Mr. Wyett,

Pursuant to your request, Barr Engineering Co. ("Barr") conducted a wetland delineation at the above-referenced approximately 7.2-acre site on September 23, 2024. The purpose of this report is to summarize the results of that work.

1.0 Area of Investigation Description

The Area of Investigation ("AOI") includes the southernmost portion of parcel number 11-09-300-008 Surrounding land uses include residential, agricultural, and vacant land.

Figure 1. Approximate Area of Investigation

1.1 Desktop Review

Barr conducted a desktop review of the site to evaluate aerial imagery, topography, soil types, and mapped wetlands within the site prior to the wetland delineation. As part of the desktop review, Barr staff reviewed resources such as aerial photography (Figure 1), the Natural Resources Conservation Service ("NRCS") Web Soil Survey ("WSS") Soil Units (Figure 2), and the Michigan Department of Environment, Great Lakes, and Energy ("EGLE") Wetlands Map Viewer (Figure 3).

The soil units present on site include Wawasee loam, 2 to 6 percent slopes (MoB 40.3%); Miami loam 12 to 18 percent slopes (MoD 32.2%): and Owosso-Miami sandy loams, 2 to 6 percent slopes (OmB 27.3%). These are all well-drained soil map units.

Figure 2. Web Soil Survey Soil Map Units

The EGLE Wetlands Map Viewer does not show soil areas which include wetland soils or wetlands as identified by the National Wetlands Inventory ("NWI") or Michigan Resource Inventory System ("MIRIS") on the site.

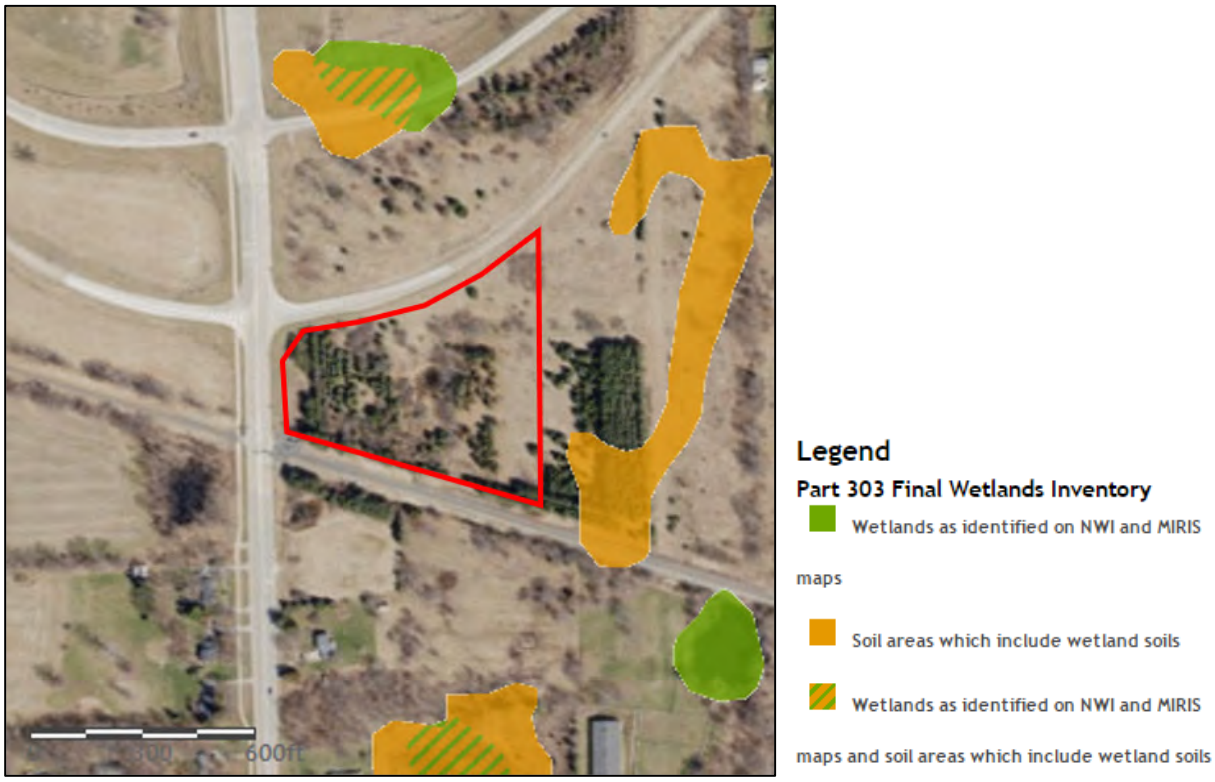


Figure 3. EGLE Wetlands Map Viewer

1.2 Methodology

The wetland delineation was conducted in a manner consistent with the *U.S. Army Corps of Engineers Wetlands Delineation Manual* (USACE 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0,* USACE 2012*).* Wetland delineation procedures outlined in these manuals require the evaluation of on-site vegetation, soils, and hydrologic characteristics. Site observations are described in the sections below. The wetland boundaries were flagged in the field with alphanumerically labeled pink pin flags and/or pink flagging tape. Flagging was located using a GPS unit capable of sub-meter accuracy.

1.3 Results

This site includes palustrine emergent (PEM) wetland habitats. Figure 4 depicts the GPS survey of the wetland areas encountered on site. The attached USACE wetland data forms provide additional wetland detail.

Figure 4. Wetland Boundary and Flag Locations

Vegetation, Soil, and Hydrology

Wetland A

Wetland A is an emergent wetland located centrally on the site, bounded by flags A1 – A13. Vegetation observed in this wetland included reed canary grass (*Phalaris arundinacea*), purple loosestrife (*Lythrum salicaria*), marsh primrose (*Ludwigia palustris*), and duckweed (*Lemna minor*). This wetland had soil saturation and a high-water table indicators of wetland hydrology, along with indicators of a hydric soil.

Wetland B

Wetland B is an emergent wetland depression located in the southwestern portion of the site, bounded by flags B1 – B20. Vegetation observed in this wetland included calico aster (*Symphyotrichum lateriflorum*), reed canary grass, fowl-manna grass (*Glyceria striata*) and purple loosestrife. Hydric soil indicators were observed.

Adjacent Uplands

The adjacent upland area on site is primarily sloping ground with planted conifers, predominantly Scotch pine (*Pinus sylvestris*) and white spruce (*Picea glauca*), but white pine (*Pinus strobus*) and red pine (*Pinus resinosa*) are also present. The remaining upland onsite is vegetated with species such as crab apple (*Malus spp.*), autumn olive (*Elaeagnus umbellata*), rambler rose (*Rosa multiflora*), smooth brome

grass (*Bromus inermis*), whiplash dewberry (*Rubus flagellaris*), and tall goldenrod (*Solidago altissima*). These upland areas showed no indicators of wetland hydrology or hydric soil.

1.4. Conclusions

Based on observations of topography, vegetation, soil, and indicators of hydrology, Barr has determined that wetland habitat is present within the AOI. According to Part 303, Wetlands Protection, of the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended), wetlands regulated by the State of Michigan include wetlands that are:

1. Located within 500 feet of, or having a direct surface water connection to, an inland lake, pond, river, or stream; or
2. Greater than 5 acres in size; or
3. Located within 1,000 feet of, or having a direct surface water connection to, the Great Lakes or Lake St. Clair; or
4. A water of the United States as that term is used in section 502(7) of the Federal Water Pollution Control Act, 33 USC 1362; or
5. Known to have a documented presence of an endangered or threatened species under Part 365 of State of Michigan 1994 PA 451, as amended or the Federal Endangered Species Act of 1973, Public Law 93-205; or
6. Rare or imperiled.

It is our opinion that the two wetlands identified on site (A and B) would not be regulated by the State of Michigan under Part 303 as they do not appear to meet any of the above criteria. Therefore, if the onsite wetlands are not regulated by Part 303, a permit would not be required from EGLE to place fill or structures, excavate soil, drain surface water, or make use of these wetlands.

Please be advised that EGLE, and in some coastal cases the USACE, have regulatory authority regarding the wetland boundary location(s) and jurisdictional status of wetlands in the State of Michigan. Barr's wetland determination was performed in general accordance with accepted procedures for conducting wetland determinations. Barr provides no warranty, guarantee, or other agreement in respect to the period of time for which this wetland determination will remain valid. Barr's conclusions reflect our professional opinion based on the site conditions within the AOI observed during the site visits. Discrepancies may arise between current and future wetland determinations and delineations due to changes in vegetation and/or hydrology as the result of land use practices or other environmental factors, whether on-site or on adjacent or nearby properties. In addition, wetland delineations performed outside the growing season, typically from late-October until late-April, may differ from those performed at the same site during the growing season due to the presence of snow cover or frozen ground conditions. We recommend our wetland boundary determination and jurisdictional opinion be reviewed by EGLE prior to undertaking any earthmoving activity on the site.

Thank you for the opportunity to provide this wetland delineation. If you have any questions, please contact me at your convenience at 810-247-1229 or fthompson@barr.com.

Sincerely,

BARR ENGINEERING CO

Fran Thompson
Ecologist

Attachments:

Figure 1 – Wetland Delineation
USACE Wetland Determination Data Forms

References:

U.S. Army Corps of Engineers (USACE). 1987. *Corps of Engineers Wetlands Delineation Manual.* Washington, DC.

USACE. 2012. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0).* Washington, DC.

Area of Investigation

Apx. Parcel Boundary

Delineated Wetland

× Wetland Flag Location

0 90 180

Feet

Imagery: Nearmap 6/8/2024

Wetland Delineation
Northeast Parcel
Versa FTAG Site
Livingston County, Michigan

FIGURE 1

BARR

113

Barr Footer: ArcGISPro 3.3.1, 2024-09-24 09:11 File: I:\Projects\23471042\Maps\Report\Wetland Delineation_NE Parcel\Wetland Delineation_NE Parcel.aprx Layout: Fig01 Wetland Delineation User: ERM3

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Northcentral and Northeast Region
See ERDC/EL TR-12-1; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: SE Corner Latson and Beck Roads City/County: Genoa Twp/Livingston Co Sampling Date: 9-23-2024

Applicant/Owner: Todd Wyett; VERSA Development State: MI Sampling Point: A1

Investigator(s): Bill Brodovich and Christian Tibaudo Section, Township, Range: T02N, R05E, Sec 09

Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): concave Slope %: 1

Subregion (LRR or MLRA): LRR L Lat: 42 34' 29" N Long: 83 52' 20" W Datum: NAD 83

Soil Map Unit Name: Wawasee loam; 2 to 6 percent slopes NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area**
Hydric Soil Present?	Yes X	No ____	**within a Wetland?** **Yes** X **No** ____
Wetland Hydrology Present?	Yes X	No ____	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes X	No ____	Depth (inches): 11
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 5

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: A1

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Herb Stratum (Plot size: 5')			
1. *Phalaris arundinacea*	94	Yes	FACW
2. *Lythrum salicaria*	2	No	OBL
3. *Ludwigia palustris*	2	No	OBL
4. *Lemna turionifera*	2	No	OBL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 =Total Cover		
Woody Vine Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	6	x 1 =	6
FACW species	94	x 2 =	188
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		194 (B)

Prevalence Index = B/A = 1.94

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: A1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR 5/1	90	10YR 5/8	10	C	PL	Loamy/Clayey	pore linings
9-14	10YR 5/1	100					Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Mesic Spodic (A17) **(MLRA 144A, 145, 149B)**
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)
- ___ Red Parent Material (F21) **(MLRA 145)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Red Parent Material (F21) **(outside MLRA 145)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Northcentral and Northeast Region
See ERDC/EL TR-12-1; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: SE Corner Latson and Beck Roads City/County: Genoa Twp/Livingston Co Sampling Date: 9-23-2024

Applicant/Owner: Todd Wyett; VERSA Development State: MI Sampling Point: B10

Investigator(s): Bill Brodovich and Christian Tibaudo Section, Township, Range: T02N, R05E, Sec 09

Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): concave Slope %: 1

Subregion (LRR or MLRA): LRR L Lat: 42 34' 27" N Long: 83 52' 21" W Datum: NAD 83

Soil Map Unit Name: Wawasee (90%) NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area**
Hydric Soil Present?	Yes X	No ____	**within a Wetland?** **Yes** X **No** ____
Wetland Hydrology Present?	Yes X	No ____	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: B10

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Herb Stratum (Plot size: 5')			
1. *Symphyotrichum lateriflorum*	70	Yes	FAC
2. *Phalaris arundinacea*	20	Yes	FACW
3. *Glyceria striata*	5	No	OBL
4. *Lythrum salicaria*	5	No	OBL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 =Total Cover		
Woody Vine Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	10
FACW species	20	x 2 =	40
FAC species	70	x 3 =	210
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		260 (B)

Prevalence Index = B/A = 2.60

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

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Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: B10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 3/1	80	10YR 5/3	20			Sandy	0-1
1-13	10YR 5/1	95	10YR 3/6	5	C	M	Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
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- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Mesic Spodic (A17) **(MLRA 144A, 145, 149B)**
- ___ Sandy Mucky Mineral (S1)
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- ___ Stripped Matrix (S6)
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- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
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- ___ Marl (F10) (**LRR K, L**)
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Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Red Parent Material (F21) **(outside MLRA 145)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Northcentral and Northeast Region
See ERDC/EL TR-12-1; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: NE parcel of Latson Road and Beck Road; VERSA FTAG City/County: Genoa Twp/Livingston Co Sampling Date: 9-23-2024

Applicant/Owner: Todd Wyett; VERSA Development State: MI Sampling Point: A1 UPL

Investigator(s): Bill Brodovich and Christian Tibaudo Section, Township, Range: T02N, R05E, Sec 09

Landform (hillside, terrace, etc.): hillside Local relief (concave, convex, none): convex Slope %: 1

Subregion (LRR or MLRA): LRR L Lat: 42 34' 30" N Long: 83 52' 20" W Datum: NAD 83

Soil Map Unit Name: Miami loam, 12 to 18 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area**
Hydric Soil Present?	Yes ____	No X	**within a Wetland?** **Yes** X **No** ____
Wetland Hydrology Present?	Yes ____	No X	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: A1 UPL

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Prunus serotina*	5	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	5	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Elaeagnus umbellata*	15	Yes	UPL
2. *Rosa multiflora*	5	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	20	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Bromus inermis*	60	Yes	UPL
2. *Rubus flagellaris*	20	Yes	FACU
3. *Solidago altissima*	10	No	FACU
4. *Euthamia graminifolia*	5	No	FAC
5. *Symphyotrichum pilosum*	3	No	FACU
6. *Dactylis glomerata*	2	No	FACU
7.			
8.			
9.			
10.			
11.			
12.			
	100	=Total Cover	
Woody Vine Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	5	x 3 =	15
FACU species	45	x 4 =	180
UPL species	75	x 5 =	375
Column Totals:	125 (A)		570 (B)

Prevalence Index = B/A = 4.56

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: A1 UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 4/3	100					Loamy/Clayey	
3-13	10YR 5/4	80	10YR 5/3	20	D	M	Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Mesic Spodic (A17) **(MLRA 144A, 145, 149B)**
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)
- ___ Red Parent Material (F21) **(MLRA 145)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Red Parent Material (F21) **(outside MLRA 145)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

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August 23, 2024

VIA EMAIL: todd@versacos.com

Mr. Todd Wyett
Latson Farm, LLC
25900 West 11 Mile Rd, Suite 250
Southfield, MI 48034

RE: Response to Comments – Latson Road Interchange Commercial PUD TIS

Fleis & VandenBrink (F&V) staff has completed this letter in response to comments provided by the Genoa Township Traffic Engineering Consultant (Tetra Tech) in their letter dated August 13, 2024, regarding their review of the F&V Traffic Impact Study (TIS) Report dated July 26, 2024. The comments related to the traffic study provided by Tetra Tech and the corresponding F&V responses are summarized herein.

Tetra Tech Comment #1: *Analysis should state done via methodologies in the 7th Edition of the Highway Capacity Manual, not 6th. This should not cause any changes in the operational results, but analysis should be performed in accordance with the latest version as noted in our previous review.*

F&V Response: The study and analysis was updated using Synchro Version 12 and the Highway Capacity Manual, 7th Edition.

Tetra Tech Comment #2: *While we take no exceptions to the background growth rate used in the report, no supporting information from SEMCOG was included in the report.*

F&V Response: The growth rate calculations were determined based upon the SEMCOG Travel Demand Forecast Model (2020-2045) traffic volume forecasts. The corresponding growth rate calculations are included in the revised TIS appendices for reference.

Tetra Tech Comment #3: *A trip distribution figure for the background Latson Road PUD development was not provided – only a summary of the trip generation forecast for the site. The application of the Latson Road PUD forecast trips to the study intersections could not be verified, resulting in us being unable to verify both the Background and Future volume figures, as well as the operational analyses completed for these scenarios.*

F&V Response: The revised TIS includes a Figure in the appendices with the trip generation / distribution at the study intersections from the Latson Road PUD.

Tetra Tech Comment #4: *HCM operational reports were not provided for the Background with Improvements scenario, so the results provided in the report could not be verified.*

F&V Response: The revised TIS includes the updated HCM reports. Additionally, the electronic Synchro file has been provided to Township as part of the revised TIS submittal.

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Tetra Tech Comment #5: *Warrant 3: Peak Hour warrant should not be used for the signal warrant evaluation of the Latson Road and Beck Road intersection, since "This signal warrant shall be applied only in unusual cases, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large number of vehicles over a short time." as per Section 4C.04 of the Michigan Manual of Uniform Traffic Control Devices (MMUTCD).*

F&V Response: Noted. Warrant 3: Peak Hour will not be considered in this evaluation.

Tetra Tech Comment #6: *A full traffic impact study report, performed in accordance with accepted practice, with supporting appendix materials should be provided for future review.*

F&V Response: The TIS report has been updated accordingly and has been provided as part of the application.

Please let me know if there are any further questions or comments related to the letter.

Sincerely,

FLEIS & VANDENBRINK

Julie M. Kroll, PE, PTOE
Traffic Engineering, Group Manager

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MEMO

VIA EMAIL todd@versacos.com

To:	**Latson South, LLC**
From:	**Julie M. Kroll, PE, PTOE** **Salman Ahmad** **Fleis & VandenBrink**
Date:	**July 26, 2024** **Revised August 23, 2024**
Re:	**Latson Road Interchange Commercial PUD** **Genoa Township, Michigan** **Traffic Impact Study**

1 INTRODUCTION

This memorandum presents the revised results of the Traffic Impact Study (TIS), previously submitted on July 26, 2024, for the proposed Latson Road Commercial Planned Unit Development (PUD) in Genoa Township, Michigan. The project site is located on undeveloped property, generally in the southeast quadrant of the Latson Road & Beck Road intersection, as shown on the attached **Figure 1**. The proposed development includes the construction of approximately 15-Acres of property for a commercial PUD project. The project site consists of two (2) adjacent parcels; an approximately 9-acre parcel (designated as Tax ID No. 11-09-300-46) and an approximately 6-acre parcel (designated as Tax ID No. 11-09-300-001). Site access for the property is provided via Beck Road, no access to Latson Road is proposed with this development plan.

The proposed project includes rezoning the 9-acre parcel to Interchange Commercial PUD (ICPUD), the 6-acre parcel is currently zoned ICPUD. The proposed ICPUD zoning would permit the development of a variety of land uses on the property. For purposes of this evaluation, a convenience store with fueling stations and a retail commercial shopping plaza were assumed to represent a conservative evaluation of the potential traffic impacts of the site associated with the proposed ICPUD zoning.

The scope of this study was developed based on Fleis & VandenBrink's (F&V) knowledge of the study area, understanding of the development program, accepted traffic engineering practice and information published by the Institute of Transportation Engineers (ITE). The study analyses were completed using Synchro/SimTraffic (Version 12). Sources of data for this study include F&V subconsultant Quality Counts, LLC (QC), Livingston County Road Commission (LCRC), ITE, the Michigan Department of Transportation (MDOT), the Southeast Michigan Council of Governments (SEMCOG), and information provided by the developer.

2 BACKGROUND

2.1 EXISTING ROAD NETWORK

Vehicle transportation for the proposed development is provided via Latson Road; with regional transportation being provided via I-96, located just north of the project site. The lane use and traffic control at the study intersections are shown on the attached **Figure 2** and the study roadways are further described below. For the purposes of this study, all minor streets, freeway ramps, and driveways are assumed to have an operating speed of 25 miles per hour (mph), unless otherwise noted.

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Latson Road runs in the north / south directions, adjacent to the west side of the project site. The study section of Latson Road has a prima facie speed limit of 55-mph and is under the jurisdiction of LCRC. Latson Road is classified as a *Minor Arterial* and has an AADT volume of approximately 9,400 vpd (SEMCOG 2018), south of I-96. The study section of roadway north of Cloverbend Road, provides a typical five-lane cross-section, with two (2) lanes of travel in each direction and a center TWLTL. South of Cloverbend Road, Latson Road narrows to provide a typical two-lane cross-section, with one (1) lane of travel in each direction, widening at the Crooked Lake Road intersection to provide exclusive left-turn lanes in both directions.

I-96 runs in the east / west directions, north of the project site. I-96 has an Average Annual Daily Traffic (AADT) volume of approximately 56,000 (SEMCOG 2018) vehicles per day (vpd), is classified as an *Interstate*, and is under the jurisdiction of MDOT. The study section of roadway has a posted speed limit of 70-mph and provides a six-lane, median divided cross-section, with three (3) lanes of travel in each direction. At the intersection of Latson Road & EB I-96 Exit-Ramp, the eastbound approach provides dual (2) left-turn lanes and an exclusive right-turn lane. At the intersection of Latson Road & WB I-96 exit-ramp, the westbound approach provides an exclusive left-turn lane and dual (2) right-turn lanes.

Beck Road runs in the east / west directions, adjacent to the north side of the project site. Beck Road is under the jurisdiction of LCRC and has prima facie speed limit of 55-mph. Beck Road is classified as a *Local Road* and provides a typical two-lane cross-section, with one (1) lane of travel in each direction; exclusive left-turn lanes are provided on both approaches to Latson Road. Beck Road is paved for approximately 500-ft east and west of Latson Road; however, beyond the paved section, Beck Road is a gravel roadway.

2.2 Existing Traffic Volumes

F&V subconsultant QC collected Turning Movement Count (TMC) data on Tuesday May 2, 2023[1], during the AM (7:00 AM-9:00 AM) and PM (3:00 PM-6:00 PM) peak periods at the following study intersections:

- Latson Road & Beck Road
- Latson Road & EB I-96 Ramps
- Latson Road & WB I-96 Ramps

During collection of the turning movement counts, Peak Hour Factors (PHFs), pedestrian and bike volumes, and commercial truck percentages were recorded and used in the traffic analysis. Through volumes were carried through the study roadway network and balanced at the proposed site driveway locations. Therefore, the traffic volumes used in the analysis and shown on the attached traffic volume figures may not match the raw traffic volumes shown in the data collection.

The weekday AM and PM peak hours for the adjacent roadway network were observed to generally occur between 8:00 AM to 9:00 AM and 4:30 PM to 5:30 PM, respectively. F&V collected an inventory of existing lane use and traffic controls, as shown on the attached **Figure 2**. Additionally, F&V obtained the current traffic signal timing information from MDOT and LCRC.

The existing 2024 peak hour traffic volumes used in the analysis are shown on the attached **Figure 3**. All applicable background data referenced in this memorandum is attached.

3 Existing Conditions (2024)

Existing peak hour vehicle delays and Levels of Service (LOS) were calculated at the study intersection using Synchro/SimTraffic (Version 12) traffic analysis software. This analysis was based on the existing lane use and traffic control shown on the attached **Figure 2**, the existing peak hour traffic volumes shown on the attached **Figure 3**, and the methodologies presented in the *Highway Capacity Manual, 7th Edition* (HCM7).

Descriptions of LOS “A” through “F”, as defined in the HCM7, are attached. Typically, LOS D is considered acceptable, with LOS A representing minimal delay, and LOS F indicating failing conditions. Additionally, SimTraffic network simulations were reviewed to evaluate network operations and vehicle queues. The results of the existing conditions analysis are attached and summarized in **Table 1**.

The results of the existing conditions analysis indicates that all approaches and movements at the study intersections are currently operating acceptably, at LOS D or better during both the AM and PM peak hours.

[1] An annual growth rate of 0.72% was applied to the 2023 traffic volumes, in order to forecast the existing 2024 traffic volumes used in the study.

Review of the SimTraffic network simulations at all of the remaining study intersections indicates acceptable traffic operations throughout the study roadway network during both the AM and PM peak hours.

Table 1: Existing Intersection Operations

Intersection	Control	Approach	Existing Conditions			
			AM Peak		PM Peak	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS
Latson Road & WB I-96 Ramps	Signalized	WBL	33.0	C	26.8	C
		WBR	38.1	D	33.8	C
		NBL	1.1	A	5.2	A
		NBT	0.3	A	0.4	A
		SBT	7.2	A	17.2	B
		SBR	8.0	A	20.1	C
		Overall	**7.6**	**A**	**15.3**	**B**
Latson Road & EB I-96 Ramps	Signalized	EBL	33.8	C	33.5	C
		EBR	29.4	C	30.3	C
		NBT	5.1	A	5.4	A
		NBR	4.8	A	4.7	A
		SBL	2.2	A	2.4	A
		SBT	0.1	A	0.2	A
		Overall	**13.7**	**B**	**11.8**	**B**
Latson Road & Beck Road	Stop (Minor)	EBL	12.5	B	17.1	C
		EBTR	0.0*	A	8.9	A
		WBL	0.0*	A	0.0*	A
		WBTR	9.4	A	9.8	A
		NBL	0.0*	A	0.0*	A
		SBL	8.3	A	8.3	A

** Indicates no vehicle volume present.*

4 Background Growth

The Southeast Michigan Council of Governments (SEMCOG), the multi-jurisdictional agency responsible for the transportation planning in Southeast Michigan, maintains the regional transportation planning models and provides information regarding projected growth rates along roadways throughout their jurisdiction. The SEMCOG traffic volume forecast models were utilized to calculate background growth rates on the adjacent study sections of Latson Road for use in this analysis; indicating the following growth rates, compounded annually, from 2020 toa 2050. This information was used to determine the applicable growth rate to project the existing 2024 traffic volumes to the build-out year of 2029. The growth rates for the study corridors determined by the SEMCOG forecast models are attached and summarized in **Table 2**.

Table 2: SEMCOG Growth Rates

Road	Limits	Growth Rate
Latson Road	Chilson Road to Crooked Lake Road	0.72%
Latson Road	Crooked Lake Road to I-96	0.68%

In addition to background growth, the following future developments were also considered in the background conditions analysis. The following developments were identified by the Township to account for traffic that will be generated by approved developments within the vicinity of the study area.

- St. Joseph Mercy Health Center Expansion
- Latson Road PUD

Therefore, a conservative annual growth rate of **0.72%** per year was utilized for the study roadway network. It is anticipated that a percentage of the expected growth along Latson Road will be generated by the proposed development and the background developments. However, in order to provide a more conservative evaluation, the full growth rate was applied to the study intersections.

The site-generated trips were obtained for the background development from the Traffic Impact Study (TIS) completed; the TIS excerpts are attached for reference. The background development trips were added to the existing traffic volumes, after applying the background growth rate, in order to forecast the background 2029 peak hour traffic volumes ***without the proposed development***, as shown on the attached **Figure 4**.

5 Background Conditions (2029)

5.1 Intersection Analysis

Background peak hour vehicle delays and LOS ***without the proposed development*** were calculated at the study intersections based on the existing lane use and traffic control shown on the attached **Figure 2**, the background peak hour traffic volumes shown on the attached **Figure 4**, and the methodologies presented in the HCM7. The results of the background conditions analysis are attached and summarized in **Table 3**.

Table 3: Background Intersection Operations

Intersection	Control	Approach	Existing Conditions (2024)				Background Conditions (2029)				Difference			
			AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS
Latson Road & WB I-96 Ramps	Signal	WBL	33.0	C	26.8	C	37.9	D	27.0	C	4.9	C→D	0.2	-
		WBR	38.1	D	33.8	C	34.9	C	33.8	C	-3.2	D→C	0.0	-
		NBL	1.1	A	5.2	A	5.8	A	54.5	D	4.7	-	49.3	A→D
		NBT	0.3	A	0.4	A	0.4	A	0.6	A	0.1	-	0.2	-
		SBT	7.2	A	17.2	B	14.6	B	18.1	B	7.4	A→B	0.9	-
		SBR	8.0	A	20.1	C	15.1	B	21.4	C	7.1	A→B	1.3	-
		Overall	**7.6**	**A**	**15.3**	**B**	**12.1**	**B**	**19.0**	**B**	**4.5**	**A→B**	**3.7**	**-**
Latson Road & EB I-96 Ramps	Signal	EBL	33.8	C	33.5	C	29.3	C	32.9	C	-4.5	-	-0.6	-
		EBR	29.4	C	30.3	C	36.4	D	31.2	C	7.0	C→D	0.9	-
		NBT	5.1	A	5.4	A	7.5	A	6.6	A	2.4	-	1.2	-
		NBR	4.8	A	4.7	A	7.0	A	5.7	A	2.2	-	1.0	-
		SBL	2.2	A	2.4	A	7.0	A	11.6	B	4.8	-	9.2	A→B
		SBT	0.1	A	0.2	A	0.3	A	0.3	A	0.2	-	0.1	-
		Overall	**13.7**	**B**	**11.8**	**B**	**14.5**	**B**	**12.1**	**B**	**0.8**	**-**	**0.3**	**-**
Latson Road & Beck Road	Stop (Minor)	EBL	12.5	B	17.1	C	23.8	C	30.1	D	11.3	B→C	13.0	C→D
		EBTR	0.0*	A	8.9	A	0.0*	A	9.0	A	0.0*	-	0.1	-
		WBL	0.0*	A	0.0*	A	0.0*	A	0.0*	A	0.0*	-	0.0*	-
		WBTR	9.4	A	9.8	A	10.0	B	11.8	B	0.6	A→B	2.0	A→B
		NBL	0.0*	A	0.0*	A	0.0*	A	0.0*	A	0.0*	-	0.0*	-
		SBL	8.3	A	8.3	A	8.8	A	10.0	B	0.5	-	1.7	A→B

** Indicates no vehicle volume present Note: Decreased delays are the result of improved progression and/or HCM weighting methodologies.*

The results of the background conditions analysis indicates that all approaches and movements at the study intersections are expected to continue operating acceptably, at LOS D or better during both peak periods, in a manner similar to the existing conditions analysis, with some minor increases in delays.

Review of SimTraffic microsimulations indicates generally acceptable operations, throughout the study roadway network during the AM peak hour; however, during the PM peak hour, long vehicle queues are present for the left-turn movements at both of the I-96 Freeway Ramps along Latson Road.

The delays and queueing along Latson Road at the I-96 Freeway Ramps are the result of the background developments and expected growth throughout the study area; these vehicle queues were not observed to dissipate and were typically present throughout the peak hour.

5.2 Background Improvements

In order to improve the projected background vehicle queue lengths at the study intersections, mitigation measures were investigated, including: geometric improvements and traffic control modifications. The results of the evaluation indicates that the following mitigation measures may be necessary to accommodate the background growth rate and future developments; these should be evaluated as part of the site plan approval and permitting process.

Latson Road & WB I-96 Ramps

- Provide permissive/protected northbound left-turn phasing with vehicle detection.
- Increase the network-wide cycle length to 90-seconds for all signals along the Latson Road corridor.

Latson Road & EB I-96 Ramps

- Provide permissive/protected southbound left-turn phasing with vehicle detection.
- Increase the network-wide cycle length to 90-seconds for all signals along the Latson Road corridor.

The results of the background conditions with improvement analysis are attached and summarized in **Table 4**. Results of the background improvements analysis, with the implementation of the recommended mitigation measures, indicates that all approaches and movements are expected to continue operating acceptably, at LOS D or better, during both peak periods.

Review of SimTraffic network simulations, also indicate acceptable operations during both peak periods. Occasional periods of vehicle queues were observed at the signalized study intersections; however, these queues were observed to be serviced within each cycle length, leaving no residual vehicle queuing.

Table 4: Background Intersection Operations with Improvements

Intersection	Control	Approach	Background Conditions				Background w/ IMP				Difference			
			AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS
Latson Road & WB I-96 Ramps	Signal	WBL	37.9	D	27.0	C	43.5	D	31.7	C	5.6	-	4.7	-
		WBR	34.9	C	33.8	C	39.9	D	49.4	D	5.0	C→D	15.6	C→D
		NBL	5.8	A	54.5	D	4.9	A	10.0	A	-0.9	-	-44.5	D→A
		NBT	0.4	A	0.6	A	0.3	A	0.5	A	-0.1	-	-0.1	-
		SBT	14.6	B	18.1	B	0.4	A	10.8	B	-14.2	B→A	-7.3	-
		SBR	15.1	B	21.4	C	0.9	A	13.9	B	-14.2	B→A	-7.5	C→B
		Overall	**12.1**	**B**	**19.0**	**B**	**6.8**	**A**	**14.7**	**B**	**-5.3**	**B→A**	**-4.3**	**-**
Latson Road & EB I-96 Ramps	Signal	EBL	29.3	C	32.9	C	34.2	C	40.1	D	4.9	-	7.2	C→D
		EBR	36.4	D	31.2	C	44.7	D	36.0	D	8.3	-	4.8	C→D
		NBT	7.5	A	6.6	A	18.2	B	14.9	B	10.7	A→B	8.3	A→B
		NBR	7.0	A	5.7	A	16.9	B	12.8	B	9.9	A→B	7.1	A→B
		SBL	7.0	A	11.6	B	9.9	A	9.5	A	2.9	-	-2.1	B→A
		SBT	0.3	A	0.3	A	0.3	A	0.2	A	0.0	-	-0.1	-
		Overall	**14.5**	**B**	**12.1**	**B**	**19.9**	**B**	**16.6**	**B**	**5.4**	**-**	**4.5**	**-**

Intersection	Control	Approach	Background Conditions				Background w/ IMP				Difference			
			AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS
Latson Road & Beck Road	Stop (Minor)	EBL	23.8	C	30.1	D	23.7	C	29.8	D	-0.1	-	-0.3	-
		EBTR	0.0*	A	9.0	A	0.0*	A	9.0	A	0.0*	-	0.0	-
		WBL	0.0*	A	0.0*	A	0.0*	A	0.0*	A	0.0*	-	0.0*	-
		WBTR	10.0	B	11.8	B	10.0	B	11.8	B	0.0	-	0.0	-
		NBL	0.0*	A	0.0*	A	0.0*	A	0.0*	A	0.0*	-	0.0*	-
		SBL	8.8	A	10.0	B	8.8	A	10.0	B	0.0	-	0.0	-

** Indicates no vehicle volume present*

6 SITE TRIP GENERATION

The number weekday peak hour (AM and PM) and daily vehicle trips that would be generated by the proposed development was forecast based on data published by ITE in the *Trip Generation Manual, 11th Edition* and the ITE *Trip Generation Handbook, 3rd Edition*. The end user(s) for the proposed ICPUD have not been identified at this time and may include a variety of potential developments that are approved as part of the ICPUD zoning. For purposes of this evaluation, a convenience store with fueling station and a retail commercial shopping plaza were assumed to represent a conservative evaluation of the potential traffic impacts of the site associated with the proposed ICPUD zoning. The site trip generation forecast utilized for this TIS is summarized in **Table 5**.

Table 5: Site Trip Generation Summary

Land Use	ITE Code	Amount	Units	Average Daily Traffic (vpd)	AM Peak Hour (vph)			PM Peak Hour (vph)		
					In	Out	Total	In	Out	Total
Shopping Plaza (40-150k SF)	821	53,000	SF	3,579	57	35	92	135	140	275
Pass-By	40% PM			*716*	*0*	*0*	*0*	*55*	*55*	*110*
New Trips				2,863	*57*	*35*	*92*	*80*	*85*	*165*
Gas Station with Convenience Market	945	10	VFP	3,458	158	158	316	135	134	269
Pass-By	76% AM, 75% PM			*2,611*	*120*	*120*	*240*	*101*	*101*	*202*
New Trips				847	*38*	*38*	*76*	*34*	*33*	*67*
Total Trips				7,037	215	193	408	270	274	544
Total Pass-By				*3,327*	*120*	*120*	*240*	*156*	*156*	*312*
Total New Trips				**3,710**	**95**	**73**	**168**	**114**	**118**	**232**

As is typical of commercial developments, a portion of the trips generated are from vehicles that are already on the adjacent roadways and will pass the site on the way from an origin to their ultimate destination. Therefore, not all traffic at the site driveways is necessarily new traffic added to the street system. This percentage of the trips generated by the development are considered "pass-by" trips, which are already present within the adjacent street system. These trips are therefore reduced from the total external trips generated by a study site. The pass-by trips for this site were applied to Latson Road and were considered as either pass-by or diverted link, depending on the proposed site access location. The percentage of pass-by trips used in this analysis was determined based on the rates published by ITE in the *Trip Generation Manual, 11th Edition.*

7 SITE TRIP DISTRIBUTION

The vehicular trips that would be generated by the proposed development were assigned to the study roadway network based on the proposed site access plan and driveway configurations, the existing peak hour traffic patterns in the adjacent roadway network, and the methodologies published by ITE. The ITE trip distribution methodology assumes that new trips will access the development, then return to their direction of origin, whereas pass-by trips will enter and exit the development, then continue in their original direction of travel. The site trip distributions utilized in this analysis are summarized in **Table 6**.

Table 6: Site Trip Distribution

To/From	Via	Commercial		Commercial Pass-By	
		AM	PM	AM	PM
North	Latson Road	12%	7%	59% (NB)	45% (NB)
South	Latson Road	4%	4%	41% (SB)	55% (SB)
East	Grand River Avenue	8%	17%		
	I-96	26%	33%		
	Crooked Lake Road	1%	2%		
West	Grand River Avenue	8%	10%		
	I-96	41%	27%		
Total		**100%**	**100%**	**100%**	**100%**

The vehicular traffic volumes shown in **Table 5** were distributed to the study network according to the distribution shown in **Table 6**. The site-generated trips shown on the attached **Figure 5** were added to the background peak hour traffic volumes shown on the attached **Figure 4**, in order to calculate the future peak hour traffic volumes with the addition of the proposed development, as shown on the attached **Figure 6**.

8 FUTURE CONDITIONS (2029)

8.1 INTERSECTION ANALYSIS

Future peak hour vehicle delays and LOS ***with the proposed development*** were calculated based on the proposed lane use and traffic control shown on the attached **Figure 2**, the proposed site access plan, the future peak hour traffic volumes shown on the attached **Figure 6**, and the methodologies presented in the HCM7. The results of the future conditions analysis are attached and summarized in **Table 7**.

The results of the future conditions analysis indicates that all study intersection approaches and movements will continue to operate acceptably, at LOS D or better during both peak periods, in a manner similar to the background conditions analysis, with increases in delays and the following additional impacts to LOS:

Latson Road & WB I-96 Ramps

- <u>During the PM peak hour:</u> The northbound left-turn movement is expected to operate at LOS F. Review of SimTraffic network simulations indicates that long vehicle queues were observed for the northbound left-turn movement, similar to those observations made during the background conditions analysis.

Latson Road & EB I-96 Ramps

- The Synchro intersection LOS analysis indicates acceptable operations during both peak periods. However, review of SimTraffic network simulations indicates that long vehicle queues were observed for the southbound left-turn movement, similar to those observations made during the background conditions analysis.

Latson Road & Beck Road

- <u>During the AM and PM peak hours:</u> The eastbound and westbound left-turn movements are expected to operate at LOS F.

Review of SimTraffic network simulations indicates generally acceptable operations throughout the study roadway network, during the AM peak hour; however, long vehicle queues were observed during the PM peak hour, which were present throughout the entire peak period.

Table 7: Future Intersection Operations

Intersection	Control	Approach	Background Conditions				Future Conditions				Difference			
			AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS
Latson Road & WB I-96 Ramps	Signal	WBL	37.9	D	27.0	C	37.4	D	27.9	C	-0.5	-	0.9	-
		WBR	34.9	C	33.8	C	33.1	C	33.6	C	-1.8	-	-0.2	-
		NBL	5.8	A	54.5	D	8.9	A	107.8	F	3.1	-	53.3	D→F
		NBT	0.4	A	0.6	A	0.4	A	0.7	A	0.0	-	0.1	-
		SBT	14.6	B	18.1	B	15.6	B	18.5	B	1.0	-	0.4	-
		SBR	15.1	B	21.4	C	15.8	B	21.4	C	0.7	-	0.0	-
		Overall	**12.1**	**B**	**19.0**	**B**	**12.6**	**B**	**24.4**	**C**	**0.5**	**-**	**5.4**	**B→C**
Latson Road & EB I-96 Ramps	Signal	EBL	29.3	C	32.9	C	27.1	C	32.8	C	-2.2	-	-0.1	-
		EBR	36.4	D	31.2	C	39.2	D	32.9	C	2.8	-	1.7	-
		NBT	7.5	A	6.6	A	8.6	A	6.9	A	1.1	-	0.3	-
		NBR	7.0	A	5.7	A	8.0	A	6.1	A	1.0	-	0.4	-
		SBL	7.0	A	11.6	B	11.3	B	19.1	B	4.3	A→B	7.5	-
		SBT	0.3	A	0.3	A	0.4	A	0.3	A	0.1	-	0.0	-
		Overall	**14.5**	**B**	**12.1**	**B**	**15.1**	**B**	**12.7**	**B**	**0.6**	**-**	**0.6**	**-**
Latson Road & Beck Road	Stop (Minor)	EBL	23.8	C	30.1	D	76.2	F	242.5	F	52.4	C→F	212.4	D→F
		EBTR	0.0*	A	9.0	A	0.0*	A	8.8	A	0.0*	-	-0.2	-
		WBL	0.0*	A	0.0*	A	60.8	F	715.3	F	60.8	A→F	715.3	A→F
		WBTR	10.0	B	11.8	B	12.5	B	17.7	C	2.5	-	5.9	B→C
		NBL	0.0*	A	0.0*	A	0.0*	A	0.0*	A	0.0*	-	0.0*	-
		SBL	8.8	A	10.0	B	9.6	A	12.0	B	0.8	-	2.0	-

** Indicates no vehicle volume present Note: Decreased delays are the result of improved progression and/or HCM weighting methodologies.*

8.2 FUTURE IMPROVEMENTS

In order to improve traffic operations to a LOS D or better for all intersection approaches and movements under future conditions, mitigation measures were investigated. These mitigation measures included signal timing adjustments, geometric improvements, and traffic control modifications. The proposed improvements and their impact to intersection operations are summarized below.

The mitigation measures that were identified for the **Background (No Build) conditions** was evaluated with the projected future traffic volumes. The future intersection operations with the improvements identified under the background conditions analysis were determined to operate well, and no further mitigation measures are recommended at the Latson Road & I-96 EB/WB Ramps intersections.

Latson Road & Beck Road

A signal warrant analysis was performed at the study intersections of Latson Road & Beck Road. The *Michigan Manual on Uniform traffic Control Devices (MMUTCD)* documents eight warrants by which traffic signal control may or should be considered. Warrant 2 (4-Hour Vehicular Volume) was evaluated for the study intersection, based on the future traffic volumes. The results of the signal warrant analyses are discussed below and summarized in **Table 8**; the signal warrant charts are attached for reference.

The results of the signal warrant analysis indicates that the study intersection of Latson Road & Beck Road is expected to meet the Warrant 2 (Four-Hour).

Table 8: Signal Warrant Analysis Summary

Intersection	Signal Warrants		Future Conditions
Latson Road & Beck Road	**Warrant 2: Four-Hour**	*Hours Met*	**4**
		Warrant Met	**YES**

8.3 SUMMARY

The following potential mitigations were evaluated with the addition of the ICPUD. These were identified based upon the projected background and the potential land uses evaluated. Further evaluation should be performed when known end users are proposed, in order to determine if/when these mitigations should be implemented.

Latson Road & Beck Road

- Intersection signalization

  No geometric improvements are necessary along Beck Road, as the existing approaches currently provide adequate paved left-turn lane storage, in order to accommodate the anticipated traffic volumes. The traffic signal should be designed to accommodate future pedestrian connectivity on Latson Road.

Latson Road & WB I-96 Ramps

- Provide permissive/protected northbound left-turn phasing with vehicle detection.
- Increase the network-wide cycle length to 90-seconds for all signals along the Latson Road corridor.

Latson Road & EB I-96 Ramps

- Provide permissive/protected southbound left-turn phasing with vehicle detection.
- Increase the network-wide cycle length to 90-seconds for all signals along the Latson Road corridor.

The results of the future conditions with improvements analysis are attached and summarized in **Table 9**.

Table 9: Future Intersection Operations with Improvements

Intersection	Control	Approach	Future Conditions				Future w/ IMP				Difference			
			AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS
Latson Road & WB I-96 Ramps	Signal	WBL	37.4	D	27.9	C	43.1	D	32.9	C	5.7	-	5.0	-
		WBR	33.1	C	33.6	C	37.8	D	49.2	D	4.7	C→D	15.6	C→D
		NBL	8.9	A	107.8	F	5.5	A	8.7	A	-3.4	-	-99.1	F→A
		NBT	0.4	A	0.7	A	0.4	A	0.5	A	0.0	-	-0.2	-
		SBT	15.6	B	18.5	B	0.5	A	2.4	A	-15.1	B→A	-16.1	B→A
		SBR	15.8	B	21.4	C	1.0	A	4.5	A	-14.8	B→A	-16.9	C→A
		Overall	**12.6**	**B**	**24.4**	**C**	**6.9**	**A**	**11.2**	**B**	**-5.7**	**B→A**	**-13.2**	**C→B**
Latson Road & EB I-96 Ramps	Signal	EBL	27.1	C	32.8	C	31.6	C	39.9	D	4.5	-	7.1	C→D
		EBR	39.2	D	32.9	C	49.1	D	38.9	D	9.9	-	6.0	C→D
		NBT	8.6	A	6.9	A	7.3	A	0.8	A	-1.3	-	-6.1	-
		NBR	8.0	A	6.1	A	7.0	A	0.7	A	-1.0	-	-5.4	-
		SBL	11.3	B	19.1	B	10.3	B	7.2	A	-1.0	-	-11.9	B→A
		SBT	0.4	A	0.3	A	0.3	A	0.3	A	-0.1	-	0.0	-
		Overall	**15.1**	**B**	**12.7**	**B**	**17.0**	**B**	**10.8**	**B**	**1.9**	**-**	**-1.9**	**-**

Intersection	Control	Approach	Future Conditions				Future w/ IMP				Difference			
			AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS
Latson Road & Beck Road	Stop (Minor) Signal [IMP]	EBL	76.2	F	242.5	F	42.7	D	42.6	D	-33.5	E→D	-199.9	F→D
		EBTR	0.0*	A	8.8	A	0.0*	A	28.7	C	0.0*	-	19.9	A→C
		WBL	60.8	F	715.3	F	32.0	C	32.0	C	-28.8	F→C	-683.3	F→C
		WBTR	12.5	B	17.7	C	40.7	D	41.9	D	28.2	B→D	24.1	C→D
		NBL	0.0*	A	0.0*	A	0.0*	A	0.0*	A	0.0*	-	0.0*	-
		[NBTR]	Free				0.5	A	2.0	A	N/A			
		SBL	9.6	A	12.0	B	1.0	A	8.1	A	-8.6	-	-3.9	B→A
		[SBTR]	Free				0.8	A	2.7	A	N/A			
		[Overall]	**N/A**				**7.9**	**A**	**9.5**	**A**	**N/A**			

** Indicates no vehicle volume present*

The results indicates that all approaches and movements at the study intersection are expected to operate at LOS D or better during both the AM and PM peak hours. Review of SimTraffic network simulations indicates acceptable operations during both peak periods, with improved delays and significantly reduced vehicle queues throughout the study roadway network.

8.4 Potential Railroad Conflict Evaluation (Beck Road)

The existing Beck Road intersection is located approximately 340-feet north of the railroad tracks, with an effective northbound queue length of 240-feet. The identified mitigation measures included the recommendation to install a fully actuated and coordinated traffic signal at the study intersection of Latson Road & Beck Road; therefore, the intersection was further evaluated, in order to ensure that the future intersection operations, with the implementation of the recommended improvements, will not impact the railroad tracks. The results of the analysis are summarized below in **Table 10**.

Table 10: Queue Length Summary (Future IMP)

Intersection	Approach	AM Peak Hour		PM Peak Hour		Available Queue Length (ft)	Exceeds Queue Length
		Average Queue (ft)	95% Queue (ft)	Average Queue (ft)	95% Queue (ft)		
Latson Road & Beck Road	NBL	0	0	0	0	240	**No**
	NBT	9	30	98	186	240	**No**
	NBTR	24	64	121	206	240	**No**

Key findings from this evaluation:

- The existing Beck Road location has adequate distance from the influence area of the railroad tracks to accommodate the projected northbound queue lengths along Latson Road.
- The recommended improvements include signalization. This signal should include communication and pre-emption with the railroad crossing operations.

9 CONCLUSIONS

The conclusions of this TIS are as follows:

9.1 EXISTING CONDITIONS (2024)

- The results of the existing conditions analysis indicates that all approaches and movements at the study intersections currently operate acceptably, at LOS D or better during both the AM and PM peak hours.
- Review of the SimTraffic network simulations indicates acceptable traffic operations throughout the study roadway network during both peak periods.

9.2 BACKGROUND GROWTH

- An annual background growth rate of **0.72%** per year was utilized to project the collected 2023 traffic volumes to the existing year of 2024 and the buildout year of 2029.
- In addition to background traffic growth, the following background developments were identified and were included within the background traffic volumes:
    - St. Joseph Mercy Health Center Expansion
    - Latson Road PUD

9.3 BACKGROUND CONDITIONS (2029)

- The results of the background conditions analysis indicates that all approaches and movements at the study intersections are expected to continue operating acceptably, at LOS D or better during both peak periods, in a manner similar to the existing conditions analysis, with some minor increases in delays.
- Review of SimTraffic microsimulations indicates generally acceptable operations, throughout the study roadway network during the AM peak hour; however, during the PM peak hour, long vehicle queues are present for the left-turn movements along Latson Road at both of the I-96 Freeway Ramps.
    - The delays and queueing along Latson Road at the I-96 Freeway Ramps are the result of the background developments and expected growth throughout the study area; these vehicle queues were not observed to dissipate and were typically present throughout the peak hour.

9.4 BACKGROUND IMPROVEMENTS

- Mitigation measures were identified and were determined to adequately mitigate the projected background vehicle queue lengths at the study intersection. As developments progress throughout the area, the following mitigation measures were identified and may be necessary to accommodate the background growth and future development plans; these should be evaluated as part of the site plan approval and permitting process.

  Latson Road & WB I-96 Ramps

  - Provide permissive/protected northbound left-turn phasing with vehicle detection.
  - Increase the network-wide cycle length to 90-seconds for all signals along the Latson Road corridor.

  Latson Road & EB I-96 Ramps

  - Provide permissive/protected southbound left-turn phasing with vehicle detection.
  - Increase the network-wide cycle length to 90-seconds for all signals along the Latson Road corridor.

9.5 FUTURE CONDITIONS (2029)

- The results of the future conditions analysis indicates that all study intersection approaches and movements will continue to operate acceptably, at LOS D or better during both peak periods, in a manner similar to the background conditions analysis, with increases in delays and the following additional impacts to LOS:

  Latson Road & WB I-96 Ramps

  - During the PM peak hour: The northbound left-turn movement is expected to operate at LOS F. Review of SimTraffic network simulations indicates that long vehicle queues were observed for the northbound left-turn movement, similar to the background conditions analysis observations.

  Latson Road & EB I-96 Ramps

  - The Synchro intersection LOS analysis indicates acceptable operations during both peak periods. However, review of SimTraffic network simulations indicates that long vehicle queues were observed for the southbound left-turn movement, similar to background conditions.

  Latson Road & Beck Road

  - During the AM and PM peak hours: The eastbound and westbound left-turn movements are expected to operate at LOS F.

  Review of SimTraffic network simulations indicates generally acceptable operations during the AM peak hour; however, long vehicle queues were observed during the PM peak hour and were present throughout the entire peak period.

9.6 FUTURE IMPROVEMENTS

- The mitigation measures identified for the Background (No Build) conditions were evaluated with the projected future traffic volumes. The future intersection operations with the improvements identified under the background conditions analysis were determined to operate well, and no further mitigation measures are recommended at the Latson Road & I-96 EB/WB Ramps intersections.

  Latson Road & Beck Road

  - Provide intersection signalization. No geometry improvements are necessary along Beck Road, as the existing approaches currently provide adequate paved left-turn lane storage, in order to accommodate the anticipated traffic volumes. The traffic signal should be designed to accommodate future pedestrian connectivity on Latson Road.

10 RECOMMENDATIONS

The following potential mitigations were evaluated with the addition of the ICPUD. These were identified based upon the projected background conditions and the potential land uses evaluated in this study. Further evaluation should be performed when known end users are proposed, in order to determine if/when these mitigation measures should be implemented.

Recommended Mitigation Measures	Existing 2024	Background 2029	Future 2029
Latson Road & WB I-96 Ramps			
• Provide permissive/protected northbound left-turn phasing with vehicle detection		✓	
• Increase the network-wide cycle length to 90-seconds for all signals along the Latson Road corridor		✓	
Latson Road & EB I-96 Ramps			
• Provide permissive/protected southbound left-turn phasing with vehicle detection		✓	
• Increase the network-wide cycle length to 90-seconds for all signals along the Latson Road corridor		✓	
Latson Road & Beck Road			
• Install a fully actuated and coordinated traffic signal with permissive/protected southbound left-turn phasing			✓

Any questions related to this memorandum, study, analysis, and results should be addressed to Fleis & VandenBrink.

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Michigan.

Julie M. Kroll
2024.08.23 16:42:53
-04'00'

Attachments: Figures 1 – 6
Traffic Volume Data
SEMCOG Data
Signal Timing Permit
Background Growth & Background Development Data
Synchro / SimTraffic Results
Signal Warrants

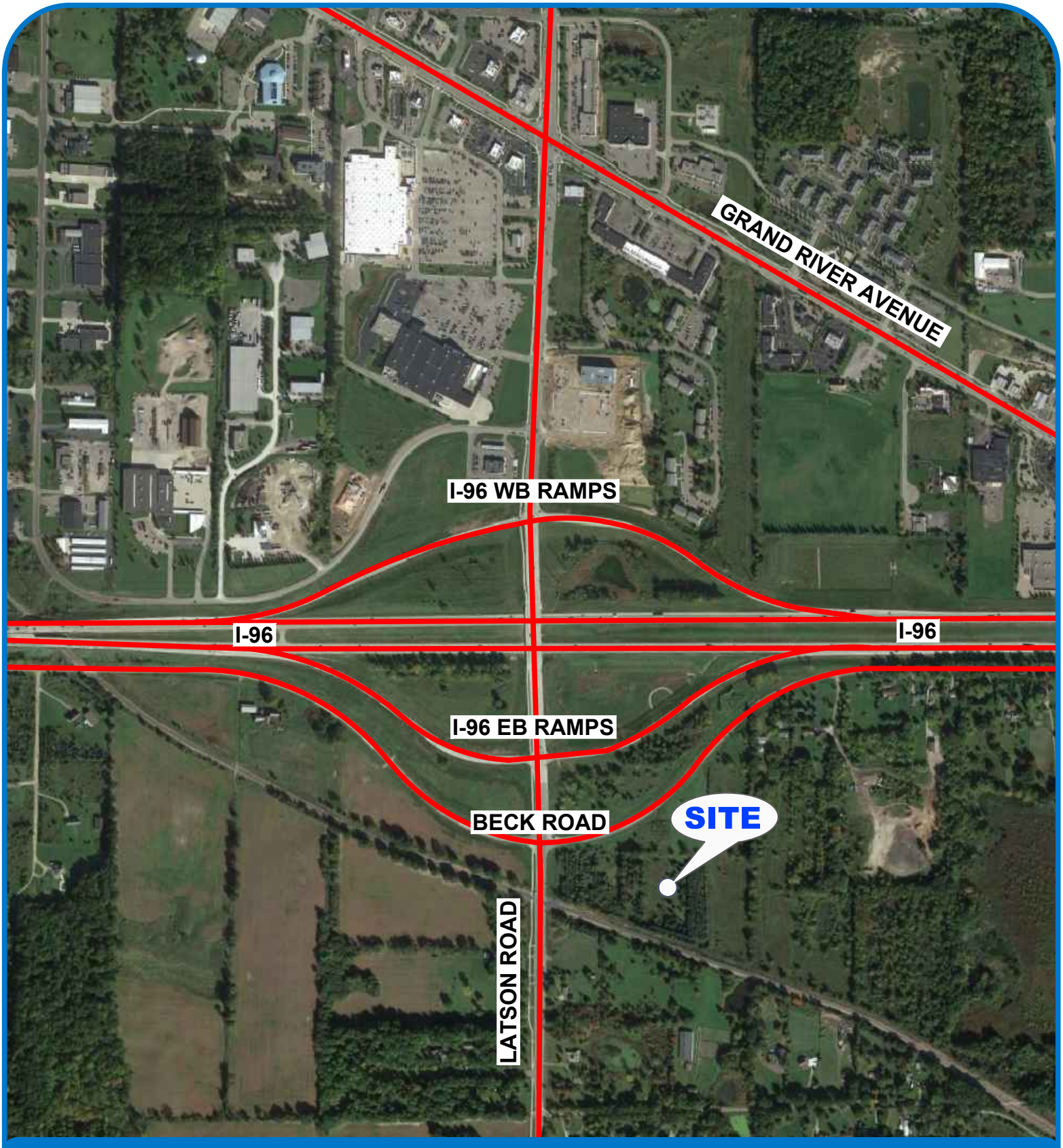


FIGURE 1

SITE LOCATION MAP

LATSON ROAD COMMERCIAL TIS - GENOA TWP, MI

LEGEND

SITE SITE LOCATION

NORTH

NOT TO SCALE

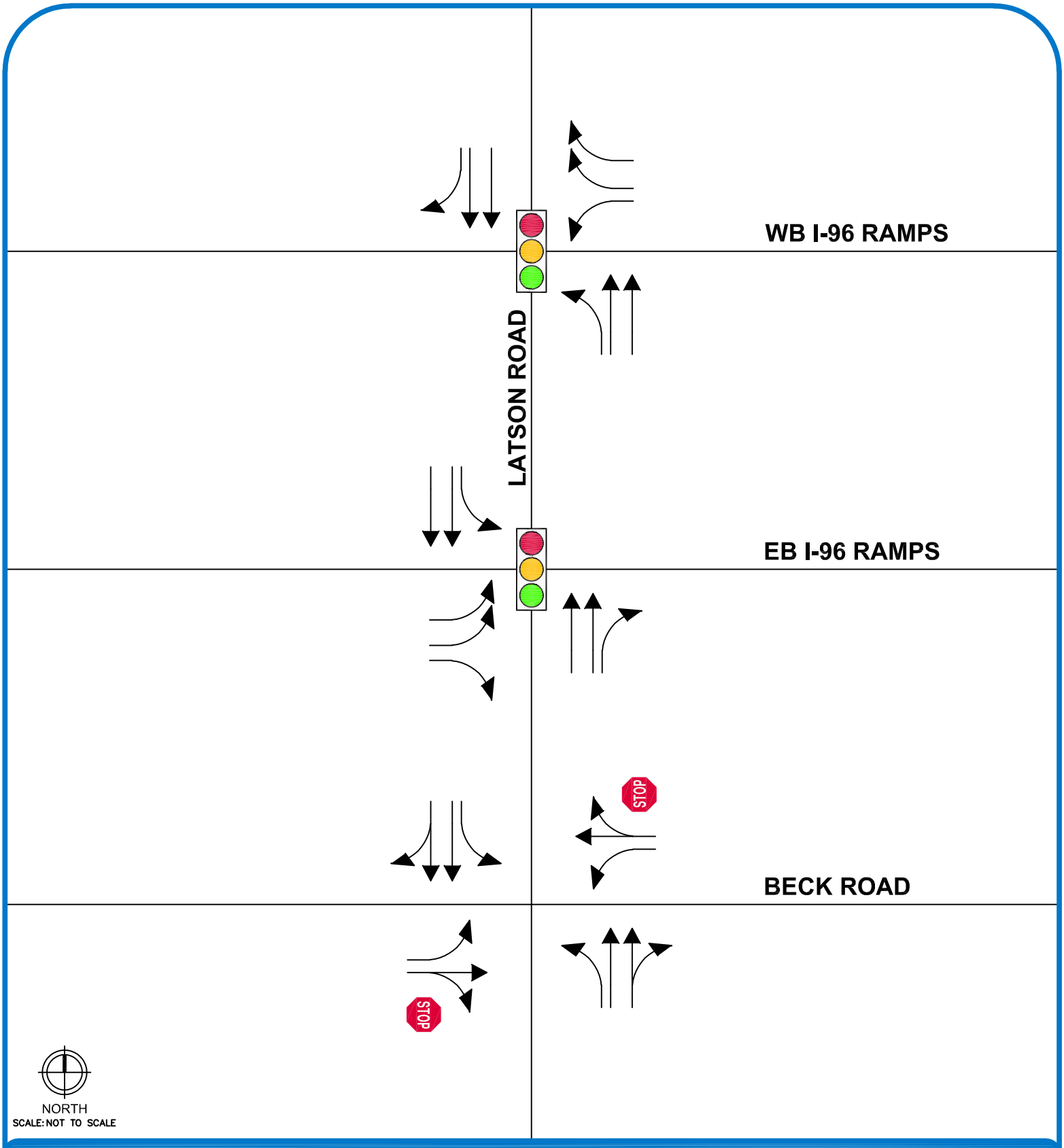


FIGURE 2

LANE USE AND TRAFFIC CONTROL

LATSON ROAD COMMERCIAL TIS - GENOA TWP, MI

LEGEND

- ROADS
- PROPOSED ROADS
- LANE USE
- PROPOSED LANE USE
- SIGNALIZED INTERSECTION
- UNSIGNALIZED INTERSECTION

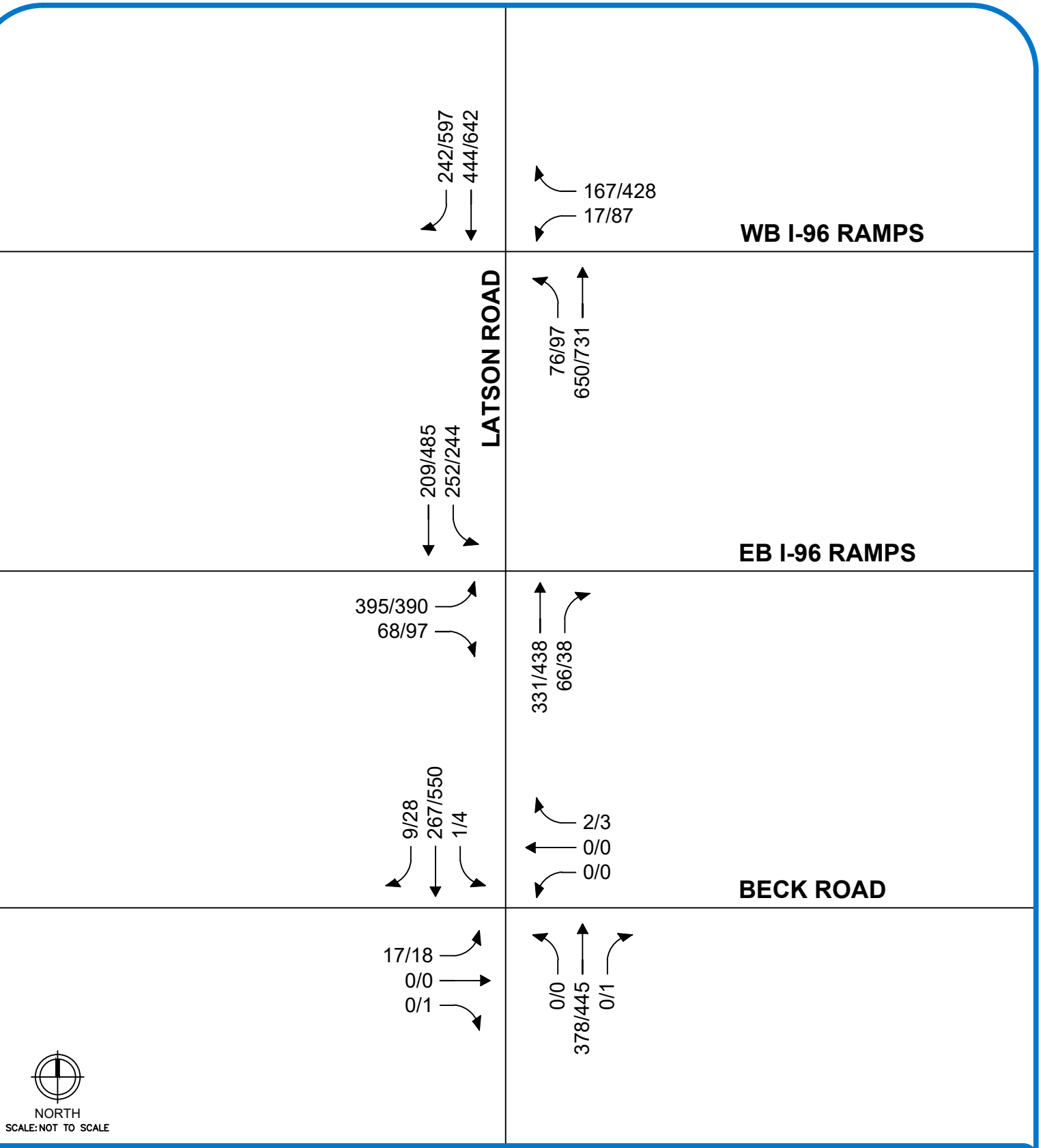


FIGURE 3

EXISTING (2024) TRAFFIC VOLUMES

LATSON ROAD COMMERCIAL TIS - GENOA TWP, MI

LEGEND

ROADS

PROPOSED ROADS

TRAFFIC VOLUMES

+/-[000/000] **PASS-BY**

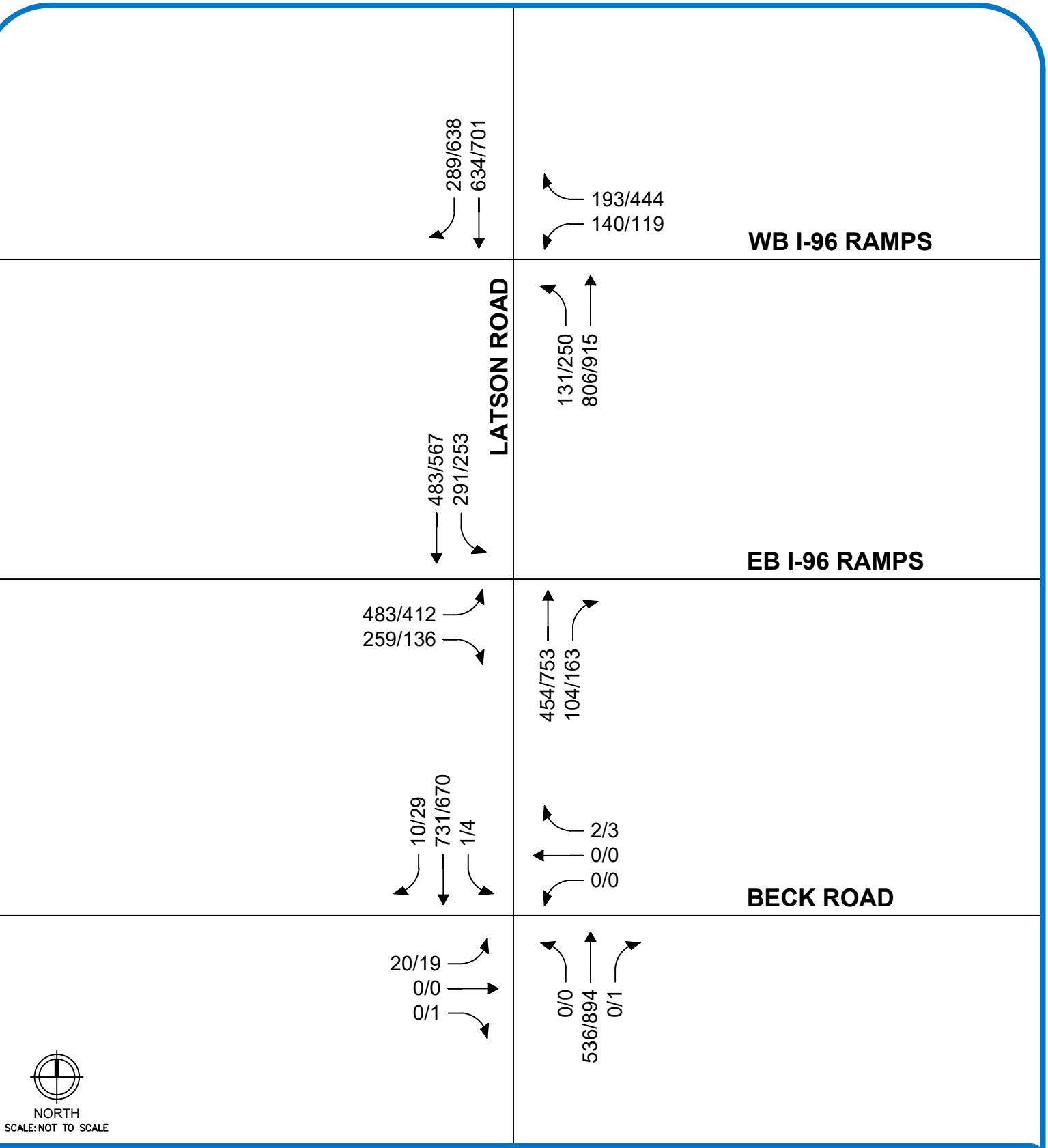


FIGURE 4

BACKGROUND (2029) TRAFFIC VOLUMES

LATSON ROAD COMMERCIAL TIS - GENOA TWP, MI

LEGEND

ROADS

PROPOSED ROADS

TRAFFIC VOLUMES (AM/PM)

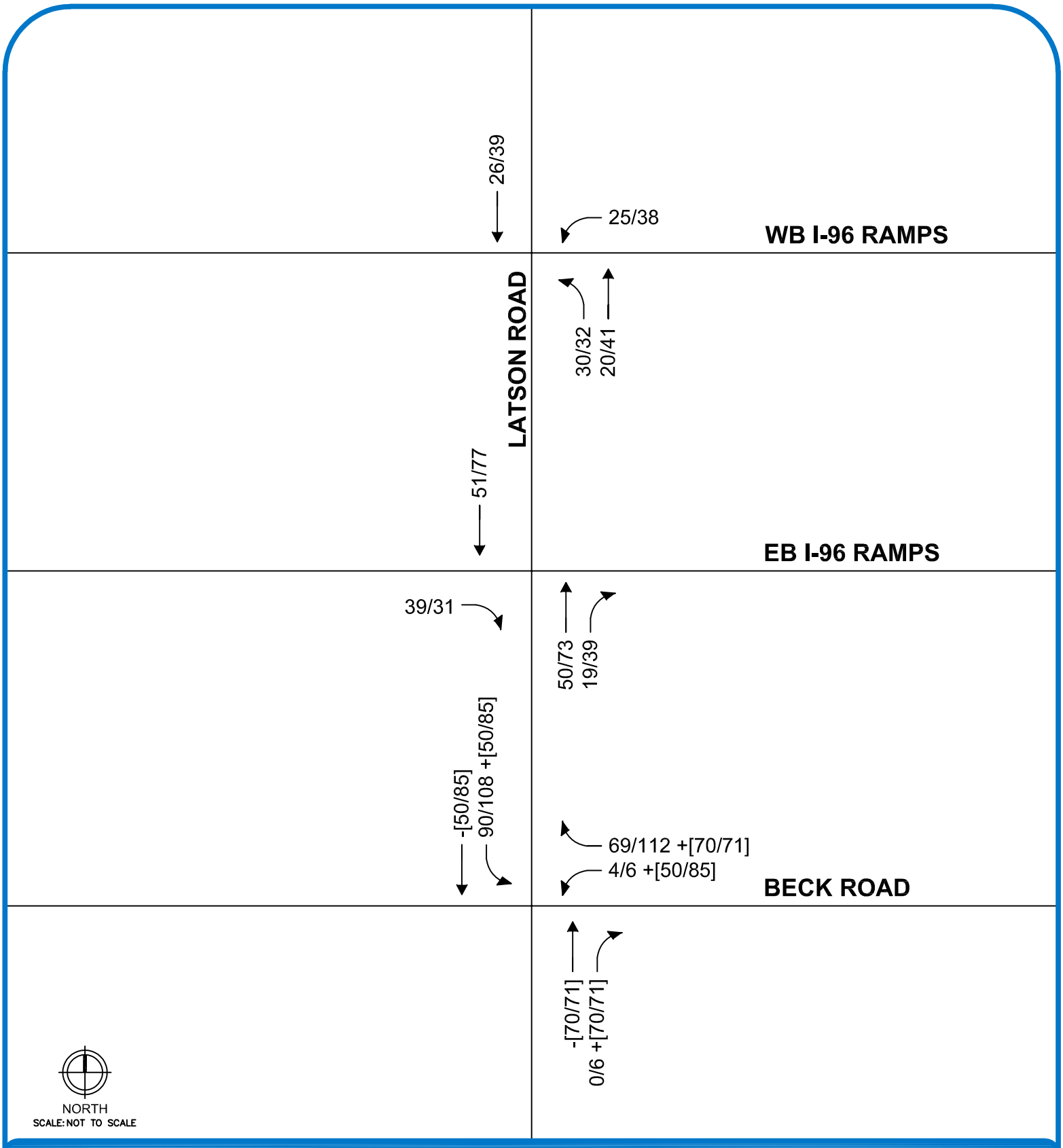


FIGURE 5

SITE-GENERATED TRAFFIC VOLUMES

LATSON ROAD COMMERCIAL TIS - GENOA TWP, MI

LEGEND

ROADS

PROPOSED ROADS

TRAFFIC VOLUMES (AM/PM)

+/-[000/000]
PASS-BY

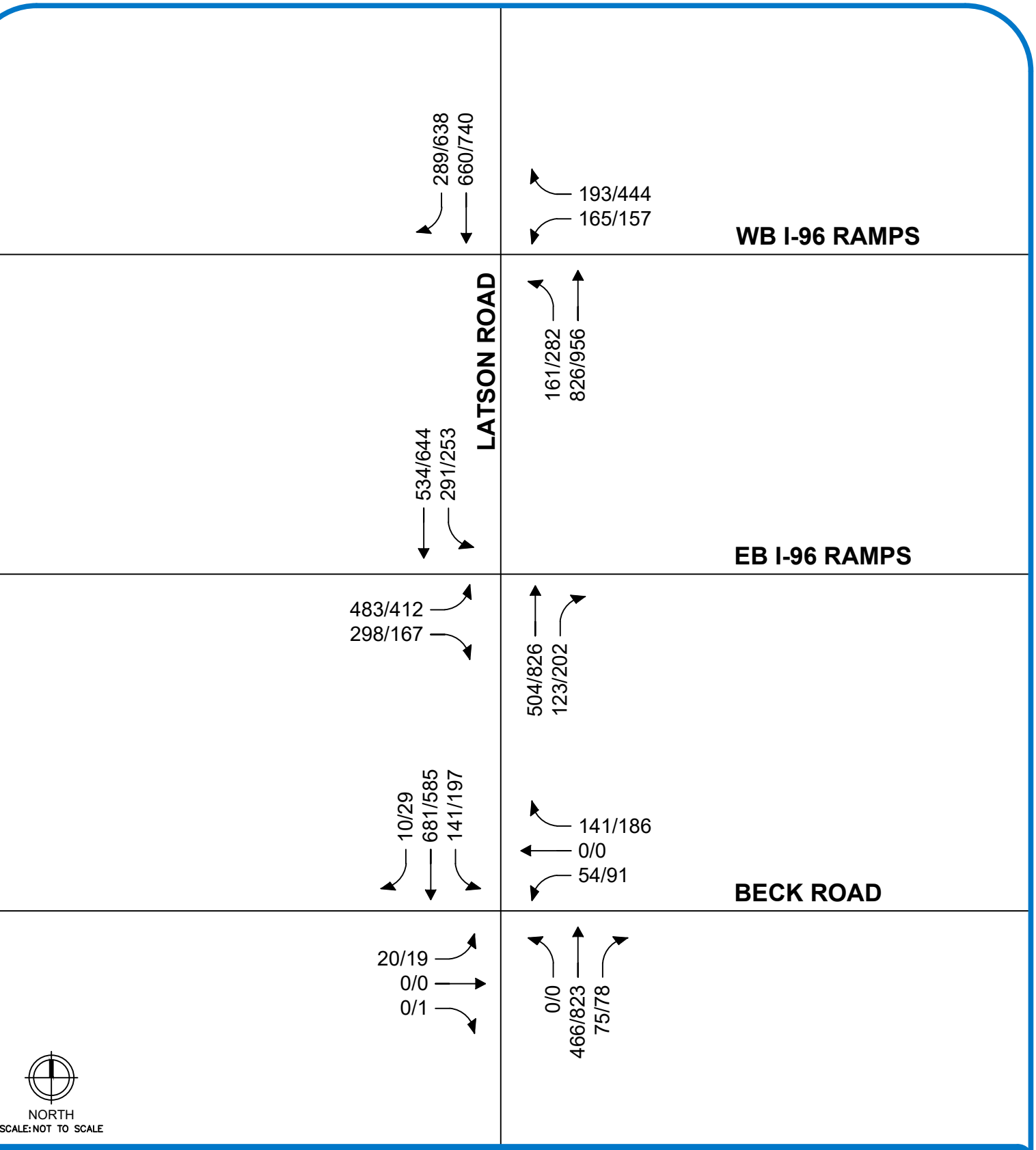


FIGURE 6

FUTURE (2029) TRAFFIC VOLUMES

LATSON ROAD COMMERCIAL TIS - GENOA TWP, MI

LEGEND

ROADS

PROPOSED ROADS

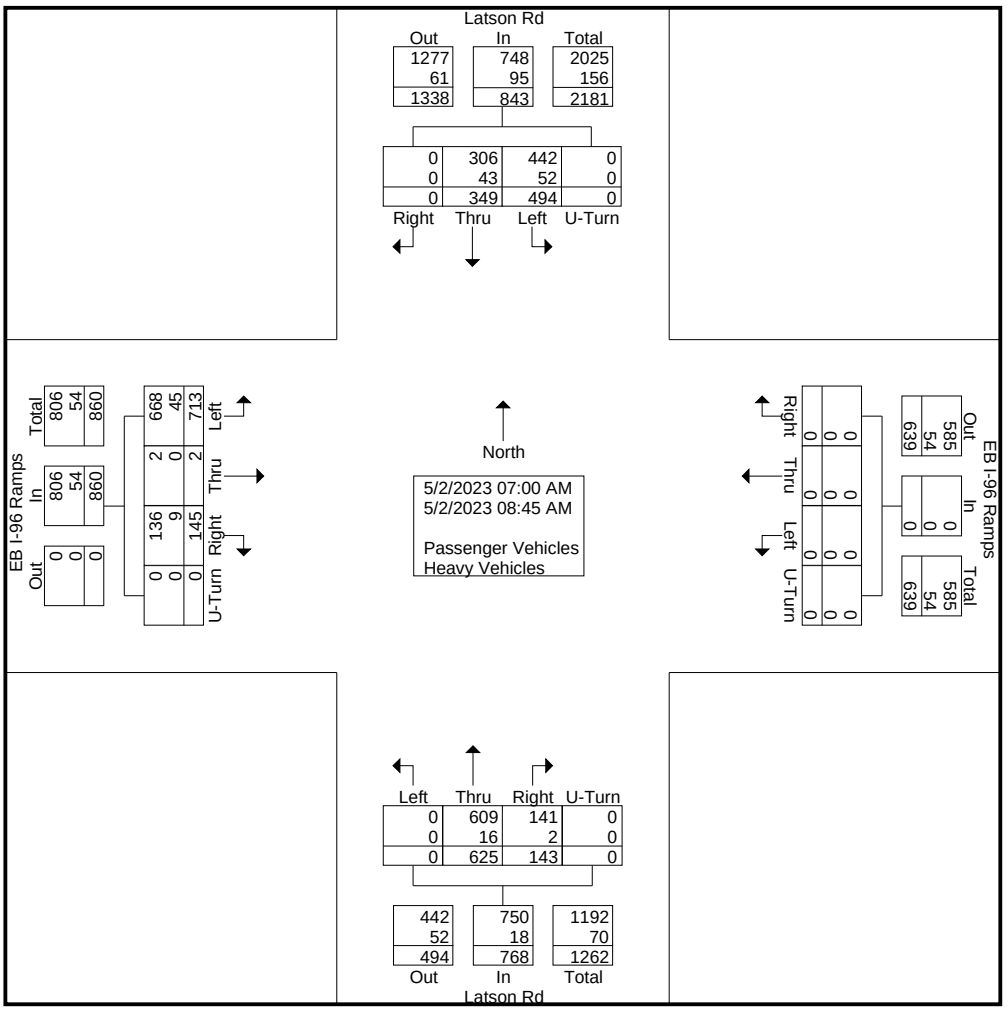
TRAFFIC VOLUMES (AM/PM)

Quality Counts

File Name : 16184807 - Latson Rd -- EB I-96 Ramps
Site Code : 16184807
Start Date : 5/2/2023
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

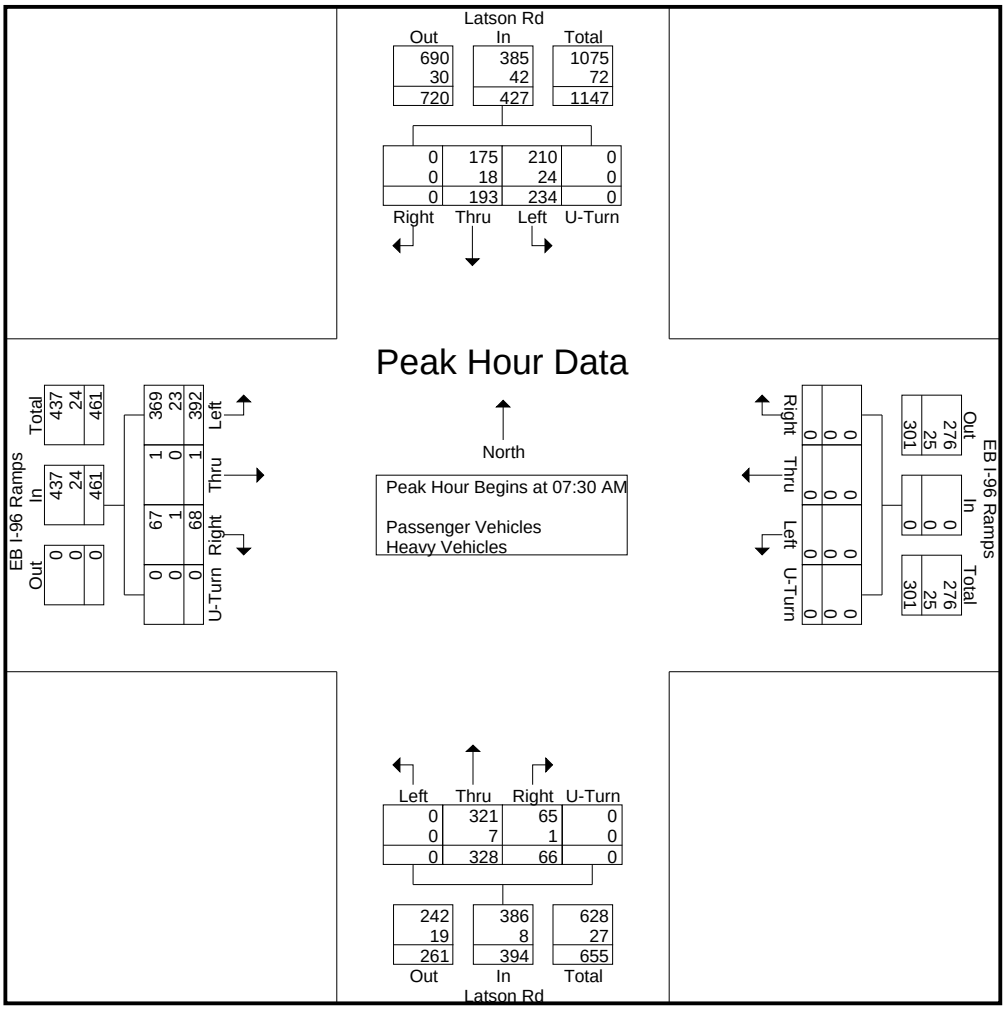
	EB I-96 Ramps Eastbound					EB I-96 Ramps Westbound					Latson Rd Northbound					Latson Rd Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
07:00 AM	67	0	19	0	86	0	0	0	0	0	0	59	26	0	85	73	25	0	0	98	269
07:15 AM	76	1	25	0	102	0	0	0	0	0	0	73	22	0	95	57	31	0	0	88	285
07:30 AM	93	0	24	0	117	0	0	0	0	0	0	71	22	0	93	53	42	0	0	95	305
07:45 AM	122	0	9	0	131	0	0	0	0	0	0	93	7	0	100	51	54	0	0	105	336
Total	358	1	77	0	436	0	0	0	0	0	0	296	77	0	373	234	152	0	0	386	1195
08:00 AM	100	1	13	0	114	0	0	0	0	0	0	78	17	0	95	63	42	0	0	105	314
08:15 AM	77	0	22	0	99	0	0	0	0	0	0	86	20	0	106	67	55	0	0	122	327
08:30 AM	73	0	14	0	87	0	0	0	0	0	0	80	15	0	95	63	51	0	0	114	296
08:45 AM	105	0	19	0	124	0	0	0	0	0	0	85	14	0	99	67	49	0	0	116	339
Total	355	1	68	0	424	0	0	0	0	0	0	329	66	0	395	260	197	0	0	457	1276
Grand Total	713	2	145	0	860	0	0	0	0	0	0	625	143	0	768	494	349	0	0	843	2471
Apprch %	82.9	0.2	16.9	0		0	0	0	0		0	81.4	18.6	0		58.6	41.4	0	0		
Total %	28.9	0.1	5.9	0	34.8	0	0	0	0	0	0	25.3	5.8	0	31.1	20	14.1	0	0	34.1	
Passenger Vehicles	668	2	136	0	806	0	0	0	0	0	0	609	141	0	750	442	306	0	0	748	2304
% Passenger Vehicles	93.7	100	93.8	0	93.7	0	0	0	0	0	0	97.4	98.6	0	97.7	89.5	87.7	0	0	88.7	93.2
Heavy Vehicles	45	0	9	0	54	0	0	0	0	0	0	16	2	0	18	52	43	0	0	95	167
% Heavy Vehicles	6.3	0	6.2	0	6.3	0	0	0	0	0	0	2.6	1.4	0	2.3	10.5	12.3	0	0	11.3	6.8



Quality Counts

File Name : 16184807 - Latson Rd -- EB I-96 Ramps
Site Code : 16184807
Start Date : 5/2/2023
Page No : 2

	EB I-96 Ramps Eastbound					EB I-96 Ramps Westbound					Latson Rd Northbound					Latson Rd Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	93	0	**24**	0	117	0	0	0	0	0	0	71	**22**	0	93	53	42	0	0	95	305
07:45 AM	**122**	0	9	0	**131**	0	0	0	0	0	0	**93**	7	0	100	51	54	0	0	105	**336**
08:00 AM	100	**1**	13	0	114	0	0	0	0	0	0	78	17	0	95	63	42	0	0	105	314
08:15 AM	77	0	22	0	99	0	0	0	0	0	0	86	20	0	**106**	**67**	**55**	0	0	**122**	327
Total Volume	392	1	68	0	461	0	0	0	0	0	0	328	66	0	394	234	193	0	0	427	1282
% App. Total	85	0.2	14.8	0		0	0	0	0		0	83.2	16.8	0		54.8	45.2	0	0		
PHF	.803	.250	.708	.000	.880	.000	.000	.000	.000	.000	.000	.882	.750	.000	.929	.873	.877	.000	.000	.875	.954
Passenger Vehicles	369	1	67	0	437	0	0	0	0	0	0	321	65	0	386	210	175	0	0	385	1208
% Passenger Vehicles	94.1	100	98.5	0	94.8	0	0	0	0	0	0	97.9	98.5	0	98.0	89.7	90.7	0	0	90.2	94.2
Heavy Vehicles	23	0	1	0	24	0	0	0	0	0	0	7	1	0	8	24	18	0	0	42	74
% Heavy Vehicles	5.9	0	1.5	0	5.2	0	0	0	0	0	0	2.1	1.5	0	2.0	10.3	9.3	0	0	9.8	5.8

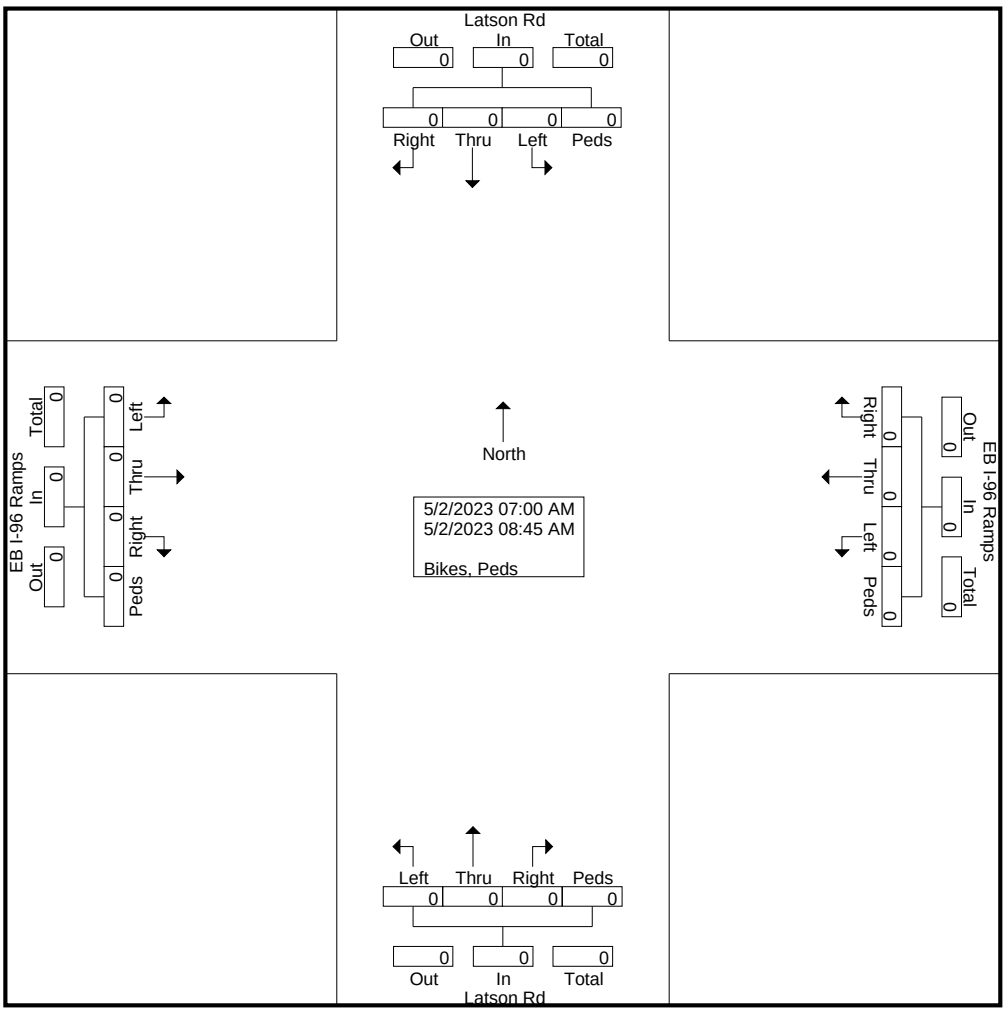


Quality Counts

File Name : 16184807 - Latson Rd -- EB I-96 Ramps
Site Code : 16184807
Start Date : 5/2/2023
Page No : 1

Groups Printed- Bikes, Peds

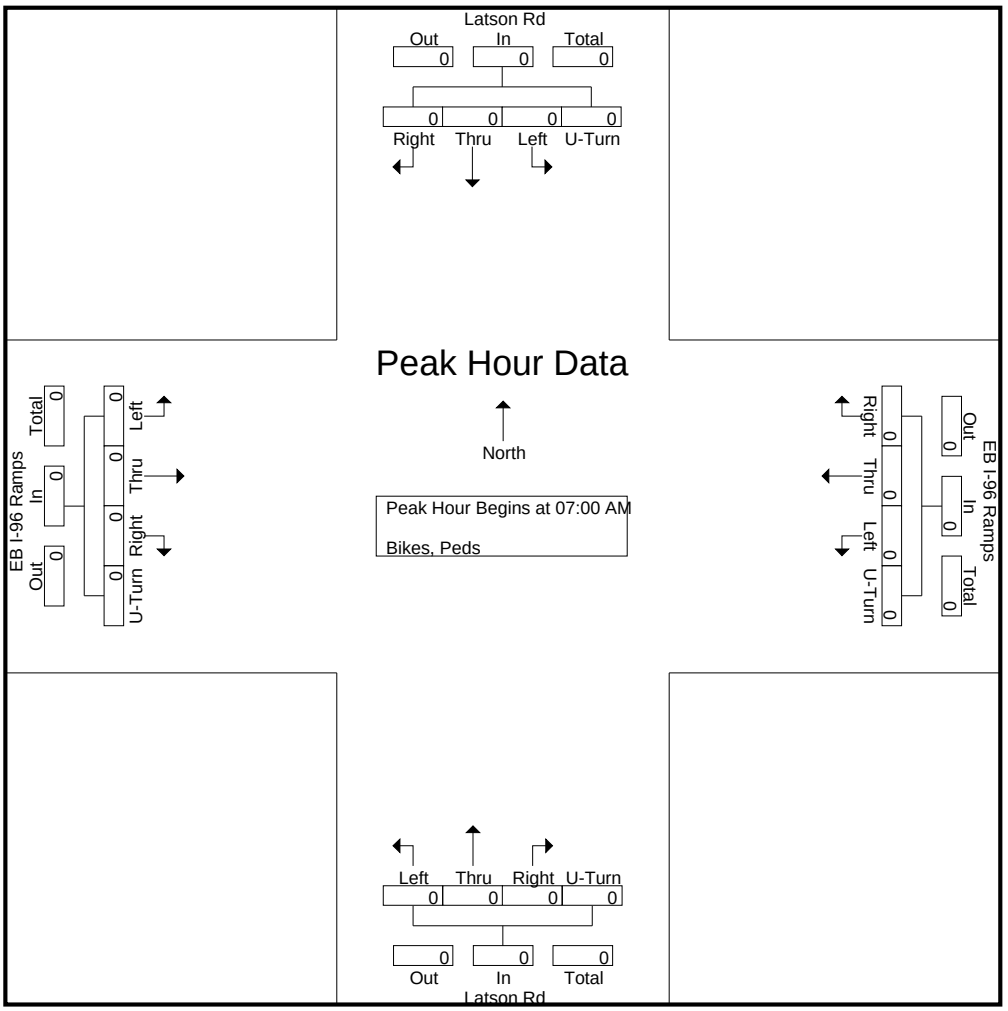
	EB I-96 Ramps Eastbound					EB I-96 Ramps Westbound					Latson Rd Northbound					Latson Rd Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
Total %																					



Quality Counts

File Name : 16184807 - Latson Rd -- EB I-96 Ramps
Site Code : 16184807
Start Date : 5/2/2023
Page No : 2

	EB I-96 Ramps Eastbound					EB I-96 Ramps Westbound					Latson Rd Northbound					Latson Rd Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

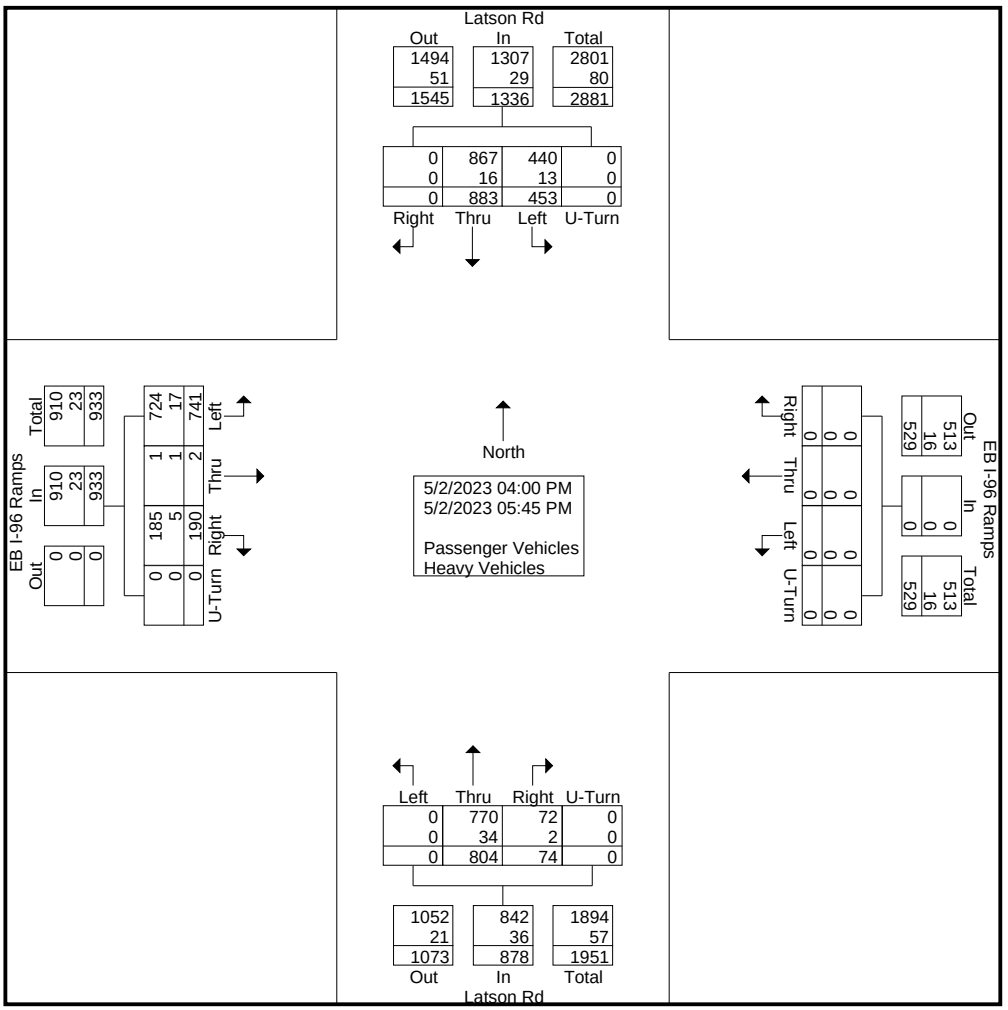


Quality Counts

File Name : 16184809 - Latson Rd -- EB I-96 Ramps
Site Code : 16184809
Start Date : 5/2/2023
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

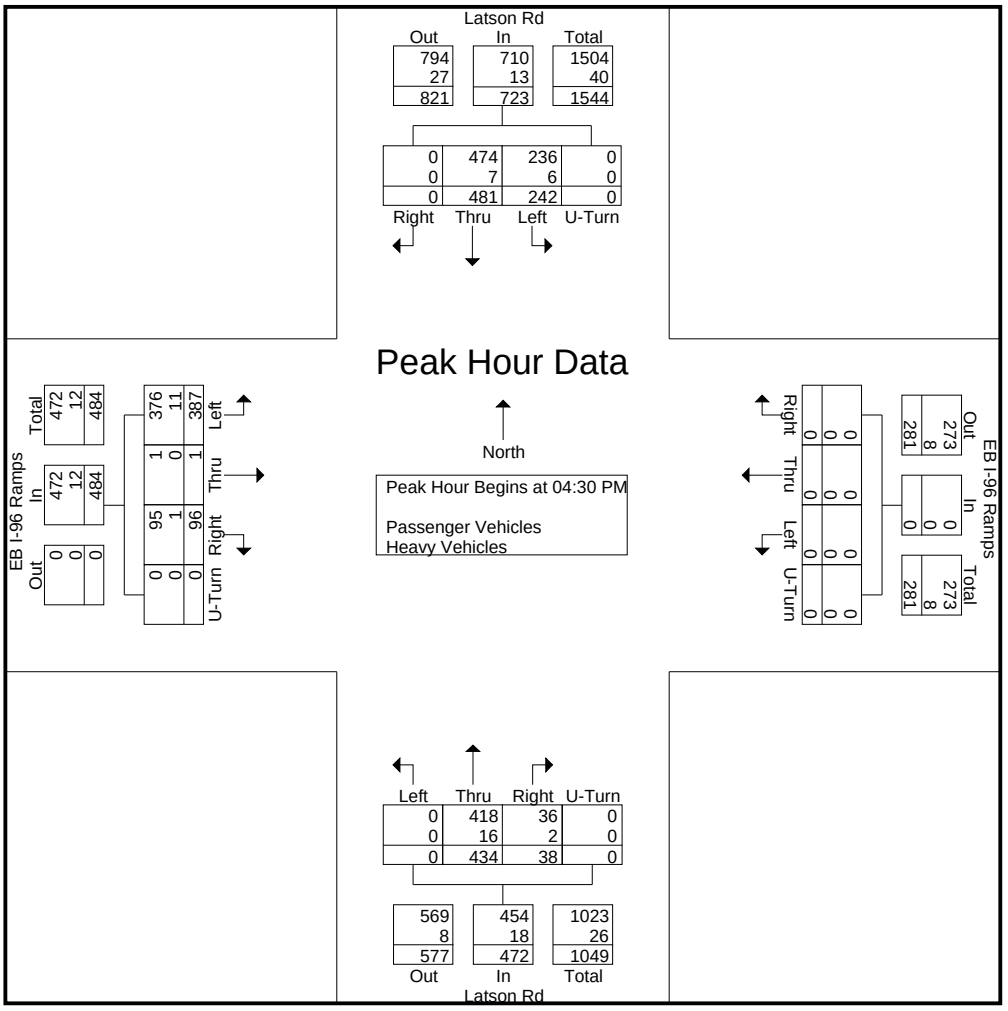
	EB I-96 Ramps Eastbound					EB I-96 Ramps Westbound					Latson Rd Northbound					Latson Rd Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
04:00 PM	82	1	19	0	102	0	0	0	0	0	0	102	11	0	113	65	94	0	0	159	374
04:15 PM	89	0	20	0	109	0	0	0	0	0	0	105	9	0	114	55	103	0	0	158	381
04:30 PM	114	0	29	0	143	0	0	0	0	0	0	111	15	0	126	64	115	0	0	179	448
04:45 PM	97	0	16	0	113	0	0	0	0	0	0	111	7	0	118	81	122	0	0	203	434
Total	382	1	84	0	467	0	0	0	0	0	0	429	42	0	471	265	434	0	0	699	1637
05:00 PM	78	0	30	0	108	0	0	0	0	0	0	103	9	0	112	54	120	0	0	174	394
05:15 PM	98	1	21	0	120	0	0	0	0	0	0	109	7	0	116	43	124	0	0	167	403
05:30 PM	99	0	28	0	127	0	0	0	0	0	0	94	13	0	107	49	96	0	0	145	379
05:45 PM	84	0	27	0	111	0	0	0	0	0	0	69	3	0	72	42	109	0	0	151	334
Total	359	1	106	0	466	0	0	0	0	0	0	375	32	0	407	188	449	0	0	637	1510
Grand Total	741	2	190	0	933	0	0	0	0	0	0	804	74	0	878	453	883	0	0	1336	3147
Apprch %	79.4	0.2	20.4	0		0	0	0	0		0	91.6	8.4	0		33.9	66.1	0	0		
Total %	23.5	0.1	6	0	29.6	0	0	0	0	0	0	25.5	2.4	0	27.9	14.4	28.1	0	0	42.5	
Passenger Vehicles	724	1	185	0	910	0	0	0	0	0	0	770	72	0	842	440	867	0	0	1307	3059
% Passenger Vehicles	97.7	50	97.4	0	97.5	0	0	0	0	0	0	95.8	97.3	0	95.9	97.1	98.2	0	0	97.8	97.2
Heavy Vehicles	17	1	5	0	23	0	0	0	0	0	0	34	2	0	36	13	16	0	0	29	88
% Heavy Vehicles	2.3	50	2.6	0	2.5	0	0	0	0	0	0	4.2	2.7	0	4.1	2.9	1.8	0	0	2.2	2.8



Quality Counts

File Name : 16184809 - Latson Rd -- EB I-96 Ramps
Site Code : 16184809
Start Date : 5/2/2023
Page No : 2

	EB I-96 Ramps Eastbound					EB I-96 Ramps Westbound					Latson Rd Northbound					Latson Rd Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	**114**	0	29	0	**143**	0	0	0	0	0	0	**111**	**15**	0	**126**	64	115	0	0	179	**448**
04:45 PM	97	0	16	0	113	0	0	0	0	0	0	111	7	0	118	**81**	122	0	0	**203**	434
05:00 PM	78	0	**30**	0	108	0	0	0	0	0	0	103	9	0	112	54	120	0	0	174	394
05:15 PM	98	**1**	21	0	120	0	0	0	0	0	0	109	7	0	116	43	**124**	0	0	167	403
Total Volume	387	1	96	0	484	0	0	0	0	0	0	434	38	0	472	242	481	0	0	723	1679
% App. Total	80	0.2	19.8	0		0	0	0	0		0	91.9	8.1	0		33.5	66.5	0	0		
PHF	.849	.250	.800	.000	.846	.000	.000	.000	.000	.000	.000	.977	.633	.000	.937	.747	.970	.000	.000	.890	.937
Passenger Vehicles	376	1	95	0	472	0	0	0	0	0	0	418	36	0	454	236	474	0	0	710	1636
% Passenger Vehicles	97.2	100	99.0	0	97.5	0	0	0	0	0	0	96.3	94.7	0	96.2	97.5	98.5	0	0	98.2	97.4
Heavy Vehicles	11	0	1	0	12	0	0	0	0	0	0	16	2	0	18	6	7	0	0	13	43
% Heavy Vehicles	2.8	0	1.0	0	2.5	0	0	0	0	0	0	3.7	5.3	0	3.8	2.5	1.5	0	0	1.8	2.6

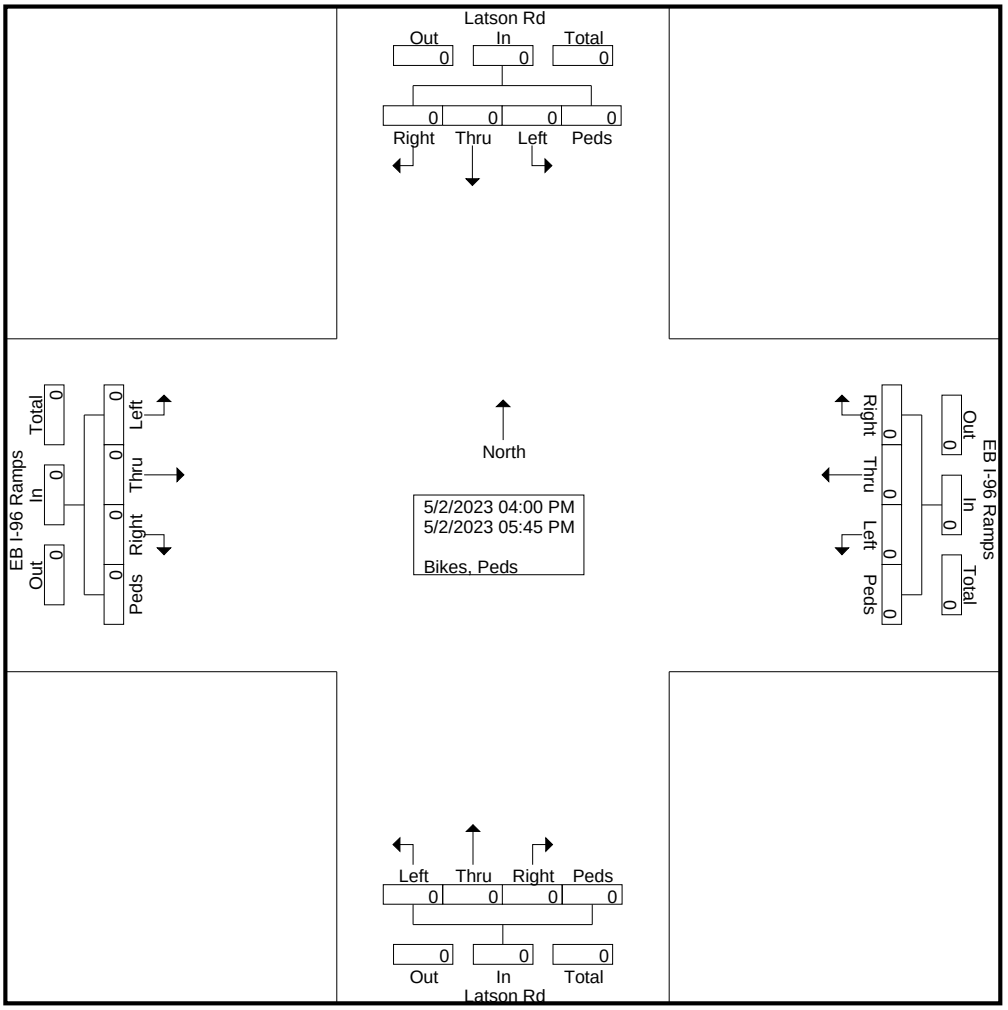


Quality Counts

File Name : 16184809 - Latson Rd -- EB I-96 Ramps
Site Code : 16184809
Start Date : 5/2/2023
Page No : 1

Groups Printed- Bikes, Peds

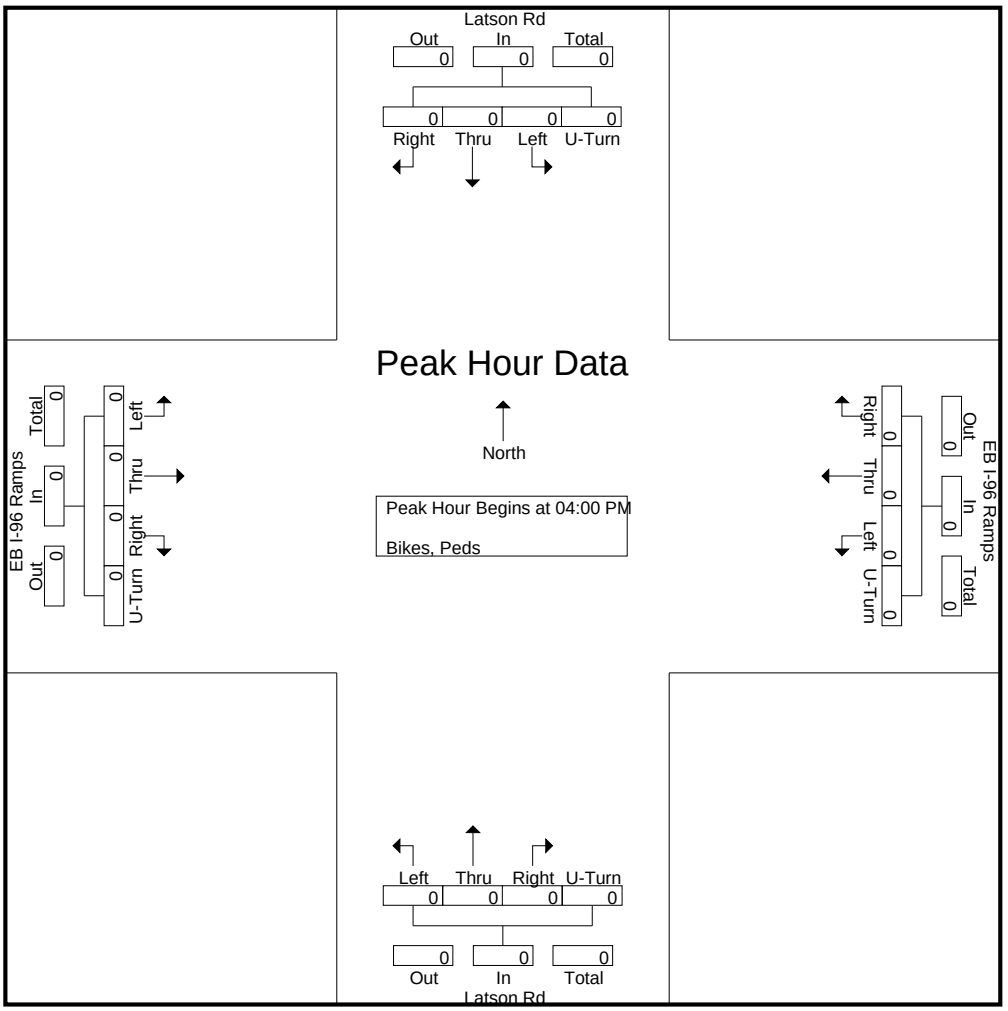
	EB I-96 Ramps Eastbound					EB I-96 Ramps Westbound					Latson Rd Northbound					Latson Rd Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
Total %																					



Quality Counts

File Name : 16184809 - Latson Rd -- EB I-96 Ramps
Site Code : 16184809
Start Date : 5/2/2023
Page No : 2

	EB I-96 Ramps Eastbound					EB I-96 Ramps Westbound					Latson Rd Northbound					Latson Rd Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

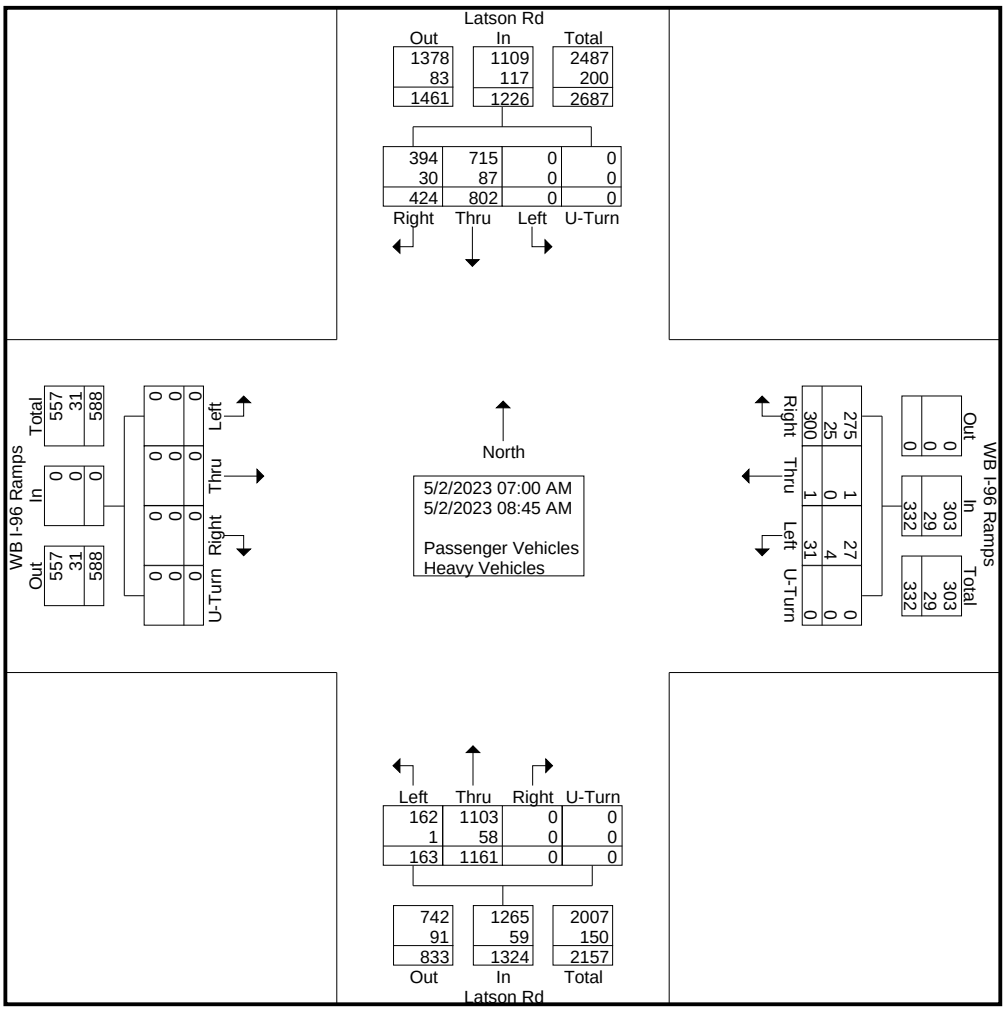


Quality Counts

File Name : 16184810 - Latson Rd -- WB I-96 Ramps
Site Code : 16184810
Start Date : 5/2/2023
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

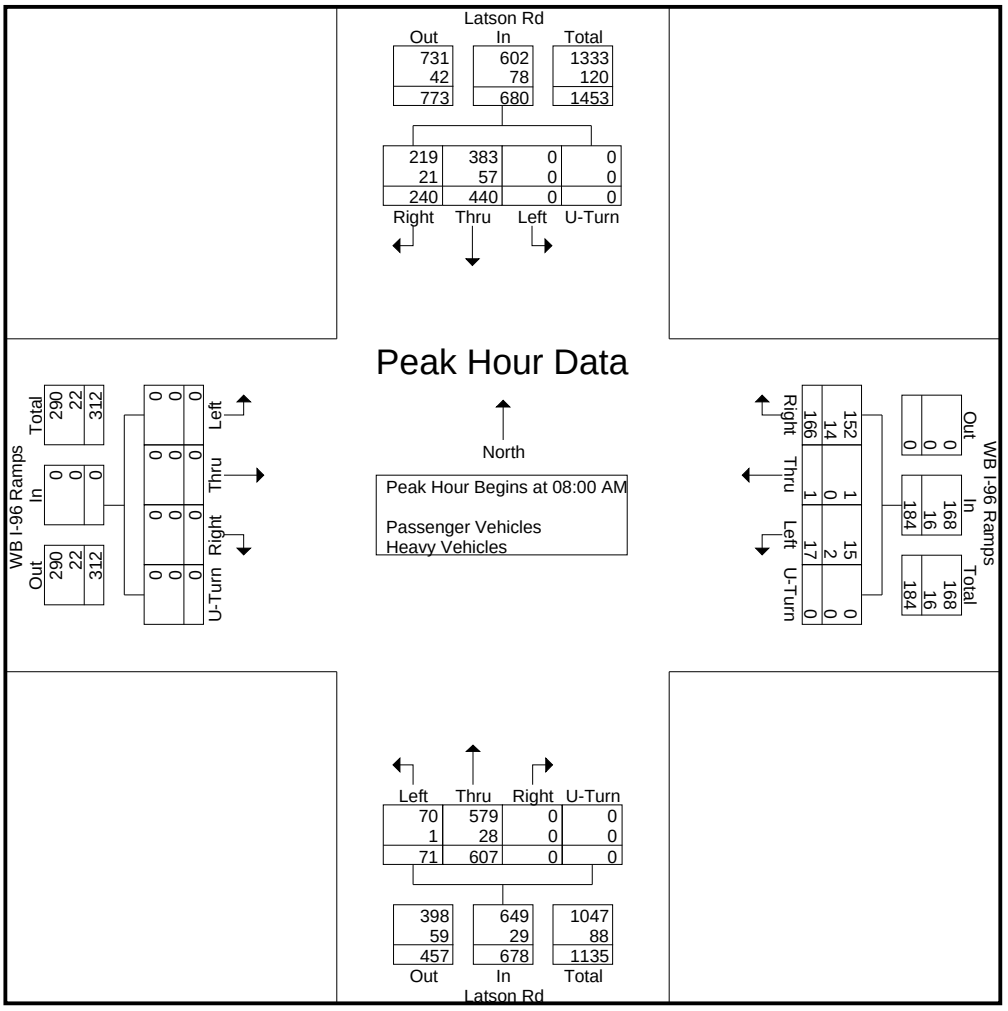
	WB I-96 Ramps Eastbound					WB I-96 Ramps Westbound					Latson Rd Northbound					Latson Rd Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
07:00 AM	0	0	0	0	0	3	0	13	0	16	21	104	0	0	125	0	87	52	0	139	280
07:15 AM	0	0	0	0	0	2	0	31	0	33	22	124	0	0	146	0	90	45	0	135	314
07:30 AM	0	0	0	0	0	4	0	44	0	48	28	122	0	0	150	0	88	42	0	130	328
07:45 AM	0	0	0	0	0	5	0	46	0	51	21	204	0	0	225	0	97	45	0	142	418
Total	0	0	0	0	0	14	0	134	0	148	92	554	0	0	646	0	362	184	0	546	1340
08:00 AM	0	0	0	0	0	2	0	38	0	40	14	160	0	0	174	0	107	44	0	151	365
08:15 AM	0	0	0	0	0	9	1	38	0	48	17	148	0	0	165	0	108	44	0	152	365
08:30 AM	0	0	0	0	0	3	0	42	0	45	20	127	0	0	147	0	115	77	0	192	384
08:45 AM	0	0	0	0	0	3	0	48	0	51	20	172	0	0	192	0	110	75	0	185	428
Total	0	0	0	0	0	17	1	166	0	184	71	607	0	0	678	0	440	240	0	680	1542
Grand Total	0	0	0	0	0	31	1	300	0	332	163	1161	0	0	1324	0	802	424	0	1226	2882
Apprch %	0	0	0	0		9.3	0.3	90.4	0		12.3	87.7	0	0		0	65.4	34.6	0		
Total %	0	0	0	0	0	1.1	0	10.4	0	11.5	5.7	40.3	0	0	45.9	0	27.8	14.7	0	42.5	
Passenger Vehicles	0	0	0	0	0	27	1	275	0	303	162	1103	0	0	1265	0	715	394	0	1109	2677
% Passenger Vehicles	0	0	0	0	0	87.1	100	91.7	0	91.3	99.4	95	0	0	95.5	0	89.2	92.9	0	90.5	92.9
Heavy Vehicles	0	0	0	0	0	4	0	25	0	29	1	58	0	0	59	0	87	30	0	117	205
% Heavy Vehicles	0	0	0	0	0	12.9	0	8.3	0	8.7	0.6	5	0	0	4.5	0	10.8	7.1	0	9.5	7.1



Quality Counts

File Name : 16184810 - Latson Rd -- WB I-96 Ramps
Site Code : 16184810
Start Date : 5/2/2023
Page No : 2

	WB I-96 Ramps Eastbound					WB I-96 Ramps Westbound					Latson Rd Northbound					Latson Rd Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	0	0	0	0	0	2	0	38	0	40	14	160	0	0	174	0	107	44	0	151	365
08:15 AM	0	0	0	0	0	**9**	**1**	38	0	48	17	148	0	0	165	0	108	44	0	152	365
08:30 AM	0	0	0	0	0	3	0	42	0	45	**20**	127	0	0	147	0	**115**	**77**	0	**192**	384
08:45 AM	0	0	0	0	0	3	0	**48**	0	**51**	20	**172**	0	0	**192**	0	110	75	0	185	**428**
Total Volume	0	0	0	0	0	17	1	166	0	184	71	607	0	0	678	0	440	240	0	680	1542
% App. Total	0	0	0	0		9.2	0.5	90.2	0		10.5	89.5	0	0		0	64.7	35.3	0		
PHF	.000	.000	.000	.000	.000	.472	.250	.865	.000	.902	.888	.882	.000	.000	.883	.000	.957	.779	.000	.885	.901
Passenger Vehicles	0	0	0	0	0	15	1	152	0	168	70	579	0	0	649	0	383	219	0	602	1419
% Passenger Vehicles	0	0	0	0	0	88.2	100	91.6	0	91.3	98.6	95.4	0	0	95.7	0	87.0	91.3	0	88.5	92.0
Heavy Vehicles	0	0	0	0	0	2	0	14	0	16	1	28	0	0	29	0	57	21	0	78	123
% Heavy Vehicles	0	0	0	0	0	11.8	0	8.4	0	8.7	1.4	4.6	0	0	4.3	0	13.0	8.8	0	11.5	8.0

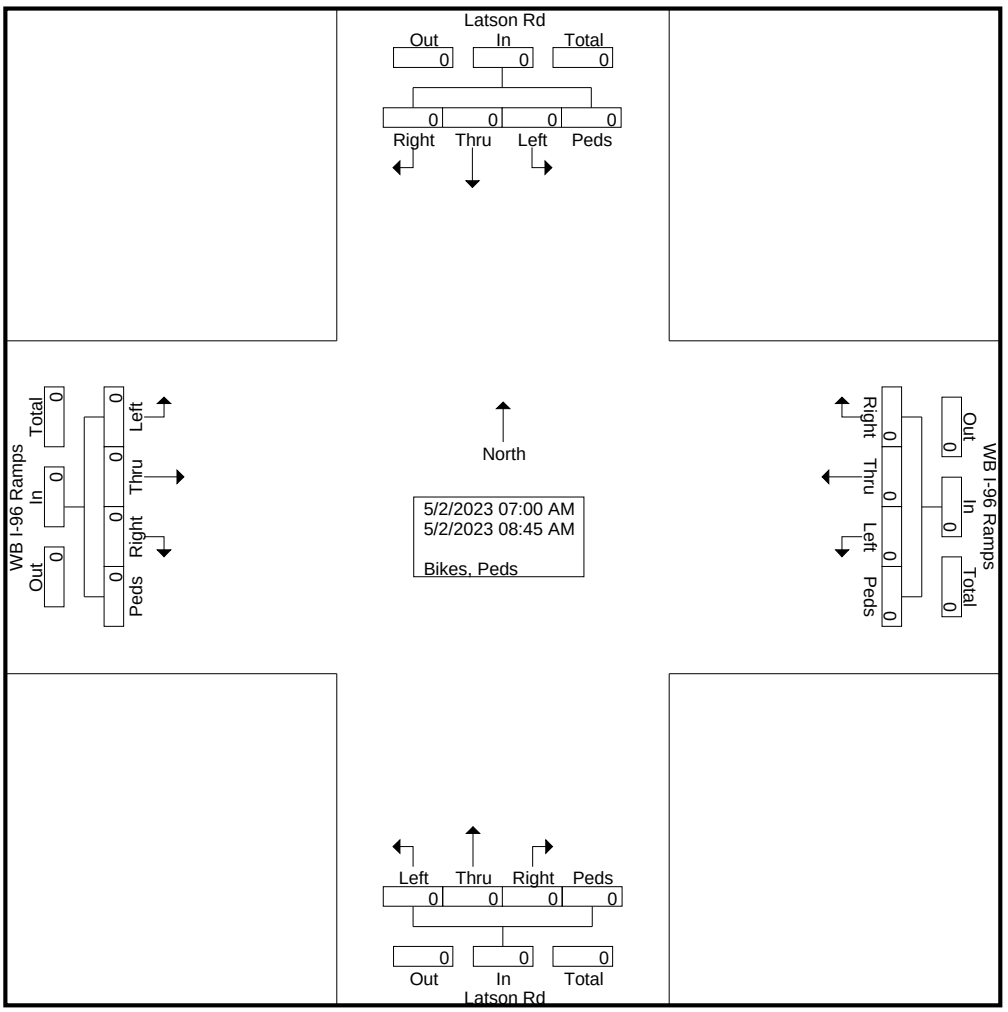


Quality Counts

File Name : 16184810 - Latson Rd -- WB I-96 Ramps
Site Code : 16184810
Start Date : 5/2/2023
Page No : 1

Groups Printed- Bikes, Peds

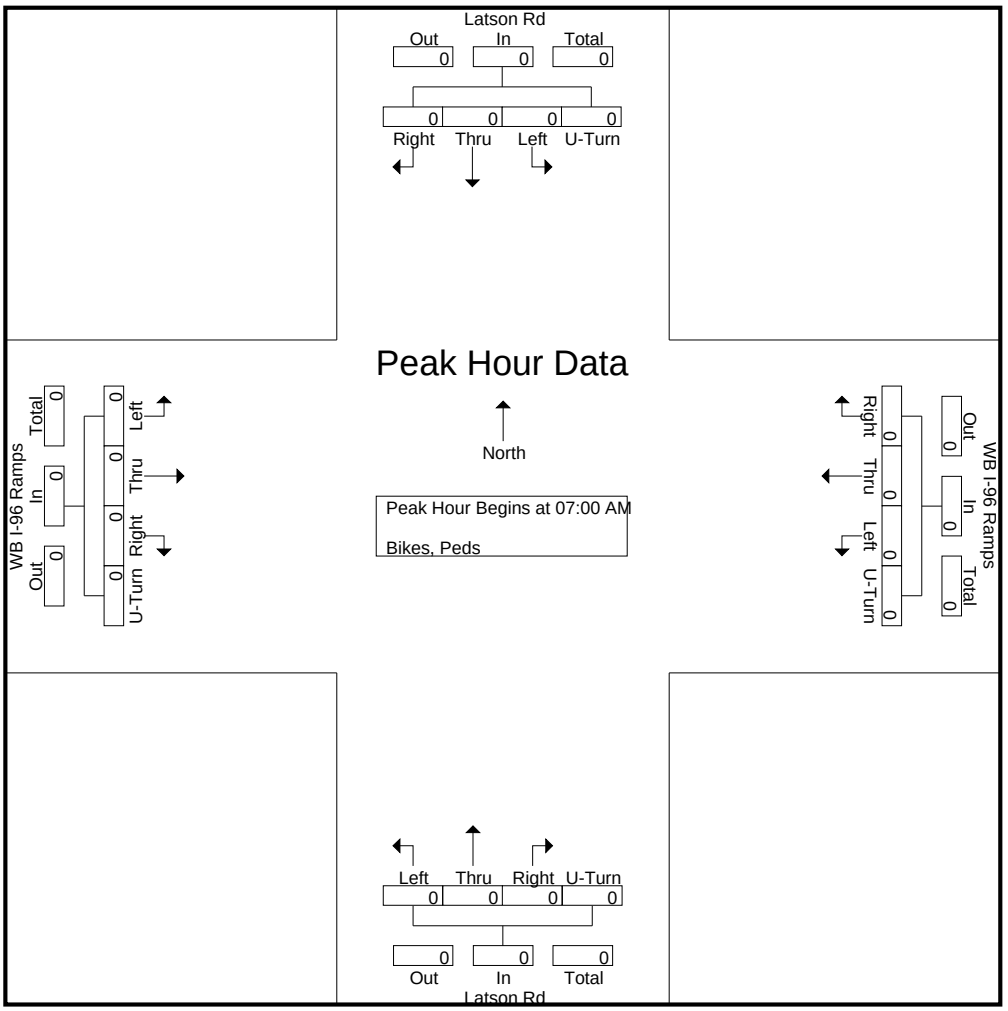
	WB I-96 Ramps Eastbound					WB I-96 Ramps Westbound					Latson Rd Northbound					Latson Rd Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
Total %																					



Quality Counts

File Name : 16184810 - Latson Rd -- WB I-96 Ramps
Site Code : 16184810
Start Date : 5/2/2023
Page No : 2

	WB I-96 Ramps Eastbound					WB I-96 Ramps Westbound					Latson Rd Northbound					Latson Rd Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

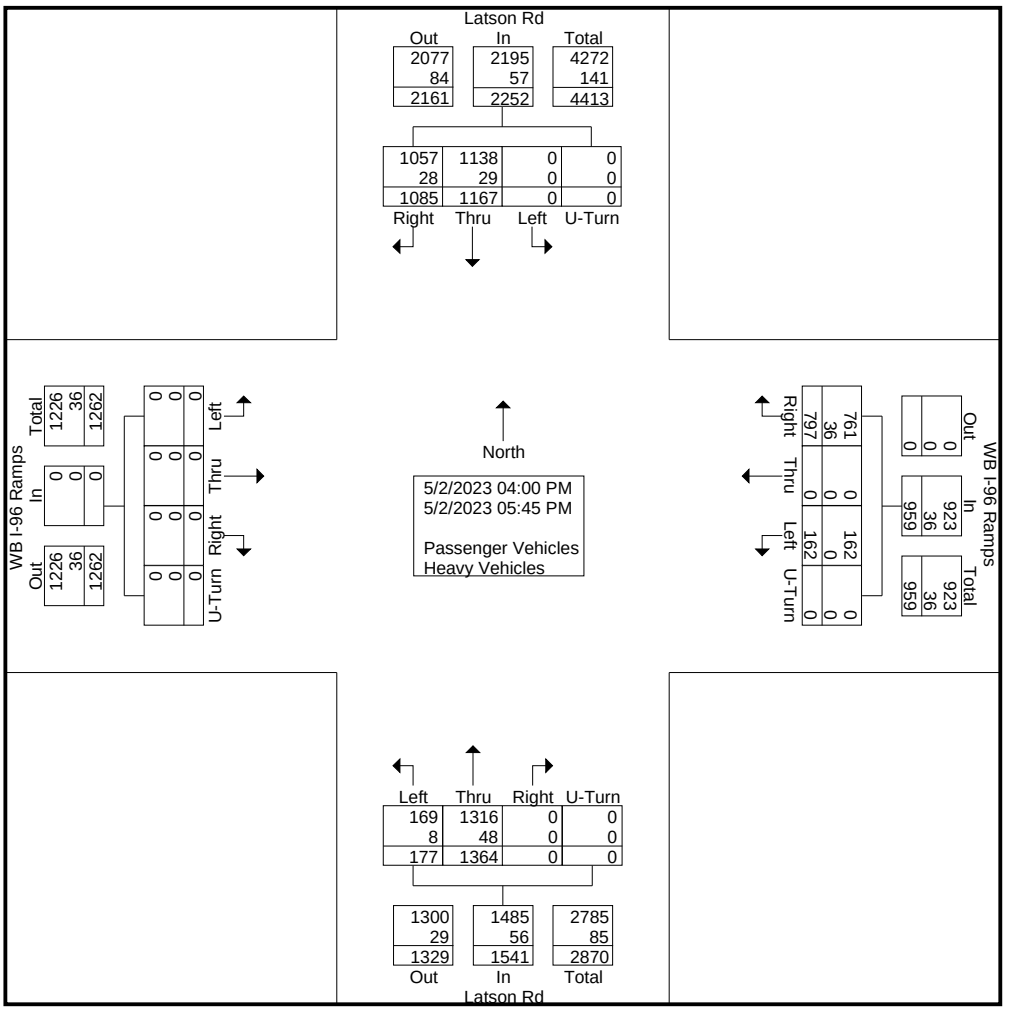


Quality Counts

File Name : 16184812 - Latson Rd -- WB I-96 Ramps
Site Code : 16184812
Start Date : 5/2/2023
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

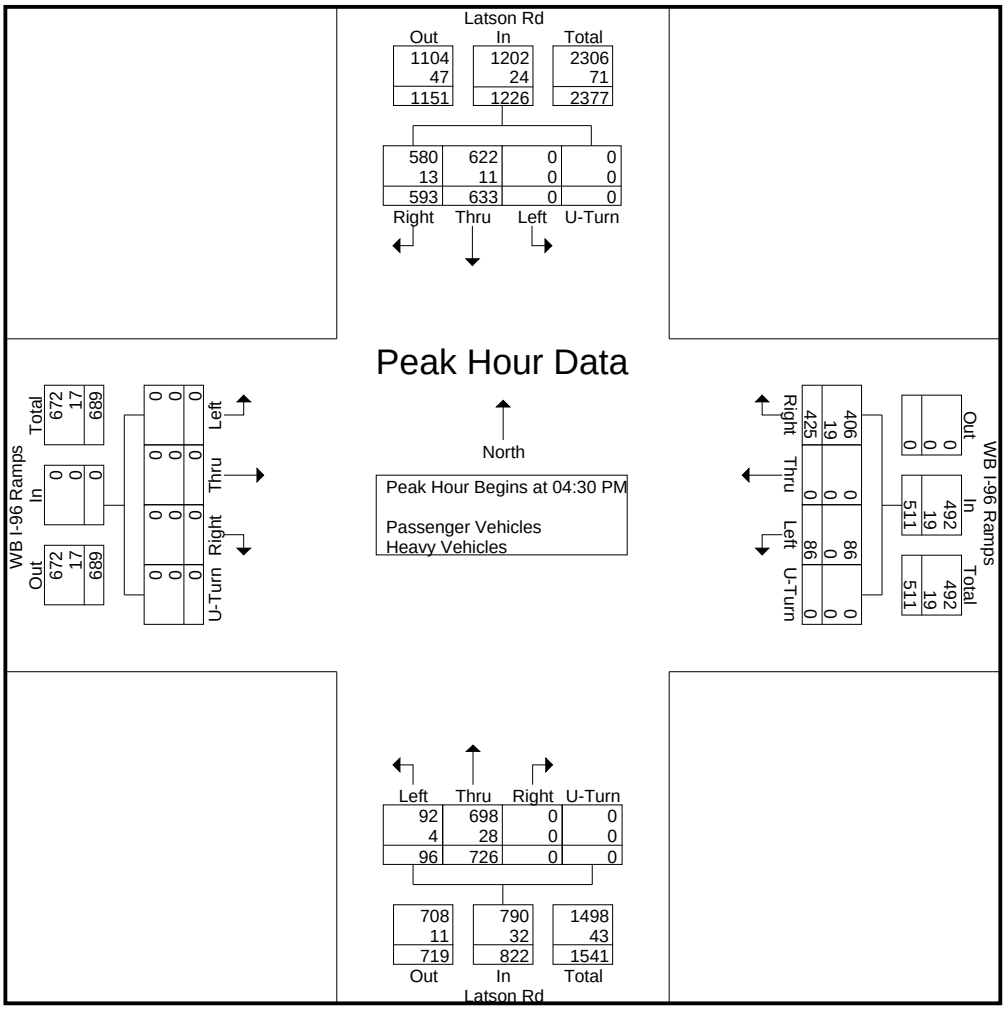
	WB I-96 Ramps Eastbound					WB I-96 Ramps Westbound					Latson Rd Northbound					Latson Rd Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
04:00 PM	0	0	0	0	0	14	0	85	0	99	23	148	0	0	171	0	148	141	0	289	559
04:15 PM	0	0	0	0	0	17	0	99	0	116	32	166	0	0	198	0	138	136	0	274	588
04:30 PM	0	0	0	0	0	17	0	102	0	119	20	186	0	0	206	0	168	144	0	312	637
04:45 PM	0	0	0	0	0	25	0	116	0	141	33	195	0	0	228	0	176	138	0	314	683
Total	0	0	0	0	0	73	0	402	0	475	108	695	0	0	803	0	630	559	0	1189	2467
05:00 PM	0	0	0	0	0	17	0	105	0	122	18	157	0	0	175	0	150	181	0	331	628
05:15 PM	0	0	0	0	0	27	0	102	0	129	25	188	0	0	213	0	139	130	0	269	611
05:30 PM	0	0	0	0	0	24	0	102	0	126	17	174	0	0	191	0	126	125	0	251	568
05:45 PM	0	0	0	0	0	21	0	86	0	107	9	150	0	0	159	0	122	90	0	212	478
Total	0	0	0	0	0	89	0	395	0	484	69	669	0	0	738	0	537	526	0	1063	2285
Grand Total	0	0	0	0	0	162	0	797	0	959	177	1364	0	0	1541	0	1167	1085	0	2252	4752
Apprch %	0	0	0	0		16.9	0	83.1	0		11.5	88.5	0	0		0	51.8	48.2	0		
Total %	0	0	0	0	0	3.4	0	16.8	0	20.2	3.7	28.7	0	0	32.4	0	24.6	22.8	0	47.4	
Passenger Vehicles	0	0	0	0	0	162	0	761	0	923	169	1316	0	0	1485	0	1138	1057	0	2195	4603
% Passenger Vehicles	0	0	0	0	0	100	0	95.5	0	96.2	95.5	96.5	0	0	96.4	0	97.5	97.4	0	97.5	96.9
Heavy Vehicles	0	0	0	0	0	0	0	36	0	36	8	48	0	0	56	0	29	28	0	57	149
% Heavy Vehicles	0	0	0	0	0	0	0	4.5	0	3.8	4.5	3.5	0	0	3.6	0	2.5	2.6	0	2.5	3.1



Quality Counts

File Name : 16184812 - Latson Rd -- WB I-96 Ramps
Site Code : 16184812
Start Date : 5/2/2023
Page No : 2

	WB I-96 Ramps Eastbound					WB I-96 Ramps Westbound					Latson Rd Northbound					Latson Rd Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	0	0	0	0	0	17	0	102	0	119	20	186	0	0	206	0	168	144	0	312	637
04:45 PM	0	0	0	0	0	25	0	**116**	0	**141**	**33**	**195**	0	0	**228**	0	**176**	138	0	314	**683**
05:00 PM	0	0	0	0	0	17	0	105	0	122	18	157	0	0	175	0	150	**181**	0	**331**	628
05:15 PM	0	0	0	0	0	**27**	0	102	0	129	25	188	0	0	213	0	139	130	0	269	611
Total Volume	0	0	0	0	0	86	0	425	0	511	96	726	0	0	822	0	633	593	0	1226	2559
% App. Total	0	0	0	0		16.8	0	83.2	0		11.7	88.3	0	0		0	51.6	48.4	0		
PHF	.000	.000	.000	.000	.000	.796	.000	.916	.000	.906	.727	.931	.000	.000	.901	.000	.899	.819	.000	.926	.937
Passenger Vehicles	0	0	0	0	0	86	0	406	0	492	92	698	0	0	790	0	622	580	0	1202	2484
% Passenger Vehicles	0	0	0	0	0	100	0	95.5	0	96.3	95.8	96.1	0	0	96.1	0	98.3	97.8	0	98.0	97.1
Heavy Vehicles	0	0	0	0	0	0	0	19	0	19	4	28	0	0	32	0	11	13	0	24	75
% Heavy Vehicles	0	0	0	0	0	0	0	4.5	0	3.7	4.2	3.9	0	0	3.9	0	1.7	2.2	0	2.0	2.9

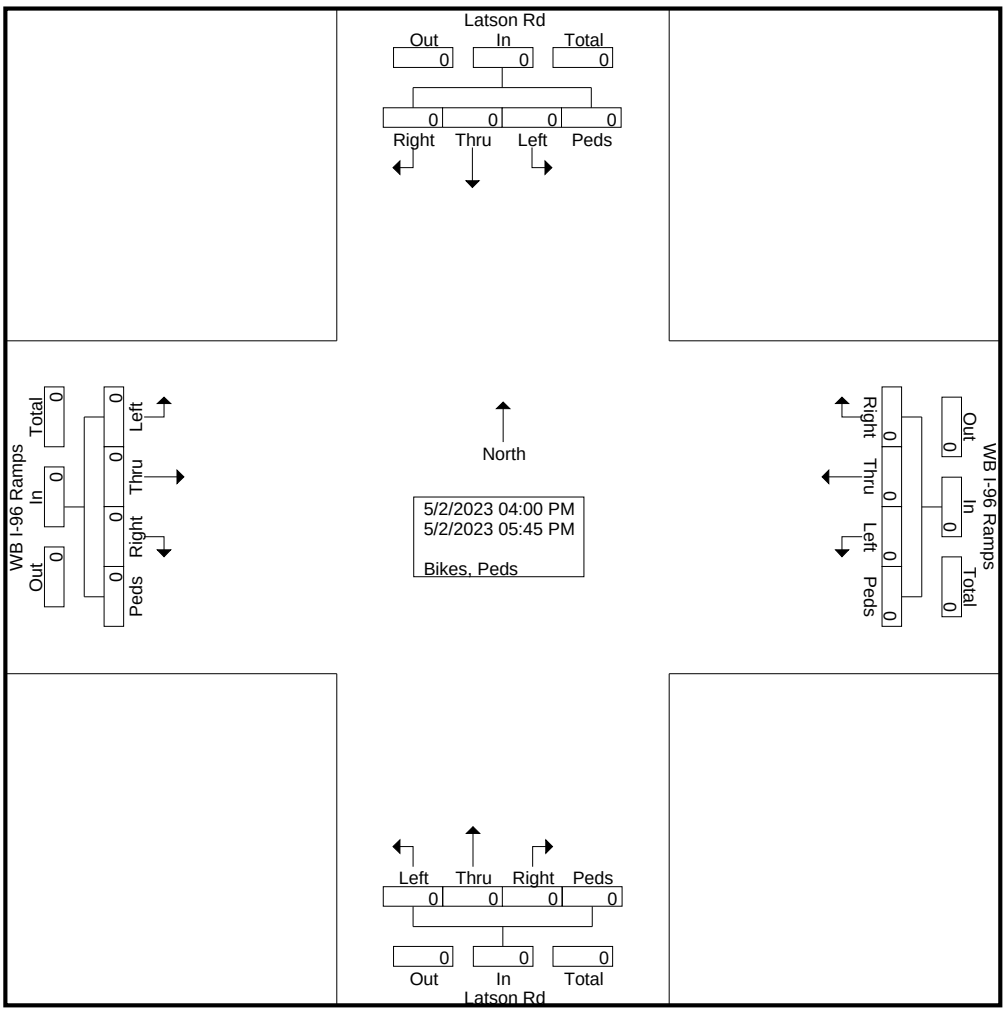


Quality Counts

File Name : 16184812 - Latson Rd -- WB I-96 Ramps
Site Code : 16184812
Start Date : 5/2/2023
Page No : 1

Groups Printed- Bikes, Peds

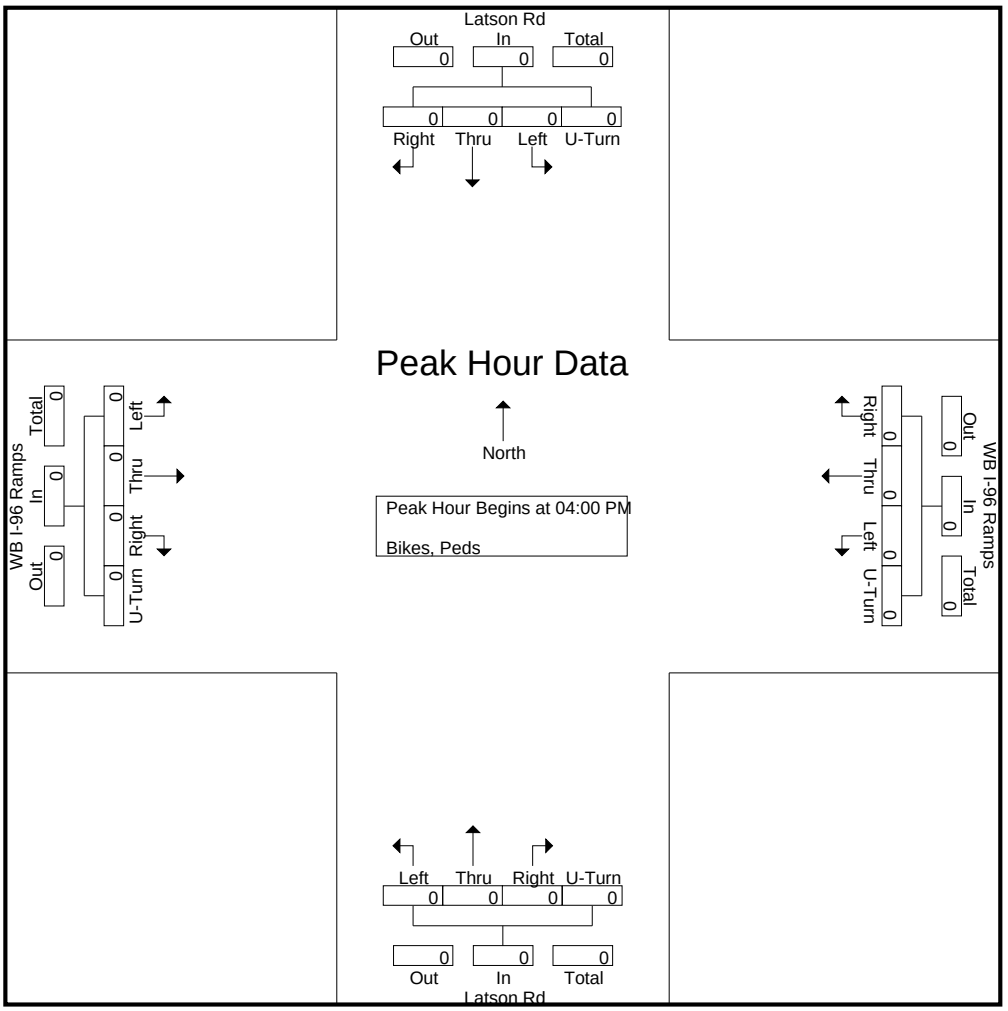
	WB I-96 Ramps Eastbound					WB I-96 Ramps Westbound					Latson Rd Northbound					Latson Rd Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
Total %																					



Quality Counts

File Name : 16184812 - Latson Rd -- WB I-96 Ramps
Site Code : 16184812
Start Date : 5/2/2023
Page No : 2

	WB I-96 Ramps Eastbound					WB I-96 Ramps Westbound					Latson Rd Northbound					Latson Rd Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

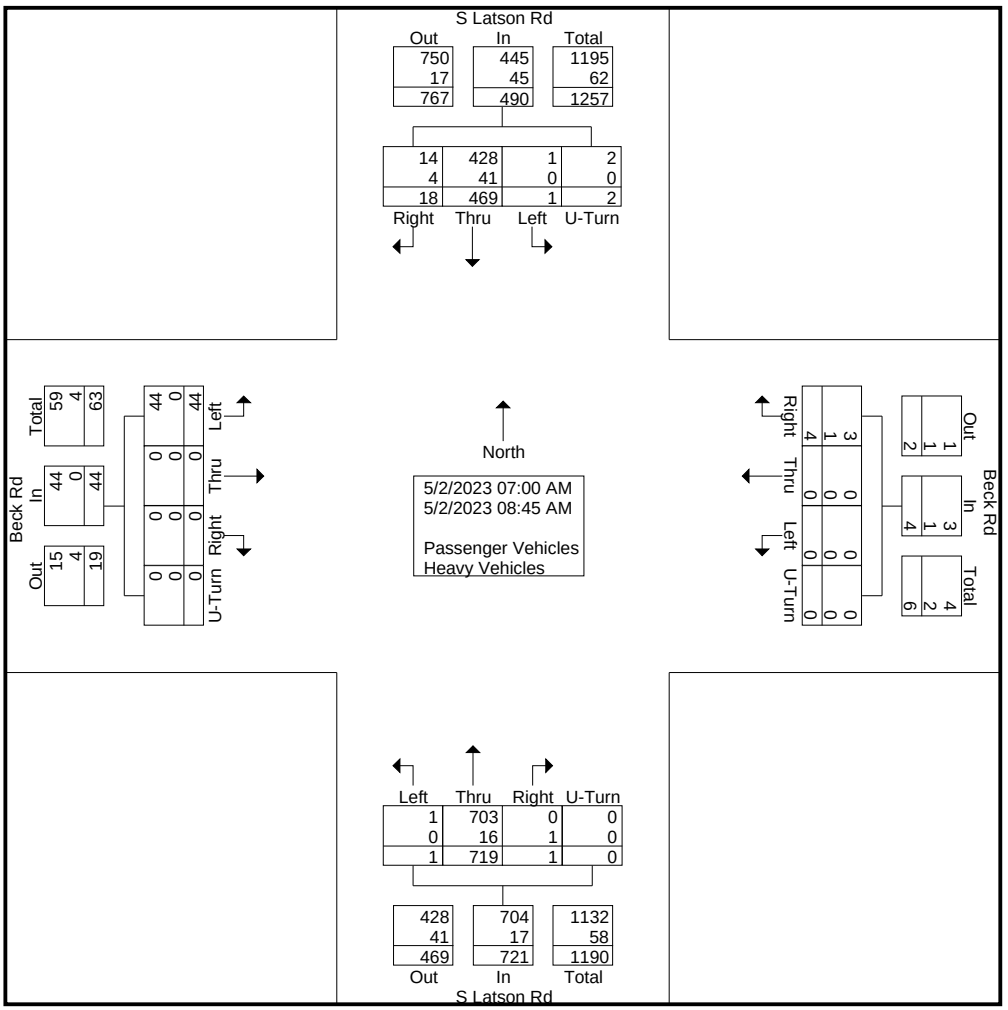


Quality Counts

File Name : 16184816 - S Latson Rd -- Beck Rd
Site Code : 16184816
Start Date : 5/2/2023
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

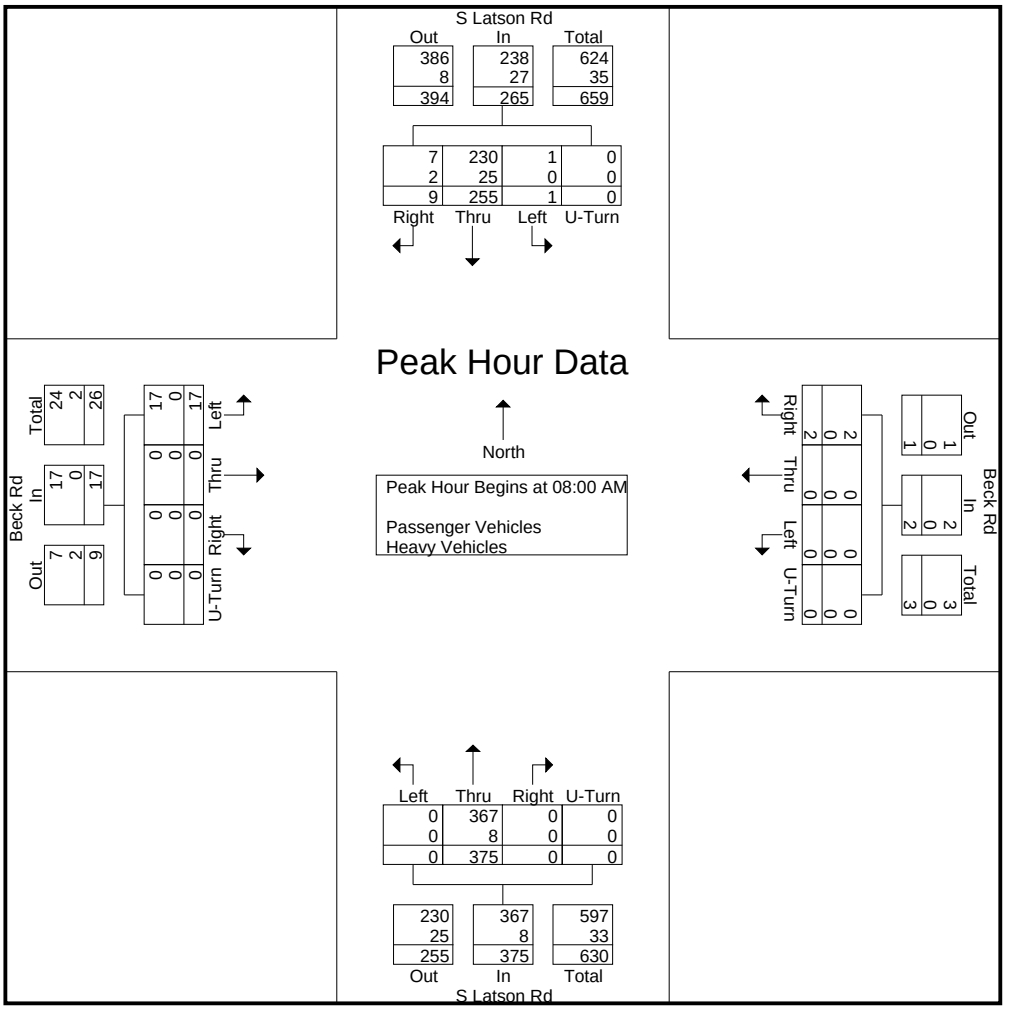
	Beck Rd Eastbound					Beck Rd Westbound					S Latson Rd Northbound					S Latson Rd Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
07:00 AM	4	0	0	0	4	0	0	1	0	1	0	86	0	0	86	0	37	3	1	41	132
07:15 AM	6	0	0	0	6	0	0	0	0	0	1	85	0	0	86	0	53	3	0	56	148
07:30 AM	10	0	0	0	10	0	0	0	0	0	0	85	0	0	85	0	65	3	1	69	164
07:45 AM	7	0	0	0	7	0	0	1	0	1	0	88	1	0	89	0	59	0	0	59	156
Total	27	0	0	0	27	0	0	2	0	2	1	344	1	0	346	0	214	9	2	225	600
08:00 AM	4	0	0	0	4	0	0	0	0	0	0	85	0	0	85	0	55	2	0	57	146
08:15 AM	3	0	0	0	3	0	0	1	0	1	0	100	0	0	100	0	75	0	0	75	179
08:30 AM	3	0	0	0	3	0	0	0	0	0	0	99	0	0	99	1	64	4	0	69	171
08:45 AM	7	0	0	0	7	0	0	1	0	1	0	91	0	0	91	0	61	3	0	64	163
Total	17	0	0	0	17	0	0	2	0	2	0	375	0	0	375	1	255	9	0	265	659
Grand Total	44	0	0	0	44	0	0	4	0	4	1	719	1	0	721	1	469	18	2	490	1259
Apprch %	100	0	0	0		0	0	100	0		0.1	99.7	0.1	0		0.2	95.7	3.7	0.4		
Total %	3.5	0	0	0	3.5	0	0	0.3	0	0.3	0.1	57.1	0.1	0	57.3	0.1	37.3	1.4	0.2	38.9	
Passenger Vehicles	44	0	0	0	44	0	0	3	0	3	1	703	0	0	704	1	428	14	2	445	1196
% Passenger Vehicles	100	0	0	0	100	0	0	75	0	75	100	97.8	0	0	97.6	100	91.3	77.8	100	90.8	95
Heavy Vehicles	0	0	0	0	0	0	0	1	0	1	0	16	1	0	17	0	41	4	0	45	63
% Heavy Vehicles	0	0	0	0	0	0	0	25	0	25	0	2.2	100	0	2.4	0	8.7	22.2	0	9.2	5



Quality Counts

File Name : 16184816 - S Latson Rd -- Beck Rd
Site Code : 16184816
Start Date : 5/2/2023
Page No : 2

	Beck Rd Eastbound					Beck Rd Westbound					S Latson Rd Northbound					S Latson Rd Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	4	0	0	0	4	0	0	0	0	0	0	85	0	0	85	0	55	2	0	57	146
08:15 AM	3	0	0	0	3	0	0	**1**	0	**1**	0	**100**	0	0	**100**	0	**75**	0	0	**75**	**179**
08:30 AM	3	0	0	0	3	0	0	0	0	0	0	99	0	0	99	**1**	64	**4**	0	69	171
08:45 AM	**7**	0	0	0	**7**	0	0	1	0	1	0	91	0	0	91	0	61	3	0	64	163
Total Volume	17	0	0	0	17	0	0	2	0	2	0	375	0	0	375	1	255	9	0	265	659
% App. Total	100	0	0	0		0	0	100	0		0	100	0	0		0.4	96.2	3.4	0		
PHF	.607	.000	.000	.000	.607	.000	.000	.500	.000	.500	.000	.938	.000	.000	.938	.250	.850	.563	.000	.883	.920
Passenger Vehicles	17	0	0	0	17	0	0	2	0	2	0	367	0	0	367	1	230	7	0	238	624
% Passenger Vehicles	100	0	0	0	100	0	0	100	0	100	0	97.9	0	0	97.9	100	90.2	77.8	0	89.8	94.7
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	8	0	0	8	0	25	2	0	27	35
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	2.1	0	0	2.1	0	9.8	22.2	0	10.2	5.3

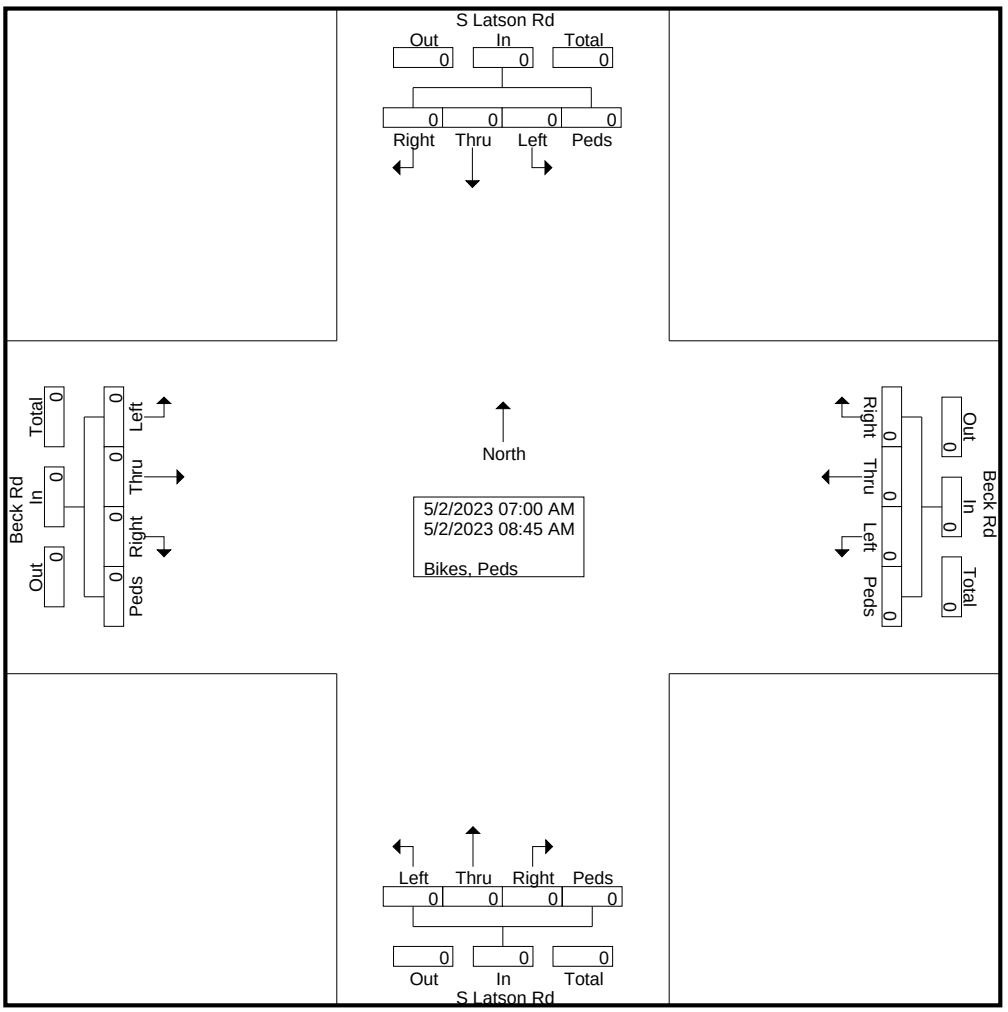


Quality Counts

File Name : 16184816 - S Latson Rd -- Beck Rd
Site Code : 16184816
Start Date : 5/2/2023
Page No : 1

Groups Printed- Bikes, Peds

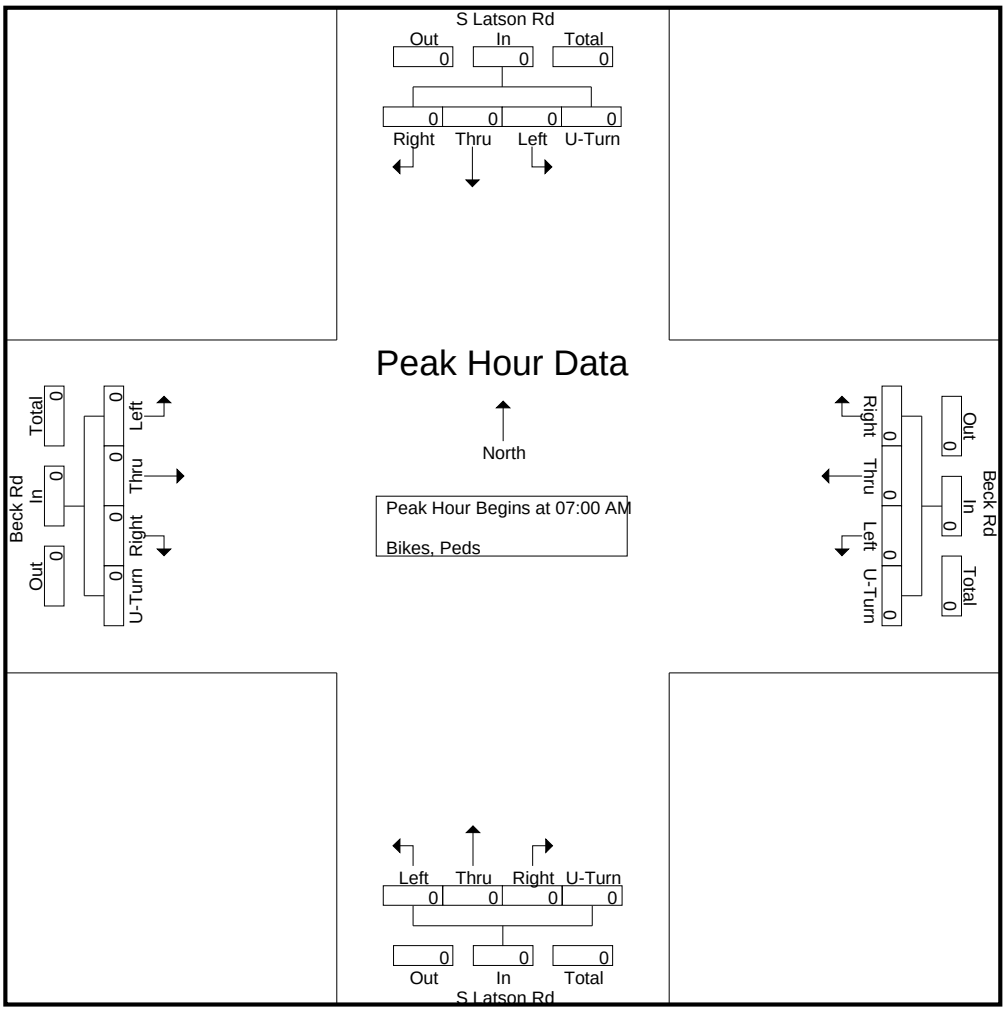
	Beck Rd Eastbound					Beck Rd Westbound					S Latson Rd Northbound					S Latson Rd Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
Total %																					



Quality Counts

File Name : 16184816 - S Latson Rd -- Beck Rd
Site Code : 16184816
Start Date : 5/2/2023
Page No : 2

	Beck Rd Eastbound					Beck Rd Westbound					S Latson Rd Northbound					S Latson Rd Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

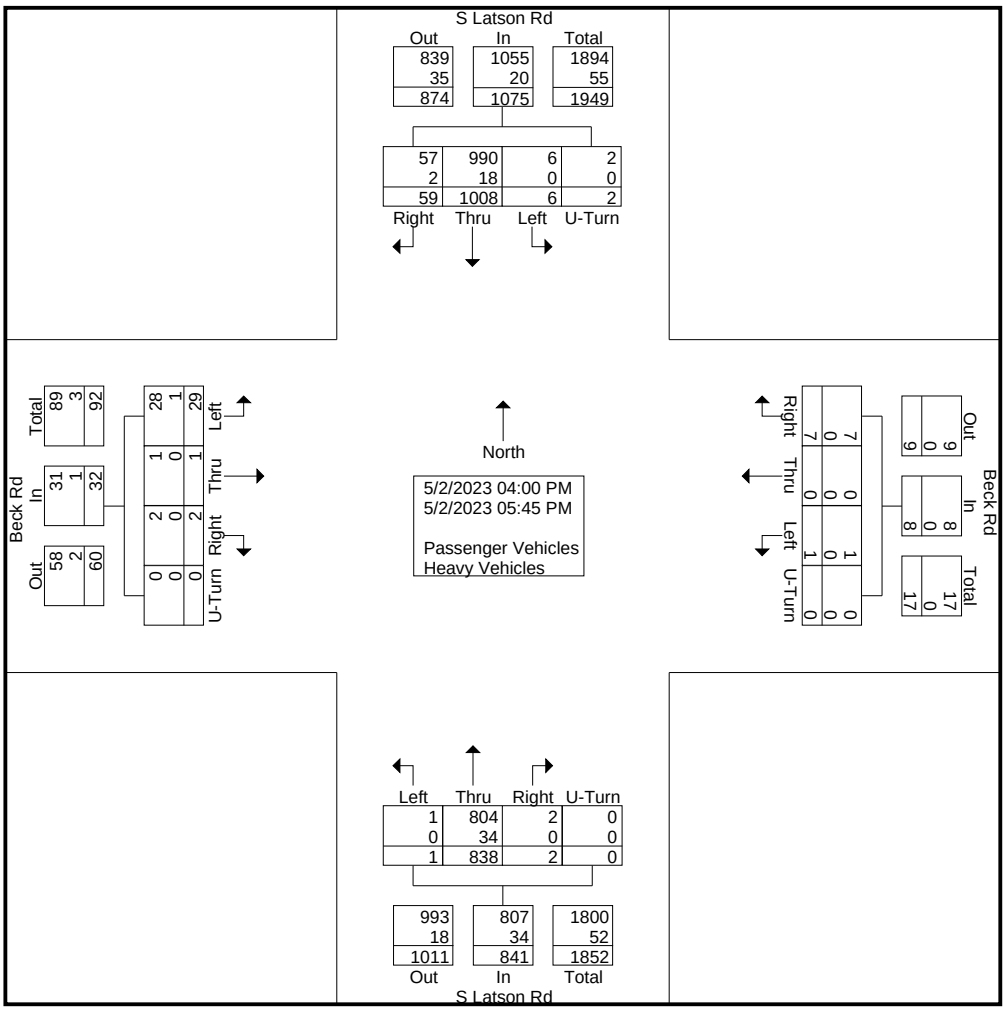


Quality Counts

File Name : 16184818 - S Latson Rd -- Beck Rd
Site Code : 16184818
Start Date : 5/2/2023
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

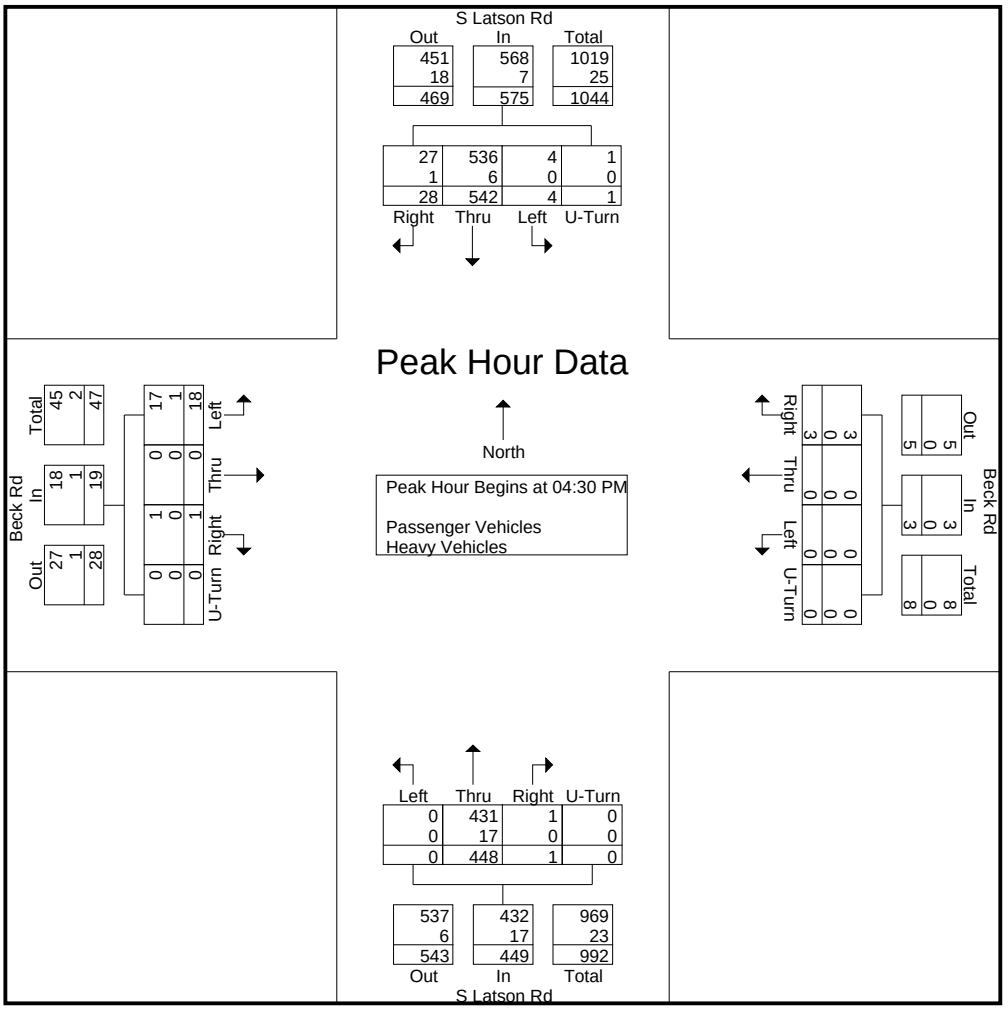
	Beck Rd Eastbound					Beck Rd Westbound					S Latson Rd Northbound					S Latson Rd Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
04:00 PM	1	1	0	0	2	1	0	1	0	2	0	100	0	0	100	0	117	6	1	124	228
04:15 PM	5	0	0	0	5	0	0	1	0	1	0	116	0	0	116	1	117	6	0	124	246
04:30 PM	5	0	0	0	5	0	0	1	0	1	0	113	0	0	113	1	135	9	0	145	264
04:45 PM	3	0	0	0	3	0	0	1	0	1	0	120	0	0	120	1	133	4	1	139	263
Total	14	1	0	0	15	1	0	4	0	5	0	449	0	0	449	3	502	25	2	532	1001
05:00 PM	8	0	0	0	8	0	0	1	0	1	0	97	0	0	97	2	133	8	0	143	249
05:15 PM	2	0	1	0	3	0	0	0	0	0	0	118	1	0	119	0	141	7	0	148	270
05:30 PM	2	0	0	0	2	0	0	2	0	2	1	102	0	0	103	1	113	13	0	127	234
05:45 PM	3	0	1	0	4	0	0	0	0	0	0	72	1	0	73	0	119	6	0	125	202
Total	15	0	2	0	17	0	0	3	0	3	1	389	2	0	392	3	506	34	0	543	955
Grand Total	29	1	2	0	32	1	0	7	0	8	1	838	2	0	841	6	1008	59	2	1075	1956
Apprch %	90.6	3.1	6.2	0		12.5	0	87.5	0		0.1	99.6	0.2	0		0.6	93.8	5.5	0.2		
Total %	1.5	0.1	0.1	0	1.6	0.1	0	0.4	0	0.4	0.1	42.8	0.1	0	43	0.3	51.5	3	0.1	55	
Passenger Vehicles	28	1	2	0	31	1	0	7	0	8	1	804	2	0	807	6	990	57	2	1055	1901
% Passenger Vehicles	96.6	100	100	0	96.9	100	0	100	0	100	100	95.9	100	0	96	100	98.2	96.6	100	98.1	97.2
Heavy Vehicles	1	0	0	0	1	0	0	0	0	0	0	34	0	0	34	0	18	2	0	20	55
% Heavy Vehicles	3.4	0	0	0	3.1	0	0	0	0	0	0	4.1	0	0	4	0	1.8	3.4	0	1.9	2.8



Quality Counts

File Name : 16184818 - S Latson Rd -- Beck Rd
Site Code : 16184818
Start Date : 5/2/2023
Page No : 2

	Beck Rd Eastbound					Beck Rd Westbound					S Latson Rd Northbound					S Latson Rd Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	5	0	0	0	5	0	0	**1**	0	**1**	0	113	0	0	113	1	135	**9**	0	145	264
04:45 PM	3	0	0	0	3	0	0	1	0	1	0	**120**	0	0	**120**	1	133	4	**1**	139	263
05:00 PM	**8**	0	0	0	**8**	0	0	1	0	1	0	97	0	0	97	**2**	133	8	0	143	249
05:15 PM	2	0	**1**	0	3	0	0	0	0	0	0	118	**1**	0	119	0	**141**	7	0	**148**	**270**
Total Volume	18	0	1	0	19	0	0	3	0	3	0	448	1	0	449	4	542	28	1	575	1046
% App. Total	94.7	0	5.3	0		0	0	100	0		0	99.8	0.2	0		0.7	94.3	4.9	0.2		
PHF	.563	.000	.250	.000	.594	.000	.000	.750	.000	.750	.000	.933	.250	.000	.935	.500	.961	.778	.250	.971	.969
Passenger Vehicles	17	0	1	0	18	0	0	3	0	3	0	431	1	0	432	4	536	27	1	568	1021
% Passenger Vehicles	94.4	0	100	0	94.7	0	0	100	0	100	0	96.2	100	0	96.2	100	98.9	96.4	100	98.8	97.6
Heavy Vehicles	1	0	0	0	1	0	0	0	0	0	0	17	0	0	17	0	6	1	0	7	25
% Heavy Vehicles	5.6	0	0	0	5.3	0	0	0	0	0	0	3.8	0	0	3.8	0	1.1	3.6	0	1.2	2.4

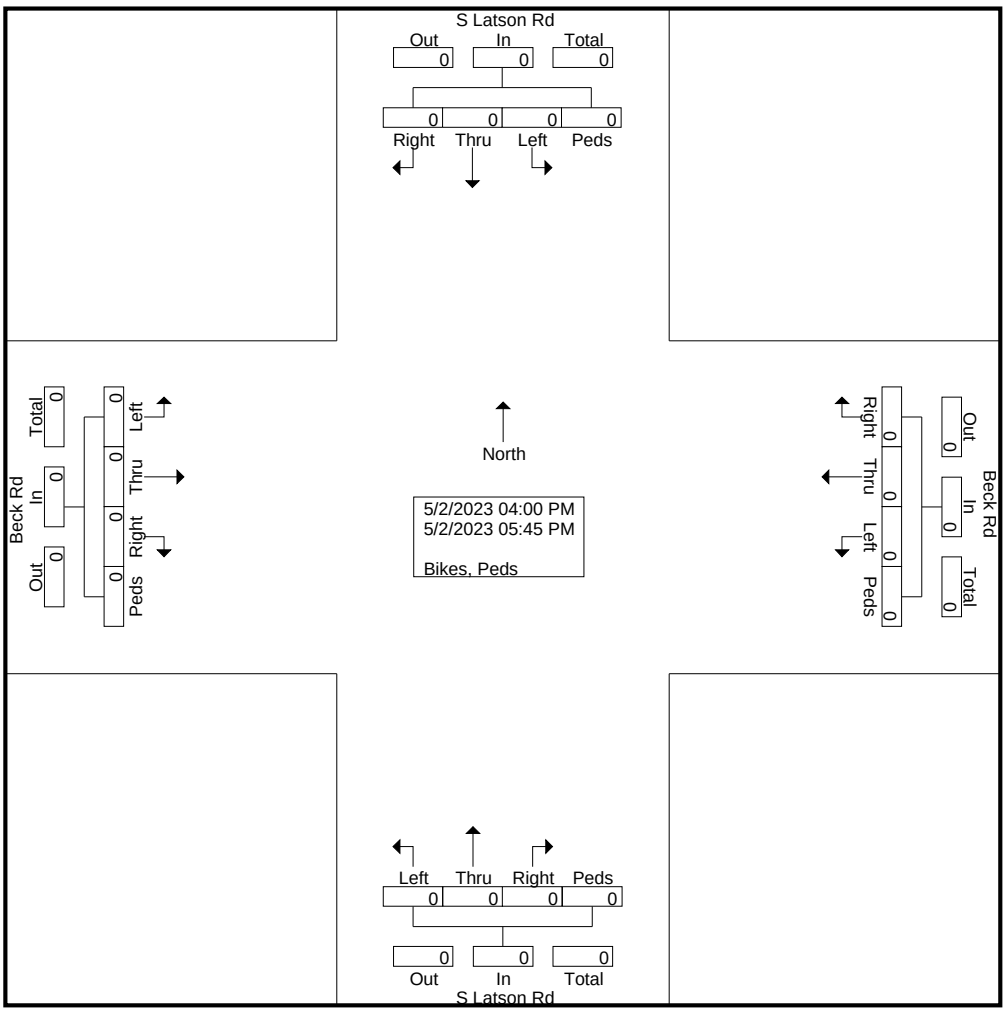


Quality Counts

File Name : 16184818 - S Latson Rd -- Beck Rd
Site Code : 16184818
Start Date : 5/2/2023
Page No : 1

Groups Printed- Bikes, Peds

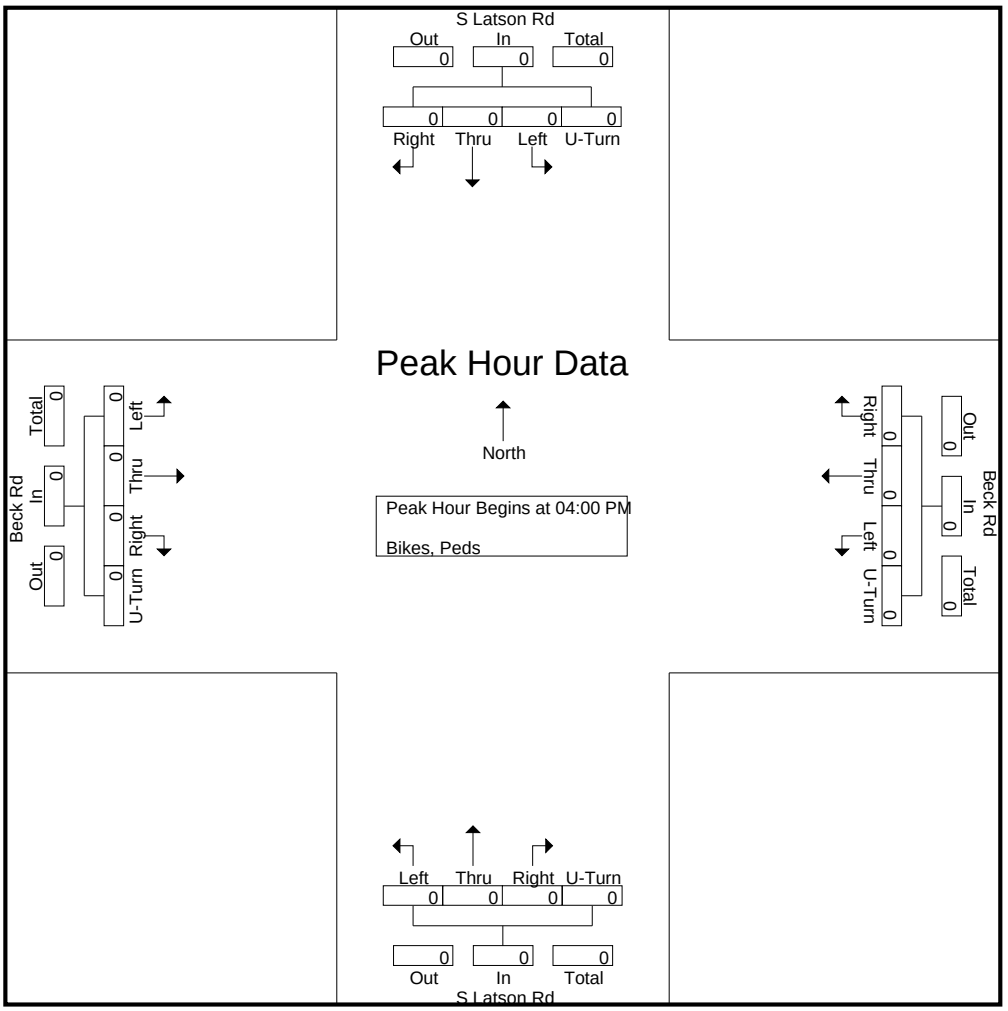
	Beck Rd Eastbound					Beck Rd Westbound					S Latson Rd Northbound					S Latson Rd Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
Total %																					



Quality Counts

File Name : 16184818 - S Latson Rd -- Beck Rd
Site Code : 16184818
Start Date : 5/2/2023
Page No : 2

	Beck Rd Eastbound					Beck Rd Westbound					S Latson Rd Northbound					S Latson Rd Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000



Michigan Department of Transportation

Transportation Data Management System

Volume Count Report

LOCATION INFO	
Location ID	47-8219_EB
Type	SPOT
Fnct'l Class	1
Located On	I-96
Direction	EB
County	Livingston
Community	Genoa Twp - Livingston
MPO ID	36594
HPMS ID	1_1_93_041
Agency	MDOT

COUNT DATA INFO	
Count Status	Accepted
Holiday	No
Start Date	Tue 5/2/2023
End Date	Wed 5/3/2023
Start Time	12:00:00 AM
End Time	12:00:00 AM
Direction	EB
Notes	
Station	HPR#4919 EE27836
Study	
Speed Limit	
Description	
Sensor Type	ATR Class
Source	CombineVolumeCountsIncremental
Latitude,Longitude	

INTERVAL:60-MIN	
Time	Hourly Count
0:00-1:00	186
1:00-2:00	152
2:00-3:00	167
3:00-4:00	299
4:00-5:00	820
5:00-6:00	1,898
6:00-7:00	3,278
7:00-8:00	3,330
8:00-9:00	3,029
9:00-10:00	2,384
10:00-11:00	2,269
11:00-12:00	2,097
12:00-13:00	2,258
13:00-14:00	2,168
14:00-15:00	2,483
15:00-16:00	2,651
16:00-17:00	2,817
17:00-18:00	2,732
18:00-19:00	1,930
19:00-20:00	1,381
20:00-21:00	1,089
21:00-22:00	879
22:00-23:00	583
23:00-24:00	416
Total	41,296
AM Peak	07:00-08:00 3,330
PM Peak	16:00-17:00 2,817

Michigan Department of Transportation

Transportation Data Management System

Volume Count Report

LOCATION INFO	
Location ID	47-8219_WB
Type	SPOT
Fnct'l Class	1
Located On	I-96
Direction	WB
County	Livingston
Community	Genoa Twp - Livingston
MPO ID	36595
HPMS ID	1_1_93_041
Agency	MDOT

COUNT DATA INFO	
Count Status	Accepted
Holiday	No
Start Date	Tue 5/2/2023
End Date	Wed 5/3/2023
Start Time	12:00:00 AM
End Time	12:00:00 AM
Direction	WB
Notes	
Station	HPR#4919 EE27836
Study	
Speed Limit	
Description	
Sensor Type	ATR Class
Source	CombineVolumeCountsIncremental
Latitude,Longitude	

INTERVAL:60-MIN	
Time	Hourly Count
0:00-1:00	288
1:00-2:00	200
2:00-3:00	182
3:00-4:00	235
4:00-5:00	309
5:00-6:00	564
6:00-7:00	1,241
7:00-8:00	2,074
8:00-9:00	2,110
9:00-10:00	1,818
10:00-11:00	1,832
11:00-12:00	1,958
12:00-13:00	2,096
13:00-14:00	2,127
14:00-15:00	2,614
15:00-16:00	3,128
16:00-17:00	3,476
17:00-18:00	3,381
18:00-19:00	2,539
19:00-20:00	1,615
20:00-21:00	1,311
21:00-22:00	962
22:00-23:00	697
23:00-24:00	488
Total	37,245
AM Peak	08:00-09:00 2,110
PM Peak	16:00-17:00 3,476

Search...

Crash and Road Data

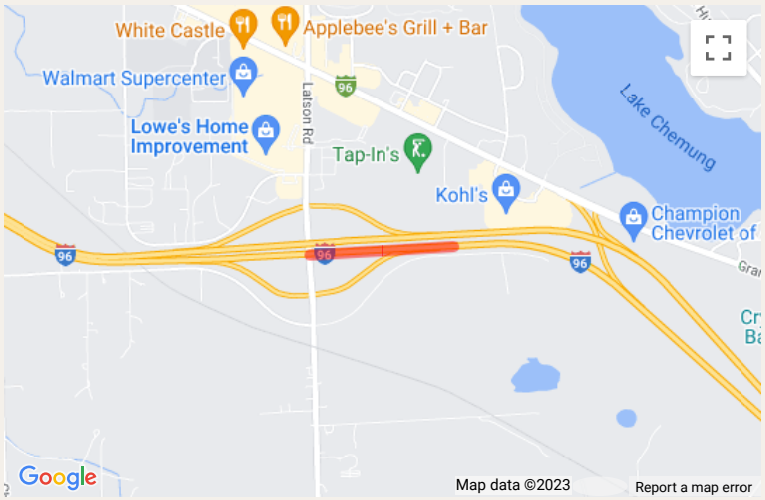
Road Segment Report

E I 96, (PR Number 935105)

From:	Latson Rd S 15.532 BMP
To:	Nixon/E I 96 Ramp 15.985 EMP
Jurisdiction:	State
FALINK ID:	5409
Community:	Genoa Township
County:	Livingston
Functional Class:	1 - Interstate Freeway
Direction:	1 Way
Length:	0.453 miles
Number of Lanes:	2
Posted Speed:	70 (source: TCO)
Route Classification:	Not a route
Annual Crash Average 2017-2021:	5
Traffic Volume (2016)*:	26,000 (Observed AADT)
Pavement Type (2021):	Concrete
Pavement Rating (2021):	Fair
Short Range (TIP) Projects:	No TIP projects for this segment.
Long Range (RTP) Projects:	No long-range projects for this segment.

* AADT values are derived from **Traffic Counts**

Street View



Search...

Crash and Road Data

Road Segment Report

W I 96, (PR Number 935207)

From:	Latson/W I 96 Ramp 15.213 BMP
To:	Latson Rd S 15.544 EMP
Jurisdiction:	State
FALINK ID:	5457
Community:	Genoa Township
County:	Livingston
Functional Class:	1 - Interstate Freeway
Direction:	1 Way
Length:	0.331 miles
Number of Lanes:	3
Posted Speed:	70 (source: COG)
Route Classification:	Not a route
Annual Crash Average 2017-2021:	4
Traffic Volume (2018)*:	30,000 (Interpolated AADT)
Pavement Type (2021):	Concrete
Pavement Rating (2021):	Fair
Short Range (TIP) Projects:	No TIP projects for this segment.
Long Range (RTP) Projects:	No long-range projects for this segment.

* AADT values are derived from **Traffic Counts**

Street View

Search...

Crash and Road Data

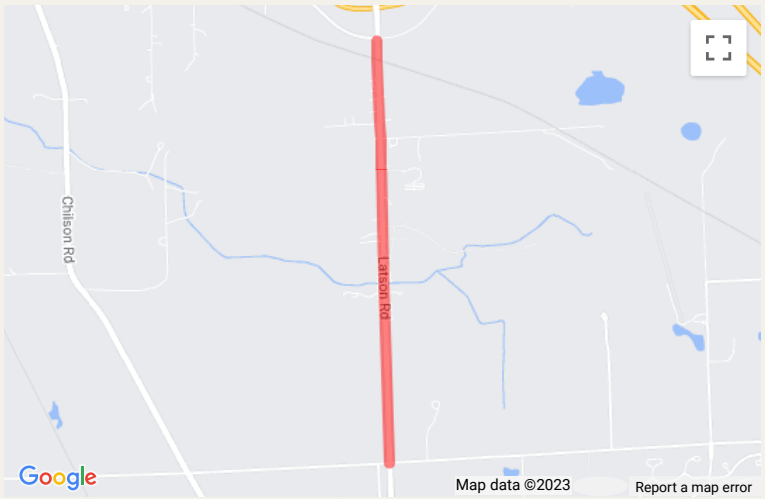
Road Segment Report

Latson Rd S, (PR Number 940302)

From:	Crooked Lake Rd 1.041 BMP
To:	Latson Rd S 2.356 EMP
Jurisdiction:	County
FALINK ID:	5582
Community:	Genoa Township
County:	Livingston
Functional Class:	4 - Minor Arterial
Direction:	1 Way
Length:	1.315 miles
Number of Lanes:	2
Posted Speed:	0 (source:)
Route Classification:	Not a route
Annual Crash Average 2017-2021:	8
Traffic Volume (2021)*:	9,400 (Observed AADT)
Pavement Type (2021):	Asphalt
Pavement Rating (2021):	Fair
Short Range (TIP) Projects:	No TIP projects for this segment.
Long Range (RTP) Projects:	No long-range projects for this segment.

* AADT values are derived from **Traffic Counts**

Street View



TRAFFIC SIGNAL TIMING PERMIT

	PHASE	1	2	3	4	5	6	7	8	
APPROACH			NB & SB		WB					
MINIMUM GREEN			10		7					
PASSAGE			0.0		3.0					
MAXIMUM NO. 1			50		40					
MAXIMUM NO. 2			0		0					
YELLOW CHANGE			4.7		3.5					
RED CLEARANCE			1.5		3.2					
WALK			7		0					
PEDESTRIAN CLEARANCE			11		0					
EXTENDED PED. CLEARANCE			0		0					
REST IN WALK			0		0					
INITIALIZATION			4		1					
NON-ACT RESPONSE			0		0					
VEHICLE RECALL			3		0					
PEDESTRIAN RECALL			2		0					
NON-LOCK MEMORY			0		0					
DUAL ENTRY			0		0					
	CYCLE									O1 O2 O3
DIAL 1 SPLIT 1	80		48		32					1
DIAL 2 SPLIT 1										
DIAL 3 SPLIT 1										
DIAL SPLIT										
DIAL SPLIT										
DIAL SPLIT										
	MODE		1		0					

PHASE

1

2 LATSON ROAD

3

4 I-96 WESTBOUND EXIT RAMP

5

6

7

8

D1/S1/O1: Normal
Maximum # 1 Times: 23:00 - 05:00 Monday - Sunday

The Pedestrian Clearance Time is based on a walking speed of 3.5 feet per second.

OVERLAPS

Overlap Phase	*Load Bays*	*Phases Overlapped*	T.G. (s)	Y (s)	R (s)	-G/Y	+GRN
=							
=							
=							
=							

TIMING INSTALLED 01/29/14

REMARKS

16-Load-Switch, Mod 50, Base-Mounted, Epac Type Controller.

Semi-Actuated Operation with WIRELESS loops in the I-96 WESTBOUND EXIT RAMP approach lanes.

Equipped with a Global Positioning System (GPS) Clock and Countdown Pedestrian Indications.

Runs Free (Maximum # 1 Times) 23:00 - 05:00 Monday - Sunday.

PREPARED BY: HHH DATE: 01/27/14

FLASH HOURS: DAILY ☐ NONE ☒

to

NIGHT FLASH:

FY = FR =

CONFLICT FLASH:

FY = LATSON ROAD FR = I-96 WB EXIT RAMP

CONTROLLER TYPE:
☒ EPAC
☐ Other:

PRE-EMPT ☐
COUNTDOWN PEDS ☒

LOCATION:
I-96 WB EXIT RAMP AT LATSON ROAD
CITY/TWP: GENOA TOWNSHIP
COUNTY : LIVINGSTON

MILE POINT	CONTROL SECTION-SPOT #
6.81	47065-01-007

Job # (If Applicable):

CLEAR PAGE 1

CLEAR ALL

Page 3 included only if Pre-Empt Checked

ADVANCED TIMING PARAMETERS FORM

SYSTEM INFORMATION

Controller Type:
- [x] EPAC
- [ ] Other:

System Type:
- [ ] Closed Loop
  - [ ] Stand By
  - [ ] Group 1
  - [ ] Group 2
  - Address:
- [ ] TBC
- [x] TBC/GPS
- [ ] None
- [ ] Other:

If TBC, Synch by:
- [x] TOD
- [ ] Event

Interconnect Type:
- [ ] Hardwire
- [ ] Fiber-Optic
- [ ] Radio
- [ ] Phone Drop
- [ ] None
- [x] Other: GPS CLOCK

If Phone Drop, Phone #

Controller Status:
- [ ] Master
- [ ] Slave
- [ ] Isolated
- [x] TBC

If Slave, Master Location:

Master Spot # :

LEFT-TURN PHASING

Phase # / Description	*Permissive-Protected* Lead	*Permissive-Protected* Lag	*Protected-Only* Split	*Protected-Only* Lead	*Protected-Only* Lag
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐

RING AND BARRIER STRUCTURE

	B1				B2				B3				B4			
R1		2				4										
R2																
R3																
R4																

VEHICULAR AND PEDESTRIAN DETECTION

Approach	*Vehicular Detection* Movements and Call Delay (s) Left		Thru		Right		Type Loop	Video	Other	*Pedestrian Detection* Push-Button Crossing Locations
I-96 WB EXIT RAMP	☒		☐		☒	10	☐	☐	☒	
	☐		☐		☐		☐	☐	☐	
	☐		☐		☐		☐	☐	☐	
	☐		☐		☐		☐	☐	☐	
	☐		☐		☐		☐	☐	☐	
	☐		☐		☐		☐	☐	☐	

DISAPPEARING LEGEND CASE SIGNS

ADDITIONAL DIAL SPLIT DATA

		PHASE	1	2	3	4	5	6	7	8	O1	O2	O3
DIAL	SPLIT	CYCLE											
DIAL	SPLIT	CYCLE											
DIAL	SPLIT	CYCLE											
DIAL	SPLIT	CYCLE											
DIAL	SPLIT	CYCLE											
DIAL	SPLIT	CYCLE											
DIAL	SPLIT	CYCLE											
DIAL	SPLIT	CYCLE											
DIAL	SPLIT	CYCLE											
DIAL	SPLIT	CYCLE											

COORDINATION DATA

Operation Mode	1
Coordination Mode	0
Maximum Mode	0
Correction Mode	3
Offset Mode	0
Force Mode	0
Max Dwell	0
Yield Period	0

REMARKS:

ADDITIONAL OVERLAP DATA

Overlap Phase	*Load Bays*	*Phases Overlapped*	T.G. (s)	Y (s)	R (s)	-G/Y	+GRN
=							
=							
=							
=							

PREPARED BY: HHH DATE: 01/27/14

- [x] MDOT
- [ ] County
- [ ] City
- [ ] Consultant

LOCATION:
I-96 WB EXIT RAMP AT LATSON ROAD

CONTROL SECTION-SPOT #
47065-01-007

CLEAR PAGE 2

PREEMPTION INFORMATION FORM

Preemption Description:

Preempt # =	Time (s)	Phases		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
SEL Ped Cl		Vehicle	Track																
SEL Yellow			Dwell																
SEL Red Cl			Cycle																
TRACK Green			Exit																
TRACK Ped Cl		Ped	Track																
TRACK Yellow			Dwell																
TRACK Red CL			Cycle																
DWELL Green		Overlap Vehicle	Overlap	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
RET Ped Cl			Track																
RET Yellow			Dwell																
RET Red Cl			Cycle																

☐ Locking

☐ Non-Locking

Delay (s)	
Extend (s)	
Duration (s)	
Max Call (s)	
Lockout (s)	
Link PE #	

Preemption Description:

Preempt # =	Time (s)	Phases		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
SEL Ped Cl		Vehicle	Track																
SEL Yellow			Dwell																
SEL Red Cl			Cycle																
TRACK Green			Exit																
TRACK Ped Cl		Ped	Track																
TRACK Yellow			Dwell																
TRACK Red CL			Cycle																
DWELL Green		Overlap Vehicle	Overlap	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
RET Ped Cl			Track																
RET Yellow			Dwell																
RET Red Cl			Cycle																

☐ Locking

☐ Non-Locking

Delay (s)	
Extend (s)	
Duration (s)	
Max Call (s)	
Lockout (s)	
Link PE #	

Preemption Description:

Preempt # =	Time (s)	Phases		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
SEL Ped Cl		Vehicle	Track																
SEL Yellow			Dwell																
SEL Red Cl			Cycle																
TRACK Green			Exit																
TRACK Ped Cl		Ped	Track																
TRACK Yellow			Dwell																
TRACK Red CL			Cycle																
DWELL Green		Overlap Vehicle	Overlap	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
RET Ped Cl			Track																
RET Yellow			Dwell																
RET Red Cl			Cycle																

☐ Locking

☐ Non-Locking

Delay (s)	
Extend (s)	
Duration (s)	
Max Call (s)	
Lockout (s)	
Link PE #	

Preemption Description:

Preempt # =	Time (s)	Phases		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
SEL Ped Cl		Vehicle	Track																
SEL Yellow			Dwell																
SEL Red Cl			Cycle																
TRACK Green			Exit																
TRACK Ped Cl		Ped	Track																
TRACK Yellow			Dwell																
TRACK Red CL			Cycle																
DWELL Green		Overlap Vehicle	Overlap	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
RET Ped Cl			Track																
RET Yellow			Dwell																
RET Red Cl			Cycle																

☐ Locking

☐ Non-Locking

Delay (s)	
Extend (s)	
Duration (s)	
Max Call (s)	
Lockout (s)	
Link PE #	

Preempt System Data

Ring	1	2	3	4	
MIN GRN/WLK (s)					

Priority	PE/FL	PE1/2	PE2/3	PE3/4	PE4/5	PE5/6
Status						

REMARKS :

PREPARED BY: HHH DATE: 01/27/14

LOCATION:

I-96 WB EXIT RAMP AT LATSON ROAD

CONTROL SECTION-SPOT #
47065-01-007

CLEAR PAGE 3

TRAFFIC SIGNAL TIMING PERMIT

	PHASE	1	2	3	4	5	6	7	8	
APPROACH			NB & SB		EB					
MINIMUM GREEN			10		7					
PASSAGE			0.0		3.0					
MAXIMUM NO. 1			50		40					
MAXIMUM NO. 2			0		0					
YELLOW CHANGE			4.7		3.5					
RED CLEARANCE			1.5		3.2					
WALK			7		0					
PEDESTRIAN CLEARANCE			23		0					
EXTENDED PED. CLEARANCE			0		0					
REST IN WALK			0		0					
INITIALIZATION			4		1					
NON-ACT RESPONSE			0		0					
VEHICLE RECALL			3		0					
PEDESTRIAN RECALL			2		0					
NON-LOCK MEMORY			0		0					
DUAL ENTRY			0		0					

	CYCLE									O1	O2	O3
DIAL 1 SPLIT 1	80		48		32					8		
DIAL 2 SPLIT 1												
DIAL 3 SPLIT 1												
DIAL SPLIT												
DIAL SPLIT												
DIAL SPLIT												
	MODE		1		0							

PHASE

1

2 LATSON ROAD

3

4 I-96 EASTBOUND EXIT RAMP

5

6

7

8

D1/S1/O1: Normal
Maximum # 1 Times: 23:00 - 05:00 Monday - Sunday
The Pedestrian Clearance Time is based on a walking speed of 3.5 feet per second.

OVERLAPS

Overlap Phase	*Load Bays*	*Phases Overlapped*	T.G. (s)	Y (s)	R (s)	-G/Y	+GRN
=							
=							
=							
=							

TIMING INSTALLED 01/29/14

REMARKS

16-Load-Switch, Mod 50, Base-Mounted, Epac Type Controller.

Semi-Actuated Operation with WIRELESS loops in the I-96 EASTBOUND EXIT RAMP approach lanes.

Equipped with a Global Positioning System (GPS) Clock and Countdown Pedestrian indications.

Runs Free (Maximum # 1 Times) 23:00 - 05:00 Monday - Sunday.

PREPARED BY: HHH DATE: 01/27/14

FLASH HOURS: DAILY ☐ NONE ☒ to

NIGHT FLASH:

FY = FR =

CONFLICT FLASH:

FY = LATSON ROAD FR = I-96 EB EXIT RAMP

CONTROLLER TYPE:
☒ EPAC
☐ Other:

PRE-EMPT ☐
COUNTDOWN PEDS ☒

LOCATION:
I-96 EB EXIT RAMP AT LATSON ROAD
CITY/TWP: GENOA TOWNSHIP
COUNTY : LIVINGSTON

MILE POINT	CONTROL SECTION-SPOT #
6.81	47065-01-107

Job # (If Applicable):

Page 3 included only if Pre-Empt Checked

ADVANCED TIMING PARAMETERS FORM

SYSTEM INFORMATION

Controller Type:
- [x] EPAC
- [ ] Other:

System Type:
- [ ] Closed Loop
  - [ ] Stand By
  - [ ] Group 1
  - [ ] Group 2
  - Address:
- [ ] TBC
- [x] TBC/GPS
- [ ] None
- [ ] Other:

If TBC, Synch by:
- [x] TOD
- [ ] Event

Interconnect Type:
- [ ] Hardwire
- [ ] Fiber-Optic
- [ ] Radio
- [ ] Phone Drop
- [ ] None
- [x] Other: GPS CLOCK

If Phone Drop, Phone #

Controller Status:
- [ ] Master
- [ ] Slave
- [ ] Isolated
- [x] TBC

If Slave, Master Location:

Master Spot # :

LEFT-TURN PHASING

Phase # / Description	Permissive-Protected Lead	Permissive-Protected Lag	Protected-Only Split	Protected-Only Lead	Protected-Only Lag
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐

RING AND BARRIER STRUCTURE

	B1				B2				B3				B4			
R1		2				4										
R2																
R3																
R4																

VEHICULAR AND PEDESTRIAN DETECTION

Approach	Vehicular Detection: Left		Thru		Right		Type: Loop	Video	Other	Pedestrian Detection: Push-Button Crossing Locations
I-96 EB EXIT RAMP	☒		☐		☒	10	☐	☐	☒	
	☐		☐		☐		☐	☐	☐	
	☐		☐		☐		☐	☐	☐	
	☐		☐		☐		☐	☐	☐	
	☐		☐		☐		☐	☐	☐	
	☐		☐		☐		☐	☐	☐	

Movements and Call Delay (s)

DISAPPEARING LEGEND CASE SIGNS

ADDITIONAL DIAL SPLIT DATA

		PHASE	1	2	3	4	5	6	7	8	O1	O2	O3
DIAL	SPLIT	CYCLE											
DIAL	SPLIT	CYCLE											
DIAL	SPLIT	CYCLE											
DIAL	SPLIT	CYCLE											
DIAL	SPLIT	CYCLE											
DIAL	SPLIT	CYCLE											
DIAL	SPLIT	CYCLE											
DIAL	SPLIT	CYCLE											
DIAL	SPLIT	CYCLE											
DIAL	SPLIT	CYCLE											

COORDINATION DATA

Operation Mode	1
Coordination Mode	0
Maximum Mode	0
Correction Mode	3
Offset Mode	0
Force Mode	0
Max Dwell	0
Yield Period	0

REMARKS:

ADDITIONAL OVERLAP DATA

Overlap Phase	Load Bays	Phases Overlapped	T.G. (s)	Y (s)	R (s)	-G/Y	+GRN
=							
=							
=							
=							

PREPARED BY: HHH DATE: 01/27/14

- [x] MDOT
- [ ] County
- [ ] City
- [ ] Consultant

LOCATION:
I-96 EB EXIT RAMP AT LATSON ROAD

CONTROL SECTION-SPOT #
47065-01-107

CLEAR PAGE 2

PREEMPTION INFORMATION FORM

Preemption Description:

Preempt # =	Time (s)	Phases		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
SEL Ped Cl		Vehicle	Track																
SEL Yellow			Dwell																
SEL Red Cl			Cycle																
TRACK Green			Exit																
TRACK Ped Cl		Ped	Track																
TRACK Yellow			Dwell																
TRACK Red CL			Cycle																
DWELL Green			Overlap	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
RET Ped Cl		Overlap Vehicle	Track																
RET Yellow			Dwell																
RET Red Cl			Cycle																

☐ Locking

☐ Non-Locking

Delay (s)	
Extend (s)	
Duration (s)	
Max Call (s)	
Lockout (s)	
Link PE #	

Preemption Description:

Preempt # =	Time (s)	Phases		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
SEL Ped Cl		Vehicle	Track																
SEL Yellow			Dwell																
SEL Red Cl			Cycle																
TRACK Green			Exit																
TRACK Ped Cl		Ped	Track																
TRACK Yellow			Dwell																
TRACK Red CL			Cycle																
DWELL Green			Overlap	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
RET Ped Cl		Overlap Vehicle	Track																
RET Yellow			Dwell																
RET Red Cl			Cycle																

☐ Locking

☐ Non-Locking

Delay (s)	
Extend (s)	
Duration (s)	
Max Call (s)	
Lockout (s)	
Link PE #	

Preemption Description:

Preempt # =	Time (s)	Phases		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
SEL Ped Cl		Vehicle	Track																
SEL Yellow			Dwell																
SEL Red Cl			Cycle																
TRACK Green			Exit																
TRACK Ped Cl		Ped	Track																
TRACK Yellow			Dwell																
TRACK Red CL			Cycle																
DWELL Green			Overlap	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
RET Ped Cl		Overlap Vehicle	Track																
RET Yellow			Dwell																
RET Red Cl			Cycle																

☐ Locking

☐ Non-Locking

Delay (s)	
Extend (s)	
Duration (s)	
Max Call (s)	
Lockout (s)	
Link PE #	

Preemption Description:

Preempt # =	Time (s)	Phases		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
SEL Ped Cl		Vehicle	Track																
SEL Yellow			Dwell																
SEL Red Cl			Cycle																
TRACK Green			Exit																
TRACK Ped Cl		Ped	Track																
TRACK Yellow			Dwell																
TRACK Red CL			Cycle																
DWELL Green			Overlap	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
RET Ped Cl		Overlap Vehicle	Track																
RET Yellow			Dwell																
RET Red Cl			Cycle																

☐ Locking

☐ Non-Locking

Delay (s)	
Extend (s)	
Duration (s)	
Max Call (s)	
Lockout (s)	
Link PE #	

Preempt System Data

Ring	1	2	3	4	
MIN GRN/WLK (s)					
Priority	PE/FL	PE1/2	PE2/3	PE3/4	PE4/5	PE5/6
Status						

REMARKS :

PREPARED BY: HHH DATE: 01/27/14

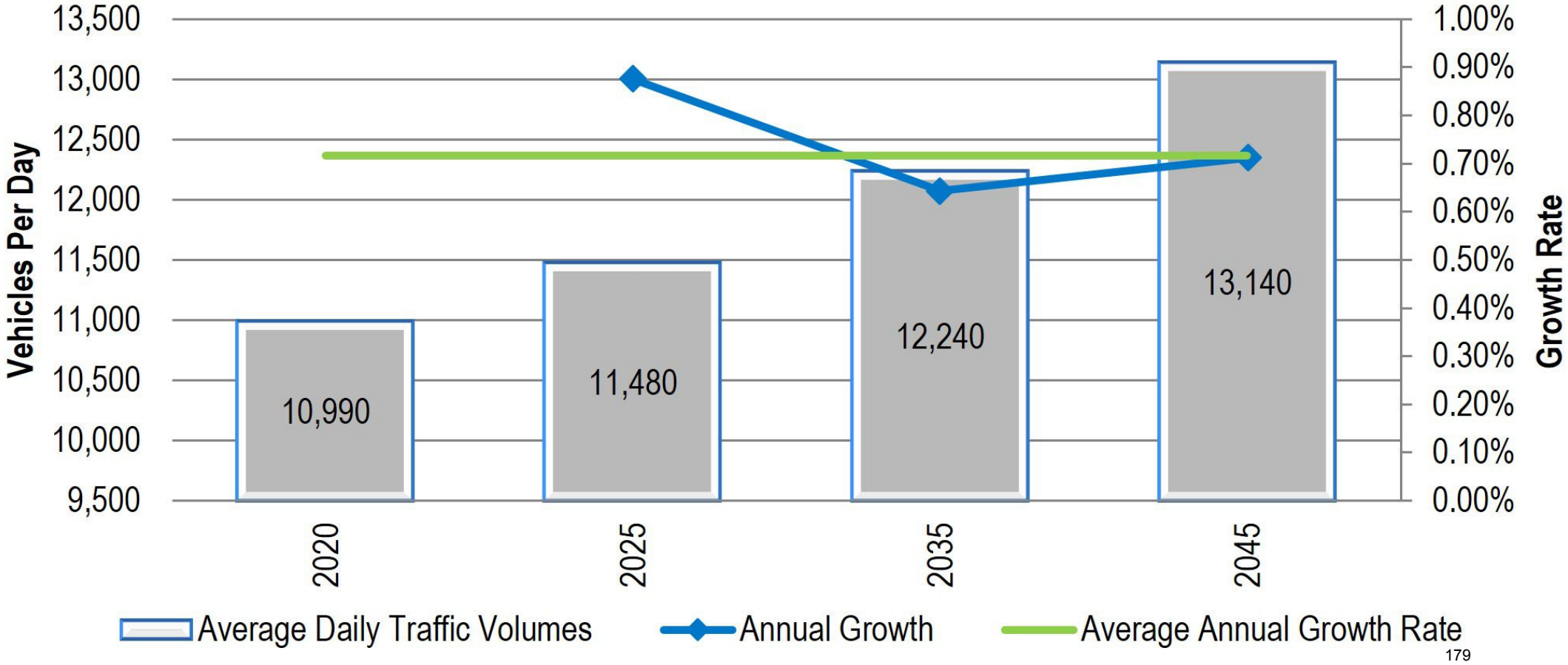
LOCATION:

I-96 EB EXIT RAMP AT LATSON ROAD

CONTROL SECTION-SPOT #
47065-01-107

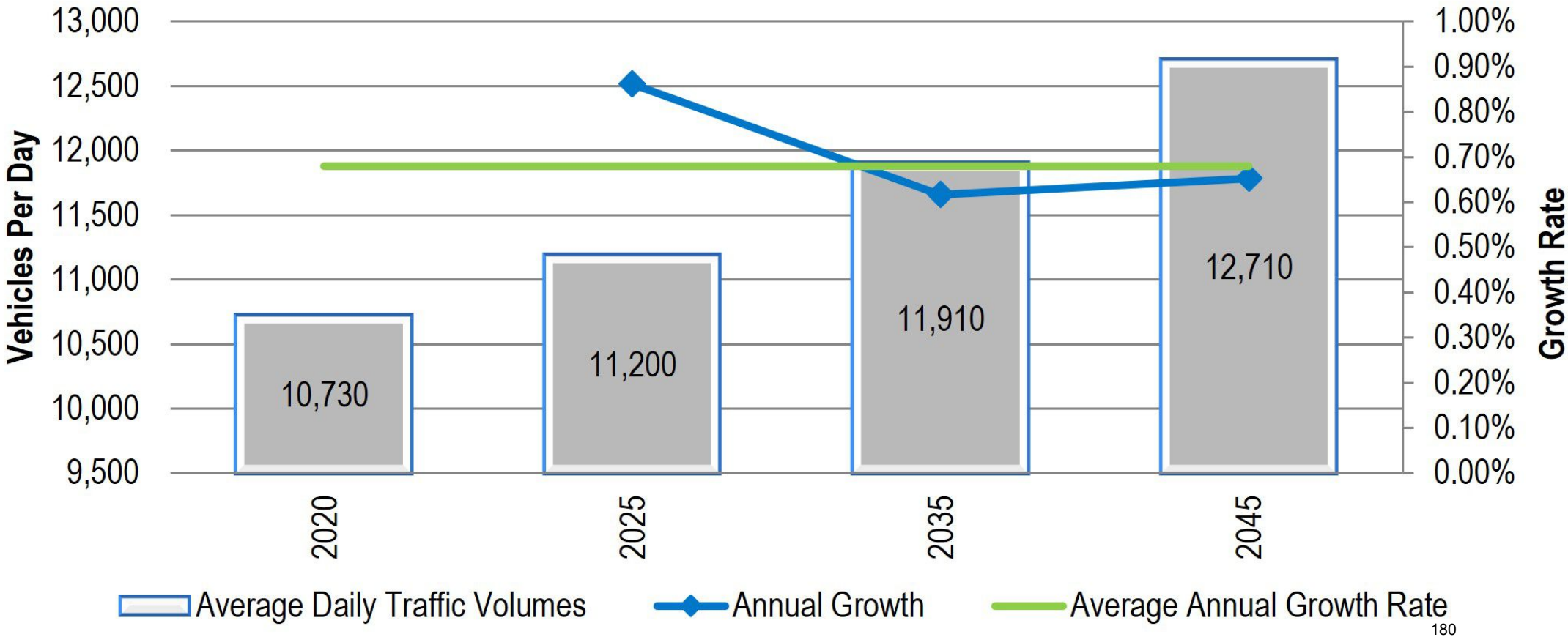
CLEAR PAGE 3

Latson Road (Chilson Road to Crooked Lake Road)

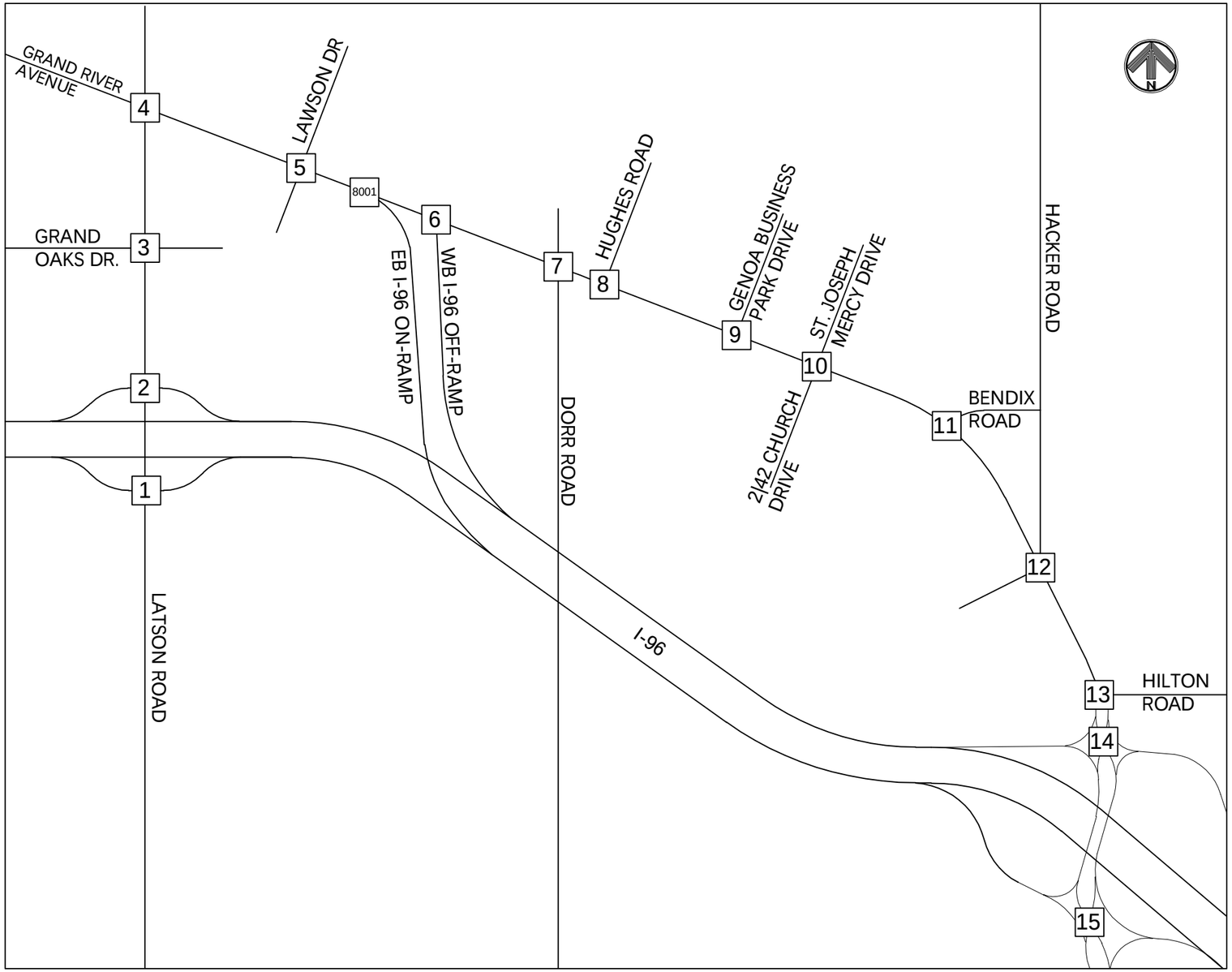


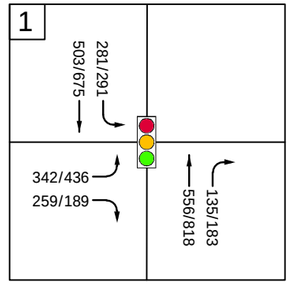
Source: SEMCOG Travel Demand Forecast Model(2020-2045)

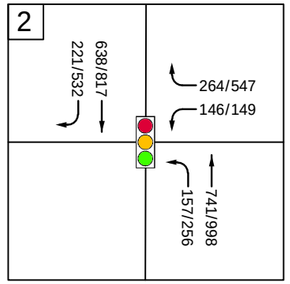
Latson Road (Crooked Lake Road to I-96)

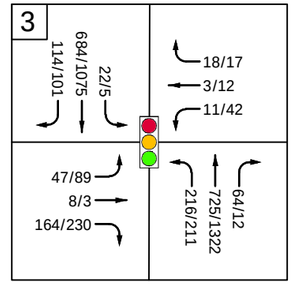


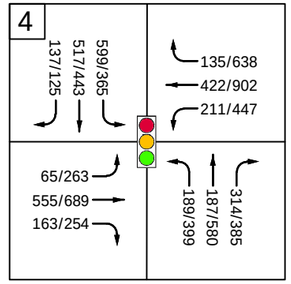
Source: SEMCOG Travel Demand Forecast Model (2020-2045)

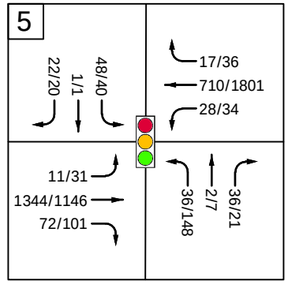


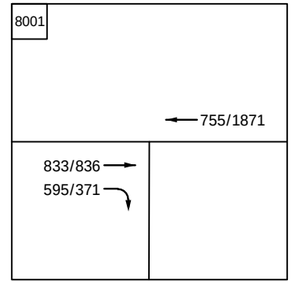


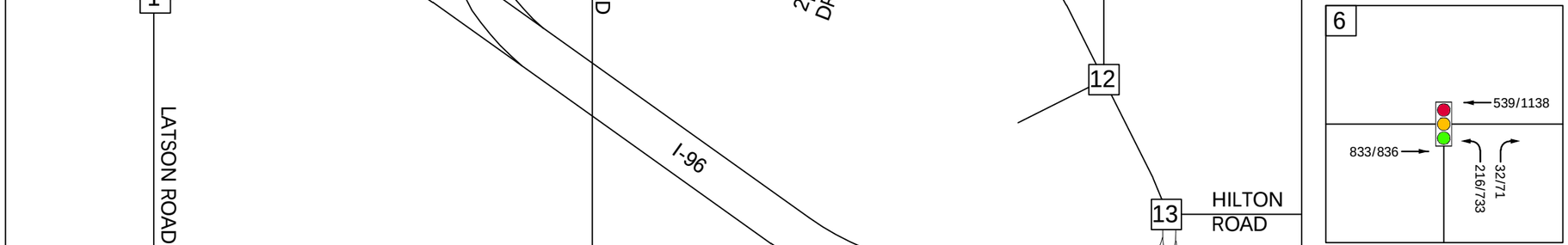


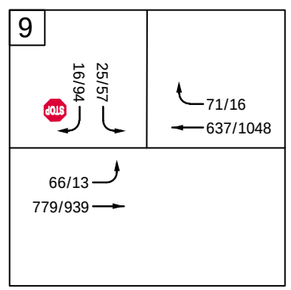


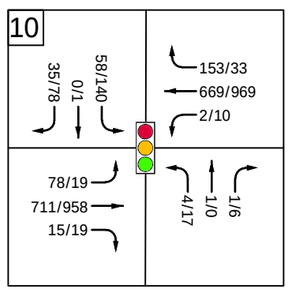


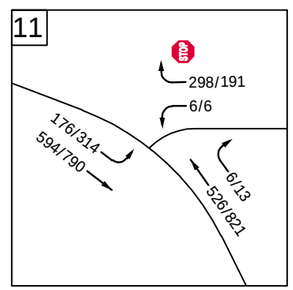


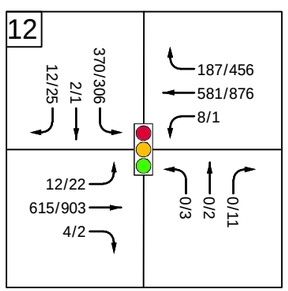


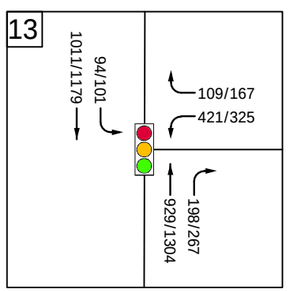


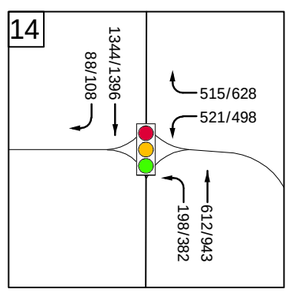


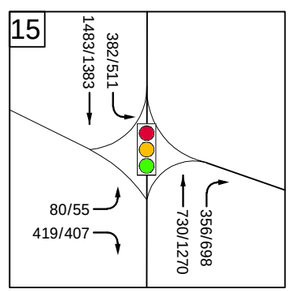












St. Joseph Mercy Brighton Health Center Expansion TIS
Genoa Township, MI

Figure 1
No-Build Traffic Volumes

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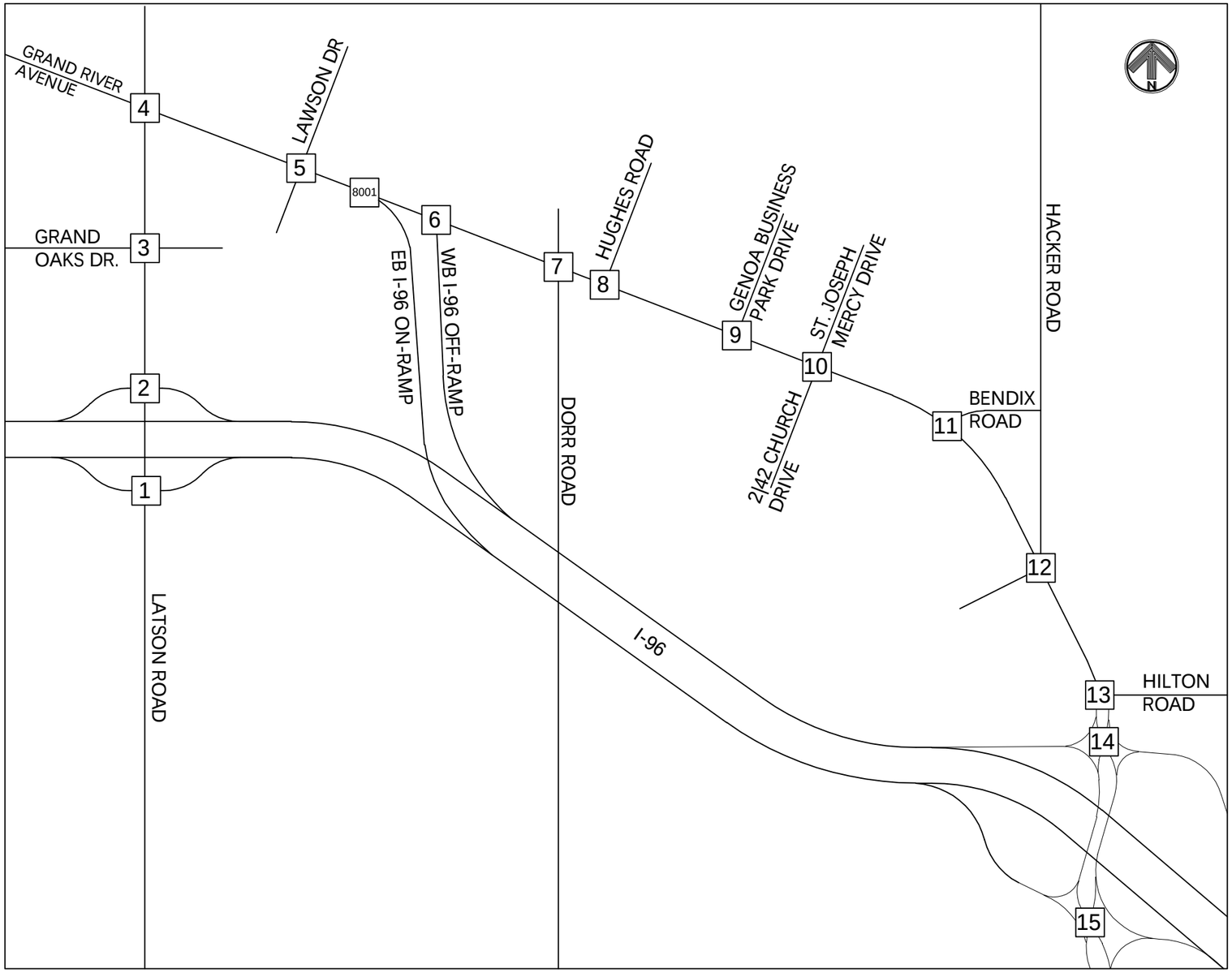

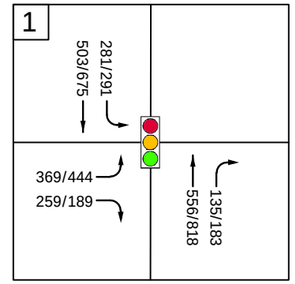

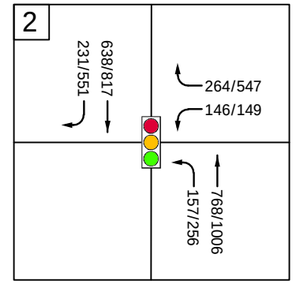

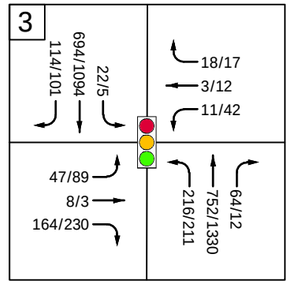

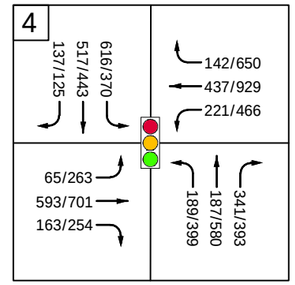

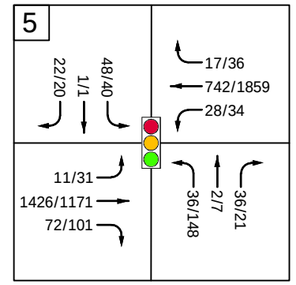

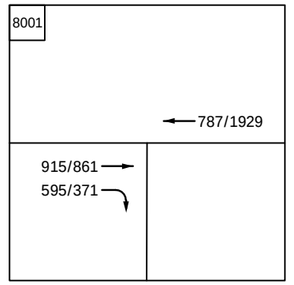

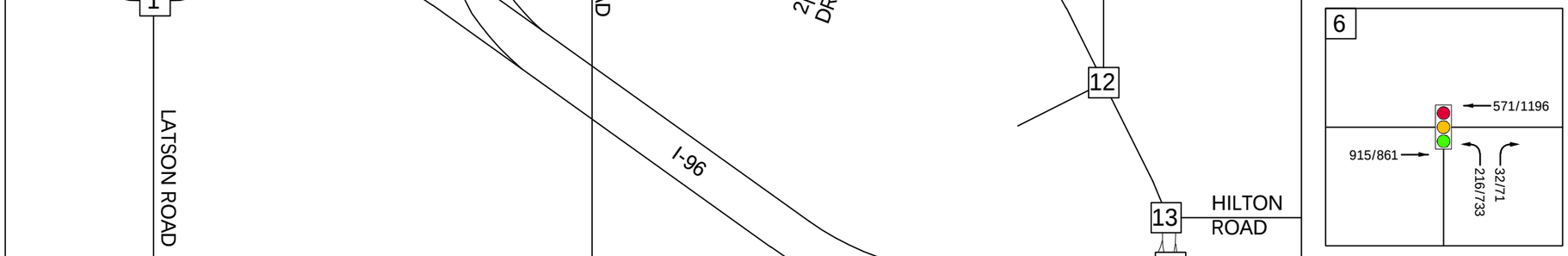

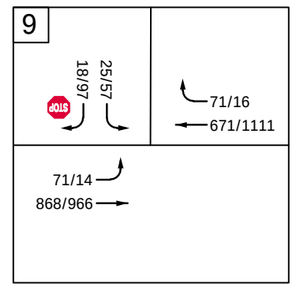

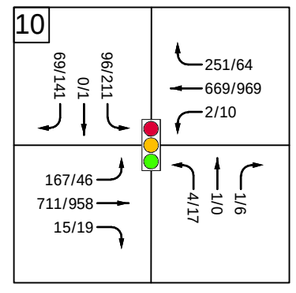

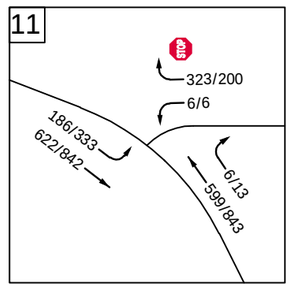

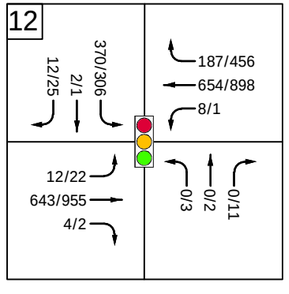

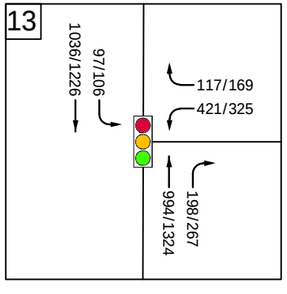

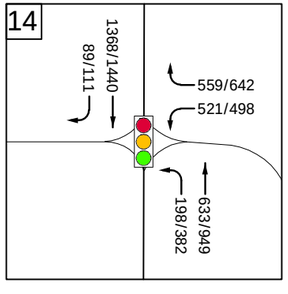

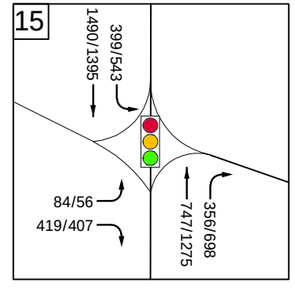

St. Joseph Mercy Brighton Health
Center Expansion TIS
Genoa Township, MI

Figure 2
Future 2024 Traffic Volumes

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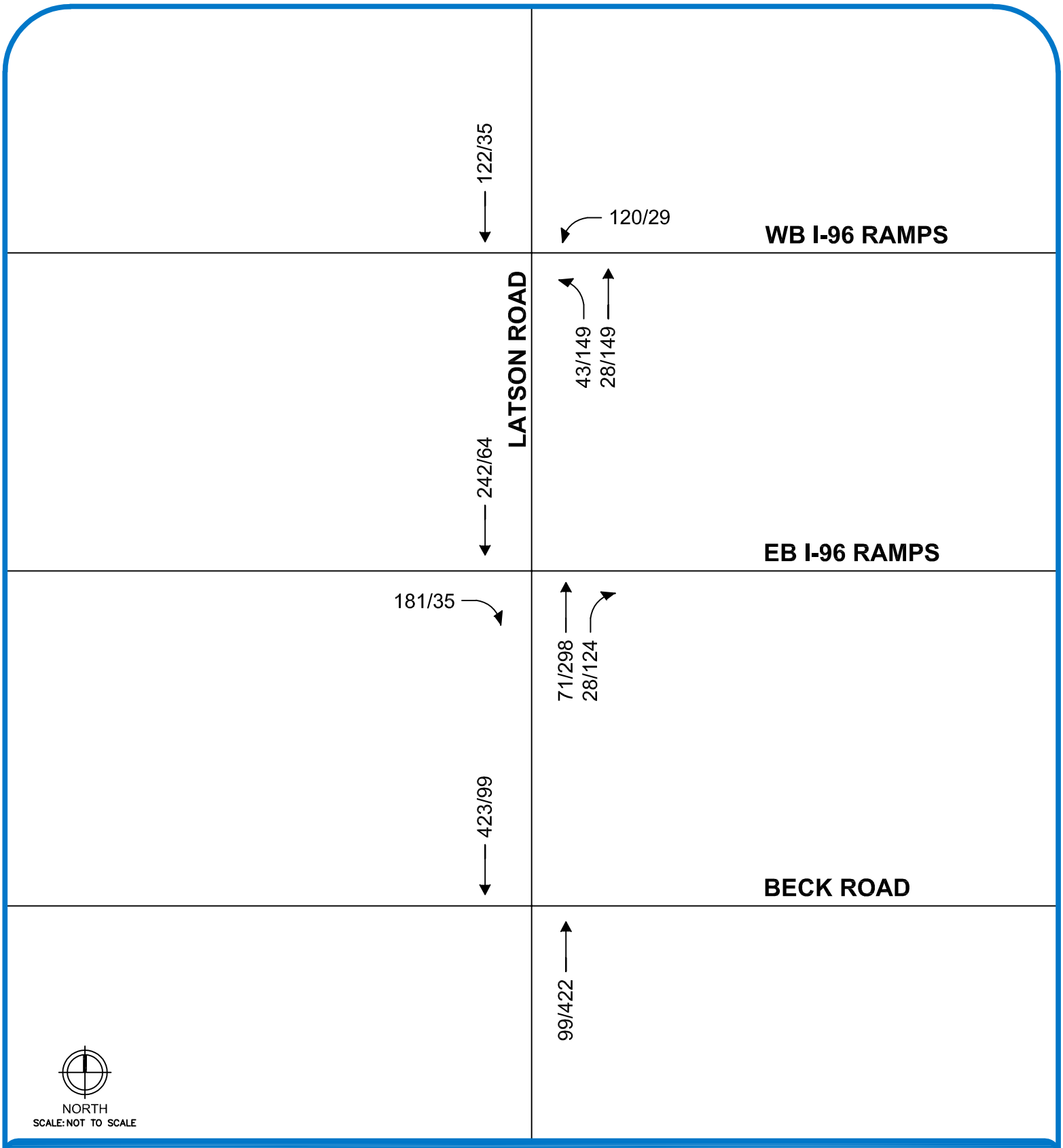


BACKGROUND DEVELOPMENT (LATSON ROAD PUD)

LATSON ROAD COMMERCIAL TIS - GENOA TWP, MI

LEGEND

ROADS

PROPOSED ROADS

TRAFFIC VOLUMES (AM/PM)

Level of Service Criteria for Stop Sign Controlled Intersections

The level of service criteria are given in Exhibit 20-2. As used here, control delay is defined as the total elapsed time from the time a vehicle stops at the end of the queue until the vehicle departs from the stop line; this time includes the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position, including deceleration of vehicles from free-flow speed to the speed of vehicles in queue.

The average total delay for any particular controlled movement is a function three (capacity) factors: distribution of gaps in the major-street traffic stream, driver judgment in selecting gaps through which to execute the desired maneuvers, and the follow-up headways required by each driver in a queue.

The basic capacity model assumes gaps in the conflicting movements are randomly distributed. When traffic signals are present on the major street, upstream of the subject intersection, flows may not be random but will likely have some platoon structure. Although the procedures in this chapter provide a method for approximating the operations of a TWSC intersection with an upstream signal, the operations of such an intersection is arguably best handled by including it in a complete simulation

Exhibit 20-2. Level of Service Criteria for Stop-Controlled Intersections (Motor Vehciles)

LEVEL OF SERVICE	AVERAGE CONTROL DELAY (sec/veh)
A	$\leq$ 10
B	> 10 and $\leq$ 15
C	> 15 and $\leq$ 25
D	> 25 and $\leq$ 35
E	> 35 and $\leq$ 50
F	> 50

Average total delay less than 10 sec/veh is defined as Level of Service (LOS) A. Follow-up times of less than 5 sec have been measured when there is no conflicting traffic for a minor street movement, so control delays of less than 10 sec/veh are appropriate for low flow conditions. A total delay of 50 sec/veh is assumed as the break point between LOS E and F.

The LOS criteria for TWSC intersections differ somewhat from the criteria used in Chapter 19 for signalized intersections, primarily because user perceptions differ among transportation facility types. The expectation is that a signalized intersection is designed to carry higher traffic volumes and will present greater delay than an unsignalized intersection. Additionally, several driver behavior considerations combine to make delays at signalized intersections less onerous than at unsignalized intersections. For example, drivers at signalized intersections are able to relax during the red interval, where drivers on the minor approaches to unsignalized intersections must remain attentive to the task of identifying acceptable gaps and vehicle conflicts. Also, there is often much more variability in the amount of delay experienced by individual drivers at unsignalized than signalized intersections. For these reasons, it is considered that the total delay threshold for any given level of service is less for an unsignalized intersection than for a signalized intersection.

LOS F exists when there are insufficient gaps of suitable size to allow a side street demand to cross safely through a major street traffic stream. This level of service is generally evident from extremely long total delays experienced by side street traffic and by queueing on the minor approaches. The method, however, is based on a constant critical gap size - that is, the critical gap remains constant, no matter how long the side street motorist waits. LOS F may also appear in the form of side street vehicles' selecting smaller-than-usual gaps. In such cases, safety may be a problem and some disruption to the major traffic stream may result. It is important to note that LOS F may not always result in long queues but may result in adjustments to normal gap acceptance behavior. The latter is more difficult to observe on the field than queueing, which is more obvious.

Source: Highway Capacity Manual, 6th Edition. Transportation Research Board, National Research Council

Level of Service for Signalized Intersections

Level of service for signalized intersections is defined in terms of delay, which is a measure of driver discomfort and frustration, fuel consumption, and lost travel time. LOS can be characterized for the entire intersection, each intersection approach, and each lane group. Specifically, level-of-service (LOS) criteria are stated in terms of the average stopped delay per vehicle. The criteria are given in Exhibit 19-8. Delay may be measured in the field or estimated using procedures presented later in this chapter. Delay is a complex measure and is dependent on a number of variables, including the quality of progression, the cycle length, the green ratio, and the v/c ratio for the lane group in question.

LOS A describes operations with a control delay of 10 s/veh or less. This level is typically assigned when the volume-to-capacity ratio is low and either progression is extremely favorable or the cycle length is very short. If LOS A is the result of favorable progression, most vehicles arrive during a green indication and travel through the intersection without stopping.

LOS B describes operations with control delay between 10 and 20 s/veh. This level is typically assigned when the volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.

Exhibit 19.8. Level-of-Service Criteria for Signalized Intersections (Motorized Vehicles)

LEVEL OF SERVICE	STOPPED DELAY PER VEHICLE (SEC)
A	≤10.0
B	> 10.0 and ≤20.0
C	> 20.0 and ≤ 35.0
D	> 35.0 and ≤ 55.0
E	> 55.0 and ≤ 80.0
F	>80.0

1. If the v/c ratio for a lane group exceeds 1.0, a LOS F is assigned to the individual lane group. LOS for approach-based and intersection-wide assessments are determined solely by the control delay.

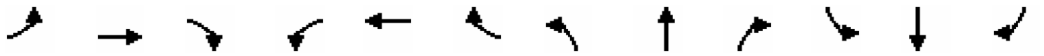
LOS C describes operations with control delay between 20 and 35 s/veh. This level is typically assigned when progression is favorable or the cycle length is moderate. Individual *cycle failures* (i.e. one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear at this level. The number if vehicle stopping is significant, although many vehicles still pass through the intersection without stopping.

LOS D describes operations with control delay between 35 and 55 s/veh. This level is typically assigned when when the volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.

LOS E describes operations with control delay between 55 and 80 s/veh. This level is typically assigned when when the volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.

LOS F describes operations with control delay exceeding 80 s/veh or a volume-to-capacity ratio greater than 1.0. This level, considered to be unacceptable to most drivers, often occurs with over-saturation, that is, when arrival flow rates exceed the capacity of the intersection. This level is typically assigned when the volume-to-capacity ratio is high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.

Source: Highway Capacity Manual, 6th Edition. Transportation Research Board, National Research Council



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	17	0	167	76	650	0	0	444	242
Future Volume (veh/h)	0	0	0	17	0	167	76	650	0	0	444	242
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Lane Width Adj.				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1767	0	1767	1841	1841	0	0	1722	1722
Adj Flow Rate, veh/h				19	0	186	86	739	0	0	499	272
Peak Hour Factor				0.90	0.90	0.90	0.88	0.88	0.88	0.89	0.89	0.89
Percent Heavy Veh, %				9	0	9	4	4	0	0	12	12
Cap, veh/h				170	0	266	538	2581	0	0	2414	1077
Arrive On Green				0.10	0.00	0.10	1.00	1.00	0.00	0.00	0.49	0.49
Sat Flow, veh/h				1682	0	2635	687	3589	0	0	3358	1459
Grp Volume(v), veh/h				19	0	186	86	739	0	0	499	272
Grp Sat Flow(s),veh/h/ln				1682	0	1317	687	1749	0	0	1636	1459
Q Serve(g_s), s				0.8	0.0	5.5	1.4	0.0	0.0	0.0	6.9	8.6
Cycle Q Clear(g_c), s				0.8	0.0	5.5	8.3	0.0	0.0	0.0	6.9	8.6
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				170	0	266	538	2581	0	0	2414	1077
V/C Ratio(X)				0.11	0.00	0.70	0.16	0.29	0.00	0.00	0.21	0.25
Avail Cap(c_a), veh/h				532	0	833	538	2581	0	0	2414	1077
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	0.67	0.67
Upstream Filter(I)				1.00	0.00	1.00	0.90	0.90	0.00	0.00	0.91	0.91
Uniform Delay (d), s/veh				32.7	0.0	34.8	0.5	0.0	0.0	0.0	7.0	7.5
Incr Delay (d2), s/veh				0.3	0.0	3.3	0.6	0.3	0.0	0.0	0.2	0.5
Initial Q Delay(d3), s/veh				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	1.9	0.1	0.1	0.0	0.0	1.3	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh				33.0	0.0	38.1	1.1	0.3	0.0	0.0	7.2	8.0
LnGrp LOS				C		D	A	A			A	A
Approach Vol, veh/h					205			825			771	
Approach Delay, s/veh					37.7			0.3			7.5	
Approach LOS					D			A			A	

Timer - Assigned Phs	2			6		8						
Phs Duration (G+Y+Rc), s	65.2			65.2		14.8						
Change Period (Y+Rc), s	6.2			6.2		6.7						
Max Green Setting (Gmax), s	41.8			41.8		25.3						
Max Q Clear Time (g_c+I1), s	10.3			10.6		7.5						
Green Ext Time (p_c), s	0.8			0.4		0.7						

Intersection Summary												
HCM 7th Control Delay, s/veh		7.6										
HCM 7th LOS		A										

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	395	0	68	0	0	0	0	331	66	252	209	0
Future Volume (veh/h)	395	0	68	0	0	0	0	331	66	252	209	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1826	0	1826				0	1870	1870	1752	1752	0
Adj Flow Rate, veh/h	449	0	77				0	356	71	286	238	0
Peak Hour Factor	0.88	0.88	0.88				0.93	0.93	0.93	0.88	0.88	0.88
Percent Heavy Veh, %	5	0	5				0	2	2	10	10	0
Cap, veh/h	583	0	267				0	2366	1055	656	2216	0
Arrive On Green	0.17	0.00	0.17				0.00	0.67	0.67	1.00	1.00	0.00
Sat Flow, veh/h	3374	0	1547				0	3647	1585	900	3416	0
Grp Volume(v), veh/h	449	0	77				0	356	71	286	238	0
Grp Sat Flow(s),veh/h/ln	1687	0	1547				0	1777	1585	900	1664	0
Q Serve(g_s), s	10.2	0.0	3.5				0.0	3.0	1.3	2.7	0.0	0.0
Cycle Q Clear(g_c), s	10.2	0.0	3.5				0.0	3.0	1.3	5.7	0.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	583	0	267				0	2366	1055	656	2216	0
V/C Ratio(X)	0.77	0.00	0.29				0.00	0.15	0.07	0.44	0.11	0.00
Avail Cap(c_a), veh/h	1067	0	489				0	2366	1055	656	2216	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.67	1.67	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.99	0.99	0.00
Uniform Delay (d), s/veh	31.6	0.0	28.8				0.0	5.0	4.7	0.2	0.0	0.0
Incr Delay (d2), s/veh	2.2	0.0	0.6				0.0	0.1	0.1	2.1	0.1	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	0.0	1.3				0.0	0.7	0.3	0.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	33.8	0.0	29.4				0.0	5.1	4.8	2.2	0.1	0.0
LnGrp LOS	C		C					A	A	A	A	
Approach Vol, veh/h		526						427			524	
Approach Delay, s/veh		33.1						5.0			1.3	
Approach LOS		C						A			A	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	59.5	20.5	59.5
Change Period (Y+Rc), s	6.2	6.7	6.2
Max Green Setting (Gmax), s	41.8	25.3	41.8
Max Q Clear Time (g_c+I1), s	5.0	12.2	7.7
Green Ext Time (p_c), s	0.3	1.7	0.4

Intersection Summary	
HCM 7th Control Delay, s/veh	13.7
HCM 7th LOS	B

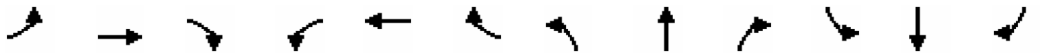
Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	0	0	0	0	2	0	378	0	1	267	9
Future Vol, veh/h	17	0	0	0	0	2	0	378	0	1	267	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	175	-	-	200	-	-	400	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	61	61	61	60	60	60	94	94	94	88	88	88
Heavy Vehicles, %	0	0	0	0	0	0	2	2	2	10	10	10
Mvmt Flow	28	0	0	0	0	3	0	402	0	1	303	10

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	512	713	157	556	718	201	314	0	0	402	0	0
Stage 1	311	311	-	402	402	-	-	-	-	-	-	-
Stage 2	201	402	-	154	316	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.14	-	-	4.3	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.22	-	-	2.3	-	-
Pot Cap-1 Maneuver	510	391	988	473	388	813	1312	-	-	1098	-	-
Stage 1	757	710	-	601	604	-	-	-	-	-	-	-
Stage 2	788	604	-	941	706	-	-	-	-	-	-	-
Platoon blocked, %	0	0	0	0	0		0	-	-		-	-
Mov Cap-1 Maneuver	507	391	988	473	388	813	1312	-	-	1098	-	-
Mov Cap-2 Maneuver	507	391	-	473	388	-	-	-	-	-	-	-
Stage 1	756	709	-	601	604	-	-	-	-	-	-	-
Stage 2	784	604	-	940	705	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	12.51	9.45	0	0.03
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1312	-	-	507	-	-	813	1098	-	-
HCM Lane V/C Ratio	-	-	-	0.055	-	-	0.004	0.001	-	-
HCM Control Delay (s/veh)	0	-	-	12.5	0	0	9.4	8.3	-	-
HCM Lane LOS	A	-	-	B	A	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	-	-	0	0	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	87	0	428	97	731	0	0	642	597
Future Volume (veh/h)	0	0	0	87	0	428	97	731	0	0	642	597
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Lane Width Adj.				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1841	0	1841	1841	1841	0	0	1870	1870
Adj Flow Rate, veh/h				96	0	470	108	812	0	0	690	427
Peak Hour Factor				0.91	0.91	0.91	0.90	0.90	0.90	0.93	0.93	0.93
Percent Heavy Veh, %				4	0	4	4	4	0	0	2	2
Cap, veh/h				368	0	576	321	2199	0	0	2234	997
Arrive On Green				0.21	0.00	0.21	1.00	1.00	0.00	0.00	0.21	0.21
Sat Flow, veh/h				1753	0	2745	496	3589	0	0	3647	1585
Grp Volume(v), veh/h				96	0	470	108	812	0	0	690	427
Grp Sat Flow(s),veh/h/ln				1753	0	1373	496	1749	0	0	1777	1585
Q Serve(g_s), s				3.7	0.0	13.1	7.0	0.0	0.0	0.0	13.2	18.7
Cycle Q Clear(g_c), s				3.7	0.0	13.1	20.1	0.0	0.0	0.0	13.2	18.7
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				368	0	576	321	2199	0	0	2234	997
V/C Ratio(X)				0.26	0.00	0.82	0.34	0.37	0.00	0.00	0.31	0.43
Avail Cap(c_a), veh/h				554	0	868	321	2199	0	0	2234	997
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	0.33	0.33
Upstream Filter(I)				1.00	0.00	1.00	0.90	0.90	0.00	0.00	0.68	0.68
Uniform Delay (d), s/veh				26.4	0.0	30.1	2.6	0.0	0.0	0.0	17.0	19.2
Incr Delay (d2), s/veh				0.4	0.0	3.7	2.5	0.4	0.0	0.0	0.2	0.9
Initial Q Delay(d3), s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.6	0.0	4.5	0.2	0.1	0.0	0.0	5.4	7.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh				26.8	0.0	33.8	5.2	0.4	0.0	0.0	17.2	20.1
LnGrp LOS				C		C	A	A			B	C
Approach Vol, veh/h					566			920			1117	
Approach Delay, s/veh					32.6			1.0			18.3	
Approach LOS					C			A			B	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	56.5		56.5		23.5			
Change Period (Y+Rc), s	6.2		6.2		6.7			
Max Green Setting (Gmax), s	41.8		41.8		25.3			
Max Q Clear Time (g_c+I1), s	22.1		20.7		15.1			
Green Ext Time (p_c), s	1.2		0.5		1.7			

Intersection Summary		
HCM 7th Control Delay, s/veh	15.3	
HCM 7th LOS	B	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	390	0	97	0	0	0	0	438	38	244	485	0
Future Volume (veh/h)	390	0	97	0	0	0	0	438	38	244	485	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1856	0	1856				0	1841	1841	1870	1870	0
Adj Flow Rate, veh/h	459	0	114				0	466	40	274	545	0
Peak Hour Factor	0.85	0.85	0.85				0.94	0.94	0.94	0.89	0.89	0.89
Percent Heavy Veh, %	3	0	3				0	4	4	2	2	0
Cap, veh/h	601	0	276				0	2321	1035	636	2358	0
Arrive On Green	0.18	0.00	0.18				0.00	0.66	0.66	1.00	1.00	0.00
Sat Flow, veh/h	3428	0	1572				0	3589	1560	893	3647	0
Grp Volume(v), veh/h	459	0	114				0	466	40	274	545	0
Grp Sat Flow(s),veh/h/ln	1714	0	1572				0	1749	1560	893	1777	0
Q Serve(g_s), s	10.2	0.0	5.2				0.0	4.1	0.7	3.6	0.0	0.0
Cycle Q Clear(g_c), s	10.2	0.0	5.2				0.0	4.1	0.7	7.7	0.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	601	0	276				0	2321	1035	636	2358	0
V/C Ratio(X)	0.76	0.00	0.41				0.00	0.20	0.04	0.43	0.23	0.00
Avail Cap(c_a), veh/h	1084	0	497				0	2321	1035	636	2358	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.97	0.97	0.00
Uniform Delay (d), s/veh	31.4	0.0	29.3				0.0	5.2	4.6	0.3	0.0	0.0
Incr Delay (d2), s/veh	2.1	0.0	1.0				0.0	0.2	0.1	2.1	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	0.0	2.0				0.0	1.0	0.2	0.4	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	33.5	0.0	30.3				0.0	5.4	4.7	2.4	0.2	0.0
LnGrp LOS	C		C					A	A	A	A	
Approach Vol, veh/h		573						506			819	
Approach Delay, s/veh		32.8						5.4			0.9	
Approach LOS		C						A			A	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	59.3	20.7	59.3
Change Period (Y+Rc), s	6.2	6.7	6.2
Max Green Setting (Gmax), s	41.8	25.3	41.8
Max Q Clear Time (g_c+I1), s	6.1	12.2	9.7
Green Ext Time (p_c), s	0.4	1.8	0.7

Intersection Summary	
HCM 7th Control Delay, s/veh	11.8
HCM 7th LOS	B

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	18	0	1	0	0	3	0	455	1	4	550	28
Future Vol, veh/h	18	0	1	0	0	3	0	455	1	4	550	28
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	175	-	-	200	-	-	400	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	60	60	60	75	75	75	94	94	94	95	95	95
Heavy Vehicles, %	5	5	5	4	4	4	4	4	4	1	1	1
Mvmt Flow	30	0	2	0	0	4	0	484	1	4	579	29

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	844	1087	304	782	1101	243	608	0	0	485	0	0
Stage 1	602	602	-	485	485	-	-	-	-	-	-	-
Stage 2	242	485	-	298	617	-	-	-	-	-	-	-
Critical Hdwy	7.6	6.6	7	7.58	6.58	6.98	4.18	-	-	4.12	-	-
Critical Hdwy Stg 1	6.6	5.6	-	6.58	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.6	5.6	-	6.58	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.55	4.05	3.35	3.54	4.04	3.34	2.24	-	-	2.21	-	-
Pot Cap-1 Maneuver	330	249	934	371	245	752	1068	-	-	1081	-	-
Stage 1	567	562	-	527	545	-	-	-	-	-	-	-
Stage 2	731	542	-	896	555	-	-	-	-	-	-	-
Platoon blocked, %	0	0	0	0	0		0	-	-		-	-
Mov Cap-1 Maneuver	327	248	934	369	244	752	1068	-	-	1081	-	-
Mov Cap-2 Maneuver	327	248	-	369	244	-	-	-	-	-	-	-
Stage 1	565	560	-	527	545	-	-	-	-	-	-	-
Stage 2	728	542	-	891	553	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	16.69	9.81	0	0.06
HCM LOS	C	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1068	-	-	327	934	-	752	1081	-	-
HCM Lane V/C Ratio	-	-	-	0.092	0.002	-	0.005	0.004	-	-
HCM Control Delay (s/veh)	0	-	-	17.1	8.9	0	9.8	8.3	-	-
HCM Lane LOS	A	-	-	C	A	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0	-	0	0	-	-

Intersection: 2: Latson Road & WB I-96 Ramps

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	R	L	T	T	T	T	R
Maximum Queue (ft)	66	102	80	48	35	42	52	30	31
Average Queue (ft)	28	64	47	23	17	12	21	13	12
95th Queue (ft)	73	111	94	50	44	44	56	38	37
Link Distance (ft)		1526			1335	1335	377	377	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	500		350	1000					250
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 3: Latson Road & EB I-96 Ramps

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	T	T	R	L	T	T
Maximum Queue (ft)	133	126	80	64	55	19	123	31	35
Average Queue (ft)	98	89	48	33	29	7	85	8	12
95th Queue (ft)	161	149	97	74	64	22	139	31	38
Link Distance (ft)		1378		394	394	394		1335	1335
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	500		500				1000		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 4: Latson Road & Beck Rd.

Movement	EB	WB
Directions Served	L	TR
Maximum Queue (ft)	24	9
Average Queue (ft)	8	2
95th Queue (ft)	27	12
Link Distance (ft)		733
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	250	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Zone Summary

Zone wide Queuing Penalty: 0

Intersection: 2: Latson Road & WB I-96 Ramps

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	R	L	T	T	T	T	R
Maximum Queue (ft)	128	174	143	92	78	50	72	58	61
Average Queue (ft)	77	128	88	60	37	30	29	31	34
95th Queue (ft)	148	189	158	128	87	62	81	71	69
Link Distance (ft)		1526			1335	1335	377	377	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	500		350	1000					250
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 3: Latson Road & EB I-96 Ramps

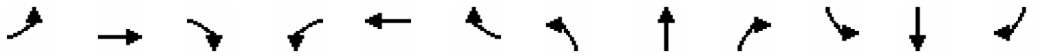
Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	T	T	R	L	T	T
Maximum Queue (ft)	142	157	98	66	67	20	125	39	30
Average Queue (ft)	97	120	63	38	31	7	71	19	11
95th Queue (ft)	152	170	114	78	76	25	135	45	37
Link Distance (ft)		1378		394	394	394		1335	1335
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	500		500				1000		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 4: Latson Road & Beck Rd.

Movement	EB	WB	SB
Directions Served	L	TR	L
Maximum Queue (ft)	33	4	6
Average Queue (ft)	13	1	1
95th Queue (ft)	38	8	11
Link Distance (ft)		733	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	250		400
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	140	0	193	131	806	0	0	634	289
Future Volume (veh/h)	0	0	0	140	0	193	131	806	0	0	634	289
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Lane Width Adj.				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1767	0	1767	1841	1841	0	0	1722	1722
Adj Flow Rate, veh/h				156	0	214	149	916	0	0	712	325
Peak Hour Factor				0.90	0.90	0.90	0.88	0.88	0.88	0.89	0.89	0.89
Percent Heavy Veh, %				9	0	9	4	4	0	0	12	12
Cap, veh/h				217	0	340	374	2482	0	0	2322	1036
Arrive On Green				0.13	0.00	0.13	1.00	1.00	0.00	0.00	0.23	0.23
Sat Flow, veh/h				1682	0	2635	535	3589	0	0	3358	1459
Grp Volume(v), veh/h				156	0	214	149	916	0	0	712	325
Grp Sat Flow(s),veh/h/ln				1682	0	1317	535	1749	0	0	1636	1459
Q Serve(g_s), s				7.1	0.0	6.2	9.3	0.0	0.0	0.0	14.4	14.7
Cycle Q Clear(g_c), s				7.1	0.0	6.2	23.6	0.0	0.0	0.0	14.4	14.7
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				217	0	340	374	2482	0	0	2322	1036
V/C Ratio(X)				0.72	0.00	0.63	0.40	0.37	0.00	0.00	0.31	0.31
Avail Cap(c_a), veh/h				532	0	833	374	2482	0	0	2322	1036
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	0.33	0.33
Upstream Filter(I)				1.00	0.00	1.00	0.88	0.88	0.00	0.00	0.75	0.75
Uniform Delay (d), s/veh				33.4	0.0	33.0	3.0	0.0	0.0	0.0	14.4	14.5
Incr Delay (d2), s/veh				4.4	0.0	1.9	2.8	0.4	0.0	0.0	0.3	0.6
Initial Q Delay(d3), s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.1	0.0	2.0	0.3	0.1	0.0	0.0	5.5	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh				37.9	0.0	34.9	5.8	0.4	0.0	0.0	14.6	15.1
LnGrp LOS				D		C	A	A			B	B
Approach Vol, veh/h					370			1065			1037	
Approach Delay, s/veh					36.2			1.1			14.8	
Approach LOS					D			A			B	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	63.0		63.0		17.0			
Change Period (Y+Rc), s	6.2		6.2		6.7			
Max Green Setting (Gmax), s	41.8		41.8		25.3			
Max Q Clear Time (g_c+I1), s	25.6		16.7		9.1			
Green Ext Time (p_c), s	1.4		0.6		1.2			

Intersection Summary		
HCM 7th Control Delay, s/veh	12.1	
HCM 7th LOS	B	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	483	0	259	0	0	0	0	454	104	291	483	0
Future Volume (veh/h)	483	0	259	0	0	0	0	454	104	291	483	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1826	0	1826				0	1870	1870	1752	1752	0
Adj Flow Rate, veh/h	549	0	294				0	488	112	331	549	0
Peak Hour Factor	0.88	0.88	0.88				0.93	0.93	0.93	0.88	0.88	0.88
Percent Heavy Veh, %	5	0	5				0	2	2	10	10	0
Cap, veh/h	789	0	362				0	2149	959	506	2013	0
Arrive On Green	0.23	0.00	0.23				0.00	0.60	0.60	1.00	1.00	0.00
Sat Flow, veh/h	3374	0	1547				0	3647	1585	767	3416	0
Grp Volume(v), veh/h	549	0	294				0	488	112	331	549	0
Grp Sat Flow(s),veh/h/ln	1687	0	1547				0	1777	1585	767	1664	0
Q Serve(g_s), s	11.9	0.0	14.4				0.0	5.0	2.4	12.5	0.0	0.0
Cycle Q Clear(g_c), s	11.9	0.0	14.4				0.0	5.0	2.4	17.6	0.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	789	0	362				0	2149	959	506	2013	0
V/C Ratio(X)	0.70	0.00	0.81				0.00	0.23	0.12	0.65	0.27	0.00
Avail Cap(c_a), veh/h	1067	0	489				0	2149	959	506	2013	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.94	0.94	0.00
Uniform Delay (d), s/veh	28.0	0.0	29.0				0.0	7.2	6.7	0.9	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.0	7.4				0.0	0.2	0.2	6.1	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	0.0	6.0				0.0	1.4	0.6	0.9	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	29.3	0.0	36.4				0.0	7.5	7.0	7.0	0.3	0.0
LnGrp LOS	C		D					A	A	A	A	
Approach Vol, veh/h		843						600			880	
Approach Delay, s/veh		31.7						7.4			2.8	
Approach LOS		C						A			A	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	54.6	25.4	54.6
Change Period (Y+Rc), s	6.2	6.7	6.2
Max Green Setting (Gmax), s	41.8	25.3	41.8
Max Q Clear Time (g_c+I1), s	7.0	16.4	19.6
Green Ext Time (p_c), s	0.4	2.3	1.0

Intersection Summary	
HCM 7th Control Delay, s/veh	14.5
HCM 7th LOS	B

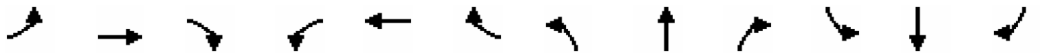
Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	0	0	0	0	2	0	536	0	1	731	10
Future Vol, veh/h	20	0	0	0	0	2	0	536	0	1	731	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	175	-	-	200	-	-	400	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	61	61	61	60	60	60	94	94	94	88	88	88
Heavy Vehicles, %	0	0	0	0	0	0	2	2	2	10	10	10
Mvmt Flow	33	0	0	0	0	3	0	570	0	1	831	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1124	1409	421	988	1415	285	842	0	0	570	0	0
Stage 1	839	839	-	570	570	-	-	-	-	-	-	-
Stage 2	285	570	-	418	844	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.14	-	-	4.3	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.22	-	-	2.3	-	-
Pot Cap-1 Maneuver	225	168	894	291	167	718	905	-	-	945	-	-
Stage 1	446	466	-	479	508	-	-	-	-	-	-	-
Stage 2	704	508	-	853	463	-	-	-	-	-	-	-
Platoon blocked, %	0	0	0	0	0		0	-	-		-	-
Mov Cap-1 Maneuver	224	168	894	291	167	718	905	-	-	945	-	-
Mov Cap-2 Maneuver	224	168	-	291	167	-	-	-	-	-	-	-
Stage 1	446	466	-	479	508	-	-	-	-	-	-	-
Stage 2	701	508	-	852	463	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	23.84	10.04	0	0.01
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	905	-	-	224	-	-	718	945	-	-
HCM Lane V/C Ratio	-	-	-	0.147	-	-	0.005	0.001	-	-
HCM Control Delay (s/veh)	0	-	-	23.8	0	0	10	8.8	-	-
HCM Lane LOS	A	-	-	C	A	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.5	-	-	0	0	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	119	0	444	250	915	0	0	701	638
Future Volume (veh/h)	0	0	0	119	0	444	250	915	0	0	701	638
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Lane Width Adj.				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1841	0	1841	1841	1841	0	0	1870	1870
Adj Flow Rate, veh/h				131	0	488	278	1017	0	0	754	471
Peak Hour Factor				0.91	0.91	0.91	0.90	0.90	0.90	0.93	0.93	0.93
Percent Heavy Veh, %				4	0	4	4	4	0	0	2	2
Cap, veh/h				381	0	597	287	2173	0	0	2208	985
Arrive On Green				0.22	0.00	0.22	1.00	1.00	0.00	0.00	0.21	0.21
Sat Flow, veh/h				1753	0	2745	448	3589	0	0	3647	1585
Grp Volume(v), veh/h				131	0	488	278	1017	0	0	754	471
Grp Sat Flow(s),veh/h/ln				1753	0	1373	448	1749	0	0	1777	1585
Q Serve(g_s), s				5.1	0.0	13.5	35.2	0.0	0.0	0.0	14.5	21.0
Cycle Q Clear(g_c), s				5.1	0.0	13.5	49.7	0.0	0.0	0.0	14.5	21.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				381	0	597	287	2173	0	0	2208	985
V/C Ratio(X)				0.34	0.00	0.82	0.97	0.47	0.00	0.00	0.34	0.48
Avail Cap(c_a), veh/h				554	0	868	287	2173	0	0	2208	985
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	0.33	0.33
Upstream Filter(I)				1.00	0.00	1.00	0.87	0.87	0.00	0.00	0.59	0.59
Uniform Delay (d), s/veh				26.5	0.0	29.8	12.4	0.0	0.0	0.0	17.8	20.4
Incr Delay (d2), s/veh				0.5	0.0	4.0	42.1	0.6	0.0	0.0	0.2	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
%ile BackOfQ(50%),veh/ln				2.1	0.0	4.7	7.7	0.2	0.0	0.0	6.4	8.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh				27.0	0.0	33.8	54.5	0.6	0.0	0.0	18.1	21.4
LnGrp LOS				C		C	D	A			B	C
Approach Vol, veh/h					619			1295			1225	
Approach Delay, s/veh					32.4			12.2			19.3	
Approach LOS					C			B			B	

Timer - Assigned Phs	2			6		8						
Phs Duration (G+Y+Rc), s	55.9			55.9		24.1						
Change Period (Y+Rc), s	6.2			6.2		6.7						
Max Green Setting (Gmax), s	41.8			41.8		25.3						
Max Q Clear Time (g_c+I1), s	51.7			23.0		15.5						
Green Ext Time (p_c), s	0.0			0.5		1.9						

Intersection Summary		
HCM 7th Control Delay, s/veh	19.0	
HCM 7th LOS	B	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	412	0	136	0	0	0	0	753	163	253	567	0
Future Volume (veh/h)	412	0	136	0	0	0	0	753	163	253	567	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1856	0	1856				0	1841	1841	1870	1870	0
Adj Flow Rate, veh/h	485	0	160				0	801	173	284	637	0
Peak Hour Factor	0.85	0.85	0.85				0.94	0.94	0.94	0.89	0.89	0.89
Percent Heavy Veh, %	3	0	3				0	4	4	2	2	0
Cap, veh/h	634	0	291				0	2287	1020	408	2324	0
Arrive On Green	0.18	0.00	0.18				0.00	0.65	0.65	1.00	1.00	0.00
Sat Flow, veh/h	3428	0	1572				0	3589	1560	577	3647	0
Grp Volume(v), veh/h	485	0	160				0	801	173	284	637	0
Grp Sat Flow(s),veh/h/ln	1714	0	1572				0	1749	1560	577	1777	0
Q Serve(g_s), s	10.7	0.0	7.4				0.0	8.2	3.5	25.0	0.0	0.0
Cycle Q Clear(g_c), s	10.7	0.0	7.4				0.0	8.2	3.5	33.2	0.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	634	0	291				0	2287	1020	408	2324	0
V/C Ratio(X)	0.77	0.00	0.55				0.00	0.35	0.17	0.70	0.27	0.00
Avail Cap(c_a), veh/h	1084	0	497				0	2287	1020	408	2324	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.95	0.95	0.00
Uniform Delay (d), s/veh	31.0	0.0	29.6				0.0	6.2	5.4	2.6	0.0	0.0
Incr Delay (d2), s/veh	2.0	0.0	1.6				0.0	0.4	0.4	9.0	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	0.0	2.9				0.0	2.0	0.8	1.0	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	32.9	0.0	31.2				0.0	6.6	5.7	11.6	0.3	0.0
LnGrp LOS	C		C					A	A	B	A	
Approach Vol, veh/h		645						974			921	
Approach Delay, s/veh		32.5						6.5			3.8	
Approach LOS		C						A			A	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	58.5	21.5	58.5
Change Period (Y+Rc), s	6.2	6.7	6.2
Max Green Setting (Gmax), s	41.8	25.3	41.8
Max Q Clear Time (g_c+I1), s	10.2	12.7	35.2
Green Ext Time (p_c), s	0.7	2.0	1.2

Intersection Summary	
HCM 7th Control Delay, s/veh	12.1
HCM 7th LOS	B

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	19	0	1	0	0	3	0	894	1	4	670	29
Future Vol, veh/h	19	0	1	0	0	3	0	894	1	4	670	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	175	-	-	200	-	-	400	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	60	60	60	75	75	75	94	94	94	95	95	95
Heavy Vehicles, %	5	5	5	4	4	4	4	4	4	1	1	1
Mvmt Flow	32	0	2	0	0	4	0	951	1	4	705	31

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1204	1681	368	1313	1696	476	736	0	0	952	0	0
Stage 1	729	729	-	952	952	-	-	-	-	-	-	-
Stage 2	476	952	-	361	744	-	-	-	-	-	-	-
Critical Hdwy	7.6	6.6	7	7.58	6.58	6.98	4.18	-	-	4.12	-	-
Critical Hdwy Stg 1	6.6	5.6	-	6.58	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.6	5.6	-	6.58	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.55	4.05	3.35	3.54	4.04	3.34	2.24	-	-	2.21	-	-
Pot Cap-1 Maneuver	177	102	899	145	101	530	968	-	-	723	-	-
Stage 1	491	502	-	275	332	-	-	-	-	-	-	-
Stage 2	531	329	-	865	495	-	-	-	-	-	-	-
Platoon blocked, %	0	0	0	0	0		0	-	-		-	-
Mov Cap-1 Maneuver	175	102	899	144	100	530	968	-	-	723	-	-
Mov Cap-2 Maneuver	175	102	-	144	100	-	-	-	-	-	-	-
Stage 1	489	499	-	275	332	-	-	-	-	-	-	-
Stage 2	527	329	-	858	492	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	29.03	11.85	0	0.06
HCM LOS	D	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	968	-	-	175	899	-	530	723	-	-
HCM Lane V/C Ratio	-	-	-	0.181	0.002	-	0.008	0.006	-	-
HCM Control Delay (s/veh)	0	-	-	30.1	9	0	11.8	10	-	-
HCM Lane LOS	A	-	-	D	A	A	B	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0.6	0	-	0	0	-	-

Intersection: 2: Latson Road & WB I-96 Ramps

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	R	L	T	T	T	T	R
Maximum Queue (ft)	151	117	104	119	48	51	74	69	36
Average Queue (ft)	88	74	61	65	27	29	41	27	13
95th Queue (ft)	160	128	122	125	62	61	86	71	44
Link Distance (ft)		1526			1335	1335	377	377	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	500		350	1000					250
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 3: Latson Road & EB I-96 Ramps

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	T	T	R	L	T	T
Maximum Queue (ft)	169	177	170	75	67	32	276	40	75
Average Queue (ft)	126	122	119	52	39	15	174	19	40
95th Queue (ft)	181	188	189	88	78	37	361	47	89
Link Distance (ft)		1378		394	394	394		1335	1335
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	500		500				1000		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 4: Latson Road & Beck Rd.

Movement	EB
Directions Served	L
Maximum Queue (ft)	30
Average Queue (ft)	18
95th Queue (ft)	39
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	250
Storage Blk Time (%)	
Queuing Penalty (veh)	

Zone Summary

Zone wide Queuing Penalty: 0

Intersection: 2: Latson Road & WB I-96 Ramps

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	R	L	T	T	T	T	R
Maximum Queue (ft)	150	178	146	332	191	93	83	73	82
Average Queue (ft)	90	129	101	203	86	67	50	43	49
95th Queue (ft)	168	198	160	455	250	110	108	93	93
Link Distance (ft)		1526			1335	1335	377	377	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	500		350	1000					250
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 3: Latson Road & EB I-96 Ramps

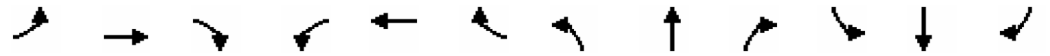
Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	T	T	R	L	T	T
Maximum Queue (ft)	162	165	111	129	109	32	242	35	55
Average Queue (ft)	114	102	70	78	60	18	158	16	25
95th Queue (ft)	185	170	127	135	123	38	320	43	64
Link Distance (ft)		1378		394	394	394		1335	1335
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	500		500				1000		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 4: Latson Road & Beck Rd.

Movement	EB	EB	WB	SB
Directions Served	L	TR	TR	L
Maximum Queue (ft)	36	10	4	15
Average Queue (ft)	15	2	3	5
95th Queue (ft)	40	13	14	20
Link Distance (ft)		1023	733	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	250			400
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	140	0	193	131	806	0	0	634	289
Future Volume (veh/h)	0	0	0	140	0	193	131	806	0	0	634	289
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Lane Width Adj.				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1767	0	1767	1841	1841	0	0	1722	1722
Adj Flow Rate, veh/h				156	0	214	149	916	0	0	712	325
Peak Hour Factor				0.90	0.90	0.90	0.88	0.88	0.88	0.89	0.89	0.89
Percent Heavy Veh, %				9	0	9	4	4	0	0	12	12
Cap, veh/h				208	0	325	502	2565	0	0	1997	891
Arrive On Green				0.12	0.00	0.12	0.11	1.00	0.00	0.00	1.00	1.00
Sat Flow, veh/h				1682	0	2635	1753	3589	0	0	3358	1459
Grp Volume(v), veh/h				156	0	214	149	916	0	0	712	325
Grp Sat Flow(s),veh/h/ln				1682	0	1317	1753	1749	0	0	1636	1459
Q Serve(g_s), s				8.1	0.0	7.0	2.7	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s				8.1	0.0	7.0	2.7	0.0	0.0	0.0	0.0	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				208	0	325	502	2565	0	0	1997	891
V/C Ratio(X)				0.75	0.00	0.66	0.30	0.36	0.00	0.00	0.36	0.36
Avail Cap(c_a), veh/h				398	0	624	714	2565	0	0	1997	891
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	2.00	2.00
Upstream Filter(I)				1.00	0.00	1.00	0.82	0.82	0.00	0.00	0.78	0.78
Uniform Delay (d), s/veh				38.1	0.0	37.6	4.6	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh				5.4	0.0	2.3	0.3	0.3	0.0	0.0	0.4	0.9
Initial Q Delay(d3), s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.6	0.0	2.3	0.6	0.1	0.0	0.0	0.1	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh				43.5	0.0	39.9	4.9	0.3	0.0	0.0	0.4	0.9
LnGrp LOS				D		D	A	A			A	A
Approach Vol, veh/h					370			1065			1037	
Approach Delay, s/veh					41.4			1.0			0.6	
Approach LOS					D			A			A	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		72.2			11.1	61.1		17.8				
Change Period (Y+Rc), s		6.2			6.2	6.2		6.7				
Max Green Setting (Gmax), s		55.8			15.8	33.8		21.3				
Max Q Clear Time (g_c+I1), s		2.0			4.7	2.0		10.1				
Green Ext Time (p_c), s		0.8			0.2	0.6		1.0				

Intersection Summary		
HCM 7th Control Delay, s/veh	6.8	
HCM 7th LOS	A	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	483	0	259	0	0	0	0	454	104	291	483	0
Future Volume (veh/h)	483	0	259	0	0	0	0	454	104	291	483	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1826	0	1826				0	1870	1870	1752	1752	0
Adj Flow Rate, veh/h	549	0	294				0	488	112	331	549	0
Peak Hour Factor	0.88	0.88	0.88				0.93	0.93	0.93	0.88	0.88	0.88
Percent Heavy Veh, %	5	0	5				0	2	2	10	10	0
Cap, veh/h	763	0	350				0	1488	664	568	2098	0
Arrive On Green	0.23	0.00	0.23				0.00	0.42	0.42	0.29	1.00	0.00
Sat Flow, veh/h	3374	0	1547				0	3647	1585	1668	3416	0
Grp Volume(v), veh/h	549	0	294				0	488	112	331	549	0
Grp Sat Flow(s),veh/h/ln	1687	0	1547				0	1777	1585	1668	1664	0
Q Serve(g_s), s	13.5	0.0	16.3				0.0	8.3	4.0	10.3	0.0	0.0
Cycle Q Clear(g_c), s	13.5	0.0	16.3				0.0	8.3	4.0	10.3	0.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	763	0	350				0	1488	664	568	2098	0
V/C Ratio(X)	0.72	0.00	0.84				0.00	0.33	0.17	0.58	0.26	0.00
Avail Cap(c_a), veh/h	948	0	435				0	1488	664	697	2098	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.90	0.90	0.00
Uniform Delay (d), s/veh	32.2	0.0	33.3				0.0	17.6	16.4	9.1	0.0	0.0
Incr Delay (d2), s/veh	2.0	0.0	11.4				0.0	0.6	0.5	0.9	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	0.0	7.2				0.0	3.1	1.4	2.2	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	34.2	0.0	44.7				0.0	18.2	16.9	9.9	0.3	0.0
LnGrp LOS	C		D					B	B	A	A	
Approach Vol, veh/h		843						600			880	
Approach Delay, s/veh		37.9						18.0			3.9	
Approach LOS		D						B			A	

Timer - Assigned Phs	1	2	4	6
Phs Duration (G+Y+Rc), s	19.1	43.9	27.1	62.9
Change Period (Y+Rc), s	6.2	6.2	6.7	6.2
Max Green Setting (Gmax), s	12.9	25.8	25.3	51.8
Max Q Clear Time (g_c+I1), s	12.3	10.3	18.3	2.0
Green Ext Time (p_c), s	0.6	0.4	2.0	0.5

Intersection Summary	
HCM 7th Control Delay, s/veh	19.9
HCM 7th LOS	B

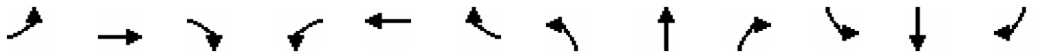
Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	0	0	0	0	2	0	536	0	1	731	10
Future Vol, veh/h	20	0	0	0	0	2	0	536	0	1	731	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	175	-	-	150	-	-	350	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	61	61	61	60	60	60	94	94	94	88	88	88
Heavy Vehicles, %	0	0	0	0	0	0	2	2	2	10	10	10
Mvmt Flow	33	0	0	0	0	3	0	570	0	1	831	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1124	1409	421	988	1415	285	842	0	0	570	0	0
Stage 1	839	839	-	570	570	-	-	-	-	-	-	-
Stage 2	285	570	-	418	844	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.14	-	-	4.3	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.22	-	-	2.3	-	-
Pot Cap-1 Maneuver	226	169	900	293	167	718	907	-	-	945	-	-
Stage 1	448	468	-	479	508	-	-	-	-	-	-	-
Stage 2	704	508	-	857	464	-	-	-	-	-	-	-
Platoon blocked, %	0	0	0	0	0		0	-	-		-	-
Mov Cap-1 Maneuver	225	169	900	292	167	718	907	-	-	945	-	-
Mov Cap-2 Maneuver	225	169	-	292	167	-	-	-	-	-	-	-
Stage 1	447	467	-	479	508	-	-	-	-	-	-	-
Stage 2	701	508	-	856	464	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	23.74	10.04	0	0.01
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	907	-	-	225	-	-	718	945	-	-
HCM Lane V/C Ratio	-	-	-	0.146	-	-	0.005	0.001	-	-
HCM Control Delay (s/veh)	0	-	-	23.7	0	0	10	8.8	-	-
HCM Lane LOS	A	-	-	C	A	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.5	-	-	0	0	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	119	0	444	250	915	0	0	701	638
Future Volume (veh/h)	0	0	0	119	0	444	250	915	0	0	701	638
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Lane Width Adj.				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1841	0	1841	1841	1841	0	0	1870	1870
Adj Flow Rate, veh/h				131	0	488	278	1017	0	0	754	471
Peak Hour Factor				0.91	0.91	0.91	0.90	0.90	0.90	0.93	0.93	0.93
Percent Heavy Veh, %				4	0	4	4	4	0	0	2	2
Cap, veh/h				352	0	551	436	2294	0	0	1703	760
Arrive On Green				0.20	0.00	0.20	0.22	1.00	0.00	0.00	0.64	0.64
Sat Flow, veh/h				1753	0	2745	1753	3589	0	0	3647	1585
Grp Volume(v), veh/h				131	0	488	278	1017	0	0	754	471
Grp Sat Flow(s),veh/h/ln				1753	0	1373	1753	1749	0	0	1777	1585
Q Serve(g_s), s				5.8	0.0	15.5	7.2	0.0	0.0	0.0	9.6	16.0
Cycle Q Clear(g_c), s				5.8	0.0	15.5	7.2	0.0	0.0	0.0	9.6	16.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				352	0	551	436	2294	0	0	1703	760
V/C Ratio(X)				0.37	0.00	0.89	0.64	0.44	0.00	0.00	0.44	0.62
Avail Cap(c_a), veh/h				376	0	589	613	2294	0	0	1703	760
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.33	1.33
Upstream Filter(I)				1.00	0.00	1.00	0.78	0.78	0.00	0.00	0.65	0.65
Uniform Delay (d), s/veh				31.1	0.0	35.0	8.7	0.0	0.0	0.0	10.2	11.4
Incr Delay (d2), s/veh				0.7	0.0	14.4	1.2	0.5	0.0	0.0	0.5	2.5
Initial Q Delay(d3), s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.5	0.0	6.2	1.8	0.2	0.0	0.0	2.9	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh				31.7	0.0	49.4	10.0	0.5	0.0	0.0	10.8	13.9
LnGrp LOS				C		D	A	A			B	B
Approach Vol, veh/h					619			1295			1225	
Approach Delay, s/veh					45.6			2.5			12.0	
Approach LOS					D			A			B	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		65.2			15.9	49.3		24.8				
Change Period (Y+Rc), s		6.2			6.2	6.2		6.7				
Max Green Setting (Gmax), s		57.8			18.8	32.8		19.3				
Max Q Clear Time (g_c+I1), s		2.0			9.2	18.0		17.5				
Green Ext Time (p_c), s		0.9			0.5	0.5		0.5				

Intersection Summary												
HCM 7th Control Delay, s/veh			14.7									
HCM 7th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	412	0	136	0	0	0	0	753	163	253	567	0
Future Volume (veh/h)	412	0	136	0	0	0	0	753	163	253	567	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1856	0	1856				0	1841	1841	1870	1870	0
Adj Flow Rate, veh/h	485	0	160				0	801	173	284	637	0
Peak Hour Factor	0.85	0.85	0.85				0.94	0.94	0.94	0.89	0.89	0.89
Percent Heavy Veh, %	3	0	3				0	4	4	2	2	0
Cap, veh/h	600	0	275				0	1782	795	474	2422	0
Arrive On Green	0.18	0.00	0.18				0.00	0.51	0.51	0.21	1.00	0.00
Sat Flow, veh/h	3428	0	1572				0	3589	1560	1781	3647	0
Grp Volume(v), veh/h	485	0	160				0	801	173	284	637	0
Grp Sat Flow(s),veh/h/ln	1714	0	1572				0	1749	1560	1781	1777	0
Q Serve(g_s), s	12.2	0.0	8.4				0.0	13.1	5.5	6.8	0.0	0.0
Cycle Q Clear(g_c), s	12.2	0.0	8.4				0.0	13.1	5.5	6.8	0.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	600	0	275				0	1782	795	474	2422	0
V/C Ratio(X)	0.81	0.00	0.58				0.00	0.45	0.22	0.60	0.26	0.00
Avail Cap(c_a), veh/h	811	0	372				0	1782	795	623	2422	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.91	0.91	0.00
Uniform Delay (d), s/veh	35.7	0.0	34.1				0.0	14.0	12.2	8.4	0.0	0.0
Incr Delay (d2), s/veh	4.4	0.0	1.9				0.0	0.8	0.6	1.1	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	0.0	3.3				0.0	4.5	1.7	1.6	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	40.1	0.0	36.0				0.0	14.9	12.8	9.5	0.2	0.0
LnGrp LOS	D		D					B	B	A	A	
Approach Vol, veh/h		645						974			921	
Approach Delay, s/veh		39.1						14.5			3.1	
Approach LOS		D						B			A	

Timer - Assigned Phs	1	2	4	6
Phs Duration (G+Y+Rc), s	15.5	52.1	22.5	67.5
Change Period (Y+Rc), s	6.2	6.2	6.7	6.2
Max Green Setting (Gmax), s	16.8	32.8	21.3	55.8
Max Q Clear Time (g_c+I1), s	8.8	15.1	14.2	2.0
Green Ext Time (p_c), s	0.5	0.7	1.5	0.5

Intersection Summary	
HCM 7th Control Delay, s/veh	16.6
HCM 7th LOS	B

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	19	0	1	0	0	3	0	894	1	4	670	29
Future Vol, veh/h	19	0	1	0	0	3	0	894	1	4	670	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	175	-	-	150	-	-	350	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	60	60	60	75	75	75	94	94	94	95	95	95
Heavy Vehicles, %	5	5	5	4	4	4	4	4	4	1	1	1
Mvmt Flow	32	0	2	0	0	4	0	951	1	4	705	31

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1204	1681	368	1313	1696	476	736	0	0	952	0	0
Stage 1	729	729	-	952	952	-	-	-	-	-	-	-
Stage 2	476	952	-	361	744	-	-	-	-	-	-	-
Critical Hdwy	7.6	6.6	7	7.58	6.58	6.98	4.18	-	-	4.12	-	-
Critical Hdwy Stg 1	6.6	5.6	-	6.58	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.6	5.6	-	6.58	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.55	4.05	3.35	3.54	4.04	3.34	2.24	-	-	2.21	-	-
Pot Cap-1 Maneuver	179	103	911	147	101	530	973	-	-	723	-	-
Stage 1	496	505	-	275	332	-	-	-	-	-	-	-
Stage 2	531	329	-	875	498	-	-	-	-	-	-	-
Platoon blocked, %	0	0	0	0	0		0	-	-		-	-
Mov Cap-1 Maneuver	177	102	911	145	101	530	973	-	-	723	-	-
Mov Cap-2 Maneuver	177	102	-	145	101	-	-	-	-	-	-	-
Stage 1	493	502	-	275	332	-	-	-	-	-	-	-
Stage 2	527	329	-	868	496	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	28.75	11.85	0	0.06
HCM LOS	D	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	973	-	-	177	911	-	530	723	-	-
HCM Lane V/C Ratio	-	-	-	0.179	0.002	-	0.008	0.006	-	-
HCM Control Delay (s/veh)	0	-	-	29.8	9	0	11.8	10	-	-
HCM Lane LOS	A	-	-	D	A	A	B	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0.6	0	-	0	0	-	-

Intersection: 2: Latson Road & WB I-96 Ramps

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	R	L	T	T	T	T	R
Maximum Queue (ft)	147	101	110	73	61	66	159	140	95
Average Queue (ft)	95	72	73	42	23	22	93	69	50
95th Queue (ft)	167	118	122	88	68	72	190	155	102
Link Distance (ft)		1526			1335	1335	377	377	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	500		350	1000					250
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 3: Latson Road & EB I-96 Ramps

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	T	T	R	L	T	T
Maximum Queue (ft)	166	160	219	119	90	40	180	109	110
Average Queue (ft)	134	120	150	81	59	22	98	67	70
95th Queue (ft)	197	186	234	139	101	45	189	120	127
Link Distance (ft)		1378		371	371	371		1335	1335
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	500		500				1000		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 4: Latson Road & Beck Rd.

Movement	EB	WB
Directions Served	L	TR
Maximum Queue (ft)	25	4
Average Queue (ft)	8	2
95th Queue (ft)	27	12
Link Distance (ft)		729
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	250	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Zone Summary

Zone wide Queuing Penalty: 0

Intersection: 2: Latson Road & WB I-96 Ramps

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	R	L	T	T	T	T	R
Maximum Queue (ft)	185	217	176	147	141	149	162	148	199
Average Queue (ft)	107	151	116	105	87	84	98	92	136
95th Queue (ft)	209	240	185	164	159	156	206	181	223
Link Distance (ft)		1526			1335	1335	377	377	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	500		350	1000					250
Storage Blk Time (%)									0
Queuing Penalty (veh)									0

Intersection: 3: Latson Road & EB I-96 Ramps

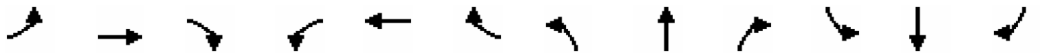
Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	T	T	R	L	T	T
Maximum Queue (ft)	169	164	128	164	134	52	155	58	73
Average Queue (ft)	120	113	86	119	90	26	109	42	50
95th Queue (ft)	187	181	138	180	157	60	203	72	81
Link Distance (ft)		1378		371	371	371		1335	1335
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	500		500				1000		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 4: Latson Road & Beck Rd.

Movement	EB	WB	SB
Directions Served	L	TR	L
Maximum Queue (ft)	62	8	6
Average Queue (ft)	28	2	1
95th Queue (ft)	80	11	11
Link Distance (ft)		729	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	250		350
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	165	0	193	161	826	0	0	660	289
Future Volume (veh/h)	0	0	0	165	0	193	161	826	0	0	660	289
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Lane Width Adj.				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1767	0	1767	1841	1841	0	0	1722	1722
Adj Flow Rate, veh/h				183	0	214	183	939	0	0	742	325
Peak Hour Factor				0.90	0.90	0.90	0.88	0.88	0.88	0.89	0.89	0.89
Percent Heavy Veh, %				9	0	9	4	4	0	0	12	12
Cap, veh/h				244	0	382	353	2426	0	0	2270	1012
Arrive On Green				0.15	0.00	0.15	1.00	1.00	0.00	0.00	0.23	0.23
Sat Flow, veh/h				1682	0	2635	520	3589	0	0	3358	1459
Grp Volume(v), veh/h				183	0	214	183	939	0	0	742	325
Grp Sat Flow(s),veh/h/ln				1682	0	1317	520	1749	0	0	1636	1459
Q Serve(g_s), s				8.3	0.0	6.0	15.5	0.0	0.0	0.0	15.1	14.8
Cycle Q Clear(g_c), s				8.3	0.0	6.0	30.7	0.0	0.0	0.0	15.1	14.8
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				244	0	382	353	2426	0	0	2270	1012
V/C Ratio(X)				0.75	0.00	0.56	0.52	0.39	0.00	0.00	0.33	0.32
Avail Cap(c_a), veh/h				532	0	833	353	2426	0	0	2270	1012
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	0.33	0.33
Upstream Filter(I)				1.00	0.00	1.00	0.88	0.88	0.00	0.00	0.73	0.73
Uniform Delay (d), s/veh				32.8	0.0	31.8	4.2	0.0	0.0	0.0	15.3	15.2
Incr Delay (d2), s/veh				4.6	0.0	1.3	4.7	0.4	0.0	0.0	0.3	0.6
Initial Q Delay(d3), s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.7	0.0	2.0	0.6	0.1	0.0	0.0	6.2	5.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh				37.4	0.0	33.1	8.9	0.4	0.0	0.0	15.6	15.8
LnGrp LOS				D		C	A	A			B	B
Approach Vol, veh/h					397			1122			1067	
Approach Delay, s/veh					35.1			1.8			15.6	
Approach LOS					D			A			B	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	61.7		61.7		18.3			
Change Period (Y+Rc), s	6.2		6.2		6.7			
Max Green Setting (Gmax), s	41.8		41.8		25.3			
Max Q Clear Time (g_c+I1), s	32.7		17.1		10.3			
Green Ext Time (p_c), s	1.4		0.6		1.3			

Intersection Summary		
HCM 7th Control Delay, s/veh	12.6	
HCM 7th LOS	B	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	483	0	298	0	0	0	0	504	123	291	534	0
Future Volume (veh/h)	483	0	298	0	0	0	0	504	123	291	534	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1826	0	1826				0	1870	1870	1752	1752	0
Adj Flow Rate, veh/h	549	0	339				0	542	132	331	607	0
Peak Hour Factor	0.88	0.88	0.88				0.93	0.93	0.93	0.88	0.88	0.88
Percent Heavy Veh, %	5	0	5				0	2	2	10	10	0
Cap, veh/h	874	0	401				0	2060	919	451	1930	0
Arrive On Green	0.26	0.00	0.26				0.00	0.58	0.58	1.00	1.00	0.00
Sat Flow, veh/h	3374	0	1547				0	3647	1585	716	3416	0
Grp Volume(v), veh/h	549	0	339				0	542	132	331	607	0
Grp Sat Flow(s),veh/h/ln	1687	0	1547				0	1777	1585	716	1664	0
Q Serve(g_s), s	11.5	0.0	16.6				0.0	6.1	3.1	23.8	0.0	0.0
Cycle Q Clear(g_c), s	11.5	0.0	16.6				0.0	6.1	3.1	29.9	0.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	874	0	401				0	2060	919	451	1930	0
V/C Ratio(X)	0.63	0.00	0.85				0.00	0.26	0.14	0.73	0.31	0.00
Avail Cap(c_a), veh/h	1067	0	489				0	2060	919	451	1930	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.92	0.92	0.00
Uniform Delay (d), s/veh	26.2	0.0	28.1				0.0	8.3	7.7	1.9	0.0	0.0
Incr Delay (d2), s/veh	0.8	0.0	11.0				0.0	0.3	0.3	9.4	0.4	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	0.0	7.2				0.0	1.8	0.9	1.2	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	27.1	0.0	39.2				0.0	8.6	8.0	11.3	0.4	0.0
LnGrp LOS	C		D					A	A	B	A	
Approach Vol, veh/h		888						674			938	
Approach Delay, s/veh		31.7						8.5			4.3	
Approach LOS		C						A			A	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	52.6	27.4	52.6
Change Period (Y+Rc), s	6.2	6.7	6.2
Max Green Setting (Gmax), s	41.8	25.3	41.8
Max Q Clear Time (g_c+I1), s	8.1	18.6	31.9
Green Ext Time (p_c), s	0.4	2.1	1.1

Intersection Summary	
HCM 7th Control Delay, s/veh	15.1
HCM 7th LOS	B

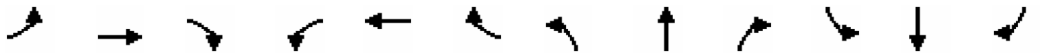
Intersection	
Int Delay, s/veh	6.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	0	0	54	0	141	0	466	75	141	681	10
Future Vol, veh/h	20	0	0	54	0	141	0	466	75	141	681	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	175	-	-	200	-	-	400	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	61	61	61	60	60	60	94	94	94	88	88	88
Heavy Vehicles, %	0	0	0	0	0	0	2	2	2	10	10	10
Mvmt Flow	33	0	0	90	0	235	0	496	80	160	774	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1348	1676	393	1243	1641	288	785	0	0	576	0	0
Stage 1	1100	1100	-	536	536	-	-	-	-	-	-	-
Stage 2	248	576	-	707	1106	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.14	-	-	4.3	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.22	-	-	2.3	-	-
Pot Cap-1 Maneuver	146	110	938	179	117	715	957	-	-	941	-	-
Stage 1	296	341	-	502	527	-	-	-	-	-	-	-
Stage 2	740	506	-	547	339	-	-	-	-	-	-	-
Platoon blocked, %	0	0	0	0	0		0	-	-		-	-
Mov Cap-1 Maneuver	82	92	938	149	97	715	957	-	-	941	-	-
Mov Cap-2 Maneuver	82	92	-	149	97	-	-	-	-	-	-	-
Stage 1	245	283	-	502	527	-	-	-	-	-	-	-
Stage 2	497	506	-	454	281	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	76.18	25.87	0	1.63
HCM LOS	F	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	957	-	-	82	-	149	715	941	-	-
HCM Lane V/C Ratio	-	-	-	0.402	-	0.606	0.329	0.17	-	-
HCM Control Delay (s/veh)	0	-	-	76.2	0	60.8	12.5	9.6	-	-
HCM Lane LOS	A	-	-	F	A	F	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	1.6	-	3.2	1.4	0.6	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	157	0	444	282	956	0	0	740	638
Future Volume (veh/h)	0	0	0	157	0	444	282	956	0	0	740	638
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Lane Width Adj.				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1841	0	1841	1841	1841	0	0	1870	1870
Adj Flow Rate, veh/h				173	0	488	313	1062	0	0	796	471
Peak Hour Factor				0.91	0.91	0.91	0.90	0.90	0.90	0.93	0.93	0.93
Percent Heavy Veh, %				4	0	4	4	4	0	0	2	2
Cap, veh/h				383	0	600	274	2169	0	0	2204	983
Arrive On Green				0.22	0.00	0.22	1.00	1.00	0.00	0.00	0.20	0.20
Sat Flow, veh/h				1753	0	2745	430	3589	0	0	3647	1585
Grp Volume(v), veh/h				173	0	488	313	1062	0	0	796	471
Grp Sat Flow(s),veh/h/ln				1753	0	1373	430	1749	0	0	1777	1585
Q Serve(g_s), s				6.8	0.0	13.5	34.2	0.0	0.0	0.0	15.4	21.0
Cycle Q Clear(g_c), s				6.8	0.0	13.5	49.6	0.0	0.0	0.0	15.4	21.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				383	0	600	274	2169	0	0	2204	983
V/C Ratio(X)				0.45	0.00	0.81	1.14	0.49	0.00	0.00	0.36	0.48
Avail Cap(c_a), veh/h				554	0	868	274	2169	0	0	2204	983
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	0.33	0.33
Upstream Filter(I)				1.00	0.00	1.00	0.86	0.86	0.00	0.00	0.56	0.56
Uniform Delay (d), s/veh				27.1	0.0	29.7	13.3	0.0	0.0	0.0	18.2	20.4
Incr Delay (d2), s/veh				0.8	0.0	3.9	94.5	0.7	0.0	0.0	0.3	0.9
Initial Q Delay(d3), s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.9	0.0	4.7	11.5	0.2	0.0	0.0	7.0	8.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh				27.9	0.0	33.6	107.8	0.7	0.0	0.0	18.5	21.4
LnGrp LOS				C		C	F	A			B	C
Approach Vol, veh/h					661			1375			1267	
Approach Delay, s/veh					32.1			25.1			19.5	
Approach LOS					C			C			B	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	55.8		55.8		24.2			
Change Period (Y+Rc), s	6.2		6.2		6.7			
Max Green Setting (Gmax), s	41.8		41.8		25.3			
Max Q Clear Time (g_c+I1), s	51.6		23.0		15.5			
Green Ext Time (p_c), s	0.0		0.6		2.0			

Intersection Summary		
HCM 7th Control Delay, s/veh	24.4	
HCM 7th LOS	C	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	412	0	167	0	0	0	0	826	202	253	644	0
Future Volume (veh/h)	412	0	167	0	0	0	0	826	202	253	644	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1856	0	1856				0	1841	1841	1870	1870	0
Adj Flow Rate, veh/h	485	0	196				0	879	215	284	724	0
Peak Hour Factor	0.85	0.85	0.85				0.94	0.94	0.94	0.89	0.89	0.89
Percent Heavy Veh, %	3	0	3				0	4	4	2	2	0
Cap, veh/h	638	0	293				0	2282	1018	366	2319	0
Arrive On Green	0.19	0.00	0.19				0.00	0.65	0.65	1.00	1.00	0.00
Sat Flow, veh/h	3428	0	1572				0	3589	1560	515	3647	0
Grp Volume(v), veh/h	485	0	196				0	879	215	284	724	0
Grp Sat Flow(s),veh/h/ln	1714	0	1572				0	1749	1560	515	1777	0
Q Serve(g_s), s	10.7	0.0	9.3				0.0	9.3	4.4	42.9	0.0	0.0
Cycle Q Clear(g_c), s	10.7	0.0	9.3				0.0	9.3	4.4	52.2	0.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	638	0	293				0	2282	1018	366	2319	0
V/C Ratio(X)	0.76	0.00	0.67				0.00	0.39	0.21	0.78	0.31	0.00
Avail Cap(c_a), veh/h	1084	0	497				0	2282	1018	366	2319	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.93	0.93	0.00
Uniform Delay (d), s/veh	30.9	0.0	30.3				0.0	6.4	5.6	5.2	0.0	0.0
Incr Delay (d2), s/veh	1.9	0.0	2.6				0.0	0.5	0.5	13.9	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	0.0	3.7				0.0	2.3	1.1	1.4	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	32.8	0.0	32.9				0.0	6.9	6.1	19.1	0.3	0.0
LnGrp LOS	C		C					A	A	B	A	
Approach Vol, veh/h		681						1094			1008	
Approach Delay, s/veh		32.8						6.8			5.6	
Approach LOS		C						A			A	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	58.4	21.6	58.4
Change Period (Y+Rc), s	6.2	6.7	6.2
Max Green Setting (Gmax), s	41.8	25.3	41.8
Max Q Clear Time (g_c+I1), s	11.3	12.7	54.2
Green Ext Time (p_c), s	0.7	2.2	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	12.7
HCM 7th LOS	B

Intersection	
Int Delay, s/veh	45.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	19	0	1	91	0	186	0	823	78	197	585	29
Future Vol, veh/h	19	0	1	91	0	186	0	823	78	197	585	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	175	-	-	200	-	-	400	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	60	60	60	75	75	75	94	94	94	95	95	95
Heavy Vehicles, %	5	5	5	4	4	4	4	4	4	1	1	1
Mvmt Flow	32	0	2	121	0	248	0	876	83	207	616	31

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1484	2004	323	1640	1978	479	646	0	0	959	0	0
Stage 1	1046	1046	-	917	917	-	-	-	-	-	-	-
Stage 2	438	959	-	723	1061	-	-	-	-	-	-	-
Critical Hdwy	7.6	6.6	7	7.58	6.58	6.98	4.18	-	-	4.12	-	-
Critical Hdwy Stg 1	6.6	5.6	-	6.58	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.6	5.6	-	6.58	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.55	4.05	3.35	3.54	4.04	3.34	2.24	-	-	2.21	-	-
Pot Cap-1 Maneuver	104	61	*956	~ 77	64	527	1056	-	-	720	-	-
Stage 1	299	344	-	289	344	-	-	-	-	-	-	-
Stage 2	560	327	-	499	340	-	-	-	-	-	-	-
Platoon blocked, %	0	0	0	0	0		0	-	-		-	-
Mov Cap-1 Maneuver	39	43	*956	~ 55	45	527	1056	-	-	720	-	-
Mov Cap-2 Maneuver	39	43	-	~ 55	45	-	-	-	-	-	-	-
Stage 1	213	245	-	289	344	-	-	-	-	-	-	-
Stage 2	296	327	-	354	242	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	230.79	246.9	0	2.92
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1056	-	-	39	956	55	527	720	-	-
HCM Lane V/C Ratio	-	-	-	0.81	0.002	2.208	0.47	0.288	-	-
HCM Control Delay (s/veh)	0	-	-	242.5	8.8	$ 715.3	17.7	12	-	-
HCM Lane LOS	A	-	-	F	A	F	C	B	-	-
HCM 95th %tile Q(veh)	0	-	-	3	0	12.1	2.5	1.2	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection: 2: Latson Road & WB I-96 Ramps

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	R	L	T	T	T	T	R
Maximum Queue (ft)	167	117	66	136	71	74	99	80	47
Average Queue (ft)	111	81	48	92	36	40	48	27	24
95th Queue (ft)	207	134	83	163	83	80	106	82	54
Link Distance (ft)		1526			1335	1335	377	377	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	500		350	1000					250
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 3: Latson Road & EB I-96 Ramps

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	T	T	R	L	T	T
Maximum Queue (ft)	156	156	263	85	76	32	332	203	142
Average Queue (ft)	115	109	171	57	47	17	221	76	57
95th Queue (ft)	167	178	282	95	84	40	522	354	183
Link Distance (ft)		1378		394	394	394		1335	1335
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	500		500				1000		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 4: Latson Road & Beck Rd.

Movement	EB	WB	WB	NB	SB
Directions Served	L	L	TR	TR	L
Maximum Queue (ft)	37	57	40	4	57
Average Queue (ft)	17	33	29	1	36
95th Queue (ft)	42	72	41	8	66
Link Distance (ft)			733	631	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	250	175			400
Storage Blk Time (%)					
Queuing Penalty (veh)					

Zone Summary

Zone wide Queuing Penalty: 0

Intersection: 2: Latson Road & WB I-96 Ramps

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	R	L	T	T	T	T	R
Maximum Queue (ft)	159	169	149	453	260	242	97	72	96
Average Queue (ft)	94	120	99	290	123	109	52	39	50
95th Queue (ft)	167	181	165	569	439	363	109	84	101
Link Distance (ft)		1526			1335	1335	377	377	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	500		350	1000					250
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 3: Latson Road & EB I-96 Ramps

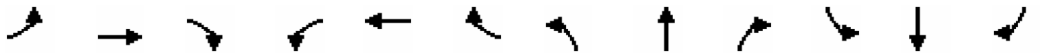
Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	T	T	R	L	T	T
Maximum Queue (ft)	166	155	138	134	114	36	303	53	41
Average Queue (ft)	117	105	90	84	69	24	182	27	25
95th Queue (ft)	184	173	148	147	125	44	383	65	54
Link Distance (ft)		1378		394	394	394		1335	1335
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	500		500				1000		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 4: Latson Road & Beck Rd.

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	TR	TR	L	T
Maximum Queue (ft)	52	5	142	173	4	94	33
Average Queue (ft)	28	1	97	89	1	61	8
95th Queue (ft)	72	9	165	194	8	106	41
Link Distance (ft)		1023		733	631		394
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	250		175			400	
Storage Blk Time (%)			0	5			
Queuing Penalty (veh)			1	5			

Zone Summary

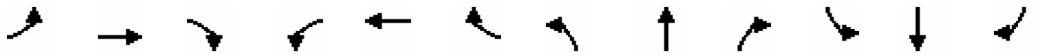
Zone wide Queuing Penalty: 5



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	165	0	193	161	826	0	0	660	289
Future Volume (veh/h)	0	0	0	165	0	193	161	826	0	0	660	289
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Lane Width Adj.				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1767	0	1767	1841	1841	0	0	1722	1722
Adj Flow Rate, veh/h				183	0	214	183	939	0	0	742	325
Peak Hour Factor				0.90	0.90	0.90	0.88	0.88	0.88	0.89	0.89	0.89
Percent Heavy Veh, %				9	0	9	4	4	0	0	12	12
Cap, veh/h				234	0	366	498	2510	0	0	1909	851
Arrive On Green				0.14	0.00	0.14	0.13	1.00	0.00	0.00	1.00	1.00
Sat Flow, veh/h				1682	0	2635	1753	3589	0	0	3358	1459
Grp Volume(v), veh/h				183	0	214	183	939	0	0	742	325
Grp Sat Flow(s),veh/h/ln				1682	0	1317	1753	1749	0	0	1636	1459
Q Serve(g_s), s				9.5	0.0	6.9	3.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s				9.5	0.0	6.9	3.6	0.0	0.0	0.0	0.0	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				234	0	366	498	2510	0	0	1909	851
V/C Ratio(X)				0.78	0.00	0.58	0.37	0.37	0.00	0.00	0.39	0.38
Avail Cap(c_a), veh/h				398	0	624	691	2510	0	0	1909	851
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	2.00	2.00
Upstream Filter(I)				1.00	0.00	1.00	0.82	0.82	0.00	0.00	0.76	0.76
Uniform Delay (d), s/veh				37.4	0.0	36.3	5.1	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh				5.7	0.0	1.5	0.4	0.4	0.0	0.0	0.5	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
%ile BackOfQ(50%),veh/ln				4.2	0.0	2.3	0.8	0.1	0.0	0.0	0.1	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh				43.1	0.0	37.8	5.5	0.4	0.0	0.0	0.5	1.0
LnGrp LOS				D		D	A	A			A	A
Approach Vol, veh/h					397			1122			1067	
Approach Delay, s/veh					40.2			1.2			0.6	
Approach LOS					D			A			A	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		70.8			12.1	58.7		19.2				
Change Period (Y+Rc), s		6.2			6.2	6.2		6.7				
Max Green Setting (Gmax), s		55.8			15.8	33.8		21.3				
Max Q Clear Time (g_c+I1), s		2.0			5.6	2.0		11.5				
Green Ext Time (p_c), s		0.9			0.3	0.6		1.0				

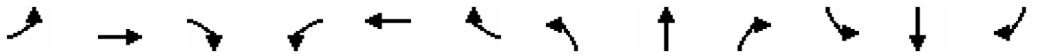
Intersection Summary		
HCM 7th Control Delay, s/veh	6.9	
HCM 7th LOS	A	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	483	0	298	0	0	0	0	504	123	291	534	0
Future Volume (veh/h)	483	0	298	0	0	0	0	504	123	291	534	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1826	0	1826				0	1870	1870	1752	1752	0
Adj Flow Rate, veh/h	549	0	339				0	542	132	331	607	0
Peak Hour Factor	0.88	0.88	0.88				0.93	0.93	0.93	0.88	0.88	0.88
Percent Heavy Veh, %	5	0	5				0	2	2	10	10	0
Cap, veh/h	843	0	387				0	1386	618	571	2020	0
Arrive On Green	0.25	0.00	0.25				0.00	0.78	0.78	0.30	1.00	0.00
Sat Flow, veh/h	3374	0	1547				0	3647	1585	1668	3416	0
Grp Volume(v), veh/h	549	0	339				0	542	132	331	607	0
Grp Sat Flow(s),veh/h/ln	1687	0	1547				0	1777	1585	1668	1664	0
Q Serve(g_s), s	13.1	0.0	18.9				0.0	4.3	2.0	10.8	0.0	0.0
Cycle Q Clear(g_c), s	13.1	0.0	18.9				0.0	4.3	2.0	10.8	0.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	843	0	387				0	1386	618	571	2020	0
V/C Ratio(X)	0.65	0.00	0.88				0.00	0.39	0.21	0.58	0.30	0.00
Avail Cap(c_a), veh/h	948	0	435				0	1386	618	692	2020	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	2.00	2.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.98	0.98	0.87	0.87	0.00
Uniform Delay (d), s/veh	30.2	0.0	32.4				0.0	6.5	6.3	9.5	0.0	0.0
Incr Delay (d2), s/veh	1.3	0.0	16.6				0.0	0.8	0.8	0.8	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	0.0	8.8				0.0	1.3	0.7	2.4	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	31.6	0.0	49.1				0.0	7.3	7.0	10.3	0.3	0.0
LnGrp LOS	C		D					A	A	B	A	
Approach Vol, veh/h		888						674			938	
Approach Delay, s/veh		38.3						7.3			3.8	
Approach LOS		D						A			A	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	19.5	41.3		29.2		60.8						
Change Period (Y+Rc), s	6.2	6.2		6.7		6.2						
Max Green Setting (Gmax), s	19.8	25.8		25.3		51.8						
Max Q Clear Time (g_c+I1), s	12.8	6.3		20.9		2.0						
Green Ext Time (p_c), s	0.6	0.4		1.6		0.5						

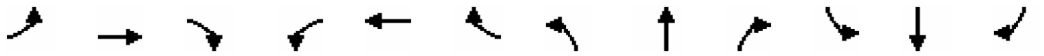
Intersection Summary												
HCM 7th Control Delay, s/veh			17.0									
HCM 7th LOS			B									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	0	0	54	0	141	0	466	75	141	681	10
Future Volume (veh/h)	20	0	0	54	0	141	0	466	75	141	681	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	1870	1870	1870	1752	1752	1752
Adj Flow Rate, veh/h	33	0	0	90	0	235	0	496	80	160	774	11
Peak Hour Factor	0.61	0.61	0.61	0.60	0.60	0.60	0.94	0.94	0.94	0.88	0.88	0.88
Percent Heavy Veh, %	0	0	0	0	0	0	2	2	2	10	10	10
Cap, veh/h	138	359	0	352	0	304	80	2055	330	605	2251	32
Arrive On Green	0.19	0.00	0.00	0.19	0.00	0.19	0.00	1.00	1.00	1.00	1.00	1.00
Sat Flow, veh/h	1163	1900	0	1440	0	1610	689	3066	492	784	3360	48
Grp Volume(v), veh/h	33	0	0	90	0	235	0	286	290	160	383	402
Grp Sat Flow(s),veh/h/ln	1163	1900	0	1440	0	1610	689	1777	1782	784	1664	1743
Q Serve(g_s), s	2.5	0.0	0.0	4.9	0.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	15.0	0.0	0.0	4.9	0.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		0.00	1.00		1.00	1.00		0.28	1.00		0.03
Lane Grp Cap(c), veh/h	138	359	0	352	0	304	80	1191	1194	605	1115	1168
V/C Ratio(X)	0.24	0.00	0.00	0.26	0.00	0.77	0.00	0.24	0.24	0.26	0.34	0.34
Avail Cap(c_a), veh/h	220	492	0	453	0	417	80	1191	1194	605	1115	1168
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.98	0.98	0.92	0.92	0.92
Uniform Delay (d), s/veh	41.8	0.0	0.0	31.6	0.0	34.7	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.9	0.0	0.0	0.4	0.0	6.0	0.0	0.5	0.5	1.0	0.8	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.0	1.6	0.0	5.0	0.0	0.2	0.2	0.2	0.2	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	42.7	0.0	0.0	32.0	0.0	40.7	0.0	0.5	0.5	1.0	0.8	0.7
LnGrp LOS	D			C		D		A	A	A	A	A
Approach Vol, veh/h		33			325			576			945	
Approach Delay, s/veh		42.7			38.3			0.5			0.8	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	66.3	23.7	66.3	23.7
Change Period (Y+Rc), s	6.0	6.7	6.0	6.7
Max Green Setting (Gmax), s	54.0	23.3	54.0	23.3
Max Q Clear Time (g_c+I1), s	2.0	17.0	2.0	14.5
Green Ext Time (p_c), s	3.2	0.0	6.1	1.0

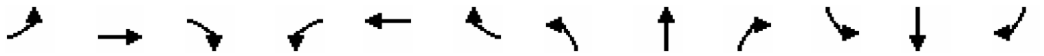
Intersection Summary	
HCM 7th Control Delay, s/veh	7.9
HCM 7th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	157	0	444	282	956	0	0	740	638
Future Volume (veh/h)	0	0	0	157	0	444	282	956	0	0	740	638
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Lane Width Adj.				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1841	0	1841	1841	1841	0	0	1870	1870
Adj Flow Rate, veh/h				173	0	488	313	1062	0	0	796	471
Peak Hour Factor				0.91	0.91	0.91	0.90	0.90	0.90	0.93	0.93	0.93
Percent Heavy Veh, %				4	0	4	4	4	0	0	2	2
Cap, veh/h				352	0	552	482	2293	0	0	1651	737
Arrive On Green				0.20	0.00	0.20	0.24	1.00	0.00	0.00	0.93	0.93
Sat Flow, veh/h				1753	0	2745	1753	3589	0	0	3647	1585
Grp Volume(v), veh/h				173	0	488	313	1062	0	0	796	471
Grp Sat Flow(s),veh/h/ln				1753	0	1373	1753	1749	0	0	1777	1585
Q Serve(g_s), s				7.9	0.0	15.5	8.4	0.0	0.0	0.0	2.6	4.7
Cycle Q Clear(g_c), s				7.9	0.0	15.5	8.4	0.0	0.0	0.0	2.6	4.7
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				352	0	552	482	2293	0	0	1651	737
V/C Ratio(X)				0.49	0.00	0.88	0.65	0.46	0.00	0.00	0.48	0.64
Avail Cap(c_a), veh/h				376	0	589	634	2293	0	0	1651	737
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	2.00	2.00
Upstream Filter(I)				1.00	0.00	1.00	0.75	0.75	0.00	0.00	0.62	0.62
Uniform Delay (d), s/veh				31.9	0.0	34.9	7.6	0.0	0.0	0.0	1.8	1.9
Incr Delay (d2), s/veh				1.1	0.0	14.3	1.1	0.5	0.0	0.0	0.6	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
%ile BackOfQ(50%),veh/ln				3.4	0.0	6.2	2.0	0.2	0.0	0.0	0.7	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh				32.9	0.0	49.2	8.7	0.5	0.0	0.0	2.4	4.5
LnGrp LOS				C		D	A	A			A	A
Approach Vol, veh/h					661			1375			1267	
Approach Delay, s/veh					44.9			2.4			3.2	
Approach LOS					D			A			A	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		65.2			17.2	48.0		24.8				
Change Period (Y+Rc), s		6.2			6.2	6.2		6.7				
Max Green Setting (Gmax), s		57.8			18.8	32.8		19.3				
Max Q Clear Time (g_c+I1), s		2.0			10.4	6.7		17.5				
Green Ext Time (p_c), s		1.0			0.6	0.6		0.6				

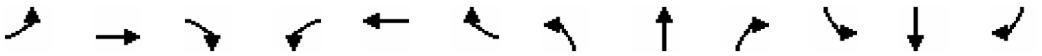
Intersection Summary												
HCM 7th Control Delay, s/veh			11.2									
HCM 7th LOS			B									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	412	0	167	0	0	0	0	826	202	253	644	0
Future Volume (veh/h)	412	0	167	0	0	0	0	826	202	253	644	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1856	0	1856				0	1841	1841	1870	1870	0
Adj Flow Rate, veh/h	485	0	196				0	879	215	284	724	0
Peak Hour Factor	0.85	0.85	0.85				0.94	0.94	0.94	0.89	0.89	0.89
Percent Heavy Veh, %	3	0	3				0	4	4	2	2	0
Cap, veh/h	603	0	277				0	1778	793	526	2419	0
Arrive On Green	0.18	0.00	0.18				0.00	1.00	1.00	0.21	1.00	0.00
Sat Flow, veh/h	3428	0	1572				0	3589	1560	1781	3647	0
Grp Volume(v), veh/h	485	0	196				0	879	215	284	724	0
Grp Sat Flow(s),veh/h/ln	1714	0	1572				0	1749	1560	1781	1777	0
Q Serve(g_s), s	12.2	0.0	10.6				0.0	0.0	0.0	6.8	0.0	0.0
Cycle Q Clear(g_c), s	12.2	0.0	10.6				0.0	0.0	0.0	6.8	0.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	603	0	277				0	1778	793	526	2419	0
V/C Ratio(X)	0.80	0.00	0.71				0.00	0.49	0.27	0.54	0.30	0.00
Avail Cap(c_a), veh/h	811	0	372				0	1778	793	675	2419	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	2.00	2.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.84	0.84	0.87	0.87	0.00
Uniform Delay (d), s/veh	35.6	0.0	34.9				0.0	0.0	0.0	6.5	0.0	0.0
Incr Delay (d2), s/veh	4.3	0.0	4.0				0.0	0.8	0.7	0.8	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	0.0	4.3				0.0	0.2	0.2	1.6	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	39.9	0.0	38.9				0.0	0.8	0.7	7.2	0.3	0.0
LnGrp LOS	D		D					A	A	A	A	
Approach Vol, veh/h		681						1094			1008	
Approach Delay, s/veh		39.6						0.8			2.2	
Approach LOS		D						A			A	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	15.5	52.0		22.5		67.5						
Change Period (Y+Rc), s	6.2	6.2		6.7		6.2						
Max Green Setting (Gmax), s	16.8	32.8		21.3		55.8						
Max Q Clear Time (g_c+I1), s	8.8	2.0		14.2		2.0						
Green Ext Time (p_c), s	0.5	0.7		1.6		0.6						

Intersection Summary												
HCM 7th Control Delay, s/veh			10.8									
HCM 7th LOS			B									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	0	1	91	0	186	0	823	78	197	585	29
Future Volume (veh/h)	19	0	1	91	0	186	0	823	78	197	585	29
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	1826	1826	1826	1841	1841	1841	1841	1841	1841	1885	1885	1885
Adj Flow Rate, veh/h	32	0	2	121	0	248	0	876	83	207	616	31
Peak Hour Factor	0.60	0.60	0.60	0.75	0.75	0.75	0.94	0.94	0.94	0.95	0.95	0.95
Percent Heavy Veh, %	5	5	5	4	4	4	4	4	4	1	1	1
Cap, veh/h	136	0	312	359	0	315	80	1643	156	519	2273	114
Arrive On Green	0.20	0.00	0.20	0.20	0.00	0.20	0.00	1.00	1.00	0.10	0.87	0.87
Sat Flow, veh/h	1105	0	1547	1393	0	1560	771	3228	306	1795	3470	174
Grp Volume(v), veh/h	32	0	2	121	0	248	0	474	485	207	318	329
Grp Sat Flow(s),veh/h/ln	1105	0	1547	1393	0	1560	771	1749	1786	1795	1791	1854
Q Serve(g_s), s	2.5	0.0	0.1	6.8	0.0	13.6	0.0	0.0	0.0	4.7	2.7	2.7
Cycle Q Clear(g_c), s	16.1	0.0	0.1	6.9	0.0	13.6	0.0	0.0	0.0	4.7	2.7	2.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.17	1.00		0.09
Lane Grp Cap(c), veh/h	136	0	312	359	0	315	80	890	909	519	1173	1214
V/C Ratio(X)	0.24	0.00	0.01	0.34	0.00	0.79	0.00	0.53	0.53	0.40	0.27	0.27
Avail Cap(c_a), veh/h	199	0	401	439	0	404	80	890	909	676	1173	1214
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.87	0.87	0.95	0.95	0.95
Uniform Delay (d), s/veh	41.8	0.0	28.7	31.5	0.0	34.1	0.0	0.0	0.0	7.6	2.2	2.2
Incr Delay (d2), s/veh	0.9	0.0	0.0	0.5	0.0	7.8	0.0	2.0	2.0	0.5	0.5	0.5
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	0.0	0.0	2.2	0.0	5.4	0.0	0.5	0.5	1.4	0.8	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	42.6	0.0	28.7	32.0	0.0	41.9	0.0	2.0	2.0	8.1	2.7	2.7
LnGrp LOS	D		C	C		D		A	A	A	A	A
Approach Vol, veh/h		34			369			959			854	
Approach Delay, s/veh		41.8			38.7			2.0			4.0	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	13.1	52.0		24.8		65.2		24.8				
Change Period (Y+Rc), s	6.2	6.2		6.7		6.2		6.7				
Max Green Setting (Gmax), s	14.8	32.8		23.3		53.8		23.3				
Max Q Clear Time (g_c+I1), s	6.7	2.0		18.1		4.7		15.6				
Green Ext Time (p_c), s	0.3	5.8		0.0		3.6		1.0				

Intersection Summary												
HCM 7th Control Delay, s/veh			9.5									
HCM 7th LOS			A									

Intersection: 2: Latson Road & WB I-96 Ramps

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	R	L	T	T	T	T	R
Maximum Queue (ft)	157	113	96	81	77	94	252	161	88
Average Queue (ft)	110	74	53	51	45	41	136	84	54
95th Queue (ft)	176	129	100	90	99	100	265	178	99
Link Distance (ft)		1526			1335	1335	377	377	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	500		350	1000					250
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 3: Latson Road & EB I-96 Ramps

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	T	T	R	L	T	T
Maximum Queue (ft)	168	159	245	133	100	58	196	119	115
Average Queue (ft)	135	126	185	92	68	28	144	70	66
95th Queue (ft)	186	175	282	152	110	58	239	142	131
Link Distance (ft)		1378		371	371	371		1335	1335
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	500		500				1000		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 4: Latson Road & Beck Rd.

Movement	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	L	TR	T	TR	L	T	TR
Maximum Queue (ft)	44	74	60	17	56	101	76	95
Average Queue (ft)	19	45	41	9	24	68	33	57
95th Queue (ft)	48	82	65	30	64	115	93	106
Link Distance (ft)			729	576	576		371	371
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	250	175				350		
Storage Blk Time (%)								
Queuing Penalty (veh)								

Zone Summary

Zone wide Queuing Penalty: 0

Intersection: 2: Latson Road & WB I-96 Ramps

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	R	L	T	T	T	T	R
Maximum Queue (ft)	176	195	169	162	188	196	194	169	217
Average Queue (ft)	117	151	109	110	87	97	124	96	147
95th Queue (ft)	195	212	183	189	196	211	227	189	251
Link Distance (ft)		1526			1335	1335	377	377	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	500		350	1000					250
Storage Blk Time (%)									1
Queuing Penalty (veh)									3

Intersection: 3: Latson Road & EB I-96 Ramps

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	T	T	R	L	T	T
Maximum Queue (ft)	167	151	149	285	281	104	127	94	85
Average Queue (ft)	125	107	104	200	179	59	88	60	52
95th Queue (ft)	189	173	167	311	306	113	141	102	103
Link Distance (ft)		1378		371	371	371		1335	1335
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	500		500				1000		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 4: Latson Road & Beck Rd.

Movement	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	L	TR	T	TR	L	T	TR
Maximum Queue (ft)	33	110	100	179	181	132	88	101
Average Queue (ft)	13	66	53	98	121	77	49	65
95th Queue (ft)	39	120	103	186	206	144	99	114
Link Distance (ft)			729	576	576		371	371
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	250	175				350		
Storage Blk Time (%)				2				
Queuing Penalty (veh)				0				

Zone Summary

Zone wide Queuing Penalty: 3

Summary of Warrants

Spot Number:	Future Conditions		
Major Street:	Latson Road	Minor Street:	Beck Road
Intersection:	Latson Road at Beck Road		
City/Twp:	Genoa Township		
Date Performed:	7/17/2024	Performed By:	F&V
Date Volumes Collected:	5/2/2023		

Warrant	Condition	Is Warrant Met
Data Validation Error		**NO**
WARRANT 1: Eight-Hour Vehicular Volume		**NO**
	Condition A	NO
	Condition B	NO
	Condition A&B	N/A
WARRANT 2: Four-Hour Vehicular Volume	(70%)	**YES**
WARRANT 3: Peak-Hour Vehicular Volume	(70%)	**YES**
	Condition A	**N/A**
	Condition B	**YES**
WARRANT 4: Pedestrian Volume	(70%)	**NO**
	Four Hour	N/A
	Peak Hour	N/A
(Threshold)	HAWK	NO
(Threshold)	RRFB	NO
WARRANT 5: School Crossing		**NO**
WARRANT 6: Coordinated Signal System		**NO**
WARRANT 7: Crash Experience		**NO**
	Condition A	NO
	Condition B	NO
WARRANT 8: Roadway Network		**NO**
WARRANT 9: Intersection Near a Grade Crossing		**#N/A**

Issue to Be Addressed by Signalization:

0

Michigan Manual of Uniform Traffic Control Devices
Worksheet for Signal Warrants (Section 4C)
WARRANT 1: Eight-Hour Vehicular Volume

Intersection:	Latson Road @ Beck Road		
Date	7/17/2024	by	F&V

3	: No. of Lanes on Major St?
2	: No. of Lanes on Minor St?
55	: Speed limit or 85th Percentile? (MPH)
NO	: Is the intersection within an Isolated community?
0	: if answer 4 is Yes, then what is the of the population isolated community?
NO	: Have other remedial measures been tried?

USE 70% WARRANTS 1A AND 1B. DO NOT USE COMBINATION OF A & B

	Major Volume (Both Apr.)	Minor Volume (One Apr.)	Condition A Major Volume	Condition A Minor Volume	Warrant Condition A Met?	Condition B Major Volume	Condition B Minor Volume	Warrant Condition B Met?	Combination Major A	Combination Minor A	Combination Major B	Combination Minor B	Warrant Condition A&B met?
Time	**N-S**	E-W											
00:01 - 01:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
01:00 - 02:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
02:00 - 03:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
03:00 - 04:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
04:00 - 05:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
05:00 - 06:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
06:00 - 07:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
07:00 - 08:00	1210	117	420	140	**NO**	630	70	**YES**	N/A	N/A	N/A	N/A	**N/A**
08:00 - 09:00	1284	117	420	140	**NO**	630	70	**YES**	N/A	N/A	N/A	N/A	**N/A**
09:00 - 10:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
10:00 - 11:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
11:00 - 12:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
12:00 - 13:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
13:00 - 14:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
14:00 - 15:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
15:00 - 16:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
16:00 - 17:00	1657	176	420	140	**YES**	630	70	**YES**	N/A	N/A	N/A	N/A	**N/A**
17:00 - 18:00	1610	175	420	140	**YES**	630	70	**YES**	N/A	N/A	N/A	N/A	**N/A**
18:00 - 19:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
19:00 - 20:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
20:00 - 21:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
21:00 - 22:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
22:00 - 23:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
23:00 - 00:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**

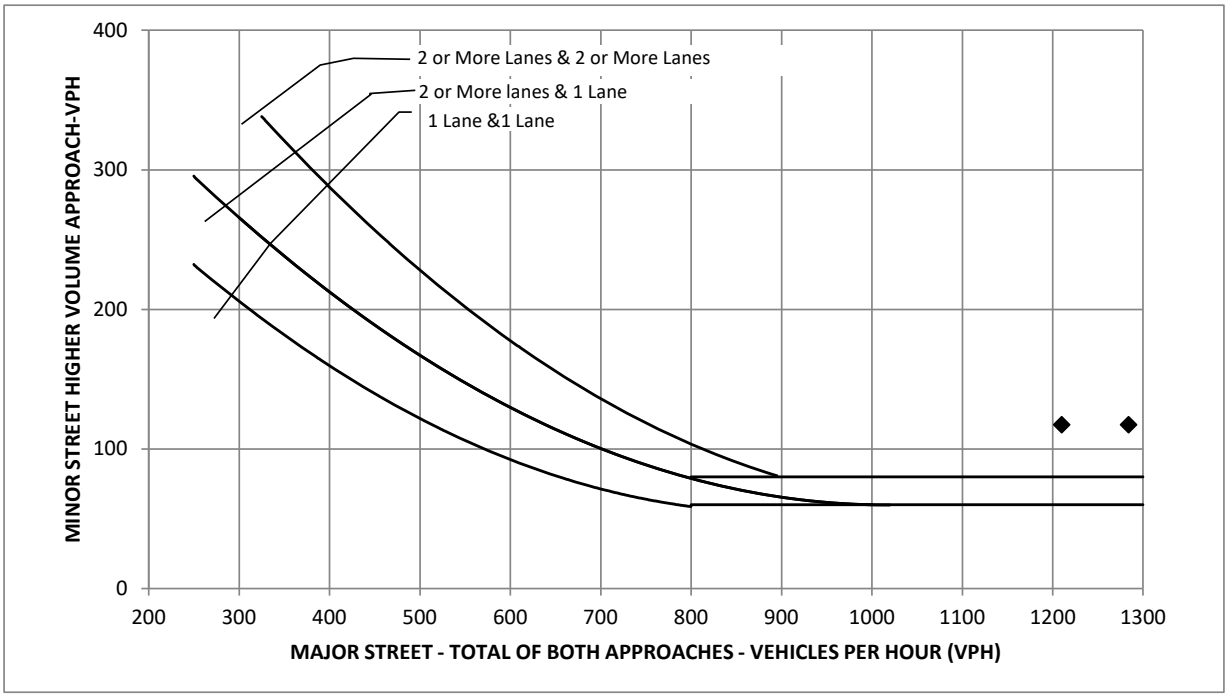
Number of Hours that met the warrant 1A =	**2**
Number of Hours that met the warrant 1B =	**4**
Number of Hours that met the warrant 1 A & B =	**0**

A. Is the Minimum Vehicular Volume Warrant Met? (Condition A)	**NO**
B. Is the Interruption of Continuous Traffic Met? (Condition B)	**NO**
C. Combination of Warrants A and B Criteria Met?	**N/A**

Michigan Manual of Uniform Traffic Control Devices
Worksheet for Signal Warrants (Section 4C)
WARRANT 2: Four-Hour Vehicular Volume

Spot Number:	Future Conditions		
Intersection:	Latson Road @ Beck Road		
Date	7/17/2024	by	F&V

3	**: No. of Lanes on Major St.**
2	**: No. of Lanes on Minor St.**
55	**: Speed limit or 85th Percentile? (MPH)**
NO	**: Is the intersection within an Isolated community?**
0	**: What is the of the population isolated community?**

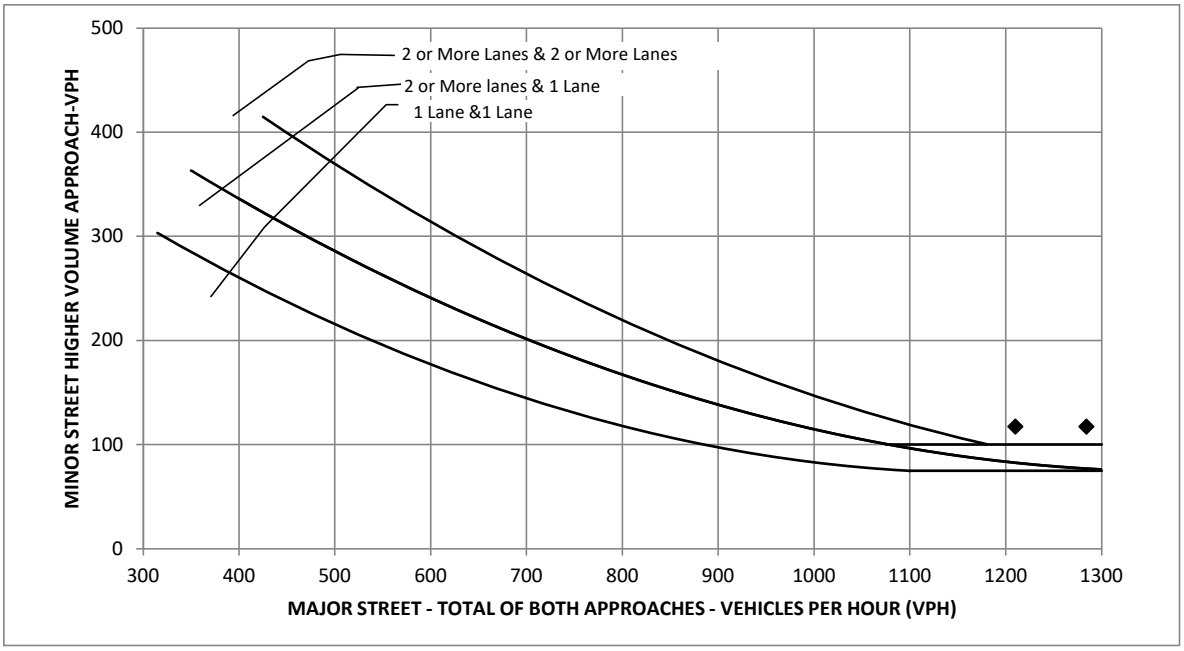


How Many Hours Are Met	**4**
Is Warrant (70%) Met?	**YES**

Michigan Manual of Uniform Traffic Control Devices
Worksheet for Signal Warrants (Section 4C)
WARRANT 3 B(70%): Peak-Hour Vehicular Volume

Spot Number:	Future Conditions		
Intersection:	Latson Road @ Beck Road		
Date	7/17/2024	by	F&V

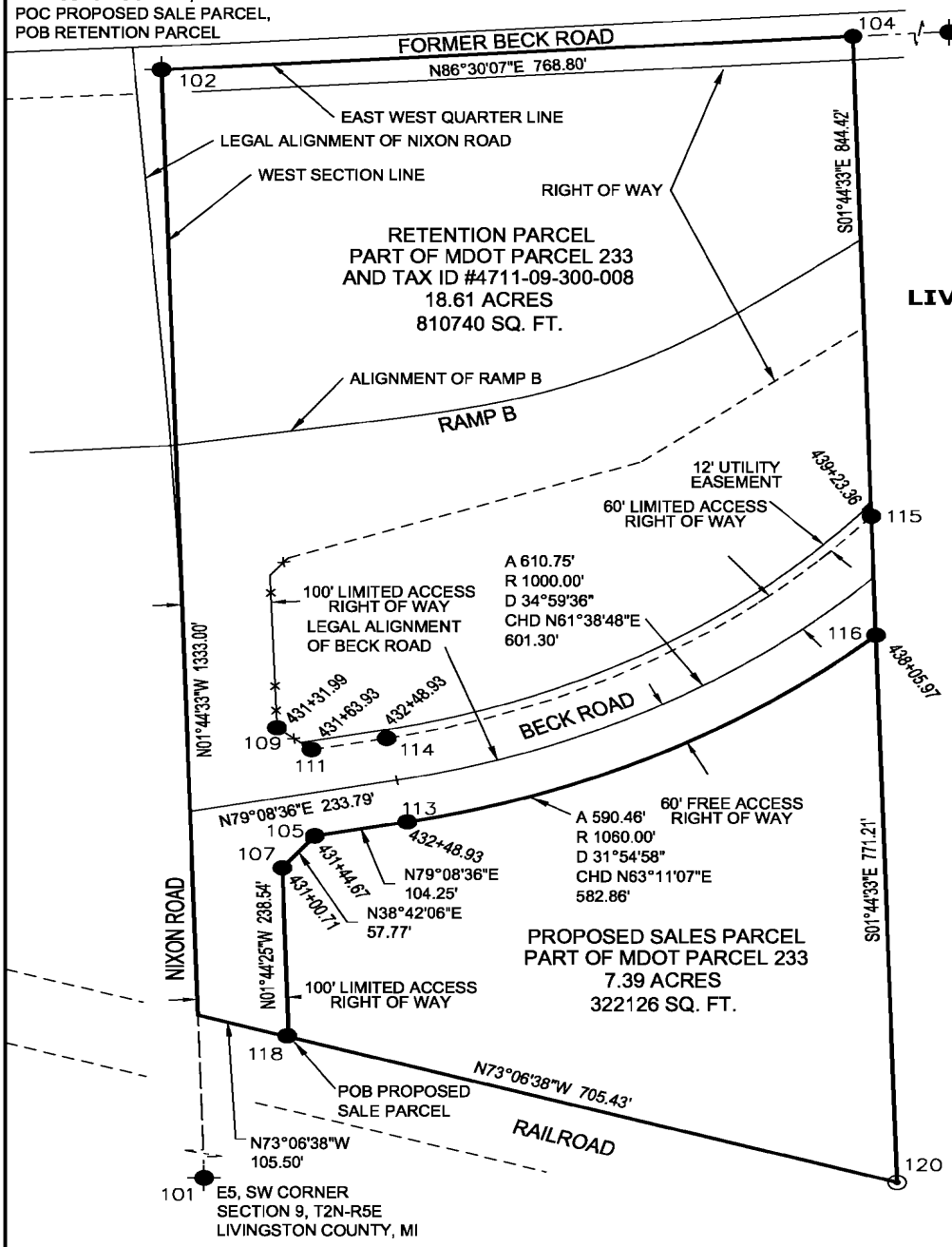
3	**: No. of Lanes on Major St.**
2	**: No. of Lanes on Minor St.**
55	**: Speed limit or 85th Percentile? (MPH)**
NO	**: Is the intersection within an Isolated community?**
0	**: What is the of the population isolated community?**



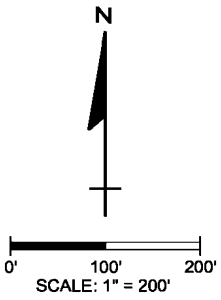
How Many Hours Are Met	**4**
Is Warrant (70%) Met?	**YES**

CERTIFICATE OF SURVEY

THIS SURVEY WAS PERFORMED FOR A PROPERTY TRANSFER FOR M.D.O.T. R.O.W. ACQUISITION. NO DIVISIONS OR SUBDIVISIONS WERE MADE, AND THE RESULTING M.D.O.T. PARCEL SHALL NOT BE CONSIDERED A BUILDING SITE AS DEFINED BY PUBLIC ACT 288 OF 1967, AS AMENDED.



2023S-0043
RECORDED ON
05/26/2023 08:34:25 AM
BRANDON DENBY
REGISTER OF DEEDS
LIVINGSTON COUNTY, MI 48843
RECORDING: 26.00
REMON: 4.00
PAGES: 2



LEGEND:

●	SET 1/2" IRON WITH CAP #51473
●	FOUND CAPPED IRON #46686
⊙	FOUND 1/2" HEX IRON PIN
✚	FOUND PLSS CORNER
R.	RECORD
M.	MEASURED
C.	CALCULATED
POC	POINT OF COMMENCING
POB	POINT OF BEGINNING
GRD.	GRID
GND.	GROUND

REVISED 03/08/2022

STATE OF MICHIGAN
Tricia A. Muxlow
License No. 4001051473
LICENSED PROFESSIONAL SURVEYOR

I, Tricia A. Muxlow, being a Surveyor Licensed in the State of Michigan, hereby certify that I have surveyed and mapped the above parcel of land, and that I have complied with the regulations of P.A. 132 of 1970 as amended.

TRICIA A. MUXLOW, P.S. 11.02.2021
LICENSED PROFESSIONAL SURVEYOR
MICHIGAN LICENSE NO. 51473

FOR: MDOT Michigan Department of Transportation

CS: 47065	JN: 213871ROW
ROUTE: I-96	DATE: 11.02.2021
DRAWN BY: TY	SHEET 1 OF 2
CHECKED BY: TM	

PREPARED BY:
3503 VANDYKE
MARLETTE, MI 48453
810.346.2200
MUXLOWSURVEYING.COM
MUXLOW SURVEYING

Livingston County Register of Deeds. 2023S-0043

CERTIFICATE OF SURVEY

THIS SURVEY WAS PERFORMED FOR A PROPERTY TRANSFER FOR M.D.O.T. R.O.W. ACQUISITION. NO DIVISIONS OR SUBDIVISIONS WERE MADE, AND THE RESULTING M.D.O.T. PARCEL SHALL NOT BE CONSIDERED A BUILDING SITE AS DEFINED BY PUBLIC ACT 288 OF 1967, AS AMENDED.

LEGAL DESCRIPTION OF RETENTION PARCEL: PART OF THE SOUTHWEST QUARTER OF SECTION 9, TOWN 2 NORTH, RANGE 5 EAST, GENOA TOWNSHIP, LIVINGSTON COUNTY, MICHIGAN; DESCRIBED AS BEGINNING AT THE WEST QUARTER CORNER OF SAID SECTION BEING AN IRON CAPPED 47055 IN A MONUMENT BOX; THENCE N86°30'07"E 768.80 FEET ALONG THE EAST WEST QUARTER LINE TO A SET IRON CAPPED 51473; THENCE THROUGH A FOUND IRON CAPPED 46686 S01°44'33"E 844.42 FEET PARALLEL TO THE WEST SECTION LINE TO THE SOUTH FREE ACCESS RIGHT OF WAY OF BECK ROAD; THENCE ALONG SAID SOUTH FREE ACCESS RIGHT OF WAY OF BECK ROAD AND ALONG A CURVE TO THE RIGHT WITH A LENGTH OF 590.46 FEET, A RADIUS OF 1060.00 FEET, A DELTA OF 31°54'58" AND A CHORD BEARING AND DISTANCE OF S63°11'07"W 582.86 FEET; THENCE S79°08'36"W 104.25 FEET ALONG SAID SOUTH FREE ACCESS RIGHT OF WAY OF BECK ROAD TO THE EAST LIMITED ACCESS RIGHT OF WAY OF NIXON ROAD; THENCE S38°42'06"W 57.77 FEET ALONG SAID EAST LIMITED ACCESS RIGHT OF WAY OF NIXON ROAD; THENCE S01°44'25"E 238.54 FEET ALONG SAID EAST LIMITED ACCESS RIGHT OF WAY OF NIXON ROAD TO THE NORTH LINE OF THE RAILROAD; THENCE N73°06'38"W 105.50 FEET ALONG SAID NORTH LINE OF THE RAILROAD; THENCE N01°44'33"W 1333.00 FEET ALONG THE WEST SECTION LINE TO THE POINT OF BEGINNING. CONTAINING 18.61 ACRES. SUBJECT TO BECK ROAD PUBLIC RIGHT OF WAY.
DATUM: STATE PLANE COORDINATES, MICHIGAN SOUTH ZONE (2113), NAD83, INTERNATIONAL FEET. POINT OF COMMENCEMENT: N 393244.3011,E 13256061.4225 (WEST 1/4 CORNER SECTION 9). AVERAGE COMBINED SCALE FACTOR: 0.9999081731522043 (GROUND TO GRID).

LEGAL DESCRIPTION OF PROPOSED SALES PARCEL: PART OF THE SOUTHWEST QUARTER OF SECTION 9, TOWN 2 NORTH, RANGE 5 EAST, GENOA TOWNSHIP, LIVINGSTON COUNTY, MICHIGAN; DESCRIBED AS COMMENCING AT THE WEST QUARTER CORNER OF SAID SECTION BEING AN IRON CAPPED 47055 IN A MONUMENT BOX; THENCE S01°44'33"E 1333.00 FEET ALONG THE WEST SECTION LINE TO THE NORTH LINE OF THE RAILROAD; THENCE S73°06'38"E 105.50 FEET ALONG SAID NORTH LINE OF THE RAILROAD TO THE EAST NIXON ROAD LIMITED ACCESS RIGHT OF WAY AND TO THE POINT OF BEGINNING; THENCE N01°44'25"W 238.54 FEET ALONG SAID LIMITED ACCESS RIGHT OF WAY LINE; THENCE N38°42'06"E 57.77 FEET ALONG SAID LIMITED ACCESS RIGHT OF WAY LINE TO THE SOUTH FREE ACCESS RIGHT OF WAY LINE OF BECK ROAD; THENCE N79°08'36"E 104.25 FEET ALONG SAID BECK ROAD RIGHT OF WAY; THENCE ALONG A CURVE TO THE LEFT WITH A LENGTH OF 590.46 FEET, A RADIUS OF 1060.00 FEET, A DELTA OF 31°54'58" AND A CHORD BEARING AND DISTANCE OF N63°11'07"E 582.86 FEET ALONG SAID BECK ROAD RIGHT OF WAY; THENCE THROUGH A FOUND IRON CAPPED 46686 S01°44'33"E 771.21 FEET PARALLEL TO SAID WEST SECTION LINE AND TO A FOUND 1/2" HEX IRON PIN AND TO SAID NORTH LINE OF THE RAILROAD; THENCE THROUGH A FOUND IRON CAPPED 46686 N73°06'38"W 705.43 FEET ALONG SAID NORTH LINE OF A RAILROAD TO THE POINT OF BEGINNING. CONTAINING 7.39 ACRES (322126 SQUARE FEET).
DATUM: STATE PLANE COORDINATES, MICHIGAN SOUTH ZONE (2113), NAD83, INTERNATIONAL FEET. POINT OF COMMENCEMENT: N 393244.3011,E 13256061.4225 (WEST 1/4 CORNER SECTION 9). AVERAGE COMBINED SCALE FACTOR: 0.9999081731522043 (GROUND TO GRID).

NOTES:

1. THIS SURVEY IS BASED UPON A WARRANTY DEED TO MDOT RECORDED IN 2011R-013466.
2. FEE SIMPLE INTEREST LIES IN MDOT AT THE TIME OF THIS SURVEY.
3. CURRENT PARCEL TAX IDENTIFICATION NUMBER: 4711-09-300-008
4. PROPERTY ADDRESS: 1641 NIXON
5. LOCATION AND CONFIGURATION OF ROAD ALIGNMENTS AND RIGHTS OF WAY WERE ACCEPTED FROM MDOT FILE 101619_ALIGN_06-29-2012.DGN AND 101619_CONST_06-29-2012.DGN. ALL ALIGNMENTS ARE LEGAL ALIGNMENTS.
6. PARENT PARCEL LEGAL DESCRIPTION IS AS RECORDED IN 2011R-013466.
7. THE OBJECTIVE OF THIS SURVEY IS TO ACCURATELY DEFINE LAND INTENDED FOR EXCESS SALE. IT DOES NOT GUARANTEE THAT THE REMAINING LAND IS FREE FROM ENCROACHMENTS, TITLE CONFLICTS OR ENCUMBRANCES.
8. METES AND BOUNDS COURSES WERE CALCULATED BASED UPON AVAILABLE SECTION CORNER EVIDENCE AND THE RECORDED DEED DESCRIPTION. FOUND IRONS GENERALLY MATCH THE CALCULATED DESCRIPTION, BUT ARE NOT CALLED OUT IN THE RECORDED DESCRIPTIONS.
9. BEARINGS ARE BASED ON GRID NORTH FOR STATE PLANE COORDINATES, MICHIGAN SOUTH ZONE (2113).
10. COORDINATE SYSTEM IS STATE PLANE COORDINATES, MICHIGAN SOUTH ZONE (2113). ALL DISTANCES SHOWN ON THIS SURVEY ARE GRID.
11. AVERAGE COMBINED SCALE FACTOR FOR THE PROJECT IS 0.9999081731522043.
12. GROUND DISTANCE = GRID DISTANCE / AVERAGE COMBINED SCALE FACTOR.
13. COORDINATE SYSTEM WAS ESTABLISHED BY RTK GNSS AND IS REFERENCED TO THE BRIGHTON MDOT CORS TOWER.
14. PARCELS ARE SUBJECT TO RIGHTS OF WAY, EASEMENTS AND RESTRICTIONS OF RECORD, IF ANY.
15. STATION/OFFSETS ARE FROM ALIGNMENT FILE 101619_ALIGN_06-29-2012.DGN AND 101619_CONST_06-29-2012.DGN.
16. NO GAPS OR GORES WERE DISCOVERED.
17. STATIONS OF MONUMENTS RELATE TO BECK ROAD LEGAL ALIGNMENT.
18. CLOSURE OF BOTH PARCELS: 0.00000

COORDINATES (MCS83)

PT NO	NORTHING	STD. DEV. N.	EASTING	STD. DEV. E.
100	392186.95557	0.0141	13256198.21437	0.0118
101	390565.76117	0.0162	13256142.90682	0.0136
102	393244.30111	0.0162	13256061.42254	0.0135
103	393404.57560	0.0260	13258683.28841	0.0264
105	392164.59582	0.0172	13256231.18744	0.0151
107	392119.70778	0.0176	13256195.27421	0.0169
109	392316.91304	0.0179	13256189.62768	0.0156
111	392286.16099	0.0175	13256227.98935	0.0148
113	392184.04777	0.0184	13256334.21114	0.0153
114	392302.00997	0.0178	13256311.38801	0.0146
115	392614.88007	0.0179	13256849.33981	0.0144
116	392447.38647	0.0179	13256854.37429	0.0142
117	393291.22149	0.0182	13256828.81929	0.0137
118	391881.16324	0.0197	13256202.67190	0.0144
120	391675.98487	0.0262	13256878.09999	0.0153

GOVERNMENT CORNER WITNESSES:

W 1/4 COR SEC 9, T2N-R5E
FOUND CAPPED IRON 47055 IN MON BOX
N30°E 32.71' SE CORNER BRIDGE ABUTMENT
S30°E 49.07' FOUND IRON 47055
EAST 11.05' BACK OF CURB
NORTH 21.41' SOUTH EDGE BRIDGE DECK

CENTER SEC 9, T2N-R5E
FOUND 3/4" IRON BAR
S45°W 20.09' FOUND SPIKE/TAG IN 18" CHERRY
S70°E 46.60' FOUND SPIKE/TAG IN TWIN 16" OAK
N10°E 27.43' FOUND SPIKE/TAG IN 36" OAK
N80°W 67.85' FOUND SPIKE/TAG IN TWIN 24" OAK

SW COR SEC 9, T2N-R5E
FOUND IRON IN MON BOX WITH DESTROYED CAP
S45°E 80.22' SPIKE IN 10" ELM
S85°W 57.22' FOUND PK/TAG IN GUY POLE
N45°E 48.88' WEST CORNER CATCH BASIN
S85°E 104.04' SPIKE IN 16" ASH

REVISED 03/08/2022

STATE OF MICHIGAN
Tricia A. Muxlow
License No. 4001051473
LICENSED PROFESSIONAL SURVEYOR

I, Tricia A. Muxlow, being a Surveyor Licensed in the State of Michigan, hereby certify that I have surveyed and mapped the above parcel of land, and that I have complied with the regulations of P.A. 132 of 1970 as amended.

TRICIA A. MUXLOW, P.S. 11.02.2021
LICENSED PROFESSIONAL SURVEYOR
MICHIGAN LICENSE NO. 51473

FOR: MDOT Michigan Department of Transportation

CS: 47065	JN: 213871ROW
ROUTE: I-96	DATE: 11.02.2021
DRAWN BY: TY	SHEET 2 OF 2
CHECKED BY: TM	

PREPARED BY:
3503 VANDYKE
MARLETTE, MI 48453
810.346.2200
MUXLOWSURVEYING.COM
MUXLOW SURVEYING

Livingston County Register of Deeds. 2023S-0043

GENOA TOWNSHIP
APPLICATION FOR PRIVATE ROAD
2911 Dorr Road, Brighton MI 48116 (810) 227-5225

A private road requiring approval of the Township shall be any road providing access to more than four dwelling units or two non-residential principal buildings. This does not include drives within a multiple family complex or parking lot aisles, but does include collector type roadways within such a development.

APPLICANT: Todd Wyett

OWNER ADDRESS: 29201 Telegraph Rd, Ste 410, Southfield, MI 48034

SITE ADDRESS: Parcels 4711-08-400-020, 004, 006

APPLICABILITY OF PUBLIC VS. PRIVATE ROAD STANDARDS

All private roads in Genoa Township shall be constructed to the standards of the Livingston County Road Commission unless the Planning Commission and Township Board determine your road qualifies under the following ordinance criteria:

1. Explain how there will be no need for the roadway to be dedicated as a public road in the future. Roadway will be part of an industrial PUD with association that will own and maintain the proposed roadway.

2. Explain how dedication of the road as a public street would not result in continuity in the public street system at the present time or in the future.
The roadway will service the private industrial development sites within the PUD

3. What uses (number of lots, number of residential units, number of buildings, etc) will have access from the private road. Will the expected traffic volumes along the roadway be below five hundred (500) vehicles per average weekday, based on accepted trip generation figures?
Future development of the site is still to be determined. Traffic volumes are dependent on specific uses in the future.

4. Are there any significant natural features such as mature trees, natural slopes, wetlands or other water bodies would be preserved through construction and maintenance as a private road?
The site will ultimately be fully developed and planned around natural features to be preserved.

5. What financial and administrative mechanisms will be provided to ensure maintenance of the private road?
The private road will be maintained by the industrial park association and a maintenance agreement will be established outlining the obligations.

AFFIDAVIT

The undersigned says that they are the Owner (owner, lessee, or other specified interest) involved in this petition and that the foregoing answers and statements herein contained and the information herewith submitted are in all respects true and correct to the best of his/her knowledge and belief.

By: Todd Wyett

Address: 29201 Telegraph Rd, Ste 410, Southfield, MI 48034 Phone: 248-770-8484

Contact Information - Review Letters and Correspondence shall be forwarded to the following:

1.) Todd Wyett (*Name*) of Versa Real Estate (*Business Affiliation*) at ( ) todd@versacos.com (*Fax No.*)

Eric Lord Atwell elord@atwell-group.com

FEE EXCEEDANCE AGREEMENT

As stated on the site plan review fee schedule, all site plans are allocated two (2) consultant reviews and one (1) Planning Commission meeting. If additional reviews or meetings are necessary, the applicant will be required to pay the actual incurred costs for the additional reviews. If applicable, additional review fee payment will be required concurrent with submittal to the Township Board. By signing below, applicant indicates agreement and full understanding of this policy.

PROJECT NAME: Innovation Interchange - Phase 1

PROJECT LOCATON & DESCRIPTION: Latson Rd, South of I-96

Phase 1 entrance roadway

SIGNATURE: _____ DATE: 7/15/24

PRINT NAME: Todd Wyett PHONE: 248-770-8484

COMPANY NAME & ADDRESS: 29201 Telegraph Rd, Ste4 410, Southfield, MI 48034

GENOA CHARTER TOWNSHIP
Application for Site Plan Review

TO THE GENOA TOWNSHIP PLANNING COMMISSION AND TOWNSHIP BOARD:

APPLICANT NAME & ADDRESS: Todd Wyett

If applicant is not the owner, a letter of Authorization from Property Owner is needed.

OWNER'S NAME & ADDRESS: Todd Wyett

SITE ADDRESS: 29201 Telegraph Rd, Ste 410, Southfield, MI 48034 PARCEL #(s): 4711-08-400-020, 004, 006

APPLICANT PHONE: (248) 770-8484 OWNER PHONE: ( ) same

OWNER EMAIL: todd@versacos.com

LOCATION AND BRIEF DESCRIPTION OF SITE:

located south of the I-96 / Latson Rd interchange, south of the railroad and west of Latson Rd

Site is existing vacant land, part of 177 acre PUD for high-tech / light industrial development.

BRIEF STATEMENT OF PROPOSED USE:

The property is zoned PUD for high tech / light industrial development

THE FOLLOWING BUILDINGS ARE PROPOSED: To be determined

This site plan application is for the initial development access location and monument sign

I HEREBY CERTIFY THAT ALL INFORMATION AND DATA ATTACHED TO AND MADE PART OF THIS APPLICATION IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

BY: Todd Wyett

ADDRESS: 29201 Telegraph Rd, Ste 410, Southfield, MI 48034

Contact Information - Review Letters and Correspondence shall be forwarded to the following:

1.) Todd Wyett (Name) of Versa Real Estate (Business Affiliation) at todd@versacos.com (E-mail Address)

Eric Lord — Atwell — elord@atwell-group.com

FEE EXCEEDANCE AGREEMENT

As stated on the site plan review fee schedule, all site plans are allocated two (2) consultant reviews and one (1) Planning Commission meeting. If additional reviews or meetings are necessary, the applicant will be required to pay the actual incurred costs for the additional reviews. If applicable, additional review fee payment will be required concurrent with submittal to the Township Board. By signing below, applicant indicates agreement and full understanding of this policy.

SIGNATURE: _____ DATE: 7/15/24

PRINT NAME: Todd Wyett PHONE: 248-770-8484

ADDRESS: 29201 Telegraph Rd, Ste4 410, Southfield, MI 48034

December 3, 2024

Planning Commission
Genoa Township
2911 Dorr Road
Brighton, Michigan 48116

Attention:	Amy Ruthig, Planning Director
Subject:	Innovation Interchange – Private Road Review #2
Location:	West side of S. Latson Road, between the rail line and Clover Bend Court
Zoning:	CAPUD Interchange Campus Planned Unit Development

Dear Commissioners:

At the Township's request, we have reviewed the revised submittal (plans dated 11/11/24), proposing the partial construction of a new private road off of S. Latson Road for the Innovation Interchange project. The project area is located on the west side of S. Latson Road, between the rail line and Clover Bend Court.

We have reviewed the proposal in accordance with the applicable provisions of the Genoa Township Zoning Ordinance, including the standards of Section 15.05, and provide the following for your consideration.

A. Review Summary

1. Several conditions are present that warrant consideration of a private road (as opposed to public).
2. The applicant must address any comments provided by staff or the Township Attorney with respect to the Private Road Easement and Maintenance Agreement.
3. We suggest that provisions be provided in the Agreement ensuring completion of the full road system as depicted in the approved PUD.
4. If favorable action is considered, Road Commission approval should be included as a condition.
5. The technical design and construction requirements are subject to review and comment by the Township Engineer and Brighton Area Fire Authority.
6. The Commission should determine whether the applicant's statement regarding project phasing is sufficient or if additional information should be provided to address the applicable Ordinance provisions.
7. Site improvements required by the PUD Agreement must be provided to the Township's satisfaction. Some improvements are required with the first site plan submittal (which this is), while others are required with the first site plan for a building (which this is not) and/or with future phases (though there is no description/depiction of future phases).

B. Proposal/Process

The applicant requests final PUD site plan review/approval for part of a new private road, identified as Phase 1. It is important to note that only a limited stub road is currently proposed.

The Planning Commission is to review the plan and Environmental Impact Assessment, and put forth recommendations to the Township Board, who has final approval authority.

Aerial view of site and surroundings (looking north)

C. Private Road Review

1. **Public versus Private Road Standards.** The proposed private road is intended to provide access to future development sites within the PUD. Generally speaking, the purpose of the proposed road does not necessitate it being public, nor is it necessary for continuity of the public street system.

   Based on the approved PUD, the remainder of the road system is intended to protect the natural features on site, and the applicant has provided a Private Road Easement and Maintenance Agreement, as required.

   The applicant must address any comments provided by staff or the Township Attorney with respect to Agreement.

   Additionally, we suggest that provisions be provided ensuring completion of the full road system as depicted in the approved PUD. In the event the full road system is not approved and installed within the timeframes established in the PUD, provisions should be made for the applicant to remove the road.

2. **AASHTO Standards.** The Commission should consider any technical comments provided by the Township Engineer.

3. **Easement Width**. The proposal provides a 66-foot wide easement, as required.

4. **Road Design.** The typical road cross section on Sheet 5 depicts a 36-foot wide paved roadway with curb and gutter, as required.

   The applicant must ensure that the road width will accommodate the improvements required as part of the traffic impact study.

5. **Maximum Length/Turnarounds.** At this time, the proposed private roadway is less than 300 feet in length; however, there is no turnaround area provided, which is a concern in the event a vehicle mistakenly turns onto the stub road.
   In response, the applicant has stated that "temporary gates or barricades will be provided across the entrance to control access to the property until the first building is constructed."

   The Commission should consider any additional comments provided by the Township Engineer and Brighton Area Fire Authority.

6. **Grading.** The Commission should consider any technical comments provided by the Township Engineer.

7. **Horizontal Curve.** The proposed private road does not have any curves at this time.

8. **Intersection Design.** The proposed private road intersects with S. Latson Road at a 90-degree angle, as required.

   The Commission should consider any additional technical comments provided by the Township Engineer.

   If favorable action is considered by the Township, it should be conditioned upon ultimate approval by the Livingston County Road Commission.

9. **Minimum Offsets.** The Commission should consider any technical comments provided by the Township Engineer.

10. **Boulevard Medians.** The proposed project does not include a boulevard median.

11. **Vertical Clearance.** The plans do not depict any trees within the 66-foot easement.

    For future reference, the applicant should be aware that the Ordinance requires 15 feet of overhead tree clearance within the width of the pavement.

12. **Street Names.** The proposed name, Innovation Drive, is subject to approval by Livingston County following review by the Township and Brighton Area Fire Authority.

    The revised submittal includes email correspondence from the Road Commission indicating that "Innovation Drive is acceptable."

13. **Signs.** The submittal does not identify any signage within the easement. Such signage, including stop signs and road identification signs, must be provided in accordance with the Michigan Manual of Uniform Traffic Control Devices and Road Commission standards.

14. **Yard Setback.** The proposed private road easement does not abut surrounding property lines.

15. **Impact Assessment.** The revised submittal includes an updated Environmental Impact Assessment for this specific request.

16. **Project Phasing.** As previously noted, the Phase 1 project includes only an approximately 300-foot long stub road.

    Our office previously requested additional information with respect to Phase 2 and future phases to ensure a coordinated development pattern.

    In response, the applicant states that "futures phases will be determined based on specific user demand and area needs and the roadway will be planned accordingly for extension for each phase during the site planning process."

    The Ordinance provides 2 provisions related to phased projects, as follows:

    - Article 10 PUD, Section 10.08.05 - For a PUD that is being developed in phases, final site plan approval for each phase shall be conditioned upon continued compliance of all phases with the Conceptual PUD Plan and PUD Agreement, as may be amended by the Township. The Township Board may postpone the approval of any final site plan for subsequent phases until previously approved phases of the PUD are brought into compliance with the requirements of the Conceptual PUD Plan and PUD Agreement.

- Article 18 Site Plan Review, Section 18.08.20 - Any phases of development are in logical sequence so that any phase will not depend upon a subsequent phase for adequate access, public utility services, drainage, or erosion control.

The Township should determine whether the applicant's response is sufficient or if additional information is needed to address the Ordinance provisions cited above.

17. **PUD Requirements.** Per the PUD Agreement, there are additional site improvements that are required as part of the first site plan submittal for the project.

    Of note, the following need to be addressed to the Township's satisfaction as part of this final PUD site plan submittal:

    - Road improvements, per Paragraph 10 Future Road Improvements. Per the Agreement, "the timing of installation of road improvements shall be determined and assessed by the Road Commission in connection with updated traffic impact assessments submitted in connection with future final site plans for building construction in the Project Areas." The submittal does not include an updated traffic impact assessment, nor does it include any commentary from the Road Commission. The applicant must ensure that the road design can accommodate the requirements of the traffic impact study.

    - Paragraph 10 also states that "any future road development will provide for internal interconnectivity for each phase of the Project." Similar to previous comments, the submittal does not include any description/depiction of future phases.

    - Paragraph 12 states that "in connection with the submission of an application for site plan approval for the first phase of any development with the Project Area, Developer shall dedicate to Livingston County Road Commission or Genoa Charter Township a strip of land sixty (60') feet in width from the center line of Latson Road along the frontage of all the Developer's Property on Latson Road (or approximately 3.8 acres of land), without compensation from the Township or the County Road Commission." The applicant must demonstrate that this will be undertaken as part of this Phase 1 site plan.

    - Paragraph 14 states that "further extension of utilities by the Developer onto the property, either through the Property or in the public road rights-of-way, shall be constructed in phases consistent with the final site plans for each such phase to be submitted by the Developer and approved by the Township." The applicant must explain how this project aligns with future phases and the Township may wish to require utility extension along the proposed road stub.

    - The plan does not depict decorative lighting at project entrances, as required by the PUD Agreement.

18. **Additional Considerations.** There are additional provisions of the PUD Agreement regarding site improvements that should be considered as part of this project, though they may be implemented in future phases.

    - Paragraph 11 Latson Road Greenbelt states "as part of the development of any initial building phase in the West Area, Developer shall install the Latson Road Streetscape Improvements as depicted on the PUD Plan and in the PUD Design Guidelines along the Developer's entire property frontage on the west side of Latson."

- Applicable items under Paragraph 13, include walking and biking pathways connecting to the Latson Road pathway system, “attractive and landscaped site entrance features at the intersection of Latson road and the interior access roads to the Project Areas,” and “a marked pedestrian connection across Latson Road at the north entrance roads tying the West and East Areas together shall include an attractive pedestrian crossing, with materials such as stamped concrete used to designate the pedestrian crossing and pedestrian actuated crossing signals.”

- Paragraph 13 notes that “the specific amenities may be installed over time in phases to correspond to the phases of development proposed for site plan approval by the Developer.”

Should you have any questions concerning this matter, please do not hesitate to contact our office.

Respectfully,
SAFEBUILT

Brian V. Borden, AICP
Michigan Planning Manager

December 3, 2024

Ms. Amy Ruthig
Genoa Township
2911 Dorr Road
Brighton, MI 48116

Re: Innovation Interchange Phase 1
Site Plan Review No. 3

Dear Ms. Ruthig:

Tetra Tech conducted a third site plan review of the Innovation Interchange Phase 1 private road plans last dated November 11, 2024. The plans were prepared by Atwell, LLC on behalf of Latson Partners, LLC. The project site includes approximately 178 acres and is located south of the Latson Road interchange and west of Latson Road just south of the railroad. The proposed plan only includes Phase 1 of the overall Latson Road – Versa Development PUD, which includes the first 200-foot section of the private road into the development and entry signage. We offer the following comments:

GENERAL

1. Although only the initial phase of the development is being proposed at this time, additional information should be provided on any future development or private road concepts. The proposed initial phase should be designed with future phases in mind and should be designed in accordance with the requirements and design guidelines of the PUD Agreement. The PUD notes that the development will include an attractive and landscaped site entrance with decorative light fixtures as part of the site entrance features. The response letter dated November 11, 2024, from Atwell states that visual enhancements such as lighting, signage, and landscaping are intended to be installed with the construction of the first building.

2. The site plan shows overhead electric lines near the end of the proposed private road, the response letter from Atwell notes that it is anticipated that the overhead electric lines will be relocated as part of Phase 2 of the development.

DRAINAGE AND GRADING

1. The Petitioner is providing a temporary sedimentation basin to capture runoff from the proposed private road. Since the proposed plan is generally reducing the total impervious area draining in the southwest direction, this solution is acceptable until the development is further built out. Stormwater detention will need to be provided in any future development of the site and the temporary sedimentation basin will need to be removed as part of future development phases.

PRIVATE ROAD AND APPROACH

1. Preliminary approval from the Livingston County Road Commission has been obtained and provided for the Township records. If more detailed private road construction plans are prepared for the Road Commission after site plan approval, they should also be provided to the Township for review and approval. After private road construction plan approval, the Petitioner will be required to pay a construction phase

Tetra Tech
3497 Coolidge Road, East Lansing, MI 48823
Tel 517.316.3930 Fax 517.484.8140 www.tetratech.com

escrow for inspection of the private road and a pre-construction meeting will be required prior to private road construction.

2. The PUD Agreement states that walking and bike pathways will be installed throughout the development area that provide access to the Latson Road pathway system. These pathways should be included as part of the initial private road phase.

3. The Traffic Impact Study completed for the PUD included recommendations for the north site driveway which should be incorporated into the design. Recommendations included a traffic signal, three egress lanes (exclusive left, through, and exclusive right), and a southbound right turn lane. The southbound right turn lane has been included in the private road approach design. The Petitioner should make sure the proposed approach is designed in a way to accommodate the future recommended through and turn lanes and the future traffic signal.

4. The correct number of egress lanes and southbound right turn lane should be shown in the driveway design and the private road plan should be designed to accommodate the future traffic signal.

We recommend the petitioner address the above comments and resubmit for additional review. Please call or email if you have any questions.

Sincerely,

Shelby Byrne

Shelby Byrne, P.E.
Project Engineer

Jared Kime

From: Cathy Tallman <ctallman@livingstonroads.org>
Sent: Tuesday, August 6, 2024 7:39 AM
To: Jared Kime; Kim Hiller
Cc: Ammar Kalasho
Subject: ***Possible Spam*** RE: Latson Road PUD - Road Entrance Location

Good morning,
Innovation Drive is acceptable. Technology Drive is too. Genesis Drive is already used and would not work. I will go ahead and reserve Innovation Drive for you.

Thanks,
Cathy

Cathy Tallman
Livingston County Road Commission

From: Jared Kime <jkime@atwell-group.com>
Sent: Monday, August 5, 2024 4:10 PM
To: Kim Hiller <khiller@livingstonroads.org>
Cc: Ammar Kalasho <akalasho@atwell-group.com>; Cathy Tallman <ctallman@livingstonroads.org>
Subject: RE: Latson Road PUD - Road Entrance Location

Thanks Kim.

The proposed road name we would like to have reviewed is Innovation Drive.

Alternate Name Options:
Technology Drive
Genesis Drive

Stay tuned on the permit submittals. I'll confer with my client whether he wants to submit for that in advance of the site plan approval for the roadway with the Twp. Thanks.

Jared Kime, PE
Project Manager
ATWELL, LLC
248.447.2000 Office
734.223.0790 Mobile

From: Kim Hiller <khiller@livingstonroads.org>
Sent: Monday, August 5, 2024 2:58 PM
To: Jared Kime <jkime@atwell-group.com>
Cc: Ammar Kalasho <akalasho@atwell-group.com>; Cathy Tallman <ctallman@livingstonroads.org>
Subject: RE: Latson Road PUD - Road Entrance Location

Hi Jared,

A private road approach and a commercial driveway approach permit will be needed. I've attached both applications. They can be completed and emailed to permits@livingstonroads.org along with the pdf of the

construction plans. There is a $200.00 application fee for each of them. This can be paid online with a credit card (https://www.govpaynow.com/gps/user/cyg/plc/a005gn) or a check can be delivered to our office. When you submit the application via email, please indicate the method of payment. We will not process the application until the fee is received.

We review road names for conformance with the Livingston County Addressing Policy (https://milivcounty.gov/wp-content/uploads/Addressing-Policy.pdf), if acceptable, we reserve the name in the Access (Road) Inventory Book (https://livingstonroads.org/wp-content/uploads/2024/07/AccessReferenceInventoryBook_July2024.pdf). Please email the proposed road names to Cathy Tallman and me. We will review the names and let you know if they are acceptable.

If you have any other questions, you may contact me.

Thank you,

Kim Hiller, P.E.
Utilities and Permits Engineer
Livingston County Road Commission
3535 Grand Oaks Drive
Howell, MI 48843
Ph. (517) 546-4250
khiller@livingstonroads.org
Office Hours: M-F 7:00 AM – 3:30 PM

From: Jared Kime <jkime@atwell-group.com>
Sent: Monday, August 5, 2024 2:27 PM
To: Kim Hiller <khiller@livingstonroads.org>
Cc: Ammar Kalasho <akalasho@atwell-group.com>
Subject: RE: Latson Road PUD - Road Entrance Location

IRONSCALES couldn't recognize this email as this is the first time you received an email from this sender jkime @atwell-group.com

Good afternoon Kim,

We are preparing to take the next steps in the development of the Latson Road PUD. Our first phase will consist on the initial section of road connecting to Latson per the approved site distance review. We have prepared and submitted a site plan package to the Township for review. At this stage, is there an additional review the LCRC would perform? Also, I believe we need to have a road name review completed, but I did not see a specific form for that. Can you provide direction on what needs to be submitted to get these next steps underway? Thank you.

Jared Kime, PE
Project Manager
ATWELL, LLC
248.447.2000 Office
734.223.0790 Mobile

LIVINGSTON COUNTY ROAD COMMISSION
LAND SPLIT / SIGHT DISTANCE REVIEW

****NOTE: THIS IS NOT A DRIVEWAY PERMIT****

Review Number **2405-009REV**

Recommended for Approval:
Yes

Date of Review:
6/4/2024

Inspector:
Kim Hiller

Property Owner and Applicant Information

Owner: **Todd Wyett**
Street Address: **29201 Telegraph Road, Suite 410**
City, State, ZIP: **Southfield, MI 48034**
Day Phone: **(248) 771-8484**

Applicant:
Company:
Address:
City,State: ,
Applicant Phone:

Location

Township: **Genoa** Section **8** Roadway On: **Latson Road** Side of Street: **West**
Approach Type: **Private Road** Development: **Innovation Interchange**
Speed Limit (if posted): **55** Speed Factors (if any):

Comments:

The centerline of an industrial road could be located 540-665 feet north of Clover Bend. The LCRC would prefer it to be located at 540 feet from Clover Bend (500 feet from the railroad) in case it gets signalized in the future. A commercial driveway approach on the east side of Latson Road could be located at the proposed location, 368 feet north of Clover Bend.

Inspector: _____

Field Measurements: Location of existing property corners from nearest crossroad: **253 and 985 feet North of Clover Bend**

Parcel	Prop/Emnt Corners	Access Point(s)		Sight Distance Req. Std	Min	Sight Distance Measured		S.D. Comply	CVA Comply	Neighbor Consent	Approve
Industrial Road (West)		**540**	**660**	**930**	**770**	**930 North**	**930 South**	**Yes**	**Yes**	**No**	**Yes**
Commercial (East)		**368**		**850**	**610**	**740 North**	**850 East**	**Yes**	**Yes**	**No**	**Yes**

** This review is based on the survey/sketch provided to us at the time of application or during the review process. Any changes to property lines or driveway locations after the date of this review will void the review and may prevent approval or permits for any future driveway approaches.

Livingston County GIS Map

5/7/2024, 4:34:45 PM

1:3,000

0 100 200 400 ft

0 30 60 120 m

Tax Parcel

Parcel Dimensions

Roads

Major Road

Minor Road

PLSS Section

Municipality

SEMCOG, Esri, HERE, Garmin, GeoTechnologies, Inc., USGS, EPA, Livingston County IT/GIS

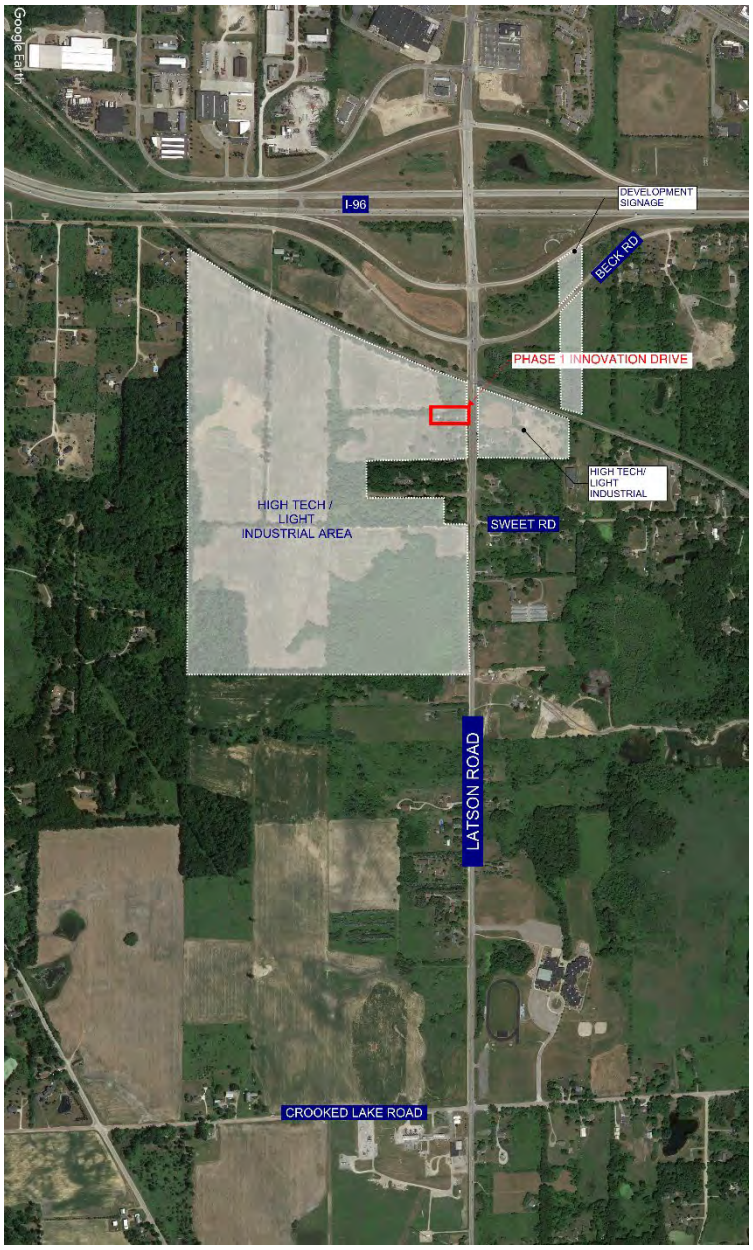
Livingston County IT/GIS

Map information depicted is not intended to replace or substitute for any official or primary source. Boundary measurements and area calculations are approximate and should not be construed as

COMMUNITY IMPACT ASSESSMENT

INNOVATION DRIVE – PHASE 1

October 17, 2024



Versa | real estate

Prepared By:

MKSK ATWELL F&V C2G CINCAR CONSULTING GROUP

In accordance with Section 18.07 of the Genoa Township Zoning Ordinance, this impact assessment describes the property associated with the Phase 1 Innovation Drive, the potential impacts, and design features to minimize the negative impacts.

The Innovation Interchange PUD will be designated as an employment center for office, research, light industrial and warehousing uses.

18.07.01 Preparer.
This statement was prepared by Bradley Strader, AICP, Principal Planner, C2G and Eric Lord, P.E., Vice President, Atwell. A traffic impact study was previously submitted with the PUD and the development of the Phase 1 Innovation Drive does not warrant an update to this study.

Cincar Consulting Group (C2G)
17199 N Laurel Park Drive
Suite 204
Livonia, MI 48152
(313) 652-1101
Bradley Strader, Principal
Brad. Strader@itsc2g.com

ATWELL, LLC
Two Towne Square, Suite 700
Southfield, MI 48076
(248) 447-2000
Eric Lord, Vice President
elord@atwell.com

FLEIS & VANDENBRINK
27725 Stansbury St #195
Farmington Hills, MI 48334
(248) 536-0080
Julie Kroll, Traffic Services Group Manager
jkroll@fveng.com

18.07.02 Location.
The project site for the Phase 1 Innovation Drive is located south of the I-96 Interchange, approximately 380 feet south of the railroad tracks on the west side of Latson Road. The road is located on parcel 11-08-400-020. The existing structures on the property and the two adjacent properties (11-08-400-004 and 11-08-400-006) to the south will be removed. The location of the proposed road has been reviewed and approved by the Livingston County Road Commission for sight distance.

18.07.03 Impact on Natural Features.
The subject property is comprised of approximately 18.96 acres of land, described in title as parcels 1A and 1B, of which only the eastern 300 feet of parcel 1B will be impacted by the Phase 1 road construction. The property is currently occupied by a single family home on the east end and active farmland on the west. The topography of the parcel is gently rolling with a north-south ridge in the middle of the property. The topography generally slopes from north to south with 20 feet of varying relief with typically moderate slopes of 2-5%. The parcel is bordered on the north by the existing railroad and on the west by a tree row. There is a small, isolated wetland located adjacent to Latson Road, north of the proposed road location which is unaffected by the Phase 1 road.

18.07.04 Impact on Stormwater Management.
The topography west of Latson Road gently slopes away from Latson Rd. Therefore, the runoff from the road will be directed into the subject property and captured in a temporary sedimentation basin at the end of the road before following the existing drainage patterns on the property back to the Latson Rd storm sewer and ditch system, which continues to flow south towards the ultimate outlet, the Marion-Genoa Drain. The additional impervious area of the new proposed roadway is off set by the removal of the existing structures and driveways, meaning there will be no noticeable change in the stormwater runoff on the property.

According to the USDA Natural Resources Conservation Service Soils information, the subject area is primarily comprised of Wawasee Loam soil, which is classified as a soils group C. Soils of this type experience low to moderate infiltration with stormwater typically saturating the soil before running off toward lower areas. High groundwater is not anticipated. These soil types do not generally limit development of land.

Future development of the property will be designed to maintain similar drainage patterns to what occurs now. A stormwater management system will be designed for the future development in accordance with the requirements of the Livingston County Drain Commissioner's office, which will include:

- Water quality measures
- Stormwater detention sized for the 100-year storm event
- Soil erosion control

We anticipate the future detention basins will be strategically located at or near the existing low points of the property where stormwater is currently leaving the site. The basins will retain the water for a period with a restricted release to maintain the current drainage patterns from the property. As mentioned earlier, the subject area is tributary to the Marion Genoa Drainage District which is the ultimate receiving water course.

A soil erosion control permit will be obtained prior to construction from Livingston County which will require the site to be managed to control erosion created by construction activity. Examples of erosion control measures that are typically deployed during site development include:

- Silt fencing and vegetative buffer strips to keep soil contained within the construction area.
- Mud Mats at construction entrances to avoid tracking onto public roads.
- Inlet protection – silt sacks in catch basins to avoid sediment buildup in storm pipes and ponds.
- Stone Rip Rap – at culvert outlets to reduce scour and erosion.
- Seed and mulch – of graded areas to promote vegetation growth, which is key to controlling erosion. established.

18.07.05 Impact on Surrounding Land Use.
The land immediately north, west, and south of the proposed Innovation Drive are part of the approved Innovation Interchange PUD and will ultimately be provided access from the proposed roadway. This proposed roadway may ultimately become a signalized intersection once the PUD is further developed and will provide for an orderly flow of traffic to and from the development property.

18.07.06 Impact on Public Facilities and Services.

Innovation Drive is a private road and will be privately maintained by the property owner or future owners within the PUD. No impacts to County or Township services are expected with the development of the Phase 1 road. The road is not expected to have any impacts on police, fire, or emergency response services as the 3 existing residential driveways and homes are being replaced by a single access point to vacant land. The tax benefits of the future development to be serviced by this road will provide a high benefits-to-impact ratio for Genoa Township.

18.07.07 Impact on Public Utilities.

Public utilities are not impacted by the private road, however, future development will extend utilities along this roadway in accordance with the previously approved master plan for the PUD. Refer to utility exhibits within the appendix for future utility concept plans.

18.07.08 Storage and Handling of any Hazardous Materials.

The proposed roadway does not provide for storage or handling of hazardous materials. Each future development proposed within the subject area will be responsible for meeting all storage and handling requirements, as applicable.

18.07.09 Traffic Impact Study.

A traffic impact study has been previously prepared by Fleis and Vandenbrink. The study area and contents of this study has been coordinated with the Livingston County Road Commission with a focus on the potential cross section for Latson Road (such as a median), its design, and the preferred location for access points to the PUD along with impacted intersections in the surrounding area. Please refer to this report for a detailed analysis of traffic impacts and recommended improvements associated with the overall PUD. The Phase 1 installation of Innovation Drive does not warrant any updates to this study.

18.07.10 Historic and Cultural Resources.

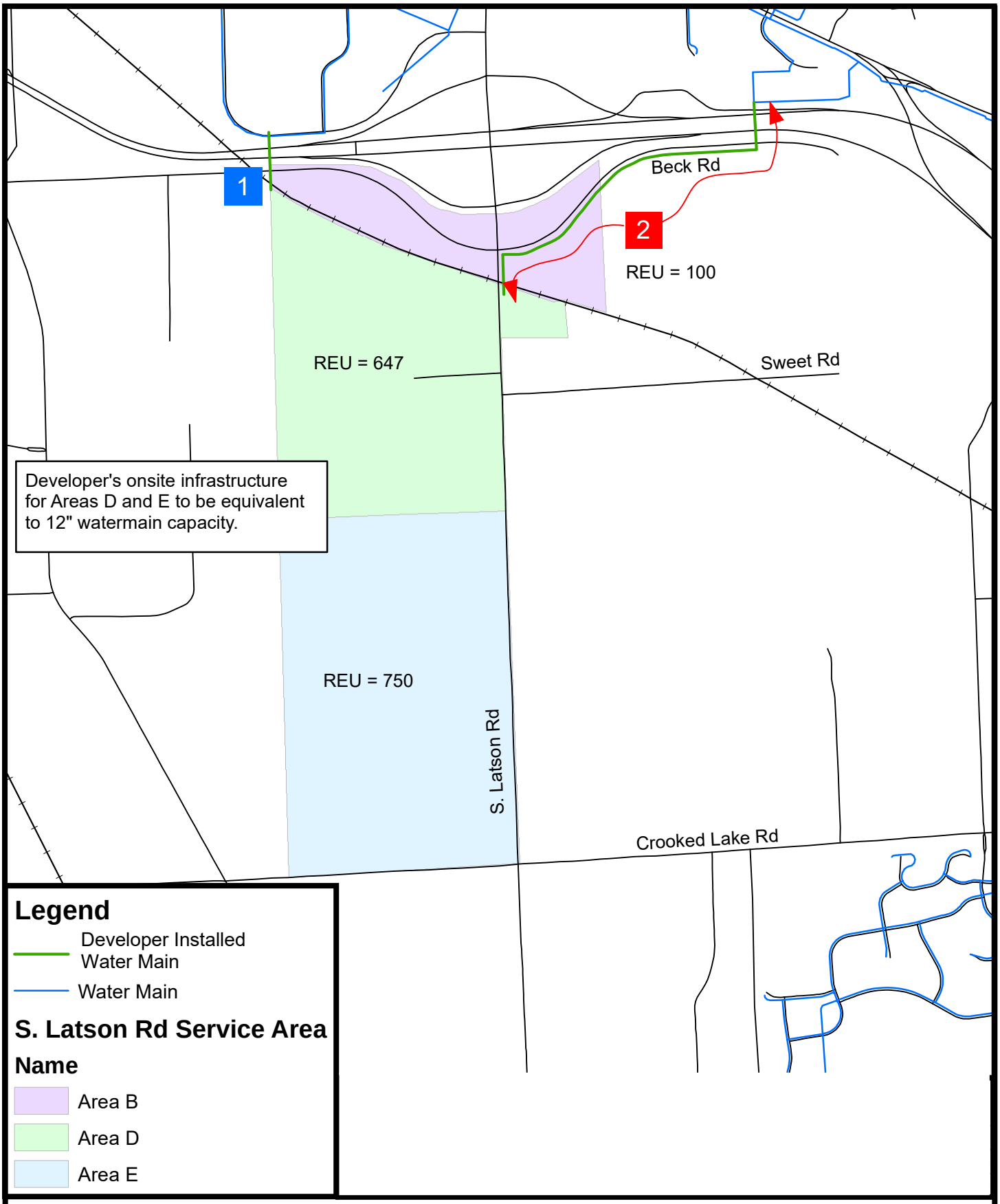
There are no historic of cultural resources on the property.

18.07.11 Special Provisions.

The PUD Agreement contains several provisions regarding the uses, operations, design and other standards that will apply to the Development and future site plans and owners.

Appendix:

- Figure 1: Water Distribution Infrastructure Map
- Water Main Concept Map
- Figure 2: Sanitary Sewer Collection Infrastructure Map
- Sanitary Sewer Concept Map
- Soils and Wetlands Site Map
- Topography and Natural Features Site Map



1 inch = 1,500 feet

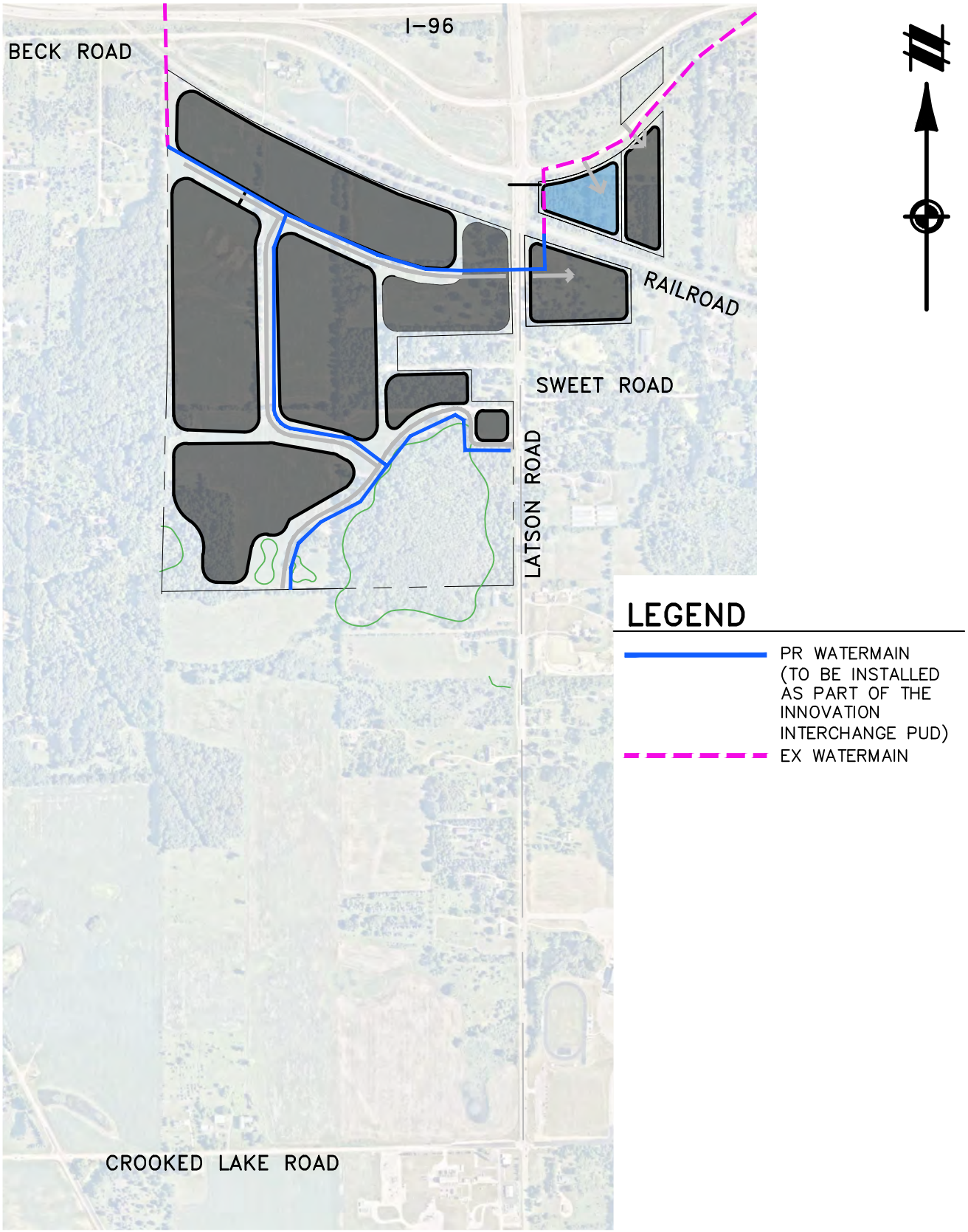
Date: 3/2/2018

N

Figure 1

Water Distribution Infrastructure

Note: This is a graphical representation of the required improvements. Final routing and location will be required during the design phase.



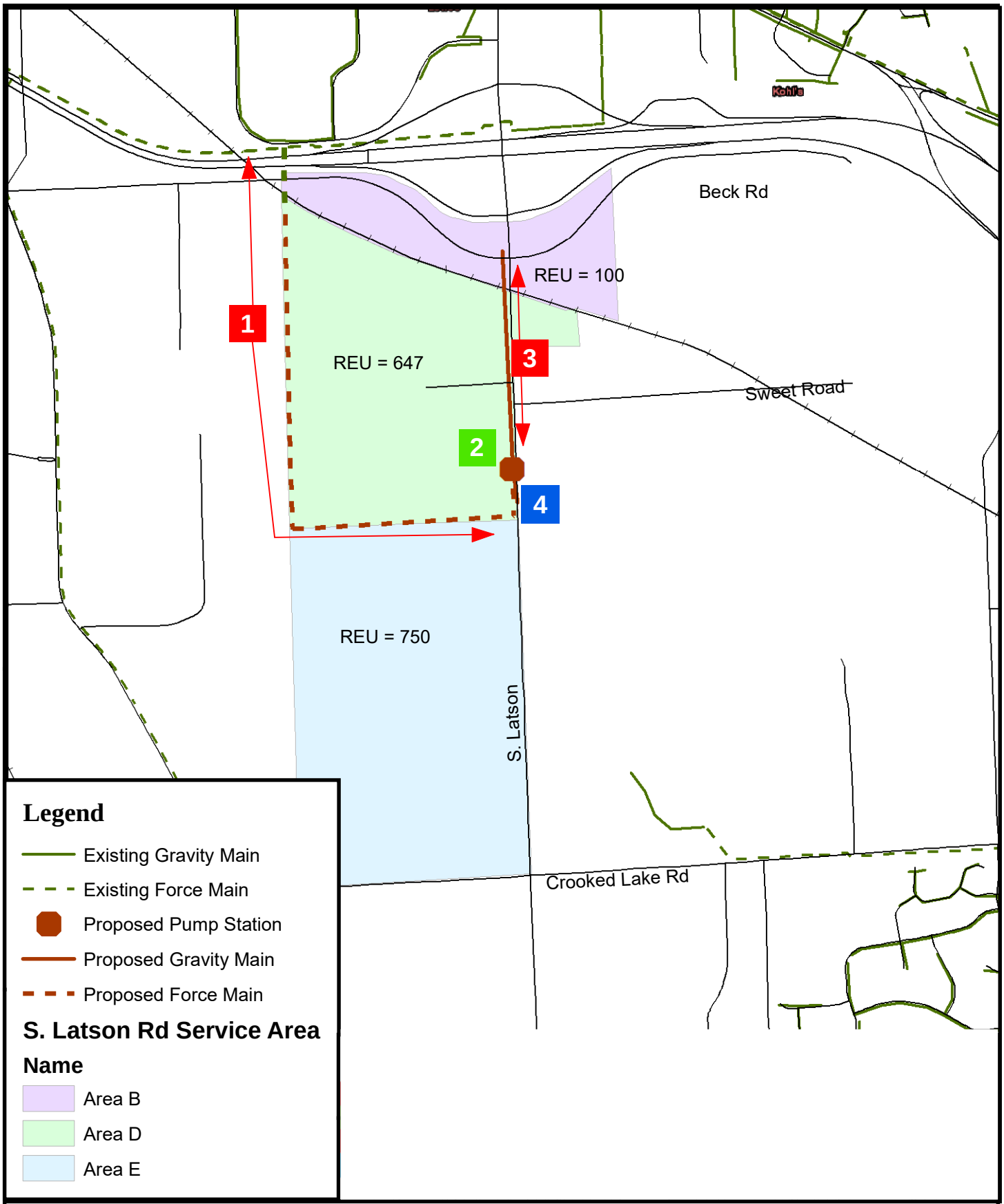
WATERMAIN CONCEPT

NOTE:
WATER MAIN TO BE A COMBINATION OF 8" AND 12" IN DIAMETER

PROJECT NO.: 16001784
DATE: 2024-09-25

DR: MJM
CAD FILE: 16001784EX-03-UTILITY ROUTING-REV2024.09.24.DWG

ATWELL
866.850.4200 www.atwell-group.com



1 inch = 1,500 feet

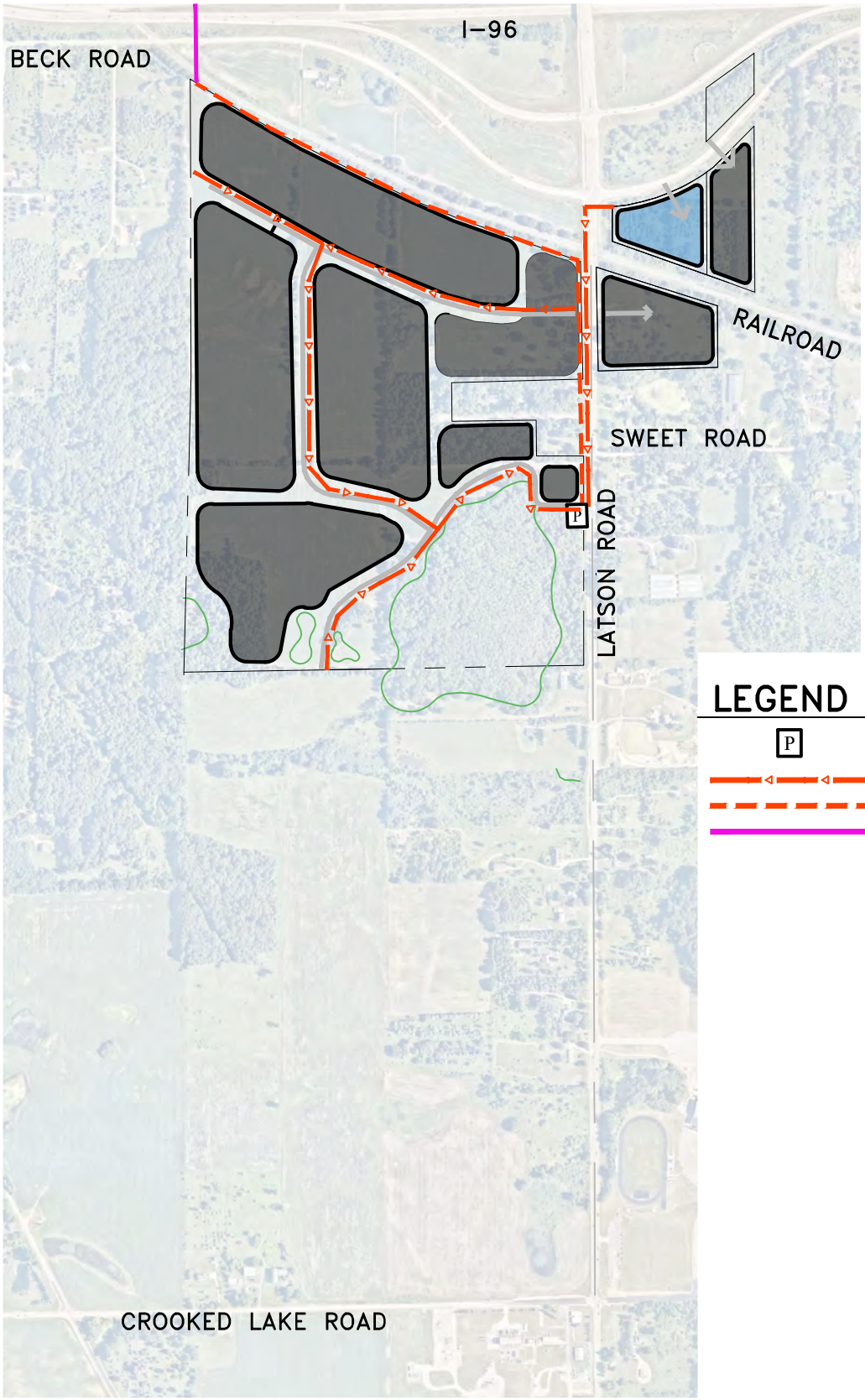
Date: 3/2/2018

Figure 2

Sanitary Sewer Collection Infrastructure

Note: This is a graphical representation of the required improvements. Final routing and location will be required during the design phase

N



LEGEND

- P — PUMP STATION
- PR GRAVITY SEWER
- PR FORCE MAIN
- EX 8" FORCE MAIN

SANITARY SEWER CONCEPT

PROJECT NO.: 16001784
DATE: 2024-06-25

NOTE:
SANITARY SEWER TO BE A COMBINATION OF 8" AND 10" GRAVITY SEWER AND 8" FORCE MAIN

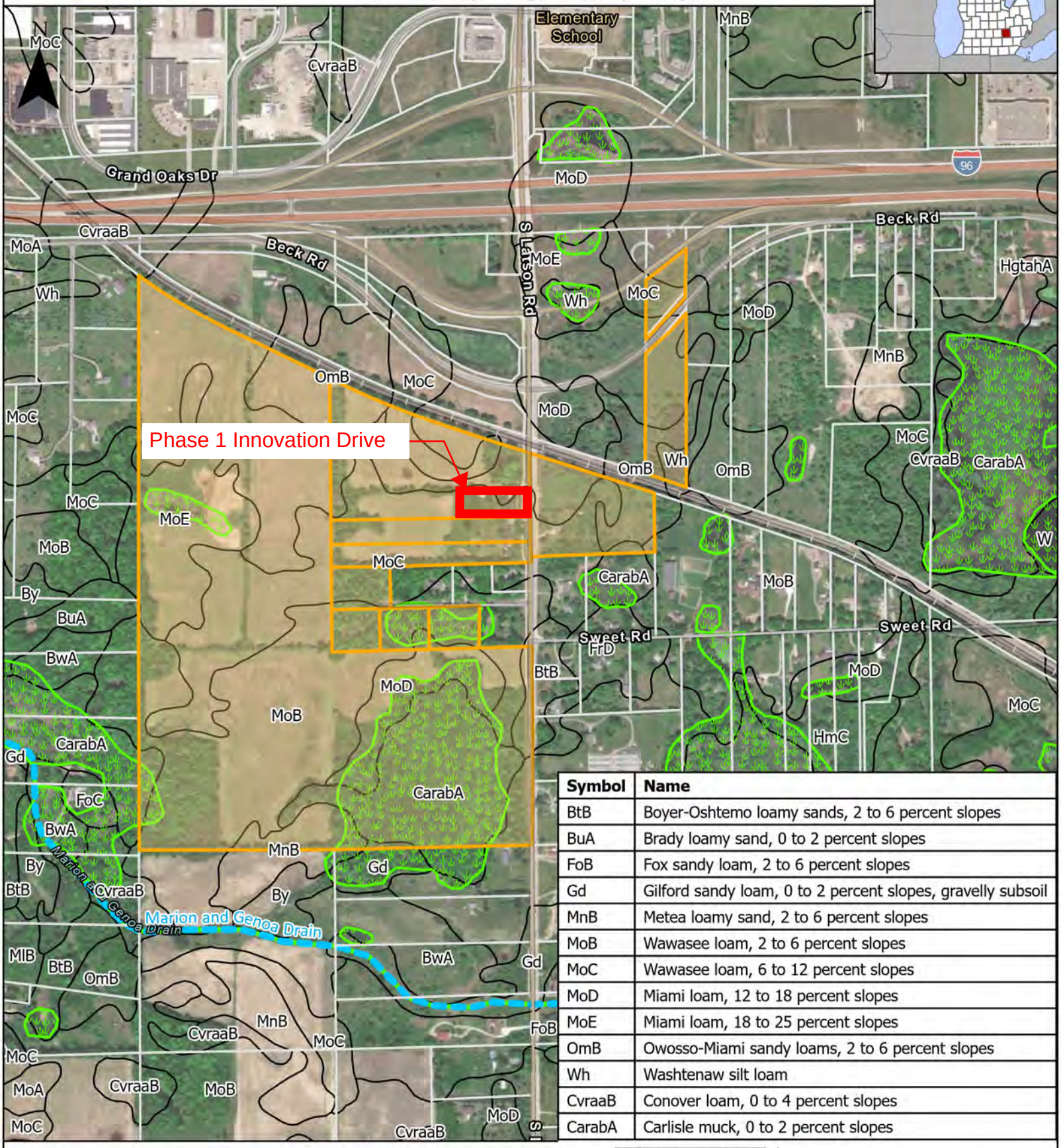
DR: MJM
CAD FILE: 16001784EX-03-UTILITY ROUTING-REV2024.09.24.DWG

ATWELL
866.850.4200 www.atwell-group.com

Innovation Interchange PUD

Site Map - Soils and Wetlands

Genoa Township, Livingston County, Michigan



Symbol	Name
BtB	Boyer-Oshtemo loamy sands, 2 to 6 percent slopes
BuA	Brady loamy sand, 0 to 2 percent slopes
FoB	Fox sandy loam, 2 to 6 percent slopes
Gd	Gilford sandy loam, 0 to 2 percent slopes, gravelly subsoil
MnB	Metea loamy sand, 2 to 6 percent slopes
MoB	Wawasee loam, 2 to 6 percent slopes
MoC	Wawasee loam, 6 to 12 percent slopes
MoD	Miami loam, 12 to 18 percent slopes
MoE	Miami loam, 18 to 25 percent slopes
OmB	Owosso-Miami sandy loams, 2 to 6 percent slopes
Wh	Washtenaw silt loam
CvraaB	Conover loam, 0 to 4 percent slopes
CarabA	Carlisle muck, 0 to 2 percent slopes

Innovation Interchange PUD

Parcel Boundary

NWI Wetlands

Soil Types

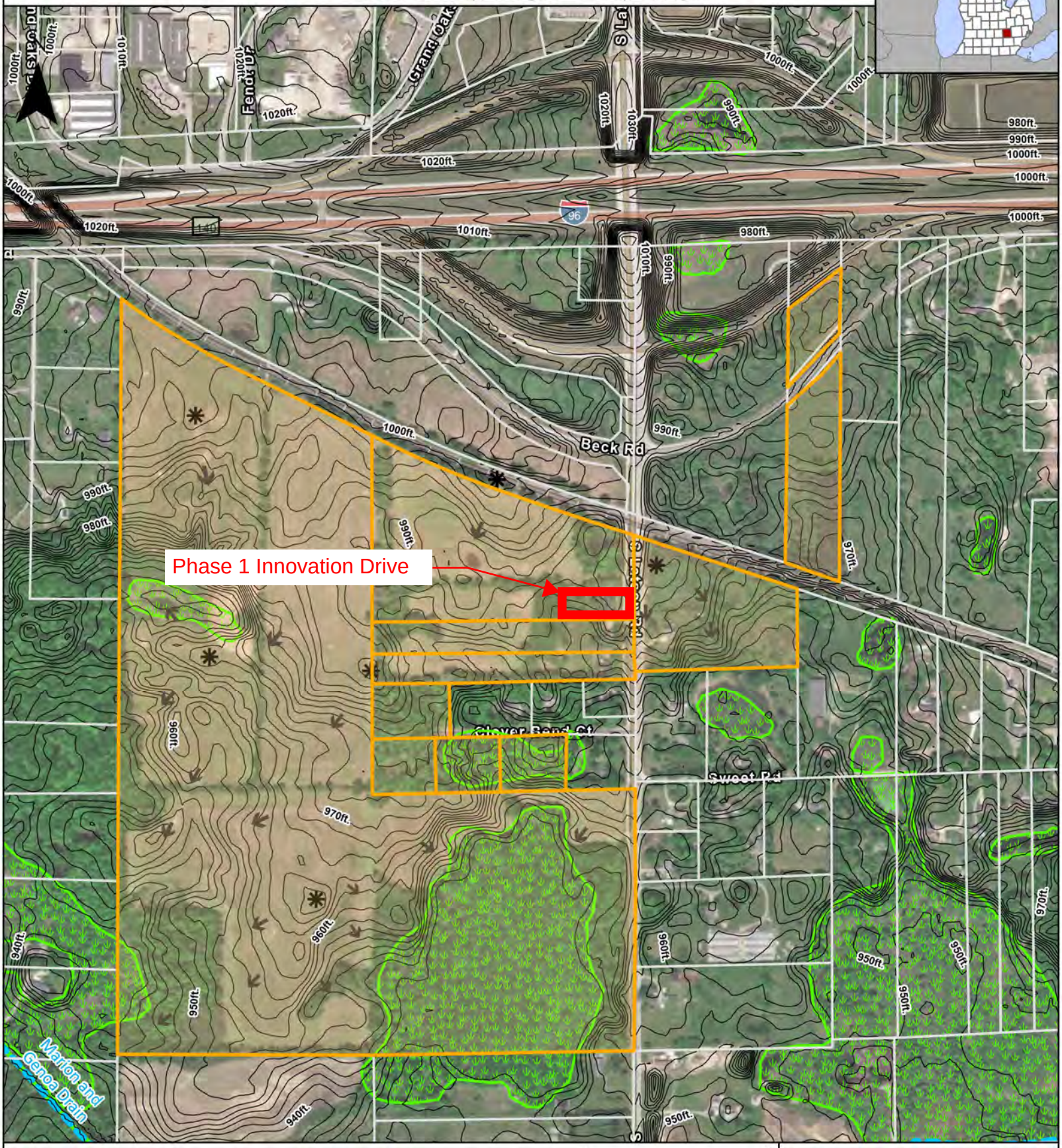
0 300 600 US Feet

ATWELL

Innovation Interchange PUD

Topography & Natural Features

Genoa Township, Livingston County, Michigan



Innovation Interchange PUD
Parcel Boundary
Local High Point
NWI Wetlands
2 Ft Contour
Estimated Flow Direction
Watercourse NHD

0 300 600 US Feet

ATWELL

PRIVATE ROAD EASEMENT
AND MAINTENANCE AGREEMENT

THIS PRIVATE ROAD EASEMENT AND MAINTENANCE AGREEMENT ("Easement") is made this ____ day of _____, 2024, by Latson Partners, LLC ("Owner"), whose address is 29201 Telegraph Road, Suite 410, Southfield, Michigan 48034.

RECITALS

WHEREAS, the Owner is the title holder of certain real property located in the Township of Genoa, County of Livingston, State of Michigan, more particularly described as Parcels 4711-08-400-004 and 4711-08-400-006 (the "Property"), as more particularly described on **Exhibit A**.

WHEREAS, the Property is part of a Planned Unit Development ("PUD") known as the Innovation Park PUD, which includes approximately 177 acres of land located south of the Latson Road/I-96 interchange, and is the subject of a PUD Agreement recorded on October 6, 2020, with the Livingston County Register of Deeds.

WHEREAS, in order to carry out the PUD, the Owner has submitted an application for site plan approval and application for private road (to be known as "Innovation Drive") to construct the planned access drive to service a portion of the PUD on the west side of Latson Road as depicted and described on the Plan attached as **Exhibit B**. As a private road, Innovation Drive will be constructed, operated and maintained by the Owner or its successors in interest.

WHEREAS, it is the desire of the Owner to establish a private road easement and maintenance agreement and an easement for public utilities for the benefit of the Township and public sewer and water authorities.

NOW, THEREFORE, in pursuance of this Easement and in consideration of the mutual covenants and benefits contained herein, the Owner declares and agrees as follows:

EASEMENT DECLARATION

1. Owner hereby grants, transfers, establishes and declares for the use and benefit of the Innovation Park PUD, Genoa Township and for public utilities, a non-exclusive, perpetual easement (the "Easement") for ingress and egress and for the location of public and private utilities, over, under and across Innovation Drive as described and depicted in **Exhibit C** (the "Easement Area").

2. The Easement shall run with the land and is binding on all future owners, heirs, assigns and successors in title.

EASEMENT MAINTENANCE

3. The Owner shall be responsible for all maintenance and repairs of the Easement Area as necessary to keep the Easement Area in good repair for safe vehicular and pedestrian passage. Maintenance obligations include the removal of snow, ice, paper and debris in a timely and reasonable manner and the patching and filling of cracks and undertaking other necessary repairs or replacement over time.

4. The maintenance and repair obligations under this Easement are specifically enforceable by Genoa Township, with its reasonable costs and expenses chargeable to and collectible against the Owner, or its successors and assigns, as owner of the Property, and, if necessary, as a delinquent special assessment on the Township tax rolls.

5. That the Easement and the rights and responsibilities set forth are permanent and perpetual and intended to bind the parties hereto, their heirs, successors and assigns, and their respective properties, to touch and concern said parcels, and to run with the land and succeeding interests therein.

6. In the event the PUD becomes a condominium and a condominium master deed is recorded with respect to the entire Property, or the PUD becomes subject to comprehensive covenants, easements and restrictions, then Owner and Township agree that this Easement shall become null and void, provided the condominium master deed or covenants, easements and restrictions include rights similar to this Easement. In such circumstances, Owner shall have the right to execute and record a termination of this Easement.

7. This Easement shall be governed by and construed in accordance with the laws of the State of Michigan.

8. This Easement may be amended or modified at any time by an agreement in writing mutually agreed to, executed and acknowledged by the Owner or its successors and assigns and any first mortgagee then encumbering the Property (or any part thereof), and approved by Genoa Township and thereafter duly recorded.

9. In the event any provision or portion of this Easement is held by any court of competent jurisdiction to be invalid or unenforceable, such holding will not affect the remainder hereof, and the remaining provisions shall continue in full force and effect at the same extent as would have been the case had such invalid or unenforceable provision or portion never been a part hereof.

Exempt from transfer tax pursuant to MCL §207.505(a) and MCL §207.526(a).

IN WITNESS WHEREOF, the Owner has executed this Easement as of the day and year first above written.

[*Signatures on following pages*]

OWNER:

LATSON PARTNERS, LLC, a
Michigan limited liability company

By: _____

Name: _____

Its: _____

STATE OF MICHIGAN)
) ss.
COUNTY OF _____)

The foregoing instrument was acknowledged before me this ____ day of _____, 2024, by _____, the Managing Member of Latson Partners, LLC, a Michigan limited liability company, on behalf of said limited liability company.

_____
_____, Notary Public
State of Michigan, County of _____
My Commission expires: _____
Acting in the County of _____

DRAFTED BY:

Alan M. Greene, Esq.
Dykema Gossett PLLC
39577 Woodward Avenue, Suite 300
Bloomfield Hills, MI 48304

WHEN RECORDED RETURN TO:

Genoa Township
2911 Dorr Road
Brighton, MI 48116

EXHIBIT A

(Legal Description of Property)

EXHIBIT B
(Plan for Innovation Drive)

EXHIBIT C

(Legal Description of Easement Area)

EXHIBIT A

DESCRIPTION OF PARCELS 1A AND 1B PER ALTA COMMITMENT FOR TITLE INSURANCE ISSUED BY FIRST AMERICAN TITLE INSURANCE COMPANY, COMMITMENT NUMBER: 1015454, COMMITMENT DATE: JULY 25, 2024:

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE TOWNSHIP OF GENOA, COUNTY OF LIVINGSTON, STATE OF MICHIGAN, AND IS DESCRIBED AS FOLLOWS:

PARCEL 1A:
PART OF THE SOUTHEAST 1/4 OF SECTION 8, TOWN 2 NORTH, RANGE 5 EAST, GENOA TOWNSHIP, LIVINGSTON COUNTY, MICHIGAN, DESCRIBED AS FOLLOWS: COMMENCING AT THE EAST 1/4 CORNER OF SAID SECTION 8; THENCE ALONG THE EAST LINE OF SAID SECTION 8, SOUTH 01 DEGREES 46 MINUTES 00 SECONDS WEST 1437.61 FEET TO A POINT OF THE SOUTHERLY RAILROAD RIGHT OF WAY LINE (AS CONSTRUCTED), ALSO THE POINT OF BEGINNING; THENCE CONTINUING ALONG THE EAST LINE OF SAID SECTION 8, SOUTH 01 DEGREES 46 MINUTES 00 SECONDS WEST 231.97 FEET; THENCE NORTH 89 DEGREES 29 MINUTES 06 SECONDS WEST 1293.05 FEET; THENCE NORTH 01 DEGREES 51 MINUTES 05 SECONDS EAST 744.25 FEET TO A POINT ON THE SOUTHERLY RAILROAD RIGHT OF WAY LINE (AS CONSTRUCTED); THENCE ALONG THE SAID SOUTHERLY RAILROAD RIGHT OF WAY LINE THE FOLLOWING THREE COURSES: SOUTH 62 DEGREES 03 MINUTES 36 SECONDS EAST 88.07 FEET; CURVE TO THE LEFT 527.26 FEET, RADIUS OF 4000.00 FEET, CENTRAL ANGLE OF 07 DEGREES 33 MINUTES 09 SECONDS, CHORD BEARING AND LENGTH SOUTH 65 DEGREES 50 MINUTES 11 SECONDS EAST 526.88 FEET, SOUTH 69 DEGREES 36 MINUTES 45 SECONDS EAST 765.54 FEET TO THE POINT OF BEGINNING.

PARCEL 1B:
THE NORTH 5 ACRES OF THE NORTH 1/2 OF THE SOUTH 30 ACRES OF THE EAST 1/2 OF THE SOUTHEAST 1/4 OF SECTION 8, TOWN 2 NORTH, RANGE 5 EAST, GENOA TOWNSHIP, LIVINGSTON COUNTY MICHIGAN.

PARCEL 1B ALSO DESCRIBED BY SURVEY AS FOLLOWS:
PART OF THE SOUTHEAST 1/4 OF SECTION 8, TOWN 2 NORTH, RANGE 5 EAST, GENOA TOWNSHIP, LIVINGSTON COUNTY, MICHIGAN, DESCRIBED AS: COMMENCING AT THE SOUTHEAST CORNER OF SAID SECTION 8; THENCE ALONG THE EAST LINE OF SAID SECTION, NORTH 01 DEGREES 46 MINUTES 00 SECONDS EAST 841.83 FEET TO THE POINT OF BEGINNING; THENCE NORTH 89 DEGREES 29 MINUTES 06 SECONDS WEST 1293.30 FEET; THENCE NORTH 01 DEGREES 51 MINUTES 05 SECONDS EAST 168.47 FEET; THENCE SOUTH 89 DEGREES 29 MINUTES 06 SECONDS EAST 1293.05 FEET; THENCE SOUTH 01 DEGREES 46 MINUTES 00 SECONDS WEST 168.46 FEET TO THE POINT OF BEGINNING.

CLIENT: LATSON PARTNERS, LLC	JOB: 16001784 / CAD: EA-03
SKETCH & DESCRIPTION OF A 66 FOOT WIDE PRIVATE ROAD EASEMENT LOCATED IN	DR.: JEP / CH.: CPK
SECTION 8 TOWN 2 NORTH, RANGE 5 EAST GENOA TOWNSHIP LIVINGSTON COUNTY, MICHIGAN	BOOK: NA / PG.: NA
	SHEET: 01 OF 03 / DATE: 10-21-2024
	FILE CODE: EA-01 ROAD EASEMENT

ATWELL
866.850.4200 www.atwell-group.com
TWO TOWNE SQUARE, SUITE 700
SOUTHFIELD, MI 48076
248.447.2000

TAX PARCEL NO.:
4711-08-400-020
BEARING BASE: NAD83(2011)
MICHIGAN STATE PLANE
COORDINATES, SOUTH ZONE,
INTERNATIONAL FEET

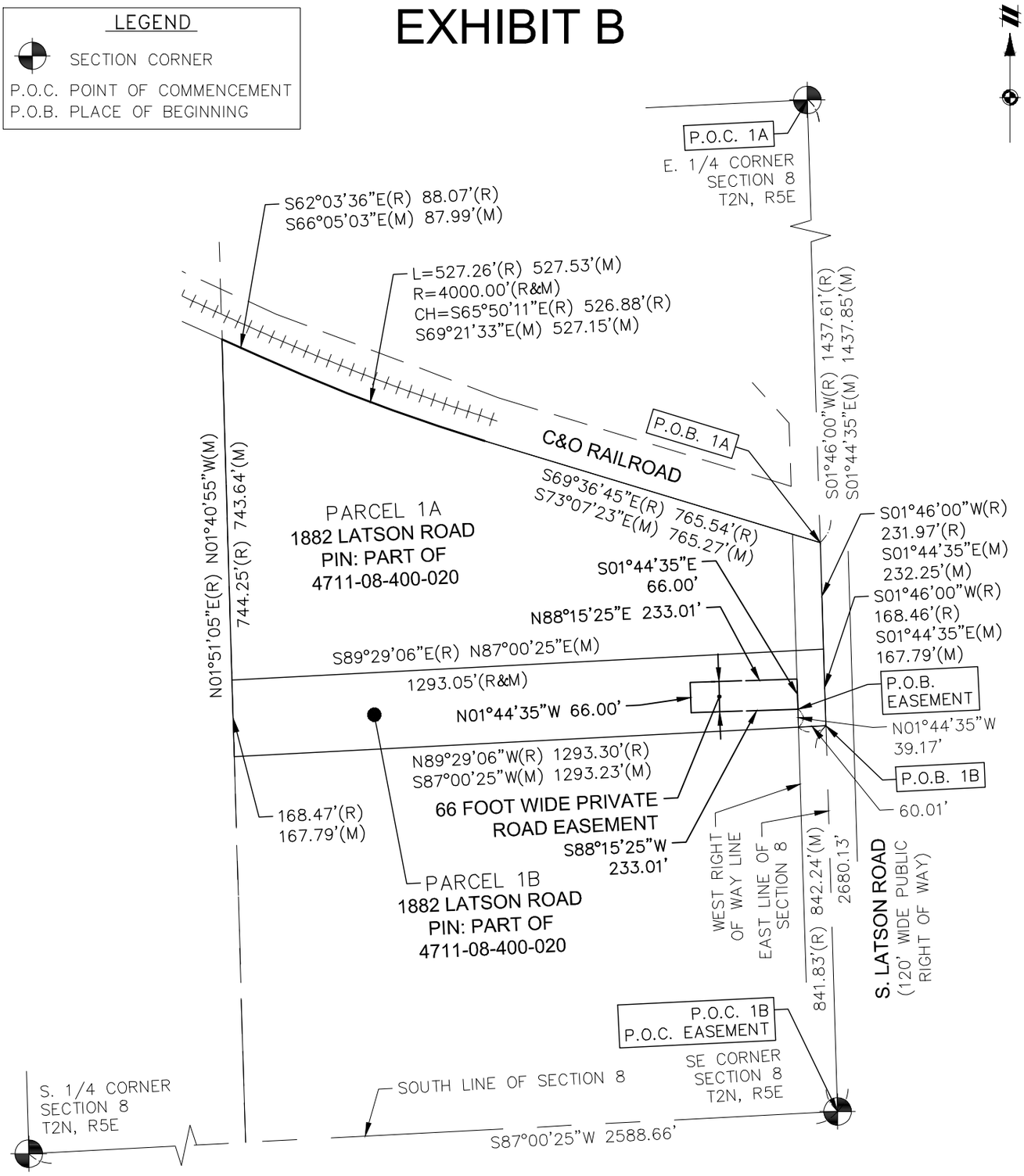
EXHIBIT B

LEGEND

SECTION CORNER

P.O.C. POINT OF COMMENCEMENT

P.O.B. PLACE OF BEGINNING



CLIENT LATSON PARTNERS, LLC

SKETCH & DESCRIPTION
OF A 66 FOOT WIDE
PRIVATE ROAD EASEMENT
LOCATED IN

SECTION 8 TOWN 2 NORTH, RANGE 5 EAST
GENOA TOWNSHIP
LIVINGSTON COUNTY, MICHIGAN

SCALE:
1 INCH = 300 FEET
0 150 300

JOB: 16001784	CAD EA-03
DR. JEP	CH. CPK
BOOK NA	PG. NA
SHEET 02 OF 03	DATE: 10-21-2024
FILE CODE: EA-01 ROAD EASEMENT	

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TWO TOWNE SQUARE, SUITE 700
SOUTHFIELD, MI 48076
248.447.2000

TAX PARCEL NO.:
4711-08-400-020
BEARING BASE: NAD83(2011)
MICHIGAN STATE PLANE
COORDINATES, SOUTH ZONE,
INTERNATIONAL FEET

EXHIBIT C

DESCRIPTION OF A 66 FOOT WIDE PRIVATE ROAD EASEMENT LOCATED IN THE SOUTHEAST 1/4 OF SECTION 8, TOWN 2 NORTH, RANGE 5 EAST, GENOA TOWNSHIP, LIVINGSTON COUNTY, MICHIGAN:

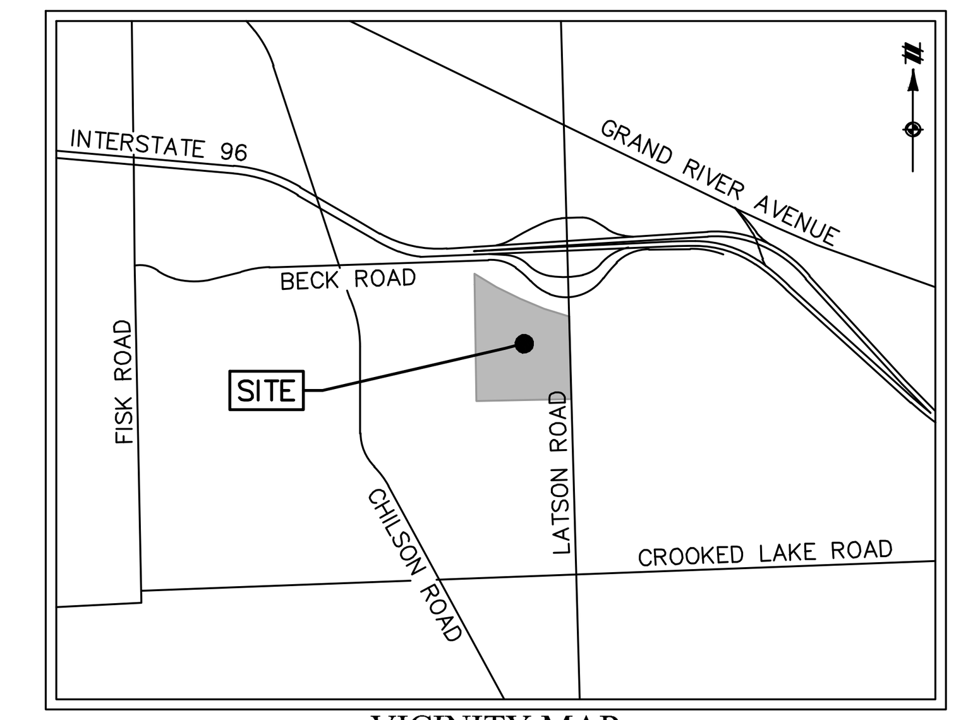
COMMENCING AT THE SOUTHEAST CORNER OF SECTION 8, TOWN 2 NORTH, RANGE 5 EAST, GENOA TOWNSHIP, LIVINGSTON COUNTY, MICHIGAN; THENCE N01°44'35"W 842.24 FEET (RECORDED AS N01°46'00"E 841.83 FEET) ALONG THE EAST LINE OF SAID SECTION 8, LYING IN S. LATSON ROAD (120 FEET WIDE); THENCE S87°00'25"W (RECORDED AS N89°29'06"W) 60.01 FEET; THENCE N01°44'35"W 39.17 FEET ALONG THE WEST RIGHT OF WAY LINE OF SAID S. LATSON ROAD FOR A **PLACE OF BEGINNING;** THENCE S88°15'25"W 233.01 FEET; THENCE N01°44'35"W 66.00 FEET; THENCE N88°15'25"E 233.01 FEET; THENCE S01°44'35"E 66.00 FEET ALONG THE WEST RIGHT OF WAY LINE OF SAID S. LATSON ROAD TO THE PLACE OF BEGINNING.

CLIENT: LATSON PARTNERS, LLC	JOB: 16001784 / CAD: EA-03
SKETCH & DESCRIPTION OF A 66 FOOT WIDE PRIVATE ROAD EASEMENT LOCATED IN	DR.: JEP / CH.: CPK
SECTION 8 TOWN 2 NORTH, RANGE 5 EAST GENOA TOWNSHIP LIVINGSTON COUNTY, MICHIGAN	BOOK: NA / PG.: NA
	SHEET: 03 OF 03 / DATE: 10-21-2024
	FILE CODE: EA-01 ROAD EASEMENT

ATWELL
866.850.4200 www.atwell-group.com
TWO TOWNE SQUARE, SUITE 700
SOUTHFIELD, MI 48076
248.447.2000

TAX PARCEL NO.:
4711-08-400-020
BEARING BASE: NAD83(2011)
MICHIGAN STATE PLANE
COORDINATES, SOUTH ZONE,
INTERNATIONAL FEET

INNOVATION INTERCHANGE
GENOA TOWNSHIP, LIVINGSTON COUNTY MICHIGAN
SITE PLAN - PHASE 1



VICINITY MAP
NOT TO SCALE

DEVELOPMENT TEAM

DEVELOPER / APPLICANT
LATSON PARTNERS LLC
29201 TELEGRAPH RD, SUITE 410
SOUTHFIELD, MICHIGAN 48034
CONTACT: TODD WYETT
PHONE: (248) 770-8484
EMAIL: TODD@VERSACOS.COM

CIVIL ENGINEER
ATWELL, LLC
TWO TOWNE SQUARE, SUITE 700
SOUTHFIELD, MICHIGAN 48076
CONTACT: JARED KIME, PE
PHONE: (248) 447-2000
EMAIL: JKIME@ATWELL-GROUP.COM

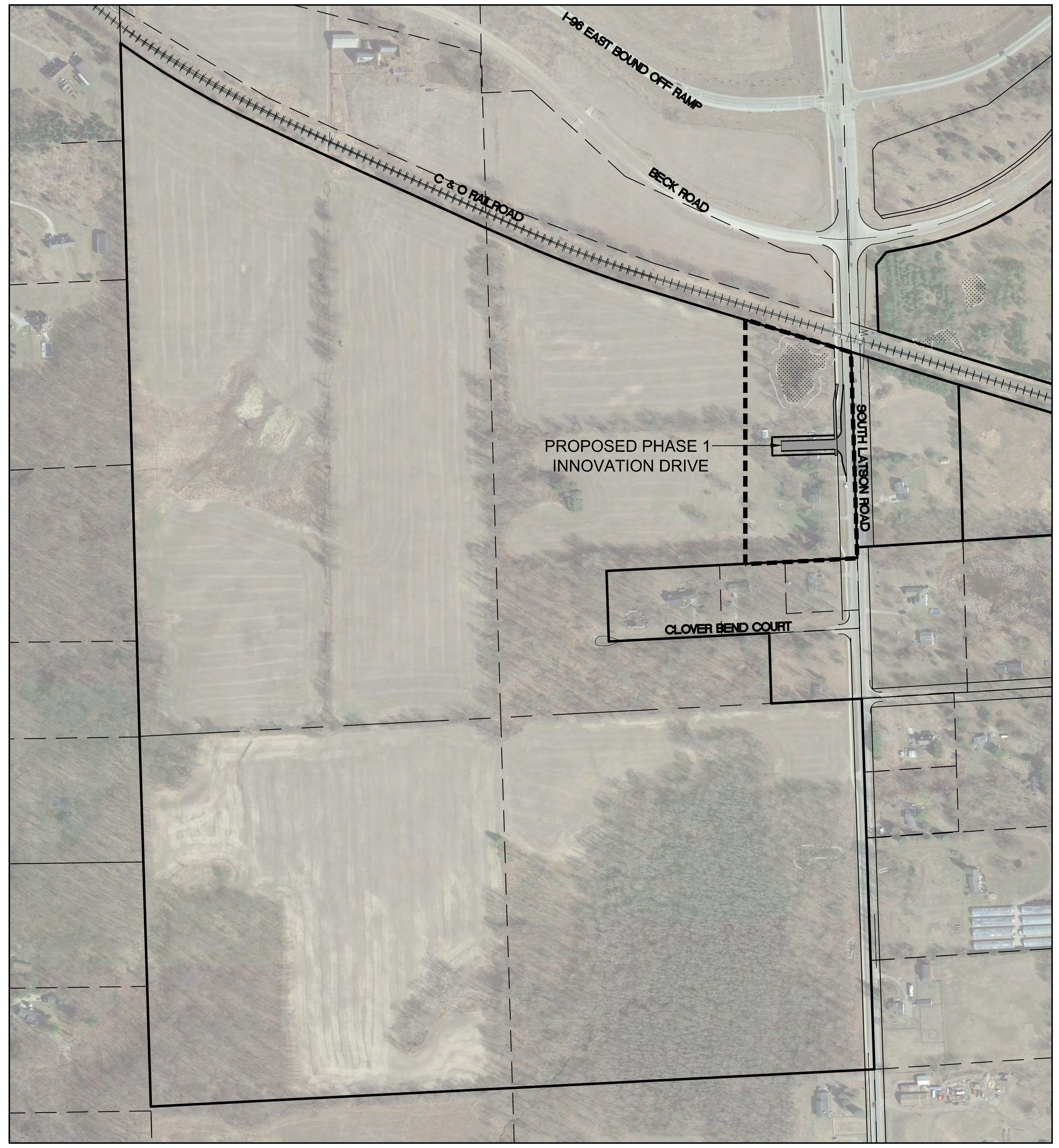
SURVEYOR
ATWELL, LLC
TWO TOWNE SQUARE, SUITE 700
SOUTHFIELD, MICHIGAN 48076
CONTACT: JUSTIN CECIL
PHONE: (248) 447-2000
EMAIL: JCECIL@ATWELL-GROUP.COM

LANDSCAPE ARCHITECT
MKSK
4219 WOODWARD AVE #305
DETROIT, MI 48201
CONTACT: HALEY WOLFE
PHONE: (614)621-2796
HWOLFE@MKSKSTUDIOS.COM

LEGAL DESCRIPTION

DESCRIPTION OF A 177.933 ACRE PARCEL (WEST PARCEL) OF LAND LOCATED IN THE SOUTHEAST 1/4 OF SECTION 8 AND THE NORTHEAST 1/4 OF SECTION 17, TOWNSHIP 2 NORTH, RANGE 5 EAST, TOWNSHIP OF GENOA, LIVINGSTON COUNTY, MICHIGAN:

BEGINNING AT THE NORTHEAST CORNER OF SECTION 17, ALSO BEING THE SOUTHEAST CORNER OF SECTION 8, TOWNSHIP 2 NORTH, RANGE 5 EAST, TOWNSHIP OF GENOA, LIVINGSTON COUNTY, MICHIGAN; THENCE S01°56'27"E 1327.90 FEET (RECORDED AS S01°56'14"E 1327.79 FEET) ALONG THE EAST LINE OF SAID SECTION 17, LYING IN LATSON ROAD (VARIABLE WIDTH); THENCE S87°03'08"W 2593.75 FEET (RECORDED AS S87°03'13"W 2593.52 FEET) ALONG THE SOUTH LINE OF THE NORTH 1/2 OF THE NORTHEAST 1/4 OF SAID SECTION 17 (AS MONUMENTED); THENCE N01°43'10"W 1325.95 FEET (RECORDED AS N01°43'52"W 1325.61 FEET) ALONG THE NORTH-SOUTH 1/4 LINE OF SAID SECTION 17 TO THE NORTH 1/4 CORNER OF SAID SECTION 17, ALSO BEING THE SOUTH 1/4 CORNER OF SAID SECTION 8; THENCE N01°35'22"W 2483.75 FEET (RECORDED AS N01°35'01"W 2485.28 FEET) ALONG THE NORTH-SOUTH 1/4 LINE OF SAID SECTION 8; THENCE ALONG THE SOUTHERLY RIGHT OF WAY LINE OF C&O RAILROAD (99 FEET WIDE)(AS MONUMENTED) THE FOLLOWING SIX (6) COURSES: 557.43 FEET (RECORDED AS 558.30 FEET) ALONG THE ARC OF A 3135.50 FOOT RADIUS CURVE TO THE LEFT, CHORD BEARING S59°31'33"E 556.70 FEET (RECORDED AS S59°26'23"E 557.56 FEET), 375.10 FEET (RECORDED AS 375.08 FEET) ALONG THE ARC OF A 19734.50 FOOT RADIUS CURVE TO THE LEFT, CHORD BEARING S65°05'54"E 375.09 FEET (RECORDED AS S65°05'07"E 375.07 FEET), S65°38'07"E 538.10 FEET (RECORDED AS S65°37'47"E 538.12 FEET), S66°05'03"E 87.99 FEET (RECORDED AS S62°03'36"E 88.07 FEET), 527.53 FEET (RECORDED AS 527.26 FEET) ALONG THE ARC OF A 4000.00 FOOT RADIUS CURVE TO THE LEFT, CHORD BEARING S69°21'33"E 527.15 FEET (RECORDED AS S65°50'11"E 526.88 FEET), AND S73°07'23"E 765.27 FEET (RECORDED AS S69°36'45"E 765.54 FEET); THENCE S01°44'35"E (RECORDED AS S01°46'00"W) 737.65 FEET ALONG THE EAST LINE OF SAID SECTION 8, LYING IN SAID LATSON ROAD; THENCE S87°00'25"W (RECORDED AS N89°29'06"W) 899.22 FEET; THENCE S01°46'25"E 252.65 FEET (RECORDED AS S01°46'00"W 252.54 FEET AND SOUTH 252.52 FEET); THENCE N87°00'25"E (RECORDED AS N88°44'11"E) 575.08 FEET; THENCE S01°47'55"E 251.98 FEET (RECORDED AS S01°47'14"W AND S00°01'10"W 252.46 FEET); THENCE N87°00'25"E 323.76 FEET (RECORDED AS N89°29'06"W 323.45 FEET AND S88°44'11"W 323.54 FEET) ALONG THE SOUTH LINE OF SAID SECTION 8 AND THE NORTH LINE OF SAID SECTION 17 TO THE PLACE OF BEGINNING, BEING A PART OF THE SOUTHEAST 1/4 OF SECTION 8 AND THE NORTHEAST 1/4 OF SECTION 17, CONTAINING 177.933 ACRES OF LAND, MORE OR LESS, BEING SUBJECT TO THE RIGHTS OF THE PUBLIC OVER THE EASTERLY PORTION THEREOF AS OCCUPIED BY SAID LATSON ROAD, ALSO BEING SUBJECT TO EASEMENTS, CONDITIONS, RESTRICTIONS AND EXCEPTIONS OF RECORD, IF ANY.



OVERALL DEVELOPMENT MAP

SHEET INDEX

Sheet Number	Sheet Title
1	COVER SHEET
2	OVERALL EXISTING CONDITIONS
3	TREE TABLES
4	EXISTING CONDITONS AND DEMOLITION PLAN
5	LAYOUT, GRADING AND UTILITY PLAN

SITE DATA

PARCEL SIZE:	177.94 acres
ZONING:	CAPUD

811 Know what's **below.** **Call** before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

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SECTION 8
TOWN 2 NORTH, RANGE 5 EAST
GENOA TOWNSHIP
LIVINGSTON COUNTY MICHIGAN

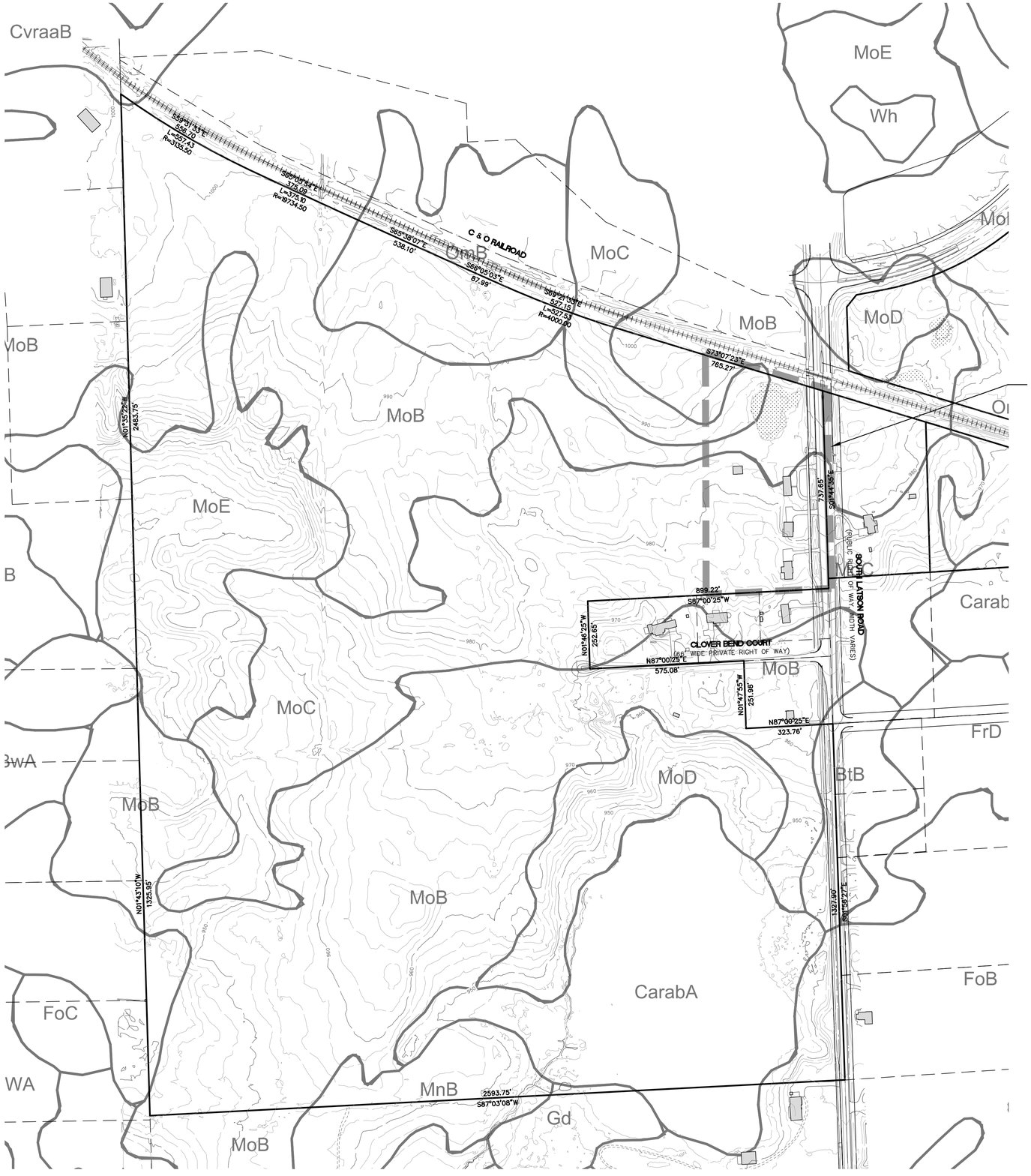
LATSON PARTNERS, LLC
INNOVATION INTERCHANGE
SITE PLAN - PHASE 1
COVER SHEET

NOT FOR CONSTRUCTION

DATE JULY 23, 2024
2024-09-17 REVISIONS
2024-11-11 PER TWP

REVISIONS
SCALE 0
1" = -- FEET
DR. MM CH. JK
P.M. J. KIME
JOB 16001784
SHEET NO. 1

STATE OF MICHIGAN
JARED M. KIME
ENGINEER
No. 57844
LICENSED PROFESSIONAL ENGINEER



LEGEND

BOUNDARY LINE	SECTION CORNER
BOUNDARY ADJACENT LINE	SOIL BORING
EASEMENT LINE	FOUND MAG NAIL
SECTION LINE	FOUND MONUMENT
RIGHT OF WAY CENTERLINE	FOUND CAPPED IRON ROD
OVERHEAD UTILITY LINE	EXISTING SIGN
EXISTING WETLAND	EX. GUY ANCHOR WITH WIRE
EXISTING CENTERLINE OF DITCH	EXISTING UTILITY POLE
APPROXIMATE UNDERGROUND FIBER LINE	EXISTING WATER BBOX
APPROXIMATE UNDERGROUND TELEPHONE LINE	EXISTING FIRE HYDRANT
APPROXIMATE UNDERGROUND GAS LINE	EXISTING TELEPHONE RISER
UNDERGROUND STORM LINE	EX. MANHOLE/CATCH BASIN
UNDERGROUND WATER LINE	EXISTING CULVERT
EXISTING FENCE	EXISTING CABLE RISER
EXISTING LIMITS OF VEGETATION	EXISTING LIGHTPOLE
EXISTING CURB AND GUTTER	UNDERGROUND GAS MARKER
EXISTING GROUND CONTOUR	UNDERGROUND WATER MARKER
	P.O.C. POINT OF COMMENCEMENT
	P.O.B. PLACE OF BEGINNING
	(R) RECORD
	(M) MEASURED

SOIL SYMBOL	SOIL TYPE
BtB	BOYER–OSHTEMO LOAMY SANDS, 2 TO 6 PERCENT SLOPES
BtD	BOYER–OSHTEMO LOAMY SANDS, 12 TO 18 PERCENT SLOPES
BuA	BRADY LOAMY SAND, 0 TO 2 PERCENT SLOPES
BwA	BRONSON LOAMY SAND, 0 TO 2 PERCENT SLOPES
By	BROOKSTON LOAM, 0 TO 2 PERCENT SLOPES
CarabA	CARLISLE MUCK, 0 TO 2 PERCENT SLOPES
CvraaB	CONOVER LOAM, 0 TO 4 PERCENT SLOPES
FoB	FOX SANDY LOAM, 2 TO 6 PERCENT SLOPES
FoC	FOX SANDY LOAM, 6 TO 12 PERCENT SLOPES
FrC	FOX–BOYER COMPLEX, 6 TO 12 PERCENT SLOPES
FrD	FOX–BOYER COMPLEX, 12 TO 18 PERCENT SLOPES
Gd	GILFORD SANDY LOAM, 0 TO 2 PERCENT SLOPES, GRAVELLY SUBSOIL
MlB	METAMORA SANDY LOAM, 0 TO 4 PERCENT SLOPES
MnB	METEA LOAMY SAND, 2 TO 6 PERCENT SLOPES
MoA	WAWASEE LOAM, 0 TO 2 PERCENT SLOPES
MoB	WAWASEE LOAM, 2 TO 6 PERCENT SLOPES
MoC	WAWASEE LOAM, 6 TO 12 PERCENT SLOPES
MoD	MIAMI LOAM, 12 TO 18 PERCENT SLOPES
MoE	MIAMI LOAM, 18 TO 25 PERCENT
OmB	OWOSSO–MIAMI SANDY LOAMS, 2 TO 6 PERCENT SLOPES
Wh	WASHTENAW SILT LOAM

Know what's below. Call before you dig.

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SECTION 8
TOWN 2 NORTH, RANGE 5 EAST
GENOA TOWNSHIP
LIVINGSTON COUNTY MICHIGAN

LATSON PARTNERS, LLC
INNOVATION INTERCHANGE
SITE PLAN - PHASE 1
OVERALL EXISTING CONDITIONS

NOT FOR CONSTRUCTION

DATE
JULY 23, 2024
2024-09-17 REVISIONS
2024-11-11 PER TWP

REVISIONS

SCALE 0 100 200
1" = 200 FEET

DR. MM | CH. JK
P.M. J. KIME
JOB 16001784
SHEET NO.
2

Tag Number	Scientific Name	Common Name	DBH (INCHES)	Condition	Demo
5201	*Acer saccharinum*	Silver Maple	34.5	Good	No
5202	*Acer saccharinum*	Silver Maple	14	Good	No
5203	*Acer saccharinum*	Silver Maple	36	Good	No
5204	*Acer saccharinum*	Silver Maple	8.5	Good	No
5205	*Acer saccharinum*	Silver Maple	9	Good	No
5206	*Acer saccharinum*	Silver Maple	10.5	Good	No
5207	*Acer saccharinum*	Silver Maple	9.5	Good	No
5208	*Acer saccharinum*	Silver Maple	18	Good	No
5209	*Acer saccharinum*	Silver Maple	8	Good	No
5210	*Acer saccharinum*	Silver Maple	14.5	Good	No
5211	*Acer saccharinum*	Silver Maple	15	Good	No
5212	*Acer saccharinum*	Silver Maple	12	Good	No
5213	*Acer saccharinum*	Silver Maple	12.5	Good	No
5214	*Acer saccharinum*	Silver Maple	14.5	Good	No
5215	*Acer saccharinum*	Silver Maple	11	Good	No
5216	*Quercus rubra*	Red Oak	12	Good	No
5217	*Quercus bicolor*	Swamp White Oak	12.5	Good	No
5218	*Quercus bicolor*	Swamp White Oak	27	Good	No
5219	*Acer saccharinum*	Silver Maple	22	Good	No
5220	*Juniperus virginiana*	Eastern Redcedar	6.5	Good	No
5221	*Quercus rubra*	Red Oak	18	Good	No
5222	*Ulmus americana*	American Elm	15.5	Good	No
5223	*Quercus bicolor*	Swamp White Oak	12	Good	No
5224	*Quercus rubra*	Red Oak	24	Good	No
5225	*Quercus bicolor*	Swamp White Oak	10	Good	No
5226	*Fraxinus pennsylvanica*	Green Ash	8.5	Poor	No
5227	*Prunus serotina*	Black Cherry	24	Good	No
5228	*Ulmus americana*	American Elm	24	Good	No
5229	*Quercus bicolor*	Swamp White Oak	8.5	Good	No
5230	*Carya cordiformis*	Bitternut Hickory	14.5	Good	No
5231	*Salix nigra*	Black Willow	20	Poor	No
5232	*Acer rubrum*	Red Maple	13	Good	No
5233	*Quercus bicolor*	Swamp White Oak	29	Good	No
5234	*Acer saccharinum*	Silver Maple	16	Good	No
5235	*Prunus serotina*	Black Cherry	17.5	Good	No
5236	*Quercus rubra*	Red Oak	12	Good	No
5237	*Populus deltoides*	Cottonwood	53.5	Good	No
5238	*Acer saccharinum*	Silver Maple	20	Good	No
5239	*Quercus bicolor*	Swamp White Oak	8	Good	No
5240	*Quercus bicolor*	Swamp White Oak	9	Good	No
5241	*Acer rubrum*	Red Maple	14	Good	No
5242	*Quercus bicolor*	Swamp White Oak	12.5	Fair	No
5243	*Carya cordiformis*	Bitternut Hickory	8	Good	No
5244	*Quercus rubra*	Red Oak	21	Good	No
5245	*Quercus rubra*	Red Oak	15	Good	No
5246	*Quercus rubra*	Red Oak	19	Good	No
5247	*Quercus bicolor*	Swamp White Oak	8	Good	No
5248	*Quercus alba*	White Oak	13	Good	No
5249	*Quercus bicolor*	Swamp White Oak	8.5	Good	No
5250	*Quercus bicolor*	Swamp White Oak	11	Fair	No
5251	*Acer rubrum*	Red Maple	8.5	Good	No
5252	*Quercus bicolor*	Swamp White Oak	10	Good	No
5253	*Quercus bicolor*	Swamp White Oak	10	Good	No
5254	*Acer rubrum*	Red Maple	8.5	Good	No
5255	*Quercus bicolor*	Swamp White Oak	19	Good	No
5256	*Acer rubrum*	Red Maple	8	Good	No
5257	*Acer saccharinum*	Silver Maple	25	Good	No
5258	*Acer saccharinum*	Silver Maple	20	Good	No
5259	*Acer saccharinum*	Silver Maple	22	Good	No
5260	*Acer saccharinum*	Silver Maple	22	Good	No
5261	*Acer saccharinum*	Silver Maple	31	Good	No
5262	*Acer saccharinum*	Silver Maple	20	Good	No
5263	*Acer saccharinum*	Silver Maple	14	Good	No
5264	*Acer saccharinum*	Silver Maple	14	Good	No
5265	*Acer saccharinum*	Silver Maple	14	Good	No
5266	*Acer saccharinum*	Silver Maple	11	Good	No
5267	*Quercus bicolor*	Swamp White Oak	30.5	Fair	No
5268	*Acer saccharinum*	Silver Maple	8	Good	No
5269	*Acer saccharinum*	Silver Maple	8	Good	No
5270	*Acer saccharinum*	Silver Maple	17.5	Good	No
5271	*Acer saccharinum*	Silver Maple	15	Good	No
5272	*Acer saccharinum*	Silver Maple	9.5	Good	No
5273	*Acer saccharinum*	Silver Maple	15	Good	No
5274	*Acer saccharinum*	Silver Maple	12.5	Good	No
5275	*Acer saccharinum*	Silver Maple	10	Good	No
5276	*Acer saccharinum*	Silver Maple	9	Good	No
5277	*Acer saccharinum*	Silver Maple	12	Poor	No
5278	*Acer saccharinum*	Silver Maple	8	Good	No
5279	*Acer saccharinum*	Silver Maple	8	Good	No
5280	*Acer saccharinum*	Silver Maple	15	Good	No
5281	*Acer saccharinum*	Silver Maple	13	Good	No
5282	*Acer saccharinum*	Silver Maple	10	Good	No
5283	*Acer saccharinum*	Silver Maple	11.5	Good	No
5284	*Prunus serotina*	Black Cherry	8	Good	No
5285	*Quercus rubra*	Red Oak	14	Good	No
5286	*Quercus rubra*	Red Oak	31.5	Good	No
5287	*Quercus rubra*	Red Oak	21	Good	No
5288	*Quercus rubra*	Red Oak	22	Good	No
5289	*Quercus rubra*	Red Oak	14	Good	No
5290	*Quercus rubra*	Red Oak	31	Good	No
5291	*Quercus rubra*	Red Oak	28	Good	No
5292	*Quercus alba*	White Oak	18	Good	No
5293	*Quercus alba*	White Oak	25.5	Good	No
5294	*Quercus alba*	White Oak	21	Good	No
5295	*Quercus rubra*	Red Oak	18	Good	No
5296	*Prunus serotina*	Black Cherry	36	Good	No
5297	*Quercus rubra*	Red Oak	22	Good	No
5298	*Quercus rubra*	Red Oak	38.5	Good	No
5299	*Quercus rubra*	Red Oak	14	Good	No
5301	*Quercus rubra*	Red Oak	33	Good	No
5302	*Quercus rubra*	Red Oak	29	Good	No
5303	*Quercus rubra*	Red Oak	16	Good	No
5304	*Quercus rubra*	Red Oak	14	Good	No
5305	*Quercus rubra*	Red Oak	34.5	Good	No
5306	*Quercus alba*	White Oak	16	Good	No
5307	*Quercus alba*	White Oak	25	Good	No
5308	*Populus tremuloides*	Quaking Aspen	12	Good	No
5309	*Populus tremuloides*	Quaking Aspen	14	Good	No
5310	*Populus tremuloides*	Quaking Aspen	16.5	Good	No
5311	*Quercus rubra*	Red Oak	10.5	Good	No
5312	*Quercus alba*	White Oak	23	Good	No
5313	*Quercus rubra*	Red Oak	35	Good	No
5314	*Quercus alba*	White Oak	17	Good	No
5315	*Prunus serotina*	Black Cherry	28	Good	No
5316	*Quercus rubra*	Red Oak	27	Good	No
5317	*Prunus serotina*	Black Cherry	26.5	Fair	No
5318	*Populus deltoides*	Cottonwood	16.5	Fair	No
5319	*Carya cordiformis*	Bitternut Hickory	23	Good	No
5320	*Quercus rubra*	Red Oak	16.5	Good	No
5321	*Prunus serotina*	Black Cherry	25.5	Fair	No
5322	*Prunus serotina*	Black Cherry	21	Good	No
5323	*Prunus serotina*	Black Cherry	9	Good	No
5324	*Quercus rubra*	Red Oak	22.5	Good	No
5325	*Quercus rubra*	Red Oak	34	Good	No
5326	*Populus tremuloides*	Quaking Aspen	21	Good	No
5327	*Quercus rubra*	Red Oak	28	Good	No
5328	*Prunus serotina*	Black Cherry	8	Good	No
5329	*Prunus serotina*	Black Cherry	9	Good	No
5330	*Prunus serotina*	Black Cherry	16	Fair	No
5331	*Prunus serotina*	Black Cherry	11	Good	No
5332	*Prunus serotina*	Black Cherry	10.5	Good	No
5333	*Quercus rubra*	Red Oak	20	Good	No
5334	*Populus deltoides*	Cottonwood	29.5	Good	No
5335	*Quercus rubra*	Red Oak	21	Good	No
5336	*Prunus serotina*	Black Cherry	21	Good	No
5337	*Acer saccharum*	Sugar Maple	19	Good	No
5338	*Prunus serotina*	Black Cherry	8.5	Good	No
5339	*Prunus serotina*	Black Cherry	11	Good	No
5340	*Prunus serotina*	Black Cherry	13.5	Good	No
5341	*Prunus serotina*	Black Cherry	16	Good	No
5342	*Quercus rubra*	Red Oak	20	Good	No
5343	*Prunus serotina*	Black Cherry	29	Good	No
5344	*Prunus serotina*	Black Cherry	9	Good	No
5345	*Prunus serotina*	Black Cherry	11	Good	No
5346	*Prunus serotina*	Black Cherry	19.5	Good	No
5347	*Prunus serotina*	Black Cherry	15	Good	No
5348	*Quercus rubra*	Red Oak	8	Good	No
5349	*Prunus serotina*	Black Cherry	10.5	Good	No
5350	*Prunus serotina*	Black Cherry	14.5	Good	No
5351	*Prunus serotina*	Black Cherry	26.5	Good	No
5352	*Prunus serotina*	Black Cherry	17.5	Good	No
5353	*Malus spp.*	Apple/Crabapple	13	Good	No
5354	*Juniperus virginiana*	Eastern Redcedar	3.5	Good	No
5355	*Juniperus virginiana*	Eastern Redcedar	4.5	Good	No
5356	*Juniperus virginiana*	Eastern Redcedar	2.5	Good	No
5357	*Juniperus virginiana*	Eastern Redcedar	4.5	Good	No
5358	*Pyrus spp.*	Pear	14	Good	No
5359	*Acer saccharum*	Sugar Maple	13	Good	No
5360	*Prunus serotina*	Black Cherry	18.5	Poor	No
5361	*Quercus rubra*	Red Oak	21	Good	No
5362	*Quercus rubra*	Red Oak	18	Good	No

Tag Number	Scientific Name	Common Name	DBH (INCHES)	Condition	Demo
5363	*Prunus serotina*	Black Cherry	13	Good	No
5364	*Juniperus virginiana*	Eastern Redcedar	4	Good	No
5365	*Prunus serotina*	Black Cherry	17.5	Good	No
5366	*Prunus serotina*	Black Cherry	15.5	Good	No
5367	*Quercus rubra*	Red Oak	16	Good	No
5368	*Acer rubrum*	Red Maple	14.5	Good	No
5369	*Prunus serotina*	Black Cherry	30	Good	No
5370	*Prunus serotina*	Black Cherry	9.5	Good	No
5371	*Quercus rubra*	Red Oak	15.5	Good	No
5372	*Morus alba*	White Mulberry	11	Good	No
5373	*Prunus avium*	Sweet Cherry	13.5	Good	No
5374	*Acer rubrum*	Red Maple	10.5	Good	No
5375	*Quercus rubra*	Red Oak	9.5	Good	No
5376	*Prunus serotina*	Black Cherry	22	Good	No
5377	*Prunus serotina*	Black Cherry	30	Good	No
5378	*Prunus serotina*	Black Cherry	10	Good	No
5379	*Prunus serotina*	Black Cherry	8	Good	No
5380	*Prunus serotina*	Black Cherry	24	Good	No
5381	*Quercus rubra*	Red Oak	17	Good	No
5382	*Prunus serotina*	Black Cherry	22	Good	No
5383	*Morus alba*	White Mulberry	16.5	Good	No
5384	*Prunus serotina*	Black Cherry	19	Good	No
5385	*Quercus rubra*	Red Oak	11	Good	No
5386	*Prunus serotina*	Black Cherry	32	Good	No
5387	*Prunus serotina*	Black Cherry	40.5	Good	No
5388	*Fraxinus pennsylvanica*	Green Ash	9	Good	No
5389	*Fraxinus pennsylvanica*	Green Ash	10	Good	No
5390	*Prunus serotina*	Black Cherry	16	Good	No
5391	*Prunus serotina*	Black Cherry	16.5	Good	No
5392	*Prunus serotina*	Black Cherry	14	Good	No
5393	*Ulmus americana*	American Elm	17	Good	No
5394	*Prunus serotina*	Black Cherry	14	Good	No
5395	*Prunus serotina*	Black Cherry	14.5	Good	No
5396	*Prunus serotina*	Black Cherry	12	Good	No
5397	*Prunus serotina*	Black Cherry	34	Good	No
5398	*Quercus rubra*	Red Oak	20	Good	No
5399	*Ulmus americana*	American Elm	9	Good	No
5400	*Ulmus americana*	American Elm	8.5	Good	No
5401	*Quercus rubra*	Red Oak	17.5	Good	No
5402	*Prunus serotina*	Black Cherry	25	Good	No
5403	*Prunus avium*	Sweet Cherry	25	Good	No
5404	*Acer negundo*	Boxelder	19	Good	No
5405	*Acer negundo*	Boxelder	16	Good	No
5406	*Acer negundo*	Boxelder	20	Good	No
5407	*Catalpa speciosa*	Northern Catalpa	9.5	Good	No
5408	*Sassafras albidum*	Sassafras	8.5	Good	No
5409	*Sassafras albidum*	Sassafras	9	Good	No
5410	*Sassafras albidum*	Sassafras	16	Good	No
5411	*Sassafras albidum*	Sassafras	16	Good	No
5412	*Sassafras albidum*	Sassafras	13.5	Good	No
5413	*Sassafras albidum*	Sassafras	11	Good	No
5414	*Sassafras albidum*	Sassafras	14.5	Good	No
5415	*Sassafras albidum*	Sassafras	10.5	Good	No
5416	*Sassafras albidum*	Sassafras	12	Good	No
5417	*Sassafras albidum*	Sassafras	14	Good	No
5418	*Prunus serotina*	Black Cherry	24	Good	No
5419	*Prunus serotina*	Black Cherry	12.5	Good	No
5420	*Ulmus pumila*	Siberian Elm	12.5	Good	No
5421	*Prunus serotina*	Black Cherry	18	Good	No
5422	*Catalpa speciosa*	Northern Catalpa	18	Good	No
5423	*Fraxinus pennsylvanica*	Green Ash	8	Good	No
5424	*Catalpa speciosa*	Northern Catalpa	12	Good	No
5425	*Prunus serotina*	Black Cherry	13	Good	No
5426	*Prunus serotina*	Black Cherry	11	Good	No
5427	*Fraxinus pennsylvanica*	Green Ash	14	Good	No
5428	*Prunus serotina*	Black Cherry	16	Good	No
5429	*Ulmus americana*	American Elm	8.5	Good	No
5430	*Catalpa speciosa*	Northern Catalpa	19	Good	No
5431	*Prunus serotina*	Black Cherry	12.5	Good	No
5432	*Prunus serotina*	Black Cherry	13	Good	No
5433	*Prunus serotina*	Black Cherry	13.5	Good	No
5434	*Prunus serotina*	Black Cherry	10	Good	No
5435	*Ulmus americana*	American Elm	9	Good	No
5436	*Prunus serotina*	Black Cherry	8.5	Good	No
5437	*Prunus serotina*	Black Cherry	16	Good	No
5438	*Prunus serotina*	Black Cherry	12	Good	No
5439	*Catalpa speciosa*	Northern Catalpa	27	Good	No
5440	*Catalpa speciosa*	Northern Catalpa	17	Good	No
5441	*Catalpa speciosa*	Northern Catalpa	29.5	Good	No
5442	*Catalpa speciosa*	Northern Catalpa	27	Good	No
5443	*Catalpa speciosa*	Northern Catalpa	34.5	Good	No
5444	*Catalpa speciosa*	Northern Catalpa	10	Good	No
5445	*Catalpa speciosa*	Northern Catalpa	17	Good	No
5446	*Catalpa speciosa*	Northern Catalpa	31	Good	No
5447	*Prunus serotina*	Black Cherry	11	Good	No
5448	*Prunus serotina*	Black Cherry	12	Good	No
5449	*Catalpa speciosa*	Northern Catalpa	29	Good	No
5450	*Catalpa speciosa*	Northern Catalpa	10	Good	No
5451	*Prunus serotina*	Black Cherry	11	Good	No
5452	*Prunus serotina*	Black Cherry	13.5	Good	No
5453	*Catalpa speciosa*	Northern Catalpa	13	Good	No
5454	*Catalpa speciosa*	Northern Catalpa	13	Good	No
5455	*Catalpa speciosa*	Northern Catalpa	20	Good	No
5456	*Catalpa speciosa*	Northern Catalpa	22	Fair	No
5457	*Catalpa speciosa*	Northern Catalpa	9	Good	No
5458	*Catalpa speciosa*	Northern Catalpa	10.5	Good	No
5459	*Acer negundo*	Boxelder	10.5	Good	No
5460	*Prunus serotina*	Black Cherry	16	Good	No
5461	*Catalpa speciosa*	Northern Catalpa	12	Good	No
5462	*Prunus serotina*	Black Cherry	20	Good	No
5463	*Prunus serotina*	Black Cherry	12	Good	No
5464	*Fraxinus pennsylvanica*	Green Ash	11.5	Poor	No
5465	*Prunus serotina*	Black Cherry	39	Good	No
5466	*Quercus rubra*	Red Oak	12	Good	No
5467	*Prunus serotina*	Black Cherry	16	Good	No
5468	*Prunus serotina*	Black Cherry	16.5	Good	No
5469	*Prunus serotina*	Black Cherry	12	Good	No
5470	*Quercus rubra*	Red Oak	10	Good	No
5471	*Carya ovata*	Shagbark Hickory	8	Good	No
5472	*Prunus serotina*	Black Cherry	19	Good	No
5473	*Carya ovata*	Shagbark Hickory	10	Good	No
5474	*Prunus serotina*	Black Cherry	15	Good	No
5475	*Prunus serotina*	Black Cherry	10	Good	No
5476	*Prunus serotina*	Black Cherry	15	Good	No
5477	*Prunus serotina*	Black Cherry	19	Good	No
5478	*Quercus rubra*	Red Oak	8	Good	No
5479	*Prunus serotina*	Black Cherry	28	Good	No
5480	*Carya cordiformis*	Bitternut Hickory	21	Good	No
5481	*Catalpa speciosa*	Northern Catalpa	14	Good	No
5482	*Pinus resinosa*	Red Pine	12	Fair	No
5483	*Malus spp.*	Apple/Crabapple	11	Good	Yes
5484	*Acer rubrum*	Red Maple	12.5	Good	No
5485	*Acer saccharinum*	Silver Maple	20	Good	No
5486	*Picea pungens*	Blue Spruce	13	Good	No
5487	*Acer saccharinum*	Silver Maple	27	Good	No
5488	*Acer saccharinum*	Silver Maple	24	Good	No
5488	*Acer saccharinum*	Silver Maple	41.5	Good	No
5489	*Acer saccharinum*	Silver Maple	41.5	Good	No
5490	*Acer saccharinum*	Silver Maple	24	Good	No
5491	*Acer saccharinum*	Silver Maple	38	Good	No
5492	*Picea abies*	Norway Spruce	27.5	Good	No
5493	*Picea abies*	Norway Spruce	27	Good	No
5494	*Picea abies*	Norway Spruce	26	Good	No
5495	*Quercus rubra*	Red Oak	21	Good	No
5496	*Prunus serotina*	Black Cherry	8	Good	No
5497	*Carya cordiformis*	Bitternut Hickory	8	Good	No
5498	*Prunus serotina*	Black Cherry	11	Good	No
5499	*Tilia americana*	Basswood	9.5	Good	No
5500	*Quercus rubra*	Red Oak	17	Good	No
5501	*Tilia americana*	Basswood	9	Good	No
5502	*Pinus resinosa*	Red Pine	15	Good	No
5503	*Acer saccharinum*	Silver Maple	40	Good	No
5504	*Acer saccharinum*	Silver Maple	36	Good	No
5505	*Acer saccharinum*	Silver Maple	34.5	Good	No
5506	*Acer saccharinum*	Silver Maple	22	Good	Yes
5507	*Acer saccharinum*	Silver Maple	26	Good	Yes
5508	*Acer saccharinum*	Silver Maple	25.5	Good	Yes
5509	*Prunus serotina*	Black Cherry	8	Good	Yes
5510	*Prunus serotina*	Black Cherry	22	Good	No
5511	*Acer saccharinum*	Silver Maple	54.5	Good	Yes
5512	*Picea pungens*	Blue Spruce	13	Good	No
5513	*Picea pungens*	Blue Spruce	7.5	Good	No
5514	*Picea abies*	Norway Spruce	24	Good	No
5516	*Picea abies*	Norway Spruce	13	Good	No
5517	*Picea abies*	Norway Spruce	12.5	Good	No
5518	*Picea abies*	Norway Spruce	11.5	Good	No
5518	*Picea abies*	Norway Spruce	15	Good	No
5519	*Picea abies*	Norway Spruce	13	Good	No
5520	*Picea pungens*	Blue Spruce	13.5	Good	No
5521	*Picea pungens*	Blue Spruce	8.5	Good	No
5522	*Populus tremuloides*	Quaking Aspen	42	Good	No

Tag Number	Scientific Name	Common Name	DBH (INCHES)	Condition	Demo
5523	*Acer saccharinum*	Silver Maple	16	Good	No
5524	*Populus deltoides*	Cottonwood	25	Good	No
5525	*Quercus rubra*	Red Oak	14	Good	No
5526	*Tilia americana*	Basswood	21	Good	No
5527	*Quercus rubra*	Red Oak	10	Good	No
5528	*Quercus rubra*	Red Oak	13	Good	No
5529	*Prunus serotina*	Black Cherry	19	Good	No
5530	*Acer saccharum*	Sugar Maple	8.5	Good	No
5531	*Prunus serotina*	Black Cherry	11.5	Good	No
5532	*Acer saccharum*	Sugar Maple	9	Good	No
5533	*Acer rubrum*	Red Maple	8	Good	No
5534	*Tilia americana*	Basswood	20	Fair	No
5535	*Acer rubrum*	Red Maple	10	Good	No
5536	*Acer rubrum*	Red Maple	20	Good	No
5537	*Acer rubrum*	Red Maple	11.5	Good	No
5538	*Tilia americana*	Basswood	13	Good	No
5539	*Quercus rubra*	Red Oak	11	Good	No
5540	*Prunus serotina*	Black Cherry	16	Good	No
5541	*Acer rubrum*	Red Maple	15	Good	No
5542	*Acer rubrum*	Red Maple	11.5	Good	No
5543	*Quercus rubra*	Red Oak	15.5	Good	No
5544	*Tilia americana*	Basswood	9	Good	No
5545	*Quercus rubra*	Red Oak	10	Good	No
5546	*Ostrya virginiana*	Ironwood	8	Good	No
5547	*Quercus rubra*	Red Oak	11	Good	No
5548	*Quercus rubra*	Red Oak	11	Good	No
5549	*Carya ovata*	Shagbark Hickory	8	Good	No
5550	*Acer rubrum*	Red Maple	10.5	Good	No
5551	*Tilia americana*	Basswood	8	Good	No
5552	*Acer rubrum*	Red Maple	9	Good	No
5553	*Quercus rubra*	Red Oak	10.5	Good	No
5554	*Tilia americana*	Basswood	11	Good	No
5555	*Quercus rubra*	Red Oak	11	Good	No
5556	*Acer saccharinum*	Silver Maple	12	Good	No
5557	*Carya ovata*	Shagbark Hickory	10	Good	No
5558	*Quercus rubra*	Red Oak	15	Good	No
5559	*Tilia americana*	Basswood	15.5	Good	No
5560	*Populus tremuloides*	Quaking Aspen	19	Good	No
5561	*Tilia americana*	Basswood	8	Good	No
5562	*Quercus rubra*	Red Oak	10	Good	No
5563	*Sassafras albidum*	Sassafras	10	Good	No
5564	*Acer rubrum*	Red Maple	8	Good	No
5565	*Acer rubrum*	Red Maple	16	Good	No
5566	*Sassafras albidum*	Sassafras	11	Good	No
5567	*Acer rubrum*	Red Maple	8	Good	No
5568	*Prunus avium*	Sweet Cherry	12	Good	No
5569	*Acer rubrum*	Red Maple	14	Good	No
5570	*Prunus serotina*	Black Cherry	17.5	Good	No
5571	*Quercus rubra*	Red Oak	18	Good	No
5572	*Prunus avium*	Sweet Cherry	9	Good	No
5573	*Populus tremuloides*	Quaking Aspen	12	Good	No
5574	*Quercus rubra*	Red Oak	17	Good	No
5575	*Sassafras albidum*	Sassafras	12	Good	No
5576	*Tilia americana*	Basswood	10.5	Good	No
5577	*Acer rubrum*	Red Maple	12.5	Good	No
5578	*Populus tremuloides*	Quaking Aspen	10.5	Good	No
5579	*Acer rubrum*	Red Maple	13	Good	No
5580	*Acer rubrum*	Red Maple	10	Good	No
5581	*Tilia americana*	Basswood	10.5	Good	No
5582	*Acer rubrum*	Red Maple	8	Good	No
5583	*Acer rubrum*	Red Maple	8.5	Good	No
5584	*Acer rubrum*	Red Maple	12	Good	No
5585	*Acer rubrum*	Red Maple	9	Good	No
5586	*Acer rubrum*	Red Maple	9	Good	No
5587	*Tilia americana*	Basswood	11.5	Good	No
5588	*Prunus serotina*	Black Cherry	9	Good	No
5589	*Populus tremuloides*	Quaking Aspen	19	Good	No
5590	*Populus tremuloides*	Quaking Aspen	17	Good	No
5591	*Populus tremuloides*	Quaking Aspen	21	Good	No
5592	*Populus tremuloides*	Quaking Aspen	19.5	Good	No
5593	*Populus tremuloides*	Quaking Aspen	21	Good	No
5594	*Populus tremuloides*	Quaking Aspen	15	Good	No
5595	*Populus tremuloides*	Quaking Aspen	16	Good	No
5596	*Quercus rubra*	Red Oak	16	Good	No
5597	*Quercus rubra*	Red Oak	10	Good	No
5598	*Acer rubrum*	Red Maple	8.5	Good	No
5599	*Acer rubrum*	Red Maple	9	Good	No
5600	*Populus tremuloides*	Quaking Aspen	16	Good	No
5601	*Acer rubrum*	Red Maple	8	Good	No
5602	*Populus tremuloides*	Quaking Aspen	17	Good	No
5603	*Sassafras albidum*	Sassafras	9	Good	No
5604	*Acer rubrum*	Red Maple	11	Good	No
5605	*Acer rubrum*	Red Maple	10.5	Good	No
5606	*Acer rubrum*	Red Maple	11	Good	No
5607	*Acer rubrum*	Red Maple	13.5	Good	No
5608	*Prunus serotina*	Black Cherry	13	Good	No
5609	*Acer rubrum*	Red Maple	13	Good	No
5610	*Quercus rubra*	Red Oak	11	Good	No
5611	*Acer rubrum*	Red Maple	13.5	Good	No
5612	*Acer rubrum*	Red Maple	14.5	Good	No
5613	*Acer rubrum*	Red Maple	14	Good	No
5614	*Sassafras albidum*	Sassafras	10	Good	No
5615	*Carya cordiformis*	Bitternut Hickory	12	Good	No
5616	*Quercus rubra*	Red Oak	18	Good	No
5617	*Acer rubrum*	Red Maple	16	Good	No
5618	*Acer rubrum*	Red Maple	12	Fair	No
5619	*Carya ovata*	Shagbark Hickory	11	Good	No
5620	*Acer rubrum*	Red Maple	18	Good	No
5621	*Acer rubrum*	Red Maple	14	Good	No
5622	*Tilia americana*	Basswood	11.5	Good	No
5623	*Carya cordiformis*	Bitternut Hickory	10.5	Good	No
5624	*Carya ovata*	Shagbark Hickory	10	Good	No
5625	*Carya glabra*	Pignut Hickory	10	Good	No
5626	*Carya glabra*	Pignut Hickory	14.5	Good	No
5627	*Quercus rubra*	Red Oak	9	Good	No
5628	*Acer rubrum*	Red Maple	14.5	Good	No
5629	*Carya glabra*	Pignut Hickory	13.5	Good	No
5630	*Quercus rubra*	Red Oak	11	Good	No
5631	*Quercus rubra*	Red Oak	14	Good	No
5632	*Prunus serotina*	Black Cherry	11.5	Good	No
5633	*Carya cordiformis*	Bitternut Hickory	19.5	Good	No
5634	*Acer rubrum*	Red Maple	11	Good	No
5635	*Quercus rubra*	Red Oak	8	Good	No
5636	*Carya ovata*	Shagbark Hickory	8	Fair	No
5637	*Carya ovata*	Shagbark Hickory	10	Good	No
5638	*Carya glabra*	Pignut Hickory	13	Good	No
5639	*Quercus rubra*	Red Oak	8	Good	No
5640	*Acer rubrum*	Red Maple	18	Good	No
5641	*Quercus alba*	White Oak	10	Good	No
5642	*Carya ovata*	Shagbark Hickory	15	Good	No
5643	*Acer rubrum*	Red Maple	8	Good	No
5644	*Carya ovata*	Shagbark Hickory	8.5	Good	No
5645	*Carya glabra*	Pignut Hickory	9	Good	No
5646	*Quercus rubra*	Red Oak	17	Good	No
5647	*Prunus serotina*	Black Cherry	45	Good	No
5648	*Carya glabra*	Pignut Hickory	10	Good	No
5649	*Carya glabra*	Pignut Hickory	8.5	Good	No
5650	*Carya ovata*	Shagbark Hickory	8	Good	No
5651	*Carya ovata*	Shagbark Hickory	9	Good	No
5652	*Carya ovata*	Shagbark Hickory	12.5	Good	No
5653	*Prunus avium*	Sweet Cherry	9.5	Good	No
5654	*Carya glabra*	Pignut Hickory	11	Good	No
5655	*Prunus serotina*	Black Cherry	16	Good	No
5656	*Acer rubrum*	Red Maple	9	Good	No
5657	*Catalpa speciosa*	Northern Catalpa	15.5	Good	No
5658	*Prunus serotina*	Black Cherry	8.5	Good	No
5659	*Prunus serotina*	Black Cherry	12.5	Good	No
5660	*Prunus serotina*	Black Cherry	8	Good	No
5661	*Acer rubrum*	Red Maple	13	Good	No
5662	*Prunus serotina*	Black Cherry	11	Good	No
5663	*Prunus serotina*	Black Cherry	15	Good	No
5664	*Prunus serotina*	Black Cherry	14	Good	No
5665	*Prunus serotina*	Black Cherry	8	Good	No
5666	*Prunus serotina*	Black Cherry	8.5	Good	No
5667	*Prunus serotina*	Black Cherry	9.5	Good	No
5668	*Prunus serotina*	Black Cherry	8	Good	No
5669	*Prunus serotina*	Black Cherry	14	Good	No
5670	*Prunus serotina*	Black Cherry	13.5	Good	No
5671	*Quercus alba*	White Oak	8.5	Good	No
5672	*Prunus serotina*	Black Cherry	12	Good	No
5673	*Prunus serotina*	Black Cherry	18	Good	No
5674	*Prunus serotina*	Black Cherry	15	Good	No
5675	*Prunus serotina*	Black Cherry	16	Good	No
5676	*Prunus serotina*	Black Cherry	17	Good	No
5677	*Prunus serotina*	Black Cherry	23	Good	No
5678	*Prunus serotina*	Black Cherry	16	Good	No
5679	*Prunus serotina*	Black Cherry	9	Good	No
5680	*Ulmus americana*	American Elm	12	Good	No
5681	*Prunus serotina*	Black Cherry	11.5	Good	No
5682	*Prunus serotina*	Black Cherry	14	Good	No
5683	*Ulmus americana*	American Elm	13	Good	No

Tag Number	Scientific Name	Common Name	DBH (INCHES)	Condition	Demo
5684	*Prunus serotina*	Black Cherry	11	Good	No
5685	*Ulmus americana*	American Elm	12	Good	No
5686	*Prunus serotina*	Black Cherry	10.5	Good	No
5687	*Prunus serotina*	Black Cherry	10	Good	No
5688	*Ulmus americana*	American Elm	13.5	Good	No
5689	*Prunus serotina*	Black Cherry	11	Good	No
5690	*Catalpa speciosa*	Northern Catalpa	20	Good	No
5691	*Prunus serotina*	Black Cherry	10	Good	No
5692	*Acer rubrum*	Red Maple	13.5	Good	No
5693	*Prunus serotina*	Black Cherry	16	Good	No
5694	*Ulmus americana*	American Elm	10.5	Good	No
5695	*Prunus serotina*	Black Cherry	19	Good	No
5696	*Prunus serotina*	Black Cherry	8	Good	No
5697	*Prunus serotina*	Black Cherry	13.5	Good	No
5698	*Prunus serotina*	Black Cherry	11.5	Good	No
5699	*Ulmus americana*	American Elm	11	Good	No
5700	*Prunus serotina*	Black Cherry	14	Good	No
5701	*Prunus serotina*	Black Cherry	14.5	Good	No
5702	*Ulmus americana*	American Elm	11.5	Good	No
5703	*Prunus serotina*	Black Cherry	16.5	Good	No
5704	*Prunus serotina*	Black Cherry	9	Good	No
5705	*Prunus serotina*	Black Cherry	16	Good	No
5706	*Prunus serotina*	Black Cherry	9	Good	No
5707	*Prunus serotina*	Black Cherry	15	Good	No
5708	*Prunus serotina*	Black Cherry	8.5	Good	No
5709	*Prunus serotina*	Black Cherry	9.5	Good	No
5710	*Prunus serotina*	Black Cherry	9	Good	No
5711	*Prunus serotina*	Black Cherry	14.5	Good	No
5712	*Ulmus americana*	American Elm	13	Good	No
5713	*Prunus serotina*	Black Cherry	14	Good	No
5714	*Prunus serotina*	Black Cherry	15	Good	No
5715	*Ulmus americana*	American Elm	12	Good	No
5716	*Ulmus americana*	American Elm	10	Good	No
5717	*Ulmus americana*	American Elm	10	Good	No
5718	*Ulmus americana*	American Elm	12.5	Good	No
5719	*Prunus serotina*	Black Cherry	17.5	Good	No
5720	*Ulmus americana*	American Elm	13	Good	No
5721	*Ulmus americana*	American Elm	8	Good	No
5722	*Ulmus americana*	American Elm	10.5	Good	No
5723	*Acer rubrum*	Red Maple	11	Good	No
5724	*Acer rubrum*	Red Maple	12	Good	No
5725	*Prunus serotina*	Black Cherry	10.5	Good	No
5726	*Prunus serotina*	Black Cherry	11	Good	No
5727	*Ulmus americana*	American Elm	15	Good	No
5728	*Ulmus americana*	American Elm	11	Good	No
5729	*Prunus serotina*	Black Cherry	12	Good	No
5730	*Prunus serotina*	Black Cherry	10	Good	No
5731	*Sassafras albidum*	Sassafras	8	Good	No
5732	*Ulmus americana*	American Elm	15	Good	No
5733	*Prunus serotina*	Black Cherry	15.5	Good	No
5734	*Prunus serotina*	Black Cherry	11	Good	No
5735	*Ulmus americana*	American Elm	8	Good	No
5736	*Sassafras albidum*	Sassafras	12	Good	No
5737	*Sassafras albidum*	Sassafras	20	Good	No
5738	*Prunus serotina*	Black Cherry	10	Good	No
5739	*Catalpa speciosa*	Northern Catalpa	17	Good	No
5740	*Sassafras albidum*	Sassafras	17	Good	No
5741	*Prunus serotina*	Black Cherry	16	Good	No
5742	*Sassafras albidum*	Sassafras	11	Good	No
5743	*Sassafras albidum*	Sassafras	9.5	Good	No
5744	*Sassafras albidum*	Sassafras	17.5	Good	No
5745	*Prunus serotina*	Black Cherry	10	Good	No
5746	*Ulmus americana*	American Elm	10	Good	No
5747	*Juglans nigra*	Black Walnut	15	Good	No
5748	*Prunus serotina*	Black Cherry	13.5	Good	No
5749	*Prunus serotina*	Black Cherry	13.5	Good	No
5750	*Fraxinus pennsylvanica*	Green Ash	14	Poor	No
5751	*Prunus serotina*	Black Cherry	12	Good	No
5752	*Catalpa speciosa*	Northern Catalpa	9	Good	No
5753	*Prunus serotina*	Black Cherry	11	Good	No
5754	*Prunus serotina*	Black Cherry	21	Good	No
5755	*Prunus serotina*	Black Cherry	16.5	Good	No
5756	*Quercus rubra*	Red Oak	17	Good	No
5757	*Picea abies*	Norway Spruce	11	Good	No
5758	*Picea abies*	Norway Spruce	9.5	Good	No
5759	*Picea abies*	Norway Spruce	8	Good	No
5760	*Pinus resinosa*	Red Pine	8	Good	No
5761	*Pinus resinosa*	Red Pine	4.5	Good	No
5762	*Pinus resinosa*	Red Pine	7	Good	No
5763	*Pinus resinosa*	Red Pine	5	Good	No
5764	*Pinus resinosa*	Red Pine	6	Good	No
5765	*Pinus resinosa*	Red Pine	6	Good	No
5766	*Pinus resinosa*	Red Pine	4	Good	No
5767	*Pinus resinosa*	Red Pine	5.5	Good	No
5768	*Pinus resinosa*	Red Pine	4.5	Good	No
5769	*Pinus resinosa*	Red Pine	4.5	Good	No
5770	*Pinus resinosa*	Red Pine	4.5	Good	No
5771	*Pinus resinosa*	Red Pine	5	Good	No
5772	*Pinus resinosa*	Red Pine	3.5	Good	No
5773	*Pinus resinosa*	Red Pine	7.5	Good	No
5774	*Pinus resinosa*	Red Pine	7	Good	No
5775	*Pinus resinosa*	Red Pine	6.5	Good	No
5776	*Pinus resinosa*	Red Pine	7.5	Good	No
5777	*Pinus resinosa*	Red Pine	5.5	Good	No
5778	*Pinus resinosa*	Red Pine	5	Good	No
5779	*Pinus resinosa*	Red Pine	12.5	Good	No
5780	*Prunus avium*	Sweet Cherry	12.5	Poor	No
5781	*Pinus resinosa*	Red Pine	8	Good	No
5782	*Pinus resinosa*	Red Pine	3	Good	No
5783	*Pinus resinosa*	Red Pine	5	Good	No
5784	*Picea abies*	Norway Spruce	12	Good	No
5785	*Picea abies*	Norway Spruce	4	Good	No
5786	*Picea abies*	Norway Spruce	8	Good	No
5787	*Picea abies*	Norway Spruce	5	Good	No
5788	*Picea abies*	Norway Spruce	4	Good	No
5789	*Picea abies*	Norway Spruce	4.5	Good	No
5790	*Picea abies*	Norway Spruce	11	Good	No
5791	*Picea abies*	Norway Spruce	13	Good	No
5792	*Picea abies*	Norway Spruce	5	Good	No
5793	*Picea abies*	Norway Spruce	7.5	Good	No
5794	*Picea abies*	Norway Spruce	12.5	Good	No
5795	*Prunus avium*	Sweet Cherry	8.5	Good	No
5796	*Picea abies*	Norway Spruce	9	Good	No
5797	*Picea abies*	Norway Spruce	5	Good	No
5798	*Picea abies*	Norway Spruce	7	Good	No
5799	*Picea abies*	Norway Spruce	7.5	Good	No
5800	*Picea abies*	Norway Spruce	6	Good	No
5801	*Picea abies*	Norway Spruce	5	Good	No
5802	*Picea abies*	Norway Spruce	5	Good	No
5803	*Picea abies*	Norway Spruce	3.5	Good	No
5804	*Picea abies*	Norway Spruce	9	Good	No
5805	*Picea abies*	Norway Spruce	10	Good	No
5806	*Picea abies*	Norway Spruce	8.5	Good	No
5807	*Picea abies*	Norway Spruce	8.5	Good	No
5808	*Picea abies*	Norway Spruce	11	Good	No
5809	*Picea abies*	Norway Spruce	10	Good	No
5810	*Picea abies*	Norway Spruce	6	Good	No
5811	*Picea abies*	Norway Spruce	11	Good	No
5812	*Picea abies*	Norway Spruce	10.5	Good	No
5813	*Picea abies*	Norway Spruce	8	Good	No
5814	*Picea abies*	Norway Spruce	12.5	Good	No
5815	*Picea abies*	Norway Spruce	5	Good	No
5816	*Pinus sylvestris*	Scotch Pine	8	Good	No
5817	*Pinus sylvestris*	Scotch Pine	10	Good	No
5818	*Pinus sylvestris*	Scotch Pine	7	Good	No
5819	*Pinus sylvestris*	Scotch Pine	7	Good	No
5820	*Pinus sylvestris*	Scotch Pine	10	Good	No
5821	*Pinus sylvestris*	Scotch Pine	8	Good	No
5822	*Pinus sylvestris*	Scotch Pine	6	Good	No
5823	*Pinus sylvestris*	Scotch Pine	10	Good	No
5824	*Pinus sylvestris*	Scotch Pine	6	Good	No
5825	*Pinus sylvestris*	Scotch Pine	5	Good	No
5826	*Pinus sylvestris*	Scotch Pine	7	Good	No
5827	*Pinus sylvestris*	Scotch Pine	4	Good	No
5828	*Picea abies*	Norway Spruce	6	Good	No
5829	*Picea abies*	Norway Spruce	7	Good	No
5830	*Picea abies*	Norway Spruce	5.5	Good	No
5831	*Juglans nigra*	Black Walnut	9	Good	No
5832	*Picea abies*	Norway Spruce	4	Good	No
5833	*Pinus sylvestris*	Scotch Pine	10.5	Good	No
5834	*Pinus sylvestris*	Scotch Pine	9	Good	No
5835	*Pinus sylvestris*	Scotch Pine	9	Good	No
5836	*Picea abies*	Norway Spruce	4	Good	No
5837	*Picea abies*	Norway Spruce	10.5	Good	No
5838	*Picea abies*	Norway Spruce	8.5	Good	No
5839	*Picea abies*	Norway Spruce	10	Good	No
5840	*Quercus rubra*	Red Oak	30	Good	No
5841	*Ulmus americana*	American Elm	9.5	Good	No
5842	*Juniperus virginiana*	Eastern Redcedar	5	Good	No

Total Trees Removed	6
Total DBH Removed	147 "

811 Know what's below. Call before you dig.

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866.850.4200 www.atwell-group.com
TWO TOWNE SQUARE, SUITE 700
SOUTHFIELD, MI 48076
248.447.2000

SECTION 8
TOWN 2 NORTH, RANGE 5 EAST
GENOA TOWNSHIP
LIVINGSTON COUNTY MICHIGAN

LATSON PARTNERS, LLC
INNOVATION INTERCHANGE
SITE PLAN - PHASE 1
TREE TABLES

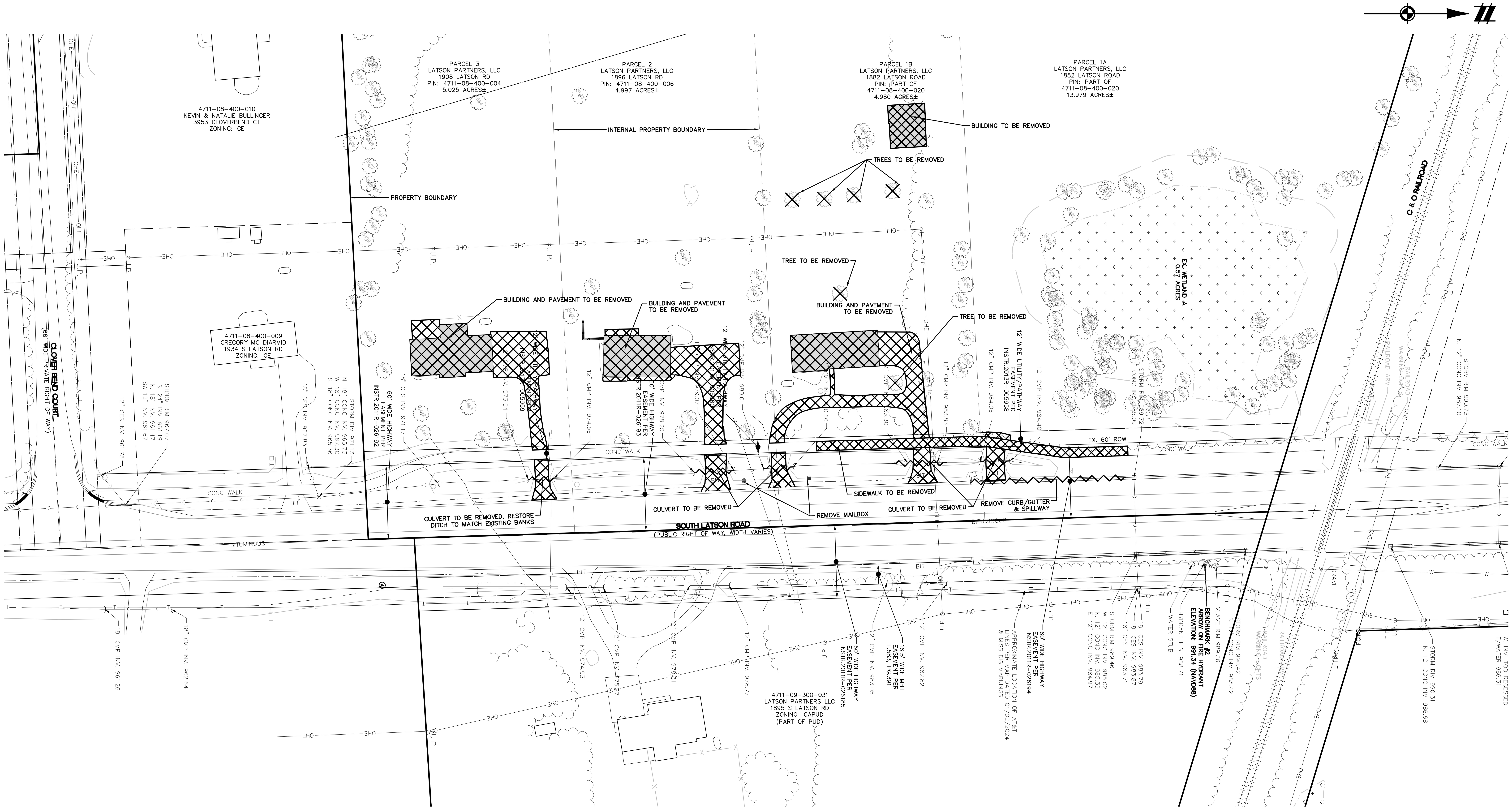
NOT FOR CONSTRUCTION

DATE JULY 23, 2024
2024-09-17 REVISIONS
2024-11-11 PER TWP
REVISIONS
SCALE
DR. MM CH. JK
P.M. J. KIME
JOB 16001784
SHEET NO. 3

K:\16001784\DWG\PLAN SETS\SITE-PRELIMINARY\PHASE 1 - ENTRANCE\16001784-C-02.0-OEC.DWG TREE 11/12/2024 9:16 AM KEVIN SULLIVAN

LEGEND

BOUNDARY LINE		SECTION CORNER	
BOUNDARY ADJACENT LINE		SOIL BORING	
EASEMENT LINE	×F	FOUND MAG NAIL	
SECTION LINE	◎F	FOUND MONUMENT	
RIGHT OF WAY CENTERLINE	⊙FCIR	FOUND CAPPED IRON ROD	
OVERHEAD UTILITY LINE		EXISTING SIGN	
EXISTING WETLAND		EX. GUY ANCHOR WITH WIRE	
EXISTING CENTERLINE OF DITCH	U.P.	EXISTING UTILITY POLE	
APPROXIMATE UNDERGROUND FIBER LINE		EXISTING WATER BBOX	
APPROXIMATE UNDERGROUND TELEPHONE LINE		EXISTING FIRE HYDRANT	
APPROXIMATE UNDERGROUND GAS LINE	T	EXISTING TELEPHONE RISER	
UNDERGROUND STORM LINE		EX. MANHOLE/CATCH BASIN	
UNDERGROUND WATER LINE		EXISTING CULVERT	
EXISTING FENCE	CATV	EXISTING CABLE RISER	
EXISTING LIMITS OF VEGETATION		EXISTING LIGHTPOLE	
EXISTING CURB AND GUTTER		UNDERGROUND GAS MARKER	
EXISTING GROUND CONTOUR		UNDERGROUND WATER MARKER	
	P.O.C.	POINT OF COMMENCEMENT	
	P.O.B.	PLACE OF BEGINNING	
	(R)	RECORD	
	(M)	MEASURED	



PARCEL 3
LATSON PARTNERS, LLC
1908 LATSON RD
PIN: 4711-08-400-004
5.025 ACRES±
PARCEL 2
LATSON PARTNERS, LLC
1896 LATSON RD
PIN: 4711-08-400-006
4.997 ACRES±
PARCEL 1B
LATSON PARTNERS, LLC
1882 LATSON ROAD
PIN: PART OF
4711-08-400-020
4.980 ACRES±
PARCEL 1A
LATSON PARTNERS, LLC
1882 LATSON ROAD
PIN: PART OF
4711-08-400-020
13.979 ACRES±
4711-08-400-010
KEVIN & NATALIE BULLINGER
3953 CLOVERBEND CT
ZONING: CE
4711-08-400-009
GREGORY MC DIARMID
1934 S LATSON RD
ZONING: CE
4711-09-300-031
LATSON PARTNERS LLC
1895 S LATSON RD
ZONING: CAPUD
(PART OF PUD)
INTERNAL PROPERTY BOUNDARY
PROPERTY BOUNDARY
BUILDING TO BE REMOVED
TREES TO BE REMOVED
TREE TO BE REMOVED
BUILDING AND PAVEMENT TO BE REMOVED
BUILDING AND PAVEMENT TO BE REMOVED
BUILDING AND PAVEMENT TO BE REMOVED
EX. WETLAND A
0.57 ACRES
C & O RAILROAD
CLOVER BEND COURT
(66' WIDE PRIVATE RIGHT OF WAY)
SOUTH LATSON ROAD
(PUBLIC RIGHT OF WAY, WIDTH VARIES)
EX. 60' ROW
CONC WALK
BITUMINOUS
CULVERT TO BE REMOVED, RESTORE DITCH TO MATCH EXISTING BANKS
CULVERT TO BE REMOVED
REMOVE MAILBOX
SIDEWALK TO BE REMOVED
CULVERT TO BE REMOVED
REMOVE CURB/GUTTER & SPILLWAY
60' WIDE HIGHWAY EASEMENT PER INSTR.2011R-026192
60' WIDE HIGHWAY EASEMENT PER INSTR.2011R-026193
60' WIDE HIGHWAY EASEMENT PER INSTR.2011R-026185
60' WIDE HIGHWAY EASEMENT PER INSTR.2011R-026194
12' WIDE UTILITY/PATHWAY EASEMENT PER INSTR.2013R-005958
16.5' WIDE MBT EASEMENT PER L.563, PG.391
APPROXIMATE LOCATION OF AT&T LINES PER MAP DATED 01/02/2024 & MISS DIG MARKINGS
BENCHMARK #2
ARROW ON FIRE HYDRANT
ELEVATION: 991.34 (NAVD88)

811
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SECTION 8
TOWN 2 NORTH, RANGE 5 EAST
GENOA TOWNSHIP
LIVINGSTON COUNTY MICHIGAN

LATSON PARTNERS, LLC
INNOVATION INTERCHANGE
SITE PLAN - PHASE 1
EXISTING CONDITONS AND DEMOLITION PLAN

NOT FOR CONSTRUCTION

DATE JULY 23, 2024

2024-09-17 REVISIONS
2024-11-11 PER TWP

REVISIONS

SCALE 0 20 40
1" = 40 FEET

DR.	MM	CH.	JK
P.M.	J. KIME		
JOB	16001784		
SHEET NO.	4		

WHEN ROAD NAME USES A COMBINATION OF NUMBERS AND LETTERS (i.e. 22ND AVE) USE J AS THE SPACE BETWEEN THE NUMBERS AND THE LETTERS.

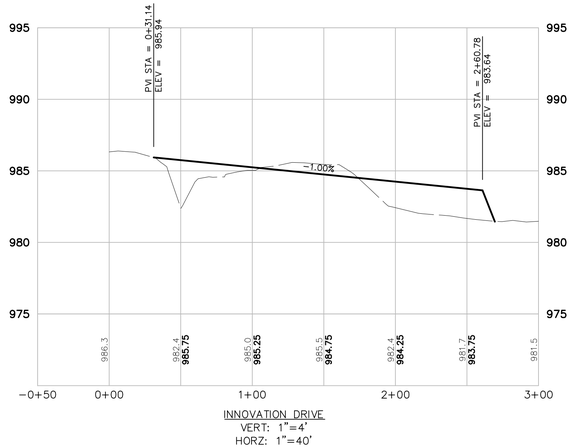
D3-1
STREET NAME

DIMENSIONS (INCHES)								
A	B	C	D	E	F	G	H	J
VAR.	8	.5	2	4 2-W	3 2-W	1.5	3	1.5
VAR.	12	.5	3	6 2-W	4 2-W	1.5	5	2
VAR.	16	.5	4	8 2-W	6 2-W	1.5	6	3
VAR.	24	.5	6	12 2-W	10 2-W	1.5	9	4

COLORS
LEGEND AND BORDER - WHITE (REFL.)
BACKGROUND - GREEN (REFL.)
CENTRALLY LOCATE ALL LEGENDS
THE BORDER MAY BE OMITTED FROM THIS SIGN

MDOT Michigan Department of Transportation
Traffic and Safety

PW Reference Documents\Traffic Reference\Typicals\Develop\Sign...Std\HwySigns...D\d03...01.dgn
REVISION DATE: 06/30/2020 NM | DRAWN BY: NM | CHECKED BY: MN



INNOVATION DRIVE
VERT: 1"=4'
HORZ: 1"=40'

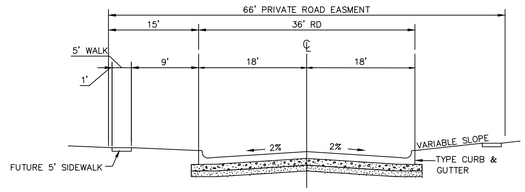
LEGEND

- PROPERTY LINE
- PROPOSED ROW
- PROPOSED CURB AND GUTTER
- 588 PROPOSED 1' CONTOUR
- 590 PROPOSED 5' CONTOUR
- 588 EXISTING 1' CONTOUR
- 590 EXISTING 5' CONTOUR
- GRADING LIMITS
- PROPOSED CONCRETE
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EX MANHOLE/CATCH BASIN/END SECTION
- PR MANHOLE/CATCH BASIN/END SECTION

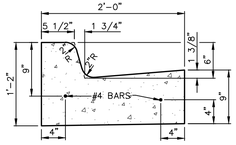
STORMWATER MANAGEMENT NARRATIVE:

RUNOFF FROM THE ROADWAY WILL INITIALLY FLOW OFF THE END OF THE ROADWAY INTO THE UNDEVELOPED PORTION OF THE SITE WHERE IT WILL BE CAPTURED IN A TEMPORARY SEDIMENT BASIN. ULTIMATELY, THE MINIMAL STORMWATER GENERATED FROM THIS ROAD SECTION WILL FOLLOW THE EXISTING DRAINAGE PATTERS OUT TO THE LATSON ROAD DITCH AND FLOW SOUTH TO THE EXISTING WETLANDS BEFORE OUTLETTING TO THE MARION GENOA DRAIN TO THE SOUTH OF THE PUD PROPERTY.

FUTURE PHASE EXPANSIONS OF THIS ROADWAY AND SITE DEVELOPMENT WILL INSTALL PERMANENT STORM SEWER AND DETENTION BASINS MEETING CURRENT LIVINGSTON COUNTY DRAIN COMMISSION STANDARDS.

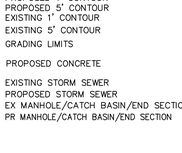


TYPICAL ROAD CROSS SECTION
NO SCALE



NOTE:
BASE AND SUBBASE AGGREGATES TO EXTEND MINIMUM 1'-0" BEHIND BACK OF CURB.

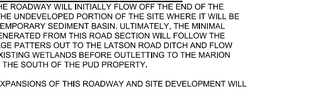
F4 CURB DETAIL
NO SCALE



WHITE LEGEND RED BACKGROUND

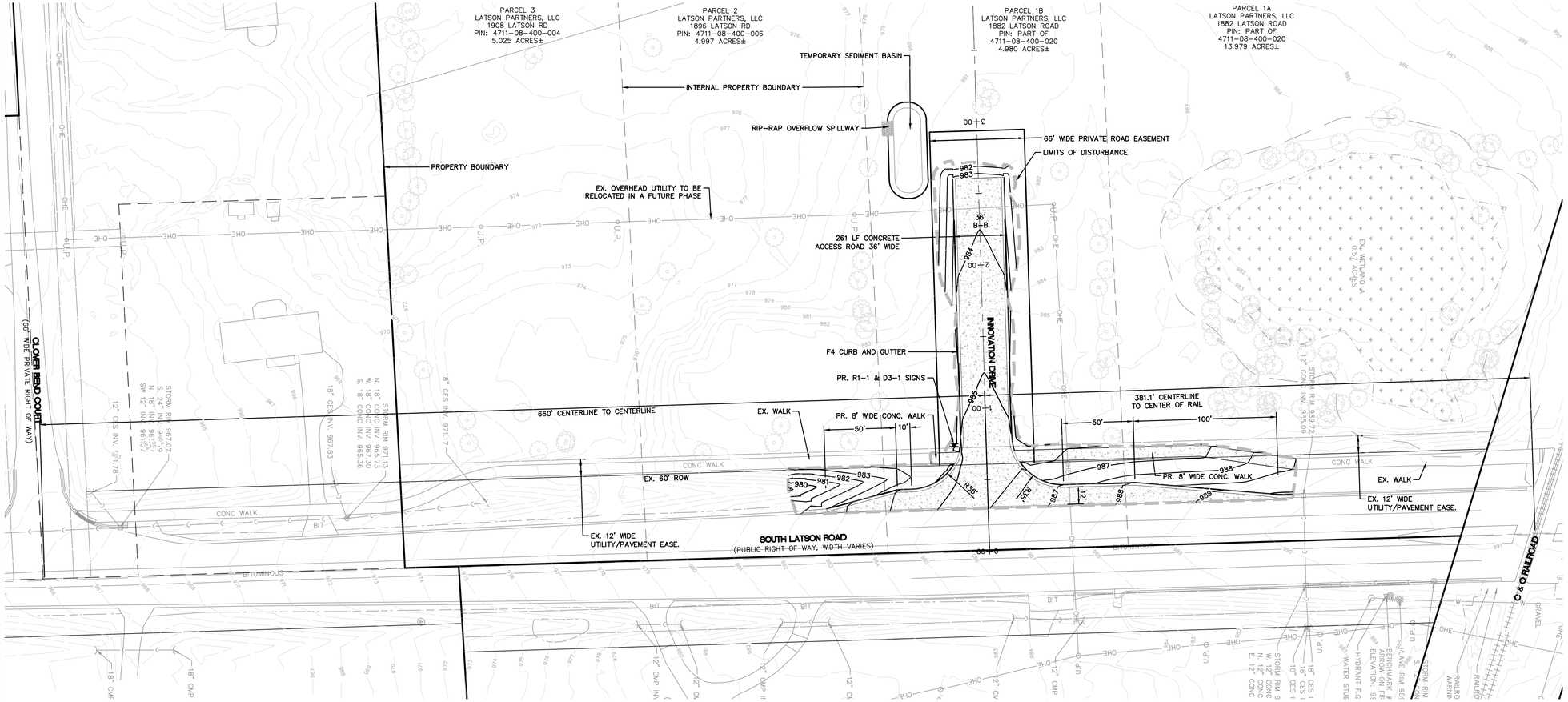
R1-1

R1-1 STOP SIGN
NO SCALE



CONCRETE PAVING SECTION
N.T.S.

*FINAL PAVEMENT DESIGN TO BE DETERMINED AFTER GEOTECHNICAL EVALUATION



811
Know what's below.
Call before you dig.
THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

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SOUTHFIELD, MI 48076
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SECTION 8
TOWN 2 NORTH, RANGE 5 EAST
GENOA TOWNSHIP
LIVINGSTON COUNTY MICHIGAN

LATSON PARTNERS, LLC
INNOVATION INTERCHANGE
SITE PLAN - PHASE 1
LAYOUT, GRADING AND UTILITY PLAN

NOT FOR CONSTRUCTION

DATE
JULY 23, 2024
2024-09-17 REVISIONS
2024-11-11 PER TWP

REVISIONS
SCALE 0 20 40
1" = 40 FEET
DR. MM | CH. JK
P.M. J. KIME
JOB 16001784
SHEET NO.
5