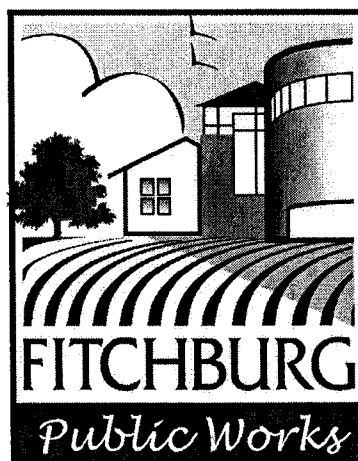


# NORTHEAST FITCHBURG TRANSPORTATION STUDY

Prepared by:  
KL Engineering & HNTB Corporation

Submitted to:  
City of Fitchburg

June 2002



**KL** Engineering  
Transportation • Municipal • Environmental • Survey/GIS

**HNTB**

**NORTHEAST FITCHBURG TRANSPORTATION STUDY  
TABLE OF CONTENTS**

Introduction .....	1
Report Format.....	1
1. Existing Conditions .....	3
1.1 Study Area.....	3
1.2 Existing Land Use .....	3
1.3 Existing Roadways.....	3
1.4 Existing Daily Traffic.....	5
1.5 Existing Peak Hour Traffic.....	6
2. Future Daily Traffic.....	11
2.1 Regional Travel Demand Model .....	11
2.2 Future Land Use .....	11
2.3 Existing Base Transportation System.....	14
2.4 Future Transportation System .....	14
2.5 Trip Generation and Distribution .....	15
2.6 Traffic Assignment.....	15
2.7 Future Base (Future Traffic with Existing Roadway Network).....	15
2.8 Overpass at East Cheryl Parkway and USH 14 with a connection to CTH MM..	17
2.9 With Interchange at East Cheryl Parkway and USH 14 with a connection to CTH MM .....	19
2.10 With Interchange at East Cheryl Parkway and USH 14 without a connection to CTH MM .....	20
2.11 Select Link Analysis on East Cheryl Parkway Ramps.....	21
2.12 Capacity Assessment.....	22
2.13 Multi-Modal Travel Opportunities .....	24
3. Peak Hour Traffic Operations .....	25
3.1 Methodology .....	25
3.2 Peak Hour Traffic Analysis Assumptions .....	26
3.3 Future Peak Hour Traffic Analysis Findings .....	27
3.4 McCoy Road Intersections with USH 14 Interchange and CTH MM – Potential Improvements .....	31
3.5 Future Peak Hour Freeway Analysis Findings.....	33
4. Recommendations .....	35
4.1 Roadway Recommended Typical Cross Sections .....	35
4.2 Recommended Posted Speed Limits .....	37
4.3 Recommended Intersection Traffic Controls .....	39
4.4 Probable Cost Estimates.....	40
4.5 Funding Sources .....	42
4.6 Conclusion.....	42

# NORTHEAST FITCHBURG TRANSPORTATION STUDY

---

## INTRODUCTION

The City of Fitchburg is currently considering future land use and development plans for a largely undeveloped area generally located west of USH 14, east of Fish Hatchery Road and north of Lacy Road, plus the Fitchburg Technology Campus (Phase I) located in the southeast quadrant of the intersection of Lacy Road and Fish Hatchery Road. As part of the land use and development review process, the city desired an analysis of the traffic impacts associated with the potential developments be conducted. This analysis was to also include the feasibility of a new USH 14 interchange at East Cheryl Parkway extended.

The City of Fitchburg retained KL Engineering and HNTB Corporation to conduct a traffic analysis of the planned developments in Northeast Fitchburg at full build-out. This report documents the procedures and findings of the traffic analysis conducted for the Northeast Fitchburg Transportation Study.

## REPORT FORMAT

This report identifies existing and proposed land uses for the area based on current plans and planning projects. The report presents the existing and future projected average daily traffic on the study area roadways. It explains the future trip generation, trip distribution and traffic assignment projections from the anticipated development in the study area. The report presents the existing and projected future morning and evening peak hour traffic volumes. Peak hour traffic operations are analyzed with and without an interchange of USH 14 at East Cheryl Parkway. The report includes recommendations on future cross sections and intersection traffic controls for the “with interchange” and “without interchange” scenarios. Finally, the report provides an estimate of the probable improvement costs of the “with interchange” and “without interchange” recommendations.

The Northeast Fitchburg Transportation Study report is divided into the following sections:

- Introduction
- Report Format
- Existing Conditions
  - Study Area
  - Existing Land Use
  - Existing Roadways
  - Existing Daily and Peak Hour Traffic
- Future Daily Traffic
  - Future Land Use
  - Existing and Future Transportation System

- Trip Generation and Distribution
- Traffic Assignment
- Capacity Assessment
- Multi-Modal Travel Opportunities
- Future Peak Hour Traffic
  - Methodology
  - Future Peak Hour Traffic Operations
  - Future Peak Hour Traffic Analysis Findings
- Recommendations and Conclusions
  - Cross Sections
  - Posted Speed Limits
  - Intersection Controls
  - Probable Cost Estimates

The next section provides documentation on the existing traffic and roadway conditions in the project study area.

# 1. EXISTING CONDITIONS

---

The following section identifies the existing land use, existing roadways, existing daily traffic and existing peak hour traffic volumes and traffic operations in the study area.

## 1.1 Study Area

The study area for this project is generally bounded by Fish Hatchery Road to the west, CTH MM to the east, the Nine Springs environmental corridor to the north and Lacy Road to the south. It also includes the first phase of the Fitchburg Technology Campus located south of Lacy Road. Exhibit 1 shows the study area, existing roadway geometry and intersection controls.

## 1.2 Existing Land Use

Most of the developed land in the study area is residential with some office and commercial related land uses. The undeveloped land in the study area is predominantly agricultural in nature.

The area outside the study area is mainly residential with some commercial and office-related uses closer to the South Beltline. The City of Fitchburg's General Land Use Plan reports that in 1990, less than 25% of Fitchburg's total area is developed. Approximately, 37% of its developed land was residential, 25% was transportation, communications and utilities, and 21% was street right-of-way. The remaining 17 % of the developed land included commercial, industrial, institutional and recreational uses. The study area's planned developments would create a greater mix of land uses in the city by adding more commercial and office-related uses.

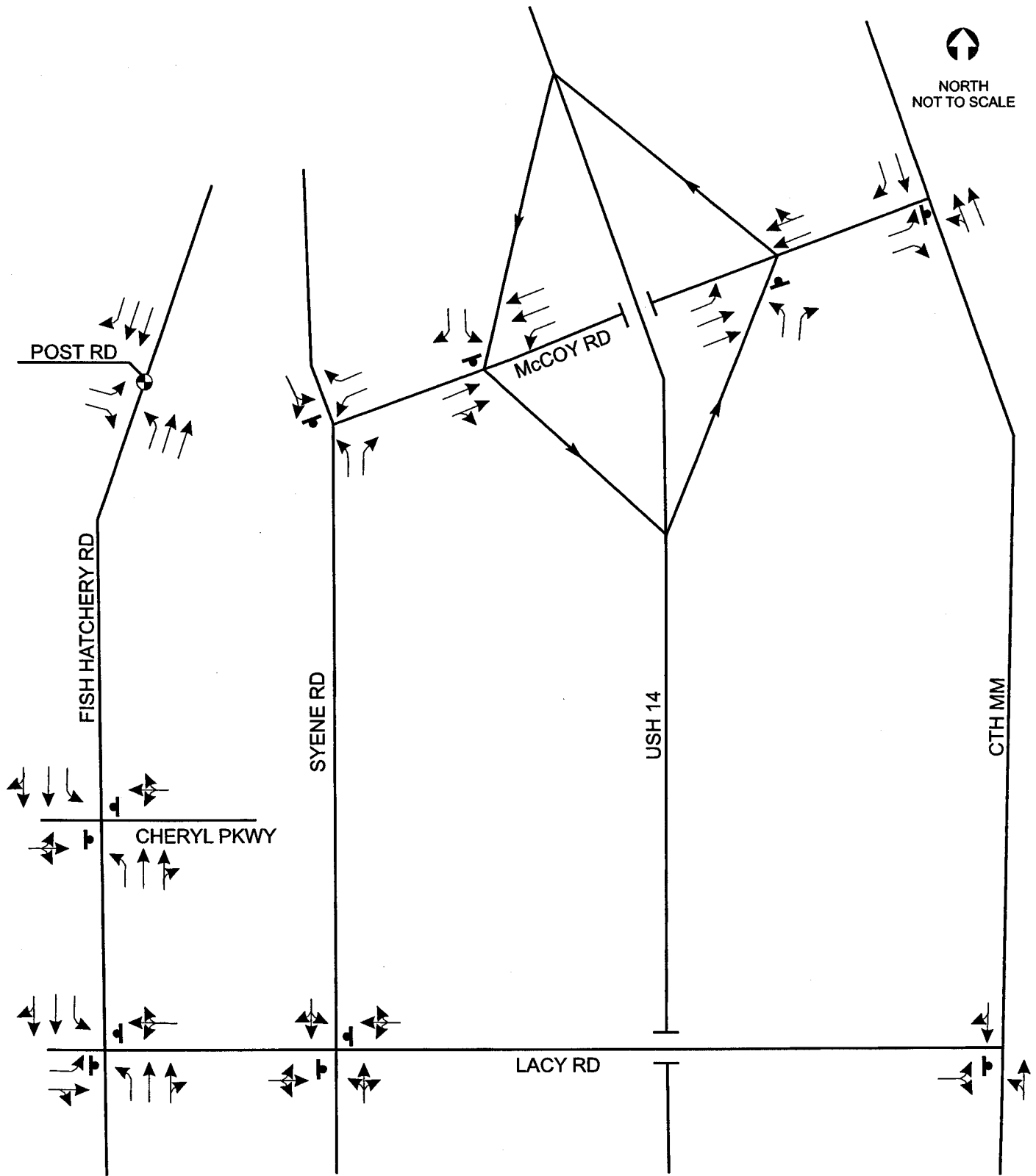
## 1.3 Existing Roadways

The major roadways in the study area include the following:

USH 14 provides a high-speed north-south freeway connection to Madison from southern communities such as Fitchburg, Oregon, Evansville and Janesville. It is a four-lane divided roadway with a full access service interchange at McCoy Road. The posted speed limit is 65 miles per hour (mph) south of the McCoy Road interchange and is 55 mph north of the McCoy Road interchange. USH 14 connects to Park Street, which accesses UW-Madison campus and Madison's central business district. USH 14 provides a full access system interchange connection to the South Beltline as well.

Fish Hatchery Road is a major north-south arterial with a six-lane divided section north of McKee Road including a diamond lane for bikes, buses and right turning vehicles, and a four-lane divided section south of McKee Road to Lacy Road. The posted speed limit is 30 mph north of Post Road and 40 mph south of Post Road. Left turn lanes are provided at most intersections. The intersections with Post Road, Caddis Bend and McKee Road are signalized. All other cross streets between Post Road and Lacy Road include two-way

NORTH  
NOT TO SCALE



**LEGEND**

- ⊙ SIGNAL
- ⊥ STOP SIGN
- EXISTING LANE GEOMETRICS



Pmwork/35035djh/exhibits/exhibits.cdr

**EXHIBIT 1**  
**STUDY AREA AND ROADWAY GEOMETRICS**  
**NORTHEAST FITCHBURG TRANSPORTATION STUDY**  
**FITCHBURG, WI**

stop sign control on the cross street. Fish Hatchery Road provides a full access interchange connection to the South Beltline.

CTH MM is a two-lane rural undivided north-south roadway that generally runs parallel to USH 14 from Oregon through Fitchburg to the South Beltline. The posted speed limit in the rural area is 50 mph. Cross streets between Lacy Road and McCoy Road include two-way stop signs. Turn lanes or passing lanes are provided at some intersections. CTH MM is also known as Old Oregon Road north of McCoy Road.

Rimrock Road is a two-lane undivided section north of Old Oregon Road with a two-way left-turn lane further to the north through a residential area. The posted speed limit is 35 mph. The continuation of CTH MM north of McCoy Road to Rimrock Road is generally referred to as Old Oregon Road. Rimrock Road provides a full access interchange at the South Beltline.

Syene Road is a two-lane undivided north-south roadway. It is currently rural in nature with shoulders and ditched drainage areas. The posted speed limit is 45 mph.

Lacy Road is a two-lane undivided east-west roadway. It is generally rural in nature with a posted speed limit of 35 mph west of Syene Road and 50 mph east of Syene Road. Lacy Road includes stop sign controls at its intersections with Fish Hatchery Road, Syene Road and CTH MM.

East Cheryl Parkway is currently a two-lane undivided roadway. West of Fish Hatchery Road it is generally residential, but east of Fish Hatchery Road it provides access to the Fitchburg Research Park. On-street parking is allowed on E. Cheryl Parkway. Current development plans indicate East Cheryl Parkway will be a two-lane divided roadway extending to at least Syene Road. East Cheryl Parkway currently dead-ends approximately 0.75 miles east of Fish Hatchery Road. The planned extension of East Cheryl Parkway would be a non-linear street with varying median widths. This design is expected to reduce roadway speeds as it travels through a proposed residential community.

This report is examining the feasibility of a USH 14 interchange at East Cheryl Parkway extended, located between Syene Road and CTH MM. The construction of E. Cheryl Parkway to CTH MM is also being examined.

McCoy Road is a four-lane divided road in the vicinity of USH 14. It provides a full access interchange to USH 14. USH 14 entrance and exit ramps include stop signs at the intersections with McCoy Road. McCoy Road is two-lane undivided west of the USH 14 interchange. McCoy Road feeds into Syene Road further west of the USH 14 interchange.

Post Road is a two-lane undivided section west of Fish Hatchery Road. A signal is located at the intersection of Post Road with Fish Hatchery Road. Current plans by the

City of Fitchburg include extending Post Road eastward to Syene Road. The specific alignment of this extension is currently being determined.

**1.4 Existing Daily Traffic**

Daily traffic volumes in the Northeast Fitchburg study area indicate many roadway segments are currently operating well under their daily capacity. Table 1 shows the existing average daily traffic (ADT) volumes in the study area and their generalized roadway capacities.

**Table 1  
Existing Average Daily Traffic Volumes**

<b>Roadway Section</b>	<b>Existing ADT Volumes</b>	<b>Daily Capacity* (at LOS D)</b>
<u>Fish Hatchery Rd</u>		
South of Greenway Cross	31,700	40,000
North of Lacy Rd	11,900	28,000
South of Lacy Rd	7,800	12,000
<u>Syene Rd</u>		
North of Lacy Rd	2,300	12,000
South of Lacy Rd	1,300	12,000
North of McCoy Rd	3,950	12,000
<u>CTH MM</u>		
North of McCoy Rd	8,600	12,000
South of McCoy Rd	5,100	12,000
South of Lacy Rd	5,100	12,000
<u>USH 14</u>		
North of McCoy Rd	21,800	72,000
South of McCoy Rd	18,900	72,000
<u>USH 14-McCoy Rd Ramps</u>		
From USH 14 southbound	4,200	9,000
From USH 14 northbound	1,300	9,000
To USH 14 southbound	1,800	9,000
To USH 14 northbound	1,200	9,000
<u>McCoy Rd</u>		
West of USH 14 interchange	4,800	12,000
<u>Lacy Rd</u>		
West of Fish Hatchery Rd	2,700	12,000
East of Fish Hatchery Rd	2,100	12,000
West of Syene Rd	2,000	12,000
East of Syene Rd	1,400	12,000

\* Note: This capacity is a generalized estimate of the amount of traffic the roadway could carry in a day at LOS D.

Table 1 shows that all of the study area roadways in Northeast Fitchburg are currently operating within their daily capacity limitations, however Fish Hatchery Road would be considered congested especially during peak travel hours. Note that in Tables 1 and 2 the daily capacity is a generalized estimate of the amount of traffic the roadway could carry

in a day at the lowest acceptable LOS. A more accurate measure of roadway capacity is peak hour intersection capacity. More detailed intersection peak hour based capacity analyses will be provided in following sections of this report.

Table 2 shows the existing average daily traffic volumes in the vicinity of the South Beltline-USH 14-Park Street interchange.

**Table 2**  
**Existing Average Daily Traffic Volumes**  
**South Beltline-USH 14-Park Street Interchange**

Roadway Section	Existing ADT Volumes	Daily Capacity at LOS D
<u>South Beltline</u>		
Westbound, West of Park St Interchange*	57,000	70,000
Westbound, East of Park St Interchange	55,700	52,500
Eastbound, West of Park St Interchange*	55,400	70,000
Eastbound, East of Park St Interchange	55,000	52,500
<u>Park Street</u>		
North of Park St Interchange	29,850	28,000
<u>South Beltline-Park St Interchange Ramps</u>		
From Westbound Beltline	9,900	13,500
From Eastbound Beltline to USH 14S	5,900	9,000
From Eastbound Beltline to USH 14N	4,400	9,000
From USH 14N to Eastbound Beltline	3,500	9,000
From USH 14N to Westbound Beltline	5,800	9,000
From USH 14S to Eastbound Beltline	5,600	9,000
From USH 14S to Westbound Beltline	6,000	9,000

\* Note: The South Beltline, west of the Park St interchange includes a full auxiliary lane, which essentially gives these roadway sections an extra lane of capacity.

Table 2 shows that existing daily traffic along the South Beltline and Park Street in the vicinity of the interchange is currently operating with some roadway segments over the level of service D daily capacity. The interchange ramps are currently operating within their LOS D daily capacity limitations.

### 1.5 Existing Peak Hour Traffic

As part of the Northeast Fitchburg Transportation Study, existing morning and evening peak hour turning movement counts were collected at the following study area intersections:

- McCoy Rd & USH 14 northbound ramps
- McCoy Rd & USH 14 southbound ramps
- McCoy Rd & CTH MM
- McCoy Rd & Syene Rd
- Cheryl Pkwy & Fish Hatchery Rd
- Lacy Rd & Fish Hatchery Rd
- Lacy Rd & Syene Rd
- Lacy Rd & CTH MM
- Post Rd & Fish Hatchery Rd

Based on the traffic counts, the peak hours were determined to be 7:15 – 8:15 a.m. in the morning and 4:45 – 5:45 p.m. in the evening at the study area intersections. Exhibit 2 shows the Year 2001 existing peak hour traffic volumes at the study area intersections. Exhibit 2 also shows the existing peak hour level of service at the study area intersections. Level of service is a measure of traffic operation, which is explained below.

The traffic operations at the study area intersections were analyzed based on the procedures set forth in the 2000 Highway Capacity Manual (HCM). For analysis purposes, level of service D was used to define acceptable peak hour operating conditions.

Level of service (LOS) is a quantitative measure that refers to the overall quality of flow at an intersection ranging from very good, represented by LOS A, to very poor, represented by LOS F. Descriptions of the various levels of service are presented below:

**LOS A** is the highest level of service that can be achieved. Under this condition, intersection approaches appear quite open, turning movements are easily made, and nearly all drivers find freedom of operation. At signalized intersections, average delays are less than 10 seconds. At non-signalized intersections, average delays are less than 10 seconds.

**LOS B** represents stable operation. At signalized intersections, average vehicle delays are 10 to 20 seconds. At non-signalized intersections, average delays are 10 to 15 seconds.

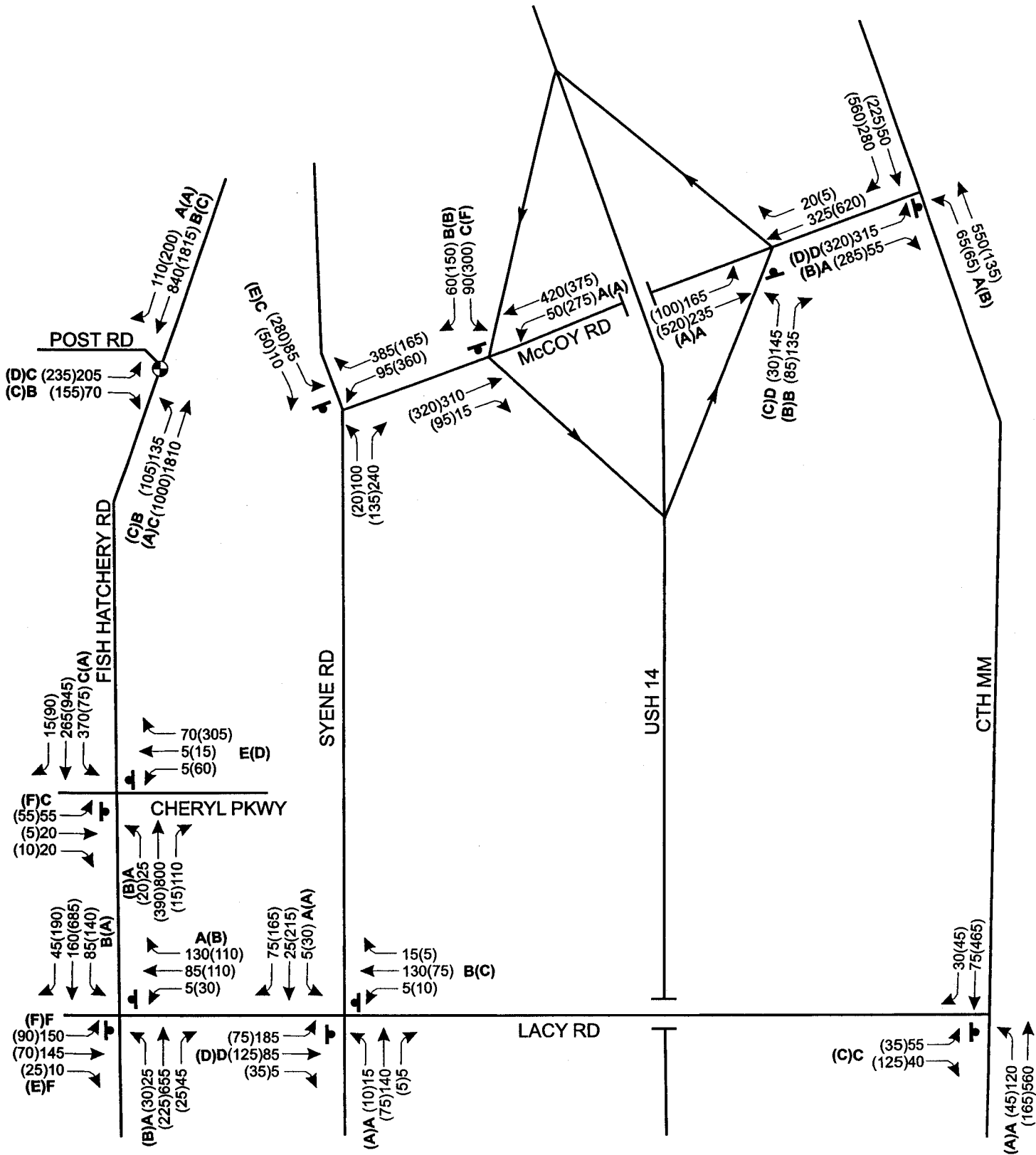
**LOS C** still represents stable operation, but periodic backups of a few vehicles may develop behind turning vehicles. Most drivers begin to feel restricted, but not objectionably so. At signalized intersections, average vehicle delays are 20 to 35 seconds. At non-signalized intersections, average delays are 15 to 25 seconds.

**LOS D** represents increasing traffic restrictions as the intersection approaches instability. Delays to approaching vehicles may be substantial during short peaks within the peak period, but periodic clearance of long lines occurs, thus preventing excessive backups. At signalized intersections, average vehicle delays are 35 to 55 seconds. At non-signalized intersections, average delays are 25 to 35 seconds.

**LOS E** represents the capacity of the intersection. At signalized intersections, average vehicle delays are 55 to 80 seconds. At non-signalized intersections, average delays are 35 to 50 seconds.

**LOS F** represents jammed conditions where the intersection is over capacity and acceptable gaps for non-signalized intersections in the mainline traffic flow are minimal. At signalized intersections, average vehicle delays exceed 80 seconds. At non-signalized intersections, average delays exceed 50 seconds.

Table 3 shows the levels of service at each of the study area intersections with existing traffic volumes, intersection controls, and geometry during the morning and evening peak hours.



**LEGEND**

- ⊕ SIGNAL
- ⊥ STOP SIGN
- XX YEAR 2001 EXISTING AM PEAK HOUR TRAFFIC VOLUMES (7:15-8:15 AM)
- (XX) YEAR 2001 EXISTING PM PEAK HOUR TRAFFIC VOLUMES (4:45-5:45 PM)
- A(B) YEAR 2001 EXISTING AM AND PM PEAK HOUR LEVEL OF SERVICE



Pmwork/35035djh/exhibits/exhibits.cdr

**EXHIBIT 2**  
**YEAR 2001 EXISTING PEAK HOUR TRAFFIC**  
**NINE SPRINGS NEIGHBORHOOD TRANSPORTATION STUDY**  
**FITCHBURG, WI**

**Table 3  
Existing Traffic  
Peak Hour Operating Conditions with Existing Geometrics**

Intersection	Traffic Control	Peak Hour	Level of Service per Movement by Approach											
			Southbound			Westbound			Northbound			Eastbound		
			LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
McCoy Rd & Highway 14 N ramps	Two-Way	AM	-	-	-	-	-	-	D	-	B	A	-	-
	Stop Sign	PM	-	-	-	-	-	-	C	-	B	A	-	-
McCoy Rd & Highway 14 S ramps	Two-Way	AM	C	-	B	A	-	-	-	-	-	-	-	-
	Stop Sign	PM	F	-	B	A	-	-	-	-	-	-	-	-
County Highway MM & McCoy Rd	Two-Way	AM	-	-	-	-	-	-	A	-	-	D	-	A
	Stop Sign	PM	-	-	-	-	-	-	B	-	-	D	-	B
McCoy Rd & Syene Rd	Two-Way	AM	C	-	C	-	-	-	-	-	-	A	-	-
	Stop Sign	PM	E	-	E	-	-	-	-	-	-	A	-	-
Fish Hatchery Rd & Post Rd	Traffic Signal	AM	-	B	A	-	-	-	B	C	-	C	-	B
		PM	-	C	A	-	-	-	C	A	-	D	-	C
Fish Hatchery Rd & Cheryl Pkwy	Two-Way	AM	C	-	-	E	E	E	A	-	-	C	C	C
	Stop Sign	PM	A	-	-	D	D	D	B	-	-	F	F	F
Fish Hatchery Rd & Lacy Rd	Two-Way	AM	B	-	-	A	A	A	A	-	-	F	F	F
	Stop Sign	PM	A	-	-	B	B	B	B	-	-	F	E	E
Syene Rd & Lacy Rd	Two-Way	AM	A	-	-	B	B	B	A	-	-	D	D	D
	Stop Sign	PM	A	-	-	C	C	C	A	-	-	D	D	D
County Highway MM & Lacy Rd	Two-Way	AM	-	-	-	-	-	-	A	-	-	C	-	C
	Stop Sign	PM	-	-	-	-	-	-	A	-	-	C	-	C

Note: Major Street through and right turning movements are not shown with Levels of Service because they are unopposed.

Table 3 shows that the following intersections are currently operating at LOS E or F with existing traffic volumes, intersection controls, and geometry:

- McCoy Rd & USH 14 southbound ramps:
  - Southbound left turn movement operates at LOS F during the evening peak hour.
- McCoy Rd & Syene Rd:
  - Southbound left and right turn movements operate at LOS E during the evening peak hour.
- Fish Hatchery Rd & Cheryl Pkwy:
  - Westbound left turn, through and right turn movements operate at LOS E during the morning peak hour. The heavy northbound traffic volume on Fish Hatchery Road during the morning peak hour creates fewer available gaps for the westbound right turning movement to utilize.
  - Eastbound left turn, through and right turn movements operate at LOS F during the evening peak hour. The heavy southbound traffic volume on Fish Hatchery Road during the evening peak hour creates fewer available gaps for the eastbound right turning movement to utilize.

- Fish Hatchery Rd & Lacy Rd:
  - Eastbound left turn, through and right turn movements operate at LOS F during the morning peak hour.
  - Eastbound left turn movement operates at LOS F and the eastbound through and right turn movements operate at LOS E during the evening peak hour.

USH 14 and South Beltline Existing Peak Hour Traffic Operations

Existing traffic operations were also analyzed at the South Beltline Interchange with USH 14/Park Street. The CORSIM software package was utilized to model current freeway morning and evening peak hour traffic operations on the South Beltline and USH 14.

Table 4 shows the current levels of service along USH 14 and the South Beltline in the vicinity of USH 14 with existing morning and evening peak hour traffic volumes.

**Table 4  
Existing Peak Hour Traffic Operations  
South Beltline and USH 14**

Roadway Section	Peak Hour	Existing Level of Service Operations			
		Eastbound	Westbound	Northbound	Southbound
South Beltline, east of USH 14	AM	E	E	-	-
	PM	E	E	-	-
South Beltline, west of USH 14	AM	C	D	-	-
	PM	D	C	-	-
USH 14, south of South Beltline	AM	-	-	D	C
	PM	-	-	C	C
USH 14, south of McCoy Road	AM	-	-	B	B
	PM	-	-	B	B

Note: South Beltline and USH 14 existing peak hour traffic volumes collected by WisDOT and HNTB.

Table 4 shows that the South Beltline roadway section east of USH 14 is operating at LOS E conditions during both the morning and evening peak hours with existing traffic volumes. The South Beltline roadway section west of USH 14 is operating at LOS D conditions or better largely because the full auxiliary lane between the Fish Hatchery Road interchange and the Park Street/USH 14 interchange increases the highway's capacity. USH 14 is operating at LOS D or better conditions during the morning and evening peak hours with existing traffic volumes.

Table 5 shows the current level of service at the Park Street signalized intersection with the South Beltline westbound exit ramp with existing morning and evening peak hour traffic volumes and existing geometry. It is the only ramp with an intersection at the Beltline interchange with USH 14/Park Street. The other ramps at the Beltline interchange with USH 14/Park Street are freeflow ramps and were shown to be well

within their daily capacity limitations (Table 2). Therefore, the peak hour traffic operations were analyzed only at the westbound exit ramp intersection with Park Street.

**Table 5  
Existing Peak Hour Traffic Operations  
Park Street Intersection with South Beltline Westbound Exit Ramp**

Intersection	Peak Hour	Existing Level of Service Operations											
		Eastbound			Westbound			Northbound			Southbound		
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
South Beltline - westbound exit ramp & Park Street	AM	-	-	-	B	-	D	-	D	-	-	B	-
	PM	-	-	-	C	-	C	-	B	-	-	C	-

Source: Existing peak hour traffic volumes collected by HNTB.

Table 5 shows the Park Street signalized intersection with the South Beltline westbound exit ramp is currently operating at LOS D conditions or better during the morning and evening peak hours.

## **2. FUTURE DAILY TRAFFIC**

---

### **2.1 Regional Travel Demand Model**

Given the size of the study area, and the density of development that is expected to take place, the magnitude of the traffic generated by these developments will certainly impact the regional roadway system. Therefore, the regional travel demand model was needed to conduct an analysis of future travel demand related to the changes in the Northeast Fitchburg area.

Therefore, an initial step in completing the *Northeast Fitchburg Transportation Study* was to obtain the regional transportation model base year and approved Long Range Transportation Plan computer files from the Madison Area Metropolitan Planning Organization (MPO).

A transportation model is essentially a set of mathematical equations developed to replicate travel patterns for an area. After the base model outputs (average daily traffic, in this case) match base year observed traffic counts within an acceptable range, the model can be used to estimate future travel patterns based on changes in land use and/or the transportation system itself. Using the model, a number of alternatives and “what if” scenarios can be tested very quickly. The Madison Area MPO’s regional transportation model is based on land use plans which anticipate development to the year 2020.

The initial study area focused on the Nine Springs Neighborhood and Greentech Village developments. As the study progressed, the analysis area was broadened to include the proposed Fitchburg Technology Campus south of Lacy Road. This analysis included Phase I buildout, which was assumed would occur by the year 2020. Development (beyond what was already in the transportation model) for the Fitchburg Technology Campus Phase II area was not added since these plans were in a very conceptual stage at the time of this analysis.

### **2.2 Future Land Use**

Change in land use is an essential input required for the projection of traffic volumes to a future year. The location and density of land development has a direct relationship on the amount of trip making activity that can be expected for an area. Transportation models, including the regional model which includes the City of Fitchburg, typically utilize demographic and economic variables as a surrogate for actual land use. In these models, households generate trips, while employment centers attract trips.

The purpose of this study was not to rework existing land use plans. In fact, one of the base assumptions is that the current land use plans will be implemented and built-out over the course of the analysis period. For the remainder of the region, it was assumed the land uses included in the transportation planning model would to be implemented by the year 2020. This approach is consistent with numerous other transportation planning studies recently completed for Madison and/or the surrounding Dane County communities.

The local land use plans which were incorporated into this study included:

- City of Fitchburg General Land Use Plan, Dane County Regional Planning Commission, March 1995
- Fitchburg Center General Development Plan, April 1995
- Greentech Village Development Plan, MG&E, July 2001
- Nine Springs Neighborhood Plan, Fitchburg Planning and Zoning, December 1998
- Nine Springs Neighborhood Comprehensive Development Plan, (also known as Swan Creek); Schreiber/Anderson Associates, March 2001
- Kelly Technology Campus Phase I Plan, Vandewalle and Associates, January 2002

The trip generation estimates for each major development area were provided by the land use planners working on the respective developments. The transportation model was then adjusted to reflect the same number of trips (productions and attractions) as were included in the land use planning documents. Based on these plans, and discussions with City of Fitchburg staff, over 87,000 trips are expected to be generated in the study area when it is built-out. Table 6 shows the increase in dwelling units and employment, along with an estimate of the number of trips which will be generated by the major activity centers in the area.

**Table 6**  
**Future Study Area Trip Generation Based on Area Plans**

Area/Location	Dwelling Unit's	Employment	Daily Trips
Fitchburg Center	630	4,600	24,700
Nine Springs Neighborhood	910	150	8,700
Green Tech Village	900	9,925	34,300
Fitchburg Technology Campus (Phase I)	100	3,300	13,500
Quarry Hill Neighborhood	525	0	6,100
<b>Total</b>	<b>3,065</b>	<b>18,025</b>	<b>87,300</b>

Exhibit 3 graphically illustrates the dwelling units, employment, population and daily trips expected to be generated by the major activity centers in the study area.

For the purposes of transportation demand forecasting, each neighborhood or activity center is broken into smaller areas called transportation analysis zones (TAZs). Since much of the area currently consists of rural or other undeveloped land, the existing zones in the model were relatively large. In order to increase the accuracy of the model's roadway network access points, the existing zones were subdivided to create 14 new TAZs in the Northeast Fitchburg study area.

Table 7 provides an area/TAZ equivalency table. The transportation analysis zones are also shown in Exhibit 4.



NORTH  
NOT TO SCALE

**Fitchburg Center**

Pop = 1,900  
Dus = 630  
Emp = 4,600  
Trips = 24,700  
Source: Fitchburg Center GDP

**Nine Springs**

Pop = 2,300  
Dus = 910  
Emp = 150  
Trips = 8,700  
Source: Schreiber/Anderson

**Green Tech Village**

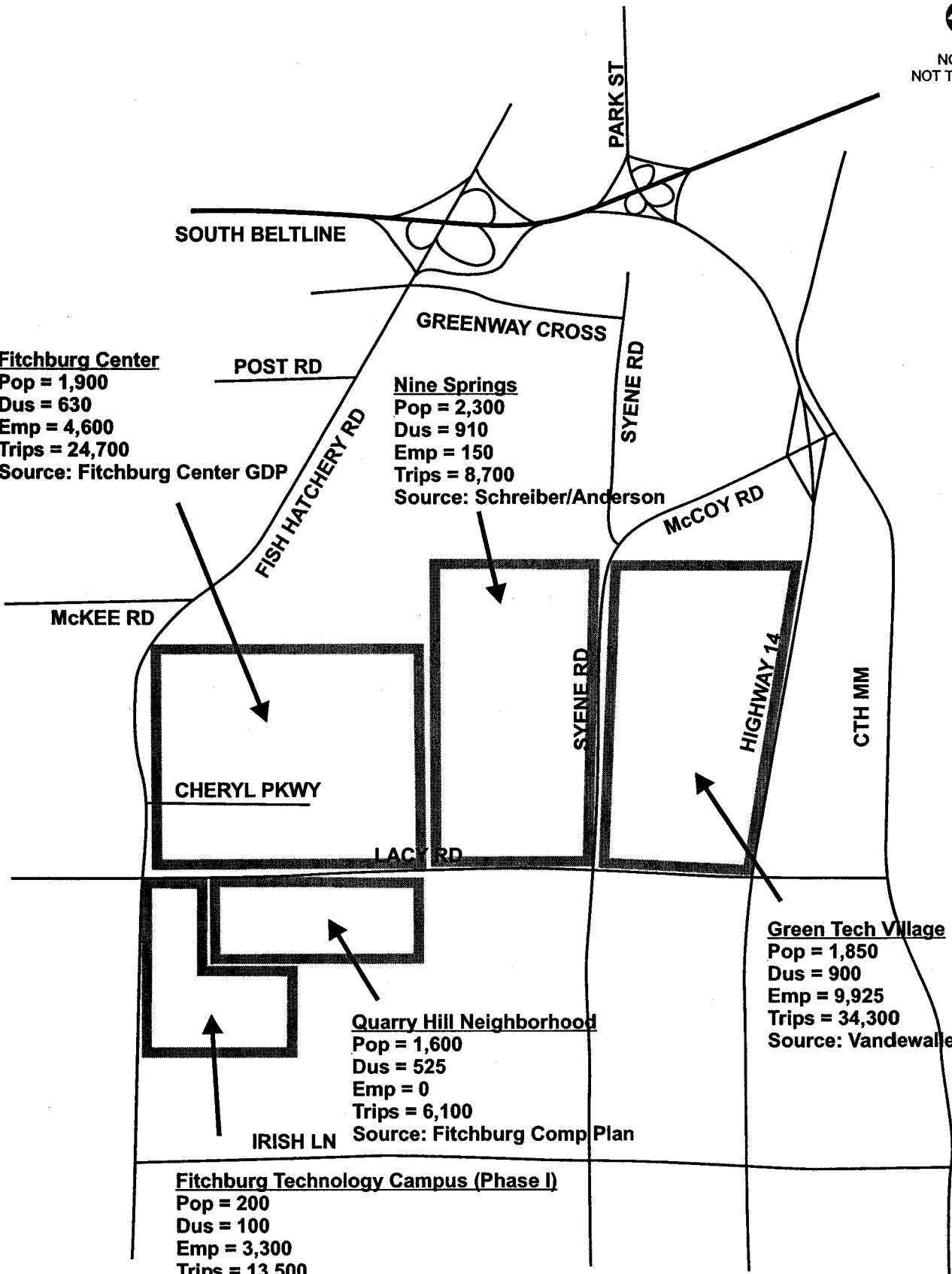
Pop = 1,850  
Dus = 900  
Emp = 9,925  
Trips = 34,300  
Source: Vandewalle

**Quarry Hill Neighborhood**

Pop = 1,600  
Dus = 525  
Emp = 0  
Trips = 6,100  
Source: Fitchburg Comp Plan

**Fitchburg Technology Campus (Phase I)**

Pop = 200  
Dus = 100  
Emp = 3,300  
Trips = 13,500  
Source: Vandewalle



Pmwork/35035djh/dane county gis/fitchburg.cdr



**Exhibit 4**  
**Transportation Analysis Zones**  
**Northeast Fitchburg Transportation Study**  
**Fitchburg, WI**

**Developments**  
**Transportation Analysis Zones**  
**Streets**

**Table 7  
Planning Area TAZ Equivalency Table**

Area/Location	TAZs
Fitchburg Center	199, 671, 672, 673, 674, 676, 677
Nine Springs Neighborhood	675, 680
Green Tech Village	681, 682, 683, 684
Fitchburg Technology Campus – Phase I	569
Quarry Hill Neighborhood	678

The number of trips envisioned for each of these areas, according to the respective development plans, represents a significant increase over the initial 2020 socio-economic data in the model for Northeast Fitchburg. Table 8 shows the increase by TAZ. Keep in mind this table compares growth originally capped at the year 2020 to growth projected to occur after buildout of the Northeast Fitchburg development plans.

**Table 8  
Comparison of Initial and Buildout Socio-Economic Data**

TAZ	Initial 2020 Data		Buildout Data		Change	
	Dwelling Units	Employment	Dwelling Units	Employment	Dwelling Units	Employment
199	16	0	50	0	34	0
200	0	0	213	0	213	0
345	1,420	0	0	0	-1,420	0
569	45	0	99	3,300	44	3,300
671	0	1,462	0	1,462	0	0
672	0	459	0	459	0	0
673	0	1,136	75	1,136	75	0
674	152	0	245	0	93	0
675	0	0	681	100	681	100
676	0	1,381	65	1,520	65	139
677	157	0	195	0	38	0
678	94	0	250	0	156	0
679	182	0	275	0	93	0
680	6	0	229	86	223	86
681	0	0	250	2,884	250	2,884
682	0	0	525	143	525	143
683	0	0	125	4,492	125	4,492
684	0	0	0	2,406	0	2,406
<b>Total</b>	<b>2,072</b>	<b>4,438</b>	<b>3,277</b>	<b>17,988</b>	<b>1,195</b>	<b>13,550</b>

The removal of the 1,420 dwelling units from TAZ 345 is related to subdividing this large zone and changing its original size. The original TAZ 345 included part of what is now considered TAZs 674, 675, 677 and 680 which now make up parts of Fitchburg Center and the proposed Nine Springs Residential Neighborhood development.

### 2.3 Existing Base Transportation System

A travel model base roadway network was developed and calibrated to reflect travel patterns (i.e. daily traffic volume and flow) that currently take place on the study area's existing roadway system. The base network includes all roadways within the area that have the functional classification of "collector" and higher. The connecting links between the zone centroids (assumed centers of trip-making activity) and the surrounding roadway network represent the remaining local street system included within each zone.

This base served as a reference point from which to build and analyze future scenario networks. The volumes from the base computer network were compared to the actual 2001 traffic counts collected at the initiation of the study to ensure the model was able to replicate current traffic patterns.

### 2.4 Future Transportation System

Future roadway network systems were then developed. Using the model, a number of scenarios were tested and compared to optimize the local and regional roadway system's ability to accommodate future area-generated development traffic and regional traffic impacting the study area. Each future year scenario network included all streets in the base network plus any roadways within the study area that are currently planned to either connect to or increase the capacity of the existing base network.

Much of the transportation system analysis focused on assessing the impacts of a proposed USH 14 interchange generally located on the planned E. Cheryl Parkway extension alignment. The future base transportation network was modified to include the potential interchange along with the local road improvements. This yielded modified future year networks with and without the proposed USH 14 interchange. A peak hour future year operational analysis of USH 14 with a potential interchange at E. Cheryl Parkway was conducted, which is documented later in this report.

The six transportation system scenarios created and analyzed included:

1. Existing 2001 Base
2. Future Base (2020 regional land use + buildout of study area)
3. Future Base with Post Road extended from Fish Hatchery east to Watford Future
4. Future Base with interchange at E. Cheryl Parkway and USH 14 with a connection to CTH MM
5. Future Base with overpass at E. Cheryl Parkway and USH 14 with a connection to CTH MM
6. Future Base with interchange at E. Cheryl Parkway and USH 14 without a connection to CTH MM

## 2.5 Trip Generation and Distribution

Trip generation provides an estimate of the number of trips produced by or attracted to an area as a function of the demographic, socio-economic, and land use characteristics of the area. The trips generated within the study area were distributed by the model according to origin-destination combinations and transportation analysis zones. External trip origins and destinations (those trips not generated within the study area, but enter the area at some point) were also examined.

## 2.6 Traffic Assignment

Following the trip distribution process, traffic was assigned to the future roadway networks. As with most models, the Madison area model assigns trips to the future roadway network, taking into account functional classification, operation, number of lanes, and location of the roadway. An iterative process is used to measure network speeds and capacities to determine the attractiveness of all available routes that could move traffic from one location to another. Using this iterative process, the model has the ability to reflect the effects of building levels of congestion on various segments of the network, which might affect a driver's choice of routes.

The findings (measured in terms of average daily traffic volumes) of the various network scenarios tested are documented below. The Future Base scenario includes the existing roadway network with future traffic projections. This scenario is provided only for reference purposes and it is acknowledged that projects such as the extension of E. Cheryl Parkway and Post Road are committed and will soon move forward to construction.

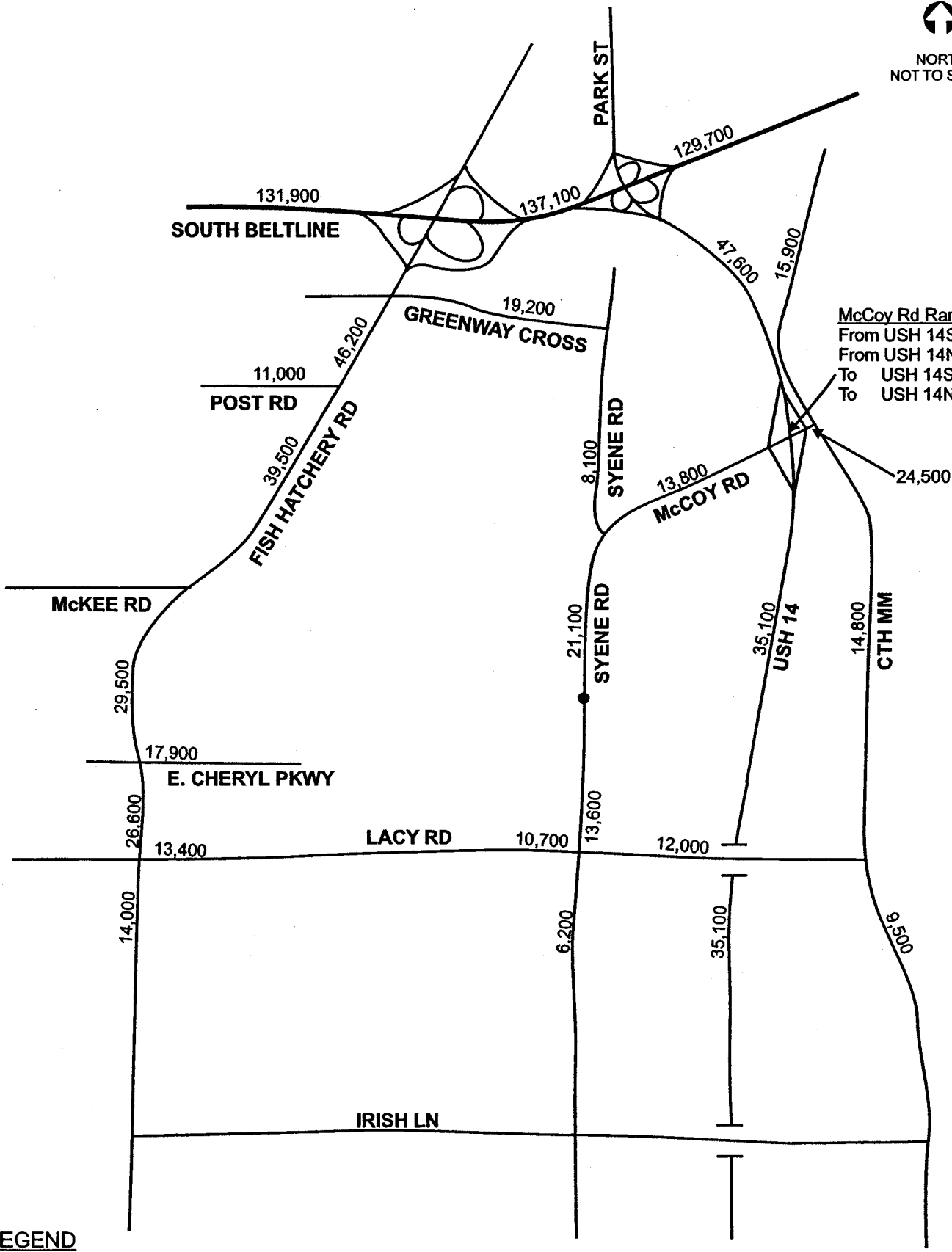
The three alternatives all include the extension of Post Road from Fish Hatchery Road to Watford Way, the extension of E. Cheryl Parkway and the expansion of Syene Road between McCoy Road and Lacy Road from 2 lanes to 4 lanes.

## 2.7 Future Base (Future Traffic with Existing Roadway Network)

Exhibit 5 shows the projected Future Base average daily traffic volumes.

Lacy Road	Lacy Road would experience higher daily traffic volumes if the existing roadway network was maintained. Daily traffic volumes would be between 10,700 and 13,400 vpd west of Syene Road and be 12,000 vpd east of Syene Road.
E. Cheryl Parkway	East Cheryl Parkway would not be extended to the east. Daily traffic volumes would be 17,900 vpd east of Fish Hatchery Road.
Greenway Cross	Greenway Cross would experience higher traffic volumes if the existing roadway network was maintained. Daily traffic volumes between Fish Hatchery Road and Syene Road would be 19,200 vpd near Fish Hatchery Road.

Post Road	No extension east of Fish Hatchery Road would be constructed. Daily traffic volumes west of Fish Hatchery Road would be 11,000 vpd, which is similar to the build scenarios.
Fish Hatchery Road	Fish Hatchery Road would experience significantly higher traffic volumes if the existing roadway network was maintained. Daily traffic volumes would range from 46,200 vpd north of Post Road to 26,600 vpd north of Lacy Road.
Syene Road	Without the Post Road extension constructed to Syene Road, the daily traffic volumes on Syene Road north of McCoy Road would be 8,100 vpd in the Future Base scenario, which is lower than the build scenarios. South of McCoy Road, in the Future Base scenario daily traffic volumes would range from 13,600 to 21,100 vpd between Lacy Road and McCoy Road, which is lower than the other scenarios.
USH 14	USH 14 would carry 47,600 vpd north of McCoy Road and 35,100 vpd south of McCoy Road.
CTH MM	CTH MM would carry 14,800 vpd between McCoy Road and Lacy Road and 9,500 vpd south of Lacy Road.



**McCoy Rd Ramps:**

From USH 14S	9,400
From USH 14N	3,700
To USH 14S	3,000
To USH 14N	9,700

**LEGEND**

9,600 FUTURE BASE ADT VOLUMES

**EXHIBIT 5**  
**FUTURE BASE**  
**EXISTING ROADWAY NETWORK**  
**PROJECTED BUILDOUT AVERAGE DAILY TRAFFIC**  
**NORTHEAST FITCHBURG TRANSPORTATION STUDY**  
**FITCHBURG, WI**



## 2.8 Overpass at East Cheryl Parkway and USH 14 with a connection to CTH MM

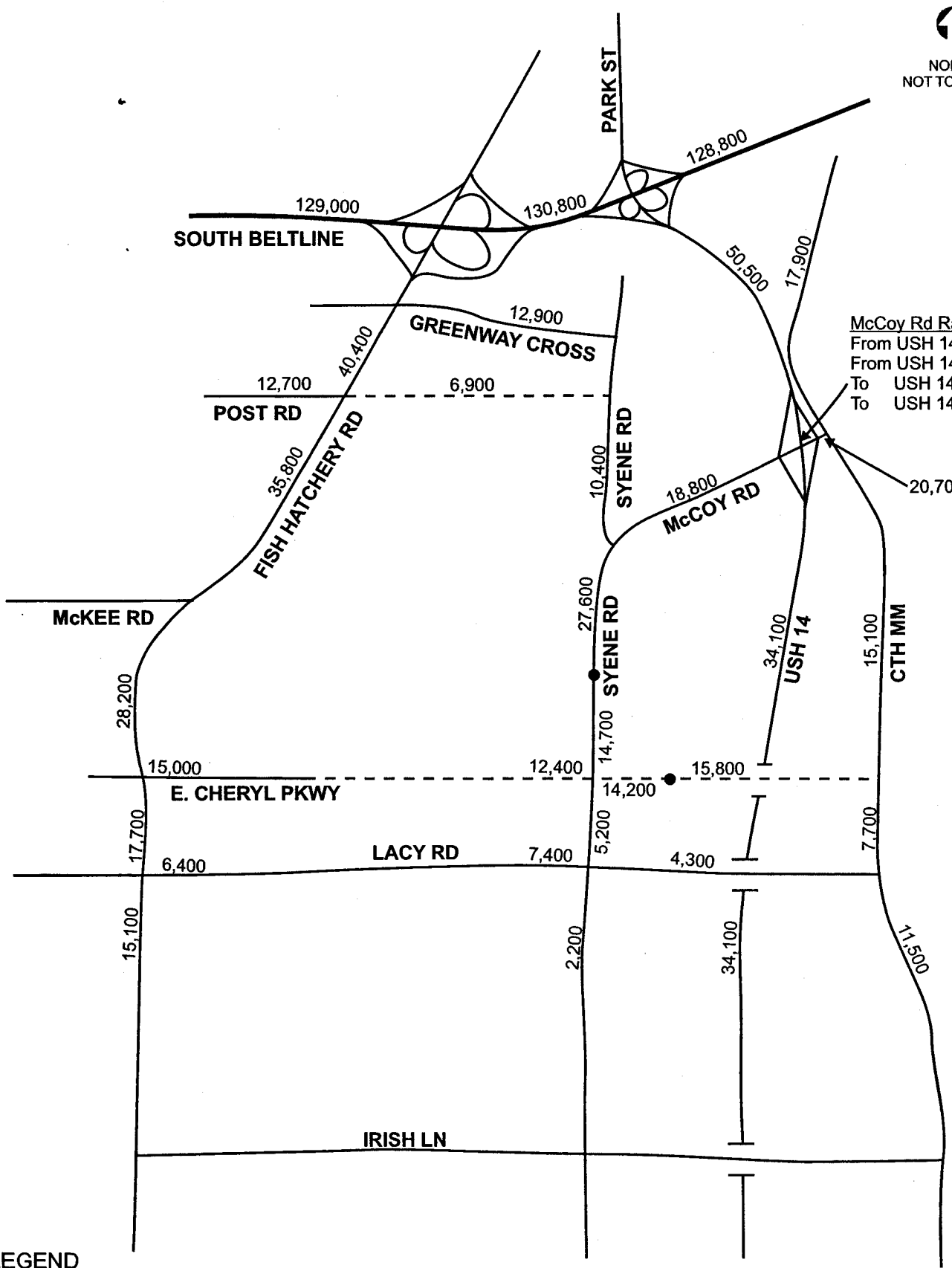
Exhibit 6 shows the projected average daily traffic volumes with an overpass at East Cheryl Parkway and USH 14 with a connection to CTH MM.

Lacy Road	Lacy Road would no longer be the only continuous east-west connection between Fish Hatchery Road and CTH M with the addition of E. Cheryl Parkway. Compared to the Future Base scenario, traffic volumes would decrease to between 6,400 and 7,400 vpd between Fish Hatchery and Syene Road. Traffic would decrease to 4,300 vpd east of Syene Road.
E. Cheryl Parkway	East Cheryl Parkway would continue to CTH MM without intersecting with USH 14. The roadway would intersect with Syene Road. With additional access along the corridor, traffic would distribute relatively evenly over the entire roadway ranging between 12,400 and 15,800 vpd.
Greenway Cross	Greenway Cross would receive significant relief with the extension of Post Road, and traffic volumes would be 12,900 vpd.
Post Road	The new extension of Post Road would carry 6,900 vpd.
Fish Hatchery Road	Fish Hatchery Road south of Lacy would carry 15,100 vph. Traffic volumes range between 17,700 and 28,200 vpd up to McKee Road. North of McKee Road, traffic volumes increase to over 35,000 before the Post Road intersection and over 40,000 north of Post Road.
Syene Road	5,200 vpd would utilize Syene Road between Lacy and E. Cheryl Parkway. The north-south traffic in this area is also shared with Sunflower Drive and Caine Road. Traffic from E. Cheryl Parkway to McCoy Road would range between 14,700 and 27,600 vpd, an increase of about 6,000 vehicles per day over the Future Base scenario.
USH 14	USH 14 would carry about the same level of traffic as in the Future Base scenario south of McCoy Road. North of the McCoy interchange, traffic would increase by about 3,000 vpd as compared to the Future Base.
CTH MM	CTH MM would carry between about the same volume of traffic south of McCoy Road as in the Future Base, and about 2,000 vpd more than the Future Base north of McCoy Road. At two lanes CTH MM will be capacity constrained at these volumes, so there is little difference between the "Without I/C" scenario and the Future Base. However, if the capacity on CTH

MM were increased, traffic volumes along CTH MM would most likely increase under the "Without I/C" scenario.



NORTH  
NOT TO SCALE



**LEGEND**

9,600 WITHOUT INTERCHANGE ADT VOLUMES

**EXHIBIT 6**  
**WITHOUT INTERCHANGE**  
**E. CHERYL PKWY EXTENSION TO CTH MM**  
**PROJECTED BUILDOUT AVERAGE DAILY TRAFFIC**  
**NORTHEAST FITCHBURG TRANSPORTATION STUDY**  
**FITCHBURG, WI**

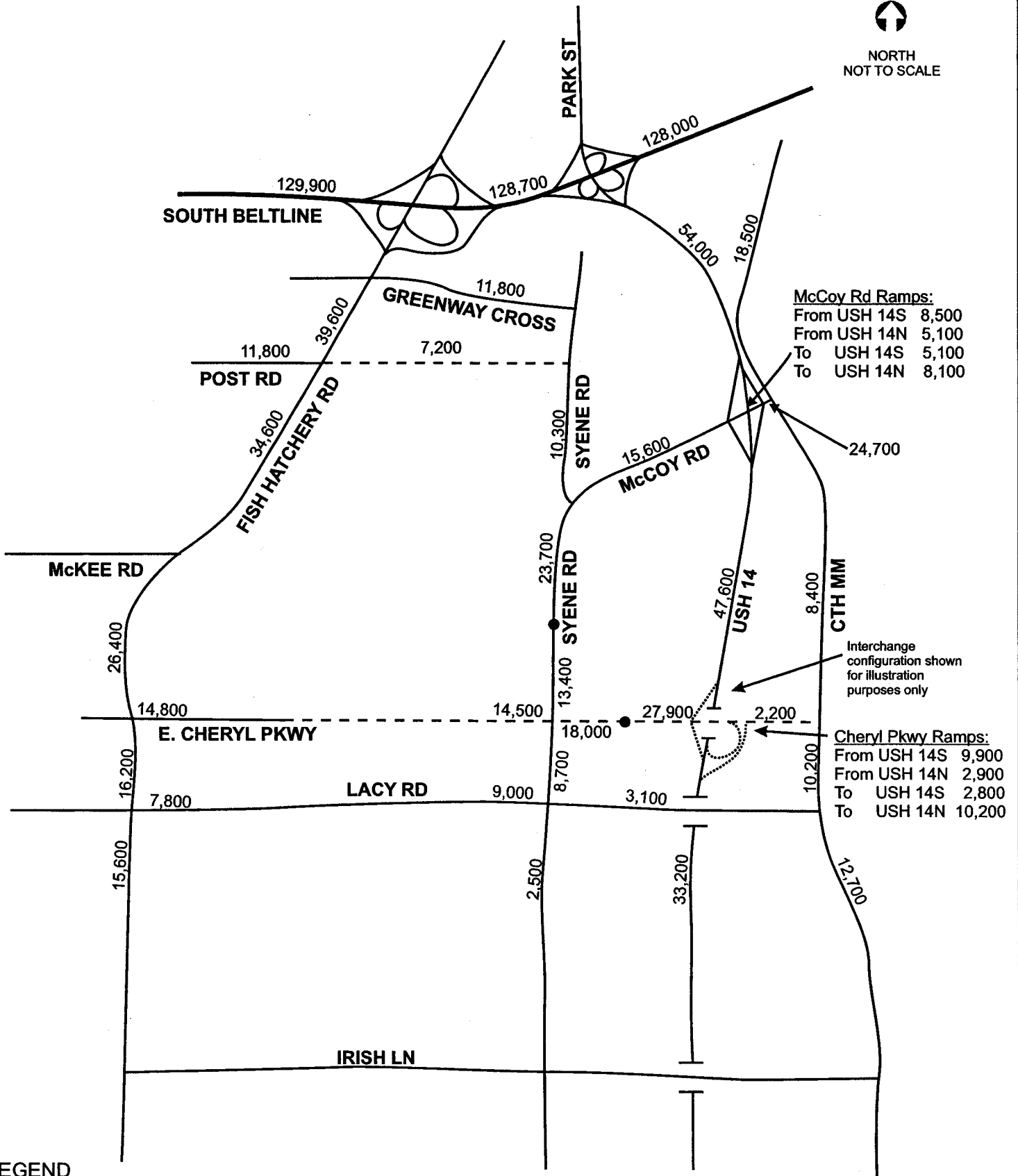


Pmwork/35035djh/dane county gis/fitchburg.cdr

## 2.9 With Interchange at East Cheryl Parkway and USH 14 with a connection to CTH MM

Exhibit 7 shows the projected average daily traffic volumes with an interchange at East Cheryl Parkway and USH 14 with a connection to CTH MM.

Lacy Road	Traffic from Fish Hatchery to Syene Road would increase over the "Without I/C" scenario to range between 7,800 and 9,000 vpd. Traffic east of Syene road would decrease to 3,100 vpd.
E. Cheryl Parkway	Traffic volumes would be about 14,500 vpd between Fish Hatchery and Syene Roads. Traffic would increase significantly between Syene Road and the proposed interchange to range between 18,000 and 27,900 vpd. Traffic would be approximately 2,000 vpd between USH 14 and CTH MM. (Note that current city plans do not include any additional development east of USH 14)
Greenway Cross	No significant changes to the "Without I/C" traffic volumes on Greenway Cross are expected with the proposed interchange.
Post Road	No significant changes to the "Without I/C" traffic volumes on Post Road extension are expected with the proposed interchange.
Fish Hatchery Road	A relatively small decrease in traffic would be expected with the interchange. Traffic south of Lacy Road would remain virtually unchanged.
Syene Road	An additional 3,500 vph would utilize Syene Road between Lacy Road and E. Cheryl Parkway as trips converge toward the proposed interchange. A decrease in traffic volumes on Syene near McCoy Road is expected as traffic moves southward from the Nine Springs area to E. Cheryl Parkway and on to the interchange.
USH 14	Traffic on USH 14 would increase by about 13,500 vpd with the addition of the interchange. Approximately 7,000 vpd would come off of CTH MM, about 4,000 from Syene/McCoy Road, and about 2,000 from Fish Hatchery Road.
CTH MM	Traffic volumes on CTH MM from E. Cheryl Parkway to McCoy Road are lower than the Future Base and "Without I/C" alternatives (8,400 vpd). Traffic remains similar to the without an interchange alternative north of McCoy Road.



**LEGEND**

9,600 WITH INTERCHANGE (CONNECTION TO CTH MM) ADT VOLUMES

**EXHIBIT 7  
WITH INTERCHANGE  
E. CHERYL PKWY EXTENSION TO CTH MM  
PROJECTED BUILDOUT AVERAGE DAILY TRAFFIC  
NORTHEAST FITCHBURG TRANSPORTATION STUDY  
FITCHBURG, WI**

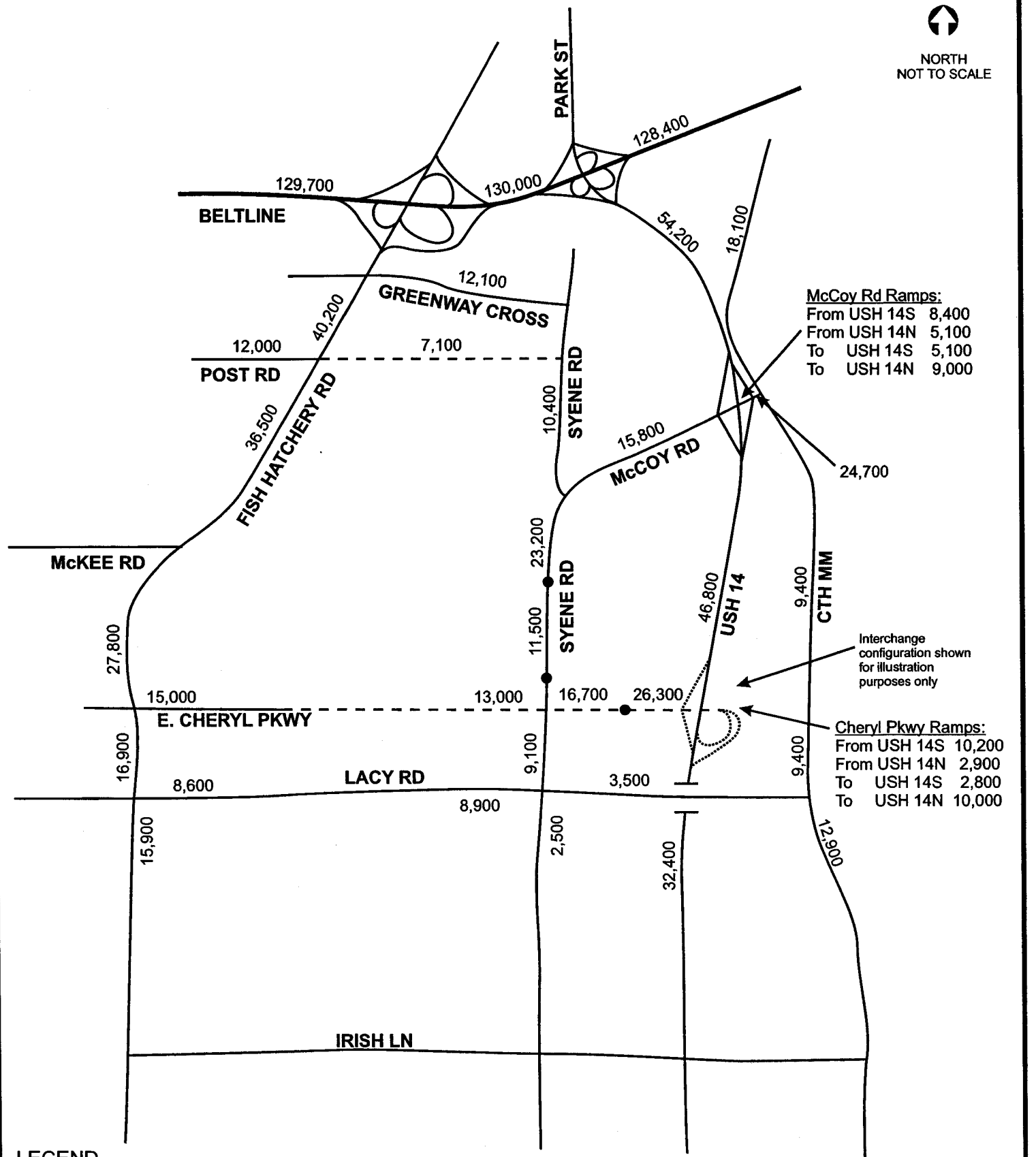


## 2.10 Interchange at East Cheryl Parkway and USH 14 without a connection to CTH MM

Exhibit 8 shows the projected average daily traffic volumes with an interchange at East Cheryl Parkway and USH 14 without a connection to CTH MM.

Lacy Road	Traffic from Fish Hatchery to Syene would be about the same as the "With I/C with CTH MM connection" scenario at a range of between 8,600 and 8,900 vpd. Traffic east of Syene Road would increase slightly to 3,500 vpd over the "With I/C with CTH MM connection" scenario.
E. Cheryl Parkway	Traffic volumes would be about 13,000 vpd between Fish Hatchery and Syene Roads, which is 1,500 vpd less than the "With I/C with CTH MM connection" scenario. Traffic would also be about 1,500 vpd lower than the "With I/C" scenario with a connection to CTH MM between Syene Road and the proposed USH 14 interchange to range between 16,700 and 26,300 vpd.
Greenway Cross	No significant changes to the "With CTH MM connection" traffic volumes on Greenway Cross are expected without the CTH MM connection.
Post Road	No significant changes to the "With CTH MM connection" traffic volumes on Post Road extension are expected without the CTH MM connection.
Fish Hatchery Road	A relatively small increase in traffic over the "With I/C with CTH MM" scenario would be expected without the CTH MM connection. Traffic south of Lacy Road would remain virtually unchanged.
Syene Road	Traffic along Syene Road would remain virtually unchanged from the "With I/C and CTH MM connection" scenario.
USH 14	Traffic along USH 14 would remain virtually unchanged from the "With I/C and CTH MM connection" scenario.
CTH MM	Traffic volumes on CTH MM are similar to the "With I/C and CTH MM connection" scenario. Traffic north of McCoy Road and south of Lacy Road is similar to the "Without I/C" scenario.

Table 9 summarizes the average daily traffic volumes under existing conditions, Future Base conditions and under each of the three future buildout scenarios. It should be noted that "Future Base" refers to the existing roadway network with future traffic.



**LEGEND**

9,600 WITH INTERCHANGE (NO CONNECTION TO CTH MM) ADT VOLUMES

**EXHIBIT 8**  
**WITH INTERCHANGE**  
**E. CHERYL PKWY EXTENSION TO USH 14**  
**PROJECTED BUILDOUT AVERAGE DAILY TRAFFIC**  
**NORTHEAST FITCHBURG TRANSPORTATION STUDY**  
**FITCHBURG, WI**



**Table 9  
Average Daily Traffic  
Existing and Future Conditions**

Roadway	Section	1999 WisDOT Count	Future Base (Exh. 5)	Future Cheryl Pkwy Alts		
				Alt 1 (Exh. 6)	Alt 2 (Exh. 7)	Alt 3 (Exh. 8)
Fish Hatchery Rd	Beltline to Post Rd	24,450	46,200	40,400	39,600	40,200
	Post Rd to McKee Rd	32,450	39,500	35,800	34,600	36,500
	E. Cheryl Pkwy to Lacy Rd.	11,900	26,600	17,700	16,200	16,900
	South of Lacy Rd	7,800	14,000	15,100	15,600	15,900
Syene Road	Post Rd to McCoy Rd	3,950	8,100	10,400	10,300	10,400
	McCoy Rd to Lacy Rd (1)	2,300	21,000	27,600	23,700	23,200
	McCoy Rd to Lacy Rd (2)	2,300	14,200	14,700	13,400	11,500
	McCoy Rd to Lacy Rd (3)	2,300	13,600	5,200	8,700	9,100
	South of Lacy Rd	1,300	6,200	2,200	2,500	2,500
USH 14	Park St. I/C to McCoy Rd I/C	21,800	47,600	50,500	54,000	54,200
	McCoy Rd I/C to Oregon I/C	18,900	35,100	34,100	---	---
	McCoy Rd I/C to Cheryl I/C	---	---	---	47,600	46,800
	Cheryl Pkwy I/C to Oregon I/C	---	---	---	33,200	32,400
CTH MM	North of McCoy Rd	8,600	15,900	17,900	18,500	18,100
	McCoy Rd to Lacy Rd	5,100	14,800	---	---	9,400
	McCoy Rd to Cheryl Pkwy	---	---	15,100	8,400	---
	Cheryl Pkwy to Lacy Rd	---	---	7,700	10,200	---
	South of Lacy Rd	5,100	9,500	11,500	12,700	12,900
Lacy Road	Fish Hatchery Rd to Caine Rd	2,100	13,400	6,400	7,800	8,600
	Caine Rd to Syene Rd	2,000	10,700	7,400	9,000	8,900
	Syene Rd to USH 14	1,400	12,000	4,300	3,100	3,500
E. Cheryl Parkway	Fish Hatchery Rd to Caine Rd	---	---	15,300	14,800	15,000
	Caine Rd to Syene Road	---	---	12,400	14,500	13,000
	Syene Rd to new access pt.	---	---	14,200	18,000	16,700
	New access pt. to CTH MM	---	---	15,800	---	---
	New access pt. to USH 14	---	---	---	27,900	26,300
	USH 14 to CTH MM	---	---	---	2,200	---
McCoy Road	Syene Rd to USH 14	4,800	13,800	18,800	15,600	15,800
	USH 14 to CTH MM	---	24,500	20,700	24,700	24,700
Post Road	Fish Hatchery Rd to Syene Rd	---	---	6,900	7,200	7,100
South Beltline	West of Fish Hatchery Rd	106,200	131,900	129,000	129,900	129,700
	Fish Hatchery Rd to Park St	112,400	137,100	130,800	128,700	130,000
	East of Park St	110,700	129,700	128,800	128,000	128,400

Note: Future Base: Existing roadway network with future traffic  
 Alt 1: E. Cheryl extended to CTH MM without USH 14 I/C  
 Alt 2: E. Cheryl extended to CTH MM with USH 14 I/C  
 Alt 3: E. Cheryl extended to USH 14 only with USH 14 I/C

**2.11 Select Link Analysis on East Cheryl Parkway Ramps**

Select link is a model technique used to ascertain the characteristics of travel (regional vs. local) on individual roadway segments within the study area. This is an important issue as the study analyzes the type of user that would be attracted to the proposed US 14 interchange at E. Cheryl Parkway. Ideally, freeway corridors should be used for longer trips, fulfilling their role of providing regional mobility, and avoid becoming a

substitute facility for a local arterial route better suited to carry shorter, non-regional trips.

A select link analysis was conducted on the north ramps of the proposed E. Cheryl Parkway interchange. According to the model, 86% of all trips utilizing the E. Cheryl Parkway interchange north ramps have an origin/destination along the eastbound Beltline (34%), the westbound Beltline (26%) and Park Street (26%). These can be considered "regional" trips rather than "local" trips. The remaining 14% trips on the E. Cheryl Parkway interchange north ramps (the local trips) have origins/destinations along Rimrock Road south of the Beltline and along John Nolen Drive.

Access to the Beltline is provided both by the Park Street cloverleaf interchange, and the diamond interchange at Rimrock Road. Exhibit 9 shows the origin/destination pattern for the trips that would utilize the proposed E. Cheryl Parkway interchange north ramps.

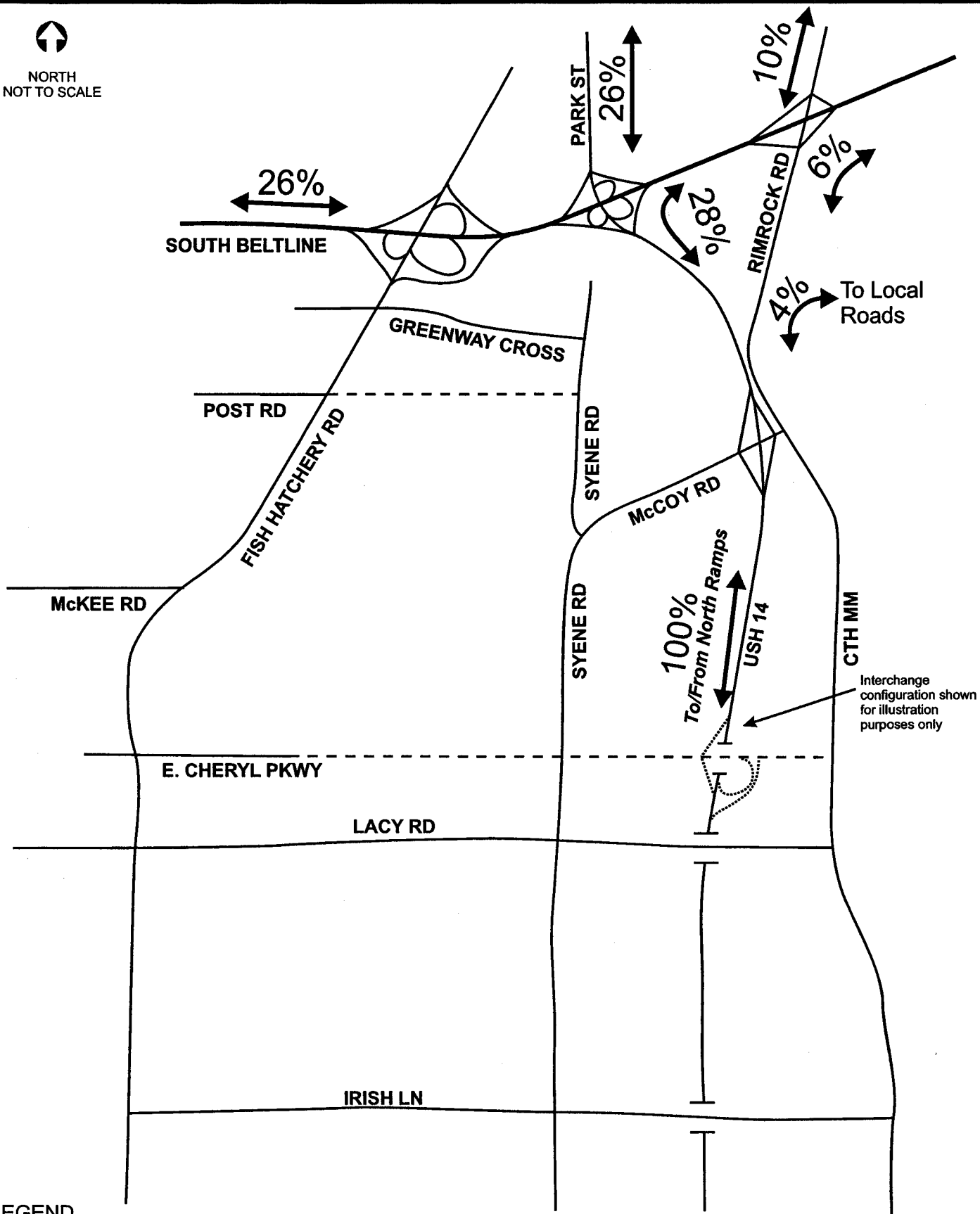
Based on this analysis, it can be concluded that an interchange at E. Cheryl Parkway will serve a predominant number of trips, which would be considered regional in nature.

## **2.12 Capacity Assessment**

Capacity analysis was conducted for the buildout land use scenarios (with and without the proposed interchange). The results are shown in the Table 10. Local road and intersection traffic control modifications will be recommended based on the results of this analysis (see Section 4).



NORTH  
NOT TO SCALE



**LEGEND**

26% % OF TRAFFIC UTILIZING NEW USH 14 INTERCHANGE NORTH RAMPS

**EXHIBIT 9**  
**WITH INTERCHANGE**  
**ORIGIN/DESTINATION PATTERN**  
**PROJECTED BUILDOUT AVERAGE DAILY TRAFFIC**  
**NORTHEAST FITCHBURG TRANSPORTATION STUDY**  
**FITCHBURG, WI**



**Table 10  
Volume to Capacity Ratios  
Future Buildout Scenarios**

Roadway	Section	Future Forecast ADT						Future LOS D Capacity*
		Alt 1	V/C	Alt 2	V/C	Alt 3	V/C	
Fish Hatchery Rd	Beltline to Post Rd	40,400	1.01	39,600	0.99	40,200	1.00	40,000
	Post Rd to McKee Rd	35,800	0.90	34,600	0.87	36,500	0.91	40,000
	E. Cheryl Pkwy to Lacy Rd.	17,700	0.63	16,200	0.58	16,900	0.60	28,000
	South of Lacy Rd	15,100	0.54	15,600	0.56	15,900	0.57	28,000
Syene Road	Post Rd to McCoy Rd	10,400	0.87	10,300	0.86	10,400	0.87	12,000
	McCoy Rd to Lacy Rd (1)	27,600	0.99	23,700	0.85	23,200	0.83	28,000
	McCoy Rd to Lacy Rd (2)	14,700	0.53	13,400	0.48	11,500	0.41	28,000
	McCoy Rd to Lacy Rd (3)	5,200	0.19	8,700	0.31	9,100	0.33	28,000
	South of Lacy Rd	2,200	0.18	2,500	0.21	2,500	0.21	12,000
USH 14	Park St. I/C to McCoy Rd I/C	50,500	0.70	54,000	0.75	54,200	0.75	72,000
	McCoy Rd I/C to Oregon I/C	34,100	0.47	---	---	---	---	72,000
	McCoy Rd I/C to Cheryl I/C	---	---	47,600	0.66	46,800	0.65	72,000
	Cheryl Pkwy I/C to Oregon I/C	---	---	33,200	0.46	32,400	0.45	72,000
CTH MM	North of McCoy Rd	17,900	1.49	18,500	1.54	18,100	1.51	12,000
	McCoy Rd to Lacy Rd	---	---	---	---	9,400	0.78	12,000
	McCoy Rd to Cheryl Pkwy	15,100	1.04	---	---	---	---	23,500
	McCoy Rd to Cheryl Pkwy	---	---	8,400	0.70	---	---	12,000
	Cheryl Pkwy to Lacy Rd	7,700	0.64	10,200	0.85	---	---	12,000
	South of Lacy Rd	11,500	0.96	12,700	1.06	12,900	1.08	12,000
Lacy Road	Fish Hatchery Rd to Caine Rd	6,400	0.53	7,800	0.65	8,600	0.72	12,000
	Caine Rd to Syene Rd	7,400	0.62	9,000	0.75	8,900	0.74	12,000
	Syene Rd to USH 14	4,300	0.36	3,100	0.26	3,500	0.29	12,000
E. Cheryl Parkway	Fish Hatchery Rd to Caine Rd	15,000	1.00	14,800	0.99	15,000	1.00	15,000
	Caine Rd to Syene Road	12,400	0.83	14,500	0.97	13,000	0.87	15,000
	Syene Rd to new access pt.	14,200	0.51	18,000	0.64	16,700	0.60	28,000
	New access pt. to CTH MM	15,800	0.67	---	---	---	---	23,500
	New access pt. to USH 14	---	---	27,900	1.00	26,300	0.94	28,000
	USH 14 to CTH MM	---	---	2,200	0.08	---	---	28,000
McCoy Road	Syene Rd to USH 14	18,800	0.67	15,600	0.56	15,800	0.56	28,000
	USH 14 to CTH MM**	20,700	0.74	24,700	0.88	24,700	0.88	28,000
Post Road	Fish Hatchery Rd to Syene Rd	6,900	0.58	7,200	0.60	7,100	0.59	12,000
South Beltline	West of Fish Hatchery Rd	129,000	1.23	129,900	1.24	129,700	1.24	105,000
	Fish Hatchery Rd to Park St	130,800	1.25	128,700	1.23	130,000	1.24	105,000
	East of Park St	128,800	1.23	128,000	1.22	128,400	1.22	105,000

\* Note: This capacity is a generalized estimate of the amount of traffic the roadway could carry in a day at LOS D.

\*\* Even though v/c ratios are below 1.00 along McCoy Road between USH 14 and CTH MM, this short segment will present traffic operational difficulties due to intersection queuing.

Note: E. Cheryl Parkway Alternatives:

Alt 1: E. Cheryl extended to CTH MM without USH 14 I/C

Alt 2: E. Cheryl extended to CTH MM with USH 14 I/C

Alt 3: E. Cheryl extended to USH 14 only with USH 14 I/C

Table 10 shows that most of the study area roadways have volume-to-capacity ratios under 1.00. Therefore, most of the study area roadways are not expected to be severely congested in the future under any of the three alternative build conditions.

Exhibits 10, 11 and 12 graphically show roadways that are considered congested (volume-to-capacity ratio of between 0.76 and 1.00) and very congested (volume-to-capacity ratio of more than 1.00) for each of the three build alternatives.

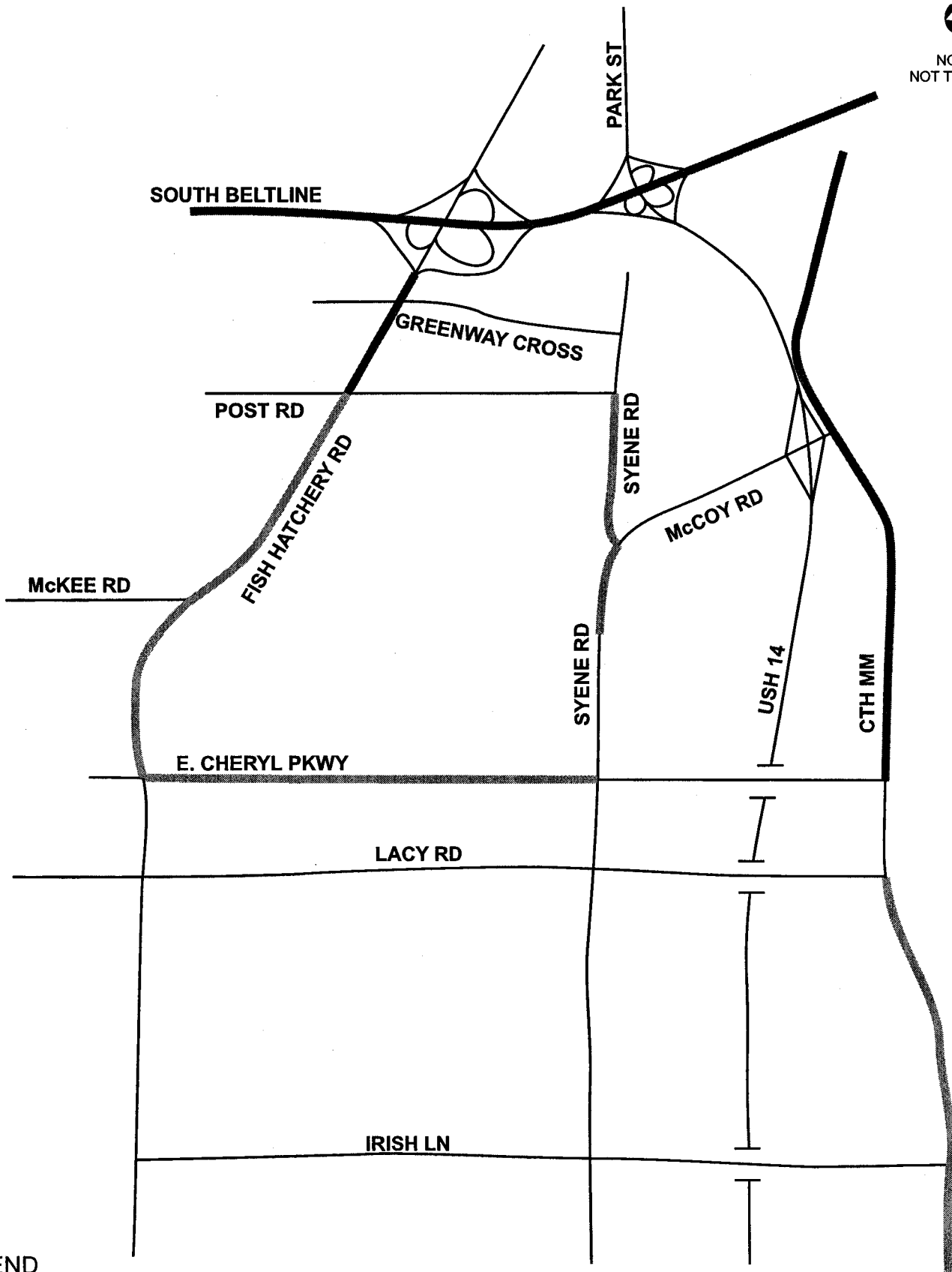
### **2.13 Multi-Modal Travel Opportunities**

Travel demand management (i.e. workplace incentives for trip reduction, increased use of transit, provision of bike-rider and walker amenities) can reduce total trip demand on the area's roadways. These programs must be implemented with the area's major employer's assistance and cooperation to be successful. Such measures will probably not remove large amounts of traffic from the roads, but can assist in the management of peak hour traffic volumes. Organization of an area Travel Management Association (TMA) involving major employers would be helpful in implementing such programs in the future. A TMA was recently implemented in the Greenway Cross - South Madison area.

The study area is not currently served by Madison Metro. Route 48 provides the nearest access point to Madison Metro. Route 48 provides peak period service to the shopping center located in the southwest quadrant of the Fish Hatchery Road/McKee Road intersection. The travel demand model used in this study shows that nearly 5% of all trips system wide would utilize public transit. Should higher levels of transit service be provided in this area ridership would be expected to reach system wide levels.

Several recently prepared land use plans for the Northeast Fitchburg area propose a passenger rail station along the Chicago and Northwestern Railroad near its intersection with the E. Cheryl Parkway extension. Transport 2020, an ongoing study examining regional transit alternatives, currently identifies the Fish Hatchery Road and USH 14 corridors as regional express bus routes. A park-and-ride facility is also proposed at the intersection of Fish Hatchery Road and Lacy Road.

Although Transport 2020 does not currently identify rail service extensions to the Northeast Fitchburg area, this should not deter ongoing long-range planning efforts in Fitchburg for passenger rail service. Transport 2020 recognizes that any future regional transit system will need to be flexible to respond to emerging growth and development patterns. Therefore, should the pace and intensity of development warrant, future passenger rail service to the Northeast Fitchburg remains a viable option.

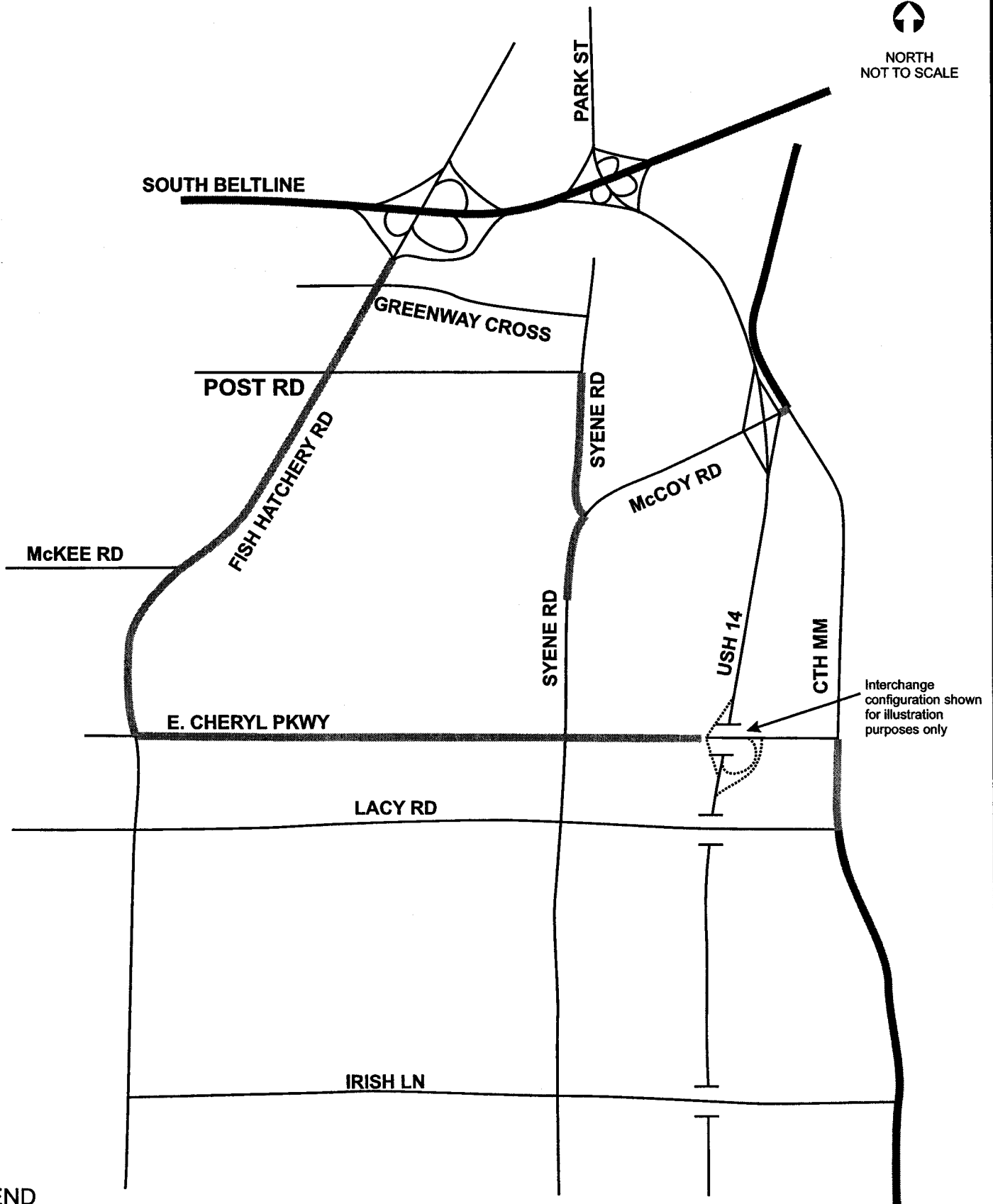


**LEGEND**

-  APPROACHING CONGESTION (V/C Ratio = 0.76 to 1.00)
-  CONGESTED (V/C Ratio > 1.00)

**EXHIBIT 10**  
**VOLUME TO CAPACITY RATIOS**  
**WITHOUT INTERCHANGE**  
**E. CHERYL PKWY EXTENSION TO CTH MM**  
**NORTHEAST FITCHBURG TRANSPORTATION STUDY**  
**FITCHBURG, WI**





Interchange configuration shown for illustration purposes only

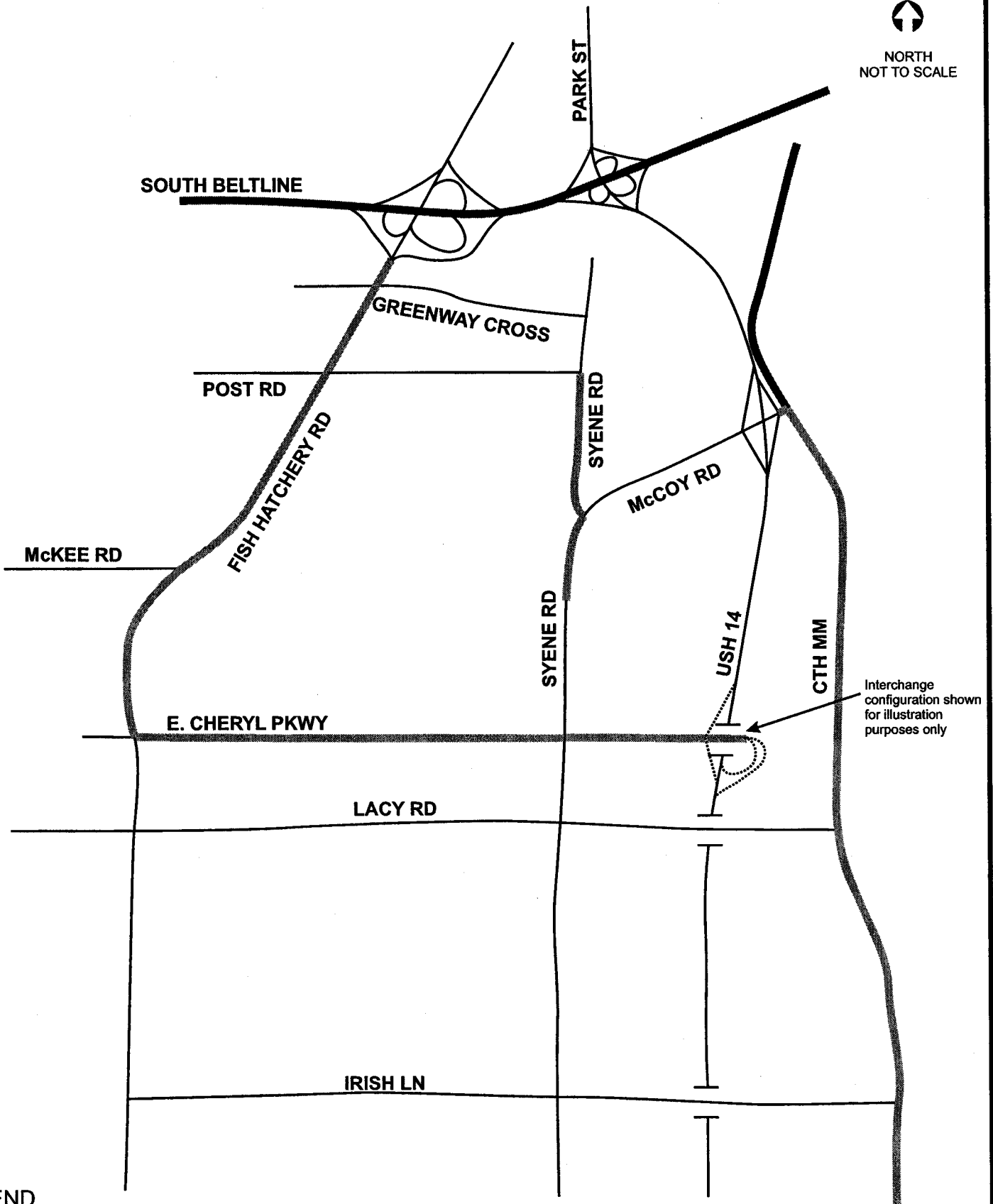
**LEGEND**

- APPROACHING CONGESTION (V/C Ratio = 0.76 to 1.00)
- CONGESTED (V/C Ratio > 1.00)



Pmwork/35035djh/dane county gis/fitchburg.cdr

**EXHIBIT 11**  
**VOLUME TO CAPACITY RATIOS**  
**WITH INTERCHANGE**  
**E. CHERYL PKWY EXTENSION TO CTH MM**  
**NORTHEAST FITCHBURG TRANSPORTATION STUDY**  
**FITCHBURG, WI**



**LEGEND**

- APPROACHING CONGESTION (V/C Ratio = 0.76 to 1.00)
- CONGESTED (V/C Ratio > 1.00)



### 3. PEAK HOUR TRAFFIC OPERATIONS

---

In the following section, future peak hour traffic operations at study area intersections under full buildout conditions will be discussed. The methodology, projected peak hour traffic volumes and future peak hour traffic operations will be presented.

#### 3.1 Methodology

Future morning and evening peak hour traffic projections are based on projected average daily traffic. The following traffic characteristics were utilized to convert the projected future daily traffic to projected future peak hour intersection traffic:

1. Directional distribution of morning and peak hour peak hour traffic.
2. Percentage of future average daily traffic occurring during the morning and evening peak hour.
3. Future projected daily intersection turning percentages.

#### *Directional Distribution*

The current directional distribution of peak hour traffic observed in Northeast Fitchburg is two-thirds of morning peak hour traffic traveling northbound and two-thirds of the evening peak hour traffic traveling southbound. The large amount of residential land use currently in the study area creates this unbalanced peak hour distribution, because of the normal commuting patterns of trips originating in residential units traveling north to Madison in the morning and then returning home in the evening.

However, the north-south trip distribution in Northeast Fitchburg is expected to change under future full buildout conditions. Much of the anticipated new development in the study area will be office or business park land use, and therefore many more trips will be attracted to Northeast Fitchburg in the morning and generated in the evening. This will cause more traffic to travel south from Madison and the South Beltline to Fitchburg in the morning and then return to the north under normal commuting patterns in the evening. As a result, in the future under full buildout conditions, the north-south trip distribution in both the morning and evening peak hours is expected to balance out to a 50%-50% northbound-southbound directional split.

#### *Percentage of Daily Traffic in Peak Hour*

Currently, 10% of the daily traffic volume totals occur during the morning peak hour and 11% of daily traffic occurs during the evening peak hour on the study area roadways. These relatively high peak hour percentages are a result of the large number of residential and office land uses and very little commercial use in the area. Residential and office land uses create a higher amount of peak hour traffic because of commuting patterns. Commercial land uses generally create more non-peak hour traffic than residential and office land uses.

Future development in the study area is expected to be primarily residential and office land uses, so the percentages of daily traffic occurring during the peak hours is not expected to significantly change in the future. Therefore, the current 10% of daily traffic

occurring during the morning peak hour and 11% of daily traffic occurring during the evening peak hour was utilized in projecting future peak hour traffic.

#### *Daily Turning Percentages*

The travel demand model was used to project future daily traffic as documented in the preceding section. One of the outputs of the regional travel demand model was a daily projection of the various turning movements at major intersections. The model's percentage of traffic turning at these intersections provided a guide to the future distribution of traffic at intersections during the peak hours.

### **3.2 Peak Hour Traffic Analysis Assumptions**

Future peak hour operations were analyzed using Highway Capacity Software and Signal 2000. Traffic operations at study area intersections were assessed with future projected morning and evening peak hour traffic volumes. Level of Service D was used as the design capacity for future intersections.

#### *Assumptions*

The future intersections were analyzed under two conditions – with and without a future USH 14 interchange at E. Cheryl Parkway extended to CTH MM (Alternatives 1 and 2). Another scenario, with a USH 14 interchange at E. Cheryl Parkway extended but not connected to CTH MM (Alternative 3), resulted in virtually the same traffic conditions as the scenario with the USH 14 interchange at E. Cheryl Parkway extended to CTH MM (Alternative 2). Therefore, for purposes of the future peak hour traffic analysis, the scenario with a USH 14 interchange without E. Cheryl Parkway extended to CTH MM (Alternative 3) was not analyzed separately.

The following roadway improvements were included in the future peak hour analysis. They were assumed to occur in the future whether or not an USH 14 interchange at E. Cheryl Parkway was constructed:

- Post Road extension east from Fish Hatchery Road to Syene Road.
- E. Cheryl Parkway extension east to CTH MM.
- Syene Road expansion from a two-lane undivided to a four-lane divided section between Lacy Road and McCoy Road.
- Caine Road extension north to the E. Cheryl Parkway extension.
- The major Fitchburg Technology Campus street access will be provided on Fish Hatchery Road south of Lacy Road.

The following intersections do not currently exist, but were analyzed because they will be created as a result of the assumed future roadway improvements listed above:

- E. Cheryl Parkway & Caine Road
- E. Cheryl Parkway & Sunflower Road
- Post Road & Syene Road
- Post Road & Fish Hatchery Road – This intersection currently has three approaches. The east approach will be added with the Post Road extension.
- E. Cheryl Parkway & Syene Road

- E. Cheryl Parkway & USH 14 interchange (if the USH 14 interchange is constructed)
- E. Cheryl Parkway & CTH MM
- Fish Hatchery Road & Fitchburg Technology Campus street access

### 3.3 Future Peak Hour Traffic Analysis Findings

Study area intersections were analyzed with projected future peak hour traffic to assess future roadway needs. This section discusses expected future intersection and freeway traffic operations with and without a new USH 14 interchange at E. Cheryl Parkway extended.

The future morning and evening projected peak hour traffic in the study area without the proposed USH 14 interchange at E. Cheryl Parkway is shown in Exhibit 13. The future morning and evening projected peak hour traffic in the study area with the construction of a USH 14 interchange at E. Cheryl Parkway is shown in Exhibit 14.

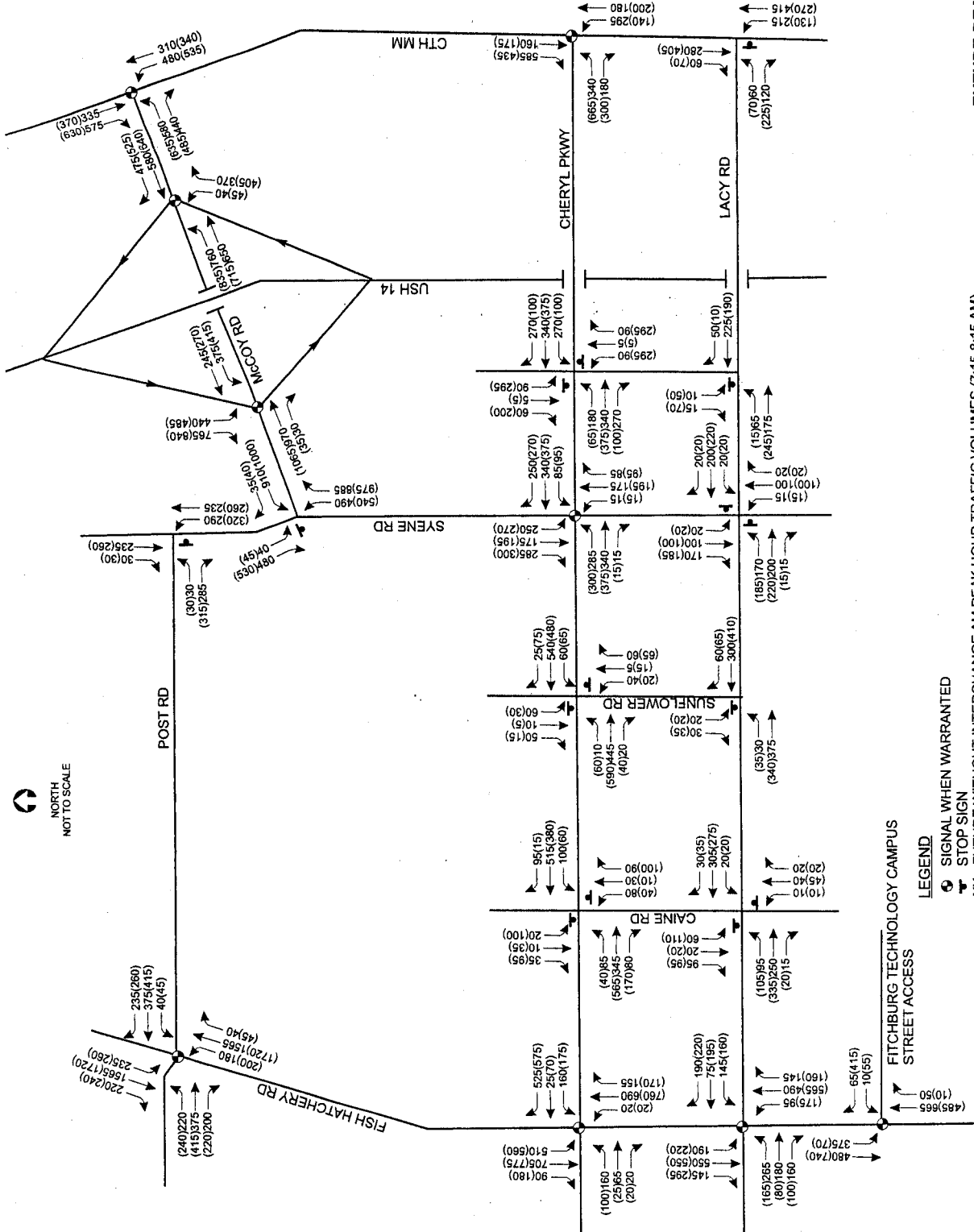
Exhibit 15 shows the future peak hour levels of service with future traffic and future roadway improvements without a USH 14 interchange at E. Cheryl Parkway extended. Exhibit 16 shows the future peak hour levels of service with future traffic and future roadway improvements with the interchange.

#### *Future Peak Hour Intersection Operations Analysis*

The following section discusses the recommended roadway and traffic control improvements necessary to achieve LOS D conditions or better whenever possible at the study area intersections under future full buildout traffic conditions with and without a USH 14 interchange at E. Cheryl Parkway extended. Unless noted, improvements apply to the intersections with and without a USH 14 interchange at East Cheryl Parkway extended.

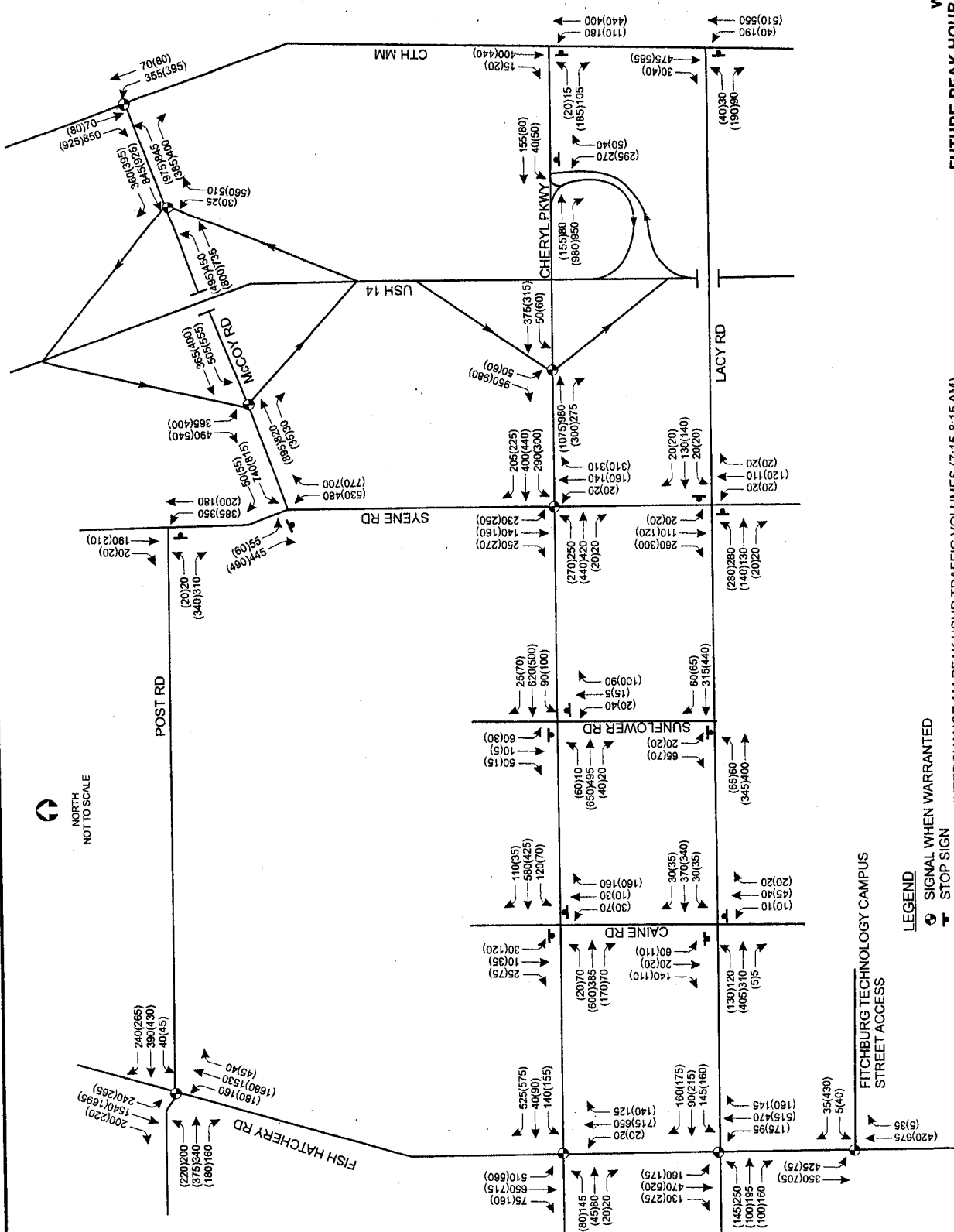
- E. Cheryl Parkway & Fish Hatchery Road
  - Install a traffic signal.
  - Install westbound right turn lane.
  - The high southbound left turn volume from Fish Hatchery Road to E. Cheryl Parkway expected in the future under full buildout conditions normally requires consideration of a dual left turn lane. Without the dual left turn lanes, the intersection is still expected to operate with all movements at LOS D or better during the morning and evening peak hour. However, the southbound left turn bay is recommended to be lengthened to 800 feet if only one turn lane is maintained.
- E. Cheryl Parkway & Caine Road
  - Current city plans indicate a roundabout will be installed to regulate traffic movements at this intersection. This study assumes that roundabout will be constructed.

- LEGEND**
- SIGNAL WHEN WARRANTED
  - ◐ STOP SIGN
  - XX FUTURE WITHOUT INTERCHANGE AM PEAK HOUR TRAFFIC VOLUMES (7:15-8:15 AM)
  - (XX) FUTURE WITHOUT INTERCHANGE PM PEAK HOUR TRAFFIC VOLUMES (4:45-5:45 PM)



**EXHIBIT 14**  
**WITH INTERCHANGE**  
**FUTURE PEAK HOUR TRAFFIC VOLUMES**  
**NORTHEAST FITCHBURG TRANSPORTATION STUDY**  
**FITCHBURG, WI**

**LEGEND**  
 ○ SIGNAL WHEN WARRANTED  
 ◐ STOP SIGN  
 XX FUTURE WITH INTERCHANGE AM PEAK HOUR TRAFFIC VOLUMES (7:15-8:15 AM)  
 (XX) FUTURE WITH INTERCHANGE PM PEAK HOUR TRAFFIC VOLUMES (4:45-5:45 PM)



**Exhibit 15**  
**Future Traffic Without USH 14 Interchange at East Cheryl Parkway**  
**Peak Hour Operating Conditions with Future Recommended Geometrics**

Intersection	Traffic Control	Peak Hour	Level of Service per Movement by Approach											
			Southbound			Westbound			Northbound			Eastbound		
			LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Fish Hatchery Rd & Post Rd	Traffic Signal	AM	E	E	E	C	E	C	C	D	D	E	C	B
		PM	E	E	E	D	E	C	E	E	E	E	C	B
Syene Rd & Post Rd	Two-Way Stop Sign	AM	-	-	-	-	-	-	A	-	-	D	-	B
		PM	-	-	-	-	-	-	A	-	-	D	-	B
Fish Hatchery Rd & Cheryl Pkwy	Traffic Signal	AM	C	C	C	D	C	B	A	C	C	D	C	C
		PM	D	C	C	D	C	B	A	D	D	D	C	C
Cheryl Pkwy & Caine Rd*	Roundabout	AM	-	-	-	-	-	-	-	-	-	-	-	-
		PM	-	-	-	-	-	-	-	-	-	-	-	-
Cheryl Pkwy & Syene Rd	Traffic Signal	AM	C	B	B	C	C	B	C	C	C	C	B	B
		PM	C	B	B	C	C	B	C	C	C	C	B	B
County Highway MM & Cheryl Pkwy	Traffic Signal	AM	-	B	A	-	-	-	B	B	-	C	-	B
		PM	-	C	A	-	-	-	C	C	-	B	-	B
Fish Hatchery Rd & Fitchburg Tech Campus	Traffic Signal	AM	B	A	-	C	-	B	-	B	B	-	-	-
		PM	A	A	-	C	-	B	-	C	C	-	-	-
Fish Hatchery Rd & Lacy Rd	Traffic Signal	AM	C	B	B	C	C	B	B	B	B	C	C	C
		PM	D	B	B	D	D	C	D	B	B	D	C	C
Lacy Rd & Caine Rd	Two-Way Stop Sign	AM	C	C	C	A	-	-	C	C	C	A	-	-
		PM	D	D	D	A	-	-	D	D	D	A	-	-
Syene Rd & Lacy Rd	Two-Way Stop Sign	AM	A	-	-	C	C	C	A	-	-	C	C	C
		PM	A	-	-	D	D	D	A	-	-	D	D	D
County Highway MM & Lacy Rd	Two-Way Stop Sign	AM	-	-	-	-	-	-	A	-	-	D	-	B
		PM	-	-	-	-	-	-	A	-	-	D	-	B
McCoy Rd & Syene Rd	Traffic Signal	AM	C	-	B	-	C	A	C	A	-	-	-	-
		PM	D	-	B	-	D	A	D	A	-	-	-	-
McCoy Rd & Highway 14 S ramps	Traffic Signal	AM	D	-	E	E	A	-	-	-	-	-	E	A
		PM	D	-	E	E	A	-	-	-	-	-	E	A
McCoy Rd & Highway 14 N ramps	Traffic Signal	AM	-	-	-	-	D	A	C	-	E	E	A	-
		PM	-	-	-	-	D	B	D	-	F	F	A	-
County Highway MM & McCoy Rd	Traffic Signal	AM	-	D	B	-	-	-	D	B	-	D	-	A
		PM	-	E	B	-	-	-	E	B	-	E	-	A
Park Street & South Beltline W ramps	Traffic Signal	AM	-	D	-	D	-	D	-	B	-	-	-	-
		PM	-	B	-	C	-	E	-	E	-	-	-	-

Note: Major Street through and right turning movements are not shown at stop sign controlled intersections with Levels of Service because they operate unopposed.

\* City of Fitchburg has approved the roundabout design. Analysis of roundabout traffic operations was not part of this report.

**Exhibit 16**  
**Future Traffic With USH 14 Interchange at East Cheryl Parkway**  
**Peak Hour Operating Conditions with Future Recommended Geometrics**

Intersection	Traffic Control	Peak Hour	Level of Service per Movement by Approach											
			Southbound			Westbound			Northbound			Eastbound		
			LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Fish Hatchery Rd & Post Rd	Traffic Signal	AM	E	E	E	C	E	C	C	D	D	E	C	B
		PM	E	E	E	D	E	C	E	E	E	E	C	B
Syene Rd & Post Rd	Two-Way Stop Sign	AM	-	-	-	-	-	-	A	-	-	C	-	C
		PM	-	-	-	-	-	-	A	-	-	C	-	C
Fish Hatchery Rd & Cheryl Pkwy	Traffic Signal	AM	D	B	B	D	D	B	B	D	D	D	D	D
		PM	D	A	A	D	D	B	C	D	D	D	D	D
Cheryl Pkwy & Caine Rd*	Roundabout	AM	-	-	-	-	-	-	-	-	-	-	-	-
		PM	-	-	-	-	-	-	-	-	-	-	-	-
Cheryl Pkwy & Syene Rd	Traffic Signal	AM	C	B	B	C	C	B	C	C	C	C	C	C
		PM	C	B	B	C	C	B	C	C	C	C	C	C
Cheryl Pkwy & USH 14 S ramps	Traffic Signal	AM	B	-	C	-	D	B	-	-	-	-	C	A
		PM	B	-	C	-	D	B	-	-	-	-	C	A
Cheryl Pkwy & USH 14 N ramps (loop)	Two-Way Stop Sign	AM	-	-	-	B	-	-	B	-	A	-	-	-
		PM	-	-	-	B	-	-	C	-	A	-	-	-
County Highway MM & Cheryl Pkwy	Two-Way Stop Sign	AM	-	-	-	-	-	-	A	-	-	C	-	C
		PM	-	-	-	-	-	-	A	-	-	C	-	C
Fish Hatchery Rd & Fitchburg Tech Campus	Traffic Signal	AM	B	A	-	C	-	B	-	C	C	-	-	-
		PM	A	A	-	C	-	B	-	C	C	-	-	-
Fish Hatchery Rd & Lacy Rd	Traffic Signal	AM	C	C	C	B	C	C	C	C	C	C	C	C
		PM	C	D	D	B	D	D	D	C	C	C	C	C
Lacy Rd & Caine Rd	Two-Way Stop Sign	AM	D	D	D	A	-	-	D	D	D	A	-	-
		PM	D	D	D	A	-	-	D	D	D	A	-	-
Syene Rd & Lacy Rd	Two-Way Stop Sign	AM	A	-	-	C	C	C	A	-	-	D	B	B
		PM	A	-	-	C	C	C	A	-	-	D	B	B
County Highway MM & Lacy Rd	Two-Way Stop Sign	AM	-	-	-	-	-	-	A	-	-	D	-	D
		PM	-	-	-	-	-	-	A	-	-	D	-	D
McCoy Rd & Syene Rd	Traffic Signal	AM	C	-	B	-	C	A	C	A	-	-	-	-
		PM	C	-	B	-	C	A	C	A	-	-	-	-
McCoy Rd & Highway 14 S ramps	Traffic Signal	AM	D	-	C	D	A	-	-	-	-	-	D	A
		PM	E	-	D	E	A	-	-	-	-	-	E	A
McCoy Rd & Highway 14 N ramps	Traffic Signal	AM	-	-	-	-	E	A	B	-	E	E	B	-
		PM	-	-	-	-	F	A	C	-	F	E	B	-
County Highway MM & McCoy Rd	Traffic Signal	AM	-	D	B	-	-	-	D	C	-	C	-	A
		PM	-	D	B	-	-	-	E	C	-	D	-	A
Park Street & South Beltline W ramps	Traffic Signal	AM	-	B	-	C	-	E	-	E	-	-	-	-
		PM	-	D	-	D	-	D	-	B	-	-	-	-

Note: Major Street through and right turning movements are not shown at stop sign controlled intersections with Levels of Service because they operate unopposed.

\* City of Fitchburg has approved the roundabout design. Analysis of roundabout traffic operations was not part of this report.

- E. Cheryl Parkway & Sunflower Road
  - Two-way stop sign control recommended on Sunflower Road.
  - No turn lanes are recommended at any of the approaches.
  
- E. Cheryl Parkway & Syene Road
  - Install signal.
  - All approaches are recommended to include an exclusive left turn lane. The eastbound turn bay should be 300 feet, the westbound turn bay should be 350 feet, the northbound turn bay should be 100 feet and the southbound turn bay should be 300 feet.
  - A westbound right turn lane with a turn bay of 200 feet is recommended.
  
- E. Cheryl Parkway & CTH MM – with USH 14 interchange
  - Stop signs should be installed at the East Cheryl Parkway approach.
  - The two lane eastbound approach should be striped as exclusive left turn and right turn lanes.
  
- E. Cheryl Parkway & CTH MM – without USH 14 interchange
  - Install a traffic signal when traffic signal warrants are met.
  - Install southbound exclusive right turn lane, and eastbound left and right turn lanes.
  
- Lacy Road & Fish Hatchery Road
  - Install a traffic signal when traffic signal warrants are met.
  - Install westbound exclusive left turn lane.
  
- Fish Hatchery Road & Fitchburg Technology Campus street access
  - Install a traffic signal when traffic signal warrants are met at least 1200 feet north of the Fish Hatchery Road intersection with Byrneland Road and at least 1200 feet south of Fish Hatchery Road intersection with Lacy Road. Future road construction plans should include preparation for future signalization by installing conduit.
  - It is recommended to widen Fish Hatchery Road past Byrneland Road to include four through lanes (two in each direction) and a southbound exclusive left turn lane with a turn bay of 175 feet. It should be noted that this intersection was assumed to have three approaches in the analysis. A fourth approach on the western side may be added later pending future development.
  - The Fitchburg Technology Campus street access is recommended to include exclusive right and left turn lanes. The westbound lane approaching the intersection would be striped as left turn only, with an adjacent right turn bay of 350 feet.
  - The topography along Fish Hatchery Road south of Lacy Road may cause some sight distance concerns at this intersection. Therefore, provision of adequate stopping sight distance should be considered upon actual intersection design.

- Lacy Road & Caine Road
  - The Caine Road northbound and southbound approaches are recommended to be one lane with flared shoulders capable of holding at least one right-turning car.
- Lacy Road & Sunflower Road
  - The Sunflower Road approach is recommended to be one lane.
  - No exclusive turning lanes are recommended on Lacy Road.
- Lacy Road & Syene Road
  - It is recommended to install an eastbound exclusive left turn lane.
  - It is recommended to consider restriping the southbound approach to include one exclusive right turn lane and one shared through and left turn lane, due to the high projected right turn and low projected left turn volumes
- Lacy Road & CTH MM
  - The Lacy Road approach is recommended to be one lane with a flared right shoulder capable of holding at least one right-turning car.
- Post Road & Fish Hatchery Road
  - The new westbound Post Road approach is recommended to include a shared left/through lane and an exclusive right turn lane.
  - The eastbound Post Road approach right turn lane should be restriped as a shared through/right turn lane.
  - It should be noted that Fish Hatchery Road currently has two through lanes in each direction with a continuous right turn lane in the vicinity of the Post Road intersection. Under current roadway geometry, the intersection is expected to experience LOS E or worse conditions during the peak hour under full buildout conditions. In the future, as development increases in the study area consideration should be given to converting the continuous right turn lanes to full through lanes to accommodate full buildout traffic conditions.
- Post Road & Syene Road
  - The Post Road westbound approach is recommended to be one lane and be stop sign controlled.
  - No other modifications to the Syene Road northbound and southbound approaches are recommended.
- McCoy Road & Syene Road
  - It should be noted that under full buildout conditions the peak hour traffic movements are expected to be worse than LOS D at the Syene Road southbound approach. Therefore, it is recommended that this intersection be prepared for potential future signalization by installing conduit. As

development increases in Northeast Fitchburg, a traffic signal warrant analysis should be conducted at this intersection.

- A right turn bay at the southbound Syene Road approach is recommended with a length of 400 feet.
  
- USH 14 interchange at McCoy Road
  - This intersection is expected to operate with many traffic movements at LOS E or F during morning and evening peak hours with existing roadway geometrics and full buildout conditions.
  - Potential options to improve future traffic operations are discussed in more detail in the next section.
  
- McCoy Road & CTH MM
  - This intersection is expected to operate with many traffic movements at LOS E during morning and evening peak hours with existing roadway geometrics and full buildout conditions.
  - The close proximity of the McCoy Road intersections at CTH MM and USH 14 northbound ramps (approximately 100 feet) creates queuing problems even if both intersections operate under a signalized progression system.
  - Potential options to improve future traffic operations are discussed in more detail in the next section.
  
- USH 14 interchange at E. Cheryl Parkway
  - The recommended interchange design is a combination diamond/loop ramp configuration.
  - The USH 14 southbound entrance and exit ramps would be a diamond configuration with a signalized intersection with E. Cheryl Parkway. A stop sign controlled southbound exit ramp approach may be feasible, but the heavy southbound right turn traffic would require dual right turn lanes, which would not be recommended at a stop sign controlled approach. A freeflow southbound right turn lane was also considered, however that configuration would cause spacing problems with any planned street accesses between the interchange and Syene Road.
  - The USH 14 northbound exit ramp would approach E. Cheryl Parkway with a stop sign controlled intersection with E. Cheryl Parkway while the USH 14 northbound entrance would be a loop ramp located between the USH 14 northbound exit ramp and USH 14. This recommended interchange design is discussed further in Part 4.
  - The USH 14 southbound exit ramp is recommended to include dual right turn lanes with a turn bay length of 700 feet and a single left turn lane. Traffic in both right turn lanes should be allowed to turn right on a red light.
  - The eastbound E. Cheryl Parkway approach to the USH 14 southbound ramp intersection is recommended to include two through lanes and one exclusive right turn lane with a turn bay length of 100 feet.

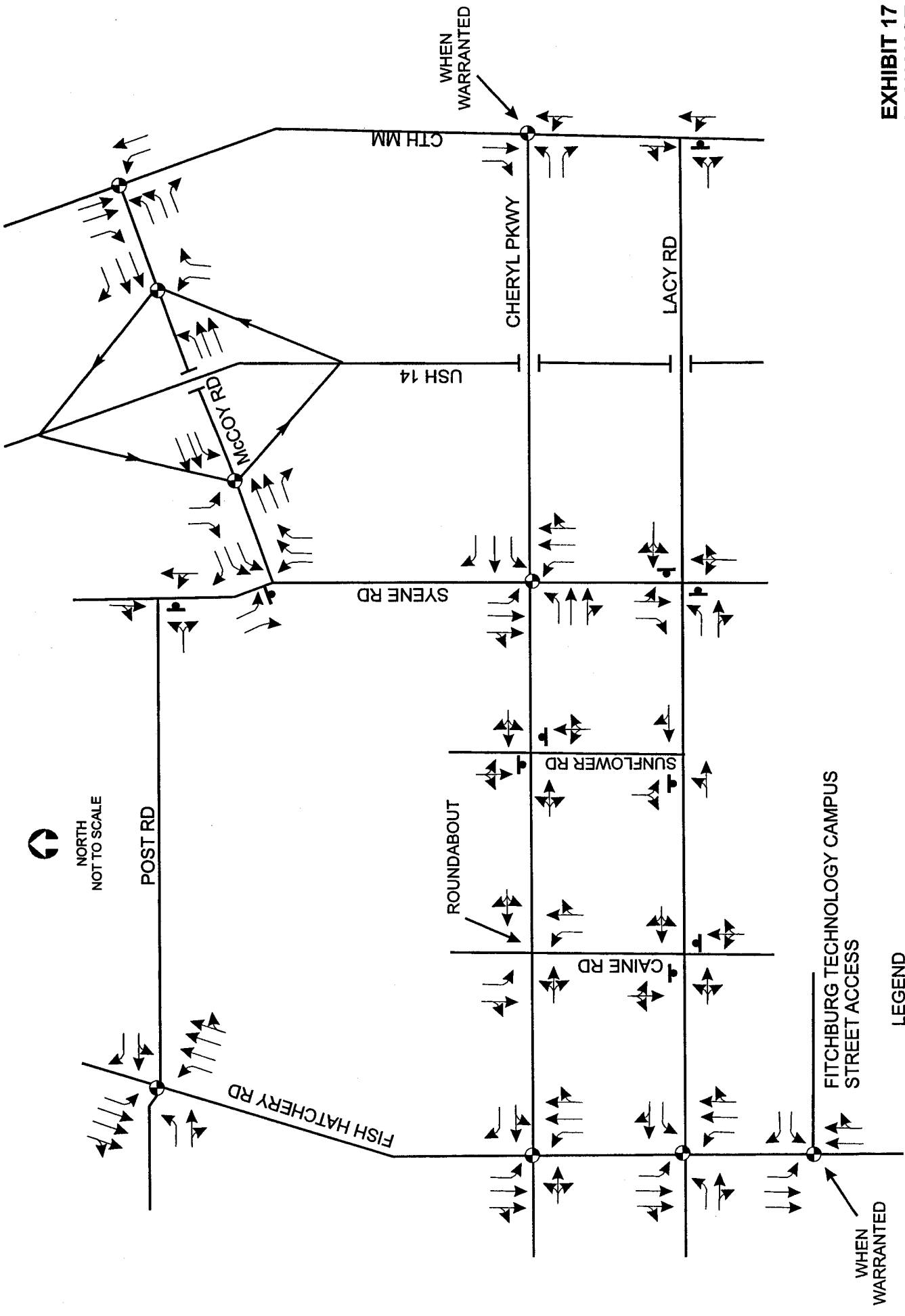
- The westbound E. Cheryl Parkway approach to the USH 14 southbound ramp intersection is recommended to include two through lanes and an exclusive left turn lane with a turn bay length of 100 feet.
- The USH 14 northbound exit ramp approach is recommended to include exclusive right turn and left turn lanes. The right turn lane feeds into a full lane on E. Cheryl Parkway that becomes the westbound right turn lane at the intersection with CTH MM.
- The westbound E. Cheryl Parkway approach to the USH 14 northbound entrance loop ramp is recommended to include two through lanes and an exclusive left turn lane with turn bay of 100 feet.
- The eastbound E. Cheryl Parkway approach to the USH 14 northbound entrance loop ramp is recommended to include one through lane and one full auxiliary right turn lane that accesses the loop ramp. It is recommended that the outside westbound through lane at the intersection with the USH 14 southbound ramps feeds into the right turn full auxiliary lane that accesses the loop ramp.
- Park Street & South Beltline westbound exit ramps
  - With or without a new USH 14 interchange at E. Cheryl Parkway, the northbound through and westbound right turn movements are expected to operate with some traffic movements at LOS E conditions during the morning peak hour. The operational service level of this intersection would be unaffected by a new USH 14 interchange constructed at East Cheryl Parkway.

Exhibit 17 shows the recommended intersection geometrics and controls under expected future traffic conditions without a new USH 14 interchange at E. Cheryl Parkway extended. Exhibit 18 shows the recommended intersection geometrics and controls under expected future traffic conditions with a new USH 14 interchange at E. Cheryl Parkway extended.

### **3.4 McCoy Road Intersections with USH 14 Interchange and CTH MM – Potential Improvements**

Future traffic operations at the USH 14 interchange with McCoy Road and the McCoy Road intersection with CTH MM are expected to operate with several movements at LOS E and F during the morning and evening peak hours under full buildout conditions whether or not a new USH 14 interchange is constructed at E. Cheryl Parkway. The distance along McCoy Road between its intersections at CTH MM and the USH 14 northbound ramps is approximately 100 feet. The close proximity of these intersections creates queuing problems with the increased number of trips that are attracted to this roadway segment by the proposed future development. Utilizing signalized progression system at the three intersections at the USH 14 interchange with McCoy Road and at McCoy Road and CTH MM will not alleviate the queuing problems between the 100-foot segment between CTH MM and the USH 14 northbound ramps.

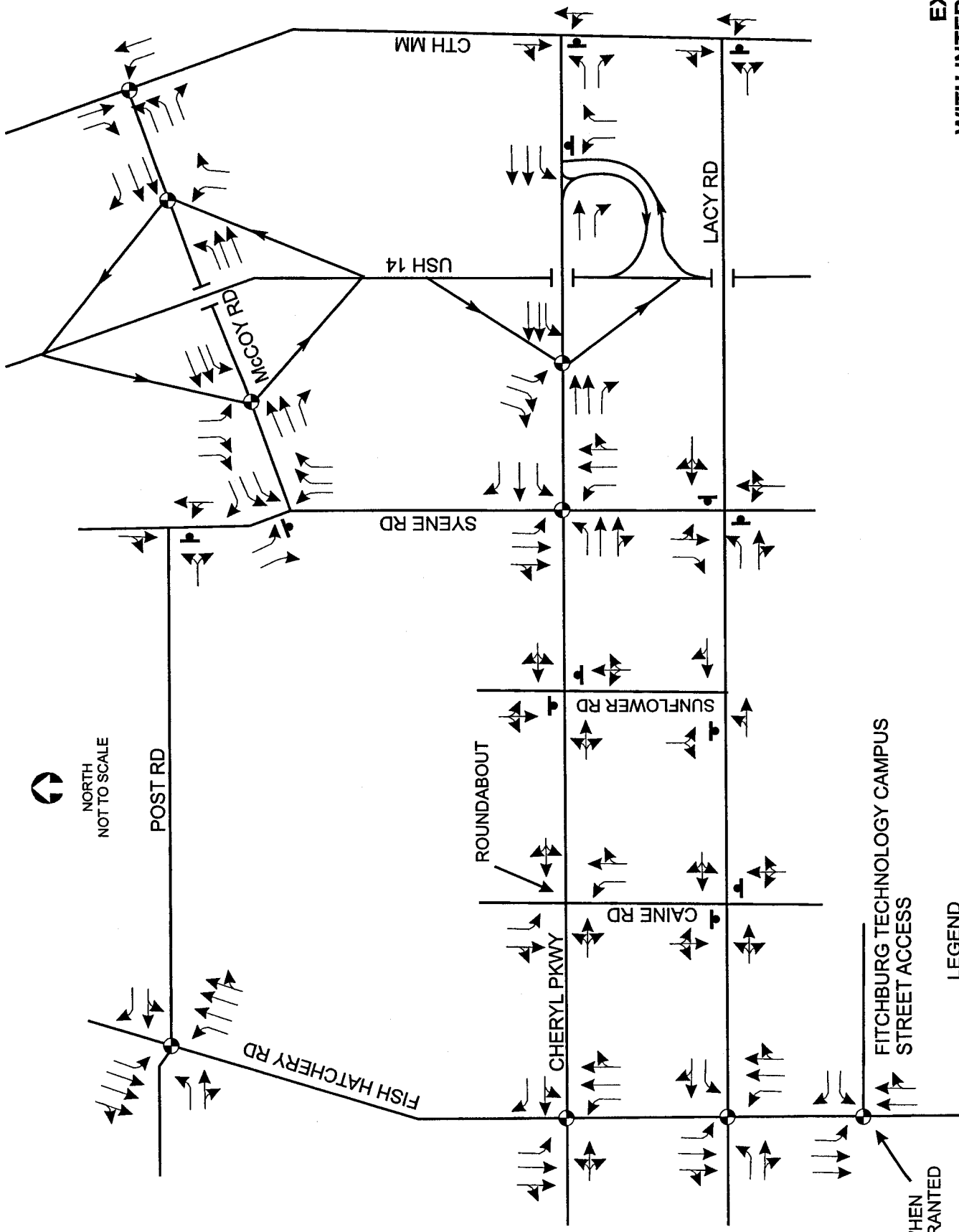
**EXHIBIT 17**  
**WITHOUT INTERCHANGE**  
**FUTURE ROADWAY AND TRAFFIC CONTROL RECOMMENDATIONS**  
**NORTHEAST FITCHBURG TRANSPORTATION STUDY**  
**FITCHBURG, WI**



- LEGEND**
- SIGNAL WHEN WARRANTED
  - ⊙ STOP SIGN
  - LANE GEOMETRICS



**EXHIBIT 18  
WITH INTERCHANGE  
FUTURE ROADWAY AND TRAFFIC CONTROL RECOMMENDATIONS  
NORTHEAST FITCHBURG TRANSPORTATION STUDY  
FITCHBURG, WI**



 NORTH  
NOT TO SCALE

WHEN  
WARRANTED

**LEGEND**

-  SIGNAL WHEN WARRANTED
-  STOP SIGN
-  LANE GEOMETRICS



Some potential options to improve traffic operations to LOS D or better and to clear up the queuing problems include the following. It is recognized that some of these concepts would most likely have significant social, economic and environmental impacts, and would require additional study beyond the scope of this report.

- Remove the USH 14 ramps to McCoy Road. Move the USH 14 access to E. Cheryl Parkway.
  - The USH 14 overpass at McCoy Road would remain. The interchange at E. Cheryl Parkway would be closer to the planned development and provide more direct access to the higher land uses. An interchange at E. Cheryl Parkway would provide better spacing from the USH 14 interchange with the South Beltline. Intersection spacing would not be expected to be an issue at the E. Cheryl Parkway interchange because of a greater distance from the interchange to CTH MM. The new interchange could be designed to better handle expected travel patterns, rather than attempting to retrofit the existing McCoy Road interchange to handle future travel patterns.
  - The safety of bicyclists and pedestrians travelling on the Capital City Trail would be improved because potential conflicts with traffic at the McCoy Road ramp intersections would be eliminated. The Capital City Trail is a multi-use path that winds through northern portions of Fitchburg and the Isthmus to the East Side of Madison.
- Move the current USH 14 interchange at McCoy Road to the west by at least 800 feet.
  - The increased spacing between the USH 14 interchange and CTH MM would improve operations along McCoy Road. However, moving the USH 14 interchange would be very expensive and may not be feasible.
- Incorporate a split diamond interchange at McCoy Road and E. Cheryl Parkway.
  - The north half of the split diamond would be located at McCoy Road; the south half of the split diamond would be located at E. Cheryl Parkway.
  - Frontage roads along USH 14 would likely be required between E. Cheryl Parkway and McCoy Road.
- Incorporate a roundabout at one or both of the McCoy Road intersections with USH 14.
  - Roundabouts generally reduce queue length at intersection approaches by keeping traffic moving.
- Reduce the size of the planned development.
  - Coordination with the various land use planners would be needed to determine the amount of development reduction that would result in acceptable traffic operations at the McCoy Road interchange.

### 3.5 Future Peak Hour Freeway Analysis Findings

A future peak hour traffic analysis was conducted along the South Beltline in the vicinity of its interchange with Park Street/USH 14 and along USH 14, south of the South Beltline. This freeway traffic operations analysis examines the impact of the new USH 14 interchange at E. Cheryl Parkway on the Beltline and USH 14 traffic.

Future peak hour traffic volume projections for the freeways were created similar to the process utilized in projecting the future peak hour traffic volumes for the arterials. The projected future average daily traffic turning volumes were converted to peak hour turning volumes utilizing the existing directional distribution and the existing percentage of freeway daily traffic volumes occurring during the peak hours.

CORSIM was used to analyze future morning and evening freeway operations along the South Beltline to the immediate east and west of the USH 14/Park Street interchange and along USH 14 south of the South Beltline. CORSIM is an animated modeling software package, which accounts for weaving and merging traffic movements along freeway sections. CORSIM is typically used to provide detailed traffic operation analysis along freeway sections.

Table 11 shows the expected future peak hour traffic operations along the South Beltline and USH 14 in the study area under a USH 14 interchange at E. Cheryl Parkway condition.

**Table 11  
Future Peak Hour Traffic Operations  
With USH 14 Interchange at East Cheryl Parkway**

Roadway Section	Peak Hour	Future Level of Service Operations			
		Eastbound	Westbound	Northbound	Southbound
South Beltline, east of USH 14	AM	E	E	-	-
	PM	E	E	-	-
South Beltline, west of USH 14	AM	D	D	-	-
	PM	D	D	-	-
USH 14, south of South Beltline	AM	-	-	D	C
	PM	-	-	C	C
USH 14, south of McCoy Road	AM	-	-	B	B
	PM	-	-	B	B

Table 11 shows that the South Beltline roadway section east of USH 14 is operating at LOS E during both the morning and evening peak hours with future traffic volumes under “with interchange” conditions. The South Beltline roadway section west of USH 14 is operating at LOS D conditions or better largely because the full auxiliary lane between the Fish Hatchery Road interchange and the Park Street/USH 14 interchange increases

the highway’s capacity. USH 14 is operating at LOS D or better conditions during the morning and evening peak hours with existing traffic volumes.

Table 12 shows the expected future peak hour traffic operations along the South Beltline and USH 14 in the study area under “without interchange” conditions.

**Table 12  
Future Peak Hour Traffic Operations  
Without USH 14 Interchange at East Cheryl Parkway**

Roadway Section	Peak Hour	Future Level of Service Operations			
		Eastbound	Westbound	Northbound	Southbound
South Beltline, east of USH 14	AM	E	E	-	-
	PM	E	E	-	-
South Beltline, west of USH 14	AM	D	D	-	-
	PM	D	D	-	-
USH 14, south of South Beltline	AM	-	-	D	C
	PM	-	-	C	C
USH 14, south of McCoy Road	AM	-	-	B	B
	PM	-	-	B	B

Table 12 shows that the South Beltline roadway section east of USH 14 is operating at LOS E during both the morning and evening peak hours with future traffic volumes under “without interchange” conditions. The South Beltline roadway section west of USH 14 is operating at LOS D conditions or better largely because the full auxiliary lane between the Fish Hatchery Road interchange and the Park Street/USH 14 interchange increases the highway’s capacity. USH 14 is operating at LOS D or better conditions during the morning and evening peak hours with existing traffic volumes.

By comparing Tables 11 and 12, it can be seen that the future freeway peak hour traffic operations under “with interchange” and “without interchange” operations are exactly the same. Furthermore, by comparing Tables 11 and 12 with Table 4, it can be seen that the future freeway peak hour traffic conditions are virtually the same as the existing freeway peak hour traffic conditions. The only changes from existing to future conditions are along the South Beltline, west of USH 14; the eastbound section is LOS C during the morning peak hour and the westbound section is LOS C during the evening peak hour, whereas in the future both of these movements operate at LOS D. This change in level of service along the South Beltline, west of USH 14 is attributable to the normal increase in freeway traffic.

## 4. RECOMMENDATIONS

---

### 4.1 Roadway Recommended Typical Cross Sections

The following section details the recommended changes in typical cross sections with and without a new USH 14 interchange at E. Cheryl Parkway.

Table 13 identifies major roadway segments with recommended changes in typical cross sections with and without a new USH 14 interchange at E. Cheryl Parkway.

#### Lacy Road

- With or Without I/C - Reconstruct Lacy Road as an improved 2 lane section as development warrants.

#### East Cheryl Parkway

- Without I/C - Construct E. Cheryl Parkway as a 2 lane roadway with exclusive turn lanes at select intersections from Fish Hatchery Road to Syene Road, and as a 4 lane road with exclusive turn lanes from Syene Road to CTH MM
- With I/C - E. Cheryl Parkway could function as a 2 lane roadway from Fish Hatchery Road to Syene Road with exclusive turn lanes at select intersections, however, 4 lanes would be optimal. E. Cheryl Parkway should be a 4 lane divided roadway with exclusive turn lanes between Syene Road and CTH MM. No access is recommended along E. Cheryl Parkway between the USH 14 northbound ramps and CTH MM given the proximity of the intersections. Restricted public street access spacing of at least 1200 feet and private driveway access spacing of 750 feet is recommended along E. Cheryl Parkway between Syene Road and USH 14.

The recommended design of the USH 14 interchange at East Cheryl Parkway extended was influenced by expected future traffic volumes, travel patterns and topography. The predominant traffic pattern in the vicinity of the proposed interchange is to and from the north and west. The high north to west and west to north travel patterns are influenced by the new development being entirely located west of the proposed interchange and the City of Madison and South Beltline being located to the north of the study area.

Therefore, under a normal diamond interchange design, a very high left turning volume would be expected on the USH 14 northbound entrance ramp. A high left turning volume could be expected to cause queuing problems, potentially backing up into the adjacent ramp intersection to the west. To address this traffic problem, the northbound entrance ramp is recommended to be constructed as a “loop ramp” instead of the standard diamond configuration.

**Table 13**  
**Comparison of Recommended Roadway Cross Sections**

Section & Termini	With I/C			Without I/C		
	Lanes	Section Type	Divided/Undivided	Lanes	Section Type	Divided/Undivided
Lacy Road	2	urban/rural	undivided	2	urban/rural	undivided
East Cheryl Parkway Fish Hatch to Syene Rd Syene Rd. to CTH MM	2	urban	divided	2	urban	divided
	4	urban	divided	4	urban	undivided
Post Road	2	urban/rural	undivided	2	urban/rural	undivided
Fish Hatchery Road South of Lacy Road	4	urban/rural	divided	4	urban/rural	divided
	4	urban	divided	4	urban	divided
Syene Road Lacy to East Cheryl East Cheryl to McCoy Rd North of McCoy Rd	4	urban	divided	4	urban	divided
	4	urban	divided	4	urban	divided
	2	urban	undivided	2	urban	undivided
McCoy Road	4	urban	divided	4	urban	divided
CTH MM	2	rural	undivided	4	rural	undivided

The topography in the area creates the need for E. Cheryl Parkway to be constructed over USH 14, much like the existing overpass at Lacy Road. The proximity of Lacy Road's USH 14 overpass also impacts the placement of the potential interchange. Sufficient spacing between the Lacy Road overpass and the merge/diverge points of the southern ramps must be provided.

Exhibits showing the recommended interchange design and the recommended design of an E. Cheryl Parkway overpass without an interchange are on the following pages.

The recommended interchange design is a combination diamond/loop ramp configuration. The USH 14 southbound entrance and exit ramps would be a diamond configuration with a signalized intersection with E. Cheryl Parkway. The USH 14 northbound exit ramp would approach E. Cheryl Parkway with a stop sign controlled intersection with E. Cheryl Parkway while the USH 14 northbound entrance would be a loop ramp located between the USH 14 northbound exit ramp and USH 14 that could be accessed by eastbound and westbound traffic.

The loop ramp would allow the heavy eastbound traffic to access the USH 14 northbound entrance ramp without stopping. The loop ramp would also increase the spacing to the McCoy Road northbound exit ramp. Increased spacing between ramps on highways is preferred to allow more room for merging and weaving movements. The placement of the loop ramp south of E. Cheryl Parkway also leaves the northeast quadrant of the interchange untouched for potential future use. However, it is recommended that access along E. Cheryl Parkway east of USH 14 be restricted in order to avoid a high westbound left turn volume onto the northbound entrance ramp. A high left turning volume from the east could cause conflicts and merging problems with the already high traffic volumes accessing the northbound entrance ramp from the west.

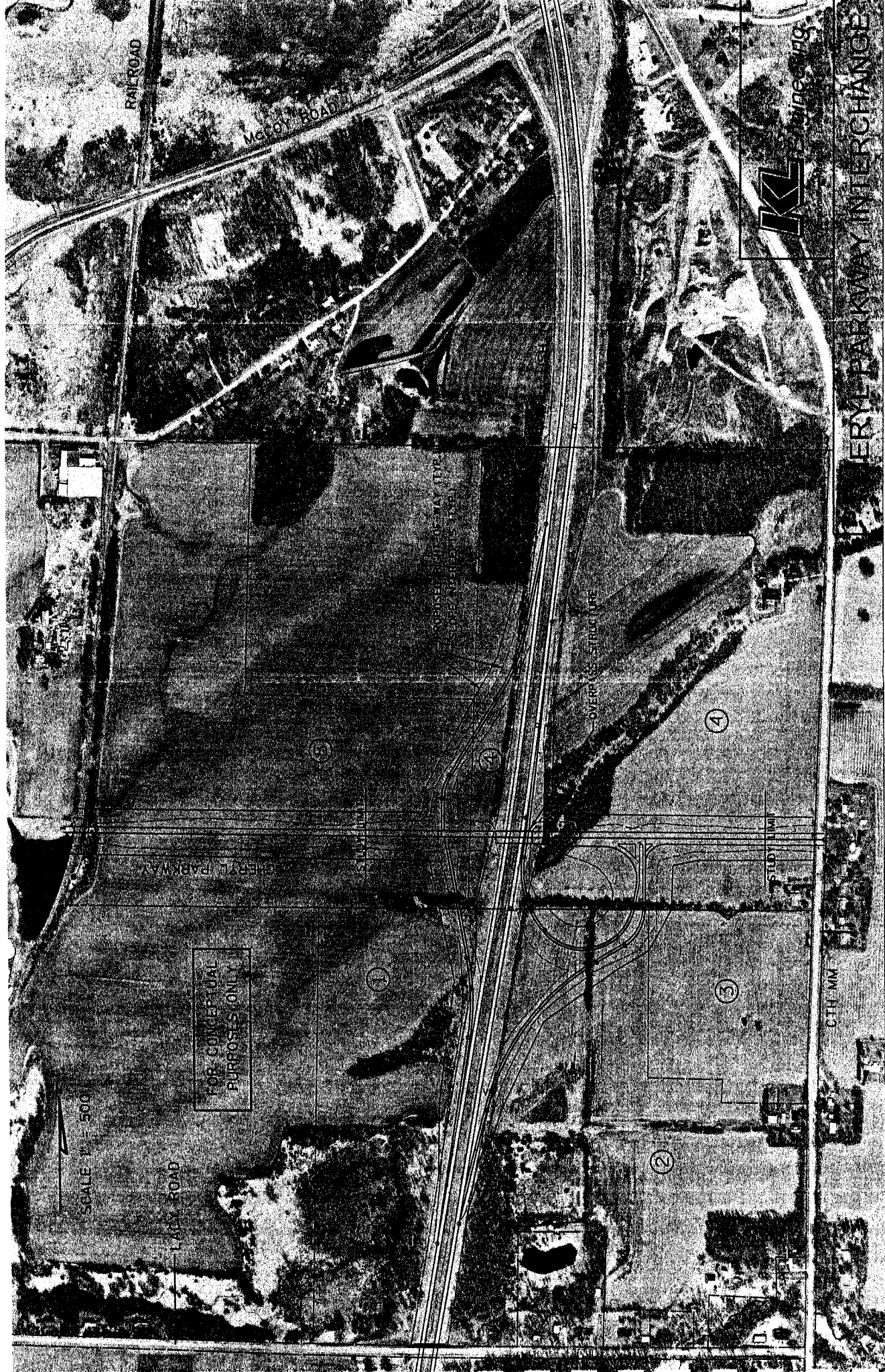
It should be noted that as of this report no development was expected to occur east of USH 14. However, if in the future, development is allowed to occur east of USH 14 along E. Cheryl Parkway, a diamond configuration design should be considered for the northbound ramps.

### Post Road

- With or Without I/C- Extend Post Road as a 2 lane urban section.

### Fish Hatchery Road

- With or Without I/C- Construct Fish Hatchery Road as a 4 lane divided cross-section south of Lacy Road. The roadway should provide for a left turn lane in the southbound direction into the Fitchburg Technology Campus. The 4 lane divided section of Fish Hatchery Road should extend at least south of the Byrneland Road



SCALE 1" = 500'

FOR CONCEPTUAL PURPOSES ONLY

RAILROAD

MCCOY ROAD

LEWIS ROAD

ST. LOUIS AVENUE

OVERPASS STRUCTURE



ERYL PARKWAY INTERCHANGE

GTH MM

1

2

3

4

5

RAILROAD

SCALE 1" = 500'

BEAR ROAD

**KL** Engineering

CTH - MM

HERYL PARKWAY OVERPASS



intersection for safety purposes due to its proximity to the Fitchburg Technology Campus street access. The 4 lane divided section would then narrow to the existing 2 lane undivided section south of the Byrneland Road intersection. Consideration should be given to extending the 4 lane divided section to just south of the Irish Lane intersection for continuity purposes. .

### Syene Road

- With or Without I/C - Construct Syene Road between Lacy Road to McCoy as a 4 lane divided urban section.

### McCoy Road

- With or Without I/C - Construct McCoy Road west of the USH 14 interchange to Syene Road as a 4 lane divided urban section.

### CTH MM

- Without I/C - Construct CTH MM as a 4 lane undivided roadway north of East Cheryl Parkway to McCoy Road.
- With I/C - No change to the existing cross section is recommended.

Exhibit 19 shows the recommended cross sections and intersection traffic controls with and without a USH 14 interchange at E. Cheryl Parkway interchange.

Table 14 shows the daily future traffic forecasts for roadway segments with recommended changes in typical cross sections under with and without interchange conditions. Also listed is the recommended cross section and corresponding capacity that could accommodate the forecast traffic volumes at the design capacity of Level of Service D. Based on the recommended cross section, the volume to capacity ratios indicate all roadways on the system will function at LOS D or better with the future land use plans in place.

## **4.2 Recommended Posted Speed Limits**

The recommended posted speed limits for study area roadways are based on the WisDOT Facilities Development Manual specifications relating to functional classifications. Table 15 shows the recommended posted speed limits on area roadways with and without the proposed E. Cheryl Parkway interchange.



2 LANE UNDIVIDED  
POST RD

EXISTING TRAFFIC SIGNAL

FISH HATCHERY RD

CHERYL PKWY  
RECOMMENDED TRAFFIC SIGNALS WHEN WARRANTED

2 LANE DIVIDED

CANE RD

SUNFLOWER RD

4 LANE DIVIDED

SYENE RD

4 LANE DIVIDED  
MCCOY RD

RECOMMENDED TRAFFIC SIGNALS

USH 14

RECOMMENDED TRAFFIC SIGNALS

4 LANE DIVIDED with IC  
4 LANE UNDIVIDED w/o IC

2 LANE UNDIVIDED with IC  
4 LANE UNDIVIDED w/o IC  
CTH MM

RECOMMENDED TRAFFIC SIGNAL w/o IC  
RECOMMENDED STOP SIGN with IC

**LEGEND**

- ⊕ SIGNAL WHEN WARRANTED
- ⊕ STOP SIGN
- CHANGE IN CROSS SECTION
- - - CHANGE IN CROSS SECTION DIFFERING BETWEEN WITH AND WITHOUT INTERCHANGE SCENARIOS

FITCHBURG TECHNOLOGY CAMPUS STREET ACCESS

**EXHIBIT 19  
FUTURE CROSS SECTION AND TRAFFIC CONTROL RECOMMENDATIONS  
NORTHEAST FITCHBURG TRANSPORTATION STUDY  
FITCHBURG, WI**



**Table 14  
Comparison of Volume to Capacity Ratios  
Recommended Roadway Cross Sections**

Section & Termini	With I/C			Without I/C				
	Forecast ADT	Lanes	Capacity LOS D	Volume/Capacity	ADT Forecast	Lanes	Capacity LOS D	Volume/Capacity
Lacy Road	9,000	2 Lane	12,000	0.75	7,400	2 Lane	12,000	0.62
East Cheryl Parkway Fish Hatch to Syene Rd Syene Rd. to CTH MM	14,500	2 Lane Divided	15,000	0.97	12,400 15,800	2 Lane Divided	15,000	0.83
	27,900	4 Lane Divided	28,000	1.00		4 Lane Undivided	23,500	0.67
Post Road	7,200	2 Lane	12,000	0.60	6,900	2 Lane	12,000	0.58
Fish Hatchery Road South of Lacy Road	15,600	4 Lane Divided	28,000	0.56	15,100	4 Lane Divided	28,000	0.54
Syene Road Lacy to East Cheryl East Cheryl to McCoy Rd North of McCoy Rd	8,700	4 Lane Divided	28,000	0.31	5,200 27,600 10,300	4 Lane Divided	28,000	0.19
	23,700	4 Lane Divided	28,000	0.85		4 Lane Divided	28,000	0.99
	10,400	2 Lane	12,000	0.87		2 Lane	12,000	0.86
McCoy Road	15,600	4 Lane Divided	28,000	0.56	18,800	4 Lane Divided	28,000	0.67
CTH MM	10,200	2 Lane	12,000	0.85	15,100	4 Lane Undivided	23,500	0.64
USH 14	54,000	4 Lane Highway	72,000	0.72	50,500	4 Lane Highway	72,000	0.70

Note: If a section listed above included more than one traffic forecast, the volume most indicative of traffic behavior along the section was used in this table

**Table 15**  
**Recommended Posted Speed Limits**

<b>Roadway</b>	<b>Section</b>	<b>Recommended Posted Speed Limit (in mph)</b>
Fish Hatchery Rd	South of Lacy Rd	40
E. Cheryl Parkway	Fish Hatchery Rd to Syene Rd	30-35
	Syene Rd to CTH MM	35
Syene Rd	McCoy Rd to Lacy Rd	40
Lacy Rd	Fish Hatchery Rd to Syene Rd	35
	Syene Rd to CTH MM	35
Post Rd	Fish Hatchery Rd to Syene Rd	30

The recommended posted speed limits in Table 15 are based on functional class and future traffic volumes. The recommended posted speed limits are consistent with speeds used in the travel demand model.

#### Fish Hatchery Road

- The posted speed limit along Fish Hatchery Road is currently 40 mph. In the future, the posted speed limit is not recommended to change.

#### E. Cheryl Parkway

- E. Cheryl Parkway between Fish Hatchery Road and Syene Road has a design speed of 35 mph. A posted speed limit of 30 to 35 mph is recommended between Fish Hatchery Road and Syene Road, contingent on the City of Fitchburg doing further analysis prior to posting the speed limit.
- A design speed of 40 mph is recommended for E. Cheryl Parkway between Syene Road and CTH MM. A posted speed limit of 5 mph below the design speed, or 35 mph is recommended.

#### Syene Road

- Syene Road currently has a posted speed limit of 45 mph between McCoy Road and Lacy Road. In the future, Syene Road is expected to be modified from a 2 lane rural section to a 4 lane urban section. Currently, no access points are present along this stretch of road, but in the future several access points are expected between McCoy Road and Lacy Road. Therefore, consideration of a reduction in the posted speed limit to 40 mph is recommended.

#### Lacy Road

- Lacy Road currently has a posted speed limit of 35 mph between Fish Hatchery Road and Syene Road. The posted speed limit on E. Cheryl Parkway between Fish Hatchery Road and Syene Road is recommended to be 30-35 mph. If E. Cheryl Parkway between Fish Hatchery Road and Syene Road is

posted at 35 mph, the posted speed limit is not recommended to change on Lacy Road between Fish Hatchery Road and Syene Road in the future. However, if E. Cheryl Parkway between Fish Hatchery Road and Syene Road is posted at 30 mph, a reduction in the posted speed limit on Lacy Road between Fish Hatchery Road and Syene Road to 30 mph should be considered, so that both east-west roads will have the same posted speed limits.

- Lacy Road currently has a posted speed limit of 50 mph between Syene Road and CTH MM. The posted speed limit on E. Cheryl Parkway is recommended to be 35 mph. A reduction in the posted speed limit on Lacy to 35 mph should be considered, so that both east-west roads will have the same posted speed limits.

#### Post Road

- A design speed of 35 mph is recommended for Post Road between Fish Hatchery Road and Syene Road. A posted speed limit of 5 mph below the design speed, or 30 mph is recommended.

### **4.3 Recommended Intersection Traffic Controls**

The following intersections are recommended for traffic signal control as conditions meet signal warrants under both with and without interchange conditions:

- Fish Hatchery Road & E. Cheryl Parkway
- Fish Hatchery Road & Lacy Road
- Fish Hatchery Road & Fitchburg Technology Campus street access
- E. Cheryl Parkway & Syene Road
- McCoy Road & USH 14 southbound ramps
- McCoy Road & USH 14 northbound ramps
- McCoy Road & CTH MM

The following intersection is recommended for traffic signal control as conditions meet signal warrants under only with interchange conditions:

- E. Cheryl Parkway & USH 14 southbound ramps

The following intersection is recommended for traffic signal control as conditions meet signal warrants under only without interchange conditions:

- E. Cheryl Parkway & CTH MM

Exhibit 19 shows the recommended intersection traffic controls with and without a USH 14 interchange at E. Cheryl Parkway interchange.

#### 4.4 Probable Cost Estimates

Generalized cost estimates were prepared for the future roadway system network alternative improvements. The following section discusses cost estimates for the proposed USH 14 interchange at E. Cheryl Parkway and for local roadway cross section and traffic control improvements.

##### *Interchange Probable Cost Estimates*

The following cost estimates for the proposed USH 14 interchange at E. Cheryl Parkway are for all ramps and E. Cheryl Parkway, 500 feet in each direction from the ramp terminals. These cost estimates do not include engineering, contingencies, utilities and right-of-way costs)

Structure	\$ 875,000
Roadways	\$ 852,500
Earthwork	<u>\$3,834,000</u>
 Total Interchange Estimate	 \$5,561,500 (does not include engineering, contingencies, utilities and right-of-way costs)

The following cost estimates for the proposed E. Cheryl Parkway overpass if a USH 14 interchange is not constructed are for E. Cheryl Parkway, 500 feet in each direction from the proposed ramp terminal locations. These cost estimates do not include engineering, contingencies, utilities and right-of-way costs)

Structure	\$ 875,000
Roadways	\$ 493,500
Earthwork	<u>\$ 980,250</u>
 Total Overpass Estimate	 \$2,348,750 (does not include engineering, contingencies, utilities and right-of-way costs)

##### *Roadway Improvement Probable Cost Estimates*

The construction cost per mile values were estimated for each recommended cross section. These cost estimates do not include utilities and right-of-way costs.

Four Lane Divided Urban Section:	\$2,800,000/mile
Four Lane Undivided Urban Section:	\$2,400,000/mile
Two Lane Undivided Urban Section	\$1,100,000/mile
Two Lane Divided Urban Section	\$1,400,000/mile
New Traffic Signal:	\$100,000

The cost estimates for the with and without interchange scenarios are as follows:

**With Interchange:**

Roadway Improvements:	\$12,190,000
New Traffic Signals (8 total):	<u>\$ 800,000</u>

Total Roadway Improvement Cost Estimate:	\$12,990,000
(does not include utilities and right-of-way costs)	

**Without Interchange:**

Roadway Improvements:	\$15,390,000
New Traffic Signals (8 total):	<u>\$ 800,000</u>

Total Roadway Improvement Cost Estimate:	\$16,190,000
(does not include utilities and right-of-way costs)	

Table 16 shows a more detailed breakdown of cost estimates for the required roadway upgrades to the base network with and without the proposed E. Cheryl Parkway interchange.

*Total Probable Cost Estimates*

The total cost estimates for the with and without interchange scenarios include interchange and overpass construction, and roadway improvements.

**With Interchange**

New Interchange:	\$ 5,561,500
Roadway Improvements:	<u>\$ 12,990,000</u>

Total With Interchange Cost Estimate:	<b>\$18,551,500</b>
(does not include utilities and right-of-way costs)	

**Without Interchange**

New Overpass:	\$ 2,348,750
Roadway Improvements:	<u>\$ 16,190,000</u>

Total Without Interchange Cost Estimate:	<b>\$ 18,538,750</b>
(does not include utilities and right-of-way costs)	

**Table 16  
Comparison of Roadway Improvement Cost Estimates**

Roadway	Section	Distance (miles)	Existing Cross Section	With Interchange Recommended Cross Section	Without Interchange Recommended Cross Section	With Interchange Improvement Cost Estimate	Without Interchange Improvement Cost Estimate
East Cheryl Pkwy	Fish Hatchery Rd to Syene Rd	1.6	N/A	2 Lane Divided	2 Lane Divided	\$2,240,000	\$2,240,000
	Syene Rd to CTH MM	1.0	N/A	4 Lane Divided	4 Lane Undivided	\$2,800,000	\$2,400,000
Post Road	Fish Hatchery Rd to Syene Rd	0.9	N/A	2 lane Undivided	2 Lane Undivided	\$990,000	\$990,000
Fish Hatchery Road	South of Lacy Rd	0.5	2 Lane Undivided	4 Lane Divided	4 Lane Divided	\$1,400,000	\$1,400,000
Syene Road	Lacy Rd to McCoy Rd	1.2	2 Lane Undivided	4 Lane Divided	4 Lane Divided	\$3,360,000	\$3,360,000
McCoy Rd	Syene Rd to USH 14 Interchange	0.5	2 Lane Undivided	4 Lane Divided	4 Lane Divided	\$1,400,000	\$1,400,000
CTH MM	Lacy Rd to McCoy Rd	1.5	2 Lane Undivided	2 Lane Undivided	4 Lane Undivided	\$0	\$3,600,000
<b>Total Construction Cost Estimate for Local Roadway Cross Section Improvements</b>						\$12,190,000	\$15,390,000
<b>Cost Estimate for Recommended Traffic Signals</b>						\$800,000	\$800,000
<b>Cost Estimate for New Interchange or New Overpass at USH 14 and East Cheryl Parkway</b>						\$5,561,500	\$2,348,750
<b>TOTAL COST ESTIMATE FOR THE ALTERNATIVES</b>						<b>\$18,551,500*</b>	<b>\$18,538,750*</b>

\*Note: Cost estimates do not include utilities and right-of-way costs.

#### 4.5 Funding Sources

It is premature to identify definite funding sources for these system improvements and modifications at this time, but it is anticipated that local revenue sources will need to be heavily relied upon.

Recently, the Federal Highway Administration and WisDOT approved a freeway interchange modification on the IH 90-94 corridor in Madison. Ramps will be added, in part, to provide additional access to the area and to relieve congestion on the existing USH 151 interchange. In order to accomplish a project of that magnitude, substantial amounts of private sector funding were required. The city of Madison, the East Towne/High Crossing business community, and WisDOT entered into a partnership. Developers on the east side of the Interstate dedicated right-of-way for an off-ramp to High Crossing Boulevard. The adjacent property owners, through a city of Madison assessment district, are financing the interchange modification design, construction, real estate and utility costs.

Assessment of local road improvement costs to adjacent property owners is a typical funding source available to municipalities. However, in this case, that source may be limited should potential roadway modifications east of USH 14 be considered and that area remains predominately undeveloped as the City's future land use plans indicate.

#### 4.6 Conclusion

The purpose of this study was to conduct a traffic needs assessment based on future planned development in Northeast Fitchburg. This report documents the procedures and findings of an area-wide traffic analysis in Northeast Fitchburg under full buildout conditions. This area will be subject to significant growth in the future.

Recommendations were made based on assumptions relating to future development uses and size. Analysis was conducted for the following scenarios:

- Future Base roadway network
- With an overpass at E. Cheryl Parkway and USH 14 and with a connection to CTH MM
- With an interchange at E. Cheryl Parkway and USH 14 and with a connection to CTH MM
- With an interchange at E. Cheryl Parkway and USH 14 and without a connection to CTH MM

Future peak hour traffic volumes were projected based on average daily traffic volumes. Detailed peak hour traffic analysis was conducted and recommended improvements were made. The recommendations included roadway cross-section requirements (essentially the number of roadway travel lanes), turn bay requirements, intersection traffic control needs, posted speed limits, and roadway access spacing. With the exception of the McCoy Road intersections with the USH 14 interchange and CTH MM, (where the current design is not suitable to handle the large peak hour traffic volumes that are expected under full buildout conditions) implementation of the recommended

improvements are expected to create peak hour traffic operations of LOS D or better in the study area under full buildout conditions with and without a proposed USH 14 interchange at E. Cheryl Parkway.