Access Management Plan
M-25 in St. Clair County
City of Port Huron and
the Charter Township of Fort Gratiot

Final Report

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EXECUTIVE SUMMARY

This document describes the access management plan that was prepared for the M-25 corridor in the City of Port Huron and the Charter Township of Fort Gratiot. The plan provides a comprehensive approach to implementing access management techniques and principles to improve traffic operations and safety in the corridor, as well as providing other beneficial effects. The plan addresses areas of the corridor where significant development exists, and explores short- and long-range opportunities for improving access.

The M-25 corridor in the City of Port Huron and the Charter Township of Fort Gratiot is a major north-south roadway that has experienced steady growth in land use and traffic. The corridor is a vital link for economic development, including commercial, residential, and recreational activities between I-69/I-94 in Port Huron and Canada, as well as destinations north and south of Port Huron. The 5.01-mile corridor runs between Thomas Street in Port Huron and Lakeshore Drive in the Charter Township of Fort Gratiot.

Land use along the M-25 corridor primarily consists of commercial development ranging from small retail service businesses to a large shopping mall. There are 16 signalized intersections on the corridor and 252 access points. On average, there is one access point every 105 feet, thus, there are numerous opportunities for improving traffic operations and safety though an access management plan.

Development of the M-25 Access Management Plan included establishing a project steering committee, meeting with and receiving input from the committee, collecting and analyzing traffic, safety, land use, and other relevant information, and preparing the report. The project steering committee included local, county, and state transportation and planning officials.


Access management is an ongoing program that should be maintained as long as the corridor exists. Because conditions on the corridor evolve and change over time, it is imperative that the plan be updated periodically to meet new opportunities for improvement. Due to the ongoing nature of access management, it is necessary to establish a formal process for implementing the plan and ensuring its success over time.

Implementation of the M-25 Access Management Plan requires the following steps.

- Develop an ongoing Access Management Steering Committee.
- Adopt and Implement the Access Management Plan.
- Establish a Monitoring and Enforcement Program.
The following short-range actions were identified and recommended for implementation.

- Develop and Implement an Access Management Ordinance.
- Establish a Permanent M-25 Access Management Steering Committee.
- Develop Better Internal Circulation to Existing Land Parcels.
- Solicit Voluntary Access Driveway Closures.

The following long-range actions were identified and recommended for implementation.

- Application of Access Management Ordinances and Standards.
- Evaluate and Implement Non-motorized Plans for the Corridor.
- Promote Rear Access and Side Street Access.

As a first step in implementing the program, Mr. Jeffrey Edwards, Transportation Planner from the MDOT Metro Region Office, volunteered at the forth Steering Committee Meeting held on October 15, 2002, to serve as the chair of the permanent M-25 Steering Committee. Mr. Larry Young, Manager of the MDOT Port Huron TSC, and Ms. Madelyn McCarthy, Supervisor, Charter Township of Fort Gratiot also volunteered to serve as committee members, and Mr. Matthew Lewandowski offered to find a volunteer from the City of Port Huron Planning Commission to serve on the committee. The first steering committee meeting was tentatively planned for early January 2003.
INTRODUCTION

The purpose of this document is to describe the access management plan that was prepared for the M-25 corridor in the City of Port Huron and the Charter Township of Fort Gratiot. The plan provides a comprehensive approach to implementing access management techniques and principles to improve traffic operations and safety in the corridor, as well as providing other beneficial effects. The plan addresses areas of the corridor where significant development exists, and explores short- and long-range opportunities for improving access.

The Federal Highway Administration (FHWA), the Michigan Department of Transportation (MDOT), and a number of Michigan communities have been active in developing and supporting access management programs for many decades. In September 2001, MDOT published the Michigan Access Management Guidebook to assist agencies with the development of viable access programs. The Guidebook was used throughout the preparation of the M-25 plan.

Overview of the M-25 Corridor

The M-25 corridor in the City of Port Huron and the Charter Township of Fort Gratiot is a major north-south roadway that has experienced steady growth in land use and traffic volumes. The corridor is a vital link for economic development, including commercial, residential, and recreational activities between I-69/I-94 in Port Huron and Canada, as well as destinations north and south of the corridor.

As shown in Figure 1, the 5.01-mile section of M-25 runs between Thomas Street in the City of Port Huron and Lakeshore Drive in the Charter Township of Fort Gratiot. The majority of the corridor has a cross section consisting of four-through lanes and a center two-way left-turn median lane. However, the northern section transitions from a five-lane section to a two-lane highway prior to the intersection of Lakeshore Drive. The average daily traffic ranges from 21,900 vehicles per day south of the I-94 Bridge to Canada to 40,500 vehicles per day north of the I-94 connector to M-25. Posted speed limits range from 35 miles per hour on the southern section to 45 miles per hour on the northern section.

Land use along the M-25 corridor primarily consists of commercial development ranging from small retail service businesses to a large shopping mall. Similar to other corridors, there are excellent examples of good access management practices such as the frontage road near Riverside Drive, which serves numerous residencies and eliminates direct access to M-25. There are also examples of driveway consolidation, shared use, and improvements such as right-turn lanes at properties to remove slow-speed turning vehicles from the higher-speed through traffic lanes. Along with the good access practices, there are also many examples where driveways should be eliminated, consolidated, or tied into future access roads.

There are 16 signalized intersections on the M-25 corridor and a total of 252 access points that intersect the road. On average, there is one access point every 105 feet, thus there are numerous opportunities for improving traffic operations and safety though the implementation of an access management program.

Because land use and topographic features change throughout the section, the M-25 corridor was divided in five segments with homogeneous characteristics as shown in Figure 2. For discussion purposes in the remaining sections of this report, a description of the segments and related information is presented by segment number as shown in Figure 2.
Figure 1. Overview of the M-25 corridor study area.
Figure 2. M-25 corridor study segments.
Definition of Access Management

The *Michigan Access Management Guidebook* identifies access management as:

“a set of proven techniques that can help reduce traffic congestion, preserve the flow of traffic, improve traffic safety, prevent crashes, preserve existing road capacity and preserve investment in roads by managing the location, design and type of access to property.”

Access management focuses on the optimum location, spacing and design of driveways for safe, efficient, and adequate access to properties. Poor access management exists on roadways with a high concentration of closely spaced and inadequately designed access points. These roadways often experience high crash rates due to excessive conflict points, slower speeds, large speed differentials, interrupted traffic flow, and congestion. Implementation of a good access management plan with controlled and well-designed access is necessary for safe, organized, and efficient access.

Benefits of Access Management

Direct benefits accrue to both property owners and motorists on a highway with the implementation of a good access management plan. The *Michigan Access Management Guidebook* identifies the following five benefits of access management.

1. Access management improves traffic safety and can prevent vehicular crashes. Access management plans provide guidelines for ideal placement and geometry of access points that reduce the number of conflict points on the roadway and reduce speed differentials between vehicles to improve safety.

2. Access management results in shorter travel times and reduces motorist costs. It improves traffic flow on the roadway, provides shorter delays and predictable travel times, and reduces vehicles costs to the motorist.

3. Access management extends the function and capacity of roadways. Unnecessary and uncontrolled access points can contribute to the deterioration of road capacity. Congestion, travel time and delays, road rage, and air pollution can be decreased with a good access management plan. With controlled and organized access points on the roadway, motorists are able to travel near the posted speed limit, and slow down less often for motorists turning into driveways.

4. Access management improves access to property while enhancing the value of private land development. Property owners reserve the right to “reasonable access”, which may not always include direct access to their properties. Motorists, as well as businesses, benefit from the implementation of an access management plan. Safe, efficient, easy and well-designed access will be more appealing to motorists and draw more business.

5. Access management results in nicer communities. Motorists driving on a roadway where good access management practices have been implemented tend to have a more agreeable experience than traveling on a roadway with poor access management. The positive features include a safer roadway, less congestion, smoother traffic flow with fewer stops, and a pleasant visual appearance with more green space.
Plan Development Methodology

Development of the M-25 Access Management Plan included establishing a project steering committee, meeting with and receiving input from the committee, collecting and analyzing traffic, safety, land use, and other relevant information, and preparing the report.

**M-25 Access Management Steering Committee**

A steering committee was formed to provide project oversight and input. The M-25 Access Management Steering Committee consisted of state, county, and local transportation and planning officials with interests in traffic conditions and transportation along the M-25 corridor. The committee included the following members.

- Mr. Ed Schultz, Commissioner, St. Clair County Board of Commissioners
- Ms. Madelyn A. McCarthy, Supervisor, Charter Township of Ft. Gratiot
- Mr. Gerald Dawson, Charter Township of Ft. Gratiot
- Mr. Robert Clegg, City of Port Huron
- Mr. Mark Neal, City of Port Huron
- Mr. Matthew R. Lewandowski, City of Port Huron
- Mr. Gordon Ruttan, St. Clair County Metropolitan Planning Commission
- Mr. Donald M. Maronde, St. Clair County Road Commission
- Ms. Holly Quaine, Greater Port Huron Chamber of Commerce
- Ms. Janice Dubay, Mainstreet Welcome Center
- Mr. Thomas J. Doyle, Michigan Department of Transportation
- Mr. Larry Young, Michigan Department of Transportation Port Huron TSC
- Mr. Jeffrey A. Edwards, Michigan Department of Transportation Region Office

The primary role of the steering committee was to provide input and comments during the development of the plan. It was also felt that the line of communication and corporative relationships established among the members would continue after the completion of the project. Continuing involvement by the committee is necessary to effectively solve and implement access management solutions, monitor and evaluate access to the corridor, and to provide revisions and modifications to the plan and related zoning ordinances. The committee participated in four meetings during the project period. The minutes of the four M-25 Access Management Steering Committee meetings are included in Appendix A.

**Plan Methodology**

The M-25 Access Management Plan was developed with input from the project steering committee. The plan was based on the guidelines and principles outlined in the document entitled *Reducing Traffic Congestion and Improving Traffic Safety in Michigan Communities: The Access Management Guidebook, September 2001* prepared by the Michigan Department of Transportation (MDOT). For brevity, the document is referred to as the *Michigan Access Management Guidebook* throughout the remainder of this report. The Guidebook presents and explains how and when to use a wide-range of access management techniques that address common traffic situations. The Guidebook is an excellent resource for local agencies to use to address new and evolving traffic problems on their major corridors.
Data Collection

To prepare the access management plan, existing roadway geometry, land use characteristics, access points, and other data were obtained and analyzed. The data collection effort is summarized in the following paragraphs.

Existing Roadway Geometry

Exiting roadway geometry for the M-25 study section was obtained from aerial photographs provided by the participating communities. Field reviews were conducted by the project team to update and obtain specific roadway design characteristics as needed for the analysis.

Land Use and Zoning

Current GIS data and ortho photography were provided by the St. Clair County Metropolitan Planning Commission. Zoning and existing and future land use information were also obtained from the St. Clair County Metropolitan Planning Commission.

Master Plans

Copies of current master plans and zoning ordinances were collected from the St. Clair County Metropolitan Planning Commission and from the City of Port Huron and the Charter Township of Fort Gratiot.

Access Points

The number of access points on both sides of the 5.01-mile corridor was determined via field counts. Various types of access points along the corridor were counted including residential driveways, commercial driveways, and public streets.

Traffic Volume Data

Average 24-hour traffic volumes and commercial vehicle use were obtained from MDOT sources for the years 1996 through 2001.

Crash Data

Crash data were obtained from the Michigan Department of Transportation for a 7-year period from January 1, 1993 through December 31, 1999. The data includes all crashes reported on the 5.01-mile segment. The data also include crashes that occurred within 150 feet of the intersecting streets.

Other Data

Field reviews of the M-25 corridor and surrounding area were made to obtain other data needed for development of the plan such as the number and location of signalized intersections, posted speed limits, etc.
GOALS AND OBJECTIVES OF ACCESS MANAGEMENT

The M-25 Access Management Plan was developed to achieve the primary goals and objectives of good access management in accordance with techniques and principles outlined in the Michigan Access Management Guidebook. Some specific goals of the plan include:

- Reduce crashes and improve safety.
- Maintain or enhance the existing character of the community.
- Identify critical and problem areas for possible access management techniques.
- Control access along M-25 and connect side streets with regulatory elements.
- Develop and implement a program that assures appropriate application of access management techniques.
- Coordinate projected traffic growth and planned land use growth.
- Reduce travel time, delay, and future access-related congestion.
- Reduce adverse environmental impacts, i.e., fuel consumption, air pollution, etc.

EXISTING CONDITIONS

This section of the plan includes a description of the five segments of the M-25 corridor, the results of the safety analysis, existing land use and zoning, and scheduled transportation improvements.

Corridor Description

Segment 1 – Thomas Street to I-94 Bridge to Canada

Segment 1 is the section of M-25 from Thomas Street to the I-94 Bridge to Canada. The segment intersects a north-south and east-west grid of side streets at a skewed angle, creating many four- or five-legged intersections at acute angles. The section generally includes many narrow parcels that accommodate mostly commercial and some residential development, each having one or more driveways on M-25. The large number of driveways in this area results in the highest density of access points of any of the five M-25 study segments. Forty-eight access points exist on the 0.60-mile segment, averaging 80 access points per mile. Traffic volumes are the lowest of any on the corridor, with 21,900 vehicles per day reported in 2001.

Segment 2 – I-94 Bridge to Canada to Holland Avenue

Segment 2 is the section of M-25 from I-94/Bridge to Canada to Holland Avenue. Sixty-one access points exist on this 1.34-mile segment, averaging 46 access points per mile. The same north-south and east-west grid of side streets continues in Segment 2 to Hancock Street, creating a pattern of four- and five-legged intersections with side streets at acute angles. Several commercial developments, having one or more driveways on M-25, are located in this segment, and in the northern section from Riverside Drive to Holland Avenue. There is lower driveway density in the mid-section of Segment 2, due to a frontage road located on the west side of the road between Brandywine Lane and Riverside Drive. Traffic volumes between the I-94 Bridge to Canada to the I-94 Connector were 22,600 vehicles per day in 2001. Volumes are higher on the northern section of Segment 2, from the I-94 Connector to Holland Avenue, where 40,500 vehicles per day were reported in 2001.
Segment 3 – Holland Avenue to M-136

Segment 3 is the section of M-25 from Holland Avenue to M-136. Segment 3 is a 0.50-mile section containing a high access density, with 32 access points, which is an average of 64 access points per mile. Similar to other segments on M-25, many of the commercial establishments have multiple driveways, and there is limited shared use between businesses on this segment. Traffic volumes in this segment were 36,200 vehicles per day, based on 2001 data.

Segment 4 – M-136 to Cherry Hill Road

Segment 4 is the section of M-25 between M-136 and Cherry Hill Road. There are 80 access points in this 1.77-mile segment, averaging a density of 45 access points per mile. Land use on the south end of the section is primarily commercial with one or more driveways on the smaller parcels. Many of the larger, newer commercial developments have good access management techniques with use of a front access road and fewer driveways located on M-25. Mixed access exists in the northern section of Segment 4, with closely spaced residential and commercial driveways. Traffic volumes on the segment were 31,100 vehicles per day recorded in 2001.

Segment 5 – Cherry Hill Road to Lakeshore Drive

Segment 5 is the section of M-25 from Cherry Hill Road to Lakeshore Drive. Thirty-two access points exist on this 0.80-mile segment, which is an average 40 access points per mile. Land use on the segment consists of many narrow residential and small commercial parcels with one or more driveways per parcel. Traffic volumes on the segment were 26,000 vehicles per day recorded in 2001.

Traffic and Safety Analysis

The number of crashes reported by year on the 5.01-mile study segment of M-25 is shown in Figure 3. The number of crashes decreased from 366 in the year 1993 to 278 in the year 1994. After the year 1994, crashes gradually increased to 439 by the year 1999. The number of crashes has increased at an average of approximately 27 per year. This trend suggests that the number of crashes along the corridor may continue to increase over time.

The majority of crashes (70.8 percent) involved property damage only. Also, 29.0 percent involved injury to one or more of the vehicle occupants, and 4 (0.2 percent) crashes involved fatalities.
Shown in Table 1 are the crashes sorted by type of collision for the 7-year study period. More than one-half (52.0 percent) of the crashes were rear end collisions, including rear end straight, driveway, left turn, and right turn. This represents an average of approximately 337 rear end collisions per year along the corridor.

Other predominant collision types included angle driveway collisions (9.2 percent), angle straight collisions (9.1 percent), sideswipe same-direction collisions (9.0 percent), rear end driveway collisions (5.0 percent), and angle turning collisions (4.3 percent).

One objective of the M-25 access management plan is to reduce crashes and improve safety along the corridor. The 5.01-mile corridor contains 252 access points, averaging one access point spaced approximately every 105 feet. A large number of the reported crashes were identified as driveway-related. Three types of driveway-related collisions have been identified by MDOT and are recorded in the crash database for M-25. The driveway-related crashes are summarized in Figure 4 for the 7-year study period. The data suggest that 241 (9.2 percent) of the 2,608 crashes on M-25 were angle driveway collisions, 131 (5.0 percent) were rear end driveway collisions, and 71 (2.7 percent) were other driveway-related collisions.

Approximately 17 percent of the total crashes were driveway-related. Implementation of an access management plan directed at reducing the number of driveways and driveway-related crashes would significantly improve safety on M-25.

Figure 3. Number of crashes per year on M-25 from 1993 though 1999.
Table 1. Summary of crashes by collision type on M-25 from 1993 through 1999.

<table>
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<tr>
<th>MDOT Crash Types</th>
<th>Grand Total</th>
<th>Percent</th>
<th>Type</th>
<th>1993 Through 1999</th>
<th>Grand Total</th>
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<tr>
<td>0</td>
<td>Uncoded &amp; Errors</td>
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<td>0.0%</td>
<td>0</td>
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<tr>
<td>11</td>
<td>Overturn</td>
<td>1</td>
<td>0.0%</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>12</td>
<td>Hit Train</td>
<td>0</td>
<td>0.0%</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>13</td>
<td>Pedestrian</td>
<td>8</td>
<td>0.3%</td>
<td>8</td>
<td>0.3%</td>
</tr>
<tr>
<td>14</td>
<td>Bicycle</td>
<td>9</td>
<td>0.3%</td>
<td>9</td>
<td>0.3%</td>
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<tr>
<td>15</td>
<td>Fixed Object</td>
<td>33</td>
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<td>33</td>
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</tr>
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<td>16</td>
<td>Other Object</td>
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<tr>
<td>17</td>
<td>Hit Parked Vehicle</td>
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<tr>
<td>18</td>
<td>Animal</td>
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<td>0.7%</td>
<td>17</td>
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<td>19</td>
<td>Misc. Single Vehicle</td>
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<td>20</td>
<td>Misc. Multiple Vehicle</td>
<td>82</td>
<td>3.1%</td>
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<td>3.1%</td>
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<tr>
<td>21</td>
<td>Angle Straight</td>
<td>238</td>
<td>9.1%</td>
<td>238</td>
<td>9.1%</td>
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<tr>
<td>22</td>
<td>Angle Turn</td>
<td>111</td>
<td>4.3%</td>
<td>111</td>
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<td>23</td>
<td>Head On Left Turn</td>
<td>49</td>
<td>1.9%</td>
<td>49</td>
<td>1.9%</td>
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<td>24</td>
<td>Rear End Straight</td>
<td>1,192</td>
<td>45.7%</td>
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<td>25</td>
<td>Rear End Left Turn</td>
<td>12</td>
<td>1.9%</td>
<td>12</td>
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<td>26</td>
<td>Rear End Right Turn</td>
<td>22</td>
<td>0.8%</td>
<td>22</td>
<td>0.8%</td>
</tr>
<tr>
<td>27</td>
<td>Dual Left Turn</td>
<td>14</td>
<td>0.5%</td>
<td>14</td>
<td>0.5%</td>
</tr>
<tr>
<td>28</td>
<td>Dual Right Turn</td>
<td>8</td>
<td>0.3%</td>
<td>8</td>
<td>0.3%</td>
</tr>
<tr>
<td>31</td>
<td>Head On</td>
<td>26</td>
<td>1.0%</td>
<td>26</td>
<td>1.0%</td>
</tr>
<tr>
<td>32</td>
<td>Sideswipe Same</td>
<td>236</td>
<td>9.0%</td>
<td>236</td>
<td>9.0%</td>
</tr>
<tr>
<td>33</td>
<td>Sideswipe Opposite</td>
<td>13</td>
<td>0.5%</td>
<td>13</td>
<td>0.5%</td>
</tr>
<tr>
<td>34</td>
<td>Angle Driveway</td>
<td>241</td>
<td>9.2%</td>
<td>241</td>
<td>9.2%</td>
</tr>
<tr>
<td>35</td>
<td>Rear End Driveway</td>
<td>131</td>
<td>5.0%</td>
<td>131</td>
<td>5.0%</td>
</tr>
<tr>
<td>36</td>
<td>Other Driveway</td>
<td>71</td>
<td>2.7%</td>
<td>71</td>
<td>2.7%</td>
</tr>
<tr>
<td>37</td>
<td>Backing</td>
<td>24</td>
<td>0.9%</td>
<td>24</td>
<td>0.9%</td>
</tr>
<tr>
<td>38</td>
<td>Parking</td>
<td>56</td>
<td>2.1%</td>
<td>56</td>
<td>2.1%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>2,608</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Figure 4. Number of driveway-related crashes on M-25.

Existing Land Use and Zoning

The purpose of this section is to examine the existing land use, zoning, and development along the M-25 corridor over time. With the knowledge of the existing land use patterns and site conditions, local planners, engineers, and other officials can guide the future land use to adapt to conditions that are favorable for proper access management implementation. The St. Clair Metropolitan Planning Commission provided the existing land use and zoning information described in this report.

The planning data for the City of Port Huron and the Charter Township of Fort Gratiot was extracted and summarized for analysis. For the most part, the existing land use followed the zoning patterns next to and within the M-25 corridor. The southern two-thirds of the corridor, from Krafft Road to Thomas Street, consists of mostly older commercial businesses, with the exception of a residential and open space land use area between Holland Avenue and the I-94 Bridge to Canada. The remainder of the corridor, from Krafft Road to Lakeshore Drive, primarily consists of newer commercial retail establishments, with the exception of residential homes located along the corridor between Carrigan Road and Lakeshore Drive. Shown in Figures 5, 6, and 7 are maps showing the existing land use, zoning, and corridor development by year.
Figure 5
To further describe land use and zoning along the M-25 corridor, the road segments shown previously in Figure 2 were utilized. The following is a brief description of the land use and zoning within each road segment.

**Segment 1 – Thomas Street to the I-94 Bridge to Canada**

The area from Thomas Street to the I-94 Bridge underpass has less traditional commercial properties and more businesses that are conducted from former residential properties. For the most part, these commercial properties are only one parcel deep, with residential single-family dwellings directly behind them.

**Segment 2 – I-94 Bridge to Canada to Holland Avenue**

The commercial properties north of the bridge underpass are mostly restaurants, service stations, and smaller retail outlets. These businesses attract a higher number of trips than the development on the southern part of the segment, which contain a higher proportion of through traffic.

Residential homes and open spaces dominate the M-25 corridor in this segment. Very few access points are located on the segment due to a frontage road which provides access to a great majority of the homes on the west side of M-25. Commercial property consists of a shopping center on the east side of M-25 and residential home type businesses located just to the south of Holland Avenue.

**Segment 3 – Holland Avenue to M-136**

Land use on this segment is dominated by older commercial properties. The properties include service stations, restaurants, banks, strip shopping centers, and automobile dealers.

**Segment 4 – M-136 to Cherry Hill Road**

This segment contains high concentrations of large size retail development. Most of the properties contain newer buildings with larger footprints. These properties include Home Depot, Lowe’s, Birchwood Mall, Meijer, numerous restaurants, and specialized retail stores. Most businesses were constructed to attract trips as a destination rather than as pass-by trips for through traffic. Although the properties in this segment are generally higher traffic generators, access roads and improvements on M-25 such as right-turn lanes have been provided to remove the negative traffic impacts. There are a number of good access management techniques in this segment.

**Segment 5 – Cherry Hill Road to Lakeshore Drive**

This segment of M-25 contains light commercial business, residential homes, and some undeveloped parcels. This segment has a two-lane cross section. Most of the residential homes and businesses are older establishments compared to land use on the other M-25 segments. The area south of Carrigan Road is not commercially developed.
The planning data indicate that the southern portion of the M-25 corridor was developed prior to 1985, while the northern section has much new commercial development with many opportunities for future development. The areas in the north portion of the corridor will most likely develop into commercial sectors in the future. Residential development is expected in the outlying areas and in the southern portion of the M-25 corridor, which will follow existing zoning. Any new residential areas should have internal residential access streets that are not connected to M-25. As both commercial and residential land uses are developed, access management techniques should be applied to the new access driveways.

A review of the M-25 corridor development by year, as shown in Figure 7, indicates that the entire southern portion of the corridor has already been developed and no new developments are projected for the year 2020. The western section of M-25 from north of Krafft Road to north of Keewahdin Road has also been heavily developed. The main segments remaining to be developed are located north of Krafft Road on the east side of M-25, and along the western side of M-25 behind existing developments. As both commercial and residential land uses are developed, access management techniques should be applied to the new accesses for these properties.

The northern segment of the study area, near Lakeshore Drive, has open spaces for future development. The future development areas in the north portion of the corridor will most likely develop into commercial establishments with residential development behind existing commercial properties. These commercial developments will need to have access management techniques implemented to ensure that unnecessary access points are not permitted onto M-25. Any open spaces that do exist in the southern section of the corridor would most likely be developed into residential neighborhoods in accordance with present zoning.

**Scheduled Transportation Improvements**

There are no major road improvements planned by MDOT in the foreseeable future for the M-25 corridor. There will be routine maintenance of traffic control devices that includes remarking edgelines, centerlines, and intersection markings such as STOP bars, ONLY arrows, etc. Upgrading of traffic signs is also possible as well as typical repairs such as filling potholes, cleaning drainage items, etc. While no safety improvements are currently scheduled, it is possible that some minor road geometry and traffic control devices work would occur if safety problems were identified.

Among possible minor improvements, MDOT is planning to interconnect the traffic signals on the M-25 corridor to provide progression where feasible. This program will improve traffic flow at the intersections, but the overall effects are expected to be minor as the spacings of many signals are not favorable for achieving good signal progression.

Other road improvements could occur based on mitigation required from new developments in the area. The mitigation efforts typically include adding right-turn lanes, constructing an access road, etc.
ACCESS MANAGEMENT PLAN

Access Management Techniques

This section of the report describes the access management techniques that should be considered for application on the M-25 corridor. The access management techniques described in the following paragraphs are based on design standards and access management principles discussed in the Michigan Access Management Guidebook. The majority of the techniques identified are remedial in nature, i.e., techniques that focus on retrofitting solutions as opportunities occur; however, preventive measures were also included where appropriate.

Because the M-25 corridor is largely developed, many of the techniques described herein include improving existing access points. These techniques are derived from the following three key principles for driveway and related access management techniques described in the Michigan Access Management Guidebook.

1. Limit the number of driveways and conflict points.
2. Separate driveways and other conflict points.
3. Improve driveway operation (ingress and egress) by fitting the best design to the need.

Other considerations for implementation include traffic control devices and related techniques, which are also derived from the following three key principles.

1. Remove turning vehicles from through traffic lanes.
2. Reduce conflicting volumes.
3. Improve roadway operations on arterials.

The following sections and accompanying aerial photographs describe how access management principles are applied to each of the 5 study segments. It should be noted that this plan is a live document that is subject to adjustments and refinements as the adjacent properties are developed or are redeveloped. Although the basic concepts are considered applicable as shown, exact locations and configurations of driveways and frontage roads may shift as required to meet the access needs of existing and future development.

Access management techniques that should be considered for application for each study segment are shown in Figures 8 through 18. The aerial photographs contain techniques that should be considered such as the following actions.

- Removing unnecessary driveways.
- Reducing width of driveways with wide throats.
- Combining and/or sharing use of access between commercial businesses.
- Closing unnecessary or unsafe streets.
- Enhancing internal circulation in existing parking areas.
- Providing rear access roads to replace individual direct access points.

There are locations on the M-25 corridor where good access management techniques have been implemented. Some of these excellent practices are also noted on the aerial photographs. Continued implementation of these practices is encouraged.
Segment 1 – Thomas Street to I-94 Bridge to Canada

Restrict the Number of Driveways Per Parcel

Study Segment 1, from Thomas Street to the I-94 Bridge to Canada, is shown on Figures 8 and 9. Land use on the segment generally consists of many small parcels with at least one driveway, which results in a high density of access points. Segment 1 has the highest density of access points of the 5 study segments on M-25. Forty-eight access points exist on the 0.60-mile segment, which is an average of 80 access points per mile, or one access point every 66 feet on both sides of the road. There are 47 commercial and residential driveways per mile, or one driveway every 113 feet on both sides of the road. The high access density poses operational and safety concerns.

The *Michigan Access Management Guidebook* indicates that the number of access points along a road has a direct correlation with the number of crashes that occur on the road. Table 2 shows the relationship between driveway density and crash rates according the *Guidebook*. This table suggests that by decreasing the number of access points in the segment, the number of crashes will also decrease.

Table 2. Relationship of driveway density to crash rates.

<table>
<thead>
<tr>
<th>Driveways per Mile</th>
<th>Approximate Number of Driveways per 500-foot City Block</th>
<th>Representative Crash Rate for a Multilane, Undivided Roadway</th>
<th>Increase in Crashes Associated with Higher Driveway Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 20</td>
<td>Under 2</td>
<td>3.4</td>
<td>-</td>
</tr>
<tr>
<td>20 to 40</td>
<td>2 to 4</td>
<td>5.9</td>
<td>+74%</td>
</tr>
<tr>
<td>40 to 60</td>
<td>4 to 6</td>
<td>7.4</td>
<td>+118%</td>
</tr>
<tr>
<td>Over 60</td>
<td>Over 6</td>
<td>9.2</td>
<td>+171%</td>
</tr>
</tbody>
</table>


It is recommended that on Segment 1, the existing number of driveways should be reduced to increase safety by limiting the number of conflict points. As shown in Figure 8 and the bottom portion of Figure 9, there are several locations on Segment 1 where the number of driveways can be reduced by eliminating unnecessary driveways. It is also recommended that due to the large number of small parcels located adjacent to M-25, local governments should consider adopting an access management ordinance that regulates driveway spacing.

Regulate the Location, Spacing, and Design of Driveways

As previously stated Segment 1 contains many narrow parcels with generally one or more driveways per parcel, which creates a high access density and unnecessary conflict points. Local governments should consider adopting strict regulations on location, spacing, design and
especially the number of driveways per parcel for new developments. Adequate driveway spacing should be provided to ensure safe stopping distances, clear vision and adequate room for acceleration and deceleration, according to the *Michigan Access Management Guidebook*. Consideration should be given to allowing only one driveway per parcel on M-25. In addition, limitations should be placed on the location and spacing of driveways in relation to intersecting streets.

Examples of driveway regulations are shown in the *Model Access Management Overlay Zone Ordinance* published by the St. Clair County Metropolitan Planning Commission. This model ordinance is included in Appendix B of this report. For comparison purposes, also see the Charter Township of Fort Gratiot, *Ordinance Number 143*, which is included in Appendix C. This ordinance is used to manage access on all roads within the Charter Township.

**Locate Driveways Away from Intersections (Corner Clearance)**

Another access management technique that should be considered for implementation on Segment 1 involves corner clearance, which is the distance between an intersection and an adjacent access point. Reasonable corner clearance guidelines for a posted speed of 35 mph provided by MDOT is 230 feet of distance from a signalized intersection to an adjacent driveway, and 85 feet from an unsignalized intersection to an adjacent driveway.

Because there are many intersecting side streets at acute angles to M-25 in close proximity to each other, it is very difficult to meet the corner clearance guidelines in this segment. Many of the driveways cannot be moved away from the intersection. Consideration should be given to eliminating some of the unnecessary driveways. Several examples of driveways that should be considered for removal are shown in red in Figures 8 and 9. Elimination of driveways adjacent to intersections will increase corner clearance.

**Provide Adequate Sight Distance**

Adequate sight distance is required in order for motorists to see if there is a safe gap before entering the roadway. The orientation of M-25 through the north-south and east-west grid of side streets has created a large number of side street accesses at acute angles in close proximity to one another. North-south intersecting streets also create acute angles with M-25, and produce limited sight distances. The motorist must turn his or her head almost completely around to an uncomfortable position to determine whether the roadway is clear.

Consideration should be given to eliminating some of the lower-volume street intersections on M-25, such as Eleventh Avenue, Mansfield Street, and Poplar Street, to decrease the number of unsafe intersections with poor sight distances. In order to preserve existing traffic circulation and provide for adequate land use, a full investigation including traffic counts should be made to determine which streets can be closed.

**Locate Driveways Away from Other Driveways**

The *Michigan Access Management Guidebook* driveway spacing guidelines are shown in Table 3, and indicate that on Segment 1, which has 35 mph posted speed limit, the distance between driveways should be 245 feet. Several driveways on Segment 1 do not meet this guideline.
Table 3. Guideline for unsignalized driveway spacing.

<table>
<thead>
<tr>
<th>Posted Speed Limit</th>
<th>MDOT Spacing Guidelines in Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>130</td>
</tr>
<tr>
<td>30</td>
<td>185</td>
</tr>
<tr>
<td>35</td>
<td>245</td>
</tr>
<tr>
<td>40</td>
<td>300</td>
</tr>
<tr>
<td>45</td>
<td>350</td>
</tr>
<tr>
<td>50</td>
<td>455</td>
</tr>
<tr>
<td>55</td>
<td>455+</td>
</tr>
</tbody>
</table>


Driveway spacing distances can be increased on Segment 1 by eliminating unnecessary driveways. As shown in Figures 8 and 9, consideration should be given to eliminate driveways on parcels with multiple closely spaced driveways.

**Locate Driveways Away from Freeway Entrances and Exits, and RR Crossings**

Railroad tracks intersect M-25 between McPherson Street and Poplar Street in Segment 1 at a skewed angle. The railroad also traverses parking lots at existing commercial developments on M-25. Although it may not be feasible to close existing driveways located close to the tracks, the location of the railroad tracks establishes another reason to consider closing northbound and southbound Poplar Street. The driving task is complicated and difficult for motorists trying to simultaneously cross M-25, McPherson Street, and the railroad tracks.

**Improve Driveway Geometry**

The throat or width of a driveway opening should not be excessively wide or narrow. Driveway openings that are too wide may be a safety concern because they do not encourage controlled flow for entering and exiting vehicles. The driveways shown in blue on Figures 8 and 9, and any others that do not meet ordinance or design standards, should be considered as candidates for geometric corrections.

It is also important that side-street intersection access be designed for safe, efficient traffic flow. Figure 9 shows an excessively wide access opening at the intersection of southbound 10th Street, westbound Mansfield Street and northbound M-25. The existing intersection is very large and access is poorly controlled, generating confusion to motorists attempting to turn at the intersection from any direction. Consideration should be given to closing westbound and eastbound Mansfield at 10th Street to improve geometrics and safety at the intersection.
Offset Design

Offset design involves driveway alignment on opposite sides of the road. Poor offset distances can create safety problems as well as left-turn lock ups. The desirable offset distance between access points on opposite sides of the roadway on undivided highways for varying speed limits are shown in Table 4. If these offset distances cannot be met, the next most desirable design is to eliminate the offset distance completely.

Table 4. Desirable offset distance between two access points on the opposite side of the roadway.

<table>
<thead>
<tr>
<th>Posted Speed Limit</th>
<th>Desirable Offset Distance Between Access Points on Opposite Sides of the Roadway Center-to-Center of Access on Undivided Highways in Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>255</td>
</tr>
<tr>
<td>30</td>
<td>325</td>
</tr>
<tr>
<td>35</td>
<td>425</td>
</tr>
<tr>
<td>40</td>
<td>525</td>
</tr>
<tr>
<td>45</td>
<td>630</td>
</tr>
<tr>
<td>50</td>
<td>750</td>
</tr>
</tbody>
</table>


The posted speed limit along Segment 1 is 35 mph; therefore, the desirable offset distance between access points is 425 feet. The existing average distance between driveways on both side of the roadway is 113 feet, which does not meet this guideline. Although it may not be feasible to provide 425 feet of offset between every access point on Segment 1, efforts can be made so that the offset between driveways is increased, which will improve current conditions.

Properly Spacing and Eliminating Intersections

The proper spacing and elimination of intersections is an important access management technique that should be considered for Segment 1. Due to the orientation of M-25 through the north-south and east-west grid of cross streets, a large number of cross street accesses are at acute angles, and are spaced close together. The number of intersections on the corridor is significantly greater than it would be if the side streets did not intersect M-25 at an acute angle.

Many of the smaller, lower-volume street intersections on M-25 pose a safety concern. Consideration should be given to closing several of these streets to prohibit access to M-25. A full investigation including traffic counts should be made to determine which lower-volume intersecting side streets should be closed. The existing street pattern allows sufficient short-distance links to M-25 even with the elimination of side street accesses. Another option to full street closures is to limit or restrict certain turning movements. As shown in Figure 8, access at Scott Avenue could be better controlled with implementation of forced eastbound and westbound right-turns only onto M-25.
Segment 2 – I-94 Bridge to Canada to Holland Avenue

**Restrict the Number of Driveways Per Parcel**

Suggestions for improving study Segment 2, from I-94/Bridge to Canada to Holland Avenue, are shown in Figures 9 through 12. There are 61 access points in this 1.34-mile segment. The average density of access points 46 per mile, with 30 driveways per mile. Varying driveway densities exist throughout the segment. Lower driveway density exists in the mid-section, as shown in Figure 11. However, in high driveway densities exist in areas at the north and south ends of the segment.

Restricting the number of driveways per parcel will improve safety conditions on Segment 2. Shown in Figures 9 through 12 are examples of several driveways that could be eliminated to reduce the number of driveways per parcel.

**Regulate the Location, Spacing and Design of Driveways**

Segment 2 contains areas with high access density and unnecessary conflict points. Adequate spacing should be provided to ensure safe stopping distances, clear vision and adequate room for acceleration and deceleration, according to the *Michigan Access Management Guidebook*. Shown in Figures 9 through 12 are driveways that should be considered for elimination.

Local governments should consider adopting strict regulations concerning the location, spacing, design, and number of driveways for new developments on Segment 2. Consideration should be given to allow only one driveway per parcel on M-25, and restrictions should be made as to the location of the driveway in relation to intersecting streets.

**Locate Driveways Away from Intersections (Corner Clearance)**

The reasonable corner clearance guidelines for speeds at or greater than 40 mph are 460 feet from a signalized intersection to an adjacent driveway, and 170 feet from an unsignalized intersection to an adjacent driveway. On the southern section of Segment 2, as shown in Figures 9 and 10, many of the intersections have driveways within close proximity and do not meet spacing guidelines.

Although the number of driveways that can be removed or located away from the intersection is limited, several examples of driveways adjacent to intersections that could possibly be eliminated are shown in red in Figures 9 through 12. If these driveways were removed, the corner clearance would be increased at the intersections of M-25 with Hancock Street, Garfield Street, I-94 Connector, and Riverside Drive.

**Locate Driveways Away from Other Driveways**

The distance between driveways on Segment 2, which has 40 mph posted speed limit, should be 300 feet. The southern section of Segment 1 has a higher driveway density than the northern section, and requires access retrofitting. Examples of several driveways that can be eliminated to decrease driveway density in the southern section are shown in Figures 9 through 12.
**Improve Driveway Geometry**

The throat or width of a driveway opening should not be excessively wide or narrow. Driveway openings that are too wide may be a safety concern because they do not encourage controlled flow for entering and exiting vehicles. Several driveways shown in blue on Figures 9 through 12, and other driveways that do not meeting ordinance or design standards, should be considered for geometric improvement.

**Offset Design**

The desirable offset distance between access points on opposite sides of the roadway for a posted speed of 40 mph is 525 feet. On Segment 2, there is an average of one driveway every 177 feet on both sides of the road. Although it may not be feasible to meet the 525 foot desired distance guideline, efforts can be made to improve existing conditions by eliminating unnecessary driveways.

**Properly Spacing and Eliminating Intersections**

The diagonal orientation of M-25 through the north-south and east-west grid pattern of side streets continues north from Segment 1 to Segment 2 at Garfield Street. Similar to Segment 1, the orientation of M-25 has created side-street accesses at acute angles spaced in close proximity to one another.

The skewed intersection of 12th Avenue and M-25, shown in Figure 9, is located very close to two other side-street intersections with M-25, posing difficult turning conditions for motorists traveling southbound on 12th Avenue. As an alternative to completely closing the street at M-25, consideration should be given to restricting traffic flow to northbound travel only at 12th Avenue. Consideration should be given also to closing the short, low-volume segment of Riverview Street at M-25.

**Require Unified Internal Circulation**

As shown in Figure 10, a unified internal circulation network connecting several parking areas could eliminate the need for the number of the existing driveways on M-25. Upon removal of these driveways, motorists could utilize the consolidated site driveway on M-25, as well as the site driveways located on Garfield Street. Garfield Street is a lower-volume and lower-speed street, which would improve safety and operational conditions on M-25. Internal circulation should be designed for smooth traffic flow and to accommodate queues, according to the *Michigan Access Management Guidebook*.

**Provide Alternative Access: Front and Rear Access Drives**

The existing frontage road on Segment 2 between Brandywine Lane and Riverside Drive is shown on Figure 11 and is an excellent example of the implementation of good access management. The frontage road provides access for more than 30 residential drives as well as Concord Place, thereby reducing the number of conflict points and maintaining the capacity of M-25.
Segment 3 – Holland Avenue to M-136

**Restrict the Number of Driveways Per Parcel**

Study Segment 3, from Holland Avenue to M-136, is shown in the top portion of Figure 12 and the bottom portion of Figure 13. Segment 3 has high driveway access density, which poses a safety and operational concern. There are 32 access points in this 0.50-mile segment, averaging 64 access points per mile, with 56 commercial and residential driveways per mile. Many of the commercial establishments on this study segment have multiple driveways.

Restricting the number of driveways per parcel will improve safety conditions on Segment 3. Shown in Figures 12 and 13 are examples of several driveways that should be considered for elimination to reduce the number of driveways per parcel.

**Regulate the Location, Spacing and Design of Driveways**

As previously mentioned, Segment 3 has high access density and unnecessary conflict points. Adequate spacing should be provided to ensure safe stopping distances, clear vision and adequate room for acceleration and deceleration, according to the *Michigan Access Management Guidebook*. As shown in Figures 12 and 13, there are several locations on Segment 3 where the driveway density can be reduced by the elimination and consolidation of unnecessary driveways.

Local governments should consider adopting strict regulations on the location, spacing, design and especially the number of driveways per parcel for new developments on Segment 3. Consideration should be given to allowing only one driveway per parcel on M-25, and limitations should be placed on the location of the driveway in relation to the adjacent intersecting street.

**Encourage Shared Access to Parcels and Consolidate Driveways Where Possible**

An excellent way to limit access points on M-25 is to encourage shared access between businesses, particularly when a large parcel has been previously developed. There are numerous possibilities and combinations for shared access among developments along the M-25 corridor, depending on the willingness of the property owners to consolidate access. Shown on Figures 12 and 13 are examples of consolidation possibilities that include the removal of several unnecessary driveways.

**Locate Driveways Away from Intersections (Corner Clearance)**

The reasonable corner clearance guidelines provided by MDOT are 460 feet from a signalized intersection to an adjacent driveway, and 170 feet from an unsignalized intersection to an adjacent driveway. The signalized and unsignalized intersections on Segment 3 have driveways very close to the intersections and do not meet these guidelines.

Although the number of driveways that can be removed or located away from the intersection is limited, several examples of driveways adjacent to intersections that could possibly be eliminated are shown in red in Figures 12 and 13. For example, consideration should be given to closing the three driveways at Holland Avenue and consolidating them into one driveway for...
shared use between sites. Although implementation of this improvement will not meet corner clearance guidelines, it will improve the current situation by removing unnecessary access points close to the intersection.

**Locate Driveways Away from Other Driveways**

MDOT driveway spacing guidelines indicate that on M-25, which has 40 mph posted speed limit, the distance between driveways should be 300 feet. The existing average distance between driveways on one side of the road in Segment 2 is 189 feet, which does not meet the guideline. Examples of several driveways that should be considered for elimination to decrease driveway density on Segment 3 are shown in Figures 12 and 13.

**Improve Driveway Geometry**

The throat or width of a driveway opening should not be excessively wide or narrow. Driveway openings that are too wide may be a safety concern because they do not encourage controlled flow for entering and exiting vehicles. The driveway shown in blue on Segment 3, and any other driveways that do not meet ordinance or design standards, should be considered as candidates for geometric corrections.

**Offset Design**

The desirable offset distance between access points on opposite sides of the road for a posted speed limit of 40 mph is 525 feet. On Segment 3, there is an average of one driveway every 94 feet on both sides of the road. Although it may not be feasible to meet the 525-foot desired distance guideline, some retrofitting efforts can be made to increase offset distances by eliminating and consolidating driveways.

**Properly Spacing and Eliminating Intersections**

Consideration should be given to closing the access from 24th Avenue at M-25, as shown in Figure 13. This large driveway is located very close to the intersection of M-136 and M-25, which is a high-volume location with operational and safety concerns. Based on the results of the safety analysis, Segment 3 has the largest number of driveway-related crashes per mile, as well as the largest number of injury-related crashes per mile. Removal of the unnecessary driveway will improve operational and safety conditions in the area.

**Provide Connection Between Adjacent Parcels**

With the consolidation of driveways for shared access between businesses, access must also be provided between sites to limit and separate conflicts. The consolidation possibilities shown in Figures 12 and 13 should also include sufficient access links between parking lots.
**Require Unified Internal Circulation**

If 24th Avenue at M-25 is closed, as shown in Figure 13, consideration should be given to unifying circulation through the parking lot to M-136. Internal circulation should be designed for smooth traffic flow and to accommodate queues, according to the *Michigan Access Management Guidebook*.

**Segment 4 – M-136 to Cherry Hill Road**

**Restrict the Number of Driveways Per Parcel**

Study Segment 4, from M-136 to Cherry Hill Road, is shown in Figures 13 through 17. This segment contains a high access density, which poses operational and safety concerns. There are 80 access points in this 1.77-mile segment, which is an average of 45 access points per mile. Forty-one of the 45 access points per mile consist of residential and commercial driveways. Similar to the other study segments, many of the commercial establishments have multiple driveways.

Restricting the number of driveways per parcel will improve safety conditions on Segment 4. Shown in Figures 13 through 17 are examples of several unnecessary driveways that could be eliminated to reduce the number of driveways.

**Regulate the Location, Spacing, and Design of Driveways**

Similar to the other segments on M-25, Segment 4 has high access density and unnecessary conflict points. Adequate spacing should be provided to ensure safe stopping distances, clear vision and adequate room for acceleration and deceleration, according to the *Michigan Access Management Guidebook*. As shown on the top portion of Figure 13 through the bottom portion of Figure 17, there are several locations on Segment 4 where the driveway density can be lowered by the elimination and consolidation of unnecessary driveways.

Local governments should consider adopting strict regulations regarding the location, spacing, design, and number of driveways per parcel for new developments on Segment 4. Consideration should be given to allow only one driveway per parcel on M-25, and limitations should be placed on their location in relation to intersecting streets.

**Encourage Shared Access to Parcels and Consolidate Driveways Where Possible**

An excellent method to limit access points on M-25 is to encourage shared access between businesses, particularly when a large parcel has been developed. There are numerous possibilities and combinations for shared access among developments along the M-25 corridor, depending on the willingness of the property owners to cooperatively consolidate access.

Shown on Figures 13 through 17 are examples of consolidation possibilities that include the removal of several unnecessary driveways. Some driveways could be removed permanently from the site, while others could be removed only in conjunction with an access consolidation plan. It is important to note that a similar number of possibilities exist for driveway consolidation on every segment of M-25.
Locate Driveways Away from Intersections (Corner Clearance)

The reasonable corner clearance guidelines provided by MDOT are 460 feet from a signalized intersection to an adjacent driveway, and 170 feet from an unsignalized intersection to an adjacent driveway. Corner clearances on Segment 4 are generally greater than clearances on Segments 1 through 3.

Several of the driveways that should be considered for removal on the segment are close to signalized and unsignalized intersections. For example, the driveway shown in Figure 13 in the southeast corner of Krafft Road and M-25 could be removed and site access could be shared with the business to the south. This improvement would create a greater distance between the intersection and the adjacent driveway. Shown in Figure 15 is a commercial driveway on M-25 south of Commerce Drive. The property actually abuts Commerce Drive, and the driveway could be relocated to Commerce Drive to provide adequate corner clearance on M-25.

Locate Driveways Away from Other Driveways

MDOT driveway spacing guidelines indicate that on M-25, which has 45 mph posted speed limit, the distance between driveways should be 350 feet. The existing average distance between driveways on one side of the road in Segment 4 is 260 feet. It can be seen on the aerial photo that the distance between driveways on Segment 4 is generally greater than the distance on Segments 1 through 3. Examples of several driveways that are located close to each other and could be considered for elimination on Segment 4 are shown in red in Figures 13 through 17.

Improve Driveway Geometry

The throat or width of a driveway opening should not be excessively wide or narrow. Driveway openings that are too wide may be a safety concern because they do not encourage controlled flow for entering and exiting vehicles. The driveways shown in blue on Segment 4, and any other driveways the do not meet ordinance or design standards, should be considered for geometric corrections.

Offset Design

According to the Michigan Access Management Guidebook, higher traffic speeds require greater driveway separation. Proper driveway spacing is important to provide motorists with sufficient time to slow down and speed up. The desirable offset distance between access points on opposite sides of the roadway at 45 mph is 630 feet, whereas on Segment 4, there is an average of one driveway every 130 feet on both sides of the road.

Although it may not be feasible to meet the 630-foot desired distance guideline, efforts can be made to increase the offset between driveways and improve existing conditions. Shown in Figures 15 and 17 are examples of inadequate driveway offset design. As shown in Figure 15, Commerce Drive and the commercial driveway across from the intersection should be realigned to eliminate the slight offset. Similarly, as shown in Figure 17, the commercial drive on the west side of M-25 should be relocated north to Cherry Hill, which would eliminate the existing offset. The existing design presents operational and safety concerns, such as left-turn lock up on the crossroad.
Provide Connection Between Adjacent Parcels

With the consolidation of driveways for shared access between businesses, access must also be provided between sites to limit and separate conflicts. The consolidation possibilities shown in Figures 13 through 17 should also include sufficient access links between parking lots.

Segment 5 – Cherry Hill Road to Lakeshore Drive

Restrict the Number of Driveways Per Parcel

Study Segment 5, from Cherry Hill Road to Lakeshore Drive, is shown in Figures 17 and 18. Figure 18 does not show the small portion of the M-25 corridor at the intersection of M-25 and Lakeshore Drive because the section was not photographed. Land use on this segment primarily consists of residential and small commercial business driveways.

There are 32 access points in this 0.80-mile segment. The average density of access points is 40 access points per mile, with 38 residential and commercial driveways per mile. Segment 5, similar to the other segments, has high access density, which poses operational and safety concerns on the segment. Restricting the number of driveways per parcel will improve safety conditions on Segment 5.

Regulate the Location, Spacing and Design of Driveways

Segment 5 has a high access density and unnecessary conflict points. Adequate spacing should be provided to ensure safe stopping distances, clear vision and adequate room for acceleration and deceleration, according to the Michigan Access Management Guidebook. As shown in Figures 17 and 18, there are several locations where the driveway density can be reduced by the elimination and consolidation of driveways.

Local governments should consider adopting limitations on location, spacing, design, and number of driveways per parcel for new developments on Segment 5. Consideration should be given to allowing only one driveway per parcel on M-25, with limitations on the driveway location with respect to adjacent intersecting streets.

Encourage Shared Access to Parcels and Consolidate Driveways Where Possible

Shown in Figure 17 are examples of access consolidation that includes the removal of unnecessary driveways. There are a number of other possibilities for consolidation and elimination of driveways, particularly if a rear access road was installed, as shown in red in Figures 17 and 18.
**Locate Driveways Away from Intersections (Corner Clearance)**

Although fewer major road intersections exist on Segment 5 compared to the other study segments, corner clearance is an important feature that should be applied to all intersections. The reasonable corner clearance guidelines provided by MDOT are 170 feet from an unsignalized intersection to an adjacent driveway. Many of the driveways located close to the intersections of M-25 and Cherry Hill, Carrigan Road and Lakeshore Drive could be eliminated upon installation of rear access roads. These changes in driveway location would increase corner clearances at the intersections.

**Locate Driveways Away from Other Driveways**

MDOT driveway spacing guidelines indicate that on M-25, which has 45 mph posted speed limit, the distance between driveways should be 350 feet. The existing average distance between driveways on one side of the road in Segment 5 is 282 feet. With the addition of a rear access road, many of the driveways can be eliminated, which would increase the average distance between driveways. Examples of several driveways that are located in close proximity to each other and could be considered for elimination are shown in red in Figures 17 and 18.

**Improve Driveway Geometry**

The throat or width of a driveway opening should not be excessively wide or narrow. Driveway openings that are too wide may be a safety concern because they do not encourage controlled flow for entering and exiting vehicles. The driveways shown in blue on Segment 5, and any other driveways that do not meet ordinance or design standards, should be considered candidates for geometric corrections.

**Offset Design**

According to the *Michigan Access Management Guidebook*, higher traffic speeds require greater driveway separation. Proper driveway spacing is important to provide motorists with sufficient time to slow down and speed up. The desirable offset distance between access points on opposite sides of the road at 45 mph is 630 feet, whereas on Segment 5, there is an average of one driveway every 141 feet on both sides of the road.

Although it may not be feasible to meet the 630-foot desired distance guideline, efforts can be made to increase the offset between driveways and improve existing conditions by eliminating and consolidating existing driveways.

**Provide Connection Between Adjacent Parcels**

With the consolidation of driveways for shared access between businesses, access must also be provided between sites to limit and separate conflicts. The consolidation possibility shown in Figure 18 should also include sufficient access links between parking lots. As previously mentioned, there are a vast number of other possibilities for driveway consolidation on Segment 5.
Provide Alternate Access: Front and Rear Access Drives

As shown in Figures 17 and 18, consideration should be given to placing a rear access road on the west side of M-25 from the commercial drive north of Cherry Hill to Lakeshore Drive, and on the east side of M-25 from Cherry Hill to Foman Drive. Rear access roads can eliminate the need for many of the driveways located on M-25, while providing adequate and efficient access to existing homes and businesses.

Shown in Figures 17 and 18 are examples of existing driveways that could be eliminated upon installation of the rear access roads. A number of possibilities exist in the relocation of driveways on the new access roads. Increasing the number of driveways that are relocated will increase safety and operations on M-25 by reducing conflict points and preserving capacity. New access points should be designed to connect the access road to M-25. These entrances should be placed with the appropriate offset design, particularly to line up with existing major intersections or each other. It should be noted that the rear access roads should have a visually pleasing and pedestrian-friendly design.

Summary of Techniques for the Study Segments

Shown in Table 5 is a summary of the techniques that could be used to control access. The techniques recommended for consideration are shaded for each of the 5 study segments. These techniques were taken from the Michigan Access Management Guidebook, as described in Chapter 3, Design Techniques to Solve Common Traffic Problems.

Several access management techniques that are not highlighted in the table should generally be considered for the M-25 corridor, but have not been discussed for each segment. Comprehensive field investigations should be conducted to examine the appropriateness of implementing the following techniques.

- Use of medians for high-volume commercial driveways.
- Installing passing lanes or flares at specific locations on the two-lane section.
- Installation or increasing the length of right-turn lanes and left-turn lanes.
- Restricted turns on the roadway for specific traffic movements.
- Signal timing improvements such as providing interconnection and updating phasing, etc.
Table 5. Techniques that should be considered for the study segments.

<table>
<thead>
<tr>
<th>Access Management Technique</th>
<th>Study Segment</th>
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<tbody>
<tr>
<td>Restrict the number of driveways per parcel.</td>
<td>1  2  3  4  5</td>
</tr>
<tr>
<td>Restrict the number of parcels.</td>
<td></td>
</tr>
<tr>
<td>Regulate the location, spacing and design of driveways.</td>
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<tr>
<td>Encourage shared access to parcels and consolidate driveways where possible.</td>
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<tr>
<td>Locate driveways away from intersections (corner clearance).</td>
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<tr>
<td>Provide adequate sight distance.</td>
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<tr>
<td>Locate driveways away from other driveways.</td>
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</tr>
<tr>
<td>Locate driveways away from freeway entrances and exits, and RR crossings.</td>
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<tr>
<td>Restrict turning movements into and out of driveways.</td>
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<tr>
<td>Driveway design for smooth driveway geometrics.</td>
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<tr>
<td>Offset design.</td>
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<tr>
<td>Properly spacing intersections and eliminating intersections.</td>
<td></td>
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<tr>
<td>Medians.</td>
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<tr>
<td>Passing lanes or flares.</td>
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<tr>
<td>Right-turn lanes and left-turn lanes.</td>
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<tr>
<td>Restricted turns on the roadway.</td>
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<tr>
<td>Provide connection between adjacent parcels.</td>
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<tr>
<td>Require unified internal circulation.</td>
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<tr>
<td>Provide alternative access: front and rear access drives.</td>
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<tr>
<td>Provide a supporting circulation system.</td>
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<tr>
<td>Links to local streets.</td>
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<tr>
<td>Spacing between signal locations.</td>
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<tr>
<td>Signal timing.</td>
<td></td>
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<tr>
<td>Adding lanes.</td>
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<tr>
<td>Convert parallel streets to one-way pair.</td>
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<tr>
<td>Construct a bypass.</td>
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<tr>
<td>Prohibit on-street parking.</td>
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</tbody>
</table>

Denotes technique to be considered for individual study segment.
IMPLEMENTATION

Access management is an ongoing program that should be maintained as long as the corridor exists. Because conditions on the corridor evolve and change over time, it is imperative that the plan be updated periodically to meet new opportunities for maintaining and improving access. Due to the ongoing nature of access management, it is necessary to establish a formal process for implementing the plan and ensuring its success over time.

Next Steps

Implementation of the M-25 Access Management Plan requires the following steps.

- **Develop an ongoing Access Management Steering Committee.** A committee, similar to the steering committee that provided review and advice on the establishment of the access management plan presented in this document, should be permanently established. The committee should include representatives of MDOT and the jurisdictions and organizations represented in the development of this plan. The members should meet on a regular basis to review and monitor progress, and to update and revise the plan as needed to improve access on the corridor. The committee should also review and offer assistance and advice regarding access to new development or redevelopment of commercial properties. The reviews would include examination of traffic impact studies and site plan review.

- **Adopt and Implement the Access Management Plan.** The M-25 Access Management Plan should be adopted as part of the comprehensive master plan by the Planning Commissions in the City of Port Huron and in the Charter Township of Fort Gratiot. As part of the approval process, public review and comments regarding the plan should be solicited.

- **Establish a Monitoring and Enforcement Program.** As described in the final section of this report, a monitoring and enforcement program would include an assessment of implemented access management strategies, planned strategies, and identification of problem areas. This program is essential to evaluate the effects of the plan over time and to determine what adjustments or revisions are needed.

Action Plan

Specific operational and institutional recommendations for the M-25 corridor are made in this section. Less expensive improvements can be made by the participating jurisdictions to improve and preserve the present capacity of the corridor, improve safety, and increase the economic vitality of the corridor over time. One of the focuses of the access management plan involves retrofitting the existing infrastructure.

As with most comprehensive implementation plans, the recommended strategies were divided into short- and long-range actions, as outlined in the following paragraphs.

- **Short-Range Actions** – This group of actions includes improvements or strategies that can be implemented immediately or that already have been committed through dedicated
funding or prior action. These actions do not necessarily have to be undertaken. Some of actions may require further study to determine their feasibility and scope, and require jurisdictional cooperation for implementation.

- **Long-Range Actions** – These are recommendations that typically include large-scale or long-term projects that are implemented to accommodate projected future traffic conditions. It would not be uncommon for the suggestions in this category to be 10- to 20-year horizon projects.

A discussion of the strategies included in each group is given in the following paragraphs.

**Short-Range Actions**

The following short-range actions were identified and are recommended for implementation.

**Develop and Implement an Access Management Ordinance**

As discussed throughout this plan, applying the principles of access management to the M-25 corridor will provide benefits such as improved travel time and safety, better utilization of land along the corridor, etc.

It is the responsibility of the local communities to implement ordinances to regulate access to and from state and county highways. The Charter Township of Fort Gratiot has an excellent access management ordinance that is shown in Appendix C, however, the City of Port Huron does not have a similar ordinance. A model access management ordinance is shown in Appendix B. The model ordinance was developed for use by communities. The City of Port Huron should consider adopting a similar ordinance for the M-25 corridor. The ordinance could also be used to manage access on other major roads and streets in the City.

**Establish a Permanent M-25 Access Management Steering Committee**

The M-25 Access Management Steering Committee that provided input into the development of this plan could be used as a basis for establishing a permanent committee to review access management needs and monitor program progress. This is an excellent forum in which the jurisdictions could share, review, and coordinate future access management strategies along the M-25 corridor. This committee should have representation of full-time staff from each jurisdiction that has interests on the corridor, including St. Clair County, the City of Port Huron, the Charter Township of Fort Gratiot, and MDOT.

Mr. Jeffrey Edwards, Transportation Planner from the MDOT Metro Region Office, volunteered at the forth Steering Committee Meeting held on October 15, 2002, to serve as the chair of the permanent M-25 Steering Committee. Mr. Larry Young, Manager of the MDOT Port Huron TSC, and Ms. Madelyn McCarthy, Supervisor, Charter Township of Fort Gratiot also volunteered to serve as committee members, and Mr. Matthew Lewandowski offered to find a volunteer from the City of Port Huron Planning Commission to serve on the committee. The first steering committee meeting was tentatively planned for early January 2003.

The primary activities of the committee were described in the preceding section of this report.
Develop Better Internal Circulation to Existing Land Parcels

It is preferable for the primary access to land adjacent to the M-25 corridor to occur through a system of service drives and access roads. As part of the short-range action goals, it is suggested that existing parcels be retrofitted to achieve this strategy. Access to future parcels should also comply with this strategy. Service or access roads channel traffic to major intersections on the M-25 corridor and reduce conflicts that result from the uncontrolled turning movements allowed to and from direct access driveways. Specific examples of the service drive and access road concept was illustrated in the access management plan presented earlier in this report for each M-25 study segment.

Solicit Voluntary Access Driveway Closures

It is recommended that MDOT and the jurisdictions work together to achieve voluntary driveway closures and other driveway improvements were ever possible. Suggested driveway closures were shown in the access management plan for each M-25 study segment.

**Long-Range Actions**

The following long-range actions were identified and are recommended for implementation.

Application of Access Management Ordinances and Standards

Continued and consistent application of the adopted access management ordinances and standards, throughout the corridor on an ongoing basis will be necessary to provide the optimum benefit of access management for the long-term. Periodic monitoring of access management standards and strategies will aid in identifying problem areas and permit revisions and updates to the ordinances and standards.

Evaluate and Implement Non-motorized Plans for the Corridor

Corridors such as M-25 usually will experience a correlation between the number of trips that are taken by non-motorized travelers and the amount of viable facilities that are available for non-motorized traffic. There are currently very few amenities available on the M-25 corridor to attract and encourage non-motorized trips. Pedestrians and bicyclists need attractive and convenient means to travel within and between commercial and residential areas. Sidewalks, bike racks, resting benches, and paths are, for all practical purposes, not available on many portions of this corridor.

The M-25 Access Management Steering Committee should investigate feasible methods and funding mechanisms available for improving and encouraging non-motorized travel.
**Promote Rear Access and Side Street Access**

Application of this strategy can reduce the access points along M-25 by redirecting access to service roads. Planning of how and where these routes can be implemented must be considered as affected parcels are scheduled by developers for site plan review. Such access routes can only be implemented if the long-range goal is kept in mind during the site plan review and approval process.

Service drives should be encouraged and required wherever feasible. Several rear access service roads were identified and are discussed in the access management plan.

**Process for Deviation from the Guidelines**

The design standards and access management techniques outlined in the *Michigan Access Management Guidebook* and discussed in this document have been shown to be effective in improving safety, reducing congestion, and providing other benefits. The standards and guidelines should always be applied as the first course of action. However, due to the wide range of unique conditions typically found on a highly developed corridor such as M-25, it is recognized that some flexibility is needed in administering the standards.

Waivers or exceptions to zoning ordinances for access management should be established in each jurisdiction. General situations that may be considered for exceptions include historic properties or locations; unusual topography that is causing a problem; emergency vehicle concerns; and no other reasonable or economically feasible solution is possible. An applicant requesting waiver or a variance for access approval shall provide documented proof of the need by a professional engineer with traffic engineering experience. The document should include a review and analysis of each applicable access alternative, and the reason the alternative cannot be used. For example, if access via a shared driveway is not possible, the engineer should show why it is not a feasible alternative, e.g., the presence of existing buildings or topographic conditions. In some cases, shared access may not be possible because permission is not granted by the adjacent property owner. In this case, a letter from the property owner stating that permission to share the driveway is denied should be obtained.

Upon submission of the engineer’s report, the Planning Commission or Zoning Board of Appeals will determine if alternative access techniques or site designs have been adequately addressed.

**Monitoring and Enforcement Program**

As previously mentioned, access management requires a long-term commitment on behalf of MDOT and the local jurisdictions. Part of that commitment is to establish a monitoring and enforcement program. The M-25 Access Management Steering Committee should establish the monitoring and enforcement program and review periodic reports on the progress of access management throughout the corridor.

The program should include an assessment of implemented access strategies, planned strategies, and identification of problem areas. The assessment should include an evaluation of the effectiveness of implemented efforts based on a number of variables including safety and
traffic operational impacts, number of closed or consolidated driveways, business impact, improved non-motorized access, etc.

The program should also include periodic reports of any enforcement action taken against the creation of unauthorized driveways, establishments where business use has changed, etc.

The results of the monitoring and enforcement program should be used to examine the progress of the access management plan and to determine what future actions are needed to improve the program.
APPENDIX A – MINUTES OF MEETINGS
APPENDIX C – CHARTER TOWNSHIP OF FORT GRATIOT
ACCESS MANAGEMENT ORDINANCE