

Introduction

Transportation systems should contribute to desirable surroundings for business and a high quality of life for residents. While the automobile is the dominant mode of transportation, Holland Charter Township strives to provide a balanced and coordinated “multi-modal” transportation system to accommodate ongoing growth and development. Coordinating (or integrating) land use, transportation planning, and development are commonly considered today as one facet of sustainable development, “smart growth”, new urbanism, or other similar concepts. These shared policies, principles, and strategies should preserve and even enhance valued natural and cultural resources and facilitate “healthy”, sustainable communities and neighborhoods. Planning in this mode also tends to encourage a balance of mixed uses (including housing, educational, employment, recreational, retail, and service opportunities) which recognizes the importance of the right mix and proximity of complementary

land uses.

Transportation & Land Use

The link between transportation and land use has been apparent throughout the Township’s development. The proximity of the Township to the State’s highway system (Business Loop 196, Interstate 196 and US-31) provides convenient access to employment centers and has contributed to Holland Charter Township’s residential development. Industrial and commercial development is attracted by the same easy access to a quality road network and by the access to the trade areas offered by the convenient highway access. Most of the Township’s industrial uses have developed in proximity to US-31 in the northern sections of the Township. Many of the industrial and commercial land uses are dependent upon the utilization of the State’s highway system



and the local road network for shipment of goods and receipt of deliveries VIA semi-trucks. The location of these land uses and provision of a sound transportation network for use by semi-trucks, delivery trucks, and other service-related heavy trucks must be considered when planning for future uses with the objective of minimizing potential conflicts with residential and other low-intensity land uses to the extent possible.

Land use and transportation decisions were often made in isolation by the various agencies. The Township cooperates with the Ottawa County Road Commission in the development of our local road system as they are the lead road agency. In addition, the State and Federal highways that traverse the Township are under the jurisdiction of the State of Michigan/Michigan Department of Transportation. Land Use decisions, which often impact the road system, are under the control of the Township, which does not allow for easy coordination of developments or road projects. This has resulted in a number of conditions that do not provide optimum transportation solu-

tions.

Transportation problems are a function of several factors. Available funding for transportation improvements has always been unable to keep pace with the need for improvements caused by increased capacity needs as a result of growth. Improvements can also be constrained by right-of-way or environmental limitations that made them impractical. Very often widening roads can have unforeseen consequences on land use. In many cases, widening to accommodate expected traffic makes the road more attractive to development, and thus attracts more traffic.

Conventional land use planning has also contributed to the traffic problems. Separation of certain land uses, such as local commercial from residential areas, forces residents to take more frequent trips or longer trips to obtain basic services such as food or personal services. Many subdivisions, in an effort to enhance safety, security, and privacy, have cul-de-sacs and lack needed road connections to other streets or pedestrian links. This type of development also does not contribute to the goal of creat-

ing a unified or cohesive community. The tendency to plan and zone for commercial or office strips along major roads has typically resulted in an oversupply of such uses which leads to commercial sprawl, the creation of numerous driveways, turning conflicts, increasing congestion while reducing safety, and limiting the capacity of the arterial roadways.

Street Networks & Functional Classification

The road classification system used in this plan is based on the National Functional Classification (NFC) system developed by the Federal Highway Administration (FHWA) classifying all streets, roads, and highways according to their function. This system has been in use by transportation agencies for many years. These road classifications are described below and are depicted on [Map 8 in Appendix A](#).

- **Interstates/Principal Arterials**
Interstates and other principal arterials generally carry long distance, through-travel movements. They also provide access to important traffic generators,

such as major airports or regional shopping centers. .

Arterials that are found in Holland Charter Township include Interstate I-196, connecting our community to Grand Rapids and Chicago. US-31, is a regional arterial which is a state-owned limited access highway that runs along **Michigan's west coast**. US-31 extends **from the State's southern border to the northern tip of the Lower Peninsula**.



Business Loop 196 is another regional arterial serving as the main conduit to the interstate and connecting the Township with the Cities of Zeeland and Holland.

- **Minor Arterials**

Lastly, minor arterials are those streets which allow traffic to complete major trips in the urban area. All or portions of the following east/west streets are minor arterials: Riley Street, James Street, Lakewood Boulevard, Old Chicago Drive/M-121, Douglas Avenue, 8th Street, 16th Street/Adams Street; and the following north/south streets are considered minor arterials: Butternut Drive, 136th Avenue, Beeline Road, 120th Avenue, and 96th Avenue.

- **Major/Minor Collectors**

The collectors funnel traffic from residential or rural areas to arterials. Collectors will also serve to provide access to abutting properties. Examples of collector roads are: 144th Avenue, 112th Avenue, 104th Avenue and Quincy Street.

- **Local Streets**

Local streets serve primarily to provide access to individual properties and homes. These roadways were historically arranged in a grid pattern of interconnected roads and blocks. Older subdivisions tend to follow a more rigid geometric grid pattern. Local roads in

newer subdivisions are laid out in a more curvilinear fashion with several cul-de-sacs. Cul-de-sacs do not allow for through traffic but were often favored by developers as they could build less roadway per lot and thus subdivision costs were reduced.

Transportation Jurisdictions

To understand the jurisdictional matters regarding roads and funding is no simple matter. Holland Charter Township has limited jurisdiction over any of the roads within its boundary. Instead, the State and County manage and maintain most of the roads and thoroughfares, while a few local residential roads remain under private control as they were developed as private streets.



The Arterials of I-196, Business loop 196, and US-31, as well as their associated interchanges are under the State's jurisdiction. Local arterials, collectors and local roads are maintained by the Ottawa County Road Commission. The use of private roads by the general public is generally prohibited because they are built and maintained by the property owners which own property adjacent to them.

Road Surfaces

Nearly all of the public and private roads located in Holland Charter Township are paved, with the exception of 1.4 miles of which are gravel or unimproved. In some cases private driveways serving up to four lots will not be paved.

Traffic Volume

Traffic volume data is measured by the Ottawa County Road Commission. Traffic counts are collected in a bi-directional manner over a 24-hour period. This method of data collection provides an accurate count

of typical daily traffic volumes. The most recent information for the Township's roads was collected in 2013. Table 1 located at the end of this chapter contains the counts gathered for some of the main roads within the Township. Map 7 located in Appendix A, contains a map displaying the traffic volumes in 2013.

Traffic Volume Trends

Many of our roadways have had significant declines in traffic over the past ten years (see Table 2 at the end of this chapter). Much of that can be attributed to the recent economic downturn, which has led to some decreases in traffic volume on several of the roadways in the Township. The most traveled street in Holland Charter Township is River Avenue in the area of the Douglas intersection, followed by Lakewood at the Beeline intersection and Riley at the US-31 intersection. The River/Douglas intersection recently underwent major reconstruction and appears to be handling traffic very well. Most of the other roads in the Township are not at capacity yet and appear to function reasonably well. The Riley/US-31 intersection has seen significant traffic increases due to new development and in-

creases in volumes have also been observed at the intersection of Quincy and 104th most likely as a result of the significant development to Helder Park.

Air Travel

Holland Charter Township does not have an airport located within its borders, but there are several smaller privately-owned airports, located in the townships of Zeeland and Park. The West Michigan Regional Airport (formerly known as Tulip City Airport) is located south of Holland City and is a full-service, 24-hour regional airport serving the entire West Michigan area. The Airport offers paved runways with taxiways, lighting, taxiway identification, an instrument landing system approach to its 6,002 foot runway, and an automated weather observation system (ASOS).



In addition, the Township is approximately 45 minutes away, VIA an excellent highway system, from the Gerald R. Ford International Airport. It is served by seven passenger airlines with 120 daily scheduled nonstop flights to and from 23 major market destinations. The Airport is the 82nd busiest commercial airport in the nation and the second busiest airport in Michigan. The airport operates three runways: a 150-foot wide - 10,000-foot main east/west runway; a 100-foot wide - 5,000-foot parallel east/west runway; and a 150-foot wide - 8,501-foot north/south runway.



Non-Motorized Transportation

In 1984, Holland Charter Township

citizens voted to add an up to one mill levy on property taxes for the construction of bike paths. This was a vote to encumber the property for four years and to provide seed money for development and maintenance of a bike path system. Today, due to several renewals, that levy is still being collected and currently the Township has built approximately 70 miles of bike path which serve Holland Township and residents in adjacent communities.



Locations of new bike paths in the future will be driven by demand, mainte-

nance and improvement needs. The millage was voted on most recently in 2008 and was approved for eight years which ensures funding for two more years. Currently, the millage generates about \$400,000 a year with about \$100,000 being used to provide maintenance (upkeep and snowplowing) on the existing path system. The vision is for a connected continuous pathway system throughout the Township, and to also provide connections to the Cities of Holland and Zeeland and neighboring townships. Today, a mile of pathway (without significant drainage needs) costs between \$80,000 and \$100,000 dollars to build. [Map 9 in Appendix A](#) displays the locations of existing and planned bike paths.

Bus Transportation



The Macatawa Area Express (MAX) has been serving the area with fixed-route bus service since 2000. They are governed by an independent transportation board and have a loose connection for certain administrative services to the City of Holland. They are funded by Federal and State grants, a transit millages from the City of Holland and Holland Charter Township, and fares from individual riders. The City of Zeeland also contracts for one route which nicely completes a good bus transit system for the area.

The MAX presently services 450,000 passengers a year and these numbers continue to increase. Statistics also indicate that 63% of the passengers are female, 13% are over 60 years old, 69% are considered to be from low income families, 90% of the passengers use the fixed-route service at least once a month, 70% do not drive or have access to a car, 40% use the bus to get to work, 60% use MAX for shopping trips, and 18% are riding because of medical needs. Another interesting statistic is that six percent of the area's population uses MAX which is twice the national average for community participation.

The MAX's operations and maintenance facility is located in a new 4.7 million dollar transportation center in Holland Charter Township on Greenway Drive.



The system is built around a transportation hub centered on the Padnos Transportation center at the corner of 8th and Lincoln Street near downtown Holland City. This facility also houses the AMTRAK terminal and the intercity bus service. In **2013, it was estimated that MAX's ridership increased by eight percent.** It is evident that the community is supporting and using this valuable asset.

Factors to Consider based on Analysis

Transportation is critical to our economic and social system. Holland Charter Township has number of factors and issues that can or are currently affecting transportation facilities and services in the Township. These factors and issues were identified using generally accepted planning principles, and were supplemented through discussions with Township staff, officials, and the general public.

- **High Growth Rate**

Rapid growth in Holland Charter Township, like other suburban communities, has resulted in higher traffic volumes on the road system from commuters, local traffic, and through traffic. The Township had the second largest population change in Ottawa County in the 10 years between the 2000 and 2010 census.

- **Driveway Design**

Many roads in the Township have an excessive number of driveway openings, which reduce the capacity of the roadway and the safety because of increased

turning movements. Butternut Drive, River Avenue, and Lakewood Boulevard have significant examples of this problem.

- **Multi-Modal Issues**

Some residents have expressed concern regarding the safety issues with the interaction of motorized and non-motorized traffic.



The existence of bike paths in the Township has led many motoring residents to feel that bicycles should not have the right to utilize the roadway. Our community questionnaire lends support to the idea of multiple transportation modes sharing the roadway (e.g. bike lanes) while also indicating that our citizens wanted to see additional development of the bike path system.

- **Community Character**

Current and future streets must function properly so that they contribute to the livable character sought throughout the Township. Through opinion surveys and interviews (see results of opinion surveys in [Appendix B](#)), the public has made it clear that preserving the suburban semi-rural character of the community is very important to them.

- **Land Use Policies**

Future traffic volumes can be influenced by decisions regarding the intensity and location of land uses. Current practices are encouraging development to spread out and encompass larger lots, which can create barriers to providing an effective and efficient public transit and obtaining the necessary funding for road improvement projects.

- **Community Gateways**

Holland Charter Township has not placed great emphasis on establishing dramatic signage or elements that bring notice at Township entry points. There is a general lack of recognition that one is entering the Township from one of the

surrounding municipalities. It may be important to establish a stronger community identity.

- **Public Transportation**

Closely monitor the present system and usage to ensure that the system continues to serve the population and community in the most effective and efficient way and the target population has routes that effectively meet their needs.



Coordinate with the Macatawa Area Express on planning for bus stop and shelter locations. Ensure that the sites are accessible and connected to our existing sidewalk and bike path system.

- **Semi-Truck Traffic**

The delivery and shipment of goods and commodities, and provision of some services are dependent upon having a

sound transportation network and accessibility to the commercial, industrial, and other similar land uses. The planned land uses surrounding the major corridors should be closely analyzed to minimize conflicts between semi-truck traffic and residential and other low-intensity land uses. Additionally, further studies should be considered to determine the feasibility of establishing designated truck routes within the Township. With that said, it is important to note that semi-trucks, other heavy trucks, and delivery trucks cannot be prohibited from accessing the local road network to make local deliveries or provide services.

Goals & Programs

In response to the above issues, the following goals and recommendations were developed to give direction to the Township Board, Planning Commission and the community in general including those agencies that regulate the transport system in the Township. The Township should refer back to them on a regular basis, when asked by road authorities to give input on road projects, or when deciding on critical

ordinances or other programs that may affect transportation in the community. The goals and recommendations below should be considered in total, not as separate statements, in order to consider the effect on the overall transportation in Holland Charter Township.

- **Street and Corridor Character**

Driver perceptions can affect vehicle speed and the care used in driving. Street width, building setbacks, design speed, right-of-way width, street trees, pavement markings, and signs and can contribute to how the street functions and the perceptions of the driver.



The character of the street corridor as viewed by the motorist also impacts the overall image of Holland Charter Township. The roadway edge can also contrib-

ute to the corridor character as evidenced by the access treatment of US-31 where portions have a wire fence and other portions have no control. The controlled portion of the road with the fence seems to be more unsightly because of litter collection than that portion that is accessible to the adjacent property owners who take the initiative to maintain the right-of-way.

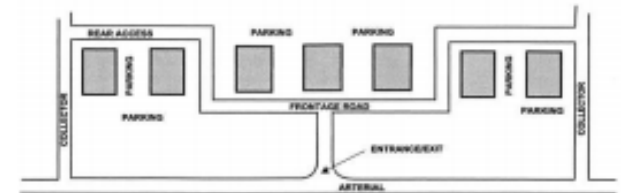
- **Access Management**

Road widening and intersection improvements are not the only way to improve traffic operations along a road. Access management involves comprehensive controls over all aspects of roadway access for the purpose of:

- Minimizing conflict points (i.e. places where crashes are more likely)
- Maintaining the carrying capacity of roadways

One key component of access management is assuring that land owners will **retain “reasonable” access to their property**, though access may not be the most direct, nor driveways as numerous as may be desired for a particular project. Studies have indicated that access management can reduce the number and se-

verity of crashes by up to 50 percent while allowing for more, and better traffic flow. The cost of access management is very minor in comparison to other, more typical capacity and safety improvements. Thus, access management is a very cost-effective tool to help manage traffic flow in the Township. The lack of access management regulations and standards can increase the potential for traffic congestion and crashes.



Some access management tools that could be implemented in cooperation with the Ottawa County Road Commission through the Zoning Ordinance are:

- Limits on the number of driveways permitted (typically one per parcel or development)
- Regulate the spacing between driveways and intersections
- Adopt design standards for access points including minimum turning radii, deceleration lanes, passing lane requirements, etc.

- Require shared access drives, such as frontage roads and rear service drives as applicable

- **Street Lighting**

Adequate lighting along roads and subdivision streets is important for safety and it can also serve as a decorative element to unify neighborhoods and the community. Street lighting used in strategic areas that are intended for mixed-use or urban-scaled developments can also enhance the pedestrian scale by creating a safe and attractive walking environment.



Lighting in residential areas should still be consistent with the Township's general vision for providing minimal lighting that provides a safe neighborhood

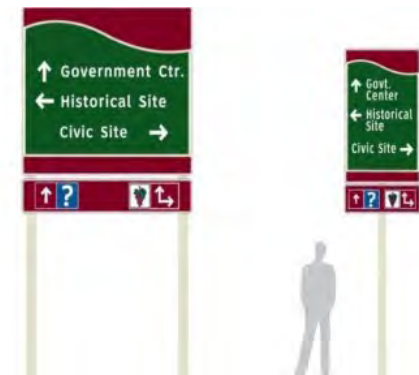
and still works to enhance dark skies while not contributing to excess lighting levels.

- **Gateways**

Gateways into the Township provide visitors their first and sometimes strongest impression of the Township. It is a reflection of its residents and businesses and the care they give to the community. To maximize impact, attractive gateways could be constructed at intersections that carry the most traffic, or on major connectors into and out of the community such as US-31. Entryway treatments could highlight **Holland Charter Township's suburban character through** aesthetically appealing signage, plantings, artwork or other features. Landscaping that accentuates the entryway and opens it up visually can create a sense of place that casts a favorable impression of the Township. Gateways into Holland Charter Township have been categorized as shown on [Map 10 in Appendix A](#) and listed according to their impact on the character of the community and the perceptions they create toward the Township. Primary gateways are considered the most important, and

may include more elaborate design treatments. Secondary gateways will receive a treatment that is significantly less dramatic but still deliver the knowledge that visitors are entering a different jurisdiction with an identity and provide a positive perception of the community.

Holland Charter Township may benefit from signage or some other type of notation and establishing a unique identity through entryway treatments. Wayfinding and other similar signs should be considered at these key locations in an effort to direct visitors to key locations. An example of such a sign is below.



- **Non-Motorized Transportation**

As previously mentioned, the Township passed a millage in 1984 which provided

funding to develop and improve pathways along many of the Township's main roads, with the first priority to provide safe access for walking and recreational biking within our Township and to provide connections to other path systems being developed in the area. Additionally, work with property owners and developers (particularly those within the heavily traveled retail/commercial areas, parks, and other such land uses which generate a significant amount of pedestrian/bicycle traffic) to improve/establish connections from individual properties to the existing and planned future bike path system; and review internal pedestrian traffic flow within these individual sites and encourage the installation of amenities such as, bike racks.



Work must continue on completing the

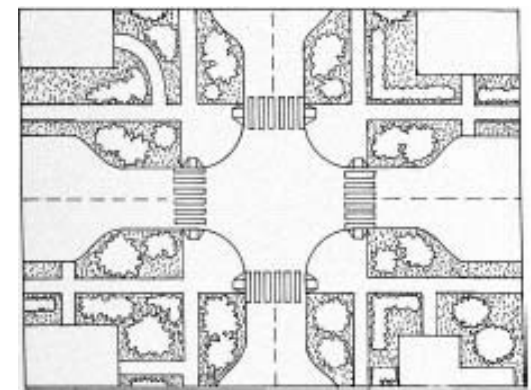
system as funding both from the millage and other State and Federal grants become available. Continue the work of path maintenance and cleaning on a year-round basis. Coordinate plans for sidewalks and bike paths with the Macatawa Area Coordinating Council and Ottawa County to ensure that paths of regional significance are being considered.

- **Subdivision Traffic Control**

Residents expect low volumes of traffic and low speeds within residential neighborhoods and seek ways to control the same. While speed enforcement can significantly reduce the speed problem, it does not have a permanent reduction of speed and/or the ability to increase driver attentiveness that common traffic calming measures may have.



The development of a traffic calming control feature may be appropriate in certain situations in the Township after considering a number of factors such as traffic volumes, cost, maintenance, and impact on emergency access. Some of these improvements could be accomplished through certain traffic calming measures, such as, speed bumps and speed tables (a raised flat portion in the road). Other traffic calming devices could be employed, such as, street narrowing or “chokers”, which utilize curb modifications, channelization, and sometimes landscaping to narrow the street to a minimum safe width. They are often installed at intersections to reduce speed, optimize the pedestrian crossing locations and/or redirect traffic.



Street narrowing techniques can provide larger areas for landscaping and enhance the aesthetics of the neighborhood. These techniques also provide for safer pedestrian crossings at intersections. It may be well to consider some test development of these features to evaluate their ability to improve the neighborhood environment. The placement of any of these features would be dependent upon approval of the Ottawa County Road Commission, and this would require significant study before implementation.

- **Residential Roads**

With any new development that has a significant network of roadways, the roads should be required to tie into the existing public road network. By doing this, it will create a system of interconnected streets, which maintains the efficiency of the overall road network. The use of cul-de-sacs and other dead end streets should be discouraged except in areas where natural features, such as wetlands, or existing adjacent development patterns precludes through streets. The image below is being used to

demonstrate the disconnected street networks between the two subdivisions.



With a connected street system, motorists are provided with multiple routes, which help to reduce driving distances and diffuse traffic. Providing road connections between adjacent subdivisions allows for the movement between neighborhoods without the need to access major roads. It also provides alternative means for residents within the subdivisions to access the major road network at locations that are most efficient for traveling to their specific destination, shortening trips, and thereby minimizing traffic impacts to the major road network. Connected streets also provide continuous routes that enhance non-motorized transportation. With connected streets, special consideration needs to be given to network design to discourage use by through traffic that

does not have an origin or destination within the local neighborhood.

- **Designated Truck Routes**

The Township should explore the potential of conducting a study to determine the feasibility of designating official truck routes within the Township. Factors to consider include, but are not limited to the following:

- The current volume of semi-truck traffic on the local/regional road network
- Location of commercial, industrial, and other land uses that are dependent upon having an adequate road network for deliveries and shipments and providing services
- Location of businesses whose principle purpose is the transportation of goods VIA semi-trucks
- Location of road network that primarily serves residential and other low-intensity/sensitive land uses
- Location of designated truck routes in adjacent municipalities and the region

The Township should also work closely with the Macatawa Area Coordinating Councils Freight Planning Task Force and implement

recommendations as feasible.

Recommendations

As more development occurs in the Township, which may also be developed at a higher density, traffic levels are likely to increase, creating capacity deficiencies. While this development may potentially create significant need for roadway improvements, any costly improvements should be supplemented with transportation management practices that will maximize the efficiency and capacity of the existing road network.

Protect public investments in the Township's road system by controlling land use, access and setbacks along primary roads to minimize congestion, crash potential, and the need for expensive road improvements.

Access management tools, can be used to maintain the efficiency of the transportation network. Other technological advances and innovative design ideas should be explored before costly improvements are made. These technologies include items such as signal timing and design concepts

like roundabouts, divided roads, and medians. The approach of system management, combined with targeted improvements, limits cost and minimizes impacts to the community character.

Continue to develop and maintain sidewalks and bicycle/jogging paths along collector and arterial streets as needed. Work to create a system of separated bike paths that are on both sides of arterial and collector streets. The paths should aim to link neighborhoods, schools, community facilities, commercial areas, parks, and the Macatawa Greenway along the Macatawa River and Lake Macatawa.

Aggressively pursue available State and Federal funding sources for motorized and non-motorized transportation infrastructure improvements. Promote the maintenance and improvement of the State, County, and local road system.

Implementation Strategies

The proposed strategies contained in the following tables are concepts and ac-

tions that may be undertaken or used to help accomplish the above goals and recommendations.

Transportation Implementation Strategies—Collaboration	Priority	Responsibility *
Monitor transportation conditions, and plan for road improvements as needed. Encourage road designs that reflect the Township’s character, coordinated through the Macatawa Area Coordinating Council , the Michigan Department of Transportation, Ottawa County Road Commission, adjacent communities, and developers. Consider creative road treatments including roundabouts, access control, and signal coordination.	Ongoing	All
Provide a copy of the Plan to the Ottawa County Road Commission, Michigan Department of Transportation, the Macatawa Area Coordinating Council, Ottawa County, and adjacent communities. This will allow better coordination of land use with transportation.	Short-Term, Ongoing	PD
Work with MDOT and the Ottawa County Road Commission on the planned expansion and improvement of US-31 (circa 2016) and monitor the development and implications of the US-31 Bypass (M-231). Consider incorporating safer pedestrian crossings and aesthetic improvements as part of the planned project and coordinate these with the City of Holland.	Short-Term, Ongoing	PC, TA
Work to improve/establish connections from individual properties to the existing and planned bike path system. Also work with individual property owners to improve internal pedestrian traffic flow within individual sites and encourage the installation of amenities, such as bike racks.	Short-Term, Ongoing	PD, PC, TA
Explore the development of a local community volunteer group to assist with beautification of entrance highways and work with property owners to improve the overall appearance of the US-31 corridor.	Short-Term	PD
Review the feasibility of developing a future right-of-way plan that identifies future transportation needs and encourages or requires developers to dedicate needed right-of-way as part of the development review process which will place streets where they will be most effective for the community.	Short-Term	All

*PC= Planning Commission, TB= Township Board, PD= Planning Department, UC=Utilities, TA = Transportation Agencies

Transportation Implementation Strategies—Regulations	Priority	Responsibility *
Provide for an interconnected road network between adjacent subdivisions to provide alternative routes for local travel and reserving the capacity of major roads for longer distance travel.	Ongoing	PD, PC
Require well designed and attractive onsite parking for new commercial, industrial and larger residential facilities.	Ongoing	PD, PC
Minimize the number of access points for individual uses along arterial roadways by encouraging the use of shared driveways and other access management techniques. Promote the use of frontage streets and rear access service drives where feasible.	Ongoing, Short-Term	PD, PC
Discuss the potential of conducting a study to determine the feasibility of designating semi-truck routes.	TBD	PD, TB, TA
Transportation Implementation Strategies—Improvements and Public Policy	Priority	Responsibility *
Direct new development to locations where road capacity is available or improvements are planned, as generally depicted on the future land use map.	Ongoing	PC
Establish consistent entry sign and landscaping themes that serve to inform and welcome visitors to the Township at important gateways. Consider the installation of wayfinding signs in appropriate locations.	Short-Term	PC TB
Encourage and support efforts to improve and beautify US-31 by lobbying the Michigan Department of Transportation for beautification treatments, application of complete street principals, and to encourage the entire roadway in the Holland area to have similar development treatment for continuity.	Ongoing	PC, TB, PD

*PC= Planning Commission, TB= Township Board, PD= Planning Department, UC=Utilities, TA= Transportation Agencies

Table 1
2013 Traffic Counts
Ottawa County Road Commission

ROUTE	LOCATION	COUNT
100TH AVE	S. of Felch St.	4297
100TH AVE	N. of Felch St.	3887
100TH AVE	S. of Riley St.	3741
100TH AVE	N. of Riley St.	2171
104TH AVE	S. of Mason St.	2382
104TH AVE	N. of Adams St.	4973
104TH AVE	S. of BL-196	6423
104TH AVE	N. of Paw Paw Dr.	7662
104TH AVE	N. of James St.	5876
104TH AVE	N. of Felch St.	5502
104TH AVE	N. of Riley St.	3529
104TH AVE	N. of Quincy St.	1071
106TH AVE	N. of Perry St.	1390
112TH AVE	N. of Ottogan St.	1828
112TH AVE	N. of BL-196	17776
112TH AVE	N. of Lakewood Blvd.	9710
112TH AVE	N. of James St.	7239
112TH AVE	S. of Quincy St.	2416
112TH AVE	N. of Quincy St.	1278

ROUTE	LOCATION	COUNT
112TH AVE	S. of BL-196	7129
120TH AVE	S. of Lakewood Blvd.	16583
120TH AVE	N. of Lakewood Blvd.	17542
120TH AVE	N. of James St.	18000
120TH AVE	N. of Felch St.	15500
120TH AVE	S. of Quincy St.	6982
120TH AVE	N. of Quincy St.	6017
120TH AVE	N. of New Holland St.	5667
128TH AVE	S. of Riley St.	6274
128TH AVE	S. of N. Bellwood	4530
132ND AVE	N. of James St.	2480
136TH AVE	N. of Butternut Drive	12364
136TH AVE	N. of James St.	12846
136TH AVE	S. of Riley St.	11102
136TH AVE	N. of Riley St.	8632
136TH AVE	N. of Quincy St.	5605
136TH AVE	N. of New Holland St.	3702
142ND AVE	N. of Riley St.	2591
144TH AVE	S. of Ottawa Beach Rd.	1464
144TH AVE	N. of Ottawa Beach Rd.	3066

Continued


Table 1, cont.
2013 Traffic Counts
Ottawa County Road Commission

ROUTE	LOCATION	COUNT
144TH AVE	N. of Lakewood Blvd.	3892
144TH AVE	N. of James St.	4280
144TH AVE	S. of Riley St.	3450
144TH AVE	N. of Butternut Dr.	5561
144TH AVE	S. of New Holland St.	4664
144TH AVE	N. of New Holland St.	2225
96TH AVE	S. of Adams St.	7272
96TH AVE	N. of Adams St.	8535
96TH AVE	S. of Gordon St.	9498
96TH AVE	S. of Riley St.	12231
96TH AVE	S. of New Holland St.	7346
Adams St.	W. of 96th Ave.	12511
Adams St.	Between 104th & City	15302
Adams St.	E. of 96th Ave.	7864
Aniline Ave.	S. of Lakewood Blvd.	1057
Aniline Ave.	N. of Lakewood Blvd.	1370
Beeline Rd.	N. of Lakewood Blvd.	9095
Beeline Rd.	N. of James St.	7376
Beeline Rd.	S. of Riley St.	3138
Beeline Rd.	N. of Riley St.	1737

ROUTE	LOCATION	COUNT
Butternut Dr.	NW of 136th Ave.	13996
Butternut Dr.	NW of James St.	14708
Butternut Dr.	S. of Riley St.	12921
Butternut Dr.	N. of Riley St.	10620
Chicago Dr.	W. of US-31	17208
Chicago Dr.	W. of 104th Ave.	8594
Douglas Ave.	E. of River Ave.	20978
Douglas Ave.	W. of River Ave.	21048
Felch St.	W. of 100th Ave.	2592
Felch St.	E. of US-31	11141
Felch St.	W. of US-31	11631
Felch St.	W. of 136th Ave.	1308
Greenly St.	E. of US-31	4140
Howard Ave.	E. of Pinecrest Dr.	1883
Howard Ave.	W. of River Ave.	1127
Howard Ave.	SW of Lakewood Blvd.	19550
James St.	W. of 104th Ave.	8842
James St.	E. of 112th Ave.	9061
James St.	E. of 120th Ave.	9374
James St.	W. of 120th Ave.	11365

Continued



Table 1, cont.
2013 Traffic Counts
Ottawa County Road Commission

ROUTE	LOCATION	COUNT
James St.	E. of US-31	14190
James St.	W. of US-31	14293
James St.	W. of Beeline Rd.	16479
James St.	E. of 136th Ave.	16074
James St.	W. of 136th Ave.	10784
James St.	W. of Butternut Dr.	9286
James St.	W. of 144th Ave.	5572
Lakewood Blvd.	E. of 112th Ave.	8986
Lakewood Blvd.	E. of 120th Ave.	16745
Lakewood Blvd.	W. of 120th Ave.	19582
Lakewood Blvd.	E. of Beeline Rd.	24538
Lakewood Blvd.	W. of Beeline Rd.	28157
Lakewood Blvd.	E. of River Ave.	10323
Lakewood Blvd.	W. of River Ave.	11842
Lakewood Blvd.	E. of 144th Ave.	8841
Lakewood Blvd.	W. of 144th Ave.	9181
Mason St.	E. of 112th Ave.	1604
New Holland St	W. of 104th Ave.	1240
New Holland St.	E. of 104th Ave.	1486
New Holland St.	W. of 112th Ave.	1403

ROUTE	LOCATION	COUNT
New Holland St.	W. of 120th Ave.	1642
New Holland St.	E. of US-31	1351
New Holland St.	W. of US-31 @ R.R.	1872
New Holland St.	E. of 144th Ave.	1519
North Bellwood St.	E. of 128th Ave.	269
Ottawa Beach Rd.	E. of 144th Ave.	16644
Ottawa Beach Rd.	W. of 144th Ave.	15661
Ottogan St.	E. of Country Club Rd.	5360
Ottogan St.	W. of 96th Ave.	3020
Ottogan St.	W. of Country Club Rd.	6031
Paw Paw Dr.	W. of 106th Ave.	2265
Paw Paw Dr.	S. of BL-196	1073
Paw Paw Dr.	NE of BL-196	881
Perry St.	W. of 96th Ave.	2385
Perry St.	W. of 104th Ave.	2113
Pinecrest Dr.	E. of 144th St.	441
Quincy St.	E. of 104th Ave.	6838
Quincy St.	W. of 104th Ave.	6545
Quincy St.	W. of 112th Ave.	6212
Quincy St.	E. of US-31	6587

Continued


Table 1, cont.
2013 Traffic Counts
Ottawa County Road Commission

ROUTE	LOCATION	COUNT
Quincy St.	W. of US-31	8867
Quincy St.	E. of 136th Ave.	7963
Quincy St.	W. of 136th Ave.	6496
Quincy St.	W. of 144th Ave.	4003
Quincy St.	E. of 96th Ave.	3455
Ransom St.	E. of 120th Ave.	262
Ransom St.	W. of 120th Ave.	1028
Riley St.	W. of 96th Ave.	12194
Riley St.	E. of Hillside Ct.	11335
Riley St.	W. of 104th Ave.	11235
Riley St.	E. of 112th Ave.	11706
Riley St.	E. of 120th Ave.	15294
Riley St.	E. of Beeline Rd.	20080
Riley St.	E. of US-31	23312
Riley St.	W. of US-31	24543
Riley St.	E. of 136th Ave.	18082
Riley St.	W. of 136th Ave.	11004
Riley St.	E. of Butternut Dr.	10667
Riley St.	W. of Butternut Dr.	7921
Riley St.	W. of 144th Ave.	7694

ROUTE	LOCATION	COUNT
River Ave.	S. of Howard Ave.	33735
River Ave.	S. of Douglas Ave.	30547
River Ave.	N. of Douglas Ave.	24792
River Ave.	N. of Lakewood Blvd.	23608
VanHill Dr.	S. of Chicago Dr.	1594
West Shore Dr.	S. of Riley St.	12167
West Shore Dr.	N. of Riley St.	11835
Woodbridge St.	W. of US-31	8036

Table 2—Traffic Volume Trends—Percentage Change over 10-Years

Route	Location	2003 Traffic Count	2013 Traffic Count	Percent Change Over 10 Years
100TH AVE	S. of Felch St.	4185	4297	2.61%
100TH AVE	N. of Felch St.	3560	3887	8.41%
100TH AVE	S. of Riley St.	2329	3741	37.74%
100TH AVE	N. of Riley St.	1208	2171	44.36%
104TH AVE	N. of Quincy St.	1194	1071	-11.48%
104TH AVE	N. of Felch St.	5741	5502	-4.34%
104TH AVE	S. of Mason St.	2356	2382	1.09%
104TH AVE	N. of James St.	5344	5876	9.05%
104TH AVE	N. of Riley St.	3049	3529	13.60%
104TH AVE	S. of BL-196	5278	6423	17.83%
104TH AVE	N. of Paw Paw Dr.	5736	7662	25.14%
104TH AVE	N. of Adams St.	2840	4973	42.89%
106TH AVE	N. of Perry St.	1665	1390	-19.78%
112TH AVE	N. of Ottagon St.	2726	1828	-49.12%
112TH AVE	N. of Quincy St.	1521	1278	-19.01%
112TH AVE	N. of BL-196	19621	17776	-10.38%
112TH AVE	N. of James St.	7952	7239	-9.85%
112TH AVE	S. of Quincy St.	2247	2416	7.00%
112TH AVE	N. of Lakewood Blvd.	8633	9710	11.09%
112TH AVE	S. of BL-196	4810	7129	32.53%
120TH AVE	S. of Lakewood Blvd.	19626	16583	-18.35%
120TH AVE	S. of Quincy St.	7405	6982	-6.06%

Continued



Table 2—Traffic Volume Trends—Percentage Change over 10-Years

Route	Location	2003 Traffic Count	2013 Traffic Count	Percent Change Over 10 Years
120TH AVE	N. of Lakewood Blvd.	18564	17542	-5.83%
120TH AVE	N. of New Holland St.	5923	5667	-4.52%
120TH AVE	N. of Quincy St.	6257	6017	-3.99%
120TH AVE	N. of Felch St.	14411	15500	7.03%
120TH AVE	N. of James St.	16264	18000	9.64%
128TH AVE	S. of N. Bellwood	2554	4530	43.62%
128TH AVE	S. of Riley St.	2624	6274	58.18%
132ND AVE	N. of James St.	2877	2480	-16.01%
136TH AVE	N. of Riley St.	12158	8632	-40.85%
136TH AVE	N. of New Holland St.	4792	3702	-29.44%
136TH AVE	S. of Riley St.	13877	11102	-25.00%
136TH AVE	N. of Butternut Drive	15438	12364	-24.86%
136TH AVE	N. of James St.	15583	12846	-21.31%
136TH AVE	N. of Quincy St.	6395	5605	-14.09%
142ND AVE	N. of Riley St.	2877	2591	-11.04%
144TH AVE	S. of Ottawa Beach Rd.	2336	1464	-59.56%
144TH AVE	S. of Riley St.	3792	3450	-9.91%
144TH AVE	N. of New Holland St.	2424	2225	-8.94%
144TH AVE	N. of James St.	4293	4280	-0.30%
144TH AVE	N. of Ottawa Beach Rd.	2618	3066	14.61%
144TH AVE	N. of Lakewood Blvd.	3233	3892	16.93%
144TH AVE	N. of Butternut Dr.	3753	5561	32.51%

Continued



Table 2—Traffic Volume Trends—Percentage Change over 10-Years

Route	Location	2003 Traffic Count	2013 Traffic Count	Percent Change Over 10 Years
144TH AVE	S. of New Holland St.	3062	4664	34.35%
96TH AVE	S. of Gordon St.	12618	9498	-32.85%
96TH AVE	N. of Adams St.	11052	8535	-29.49%
96TH AVE	S. of New Holland St.	8921	7346	-21.44%
96TH AVE	S. of Adams St.	8217	7272	-13.00%
96TH AVE	S. of Riley St.	9745	12231	20.33%
Adams St.	E. of 96th Ave.	10449	7864	-32.87%
Adams St.	W. of 96th Ave.	13637	12511	-9.00%
Adams St.	Between 104th & City	14737	15302	3.69%
Aniline Ave.	N. of Lakewood Blvd.	1724	1370	-25.84%
Aniline Ave.	S. of Lakewood Blvd.	1108	1057	-4.82%
Beeline Rd.	S. of Riley St.	5974	3138	-90.38%
Beeline Rd.	N. of James St.	8271	7376	-12.13%
Beeline Rd.	N. of Lakewood Blvd.	9040	9095	0.60%
Beeline Rd.	N. of Riley St.	666	1737	61.66%
Butternut Dr.	N. of Riley St.	12342	10620	-16.21%
Butternut Dr.	NW of James St.	16729	14708	-13.74%
Butternut Dr.	S. of Riley St.	14140	12921	-9.43%
Butternut Dr.	NW of 136th Ave.	15111	13996	-7.97%
Chicago Dr.	W. of US-31	24922	17208	-44.83%
Chicago Dr.	W. of 104th Ave.	10358	8594	-20.53%

Continued



Table 2—Traffic Volume Trends—Percentage Change over 10-Years

Route	Location	2003 Traffic Count	2013 Traffic Count	Percent Change Over 10 Years
Douglas Ave.	W. of River Ave.	17956	21048	14.69%
Douglas Ave.	E. of River Ave.	13111	20978	37.50%
Felch St.	W. of 136th Ave.	1366	1308	-4.43%
Felch St.	W. of US-31	11799	11631	-1.44%
Felch St.	E. of US-31	11286	11141	-1.30%
Felch St.	W. of 100th Ave.	2374	2592	8.41%
Greenly St.	E. of US-31	n/a	4140	n/a
Howard Ave.	W. of River Ave.	3286	1127	-191.57%
Howard Ave.	E. of Pinecrest Dr.	2060	1883	-9.40%
Howard Ave.	SW of Lakewood Blvd.	20826	19550	-6.53%
James St.	E. of US-31	19926	14190	-40.42%
James St.	E. of 120th Ave.	12126	9374	-29.36%
James St.	W. of US-31	17335	14293	-21.28%
James St.	W. of 136th Ave.	12951	10784	-20.09%
James St.	W. of Beeline Rd.	19323	16479	-17.26%
James St.	W. of 120th Ave.	12955	11365	-13.99%
James St.	W. of 104th Ave.	9594	8842	-8.50%
James St.	E. of 112th Ave.	9782	9061	-7.96%
James St.	W. of Butternut Dr.	9892	9286	-6.53%
James St.	E. of 136th Ave.	16354	16074	-1.74%
James St.	W. of 144th Ave.	5107	5572	8.35%
Lakewood Blvd.	W. of River Ave.	13854	11842	-16.99%

Continued



Table 2—Traffic Volume Trends—Percentage Change over 10-Years

Route	Location	2003 Traffic Count	2013 Traffic Count	Percent Change Over 10 Years
Lakewood Blvd.	E. of 144th Ave.	9902	8841	-12.00%
Lakewood Blvd.	E. of River Ave.	11106	10323	-7.59%
Lakewood Blvd.	W. of 120th Ave.	20432	19582	-4.34%
Lakewood Blvd.	W. of Beeline Rd.	28301	28157	-0.51%
Lakewood Blvd.	W. of 144th Ave.	9141	9181	0.44%
Lakewood Blvd.	E. of Beeline Rd.	22429	24538	8.59%
Lakewood Blvd.	E. of 120th Ave.	14094	16745	15.83%
Lakewood Blvd.	E. of 112th Ave.	5544	8986	38.30%
Mason St.	E. of 112th Ave.	2074	1604	-29.30%
New Holland St	W. of 104th Ave.	1792	1240	-44.52%
New Holland St.	W. of 112th Ave.	2737	1403	-95.08%
New Holland St.	E. of US-31	2218	1351	-64.17%
New Holland St.	E. of 104th Ave.	1798	1486	-21.00%
New Holland St.	W. of US-31 @ R.R.	2262	1872	-20.83%
New Holland St.	E. of 144th Ave.	1719	1519	-13.17%
New Holland St.	W. of 120th Ave.	1814	1642	-10.48%
North Bellwood St.	E. of 128th Ave.	n/a	269	n/a
Ottawa Beach Rd.	E. of 144th Ave.	14208	16644	14.64%
Ottawa Beach Rd.	W. of 144th Ave.	13326	15661	14.91%
Ottogan St.	W. of 96th Ave.	4726	3020	-56.49%
Ottogan St.	W. of Country Club Rd.	6788	6031	-12.55%
Ottogan St.	E. of Country Club Rd.	n/a	5360	n/a

Continued



Table 2—Traffic Volume Trends—Percentage Change over 10-Years

Route	Location	2003 Traffic Count	2013 Traffic Count	Percent Change Over 10 Years
Paw Paw Dr.	S. of BL-196	1449	1073	-35.04%
Paw Paw Dr.	W. of 106th Ave.	2412	2265	-6.49%
Paw Paw Dr.	NE of BL-196	624	881	29.17%
Perry St.	W. of 96th Ave.	1981	2385	16.94%
Perry St.	W. of 104th Ave.	1708	2113	19.17%
Pinecrest Dr.	E. of 144th St.	n/a	441	n/a
Quincy St.	E. of 96th Ave.	4433	3455	-28.31%
Quincy St.	W. of 136th Ave.	6905	6496	-6.30%
Quincy St.	W. of 144th Ave.	3873	4003	3.25%
Quincy St.	E. of US-31	5919	6587	10.14%
Quincy St.	W. of 112th Ave.	5468	6212	11.98%
Quincy St.	W. of US-31	7721	8867	12.92%
Quincy St.	E. of 136th Ave.	6778	7963	14.88%
Quincy St.	E. of 104th Ave.	4614	6838	32.52%
Quincy St.	W. of 104th Ave.	3170	6545	51.57%
Ransom St.	W. of 120th Ave.	1053	1028	-2.43%
Ransom St.	E. of 120th Ave.	256	262	2.29%
Riley St.	W. of 136th Ave.	12779	11004	-16.13%
Riley St.	W. of 144th Ave.	8918	7694	-15.91%
Riley St.	W. of Butternut Dr.	8962	7921	-13.14%
Riley St.	E. of Butternut Dr.	12023	10667	-12.71%

Continued



Table 2—Traffic Volume Trends—Percentage Change over 10-Years

Route	Location	2003 Traffic Count	2013 Traffic Count	Percent Change Over 10 Years
Riley St.	E. of 120th Ave.	14496	15294	5.22%
Riley St.	E. of 136th Ave.	16153	18082	10.67%
Riley St.	W. of 104th Ave.	9567	11235	14.85%
Riley St.	E. of Beeline Rd.	16897	20080	15.85%
Riley St.	E. of 112th Ave.	9728	11706	16.90%
Riley St.	E. of Hillside Ct.	9365	11335	17.38%
Riley St.	E. of US-31	18944	23312	18.74%
Riley St.	W. of 96th Ave.	9478	12194	22.27%
Riley St.	W. of US-31	15672	24543	36.14%
River Ave.	N. of Lakewood Blvd.	30089	23608	-27.45%
River Ave.	N. of Douglas Ave.	31126	24792	-25.55%
River Ave.	S. of Howard Ave.	33203	33735	1.58%
River Ave.	S. of Douglas Ave.	28550	30547	6.54%
VanHill Dr.	S. of Chicago Dr.	1415	1594	11.23%
West Shore Dr.	N. of Riley St.	n/a	11835	n/a
West Shore Dr.	S. of Riley St.	4788	12167	60.65%
Woodbridge St.	W. of US-31	12205	8036	-51.88%

Continued
