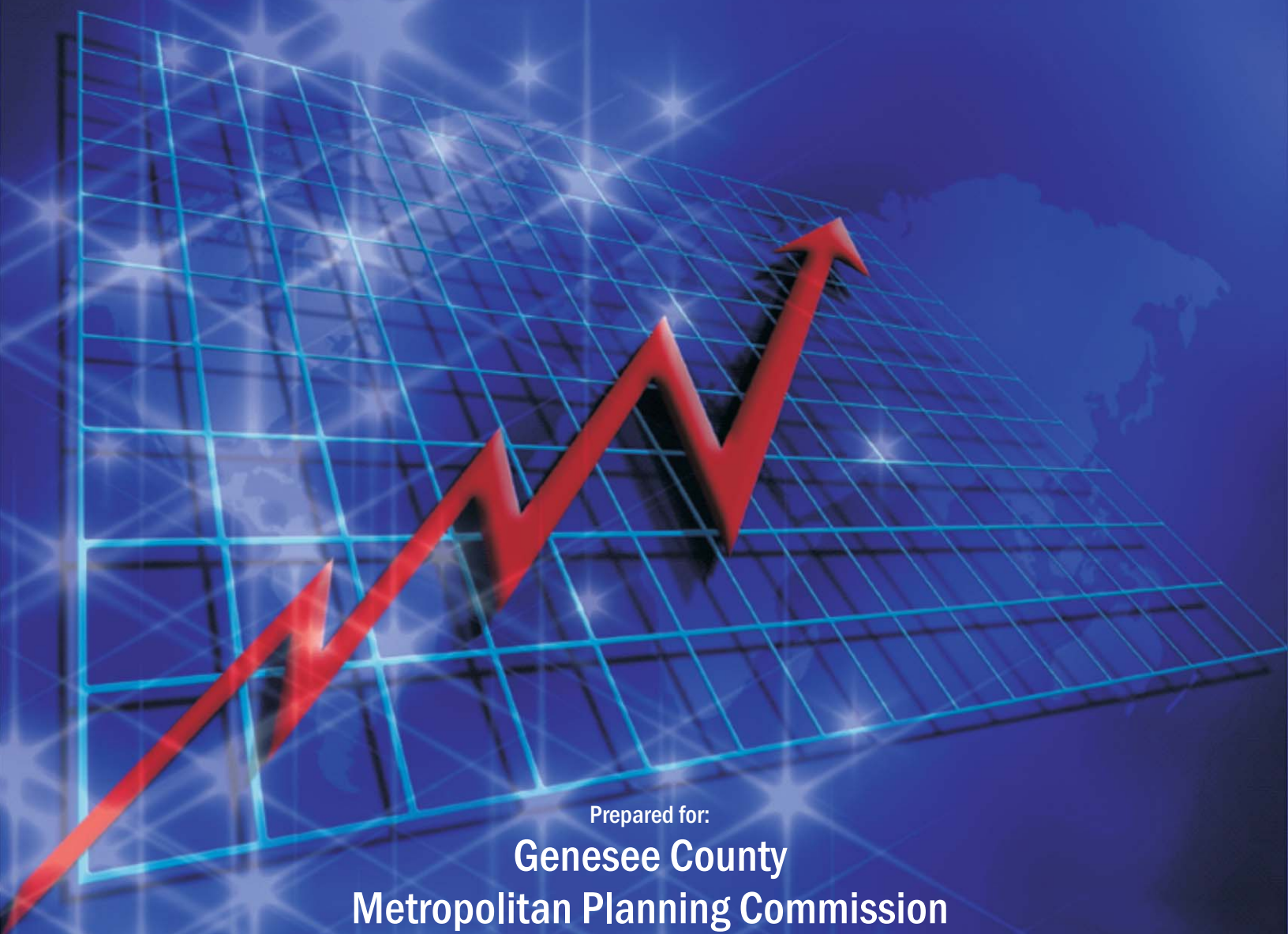


FINAL REPORT

Genesee County Freight and Connectivity Study



Prepared for:

**Genesee County
Metropolitan Planning Commission**

Prepared by:

The Corradino Group of Michigan, Inc.

In association with:

**Rowe Professional Services Company
Cambridge Systematics**

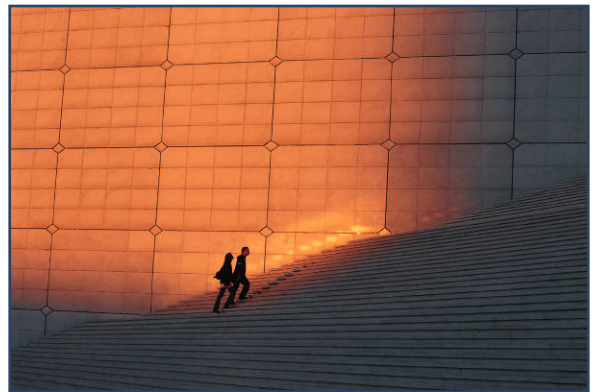
February 2011

Summary

Introduction

The concept of a Genesee County Freight and Connectivity Study has evolved from the continuing thrust of the Partners for Progress Program to meet the challenges of economic revitalization. This study is timely, given the recent completion of the Genesee County Regional Transportation Plan and the Comprehensive Economic Development Strategy. Added to that are the position of the region as the hub of three interstates, an international airport, and a variety of rail lines with an abundance of development/redevelopment opportunities. But, there are a number of connectivity problems that can cause frequent travel delays, confusion for vacationers, and other general economic impacts that lessen the attractiveness of the region.

The Long Range Transportation Plan (LRTP) has recently been updated to serve as a blueprint for the development of land and transportation infrastructure that can attract to and keep businesses and residents in the county. Managing and maintaining the current infrastructure is high on the priority list, while adding lanes of highway is recognized as a challenge. Nonetheless, an inventory of knowledgeable people in the public and private sectors indicates very few question a core objective of the Freight and Connectivity Study, i.e. to connect I-475 to U.S. 23.

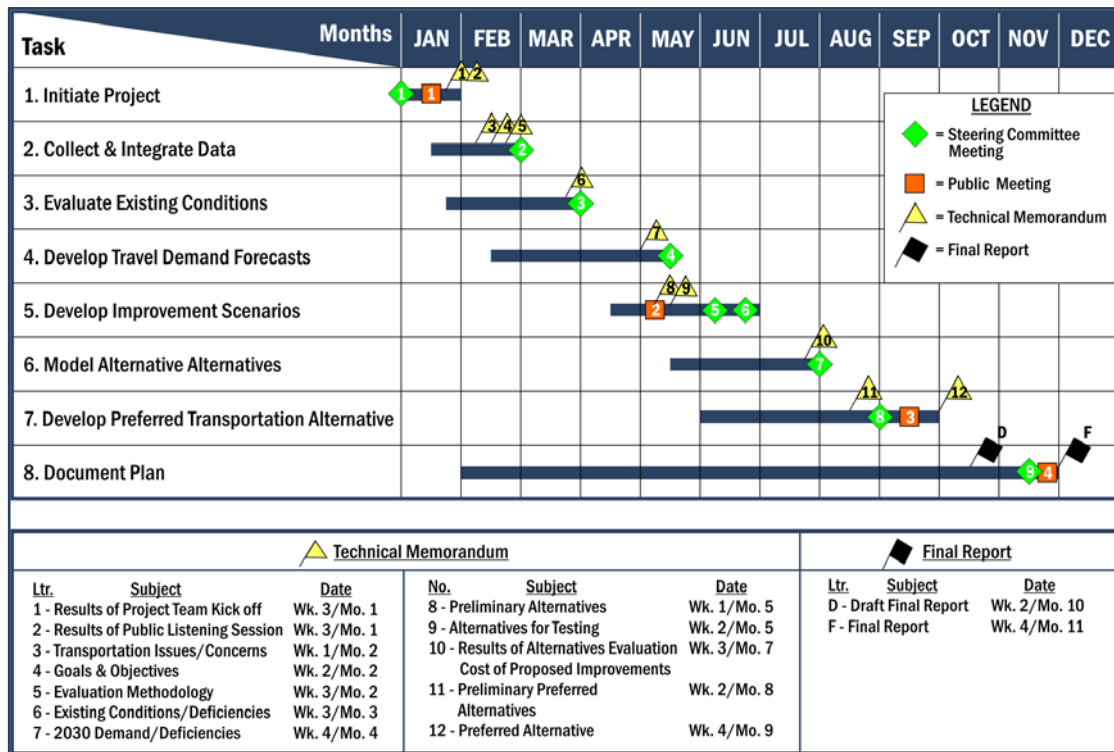


To do so, a broad range of alternatives were evaluated. The planning process engaged the citizens who expressed their views of the relative importance of the critical issues by which the performance of the alternatives was measured. Such a technique has provided an opportunity for the community to help establish the basis of the choice of a preferred alternative if it is to go beyond doing nothing to address the I-475 to U.S. 23 connectivity issue.

Schedule and Public Involvement

This study was guided by a Project Steering Committee, the members are listed on page 8. The Steering Committee met in advance of each round of public meetings and five other times during the year-long study. Each report developed for the project was delivered to the Steering Committee prior to each of its meetings at which the report contents were discussed in detail.

The community was also involved at key milestones, as discussed next and illustrated on the schedule.



Evaluation Factors

Each member of the Steering Committee attending the January meeting and those attending the public meetings on January 19th, 20th, and 21st was invited to indicate his/her personal preference (weight) for the importance of each evaluation factor by ranking and rating them. The evaluations of the Steering Committee, the participants at three public meetings, and the consultant established the importance of these factors. Each of these three independent weightings was used in the evaluation of the alternatives so it is clear how the public, the Steering Committee and the consultant staff view their performance.

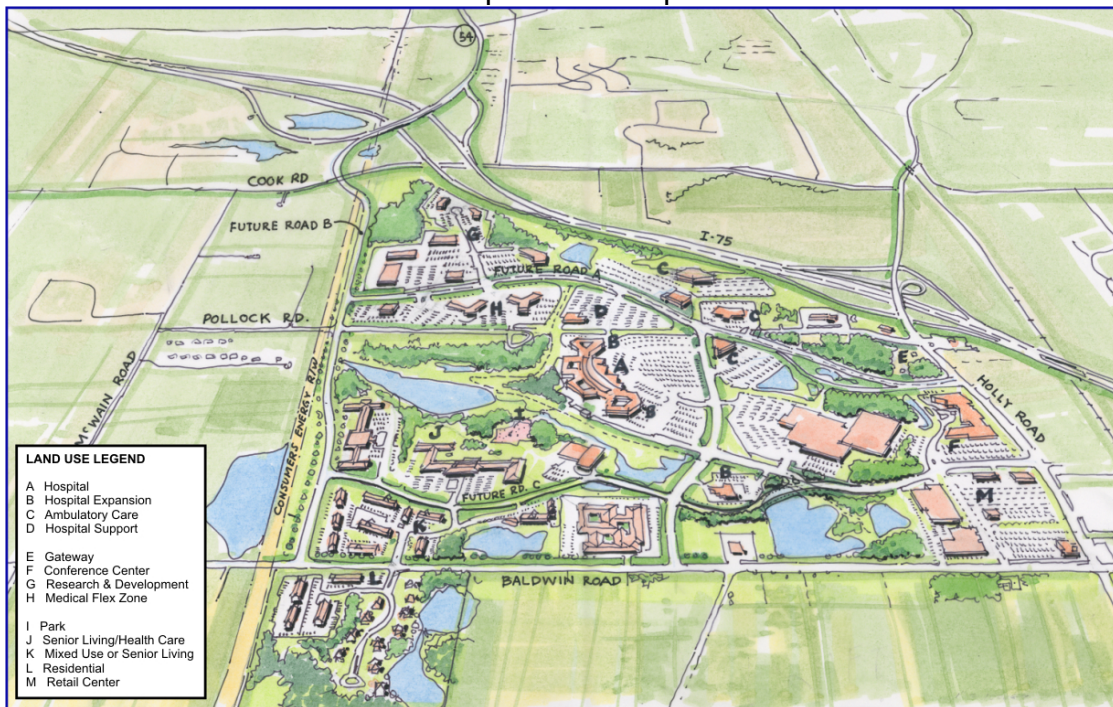
Evaluation Factor Weighting

Factor	Steering Committee Order	Citizen Order	Consultant Order
Generate/Retain Jobs	1	2	1
Minimize Neighborhood Disruption	4	5	4
Better Connect Links in the Transit and Road Networks	3	3	3
Maintain Good Air Quality	6	6	8
Minimize Purchase of Private Property to Build Transportation Facilities	8	8	5
Protect Open Spaces/Parks	7	4	6
Control Noise at Sensitive Locations (e.g., homes, schools, hospitals, etc.)	5	7	7
Maximize Safe Travel	2	1	2

Alternatives

Consistent with this information and a series of traffic analyses, alternatives were developed. It should be noted in developing the alternatives, it was important to focus on the projection in the LRTP that the employment gain in all of Genesee County over the next 25+ years is 24,000 jobs. It was also noted that a medical campus is planned at and around the Genesys Regional Medical Center. By 2020, the number of jobs at this location is forecast at 6,000+. The jobs throughout the region that support the direct employment at the campus are projected to be 15,000. So, serving the proposed medical campus through improvements that result from this study has significant jobs potential.

Concept of Medical Campus



A dozen alternatives were developed. Except for Alternative 5, all include proposed connection of I-475 to U.S. 23. All include a number of local road improvements. Some include widening of U.S. 23 and/or M-15.

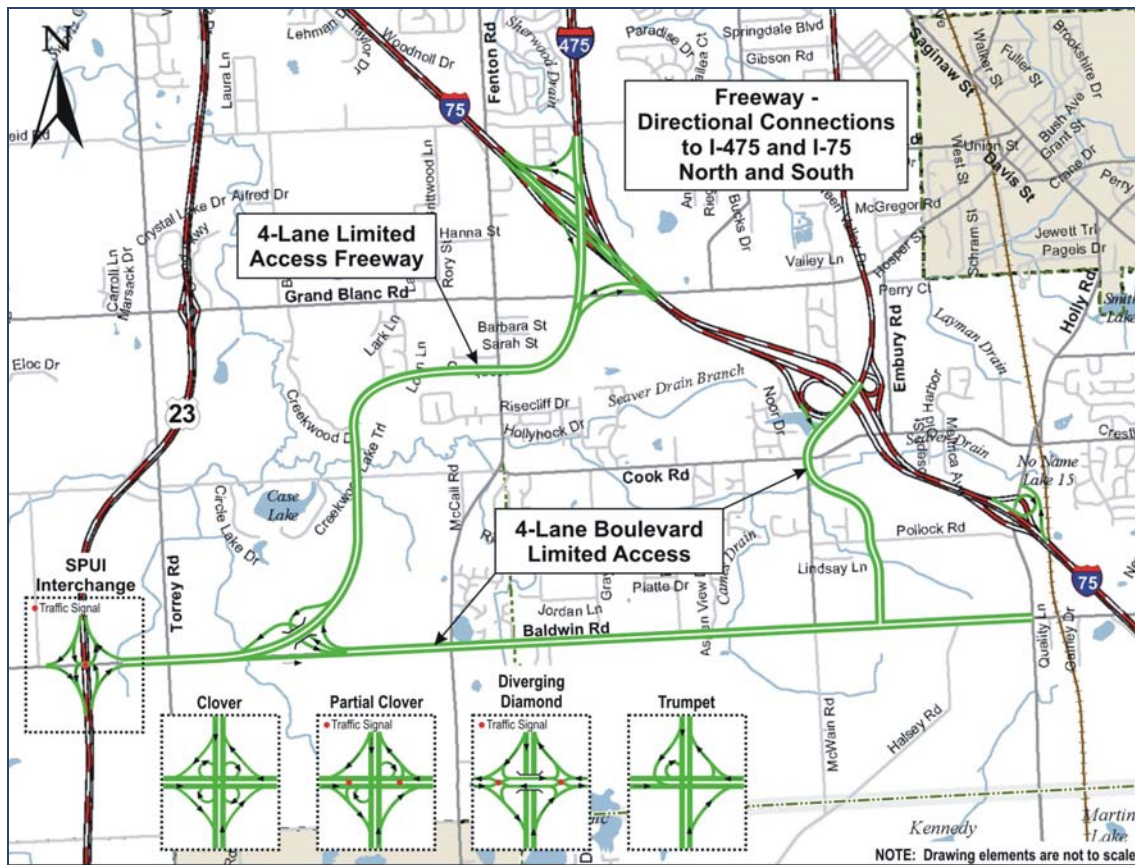
Makeup of Alternatives

Alternative	Connector	U.S. 23	M-15	Local
1	Yes	No	No	Yes
1A	Yes	Yes	No	Yes
1B	Yes	Yes	No	Yes
2	Yes	No	Yes	Yes
3	Yes	No	No	Yes
3A	Yes	No	Yes	Yes
3B	Yes	No	Yes	Yes
3C	Yes	Yes	Yes	Yes
3D	Yes	No	Yes	Yes
4	Yes	No	No	Yes
4A	Yes	No	No	Yes
5	No	No	No	Yes

Evaluation of Alternatives

The alternatives were evaluated using the factors shown on page 3. The results indicated that Alternatives 3, 3A and 3B were the best performers. Through collaboration with the project's Steering Committee, the Preferred Alternative was developed and is shown below. Extending Dort Highway over I-75 south to Baldwin Road and improving the Holly Road interchange with I-75 are part of the connector system. Documentation of this work and supporting data can be found in the report entitled "Evaluation of Alternatives" located on the Web site (www.geneseecconnect.org).

Preferred Alternative



Localized Road Improvements

Eight localized improvements of the Preferred Alternative are shown on the right.

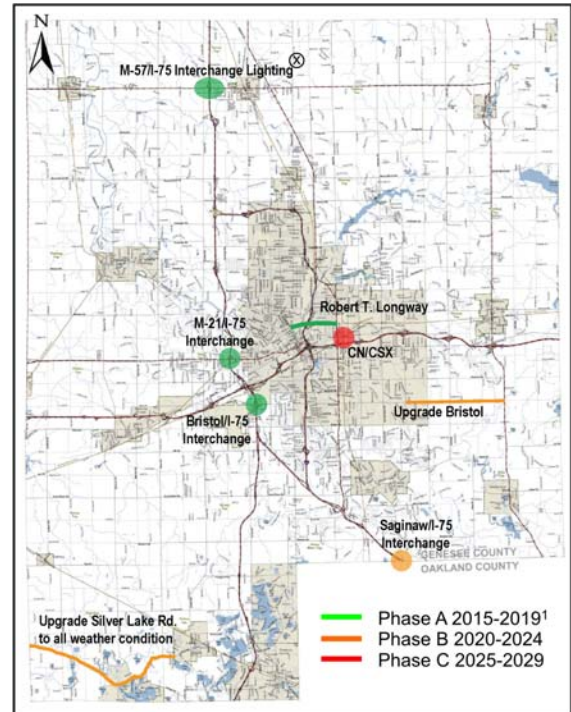
Plan Implementation

All projects have been proposed for implementation to address the practical availability of funding reflecting the pace of the recovery from the "Great Recession." Construction of the first projects is proposed to begin in 2015; design and environmental clearance must precede construction.

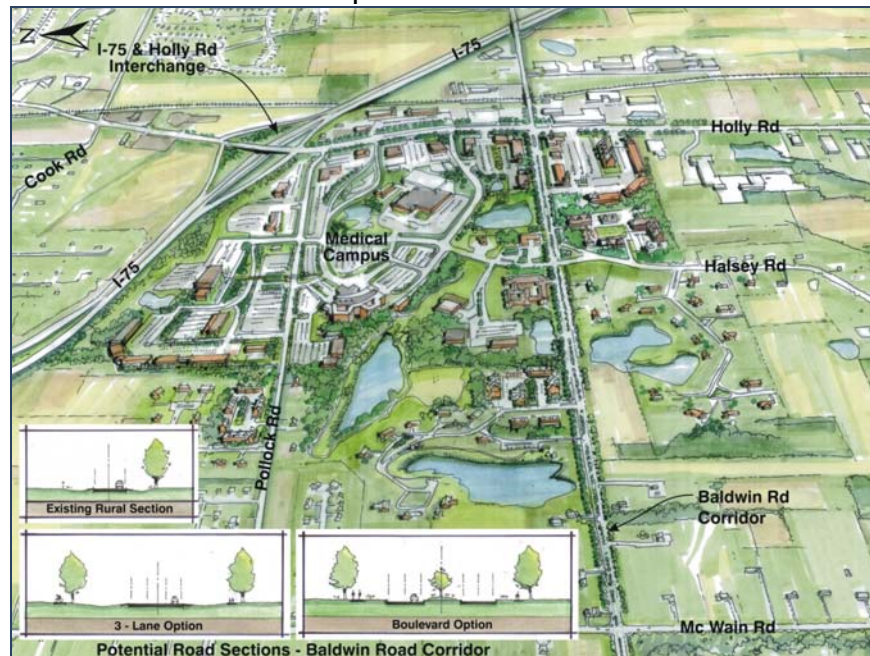
The extension of Dort Highway over I-75 to Baldwin Road is contemplated to begin in 2015. This will support the medical campus plan from the outset. The property on which the Dort extension is to be built may be dedicated at no cost by the Genesys Health System.

To add further support to the proposed medical campus development, Baldwin Road would be widened from the Dort Highway extension to Holly Road. Baldwin would become a boulevard. The concept in this study is for a "wide" boulevard with a right-of-way of 180 feet which can handle turns by the largest trucks. A narrow boulevard with a 120-foot right-of-way is an option to consider as the study's recommendations are implemented. Another project to support medical campus development is improving the Holly Road/I-75 interchange to eliminate congestion caused by turning vehicles that cannot be accommodated by the interchange's current configuration.

Localized Improvements in the Preferred Alternative



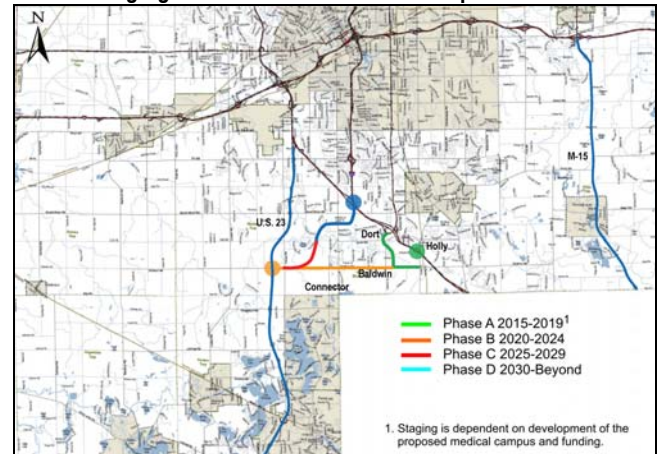
Concept of Baldwin Boulevard



Assuming the medical campus gets off to a successful start, then Baldwin Road would be improved to a boulevard from the Dort Extension to the east. A new interchange would be built to connect Baldwin to U.S. 23. This connection is expected to be made in the 2020 to 2024 timeframe. By completing this much of the Preferred Plan, the most cost-effective core element of any alternative analyzed in this study would be in place.

Because future funding for transportation is expected to be limited for some time, the section of the U.S. 23-to-I-475 connector from Baldwin Road to Cook Road is proposed to occur in the 2025-2029 timeframe. The last section of the connector, from Cook Road to I-475, including a significantly modified interchange, would then follow in the period between 2030 and 2035. Without doubt, additional analyses, including updates, of the Genesee County Long Range Transportation Plan will be completed before the Connector begins to reconfirm its need. Likewise the need to widen U.S. 23 and M-15 should be re-examined.

Staging of Connector and Related Improvements



Costs, Funding and Proposed Implementation

The overall cost of the Preferred Alternative (in 2010 dollars) is \$272.5 million (refer to Table 7-1). (Detailed cost estimates are included in Appendix D.) The cost by phase is:

■ Phase A/2015 through 2019	\$61.5 million
■ Phase B/2020 through 2024	\$37.0 million
■ Phase C/2025 through 2029	\$68.0 million
■ Phase D/2030 and beyond	<u>\$106.0 million</u>
Total	\$272.5 million

The localized improvements are projected to cost \$27.5 million (refer to Table 7-1).

The Dort Highway extension is expected to cost \$24 million, if land for it is not provided, cost-free, by Genesys. Widening Baldwin from the Dort Highway extension to Holly Road is estimated to cost \$9 million. The Holly Road/I-75 interchange is projected to cost \$13 million. The cost of the Baldwin Boulevard and interchange with U.S. 23 is estimated at \$29 million. The connector from Baldwin to I-475 would cost \$170 million. It is noteworthy that widening Baldwin Road and improvements to the Holly Road/I-75 interchange are already part of the county's Long Range Transportation Plan. (So are the Bristol Road (EB)/I-75 (NB) interchange and the M-21/I-75 interchange improvements). Therefore, the cost of these improvements (\$64 million calculated for this study) is not an addition to the commitments already made and approved by local and federal authorities. Possible funding sources are:

- Private sources (railroads, investors in proposed medical campus)
- Genesee County Road Commission

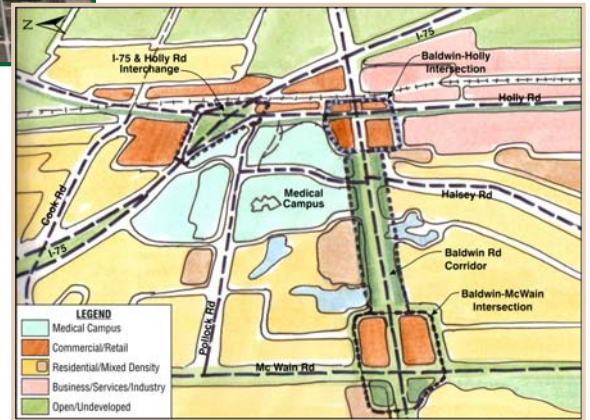
- Federal Highway Administration
- Michigan Department of Transportation
- Michigan Economic Development Corporation
- City of Flint
- Townships

Efforts will be made to secure the needed financial resources from these and other sources as they may develop.

Other Steps

It is important to recognize that steps should be taken to ensure land use and zoning decisions in proximity to the I-475-to-U.S. 23 connector maintain the quality of life of the area. Currently, much of the vacant property along the proposed path of the connector is in agricultural use. To ensure this property is not permitted to be used in manners that would block the connector physically or financially, proper land use/zoning controls are needed. The character along Baldwin Road should be protected by maintaining the large-lot residential pattern while being cognizant of the nearby development of the medical campus.

Current Conditions



Possible Baldwin Road Area Land Use Trends in the Future

Conclusion

The results of the Genesee County Freight and Connectivity Study complement the work documented in the Long Range Transportation Plan and the Comprehensive Economic Development Strategy. The Genesys Health System was part of the community leadership that produced all three projects. Now, Genesys has proposed developing a medical campus at and around its regional medical center. This proposal has significant merit. It is forecast that by 2020 this project would create more than 6,000 jobs directly on site and another 15,000 support jobs throughout the region, mostly in Genesee County. The medical campus is in the study “subarea” served by the proposed I-475-to-U.S. 23 connector, which has elements to tie into the medical campus area. Additionally, construction of this study’s recommendations is expected to create 600 to 700 jobs each year for as many as 15 years. And, this doesn’t include the construction jobs associated with the medical campus.

As noted earlier, construction of the Freight and Connectivity Study recommendations are projected to begin in 2015 (advance environmental and design work would precede this) recognizing that the funding sources to embark on the program at the federal, state and local levels will not be adequate until the current recession is over. The staging of all projects in the plan covers 20 years. But, the work beyond the first phase (2015 to 2019) will depend on the medical campus demonstrating that its full potential will be met.

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Appendix A – Genesee County Freight and Connectivity Study Questionnaire

Appendix B – Network Analyses Results

Appendix C – Performance Data of Preferred Alternative

Appendix D – Detailed Preliminary Cost Estimates of the Elements of the Preferred Alternative

Appendix E – Suggestions/Comments Cited by Steering Committee and the Public

Appendix F – Public Comments Made on Draft Plan

Appendix G – Acknowledgement of Public Comments on Draft Plan

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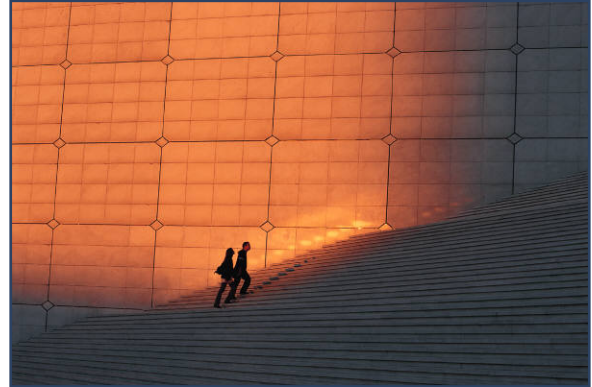
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1. Introduction

The concept of a Genesee County Freight and Connectivity Study has evolved from the continuing thrust of the Partners for Progress Program to meet the challenges of economic revitalization. This study is timely, given the recent completion of the Genesee County Regional Transportation Plan and the Comprehensive Economic Development Strategy. Added to that are the position of the region as the hub of three interstates, an international airport, and a variety of rail lines with an abundance of development/redevelopment opportunities. But, there are a number of connectivity problems that can cause frequent travel delays, confusion for vacationers, and other general economic impacts that lessen the attractiveness of the area.



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To do so, a broad range of alternatives were evaluated. The planning process engaged the citizens who expressed their views of the relative importance of the critical issues by which the performance of the alternatives was measured. Such a technique has provided an opportunity for the community to help establish the preferred alternative if it is to go beyond doing nothing to address the I-475 to U.S. 23 connectivity issue.

1.1 Schedule and Public Involvement

This study was guided by a Steering Committee, the members of which are:

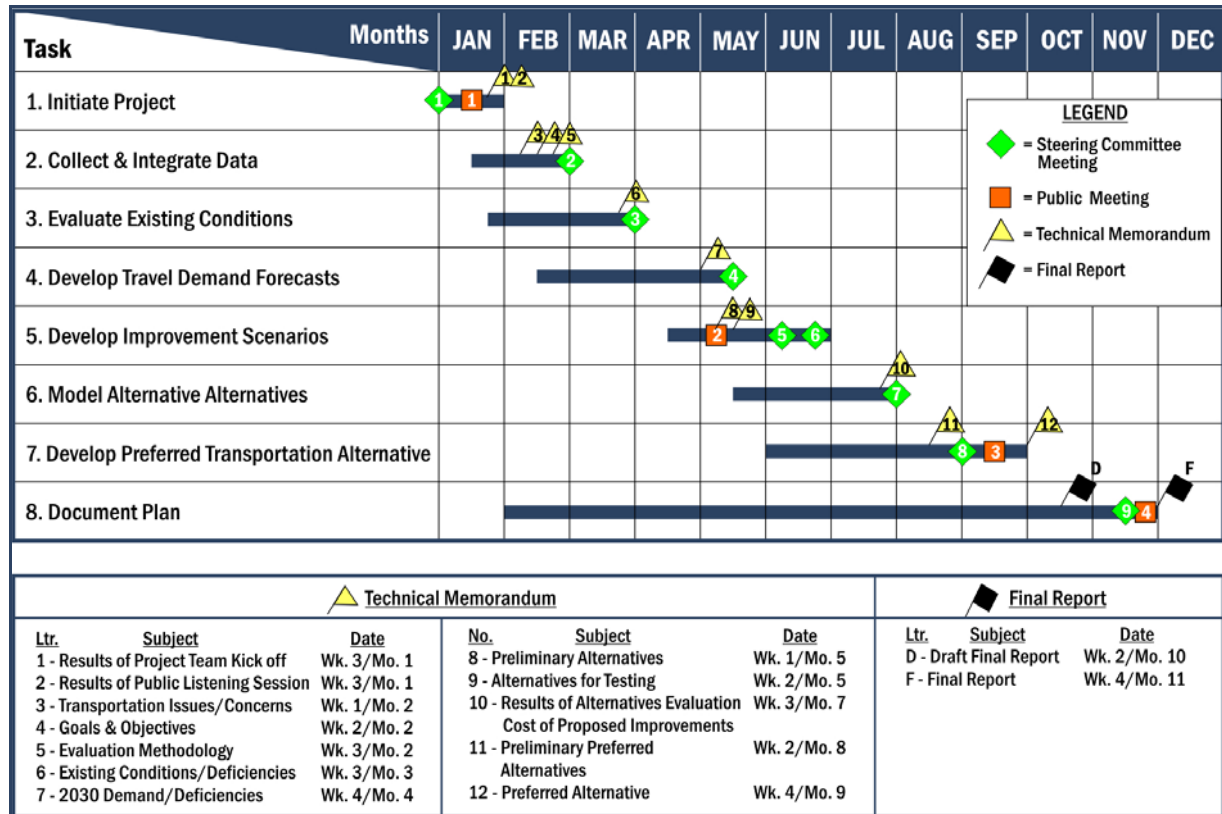
Brenda Ashley, Mt. Morris Township
 John Barsalou, Bishop Airport
 Pat Corfman, Bishop Airport
 Thomas Crampton, Mott Community College
 Michael Deem, Grand Blanc Township
 Keith Edward, Genesee Regional Chamber of Commerce
 Nick Evans, Genesys
 Robert Foy, Metropolitan Transit Authority
 Dave Guigear, Mundy Township
 N. Hamilla, Genesys

Mike Hemmingsen Michigan Department of Transportation
 Ted Henry, Genesee County Board of Commissioners
 Micki Hoffman, Grand Blanc Township
 Ken Johnson, Genesee County Road Commission
 Shirley Kaufman-Jones, Atlas Township
 K. Muhammad, City of Flint
 B. Parker, Mt. Morris Township
 Fred Peivandi, Genesee County Road Commission
 Dick Ramsdell, Flint Farmers Market
 Jim Rice, Bishop Airport

The Steering Committee met in advance of each round of public meetings and five other times during the year-long study. Each report developed for the project was delivered to the Steering Committee prior to each of its meetings at which the report contents were discussed in detail.

The community was also involved at key milestones along the way, as discussed next and illustrated on the schedule (Figure 1-1).

Figure 1-1
Project Schedule



1.2 Public Listening Sessions

The consultant conducted four rounds of public meetings. The first two rounds (January and May) were held at three locations on three different nights, distributing the meetings geographically across the county. The October meetings were held in the midday (11:30 a.m. to 1:00 p.m.) at Kettering University and the Genesys Medical Complex. The December meetings were held at the Genesee County Commission Chambers and the Rankin Elementary School in Mundy Township.

1.2.1 Public Listening Session 1: Introduce Project/Public Listening Session: January 2010

This first set of three meetings was attended by 55 people. The project's work program and schedule were discussed, along with an overview of transportation issues. During the interactive portion of the meeting, participants cited on maps what they see as transportation concerns that limit future economic development. Then, by using a simple scoring process, the group weighted

factors to be used in the later evaluation of transportation alternatives. This input helped the development of transportation alternatives and the process by which they were evaluated.

A toll-free hotline (866-251-9967) was established, and information was posted on the Web site at www.geneseecconnect.org.

1.2.2 Public Meeting 2: Existing and Future Deficiencies/Preliminary Alternatives: May 2010

This round of public meetings began with a presentation of existing and future transportation needs and deficiencies and preliminary alternative transportation system scenarios. The attendance at these two meetings was very low – eight people.

1.2.3 Public Meeting 3: Review Evaluation/Preliminary Preferred Alternative: October 2010

At this set of two meetings, attended by 60 people, preliminary evaluation results of the transportation system alternatives were presented to the public. Based on this input, the Preferred Alternative was developed.

1.2.4 Public Meeting 4: Present Preferred Alternative: December 2010

The Preferred Alternative of the Genesee Freight and Connectivity Study was presented to the public at the final public meeting held on December 8, 2010.



2. Background

The 2035 Long Range Transportation Plan (LRTP) for Genesee County was completed in 2009. Its main finding is that the needs of the transportation system in Genesee County outweigh the resources available to address them. Fifty percent of the road system is failing, and 90 percent of the bridges will need to be replaced by 2035. The LRTP forecasts that, at the minimum, a \$5.3 billion shortfall in funding to maintain and improve its transportation system. For example, it has an \$872 million shortage to address road pavement conditions, a \$3.2 billion shortfall to address capacity issues, and a \$1.1 billion shortfall to address needed bridge projects over the next 25 years.

These needs are placed in the setting of population and employment projections which indicate:

- A 4.6 percent increase in county population from 2005 to 2035. The City of Flint is continuing to show a movement of people out of the city to the surrounding communities. Smaller cities and villages such as Davison, Gaines and Otisville are projected to realize a small decline in population mostly attributed to the national trend of the shrinking number of persons per household (Table 2-1).
- The employment projection shows an 11.4 percent increase. The main fact to note is the projections are showing a shift from a manufacturing-based to a service-based economy (Table 2-2).

To address growth in the county, an “Urban Renewal” strategy was chosen from among four scenarios studied in the LRTP planning process. The Urban Renewal strategy was deemed the best as it could potentially preserve over 18,000 acres of farmland and open space, keep costs for new infrastructure and public services down, decrease the vehicle miles traveled by local residents and the length of time residents are delayed by traffic congestion, and increase transit ridership by 20 percent. In an effort to move the Urban Renewal strategy forward, the following initiatives were included in the LRTP:

- Strengthen and direct development towards existing communities.
- Encourage cities, villages, and townships to work together and adopt common goals for future development.
- Encourage local units to update zoning ordinances and master planning documents and seek commonality with other local units of government to promote smarter growth standards and development guidelines.
- Encourage transportation system maintenance and improvements on the existing infrastructure, while minimizing costly expansion of the system.
- Preserve open space, farmland, natural beauty, and critical environmental areas.
- Provide a variety of transportation choices.
- Take advantage of compact development design.
- Foster distinctive, attractive communities with a strong sense of place
- Create walkable neighborhoods

Table 2-1
Genesee County Population by Municipality

Municipality	2005	2010	2015	2020	2025	2030	2035
Argentine Township	6,943	7,094	7,256	7,394	7,563	7,732	7,897
Atlas Township	6,215	6,335	6,465	6,577	6,716	6,854	6,986
City of Burton	31,305	31,583	31,945	32,200	32,611	33,033	33,439
Clayton Township	7,700	7,846	8,003	8,134	8,304	8,476	8,644
City of Clio	2,586	2,595	2,611	2,618	2,637	2,660	2,679
City of Davison	5,529	5,470	5,430	5,372	5,348	5,327	5,306
Davison Township	19,180	19,753	20,367	20,900	21,531	22,161	22,773
City of Fenton	11,625	12,073	12,484	12,788	13,022	13,255	13,433
Fenton Township	14,665	15,342	16,028	16,646	17,327	18,055	18,664
City of Flint	120,283	118,100	116,140	113,902	112,383	110,852	109,494
Flint Township	33,720	33,430	33,253	32,972	32,874	32,802	32,731
City of Flushing	8,464	8,436	8,435	8,405	8,424	8,445	8,464
Flushing Township	10,596	10,695	10,822	10,912	11,054	11,195	11,336
Forest Township	3,872	3,885	3,909	3,918	3,948	3,981	4,010
Gaines Township	6,420	6,530	6,673	6,793	6,943	7,102	7,250
Genesee Township	23,981	23,707	23,508	23,247	23,106	22,982	22,856
City of Grand Blanc	8,078	8,082	8,091	8,101	8,234	8,271	8,367
Grand Blanc Township	35,075	36,788	38,556	40,069	41,590	43,022	44,399
City of Linden	3,603	3,638	3,682	3,708	3,715	3,725	3,734
City of Montrose	1,552	1,605	1,663	1,712	1,771	1,828	1,884
Montrose Township	6,496	6,528	6,574	6,601	6,658	6,716	6,773
City of Mt. Morris	3,448	3,475	3,512	3,537	3,581	3,623	3,665
Mt. Morris Township	23,795	23,580	23,438	23,231	23,140	23,065	22,982
Mundy Township	14,810	15,503	16,189	16,800	17,471	18,143	18,790
Richfield Township	8,726	8,950	9,192	9,398	9,646	9,892	10,131
City of Swartz Creek	5,493	5,651	5,790	5,891	6,022	6,154	6,278
Thetford Township	8,385	8,370	8,375	8,359	8,381	8,408	8,433
Vienna Township	13,627	13,819	14,043	14,218	14,461	14,705	14,939
Village of Gaines	450	467	465	463	460	451	447
Village of Goodrich	1,566	1,666	1,767	1,860	1,959	2,058	2,154
Village of Otisville	903	899	898	894	894	895	896
Village of Otter Lake (part)	59	59	60	60	61	61	61
Genesee County	448,188	450,996	454,666	456,726	460,880	464,923	468,938

Table 2-2
Genesee County Employment by Industry 2005-2035

Employment Category	2005	2010	2015	2020	2025	2030	2035
Manufacturing	24,433	22,970	20,432	18,962	17,516	16,077	14,763
Other	12,677	13,102	13,693	13,876	13,778	13,804	13,846
Transportation and Public Utilities	5,768	6,075	6,187	6,189	6,053	5,932	5,798
Finance, Insurance and Real Estate	14,400	15,117	15,489	15,654	15,453	15,337	15,205
Retail Trade	27,984	28,023	27,966	27,707	27,009	26,553	26,126
Wholesale Trade	7,244	7,164	6,792	6,479	6,090	5,708	5,328
Services	92,713	105,186	112,086	117,666	120,728	124,384	128,129
Government	26,443	26,486	26,461	26,411	26,366	26,427	26,511
Total	211,662	224,123	229,106	232,944	232,993	234,222	235,706

Positioned between the LRTP and this Freight and Connectivity Study is the Comprehensive Economic Development Strategy (CEDS) for Genesee County prepared for the Genesee Regional Chamber of Commerce. The core goals of the CEDS are:

- Secure federal funding for priority economic development projects that benefit the entire county.

- Focus strategic thinking on economic development, to start moving the County forward again.
- Recommend short-term strategies to retain jobs, along with mid-term and long-term strategies to re-ignite job creation.

Core areas of job growth over the next several years include the following:

- Health care and education
- Finance, insurance, and real estate
- Professional and technical services
- Transportation and utilities

The CEDS suggests that through a focused approach to economic development, a 12-year target to create up to 9,000 new jobs for the entire county can be met.

The CEDS developed a list of priority economic development projects of about \$1.2 billion in potential new investment, extending across the county, and including projects from townships, municipal, city, and county governments, and medical and educational institutions. If the world were perfect (and it is not) and these projects were built in 2011, the \$1.2 billion investment would support almost 17,000 jobs and generate \$1.8 billion in labor income.

In practical terms, the array of projects will compete for funding from a number of sources. The CEDS recommends prioritization be based upon the following framework elements:

- Initial projects should benefit as large a portion of the county as possible, and correlate with longer-term countywide economic diversification efforts. Initial projects that build on local strengths in aviation, healthcare, and education would be logical, along with major investments to critical infrastructure systems. It will be critical for leadership groups across the county to build consensus around these core programs, and move them forward to state and federal elected leadership groups.
- Investments in sustainability can generate long-term benefits, in terms of reduced building operating costs. Through 2010, there is considerable Department of Energy funding to support these kinds of efforts.
- Investments in attractions and tourism generation facilities can be appropriate if the project has realistic potential to attract people from outside the county/region.
- Downtown revitalization projects also would have merit to the extent that planning dollars are used to identify and prepare infill sites for residential/mixed-use redevelopment. Streetscape investments can also be effective, if they are combined with strategies for parking, façade improvement, and organizational efforts (DDA or related) to improve the competitive position of downtowns.
- Road improvement projects in general are appropriate as employment generators, assuming that the work is awarded to local contractors. Consideration should be given to projects that are considerate of long term sustainability and smart growth practices, particularly if transit-oriented development practices can be followed.

The Freight and Connectivity Study was developed to be consistent with the Long Range Transportation Plan and the Comprehensive Economic Development Strategy. The Freight and Connectivity Study process and findings are presented in the remainder of this document.

3. Survey

The Genesee County Freight and Connectivity Study is designed to analyze transportation issues in order to establish a program of improvements that will reinforce economic development and the quality of life in the region centered on Genesee County. As part of the study, 34 questionnaires were completed by members of the private/business sector (7 respondents), the public/government sector (16 respondents), plus citizens (11 respondents) between December 2009 and February 2010.



Table 3-1 summarizes the responses to eight of the ten questions without attribution to any interviewee, consistent with the commitment that the source of the information would remain confidential. The responses to Questions 1 and 7 are discussed at the end of this section. The questionnaire is provided in Appendix A.

3.1 Question 2: Complete the I-475-to-U.S. 23 Connection

A key question that was asked at the beginning of the survey is whether the interviewee found any advantage to connecting I-475 and U.S. 23 in southern Genesee County. Of the 34 responses, 28 said yes, five said no, and one indicated that more information was needed before a judgment could be made. Interestingly, two of those that replied “yes” indicated that the full I-475 loop should be completed in Genesee County.

3.2 Question 3: Future Growth in Genesee County

On the issue of where future growth in Genesee County may occur once the economy turns around, some cited specific locations, others talked about the type of growth. All but three respondents thought that growth would resume; two had no comment, and one person questioned whether the existing infrastructure could support growth. Of those citing location, downtown Flint, the Kettering University area, and the Genesys/medical area were place-named. Others citing a more general location indicated that they believed that future growth would occur in the south part of the county including Grand Blanc and Mundy Townships. One respondent indicated that all of the county would benefit once the economy rebounds. Of those that cited the type of growth that would occur, the respondents most frequently indicated that there would likely be residential development in the south part of the county with industrial in-fill, rather than a major industrial expansion, as the economy recovers.

Table 3-1
Genesee County Freight and Connectivity Study
Summary of Interviews
(Additional Information on Questions/Issues 1 and 7 are Provided on Maps)

Question/Issue	Respondent																	
	1 (A) ¹	2 (A)	3 (A)	4 (A)	5 (B)	6 (A)	7 (A)	8 (A)	9 (A)	10 (B)	11 (A)	12 (A)	13 (A)	14 (B)	15 (A)	16 (A)	17 (B)	18 (A)
2. Complete I-475 to U.S. 23 Connection?	• Yes, but where to connect.	• Yes, would open southwestern part of county.	• No.	• Yes.	• Yes. Make an expressway.	• Yes.	• Yes.	• Yes.	• Yes.	• Yes. Use of Baldwin would be best	• Yes.	• Yes.	• Yes. Use Thompson or Baldwin Roads	• No.	• No.	• Yes.	• Yes.	• More information needed to decide.
3. Future growth in Genesee County?	• Downtown Flint	• More of a bedroom community, less industrial growth • Some industrial infill	• Not certain; current trend is “down.”	• Clinton Twsp. • Swartz Creek along I-69	• South part of county	• Some industrial infill • U.S. 23/M-15 corridor more residential	• Fenton & Vienna Twnshps. • Maybe, Davison	• Southern part of county	• All of Genesee County should benefit	• Kettering University Hospitals/ Healthcare • Bishop Airport	• In core urban areas • Little growth in “outer” areas	• Mundy and Flint Township	• Fenton Township/ Thompson Road • Mundy/Grand Blanc Townships/ Thompson- Baldwin Roads	• Around GM at Bristol/Van Slyke complex	• University and medical areas	• Residential in SE quadrant of Flint • Brownfields in vicinity of Dort Highway and Saginaw Street	• Focused on I-75	• Where infrastructure already exists.
4. Connector’s effect on local zoning?	• Depends on cost/availability of land.	• Not much effect if design elements are considered early in process.	• Need more regional planning emphasized at “high level.” • Create county executive.	• Need countywide land use master plan.	• Expressway would be better for local zoning	• Freeway will limit changes.	• Provide full I-475 loop • Make area inside loop a “development zone” • Provide utilities	• Increased development at interchanges	• A regional look at potential changes is needed	• Grand Blanc Twsp. would be affected	• Based on timing of connectors, there may not be many zoning issues.	• Need more regional planning to determine	• No negative impact on north Fenton Township • More development around Genesys	• No response	• Not practical to think regional planning will work to address this issue	• Yes. Communities affected will need to coordinate growth types and locations. • Communities must work as a unit.	• Will put pressure on “no growth” communities. • May need additional regional policies.	• Unsure.
5. Commercial freight changes in region?	• More rail • Maybe less freight	• Need to find way to improve affordable, safe and convenient transportation. • Connect people to blue collar jobs.	• Yes. Key is truck-to-air.	• Rail and Air-to-Rail • More short-distance trucking	• Passenger rail • Diversity of modes	• Strong in Flint • I-69 is key.	• Not a lot • Detroit area will be preferred	• Flint will definitely see an increase.	• Strong, in light of airport and area’s rail service • If County had water service independent of Detroit it would have more business opportunities.	• I-69 connector to Canada--need to market better	• Continuation of manufacturing	• Genesee could be intermodal hub	• Rail will not be as big • Use of air, lighter trucks, automated rail will grow • More public transit/ commuter trains	• Not much change	• Through freight • Increase in light manufacturing	• No response	• Genesee needs to position itself to take advantage of global growth.	• More trade with Canada using I-69/Blue Water Bridge.
6. Changes to improve community’s connection to transportation infrastructure?	• Widen M-15 plus turn lanes, better signage, safety improvements. • Non-motorized path along M-15; signalization	• Bus pullouts • Tenant amenities	• Same answer to Q1 and Q2	• I-69/Seymour Rd. Interchange • M-21 as alternate to I-69	• Robert T. Longway – short merge of I-475 • Court eastbound at Crapo • No signal at Harrington Court	• Eliminate connection of I-75 between I-475 and U.S. 23 • Upgrade Cook, Grand Blanc or Baldwin Road	• M-57 and M-15 • Improve Linden Road	• I-475 @ Davison Road-- one-way streets feel unsafe.	• Connect I-475 to U.S. 23 @ Baldwin Road	• Improve infrastructure for travel/ commuting	• More money • Holly/I-75 interchange improvements • Baldwin connector of U.S. 23 and I-475	• SB ramps to I-75 from Miller Road and M-21 • Get intermodal going	• Thompson Road, Baldwin Road, including water and sewer services • North Road and Silver Lake Road interchanges	• An M-53/I-69 connection	• Light rail may be needed.	• Bristol Road which is “falling apart”	• Future of transit is “on wheels, not rails.” • Must be mindful of operating costs.	• Transportation infrastructure not an impediment to any community.
8. Role of government in making transportation investments to improve economy?	• More federal money	• Set rules to ensure safety. • Maintenance • Become more business friendly	• Cooperate with private sector	• More federal funding • Protect Act 51 funding	• Collaboration between large and small governments • More federal funding • Cooperate with business	• Form Public-Private Partnerships to fund improvements	• Only government can do roads.	• GCMPC should lead the way. • Road maintenance	• Proper regional planning to target transportation investment • Cooperation in planning	• Capital for infrastructure • Transparency with public facilities	• Additional transportation funding • Put “teeth” into county planning • Centralize county decision making	• Provide funding	• Provide funding • Improve infrastructure	• Provide the necessary infrastructure and economic enhancements to attract business	• Facilitation between end users and policy makers	• Additional funding • More motor carrier enforcement to preserve roads longer	• Facilitation • Can remove barriers	• Help build a consensus
9. Role of private sector in making transportation investments to improve economy?	• Need to finance impact improvements.	• Has primary role: key to success.	• Cooperate with government	• Involvement in toll facilities	• Redevelop brownfields • Create transportation hubs	• Be supportive of government • Bring funds • Be champions	• Typically limited to what can be done on their property.	• Play role in light rail like in Detroit.	• Cooperation with government	• Balance with public sector	• Pay their fair share • Develop user impact fees • Re-look at Arrow Head court decision	• Assess cost of their fair share	• Carpooling • Provide funding	• More sales to a better economy	• No role in the transportation system	• No response	• It’s the “driver” of region’s economy.	• Job creator, which is key
10. Other issues?	• Minimal attention to M-15 as detour route to I-75 • Should I-475 be looped around county.	• Look at BRT • Complete MTA service counters	• Move into Phase 2 of intermodal strategy.	• Rail transit • Improved County GIS • Wind energy farms • Improve traffic signals with “flasher yellow”	• Over building • Hard to get to downtown Flint. • Better signage • Promote work force development	• No grain elevator in Genesee County	• Maintenance of roads • Dead-end water line at Linden Road may limit development	• Sound walls along residential areas • Road maintenance	• I-475/U.S. 23 connection would help economies of Mundy Twsp.	• Coordinated access to federal money • Getting started on expanding Genesys Campus • Work on Genesys strategic plan • Partner with Kettering University on education & health • Address items not funded with federal stimulus money • Create partnerships on prospects that make most sense and are ready to go.	• Any transportation improvement should be “net economic gain” • Examine additional intermodal options (e.g. more train-to-air @ Bishop) • Question extent of ITS system in Genesee County	• Too many one-way streets in Flint • Safety issues: Morris/Beecher and Dye/Beecher	• Higher standards on road construction • Warranties in road construction • Improvements to better connect SW and SE parts of county • M-59 extended to west • Fix SB I-75/U.S. 23 split • Need toll roads • Higher fencing to keep animals of freeway • More lighting at high-volume interchanges • More communication/ cooperation between counties and road commissions	• Relationship between trucking firms and locals needs to improve • Truck drivers need to be treated better by law enforcement • Need better relationship between trucking firms and auto drivers	• None	• Examine possible designated truck lanes	• County must be focused; target specific businesses. • Participate in Northern County Alliance.	• None

¹ (A): Public Sector Respondent
(B): Private Sector Respondent
(C): Citizen

Table 3-1 (continued)
Genesee County Freight and Connectivity Study
Summary of Interviews
(Additional Information on Questions/Issues 1 and 7 are Provided on Maps)

Question/Issue		Respondent															
		19(B)	20(A)	21(B)	22(B)	23(A)	24 (C)	25 (C)	26 (C)	27(C)	28 (C)	29 (C)	30 (C)	31 (C)	32 (C)	33 (C)	34(C)
2.	Complete I-475 to U.S. 23 Connection?	• Yes.	• Yes.	• Yes. Baldwin Road.	• Not from a railroad perspective.	• Yes. • Upgrade Hill Road connection.	• Yes, if done correctly.	• Yes.	• Yes.	• Yes, if it improves moving goods.	• Yes. A boulevard on Baldwin.	• Yes.	• Yes.	• Yes.	• Only as a convenience to east-west movement.	• Yes.	• Yes.
3.	Future growth in Genesee County?	• Redevelopment of Flint.	• Fenton and Fenton Township; Grand Blanc and Mundy Townships.	• Fenton, Mundy and Grand Blanc Townships. • Linden/Hill road by airport.	• Unsure if infrastructure is available to accommodate growth.	• Southern portion of Grand Blanc Township, around Genesys. • If Buick City and universities expand, area will grow.	• Mostly to the southeast.	• Flint downtown. • Southern Genesee County.	• Along I-475, I-69 and I-75 interchanges.	• Davison and Davison Township. • Fenton and Grand Blanc. • Flint Township and Swartz Creek.	• Davison, Swartz Creek, Fenton.	• Gran Blanc and Fenton.	• I-75/I-69/Bristol Road corridors.	• Downtown Flint and surrounding cities.	• No response.	• No response.	• East, southeast and northwest.
4.	Connector’s effect on local zoning?	• Unsure.	• If I-475-US 23 connection properly done, it could be positive.	• A possible adverse impact.	• Unsure.	• Not too adverse.	• Probably.	• More regional planning is needed.	• Not if growth is controlled.	• Must do planning—cannot do enough.	• No response.	• More planning will be needed. • Local zoning will probably have to be changed.	• Not sure about local zoning. • More regional planning is needed.	• Possibly make it more commercial.	• More regional planning will be needed to concentrate jobs in one area and housing either in multi-use or concentrated to stop sprawl.	• If I-475 is extended to U.S. 23, the growth will come later.	• An I-475 –to- U.S. 23 connector will attract growth and local zoning should be addressed.
5.	Commercial freight changes in region?	• Freight rail will grow. • Rail will be more competitive with trucks as fuel prices increase. • Agriculture will continue to ship to southern U.S. and overseas.	• It depends on energy prices/alternative sources.	• More east-Flint development if intermodal development happens. • Truckers avoiding Detroit.	• Agriculture and coal will continue to grow.	• More rail if railroads are cooperative. • Direct/express bus service to Detroit. • Bishop Airport improvements.	• NR	• Increased freight on I-69 to Canada. • Increased air freight.	• Train and air freight will be much larger.	• Air and rail freight should increase.	• I-69 from Canada to Mexico will be important to freight.	• More freight coming through the region.	• Garbage hauling. • Trainways will be dominant again.	• More freight in total.	• No response.	• It depends of fuel cost and the economy.	• The area will be a global transportation hub.
6.	Changes to improve community’s connection to transportation infrastructure?	• Belsay Road Yard could be intermodal terminal.	• North Road/Silver Lake interchange. • Fenton Road – existing problems. • Torrey Road – future problems. • Silver Lake/Grange Hall Roads.	• CSX/CN transfer point by Center/Dort. • Bridges too low. • Expressway pavement conditions.	• Unsure.	• I-75/Holly interchange. • Dort Highway extension. • Baldwin Road/I-75 interchange. • I-475/U.S. 23 connector. • Connect SB Saginaw Street to NB I-75.	• Three lanes on M-15. • Better mass transportation for the growing elderly population.	• Limits on weight on roads.	• Linden Road from Mt. Morris Road south to airport—at least 5 lanes.	• Bridge and overpass improvements. • Coordinate planning for transportation with planning for other infrastructure.	• More effective on/off-ramps on freeways.	• Repair or rework some of the entrance/exit ramps.	• Roads that facilitate safer driving practices.	• The connection of CSX and CN rail lines.	• Widening Linden Road between Birch Run and Pierson Roads.	• Extending I-69 to Mexico.	• Road Conditions and maintenance.
8.	Role of government in making transportation investments to improve economy?	• Government re-regulation is opposed by freight railroads. • Alternative is new anti-trust policy/law with existing limited exemptions.	• Funding, planning, cooperation among governments.	• Adequate interchanges. • Maintenance program.	• Public-private partnerships will become more the norm.	• I-75/Holly interchange.	• Cooperation with the private sector.	• Eliminate red tape. • Invest.	• State needs to set up funding program that will allow the roads to be fixed and maintained. It cannot be done locally.	• Planning, financing, maintaining infrastructure. • Providing for safety.	• Money.	• Money.	• Implement green initiatives. • Tax cuts for green companies. • Incentives for people to stay in Genesee County.	• Money.	• Maintain roads.	• Nothing that will save the economy.	• Huge.
9.	Role of private sector in making transportation investments to improve economy?	• Work in cooperation with government to meet transportation needs.	• Address through planning their impact on area and traffic.	• Access management/land use planning prior to development.	• More capital.	• Funding • Open mindedness. • Positive promotion.	• Bring in the money in matching grants	• Collaborate. • Invest.	• Better marketing of this regional hub.	• Partner with public sector.	• Better upkeep.	• Input and some money.	• Work harder to improve the economy.	• Input.	• Make improvements to roads needed to accommodate their needs.	• Bring in more business and industry, if it’s not too late.	• If there are money and jobs, the private sector will create come to the area.
10.	Other issues?	• None.	• Shift shopping patterns. • Curtail greenfield development.	• Non-motorized alternatives. • More efficient truck access to interstate system. • Lopsided investment in Grand Rapids vs. Flint. • Private freight rail; perhaps a shortline railroad.	• None.	• I-75/Holly Road. • Slow master planning process. • Potential development “hot spots” – Trillium area and tech village. • Possibly reconstruct I-75 between U.S. 23 and I-475.	• Eliminate left entries onto freeways.	• Too much reliance on autos which people may not be able to afford in future.	• None.	• General streamlining of government processes.	• Road maintenance. • What to do with Buick City? • More lighting. • Rail transit.	• No response.	• Incentives need to stop and spend in Genesee County.	• Input.	• None.	• The future will see a continuation of loss jobs/benefits.	• None.

(A): Public Sector Respondent
(B): Private Sector Respondent
(C): Citizen

3.3 Question 4: Possible Effects on Local Zoning of Connecting I-475 to U.S. 23

In response to the question of whether the connection of I-475 and U.S. 23 would affect local zoning, and if this issue needed to be addressed on a regional basis, most felt that there was likely to be little effect on zoning issues. Many indicated that countywide or regional planning is needed. One respondent stressed that, in order for such planning to be successful, it had to be emphasized that a high level of leadership in the county was important. The basis for the latter response was to ensure that cooperation would exist from the very beginning among the many different governmental jurisdictions that would be involved.

3.4 Question 5: Future Changes in Commercial Freight

In response to the question of whether the respondent saw a change coming in commercial freight in the region over the near-term and long-range futures (2020 to 2050), only two respondents were negative in this regard. Most believe that there will be a continued growth in freight in the region with a number emphasizing the importance of rail (Canadian National) and road (I-69) connections to Canada, plus Bishop Airport.

3.5 Question 6: Changes to Improve Communities' Connection to the Regional Transportation System

When asked about the needed improvements to connect the respondents' community to the existing transportation system, improving M-15 was noted in several instances. Improving freeway interchanges with an emphasis on safety was noted. Some suggested additional freeway interchanges were necessary such as along I-69 at Seymour Road and an extension to the freeway at M-53 in Lapeer County. Still others believe that additional ramps were needed to southbound I-75 from Miller Road and M-21. Interestingly, one respondent indicated that the accesses to I-75 between I-475 and U.S. 23 should be eliminated. Transit improvements were also highlighted by a number of individuals ranging from transit amenities to the development of a passenger rail system.

3.6 Questions 8 and 9: Role of Government and the Private Sector in Making Transportation Investments to Improve the Region's Economy

Each respondent was asked for his/her perception of the role of government and the private sector in transportation in order to improve the region's economy. With respect to the role of government, the most frequent response was that it should provide funding and more of it. Cited frequently was the need for government to cooperate with the private sector to build consensus. The respondents also noted that only government can do the roadway improvements necessary in the area and the importance of government in maintaining the existing infrastructure.

As it relates to the role of the private sector in transportation matters, many believe that the private sector should contribute, in some way, to financing transportation improvements. Mechanisms to do so included impact fees and public-private partnerships including the use of tolling on some road

facilities. Again, the need for cooperation between government and the private sector was highlighted. Only one respondent felt that the private sector had no role in transportation matters.

3.7 Question 10: Other Issues

When asked about other issues that the respondents would like to discuss, some noted specific highway improvements, others indicated the need for bus rapid transit and non-motorized facilities, including accommodation of the disabled. The responses to this question also included the need to continue to advance the intermodal strategy laid out for Genesee County. Likewise, moving forward with plans to develop the area around the Genesys Regional Medical Center and Kettering University was cited in this “other” category. One respondent indicated that the relationship between truckers and law enforcement as well as automobile drivers is an important part of his understanding of the need to improve the Genesee County area. Another stated the future will see a continued loss in jobs/benefits.

3.8 Questions 1 and 7: Transportation Bottlenecks and Transportation Deficiencies

As noted earlier, Questions 1 and 7 dealt with transportation bottlenecks and deficiencies, respectively. Figure 3-1 is a mapping of transportation bottlenecks offered by the 34 interviewees plus attendees of the January public meetings and input from the Steering Committee. Table 3-2 lists those responses. Figure 3-2 is an examination of projects that the interviewees, the public and Steering Committee felt were key deficiencies that should be addressed to avoid limiting economic development in the future. Table 3-3 lists those responses. These listings, along with the emphasis of the responses to the other eight questions in the survey, became part of the analysis process going forward in the Freight and Connectivity Study. Not all of the suggestions could be covered in the final recommendations developed by this long-range planning project. Nonetheless, the disposition of each suggestion is included in Appendix E.

Figure 3-1
Genesee County Freight and Connectivity Study
Question 1 – Transportation Bottlenecks

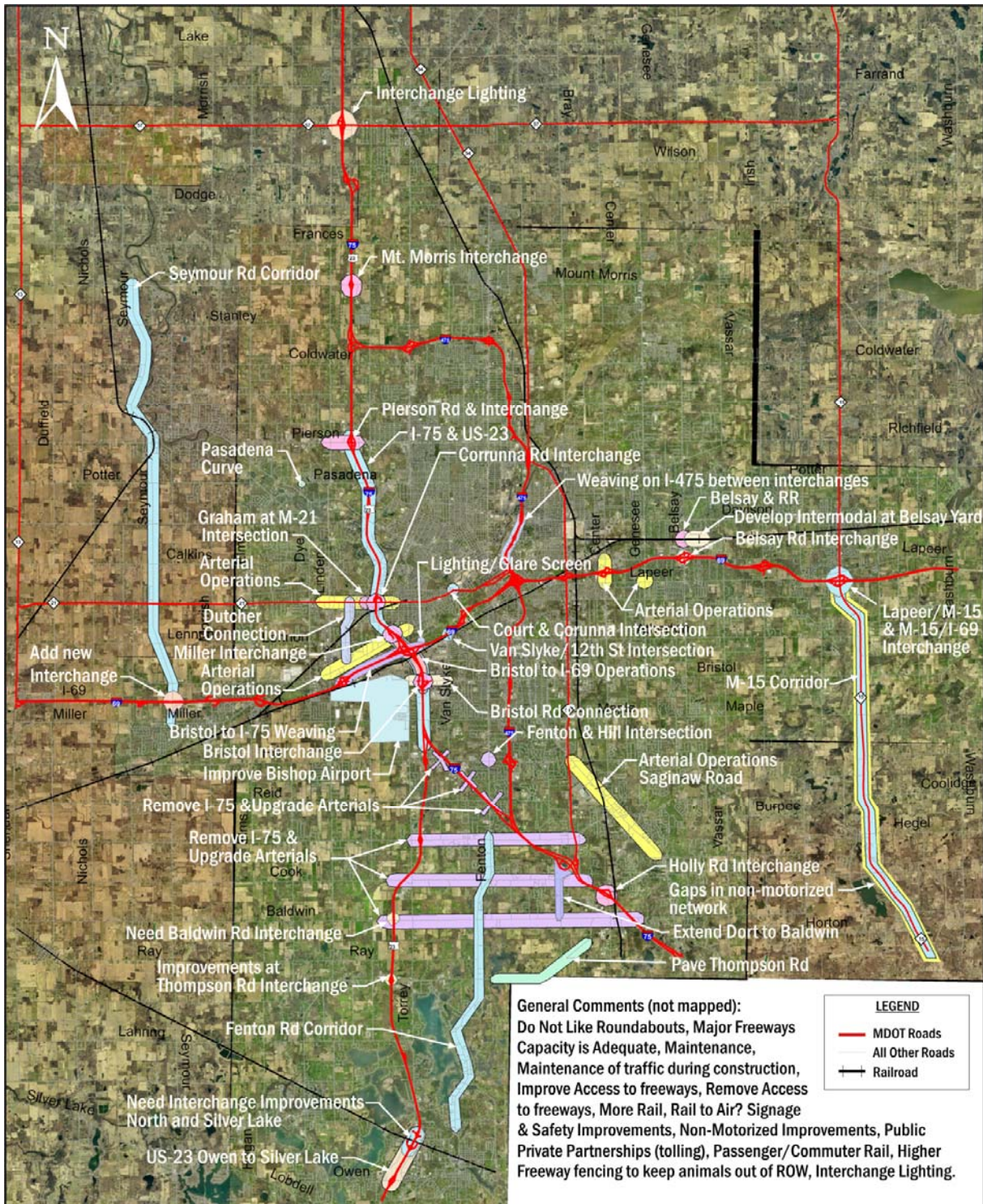


Table 3-2
Genesee County Freight and Connectivity Study
Transportation Bottlenecks Cited by the Project Steering Committee and the Public

1. Pasadena Curve is too sharp and causes crashes 2. Graham at M-21 Intersection congestion 3. Corunna Road Interchange 4. Miller Road Interchange 5. Bristol Road connection to I-75 6. Fix/Improve Bristol Road Interchange with I-75 7. Remove I-75 & Upgrade East-West Arterials 8. Improve the Fenton Road Corridor 9. US-23 Owen Road to Silver Lake Road operations and safety, including interchanges 10. Improve Pierson Road & Interchange 11. I-75 & US-23 merge 12. Court & Corunna Intersection 13. Traffic operations – Miller, Corruna, 14. Improve Dutcher Connection between Lennon and Miller Roads 15. Traffic Operations on Saginaw Road 16. Weaves between Bristol On-ramp for EB I-69 and exits to I-75 17. Improve Mt. Morris Interchange 18. Fenton & Hill Road Intersection 19. Arterial traffic operations 20. Holly Road Interchange congestion and safety 21. Improve Seymour Road Corridor 22. Phase 2 Intermodal Development at Bishop Airport; Improve Bishop	23. Fix RR crossing at Belsay Road 24. M-15 Corridor Congestion/Widen 25. Improve I-75/US-23 from Pierson Road to US-23/I-75 merge 26. North Road and Silver Lake Interchange 27. Develop Intermodal along CN line for trucks 28. Add Interchange at Baldwin Road 29. Extend Dort Hwy 30. Interchange lighting at M-57 and I-75 31. VanSlyke/12th Street intersection confusing signals for WB 12th Street 32. For SB I-75 to EB I-69 move, GM Truck and Bus lights in parking lot are distracting 33. Lapeer/M-15 intersection congestion 34. Lapeer Road widened to accommodate a full 5 lanes at M-15 (not legal 5 lane currently) 35. I-69/M-15 Interchange congestion 36. Major Problems at Miller Road Interchange (weaves to I-69/I-75) 37. Bristol to I-69 Operations 38. County Line is a Natural Beauty Road, difficult to improve 39. Pave Thompson Road 40. Need Seymour Road Interchange 41. Center Road at I-69 42. Genesee & Lapeer Roads Intersection 43. Gaps in non-motorized network along M-15
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General Comments (not mapped):

1. Do Not Like Roundabouts
2. Freeway Capacity is Adequate
3. Maintenance
4. Maintenance of traffic during construction
5. Improve Access to freeways.
6. Remove Access to freeways
7. More Rail and Rail to Air?
8. Signage & Safety Improvements
9. Non-Motorized Improvements
10. Public Private Partnerships (tolling)
11. Passenger/Commuter Rail
12. Higher Freeway fencing to keep animals out of ROW
13. Interchange Lighting

Figure 3-2
Genesee County Freight and Connectivity Study
Question 7 – Transportation Deficiencies Affecting Future Development

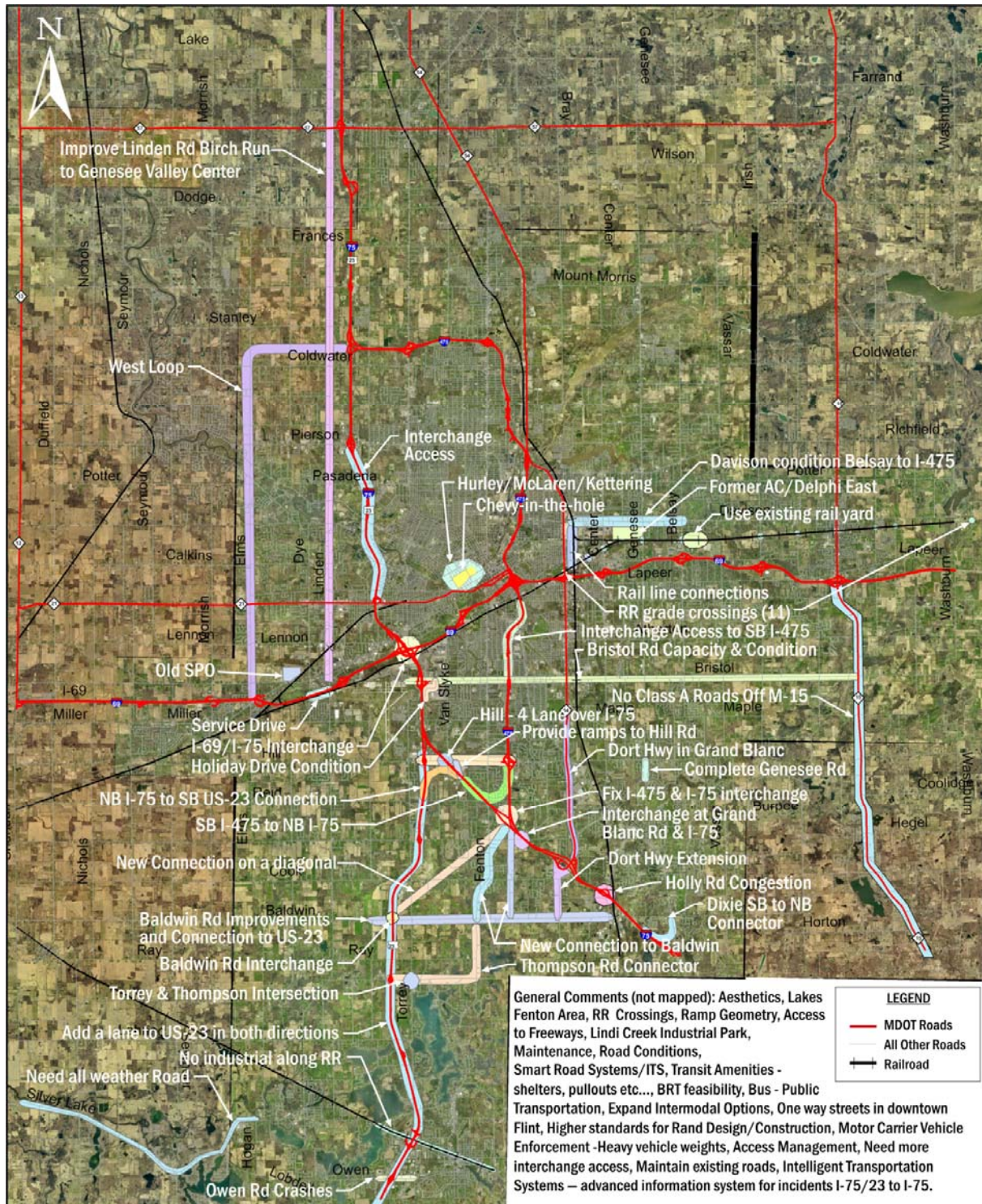


Table 3-3
Genesee County Freight and Connectivity Study

Transportation Deficiencies Affecting Future Development Cited by the Project Steering Committee and the Public

A. Provide West freeway loop, possibly connecting flushing Schwartz Creek	W. Suggest provide better E-W corridor between M-15 and US-23 South of Bristol Road
B. Old SPO	X. I-69 WB to I-475 NB exit to Robert T Longway is dangerous- cars crossing each other
C. Possible Service Drive between	Y. Improve Linden Road through north part of county/Birch Run to Genesee Valley Center
D. Holiday Drive Road Conditions	Z. Connect/Continue I-475 due south to Baldwin; Improve Baldwin
E. Hill – 4 Lane over I-75	AA. Align connection from I-475/I-75 on a diagonal (vs. with rectangular grid) to US-23
F. Provide SB I-475 to NB I-75 Connection	BB. A lot of traffic crashes at Owen Road and US-23
G. Baldwin Road Improvements and Connection of I-475 to US-23	CC. Improve Hill Road to connect US-23 to I-475
H. Torrey & Thompson Intersection	DD. Connect Baldwin Road to US-23 via new Interchange
I. Need more interchange access	EE. Can't get to Chevy-in the hole and McLaren/Hurley/Kettering area very easily
J. Hard to get to Hurley/McLaren/Kettering area	FF. RR Viaduct at Averill Road
K. Chevy-in-the-hole needs redevelopment	GG. Fix road condition, Davison Road between Center and Belsay
L. Former AC/Delphi East needs redevelopment	HH. Davison between Belsay Road and I-475
M. Need more interchange access to SB I-475 in and around Atherton and Hemphill	II. Fix RR crossing conditions in Burton, Davison, and Davison Township
N. Bristol Road Capacity & Condition	JJ. Complete Genesee Road from Hill Road to Perry in Grand Blanc
O. No Class A Roads Off M-15	KK. Provide new off-ramp from I-75 to Hill Road
P. Dort Hwy in Grand Blanc, redevelopment	LL. Connect SB I-475 to NB I-75, and connect NB I-75 to SB US-23
Q. Provide New Interchange at Grand Blanc & I-75	MM. Add a lane to US-23 in each direction (3 lanes)
R. Holly Rd Congestion	NN. Silver Lake Road needs to be an all-weather road in Argentine Township
S. Saginaw/Dixie SB to NB Connector	
T. Connect I-475 to Baldwin	
U. Use Thompson Road to connect to US-23	
V. Better connect CSX/CN rail line near Center/Dort	

General Comments (not mapped):

1. Aesthetics, Lakes – Fenton Area
2. RR – Crossings
3. Ramp Geometry, Access to Freeways
4. Lindi Creek Industrial Park
5. Maintenance
6. Road Conditions
7. Smart Road Systems/ITS
8. Transit Amenities - shelters, pullouts etc...
9. BRT feasibility
10. Bus - Public Transportation
11. Expand intermodal options
12. One way streets in downtown Flint
13. Higher standards for Road Design/Construction
14. Motor Carrier Vehicle Enforcement - heavy vehicle weights
15. Access Management
16. Need more interchange access
17. Maintain existing roads
18. Intelligent Transportation Systems – advanced information system for incidents I-75/23 to I-75

4. Goals, Objectives and Evaluation Factors

The Genesee County Metropolitan Planning Commission (GCMPC) has the following mission:

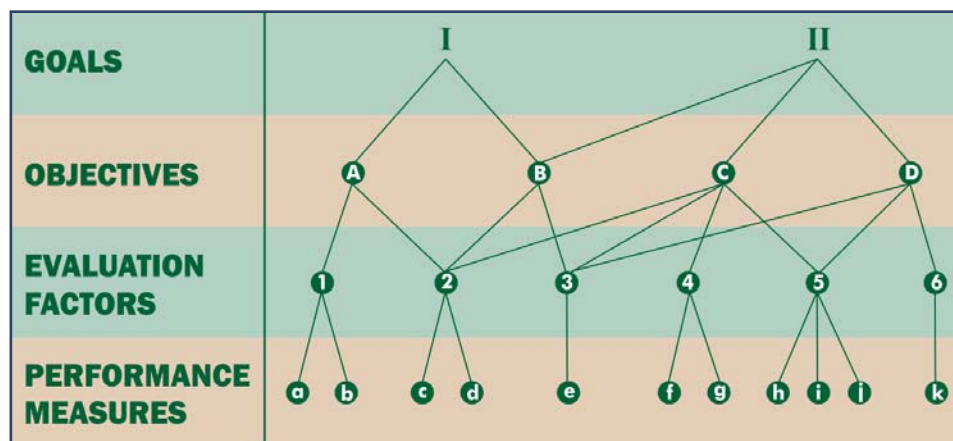
To provide a framework and encourage development that enhances the quality of life in Genesee County through government and community partnerships.

The goals of the GCMPC 2035 Long Range Transportation Plan are:

- Develop a Plan that is compliant with Federal Regulations;
- Develop a Plan that Will Address the Needs of the Community;
- Develop a Plan Through an Open Process With Input From Diverse Participants;
- Write a Plan That IS Friendly to the Public but is Detailed Enough to be Used by Transportation Related Agencies;
- Develop a Plan that is Within Budget;
- Identify any Unmet Needs Not Able to be Addressed Due to a Limited Budget; and,
- Develop a Plan that Will Conform to Air Quality Regulations.

There is also a set of objectives and a set of evaluation factors. The relationship among goals, objectives and evaluation factors is shown on Figure 4-1.

Figure 4-1
Goals and Objectives to Performance Measures



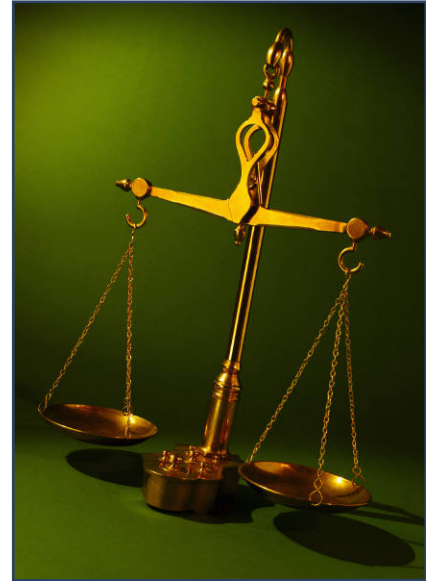
4.1 Definition of Evaluation Factors

The evaluation factors for this freight and connectivity study and how they are measured are:

- Generate/Retain Jobs – Construction jobs were determined based on the capital investment associated with the alternatives. The potential long-term jobs were determined based on changes in regional accessibility.
- Minimize Neighborhood Displacements – Sensitive neighborhoods were defined where roadway expansions or new alignments are under consideration. Traffic (especially truck traffic) volumes and speeds were determined at these locations.
- Connect Links in Road Networks – Peak hour changes in vehicle hours and miles of travel and traffic delay (in hours) compared to the Base System condition were examined for a subarea of the county representing the I-475 to US 23 connector, and representative major roadway links. Additionally, the travel time over 30 representative origin-destination pairs were compared to assess how well traffic is expected to move within and through the region.
- Maintain Good Air Quality – Twenty points that represent air quality hot-spots (key intersections and roadway links) have been determined. Carbon monoxide (CO) concentrations were estimated and compared to the National Ambient Air Quality Standard.
- Minimize Purchase of Private Property to Build Transportation Facilities – Typical cross-sections have been defined for new freeways (300'), 4-lane boulevards (180') and reconstructed 4- and 5-lane roads. These roadway widths were overlaid on GIS aerial photography to determine how many dwelling units, businesses, and institutions might require relocation. The overlay process involved avoidance/minimization as the corridors are laid out. Acreage impacted by land use type was also estimated.
- Control Noise at Sensitive Locations – Twenty locations consistent with the evaluation factors of community disruption and air quality were evaluated for potential noise exposure. Noise effects on new alignments were determined by using GIS to count the number of dwellings, schools, churches, and hospitals within defined distances from the new/reconstructed roads, representing zones that would be affected by new noise. Noise was determined using the Transportation Noise Model (TNM2.5) and its Lookup Table.
- Protect Open Space/Parks/Wetlands – The typical roadway cross-sections were overlaid onto GIS aerial photography to identify the number of acres of publicly owned parks and wetlands, and the number of National Register historic sites that could be impacted.
- Maximize Safe Travel – The number of crashes was estimated using rates for roadway facility types to determine the potential annual crash total on twenty roadway segments.

4.1.1 Weights of Evaluation Factors

Each member of the Steering Committee attending the January meeting and those citizens attending the public meetings on January 19th, 20th, and 21st was invited to indicate his/her personal preference (weight) for the importance of each evaluation factor by ranking (Figure 4-2) and rating (Figure 4-3) them. The evaluations of the Steering Committee, the participants at three public meetings, and the consultant established the importance of these factors. Each of these three independent weightings was used in the evaluation of the alternatives so it is clear how the public, the Steering Committee and the consultant staff view their performance.



The factor weighting results are displayed on Tables 4-1¹, 4-2, and 4-3. The results indicate those citizens who participated at each of the three public meetings weighted **“Generate/Retain Jobs,” “Maximize Safe Travel,”** and **“Better Connect Links in the Transit and Road Networks”** as the top three factors.

Among the three lowest scoring factors at each public meeting are **“Maintain Good Air Quality”** and **“Control Noise at Sensitive Locations.”** When the evaluations of all 33 citizens are combined (bottom of Table 4-1), the top three weighted factors are, in order:

1. Maximize Safe Travel (18.1% of 100.0 %)
2. Generate/Retain Jobs (17.2% of 100.0%)
3. Better Connect Links in the Transit and Road Networks (13.9% of 100.0%).

The three lowest scoring factors, with virtually the same weights, are:

6. Maintain Good Air Quality (9.8% of 100.0%)
7. Control Noise at Sensitive Locations (9.7% of 100.0%)
8. Minimize Purchase of Private Property (9.3% of 100.0%)

The Steering Committee weighting results are within two percentage points of the citizens’ weights for six of the eight factors (Table 4-2). The Steering Committee also has the same three factors weighted highest as the citizens’ scoring indicates. The differences are the Steering Committee weights the **“Jobs”** factor first and significantly higher than the citizens do. Also of note is that the Steering Committee weights the **“Noise”** factor fifth highest, while the citizens place it seventh. But, the weights of the Steering Committee and citizens on this factor are virtually the same, 9.7 percent versus 9.2 percent, respectively.

The consulting team weighting agrees with the Steering Committee and citizens in that the **“Jobs,” “Links,”** and **“Safe Travel”** factors are the three highest scoring (Table 4-3). The consulting team also agrees with the Steering Committee that the **“Air Quality”** and **“Open Space”** factors are among the three lowest scoring. The consulting team agrees with the citizens that the **“Noise”** factor is weighted seventh. Also noteworthy is the consulting team weights the **“Minimize Purchase of Private Property”** factor fifth highest, while the two other groups score it eighth of eight factors.

¹ One citizen form was completed incorrectly and removed from the weighting process.

Figure 4-2
Ranking Form

How Important Are These Factors?

We want to know how important you believe the following factors are in developing the Freight and Connectivity Study for Genesee County. These factors will be used to help determine which changes should be made to the highway, pathway and public transportation elements in the region.

To provide us your opinion, please rank the following factors "1" through "8," with "1" indicating the factor you believe is most important and "8" indicating the factor you believe is least important. Use each number only once. When finished, return your form to a project representative or by email using the Web site address or fax to the number listed at the bottom of the sheet.

Your opinions will be used to evaluate the long range transportation plan alternatives. Thank you.

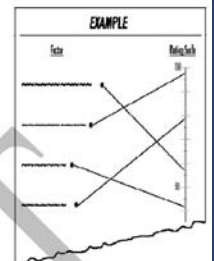
<u>Factor</u>	<u>Rank</u>
Generate/Retain Jobs	_____
Minimize Neighborhood Disruption	_____
Better Connect Links in the Transit and Road Networks	_____
Maintain Good Air Quality	_____
Minimize Purchase of Private Property to Build Transportation Facilities	_____
Protect Open Spaces/Parks/Wetlands	_____
Control Noise at Sensitive Locations (e.g., homes, schools, hospitals, etc.)	_____
Maximize Safe Travel	_____

Figure 4-3
Rating Form

How Important Are These Factors?

We want to know how important you believe the following factors are in developing the Freight and Connectivity Study. These factors will be used to help determine which changes should be made to the highway, pathway and public transportation elements in Genesee County.

To provide us your opinion, please rate the following factors "0" through "100," with the highest rating indicating the factor you believe is most important. To do this, draw a line from the dot (•) following the factor name to the scale to indicate your opinion. An example is shown to the right. When finished, return your form to a project representative or by email using the Web site address or fax to the number listed at the bottom of the sheet.



Your opinions will be used to evaluate the long range transportation plan alternatives. Thank you.

Rating Scale

Factor

- Generate/Retain Jobs •
- Minimize Neighborhood Disruption •
- Better Connect Links in the Transit and Road Networks •
- Maintain Good Air Quality •
- Minimize Purchase of Private Property to Build Transportation Facilities •
- Protect Open Spaces/Parks/Wetlands •
- Control Noise at Sensitive Locations (e.g., homes, schools, hospitals, etc.) •
- Maximize Safe Travel •

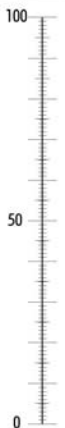


Table 4-1
Genesee County Freight and Connectivity Study
Community Participation in Evaluation Factor Weighting by Public Meeting and in Total

Factor	January 19, 2010 - Public Meeting (14)			
	Rank Wt.	Rate Wt.	Avg.	Order
Generate/Retain Jobs	20.9%	18.3%	19.6%	1
Minimize Neighborhood Disruption	9.6%	12.1%	10.8%	4
Better Connect Links in the Transit and Road Networks	13.6%	15.0%	14.3%	3
Maintain Good Air Quality	9.5%	10.6%	10.1%	7
Minimize Purchase of Private Property to Build Transportation Facilities	7.7%	7.9%	7.8%	8
Protect Open Spaces/Parks	10.9%	10.1%	10.5%	5
Control Noise at Sensitive Locations (e.g., homes, schools, hospitals, etc.)	9.7%	10.9%	10.3%	6
Maximize Safe Travel	18.2%	15.1%	16.7%	2
Factor	January 20, 2010 - Public Meeting (14)			
	Rank Wt.	Rate Wt.	Avg.	Order
Generate/Retain Jobs	13.9%	15.8%	14.9%	2
Minimize Neighborhood Disruption	10.0%	11.1%	10.5%	6
Better Connect Links in the Transit and Road Networks	12.5%	12.0%	12.2%	4
Maintain Good Air Quality	10.5%	9.8%	10.2%	7
Minimize Purchase of Private Property to Build Transportation Facilities	10.8%	11.4%	11.1%	5
Protect Open Spaces/Parks	11.9%	12.7%	12.3%	3
Control Noise at Sensitive Locations (e.g., homes, schools, hospitals, etc.)	8.8%	9.9%	9.4%	8
Maximize Safe Travel	21.7%	17.4%	19.5%	1
Factor	January 21, 2010 - Public Meeting (5)			
	Rank Wt.	Rate Wt.	Avg.	Order
Generate/Retain Jobs	18.9%	18.2%	18.5%	1
Minimize Neighborhood Disruption	9.1%	10.4%	9.7%	5
Better Connect Links in the Transit and Road Networks	17.6%	17.3%	17.5%	3
Maintain Good Air Quality	7.7%	7.9%	7.8%	8
Minimize Purchase of Private Property to Build Transportation Facilities	9.1%	6.7%	7.9%	7
Protect Open Spaces/Parks	10.7%	12.3%	11.5%	4
Control Noise at Sensitive Locations (e.g., homes, schools, hospitals, etc.)	7.9%	10.9%	9.4%	6
Maximize Safe Travel	18.9%	16.4%	17.6%	2
Factor	Citizens (33)			
	Rank Wt.	Rate Wt.	Avg.	Order
Generate/Retain Jobs	17.2%	17.2%	17.2%	2
Minimize Neighborhood Disruption	9.8%	11.3%	10.6%	5
Better Connect Links in the Transit and Road Networks	13.7%	14.0%	13.9%	3
Maintain Good Air Quality	9.7%	9.8%	9.8%	6
Minimize Purchase of Private Property to Build Transportation Facilities	9.2%	9.4%	9.3%	8
Protect Open Spaces/Parks	11.4%	11.8%	11.6%	4
Control Noise at Sensitive Locations (e.g., homes, schools, hospitals, etc.)	9.1%	10.2%	9.7%	7
Maximize Safe Travel	19.9%	16.2%	18.1%	1

Table 4-2
Genesee County Freight and Connectivity Study
Steering Committee Participation in Evaluation Factor Weighting

Factor	Steering Committee (14)			
	Rank Wt.	Rate Wt.	Avg.	Order
Generate/Retain Jobs	25.8%	17.7%	21.8%	1
Minimize Neighborhood Disruption	10.1%	11.5%	10.8%	4
Better Connect Links in the Transit and Road Networks	14.3%	14.8%	14.6%	3
Maintain Good Air Quality	7.5%	10.5%	9.0%	6
Minimize Purchase of Private Property to Build Transportation Facilities	7.3%	8.4%	7.8%	8
Protect Open Spaces/Parks	8.2%	9.8%	9.0%	7
Control Noise at Sensitive Locations (e.g., homes, schools, hospitals, etc.)	7.9%	10.5%	9.2%	5
Maximize Safe Travel	19.0%	16.9%	17.9%	2

Table 4-3
Genesee County Freight and Connectivity Study
Consulting Team Participation in Evaluation Factor Weighting

Factor	Technical Team (7)			
	Rank Wt.	Rate Wt.	Avg.	Order
Generate/Retain Jobs	24.7%	18.8%	21.8%	1
Minimize Neighborhood Disruption	12.4%	13.4%	12.9%	4
Better Connect Links in the Transit and Road Networks	13.3%	15.5%	14.4%	3
Maintain Good Air Quality	7.1%	8.1%	7.6%	8
Minimize Purchase of Private Property to Build Transportation Facilities	9.4%	9.8%	9.6%	5
Protect Open Spaces/Parks	9.9%	9.1%	9.5%	6
Control Noise at Sensitive Locations (e.g., homes, schools, hospitals, etc.)	8.9%	9.0%	8.9%	7
Maximize Safe Travel	14.4%	16.3%	15.4%	2

In summary, the weightings of the three groups are very similar. Each group's weights were applied separately in evaluating the transportation alternatives. That evaluation, using the performance measures cited above, was done by the consultant and reported to the Steering Committee and public in October 2010.

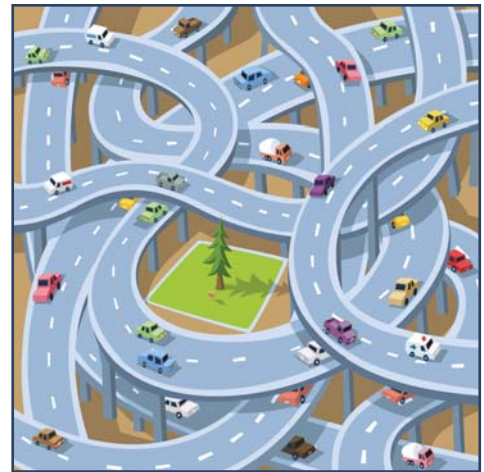
5. Alternatives

As a result Steering Committee guidance and the community engagement process, a set of transportation alternatives was developed. To develop them, the updated 2005 base transportation system and the 2035 LRTP network were also examined. It is noteworthy that the base year truck trip data were updated from those used in the Long Range Transportation Plan (LRTP). The most recent information was provided by the Michigan Department of Transportation. The new data show about a five percent decline in Genesee County daily truck travel (44,950/new versus 47,350/previous) but an increase of daily thru truck trips (9,950/new versus 7,350/previous).

It is also noteworthy that the most up-to-date models available to the Genesee County Metropolitan Planning Commission were used in this analysis. They permit a focus on peak hours of traffic. The peak with the greatest traffic impact is in the afternoon.

Early in the process, it was decided to test if there were much “traffic synergy” between U.S. 23 and M-15. These tests indicate that widening M-15 does not cause any significant traffic changes on U.S. 23.

When U.S. 23 was widened in the model to six lanes (one additional lane in each direction), while M-15 wasn’t, the model results indicated there is no effect on M-15. The distance between the two facilities (more than ten miles) discourages a shift of traffic between them. In technical terms, the improvements to M-15 and U.S. 23 have “independent utility.”



Interestingly, widening U.S. 23 to six lanes does not improve the congestion as much as might be expected because the U.S. 23 corridor has a lot of “latent demand” which is being constrained by congestion. The more lanes that are added to U.S. 23, the more traffic is attracted to it.

Consistent with this information and a series of traffic analyses, the alternatives described next were developed. They were vetted with the Steering Committee and presented to the public in May 2010. In developing the alternatives, it was important to focus on the projection in the LRTP that the employment gain in all of Genesee County over the next 25+ years is forecast at 24,000 jobs (refer to Table 2-3). It is also noted that a medical campus is being planned at and around the Genesys Regional Medical Center. By 2020, the number of jobs at this location is forecast at 6,000+. The jobs throughout the region that support the direct employment at the campus are projected to be 15,000. So, serving the proposed medical campus through improvements that are described next has significant jobs potential.

- **Base System**

The Base System consists of the projects listed in the Transportation Improvement Program and Cost-feasible Long Range Transportation Plan. Note, for example, that both Grand Blanc Road and Baldwin Road are assumed to be five-lane roads east of Fenton Road in the Base System.

- **Alternative 1 – Connect Movements from I-475 and I-75 to U.S. 23 with New Interchange at Grand Blanc Road**

This alternative includes a new limited access facility with two lanes in each direction which would connect directly northbound I-475 and southbound I-75 to U.S. 23 at a point just north of Grand Blanc Road. There would be new flyover ramps to/from U.S. 23 south to provide a high speed connection (Figure 5-1). Local access to Grand Blanc Road would continue at a reconstructed Grand Blanc interchange that would be integrated with the flyover ramps such that vehicles on Grand Blanc could use the new connector.

Other improvements that are part of this alternative include fixing the Bristol Road Interchange with I-75 and the Holly Road Interchange with I-75 (Inset on Figure 5-1). (Note: Bristol Road/I-75 interchange is in the LRTP.)

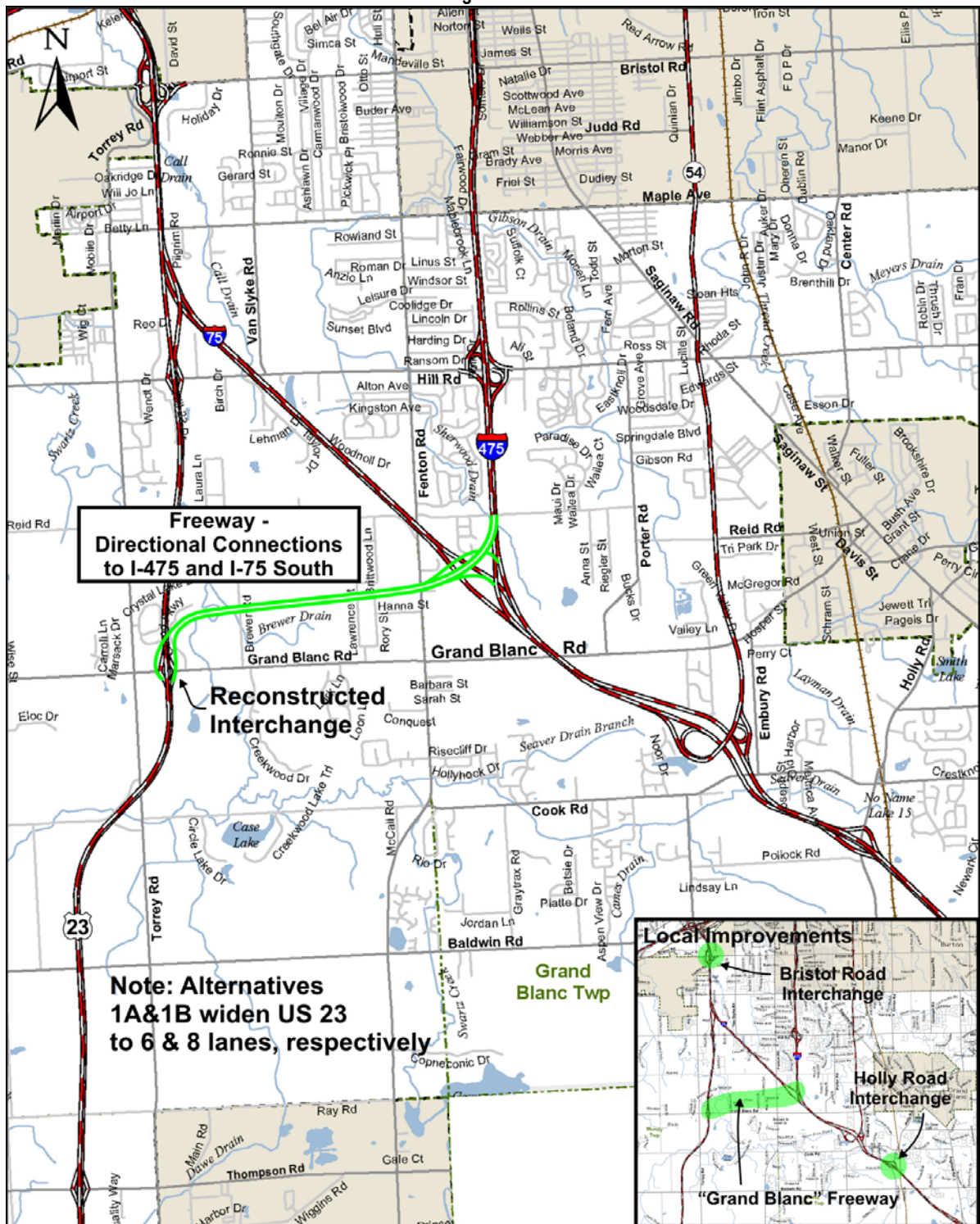
Alternative 1A improves, in the model, U.S. 23 to six lanes (one more lane in each direction). Alternative 1B widens it to eight lanes.

- **Alternative 2 – Upgrade Baldwin Road Corridor and Provide New Interchange at U.S. 23**

Alternative 2 includes a new Single Point Urban Interchange (SPUI) at Baldwin Road and U.S. 23 (Figure 5-2). This efficient interchange brings all traffic to a single point, and through proper signal timing, minimizes congestion. The Baldwin Road corridor would be improved to a four-lane, limited access boulevard to Holly Road. Holly Road from Baldwin Road to I-75 would also be improved with additional lanes. The Holly Road interchange at I-75 would be improved to handle the projected traffic demand.

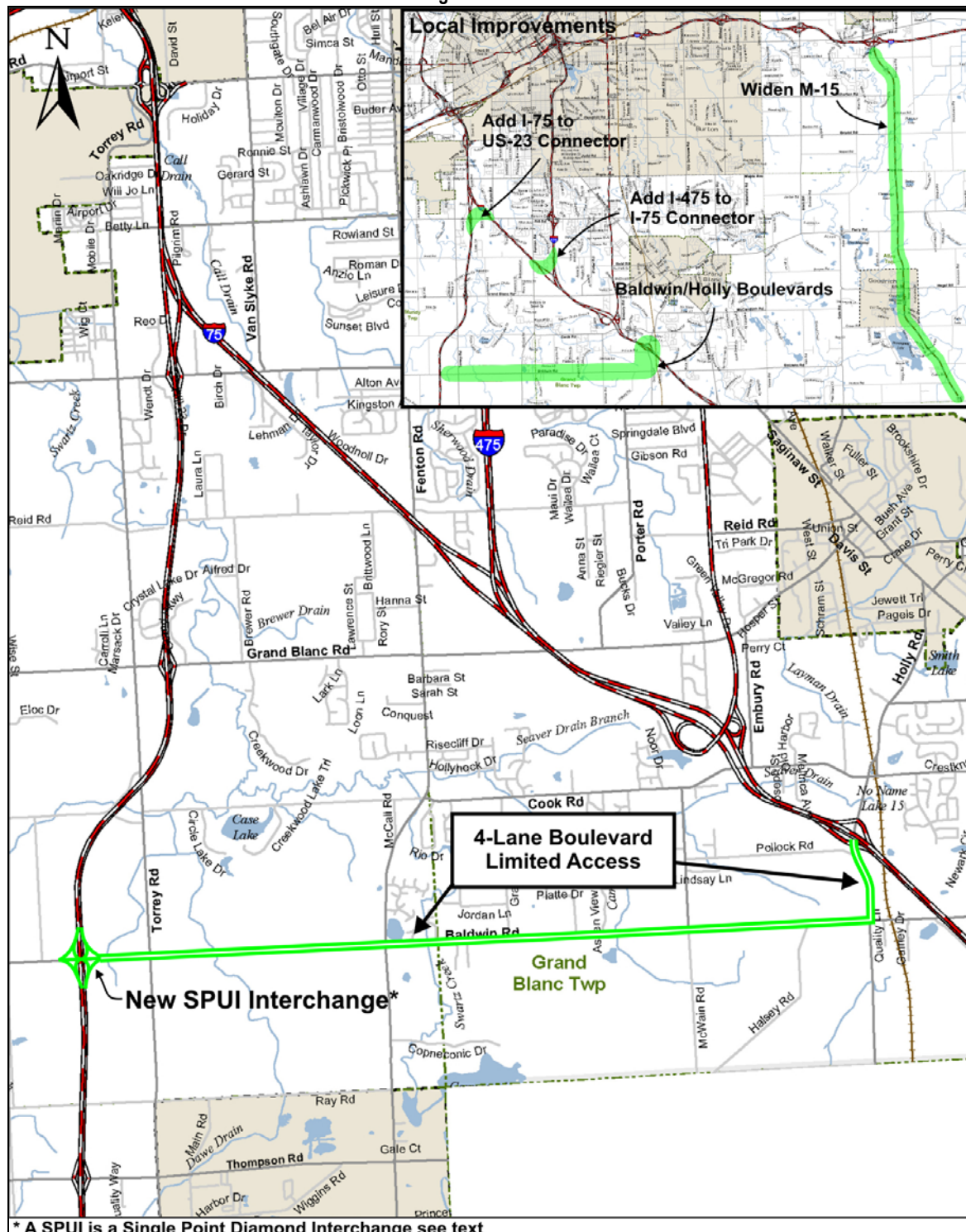
Other improvements tested include a connection from I-475 to I-75, a connection from I-75 to U.S. 23, and the widening of M-15 (Inset on Figure 5-2).

Figure 5-1
Genesee County Freight and Connectivity Study
Alternatives 1, 1A and 1B – Connect I-475 and I-75 (South) to U.S. 23
with Reconstructed Interchange at Grand Blanc Road and U.S. 23



Source: The Corradino Group of Michigan, Inc.

Figure 5-2
Genesee County Freight and Connectivity Study
Alternative 2 – Upgrade Baldwin Corridor
with New Interchange at Baldwin Road and U.S. 23



Source: The Corradino Group of Michigan, Inc.

■ **Alternative 3 – Connect I-475, I-75 and U.S. 23 at Baldwin Road with Full Access Interchanges**

In this alternative, a new trumpet-type interchange would be constructed for the new connector at Baldwin Road and U.S. 23 (Figure 5-3). A traditional diamond-type interchange would be built at Baldwin Road. The design of the two interchanges would be integrated. A new limited access freeway facility with two lanes in each direction would connect directly to I-475 and I-75 and allow movements in all directions there.

Other improvements tested include: improving the Bristol Road Interchange with I-75; the Holly Road Interchange with I-75; providing interchange lighting at M-57; and, widening M-57 from Seymour Road on the west to Bray Road on the east. Also included in Alternative 3 is widening M-15 (Inset on Figure 5-3).

A variation of Alternative 3 is to make the I-475 connection to U.S. 23 tie in at Thompson Road (Alternative 3A shown on Figure 5-4).

With guidance from the Steering Committee, Alternatives 3B, 3C and 3D were developed. Alternative 3B is a modification of Alternative 3 by making Baldwin Road a limited access boulevard all the way to McWain Road (Figure 5-5). The connector to U.S. 23/Thompson Road to I-475 would provide full access to Baldwin Road.

Alternative 3C is a derivative of Alternative 3B with U.S. 23 widened to six lanes.

Alternative 3D is a modification to Alternative 3 by configuring the I-475 connector to U.S. 23 at Baldwin Road as a limited access boulevard with intersections at Grand Blanc, Baldwin, and Torrey Roads. Baldwin Road is also configured as a limited access boulevard (Figure 5-6).

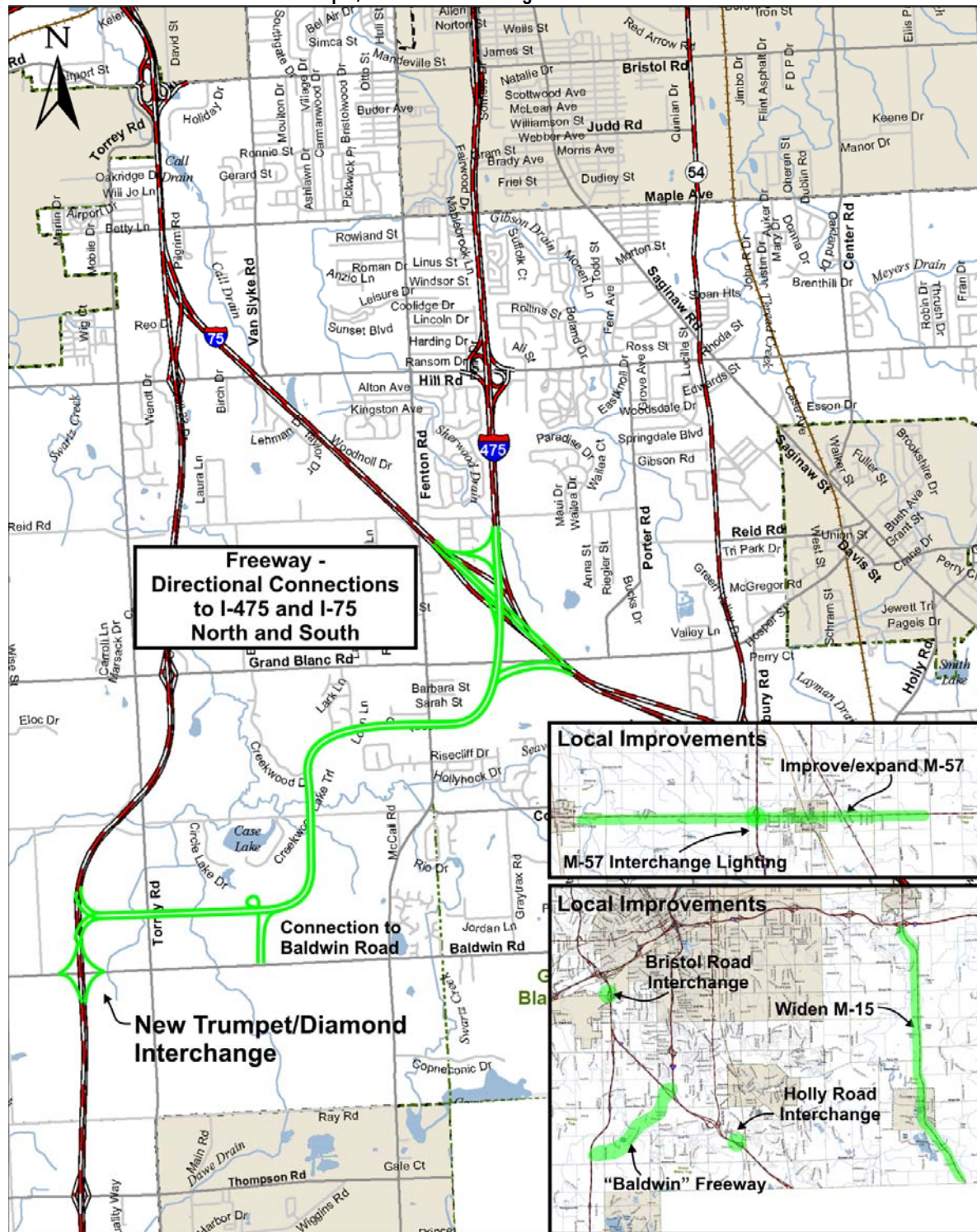
■ **Alternative 4 – Extend Dort Highway and Improve Baldwin Road Corridor Connection with U.S. 23 Interchange**

Alternative 4 includes a new SPUI interchange at Baldwin Road and U.S. 23. The Baldwin Road corridor would be improved to a four-lane boulevard from U.S. 23 to just east of McWain Road (Figure 5-7). A connector would be built between the Dort Highway interchange with I-75 and Baldwin Road. Ramp connections to and from southbound I-75 at M-54/Dort Highway would make this a full-access interchange with I-75.

Other improvements tested include Improving Bristol Road, Seymour Road, Fenton Road, and Silver Lake Road (Figure Inset on Figure 5-7).

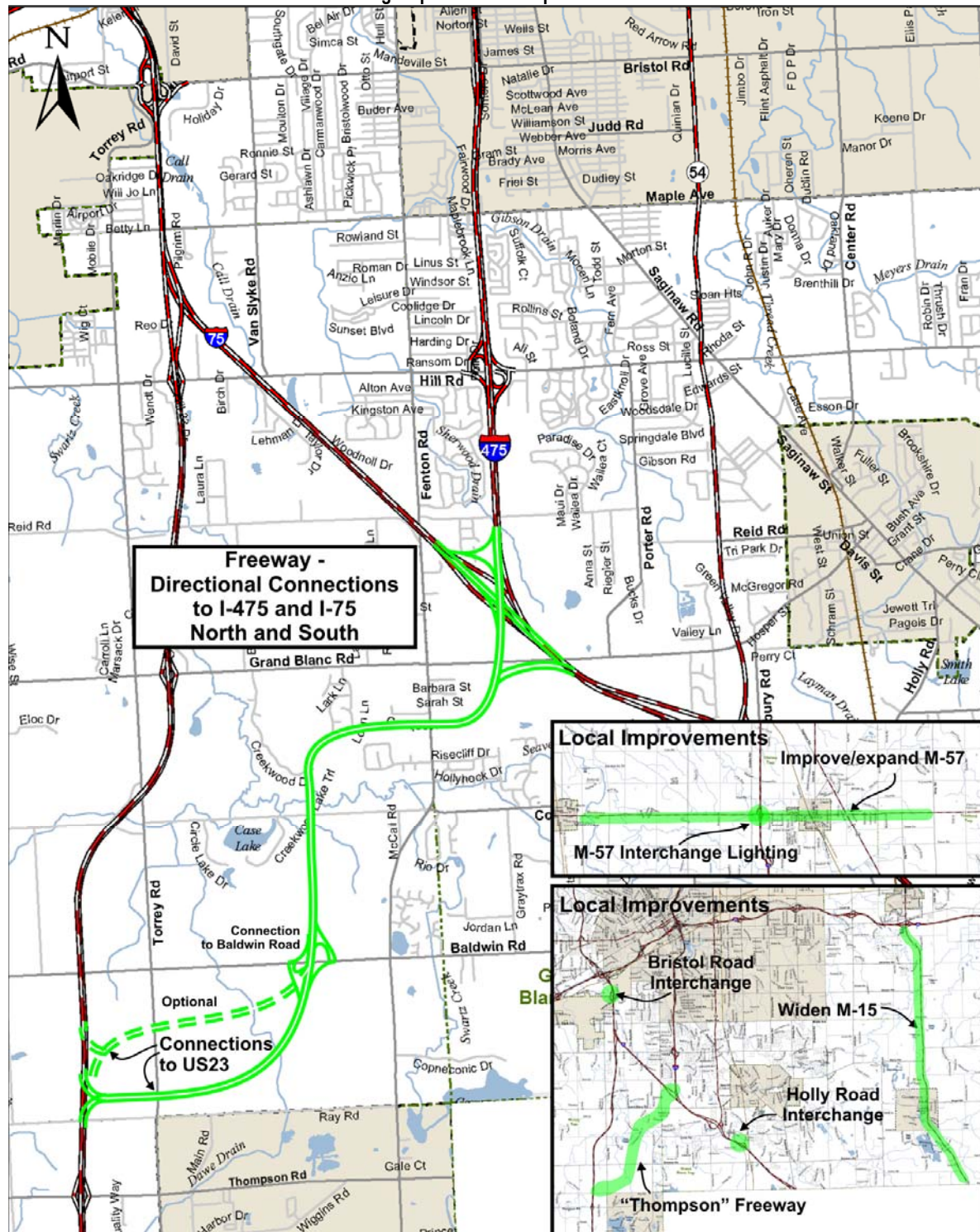
Based on interaction with the Steering Committee, Alternative 4A was developed to add more north/south capacity on Linden Road from Hill Road to the Linden city limits (Figure 5-8). The Baldwin Road improvement would extend west to Linden Road.

Figure 5-3
 Genesee County Freight and Connectivity Study
 Alternative 3 – Connect I-475 to I-75 (North and South) and U.S. 23
 with New Trumpet/Diamond Interchange at Baldwin Road and U.S. 23



Source: The Corradino Group of Michigan, Inc.

Figure 5-4
Genesee County Freight and Connectivity Study
Alternative 3A – Connect I-475 to I-75 (North and South) and U.S. 23
with Interchange Options at Thompson Road and U.S. 23



Source: The Corradino Group of Michigan, Inc.

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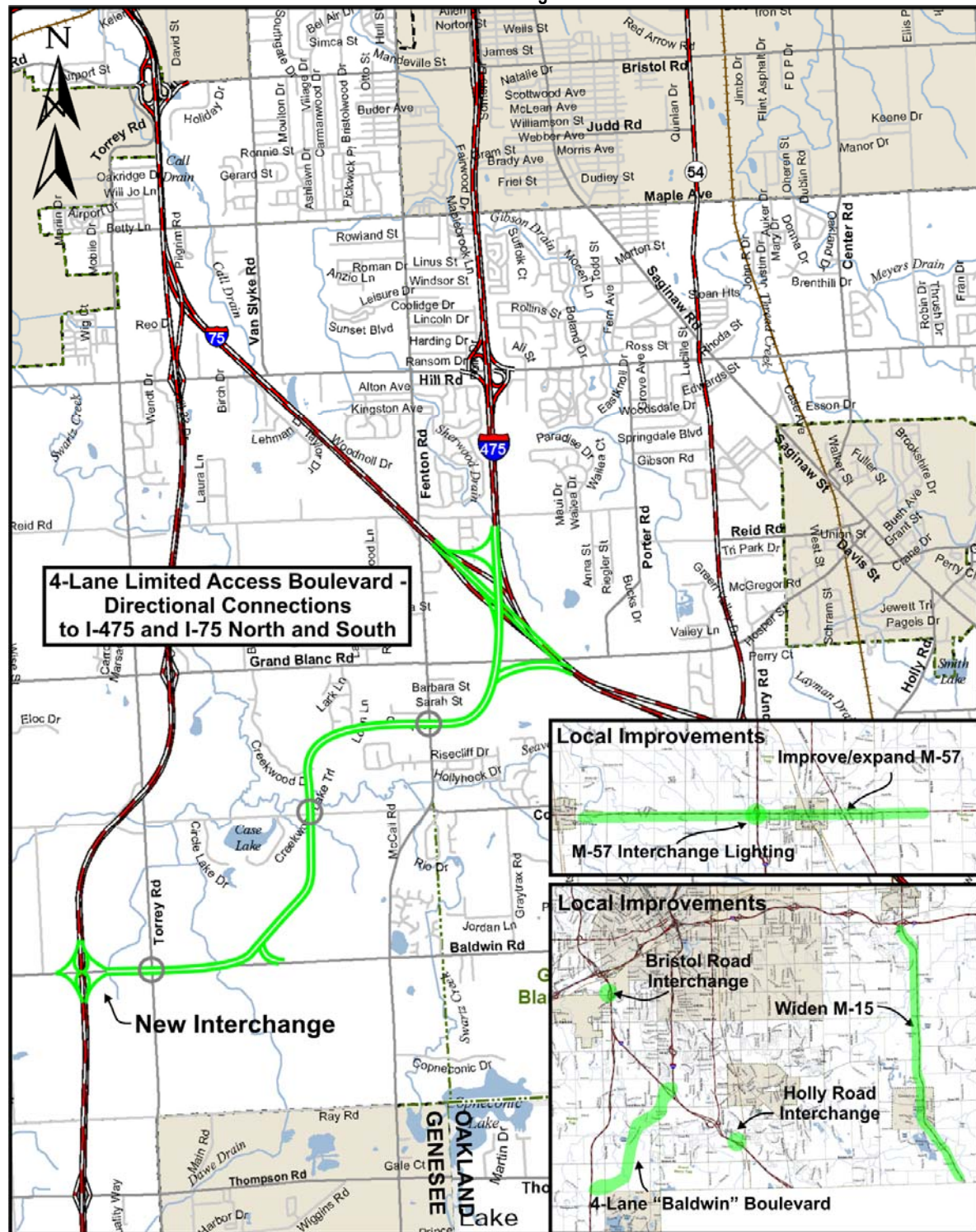
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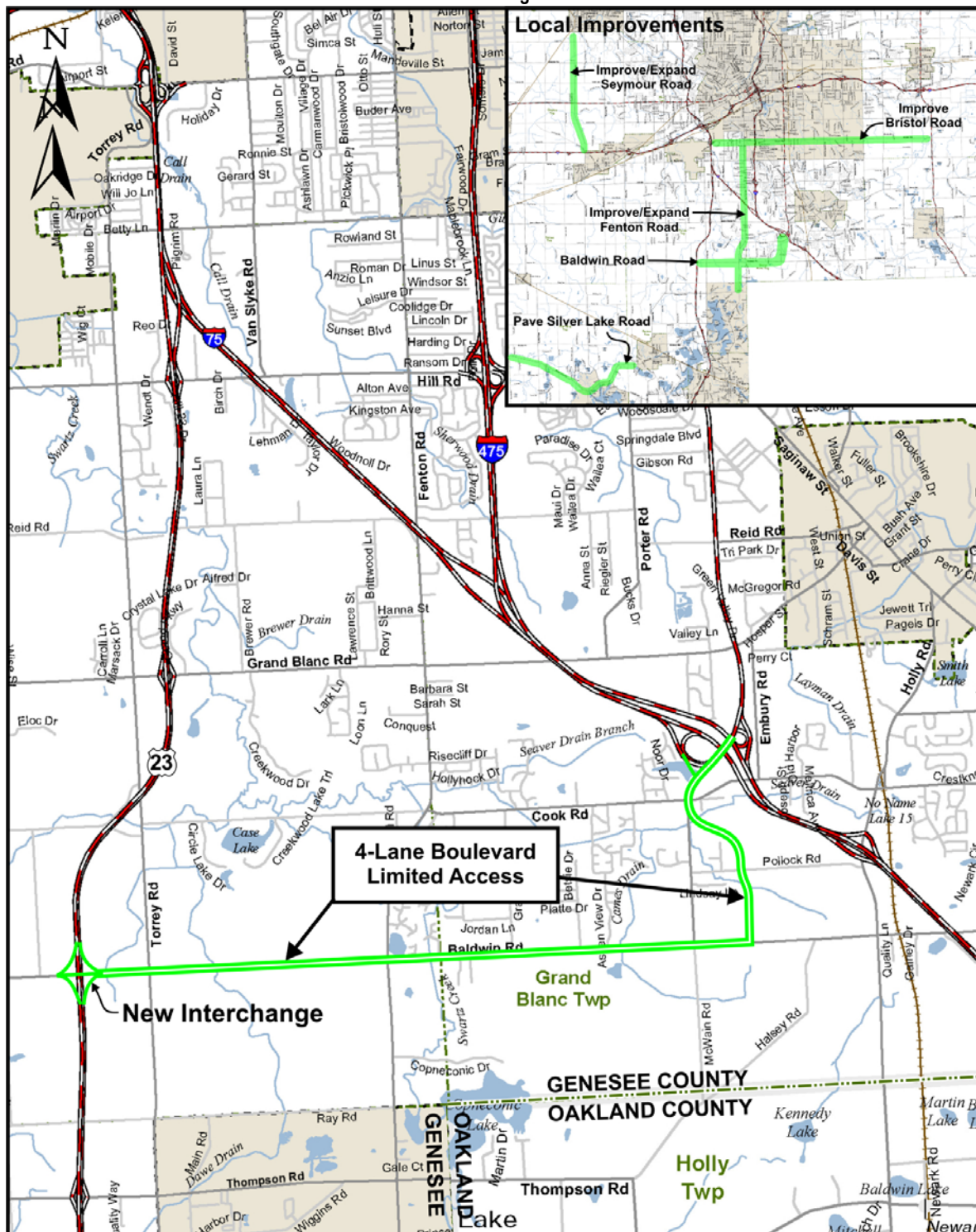
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Figure 5-6
Genesee County Freight and Connectivity Study
Alternative 3D – Alternative 3 Alignment as a Boulevard



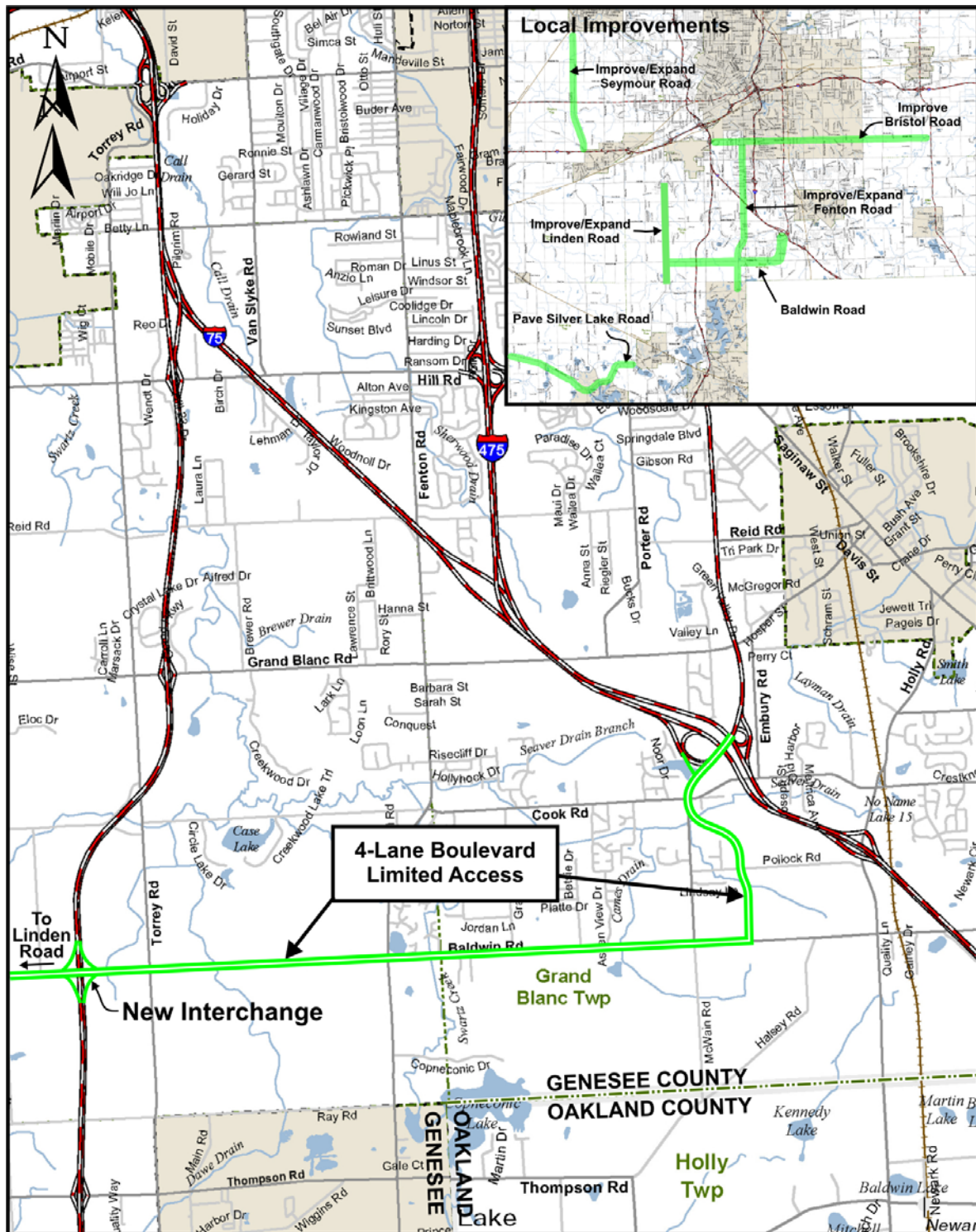
Source: The Corradino Group of Michigan, Inc.

Figure 5-7
Genesee County Freight and Connectivity Study
Alternative 4 – Extended Dort Highway and Baldwin Boulevard
with New Interchange at U.S. 23



Source: The Corradino Group of Michigan, Inc.

Figure 5-8
Genesee County Freight and Connectivity Study
Alternative 4A – Alternative 4 Plus a Widened Linden Road



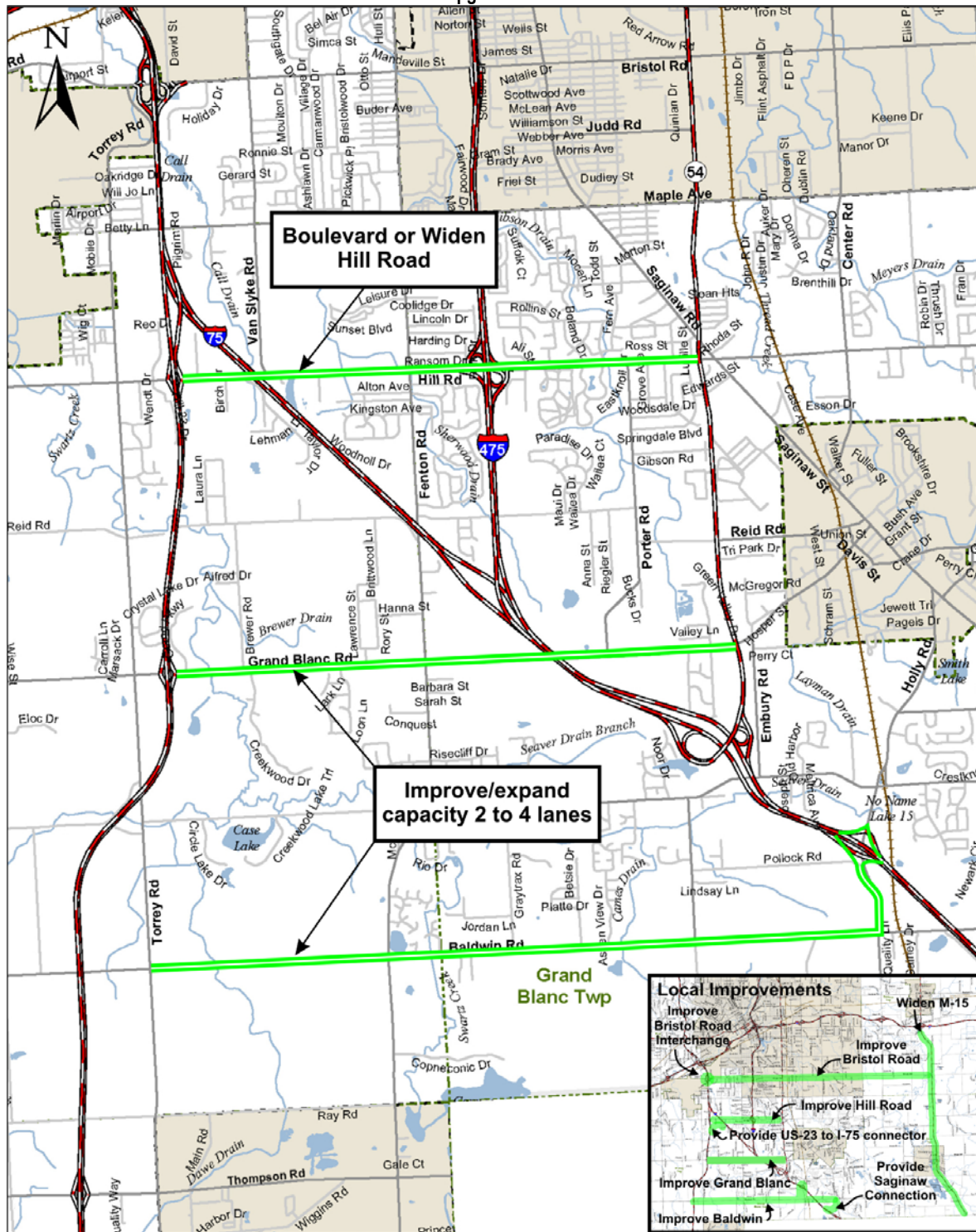
Source: The Corradino Group of Michigan, Inc.

- **Alternative 5 - Upgrade Hill, Grand Blanc and Baldwin Road Corridors**

Alternative 5 adds lanes to Hill Road from U.S. 23 to M-54 and widens Grand Blanc and Baldwin roads. It would improve east-west travel and offer better connections with U.S. 23 (Figure 5-9).

Other options tested include improving: the Bristol Road interchange with I-75; connections from Saginaw to northbound I-75, and to Saginaw from southbound I-75; providing connections from U.S. 23 to I-75; and, widening M-15. Improving the North and Silver Lake Road interchanges with U.S. 23 was explored, but such improvements are not feasible.

Figure 5-9
Genesee County Freight and Connectivity Study
Alternative 5 – Upgrade East-West Arterials



Source: The Corradino Group of Michigan, Inc.

6. Evaluation of Alternatives

The dozen alternatives to the Base System were all tested and compared to narrow them to the best performers consistent with the evaluation data. Except for Alternative 5, all include a proposed connection of I-475 to U.S. 23. All include a number of local road improvements. Some include widening of U.S. 23 and/or M-15 (Table 6-1).

Table 6-1
Genesee County Freight and Connectivity Study
Makeup of Alternatives

Alternative	Connector	U.S. 23	M-15	Local
1	Yes	No	No	Yes
1A	Yes	Yes	No	Yes
1B	Yes	Yes	No	Yes
2	Yes	No	Yes	Yes
3	Yes	No	No	Yes
3A	Yes	No	Yes	Yes
3B	Yes	No	Yes	Yes
3C	Yes	Yes	Yes	Yes
3D	Yes	No	Yes	Yes
4	Yes	No	No	Yes
4A	Yes	No	No	Yes
5	No	No	No	Yes

6.1 Evaluation Data

The process by which to evaluate transportation alternatives for the Genesee County Freight and Connectivity Study involves eight factors and performance measures as outlined in Table 6-2.

Underlying the analysis are traffic data developed by using the Genesee County Metropolitan Planning Commission travel demand model enhanced with new truck travel data. Each alternative was modeled and then compared to Base System in 2035. The Base System is the future transportation plan included in the 2035 LRTP. This comparison provides a common framework for evaluating the relative effectiveness of each alternative. These model-based measures, along with other evaluation metrics listed in Table 6-2, form the basis for measuring the performance of each alternative. The results are documented in a report entitled, "Evaluation of Alternatives" found on the project Web site (www.geneseecconnect.org).

Table 6-2
Genesee County Freight and Connectivity Study
Evaluation Factors, Performance Measures and Process of Calculating Measures

Evaluation Factor	Performance Measure	Process
Generate/Retain Jobs	Estimate of construction and long-term, permanent jobs.	Construction jobs was determined based on the capital investment associated with the alternatives. The potential long-term jobs were determined based on changes in regional accessibility.
Minimize Neighborhood Disruption	Projected traffic volumes/speeds on 20 sensitive (environment, aesthetics, social) roadway segments (Figure 1).	Sensitive neighborhoods was defined where roadway expansions or new alignments are under consideration. Traffic (especially truck traffic) volumes and speeds were determined at these locations.
Better Connect Links in the Transit and Road Networks	Change in travel time from baseline system for 30 origin-destination pairs using pairings of the 20 origin and destination points in (Figure 2).	Peak hour changes in vehicle hours and miles of travel and traffic delay (in hours) from the Base System condition were examined for a subarea of the county representing the I-475 to US 23 connector, and representative major roadway links. Additionally, the travel time over 30 representative origin-destination pairs were compared to assess how well traffic is expected to move within and through the region.
Maintain Good Air Quality	CO concentrations at 20 points in the network (Figure 3) and consistent with noise, community cohesion, and safety factors analysis.	Twenty points that represent air quality hot-spots (key intersections and roadway links) have been determined. Carbon monoxide (CO) concentrations were estimated and compared to the National Ambient Air Quality Standard.
Minimize Purchase of Private Property to Build Transportation Facilities	Number of residential and business properties potentially taken.	Typical cross-sections have been defined for new freeways (300'), 4-lane boulevards (180') and reconstructed 4- and 5-lane roads. These roadway widths were overlaid on GIS aerial photography to determine how many dwelling units, businesses, and institutions might require relocation. The overlay process involved avoidance/minimization as the corridors are laid out. Acreage impacted by land use type was also estimated.
Protect Open Spaces/Parks/Wetlands/	Number of acres of public and non-public park potentially lost.	The typical roadway cross-sections were overlaid onto GIS aerial photography to identify the number of acres of publicly owned parks and wetlands, and the number of National Register historic sites that could be impacted.
Control Noise at Sensitive Locations. (e.g., houses, schools, hospitals that exist in GIS)	Expected "significant change" in noise due to traffic volume change at 20 points (Figure 3).	Twenty locations consistent with the evaluation factors of community disruption and air quality were evaluated for potential noise exposure. Noise effects on new alignments were determined by using GIS to count the number of dwellings, schools, churches, and hospitals within defined distances from the new/reconstructed roads, representing zones that would be affected by new noise. Noise was determined using the Transportation Noise Model (TNM2.5) and its Lookup Table.
Maximize Safe Travel	Change in crashes compared to baseline system in vehicle miles of travel on 10 roadway segments (Figure 4).	The number of crashes was estimated using rates for roadway facility types to determine the potential annual crash total on twenty roadway segments.

Source: The Corradino Group of Michigan, Inc.

6.1.1 Overall Transportation Issues

Each alternative has been evaluated for its traffic performance using three basic units of geography: county-wide, study area (Figure 6-1), and key road segments (Figure 6-2). County-wide statistics are provided because the study covers freight and mobility issues for all of Genesee County. However, most of the alternative improvements being analyzed are concentrated in the area south of I-69, so a more localized subarea is defined to differentiate among alternatives.

The data produced in the traffic analysis include detailed link-level, PM peak hour congestion measures. Other statistics (Vehicle Miles of Travel [VMT]; Vehicle Hours of Travel [VHT]; and, Vehicle Hours of Delay [VHD]) have also been developed to define the differences among alternatives.

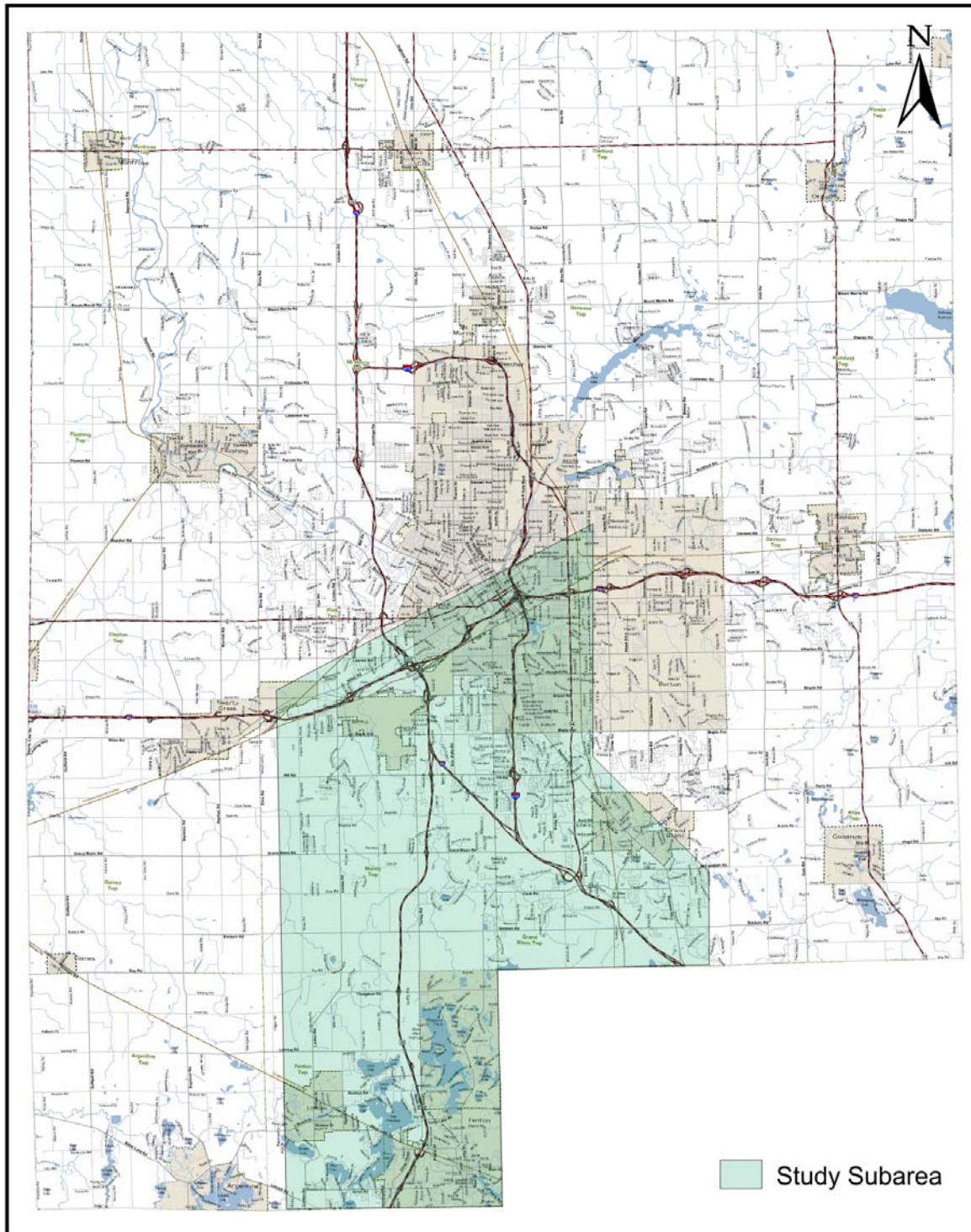
6.1.1.1 Travel Delay Characteristics

The total delay data in 2035 for the transportation systems serving the study area and county-wide are presented in Figure 6-3. Overall, the better performing alternatives, i.e., those with the greatest reduction in delay compared to the Base System, are Alternatives 1A, 1B, and 3C. Each involves widening U.S. 23 by at least one lane in each direction. But, as widening U.S. 23 may be a project in the more distant future, the other good performers that don't include it are Alternatives 3, 3B, 4, 4A on a study area basis and Alternatives 3, 3B and 4A on a countywide basis.

When the delay data are viewed by key corridor segments, the better performing alternatives are 1B, 3, 3A, 3B, 3C and 4A (Table 6-3). Alternatives 1B and 3C include widening U.S. 23.

It is noteworthy that these changes are in addition to the improved conditions resulting from the 2035 planned transportation system (i.e., the Base System).

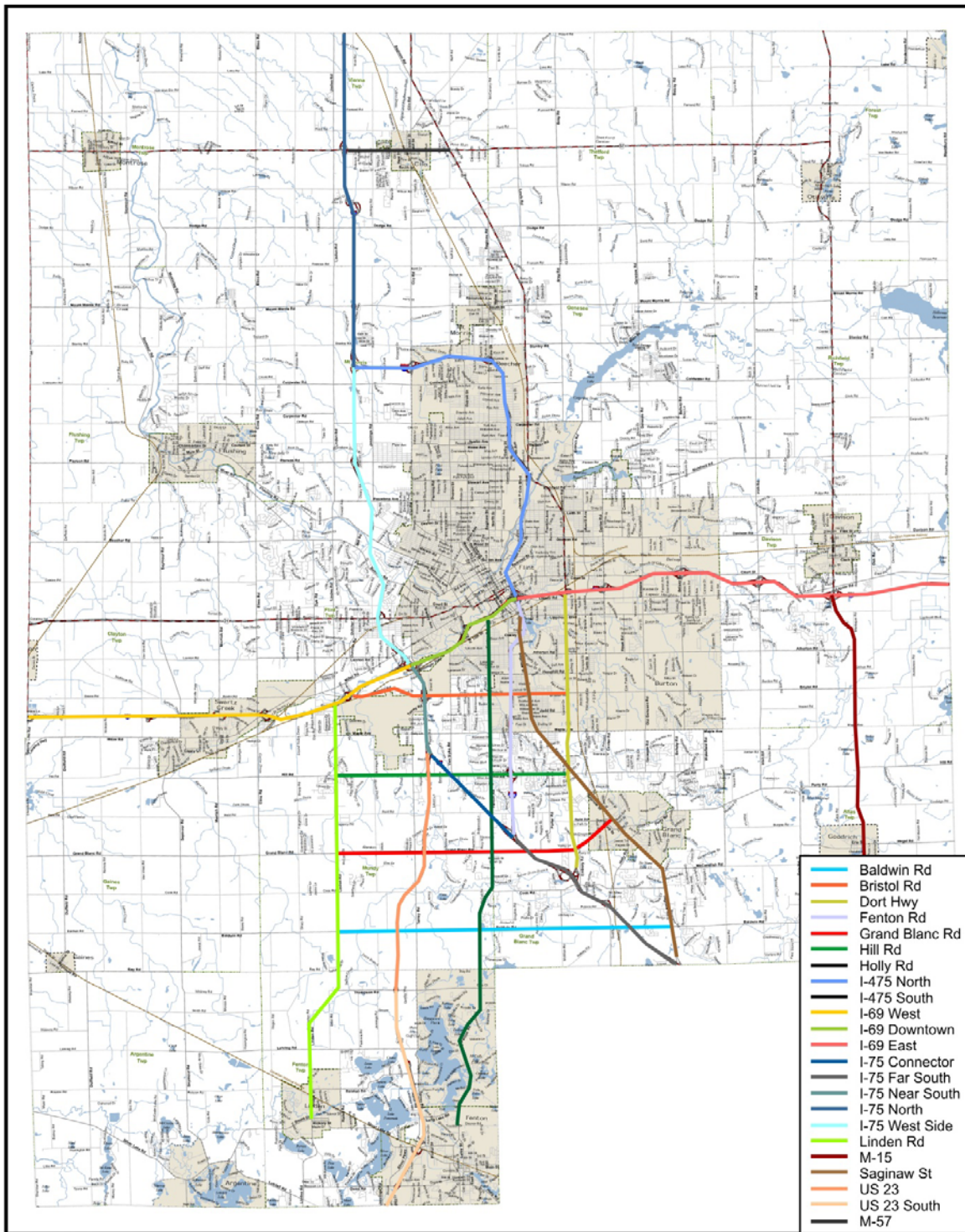
Figure 6-1
Genesee County Freight and Connectivity Study
Study Subarea



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Source: The Corradino Group of Michigan, Inc.

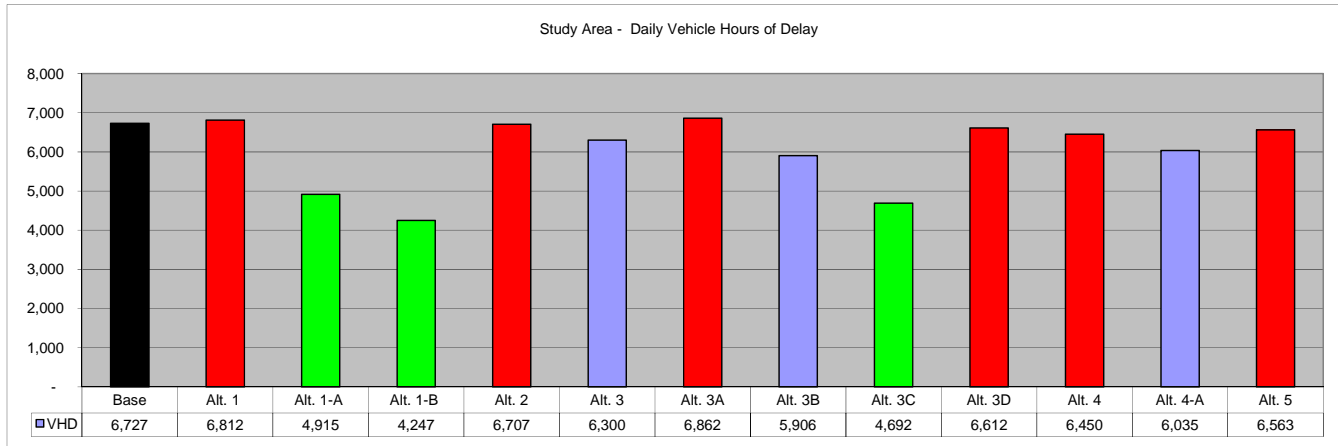
Figure 6-2
Genesee County Freight and Connectivity Study
Major Roadway Segments in Traffic Analysis



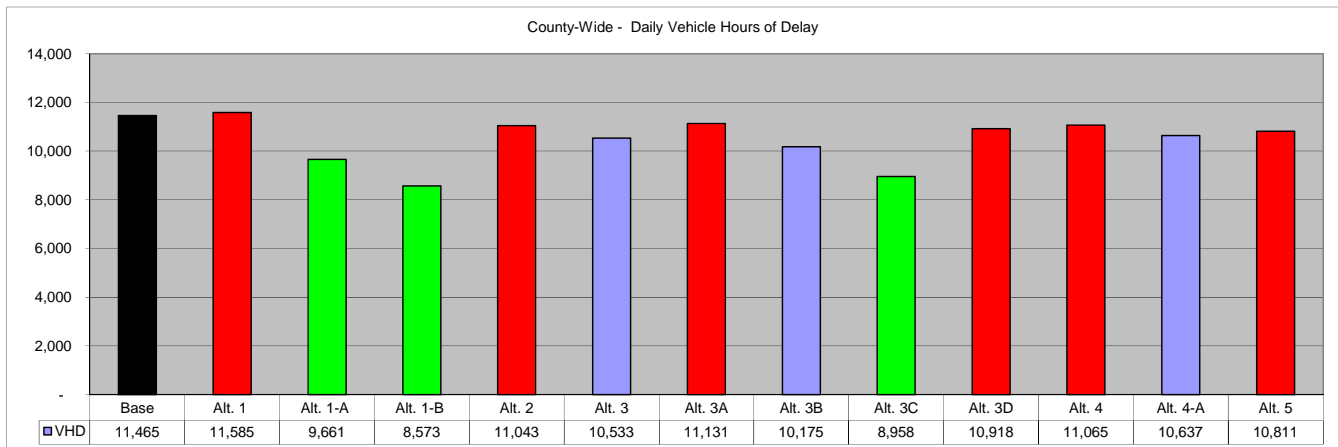
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Source: The Corradino Group of Michigan, Inc.

Figure 6-3
Genesee County Freight and Connectivity Study
Study Area Delay Statistics



County-wide Delay Statistics



Source: The Corradino Group of Michigan, Inc.

Table 6-3
Genesee County Freight and Connectivity Study
Comparative Delay Statistics by Key Corridor Segments

Percent of Daily VHT in Delayed Conditions, by Corridor, 2035.

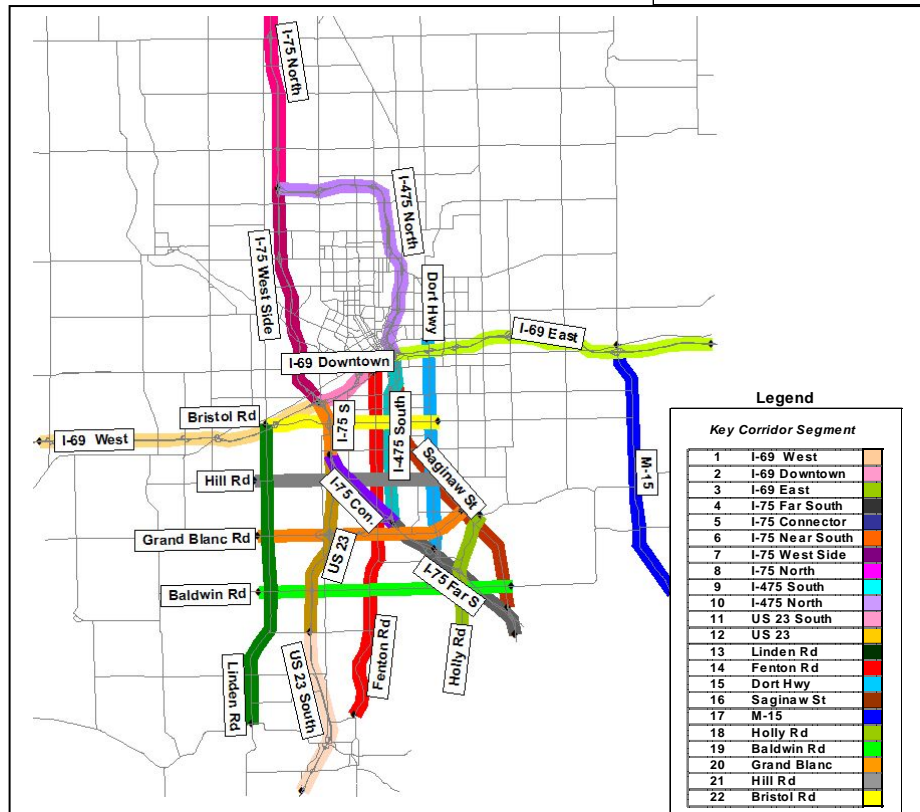
Corridor	Scenario												
	Base	Alt. 1	Alt. 1-A	Alt. 1-B	Alt. 2	Alt. 3	Alt. 3A	Alt. 3B	Alt. 3C	Alt. 3D	Alt. 4	Alt. 4-A	Alt. 5
1 I-69 West	2.5%	2.0%	2.0%	2.0%	2.3%	1.9%	1.9%	1.9%	1.9%	2.2%	2.4%	2.3%	2.5%
2 I-69 Downtown	3.0%	1.9%	2.0%	2.0%	2.6%	1.6%	1.8%	1.8%	1.8%	2.3%	2.8%	2.9%	2.9%
3 I-69 East	6.2%	6.2%	6.2%	6.3%	6.3%	6.2%	6.2%	6.3%	6.3%	6.3%	6.1%	6.1%	6.1%
4 I-75 Far South	3.3%	3.4%	3.4%	3.3%	3.2%	3.0%	3.0%	3.0%	3.0%	3.4%	2.9%	2.9%	3.5%
5 I-75 Connector	3.3%	2.6%	3.0%	2.9%	3.0%	2.6%	2.6%	2.7%	2.7%	2.9%	3.2%	2.9%	3.2%
6 I-75 Near South	11.7%	9.4%	10.6%	10.5%	10.8%	9.2%	9.8%	10.0%	10.1%	10.4%	11.5%	10.8%	11.8%
7 I-75 West Side	2.9%	2.9%	2.9%	2.9%	2.9%	2.9%	2.9%	2.9%	3.0%	2.9%	2.9%	2.8%	2.9%
8 I-75 North	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%
9 I-475 South	3.3%	7.0%	6.7%	7.1%	3.8%	7.5%	6.9%	7.3%	7.5%	5.8%	3.5%	3.3%	3.4%
10 I-475 North	2.1%	2.3%	2.3%	2.3%	2.2%	2.3%	2.3%	2.3%	2.3%	2.3%	2.2%	2.2%	2.1%
11 US 23 South	15.3%	16.2%	6.0%	2.7%	15.9%	17.0%	17.1%	15.7%	5.1%	15.7%	15.6%	15.1%	15.4%
12 US 23	14.8%	14.7%	7.6%	4.8%	15.4%	11.3%	8.7%	8.5%	8.5%	13.0%	14.3%	12.5%	15.0%
13 Linden Rd	4.8%	4.3%	3.2%	3.0%	4.5%	4.0%	4.0%	3.8%	3.3%	4.1%	4.5%	2.7%	4.6%
14 Fenton Rd	2.5%	1.8%	1.1%	1.0%	2.3%	1.5%	1.4%	2.7%	2.0%	2.7%	2.0%	1.8%	2.3%
15 Dort Hwy	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
16 Saginaw St	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	4.0%	4.0%	4.1%	3.7%	3.8%	3.7%
17 M-15	10.1%	10.2%	10.2%	2.6%	2.1%	2.2%	2.2%	2.2%	2.2%	2.2%	10.2%	10.3%	2.0%
18 Holly Rd	3.3%	3.5%	3.5%	3.2%	1.8%	2.5%	2.6%	2.5%	2.5%	6.1%	1.7%	1.8%	1.6%
19 Baldwin Rd	2.2%	1.9%	2.4%	2.5%	1.8%	2.8%	4.1%	2.6%	1.7%	3.0%	1.8%	1.6%	1.2%
20 Grand Blanc	1.8%	2.1%	2.1%	1.6%	1.7%	2.0%	1.9%	1.9%	1.9%	3.2%	1.5%	1.5%	0.9%
21 Hill Rd	2.8%	2.2%	2.3%	2.3%	2.4%	2.4%	2.4%	2.4%	2.4%	2.6%	2.8%	2.8%	1.6%
22 Bristol Rd	2.3%	2.3%	2.4%	2.4%	2.2%	1.6%	1.6%	1.7%	1.7%	1.7%	1.5%	1.6%	2.5%

Source: The Corradino Group of Michigan, Inc.

Legend

Conditions are worsened 10% or more compared to base condition

Conditions are improved 10% or more compared to base condition



Source: The Corradino Group of Michigan, Inc.

6.1.1.2 Congestion (Level of Service)

Data on Table 6-4 show the degree to which system congestion relief is provided by each of the alternatives compared to the Base System. Again, Alternatives 1A, 1B, and 3C, which include widening U.S. 23, perform better than the others both for the study area and county-wide. The next best performers are Alternatives 3, 3A, 3B and 4A.

Table 6-4
Genesee County Freight and Connectivity Study
Study Area 2035 PM Peak Hour Level of Service

Level of Service	Network Scenario												
	Base	1	1-A	1-B	2	3	3-A	3-B	3-C	3-D	4	4-A	5
Vehicle Miles at:													
A	9.8%	10.2%	10.8%	10.8%	10.9%	10.7%	10.5%	10.5%	10.4%	10.5%	12.3%	12.5%	11.7%
B	14.9%	14.3%	14.2%	14.0%	15.7%	14.5%	15.9%	15.2%	15.4%	14.5%	15.9%	16.8%	15.2%
C	21.6%	20.0%	20.8%	26.6%	19.3%	21.7%	21.2%	21.1%	23.5%	18.8%	18.5%	19.8%	19.5%
D	13.3%	18.5%	26.3%	29.2%	14.9%	19.6%	19.3%	21.1%	23.7%	17.7%	14.5%	12.9%	13.4%
E	11.9%	10.0%	7.4%	6.1%	11.6%	11.3%	10.3%	9.7%	12.9%	10.9%	11.3%	16.5%	11.8%
F	28.4%	27.1%	20.5%	13.2%	27.6%	22.2%	22.8%	22.4%	14.1%	27.7%	27.5%	21.4%	28.4%
Vehicle Hours at:													
A	11.5%	11.9%	13.0%	13.1%	12.6%	12.6%	12.5%	12.5%	12.7%	12.4%	14.1%	14.5%	13.5%
B	16.4%	15.8%	16.1%	16.2%	16.9%	16.0%	16.9%	16.2%	16.9%	15.6%	17.2%	17.9%	16.8%
C	21.1%	20.3%	21.4%	25.6%	19.6%	22.1%	21.8%	21.6%	24.1%	19.8%	18.7%	19.9%	19.4%
D	13.5%	16.9%	22.5%	25.2%	14.5%	17.6%	17.3%	19.5%	21.0%	16.6%	14.1%	13.0%	13.3%
E	10.3%	8.8%	6.8%	5.8%	9.9%	9.7%	8.9%	8.2%	11.1%	9.4%	9.6%	13.7%	9.8%
F	27.2%	26.3%	20.3%	14.0%	26.5%	22.1%	22.5%	21.9%	14.2%	26.1%	26.2%	21.1%	27.2%

County-wide 2035 PM Peak Hour Level of Service

Level of Service	Network Scenario												
	Base	1	1-A	1-B	2	3	3-A	3-B	3-C	3-D	4	4-A	5
Vehicle Miles at:													
A	18.4%	18.3%	18.7%	19.1%	19.3%	19.7%	19.7%	19.7%	19.6%	19.5%	20.3%	20.4%	19.9%
B	21.3%	21.4%	21.3%	21.5%	22.4%	21.8%	22.5%	22.0%	22.1%	21.8%	22.0%	22.1%	22.2%
C	24.9%	23.8%	24.0%	26.8%	23.7%	24.3%	23.9%	24.0%	24.9%	23.3%	22.7%	23.2%	23.7%
D	13.5%	15.7%	19.0%	19.8%	14.1%	15.9%	15.8%	16.4%	17.6%	15.0%	14.2%	13.6%	13.5%
E	9.2%	8.1%	7.0%	6.2%	8.4%	8.2%	7.8%	8.0%	8.8%	8.1%	8.7%	10.9%	8.4%
F	12.7%	12.6%	10.1%	6.6%	12.1%	10.1%	10.4%	9.8%	7.0%	12.2%	12.2%	9.8%	12.3%
Vehicle Hours at:													
A	20.2%	20.1%	20.8%	21.2%	21.0%	21.5%	21.5%	21.5%	21.7%	21.3%	22.0%	22.2%	21.7%
B	22.4%	22.5%	22.6%	23.1%	23.4%	23.1%	23.5%	23.1%	23.4%	22.8%	23.0%	23.1%	23.4%
C	24.0%	23.3%	23.7%	25.8%	23.2%	23.8%	23.5%	23.6%	24.5%	23.1%	22.1%	22.6%	23.0%
D	12.5%	14.1%	16.4%	17.2%	13.0%	14.1%	14.1%	14.8%	15.5%	13.7%	13.1%	12.6%	12.5%
E	8.0%	7.1%	6.2%	5.5%	7.2%	7.0%	6.8%	6.9%	7.6%	7.0%	7.6%	9.4%	7.1%
F	12.9%	12.9%	10.4%	7.2%	12.2%	10.5%	10.7%	10.2%	7.4%	12.1%	12.3%	10.2%	12.4%

Source: The Corradino Group of Michigan, Inc.

6.1.1.3 Connectivity

Twenty locations were selected to cover the county between which 2035 travel times were calculated to determine the degree to which connectivity is affected by each alternative compared to the Base System (Figure 6-4). The results indicate Alternatives 1A, 1B and 3C are the better performers. Each includes widening U.S. 23. There is virtually no difference among the remaining alternatives (Table 6-5).

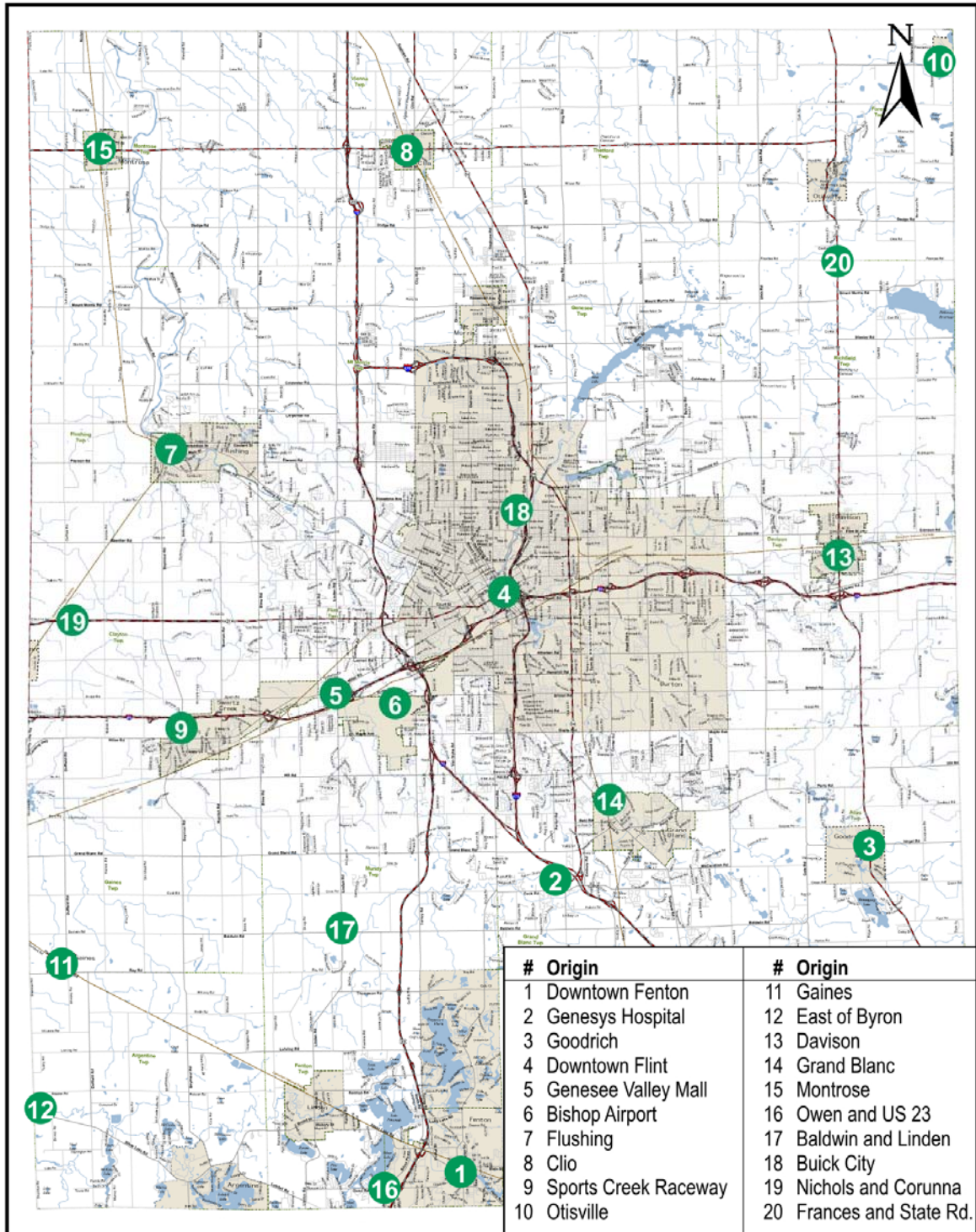
Table 6-5
Genesee County Freight and Connectivity Study
Number of Origin-Destination Pair Trips with Time Savings or Loss

Alternative	Time Savings > 2.5 Min.		Time Loss > 3.6 Min.	
	PM Pk Hr	Daily	PM Pk Hr	Daily
1	0	0	0	0
1A	7	1	0	0
1B	22	4	0	0
2	0	0	0	0
3	0	0	0	0
3A	1	1	1	0
3B	0	2	0	0
3C	7	0	0	0
3D	0	0	0	0
4	1	0	0	0
4A	3	0	0	0
5	0	0	0	0

Alternative includes U.S. 23 widening

Source: The Corradino Group of Michigan, Inc.

Figure 6-4
Genesee County Freight and Connectivity Study
Origins or Destination Points
2035 PM Peak Hour Travel Time Comparisons



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Source: The Corradino Group of Michigan, Inc.

6.1.2 Neighborhood Disruption

To measure the impact on neighborhoods of the various transportation alternatives, 20 roadway segments adjacent to sensitive residential areas were selected (Figure 6-5). Then the amount of change in 2035 truck traffic in the afternoon peak hour between each alternative and the Base System were calculated for each route.

Table 6-6 shows those changes in 2035 truck traffic in the afternoon peak hour. Providing a new connector sometimes results in a reduction in truck traffic on local arterials as trucks divert to the connector. Examples are Linden Road (except for Alternative 4A) and Hill Road west of I-475. Road sections other than the new connectors that would experience an increase in trucks are most often roads that would be widened under an alternative. Linden Road, for example, shows an increase of 104 trucks under Alternative 4A because it is widened to five lanes with this option. Baldwin Road, to the east of the new connector, is widened and attracts traffic under Alternative 3D.

Those roads with a projected change of more than 100 trucks in the afternoon peak hour (highlighted in yellow in Table 6-6) with each alternative are:

- Alternative 1B would divert trucks from Linden Road to U.S. 23 because of its widening.
- Alternatives 1A and 1B would divert trucks from Hill Road west of I-475.
- Alternative 3C would divert sufficient traffic to a Baldwin connector that the volume of trucks on Hill Road west of I-475 would be reduced by over 100.
- Alternative 3D, with a boulevard connector following a Baldwin alignment, would increase truck traffic on Baldwin Road east of Torrey Road.
- Alternative 4A, the only alternative to widen Linden Road, would attract significant truck traffic to Linden Road.
- Alternatives 1, 1A, 1B, 3, 3A, 3B, 3C, 3D, 4 and 4A each have a new alignment section that would attract at least 100 trucks (see bottom row of Table 6-4).

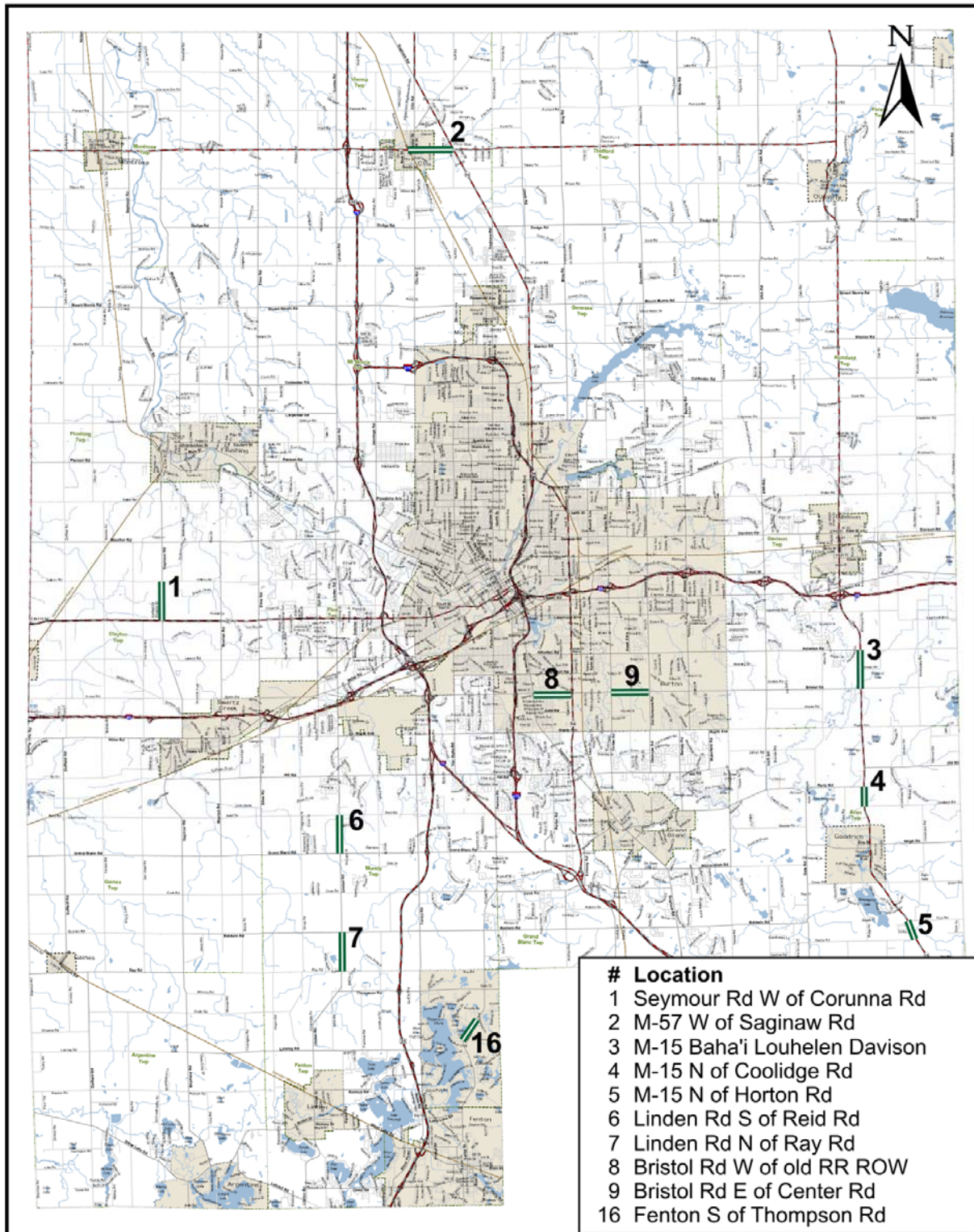
There are no hospitals, or schools along these road segments, except Genesys Hospital, which is served by Alternatives 4 and 4A.

Table 6-6
Genesee County Freight and Connectivity Study
Changes from Base System in 2035 PM Peak Hour Truck Volumes

Locations/ Alternative	1	1A	1B	2	3	3A	3B	3C	3D	4	4A	5
Seymour Rd. N of Corunna Rd	0	-1	-1	0	-1	-1	-1	-1	-1	7	7	0
M-57 W of Saginaw Rd	-3	-3	-3	-1	16	16	16	16	17	2	-2	2
M-15 Baha'l Louhelen Davison	-1	0	36	27	26	26	25	25	26	-10	-11	10
M-15 N of Coolidge Rd	-2	-2	21	12	12	12	12	12	21	-43	-8	18
M-15 N of Horton Rd	0	0	0	0	0	0	0	0	0	0	0	0
Linden Rd S of Reid Rd	-21	-50	-56	4	-38	-77	-72	-72	-10	-2	104	-5
Linden Rd N of Ray Rd	-19	-92	-112	-57	-77	-85	-91	-83	-59	-52	51	-4
Bristol Rd W of old RR ROW	18	21	23	10	20	20	23	23	20	6	10	22
Bristol Rd E of Center Rd	1	1	-1	-3	-2	-1	-2	-2	-2	52	53	67
Hill Rd W of I-475	-95	-102	-104	-62	-84	-78	-84	-122	-93	-89	-93	-4
Hill Rd E of I-475	22	21	24	11	24	20	21	26	13	0	-1	4
Grand Blanc W of Fenton Rd	4	-11	-11	-33	-52	-39	-45	-45	-19	-57	-58	18
Baldwin E of Torrey Rd	-18	-24	-27	-24	-11	-38	-96	-95	105	82	68	-5
Baldwin W of McWain Rd	-10	-15	-19	21	-29	-23	-4	-51	-25	-37	9	9
Fenton NE of Cook Rd	-24	-68	-80	-11	-77	-61	-92	-93	-75	89	71	-18
Fenton S of Thompson Rd	-13	-54	-66	-3	-30	-43	28	4	13	26	16	-5
Maximum Truck Volume on Proposed Connector	210	364	389	NA	529	476	479	494	229	130	127	NA

Note: Highlighting indicates a change of more than 100 trucks.
Source: The Corradino Group of Michigan, Inc.

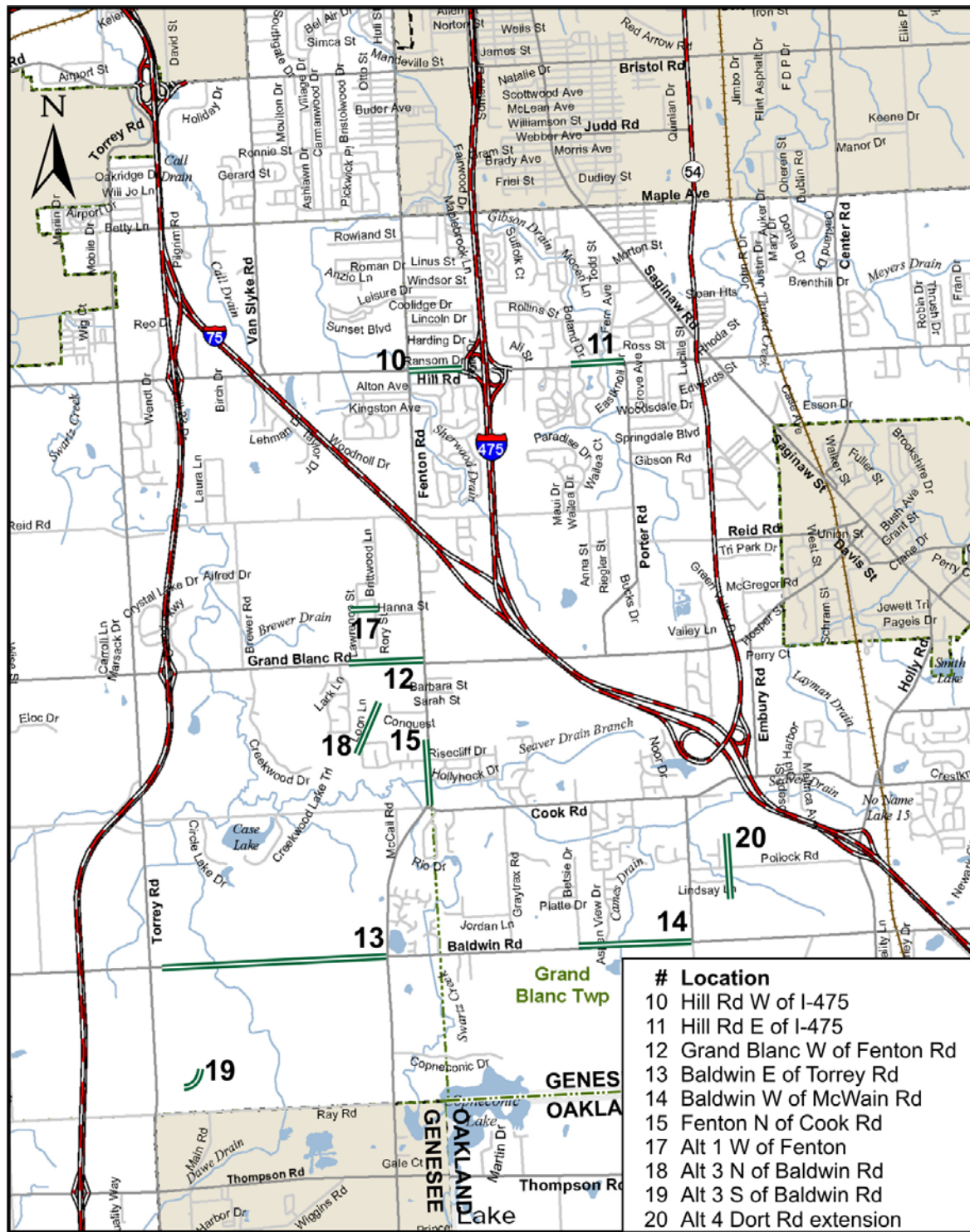
Figure 6-5
Genesee County Freight and Connectivity Study
Neighborhood Sensitive Roadway Links



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Source: The Corradino Group of Michigan, Inc.

Figure 6-5A
Genesee County Freight and Connectivity Study
Neighborhood Sensitive Roadway Links



Source: The Corradino Group of Michigan, Inc.

6.1.3 Air Quality

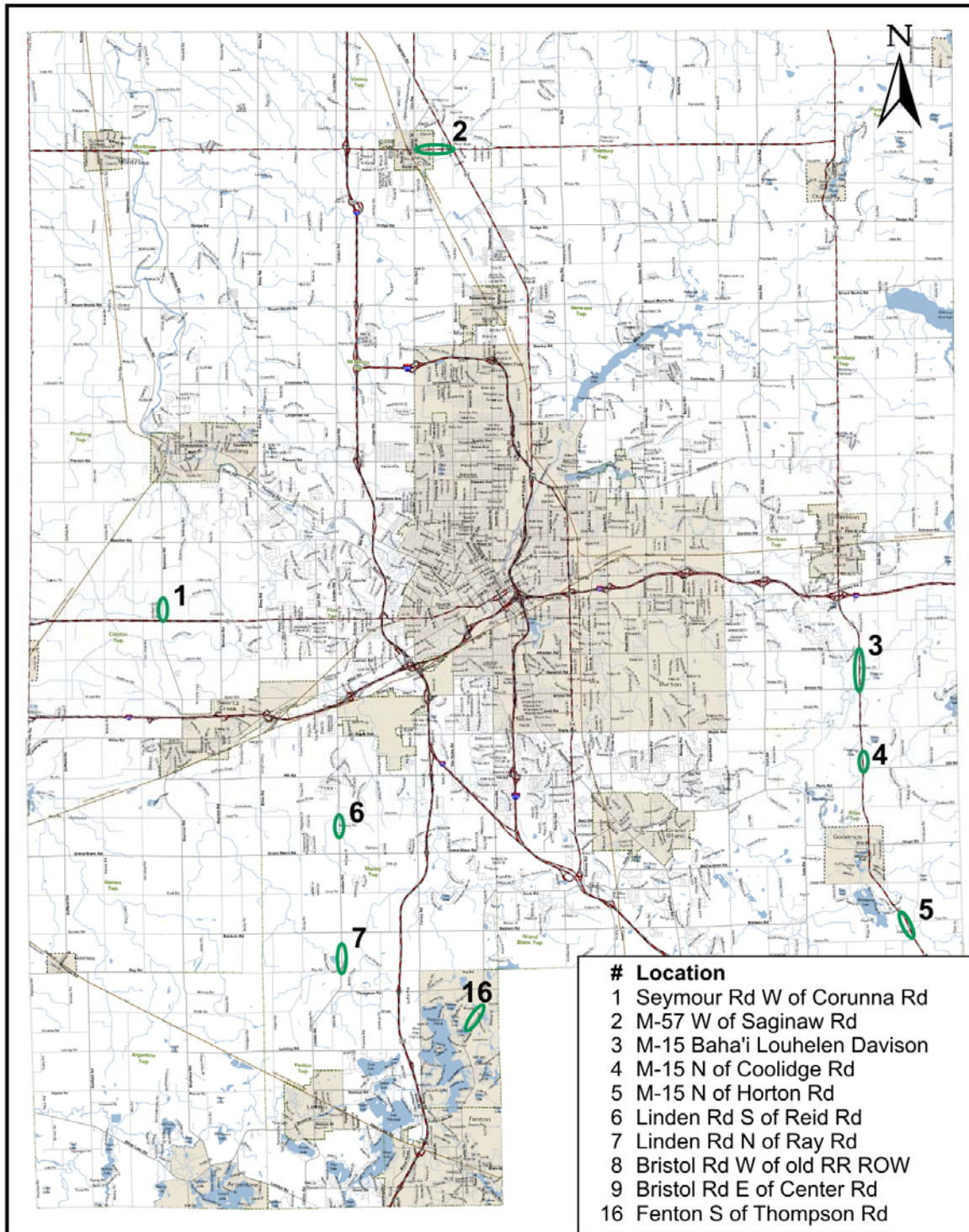
Air quality effects of new transportation projects have traditionally been measured by estimating the potential concentrations of carbon monoxide (CO) at sensitive locations near such projects. For this analysis, 20 locations were selected (Figure 6-6). Carbon monoxide is a colorless, odorless gas that interferes with the body's intake of oxygen. In the transportation sector, it is produced primarily from gasoline engines. It is one of a number of pollutants for which the U.S. EPA has established National Ambient Air Quality Standards (NAAQS). Estimates of potential future CO levels are done with a computer program called CALINE3. The background level of CO in the Flint area is 1 part per million (ppm) in the afternoon peak hour. By comparison, the NAAQS is 35 ppm. Worst-case conditions along roads occur when air is stagnant or moves very slowly along the length of the road so that pollutants accumulate. These worst-case conditions were modeled for 2035. Even those links in the regional roadway system that carry the heaviest traffic barely register above the background level of 1 ppm, and only then at points very close to the road. For this analysis, receivers were modeled at 10 feet from the traveled way. The maximum concentration under these circumstances is projected to be 1.7 ppm on a widened Hill Road with Alternatives 4, 4A, and 5 (Table 6-7). With all modeled CO levels so low, the conclusion is there is no difference among the alternatives in air quality effects.

Table 6-7
Genesee County Freight and Connectivity Study
Carbon Monoxide 1-Hour (Afternoon Peak) Concentrations in Parts per Million (ppm)
(National Standard is 35 ppm)

Locations/Alternative	1	1A	1B	2	3	3A	3B	3C	3D	4	4A	5
Seymour Rd. N of Corunna Rd	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
M-57 W of Saginaw Rd	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
M-15 Baha'l Louhelen Davison	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.4
M-15 N of Coolidge Rd	1.3	1.3	1.3	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.3
M-15 N of Horton Rd	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3
Linden Rd S of Reid Rd	1.2	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.6	1.2
Linden Rd N of Ray Rd	1.2	1.1	1.1	1.2	1.2	1.2	1.1	1.1	1.2	1.2	1.4	1.2
Bristol Rd W of old RR ROW	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Bristol Rd E of Center Rd	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.3	1.3	1.4
Hill Rd W of I-475	1.3	1.3	1.3	1.6	1.4	1.4	1.4	1.4	1.4	1.7	1.7	1.7
Hill Rd E of I-475	1.3	1.3	1.3	1.5	1.5	1.5	1.5	1.5	1.3	1.3	1.3	1.5
Grand Blanc W of Fenton Rd	1.4	1.4	1.4	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2
Baldwin E of Torrey Rd	1.1	1.1	1.1	1.2	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2
Baldwin W of McWain Rd	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Fenton NE of Cook Rd	1.2	1.1	1.1	1.2	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2
Fenton S of Thompson Rd	1.2	1.1	1.1	1.2	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2
Alt 1 W of Fenton	1.1	1.1	1.1	NA	NA	NA	NA	NA	NA	NA	NA	NA
Alt 3 N of Baldwin Rd	NA	NA	NA	NA	1.3	1.3	1.4	1.4	1.2	NA	NA	NA
Alt 3 S of Baldwin Rd	NA	NA	NA	NA	NA	1.4	1.3	1.3	1.2	NA	NA	NA
Alt 4 Dort Rd Extension	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.2	1.2	NA

Source: The Corradino Group of Michigan, Inc.

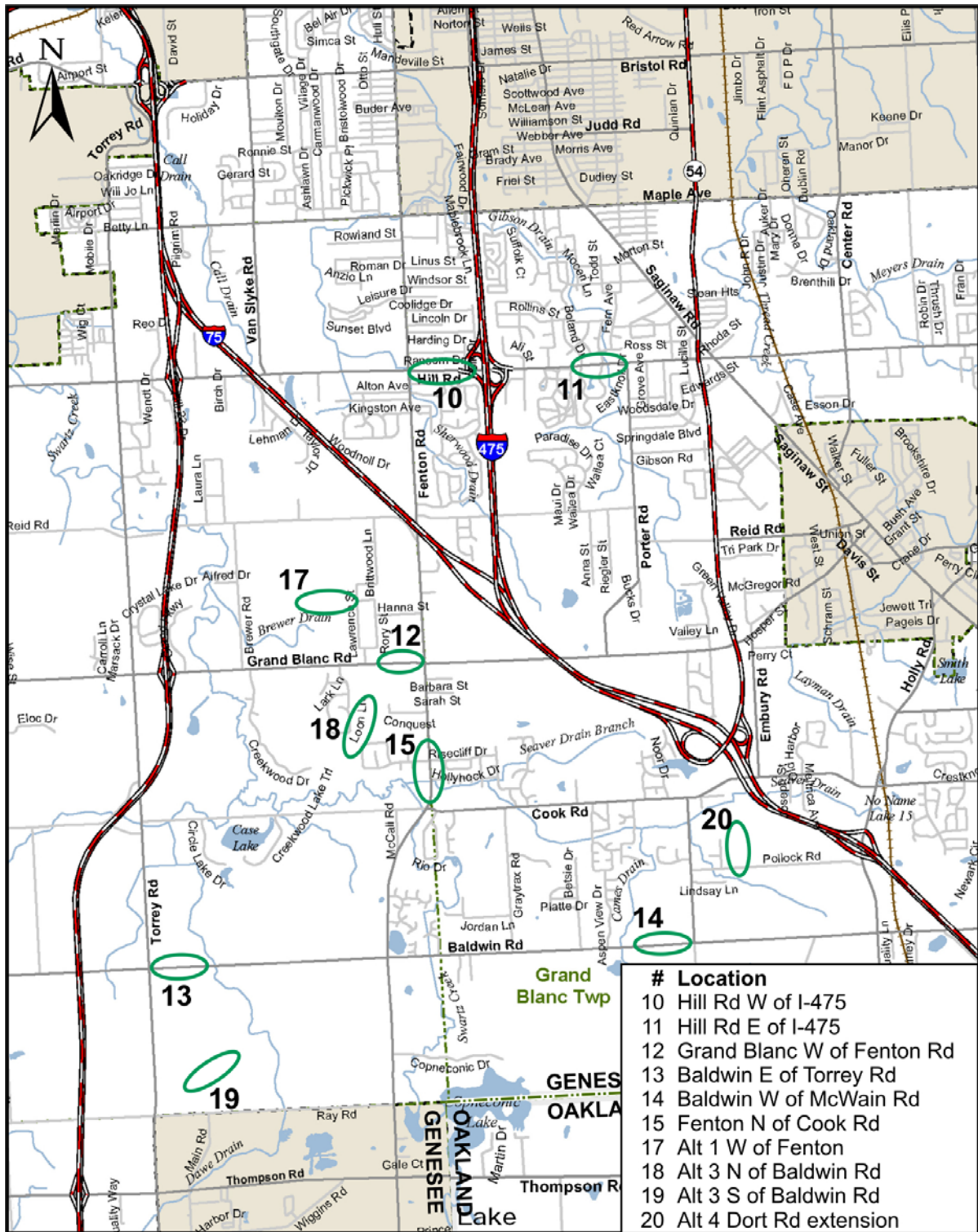
Figure 6-6
Genesee County Freight and Connectivity Study
20 Locations Sensitive to Air Quality and Noise Effects



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Source: The Corradino Group of Michigan, Inc.

Figure 6-6A
Genesee County Freight and Connectivity Study
20 Locations Sensitive to Air Quality and Noise Effects



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Source: The Corradino Group of Michigan, Inc.

6.1.4 Noise Impacts

The review of changes in noise levels considers the extent to which traffic increases or shifts closer to houses; or, for new alignments, the number of houses that would be exposed. The houses examined are those in existence in 2009, per the GIS. For this analysis, the sensitive locations for air quality issues were also chosen for the noise analysis (refer to Figure 6-6).

There are two principles that help explain the kinds of noise changes that can occur. As traffic increases, or is moved closer to sensitive receivers, noise increases. In each case, the change in noise can be gauged by the ratio of conditions (traffic volumes or distances) with and without a project. The change in noise levels related to traffic volumes is expressed mathematically such that doubling traffic volumes or halving the distance results in a 3 decibel (dBA) increase in noise levels. This 3 dBA change happens to be the minimum amount that most people can detect in normal conditions. This means there must be a doubling of traffic before most people perceive a change, or traffic must be closer by half. The traffic volume changes that have been forecast for this analysis are, generally, not associated with noticeable noise changes. Traffic noise changes would be more noticeable when a road is shifted closer to a receiver, or a new road is put in place that did not exist before – like a new connector.

For existing roads, the modeling performed for this project allows an understanding of how traffic volumes will change relative to the Base Condition in 2035. For noise, the “loudest hour” of the day is examined, as mandated by the Federal Highway Administration. Future noise levels were forecast based on expected traffic and whether a road alignment is shifted closer to residences that show on the 2009 GIS. First, the change in noise was predicted for the change in traffic. Then, assumptions were made about how roads would be widened and how far back from the road most houses would sit. The effects of the distance changes were then combined with those from traffic volumes changes to account for both in Table 6-8. Blue shading indicates locations where roads are widened by the various alternatives. Only a few locations along existing roads would experience a perceptible noise change, as follows:

- Alternatives 4, 4A and 5 call for the widening of Bristol Road east to M-15. Much of Bristol Road is already five lanes, but from Center Road to the east it is only two lanes. Widening Bristol Road to three lanes in that area would bring traffic closer to houses, a number of which are relatively close to the road and would experience a perceptible noise increase.
- Alternatives 2, 3D, 4, 4A and 5 would widen Baldwin Road to a four-lane boulevard. If widened to the south of the existing road, houses on the north would remain in place with an imperceptible change in noise, but in its eastern length there would be houses that would remain (not acquired by the widening) that would have the widened road much closer, resulting in a noise increase.
- Alternatives 3B, 3C and 3D would divert sufficient traffic to the new connector to cause a perceptible noise reduction on nearby Fenton Road.

For new alignments, a more meaningful way of looking at noise impacts is to estimate the number of houses within 500 feet of the centerline of the new alignment, because there is no existing traffic base to which to compare the new traffic. Five hundred feet is generally considered the limiting distance within which noise mitigation may be required. The bottom section of Table 6-9 shows the number of dwellings within 500 feet of the proposed connector links under consideration, accounting for the fact that some houses would be acquired by the project. These are not counted in numbers in Table 6-9.

Table 6-8
Genesee County Freight and Connectivity Study
2035 PM Peak Hour Noise Changes from Base System for Existing Roads (dBA)

Locations \ Alternative	1	1A	1B	2	3	3A	3B	3C	3D	4	4A	5
Seymour Rd. N of Corunna Rd	0.0	0.0	-0.1	0.0	0.0	-0.1	-0.1	-0.1	0.0	1.8	1.7	0.0
M-57 W of Saginaw Rd	0.0	0.0	0.0	0.0	0.4	1.2	1.2	1.2	1.3	0.0	0.0	0.0
M-15 Baha'l Louhelen Davison	0.0	0.1	0.0	0.4	0.4	1.3	1.3	1.3	1.3	-0.4	-0.3	-0.1
M-15 N of Coolidge Rd	0.0	0.1	0.0	0.4	0.4	1.0	1.0	1.0	1.0	-0.2	-0.3	0.4
M-15 N of Horton Rd	0.0	0.0	0.0	0.0	0.0	2.2	2.2	2.2	0.6	0.0	0.0	0.0
Linden Rd S of Reid Rd	-0.3	-1.6	-1.9	-0.3	-1.3	-1.4	-1.5	-1.5	-0.8	-0.5	2.3	0.0
Linden Rd N of Ray Rd	-0.4	-2.1	-2.4	-0.4	-1.0	-2.1	-2.6	-2.5	-0.2	-0.4	2.1	-0.1
Bristol Rd W of old RR ROW	0.3	0.4	0.3	0.1	0.3	0.3	0.3	0.4	0.4	1.5	1.6	1.9
Bristol Rd E of Center Rd	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	3.5	3.5	3.9
Hill Rd W of I-475	-1.1	-1.1	-1.1	-0.5	-0.9	-0.8	-0.8	-0.8	-1.0	0.1	0.1	1.0
Hill Rd E of I-475	-0.4	-0.5	-0.4	0.0	0.1	0.0	-0.2	0.1	-0.2	-0.1	-0.1	0.9
Grand Blanc W of Fenton Rd	-0.5	-1.0	-0.8	-0.4	-0.1	-0.3	-0.4	-0.6	-1.8	-0.6	-0.6	0.6
Baldwin E of Torrey Rd	1.0	0.5	0.4	1.8	1.7	0.7	0.2	0.2	2.1	2.5	2.4	1.5
Baldwin W of McWain Rd	-0.1	-0.3	-0.3	5.3	-0.5	-0.2	-0.3	-0.3	3.8	5.0	5.0	5.3
Fenton NE of Cook Rd	-0.2	-1.9	-1.7	-0.7	-2.9	-2.0	-3.6	-3.7	-3.7	1.9	1.6	-0.6
Fenton S of Thompson Rd	0.3	-0.7	-2.6	-0.1	-0.8	-1.3	0.5	-0.3	0.2	1.1	1.0	-0.2

Note: **Blue** indicates where a widening is assumed, which typically attracts traffic and might move the road closer to houses. **Orange** indicates a perceptible noise change where a road is widened. **Yellow** indicates a perceptible noise reduction when traffic is diverted from the road.

Source: The Corradino Group of Michigan, Inc.

Table 6-9
Genesee County Freight and Connectivity Study
Number of Houses Potentially Affected by Noise along New Connector

Locations \ Alternative	1	1A	1B	2	3	3A	3B	3C	3D	4	4A	5
Alt 1 W of Fenton	22	22	22	NA	NA	NA	NA	NA	NA	NA	NA	NA
Alt 3 N of Baldwin Rd	NA	NA	NA	NA	37	31	31	31	23	NA	NA	NA
Alt 3 S of Baldwin Rd	NA	NA	NA	NA	NA	2	2	2	NA	NA	NA	NA
Alt 4 Dort Rd Extension	NA	NA	NA	NA	NA	NA	NA	NA	NA	23	23	NA

Note: **Blue** indicates where a widening is assumed, which typically attracts traffic and might move the road closer to houses.

Source: The Corradino Group of Michigan, Inc.

In terms of the noise that houses could experience from a new connector:

- Alternatives 1, 1A and 1B would provide a new connector tying into U.S. 23 north of Grand Blanc Road. Twenty-two houses would fall within 500 feet of the new alignment.
- Alternative 3 would provide a new connector tying into US 23 north of Baldwin Road. Thirty-seven houses (not counting those acquired for the project) would fall within 500 feet of the new alignment.
- Alternatives 3A, 3B and 3C would affect 31 houses north of Baldwin and two more south of Baldwin Road toward Thompson Road.
- Alternative 3D's connector, as a boulevard would affect 23 houses along the same alignment as Alternative 3, but in a narrower right-of-way.
- Alternative 4 and 4A would affect 23 houses along the proposed Dort Highway extension.

6.1.5 Property Likely to be Acquired

This analysis has examined the extent to which various types of property would likely be acquired for each proposed alternative – residential, commercial or industrial, public parks, and wetlands (Table 6-10). (Supporting data are included in the Technical Report entitled, “Evaluation of Alternatives,” found on the Web site (www.geneseecconnect.org).

Table 6-10
Genesee County Freight and Connectivity Study
Possible Property Acquisition

Alternative	Totals		Residential		Commercial		Agricultural		Industrial		# of Wetlands Impacted	# of Wetlands Acres Impacted
	# of Parcels ¹	# Acres Affected ²	# of Parcels	Acres Affected	# of Parcels	Acres Affected	# of Parcels	Acres Affected	# of Parcels	Acres Affected		
1	129	215	110	104	15	95	0	0	4	16	11	43
1A	129	215	110	104	15	95	0	0	4	16	11	43
1B	351	317	244	150	76	129	7	10	24	28	75	95
2	126	143	83	96	21	19	6	19	16	9	17	21
3	64	569	59	505	2	<1	3	64	0	0	21	62
3A	57	643	50	458	2	34	5	151	0	0	28	79
3B	162	780	133	553	9	48	11	170	9	9	45	100
3C	162	780	133	553	9	48	11	170	9	9	45	100
3D	88	703	79	678	2	1	7	24	0	0	18	63
5	96	125	82	87	5	16	6	19	3	3	25	29
4A	438	160	406	112	19	17	10	28	3	3	35	45
5	604	295	306	161	273	111	1	2	24	21	29	33

¹ Total number of parcels impacted (whole and portion) by the proposed alternative.

² Parcel take acreages are estimated, and are +/- 10%

Source: ROWE Professional Services Company

Alternatives 3, 3A, 3D and 4 would possibly involve the acquisition of fewer than 100 private properties; the lowest potential acquisition is 57 private properties associated with Alternative 3A. The greatest potential acquisition is associated with Alternative 5 for which widening a number of arterials will likely involve acquisition of more than 600 private properties. Alternative 5 would have the greatest effect on commercial properties (273 parcels). Alternative 4A would likely involve acquiring 438 parcels, of which 342 would be associated with widening Linden Road to five lanes.

It is also noteworthy that Alternative 1B, which includes widening U.S. 23 to eight lanes (two more lanes in each direction), would involve acquiring 76 commercial parcels covering 129 acres. This is the largest number of acres of commercial property of any alternative.

The greatest potential impact on residential acreage is with the Alternative “3-Set” – 3 (59 parcels on 505 acres), 3A (50 parcels at 458 acres), 3B (133 parcels at 553 acres), 3C (133 parcels at 553 acres), and 3D (79 parcels at 678 acres).

The largest impact on agricultural property is expected to be with Alternatives 3A (five parcels at 151 acres), 3B (11 parcels at 170 acres), and 3C (11 parcels at 170 acres).

The possible wetland impacts range from 29 acres (Alternative 4) to 100 acres (Alternatives 3B and 3C). The greatest number of individual wetlands potentially impacted is 75 with Alternative 1B. These involve 95 acres.

6.1.6 Crash Analysis

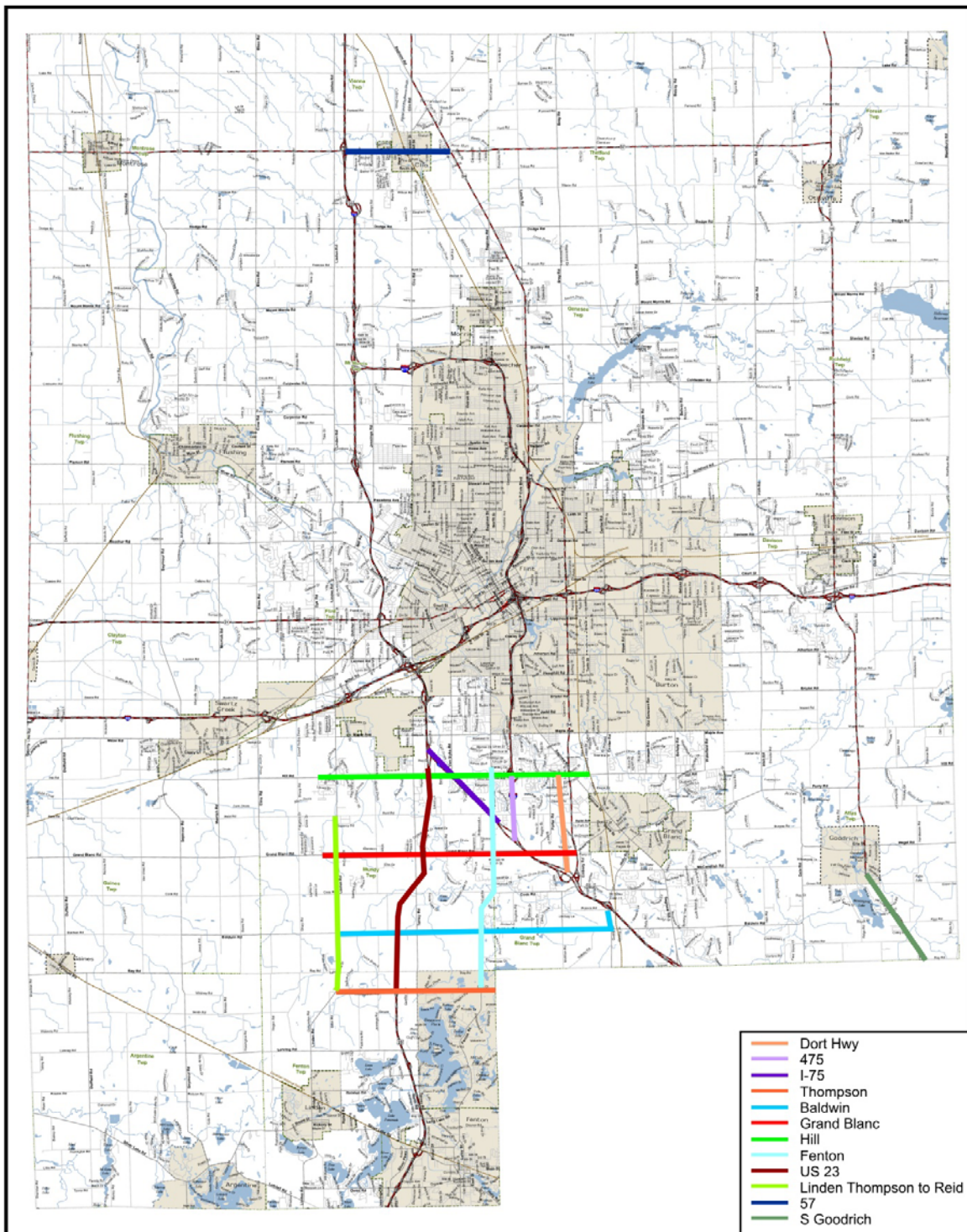
Crash data were analyzed on 13 segments in the county identified on Figure 6-7. The Michigan State Police Crash Database was queried using the Traffic Information Association's (TIA) Traffic Crash Analysis Software for crashes occurring within these segments between 2007 and 2009.

These data formed the basis of this analysis. Then, future volumes for each alternative on each roadway segment were compared to volumes at the same location with Base System to determine the effect of a change in travel on the frequency of crashes. The existing crash rates were assumed to remain constant if a road were not improved. On the other hand, where road improvements were proposed, the crash rate was reduced by one-third indicating safer conditions as a result of the improvement. Indirect improvements and crash reduction factors of 10 percent were assumed for adjacent roads, intersections, and interchanges that would likely have some safety benefit as a result of the direct improvements.

The results of the analysis are shown in the Table 6-11. They indicate that Bristol Road (Link M) does not directly benefit from the other alternatives, as the road is not considered improved within the demand model and it would experience up to 22 percent more traffic on a daily basis. U.S. 23 (Link G), however, has a net safety benefit from each alternative with direct and indirect improvements.

Alternative 3C is expected to provide the best net reduction of crashes followed by Alternatives 1A and 1B. Each of these include widening U.S. 23. The better performers that do not include widening U.S. 23 are Alternatives 3, 3A, 3B, and 5.

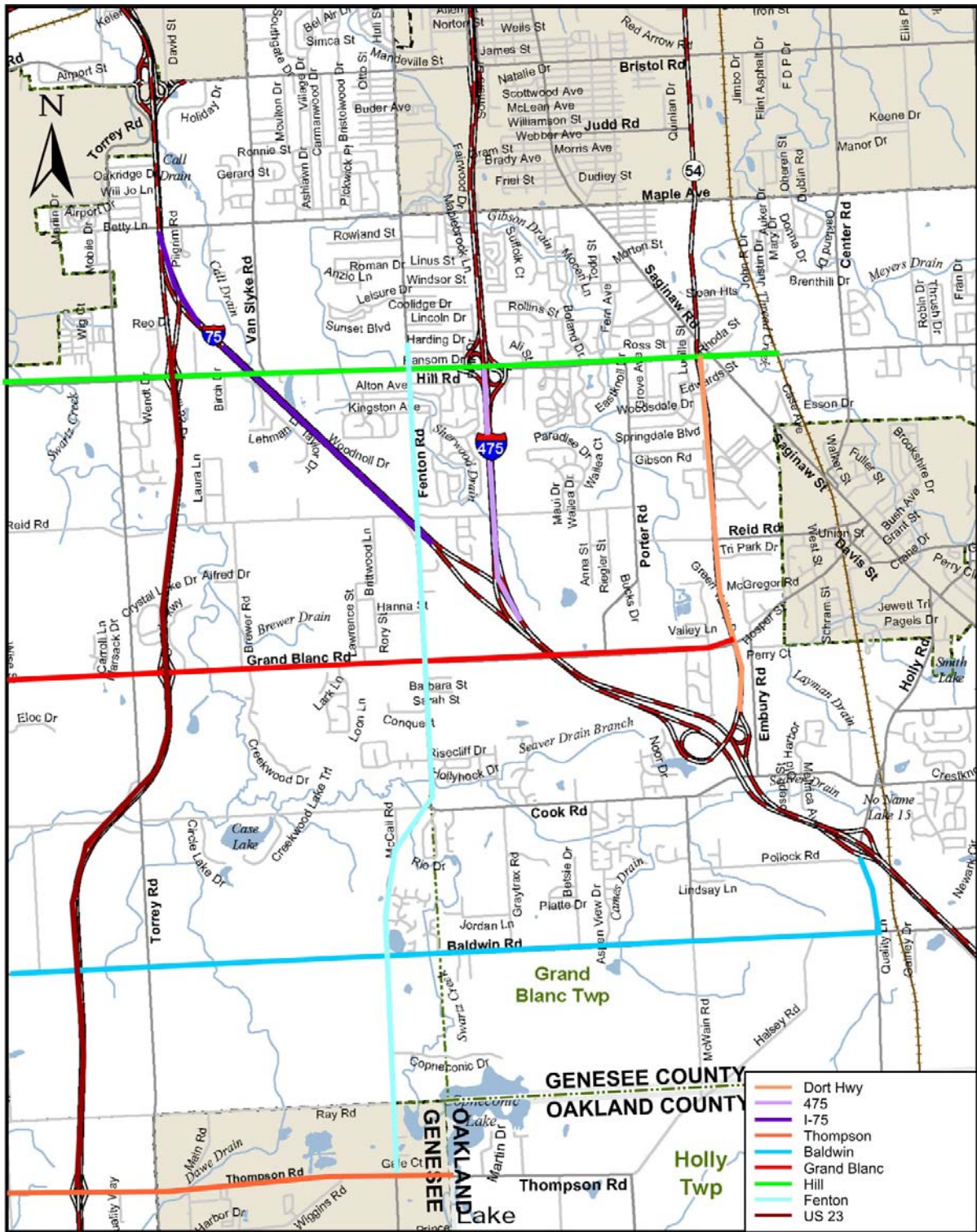
Figure 6-7
Genesee County Freight and Connectivity Study
Roadway Segments Analyzed for Crashes



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Source: The Corradino Group of Michigan, Inc.

Figure 6-7A
Genesee County Freight and Connectivity Study
Roadway Segments Analyzed for Crashes



Source: The Corradino Group of Michigan, Inc.

Table 6-11
Genesee County Freight and Connectivity Study
Forecast of 2035 Crash Experience

Link	On	From	To	Crashes Per Mile Per Year	Alt 1	Alt 1A	Alt 1B	Alt 2	Alt 3	Alt 3A	Alt 3B	Alt 3C	Alt 3 D	Alt 4	Alt4 A	Alt 5
A	M-57	I-75	Saginaw	21.43	21.09	21.11	21.09	21.41	16.19	16.19	16.19	16.20	16.41	21.44	21.39	21.43
B	Hill Road	Linden	Saginaw	21.21	21.64	21.61	21.65	21.56	21.69	21.69	21.79	21.82	21.79	20.93	20.93	14.55
C	Grand Blanc Road	Linden	M-54 (Dort Hwy)	11.56	6.84	6.72	6.89	10.90	11.45	11.36	11.08	10.61	8.00	10.55	10.64	9.47
D	Baldwin	Linden	Holly/I-75	9.05	7.49	7.75	7.62	6.93	6.99	7.92	6.94	7.00	5.67	7.74	7.58	6.15
E	Thompson	Linden	Fenton	8.89	9.07	8.96	8.98	8.58	8.77	6.28	5.45	5.34	8.49	8.13	8.29	9.27
F	Linden	Cook	Thompson	5.51	5.03	3.42	2.95	5.47	4.47	4.61	4.01	4.00	5.80	5.27	5.98	5.99
G	US-23	I-75	Thompson	21.08	20.00	17.13	17.58	19.24	16.06	15.98	15.78	12.40	18.76	18.49	20.01	19.04
H	I-75	US-23	I-475	5.48	5.06	5.02	4.96	6.57	5.34	5.36	5.49	5.51	5.08	5.57	5.57	5.50
I	Fenton Road	Hill	Thompson	10.69	7.64	5.67	5.20	9.09	6.01	7.52	5.32	5.34	5.02	11.44	11.04	9.27
J	I-475	Hill	I-75	4.44	3.55	2.97	2.83	4.55	3.37	3.36	4.77	4.31	4.43	5.47	5.31	4.54
K	M-54 (Dort Hwy)	Hill	I-75	19.60	20.30	20.18	20.14	20.08	20.76	20.66	20.03	20.11	20.48	23.61	23.50	17.94
L	M-15	Ortonville	County Line	32.96	32.96	32.96	32.96	32.96	32.96	32.96	32.96	32.96	32.96	32.96	32.96	32.96
New	Bristol	I-75	M-54 (Dort Hwy)	28.00	30.24	30.53	30.49	28.36	29.59	29.40	29.81	29.93	29.90	30.38	30.57	34.10
Increase in crashes (segments)					2	4	4	1	4	4	5	5	5	1	0	4
Decrease in crashes (segment)					1	1	1	0	0	0	0	0	1	2	2	1
No Change					10	8	8	12	9	9	8	8	7	10	11	8
Net Change These Segments (2035 crashes per mile per year)					-8.98	-15.88	-16.55	-4.19	-16.24	-16.61	-20.28	-24.38	-17.11	2.06	3.88	-9.69

green = alternative has potential to reduce >2 crashes per mile per year in the future along this specific segment

red = alternative has potential to increase >2 crashes per mile per year in the future along this specific segment

Source: The Corradino Group of Michigan, Inc.

6.1.7 Jobs

Two types of jobs projections were developed for each of the 12 alternatives: 1) construction; and, 2) permanent, long-term jobs (Table 6-12). The construction jobs were developed by using the Federal Highway Administration's formula (ala the Stimulus Program) of seven direct and 18 indirect jobs for every million dollars spent on construction (exclusive of right-of-way acquisition). They were then converted to the average number of jobs per year of the periods to construct each alternative's improvements. These range from seven to 15 years.

Table 6-12
Genesee County Freight and Connectivity Study
2035 Job Forecast

	Alternatives											
	1	1A	1B	2	3	3A	3B	3C	3D	4	4A	5
Construction Jobs	200 to 300	400 to 500	300 to 400	200 to 300	400 to 500	600 to 700	500 to 600	800 to 900	600 to 700	300 to 400	400 to 500	200 to 300
Permanent Jobs	Fewer than 50	51 to 100	More than 200	51 to 100	Fewer than 50	Fewer than 50	Fewer than 50	101 to 200	Fewer than 50	Fewer than 50	Fewer than 50	Fewer than 50

Source: The Corradino Group of Michigan, Inc.

Permanent jobs were derived by monetizing travel time savings and vehicle operating cost and then applying the REMI Transight model (Michigan 84-Area v3.1.1) to estimate the total job impacts. The sum of the direct and secondary impacts is reported as total impacts. The secondary impacts include the following:

- Indirect impacts: This refers to incremental business sales and associated income and employment stimulated by increased purchase of input material (supplies, materials, equipment and services) required to expand business activities;
- Induced impacts: This refers to incremental business sales and associated income and employment stimulated by increased consumer spending on goods and services that impacts positively on businesses.

In reviewing these jobs data it is clear that the local economy cannot be repaired with benefits of highway improvements alone. The federal Stimulus Program demonstrated that. And, because of the lack of funding, most permanent jobs do not materialize until after 2030 and are fewer than 50 for eight of the 12 alternatives. The largest number of permanent jobs in 2035 is associated with Alternatives 1B (more than 200 jobs) and 3C (between 100 and 200 jobs).

Likewise, because of funding limitations, construction must be spread over periods of seven to 15 years, beginning in 2015, because aggressive funding cannot be counted upon. Nonetheless, construction jobs could average from the low of 200 to 300 jobs per year (Alternatives 1, 2 and 5) to a high of 800 to 900 jobs per year with Alternative 3C.

6.1.8 Cost

The preliminary cost estimate (current dollars) of each alternative, including property acquisition, is shown in Table 6-13. The estimate is highest for Alternatives 3B (\$330 million) and 3C (\$365 million) each of which includes a new I-475-to-U.S. 23 connector and widening M-15. Alternative 3C includes widening U.S. 23. The least costly alternatives are 1 and 4 at about \$100 million.



Table 6-13
Genesee County Freight and Connectivity Study
Estimated Cost of Alternatives
(including property acquisition)
(2010 dollars)



Alternative	Connector	U.S. 23	M-15	Local	Total
1	\$82	–	–	\$28	\$110
1A	\$82	\$64	–	\$28	\$174
1B	\$82	\$136	–	\$28	\$246
2	\$69	–	\$73	\$10	\$152
3	\$161	–	–	\$10	\$171
3A	\$178	–	\$73	\$28	\$279
3B	\$229	–	\$73	\$28	\$330
3C	\$200	\$64	\$73	\$28	\$365
3D	\$160	–	\$73	\$28	\$261
4	\$70	–	–	\$32	\$102
4A	\$70	–	–	\$72	\$142
5	–	–	–	\$228	\$228



Source: ROWE Professional Services Company



6.2 Evaluation Results



Six members of the consultant team examined all of the data presented above by evaluation factor by alternative to judge the overall performance of each alternative (Table 6-14). For the category of jobs, each evaluator weighted construction jobs equal to or greater than permanent jobs. Construction jobs are more near-term and, so act like a stimulus, but not a permanent solution to the County's economic issues. Likewise, because an aggressive transportation funding program cannot be counted upon, the improvements are spread over a period of seven to 15 years, beginning in 2015, depending on the alternative. The expenditures to widen U.S. 23 and widen M-15 are not expected to begin until 2030.



The evaluation of the alternatives for their job impacts places Alternative 3C ( yellow ovals) (which includes widening U.S. 23 and M-15) as the highest performing plan. The least performing alternatives are 1 and 5 ( yellow squares).


In evaluating neighborhood impacts by alternative, the evaluators considered the change of at least 60 peak hour trucks on sensitive links shown on Figure 6-5 combined with the ability of the proposed connector to attract trucks. Alternative 3C was judged the best performer ( red oval); Alternative 4A was judged the least ( red square).

In the area of transportation/connectivity, the evaluators examined the following data for the study area: daily delay savings, VHT (Vehicle Hours of Travel) savings, and afternoon peak period congestion. These same items were considered on a countywide basis, plus point-to-point travel times on peak hour and daily bases. In the transportation/connectivity category, Alternative 1B was judged best performer ( blue oval); Alternative 2, the least ( blue square).

For the air quality category, the carbon monoxide information provided in Table 6-7 was examined in light of afternoon peak hour congestion indices on Table 6-4. Alternative 1B performs the best ( green oval) while Alternative 5, the least ( green square).

When considering the criterion of private property acquisition, the evaluators examined the possible acquisition of property by land use category focusing on the number of parcels. Also considered was the tax value of the property affected. No alternative is considered positive as all will cause property in significant amounts to be acquired. Alternative 3 is expected to have the least negative effect ( black oval); Alternative 5 is judged to have the most negative effect ( black square).

In examining the impacts on parks/open spaces and wetlands, only wetlands were affected by the alternatives. The evaluators considered the total wetland acres affected and the average number of acres per wetland. Again, no alternative is considered to have a positive effect. Alternative 2 is judged to have the least negative impact ( orange oval); Alternatives 3B and 3C the most negative effects ( orange square).

Noise was evaluated by examining the data in Tables 6-8 and 6-9. As with the acquisition of private property, and wetlands, no alternative is considered to have a positive impact. All alternatives score between 40 and 48 ( pink oval).



Finally, in evaluating the safety characteristics of each alternative, more weight was given to significant improvements on the major links shown in Table 6-11. Then, the overall improvement to all links was considered. Alternative 3C is judged the best performer ( purple oval); Alternative 4A, the least ( purple square).

Table 6-14
Genesee County Freight and Connectivity Study
Selection of Alternatives

Consultant Performance Scores		Alternatives											
Factor		1	1A	1B	2	3	3A	3B	3C	3D	4	4A	5
Generate/Retain Jobs		54.5	61.7	68.8	59.3	60.0	64.5	61.0	75.3	62.7	57.3	59.2	55.5
Minimize Neighborhood Disruption		54.8	63.8	65.5	57.2	70.2	68.5	72.8	75.0	59.2	51.8	48.8	51.5
Better Connect Links in the Transit and Road Networks		52.5	79.0	88.7	51.0	65.5	62.8	68.7	81.8	52.2	52.8	56.0	51.8
Maintain Good Air Quality		54.3	56.8	60.7	51.7	54.3	55.7	55.3	56.8	53.5	51.2	51.8	47.5
Minimize Purchase of Private Property		42.5	42.5	18.3	39.7	49.8	49.5	37.9	37.9	47.5	47.0	32.6	12.1
Protect Open Spaces/Parks/Wetlands		34.3	34.3	21.2	41.5	29.2	24.3	19.2	19.2	28.8	39.0	35.0	36.7
Control Noise at Sensitive Locations		43.0	42.7	42.3	47.5	40.7	41.8	42.8	42.8	41.7	40.2	40.0	44.5
Maximize Safe Travel		64.5	71.8	72.0	60.3	74.7	75.8	80.5	80.7	80.3	55.2	50.8	65.8

Citizens (32)		Avg. Weight	Alternatives											
Order	Factor		1	1A	1B	2	3	3A	3B	3C	3D	4	4A	5
2	Generate/Retain Jobs	20.8%	11.3	12.8	14.3	12.3	12.5	13.4	12.7	15.7	13.0	11.9	12.3	11.5
5	Minimize Neighborhood Disruption	12.9%	7.0	8.2	8.4	7.3	9.0	8.8	9.4	9.6	7.6	6.7	6.3	6.6
3	Better Connect Links in the Transit and Road Networks	16.6%	8.7	13.1	14.7	8.4	10.8	10.4	11.4	13.6	8.6	8.7	9.3	8.6
6	Maintain Good Air Quality	11.8%	6.4	6.7	7.1	6.1	6.4	6.6	6.5	6.7	6.3	6.0	6.1	5.6
8	Minimize Purchase of Private Property	11.3%	4.8	4.8	2.1	4.5	5.6	5.6	4.3	4.3	5.4	5.3	3.7	1.4
4	Protect Open Spaces/Parks/Wetlands	14.4%	4.9	4.9	3.0	6.0	4.2	3.5	2.8	2.8	4.1	5.6	5.0	5.3
7	Control Noise at Sensitive Locations	11.6%	5.0	5.0	4.9	5.5	4.7	4.9	5.0	5.0	4.8	4.7	4.6	5.2
1	Maximize Safe Travel	21.6%	13.9	15.5	15.5	13.0	16.1	16.3	17.3	17.4	17.3	11.9	11.0	14.2
Total Score			62.1	71.0	70.1	63.2	69.4	69.5	69.3	74.9	67.2	60.8	58.3	58.3
Rank			9	2	3	8	5	4	6	1	7	10	12	12

Table 6-14 (continued)
Genesee County Freight and Connectivity Study
Selection of Alternatives

Steering Committee (14)														
Order	Factor	Avg. Weight	Alternatives											
			1	1A	1B	2	3	3A	3B	3C	3D	4	4A	5
1	Generate/Retain Jobs	28.2%	14.8	22.2	25.0	14.4	18.4	17.7	19.3	23.0	14.7	14.9	15.8	14.6
4	Minimize Neighborhood Disruption	13.8%	7.5	8.8	9.0	7.9	9.6	9.4	10.0	10.3	8.1	7.1	6.7	7.1
3	Better Connect Links in the Transit and Road Networks	18.6%	9.8	14.7	16.5	9.5	12.2	11.7	12.8	15.2	9.7	9.8	10.4	9.7
6	Maintain Good Air Quality	11.4%	6.2	6.5	6.9	5.9	6.2	6.4	6.3	6.5	6.1	5.8	5.9	5.4
8	Minimize Purchase of Private Property	10.0%	4.3	4.3	1.8	4.0	5.0	5.0	3.8	3.8	4.8	4.7	3.3	1.2
7	Protect Open Spaces/Parks/Wetlands	11.5%	3.9	3.9	2.4	4.8	3.3	2.8	2.2	2.2	3.3	4.5	4.0	4.2
5	Control Noise at Sensitive Locations	11.7%	5.0	5.0	4.9	5.5	4.7	4.9	5.0	5.0	4.9	4.7	4.7	5.2
2	Maximize Safe Travel	23.0%	14.9	16.6		13.9	17.2	17.5	18.5	18.6	18.5	12.7	11.7	15.2
Total Score			66.9	77.1	77.6	68.2	75.2	75.7	75.8	82.8	73.0	65.5	63.4	63.6
Rank			9	3	2	8	6	5	4	1	7	10	12	11

Consultant (6)														
Order	Factor	Avg. Weight	Alternatives											
			1	1A	1B	2	3	3A	3B	3C	3D	4	4A	5
1	Generate/Retain Jobs	28.0%	14.7	22.1	24.8	14.3	18.3	17.6	19.2	22.9	14.6	14.8	15.7	14.5
4	Minimize Neighborhood Disruption	16.5%	9.0	10.5	10.8	9.4	11.6	11.3	12.0	12.4	9.7	8.5	8.0	8.5
3	Better Connect Links in the Transit and Road Networks	18.4%	9.6	14.5	16.3	9.4	12.0	11.5	12.6	15.0	9.6	9.7	10.3	9.5
8	Maintain Good Air Quality	9.7%	5.3	5.5	5.9	5.0	5.3	5.4	5.4	5.5	5.2	5.0	5.0	4.6
5	Minimize Purchase of Private Property	12.3%	5.2	5.2	2.2	4.9	6.1	6.1	4.6	4.6	5.8	5.8	4.0	1.5
6	Protect Open Spaces/Parks/Wetlands	12.2%	4.2	4.2	2.6	5.1	3.6	3.0	2.3	2.3	3.5	4.8	4.3	4.5
7	Control Noise at Sensitive Locations	11.4%	4.9	4.9	4.8	5.4	4.6	4.8	4.9	4.9	4.8	4.6	4.6	5.1
2	Maximize Safe Travel	19.6%	12.7	14.1	14.1	11.8	14.6	14.9	15.8	15.8	15.8	10.8	10.0	12.9
Total Score			66.1	76.1	76.0	67.6	74.6	74.9	74.7	81.7	71.9	65.2	62.7	62.1
Rank			9	2	3	8	6	4	5	1	7	10	11	12

Source: The Corradino Group of Michigan, Inc.

By combining these performance scores with the weight on the evaluation factors provided by community representatives, the project's Steering Committee and the consultant, the overall performance of each alternative is established. The top performers, for all three weightings, are Alternatives 3C (△ blue pyramid) followed by 1A (△ green pyramid) and 1B (△ blue pyramid). Each of these include widening U.S. 23. Alternative 3C also includes widening M-15. Because these latter improvements are likely to be postponed for some time (not to start until 2030 or later), the next best performers need to be considered. These are 3, 3A, and 3B. They score almost identically using separate weightings of the citizens, Steering Committee and consultant staff. Therefore, it is the consultant's opinion that the core of the preferred alternative is within these three alternatives. In establishing the final preference, consideration to blending local improvements will also be involved, as will be widening of U.S. 23 and M-15 at an appropriate time in the future.

The results of the evaluation were reviewed with the Steering Committee and the public at two separate midday meetings. The consultant, GCMPC staff, and Steering Committee then met to review the results and select the Preferred Alternative. That is discussed in the next section of this report.

7. The Preferred Alternative

7.1 Introduction

One purpose of the Freight and Connectivity Study is to help meet the challenges of economic revitalization. Realizing population and employment growth is forecast to be relatively small over the next 25 years, as the region and the state fight their way through and out of the “Great Recession,” it is clear that highway improvements alone, while helpful, will not fully repair the local economy – the federal Stimulus Program has demonstrated that. Nonetheless, the Freight and Connectivity Study can directly support the first and fourth platforms for economic revitalization as presented in the Comprehensive Economic Development Strategy – health care and transportation.

- Health care and education
- Finance, insurance, and real estate
- Professional and technical services
- Transportation and utilities

In terms of connectivity, the Preferred Alternative will handle at least 350 (and up to 500) trucks in the afternoon peak hour alone – not an insignificant amount. Additionally, the connector can support the planned medical campus development at and around the Genesys Regional Medical Center. The medical campus concept is expected to generate more than 6,000 direct jobs and another 15,000 indirect jobs by 2020 (Figure 7-1). This alone exceeds the goal of 9,000 new jobs in 12 years established in the CEDS and nearly meets the LRTP projection of 24,000 net new jobs over the next 25+ years. When combined with construction jobs of the roadway proposals examined in this study, which will average 400 to 600 jobs every year for up to 15 years, implementing the Freight and Connectivity Study results will help Genesee County in its economic revitalization.

7.2 Decision Process

Following the October public meetings, the consultant met with the Steering Committee to present its proposal on the Preferred Alternative. It included eight localized road improvements, four of which are shown in detail on Figure 7-2. For the connector, the focus was on the “3 Set” of alternatives from which the plan illustrated on Figures 7-3 and 7-3A was chosen as the Preferred Alternative. The consultant then proposed staging of connector and related projects to support the medical campus development at and around Genesys area while recognizing the entire connector could not be completed until the medical campus demonstrates its full potential will be met. The number of trips (25,000) associated with the full medical campus development was added to the analysis.

Figure 7-1
Concept of Medical Campus



Source: The Corradino Group of Michigan, Inc.

CORRADINO



CORRADINO

Figure 7-3
Preferred Alternative
Connector and Related Improvements

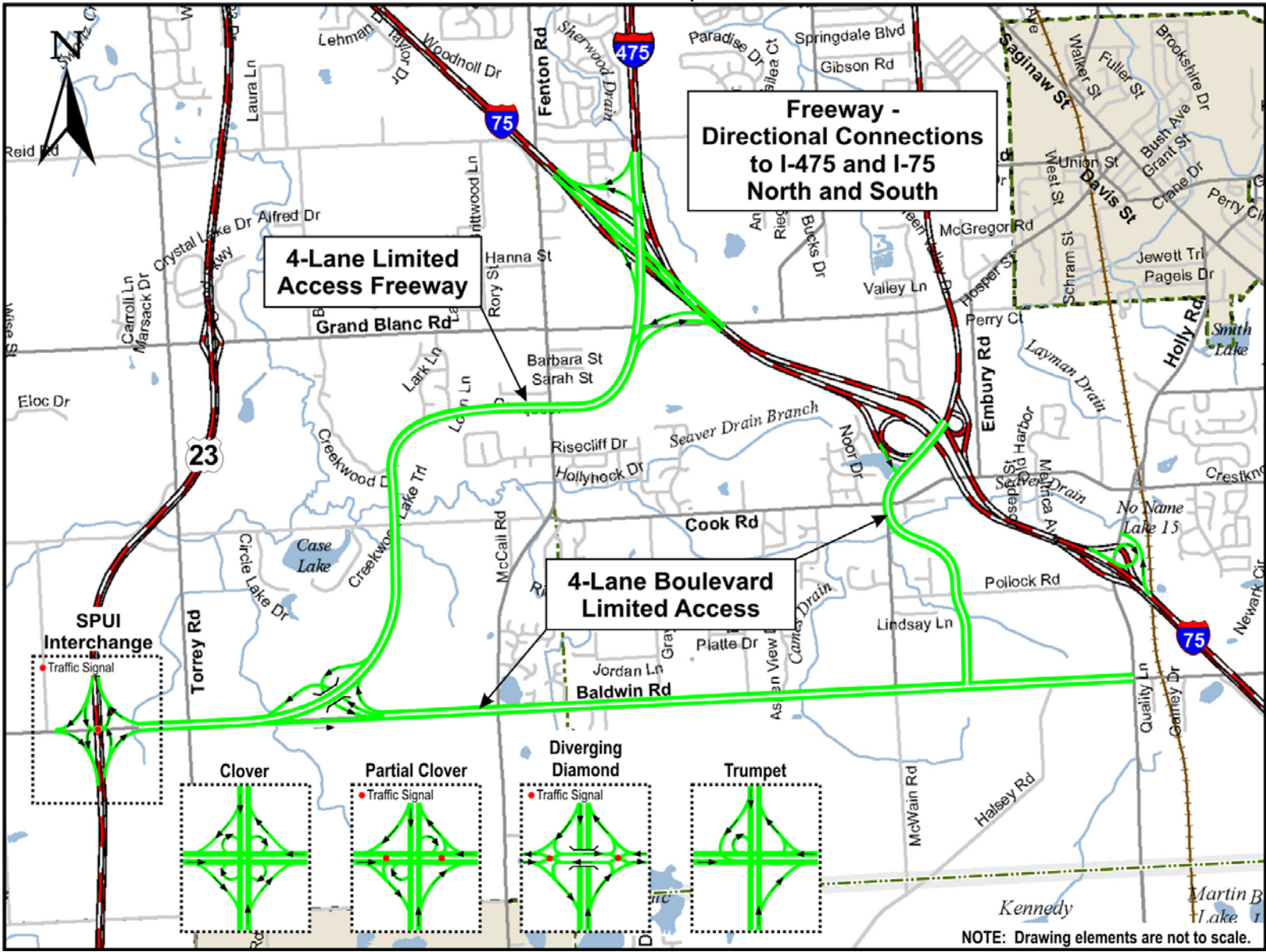
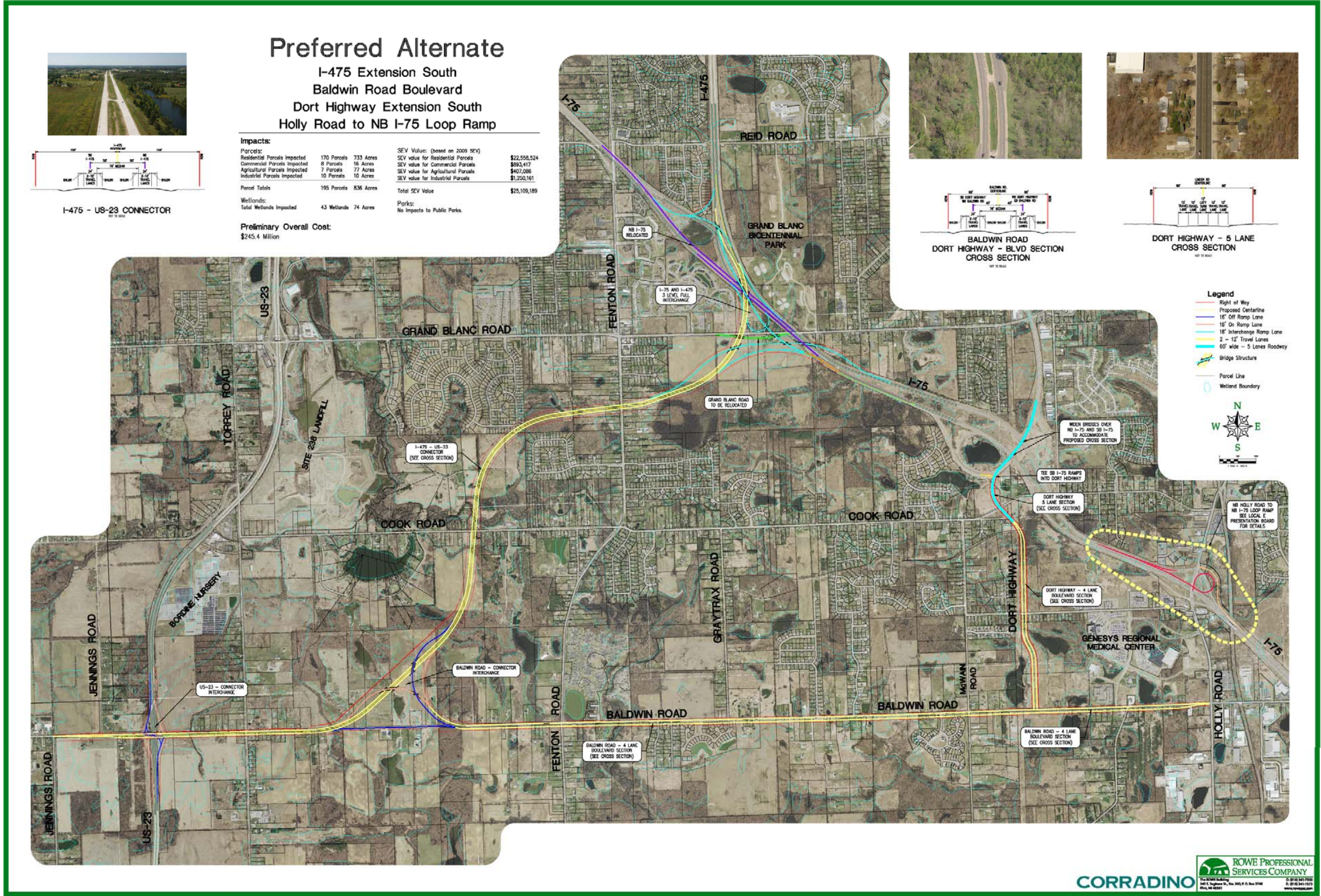


Figure 7-3A
Connector and Related Improvements of Preferred Alternative



7.2.1 Plan Implementation

All projects have been staged to address the practical availability of funding reflecting the pace of the recovery from the ongoing recession. Construction of the first projects is expected to begin in 2015, while design and environmental clearance will precede construction.

The extension of Dort Highway over I-75 to Baldwin Road (Table 7-1 and Figure 7-4) is contemplated to begin in 2015. This will support the medical campus plan from the outset. The property on which the Dort extension is to be built may be dedicated at no cost by the Genesys Health System.

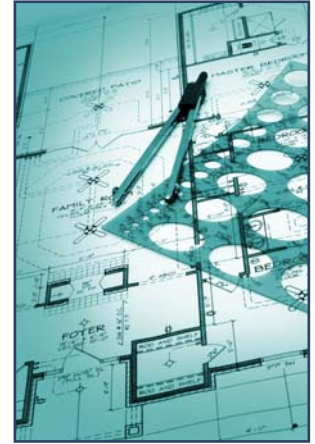
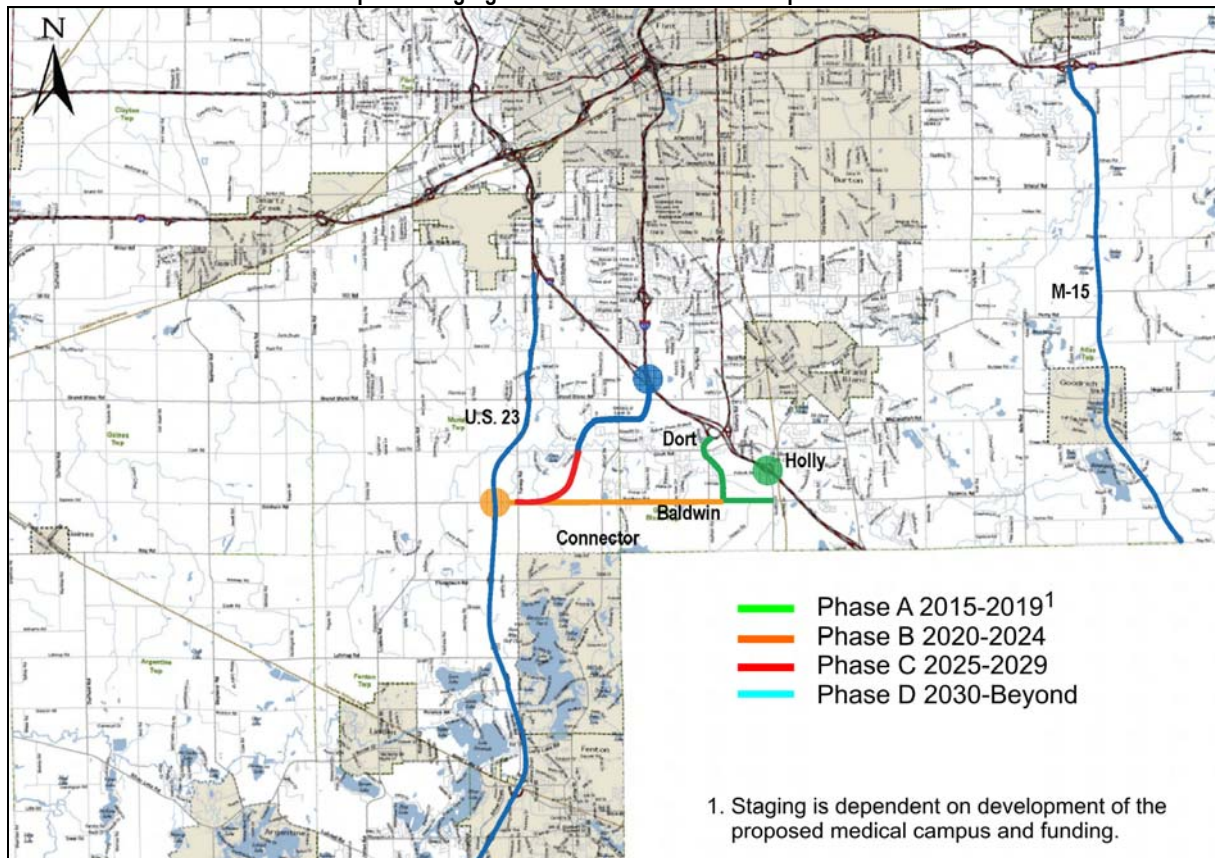


Table 7-1
Genesee County Freight and Connectivity Study
Preferred Alternative Cost, Staging and Possible Funding Sources

Localized Improvements			
Phase A (2015 through 2019) ¹	Phase B (2020 through 2024)	Phase C (2025 through 2029)	Phase D (2030 and beyond)
<ul style="list-style-type: none"> Bristol (EB)/I-75 (NB) Interchange (\$5M) M-21 (EB)/I-75 (SB) Interchange (\$8M) M-57/I-75 Interchange Lighting (\$0.5M) 5th Avenue/Robert T. Longway (Saginaw to Dort) (\$2M) 	<ul style="list-style-type: none"> Saginaw (SB)/I-75 (NB) Interchange (\$2M) Upgrade Bristol Rd. (Center Rd. to M-15) to All-weather Road (\$3M) Upgrade Silver Lake Rd. to All-weather Road (\$3M) 	<ul style="list-style-type: none"> CN/CSX Rail Connection near Court St. and Dort Hwy. (\$2M) Lapeer Rd. widening (I-69 to M-15) (\$2M) 	
SUBTOTAL: \$15.5 million	SUBTOTAL: \$8.0 million	SUBTOTAL: \$4.0 million	
I-475 to U.S. 23 Connector			
Phase A	Phase B	Phase C	Phase D
<ul style="list-style-type: none"> Dort Extension to Baldwin Rd. (\$24M) Baldwin Blvd. from Dort Extension to Holly Rd. (\$9M) Holly Rd. to I-75 (NB) Interchange (\$13M) 	<ul style="list-style-type: none"> Baldwin Blvd. from Dort Extension to Connector (\$29M), including U.S. 23/Connector Interchange 	<ul style="list-style-type: none"> Connector from U.S. 23 to Cook Rd. (\$64M) 	<ul style="list-style-type: none"> Connector from Cook to I-475 including the I-475 Interchange (\$106M) U.S. 23 Widening (TBD) M-15 Widening (TBD)
SUBTOTAL: \$46.0 million	SUBTOTAL: \$29.0 million	SUBTOTAL: \$64.0 million	SUBTOTAL: \$106.0 million
PHASE TOTAL: \$61.5 million	PHASE TOTAL: \$37.0 million	PHASE TOTAL: \$68.0 million	PHASE TOTAL: \$106.0 million

¹ M-57/I-75 interchange lighting should be improved as soon as possible. Its cost is estimated at \$500,000.

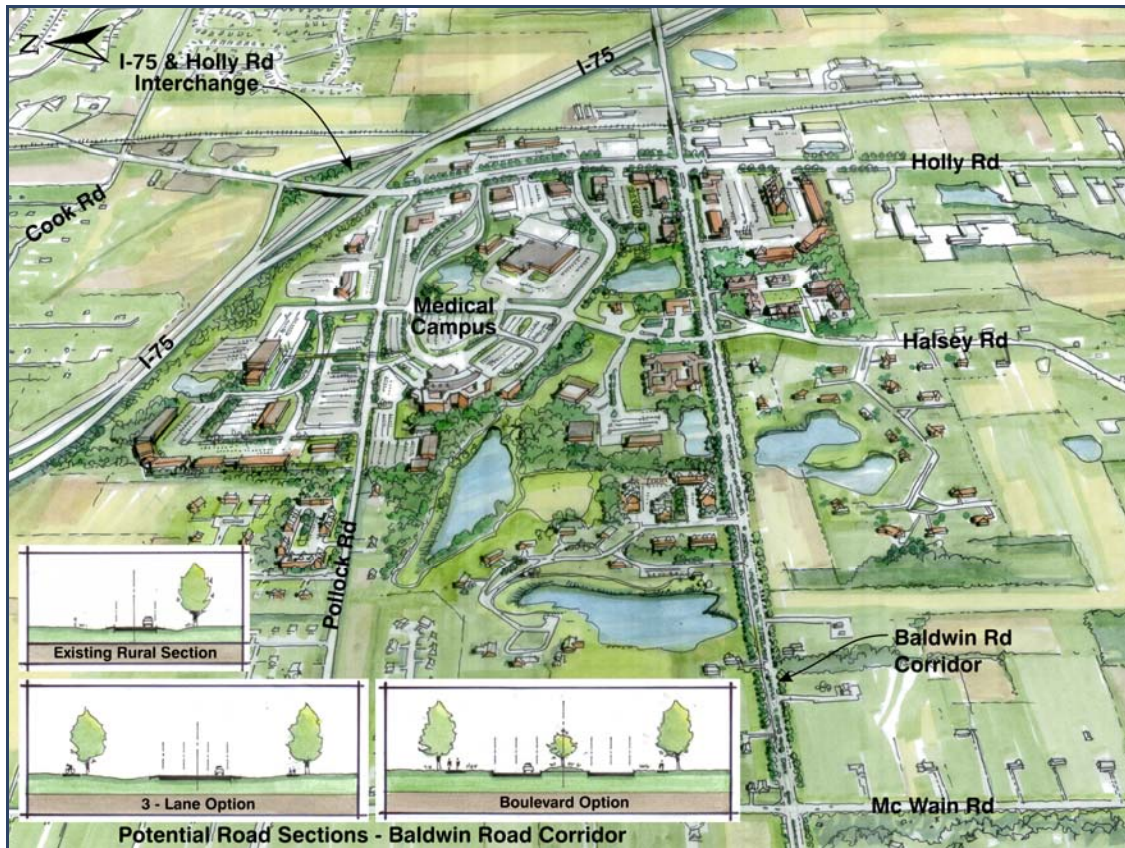
Figure 7-4
Genesee County Freight and Connectivity Study
Proposed Staging of Connector and Related Improvements



To add further support to the proposed medical campus development, Baldwin Road would be widened from the Dort Highway extension to Holly Road. Baldwin would become a boulevard. The concept in this study is for a “wide” boulevard with a right-of-way of 180 feet which can handle turns by the largest trucks. A narrow boulevard with a 120-foot right-of-way is an option to consider as the study’s recommendations are implemented. Another project to support medical campus development is improving the Holly Road/I-75 interchange to eliminate congestion caused by turning vehicles that cannot be accommodated by the interchange’s current configuration.

Assuming the medical campus lives up to expectations, then Baldwin Road would be improved to a boulevard from the Dort Extension to the east (Figure 7-5). A new interchange would be built to connect Baldwin to U.S. 23. This connection is expected to be made in the 2020 to 2024 timeframe. By completing this much of the Preferred Plan, the most cost-effective core element of any alternative analyzed in this study would be in place.

Figure 7-5
Concept of Baldwin Road



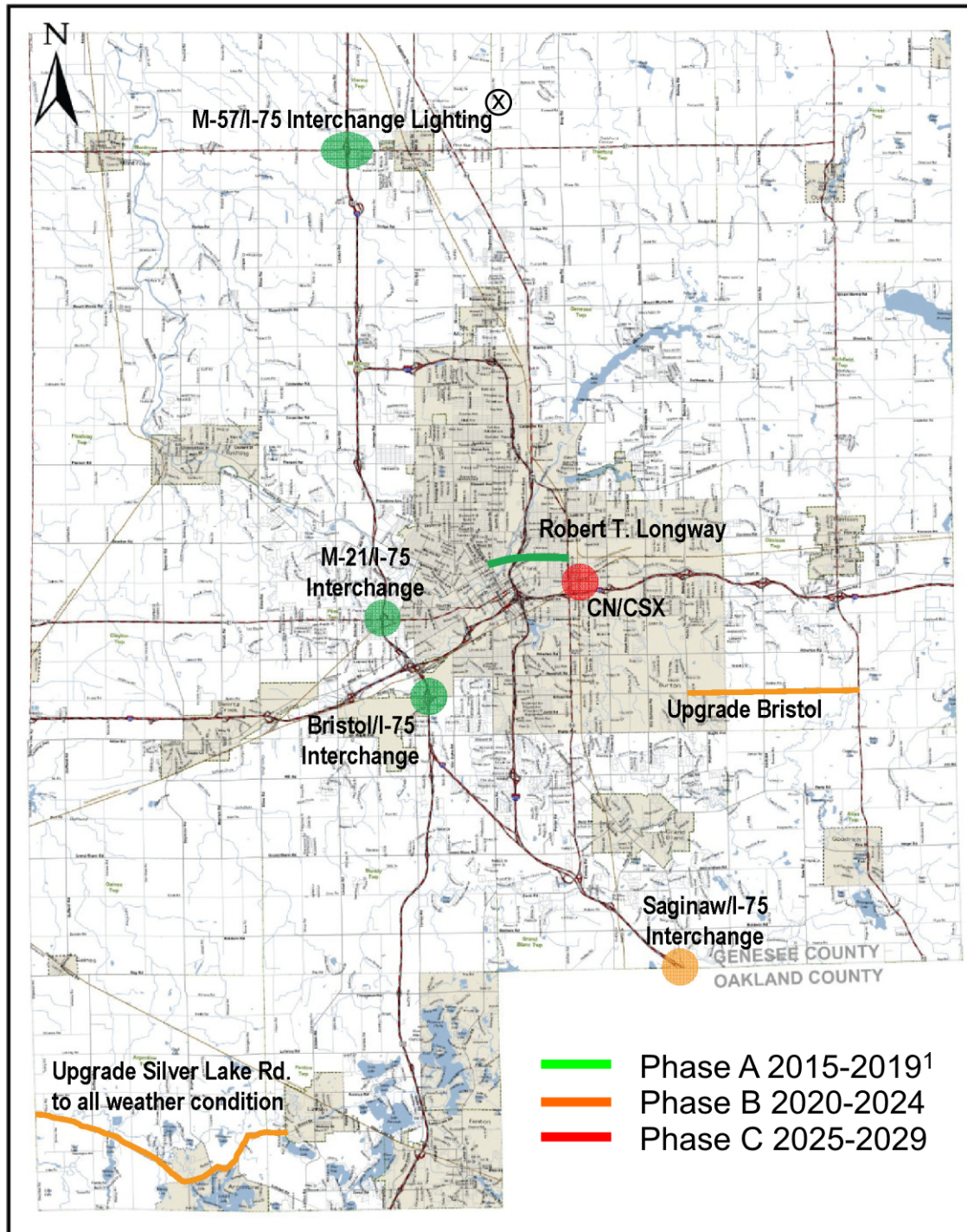
Because future funding for transportation is expected to be limited for some time, the section of the U.S. 23-to-I-475 connector from Baldwin Road to Cook Road is proposed to occur in the 2025-2029 timeframe. The last section of the connector, from Cook Road to I-475, including a significantly modified interchange, would then follow in the period between 2030 and 2035. Without doubt, additional analyses, including updates of the Genesee County Long Range Transportation Plan, will be completed before the connector begins to reconfirm its needs. Likewise, the need to widen U.S. 23 and/or M-15 should be re-examined.

7.2.1.1 Localized Road Improvements

The Freight and Connectivity Study addressed a number of road improvements based on Steering Committee and public input. Appendix E includes the disposition of every concept suggested. The localized improvements in the Preferred Alternative and their proposed phasing are (Figure 7-6):

- Phase A (Timeframe: 2015 through 2019)
 - ✓ Improve the Bristol Road (EB)/I-75 (NB) interchange
 - ✓ Improve the Saginaw (SB)/I-75 (NB) interchange
 - ✓ Improve Robert T. Longway between Saginaw and Dort through context sensitive treatment/streetscape improvements
 - ✓ Upgrade Silver Lake Road to all-weather condition

Figure 7-6
Genesee County Freight and Connectivity Study
Proposed Staging of Localized Improvements



(X) This project should occur as soon as possible.

1. Staging is dependent on funding

- Phase B (Timeframe: 2020 through 2024)
 - ✓ Improve the M-21 (EB)/I-75 (SB) interchange
 - ✓ Improve the CN/CSX rail connection near Court Street and Dort Highway
- Phase C (Timeframe: 2025 to 2030)
 - ✓ Upgrade Bristol Road, between Center Road and M-15, to all-weather condition

It is noted that improved lighting at the M-57/I-75 interchange is a “localized” improvement that should occur as soon as possible.

7.3 Costs, Funding and Proposed Implementation

The overall cost of the Preferred Alternative (in 2010 dollars) is \$272.5 million (refer to Table 7-1). (Detailed cost estimates are included in Appendix D.) The cost by phase is:

■ Phase A/2015 through 2019	\$61.5 million
■ Phase B/2020 through 2024	\$37.0 million
■ Phase C/2025 through 2029	\$68.0 million
■ Phase D/2030 and beyond	<u>\$106.0 million</u>
Total	\$272.5 million

The localized improvements are projected to cost \$27.5 million (refer to Table 7-1).

The Dort Highway extension is expected to cost \$24 million, if land for it is not provided, cost-free, by Genesys. Widening Baldwin from the Dort Highway extension to Holly Road is estimated to cost \$9 million. The Holly Road/I-75 interchange is projected to cost \$13 million. The cost of the Baldwin Boulevard and interchange with U.S. 23 is estimated at \$29 million. The connector from Baldwin to I-475 would cost \$170 million. It is noteworthy that widening Baldwin Road and improvements to the Holly Road/I-75 interchange are already part of the county’s Long Range Transportation Plan. (So are the Bristol Road (EB)/I-75 (NB) interchange and the M-21/I-75 interchange improvements). Therefore, the cost of these improvements (\$64 million calculated for this study) is not an addition to the commitments already made and approved by local and federal authorities. Possible funding sources are:

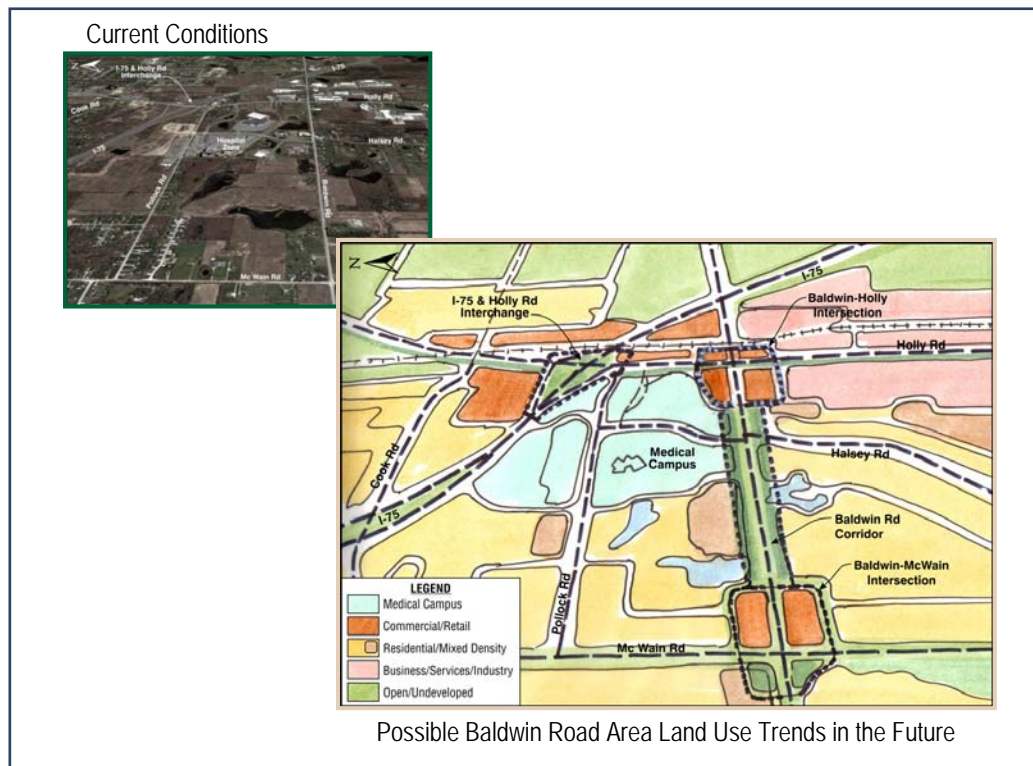
- Private sources (railroads, investors in proposed medical campus)
- Genesee County Road Commission
- Federal Highway Administration
- Michigan Department of Transportation
- Michigan Economic Development Corporation
- City of Flint
- Townships

Efforts will be made to secure the needed financial resources from these and other sources as they may develop.

7.4 Other Steps

It is important to recognize that steps should be taken to ensure land use and zoning decisions in proximity to the I-475-to-U.S. 23 connector maintain the quality of life of the area (Figure 7-7). Currently, much of the vacant property along the proposed path of the connector is in agricultural use. To ensure this property is not permitted to be used in manners that would block the connector physically or financially, proper land use/zoning controls are needed. The character along Baldwin

Figure 7-7
Genesee County Freight and Connectivity Study
Address Land Use/Zoning



Road should be protected by maintaining the large-lot residential pattern while being cognizant of the nearby development of the medical campus.

7.5 Conclusion

The results of the Genesee County Freight and Connectivity Study complement the work documented in the Long Range Transportation Plan and the Comprehensive Economic Development Strategy. The Genesys Health System was part of the community leadership that produced all three projects. Now, Genesys has proposed developing a medical campus at and around the Genesys Regional Medical Center. This proposal has significant merit. It is forecast that by 2020 this project would create more than 6,000 jobs directly on site and another 15,000 support jobs throughout the region, mostly in Genesee County. The medical campus is in the study "subarea" served by the proposed I-475-to-U.S. 23 connector, which has elements to tie into the medical campus area. Additionally, construction of this study's recommendations is expected to create 400 to 600 jobs each year for as many as 15 years. This doesn't include the construction jobs associated with the medical campus.

Construction of the Freight and Connectivity Study recommendations are expected to begin in 2015 (advance environmental and design work would precede this) recognizing that the funding sources to embark on the program at the federal, state and local levels will not be adequate until the current recession is over. The staging of all projects in the plan covers 20 years. But, the work on non-local improvements beyond the first phase (2015 to 2019) will depend on the medical campus demonstrating that its expectations will be met.

Comments made at the December public meeting on the proposed plan are included in Appendix F. Acknowledgement of these comments is included in Appendix G. One often-repeated concern is the impact of the proposed I-475/U.S. 23 connector on property values. There are a variety of causes for property value changes, particularly in this economic recession (there are more than 6,000 properties in foreclosure in Genesee County). There are also a number of rules/regulations applied to determine property value by the Federal Highway Administration and the Michigan Department of Transportation. Nonetheless, it should be noted that major projects, such as the I-475/U.S. 23 connector, have recently involved a program of community benefits to mitigate a project's impacts. This includes efforts to address property values and property replacement. Whether that approach will apply on the I-475/U.S. 23 connector, which may not be built, if it is built, for at least 15 years, remains to be seen.