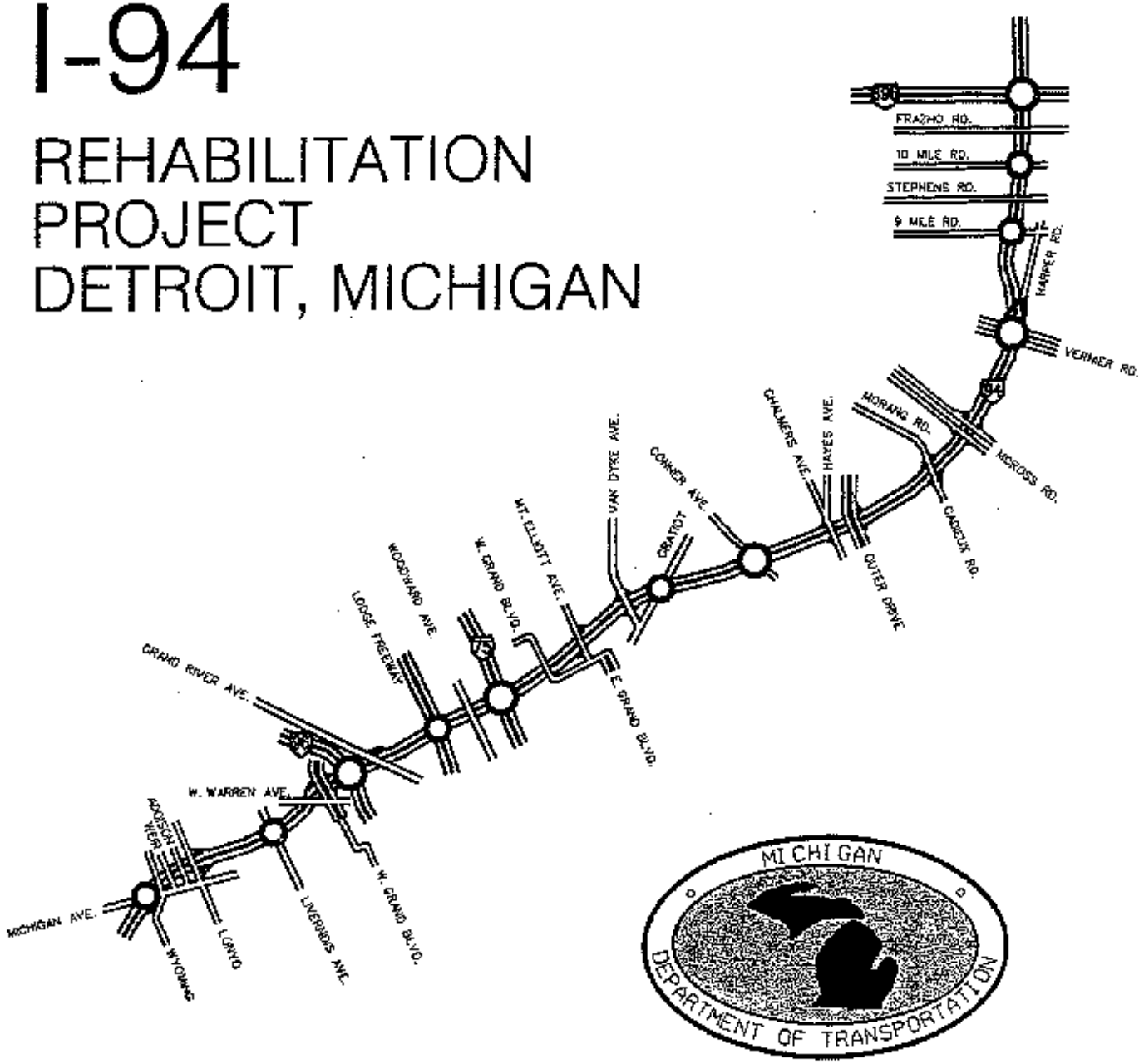
EXHIBIT D

I-94

REHABILITATION PROJECT DETROIT, MICHIGAN



SCOPING PACKET

AUGUST, 1995

Scoping Information Packet
CONTENTS

INTRODUCTION

Major Investment Study/National Environmental Policy Act Process

The Michigan Department of Transportation (MDOT) is conducting a Major Investment Study (MIS) of a segment of the Interstate 94 (I-94) corridor in Southeastern Michigan. The study is expected to last for 30 months, and is intended to achieve total transportation improvements, to rehabilitate the freeway itself, and to improve access to and from the freeway in key areas. An MIS, which focuses on the selection of a recommended investment strategy for an urban transportation corridor, proceeds in concert with the meeting of the requirements of the National Environmental Policy Act of 1969 (NEPA). This federal legislation requires that social, economic and environmental impacts of transportation projects be evaluated before a decision to construct a project is made.

NEPA requirements, when applied to this project, will require preparation of a Draft Environmental Impact Statement (DEIS) and a Final Environmental Impact Statement (FEIS). The draft EIS will analyze the social, economic and environmental impact of each alternative strategy being considered. The FEIS then provides a more detailed analysis of the impacts of the recommended alternative.

Major Investment Studies are required in Section 450.318 of the new joint Federal Highway Administration/Federal Transit Administration Final Rule on Statewide and Metropolitan Planning issued in the Federal Register in the fall of 1993. The rule resulted from the passage of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and the Clean Air Act Amendments of 1990 (CAAA). The legislation includes major changes in surface transportation systems, their priority goals, and how they are funded and administered. The basic purpose of ISTEA is stated in the initial Declaration of Policy: "It is the policy of the United States to develop a National Intermodal Transportation System that is economically efficient, environmentally sound, provides the foundation for the nation to compete in the global economy and will move people and goods in an energy efficient manner."

The CAAA is landmark federal legislation that has challenged the Federal Highway Administration (FHWA) and the entire transportation community to develop projects and programs that contribute to improved air quality. Among the goals of the CAAA are: providing for greater integration of the transportation and air quality planning process; ensuring that transportation plans and projects conform with the state air quality implementation plans and contribute to attainment of national air quality standards; and reducing the growth in vehicle miles travelled and congestion levels in areas that have not attained the Environmental Protection Agency's air quality standards.

ISTEA requires planners to consider a broad range of mobility options in corridor and sub-area planning studies, and to analyze an extensive range of impacts. The new corridor planning process is called a "Major Investment Study," or MIS. An MIS examines corridor transportation needs and identifies how well autos, buses, trains, and multiple-occupant

vehicles can meet those needs.

A Major Investment Study is needed when projects proposed include a "high-type highway or transit improvement of substantial cost that is expected to have a significant effect on capacity, traffic flow, level of service, or mode share at the transportation corridor or sub-scale area." Examples include: a new, partially controlled principal arterial; extension of a partially controlled principal arterial (one or more miles); capacity expansion equivalent to one or more lanes on a partially controlled principal arterial; construction or extension of a High Occupancy Vehicle (HOV) facility or fixed guideway transit facility; addition of lanes or tracks to a fixed guideway; and substantial increase of transit service on a guideway.

Besides requiring the transportation investment process to analyze a broad array of mobility options, MIS's also involve detailed consideration of a system's impact on social, economic and environmental conditions, and on how those impacts can be avoided or minimized. In addition, they include very extensive and intensive public involvement programs to help ensure that citizens have opportunity throughout the project to be involved in the decision-making process.

Purpose of Document

This Scoping Information Packet is a part of the MIS/NEPA process. It outlines the reasons why the study is being undertaken and the potential problems that the redesign and rehabilitation project is expected to address. It reviews the project schedule and elements, including the public and agency involvement components. The alternative strategies that will be considered are also described. It also provides preliminary assessments regarding the possible social, economic and environmental issues that could result from each of the alternatives. The major issues will be analyzed in detail as the alternatives are evaluated. In sum, this document outlines the evaluation process for the study and invites public and agency involvement in the refinement of the elements of the process, as well as in the evaluation itself.

PURPOSE AND NEED

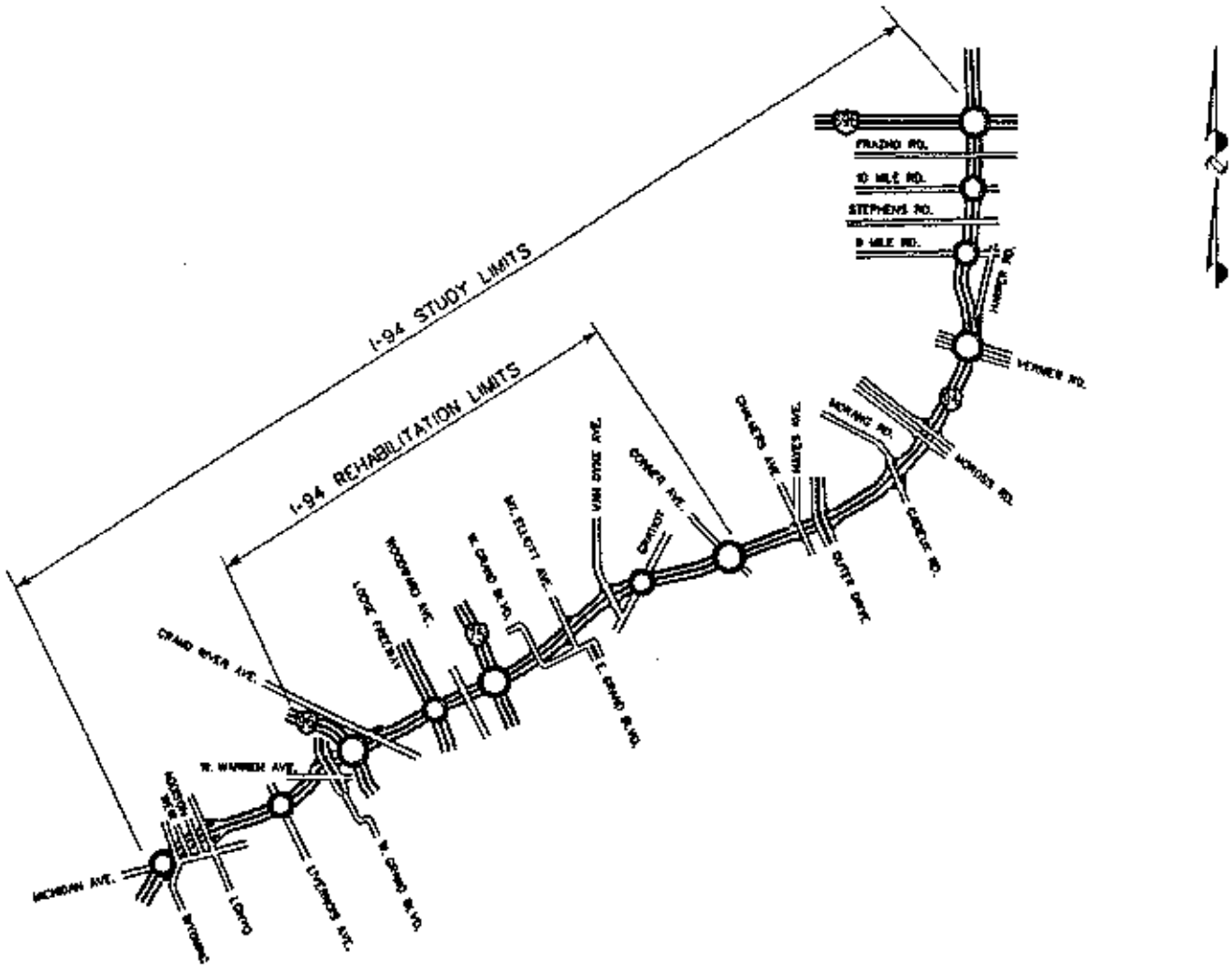
Corridor Description

The rehabilitation corridor, that which is to be redesigned and reconstructed, extends from approximately one kilometer west of the I-94/I-96 interchange easterly approximately 13 kilometers (8 miles) to approximately one kilometer east of the Conner Avenue interchange (Exhibit 1). In addition, MDOT has identified a longer study corridor that extends from Wyoming Avenue easterly approximately 30 kilometers (19 miles) to I-696. This study corridor will be evaluated for the possible implementation of High Occupancy Vehicle (HOV) lanes (Exhibit 1). For reconstruction purposes the corridor extends for approximately two blocks on either side of the freeway itself, but the transportation strategies to be developed in the study will consider important destinations beyond those boundaries. Those destinations include, Detroit's Central Business District (CBD), the Woodward Avenue corridor extending from the CBD to the New Center Area, medical and cultural institutions in and near that corridor, City Airport and the Eastern Market area. In addition, the study will include assessment of the transportation impacts and needs of new developments.

The I-94 freeway between the I-96 interchange and Conner Avenue includes a diverse mix of land uses. This 13-kilometer stretch includes residential, commercial/business, industrial, cultural, utility, office park, and educational uses.

The freeway serves many institutions and points of interest. These include Wayne State University, the Cultural Center, the New Center Area, the Fisher Theater, the General Motors-Cadillac Plant, the Medical Center, Wayne County Community College, the Center for Creative Studies, the General Motors World headquarters, Henry Ford Hospital, the Detroit Institute of Arts and the Museum of African-American History. The freeway improvement can be seen as an opportunity for the city of Detroit, its residents and visitors. Improved access via I-94 would have the ability to attract more of the population to reside, visit, boost the tax base, and conduct business within the I-94 corridor.

The I-94 study area between the I-96 interchange and the John C. Lodge Freeway (M-10) is primarily an area of educational and industrial land uses. It includes four census tracts, with a population of approximately 10,700 residing in 5700 dwellings. In this area there are several large traffic generators that are dependent on I-94. The campus of Wayne State University occupies approximately 185 acres and operates more than 100 buildings. The campus is located between Trumbull Avenue and St. Antoine Street near the I-75 freeway. Also in the region is Pelham Middle School, a newly renovated middle school for the community, and near Trumbull Avenue there are several new apartment and townhouse complexes. Another major land use of the region is the industrial corridor. There are several industrial sites, some of which appear to be abandoned.



NOT TO SCALE

I-94 REHABILITATION STUDY
STUDY CORRIDOR

EXHIBIT 1

The I-94 study area between the Lodge Freeway and the I-75 Freeway includes large sections devoted to educational, cultural and commercial/business land uses. This region consists of four census tracts, with a population of 4400 in about 2700 dwellings. The area draws people from all over the state and beyond several cultural attractions, which are also major employment centers. The Wayne State University facilities include the main campus, the law school, the medical school, and the Merrill-Palmer complex. The Cultural Center includes the Detroit Institute of Arts, the main branch of the Detroit Public Library, the Detroit Science Center, and the Center for Creative Studies. Also in this region are the New Center Area, the Fisher Theater, the General Motors World Headquarters, the Henry Ford Hospital, and the Museum of African-American History. All of these locations contribute significantly to the employment base of the area.

The residential land in the area is underutilized. A number of the blocks have more vacant lots and abandoned homes than are occupied. Of the abandoned properties, most are used as dump sites. There does, however, seem to be a movement to elicit civic pride and community involvement in the area of Brush Street. The City of Detroit and Michigan State University have taken control of two blocks and started a tree planting effort for community improvement.

The I-94 study area between the I-75 Freeway and East Grand River Avenue is about half residential and half industrial. The area includes seven census tracts, with a population of 11,300 and about 4400 dwellings. The land use indicates a thriving past industrial use, including the old Chrysler Corporation buildings-Amplex Division. However, more than half have since been abandoned and vacated. Some sites include Gemmer Manufacturing, JW Cole and Sons, Inc., and other large sites. The structures still remain and take up a large amount of land, but the area is no longer an employment generator. About 60 percent of the housing is in poor condition. Along the major thoroughfare about 20 to 25 percent of the commercial sites are in use.

The last part of the I-94 study area between East Grand River Avenue and Conner Avenue has a diverse mixture of uses include residential, industrial, commercial/business, educational, institutional, park land, utility and office space. This area includes nine census tracts and is the largest region studied. There is a population of about 24,300 and 8400 dwellings. Each type of land use is well represented in this segment. Educational land use consists of the eastern campus of Wayne County Community College and Kettering High School. Detroit Edison has a facility in this area and there are offices used by PVS Technologies. The Conner Playfield and Castator Playground make up the park land and there are also many churches in the area. Other institutional uses include a YMCA, youth centers, day care centers, and other social clubs and organizations. The residential land use is varied. There are some vacant and abandoned areas, but for the most part this region has the lowest vacancy rates. The commercial/business uses are mainly located on Van Dyke Avenue, Gratiot Avenue and Harper Avenue. They house everything from fast food businesses to furniture stores to hair salons to supermarkets. Although there are some vacancies, a majority of the businesses are in operation.

Corridor Deficiencies

The deficiencies that the I-94 project are designed to address fall into three categories:

- Infrastructure: The I-94 study segment was constructed in the 1950's and is one of the oldest urban freeways in the country. It has been repaired frequently, but it has reached the point at which it must be completely rebuilt.

- Design: Constructed in the 1950's, the I-94 segment was designed in the late 1940's. Since then highway design standards have changed. New standards will be used to improve safety, reduce congestion, and increase passenger and freight capacity.

- Development: The corridor traverses areas that are good candidates for residential, commercial, recreational and industrial redevelopment. There are also opportunities to tie into major development projects sponsored by the city of Detroit, including those in the Empowerment Zone, a major development effort that includes a number of areas adjacent to I-94. An improved transportation corridor can contribute to existing and potential developments.

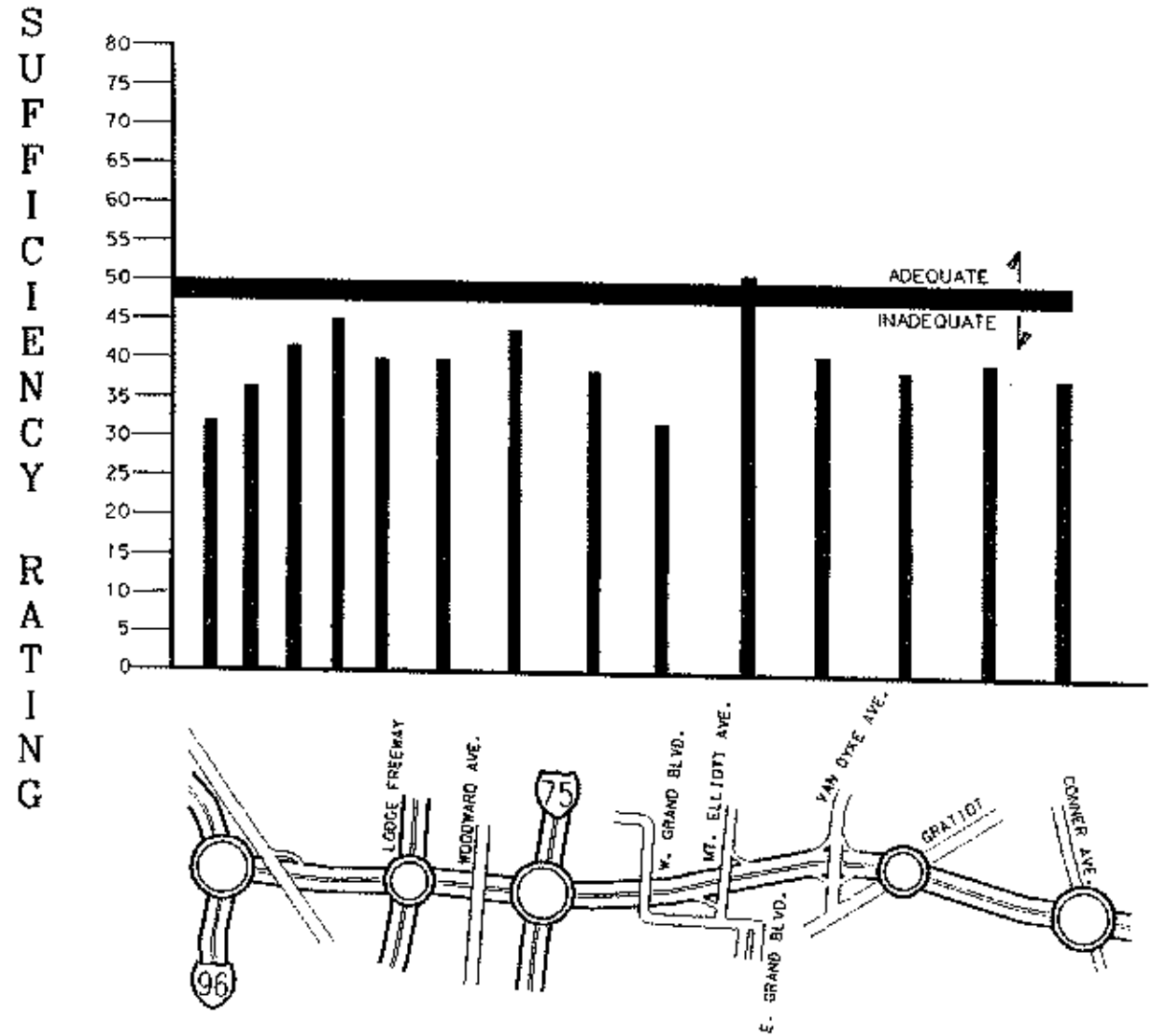
MDT and the FHWA have recognized that I-94 levels of service as well as deficiencies in both roadway, pavement and structures would require reconstruction of the facility to meet modern standards. In a 1983 letter from David Merchant, former FHWA Division Administrator, to Jim Pitz, MDOT Director it was stated that:

"We concur that reconstruction of I-94 is badly needed, and further concur that the actual reconstruction should be delayed until the necessary studies of acceptable design standards, need for additional capacity, handling of traffic, construction phasing, and possible environmental impacts can be made and analyzed. The alternatives considered should include such methods as joint repairs or leaving portions of I-94 in as-is condition until reconstruction."

Under the above policy, MDOT has performed only necessary maintenance functions to prolong the life of the pavement and structures, such as resurfacing and structure work to prevent any hazardous conditions.

The MDOT Sufficiency Report is a point system for evaluating and comparing the adequacy of each segment of highway in the state system by its adequacy in four rating categories: accidents, traffic capacity, physical condition of base, and physical conditions of surface. The maximum point values assigned to each rating category represent their relative contribution to the total sufficiency rating. The maximum points for these categories are 30, 30, 15, and 25, respectively.

On average, the sufficiency ratings for the study section of the I-94 corridor indicate that throughout the project limits, at least half of this segment has a poor surface condition based on a maximum of 100 points (Exhibit 2). The resurfacing of many parts of I-94 pavements only bought additional time before replacement is needed.



NOTE: DATA BASED ON 1993 SUFFICIENCY RATING BOOK

I-94 REHABILITATION STUDY

SUFFICIENCY RATINGS

EXHIBIT 2

The level of service (1989 data) along this segment is either E or F, which indicates that the traffic operates from unstable conditions at capacity, with speeds near 30 m.p.h. to forced flow with stop-and-go conditions. (Level of service can range from A to F, where A indicates free flow conditions with no restrictions on operating speed, to F, which is forced flow with stop-and-go conditions.)

The highest number of accidents occurs between I-75 and Mt. Elliott Avenue. The accident rate per 100 million vehicle miles (1993 data) is 480, compared with a statewide average of 115.7 for limited access freeways.

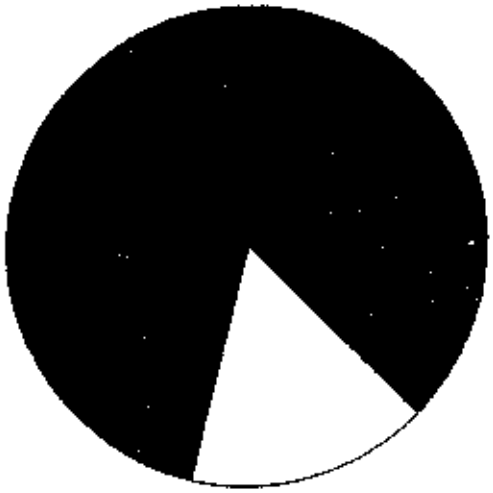
Existing I-94 does not have continuous service drives. These are useful for emergency access, and when freeway maintenance and rehabilitation is underway. They also mitigate the impact of freeway-generated traffic filtering through neighborhoods. Ramp spacing and ramp geometrics should be reviewed to determine where additional ramps may be needed, excess ramps eliminated, or existing obsolete ramps redesigned. For example, Lonyo off-ramp from I-94 is an example of a ramp in need of redesign and improvement because of substandard geometrics (short taper or no taper at all). In addition, ramps that enter or exit on the left side of the roadway should be eliminated since they tend to contribute to congestion and safety problems. For this reason, the I-94/M-10 interchange is of particular concern.

There are approximately 90 bridges in the I-94 corridor. On I-94 about 60 of the structures need major repairs such as deck replacement, painting, and concrete repairs (Exhibit 3). Some bridges will need to be replaced entirely because of their structural condition. Some of the bridges may need widening for additional traffic capacity, both on the freeway and on the cross streets.

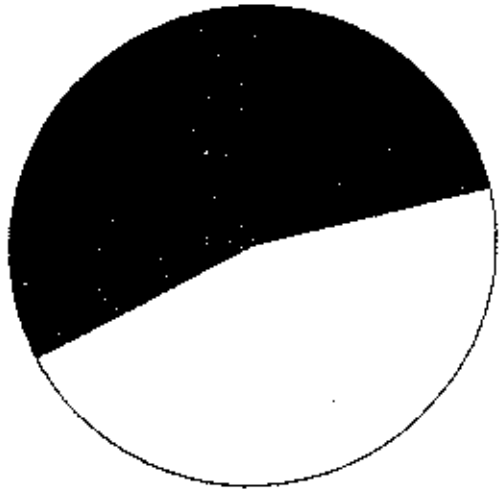
The center portion of the I-94 study area contains 43 bridges that were inspected and appraised during 1993 and 1994 under the biennial bridge inspection program. This appraisal period rated 54 percent of the deck wearing surfaces less than satisfactory while 84 percent of the decks, 30 percent of the superstructures, and 70 percent of the bridges have substructures rated fair or better. Part of the bridge inventory and appraisal process is to make an overall structural evaluation. The most recent evaluations show that 12 percent of the bridges should have a high priority of corrective action and 37 percent meet only minimal tolerable limits. It was generally found that older bridges receive lower ratings because of the effects of traffic. It is not surprising that major repairs will soon be needed on the majority of the bridges in the I-94 corridor since 37 of these 43 bridges were built in the 1950's.

Vertical clearance over I-94 and other routes should be considered in making decisions to rehabilitate or replace structures. In the center portion of the I-94 study area, only 15 of the structures over I-94 meet or exceed the 16'- 0" required clearance for rehabilitated bridges or the 16'- 3" required clearance of new bridges over interstate highways. Some of the vertical clearances are as low as 14'- 1", such as the northbound M-10 bridge over I-94.

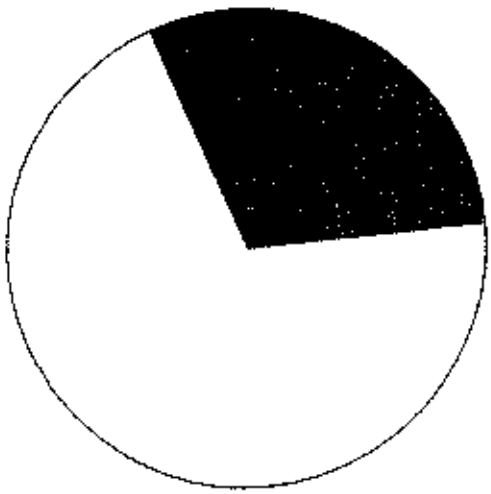
DECK [CONDITION]



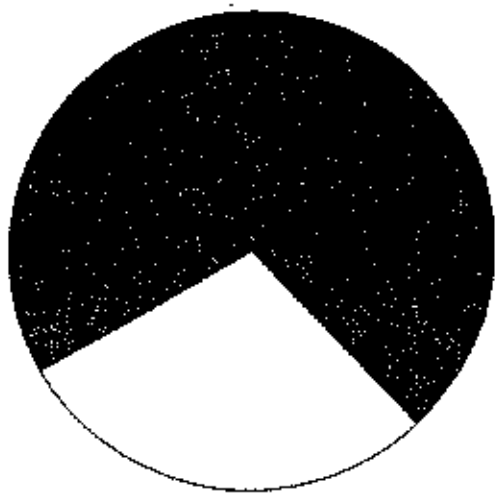
DECK WEARING SURFACE [CONDITION]



SUPERSTRUCTURE [CONDITION]



SUBSTRUCTURE [CONDITION]



LEGEND

UNSATISFACTORY

SATISFACTORY

NOTE: DATA BASED ON 1993-1994 BIENNIAL BRIDGE INSPECTION

I-94 REHABILITATION STUDY

BRIDGE CONDITION SURVEY

PROJECT STATUS

Prior Studies

The present study builds on the results of several previous reports. These include:

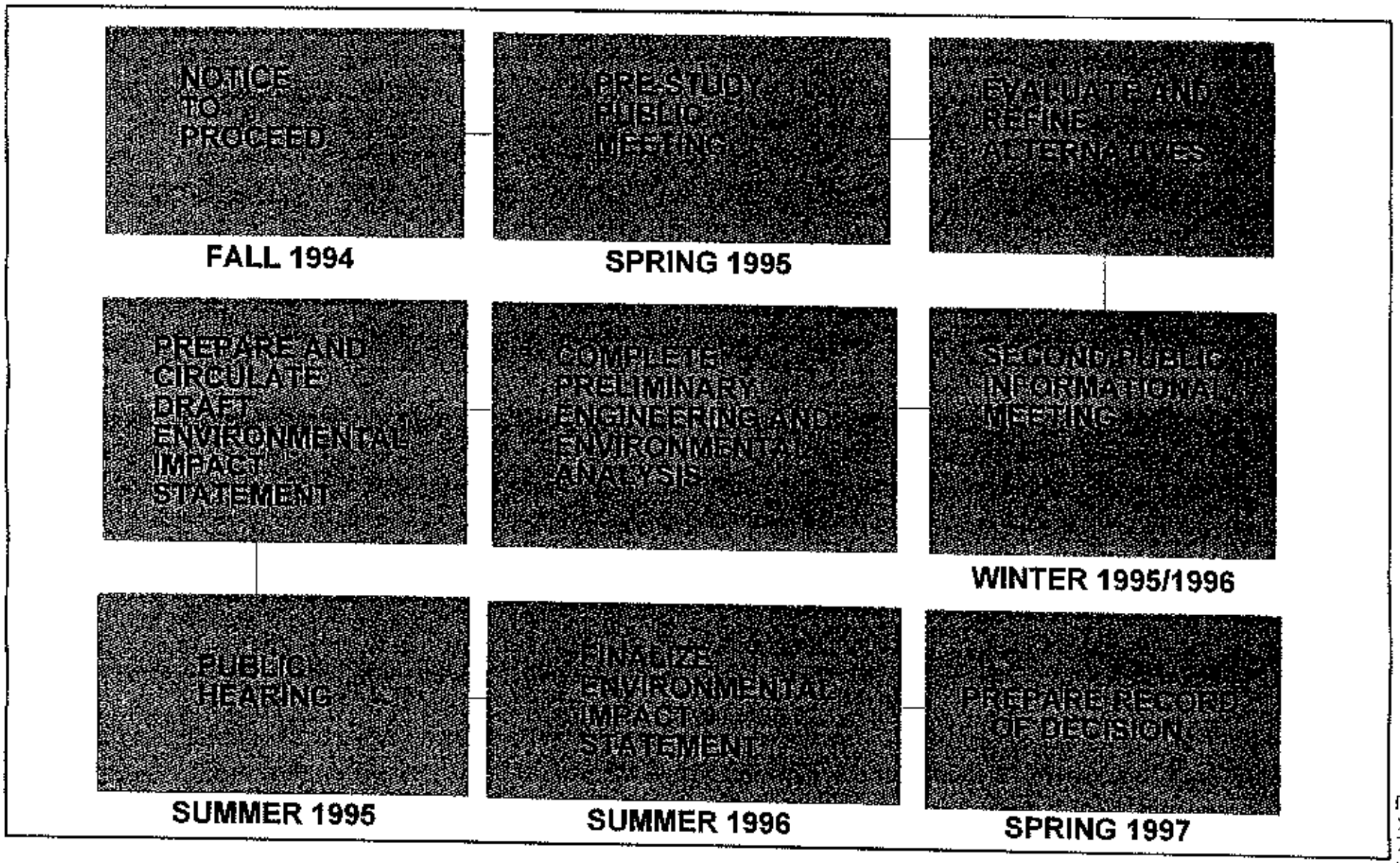
- "Greater Detroit Area Freeway Rehabilitation Program Study," 1990
- "An Image Renaissance: Detroit I-94 - U.S. 10 Entrance Corridor," 1986
- "Traffic and Transportation Study," New Center Area Traffic Improvement Program, 1986
- SEMCOG, 2015 Regional Transportation Plan for Southeast Michigan, 1993
- "A Framework for Action: Recommendations of the Mayor's Land Use Task Force," 1994

Project Outline

This report marks the transition between Phases I and II of a three-phase study (Exhibit 4).

Phase I included the review and analysis of existing pertinent information and data from previous studies, and the completion of additional studies and data assembly. Formal inter-agency coordination began with the establishment of the Inter-agency Coordination Committee (ICC), which will be discussed below. MDOT and the ICC directed the development of Illustrative Alternatives, which are conceptual strategies to address the problems outlined above. These alternatives were considered, and the list was narrowed to a set of practical alternatives, each of which is described in the next section of this report. Finally, MDOT and the ICC agreed upon goals and objectives for assessing the alternatives and upon major issues that must be evaluated in Phase II. As part of the MIS process, MDOT, with the advise of the ICC, input from the public, and technical evaluations, will use those goals and objectives to select one recommended alternative. That selection process is expected to be completed by the spring of 1996.

Preliminary engineering and environmental studies will be conducted during Phase II to complete an evaluation of the feasibility of alternatives for future inclusion of HOV lanes on the extended section between Wyoming Avenue and I-696, to complete the refinement of final design alternatives and selection of the recommended alternative for the section from west of I-96 to east of Conner, as well as the identification, evaluation, and documentation of potential environmental impacts and conceptual mitigation in that segment. The approved Public Involvement/Public Relations Plan will be indicated during this phase and will culminate in a formal public hearing. A Draft Environmental Impact Statement (DEIS) as well as a Draft Engineering Report (DER), for a section from west of I-96 to east of Conner Avenue, must be submitted and approved in this phase. The DEIS will include evaluation of



I-94 REHABILITATION STUDY
PROJECT SCHEDULE

EXHIBIT 4

impacts, conceptual mitigation, and possible Section 4(f) and Section 106 evaluation and documentation. The DEIS will be completed in accordance with NEPA regulations and FHWA guidelines, and is subject to FHWA review and approval.

During Phase III, preliminary engineering and environmental studies will be finalized. Comments from the public hearing will be addressed, as will engineering issues raised during the Hearing. The Final Environmental Impact Statements (FEIS) as well as the Final Engineering report (FER) will be submitted and approved during this phase. The FEIS will include detailed documentation of unavoidable impacts of the selected alternative, mitigation measures, and possible final Section 4(f) and Section 106 evaluations. This phase also requires the preparation of a Record of Decision (ROD) for FHWA approval. The FEIS and ROD shall be completed in accordance with FHWA regulations and guidelines and is subject to FHWA review and approval.

Public and Agency Involvement

Care is being taken to assure that citizen input is used to help develop the selected plan. A Public Information Plan is being implemented through a series of activities that include:

- Public informational meetings. These include large group, special interest and cluster group meetings.
- Operation of an 800 number telephone information line (1-800-Fixup-94) where citizens can call for information 24 hours a day.
- A Citizens Advisory Committee (CAC) where representatives of the community meet on a regular basis to give their input and receive information regarding the progress of the project and to review selected design alternatives.
- Open house meetings where citizens may drop by to acquaint themselves with project goals and suggested alternatives, and to converse with project consultants, as well as MDOT and FHWA staff.
- Regular monthly meetings of the Interagency Coordination Committee (ICC) where agency representatives (MDOT, City of Detroit, Wayne County, Macomb County, FHWA, SEMCOG, and the local transit operators) review design alternatives, evaluate selection criteria, and exchange information pertinent to the development of a recommended alternative.
- A Citizens' Impact Survey of Detroit residents to determine the effect of I-94 improvements on residents. This opinion survey, which includes two focus groups, is expected to be completed by October 1995.

An initial CAC meeting was held on March 16, 1995, with an attendance of approximately 200 community partners. Members of all stakeholder groups were represented: businesses, churches, community, cultural and civic organizations, and medical providers.

Responses from comment cards distributed at the CAC meeting were tabulated. Results included:

- More than 50 of the respondents of the CAC meeting requested special meetings or speakers to address their organizations.

- As of May 1995, ten meetings had been scheduled. Some groups have requested cluster meetings with other groups who have interests similar to theirs. An example of a cluster is Wayne State University, University Cultural Center, General Motors, and Detroit Medical Center.

- Most groups are requesting meetings to provide a project overview with time devoted to questions and answers from the audience. Most are concerned about potential impacts to their communities or businesses.

PRACTICAL ALTERNATIVES

MDOT, with the advice and consent of the ICC, has selected several alternatives to be analyzed in detail in Phase II of the study. The list includes three infrastructure alternatives: "no build," and the addition of either general purpose lanes or special use lanes. Then there is a series of enhancement alternatives, any combination of which could be combined with any of the infrastructure options. The assumption is that one of the three infrastructure alternatives will be selected, either maintain current system, add general purpose lanes, or add special use lanes. For the selected infrastructure alternative, a series of enhancement alternatives will be recommended. These include service roads, transit enhancements, neighborhood enhancements, and intelligent transportation systems capability. (See Exhibit 5.)

Infrastructure Alternatives

Alternative A. Maintain Current System
This is the "no change" or "base-case" environmental alternative, often referred to as "No Build." It would include basic routine maintenance as required. The result would be the present freeway design, basically a six-lane highway.

Evaluation of Alternative A will help determine whether or not the benefits of the other alternatives are worth their social, economic and environmental impacts or costs. Evaluation of the "No Build" alternative is required as part of the DEIS analysis.

Alternative B-1. General Purpose Lanes
This option would add one or more lanes in each direction for mixed traffic. The number of additional lanes would be consistent with the area's long-range transportation and development needs.

Alternative B-2. Special Use Lanes (for High Occupancy Vehicles and Buses) These lanes- - one or more in each direction- - would be reserved at some or all times for High-Occupancy Vehicles (HOV's). These could include private cars with two or more, or three or more occupants, and for buses- - typically the highest occupancy vehicles on the road. (Exhibit 6 shows typical cross-sections of HOV facilities.) HOV lanes are intended to reduce congestion and air pollution by using the lure of faster trips to get people to carpool or vanpool.

As the planning process moves forward, transit operators will examine possible additions to express bus service that could take advantage of a new HOV facility. In addition, an evaluation of the feasibility of using a parallel rail corridor for the special use lanes, or possibly for general purpose lanes, will be completed during the study. This rail corridor crosses I-94 west of the M-10 interchange, parallels the freeway through the New Center Area, servicing the new Amtrak Station, and recrosses I-94 east of I-75. Finally, the possibility of using special use lanes for trucks will be studied. For example, the lanes could be reserved solely for truck use at night.

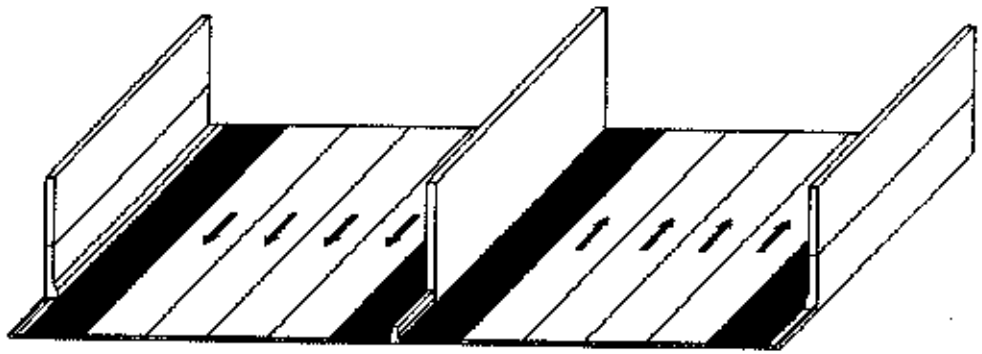
Infrastructure Alternatives

Enhancement Alternatives	(A) Maintain Current System	(B-1) General Purpose Lanes	(B-2) Special Use Lanes (HOV/Busway)
(C-1) Service Roads			
(C-2) Transit Enhancements			
(C-3) Neighborhood Enhancements			
(C-4) ITS			

I-94 REHABILITATION STUDY

PRACTICAL ALTERNATIVES

FREEWAY WITH ADDED GENERAL PURPOSE LANES



FREEWAY WITH ADDED GENERAL PURPOSE LANES
AND BARRIER WALLS

FREEWAY WITH SPECIAL USE LANES

I-94 REHABILITATION STUDY
SPECIAL LANES FOR BUSES AND CARPOOLS
EXAMPLE CONCEPTS

EXHIBIT 6

For both alternatives, B-1 and B-2, Phase II of the study will consider:

- Designing in the capacity for a future rail facility in the I-94 right-of-way. If potential ridership warrants the construction of rail transit, the physical capacity for tracks and stations would be in place.

- Designing in the capacity for toll or other pricing facilities. While pricing for I-94 is not considered to be feasible now, the re-designed I-94 would be planned to allow the easy installation of appropriate pricing facilities at some future time.

Enhancement Alternatives

In Phase II, a number of enhancement options will be developed and analyzed. Any of these could be recommended for inclusion with any of the infrastructure alternatives.

Alternative C-1. Continuous Service Roads
Several design options for parallel service roads will be considered. Such roads provide access to nearby residences, businesses and institutions. They could also serve as detours during the construction of I-94. Innovations in service road design could be key parts of the development options to be discussed below.

Alternative C-2. Transit Enhancement Packages
A number of transit packages will be developed. These will be directly connected to the I-94 corridor and will be designed to increase transit usage. The packages will be assembled using, among other possibilities, the following:

- New Intermodal Passenger Facility: It is likely that a new passenger station will be built along Woodward Avenue in the New Center Area. It would serve Amtrak and possibly high-speed rail service to Chicago as well as local transit. It could be an integral part of the I-94 transportation system, especially if the rail corridor, which would directly serve the new facility, is used. The station could serve as a major transfer point for express bus service using HOV lanes.

- Woodward Corridor: The Woodward corridor could serve as a key transit link between I-94 and the numerous destinations between the New Center Area and Detroit's Central Business District. Various options will be examined as part of the I-94 study.

- Satellite Transit Facilities: The establishment of one or more transit facilities near the freeway will be considered. These could include park-and-ride lots, covered waiting facilities and commercial outlets. They also could have direct access for buses to special use lanes.

- Public Education and Other Public Policies to Encourage Transit Usage: These can complement the potential transit system improvements discussed above. A number of transit supporting public policies will be considered for recommendation.

Alternative C-3. Neighborhood Enhancement Packages

As was the case with transit alternatives, there will be several sets of neighborhood enhancement options analyzed in Phase II of the I-94 study. All areas in the corridor will be included. Among the elements to be considered in assembling the packages will be the following:

- Aesthetics: The study will explore ways to make the highway facility more attractive and more of an asset to neighborhoods through which it passes.

- Improved Access: Alternatives to make major destinations - - residential, commercial and institutional - - more accessible from the I-94 corridor will be developed.

- Woodward Corridor: An important access issue is how to travel to and from the Woodward area. Possibilities for improving this access will be considered.

- Gateway Concepts: There have been discussions for years about developing a "Gateway to Detroit," a showcase entrance to the city. The redesign of the I-94 corridor allows plans for a gateway to be developed in conjunction with this project. This could be part of the Woodward Ave. development.

- Recreational and Commercial Development: The corridor redesign could permit and attract development of many kinds. The study will weigh options for recreational developments, especially park possibilities, in the area. The study will also look at ways that transportation investment could be linked to commercial and residential development, including projects that are part of Detroit's Empowerment Zone.

- Decking/Land Bridges: The possibility of covering part of I-94 to provide greater recreational and commercial opportunities in the city will be considered.

- Noise and Other Environmental Mitigation: The study team will recommend options for preventing or lessening the impact of noise and other environmental hazards throughout the corridor.

Alternative C-4. Intelligent Transportation Systems (ITS)

ITS includes the application of technologies to improve the flow of traffic without necessarily expanding highway facilities. This is done primarily by making both drivers and those who manage roadways more knowledgeable about traffic conditions. Technology in this area is constantly evolving and, at this stage, it has been recommended that evaluation of suitable options continue throughout the study. It has also been recommended that care be taken not to allow design decisions to preclude the use of ITS options in the future. In this vein, design and construction should allow for the installation of communication technologies that may be needed in the future.

Among the ITS options to be evaluated in the study are the following:

- Communications: optical fiber cable.

- Vehicle Detection Systems: buried loop detectors (inductive loop, microloop and

magnetometer), ultrasonic detectors, passive sonic detectors, microwave radar detectors, active and passive infrared detectors, video image processing and automatic vehicle identification.

- Congestion Detection Systems: cellular incident detection algorithms. California detection algorithm, all-purpose incident detection, double exponential smoothing and high occupancy algorithm.

- Traffic Surveillance Systems: closed circuit television, and low frequency and ranging radar.

Screened Alternatives

After careful consideration, the ICC recommended that three major alternatives be dropped from further consideration at this time. This does not mean that these options - - rail transit in the I-94 corridor, separate "busways" and road pricing (tolls) - - will never be feasible, only that they are not practical now. Indeed, the ICC recommended to MDOT that care be taken to assure that these options could be adopted if conditions warrant sometime in the future.

Rail transit was removed from the study because it is unlikely that ridership forecasts before the year 2015 would not justify the major investment that rail entails. Likewise, separate lanes for buses only (as opposed to lanes for buses and multiple-occupancy cars) would be unlikely to attract enough buses to make the facility cost-effective in the foreseeable future. The ICC did recommend, however, that the new facility be designed to allow for the installation of rail or busways without major reconstruction, if conditions justify such an investment.

The use of tolls to finance major highway projects is becoming increasingly attractive around the United States. However, it was felt that making I-94 the first toll facility in the state (excepting bridge and tunnels) is not likely to gain significant political support. Still, the ICC recommended that the ultimate design be capable of including toll facilities in the future.

SOCIAL, ECONOMIC AND ENVIRONMENTAL IMPACT ISSUES

A wide range of social, economic and environmental impact issues will be addressed in the Draft Environmental Impact Statement (DEIS). The types of issues to be addressed are:

- Transportation service changes and impacts,
- Community impacts,
- Cultural resource impacts,
- Natural resource impacts, and
- Cost-effectiveness and equity.

The proposed impact assessment and specific evaluation criteria will take into account both positive and negative impacts, direct and indirect impacts, short-term (construction) and long-term (operational) impacts, and site-specific and corridor-wide impacts. Evaluation criteria will be consistent with applicable federal, State of Michigan and local standards, criteria, regulations and policies. Potential mitigation measures will be identified for any unavoidable adverse impacts which are identified.

Comments are welcomed and encouraged at public meetings (or in writing) on the completeness of the list of issues to be addressed. Descriptions of site-specific issues also are encouraged. The on-going public involvement program also will provide opportunities for the presentation of additional site-specific issues as the alternatives are detailed and their analysis progresses.

Transportation Issues

Freeway level of service, transit service changes, as well as traffic and railroad movement impacts will be examined. Specific issues and questions are:

- Traffic: Will traffic congestion be reduced? Where and how much? Will traffic safety be improved? Will the need for new roadway improvements be reduced or increased? Will patterns of traffic circulation be altered? Will accessibility to homes, work places, stores, medical centers, and public services be improved? Will traffic movement, safety or accident potential be changed? Will the delivery of goods and services be affected?

- Transit Service: Will transit service and access to transit service be improved? Will ridership increase? Will travel time be improved?

- Bicycle and Pedestrian Facilities: Will bicycle and pedestrian access be accommodated? Will pedestrian circulation be affected? Will pedestrian and/or bicycle safety or accident potential be changed?

- Railroads: How will train movements on impacted railroad rights-of-way be safely operated and maintained?

Community Issues

Land use plan and zoning compatibility, neighborhood compatibility, economic, visual and utility impact issues will be examined. Secondary and cumulative impacts will be addressed for each of these issues. Specific issues and questions are:

- Land Use Plan and Zoning Compatibility: Will the goals and objectives of local plans still be met or reinforced? Will incompatible land uses be replaced or encouraged in residential areas? Will the rate of redevelopment be changed? Will new opportunities be created that will make a change in plans desirable? How will zoning requirements, including environmental performance standards, be met? What new development opportunities will be created?

- Neighborhood Compatibility: Will households and businesses be displaced, and what opportunities exist for their relocation to adequate replacement residential and nonresidential structures? Will barriers to social interaction between neighbors or between households and neighborhood services be created? How will potential safety or security hazards be minimized?

- Economics: How will construction and operation activities affect the local and regional economy? What will be the local fiscal impact of removing property from the tax roles? What will be the economic benefit of new or joint development opportunities that may be created? What policies and actions at the local or state government level will be available to increase benefits?

- Equity: Are benefits, costs and impacts distributed in a equitable manner? Do elderly, disabled, low-income and minority residents, and users of the facility benefit from the improvements?

- Visual: Will the alternatives be in character with the surrounding environment in terms of scale, use intensity, and materials? Will views be restricted or limited? Will any restriction be a negative feature or would the view be enhanced by the blocking of a visually unattractive area? How will the requirements of ordinances related to visual quality be met?

- Utilities: Will utility relocation's be required? How can relocation be accomplished without the disruption of service? How will major utility lines affect transit alignments?

Cultural Resources Issues

Cultural resource impact assessments will consider historic, archaeological, and park resources as defined in Section 4(f) of the Department of Transportation Act of 1966 and Section 106 of the National Historic Preservation Act of 1966. Specific issues and questions are:

- Historic Resources: Will historic resources included in the National Register of Historic Places or eligible for inclusion in the National Register be adversely affected?

What is the nature of the probable effect and the likely severity?

- Archaeological Resources: Will significant historic archaeological resources be affected?

- Parks: Will parkland be taken or displaced or will park use be disrupted by construction, noise, partial displacement, view change, or loss of access? Will access to parks be improved?

Natural Resources Issues

Air quality, noise and vibration, preexisting hazardous waste, water resource, and natural feature and ecosystem (including wetlands) issues will be examined. Specific issues and questions are:

- Air Quality: Will changes in traffic flow and volume contribute to local carbon monoxide levels and ozone levels? How will Clean Air Act Amendment requirements affect this project?

- Noise and Vibration: Will noise and vibration levels be significantly increased at sensitive receptors (for example, nearby homes and hospitals)? Will noise barriers be necessary to provide mitigation from the freeway noise and adjacent properties?

- Pre-existing Hazardous Wastes/Underground Storage Tanks: Have hazardous wastes previously been spilled on the planned right-of-way? What are the likely cleanup measures to mitigate these sites? Are there underground storage tanks within the corridor.

- Water Quality: Will the project enter or cross any floodplain or floodway? Will there be difficulty in meeting any local floodplain engineering, Coastal Zone Management, and storm-water runoff requirements? Will water quality in natural waterways be significantly altered?

- Natural Features and Ecosystems: Will wildlife habitat, such as environmental corridors, be affected and what will be the significance of the effect? Will threatened or endangered plant or wildlife species be affected? Will unique geological features or prime and unique farmlands be affected?

ACTION TO FOLLOW

The public and agency involvement that was described above will continue throughout the project.

After sufficient analysis has been completed, the consultant team will provide a DEIS and DER. The DEIS will assess the social, economic and environmental consequences of the alternatives, and the DER will describe the alternatives with exhibits of each alternative based on mapping of a suitable metric scale. The DEIS will be circulated for review and comments by the public and reviewing agencies. A public hearing will then be held to review the preferred alternative. After the public hearing a disposition of comments will be prepared for review and approval. This will then lead to revisions in the DEIS and DER and the completion a Final Environmental Impact Statement and a Final Engineering Report. Finally, a Record of Decision will be prepared for the FHWA. At that time, the project will proceed to final design, right-of-way acquisition, and a construction contract letting.

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Michigan
Department of
Transportation

MEDIA ROUNDUP

VOLUME 23/NUMBER 12 [3/16/01-3/22/01]

From: Marty Brown VMS Detroit <martyb@vidmon.com>
To: <lovettec@mdot.state.mi.us>
Date: 3/23/01 11:33AM
Subject: Video Monitoring Services of America, L.P. (VMS)

BROADCAST TRANSCRIPT

Video Monitoring Services of America, Inc.
30600 Telegraph Road, Suite 1200
Bingham Farms, MI 48025
(248) 220-0002
(248) 220-0012 (FAX)

Date March 22, 2001
Time 08:00 PM - 10:00 PM
Station WJR-AM Radio
Location Detroit
Program David Newman Show

David Newman, host:

And now, as they say, for something completely different, we're joined by Karen Kendrick Hand, who is co-founder of an organization called Transportation Riders United; and our old friend Gary Naeyaert, formerly of MDOT, now with the Michigan Road builders Association; and an able spokesman he has been for both organizations.

Are you there, Gary?

Gary Naeyaert (Michigan Road Builders Association): I am, David. Welcome to the evening shift.

Newman: Thank you...and Karen, are you there?

Karen Hand (Transportation Riders United): Yes, I am.

Newman: Karen has a thesis which deserves comment, and we'll do it in this half hour. This, by the way, again, should not be confused with current work on I-94, which is more in the routine kind of nature. There is a proposal, which is in the process of being vetted and considered and solicited for public comment--I don't know the exact stage of it, for a massive billion-dollar-plus widening of I-94 between Conner and Interstate 96, which would be part of--kind of a rehabbing of the entire downtown scene.

Karen, you've got a problem with it...why?

Hand: It's too big, it's too expensive, and it's out of sync with what other real cities around the country are doing to move people and freight efficiently.

Newman: When you say real cities, meaning what?

Hand: Well, peop--cities that people want to go to when they want an urban atmosphere, when they want vitality in the downtown, when they want transit, when they want to be able to walk on the streets at night because there's people and exciting places to go. Detroit doesn't have it, and one reason we don't have it is we keep putting all of our eggs in the pavement basket.

Newman: And, so the proposal that is on board should be entirely abandoned...

Hand: No!

Newman: ...or scaled down, or what, exactly?

Hand: Anyone who's driven I-94 would like to see this construction project finished. Access to the three lanes that we haven't had to drive on for four or five years because of the various construction projects. We'd like to see the potholes fixed, but I question whether we are back to the capacity we used to have. We really need more than the three lanes that are there.

Newman: In your recent op-ed piece, you also imply that we're again truckling to the trucking industry...if that isn't too much of a silly, unintended pun. In other words, we're giving in to massive transcontinental trucking in a way that benefits no real interests here in Michigan. True?

Hand: This is a project that will do considerable damage to the local community that's being asked to host it, without any significant benefit. The thought it might be used for trucks is right out of the Michigan Department--the governor's justification for the Build Michigan III program.

Newman: All right, Gary Naeyaert, it's your turn. What do you say?

Naeyaert: Well, I think it's safe to say that I-94 is not, by any stretch of the imagination, a downtown boulevard. It's a major commuter and commercial route. It's the oldest state-to-state piece of interstate in Michigan, and it is well beyond its design life; it is well beyond carrying the capacity of traffic that it can carry safely. It is a pothole-ridden nightmare that needs to be reconstructed. It does not need to be patched again, and again. And when you rebuild the road...if you reconstruct it as it is, it will not be a facility that does justice to the hundred and seventy-five thousand vehicles a day that take this road. It is the highest percentage of commercial truck traffic of any freeway in the state of Michigan.

And despite Karen and her colleagues, and their effort to get us out of our cars, I don't think that the hundred and seventy-five thousand vehicles a day are going to park on the side of the road and walk to get where they're going now on I-94. And, done properly, we will reconstruct this roadway. We will widen it by adding one lane in each direction. We will add local, continuous service lanes throughout the project that will separate the local traffic from the through traffic, which is a tremendous benefit to the people in the city of Detroit because they'll be able to more safely navigate the local streets. And we will create additional space for mass transit in the future, when and if the transit providers in Southeast Michigan ever get their act together enough to come up with a plan. We'll be ready for it. And that, David, is just the tip of the iceberg, and I have more.

Hand: I do, too.

Naeyaert: And this is really--if you look at it properly--this project is not only the seven miles from I-96 to Connor, but it also includes the reconstruction, redesign of the interchanges at I-75 and the Lodge on I-94, including a mile north and south from those freeways--north and south of I-94. So, it's eleven miles of freeway. It is the lynch-pin project that we need to do to begin to modernize and upgrade the entire freeway network in Metro Detroit. It's the first of many pieces to give us the kind of system that the capacity we see now, and in the future, really requires and deserves.

Newman: All right. Here are the numbers to join us, folks, with comments of your own...313-875-4476, 1-800-859-0WJR and 1-800-859-0957 are the numbers that are currently operative. Karen, is it really about getting us out of our cars, as Gary has said, for you?

Hand: It's about choices. I want the viewers--the listeners to know that this project will be--when you measure the whole footprint--twenty-four lanes wide from sidewalk to sidewalk edge, counting the service drives. The existing lanes, the new wider shoulders, the acceleration lane, the extra traffic lane and four lanes of space in the center--we added them up last night.. twenty-four lanes wide. The cost will be--for this stretch--about twenty million dollars a block. 1.3 billion dollars is a lot of money for 6.7 miles. But listening to Gary's description, reading MDOT's own road and bridge plan today, this is only the first segment that they plan to build this wide through the heart of our city--well, through midtown center of Detroit. They want it to go all the way from (I-)696 to Wyoming. It's very difficult to conceive of a twenty-lane wide swath of expressway. That's longer than a football field is wide.

Rebuild it in place? Absolutely. You want to squeeze in

an extra acceleration lane, maybe so. But, the capacity figures don't warrant it, according to MDOT's own measures. We would be way overbuilt for capacity, even out to the year 2020.

Newman: Twenty--twenty lanes. Gary, is that accurate? Three hundred feet wide and more?

Naeyaert: No, Karen's talking about the total width of the project...right-of-way line to right-of-way line. It's a little disingenuous to suggest that there are twenty-four lanes that will be there. We're talking about going from three lanes of traffic today on the freeway proper, to four lanes of traffic...

Hand: Five!

Naeyaert: ...in each direction.

Newman: She says five, but who's counting?

Naeyaert: Well, through lanes...and so you do have wider shoulders, which provide an opportunity for vehicles to--that are disabled, or in need of repair--to go to the side of the road. One of the biggest problems that your station reports on every day are the delays to traffic because of accidents, because there really isn't anywhere, you know, for those disabled vehicles to go. A wider shoulder will do that. That gives you a place to get away from a disabled vehicle if you need to. So, it does provide safety...that added capacity. And we are making the--she's also adding in all the continuous service lanes. You have now, on this stretch of freeway, non-continuous service lanes. And our goal is to make them continuous, so that you can drive the entire length of the project on a service lane, which is above the freeway, and it really will separate that local traffic from the through traffic, and I think everyone there is going to find it a lot safer and a lot easier to navigate.

###

EXHIBIT F

Karen Kendrick-Hands

5 Year Road & Bridge Program

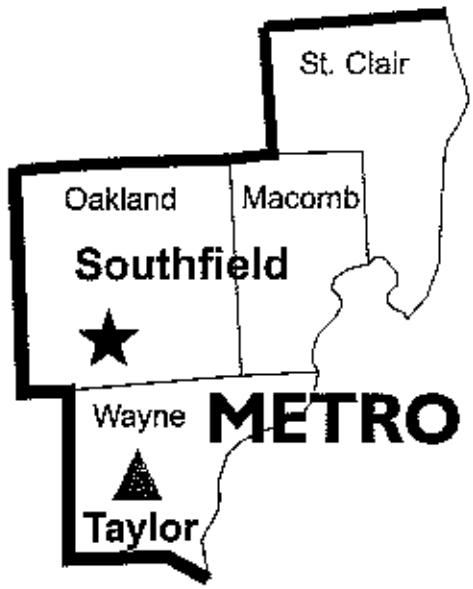
1999 to 2003

MDOT

Michigan Department of Transportation

Metro Region

1997 Road Condition



The Metro Region serves 4 counties in southeastern Michigan. These include Oakland, Macomb, St. Clair, and Wayne counties. Major state trunklines include I-75, I-94, I-69, I-696, and I-275.

The Metro Region has the state's largest population and the oldest and busiest freeways carrying 44% of statewide freeway system traffic. The region is also a major gateway to Canada, home to the Ambassador Bridge in Detroit - the busiest commercial border crossing in North America - as well as the Blue Water Bridge in Port Huron and the Detroit-Windsor Tunnel, which carries the most passengers of any crossing on the US-Canada border.

Project selection strategies will emphasize freeway modernization through safety and operational improvements. MDOT will continue to improve international border crossings in the region to facilitate the flow of trade across the Canadian border into Ohio. The department will improve access to support economic development in downtown Detroit and other growing areas in the region. MDOT will work to eliminate choke points in the region, address system continuity issues, and improve east/west corridors in Wayne and Washtenaw counties and north/south corridors in Oakland and Macomb counties. MDOT will begin to investigate corridor improvements along M-53 (VanDyke) north of I-696, particularly in the City of Warren.

Road preservation and capacity improvement work will upgrade 315 miles of the Metro Region's 875 miles over the next five years. The extensive amount of work scheduled in the Metro Region is related to the unique problem it faces dealing with its aging Interstate expressways and bridges. Having earlier completed a Detroit Area Freeway Study, MDOT will undertake a study of the long-term capacity needs of I-75 in Oakland Corridor, with completion expected in 2000. In addition, capital preventive maintenance projects, programmed annually, are anticipated for a significant number of pavements that do not yet require more extensive repairs, to improve the condition and extend the life of those pavements.

In addition to the many preservation, bridge, and CPM projects scheduled, sixteen capacity improvements in the four county Metro Region are underway or scheduled for construction to begin in the next 5 years. Six of these projects are located in Wayne County:

- Construction is scheduled for 2002 to address long term congestion mitigation and direct access improvements between the **Ambassador Bridge and I-75 and I-96.** The Gateway Project is central to our border crossing strategy and includes reconstruction of the I-75/I-96 mainline from south of west Grand Boulevard to the existing I-96 interchange. Estimated cost to complete this project is $103 million, and completion is anticipated in 2004.

- Construction is scheduled in 1999 to reconstruct and improve the **interchange at I-75 and Eureka** to alleviate existing safety problems. The improvements involve lengthening the SB I-75 off-ramp and widening its terminus to four lanes, making minor improvements to the SB I-75 on-ramp and making median and signalization changes to Eureka Road in the interchange area. Cost to complete is $1.7 million and completion is anticipated in 1999.

- The scope of improvements to **I-94 between I-96 and Conner Avenue** is still being determined with a final recommendation to be made in 1999. $17.5 million is budgeted to provide design work up to 2002. Following FHWA approval of the environmental document, design could begin as early as 2000. This project is the first phase of a larger project to rehabilitate I-94

between Wyoming Avenue in the City of Detroit and I-696 in Macomb County. A major objective is to maintain truck mobility, as this segment is part of the hub of interstate-to-interstate and international truck travel. This section of I-94 provides a connection for commercial and trans-continental traffic to the two Detroit/Windsor border crossings and the Blue Water Bridge in Port Huron. Structure work to accommodate improvements to mainline I-94 including the Dequindre Yard bridge are expected to occur within this 5 year period.

- Reconstruction and ramp modification to accommodate the new stadiums and theater development in downtown Detroit is scheduled in 1999 on **I-75 between I-96 and I-375**. Completion is anticipated in 1999.

- A steering committee composed of MDOT, City of Detroit, FHWA and SEMCOG has convened to oversee the East Riverfront Access Study. Consultants are being selected in 1999 to complete the access study. Construction of access improvements could begin in 2002. Estimated cost to complete is $51 million.

- Implementation of operational improvements are scheduled in 2000 on **Jefferson Avenue from Randolph to I-375**. Estimated cost to complete is $3 million.

- Widening of **US-24 from Pennsylvania to Vreeland** is scheduled to begin in 2000 to include a left turn lane within this 5 mile segment in order to address anticipated and existing pavement condition, operational and safety issues resulting from increased industrial, commercial and residential development. Estimated cost to complete this widening is $17 million.

In addition, ten Oakland County capacity improvements are scheduled for implementation:

- Improvements to I-75 in Oakland County include the addition of a merge and weave lane on northbound I-75 **from south of Square Lake to M-59**. This project is part of a larger concept which would reconstruct and widen I-75 between a point south of South Blvd. and Featherstone Road. Current cost issues with the interchange at M-59 prohibit this concept to be completed as one project. Immediate attention will be given to the section of NB I-75 where a lane drop occurs at the Square Lake Road exit. This improvement will address the traffic congestion occurring at this location. The estimated cost of the additional lanes is $15 million with construction scheduled for 2001 and completion expected in the same year.

- Construction began in 1998 to provide access to **University Drive and northbound I-75 from Chrysler Drive**. This project will improve access to the Chrysler Technology Center. Some additional modifications to the University Drive interchange are included to address current operational problems. The estimated cost to complete this project is $12.5 million and completion is anticipated in 1999.

- Reconstruction of **I-96 interchanges at Beck and at Wixom** are scheduled for construction in 2002 and 2003 with a combined cost to complete estimated at $70 million. $1,950,000 in TEA-21 High Priority project funds have been earmarked for these projects. These improvements are needed to accommodate traffic generated by current and future development in the area.

- Construction of a boulevard is scheduled to begin in 2000 for the last 1½ mile segment of **M-5 from 14 Mile to Pontiac Trail**. This project is the final part of a larger project designed to provide access to I-96, I-696 and I-275 from the Haggerty Road corridor. $2,400,000 in TEA-21 High Priority project funds have been earmarked for this project. The estimated cost to complete this phase is $31 million.

- Construction began in 1998 to improve the **M-5 interchange at Grand River Avenue**. This project will relieve congestion at this interchange. Estimated cost to complete this improvement is $2 million, and completion is anticipated in 1999.

EXHIBIT G

MDOT
Michigan Department of Transportation

5 Year Road & Bridge Program

1999 to 2004

- The grade separation on M-59 in downtown Pontiac was completed and opened to traffic.

In addition, over 50 miles of road were resurfaced or reconstructed. Surface condition improved from 67% "good" in 1997 to 70% "good" in 1998. There were also 66 bridges upgraded. Because of these surface improvements, travel times were improved and capacity problems were reduced in these major urban areas.

Only two projects announced for 1999 were not completed. They were:

- US-12 from Gulley Road to Washington. This project has been delayed due to utility relocation conflicts and ROW issues. It is on track for implementation in 2000.

- I-75 at Eureka Road interchange in Taylor. This project, being initiated by the City of Taylor, is delayed while the city completes the acquisition of necessary right-of-way.

2000-2004 Five-Year Program:

Road preservation and capacity improvement work will upgrade almost 250 miles of the Metro Region's 889 miles over the next five years. Of the region's 1,423 bridges, 188 (13.2%) are scheduled for repairs in 2000 and 2001. Over $936 million dollars will be invested over the next five years in Metro Region on these programs alone.

The extensive amount of work scheduled in the Metro Region is related to the unique problem it faces dealing with its aging Interstate expressways and bridges. Having earlier completed a Detroit Area Freeway Study, MDOT will undertake a study of the long-term capacity needs of I-75 in Oakland County, with completion expected in 2000. In addition, capital preventive maintenance (CPM) projects, programmed annually, are anticipated for a significant number of pavements that do not yet require more extensive repairs. This treatment will improve the condition and extend the life of these pavements

MDOT will study the possible jurisdictional transfer of Gratiot Avenue between 23 Mile Road and M-19 in Macomb County. We will also participate in a study to determine necessary intersection improvements along M-59 at Williams Lake Road and will coordinate our findings with the Road Commission for Oakland County's efforts to possibly relocate Williams Lake Road at M-59.

Along with the many preservation, bridge, and CPM projects scheduled, several transportation system improvements in the four county Metro Region are underway or scheduled for construction to begin in the next 5 years. Over $470 million will be invested in the Metro Region on programs that address congestion and safety concerns resulting from economic and population growth.

Capacity Improvements and New Roads

Wayne County

- Construction could begin as early as 2002 to address long term congestion mitigation and direct access improvements between the Ambassador Bridge and I-75 and I-96. The Gateway Project is central to our border crossing strategy and includes reconstruction of the I-75/I-96 mainline from south of West Grand Boulevard to the existing I-96 interchange. Right-of-way acquisition begins in 2000.

- Pending resolution of the remaining ROW issues by the City of Taylor, construction is scheduled to begin in 2000 to improve the interchange at I-75 and Eureka Road in Wayne County to alleviate existing operational problems. The improvements include lengthening the southbound I-75 off-ramp and widening its terminus to four lanes, making minor improvements to the southbound I-75 on-ramp, and making median and signalization changes to Eureka Road in the interchange area.

- A Draft Environmental Impact Statement (DEIS) for recommended improvements to I-94 from I-96 and Conner Avenue in Wayne County is expected be submitted to FHWA for review in 2000. The final EIS, with a recommended alternative, is currently possible by early 2001. Following FHWA approval, authorization to design the selected alternative could begin. This project is the first phase of a larger project to rehabilitate I-94 between Wyoming Avenue in the City of Detroit and

I-696 in Macomb County. This section of I-94 provides a connection for commercial and trans-continental traffic to the two Detroit/Windsor border crossings and the Blue Water Bridge in Port Huron. Since this segment is part of the hub of interstate and international truck travel, a major objective for this project is to maintain truck mobility. Structure work to accommodate improvements to mainline I-94 are expected to occur within this 5 year period. Currently, the Dequindre Yard bridge replacement is underway.

- A steering committee, composed of MDOT, City of Detroit, FHWA, Wayne County and the Southeast Michigan Council of Governments (SEMCOG), is providing guidance to MDOT's consultants to identify practical alternatives for the I-375 East Riverfront Access Study in Wayne County. The feasibility study will be completed in December 1999, planning and environmental analysis is expected to be completed by late 2000. The project is expected to move into the design phase in 2001.

- Implementation of operational improvements is scheduled in 2000 for Jefferson Avenue from Randolph to I-375 in downtown Detroit. These improvements are being coordinated with the City of Detroit and General Motors.

- Widening of US-24 (Telegraph Road) from Pennsylvania to Vreeland is scheduled to begin in 2001. This improvement will include a left-turn lane along this five-mile segment in Wayne County to address anticipated and existing pavement condition, and operational and safety issues resulting from increased industrial, commercial and residential development. Consultants for Brownstown Township are performing the early preliminary engineering.

Oakland County

- To correct the existing lane drop on northbound I-75 at Square Lake Road, the department will add an additional northbound lane on I-75 from south of Square Lake to south of M-59 in Oakland County. The construction of this additional lane will alleviate traffic congestion and delays at this location. Construction is scheduled for 2001.

- Reconstruction of the I-96 interchanges at Beck and Wixom Roads in Oakland County are scheduled for construction in 2002 and 2003. In 1999, this project received environmental clearance. Design work will begin this year.

- The construction of Phase 3 of the M-5 boulevard from 14 Mile Road to Pontiac Trail in Oakland County is scheduled to begin in 2001. A two-year construction schedule is planned.

- With completion of the railroad grade separation on M-59 additional work agreed to with the railroads will be undertaken, as well as constructing the M-59 bridge grade separation of two other nearby railroad bridges that needed to be reconstructed or eliminated due to low underclearance. At the railroad's request, the bridge at Lawrence Street was removed and the bridge at Pike Street will be raised and reconstructed in 2000. In addition, the bridge at Orchard Lake Road will be reconstructed and lengthened to accommodate Oakland County's widening of Orchard Lake Road. This project will be jointly funded by the railroad, MDOT, City of Pontiac and Oakland County.

- Construction of a new interchange on M-59 at Squirrel Road in Oakland County was initiated in 1999. This interchange will ease congestion at adjacent interchanges on M-59 and improve access to the Daimler/Chrysler Technology Park. The interchange is scheduled to be completed in the summer of 2000.

- The Road Commission for Oakland County will be coordinating the staging of interchange improvements at M-59 and Crooks Road with related widening work on Crooks Road. The interchange improvement will include dual span structures over M-59 and two new loop on-ramps. This work is being performed by Oakland County in conjunction with their widening of Crooks Road.

Macomb County

- During 1999 planned improvements for M-53 at 18 ½ Mile and Van Dyke have progressed from research to committed status. Preliminary design plans for the

EXHIBIT H

MDOT

5 Year Road & Bridge Program

Vol III - 2001 to 2005

- **M-53, I-696 to 14 Mile Road.** This project is adjacent to the GM Warren Technical Center and is to be done in association with redevelopment and modernization of the GM Tech Center. This and other local projects will reduce congestion and improve access to the facility. Improvements to this portion of M-53 are included in Governor Engler's *Build Michigan III* program.

- **M-59 from Crooks Road to Ryan Road.** Early preliminary engineering (EPE) and environmental clearance will take place in 2001 and 2002 for widening M-59 to a six-lane freeway from Crooks to Ryan in Oakland and Macomb counties. Constructing an additional lane will help reduce congestion, resulting in better operations on the freeway mainline and in the ramp merge/diverge areas. *Build Michigan III* has made funding available for this "choke point" project.

- **M-59/Crooks Road Interchange.** A dual-span bridge and two loop entrance ramps will be constructed. The Road Commission of Oakland County (RCOC) will widen Crooks Road to four lanes by 2002. MDOT has agreed to reconstruct the M-59/Crooks Road Bridge as a four-lane, dual-span bridge to match the cross-section of Crooks Road. The RCOC is performing the study and design for this project.

- **US-24 from Pennsylvania to Vreeland Road.** Approximately five miles of US-24, between Pennsylvania and Vreeland, will be widened from four to five lanes to allow for a center left-turn lane. Design and right-of-way will occur in 2001 with construction scheduled for 2002. The project will be completed in phases, although a specific phasing plan has not yet been established. Therefore, right-of-way and construction may extend beyond 2001 and 2002.

Research Projects

- **I-75, south of Chrysler Drive to M-24 (with University Interchange).** This project is the approach work for the I-75/University Drive interchange and will include the use of collector/distributor roads paralleling I-75. The project will require lengthening of the Walton Road bridge. Construction funding has not been identified, but will be coordinated with implementation of the I-75 Corridor Study recommendations.

- **I-75, 8 Mile Road to the north county line.** The feasibility study for capacity improvements to I-75 in Oakland County was completed late in 2000. Environmental clearance will begin in 2001. Funding for environmental clearance and design activities is included in Governor Engler's *Build Michigan III* program.

- **I-75 at Crooks Road.** This project will modify and reconstruct the existing interchange in Troy and provide improved access to the area. In May 2000, the department and the city reached agreement on a conceptual design that will address issues at the interchange. MDOT will complete environmental clearance and design. Necessary right-of-way will be provided by the city of Troy. Construction will follow.

- **I-75/M-59 Interchange.** An interchange feasibility study at I-75 and M-59 is underway and is expected to be completed in late Spring 2001. Additional early preliminary engineering (EPE) activities will continue into 2001, with the preparation of an access modification application to the FHWA. Advance acquisition for key right-of-way parcels are also being pursued. Construction funding has not been identified, but will be coordinated with implementation of the I-75 Corridor Study recommendations.

- **I-94, I-96 to Connor Avenue.** This project is the first phase of a larger project to rehabilitate two projects; I-94 between Wyoming Avenue in the city of Detroit and I-696 in Macomb County. I-94 in Detroit was identified in an MDOT planning study entitled *The Greater Detroit Area Freeway Study* as the freeway in greatest need of improvement. The objective is to address the deterioration of the facility due to age and outmoded design. The Draft Environmental Impact Statement (EIS) is being finalized and is expected to be completed in early 2001. A Final EIS should be completed later in 2001. *Build Michigan III* contains additional funding for design.

- **I-94/Black River Bridge.** The I-94/Black River bridge connects Port Huron with Port Huron Township, and connects the Blue Water Bridge with I-94 and I-69. The study will determine the most appropriate improvement to replace the 50-year-old, four-lane bridge over the Black River and to improve the Water Street interchange. The project is programmed for environmental clearance

EXHIBIT I

FY 2000
TRANSPORTATION PLANNING CERTIFICATION

SUMMARY REPORT

DETROIT, MICHIGAN
TRANSPORTATION PLANNING PROCESS

Prepared by
Federal Highway Administration
Federal Transit Administration

June 14-15, 2000

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APPENDIXES

Executive Summary

On June 14-15, 2000, the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) conducted the third certification review of the transportation planning process in the seven county southeast Michigan area. FHWA and FTA are required to jointly evaluate the planning process for each urbanized area over 200,000 in population at least every three years and determine if the process meets the Federal planning requirements. The first certification for the southeast Michigan metropolitan area was conducted in 1994. The second certification was conducted in July 1997.

The transportation planning process is making good progress in implementing national initiatives in the areas of job access and reverse commute, and development of a regional Intelligent Transportation System architecture. The process has responded to FHWA's state initiatives in timely updates of the Regional Transportation Plan (RTP), revenue forecasts for the RTP, and development of a TIP management process. SEMCOG, and its planning partners, are recognized as national leaders in incorporating safety considerations in the development of transportation plans and programs.

The Federal review found that the transportation planning process being conducted in the southeast Michigan area continues to make progress in implementing the planning framework adopted in 1997.

Implementation of a Congestion Management System and opportunity for public comment on air quality analyses were identified as areas where additional work is needed to fully meet Federal planning expectations. The MPO staff is also working on process improvements in the areas of public involvement and the consideration of the Environmental Justice effects of transportation plan and program decisions.

The review team received a significant amount of public comment on the transportation planning process in southeast Michigan. The public made specific suggestions on improving the transportation planning process or products of the process. MDOT, SEMCOG and the transit operators should seriously consider how they will respond to the suggestions made by their citizens.

Through the certification process, we also provide comments and recommendations on how the planning process or the products of the planning process could be improved. The review team identified opportunities for strengthened regional leadership in transit and land use planning and the development of technical tools for establishing regional priorities. This report highlights areas of good performance and contains recommendations for continuing quality improvements that should be implemented in a timely manner.

I. Introduction and Background Information

The FHWA and FTA are required to jointly review and evaluate the transportation planning process in all Transportation Management Areas (TMA)--urbanized areas over 200,000 population--on a 3-year cycle to determine if the process meets the Federal planning requirements. The resulting certification is a prerequisite to the approval of Federal funding for transportation projects in such areas. The certification review also provides an opportunity the Federal agencies to provide assistance on new programs and to enhance the ability of the process to provide decision makers with the knowledge they need to make well-informed capital and operating investment decisions. The first review for the southeast Michigan area was conducted in 1994 and the second in 1997. A summary of progress in addressing the findings from the second review is provided in Appendix F.

This was the third certification review in the southeast Michigan metropolitan area and consisted of a formal site visit and one public meeting. The site visit was conducted on June 14-15, 2000, and the public meeting was held on the evening of August 16, 2000. The public meeting was originally scheduled for the evening of June 13, 2000, but was delayed because of an electrical outage in downtown Detroit. Participants in this review included representatives of FHWA, FTA, the Michigan Department of Transportation (MDOT), the Ann Arbor Transportation Authority (AATA), the Ann Arbor/Ypsilanti Urban Area Transportation Study (UATS), the St. Clair County Transportation Study (SCCOTS), the Suburban Mobility Authority for Regional Transportation (SMART), and the Southeast Michigan Council of Governments (SEMCOG). A list of participants is included in Appendix B. A desk audit of current documents and correspondence was completed prior to the site visit. In addition to the formal review, routine oversight mechanisms provide a major source of information upon which to base the certification findings.

The certification review covers the transportation planning process conducted cooperatively by the Metropolitan Planning Organization (MPO), MDOT, and the public transit operators. SEMCOG is the designated MPO for the seven county southeast Michigan area, MDOT is the responsible state agency and DDOT, SMART, AATA, Blue Water Area Transportation Authority (BWATA), Lake Erie Transportation Commission (LETC), and Livingston Essential Transportation Services (LETS) are the responsible transit agencies. Current membership of the SEMCOG is primarily elected and appointed officials. The study area includes all of Livingston, Macomb, Monroe, Oakland, St. Clair, Washtenaw, and Wayne Counties. SEMCOG is the largest MPO in Michigan, with a 1990 study area population of 4,590,468. The population is expected to grow to 5,429,000 by 2025. SEMCOG includes two of the five TMAs in Michigan (Detroit and Ann Arbor), the Michigan portion of the Toledo, Ohio TMA, and the Port Huron urbanized area. Separate but coordinated sub-studies are conducted in Washtenaw County for the Ann Arbor/Ypsilanti urbanized area and in St. Clair County for the Port Huron urbanized area.

The items selected for on site review included:

- Status of recommendations from previous certification review
- Status of implementing the adopted planning process

- The transportation plan update/amendment process
- Process integration among the planning partners
- The process for developing a financial plan
- Relationship of TIP projects to the transportation plan
- Consideration of Environmental Justice/Public Involvement Plan
- Access to jobs
- Status of implementation of a CMS
- ITS consistency with national architecture

The report and appendices provide additional background information, key findings, commendations, corrective actions, and recommendations related to these items.

II. Job Access and Reverse Commute

Background

The review team provided an overview of the FTA program called Job Access and Reverse Commute (JA/RC). The objective of this program is to enhance the ability of welfare recipients and low-income individuals to get to jobs and related activities. In 1999 there were over 300 applicants with 60 to 70 selected to receive grants. For 2000 there is $75M available but it is expected that much of it will be "earmarked" by congress.

Findings

SEMCOG applied for second round JA/RC funding. They also applied for and received funding from MDOT, the U.S. Department of Labor, and the Family Independence Agency (FIA) for transportation to work programs for low-income persons. SEMCOG managed a regional consortium that developed the *Area-wide Job Access/Reverse Commute Plan for Southeast Michigan*. The plan recognizes the importance of using the existing transit systems and augmenting them with taxi and subscription van services when necessary. The consortium includes brokering of transportation services as well as a program for emergency rides and rides accommodating childcare. The plan also supports programs for individual car ownership and car/van pooling.

SEMCOG conducted a needs assessment that included interagency data collection; mapping of residential areas with concentrations of welfare recipients, major employment centers, licensed child care providers, and existing bus routes; and a spatial analysis of the mismatch between residences and existing jobs, services, and transit routes.

SEMCOG formed a task force along with the City of Detroit's Employment and Training Department and representatives of job placement agencies, the Wayne County FIA, transit providers, MDOT, and Child Care Coordinating Council. The task force has developed strategies for making transportation a resource, not a barrier, while seeking to understand the special transportation needs

of the region's various ethnic groups.

AATA has not applied for a JA/RC grant because Washtenaw County has an unemployment rate of less than 1%, which means that they could not meet the basic grant requirements. AATA has a guaranteed ride home program using shared ride taxi service when AATA is not operating. AATA indicated that there is a weakness in the job access program in Michigan because a lot of the transit service is provided on a county basis and it is hard to bridge services across county lines.

BWATA has not applied for JA/RC funds and is not currently in a position to apply. They are working with social service agencies to develop grant application materials in the near future.

Commendation

(1) SEMCOG is commended for taking a pro-active leadership role in the establishment of programs and services that connect people to jobs. SEMCOG, MDOT, and the transit agencies should continue their current activities to identify the location of welfare recipients and low-income individuals in the urbanized area and develop transportation programs to meet their needs.

III. Public Involvement Plan/Environmental Justice

Background

The team briefly reviewed (1) Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," dated February 11, 1994, and (2) the U.S. Department of Transportation Environmental Justice Order published in the Federal Register on April 15, 1997. The consideration of environmental justice is not a new requirement. Federal agencies are taking opportunities, such as certification reviews, to remind recipients of Federal funds to seek early and continuing involvement of low income populations and minority populations in the development of transportation plans and programs. State, regional, and local agencies are required to assure meaningful community representation through effective public participation strategies. Although there is no standard formula for how environmental justice issues should be identified or addressed, agencies should consider the composition of the study area and how the benefits and burdens of transportation investments are distributed.

Findings

At the time of the office visit, SEMCOG was in the process of reviewing its public involvement processes. A special task force representing a wide range of population groups, including minority and low-income representatives was established to review SEMCOG's overall public involvement process. This Public Involvement Transportation Task Force has identified issues and concerns that need to be addressed. Among other things, the task force recommended that a citizen's guide to regional transportation planning be developed and that the public involvement plan be updated to

reflect current needs and practices. Results of the task force efforts were presented to the Transportation Advisory Council and Executive Committee in September 2000.

The SEMCOG Transportation Advisory Council is composed of local government officials, transportation technicians, special interest representatives as well as minorities and low-income representatives. This committee reviews the long range plan and project list and submits its recommendations to the Executive Committee. The TAC, Executive Committee, and General Assembly are open to the public and provide opportunities for public involvement.

SEMCOG had an extensive public outreach effort in the development of the 2025 Regional Transportation Plan (RTP) as documented in *Public Involvement in Regional Transportation Planning*. SEMCOG developed a three-phase public involvement plan, establishment of an oversight committee, educating and collaborating with the public, and post adoption publicizing of the plan. SEMCOG took specific actions to reach out to minority and low-income populations, including placing paid advertisement in various news publications reaching African-American, Hispanic, Asian-American, Native American and low-income residents and focusing efforts to meet with and present information to these various groups.

The oversight committee provided guidelines for plan development, reviewed technical information and offered guidance to ensure that plan priorities were truly representative of regional needs. SEMCOG identified venues for public input during the development of the transportation plan, many with multiple meetings. They had also made 32 presentations of the draft plan at the time of the certification review with additional presentations scheduled. SEMCOG will continue to make presentations on the 2025 RTP following its adoption as well as having a wide distribution of the plan document.

As part of the 2025 RTP process, SEMCOG staff identified all traffic analysis zones that have higher than the regional average percent population of low-income, African-American, Hispanic, Asian-American and Native American persons. The locations of projects were overlaid on maps of the protected populations and analyzed to ensure that project implementation would not negatively affect low-income populations or minority populations. There appeared to be a lack of projects in the City of Detroit. Staff investigation revealed that much of the funding for projects in Detroit was for projects that cannot be plotted on maps (e.g., safety and resurfacing projects). Staff also analyzed accessibility to jobs as an indicator of impacts on low-income populations and minority populations. From all of the analyses SEMCOG staff concluded, "that no disproportionately high and adverse effects on minority populations and low-income populations were anticipated as a result of implementation of the 2025 RTP."

Commendation

(2) We commend SEMCOG for implementing the recommendation from the Public Involvement Transportation Task Force on receiving public comment at public meetings. Instead of receiving comments only at the beginning of meetings, public comments are now solicited after each agenda item. Further we urge SEMCOG to complete development of a citizen's guide to regional transportation planning and the other task force recommendations.

Recommendation

(1) We recommend that MDOT, SEMCOG and the transit operators consult with the low income and minority populations in the development of a process for assessing the transportation needs in the region and in developing assessment techniques.

IV. Intelligent Transportation System (ITS) Architecture and Consistency Policy

Background

Section 5206 of TEA-21 requires federally funded ITS projects to conform to the national architecture and standards. Promoting and implementing ITS technologies in the largest metropolitan areas of the country, including the SEMCOG area, is a national priority. The review team heard a presentation from the SEMCOG staff regarding their activities in developing a Regional ITS consistency policy.

Findings

MDOT, SEMCOG and the transit operators recognize the importance of ITS to better manage and optimize the use of the infrastructure already in place in the metropolitan area. They understand the importance of ITS in resolving many of the congestion problems in the metropolitan area. SEMCOG has been a leader in promoting ITS in the metropolitan area through hosting seminars and workshops and participation on regional and national ITS committees. SEMCOG has been chosen by the Southeast Michigan ITS Task Force to be the champion in developing the regional ITS architecture. Federal regulations addressing this requirement are anticipated in the near future.

The AATA is currently in the third phase of providing real time information to customers at transit stations. Use of technologies such as an automated vehicle locator system allows AATA to dynamically display bus arrival times at their transit stations.

The Michigan Intelligent Transportation Systems Center (MITS) has expanded their coverage of monitoring the operation of the freeway system in the area. They are in the process of developing a five-year plan. They have about $40M worth of equipment on the ground and a $4M/year

replacement schedule for the next 10 years. General Motors Corporation has donated additional vehicles for the courtesy patrol so that coverage can be expanded. MITS is trying to get the courtesy patrol to be run from MITS so that all operations are run from one location.

Commendation

(3) We commend the SEMCOG staff for its leadership role in the ITS area and urge continued efforts to engage the stakeholders and facilitate the cooperative development of a regional ITS architecture.

V. Status of Implementation of a Congestion Management System

Background

The Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 mandated the development of six management systems. Even though the National Highway System Designation Act of 1995 generally made the management systems optional, it did not change the requirement for development of Congestion Management Systems in urbanized areas over 200,000 population. The planning regulations in 23 CFR 450.320(c) and (d) state *"(c) In TMAs, the planning process must include the development of a CMS that provides for effective management of new and existing transportation facilities through the use of travel demand reduction and operational management strategies and meets the requirements of 23 CFR part 500. (d) The effectiveness of the management systems in enhancing transportation investment decisions and improving the overall efficiency of the metropolitan area's transportation systems and facilities shall be evaluated periodically, preferably as part of the metropolitan planning process."*

Findings

MDOT assumed the role of lead agency in the development of the management systems for all areas of the State. Following the passage of the National Highway System Designation Act, MDOT decided to continue the development of management systems but the pace of the development slowed. During the 1994 certification review, it was indicated that the CMS would be operational in the SEMCOG region prior to October 1, 1995. During the 1997 certification review, staff indicated that implementation of the State developed CMS was expected within the year. SEMCOG has the MDOT developed CMS which includes only State trunklines at this time. SEMCOG staff is developing methods for inputting local data into the State developed CMS

SEMCOG is in the process of developing a CMS, which they expect to have completed by the end of the year. SEMCOG is developing extensive tools for dealing with recurrent congestion including both travel forecasting and micro-simulation models. They are involved in numerous corridor studies to determine ways of addressing traffic congestion in the corridors. The SEMCOG staff promotes alternative commute options and integration of ITS strategies to help resolve congestion problems.

SEMCOG staff is collecting data on non-recurrent congestion from sources such as the Michigan State Police and the Freeway Courtesy Patrol. In the future SEMCOG plans to define additional performance measures, move to a new modeling platform which is more GIS compatible, incorporate the Regional ITS Architecture, develop a transit mode choice model, and enhance the relationship with other management systems.

Corrective Action

(1) As a TMA, the southeast Michigan urbanized areas must have a CMS that meets the requirements of 23 CFR 500.109. Work is well underway to develop a CMS for the southeast Michigan area, however, this effort has not been completed. The CMS for the southeast Michigan area must be operational by July 1, 2001.

Recommendation

(2) We recommend that the CMS, when completed, become one of the principal tools used to identify capacity deficiencies in the transportation plan development process and the primary mechanism to evaluate alternative solutions to those identified deficiencies.

VI. Process Integration Among Planning Partners

The 1991 ISTEA significantly enhanced the role of the planning process in establishing area wide transportation priorities. Across the country, the participants in the planning process reexamined the way they interacted to cooperatively produce plans and programs that were: financially constrained, offered increased opportunities for public involvement, conformed with air quality standards, preserved the existing system, and enhanced operations. These features were continued with the passage of TEA-21 in 1998.

Background

The cooperative aspects of the process in Michigan were put to the test in 1995. To the credit of those involved, a major effort to redesign the urbanized area transportation planning process produced a cooperative planning framework. This was an excellent undertaking and illustrated a strong commitment to the planning process in Michigan. A major goal of that effort, as mutually identified by MDOT and MPOs, was to create a single integrated cooperative planning process consistent with the Federal transportation planning regulations. A Memorandum of Understanding (MOU), referencing the newly adopted process, was signed by SEMCOG, UATS, SCCOTS and MDOT as a starting point for the planning partners to negotiate the details of how the how the parties would cooperate in carrying out each step. Overall, the collective effort of those involved has strengthened the partnership. A memo dated March 10, 1999, from SEMCOG to MDOT describes the agreement and time lines for implementing the planning process incrementally as new products are produced (see Appendix G).

Findings

The review team found that progress is being made in implementing the adopted planning process and in integrating procedures as evidenced by the mutual development of: a schedule for implementation; a process for preparing and managing the TIP; a revenue forecasting process for the Regional Transportation Plan; and the public involvement re-assessment effort. Additional opportunities for implementing other steps of the adopted process were also evident.

The review team found evidence of consultation and coordination among MDOT, SEMCOG, the county road commissions, other highway implementing agencies, and the transit operators through such things as participation on committees, requesting input on area transportation needs and sharing information. The review team found that the plan and TIP are assembled from components developed separately by the implementing agencies and then brought to the MPO committees for endorsement. Achieving cooperation requires working together, in an agreed upon way, throughout the planning process, not just comparing proposals prior to adoption. Federal regulations (23 CFR 450.104) define cooperation as *"... parties involved in carrying out the planning, programming and management systems processes work together to achieve a common goal or objective."* See Appendix C for complete definitions.

Continued implementation of the adopted process provides the best approach for achieving the desired process integration and enhanced cooperation. The adopted process calls for cooperation at each step and agreement on how the parties will work together. As noted above, some new procedures are in place. Defining the methods to cooperatively achieve the remaining steps will give the partners a greater sense of collective ownership of decisions when establishing regional transportation priorities. In its most basic form, the overall success of the transportation planning process is linked to its ability to cooperatively produce a plan and a program that reflects regional priorities.

Commendation

(4) We commend MDOT and SEMCOG for developing a schedule for implementing the adopted planning process.

Recommendation

(3) We recommend that MDOT, SEMCOG, and the transit operators give continued attention to enhancing the cooperative procedures for carrying out the steps of the adopted planning process.

VII. Financial Plan

ISTEA called for the State and transit operators to provide the MPOs with estimates of revenues for use in developing plans and programs. TEA-21 modified that by saying that the State, transit operators, and MPOs should work together to develop estimates of revenues to be available for developing plans and programs.

2025 RTP Financial Plan--Background

SEMCOG staff began development of the 2025 RTP financial forecasts by reviewing the methodology and revenue projections that were developed for the 2020 RTP. The funding formulas and historic data on State gas tax distributions to local jurisdictions were used to forecast non-Federal user fee revenues, taking into account the recent increase in the State motor fuel tax. SEMCOG also analyzed non-user fee generated revenues that are used by local jurisdictions for transportation purposes. They found no trends but used averages to forecast future revenues.

The Federal funding from the second year of TEA-21 was used as a base for a straight-line projection of Federal revenues. SEMCOG and MDOT worked together to determine the split, on a statewide basis, between the amount of Federal revenues available to MDOT and the amount available to local governments.

MDOT and SEMCOG staff examined past spending practices and determined the percentage of expenditures that occur in the SEMCOG area and used that percentage to split the revenues between SEMCOG and the rest of the State. MDOT indicated that this is a model they intend to use for the other MPOs that are in the process of updating their transportation plans.

SEMCOG also worked with the transit operators in the development of mutually agreeable revenue forecasts for use in developing the transit portion of the transportation plan.

Findings

The review team found that use of a single revenue forecasting methodology for State, Federal and local revenues complies with the recommendation made in the previous certification review. The cooperative development of revenue estimates is one of the steps in the adopted planning process. The approach used in the financial plan covers funding from known and available revenue sources. There are no new or speculative funding sources identified in the financial plan.

Based on the revenue forecasts and historic expenditure patterns, funding targets were established for the Federal Aid Committee (FAC) for Livingston, Macomb, Monroe, Oakland and Wayne counties, and the City of Detroit, the Ann Arbor-Ypsilanti Urban Area Transportation Study, and the St. Clair County Transportation Study. The FACs, AAYUATS, SCOTTS, and MDOT develop lists of proposed improvements for their geographic areas within the expected funding targets.

Corridor studies are identified in the 2025 RTP and funding is reserved in the financial plan to

implement a limited number of the results of the studies. They are shown as studies only, not as assumed solutions, thus no funding is specified for particular corridors. For project development activities to proceed beyond the environmental feasibility phase, commonly referred to as early preliminary engineering (EPE), the results of the studies will need to be added to the transportation plan and the financial plan will need to show that full funding is available for the project.

Commendation

(5) We commend MDOT and SEMCOG for developing a cooperative revenue forecasting methodology for use in preparing the 2025 Regional Transportation Plan and urge MDOT and SEMCOG to share the cooperative revenue forecasting methodology with other Michigan MPOs.

TIP Financial Plan–Background

TEA-21 requires the State, MPO, and Transit operators to cooperatively develop a revenue estimate as a starting point for establishing TIP priorities.

SEMCOG and MDOT worked together to develop revenue estimates for the local jurisdiction projects portion of the TIP. Under Michigan law, "PUBLIC ACT 308 of 1998" requires that *"Twenty-three to 27% of the DOT-FHWA highway research, planning, and construction federal funds appropriated to this state from the Federal government for road and bridge construction will be allocated to programs administered by local jurisdictions."* Based on this State law and historic amounts provided to urbanized areas, SEMCOG staff allocated an amount of Federal funding for each county and the City of Detroit to be used on local jurisdiction roads.

Concurrent with this, staff of MDOT allocated the remaining amount of Federal funds for use through out the state on the State trunkline system by a work type template, which was developed in response to the Department's performance objectives. In order to achieve the future system condition identified by the template for preservation work, MDOT Regions received an allocation of funding in proportion to their needs. Revenues for improve and expand projects are allocated project by project on a statewide basis.

Findings

The review team found elements of a cooperative process in the development of revenue estimates for the local jurisdiction portion of the FY 2000 - 2002 TIP. The review team found that the revenue estimate for MDOT projects in the FY 2000 - 2002 TIP was provided by MDOT as a sum of the proposed expenditures taken from the MDOT 5-Year Road & Bridge Program.

Recommendation

(4) We recommend that MDOT, SEMCOG and the transit operators continue the cooperative development of revenue estimates for local jurisdiction projects and expand the cooperative process to include revenues that are expected to be available for MDOT projects.

VIII. Regional Transportation Plan

Background--Highways

The 2025 Regional Transportation Plan for Southeast Michigan (2025 RTP) was adopted on June 22, 2000, one week after the certification review, as an update to the 2020 Regional Transportation Plan. The 2025 RTP effort was guided by the 2025 RTP Committee comprised of staff of SEMCOG, UATS, SCCOTS, MDOT, FHWA, regional transit providers, county road commissions, and other local transportation agencies. Additionally, monthly progress updates and items needing formal action were provided to the Transportation Advisory Council. It was originally anticipated that the 2025 RTP would be a quick review and extension of the 2020 RTP forecasts. As the 2025 RTP Committee began work, however, the extent of the revisions and additions to the 2020 RTP increased the level of effort from that originally planned.

The SEMCOG staff identified three phases in the plan development: early plan development; draft plan evaluation; and plan approval. Early plan development included review of goals and objectives from the 2020 RTP; regional financial analysis; demographic changes; determination of needs to resolve capacity, pavement, bridge, safety, and transit deficiencies; and development of a draft plan and project list. The draft plan evaluation phase included analyses of financial constraint, air quality conformity, environmental justice, Federal planning factors, and regional goals and objectives. The plan approval phase included formal endorsement of the plan by the Transportation Advisory Council, approval by the Executive Committee, and adoption by General Assembly (which occurred on June 22, 2000).

SEMCOG held an outreach effort they called "Transportation 2000 and Beyond -- A Visioning Process" on September 29, 1999. One-hundred and fifty-five (155) people participated in the process through twenty-two small groups organized around specific topics within the areas of highways, public transit, freight and non-motorized. The problem most often identified by the groups was that there is not sufficient funding available to address all of the transportation problems in the region. More than 200 transportation issues and 150 potential solutions were identified through the visioning process. While the visioning process had input to the 2025 RTP, it is expected to have a greater impact on the next plan update, the 2030 RTP.

The adopted plan identifies a limited number of major improvements. The plan also identifies corridor studies currently underway along major routes or planned in the region. The financial plan assumes an investment level for implementing the results of the studies but does not indicate which ones. Additionally, it is planned that a freeway needs study will be started this fall to take a more comprehensive look at the freeway needs in the area. The 2025 RTP shows about 80% of available funding being spent on system preservation type activities and 20% being spent on capital needs

including safety, bridge, and capacity projects.

Findings

Past certification reviews have recommended that SEMCOG take a stronger leadership role in prioritizing deficiencies and suggesting solutions to the implementing agencies. Progress has been made in that direction by supplying the implementing agencies with lists of capacity, safety, bridge, and pavement deficiencies along with ranges of appropriate solutions based on the severity of the deficiencies. Implementing agencies that propose projects inconsistent with the regionally identified deficiencies or with the range of appropriate solutions are required to justify the proposed projects.

The plan accumulates projects developed by the implementing agencies. The use of funding targets, combined with a process where the FACs and MDOT choose projects for inclusion in the plan independently, creates a situation where there is no assurance that regional priorities are being addressed. The review team had difficulty identifying a regional vision for the transportation plan or that there was an analysis of tradeoffs among highway projects or between modes. It was difficult to find evidence that deficiencies had been prioritized on a regional basis or that improvements listed in the plan are addressing the highest regional priority needs.

Air quality conformity analysis on the RTP began in January 2000, with a meeting of the Interagency Work Group (IAWG) to review the proposed projects to determine those that are subject to the conformity requirements. Since that work group meeting, six additional non-exempt projects were added to the plan. The IAWG reviewed the projects and agreed that they were subject to the air quality conformity requirements. The review team found no evidence that the results of the second conformity analysis were taken to the public for review and comment.

Background--Transit

Provision of transit service for the Detroit metropolitan area has been an issue for a number of years. The existing transit providers are the Detroit Department of Transportation (DDOT), Suburban Mobility Authority for Regional Transportation (SMART), Ann Arbor Transportation Authority (AATA), Blue Water Area Transportation Commission (BWATC), Lake Erie Transportation Commission (LETC), Livingston Essential Transportation Services (LETS), and the Detroit Transportation Corporation, which operates the People Mover. Each of the transit agencies operates independently and serves specific geographic areas with little overlap or coordination of services. Recently there have been more efforts to coordinate schedules between DDOT and SMART to allow easier transfers between the two systems. The primary issue has been and remains whether there is a regional vision for the provision of transit service. A letter from FHWA to SEMCOG dated October 28, 1999, highlighted the importance of having "a region wide transportation vision and plan that considers all transportation modes and supports sustainable metropolitan community development and social goals." A copy of the letter can be found in Appendix H.

The 2025 RTP discusses a number of past or currently active transit corridor studies including the Woodward Avenue Corridor Transit Alternative Study; the Downtown Detroit to Detroit Metro

Airport Rail Study; the Detroit-Chicago High-Speed Rail Passenger Corridor Study; and the Lansing to Detroit Rail Study. However, there does not appear to be a source of funding to operate the system that would result from any of the studies. There is also discussion of two regional transit visioning studies, the *TransitChoice* vision developed by the Metropolitan Affairs Coalition in consultation with the Detroit Regional Chamber and the more recent *SpeedLink* Collaborative which includes the Metropolitan Affairs Coalition, Detroit Regional Chamber, Detroit Renaissance, and Greater Downtown Partnership. Neither of the above two studies have been included as a project in the transportation plan but the area is continuing to explore options for transit. SEMCOG held a transit visioning session on August 10, 2000, to continue the public dialog on the future of transit in the area.

The transit projects in the 2025 RTP continue the existing services and do not envision any significant change in the way transit service is provided. All projected Federal revenues are being used to upgrade facilities and replace buses.

Findings

MDOT, SEMCOG, and the transit operators do not have operational mode choice or transit network assignment models for the region. Without such tools, the ability to quantify choices; evaluate benefits and costs; and analyze tradeoffs among transit alternatives and between transit and highway projects is extremely limited. If transit visions such as *TransitChoice* or *SpeedLink* are to be seriously considered, the decision makers should have the benefit of the information that these tools can provide.

Plan Amendments--Background

Transportation plans are not static documents, conditions change and amendments are sometimes needed between scheduled updates. Unforeseen land development or unexpected special funding could prompt the need to reevaluate plan priorities and to consider an amendment. The decision making tools used to develop the plan and establish priorities are appropriate for use in the amendment process.

Findings

Since adoption in June 1997, the 2020 RTP was amended 3 times, adding a total of 17 projects. In most cases the plan was amended for projects that were ready to be constructed, but were not listed in the plan. The review team found that the 2020 RTP did not identify improvements to the major highway system beyond the first 5-years of the plan. As projects on these systems became ready, they were proposed for addition to the RTP. In each case the SEMCOG staff completed an analysis to demonstrate that the RTP remained in financial constraint and in air quality conformity.

The review team had difficulty finding evidence that available regional planning tools were used to evaluate the proposed amendments in the context of the adopted plan. The review team found that incrementally proposed additions, coupled with the absence of system level technical analyses, made

it difficult for decision makers to know if the proposed additions truly constituted the next set of regional priorities.

Commendation

(6) We commend MDOT, SEMCOG and the transit operators for consistently meeting the 3-year cycle for regional transportation plan updates.

Recommendations

(5) We recommend that MDOT, SEMCOG, and the transit operators develop and refine regional travel demand forecasting tools for both highway and transit modes, including methods for evaluating and establishing regional system wide priorities linked to area wide goals and objectives.

(6) We recommend that MDOT, SEMCOG, and the transit operators use these tools to develop a regional vision for transportation and a RTP that identifies cost feasible improvement priorities for both highways and transit over the 20-year plan horizon.

(7) We recommend that SEMCOG take a stronger role to encourage and assist in coordinating transportation services between DDOT, SMART and DCT.

(8) We recommend that all plan amendments and additions be subject to the same analyses recommended for the development of the RTP.

IX. Transportation Improvement Program

Background

SEMCOG staff described the procedures used in developing the local component of the Transportation Improvement Program (TIP). A revenue estimate and list of RTP projects is provided to the Federal Aid Committees (FAC) for Livingston, Macomb, Monroe, Oakland and Wayne counties, and the City of Detroit. The Ann Arbor-Ypsilanti Urban Area Transportation Study, and the St. Clair County Transportation Study each develop TIPs for their areas that are inputs to the SEMCOG TIP. Each FAC and transportation study is responsible for developing a prioritized list of projects within the revenue estimate for their area. SEMCOG staff, MDOT and the transit agencies sit on all the committees.

In conjunction with this discussion, MDOT staff described their Road Quality Forecasting System (RQFS). RQFS is a good technical process used to evaluate the condition of the trunkline system on a statewide basis. RQFS rates the roadway condition based on statewide goals set by MDOT for the freeway and non-freeway systems. Funds are allocated to MDOT Regions in proportion to their "needs" as defined by the system performance goals. The Regions then develop their repair, surface

and base program to meet the performance goals using RQFS and a pavement management system to choose the best mix of fixes. Project lists developed by the MDOT Regions are given to the MPO for review and inclusion in the TIP. MDOT staff indicated these lists are given to the MPO at least six months prior to TIP adoption in order to fit them into the program.

State trunkline "Improve" (adding lanes) and "Expand" (new roads) projects are developed and controlled at the MDOT central office in Lansing. The investment levels for these project priorities are set on a statewide basis within the State's investment strategies. As Improve/Expand projects are ready to be advanced, information is provided to the respective MPO for inclusion in the plan and TIP.

Each transit operator develops proposed transit projects separately within the amount of their expected FTA and state grants.

SEMCOG staff reviews the project listings from a regional perspective. The compiled lists of proposed projects (state and local, highway and transit) are then reviewed by the TIP Development Committee and recommended to the Transportation Advisory Council (TAC). The TAC reviews the TIP and recommends it to the Executive Committee for approval.

SEMCOG has developed "Transportation Improvement Program Development Policies" which describe policies for the development and modification of the TIP. The policies clearly indicate when the TIP must be amended and when it can be administratively changed. SEMCOG staff has authority to make administrative changes that it then reports back to the TIP Development Committee at the next meeting.

The TIP development policies include a schedule for processing amendments so that all project sponsors know when proposed changes must be submitted in order to get them amended into the TIP. The TIP policy document indicates the reviews that the projects undergo once they are submitted to SEMCOG. One of the reviews assesses consistency with the Regional Transportation Plan. If a project is not consistent with the plan, the TIP development policy document clarifies that the plan must be amended if the project is to advance.

The FY 2000-2002 TIP has been amended on the quarterly amendment schedule. The amendments have added hundreds of projects and hundreds of millions of dollars to the program. Sources of many amendments include the programs that are controlled on a statewide competitive basis that do not meet that TIP development schedule, such as the transportation enhancement and safety programs. The CMAQ program is also a source of many amendments. Outside of the off schedule programs, many amendments come from MDOT.

Findings

The review team found that good technical tools exist for implementing agencies to independently identify priorities within their jurisdictions. The effort by SEMCOG to identify RTP priorities for the implementing agencies at the beginning of the TIP development cycle is also commendable. In

addition, SEMCOG's TIP development policy is an excellent tool for managing the TIP and its amendments.

The review team found a regional approach at the start of the TIP development process and at the point of adoption by the MPO committee structure. In between, opportunities for a more regional approach were evident. Working with separate allocations of revenue the implementing agencies operate independently in establishing priorities for improvements within their jurisdictions. The final TIP then, accumulates the proposed improvements without a mechanism to determine if regional priorities (highway and transit) are being addressed.

Overall, the review team found that the TIP development and amendment process included opportunities for public review and for air quality conformity analyses. A gap was identified, however, in the TIP amendment process where the air quality conformity analysis often did not undergo a public review as required by the air quality conformity regulations and the State Implementation Plan for transportation conformity. The review team also identified instances where the conformity information was not available to the TAC at the time they are asked to take action on a TIP amendment.

The review team found that many TIP amendments were the result of statewide competitive programs such as the transportation enhancements and safety programs being out of sync with the TIP cycle. The next largest group of amendments were to MDOT projects, resulting from changes to their five-year program. In addition to getting programs on the same cycle, the review team found that the need for amendments could be reduced by more extensive use of groupings for projects that don't warrant individual inclusion.

Corrective Action

(2) The results of air quality conformity analyses for future TIPs and TIP amendments must be made available to the public for review and comment as required by *The Michigan Transportation Conformity Air Quality State Implementation Plan (SIP) Revision.*

Recommendations

(9) We recommend that MDOT, SEMCOG, and the transit operators move toward a TIP development process that more fully considers regional priorities for highway and transit improvements at every step, not just at the beginning and at the point of final approval.

(10) We recommend that MDOT, SEMCOG, and the transit operators develop time lines for the special programs consistent with the TIP cycle and consider grouping techniques to cover projects that don't warrant individual inclusion.

X. Public Comments

Background

A public input session was held on Wednesday, August 16, 2000, from 6:00 p.m. to 9:00 p.m. at the Cobo Center in downtown Detroit. The meeting was originally scheduled for Tuesday, June 14, 2000, but was delayed because of an electrical power outage. SEMCOG's mailing list was used to send out notices of the original and rescheduled meetings.

The public meeting is used to help the FHWA and FTA evaluate the effectiveness of the transportation planning process and its public involvement process. FHWA and FTA want to hear from the public about their experiences in interacting with the transportation planning process in the MPO area.

Forty people attended the meeting representing a wide spectrum of interests in the Detroit metropolitan area. Fourteen people gave oral testimony to the review team. Twenty-four non-duplicative written comments were submitted in response to the notice for the postponed meeting as well as the meeting held on August 16. Some of the comments were submitted more than once (e.g., mailed and faxed). Most of the people giving the oral testimony also presented a written copy of their comments. A court reporter was used to record the meeting. The public comments are on file at the Michigan Division Office of the Federal Highway Administration and are summarized in Appendix A

Findings

The notice of the public meeting reached a wide spectrum of the population in the planning area. The public comments demonstrated a strong interest in the planning process and underscored the public's desire for opportunities to have input to the plan development process. Many of the issues and concerns raised by the public are addressed by the review team's findings and recommendations.

XI. Summary and Certification Finding

The FHWA and FTA are required to jointly review and evaluate the transportation planning process in urbanized areas over 200,000 population on a 3-year cycle to determine if the process meets the Federal planning requirements. The resulting certification is a prerequisite to the approval of Federal funding for transportation projects in such areas. The certification review is also an opportunity to provide assistance on new programs and to enhance the ability of the process to provide decision makers with the knowledge they need to make well-informed capital and operating investment decisions.

This review assessed the status of the findings from the previous review and explored new items including: ITS Architecture, Environmental Justice, Job Access, Process Integration, and Financial Plans. The public also provided input to the review.

Overall the planning process conducted by MDOT, SEMCOG and the transit operators is addressing transportation issues facing the southeast Michigan area and the review team found a number of noteworthy examples of good practice. Good technical tools were being used to make decisions on individual projects and staff of SEMCOG has developed good TIP development and amendment policies. MDOT's pavement management system and a 5-year preservation program are also noteworthy. MDOT and SEMCOG have agreed on methods for developing revenue estimates for use in the RTP. MDOT, SEMCOG and the transit operators have a good start on the identification of low-income populations and minority populations and have made a good initial effort to evaluate the impact of the transportation plan on these populations.

The second certification, in 1997, identified opportunities for increased cooperation in preparing the RTP and TIP. Since that time the planning partners have made significant progress, developing a new framework for cooperative transportation planning and signing MOUs. Commitment to the adopted process is evidenced by MDOT and SEMCOG agreeing on a time schedule and steps to implement the adopted planning process.

While there was evidence of coordination and consultation in developing the 2025 RTP and the FY 2000 – 2002 TIP, the review team had difficulty identifying a cooperative process as required by the Federal planning regulations. The review team found that the RTP and TIP were assembled from components developed separately by MDOT, SEMCOG's Federal Aid Committees, and the transit operators.

Opportunities for increased regional leadership were identified for the development of technical tools to identify and prioritize needs, analyze alternatives, evaluate tradeoffs, and create a shared vision for the transportation plan for southeast Michigan.

The review identified two technical areas where the planning regulations were not being fully implemented. The area lacks an operational Congestion Management System as required in all TMAs. The required public comment period for air quality conformity analyses was also not being provided.

A full summary of the commendations, corrective actions and recommendations is provided in Appendix E.

Certification Finding

The transportation planning process for the Southeast Michigan area conducted by MDOT, SEMCOG, and the transit operators is certified subject to the corrective actions and recommendations contained in this report. The conditional certification does not restrict the advancement of projects, provided reasonable progress is made in addressing the findings of this review. From a Federal perspective, attention to these corrective actions is a high priority. The recommendations offer suggestions on items that would enhance the Southeast Michigan process and we urge a thoughtful consideration of these items. FHWA and FTA stand ready to assist MDOT, SEMCOG, and the transit operators in addressing the corrective actions and recommendations.

Appendix A

Summary of Public Comments

Citizen Input/Environmental Justice

A high priority issue identified by the public, was concern over their ability to influence the transportation decision-making process. Concern was expressed about the meeting time of the Transportation Advisory Council, the place on the agenda for public comment, their perception that by the time they see a proposed project it is already too late to influence it, and the need to have more end users of the transportation system on the Council. A commenter also questioned SEMCOG's sincerity in obtaining public input. Some felt that public comment was not welcome and that SEMCOG needed to do a better job of reaching out to the community.

Concern was expressed that the Environmental Justice evaluation of the 2025 Transportation Plan was flawed and confusing. It was felt that an evaluation of auto accessibility to jobs by protected populations is misleading when many households within the protected population groups do not have cars. The use of traffic analysis zones in the presentation of the results adds to the confusion since traffic analysis zones are a technical concept not understood by the public.

Transportation Plan

There were a number of comments related to the 2025 Regional Transportation plan and the process of developing the plan. Some comments questioned how realistic the long-range plan is since they felt that there was no serious consideration of transit or bicycling. There was concern that the plan was developed highway segment by highway segment without an overall system evaluation and that when a plan is developed in that manner there can be no serious consideration of the ability of transit to solve transportation corridor deficiencies. A comment suggested that the plan should include a cycling master plan and that cycling is not taken seriously as a transportation mode.

Related concerns were that planning for continued dependence on the automobile is "wrong." The plan should promote equity in funding among modes and; we should not expand a highway system that we cannot maintain.

Concern was expressed that the plan is a plan for sprawl and that if you plan for sprawl, it will happen. The projection of population and land use in a "business as usual" approach was accepted as fact rather than one way that the region might develop. The concern seems to be that there was no evaluation of alternative development scenarios.

The opinion was offered that the plan should protect and enhance the environment but fails to do so and that there should be an analysis of the emerging air quality issues of the 8-hour ozone standard and PM 2.5. It was felt by the commenters that the issues should be evaluated even though there is not a requirement to do so.

Transit Service

There were a number of comments about the existing transit service in Detroit. Most of the concern was directed at the service provided by the Detroit Department of Transportation (DDOT). Comments indicated that the service is becoming increasingly unreliable; the buses are dirty and not properly maintained; DDOT continues to cut service and; DDOT does not respond to suggestions or complaints.

The suggestion was made that SEMCOG should act as a transit ombudsman or an inspector general. In this role they would have authority to investigate complaints, call witnesses, and condition the receipt of Federal transit funding on the proper maintenance of buses. A related suggestion was that there should be a transit "Quality Management System" to assure that buses are properly maintained.

Federal Actions

There were a few comments suggesting that the USDOT mandate that SEMCOG take specific actions as a condition of continued Federal certification of the planning process. One was that we mandate that SEMCOG demonstrate clear support for public transportation by proposing timelines and budgets for implementation of an accessible and affordable public transportation system. A related suggestion was that we mandate that SEMCOG require communities to fund transit.

Another request was that we mandate that SEMCOG amend their bylaws to implement the concept of one person, one vote within the committee structure as well as in the voting process.

Other Comments

There were two comments supporting the planning process conducted by MDOT, SEMCOG, and the transit operators. They were from stakeholders indicating that they receive good service from the SEMCOG staff.

There was a letter from the taxi industry expressing concern that they are a major supplier of transportation services but have no opportunity for input in the planning process.

Appendix B

List of Participants

Federal Review Team:

Jim Cramer	Cindy Durrenberger	FHWA
Ashby Johnson	Mary McDonough Bragg	FHWA
Alicia Nolan		FHWA
Victor Austin		FTA Region V

Michigan Department of Transportation:

Denise Jackson	Renee Farnum
Gary Endres (6/15)	Steve Redmond (6/14)
Brad Funkhouse, University Region (6/14)	Jim Shultz, MITS (6/14)

Southeast Michigan Counil of Governments:

Paul Tait	Carmine Palombo
Kathleen Lomako	Jerry Rowe
Lore Watt Corradino	Stephanie Davenport
Sue Setler	

Ann Arbor Ypsilanti Urban Area Transportation Study

Robert Tetens	Terri Balckmore

St. Clair County Transportation Study

Grant Baumann

Ann Arbor Transportation Authority:

Chris White (6/14)

Suburban Mobility for Regional Transportation

Dan Dirks (6/14)	Jay Gardner

Others

Peggy Johnson, Eastern Michigan Environmental Action Council
Karen Kendrick Hands, Transportation Riders United

Appendix C

Definitions

23 CFR 450.104 Definitions:

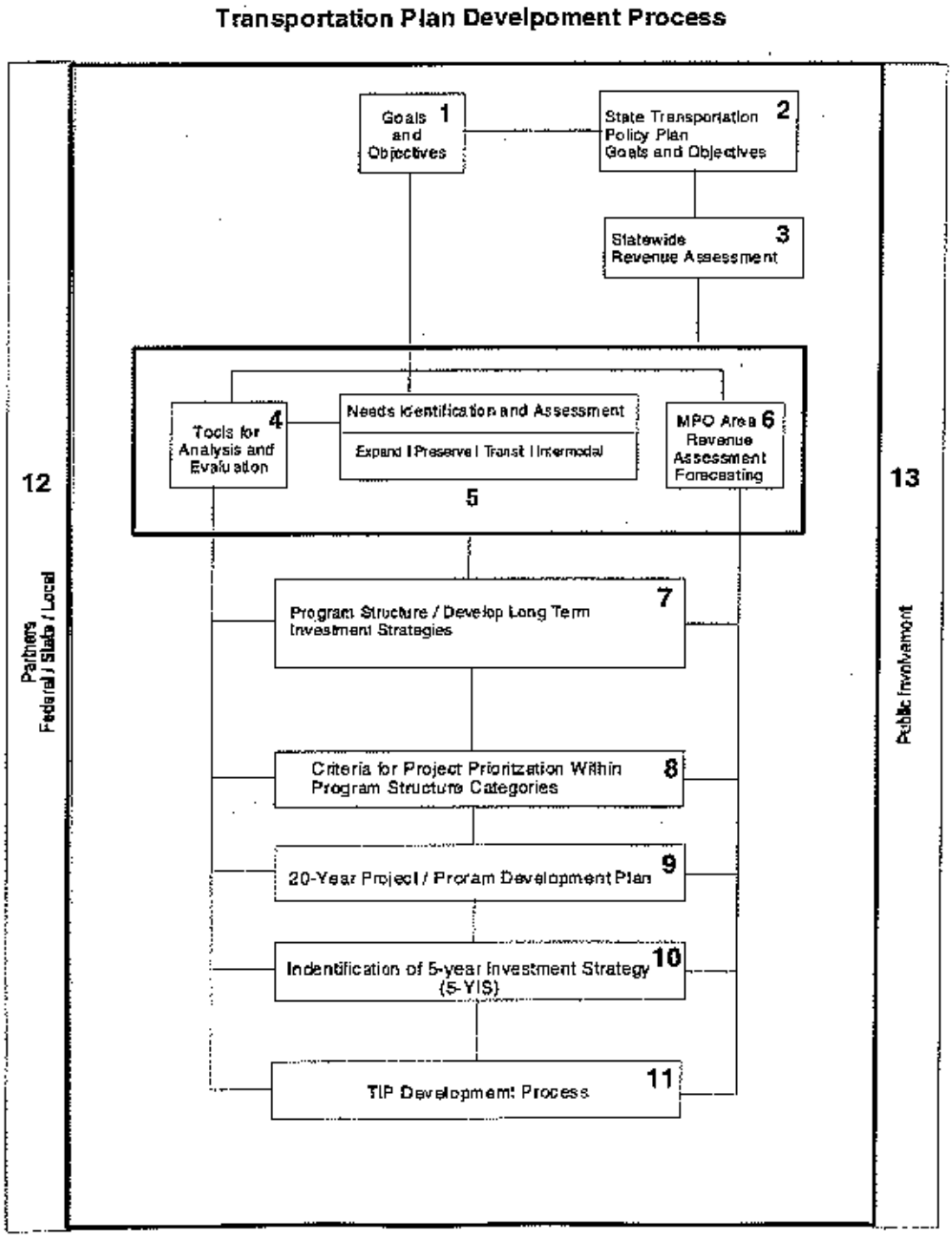
- *Consultation* means that one party confers with another identified party and, prior to taking action(s), considers that party's views.

- *Cooperation* means that the parties involved in carrying out the planning, programming and management systems processes work together to achieve a common goal or objective.

- *Coordination* means the comparison of the transportation plans, programs, and schedules of one agency with related plans, programs and schedules of other agencies or entities with legal standing, and adjustment of plans, programs and schedules to achieve general consistency

Appendix D

New Process Framework



Appendix E

Summary of Commendations, Corrective Actions and Recommendations

Commendations

(1) SEMCOG is commended for taking a pro-active leadership role in the establishment of programs and services that connect people to jobs. SEMCOG, MDOT, and the transit agencies should continue their current activities to identify the location of welfare recipients and low-income individuals in the urbanized area and develop transportation programs to meet their needs.

(2) We commend SEMCOG for implementing the recommendation from the public involvement in transportation task force to change the place on the agenda for receipt of public input on each agenda item, and urge them to complete the development of a citizen's guide to regional transportation planning and the other task force recommendations.

(3) We commend the SEMCOG staff for its leadership role in the ITS area and urge continued efforts to engage the stakeholders and facilitate the cooperative development of a regional ITS architecture.

(4) We commend MDOT and SEMCOG for developing a schedule for implementing the adopted planning process.

(5) We commend MDOT and SEMCOG for developing a cooperative revenue forecasting methodology for use in preparing the 2025 Regional Transportation Plan and urge MDOT and SEMCOG to share the cooperative revenue forecasting methodology with other Michigan MPOs.

(6) We commend MDOT, SEMCOG and the transit operators for consistently meeting the three-year cycle for regional transportation plan updates.

Corrective Actions

(1) As a TMA, the southeast Michigan urbanized areas must have a CMS that meets the requirements of 23 CFR 500.109. Work is well underway to develop a CMS for the southeast Michigan area, however, this effort has not been completed. The CMS for the southeast Michigan area must be operational by July 1, 2001.

(2) The results of air quality conformity analyses for future TIPs and TIP amendments must be made available to the public for review and comment as required by *The Michigan Transportation Conformity Air Quality State Implementation Plan (SIP) Revision.*

Recommendations

(1) We recommend that MDOT, SEMCOG and the transit operators consult with the low income and minority populations in the development of a process for assessing the transportation needs in the region and in developing assessment techniques.

(2) We recommend that the CMS, when completed, become one of the principal tools used to identify capacity deficiencies in the transportation plan development process and the primary mechanism to evaluate alternative solutions to those identified deficiencies.

(3) We recommend that MDOT and SEMCOG give continued attention to enhancing the cooperative procedures for carrying out the steps of the adopted planning process.

(4) We recommend that MDOT, SEMCOG and the transit operators continue the cooperative development of revenue estimates for local jurisdiction projects and expand the cooperative process to include revenues that are expected to be available for MDOT projects.

(5) We recommend that MDOT, SEMCOG, and the transit operators develop and refine regional travel demand forecasting tools for both highway and transit modes, including methods for evaluating and establishing regional system wide priorities linked to area wide goals and objectives.

(6) We recommend that MDOT, SEMCOG, and the transit operators use these tools to develop a regional vision for transportation and a RTP that identifies cost feasible improvement priorities for both highways and transit over the 20-year plan horizon.

(7) We recommend that SEMCOG take a stronger role to encourage and assist in coordinating transportation services between DDOT, SMART and DCT.

(8) We recommend that all plan amendments and additions be subject to the same analyses recommended for the development of the RTP.

(9) We recommend that MDOT, SEMCOG, and the transit operators move toward a TIP development process that more fully considers regional priorities for highway and transit improvements at every step, not just at the beginning and at the point of final approval.

(10) We recommend that MDOT, SEMCOG, and the transit operators develop time lines for the special programs consistent with the TIP cycle and consider grouping techniques to cover projects that don't warrant individual inclusion.

Appendix F

Status of Previous (1997) Certification Recommendations

One objective for each certification review is assessing how well the planning partners in the area have addressed recommendations from the previous certification review. This section identifies the recommendations from the previous certification and addresses their status.

Recommendation 1: It is recommended that the MPO clearly identify which of the corridors listed in the 2020 Regional Transportation Plan as Major Investment Study candidates, are place holders, or which are studies.

Status: While the requirement for stand alone Major Investment Studies was removed by TEA-21, the concept of differentiation between studies of potential solutions and project development activities within the transportation plan is still valid. In the plan scheduled for adoption in June, 2000, about 30 studies are shown. There is no assumption that study will result in a project. As studies are completed, the results of the studies will need to be amended into the transportation plan. This recommendation is being met.

Recommendation 2: It is recommended that the SEMCOG aggressively market their variety of excellent products and services available to the public

Status: SEMCOG has been more aggressively marking their products with the media. They have over 200 news media contacts and they are trying to get out to those they have not traditionally reached out to. They have 121 documents they are marketing. SEMCOG is creating higher visibility both within Michigan and Nationally. This recommendation is being met.

Recommendation 3: It is recommended that SEMCOG work with those who prepare environmental documents to develop a mechanism to include information from the systems planning effort in environmental documents.

Status: SEMCOG is more actively involved in project development activities including studies and the environmental process. They assist in he public involvement process and provide traffic and air quality data. This recommendation is being met.

Recommendation 4: MDOT should continue to dedicate all resources necessary to fully implement the Congestion Management System for all Transportation Management Areas.

Status: This recommendation was a specific topic in the review and is discussed in the body of the report.

Recommendation 5: The staff of SEMCOG and MDOT should develop a single methodology for forecasting revenue for the area in accordance with the requirements of 23 CFR 450.322(b)(11).

Status: This recommendation was a specific topic in the review and is discussed in the body of the report.

Recommendation 6: SEMCOG and MDOT need to jointly develop a schedule outlining steps toward full implementation of the planning process and proceed accordingly.

Status: SEMCOG has signed new MOUs with MDOT, AAYUATS, SCCOTS, BWATA and is working on MOUs with DDOT and SMART. A March 10, 1999, MEMO from SEMCOG to MDOT outlines the general time frame and sequence for implementing the revised planning process in southeast Michigan. This recommendation is being met.

Recommendation 7: It is recommended that MDOT and SEMCOG formalize and commit to writing an agreement on how to manage both State and local projects in the TIP.

Status: SEMCOG is in the process of modifying their TIP management policies to more clearly articulate when amendments to the TIP are required and what authority the staff has to administratively modify the program. MDOT has provided additional funding for a position at SEMCOG to manage the TIP for the seven county area reasonable progress is being made in implementing this recommendation.

Appendix G

Memo dated March 10, 1999 from SEMCOG to MDOT

SEMCOG

MEMO

Southeast Michigan Council of Governments
660 Plaza Drive, Suite 1900
Detroit, MI 48226
(313) 961-4266
Fax (313) 961-4869
http://www.semcog.org/

March 10, 1999

TO: Susan Mortel

FROM: Carmine Palombo

SUBJECT: Planning Process Implementation

SEMCOG and MDOT have established a good track record as partners to deliver transportation improvement services to the residents of Southeast Michigan. At the staff level, this relationship remains strong and in many areas is getting stronger. We are adopting innovative approaches to ensure that projects are *developed* ~~planned~~ and implemented in a timely manner. Some of these efforts include our joint administration of the Eastern Border Crossing and the Ambassador Bridge project.

In addition to our regular planning coordination activities, we are now meeting with:

1. Dave Schade and his staff to develop a strategy to cooperatively collect traffic data in our region.

2. Dave Kiter and his staff to develop a strategy to cooperatively articulate transit and intermodal activities for the next work program.

3. Terry Gotts to initiate the review and coordination of the 2025 RTP and State sub-area plans.

This memo documents our mutually agreed approach for implementing the revised planning process. It focuses on our commitment to support a planning process that allows for wise transportation investments in Southeast Michigan within the umbrella of TEA-21. We desire to implement the revised planning process in a timely fashion, identifying interim activities to be undertaken between now and the full implementation date.

SEMCOG and MDOT agree to the following principles:

1. Overall

   - SEMCOG and MDOT are committed to maintaining a planning process that moves from mandates to relevancy, respond to the needs of the region and the goals and objectives of the Regional Transportation Plan (RTP)

   - Our planning process and project implementation should be customer-focused, allowing the customer to derive the maximum benefit from transportation investments in Southeast Michigan.

   - The planning process is designed and implemented to support decision making *while acknowledging that the planning process is more than a project by project decision tool.*

   - The planning process should strengthen the strong partnership between SEMCOG and MDOT.

2. New Planning Process

   - It is the intent of SEMCOG and MDOT to fully implement the revised planning process.

   - While it is our intent to fully implement the revised planning process, we recognize that this will take considerable amount of time and effort to accomplish and cannot be completed over night.

   - Annually report to the region on the planning process and project/plan accomplishments.

The purpose of the revised planning process is to improve communication and trust between stakeholders/partners in transportation, specially, between the MPOs, 3C agencies and MDOT. Following the completion of the planning process SEMCOG established a working committee made up of SEMCOG, MDOT, FHWA , UATS and SCCOTS to explore ways of fully implementing the revised process and to establish a time frame for implementation.

One of the challenges facing us is the fact that while we explored and established time frames for implementation, we *have had* to continue to recognize that projects are still being developed and let for construction. These projects are needed to meet the needs of the residents of Southeast Michigan. We also acknowledged that the agencies involved have different needs determined by the demands of their score keepers.

The working group agreed on these benchmarks/dates for process implementation; Phase I - October 1998, Phase II - October 1999 and Phase III - December 2000.

Phase 1, ending October 1998
Within the short duration, we made two significant improvements — MDOT presented their strategic approach to transportation investments and the resultant project list to SEMCOG and UATS committees and the implementation of a preliminary statewide revenue estimates, provided by MDOT to MPOs. These presentations have opened up new avenues for communication between SEMCOG, MDOT, UATS and SCCOTS. The local operators were equally involved in these discussions. We desire to strengthen and build upon these accomplishments in subsequent phases.

Phase II, ending October 1999
We agreed to significantly implement the new planning process including the following steps:

1. For the completion of the 2000 TIP:

Status		
Completed	•	SEMCOG will provide state and local capacity and safety deficient locations and suggested improvements as contained in the 2020 plan to all agencies.
Completed	•	SEMCOG will provide a region-wide revenue estimate based on the statewide revenue estimate received from MDOT to local units of governments.
Completed	•	SEMCOG will send the deficiencies, 2020 RTP projects and revenue estimates to all operating agencies, including MDOT by January 1999.

Status

Enhancement in TIP, but only 2 years. CMAQ will be added by December, but will be 3 years. Safety needs to be added.

- MDOT will synchronize the timing of the following programs with regular STP *program* to allow for effective overall review of the 2000 TIP projects. These programs are CMAQ, Safety and Enhancement projects that currently have different timings for project selection (see Figure 1).

  Additional changes will be identified in future years as this process continues to mature.

We acknowledge that until complete technical tools are developed for each project or program type, e.g. pavement, the regional planning process as defined by the planning definition committee and agreed upon by SEMCOG and MDOT will continue to be implemented in parts or phases. **We keep in view the overall objective — to effectively and efficiently deliver transportation improvements to the residents of Southeast Michigan.**

Continuing

2. During this phase, we will focus attention to the development of these tools. SEMCOG and MDOT made a strategic decision 15 years ago to have SEMCOG perform all modeling activities for the region excluding Washtenaw and St. Clair Counties. This practice has served the region well. Recently significant investments have been made to strengthen the capabilities of the region's travel demand modeling tools. These improvements include new household and transit on-board surveys, external station survey and the ongoing commercial vehicle survey. Efforts are underway to nest the subarea models within the regional model. As a result of these improvements, every capacity improvement, no matter who is engaged to do the study uses the same data source and models for capacity analyses. We will continue to improve the travel demand model.

Status

3. The most challenging area is the pavement management system (PMS). Our current work program calls for the establishment of a regional PMS task force made of operating agencies in the region, including MDOT to:

Completed

- Review current PMS practices in the region, including the review of all or selected PMS approaches and software being used by operating agencies (including MDOT PMS) in Southeast Michigan.

In progress

- Recommend a preferred approach and software(s) to evaluate pavement conditions in Southeast Michigan.

Not started yet

- Develop RFP, if necessary, to implement task force recommendations. It is anticipated that this effort may lead to a unified or single PMS for the region.

In progress

4. Review of all existing/updated plans for roadway improvements in the region, including the freeway reconstruction plan and any other local significant transportation plan(s) not included in the 2020 RTP. *The results of such studies will be added to the Plan upon completion of the study, the identification of a preferred alternative and an identification of a likely funding source to implement the improvement.*

These activities move us closer to full implementation of the revised planning process, they encourage review of known deficiencies, projects contained in the plan and improved revenue estimates as the beginning point for selecting projects for 2020 TIP.

Status

Bridges and transit in progress	5.	We are proud to note that we are constantly mentioned as a model for including and integrating safety as part of the regional planning process. On October 20 and 21, 1998 we received staff from Iowa DOT and reviewed with them our work in safety. They hope to implement parts or all of our process in Iowa. FHWA Lansing and Michigan Office of Highway Safety Planning (OHSP) after spending one day with us are now proposing to fund a traffic engineer's position at another MPO in the state as part of the 402 funding. Also, we made a presentation at the FHWA meeting in Chicago on October 26-28, 1998 on our work in safety. It is our intention to further improve our safety tool within this phase. Work on other program areas such as bridges and transit are equally progressing.

Phase III: Year 2000 and beyond

As we complete the next regional RTP we anticipate that we will more fully implement the revised planning process. The development/refinement of the RTP provides *an* excellent opportunity to integrate the various processes and techniques *within an overall cooperative process.*

We have developed a tentative schedule for developing the 2025 and 2030, including the focus of each plan. (See Figure 2).

The 2020 RTP was approved by SEMCOG's GA in June 1997. With the passage of TEA-21 and the retention of a three-year RTP development circle, we have developed Figure 2 to assist us in focusing our planning activities. We have about 14 months to complete the 2025 RTP. As shown in Figure 2, we plan to focus our activities for the 2025 RTP on system integration and management while selectively reviewing the travel demand model results and making adjustments as necessary. This emphasis moves us towards attaining the 2020 RTP goals; promote a safe and secure transportation system, provide accessibility and mobility for all people and goods, invest strategically in transportation infrastructure to enhance the vitality of the community and promote and enhance the environment. Specifically the 2025 RTP will include a sharper focus on:

Status

Will be included	• Managing non-recurring congestion; including the integration of the incident management activities, such as the Freeway Courtesy Patrol and ITS. We will integrate analysis and implementation of these activities to address traffic congestion. It has been estimated that non-recurring congestion count for more than 45 percent of all freeway traffic congestion.
Will be included	• Reviewing 2020 RTP and results.
Will be included	• Inclusion of more roads in our safety analysis
Will be included	• Introduction of the initial results of our PMS efforts, if available.
Will be included	• Designation of special corridors for corridor-level analysis and evaluation, including freeways. Capacity deficient corridors will be grouped by severity, possible solutions will be included/refined from the 2020 RTP. For others, more detailed analysis will be recommended.
Will be included	• Defining and integrating various transit activities including our welfare-to-work initiatives.
Will be included	• Fully integrating/developing a five-year investment strategy that provides more details on our five-year investment focus for the regional transportation system.
Will be included	• Further integration of our modal activities —airports, freight and non-motorized transportation.

In short, 2025 RTP emphasis will be to improve the operating efficiencies of our transportation system and to selectively target capacity improvements consistent with adopted RTP goals.

Status

In progress	The RTP is the framework and document that guides transportation investments in Southeast Michigan. As in the past, it will highlight significant issues affecting the region and the region's opportunities and challenges, including preferred projects, policies and procedures to be used to address transportation issues in Southeast Michigan. In some instances and wherever possible it will specify the nature of transportation improvements selected and the criteria used to address specific issues. In other instances, it will guide procedures and criteria to be used for evaluating and prioritizing projects to be implemented in Southeast Michigan.

It is anticipated that several "white papers" will be completed as part of RTP development and released to guide project development. For instance, the activities and strategies to manage non-recurring congestion and ITS operations could be released and used by operating agencies before the final adoption of the 2025 RTP. The "white papers" will be integrated into the RTP.

The RTP to be completed in 2003 will take advantage of 2000 census and completely review the result of previous plans, develop new goals and objectives and models, if needed, as part of plan development.

The successful implementation of the planning process which clearly delineates the value of planning, (stressing a performance-based approach) allows us to fully benefit from the provisions of TEA-21 and maximize transportation investments in Southeast Michigan.

Response to FHWA Short-Term Concerns

- Missing steps/data (e.g., complete emission and financial data were not completed before presenting the projects to TAC).
- Lack of 20-year MDOT plan that is integrated with the 2020 Regional Transportation Plan (RTP)
- Project-to-project orientation
- Coordinated vs. cooperative planning efforts.

Status

Process revised to incorporate process used in developing 2000-2002 TIP.

Missing steps/data

As I indicated at the meeting, we completed the air quality and financial analyses of the proposed amendment in enough time to allow for adequate public review of the amendments including the supporting financial and air quality data. We do, however, note the FHWA comment and concern that we must complete these analyses prior to forwarding projects to TAC for action in the future.

The public and any other interested party still had about 30 days to review the project before the approval of the amendments at the October 29th SEMCOG General Assembly (GA).

Working with MDOT to increase number of projects.

Lack of 20-year MDOT Plan

This concern was discussed at length during the meeting. FHWA's concern centered more on the role of the MPOdeveloping a RTP that integrates both state and local priorities. Also at issue is the content of the 2020 RTP. FHWA desires that the RTP be as specific as possible to enable a useful analysis of air quality impacts.

While we agree that the RTP should be specific as possible, we don't believe that detailing all projects for the complete 20-year period is practical or appropriate. For one, we don't know the solutions of many of the major corridors that are deficient until we complete detailed study of the corridors. Some of these studies demand significant resource — time and money. We prefer and advocate for a corridor approach" to be used in identifying solutions for significant corridors or roadways. We agree with the observation that the MDOT Freeway Study should be an integral part of the RTP (see the new RTP development process for our thoughts on this issue).

Status

Project-to-project orientation

We believe that the new planning process will move us further towards system-wide planning. Part of the challenge we faced this year was the timing of TEA-21 and the need to obligate money as quickly as possible. MDOT has initiated a five-year investment plan development process. This effort if embedded within the new planning process will significantly enhance our ability to become more strategic and invest efficiently in transportation infrastructure in Southeast Michigan.

Continue to work with MDOT to coordinate varous public input opportunities through MPO process.

Coordinated versus Cooperative Process

I believe the intent of this comment or observation is that all key partners in the systems planning, project prioritization and project development need to work together from the beginning using the MPO as the forum. We still have some distance to travel to reach this goal. However, we made significant strides this year. MDOT regions (University and Metro) for the first in recent history provided their tentative projects to SEMCOG including making presentations at various SEMCOG committees and UATS.

While we have accomplished a lot together, much remains to be done. This framework can proactively define and implement a planning process that supports good transportation investment decision making by cooperatively working together and leveraging our resources.

Appendix H

U.S. Department
of Transportation

**Federal Highway
Administration**

Region 5
Michigan Division

315 West Allegan Street, Room
207
Lansing, Michigan 48933

October 28, 1999

Mr. Paul Tait, Executive Director
Southeast Michigan Council of Governments
660 Plaza Drive, Suite 1900
Detroit, MI 48226

Dear Mr. Tait:

Comprehensive, Region Wide, Transportation Vision and Plan
for the Greater Detroit Area

Public input on the I-94 Rehabilitation Project, the I-375 East Riverfront Access (ERFA) Improvement Feasibility Study, and the I-75 Freeway Study has brought into sharp focus the question of the role for transit in relieving congestion and serving mobility needs of area residents. A full response has been impeded by the lack of a comprehensive regional transit plan. We understand that a number of meetings have recently taken place between MDOT, SEMCOG, City of Detroit, DDOT, SMART, and the Detroit Transportation Corporation to coordinate transit activities, both current and future, with the I-375 study.

We strongly applaud your efforts to bring the parties together and encourage a continuing comprehensive effect. As you know, transit alternatives for abating congestion do not stop at the project limits; a region wide systems approach is needed. The same can be said with equal certainty for the other modes and the transportation network as a whole; a systems wide approach is needed to create a region wide transportation vision and plan that will guide individual project decisions for all modes.

Implementing agencies and policy level decision makers need to be developing projects that are consistent with the regional transportation vision and plan priorities considering all

modes of transportation. The recently expressed public concerns regarding mass transit in the Greater Detroit Area are an indication of the questions that future transportation projects in the SEMCOG area will have to be able to answer. Each transportation project needs to be a building block in an integrated, multi-modal transportation vision and plan for highways, transit, intermodal connectors, parking, and pedestrian. If the public is unable to clearly see how each project fits into the vision and plan, it is likely that project will bog down in the development process. If implementing agencies and policy level decision makers (in both the public and private sector) are unable to see how a project fits into the regional vision and plan, they should delay their decision or move their investment to another location.

I strongly encourage a continuing, cooperative, and comprehensive transportation planning process that results in a region wide transportation vision and plan that considers all transportation modes and supports sustainable metropolitan community development and social goals. The white paper prepared by your staff a year ago addressed these issues and presented an inspirational view of changes to the approach for transportation planning that should address these concerns. We look forward to helping SEMCOG implement such change. The leadership role provided by SEMCOG in regional transportation planning will be a major asset in developing an integrated, multi-modal regional transportation vision and plan that facilitates the efficient, economic movement of people and goods.

The challenge is there in front of us. Where we go from here, in large part, is up to you and the leadership of the SEMCOG organization. FHWA=s goal is to increase user satisfaction with the transportation system as a whole (mobility, productivity, and safety) and to aid implementing agencies and policy level decision makers by enhancing the information and data available to them for making well informed choices. We will take a supportive role and will gladly assist SEMCOG in your pro-active efforts to develop a comprehensive regional transportation vision and plan. I look forward to the opportunity to explore these opportunities with you and to develop a plan for action. Please contact me at 517-377-1844 at your earliest convenience so we can begin a discussion on how to proceed.

Sincerely,

/s/ James J. Steele

James J. Steele
Division Administrator

EXHIBIT J

TRU Estimate for Transit Improvement Operating and Capital Cost

	Project 3 Commuter Rail to Mt Clemens, Pontiac and Ann Arbor	Project 4 Woodward Light Rail to Ferndale	Project 5 SpeedLink along Gratiot, Grand River, and Michigan	Sum
Peak Operating Frequency, minutes	30	8	10	
Non-Peak Operating Frequency, minutes	120	15	20	
One way system Miles	100	11	35	
Operating Cost per vehicle mile, per SEMCOG	$13	$9	$4	
Vehicles per train	2	2	1	
Percent of seats used				
Peak	40%	60%	40%	
Non-peak	25%	25%	20%	
Annual operating cost	$26,040,040	$13,330,350	$7,203,000	$46,573,390
Avg trip length, miles	15	5	5	
Passenger trips per week day	23,544	26,298	13,697	63,539
Passengers per peak hour, each way--low to low-middle range of SEMCOG figures	2,987	2,772	1,344	
Operating cost per passenger trip	$4.34	$1.99	$2.06	
Ticket price	$3.50	$1.25	$1.25	
Public Investment for Annual Operations, Million $/yr	**$5**	**$5**	**$3**	**$13**
Capital cost per mile, SEMCOG average	$2,500,000	$40,500,000	$12,000,000	
System capital cost, average	$250,000,000	$445,500,000	$420,000,000	$1,115,500,000
Local match	30%	30%	30%	
Annual/present factor	0.08	0.08	0.12	
Annualized cost	$30,840,040	$21,250,350	$22,323,000	$74,413,390
Farebox revenue, $/yr	$21,013,095	$8,382,605	$4,365,900	$33,761,600
Suggested State funding, $/yr	$4,000,000	$7,000,000	$10,000,000	$21,000,000
New Total Local Investment (Capital and Operations), Million $/yr	**$6**	**$6**	**$8**	**$20**

Project 4 DDOT Woodward Corridor Light Rail

Implement light rail on the Woodward Corridor to Ferndale or the Detroit Zoo. (Current capital estimate about $0.5 billion could be paid with mostly Federal money if operating fund is established. Operations cost for light rail should be significantly lower than comparable service using buses.) This system would provide intermodel connection to the high-speed rail to Chicago. Light rail provides significant benefit for accessing capital funds, inducing transit oriented development, and increasing acceptability of choice users.

Project 5 DDOT Express Bus System on Major Surface Streets

Establish SpeedLink on Gratiot, Grand River, Michigan, Fort and Jefferson to the city limits (Speedlink.) The SpeedLink system should be based on the Curitiba system and consist of the following elements:

- Dedicated (curbed) right-of-way for buses only
- Only 1 or 2 stops per mile
- Quick same level boarding (no steps)
- Quick fare-management system that doesn't delay buses and is accepted on other systems
- Coordinated local feeder-buses

Buses could continue beyond the city limits on non-dedicated lanes. (Entire system could be established for about $12 million per mile.) Using dedicated lanes on surface streets with excess capacity, the express-bus system would significantly increase the quality of service along with increases in operating efficiency. As the system matures, decide whether to convert express buses to light rail or alternative technology.

Project 6 Improve Auto Access to Downtown by reclaiming I-375 as a Surface Street

Fill in I-375 and replace this expressway access by upgrading the existing service drives as multi-lane one-way streets. Develop the reclaimed real estate as high-density office or residential to better merge downtown with the near-east-residential area. As a surface street, it would be simple to access the east riverfront area. The value of the reclaimed real estate would somewhat offset the cost. Current and projected traffic counts along I-375 do not justify the expressway.

Project 7 Improve non-Auto access to Detroit Metro and City Airports

Complete the Detroit-Metro Airport rail study and implement recommendations. Improve access to Downtown from Detroit City Airport, possibly with Speedlink System.

Project 8 Establish Dedicated Funding Source for Transit

Establish a dedicated source of funding for transit such as a procedure to tax each parking space in the SEMCOG region through a special property tax assessment as a dedicated funding source for transit. Through this property tax assessment process, the region could start to equalize the significant apparent difference in parking costs between City and Suburb. In addition, parking lots would shrink to better fit the needs of the users.

Transportation Riders United (TRU)
1150 Griswold, Suite 2800
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TRU's Transportation Vision for Southeast Michigan

Introduction

Transportation Riders United (TRU) proposes this multi-project, comprehensive Transportation Vision for Southeast Michigan. By implementing this TRU Vision, the region will position itself to strengthen the city, build community, and curb urban sprawl. We will also provide a viable urban lifestyle consistent with national trends.

> "Traffic is a royal pain. After a while that surround-sound stereo doesn't make much difference. Add up the time we spend commuting, more than a month out of the year for just a 20-mile round trip. It used to be a snap. And all that time down the drain for what? Living at the end of a cul-de-sac in an area where new strip malls seem to pop up overnight and the only way to get anywhere is in that damn car."

PricewaterhouseCoopers LLP, and Lend Lease Real Estate Investments, Inc., *Emerging Trends in Real Estate 2000*

> "In the longer term, cities should continue to benefit from demographic trends. Both Generation Xers and aging baby boomers are migrating back to urban cores--young people for the excitement and the empty nesters for convenience and amenities. The city beckons. Single-family homes are more trouble to maintain than apartments, and *suburban traffic congestion* has become more aggravating, not to mention time-consuming. Who needs the hassle? *Emerging Trends* has said it before, but it bears repeating: People want to live closer to where they work and play."

Emerging Trends in Real Estate 1999

The following projects outline steps necessary to develop Detroit into a vibrant urban environment. Public Investment in the TRU Vision results in significant public cost savings as compared to continuing to rely solely on pavement and cars as our transportation system.

Project 1 Market Public Transit

Significantly improve marketing and signage efforts for both DDOT and SMART. Marketing and signage are critical to welcome new customers and improve system reputation, especially for those people who would choose to use transit.

Much of this marketing is no cost. As an example, Mayor Archer and the county executives could use their "bully pulpit" to "Try the Bus" as a good alternative to get to work, games and events. MDOT could suggest "Try the Bus" as an alternative during road-construction projects. Ozone Action should encourage "Try the Bus" on Ozone Action Days. Ask the newspapers to change the "Auto" section of the newspaper to the "Transportation" section. Develop "good news" stories about transit.

In addition, replace bus stop signs with signs that include the bus route ID, name, hours and route diagram following the concept used in Toronto and Chicago. Add map and schedule displays to bus shelters. Produce a joint DDOT-SMART map. Make bus stops visible, attractive public spaces that invite transit usage.

Marketing meets congestion mitigation/air quality (CMAQ) criteria for Federal funding. As with all marketing efforts, the cost of the program would be offset by increased farebox recovery.

Project 2 Circulating Transit Mall Downtown

Develop a circulating bus mall in Downtown Detroit to replace and improve on the function of Cadillac Square Bus Terminal. This Downtown bus mall could consist of the following elements:

- The Woodward buses would continue to go straight through downtown, then up Jefferson to the Ren Cen or the future casino area. Campus Martius would become the Woodward Corridor heart, much as Portland Oregon's transit square. Ultimately, as a light-rail or SpeedLink is established on the Woodward corridor, the Campus Martius Park will be *the place to be*.
- All other downtown buses would make one clockwise loop around downtown from the reopened State Street to Farmer to Randolph to Congress to Griswold and back to State. Automobile and truck access to bus-mall streets could remain as is. Downtown would create the needed space for a dedicated-bus corridor by removing the few on-street parking spaces along this loop so that automobile flow would not be hindered.
- DDOT buses would not layover in the immediate downtown area during the day; rather, they would come in, circulate once, and get out. The layover time would be at the end of the line at the City Limits. This would reduce bus traffic, emissions and vehicle noise within the central business district. During night hours, buses would stop along one section of the mall so that passengers can make connections.
- Consider a small staging area on existing vacant land at Farmer and Bates with driver's restroom and mechanic on site.
- Fares could be free within downtown to speed up loading and encourage quick within-downtown trips (like Seattle, Portland or Denver.)
- Cost would be for shelters and signage throughout the mall. With reduced bus dwell time downtown, efficiency would be increased and therefore operating costs would be decreased.

Project 3 Establish Commuter Rail rather than Expanding I-94 and I-75

Rebuild, *but do not increase capacity* on I-94 in Detroit. Prior to rebuild, establish a commuter-rail system to serve Ann Arbor, Mount Clemens, and Pontiac (See Attached Cost Estimate). Commuter rail is an excellent tool to mitigate congestion. Commuter rail will reduce traffic volume along this corridor. Even a small decrease in peak-traffic volume will result in significantly improved traffic flow. Based on using state of the art equipment and SEMCOG cost data, this system can be implemented for about $0.25 billion, just a fraction of the $1.3 billion talked about for the first stage of the I-94 *Expansion* (MDOT misnomer rebuild) project.

As a congestion mitigation and traffic maintenance tool for the I-94 and I-75 projects, the Federal Government can pay for 100 percent of the capital and operating cost for the Regional Rail System.

EXHIBIT K

Special Report 245

EXPANDING METROPOLITAN HIGHWAYS

Implications for Air Quality and Energy Use

Committee for Study of Impacts of
Highway Capacity Improvements on
Air Quality and Energy Consumption

TRANSPORTATION RESEARCH BOARD
National Research Council

National Academy Press
Washington, D.C. 1995

App C

Appendix C

Impact of Changes in Highway Capacity on Truck Travel

LANCE R. GRENZEBACK
Cambridge Systematics, Inc.

The impact of changes in highway capacity on truck travel in metropolitan areas is discussed in this appendix. At issue is whether highway capacity improvements induce truck travel and, conversely, whether restricting highway capacity dampens truck travel. The answers are needed to inform the debate about the impact of changes in highway capacity on congestion, air pollution, and energy consumption.

Changes in highway capacity include the addition of physical capacity to existing facilities (e.g., more lanes), the addition of operational capacity (e.g., better management of traffic flow through traffic engineering or road pricing), and the addition of new facilities to the highway network (e.g., construction of new highways or bridges).

For the truck driver, these improvements result in changes in travel time (i.e., faster trips), changes in travel reliability (i.e., more predictable trip times), or changes in accessibility (i.e., the ability to physically reach new areas and new markets). Where highway capacity is reduced, the changes result in slower trips, less predictable travel times, and restricted access to markets.

Over time, the truck driver, the motor carrier firm, and eventually the shipper will react to these changes by adjusting their travel behavior and changing their use of the highway system. They may reallocate their trips—shifting the hour or day that a trip is made, changing the route, and changing the destination; or they may make new trips, take longer trips, and shift freight between truck and rail or truck and air. By altering the total truck miles of travel and its allocation between congested and uncongested roads, changes in highway capacity can increase or decrease congestion, engine emissions, and energy consumption.

The general impact of changes in highway capacity on truck traffic is examined in the first section of this appendix. The author argues that, in the short term, changes in highway capacity are not likely to result in significant changes in truck travel. The three major reasons for this argument are the marginal nature of most changes in highway capacity today, the moderate exposure of trucks to severe congestion, and the overriding influence of low freight transportation costs.

Reviewed in the second section is the fragmentary evidence on the specific responses of motor carriers to changes in highway capacity, the primary ones being changes in the time of travel, route, and mode.

Structural changes in the economy, freight logistics, and trucking that may make truck travel more sensitive to changes in highway capacity in the future are discussed in the third section. These trends include a shift toward longer and more time-sensitive supply chains and distribution networks that leave trucks exposed to congestion and a countervailing shift toward the use of information technology to improve the productivity and flexibility of freight transportation.

In the fourth section research findings are reviewed on the relationship between truck accidents and congestion, which suggest that reducing peak-period congestion may reduce the frequency of common accidents, but will have little effect on the frequency of major truck accidents, which tend to occur during uncongested off-peak periods.

The state of truck travel modeling and the data available to transportation planners and engineers to analyze trucking issues are reviewed in the fifth section.

In the final section the author's conclusions are summarized and the implications for highway capacity planning, air quality, and energy use are discussed.

The conclusions rely heavily on empirical data from planning and policy studies and on anecdotal information from the freight and motor carrier industries. Although a large body of academic and applied research on many aspects of freight logistics and trucking exists, there is little on the topic of induced truck travel. Almost all of the work on travel demand forecasting and induced traffic has been focused on automobiles and transit.

Finally, the information that exists on truck travel usually pertains to large trucks, typically heavy five-axle tractor-semitrailers. There are 45.5 million trucks registered in the United States; however, 39.5 million of these trucks, or about 88 percent of that fleet, are pickup trucks, panel trucks, and minivans, many of which are used for personal transportation. For traffic and congestion management purposes, these light trucks are indistinguishable from automobiles and are seldom accounted for as trucks in urban transportation studies. The balance of the trucks in the U.S. fleet, approximately six million, or about 12 percent of all trucks, are medium and heavy trucks, ranging from local delivery trucks with two axles and six tires to large over-the-road tractor-semitrailers with five axles and 18 tires (BTS 1994, 64). (The size classes used to categorize trucks are presented in Table C-1.) In the medium and heavy truck categories, the heavy and heavy-heavy trucks (Classes 7 and 8) are the focus of most truck transportation studies. These large trucks, an estimated 2.5 million trucks, or about 5 percent of the total fleet, are thought to account for more than three-fourths of all truck miles of travel and most of the ton miles and revenue miles of travel in urban areas (Blower and Campbell 1988).[1]

GENERAL IMPACT OF CHANGES IN HIGHWAY CAPACITY

In the short term, changes in highway capacity are not likely to result in significant changes in truck travel for three major reasons.

Extensiveness of Existing Highway Network

The first reason is the extensiveness of the existing highway network in the United States. The aggregate contribution of the highway ca-

TABLE C-1 Large Trucks : 3+ Axles, Straight, or Combination (Grenzeback et al. 1988, 2).

Size Class	Weight Class	Gross Vehicle Weight (lb)	Axles/Tires	Examples	
Heavy-Heavy	8	>33,000	7/22+	Multitrailer trucks	5-AXLE TRACTOR SEMITRAILER 48'–48' TWIN-TRAILER OR "DOUBLES" 28' 28'
			6/18+		
			5/18	Tractor-semitrailers and doubles	
			4/14		5-AXLE TRACTOR TANK TRAILER 38'–40' 5-AXLE TRACTOR FLATBED TRAILER 38'–42'
			3/10	Concrete mixers and dump trucks	
Heavy	7	26,000–33,000	3/10	City tractor with 28-ft pup trailer	4-AXLE TRACTOR SEMITRAILER 38'–48' 3-AXLE TRACTOR-SEMITRAILER 28'–28'
Light-Heavy	6	19,500–26,000	2/6	Beverage truck	
				Home-heating fuel truck	
	5	16,000–19,500	2/6	Stake truck	STRAIGHT TRUCK 25'–40'
	4	14,000–16,000	2/6	Flatbed	
Medium	3	10,000–14,000	2/6	Metro van (UPS)	
	2	6,000–10,000	2/4	Step van (mail)	
Light	1	<6,000	2/4	Pickup truck, van	

NOTE: Includes four- and five-axle trucks, weight Classes 7 and 8, greater than or equal to 26,000 lb gross vehicle weight.

pacity improvements planned for the next two decades will be marginal, at best, to the overall capacity of the existing system. The highway system is composed of 3.9 million mi of roads and streets and supports a highly developed truck freight system. The 45,500-mi Interstate highway system and the 200,000 mi of other expressways and principal arterial highways (together about 6 percent of the total system) are the economic backbone of the highway system and carry the bulk of the truck traffic. Urban highways—composed of 12,500 mi of Interstates, 6,500 mi of freeways and expressways, and 52,200 mi of other principal arterials, for a total of 71,200 mi—account for 30 percent of the truck network and about 1.8 percent of all roads (FHWA 1993, 146).[2] The size of this urban system has been relatively static for the past two decades as highway funds have shifted from construction of new roads to the repair and replacement of existing roads. This pattern is expected to continue through the next two decades.

From a historical perspective the highway capacity improvements being debated today will be occurring at the end of the truck era, not the beginning. When trucks were introduced at the beginning of this century, they freed industry and workers from the need to locate near rail lines, just as the introduction of railroads in the early 1800s freed industry and workers from the need to locate within dray horse–hauling distance of ports, rivers, and canals. In both cases the new transportation technologies led to sharp drops in the cost of moving goods and contributed to profound changes in the structure and dynamics of cities.

The push to improve farm-to-market roads in the 1930s and the decision to build a full intercity-Interstate highway network in the 1950s and 1960s provided the basic highway capacity that supports the trucking industry today. None of the highway capacity improvements currently planned are comparable to these programs and none will significantly reduce the average cost of truck freight movement. They will make marginal improvements to specific corridors and relieve critical bottlenecks; however, they will not fundamentally restructure the economics of trucking.

Limited Exposure of Trucks to Congestion

The second reason that changes in highway capacity are not likely to result in significant changes in truck travel is the modest exposure of

trucks to congestion. Most truck travel is not exposed to severe congestion and therefore is not highly sensitive to marginal changes in travel time and travel reliability. Truck travel is spread more evenly across the day than commuter traffic, with relatively more truck trips than automobile trips made during uncongested off-peak hours. Changes in highway capacity designed to facilitate or restrict peak-period automobile travel will have little effect on off-peak truck travel.

A 1988 study of truck traffic in Los Angeles, San Diego, and San Francisco, California, found that large trucks accounted for less than 5 percent of vehicles on the freeways during the peak periods (Grenzeback et al. 1988, 1).[3] The percentage and the absolute number of large trucks on the freeways were highest during the midday off-peak period (see Table C-2 and Figure C-1). A subsequent study of large-truck traffic on city streets in Los Angeles resulted in similar findings (JHK & Associates 1989).[4]

A parallel analysis of California Department of Transportation annual average daily traffic data for all freeway segments in Los Angeles, San Diego, and San Francisco found that the "worst" freeway segments (i.e., those with high traffic volumes, high injury rates,

TABLE C-2 Large Trucks as a Percentage of Total Vehicles (One Direction) (Grenzeback et al. 1988, 8)

	Los Angeles	San Diego	San Francisco
Morning Peak (7:00 to 9:00 a.m.)			
Weighted Average[a]	3.8	1.8	4.2
Observed Range	0.5–17.2	0.7–5.7	0.8–13.2
Midday Off-Peak (11:00 a.m. to 1:00 p.m.)			
Weighted Average[a]	5.5	2.5	5.4
Observed Range	0.7–16.2	0.6–4.8	0.6–12.1
Evening Peak (4:00 to 6:00 p.m.)			
Weighted Average[a]	2.6	0.8	2.4
Observed Range	0.2–13.2	0.1–1.9	0.3–6.8

[a] Average traffic volumes during the evening peak period were slightly higher than average traffic volumes during the morning peak period. Midday traffic volumes were 10 to 15 percent lower than the peak-period volumes.

shifts, but tend to commute outside peak traffic hours. As with downtown stores, maintenance, cleaning, and restocking are done late at night or early in the morning, but truck deliveries are made during the midday off-peak period so that they do not interfere with the afternoon or evening sales periods. As a consequence of these business cycles, only a fraction of all truck movements serving major department stores at downtown and suburban locations is likely to be exposed to substantial congestion.

Similar patterns are evident in other trucking operations, including petroleum distribution. Tank trucks delivering gasoline and home-heating fuel account for a large number of local truck movements in urban areas. Home-heating fuel trucks are loaded at tank farms during the midday or evening, and deliveries are made the next morning or afternoon to comply with local noise ordinances that restrict truck deliveries in residential areas to daylight hours. Gasoline tankers serving metropolitan areas tend to be loaded at tank farms during the afternoon, and deliveries are made in the evening or at night when business slacks off at local service stations. In both cases exposure to severe congestion is minimized, but primarily because of client needs, not travel time or cost considerations that would be affected by improvements in highway capacity.

By contrast, couriers, parcel services, and less-than-truckload carriers, such as Federal Express, United Parcel Service, and Roadway, operate in a much different business environment, which leaves their pick-up and delivery operations exposed to peak-period traffic congestion. These carriers distribute inbound freight during the morning peak period as offices and retail stores open and pick up outbound freight during the afternoon peak period as their clients close out the business day. This pattern persists because few offices and retail stores ship or receive sufficient volumes of freight to justify the cost of employing a night shipping clerk, dock worker, and security officer. As a consequence, these carriers operate during the peak periods and are very sensitive to local highway capacity changes.

For businesses that are open at night, some firms and their motor carriers make nighttime deliveries. Hotel and restaurant provisioners, including bakery, dairy, meat, and produce truckers, sometimes deliver at night; however, the primary incentive is often uncongested parking and open docks, not lack of traffic congestion per se. A study

of United Parcel Service operations found that the cost of the parking tickets that its trucks received in downtown Boston during the day was five times greater than the cost the firm incurred on those routes because of traffic congestion (Warner and Wilson 1989).

In summary, the trucking industry is highly fragmented. The exposure of trucks to congestion and their response to highway capacity improvements is determined by the industries they serve, their geographic range, whether they operate fixed or variable routes, the time sensitivity of their shipments, and the size and sophistication of the fleet. This diversity has tended to spread truck travel more evenly across the day than automobile travel, making trucks generally less sensitive to changes in highway capacity.

Low Freight Transportation Costs

The third reason for the limited impact of highway capacity changes on truck travel is the overriding influence of low freight transportation costs. Changes in highway capacity result primarily in changes in travel time and reliability. For a motor carrier these changes are accrued directly as increased (or decreased) labor and vehicle operating costs and indirectly as changes in the level of service that can be offered to shippers and receivers. Carriers are sensitive to changes in travel time, and therefore driver time, because labor costs [payroll, benefits, and purchased transportation (i.e., leased owner-operators)] account for almost 60 percent of operating expenses. Fuel purchases account for a smaller proportion of operating expenses, about 8 percent, but both labor and fuel costs have escalated rapidly during the past decade. In the for-hire trucking industry, which accounts for a large share of truck miles of travel and for which statistics are available, labor costs rose 40 percent and fuel costs rose 50 percent between 1986 and 1991 (BTS 1994, 115).

Despite these cost increases, overall freight transportation costs have dropped relative to the gross national product (GNP) and other producers' prices (BTS 1994, 58). Because transportation costs typically account for 1 to 4 percent of total production costs in the manufacturing and retail industries, low freight costs have made it more attractive for shippers and receivers to substitute transportation for

higher cost labor, materials, and land.[6] The outsourcing of manufacturing and assembly work to Asia and Mexico and other Latin American countries depends on long, but relatively inexpensive, transportation supply lines to realize large savings on labor. Just-in-time manufacturing and distribution substitute more frequent truck deliveries to factories and retail stores to reduce the cost of carrying extra inventory. Similarly, the emergence of exurban distribution and warehousing centers reflects business decisions to increase expenditures on truck, rail, and air transportation to obtain access to low-cost and easily developed land, which is more available on the periphery of metropolitan areas.

In general highway capacity improvements have played a small role in driving down transportation costs and making such substitutions possible. The dominant factors are discussed in the following paragraphs.

- Evolution of air freight services using all-cargo air freighters and the belly-freight capacity of commercial wide-body passenger airliners. Air freight service has captured and expanded the market for very-high-value and time-sensitive shipments, outperforming trucking. Since the 1950s the air freight share of national freight ton miles has grown tenfold from 0.03 to 0.37 percent, for which the air freight industry now receives 4 percent of national freight revenues. By comparison, trucks account for 25 percent of the national ton miles and receive 79 percent of national freight revenues (BTS 1994, 58,59). The trucking industry percentages are expected to remain stable or decrease slightly during the next decade and the air freight share of tonnage and revenues is expected to increase.
- Introduction of containerization and very large container ships (i.e., post-Panamax container ships). Containerization has reduced damage and pilferage of goods in transit and reduced the cost of labor required to load and unload shipments. Automation and economies of scale in ship design have sharply reduced the cost of moving a container across the Atlantic or Pacific oceans.
- Development of double-stack rail service on unit trains. Double-stack service has halved the cost of long distance (i.e., greater than 1,200 mi) intermodal rail container shipments. Rail rates per ton for intermodal container movements reportedly fell from $75 in 1980 to $47 in 1990, reflecting increases in productivity and strong competition among rail carriers for market share (*21st Century Trucking: Profiles of the Future* 1994, IV-1 and Figure IV-3).
- Deregulation of the transportation industry, especially deregulation of the motor carrier industry in 1980. The abolishment of most business entry and exit barriers to interstate trucking and the effective abandonment of pricing, service, and route restrictions precipitated a major restructuring of the motor carrier industry. (A second wave of restructuring is expected to follow recent congressional deregulation of intrastate motor carrier operations.) From the restructuring are emerging cost-competitive integrated and intermodal transportation companies that work closely with shippers and receivers. These firms have been successful in reducing the costs of organizing, managing, and administering freight services. Truckload motor carriers working with the railroads and air freight forwarders have been especially effective at developing integrated transportation services, which were once provided at higher cost by third-party brokers.

The net effect of these changes has been to make changes in highway capacity less visible and important to the shippers and receivers who determine the overall demand and logistics strategies for freight transportation. Changes in highway capacity are important to individual motor carriers, but are a secondary factor in determining the general level of demand for freight transportation and truck miles of travel.

SPECIFIC RESPONSES TO CHANGES IN HIGHWAY CAPACITY

The fragmentary evidence on the specific responses of motor carriers to changes in highway capacity is examined in this section. Two types of travel responses are of interest: those that involve reallocation of truck travel, such as changes in travel hour, route, and destination, and those that involve induced travel, such as changes in the number, length, or mode of trips.

Reallocation of Truck Travel

Changes in Travel Hour

There is a paucity of data on truck travel by hour of the day. State departments of transportation and metropolitan planning organizations take frequent vehicle and truck counts on major arterials, but this information is usually aggregated to the daily or annual level because the primary users of truck count data have been pavement and bridge design engineers who must estimate total axle-loadings on a yearly, not an hourly, basis. As a proxy for more comprehensive data, truck crossings at toll facilities provide some indication of truck travel patterns by time of day and their response to changes in highway capacity.

In 1985 and 1991, the Port Authority of New York and New Jersey conducted origin and destination and commodity surveys of all trucks at its eastbound Hudson River bridge and tunnel toll plazas. Figure C-2 shows the distribution of truck crossings by hour for those years (Cambridge Systematics, Inc. 1992).[7] The data show a pronounced shift in the distribution of truck trips away from the morning and midday hours and toward the early morning and late evening hours.

Anecdotal information from motor carriers using the George Washington Bridge, which carries more than 50 percent of the truck traffic crossing the Hudson River, suggests that increasing congestion has been the major factor in this shift. At least three groups of motor carriers have shifted the time of their trips: long-haul interstate carriers serving New England from warehouses in New Jersey, produce haulers moving fruits and vegetables from the New Jersey rail yards and the South to the Hunt's Point Market in the South Bronx, and local provisioners serving restaurants and hotels in Manhattan. Toll pricing did not influence their decisions because the Port Authority's truck tolls are based solely on the number of axles; no discounts are offered for off-peak travel.

The scale and level of congestion in New York make it atypical of metropolitan areas, but similar, although less pronounced, shifts in peak-period travel patterns have been observed at locations (such as San Francisco's Bay Bridge) where highway capacity is severely restricted. In these situations highway capacity improvements will likely result in a shift of truck traffic back to the peak period. Those most

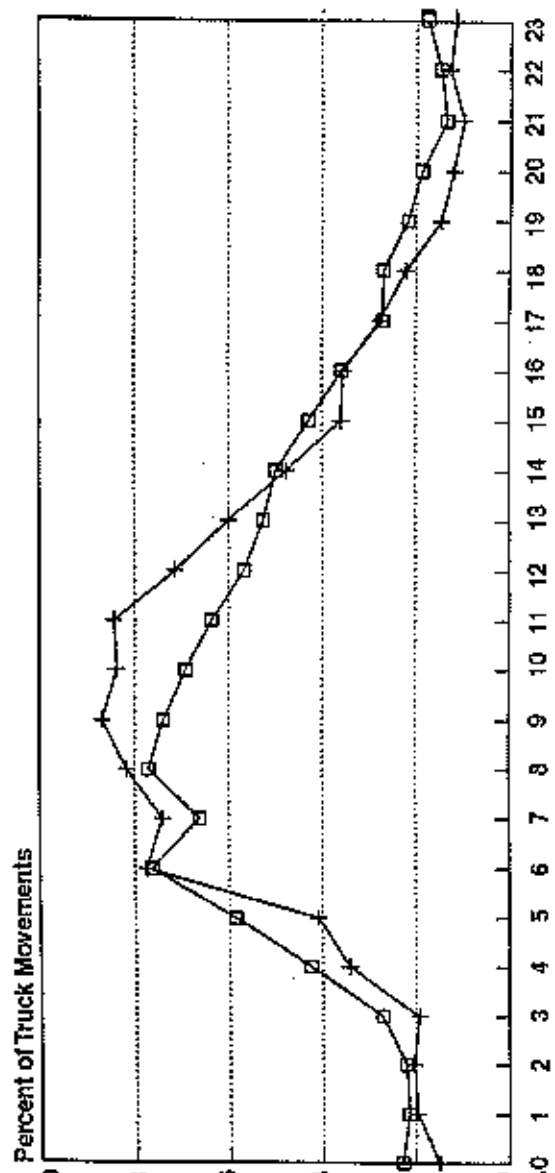

FIGURE C-2 Truck trips by hour for all eastbound crossings, 1985 and 1991, all commodities (Cambridge Systematics, Inc. 1992)[7].

affected would be carriers serving firms that have early morning delivery windows.

Changes in Route

Large trucks operate on a small number of routes in most metropolitan areas. Figure C-3 shows the regional truck freightways in the New York and New Jersey metropolitan area. New York is particularly constricted because interstate-standard trucks, which are 13 ft 6 in. high and 102 in. wide, cannot use the Lincoln and Holland tunnels. Similar bridge and tunnel clearance restrictions exist in Boston, Chicago, San Francisco, Seattle, and other cities. These physical clearance restrictions limit the ability of truck drivers to avoid congestion and incidents and introduce considerable circuitry to urban truck routes. A network analysis of truck routes in Chicago by Chicago Area Transportation Study staff showed that truck route restrictions in the metropolitan Chicago area added significantly to the truck miles of travel in that area (Reilly and Hochmuth 1990).

The trend toward the use of larger, interstate-standard trucks, as shown in Figure C-4 by the increase in five-axle trucks at the expense of four-axle trucks, concentrates large-truck traffic into those few corridors that can safely accommodate it.[8] This shift, which has occurred nationwide, makes large-truck travel sensitive to bridge and tunnel improvements that restrict or provide access to specific corridors.

Small trucks, particularly vans and two-axle, six-tire delivery trucks, face fewer route restrictions. Many urban carriers allow their drivers considerable latitude in picking local routes and delivery sequences. Federal Express, for example, provides its drivers with a list of delivery points and deadlines, but lets the drivers determine the specific route to minimize traffic delays. However, less-than-truckload carriers, such as Roadway, Yellow Freight, and Consolidated Freightways, can seldom take advantage of this flexibility. Because they carry heavier shipments packed for a specific sequence of deliveries, the last shipment into the trailer must be the first shipment out.

Changes in Destination

A study of the impacts of urban congestion on service-sector industries found that congestion and highway capacity were a con-

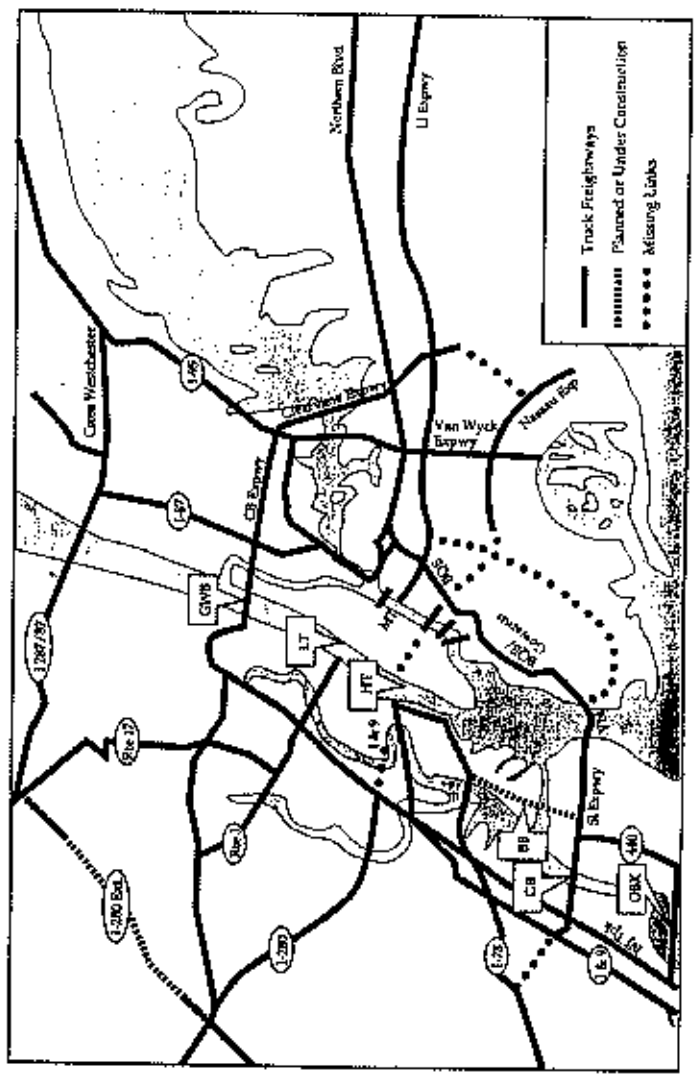

FIGURE C-3 Regional truck freightways in New York and New Jersey metropolitan area (source: Port Authority of New York and New Jersey).

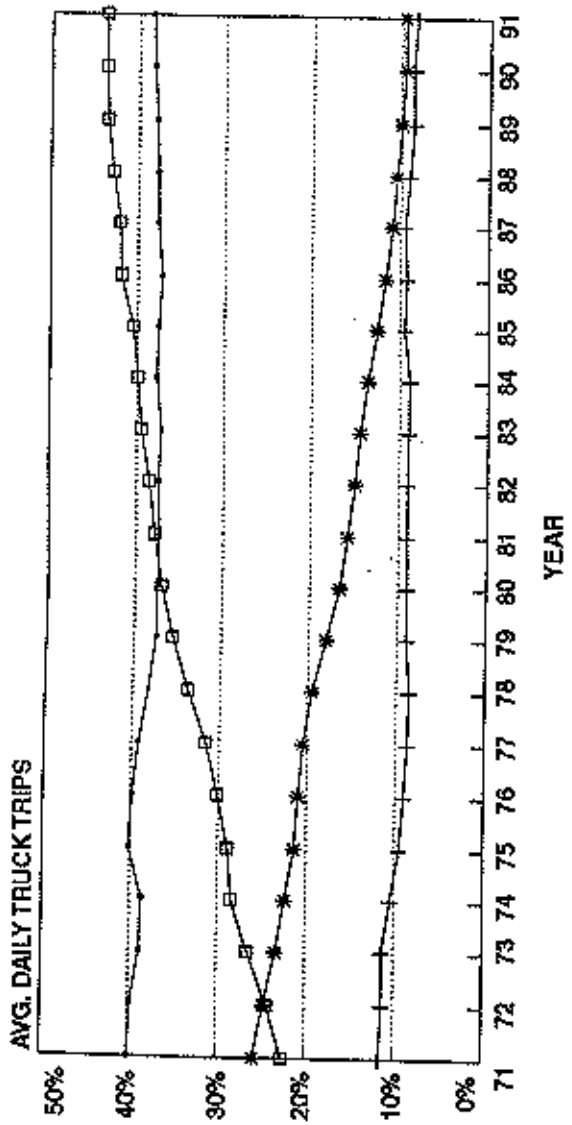

FIGURE C-4 Truck trips by truck type for all eastbound crossings, 1971–1991 (Cambridge Systematics, Inc. 1992)[7].

tributing, but not major, factor in corporate relocation decisions (Grenzeback and Warner 1994). Although relocation may significantly reduce a firm's exposure to congestion, the dominant factors driving decisions to relocate were the availability and cost of labor and housing, tax rates, and perceived levels of crime. Service-sector industries generally are not as transportation dependent as manufacturing or wholesale firms, but service-sector firms are the primary source of jobs and growth in most urban areas today.

Studies of trends in warehousing and truck terminal locations also suggest that congestion and highway capacity are contributing, but not major, factors in relocation decisions. A study of warehousing in the New York metropolitan region by Port Authority of New York and New Jersey staff (Strauss-Wieder et al. undated) found that land, tax, and labor costs were the primary factors determining warehousing and truck terminal location decisions. These factors were important because of structural changes in the warehousing and distribution industry that forced warehouse operators to reorganize their operations and physical plants. Those changes included consolidation, computerization, automation, introduction of value-added services, and growth in public and contract warehousing.

Interviews with major truck terminal operators in Los Angeles and New York revealed that the decision to relocate a terminal was usually triggered by the inability to expand operations at an existing location because of encroaching residential development and restrictive noise regulations.[9] When truck terminals are relocated, most are moved to the periphery of the metropolitan area, along existing nterstate highways. In almost all cases this relocation leads to an increase in truck miles of travel for the carrier; however, the savings in land costs and inability to locate closer to the urban core make this trade-off financially acceptable. Such relocation would not be possible without the access provided by previous investments in Interstate and metropolitan highway capacity.

Induced Travel

Changes in the Number of Trips

The high cost of labor makes adding trips to compensate for congestion less attractive than shifting travel times and routes. Most motor

carriers rely on overtime and temporary drivers (i.e., leasing trucks and using owner-operator drivers) to deal with short-term and seasonal congestion. Research attempting to relate fleet size and truck miles of travel to urban congestion levels have been stymied by a lack of reliable data on congestion levels and the inability to adequately distinguish the impacts of congestion, economic growth, and improved routing and dispatching techniques by motor carriers.

In urban areas some service-delivery firms have been able to minimize truck travel by establishing satellite branches and consolidation terminals. By using a satellite base the firm avoids sending its staff and vehicles between the service area and a more distant central facility during the day. An office machine repair firm that has small bases throughout its service area is a good example of this logistics strategy. Its satellite offices, usually one or two small rooms in an office or strip commercial building, have inventory and parts rooms that are restocked at night. The technicians assigned to the satellite offices travel locally to work on clients' machines, returning to the central office only once or twice or week. In central business districts where there is a heavy concentration of office machines, the bases are numerous enough so that the technicians can walk to the customers' offices in their territories. In some cases couriers or less-than-truckload carriers are used to deliver parts directly from a central warehouse to the clients' offices. The clear limitation to this strategy is the size and weight of the goods being moved.

Changes in Trip Length

National freight statistics show an increase in the total number of ton miles moved in the United States during the last 20 years, but a decline in the number of ton miles per unit of GNP. The implication of these statistics is that lighter, higher-value goods are being moved over longer distances. This is consistent with the trend, discussed earlier, toward substitution of low-cost transportation for high-cost production factors, such as labor, inventory, and land. There are numerous examples of individual firms, as well as metropolitan areas and regions, that have taken advantage of lower transportation costs to develop warehousing and distribution centers.

One of the more successful examples has been the emergence of an "inland port" in Columbus, Ohio. Because of its central location in the eastern half of the United States and the freight capacity of the highways, rail lines, and airports serving the region, Columbus has developed into a centralized warehousing and distribution center for such major retailers as The Limited, Spiegel's, and Consolidated Stores. These firms bring much of their inventory into central warehouses in Columbus and then distribute them, primarily by truck, to individual retail stores across the United States. This logistics strategy generates longer individual truck trips, but there are no readily available statistics to determine whether the net effect is to increase or decrease total truck miles of travel compared with more localized distribution strategies.

As with the relocation of metropolitan warehouses, the development of major distribution centers depends on previous investments in air, rail, and highway capacity, but in most cases the emergence of such distribution centers has lagged behind the transportation investments by decades. It is therefore difficult to determine how much additional truck travel is the result of increased highway capacity and how much is the result of broader structural changes in the economy.

Changes in Mode

A significant change in the past decade has been the accelerating integration of truck and rail service to provide intermodal freight service. Freight movements by intermodal containers have been growing rapidly. The number of intermodal containers coming into and going out of the United States has been growing at an average annual rate of just over 7 percent. The use of domestic containers, which is a new, small, and rapidly growing market, is expected to increase at an average annual rate of about 25 percent. The use of roadrailers (truck trailers equipped with retractable road wheels and removable rail wheels) and similar flexible equipment is expected to grow at about 10 percent per year, cutting into the volume of piggyback trailers (truck trailers that have fixed wheels and are carried on railroad flatcars), which are projected to decline about 10 percent annually.[10]

Changes in highway capacity have played a role in making intermodal and domestic containers more attractive to shippers and

carriers, but the major consideration has been pressure to cut total transportation costs. The introduction of intermodal stack trains, especially double-stack trains, has cut the cost of moving a container long distance (more than 1,200 mi), approximately in half, making them competitive with long-haul truckload service. It is likely that intermodal service will become competitive with truckload service over distances as short as 500 to 600 mi during the next decade; however, this will occur only in high-volume rail corridors with sufficient capacity to provide timely, high-speed service.

The shift to intermodal rail will free up highway capacity on the major cross-country truck lanes, but few of these corridors experience significant congestion except in metropolitan areas. As the volume of intermodal freight increases, railroads will improve or convert existing rail yards to intermodal service. This action will result in reallocation of truck travel, both long haul and short haul, but no research studies have yet attempted to document the net impact on truck miles of travel.

There are fewer opportunities to shift freight from truck to rail within metropolitan areas. The demand for intra-metropolitan movement of heavy and bulky freight has dropped as heavy industry has relocated away from metropolitan areas, and most of the rail distribution networks that flourished in the late 1800s have been removed to make way for other land uses. The industries that are growing today in urban areas—business services, government, distribution, research and development, education, health, light manufacturing, and the like—generate smaller, lighter, higher-value shipments that railroads cannot handle cost-effectively over short distances.

Rail transportation is cost-effective at moving large volumes of freight over long distances where it can achieve economies of scale that offset the high cost of maintaining locomotives, track, and control systems; however, it cannot achieve the necessary economies of scale when shuttling two or three carloads or container-loads of freight at a time across a metropolitan area. Trucking, with its lower equipment and control costs and greater flexibility, is cost-effective at serving such local distribution and intra-metropolitan plant shipments. Because of the substantial cost differences, trucking will continue to dominate the metropolitan freight market even if highway congestion, and therefore intra-metropolitan distribution costs, increase substantially during the next decades. Rail will continue to be the carrier of choice for the delivery of bulk products, such as coal to metropolitan power plants, and the intercity movement of low-value commodities, such as sand and gravel. Rail will capture a larger share of long-haul shipments of produce and manufactured goods through intermodal containerization, and there will be greater integration of rail for long-haul moves and trucks for short-haul distribution, but there will be little modal shift within metropolitan areas.

TRENDS

Freight transportation is in the early stages of another major shift, comparable to those that occurred with the introduction of railroads in the 1800s and trucks in the 1900s. This time the shift is being driven by structural changes in the economy and the application of information technology to transportation. The direction and dimensions of the new transportation system are not clear, but two countervailing trends may make truck transportation more sensitive to highway capacity changes in the future.

The first trend is the structural movement in the economy toward service-intensive industries. The U.S. economy requires fewer tons of freight to produce a unit of GNP today than it did 20 years ago. Manufacturing and assembly are being done in smaller factories that employ fewer people and are more widely dispersed over metropolitan areas. For transportation this has meant a demand for faster, more reliable, and higher quality transportation services tailored to the needs of widely dispersed individual manufacturers, retailers, and consumers. This demand has been met by the rapid expansion of trucking, air freight, and now intermodal rail services. The result has been the development of long, time-sensitive supply chains and distribution networks that leave trucks exposed to congestion.

In air freight operations, for example, the truck is the first and last link in a long, high-cost trip. The total truck miles of travel involved is a small fraction of the total ton miles, but truck movements into and out of congested metropolitan airports are quickly becoming the least reliable links in the total move. The same type of problem may arise as the number of intermodal and domestic container movements increases during the next decade. Access to and from intermodal rail

yards by truck will be the least predictable link in the total trip. In each case local decisions about highway capacity and truck access will have a multiplier effect on freight travel times, costs, and economic activity far beyond the immediate roadway because they will affect an extended and, in most cases, time- and cost-sensitive shipment.

The second trend is toward the use of information technology to improve the productivity and flexibility of freight transportation. Two information systems are evolving, somewhat independently, today. The first system consists of fleet management technologies that provide motor carrier managers with the ability to route, track, and communicate with trucks on the road. The first generations of computerized routing and dispatching software have proved to be an effective competitive weapon for long-haul truckload carriers operating nationally and urban couriers operating locally. Both are realizing considerable costs savings by minimizing truck miles of travel and driver time per shipment.

The second system is composed of urban automated traffic management systems, which are an outgrowth of traffic signal engineering intended to improve the flow of vehicles through city streets; automated traveler information systems, which are an attempt to influence driver route and travel time choices by providing near-real-time information on traffic, weather, and road conditions; and commercial vehicle regulatory systems, which are targeted at improving the speed and quality of truck size, weight, and safety inspections.[11] These intelligent transportation systems (ITS) programs are evolving slowly, but offer the promise of feeding better highway capacity information to motor carrier fleet management systems. In the short term these systems are likely to improve the productivity of motor carriers and reduce truck miles of travel. In the long term they are likely to provide the flexibility and redundancy to operate long supply chains and distribution networks, supporting the continued dispersion of businesses and housing across metropolitan areas. As with just-in-time transportation strategies, the net effect of these changes on truck miles of travel is unknown.

TRUCKS, CONGESTION, AND SAFETY

Research on highway incidents suggests that reducing peak-period congestion may reduce the frequency of common accidents (typically,

a multi-vehicle, rear-end or sideswipe collision with minor to moderate injury and property damage), but may have little effect on the frequency of major truck accidents, which tend to occur during uncongested off-peak periods. General knowledge about the accidents on metropolitan highways and the relationship between accidents and congestion are reviewed in this section. Specific knowledge about truck accidents and their relationship to congestion are then examined.

It is estimated that 70 percent of all highway incidents in metropolitan areas are recorded by police and highway agencies; the other 30 percent go unreported and, as such, are assumed to be minor incidents having little impact on traffic.[12] (Figure C-5 is a composite profile of reported highway incidents by type that shows typical incident duration and congestion impact for metropolitan highways.) Of the incidents recorded by police and highway departments, the vast majority, some 80 percent, are vehicle disablements—cars and trucks that have run out of gas, had a flat tire, or been abandoned by their drivers. During off-peak periods when traffic volumes are low, these disabled vehicles have little or no impact on traffic flow. When traffic volumes are high, however, the presence of a stalled car or a driver changing a flat in the breakdown lane can slow traffic in the adjacent traffic lane, causing significant delay to other motorists.

Accidents account for only 10 percent of reported incidents. Most are the result of collisions, such as sideswipes and slow-speed rear-end collisions. Few of these accidents, variously estimated to make up 5 to 15 percent of accidents, are major incidents (typically single-vehicle or head-on collisions with fatalities or severe injuries and extensive property damage). Major incidents are relatively rare, but may last 3 to 10 hr and trigger thousands of hours of vehicle delay to other motorists on a congested urban highway. The remaining 10 percent of reported incidents are most often blockages and slowdowns caused by debris on the roadway.

Studies of the relationship between accident rates and congestion levels suggest that accident rates are lowest when traffic volumes are moderate (i.e., at Levels of Service B and C). Accident rates appear to increase as traffic volumes drop (i.e., at Levels of Service A and B) and as traffic volumes and congestion increase (i.e., at Levels of Service D and E). This u-shaped curve is composed of two accident patterns:

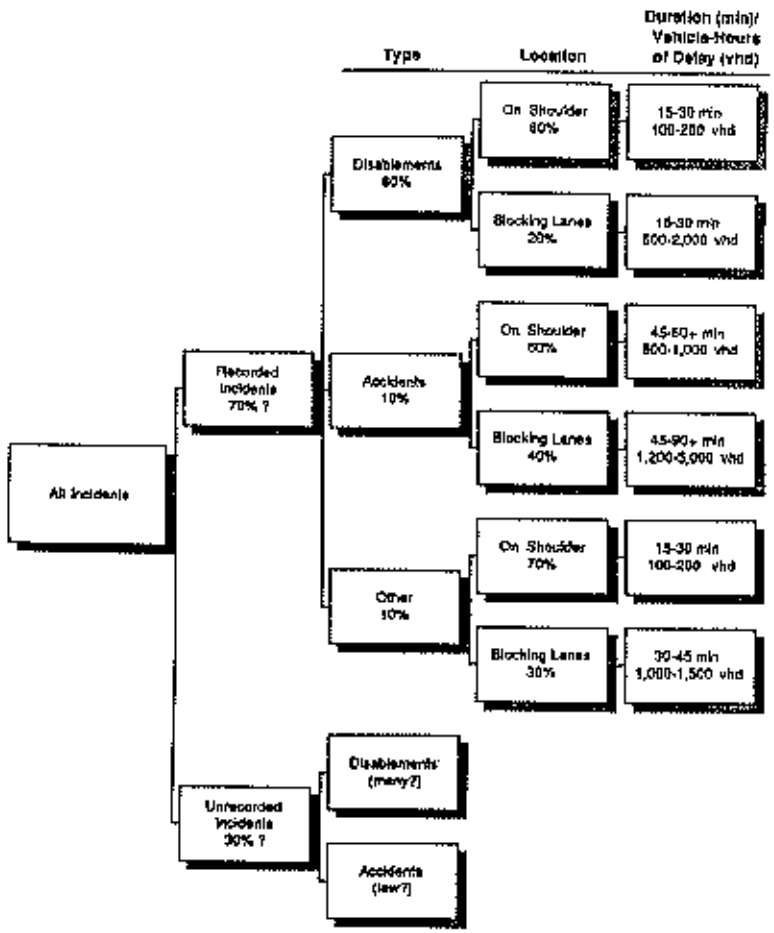

FIGURE C-5 Composite profile of reported incidents by type (Cambridge Systematics, Inc. 1990).

high accident rates at low traffic volumes that are typically the result of single-vehicle, often fatal, involvements that occur at night and high accident rates at high traffic volumes that are typically the result of common accidents that occur during the day. As highways approach saturation levels with stop-and-go traffic conditions, the accident rate is thought to drop as travel speeds fall.[15]

The distribution of truck accidents and the relationship between truck accident rates and congestion levels appear to follow the general patterns just described with some significant variations: trucks are involved in more common accidents than cars because they are less maneuverable in congested conditions; they are involved in more accidents during the midday than cars because relatively more trucks operate during that time; and they are involved in more fatal accidents than cars because of their greater size and weight.

[The nationwide accident rate for trucks has dropped during the past decade. The fatal accident rate for medium and heavy trucks dropped by 39 percent despite a 42 percent increase in truck miles of travel during that period, but trucks are still involved in a disproportionately high percentage of fatal accidents (*21st Century Trucking: Profiles of the Future* 1994; BTS 1994, 138).]

An analysis of truck incidents on Los Angeles freeways found that 50 percent of all reported truck incidents were caused by breakdowns, stalls, broken fan belts, flat tires, and the like, whereas 30 percent of truck incidents were common accidents, typically involving sideswipes and rear-end collisions (Recker et al. 1988). Five to 10 percent of truck incidents were found to be major incidents, which were defined as truck-involved accidents or spills requiring the closing of two or more lanes of freeway for 2 hr or longer. The remaining 10 percent of reported incidents were attributed to debris on the roadway.

Major truck accidents were most often the result of overturns, spills, and shifted loads; they were usually fatal and caused extensive property damage. They tended to occur on freeway ramps, the primary cause being excessive speed on the curve. Most major accidents occurred during off-peak periods—at dawn when traffic volumes are low and trucks travel at full speed, or at midday when trucks and other vehicles operate at full freeway speeds. By contrast, common accidents, usually involving sideswipes and rear-end collisions, tended to occur during peak periods. Overall, it was estimated that 90 to 95 percent of truck incidents occurred on weekdays, 70 to 80 percent during the daytime, and about 50 percent during the midday period when truck volumes, and therefore truck exposure on the freeways, were highest.

These findings suggest that increasing highway capacity and smoothing traffic flow during congested peak periods may reduce the rate of common accidents for both cars and trucks and the substan-

tial delay and economic costs of these incidents; however, the findings also suggest that increased highway capacity alone may do little to reduce the frequency of major truck accidents, both because fewer trucks operate during peak periods and because most major accidents occur at night or at midday when trucks operate at full speed.

MODELING TRUCK TRAVEL

There are many approaches, all relatively simple, to truck trip modeling. Some regional travel demand models, particularly in smaller urban areas, do not differentiate between trucks and automobiles. The current models are descended from the urban transportation planning system suite of models developed during the 1960s and 1970s to help size new highway, and later, transit, projects. The forecast horizon for these models was typically 20 years, and a substantial margin of error was expected because of the difficulty of accurately anticipating underlying land use and socioeconomic trends. Trucks (especially large trucks) were known to account for a relatively small proportion of all traffic (e.g., 5 to 10 percent of total vehicles). Because this is well within the margin of error of the models, transportation modelers did not push to develop separate or accurate truck forecasts.

Many regional model systems today estimate vehicle trips from person trips, usually based on observed behavior. After total vehicle trips are estimated and assigned to roadways on the metropolitan network, the link traffic volumes are apportioned among trucks and automobiles. The more detailed models use current traffic counts by functional class of roadway as the basis for estimating the percentage of trucks in the traffic stream; less developed models use a single estimated percentage for major roads only, largely disregarding local and small truck travel. To account for the size difference among trucks and cars, most traffic assignment programs perform calculations in passenger-car-equivalents (PCEs), then convert these units to vehicles by equating an automobile to one PCE, small or medium trucks to two PCEs, and large trucks to three PCEs.

A few of the larger and more advanced metropolitan areas have refined this process by developing separate trip tables for trucks and automobiles. Chicago, for example, has developed a separate truck trip table for its regional model on the basis of extensive surveys of

shippers and motor carriers in the region. This permits the Chicago Area Transportation Study, the metropolitan transportation agency, to model the impact of major changes in highway capacity (e.g., new roads, major widenings, truck access restrictions) on truck miles of travel and to approximate the subsequent air quality and energy impacts. Phoenix has recently developed a similar truck modeling capability, and other metropolitan areas have developed partial truck trip tables for corridor or area analyses, but these are the exceptions rather than the rule. The overall state-of-practice with respect to truck travel modeling is very modest.

The two major hurdles to development of more sophisticated truck travel models are the general lack of data on freight and truck movement and the complexity of freight demand estimation and truck trip modeling. The lack of data reflects the historic focus of metropolitan transportation agencies on automobiles and passenger transit and the difficulty of collecting the data. Local transportation agencies have had no mandate or funding to deal with trucks, except as they affect downtown parking and loading zones. For the most part, truck travel has been viewed as a private-sector responsibility that is of concern to state agencies primarily for revenue, safety, and size and weight regulation.

The Intermodal Surface Transportation Efficiency Act of 1991 mandates greater attention to freight transportation and more private-sector involvement in the planning and programming of highway improvements; over time this will lead to a more sophisticated understanding of freight movement and truck travel, which will be reflected in better data collection programs and regional travel models. In the interim, however, current and reliable data on commodity movements and truck travel patterns at the metropolitan level are scarce. (At the national level there are good aggregate data on commodity and freight movement and sophisticated analytical models for economic policy issues such as size and weight regulation, but again, only limited data and modeling capability to analyze the impact of freight system capacity changes.)

The second hurdle is the complexity of freight movement and truck travel modeling relative to passenger and automobile travel modeling.

- Freight modeling lacks a definable common unit, such as a traveler, that can be used across all freight demand analyses. Freight

is measured and forecast variously in tons, units, and value, forcing transportation and logistics planners to develop separate (and usually incompatible) models by commodity and carrier.
- Freight does not aggregate well for travel demand and behavior modeling purposes, as can be done by using households or commuters for passenger transportation modeling.
- Freight mode choice modeling is complex and must often be modeled at the commodity, industry, and sometimes firm level to produce acceptable results.
- Freight trips, especially local truck pick-up and delivery trips, are often chained trips, with trucks making dozens of stops across a metropolitan area during an 8- to 10-hr work day. Such trips can be described and modeled individually (e.g., using routing and dispatching software), but the techniques for effectively handling thousands of chained trips within a regional model are not yet available. (This problem is common to activity-based passenger modeling as well.)
- Freight trips typically extend beyond the geographic scope of metropolitan transportation agencies. One area may see the container as it lands at a seaport, a second as it moves through on a rail car, and a third as it moves by truck from a rail terminal to a warehouse. Few agencies have the resources to track and represent such multimodal trips into regional travel models.

Overall, regional travel models are not well equipped to forecast changes in truck travel as a result of changes in highway capacity within metropolitan areas, except by treating trucks as automobiles. This is adequate to evaluate the impact of limited highway capacity changes, such as lane widenings, on general travel times, but the changes cannot be tied back to specific types of trucks, industries, or commodities. The models are not capable of anticipating the impact of economic demand management techniques, such as road pricing or emission pricing schemes, on trucks because the models do not incorporate shipper demand or motor carrier behavior models. Where the highway capacity changes studied are modest in scale and limited to a single definable corridor, the shortcomings of the models can be compensated for by direct interviews with industries and motor carriers. For larger projects in complex metropolitan areas, planners must develop truck trip tables or forego detailed analysis of the impacts of highway capacity on truck travel.

CONCLUSIONS AND RECOMMENDATIONS

In the short term changes in highway capacity are not likely to result in significant changes in truck travel. With a well-developed highway system in place, the demand for truck travel is determined prim by the overall level of economic activity in a metropolitan are the area's role in the national and global economy. Deregulation transportation industry and technological innovations outside ing have pushed down the cost of transportation relative to lab materials, making shippers less sensitive to changes in highw pacity at a metropolitan scale. Moreover, the business cycles of industries work to insulate trucks from the morning and evenin traffic periods, resulting in truck travel that is spread more across the day than is the case with automobile travel. This trucks less exposed to peak-period congestion and less sensi changes in highway capacity designed to facilitate or restric period travel. This pattern makes it unlikely that air quality and conservation goals for trucks can be achieved solely by manip highway capacity.

Internal economic pressures within the trucking industry may achieve what changes in highway capacity cannot: relative reductions in truck miles of travel, engine emissions, and energy consumption. Deregulation of the trucking industry has induced shippers to expand their use of trucking, but it has also triggered strong competitive pressures within the trucking industry to reduce costs and improve productivity. During the next decade trucking will carry more freight with fewer trucks and fewer truck miles of travel relative to the past decade and the years before deregulation. The productivity improvements will come in vehicle and engine design, vehicle and driver use, and administration. The effects of these improvements will be most pronounced in long-haul intercity truck traffic where freight can be shifted to rail and less pronounced in short-haul metropolitan distribution operations where rail is not, and will not be, a cost-effective competitor.

The public sector should take advantage of these internal economic pressures to accelerate the trucking industry's move toward more productive operations. Effective programs might include removal of physical and regulatory barriers within metropolitan areas that result in circuitous truck routes and excessive truck miles of travel, tax incentives to retire high-emission trucks, and training programs to introduce automated routing and dispatching programs to small trucking fleets as part of urban ITS programs. The great majority of trucking firms in metropolitan areas are in small fleets of 5 to 25 trucks; like many small businesses, they have the flexibility to innovate quickly, but seldom have the sophistication or resources to explore and transfer new concepts and new technologies. For these programs to be effective, they must be targeted and designed for specific industry and motor carrier groups, and they must involve the shippers who buy trucking services as well as the motor carriers who provide them. These efforts must be coupled with aggressive enforcement programs aimed at putting unsafe truck drivers and firms out of business.

Working against these programs will be long-term pressures on the trucking industry to increase truck miles of travel, absorbing much of the remaining capacity of today's highway system. The key forces will be continuing dispersion of business and housing across metropolitan areas, which will expand the service area that trucking firms must cover; changing land values, which will push warehouses and truck terminals toward the periphery of metropolitan areas; adoption of just-in-time manufacturing and retailing practices, which will generate more truck trips; and globalization of trade, which will produce growing demand for long, time-sensitive supply chains and distribution networks.

To address these forces, metropolitan areas must develop a more integrated approach to freight transportation planning. Basic research is needed to describe and forecast the following:

- Freight generation rates by industry and commodity that can be tied to specific land uses and industrial facilities. Which industries generate freight and how much?
- Trip patterns by industry and commodity across carriers. Where does the freight come from and where is it going? Who carries it and where is it transferred from one mode to another?

- Economic behavior of trucking firms. How do motor carriers make truck routing and dispatching decisions and terminal location decisions?
- Engine emissions and energy consumption by engine, body type, and duty cycle. Many more combinations of engines, body types, and duty cycles exist within the truck fleet than the passenger car and light truck fleets. What are the most prevalent combinations in urban areas and what are their emission patterns?

This basic research will not immediately produce models that forecast the impact of changes in highway capacity on truck travel, but it will provide planners and policy makers with a better understanding of the interrelationship of economic development, land use, freight transportation, and environmental quality. This understanding is necessary for informed decisions about the appropriateness and effectiveness of land use, tax, and regulatory policies.

Concurrent research is needed to develop more sophisticated regional travel models, particularly corridor-scale models, that can accommodate multiple truck trip tables and truck networks. However, focused models with the potential for practical application should be encouraged over comprehensive models because of the complexity of freight transportation.

NOTES

1. Using data from the National Truck Trip Information Survey (Blower and Pettis 1988), this study estimates that large trucks account for 79 percent of all truck travel (excluding travel by light trucks, such as pickups and panel trucks) within the 15 large urban areas that were surveyed.
2. Under the provisions of the Intermodal Surface Transportation Efficiency Act of 1991, about 155,000 mi of Interstate and other economically critical arterials will be designated as the National Highway System.
3. For the purposes of the study, a large truck was defined as having three or more axles and a gross vehicle weight rating of 26,000 lb or more. Truck counts and classifications were made from video tapes of traffic flows at 78 urban freeway sites across the three cities. Counts were made of two-axle, six-tire trucks, but not reported because the California legislature had specified a study of large, three-or-more-axle trucks. The distribution of two-axle, six-tire trucks was similar to the distribution of the large trucks.

4. This follow-on study used the same sampling, video-taping, and classification methodology as the *Urban Freeway Gridlock Study* (Grenzeback et al. 1988).
5. The average value of time for truck drivers is estimated to be approximately $20.00 per hour ($15.65 per hour for four-tire trucks, $21.54 per hour for six-tire trucks, $16.99 per hour for three- to four-axle trucks, and $19.63 per hour for combination trucks). The cost estimates, in 1990 dollars, include hourly wage rates, fringe benefits, an allowance for overtime, and adjustments for vehicle occupancy. American Trucking Associations officials have suggested that the cost of operating a truck may be as high as $60 per hour when union wages and depreciation of the tractor and trailer are taken into account. None of these estimates include the opportunity cost of time lost to receivers because of congestion delays.
6. Cambridge Systematics, Inc., estimates based on national and state input-output tables. See also *21st Century Trucking: Profiles of the Future* 1994, VI-3 and Figure VI-2. In this report, Mercer Management, a contributing author, estimates that transportation accounts for 6.4 percent of the 1992 U.S. gross domestic product (GDP). Total logistics costs, including warehousing, administration, and other inventory carrying costs are estimated to be 10.9 percent of GDP.
7. Data are available for eastbound truck crossings only; the Port Authority does not charge drivers traveling westbound across the Hudson River.
8. The federal Surface Transportation Assistance Act of 1982 (STAA) established a de facto interstate-standard truck by declaring that trucks meeting specified size and weight standards could operate without restriction on the national system of designated truck routes (i.e., Interstate highways, specified arterials, and access roads). The STAA effectively preempted the states' rights to regulate the size and weight of trucks in interstate commerce as long as those trucks operated on the Interstate and designated access routes. The net effect of the STAA and the economic pressures felt by motor carriers to improve the productivity of their drivers and tractors has been to push carriers toward larger capacity five-axle trucks or smaller, more maneuverable three-axle trucks, reducing the demand for midsize four-axle trucks. States still regulate the size and weight of trucks operating in intrastate commerce and may authorize the use of heavier or larger trucks within a state under special permit arrangements.
9. Cambridge Systematics, Inc., field interviews conducted for the Port Authority of New York and New Jersey and the California Department of Transportation under various projects, 1987 through 1990.
10. Estimates prepared by Dr. Paul O. Roberts of Transmode Consultants, Inc., for Cambridge Systematics, Inc., and reported in work by Cambridge Systematics, Inc. (1994, 3–7).
11. The intelligent transportation systems (ITS) commercial vehicle operations (CNO) programs involve automated clearance and verification of truck credentials (e.g., registration, operating authority, fuel tax permits, oversize-overweight permits), automated weighing (weigh-in-motion), and may eventually incorporate automated roadside safety inspection technology and on-board vehicle diagnostics and driver-fatigue monitoring systems. Most size, weight, and safety inspections are done on rural Interstates and state highways. ITS CVO systems will improve state productivity and minimize delays and congestion for motor carriers at weigh stations and ports-of-entry, but will have little impact on urban congestion and urban truck movements.
12. These estimates are drawn from *Incident Management*, a study of metropolitan traffic and highway incident management programs prepared for the Trucking Research Institute of the American Trucking Associations by Cambridge Systematics, Inc. (1990). The estimates are based on interviews with police and highway officials; case studies of traffic and incident management programs in Chicago, Fort Worth, Los Angeles, Minneapolis, and New York; incident management program records; and available studies, including *Incident Characteristics, Frequency, and Duration on a High Volume Urban Freeway (I-10, Los Angeles)* (Giuliano 1988).
13. For a summary of the literature, see work by Campbell et al. (1994) and Hall and Pendleton (1989). Hall and Pendleton discuss urban freeway accident rates and congestion in Appendix C (pp. 22, 23) of their study.

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ABBREVIATIONS

BTS	Bureau of Transportation Statistics
FHWA	Federal Highway Administration

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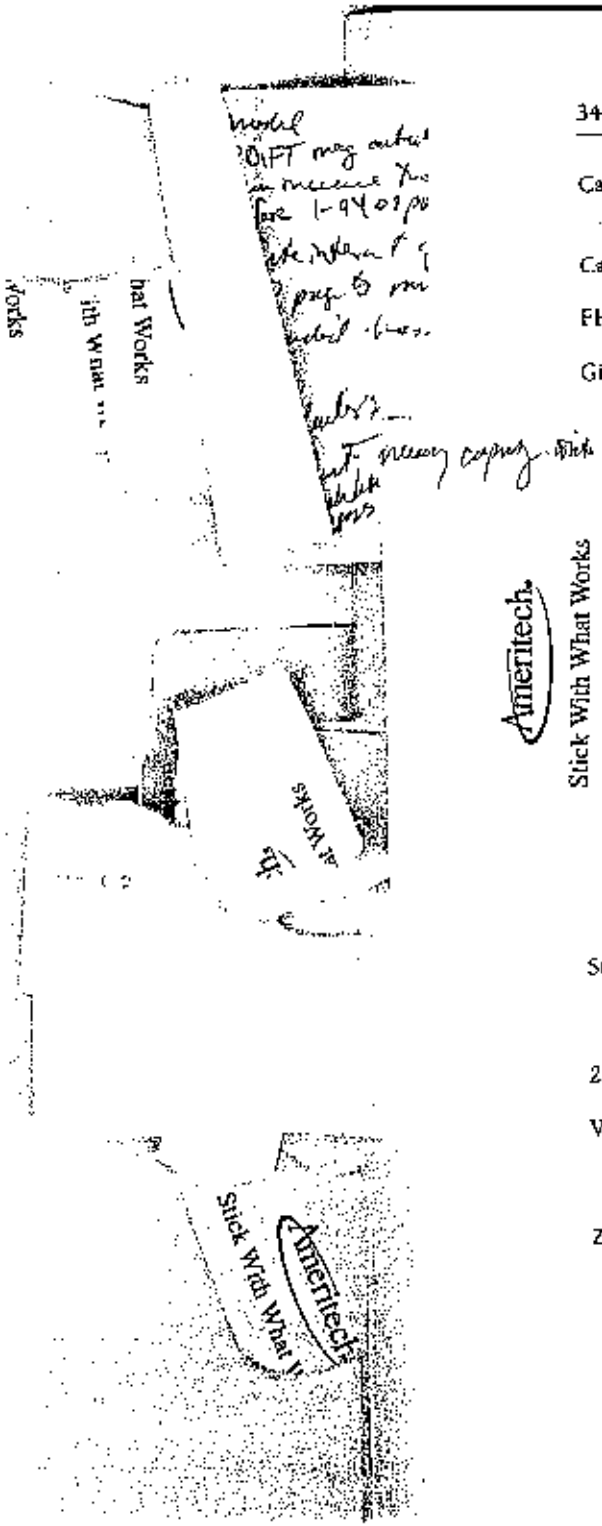

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