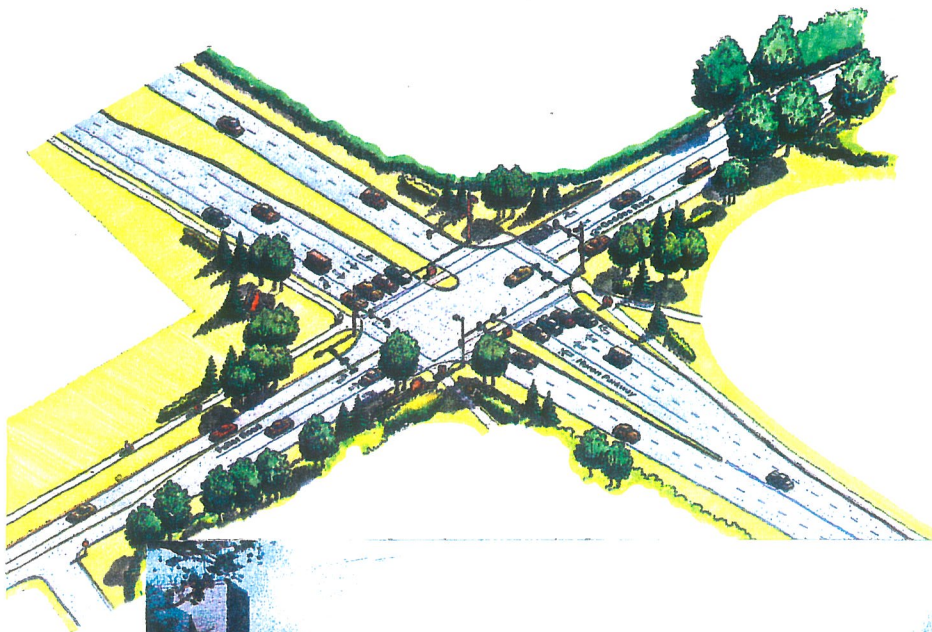
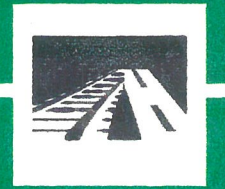


Geddes/Fuller/Conrail

Corridor Study



June 1994



EXECUTIVE SUMMARY

In April of 1993, the City of Ann Arbor, The Ann Arbor Transportation Authority, and the University of Michigan jointly issued a request for proposal for a study of the Geddes/Fuller/Conrail corridor. The study's purpose is to develop and analyze transportation alternatives for the corridor with an emphasis on preferential transit, use of high occupancy vehicle (HOV) lanes (highway lanes designated for vehicles carrying two or more passengers), non-motorized options, and other related improvements.

Socioeconomic forecasts based on Ann Arbor-Ypsilanti Urban Area Transportation Study Committee (UATS) projections predict that between now and the year 2015 significant increases will occur in major demographic indicators in the corridor such as:

- Households 33%
- Retail employment 90%
- Non-retail employment 48%
- Total employment 52%

Although socioeconomic growth is desirable, excessive amounts lead to large increases in trips--trips which cannot be accommodated with the existing roadway network. Presently, existing travel demand is nearing the maximum capacity of Geddes/Fuller Road. Any increase of traffic and vehicle trips may result in:

- Increased congestion and travel time,
- Traffic diversions to other local and residential streets,
- Degradation of air quality,
- Reduced safety,
- Increased noise levels,
- Degradation of the environment, and
- Increased vehicle/pedestrian conflicts.

The challenge facing Ann Arbor is to understand the potential increases in demographics and travel demand, and to improve the traffic-carrying capacity in the corridor without degrading the environment or quality of life.

Ann Arbor planners, transportation professionals, and community citizens recognize the potential for growth and increased congestion in the Geddes/Fuller corridor, and have been organized into committees to address this issue. Two committees were formed to help guide the Geddes/Fuller/Conrail corridor study: a Citizens Advisory Committee (CAC) consisting of 26 members of the community, and a Steering Committee consisting of 14 representatives from the University of

Michigan, Ann Arbor Transportation Authority, the City of Ann Arbor, and other agencies.

The two committees formulated the following set of goals and objectives to help guide the study:

GOAL 1: To efficiently and effectively serve travel needs of the corridor.

OBJECTIVES:

Provide an adequate level of mobility along/within the corridor both today and in the future, and provide connections to the regional transportation system.

- Provide incentives for and encourage use of alternative transportation modes/management techniques of travel.
- Increase persons per vehicle throughout the corridor.
- Provide transportation alternatives in the form of transit, bicycle, and pedestrian facilities and services for persons who cannot or choose not to use automobiles.

GOAL 2: To be compatible with the environmental character and adjacent land uses of the corridor.

OBJECTIVES:

- Implement transportation system improvements that are sensitive to the unique characteristics of the corridor.
- Implement transportation system improvements that are sensitive to adjacent land uses, natural features, and have positive environmental aspects.
- Support land use development patterns consistent with other community and institutional plans.

GOAL 3: To be implemented within the financial constraints of public/private resources.

OBJECTIVES:

- Develop a transportation corridor plan that can be financed within the resources of the public sector.
- Develop policies and programs that encourage private sector participation in serving corridor travel needs.

- Developing a plan to satisfy the requirements of these goals and objectives was the focus of the Geddes/Fuller/Conrail corridor study.

A three-step procedure was used to evaluate potential alternative strategies for the corridor. This procedure starts with a broad range of alternatives and filters or screens the alternatives through a series of tests to identify alternatives that support the goals and objectives. The final result of this evaluation procedure is a recommended alternative that best supports the goals and objectives of the corridor and provides an acceptable cost-benefit measurement.

The first screen of the Geddes/Fuller/Conrail study considered a "universe" of alternatives. This universe included a wide range of alternatives that could have any chance of meeting the objectives for the corridor. These alternatives were subjected to a fatal flaw analysis whereby the alternative either passed or failed the test.

The universe of alternative strategies can be categorized as follows:

- Travel Demand Management (TDM),
- Transportation System Management (TSM),
- Intelligent Vehicle-Highway Systems (IVHS) Applications,
- Environmental and Aesthetic Issues,
- Roadway Widening, and
- No-build.

Travel demand management encompasses strategies that coordinate the use of travel and maximized effectiveness of current transportation facilities. Compared to construction, these strategies are generally low cost. These strategies include carpool/vanpool programs, congestion pricing and flexible work hours. Transportation system management strategies seek to make improvements in transportation facilities to improve the effectiveness of the overall travel environment. These strategies can have a wide range of costs, benefits and impacts. TSM strategies tend to focus primarily on infrastructure improvements and, consequently, are site specific. Intelligent Vehicle-Highway Systems (IVHS) is a national initiative to apply technology-based solutions to make significant increases in safety, mobility, air quality and trip quality. IVHS strategies provide real-time traffic and trip information to travelers to accomplish these improvements.

Any changes made to the infrastructure or operating characteristics of the transportation system within the corridor must be made in accordance with procedures and regulations for environmental and aesthetic issues. These issues include,

- Preserve lands fronting transportation routes,
- Land use decisions relating to transit, and
- Enhance image of frontage roads.

To complete the range of available alternatives considered for this study, a no-build or do-nothing option, and a construction option were considered. This provided a basis to compare the relative impact of considered improvements and an understanding of the impacts of "not-taken" proactive steps in improving the corridor.

As a preliminary screening of strategies, a universe of 128 alternatives was identified and then reduced to 35 candidates. The alternatives not passing this preliminary screening had fatal flaws and had no elements worthy of being considered for combination with other strategies. The remaining 35 strategies were given a more thorough review and analysis for fatal flaws and possible elements for combination in other strategies. Of the 35 strategies reviewed in detail in Screen 1, 20 strategies received a pass rating. Of the 15 strategies that failed, four had elements that were considered desirable and warranted further review. From these twenty passing strategies and four additional elements, nine alternatives were developed for review in the second screening.

The Screen 2 evaluation was a more rigorous review and focused on three categories of macro-level criteria:

- Use and Ridership,
- Environmental Issues, and
- Cost Considerations.

Individual strategies for each of the alternatives were evaluated using a weighted scoring procedure. Six of the nine alternatives were eliminated through this screening.

The final and most rigorous analysis of alternatives occurred in Screen 3. The analysis from the Screen 2 evaluation indicated that there were several key elements throughout the previous alternatives that warranted further review. These key elements were combined into three new alternatives:

- Alternative A: Applications of TDM/TSM,
- Alternative B: One-Lane Bus Guideway in the Conrail Right-of-Way, and
- Alternative C: Extend the Existing HOV-Lane on Fuller Road.

Widening Geddes/Fuller Road and a Do Nothing alternative (Alternatives D and E respectively) were also evaluated.

Seventeen criteria were used to evaluate individual strategies of the final alternatives mentioned above:

1. Desirable person and vehicle throughput,
2. Ridership,

3. Travel time savings,
4. Proximity to congested roadways,
5. Consistency with transportation plan,
6. Safety,
7. Right-of-way requirements,
8. Air quality,
9. Noise Impacts,
10. Wetlands, woodlands, and other natural features,
11. Impact on side slopes,
12. Existing traffic level of service,
13. Reverse commuter trips,
14. Visual and enhancement opportunities,
15. Capital costs,
16. Operating and maintenance costs, and
17. Cost-effectiveness.

The strategies were evaluated individually against each of the first 14 criteria and assigned a score between -5 and 5, depending upon the evaluation result. A negative score indicated that the strategy will likely adversely affect the criterion with respect to the study's goals and objectives. Conversely, positive scores indicated desirable impacts and work toward achieving the goals and objectives. Scores were then summed by alternative to determine that alternative's overall rating. Results of this final screening were ranked according to the ratings. Cost-related criteria 15-17 were also ranked. These rankings are shown in the Ranking Summary for all Screen 3 Criteria table. Rankings are shown for post-implementation and year 2015 time periods.

RANKING* SUMMARY FOR ALL SCREEN 3 CRITERIA

Strategy	Cost-Benefit Criteria (Criteria 15-17 only)		Non-Cost Criteria Screen 3 (Criteria 1-14)	Final Overall Ranking (Criteria 1-17)	
	P-Imp	Yr. 2015		P-Imp	Yr. 2015
Parking Restrictions & Mgmt.	4	5	5	3	4
Additions to Transit Services	15	12	3	4	3
Smart Buses and Kiosks	17	14	9	10	9
Park & Ride w/ Bus Transfer	12	17	11	11	13
Employee Rideshare Programs	1	1	14	13	12
Area Bicycle Circulation Program	10	9	6	6	6
Pedestrian Circulation System	5	3	8	7	7
ATMS-Traffic Surveillance	14	15	11	12	12
ATIS-Transit Info.	18	16	8	8	8
CMS Prkg & Traffic Information	8	8	16	15	15
Signal Optimization, Phasing, Prgssn	2	2	3	2	2
Intersection Improvements	3	4	12	10	10
1-Lane Guided Busway on CONRAIL	11	11	1	1	1
Satellite P&R near Busway Stations	16	18	15	16	16
Feeder Buses to P&R / Busway Stns	13	13	5	5	5
Pedestrian Traffic Enhancements	6	6	14	14	14
Extend Existing HOV on G/F	9	10	17	17	17
Widen G/F to 4-lanes	7	7	18	18	18
Do Nothing	19	19	19	19	19

* Highest (most desirable) rank = 1; lowest = 19.

A potential staging plan for the recommended alternative is presented in the table below. Responsible agencies for implementation of individual strategies are also provided.

POTENTIAL STAGING OF THE RECOMMENDED ALTERNATIVE

Strategy	Capital Cost	Annual O&M Cost	Responsible Agency
SHORT-TERM (0 TO 5 YEARS)			
One-Lane Bus Guideway on Conrail, LeForge Road to the Medical Center			
Environmental Impacts Studies, Preliminary Engineering and Design	\$1,400,000	--	AATA
Parking Restrictions and Management			
HOV-Priority Parking	\$37,000	\$39,000	Employer Specific
Parking Fee	--	\$163,000	
Increase to 10% HOV-Priority Parking	\$37,000	--	
Transit Service Enhancements			
Increase Transit to 15-Minute Headway	\$1,290,000	\$727,000	AATA
Purchase and Operate 3 Feeder Buses in Peak Hours	\$645,000	\$363,000	AATA
Continue Fare Subsidies		\$3,000	AATA
Smart Buses, Kiosks, and ATIS Transit Information			
Implement AATA Smart Bus	\$645,000	\$166,000	AATA
Park and Ride with Bus Transfer			
Use Existing Lots for P&R	--	Negotiable	AATA
Employee RideShare Program			
Market RideShare Public Information Campaign	--	\$21,000	AATA
Area Bicycle Circulation Program			
Coordinate Plans with City and Washtenaw County	\$1,256,000	\$38,000	City of Ann Arbor

Strategy	Capital Cost	Annual O&M Cost	Responsible Agency
Pedestrian Circulation System			
Assure Consistency with Master Plan	--	--	City of Ann Arbor
Site Specific Circulation Plans	\$125,000	\$2,000	
System Beautification Project		\$30,000	
Signal Optimization, Phasing, Progression			
Optimize All Signals in Primary Study Area	\$31,000	\$4,000	City of Ann Arbor
Set Timing Plans for AM/PM Peaks	--	--	
Coordinate Efforts with Washtenaw County and City	--	--	
Intersection Improvements			
<i>Geddes/Fuller and Huron Parkway</i>	\$414,000	TBD	City of Ann Arbor
Add Right Turn Lanes for EB and WB Geddes\Fuller	--	--	
Extend Left Turn Bay on WB Geddes/Fuller	--	--	
Improve Pavement Conditions on EB and WB Geddes/Fuller	--	--	
<i>Geddes Road and U.S. 23</i>	\$300,000*	TBD	Michigan DOT
Interconnect and Progress Signals	--	--	
<i>Geddes Road and Dixboro Road</i>	\$300,000	TBD	Washtenaw County Road Commission
Extend Left Turn Bays	--	--	
Add Right Turn Lanes	-	--	
<i>Dixboro Road and Huron River Drive</i>	\$320,000	TBD	
Extend EB Left Turn Bay	--	--	
Lengthen SB Right Turn Lane	--	--	
<i>Huron Parkway and Glazier Way</i>	\$300,000	TBD	City of Ann Arbor
Signalize and Optimize Signal	--	--	

Strategy	Capital Cost	Annual O&M Cost	Responsible Agency
<i>Huron Parkway and Huron River Drive</i>	\$300,000	TBD	
Signalize and Optimize Signal	--	--	
<i>Washtenaw Avenue and Huron Parkway</i>	\$380,000	TBD	City of Ann Arbor
Add Right Turn Lanes on NB and SB Huron Parkway	--	--	
Right Turn Lanes on EB and WB Washtenaw Avenue	--	--	
<i>Huron Parkway and Glazier Way</i>	\$300,000	TBD	City of Ann Arbor
Signalize and Optimize Signal	--	--	
Roadway Improvement			
Pave Glazier Way East of Huron Parkway	\$1,000,000	\$4,000	City of Ann Arbor
INTERMEDIATE FUTURE (6 TO 10 YEARS)			
One Lane Bus Guideway on Conrail	\$15,802,000	\$1,142,000	AATA
Satellite Park-and-Ride near Guideway	\$816,000	\$95,000	AATA
Feeder Buses to P&R/Bus Guideway	\$3,048,000	\$1,635,000	AATA
Pedestrian Traffic Enhancements	\$121,000	\$2,000	AATA
Intersection Improvements (Intermediate Future - 6 to 10 years)			
<i>Geddes/Fuller and Huron Parkway</i>	TBD	TBD	City of Ann Arbor
Add a Second Left Turn Lane to WB Geddes Road			
<i>Geddes Road and U.S. 23</i>	TBD	TBD	Michigan DOT
Realign SB On-Ramp with SB Off-Ramp			
Widen Existing Bridge			
Provide Right Turn Lanes at Ramp Terminals			

Strategy	Capital Cost	Annual O&M Cost	Responsible Agency
<i>Geddes Road and Dixboro Road</i>	TBD	TBD	Washtenaw County Road Commission
Consider Double Left Turns for NB Dixboro			
Consider EB Channelized Right Turn with Yield			
LONG-TERM (11 + YEARS)			
ATMS-Traffic Surveillance			
Video Surveillance and Signal Control	\$1,924,000	\$200,000	TBD
CMS Parking and Traffic Information			
Sites Along U.S. 23	\$386,000	\$50,000	TBD
Intersection Improvements			
<i>Geddes Road and Dixboro Road</i>	TBD	TBD	City of Ann Arbor
Consider Double Left Turns for NB Dixboro			
Consider EB Channelized Right Turn with Yield			

TBD = To Be Determined

* Not including bridge reconstruction

Of all the strategies evaluated, the bus guideway most comprehensively satisfies the study's goals and objectives. However, the bus guideway is not the most cost-effective of these strategies. The bus guideway will incur an additional annual operating cost of approximately \$800,000 over and above the cost of operating the current route in the corridor (Route 3). Ridership on the guideway is forecasted at about 4,900 riders per day for the forecast year 2015. Accompanying the bus guideway are park-and-ride lots, feeder buses to these lots, and pedestrian traffic enhancements. Individually, these features provide marginal benefits. Feeder buses to park-and-ride lots, like the bus guideway, support the goals and objectives well, but at a high cost. The total estimated cost to implement the entire recommendation is approximately \$30 million dollars and \$3 million annual O&M costs. Right-of-way and additional insurance costs are not included.

The recommendation's overall potential impact on the Geddes/Fuller corridor is illustrated in the Comparison of Capacity Improvements figure. This figure shows the average daily traffic capacity of Geddes/Fuller for LOS D (level of service D indicates high-density, but stable traffic flow,

restricted speeds and vehicle movement, and poor pedestrian levels of comfort) as a solid horizontal line crossing the ordinate at 20,000 vehicles per day. Traffic conditions in the peak hours already exceed LOS D. Forecasted average daily traffic volumes are represented by the top curve. The intersection of these two lines indicates that traffic conditions will meet LOS D conditions sometime in 1997. Based upon the Screen 3 evaluation, the ability of each strategy to reduce vehicles per day extends the intersection point between the LOS D horizontal line and the traffic volumes over time. Assuming all strategies of the recommended alternative were implemented, LOS D conditions or better can be extended approximately 13 years. Intersection improvements provide the greatest improvement to roadway capacity, but these benefits may diminish after five to seven years. These final observations indicate that other means of satisfying travel demand must accompany the bus guideway in order to maintain LOS D traffic conditions or better up to the year 2015.

The recommendations represent a family of improvements which all need to be implemented to provide necessary relief to projected congestion through the twenty-year planning period. Some of the recommendations will be difficult to achieve. The implementation of the bus guideway faces significant challenges in right-of-way issues and negotiations. Other recommendations must face competition for funding from other important community needs.

Failure to implement all of the recommendations is likely to lead to unacceptable levels of traffic congestion. The most important immediate recommendation is to improve the operation of the intersections. The biggest positive impact to the corridor will result from extended turning lanes, signal timing and progression improvements. The second most important combination of recommendations are those dealing with transit. Additions to transit service in the corridor -- increased frequency, feeder buses, advanced technologies (underway), and preferential treatments -- should occur soon. Preliminary engineering, design and right-of-way negotiations for the bus guideway should also begin immediately. Actual construction of the guideway is not likely to occur within the first five years of the plan's implementation, but will be important.

Many of the improvements are not scheduled for implementation until after the first five years of the plan (such as construction of the bus guideway). Thus, a comprehensive reassessment of the corridor should be undertaken at the end of the five-year period. This reassessment needs to include a new look at traffic, forecasts and congestion in the corridor. It needs to assess the ability of improvements undertaken during the first five years to accommodate travel demand in the corridor. Finally, it needs to assess the likelihood of continued implementation of recommendations scheduled beyond the first five years of the plan. If traffic projections continue to be realized and some of the improvements are not able to be implemented as planned, a new assessment of alternatives (including roadway widening) will need to take place.

Comparison of Reduction in Average Daily Traffic (ADT) from Recommended Improvements

