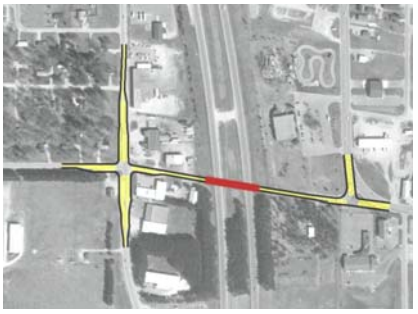
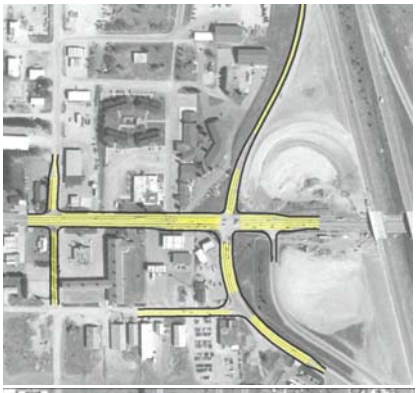
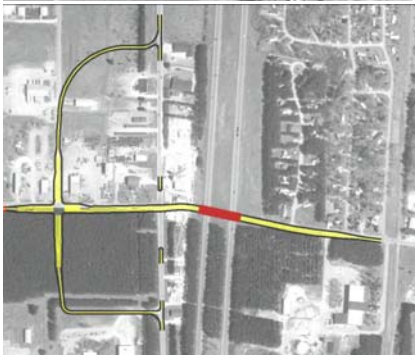
I-75 Gaylord East-West Crossing Study Report







Prepared for:

Northeast Michigan Council of Governments (NEMCOG)

NEMCOG

In Partnership with:

City of Gaylord
Michigan Department of Transportation
Otsego County Road Commission
Otsego County
Otsego County Economic Alliance
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SECTION 1 - INTRODUCTION

This report presents information for the I-75 East-West Crossing Study in Gaylord, Michigan. This study investigated traffic operations and road system improvements in and around the City of Gaylord. The report is broken into six main sections, each of which describes an important element of the study:

1. Introduction and Background Information
2. Evaluation of the Existing Situation
3. Evaluation of Future Needs
4. Road Improvements
5. Public Involvement
6. Recommendations

1.0 BACKGROUND

Gaylord is located in Otsego County in the north central part of Michigan's lower peninsula and is about 60 miles south of the Mackinac Bridge. Interstate Highway 75 (I-75) runs north-south through the City of Gaylord and connects the area with destinations outside the general region. I-75 also connects to other major highways and Michigan's heavily populated central and southern regions. Running east-west through the northern part of Gaylord is M-32 (Main Street). This state trunkline connects Gaylord with other northern Michigan cities such as Alpena and East Jordan. Gaylord has two I-75 interchanges (Figure 1). These are located about three miles apart at Main Street (exit 282) and the I-75 Business Loop (Otsego Avenue) (exit 279). Otsego Lake is a major natural feature located just to the southwest of the Otsego Avenue interchange with I-75.

Gaylord is the urban center of Otsego County, a regional market center, and also a year-round tourist and recreational destination. Gaylord has been experiencing steady growth in population (both full and part time residents) and development over the last 20 years. Otsego County's economic base (centered in and around Gaylord) is composed of manufacturing, wholesale/distribution, oil and gas (the county is the largest producer of natural gas in the state), construction, and high value destination tourism. Like many northern Michigan cities, Gaylord has also attracted vacationers, retirees, and part-time residents who enjoy the area's quality of life. Although I-75 was originally constructed to the west of Gaylord's developed areas, expansion of the city and nearby townships (Livingston, Hayes, and Bagley Townships) to the west has resulted in substantial development on both sides of I-75 (Figure 1). Located on the west side of I-75 are residential areas, the Otsego County Airport, industrial areas near the airport, and commercial development along Main Street and Dickerson Road. There is also a substantial amount of undeveloped land to the west of I-75. On the east side of I-75 lies most of the City of Gaylord. This area is a mixture of residential neighborhoods; commercial development along Otsego Avenue, Main Street, Wisconsin Avenue, Grandview Boulevard, Johnson Road, and Old US-27 (Center Street); institutional uses; and undeveloped areas.

The north-south road system in Gaylord and surrounding areas is well developed and includes the following collector and arterial routes: Krys Road, Otsego Avenue, I-75, Dickerson Road, and Townline Road (Figure 1). These routes accommodate both short and long distance trips and have adequate connections to the rest of the road system. However, east-west travel in the area is

hindered by the lack of continuous routes that cross I-75. Within the entire study area, there are only two roads that cross I-75 (Main Street and Otsego Avenue), and Otsego Avenue turns and runs north-south just to the east of I-75 (Figure 1). Local routes such as Fairview Road, Grandview Boulevard, McCoy Road, Johnson Road (east side of I-75), Five Lakes Road, Van Tyle Road, Milbocker Road, and North Otsego Lake Road (west side of I-75) facilitate local circulation and connections but do not accommodate longer trips because they do not cross I-75 (Figure 1). In developed areas like Gaylord, a general guideline is that there should be a continuous arterial route for longer distance travel located approximately every one mile. While this guideline is generally accomplished for north-south routes, it is not met for east-west roadways. In addition to the main routes noted in this paragraph, there are numerous local and minor collector streets throughout the study area. These are shown in Figure 1, and Figure 2 shows the official road classifications for the study area (based on Otsego County's Act 51 map).

With population growth, new development (especially to the west of I-75, including the industrial areas near the airport), and limited options for east-west travel, traffic congestion has developed in the study area (this is described in detail in subsequent sections of the report). As a result of this congestion, overview studies have been performed by the Michigan Department of Transportation (MDOT) and the Northeast Michigan Council of Governments (NEMCOG) during the past five years. These studies identified important background information and focused in on some of the general causes of the congestion (limited east-west routes; land use patterns including industrial areas near the airport; undesirable driveway access conditions). These studies served as a starting point for the current study.

The current study is sponsored by NEMCOG in partnership with Otsego County, MDOT, the City of Gaylord, Bagley Township, Hayes Township, Livingston Township, the Otsego County Economic Alliance, and the Otsego County Road Commission (OCRC). Collectively, these entities made up the Technical Steering Committee for the project. This committee met regularly during the course of the project and made decisions at key milestones. The committee contracted with a team of consultants led by DLZ Michigan, Inc. (DLZ) to perform the study. Also on the consultant team was Midwestern Consulting, LLC (Midwestern). During the study, the Technical Steering Committee and consultant team also met periodically with an Advisory Committee. The Advisory Committee consisted of local stakeholders representing government agencies, private businesses, and interested citizens. This group provided input regarding the study and helped inform their respective constituencies about the status of the project. The current study commenced in July, 2003, with completion in June, 2004.

1.1 PROJECT GOALS AND PURPOSE

Taking into account the background information noted in the preceding section, several goals were developed early in the study to guide the process:

- Identify existing and future traffic problems, primarily as they relate to east-west travel across I-75, including traffic congestion and commercial vehicle routing.
- Identify practical short and long term solutions for existing and future traffic problems. Solutions shall support commercial and residential growth and local goals for pedestrians and bicycle circulation.
- Provide recommendations to fund road improvements.
- Collect input from the public, business, and government agencies for consideration throughout the study.

These goals led to development of the following project purposes which were used to evaluate the road improvement options that were eventually developed:

- Improve east-west travel efficiency
- Eliminate traffic congestion at the two interchanges
- Eliminate non-interchange traffic congestion
- Improve freeway access and circulation for trucks
- Reduce crashes, especially on Main Street
- Provide opportunities for aesthetic improvements and non-motorized travel

In order to meet these purposes, a three phase study was undertaken by the consultant team under the direction of the Technical Steering Committee. The following three sections of this report describe these three phases.

SECTION 2 - PHASE I: ASSESS EXISTING CONDITIONS

2.0 OVERVIEW

This phase of the study involved an assessment of existing peak hour traffic conditions in the study area. In order to perform this evaluation, data collection and traffic modeling with computer software were undertaken. This resulted in identification of existing peak hour traffic operational and crash problems. This phase also served as the baseline for subsequent evaluations in phases II and III of the study. This section of the report describes the methods used and results for phase I of the study. Off peak traffic operations were not evaluated as part of the study.

2.1 METHODS

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2.1.1 Traffic Data

The first main task undertaken as part of this phase was to collect traffic data for the peak traffic hour. Based on coordination with the Technical Steering Committee and evaluation of 24-hour traffic count data, it was determined that the existing peak hour occurs on weekend days in the summer between noon and 4:00 pm. This is due to the very heavy volumes of tourist and recreational traffic in Gaylord. Existing traffic data that had been collected within the past five years by NEMCOG, MDOT, the City of Gaylord, and the Otsego County Road Commission was provided to the consultant team for review. This information was supplemented with additional traffic counts at all relevant intersections in the study area. In July and August, 2003, peak hour turning movement counts were obtained at the intersections listed in Table 1. Appendix A includes existing peak hour turning movement counts.

Although the highest traffic volumes in the study area occur during weekend afternoons in the summer, the study also included supplemental evaluation of weekday AM and PM peak hours. Weekday peak hour traffic tends to be commuters going to and from work. This supplemental analysis was conducted at eight main intersections to assure a thorough evaluation in case any locations had substantially different turning patterns or volumes. The eight intersections where weekday counts were collected during April, 2004, included:

1. South Otsego Avenue and Grandview Blvd
2. South Otsego Avenue and Commerce Blvd
3. M-32 and Krys Road
4. Old US 27 and North Otsego Lake Drive
5. M-32 and Meecher Road
6. Dickerson and Mankowski Road
7. M-32 and South Otsego Avenue
8. M-32 and Wisconsin Ave

Section 4 of this report includes additional details about how the weekday peak hour analysis was conducted to supplement the weekend peak hour analysis.

Table 1 Location of Peak Hour Turning Movement Counts

Intersection ID	Intersection Name
1	Five Lakes Rd & Murner Rd
2	Five Lakes Rd & Meecher Rd (North Leg)
3	Five Lakes Rd & Meecher Rd (South Leg)
4	Old 27 & McLouth Rd
5	Hayes Rd & McLouth Rd
6	Petoskey St & Ohio Ave
7	Petoskey St & Otsego Ave
8	Petoskey St & Center Ave
9	Petoskey St & Hayes Ave
10	Fourth St & Wisconsin Ave
11	Fourth St & Otsego Ave
12	Fourth St & Center Ave
13	Milbocker Rd & Plywood Rd
14	McCoy Rd & Evergreen Dr
15	McCoy Rd & Krys Rd
16	Johnson Rd & Krys Rd
17	Johnson Rd & Evergreen Dr
18	Johnson Rd & Otsego Ave
19	Old Alba Rd & North Otsego Lake Dr
20	Old Alba Rd & Fowler Lake Rd
21	Otsego Ave & McCoy Rd
22	Old 27 & NB I 75 Entrance Ramp
23	Old 27 & NB I 75 Exit Ramp
24	Old 27 & SB I 75 Entrance Ramp
25	Old 27 & SB I 75 Exit Ramp
26	Old 27 & North Otsego Lake Dr
27	Dickerson Rd & North Otsego Lake Dr
28	Otsego Ave & Grandview Blvd
29	M 32 & Krys Rd
30	Main St & Hayes Rd
31	Main St & Center Ave
32	Main St & Otsego Ave
33	Main St & Wisconsin Ave
34	Main St & NB I 75 Entrance Ramp/NB I 75 Exit Ramp
35	Main St & Ohio Ave
36	Dickerson Rd & Van Tyle Rd
37	Main St (Eastbound) & SB I 75 Entrance Ramp
38	Main St & SB I 75 Exit Ramp/Dickerson Rd
39	Main St & Meecher Rd
40	M 32 & McVannel Rd
41	Old Alba Rd & Plywood Rd
42	Townline Rd S & Van Tyle Rd
43	M 32 & Townline Rd
44	Dickerson Rd & Van Tyle Rd

In addition to these peak hour counts, 24-hour counts were conducted at the following locations:

Main Steet: between Krys and Hayes, between Center and Ohio, between east and west I-75 ramps, between Dickerson and Meecher, and between Townline and Murner
Dickerson Road: just north of O'Rourke Blvd., just south of Milbocker

Milbocker Road: between Dickerson and Plywood
N Otsego Lake Drive: between Dickerson and Old 27
Otsego Avenue: between I-75 ramps and McCoy, between McCoy and Grandview
Murner Road: just north of Main
Ohio Avenue: just north of Main
Center Street: just north of Main
Hayes Road: just north of Main
Krys Road: just south of Main

Existing 24-hour traffic volumes from these counts are shown on Figure 3. These 24-hour counts also included vehicle classifications so that commercial and non-commercial volumes could be analyzed.

An important issue that was addressed during the traffic count process was the effect that Dickerson Road construction had upon traffic patterns. Dickerson Road was under construction as part of a new Super Wal-Mart development. To address this issue, a second round of traffic counts were collected when construction was completed in September. Comparing the two rounds of traffic counts with historic counts and traffic impact studies for the area allowed for reasonable estimation of traffic patterns at the intersection. Construction on M-32 to the east of Gaylord was also underway during the counting period but did not affect local traffic patterns.

While traffic counts were being undertaken, information about primary traffic origins and destinations in the study area was obtained. This information was acquired from previous studies (e.g., an MDOT sub area model and the *M-32 & Old 27/I-75 Business Loop Corridor Study* - NEMCOG 2000), land use information and maps, socioeconomic data (e.g., U.S. Census data and economic data developed by the University of Michigan), aerial photos, interviews with members of the Technical Steering Committee, and windshield surveys of the study area. The general location of major existing traffic generators is shown in Figure 4.

Timing plans for all existing traffic signals in the project area were collected. These plans were obtained from MDOT and OCRC for existing signals along Main Street and Otsego Avenue. Discussions with these agencies indicated that the timing plans were up to date, and the timings indicated in the plans were the same as those programmed in the field.

Average travel speeds were observed and calculated for the main routes in the study area during the peak hour. Also, the locations of on-street parking and intersection geometry (i.e., number and type of lanes on each approach) were noted, and photographs of all intersection approaches were taken. Posted speeds were recorded as well.

The last major category of traffic data gathered was information related to commercial (truck) traffic. This information was collected through three methods. First, a survey of local business was prepared, distributed, and results tallied. This survey was designed to identify commercial traffic patterns. Details regarding the survey are included in Appendix B. Second, the percent of east/west and north/south traffic by classification (commercial vs. non-commercial) was gleaned from the 24-hour counts that were noted above. Last, truck percentages were recorded for key locations during collection of peak hour turning movement counts. Information about trucks was used to assess their impact upon traffic operations and also to evaluate the need for a separate truck route.

2.1.2 SYNCHRO Model for Existing Conditions

Using the traffic data, signal timings, noted in 2.1.1, a SYNCHRO computer traffic model was developed for the existing situation in the study area. The purposes of this model were to characterize the existing peak hour traffic operations and to serve as a baseline for analysis of future traffic conditions. SYNCHRO is a peak hour model that accounts for interactions between intersections. It predicts traffic impacts caused by microscopic changes in roadway and intersection geometry, traffic operations strategies, and traffic signal timing changes. SYNCHRO can be used to produce overall measures of effectiveness (MOEs) including total travel times along various routes. The existing conditions SYNCHRO model that was developed for the study area included all arterial and collector routes and major intersections.

The general steps that were followed in development of the SYNCHRO model include:

- The base SYNCHRO model was created to simulate the lane configurations, intersection controls, posted travel speeds and other characteristics of the network.
- Peak hour turning movement counts were loaded into the SYNCHRO model at each intersection.
- Adjustments were made to road link volumes to account for major mid-link driveways at heavy generators of traffic. This resulted in a balanced traffic flow model.
- The initial SYNCHRO run output was compared to the traffic volumes collected and the actual travel speeds recorded for each link in the SYNCHRO model. If the SYNCHRO average speed was more than 5 mph different from the actual recorded travel speed for a road link, the model was adjusted by changing the free-flow speed up or down until the two speeds were within 5 mph.
- The SYNCHRO model was run, and the SIMTRAFFIC program was used to view the resulting intersection operations and queue lengths. Backups in the model were compared with field notes to verify their occurrence and queue length to make sure that the model accurately simulated problems on individual approaches/movements. Minor adjustments were made to accurately calibrate the model to field conditions.
- The SYNCHRO report generation feature was used to generate Highway Capacity Software 2000 (HCS) outputs to identify the Level of Service (LOS) for each intersection, intersection approach, and road segment. LOS is a qualitative measurement that reflects the degree of congestion and amount of delay experienced by motorists. LOS is expressed as a letter between A and F. LOS A represents a situation where motorists experience minimal congestion, minimal delays, and free-flow travel. At the other end of the spectrum, LOS F represents a situation where motorists experience extreme congestion, long delays, and severely impeded traffic flows. LOS A, B, C, and D are all considered acceptable with LOS E and F being unacceptable. Figure 5 shows the LOS calculations for the existing condition in the study area.

Additional details regarding the SYNCHRO model and methodology are included in Appendix C.

2.1.3 Crash Data

Although not the primary focus of the study, crash data was also collected. This data was obtained from NEMCOG's Geographic Information System (GIS) database for the most recent years available which were 1997 through 1999. Crash locations were then displayed on base mapping to identify crash clusters.

2.2 RESULTS

The evaluation of existing conditions showed that peak hour traffic operations problems and crash concerns presently exist. The following bullets summarize existing problems:

- The combination of land use patterns, new development (residential, commercial, and industrial) causing increased traffic volumes, and a limited number of continuous east-west routes leads to peak hour traffic congestion. Numerous different categories of motorists (e.g., local traffic going to commercial sites, longer distance through traffic, I-75 travelers stopping for services, and those traveling for work) are all using the same segments of Main Street and Otsego Avenue at the same time. Peak hour traffic congestion exists along Main Street at the I-75 interchange; along Otsego Avenue at the I-75 interchange; and at the Otsego Avenue/Grandview Avenue intersection. All of this congestion occurs at intersections which have at least one turning movement that is at Level of Service (LOS) E or F during the peak hour. The specific areas of concern are shown in red (which indicates LOS E or F) on Figure 5. The duration of existing peak hour problems varies, but it is not uncommon for congestion to last for several hours on summer weekends.
- Trucks and recreational vehicles (RVs) together make up between six and eight percent of total traffic on the main arterial routes during the peak hour (Figure 6). The split between trucks and RVs is about even on most routes. These percentages are not unusual for such routes and do not, on their own, cause traffic operation or safety problems.
- There are relatively high numbers of crashes at some locations in the study area. The main area where crashes are a concern is along Main Street between Meecher Road and Wisconsin Avenue. Crash locations for 1997-1999 (the most recent three years where reliable data was available) are shown in Figures 7, 8, and 9.
- The current number and location of driveway access points reduce road capacity and contribute to crashes, especially along Main Street. To a lesser degree, this situation also exists on Otsego Avenue and Dickerson Road.
- Existing land use patterns do contribute to the peak hour congestion problems.

SECTION 3 - PHASE II: DETERMINE FUTURE NEEDS

3.0 OVERVIEW

Future needs in the study area were assessed using the SYNCHRO model that was developed during the existing conditions phase of the study. The objective of this task was to define the peak hour traffic operations problems that will occur in 2015 and 2025 without construction of any road improvements (i.e., the "No Build" scenario). This evaluation will highlight future problems that need to be addressed by road improvements and will serve as the justification for these improvements. Off-peak traffic operations were not analyzed.

3.1 METHODS

This phase began with a review of future land use projections, household and employment growth estimates, and other demographic data for years 2015 and 2025. It also involved assessment of economic forecasts produced by the University of Michigan (REMI data) and the MDOT sub-area traffic model. Together with historic traffic growth rates, this information was used to develop a background growth factor for 2015 and 2025 peak hour traffic. The growth factor was developed based on the professional judgment of the consultant team and Technical Steering Committee members after considering all of the relevant information noted above. The background factors that were agreed upon were one and one half percent per year between 2003 and 2015 and one and one quarter percent between 2015 and 2025. The growth factors were then applied to the existing traffic volumes to develop year 2015 and 2025 peak hour traffic volumes based on background growth. This served as the background traffic volumes for these years. In addition to these background volumes, additional traffic generated by specific proposed or planned developments (as shown on proposed site plans) was taken into account. For such sites, additional traffic volumes were generated onto the segments of the road network where they would most likely travel. The distribution of these new development trips to the roadway network was made according to the directional distributions contained in the existing conditions SYNCHRO model. Figure 10 shows the location of new developments that were assumed to be primary origins and destinations for the future condition.

Using the SYNCHRO model developed during the existing conditions (year 2003) phase of the project, committed future road improvement projects that affect capacity (other than those being considered as a part of this project) were added. These included projects that the road agencies involved in the study are planning to undertake regardless of what happens with the results of this study. These include:

- Construction of Industrial Park Drive
- Extension of McVannel Road
- Extension of Edelweiss Village Parkway
- Construction of a four-lane boulevard on Otsego Avenue between the I-75 interchange and Commercial Drive
- Extension of Commercial Drive
- Construction of Dale Drive
- Construction of Fantasy Drive

This resulted in the base road network for the No Build Alternative. Using the 2003 peak hour traffic volumes with background growth factors applied, the SYNCHRO model was run for peak hour traffic in 2015 and 2025. These were classified as "low growth" scenarios because they only included background growth, but not growth caused by specific new developments. For the low growth scenarios, no changes were made to traffic management strategies, and no new traffic signals were added. Existing traffic signal cycle lengths were optimized for the entire system.

"High growth" scenarios were also developed for 2015 and 2025 by adding traffic caused by specific developments to the low growth peak hour volumes. The SYNCHRO model was then run for these high growth scenarios. New development trips were generated for each known development and distributed to the roadway network by a travel time gravity model. There were 19 development trip end locations in the gravity model. New traffic signals were added where these were identified in traffic impact studies for new developments. Existing traffic signal cycle lengths were optimized for the entire system.

For 2015 and 2025, low and high growth scenario peak hour LOS was determined for the No Build Alternative at intersections and road segments using SYNCHRO and HCS 2000 evaluations. This analysis identified deficient intersections (LOS E or F) and road segments. The analysis also identified those intersections where at least one approach would experience LOS E or worse, but would maintain an overall LOS that is better than E. The year 2015 and 2025 predicted LOS are shown in Figures 11 through 14. After reviewing the results, the Technical Steering Committee concluded that the high growth scenarios would be used for evaluation and planning purposes as these most closely represent what would likely occur.

Appendix D includes a more detailed description of the modeling methodology for future conditions.

3.2 RESULTS

The evaluation of future conditions showed that peak hour traffic operations problems in the study area will worsen substantially without road improvements. The following bullets summarize these future problems:

- By 2025, serious peak hour traffic congestion will exist along Main Street at all major intersections; along Otsego Avenue at numerous intersections, especially near its I-75 interchange; and at numerous other intersections across the road network including along Dickerson Road, Johnson Road, and Krys Road. This congestion occurs at intersections which have at least one turning movement that is at Level of Service (LOS) E or F during the peak hour. The specific areas of concern are shown in red (which indicates LOS E or F) on Figures 11 through 14. The basic causes of this situation in the future are the same as those that presently exist. The duration of these problems would likely last longer than existing problems, with congestion possibly lasting for several hours at a time.
- Problems will gradually worsen between now and 2025 with some additional peak hour congestion occurring by 2015 and the rest by 2025. This is Illustrated in Figures 5 and 11 through 14 which show gradually worsening traffic operations between now and 2025. There is one minor exception to this conclusion. At one specific location (on M-32 near the I-75 interchange), the predicted peak hour LOS for the low growth scenario actually improves from 2015 to 2025 (Figures 11 and 13). This is due to the fact that congestion predicted for 2025 at adjacent intersections does not allow traffic to reach the road segment

in question. Because traffic cannot reach this location in large numbers, the LOS predicted in the SYNCHRO model actually improves.

- Crashes are expected to increase, especially along Main Street and Otsego Avenue near the I-75 interchange.

SECTION 4 - PHASE III: ROAD IMPROVEMENTS

4.0 OVERVIEW

This phase of the project focused upon the development and evaluation of potential solutions to the peak hour problems identified in the preceding two phases of the study. These solutions included a variety of different road improvement concepts. As with the previous phases of the study, the focus was on solutions for the peak hour, and off-peak conditions were not analyzed.

4.1 METHODS

4.1.1 Road Improvement Concepts

The first step that was undertaken for this phase of the study was to identify road improvements that could address the existing and future problems in the study area. Based on the problems that would occur with no road improvements, the following alternatives were identified for evaluation and comparison:

Alternative 1

Alternative 1 included the following:

- Upgrade and/or reconfigure Interchanges 282 and 279
- New crossing over I-75 at Fairview Road/Five Lakes Road
- New crossing over I-75 at Wisconsin Avenue/VanTyle Road

Alternative 2

Alternative 2 included the following:

- New interchange between the existing interchanges 282 and 279 at or near the existing Milbocker and McCoy Roads

Alternative 3

Alternative 3 included the following:

- Upgrade existing traffic signals by adding lanes where needed and changing signal operations (phasing, cycle lengths, coordinating with adjacent signals, etc.)
- New signalized intersections where needed
- Road widenings on those segments where needed
- New crossing over I-75 at Wisonsin Avenue/VanTyle Road
- New crossing over I-75 at McCoy Road/Milbocker Road

Alternative 4

Alternative 4 included the following:

- Replacement of problem intersections with modern roundabout intersections
- Road widenings on those segments where needed
- New crossing over I-75 at Wisconsin Avenue/VanTyle Road
- New crossing over I-75 at McCoy Road/Milbocker Road

Alternative 5
Alternative 5 included the following:

- Intersection upgrade and/or minor reconfiguration of Interchanges 282 and 279

Minor Changes Included in All Alternatives
There are a number of relatively minor changes that were included in all of the alternatives:

- Designation of an alternate route for trucks which would move traffic around the downtown business district to the south of M-32 using local roads
- Signing Thumb Lake Road for east-west travel between US-131 and I-75
- Implementation of access management measures and a joint permit review process
- Signal timing optimization and coordination
- Implementation of a coordinated land use planning system

For all of these alternatives, conceptual road designs were drawn over the top of aerial photographs. These drawings were to scale and had correct geometry for a concept level analysis (i.e., with minor adjustments during design, they would meet the requirements of relevant design standards). These alternative road improvement drawings are shown as Figures 15 through 19.

4.1.2 SYNCHRO Analysis
Starting with the SYNCHRO peak hour model developed for the future condition, 2025 high growth scenario (developed during the previous phase of the project), road improvements were added to the road network for each alternative. Using the projected future peak hour traffic volumes, the SYNCHRO model was run for each concept. The resulting intersection LOS and travel time information for various routes was evaluated, and traffic volumes were redistributed to equalize travel times and LOS using several iterations of a travel-time algorithm. This is representative of what would actually occur as motorists adjust their travel patterns within the overall road network to minimize travel times. Once these balanced flows were set, 2025 peak hour LOS was determined for each concept at intersections and road segments using SYNCHRO and HCS 2000. For Alternative 4, the software Rodel was used to evaluate intersection LOS for the modern roundabouts, and queues at adjacent signalized intersections were evaluated to assure that the roundabouts would not interfere with signal operations (this was accomplished by performing additional SYNCHRO runs customized to the situation).

Appendix E contains a detailed description of the methodology used to predict future traffic volumes for the alternatives and to evaluate their traffic operations.

4.1.3 Evaluation of Road Improvement Concepts
In order to evaluate the road improvement concepts, analysis was performed to compare the improvements against each other for the following main categories:

- East-west traffic movement
- Traffic congestion at interchanges
- Non-interchange traffic congestion
- Freeway access for trucks
- Safety
- Negative impacts
- Parking impacts

- Cost
- Accommodation of pedestrians and bicyclists
- Aesthetic opportunities

Planning-level cost estimates were developed for the road improvement concepts. These cost estimates (which are in year 2004 dollars) were developed using basic calculations (e.g., area of new pavement, area of pavement to be removed, structure type, etc.), typical costs on similar projects, and the professional judgment of the consultant team. Because these are planning-level estimates, a contingency factor of 30 percent was included to account for unknown factors that often arise when more detailed investigation is completed. Details regarding the cost estimates are included in Appendix F. Table 2 shows the main categories evaluated in the analysis.

4.1.4 Weekday Peak Hour Analysis

As has been previously noted, the peak traffic conditions which regularly occur in the project area happen on weekend afternoons between May and September due to the extremely high recreation-related traffic volumes in the study area. Therefore, this time frame was the main focus of the analysis. However, the Technical Steering Committee and consultant team recognized that traffic patterns were potentially different during the weekday AM and PM peak hours when travel patterns are primarily determined by commuters going to and from work. For this reason, it was decided that additional analysis would be performed for the weekday peak hours at key intersections identified as potential concerns by the Technical Steering Committee and consultant team.

This analysis began in April, 2004, with collection of AM and PM peak hour turning movement counts at eight intersections with separate counts performed for automobiles and trucks. The intersection of Otsego Avenue and Grandview Boulevard served as the control intersection and was compared to the other intersections that were counted. The eight intersections counted include:

1. Otsego Avenue and Grandview Blvd (control intersection)
2. Otsego Avenue and Commercial Drive
3. M-32 and Krys Road
4. Old US 27 and North Otsego Lake Drive
5. M-32 and Meecher Road
6. Dickerson and Mankowski Road
7. M-32 and Otsego Avenue
8. M-32 and Wisconsin Ave

Weekday peak hour counts were compared to the previous counts collected during the summer of 2003. At any intersection with one or more turning movements exceeding the 2003 weekend counts by 15 percent or more, additional analysis was performed. If none of the turning movements at an intersection exceeded this benchmark, it was assumed that the road improvement concepts developed for the weekend peak conditions would also accommodate the weekday peak traffic. This analysis showed that weekday peak hour counts exceeded weekend peak counts by more than 15 percent at only one intersection. This occurred at the intersection of M-32 and Meecher Road. Additional analysis for this intersection was performed and involved checking the road improvements concepts against existing and future weekday peak hour volumes. This analysis included calculation of future LOS using HCS 2000. This analysis showed that adjustments to signal timing would accommodate the weekday peak hour traffic

patterns at this intersection. Therefore, weekday peak hour traffic volumes would be accommodated by the road improvements options under consideration.

4.2 RESULTS

Table 2 shows the results of the analysis conducted for the five alternatives for the main evaluation categories. As the first and second rows of this table (shaded gray) demonstrate, the alternatives include diverse road improvements which address different problems. The alternatives can be loosely grouped together based on the types of problems that they address and the extent of the road improvements encompassed. Alternative 5 provides the lowest level of improvement and addresses the least amount of problems. Alternatives 1 and 2 deal with more of the problems and are comparable in scope to each other. Alternatives 3 and 4 address the greatest range of issues and can be compared to each other. Based on this situation, the alternatives provide a variety of choices for addressing differing transportation needs.

The most important general conclusions that can be drawn from Table 2 include:

- Alternative 1 provides limited benefits at a relatively high cost.
- Alternative 2 provides the best benefit for truck access into the industrial areas near the airport, but does not solve peak hour traffic congestion problems at the two existing I-75 interchanges.
- Alternatives 3 and 4 have the highest costs and negative impacts, but also address the greatest number of problems and offer the greatest benefits.
- Alternative 4 provides the best overall peak hour traffic congestion relief, safety, and aesthetic opportunities, but it costs about $1.3 million more than Alternative 3.
- Alternative 5 would provide short-term improvements with minimal impacts and relatively low cost.

The evaluation information presented in Table 2 (as well as more detailed information about each individual location from the technical analysis) formed the basis for the recommendations which are included in Section 6.

Table 2 Alternative Evaluation Comparison (for Year 2025)

TOPIC	COMMENTS	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4	ALTERNATIVE 5
Main Components	Main road improvement elements included in the alternative	• **Interchange upgrades** • **Five Lakes/Fairview crossing** • **Van Tyle/Wisconsin crossing**	• **New Interchange at Milbocker/McCoy**	• **Interchange upgrades** • **Van Tyle/Wisconsin crossing** • **Milbocker/McCoy crossing** • **New/upgraded signals across local system** • **Road widenings**	• **Interchange upgrades** • **Van Tyle/Wisconsin crossing** • **Milbocker/McCoy crossing** • **Roundabouts and New/ upgraded signals across local system** • **Road widenings**	• **Low cost interchange upgrades**
Problems Addressed	Primary problems addressed by the alternative	• Congestion at existing interchanges • Limited routes for East-West travel • Freeway access for trucks	• Congestion at existing interchanges • Limited routes for East-West travel • Freeway access for trucks	• Congestion at existing interchanges • Limited routes for East-West travel • Freeway access for trucks • Non-interchange congestion • Crashes on Main Street	• Congestion at existing interchanges • Limited routes for East-West travel • Freeway access for trucks • Non-interchange congestion • Crashes on Main Street	• Congestion at existing interchanges (short term)
East-West Traffic Movement	Degree of improvement in East-West connections and travel	Moderate Improvement	Moderate Improvement	Major Improvement	Major Improvement	No Improvement
Traffic Congestion at Interchanges	Degree of congestion relief provided at existing interchanges	Moderate Improvement	Moderate Improvement	Moderate Improvement	Major Improvement	Minimal Improvement
Freeway Access For Trucks	Degree to which option improves access to I-75 for trucks	Moderate Improvement	Major Improvement	Moderate Improvement	Moderate Improvement	Minimal Improvement
Non-Interchange Traffic Congestion	Degree of congestion relief provided on road system away from interchanges	Minimal Improvement	Minimal Improvement	Moderate Improvement	Moderate Improvement	No Improvement
Safety	Degree to which option reduces total crashes and injury crashes	Minimal Improvement	Minimal Improvement	Moderate Improvement	Major Improvement	Minimal Improvement
Negative Impacts	Impacts related to right-of-way (ROW) acquisition, relocations, increased traffic in residential areas, etc.	Moderate	Moderate	Moderate	Moderate	Minimal
Parking Impacts	Impacts to parking on Main Street	Minimal	None	Major	Minimal	None
Cost Estimate	Planning-level estimate includes cost for design and construction with a 30% contingency (does not include ROW acquisition). All costs are in year 2004 dollars.	$13.6 Million	$6.1 Million	$24.6 Million	$25.9 Million	$2.5 Million
Bicyclists and Pedestrians	Degree to which option could accommodate non-motorized travel	Good Opportunities	Good Opportunities	Good Opportunities	Good Opportunities	Good Opportunities
Aesthetics	Degree to which option could improve visual appearance	Limited Opportunities	Limited Opportunities	Limited Opportunities	Good Opportunities	Limited Opportunities

NOTES:

- Alternatives are grouped together based on the types of problems that they address and the extent of the road improvements encompassed. Alternative 5 provides the lowest level of improvement and addresses the least amount of problems. Alternatives 1 and 2 deal with more of the problems and are comparable in scope to each other. Alternatives 3 and 4 address the greatest range of issues and can be compared to each other.
- The cells shaded in gray provide descriptive information about the alternatives.
- The cells shaded in green indicate the alternative that has the best rating for each topic. Where no cells are shaded green for a topic, all alternatives are similar to each other in effect.

SECTION 5 - PUBLIC INVOLVEMENT

Throughout the course of this project, coordination was conducted with members of the public, business interests, and government agencies. This section describes this coordination. Public involvement activities undertaken as part of this study included four Advisory Committee meetings and two public information meetings. The input received through these public involvement activities was taken into consideration by the Technical Steering Committee as the study was conducted.

Shortly after the project began, a public information meeting was held on August 19, 2003. At this meeting, information about the project was presented, and the public was informed about methods for providing comments and input. This meeting was held at the University Center, and approximately 45 residents attended. This meeting was a three-hour open house which allowed members of the public to discuss questions in a one-on-one setting with members of the project team. Comment forms were available for members of the public to provide written comments. Copies of written comments provided by the public are included as Appendix H.

The Advisory Committee for this project consisted of local stakeholders representing government agencies, private businesses, and interested citizens. This group provided input regarding the study and helped inform their respective constituencies about the status of the project. Four meetings were held with this group (July and October 2003, January and May 2004), and these meetings were open to the general public.

An internet web site that included traffic information for the project was available and used as a means of sharing information with members of the public who were interested in project details (http://gis.midwesternconsulting.com/tsgis/tsearch.asp). In addition, press releases to local media outlets (newspapers, television stations, and radio stations) were also used to distribute information on the project and solicit public input.

A second public information meeting was held on April 14, 2004. Like the first meeting, this was an open house held at the University Center. Approximately 35 people attended this meeting and saw exhibits and other information about the study process and results. Comment forms were available for members of the public to provide written comments. Copies of written comments provided by the public are included as Appendix H.

Last, information related to the study was presented to the Gaylord City Council on May 10, 2004. This information included an overview of the study, existing and future traffic problems, road improvements under consideration, some preliminary recommendations, and future steps that will be needed.

Comments received from members of the public during the course of the study included a wide variety of topics, but the following items appeared regularly:

- General support for a new I-75 local road crossing. The most common location suggested was at Milbocker and McCoy Roads.
- Creation of a truck route that would remove the need to trucks to use Main Street in downtown Gaylord
- Concern about road improvements that would route new traffic through residential areas
- Signal timing and left turn phases

- Numerous alternative routes for an east-west route were suggested, some along new alignments
- Relationship between land use plans and the road network
- Use of boulevards
- Future airport plans need to be considered
- Consider new interchange
- Pros and cons of roundabouts
- Suggestions for aesthetic improvements and funding

SECTION 6 - RECOMMENDATIONS

6.0 ROAD IMPROVEMENTS

After considering the evaluation information (presented in Section 4) and input received from members of the public (presented in Section 5), the consultant team developed recommendations regarding road improvements for consideration by the Technical Steering Committee. These recommendations were based on a location-by-location assessment of the benefits, negative impacts, and costs of the potential improvements. These recommendations were discussed with the committee and revised based on their input to form the final recommendations in this report.

At most of the locations where road improvements were under consideration, the best overall changes were readily apparent and did not require detailed comparison of different alternatives. At these locations, only one alternative was under consideration, and that improvement was included as part of the recommendation. However, at a smaller number of locations, there was more than one alternative possible. This was the case at some of the major intersections (Alternatives 3 and 4), the local road crossings of I-75 (Alternatives 1, 3, and 4), and the new interchange (Alternative 2).

Table 3 shows the prioritized list of road improvements recommended by the consultant team and accepted by the Steering Committee. The recommendations in this table represent the best overall combination of elements based on the technical evaluation factors and are a mixture of all of the alternatives considered. This table lists "high", "medium", and "low" priority improvements and also gives an overall ranking for the improvements. The rankings were developed based on:

- The severity of the problem being addressed (the worst congestion and safety problems were given highest priority)
- The timing of the problem (existing problems were given higher priority than future projected problems)
- Cost effectiveness (benefit derived vs. construction cost)
- Relationship to other improvements (some improvements can not or should not be constructed unless others are also done simultaneously)
- Importance of the upgrade relative to the overall road network (i.e., high volume locations and bottlenecks were given higher priority)
- Whether an improvement would extend the useful life of the existing transportation infrastructure at a relatively low cost (low cost, short term measures were given higher priority where they extend useful life notably)

Table 3 also includes the estimated cost for each improvement. High priority improvements total about $7.4 million, medium priority items make up $9.3 million, and low priority projects would cost $5.6 million.

It is important to note that the overall strategy in Table 3 must be adapted over time to take into account changes that are unforeseen at the present time. This situation could result in lower priority items being given higher importance or vice versa. This is especially important for items 21-30 and 42 as the need for these will be largely driven by development of the vacant parcels near the Otsego Avenue interchange with I-75. Under ideal conditions (i.e., funding is available),

Table 3 Prioritized List of Road Improvements (Preliminary)

Priority Number	Location	Alternative Selected	Recommended Improvement	Priority	Cost (Year 2004 Dollars)	Comments
1	Varies	All	Improve Signal Timing/Phasing/Coordination	High	$300,000	To be implemented at all problem intersections and along M-32
2	M-32, I-75 BL, Dickerson Road, Fantasy Drive, Old US-27	All	Study and Implement Access Management	High	$100,000	Need to implement local land use planning and interagency review processes that address this issue. Also specific driveway consolidations and other construction measures such as service drives. Some of these may be accomplished as part of other construction projects.
3	Bridge @ Mccoy/Millbocker	3	Bridge over I-75	High	$2,610,000	Includes only bridge structure. Approach roads included in Millbocker/Dickerson Road Intersection and McCoy Road items below. Bridge could be constructed such that it could be converted for use as interchange if needed in future. This would add about $300,000 to project cost. Items 3-6 must be constructed together
4	Dickerson Rd. Realignment	3	Realign to accommodate new crossing	High	$510,000	Items 3-6 must be constructed together. Road could be re-aligned such that it could accommodate future interchange ramps with I-75 if needed in the future.
5	Millbocker Rd. & Dickerson Rd.	3	Traffic Signal with turn lanes	High	$730,000	Items 3-6 must be constructed together
6	McCoy Road	3	Bridge approach	High	$430,000	Items 3-6 must be constructed together
7	Townline, Millbocker, McCoy, Krys	All	Designate truck route	High	$10,000	Assumes cost for signing and related planning
8	M-32 & SB I-75 Entrance	3		High	$180,000	Items 8-10 should be constructed together
9	M-32 & SB I-75 Exit	4	Modern Roundabout	High	$1,040,000	Items 8-10 should be constructed together
10	M-32 & Meecher Rd.	3	Traffic Signal with turn lanes	High	$570,000	Items 8-10 should be constructed together
11	M-32 & NB I-75	3	Traffic Signal with turn lanes	High	$90,000	
12	I-75 NB Off Ramp & Ostego Ave	1, 3	Traffic Signal (short term)	High	$50,000	Address short term problems with traffic signal, but no turn lanes
13	Otsego Ave & SB I-75 Entrance Ramp	1, 3	Traffic Signal (short term)	High	$50,000	Address short term problems with traffic signal, but no turn lanes
14	M-32 & Krys Rd.	3	Traffic Signal with turn lanes	High	$690,000	
15	M-32 & Ostego Ave.	4	Modern Roundabout	Medium	$250,000	
16	M-32 & Townline Rd.	3	Traffic Signal with turn lanes	Medium	$450,000	
17	M-32 & Wisconsin	3	Traffic Signal with turn lanes	Medium	$420,000	
18	Otsego Ave & Dickerson Rd.	3	Traffic Signal with turn lanes	Medium	$490,000	
19	Mankowski Rd. & Dickerson Rd.	3	Traffic Signal with turn lanes	Medium	$460,000	
20	Otsego Ave & N. Ostego Lake Dr.	3	Traffic Signal with turn lanes	Medium	$990,000	
21	I-75 NB Off Ramp & Ostego Ave	3	Traffic Signal with turn lanes	Medium	$450,000	Timing of improvement linked to new development
22	Old 27 & SB I-75 Entrance Ramp	3	Traffic Signal with turn lanes	Medium	$630,000	Timing of improvement linked to new development
23	Otsego Ave & Fantasy Dr.	4	Modern Roundabout	Medium	$920,000	Timing of improvement linked to new development
24	Fantasy Dr.	3	New Road	Medium	$850,000	Timing of improvement linked to new development
25	Johnson Rd. & Fantasy Dr.	3	Traffic Signal with turn lanes	Medium	$640,000	Timing of improvement linked to new development
26	Otsego Ave & Dale Dr.	3	Traffic Signal with turn lanes	Medium	$880,000	Timing of improvement linked to new development
27	Dale Dr.	3	New Road	Medium	$180,000	Timing of improvement linked to new development
28	Johnson Rd. & Dale	3	Traffic Signal with turn lanes	Medium	$800,000	Timing of improvement linked to new development
29	Johnson & Evergreen Dr	3	Traffic Signal with turn lanes	Medium	$800,000	Timing of improvement linked to new development
30	Mccoy & Krys Rd	3	Traffic Signal	Medium	$90,000	Timing of improvement linked to new development
31	Bridge @ Van Tyle/Grandview	3	Bridge over I-75	Low	$1,850,000	Items 31-34 must be constructed together
32	Van Tyle Rd. & Dickerson Rd.	3	Traffic Signal with turn lanes	Low	$690,000	Items 31-34 must be constructed together
33	Grandview Blvd and Wisconsin Ave.	3	Traffic Signal with turn lanes	Low	$260,000	Items 31-34 must be constructed together
34	Van Tyle Rd. & Townline Rd.	3	Traffic Signal	Low	$90,000	Items 31-34 must be constructed together
35	M-32 & Center Ave.	3	Traffic Signal with turn lanes	Low	$210,000	
36	M-32 & Hayes Rd.	3	Traffic Signal	Low	$70,000	
37	M-32 & Murner Rd.	3	Traffic Signal with turn lanes	Low	$620,000	
38	M-32 & Ohio Ave.	3	Traffic Signal with turn lanes	Low	$410,000	
39	Fourth St and Ostego Ave	3	Traffic Signal	Low	$90,000	
40	Commerce Blvd. & Otsego Ave.	3	Traffic Signal with turn lanes	Low	$570,000	
41	PetoskeySt & Center Ave	3	Traffic Signal	Low	$90,000	
42	Mccoy & Evergreen Dr	3	Turn Lanes	Low	$110,000	Timing of improvement linked to new development
43	McCoy Rd. & Commercial	3	Turn Lanes	Low	$90,000	
44	Millbocker Rd and Plywood	3	Turn Lanes	Low	$200,000	
45	Millbocker Rd. & Townline Rd.	3	Turn Lanes	Low	$130,000	
46	Townline Rd. & Industrial	3	Turn Lanes	Low	$70,000	
TOTAL COST					**$22,210,000**	

the high priority items would be constructed within seven years, medium priorities within 12 years, and low priorities within 20 years.

For some of the recommendations in Table 3, additional explanation is needed since more than one alternative was under consideration. The following bullets explain the basis for the recommendations:

- At least one new east-west crossing of I-75 is necessary. The Milbocker/McCoy location provides major benefits and is recommended as a high priority improvement. The Van Tyle/Wisconsin crossing also provides benefits but would be a longer term need and is designated as a low priority improvement. Based on the results of the SYNCHRO model analysis, the Five Lakes/Fairview crossing location would not draw large amounts of traffic away from Main Street. For this reason, it is undesirable.
- The existing interchange configurations can remain if the ramp intersections are upgraded. Keeping these configurations minimizes costs and negative impacts.
- A new interchange at Milbocker/McCoy provides limited benefits considering its cost. This improvement provides direct truck access to and from I-75 which is important, but road improvements at the existing Main Street and Otsego Avenue interchanges with I-75 would still be needed because the new interchange would not draw enough traffic away from these locations. Also, the new interchange would not eliminate the need for road improvements elsewhere across the road network. With the construction of an I-75 crossing (without interchange ramps) at Milbocker/McCoy, trucks will still have greatly improved access to the industrial area near the airport via the Otsego Avenue interchange with I-75, Otsego Avenue, McCoy Road, and Milbocker Road. The Milbocker/McCoy bridge and re-aligned Dickerson Road could be constructed such that interchange ramps could be built in the future if needed.
- At eight of the 45 intersections in the study area, modern roundabouts were evaluated as part of Alternative 4 for comparison with the traffic signals in Alternative 3. Modern roundabouts are recommended at three of these locations based on the technical evaluation performed by the consultant team. Table 4 provides the technical information considered for the eight locations where roundabouts were evaluated. Modern roundabouts could also be considered at other intersections (beyond the eight evaluated here) during more detailed analysis in the future.
- The first location where a roundabout is recommended is at the Main Street and southbound I-75 off ramp intersection. Although the roundabout at this location costs about $120,000 more than a traffic signal, the roundabout would provide substantially better traffic operations and safety, both of which are concerns at this intersection. This cost difference is easily justified by the improved safety offered by the roundabout. The roundabout would also be an attractive gateway into the community. All other evaluation factors were similar for the two options.
- The second location where a roundabout is recommended is at the Main Street and Otsego Avenue intersection. The roundabout at this location costs about half as much as the traffic signal option, provides substantially better traffic operations and safety, would be an attractive element of a pedestrian-friendly downtown, and would have less parking impacts. All other evaluation factors were similar for the two options.
- The third location where a roundabout is recommended is at the Fantasy Drive and Otsego Avenue intersection. The roundabout at this location costs about $150,000 less than the traffic signal option, provides substantially better traffic operations and safety, and would be an attractive entryway into this proposed commercial area. All other evaluation factors were similar for the two options.

There are several other important notes related to the recommendations. These are summarized as follows:

- It is recommended that access management be integrated into the planning and permit approval processes of all government bodies involved in this study, especially those with jurisdiction along Main Street, Otsego Avenue, Dickerson Road, Old US-27, and the future planned Fantasy Drive. Specifically, the City of Gaylord, Otsego County, and the three townships should include access management measures and requirements as part of their land use planning, zoning, and site-plan review processes. Similarly, the City of Gaylord, the Otsego County Road Commission, and MDOT should initiate a joint permit review process for driveways. In order to most effectively implement such a program, it is recommended that a specific access management study be performed in the future.
- Coordinated regional land use and transportation system planning are very important and should be a priority for all of the government bodies involved in this study. Future decisions about these items should be account for the important interaction between land use and transportation as well as interjurisdictional issues.
- The Otsego County Airport has an approved Airport Layout Plan (ALP) that includes the extension of the crosswind runway (runway end 36) to the south. This extension and the related safety areas would require the rerouting or closure of Milbocker Road. If Milbocker Road is selected as the location for the first crossing of I-75, it is recommended that coordination with the airport be commenced immediately to assure that Milbocker can remain open with minimal rerouting.

Table 4 Technical Evaluation Factors for Roundabouts vs. Traffic Signals

Evaluation Factor	Main & SB Off Ramp/Dickerson		Main & NB Ramps		Main & Otsego		Main & Center		Otsego & Wisconsin		Otsego & Fantasy		Otsego & NB Ramps		Otsego & SB Ramps	
	Signal	Rndbt	Signal	Rndbt	Signal	Rndbt	Signal	Rndbt	Signal	Rndbt	Signal	Rndbt	Signal	Rndbt	Signal	Rndbt
Average Peak Hour Intersection Delay/LOS	21.5 sec. LOS = C	8.3 sec. LOS = A	22.7 sec. LOS = C	10.0 sec. LOS = A	33.0 sec. LOS = C	3.8 sec. LOS = A	16.0 sec. LOS = B	3.6 sec. LOS = A	17.3 sec. LOS = B	5.5 sec. LOS = A	24.3 sec. LOS = C	6.3 sec. LOS = A	17.0 sec. LOS = B	6.2 sec. LOS = A	13.8 sec. LOS = B	5.0 sec. LOS = A
Excess Capacity	Moderate	Moderate	Moderate	Moderate	Moderate	Major	Moderate	Major	Minimal	Major	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Safety*	Crashes similar to existing	Major reduction in crashes	Crashes similar to existing	Major reduction in crashes	Crashes similar to existing	Major reduction in crashes	Crashes similar to existing	Major reduction in crashes	Crashes similar to existing	Major reduction in crashes	Crashes similar to existing	Major reduction in crashes	Crashes similar to existing	Major reduction in crashes	Crashes similar to existing	Major reduction in crashes
Cost (including 30% contingency)	$915,000	$1,040,000	$95,000	$900,000	$520,000	$250,000	$215,000	$260,000	$575,000	$860,000	$1,070,000	$920,000	$450,000	$760,000	$630,000	$720,000
WB-62 Turns Accommodated?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Aesthetic Opportunities	Limited	Good	Limited	Good	Limited	Good	Limited	Good	Limited	Good	Limited	Good	Limited	Good	Limited	Good
ROW Impacts	Moderate	Moderate	Minimal	Moderate	Moderate	Moderate	Moderate	Moderate	Minimal	Moderate	Moderate	Moderate	Minimal	Moderate	Minimal	Minimal
Parking Impacts	Minimal	Minimal	None	None	Major	Moderate	Moderate	Moderate	None	Minimal	Minimal	Minimal	None	None	None	None
Interaction with Adjacent Traffic Signals	Acceptable	Acceptable	Acceptable	Some Concerns	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Recommendation	Roundabout		Traffic Signal		Roundabout		Traffic Signal		Traffic Signal		Roundabout		Traffic Signal		Traffic Signal	

* Studies from around the world and the U.S. have shown that roundabouts are substantially safer than traffic signals. The most comprehensive study in the U.S. showed that intersections converted from traffic signals and stop control to roundabouts had about a 40% reduction in total crashes, an 80% reduction in injury crashes, and a 90% reduction in incapacitating injury and fatal crashes (IIHS 2000).

Cells shaded in green indicate the option that has the best rating for the topic. Where no cells are shaded green for a topic, there is no meaningful difference between the two options.

6.1 FUNDING

A number of potential funding sources could be utilized to fund the projects listed in Table 3. This section identifies the most promising sources and provides information about each. The applicability of each source to specific projects is related to a number of factors including the benefits of each project to the local- and MDOT-controlled road networks. Table 5 shows the possible funding sources that could be used for each specific improvement under consideration.

6.1.1 Funding Sources

The funding sources available are presented according to the project function they serve and the funding category of which they are a part. For the purposes of this study, funding sources were identified for MDOT, the Otsego County Road Commission, the City of Gaylord, the three townships, and private developers.

The MDOT has various state trunkline funds at their disposal that are distributed on a statewide basis and from the MDOT North Region. Examples of these are Increase Capacity funds for new construction and widening; Resurface, Restoration and Rehabilitation (R&R), and Reconstruction funding to handle everything from minor resurfaces to major reconstructions; and safety funds from both Lansing and the region that address everything from traffic signals to intersection reconfiguration. MDOT also has Intelligent Transportation (IT) funding for use on signal timing projects and studies.

The OCRC has two major funding sources distributed to them by the MDOT on an annual basis called the Transportation Economic Development Fund (TEDF) Category D and the State Transportation Program fund (STP). These funds are part of a three-year plan that is developed through the state's Rural Task Force program. The TEDF Category D funding purpose is to build a local secondary all-season road system that is integrated with the state trunkline system. This funding is to be used on the county primary road system. The STP funding is used at the discretion of the OCRC on the county primary system. The OCRC is also eligible to apply for additional all-season funds. TEDF Category F Fund's purpose is to offer an all-season connection from small urban areas to the county and state all-season road networks. Bagley, Hayes, and Livingston Townships are dependent upon the OCRC for their road funding and can request projects through the OCRC system of project selection.

The City of Gaylord is allocated road transportation funding (Act-51) annually based on their recorded road mileage. The city is eligible to apply for annually awarded Small Urban road funds. Small Urban Funds are available to all urban areas with a population of more than 5,000 but less than 50,000 and are a competitive award. The city is also eligible to apply for TEDF Category F Funds. Other funding options available to the city are through their local TIFA, DDA board, road millage, or bonding.

Private developers can work with road agencies in developing public/private funding plans for projects or generate funding on their own utilizing for example, a commercial paper letter of credit where they would provide the funding or a portion of the funding necessary for a project in return for future payment when the land is developed. Private developers should participate in the funding of all road improvements that benefit their development or are a result of their development.

Table 5 Funding Recommendations for Prioritized List of Improvements

Priority Number	Location	Recommended Improvement	Cost	Comments	Funding Sources
1	Varies	Improve Signal Timing/Phasing/Coordination	$300,000	To be implemented at all problem intersections and along M-32	MDOT IT; MDOT Safety; MDOT Region Safety; Local Agency Safety
2	M-32, I-75 BL, Dickerson Road, Fantasy Drive	Implement Access Management	$100,000	Need to implement local land use planning and interagency review processes that address this issue. Also specific driveway consolidations and other construction measures such as service drives. Some of these may be accomplished as part of other construction projects.	MDOT Access Management; MDOT SPR; Act 51
3	Bridge @ Mccoy/Millbocker	Bridge over I-75	$2,610,000	Includes only bridge structure. Approach roads included in Millbocker/Dickerson Road Intersection and McCoy Road items below. Bridge could be constructed such that it could be converted for use as interchange if needed in future. This would add about $300,000 to project cost. Items 3-6 must be constructed together	MDOT I/C; Act 51; Congressional Earmark; TEDF Cat A, D, and F; STP; Small Urban; TIFA; DDA, Millage; Bonding; SIB; Private Development
4	Dickerson Rd. Realignment	Realign to accommodate new crossing	$510,000	Items 3-6 must be constructed together	MDOT I/C; Act 51; Congressional Earmark; TEDF Cat A, D, and F; STP; Small Urban; TIFA; DDA, Millage; Bonding; SIB; Private Development
5	Millbocker Rd. & Dickerson Rd.	Traffic Signal with turn lanes	$730,000	Items 3-6 must be constructed together	MDOT I/C; MDOT Safety; MDOT Region Safety; Local Agency Safety; Act 51; Congressional Earmark; TEDF Cat A, D, and F; STP; Small Urban; TIFA; DDA, Millage; Bonding; SIB; Private Development
6	McCoy Road	Bridge approach	$430,000	Items 3-6 must be constructed together	MDOT I/C; Act 51; Congressional Earmark; TEDF Cat A, D, and F; STP; Small Urban; TIFA; DDA, Millage; Bonding; SIB; Private Development
7	Townline, Millbocker, McCoy, Krys	Designate truck route	$10,000	Assumes cost for signing and related planning	Act 51; Gaylord & OCRC General Funds; TIFA; DDA
8	M-32 & SB I-75 Entrance		$180,000	Items 8-10 should be constructed together	MDOT R&R; Act 51
9	M-32 & SB I-75 Exit	Modern Roundabout	$1,040,000	Items 8-10 should be constructed together	MDOT I/C; Act 51; Congressional Earmark; TEDF Cat A, D, and F; STP; Small Urban; TIFA; DDA, Millage; Bonding; SIB; Private Development
10	M-32 & Meecher Rd.	Traffic Signal with turn lanes	$570,000	Items 8-10 should be constructed together	MDOT R&R; MDOT Safety; MDOT Region Safety; Local Agency Safety; Act 51; Congressional Earmark; TEDF Cat A, D, and F; STP; Small Urban; TIFA; DDA, Millage; Bonding; SIB; Private Development
11	M-32 & NB I-75	Traffic Signal with turn lanes	$90,000		MDOT R&R; MDOT Safety; MDOT Region Safety; Local Agency Safety; Act 51; Congressional Earmark; TEDF Cat A, D, and F; STP; Small Urban; TIFA; DDA, Millage; Bonding; SIB; Private Development
12	I-75 NB Off Ramp & Ostego Ave	Traffic Signal (short term)	$50,000	Address short term problems with traffic signal, but no turn lanes	MDOT Safety; MDOT Region Safety; Local Agency Safety
13	Otsego Ave & SB I-75 Entrance Ramp	Traffic Signal (short term)	$50,000	Address short term problems with traffic signal, but no turn lanes	MDOT Safety; MDOT Region Safety; Local Agency Safety
14	M-32 & Krys Rd.	Traffic Signal with turn lanes	$690,000		MDOT R&R; MDOT Safety; MDOT Region Safety; Local Agency Safety; Act 51; Congressional Earmark; TEDF Cat A, D, and F; STP; Small Urban; TIFA; DDA, Millage; Bonding; SIB; Private Development
15	M-32 & Ostego Ave.	Modern Roundabout	$250,000		MDOT I/C; MDOT Safety; MDOT Region Safety; Local Agency Safety; Act 51; Congressional Earmark; TEDF Cat A, D, and F; STP; Small Urban; TIFA; DDA, Millage; Bonding; SIB; Private Development
16	M-32 & Townline Rd.	Traffic Signal with turn lanes	$450,000		MDOT R&R; MDOT Safety; MDOT Region Safety; Local Agency Safety; Act 51; Congressional Earmark; TEDF Cat A, D, and F; STP; Small Urban; TIFA; DDA, Millage; Bonding; SIB; Private Development
17	M-32 & Wisconsin	Traffic Signal with turn lanes	$420,000		MDOT R&R; MDOT Safety; MDOT Region Safety; Local Agency Safety; Act 51; Congressional Earmark; TEDF Cat A, D, and F; STP; Small Urban; TIFA; DDA, Millage; Bonding; SIB; Private Development
18	N. Otsego Lake & Dickerson Rd.	Traffic Signal with turn lanes	$490,000		MDOT R&R; MDOT Safety; MDOT Region Safety; Local Agency Safety; Act 51
19	Mankowski Rd. & Dickerson Rd.	Traffic Signal with turn lanes	$460,000		Local Agency Safety; Act 51; TEDF Cat A, D, and F; STP; Small Urban; TIFA; DDA, Millage; Bonding; SIB; Private Development
20	Otsego Ave & N. Ostego Lake Dr.	Traffic Signal with turn lanes	$990,000		MDOT R&R; MDOT Safety; MDOT Region Safety; Local Agency Safety; Act 51; Congressional Earmark; TEDF Cat A, D, and F; STP; Small Urban; TIFA; DDA, Millage; Bonding; SIB; Private Development
21	I-75 NB Off Ramp & Ostego Ave	Traffic Signal with turn lanes	$450,000	Timing of improvement linked to new development	MDOT R&R; MDOT Safety; MDOT Region Safety; Local Agency Safety; Act 51; Congressional Earmark; TEDF Cat A, D, and F; STP; Small Urban; TIFA; DDA, Millage; Bonding; SIB; Private Development
22	Old 27 & SB I-75 Entrance Ramp	Traffic Signal with turn lanes	$630,000	Timing of improvement linked to new development	MDOT R&R; MDOT Safety; MDOT Region Safety; Local Agency Safety; Act 51; Congressional Earmark; TEDF Cat A, D, and F; STP; Small Urban; TIFA; DDA, Millage; Bonding; SIB; Private Development
23	Otsego Ave & Fantasy Dr.	Modern Roundabout	$920,000	Timing of improvement linked to new development	MDOT R&R; MDOT Safety; MDOT Region Safety; Local Agency Safety; Act 51; Congressional Earmark; TEDF Cat A, D, and F; STP; Small Urban; TIFA; DDA, Millage; Bonding; SIB; Private Development
24	Fantasy Dr.	New Road	$850,000	Timing of improvement linked to new development	MDOT R&R; Act 51; TEDF Cat A, D, and F; STP; Small Urban; TIFA; DDA, Millage; Bonding; SIB; Private Development
25	Johnson Rd. & Fantasy Dr.	Traffic Signal with turn lanes	$640,000	Timing of improvement linked to new development	MDOT Safety; MDOT Region Safety; Local Agency Safety; Act 51
26	Otsego Ave & Dale Dr.	Traffic Signal with turn lanes	$880,000	Timing of improvement linked to new development	MDOT R&R; MDOT Safety; MDOT Region Safety; Local Agency Safety; Act 51; Congressional

Priority Number	Location	Recommended Improvement	Cost	Comments	Funding Sources
					Earmark; TEDF Cat A, D, and F; STP; Small Urban; TIFA; DDA, Millage; Bonding; SIB; Private Development
27	Dale Dr.	New Road	$180,000	Timing of improvement linked to new development	Act 51; TEDF Cat A, D, and F; STP; Small Urban; TIFA; DDA, Millage; Bonding; SIB; Private Development
28	Johnson Rd. & Dale	Traffic Signal with turn lanes	$800,000	Timing of improvement linked to new development	Local Agency Safety; Act 51; TEDF Cat A, D, and F; STP; Small Urban; TIFA; DDA, Millage; Bonding; SIB; Private Development
29	Johnson & Evergreen Dr	Traffic Signal with turn lanes	$800,000	Timing of improvement linked to new development	Local Agency Safety; Act 51; TEDF Cat A, D, and F; STP; Small Urban; TIFA; DDA, Millage; Bonding; SIB; Private Development
30	Mccoy & Krys Rd	Traffic Signal	$90,000	Timing of improvement linked to new development	Local Agency Safety; TIFA; DDA, Millage; Bonding; SIB; Private Development
31	Bridge @ Van Tyle/Grandview	Bridge over I-75	$1,850,000	Items 31-34 must be constructed together	MDOT I/C; MDOT Safety; MDOT Region Safety; Local Agency Safety; Act 51; Congressional Earmark; TEDF Cat A, D, and F; STP; Small Urban; TIFA; DDA, Millage; Bonding; SIB; Private Development
32	Van Tyle Rd. & Dickerson Rd.	Traffic Signal with turn lanes	$690,000	Items 31-34 must be constructed together	MDOT R&R; MDOT Safety; MDOT Region Safety; Local Agency Safety; Act 51; Congressional Earmark; TEDF Cat A, D, and F; STP; Small Urban; TIFA; DDA, Millage; Bonding; SIB; Private Development
33	Grandview Blvd and Wisconsin Ave.	Traffic Signal with turn lanes	$260,000	Items 31-34 must be constructed together	MDOT R&R; MDOT Safety; MDOT Region Safety; Local Agency Safety; Act 51; Congressional Earmark; TEDF Cat A, D, and F; STP; Small Urban; TIFA; DDA, Millage; Bonding; SIB; Private Development
34	Van Tyle Rd. & Townline Rd.	Traffic Signal	$90,000	Items 31-34 must be constructed together	Local Agency Safety; TIFA; DDA, Millage; Bonding; SIB; Private Development
35	M-32 & Center Ave.	Traffic Signal with turn lanes	$210,000		MDOT R&R; MDOT Safety; MDOT Region Safety; Local Agency Safety; Act 51; Congressional Earmark; TEDF Cat A, D, and F; STP; Small Urban; TIFA; DDA, Millage; Bonding; SIB; Private Development
36	M-32 & Hayes Rd.	Traffic Signal	$70,000		Local Agency Safety; TIFA; DDA, Millage; Bonding; SIB; Private Development
37	M-32 & Murner Rd.	Traffic Signal with turn lanes	$620,000		MDOT R&R; MDOT Safety; MDOT Region Safety; Local Agency Safety; Act 51; Congressional Earmark; TEDF Cat A, D, and F; STP; Small Urban; TIFA; DDA, Millage; Bonding; SIB; Private Development
38	M-32 & Ohio Ave.	Traffic Signal with turn lanes	$410,000		MDOT R&R; MDOT Safety; MDOT Region Safety; Local Agency Safety; Act 51; Congressional Earmark; TEDF Cat A, D, and F; STP; Small Urban; TIFA; DDA, Millage; Bonding; SIB; Private Development
39	Fourth St and Ostego Ave	Traffic Signal	$90,000		MDOT R&R; MDOT Safety; MDOT Region Safety; Local Agency Safety; Act 51; Congressional Earmark; TEDF Cat A, D, and F; STP; Small Urban; TIFA; DDA, Millage; Bonding; SIB; Private Development
40	Commerce Blvd. & Otsego Ave.	Traffic Signal with turn lanes	$570,000		MDOT R&R; MDOT Safety; MDOT Region Safety; Local Agency Safety; Act 51; Congressional Earmark; TEDF Cat A, D, and F; STP; Small Urban; TIFA; DDA, Millage; Bonding; SIB; Private Development
41	PetoskeySt & Center Ave	Traffic Signal	$90,000		Local Agency Safety; TIFA; DDA, Millage; Bonding; SIB; Private Development
42	Mccoy & Evergreen Dr	Turn Lanes	$110,000	Timing of improvement linked to new development	ACT-51; Local Agency Safety; TIFA; DDA, Millage; Bonding; SIB; Private Development
43	McCoy Rd. & Commercial	Turn Lanes	$90,000		ACT-51; Local Agency Safety; TIFA; DDA, Millage; Bonding; SIB; Private Development
44	Millbocker Rd and Plywood	Turn Lanes	$200,000		ACT-51; Local Agency Safety; TIFA; DDA, Millage; Bonding; SIB; Private Development
45	Millbocker Rd. & Townline Rd.	Turn Lanes	$130,000		ACT-51; Local Agency Safety; TIFA; DDA, Millage; Bonding; SIB; Private Development
46	Townline Rd. & Industrial	Turn Lanes	$70,000		ACT-51; Local Agency Safety; TIFA; DDA, Millage; Bonding; SIB; Private Development

There is one area of funding that is open to all the above-mentioned participants. The TEDF Category A Fund is open to all road agencies and to private developers working through road agencies. The fund provides a means for State government, local agencies, and business to work together to fund transportation projects that promote job creation or retention. Category A ensures an existing or potential business is properly connected to the network of all-season roads. Another fund available to road agencies is the State Infrastructure Bank (SIB) loan program (when active). The SIB loan program offers low interest loans for transportation projects from a revolving state fund.

The last potential funding source would be an "earmark" or line item in Federal legislation. Also known as "high priority projects", this method of funding requires a U.S. Representative or Senator to include funding for a specific project in legislation (usually highway transportation bills) that is considered and approved by Congress and the President.

6.1.2 Funding Strategies for the Alternatives

It is recommended that the sources noted above be discussed during negotiations among the Technical Steering Committee member agencies as part of future ongoing negotiations. In order to develop a cost share percentage for each project, a variety of qualitative factors should be considered including:

- Agency with jurisdiction over the road (City, OCRC, MDOT)
- Whether the improvement benefits other routes by pulling traffic from them to the new route
- Degree to which improvement provides opportunities for future development
- Degree to which costs could reasonably be passed on to private developers who would be impacting traffic operations

Recognizing that all of the agencies involved in this study are facing tight budgets, opportunities for partnerships will be one important factor in future negotiations regarding funding. Most of the high and medium priority projects (i.e., those addressing the most serious problems) are located on state trunklines under the jurisdiction of MDOT. In addition, although the Milbocker/McCoy crossing is not under MDOT jurisdiction, this project would benefit traffic operations on state trunklines.

One very important factor that will need to be considered as funding discussions take place is the MDOT Interchange Strategy contained in their State Long Range Plan, 2000-2025. This strategy directs MDOT participation in local road projects that related to state trunklines. The policy states:

> ***Interchange Strategy.*** *Improvements to existing interchanges and construction of new interchanges present a special need for state and local coordination. For example, MDOT may choose to widen or construct an interchange in response to increasing traffic volumes. These projects are selected in response to traffic needs on a statewide priority basis and require local coordination and a concurrent local commitment to widen the local road as necessary.*
>
> *Local authorities may choose to widen the local road at an interchange to attract development, even though current traffic volumes do not warrant such improvement. Such improvements may also require improvement to state highway interchange ramps. Interchange improvements prompted by locally encouraged and approved developments*

are the financial responsibility of local authorities. This type of project is not part of the MDOT project selection process, but does require coordination with MDOT.

The local agency and/or private sector developers are responsible for all costs associated with a new interchange necessitated by private sector development including grade separation structures, right-of-way improvements, and approach work. An exception to this policy is granted in cases where MDOT has determined that reduction in existing congestion at adjacent trunkline interchanges can be reasonably expected and where FHWA justification criteria warrant an additional break in access. In such cases, MDOT may assume costs for structures and ramps only. The costs associated with local roadway work outside of bridge abutments, including right-of-way costs, remain the responsibility of the local road agency.

Because local road crossings of I-75 would benefit traffic operations at both state trunkline interchanges, along M-32, and along the I-75 Business Loop, the MDOT policy should be considered during future discussions about funding for these projects.

6.2 OTHER ENHANCEMENTS

In addition the road improvements identified above, the consultant team and Technical Steering Committee also performed an overview evaluation of opportunities for aesthetic and non-motorized enhancements. The main focus of this evaluation was upon opportunities and how well the various road improvements could accommodate these enhancements should local governments or MDOT choose to fund and implement them. Decisions about elements that could be included, funding, and the timing of their implementation will need to be negotiated among the Technical Steering Committee members in the future.

6.2.1 Aesthetic Enhancements

Almost all of the road improvements that are recommended could incorporate at least some aesthetic elements. The type of enhancements that are possible would vary depending upon the type of road improvement under consideration. A general list of possible enhancements includes:

- Landscaping
- Grass medians
- Decorative brick pavers
- Concrete coloring and texturing
- Concrete forms
- Decorative lighting fixtures
- Decorative benches
- Bridge railing treatments
- Public artwork
- Street trees
- Decorative trash cans
- Moving utilities underground
- Building façade treatments

An example of how many of these treatments could be incorporated into road improvements is shown in Figures 20 and 21.

6.2.2 Non-Motorized Enhancements

Like aesthetic enhancements, almost all of the road improvements that are recommended could incorporate at least some non-motorized (pedestrian and bicycle) elements. The type of enhancements that are possible would vary depending upon the type of road improvement under consideration. This could include marked bicycle lanes, multi-use paths, crosswalks using brick pavers, and sidewalks. Some of these elements are also shown in Figures 20 and 21.

REFERENCES

NEMCOG 2000. M-32 & Old 27/I-75 Business Loop Corridor Study, Gaylord, MI.

Insurance Institute for Highway Safety (IIHS), 2000. Crash Reductions Following Installation of Roundabouts in the United States. Arlington, VA

APPENDIX A

PEAK HOUR TURNING MOVEMENT COUNTS

Five Lakes Road & Murner Road

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	2	16	1	3	4	5	4	16	8	2	1	1	63
	2	16	1	3	4	5	4	15	8	2	1	1	62
	1	16	0	2	4	5	3	15	8	2	0	0	56
	1	15	0	2	4	5	3	15	8	2	0	0	55
TOTAL	**6**	**63**	**2**	**10**	**16**	**20**	**14**	**61**	**32**	**8**	**2**	**2**	**236**

Five Lakes Road & Meecher Road (North Leg)

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	4	0	2	7	5	0	0	0	0	0	3	1	22
	3	0	0	10	6	0	0	0	0	0	0	3	22
	2	0	0	3	5	0	0	0	0	0	3	0	13
	4	0	1	5	7	0	0	0	0	0	6	2	25
TOTAL	**13**	**0**	**3**	**25**	**23**	**0**	**0**	**0**	**0**	**0**	**12**	**6**	**82**

Five Lakes Road & Meecher Road (South Leg)

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	0	0	0	0	0	0	0	0	5	3	0	0	8
	0	0	0	0	0	0	0	0	4	6	0	0	10
	0	0	0	0	0	0	0	0	6	2	0	0	8
	0	0	0	0	0	0	0	0	6	3	0	0	9
TOTAL	0	0	0	0	0	0	0	0	21	14	0	0	**35**

Old 27 & McLouth Road

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	3	34	0	2	2	4	2	34	0	2	5	2	90
	1	28	0	0	2	2	2	23	1	1	3	3	66
	1	29	0	0	0	0	4	24	2	1	3	1	65
	3	32	1	1	1	3	7	27	3	4	0	3	85
TOTAL	**8**	**123**	**1**	**3**	**5**	**9**	**15**	**108**	**6**	**8**	**11**	**9**	**306**

Hayes Road & McLouth Road

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	0	0	0	0	0	0	0	2	6	2	0	0	10
	0	3	0	0	0	0	0	4	1	2	0	0	10
	0	1	0	0	0	0	0	0	1	2	0	1	5
	2	0	0	0	0	0	0	0	2	2	1	0	7
TOTAL	**2**	**4**	**0**	**0**	**0**	**0**	**0**	**6**	**10**	**8**	**1**	**1**	**33**

Petoskey Street & Ohio Avenue

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	0	122	2	2	0	2	0	23	0	0	0	0	151
	0	43	4	1	0	0	1	21	0	0	0	0	70
	0	45	0	2	0	1	0	46	0	0	0	0	94
	0	49	2	5	0	0	0	84	0	0	0	0	140
TOTAL	**0**	**259**	**8**	**10**	**0**	**3**	**1**	**174**	**0**	**0**	**0**	**0**	**455**

Petoskey Street & Otsego Avenue

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	2	54	0	0	0	2	0	2	1	3	5	0	70
	1	21	1	0	0	3	1	7	0	1	2	0	37
	0	6	0	0	1	0	1	13	1	1	1	1	25
	0	11	0	1	3	2	0	19	2	5	1	1	45
TOTAL	**3**	**93**	**1**	**1**	**4**	**7**	**2**	**41**	**4**	**10**	**9**	**2**	**177**

Petoskey Street & Center Avenue

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	0	63	1	1	1	2	3	67	0	2	0	1	141
	1	54	1	2	2	1	2	49	2	1	3	2	120
	1	62	2	2	4	0	1	58	0	3	3	1	137
	1	45	1	2	2	1	1	52	0	1	1	3	110
TOTAL	**3**	**224**	**5**	**7**	**9**	**4**	**7**	**226**	**2**	**7**	**7**	**7**	**508**

Petoskey Street & Hayes Avenue

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	0	5	0	0	0	0	0	6	2	4	0	1	18
	0	4	0	0	0	0	0	16	3	1	0	1	25
	0	15	0	0	0	0	0	4	1	2	0	2	24
	0	9	0	0	0	0	0	8	0	1	0	0	18
TOTAL	**0**	**33**	**0**	**0**	**0**	**0**	**0**	**34**	**6**	**8**	**0**	**4**	**86**

Fourth Street & Wisconsin Avenue

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	0	132	7	10	0	1	1	115	0	0	0	0	266
	0	115	4	15	0	1	1	104	0	0	0	0	240
	0	127	4	12	0	2	2	102	0	0	0	0	249
	0	122	5	6	0	1	1	100	0	0	0	0	235
TOTAL	**0**	**496**	**20**	**43**	**0**	**5**	**5**	**421**	**0**	**0**	**0**	**0**	**990**

Fourth Street & Otsego Avenue

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	4	94	1	1	2	4	5	137	12	12	3	5	282
	8	102	2	1	5	7	4	116	10	8	3	3	271
	4	98	2	1	2	4	6	129	12	12	2	0	272
	4	89	0	2	1	1	5	122	8	8	2	1	244
TOTAL	**21**	**383**	**5**	**5**	**10**	**17**	**21**	**504**	**42**	**41**	**10**	**9**	**1070**

Fourth Street & Center Avenue

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	4	3	3	1	2	1	1	2	1	2	3	5	28
	4	3	3	1	2	1	1	2	1	2	3	5	28
	4	2	2	1	2	1	1	2	1	2	2	4	24
	4	2	2	1	2	1	1	2	1	2	2	4	24
TOTAL	**16**	**10**	**10**	**4**	**8**	**4**	**4**	**8**	**4**	**8**	**10**	**18**	**104**

Milbocker Road & Plywood Road

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	0	0	0	0	1	1	0	0	1	1	0	0	4
	0	0	0	0	0	1	1	0	1	5	2	0	10
	0	0	0	0	1	2	1	0	6	0	0	0	10
	0	0	0	0	1	1	1	0	2	3	2	0	10
TOTAL	**0**	**0**	**0**	**0**	**3**	**5**	**3**	**0**	**10**	**9**	**4**	**0**	**34**

McCoy Road & Evergreen Drive

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	0	0	1	0	43	6	0	0	6	9	29	0	94
	0	0	0	0	49	3	8	0	6	14	29	0	109
	0	0	0	0	27	1	4	0	12	11	32	0	87
	0	0	0	0	45	1	0	0	7	12	32	0	97
TOTAL	**0**	**0**	**1**	**0**	**164**	**11**	**12**	**0**	**31**	**46**	**122**	**0**	**387**

McCoy Road & Krys Road

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	11	4	4	3	43	5	4	8	13	5	19	8	127
	4	11	3	2	31	2	1	8	3	3	23	9	100
	8	11	0	6	33	1	3	6	11	6	23	12	120
	7	7	4	0	27	1	5	4	13	8	17	2	95
TOTAL	**30**	**33**	**11**	**11**	**134**	**9**	**13**	**26**	**40**	**22**	**82**	**31**	**442**

Johnson Road & Krys Road

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	4	12	0	0	1	0	0	14	11	12	3	4	61
	3	10	0	1	0	0	0	15	5	10	1	5	50
	0	7	0	0	0	0	0	8	6	10	0	4	35
	3	9	0	0	1	0	1	7	7	13	0	4	45
TOTAL	**10**	**38**	**0**	**1**	**2**	**0**	**1**	**44**	**29**	**45**	**4**	**17**	**191**

Johnson Road & Evergreen Drive

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	1	0	1	0	8	0	0	0	0	0	11	1	22
	5	0	0	0	16	0	0	0	0	0	20	6	47
	10	0	0	0	8	0	0	1	0	0	14	3	36
	6	0	2	1	16	0	0	0	0	0	14	10	49
TOTAL	**22**	**0**	**3**	**1**	**48**	**0**	**0**	**1**	**0**	**0**	**59**	**20**	**154**

Johnson Road & Otsego Drive

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	0	180	20	9	0	12	19	187	0	0	0	0	427
	0	170	8	9	0	17	16	225	0	0	0	0	445
	0	221	7	7	1	12	25	181	0	0	0	0	454
	0	198	13	5	0	12	13	188	0	0	0	0	429
TOTAL	**0**	**769**	**48**	**30**	**1**	**53**	**73**	**781**	**0**	**0**	**0**	**0**	**1755**

Old Alba & North Otsego Lake Drive

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	18	33	0	0	0	0	0	29	5	1	0	14	100
	18	36	0	0	0	0	0	17	2	2	0	15	90
	19	38	0	0	0	0	0	25	4	3	0	21	110
	26	31	0	0	0	0	0	38	2	2	0	24	123
TOTAL	**81**	**138**	**0**	**0**	**0**	**0**	**0**	**109**	**13**	**8**	**0**	**74**	**423**

Old Alba & North Fowler Lake Road

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	0	0	0	0	13	2	9	0	2	4	16	0	46
	0	0	0	0	9	8	1	0	3	1	10	0	32
	0	0	0	0	9	3	8	0	2	2	14	0	38
	0	0	0	0	12	2	6	0	1	2	20	0	43
TOTAL	**0**	**0**	**0**	**0**	**43**	**15**	**24**	**0**	**8**	**9**	**60**	**0**	**159**

Otsego Ave & McCoy Road

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	6	111	29	50	0	23	17	117	5	6	3	8	375
	6	174	41	33	3	27	20	117	5	7	2	7	442
	3	137	41	24	3	23	24	120	5	7	0	6	393
	6	135	32	32	2	15	19	113	4	3	0	6	367
TOTAL	**21**	**557**	**143**	**139**	**8**	**88**	**80**	**467**	**19**	**23**	**5**	**27**	**1577**

Old 27 & Northbound I-75 Entrance Ramp

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	0	173	29	58	0	5	21	159	0	0	0	0	445
	0	205	25	58	0	4	16	140	0	0	0	0	448
	0	209	23	53	0	8	15	149	0	0	0	0	457
	0	148	20	67	0	6	18	151	0	0	0	0	410
TOTAL	**0**	**735**	**97**	**236**	**0**	**23**	**70**	**599**	**0**	**0**	**0**	**0**	**1760**

Old 27 & Southbound I-75 Entrance Ramp

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	17	0	15	31	107	0	0	0	0	0	136	4	310
	17	0	14	27	126	0	0	0	0	0	152	5	341
	15	0	23	29	114	0	0	0	0	0	125	4	310
	18	0	19	38	120	0	0	0	0	0	138	4	337
TOTAL	**67**	**0**	**71**	**125**	**467**	**0**	**0**	**0**	**0**	**0**	**551**	**17**	**1298**

Old 27 & North Otsego Lake Drive

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	62	107	0	0	0	0	0	129	29	17	1	65	410
	61	109	0	0	0	0	0	127	19	17	0	66	399
	67	109	0	0	0	0	0	103	15	17	0	55	366
	52	140	0	0	0	0	0	117	21	13	0	41	384
TOTAL	**242**	**465**	**0**	**0**	**0**	**0**	**0**	**476**	**84**	**64**	**1**	**227**	**1559**

Dickerson Road & North Otsego Lake Drive

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	15	0	27	28	40	0	0	0	0	0	50	17	177
	14	0	21	29	34	0	0	0	0	0	42	21	161
	16	0	34	35	45	0	0	0	0	0	29	14	173
	11	0	21	21	29	0	0	0	0	0	29	10	121
TOTAL	**56**	**0**	**103**	**113**	**148**	**0**	**0**	**0**	**0**	**0**	**150**	**62**	**632**

Otsego Avenue & Grandview Boulevard

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	25	147	9	11	19	19	5	157	87	108	16	23	626
	14	137	13	10	9	13	1	166	90	108	12	14	587
	5	121	14	10	13	19	4	163	98	88	21	14	570
	13	134	4	13	10	13	4	183	87	113	23	12	609
TOTAL	**57**	**539**	**40**	**44**	**51**	**64**	**14**	**669**	**362**	**417**	**72**	**63**	**2392**

M-32 & Krys Road

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	0	1	2	0	34	2	3	2	22	15	59	0	140
	1	2	0	1	48	4	3	5	12	15	54	1	146
	0	2	0	0	39	2	3	2	10	18	41	0	117
	0	2	0	0	60	7	8	4	18	11	53	0	163
TOTAL	**1**	**7**	**2**	**1**	**181**	**15**	**17**	**13**	**62**	**59**	**207**	**1**	**566**

Main Street & Hayes Road

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	0	0	0	0	103	3	5	0	2	4	118	0	235
	0	0	0	0	92	3	6	0	7	0	111	0	219
	0	0	0	0	90	6	3	0	3	6	113	0	221
	0	0	0	0	109	2	6	0	4	8	84	0	213
TOTAL	**0**	**0**	**0**	**0**	**394**	**14**	**20**	**0**	**16**	**18**	**426**	**0**	**888**

Main Street & Center Avenue

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	34	6	5	7	93	2	5	7	10	9	68	33	279
	41	7	13	5	74	3	4	9	1	11	75	37	280
	38	8	9	8	91	3	5	8	5	13	87	26	301
	30	5	10	7	87	4	4	4	10	20	64	33	278
TOTAL	**143**	**26**	**37**	**27**	**345**	**12**	**18**	**28**	**26**	**53**	**294**	**129**	**1138**

Main Street & Otsego Avenue

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	45	23	89	43	107	5	13	26	5	6	140	32	534
	49	20	84	42	99	8	10	13	2	5	120	24	476
	50	17	91	25	99	7	8	17	4	2	132	37	489
	47	23	75	36	105	8	17	19	3	3	144	36	516
TOTAL	**191**	**83**	**339**	**146**	**410**	**28**	**48**	**75**	**14**	**16**	**536**	**129**	**2015**

Main Street & Wisconsin Avenue

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	9	19	12	5	172	20	15	14	88	83	152	3	592
	19	21	4	1	203	9	7	14	84	107	162	6	637
	10	19	6	3	184	16	11	12	84	96	156	7	604
	23	11	8	2	190	12	15	14	96	74	128	8	581
TOTAL	**61**	**70**	**30**	**11**	**749**	**57**	**48**	**54**	**352**	**360**	**598**	**24**	**2414**

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	0	0	0	44	322	0	69	0	59	0	312	34	840
	0	0	0	38	322	0	55	0	65	0	330	29	839
	0	0	0	44	301	0	44	1	79	0	318	26	813
	0	0	0	55	332	0	56	0	40	1	316	41	841
TOTAL	**0**	**0**	**0**	**181**	**1277**	**0**	**224**	**1**	**243**	**1**	**1276**	**130**	**3333**

Main Street & Ohio Avenue

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	78	0	13	10	242	0	0	0	0	0	185	24	552
	39	0	2	13	263	0	0	0	0	0	174	25	516
	41	0	8	14	229	0	0	0	0	0	210	42	544
	61	0	6	15	215	0	0	0	0	0	218	48	563
TOTAL	**219**	**0**	**29**	**52**	**949**	**0**	**0**	**0**	**0**	**0**	**787**	**139**	**2175**

Dickerson Road & Van Tyle Road

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	3	27	1	1	0	0	0	30	7	9	0	20	98
	6	34	1	0	0	0	0	29	9	5	0	7	91
	9	20	0	0	0	0	0	38	17	13	0	12	109
	8	24	0	0	0	0	0	37	4	16	0	10	99
TOTAL	**26**	**105**	**2**	**1**	**0**	**0**	**0**	**134**	**37**	**43**	**0**	**49**	**397**

Main Street (Eastbound) & Southbound I-75 Entrance Ramp

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	0	0	0	46	301	0	0	0	0	60	307	0	714
	0	0	0	34	333	2	0	0	0	76	300	0	745
	0	0	0	36	300	3	0	0	0	75	308	0	722
	0	0	0	38	310	1	0	0	0	64	322	0	735
TOTAL	**0**	**0**	**0**	**154**	**1244**	**6**	**0**	**0**	**0**	**275**	**1237**	**0**	**2916**

Main Street & Southbound I-75 Exit Ramp/Dickerson Road

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	32	14	31	0	322	37	81	0	39	22	312	0	890
	43	14	36	0	309	54	77	0	26	24	301	0	883
	34	7	37	0	336	48	98	0	38	21	293	0	910
	35	10	42	0	305	43	59	0	28	19	307	0	847
TOTAL	**144**	**44**	**146**	**0**	**1271**	**182**	**314**	**0**	**131**	**85**	**1212**	**0**	**3530**

Main Street & Meecher Road

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	3	0	2	13	372	0	0	0	0	0	310	8	709
	9	0	5	2	368	0	0	0	0	0	342	1	728
	9	0	0	14	356	0	0	0	0	0	343	4	726
	4	0	4	17	355	0	0	0	0	0	330	1	712
TOTAL	**25**	**0**	**12**	**46**	**1451**	**0**	**0**	**0**	**0**	**0**	**1326**	**15**	**2875**

M-32 & McVannel Road

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	3	2	21	14	200	1	2	1	12	0	178	7	441
	2	0	20	8	192	2	1	4	4	3	213	4	453
	1	1	18	28	213	0	1	5	9	1	197	2	476
	3	2	23	27	190	1	0	0	10	2	187	3	448
TOTAL	**9**	**5**	**82**	**77**	**795**	**4**	**4**	**10**	**35**	**6**	**775**	**16**	**1818**

Old Alba Road & Plywood Road

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	4	0	2	0	7	0	0	0	0	0	12	4	29
	1	0	0	5	12	0	0	0	0	0	11	2	31
	3	0	1	1	16	0	0	0	0	0	10	1	32
	1	0	1	1	10	0	0	0	0	0	12	0	25
TOTAL	**9**	**0**	**4**	**7**	**45**	**0**	**0**	**0**	**0**	**0**	**45**	**7**	**117**

Townline Road South & Van Tyle Road

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	4	2	4	2	11	0	0	2	0	1	4	4	34
	3	1	3	6	3	0	0	1	0	0	6	6	29
	5	3	6	2	3	0	0	4	0	0	7	5	35
	3	2	2	5	6	1	1	6	0	1	3	1	31
TOTAL	**15**	**8**	**15**	**15**	**23**	**1**	**1**	**13**	**0**	**2**	**20**	**16**	**129**

M-32 & Townline Road

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	0	0	0	0	181	8	9	0	8	3	130	0	339
	0	0	0	0	155	8	8	0	3	4	146	0	324
	0	0	0	0	186	14	9	0	9	3	108	0	329
	0	0	0	0	189	11	6	0	0	1	123	0	330
TOTAL	**0**	**0**	**0**	**0**	**711**	**41**	**32**	**0**	**20**	**11**	**507**	**0**	**1322**

Dickerson Road & Van Tyle Road

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	3	39	0	0	0	0	0	34	2	3	0	5	86
	4	28	0	0	0	0	1	39	6	0	0	2	80
	2	34	0	0	0	0	0	43	0	7	0	0	86
	1	36	0	1	0	1	0	38	3	3	0	1	84
TOTAL	**10**	**137**	**0**	**1**	**0**	**1**	**1**	**154**	**11**	**13**	**0**	**8**	**336**

Intersection 45 -12pm

	SB			WB			NB			EB			TOTAL
	R	T	L	R	T	L	R	T	L	R	T	L	
	0	148	10	16	0	29	25	171	0	0	0	0	399
	0	141	4	11	0	20	23	144	0	0	0	0	343
	0	143	7	14	0	14	22	132	0	0	0	0	332
	0	189	9	11	0	23	25	132	0	0	0	0	389
TOTAL	**0**	**621**	**30**	**52**	**0**	**86**	**95**	**579**	**0**	**0**	**0**	**0**	**1463**

APPENDIX B

BUSINESS SURVEY RESULTS FOR COMMERCIAL TRAFFIC

I-75 Crossing Study Business Survey Questionnaire

1. Where is your business located? Please enter either your street address, or a general intersection description such as: “NW of Murner Rd & M-32 intersection” or “SE of Van Tile Rd & Dickerson intersection”, etc.

_____

2. Which days of the week do you generally receive pickups or deliveries?
Either A.M. or P.M.?
From which direction? (N)orth (S)outh (E)ast (W)est
On what type of truck? 2-Axles; 3 or more Axles

Please write the approximate number of arriving pickups/deliveries in the appropriate spaces:

	A.M.				P.M.			
A. Monday	N____	S____	E____	W____	N____	S____	E____	W____
2 Axles								
3+ Axles	N____	S____	E____	W____	N____	S____	E____	W____
B. Tuesday								
2 Axles	N____	S____	E____	W____	N____	S____	E____	W____
3+ Axles	N____	S____	E____	W____	N____	S____	E____	W____
C. Wednesday								
2 Axles	N____	S____	E____	W____	N____	S____	E____	W____
3+ Axles	N____	S____	E____	W____	N____	S____	E____	W____
D. Thursday								
2 Axles	N____	S____	E____	W____	N____	S____	E____	W____
3+ Axles	N____	S____	E____	W____	N____	S____	E____	W____
E. Friday								
2 Axles	N____	S____	E____	W____	N____	S____	E____	W____
3+ Axles	N____	S____	E____	W____	N____	S____	E____	W____
F. Saturday								
2 Axles	N____	S____	E____	W____	N____	S____	E____	W____
3+ Axles	N____	S____	E____	W____	N____	S____	E____	W____
G. Sunday								
2 Axles	N____	S____	E____	W____	N____	S____	E____	W____
3+ Axles	N____	S____	E____	W____	N____	S____	E____	W____

3. Using the schedule in question 2, in which direction do pickup/delivery trucks depart after picking up/dropping off at your location?

Please write the approximate number of departing pickups/deliveries in the appropriate spaces:

Y Don't Know

A. Monday A.M Deliveries P.M Deliveries
   2 Axles N____ S____ E____ W____ N____ S____ E____ W____
   3+ Axles N____ S____ E____ W____ N____ S____ E____ W____

B. Tuesday A.M. P.M.
   2 Axles N____ S____ E____ W____ N____ S____ E____ W____
   3+ Axles N____ S____ E____ W____ N____ S____ E____ W____

C. Wednesday A.M. P.M.
   2 Axles N____ S____ E____ W____ N____ S____ E____ W____
   3+ Axles N____ S____ E____ W____ N____ S____ E____ W____

D. Thursday A.M. P.M.
   2 Axles N____ S____ E____ W____ N____ S____ E____ W____
   3+ Axles N____ S____ E____ W____ N____ S____ E____ W____

E. Friday A.M. P.M.
   2 Axles N____ S____ E____ W____ N____ S____ E____ W____
   3+ Axles N____ S____ E____ W____ N____ S____ E____ W____

F. Saturday A.M. P.M.
   2 Axles N____ S____ E____ W____ N____ S____ E____ W____
   3+ Axles N____ S____ E____ W____ N____ S____ E____ W____

G. Sunday A.M. P.M.
   2 Axles N____ S____ E____ W____ N____ S____ E____ W____
   3+ Axles N____ S____ E____ W____ N____ S____ E____ W____

5. In general, where do your pickup/deliveries occur most frequently? (Circle one)

   A. On street (truck stops in roadway for pickup/delivery)
   B. Off street (loading dock, alley entrance, rear area, etc.)

6. Do you have, or foresee difficulties with any of the following? (Circle all that apply)

A. Ingress/Egress to your business
B. Traffic safety issues (speeds, roadway lane configuration, etc.)
C. Customer parking – availability
D. My commercial vehicle parking
E. Concerns related to bikes and pedestrian access
F. Traffic delays/congestion

7. Do you have any additional comments?

_____

_____

_____

_____

_____

_____

_____

_____

Thank you for your valuable time and assistance. You have made an important contribution to help Otsego County meet all of our future transportation needs!

I-75 Crossing Study - Business Survey Questionnaire

4. Where is your business located? Please enter either your street address, or a general intersection description such as: "NW of Murner Rd & M-32 intersection" or "SE of Van Tile Rd & Dickerson intersection", etc.

_____

5. Approximate number of trucks or vans that **arrive to** your business each day? _____

Approximate number of trucks or vans that **depart from** your business each day? _____

Direction of travel:

Which route is currently used most frequently for **eastward** travel? (i.e., M-32; or McCoy Rd to Krys Rd to M-32; etc.) _____

Which route is currently used most frequently for **westward** travel? (i.e., M-32; or Milbocker Rd to Townline Rd to M-32; etc.) _____

6. When using I-75 for north or south travel,

Approximately how many trips are directed to the 282 interchange? _____Northbound

_____Southbound

Approximately how many trips are directed to the 279 interchange? _____Northbound

_____Southbound

Eastward Travel	Street Number	Street Name	Intersection/ Notes	Arriving Daily	Departing Daily	Westward Travel	North 282	South 282	North 279	South 279
M-32	825	S. Wisconsin Ave		7	7	M-32	4	4	3	3
M-32	1025	S. Wisconsin Ave		2	2	M-32	0	1	1	0
0		Wisconsin	Gornick Ave	0	0	0	0	0	0	0
M-32		Wisconsin	Gornick Ave	2	2	M-32	1	0	0	1
M-32	1092	Anna Dr.		6	6	M-32	1	5	3	3
M-32	1245	Anna Dr.		30	30	M-32	30	30	0	0
M-32	1196	Energy Dr.	In Industrial Park	4	4	M-32	1	1	1	1
D-M-32	1680	Calkins	In Industrial Park	20	20	D-T-M-32	0	0	0	4
M-32	1829	Calkins		10	10	M-32	9	1	1	1
M-32	1534	O'Rourke Blvd	In Industrial Park	7	2	Van Tile-Townline-M-32	5	0	4	0
M-32	1670	O'Rourke Blvd		4	4	M-32	1	2	2	2
D-M-32	1923	O'Rourke Blvd	In Industrial Park	7	7	D-M-32	0	1	4	0
D-27-BL-M-32	1924	O'Rourke Blvd	Industrial Park near Millbocker	20	20	D-M-32	10	0	0	14
0		O'Rourke Blvd		1	1	D-Van Tile	0	2	0	1
D-Otsego Lake		Air Park	Off O'Rourke	4	4	Van Tile-Townline-M-32	200	10	40	20
M-32	1134	Milbocker		50	50	Milbocker-Townline	45	0	5	0
D-M-32	1180	Milbocker		10	10	D-M-32	5	0	0	5
M-32	1396	Milbocker		15	15	Townline-M-32	5	0	2	5
D-McCoy	1801	Milbocker		10	10	Milbocker-Townline	1	0	0	1
D-M-32	2000	Milbocker		45	45	D-M-32	10	10	10	10
M-32-Old State Rd.	1886	Engel	Off Milbocker	9	9	Milbocker-T-M-32	3	3	4	4
M-32	118	Meecher		15	3	M-32	1	2	0	0
M-32	231	Meecher		6	6	M-32	2	4	4	2
Mankowski-D-M-32	1370	Pinewiew	By Barnyard - SW Corner of M-32 & Dickerson	3	3	Mankowski-D-M-32	3	3	0	0
M-32			Pineview off Dickerson	3	3	M-32	3	3	0	0
Old 27 - McCoy		West Otsego Lake Dr.	D & M Drive	12	12	D-M-32	0	0	1	3
McCoy-M-32	525	Dickerson		4	4	M-32	0	4	0	0
M-32	845	Dickerson		7	7	M-32	4	4	4	4
M-32	901	Dickerson		55	55	M-32	10	10	0	0
M-32	995	Dickerson		15	15	M-32	7	7	7	7
M-32	1497	Dickerson		18	18	M-32	4	8	0	8
M-32	1759	Dickerson		35	35	M-32	0	0	4	4
McCoy-M-32	1924	Dickerson	N of Milbocker	9	6	M-32	7	7	0	0
M-32	2055	Dickerson		3	3	M-32	1	0	0	1
D-M-32	2212	Dickerson		120	120	D-M-32	25	20	0	60
M-32	2757	Dickerson		10	10	M-32	5	3	2	2

Eastward Travel	Street Number	Street Name	Intersection/ Notes	Arriving Daily	Departing Daily	Westward Travel	North 282	South 282	North 279	South 279
M-32			Industrial Park & Dickerson Rd.	3	3	M-32	0	1	0	2
M-32			Dickerson & O'Rourke	25	25	M-32	15	5	1	4
McCoy-M-32			Dickerson & Milbocker	20	20	M-32	10	5	0	0
M-32	356	Expressway Ct.		3	3	M-32	3	3	0	0
M-32	520	Expressway Ct.		5	5	M-32	1	1	0	0
Meecher-M-32	692	Expressway Ct.		8	8	Meecher-M32	1	4	4	1
Meecher-M-32	765	Expressway Ct.		5	5	Meecher-M-32	5	5	0	0
M-32	846	Expressway Ct.		9	9	M-32	3	2	0	0
McCoy-Krys-M-32	1319	N. Townline		1	1	M-32	0	0	0	0
M-32	319	W. Main		5	2	M-32	3	2	0	2
M-32	1466	West Main		15	15	M-32	10	2	1	1
M-32	2010	West M-32		3	15	M-32	2	4	0	0
M-32		West M-32	NE of Murner & NW of Meecher	2	2	M-32	1	1	0	0
M-32		West M-32	SE of Murner & SW of Meecher	20	20	M-32	20	20	0	0
N Ohio-Mitchell-W-M-32		Carpenter	N of M-32 &- W of N Ohio	50	50	M-32	50	50	0	0
M-32		East M-32		30	15	M-32	0	0	0	0
M-32-Krys		East M-32	East of Chester Road	6	3	M-32	0	1	10	5
M-32			SE corner of McCoy & M-32 East	6	5	McCoy	1	1	1	1
M-32	403	W. Mitchell		5	5	M-32	2	2	1	1
M-32	403	W. Sheldon		14	14	M-32	2	0	6	8
M-32			S of M-32 & W of I-75	12	12	M-32	12	12	0	0
M-32			S of M-32 & W of Old 27 South	4	4	M-32	1	3	0	3
M-32	825	North Center		22	22	M-32	10	10	0	0
M-32	901	North Center		4	4	M-32	2	4	0	0
M-32	977	North Center	S of Fairview St.	8	3	M-32	2	0	0	0
Old 27-M-32-I-75			Fairview & Old 27 North	1	1	M-32	10	10	10	10
M-32	1054	Old 27 North		30	30	M-32	5	15	0	0
M-32	1144	Old 27 North	Across from Highschool	10	10	M-32	2	2	2	2
M-32	1258	Old 27 North		25	25	M-32	15	10	0	0
M-32	720	S Otsego Ave		6	20	M-32	15	0	0	12
M-32	931	S Otsego Ave		20	20	Townline-M-32	10	0	0	10
M-32	1349	S Otsego Ave		2	2	M-32	0	0	2	2
M-32	1419	S Otsego Ave		1	1	M-32	0	0	0	0
McCoy-Krys-M-32	2086	S Otsego Ave	S of McCoy Rd	30	30	M-32	6	6	24	24
McCoy-M-	2401	S Otsego Ave		25	25	West Otsego-D-	25	0	25	0

Eastward Travel	Street Number	Street Name	Intersection/ Notes	Arriving Daily	Departing Daily	Westward Travel	North 282	South 282	North 279	South 279
32						M-32				
McCoy-Krys-M-32	2678	Old 27 South		100	100	M-32	50	50	50	50
McCoy-Krys-M-32	3689	Old 27 South		15	20	West Otsego-D-M-32	2	0	6	10
McCoy-M-32	647	Poplar Drive	W of Old 27 S & S of Poplar Dr.	1	3	27 to Old State Rd	0	0	4	0
McCoy-Krys-M-32	150	Dale Dr.	E of Old 27 S & S of McCoy Near 279 interchange	4	4	Milbocker-Townline-M-32	0	0	4	4
McCoy-M-32			North of 279 Interchange on Old 27 S	2	0	Old 27-W-M-32	1	0	0	1
M-32 = 47			**Totals**	**1135**	**1119**	M-32 = 51	**700**	**376**	**253**	**319**
Old 27-McCoy = 1						D-T-M-32 = 1				
McCoy-M-32 = 6						Van Tile-Townline-M-32 = 2				
McCoy-Krys-M-32 = 5						D-M-32 = 6				
Old 27-M-32-I-75 = 1			**KEY**			Milbocker-Townline = 4				
M-32-Krys = 1			D=Dickerson			Mankowski-D-M-32 = 1				
N Ohio-Mitchell-W-M-32 = 1			Old 27-McCoy=Old 27 (South Otsego) to McCoy			Meecher-M32 = 2				
Meecher-M-32 = 2			D-T-M-32=Dickerson to Townline to M-32			West Otsego-D-M-32 = 2				
D-M-32 = 5			D-M-32=Dickerson to M-32			Townline-M-32 = 2				
Mankowski-D-M-32 = 1			D-27-BL-M-32=Dickerson to Old 27 to McCoy to Big Lake to McCoy to M-32			27 to Old State Rd = 1				
M-32-Old State Rd. = 1			Milbocker-T-M-32=Milbocker to Townline to M-32			Old 27-W-M-32 = 1				
D-Otsego Lake = 1			N Ohio-Mitchell-W-M-32=North Ohio to Mitchell to Wisconsin to M-32							
D-27-BL-M-32 = 1			Old 27-W-M-32=Old 27 to Wisconsin to M-32							
0 = 2						0 = 2				
Total = 75						**Total = 75**				

APPENDIX C

ASSUMPTIONS, METHODS, AND RESULTS FOR SYNCHRO ANALYSIS – PHASE I

I-75 East-West Crossing Study

Assumptions and procedures used to populate the Existing Conditions SYNCHRO model and Capacity Analysis:

Assumptions:

1. The node locations and link distances as illustrated on the base aerial photo supplied by NEMCOG are to scale and accurate with respect to distances.
2. Traffic volumes and turning movements taken between 11 AM and 3 PM on the weekends selected are representative of "typical" summer traffic. This is the peak period for which the evaluation is being conducted.
3. Heavy truck traffic and recreational vehicle traffic have similar acceleration and deceleration characteristics.
4. The input traffic signal times supplied by NEMCOG are installed in the field and the signal sequences are as identified on the timing permits.
5. M-32 westbound travel speeds were reduced between Hayes and Otsego to create additional delay. Parking movements were increased to 60 per hour in each direction to further create backups along M-32.

Model procedure:

1. Turning movements were collected for at most 1 hour and 45 minutes at 43 intersections on a weekend (Friday, Saturday or Sunday) during August between 1100 and 1500 hours. The intersections were not all counted on the same day or at the same time. It was previously agreed that this time period was typical of the peak congestion experienced in the community. To verify the peak hours and directional distribution of traffic, NEMCOG obtained several 24 hour counts at selected locations.
2. Heavy commercial vehicles were counted separately for about half of the intersections. The local volunteer counters did not all use the commercial vehicle count tab, and as a result the intersections counted locally did not all include commercial vehicle data. Commercial vehicles were included in the total count for the intersection. As an estimate of commercial vehicle values, adjacent intersections where commercial vehicles were reviewed and a composite commercial percentage was gleaned from adjacent intersection data.
3. Recreational vehicles (pulling a trailer or other vacation purpose vehicles) were counted separately for about half of the intersections. The local volunteer counters did not all use the recreational vehicle count tab, and as a result the intersections counted locally did not all include recreational vehicle data. Recreational vehicles were included in the total count for the intersection. As an estimate of recreational vehicle values, adjacent intersections where recreational vehicles were reviewed and a composite recreational percentage was gleaned from adjacent intersection data.
4. Heavy commercial vehicles and recreational vehicles (where available) were counted separately and the actual percent of large vehicles was input into the 2003 Existing Conditions model.
5. Peak hours were calculated from the combined intersection turning movement data for cars, heavy vehicles and recreational vehicles where available.
6. Peak hour factors were calculated for each intersection movement and input into the 2003 Existing Conditions model.
7. Travel times were collected during these time periods for each link in the model, and the posted speeds were recorded for each link also.
8. A photograph was taken of each intersection approach to verify model geometrics.
9. A hand sketch of the intersection was obtained that also was used to verify lane widths and

configurations.
10. The NEMCOG GIS was used to create the SYNCHRO base model and the NEMCOG aerial photo was used to verify lanes and intersection angles.
11. The base SYNCHRO model was created to physically simulate the lane configuration, intersection control, posted travel speed and other characteristics of the intersection.
12. Peak hour turning movements were loaded into the SYNCHRO model at each intersection.
13. The intersection turning movement counts were adjusted to allow a 15 % variance between adjacent intersections, unless field observations indicated a heavy volume of mid-block trip destinations. To verify the peak hours and directional distribution of traffic, NEMCOG obtained several 24 hour counts at selected locations, and compared directional distributions with those collected at the intersections. Some adjustments to the intersection turning movement data was made to coincide with traffic volume counts, but these were not of a great magnitude.
14. The result of this calculation is a balanced traffic flow model
15. The initial SYNCHRO run output was compared to the field volumes collected and the actual travel speeds recorded for each link in the SYNCHRO model. If the SYNCHRO average speed was more than 5 mph different from the actual recorded travel speed for each link, the model was adjusted by changing the free-flow speed up or down until the two speeds were within 5 mph.
16. The SYNCHRO model was run and the SIMTRAFFIC program used to view the resulting intersection operations and queue lengths. Backups in the model were compared with field notes to verify the occurrence and queue length to make sure that the model accurately simulated problems on individual approaches/movements.
17. The SYNCHRO report generation feature was used to generate output to identify levels of service for each approach, traffic signal, stop sign intersection and arterial roadway.

Initial Findings:

1. Traffic backups similar to those observed in the field data collection are verified in the model along M-32 west of I-75 (I-75 SB off ramp/Dickerson, Meecher, Murner). There is congestion along the east portion of M-32 (downtown) which dissipates the further east one travels.
2. Traffic backups were verified in the model Ohio, Wisconsin and Otsego intersections with M-32 (Main Street).
3. Traffic backups were verified at Grandview and S. Otsego. This intersection operates at LOS e (fails) due to traffic signal timing issues.
4. M-32 and Otsego Ave operates at LOS C, but the northbound left turn movement operates at LOS E.
5. M-32 and Wisconsin operates at LOS C, but the Westbound left turn operates at LOS E due to timing issues.
6. M-32 and northbound I-75 off ramp operates at LOS C, but the northbound left turn operates at LOS E due to signal timing issues.
7. M-32 and Dickerson operates at LOS E (fails) due to capacity issues.
8. The intersection of Johnson Road and S Otsego Rd (18) does not operate well at LOS F for the westbound left turn movement.
9. The intersection of Otsego Av and N Otsego Lake Rd (26) has some backup issues but operates at the upper limits of LOS D.
10. The intersection of M-32 and Ohio Av experiences LOS F for the southbound approach due to lack of gaps in the M-32 traffic stream.
11. M-32 and Townline Road operates at LOS D, but the northbound left turn movement operates at LOS E (with only 36 left turns).

APPENDIX D

ASSUMPTIONS, METHODS, AND RESULTS FOR SYNCHRO ANALYSIS – PHASE II

Procedures used to create the 2015 Low Growth Scenario (No Build, Background Growth Only) SYNCHRO model and Capacity Analysis:

Model procedure:

1. New roadways, which are likely to be constructed regardless of the results of this study, were added to the roadway network, assuming that they will be operational by 2015.
2. The Project Pedestrian geometrics were modeled, but without the traffic report that justifies the location of the turn around lanes, no accurate modeling of u-turn traffic is possible.
3. A new model node was created for Dale Drive where it intersects with S. Otsego and with Johnson Road.
4. Background traffic was projected to grow at a rate of 1.5 percent annually to the year 2015, which is consistent with the background traffic growth rate used in related studies. This is a rather conservative estimate, and gives rise to the fear that background growth may be slightly under-represented in the model.
5. The traffic impact studies previously prepared for the Otsego Place East and Edelweiss Village developments were not used to assign turning movements at the intersections that are described in these reports. The background growth rate was applied uniformly across all intersections in the study area. It is not known if the future projections in households and employment included these two major developments as there were no traffic analysis zones assigned specifically to them. The specific impacts of each major development at specific intersections are not the subject of this particular model, but are included in the 2015 High Growth Model.
6. No changes were made to traffic management strategies, and no new traffic signals were added for this particular model.
7. Existing traffic signal cycle lengths were optimized for the entire system.
8. The 2003 Existing Conditions Model was modified with the above factors. This is believed to be accurate because the 2003 Existing Conditions Model is representative of what has been observed. No re-balancing of turning movements or travel times occurred and the calibration accompanying the 2003 Existing Conditions model are intact with this model.

Procedures used to create the 2015 High Growth Scenario (No-Build, Background Growth plus Proposed Developments) SYNCHRO model and Capacity Analysis:

Model procedure:

The same general assumptions used in the 2015 Background Only model were employed with this new model, with the following modifications:

1. New development trips were generated for each known development (list provided by Technical Steering Committee), and distributed to the roadway network by a travel time gravity model. There are 19 development trip end locations in the gravity model. The new development trips were generated using the procedures contained in the ITE Trip Generation Manual, 6th Edition. The generated trips were calculated using weekend factors to coincide with the 2003 Existing Model. Reasonable assumptions regarding weights assigned to each proposed development, based upon the development's proximity to the study area, were made using experience and professional judgment.
2. The specific turning movements at intersections impacted by Edelweiss Village and Otsego Place East were input into the model at the intersections adjacent to these two developments. Since the other identified developments did not have traffic impact

studies associated with them, the new trips for those were assigned using the gravity model for trip distribution.

3. Intersection volumes were examined and balanced to within 15 percent, unless major trip ends were present at mid-block locations.
4. Since it is likely that the 1.5 percent background growth projection included some of the new trips generated by known developments, it is believed that this model slightly over-estimates future trips.
5. New traffic signals and lane geometrics were modeled according to the recommendations of each development's traffic impact report. It is noted that these impact reports did not contemplate Project Pedestrian, and as a result it was not possible to project u-turn volumes at the median cross over locations along S. Otsego.
6. At Otsego and McCoy, all left turn movements were converted into indirect left turns, consistent with the intent of Project Pedestrian.
7. For the Otsego Place East development, modeling of individual driveways did not occur because it is not the intent of this study to analyze the impact of development driveways.
8. New traffic signals were added to the model to reflect the recommendations of the traffic impact studies.

Procedures used to create the 2025 Low Growth Scenario (No Build, Background Growth Only) SYNCHRO model and Capacity Analysis:

Model procedure:
The same general assumptions used in the 2015 Low Growth Scenario model were employed with this new model, with the following modifications:

1. 2015 Low Growth model volumes were increased by an annual rate of 1.25 percent to generate the growth in background traffic through year 2025. This slightly lower annual growth rate is believed to be appropriate because it is assumed that all 19 development sites would be fully occupied by 2015, and additional background would be reduced to reflect the filling in of available developable land. This resulted in a 16 percent increase in volumes over the year 2015 Low Growth model volumes.
2. No new traffic signals or modifications to the current traffic management strategies were modeled, except that existing traffic signal cycles were optimized to improve traffic operations.

Procedures used to create the 2025 High Growth Scenario (No-Build, Background Growth plus Proposed Developments) SYNCHRO model and Capacity Analysis:

Model procedure:

The same general assumptions used in the 2015 High Growth model were employed with this new model, with the following modifications:

1. 2015 High Growth model volumes were increased by an annual rate of 1.25 percent to generate the growth in background traffic through year 2025. This resulted in a 16 percent increase in volumes over the year 2015 High Growth model volumes.
2. No new traffic signals or modifications to the current traffic management strategies were modeled, except that existing traffic signal cycles were optimized to improve traffic operations.

APPENDIX E

ASSUMPTIONS, METHODS, AND RESULTS FOR SYNCHRO ANALYSIS – PHASE III

Methodology for assigning future trips and calculating future intersection turning movement volumes.

Assumptions: The base assumption relied upon to distribute future trips is that drivers will, over time, gravitate to the route that consumes the least amount of travel time. Drivers who are familiar with the area will find these shortest-time routes easily, and drivers who are not generally familiar with the area will ultimately find the shortest-time route over a longer period of time. Local trips within the study area will also take the routes that result in the shortest travel time in order to avoid delay and congestion at intersections.

There are three types of trips considered in the projections: external to external, external to internal and internal to internal. Trip distributions for all three trip types are needed in order to assign trips to individual routes and intersections within the study area.

Procedure: The Synchro program predicts travel times, in seconds, between each node in the system for each alternative modeled. For each model, a trip route was manually identified that logically linked each entry link to major destinations within the study area, and also linked each destination to the exit links. These trip routes account for the external to external and external to internal trip assignments. Usually, two to four different routes were selected based upon our knowledge of travel patterns in the study area. In this way, a "trip tree" was derived that identified specific routes through the study area, and assigned a value of total travel time to each potential route.

For each route contained in the resulting trip matrix the total travel time, as predicted by the Synchro model for each alternative, was identified. Next, an algorithm was derived to distribute the volumes using each potential route within each trip tree. The distribution resulted in the calculation of volume percentages resulting between all selected routes within the system. The largest percentage was assigned to the route that provided the least amount of total travel time. The routes within each trip tree were described by identifying individual intersections whose approach volumes were converted into individual turning movement values.

The turning movements were then input into the original Synchro model for the specific alternative being evaluated. This process was repeated three times, with trip times and turning movement percentages being re-calculated for each model run. The process resulted in a re-distribution of intersection volumes, and arterial volumes also, which were used to determine LOS values for each intersection and arterial for each scenario.

While the above described process was effective in describing the altered paths of vehicles entering the system from external links, it resulted in total vehicle miles of travel that were significantly less than the 2025 No-Build totals. This is because the trip tree process distributed volumes starting with system entry links and not with internal sources of trips. To overcome this imbalance, consideration had to be given to trips originating within the study area which also have a destination within the study area. The internal to internal trips are correctly reflected in the 2003 Baseline model and in the 2025 No-Build model. It is believed that many of the internal to internal trips will not be significantly altered due to the presence of shorter travel time routes. However at some nodes, it was apparent that the previous assignment of the external related trips resulted in a "loss" of some of the internal origin trips. For these locations, our knowledge of existing travel patterns in the area was helpful in order to manually adjust some of the intersection turning movements to account for internal to internal vehicle trips.

Also of critical importance are the locations of existing and future large commercial/retail trip ends that currently experience heavy access/egress volumes, and/or which will continue to experience heavy demand under future condition scenarios For these locations, care was taken to examine major commercial center driveway volumes and re-establish the access and egress movements to replicate those observed in 2003, and those predicted in the 2025 No-Build scenario model. The 2025 driveway volumes were set and traffic movements to/from each commercial area were manually adjusted and distributed to the roadway network by adjusting volumes at individual intersections.

Summary: At the conclusion of the trip distribution process, each scenario model included continuity for vehicles entering and exiting the study area via the routes that serve that purpose, (external to external and external to internal) and also included continuity at the major attractors of trips (internal to internal). Thus, the total volumes entering and exiting the study area are similar to the entry and exit volumes predicted in the 2025 No-Build model, and the commercial driveway volumes and intersection approach volumes adjacent to these heavily traveled areas also are of the same order of magnitude. The only changes evident, when comparing the results of each future scenario to the 2025 No-Build model, is the predicted impact of assigning trips to routes based upon the shortest travel times, and the changes to the geometrics and traffic controls embedded within each scenario.

Source of Errors: This method does not include trip assignments according to any origin and designation (O&D) study, which would be outside the scope of the study. Thus, little is realized about the actual trip routes that would be predicted based upon a scientific roadside survey, or other O&D tool. Notwithstanding that source of potential error, the travel time gravity model process used here is a logical one that considers a motorists overall desire not to be excessively delayed while traversing the study area. The prediction of travel time through the Synchro model process represents a highly educated prediction of travel time and intersection performance.

APPENDIX F

COST ESTIMATES

I-75 E-W CONNECTOR		Prepared By: RZ Date: 5/7/2004 Checked By: Date:
	TOTAL COST	
ALTERNATIVE 1		
ROAD WORK	$6,207,580.00	
TRAFFIC WORK	$840,000.00	
BRIDGE WORK	$2,445,000.00	
CONTINGENCY (30%)	$2,847,774.00	
PE (10%)	$1,234,035.40	
GRAND TOTAL	**$13,574,389.40**	
ALTERNATIVE 2		
ROAD WORK	$2,100,000.00	
TRAFFIC WORK	$175,000.00	
BRIDGE WORK	$2,024,670.00	
CONTINGENCY (30%)	$1,289,901.00	
PE (10%)	$558,957.10	
GRAND TOTAL	**$6,148,528.10**	
ALTERNATIVE 3		
ROAD WORK	$12,415,500.00	
TRAFFIC WORK	$1,685,000.00	
BRIDGE WORK	$3,114,926.00	
CONTINGENCY (30%)	$5,164,627.80	
PE (10%)	$2,238,005.38	
GRAND TOTAL	**$24,618,059.18**	
ALTERNATIVE 4		
ROAD WORK	$13,676,163.00	
TRAFFIC WORK	$1,300,000.00	
BRIDGE WORK	$3,114,926.00	
CONTINGENCY (30%)	$5,427,326.70	

	PE (10%)	$2,351,841.57	
	GRAND TOTAL	**$25,870,257.27**	
	ALTERNATIVE 5		
	ROAD WORK	$1,520,000.00	
	TRAFFIC WORK	$260,000.00	
	BRIDGE WORK	$0.00	
	CONTINGENCY (30%)	$534,000.00	
	PE (10%)	$231,400.00	
	GRAND TOTAL	**$2,545,400.00**	

I-75 E-W CONNECTOR

Prepared By:	RZ
Date:	5/7/2004
Checked By:	
Date:	

ALTERNATIVE 1

QUANTITIES

ID	Intersection	Area (Sft)	Unit Cost	TOTAL	
17	Johnson & Evergreen Dr				$575,000.00
	- Road Improvements	103000	$5.00	$515,000.00	
	- Traffic Improvements			$60,000.00	
22	I-75 NB Off Ramp & Ostego Ave				$105,000.00
	- Road Improvements	11000	$5.00	$55,000.00	
	- Traffic Improvements			$50,000.00	
24	Old 27 & SB I-75 Entrance Ramp				$365,000.00
	- Road Improvements	63000	$5.00	$315,000.00	
	- Traffic Improvements			$50,000.00	
26	Old 27 & N. Ostego Lake Dr.				$575,000.00
	- Road Improvements	105000	$5.00	$525,000.00	
	- Traffic Improvements			$50,000.00	
28	Grandview Blvd. & Ostego Ave.				$380,000.00
	- Road Improvements	61000	$5.00	$305,000.00	
	- Traffic Improvements			$75,000.00	
33	M-32 & Wisconsin				$75,000.00
	- Road Improvements	5000	$5.00	$25,000.00	
	- Traffic Improvements			$50,000.00	
34	M-32 & NB I-75				$215,000.00
	- Road Improvements	38000	$5.00	$190,000.00	
	- Traffic Improvements			$25,000.00	
36	Van Tyle Rd. & Dickerson Rd.				$230,000.00
	- Road Improvements	34000	$5.00	$170,000.00	
	- Traffic Improvements			$60,000.00	
38	M-32 & SB I-75 Exit				$450,000.00
	- Road Improvements	75000	$5.00	$375,000.00	

	- Traffic Improvements			$75,000.00	
39	M-32 & Meecher Rd.				$650,080.00
	- Road Improvements	115016	$5.00	$575,080.00	
	- Traffic Improvements			$75,000.00	
127	Johnson Rd. & Dale				$232,500.00
	- Road Improvements	34500	$5.00	$172,500.00	
	- Traffic Improvements			$60,000.00	
184	Ostego Ave & Fantasy Dr.				$360,000.00
	- Road Improvements	60000	$5.00	$300,000.00	
	- Traffic Improvements			$60,000.00	
188	Ostego Ave & Dale Dr.				$440,000.00
	- Road Improvements	78000	$5.00	$390,000.00	
	- Traffic Improvements			$50,000.00	
500	Mankowski Rd. & Dickerson Rd.				$295,000.00
	- Road Improvements	49000	$5.00	$245,000.00	
	- Traffic Improvements			$50,000.00	
502	Johnson Rd. & Fantasy Dr.				$300,000.00
	- Road Improvements	50000	$5.00	$250,000.00	
	- Traffic Improvements			$50,000.00	
	SB I-75 Ramp @ Main St.	50000	$5.00		$250,000.00
	Main St. Construction	57000	$5.00		$285,000.00
	Fantasy Dr. Construction	118000	$5.00		$590,000.00
	Dale Dr. Construction	25000	$5.00		$125,000.00
	Fairview/Five Lakes Construction	30000	$5.00		$150,000.00
	Van Tyle/Grandview Construction	80000	$5.00		$400,000.00
	Bridge @ Fairview/Five Lakes			$1,155,000.00	$1,155,000.00
	Bridge @ Van Tyle/Grand View			$1,290,000.00	$1,290,000.00
	SUB TOTAL				$9,492,580.00
	Contingency (30%)				$2,847,774.00
	TOTAL				$12,340,354.00
	PE (10%)				$1,234,035.40
	TOTAL PROJECT COST				**$13,574,389.40**

I-75 E-W CONNECTOR

Prepared By:	RZ
Date:	5/7/2004
Checked By:	
Date:	

ALTERNATIVE 2

QUANTITIES

ID	Intersection	Area (Sft)	Unit Cost	TOTAL	
	Mccoy @ I-75 NB Ramps				$315,000.00
	- Road Work	53000	$5.00	$265,000.00	
	- Signal Work		$50,000.00	$50,000.00	
	Millbocker @ I-75 SB Ramps				$240,000.00
	- Road Work	38000	$5.00	$190,000.00	
	- Signal Work		$50,000.00	$50,000.00	
	Dickerson/Milbocker Intersection				$320,000.00
	- Road Work	49000	$5.00	$245,000.00	
	- Signal Work		$75,000.00	$75,000.00	
	I-75 NB Off Ramp	40000	$5.00		$200,000.00
	I-75 NB On Ramp	45000	$5.00		$225,000.00
	I-75 SB Off Ramp	46000	$5.00		$230,000.00
	I-75 SB On Ramp	62000	$5.00		$310,000.00
	Dickerson Road Construction	72000	$5.00		$360,000.00
	Millbacker Road Construction	15000	$5.00		$75,000.00
	Bridge @ New Interchange			$2,024,670.00	$2,024,670.00
	SUB TOTAL				$4,299,670.00
	Contingency (30%)				$1,289,901.00
	TOTAL				$5,589,571.00
	PE (10%)				$558,957.10
	TOTAL PROJECT COST				**$6,148,528.10**

I-75 E-W CONNECTOR

Prepared By:	RZ
Date:	5/7/2004
Checked By:	
Date:	

ALTERNATIVE 3

QUANTITIES

ID	Intersection	Area (Sft)	Unit Cost		
8	PetoskeySt & Center Ave				$60,000.00
	- Road Improvements			$0.00	
	- Traffic Improvements		$60,000.00	$60,000.00	
11	Fourth St and Ostego Ave				
	- Road Improvements			$0.00	$60,000.00
	- Traffic Improvements		$60,000.00	$60,000.00	
13	Millbocker Rd and Plywood				$140,000.00
	- Road Improvements	28000	$5.00	$140,000.00	
	- Traffic Improvements			$0.00	
14	Mccoy & Evergreen Dr				$75,000.00
	- Road Improvements	15000	$5.00	$75,000.00	
	- Traffic Improvements			$0.00	
15	Mccoy & Krys Rd				$60,000.00
	- Road Improvements			$0.00	
	- Traffic Improvements		$60,000.00	$60,000.00	
17	Johnson & Evergreen Dr				$560,000.00
	- Road Improvements	100000	$5.00	$500,000.00	
	- Traffic Improvements		$60,000.00	$60,000.00	
22	I-75 NB Off Ramp & Ostego Ave				$315,000.00
	- Road Improvements	53000	$5.00	$265,000.00	
	- Traffic Improvements		$50,000.00	$50,000.00	
24	Old 27 & SB I-75 Entrance Ramp				$440,000.00
	- Road Improvements	78000	$5.00	$390,000.00	
	- Traffic Improvements		$50,000.00	$50,000.00	
26	Old 27 & N. Ostego Lake Dr.				$691,000.00
	- Road Improvements	128200	$5.00	$641,000.00	

	- Traffic Improvements		$50,000.00	$50,000.00	
27	Ostego Ave & Dickerson Rd.				$340,000.00
	- Road Improvements	58000	$5.00	$290,000.00	
	- Traffic Improvements		$50,000.00	$50,000.00	
28	Grandview Blvd. & Ostego Ave.				$402,500.00
	- Road Improvements	65500	$5.00	$327,500.00	
	- Traffic Improvements		$75,000.00	$75,000.00	
29	M-32 & Krys Rd.				$483,000.00
	- Road Improvements	84600	$5.00	$423,000.00	
	- Traffic Improvements		$60,000.00	$60,000.00	
30	M-32 & Hayes Rd.				$50,000.00
	- Road Improvements			$0.00	
	- Traffic Improvements		$50,000.00	$50,000.00	
31	M-32 & Center Ave.				$150,000.00
	- Road Improvements	30000	$5.00	$150,000.00	
	- Traffic Improvements			$0.00	
32	M-32 & Ostego Ave.				$365,000.00
	- Road Improvements	63000	$5.00	$315,000.00	
	- Traffic Improvements		$50,000.00	$50,000.00	
33	M-32 & Wisconsin				$294,000.00
	- Road Improvements	48800	$5.00	$244,000.00	
	- Traffic Improvements		$50,000.00	$50,000.00	
34	M-32 & NB I-75				$65,000.00
	- Road Improvements	8000	$5.00	$40,000.00	
	- Traffic Improvements		$25,000.00	$25,000.00	
35	M-32 & Ohio Ave.				$286,000.00
	- Road Improvements	47200	$5.00	$236,000.00	
	- Traffic Improvements		$50,000.00	$50,000.00	
36	Van Tyle Rd. & Dickerson Rd.				$485,000.00
	- Road Improvements	85000	$5.00	$425,000.00	
	- Traffic Improvements		$60,000.00	$60,000.00	
37	M-32 & SB I-75 Entrance				$125,000.00
	- Road Improvements	25000	$5.00	$125,000.00	
	- Traffic Improvements			$0.00	

38	M-32 & SB I-75 Exit				$638,500.00
	- Road Improvements	112700	$5.00	$563,500.00	
	- Traffic Improvements		$75,000.00	$75,000.00	
39	M-32 & Meecher Rd.				$400,500.00
	- Road Improvements	65100	$5.00	$325,500.00	
	- Traffic Improvements		$75,000.00	$75,000.00	
40	M-32 & Murner Rd.				$436,500.00
	- Road Improvements	72300	$5.00	$361,500.00	
	- Traffic Improvements		$75,000.00	$75,000.00	
42	Van Tyle Rd. & Townline Rd.				$60,000.00
	- Road Improvements			$0.00	
	- Traffic Improvements		$60,000.00	$60,000.00	
43	M-32 & Townline Rd.				$318,000.00
	- Road Improvements	51600	$5.00	$258,000.00	
	- Traffic Improvements		$60,000.00	$60,000.00	
44	Millbocker Rd. & Dickerson Rd.				$511,500.00
	- Road Improvements	92300	$5.00	$461,500.00	
	- Traffic Improvements		$50,000.00	$50,000.00	
45	Commerce Blvd. & Ostego Ave.				$397,500.00
	- Road Improvements	64500	$5.00	$322,500.00	
	- Traffic Improvements		$75,000.00	$75,000.00	
127	Johnson Rd. & Dale				$560,500.00
	- Road Improvements	100100	$5.00	$500,500.00	
	- Traffic Improvements		$60,000.00	$60,000.00	
139	Millbocker Rd. & Townline Rd.				$89,500.00
	- Road Improvements	17900	$5.00	$89,500.00	
	- Traffic Improvements			$0.00	
150	Townline Rd. & Industrial				$50,000.00
	- Road Improvements	10000	$5.00	$50,000.00	
	- Traffic Improvements			$0.00	
155	McCoy Rd. & Commercial				$63,000.00
	- Road Improvements	12600	$5.00	$63,000.00	
	- Traffic Improvements			$0.00	
184	Ostego Ave & Fantasy Dr.				$748,500.00
	- Road Improvements	137700	$5.00	$688,500.00	

	- Traffic Improvements		$60,000.00	$60,000.00	
188	Ostego Ave & Dale Dr.				$613,000.00
	- Road Improvements	112600	$5.00	$563,000.00	
	- Traffic Improvements		$50,000.00	$50,000.00	
500	Mankowski Rd. & Dickerson Rd.				$323,000.00
	- Road Improvements	54600	$5.00	$273,000.00	
	- Traffic Improvements		$50,000.00	$50,000.00	
501	Edelweiss Village & Dickerson Rd.				$350,000.00
	- Road Improvements	60000	$5.00	$300,000.00	
	- Traffic Improvements		$50,000.00	$50,000.00	
502	Johnson Rd. & Fantasy Dr.				$449,000.00
	- Road Improvements	57000	$7.00	$399,000.00	
	- Traffic Improvements		$50,000.00	$50,000.00	
	Grandview & Wisconsin Rd.				$185,000.00
	- Road Improvements	30000	$5.00	$150,000.00	
	- Traffic Improvements			$35,000.00	
	Fantasy Dr. Construction	119000	$5.00	$595,000.00	$595,000.00
	Dale Rd. Construction	25000	$5.00	$125,000.00	$125,000.00
	Commercial Dr. Construction	84000	$5.00	$420,000.00	$420,000.00
	Dickerson Rd. Construction	72000	$5.00	$360,000.00	$360,000.00
	Industrial Dr. Construction	62000	$5.00	$310,000.00	$310,000.00
	Mccoy Rd. Construction	60000	$5.00	$300,000.00	$300,000.00
	McVannel Rd. Construction	40000	$5.00	$200,000.00	$200,000.00
	Edelweiss Village Rd. Construction	30000	$5.00	$150,000.00	$150,000.00
	Bridge @ Mccoy/Millbocker			$1,824,926.00	$1,824,926.00
	Bridge @ Van Tyle/Grand View			$1,290,000.00	$1,290,000.00
	SUB TOTAL				$17,215,426.00
	Contingency (30%)				$5,164,627.80
	TOTAL				$22,380,053.80
	PE (10%)				$2,238,005.38
	TOTAL PROJECT COST				**$24,618,059.18**

I-75 E-W CONNECTOR

Prepared By:	RZ
Date:	5/7/2004
Checked By:	
Date:	

ALTERNATIVE 4

QUANTITIES

ID	Intersection	Area (Sft)	Unit Cost		
8	PetoskeySt & Center Ave				$60,000.00
	- Road Improvements			$0.00	
	- Traffic Improvements		$60,000.00	$60,000.00	
11	Fourth St and Ostego Ave				
	- Road Improvements			$0.00	$60,000.00
	- Traffic Improvements		$60,000.00	$60,000.00	
13	Millbocker Rd and Plywood				$142,795.00
	- Road Improvements	28559	$5.00	$142,795.00	
	- Traffic Improvements			$0.00	
14	Mccoy & Evergreen Dr				$76,030.00
	- Road Improvements	15206	$5.00	$76,030.00	
	- Traffic Improvements			$0.00	
15	Mccoy & Krys Rd				$60,000.00
	- Road Improvements			$0.00	
	- Traffic Improvements		$60,000.00	$60,000.00	
17	Johnson & Evergreen Dr				$560,320.00
	- Road Improvements	100064	$5.00	$500,320.00	
	- Traffic Improvements		$60,000.00	$60,000.00	
22	I-75 NB Off Ramp & Ostego Ave				$532,000.00
	- Road Improvements	76000	$7.00	$532,000.00	
	- Traffic Improvements			$0.00	
24	Old 27 & SB I-75 Entrance Ramp				$504,000.00
	- Road Improvements	72000	$7.00	$504,000.00	
	- Traffic Improvements			$0.00	
26	Old 27 & N. Ostego Lake Dr.				$690,915.00
	- Road Improvements	128183	$5.00	$640,915.00	

	- Traffic Improvements		$50,000.00	$50,000.00	
27	Ostego Ave & Dickerson Rd.				$340,105.00
	- Road Improvements	58021	$5.00	$290,105.00	
	- Traffic Improvements		$50,000.00	$50,000.00	
28	Grandview Blvd. & Ostego Ave.				$602,000.00
	- Road Improvements	86000	$7.00	$602,000.00	
	- Traffic Improvements			$0.00	
29	M-32 & Krys Rd.				$482,695.00
	- Road Improvements	84539	$5.00	$422,695.00	
	- Traffic Improvements		$60,000.00	$60,000.00	
30	M-32 & Hayes Rd.				$50,000.00
	- Road Improvements			$0.00	
	- Traffic Improvements		$50,000.00	$50,000.00	
31	M-32 & Center Ave.				$183,400.00
	- Road Improvements	26200	$7.00	$183,400.00	
	- Traffic Improvements			$0.00	
32	M-32 & Ostego Ave.				$175,000.00
	- Road Improvements	25000	$7.00	$175,000.00	
	- Traffic Improvements			$0.00	
33	M-32 & Wisconsin				$294,015.00
	- Road Improvements	48803	$5.00	$244,015.00	
	- Traffic Improvements		$50,000.00	$50,000.00	
34	M-32 & NB I-75				$630,000.00
	- Road Improvements	90000	$7.00	$630,000.00	
	- Traffic Improvements			$0.00	
35	M-32 & Ohio Ave.				$285,795.00
	- Road Improvements	47159	$5.00	$235,795.00	
	- Traffic Improvements		$50,000.00	$50,000.00	
36	Van Tyle Rd. & Dickerson Rd.				$484,615.00
	- Road Improvements	84923	$5.00	$424,615.00	
	- Traffic Improvements		$60,000.00	$60,000.00	
37	M-32 & SB I-75 Entrance				$124,740.00
	- Road Improvements	24948	$5.00	$124,740.00	
	- Traffic Improvements			$0.00	

38	M-32 & SB I-75 Exit				$726,474.00
	- Road Improvements	103782	$7.00	$726,474.00	
	- Traffic Improvements		$0.00	$0.00	
39	M-32 & Meecher Rd.				$400,575.00
	- Road Improvements	65115	$5.00	$325,575.00	
	- Traffic Improvements		$75,000.00	$75,000.00	
40	M-32 & Murner Rd.				$436,675.00
	- Road Improvements	72335	$5.00	$361,675.00	
	- Traffic Improvements		$75,000.00	$75,000.00	
42	Van Tyle Rd. & Townline Rd.				$60,000.00
	- Road Improvements			$0.00	
	- Traffic Improvements		$60,000.00	$60,000.00	
43	M-32 & Townline Rd.				$318,100.00
	- Road Improvements	51620	$5.00	$258,100.00	
	- Traffic Improvements		$60,000.00	$60,000.00	
44	Millbocker Rd. & Dickerson Rd.				$511,280.00
	- Road Improvements	92256	$5.00	$461,280.00	
	- Traffic Improvements		$50,000.00	$50,000.00	
45	Commerce Blvd. & Ostego Ave.				$397,480.00
	- Road Improvements	64496	$5.00	$322,480.00	
	- Traffic Improvements		$75,000.00	$75,000.00	
127	Johnson Rd. & Dale				$560,320.00
	- Road Improvements	100064	$5.00	$500,320.00	
	- Traffic Improvements		$60,000.00	$60,000.00	
139	Millbocker Rd. & Townline Rd.				$89,350.00
	- Road Improvements	17870	$5.00	$89,350.00	
	- Traffic Improvements			$0.00	
150	Townline Rd. & Industrial				$50,025.00
	- Road Improvements	10005	$5.00	$50,025.00	
	- Traffic Improvements			$0.00	
155	McCoy Rd. & Commercial				$62,960.00
	- Road Improvements	12592	$5.00	$62,960.00	
	- Traffic Improvements			$0.00	
184	Ostego Ave & Fantasy Dr.				$644,000.00
	- Road Improvements	92000	$7.00	$644,000.00	

	- Traffic Improvements			$0.00	
188	Ostego Ave & Dale Dr.				$612,920.00
	- Road Improvements	112584	$5.00	$562,920.00	
	- Traffic Improvements		$50,000.00	$50,000.00	
500	Mankowski Rd. & Dickerson Rd.				$323,180.00
	- Road Improvements	54636	$5.00	$273,180.00	
	- Traffic Improvements		$50,000.00	$50,000.00	
501	Edelweiss Village & Dickerson Rd.				$350,000.00
	- Road Improvements	60000	$5.00	$300,000.00	
	- Traffic Improvements		$50,000.00	$50,000.00	
502	Johnson Rd. & Fantasy Dr.				$449,399.00
	- Road Improvements	57057	$7.00	$399,399.00	
	- Traffic Improvements		$50,000.00	$50,000.00	
	Grandview & Wisconsin Rd.				$185,000.00
	- Road Improvements	30000	$5.00	$150,000.00	
	- Traffic Improvements			$35,000.00	
	Fantasy Dr. Construction	119000	$5.00	$595,000.00	$595,000.00
	Dale Rd. Construction	25000	$5.00	$125,000.00	$125,000.00
	Commercial Dr. Construction	84000	$5.00	$420,000.00	$420,000.00
	Dickerson Rd. Construction	72000	$5.00	$360,000.00	$360,000.00
	Industrial Dr. Construction	62000	$5.00	$310,000.00	$310,000.00
	Mccoy Rd. Construction	60000	$5.00	$300,000.00	$300,000.00
	McVannel Rd. Construction	40000	$5.00	$200,000.00	$200,000.00
	Edelweiss Village Rd. Construction	30000	$5.00	$150,000.00	$150,000.00
	Bridge @ Mccoy/Millbocker			$1,824,926.00	$1,824,926.00
	Bridge @ Van Tyle/Grand View			$1,290,000.00	$1,290,000.00
	SUB TOTAL				$18,091,089.00
	Contingency (30%)				$5,427,326.70
	TOTAL				$23,518,415.70
	PE (10%)				$2,351,841.57
	TOTAL PROJECT COST				**$25,870,257.27**

I-75 E-W CONNECTOR

Prepared By:	**RZ**
Date:	**5/7/2004**
Checked By:	
Date:	

ALTERNATIVE 5

QUANTITIES

ID	Intersection	Area (Sft)	Unit Cost	TOTAL	
22	I-75 NB Off Ramp & Ostego Ave				$75,000.00
	- Road Improvements	5000	$5.00	$25,000.00	
	- Traffic Improvements			$50,000.00	
24	Old 27 & SB I-75 Entrance Ramp				$145,000.00
	- Road Improvements	19000	$5.00	$95,000.00	
	- Traffic Improvements			$50,000.00	
34	M-32 & NB I-75				$75,000.00
	- Road Improvements	10000	$5.00	$50,000.00	
	- Traffic Improvements			$25,000.00	
37	M-32 & SB I-75 Entrance				$135,000.00
	- Road Improvements	27000	$5.00	$135,000.00	
	- Traffic Improvements			$0.00	
38	M-32 & SB I-75 Exit				$390,000.00
	- Road Improvements	63000	$5.00	$315,000.00	
	- Traffic Improvements			$75,000.00	
184	Ostego Ave & Fantasy Dr.				$210,000.00
	- Road Improvements	30000	$5.00	$150,000.00	
	- Traffic Improvements			$60,000.00	
	Fantasy Dr. Construction	150000	$5.00	$750,000.00	$750,000.00

SUB TOTAL	$1,780,000.00
Contingency (30%)	$534,000.00
TOTAL	$2,314,000.00
PE (10%)	$231,400.00

TOTAL PROJECT COST	**$2,545,400.00**

APPENDIX G

METHODS AND COUNTS FOR WEEKDAY PEAK HOUR ANALYSIS

Data Collection:

All data collection was completed by NEMCOG during April 2004. Traffic volume turning movements were obtained at eight intersections for two on-hour periods between the hours of 7:00 am and 8:00 am and 5:00 pm and 6:00 pm on a Tuesday, Wednesday or Thursday. The weather conditions on the counting days were dry pavement conditions. Intersection counts were be coded with the same identification number as used previously, or a new identifier was assigned. Automobile traffic and commercial vehicle traffic were counted separately.

The intersection of South Otsego Avenue and Grandview Blvd. served as the control intersection, and it was counted once during the same intervals and day that one of the remaining seven intersections was counted. In this way, a statistical relationship was identified between the control intersection and the others so that comparisons could be made to the baseline traffic flow model already completed. The eight intersections counted were:

1. South Otsego Avenue and Grandview Blvd (control intersection), ID # 28
2. South Otsego Avenue and Commerce Blvd, ID # 45
3. M-32 and Krys Road, ID # 29
4. Old US 27 and North Otsego Lake Drive, ID # 26
5. M-32 and Meecher Road, ID # 39
6. Dickerson and Mankowski Road, ID # 500
7. M-32 and South Otsego Avenue, ID # 32
8. M-32 and Wisconsin Ave, ID # 33

Analysis:

The control intersection turning movement volumes and heavy vehicle percentages were compared with each of the seven remaining intersections, and also with the baseline model turning movements for the control intersection (collected during the summer of 2003). This procedure provided a relationship between the eight intersections counted in the data collection element and the same eight intersections counted during the summer of 2003, with the exception of Dickerson and Mankowski Road, which did not exist in the summer.

Intersection turning movement diagrams were prepared illustrating the peak hour volumes at each of the eight intersections. For those intersections where the new turning movements were within 15 percent of the volumes for the same intersection as contained in the baseline model, then no further analysis was performed as this percentage is within the acceptable error limit. In this case, all further work was stopped and no adjustments were made to the model.

At those intersections that exhibited turning movement volumes in excess of 15 percent of the previous values, the following analysis occured:

A) For each intersection that qualifies for this element, the new volumes were input into the HCS2000 computer program to identify resulting levels of service.
B) These LOS results were compared to the predicted LOS from the SYNCHRO simulation for the baseline and future condition models to identify any geometric improvements that were needed to assure acceptable LOS using the updated intersection turning movement volumes. These improvements were included in the alternatives developed during the third phase of the project.

APPENDIX H

PUBLIC COMMENTS

NEMCOG

I-75 EAST-WEST CROSSING STUDY
PUBLIC INFORMATION MEETING COMMENT SHEET
August 19, 2003

Name: B. A. Hoekstra
Address: 1013 N Ohio
City: Gaylord *State:* Mi *Zip:* 49735
Phone:
FAX:
E-mail:

Please use the space provided below to provide your comments, thoughts and ideas on the I-75 East-West Crossing Study. If you need additional space, please use back side of comment sheet. Please submit your comments in the comment box located in the meeting room or give to a member of the Project Team. Comments can also be mailed to: Northeast Michigan Council of Governments (NEMCOG), attn: Tom Kellog, Project Manager, PO Box 457, 121 East Mitchell Street, Gaylord, MI 49734. Finally, comments can also be submitted via email at *tkellogg@nemcog.org*. Your input is greatly appreciated!

An East-West road that crosses the Expressway, besides M-32, ~~could~~ is NEEDED to decrease traffic on M-32. Perhaps aligning McCoy Road with Milbakew Road would help.
Anysit that is available for trucks to enter + exit the Gaylord Industrial Park also is needed to avoid truck traffic at M-32 + Dickerson.
Any attempts to decrease traffic thru the city + in residential areas should be considered.
At this point, I believe 2 Gaylord exits from I-75 are sufficient. In the future - ? - maybe not.
The entrance ramp to South I-75 from west bound M-32 was a fantastic idea. Adding a longer entrance to I-75 from East bound M-32 also has helped.
Traffic lights should be timed to avoid traffic back ups.

NEMCOG

I-75 EAST-WEST CROSSING STUDY
PUBLIC INFORMATION MEETING COMMENT SHEET
August 19, 2003

Name: Carroll Scott
Address: 1090 Van Tyle
City: Gaylord *State:* MI *Zip:* 49735
Phone: 989-732-5078
FAX:
E-mail:

Please use the space provided below to provide your comments, thoughts and ideas on the I-75 East-West Crossing Study. If you need additional space, please use back side of comment sheet. Please submit your comments in the comment box located in the meeting room or give to a member of the Project Team. Comments can also be mailed to: Northeast Michigan Council of Governments (NEMCOG), attn: Tom Kellog, Project Manager, PO Box 457, 121 East Mitchell Street, Gaylord, MI 49734. Finally, comments can also be submitted via email at *tkellogg@nemcog.org*. Your input is greatly appreciated!

Having lived just west of Dickerson on Van Tyle For 48 yrs I recognize the URGENT need for a east-West I-75 crossing - I believe the simplest-least disruptive would be to follow the power line from Town line - Milbacker far enough South to allow For the extension of the N/S runway cross Dickersen + I-75 at the power line - angle South east to Johnson Road to McCoy + M-32 - Gordon Everet has studied this in depth and should be consulted For his views.

NEMCOG

I-75 EAST-WEST CROSSING STUDY
PUBLIC INFORMATION MEETING COMMENT SHEET
August 19, 2003

Name: Ilene Dombrowski
Address: 3065 E. Dixon Lk. Rd.
City: Gaylord *State:* Mi *Zip:* 49735
Phone: 989-732-4406
FAX:
E-mail:

Please use the space provided below to provide your comments, thoughts and ideas on the I-75 East-West Crossing Study. If you need additional space, please use back side of comment sheet. Please submit your comments in the comment box located in the meeting room or give to a member of the Project Team. Comments can also be mailed to: Northeast Michigan Council of Governments (NEMCOG), attn: Tom Kellog, Project Manager, PO Box 457, 121 East Mitchell Street, Gaylord, MI 49734. Finally, comments can also be submitted via email at *tkellogg@nemcog.org*. Your input is greatly appreciated!

I am in favor for the overpass at McCoy Rd.

32 to Millbrook to Dickerson across to McCoy to E. M32

NEMCOG

I-75 EAST-WEST CROSSING STUDY
PUBLIC INFORMATION MEETING COMMENT SHEET
August 19, 2003

Name: Irene Pollock
Address:
City: Gaylord, *State:* _____ *Zip:* _____
Phone:
FAX:
E-mail:

Please use the space provided below to provide your comments, thoughts and ideas on the I-75 East-West Crossing Study. If you need additional space, please use back side of comment sheet. Please submit your comments in the comment box located in the meeting room or give to a member of the Project Team. Comments can also be mailed to: Northeast Michigan Council of Governments (NEMCOG), attn: Tom Kellog, Project Manager, PO Box 457, 121 East Mitchell Street, Gaylord, MI 49734. Finally, comments can also be submitted via email at *tkellogg@nemcog.org*. Your input is greatly appreciated!

My Consern is to put up More traffic lights where needed And all traffic lights should all have a left Turn light also. East, West North + South, We have three lights now that do not have left turns both diratons, So the traffic is still tied up in That Center lane.

NEMCOG

I-75 EAST-WEST CROSSING STUDY
PUBLIC INFORMATION MEETING COMMENT SHEET
August 19, 2003

Name: Joe Duff
Address: 225 Main St., Rm. 109
City: Gaylord *State:* MI. *Zip:* 49735
Phone: 989 732-4080
FAX:
E-mail:

Please use the space provided below to provide your comments, thoughts and ideas on the I-75 East-West Crossing Study. If you need additional space, please use back side of comment sheet. Please submit your comments in the comment box located in the meeting room or give to a member of the Project Team. Comments can also be mailed to: Northeast Michigan Council of Governments (NEMCOG), attn: Tom Kellog, Project Manager, PO Box 457, 121 East Mitchell Street, Gaylord, MI 49734. Finally, comments can also be submitted via email at *tkellogg@nemcog.org*. Your input is greatly appreciated!

- Question the accuracy of the Future Land Use Map
  Airport property not accurately depicted
- Misspelling of Roadway Names on visuals.
- Looking forward to seeing traffic counts & patterns
- Thoughts at this time are on crossovers of I-75
  1. For Local traffic @ Milbocker/McCoy & VanTyle and Wisconsin
  2. Need for possible review of 5 Lakes crossing of I-75
  3. Improvements needed for S. Townline Rd.
  4. Possible McManus extension to VanTyle & E Boundary Roadway along Edelweiss Shopping Center property
  5. Hope data is reviewed in schedule & before plans are finalized. Edelweiss Shopping Center Site visit not to be completed till Spring of '04

Without some of this data accounted for in plan I think we maybe missing the Full picture.

NEMCOG

I-75 EAST-WEST CROSSING STUDY
PUBLIC INFORMATION MEETING COMMENT SHEET
August 19, 2003

Name: Jodie Chapman
Address: 3600 McCoy Road
City: Gaylord *State:* MI *Zip:* 49735
Phone: 989-732-2334
FAX:
E-mail:

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I reside on East McCoy Road and am concerned about diversion of more traffic in that direction.

I am also concerned with the many bottlenecks in our traffic flows.

We are stacking too much in buildings in small & small area of Gaylord. We need to look more at moving away from the congested area to open areas with room and better traffic flows.

I would be interested in attending future meetings that give some options, alternatives & solutions to the above.

NEMCOG

I-75 EAST-WEST CROSSING STUDY
PUBLIC INFORMATION MEETING COMMENT SHEET
August 19, 2003

Name: LAURIE TOLLSTAM
Address: P.O. BOX 3005
City: GAYLORD *State:* MI. *Zip:* 49734
Phone: 989-732-2053
FAX: 989-732-9792
E-mail: LTOLLSTAM@LOWATCHBUILDERS.COM

Please use the space provided below to provide your comments, thoughts and ideas on the I-75 East-West Crossing Study. If you need additional space, please use back side of comment sheet. Please submit your comments in the comment box located in the meeting room or give to a member of the Project Team. Comments can also be mailed to: Northeast Michigan Council of Governments (NEMCOG), attn: Tom Kellog, Project Manager, PO Box 457, 121 East Mitchell Street, Gaylord, MI 49734. Finally, comments can also be submitted via email at *tkellogg@nemcog.org*. Your input is greatly appreciated!

1. IS THERE AN UP-DATED OTSEGO COUNTY MASTER PLAN?
2. DOES THE COUNTY, CITY, OR TOWNSHIPS HAVE ANY INFRASTRUCTURE GUIDELINES TO FOLLOW?
3. WILL THERE BE A JOINT CITY/TOWNSHIP COMMITTEE TO WORK OUT ISSUES?
4. THERE IS NO QUESTION THAT A I-75 EAS-WEST CROSSING IS NEEDED — HOW DOES IT SUPPORT THE LONG-TERM LOOK AT SURROUNDING COMMUNITIES?
5. WHAT WILL HAPPEN TO M-32 EAST & WEST OF I-75 WITH THE NEW CROSSING?
6. WILL THE EAST/WEST I-75 CROSSING SOLVE SHORT AND LONG TERM PROBLEMS — CONGESTION, SAFETY, GROWTH ETC.?
7. WILL THE E/W I-75 CROSSING FORCE BAGLEY TOWNSHIP TO CHANGE ZONING DRAMATICALLY?
8. HAVE YOU LOOKED AT DESIGN CONSIDERATIONS OF MI. BOULEVARDS? (DETROIT DESIGNS)
9. OLD STATE RD. COULD BE AN OPTION!

NEMCOG

I-75 EAST-WEST CROSSING STUDY
PUBLIC INFORMATION MEETING COMMENT SHEET
August 19, 2003

Name: Lori Moser
Address: 620 S. Center Avenue
City: Gaylord *State:* MI *Zip:* 49735
Phone: 732-7793
FAX:
E-mail: gaylordmoser@yahoo.com

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① You should consider two bypasses over I-75. By the time all the studies are done, we are going to need more.

② There needs to be an area that joins the western part of the state to I-75. 131 needs to be connected to I-75. This is creating all of the traffic west of town.

NEMCOG

I-75 EAST-WEST CROSSING STUDY
PUBLIC INFORMATION MEETING COMMENT SHEET
August 19, 2003

Name: MARCUS WEGMEYER
Address: 2540 CASTLEWOOD DRIVE
City: GAYLORD *State:* MI *Zip:* 49735
Phone: 989-732-7548 OFFICE
FAX: 989-732-7916
E-mail: MARCUS@MI-INSURANCE.COM

Please use the space provided below to provide your comments, thoughts and ideas on the I-75 East-West Crossing Study. If you need additional space, please use back side of comment sheet. Please submit your comments in the comment box located in the meeting room or give to a member of the Project Team. Comments can also be mailed to: Northeast Michigan Council of Governments (NEMCOG), attn: Tom Kellog, Project Manager, PO Box 457, 121 East Mitchell Street, Gaylord, MI 49734. Finally, comments can also be submitted via email at *tkellogg@nemcog.org*. Your input is greatly appreciated!

I'm very interested to see what the TRAFFIC Studies Show.

NEMCOG

I-75 EAST-WEST CROSSING STUDY
PUBLIC INFORMATION MEETING COMMENT SHEET
August 19, 2003

Name: Mattie Lee Townsend
Address: POBox 432 (572 Fellows St)
City: Gaylord *State:* Mi *Zip:* 49734
Phone: 989-732-2725
FAX: 989-731-5945
E-mail:

Please use the space provided below to provide your comments, thoughts and ideas on the I-75 East-West Crossing Study. If you need additional space, please use back side of comment sheet. Please submit your comments in the comment box located in the meeting room or give to a member of the Project Team. Comments can also be mailed to: Northeast Michigan Council of Governments (NEMCOG), attn: Tom Kellog, Project Manager, PO Box 457, 121 East Mitchell Street, Gaylord, MI 49734. Finally, comments can also be submitted via email at *tkellogg@nemcog.org*. Your input is greatly appreciated!

We need a bypass Before Traffic gets To downtown-and we need To reroute Truck Traffic(Thru) So it is Not going EorW right Through The main Section of downTown- Huge Trucks are noTonly noisy bat are a hazard when They have To make Turns From M-32 onTo S Otsego & N. Center. Our downTown M-32 is Way Too narrow To accomodate Truck Traffic.

I'd suggest a by-pass beginning even at Hayes Tower Rd. because The M-32 W. is so busy with Traffic and I Think 80% of it Turns South on I-75 just past The Dickerson Rd. entrance -

Thank you For giving me The opportunity To give my comments -

Mattie Lee Townsend

I am a Lifelong resident of Gaylord.

NEMCOG

I-75 EAST-WEST CROSSING STUDY
PUBLIC INFORMATION MEETING COMMENT SHEET
August 19, 2003

Name: _____
Address: _____
City: _____ *State:* _____ *Zip:* _____
Phone: _____
FAX: _____
E-mail: _____

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1. Why don't all lights have a D hadd turn green arrow, so they can turn before ~~on~~ oncoming traffic starts.
2. Another overpass @ McCoy Rd to cut down on truck traffic + all traffic.
3. Another highway west to I-75 to avoid Gaylord

NEMCOG

I-75 EAST-WEST CROSSING STUDY
PUBLIC INFORMATION MEETING COMMENT SHEET
August 19, 2003

Name: RON CHAVEY
Address: 3571 W OTSEGO LK DR
City: GAYLORD *State:* _____ *Zip:* _____
Phone: 7315959
FAX: 7312677
E-mail: _____

Please use the space provided below to provide your comments, thoughts and ideas on the I-75 East-West Crossing Study. If you need additional space, please use back side of comment sheet. Please submit your comments in the comment box located in the meeting room or give to a member of the Project Team. Comments can also be mailed to: Northeast Michigan Council of Governments (NEMCOG), attn: Tom Kellog, Project Manager, PO Box 457, 121 East Mitchell Street, Gaylord, MI 49734. Finally, comments can also be submitted via email at *tkellogg@nemcog.org*. Your input is greatly appreciated!

NORTH SOUTH RUNWAY WILL CROSS MILLBROOKER SOME DAY IN THE FUTURE

LOOK GOOD AT CURRENT POWER LINE (WOLVERINE) TO JOHNSON ROAD CONNECTION NORTH OF INTERCHANGE

LOOK AT FUTURE CONNECTION OF 131 TO ~~I-75~~ I-75

NEMCOG

I-75 EAST-WEST CROSSING STUDY
PUBLIC INFORMATION MEETING COMMENT SHEET
April 14, 2004

Name: Barbara HOEKSTRA
Address: 1013 N. Ohio
City: Gaylord *State:* MI *Zip:* 49735
Phone:
FAX:
E-mail:

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1) Granted: crossover at Fairview MAY be convenient for schools, store, etc; BUT increased traffic in residential neighborhood will endanger children's safety as they try to cross road, etc.
2) Residential streets are not built for increased traffic.
3) If trucks use crossover, again foundation of streets not built for this. Also would increase safety risks for school children, residents, etc.
4) North Ohio traffic at times ~~the~~ now does NOT allow residents to enter streets from their driveways.

McCoy - Milbocker w Grandview - Van Tyle crossover makes much more sense.
1) Roads are already built for trucks.
2) Less safety risks for pedestrians - adults + children.
3) Trucks need access to Industrial Park & Dickson Road. Not needed or sensible North of M-32.

If Crossover needed North of M-32 - consider Pennyfield or Wintus Road. Less traffic & safety risk than in an ESTABLISHED residential neighborhood.

? Roundabouts? Have used in Boston and very difficult to maneuver.

NEMCOG

I-75 EAST-WEST CROSSING STUDY
PUBLIC INFORMATION MEETING COMMENT SHEET
April 14, 2004

Name: Ed Estill
Address: 8317 Alba Rd.
City: Elmira *State:* MI *Zip:* 49730
Phone: 989-732-7424
FAX: 732-7424
E-mail: EStellaFarms@Gtlakes.com

Please use the space provided below to provide your comments, thoughts and ideas on the I-75 East-West Crossing Study. If you need additional space, please use back side of comment sheet. Please submit your comments in the comment box located in the meeting room or give to a member of the Project Team. Comments can also be mailed to: Northeast Michigan Council of Governments (NEMCOG), attn: Tom Kellogg, Project Manager, PO Box 457, 121 East Mitchell Street, Gaylord, MI 49734. Finally, comments can also be submitted via email at *tkellogg@nemcog.org*. Your input is greatly appreciated!

I think we definately need a crossing over I75 at Vanlyke. I also think a Extention of 32 swing South to Vanlyke to Airport & Gaustin on Dickerson.

A Combinate of Alt 2 & 3 would Be a great Help.

NEMCOG

I-75 EAST-WEST CROSSING STUDY
PUBLIC INFORMATION MEETING COMMENT SHEET
April 14, 2004

Name: JOHN JENKINS GAYLORD P.D.
Address:
City: GAYLORD *State:* *Zip:*
Phone:
FAX:
E-mail:

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I LIKE THE INTERCHANGE AT McCOY RD, AND THE OVERPASS AT VAN TYLE, I THINK THE OVERPASS AT 5 LAKES CAN BE PLANNED, BUT CAN WAIT FOR THE 10-20 YR PLAN.

I LIKE THE POSSIBILITIES OF ROUND ABOUTS, ESPEC. ON MAIN ST AND SOUTH OTSEGO - INCLUDING SO OTSEGO AND McCOY.

NEMCOG

I-75 EAST-WEST CROSSING STUDY
PUBLIC INFORMATION MEETING COMMENT SHEET

April 14, 2004

Name: MARK KERSTEN
Address: 1021 NORTH OHIO
City: GAYLORD *State:* MI *Zip:* 49735
Phone: 989-732-2781
FAX: N/A
E-mail: N/A

Please use the space provided below to provide your comments, thoughts and ideas on the I-75 East-West Crossing Study. If you need additional space, please use back side of comment sheet. Please submit your comments in the comment box located in the meeting room or give to a member of the Project Team. Comments can also be mailed to: Northeast Michigan Council of Governments (NEMCOG), attn: Tom Kellogg, Project Manager, PO Box 457, 121 East Mitchell Street, Gaylord, MI 49734. Finally, comments can also be submitted via email at *tkellogg@nemcog.org*. Your input is greatly appreciated!

Alternative #2 appears to be the best concept
with:
Alternative #1 the worst

Cost estimate for tax payer for #2 gives you more bang for your buck

Round abouts are pretty, don't seem practical, especially when it comes to snow removal - broken cement from plows and the like

Alter #2 should eliminate the majority of heavy truck traffic that is primarily directed at the industrial park, proposed "new" industrial park, Georgia Pacific and A & L Iron, not to mention the employee traffic, to include the new WalMart development.

Alternative 1 would create additional traffic in a residential area, and effectively lower property value and resale possibilities. Even though the "experts" say truck traffic would not exist, my experience says that once found, always used. Safety becomes a high issue also. 1000 young children at soccer fields, elementary schools and general local population. Just would not make sense at this time. Perhaps the "long range" plan should be an overpass NORTH of the location to accomodate the supposedly expansion boom in residential build up.

NEMCOG

I-75 EAST-WEST CROSSING STUDY
PUBLIC INFORMATION MEETING COMMENT SHEET
April 14, 2004

Name: Mary Sanders
Address: 7200 Hayes Tower Rd
City: Gaylord *State:* Mi *Zip:* 49735
Phone: 989 732-4206
FAX: SAme
E-mail: msanders@freeway.net

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After my review of the materials, I seemed to focus on the traffic patterns in the town and the entrances. The concept of the round abouts is certainly one to pursue. It can slow the traffic, eliminate the stop lights, and create more unique-ness of downtown. The City of Gaylord has plans for doing the boulevard pattern for S. Otsego — Scenic beauty can be created even in the face of winter storms. Partnerships could be formed to promote DDA and then the South Otsego area and then attempt to improve/alter the West 32 corridor.

over

75 Crossing

It would appear there are 2 choices to consider for truck traffic - Van Fyke or McCoy. McCoy would be visible with the traffic that goes to Alpena or to Traverse City. People in the 60's worked hard to assure that Gaylord would have 2 expressway exits to have the growth - Little did they know what would happen 30-30 years later. We still need the ability to serve the businesses and provide safe travel for residents & tourists.

Funding is an issue) — Once the main choices are decided, partnerships can be formed

NEMCOG

I-75 EAST-WEST CROSSING STUDY
PUBLIC INFORMATION MEETING COMMENT SHEET
April 14, 2004

Name: Clarence Rogers
Address: 8620 E. Five Lks Rd
City: Gaylord *State:* MI *Zip:* 49735
Phone: 858-6942
FAX:
E-mail:

Please use the space provided below to provide your comments, thoughts and ideas on the I-75 East-West Crossing Study. If you need additional space, please use back side of comment sheet. Please submit your comments in the comment box located in the meeting room or give to a member of the Project Team. Comments can also be mailed to: Northeast Michigan Council of Governments (NEMCOG), attn: Tom Kellogg, Project Manager, PO Box 457, 121 East Mitchell Street, Gaylord, MI 49734. Finally, comments can also be submitted via email at *tkellogg@nemcog.org*. Your input is greatly appreciated!

To Whom It May Concern, I live at Five Lakes + I 75. If you want to put in the bypass do it as soon as possible so I can get on with my life, and make a decision on the five acres I own.

Thank You.

Alternative #1 makes good sense for alot of people.

NEMCOG

I-75 EAST-WEST CROSSING STUDY
PUBLIC INFORMATION MEETING COMMENT SHEET
April 14, 2004

Name: Phil Alexander
Address:
City: _____ *State:* _____ *Zip:* _____
Phone:
FAX:
E-mail:

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Option 2 appears to provide the "biggest bang for the buck"
Major traffic congestion will be W. 32 / Dickerson

On/off ramp at McCoy / Millbocker would be a great help

Not sure all the traffic lights in some of the other Alternatives are necessary or helpful

Round-a-bouts look good on paper but would cause more confusion / problems than benefits. I really doubt they would be worthwhile

Thanks for keeping this initiative moving forward.

NEMCOG

I-75 EAST-WEST CROSSING STUDY
PUBLIC INFORMATION MEETING COMMENT SHEET
April 14, 2004

Name: RICHARD S. SAWICKI
Address: 141 FOXHOLLOW DRIVE
City: GAYLORD *State:* MI *Zip:* 49735
Phone: 989-732-1504
FAX:
E-mail:

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THE NEW INTERCHANGE AT M.L BOCKE/ HE COU ROADS - AND TRYING TO USE PARTS OF MODERN ROUNDABOUT INTERSECTIONS WOULD GIVE THE COUNTY & CITY A VERY CRAN AND MELT, ATTRACTION - DOLLAR WISE IT'S A GREAT BANG FOR A BUCK.

I WOULD LIKE A PRINT OUT ON ALTERNATIVE'S 2 & 3 - A LOT OF WORK HAS BEEN SINCE OUR LAST MEETING - AND IT SHOWS -

GOOD WORK AND THANKS.

RS -