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Report of the Strategic Planning Process

Volume 1

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Quality Life Through Good Roads

Road Commission for Oakland County

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ROAD COMMISSION for OAKLAND COUNTY

REPORT

OF THE

ROAD COMMISSION FOR OAKLAND COUNTY

STRATEGIC PLANNING PROCESS

1990

VOLUME I

Prepared By:
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PREFACE

This is the third report of the Strategic Planning Process of the Road Commission for Oakland County. That process, begun in 1985, focuses on establishing an on-going discussion about road requirements and service responses with cities, villages, and townships in Oakland County.

This report summarizes discussions held in late 1989 and early 1990. Those discussions continued the focus in previous reports on growth trends, road needs, and responsiveness of Road Commission services to the needs of the community, but they also sought information regarding ways to adapt Road Commission activities to the changes that are occurring throughout the county.

As a consequence, this report updates information related to strategies developed in previous reports. The emphasis on prioritizing needs, seeking new funding, and creating a service perspective has been retained and updated. To these updated strategies have been added four new strategic areas of needs for the 1990's. These areas are: improvement and preservation of gravel roads, improved drainage, innovative traffic management, and preservation and expansion of the paved road network.

This report also outlines several improved courses of action designed to address needs. Procedures to more fully integrate strategic concerns into ongoing Road Commission activities and financial planning have been identified. Making services more adaptive to the ongoing changes in the county have also received increased emphasis. Better communication and cooperation with local communities during all phases of Road Commission activities is also stressed. The application of new technologies and methods to more cost-effectively meet needs is a major strategy developed in this report.

Of equal importance, this report documents the value of the strategic planning process to the residents of Oakland County as well as to the Road Commission. Effective lines of communication, necessary for meaningful co-ordinated action have been opened and strengthened. The conversation about good roads has been broadened to include new participants and points of view.

Good roads have become not only a topic of daily conversation among Oakland County residents, but a priority for action as well. The link between good roads and the quality of life of Oakland County residents has been established.

With varied points of view have come different alternatives which stimulate new ways of addressing road needs. Exploration of innovation in technologies, funding, and service delivery have become major Road Commission activities.

Oakland County is undergoing a revolutionary transformation into a new type of American community. Where we live, play, and work is being redefined daily. The traditional concepts of "city" and "country" are taking on new meanings. Travel patterns characteristic of a suburban Oakland County no longer prevail. Today, travel is diffuse and ever-changing, requiring constant monitoring and adaptation of road services to the changes occurring throughout the county.

While this report systematically prioritizes all of the county road needs, it is not a plan in the traditional sense. The transformation occurring throughout the county requires a more dynamic approach which stresses adaptation to change. The reader is encouraged to interpret this report as pointing the direction for the journey into the future which we are collectively creating today. It signals what must be done to insure that good roads are there to accommodate the good life we all seek in that future.

I would like to acknowledge with deep appreciation the contribution of the officials of the cities, villages and townships of Oakland County to this report. Literally hundreds of these dedicated public servants discussed with the Road Commission team, in a very open and candid way, the goals of their communities and what they expected and what they hoped the Road Commission would provide in a continuing and cooperative alliance to achieve those goals. It is clear that Oakland County is a great place to live because of the dedication and commitment of these leaders.

The Road Commission team which met with the local officials consisted of the undersigned and Brent Bair, Deputy Managing Director, James C. Barbaresso, Director of Planning & Development, and Robert D. Blanchard, Systems Planning Coordinator. Dr. Blanchard is the principal author of the report. He received valuable contributions from Robert Slattery and Mathew Gaberty, of the P&D Department, Lee Liston of the Engineering Department, and the staff of the Traffic Improvement Association of Oakland County. Finally, Barbara Bowdell did all the work in preparing and publishing this report. My gratitude and appreciation to all for significant and important contributions to the story of Oakland County and the possibilities for its future.

John L. Grubba
Managing Director

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INTRODUCTION

A REVIEW OF ROAD COMMISSION STRATEGIC PLANNING

In 1985 the Road Commission for Oakland County began a process intended to identify the strategic road needs of the citizens of Oakland County and to formulate strategies to meet those needs. The process was developed around new lines of communication with every community in the county.

This process took the form of conversations with local officials regarding the community's needs, adequacy of Road commission responses to those needs, and the community's needs in the future.

From these conversations emerged a view that there was much to do regarding adaptation of road services to community needs. A solid picture of future needs and their relative importance was developed as well.

This improved assessment of the environment in which the county road system operates was an immediate asset to the internal assessments being conducted regarding Road Commission services and strategies.

In 1988, the strategic planning conversation was continued with the communities. The objectives of this round of conversations were to report progress on community requests as well as to solicit any changes at the community level of which the Road Commission should be aware.

The first two series of meetings with communities generated a tremendous amount of information that would provide the basis for the strategic goals of the organization. From those meetings evolved an overarching vision, a mission,

and a set of goals which would make the Road Commission more responsive to local community needs as well as better able to meet the multi-million dollar backlog of road needs in the county.

During 1988 and 1989 the Road Commission steadily moved toward a more complete integration of community needs into its ongoing activities. A service strategy, which emphasized the citizens of Oakland County as customers seeking road services, was developed. Steps were taken to more fully integrate strategic concerns into the short range budgeting and longer range financial planning of the Road Commission.

In October, 1989, the strategic planning conversation continued as a third round of meetings with community officials was conducted. While the individual needs of the communities of Oakland County remain varied, four major areas of concern emerged from the 1989 discussions:

1. The condition of gravel roads.
2. The safety, capacity and condition of paved roads.
3. Increased emphasis on traffic management.
4. Improvement of roadway drainage systems.

This report documents the findings of the 1989-90 discussions and outlines courses of action to be explored and implemented if found beneficial.

MAJOR FINDINGS

GROWTH IS CONTINUING

In those communities which had capacity to grow, growth has continued since 1988. Further, all sectors - residential, commercial, and office - are reported to be strong. Many local officials did not project any significant slowing of the growth trends in the near future.

Traffic will continue to be a major concern of local communities in the near future. Continuing growth and limited resources to improve roads to accommodate that growth will insure that.

Further, while individual development or residential location decisions may have only a marginal impact on the road system, the collective impact is reaching crisis proportions. New development is occurring in areas where the roadway network was designed and developed for low density travel. Gravel roads, especially, have been severely impacted by new growth. Many two lane paved roads, suitable for rural traffic volumes, are now carrying volumes characteristic of city environments.

An entirely new pattern of movement was documented in 1988. That pattern clearly showed that travel between communities in the county had supplanted travel from these communities to the City of Detroit. Traffic had become largely intra-county. The growth that continues to occur in the county and which is projected to continue in the near future guarantees that this new traffic pattern will continue to dominate travel in the county.

The year 1989 also saw completion of the I-696/I-96 freeway across the county. This new transportation facility has already had a major impact on traffic patterns in south Oakland County. It will undoubtedly have a profound effect on growth in southwestern portions of the county, while also creating redevelopment possibilities in the communities in southeast Oakland County.

ROAD SERVICES MUST BE ADAPTIVE

Growth not only results in requirements for more service, but often requirements for new services. Road pavings reduce grading requirements while adding new requirements for pavement maintenance. Paving often involves curbing, guttering, drain enclosures, and landscaping which require different maintenance activities.

Road services must be adaptive to changes brought on by development. At least two of the current maintenance districts reflect adaptive responses to changing maintenance needs. The Southfield and Troy maintenance districts have unique and distinctive equipment and

activities geared to their urban settings. Several instances were reported in the 1989 meetings where existing maintenance services supplied to communities were no longer responsive to new needs.

Preservation of the existing road network is a primary concern in stable communities in the southern portion of the county. Community emphasis is placed on surface repair, drainage, and aesthetic considerations such as mowing and litter pick-up. Improved traffic management is also a high priority in these communities.

Effectively linking transportation planning and improvements to community planning and growth management efforts is a high priority in growing areas. Many of the growing communities are seeking transportation strategies to "get ahead" of development or strategies for early mitigation of the impacts of growth. Most communities expressed a need for more and better traffic information and assistance in interpreting that information for planning purposes. Selective road paving, capacity improvements and improved traffic management techniques figure prominently in local strategies.

GROWTH MANAGEMENT IS AN IMPORTANT ISSUE

Many communities in the county are currently updating or preparing master plans. Many of these communities stress management of growth as a central theme.

Transportation improvements are a major element of these plans and strategies. Several growing communities have enacted ordinances which tie developmental alternatives to transportation impacts, using such criteria as access to roads, density credits, and other impact measures. A consortium of several Oakland County communities has been formed to explore and develop growth management strategies applicable at the local level.

Recent proposals favoring management of development at the regional level has generated differing perspectives regarding road funding, allocation of resources, and decision-making prerogatives. Land use and development decision-making is an historical function of local government, yet the impacts of these decisions usually transcend local jurisdiction boundaries. The allocation of resources to road improvements to accommodate new growth heightens the competition for funds that stable communities seek to preserve their road systems.

These differing points of view on the management of growth are often held by adjoining communities, and transportation improvements are often at the core of the conflict. Alternatives favored by one perspective are often unacceptable to the opposing point of view, making consensus on road improvement alternatives difficult to achieve.

While the Road Commission has no direct involvement in this issue, it is of strategic importance to the Road Commission. The Road Commission is committed to assisting local communities in achieving their growth and transportation goals and is called upon often to provide road improvements in response to growth.

THERE ARE MUTUALLY IMPORTANT STRATEGIC CONCERNS

While the needs of stable communities differ from growing communities and the needs of urban areas differ from rural areas, the 1989-90 strategic discussions have identified five major areas of mutually important concerns. These areas are:

- The condition of gravel roads.
- The safety, capacity and condition of paved roads.
- Increased emphasis on traffic management.
- Improved road drainage systems.
- Increased funding for road improvements.

Gravel roads, long considered a "rural problem", are rapidly becoming a concern in growing areas of the county. Many of the communities served by gravel roads have experienced accelerated development in recent

years. Dramatic increases in traffic volumes seriously threaten the structural integrity of these roads. Maintenance cycles once adequate on these roads are now inadequate.

Local communities are almost unanimous regarding preservation of the paved road system in the county. Increased traffic, increasing age, and limited funding combine to reduce the serviceability of paved county roads. Preservation of existing pavements must be balanced with requirements to add new laneage to relieve congestion throughout the county.

Improved traffic management systems is often a desirable alternative to capacity improvements in many locations. Where rights of way are narrow and setbacks to structures are shallow, improved traffic management can provide added road capacity without major community disruption and relocation. New technologies are becoming available which can greatly improve the effectiveness of traffic management systems. Technologies, such as video monitoring of traffic and integrated computer controlled timing, are rapidly becoming realistic possibilities for applications on local road systems.

Inadequate drainage is a widespread concern in the county, both in rural and urban areas. Improved drainage is strategic in that poor drainage is not only a safety hazard during freeze/thaw cycles, but also threatens the integrity of the road. Poor drainage is a major source of pavement cracking, spawling, and heaving due to freezing. Solid base and sub-base layers are essential to smooth pavement surfaces.

Funding for road improvements is a chronic and on-going concern. The Road Commission Strategic Planning process identified over $940 million in backlogged needs in 1988. During the 1989-90 discussions, this figure has risen to over $1 billion.

WHAT NEEDS TO BE DONE

INTEGRATE COMMUNITY CONCERNS INTO ROAD COMMISSION OPERATIONS

Since 1985 the Road Commission has developed processes to more fully integrate community concerns into the Road Improvement Program, Road Commission operations, and long range plans. Since that time, many short term community concerns and some longer term needs have been addressed. Nevertheless, considerably more progress must be made to integrate strategic planning concerns into on-going activities.

DEVELOP RESPONSIVE SERVICE ATTITUDES AND STRATEGIES

A major outcome of the previous strategic planning discussions was the development of a service perspective focused on meeting the transportation needs of the citizens of Oakland County. A major policy committing the Road Commission to assisting local communities in achieving their developmental and transportation goals was a direct outcome of that perspective. Internal strategic planning efforts have sought, since 1988, to instill this service perspective in all Road Commission activities.

The 1989-90 strategic discussions clearly indicated that this shift in perspective has been effective. The discussions also indicated that service requirements change as growth occurs - that service strategies must be dynamic over time.

CONTINUE EFFORTS TO GENERATE NEW REVENUES FOR ROAD IMPROVEMENTS

Based upon findings of the strategic planning process, the Road Commission championed legislation establishing the Transportation Economic Development Fund (TEDF) for funding road improvements in support of economic development. While this legislation has resulted in significant increases in revenues for road improvements in the county, it is but part of an integrated funding package designed to meet the strategic road needs of the county.

The collection of fuel taxes as a measure of use of roads has historically been a major strength of road funding. This "user fee" concept should be maintained as the primary funding mechanism for road maintenance and improvements. Several important factors have developed, however, which make the traditional relationship of gallons consumed to miles travelled less reflective of road system usage.

First, vehicles today are increasingly more fuel efficient. Thus motorists drive more miles on the same amount of fuel. While the use of the road system has increased, the revenues generated from the fuel consumed have not increased proportionally. The traditional linkage between fuel consumption and fees paid has been altered significantly. There is a requirement to adjust the fuel consumption fee to adequately reflect the roadway usage.

Second, there is growing realization that agencies responsible for provision of roads and road services do not directly benefit from increased development, but do incur costs associated with mitigating impacts due to development. Further, benefits are derived from good roads by other than those who drive on the road system. These beneficiaries of good roads should assist in financing good roads.

The following sections of this volume explore the topics outlined above in detail. They draw more fully on the information gathered from the strategic discussions and outline alternatives in response to what was learned in those discussions.

COUNTY ROAD NEEDS UPDATE

An integral part of the Road Commission's strategic planning process is to obtain information from community officials about community development, Road Commission service requirements, road improvement needs, and local initiatives. The Road Commission applied two techniques to obtain this information:

1. Meetings were held with community officials in nearly every city, village and township in Oakland County. A case study format was used to report the information obtained in these meetings. A complete set of these case studies is included in Appendix "A" in Volume II. Appendix "B" contains a summary of the requests and concerns that communities expressed during our meetings with them.

2. A strategic planning questionnaire was distributed to all communities. A copy of the survey form is contained in Appendix "C". The survey results for all communities that responded are shown in Appendix "D".

The information received from both of these sources forms the basis for the 1990 Report of the Strategic Planning Process. The following sections summarize the results of the strategic planning survey of communities and the meetings with those communities.

LOCAL PERSPECTIVES ON GROWTH

HISTORICAL OVERVIEW

The Road Commission initiated its Strategic Planning Process in 1985. A key objective in those initial meetings was to get an accurate assessment of the growth occurring in the county and the impact which that growth had on the road system.

The growth picture prior to 1984 was not an optimistic one. The county was recovering from the recession years of the early 1980's, and projections of growth were guarded at best. In 1985, however, many communities were witnessing the beginning of a major development boom.

In 1988, when the second round of strategic discussions occurred, the boom was in full swing. Growth was occurring throughout the county at an unprecedented rate. Local officials did not see any slowing of growth and development in the immediate future.

A major topic of discussion for this third round of meetings was, then, whether growth was continuing or slowing, and whether the perspectives on growth at the local level were shifting.

CURRENT PICTURE: GROWING COMMUNITIES

Those communities which had capacity to grow in 1988 reported that growth is continuing at the present time. Development in all sectors - commercial, residential, and office - were reported to be strong. While some local officials did report a slight slowing of building permits in 1989, few foresaw any major slowing of growth and development in the near term.

Some areas, most notably along the northern and western boundaries of the county, are experiencing growth greater than anticipated in 1988. For example, communities in north Oakland County attributed a great deal of their growth to the industrial and office development taking place within a short commute distance away, most notably along I-75 in Auburn Hills and Troy. These areas reported that growth is stimulated not only from the southeast, but from the southwest (Ann Arbor) and the north (Flint) as well. Many of these communities also reported a significant increase in traffic due to recreational opportunities in the communities.

In many of these growing communities, especially near the periphery of the urban area, the adequacy of water and sewer systems may be a deterrent to future growth. The recent improvement of these services in

Novi and the Rochester area demonstrates that this perspective is valid. These communities are projecting major growth in the near future as a result of improved sewer and water services.

The completion of the I-696/I-96 corridor also figures prominently in the growth potential of the southwestern part of the County, since this new freeway significantly reduces travel time to this area from other parts of southern Oakland County. Likewise, recent improvements to I-75 may stimulate added development in northern Oakland County.

CURRENT PICTURE: STABLE COMMUNITIES

Many of the stable communities of the county experienced growth at an earlier period and have little vacant land remaining for development. They do not, however, constitute a homogeneous grouping. Many of the stable communities are pursuing aggressive redevelopment programs, while others are seeking to preserve the existing community because of unique characteristics. Several of the villages and smaller cities, especially, fall into this latter category.

While the stable communities are not generating significant increases in traffic from development, they do experience major impacts from development. Many stable communities have experienced a dramatic increase in "through traffic" - traffic generated in surrounding growth areas that is passing through the community for destinations elsewhere.

Many of these "through traffic" communities have developed, at an earlier time, at the intersection of major roads or astride major transportation corridors such as state trunklines or county primary roads. Conditions in these locations are often worsened by the narrow rights of way and shallow setback requirements common in the past. These conditions often preclude major road improvements without serious demolition and relocation in the community.

This traffic pattern has prompted many of the smaller stable communities to advocate by-passes around the community or strategies designed to channel traffic along the boundaries of the community. Still others seek improved traffic management technologies and techniques to more adequately channel and manage traffic in the community.

REACTIONS TO GROWTH AND TRAFFIC

Given the sustained growth that has occurred in the county since 1988, this round of strategic discussions sought to document any changes in perceptions or strategies on the part of local officials regarding future growth. Specifically, since the Road Commission is committed to assisting the local communities in achieving their development and transportation goals, any shifts in perspective regarding growth would be important to Road Commission services and planning.

Perspectives on growth and its management differ markedly between stable and growing communities. Stable communities, in large measure, favor growth strategies that maximize utilization of existing public infrastructure rather than the extension of infrastructure into new areas. They see building new infrastructure as siphoning off scarce resources that could be devoted to maintaining the existing infrastructure. Without these needed funds, the previous investments made in infrastructure would be jeopardized.

Some local officials who favor this growth management perspective further see the new growth occurring in the county as relocation rather than from in-migration. New growth is seen as largely at the expense of the more stable communities.

Given the nature of development and road configurations in the stable communities, traffic mitigation strategies most often focus on traffic management and application of new technologies for traffic management rather than capacity improvements. Maintenance of existing roadways, including aesthetic maintenance, is a high priority in these communities.

Growing communities, on the other hand, are concerned with developing the infrastructure necessary to accommodate the growing traffic. Planning for growth in advance of growth is a major activity in many of these communities. Capacity improvements, made possible by wider rights of way and deeper setbacks, have high priority in many of these communities. In growing rural communities, providing a basic network of paved roads offers a possible solution.

These growing communities are also concerned with the subsidization issue in funding infrastructure. Many believe that they assisted the stable communities in the past with building the required infrastructure during their growth period and that it is now time for the growing communities to receive infrastructure improvements. Many also believe that there was no corresponding concern for the donor areas when the now established urban areas were growing in the past.

Many of the growing communities that are actively seeking additional growth favor a market approach to development. They are of the opinion that people and businesses have always located where it is advantageous for them to locate, and that this market mechanism should be permitted to operate freely. Many doubt that any centralized policy which would seek to direct growth into selected areas would be effective. They perceive growth and growth management as a local prerogative. In response, several communities have formed a consortium for analyzing growth and developing strategies for dealing with growth.

INTER-COMMUNITY CONFLICTS REGARDING GROWTH

Many occurrences of conflicting objectives regarding growth and its management were found during this round of strategic planning discussions. These conflicts are most pronounced in areas where growing communities border stable communities, especially in those cases where the stable community is seeking to preserve its unique character and sees growth as detrimental to that goal.

Traffic is usually at the core of this conflict. New development generates new traffic patterns and volumes which impact both the growing and stable communities. Solutions favored by growth communities often worsen the traffic problems of the stable community.

THE NO-GROWTH PERSPECTIVE

Strategic discussions with local officials revealed that there is growing concern with continued growth by some residents and that while not wide-spread, a no-growth perspective is growing in some areas of the county. This perspective, in most cases, appears to be focused on the fundamental reasons for the location decision which growth jeopardizes. Local officials reported that many seek to stop growth because it destroys the character of the community - a primary reason why residents and businesses settled in the community initially.

STRATEGIC IMPLICATIONS

Projections of local officials regarding growth in the near future suggest that traffic will continue to increase on the county road system.

Growth management, in all likelihood, will continue to be a local prerogative. It is anticipated, however, that new growth management tools currently being developed will become available and increasingly utilized by local officials. The Road Commission has an opportunity to assist in this regard by supplying local communities with up-to-date transportation information useful in land use and transportation decision-making.

Conflicts between communities regarding growth strategies and response to traffic will continue. An on-going forum, perhaps modeled along the lines of traffic management associations representing functional areas of the county, is needed in which these conflicts can be discussed and alternative solutions generated. In this regard, the Road Commission is an active participant in the traffic demand management activities on the Traffic Improvement Association of Oakland County.

Service requirements of the stable and growing communities differ, and Road Commission services must be tailored to be responsive to these differences. Traffic management solutions especially well suited to assisting stable communities should be aggressively pursued by the Road Commission. Advanced traffic signal and traffic control systems should be emphasized as potential solutions in these areas. Maintenance activities in these communities should be geared to preserving and enhancing the road network, including aesthetic maintenance.

Growing communities change in terms of the services that they require. Several instances were reported where growth has prompted requests for new or different services not easily accommodated by the Road Commission maintenance district servicing the communities. The Road Commission should undertake an assessment of the service needs of the local communities by service district to determine if realignment of equipment and services is warranted.

The newly completed I-696/I-96 freeway will produce major changes in the patterns of growth and traffic along the corridor. The Road Commission should monitor this area carefully for these changes and formulate courses of action in response to the changes.

ROAD COMMISSION SERVICE REQUIREMENTS

Road Commission service requirements for the next decade were derived from two sources:

1. A strategic planning survey of communities.

2. The strategic planning meetings with communities.

The results of each of these activities are discussed below.

1990 STRATEGIC PLANNING SURVEY OF COMMUNITIES

A survey of community service needs was conducted as part of the strategic planning process in 1990. This survey was designed to derive quantifiable measures of community perceptions of their needs and Road Commission effectiveness in meeting those needs. Response categories were selected to cover the broad spectrum of services provided by the Road Commission.

Surveys were sent to 58 communities and responses were received from 54 for an overall response rate of 93.10%. The following table shows the response rates by community type.

SURVEY RESPONSE RATES BY COMMUNITY TYPE

	CITIES	VILLAGES	TOWNSHIPS	OVERALL
Surveys Sent	29	10	19	58
# Not Responding	0	2	2	4
# Responding	29	8	17	54
Response Rate	**100.00%**	**80.00%**	**89.47%**	**93.10%**

The response rate for cities increased from 72.41% in 1988 to 100.00% in 1989. The response rate for villages increased from 60% to 80% while the rate for townships remained stable at 89.47%. These increases may reflect a feeling that the Road Commission is willing to listen to the needs of the communities and to be responsive to those needs.

As in previous years, the survey consisted of two parts. The first part asked the communities to rate their need for Road Commission services. The second part asked the communities to rate the effectiveness of the Road Commission in providing those services. For each part a rating scale from 0 to 5 was used, with 0 indicating a very low need or effectiveness and 5 indicating a very high need or effectiveness. A response of 3 indicated a moderate rating.

To graphically display the information received a matrix was constructed with service needs on one axis and service effectiveness on the other. A three-by-three matrix format was adopted for this survey. This change in format allows for greater sensitivity and accuracy in displaying community service needs and the effectiveness of the Road Commission in meeting those needs.

The responses to the survey were summarized by community type - - city, village or township - - and needs were cross tabulated with effectiveness. The result of this procedure determined the placement of the service category in the matrix. Figures 1 through 3 show the results of the analysis by community type. Matrices for each of the responding communities are included in Appendix "D" of Volume II of this report.

Certain strategic considerations can be drawn from the survey matrices. When the need for a service is ranked higher than the effectiveness there is a need to improve the service. When the effectiveness is ranked higher than the need, the service should be reevaluated to determine if the level of service provided should be reduced. Resources involved in providing the service may be more effectively applied to areas of greater need. In those areas where the service need and effectiveness are ranked equally as either moderate or high, the level of service should be maintained or upgraded as necessary to keep pace with the need. When both the need and effectiveness are ranked low, the needs and services should be evaluated on a case-by-case basis and the services could be reduced or curtailed where necessary.

It is important to discuss any changes in service levels, particularly any reduction or curtailment, with the affected communities prior to making a change.

FIGURE 1

	LOW NEED	MODERATE NEED	HIGH NEED
GOOD SERVICE			
FAIR SERVICE	GUARDRAIL MAINT. GUARDRAIL UPGR/INST GRADING GRAVEL SURF PATCHING GRAVEL SURF CONTROLLING DUST PAINT/MAINT BRIDGES	SIGN MAINTENANCE SIGN UPGR/INSTALL PAVEMENT MARKING SIGNAL MAINT/OPT SIGNAL MOD/INSTALL POTHOLE PATCHING PLANT MIX PATCHING GRADING GRAV SHLDRS RECOND GRAV SHLDRS MAINTAIN DRAIN SYS. CLEAN/SHAPE DITCHES	SNOW/ICE CNTRL- MAIN
POOR SERVICE	SNOW/ICE CNTRL-SUBS CONTROLLING EROSION	JOINT/CRACK FILLING BASE REPAIRING PAVING GRAV SHLDRS CURB SWEEPING CUT/SPRAY BRUSH TREE TRIMMING CLEAR VISION MOWING AESTHETIC MOWING LANDSCAPING PICKING UP LITTER	

NEED

SUMMARY OF ALL SERVICES -- CITIES

FIGURE 2

SERVICE	LOW NEED	MODERATE NEED	HIGH NEED
GOOD			
FAIR	GUARDRAIL MAINT. GUARDRAIL UPGR/INST CLEAR VISION MOWING PAINT/MAINT BRIDGES CONTROLLING EROSION	SIGN MAINTENANCE SIGN UPGR/INSTALL PAVEMENT MARKING SIGNAL MAINT/OPT SIGNAL MOD/INSTALL POTHOLE PATCHING PLANT MIX PATCHING JOINT/CRACK FILLING BASE REPAIRING PATCHING GRAVEL SURF GRADING GRAV SHLDRS RECOND GRAV SHLDRS MAINTAIN DRAIN SYS. CUT/SPRAY BRUSH TREE TRIMMING SNOW/ICE CNTRL- MAIN CLEAN/SHAPE DITCHES CONTROLLING DUST LANDSCAPING	
POOR	CURB SWEEPING SNOW/ICE CNTRL-SUBS	GRADING GRAVEL SURF PAVING GRAV SHLDRS AESTHETIC MOWING PICKING UP LITTER	

NEED

SUMMARY OF ALL SERVICES -- VILLAGES

FIGURE 3

SERVICE	LOW NEED	MODERATE NEED	HIGH NEED
GOOD SERVICE			
FAIR SERVICE	GUARDRAIL MAINT. GUARDRAIL UPGR/INST SIGNAL MAINT/OPT SIGNAL MOD/INSTALL CURB SWEEPING PAINT/MAINT BRIDGES LANDSCAPING	SIGN MAINTENANCE SIGN UPGR/INSTALL PAVEMENT MARKING POTHOLE PATCHING PLANT MIX PATCHING JOINT/CRACK FILLING BASE REPAIRING GRADING GRAVEL SURF PATCHING GRAVEL SURF GRADING GRAV SHLDRS PAVING GRAV SHLDRS RECOND GRAV SHLDRS CUT/SPRAY BRUSH TREE TRIMMING SNOW/ICE CNTRL- MAIN SNOW/ICE CNTRL-SUBS CLEAN/SHAPE DITCHES CLEAR VISION MOWING CONTROLLING EROSION	MAINTAIN DRAIN SYS. CONTROLLING DUST
POOR SERVICE		AESTHETIC MOWING PICKING UP LITTER	

NEED

SUMMARY OF ALL SERVICES -- TOWNSHIPS

According to Figures 1 through 3, no Road Commission service, when aggregated by community type, was rated as being highly effective. Most services were rated as being moderately effective, while a few services were rated as being of low effectiveness. Only one service - litter pick-up - was rated as ineffective across all community types. A greater number of services were rated as being ineffective by the cities than by villages and townships.

Of special concern are those instances where the need is identified as high and effectiveness is rated lower. In cities, this mismatch occurs in controlling snow and ice on main roads. Paved road maintenance and aesthetic maintenance services were rated as moderate needs for cities while Road Commission effectiveness was rated low. In the villages, signal maintenance, optimization, modernization, and installation and litter pickup fall into this category. In the townships, maintenance of drainage systems, dust control, and aesthetic maintenance services do not meet the needs.

EVALUATION OF PRIORITY SERVICES

Of the 54 communities responding to the needs survey, 46 communities ranked the top five priority service needs of the community. Snow and ice control on main roads ranked highest in terms of community need with 19 communities (41.3%) identifying it at as priority. In order of priority, maintenance of drainage systems (14 communities), maintenance of signals (12 communities), grading of gravel roads (11 communities), pothole patching (10 communities), and aesthetic mowing (10 communities) rounded out the top six priorities of all communities in the county.

Cities, villages, and townships, however, differ considerably in their respective priorities. The cities, for example, rated snow and ice control on main roads (41.4%), aesthetic mowing (31%), signal maintenance (27.6%), pothole patching (24.1%), and curb sweeping (24.1%) as their top priority services.

The villages identified sign maintenance (60%), signal maintenance (60%), and signal modernization (60%) as their top three priorities.

Three-quarters of the townships identified grading of gravel roads, followed by maintenance of drainage systems, and controlling dust as their top priorities.

From these results, coupled with other observations during the strategic planning discussions, have come four major areas of strategic concern discussed in this volume - gravel roads, paved roads, traffic management, and drainage system maintenance.

STRATEGIC IMPLICATIONS

The survey of services provides an important insight into the service needs of the community and into the effectiveness of the Road Commission in meeting needs. In most instances, the surveys corroborate the discussions with local officials. The surveys, with additional refinement to insure compatibility with prior years for comparison purposes, should be continued as part of the strategic planning process.

Survey results should also be prepared and disseminated throughout the Road Commission to those responsible for providing services to the community. The results, properly prepared and presented, can be a fundamental resource for training, goal setting, and departmental planning in delivering road services to communities.

STRATEGIC PLANNING MEETINGS WITH COMMUNITIES

Almost 1,500 requests resulted from the meetings held between Road Commission staff and local community officials. These requests were classified into the following general categories:

1. Engineering services, including road improvement requests and concerns regarding engineering administration.

2. Road maintenance services.
3. Traffic-Safety services.
4. Administrative services including financial services and planning services.

A complete listing of the requests is included in the Appendix "B", Volume II of this report. Tables 1A through 1D provide a summary of these requests broken down by townships and cities/villages.

Patterns in the requests made by the community officials are explored below.

ENGINEERING SERVICES:

As in the past, cities and villages dominated the requests for various types of road improvements with the exception of road pavings and gravel road upgrading. The most frequently requested improvement types were intersection improvements and safety improvements. Other dominant improvement types requested, especially by cities and villages, included drainage improvements, road resurfacing, and capacity improvements.

Township requests concentrated primarily on intersection and safety improvements, road relocations and by-passes, and gravel road paving. These requests reflect a concern for improved access in rural areas. Many of the rural communities expressed the need for a basic network of paved roads. However, most communities would prefer upgraded gravel roads over additional paving beyond the basic paved road network. Drainage and road preservation also appear to be a priority.

MAINTENANCE SERVICES

Maintenance service requests from the communities revealed a number of patterns. As expected, township officials expressed interest in gravel road maintenance with considerable emphasis on road drainage systems. Cities and villages focused on paved road maintenance services, such as pothole patching and drainage maintenance, and reiterated their desire to improve aesthetic maintenance services.

TABLE 1A

SUMMARY OF COMMUNITY REQUESTS BY COMMUNITY TYPE

ISSUE OR CONCERN	CITY AND VILLAGE TOTALS	TOWNSHIP TOTALS	GRAND TOTAL
ENGINEERING SERVICES			
ROAD IMPROVEMENTS:			
. Improve Intersections	32	15	47
. Safety Improvements	24	18	42
. Capacity Improvements	24	10	34
. Road Resurfacing	24	12	36
. Drainage Improvements	23	12	35
. Road Relocations/By-Passes/Extensions	13	14	27
. Road Pavings	7	13	20
. Road Reconstruction	17	4	21
. Shoulder/Curb Improvements	17	8	25
. Improve Freeway System Access	12	5	17
. Improve Roadway Aesthetics	24	4	28
. Bridge Repair/Replacement/Maintenance	10	4	14
. Upgrade Gravel Roads	1	10	11
. Non-Motorized Facilities	5	2	7
. Provide Access Control	4	3	7
. Base Improvements	7	7	14
. Approach Paving	1	6	7
ENGINEERING ADMINISTRATION:			
. Improve Flexibility of Standards	4	8	12
. Reduce Engineering Costs on Small Projects	2	4	6
. Improve Project Admin., Inspection, Mgmt.	2	4	6
. Get Local Input in Early Stages of Project Engineering	12	7	19
. Allow Communities to Administer Projects	1	2	3
SUB-TOTAL ENGINEERING SERVICES CONCERNS:	**266**	**172**	**438**

TABLE 1B

SUMMARY OF COMMUNITY REQUESTS BY COMMUNITY TYPE

ISSUE OR CONCERN	CITY AND VILLAGE TOTALS	TOWNSHIP TOTALS	GRAND TOTAL
MAINTENANCE SERVICES			
GRAVEL ROAD MAINTENANCE:			
. Increased Gradings	4	15	19
. Increased Chloriding	3	14	17
. Improve Drainage Maintenance	5	15	20
. Increased Re-gravelings	5	14	19
. Base Repair	2	11	13
PAVED ROAD MAINTENANCE:			
. Improve Surface Patching	24	8	32
. Improve Drainage Maintenance	24	13	37
. Increased Joint & Crack Sealing	21	2	23
. Improve Shoulder Maintenance	14	4	18
SEASONAL MAINTENANCE:			
. Increase Number of Mowings	14	2	16
. Improve Winter Maintenance on Primary Roads	15	5	20
. Cut/Spray Brush	10	6	16
. Improve Winter Maintenance on Secondaries and in Subdivisions	0	7	7
. Clear Vision Mowing/Tree Trimming	11	10	21
AESTHETIC MAINTENANCE:			
. Litter Pick-Up	30	9	39
. Aesthetic Mowing	24	5	29
. Curb Sweeping	22	4	26
MAINTENANCE ADMINISTRATION:			
. Improve Service on State Trunklines	20	7	27
. Improve Coordination of Services	16	10	26
. Improve Response Time	6	9	15
. Provide Higher LOS on Specifid Local Roads	0	9	9
. Schedule Maintenance	8	5	13
. Contact W/Communities to Augment Maint. Services	7	0	7
. Community Contract Directly with MDOT	4	1	5
. Explore Outsourcing for Cost Reduction	4	2	6
. Contract W/OCRC to Augment Road Maint.	4	0	4
. Explore Use of Prison/Welfare Labor	1	1	2
SUB-TOTAL MAINTENANCE SERVICES CONCERNS:	**298**	**188**	**486**

T A B L E 1C

SUMMARY OF COMMUNITY REQUESTS BY COMMUNITY TYPE

ISSUE OR CONCERN	CITY AND VILLAGE TOTALS	TOWNSHIP TOTALS	GRAND TOTAL
TRAFFIC/SAFETY SERVICES			
OPERATIONS:			
. Signal Installation	24	8	32
. Signal Modernization	22	3	25
. Install Signing	12	6	18
. Upgrade Signing	10	8	18
. Signal Interconnect/Optimization	25	3	28
. Improve Sign Maintenance/Replacement	12	7	19
. Pavement Markings	13	2	15
. Improve Railroad Crossing	3	5	8
. Pedestrian Signals	4	2	6
. Pedestrian Crosswalks	3	2	5
. Upgrade Guardrail	5	2	7
. Improve Signal Maintenance	9	1	10
. Remove Signals	1	0	1
TRAFFIC/SAFETY ADMINISTRATION:			
. Provide Traffic Studies	19	9	28
. Provide Up-to-Date Traffic & Volume Data	12	7	19
. Reduce Cut-Thru Traffic on Residential Sts.	17	4	21
. Comprehensive Approach to Problem Solving	14	3	17
. Establish Special Truck Routes	3	8	11
. Explore Speed Limit Reduction	7	2	9
. Improve Permit Procedures/Turnaround Time	3	5	8
. Improve Signal Maintenance Response Time	8	0	8
. Improve Flexibility of Standards	0	4	4
. Improve Response Time on Safety Issues	10	7	17
SUB-TOTAL TRAFFIC/SAFETY SERVICES CONCERNS:	**236**	**98**	**334**

TABLE 1D

SUMMARY OF COMMUNITY REQUESTS BY COMMUNITY TYPE

ISSUE OR CONCERN	CITY AND VILLAGE TOTALS	TOWNSHIP TOTALS	GRAND TOTAL
ADMINISTRATIVE SERVICES			
FINANCIAL SERVICES:			
. Revise Billing Procedures	1	1	2
. Joint Contracting/Group Bidding	2	0	2
PLANNING SERVICES:			
. Pursue Expansion of State Trunkline Network	12	8	20
. Explore Changes in Jurisdiction	19	1	20
. Coordinate Road Planning with Land Use Planning	19	12	31
. Mitigate Environmental/Social Impacts	19	11	30
. Explore Alternate Route	14	6	20
. Need for More Public Transportation	9	2	11
. Provide Planning Assistance to Communities	7	9	16
. Explore Takeover of Private Roads	0	2	2
. Leadership/Advocacy on Behalf of Local Units	29	13	42
SUB-TOTAL ADMINISTRATIVE CONCERNS:	**131**	**65**	**196**
TOTAL NUMBER OF CONCERNS BY COMMUNITY:	**931**	**523**	**1,454**

Of growing concern to the Road Commission is the apparent increased dissatisfaction with winter maintenance services in some of the cities. This dissatisfaction appears to be most prevalent in cities where the Road Commission has an extensive primary road network.

Drainage system maintenance on both gravel and paved roads appears to be a priority for most communities. Community officials generally recognize the need to provide adequate drainage to preserve the integrity of the road system.

Another concern of both cities and townships is in regard to the coordination of maintenance services. In cities, this concern was expressed primarily with regard to aesthetic maintenance services, such as mowing and litter pick up. In townships, the coordination of gravel road grading and dust control was a concern.

As in past years, maintenance service improvements on state trunklines were requested universally by communities with state roads. Cities, in particular, were concerned about the level of aesthetic maintenance services provided along these facilities.

TRAFFIC-SAFETY SERVICES

Requests from cities and villages for traffic-safety services were dominated by concerns about traffic signal installation, traffic signal optimization, and traffic signal modernization. This level of concern appears to be a manifestation of the tremendous growth in traffic volumes on the county's road system. This hypothesis is further supported by an increased need in the cities for traffic studies, traffic planning, and innovative approaches to improve mobility in congested areas.

While cities are mostly concerned with ways to reduce traffic congestion, the concern in townships appears to focus more on road signing. Sign upgrading, maintenance, and installation were frequent requests. Most of these requests focused on speed limit reductions, truck routes, and the need for stop signs.

Townships also expressed a need for more up-to-date traffic information. Townships are exploring ways to mitigate the traffic impacts of unprecedented growth. Improved traffic information will assist them in planning efforts.

Overall, these requests reflect a growing need for improved traffic management throughout all of Oakland County.

ADMINISTRATIVE SERVICES

Communities throughout Oakland County look to the Road Commission for leadership in the area of road funding. There is general recognition that the Road Commission has been effective in generating new revenues for road improvements and maintenance. Continued pursuit of additional funding has been requested. Other concerns expressed by communities include:

1. A growing concern for preserving the environmental and historical features of the county.
2. A growing concern for coordinating transportation planning with land use planning.

A number of communities are seeking planning assistance from the Road Commission in response to unprecedented growth and increasing traffic. There appears to be a need for all operating departments of the Road Commission to be active in assisting the communities with their planning efforts. For example, many communities expressed a need to revise standards, evaluate environmental and social impacts of activities, seek local input early in project development, provide traffic information and studies, and to take a comprehensive approach to solving traffic problems. All of these concerns lead to the conclusion that greater participation in the community planning effort is mandatory.

Cities and villages expressed the need to explore changes in jurisdiction. Half of the requests were for the Road Commission to transfer road jurisdiction to the cities. Generally, these requests were the result of community dissatisfaction with Road Commission services or a desire to have greater community control over the road in question. An equal number of requests were made to transfer the jurisdiction of city streets to the Road Commission. In many of these cases, the local unit of government wanted to transfer the responsibility for these roads to the Road Commission or felt that the Road Commission is better able to provide service on the roads in question.

As in the past, a number of communities are seeking to expand the state trunkline network in Oakland County. Most of the requests were for Road Commission support of new interchanges and new state trunkline routes.

ROAD IMPROVEMENT NEEDS

County road improvement needs requested by community officials reached the $1 billion mark in 1990. The majority of the requests reflected a concern for increased highway congestion and increased traffic on rural roads. Concerns for roadway preservation and improved highway safety were also expressed.

Road improvement needs requested by communities were categorized as follows:

1. **CAPACITY IMPROVEMENT NEEDS.**
   Such improvements include road widenings and boulevard construction.
2. **ROAD PAVING NEEDS.**
   These needs reflect the requests for paving gravel roads.
3. **NEW ROAD CONSTRUCTION NEEDS.**
   Improvements in this category involve new roads where none currently exist. By-passes and extensions of existing roads are included.

4. **ROAD RESURFACING AND RESTORATION NEEDS.**

   Improvement needs in this category include resurfacing, reconstructing, and restoring existing roads. Safety enhancements, such as shoulder paving, hill-cutting, and guardrail upgrading, are additional features added to projects in this category. Specific community requests for projects were added to the needs identified by the Road Commission's Pavement Management System.

5. **SPOT SAFETY AND DRAINAGE IMPROVEMENT NEEDS.**

   All spot improvements requested by community officials that were not included among projects in other road need categories are included under this category.

6. **ADVANCED TRAFFIC MANAGEMENT SYSTEM NEEDS.**

   The need for a state-of-the-art traffic management system in the densely populated urban area of Oakland County was identified.

Each of these categories of road needs is described in greater detail below.

CAPACITY IMPROVEMENT NEEDS

Capacity improvement projects dominate county road needs as they have in the two previous needs assessments. Since the previous series of meetings with community officials, however, Oakland County communities and the Road Commission have been able to meet many of the critical capacity improvement needs facing the county. The estimated need since 1988 has increased by only $5 million. This slight increase can be attributed both to improvement in funding for capacity improvement projects and to changes in community priorities.

Some of the major capacity improvement needs that have been completed or are currently underway include:

1. Dequindre Road north of 14 Mile Road.
2. 12 Mile Road in the City of Farmington Hills.
3. Pontiac Trail in the City of Walled Lake.
4. Baldwin Road in the City of Auburn Hills.
5. Livernois Road in Rochester Hills.

Although many of the higher priority capacity improvements are underway or will be shortly, many new capacity improvement needs have been identified by community officials. The majority of these newly identified road capacity needs are located in the Haggerty Road corridor. Community officials identified a need to provide additional capacity on Haggerty Road and other roads expected to be impacted by the proposed Haggerty Road Connector. Other newly requested highway capacity needs were identified for Middlebelt Road and Big Beaver Road.

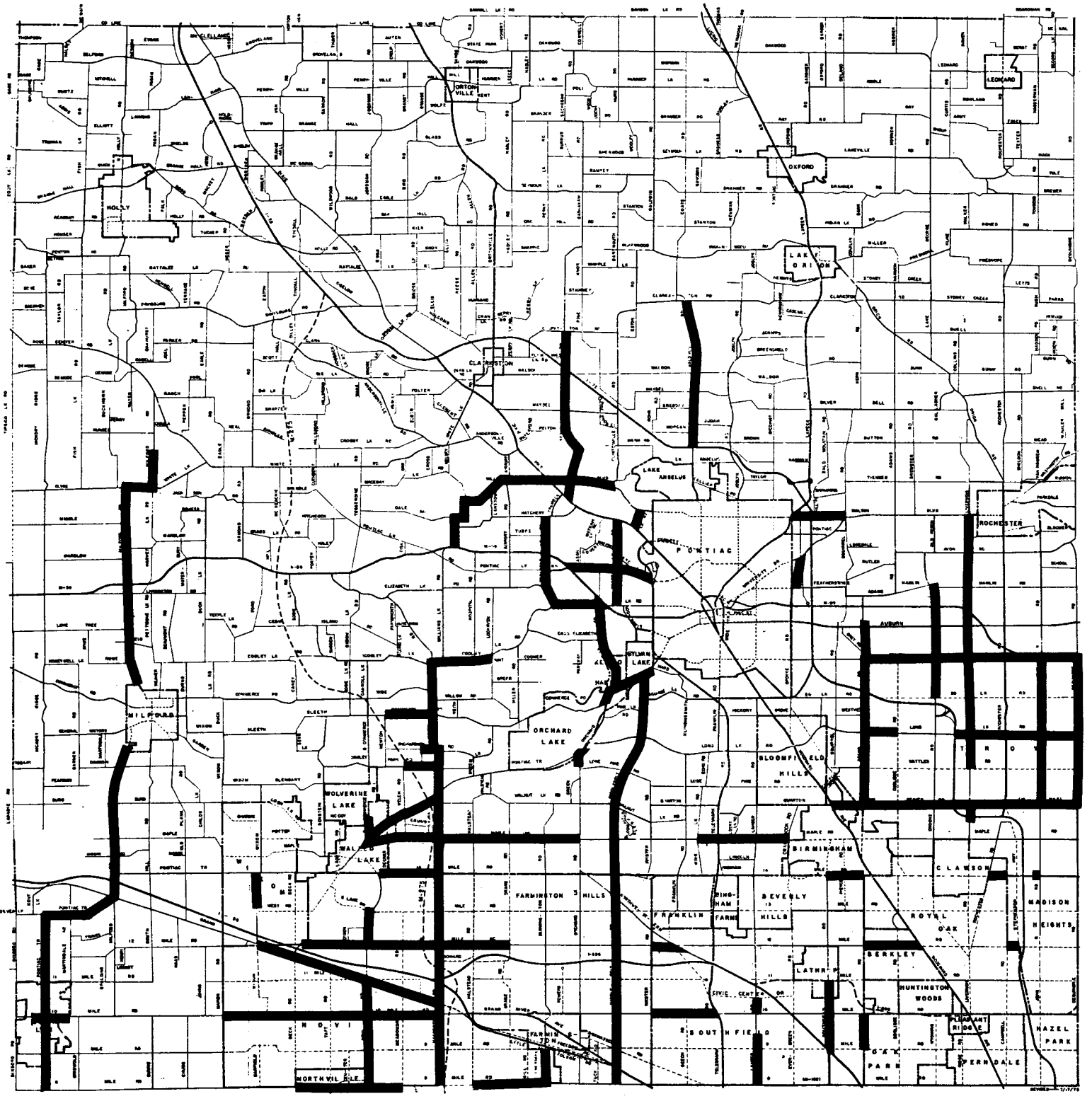
A number of communities throughout Oakland County recently completed communitywide traffic studies that were instrumental in identifying future road capacity requirements. For example, the capacity improvement needs for the City of Rochester Hills changed considerably since the previous round of meetings with community officials. Deleted from the list of priority road capacity improvements in Rochester Hills are Adams Road, Avon Road, Crooks Road, and Tienken Road. The priorities in other communities changed as well, but to a lesser extent.

Considerable progress has been made in providing the additional capacity required to accommodate the growth that has occurred in Oakland County. Milestones in this effort include MDOT's completion and expansion of the I-696 freeway in south Oakland County and the expansion of I-75 in the Pontiac-Auburn Hills area. These projects, in conjunction with the millions of dollars that are being returned to Oakland County through the newly created Transportation Economic Development Fund, should significantly improve mobility in some of the more congested areas in Oakland County.

Although progress has been made, a significant shortfall in highway capacity and the funding needed to provide such capacity still exists. Figure 4 shows the highway capacity needs on county roads over the next decade. Additional capacity will be needed on 168.6 miles of county roads at a cost of $591 million. These costs do not include the need for additional capacity on state trunklines or city and village streets.

Figure 4

CAPACITY IMPROVEMENT NEEDS
OAKLAND COUNTY
MICHIGAN



KEY

Capacity Improvements

168.6 Miles

ROAD PAVING NEEDS

While road capacity needs increased slightly, the need for paving gravel roads dropped since the last needs analysis was conducted. Communities requested 155.5 miles of road paving at a cost of over $133 million.

The requests for road paving appear to be driven by the need in many rural communities for a basic paved road network. Most communities wish to see the primary road system paved as a minimum. However, once a basic network of paved roads is established, these communities would prefer that their remaining gravel roads remain in their unpaved condition.

In some communities in north Oakland County, requests for road paving were dropped. Changes in community leadership and greater sentiment toward growth management strategies were reflected in the reduced number of requests for road paving.

On the other hand, many of the growing communities on the urban fringe expanded their requests for road paving in response to increased traffic. In these communities, there is an apparent need for paving many of the local access roads that feed the primary road system and state trunklines. The requests for paving are concentrated along major corridors, such as M-15, M-24, M-59, and Milford Road.

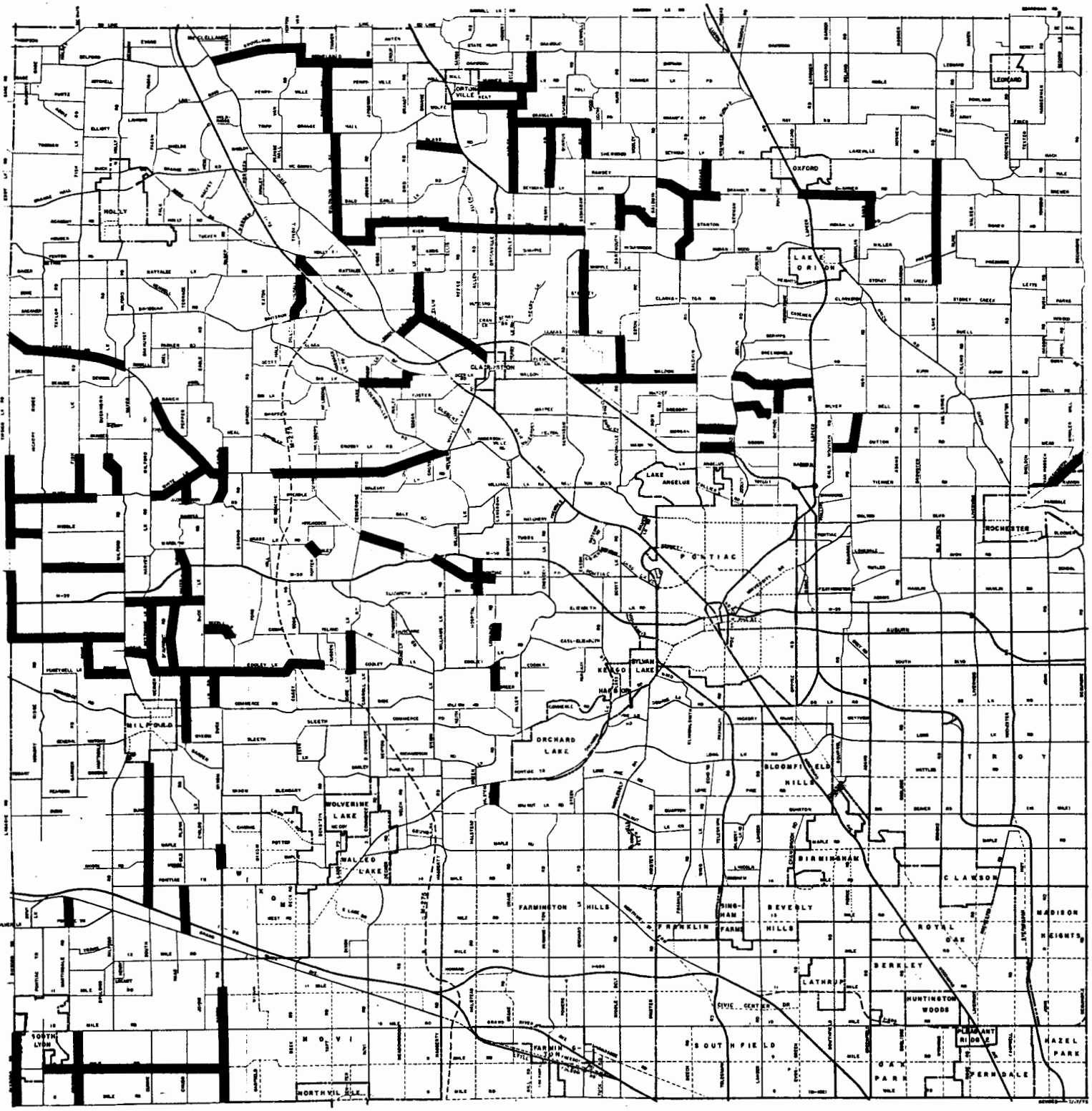
Figure 5 displays the extent of the road paving needs in Oakland County.

NEW ROAD CONSTRUCTION NEEDS

An evaluation of the county's road system reveals that discontinuities in specific road corridors have lead to excessive traffic congestion. As a result, community officials requested that the Road Commission explore a number of alternative routes, by-passes, and new road extensions. The needs expressed by community officials can be categorized as follows:

Figure 5

ROAD PAVING NEEDS
OAKLAND COUNTY
MICHIGAN



KEY

Road Paving Needs

155.5 Miles

1. There is an apparent need to complete major corridors to accommodate commuting. Examples include requests to extend Northwestern Highway west of Orchard Lake Road, and Maple Road west of Pontiac Trail.
2. There is an apparent, more localized need for alternative routes and by-passes to reduce the level of congestion in central business districts. For example, alternate routes were requested in the Cities of Rochester and South Lyon, and in the Villages of Oxford and Milford.
3. There is also an apparent need to realign specific roads for improved highway safety. For example, the need was expressed for the realignment of Adams Road north of Auburn Road to safely accommodate an additional interchange on M-59. A realignment of the M-59/Williams Lake Road intersection was also requested for safety reasons.

In total, new road construction needs increased by almost $44 million since the last needs analysis was conducted. Seven additional miles of new road were added to the needs. These include:

1. Benstein Road, Sleeth Road to Cooley Lake Road.
2. Glengary Road, Commerce Road to Welch Road.
3. Newton Road, Commerce Road to Wise Road.
4. The extension of Telegraph Road north of Dixie Highway to Walton Boulevard.
5. A by-pass route in the City of Wixom.
6. A by-pass route in the Village of Oxford.

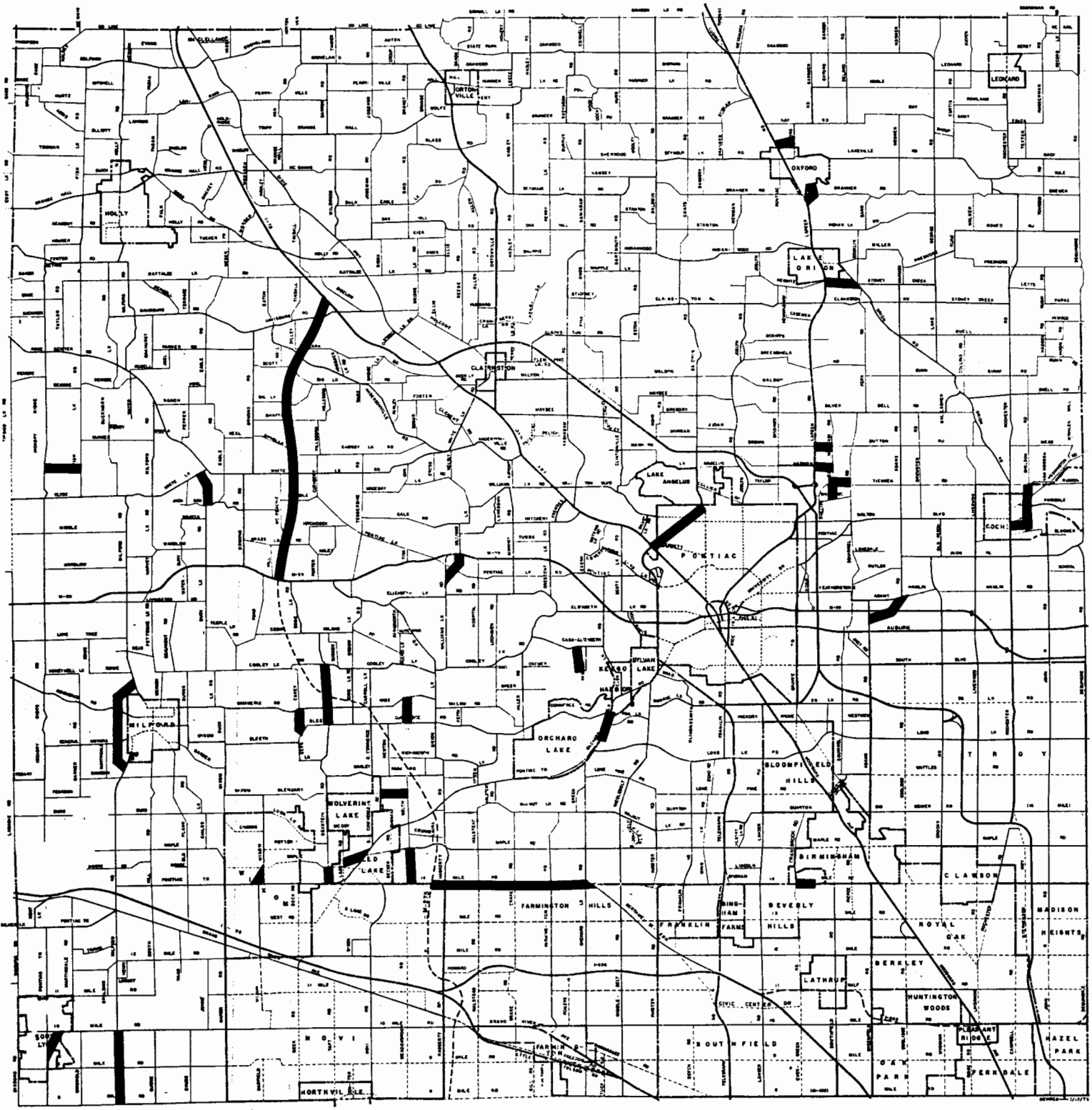
Figure 6 provides the map of new road construction needs throughout Oakland County. These needs have been estimated at more than $163 million over the next decade.

ROAD RESURFACING AND RESTORATION

The Road Commission was able to utilize its recently implemented Pavement Management System to identify road resurfacing and restoration priorities for the next decade. The priority road segments identified

Figure 6

NEW ROAD CONSTRUCTION NEEDS
OAKLAND COUNTY
MICHIGAN



KEY

New Road Construction Needs

41 Miles

by the Pavement Management System, in combination with projects requested by communities that were not among those identified by the Pavement Management System, total almost 850 lane-miles of road that will require preservation work over the next decade. At a cost of $100,000 per lane-mile, the estimated need for resurfacing and restoration projects is almost $85 million.

SPOT SAFETY AND DRAINAGE IMPROVEMENTS

The concerns expressed by community officials for improved highway safety and better road drainage manifested themselves in a number of requests for spot safety and drainage improvements. In total, over 200 locations were identified for spot improvements. The total costs of these improvements are estimated to be almost $48 million. This is jump of over $20 million since the last needs analysis was conducted.

ADVANCED TRAFFIC MANAGEMENT SYSTEM NEEDS

The requests of urban communities focused primarily on the need for additional roadway capacity and better traffic management. At the same time, there is general recognition that widening all of the roads in these communities would not be acceptable even if it was financially feasible.

More and more communities are resorting to traffic control devices as a means of managing traffic and improving mobility in congested areas. Consequently, the Road Commission is pursuing the development of an Advanced Traffic Management System in urbanized portions of Oakland County. Conceptually, this system would involve the integration of up to 1,000 traffic signals in Oakland County. Traffic patterns would be continually monitored by advanced vehicle sensing devices, and the information generated by these devices would be used to change signal timing in response to "real-time" traffic patterns. A more detailed description of the proposed Advanced Traffic Management System is contained in Appendix "E" in Volume II of this report.

It is estimated that an Advanced Traffic Management System, such as the one proposed by the Road Commission, will cost approximately $70 million to implement.

SUMMARY OF ROAD IMPROVEMENT NEEDS

The vast majority of the road improvement needs identified by community officials results from the tremendous growth that has occurred and continues to occur throughout Oakland County. These needs are summarized in Table 2. Overall, more than $1 billion will be required over the next decade to meet these needs.

IMPROVEMENT PRIORITIES

The 1988 report of the strategic planning process contained a method of assigning priorities to the road improvements suggested by the communities. The same technique for assigning priorities was utilized in this report.

Table 3 provides a listing of priority ranked capacity improvement locations. The priorities for capacity improvements are based on four criteria:

1. Accident reduction benefits of the improvement.
2. Congestion reduction benefits of the improvement.
3. Road surface improvement benefits.
4. Economic development potential related to the improvement.

It is obvious that even if additional funding is received for these improvements all of them could not be built simultaneously. Therefore, these priorities could be used to assure that the greatest needs are addressed first.

Proposed paving needs were also ranked according to a similar priority scheme. Table 4 provides the priority ranking for such projects. A description of the ranking procedures for capacity improvement needs and road paving needs is contained in Appendix "F", Volume II, of this report.

TABLE 2

ROAD IMPROVEMENT NEEDS IN OAKLAND COUNTY

(1990 - 1999)

IMPROVEMENT CATEGORY	MILES/LOCATIONS	ESTIMATED NEED
CAPACITY IMPROVEMENTS (Including Bridge Replacements)	168.6 Miles	$ 591,311,000
ROAD PAVING	155.5 Miles	133,216,000
NEW ROAD CONSTRUCTION	41.0 Miles	163,592,000
RESURFACING & RESTORATION	845.4 Lane Miles	84,540,000
SPOT SAFETY & DRAINAGE	200 Locations	47,992,000
ADVANCED TRAFFIC MANAGEMENT SYSTEM	Southeast Oakland County	70,000,000
TOTAL NEEDS:		**$1,090,651,000**

TABLE 3

ROAD WIDENING PRIORITIES

TOTAL POINTS	ROAD NAME	LIMITS	COMMUNITY	CONGEST FACTOR	SAFETY FACTOR	SRFC COND FACTOR	ECON DVLPMT FACTOR
66	HAGGERTY RD.	EIGHT MILE-NINE MILE	NOVI	28	10	6	22
65	BIG BEAVER RD.	I75-CASWELL	TROY	15	25	4	21
64	NOVI RD.	TEN MILE-GRAND RIVER	NOVI	27	9	8	20
62	BALDWIN RD.	I75-WALDON	ORION TWP.	23	15	4	20
62	HAGGERTY RD.	THIRTEEN MILE-FOURTEEN MILE	NOVI	33	7	4	18
62	WIXOM RD.	1/4 M N.OF WEST-PONTIAC TR.	WIXOM	28	8	4	22
60	SASHABAW RD.	WALDON-CLARKSTON	INDEPENDENCE TWP.	19	15	6	20
60	HAGGERTY RD.	GRAND RIVER-HOWARD	FARMINGTON HILLS	26	7	6	21
60	HAGGERTY RD.	NINE MILE-TEN MILE	NOVI	31	7	4	18
60	MAPLE RD.	FARMINGTON-ORCHARD LAKE	WEST BLOOMFIELD TWP.	34	10	6	10
60	HAGGERTY RD.	FOURTEEN MILE-MAPLE	COMMERCE TWP.	31	4	4	21
59	SASHABAW RD.	MAYBEE-WALDON	INDEPENDENCE TWP.	25	7	6	21
58	BIG BEAVER RD.	DEQUINDRE-FRANKTON	TROY	11	27	4	16
58	LAHSER RD.	TEN MILE-CIVIC CENTER	SOUTHFIELD	19	14	6	19
58	TWELVE MILE RD.	NOVI-MEADOWBROOK	NOVI	18	12	8	20
58	HAGGERTY RD.	TWELVE MILE-THIRTEEN MILE	NOVI	33	4	4	17
58	NOVI RD.	TWELVE MILE-THIRTEEN MILE	NOVI	25	7	6	20
58	CROOKS RD.	AUBURN-M59	ROCHESTER HILLS	28	6	4	20
58	GRAND RIVER	TAFT-NOVI	NOVI	26	6	6	20
57	BIG BEAVER RD.	WOODWARD-ADAMS	BIRMINGHAM	26	12	6	13
56	HAGGERTY RD.	HOWARD-TWELVE MILE	FARMINGTON HILLS	26	5	6	19
55	TWELVE MILE RD.	CAMPBELL-STEPHENSON	MADISON HEIGHTS	32	7	6	10
55	HAGGERTY RD.	TEN MILE-GRAND RIVER	NOVI	30	4	6	15
54	OPDYKE RD.	FEATHERSTONE-UNIVERSITY	AUBURN HILLS	21	8	4	21
54	LIVERNOIS RD.	HAMLIN-AVON	ROCHESTER HILLS	27	8	6	13
54	CROOKS RD.	M59-HAMLIN	ROCHESTER HILLS	19	11	4	20
54	HAGGERTY RD.	MAPLE-PONTIAC TR.	COMMERCE TWP	26	7	6	15
54	LIVERNOIS RD.	AVON-HARDING	ROCHESTER HILLS	32	6	6	10
53	CASS LAKE RD.	ORCHARD LAKE-OTTER	KEEGO HARBOR	23	14	6	10

TABLE 3

ROAD WIDENING PRIORITIES

TOTAL POINTS	ROAD NAME	LIMITS	COMMUNITY	CONGEST FACTOR	SAFETY FACTOR	SRFC COND FACTOR	ECON DVLPMT FACTOR
53	UNION LAKE RD.	WISE-COOLEY LAKE	COMMERCE TWP.	27	10	6	10
53	TWELVE MILE RD.	HALSTEAD-DRAKE	FARMINGTON HILLS	25	6	6	16
52	WALTON RD.	PERRY-SQUIRREL	AUBURN HILLS	18	14	6	14
52	WILLIAMS LAKE RD.	AIRPORT-DIXIE	WATERFORD TWP.	24	12	6	10
52	LONG LAKE RD.	LIVERNOIS-ROCHESTER	TROY	24	11	4	13
52	LONG LAKE RD.	I-75-LIVERNOIS	TROY	23	8	6	15
51	MAPLE RD.	WALLED LAKE LIMIT-HAGGERTY	COMMERCE TWP.	23	11	6	11
51	MIDDLEBELT RD.	NORTHWESTERN-FOURTEEN MILE	WEST BLOOMFIELD TWP.	26	7	6	12
51	DEQUINDRE RD.	SQUARE LAKE-SOUTH BLVD.	TROY	21	3	6	21
50	SOUTHFIELD RD.	US10-TEN MILE	SOUTHFIELD	7	15	8	20
50	CASS LAKE RD.	CASS ELIZABETH-M59	WATERFORD TWP.	24	10	6	10
50	LONG LAKE RD.	ROCHESTER-JOHN R.	TROY	25	8	6	11
50	WALTON BLVD	SASHABAW-CLINTONVILLE	WATERFORD TWP.	30	7	4	9
50	JOHN R RD.	BIG BEAVER-WATTLES	TROY	23	8	6	13
50	WALTON BLVD	DIXIE HWY-SASHABAW	WATERFORD TWP.	24	10	6	10
50	MAPLE RD.	HALSTEAD-DRAKE	WEST BLOOMFIELD TWP.	28	4	8	10
50	ADAMS RD.	SOUTH BLVD.-AUBURN	AUBURN HILLS	20	3	8	19
49	SOUTHFIELD RD.	TEN MILE-1/8 MILE N. OF I696	SOUTHFIELD	7	14	8	20
49	COOLEY LAKE RD.	WILLIAMS LAKE-LOCKHAVEN	WATERFORD TWP.	22	14	4	9
49	MIDDLEBELT RD.	EIGHT MILE-NINE MILE	FARMINGTON HILLS	24	7	6	12
49	ADAMS RD.	LONG LAKE-I75	TROY	19	5	6	19
49	CROOKS RD.	SOUTH BLVD.-AUBURN	ROCHESTER HILLS	24	6	4	15
49	LONG LAKE RD.	JOHN R.-DEQUINDRE	TROY	26	7	4	12
48	MIDDLEBELT RD.	NINE MILE-TEN MILE	WEST BLOOMFIELD TWP.	24	6	6	12
48	PONTIAC TRAIL	NINE MILE-TEN MILE	SOUTH LYON	21	12	6	9
48	MIDDLEBELT RD.	TWELVE MILE-THIRTEEN MILE	FARMINGTON HILLS	24	6	6	12
48	MIDDLEBELT RD.	FOURTEEN MILE-MAPLE	WEST BLOOMFIELD TWP.	24	6	6	12
48	ADAMS RD	I75-SOUTH BLVD	TROY	20	3	6	19
47	MIDDLEBELT RD.	ELEVEN MILE-TWELVE MILE	WEST BLOOMFIELD TWP.	23	6	6	12

TABLE 3

ROAD WIDENING PRIORITIES

TOTAL POINTS	ROAD NAME	LIMITS	COMMUNITY	CONGEST FACTOR	SAFETY FACTOR	SRFC COND FACTOR	ECON DVLPMT FACTOR
47	CRESENT LAKE RD.	ELIZABETH LAKE-M59	WATERFORD TWP.	22	9	6	8
47	SASHABAW RD.	TWP. LINE-MAYBEE	WATERFORD TWP.	20	11	4	12
47	TWELVE MILE RD.	W. BECK-TAFT	NOVI	11	8	8	20
47	MIDDLEBELT RD.	LONG LAKE-SQUARE LAKE	WEST BLOOMFIELD TWP.	18	11	6	12
47	CROOKS RD.	SQUARE LAKE-SOUTH BLVD.	TROY	18	6	4	19
47	NOVI RD.	NINE MILE-TEN MILE	NOVI	17	7	6	17
47	GRAND RIVER	NOVI-MEADOWBROOK	NOVI	3	18	6	20
46	PONTIAC LAKE RD.	CASS LAKE-WATKINS LAKE	WATERFORD TWP.	19	13	6	8
46	SASHABAW RD.	WALTON-TWP LINE	WATERFORD TWP.	20	10	4	12
46	MILFORD RD.	LONE TREE-M59	HIGHLAND TWP.	20	12	6	8
46	WILLIAMS LAKE RD.	M59-GALE	WATERFORD TWP.	24	6	6	10
46	HAGGERTY RD.	PONTIAC TR.-OAKLEY PARK	COMMERCE TWP.	22	5	4	15
46	MILFORD RD.	PONTIAC TR.-MAPLE	MILFORD TWP.	18	4	6	18
45	CRESENT LAKE RD.	M59-HATCHERY	WATERFORD TWP.	22	9	6	8
45	TEN MILE RD.	BEECH-TELEGRAPH	SOUTHFIELD	19	6	8	12
45	MAPLE RD.	DRAKE-FARMINGTON	WEST BLOOMFIELD TWP.	23	8	6	8
45	LAHSER RD.	NINE MILE-TEN MILE	SOUTHFIELD	18	3	8	16
45	MIDDLEBELT RD.	THIRTEEN MILE-NORTHWESTERN	WEST BLOOMFIELD TWP.	19	8	6	12
44	MIDDLEBELT RD.	TEN MILE-ELEVEN MILE	WEST BLOOMFIELD TWP.	22	4	6	12
44	BIG BEAVER RD.	FRANKTON-I75	TROY	11	10	4	19
44	TEN MILE RD.	MEADOWBROOK-HAGGERTY	NOVI	18	8	6	12
44	TWELVE MILE RD.	NORTHWESTERN-INKSTER	SOUTHFIELD	17	10	4	13
44	CASS LAKE RD.	KEEGO HARBOR-CASS ELIZABETH	WATERFORD TWP.	23	5	6	10
44	ADAMS RD.	BIG BEAVER-WATTLES	TROY	20	5	6	13
44	FOURTEEN MILE RD.	SOUTHFIELD-GREENFIELD	BEVERLY HILLS	21	5	8	10
44	PONTIAC TRAIL	TEN MILE-ELEVEN MILE	SOUTH LYON	21	5	6	12
44	GRAND RIVER	BECK-TAFT	NOVI	15	5	4	20
44	DEQUINDRE RD.	LONG LAKE-SQUARE LAKE	TROY	18	3	6	17
43	MILFORD RD.	BUNO-DAWSON	MILFORD TWP.	16	10	6	11

TABLE 3

ROAD WIDENING PRIORITIES

TOTAL POINTS	ROAD NAME	LIMITS	COMMUNITY	CONGEST FACTOR	SAFETY FACTOR	SRFC COND FACTOR	ECON DVLPMT FACTOR
43	TWELVE MILE RD.	HAGGERTY-HALSTEAD	FARMINGTON HILLS	18	6	6	13
43	WILLIAMS LAKE RD.	GALE-MACEDAY LAKE	WATERFORD TWP.	23	5	6	9
43	UNION LAKE RD.	RICHARDSON-COMMERCE	COMMERCE TWP.	22	6	6	9
43	LIVERNOIS RD.	LONG LAKE-SQUARE LAKE	TROY	21	5	4	13
43	LIVERNOIS RD.	WATTLES-LONG LAKE	TROY	25	4	4	10
43	DEQUINDRE RD.	BIG BEAVER-WATTLES	TROY	23	5	4	11
43	ADAMS RD.	WATTLES-LONG LAKE	TROY	18	3	6	16
42	FOURTEEN MILE RD.	JOHN R.-EDWARD	MADISON HEIGHTS	4	10	8	20
42	JOHN R RD.	WATTLES-LONG LAKE	TROY	19	9	4	10
42	WILLIAMS LAKE RD.	MACEDAY LAKE-AIRPORT	WATERFORD TWP.	20	7	6	9
42	TWELVE MILE RD.	TAFT-NOVI	NOVI	8	6	8	20
42	HAGGERTY RD.	OAKLEY PARK-RICHARDSON	COMMERCE TWP.	22	4	2	14
42	TWELVE MILE RD.	MEADOWBROOK-HAGGERTY	NOVI	13	5	6	18
42	MAPLE RD.	HAGGERTY-HALSTEAD	WEST BLOOMFIELD TWP.	22	3	6	11
42	PONTIAC TRAIL	GRAND RIVER-I96	LYON TWP.	12	4	6	20
41	DEQUINDRE RD.	WATTLES-LONG LAKE	TROY	20	3	4	14
41	GRAND RIVER	WIXOM-BECK	NOVI	12	3	6	20
41	MILFORD RD.	MAPLE-BUNO	MILFORD TWP.	17	5	6	13
40	ORCHARD LAKE RD.	COMMERCE RD EAST-CITY LIMIT	KEEGO HARBOR	1	22	6	11
40	LAHSER RD.	EIGHT MILE-NINE MILE	SOUTHFIELD	15	5	6	14
40	MIDDLEBELT RD.	WALNUT LAKE-LONE PINE	WEST BLOOMFIELD TWP.	16	6	6	12
40	GRAND RIVER	MEADOWBROOK-HAGGERTY	NOVI	13	5	8	14
40	MIDDLEBELT RD.	LONE PINE-LONG LAKE	WEST BLOOMFIELD TWP.	17	5	6	12
40	MILFORD RD.	N. VILLAGE LINE-ROWE	MILFORD TWP.	21	3	6	10
40	LIVERNOIS RD.	SOUTH BLVD.-AUBURN	ROCHESTER HILLS	19	3	6	12
39	PONTIAC LAKE RD.	M59-CASS LAKE	WATERFORD TWP.	12	15	4	8
39	GREENFIELD RD.	NINE MILE-TEN MILE	SOUTHFIELD	8	8	6	17
39	SCOTT LAKE RD.	PONTIAC LK-DIXIE	WATERFORD TWP.	16	9	6	8
39	BALDWIN RD.	WALDON-CLARKSTON	ORION TWP.	15	7	4	13

TABLE 3

ROAD WIDENING PRIORITIES

TOTAL POINTS	ROAD NAME	LIMITS	COMMUNITY	CONGEST FACTOR	SAFETY FACTOR	SRFC COND FACTOR	ECON DVLPMT FACTOR
39	BIG BEAVER RD.	CASWELL-ADAMS	TROY	13	6	4	16
39	PONTIAC TRAIL	MARTINDALE-GRAND RIVER	LYON TWP.	9	6	6	18
39	LONG LAKE RD.	ADAMS-COOLIDGE	TROY	16	4	6	13
39	MIDDLEBELT RD.	MAPLE-WALNUT LAKE	WEST BLOOMFIELD TWP.	16	5	6	12
39	MILFORD RD.	DAWSON-HUBBELL ST.	MILFORD TWP.	22	3	6	8
38	TEN MILE RD.	NOVI-MEADOWBROOK	NOVI	12	9	4	13
38	MILFORD RD.	ROWE-LONE TREE	HIGHLAND TWP.	16	8	6	8
38	LIVERNOIS RD.	SQUARE LAKE-SOUTH BLVD.	TROY	16	5	4	13
38	TEN MILE RD.	INKSTER-BEECH	SOUTHFIELD	19	3	6	10
38	LIVERNOIS RD.	AUBURN-HAMLIN	ROCHESTER HILLS	16	5	6	11
38	SILVER LAKE RD.	DIXIE-WALTON	WATERFORD TWP.	20	4	6	8
38	MIDDLEBELT RD.	SQUARE LAKE-ORCHARD LAKE	WEST BLOOMFIELD TWP.	17	3	6	12
37	FARMINGTON RD.	EIGHT MILE-NINE MILE	FARMINGTON	2	13	4	18
37	SOUTH BLVD	ROCHESTER-JOHN R.	TROY	10	4	4	19
37	PONTIAC LAKE RD.	WATKINS LAKE-TELEGRAPH	WATERFORD TWP.	19	3	6	9
36	LIVERNOIS RD.	HARDING-WALTON	ROCHESTER HILLS	4	16	6	10
36	FOURTEEN MILE RD.	ROCHESTER-CAMPBELL	CLAWSON	2	11	4	19
36	UNION LAKE RD.	COMMERCE-WISE	COMMERCE TWP.	8	12	6	10
36	TEN MILE RD.	TAFT-NOVI	NOVI	12	7	4	13
36	JOHN R RD.	LONG LAKE-SQUARE LAKE	TROY	17	5	4	10
36	SOUTH BLVD	CROOKS-LIVERNOIS	TROY	12	5	6	13
36	NOVI RD.	EIGHT MILE-NINE MILE	NOVI	14	3	6	13
35	SCOTT LAKE RD.	ELIZABETH LK-PONTIAC LK	WATERFORD TWP.	16	5	6	8
35	SOUTH BLVD	LIVERNOIS-ROCHESTER	TROY	12	3	6	14
35	SASHABAW RD.	DIXIE-WALTON	WATERFORD TWP.	13	7	6	9
34	ELIZABETH LAKE RD.	CRESENT LAKE-CASS LAKE	WATERFORD TWP.	1	17	6	10
34	MILFORD RD.	M59-E. WARDLOW	HIGHLAND TWP.	13	5	6	10
34	SOUTH BLVD	JOHN R.-DEQUINDRE	TROY	7	5	4	18
33	FOURTEEN MILE RD.	EAST LAKE-HAGGERTY	NOVI	12	6	6	9

TABLE 3

ROAD WIDENING PRIORITIES

TOTAL POINTS	ROAD NAME	LIMITS	COMMUNITY	CONGEST FACTOR	SAFETY FACTOR	SRFC COND FACTOR	ECON DVLPMT FACTOR
33	PONTIAC TRAIL	ELEVEN MILE-SILVER LAKE	LYON TWP.	9	6	6	12
32	MAPLE RD.	TELEGRAPH-LAHSER	BLOOMFIELD TWP.	2	15	6	9
32	ORCHARD LAKE RD.	GREER-WARD	SYLVAN LAKE	2	14	6	10
32	FARMINGTON RD.	NINE MILE-SLOCUM	FARMINGTON	2	6	6	18
32	COMMERCE RD.	NEWTON-UNION LAKE	COMMERCE TWP.	15	5	6	6
32	JOHN R RD.	SQUARE LAKE-SOUTH BLVD.	TROY	12	4	4	12
32	SOUTH BLVD	COOLIDGE-CROOKS	TROY	14	3	6	9
32	SOUTH COMMERCE RD.	PONTIAC TR.-WOLVERINE	WOLVERINE LAKE	14	5	4	9
32	PONTIAC TRAIL	SILVER LAKE-MARTINDALE	LYON TWP.	6	5	6	15
31	MAPLE RD.	LAHSER-CRANBROOK	BLOOMFIELD TWP.	2	12	8	9
31	LIVERNOIS RD.	I75-TOWN CENTER	TROY	2	5	6	18
30	TWELVE MILE RD.	GREENFIELD-COOLIDGE	BERKLEY	2	13	4	11
30	PONTIAC TRAIL	S. COMMERCE-WELCH	WALLED LAKE	1	13	6	10
30	MAPLE RD.	E/O WING LK-TELEGRAPH	BLOOMFIELD TWP.	2	13	6	9
30	COOLEY LAKE RD.	WILLIAMS LAKE-UNION LAKE	WHITE LAKE TWP.	1	15	4	10
30	WEST MAPLE RD.	PONTIAC TRAIL-E. CITY LIMIT	WALLED LAKE	6	7	6	11
30	PONTIAC TRAIL	WELCH-HAGGERTY	COMMERCE TWP.	12	5	4	9
30	PONTIAC TRAIL	EIGHT MILE-NINE MILE	LYON TWP.	11	6	6	7
29	ORCHARD LAKE RD.	PONTIAC TR SOUTH TO RR	ORCHARD LAKE VILLAGE	2	12	4	11
29	MILFORD RD.	WARDLOW-MIDDLE	HIGHLAND TWP.	7	6	6	10
29	TEN MILE RD.	BECK-TAFT	NOVI	10	6	4	9
29	SOUTH BLVD	ADAMS-COOLIDGE	TROY	10	4	6	9
29	EIGHT MILE RD.	BECK-TAFT	NORTHVILLE	11	3	6	9
28	OAKLEY PARK	WELCH-HAGGERTY	COMMERCE TWP.	10	4	6	8
27	TEN MILE RD.	PONTIAC TR.-MARTINDALE	SOUTH LYON	10	5	4	8
27	MILFORD RD.	MIDDLE-CLYDE	HIGHLAND TWP.	5	6	6	10
26	TEN MILE RD.	DIXBORO-PONTIAC TR	SOUTH LYON	10	4	4	8
24	TEN MILE RD.	NAPIER-WIXOM	NOVI	6	5	4	9
24	TEN MILE RD.	WIXOM-BECK	NOVI	7	4	4	9

TABLE 3

ROAD WIDENING PRIORITIES

TOTAL POINTS	ROAD NAME	LIMITS	COMMUNITY	CONGEST FACTOR	SAFETY FACTOR	SRFC COND FACTOR	ECON DVLPMT FACTOR
33	PONTIAC TRAIL	ELEVEN MILE-SILVER LAKE	LYON TWP.	9	6	6	12
32	MAPLE RD.	TELEGRAPH-LAHSER	BLOOMFIELD TWP.	2	15	6	9
32	ORCHARD LAKE RD.	GREER-WARD	SYLVAN LAKE	2	14	6	10
32	FARMINGTON RD.	NINE MILE-SLOCUM	FARMINGTON	2	6	6	18
32	COMMERCE RD.	NEWTON-UNION LAKE	COMMERCE TWP.	15	5	6	6
32	JOHN R RD.	SQUARE LAKE-SOUTH BLVD.	TROY	12	4	4	12
32	SOUTH BLVD	COOLIDGE-CROOKS	TROY	14	3	6	9
32	SOUTH COMMERCE RD.	PONTIAC TR.-WOLVERINE	WOLVERINE LAKE	14	5	4	9
32	PONTIAC TRAIL	SILVER LAKE-MARTINDALE	LYON TWP.	6	5	6	15
31	MAPLE RD.	LAHSER-CRANBROOK	BLOOMFIELD TWP.	2	12	8	9
31	LIVERNOIS RD.	I75-TOWN CENTER	TROY	2	5	6	18
30	TWELVE MILE RD.	GREENFIELD-COOLIDGE	BERKLEY	2	13	4	11
30	PONTIAC TRAIL	S. COMMERCE-WELCH	WALLED LAKE	1	13	6	10
30	MAPLE RD.	E/O WING LK-TELEGRAPH	BLOOMFIELD TWP.	2	13	6	9
30	COOLEY LAKE RD.	WILLIAMS LAKE-UNION LAKE	WHITE LAKE TWP.	1	15	4	10
30	WEST MAPLE RD.	PONTIAC TRAIL-E. CITY LIMIT	WALLED LAKE	6	7	6	11
30	PONTIAC TRAIL	WELCH-HAGGERTY	COMMERCE TWP.	12	5	4	9
30	PONTIAC TRAIL	EIGHT MILE-NINE MILE	LYON TWP.	11	6	6	7
29	ORCHARD LAKE RD.	PONTIAC TR SOUTH TO RR	ORCHARD LAKE VILLAGE	2	12	4	11
29	MILFORD RD.	WARDLOW-MIDDLE	HIGHLAND TWP.	7	6	6	10
29	TEN MILE RD.	BECK-TAFT	NOVI	10	6	4	9
29	SOUTH BLVD	ADAMS-COOLIDGE	TROY	10	4	6	9
29	EIGHT MILE RD.	BECK-TAFT	NORTHVILLE	11	3	6	9
28	OAKLEY PARK	WELCH-HAGGERTY	COMMERCE TWP.	10	4	6	8
27	TEN MILE RD.	PONTIAC TR.-MARTINDALE	SOUTH LYON	10	5	4	8
27	MILFORD RD.	MIDDLE-CLYDE	HIGHLAND TWP.	5	6	6	10
26	TEN MILE RD.	DIXBORO-PONTIAC TR	SOUTH LYON	10	4	4	8
24	TEN MILE RD.	NAPIER-WIXOM	NOVI	6	5	4	9
24	TEN MILE RD.	WIXOM-BECK	NOVI	7	4	4	9

TABLE 3

ROAD WIDENING PRIORITIES

TOTAL POINTS	ROAD NAME	LIMITS	COMMUNITY	CONGEST FACTOR	SAFETY FACTOR	SRFC COND FACTOR	ECON DVLPMT FACTOR
23	TWELVE MILE RD.	COOLIDGE-WOODWARD	BERKLEY	2	3	6	12
21	MILFORD RD.	WHITE LAKE-N. TWP. LIMIT	HIGHLAND TWP.	3	4	6	8
21	MILFORD RD.	CLYDE-WHITE LAKE	HIGHLAND TWP.	5	4	4	8

TABLE 4

ROAD PAVING PRIORITIES

TOTAL POINTS	ROAD NAME	LIMITS	COMMUNITY	ADT FACTOR	SAFETY FACTOR	SRFC COND FACTOR
71	DRAHNER RD.	M24-BARR	OXFORD TWP.	33	17	21
64	WHITE LAKE RD.	TEGGERDINE-ANDERSONVILLE	WHITE LAKE TWP.	13	23	28
61	NAPIER RD.	ELEVEN MILE-ELEVEN 1/2 MILE	NOVI	19	7	35
59	DUCK LAKE RD.	COMMERCE-COOLEY LAKE RD.	MILFORD TWP.	15	9	35
57	LOCHAVEN RD.	UNPAVED PORTIONS	WATERFORD TWP.	8	21	28
54	WALDON	TWP LINE-BALDWIN	ORION TWP.	4	22	28
53	PONTIAC LAKE RD.	TEGGERDINE-W. OF M59	WHITE LAKE TWP.	3	22	28
53	LONE TREE RD.	ROWE-W. OF MILFORD	HIGHLAND TWP.	15	10	28
52	BURNS RD.	COMMERCE-COOLEY LAKE	MILFORD TWP.	8	9	35
52	CLINTONVILLE RD.	WALDON-CLARKSTON	INDEPENDENCE TWP.	10	14	28
52	OLD PLANK RD.	PONTIAC TR.-GRAND RIVER	LYON TWP.	10	7	35
51	GLASS RD.	BIRD-M15	GROVELAND TWP.	19	11	21
50	NAPIER RD.	TEN MILE-ELEVEN MILE	NOVI	10	5	35
50	NINE MILE RD.	PONTIAC TR-GRISWOLD	LYON TWP.	15	0	35
49	WHITE LAKE RD.	MCKEACHIE-TEGGERDINE	WHITE LAKE TWP.	6	15	28
49	LAKE GEORGE RD.	STONEY CREEK-ROMEO	ADDISON TWP.	10	11	28
49	GRISWOLD	NINE MILE-TEN MILE	LYON TWP.	3	11	35
48	GRISWOLD	EIGHT MILE-NINE MILE	LYON TWP.	3	10	35
48	COATS RD.	INDIANWOOD-STANTON	OXFORD TWP.	2	11	35
48	WARDLOW RD.	HICKORY RIDGE-MILFORD	HIGHLAND TWP.	11	9	28
47	LONE TREE RD.	HICKORY RIDGE-ROWE	HIGHLAND TWP.	6	13	28
47	OXBOW LK RD.	COOLEY LK-CEDAR ISLAND	WHITE LAKE TWP.	11	8	28
47	NAPIER RD.	NINE MILE-TEN MILE	NOVI	5	7	35
47	WATERBURY RD.	M59-WARDLOW	HIGHLAND TWP.	2	24	21
46	SOUTH HILL RD.	BUNO-DAWSON	MILFORD TWP.	1	17	28
46	SILVERBELL RD.	W/O GIDDINGS-JOSLYN	ORION TWP.	6	12	28
46	BURNS RD.	WIXOM-COMMERCE	MILFORD TWP.	8	3	35

TABLE 4

ROAD PAVING PRIORITIES

TOTAL POINTS	ROAD NAME	LIMITS	COMMUNITY	ADT FACTOR	SAFETY FACTOR	SRFC COND FACTOR
45	GROVELAND RD.	THAYER-JOSSMAN	GROVELAND TWP.	9	15	21
45	WHITE LAKE RD.	MILFORD-ROSE CENTER	HIGHLAND TWP.	6	11	28
45	BROWN RD.	E. OF BALDWIN-JOSLYN	ORION TWP.	6	11	28
45	GRANGER RD.	GLASS-HADLEY	BRANDON TWP.	7	3	35
45	DRAHNER RD.	COATS-E. SANDERS	OXFORD TWP.	14	3	28
44	COOLEY LAKE RD.	CAREY-BOGIE LAKE	WHITE LAKE TWP.	2	14	28
44	LIVINGSTON RD.	HARVEY LAKE-WATERBURY	HIGHLAND TWP.	3	13	28
44	ROWE RD.	LONE TREE-INDIAN GARDENS	HIGHLAND TWP.	9	7	28
44	MARTINDALE RD.	PONTIAC TR-GRAND RIVER	LYON TWP.	3	6	35
44	BUCKHORN LAKE RD.	CLYDE-N. TWP. LIMIT	HIGHLAND TWP.	2	14	28
44	WASHINGTON RD.	TIENKEN-WINKLER MILL	ROCHESTER HILLS	9	7	28
44	NINE MILE RD.	GRISWOLD-CURRIE	LYON TWP.	4	5	35
44	BRIDGE LAKE RD.	DIXIE-HOLCOMB	SPRINGFIELD TWP.	5	4	35
43	WALDON RD.	SASHABAW-CLINTONVILLE	INDEPENDENCE TWP.	8	14	21
43	LOCHAVEN RD.	GREER-HUNT	WEST BLOOMFIELD TWP.	8	7	28
43	OAK HILL RD.	BIRD-ELLIS	GROVELAND TWP.	5	10	28
43	NINE MILE RD.	CURRIE-CHUBB	LYON TWP.	2	6	35
43	HOLCOMB RD.	ELLIS RD.-E/O REESE	INDEPENDENCE TWP.	5	3	35
43	SOUTH HILL RD.	I96-PONTIAC TR	LYON TWP.	2	6	35
42	LAKE GEORGE RD.	ROMEO-DRAHNER	ADDISON TWP.	5	9	28
42	GROVELAND RD.	HORTON-VAN	GROVELAND TWP.	5	16	21
42	HALSTEAD RD.	WALNUT LK RD-PONTIAC TR.	WEST BLOOMFIELD TWP.	4	3	35
42	ROWE RD.	INDIAN GARDENS-MILFORD	HIGHLAND TWP.	9	5	28
42	NAPIER RD.	EIGHT MILE-NINE MILE	NOVI	4	3	35
42	COOLEY LAKE RD.	BURNS-PETTIBONE LAKE	HIGHLAND TWP.	7	7	28
41	SOUTH HILL RD.	MAPLE-BUNO	MILFORD TWP.	5	8	28
41	ROSE CENTER RD.	FISH LAKE-MILFORD	ROSE TWP.	8	5	28

TABLE 4

ROAD PAVING PRIORITIES

TOTAL POINTS	ROAD NAME	LIMITS	COMMUNITY	ADT FACTOR	SAFETY FACTOR	SRFC COND FACTOR
37	CLYDE RD.	COUNTY LINE-HICKORY RIDGE	HIGHLAND TWP.	4	5	28
37	ROSE CENTER RD.	TIPSICO LAKE-HICKORY RIDGE	ROSE TWP.	6	3	28
37	OAK HILL RD.	PERRY LAKE-SASHABAW	INDEPENDENCE TWP.	4	5	28
37	NINE MILE RD.	CHUBB-NAPIER	LYON TWP.	2	0	35
36	DRAHNER RD.	BALDWIN-COATS	OXFORD TWP.	4	11	21
36	WALDON RD.	GIDDINGS-M24	ORION TWP.	4	11	21
36	SOUTH HILL RD.	DAWSON-BEATON	MILFORD TWP.	5	3	28
36	SOUTH HILL RD.	PONTIAC TR.-MAPLE	MILFORD TWP.	5	3	28
35	COATS RD.	STANTON-DRAHNER	OXFORD TWP.	3	11	21
35	PONTIAC LAKE RD.	WILLIAMS LAKE-HOSPITAL	WATERFORD TWP.	5	9	21
35	OAK HILL RD.	KIER-JOSSMAN	GROVELAND TWP.	3	4	28
35	CLYDE RD.	HICKORY RIDGE-FISH LAKE	HIGHLAND TWP.	4	3	28
35	OAK HILL RD.	DIXIE-KIER	GROVELAND TWP.	4	3	28
35	OAK HILL RD.	JOSSMAN-BIRD	GROVELAND TWP.	2	5	28
34	BRIDGE LAKE RD.	HOLCOMB-RATTALEE LAKE	SPRINGFIELD TWP.	6	7	21
34	WILDWOOD RD.	MCGINNIS-GRANGE HALL	GROVELAND TWP.	3	3	28
34	LIVINGSTON RD.	WATERBURY-DUCK LAKE	HIGHLAND TWP.	3	3	28
34	LAKE GEORGE RD.	DRAHNER-LAKEVILLE	ADDISON TWP.	6	7	21
33	N. GIDDINGS RD.	SILVERBELL-WALDON	ORION TWP.	2	3	28
33	OAK HILL RD.	ORTONVILLE-PERRY LAKE	INDEPENDENCE TWP.	2	3	28
33	HOLCOMB RD.	BRIDGE-ELLIS	INDEPENDENCE TWP.	7	5	21
33	CLYDE RD.	FISH LAKE-STRATHCONA	HIGHLAND TWP.	5	0	28
33	PERRY LAKE RD.	FLINT-GRANGER	BRANDON TWP.	2	10	21
33	TEEPLE LAKE RD.	DUCK LK E. TO E HIGHLAND LIN	HIGHLAND TWP.	2	3	28
32	PETTIBONE LAKE RD.	COOLEY LAKE-LIVINGSTON	HIGHLAND TWP.	2	9	21
32	COOLEY LAKE RD.	FORD-CAREY	WHITE LAKE TWP.	1	10	21
32	PERRY LK RD.	N/O SEYMOUR LK RD-FLINT ST	BRANDON TWP.	5	6	21

TABLE 4

ROAD PAVING PRIORITIES

TOTAL POINTS	ROAD NAME	LIMITS	COMMUNITY	ADT FACTOR	SAFETY FACTOR	SRFC COND FACTOR
32	SANDERS RD.	DRAHNER-SEYMOUR LK RD	OXFORD TWP.	4	0	28
31	JUDAH RD.	BALDWIN-JOSLYN	ORION TWP.	5	5	21
31	GROVELAND RD.	VAN-THAYER	GROVELAND TWP.	5	5	21
31	WALDON RD.	CLINTONVILLE-E. TWP. LIMIT	INDEPENDENCE TWP.	4	6	21
30	WEST MAPLE RD.	ALONG THE WEST CITY LINE	WIXOM	2	0	28
30	BARR RD.	INDIAN LAKE-DRAHNER	ADDISON TWP.	3	6	21
29	GRANGER RD.	HADLEY-SASHABAW	BRANDON TWP.	3	5	21
29	BARRON RD.	GRANGE HALL-PERRYVILLE	GROVELAND TWP.	5	3	21
29	TINDALL RD.	DAVISBURG-RATTALEE LAKE	SPRINGFIELD TWP.	3	5	21
29	HUMMER LAKE RD.	ORTONVILLE LIMIT-HADLEY	BRANDON TWP.	3	5	21
29	ROSE CENTER RD.	WHITE LAKE-N. HIGHLAND TWP	LHIGHLAND TWP.	8	0	21
28	ROSE CENTER RD.	S. TWP LINE-MILFORD	ROSE TWP.	3	4	21
28	BEAUMONT RD.	COOLEY LAKE-LIVINGSTON	HIGHLAND TWP.	1	6	21
28	WATERBURY RD.	LIVINGSTON-M59	HIGHLAND TWP.	4	3	21
28	TIPSICO LAKE RD.	LONE TREE-M59	HIGHLAND TWP.	4	3	21
28	DIXBORO RD.	NINE MILE-TEN MILE	LYON TWP.	4	3	21
28	GROVELAND RD.	VASSAR-HORTON	GROVELAND TWP.	3	4	21
28	TIPSICO LAKE RD.	CLYDE-N. TWP. LIMIT	HIGHLAND TWP.	2	5	21
28	TINDALL RD.	RATTALEE LAKE-E. HOLLY	SPRINGFIELD TWP.	4	3	21
28	TIPSICO LAKE RD.	1/4 M S. OF MIDDLE-CLYDE	HIGHLAND TWP.	2	5	21
27	GROVELAND RD.	DIXIE-VASSAR	GROVELAND TWP.	3	3	21
27	MIDDLE RD.	TIPSICO LAKE-HICKORY RIDGE	HIGHLAND TWP.	3	3	21
26	DUTTON RD.	BALD MOUNTAIN-CITY LIMIT	AUBURN HILLS	2	3	21
26	SQUIRREL RD.	DUTTON-SILVERBELL	ORION TWP.	2	3	21
26	BARRON RD.	PERRYVILLE-GROVELAND	GROVELAND TWP.	2	3	21
26	COATS RD.	DRAHNER-SEYMOUR LAKE	OXFORD TWP.	2	3	21
25	DIXBORO RD.	EIGHT MILE-NINE MILE	LYON TWP.	4	0	21

TABLE 4

ROAD PAVING PRIORITIES

TOTAL POINTS	ROAD NAME	LIMITS	COMMUNITY	ADT FACTOR	SAFETY FACTOR	SRFC COND FACTOR
24	DARTMOUTH RD.	OAKHILL-SEYMOUR LAKE	BRANDON TWP.	3	0	21

Other improvement types have been compiled and ranked also, but are not shown in this report. For example, the priorities for road resurfacing and restoration needs will be determined by the Pavement Management System in use by the Road Commission.

PROJECTED FUNDING SHORTFALL

The previous section of this report identified over $1 billion dollars in road improvement needs for the next decade. It is estimated that revenues to meet these road improvement needs will fall short by $900 million by 2000. During the next decade, an additional $10 million per year will be needed to increase the level of service provided to and requested by the communities in Oakland County. Thus, the shortfall in revenues to meet the road improvement and road service needs requested by community officials throughout Oakland County for the next decade is estimated at $1 billion.

Clearly, new revenue sources must be provided to meet these immense needs. The Road Commission has been actively seeking alternative sources of road revenue for the county road system, as well as for city and village streets. The efforts of the Road Commission in this regard are documented in the following section of this report.

ROAD FUNDING EFFORTS

The Road Commission's strategic planning process has been instrumental in generating new revenues to meet the county's road needs. Funding proposals have been designed to not only generate sufficient revenues to meet the road needs, but also to focus revenues on the types of projects most needed.

The total road needs expressed by community officials in 1989-90 remained relatively constant since the last series of meetings in the spring of 1988. This demonstrates that road funding efforts have been effective in generating new revenues to meet many of the more critical road needs identified by community officials. Some very significant projects have been completed or are currently scheduled due to the influx of new revenues from state and federal sources. These sources are examined in greater detail below.

TRANSPORTATION ECONOMIC DEVELOPMENT FUND

In December of 1987, the Michigan State Legislature passed legislation creating a state-wide Transportation Economic Development Fund (TEDF). This landmark legislation, proposed and developed in large part by the Road Commission for Oakland County, funds road improvement projects that enhance economic development or mitigate the impacts of development. Passage of the TEDF legislation was a major victory in the effort to link road funding to economic development.

Since the creation of the Transportation Economic Development Fund, communities and the Road Commission have received grant approvals of over $83 million. This amounts to almost 46% of all Category "A", "B", and "C" funds granted state-wide.

The Category "A" program alone is expected to bring over $53 million into Oakland County. The City of Auburn Hills is, by far, the greatest beneficiary of Category "A" funding. Most of this funding is devoted to road improvements to serve the Oakland Technology Park. The Cities of Rochester Hills, Farmington Hills, Southfield, and Troy were also major beneficaries of these programs. Some of the major projects funded by the Transportation Economic Development Fund include: Big Beaver Road in Troy, Orchard Lake Road in Farmington Hills, 12 Mile Road in Farmington Hills, Ten Mile Road in Southfield and Oak Park, John R Road in Madison Heights, 13 Mile Road in Royal Oak, and roads in the Oakland Technology Park and Northfield Hills Corporate Center areas.

Roads under the jurisdiction of the MDOT will also be improved with grants from the Transportation Economic Development Fund. New interchanges on M-59 at Squirrel Road and at Adams Road, and on I-75 at Long Lake Road will be constructed. In addition, a portion of these funds will be dedicated to right-of-way acquisition for the Haggerty Connector project in the City of Novi and Commerce Township.

In combination with traditional road improvement funding and other new revenues from federal sources, the Transportation Economic Development Fund has provided communities in Oakland County and the Road Commission with the means to address some of the more critical transportation needs in the County. At a consequence, the road needs in Oakland County have begun to stabilize.

NEW FEDERAL REVENUE SOURCES

Over the past three years Oakland County has realized a decrease in federal revenues from traditional sources. For example, the Federal Aid to Urban Systems (FAUS) program was established in 1972. Between 1972 and 1987, the communities in Oakland County and the Road Commission shared approximately $4.2 million per year in FAUS funds. Since 1987, FAUS revenues have dwindled to $3.5 million as a result of federal deficit reduction efforts.

Communities in Oakland County and the Road Commission have been fortunate to make up for this loss in federal aid from other sources. Since 1987, Oakland County has been able to attract millions of dollars in direct appropriations from Congress. Federal demonstration projects have been completed or approved for many of the major corridors in Oakland County, including Dixie Highway, M-59, and Walton Boulevard. Road improvements are also scheduled for many of the roads feeding these major corridors. Projects on Baldwin Road, Joslyn Road, and Rochester Boulevard are also scheduled.

SUMMARY OF STATE AND FEDERAL FUNDING

None of the funding mechanisms mentioned above can provide sufficient revenues to meet all of the needs identified by community officials in Oakland County. However, it appears that the magnitude of the needs has stablized because of these additional road funding mechanisms. Even though the trend toward increased highway needs has been slowed, the magnitude of these needs still justifies a comprehensive and vigorous effort to generate additional revenues.

The Road Commission has provided a leadership role in efforts to obtain the road funding necessary in Oakland County. The Road Commission has a commitment to continue to seek the funding necessary to meet these needs.

FUTURE FUNDING EFFORTS

Highway improvement needs on county roads now exceed $1 billion. In order to obtain the funding necessary to meet these needs, the Road Commission will continue its efforts to obtain additional funding at the federal, state, and local levels. The following general strategies were developed by the Road Commission to accomplish this goal.

FEDERAL FUNDING STRATEGIES

In early 1990, President Bush announced his proposed national transportation policy. In essence, the policy called for a lesser role for the federal government in transportation funding. This new policy, candidly called "Fend for Yourself Federalism", will require a significantly greater commitment for funding transportation improvements on the part of the state and local governments. Nevertheless, the federal government will continue to play a role in key arenas. These arenas will be the focus for Road Commission funding efforts.

The Road Commission will continue to seek federal demonstration grants for highway projects on roads of national significance. In addition, the Road Commission is pursuing a special appropriation from Congress to implement an advanced traffic management system in Oakland County. This system would provide the basis for the development of intelligent vehicle-highway systems (IVHS) in Oakland County. The Road Commission is seeking millions of dollars to develop, implement, and maintain such a system.

STATE LEVEL FUNDING EFFORTS

The Road Commission will continue to pursue a state-collected fuel tax increase of at least six cents per gallon. Half of these increased revenues would be devoted to the Michigan Transportation Fund, which is the principal source of revenue for state, county, city, and village road systems, and the other half would be devoted to the Transportation Economic Development Fund.

It has become clear from the comments of community officials and from financial analyses that funding to maintain Road Commission operations is insufficient. The state-collected fuel tax reached it upper limit of 15 cents per gallon in January of 1984. Since that time, tremendous demands have been placed on the road system and the Road Commission. While the demands have escalated, the purchasing power of each tax dollar collected has diminished and the impact of more fuel efficient vehicles has also taken a toll. As vehicles become more fuel efficient, drivers pay less tax per mile driven. Thus, demand is up and revenues are down.

As the responsibility for road funding is shifted from the federal level to the state and local levels, the need for an increase in the state fuel tax becomes all the more clear. In addition to the state-collected tax, the state legislature must act expeditiously to give local units of government greater flexibility in funding road improvements. Enabling legislation is needed for developer impact fees, local fuel taxes, and other innovative funding mechanisms. Changes in existing statutes must be made to allow greater flexibility for local units of government in tax increment financing and in the use of existing tax revenues for road purposes.

A significant increase in the state-collected fuel tax is needed. But the state fuel tax alone will not generate sufficient revenues to meet the road needs identified in Oakland County and make up for lost federal revenues. Other, innovative mechanisms must be established.

LOCAL FUNDING EFFORTS

In November of 1989 the Road Commission submitted a proposal to the County Board of Commissioners for a road funding partnership that would begin in 1991 and extend through the year 2000. The partnership proposal calls for a yearly contribution of $10 million from the County Board of Commissioners for a period of ten years. The total $100 million request would be matched by $104 million from traditional Road Commission revenue sources, primarily federal, state and local transportation funds.

The total $204 million partnership program is comprised of five elements:

1. A continuation of the existing Tri-Party Program at a funding level of $30 million over the decade.
2. A $40 million "quality of life" grant program, with monies distributed to communities according to state equalized valuation (SEV).
3. A county-wide priority road improvement program, wherein a $28 million appropriation from the County Board of Commissioners would be matched by $84 million in Road Commission revenues.
4. A $2 million grant for an advanced traffic management system for southeast Oakland County.
5. A $20 million program to improve the safety and condition of 70 miles of roads that are in poor condition.

A continuous, reliable source of funding is necessary, especially in light of road funding cutbacks at the federal level.

Other local funding mechanisms must be explored to meet the backlog of road needs in this time of declining revenues. The only option currently available would be to seek a county-wide vehicle registration fee of up to $25. This option was placed on the ballot in November of 1988, but failed to win voter approval. It is felt that putting this referendum before the voters of Oakland County again is not an attractive option.

LOCAL INITIATIVES FOR MEETING TRANSPORTATION NEEDS

Oakland County communities are undertaking a number of initiatives that would assist in meeting the transportation needs that have been identified. These initiatives come in a variety of forms, but most are related to local planning efforts to reduce the transportation impacts of growth or local funding initiatives.

PLANNING ACTIVITIES

Ten communities in Oakland County are currently engaged in or have recently completed major Master Planning efforts. Two additional communities have recently established road committees to determine transportation priorities of the community.

Local communities are seeking a closer tie between transportation and land use planning. They are seeking up-to-date traffic information and assistance in identifying the traffic impacts of development. While many of the established communities have transportation staff, there is a need to assist the smaller communities who lack this expertise. Many of the communities that do not have transportation planning staff are very interested in participating in the Community Transportation Planning Assistance Program (CTPAP) being considered by the Road Commission as an additional service.

Local communities are also developing ordinances and strategies that address the impact of development on the road system. Oakland Township has adopted a density ordinance which permits higher densities in developments built with access on paved roads. Developers who seek to develop with access to gravel roads are encouraged to pave the access road in order to obtain the higher density factor. Rose Township prohibits developments which access gravel roads only. Still many other communities have enacted ordinances that regulate the design standards of private roads as a safeguard to any eventual transfer of these roads to public jurisdiction.

Several communities in the county are members of a consortium studying and developing legislation and ordinances which would assist in managing growth and development. This committee is examining a range of planning concepts and tools which could be enacted by local officials to manage growth.

LOCAL ROAD FUNDING

The Tri-Party Program, jointly funded by the local communities, Road Commission, and Oakland County general government, has been a most successful program in the last decade. Local communities which have participated in this program have contributed $10 million in local funds for road improvements through this program. On other road improvements initiated by the Road Commission, local communities have provided over $23 million in local matching funds. Many communities, such as Troy which recently spent over $13 million, undertake projects on county roads, on their own, with no participation from the Road Commission.

The Special Assessment District (SAD) program of the Road Commission has also been a major source of road improvements on subdivision streets in the townships in the last decade. Over $32 million in road improvements have been made through this program since 1980. Townships have contributed over $3 million to these improvements from general funds.

Local communities make other contributions that are less visible, but which significantly augment Road Commission funds. Local communities provide litter pick up and additional roadside mowings, for example. Several communities subsidize local citizens who haul roadside litter away or have it hauled away at their expense.

Many communities utilize Community Block Grant funds for road improvements. While road improvement is a valid use for such funds, it is but one of several categories in which the community can use the funds. Block Grant funding is used for such projects as road graveling, approach paving projects, and conversion of private roads to public.

Most communities actively seek contributions from developers in the community to mitigate local transportation problems. Several communities receive gravel from local pit operators for improving gravel roads. Others seek land dedication for future right-of-way. Developers often assist local communities in road capacity improvements in the vicinity of their developments. Many communities are seeking greater authority to obtain road improvements from developers.

Dust control and surface stabilization on the 940 miles of county gravel road constitute a major local expenditure. The annual expenditure for chloride applications is now approximately $600,000 per year, of which about half is supplied by local governments from general operating revenues.

OTHER INITIATIVES

Thirteen local communities reported that they have either successfully passed local bond issues or millages for road improvements, or are seriously contemplating such action. Several others have initiated Tax Increment Finance Authorities (TIFA's) or Local Development Finance Authorities (LDFA's) to assist in road improvements in their community. One community is currently considering an excise tax on development to offset the impacts of development on public infrastructure.

Speed enforcement has also become a priority in several communities, with two reporting that they have augmented their staffs with additional full-time traffic enforcement officers. Several other communities have requested speed studies to determine the appropriateness of existing speed limits.

STRATEGIC IMPLICATIONS

The Strategic Planning Process of the Road Commission is a recognition of the importance of the role that local communities play in the improvement of the county road system. The material contributions which

they make, as well as the flow of information that they provide, are key to tailoring Road Commission services to meet the needs of the communities of the county.

There is a continuing need to maintain effective lines of communication with local communities. Road Commission staff is encouraged to improve communications with local officials wherever and whenever possible by supplying up-to-date schedules, technical information needed for local planning purposes, and status reports of Road Commission activities that impact the local community.

Staff is also encouraged to include the local community whenever and wherever possible in the planning stages of Road Commission projects. Local communities have a personal as well as a fiscal stake in the outcome of these planning activities.

The Road Commission should continue the investigation of providing planning assistance to local communities as an additional service. The focus of this service should be to provide the local community with information regarding the impact of development on the transportation system and other information which may be of assistance to local officials in reaching decisions regarding development and traffic impacts. Emphasis in this program should be on assisting local communities in their planning, not on planning for the community.

Finally, the tacit appreciation of the contributions made by local communities should become explicit. The central role of the local communities as the customers of the Road Commission should become the major consideration in formulating service and funding strategies. Assisting local communities in achieving their developmental and transportation goals should be foremost in all activities of the Road Commission.

SUMMARY OF FUNDING EFFORTS

The information received through the Road Commission's strategic planning process has been instrumental in formulating a comprehensive funding strategy for Oakland County roads. There have been both successes and failures in the efforts to generate new revenues. Nevertheless, the road needs in Oakland County are still substantial.

Many communities are undertaking a variety of local initiatives to help meet these needs. Together, in partnership with the Road Commission, progress can be made. It is recognized, however, that the level of funding necessary to meet these needs will probably never be attained. Consequently, other solutions are being explored.

AREAS OF STRATEGIC CONCERN

Some concerns were expressed almost universally by comunities during the 1989-90 series of meetings. These concerns focused on preserving the integrity of the road system and on dealing with tremendous growth in traffic volumes.

In order to properly manage response to these community concerns, the Road Commission has established four areas of emphasis:

1. Maintenance of drainage systems and structures.
2. Gravel road maintenance and rehabilitation.
3. Paved road maintenance and improvement.
4. Traffic management and safety.

Each of these emphasis areas is discussed below, and the strategic implications of the concerns in these areas are explored.

DRAINAGE SYSTEM MAINTENANCE

Maintenance of drainage systems on county roads is a strategic concern to the majority of communities in Oakland County. Fifty-seven percent (57%) of all communities visited identified drainage maintenance as a high priority of the community, an ineffective Road Commission service, a short term need, or a long term priority of the community.

Seventy-three percent (73%) of the townships visited reported drainage maintenance as a major need of the community. Seven townships reported specific problem drainage locations in their communities needing immediate attention, and three townships - Royal Oak, Rose and Springfield - identified township-wide drainage programs as long term transportation priorities.

Seventy percent (70%) of the villages visited also identified drainage maintenance as a major concern of the community. Four communities identified drainage maintenance as one of the five top Road Commission services needed by the community, and an additional four villages - Clarkston, Franklin, Holly, and Wolverine Lake - identified specific locations requiring correction in the short term. Wolverine Lake identified drainage maintenance as a long term transportation need of the village.

While drainage is less a concern in the cities visited, over 44.8% did cite drainage maintenance as a major need of the city and/or as being a service which was below average in effectiveness. Four cities - Bloomfield Hills, Keego Harbor, Pontiac, and South Lyon - identified specific locations requiring immediate attention. Two cities - Lake Angelus and Lathrup Village - identified improved drainage maintenance as a long term transportation priority.

STRATEGIC DRAINAGE CONCERNS

While standing water is usually the point of entry in discussions regarding drainage concerns of the community, it rarely represents the major concern. Rather, drainage concerns are related to several broader categories: damage of bases, sub-bases, and roadway surfaces; environmental concerns; safety concerns; erosion control; and aesthetics.

Damage to Roadway Bases, Sub-Bases and Surfaces

Inadequate drainage, especially during winter months, can significantly damage roadway bases, sub-bases, and pavement surfaces. Progressive freezing and thawing of saturated soil beneath the pavement surface produces buckling, heaving, cracking and spalling of the pavement surface often requiring major rehabilitation of the roadway as well as drainage improvements.

Environmental Concerns

Several communities located in the vicinity of lakes and streams are concerned about drainage of roadway contaminants, such as petroleum based products and salts, into these lakes and streams. For these communities, drainage is adequate, but flows to inappropriate locations.

Safety Concerns

Inadequate drainage resulting in standing water, especially in winter months, is a safety hazard noted by several communities. Progressive freezing and thawing results in standing water freezing on roadway surfaces at locations which may not be anticipated by motorists. These locations can be especially difficult to anticipate and prepare for during hours of darkness. In addition, standing water can pose a serious safety concern even during warm months due to loss of surface traction and hydroplaning.

Erosion Control

Erosion control, while evaluated by communities as a separate Road Commission service, is often related to drainage concerns. Communities report rutting and washing of gravel surfaces as a concern as well as redepositing of gravel and dirt at undesirable locations on roadway surfaces as issues related to drainage. This also is a safety concern.

Ditch Cleaning and Reshaping

Ditch cleaning and reshaping are also Road Commission services rated separately from drainage maintenance, yet are undoubtedly related in may instances to drainage problems and concerns. Discussions of this service often include observations regarding filled and overgrown ditches, and collapsed culverts and drainage structures.

SHORT TERM DRAINAGE MAINTENANCE ACTIVITIES

Several short term activities that can contribute to a longer term strategic solution to drainage concerns can be identified:

1. Inventory and rank locations where standing water, surface ponding, washing, contaminant run-off, sub-base damage, and inadequate ditching occur on county roads.

2. Investigate the relationship between problematic drainage locations and accident and environmental data to determine priorities and possible countermeasures.
3. Evaluate the adequacy of existing drainage maintenance equipment and usage for possible acquisitions, redistribution to different maintenance centers, and improved scheduling.
4. Accelerate, as warranted, ditch cleaning and reshaping, regraveling and grading programs, and crack and joint filling maintenance activities in priority drainage problem areas.
5. Develop a bridge and drainage structure information management system to establish improvement priorities and alternative solutions.

LONG RANGE DRAINAGE STRATEGY

Information received in the short range can be utilized to develop a longer range drainage maintenance strategy. Elements of that strategy may include:

1. Develop a county-wide roadway drainage plan.
2. Translate the master drainage plan into phased drainage improvement projects as part of the 3-year financial planning process of the Road Commission.
3. Regularly monitor accident and environmental data for drainage implications and needed countermeasures and incorporate these countermeasures into the long range drainage improvement plan.

GRAVEL ROAD MAINTENANCE AND REHABILITATION

Gravel road maintenance is a major Road Commission service in Oakland County. Over 940 miles of the 2,400 mile system are gravel roads. The majority of this mileage is located in areas currently experiencing accelerated growth and development. Much of the growth and development, manifested on these gravel roads as increased traffic, is incongruous with the character of the community.

It probably should not be surprising, then, that gravel road maintenance and rehabilitation is not characterized by the same level of agreement regarding the desired courses of action as is present regarding drainage maintenance. No one clear-cut gravel road problem or course of action can be identified.

STRATEGIC GRAVEL ROAD CONCERNS

Community concerns regarding gravel roads can be grouped into six categories:

- Inadequacy of Road Commission Scheduling.
- Increased Traffic on Gravel Roads.
- Safety Concerns.
- Drainage/Run-Off/Erosion Concerns.
- Environmental Concerns.
- Long Range Planning for the Community.

Inadequacy of Road Commission Grading Schedules

Several communities reported that the number of gradings, the pattern of gradings, and the timing of gravel road gradings is not adequate in their community. These communities reported that gradings often are not well coordinated with chloride applications and follow no apparent pattern. Local officials are often unable to inform residents of when gradings will occur or in what order.

Increased Gravel Road Traffic

Traffic on gravel roads, especially in those communities experiencing accelerated growth, is becoming a major community concern. Increased traffic results in deteriorating surface conditions, in increased complaints regarding dust and the adequacy of dust control measures, and in increased complaints regarding travel speeds.

In most instances where increased gravel road traffic volumes are occurring, communities seek increased grading, regraveling, and dust control. These communities are mixed, however, regarding other countermeasures. Many prefer not to have gravel roads paved, feeling that paving will encourage still additional traffic and higher speeds. Some communities see paving as a definite shift in the basic character of their communities. In most instances where paving is not seen as a preferred alternative, increased enforcement of speeds or speed reductions are identified as preferences.

Safety Considerations

Increased traffic on gravel roads has brought certain roadway features, such as sight distances, curves, narrow rights-of-way, and roadside obstacles, into sharper focus in some communities. In those communities seeking paving of these roads, suggested projects usually include elimination or mitigation of these problems. For communities not seeking paving of gravel roads, speed reductions and judicious signing are usually recommended.

Traffic conflicts with pedestrian and equestrian users of gravel roads are also of concern to some communities in the county. These communities seek countermeasures to reduce these conflicts usually through speed enforcement. Separate pedestrian and equestrian facilities are usually not sought by these communities.

Gravel wash and vehicle traffic dragging gravel onto paved surfaces at intersections with paved roads is also a concern in many communities. Several communities have initiated approach paving programs to remedy this situation. A common complaint in communities engaged in pavement approach programs involves engineering standards for curbs and gutters which seriously restrict the amount of approach paving that can be done with available funds.

Washouts and rutting due to insufficient road drainage also poses a safety concern on gravel roads. The effective width of the road surface is generally diminished, and the road surface becomes less stable. Sometimes the Road Commission has been forced to close roads for this reason.

While not universally true, there is a common tendency in conversations regarding gravel road safety concerns to focus primarily on the dramatic accidents rather than on the long term trends in accidents. This may reflect a general inadequacy of the long term accident information available for gravel roads or the relative infrequency with which gravel road accidents are reported.

Drainage/Run-Off/Erosion Concerns

Drainage concerns noted in the sub-section above on drainage maintenance apply to gravel roads in general. In addition, some communities report that grading practices tend to remove the crown in gravel roads and generally lower the roadway elevation, creating berms along the roadside. These berms tend to impound water and confine it to the roadway surface. These communities seek grading practices that would return the gravel to the roadway and re-establish the crown of the road.

Run-off, gravel wash, and erosion are common concerns in communities with gravel roads. This is especially true following major thaws and during spring and summer months as a result of major rain storms. Rutting due to gravel wash and erosion were cited by some communities as potentially hazardous to school bus traffic and to other vehicles with high centers of gravity.

Environmental Concerns

Environmental concerns associated with drainage of contaminants into nearby streams and lakes are not as frequent with gravel roads as with paved roads since salting is a less common practice and petroleum based contaminants are not as commonly present. Silt is a more common problem along gravel roads.

Environmental concerns regarding gravel roads are often of an aesthetic nature or concern for tree and vegetation removal along these roadways. Some communities find safety and advisory signage excessive and/or unnecessary and antithetical to the characteristics of the areas served by gravel roads. This is especially true along less heavily travelled gravel roads where the majority of the traffic is made up of local residents familiar with the roadway.

Many community officials feel that the natural vegetation along gravel roads is a primary asset of their community and a major reason why many residents elected to live in these areas. They noted that many gravel roads are narrow and that vegetation often come right up to the roadway edge. Widenings, realignments, and drainage improvements, of necessity, often require removal of natural vegetation. Most of the communities in which this is a major concern seek assurances that road projects on gravel roads will minimize the impact on natural vegetation along the roadside.

Long Range Planning

All communities have a need for a basic network of paved roads. Communities on the urban fringe may require a more extensive network than those in more rural areas. Nevertheless, each community expressed a need for a good north-south and a good east-west road as a minimum.

Many communities feel that the county primary road system should be paved in its entirety. After that, it is a difficult task to decide what other roads may require paving in the future. Only a couple of communities are seeking to pave all of their main roads in the foreseeable future. For most communities, especially those in rural areas, a major paving program is inconsistent with their long range goals. After these communities obtain a basic network of paved roads, they merely want good gravel roads on the remainder of the network.

This implies a strategy for the long range improvement of the gravel road system. Initially, it is important to determine which roads the communities want paved.

SHORT TERM GRAVEL ROAD MAINTENANCE ACTIVITIES

Given the many perspectives on acceptable alternatives regarding gravel road maintenance in the County, any long term strategy will feature many specialized approaches and features. Some activities can be identified in the short term, however, that will be beneficial and generally applicable in all communities:

1. Improved coordination of gravel road grading and dust control activities. This activity should include better communication of schedules and priorities between the Road Commission and local officials. As warranted by efficiency and cost-effectiveness, consider augmentation of existing gravel road maintenance forces by private contracting.
2. Initiation of a regular program of monitoring gravel roads for traffic volumes, surface conditions, and accident history to determine applicable performance criteria and countermeasures. Initiate development of a gravel road information management system, similar to the pavement management system now in operation.
3. Re-examination of signage requirements on gravel roads for appropriate adjustments.

4. Identification of drainage problem locations on gravel roads and incorporation into the master drainage plan of the Road Commission.
5. Examination of materials and technical specifications for gravel road design.
6. Re-examination of engineering requirements associated with approach paving projects and programs.
7. Review of road grading practices and initiation of a road grading training program.
8. Expansion of the current road chloride program.

LONG RANGE GRAVEL ROAD STRATEGIES

Strategies regarding long range improvement of gravel roads must incorporate local community preferences as well as development of procedures for establishing priorities based on engineering, right-of-way, environmental, and safety criteria.

The following long-range activities are seen as part of these strategies:

1. Identify high accident, poor drainage, high traffic gravel road segments for high priority improvement projects. Additional weight should be given to those projects from this inventory that have been identified by the community as having high priority as well.
2. Develop an on-going reporting and ranking scheme for gravel road improvements based on performance measures related to:
   A. Accident history and safety concerns.
   B. Drainage, washing, and erosion concerns.
   C. Traffic volumes.
   D. Road surface condition.
3. Develop a long range gravel road improvement plan and incorporate into the long range financial planning process as capital improvements. This plan should emphasize:
   A. Right-of-way requirements for advance purchase or acquisition.

B. Gravel road pavings, approach pavings, and drainage improvements.

C. A priority regravelling program.

D. A priority grading and dust control program.

4. Develop a long range road paving plan in cooperation with the local units of government. This plan will provide the basis for a staged program of gravel road improvements with the ultimate objective of providing a paved road with all necessary safety and drainage features in place.

PAVED ROAD MAINTENANCE AND IMPROVEMENT

The dramatic growth reported in 1988 has continued in Oakland County. Communities reported no slowing of the rate of development and anticipate that growth will continue in the near future.

This dramatic growth has had a marked impact on the paved road systems of the county. The condition of the road surfaces and the traffic carrying capacity of the roads are most impacted. With the continued growth has come increased traffic volumes which damage pavement surfaces and reduce the service life of pavements. Concentrated development in many locations significantly increases traffic congestion especially during peak hours. New development often produces traffic volumes that exceed the capacity of roads designed and built in the past to accommodate a more rural and suburban development pattern.

Transportation projects to rehabilitate deteriorating roads and to increase capacity form a major element of the long range transportation needs of the communities of Oakland County. Over half - 31 - of the communities in the county have identified major road widening projects as high priority projects for their community. Over 160 miles of road widening needs have been identified in these communities at a cost of almost $600 million.

In addition, 65 intersections have also been identified as needing safety and capacity improvements by the communities. These required improvements include dedicated turning and passing lanes, additional through laneage, and additional capacity at existing turn lanes.

Over 70 segments of paved roadway have been identified by the communities as requiring extensive rehabilitation and restoration. Combined with the restoration needs identified by the Road Commission's Pavement Management System, almost 850 lane miles of road will need pavement surface improvement over the next decade.

Increased joint and crack sealing, pothole patching, and base repairing were also identified as being needed on many pavement sections in the county.

The rate of economic development, coupled with the increasing age of pavements, increasing cost of reconstruction, and increasing uncertainty of federal funding for construction, has created a backlog of paved road needs of staggering proportions. Resources approaching $900 million dollars would be required to address the complete backlog in the next decade. At the current rate of spending for road improvement, it would take 60 to 90 years to retire this backlog.

This situation has resulted in the development of stringent priority rankings for paved road projects to assure the cost-effective expenditure of limited funding. Another strategy has been to earmark Road Commission revenues only for those projects for which local matching funds are available. In many cases, local communities are being called upon to assume greater funding responsibility for paved county road projects.

SHORT TERM PAVED ROAD STRATEGIES

Short term alternatives, emphasizing paved road preservation and improved capacity, include:

1. Use of the recently implemented Pavement Management System to establish priorities and treatment types for paved road preservation projects.
2. Initiation of a regular program for paved road preservation activities in the Road Improvement Program (RIP).

3. Review of current paved road maintenance practices with emphasis on innovative approaches for paved road preservation and maintenance administration.
4. Development of a roadway information system that would identify congested areas which require capacity improvements.
5. Exploration and implementation of low-cost, innovative approaches for improving mobility in congested areas. Alternatives include, but are not limited to:
   A. Reversible traffic lanes.
   B. Minor widenings such as intersection flarings and passing lanes.
   C. Restriping.
   D. Turn and parking restrictions during peak hours.
   E. Traffic signal optimization.

LONG TERM PAVED ROAD STRATEGIES

The Road Commission is currently pursuing several long range strategies to meet the paved road needs of the county:

1. Actively pursue increased user fees from fuel purchases with increased dedicated funding from the Transportation Economic Development Fund.
2. Seek legislation which would enable local road agencies to levy fees on development for mitigation of traffic impacts.
3. Obtain recognition of the significance of local road systems to national and state economic vitality and to insure continued federal participation in local road improvements.
4. Active participation in local road improvement demonstration programs.
5. Identification of new transportation revenue sources.

Ultimately, it may be necessary to divide paved road needs into two distinct categories -- road preservation/rehabilitation and traffic management -- with construction funds being dedicated primarily to paved road preservation and rehabilitation. Solutions to traffic congestion would emphasize use of innovations related to "smart roads" technologies.

This "smart roads" strategy is developed further in the section below.

TRAFFIC MANAGEMENT AND SAFETY

Local communities are asked, as part of the strategic planning conversation, to evaluate Road Commission services related to signal and sign maintenance and modernization. They are also asked to assess local traffic impacts in the community and to identify traffic management requirements.

As noted in the section on paved roads above, requests for traffic signals and dedicated turn lanes are major aspects of local community strategies to mitigate the traffic generated by development in the community.

The communities of Oakland County made over 100 requests for traffic control devices, signal optimization, or signal maintenance during this round of strategic discussions. In addition, traffic signalization was often identified as a part of intersection improvement requests made by the communities.

STRATEGIC TRAFFIC MANAGEMENT CONCERNS

The strategic traffic management concerns can be categorized as follows:

1. Traffic signal installation concerns.
2. Traffic signal maintenance concerns.
3. Traffic signal optimization concerns.

Each of these areas of concern are addressed below.

Signal Installation Concerns

Signal installation is requested for at least two reasons by local communities. The first is to improve flow at intersections and to create gaps along road segments to permit ingress and egress to local properties. The second reason is to improve safety.

Road Commission responses to signal requests based on safety are often a source of frustration to local officials. Warrant procedures are often confusing to local officials who have difficulty in explaining denied requests for signals to their constituents. Often officials perceive the explanation as "not enough people have been killed here to warrant the signal". While this is not a correct perception, great care is needed in explaining the warranting procedure to insure that this interpretation is not given to the findings.

A second source of frustration to local officials is the frequent delays experienced in obtaining operational signals once they are approved. A clear understanding of the coordination required with utility companies to achieve final operational status is often the source of this dissatisfaction. Similarly, the volume of signal work being performed throughout the county is not readily apparent and hence not often easily identified as a source of delays.

Traffic Signal Maintenance Concerns

Some communities, primarily those on the peripheries of the county, have the impression that response times for signal malfunctions and maintenance are inadequate. Similarly, some communities that contract with the Road Commission for signal maintenance services feel that they are not given priority treatment. The volume of signal maintenance has expanded with the number of new signals installed, and this may not be readily apparent to some community officials. Nevertheless, the general impression of traffic signal maintenance services provided by the Road Commission is good.

Traffic Signal Optimization Concerns

As mentioned in a previous section of this report, the county road capacity needs are estimated at almost $600 million. As traffic congestion has increased, communities have been seeking ways to

improve traffic flow until such time that funding becomes available for road widening. Traffic signal optimization is one means available to improve mobility in these congested areas.

Traffic signal optimization requires both good information about traffic patterns and reliable traffic control equipment. Most traffic signals are currently pre-timed based on historical traffic patterns. The Road Commission has had an active program of signal controller modernization, so that more accurate, solid state equipment makes up most of the traffic control system at this time. However, without more timely information on traffic patterns, traffic signal optimization is difficult.

SHORT TERM TRAFFIC MANAGEMENT STRATEGIES

While Oakland County communities are generally satisfied with Road Commission maintenance of signals and signs, there is a requirement to improve communication with local officials regarding proposed traffic control device changes in their community. Specifically, there appears to be a requirement to more thoroughly inform local officials of project schedules and progress, and notification of any delays in progress.

There is also a requirement to more fully review traffic control warrant studies with local officials, especially in the case of denials. Many communities do not have traffic engineering staff and therefore lack resident expertise to interpret traffic warrant studies. Yet, they are called upon to discuss these matters with residents who are seeking traffic control devices. It is incumbent upon Road Commission staff to provide the thorough explanation necessary in these situations.

This requirement to improve communications with local officials regarding traffic control may also need to be extended to signage as well. Local officials, especially in more rural areas of the county where much of the traffic is local, do not always understand the safety and legal considerations which accompany signing activities. In these

cases, signing is often seen as excessive and/or redundant. Many of the complaints regarding signs in these locations may be addressed effectively by improved discussion of the signing with local officials.

Other short term strategies include:

1. Develop a traffic signal management information system that will:
   A. Monitor traffic and accident conditions, and flag intersections approaching traffic signal warrants or requiring re-timing.
   B. Track signal equipment and parts inventories.
   C. Flag signals and controllers in need of routine preventative maintenance.
2. Develop a strategy for increasing the traffic volume counts taken on a routine basis. Intersection counts should take precedence over mid-block counts; and other sources of traffic count information, such as communities, SEMCOG, and TIA, should be utilized.
3. Continue to apply for federal aid to modernize signal control equipment.
4. Review new software developments for optimal signal timing.
5. Improve facilities for signal equipment repair and fabrication.
6. Improve trouble-shooting capabilities of Traffic-Safety signal crews.
7. Utilize "road-based" performance measures, such as Level of Service, to evaluate overall system performance and Traffic-Safety Department progress.

LONG RANGE TRAFFIC MANAGEMENT STRATEGIES

As noted above, there is a growing awareness that improved use of traffic control devices may be a necessary and desirable alternative to increased capacity improvements through construction. Increased use of loop detection devices and microprocessor controllers at intersections is a current example of this type of approach to capacity improvements in lieu of construction.

New technologies which utilize remote sensing of traffic conditions coupled with centralized processing and retiming of signals as required by local traffic conditions are currently being developed as viable alternatives. Systems featuring video monitoring of traffic conditions with subsequent "real time" signal retiming are, for example, possible at the present time.

The Road Commission is currently developing a strategic demonstration program to apply this technology to the county road system. It is anticipated that this demonstration project will result in a cost-effective alternative to capacity improvements involving construction in many instances, thus resulting in an accelerated reduction in the traffic capacity backlog.

CONCLUSIONS

This round of strategic planning discussions prompts the following major conclusions:

1. Growth will continue throughout much of Oakland County in the foreseeable future. New growth will continue to reflect a greater transformation of the county into a new type of American community in which travel patterns are diffuse and constantly changing. This new growth will generate added traffic, congestion, and roadway deterioration on the county road system.

2. Growth in new areas of the county will significantly alter service requirements, both in terms of quantity and type. Service strategies that monitor changing service requirements and which permit rapid adaptation to changing conditions will become increasingly important.

3. The preservation of existing roads in established areas, including aesthetic maintenance, will increasingly compete with the need for new and expanded roads in growing areas. Local communities in established areas will see preservation and aesthetics as basic ingredients of their viability in the new American community which has emerged in Oakland County.

4. Strategic information exchange with local communities at all levels of Road Commission activity will become increasingly important in the years ahead. Local communities are not only the primary clients of the Road Commission, but the primary source of information regarding the success of Road Commission strategic efforts.

5. Clear and widely accepted measures of performance are a current need which will increase in importance in the future. Performance measures based on cost-effectiveness as well as technical criteria will be required as competition for scarce resources escalates and local service requirements change. These performance measures will have important implications for services rendered and methods of delivery.

6. Development of strategic data bases which make information rapidly available for analyzing new alternatives and supporting decision-making will increasingly become important. The growing need to answer "what if" questions will make documenting current conditions only a preliminary step to identifying future situations and responses in these data bases.

7. New technologies will increasingly become available and affordable to the Road Commission. These technologies, in many cases, will be viable alternatives to existing options. Advanced traffic monitoring and signal timing will, for example, figure prominently as an alternative for improving capacity in many instances.

8. Road funding will continue to be a major concern. Current road financing mechanisms are inadequate to fund road needs and to provide the required flexibility to changing conditions. New funding mechanisms and sources which more adequately reflect usage of roads, benefits derived from road improvements, and impacts imposed on the road system must be authorized.

9. The erosion of federal support of local road systems will continue in the foreseeable future, and competition for state support for local roads will increase. Forming and maintaining strong local, public-private sector alliances for good roads will be a major requirement for the coming decade.

10. The Road Commission of the future will undoubtedly be different from the Road Commission of today. New skills will be required as new services are identified and implemented. Expertise in such areas as electronics, communications, public finance, contract management, information management, and technology assessment will supplement skills in road building and maintenance. Organizationally, strategic planning concerns will permeate daily activities as they become fully integrated into the financial and operational strategies of the Road Commission.