



**ACME TOWNSHIP REGULAR BOARD MEETING**

**ACME TOWNSHIP HALL**

**6042 Acme Road, Williamsburg MI 49690**

**Tuesday, November 1, 2022, 7:00 p.m.**

**CALL TO ORDER WITH PLEDGE OF ALLEGIANCE at 7:02 p.m.**

**ROLL CALL: Members present:** J. Aukerman, D. Hoxsie, A. Jenema, P. Scott, L. Swanson, D. White

**Members excused:** D. Stevens

**Staff present:** Lindsey Wolf, Planning & Zoning Administrator; Cristy Danca, Recording Secretary

**A. LIMITED PUBLIC COMMENT:**

**Limited Public Comment was opened at 7:02 p.m.**

Brian Kelley, Acme resident

**Limited Public Comment closed at 7:06 p.m.**

Added to record:

Brian Kelley's written comments

State of Michigan Department of Agriculture and Rural Development GAAMPs Conformance

**B. APPROVAL OF AGENDA:**

White added *Beckett & Raeder Invoice #2022692 and Acme Connector Trail Payment Application No. 7* (New Business, Item #3), *Discussion of hiring cleaning service for township hall* (New Business, Item #4), and *Discussion on SPARK grants* (New Business, Item #5).

**Motion by Scott, supported by Jenema, to approve the agenda as presented with the addition of *Beckett & Raeder Invoice #2022692 and Acme Connector Trail Payment Application No. 7* under Agenda item K. 3 (New Business), *Cleaning for the township hall* under Agenda item K. 4 (New Business), and *SPARK grant* under Agenda item K. 5 (New Business). Voice vote. Motion carried unanimously.**

**C. APPROVAL OF BOARD MINUTES:**

Special meetings 09/27/22, 10/17/22, 10/19/22, and Regular meeting 10/04/22

**Motion by Aukerman, supported by Swanson, to approve the minutes from Special meetings 09/27/22, 10/17/22, 10/19/22, and Regular meeting 10/04/22 as presented. Voice vote. Motion carried unanimously.**

**D. INQUIRY AS TO CONFLICTS OF INTEREST: None**

**E. REPORTS:**

**a. Clerk** – Acme currently has 4024 registered voters, approximately 1530 absentee ballots have been issued for the November 8, 2022 General Election, and 1011 ballots have been received as of noon today. The township recently completed an annual audit which went well. A representative from Baird & Cotter will be present in December to review the audit report. The clerk will be providing election workers with additional training this weekend.

## **APPROVED**

- b. Parks** – Per Jenema, Parks and Trails met in September and is wrapping up for the season.
- c. Legal Counsel** – None
- d. Sheriff** – Continuing work on camping and junk ordinance issues on Whiteford Rd.
- e. County** – None
- f. Supervisor** – Supervisor White met with Eagleview Area Imagery an aerial company that could photograph township properties and would be helpful for assessing. A 40/60 cost split is possible with the County where Acme pays 40% for the service. Eagleview is expected to submit a proposal later this month for Board review. Continued discussions with East Bay regarding sewer line replacement and grants for that.
- g. Planning and Zoning** – Wolf provided updates: Bob Verschaeve's report expected next week regarding 3<sup>rd</sup> stormwater inspection at Horse Shows; Trailside Solar is on Phase 2, Bob Verschaeve inspected their stormwater structures and will submit a report for the next board packet, all their stream monitoring reports reflect no issues; the KOTI development is progressing; Wolf is working with John Iacoangeli and Jeff Jocks to get site plan review finalized for the Tom's/Kmart property; public hearing continuing through Special meeting tomorrow regarding High Pointe Golf Course and for a self-storage facility off Arnold Rd. to the north; later this month she will attend a virtual planning conference; and she's working with Deputy Abbring and Supervisor White on an ongoing short-term rental violation.
- h. MMR** – Report has not been received, White meeting with them tomorrow.

**F. SPECIAL PRESENTATIONS:** None

**G. CONSENT CALENDAR:**

**1. RECEIVE AND FILE:**

- a. Treasurer's Report
- b. Clerk's Revenue/Expenditure Report
- c. Planning Commission Draft minutes 08/22/2022, 10/10/2022  
Approved minutes 09/12/2022
- d. Personnel Committee Draft minutes 09/26/2022

**2. APPROVAL:**

- 1. Accounts Payable prepaid of \$127,894.25 and NO CURRENT to be approved  
(Recommend approval: Clerk, L. Swanson)

**H. ITEMS REMOVED FROM THE CONSENT CALENDAR:** None

**Motion by Scott, approved by Swanson, to approve Consent Calendar as presented. Roll call vote.  
Motion carried unanimously.**

**I. CORRESPONDENCE:** None

**J. PUBLIC HEARING:** None

**K. NEW BUSINESS:**

**1. TART request GTB 2% Application**

Casey Ressler and Elizabeth Calcutt from TART spoke about a Deepwater Pointe connector trail portion connecting Shore Beach Lane and Bayside Park across the US Highway 31 and M-72 intersection and up to Acme Rd (.3 miles).

**Motion by Jenema, supported by Scott, to give Supervisor White authorization to sign the 2% grant on behalf of Acme Township with TART Trails for \$25,000. Voice vote. Motion carried unanimously.**



## **APPROVED**

### **2. Resolution for fire truck purchase**

Metro Chief Pat Parker spoke. Due to long lead times, a truck ordered now to replace a 1993 reserve truck would be ready in 2024. He asked the Board for a resolution approving the financing that is expected to begin late 2023 and last six (6) years.

**Motion by Jenema, supported by Scott, to approve Resolution 2022-20 for approving the financing for a fire truck. Roll call vote. Motion carried unanimously.**

### **3. Beckett & Raeder Invoice #2022692 and Acme Connector Trail Payment Application No. 7**

Discussion of cash flow process and paying both when funds are available.

**Motion by Scott, supported by Jenema, to pay both once funds are available with clarification regarding the Beckett & Raeder invoice that it includes inspections for the remainder of the KOTI project. Roll call vote. Motion carried unanimously.**

### **4. Discussion of hiring cleaning service for township hall**

Swanson led discussion. Pricing information will be gathered and presented at a later date.

### **5. Discussion on SPARK grants**

Wolf presented information regarding this \$65,000,000 federally funded grant program targeting outdoor recreation and development for communities impacted by Covid -19. Wolf discussed preparing and later presenting cost estimates for things like playground equipment, a pavilion, and pathway additions within Bayside Park. Board supported pursuing this opportunity. The first-round grant application deadline is mid-December. Wolf will share information regarding deadlines for the second and third rounds for grant submissions when she has it.

## **L. OLD BUSINESS:**

### **1. Continued discussion on Job description staff Planning & Zoning**

Board discussion led by Aukerman reviewing updated Summary Overview Chart and updated job description draft, both reflecting changes made after the Personnel Committee met 10/27/2022. As a member of the Personnel Committee, Aukerman stated the Personnel Committee seeks Board approval at this time, to approach Cristy Danca regarding this position. In addition, the Personnel Committee also seeks Board approval to advertise the position if Danca declines.

**Motion by Jenema, seconded by Scott, for the Personnel Committee to meet to offer the position to Danca and have the ability to negotiate details including start date and wage. If she declines, they have the ability to seek other applicants, interview them and make recommendations to the Board to review at the next meeting. Roll call vote. Motion carried unanimously.**

### **2. Traverse City Horse Shows Update**

The stormwater report is expected in the next week. Based on that report, Wolf will make a recommendation to the Board at the December meeting identifying a date to complete any incomplete items that still exist. Discussion about scarified surface to reduce dust on Bates. Discussion about landscape buffer on south property line. Discussion about northwest Basin #5 compliance. Wolf will contact Bob Verschaeve to inquire whether northwest Basin #5 is in full compliance. Scott requested the township remind Horse Shows in writing of the landscape buffer expectation on the south property line. If they do not have a waiver from the Tribe by 11/15/2022, they will have to provide a landscaping plan that would have to be completed by 05/01/2023. Discussion about the letter from Michigan Department of Agriculture and Rural Development regarding Final Conformance to Site Selection GAAMPs.

## **PUBLIC COMMENT and OTHER BUSINESS:**

Public comment opened at 9:02 p.m.

Brian Kelley, Acme resident

## **APPROVED**


Public comment closed at 9:05 p.m.

**Motion by Scott, supported by Hoxsie, to adjourn the meeting. Voice vote. Motion carried unanimously.**

The meeting was adjourned at 9:05 p.m.

### **CERTIFICATION**

I hereby certify that the foregoing is a true and complete copy of a document from the official records of the township.

  
\_\_\_\_\_  
**Lisa Swanson, Acme Township Clerk**





**ACME TOWNSHIP REGULAR BOARD MEETING**  
**ACME TOWNSHIP HALL**  
**6042 Acme Road, Williamsburg MI 49690**  
**Tuesday, November 1, 2022, 7:00 p.m.**

**GENERAL TOWNSHIP MEETING POLICIES**

- A. All cell phones shall be switched to silent mode or turned off.**
- B. Any person may make a video, audio or other record of this meeting. Standing equipment, records, or portable microphones must be located so as not to block audience view.**

**CALL TO ORDER WITH PLEDGE OF ALLEGIANCE**  
**ROLL CALL**

**A. LIMITED PUBLIC COMMENT:**

Public Comment periods are provided at the beginning and end of each meeting agenda. Members of the public may address the Board regarding any subject of community interest during these periods. Comment during other portions of the agenda may or may not be entertained at the moderator's discretion.

**B. APPROVAL OF AGENDA:**

**C. APPROVAL OF BOARD MINUTES:**

**Special meetings 09/27/22-10/17/22-10/19/22 and Regular meeting 10/04/22**

**D. INQUIRY AS TO CONFLICTS OF INTEREST:**

**E. REPORTS**

- a. Clerk -**
- b. Parks**
- c. Legal Counsel –**
- d. Sheriff –**
- e. County –**
- f. Supervisor-**
- g. Planning and Zoning -**
- h. MMR**

**F. SPECIAL PRESENTATIONS:**

- G. CONSENT CALENDAR:** The purpose is to expedite business by grouping non-controversial items together for one Board motion (roll call vote) without discussion. A request to remove any item for discussion later in the agenda from any member of the Board, staff or public shall be granted.

**1. RECEIVE AND FILE:**

- a. Treasurer's Report**
- b. Clerk's Revenue/Expenditure Report**
- c. Planning Commission Draft minutes 08/22/2022 - 10/10/22**  
**Approved minutes 09/12/22**
- d. Personnel Committee Draft minutes 09/26/2022**

**2. APPROVAL:**

- 1. Accounts Payable Prepaid of \$127,894.25 and NO CURRENT to be approved**  
**(Recommend approval: Clerk, L. Swanson)**

**H. ITEMS REMOVED FROM THE CONSENT CALENDAR:**

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

**I. CORRESPONDENCE:**

**J. PUBLIC HEARING:**

**K. NEW BUSINESS:**

1. TART request GTB 2% Application
2. Resolution for fire truck purchase

**L. OLD BUSINESS:**

1. Continued discussion on Job description staff Planning & Zoning
2. Traverse City Horse Shows Update

**PUBLIC COMMENT & OTHER BUSINESS THAT MAY COME BEFORE THE BOARD:**

**ADJOURN**



**ACME TOWNSHIP SPECIAL BOARD MEETING**  
**FEAST OF VICTORY LUTHERAN CHURCH**  
**4444 Mt. Hope Road Williamsburg MI 49690**  
**Tuesday, September 27, 2022, 7:00 p.m.**

**CALL TO ORDER WITH PLEDGE OF ALLEGIANCE at 7:00 p.m.**

**ROLL CALL: Members present:** J. Aukerman, D. Hoxsie, A. Jenema, P. Scott, D. Stevens,  
L. Swanson, D. White

**Members excused:** None

**Staff present:** Jeff Jocks, Legal Counsel; John Iacoangeli, Planner, Beckett & Raeder; Lindsey Wolf, Planning  
& Zoning Administrator; Cristy Danca, Recording Secretary

**A. LIMITED PUBLIC COMMENT:**

**Limited Public Comment was opened at 7:01 p.m.**

David Bieganowski, spoke on behalf of Acme Strong members present

Rick Adair, Acme Resident

Dave Sexton

Charlene Abernethy, Acme Resident

Glenn Arnold, Acme Resident

Rachelle Babcock, Acme Resident

Steven Ezell

Brian Kelley, Acme Resident

Christine Arnold, Acme Resident

Theresa Bak, Acme Resident

**Limited Public Comment closed at 7:43 p.m.**

**B. APPROVAL OF AGENDA:**

**Motion by Scott, supported by Jenema, to approve the agenda as presented. Voice vote. Motion carried unanimously.**

**C. CORRESPONDENCE:**

1. Robert Summers
2. Kristine Bryant
3. C.J. Kalil
4. Jim Goran
5. Anja Gierlach, Rebecca Morin
6. Brian Kelley



## **DRAFT UNAPPROVED**

### **D. NEW BUSINESS:**

#### **1. PD 2022-01 Tom's/Kmart Formal PD Approval**

Jocks stated there is a formal request for public hearing by someone living within 300 ft of the project. The request must be honored pursuant to the Zoning Enabling Act. The Board agreed to hold a public hearing at a later date.

#### **2. Closed Session regarding land acquisition**

**Motion by Scott, supported by Aukerman, to go into closed session regarding land acquisition pursuant to MCL 15.268(d) to consider purchase or lease of real property. Roll call vote. Motion carried unanimously.**

Board entered closed session at 7:49 p.m.

**Motion by Hoxsie, supported by Scott, to return to open session at 9:03 p.m. Roll call vote. Motion carried unanimously.**

Board entered open session at 9:03 p.m.

### **PUBLIC COMMENT and OTHER BUSINESS: None**

**Motion by Scott, supported by Jenema, to adjourn the meeting.**

The meeting was adjourned at 9:04 p.m.



**ACME TOWNSHIP **SPECIAL** BOARD MEETING**  
**FEAST OF VICTORY LUTHERAN CHURCH**  
**4400 Mt. Hope Road, Williamsburg MI 49690**  
**Monday, October 17, 2022, 7:00 p.m.**

**CALL TO ORDER WITH PLEDGE OF ALLEGIANCE at 7:00 p.m.**

**ROLL CALL: Members present:** J. Aukerman, D. Hoxsie, A. Jenema, P. Scott, L. Swanson, D. White

**Members excused:** None

**Staff present:** Lindsey Wolf, Planning & Zoning Administrator; Jeff Jocks, Legal Counsel; John Iacoangeli, Planner, Beckett & Raeder; Cristy Danca, Recording Secretary

Supervisor White inquired as to any conflicts of interest: None stated.

Correspondence entered into the record per Supervisor White.

**A. LIMITED PUBLIC COMMENT:**

**Limited Public Comment was opened at 7:01 p.m.**

Brian Kelley, Acme resident  
Rachelle Babcock, Acme resident  
Denny Rohn, Acme resident  
Rhonda Stevens, Acme resident  
David Sexton  
Barbara Bordo  
Laura Anderson, Acme resident  
Chris Groebel  
Paul Deyo, Acme resident

**Limited Public Comment was closed at 7:19 p.m.**

**B. APPROVAL OF AGENDA:**

**Motion by Aukerman, supported by Stevens, to approve the agenda as presented with the additions of the red in Correspondence: 8. Kelley #2, 9. Acme Strong #6, 10. Snyder, 11. Grobbel, 12. Saunders, 13. Acme Strong #7, 14. Bauer, 15. Fahl, 16. Osborne, 17. Osborne, 18. Silk, and 19. Kelley #3. No discussion. Voice vote. Motion carried unanimously.**

**C. INQUIRY AS TO CONFLICTS OF INTEREST: None**

**D. CORRESPONDENCE: Entered into record**

1. Acme Strong #1
2. Acme Strong #2
3. Acme Strong #3
4. Kelley
5. Haggard
6. Acme Strong #4
7. Acme Strong #5
8. Kelley #2
9. Acme Strong #6

10. Snyder
11. Grobbel
12. Saunders
13. Acme Strong #7
14. Bauer
15. Fahl
16. Osborne
17. Osborne
18. Silk
19. Kelley #3

**E. PUBLIC HEARING: PD 2022-01 Tom's/Kmart Formal PD Application**

**Public hearing opened at 7:20 p.m.**

David Bieganowski P.C., spoke representing some of the people present regarding concerns of some of the process and policy decisions. He asked questions about the application's compliance with Acme's zoning ordinance. He recommended the Board deny the application or remand it back to the Planning Commission for further review.

Chris Grobbel, Grobbel Environmental & Planning Associates, Lake Leelanau, spoke regarding an independent review of the project that he prepared. He asked questions about the application's compliance with Acme's zoning ordinance and Master Plan. He recommended the Board deny the application and remand it back to the Planning Commission.

Charlene Abernethy, Acme resident, spoke regarding self-storage and sewage system.

Pat Salathiel, Acme resident, spoke regarding self-storage.

Jim Stevens spoke regarding self-storage, light industrial business, and pedestrian safety.

Barbara Bordo, spoke regarding pickleball.

Brian Kelley, Acme resident, spoke regarding ordinance and Master Plan compliance.

Beth Whiting, Acme resident, spoke regarding pickleball, recreation and accessible trails, and Meijer site development.

Don Howe, Truly Free employee, spoke regarding hiring opportunities and the business's commitment to the community.

Julie Hay, Acme resident, spoke regarding reuse of the existing buildings and pickleball.

Dave Sexton, spoke regarding pickleball.

Lisa Kerkhof, Acme resident, spoke regarding pickleball, hours of operation and type of coffee shop, and parking layout.

Stephan Ezell, Acme resident and CEO of Truly Free, spoke of his employees, employee retention, and the need for more and diverse businesses in the community.

**Public hearing closed at 8:02 p.m.**



**F. OLD BUSINESS:**

**1. PD 2022-01 Tom's/Kmart Formal PD Application**

-John Iacoangeli, Planner, Beckett & Raider spoke at length providing a broad overview about the past six months with regard to this application. He stated the original application was filed for the PD under two names: Lormax Stern and Strathmore Development. Since that time the property has been divided into four parcels as a requirement for financing. He spoke about challenges communities face in finding a use for empty box stores, the difficulty in redeveloping the spaces and about the good condition and building materials of these two buildings. This property is zoned Commercial Flex and the developer also wanted to use the PD ordinance in the zoning code which allows for more innovation, creativity, and uses that would not normally be on the property based on underlying zoning.

The zoning ordinance adopted in 2018 said the Planning Commission and Township Board could have a mix of non-permitted uses and permitted uses without any percentage specified. The new ordinance adopted in July 2022, required in the PD that there must be at least 50% of the permitted uses in the underlying zoning district in the buildings. Based on the drawing being presented, 60% of the proposed application is permitted use and 40% of the site includes the warehousing in the back of the Kmart and the indoor storage, thus complying with the 50% requirement.

The Planning Commission required that with the residential buildings there also be a significant amount of open space green areas for landscaping where there is currently asphalt. In addition, the developer is going to pay for the TART Trail expansion in front of the property.

Regarding Tom's becoming Truly Free, a special use permit runs with the property not the property owner and transfers with the property. The Planning Commission looked at the Tom's store in a generic way relative to what goes on in a grocery store i.e., product is delivered to the back, employees stock shelves, people shop the store. Current trends now reflect grocery store shopping as almost identical to the way Truly Free operates i.e., product is delivered to the back, employees assemble orders as placed online, and people pick up their order or have it shipped out. As a result, the zoning administrator determined it was a minor amendment, the Planning Commission deliberated and agreed with that interpretation.

Regarding sewer, Gosling & Czubak engineers analyzed sewer requirements for the entire development based on capacity and provided a memorandum to the Planning Commission in July. They said there is capacity to serve this development based on what the sewer capacities are at the current time. The applicant has been working with the Tribe to extend water across the street. The developer also may have to drill additional wells. They would have to satisfy the engineering requirements of the county, the building code, and Metro Fire. Whether water comes from the Tribe or additional wells, the developer will have to meet all applicable state and county codes. Stormwater was also reviewed by Gosling & Czubak and they wanted to wait to see if the project would be approved.

A PD is a master plan for the site. If approved, they go back to the Planning Commission to go through site plan review before building takes place. That is where technical and feasibility issues are reviewed – i.e., stormwater, BATA stop, how the parks will be built, the type of lighting, the photometrics are all reviewed at that time.

Iacoangeli stated this is not a light industrial complex. As part of its review, the Planning Commission wanted to ensure that the uses in the back of the Kmart were highly restrictive. As a condition of approval, they identified those conditions and the uses allowable on this property. One of the uses is referred to as warehouse flex or flex warehousing (a combination of office space and warehousing primarily in smaller increments). He gave an example of a contractor wanting office space and indoor parking space for vans to keep them secure.



## DRAFT UNAPPROVED

Iacoangeli added that the Planning Commission also said they would encourage additional e-commerce. The developer used Fishbeck out of Grand Rapids, known to be MDOT prequalified, for the traffic study. They are a professional traffic operating engineer which is a separate designation from a PE. The idea of e-commerce is so new, the trip generation manual does not have a category within it yet for e-commerce. In order to be conservative, the engineers classified Tom's as general office. The difference between general office and warehousing is that general office generates about four times the amount of traffic that a warehouse would. They analyzed the trip generation that would be from this development and concluded that the amount of trips that would be generated by this development are less than what was generated by Tom's and Kmart when they were in full operation.

Iacoangeli stated these properties were vacant on the market for sale for the past five years, they were not abandoned. This is the first developer to try to make the project work from a financial feasibility standpoint.

According to Iacoangeli, all the pieces have been reviewed, the Planning Commission did its job very deliberately over the last six months with the thought in mind that they would develop a project that would be much better than what currently exists and it meets many of the objectives of the Master Plan. The interior has residential use - sidewalks, parks, pickleball, fitness center, coffee shop, indoor storage. E-commerce and warehousing is in the back with flex warehousing.

-Sarah Keever, Northview 22, representative of the applicant, provided an overview. In meeting with the Planning Commission in April, most of the standards of the PD had been met and were found favorable. At that point, the developer's team committed to a site plan to move forward. In June the applicant provided the Planning Commission with an application packet that has largely remained the same other than the exception of the emphasis of a coffee shop or a food service establishment. That change was brought about by Planning Commission recommendation. Carports were also added at that time as an amenity.

Keever referred to an adaptive reuse of functionally obsolete buildings referring to drawings of the prospective development. Proposed are a total of 186 apartment units (1-, 2- and 3-bedroom units available) located over nine buildings. Amenities for lessees include carports, playgrounds, grills, picnic areas, walking paths, indoor storage, a BATA stop, a portion of the TART trail on the premises, as well as proximity to other parks, picnic areas, and beaches.

Per Keever, inside the Kmart would be pickleball courts, a food service or coffee shop, indoor storage, flexible office space (i.e., rent an office and share community/reception/lobby space), flex warehousing – the opportunity per her example for a plumber or electrician to rent space on a smaller scale, and the Men's Shed creating an opportunity for networking and community building.

Keever referred to the Access Management Plan in which truck traffic is directed to the rear of the project away from pedestrian traffic. This aspect would be included in lease agreements to maintain truck traffic in designated areas.

Keever identified this project as all one (1) phase that will progress based on construction sequence as quickly as possible and as soon as permits are obtained following site review. In addition, she identified much needed housing, reduction of hard surface area by about 15%, and the reuse of two large vacant structures as three benefits this project provides to the community – to residents who live onsite, to other Acme residents, and to non-Acme residents alike, creating what she referred to as vibrancy, network, and community.

There was discussion regarding the sequence of buildings to be built, parcel splits for financing purposes and about a surety bond for the first four buildings.



## DRAFT UNAPPROVED

-Jacob Chappelle, Strathmore Development, provided history as to why the two sites were split. Strathmore Development purchased both the Tom's and Kmart properties (recorded deeds provided to Acme Township as they were closed). He explained that they need to finance three things - the Tom's building, the Kmart building, and the multi-family project with three different lenders who each need three different forms of collateral. They approached the township and were able to split both sites in two. The Tom's building is now one site and that building is collateral for Truly Free. The multi-family parts are its own parcel that can be used as collateral for the multi-family lender.

Chappelle stated they have unified ownership owning all four parcels and they were only split to facilitate financing. Legal descriptions were provided and will be included in site plan reviews. They have all surveys for all the new sites, each of which was recorded in deeds provided to the township. He addressed concerns about preventing noncompliance of rules by a future landowner and referred to a drafted Declaration of Easements Conditions and Restrictions (DECR), described essentially as an agreement to require property owners in a project like this to comply with the rules regardless of the future ownership. He further stated it is a requirement in the PD plan and will be a requirement in the DECR to ensure that township requirements are followed no matter who owns the property. He recapped by stating, "We own all the parcels, we can assure that they will be developed and will follow the PD plan, and we can ensure future compliance through a DECR."

Stevens expressed concern about the township being protected and Jocks confirmed the township is protected stating the approved PD is the contract that is signed by the then landowner that runs with the land and it applies to any purchaser of the property in the event it is divided/split. It is enforced the same way as with a single owner.

-Ron Calhoun, Project Engineer for Strathmore Development, addressed how development will occur. Also discussed were timelines and considerations of weather and work force playing a role in completion timelines.

Jenema discussed the surety bonds being for four (4) buildings. Per Iacoangeli, the Planning Commission was satisfied with the fact that if four buildings were built out of the plan, that there would be a residential component on the site. The developer will staff and manage the site. White, Scott and Aukerman raised questions about assurances against having any partial buildings (beyond the first four that have performance bonds) go unfinished if anything happened to jeopardize completion. Chappelle stated they would be willing to escrow money to the township as an option to either complete partially completed buildings or restore the site.

Discussion occurred about the likelihood of on-site residents utilizing the on-site self-storage, pickleball courts, and office space, and about target demographics.

Aukerman stated the Planning Commission went through a very thorough process and identified 19 conditions before voting to support this project unanimously. She spoke to the responsiveness of the developer regarding suggestions/conditions and the fact that only one additional condition was suggested at the present meeting. She identified additional included amenities such as car charging stations and high-end finishes in the apartments.

### **Motion by Aukerman to approve with conditions**

**I move that the Board of Trustees incorporate and adopt Beckett & Raeder's proposed findings concerning the SH East Bay Holdings South LLC application for PD 2022-01. In so doing, the Board of Trustees finds that the proposed PD 2022-01 does meet the requirements of the Acme Township Zoning Ordinance for a Planned Development on the former Kmart property, 6455 US-31N, Parcel No 28-01-234-036-00 and Tom's Market property, 6261 US-31N, Parcel No 28-01-234-035-00 based on the Conceptual Layout Plan dated, 07-25-2022. The approval also allows for indoor storage and warehousing in the former Kmart Building and residential uses on the first floor with the following conditions:**



## DRAFT UNAPPROVED

- 1) That the Applicant secure an agreement for the extension of water to the PD site with the Grand Traverse Band of Ottawa and Chippewa Indians, or provide on-site water subject to approval by the Township Engineer, Michigan Department of Environment, Great Lakes and Energy (EGLE), Grand Traverse Building Department, and Metro Fire.
- 2) That the Applicant provide an easement to the TART Trails Inc. and for the installation of a 10-foot-wide concrete trail on the applicant property adjacent to the US-31 rights-of-way. The width of the easement shall be determined and executed between the parties and recorded with a copy of the recorded easement provided to the Township as part of site plan approval.
- 3) Warehousing space in the former Kmart building shall not exceed 24,450 square feet. Warehousing in the instance of this PD application shall be defined as,  
*A space limited to skilled trade contractors, research & development, that handle distribution and fulfillment operations for e-commerce or omnichannel retailers, delivery-related businesses, and start-up businesses excluding storage of materials that are inflammable or explosive or that present hazards or conditions commonly recognized as offensive.*
- 4) Parking of vehicles that are associated with a warehouse on-site tenant may be parked inside the building.
- 5) There shall be no outdoor storage of any materials or products on the PD premises with the exception of enclosed outdoor dumpsters and recycling bins.
- 6) Indoor storage of boats, recreational vehicles, ATV's, OTR's, cars, and trucks is prohibited in the warehousing and indoor storage areas.
- 7) Indoor storage shall not exceed 35,800 square feet.
- 8) To ensure there is a balance in the overall development between redevelopment of the former Kmart building and the residential apartments, applicant shall provide a performance bond equal to the costs to complete no less than four (4) of the residential apartment buildings. The performance bond must be provided prior to issuance of a land use permit for the redevelopment of the former Kmart building. Applicant may provide more than one bond which when added together totals the costs to complete. The Township will release and return a bond that was provided for a specific building or buildings when they are completed.
- 9) Site lighting shall be painted black, utilized LED as a light source meeting dark sky standards and not to exceed twenty-two feet in height.
- 10) In the event there is interest to build on the PD site freestanding retail and/or restaurant the applicant shall be able to substitute residential building sites for these uses as long as the trip generation does not exceed the trip generated by the former Tom's Market and Kmart as enumerated in the Traffic Impact Study prepared by Fishbeck, dated May 3, 2022. Further, the Applicant will be required to update the Conceptual Plan noting the substitution and submit a site plan for the proposed project.
- 11) In the event there is interest to lease in the Kmart Building e-commerce or omnichannel retailers the applicant shall be able to substitute the indoor storage and warehousing spaces for these uses as long as the trip generation does not exceed the trip generated by the former Tom's Market and Kmart as enumerated in the Traffic Impact Study prepared by Fishbeck, dated May 3, 2022. Further, the Applicant will be required to update the Conceptual Plan noting the substitution and submit a site plan for the proposed project.

## **DRAFT UNAPPROVED**

- 12) Sidewalks should be designed based on Section 6.3, Non-Motorized Transportation of the new zoning code effective July 31, 2022.
- 13) Snow storage shall be provided with on-site snow storage areas in addition to the required off-street parking area. Snow storage areas shall be provided on the ratio of fifteen (15) square feet per one hundred (100) square feet of off-street parking area. Snow storage areas shall be located in such a manner that does not obstruct required clear vision areas.
- 14) Bicycle parking shall be required on-site. Minimum bicycle parking shall equate to 1 bicycle parking space for every six (6) dwelling units, 1 bicycle parking space per 2,000 gross square feet of office, 1 bicycle parking space per 5,000 gross square feet of retail, and 1 bicycle parking space per 10,000 gross square feet of warehousing and distribution.
- 15) Residential apartment units shall be rented at least on a six-month basis or more. No short-term rentals (STR's), which for purposes of this development are less than six (6) months in duration, shall be allowed.
- 16) Any proposed change of use from apartments to some other type of housing, including but not limited to, condominiums, shall require a major amendment of this PD.
- 17) Warehousing tenants shall be required to follow the Access Management Plan (Sheet C6) dated 07-25-2022, and submit a specimen copy of the warehousing lease to the Township for review and approval by the Township Attorney. The Applicant is responsible for ensuring that its warehousing tenants use the proper access. If tenants use another access, then both the tenants and the Applicant shall be responsible for the violation and remedy.
- 18) Warehousing days and hours of operation shall be Monday through Saturday, 7:00 AM to 7:00PM.
- 19) Warehousing tenants and their employees, UPS trucks, and delivery vehicles shall park in the north and west side of the former Kmart Building.
- 20) Developer/Applicant will provide an escrow payment to cover the cost to restore the site in the event buildings 5 through 9 are not completed.

Iacoangeli stated the Findings of Fact were prepared prior to the division of the properties and the parcel numbers in the motion should instead be 28-01-234-036-01, 28-01-234-036-02, 28-01-234-035-01, and 28-01-234-035-02. The change was accepted.

Jenema and Jocks stated that for #2 the easement is to Acme Township for the TART Trail.

Board members discussed #15 and the option of increasing from 6 to 9 months. The Board chose to keep it 6 months.

Iacoangeli summarized the motion made by Trustee Aukerman with amendments to change the two parcel numbers to four; under #2, strike the TART Trails Inc. and insert Acme Township for the TART Trail; and under #20, developer will provide an escrow payment to cover the cost to restore the site in the event buildings 5 through 9 are not completed. Motion seconded by Jenema. Roll call vote. Yes: Aukerman, Jenema, Stevens, Swanson, Hoxsie, White. No: Scott. Motion carried.

### **PUBLIC COMMENT and OTHER BUSINESS:**

Public comment was opened at 9:28 p.m.

## DRAFT UNAPPROVED

Chris Grobbel  
Brian Kelley

Public comment was closed at 9:32 p.m.

Jenema provided clarification regarding the way property taxes work in that when a land division occurs during the 2022 year, those parcels are created in the 2023 tax year. The 2022 tax roll would not reflect the split. She further stated the legal descriptions of the properties did not match the map. The legal descriptions are correct, the map was not.

**Motion by Scott, supported by Stevens, to adjourn the meeting. Voice vote. Motion carried unanimously.**

The meeting was adjourned at 9:36 p.m.





**ACME TOWNSHIP SPECIAL BOARD MEETING**

**Acme Township Hall  
6042 Acme Road, Williamsburg MI 49690  
Wednesday, October 19, 2022, 2:00 p.m.**

**CALL TO ORDER WITH PLEDGE OF ALLEGIANCE at 2:01 p.m.**

**ROLL CALL: Members present:** J. Aukerman, A. Jenema, P. Scott, L. Swanson, D. White

**Members excused:** D. Hoxsie, D. Stevens

**Staff present:** None

**A. LIMITED PUBLIC COMMENT:**

**Limited Public Comment was opened at 2:02 p.m.**

None

**Limited Public Comment closed at 2:02 p.m.**

**B. APPROVAL OF AGENDA:**

**Motion by Jenema, supported by Scott, to approve the agenda as presented. Voice vote. Motion carried unanimously.**

**C. INQUIRY AS TO CONFLICTS OF INTEREST**

None

**D. OLD BUSINESS:**

**1. Continued discussion on land acquisition/Possible Closed Session**

**Motion by Aukerman, supported by Scott to go into closed session regarding land acquisition pursuant to MCL 15.268(d) to consider purchase or lease of real property. Roll call vote. Motion carried unanimously.**

Board entered closed session at 2:40p.m.

**Motion by Scott, supported by Jenema, to return to open session at 3:06 p.m. Roll call vote. Motion carried unanimously.**

Board entered open session at 3:06 p.m.

**Motion by Scott, supported by Jenema, to approve RFP submittal: I move that Doug White and Jean Aukerman are authorized to complete and submit the proposal as discussed in closed session. Roll call vote. Motion carried unanimously.**

**E. NEW BUSINESS: None**

**PUBLIC COMMENT and OTHER BUSINESS: None**

**Motion by Scott, supported by Jenema, to adjourn the meeting.**

The meeting adjourned at 3:08 p.m.



**ACME TOWNSHIP REGULAR BOARD MEETING**

**ACME TOWNSHIP HALL**

**6042 Acme Road, Williamsburg MI 49690**

**Tuesday, October 4, 2022, 7:00 p.m.**

**CALL TO ORDER WITH PLEDGE OF ALLEGIANCE at 7:00 p.m.**

**ROLL CALL: Members present:** J. Aukerman, D. Hoxsie, A. Jenema, P. Scott, D. Stevens, L. Swanson, D. White

**Members excused:** None

**Staff present:** Jeff Jocks, Legal Counsel; Lindsey Wolf, Planning & Zoning Administrator; Cristy Danca, Recording Secretary

**A. LIMITED PUBLIC COMMENT:**

**Limited Public Comment was opened at 7:01 p.m.**

Beth Pack, introduced herself as a candidate for TCAPS Board

Brian Kelley, Acme resident, complimented Wolf and Aukerman regarding job description for Planning and Zoning Assistant position. He stated concerns about Flintfields Stormwater Inspection report.

**Limited Public Comment closed at 7:05 p.m.**

**B. APPROVAL OF AGENDA:**

White requested addition of *Septic Rate Study* (New Business, Item #2), and *Discussion of Time Frame in Which People Can Submit Correspondence to the Board* (New Business, Item #3).

**Motion by Jenema, supported by Stevens, to approve the agenda as presented with the addition of *Contract For Services - Sewer Rate Study* under Agenda item K. 2 (New Business) and under Agenda item K. 3 (New Business) will be the *Rules of Procedure for the Board*. Voice vote. Motion carried unanimously.**

**C. APPROVAL OF BOARD MINUTES: 09/06/2022**

**Motion by Swanson, supported by Aukerman, to approve the minutes from 09/06/2022 as presented. Voice vote. Motion carried unanimously.**

**D. INQUIRY AS TO CONFLICTS OF INTEREST: None**

**E. REPORTS:**

**a. Clerk** – Swanson stated absentee ballots have been mailed in preparation for the November election and complimented assistant Mellisa Loose on her progress.

**b. Parks** – Jenema stated Parks and Trails may have an October meeting if information comes together regarding Bayside Park playground equipment. A New Flag Memorial box (an Eagle Scout project), was placed Sunday at Bayside Park. Residents are welcome to ‘retire’ flags there and they will be picked up monthly.

**c. Legal Counsel** – Jocks has been working on zoning matters. He stated the Engle Appeal argument took place today and went well. A written opinion from the Court of Appeals is expected sometime in the next few weeks to few months.

## **DRAFT UNAPPROVED**

**d. Sheriff** – None

**e. County** – None

**f. Supervisor** – Supervisor White has had discussions with East Bay regarding the sewer rate study and will discuss further later in the agenda. Continued attempts to discuss water access with the Tribe.

**g. Planning and Zoning** – Wolf has an upcoming public hearing regarding High Pointe Golf Course; Planning Commission will have a site plan review for a self-storage facility; she's been working with Iacoangeli and Jocks regarding publication materials for October 17, 2022, Special Board Meeting; and working with Supervisor White and Deputy Abbring on short-term rental violations.

**h. MMR** – White stated report will be added to next month's packet upon receipt.

**i. Stormwater Report** – In packet

**F. SPECIAL PRESENTATIONS: Julie Brown, Elk Rapids Schools Superintendent, presented Operating Millage Proposal on November ballot. Questions can be directed to 231-264-8692.**

**G. CONSENT CALENDAR:**

**1. RECEIVE AND FILE:**

- a. Treasurer's Report
- b. Clerk's Revenue/Expenditure Report
- c. Planning Commission Draft minutes 09/12/2022

**2. APPROVAL:**

- 1. Accounts Payable prepaid of \$180,122.90 and NO CURRENT to be approved  
(Recommend approval: Clerk, L. Swanson)

**H. ITEMS REMOVED FROM THE CONSENT CALENDAR:** None

**Motion by Hoxsie, approved by Jenema, to approve Consent Calendar as presented. Roll call vote. Motion carried unanimously.**

**I. CORRESPONDENCE:**

- 1. 09/19/2022 Letter from Department of Licensing/State of Michigan/ Grand Traverse Band Economic Development Corporation

**J. PUBLIC HEARING:** None

**K. NEW BUSINESS:**

**1. Grand Traverse County Natural Hazards Mitigation Plan 2022**

Gregg Bird, Emergency Management Coordinator, Grand Traverse County, spoke regarding the new Natural Hazard Mitigation Plan (5-year plan) that has been formally adopted by Grand Traverse County and formally approved by FEMA. At this time, the plan is offered to all municipalities for adoption.

**Motion by Jenema, supported by Swanson, to approve Resolution #2022-19 Natural Hazard Mitigation Plan Adoption for Acme Township. Roll call vote. Motion carried unanimously.**

**2. Contract For Services - Sewer Rate Study**

Discussion of shared sewer lines with East Bay focused on line life expectancy, increased use with new development, types of line materials, options to cover the cost of new lines, previous problems with sections of line, and potential future problems. It has been 5-6 years since the last study. White



## **DRAFT UNAPPROVED**

asked for Board approval for another rate study.

**Motion by Jenema, supported by Aukerman, to approve the Contract For Services with Gosling Czubak for the Sewer Rate Study in the amount of \$5100. Additional discussion regarding materials and rate amounts. Roll call vote. Motion carried unanimously.**

### **3. Rules of Procedure for the Board**

Discussion of amending Rules of Procedure specific to sections regarding written public comment and time frame for submission of written correspondence to the Board. Jocks will have language for review at the next meeting.

## **L. OLD BUSINESS:**

### **1. Continued discussion of Job description staff Planning & Zoning**

Board discussion led by Aukerman regarding updated job description drafts of Planning & Zoning Manager position and new position of Assistant, Zoning & Special Projects. Summary Overview Chart of Planning & Zoning Department was also discussed and this chart included both those positions, as well as the position of Enforcement Officer, Zoning. Board gave direction for the Personnel Committee to review information discussed and present recommendations to the Board in November.

### **2. Trail Connector Payment application No. 6**

Per Jenema funds have not yet been received to make this final payment. This payment is higher than previous payments because it includes the bridge. There will be a ribbon cutting ceremony October 25, 2022 at 4:30 p.m. near Meijer.

**Motion by Aukerman, seconded by Swanson, to pay the application No. 6 payment of \$366,347.56 payable to Elmer's when the funds are received by Acme Township and we are able to do so. Roll call vote. Motion carried unanimously.**

## **PUBLIC COMMENT and OTHER BUSINESS:**

Public comment opened at 9:08 p.m.

Brian Kelley, Acme resident, spoke about zoning assistant position and potential policy changes to Rules of Procedure.

Public comment closed at 9:11 p.m.

**Motion by Scott, supported by Hoxsie, to adjourn the meeting. Voice vote. Motion carried unanimously.**

The meeting was adjourned at 9:11 p.m.



CASH SUMMARY BY BANK FOR ACME TOWNSHIP  
 FROM 09/01/2022 TO 09/30/2022

Bank Code Fund	Description	Beginning Balance 09/01/2022	Total Debits	Total Credits	Ending Balance 09/30/2022
CHASE	GENERAL FUND				
101	GENERAL FUND	1,071,261.75	26,995.16	69,822.42	1,028,434.49
206	FIRE FUND	24,542.05	0.00	0.00	24,542.05
207	POLICE PROTECTION	39,925.65	0.00	0.00	39,925.65
208	PARK FUND	46,076.80	447.00	0.00	46,523.80
209	CEMETERY FUND	25,653.44	500.00	0.00	26,153.44
210	AMBULANCE FUND	12,572.89	0.00	0.00	12,572.89
212	LIQUOR FUND	11,802.29	0.00	0.00	11,802.29
282	ARPA	497,700.18	0.00	0.00	497,700.18
	GENERAL FUND	<u>1,729,535.05</u>	<u>27,942.16</u>	<u>69,822.42</u>	<u>1,687,654.79</u>
FARM	FARMLAND PRESERVATION				
225	FARMLAND PRESERVATION	1,481,339.82	0.00	282.00	1,481,057.82
	FARMLAND PRESERVATION	<u>1,481,339.82</u>	<u>0.00</u>	<u>282.00</u>	<u>1,481,057.82</u>
FARMM	FARMLAND PRESERVATION - MONEY MARKET				
225	FARMLAND PRESERVATION	5,145.85	0.00	0.00	5,145.85
	FARMLAND PRESERVATION - MONEY MARKET	<u>5,145.85</u>	<u>0.00</u>	<u>0.00</u>	<u>5,145.85</u>
GENHY	GENERAL FUND - HIGH YIELD				
101	GENERAL FUND	157,872.57	0.00	0.00	157,872.57
	GENERAL FUND - HIGH YIELD	<u>157,872.57</u>	<u>0.00</u>	<u>0.00</u>	<u>157,872.57</u>
GENMM	GENERAL FUND - MONEY MARKET				
101	GENERAL FUND	299,662.91	0.00	0.00	299,662.91
	GENERAL FUND - MONEY MARKET	<u>299,662.91</u>	<u>0.00</u>	<u>0.00</u>	<u>299,662.91</u>
PARKS	BAYSIDE PARK				
403	NAKWEMA TRAILWAY FUND	79,427.87	179,541.00	158,312.61	100,656.26
	BAYSIDE PARK	<u>79,427.87</u>	<u>179,541.00</u>	<u>158,312.61</u>	<u>100,656.26</u>
PETTY	PETTY CASH				
101	GENERAL FUND	200.00	0.00	0.00	200.00
	PETTY CASH	<u>200.00</u>	<u>0.00</u>	<u>0.00</u>	<u>200.00</u>
SADH	HOLIDAY HILLS				
811	HOLIDAY HILLS AREA IMPROVEMENT	216,305.59	2,652.99	0.00	218,958.58
	HOLIDAY HILLS	<u>216,305.59</u>	<u>2,652.99</u>	<u>0.00</u>	<u>218,958.58</u>

CASH SUMMARY BY BANK FOR ACME TOWNSHIP  
FROM 09/01/2022 TO 09/30/2022

Bank Code Fund	Description	Beginning Balance 09/01/2022	Total Debits	Total Credits	Ending Balance 09/30/2022
SEWER	ACME RELIEF SEWER				
590	ACME RELIEF SEWER	2,384,621.98	0.00	2,257.50	2,382,364.48
591	WATER FUND- HOPE VILLAGE	16,138.87	0.00	0.00	16,138.87
	ACME RELIEF SEWER	<u>2,400,760.85</u>	<u>0.00</u>	<u>2,257.50</u>	<u>2,398,503.35</u>
SEWMM	ACME RELIEF SEWER MONEY MARKET				
590	ACME RELIEF SEWER	198,092.46	0.00	0.00	198,092.46
	ACME RELIEF SEWER MONEY MARKET	<u>198,092.46</u>	<u>0.00</u>	<u>0.00</u>	<u>198,092.46</u>
SHORE	SHORELINE PRESERVATION				
296	SHORELINE PPRESERVATION	1,388.38	0.00	0.00	1,388.38
	SHORELINE PRESERVATION	<u>1,388.38</u>	<u>0.00</u>	<u>0.00</u>	<u>1,388.38</u>
TAX	CURRENT TAX COLLECTION				
703	CURRENT TAX COLLECTION	1,523,234.86	5,985,157.24	7,067,318.44	441,073.66
	CURRENT TAX COLLECTION	<u>1,523,234.86</u>	<u>5,985,157.24</u>	<u>7,067,318.44</u>	<u>441,073.66</u>
TRUST	TRUST & AGENCY				
701	TRUST AND AGENCY	110,350.00	0.00	0.00	110,350.00
	TRUST & AGENCY	<u>110,350.00</u>	<u>0.00</u>	<u>0.00</u>	<u>110,350.00</u>
	TOTAL - ALL FUNDS	<u>8,203,316.21</u>	<u>6,195,293.39</u>	<u>7,297,992.97</u>	<u>7,100,616.63</u>

*Sarah Lawrence*  
*Deputy Treasurer*  
*10/27/22*

User: LSWANSON

DB: Acme Township

PERIOD ENDING 09/30/2022

GL NUMBER	DESCRIPTION	2022-23	YTD BALANCE	ACTIVITY FOR	AVAILABLE	% BDGT USED
		AMENDED BUDGET	09/30/2022 NORMAL (ABNORMAL)	MONTH 09/30/2022 INCREASE (DECREASE)	BALANCE NORMAL (ABNORMAL)	
Fund 101 - GENERAL FUND						
Revenues						
Dept 000						
101-000-402.000	CURRENT PROPERTY TAXES	271,000.00	0.00	0.00	271,000.00	0.00
101-000-412.000	PERSONAL PROP TAXES	15,200.00	0.00	0.00	15,200.00	0.00
101-000-420.000	DELQUENT PERS PROP TAX	118.00	0.00	0.00	118.00	0.00
101-000-445.020	PENALTIES& INTEREST	2,500.00	0.00	0.00	2,500.00	0.00
101-000-447.000	ADMINISTRATIVE FEE 1%	113,828.00	14,384.17	0.00	99,443.83	12.64
101-000-448.000	CABLE TV FEE	86,400.00	22,305.81	0.00	64,094.19	25.82
101-000-465.000	PASSPORT FEES	1,500.00	800.00	175.00	700.00	53.33
101-000-574.000	ST SHARED SALES TAX	426,316.00	85,490.00	0.00	340,826.00	20.05
101-000-577.000	SWAMP TAX	1,500.00	0.00	0.00	1,500.00	0.00
101-000-602.000	GRANTS	0.00	4,232.73	4,232.73	(4,232.73)	100.00
101-000-602.004	ENDOWMENT	10,000.00	0.00	0.00	10,000.00	0.00
101-000-607.000	CHARGES FOR SERVICES	3,010.00	0.00	0.00	3,010.00	0.00
101-000-608.001	Zoning Fees	17,600.00	4,545.40	75.00	13,054.60	25.83
101-000-610.000	Revenues for Escrow Account	30,000.00	3,000.00	0.00	27,000.00	10.00
101-000-631.000	CONS INDUSTRY ANNUAL MAINT FE	7,800.00	0.00	0.00	7,800.00	0.00
101-000-665.000	INTEREST ON INVESTMENTS	510.00	77.72	0.00	432.28	15.24
101-000-665.001	INTEREST SEPTAGE RECEIVED	2,450.00	0.00	0.00	2,450.00	0.00
101-000-667.000	RENT-PARKS	200.00	460.00	40.00	(260.00)	230.00
101-000-671.000	MISC REVENUES	0.00	21,056.86	21,056.86	(21,056.86)	100.00
101-000-671.010	CIVIL INFRACTION FEES	100.00	0.00	0.00	100.00	0.00
101-000-676.000	REIMBURSEMENTS	15,000.00	2,214.09	1,415.57	12,785.91	14.76
Total Dept 000		1,005,032.00	158,566.78	26,995.16	846,465.22	15.78
TOTAL REVENUES		1,005,032.00	158,566.78	26,995.16	846,465.22	15.78
Expenditures						
Dept 000						
101-000-465.001	POSTAGE FOR PASSPORTS	500.00	204.37	85.34	295.63	40.87
101-000-992.000	CONTINGENCY	45,000.00	0.00	0.00	45,000.00	0.00
101-000-994.000	TC TALUS CONTRACT SERVICES	1,000.00	0.00	0.00	1,000.00	0.00
101-000-997.300	FOURTH OF JULY FIREWORKS	300.00	0.00	0.00	300.00	0.00
101-000-998.000	GT COUNTY ROAD COMMISSION TART	10,000.00	3,662.82	0.00	6,337.18	36.63
101-000-999.000	TRANSFER TO OTHER FUNDS	0.00	300,000.00	0.00	(300,000.00)	100.00
Total Dept 000		56,800.00	303,867.19	85.34	(247,067.19)	534.98
Dept 101 - TOWNSHIP BOARD OF TRUSTEES						
101-101-702.000	SALARIES	37,700.00	9,276.96	3,092.32	28,423.04	24.61
101-101-703.001	SECRETARY	36,100.00	8,358.61	3,447.60	27,741.39	23.15
101-101-705.001	PER DIEM TRUSTEES	300.00	0.00	0.00	300.00	0.00
101-101-714.000	FICA LOCAL SHARE	5,800.00	1,409.56	520.48	4,390.44	24.30
101-101-726.000	SUPPLIES & POSTAGE	1,800.00	167.97	0.00	1,632.03	9.33
101-101-801.000	ACCOUNTING & AUDIT	15,000.00	0.00	0.00	15,000.00	0.00
101-101-801.001	INTERNAL ACCOUNTANT	600.00	0.00	0.00	600.00	0.00
101-101-802.001	ATTORNEY SERVICES LITIGATION	1,200.00	0.00	0.00	1,200.00	0.00
101-101-802.002	ATTORNEY SERVICES	15,000.00	2,655.42	2,655.42	12,344.58	17.70
101-101-802.005	CONTRACTED COMMUNITY SERVICES	5,000.00	0.00	0.00	5,000.00	0.00
101-101-803.003	ENGINEERING SERVICES	25,000.00	480.00	480.00	24,520.00	1.92
101-101-804.000	SOFTWARE SUPPORT & PROCESSIN	20,000.00	6,472.00	235.00	13,528.00	32.36
101-101-804.001	BSA SOFTWARE SUPPORT	6,500.00	4,478.00	0.00	2,022.00	68.89
101-101-860.000	TRAVEL & MILEAGE	200.00	0.00	0.00	200.00	0.00
101-101-874.000	RETIREMENT/PENSION	4,000.00	951.24	323.22	3,048.76	23.78

PERIOD ENDING 09/30/2022

GL NUMBER	DESCRIPTION	2022-23	YTD BALANCE	ACTIVITY FOR	AVAILABLE	% BDGT USED
		AMENDED BUDGET	NORMAL (ABNORMAL)	MONTH 09/30/2022 INCREASE (DECREASE)	BALANCE NORMAL (ABNORMAL)	
Fund 101 - GENERAL FUND						
Expenditures						
101-101-900.000	PUBLICATIONS	2,800.00	452.40	310.45	2,347.60	16.16
101-101-910.000	INSURANCE	7,000.00	1,796.24	547.93	5,203.76	25.66
101-101-958.000	EDUCATION/TRAINING/CONVENTION	300.00	0.00	0.00	300.00	0.00
101-101-960.000	dues subscriptions	6,400.00	6,684.80	15.89	(284.80)	104.45
Total Dept 101 - TOWNSHIP BOARD OF TRUSTEES		190,700.00	43,183.20	11,628.31	147,516.80	22.64
Dept 171 - SUPERVISOR EXPENDITURES						
101-171-702.000	SALARIES	45,580.00	10,478.52	3,506.16	35,101.48	22.99
101-171-714.000	FICA LOCAL SHARE	3,650.00	689.13	230.72	2,960.87	18.88
101-171-726.000	SUPPLIES & POSTAGE	50.00	0.00	0.00	50.00	0.00
101-171-860.000	TRAVEL & MILEAGE	500.00	0.00	0.00	500.00	0.00
101-171-874.000	RETIREMENT/PENSION	4,500.00	1,047.86	350.62	3,452.14	23.29
101-171-910.000	INSURANCE	13,000.00	3,099.41	1,033.71	9,900.59	23.84
101-171-958.000	EDUCATION/TRAINING/CONVENTION	1,500.00	0.00	0.00	1,500.00	0.00
Total Dept 171 - SUPERVISOR EXPENDITURES		68,780.00	15,314.92	5,121.21	53,465.08	22.27
Dept 191 - ELECTION EXPENDITURES						
101-191-702.000	SALARIES	11,500.00	5,024.96	0.00	6,475.04	43.70
101-191-714.000	FICA LOCAL SHARE	350.00	0.00	0.00	350.00	0.00
101-191-726.000	SUPPLIES & POSTAGE	9,500.00	2,278.06	278.00	7,221.94	23.98
101-191-900.000	PUBLICATIONS	200.00	88.60	0.00	111.40	44.30
Total Dept 191 - ELECTION EXPENDITURES		21,550.00	7,391.62	278.00	14,158.38	34.30
Dept 209 - ASSESSOR'S EXPENDITURES						
101-209-702.000	SALARIES	5,830.00	1,457.49	485.83	4,372.51	25.00
101-209-714.000	FICA LOCAL SHARE	450.00	111.50	37.17	338.50	24.78
101-209-726.000	SUPPLIES & POSTAGE	3,500.00	0.00	0.00	3,500.00	0.00
101-209-803.002	ASSESSING CONTRACT SERVICES	49,050.00	16,100.00	8,050.00	32,950.00	32.82
101-209-803.004	ASSESSOR'S EVALUATION SERVICES	3,000.00	3,011.92	3,011.92	(11.92)	100.40
Total Dept 209 - ASSESSOR'S EXPENDITURES		61,830.00	20,680.91	11,584.92	41,149.09	33.45
Dept 215 - CLERK'S EXPENDITURES						
101-215-702.000	SALARIES	45,580.00	10,478.52	3,506.16	35,101.48	22.99
101-215-703.000	WAGES DEPUTY/SEC/PRT TIME	28,000.00	9,046.05	3,517.34	18,953.95	32.31
101-215-714.000	FICA LOCAL SHARE	5,735.00	1,493.62	537.32	4,241.38	26.04
101-215-726.000	SUPPLIES & POSTAGE	700.00	0.00	0.00	700.00	0.00
101-215-860.000	TRAVEL & MILEAGE	1,000.00	0.00	0.00	1,000.00	0.00
101-215-874.000	RETIREMENT/PENSION	7,030.00	679.60	215.38	6,350.40	9.67
101-215-910.000	INSURANCE	12,900.00	0.00	0.00	12,900.00	0.00
101-215-958.000	EDUCATION/TRAINING/CONVENTION	1,500.00	0.00	0.00	1,500.00	0.00
Total Dept 215 - CLERK'S EXPENDITURES		102,445.00	21,697.79	7,776.20	80,747.21	21.18
Dept 247 - BOARD OF REVIEW						
101-247-702.000	SALARIES	1,500.00	33.92	0.00	1,466.08	2.26
101-247-714.000	FICA LOCAL SHARE	100.00	0.00	0.00	100.00	0.00
101-247-900.000	PUBLICATIONS	50.00	0.00	0.00	50.00	0.00



PERIOD ENDING 09/30/2022

GL NUMBER	DESCRIPTION	2022-23	YTD BALANCE	ACTIVITY FOR	AVAILABLE	% BDGT USED
		AMENDED BUDGET	09/30/2022 NORMAL (ABNORMAL)	MONTH 09/30/2022 INCREASE (DECREASE)	BALANCE NORMAL (ABNORMAL)	
Fund 101 - GENERAL FUND						
Expenditures						
101-247-956.000	MISCELLANEOUS	160.00	0.00	0.00	160.00	0.00
101-247-958.000	EDUCATION/TRAINING/CONVENTIONS	250.00	0.00	0.00	250.00	0.00
Total Dept 247 - BOARD OF REVIEW		2,060.00	33.92	0.00	2,026.08	1.65
Dept 253 - TREASURER'S EXPENDITURES						
101-253-702.000	SALARIES	27,046.00	6,212.35	2,080.46	20,833.65	22.97
101-253-703.000	WAGES DEPUTY/SEC/PRT TIME	31,820.00	7,309.01	2,447.70	24,510.99	22.97
101-253-714.000	FICA LOCAL SHARE	4,700.00	1,105.00	369.94	3,595.00	23.51
101-253-726.000	SUPPLIES & POSTAGE	5,600.00	2,330.62	0.00	3,269.38	41.62
101-253-860.000	TRAVEL & MILEAGE	200.00	0.00	0.00	200.00	0.00
101-253-874.000	RETIREMENT/PENSION	5,887.00	1,444.49	483.60	4,442.51	24.54
101-253-910.000	INSURANCE	4,000.00	923.10	307.70	3,076.90	23.08
101-253-958.000	EDUCATION/TRAINING/CONVENTION	400.00	0.00	0.00	400.00	0.00
Total Dept 253 - TREASURER'S EXPENDITURES		79,653.00	19,324.57	5,689.40	60,328.43	24.26
Dept 265 - TOWNHALL EXPENDITURES						
101-265-726.000	SUPPLIES & POSTAGE	3,000.00	449.02	100.79	2,550.98	14.97
101-265-851.000	CABLE INTERNET SERVICES	4,000.00	1,138.38	379.46	2,861.62	28.46
101-265-920.000	ELECTRIC UTILITIES TOWNHALL	18,200.00	3,206.10	1,082.33	14,993.90	17.62
101-265-921.000	STREET LIGHTS	12,000.00	1,699.25	818.04	10,300.75	14.16
101-265-922.000	DTE GAS	3,800.00	104.94	52.47	3,695.06	2.76
101-265-923.000	SEWER TOWNSHIP HALL	720.00	120.00	60.00	600.00	16.67
101-265-930.000	REPAIRS & MAINT	20,000.00	1,470.16	591.23	18,529.84	7.35
101-265-970.000	CAPITAL OUTLAY	20,000.00	0.00	0.00	20,000.00	0.00
Total Dept 265 - TOWNHALL EXPENDITURES		81,720.00	8,187.85	3,084.32	73,532.15	10.02
Dept 410 - PLANNING & ZONING EXPENDITURES						
101-410-702.001	PLANNING & ZONING ASSISTANT	30,000.00	0.00	0.00	30,000.00	0.00
101-410-702.002	PLANNING & ZONING ADMINISTRATOR	65,826.00	15,133.57	5,063.54	50,692.43	22.99
101-410-705.000	PER DIEM PLANNING/ZBA	11,000.00	3,690.00	3,490.00	7,310.00	33.55
101-410-714.000	FICA LOCAL SHARE	7,400.00	1,328.45	617.17	6,071.55	17.95
101-410-726.000	SUPPLIES & POSTAGE	300.00	0.00	0.00	300.00	0.00
101-410-802.001	ATTORNEY SERVICES LITIGATION	500.00	0.00	0.00	500.00	0.00
101-410-802.002	ATTORNEY SERVICES	12,000.00	4,587.58	3,433.58	7,412.42	38.23
101-410-802.003	ATTORNEY T & A	3,000.00	1,260.00	1,260.00	1,740.00	42.00
101-410-803.000	PLANNER SERVICES	7,000.00	0.00	0.00	7,000.00	0.00
101-410-803.001	PLANNING CONSULTANT	12,500.00	0.00	0.00	12,500.00	0.00
101-410-803.003	ENGINEERING SERVICES	3,000.00	0.00	0.00	3,000.00	0.00
101-410-803.004	ENGINEERING SERVICES T&A	3,000.00	0.00	0.00	3,000.00	0.00
101-410-803.005	PLANNING & CONSULTANT T & A	12,000.00	2,493.75	2,293.75	9,506.25	20.78
101-410-803.006	STAFF REVIEW T & A	1,800.00	559.40	0.00	1,240.60	31.08
101-410-804.000	SOFTWARE SUPPORT & PROCESSIN	1,500.00	0.00	0.00	1,500.00	0.00
101-410-860.000	TRAVEL & MILEAGE	700.00	0.00	0.00	700.00	0.00
101-410-874.000	RETIREMENT/PENSION	6,583.00	1,513.37	506.36	5,069.63	22.99
101-410-900.000	PUBLICATIONS	2,100.00	154.70	0.00	1,945.30	7.37
101-410-900.001	PUBLICATIONS T & A	1,000.00	148.70	0.00	851.30	14.87
101-410-910.000	INSURANCE	9,250.00	2,273.10	757.78	6,976.90	24.57
101-410-949.000	RENTAL OF SPACE	300.00	0.00	0.00	300.00	0.00
101-410-956.000	MISCELLANEOUS	100.00	0.00	0.00	100.00	0.00
101-410-958.000	EDUCATION/TRAINING/CONVENTION	2,000.00	0.00	0.00	2,000.00	0.00

## PERIOD ENDING 09/30/2022

PERIOD ENDING 09/30/2022

GL NUMBER	DESCRIPTION	2022-23 AMENDED BUDGET	YTD BALANCE 09/30/2022 NORMAL (ABNORMAL)	ACTIVITY FOR MONTH 09/30/2022 INCREASE (DECREASE)	AVAILABLE BALANCE NORMAL (ABNORMAL)	% BDGT USED
Fund 206 - FIRE FUND						
Expenditures						
206-000-805.000	METRO FIRE CONTRACT	995,869.00	0.00	0.00	995,869.00	0.00
Total Dept 000		995,869.00	0.00	0.00	995,869.00	0.00
TOTAL EXPENDITURES		995,869.00	0.00	0.00	995,869.00	0.00
Fund 206 - FIRE FUND:						
TOTAL REVENUES		1,206,534.00	0.00	0.00	1,206,534.00	0.00
TOTAL EXPENDITURES		995,869.00	0.00	0.00	995,869.00	0.00
NET OF REVENUES & EXPENDITURES		210,665.00	0.00	0.00	210,665.00	0.00
Fund 207 - POLICE PROTECTION						
Revenues						
Dept 000						
207-000-402.000	CURRENT PROPERTY TAXES	95,756.00	0.00	0.00	95,756.00	0.00
207-000-671.000	MISC REVENUES	11,000.00	0.00	0.00	11,000.00	0.00
Total Dept 000		106,756.00	0.00	0.00	106,756.00	0.00
TOTAL REVENUES		106,756.00	0.00	0.00	106,756.00	0.00
Expenditures						
Dept 000						
207-000-802.000	COMMUNITY POLICING CONTRACT	89,500.00	0.00	0.00	89,500.00	0.00
207-000-956.000	MISCELLANEOUS	1,500.00	750.00	0.00	750.00	50.00
Total Dept 000		91,000.00	750.00	0.00	90,250.00	0.82
TOTAL EXPENDITURES		91,000.00	750.00	0.00	90,250.00	0.82
Fund 207 - POLICE PROTECTION:						
TOTAL REVENUES		106,756.00	0.00	0.00	106,756.00	0.00
TOTAL EXPENDITURES		91,000.00	750.00	0.00	90,250.00	0.82
NET OF REVENUES & EXPENDITURES		15,756.00	(750.00)	0.00	16,506.00	4.76
Fund 208 - PARK FUND						
Revenues						
Dept 000						
208-000-600.000	CONTRIBUTIONS FROM RESIDENTS	3,000.00	2,454.25	447.00	545.75	81.81
208-000-602.004	ENDOWMENT-BAYSIDE	10,000.00	0.00	0.00	10,000.00	0.00
Total Dept 000		13,000.00	2,454.25	447.00	10,545.75	18.88
TOTAL REVENUES		13,000.00	2,454.25	447.00	10,545.75	18.88



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REVENUE AND EXPENDITURE REPORT FOR ACME TOWNSHIP

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PERIOD ENDING 09/30/2022

GL NUMBER	DESCRIPTION	2022-23 AMENDED BUDGET	YTD BALANCE 09/30/2022 NORMAL (ABNORMAL)	ACTIVITY FOR MONTH 09/30/2022 INCREASE (DECREASE)	AVAILABLE BALANCE NORMAL (ABNORMAL)	% BDGT USED
Fund 208 - PARK FUND						
Expenditures						
Dept 000						
208-000-930.000	REPAIRS & MAINT	5,000.00	0.00	0.00	5,000.00	0.00
Total Dept 000		5,000.00	0.00	0.00	5,000.00	0.00
TOTAL EXPENDITURES		5,000.00	0.00	0.00	5,000.00	0.00
Fund 208 - PARK FUND:						
TOTAL REVENUES		13,000.00	2,454.25	447.00	10,545.75	18.88
TOTAL EXPENDITURES		5,000.00	0.00	0.00	5,000.00	0.00
NET OF REVENUES & EXPENDITURES		8,000.00	2,454.25	447.00	5,545.75	30.68
Fund 209 - CEMETERY FUND						
Revenues						
Dept 000						
209-000-643.000	CEMETARY lot &plots	5,000.00	2,800.00	0.00	2,200.00	56.00
209-000-646.000	BURIAL FEE PAYMENTS	4,000.00	2,500.00	500.00	1,500.00	62.50
Total Dept 000		9,000.00	5,300.00	500.00	3,700.00	58.89
TOTAL REVENUES		9,000.00	5,300.00	500.00	3,700.00	58.89
Expenditures						
Dept 000						
209-000-726.000	SUPPLIES & POSTAGE	400.00	241.16	0.00	158.84	60.29
209-000-802.004	CONTRACTED EMPLOYEE SERVICES	7,000.00	0.00	0.00	7,000.00	0.00
209-000-930.000	REPAIRS & MAINT	3,000.00	400.00	0.00	2,600.00	13.33
Total Dept 000		10,400.00	641.16	0.00	9,758.84	6.17
TOTAL EXPENDITURES		10,400.00	641.16	0.00	9,758.84	6.17
Fund 209 - CEMETERY FUND:						
TOTAL REVENUES		9,000.00	5,300.00	500.00	3,700.00	58.89
TOTAL EXPENDITURES		10,400.00	641.16	0.00	9,758.84	6.17
NET OF REVENUES & EXPENDITURES		(1,400.00)	4,658.84	500.00	(6,058.84)	332.77
Fund 210 - AMBULANCE FUND						
Revenues						
Dept 000						
210-000-402.000	CURRENT PROPERTY TAXES	185,000.00	0.00	0.00	185,000.00	0.00
Total Dept 000		185,000.00	0.00	0.00	185,000.00	0.00
TOTAL REVENUES		185,000.00	0.00	0.00	185,000.00	0.00

## PERIOD ENDING 09/30/2022

GL NUMBER	DESCRIPTION	2022-23 AMENDED BUDGET	YTD BALANCE 09/30/2022 NORMAL (ABNORMAL)	ACTIVITY FOR MONTH 09/30/2022 INCREASE (DECREASE)	AVAILABLE BALANCE NORMAL (ABNORMAL)	% BDGT USED
Fund 210 - AMBULANCE FUND						
Expenditures						
Dept 000						
210-000-802.004	CONTRACTED EMPLOYEE SERVICES	185,000.00	92,500.00	0.00	92,500.00	50.00
Total Dept 000		185,000.00	92,500.00	0.00	92,500.00	50.00
TOTAL EXPENDITURES		185,000.00	92,500.00	0.00	92,500.00	50.00
Fund 210 - AMBULANCE FUND:						
TOTAL REVENUES		185,000.00	0.00	0.00	185,000.00	0.00
TOTAL EXPENDITURES		185,000.00	92,500.00	0.00	92,500.00	50.00
NET OF REVENUES & EXPENDITURES		0.00	(92,500.00)	0.00	92,500.00	100.00
Fund 212 - LIQUOR FUND						
Revenues						
Dept 000						
212-000-443.000	LIQUOR LICENSE FEES	11,500.00	9,585.20	0.00	1,914.80	83.35
212-000-665.000	INTEREST ON INVESTMENTS	3.00	0.00	0.00	3.00	0.00
Total Dept 000		11,503.00	9,585.20	0.00	1,917.80	83.33
TOTAL REVENUES		11,503.00	9,585.20	0.00	1,917.80	83.33
Expenditures						
Dept 000						
212-000-999.000	TRANSFER TO OTHER FUNDS	11,000.00	0.00	0.00	11,000.00	0.00
Total Dept 000		11,000.00	0.00	0.00	11,000.00	0.00
TOTAL EXPENDITURES		11,000.00	0.00	0.00	11,000.00	0.00
Fund 212 - LIQUOR FUND:						
TOTAL REVENUES		11,503.00	9,585.20	0.00	1,917.80	83.33
TOTAL EXPENDITURES		11,000.00	0.00	0.00	11,000.00	0.00
NET OF REVENUES & EXPENDITURES		503.00	9,585.20	0.00	(9,082.20)	1,905.61
Fund 225 - FARMLAND PRESERVATION						
Revenues						
Dept 000						
225-000-402.000	CURRENT PROPERTY TAXES	276,435.00	0.00	0.00	276,435.00	0.00
225-000-665.000	INTEREST ON INVESTMENTS	600.00	126.17	0.00	473.83	21.03
Total Dept 000		277,035.00	126.17	0.00	276,908.83	0.05
TOTAL REVENUES		277,035.00	126.17	0.00	276,908.83	0.05

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REVENUE AND EXPENDITURE REPORT FOR ACME TOWNSHIP

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PERIOD ENDING 09/30/2022

GL NUMBER	DESCRIPTION	2022-23	YTD BALANCE	ACTIVITY FOR	AVAILABLE	% BDGT USED
		AMENDED BUDGET	09/30/2022	MONTH 09/30/2022	BALANCE	
Fund 225 - FARMLAND PRESERVATION						
Expenditures						
Dept 000						
225-000-802.002	ATTORNEY SERVICES	8,000.00	282.00	282.00	7,718.00	3.53
225-000-802.004	CONTRACTED EMPLOYEE SERVICES	31,750.00	16,000.00	0.00	15,750.00	50.39
225-000-941.000	PDR PYMT TO LANDOWNERS	220,000.00	0.00	0.00	220,000.00	0.00
225-000-942.000	APPRAISAL EXPENSES	8,200.00	0.00	0.00	8,200.00	0.00
225-000-943.000	TITLE WORK EXPENSES	10,000.00	0.00	0.00	10,000.00	0.00
225-000-944.000	CLOSING EXPENSES	5,000.00	0.00	0.00	5,000.00	0.00
Total Dept 000		282,950.00	16,282.00	282.00	266,668.00	5.75
TOTAL EXPENDITURES		282,950.00	16,282.00	282.00	266,668.00	5.75
Fund 225 - FARMLAND PRESERVATION:						
TOTAL REVENUES		277,035.00	126.17	0.00	276,908.83	0.05
TOTAL EXPENDITURES		282,950.00	16,282.00	282.00	266,668.00	5.75
NET OF REVENUES & EXPENDITURES		(5,915.00)	(16,155.83)	(282.00)	10,240.83	273.13
Fund 282 - ARPA						
Revenues						
Dept 000						
282-000-528.000	FEDERAL GRANT (ARPA)	247,855.00	0.00	0.00	247,855.00	0.00
Total Dept 000		247,855.00	0.00	0.00	247,855.00	0.00
TOTAL REVENUES		247,855.00	0.00	0.00	247,855.00	0.00
Fund 282 - ARPA:						
TOTAL REVENUES		247,855.00	0.00	0.00	247,855.00	0.00
TOTAL EXPENDITURES		0.00	0.00	0.00	0.00	0.00
NET OF REVENUES & EXPENDITURES		247,855.00	0.00	0.00	247,855.00	0.00
Fund 296 - SHORELINE PPRESERVATION						
Revenues						
Dept 000						
296-000-665.000	INTEREST ON INVESTMENTS	0.00	0.11	0.00	(0.11)	100.00
Total Dept 000		0.00	0.11	0.00	(0.11)	100.00
TOTAL REVENUES		0.00	0.11	0.00	(0.11)	100.00
Fund 296 - SHORELINE PPRESERVATION:						
TOTAL REVENUES		0.00	0.11	0.00	(0.11)	100.00
TOTAL EXPENDITURES		0.00	0.00	0.00	0.00	0.00



PERIOD ENDING 09/30/2022

GL NUMBER	DESCRIPTION	2022-23 AMENDED BUDGET	YTD BALANCE 09/30/2022 NORMAL (ABNORMAL)	ACTIVITY FOR MONTH 09/30/2022 INCREASE (DECREASE)	AVAILABLE BALANCE NORMAL (ABNORMAL)	% BDGT USED
Fund 296 - SHORELINE PPRESERVATION						
NET OF REVENUES & EXPENDITURES		0.00	0.11	0.00	(0.11)	100.00
Fund 403 - NAKWEMA TRAILWAY FUND						
Revenues						
Dept 000						
403-000-602.008	IRON BELLE TRAIL FUND	325,000.00	0.00	0.00	325,000.00	0.00
403-000-602.009	MI NATIONAL RESOURSE TRUST FUND	300,000.00	0.00	0.00	300,000.00	0.00
403-000-674.001	TART TRAIL	786,218.00	377,123.85	175,308.27	409,094.15	47.97
403-000-699.000	TRANSFER IN	0.00	300,000.00	0.00	(300,000.00)	100.00
Total Dept 000		1,411,218.00	677,123.85	175,308.27	734,094.15	47.98
TOTAL REVENUES		1,411,218.00	677,123.85	175,308.27	734,094.15	47.98
Expenditures						
Dept 000						
403-000-803.000	PLANNER SERVICES	25,000.00	0.00	0.00	25,000.00	0.00
403-000-930.002	PARKS & RECREATION EXPENDITURE	1,313,100.00	652,172.71	154,079.88	660,927.29	49.67
Total Dept 000		1,338,100.00	652,172.71	154,079.88	685,927.29	48.74
TOTAL EXPENDITURES		1,338,100.00	652,172.71	154,079.88	685,927.29	48.74
Fund 403 - NAKWEMA TRAILWAY FUND:						
TOTAL REVENUES		1,411,218.00	677,123.85	175,308.27	734,094.15	47.98
TOTAL EXPENDITURES		1,338,100.00	652,172.71	154,079.88	685,927.29	48.74
NET OF REVENUES & EXPENDITURES		73,118.00	24,951.14	21,228.39	48,166.86	34.12
Fund 590 - ACME RELIEF SEWER						
Revenues						
Dept 000						
590-000-460.000	USAGE&CONNECTION FEES	902,640.00	190,401.29	0.00	712,238.71	21.09
590-000-633.000	REPLACEMENT	2,500.00	0.00	0.00	2,500.00	0.00
590-000-634.000	IMPROVEMENTS	21,500.00	0.00	0.00	21,500.00	0.00
590-000-665.000	INTEREST ON INVESTMENTS	2,600.00	219.98	0.00	2,380.02	8.46
Total Dept 000		929,240.00	190,621.27	0.00	738,618.73	20.51
TOTAL REVENUES		929,240.00	190,621.27	0.00	738,618.73	20.51
Expenditures						
Dept 000						
590-000-802.002	ATTORNEY SERVICES	1,000.00	0.00	0.00	1,000.00	0.00
590-000-803.003	ENGINEERING SERVICES	34,500.00	0.00	0.00	34,500.00	0.00
590-000-956.001	OPERATING & MAINT EXP	750,000.00	4,384.50	2,257.50	745,615.50	0.58
590-000-956.003	HOCH ROAD #697 EXP	1,200.00	0.00	0.00	1,200.00	0.00
Total Dept 000		786,700.00	4,384.50	2,257.50	782,315.50	0.56

PERIOD ENDING 09/30/2022

GL NUMBER	DESCRIPTION	2022-23 AMENDED BUDGET	YTD BALANCE 09/30/2022 NORMAL (ABNORMAL)	ACTIVITY FOR MONTH 09/30/2022 INCREASE (DECREASE)	AVAILABLE BALANCE NORMAL (ABNORMAL)	% BDGT USED
Fund 590 - ACME RELIEF SEWER						
Expenditures						
TOTAL EXPENDITURES		786,700.00	4,384.50	2,257.50	782,315.50	0.56
Fund 590 - ACME RELIEF SEWER:						
TOTAL REVENUES		929,240.00	190,621.27	0.00	738,618.73	20.51
TOTAL EXPENDITURES		786,700.00	4,384.50	2,257.50	782,315.50	0.56
NET OF REVENUES & EXPENDITURES		142,540.00	186,236.77	(2,257.50)	(43,696.77)	130.66
Fund 591 - WATER FUND- HOPE VILLAGE						
Revenues						
Dept 550 - HOPE VILLAGE- WATER						
591-550-460.000	USAGE&CONNECTION FEES	14,749.00	2,458.93	0.00	12,290.07	16.67
Total Dept 550 - HOPE VILLAGE- WATER		14,749.00	2,458.93	0.00	12,290.07	16.67
TOTAL REVENUES		14,749.00	2,458.93	0.00	12,290.07	16.67
Expenditures						
Dept 550 - HOPE VILLAGE- WATER						
591-550-956.001	OPERATING & MAINT EXP	12,700.00	561.43	0.00	12,138.57	4.42
Total Dept 550 - HOPE VILLAGE- WATER		12,700.00	561.43	0.00	12,138.57	4.42
TOTAL EXPENDITURES		12,700.00	561.43	0.00	12,138.57	4.42
Fund 591 - WATER FUND- HOPE VILLAGE:						
TOTAL REVENUES		14,749.00	2,458.93	0.00	12,290.07	16.67
TOTAL EXPENDITURES		12,700.00	561.43	0.00	12,138.57	4.42
NET OF REVENUES & EXPENDITURES		2,049.00	1,897.50	0.00	151.50	92.61
Fund 703 - CURRENT TAX COLLECTION						
Expenditures						
Dept 000						
703-000-876.000	REFUNDS &OVERPAYMENTS	0.00	(6.01)	(6.82)	6.01	100.00
Total Dept 000		0.00	(6.01)	(6.82)	6.01	100.00
TOTAL EXPENDITURES		0.00	(6.01)	(6.82)	6.01	100.00
Fund 703 - CURRENT TAX COLLECTION:						
TOTAL REVENUES		0.00	0.00	0.00	0.00	0.00
TOTAL EXPENDITURES		0.00	(6.01)	(6.82)	6.01	100.00
NET OF REVENUES & EXPENDITURES		0.00	6.01	6.82	(6.01)	100.00

PERIOD ENDING 09/30/2022

GL NUMBER	DESCRIPTION	2022-23 AMENDED BUDGET	YTD BALANCE 09/30/2022 NORMAL (ABNORMAL)	ACTIVITY FOR MONTH 09/30/2022 INCREASE (DECREASE)	AVAILABLE BALANCE NORMAL (ABNORMAL)	% BDGT USED
Fund 811 - HOLIDAY HILLS AREA IMPROVEMENT						
Revenues						
Dept 000						
811-000-672.000	ASSESSMENTS CURRENT	48,071.00	0.00	0.00	48,071.00	0.00
811-000-672.011	INTEREST ON SPECIAL ASSESSMENTS	15,220.00	0.00	0.00	15,220.00	0.00
811-000-672.020	PREPAID ASSESSMENTS	0.00	5,305.98	2,652.99	(5,305.98)	100.00
Total Dept 000		63,291.00	5,305.98	2,652.99	57,985.02	8.38
TOTAL REVENUES		63,291.00	5,305.98	2,652.99	57,985.02	8.38
Expenditures						
Dept 000						
811-000-995.001	INTEREST on BONDS	18,075.00	9,911.25	0.00	8,163.75	54.83
811-000-997.000	DEBT PAYMENT TO COUNTY	65,000.00	65,000.00	0.00	0.00	100.00
Total Dept 000		83,075.00	74,911.25	0.00	8,163.75	90.17
TOTAL EXPENDITURES		83,075.00	74,911.25	0.00	8,163.75	90.17
Fund 811 - HOLIDAY HILLS AREA IMPROVEMENT:						
TOTAL REVENUES		63,291.00	5,305.98	2,652.99	57,985.02	8.38
TOTAL EXPENDITURES		83,075.00	74,911.25	0.00	8,163.75	90.17
NET OF REVENUES & EXPENDITURES		(19,784.00)	(69,605.27)	2,652.99	49,821.27	351.83
Fund 819 - SPRINGBROOK SAD						
Revenues						
Dept 000						
819-000-672.000	ASSESSMENTS CURRENT	21,310.00	0.00	0.00	21,310.00	0.00
819-000-672.020	PREPAID ASSESSMENTS	0.00	5,580.56	5,580.56	(5,580.56)	100.00
Total Dept 000		21,310.00	5,580.56	5,580.56	15,729.44	26.19
TOTAL REVENUES		21,310.00	5,580.56	5,580.56	15,729.44	26.19
Expenditures						
Dept 000						
819-000-995.001	INTEREST on BONDS	7,000.00	0.00	0.00	7,000.00	0.00
819-000-997.000	DEBT PAYMENT TO COUNTY	25,000.00	0.00	0.00	25,000.00	0.00
Total Dept 000		32,000.00	0.00	0.00	32,000.00	0.00
TOTAL EXPENDITURES		32,000.00	0.00	0.00	32,000.00	0.00
Fund 819 - SPRINGBROOK SAD:						
TOTAL REVENUES		21,310.00	5,580.56	5,580.56	15,729.44	26.19
TOTAL EXPENDITURES		32,000.00	0.00	0.00	32,000.00	0.00



PERIOD ENDING 09/30/2022

GL NUMBER	DESCRIPTION	2022-23 AMENDED BUDGET	YTD BALANCE 09/30/2022 NORMAL (ABNORMAL)	ACTIVITY FOR MONTH 09/30/2022 INCREASE (DECREASE)	AVAILABLE BALANCE NORMAL (ABNORMAL)	% BDGT USED
Fund 819 - SPRINGBROOK SAD						
NET OF REVENUES & EXPENDITURES		(10,690.00)	5,580.56	5,580.56	(16,270.56)	52.20
TOTAL REVENUES - ALL FUNDS		5,501,523.00	1,057,123.10	211,483.98	4,444,399.90	19.22
TOTAL EXPENDITURES - ALL FUNDS		4,821,257.00	1,339,525.38	228,580.27	3,481,731.62	27.78
NET OF REVENUES & EXPENDITURES		680,266.00	(282,402.28)	(17,096.29)	962,668.28	41.51



· **ACME TOWNSHIP PLANNING COMMISSION**  
· **SPECIAL MEETING**  
· **FEAST OF VICTORY CHURCH**  
· **4400 Mt. Hope Road Acme, MI 49610**  
· **August 22, 2022 7:00 p.m.**

**CALL TO ORDER WITH PLEDGE OF ALLEGIANCE 7:00**

**ROLL CALL: Present; Dan Rosa, Dan VanHouten, Jack Challendar, Steve Feringa, Karly Wentzloff, Jean Aukerman, Marcie Timmins**

**Staff Present: John Iacoangeli Planner Beckett & Raeder; Jeff Jocks, Legal counsel; Lindsey Wolf, Acme Planning and Zoning Administrator; Marcie Timmins, recording secretary**

- A. LIMITED PUBLIC COMMENT:** Members of the public may address the Commission regarding any subject of community interest during public comment periods by filling out a Public Comment Card and submitting it to the Secretary. Public comments are limited to three minutes per individual. Comments during other portions of the agenda may or may not be entertained at the moderator's discretion.

Public comment opened at 7:02

Rachelle Babcock- Community on the water between two popular cities. Talked about lifestyle changes throughout the country. People seek out communities like Acme to live in while they have the ability to work at home. Doesn't think the current apartment buildings do the area justice. Talked about wanting new colors and building materials.

Rick Nuffer- Talked about his concern about not understanding the corporation the township is dealing with. Talked about a newspaper article about Scott Chappelle not having a vested interest in the project. His question is what interest, if any, does he or anyone else have that is contingent interest? Would be hesitant going forward without some further investigation.

Brian Kelley- Talked about the failed Strathmore projects, one in Lansing and one in Ann Arbor. Provided the committee copies of the news articles on the projects. Talked about how the projects used other people's money to fund them and the money lost. Does Acme have a credible strategy to make sure that doesn't happen here? He doesn't see it. Concerned that they need the funds from self-storage to fund the housing on this property.

Thinks the late disclosure of the utility trucks storage and additional bay doors should require another public hearing. He believes it is a major change to the plan. Discussed the traffic concerns.

Thinks Acme should apply some of Traverse Cities adult use marijuana scoring rubric to developers in Acme. He read some of the metrics he thought should be applied.

Jim Goran- Requesting a new public hearing for the multiple changes in the conditions and unanswered questions. Questioned what the light industry would do for a healthy apartment neighborhood going in or for the neighbors next door. Asked about the new ordinance 7-17 f.8, that talks about all ingress and egress on self storage sites shall be directly on public streets. This development has a neighborhood in between the public street and the facility. What about the noise, traffic and safety concerns with what is stored. What about conditions for all the other places being built within the buildings. Building ten is also a surprise on the plan.

Rick Adair- Thinks if the developers application meets the current zoning and is in line with the Acme Township master plan then it should probably be approved. Factors he thinks are important. Is it in line with the masterplan, does it meet current zoning, will it bring value to Acme township and does it have the support of Acme township residents.

Jim Stevens - concerns that it is anything but conforming. Going away from everything being done in one phase. Will all these other things happen, Who will operate these facilities? Or is everything being done for a warehouse flip. Feels it is so far out from what commercial flex is.

Dave Sexton- Answered that he would be the proprietor of the pickle ball courts. Here to support Strathmore. Talking with the silver sneakers program to make it available to those over 65 would be able to use it for free.

Jim Novack- President of the Men's Shed. Clarified that he did the initial contact with Strathmore Real estate after seeing an ad. Talked about the demographic the men's shed helps.

Stephen Ezell- Co-founder of Truly Free. Spoke about how great Strathmore is to work with. Talked about the risk of letting the buildings atrophy.  
Public comment closed at 7:28

**APPROVAL OF AGENDA: Motion by Feringa, support by Challendar to approve the agenda with the addition of G.3 Chappelle, G.4 Jamil, G.5 Goran.**

**Motion Carries**

**B. INQUIRY AS TO CONFLICTS OF INTEREST: None**

**C. SPECIAL PRESENTATIONS: None**

**D. RECEIVE AND FILE:**

**1. RECEIVE AND FILE**

**a. None**

**E. APPROVAL OF MINUTES:**

**a. None**

**F. CORRESPONDENCE:**

**1. Fahl**

**2. Goran**

**3. Chappelle-** this was sent to Jeff Jocks, counsel. I was reviewing correspondence for the upcoming PC meeting. I wanted to refute some points made by Jim Goran. Scott Chappelle has no ownership, management, control or decision making capacity of the owner or developer and otherwise has no ability to direct the affairs of their projects. The project and development companies are owned by me and my brother Sam and various unrelated third parties. We are willing to provide a list of owners if that is something you would like to review.

**4. Jamil-** No interest in the Kmart development and question the objective of some criticizing the proposed development. However the character of the developer and his history are relevant to your decision whether to approve their plan. Can they be trusted to do what they say they will do? What does their history say about their integrity and commitment to this community? Are the current owners actually removed from the old one? Is Acme more than just a venue to make money? Two links to articles, one link didn't work.

**5. Goran-** Trustees and planning commissioners we are requesting that a new public hearing is required due to the multiple changes in the proposed application, conditions and the remaining unanswered questions. We believe this is owed to our Windwood Ridge residents and the rest of neighboring residents and business owners. Has there been a compatibility study conducted beyond mixed use PUD ordinance interruption around the introduction of the proposed light industrial operations for this corridor? Has the township insured more than four residential buildings are going to be built before the property is flipped to a self-storage company? Has the township done due diligence on the Strathmore development with the fast changes in management structure that appear to be occurring during the application process. Are we giving too much non conforming variance away to the non owner property developer versus our current property owners needs and wishes? Has compatibility from a business standpoint been looked at? New self storage here and on Arnold Rd. Have Acme officials done enough homework personally before considering this major change in direction for this most visible core property? Building along the Bay in TC and Elk Rapids is booming, have we pushed hard enough to get conforming desirable property values enhancing, PUD vitality intent businesses?

**G. PUBLIC HEARINGS:**

1. None

**H. OLD BUSINESS:**

1. PD 2022-01 Tom's/Kmart – Formal PD Application

Wentzloff- Start with a clarification that building ten is existing.

Aukerman- Disclosed that she had a discussion with John Iacoangeli today about some questions pertaining to the application, self storage and warehousing. He did not know the answers for me. He suggested I call Sarah Keever. I called Sarah and asked my questions, discussed self-storage and warehousing.

Wentzloff asked the council to comment on why we are not weighing personal or applicant considerations. Jocks- Planning commission has a job to review an application that is before it, and review it within the bounds of the zoning ordinance and Michigan law, by making determinations on the standards. Then making the final determination as to whether to approve or deny the project. An applicant comes to the planning commission as the applicant comes. We were told by email today that the person of concern, amongst most of the public, is not involved in the project according to them and that they would provide a list of owners, if we so desire. The question of whether even an applicant who is at the forefront was an admitted felon, if that were the case you review that application under the same standards as anything else. To the extent you are concerned about the financial wherewithal of the applicants, you utilize tools to address that. One of those is found in your proposed conditions right now. In the form of a performance bond. You ask to require a performance bond that ensures that those parts of a project get done, and if not you utilize that bond to carry out the project if that is what you see fit. You ensure though the financial wherewithal of the entity or the applicant is going to be sufficient with virtue of those kinds of tools.

John I.- Went over revisions of the findings.

First one is on number 1) recommended that the applicant secure an agreement with the GTB for the water. In lieu of that they have the right to provide onsite water subject to approval of the township engineer, Grand Traverse building department and metro fire. The building department the engineer and metro fire will ensure if they use onsite water through their well system that there is adequate pressure, capacity and the ability to have fire suppression within the Kmart building plus the apartment buildings. Changed the trail installation the width from twelve to ten feet which was consistent with TART. Their design was number two.

Number three the planning commission had some questions pertaining to the definition of warehousing. Came up with a definition for the warehousing component in the old Kmart building. The space is limited to skilled trade contractors. Wants to strike the word energy and natural resource companies, removed that in a later draft. It would be a space limited to; skilled contractors, research and development, e-commerce or omni-channel retailers that handle distribution or fulfillment operations. Delivery related businesses, and start up businesses. Excluding bulk storage of materials that are flammable or explosive, or present hazards or conditions commonly recognized as offensive. An Omni channel retailer is a retailer that has a brick and mortar store as well as an e-commerce business. An example would be Talbots, they have a brick and mortar store and a catalog, Walmart is an omni-channel retailer, they have a brick and mortar store and internet sales. Changed the warehousing definition to be much more targeted to the uses that the planning commission was talking about going into the building. The planning commission has the authority to do that because this is a planned development.

Number 8 was the next finding to be changed. Jeff, myself and Lindsey thought it would be better to have a performance bond that was tied to the construction and completion of four apartment buildings and would be tied to the occupancy of the Kmart building. Once any of the four our build then the performance bond would be reduced proportionally.

In number 11 we added a condition that if there is an interest in leasing the Kmart building to an e-commerce or omni-channel retailer that they could substitute the indoor storage and warehousing space as long as the trip generation does not exceed the trip generation of the former Tom's and Kmart building which was in the Fishbeck traffic assessment. Same condition that we set up for condition



number 10. If there were to be a free standing retail and or restaurant that came on to the project site they could be substituted with a residential building, without having to go back through the approval process.

Number 14 we changed the bicycle parking based on requirements of one bicycle parking space per six dwelling units. One bicycle parking space for every 2000 gross sq. ft. of office space. One space for every 5000 gross sq ft. of retail and one bicycle space for every 10,000 gross sq. ft. of warehousing distribution. We added those up to about 42 bicycle parking spaces for the development. Those were the changes based on the planning commission discussion that took place two weeks ago.

Rosa- Concern about the addition of the skilled tradesman area at the back of the building. Concerned about the traffic in the area. How will they get to their businesses in the back of the building? Wonders how enforcement can happen to ensure they take Shore Rd. instead of cutting through the apartments. Worried about pedestrians and vehicular traffic mixing.

Keever- Discussed the access management plan. The businesses would be required to take a planned route off Shore Rd. It is part of their lease agreement.

Wentzloff asked about the cost of the concrete for the TART trail and what would happen if TART didn't have the budget for it.

Keever- addressed that the developer is responsible for the construction of the trail. Ten foot concrete trail from property line to property line.

John I. corrected the language in the suggested motion.

Challendar- addressed the hours of operation for trucks in the back area of the building.

Feringa addressed the water agreement. It is drafted and going before tribal council but he is not sure when.

Aukerman- Suggested a language change to, distribution and fulfillment operations of ecommerce of omni-channel retailers because that is what truly free is as opposed to talking about them as warehousing space. Thought the distinction should be made.

John I.- clarified that if an ecommerce business had a need for distribution and fulfillment operations they could go into the warehousing portion. That is what the intent was.

Aukerman- under 8, use of performance bond. Referenced Jacob Chappelles letter. Does it change how we use the performance bonds?

John I.- recommendation to still use the performance bond, that is the metric to measure the balance between the renovation of the Kmart building and the development of the apartments.

Wentzloff- questioned if something is written in a lease how does the township know that is followed through on when we don't see the lease?

John I- recommended adding a condition that would include submitting copies of the lease.

Wentzloff- what she likes least in terms of compatible uses with the PD is the warehousing. Hard to see a bunch of apartments next to that. Would be more comfortable with the definition of warehousing in the development being more narrow. Concerned about the noise and storage of vehicles. The warehousing definition is to her the most important part. Went over wording. Also concerned that it feels more phased

than not.

Keever- hours of operation would be similar to how the Kmart operated.

Discussion followed about the hours of operation for the warehousing. Hours of 7- 7 and no Sundays was agreed upon.

Planning commission discussed how having the self-storage allowed for fewer parking spots needed thus enabling more green space and housing to be on the site.

John I. -went over the changes to the conditions in the suggested motion.

**Motion by Feringa support by Challendar to**

**move that the Planning commission incorporate and adopt Beckett & Raeder's proposed findings concerning the SH East Bay Holdings South LLC application for PD 2022-01 and recommend approval to the township board. In doing so the Planning Commission finds the the proposed PD 2022-01 does meet the requirements of the Acme Township Zoning Ordinance for a Planned Development on the former Kmart property, 6455 US-31N, Parcel NO28-01-234-036-00 and Tom's Market property, 6261 US-31N, Parcel No 28-01-234-035-00 based on the Conceptual Layout Plan dated, 07-25-2022. The approval shall allow for indoor storage and warehousing in the former Kmart Building and residential uses on the first floor with the following conditions:**

- 1) That the applicant secure an agreement for the extension of water to the PD site with the Grand Traverse Band of Ottawa and Chippewa Indians, or provide on-site water subject to the approval by the Township Engineer, Grand Traverse Building Department, and Metro Fire.**
- 2) That the Applicant provide an easement to the TART Trails, Inc and for the installation of a 10-foot-wide concrete trail on the applicant property adjacent to the US-31 right-of-way. The width of the easement shall be determined and executed between the parties and recorded with a copy of the recorded easement provided to the Township as part of the site plan approval.**
- 3) Warehousing space in the former Kmart building shall not exceed 24,450 square feet.**
  - a) Warehousing in the instance of this PD application shall be defined as, A space limited to skilled trade contractors, research and development, e-commerce or omni-channel retailers, distribution and fulfillment operations for ecommerce or omni-channel retailers, delivery related businesses and start up businesses. Excluding bulk storage of materials that are inflammable or explosive, or that present hazardous conditions commonly recognized as offensive.**
- 4) Parking of vehicles that are associated with a warehouse on-site tenant may be parked inside the building.**
- 5) There shall be no outdoor storage of any materials or products on the PD premises with the exception of enclosed outdoor dumpsters and recycling bins.**
- 6) Indoor storage of boats, recreational vehicles, ATV's, OTR's, cars, and trucks is prohibited in the warehousing and indoor storage areas.**
- 7) Indoor storage shall not exceed 35,800 square feet.**
- 8) To ensure there is a balance in the overall development between redevelopment of the former Kmart building and the residential apartments, applicant shall provide a performance bond equal to the costs to complete no less than four (4) of the residential apartment buildings. The performance bond must be provided prior to the issuance of a land use permit for the redevelopment of the former Kmart building. Applicant may provide more than one bond which when added together totals the costs to complete. The Township will release and return a bond that was provided for a specific building or buildings when they are completed.**

- 9) Site lighting shall be painted black, utilized LED as a light source meeting dark sky standards and not to exceed twenty-two feet in height.
- 10) In the event there is interest to build on a PD site freestanding retail and/or restaurant the applicant shall be able to substitute residential building sites for these uses as long as the trip generation does not exceed the trip generated by the former Tom's Market and Kmart as enumerated in the Traffic Impact Study prepared by Fishbeck, dated May 3, 2022.
- 11) In the event there is interest to lease in the Kmart Building e-commerce or omni-channel retailers the applicant shall be able to substitute the indoor storage and warehousing spaces for these uses as long as the trip generation does not exceed the trip generated by the former Tom's Market and Kmart as enumerated in the Traffic Impact Study prepared by Fishbeck, dated May 3, 2022.
- 12) Sidewalks should be designed based on Section 6.3, Non-motorized Transportation of the new zoning code effective July 31, 2022.
- 13) Snow storage shall be provided with on-site snow storage areas in addition to the required off-street parking area. Snow storage areas shall be provided on the ratio of fifteen (15) square feet per one hundred (100) square feet of off-street parking area. Snow storage areas shall be located in such a manner that doesn not obstruct required clear vision areas.
- 14) Bicycle parking shall be required on-site. Minimum bicycle parking shall equate to 1 bicycle parking space for every six(6) dwelling units, 1 bicycle parking space per 2,000 gross square feet of office, 1 bicycle parking space per 5,000 gross square feet of retail, and 1 bicycle parking space per 10,000 gross square feet of warehousing distribution.
- 15) Residential apartment units shall be rented at least on a six-month basis or more. NO short term rentals (STR's) shall be allowed.
- 16) Any proposed change of use from apartments to some other type of building, including but not limited to, condominiums, shall require a major amendment of this PD.
- 17) The warehousing tenants shall be required to comply with the access management plan and the applicant shall submit a model lease to the township for review and approval by the township attorney.
- 18) Hours of operation for the warehousing shall be 7am - 7pm with no Sunday deliveries.
- 19) Parking for warehousing staff shall be on the West and North side, back of the building only.

Friendly amendment to item 3, definition of warehousing would be a space limited to skilled trade contractors, research and development. The energy and natural resource companies would be removed.

Feringa revised the motion to strike energy and natural resource companies out of item 3. Challendar supports.

Wentzloff- parking for the warehousing operators, would it be possible to include in the condition that they would be parking in other outside vehicles back by the warehousing?

Feringa revised motion number 19) Parking for warehousing staff shall be on the West and North side, back of the building only. Challendar supports

Roll call vote

Rosa - yes, VanHouten - yes, Challendar - yes, Feringa - yes, Wentzloff - yes, Aukerman - yes, Timmins - yes

Motion carries

**I. NEW BUSINESS:**

1. None

**J. PUBLIC COMMENT & OTHER PC BUSINESS**

**Public comment opened at 8:46pm**

Jim Goran- Is disappointed with the recommendation. Feels self storage is the mobile homes of the businesses that they are putting in here. He thinks it is the wrong call for the neighborhood. What will keep the self-storage from growing more? Didn't seem to answer the question. Wondered why there were more specific conditions put in to not be able to increase the self storage amount. When is the board meeting going to be when they will look at this?

Robert Wasieleski-Suggest that the board learn more about e- fulfillment businesses before deciding anything. They are cyclical in nature.

Brain Kelley- Was at all the PUD planning meetings for the ordinance, this is not what was discussed at those meetings. The PUD planning ordinance was all about protecting open space and about anti sprawl. This is in fact sprawl of warehousing and sprawl of self-storage.

Talked about the performance bond not being enough to ensure the project gets done. Concerned we are only bonding four buildings. When will all nine buildings be occupiable? Worried the lease restrictions won't be enough to keep trucks from driving through the residential areas.

Jim Stevens- When will the board meeting be that the Strathmore project will be voted on.

Wentzloff- Directed them to look on-line or call Doug White to get an exact date.

Public comment closed at 8:56pm

1. Planning & Zoning Administrator Report – Lindsey Wolf- Thanked the folks at Feast of Victory for accommodating us at such short notice. Thanked the Planning commission for making the back to back meetings work all month.
2. Township Board Report – Jean Aukerman- None
3. Parks & Trails Committee Report –

**ADJOURN: Motion by Timmins, support by VanHouten to adjourn.**

**Motion carries**





· **ACME TOWNSHIP PLANNING COMMISSION MEETING**  
· **ACME TOWNSHIP HALL**  
· **6042 Acme Road Williamsburg, MI 49690**  
· **October 10, 2022 7:00 p.m.**

**CALL TO ORDER WITH PLEDGE OF ALLEGIANCE 7:01**

**ROLL CALL: Present- Dan Rosa, Jack Challender, Dan VanHouten, Steve Feringa, Karly Wentzloff, Marcie Timmins, Jean Aukerman**

**Staff Present; Lindsey Wolf, Planning and Zoning Administrator; Jeff Jocks, Legal Counsel; Marcie Timmins, Recording Secretary.**

- A. LIMITED PUBLIC COMMENT:** Members of the public may address the Commission regarding any subject of community interest during public comment periods by filling out a Public Comment Card and submitting it to the Secretary. Public comments are limited to three minutes per individual. Comments during other portions of the agenda may or may not be entertained at the moderator's discretion.

Public comment opened at 7:01m

Brian Kelley- Believes all the project information should come out long enough before the public hearing that the public has sufficient time to review it all. Having a site plan review before having the public hearing. He thinks it is a great project. Worried about fertilizer infiltration in the wetlands, creeks and aquifers. Concerned about the amount of fertilizers being used. Would like more information about the tank capacity and the capacity for vehicle washing and fertilizer spills in the outdoor storage site/washing station. Wet area on the west side of the property by the maintenance building, would like to know what is happening in that area.

Public comment closed at 7:06

- B. APPROVAL OF AGENDA: Motion by Feringa, second by Timmins to approve the agenda with the addition of G.2 - Goran Motion Carries**
- C. INQUIRY AS TO CONFLICTS OF INTEREST: none**
- D. SPECIAL PRESENTATIONS: none**

Wentzloff discussed Jim Goran's correspondence request concerning the 8/22/22 meeting minutes.

**E. RECEIVE AND FILE:**

**1. RECEIVE AND FILE**

- a. Approved Board Meeting Minutes 9.6.22**

**Motion by Timmins, second by Aukerman to approve the Board meeting minutes from 9-6-22 Motion carries**

**F. APPROVAL OF MINUTES:**

- a. Approve Draft Planning Commission Special Meeting Minutes 8.22.22-**  
Timmins- corrected typos. Challenders name was corrected and on page 3 second to the last paragraph, last sentence, changing "Four our build" to "four are built"  
Feringa- page 3 second paragraph under Wentzloff spelling of "council" to "counsel"  
**Motion by Aukerman, second by VanHouten to approve the Draft planning commission special meeting minutes from 8/22/22 with changes mentioned. Motion carries**
- b. Approve Draft Planning Commission Meeting Minutes 9.12.22-**  
Timmins- one correction, top of page 2 under Aukerman. Changing "forty screws" to " forty acres"  
**Motion by Feringa, second by Timmins to approve the draft planning commission meeting minutes from 9-12-22 with changes mentioned.**

**G. CORRESPONDENCE:**

1. **Haggards-** Supports the Highpointe golf club
2. **Goran-** can you please update the record correction per actual audio: Wentzloff read into the record the area of audio he was asking to correct pertaining to Steve Ezell's introduction at the 8/22/22 meeting.

Discussion ensued as to whether or not all of the information for the Highpointe golf course was turned in on time or if the public hearing should be continued forward to the November PC meeting as was discussed at the September meeting.

Wolf- 99% of what was requested was received. Jozwiak will be talking about the fertilizer applications and narrative on the aquifers. Some of the outstanding things will be discussed tonight to satisfy the requirements for the record. There were also additional landscaping items and questions Jozwiak will be updating the PC on this evening as well.

Jozwiak- The only thing they didn't have was the landscaping in one other quadrinat, which was something new and the aquifer analysis, came from a public comment and they were able to have their engineer provide a response to.

Wolf- they still need to go out to that quadrant and count the number of trees to see if existing trees will satisfy the requirements.

Jozwiak- Went over the original Highpointe golf course layout and compared it to what the new boundary will be. They will be utilizing the existing holes that are there with some reshaping. The maintenance building will be in Acme, with the new club house and cabins in Whitewater township.

Proposing a new driveway off Bates Rd. for the maintenance building. Some tree removal around a few holes they will be shaping. Most of it they are working with the existing terrain and just reseeding and sodding.

Maintenance building will consist of a few different structures, the building being the primary one. Where the equipment is stored and repairs are made. Will also house offices and supplies. A smaller building will hold cold storage for fertilizer. They have a dumpster pad and some bunkers for sand traps.

There is a new facility - the environmental center pavilion, like the one they have at the Walloon Lake country club. It will house a fuel center, chemical containment, and vehicle wash. There are drains with a reclaiming system under the unit. It is a closed loop recycling system. It is filled in the spring and emptied in the fall. The company is Waste to Water. The only time you add water is when you replenish the system. There is a full scale treatment system within the station. There is a bacteria treatment put in there to keep the system balanced.

Wolf- went over the staff report- Things in red were from the previous report. Items in blue are questions that have been partially or fully satisfied or are in need of more elaboration.

Also spoke with Ryan, he used to work with Gene at the Grand Traverse Resort, about the fertilizer runoff near the wetlands. He agrees that the way the applicant is dealing with the runoff near the wetlands and vegetation is appropriate. Ryan couldn't elaborate how the fertilizer applications would remain on sight as opposed to leaching off the property. Wolf believes that is an important fact for the PC and public to understand. There are also the landscaping items she spoke about earlier in the meeting that need to be indicated on the plan set as well.

Wentzloff asked if the recommendation was to still continue the public hearing at the November meeting.

Wolf- Jocks thought that was appropriate since the public didn't get a chance to review the complete standards.

in open.

## **H. PUBLIC HEARINGS:**

### **1. SUP/SPR 2022-03 High Pointe Golf Course**

Public hearing opened at 7:37

Brian Kelley- talked about Whitewater townships continuing moratorium on applications and reviews. Where the maintenance building is planned is where the possible wet area is which may have some challenging soils. Likes the environmental center and some of the cautions. He wonders what the tank capacity is for it.

Talked about the master plan cornerstone that addresses maintaining and improving ground and surface water around the township. Building blocks continue to be working with the watershed center and Grand Traverse Bay Ottawa and Chippewa Indians on e coli and other quality monitoring in East Bay, Acme and Yuma creeks. Found many Scholarly best management practices online, thinks best practices should be used on this golf course and they should be part of the conditions. Wants to make sure we protect the watershed. Thinks this could use an extra pair of eyes on the project.

Dennis Arouca- Is from Traverse City, supports the Highpointe golf project. He has three reasons to green light the project. 1) golf is good for local philanthropy, golf courses host many events to raise money for nonprofits. 2) Good for the local economy. 3) Good for the environment - most new follow the audubon sanctuary for golf courses.

Casey Cowell- From Traverse City. Supports the High Pointe Golf course project.

Adam Shriver- Supports the golf project. Knows from personal experience how much golf can change peoples lives.

Stephanie Slawnik- Supports the Highpointe golf project, her husband is part of the building team and this project would allow him to be home while this project is being built.

Wentzloff went over the options for the motion concerning the public hearing. Discussion with Jozwiak followed over the continuation of the public hearing.

Jozwiak- talked about bringing Gosling Czubak on to the project to help with all of the environmental concerns. Wants to clarify what the township was looking for, feels like the bar is shifting a little bit.

Jocks-As he understood it when the information was sent to him the application was not complete from the staff review.

Jozwiak- is concerned with the information about the fertilizer leaving the property, not saying that will happen. He is confused as to how that would be proved.

Discussion followed as to the completeness of the application.

Wentzloff did a straw poll of the PC members' opinions.

Feringa went over the Staff Report, and all of the different sections that had not yet been satisfied or were only partially satisfied when Lindsey initially wrote the staff report. Also listed the four bullet points 1) Landscape buffer and screening 2) right of way landscaping 3) existing tree

inventory and 4) concerns about fertilizer leaving the property boundaries. Two of the four are still outstanding.

Discussion about landscaping followed and what the ordinance says about screening the sides that don't border agricultural uses.

Jozwiak- will agree to doing a buffer if that is necessary.

**Motion by Timmins support by Rosa to continue the public hearing at the November 14th meeting.**

**Friendly amendment by Timmins, to continue the public hearing either at the November 14th PC meeting or a date requested by the applicant.**

**Rosa accepts the amendment**

**Roll call vote- Aukerman - yes, Timmins - yes, Feringa- yes, Wentzloff- yes, VanHouten-No, Challendar-yes, Rosa-yes**

**Motion carries**

## **I. OLD BUSINESS:**

### **1. SUP/SPR 2022-03 High Pointe Golf Course -**

Jozwiak - asked for clarification about the areas that will need buffering to the North of the maintenance shed.

Wentzloff- asked Wolf what would satisfy the conditions of 6.4.4

Wolf- that area is fine, she is more concerned with the existing area bordering the side and rear property lines.

Wentzloff- clarified the north area is a side property line.

Wolf- a green belt consists of one deciduous or evergreen tree and six shrubs or every forty lineal feet. They can be clustered on approval of the planning commission.

Jozwiak- asked if he could cluster trees.

PC agreed the trees could be clustered.

Jozwiak clarified how the trees should be counted

Wentzloff - a buffer is 20 ft. so count all the trees within the 20 ft.

Jozwiak - talked about the aquifer. Explained the process when you have a well that pulls more than seventy gallons a minute. It gets kicked to a secondary review by EGLE and they have a program where you input your data and get a letter grading. Roger has done that and they were given an A rating on a 400 gal. a minute well. This takes into consideration all the other wells in the area.

Wentzloff- that area looks good.

Rosa- question is it possible, with technology, to come up with a number that shows it is not running off this property based on the topography off the land and weather events?

Gene- Not for all those factors, unless you wanted to be diligent and do soil samples on an hourly basis to figure it out. Last time he spoke he explained about the minimalist design that translates down the road to maintenance as well. Tom's design renders a minimalist input sort of golf course. The vast majority of the property that will be developed will be unmaintained turf, it really won't have any inputs whatsoever. A well

established stand of turf grass is the best defense against run off and any sort of leaching. The areas of input will be mostly far away from the edges of the property and with the Fescud grass which will require even less inputs. The perception of golf courses being polluters is so wrong, especially in this area where waterways are so abundant. He doesn't know how it is possible to quantify amounts that may permeate and cross property lines.

Wentzloff- asked if he could speak to any best practices management( BMP) that will be used?

Gene- Golf Course Superintendent Association of America which is our nation chapter. Their big initiative over the last two years is to create a BMP for the nation. It provides golf courses the template of BMP and a really cool tool that one can go online and tailor it to individual properties. Highpointe golf course does not yet have their specific BMP in place. That is something that would be done down the line.

Timmins wanted to clarify that they know about the township's native plant ordinance and are using Native plants, not just non invasive ones as there is a middle ground.

Jozwiak - asked for clarification as to what was needed for the next meeting.

Wentzloff- Aquifer and fertilizer are good, they need to go count trees along the property lines and show landscaping. We need to know what is on the plan.

#### **J. NEW BUSINESS:**

1. Accessory Dwelling Unit Discussion - Will be moving this to the November meeting before we talk about it.

Wolf- did give a handout that was specific to Grand Traverse County, but not specific to Acme. Would like to get someone from Housing North to come in and talk to the township and see if they have any data on Acme.

Aukerman- would like to make sure we identify the problem in the area before we jump into a solution space as other housing could fill the needs of the township in a better way.

Wentzloff- thinks this is a good first step in identifying the problem. Would like to also get some information to provide to the PC for some other housing options.

#### **K. PUBLIC COMMENT & OTHER PC BUSINESS**

**Public comment open - 8:56**

**Brian Kelley-** Doesn't understand how the fertilizer issue can be considered resolved. The township needs to depend on subject matter experts. Talked about using hydrologic modeling and contour modeling to monitor the fertilizer issue. As well as using vegetated wetlands and riparian buffers. Using BMP's as a guide, and ask an expert what to do. Referred to item 3 in the master plan that refers to the use of riparian buffers near environmentally sensitive areas. Quoted the Michigan zoning and enabling act, about the conditions proposed for shoreline areas.

Planning & Zoning Administrator Report – Lindsey Wolf- Self storage was not ready yet for review and still had some outstanding items. There is a special meeting for the Strathmore public hearing on Oct. 17th at the feast of victory. Township is looking to get Lindsey an assistant.

1. Township Board Report – Jean Aukerman- the personnel committee has been looking at an assistant for Lindsey for a few months. Job description is already written. They will also be doing special projects for the supervisor, clerk and treasurer as needed.
2. Parks & Trails Committee Report – Wentzloff is no longer on the committee. Her replacement has

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been appointed. Acme connector trail grand opening October 25th at 4:30pm over by the Meijer roundabout, people can park in the back of the Meijer parking lot.

**ADJOURN: Motion by Feringa, second by Timmins to adjourn.**  
**Motion carries**



· **ACME TOWNSHIP PLANNING COMMISSION MEETING**  
 · **ACME TOWNSHIP HALL**  
 · **6042 Acme Road Williamsburg, MI 49690**  
 · **September 12, 2022 7:00 p.m.**

**CALL TO ORDER WITH PLEDGE OF ALLEGIANCE** Opened at 7:00

**ROLL CALL: Present:** Karly Wentzloff, Jean Aukerman, Dan Rosa, Dan VanHouten, Jack Challender, Steve Feringa, Marcie Timmins

**Staff Present:** Lindsey Wolf, Acme Planning and Zoning Administrator; Marcie Timmins, Recording Secretary

- A. LIMITED PUBLIC COMMENT:** Members of the public may address the Commission regarding any subject of community interest during public comment periods by filling out a Public Comment Card and submitting it to the Secretary. Public comments are limited to three minutes per individual. Comments during other portions of the agenda may or may not be entertained at the moderator's discretion

Public Comment opened at 7:02

Lowel Gruman- Traverse City Resident. Managing partner of venture capital firm Boomerang Catapult. Here to support the character of Rod Trump, a friend of his. Rod is the President of the Pine Tree Club down in Florida. He has played many of Tom Doak's golf course designs.

Francis Gingraas- Supports the redevelopment of High Pointe Golf Course. He thinks it is a good addition to our infrastructure.

Brian Kelley- Nice to see the course coming back to Acme; thinks it's good growth in the community. Talked about the fragile watershed in the community. Pointed out the wetlands at the south hole and thinks a third party delineation is warranted there. Talked about how groundwater varies and about knowing where the groundwater is onsite. Worried about the fertilizers used on the golf course making it into Yuba creek via the wetlands and underground springs on the property. Believes the site could use some low impact stormwater techniques to create a safety buffer.

Public comment closed 7:09

- B. APPROVAL OF AGENDA:** Motion by Feringa, support by Timmins to approve the agenda with the removal of item F. a.(approve planning commission special meeting minutes 7-26-22) and the addition of correspondence G. 3 Kelley  
**Motion carries**

- C. INQUIRY AS TO CONFLICTS OF INTEREST:**none

- D. SPECIAL PRESENTATIONS:** none

- E. RECEIVE AND FILE:**

- 1. RECEIVE AND FILE**

- a.** Approved Board Meeting Minutes 8.9.22

**Motion by Timmins, support by Aukerman to receive and file the board meeting minutes. 8/9/22.**

**Motion carries**

- F. APPROVAL OF MINUTES:**

- a.** Approve Draft Planning Commission Meeting Minutes 8.8.22

Timmins corrections- Page 1 . A change G.8 to F.8. Page .2 last sentence change the word and to in for instead. Page.3 change elections to electricians and under that, Rose to Rosa. Page 5, change Joe Chappelle to Jacob Chappelle, and capitalize Jocks.

**Motion by VanHouten, support by Challender to approve draft planning commission meeting minutes from 8-8-22 with the added corrections mentioned above.**

If you are planning to attend and are physically challenged, requiring any special assistance, please notify Lisa Swanson, Clerk, within 24 hours of the meeting at 938-1350.

- b. Approve Draft Planning Commission Special Meeting Minutes 8.15.22

VanHouten- name is spelled wrong.

Aukerman- asked about changing the motion to rezone the forty acres from B-4 material processing to A-1 to a roll call vote. Five yes votes would be Aukerman, Challendar, Feringa, Rosa, Wentzloff. The no, would be VanHouten.

Challendar - name spelled wrong too.

**Motion by Timmins support by Aukerman to approve draft planning commission special meeting from 8-15-22 with above mentioned corrections.**

**Motion carries**

**G. CORRESPONDENCE:**

1. Kelley

2. Silk

3. **Kelley**- Kelley stated that since this item is not on the agenda he is fine with holding it for the next meeting.

Wentzloff- since it came in today before the correspondence was cut off it is part of this agenda. Wentzloff read the letter into record. Letter is attached. Summary of the letter is to draw attention to cornerstone on page 53 of the Acme Master Plan Update. It specifically references collaboration with the Watershed to protect our water resources. Encourages the PC to fully collaborate with the Watershed Center in the creation of the zoning ordinance overlay protections, and the stormwater ordinance.

**H. PUBLIC HEARINGS:**

1. None

**I. OLD BUSINESS:**

1. None

**J. NEW BUSINESS:**

1. SUP/SPR 2022-03 High Pointe Golf Course

Scott Jozwiak - is the project engineer.

Tom Doak - Golf Course Architect, original architect of the project 35 years ago.

Gene Davis- Golf Course Superintendent and Gm of the Elk Rapids golf club, acting as an advisor for this project.

Rod Trump- Working with Tom on the project

Jozwiak- contacted by Rod Trump a few months ago about this project. Tom agreed to come back and work on the project too. He is excited about this project.

Went over what the original golf course was like and where things used to be placed.

Went over what it looks like today with the Hops farm now in place on the old front nine. They have identified a new piece of property and will be re-developing the holes so that it is quasi "T" shaped property. They are taking out a half acre of hops. Property goes from Bates Rd. to Moore Rd. and down to Ag. land and state land down at the bottom. On Bates Rd, and all of Acme township they will only have one structure off Bates Rd. the maintenance building. Eventually there will be a pavilion building in the middle of the course, between holes nine and ten. That will be in the future once they fully establish what it will look like. Whitewater township is where the clubhouse, training facility and some cabins will be. Meeting with Whitewater tomorrow (September 13th.) to go over their application. The existing clubhouse will stay on the hops farm property; they won't reuse that. Went over the layout of the course. Identified the areas in dark shaded areas of where major earth moving will be taking place and where trees will be cleared.

Since the maintenance building is the main structure in Acme, focus was on the stormwater and design of that facility. Went over the building and what will be in it: fertilizer storage, break room, equipment, bathrooms for employees. Went over stormwater containment in a valley

below it. Asked about right-of-way landscaping along Bates Rd. and how much the township wanted in that area. Addressed the path crossings on Arnold Rd. from Lindsey's review. Discussed with the Road Commission they are fine with having the crossings, they just can't pave through the dry portion of the two tracks. They will directionally drill the irrigation line under the right of way.

Rod Trump- Talked about how he happened upon the project. He talked with Tom Doak and he agreed to work on the project if he could make something come of it. Purchased the piece of land next to the adjacent piece of property to the original golf course. Talked about the change in Acme's township zoning ordinance that changed in July to allow golf courses in the Agricultural district that gave them another piece of the path forward to bring this project back. They see a viable path forward to bring great things to the community.

Tom Doak- Golf course architect. High Pointe is the course he built on his own, and would really mean a lot to him to work on the project. Went over the grading and earthwork on the property. Not much earthwork is needed where the original back nine holes are located. Some reconfiguring of hole 18. It is a matter of re-irrigating the area to get the grass re-established. The back holes will need irrigation and reseeding. Three or four holes where some clearing is required. He went over the areas with the PC. Tries to use a piece of land as best he can without doing too much major work on the fareways and just using what is there. They do have to flatten land for hills and build bunkers.

Discussed area close to the maintenance building that doesn't surface drain water from the area; it is an isolated area on the property. They would like to get started on it next spring. He thinks it would be open by 2025.

Wolf- asked if the pathways will be new or rebuilt.

Doak-Some are missing pavers but they will be rebuilding previous paths where pavers were taken out.

Wolf-Briefly went over the staff report of what was already addressed by the applicant during this meeting. Confident they will get all of the needed information back to the PC.

Questioned how it will work with our stormwater ordinance when Whitewater township doesn't have a stormwater ordinance. She will be talking to Bob Verschaeve to make sure what they do in Whitewater doesn't impact Acme.

Once they give all the other needed information she can conduct her site plan review. She will be able to provide something more thorough for the planning commission.

Jozwiak- asked what more items are needed for the environmental aspect of it.

Wolf-Better illustrations of what will and won't be touched on the property. Asked for a 24 x 36 plan set for the office to review before the next meeting and about fertilizer storage and management.

Jozwiak- The person managing fertilizer is here tonight if we want to tackle that.

Timmins and Aukerman have questions about fertilizers.

Davis- General manager and superintendent of Elk Rapids golf club. Has a bachelor of science from Michigan State, turf grass program. I am a grass grower not a wetlands expert or even an architecture expert.

Discussion followed with questions concerning use of fertilizers with phosphates as well as protecting the wetlands from fertilizer runoff. Discussed how phosphate fertilizers are used more in the first two or three years as opposed to when a maintenance plan is established. Talked about using fertilizer applications that lessen the loss of fertilizers to areas they don't want treated.

Jozwiak- Said there are only two wetland areas that may be affected. One is by where the old eighteenth hole was and one near the sixteenth hole and a kind of wooded wetland on the new forty acres to the south that they do need to get a delineation on. He assumes when they do the erosion control permits there will be sediment control basins put there to stop anything from washing into the wetland and they would also stop fertilizer runoff. They could even leave them for a couple years, as they will just be dirt berms that they can knock down later.

Doak- talked about the project using fescue grass on the fine turf areas; greens, tees and fairways. Native grass will be used on the outside areas which is great for filtration and erosion control. Fescue grass needs very little to keep it in top shape for play.

Davis- talked about the safety regulations of the fertilizer industry as it applies to the storage and mixing of fertilizers in the maintenance building. The Michigan Turfgrass Environmental Stewardship Program is prevalent in the golf world and in Michigan. They have a very strict benchmark of the storage of fertilizers. He believes the club would be part of this program.

Discussed the "fertiligation" system of application and they don't use it. It is not the most effective way to get the fertilizers where you want. Much is wasted.

Discussed the planting of native plants around the wetlands to stop runoff. The Michigan Turfgrass Environmental StewardShip Program calls that the buffer zones. They recommend varying levels of grasses, like mesh on a screen.

Discussed timeline for a public hearing.

Wentloff would like a more complete packet and a public hearing in November.

Trump- Was led to believe that from the new zoning ordinance that the timeline would be 60 days.

Wentloff- is apprehensive to schedule a public hearing without complete information for the public to review.

Wolf - would need the information by September 23rd. in order to schedule a public hearing for the October PC meeting. They can also schedule a special meeting if needed, it is \$1000.00.

**Motion by Aukerman, support by Challendar to set a public hearing for the October 10th. planning commission meeting.**

**Discussion- Wentloff reiterated that if we don't have the information, she will make sure people have enough time to review it.**

**Motion carries.**

## **K. PUBLIC COMMENT & OTHER PC BUSINESS**

**Public comment open at 8:16**

**Kelley- hopes the golf course has good buffer zones for the fertilizer runoff to be controlled. Believes this is the Yuba creek watershed not Acme creek. Yuba creek is spring-fed.**

**Wants to talk about site plan review standards, section 8.4. His impression from the staff report and looking at the packet is that the materials here didn't meet the requirements. Reminds him of Flint Fields and lack of information.**

**Glenn Arnold- Question about where the water for irrigation is coming from? Will there be new wells**

If you are planning to attend and are physically challenged, requiring any special assistance, please notify Lisa Swanson, Clerk, within 24 hours of the meeting at 938-1350.



**drilled? The southern wetlands use to have a pond back there and the water in the spring can still get very high. He is worried his water will be compromised.**

**Wentzloff confirmed that the two original wells will stay with the golf course and two new wells are being drilled for the Hop farm.**

**Public comment closed at 8:21**

- 1.** Planning & Zoning Administrator Report – Lindsey Wolf- talked about the handouts for Accessory Dwelling Units and the seminars she virtually attended. Giving the PC a heads up before it comes before the PC on the agenda. She will be looking to see what other townships in Grand Traverse County allow ADU's and what their experiences have been, including how to enforce. They are not to be used for short-term rentals. It is meant to be a housing solution. Hopes to bring up the ADU's in November or December. Special board meeting for the Strathmore development will be Tuesday the 27th of September at the Feast of Victory Church.
- 2.** Township Board Report – Jean Aukerman - The board discussed recreational marijuana, good discussion and public comments. The board agreed to not move forward with recreational marijuana.
- 3.** Parks & Trails Committee Report – Wolf will be doing a walk through of the Acme connector trail before it is open to the public.  
Working with TART on a ribbon cutting ceremony, possibly on Tuesday, October 25th. The site is still to be determined. Once it is finalized it will go on the website and out to the planning commission.

**ADJOURN: Motion by VanHouten, support by Timmins to adjourn  
Motion carries.**

**DRAFT UNAPPROVED**

**ACME TOWNSHIP  
PERSONNEL COMMITTEE**

**Monday, September 26, 2022**

10:00 a.m.

Acme Township Hall  
6042 Acme Road  
Williamsburg, MI 49690

Members present: Jean Aukerman, Lisa Swanson, Doug White

Pledge of Allegiance

Called to order at 10:04 a.m.

Public present: Brian Kelley

Approval of Agenda.

**Motion by Aukerman second by White to approve agenda.** Motion carried unanimously.

Minutes from November 10, 2021, stand approved, no corrections.

Discussion of the Summary Overview Chart, the Manager of Planning & Zoning job description, and the proposed Zoning Assistant job description documents presented by Aukerman, to be considered for use during the Regular Board Meeting on October 4<sup>th</sup>, 2022. After discussion, any changes to be made to the documents presented would be done so and given to Swanson to be included in the Board packet on Thursday.

Public Comment: Brian Kelley commented on the Tom's/Kmart PD 2022-01 and the possible addition of an Assistant for Lindsey Wolf, Zoning Administrator.

**Motion by White, seconded by Swanson to Adjourn at 11:10 p.m.**



10/26/2022 12:47 PM

User: LSWANSON

DB: Acme Township

## CHECK DISBURSEMENT REPORT FOR ACME TOWNSHIP

CHECK DATE FROM 10/05/2022 - 10/31/2022

Banks: CHASE, FARM, PARKS, SEWER

Page 2/4

Check Date	Bank	Check #	Payee	Description	GL #	Amount
10/13/2022	FARM	234	SONDEE, RACINE & DOREN, P.L.C.	ATTORNEY SERVICES	225-000-802.002	450.00
10/13/2022	CHAS	26827	CINTAS	REPAIRS & MAINT		** VOIDED **
10/13/2022	CHAS	26828	CONSUMERS ENERGY	STREET LIGHTS		** VOIDED **
10/13/2022	CHAS	26829	CULLIGAN WATER, MCCARDEL	REPAIRS & MAINT		** VOIDED **
10/13/2022	CHAS	26830	FEAST OF VICTORY LUTHERAN CHURC	CONTRACTED COMMUNITY SERVICES		** VOIDED **
10/13/2022	CHAS	26831	GRD TRAV COUNTY TREASURERS OFF	ADMINISTRATIVE FEE 1%		** VOIDED **
10/13/2022	CHAS	26832	SONDEE, RACINE & DOREN, P.L.C.	ATTORNEY SERVICES		** VOIDED **
		26832		ATTORNEY SERVICES		** VOIDED **
		26832		ATTORNEY T & A		** VOIDED **
10/13/2022	CHAS	26833	TRAVERSE CITY RECORD EAGLE	PUBLICATIONS		** VOIDED **
		26833		PUBLICATIONS T & A		** VOIDED **
10/13/2022	CHAS	26834	WELLS IRRIGATION, INC	REPAIRS & MAINT		** VOIDED **
10/13/2022	CHAS	26835	CINTAS	REPAIRS & MAINT	101-265-930.000	174.39
10/13/2022	CHAS	26836	CONSUMERS ENERGY	STREET LIGHTS	101-265-921.000	255.30
10/13/2022	CHAS	26837	CULLIGAN WATER, MCCARDEL	REPAIRS & MAINT	101-265-930.000	25.25
10/13/2022	CHAS	26838	FEAST OF VICTORY LUTHERAN CHURC	CONTRACTED COMMUNITY SERVICES	101-101-802.005	200.00
10/13/2022	CHAS	26839	GRD TRAV COUNTY TREASURERS OFF	ADMINISTRATIVE FEE 1%	101-000-447.000	74.61
10/13/2022	CHAS	26840	SONDEE, RACINE & DOREN, P.L.C.	ATTORNEY SERVICES	101-101-802.002	1,852.50
		26840		ATTORNEY SERVICES	101-410-802.002	667.50
		26840		ATTORNEY T & A	101-410-802.003-129	405.00
						2,925.00
10/13/2022	CHAS	26841	TRAVERSE CITY RECORD EAGLE	PUBLICATIONS	101-101-900.000	237.55
		26841		PUBLICATIONS T & A	101-410-900.001-132	144.45
						382.00

Check Date	Bank	Check #	Payee	Description	GL #	Amount
10/13/2022	CHAS	26842	WELLS IRRIGATION, INC	REPAIRS & MAINT	101-750-930.000	320.00
10/17/2022	CHAS	26843	A & D ASSESSING	ASSESSING CONTRACT SERVICES	101-209-803.002	4,025.00
10/17/2022	CHAS	26844	CHARTER COMMUNICATIONS	CABLE INTERNET SERVICES	101-265-851.000	379.46
10/17/2022	CHAS	26845	CHASE CARDMEMBER SERVICE	SUPPLIES & POSTAGE	101-101-726.000	10.00
		26845		dues subscriptions	101-101-960.000	15.89
		26845		REPAIRS & MAINT	101-750-930.000	765.60
						<hr/> 791.49
10/17/2022	CHAS	26846	CONSUMERS ENERGY	ELECTRIC UTILITIES TOWNHALL-6042 ACM	101-265-920.000	748.16
		26846		ELECTRIC UTILITIES TOWNHALL-5875 US	101-265-920.000	42.93
		26846		ELECTRIC UTILITIES TOWNHALL-5827 US	101-265-920.000	126.69
						<hr/> 917.78
10/17/2022	CHAS	26847	CONSUMERS ENERGY	STREET LIGHTS	101-265-921.000	129.20
10/17/2022	CHAS	26848	ELECTION SYSTEMS & SOFTWARE	SUPPLIES & POSTAGE	101-191-726.000	24.47
10/17/2022	CHAS	26849	GFL ENVIRONMENTAL	REPAIRS & MAINT	101-265-930.000	70.78
		26849		REPAIRS & MAINT	101-750-930.000	476.00
						<hr/> 546.78
10/17/2022	CHAS	26850	GOVERNMENTAL BUSINESS SYS GBS	SUPPLIES & POSTAGE	101-265-726.000	225.78
10/17/2022	CHAS	26851	INTEGRITY BUSINESS SOLUTIONS	SUPPLIES & POSTAGE	101-265-726.000	440.17
10/17/2022	CHAS	26852	QUADIENT FINANCE USA, INC	SUPPLIES & POSTAGE	101-191-726.000	1,508.00
10/17/2022	CHAS	26853	WEX BANK	REPAIRS & MAINT GAS	101-750-930.000	346.07
10/17/2022	PARK	424	MT. HOLIDAY, INC.	ENGINEERING SERVICES	403-000-803.003	4,232.73
10/24/2022	CHAS	26854	RELIANCE STANDARD	INSURANCE	101-101-910.000	150.49
10/25/2022	FARM	235	EAGLE LAND SURVEYING	APPRAISAL EXPENSES	225-000-942.000	4,500.00
TOTAL - ALL FUNDS				TOTAL OF 44 CHECKS (8 voided)		127,894.25

--- GL TOTALS ---

101-000-447.000	ADMINISTRATIVE FEE 1%	74.61
101-101-726.000	SUPPLIES & POSTAGE	177.97
101-101-802.002	ATTORNEY SERVICES	1,852.50



Check Date	Bank	Check #	Payee	Description	GL #	Amount
101-101-802.005				CONTRACTED COMMUNITY SERVICES		200.00
101-101-804.000				SOFTWARE SUPPORT & PROCESSIN		690.00
101-101-900.000				PUBLICATIONS		237.55
101-101-910.000				INSURANCE		150.49
101-101-960.000				dues subcriptions		15.89
101-191-726.000				SUPPLIES & POSTAGE		1,532.47
101-209-803.002				ASSESSING CONTRACT SERVICES		4,025.00
101-265-726.000				SUPPLIES & POSTAGE		931.35
101-265-851.000				CABLE INTERNET SERVICES		379.46
101-265-920.000				ELECTRIC UTILITIES TOWNHALL		1,007.25
101-265-921.000				STREET LIGHTS		739.58
101-265-922.000				DTE GAS		54.59
101-265-923.000				SEWER TOWNSHIP HALL		60.00
101-265-930.000				REPAIRS & MAINT		280.42
101-410-802.002				ATTORNEY SERVICES		667.50
101-410-802.003-129				ATTORNEY T & A		405.00
101-410-803.005-116				PLANNING & CONSULTANT T & A		600.00
101-410-803.005-133				PLANNING & CONSULTANT T & A		750.00
101-410-900.001-132				PUBLICATIONS T & A		144.45
101-750-930.000				REPAIRS & MAINT		2,132.56
207-000-802.000				COMMUNITY POLICING CONTRACT		23,187.31
209-000-802.004				CONTRACTED EMPLOYEE SERVICES		2,250.00
225-000-802.002				ATTORNEY SERVICES		450.00
225-000-942.000				APPRAISAL EXPENSES		4,500.00
403-000-803.003				ENGINEERING SERVICES		4,232.73
590-000-956.001				OPERATING & MAINT EXP		75,274.42
591-550-956.001				OPERATING & MAINT EXP		891.15
				TOTAL		127,894.25

**PLEASE NOTE:**

**\*ONLY APPLICATIONS FROM LOCAL UNITS OF GOVERNMENT LOCATED WITHIN  
GTB'S 6-COUNTY SERVICE AREA WILL BE CONSIDERED FOR 2% FUNDING**

1. Allocation Cycle: \_\_\_\_\_ JUNE – New submission date, Postmarked by **MAY 31st**  
\_\_\_\_\_ X \_\_\_\_\_ DECEMBER – New submission date, Postmarked by **NOVEMBER 30th**
2. Name of Applicant: \_\_\_\_\_ Traverse Area Recreation and Transportation (TART) Trails, Inc.  
Address: \_\_\_\_\_ PO Box 252  
\_\_\_\_\_  
148 E. Front St, Suite 201  
\_\_\_\_\_  
Traverse City, MI 49685  
\_\_\_\_\_  
Phone #: \_\_\_\_\_ 231.941.4300 Fax #: \_\_\_\_\_  
Printed Name: \_\_\_\_\_ Doug White
- **Authorized Signature:** \_\_\_\_\_  
(Signature of local unit of government official; e.g., county/city official, township supervisor, village president, college president, school superintendent)
- Title: \_\_\_\_\_ Acme Township Supervisor
- E-mail address: \_\_\_\_\_ Dwhite@acmetownship.org
- Printed Name of contact person: \_\_\_\_\_ Casey Ressler, TART Trails Development Director
- Telephone #: \_\_\_\_\_ 231.360.3604 Fax #: \_\_\_\_\_
- E-mail address: \_\_\_\_\_ casey@traversetrails.org
3. Type of Applicant: \_\_\_\_\_ Local Government \_\_\_\_\_ Local Court  
\_\_\_\_\_ Township \_\_\_\_\_ County Commissioner \_\_\_\_\_ Road Commission  
\_\_\_\_\_ Public School District \_\_\_\_\_ College \_\_\_\_\_ Charter School  
\_\_\_\_\_ Public Library \_\_\_\_\_ Sheriff/Police Department \_\_\_\_\_ Fire Department
- X \_\_\_\_\_ 501c3 applying through local unit of government (name): Acme Township on behalf of TART Trails

4. Fiscal Data: Amount Requested: \$ 25,000 Percent: 5 %  
 Local Leveraging: \$ 425,000 Percent: 95 %  
 (Match)  
 Total Budget: \$ 450,000 Percent: 100 %
5. Target Population numbers: X Children X Adults X Elders  
 (Indicate the X\* Total GTB member Community X Others  
 number of GTB members)  
 \*Trail will connect Grand Traverse Town Center and GTB property at the corner  
 of US31 and Acme Road.
6. Counties Impacted:        Antrim        Benzie        Charlevoix  
X Grand Traverse        Leelanau        Manistee
7. Brief Description (purpose of funding); include statement of need:

TART Trails is applying for Grand Traverse Band 2% funding to provide critical transportation and recreational connections by constructing just under a mile of non-motorized trail in Acme Township as part of a larger effort to connect Traverse City and Charlevoix with the Nakwema Trailway (please see the see attached map). The Grand Traverse Band has been instrumental in the continued success of TART Trails and our regional trail network. We greatly appreciate your support of trails and community connections. With your help, we'd like to pursue the opportunity to connect our current trail network to the neighborhoods, businesses and parks in Acme Township. This grant would support a meaningful local and regional trail connection on the westside of US31 near Osorio's.

Continued investment in non-motorized, multi-use trails is crucial because they provide residents and visitors with the ability to improve their physical and mental health, contribute to a vibrant economy, and build a greener transportation network. Trails can be a part of the solution in combatting heart disease, obesity, mental illness and more. They also offer transportation independence through a consistent alternative mode of transportation. They help build more resilient communities through the myriad of benefits they provide.

With the Tribe's support, project partners will construct non-motorized, multi-use trail that will expand transportation and recreational opportunities in Acme Township. The Deepwater Connector will improve the non-motorized crossing at the US-31/M-72 intersection, and continue north. This section of trail will begin at the southernmost Nakwema Trailway trailhead at Bayside Park. The trail will then follow a scenic stretch of Acme Creek, and provide access to the Deepwater Point Natural Area via shared roadway. In addition, the Deepwater Connector will create a connection for a densely populated area to over 100 miles of trail within our regional network. Once complete, the project will increase commuter use of the trail to local businesses, including the top

two employers in Acme Township – the Meijer store and Grand Traverse Resort and Spa. As the Grand Traverse Town Center continues to grow and be a destination, this trail will support access to developments for visitors and employees. Snow clearing during the winter months will allow year-round use as our region continues to build its 4-season reputation.

With continued support for this project, the Grand Traverse Band is helping to catalyze an entire region to move forward with an initiative that will transform our region's identity. This segment is part of a larger vision to connect Traverse City, Acme, Elk Rapids, Eastport, Norwood and Charlevoix through a 46+ mile trail. Once complete, the Nakwema Trailway will create a connected network of 325+ miles of trails in northern Lower Michigan. Together, we can do something big. Thank you for your consideration of this proposal to create community connections in Acme Township and build the next segment of the Nakwema Trailway.

8. This question only pertains to Indian Education Programs of Public School Systems. If you are not an Indian Education Program of a Public School system, skip to question 9.

(a) **Program formula: (1) \$5,000, up to \$10,000 per school district + (\$1,000, up to \$1,500 x # of GTB member students) = allocation. The increase to the formula will be determined by the previous timely 2% report received, and the data provided within the report on the success of the school's Indian Education Program as a result of the 2% allocation.**

**Please note: 1) In completing this section, only provide the student numbers of currently enrolled GTB members; do not include the general Native American data of your school system; and 2) there will be a cap of \$100,000, up to \$125,000 per school, based on the school's GTB membership count and data provided within the 2% report received from the previous year.**

(b) Recommendation from Parent Committee: \_\_\_\_\_ YES \_\_\_\_\_ NO

**Please have the Parent Committee sign the attached Certification Form.**

(c) Describe parent involvement in project: \_\_\_\_\_  
\_\_\_\_\_

(d) Does the school receive Title VII Indian Education Funds? \_\_\_\_\_ YES \_\_\_\_\_ NO  
If yes, how much: \_\_\_\_\_

9. What are the start and completion dates of the proposed project?

Start October 1, 2022 Completion September 30, 2024

10. Has applicant received prior awards through the Tribe's 2% funding allocation?

X YES \_\_\_\_\_ NO. If yes, please list the start and end dates and amount:

May 1, 2022 - December 31, 2022 and amounts: \$25,000 for the Acme Connector  
May 1, 2022 - December 31, 2022 and amounts: \$5,500 for Recycle-A-Bicycle Program  
May 1, 2021 - December 31, 2021 and amounts: \$5,500 for Recycle-A-Bicycle Program  
May 1, 2021 - December 31, 2021 and amounts: \$2,500 for Acme Connector Maintenance  
March 1, 2020 - December 31, 2020 and amounts: \$25,000 for the Acme Connector  
March 1, 2020 - December 31, 2020 and amounts: \$10,000 for the Leelanau Trail  
March 1, 2020 - December 31, 2020 and amounts: \$6,400 for Recycle-A-Bicycle Program  
March 1, 2019 - December 31, 2019 and amounts: \$4,041.82 for Recycle-A-Bicycle Program  
March 1, 2018 - December 31, 2018 and amounts: \$15,000 for Boardman Lake Loop Trail  
March 1, 2018 - December 31, 2018 and amounts: \$5,000  
March 28, 2014 - December 31, 2014 and amounts: \$5,080  
January 31, 2012 - December 31, 2013 and amounts: \$6,000  
February 18, 2010 - December 1, 2010 and amounts: \$15,000  
August 9, 2007 - December 31, 2008 and amounts: \$30,000  
January 27, 2006 - December 31, 2006 and amounts: \$15,000  
February 6, 2004 - December 31, 2005 and amounts: \$50,000

11. Is the proposed project new  X  or a continuation project \_\_\_\_\_?

If this is a continuation project, please explain why there is a need to continue funding:

**Note:** The Grand Traverse Band previously awarded TART Trails via Acme Township funding for construction of the adjacent Acme Connector.

12. If the previous project has been completed, did you submit your 2% report?  X  YES \_\_\_\_\_ NO.

**The 2% report must be submitted one year from the date you received your 2% award. If your report has not been submitted, your current application will not be considered! 2% Reports are mandatory for future grant considerations. Mail your 2% report to: Attn: 2% Reports; GTB, 2605 N.W. Bay Shore Drive, Peshawbestown, MI 49682.**

13. Impact of Gaming on local program: (e.g., increase in student population, resulting from increase in Tribal employment or increase in emergency services to Casino patrons).



This segment of trail will provide critical nonmotorized infrastructure to residents including those who live and work in Acme Township as well as those who visit the Grand Traverse Town Center, Grand Traverse Resort & Spa and Turtle Creek Casino. It is our hope to continue to build non-motorized options including a connection to community attractions like Turtle Creek.

14. How will the success of the project be assessed (evaluation plan)? TART Trails has a long-standing trail use and monitoring program staffed by TART employees and volunteers. In the most recent TART Trail monitoring, 500,000 annual visits to the TART network were logged. The trail network experienced a sustaining 30% increase in use since 2020. In the near term, TART Trails will continue to count annual trail visits in multiple locations with TRAFx Trail Counters that use high-quality infrared scopes to track trail visits year-round. Trail counters are installed along the new Acme Connector, the southernmost portion of the Nakwema Trailway that opened in October of this year. TART will also periodically survey individual users to determine how and why they are using the trails. In addition, TART Trails conducts health and economic benefits studies every 3-5 years to examine impact of trails in communities.
15. If new staff is required, will preference be given to Native American applicants?  
X YES           NO
16. Budget: Please attach a one-page itemization of the planned budget. Include explanation for each category of the budget.

**IMPORTANT!! BEFORE YOU MAIL YOUR 2% APPLICATION, PLEASE REMEMBER TO:**

- 1) Execute authorized signature on first page, question #2.
- 2) Attach 1-page budget
- 3) Attach Parent Committee Certification Form if application is from an Indian Education/Title VII Program.
- 3) Submit by appropriate deadline:
  - **If for June cycle, postmarked by May 31st.**
  - **If for December cycle, postmarked by November 30th.**

**Mail completed 2% applications to:**

**Attention: 2% Program  
Grand Traverse Band of Ottawa and Chippewa Indians  
2605 N.W. Bay Shore Drive  
Peshawbestown, MI 49682**

**If you have any questions, please call 231-534-7601.**

## Budget for Nakwema Trailway | Deepwater Connector

Elizabeth Calcutt, Trail Development Director | 231-941-4300 | [elizabeth@traversetrails.org](mailto:elizabeth@traversetrails.org)

Casey Ressler, Development Director | 231-360-3604 | [casey@traversetrails.org](mailto:casey@traversetrails.org)

Funding Source	Committed	Proposed	Total
State of Michigan*	\$89,000		\$89,000
Public Funding*		\$75,000	\$75,000
Grand Traverse Band of Ottawa & Chippewa Indians*		\$25,000	\$25,000
TART Trails	\$50,000	\$211,000	\$261,000
<b>Total</b>	<b>\$139,000</b>	<b>\$311,000</b>	<b>\$450,000</b>

Use of Funds	Total
Trail Design and Engineering	\$50,000
Trail Construction	\$325,000
Project Management, Outreach & Fundraising	\$39,000
Maintenance Fund	\$36,000
<b>Total</b>	<b>\$450,000</b>

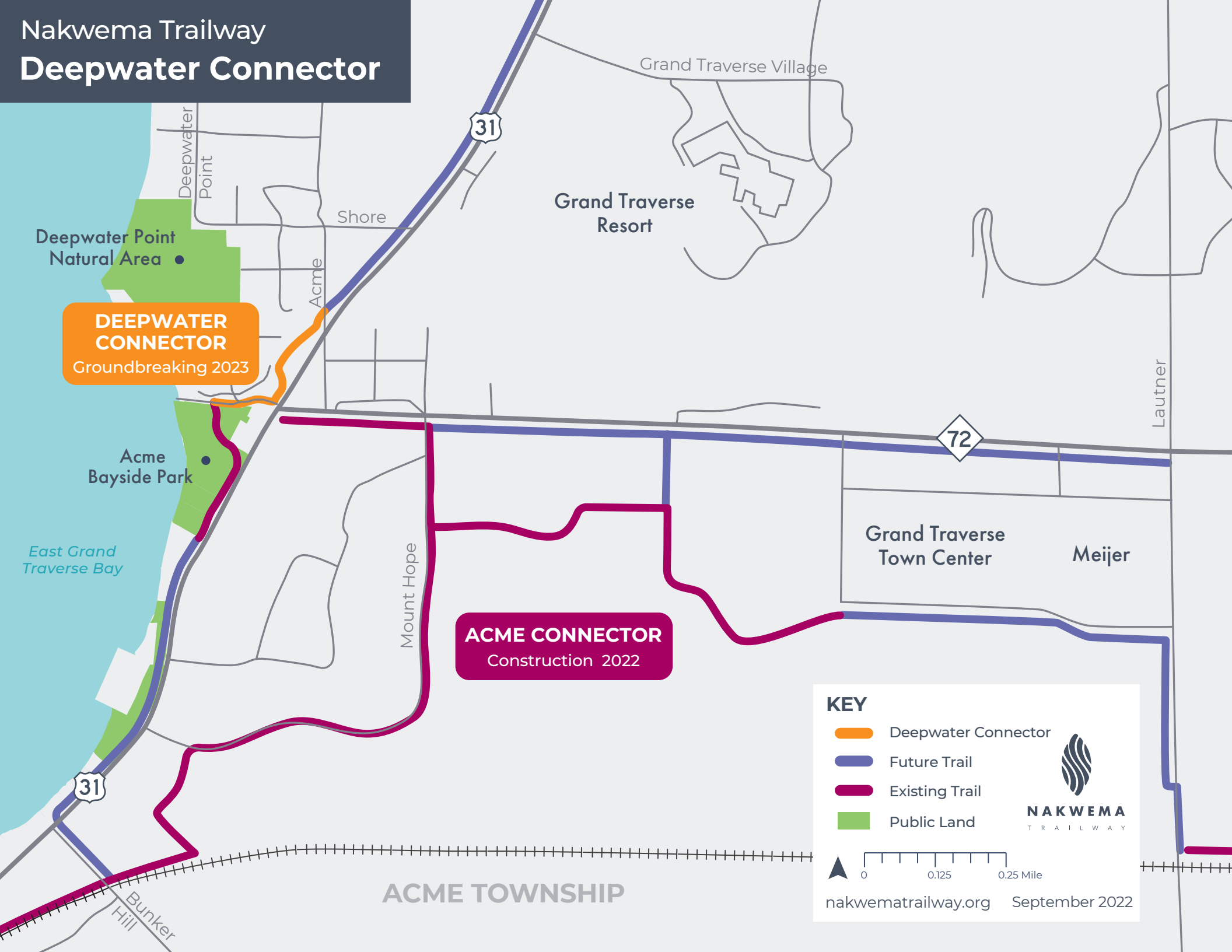
## Budget Details

Funds for the Deepwater Connector include public funding sources\* totaling \$189,000 (42%) and private funding sources totaling \$261,000 (58%).

Updated 10/20/22

# Nakwema Trailway

## Deepwater Connector



Deepwater Point  
Natural Area

**DEEPWATER  
CONNECTOR**  
Groundbreaking 2023

Acme  
Bayside Park

East Grand  
Traverse Bay

Mount Hope

**ACME CONNECTOR**  
Construction 2022

Grand Traverse Village

Grand Traverse  
Resort

72

Grand Traverse  
Town Center

Meijer

Lautner

31

Bunker  
Hill

ACME TOWNSHIP

### KEY

- Deepwater Connector
- Future Trail
- Existing Trail
- Public Land



**NAKWEMA**  
TRAILWAY

0 0.125 0.25 Mile

[nakwematrailway.org](http://nakwematrailway.org) September 2022



# GRAND TRAVERSE METRO EMERGENCY SERVICES AUTHORITY

From the Desk of CHIEF PAT PARKER

**FIRE OFFICE** 897 Parsons Road ~ Traverse City, MI 49686

Ph: (231) 947-3000 ext. 1235 Fax: (231) 947-8728 ~ Website: [www.gtmetrofire.org](http://www.gtmetrofire.org) Email: [pparker@gtmetrofire.org](mailto:pparker@gtmetrofire.org)

*Omnis Cedo Domus - "everyone goes home"*

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Metro Authority Board  
October 25, 2022

## Agenda Item – Fire Truck Purchase

At the September Metro Board meeting the Chief introduced the subject of purchasing another fire engine to replace the front line 2007 American LaFrance engine. The 2007 engine would move to reserve status and the 1993 Pierce reserve engine would be sold.

Since the September meeting, the Chief has confirmed a price and delivery time on a new engine. The price of the engine is \$737,880 and delivery is out now 32-36 months, but this is a guaranteed price if we order before November 1, 2022. The price after that is \$785,842 which is an increase of \$47,962. Again, they are guaranteeing the price for possibly 32-36 months. There are no stock trucks available. The problem is now supply and demand issues with ARPA monies playing into it. This is an apples to apples increase of \$162,000. The same is true for commercial chassis (Freightliner, International).

This truck has been competitively bid under the Houston/Galveston Cooperative Purchasing program.

Financing will not come into play until 2024. We qualify for tax exempt rate and the recent quote from 5<sup>th</sup>/3<sup>rd</sup> is 5.5% which is the same as the last truck financed in 2020. Possibly Cherryland Electric will have 0% monies available at the time. Currently he has monies available that could cover the entire cost of the truck. This truck was budgeted for 2024.

Staff is recommending the purchase of the 2025 Pierce Enforcer from Halt Fire in the amount of \$737,880. We have attached resolution 2022-08 for your consideration.

**TOWNSHIP OF ACME  
GRAND TRAVERSE COUNTY, MICHIGAN  
RESOLUTION 2022 - \_\_\_\_\_**

**RESOLUTION APPROVING FINANCING FOR  
FIRE TRUCK PURCHASE**

Resolution of a meeting of the board of Trustees of Acme Township, Grand Traverse County, Michigan held on the 1<sup>st</sup> day of November 2022 at 7:00 o'clock p.m.

**PRESENT:** \_\_\_\_\_  
\_\_\_\_\_

The following preamble and resolution were offered by \_\_\_\_\_ and supported by \_\_\_\_\_.

**WHEREAS**, The Township is an Incorporating Township of the Grand Traverse Metro Emergency Services Authority ("Metro"), incorporated under the authority of Public Act 57 of 1988; and

**WHEREAS**, Article XII of Metro's Articles of Incorporation provides that a Township must approve capital expenditures requiring allocation of funds or financing for periods exceeding one year if that Township is to be responsible for financial obligations extending beyond Metro's regular annual budget; and

**WHEREAS**, Metro has a future need for a replacement pumper truck that due to supply chain issues will not be delivered until April/May of 2024. The vehicle will replace a 1993 Pierce pumper truck; and

**WHEREAS**, the Metro Board approved the purchase of a Pierce Impel Pumper from Halt Fire for \$737,880, at its October 25, 2022 Authority Board Meeting.

**WHEREAS**, Metro intends at a future date to apply for financing from a commercial bank institution in the amount of \$737,880; and

**WHEREAS**, the term of the bank financing would extend beyond Metro's regular annual budget; and

**WHEREAS**, this equipment purchase and associated financing furthers the Township's interest in efficient provision of fire protection services.

**NOW, THEREFORE,**



**BE IT RESOLVED** that the Township hereby commits its financial resources to this expenditure in accordance with Metro's Articles of Incorporation and, subject to final approval of appropriate loan documents by Metro.

Ayes:  
Nays:  
Absent:

**RESOLUTION DECLARED ADOPTED.**

\_\_\_\_\_  
, Clerk

#### **CERTIFICATE**

I, \_\_\_\_\_, the duly elected and acting Clerk of the Township of \_\_\_\_\_, hereby certify that the foregoing constitutes a true copy of a Resolution of the Township Board for the Township of \_\_\_\_\_ adopted during a meeting of the Township of \_\_\_\_\_ Township Board, Grand Traverse County, Michigan, held on \_\_\_\_\_, \_\_\_\_\_, 2022, at which meeting \_\_\_\_\_ members were present as indicated in said Minutes and voted as therein set forth and that all signatures affixed thereto are the genuine signatures of those so indicated, and that each signatory was duly authorized to affix his or her signature, that said meeting was held in accordance with the Open Meetings Act of the State of Michigan, and that due and proper notice of the meeting as required by law was given to the members of the Township Board, and that the minutes of said meeting were kept and will be and have been made available as required by said Act.

Dated: \_\_\_\_\_

\_\_\_\_\_  
, Clerk  
Township of \_\_\_\_\_  
Grand Traverse County, Michigan

## Acme Township, Planning & Zoning - Summary Overview Chart UPDATED DRAFT -- Oct 27, 2022

Chart illustrates leadership role of Manager, supporting role of Assistant, and enforcement role of Code Officer -- with key examples, but not exhaustive detail.

PLANNING & ZONING ADMINISTRATOR	ASST, ZONING & SPECIAL PROJECTS	ENFORCEMENT OFFICER, ZONING
<p><b>Key Job Responsibilities</b></p> <ul style="list-style-type: none"> <li>• Serves as Township's go-to expert on Acme Township Zoning Ordinance for/to all audiences.</li> <li>• Represents Department as subject matter expert at Board, Planning Commission, ZBA mtgs.</li> <li>• Proactively recommends solutions to ordinance-related issues.</li> <li>• Maintains Master Document of historical and proposed changes.</li> <li>• Ensures approved Projects are in compliance with conditions of approval.</li> <li>• Receives, oversees processing of zoning applications including land use, special use, site plan review, ZBA, short-term rentals, and more.</li> <li>• Performs inspections to ensure land use changes comply with Zoning Ordinance.</li> <li>• Directs proactive identification, inventorying, and monitoring of non-conforming uses.</li> <li>• Directs enforcement actions.</li> <li>• Researches, writes reports to inform audiences.</li> <li>• Ensures all related files are complete and accessible, with supporting documentation.</li> <li>• Manages Department's annual budget.</li> </ul> <p><b>Preferred Qualifications</b></p> <ul style="list-style-type: none"> <li>• Planning degree; minimum 5 yrs experience.</li> <li>• Outstanding verbal, written communication skills to all -- Public, Officials, Developers, and more.</li> <li>• Responsiveness to all audiences.</li> <li>• Comprehensive knowledge of: Planning -- theory, principles, techniques; federal, state, local laws.</li> <li>• Excellent time management, organization skills.</li> </ul> <p><b>Physical Demands</b></p> <ul style="list-style-type: none"> <li>• Work performed in office environment, daytime/evening meetings, at development sites.</li> <li>• Bad weather, uneven terrain are expected issues.</li> </ul>	<p><b>Key Job Responsibilities</b></p> <p><b>Zoning Examples</b></p> <ul style="list-style-type: none"> <li>• Assists Manager in responding to Public on frequently-asked questions re Zoning Ordinance.</li> <li>• Works, as directed, to issue permits and maintain files with supporting documentation.</li> <li>• At Manager's direction, maintains variety of logs and records re inspections, enforcement activities.</li> <li>• Proactively assists Manager to identify non-conforming uses in Township.</li> <li>• Helps to inventory, monitor non-conforming uses.</li> <li>• At Manager's direction, prepares board packets and other communications.</li> <li>• Posts P&amp;Z information to web site within deadlines; also serves as backup for Township's Admin Assistant for posting township information.</li> </ul> <p><b>Special Project Examples</b></p> <ul style="list-style-type: none"> <li>• Manages, implements, oversees special projects for Supervisor, Clerk's Office, when assistance is needed such as: handling urgent influx of cemetery requests; coordinating FOIA requests; assisting with elections -- processing applications, issuing ballots, etc; managing web site and resolving issues; drafting "thank you" notes; and other projects where timely action is required.</li> </ul> <p><b>Preferred Qualifications</b></p> <ul style="list-style-type: none"> <li>• Proven project and time management skills.</li> <li>• Established track record for proactive problem identification and problem-solving skills.</li> <li>• Excellent verbal, written communications skills.</li> <li>• Effective working independently and on teams.</li> </ul> <p><b>Physical Demands</b></p> <ul style="list-style-type: none"> <li>• Work mainly performed in office environment.</li> <li>• Some driving and off-site work necessary.</li> <li>• Evening meeting attendance may be necessary.</li> </ul>	<p><b>Key Job Responsibilities</b></p> <ul style="list-style-type: none"> <li>• Directed by Manager or Twp Supervisor, Deputy: <ul style="list-style-type: none"> <li>- Builds relationships with residents, business owners, developers working on new projects.</li> <li>- Monitors township for non-conforming uses and other potential problems.</li> <li>- Responds to complaints of potential code violations.</li> <li>- Initiates necessary corrective measures.</li> <li>- Routinely reports back to Manager, Supervisor, Board to keep Staff and Township informed.</li> </ul> </li> </ul> <p><b>Preferred Qualifications</b></p> <ul style="list-style-type: none"> <li>• Prior zoning enforcement training.</li> <li>• Excellent interpersonal, problem-solving skills.</li> <li>• Knowledge and use of de-escalation skills.</li> <li>• Member of Sheriff's Department Staff.</li> <li>• Familiarity with Acme residents, businesses.</li> </ul> <p><b>Physical Demands</b></p> <ul style="list-style-type: none"> <li>• Work performed in office setting, out-of-doors, and at development sites and in neighborhoods.</li> <li>• Frequent attendance at evening meetings.</li> </ul>



## UPDATED DRAFT - October 27, 2022 (following 10/27 Personnel Committee meeting)

### NOTE:

This is an updated draft job description for an Assistant for Lindsey Wolf, Planning & Zoning Administrator. Personnel Committee members that provided input are Doug White, Lisa Swanson, and Jean Aukerman. Lindsey Wolf has also provided input. While the entire Job Description is up for Board review, thoughts/recommendations immediately below (in **RED**) will require Board approval.

**Position Title:** Assistant, Zoning & Special Projects  
**Status:** Less than Full Time (< 30 hrs/wk - avg. 26 hrs/week); salaried  
**Reports to:** Planning & Zoning Administrator  
**Salary Range:** \$25,000 to \$30,000 depending on qualifications

### Position Summary

Acme Township's *Assistant, Zoning & Special Projects* is a new role for the Township. This individual plays a critical role in the overall success and effectiveness of Acme's Planning & Zoning function by serving as the right-hand assistant to Acme Township's Planning & Zoning Administrator. As such, the Assistant must be experienced at working with all types of people -- understanding needs, viewpoints, and how to fulfill requests and meet expectations -- while representing the Township and its administration and enforcement of the Zoning Ordinance. Special Projects may be assigned by the Supervisor, Clerk, and other Township officials. To meet expectations, the Assistant must possess proven project management skills including the ability to effectively prioritize workload while establishing reasonable expectations to ensure requests and projects are delivered as committed.

### 1. Responsibilities

The following list of responsibilities is not exhaustive and may be supplemented from time to time.

#### A. PRIMARY DUTIES (may include but are not limited to the following)

1. Maintains a thorough knowledge of the Acme Township Zoning Ordinance.
2. Assists in administering, interpreting, and enforcing the Acme Township Zoning Ordinance, applicable state zoning laws, and other township ordinances.
3. Responds to general public regarding their zoning and permit questions and with general customer service needs – by telephone, by email, and in person.
4. Proactively and effectively communicates Zoning Ordinance to interested businesses and public.
5. Assists in issuing appropriate permits and maintains files of the permits with supporting documentation.
6. Helps with code enforcement and responds to complaints of potential code violations.
7. Issues necessary corrective measures, as required, by promptly notifying applicant, in writing, if the proposed use is not in compliance with the Zoning Ordinance; assists with an appropriate alternative procedure, appeals, or any other administrative remedies necessary to attain compliance.
8. Helps to maintain a variety of logs and records related to inspections and enforcement activities.
9. Provides information and assistance to the public regarding code enforcement matters.
10. Assists in removing and discarding illegal signage along the township roadways.
11. Helps to identify, inventory, and monitor non-conforming uses
12. Assists in receiving and processing zoning applications including: land use, sign, short-term rentals, and mobile food vending.
13. Assists with preparation of Zoning Board of Appeals case files and publication notices.

14. Assists with Planning Commission case files such as: notices, Planning Commission packets, compliance with Township ordinances and Master Plan.
15. Attends Planning Commission meetings; reports on zoning issues when Planning & Zoning Administrator is unable to attend.
16. Consistently utilizes effective verbal and written communications with permit applicants, related governmental agencies, and other offices as necessary.
17. Assists in the inspection of properties to ensure projects approved by staff, Planning Commission and Township Board are in compliance with the conditions of approval.
18. Testifies, as necessary, at public and judicial hearings.
19. Assists in maintaining the master document of proposed Ordinance changes during its development and makes it available, electronically, to the Planning Commission.
20. Performs research pertaining to specific intended amendments to the Ordinance initiated from the Master Plan or from other sources.

## **B. Office Administration**

1. Assists in the submission of the permit application spreadsheet to the tax assessor in a timely manner.
2. Maintains, administers and follows procedures and policies established for the office.
3. Assists in keeping zoning map, text, and office records up-to-date; distributes copies of the zoning ordinances to Planning Commissioners, Zoning Board of Appeals, and to the public.
4. Posts information on the Acme Township website regarding zoning and planning issues such as agendas, packets, public hearing notices. Posts draft and approved meeting minutes.
5. Submits written monthly report (written by Planning & Zoning Administrator), one week in advance of the Acme Township Board meeting. Report will include: permits issued/denied; appeals; request for amendments; requests for variances; and other pertinent zoning administration activity and information.
6. Attends meetings of the Acme Township Board when the Planning & Zoning Administrator cannot.
7. Submits a monthly statement of all reimbursable expenses including: postage; forms; maps; mileage to meetings, etc.

## **C. General Public Relations, Professional Development, Other**

1. Communicates to and works well with elected and appointed officials, public, other regional agencies.
2. Assists general public, applicants, developers and their representatives with zoning inquiries, proposals, and applications. Directs the individual(s) to the proper agencies for other needed permits.
3. When pre-approved by Township Supervisor and Planning & Zoning Administrator, attends seminars and/or conferences to stay up-to-date on laws, zoning trends, and other information pertinent to zoning administration.
4. Strives to be generally accessible to the public by telephone and email during business hours.
5. Performs other duties and accepts other responsibilities as may be directed or specified by the Zoning Ordinance, policies and procedures, or the Township Board.

## **2. Preferred Qualifications**

### **A. Education/Experience**

1. Minimum of two-year college degree.
2. Proven project management skills dealing with wide assortment of subjects/topics.
3. A developed, deductive, logical system of thought when reading and interpreting documents.
4. Computer skills in: word processing; data base; web site maintenance.



5. Demonstrated problem-solving ability to identify workable solutions within the Ordinance and Special Projects, as assigned.

## **B. Knowledge, Skills, and Abilities**

1. Ability to work and communicate with other elected and appointed officials and the public with appropriate etiquette and diplomacy – written and verbal.
2. Practiced at writing clear reports, complete with relevant background as needed.
3. Ability to comprehend basic knowledge of local ordinances.
4. Knowledge of construction and construction terms as appropriate to issuing land use permits.
5. Pays close attention to the details -- timelines, grammar, etc. (does not include Site Plan Reviews).
6. Ability to maintain confidentiality of information and professional boundaries.
7. Excellent organization skills: (a) prioritize and schedule work load appropriately; (b) ability to work independently and with little supervision; and (c) complete work assignments on a timely basis in an environment where interruptions may occur.
8. Must have current, valid Michigan vehicle operators license and good driving record; must provide own transportation.

## **C. PHYSICAL DEMANDS, WORK ENVIRONMENT AND OTHER REQUIREMENTS**

1. Physical requirements include:
  - Work is typically performed in an office environment but may be conducted out-of-doors at development sites. Exposure to occasional inclement weather and normal transportation and construction activity such as high noise levels, moving vehicles and machines, dust and mud, and traversing of exposed and sometimes unsteady walkways and platforms may be required. A moderate amount of local travel may be required.
  - Prolonged walking over uneven terrain, on stairs; able to use hand grip to pull oneself over obstacles in order to assist in conducting site inspections.
  - Periodic bending, stooping, and kneeling to move items weighing up to 20 pounds from the floor/ground to overhead to obtain stored records, books, files, move objects in the field, and to operate various field equipment (shovel, tape measure, etc.).
  - Attendance at meetings may be required when Planning & Zoning Administrator cannot attend.
2. Working conditions/environmental factors include:
  - Work inside Acme Township Hall in cubicle office or open environment where frequent interruptions may occur.
  - Work outside as needed, despite weather conditions and exposure to environmental allergens.
  - May travel to locations throughout the township.
  - May have irregular or extended working hours in order to meet schedules and respond to complaints as quickly as possible.
  - Can receive work-related telephone calls after hours on Township cell phone (if provided).
3. Selection guidelines include: formal application; rating of education; oral interview; reference check; submission of examples of written reports; and job-related tests may be required.

*The above is intended to describe the general content of and requirements for the performance of the position. It is not to be construed as an exhaustive statement of duties, responsibilities or requirements for the position.*

## **ADDENDUM**

### **Short-term Goals**

The following lists indicate the knowledge and skills goals and expectations the Assistant should strive to achieve and be delivering (1) at the 3-month mark, and (2) at 6 months on the job. Acme Township's Planning & Zoning Administrator is responsible for day-to-day teaching/coaching of the Assistant and providing professional direction on all aspects of this job.

#### **3-Month Expectations:**

- Basic knowledge of the Acme Township Zoning Ordinance (20%)
- Knowledge of Acme Township Short-Term Rental Ordinance
- Permitting of residential land use permits: single family and accessory uses
- Permitting of sign permits
- Permitting of Short-term rental licenses
- Attaching records to BSA
- Parks & Trails and Planning Commission packet printing and distribution
- Knowledge of Zoning Map vs. Future Land Use Map
- Preparation of 300' mailers
- Providing information on township website
- Becoming familiar with township applications and checklist for complete applications: Land Use Permits, Land Division, Medical Marihuana, Short-Term Rental, Site Plan Review

#### **6-Month Expectations:**

- Thorough knowledge of Acme Township Zoning Ordinance
- Thorough knowledge of Short-Term Rental Ordinance
- Able to address all FAQs on website under Planning & Zoning
- Preparation of ordinance violation notices
- Ensure that all applications are complete prior to department review: LUPs, SUPs, Land Division, Medical Marihuana, Short-Term Rental



## ITEMS TO BE COMPLETED PRIOR TO 2022 OPERATION:

<b>Action Item</b>	<b>Status</b>	<b>Note</b>
<b>1. Municipal Approvals</b>	Completed	Health Department, Metro Fire, GTC Code - waiting for special inspection report
<b>2. Stormwater Approvals</b>	Completed- minor areas of repair w/action items needed to be addressed by Horse Shows - will further inspect in July	5.31.22 First inspection completed - inspection letter provided. Next scheduled for end of July 2022.
<b>3. Stormwater Construction Modifications</b>	Completed – minor outstanding items per inspection reports	Inspected 5.31.2022 & 6.6.2022, 8.26.2022, 10.28.2022
<b>4. Emergency Services Road Construction</b>	Completed	Verbal conversation w/Brian Belcher and Kathy Fordyce
<b>5. Road Signs for Emergency Services</b>	Completed	Temporary signs installed until permanent arrive
<b>6. Building Numbers for Emergency Services</b>	Completed	
<b>7. Signage prohibiting non-licensed vehicles on Bates</b>	Completed	Inspected 5.31.2022
<b>8. Stormwater Maintenance Plan</b>	Completed	Approved and Recorded
<b>9. Dust Plan for Horse Parks</b>	Completed	Provided 5.31.2022
<b>10. Manure Transfer Station "Concrete Pad"</b>	Completed	Replaced with Asphalt and added an additional bottom layer
<b>11. GT Metro -roads/building IDs</b>	Completed - Repetitive of item #4 & #5	
<b>12. Provide Signage for Buildings</b>	Completed - Repetitive of item #5 & #6	
<b>13. Provide water supply source with sufficient flow</b>	Not applicable to this year	Verbal conversation w/Brian Belcher and Kathy Fordyce
<b>14. 2 story tent permitting by Metro</b>	Completed	
<b>15. 2 story tent permitted by GTC building</b>	Completed	scheduled for 6.6.2022

## ADDITIONAL ITEMS TO BE COMPLETED BY NOVEMBER 15, 2022:

Action Item	Status	Note
1. Arabian Lane Buffering (Landscaping)	Completed	Trees in place - small plants being installed 6.6.22
2. Arabian Lane Irrigation	Completed	
3. Arabian Lane Fencing (Steven's property)	Completed	
4. Bates Road Buffering (Landscaping)	Completed	Trees in place - small plants being installed 6.6.22
5. Bates Road Irrigation	Completed	5.31.2022 Site Visit
6. Parking Island Trees N 13 Acre Parcel	Completed	10.25.2022 Site Visit
7. Stormwater Inspections (3 per year, 3 years)	Completed - minor outstanding items per inspection reports	Inspected 5.31.2022 & 6.6.2022, 8.26.2022, 10.28.2022
8. Extend asphalt at 3 entrances	Completed	
9. Scarified surface to reduce dust on Bates	Not Complete	Strips originally to be ground into asphalt - provided an alternative removable strip that better meets freeze/thaw conditions
10. Traffic Study	Completed	Proposal approved by Township & BRI
11. Gate Signage (North Gate Service Drive Only)	Completed	
12. Landscape Buffer on South Property Line	Not Complete	Meeting w/Tribe for waiver
13. Grading and gravel for Trailer Parking		Board discussion - new zoning ordinance allows for PC to sign off on grass parking in Agricultural district
14. Letter for "Optimal Dust Control"	Completed	
15. Performance Guarantee		May not be necessary if parking location/pavement is resolved.
16. Complete plan for township	Provided	Will need a sealed copy of the plan set with the lunging ring and small tent
17. Fee for stormwater review	1st year fee provided	2 additional years needed



## TRAFFIC IMPACT STUDY

# Traverse City Horse Shows, LLC Acme Township, Grand Traverse County, Michigan

### PREPARED FOR:

Morrissey Management Group, LLC  
Traverse City Horse Shows, LLC  
15355 De Havilland Court  
Wellington FL 33414  
October 1, 2022

### PREPARED BY:

Wade Trim Associates, Inc.  
25251 Northline Road, Taylor, Michigan 48180



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## DISCLAIMER

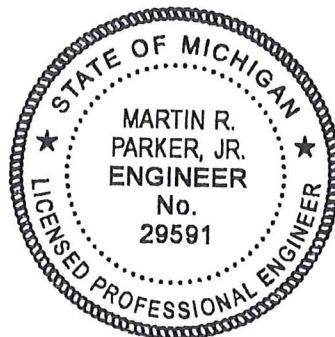
The contents of this report reflect the views of Wade Trim Associates, Inc. who is responsible for the facts and accuracy of the data and the results presented herein. The contents do not necessarily reflect the official views or policies of the Morrissey Management Group, LLC; Acme Township; the Grand Traverse County Road Commission; or the Michigan Department of Transportation; or any related government or private agency.

## Certification

This is to certify that I, Martin R. Parker, Jr, PE has the necessary credentials and experience to conduct traffic impact studies in Michigan. This study was conducted using the latest information available and in accordance with the Grand Traverse County Road Commission and the Michigan Department of Transportation guidelines for conducting traffic impact studies.

Martin R. Parker, Jr., PE  
Senior Project Manager  
Wade Trim Associates, Inc.

*Martin R. Parker, Jr.*  
10-19-2022



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Acronyms	
MDOT	Michigan Department of Transportation
HCM	Highway Capacity Manual
TRB	Transportation Research Board
Type A Injury Crash	Incapacitating Injury Crash
Type B Injury Crash	Non-Incapacitating Injury Crash
Type C Injury Crash	Possible Injury Crash
PDO	Property Damage Only Crash
TIA	Transportation Improvement Association
ADA	American Disabilities Act
Commercial Driveway	Driveway that serves one or more commercial or industrial properties

## EXECUTIVE SUMMARY

Morrissey Management Group, LLC is planning and constructing facilities for the Traverse City Horse Shows. The property is located at the Flintfields Horse Park at 6535 Bates Road, Williamsburg, MI 49690. The Park consists of approximately 130 acres and is about 10 miles east of Traverse City. The Horse Park is an equestrian facility, and in concert with Morrissey Management Group, LLC and Flintfields Horse Park, the Park is expanding to include additional VIP pavilions, vending areas, retail spaces, a proposed pedestrian shuttle pick-up and drop-off area, and proposed gravel overflow parking spaces. Typical equestrian events at the Park include national level jumping, hunter riding, junior and senior competitions, and other planned events. Since 2015, The Traverse City Horse Shows, LLC in conjunction with Flintfields Horse Park have been working on a master plan to develop the property into one of North America's most sought after equestrian destinations. All of the proposed improvements, including the parking areas, new competition and schooling rings, permanent pavilions for viewing, pads in the stabling area venues, pedestrian and horse paths, and landscaping shown on the development plans were completed by the July 2022 data collection date for this project.

The purpose of this study was to conduct a comprehensive review and analysis to quantify the current and future traffic impacts of the Traverse City Horse Shows property. After determining the traffic impacts of the development, proposed mitigation improvements are discussed for intersections with unacceptable levels of service E and F. The study involved the collection and analysis of existing geometric, traffic control, and vehicle traffic data for the two major intersections on Bates Road and the two driveways to the Traverse City Horse Shows facilities. The 1.002-mile study section of Bates Road including the Bates, Brackett, and Sayler Road intersection and the intersection of Bates Road and M-72 was input into Synchro models which were used to conduct the capacity analysis and to examine the queuing and performance issues for existing and proposed conditions.

The results of the capacity analysis based on four days of counting and the six peak hours revealed the following information.

- The intersection of Bates, Brackett, and Sayler Roads as well as the Stable (north driveway) and the Front (south) driveway all operate at level of traffic service A.
- At these intersections, most approach legs also operate at level of service A, but in a few cases they operate at a very high level of service B.
- The results for the intersection of Bates Road and M-72 (highlighted in yellow in Table 1 in the report) operates at level of service F during the Thursday and Friday afternoon peak hours, and during the Saturday peak hour as well. During the Sunday peak hour, the level of service is E, which is also considered a failing level of service that requires mitigation.

- The poor performance of the intersection is attributed to the need for separate right- and left-turn lanes on Bates Road at M-72. Also, there is a need for a left-turn lane from eastbound M-72 to northbound Bates Road. With these improvements, however, the intersection still operates at level of service F. A roundabout design would allow the intersection to operate at level of service B.

Traffic generated for a development is usually obtained from the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11<sup>th</sup> Edition, but the only related land use code in the manual was code 452 Horse Racetrack. The equestrian events and the layout of the Horse Park does not resemble the operation of a racetrack so land use code 452 is not applicable for this development. After reviewing the plans and communicating with the developer, it was learned that some of the gravel overflow parking was available for future use. By the time these vehicles were separated into directions entering the Park and leaving the Park, the numbers (15 to 23) are too small to have an effect on mitigation at the Bates Road and M-72 intersection. Therefore, the capacity analysis completed for existing 2022 conditions also applies to 2023 conditions.

Due to the operational problem identified through Synchro analysis of the intersection of Bates Road and M-72, a crash analysis was conducted on Bates Road to determine if there were any safety problems on the roadway or at the intersections. The crash analysis included the intersections of Bates, Brackett, and Sayler Roads, the two driveways to the Traverse City Horse Shows, and the M-72 and Bates Road intersection.

Based on traffic data collected on Bates Road during the major horse events at the Traverse City Horse Shows during July 2022, there are no existing operational or safety problems at the intersection of Bates, Barrett, and Sayler Roads or at either of the two Horse Show driveways on Bates Road.

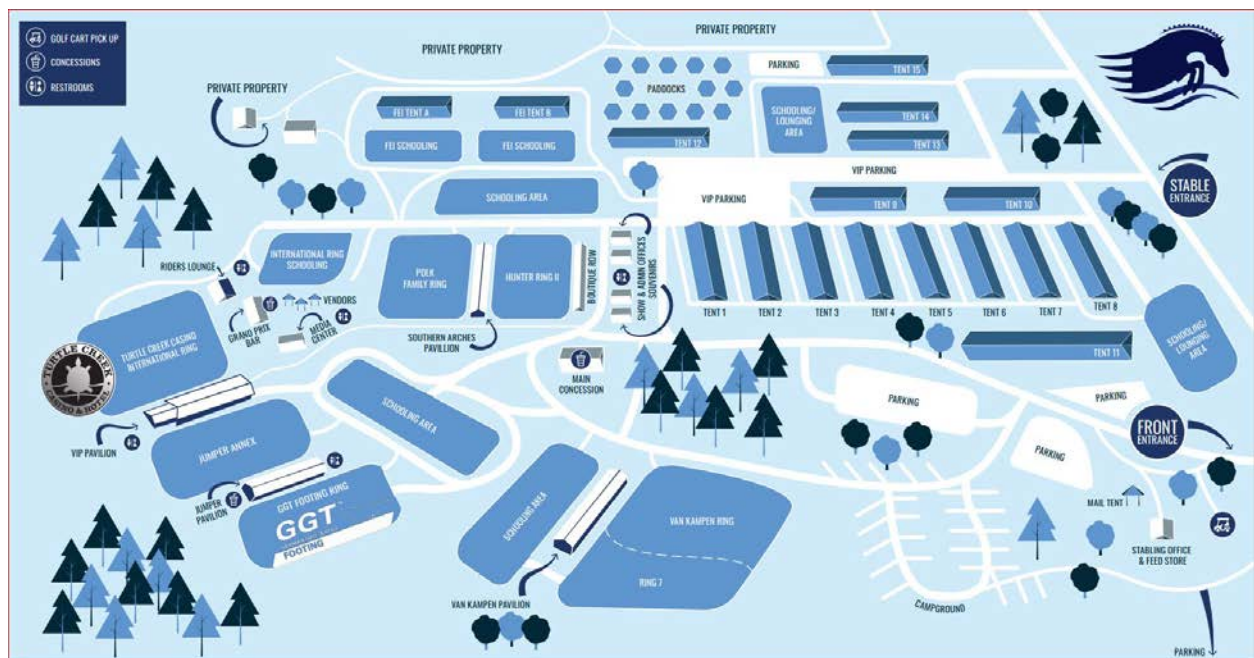
Adding a left-turn lane on M-72 at the Bates Road intersection would significantly reduce driver control delay. Also adding a left-turn lane on M-72 for eastbound traffic to turn left onto Bates Road northbound would improve capacity on this leg, but neither improvement nor a combination would bring the level of service above D, the minimum level of service deemed acceptable for this intersection. Another road design improvement would be to install a roundabout at this location which would permit all approaches to have a level of service of B or better and significantly reduce the crashes at this location. These improvements are expensive and should be discussed with the Grand Traverse County Road Commission and the Michigan Department of Transportation. M-72 road improvements by MDOT to the west of Bates Road indicate MDOT prefers to have M-72 divided with two lanes of traffic in each direction and a roundabout added at major intersections.

## 2.0 INTRODUCTION

Morrissey Management Group, LLC is planning and constructing facilities for the Traverse City Horse Shows. The property is located at the Flintfields Horse Park at 6535 Bates Road, Williamsburg, MI 49690. The Horse Park is an equestrian facility, and in concert with Morrissey Management Group, the facility is expanding to include additional VIP pavilions, vending areas, retail spaces, a proposed pedestrian shuttle pick-up and drop-off area, and proposed gravel overflow parking spaces. Typical equestrian events at the Park include national level jumping, hunter riding, junior and senior competitions, and other planned events.

Since 2015, a significant investment has been made to facilitate the long-term master plan. Completed projects include new competition and schooling rings, permanent pavilions for viewing, pads in the stabling area, etc. The Park draws Olympic athletes, top trainers, professionals, amateur, and junior riders from around the world. The Park has partnered with the Grand Traverse Band of Ottawa & Chippewa Indians to provide entertainment between the horse show events.

The Park consists of approximately 130 acres and is about 10 miles east of Traverse City. A schematic of the layout of the various horse show and public viewing areas, and parking is shown in Figure 1. The Park also contains a camping area where guests can bring their campers and stay on the grounds during the shows.



**Figure 1. Overview of Traverse City Horse Shows facilities.**

## 2.0 OBJECTIVES AND SCOPE

The purpose of this study was to conduct a comprehensive review and analysis to quantify the current and future traffic impacts of the Traverse City Horse Shows property located on the west side of Bates Road in Acme Township. After determining the traffic impacts, the proposed mitigation improvements are discussed.

## 3.0 STUDY PROCEDURE

The study involved the collection and analysis of existing geometric, traffic control, and vehicle traffic data for the two major intersections on Bates Road and the two driveways to the Traverse City Horse Shows facilities. The 1.002-mile study section of Bates Road including the Bates, Brackett, and Sayler Road intersection and the intersection of Bates Road and M-72 was input into Synchro models which were used to conduct the capacity analysis and to examine the queuing and performance issues for existing and proposed conditions.

### 3.1 Assumptions

Based on the data collected and subsequent traffic analyses, the following assumptions were used to identify and quantify the current and future traffic impacts of the Traverse City Horse Shows events.

- Since 2015, The Traverse City Horse Shows, LLC and Flintfields Horse Park have been working on a master plan to develop the property into one of North American's most sought after equestrian destinations. An overview of the site based on plans developed by Mansfield Land Use Consultants is shown in Figure 2. All of the proposed improvements, including the parking areas, venues, pedestrian and horse paths, and landscaping shown on the plans were completed by the July 2022 data collection date for this project.
- In order to determine the maximum number of vehicles travelling to the site, traffic data were collected for two weekdays and for a Saturday and a Sunday to cover weekend trips.
- Based on the traffic counts, the majority of vehicle trips at the site come from and return to M-72. Any future trips should be assigned to this same trip pattern.

When the proposal was prepared for this study, the developer sent it to the Grand Traverse County Road Commission and the MDOT Traverse City Transportation Service Center. Because the intersections of interest were included in the study and multiple days of data collection was proposed, the study procedure was approved.



**Mansfield**  
—OR—  
**Land Use Consultants**

## C4.0

**NOTE:** Property boundaries, land contours, physical features and the like, illustrated on this plan are exhibited for planning purposes only. Mansfield Land Use Consultants makes no guarantee to the correctness nor the completeness of this information.



## 3.2 Data Collection

No previous traffic counts were available for this site. In order to determine the highest peak hour (the hour with the largest number of vehicles) for the Traverse City Horse Shows events, it was decided to collect data on two different days of the week. Thursday and Friday were selected and traffic counts were made from 7:00 AM to 9:00 AM for the morning peak hour, and from 2:00 PM to 6:00 PM for the afternoon peak hour. In addition, weekend counts were taken on Saturday and Sunday from 11:00 AM until 4:00 PM to examine traffic impacts for the weekend peak hour.

The weekday morning and afternoon peak hour traffic counts were made on Thursday and Friday, July 21 and 22, 2022. The weekend peak hour counts were made on July 23, and 24, 2022. The traffic count data for the four days and 6 peak hours is shown in Appendix A. Video's of the traffic counts were also made and are available upon request.

Map views of the Bates Road intersections were taken from Google maps of the area. Also, the photograph on the cover of this report was obtained from the Traverse City Horse Shows website <https://traversecityhorseshows.com/>.

## 4.0 TRAFFIC ANALYSIS PROCEDURES

The traffic analysis included the development of Synchro 11 models to examine the capacity of the existing driveways and intersections. SimTraffic simulation models were also used to examine traffic flow issues and to determine if any street and intersection improvements are needed to accommodate the proposed traffic demand.

The study was conducted by building a Synchro 11 traffic simulation model based on a two-step plan. The first step was to collect existing (Year 2022) geometric and traffic control information along with traffic turning movements to establish existing weekday and weekend conditions. The second phase was to add the traffic generated by the new Traverse City Horse Shows events for the year 2023 and beyond.

The software package, Synchro Studio Version 11.1, Build 2, Revision 9 was used to conduct the traffic analyses for existing and proposed design conditions. Synchro is a software package used for modeling and optimizing traffic signal timing at intersections as well as STOP controlled intersections. The program utilizes the methods of the ***Highway Capacity Manual 2000 through 2016*** to calculate capacity. The delay calculated in Synchro is average control delay per vehicle, which is the same measure used to describe intersection operations in the ***Highway Capacity Manual 2016*** and related software (***HCS 7, 2016***).

The key features and capabilities of Synchro include capacity analysis, coordination, actuated signals, and the development of time-space diagrams. Another key feature is the use of SimTraffic simulation to examine the operational features of the network including queues that form at intersections, spillback from other intersections, and other traffic flow issues. This review aids in identifying traffic flow problems that are not apparent in traditional highway capacity analyses. The models also aid in evaluating alternatives to improve traffic flow.

### 4.1 Synchro and SimTraffic Model Development and Validation

The existing conditions peak-hour models were prepared by entering road and geometric data based on a field review and aerial photograph of the road network. Next turning movement and traffic control data were added to the models. Capacities of the road intersections and driveways were calculated by Synchro and a summary of results for each intersection are shown in Appendix B.

After conducting several preliminary runs and making any needed corrections, 10 simulation runs were made for each model to examine the validity of the models to reflect actual field operational conditions. The validation process involved comparing the actual turning movement counts at each intersection with the SimTraffic Volume Exited report. The models were

considered validated when the field counts and model results were within the greater of  $\pm 10$  percent or  $\pm 20$  vehicles. Based on 10 simulations of each peak period, the average of the volumes for each turning movement was printed. The SimTraffic Performance measures along with the validation logs for each intersection movement are shown in Appendix C.

To examine queuing effects at the intersections, Synchro Queuing and blocking reports were generated and the results are presented in Appendix D.

For the AM and PM periods for each turning movement, the differences between the actual field counts and the average values from 10 simulation runs were within the acceptable range. Accordingly, no adjustments to the simulation parameters were made. After the Synchro models were validated, 10 additional runs were made. The results of these simulation runs are presented in Appendix E.

Because the operational analysis indicated that the intersection of Bates Road and M-72 is operating at level of service F, road mitigation was proposed. The impacts of these treatments are presented in Appendix F.

## 5.0 TRAFFIC IMPACT ANALYSIS

### 5.1 Existing Conditions

As previously mentioned, the Traverse City Horse Shows has vehicle service provided via two access gated driveways on Bates Road. The Front (main) entrance to the site is located 0.565 miles north of M-72, and the Stable entrance is located 0.729 miles north of M-72. There are two other gated entrances to the property, but they are not available to the public.

#### 5.1.a Front Entrance to Traverse City Horse Shows

As shown in Figure 3, the Front entrance to the property is a gated, main access point available to the public for all events. Bates Road is a two-lane, two-way highway at the entrance to the Shows. On southbound Bates Road there is a right-turn taper into the entrance. Traffic headed northbound on Bates Road has to Stop until the vehicle ahead who is making a left-turn into the property completes the turn. The Front entrance is also a paved two-lane, two-way road with an opening on Bates Road that is sufficient to allow a vehicle to turn left and one to turn right simultaneously onto Bates Road. Similar to all other farm entrances in the area, there is not a STOP sign on the Front exit lane.



**Figure 3. Front (Main) entrance to the Traverse City Horse Shows property.**

### 5.1.b Stable Entrance to Traverse City Horse Shows

The Stable entrance to the property, shown in Figure 4, is a paved and gated entrance where horse owners, trainers, etc. have access to the property. Bates Road is a two-lane, two-way highway at this entrance. On southbound Bates Road there is a right-turn taper into the entrance. Traffic headed northbound on Bates Road has to Stop until the vehicle ahead who is making a left-turn into the property completes the turn. The Stable entrance is also a paved two-lane, two-way road with an opening on Bates Road that is sufficient to allow a vehicle to turn left and one to turn right simultaneously onto Bates Road. Similar to all other farm entrances in the area, there is not a STOP sign on the Stable exit lane.



**Figure 4. Stable entrance to the Traverse City Horse Shows property.**



### 5.1.c Intersection of Brackett, Sayler, and Bates Roads

This four-legged intersection is located at the northern end of Bates Road, as shown in Figure 5. The roads in this area are all two-lane, two-way highways. There is only one exit lane on each road. STOP signs are located on the two east-west roads (Brackett and Bates).



**Figure 5. Brackett, Bates, and Sayler Road Intersection  
(north of Traverse City Horse Shows property.)**

### 5.1.d Intersection of Bates Road and M-72

The intersection of Bates Road and M-72 is located on the southern end of Bates Road as shown in Figure 6. Bates Road intersects M-72 forming a tee intersection. The intersection is 162 feet east of the Huron and Eastern Railway tracks. There is a paved shoulder on eastbound M-72, but it is not marked or signed for right turns. During data collection only a few vehicles turned right from the eastbound lane of M-72. The majority of vehicles used the paved shoulder as a right-turn lane. Therefore, in the Synchro model, a right-turn lane was included at this intersection. There is also a paved shoulder on westbound M-72. During the field data collection, only a few vehicles used the paved shoulder to go around and bypass a vehicle stopped in the westbound lane to turn left onto Bates Road. The southbound exit lane on Bates Road is too narrow to contain both a left- and right-turn lane to permit vehicles to turn simultaneously.



**Figure 6. Intersection of Bates Road and M-72.**

## **5.2 Capacity Analyses for Existing Conditions**

Normally capacity analyses are conducted for existing year 2022 conditions without the Horse Park developmental traffic, then year 2022 background traffic without the new development traffic is determined, then design year generated traffic is determined. The existing, background, and design year traffic is added to determine the future impacts of the development. However, for this study, the developer has informed Wade Trim that all of the proposed Horse Show improvements shown on the plans in Figure 1 have been completed prior to the traffic data collection. He further stated that there is no room for more attendees and that when the Park fills to capacity, the gates are closed and people are turned away from entering the events.

Based on the developer's statements, the existing conditions models for the peak hours represents the full buildout of the Horse Shows. Based on counting parking spaces, there is a little more room for more vehicles, and that was used to forecast future traffic for the Horse Shows. More about that in the next section of this report.

The level of service measurement for Stop-controlled intersections is average control delay, which is quantified in terms of seconds of delay per vehicle. Control delay includes the initial deceleration delay, queue move-up time, stopped delay, and acceleration delay. The level of service criteria for two-way Stop-controlled intersections, taken from the ***Highway Capacity Manual 2016***, is shown in Table 1.

The results of the capacity analyses for the existing conditions described above for the 6 peak hours are summarized in Table 2. The detailed Synchro worksheets are shown in Appendix B. A discussion of the results is presented in the following section.

**Table 1. Level of service criteria for two-way Stop controlled intersections.**

Level of Service	Description	Average Control Delay, Seconds per Vehicle
A	Little or no delay.	<10.0
B	Short traffic delays.	Between 10 and 15
C	Average traffic delays.	Between 15 and 25
D	Long traffic delays.	Between 25 and 35
E	Very long traffic delays.	Between 35 and 50
F	Demand exceeds capacity.	>50

Source: Transportation Research Board, ***Highway Capacity Manual 2016***.

Table 2. Highway capacity results for 4 days and 6 peak hours.

Intersection	Date Peak Hour	Weekday Peaks						Weekend Peaks					
		Thursday AM 7:00 AM to 8:00 AM		Thursday PM 4:30 PM to 5:30 PM		Friday AM 8:00 AM to 9:00 AM		Friday PM 4:15 PM to 5:15 PM		Saturday Peak 2:45 PM to 3:45 PM		Sunday Peak 11:45 AM to 12:45 PM	
	Leg	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Bates, Brackett, and Sayler	NB Bates	3	1	6									
	SB Sayler	3	8	5									
	EB Brackett	5	12	19									
	WB Bates	41	12	0									
Intersection	NB Bates												
	LOS		A										
	Delay		7.4										
Approach	NB Bates	A	2.2										
	SB Sayler	A	1.4										
	EB Brackett	A	9.0										
	WB Bates	A	9.4										
Driveaway North 1	NB Bates	33	9	7									
	SB Bates	63	63	21									
	EB Drive 1	1											
	LOS		A										
Intersection	NB Bates												
	LOS		3.3										
	Delay												
Approach	NB Bates	5.9	A										
	SB Bates	0.0	A										
	EB Drive 1	8.9	A										
Driveaway South 2	NB Bates	92	39	69									
	SB Bates	15	15	13									
	EB Drive 2	3											
	LOS		A										
Intersection	NB Bates												
	LOS		3.6										
	Delay												
Approach	NB Bates	5.5	A										
	SB Bates	0.0	A										
	EB Drive 2	9.4	A										
Bates and M-72	EB M-72	98	434	41									
	WB M-72	13	707	22									
	SB Bates												
	LOS		A										
Intersection	NB Bates												
	LOS		1.9										
	Delay												
Approach	EB M-72	2.0	A										
	WB M-72	0.0	A										
	SB Bates	34.3	D										
		169.3	F										
		306.3	F										
		9.4	A										
		0.0	A										
		53.2	F										
		37.2	E										
		45	718										
		18	783										
		2.1	A										
		9.6	A										
		0	A										
		37.2	E										

### 5.3 Results of Capacity Analysis for Existing Conditions

The results of the capacity analysis for the four days of counting and the six peak hours reveals the following information.

- The intersection of Bates, Brackett, and Sayler Roads as well as the Stable (north driveway) and the Front (south) driveway all operate at level of traffic service A.
- At these intersections, most approach legs also operate at level of service A, but in a few cases they operate at a very high level of service B.
- The results for the intersection of Bates Road and M-72 (highlighted in yellow in Table 1) operates at level of service F during the Thursday and Friday afternoon peak hours, and during the Saturday peak hour as well. During the Sunday peak hour, the level of service is E, which is also considered a failing level of service that requires mitigation.
- The poor performance of the intersection is attributed to the need for separate right- and left-turn lanes at M-72. Also, there is a need for a left-turn lane from eastbound M-72 to northbound Bates Road. However, if both improvement are made, the level of service remains at F although the control delay have been greatly reduced from over 300 down to 63 seconds per vehicle.

### 5.4 Capacity Analysis for Design Year 2023 Conditions

As previously mentioned, the improvements shown in the developer's Horse Park Improvements plan were completed before the traffic data were collected for this project. Therefore, the results mentioned above for existing conditions actually represents the capacity analysis for the full build out of the Horse Park.

Traffic generated for a development is usually obtained from the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11<sup>th</sup> Edition, but the only related land use code was 452 Horse Racetrack. The equestrian events and the layout of the Horse Park does not resemble the operation of a racetrack so land use code 452 is not applicable for this development.

The developer provided the following information regarding activities at the Park. "During the busiest show weeks, there are approximately 1,700 horses on the site and approximately 4,500 people on site per day, spread across three show sessions. That number includes staff, riders, rider's families, spectators, trainers, grooms, etc."



After reviewing the plans and communicating with the developer, it was learned that some of the gravel overflow parking was available for future use. Currently, there are parking spaces for 650 vehicles. With grass parking, the Park can utilize a total of 800 parking spaces. This means there could be a maximum of 150 more vehicles during 2023 and in later years.

To convert parking spaces to vehicles, some assumptions are necessary. First, it is necessary to determine how many of these vehicles would arrive during the afternoon peak hour. Based on previous counts by MDOT and others, typically 10 to 15 percent of the total vehicles on a road travel during the afternoon peak hour. In the case of the Horse Park, this means of the 150 available grass spaces, only 15 to 23 additional vehicles would arrive and leave during the afternoon peak hour.

By the time these vehicles were separated into directions entering the Park and leaving the Park, the numbers are too small to have an effect on mitigation at the Bates Road and M-72 intersection. Therefore, the capacity analysis completed for existing 2022 conditions also applies to 2023 conditions.

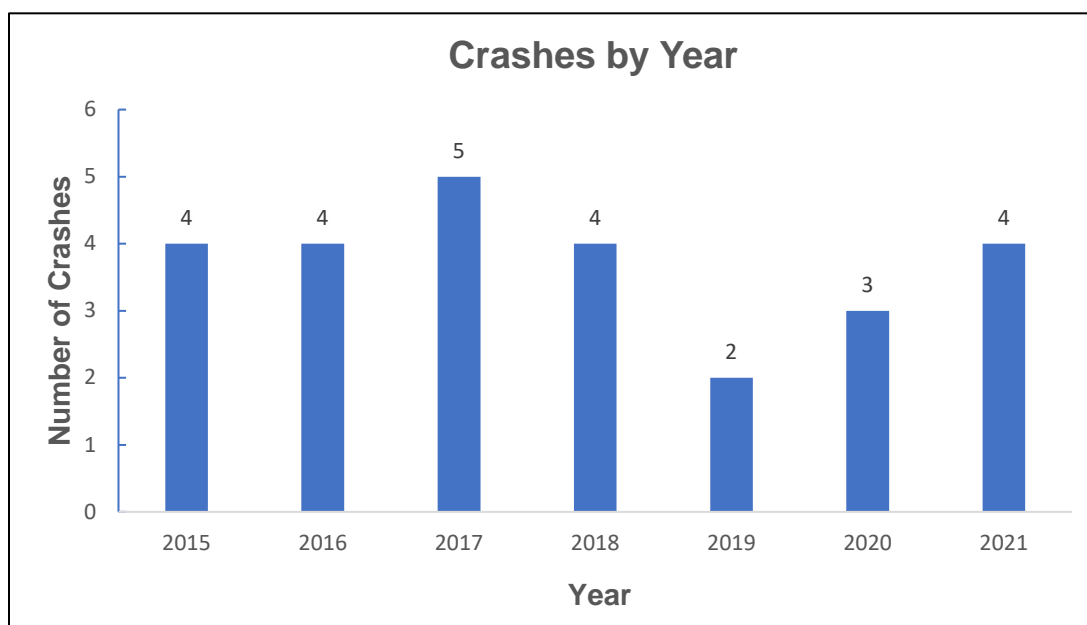
By adding a 250-foot left-turn lane on Bates Road at M-72 the level of service is dramatically reduced to 71.1 seconds of control delay, however, on the approach leg the level of service is still F. In addition, adding an eastbound left-turn lane and a bypass lane on M-72 will reduce the delay and storage issue for eastbound traffic, but the level of service is not improved for Bates Road traffic. Adding a roundabout at the intersection brings all legs to operate at level of service B, however, this is a major improvement that involves funding issues and needs to be discussed with MDOT and the Grand Traverse County Road Commission. With the higher volumes of traffic on M-72, MDOT's preference, as shown on projects to the west of Bates Road at Lautner Road and Town Center Drive, is to divide M-72 with two lanes in each direction and constructing roundabouts at major intersections.

## 6.0 TRAFFIC CRASH ANALYSIS

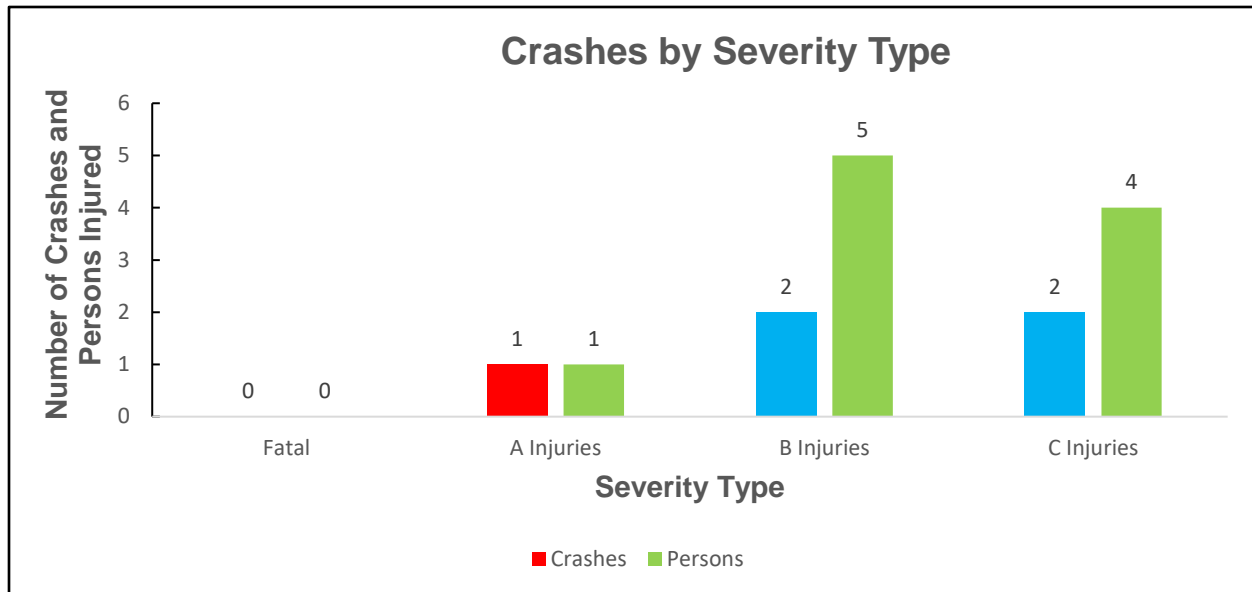
Due to the operational problem identified through Synchro analysis of the intersection of Bates Road and M-72, a crash analysis was conducted on Bates Road to determine if there were any safety problems on the roadway or at the intersections. The crash analysis included the intersections of Bates, Brackett, and Sayler Roads, the two driveways to the Traverse City Horse Shows, and the M-72 and Bates Road intersection.

To examine the crash history of the 1.002-mile corridor, police reported crash data were obtained from the Transportation Improvement Association's statewide traffic crash database. A seven year period, from January 1, 2015 through December 31, 2021 was used in the analysis. The crash analysis was conducted to identify and quantify crash patterns such as collision type, severity, environmental conditions, contributing factors, and other related characteristics.

A summary of the 26 collisions by year reported on Bates Road, which also included crashes on M-72 within 250-feet of the intersection, is shown in Figure 7. Throughout the crash history from 2015 through 2021, the number of collisions has remained about the same. The severity of these crashes has remained low, as shown in Figure 8, with no fatal crashes, and only one Type A Incapacitating Injury crash with one person injured. The 5 Type B Non-Incapacitating Injuries and 4 Type C Possible Injuries are considered minor injuries.



**Figure 7. Crashes by year on Bates Road including the M-72 intersection.**

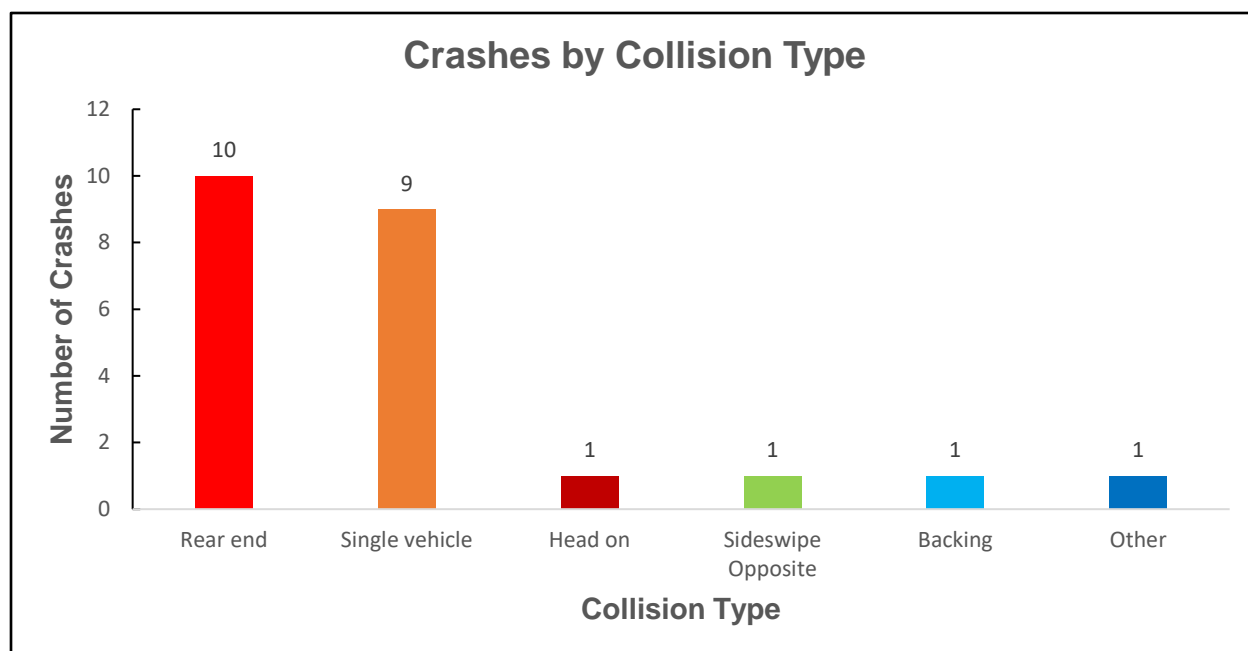


**Figure 8. Crashes by severity on Bates Road including the M-72 intersection.**

The Covid Pandemic period beginning in February 2020 and extending through most of 2021, significantly reduced trips on most roads and reduced crashes due to the stay-at-home restrictions and various social distancing limitations. The Pandemic does not appear to have had much of an influence on Bates Road as crashes were 3 in 2020 and 4 in 2021 which is very close to the average number of crashes prior to the Pandemic. Accordingly, no adjustments in crashes were made for the COVID Pandemic.

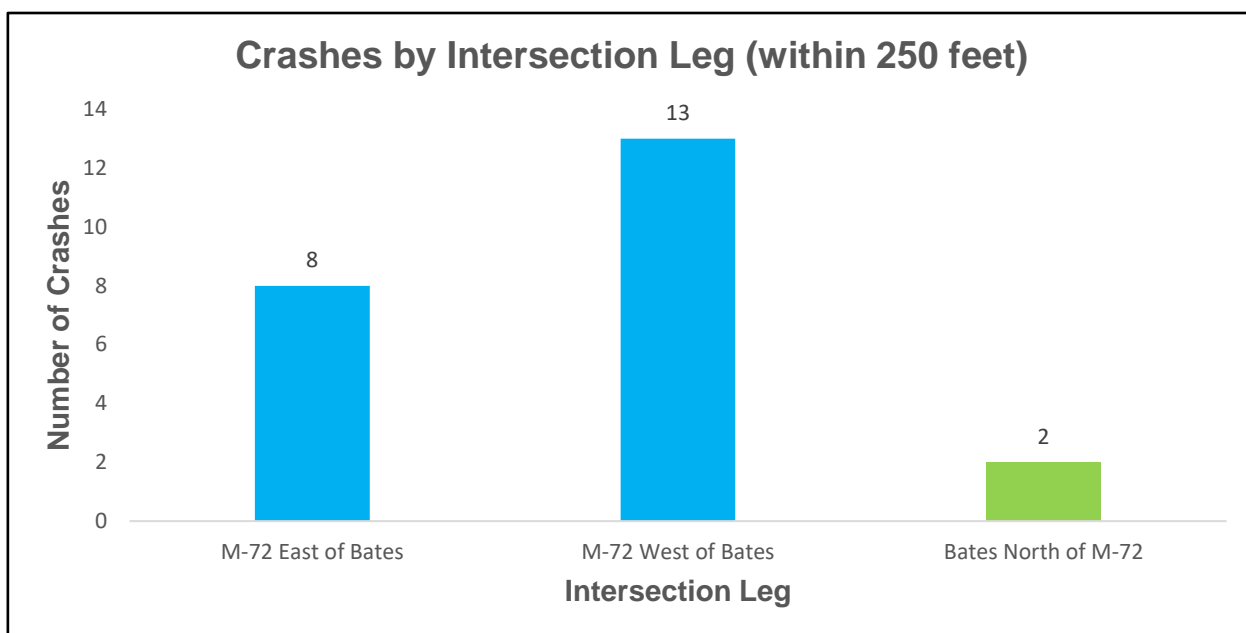
Beginning with the intersection of Bates, Brackett, and Saylor Roads, there was one angle crash at this location on September 23, 2021, with one person sustaining a Type C Possible Injury. At the intersection of Arabian and Bates, there was one single-vehicle collision that occurred on a cloudy night on October 9, 2020. There were no injuries in this collision. On March 4, 2018, a single-vehicle collision was reported on Bates Road. These data suggest that the crash history on Bates Road is low even with traffic generated from Traverse City Horse Shows that were ongoing during the summer months, during the study period.

The crash history at the intersection of Bates Road and M-72 is different. Of the 26 collisions identified within 250-feet of the intersections, 23 crashes occurred at the intersection of Bates Road and M-72. As shown in Figure 9, the predominate collision types were rear end and single vehicle crashes. Rear end crashes are expected at rural locations where there is considerable delay at intersections. Single motor vehicle crashes occurs when a driver either enters an area at a speed too fast for conditions, or where they misjudge road and vehicle conditions and end up running off the road.



**Figure 9. Crashes by collision type at Bates Road and M-72.**

The location of crashes on the legs of the intersection describes where the crashes are occurring. As shown in Figure 10, only 2 of the crashes occurred on Bates Road. On M-72 however, there were 8 crashes east of Bates Road and 13 crashes west of Bates Road.



**Figure 10. Crashes on each intersection leg at Bates Road and M-72.**

Of the 23 crashes that occurred at this intersection, 8 (35%) collisions were reported during June, July, and August, the months that the Traverse City Horse Shows were taking place. Of those crashes 1 occurred in June, 7 occurred in July, and there were no reported collisions in August. Of the 8 crashes, 7 were rear end and 1 was a single-vehicle collision. The rear end collisions that occurred west of M-72 were possibly related to vehicles stopped waiting to turn left onto M-72 and were struck in the rear by oncoming eastbound vehicles. Likewise, the collisions the collision that occurred east of M-72 were possibly related to a westbound vehicle on M-72 rapidly slowing or stopping for a eastbound vehicle turning left onto M-72 and were struck in the rear by an oncoming westbound vehicle. It is not possible to determine if any of these vehicles were attending the Horse Show competitions, but it is possible they were related as all of the collisions occurred during daylight, when the weather condition was clear.



## 7.0 Conclusions and Recommendations

Based on traffic data collected on Bates Road during the major horse events at the Traverse City Horse Shows during July 2022, there are no existing operational or safety problems at the intersection of Bates, Barrett, and Saylor Roads or at either of the two Horse Show driveways on Bates Road. The grounds and parking facilities at the Horse Show property are well maintained and are very aesthetically appealing. Based on comments received from patrons, attending the Horse Shows is a very relaxing and stimulating experience. Additional traffic at the two Horse Show driveways would not appear to create any future problems.

The intersection of Bates Road and M-72, both from a safety and operational viewpoint, needs mitigation in the form of adding a right- or left-turn lane on Bates Road to provide drivers an opportunity to simultaneously turn left and right onto M-72. The level of service of the Bates approach to the intersection is F on three of the four peak hours examined in this study. Adding the left- or right-turn lane will greatly improve the level of service although the level of service would still be an F or failing grade.

On M-72 east of Bates Road, it would be desirable to use the paved shoulder in this area as a marked and signed right-turn only lane. Nearly 95% of the traffic turning right onto Bates Road are currently using the pavement as a right-turn lane.

The greatest need on M-72 is to provide a left-turn lane at Bates Road and allow through traffic to proceed around left-turning vehicles with a bypass lane. Another road design improvement would be to install a roundabout at this location which would permit all approaches to have a level of service of B or better and significantly reduce the crashes at this location.

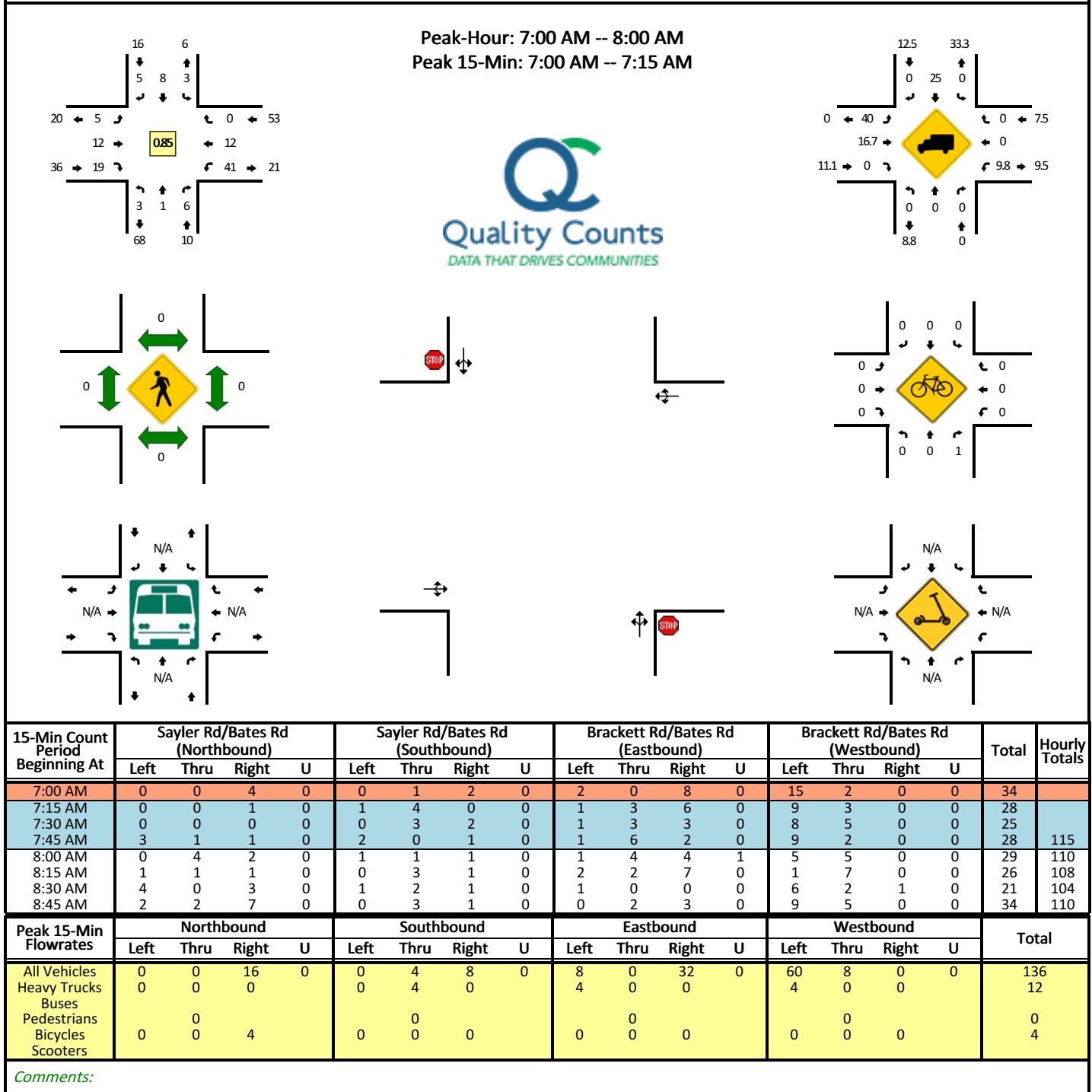
These improvements are expensive and should be discussed with the Grand Traverse County Road Commission and the Michigan Department of Transportation. M-72 road improvements by MDOT to the west of Bates Road indicate MDOT prefers to have M-72 divided with two lanes of traffic in each direction and a roundabout added at major intersections.

The safety and operational problems at M-72 and Bates Road have been going on for many years and need attention to eliminate an existing condition. Whether the Traverse City Horse Shows can participate in the mitigation effort, is up to the owners. Wade Trim will be happy, if called upon, to lead the discussion.

## **Appendix A – Traffic Data Collected by Quantity Counts**

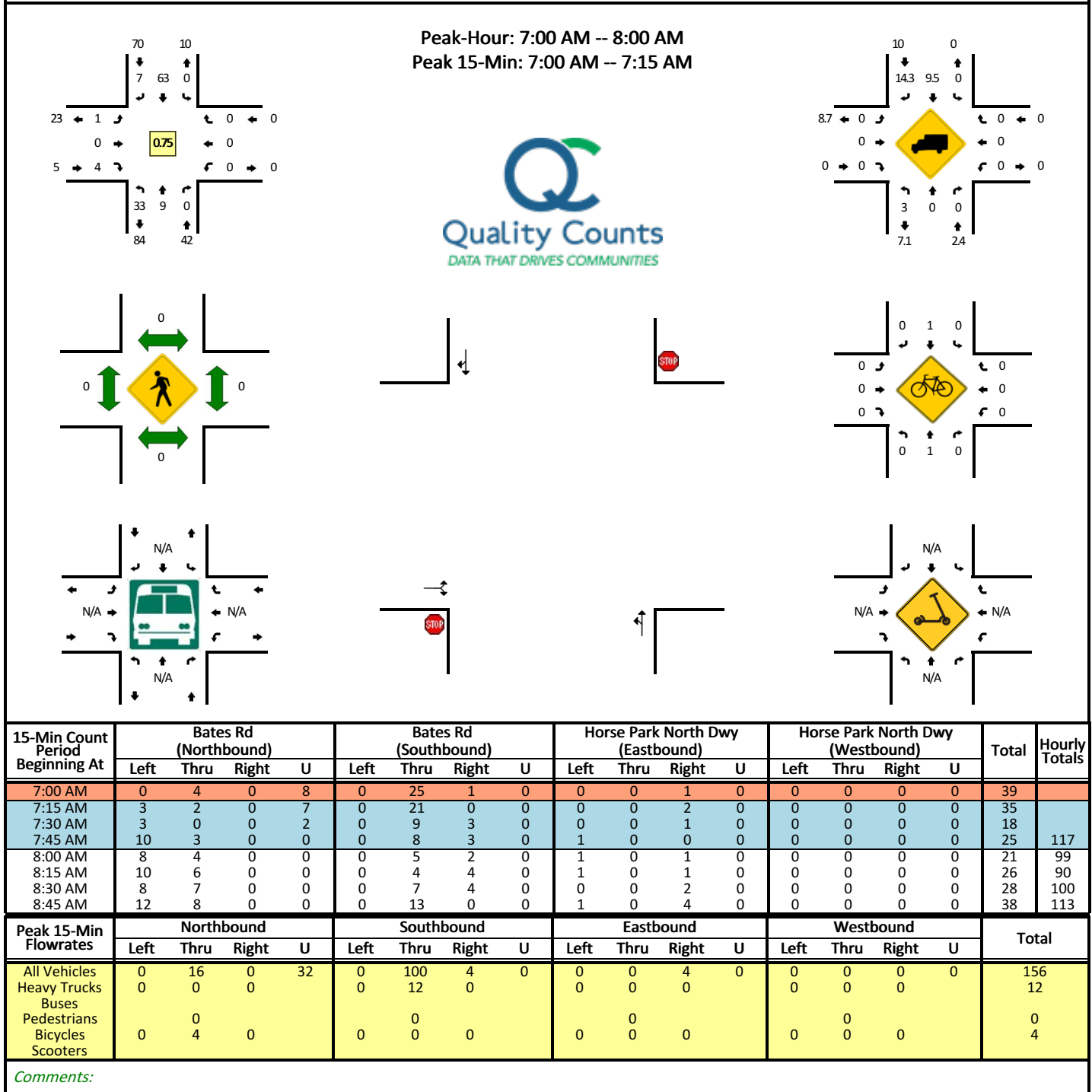
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**CITY/STATE:** Grand Traverse, MI

**QC JOB #:** 15867701  
**DATE:** Thu, Jul 21 2022



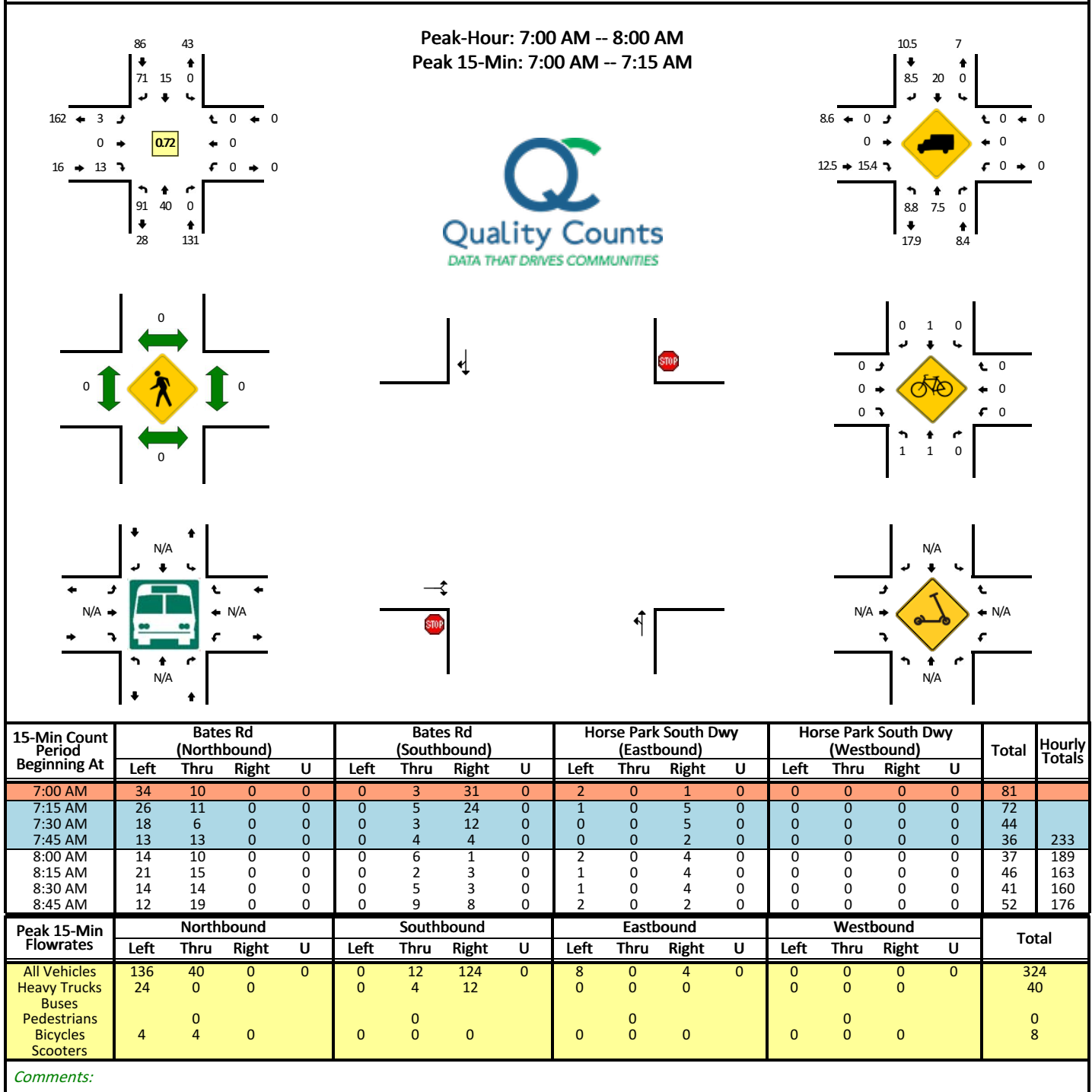
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**CITY/STATE:** Grand Traverse, MI

**QC JOB #:** 15867707  
**DATE:** Thu, Jul 21 2022



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**CITY/STATE:** Grand Traverse, MI

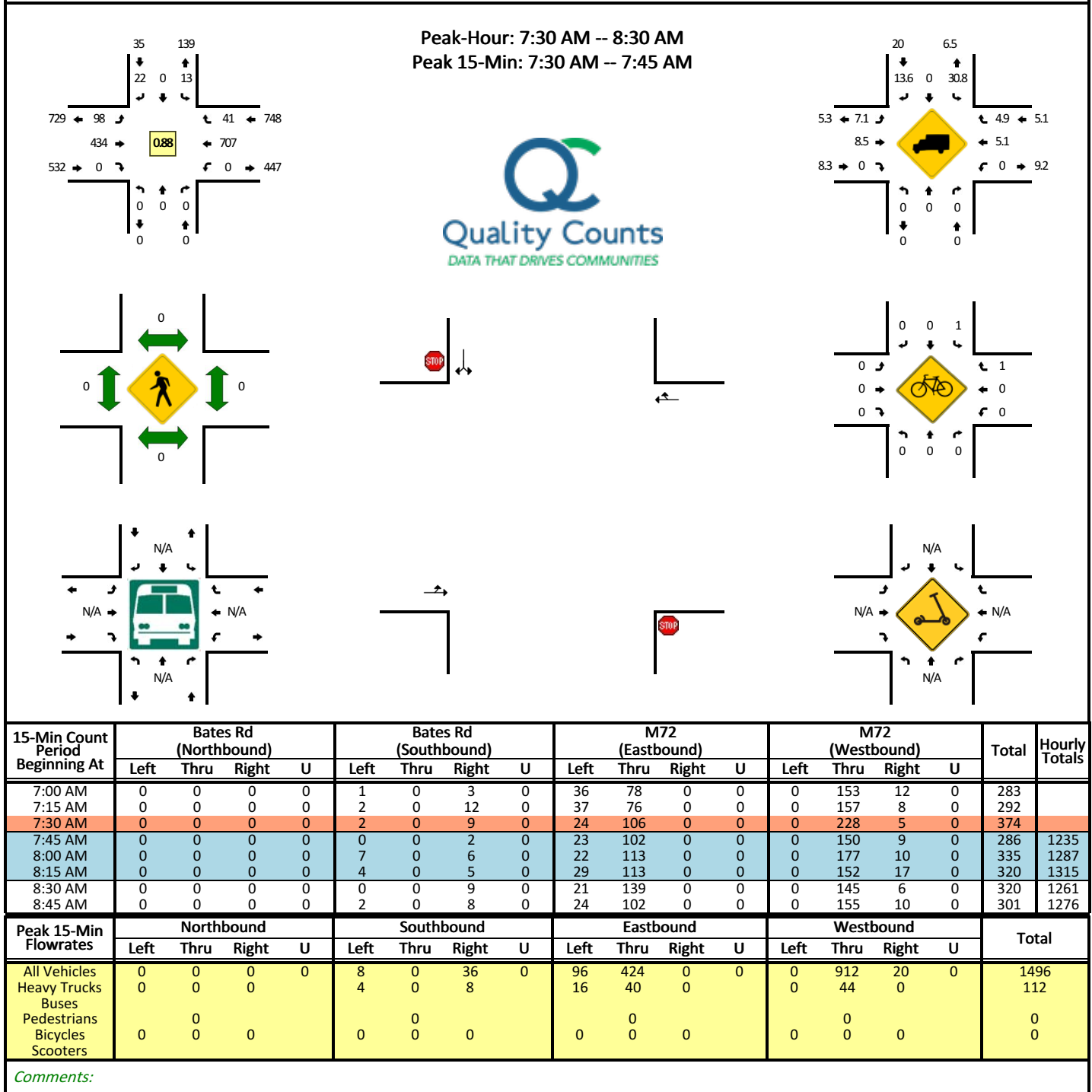
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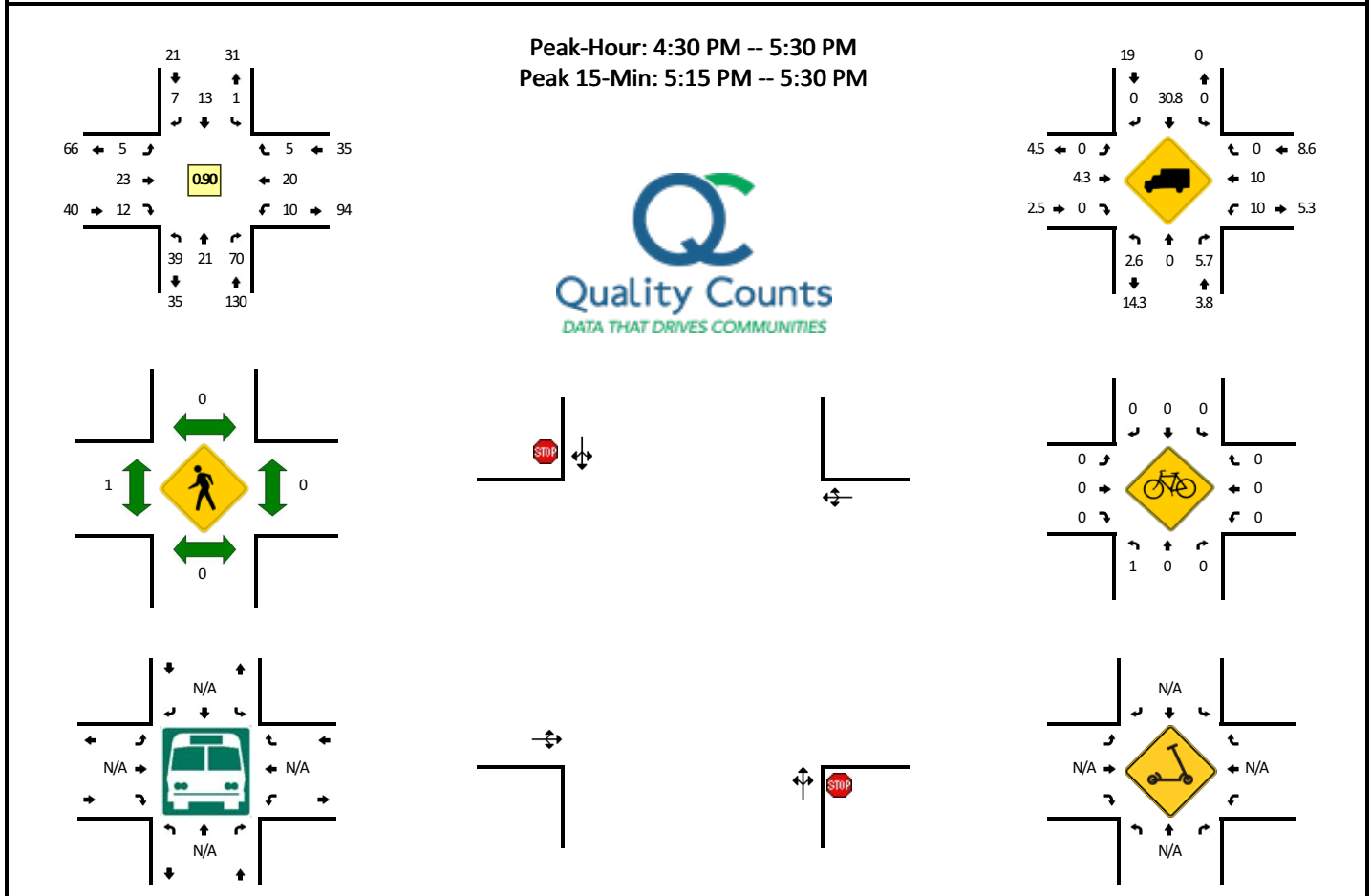
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**CITY/STATE:** Grand Traverse, MI

**QC JOB #:** 15867719  
**DATE:** Thu, Jul 21 2022



**LOCATION:** Sayler Rd/Bates Rd -- Brackett Rd/Bates Rd  
**CITY/STATE:** Grand Traverse, MI

**QC JOB #:** 15867702  
**DATE:** Thu, Jul 21 2022

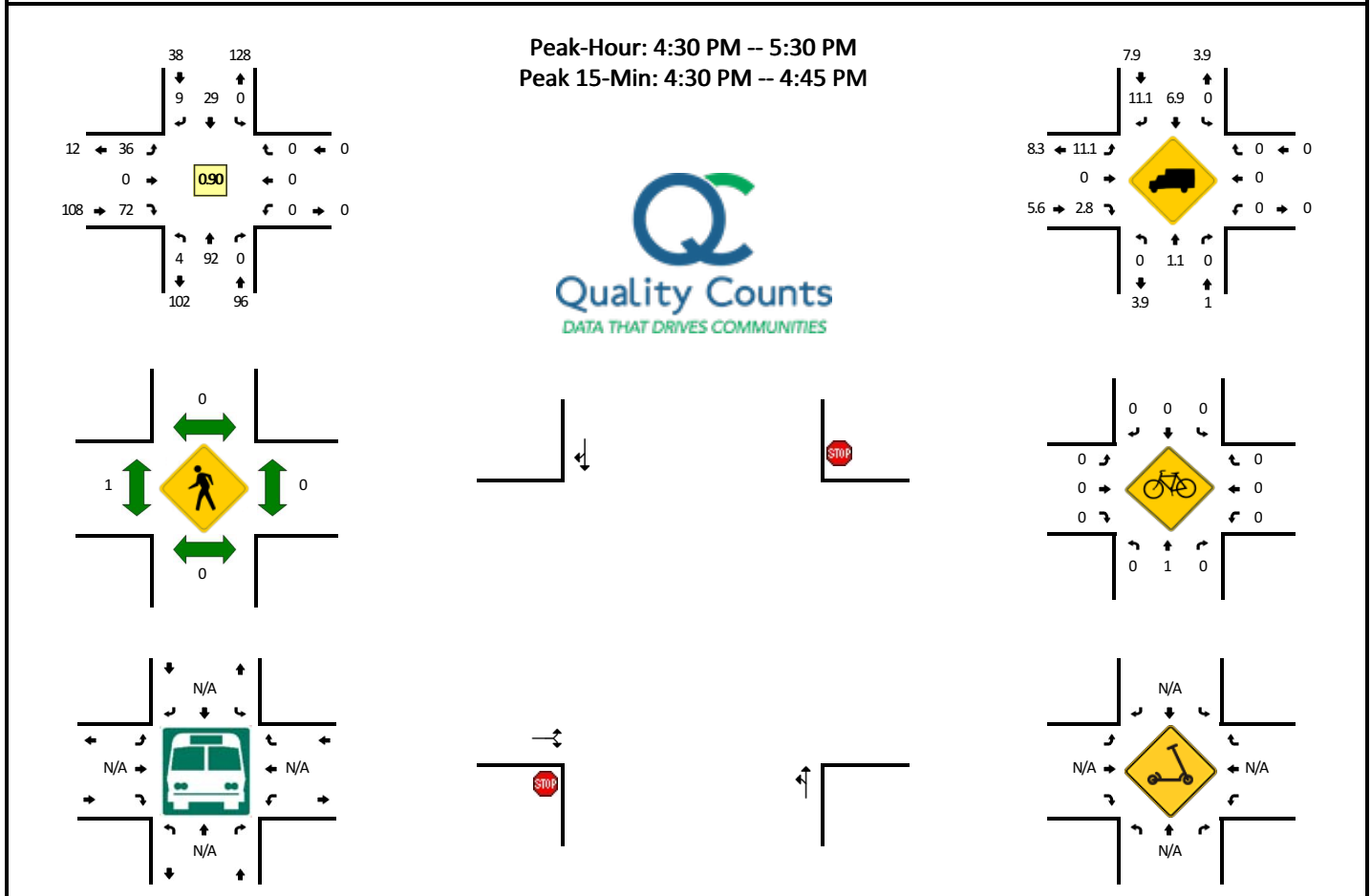


15-Min Count Period Beginning At	Sayler Rd/Bates Rd (Northbound)				Sayler Rd/Bates Rd (Southbound)				Brackett Rd/Bates Rd (Eastbound)				Brackett Rd/Bates Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	4	2	7	0	0	0	0	0	0	6	0	0	1	2	0	0	22	
2:15 PM	5	1	6	0	0	0	0	0	1	3	0	0	3	5	2	0	26	
2:30 PM	2	3	7	0	0	1	0	0	2	5	4	0	3	5	1	0	33	
2:45 PM	5	6	8	0	1	2	1	0	0	3	2	0	3	5	0	0	36	117
3:00 PM	10	2	11	0	0	1	3	0	2	4	1	0	4	1	1	0	40	135
3:15 PM	5	1	12	0	1	0	1	0	0	4	3	0	4	4	0	0	35	144
3:30 PM	12	2	15	0	2	1	1	0	2	7	1	0	2	5	0	0	50	161
3:45 PM	5	5	6	0	0	3	0	0	0	4	1	0	3	2	0	0	29	154
4:00 PM	3	5	12	0	1	6	0	0	0	8	0	0	2	2	1	0	40	154
4:15 PM	10	5	11	0	0	3	0	0	1	9	0	0	1	3	0	0	43	162
4:30 PM	9	6	12	0	0	7	2	0	2	3	2	0	2	2	1	0	48	160
4:45 PM	5	7	19	0	0	3	1	0	0	7	3	0	1	6	1	0	53	184
5:00 PM	11	4	23	0	0	1	0	0	2	8	2	0	2	6	3	0	62	206
5:15 PM	14	4	16	0	1	2	4	0	1	5	5	0	5	6	0	0	63	226
5:30 PM	5	3	9	0	0	0	3	0	4	8	1	0	2	7	0	0	42	220
5:45 PM	2	7	6	0	0	1	2	0	2	17	1	0	1	5	0	0	44	211
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	56	16	64	0	4	8	16	0	4	20	20	0	20	24	0	0	252	
Heavy Trucks	4	0	4	0	0	4	0	0	0	0	0	0	4	0	0	0	16	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

**Comments:**

**LOCATION:** Bates Rd -- Horse Park North Dwy  
**CITY/STATE:** Grand Traverse, MI

**QC JOB #:** 15867708  
**DATE:** Thu, Jul 21 2022

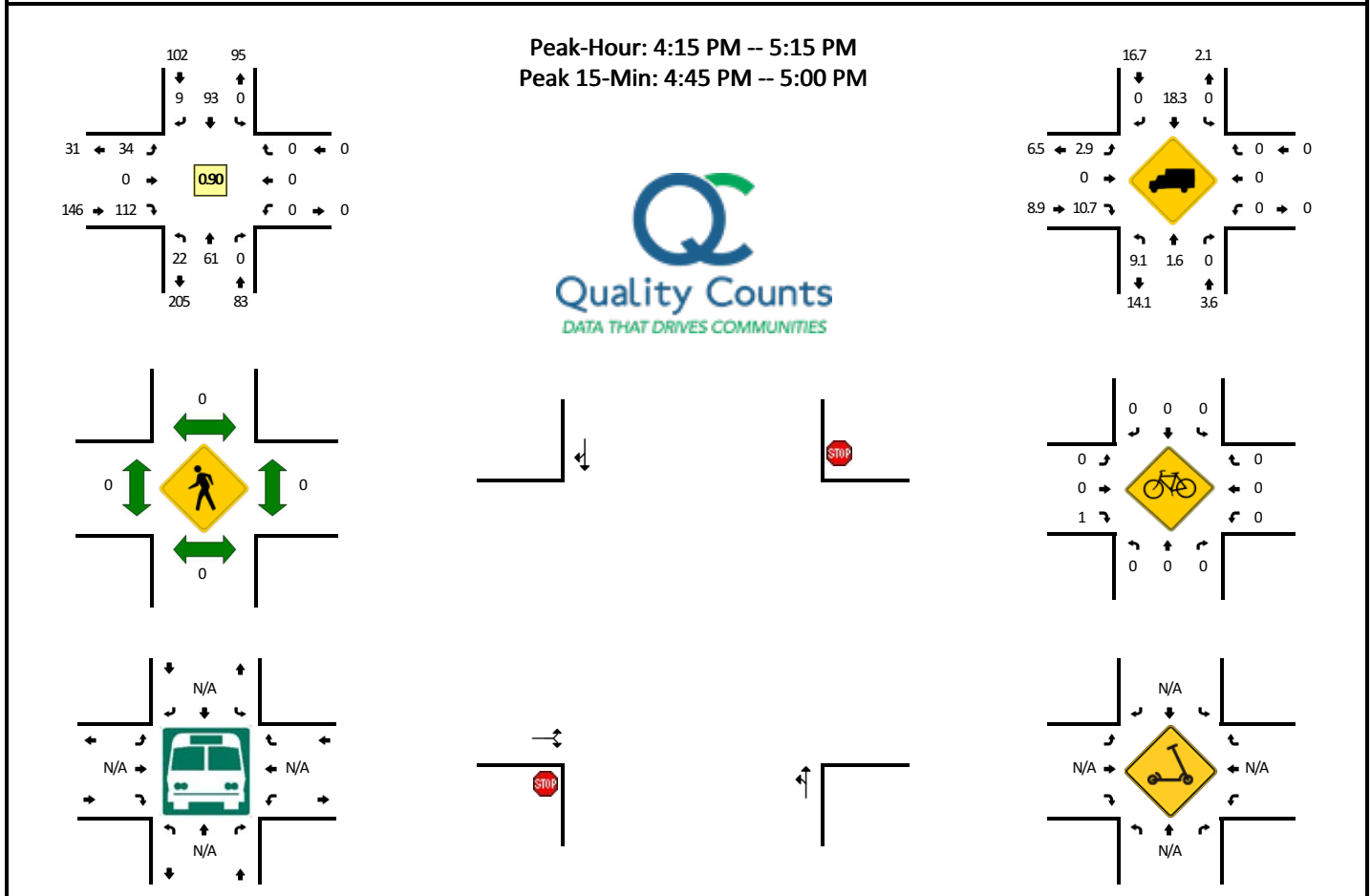


15-Min Count Period Beginning At	Bates Rd (Northbound)				Bates Rd (Southbound)				Horse Park North Dwy (Eastbound)				Horse Park North Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	3	8	0	0	0	1	1	0	7	0	10	0	0	0	0	0	30	
2:15 PM	7	7	0	0	0	3	1	0	4	0	8	0	0	0	0	0	30	
2:30 PM	2	7	0	0	0	4	4	0	6	0	9	0	0	0	0	0	32	
2:45 PM	1	10	0	0	0	9	0	0	8	0	11	0	0	0	0	0	39	131
3:00 PM	5	19	0	0	0	8	0	0	5	0	8	0	0	0	0	0	45	146
3:15 PM	2	11	0	0	0	7	2	0	6	0	9	0	0	0	0	0	37	153
3:30 PM	2	22	0	0	0	6	0	0	6	0	10	0	0	0	0	0	46	167
3:45 PM	3	7	0	0	0	7	2	0	6	0	6	0	0	0	0	0	31	159
4:00 PM	0	15	0	0	0	8	2	0	8	0	12	0	0	0	0	0	45	159
4:15 PM	2	17	0	0	0	2	5	0	6	0	18	0	0	0	0	0	50	172
4:30 PM	0	14	0	0	0	12	3	0	11	0	27	0	0	0	0	0	67	193
4:45 PM	1	23	0	1	0	7	1	0	8	0	19	0	0	0	0	0	60	222
5:00 PM	2	34	0	0	0	3	2	0	4	0	13	0	0	0	0	0	58	235
5:15 PM	0	21	0	0	0	7	3	0	13	0	13	0	0	0	0	0	57	242
5:30 PM	0	14	0	0	0	7	1	0	3	0	9	0	0	0	0	0	34	209
5:45 PM	1	10	0	0	0	2	2	0	4	0	7	0	0	0	0	0	26	175
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	56	0	0	0	48	12	0	44	0	108	0	0	0	0	0	268	
Heavy Trucks	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	4	
Buses																		
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	
Scoters																		

**Comments:**

**LOCATION:** Bates Rd -- Horse Park South Dwy  
**CITY/STATE:** Grand Traverse, MI

**QC JOB #:** 15867714  
**DATE:** Thu, Jul 21 2022

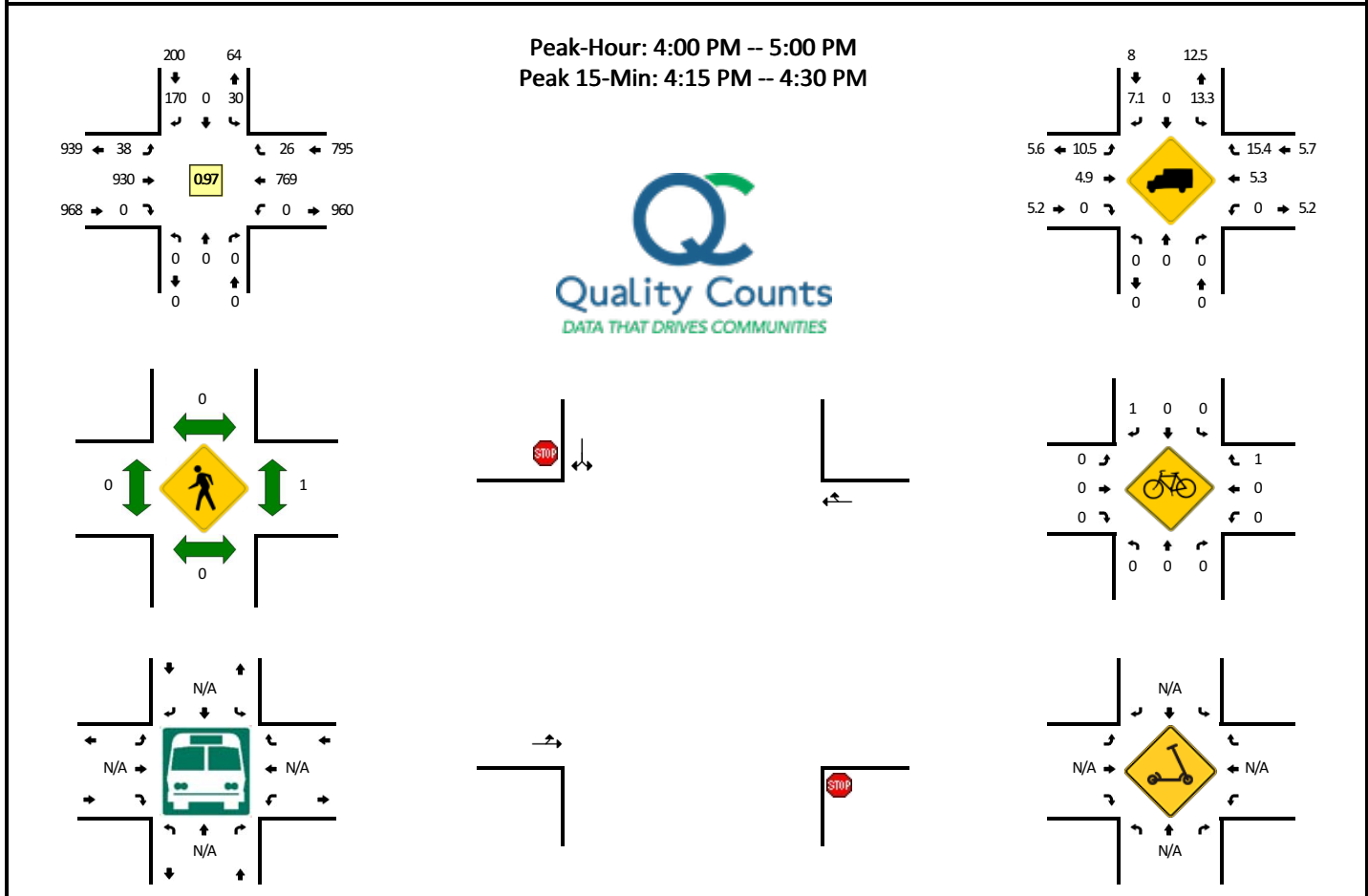


15-Min Count Period Beginning At	Bates Rd (Northbound)				Bates Rd (Southbound)				Horse Park South Dwy (Eastbound)				Horse Park South Dwy (Westbound)				Total	Hourly Totals
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2:00 PM	5	5	0	0	0	11	0	0	6	0	10	0	0	0	0	0	37	
2:15 PM	5	11	0	0	0	10	1	0	3	0	19	0	0	0	0	0	49	
2:30 PM	2	5	0	0	0	10	2	0	5	0	15	1	0	0	0	0	40	
2:45 PM	7	6	0	0	0	20	1	0	4	0	15	1	0	0	0	0	54	180
3:00 PM	3	22	0	0	0	15	1	0	2	0	7	0	0	0	0	0	50	193
3:15 PM	4	11	0	0	0	13	1	0	2	0	8	0	0	0	0	0	39	183
3:30 PM	10	19	0	0	0	16	2	0	6	0	24	0	0	0	0	0	77	220
3:45 PM	3	8	0	1	0	12	0	0	2	0	25	0	0	0	0	0	51	217
4:00 PM	3	11	0	0	0	20	1	0	4	0	13	0	0	0	0	0	52	219
4:15 PM	5	9	0	0	0	18	1	0	10	0	26	0	0	0	0	0	69	249
4:30 PM	7	9	0	0	0	36	4	0	5	0	26	0	0	0	0	0	87	259
4:45 PM	6	15	0	0	0	24	3	0	10	0	34	0	0	0	0	0	92	300
5:00 PM	4	28	0	0	0	15	1	0	9	0	26	0	0	0	0	0	83	331
5:15 PM	5	6	0	0	0	18	2	0	14	0	23	0	0	0	0	0	68	330
5:30 PM	6	10	0	0	0	12	4	0	4	0	16	0	0	0	0	0	52	295
5:45 PM	6	11	0	0	0	8	1	0	1	0	14	0	0	0	0	0	41	244
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	24	60	0	0	0	96	12	0	40	0	136	0	0	0	0	0	368	
Heavy Trucks	0	0	0	0	0	24	0	0	0	0	12	0	0	0	0	0	36	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

**LOCATION:** Bates Rd -- M72  
**CITY/STATE:** Grand Traverse, MI

**QC JOB #:** 15867720  
**DATE:** Thu, Jul 21 2022



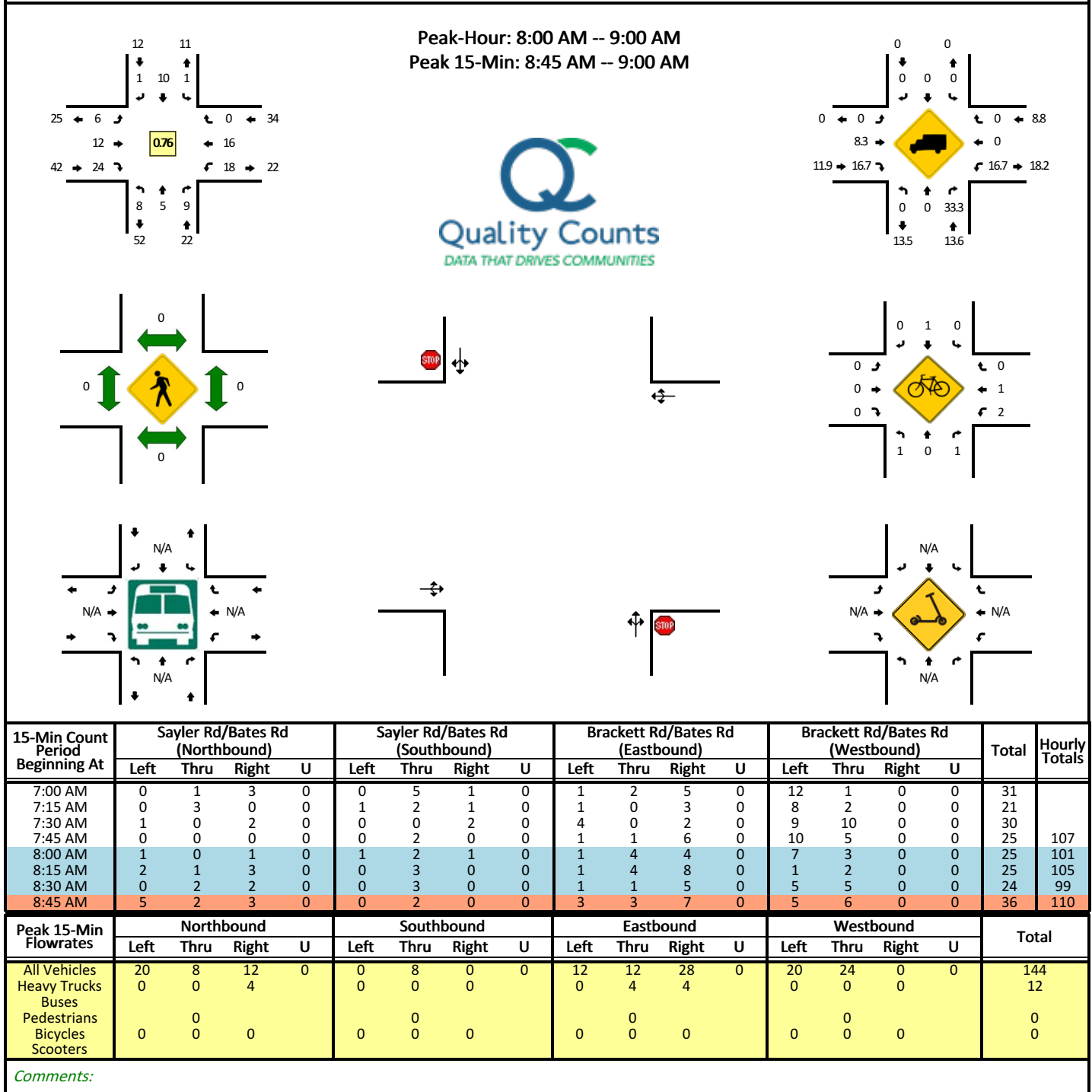
15-Min Count Period Beginning At	Bates Rd (Northbound)				Bates Rd (Southbound)				M72 (Eastbound)				M72 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	0	0	0	0	5	0	16	0	9	186	0	0	0	178	6	0	400	
2:15 PM	0	0	0	0	12	0	26	0	14	205	0	0	0	194	6	0	457	
2:30 PM	0	0	0	0	3	0	19	0	6	189	0	0	0	175	6	0	398	
2:45 PM	0	0	0	0	13	0	25	0	10	163	0	0	0	186	5	0	402	1657
3:00 PM	0	0	0	0	8	0	13	0	12	222	0	0	0	178	9	0	442	1699
3:15 PM	0	0	0	0	7	0	18	0	8	236	0	0	0	156	5	0	430	1672
3:30 PM	0	0	0	0	9	0	38	0	8	228	0	0	0	156	11	0	450	1724
3:45 PM	0	0	0	0	14	0	29	0	3	242	0	0	0	193	7	0	488	1810
4:00 PM	0	0	0	0	9	0	28	0	6	243	0	0	0	198	6	0	490	1858
4:15 PM	0	0	0	0	5	0	40	0	3	258	0	0	0	193	7	0	506	1934
4:30 PM	0	0	0	0	5	0	57	0	14	204	0	0	0	183	4	0	467	1951
4:45 PM	0	0	0	0	11	0	45	0	15	225	0	0	0	195	9	0	500	1963
5:00 PM	0	0	0	0	13	0	34	0	13	220	0	0	0	193	4	0	477	1950
5:15 PM	0	0	0	0	7	0	45	0	6	202	0	0	0	215	3	0	478	1922
5:30 PM	0	0	0	0	3	0	26	0	5	232	0	0	0	174	8	0	448	1903
5:45 PM	0	0	0	0	5	0	19	0	11	257	0	0	0	173	5	0	470	1873
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	0	0	20	0	160	0	12	1032	0	0	0	772	28	0	2024	
Heavy Trucks	0	0	0	0	0	0	12	0	4	32	0	0	0	28	8	0	84	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	4		0	0	0		0	0	0		4	
Scooters																		

**Comments:**



**LOCATION:** Saylor Rd/Bates Rd -- Brackett Rd/Bates Rd  
**CITY/STATE:** Grand Traverse, MI

**QC JOB #:** 15867703  
**DATE:** Fri, Jul 22 2022

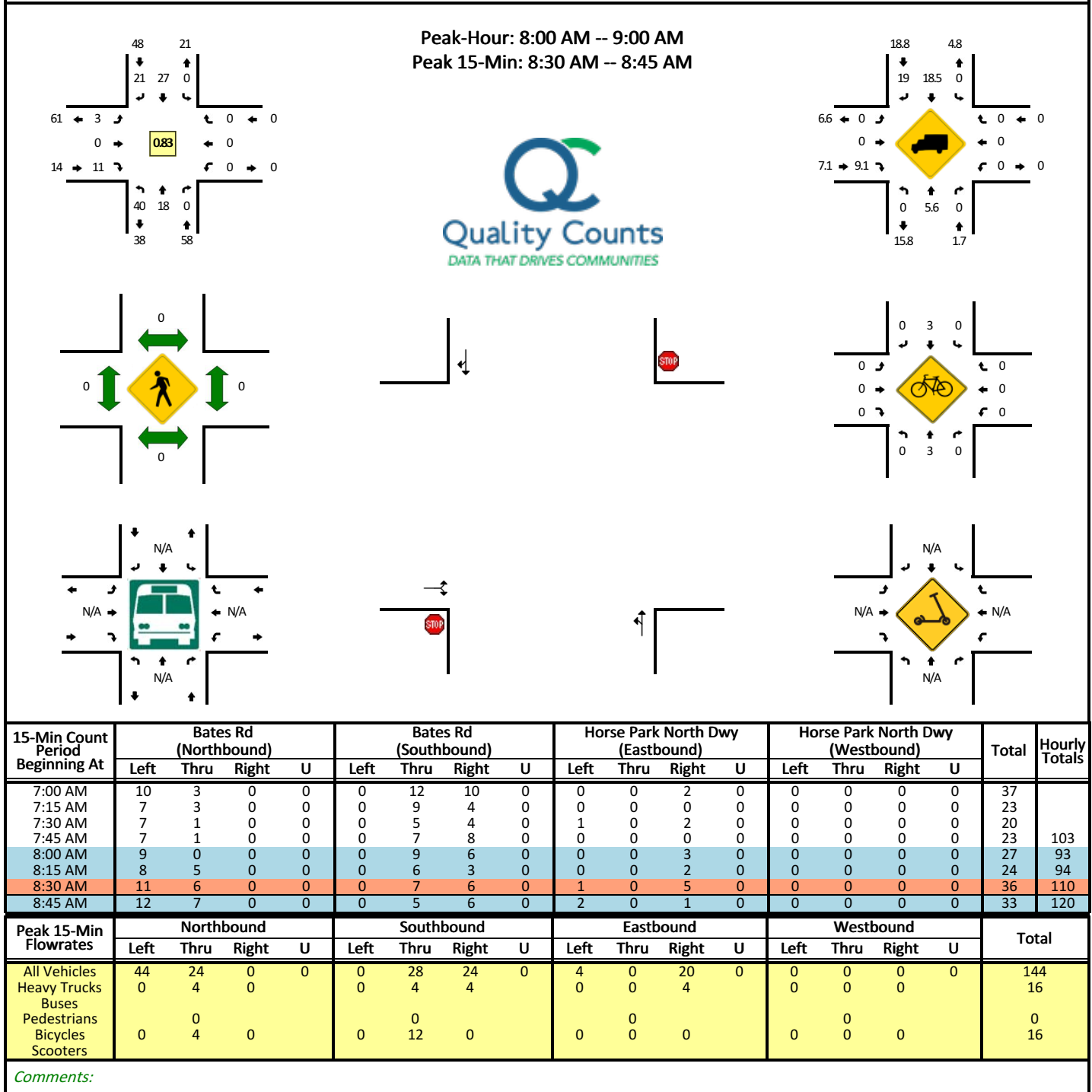


Report generated on 8/4/2022 4:42 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

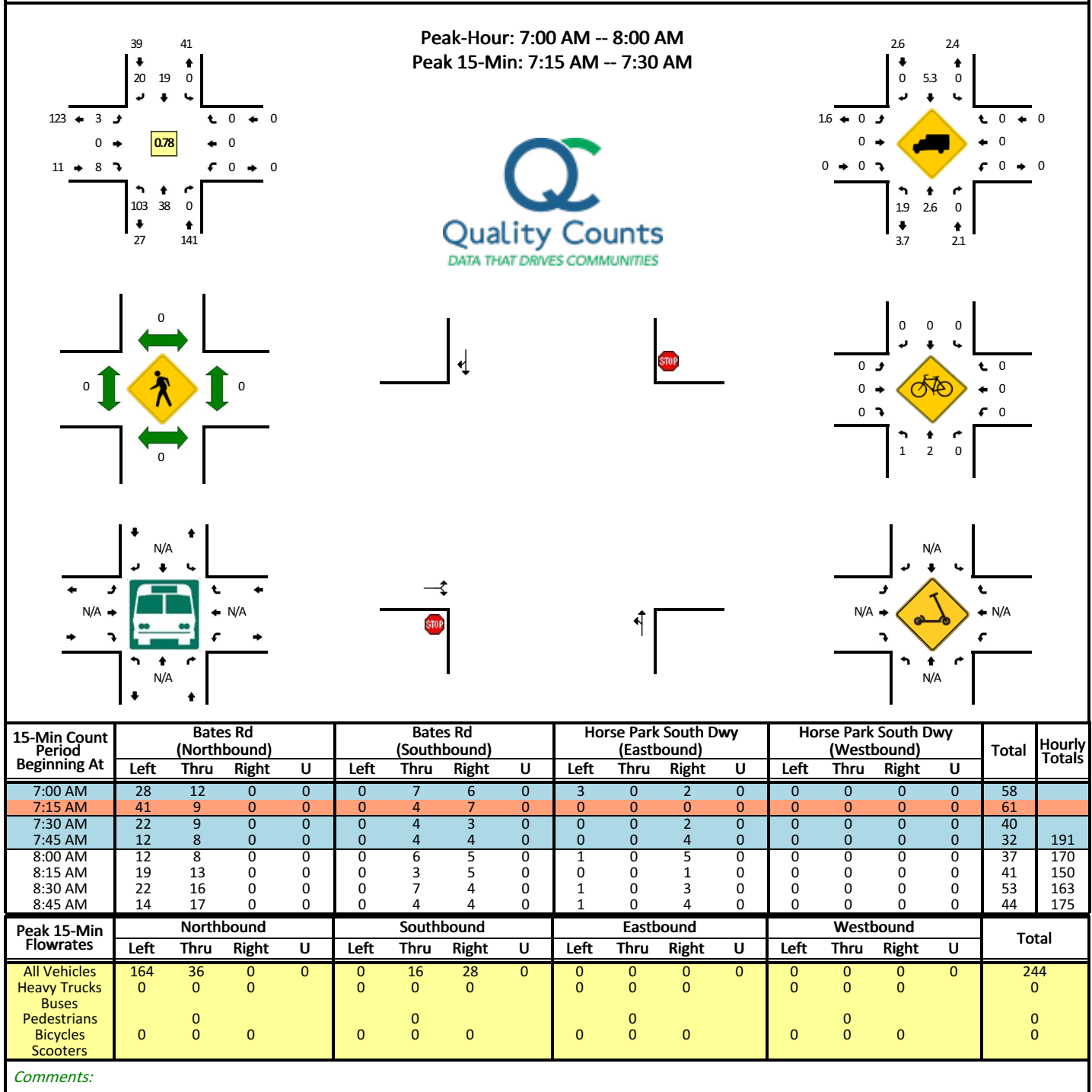
**LOCATION:** Bates Rd -- Horse Park North Dwy  
**CITY/STATE:** Grand Traverse, MI

**QC JOB #:** 15867709  
**DATE:** Fri, Jul 22 2022



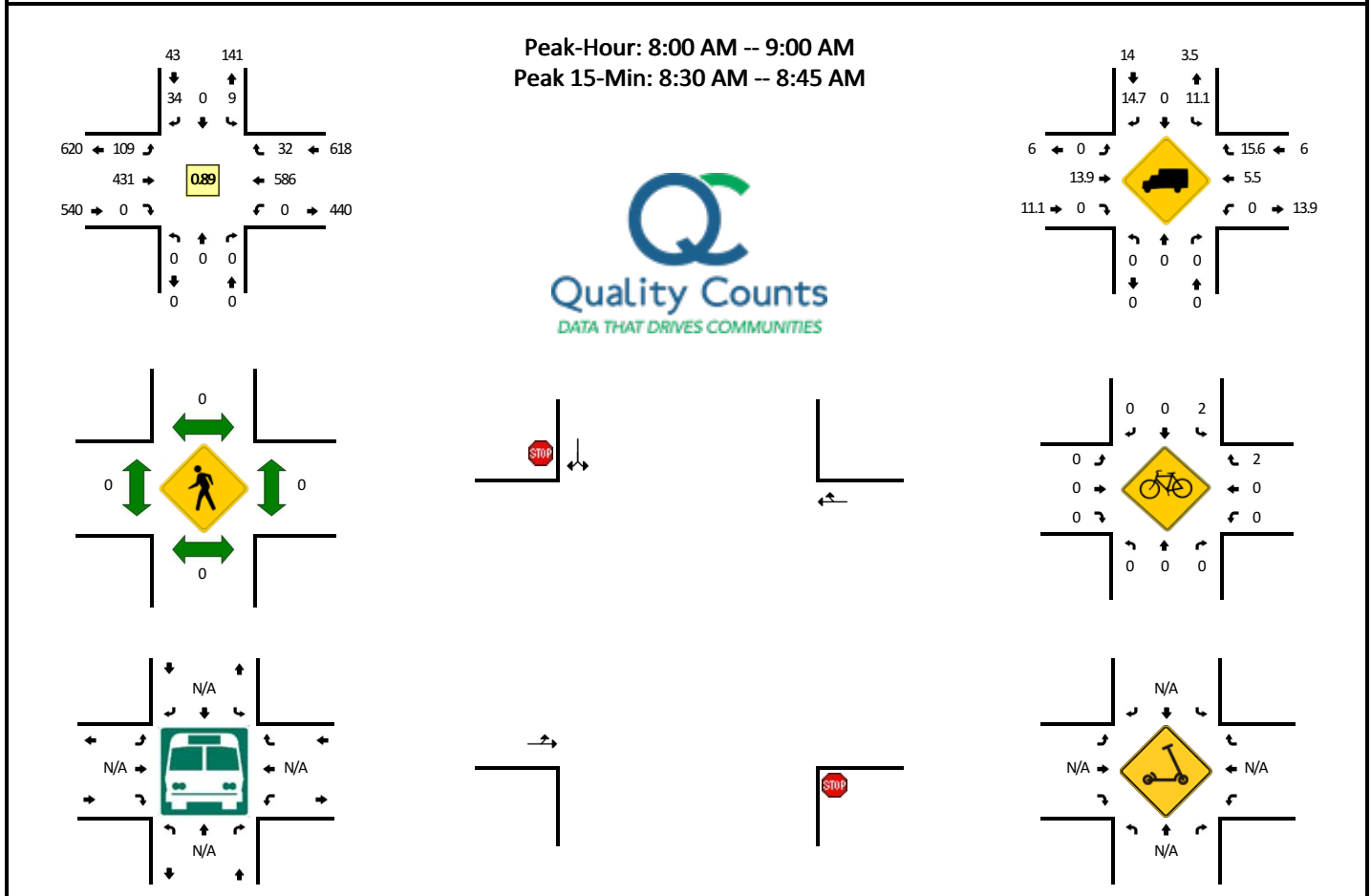
**LOCATION:** Bates Rd -- Horse Park South Dwy  
**CITY/STATE:** Grand Traverse, MI

**QC JOB #:** 15867715  
**DATE:** Fri, Jul 22 2022



**LOCATION:** Bates Rd -- M72  
**CITY/STATE:** Grand Traverse, MI

**QC JOB #:** 15867721  
**DATE:** Fri, Jul 22 2022



15-Min Count Period Beginning At	Bates Rd (Northbound)				Bates Rd (Southbound)				M72 (Eastbound)				M72 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	2	0	11	0	33	73	0	0	0	123	12	0	254	
7:15 AM	0	0	0	0	2	0	4	0	42	73	0	0	0	155	12	0	288	
7:30 AM	0	0	0	0	2	0	5	0	22	110	0	0	0	171	8	0	318	
7:45 AM	0	0	0	0	2	0	3	0	14	92	0	0	0	135	9	0	255	1115
8:00 AM	0	0	0	0	2	0	12	0	19	103	0	0	0	139	7	0	282	1143
8:15 AM	0	0	0	0	2	0	5	0	28	93	0	0	0	144	9	0	281	1136
8:30 AM	0	0	0	0	3	0	5	0	35	125	0	0	0	161	8	0	337	1155
8:45 AM	0	0	0	0	2	0	12	0	27	110	0	0	0	142	8	0	301	1201
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	0	0	12	0	20	0	140	500	0	0	0	644	32	0	1348	
Heavy Trucks	0	0	0	0	0	0	4	0	0	88	0	0	0	32	0	0	124	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	4		4	
Scooters																		

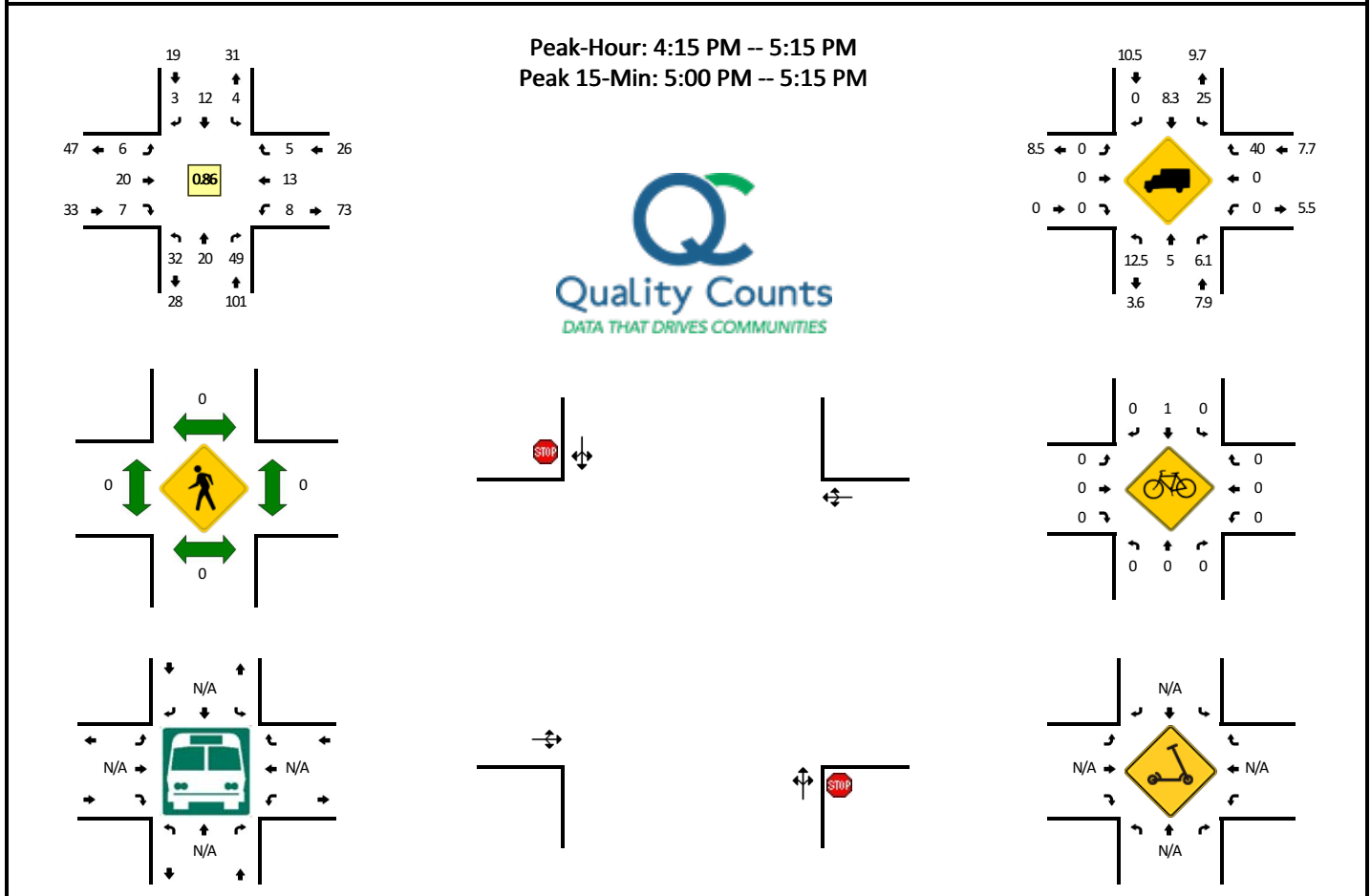
**Comments:**

Report generated on 8/4/2022 4:43 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

**LOCATION:** Saylor Rd/Bates Rd -- Brackett Rd/Bates Rd  
**CITY/STATE:** Grand Traverse, MI

**QC JOB #:** 15867704  
**DATE:** Fri, Jul 22 2022



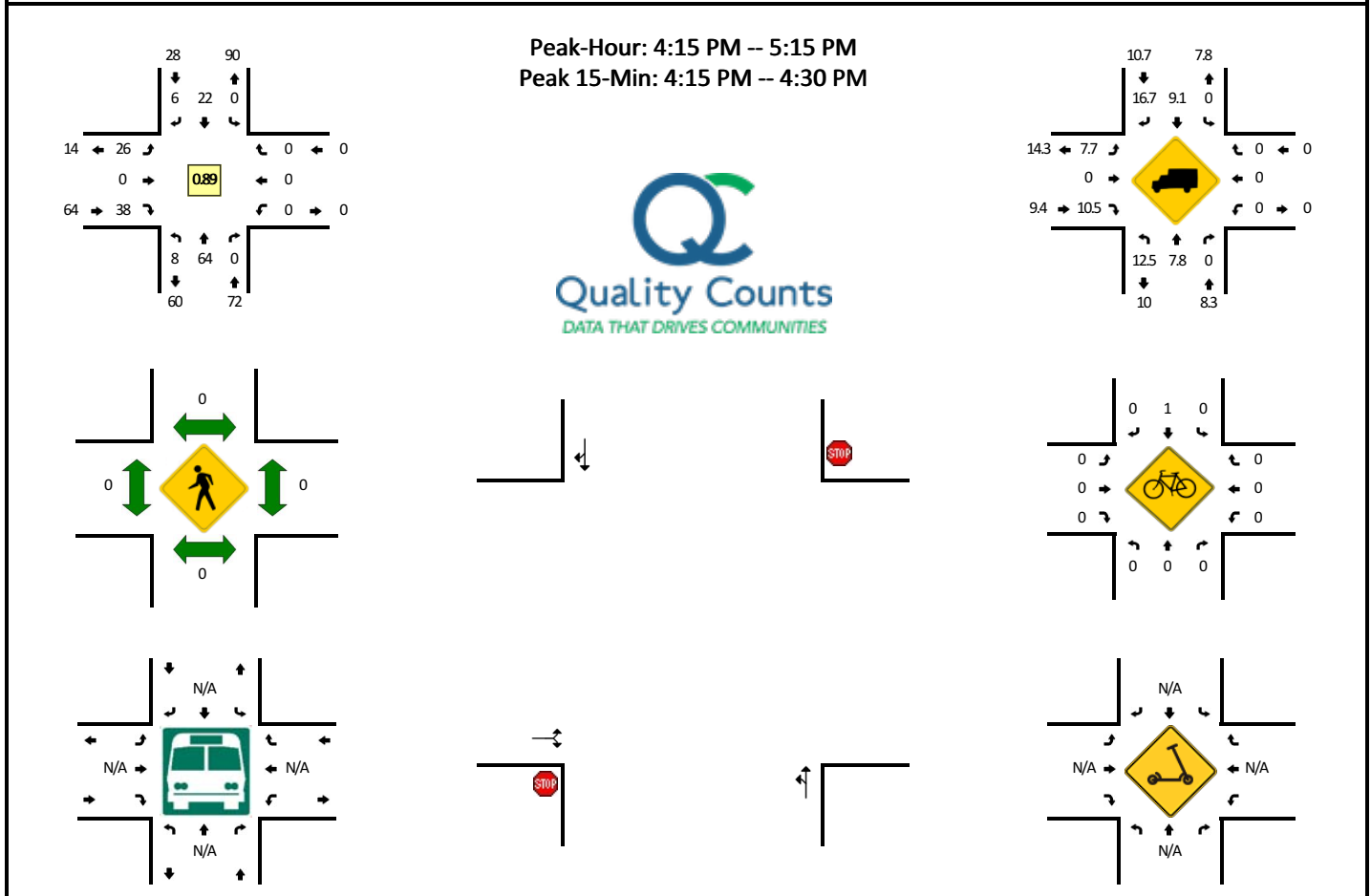
15-Min Count Period Beginning At	Saylor Rd/Bates Rd (Northbound)				Saylor Rd/Bates Rd (Southbound)				Brackett Rd/Bates Rd (Eastbound)				Brackett Rd/Bates Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	2	2	2	0	0	2	1	0	0	5	0	0	0	3	1	0	18	
2:15 PM	5	2	3	0	0	1	0	0	1	3	3	0	4	3	0	0	25	
2:30 PM	0	8	7	0	0	1	0	0	1	1	3	0	2	6	0	0	29	
2:45 PM	4	3	3	0	0	2	2	0	0	4	1	0	3	1	0	0	23	95
3:00 PM	0	2	7	0	0	3	2	0	1	0	0	0	2	3	0	0	20	97
3:15 PM	2	2	6	0	0	3	1	0	2	7	5	0	7	8	1	0	44	116
3:30 PM	4	1	7	0	1	6	3	0	3	6	0	0	4	6	1	0	42	129
3:45 PM	5	8	4	0	2	4	1	0	1	13	3	0	2	3	1	0	47	153
4:00 PM	2	3	3	0	2	0	1	0	0	3	3	0	0	5	1	0	23	156
4:15 PM	6	8	12	0	1	2	0	0	2	6	3	0	5	3	0	0	48	160
4:30 PM	13	1	10	0	1	0	0	0	2	6	2	0	0	3	2	0	40	158
4:45 PM	2	9	8	1	1	4	0	0	2	4	1	0	2	4	1	0	39	150
5:00 PM	10	2	19	0	1	6	3	0	0	4	1	0	1	3	2	0	52	179
5:15 PM	5	2	15	0	1	2	0	0	0	2	1	0	3	3	0	0	34	165
5:30 PM	6	4	16	0	1	1	0	0	0	9	2	0	1	1	0	0	41	166
5:45 PM	5	8	9	0	1	2	2	0	0	7	0	0	2	3	0	0	39	166
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	40	8	76	0	4	24	12	0	0	16	4	0	4	12	8	0	208	
Heavy Trucks	8	0	0		0	0	0		0	0	0		0	0	0		8	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

**Comments:**



**LOCATION:** Bates Rd -- Horse Park North Dwy  
**CITY/STATE:** Grand Traverse, MI

**QC JOB #:** 15867710  
**DATE:** Fri, Jul 22 2022

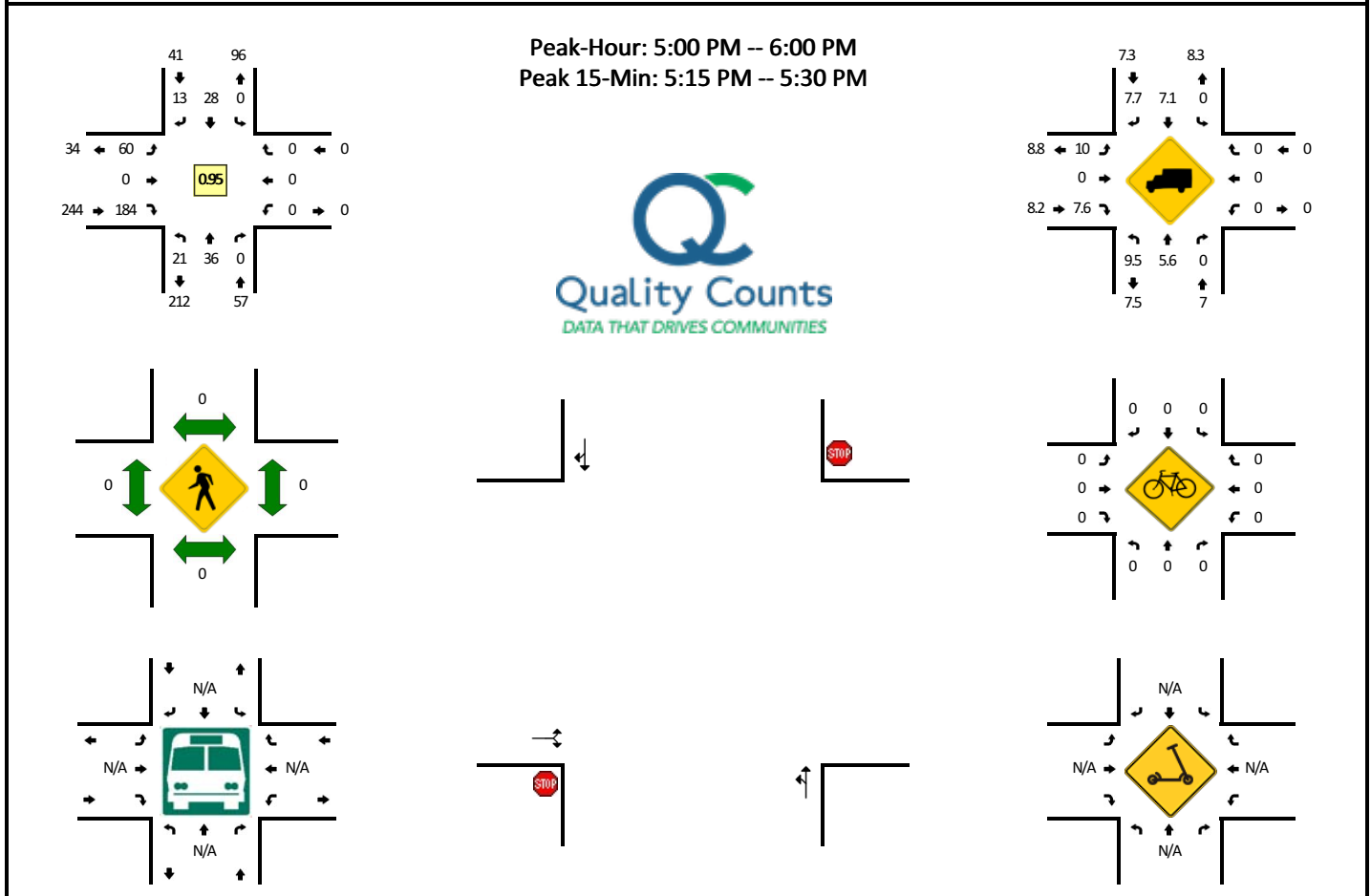


15-Min Count Period Beginning At	Bates Rd (Northbound)				Bates Rd (Southbound)				Horse Park North Dwy (Eastbound)				Horse Park North Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	4	6	0	0	0	4	1	0	3	0	8	0	0	0	0	0	26	109
2:15 PM	1	9	0	0	0	6	1	0	2	0	10	0	0	0	0	0	29	
2:30 PM	7	14	0	0	0	4	2	0	1	0	3	0	0	0	0	0	31	
2:45 PM	3	6	0	0	0	5	2	0	4	0	3	0	0	0	0	0	23	
3:00 PM	4	4	0	0	0	4	1	0	4	0	4	0	0	0	0	0	21	
3:15 PM	4	6	0	0	0	16	1	0	4	0	7	0	0	0	0	0	38	
3:30 PM	2	9	0	0	0	6	4	0	5	0	7	0	0	0	0	0	33	
3:45 PM	2	9	0	0	0	3	3	0	6	0	7	0	0	0	0	0	30	
4:00 PM	2	6	0	0	0	3	1	0	2	0	10	0	0	0	0	0	24	
4:15 PM	4	12	0	0	0	6	2	0	12	0	10	0	0	0	0	0	46	133
4:30 PM	1	8	0	0	0	1	1	0	10	0	18	0	0	0	0	0	39	139
4:45 PM	3	16	0	0	0	5	3	0	3	0	10	0	0	0	0	0	40	149
5:00 PM	0	28	0	0	0	10	0	0	1	0	0	0	0	0	0	0	39	164
5:15 PM	2	19	0	1	0	8	0	0	0	0	1	0	0	0	0	0	31	149
5:30 PM	1	25	0	0	0	3	0	0	0	0	2	0	0	0	0	0	31	141
5:45 PM	2	17	0	2	0	5	0	0	3	0	11	0	0	0	0	0	40	141
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	16	48	0	0	0	24	8	0	48	0	40	0	0	0	0	0	184	
Heavy Trucks	4	8	0	0	0	0	0	0	0	0	4	0	0	0	0	0	16	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

**Comments:**

**LOCATION:** Bates Rd -- Horse Park South Dwy  
**CITY/STATE:** Grand Traverse, MI

**QC JOB #:** 15867716  
**DATE:** Fri, Jul 22 2022

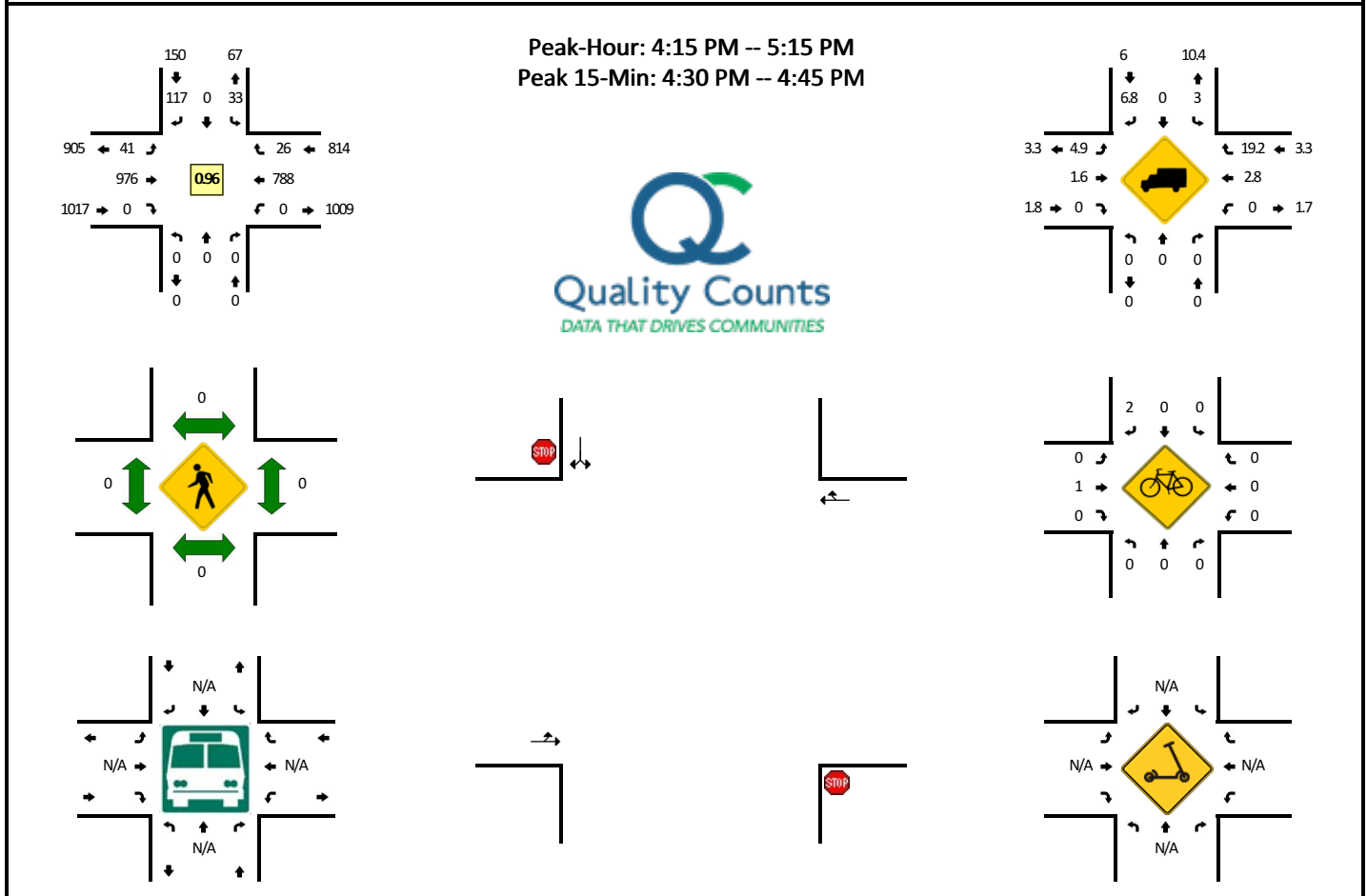


15-Min Count Period Beginning At	Bates Rd (Northbound)				Bates Rd (Southbound)				Horse Park South Dwy (Eastbound)				Horse Park South Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	3	10	0	0	0	12	1	0	0	0	6	0	0	0	0	0	32	
2:15 PM	6	6	0	0	0	14	3	0	4	0	5	0	0	0	0	0	38	
2:30 PM	3	20	0	0	0	5	2	0	3	0	6	0	0	0	0	0	39	
2:45 PM	0	9	0	0	0	7	1	0	0	0	12	0	0	0	0	0	29	138
3:00 PM	4	5	0	0	0	7	1	0	3	0	7	0	0	0	0	0	27	133
3:15 PM	7	6	0	0	0	14	9	0	4	0	5	0	0	0	0	0	45	140
3:30 PM	3	10	0	0	0	13	0	0	1	0	14	0	0	0	0	0	41	142
3:45 PM	2	10	0	0	0	9	0	0	3	0	21	0	0	0	0	0	45	158
4:00 PM	2	6	0	0	0	11	2	0	1	0	10	0	0	0	0	0	32	163
4:15 PM	5	13	0	0	0	17	1	0	4	0	12	0	0	0	0	0	52	170
4:30 PM	3	7	0	0	0	18	1	0	2	0	7	0	0	0	0	0	38	167
4:45 PM	5	9	0	0	0	15	0	0	10	0	16	0	0	0	0	0	55	177
5:00 PM	6	15	0	0	0	5	3	0	10	0	44	0	0	0	0	0	83	228
5:15 PM	7	6	0	0	0	9	4	0	18	0	46	0	0	0	0	0	90	266
5:30 PM	3	7	0	0	0	2	3	0	19	0	48	0	0	0	0	0	82	310
5:45 PM	5	8	0	0	0	12	3	0	13	0	46	0	0	0	0	0	87	342
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	28	24	0	0	0	36	16	0	72	0	184	0	0	0	0	0	360	
Heavy Trucks	4	4	0	0	0	4	4	0	20	0	16	0	0	0	0	0	52	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

**Comments:**

**LOCATION:** Bates Rd -- M72  
**CITY/STATE:** Grand Traverse, MI

**QC JOB #:** 15867722  
**DATE:** Fri, Jul 22 2022

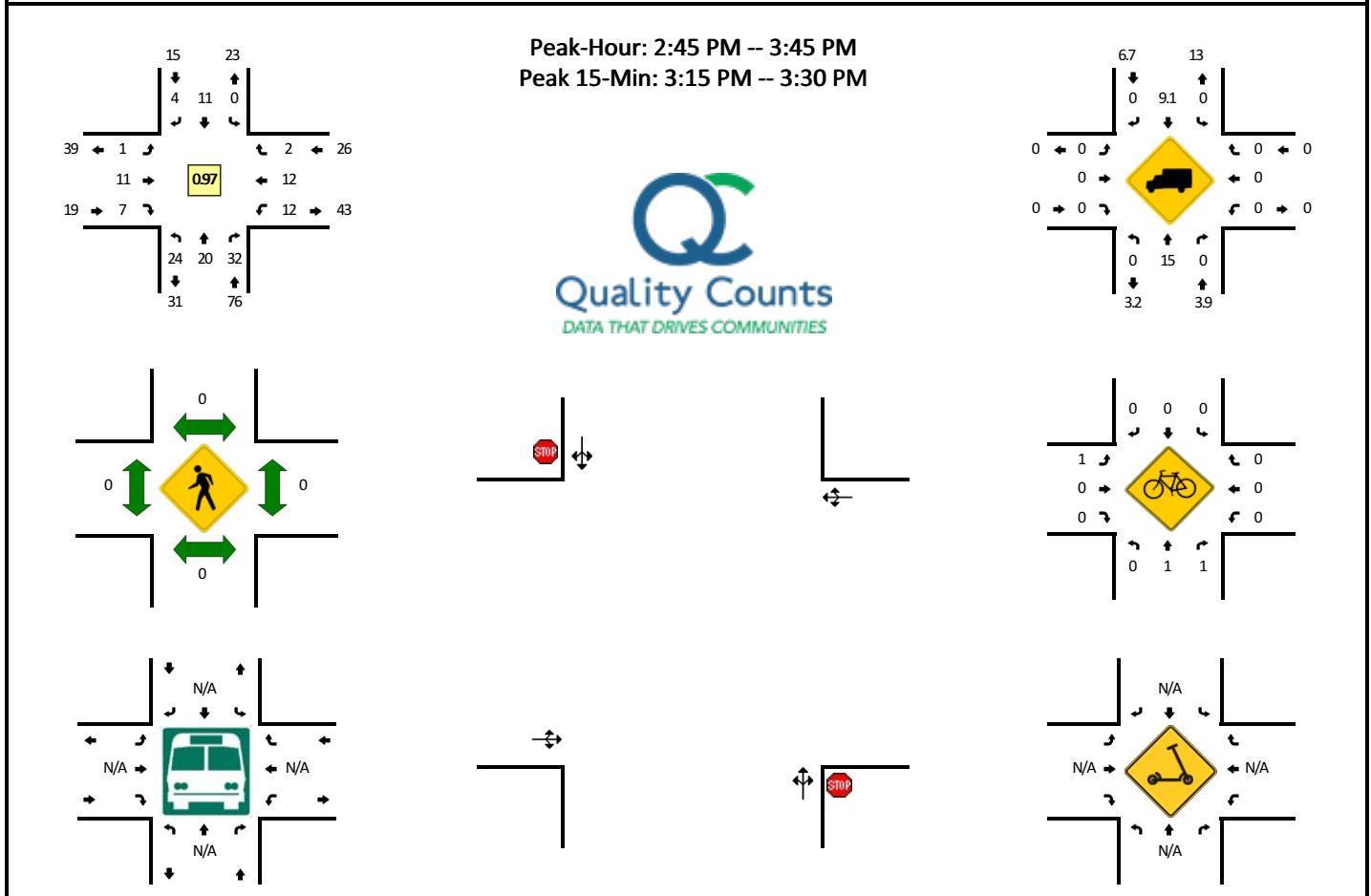


15-Min Count Period Beginning At	Bates Rd (Northbound)				Bates Rd (Southbound)				M72 (Eastbound)				M72 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	0	0	0	0	2	0	19	0	12	203	0	0	0	189	6	0	431	1702
2:15 PM	0	0	0	0	2	0	15	0	9	184	0	0	0	199	7	0	416	
2:30 PM	0	0	0	0	5	0	9	0	14	213	0	0	0	178	9	0	428	
2:45 PM	0	0	0	0	5	0	16	0	8	202	0	0	0	191	5	0	427	
3:00 PM	0	0	0	0	6	0	14	0	9	213	0	0	0	204	1	0	447	
3:15 PM	0	0	0	0	6	0	12	0	9	222	0	0	0	196	4	0	449	
3:30 PM	0	0	0	0	7	0	30	0	4	210	0	0	0	176	4	0	431	
3:45 PM	0	0	0	0	8	0	21	0	6	236	0	0	0	196	3	0	470	
4:00 PM	0	0	0	0	3	0	30	0	5	223	0	0	0	206	4	0	471	
4:15 PM	0	0	0	0	7	0	22	0	10	225	0	0	0	214	12	0	490	1862
4:30 PM	0	0	0	0	5	0	25	0	8	264	0	0	0	210	6	0	518	1949
4:45 PM	0	0	0	0	8	0	23	0	14	254	0	0	0	170	5	0	474	1953
5:00 PM	0	0	0	0	13	0	47	0	9	233	0	0	0	194	3	0	499	1981
5:15 PM	0	0	0	0	15	0	43	0	5	224	0	0	0	171	6	0	464	1955
5:30 PM	0	0	0	0	7	0	46	0	8	249	0	0	0	172	4	0	486	1923
5:45 PM	0	0	0	0	8	0	52	0	6	205	0	0	0	146	6	0	423	1872
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	0	0	20	0	100	0	32	1056	0	0	0	840	24	0	2072	
Heavy Trucks	0	0	0	0	4	0	4	0	4	28	0	0	0	20	0	0	60	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

**Comments:**

**LOCATION:** Sayer Rd/Bates Rd -- Brackett Rd/Bates Rd  
**CITY/STATE:** Grand Traverse, MI

**QC JOB #:** 15867705  
**DATE:** Sat, Jul 23 2022

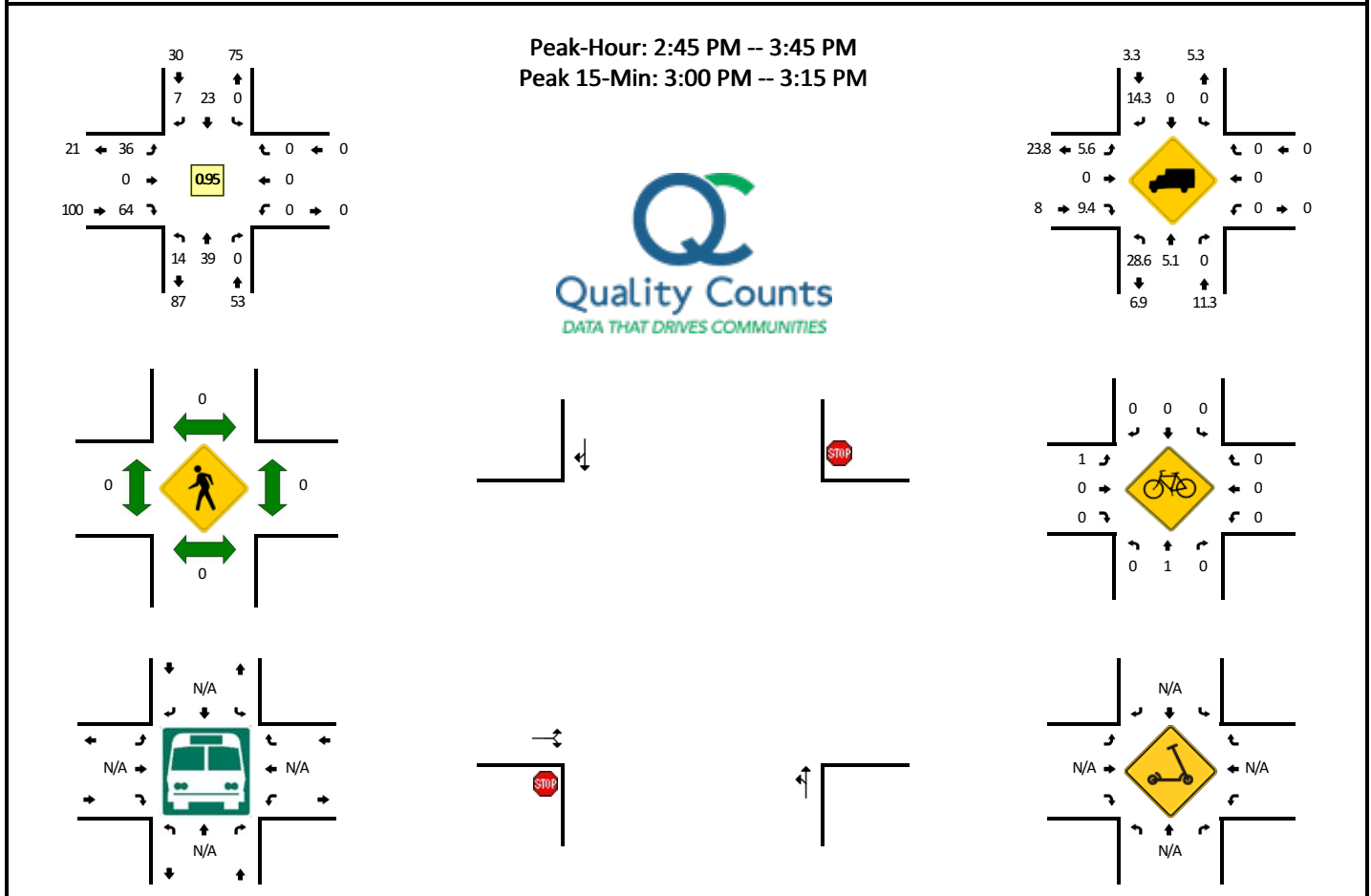


15-Min Count Period Beginning At	Sayer Rd/Bates Rd (Northbound)				Sayer Rd/Bates Rd (Southbound)				Brackett Rd/Bates Rd (Eastbound)				Brackett Rd/Bates Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:00 AM	2	4	7	0	0	1	1	0	1	3	2	0	5	2	1	0	29	
11:15 AM	4	1	1	0	0	0	1	0	3	1	1	0	10	2	0	0	24	
11:30 AM	4	2	3	0	5	3	1	0	0	3	5	0	6	2	1	0	35	
11:45 AM	1	5	7	0	1	0	0	0	0	2	1	0	3	1	0	0	21	109
12:00 PM	3	4	9	0	0	3	0	0	1	4	2	0	4	5	0	0	35	115
12:15 PM	2	2	8	0	0	3	0	0	0	5	5	0	3	6	0	0	34	125
12:30 PM	4	4	4	0	0	2	0	0	1	6	3	0	1	3	1	0	29	119
12:45 PM	1	2	2	0	1	0	0	0	0	5	1	0	4	4	0	0	20	118
1:00 PM	5	3	2	0	1	2	0	0	0	5	2	0	2	1	0	0	23	106
1:15 PM	3	0	3	0	0	0	0	0	1	6	2	0	0	1	2	0	18	90
1:30 PM	2	6	2	1	1	4	0	0	0	5	0	0	1	2	0	0	24	85
1:45 PM	1	1	3	0	0	3	1	0	1	4	3	0	2	2	0	0	21	86
2:00 PM	9	0	5	0	0	0	1	0	0	1	0	0	3	0	0	0	19	82
2:15 PM	3	1	7	0	2	0	0	0	1	2	3	0	1	3	0	0	23	87
2:30 PM	5	3	5	0	0	0	0	0	0	1	0	0	6	4	1	0	25	88
2:45 PM	6	7	5	0	0	3	2	0	0	2	2	0	2	4	0	0	33	100
3:00 PM	6	5	7	0	0	4	1	0	1	4	2	0	1	3	0	0	34	115
3:15 PM	6	5	10	1	0	1	0	0	0	3	1	0	4	2	2	0	35	127
3:30 PM	5	3	10	0	0	3	1	0	0	2	2	0	5	3	0	0	34	136
3:45 PM	4	3	9	0	1	3	0	0	1	5	1	0	0	1	0	0	28	131
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	24	20	40	4	0	4	0	0	0	12	4	0	16	8	8	0	140	
Heavy Trucks	0	4	0		0	0	0		0	0	0		0	0	0		4	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	4	0		0	0	0		0	0	0		0	0	0		4	
Scoters																		

Comments:

**LOCATION:** Bates Rd -- Horse Park North Dwy  
**CITY/STATE:** Grand Traverse, MI

**QC JOB #:** 15867711  
**DATE:** Sat, Jul 23 2022

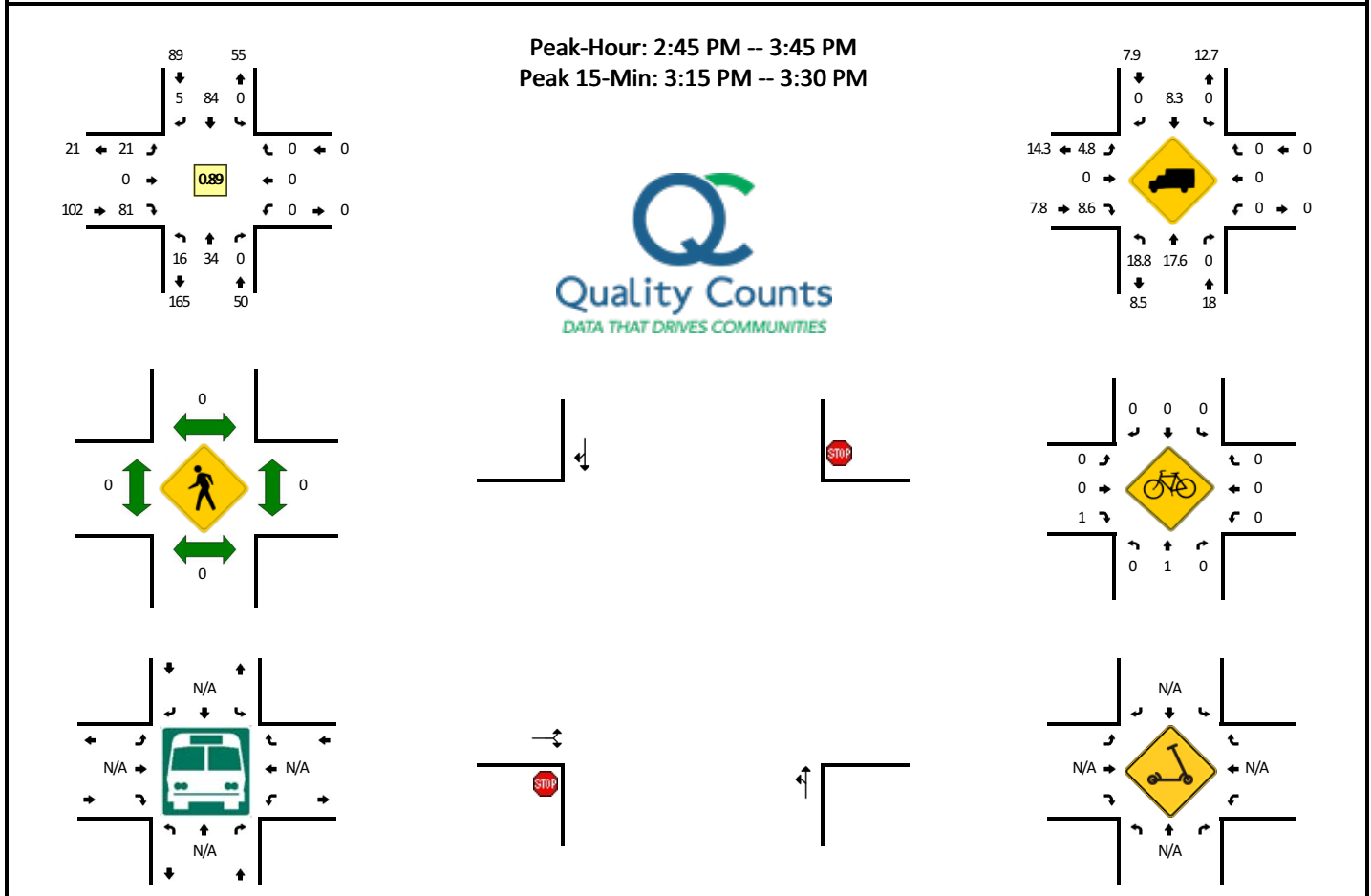


15-Min Count Period Beginning At	Bates Rd (Northbound)				Bates Rd (Southbound)				Horse Park North Dwy (Eastbound)				Horse Park North Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:00 AM	4	13	0	0	0	6	2	0	1	0	6	0	0	0	0	0	32	
11:15 AM	5	6	0	0	0	5	8	0	1	0	9	0	0	0	0	0	34	
11:30 AM	6	10	0	0	0	9	8	0	4	0	7	0	0	0	0	0	44	
11:45 AM	5	11	0	0	0	5	0	0	2	0	5	0	0	0	0	0	28	138
12:00 PM	5	13	0	0	0	2	7	0	4	0	3	0	0	0	0	0	34	140
12:15 PM	2	9	0	0	0	7	3	0	1	0	8	0	0	0	0	0	30	136
12:30 PM	0	6	0	0	0	4	4	0	3	0	5	0	0	0	0	0	22	114
12:45 PM	3	3	0	0	0	5	0	0	1	0	7	0	0	0	0	0	19	105
1:00 PM	2	7	0	0	0	6	2	0	3	0	6	0	0	0	0	0	26	97
1:15 PM	3	4	0	0	0	1	1	0	3	0	7	0	0	0	0	0	19	86
1:30 PM	1	6	0	0	0	5	2	0	5	0	7	0	0	0	0	0	26	90
1:45 PM	1	4	0	0	0	4	3	0	1	0	5	0	0	0	0	0	18	89
2:00 PM	3	9	0	0	0	3	1	0	7	0	12	0	0	0	0	0	35	98
2:15 PM	2	4	0	0	0	4	1	0	7	0	12	0	0	0	0	0	30	109
2:30 PM	5	12	0	0	0	3	2	0	2	0	8	0	0	0	0	0	32	115
2:45 PM	6	9	0	0	0	6	2	0	8	0	13	0	0	0	0	0	44	141
3:00 PM	2	7	0	0	0	4	2	0	11	0	22	0	0	0	0	0	48	154
3:15 PM	3	16	0	0	0	6	1	0	7	0	14	0	0	0	0	0	47	171
3:30 PM	3	7	0	0	0	7	2	0	10	0	15	0	0	0	0	0	44	183
3:45 PM	4	10	0	0	0	3	1	0	5	0	15	0	0	0	0	0	38	177
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	8	28	0	0	0	16	8	0	44	0	88	0	0	0	0	0	192	
Heavy Trucks	4	0	0	0	0	0	4	0	4	0	0	0	0	0	0	0	12	
Buses																		
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles																		
Scoters																		

Comments:

**LOCATION:** Bates Rd -- Horse Park South Dwy  
**CITY/STATE:** Grand Traverse, MI

**QC JOB #:** 15867717  
**DATE:** Sat, Jul 23 2022



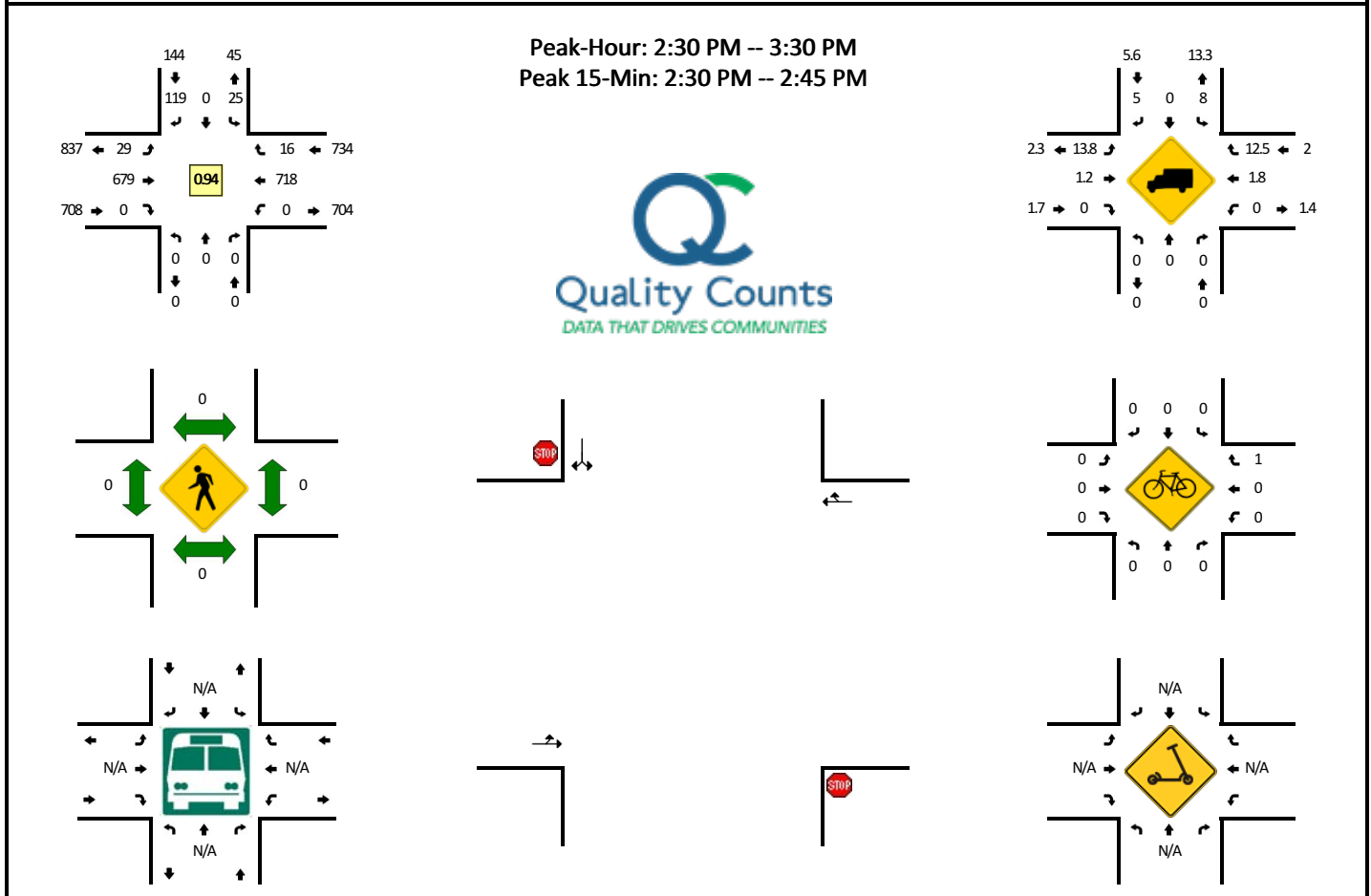
15-Min Count Period Beginning At	Bates Rd (Northbound)				Bates Rd (Southbound)				Horse Park South Dwy (Eastbound)				Horse Park South Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:00 AM	6	13	0	0	0	10	2	0	4	0	6	0	0	0	0	0	41	
11:15 AM	8	8	0	0	0	12	2	0	3	0	8	0	0	0	0	0	41	
11:30 AM	10	12	0	0	0	13	1	1	2	0	4	0	0	0	0	0	43	
11:45 AM	4	15	0	0	0	8	2	0	1	0	7	0	0	0	0	0	37	162
12:00 PM	4	16	0	0	0	3	2	0	2	0	11	0	0	0	0	0	38	159
12:15 PM	7	8	0	0	0	10	5	0	4	0	10	0	0	0	0	0	44	162
12:30 PM	9	1	0	0	0	6	3	0	4	0	5	0	0	0	0	0	28	147
12:45 PM	13	5	0	0	0	9	2	0	2	0	4	0	0	0	0	0	35	145
1:00 PM	8	6	0	0	0	9	2	0	3	0	7	0	0	0	0	0	35	142
1:15 PM	2	5	0	0	0	8	1	0	2	0	4	0	0	0	0	0	22	120
1:30 PM	5	5	0	0	0	10	1	0	1	0	4	0	0	0	0	0	26	118
1:45 PM	3	3	0	0	0	9	1	0	2	0	13	0	0	0	0	0	31	114
2:00 PM	2	11	0	0	0	14	0	0	2	0	15	0	0	0	0	0	44	123
2:15 PM	5	5	0	0	0	16	0	0	3	0	10	0	0	0	0	0	39	140
2:30 PM	3	13	0	0	0	9	2	0	2	0	14	0	0	0	0	0	43	157
2:45 PM	4	7	0	0	0	16	3	0	6	0	16	0	0	0	0	0	52	178
3:00 PM	2	7	0	0	0	26	2	0	4	0	22	0	0	0	0	0	63	197
3:15 PM	5	12	0	0	0	21	0	0	7	0	23	0	0	0	0	0	68	226
3:30 PM	5	8	0	0	0	21	0	0	4	0	20	0	0	0	0	0	58	241
3:45 PM	2	9	0	0	0	16	0	0	5	0	16	0	0	0	0	0	48	237
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	20	48	0	0	0	84	0	0	28	0	92	0	0	0	0	0	272	
Heavy Trucks	4	4	0	0	0	16	0	0	0	0	16	0	0	0	0	0	40	
Buses																		
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Scoters																		

*Comments:*



**LOCATION:** Bates Rd -- M72  
**CITY/STATE:** Grand Traverse, MI

**QC JOB #:** 15867723  
**DATE:** Sat, Jul 23 2022



15-Min Count Period Beginning At	Bates Rd (Northbound)				Bates Rd (Southbound)				M72 (Eastbound)				M72 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:00 AM	0	0	0	0	4	0	13	0	24	187	0	0	0	159	2	0	389	
11:15 AM	0	0	0	0	7	0	13	0	10	177	0	0	0	183	11	0	401	
11:30 AM	0	0	0	0	0	0	16	0	10	157	0	0	0	198	11	0	392	
11:45 AM	0	0	0	0	2	0	17	0	10	162	0	0	0	168	5	0	364	1546
12:00 PM	0	0	0	0	6	0	12	0	12	149	0	0	0	203	8	0	390	1547
12:15 PM	0	0	0	0	2	0	20	0	9	175	0	0	0	185	9	0	400	1546
12:30 PM	0	0	0	0	5	0	12	0	9	165	0	0	0	173	4	0	368	1522
12:45 PM	0	0	0	0	0	0	12	0	14	163	0	0	0	197	4	0	390	1548
1:00 PM	0	0	0	0	1	0	16	0	9	155	0	0	0	157	5	0	343	1501
1:15 PM	0	0	0	0	3	0	8	0	6	170	0	0	0	195	3	0	385	1486
1:30 PM	0	0	0	0	4	0	10	0	8	192	0	0	0	181	5	0	400	1518
1:45 PM	0	0	0	0	7	0	15	0	3	164	0	0	0	169	4	0	362	1490
2:00 PM	0	0	0	0	8	0	29	0	6	149	0	0	0	162	3	0	357	1504
2:15 PM	0	0	0	0	3	0	25	0	8	149	0	0	0	174	4	0	363	1482
2:30 PM	0	0	0	0	1	0	26	0	11	181	0	0	0	199	4	0	422	1504
2:45 PM	0	0	0	0	6	0	20	0	4	179	0	0	0	170	4	0	383	1525
3:00 PM	0	0	0	0	9	0	40	0	3	143	0	0	0	182	3	0	380	1548
3:15 PM	0	0	0	0	9	0	33	0	11	176	0	0	0	167	5	0	401	1586
3:30 PM	0	0	0	0	6	0	38	0	5	160	0	0	0	168	7	0	384	1548
3:45 PM	0	0	0	0	7	0	23	0	7	149	0	0	0	165	3	0	354	1519
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	0	0	4	0	104	0	44	724	0	0	0	796	16	0	1688	
Heavy Trucks	0	0	0	0	0	0	4	0	0	4	0	0	0	8	0	0	16	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

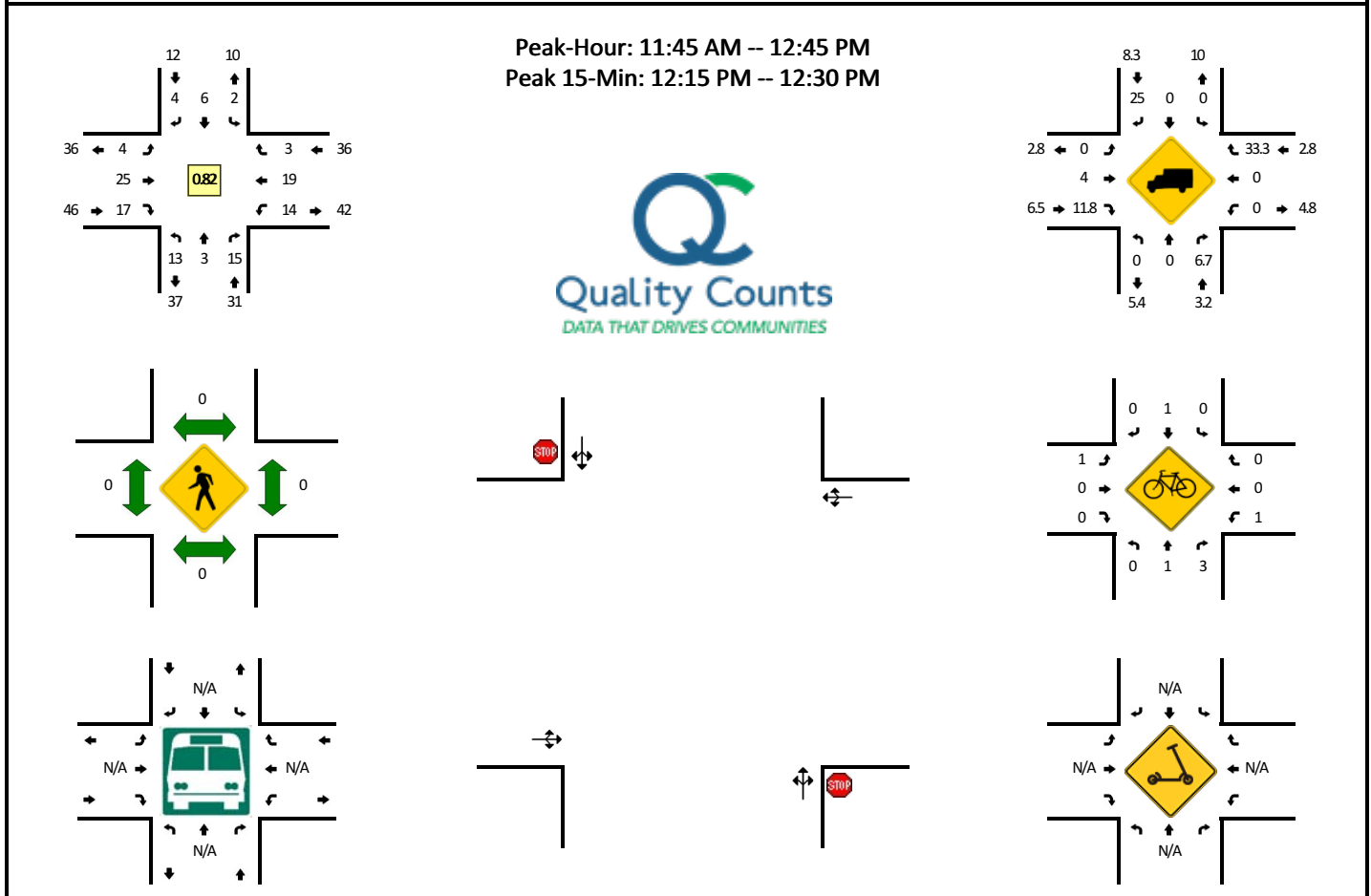
*Comments:*

Report generated on 8/4/2022 4:43 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

**LOCATION:** Sayer Rd/Bates Rd -- Brackett Rd/Bates Rd  
**CITY/STATE:** Grand Traverse, MI

**QC JOB #:** 15867706  
**DATE:** Sun, Jul 24 2022

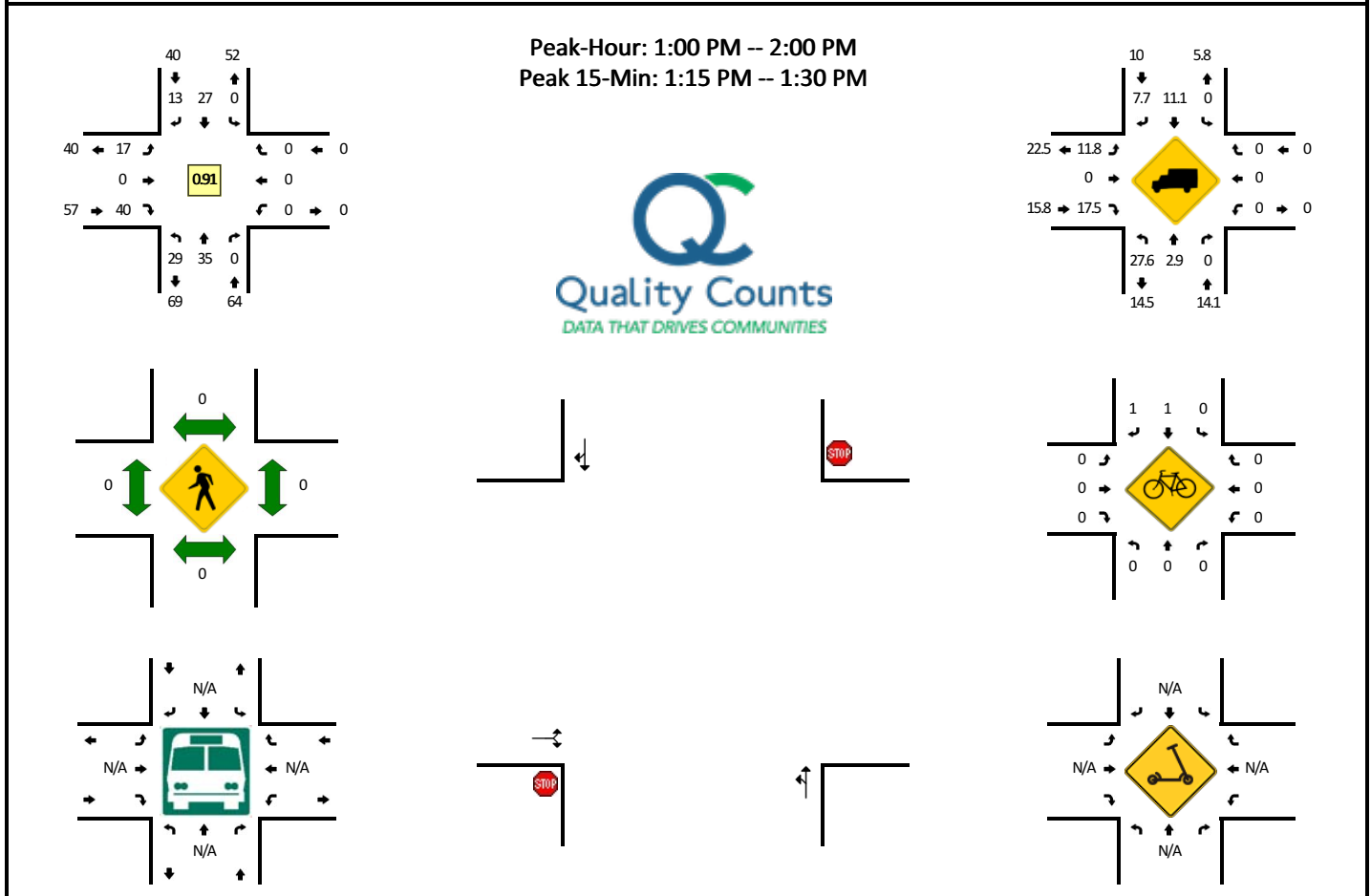


15-Min Count Period Beginning At	Sayer Rd/Bates Rd (Northbound)				Sayer Rd/Bates Rd (Southbound)				Brackett Rd/Bates Rd (Eastbound)				Brackett Rd/Bates Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:00 AM	2	1	3	1	1	3	1	0	1	4	0	0	5	1	0	0	23	
11:15 AM	2	0	6	0	1	1	2	0	0	3	3	0	6	3	0	0	27	
11:30 AM	1	1	2	0	1	0	0	0	1	7	1	0	3	2	1	0	20	
11:45 AM	5	0	4	0	0	3	3	0	0	5	3	0	6	1	3	0	33	103
12:00 PM	0	1	0	0	1	1	1	0	2	7	4	0	1	7	0	0	25	105
12:15 PM	3	0	7	0	0	2	0	0	0	8	6	0	5	7	0	0	38	116
12:30 PM	5	2	4	0	1	0	0	0	2	5	4	0	2	4	0	0	29	125
12:45 PM	6	4	2	0	0	1	0	0	3	2	3	0	4	3	0	1	29	121
1:00 PM	0	3	7	0	0	3	0	0	1	4	3	0	3	2	0	0	26	122
1:15 PM	2	3	6	1	0	2	0	0	0	4	4	0	2	3	1	0	28	112
1:30 PM	6	5	3	0	0	3	1	0	0	1	6	0	3	4	1	0	33	116
1:45 PM	5	4	5	0	0	1	0	0	0	3	4	0	4	1	1	0	28	115
2:00 PM	2	2	7	0	0	1	0	0	0	3	2	0	6	3	0	0	26	115
2:15 PM	2	2	4	0	1	1	0	0	0	4	2	0	2	1	0	0	19	106
2:30 PM	7	4	3	0	0	0	0	0	1	1	1	0	5	5	0	0	27	100
2:45 PM	6	3	8	0	0	3	0	0	0	1	4	0	3	4	0	0	32	104
3:00 PM	7	2	4	1	1	1	0	0	1	4	2	0	1	4	3	0	31	109
3:15 PM	1	7	5	0	0	2	0	0	1	4	6	0	5	0	1	0	32	122
3:30 PM	4	1	8	0	0	6	0	0	0	0	1	0	5	4	0	0	29	124
3:45 PM	0	3	5	0	0	5	1	0	1	1	2	0	5	0	1	0	24	116
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	12	0	28	0	0	8	0	0	0	32	24	0	20	28	0	0	152	
Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Buses																		
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	8	
Scooters																		

Comments:

**LOCATION:** Bates Rd -- Horse Park North Dwy  
**CITY/STATE:** Grand Traverse, MI

**QC JOB #:** 15867712  
**DATE:** Sun, Jul 24 2022



15-Min Count Period Beginning At	Bates Rd (Northbound)				Bates Rd (Southbound)				Horse Park North Dwy (Eastbound)				Horse Park North Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:00 AM	10	9	0	0	0	10	3	0	0	0	10	0	0	0	0	0	42	127
11:15 AM	2	5	0	0	0	6	3	0	3	0	9	0	0	0	0	0	28	
11:30 AM	4	4	0	1	0	4	1	0	0	0	15	0	0	0	0	0	29	
11:45 AM	4	3	0	0	0	12	0	0	6	0	3	0	0	0	0	0	28	
12:00 PM	4	4	0	0	0	3	5	0	0	0	9	0	0	0	0	0	25	
12:15 PM	6	8	0	0	0	9	4	0	2	0	3	0	0	0	0	0	32	
12:30 PM	3	7	0	1	0	2	3	0	2	0	6	0	0	0	0	0	24	
12:45 PM	4	10	0	0	0	6	3	0	2	0	8	0	0	0	0	0	33	
1:00 PM	2	8	0	0	0	6	1	0	3	0	14	0	0	0	0	0	34	
1:15 PM	7	10	0	1	0	10	2	0	3	0	11	0	0	0	0	0	44	135
1:30 PM	11	7	0	0	0	7	5	0	7	0	6	0	0	0	0	0	43	154
1:45 PM	7	10	0	1	0	4	5	0	4	0	9	0	0	0	0	0	40	161
2:00 PM	1	8	0	1	0	7	1	0	2	0	6	0	0	0	0	0	26	153
2:15 PM	1	3	0	0	0	2	1	0	5	0	10	0	0	0	0	0	22	131
2:30 PM	6	6	0	0	0	6	2	0	8	0	6	0	0	0	0	0	34	122
2:45 PM	4	11	0	0	0	7	3	0	4	0	12	0	0	0	0	0	41	123
3:00 PM	4	11	0	0	0	2	3	0	4	0	12	0	0	0	0	0	36	133
3:15 PM	4	6	0	0	0	8	2	0	6	0	14	0	0	0	0	0	40	151
3:30 PM	2	9	0	0	0	10	5	0	4	0	10	0	0	0	0	0	40	157
3:45 PM	5	3	0	0	0	10	1	0	6	0	4	0	0	0	0	0	29	145
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	28	40	0	4	0	40	8	0	12	0	44	0	0	0	0	0	176	
Heavy Trucks	8	0	0		0	4	0		0	0	8		0	0	0		20	
Buses																		
Pedestrians	0	0			0				0				0				0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

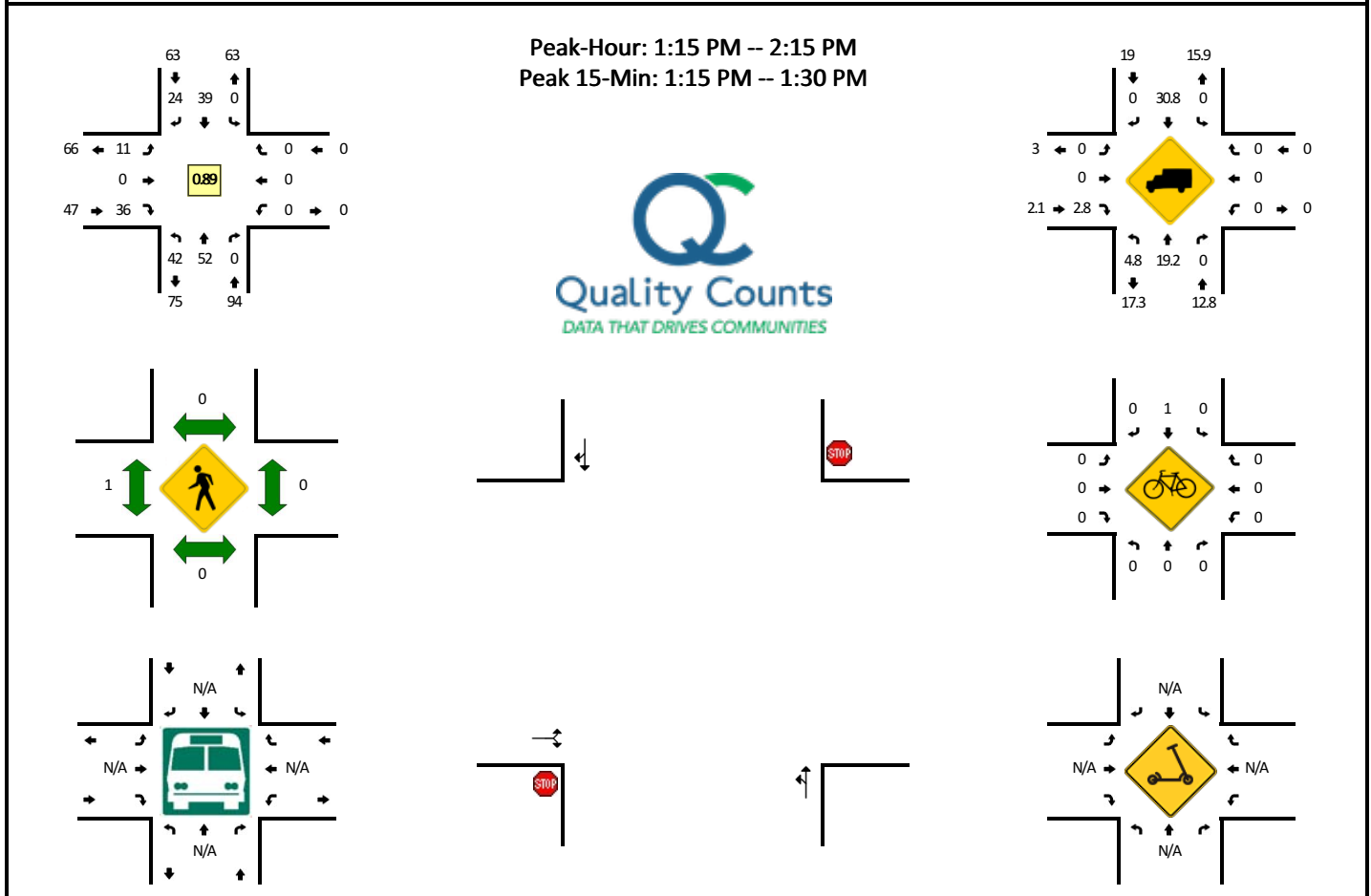
Comments:

Report generated on 8/4/2022 4:43 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

**LOCATION:** Bates Rd -- Horse Park South Dwy  
**CITY/STATE:** Grand Traverse, MI

**QC JOB #:** 15867718  
**DATE:** Sun, Jul 24 2022



15-Min Count Period Beginning At	Bates Rd (Northbound)				Bates Rd (Southbound)				Horse Park South Dwy (Eastbound)				Horse Park South Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:00 AM	7	15	0	0	0	13	7	0	5	0	8	0	0	0	0	0	55	
11:15 AM	6	3	0	0	0	14	1	0	3	0	6	0	0	0	0	0	33	
11:30 AM	8	6	0	0	0	19	1	0	3	0	6	0	0	0	0	0	43	
11:45 AM	5	6	0	0	0	12	3	0	1	0	11	0	0	0	0	0	38	169
12:00 PM	13	8	0	0	0	10	2	0	0	0	9	0	0	0	0	0	42	156
12:15 PM	4	14	0	1	0	8	4	0	0	0	6	0	0	0	0	0	37	160
12:30 PM	7	8	0	0	0	7	2	0	3	0	6	0	0	0	0	0	33	150
12:45 PM	10	9	0	0	0	10	4	0	6	0	5	0	0	0	0	0	44	156
1:00 PM	7	9	0	0	0	19	1	0	1	0	8	0	0	0	0	0	45	159
1:15 PM	10	15	0	0	0	12	10	0	4	0	6	0	0	0	0	0	57	179
1:30 PM	9	15	0	0	0	11	2	0	2	0	7	0	0	0	0	0	46	192
1:45 PM	10	17	0	0	0	7	7	0	1	0	10	0	0	0	0	0	52	200
2:00 PM	13	5	0	0	0	9	5	0	4	0	13	0	0	0	0	0	49	204
2:15 PM	8	4	0	0	0	9	2	0	0	0	9	0	0	0	0	0	32	179
2:30 PM	5	11	0	0	0	9	3	0	4	0	12	0	0	0	0	0	44	177
2:45 PM	4	8	0	0	0	16	4	0	6	0	14	0	0	0	0	0	52	177
3:00 PM	5	11	0	0	0	12	2	0	4	0	11	0	0	0	0	0	45	173
3:15 PM	2	7	0	0	0	17	4	0	2	0	12	0	0	0	0	0	44	185
3:30 PM	4	7	0	0	0	20	1	0	3	0	15	0	0	0	0	0	50	191
3:45 PM	5	5	0	0	0	11	4	0	3	0	20	0	0	0	0	0	48	187
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	40	60	0	0	0	48	40	0	16	0	24	0	0	0	0	0	228	
Heavy Trucks	0	12	0	0	0	12	0	0	0	0	0	0	0	0	0	0	24	
Buses																		
Pedestrians		0				0				4				0			4	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		

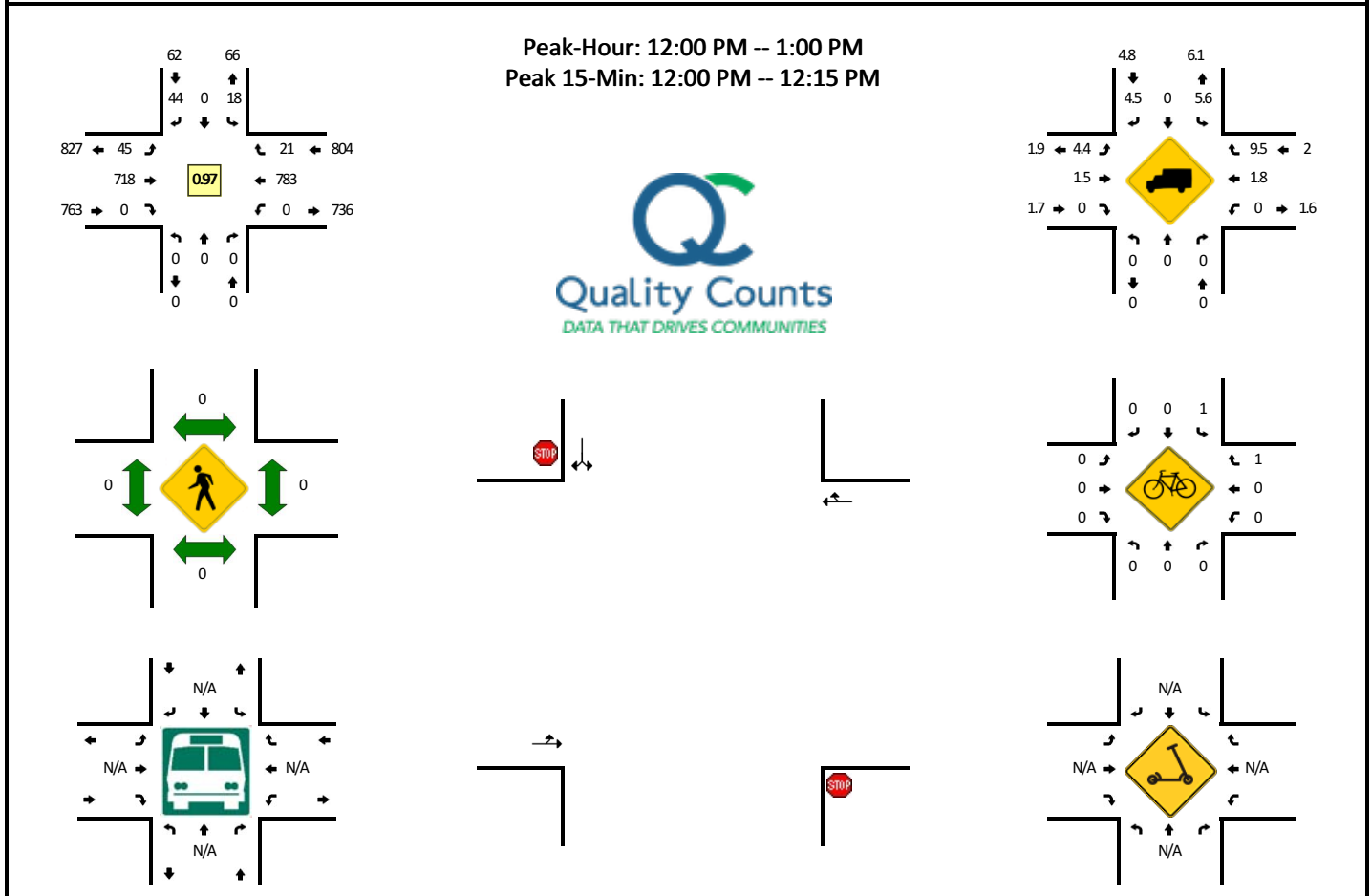
Comments:

Report generated on 8/4/2022 4:43 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

**LOCATION:** Bates Rd -- M72  
**CITY/STATE:** Grand Traverse, MI

**QC JOB #:** 15867724  
**DATE:** Sun, Jul 24 2022



15-Min Count Period Beginning At	Bates Rd (Northbound)				Bates Rd (Southbound)				M72 (Eastbound)				M72 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:00 AM	0	0	0	0	6	0	13	0	15	172	0	0	0	150	5	0	361	
11:15 AM	0	0	0	0	7	0	21	0	6	182	0	0	0	188	1	0	405	
11:30 AM	0	0	0	0	4	0	17	0	9	176	0	0	0	173	7	0	386	
11:45 AM	0	0	0	0	6	0	11	0	9	187	0	0	0	192	2	0	407	1559
12:00 PM	0	0	0	0	5	0	16	0	11	180	0	0	0	199	7	0	418	1616
12:15 PM	0	0	0	0	4	0	9	0	12	193	0	0	0	180	2	0	400	1611
12:30 PM	0	0	0	0	2	0	10	0	12	168	0	0	0	206	5	0	403	1628
12:45 PM	0	0	0	0	7	0	9	0	10	177	0	0	0	198	7	0	408	1629
1:00 PM	0	0	0	0	10	0	16	0	9	177	0	0	0	176	7	0	395	1606
1:15 PM	0	0	0	0	8	0	11	0	18	177	0	0	0	177	9	0	400	1606
1:30 PM	0	0	0	0	4	0	10	0	12	165	0	0	0	193	8	0	392	1595
1:45 PM	0	0	0	0	3	0	14	0	16	174	0	0	0	180	8	0	395	1582
2:00 PM	0	0	0	0	5	0	14	0	15	170	0	0	0	186	2	0	392	1579
2:15 PM	0	0	0	0	9	0	11	0	9	183	0	0	0	168	4	0	384	1563
2:30 PM	0	0	0	0	8	0	11	0	10	158	0	0	0	177	5	0	369	1540
2:45 PM	0	0	0	0	14	0	14	0	9	194	0	0	0	163	2	0	396	1541
3:00 PM	0	0	0	0	11	0	11	0	7	159	0	0	0	175	5	0	368	1517
3:15 PM	0	0	0	0	9	0	20	0	5	155	0	0	0	169	6	0	364	1497
3:30 PM	0	0	0	0	7	0	20	0	5	161	0	0	0	182	3	0	378	1506
3:45 PM	0	0	0	0	9	0	24	0	8	146	0	0	0	165	4	0	356	1466
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	0	0	20	0	64	0	44	720	0	0	0	796	28	0	1672	
Heavy Trucks	0	0	0	0	0	0	4	0	0	4	0	0	0	4	4	0	16	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		4	0	0		0	0	0		0	0	0		4	
Scoters																		

**Comments:**

## Appendix B – Synchro Capacity Worksheets for Existing Conditions



Intersection

Int Delay, s/veh 1.9

Movement EBL EBT WBT WBR SBL SBR

Lane Configurations 

Traffic Vol, veh/h 98 434 707 41 13 22

Future Vol, veh/h 98 434 707 41 13 22

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - 100 0 -

Veh in Median Storage, # 0 0 - 0 -

Grade, % - 0 0 - 0 -

Peak Hour Factor 94 94 80 80 67 67

Heavy Vehicles, % 5 5 5 5 14 0

Mvmt Flow 104 462 884 51 19 33

Major/Minor Major1 Major2 Minor2

Conflicting Flow All 935 0 - 0 1554 884

Stage 1 - - - - 884 -

Stage 2 - - - - 670 -

Critical Hdwy 4.15 - - - 6.54 6.2

Critical Hdwy Stg 1 - - - - 5.54 -

Critical Hdwy Stg 2 - - - - 5.54 -

Follow-up Hdwy 2.245 - - - 3.626 3.3

Pot Cap-1 Maneuver 720 - - - 117 347

Stage 1 - - - - 385 -

Stage 2 - - - - 487 -

Platoon blocked, % - - -

Mov Cap-1 Maneuver 720 - - - 94 347

Mov Cap-2 Maneuver - - - - 94 -

Stage 1 - - - - 310 -

Stage 2 - - - - 487 -

Approach EB WB SB

HCM Control Delay, s 2 0 34.3

HCM LOS D

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h) 720 - - - 174

HCM Lane V/C Ratio 0.145 - - - 0.3

HCM Control Delay (s) 10.8 0 - - 34.3

HCM Lane LOS B A - - D

HCM 95th %tile Q(veh) 0.5 - - - 1.2

Intersection												
Int Delay, s/veh	7.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	12	19	41	12	0	3	1	6	3	8	5
Future Vol, veh/h	5	12	19	41	12	0	3	1	6	3	8	5
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	-	0	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	78	78	78	60	60	60	80	80	80
Heavy Vehicles, %	40	17	0	10	0	0	0	0	0	0	25	0
Mvmt Flow	6	13	21	53	15	0	5	2	10	4	10	6
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	46	43	13	55	41	7	16	0	0	12	0	0
Stage 1	21	21	-	17	17	-	-	-	-	-	-	-
Stage 2	25	22	-	38	24	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.67	6.2	7.2	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.67	-	6.2	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.67	-	6.2	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.86	4.153	3.3	3.59	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	868	820	1073	923	855	1081	1615	-	-	1620	-	-
Stage 1	908	849	-	982	885	-	-	-	-	-	-	-
Stage 2	903	848	-	957	879	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	852	816	1073	890	851	1081	1615	-	-	1620	-	-
Mov Cap-2 Maneuver	852	816	-	890	851	-	-	-	-	-	-	-
Stage 1	905	847	-	979	882	-	-	-	-	-	-	-
Stage 2	885	845	-	922	877	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	9		9.4		2.2		1.4					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1615	-	-	940	881	1620	-	-				
HCM Lane V/C Ratio	0.003	-	-	0.043	0.077	0.002	-	-				
HCM Control Delay (s)	7.2	0	-	9	9.4	7.2	0	-				
HCM Lane LOS	A	A	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0	-	-				

Intersection

Int Delay, s/veh 3.3

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations

Traffic Vol, veh/h 1 21 33 9 63 7

Future Vol, veh/h 1 21 33 9 63 7

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Stop Stop Free Free Free Free

RT Channelized - None - None - None

Storage Length 0 - - - - -

Veh in Median Storage 0# - - 0 0 -

Grade, % 0 - - 0 0 -

Peak Hour Factor 61 61 81 81 67 67

Heavy Vehicles, % 0 0 7 2 14 10

Mvmt Flow 2 34 41 11 94 10

Major/Minor Minor2 Major1 Major2

Conflicting Flow All 192 99 104 0 - 0

Stage 1 99 - - - - -

Stage 2 93 - - - - -

Critical Hdwy 6.4 6.2 4.17 - - -

Critical Hdwy Stg 1 5.4 - - - - -

Critical Hdwy Stg 2 5.4 - - - - -

Follow-up Hdwy 3.5 3.3 2.263 - - -

Pot Cap-1 Maneuver 801 962 1457 - - -

Stage 1 930 - - - - -

Stage 2 936 - - - - -

Platoon blocked, % - - -

Mov Cap-1 Maneuver 779 962 1457 - - -

Mov Cap-2 Maneuver 779 - - - - -

Stage 1 904 - - - - -

Stage 2 936 - - - - -

Approach EB NB SB

HCM Control Delay, s 8.9 5.9 0

HCM LOS A

Minor Lane/Major Mvmt NBL NBT EBLn1 SBT SBR

Capacity (veh/h) 1457 - 952 - -

HCM Lane V/C Ratio 0.028 -0.038 - -

HCM Control Delay (s) 7.5 0 8.9 - -

HCM Lane LOS A A A - -

HCM 95th %tile Q(veh) 0.1 - 0.1 - -

Intersection

Int Delay, s/veh 3.6

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations

Traffic Vol, veh/h 3 13 92 39 15 69

Future Vol, veh/h 3 13 92 39 15 69

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Stop Stop Free Free Free Free

RT Channelized - None - None - None

Storage Length 0 - - - - -

Veh in Median Storage 0# - - 0 0 -

Grade, % 0 - - 0 0 -

Peak Hour Factor 67 67 74 74 63 63

Heavy Vehicles, % 0 15 9 8 20 9

Mvmt Flow 4 19 124 53 24 110

Major/Minor Minor2 Major1 Major2

Conflicting Flow All 380 79 134 0 - 0

Stage 1 79 - - - - -

Stage 2 301 - - - - -

Critical Hdwy 6.4 6.35 4.19 - - -

Critical Hdwy Stg 1 5.4 - - - - -

Critical Hdwy Stg 2 5.4 - - - - -

Follow-up Hdwy 3.5 3.435 2.281 - - -

Pot Cap-1 Maneuver 626 947 1408 - - -

Stage 1 949 - - - - -

Stage 2 755 - - - - -

Platoon blocked, % - - -

Mov Cap-1 Maneuver 569 947 1408 - - -

Mov Cap-2 Maneuver 569 - - - - -

Stage 1 863 - - - - -

Stage 2 755 - - - - -

Approach EB NB SB

HCM Control Delay, s 9.4 5.5 0

HCM LOS A

Minor Lane/Major Mvmt NBL NBT EBLn1 SBT SBR

Capacity (veh/h) 1408 - 842 - -

HCM Lane V/C Ratio 0.088 -0.028 - -

HCM Control Delay (s) 7.8 0 9.4 - -

HCM Lane LOS A A A - -

HCM 95th %tile Q(veh) 0.3 - 0.1 - -

Intersection

Int Delay, s/veh 20.5

Movement EBL EBT WBT WBR SBL SBR

Lane Configurations		↑	↑	↑	↑	
Traffic Vol, veh/h	38	930	769	26	30	170
Future Vol, veh/h	38	930	769	26	30	170
Conflicting Peds, #/hr	0	0	0	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	100	0	-
Veh in Median Storage, #	0	0	-	0	-	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	95	95	78	78
Heavy Vehicles, %	11	5	5	6	13	7
Mvmt Flow	41	1000	809	27	38	218

Major/Minor Major1 Major2 Minor2

Conflicting Flow All	836	0	-	0	1892	809
Stage 1	-	-	-	-	809	-
Stage 2	-	-	-	-	1083	-
Critical Hdwy	4.21	-	-	-	6.53	6.27
Critical Hdwy Stg 1	-	-	-	-	5.53	-
Critical Hdwy Stg 2	-	-	-	-	5.53	-
Follow-up Hdwy	2.299	-	-	-	3.617	3.363
Pot Cap-1 Maneuver	760	-	-	-	72	373
Stage 1	-	-	-	-	420	-
Stage 2	-	-	-	-	309	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	760	-	-	-	63	373
Mov Cap-2 Maneuver	-	-	-	-	63	-
Stage 1	-	-	-	-	369	-
Stage 2	-	-	-	-	309	-

Approach EB WB SB

HCM Control Delay, s	0.4	0	169.3
HCM LOS			F

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h)	760	-	-	-	215
HCM Lane V/C Ratio	0.054	-	-	-	1.193
HCM Control Delay (s)	10	0	-	-	169.3
HCM Lane LOS	B	A	-	-	F
HCM 95th %tile Q(veh)	0.2	-	-	-	12.7

Intersection

Int Delay, s/veh 4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	23	12	10	20	5	39	21	70	1	13	7
Future Vol, veh/h	5	23	12	10	20	5	39	21	70	1	13	7
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	-	0	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	80	80	80	86	86	86	58	58	58
Heavy Vehicles, %	0	4	0	4	4	0	3	0	6	0	31	0
Mvmt Flow	6	28	14	13	25	6	45	24	81	2	22	12

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	203 228	29 208 194	65 35	0 0 105 0 0
Stage 1	33 33	- 155 155	- -	- - - - -
Stage 2	170 195	- 53 39	- -	- - - - -
Critical Hdwy	7.1 6.54	6.2 7.14 6.54	6.2 4.13	- - 4.1 - -
Critical Hdwy Stg 1	6.1 5.54	- 6.14 5.54	- -	- - - - -
Critical Hdwy Stg 2	6.1 5.54	- 6.14 5.54	- -	- - - - -
Follow-up Hdwy	3.54 0.36	3.3 3.53 6.4 0.36	3.3 2.227	- - 2.2 - -
Pot Cap-1 Maneuver	759 668	1052 745 698	1005 1570	- - 1499 - -
Stage 1	988 864	- 843 766	- -	- - - - -
Stage 2	837 736	- 955 859	- -	- - - - -
Platoon blocked, %				- - - - -
Mov Cap-1 Maneuver	714 646	1051 694 675	1005 1569	- - 1499 - -
Mov Cap-2 Maneuver	714 646	- 694 675	- -	- - - - -
Stage 1	956 862	- 817 742	- -	- - - - -
Stage 2	779 713	- 911 857	- -	- - - - -

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.2	10.4	2.2	0.4
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1569	-	-	740	714	1499	-	-
HCM Lane V/C Ratio	0.029	-	-	0.065	0.061	0.001	-	-
HCM Control Delay (s)	7.4	0	-	10.2	10.4	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.2	0	-	-



Intersection

Int Delay, s/veh 4.4

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations 

Traffic Vol, veh/h 36 73 5 92 29 9

Future Vol, veh/h 36 73 5 92 29 9

Conflicting Peds, #/hr 0 0 1 0 0 0

Sign Control Stop Stop Free Free Free Free

RT Channelized - None - None - None

Storage Length 0 - - - - -

Veh in Median Storage 0# - - 0 0 -

Grade, % 0 - - 0 0 -

Peak Hour Factor 71 71 67 67 63 63

Heavy Vehicles, % 11 3 0 1 7 11

Mvmt Flow 51 103 7 137 46 14

Major/Minor Minor2 Major1 Major2

Conflicting Flow All 205 54 61 0 - 0

Stage 1 54 - - - - -

Stage 2 151 - - - - -

Critical Hdwy 6.51 6.23 4.1 - - -

Critical Hdwy Stg 1 5.51 - - - - -

Critical Hdwy Stg 2 5.51 - - - - -

Follow-up Hdwy 3.599 3.327 2.2 - - -

Pot Cap-1 Maneuver 764 1010 1555 - - -

Stage 1 946 - - - - -

Stage 2 855 - - - - -

Platoon blocked, % - - -

Mov Cap-1 Maneuver 759 1009 1554 - - -

Mov Cap-2 Maneuver 759 - - - - -

Stage 1 940 - - - - -

Stage 2 854 - - - - -

Approach EB NB SB

HCM Control Delay, s 9.8 0.4 0

HCM LOS A

Minor Lane/Major Mvmt NBL NBEBLn1 SBT SBR

Capacity (veh/h) 1554 - 910 - -

HCM Lane V/C Ratio 0.005 -0.169 - -

HCM Control Delay (s) 7.3 0 9.8 - -

HCM Lane LOS A A A - -

HCM 95th %tile Q(veh) 0 - 0.6 - -

Intersection

Int Delay, s/veh 4.6

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations 

Traffic Vol, veh/h 34 112 22 61 93 9

Future Vol, veh/h 34 112 22 61 93 9

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Stop Stop Free Free Free Free

RT Channelized - None - None - None

Storage Length 0 - - - - -

Veh in Median Storage 0# - - 0 0 -

Grade, % 0 - - 0 0 -

Peak Hour Factor 83 83 65 65 64 64

Heavy Vehicles, % 3 11 9 2 18 0

Mvmt Flow 41 135 34 94 145 14

Major/Minor Minor2 Major1 Major2

Conflicting Flow All 314 152 159 0 - 0

Stage 1 152 - - - - -

Stage 2 162 - - - - -

Critical Hdwy 6.43 6.31 4.19 - - -

Critical Hdwy Stg 1 5.43 - - - - -

Critical Hdwy Stg 2 5.43 - - - - -

Follow-up Hdwy 3.527 3.399 2.281 - - -

Pot Cap-1 Maneuver 677 871 1379 - - -

Stage 1 874 - - - - -

Stage 2 865 - - - - -

Platoon blocked, % - - -

Mov Cap-1 Maneuver 659 871 1379 - - -

Mov Cap-2 Maneuver 659 - - - - -

Stage 1 851 - - - - -

Stage 2 865 - - - - -

Approach EB NB SB

HCM Control Delay, s 10.7 2 0

HCM LOS B

Minor Lane/Major Mvmt NBL NBT EBLn1 SBT SBR

Capacity (veh/h) 1379 - 810 - -

HCM Lane V/C Ratio 0.025 -0.217 - -

HCM Control Delay (s) 7.7 0 10.7 - -

HCM Lane LOS A A B - -

HCM 95th %tile Q(veh) 0.1 - 0.8 - -

Intersection

Int Delay, s/veh 1.7

Movement EBL EBT WBT WBR SBL SBR

Lane Configurations 

Traffic Vol, veh/h 109 431 586 32 9 34

Future Vol, veh/h 109 431 586 32 9 34

Conflicting Peds, #/hr 1 0 0 1 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - 100 0 -

Veh in Median Storage, # 0 0 - 0 -

Grade, % - 0 0 - 0 -

Peak Hour Factor 84 84 91 91 77 77

Heavy Vehicles, % 0 14 6 16 11 15

Mvmt Flow 130 513 644 35 12 44

Major/Minor Major1 Major2 Minor2

Conflicting Flow All 680 0 - 0 1418 645

Stage 1 - - - - 645 -

Stage 2 - - - - 773 -

Critical Hdwy 4.1 - - - 6.51 6.35

Critical Hdwy Stg 1 - - - - 5.51 -

Critical Hdwy Stg 2 - - - - 5.51 -

Follow-up Hdwy 2.2 - - - 3.599 3.435

Pot Cap-1 Maneuver 222 - - - 144 450

Stage 1 - - - - 506 -

Stage 2 - - - - 440 -

Platoon blocked, % - - - -

Mov Cap-1 Maneuver 21 - - - 115 450

Mov Cap-2 Maneuver - - - - 115 -

Stage 1 - - - - 406 -

Stage 2 - - - - 440 -

Approach EB WB SB

HCM Control Delay, s 4.9 0 21

HCM LOS C

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h) 921 - - - 280

HCM Lane V/C Ratio 0.141 - - - 0.199

HCM Control Delay (s) 9.5 0 - - 21

HCM Lane LOS A A - - C

HCM 95th %tile Q(veh) 0.5 - - - 0.7

Intersection

Int Delay, s/veh 6.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	12	24	18	16	0	8	5	9	1	10	1
Future Vol, veh/h	6	12	24	18	16	0	8	5	9	1	10	1
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	-	0	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	77	77	77	60	60	60	75	75	75
Heavy Vehicles, %	0	8	17	0	0	17	0	0	33	0	0	0
Mvmt Flow	7	15	30	23	21	0	13	8	15	1	13	1

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	68	65	14	80	58	16	14	0	0	23	0	0
Stage 1	16	16	-	42	42	-	-	-	-	-	-	-
Stage 2	52	49	-	38	16	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.58	6.37	7.1	6.5	6.37	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.58	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.58	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.54	0.72	3.45	3.5	4.3	4.53	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	930	814	1024	913	837	1021	1617	-	-	1605	-	-
Stage 1	1009	870	-	978	864	-	-	-	-	-	-	-
Stage 2	966	842	-	982	886	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	906	807	1024	868	829	1021	1617	-	-	1605	-	-
Mov Cap-2 Maneuver	906	807	-	868	829	-	-	-	-	-	-	-
Stage 1	1001	869	-	970	857	-	-	-	-	-	-	-
Stage 2	935	835	-	936	885	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.1	9.5	2.6	0.6
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1617	-	-	935	849	1605	-	-
HCM Lane V/C Ratio	0.008	-	-	0.055	0.052	0.001	-	-
HCM Control Delay (s)	7.2	0	-	9.1	9.5	7.2	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-

Intersection

Int Delay, s/veh 3.7

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations

Traffic Vol, veh/h 3 11 40 18 27 21

Future Vol, veh/h 3 11 40 18 27 21

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Stop Stop Free Free Free Free

RT Channelized - None - None - None

Storage Length 0 - - - - -

Veh in Median Storage 0# - - 0 0 -

Grade, % 0 - - 0 0 -

Peak Hour Factor 60 60 76 76 80 80

Heavy Vehicles, % 0 9 0 6 19 19

Mvmt Flow 5 18 53 24 34 26

Major/Minor Minor2 Major1 Major2

Conflicting Flow All 177 47 60 0 - 0

Stage 1 47 - - - - -

Stage 2 130 - - - - -

Critical Hdwy 6.4 6.29 4.1 - - -

Critical Hdwy Stg 1 5.4 - - - - -

Critical Hdwy Stg 2 5.4 - - - - -

Follow-up Hdwy 3.53.381 2.2 - - -

Pot Cap-1 Maneuver 817 1003 1556 - - -

Stage 1 981 - - - - -

Stage 2 901 - - - - -

Platoon blocked, % - - -

Mov Cap-1 Maneuver 788 1003 1556 - - -

Mov Cap-2 Maneuver 788 - - - - -

Stage 1 947 - - - - -

Stage 2 901 - - - - -

Approach EB NB SB

HCM Control Delay, s 8.9 5.1 0

HCM LOS A

Minor Lane/Major Mvmt NBL NBT EBLn1 SBT SBR

Capacity (veh/h) 1556 - 948 - -

HCM Lane V/C Ratio 0.034 -0.025 - -

HCM Control Delay (s) 7.4 0 8.9 - -

HCM Lane LOS A A A - -

HCM 95th %tile Q(veh) 0.1 - 0.1 - -

Intersection

Int Delay, s/veh 4.7

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations	W				W	W
Traffic Vol, veh/h	3	8	103	38	19	19
Future Vol, veh/h	3	8	103	38	19	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	60	60	71	71	75	75
Heavy Vehicles, %	0	0	2	3	5	0
Mvmt Flow	5	13	145	54	25	25

Major/Minor Minor2 Major1 Major2

Conflicting Flow All	382	38	50	0	-	0
Stage 1	38	-	-	-	-	-
Stage 2	344	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.12	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.218	-	-	-
Pot Cap-1 Maneuver	624	1040	1557	-	-	-
Stage 1	990	-	-	-	-	-
Stage 2	722	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	564	1040	1557	-	-	-
Mov Cap-2 Maneuver	564	-	-	-	-	-
Stage 1	895	-	-	-	-	-
Stage 2	722	-	-	-	-	-

Approach EB NB SB

HCM Control Delay, s	9.4	5.5	0
HCM LOS	A		

Minor Lane/Major Mvmt NBL NBEBLn1 SBT SBR

Capacity (veh/h)	1557	-	845	-	-
HCM Lane V/C Ratio	0.093	-	0.022	-	-
HCM Control Delay (s)	7.5	0	9.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.3	-	0.1	-	-



### Intersection

Int Delay, s/veh 32.8

### Movement

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↑	↑	↑
Traffic Vol, veh/h	41	976	788	26	33	117
Future Vol, veh/h	41	976	788	26	33	117
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	- None		- None		- None	
Storage Length	-	-	-	100	0	-
Veh in Median Storage, #	0	0	-	0	-	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	90	90	63	63
Heavy Vehicles, %	5	2	3	19	3	7
Mvmt Flow	44	1049	876	29	52	186

### Major/Minor

	Major1	Major2	Minor2
Conflicting Flow All	905	0	0 2013 876
Stage 1	-	-	- 876 -
Stage 2	-	-	- 1137 -
Critical Hdwy	4.15	-	- 6.43 6.27
Critical Hdwy Stg 1	-	-	- 5.43 -
Critical Hdwy Stg 2	-	-	- 5.43 -
Follow-up Hdwy	2.245	-	- 3.527 3.363
Pot Cap-1 Maneuver	739	-	- 64 341
Stage 1	-	-	- 406 -
Stage 2	-	-	- 305 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	739	-	- 55 341
Mov Cap-2 Maneuver	-	-	- 55 -
Stage 1	-	-	- 348 -
Stage 2	-	-	- 305 -

### Approach

	EB	WB	SB
HCM Control Delay, s	0.4	0	\$ 306.3
HCM LOS			F

### Minor Lane/Major Mvmt

	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	739	-	-	-	159
HCM Lane V/C Ratio	0.06	-	-	-	1.497
HCM Control Delay (s)	10.2	0	-	-	\$ 306.3
HCM Lane LOS	B	A	-	-	F
HCM 95th %tile Q(veh)	0.2	-	-	-	15.6

### Notes

~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

Intersection												
Int Delay, s/veh	4.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	20	7	8	13	5	32	20	49	4	12	3
Future Vol, veh/h	6	20	7	8	13	5	32	20	49	4	12	3
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	-	0	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	93	93	93	81	81	81	60	60	60
Heavy Vehicles, %	0	0	0	0	0	40	13	5	6	0	8	25
Mvmt Flow	8	27	9	9	14	5	40	25	60	7	20	5

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	182	202	23	190	174	55	25	0	0	85	0	0
Stage 1	37	37	-	135	135	-	-	-	-	-	-	-
Stage 2	145	165	-	55	39	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.6	4.23	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.66	2.317	-	-	2.2	-	-
Pot Cap-1 Maneuver	784	698	1060	774	723	914	1521	-	-	1524	-	-
Stage 1	984	868	-	873	789	-	-	-	-	-	-	-
Stage 2	863	766	-	962	866	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	748	675	1060	725	699	914	1521	-	-	1524	-	-
Mov Cap-2 Maneuver	748	675	-	725	699	-	-	-	-	-	-	-
Stage 1	956	864	-	849	767	-	-	-	-	-	-	-
Stage 2	819	745	-	919	862	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.1	10	2.4	1.6
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1521	-	-	746	741	1524	-	-
HCM Lane V/C Ratio	0.026	-	-	0.059	0.038	0.004	-	-
HCM Control Delay (s)	7.4	0	-	10.1	10	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.1	0	-	-

Intersection

Int Delay, s/veh 3.8

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations

Traffic Vol, veh/h 26 38 9 87 22 6

Future Vol, veh/h 26 38 9 87 22 6

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Stop Stop Free Free Free Free

RT Channelized - None - None - None

Storage Length 0 - - - - -

Veh in Median Storage 0# - - 0 0 -

Grade, % 0 - - 0 0 -

Peak Hour Factor 60 60 64 64 70 70

Heavy Vehicles, % 8 11 13 8 9 17

Mvmt Flow 43 63 14 136 31 9

Major/Minor Minor2 Major1 Major2

Conflicting Flow All 200 36 40 0 - 0

Stage 1 36 - - - - -

Stage 2 164 - - - - -

Critical Hdwy 6.48 6.31 4.23 - - -

Critical Hdwy Stg 1 5.48 - - - - -

Critical Hdwy Stg 2 5.48 - - - - -

Follow-up Hdwy 3.57 2.39 2.317 - - -

Pot Cap-1 Maneuver 775 1011 1502 - - -

Stage 1 971 - - - - -

Stage 2 851 - - - - -

Platoon blocked, % - - -

Mov Cap-1 Maneuver 767 1011 1502 - - -

Mov Cap-2 Maneuver 767 - - - - -

Stage 1 961 - - - - -

Stage 2 851 - - - - -

Approach EB NB SB

HCM Control Delay, s 9.6 0.7 0

HCM LOS A

Minor Lane/Major Mvmt NBL NBT EBLn1 SBT SBR

Capacity (veh/h) 1502 - 895 - -

HCM Lane V/C Ratio 0.009 -0.119 - -

HCM Control Delay (s) 7.4 0 9.6 - -

HCM Lane LOS A A A - -

HCM 95th %tile Q(veh) 0 - 0.4 - -

Intersection

Int Delay, s/veh 7

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations 

Traffic Vol, veh/h 60 184 21 36 41 19

Future Vol, veh/h 60 184 21 36 41 19

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Stop Stop Free Free Free Free

RT Channelized - None - None - None

Storage Length 0 - - - - -

Veh in Median Storage 0 # - - 0 0 -

Grade, % 0 - - 0 0 -

Peak Hour Factor 91 91 68 68 68 68

Heavy Vehicles, % 10 8 10 6 7 8

Mvmt Flow 66 202 31 53 60 28

Major/Minor Minor2 Major1 Major2

Conflicting Flow All 189 74 88 0 - 0

Stage 1 74 - - - - -

Stage 2 115 - - - - -

Critical Hdwy 6.5 6.28 4.2 - - -

Critical Hdwy Stg 1 5.5 - - - - -

Critical Hdwy Stg 2 5.5 - - - - -

Follow-up Hdwy 3.59 3.372 2.29 - - -

Pot Cap-1 Maneuver 782 971 1459 - - -

Stage 1 929 - - - - -

Stage 2 890 - - - - -

Platoon blocked, % - - -

Mov Cap-1 Maneuver 765 971 1459 - - -

Mov Cap-2 Maneuver 765 - - - - -

Stage 1 909 - - - - -

Stage 2 890 - - - - -

Approach EB NB SB

HCM Control Delay 10.6 2.8 0

HCM LOS B

Minor Lane/Major Mvmt NBL NBT EBLn1 SBT SBR

Capacity (veh/h) 1459 - 911 - -

HCM Lane V/C Ratio 0.021 -0.294 - -

HCM Control Delay (s) 7.5 0 10.6 - -

HCM Lane LOS A A B - -

HCM 95th %tile Q(veh) 0.1 - 1.2 - -

Intersection

Int Delay, s/veh 6.1

Movement EBL EBT WBT WBR SBL SBR

Lane Configurations 

Traffic Vol, veh/h 29 679 718 16 25 119

Future Vol, veh/h 29 679 718 16 25 119

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - 100 0 -

Veh in Median Storage, # 0 0 - 0 -

Grade, % - 0 0 - 0 -

Peak Hour Factor 92 92 90 90 73 73

Heavy Vehicles, % 14 1 2 13 13 6

Mvmt Flow 32 738 798 18 34 163

Major/Minor Major1 Major2 Minor2

Conflicting Flow All 816 0 - 0 1600 798

Stage 1 - - - - 798 -

Stage 2 - - - - 802 -

Critical Hdwy 4.24 - - - 6.53 6.26

Critical Hdwy Stg 1 - - - - 5.53 -

Critical Hdwy Stg 2 - - - - 5.53 -

Follow-up Hdwy 2.326 - - - 3.617 3.354

Pot Cap-1 Maneuver 762 - - - 110 380

Stage 1 - - - - 425 -

Stage 2 - - - - 423 -

Platoon blocked, % - - - -

Mov Cap-1 Maneuver 762 - - - 102 380

Mov Cap-2 Maneuver - - - - 102 -

Stage 1 - - - - 395 -

Stage 2 - - - - 423 -

Approach EB WB SB

HCM Control Delay, s 0.4 0 53.2

HCM LOS F

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h) 762 - - - 258

HCM Lane V/C Ratio 0.041 - - - 0.765

HCM Control Delay (s) 9.9 0 - - 53.2

HCM Lane LOS A A - - F

HCM 95th %tile Q(veh) 0.1 - - - 5.6

Intersection												
Int Delay, s/veh	4.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	11	7	12	12	2	24	20	32	0	11	4
Future Vol, veh/h	1	11	7	12	12	2	24	20	32	0	11	4
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	-	0	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	68	68	68	81	81	81	86	86	86	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0	0	15	0	0	9	0
Mvmt Flow	1	16	10	15	15	2	28	23	37	0	15	5
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	124	134	18	129	118	42	20	0	0	60	0	0
Stage 1	18	18	-	98	98	-	-	-	-	-	-	-
Stage 2	106	116	-	31	20	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	855	760	1066	849	776	1034	1609	-	-	1556	-	-
Stage 1	1006	884	-	913	818	-	-	-	-	-	-	-
Stage 2	905	803	-	991	883	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	828	746	1066	816	762	1034	1609	-	-	1556	-	-
Mov Cap-2 Maneuver	828	746	-	816	762	-	-	-	-	-	-	-
Stage 1	988	884	-	897	803	-	-	-	-	-	-	-
Stage 2	870	789	-	963	883	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	9.4		9.7		2.3		0					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1609	-	-	844	803	1556	-	-				
HCM Lane V/C Ratio	0.017	-	-	0.033	0.04	-	-	-				
HCM Control Delay (s)	7.3	0	-	9.4	9.7	0	-	-				
HCM Lane LOS	A	A	-	A	A	A	-	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0.1	0	-	-				



Intersection

Int Delay, s/veh 5.5

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations

Traffic Vol, veh/h 34 64 14 41 25 7

Future Vol, veh/h 34 64 14 41 25 7

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Stop Stop Free Free Free Free

RT Channelized - None - None - None

Storage Length 0 - - - - -

Veh in Median Storage 0# - - 0 0 -

Grade, % 0 - - 0 0 -

Peak Hour Factor 76 76 70 70 83 83

Heavy Vehicles, % 5 9 29 5 0 14

Mvmt Flow 45 84 20 59 30 8

Major/Minor Minor2 Major1 Major2

Conflicting Flow All 133 34 38 0 - 0

Stage 1 34 - - - - -

Stage 2 99 - - - - -

Critical Hdwy 6.45 6.29 4.39 - - -

Critical Hdwy Stg 1 5.45 - - - - -

Critical Hdwy Stg 2 5.45 - - - - -

Follow-up Hdwy 3.54 3.38 12.46 1 - - -

Pot Cap-1 Maneuver 854 1019 1415 - - -

Stage 1 981 - - - - -

Stage 2 917 - - - - -

Platoon blocked, % - - -

Mov Cap-1 Maneuver 841 1019 1415 - - -

Mov Cap-2 Maneuver 841 - - - - -

Stage 1 966 - - - - -

Stage 2 917 - - - - -

Approach EB NB SB

HCM Control Delay, s 9.4 1.9 0

HCM LOS A

Minor Lane/Major Mvmt NBL NBT EBLn1 SBT SBR

Capacity (veh/h) 1415 - 949 - -

HCM Lane V/C Ratio 0.014 -0.136 - -

HCM Control Delay (s) 7.6 0 9.4 - -

HCM Lane LOS A A A - -

HCM 95th %tile Q(veh) 0 - 0.5 - -

Intersection

Int Delay, s/veh 4.4

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations

Traffic Vol, veh/h 21 81 16 34 84 5

Future Vol, veh/h 21 81 16 34 84 5

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Stop Stop Free Free Free Free

RT Channelized - None - None - None

Storage Length 0 - - - - -

Veh in Median Storage 0# - - 0 0 -

Grade, % 0 - - 0 0 -

Peak Hour Factor 85 85 74 74 79 79

Heavy Vehicles, % 5 9 19 18 8 0

Mvmt Flow 25 95 22 46 106 6

Major/Minor Minor2 Major1 Major2

Conflicting Flow All 199 109 112 0 - 0

Stage 1 109 - - - - -

Stage 2 90 - - - - -

Critical Hdwy 6.45 6.29 4.29 - - -

Critical Hdwy Stg 1 5.45 - - - - -

Critical Hdwy Stg 2 5.45 - - - - -

Follow-up Hdwy 3.545 3.381 2.371 - - -

Pot Cap-1 Maneuver 783 926 1378 - - -

Stage 1 908 - - - - -

Stage 2 926 - - - - -

Platoon blocked, % - - -

Mov Cap-1 Maneuver 770 926 1378 - - -

Mov Cap-2 Maneuver 770 - - - - -

Stage 1 893 - - - - -

Stage 2 926 - - - - -

Approach EB NB SB

HCM Control Delay, s 9.7 2.4 0

HCM LOS A

Minor Lane/Major Mvmt NBL NBT EBLn1 SBT SBR

Capacity (veh/h) 1378 - 889 - -

HCM Lane V/C Ratio 0.016 -0.135 - -

HCM Control Delay (s) 7.7 0 9.7 - -

HCM Lane LOS A A A - -

HCM 95th %tile Q(veh) 0 - 0.5 - -

Intersection

Int Delay, s/veh 2.1

Movement EBL EBT WBT WBR SBL SBR

Lane Configurations 

Traffic Vol, veh/h 45 718 783 21 18 44

Future Vol, veh/h 45 718 783 21 18 44

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - 100 0 -

Veh in Median Storage, # 0 0 - 0 -

Grade, % - 0 0 - 0 -

Peak Hour Factor 93 93 95 95 74 74

Heavy Vehicles, % 5 2 2 10 6 5

Mvmt Flow 48 772 824 22 24 59

Major/Minor Major1 Major2 Minor2

Conflicting Flow All 846 0 - 0 1692 824

Stage 1 - - - - 824 -

Stage 2 - - - - 868 -

Critical Hdwy 4.15 - - - 6.46 6.25

Critical Hdwy Stg 1 - - - - 5.46 -

Critical Hdwy Stg 2 - - - - 5.46 -

Follow-up Hdwy 2.245 - - - 3.554 3.345

Pot Cap-1 Maneuver 778 - - - 100 368

Stage 1 - - - - 424 -

Stage 2 - - - - 404 -

Platoon blocked, % - - -

Mov Cap-1 Maneuver 778 - - - 89 368

Mov Cap-2 Maneuver - - - - 89 -

Stage 1 - - - - 378 -

Stage 2 - - - - 404 -

Approach EB WB SB

HCM Control Delay, s 9.6 0 37.2

HCM LOS E

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h) 778 - - - 193

HCM Lane V/C Ratio 0.062 - - - 0.434

HCM Control Delay (s) 9.9 0 - - 37.2

HCM Lane LOS A A - - E

HCM 95th %tile Q(veh) 0.2 - - - 2

Intersection												
Int Delay, s/veh	6.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	25	17	14	19	3	13	12	15	2	6	4
Future Vol, veh/h	4	25	17	14	19	3	13	12	15	2	6	4
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	-	0	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	75	75	75	70	70	70	60	60	60
Heavy Vehicles, %	0	4	12	0	0	33	0	0	7	0	0	25
Mvmt Flow	5	30	21	19	25	4	19	17	21	3	10	7
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	100	96	14	111	89	28	17	0	0	38	0	0
Stage 1	20	20	-	66	66	-	-	-	-	-	-	-
Stage 2	80	76	-	45	23	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.54	6.32	7.1	6.5	6.53	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.54	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.54	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.54	0.36	3.40	8	3.5	4.35	97	2.2	-	2.2	-	-
Pot Cap-1 Maneuver	886	790	1038	872	805	965	1613	-	-	1585	-	-
Stage 1	1004	875	-	950	844	-	-	-	-	-	-	-
Stage 2	934	828	-	974	880	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	851	779	1038	821	794	965	1613	-	-	1585	-	-
Mov Cap-2 Maneuver	851	779	-	821	794	-	-	-	-	-	-	-
Stage 1	992	873	-	939	834	-	-	-	-	-	-	-
Stage 2	891	818	-	919	878	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	9.5		9.7		2.4		1.2					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn	WBLn	1	SBL	SBT	SBR			
Capacity (veh/h)	1613	-	-	865	816	1585	-	-	-			
HCM Lane V/C Ratio	0.012	-	-	0.065	0.059	0.002	-	-	-			
HCM Control Delay (s)	7.3	0	-	9.5	9.7	7.3	0	-	-			
HCM Lane LOS	A	A	-	A	A	A	A	-	-			
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-	-			

Intersection

Int Delay, s/veh 4.6

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations 

Traffic Vol, veh/h 17 40 29 34 27 13

Future Vol, veh/h 17 40 29 34 27 13

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Stop Stop Free Free Free Free

RT Channelized - None - None - None

Storage Length 0 - - - - -

Veh in Median Storage 0# - - 0 0 -

Grade, % 0 - - 0 0 -

Peak Hour Factor 87 87 89 89 83 83

Heavy Vehicles, % 12 18 28 3 11 8

Mvmt Flow 20 46 33 38 33 16

Major/Minor Minor2 Major1 Major2

Conflicting Flow All 145 41 49 0 - 0

Stage 1 41 - - - - -

Stage 2 104 - - - - -

Critical Hdwy 6.52 6.38 4.38 - - -

Critical Hdwy Stg 1 5.52 - - - - -

Critical Hdwy Stg 2 5.52 - - - - -

Follow-up Hdwy 3.608 3.462 2.452 - - -

Pot Cap-1 Maneuver 824 986 1406 - - -

Stage 1 956 - - - - -

Stage 2 896 - - - - -

Platoon blocked, % - - -

Mov Cap-1 Maneuver 804 986 1406 - - -

Mov Cap-2 Maneuver 804 - - - - -

Stage 1 933 - - - - -

Stage 2 896 - - - - -

Approach EB NB SB

HCM Control Delay, s 9.2 3.5 0

HCM LOS A

Minor Lane/Major Mvmt NBL NBT EBLn1 SBT SBR

Capacity (veh/h) 1406 - 924 - -

HCM Lane V/C Ratio 0.023 -0.071 - -

HCM Control Delay (s) 7.6 0 9.2 - -

HCM Lane LOS A A A - -

HCM 95th %tile Q(veh) 0.1 - 0.2 - -

Intersection

Int Delay, s/veh 3.8

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations	W				W	W
Traffic Vol, veh/h	11	40	42	52	39	28
Future Vol, veh/h	11	40	42	52	39	28
Conflicting Peds, #/hr	0	1	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	- None		- None		- None	
Storage Length	0	-	-	-	-	-
Veh in Median Storage	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	69	69	87	87	72	72
Heavy Vehicles, %	0	3	5	19	31	0
Mvmt Flow	16	58	48	60	54	39

Major/Minor Minor2 Major1 Major2

Conflicting Flow All	230	75	93	0	-	0
Stage 1	74	-	-	-	-	-
Stage 2	156	-	-	-	-	-
Critical Hdwy	6.4	6.23	4.15	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.32	2.24	-	-	-
Pot Cap-1 Maneuver	763	984	1483	-	-	-
Stage 1	954	-	-	-	-	-
Stage 2	877	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	738	983	1483	-	-	-
Mov Cap-2 Maneuver	738	-	-	-	-	-
Stage 1	923	-	-	-	-	-
Stage 2	877	-	-	-	-	-

Approach EB NB SB

HCM Control Delay, s	9.3	3.4	0
HCM LOS	A		

Minor Lane/Major Mvmt NBL NBEBLn1 SBT SBR

Capacity (veh/h)	1483	-	917	-	-
HCM Lane V/C Ratio	0.033	-	0.081	-	-
HCM Control Delay (s)	7.5	0	9.3	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-



## **Appendix C – Synchro Performance Worksheets for Existing Conditions**

Total Network Performance

Denied Delay (hr)	0.2
Denied Del/Veh (s)	0.6
Total Delay (hr)	3.2
Total Del/Veh (s)	7.8
Stop Delay (hr)	0.8
Stop Del/Veh (s)	1.8
Total Stops	336
Stop/Veh	0.23
Travel Dist (mi)	689.5
Travel Time (hr)	21.7
Avg Speed (mph)	32
Fuel Used (gal)	20.9
Fuel Eff. (mpg)	33.0
HC Emissions (g)	524
CO Emissions (g)	15466
NOx Emissions (g)	1465
Vehicles Entered	1468
Vehicles Exited	1470
Hourly Exit Rate	1470
Input Volume	3499
% of Volume	42

### Total Network Performance

Denied Delay (hr)	0.5
Denied Del/Veh (s)	0.9
Total Delay (hr)	33.0
Total Del/Veh (s)	53.6
Stop Delay (hr)	28.7
Stop Del/Veh (s)	46.6
Total Stops	701
Stop/Veh	0.32
Travel Dist (mi)	1027.1
Travel Time (hr)	61.1
Avg Speed (mph)	17
Fuel Used (gal)	36.5
Fuel Eff. (mpg)	28.1
HC Emissions (g)	794
CO Emissions (g)	21263
NOx Emissions (g)	2098
Vehicles Entered	2164
Vehicles Exited	2136
Hourly Exit Rate	2136
Input Volume	5390
% of Volume	40

## Total Network Performance

Denied Delay (hr)	0.2
Denied Del/Veh (s)	0.5
Total Delay (hr)	2.7
Total Del/Veh (s)	6.9
Stop Delay (hr)	0.5
Stop Del/Veh (s)	1.4
Total Stops	323
Stop/Veh	0.23
Travel Dist (mi)	629.4
Travel Time (hr)	19.5
Avg Speed (mph)	33
Fuel Used (gal)	19.4
Fuel Eff. (mpg)	32.4
HC Emissions (g)	572
CO Emissions (g)	16010
NOx Emissions (g)	1575
Vehicles Entered	1371
Vehicles Exited	1369
Hourly Exit Rate	1369
Input Volume	3268
% of Volume	42

### Total Network Performance

Denied Delay (hr)	0.6
Denied Del/Veh (s)	1.0
Total Delay (hr)	32.4
Total Del/Veh (s)	50.8
Stop Delay (hr)	27.5
Stop Del/Veh (s)	43.2
Total Stops	690
Stop/Veh	0.30
Travel Dist (mi)	1029.7
Travel Time (hr)	60.8
Avg Speed (mph)	17
Fuel Used (gal)	36.2
Fuel Eff. (mpg)	28.4
HC Emissions (g)	612
CO Emissions (g)	18265
NOx Emissions (g)	1651
Vehicles Entered	2252
Vehicles Exited	2210
Hourly Exit Rate	2210
Input Volume	5370
% of Volume	41

### Total Network Performance

Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.6
Total Delay (hr)	6.1
Total Del/Veh (s)	12.4
Stop Delay (hr)	3.2
Stop Del/Veh (s)	6.6
Total Stops	479
Stop/Veh	0.27
Travel Dist (mi)	826.5
Travel Time (hr)	28.6
Avg Speed (mph)	29
Fuel Used (gal)	24.9
Fuel Eff. (mpg)	33.2
HC Emissions (g)	478
CO Emissions (g)	14941
NOx Emissions (g)	1369
Vehicles Entered	1755
Vehicles Exited	1757
Hourly Exit Rate	1757
Input Volume	4212
% of Volume	42



Total Network Performance

Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.6
Total Delay (hr)	5.0
Total Del/Veh (s)	9.6
Stop Delay (hr)	1.6
Stop Del/Veh (s)	3.1
Total Stops	408
Stop/Veh	0.22
Travel Dist (mi)	829.2
Travel Time (hr)	27.3
Avg Speed (mph)	31
Fuel Used (gal)	24.0
Fuel Eff. (mpg)	34.5
HC Emissions (g)	483
CO Emissions (g)	14684
NOx Emissions (g)	1359
Vehicles Entered	1854
Vehicles Exited	1854
Hourly Exit Rate	1854
Input Volume	4241
% of Volume	44

## **Appendix D – Queuing and Blocking Reports**

Queuing and Blocking Report  
Existing Conditions - AM Peak THU

Traverse City Horse Shows  
Existing Conditions - AM Peak THU

Intersection: 1: M-72 & Bates Rd

Movement	EB	WB	WB	SB
Directions Served	LT	T	R	LR
Maximum Queue (ft)	224	2	7	80
Average Queue (ft)	73	0	0	20
95th Queue (ft)	174	2	4	55
Link Distance (ft)	975	1134		1252
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			100	
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: Bates Rd & Brackett Rd & Sayler Rd

Movement	EB	WB
Directions Served	LTR	LTR
Maximum Queue (ft)	64	60
Average Queue (ft)	22	26
95th Queue (ft)	50	51
Link Distance (ft)	586	559
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 9: Bates Rd & 1st North Access

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	33	21
Average Queue (ft)	15	1
95th Queue (ft)	40	11
Link Distance (ft)	594	800
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 10: Bates Rd & 2nd South Access

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	58	39
Average Queue (ft)	12	6
95th Queue (ft)	40	25
Link Distance (ft)	821	1608
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 12: Bates Rd & Dummy C /Dummy D

Movement	EB
Directions Served	LTR
Maximum Queue (ft)	36
Average Queue (ft)	21
95th Queue (ft)	44
Link Distance (ft)	491
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 15: Bates Rd & Dummy A /Dummy B

Movement	EB
Directions Served	LTR
Maximum Queue (ft)	21
Average Queue (ft)	1
95th Queue (ft)	12
Link Distance (ft)	380
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 0

Queuing and Blocking Report  
Existing Conditions - PM Peak THU

Traverse City Horse Shows  
Existing Conditions - PM Peak THU

Intersection: 1: M-72 & Bates Rd

Movement	EB	WB	WB	SB
Directions Served	LT	T	R	LR
Maximum Queue (ft)	481	15	2	1088
Average Queue (ft)	85	1	0	693
95th Queue (ft)	289	9	2	1303
Link Distance (ft)	975	1134		1249
Upstream Blk Time (%)				10
Queuing Penalty (veh)				19
Storage Bay Dist (ft)			100	
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: Bates Rd & Brackett Rd & Sayler Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	53	49	10	3
Average Queue (ft)	22	19	0	0
95th Queue (ft)	45	44	6	3
Link Distance (ft)	586	559	323	348
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Bates Rd & 1st North Access

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	79	5
Average Queue (ft)	37	0
95th Queue (ft)	62	3
Link Distance (ft)	594	800
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 10: Bates Rd & 2nd South Access

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	94	23
Average Queue (ft)	47	1
95th Queue (ft)	78	11
Link Distance (ft)	821	1608
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 12: Bates Rd & Dummy C /Dummy D

Movement	EB	WB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	50	30	223
Average Queue (ft)	18	12	46
95th Queue (ft)	48	36	281
Link Distance (ft)	491	504	1608
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 15: Bates Rd & Dummy A /Dummy B

Movement	EB	WB
Directions Served	LTR	LTR
Maximum Queue (ft)	29	23
Average Queue (ft)	3	2
95th Queue (ft)	18	15
Link Distance (ft)	380	354
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 19



Queuing and Blocking Report  
Existing Conditions - AM Peak FRI

Traverse City Horse Shows  
Existing Conditions - AM Peak FRI

Intersection: 1: M-72 & Bates Rd

Movement	EB	WB	SB
Directions Served	LT	R	LR
Maximum Queue (ft)	196	7	66
Average Queue (ft)	61	0	21
95th Queue (ft)	146	5	51
Link Distance (ft)	975		1249
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		100	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: Bates Rd & Brackett Rd & Sayler Rd

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	60	34	5
Average Queue (ft)	23	19	0
95th Queue (ft)	50	40	3
Link Distance (ft)	586	559	323
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 9: Bates Rd & 1st North Access

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	53	22
Average Queue (ft)	11	1
95th Queue (ft)	40	12
Link Distance (ft)	594	800
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 10: Bates Rd & 2nd South Access

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	31	33
Average Queue (ft)	8	3
95th Queue (ft)	30	18
Link Distance (ft)	821	1608
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 12: Bates Rd & Dummy C /Dummy D

Movement	EB	WB
Directions Served	LTR	LTR
Maximum Queue (ft)	38	32
Average Queue (ft)	23	5
95th Queue (ft)	45	24
Link Distance (ft)	491	504
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 15: Bates Rd & Dummy A /Dummy B

Movement	WB
Directions Served	LTR
Maximum Queue (ft)	33
Average Queue (ft)	10
95th Queue (ft)	32
Link Distance (ft)	354
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 0

Intersection: 1: M-72 & Bates Rd

Movement	EB	WB	SB
Directions Served	LT	R	LR
Maximum Queue (ft)	463	8	929
Average Queue (ft)	96	0	593
95th Queue (ft)	347	6	1266
Link Distance (ft)	975		1249
Upstream Blk Time (%)	0		14
Queuing Penalty (veh)	0		21
Storage Bay Dist (ft)		100	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: Bates Rd & Brackett Rd & Sayler Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	32	51	13	6
Average Queue (ft)	19	18	1	0
95th Queue (ft)	40	44	6	4
Link Distance (ft)	586	559	323	348
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Bates Rd & 1st North Access

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	72	5
Average Queue (ft)	33	0
95th Queue (ft)	60	4
Link Distance (ft)	594	800
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 10: Bates Rd & 2nd South Access

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	107	8
Average Queue (ft)	57	0
95th Queue (ft)	90	6
Link Distance (ft)	821	1608
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 12: Bates Rd & Dummy C /Dummy D

Movement	SB
Directions Served	LTR
Maximum Queue (ft)	417
Average Queue (ft)	96
95th Queue (ft)	527
Link Distance (ft)	1608
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 15: Bates Rd & Dummy A /Dummy B

Movement	EB	WB
Directions Served	LTR	LTR
Maximum Queue (ft)	15	33
Average Queue (ft)	1	15
95th Queue (ft)	10	39
Link Distance (ft)	380	354
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 21

Queuing and Blocking Report  
Existing Conditions - AM Peak SAT

Traverse City Horse Shows  
Existing Conditions - AM Peak SAT

Intersection: 1: M-72 & Bates Rd

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	234	342
Average Queue (ft)	45	112
95th Queue (ft)	150	298
Link Distance (ft)	975	1249
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Bates Rd & Brackett Rd & Sayler Rd

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	30	34	5
Average Queue (ft)	13	14	0
95th Queue (ft)	35	37	4
Link Distance (ft)	586	559	323
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 9: Bates Rd & 1st North Access

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	72	3
Average Queue (ft)	38	0
95th Queue (ft)	63	3
Link Distance (ft)	594	800
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 10: Bates Rd & 2nd South Access

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	80	19
Average Queue (ft)	39	1
95th Queue (ft)	67	11
Link Distance (ft)	821	1608
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 12: Bates Rd & Dummy C /Dummy D

Movement	EB	WB
Directions Served	LTR	LTR
Maximum Queue (ft)	31	30
Average Queue (ft)	5	11
95th Queue (ft)	24	34
Link Distance (ft)	491	504
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 15: Bates Rd & Dummy A /Dummy B

Movement	EB	WB
Directions Served	LTR	LTR
Maximum Queue (ft)	26	30
Average Queue (ft)	2	10
95th Queue (ft)	15	33
Link Distance (ft)	380	354
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0

Queuing and Blocking Report  
Existing Conditions - Peak Hour SUN

Traverse City Horse Shows  
Existing Conditions - Peak Hour SUN

Intersection: 1: M-72 & Bates Rd

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	381	147
Average Queue (ft)	75	43
95th Queue (ft)	237	118
Link Distance (ft)	975	1249
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Bates Rd & Brackett Rd & Sayler Rd

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	61	45	5
Average Queue (ft)	25	20	0
95th Queue (ft)	50	43	2
Link Distance (ft)	586	559	323
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 9: Bates Rd & 1st North Access

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	70	41
Average Queue (ft)	33	2
95th Queue (ft)	62	18
Link Distance (ft)	594	800
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		



Intersection: 10: Bates Rd & 2nd South Access

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	50	16
Average Queue (ft)	26	2
95th Queue (ft)	48	12
Link Distance (ft)	821	1608
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 12: Bates Rd & Dummy C /Dummy D

Movement	EB	WB
Directions Served	LTR	LTR
Maximum Queue (ft)	31	44
Average Queue (ft)	8	20
95th Queue (ft)	29	44
Link Distance (ft)	491	504
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 15: Bates Rd & Dummy A /Dummy B

Movement	EB
Directions Served	LTR
Maximum Queue (ft)	30
Average Queue (ft)	8
95th Queue (ft)	29
Link Distance (ft)	380
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 0

## **Appendix E – Validation Reports**

1: M-72 & Bates Rd Performance by approach

Approach	EB	WB	SB	All
Denied Delay (hr)	0.1	0.2	0.0	0.2
Denied Del/Veh (s)	0.5	0.8	0.0	0.7
Total Delay (hr)	1.4	1.0	0.2	2.6
Total Del/Veh (s)	9.5	4.7	21.1	7.1
Stop Delay (hr)	0.4	0.0	0.2	0.6
Stop Del/Veh (s)	2.7	0.0	21.0	1.7
Total Stops	137	0	34	171
Stop/Veh	0.26	0.00	0.89	0.13
Travel Dist (mi)	97.7	159.8	8.5	265.9
Travel Time (hr)	3.3	3.9	0.5	7.7
Avg Speed (mph)	31	43	17	36
Fuel Used (gal)	2.6	3.5	0.5	6.6
Fuel Eff. (mpg)	37.5	45.9	16.9	40.4
HC Emissions (g)	60	80	8	147
CO Emissions (g)	2273	2997	440	5709
NOx Emissions (g)	160	216	22	399
Vehicles Entered	528	743	38	1309
Vehicles Exited	530	743	38	1311
Hourly Exit Rate	530	743	38	1311
Input Volume	529	732	37	1298
% of Volume	100	101	103	101

5: Bates Rd & Brackett Rd & Sayler Rd Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.1	0.1
Total Delay (hr)	0.0	0.1	0.0	0.0	0.1
Total Del/Veh (s)	4.5	4.1	0.2	0.7	3.3
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0
Stop Del/Veh (s)	1.9	1.9	0.0	0.0	1.5
Total Stops	37	50	0	0	87
Stop/Veh	1.00	1.00	0.00	0.00	0.76
Travel Dist (mi)	4.2	5.3	0.8	1.1	11.4
Travel Time (hr)	0.2	0.2	0.0	0.0	0.4
Avg Speed (mph)	26	26	34	31	27
Fuel Used (gal)	0.1	0.1	0.0	0.0	0.3
Fuel Eff. (mpg)	43.0	41.8	96.0	22.6	40.4
HC Emissions (g)	2	3	0	3	8
CO Emissions (g)	79	109	1	94	283
NOx Emissions (g)	5	8	0	8	21
Vehicles Entered	38	50	11	17	116
Vehicles Exited	37	50	11	17	115
Hourly Exit Rate	37	50	11	17	115
Input Volume	36	52	10	16	113
% of Volume	103	97	110	108	102

9: Bates Rd & 1st North Access Performance by approach

Approach	EB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.0
Total Del/Veh (s)	3.1	0.9	0.4	0.9
Stop Delay (hr)	0.0	0.0	0.0	0.0
Stop Del/Veh (s)	2.7	0.1	0.0	0.4
Total Stops	20	2	0	22
Stop/Veh	1.00	0.05	0.00	0.17
Travel Dist (mi)	2.3	6.3	14.2	22.8
Travel Time (hr)	0.1	0.2	0.3	0.6
Avg Speed (mph)	19	38	46	38
Fuel Used (gal)	0.1	0.2	0.5	0.8
Fuel Eff. (mpg)	36.3	33.7	26.7	29.1
HC Emissions (g)	0	6	28	34
CO Emissions (g)	6	179	765	949
NOx Emissions (g)	1	18	78	97
Vehicles Entered	20	40	74	134
Vehicles Exited	20	40	73	133
Hourly Exit Rate	20	40	73	133
Input Volume	21	42	72	135
% of Volume	95	95	101	99

10: Bates Rd & 2nd South Access Performance by approach

Approach	EB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.1
Total Del/Veh (s)	3.0	1.1	0.3	1.0
Stop Delay (hr)	0.0	0.0	0.0	0.0
Stop Del/Veh (s)	2.5	0.1	0.1	0.2
Total Stops	13	6	0	19
Stop/Veh	1.00	0.04	0.00	0.08
Travel Dist (mi)	2.0	41.2	12.8	56.0
Travel Time (hr)	0.1	1.0	0.4	1.4
Avg Speed (mph)	20	43	36	39
Fuel Used (gal)	0.1	1.0	0.4	1.5
Fuel Eff. (mpg)	36.1	40.6	32.2	38.2
HC Emissions (g)	2	46	17	64
CO Emissions (g)	25	925	469	1419
NOx Emissions (g)	4	141	46	191
Vehicles Entered	13	134	80	227
Vehicles Exited	13	134	80	227
Hourly Exit Rate	13	134	80	227
Input Volume	16	132	80	228
% of Volume	84	102	99	100

1: M-72 & Bates Rd Performance by approach

Approach	EB	WB	SB	All
Denied Delay (hr)	0.2	0.2	0.1	0.5
Denied Del/Veh (s)	0.9	0.8	1.8	1.0
Total Delay (hr)	2.7	1.3	26.1	30.0
Total Del/Veh (s)	10.1	5.7	449.2	55.3
Stop Delay (hr)	0.5	0.0	26.4	26.9
Stop Del/Veh (s)	1.8	0.0	454.3	49.5
Total Stops	117	1	187	305
Stop/Veh	0.12	0.00	0.89	0.16
Travel Dist (mi)	175.4	169.6	43.5	388.5
Travel Time (hr)	5.9	4.3	27.4	37.6
Avg Speed (mph)	31	41	2	10
Fuel Used (gal)	3.7	3.7	6.7	14.1
Fuel Eff. (mpg)	46.9	46.4	6.5	27.6
HC Emissions (g)	83	82	81	246
CO Emissions (g)	2466	2916	1564	6946
NOx Emissions (g)	215	226	110	550
Vehicles Entered	949	788	194	1931
Vehicles Exited	948	787	167	1902
Hourly Exit Rate	948	787	167	1902
Input Volume	962	792	202	1956
% of Volume	99	99	83	97



5: Bates Rd & Brackett Rd & Sayler Rd Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.1	0.0
Total Delay (hr)	0.1	0.1	0.0	0.0	0.1
Total Del/Veh (s)	6.0	5.9	0.6	0.9	2.3
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0
Stop Del/Veh (s)	2.3	2.3	0.0	0.0	0.8
Total Stops	39	33	0	0	72
Stop/Veh	0.98	1.00	0.00	0.00	0.32
Travel Dist (mi)	4.3	3.4	9.2	1.2	18.2
Travel Time (hr)	0.2	0.1	0.3	0.0	0.7
Avg Speed (mph)	25	25	30	33	28
Fuel Used (gal)	0.1	0.1	0.1	0.1	0.4
Fuel Eff. (mpg)	45.4	45.8	72.9	19.8	50.8
HC Emissions (g)	1	1	2	6	10
CO Emissions (g)	65	52	47	154	318
NOx Emissions (g)	3	3	4	14	25
Vehicles Entered	38	33	135	18	224
Vehicles Exited	40	33	135	18	226
Hourly Exit Rate	40	33	135	18	226
Input Volume	39	34	134	20	227
% of Volume	102	96	101	91	99

9: Bates Rd & 1st North Access Performance by approach

Approach	EB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.0	0.0	0.1
Total Delay (hr)	0.1	0.0	0.0	0.1
Total Del/Veh (s)	3.9	0.6	0.4	2.0
Stop Delay (hr)	0.1	0.0	0.0	0.1
Stop Del/Veh (s)	2.8	0.1	0.0	1.3
Total Stops	104	0	0	104
Stop/Veh	1.00	0.00	0.00	0.45
Travel Dist (mi)	11.8	14.4	7.3	33.5
Travel Time (hr)	0.6	0.4	0.2	1.2
Avg Speed (mph)	19	41	44	29
Fuel Used (gal)	0.3	0.7	0.3	1.3
Fuel Eff. (mpg)	34.4	22.1	26.8	26.4
HC Emissions (g)	4	10	12	25
CO Emissions (g)	91	511	349	952
NOx Emissions (g)	12	36	33	82
Vehicles Entered	104	92	37	233
Vehicles Exited	104	91	37	232
Hourly Exit Rate	104	91	37	232
Input Volume	105	94	38	238
% of Volume	99	97	96	98

10: Bates Rd & 2nd South Access Performance by approach

Approach	EB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.0	0.0	0.1
Total Delay (hr)	0.2	0.0	0.0	0.2
Total Del/Veh (s)	4.3	0.6	0.9	2.3
Stop Delay (hr)	0.1	0.0	0.0	0.1
Stop Del/Veh (s)	3.1	0.1	0.2	1.4
Total Stops	147	2	0	149
Stop/Veh	0.99	0.02	0.00	0.44
Travel Dist (mi)	22.9	24.3	15.3	62.5
Travel Time (hr)	1.2	0.6	0.5	2.2
Avg Speed (mph)	20	44	33	29
Fuel Used (gal)	0.7	0.8	0.9	2.4
Fuel Eff. (mpg)	33.7	31.4	16.5	26.2
HC Emissions (g)	16	26	32	74
CO Emissions (g)	296	698	1138	2132
NOx Emissions (g)	42	83	88	214
Vehicles Entered	146	81	107	334
Vehicles Exited	147	81	107	335
Hourly Exit Rate	147	81	107	335
Input Volume	144	84	110	338
% of Volume	102	96	97	99

1: M-72 & Bates Rd Performance by approach

Approach	EB	WB	SB	All
Denied Delay (hr)	0.1	0.1	0.0	0.2
Denied Del/Veh (s)	0.4	0.7	0.0	0.6
Total Delay (hr)	1.2	0.7	0.1	2.1
Total Del/Veh (s)	8.4	4.3	9.5	6.3
Stop Delay (hr)	0.3	0.0	0.1	0.4
Stop Del/Veh (s)	1.9	0.0	9.5	1.2
Total Stops	120	0	41	161
Stop/Veh	0.23	0.00	0.84	0.13
Travel Dist (mi)	96.9	133.1	10.1	240.1
Travel Time (hr)	3.1	3.2	0.5	6.7
Avg Speed (mph)	32	44	22	37
Fuel Used (gal)	2.6	3.1	0.6	6.2
Fuel Eff. (mpg)	37.9	43.6	17.5	38.8
HC Emissions (g)	96	86	12	194
CO Emissions (g)	2869	3069	577	6514
NOx Emissions (g)	245	224	33	502
Vehicles Entered	525	619	49	1193
Vehicles Exited	524	618	49	1191
Hourly Exit Rate	524	618	49	1191
Input Volume	532	613	49	1193
% of Volume	99	101	101	100

5: Bates Rd & Brackett Rd & Sayler Rd Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.1	0.1
Total Delay (hr)	0.0	0.1	0.0	0.0	0.1
Total Del/Veh (s)	3.5	5.7	0.5	0.8	3.3
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0
Stop Del/Veh (s)	1.8	2.0	0.1	0.0	1.3
Total Stops	41	35	0	0	76
Stop/Veh	1.00	1.00	0.00	0.00	0.68
Travel Dist (mi)	4.5	3.7	1.4	0.8	10.4
Travel Time (hr)	0.2	0.1	0.1	0.0	0.4
Avg Speed (mph)	27	25	23	38	26
Fuel Used (gal)	0.1	0.1	0.1	0.0	0.3
Fuel Eff. (mpg)	41.5	44.9	23.6	16.3	34.9
HC Emissions (g)	4	1	1	1	6
CO Emissions (g)	125	52	36	53	267
NOx Emissions (g)	10	2	3	2	17
Vehicles Entered	41	35	23	12	111
Vehicles Exited	41	35	23	12	111
Hourly Exit Rate	41	35	23	12	111
Input Volume	41	33	25	12	111
% of Volume	99	106	93	102	100

9: Bates Rd & 1st North Access Performance by approach

Approach	EB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.0
Total Del/Veh (s)	3.1	0.9	0.2	0.9
Stop Delay (hr)	0.0	0.0	0.0	0.0
Stop Del/Veh (s)	2.6	0.1	0.0	0.3
Total Stops	13	2	0	15
Stop/Veh	1.00	0.04	0.00	0.12
Travel Dist (mi)	1.5	7.6	9.6	18.6
Travel Time (hr)	0.1	0.2	0.2	0.5
Avg Speed (mph)	19	36	44	37
Fuel Used (gal)	0.0	0.2	0.3	0.6
Fuel Eff. (mpg)	36.2	31.2	29.3	30.5
HC Emissions (g)	1	5	21	27
CO Emissions (g)	15	194	532	741
NOx Emissions (g)	2	16	56	74
Vehicles Entered	13	57	51	121
Vehicles Exited	13	56	51	120
Hourly Exit Rate	13	56	51	120
Input Volume	13	56	52	122
% of Volume	98	99	99	99

10: Bates Rd & 2nd South Access Performance by approach

Approach	EB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.1
Total Del/Veh (s)	3.1	1.0	0.3	1.0
Stop Delay (hr)	0.0	0.0	0.0	0.0
Stop Del/Veh (s)	2.6	0.1	0.1	0.2
Total Stops	9	3	0	12
Stop/Veh	1.00	0.02	0.00	0.06
Travel Dist (mi)	1.4	43.5	5.9	50.8
Travel Time (hr)	0.1	1.0	0.2	1.3
Avg Speed (mph)	20	42	37	40
Fuel Used (gal)	0.0	1.1	0.2	1.4
Fuel Eff. (mpg)	36.9	38.8	25.6	36.5
HC Emissions (g)	0	36	12	48
CO Emissions (g)	3	826	321	1149
NOx Emissions (g)	0	120	32	153
Vehicles Entered	9	148	44	201
Vehicles Exited	9	149	42	200
Hourly Exit Rate	9	149	42	200
Input Volume	10	148	42	200
% of Volume	88	101	100	100



1: M-72 & Bates Rd Performance by approach

Approach	EB	WB	SB	All
Denied Delay (hr)	0.3	0.2	0.1	0.6
Denied Del/Veh (s)	1.1	0.9	2.2	1.1
Total Delay (hr)	3.1	1.2	23.1	27.4
Total Del/Veh (s)	11.1	5.3	569.5	50.0
Stop Delay (hr)	0.6	0.0	23.2	23.8
Stop Del/Veh (s)	2.2	0.0	572.3	43.5
Total Stops	135	0	134	269
Stop/Veh	0.13	0.00	0.92	0.14
Travel Dist (mi)	185.4	175.2	30.0	390.6
Travel Time (hr)	6.6	4.4	24.0	35.0
Avg Speed (mph)	29	42	1	11
Fuel Used (gal)	3.9	3.6	5.7	13.3
Fuel Eff. (mpg)	47.3	48.5	5.2	29.4
HC Emissions (g)	47	66	59	172
CO Emissions (g)	1834	2617	1149	5601
NOx Emissions (g)	135	184	75	394
Vehicles Entered	1002	814	138	1954
Vehicles Exited	1001	814	110	1925
Hourly Exit Rate	1001	814	110	1925
Input Volume	1011	806	150	1968
% of Volume	99	101	73	98

5: Bates Rd & Brackett Rd & Sayler Rd Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.1	0.0
Total Delay (hr)	0.1	0.0	0.0	0.0	0.1
Total Del/Veh (s)	6.3	5.5	0.6	0.8	2.4
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0
Stop Del/Veh (s)	2.4	2.1	0.1	0.0	0.8
Total Stops	31	28	0	0	59
Stop/Veh	1.00	1.00	0.00	0.00	0.33
Travel Dist (mi)	3.6	2.9	7.0	1.2	14.7
Travel Time (hr)	0.1	0.1	0.3	0.0	0.6
Avg Speed (mph)	25	25	26	32	26
Fuel Used (gal)	0.1	0.1	0.2	0.1	0.4
Fuel Eff. (mpg)	47.5	48.8	39.7	19.6	39.4
HC Emissions (g)	1	2	3	2	7
CO Emissions (g)	43	53	112	86	294
NOx Emissions (g)	2	4	9	5	20
Vehicles Entered	31	28	104	18	181
Vehicles Exited	31	28	104	18	181
Hourly Exit Rate	31	28	104	18	181
Input Volume	32	26	104	18	180
% of Volume	97	108	100	101	101

9: Bates Rd & 1st North Access Performance by approach

Approach	EB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.0	0.0	0.0
Total Delay (hr)	0.1	0.0	0.0	0.1
Total Del/Veh (s)	3.7	0.8	0.3	1.7
Stop Delay (hr)	0.0	0.0	0.0	0.1
Stop Del/Veh (s)	2.6	0.2	0.0	1.0
Total Stops	62	0	0	62
Stop/Veh	1.00	0.00	0.00	0.35
Travel Dist (mi)	7.1	14.4	5.1	26.6
Travel Time (hr)	0.4	0.4	0.1	0.9
Avg Speed (mph)	19	36	46	30
Fuel Used (gal)	0.2	0.8	0.2	1.2
Fuel Eff. (mpg)	34.7	17.5	29.1	22.1
HC Emissions (g)	5	29	5	39
CO Emissions (g)	86	1026	169	1280
NOx Emissions (g)	12	81	16	110
Vehicles Entered	62	91	26	179
Vehicles Exited	62	90	26	178
Hourly Exit Rate	62	90	26	178
Input Volume	60	94	29	183
% of Volume	102	96	90	97

10: Bates Rd & 2nd South Access Performance by approach

Approach	EB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.3	0.0	0.0	0.2
Total Delay (hr)	0.3	0.0	0.0	0.3
Total Del/Veh (s)	4.7	0.4	0.9	3.4
Stop Delay (hr)	0.2	0.0	0.0	0.2
Stop Del/Veh (s)	3.1	0.0	0.2	2.2
Total Stops	242	0	0	242
Stop/Veh	0.99	0.00	0.00	0.68
Travel Dist (mi)	37.8	16.0	9.1	62.8
Travel Time (hr)	2.0	0.3	0.3	2.6
Avg Speed (mph)	19	46	32	24
Fuel Used (gal)	1.1	0.4	0.5	2.0
Fuel Eff. (mpg)	33.8	38.6	18.3	31.0
HC Emissions (g)	27	12	16	55
CO Emissions (g)	504	255	572	1331
NOx Emissions (g)	71	41	45	157
Vehicles Entered	243	53	58	354
Vehicles Exited	242	53	58	353
Hourly Exit Rate	242	53	58	353
Input Volume	242	58	59	358
% of Volume	100	92	98	98

1: M-72 & Bates Rd Performance by approach

Approach	EB	WB	SB	All
Denied Delay (hr)	0.1	0.1	0.0	0.3
Denied Del/Veh (s)	0.6	0.7	0.0	0.6
Total Delay (hr)	1.3	1.1	2.8	5.2
Total Del/Veh (s)	6.7	5.3	64.7	11.7
Stop Delay (hr)	0.2	0.0	2.8	3.0
Stop Del/Veh (s)	1.0	0.0	64.7	6.7
Total Stops	59	0	144	203
Stop/Veh	0.08	0.00	0.92	0.13
Travel Dist (mi)	130.6	156.5	36.0	323.0
Travel Time (hr)	3.7	3.9	3.8	11.3
Avg Speed (mph)	37	42	10	29
Fuel Used (gal)	2.8	3.4	1.4	7.6
Fuel Eff. (mpg)	46.7	45.8	25.2	42.3
HC Emissions (g)	37	53	40	131
CO Emissions (g)	1859	2464	861	5184
NOx Emissions (g)	107	157	102	365
Vehicles Entered	705	726	152	1583
Vehicles Exited	705	727	153	1585
Hourly Exit Rate	705	727	153	1585
Input Volume	703	727	148	1578
% of Volume	100	100	103	100

5: Bates Rd & Brackett Rd & Sayler Rd Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.1	0.0
Total Delay (hr)	0.0	0.0	0.0	0.0	0.1
Total Del/Veh (s)	5.3	5.1	0.7	0.6	2.0
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0
Stop Del/Veh (s)	2.0	2.1	0.0	0.0	0.7
Total Stops	19	22	0	0	41
Stop/Veh	1.00	0.96	0.00	0.00	0.30
Travel Dist (mi)	2.1	2.4	5.4	1.0	10.9
Travel Time (hr)	0.1	0.1	0.2	0.0	0.4
Avg Speed (mph)	26	26	28	34	28
Fuel Used (gal)	0.0	0.1	0.1	0.1	0.3
Fuel Eff. (mpg)	46.2	47.8	44.6	19.9	40.9
HC Emissions (g)	0	0	4	1	6
CO Emissions (g)	28	30	105	61	223
NOx Emissions (g)	1	1	10	3	16
Vehicles Entered	19	22	80	15	136
Vehicles Exited	19	23	80	15	137
Hourly Exit Rate	19	23	80	15	137
Input Volume	18	26	78	15	137
% of Volume	104	90	102	102	100

9: Bates Rd & 1st North Access Performance by approach

Approach	EB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.0	0.0	0.1
Total Delay (hr)	0.1	0.0	0.0	0.1
Total Del/Veh (s)	3.7	0.7	0.5	2.3
Stop Delay (hr)	0.1	0.0	0.0	0.1
Stop Del/Veh (s)	2.6	0.1	0.0	1.4
Total Stops	96	0	0	96
Stop/Veh	1.00	0.00	0.00	0.53
Travel Dist (mi)	10.8	8.1	6.2	25.1
Travel Time (hr)	0.6	0.2	0.1	0.9
Avg Speed (mph)	19	38	44	27
Fuel Used (gal)	0.3	0.4	0.2	0.9
Fuel Eff. (mpg)	34.3	22.9	28.2	28.2
HC Emissions (g)	6	14	6	26
CO Emissions (g)	123	417	214	753
NOx Emissions (g)	17	40	18	75
Vehicles Entered	96	52	33	181
Vehicles Exited	96	52	32	180
Hourly Exit Rate	96	52	32	180
Input Volume	95	54	34	183
% of Volume	101	95	96	98



10: Bates Rd & 2nd South Access Performance by approach

Approach	EB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.0	0.0	0.1
Total Delay (hr)	0.1	0.0	0.0	0.1
Total Del/Veh (s)	3.7	0.4	0.7	1.9
Stop Delay (hr)	0.1	0.0	0.0	0.1
Stop Del/Veh (s)	2.8	0.1	0.2	1.3
Total Stops	103	1	0	104
Stop/Veh	0.99	0.02	0.00	0.42
Travel Dist (mi)	16.0	15.4	13.6	45.0
Travel Time (hr)	0.8	0.4	0.4	1.6
Avg Speed (mph)	20	43	33	29
Fuel Used (gal)	0.5	0.5	0.8	1.8
Fuel Eff. (mpg)	33.9	30.1	16.4	24.8
HC Emissions (g)	10	24	30	64
CO Emissions (g)	180	591	1052	1823
NOx Emissions (g)	26	72	84	181
Vehicles Entered	103	55	87	245
Vehicles Exited	103	55	87	245
Hourly Exit Rate	103	55	87	245
Input Volume	100	54	88	243
% of Volume	102	101	99	101

1: M-72 & Bates Rd Performance by approach

Approach	EB	WB	SB	All
Denied Delay (hr)	0.1	0.2	0.0	0.3
Denied Del/Veh (s)	0.7	0.8	0.0	0.7
Total Delay (hr)	2.0	1.1	0.9	4.0
Total Del/Veh (s)	9.1	5.0	53.3	8.8
Stop Delay (hr)	0.5	0.0	0.9	1.4
Stop Del/Veh (s)	2.1	0.0	53.4	3.1
Total Stops	107	0	57	164
Stop/Veh	0.14	0.00	0.89	0.10
Travel Dist (mi)	142.7	172.4	14.4	329.5
Travel Time (hr)	4.6	4.2	1.3	10.2
Avg Speed (mph)	32	42	11	33
Fuel Used (gal)	3.2	3.5	0.6	7.3
Fuel Eff. (mpg)	44.9	49.0	24.1	45.2
HC Emissions (g)	45	53	15	113
CO Emissions (g)	2012	2443	364	4819
NOx Emissions (g)	128	154	39	321
Vehicles Entered	772	801	61	1634
Vehicles Exited	770	799	63	1632
Hourly Exit Rate	770	799	63	1632
Input Volume	758	800	64	1622
% of Volume	102	100	99	101

5: Bates Rd & Brackett Rd & Sayler Rd Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.1	0.1
Total Delay (hr)	0.1	0.1	0.0	0.0	0.1
Total Del/Veh (s)	5.4	5.6	0.5	0.6	3.7
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0
Stop Del/Veh (s)	2.0	2.1	0.0	0.0	1.3
Total Stops	48	38	0	0	86
Stop/Veh	1.00	1.00	0.00	0.00	0.63
Travel Dist (mi)	5.3	3.9	2.8	0.7	12.6
Travel Time (hr)	0.2	0.2	0.1	0.0	0.5
Avg Speed (mph)	26	25	33	32	27
Fuel Used (gal)	0.1	0.1	0.0	0.0	0.3
Fuel Eff. (mpg)	45.2	46.9	81.2	20.6	46.9
HC Emissions (g)	3	1	0	1	5
CO Emissions (g)	101	51	12	40	204
NOx Emissions (g)	8	3	1	2	13
Vehicles Entered	48	38	39	11	136
Vehicles Exited	48	38	39	11	136
Hourly Exit Rate	48	38	39	11	136
Input Volume	45	35	41	12	132
% of Volume	106	109	96	96	103

9: Bates Rd & 1st North Access Performance by approach

Approach	EB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.0	0.0	0.0
Total Delay (hr)	0.1	0.0	0.0	0.1
Total Del/Veh (s)	3.4	0.9	0.5	1.6
Stop Delay (hr)	0.0	0.0	0.0	0.0
Stop Del/Veh (s)	2.6	0.1	0.1	0.9
Total Stops	54	1	0	55
Stop/Veh	1.00	0.02	0.00	0.34
Travel Dist (mi)	6.0	10.3	7.9	24.2
Travel Time (hr)	0.3	0.3	0.2	0.8
Avg Speed (mph)	19	38	40	31
Fuel Used (gal)	0.2	0.4	0.3	0.8
Fuel Eff. (mpg)	36.1	29.3	24.1	28.6
HC Emissions (g)	7	19	14	40
CO Emissions (g)	111	476	430	1017
NOx Emissions (g)	16	52	38	107
Vehicles Entered	54	65	41	160
Vehicles Exited	54	65	41	160
Hourly Exit Rate	54	65	41	160
Input Volume	56	63	41	160
% of Volume	96	103	101	100

10: Bates Rd & 2nd South Access Performance by approach

Approach	EB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.1
Total Del/Veh (s)	3.4	0.8	0.5	1.3
Stop Delay (hr)	0.0	0.0	0.0	0.0
Stop Del/Veh (s)	2.7	0.1	0.2	0.7
Total Stops	48	2	0	50
Stop/Veh	0.98	0.02	0.00	0.23
Travel Dist (mi)	7.5	29.7	9.5	46.7
Travel Time (hr)	0.4	0.7	0.3	1.4
Avg Speed (mph)	20	41	33	34
Fuel Used (gal)	0.2	1.1	0.5	1.8
Fuel Eff. (mpg)	35.3	28.2	19.3	26.6
HC Emissions (g)	1	47	39	87
CO Emissions (g)	30	1245	962	2237
NOx Emissions (g)	4	137	98	240
Vehicles Entered	48	102	62	212
Vehicles Exited	48	101	63	212
Hourly Exit Rate	48	101	63	212
Input Volume	49	99	68	216
% of Volume	98	102	93	98

## **Appendix F – Capacity Reports for Road Mitigation**

Intersection

Int Delay, s/veh 8.1

Movement EBL EBT WBT WBR SBL SBR

Lane Configurations 

Traffic Vol, veh/h 41 976 788 26 33 117

Future Vol, veh/h 41 976 788 26 33 117

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - 250 0

Veh in Median Storage, # 0 0 - 0 -

Grade, % - 0 0 - 0 -

Peak Hour Factor 93 93 90 90 63 63

Heavy Vehicles, % 5 2 3 19 3 7

Mvmt Flow 44 1049 876 29 52 186

Major/Minor Major1 Major2 Minor2

Conflicting Flow All 905 0 - 0 2028 891

Stage 1 - - - - 891 -

Stage 2 - - - - 1137 -

Critical Hdwy 4.15 - - - 6.43 6.27

Critical Hdwy Stg 1 - - - - 5.43 -

Critical Hdwy Stg 2 - - - - 5.43 -

Follow-up Hdwy 2.245 - - - 3.527 3.363

Pot Cap-1 Maneuver 739 - - - 63 334

Stage 1 - - - - 399 -

Stage 2 - - - - 305 -

Platoon blocked, % - - - -

Mov Cap-1 Maneuver 739 - - - 54 334

Mov Cap-2 Maneuver - - - - 54 -

Stage 1 - - - - 342 -

Stage 2 - - - - 305 -

Approach EB WB SB

HCM Control Delay, s 0.4 0 74.1

HCM LOS F

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1 SBLn2

Capacity (veh/h) 739 - - - 54 334







HCM Lane V/C Ratio 0.06 - - - 0.97 0.556

HCM Control Delay (s) 10.2 0 - - 235.6 28.5

HCM Lane LOS B A - - F D

HCM 95th %tile Q(veh) 0.2 - - - 4.3 3.2



Intersection						
Int Delay, s/veh	7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	41	976	788	26	33	117
Future Vol, veh/h	41	976	788	26	33	117
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	- None		- None		- None	
Storage Length	200	-	-	100	250	0
Veh in Median Storage, #	0	0	-	0	-	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	90	90	63	63
Heavy Vehicles, %	5	2	3	19	3	7
Mvmt Flow	44	1049	876	29	52	186
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	905	0	-	0	2013	876
Stage 1	-	-	-	-	876	-
Stage 2	-	-	-	-	1137	-
Critical Hdwy	4.15	-	-	-	6.43	6.27
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.245	-	-	-	3.527	3.363
Pot Cap-1 Maneuver	739	-	-	-	64	341
Stage 1	-	-	-	-	406	-
Stage 2	-	-	-	-	305	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	739	-	-	-	60	341
Mov Cap-2 Maneuver	-	-	-	-	60	-
Stage 1	-	-	-	-	382	-
Stage 2	-	-	-	-	305	-
Approach	EB	WB		SB		
HCM Control Delay, s	9.4	0		63.8		
HCM LOS				F		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	739	-	-	-	60	341
HCM Lane V/C Ratio	0.06	-	-	-	0.873	0.545
HCM Control Delay (s)	10.2	-	-	-	192.6	27.5
HCM Lane LOS	B	-	-	-	F	D
HCM 95th %tile Q(veh)	0.2	-	-	-	4	3.1

<b>Intersection</b>			
Intersection Delay, s/veh	17.0		
Intersection LOS	C		
<b>Approach</b>	<b>EB</b>	<b>WB</b>	<b>SB</b>
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	1093	905	238
Demand Flow Rate, veh/h	1116	937	253
Vehicles Circulating, veh/h	54	46	902
Vehicles Exiting, veh/h	1101	1124	81
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	20.8	13.0	15.1
Approach LOS	C	B	C
<b>Lane</b>	<b>Left</b>	<b>Left</b>	<b>Left</b>
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	1116	937	253
Cap Entry Lane, veh/h	1306	1317	550
Entry HV Adj Factor	0.979	0.966	0.941
Flow Entry, veh/h	1093	905	238
Cap Entry, veh/h	1279	1271	517
V/C Ratio	0.855	0.712	0.460
Control Delay, s/veh	20.8	13.0	15.1
LOS	C	B	C
95th %tile Queue, veh	12	6	2