PLANNING REPORT NO. 15

A JURISDICTIONAL HIGHWAY SYSTEM PLAN FOR WALWORTH COUNTY

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Walworth County Board of Supervisors
Southeastern Wisconsin Regional Planning Commission
Wisconsin Department of Transportation

Southeastern Wisconsin Regional Planning Commission
Continuing Regional Land Use-Transportation Study
Old Courthouse
P. O. Box 769
Waukesha, Wisconsin
53186

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October 1972

Inside Region: $ 5.00
Outside Region: $10.00

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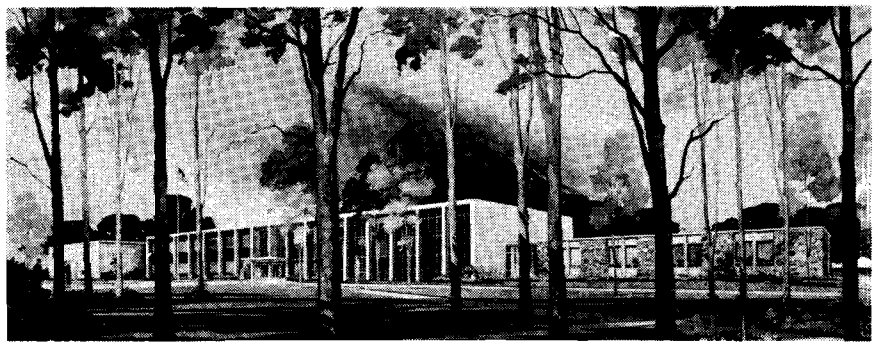
Walworth County



Elkhorn, Wisconsin

October 10, 1972

TO: Walworth County Board of Supervisors
Southeastern Wisconsin Regional Planning Commission
State Highway Commission of Wisconsin

The Walworth County Board of Supervisors on March 19, 1968, directed that a comprehensive study be made of the jurisdictional responsibility for the construction, maintenance, and operation of arterial streets and highways in Walworth County and that such study culminate in the recommendation of a long-range plan for integrated state, county, and local highway system development within the County. In order to carry out the study, an interagency planning staff was assembled with representation of the County, the Regional Planning Commission, and the State Highway Commission. In order to actually involve the local units of government within the County in this important study, a Technical Coordinating and Advisory Committee was formed to assist and advise the interagency staff, with membership from the U. S. Department of Transportation; the Wisconsin Department of Transportation; the Regional Planning Commission; representatives of local units of government; and interested citizens from throughout the County.

This report contains the findings and recommendations of more than three years of intensive study by the interagency staff and the Technical Coordinating and Advisory Committee. The report sets forth a recommended plan for state trunk highway, county trunk highway, and local trunk highway system development within Walworth County to the year 1990, and contains specific recommendations for carrying out that plan.

The findings and recommendations contained in this report were carefully reviewed and unanimously approved by the Technical Coordinating and Advisory Committee. Adoption and implementation of the recommended plan would, in the Committee's opinion, provide the County with an integrated highway transportation system which would effectively serve and promote a desirable land use pattern within the County, abate traffic congestion, reduce travel time and costs, and reduce accident exposure. It would also serve to concentrate appropriate resources and capabilities on corresponding areas of need, assuring the most effective use of the total public resources in the provision of highway transportation and providing a sound basis for the establishment of long-range fiscal policies and for the systematic programming of arterial street and highway improvements within Walworth County.

This report, and the plan it represents, are the result of a most unusual intergovernmental planning effort undertaken for the first time in a predominantly rural county within the Southeastern Wisconsin Region. The report and plan are hereby respectfully submitted for your careful consideration and, hopefully, adoption. Favorable action on the report and plan is respectfully urged by the interagency staff and by the Technical Coordinating and Advisory Committee.

Respectfully submitted,

Milton R. Reik

Milton R. Reik, Chairman
Technical Coordinating and Advisory
Committee on Jurisdictional Highway Planning for
Walworth County

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Chapter I

INTRODUCTION

On December 1, 1966, the Southeastern Wisconsin Regional Planning Commission, pursuant to its statutory responsibilities and after four years of intensive study, adopted two key elements of a comprehensive plan for the physical development of the seven-county Southeastern Wisconsin Region: a land use plan and a transportation plan. On March 17, 1967, in accordance with its advisory role, the Commission certified these plans to the constituent counties, cities, villages, and towns, as well as to certain state and federal agencies, for adoption and implementation. On March 21, 1967, after careful consideration and upon the recommendation of the Walworth County Highway Committee, the Walworth County Board of Supervisors adopted the recommended transportation plan as a guide to be used in making decisions concerning transportation facility development within the county.

The adopted regional land use and transportation plans, as well as the salient findings and recommendations of the comprehensive regional land use-transportation study upon which the plans are based, are set forth in SEWRPC Planning Report No. 7, Volume 1, Inventory Findings—1963; Volume 2, Forecasts and Alternative Plans—1990; and Volume 3, Recommended Regional Land Use and Transportation Plans—1990. The regional transportation plan recommends a threefold approach to the solution of the growing transportation problems of the rapidly urbanizing Region. First, it recommends the development of an expanded, fully integrated regional freeway system which would serve to remove heavy volumes of fast, through traffic from the existing surface arterial street and highway system. Second, it recommends the development of an integrated regional modified rapid transit and rapid transit system designed to complement and supplement the transportation services provided by the regional freeway and standard arterial systems and to provide, efficiently and economically, a high level of transit service to the most intensely urbanized areas of the Region. Third, and of direct concern to this report, it recommends improvements and additions to the existing surface arterial street and highway system in order to provide an areawide system of standard arterials properly related to the recommended freeway and modified rapid transit and rapid transit systems.

The regional transportation plan thus contains, as an integral element, a functional arterial street and highway system plan. This functional plan consists of recommendations concerning the general location, type, capacity, and service levels of the arterial street and highway facilities required to serve the rapidly developing Southeastern Wisconsin Region to the year 1990. Except for freeways the functional plan does not, however, contain recommendations as to which levels and agencies of government should assume responsibility for the construction, operation, and maintenance of each of the various facilities included in the functional plan.[1]

As a logical sequel to the adoption of the recommended regional transportation plan and pursuant to specific implementing recommendations contained in that plan, the Walworth County Board of Supervisors, on March 19, 1968, directed that the County Highway Committee, in cooperation with the U. S. Department of Transportation, Federal Highway Administration; the State Highway Commission of Wisconsin; the Southeastern Wisconsin Regional Planning Commission; and the local units of government concerned, proceed with the conversion of the functional highway system plan contained in the adopted regional transportation plan to a jurisdictional highway system plan. The jurisdictional highway system plan was to contain specific recommendations as to the level and agency of government which should assume responsibility for the construction, maintenance, and operation of each segment of the total arterial street and highway system. Such a plan was also to contain concomitant recommendations for the realignment

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[1] *The regional transportation plan recommends that the Wisconsin Department of Transportation, Division of Highways, assume jurisdictional responsibility for all proposed freeway facilities shown on the regional transportation plan within Walworth County.*

of the federal aid highway systems, as well as of the state and county trunk highway systems, and, if warranted, propose necessary changes in the various state and federal aid formulae.

NEED FOR A COMPREHENSIVE REVISION OF HIGHWAY JURISDICTION

Although implementation of the adopted regional transportation plan is an important reason for proceeding with a jurisdictional highway planning study, other important reasons exist. Among these is the fact that the location and extent of the state and county trunk highway systems in Walworth County, as well as of the related federal aid highway systems, are becoming increasingly obsolete in light of changing areawide land use development patterns and accompanying areawide changes in traffic demand. The rapid conversion of land from rural to urban use and the rapid development of automotive transportation within Walworth County and the Region of which Walworth County is a part, have placed new and greatly increased demands on the existing arterial street and highway system in the county. As documented in the regional land use-transportation study, Walworth County can expect to continue to experience residential, commercial, and industrial growth in the next two decades; and this growth will be accompanied by greater increases in motor vehicle registrations and in the demand for improved highway transportation facilities. Moreover, the changing land use pattern has brought about, and will continue to bring about, important changes in the manner in which the highway system is affected by increased traffic demand so that the existing jurisdictional highway systems may no longer function as effective subsystems on their present alignment and in their present extent.

Another reason for proceeding with a jurisdictional highway planning study at this time is the fact that land use development has in some cases affected the ability of the existing jurisdictional highway systems to perform their intended functions on their existing alignment. As land use and traffic patterns developed over the years within the developed areas of Walworth County, those streets and highways which carried the heaviest volumes of traffic have tended to attract "strip" commercial land use development. Thus, in some cases, a poor relationship was established between the arterial street system and the adjacent land uses which served not only to increase traffic demand and impede the operating capacity of the existing arterials but at the same time to make major capacity improvements in the existing facilities extremely difficult and expensive. Consequently, arterial traffic is, at least in certain urban areas of the county, confined to facilities which were originally constructed to provide for a much lower level of traffic demand and which are difficult and expensive to improve. While these conditions have not grown to the proportions that exist in more highly urbanized counties of the Region, they do exist in Walworth County and may, in the absence of sound local land use planning, be expected to increase as the county continues to develop. Under these circumstances, either rerouting of the arterial traffic is required or the necessary resources must be made available to adequately improve the existing facilities. Realignment of the jurisdictional highway systems is necessary to achieve subsystems which will adequately serve the daily demand for the movement of persons and goods without adversely affecting desirable land use patterns.

In some instances, localized improvements such as adjustments in vertical and horizontal alignment, provision of additional pavement width, control of access, signalization of intersections, and the signing and marking of intersections for channelization of traffic may provide relief from growing traffic congestion. The proper integration of these improvements into a broad, areawide, and long-range effort to improve traffic operations and service also demands realignment of the existing jurisdictional highway systems into more fully integrated subsystems.

Another very important reason for proceeding with a jurisdictional highway planning study at this time is to avoid the kind of fragmented deletions from the county trunk highway system that have been made in some other counties of the Region as land has been converted from rural to urban use and concomitantly incorporated and which have complicated the construction, operation, and maintenance of the remaining portions of the system and have destroyed the necessary system continuity. A need exists to assure the maintenance of an integrated county trunk highway system to serve the growing urban, as well as rural, transportation needs of the county.

Finally, the construction of an areawide freeway system within the Region has radically altered traffic patterns on certain parallel and cross

arterials in and near freeway corridors. The existing traffic patterns in Walworth County will continue to change in the future as additional segments of the regional freeway system are completed and opened to traffic. Adjustment of the jurisdictional street and highway systems to these changes is essential if both the freeway and the surface arterial systems are to function properly and will require the realignment of jurisdictional subsystems.

In summary, a jurisdictional highway planning effort is required at this time in order to cope with the growing and changing traffic demands; to adjust the existing jurisdictional systems to changes in land use development along their alignment; to assure the maintenance of an integrated network of county trunk highways as urban development proceeds within the county; and to adjust the jurisdictional systems to reflect the major changes in traffic patterns resulting from freeway utilization. The need for such a jurisdictional planning effort is, consequently, becoming increasingly more urgent with Walworth County.

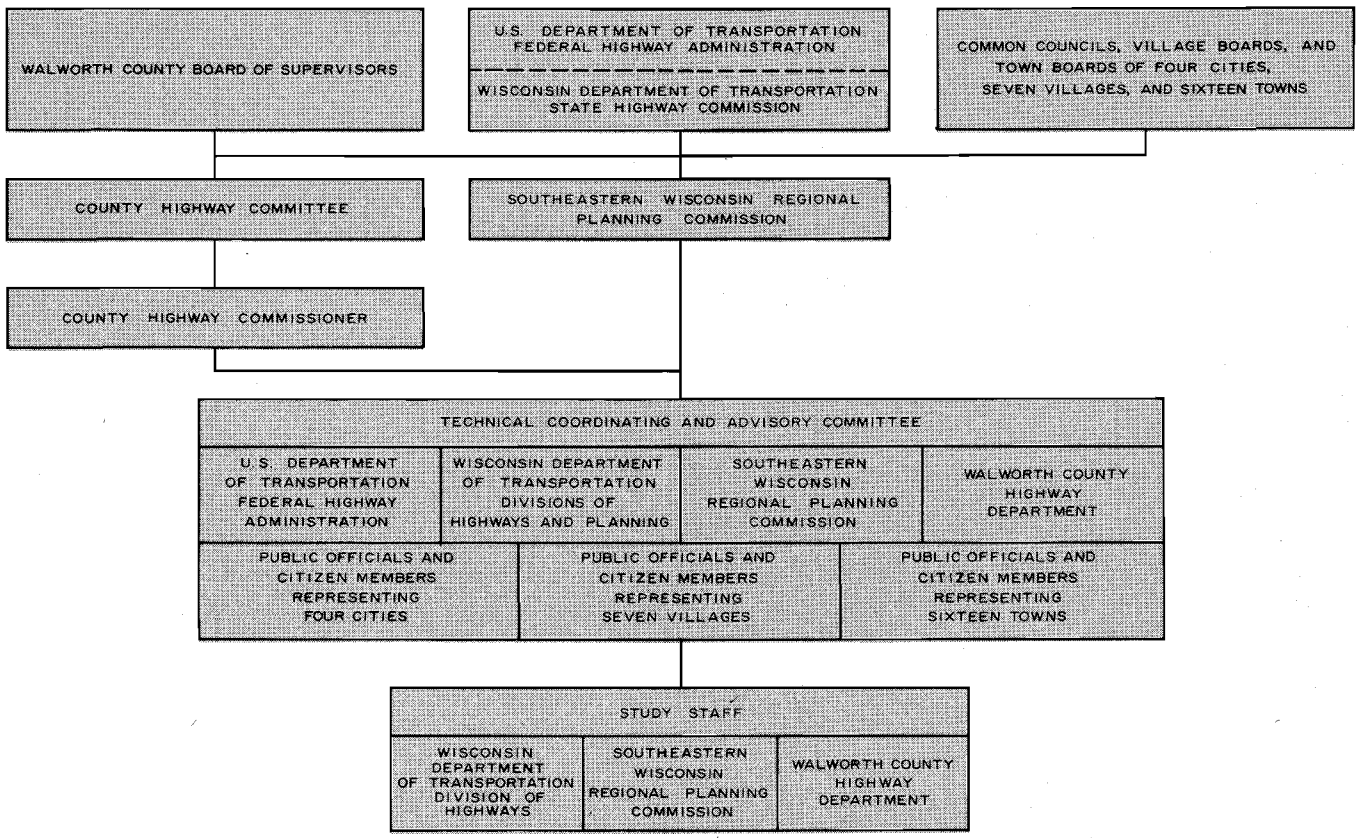
STUDY ORGANIZATION

Staff Requirements

The organization created for the necessary jurisdictional highway planning study is shown in Figure 1. Since the necessary jurisdictional highway planning effort was preceded by an intensive, comprehensive, areawide functional highway planning study, a large staff was not required to carry out the effort. This preceding study provided almost all of the necessary basic planning and engineering data, as well as the basic traffic simulation models, essential to any meaningful jurisdictional highway system planning effort. Thus, only a very small staff of experienced regional transportation planning engineers closely associated with the development of the

Figure 1

ORGANIZATIONAL STRUCTURE FOR THE JURISDICTIONAL HIGHWAY SYSTEM PLANNING PROGRAM
WALWORTH COUNTY, WISCONSIN



Source: SEWRPC.

functional highway system plan and having a thorough understanding of the traffic and land use data and simulation models used in the preparation of that plan was required to convert the functional highway system plan to a jurisdictional highway system plan from a technical standpoint.

Advisory Committee Structure

Because any realignment in the jurisdictional highway systems would affect the federal, state, and local units of government concerned in many ways, it was considered essential to actively involve these units of government in the jurisdictional highway planning process. Such participation had been previously obtained within the county in connection with the regional land use-transportation study through the use of a Technical Coordinating and Advisory Committee on Regional Land Use-Transportation Planning, with technical representation from the county as well as from the federal and state levels. Consultation with the elected heads of the local units of government indicated that a similar arrangement for the jurisdictional highway planning effort would be considered desirable and that the technical, not policy-making, local officials should be represented on the advisory committee. A Technical Coordinating and Advisory Committee was, therefore, incorporated into the jurisdictional highway planning study organization to provide guidance and assistance to the staff during the course of the study. Specifically, this Committee was charged with assisting and advising the study staff on technical methods, procedures, and interpretations; assisting in the assembly and evaluation of planning and engineering data; assisting in the establishment, definition, and review of criteria; appraising alternative plans; and resolving any conflicts which might arise in plan preparation and selection. The Committee was intended to be a working committee and to actively involve the federal, state, and local technical officials in the planning process, an objective which it has fully met.

Membership on the Advisory Committee was drawn to include representation from the U. S. Department of Transportation, Federal Highway Administration; the Wisconsin Department of Transportation, Divisions of Highways and Planning; the Southeastern Wisconsin Regional Planning Commission; the Walworth County Highway Department; and 12 local public officials and citizen members who collectively represented the interests of the four cities, seven villages, and 16 towns within Walworth County.

A complete committee membership list is set forth in Appendix A of this report. The Committee was responsible for the detailed review and ultimate approval of the completed work of the study staff and for transmittal of the recommended jurisdictional plan to the constituent and cooperating agencies for adoption and implementation.

STUDY PURPOSE AND PLAN OBJECTIVES

The primary purpose of the jurisdictional highway planning study was to identify, and subsequently group into subsystems, classes of arterial streets and highways serving similar functions and providing similar levels of service, utilizing criteria established for this purpose, and, further, to assign jurisdictional responsibility over the subsystems so established to the appropriate level of government having the greatest basic interest so as to achieve the following objectives:

1. Promote implementation of the adopted regional transportation plan.

2. Provide a sound basis for the efficient multijurisdictional management of the total arterial street and highway system and for the attainment of the necessary intergovernmental coordination in that management; and thereby avoid conflicts over, and duplication in, the administration, financing, design, construction, maintenance, and operation of the individual facilities which must comprise the total arterial street and highway system.

3. Provide a sound basis for the efficient design and improvement of the total arterial street and highway system by combining into subsystems those facilities which, because of the type and level of service provided, should have similar standards for design, construction, operation, and maintenance.

4. Provide a basis for the establishment of a sound, long-range fiscal policy and for the systematic programming of arterial street and highway improvements; and thereby to assure the most effective use of the total public resources in the provision of highway transportation, focusing the appropriate resources and capabilities on the corresponding areas of need.

5. Provide a basis for the more equitable distribution of highway system development costs and revenues among the levels and agencies of government concerned.

FORMAT OF PRESENTATION

The findings and recommendations of the jurisdictional highway study, as presented in this report, have been unanimously approved by the Technical Coordinating and Advisory Committee on Jurisdictional Highway Planning for Walworth County established for the study. The report briefly traces the historical development of the present state trunk, county trunk, and federal aid highway systems; describes the techniques and procedures used to prepare a plan for the realignment of these systems; and presents the recommended jurisdictional highway system plan so prepared. Existing financing formulae are described, proposals advanced for the revision of these formulae, and the financial feasibility of the recommended plan determined and documented. Finally, means for implementation of the study findings are provided, together with recommended staging of major improvements.

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Chapter II

THE JURISDICTIONAL HIGHWAY PLANNING PROCESS

INTRODUCTION

The establishment, proper improvement, and efficient operation and maintenance of an arterial highway system are important to the orderly growth and development of any area. Such a system is particularly important to the orderly growth and development of a large metropolitan region and to the orderly growth and development of a county, such as Walworth County, which is an integral part of such a large metropolitan region (see Map 1). A well-conceived arterial highway system, delineated on the basis of sound planning and engineering principles, will provide a framework upon which good land use development can progress and, if properly improved and maintained, will stimulate and foster the social and economic, as well as the physical, development of the county and of the entire region of which the county is a part.

The arterial highways of an urbanizing region must function as a single, integrated system over the entire region; yet many levels and agencies of government are responsible for the design, construction, maintenance, and operation of various parts of that total system. The identification of jurisdictional subsystems within the total arterial highway system is, therefore, essential to the attainment of an efficient, workable, and fully integrated highway transportation system and to the avoidance of inefficiencies and duplication of effort. The planning of the total arterial highway system and the identification of the various jurisdictional subsystems on an objective, rational basis are highly complex, technical tasks requiring not only the prerequisite planning and engineering skills and data but also the active participation of the several levels and agencies of government concerned with the provision of highway transportation services within the urbanizing region.

BASIC CONCEPTS

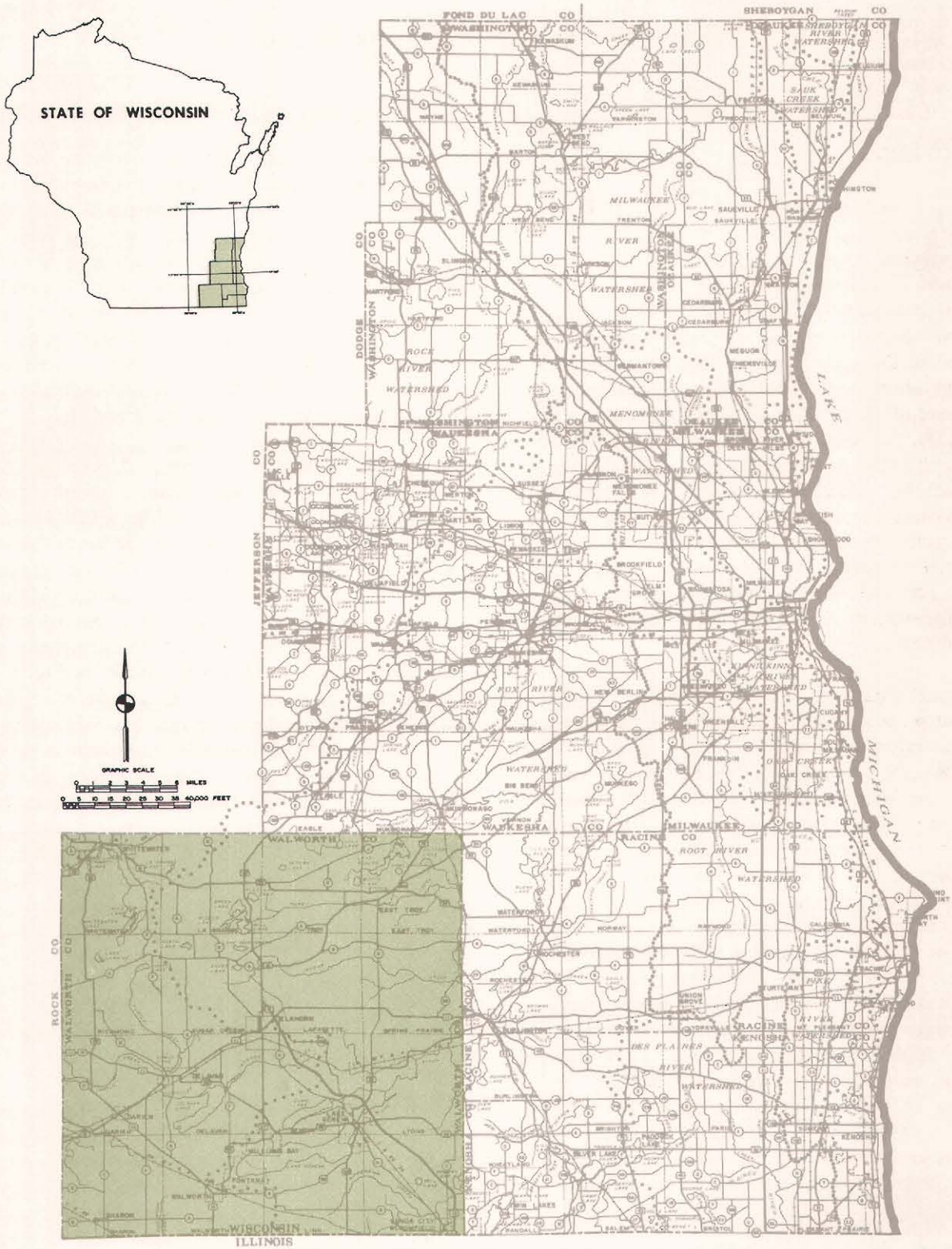
Any planning for coordinated highway system development must involve a comprehensive determination of the character of the individual facilities needed to provide an adequate highway transportation system. Such planning cannot be done effectively on an uncoordinated, "one-road-at-a-time" basis, since individual streets and highways do not serve travel independently in any significant way. Rather, most travel involves movement through a total system of highway facilities. Consequently, the planning of highway system development must begin with a consideration of the trips to be served by the facilities and the land uses which generate these trips.

Since it is impossible to provide direct-line highway connections for all travel desires existing within an urbanizing region, the trips must be channelized into a system of arterial streets and highways in a logical and efficient manner. The functional classification of highway facilities defines the nature of this traffic channelization process by identifying the function which each particular street or highway should serve in the total highway system. The functional classification of the total arterial street and highway system thus becomes one of the important elements of the comprehensive transportation planning process. It provides the means for defining travel paths through the total highway network and thereby provides the basis for estimating the amount and character of traffic which each facility in the total system may be expected to carry. The functional classification also provides the means for establishing desirable levels of service to be provided by each of the facilities comprising the total system and a basis for determining the predominant travel distances served by various segments of the total system.

The singularly most important basic concept underlying the jurisdictional highway planning process, therefore, is that the jurisdictional highway planning process must be preceded by a functional highway planning process; that is, a jurisdictional highway system plan must be based upon, and derived from, a prior functional highway system plan. The development of a sound and viable jurisdictional highway system plan, therefore, can properly proceed only within the context of a comprehensive areawide transportation plan-

Map 1

LOCATION OF WALWORTH COUNTY WITHIN THE SOUTHEASTERN WISCONSIN REGION



Walworth County comprises about 21 percent of the total area of the seven-county Southeastern Wisconsin Region, contains about 4 percent of the Region's population, employs about 4 percent of its labor force, and contains about 5 percent of its tangible wealth. The county, which has been a rich agricultural and recreational resource area within the Region, is beginning to experience the pressures of urban development, and with the completion of the Rock Freeway (STH 15) linking the county to the Milwaukee urbanized area this pressure may be expected to increase.

Source: SEWRPC.

ning process which has identified the transportation needs of the entire urbanizing region to a selected design year and which has provided definitive recommendations for meeting those needs through the improvement of both arterial highway and mass transit facilities in the form of a functional transportation plan.

The functional arterial street and highway system established in the initial regional land use-transportation study effort for the Southeastern Wisconsin Region accordingly became the point of departure for the preparation of the jurisdictional highway system plan within Walworth County. The jurisdictional highway planning problem was thus one of identifying jurisdictional subsystems within the total arterial system on an objective and rational basis, with the character of the trips served, the character of the land use activities served, and the service level of each subsystem becoming the basis for the subclassification.

Functional Classifications

In the initial regional land use-transportation study effort, all of the existing streets and highways within the Region were classified, on the basis of existing function, into two categories: arterial and all other. The latter category included the collector and local (land access) street subcategories. The initial classification was based upon the function which the facilities were actually performing at the time of the classification in the considered opinion of experienced, knowledgeable state and local public works engineers responsible for the construction, maintenance, and operation of the total street and highway system. This initial classification was subsequently verified by application of traffic simulation models and comparison of the resulting simulated traffic flows with actual traffic volume counts.

An arterial facility was defined, in the initial regional land use-transportation study effort, as a facility intended to serve the movement of heavy volumes of through traffic. Its primary function, therefore, must be to facilitate the expeditious movement of vehicular traffic. A secondary function may be the provision of access to abutting land, but this function should always be subordinate to the primary function of traffic movement. Arterial facilities include freeways, expressways, certain types of parkways, and standard surface arterial streets and highways. Freeways and expressways do not provide direct access to abutting land uses and are intended to provide safe, convenient, economical, and expeditious movement of the heaviest volumes of traffic involving the longest trip lengths. The standard arterials and certain parkways are intended to serve through traffic, the volumes and trip length characteristics of which do not warrant the use of freeways or expressways.

The collector streets, which were not categorized as arterials in the initial land use-transportation study, provide the transitional connection from the arterial system to the local (land access) street system. As the name implies, the function of collector streets is to collect and distribute traffic, as well as to provide access to abutting land uses. Since arterial routes serve longer trip lengths with a higher level of service, the traffic on a collector street will usually turn onto an arterial wherever the collector intersects an arterial.

In a rectangular grid street pattern, it may be difficult to distinguish clearly between the arterial and collector functions as these functions relate to existing facilities. Straight and continuous collector streets several miles in length may carry significant volumes of traffic, thus appearing to serve as arterials, even though the predominant use of the streets may be to carry traffic to the next junction with an arterial so that the major portion of the trip can be made over arterial facilities. Collector streets, moreover, may serve industrial and commercial, as well as residential, land uses. In industrial and commercial areas, the collector streets may properly be used by both trucks and buses serving tributary land uses. In residential areas collector streets may properly be used by buses serving tributary land uses. In some instances roadway widths of some collector streets may, in response to the character and volume of traffic, be wider than the roadway widths of some arterials.

Functional Classification Criteria

In the delineation of an arterial system, it is important to promote sound future land use development or redevelopment, as well as to protect existing desirable forms of development, by recognizing the diverse needs of the various types of existing and proposed land use development, both rural and urban, in the county. The proper spacing and location of arterial facilities, existing and proposed, are most important to the attainment of this end. The majority of the existing

land uses within the county are still rural in nature, with such urban development as exists occurring primarily in and around the relatively small urban communities located throughout the county.

In the rural areas of the county, as in the urban areas, arterial facilities must be located to support the everyday activities of families residing in these areas, including work, personal business, shopping, recreation, and social intercourse, and, therefore, must facilitate reasonably fast, safe, and convenient travel between existing urban communities containing commercial, industrial, institutional, and recreational, as well as residential, development and between farmsteads and such communities. In rural areas, however, the arterial facilities must also be located to promote the economic viability and vitality of productive rural enterprises. It is important to recognize that such enterprises include active farmsteads, as well as food processing industries, fowl and fur farms, gravel and stone quarries, nurseries, and orchards. Thus, farmsteads, unlike urban residential areas, represent productive enterprises and are only incidentally utilized as residential areas for farm labor and management. As productive enterprises, these farmsteads require arterial facilities to be located so as to provide ready access to sources of labor, material, and markets. The rural arterial system should also be located to provide direct connections to the regional freeway system in order to provide ready access to regional commercial, industrial, and recreational activities and to the more highly urbanized areas of the Region. Finally, in order to provide full flexibility to adapt to changing conditions, arterials in rural areas should be so located as to permit future conversion of land from rural to urban use and, in so doing, promote the sound development of planned development units, particularly residential neighborhood units, at various population densities. In order to meet this last requirement, rural arterials should be placed no closer than two miles.

Within urban areas the penetration of residential neighborhoods by heavy volumes of fast, through, vehicular traffic is one of the surest means of destroying the desirable characteristics of such neighborhoods. Arterial routes should, therefore, be located on the periphery of residential neighborhoods. To this end the Regional Planning Commission, in formulating regional development objectives, principles, and standards, has recommended the following minimum spacings for arterial routes in urban areas:

1. High-density[1] urban development—one-half mile spacing.

2. Medium-density[2] urban development—one-mile spacing.

3. Low-density[3] urban development—two-mile spacing.

Accepting the premise that a well-planned and properly maintained arterial street and highway system should not only serve the traffic demands but do so with minimal disruption of residential development, the location and spacing of arterial facilities becomes unusually important. The arterial system should be clearly identifiable so that it is readily apparent which routes should be carrying the heaviest volumes of through traffic and so that these routes can serve to provide boundaries between planned development units rather than to penetrate and divide these units. Finally, the component parts of the arterial system should be so located that the number of intersections with other arterials allows for good traffic progression and efficient system operation.

Scenic Drives

A third category of facility, normally not considered in the jurisdictional highway planning process but considered as both a special functional and jurisdictional classification under the Walworth County jurisdictional highway planning program, is the scenic drive. For the purposes of this report, a scenic drive is defined as a marked and signed route over existing streets and highways that traverses particularly pleasing landscapes, including areas of topographic, vegetative, and geological interests and areas con-

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[1] *High-density urban development is defined as development at a gross density ranging from 10,000 to 25,000 persons per square mile (4.8 to 11.8 dwelling units per gross acre).*

[2] *Medium-density urban development is defined as development at a gross density ranging from 3,500 to 9,999 persons per square mile (1.8 to 4.7 dwelling units per gross acre).*

[3] *Low-density urban development is defined as development at a gross density ranging from 350 to 3,499 persons per square mile (0.2 to 1.7 dwelling units per gross acre).*

taining sites of scientific, cultural, or historic interest. Such scenic drives are normally heavily utilized only during summer weekend and holiday periods, and are routed over existing facilities that perform arterial, collector, and land access functions during the remainder of the time. Although not all, or even a majority, of the facilities and facility mileage over which the scenic drives are routed function as arterials with respect to the weekday travel demand, the areawide nature of the recreational travel demand served by the scenic drive facilities during seasonal weekend and holiday periods dictates that scenic drives be given careful consideration in the jurisdictional highway planning process. The areawide nature of the recreational travel demand served, the need to maintain intercommunity and intercounty continuity in the network of scenic drives through proper marking and signing, and the need to relate such drives properly to the natural resource base all indicate the need for a special functional and jurisdictional classification relating to such drives.

FUNCTIONAL NETWORK REFINEMENT

As a prerequisite to the actual jurisdictional highway planning process, the functional arterial street and highway system prepared under the initial regional land use-transportation planning effort was refined and updated for Walworth County to reflect changes in traffic patterns and to better accommodate future land use development. This refinement and updating of the functional arterial system included a careful review of the existing and desirable future functions of each route included in the original system. This review was made in cooperation with local planning and engineering staffs and included consideration of existing and proposed land uses along the facilities, as well as of the location, spacing, and operational characteristics of the facilities themselves.

The review indicated that the original functional arterial system for Walworth County included some facilities, particularly in urban areas, which actually served collector, rather than true arterial, functions, and that, particularly in rural areas, some facilities which were originally considered as collector and local streets were actually performing an arterial function, even though traffic volumes on such facilities were relatively low. It indicated also that the original classification had placed too much emphasis upon the functions actually being performed by the various components of the total street and highway system at the time of the original classification and too little emphasis upon the desirable changes in these functions over time. Just because a given street or highway functions as an arterial at the present time does not necessarily mean that it should, in light of changing land use and traffic patterns, continue to perform this function in the future.

Accordingly, certain changes in the functional classification of the total street and highway system within Walworth County were made. The net result was the addition of about two miles of facilities to the arterial system. The revised arterial system was once more reviewed by experienced county and municipal engineers most intimately acquainted with the construction, maintenance, and operation of the total street and highway system; and the revised arterial street and highway system was then adopted as a basis for the jurisdictional highway planning effort.

THE JURISDICTIONAL HIGHWAY PLANNING PROCESS

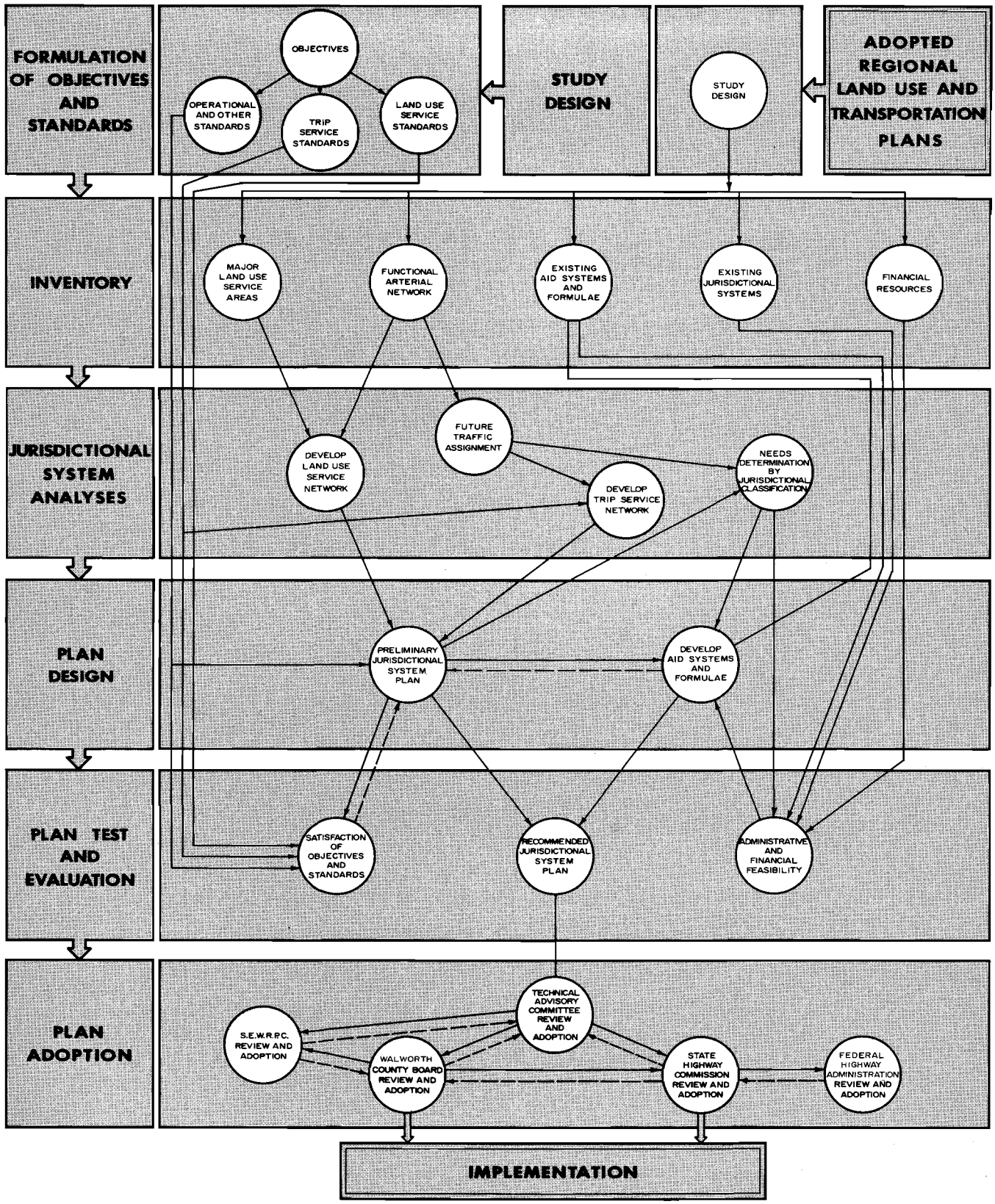
Based upon the preceding basic concepts, a seven-step planning process was employed in the development of a jurisdictional highway system plan for Walworth County. The seven steps constituting the process were: 1) study design; 2) formulation of objectives and standards; 3) inventory of existing systems, aid formulae, and financial resources; 4) jurisdictional systems analyses; 5) plan design; 6) plan test and evaluation; and 7) plan adoption. A brief description of each of these seven steps follows (see Figure 2).

Study Design

Every planning program must embrace a formal structure or study design so that the program can be carried out in a logical, consistent, and efficient manner. A statement of policy and procedure, setting forth the routine for the conduct of the study, was, therefore, prepared as the initial work element of the Walworth County jurisdictional highway planning study. This statement provided a sequential overview of the major work elements of the study; provided for the establishment of the Technical Coordinating and Advisory Committee necessary to assist in the conduct of the study and in the provision of technical policy guidance; and provided for the documentation of the study results in detailed staff memoranda, the minutes of the Technical Coordinating and Advisory Committee meetings, and ultimately, in this published report.

Figure 2

THE JURISDICTIONAL HIGHWAY SYSTEM PLANNING PROCESS FOR WALWORTH COUNTY



Source: SEWRPC.

Formulation of Objectives and Standards

In its most basic sense, planning is a rational process for establishing and meeting objectives. The formulation of objectives is, therefore, an essential task to be undertaken before plans can be prepared. The basic transportation system development objectives governing the preparation of the jurisdictional highway plans are set forth in the adopted regional transportation plan[4] and relate to the provision of an integrated transportation system which effectively serves the existing and proposed land use pattern; to the provision of a balanced transportation system providing appropriate types and levels of transportation service to the various subareas of the Region; to the alleviation of traffic congestion and the reduction of travel time; to the reduction of accident exposure and the provision of increased travel safety; to the provision of a more economical and efficient transportation system; to the minimization of disruption of desirable development and of deterioration or destruction of the natural resource base; and to the promotion of a high aesthetic quality in the transportation system. That the functional arterial highway system recommended in the adopted regional transportation plan, and upon which the jurisdictional plan is based, met these objectives was demonstrated in the regional transportation study and documented in the planning reports issued under that study.

The conversion of the arterial highway system to a jurisdictional system, however, required the formulation and application of additional standards in the form of functional criteria for the jurisdictional classification of highway systems. These criteria, relating each jurisdictional subclassification to three basic functional characteristics—trip service, land use service, and the operational characteristics of the facilities themselves—formed the basis for plan preparation and evaluation by providing a rational and objective basis for the classification of the total arterial street and highway system into jurisdictional subsystems.

Inventory

Reliable data collected on a uniform, areawide basis are absolutely essential to the formulation of workable development plans. Consequently, inventory becomes the first operational step in any planning process, growing out of the study design. The crucial nature of factual information in the planning process should be evident, since no intelligent forecasts can be made or alternative courses of action selected without knowledge of the current state of the system being planned.

The sound formulation of a jurisdictional highway system plan for Walworth County required that factual data be developed on the location and configuration of the existing jurisdictional highway systems, including the supporting federal aid routes; on the existing route mileage of each major jurisdictional type by civil division; on the attendant construction and maintenance aid formulae and related plan implementation policies and practices; and on historic patterns of highway revenues and expenditures by level and agency of government concerned. In addition, as already noted, the functional arterial highway network and the major land use service areas, as identified and delineated in the initial regional land use-transportation planning effort, were reviewed under the inventory phase and, in some cases, refined and detailed.

Since the jurisdictional highway planning process in Walworth County had been preceded by a comprehensive, areawide regional transportation planning process, the inventory operations could be confined to the collection of data relating directly to jurisdictional classification. This limited inventory operation and the economies and efficiencies associated therewith were feasible only because the initial regional land use-transportation study had provided the necessary data on the existing and committed transportation facilities and their utilization and, most importantly, had also provided data on the existing travel habits and patterns, including a complete origin and destination study. The initial regional land use-transportation plan had, moreover, provided a full battery of calibrated and operable traffic simulation models essential to the analysis of existing and probable future traffic flows required for proper execution of the jurisdictional highway planning process.

Jurisdictional Systems Analyses

Inventories provide factual information about the existing state of the system being planned, but analyses and forecasts are necessary to provide estimates of future needs. These future needs are determined by a sequence of interlocking forecasts. Economic activity and population fore-

[4] *See SEWRPC Planning Report No. 7, Volume 2, Forecasts and Alternative Plans--1990, Chapter II.*

casts set the general scale of future growth, which can, in turn, be translated into future demand for land use and travel. These future demands can then be scaled against the existing supply of land and transportation system capacity and plans formulated to meet any deficiencies. The necessary economic activity, population, land use, and travel demand forecasts were all prepared under the initial regional land use-transportation planning effort. Under the jurisdictional highway planning study, it remained only to utilize these forecasts in the application of the jurisdictional criteria (see Figure 3). This required analyses of the lengths and volumes of trips to be served by each link in the total arterial street and highway system, an identification of the land use areas to be served by each jurisdictional facility type, and an investigation of the operational characteristics of the arterial facilities themselves. Essential to these analyses was the availability of the battery of traffic simulation models formulated and maintained by the Regional Planning Commission.

Plan Design

Plan design forms the heart of the planning process. The outputs of each of the previously described planning operations become inputs to the design problem of plan synthesis. No substitute for intuition and professional judgment in plan design has so far been found, much less developed, to a practical level. Means do exist, however, for reducing the gap between the necessary intuitive and integrative grasp of the problem and its magnitude; and these were fully applied in the Walworth County jurisdictional highway planning study. They center primarily on the application of systems engineering techniques to the quantitative test of the jurisdictional highway system plans evolved from the functional highway network through the application of intuition and professional judgment. These quantitative tests assure the technical adequacy of the plan design but are of limited usefulness in actual plan synthesis. Consequently, it was still necessary to develop the jurisdictional highway subsystem plans by traditional graphic and analytical "cut and try" methods, then to test quantitatively the resulting design by application of the simulation model techniques, and make necessary adjustments in the design until a workable plan was evolved.

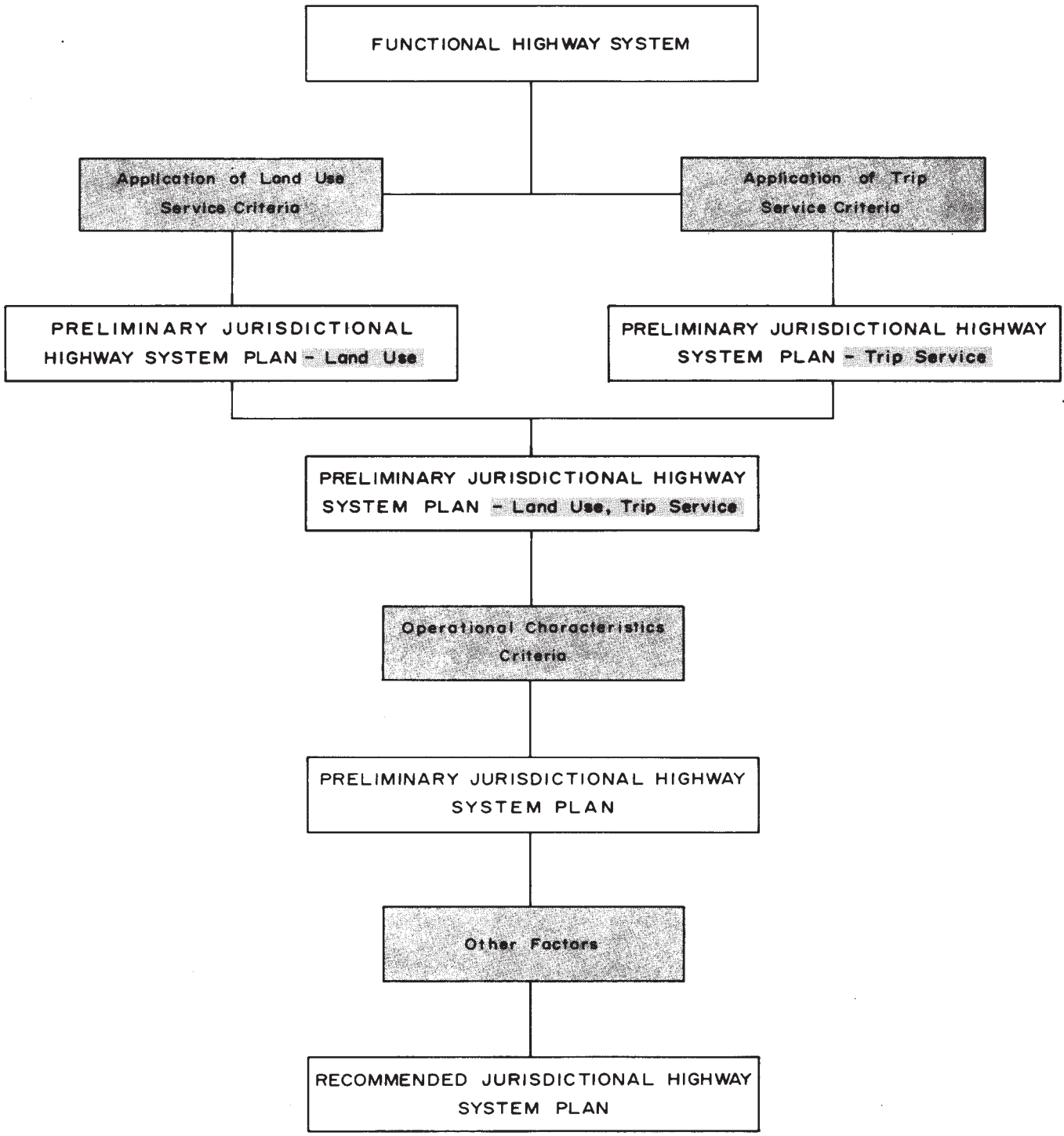
In order to overcome the limitations of individual intuitive grasp of the design problem, maximum resort was made to team effort in the actual plan synthesis; and the knowledge and experience of federal, state, and local highway engineers familiar with the geographic and functional areas concerned were applied to the plan synthesis process through careful Technical Coordinating and Advisory Committee review, interagency staff assignments, and interagency staff conferences. Final determination with respect to the inclusion or exclusion of any facilities in a jurisdictional subsystem which met only marginally the criteria established for that subsystem was made by the Technical Coordinating and Advisory Committee. The plan design procedure thus provided for careful review of the application of the criteria by local, county, regional, state, and federal technical staffs and thereby provided a practical jurisdictional highway system delineation, as well as a practical estimate of plan implementation costs and feasible proposals for plan implementation.

Plan Test and Evaluation

If the plans developed in the design stage of the planning process are to be realized in terms of actual transportation system development, some measures must be applied to quantitatively and qualitatively test these plans in advance of their adoption and implementation. The plan test and evaluation process must ascertain whether or not the plans are realistic in scope; consistent with the desirable advancement of the public interest; technically, legally, and financially feasible; and readily comprehensible by knowledgeable elected public officials, engineers, and technicians who will be ultimately charged with implementation. As already noted, simulation procedures were used to test and verify the technical workability and efficiency of the proposed total arterial highway network. Satisfaction of objectives could be ascertained through application of the jurisdictional criteria in concert with the simulation techniques. These simulation techniques also permitted the determination of future link capacity and accompanying right-of-way and curb-to-curb pavement widths and improvement requirements. A total plan implementation cost could then be assigned to the resulting system configuration by the application of unit construction and maintenance costs. From a composite summary of all existing highway aids and revenues prepared under the planning study, a forecast of the public financial resources available for arterial highway improvements could be provided. By comparing the forecast revenues with the forecast needs, the financial feasibility of the proposed plan could be determined and evaluated.

Figure 3

PROCEDURE FOR THE APPLICATION OF CRITERIA IN THE DEVELOPMENT OF A JURISDICTIONAL HIGHWAY SYSTEM PLAN



Source: SEWRPC.

Plan Adoption

In a practical sense, any plan is not complete until the steps required for its implementation—that is, the steps necessary to convert the plan into action policies and programs—are specified. Plan implementation must begin with plan adoption by the responsible implementing agencies, including particularly the Walworth County Board of Supervisors, the Highway Commission of the Wisconsin Department of Transportation, and the U. S. Department of Transportation, Federal Highway Administration. All other implementation recommendations, including the schedule for realignment of jurisdictional responsibilities, proposals for capacity protection and right-of-way reservation, staged construction, and capital improvements programming must follow and flow from such plan adoption.

Chapter III

HISTORICAL DEVELOPMENT AND PRESENT STATE OF THE JURISDICTIONAL HIGHWAY SYSTEMS

HISTORICAL DEVELOPMENT

The earliest European settlers in southeastern Wisconsin traveled "highways" consisting of a network of Indian trails and rivers which connected the many Indian villages in the territory. It was near these Indian villages at strategic points along the trails and rivers that trading posts were established by the settlers, and many of the present cities and villages within the Region were built on or near the sites of these trading posts and nearby Indian villages. As settlement became more widespread, several forts were constructed for frontier defense against hostile Indians within the territory of which southeastern Wisconsin was then a part. In order to facilitate the transportation of troops and supplies between these forts, the U. S. Army developed and constructed a system of military roads. Map 2 depicts the two military roads that traversed Walworth County.

One of the military roads connected what is now the City of Racine with Sinipee (Cassville) on the Mississippi River. The present routing of STH 11 approximates the location of this old military road. The second military road connected Southport, now the City of Kenosha, with Beloit. The present routing of STH 50 follows the location of this road as far west as Williams Bay.

In 1836 the Territorial Legislature established a system of territorial roads. Although these roads were surveyed and located by commissions appointed by the Legislature, construction costs were assumed by the towns or by local private interests. A road tax was levied on real estate to finance construction of these territorial roads. Map 3 depicts the five territorial roads that traversed Walworth County linking Mukwonago and Fort Atkinson, Milwaukee and Janesville, Rochester and Madison, Milwaukee and Beloit, and Delavan and Watertown.

As shown on Map 3, the Mukwonago-Fort Atkinson road was located approximately along the alignments of what are now CTH J and USH 12; the Madison-Rochester road was located, in part, on what is now CTH D, STH 15, CTH A, CTH H, Kettle Moraine Drive, CTH O, and USH 12; the Milwaukee-Janesville road was located on a common alignment with the Mukwonago-Fort Atkinson road as far west as present STH 67, and approximately along present CTH A, CTH P, and Territorial Road; the Milwaukee-Beloit road was located along what is now STH 36, Hospital Road, and STH 50 between Burlington and Delavan; and the Delavan-Watertown road followed the alignment of the Southport (Kenosha)-Beloit military road located along what is presently STH 11 in Walworth County.

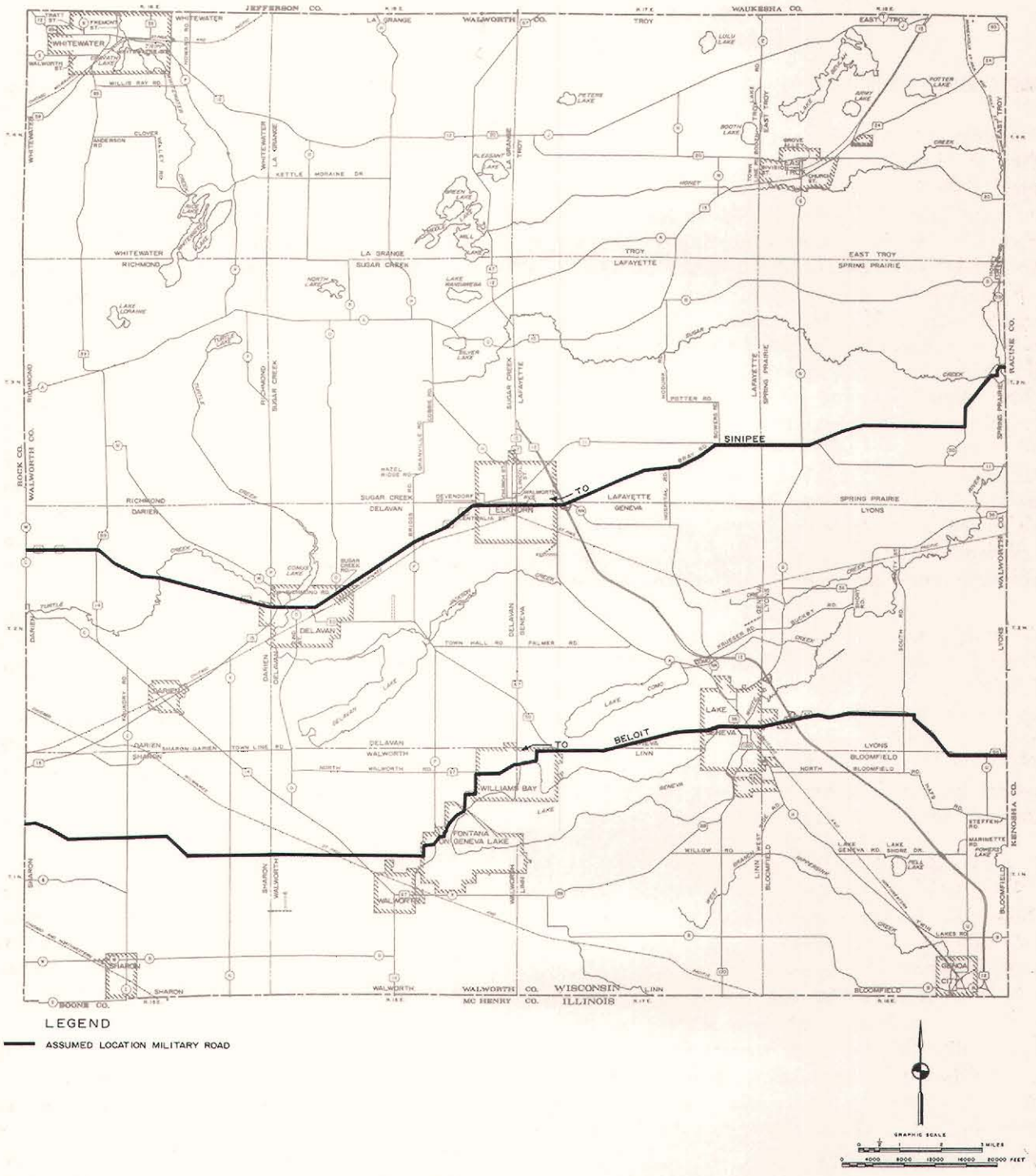
Since many of the territorial roads were poorly constructed and did not provide the transportation service required, demand soon developed for the construction of plank roads. About the time Wisconsin attained statehood in 1848, a number of plank roads were chartered by the territorial and state governments. These roads were to be constructed with private capital as toll roads. The receipts from the tolls were expected to recover the capital investment in construction, keep the roads in repair, and pay a profit to the road-building company. Map 4 depicts the single plank road constructed in Walworth County. Known as the Racine and Rock River Plank Road, it was completed as far west as Delavan, following approximately the alignment of present STH 11 from Spring Prairie to Delavan.

A combination of high maintenance costs, low profits, and competition from railroads caused the eventual abandonment of the plank roads within the Region. In 1869 the State Legislature authorized and directed town supervisors to declare the remaining plank roads public highways.

After Wisconsin became a state in 1848, all public roads laid out and opened by authorization of the State Legislature were designated as state roads. Commissions were appointed by the State Legislature to establish such roads and were authorized, in addition to opening new roads, to adopt any part of previously established town, county, or territorial roads as state roads. Map 3 depicts the single state road located within Walworth County. Opened in 1849, this road connected East Troy with Burlington, following such present facilities as CTH G, Honey Creek Road, Colbo Road, CTH D, and CTH DD within Walworth County.

Map 2

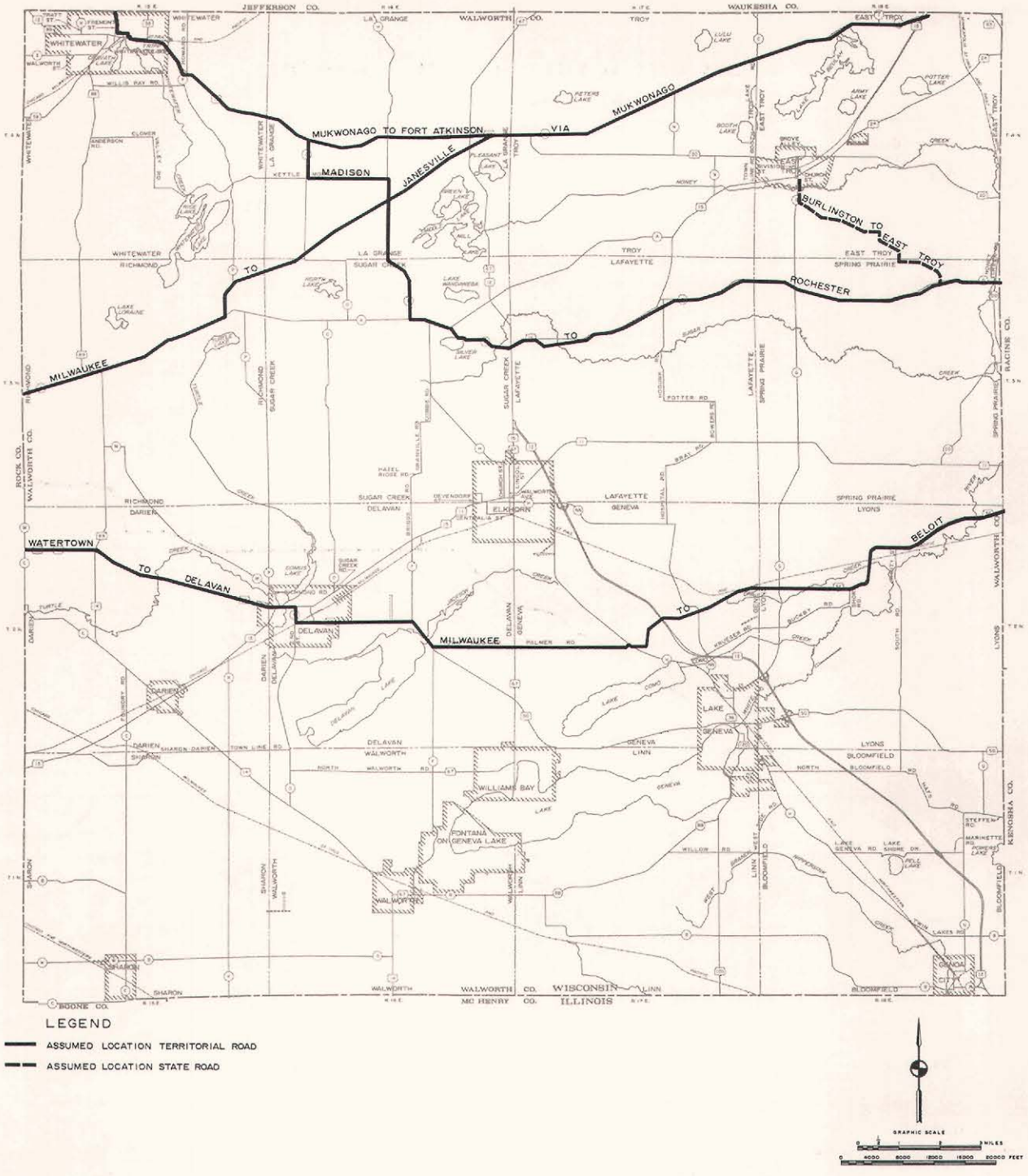
MILITARY ROADS IN WALWORTH COUNTY: 1835-1870



A system of military roads was built by the federal government in territorial Wisconsin to make the transportation of troops and supplies easier between forts established to guard the developing frontier. Two of these military roads traversed Walworth County. One of the roads connected what is now the City of Racine with Sinipee (Cassville) on the Mississippi River. The present routing of STH 11 follows the location of this old military road. The other road connected Southport, now the City of Kenosha, with Beloit. The present routing of STH 50 follows the location of this road as far west as Williams Bay.

Source: SEWRPC.

Map 3
STATE AND TERRITORIAL ROADS IN WALWORTH COUNTY: 1835-1855

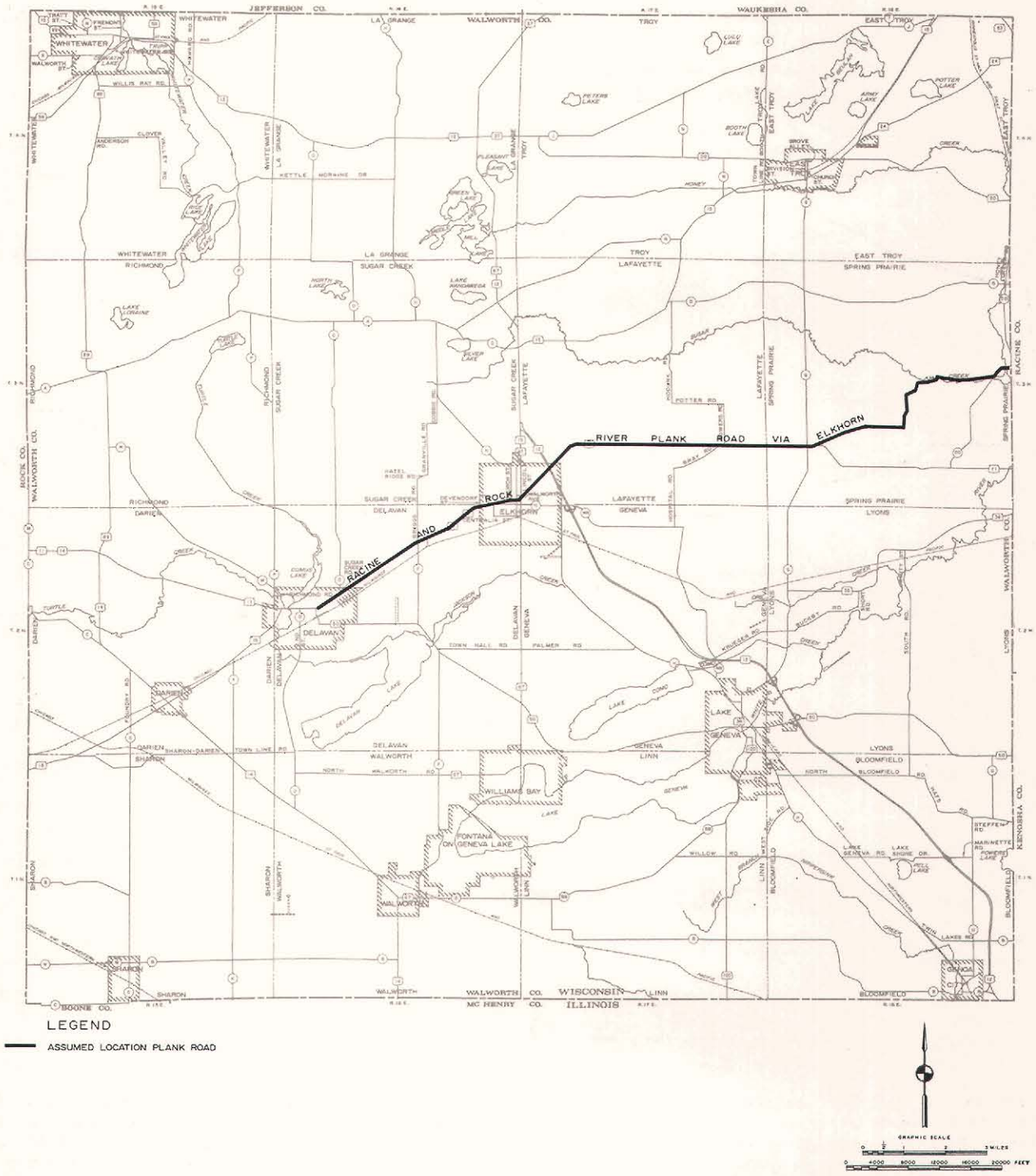


In 1836 the Territorial Legislature established a system of territorial roads to connect important settlements within the territory. Five territorial roads traversed Walworth County, linking Mukwonago and Fort Atkinson, Milwaukee and Janesville, Rochester and Madison, Milwaukee and Beloit, and Delavan and Watertown. The Mukwonago-Fort Atkinson road was located approximately along the present alignments of CTH J and USH 12; the Milwaukee-Janesville road was located on a common alignment with the Mukwonago-Fort Atkinson road west to present STH 67, and generally along the present alignments of CTH A, CTH P, and Territorial Road; the Milwaukee-Beloit road was located along the present alignments of STH 36, Hospital Road, and STH 50 between Burlington and Delavan; the Delavan-Watertown road followed the alignment of the Southport (Kenosha)-Beloit military road along the present location of STH 11 in Walworth County; and the Madison-Rochester road was located on the present alignments of CTH D, STH 15, CTH A, CTH H, Kettle Moraine Drive, CTH O, and USH 12. After Wisconsin became a state in 1848, all public roads opened by authority of the State Legislature were designated as state roads. The single state road in Walworth County, opened in 1849, connected East Troy with Burlington along what is now CTH G, Honey Creek Road, Colbo Road, CTH D, and CTH DD.

Source: SEWRPC.

Map 4

PLANK ROADS IN WALWORTH COUNTY: 1846-1854



Due to the poor construction of many of the territorial roads, demand soon developed for the construction of plank roads. The single plank road in Walworth County, known as the Racine and Rock River Plank Road, was completed as far west as Delavan, following approximately the alignment of present STH 11 from Spring Prairie to Delavan.

Source: SEWRPC.

State roads so laid out and opened were a direct charge to the towns through which the roads traversed because of the constitutional provision prohibiting the state government from participation in works of internal improvement. The State Statutes required that the right-of-way for all state roads be established at a width of four rods (66 feet). Later legislation also required all county roads to be laid out with a right-of-way width of not less than four rods. Town roads could be laid out with right-of-way widths of three rods (49.5 feet). The maintenance of state, county, and town roads was made the responsibility of the towns. The success of the steam railroad in the late 1800's caused highway transportation to be neglected. Private road-building companies passed out of existence, and since the state could not directly participate in road construction, very little progress in highway improvement was realized.

About the turn of the century, the motor vehicle became a practical means of transportation and revived the demand for improved highways to connect and serve the growing population centers. As a result, the Legislature enacted the first county aid highway laws in 1907. These county aid highway laws provided that any town could, by appropriating money from town funds, secure matching funds from the county for highway improvements; the county was to select a system of highways on which improvements utilizing town and county funds were to take place; and the county was to elect a county highway commissioner to administer the improvement of the system of highways selected by the county.

In the general election of 1908, the people of the state approved a constitutional amendment which provided:

> ... that the State may appropriate the money in the treasury or to be thereafter raised by taxation for the construction or improvement of public highways ....

In the period between 1907, when the county aid highway laws were enacted, and 1911, when the first state aid highway law was passed, it had become increasingly apparent that local units of government alone would not be able to construct and maintain the highway facilities which were needed and being demanded. In addition, public opinion was becoming crystallized in favor not only of a much higher level of highway improvement but also of a more centralized regulation and financing of highway construction and maintenance.

Under Chapter 52, Laws of Wisconsin 1911, the State Legislature created the State Highway Commission, which was given authority over all matters pertaining to the expenditure of the state highway fund for the improvement of public highways and bridges in the state. The Highway Commission, in turn, organized a State Highway Department to provide the engineering staff necessary for the proper performance of its duties and functions. A chief engineer, designated the State Highway Engineer, was appointed; and within two years several division offices were established throughout the state.

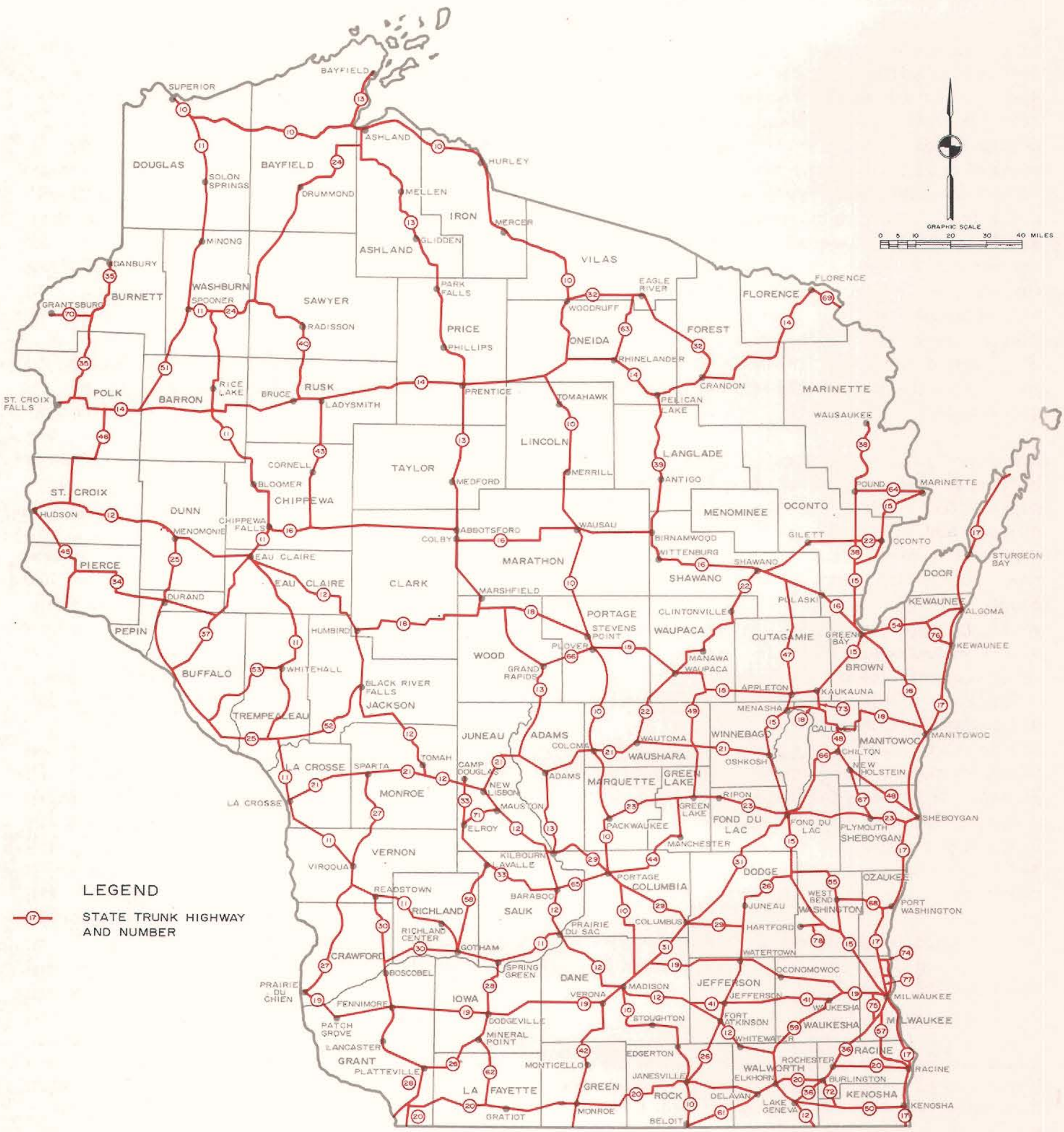
In 1916 the United States Congress, realizing the necessity of a national system of highways for interstate transportation and national economic development, passed the first federal aid highway law. The benefits accruing to Wisconsin under this law made it possible for the State Highway Commission, already a well-established agency, to proceed with the development of an integrated system of state highways, a vast improvement over the aggregation of the discontinuous, and often illogical, county highway systems then existing. One requirement of the federal aid highway law was that the state assent to the provisions of the federal act and provide for the maintenance of the highways improved with state and federal aid.

The State Legislature of 1917 directed the State Highway Commission to establish a state trunk highway system not to exceed 5,000 miles, which would interconnect every county seat and every city with a population of 5,000 or more. The system was laid out after due investigation and public hearings by the Highway Commission. The new law also provided for the proper marking and signing of the system by the Highway Commission and for the publication and sale of maps for the guidance of travel. Maintenance of this system was assigned to the counties under the general supervision of the State Highway Commission. Map 5 depicts the location and numbering of the original state trunk highway system as established statewide in 1918, totaling about 4,999 miles of facilities. Map 6 depicts this system as established in Walworth County in 1918, totaling about 90 miles of facilities.

The 1921 Federal Aid Highway Act provided that the states could designate a system of highways,

Map 5

ORIGINAL STATE TRUNK HIGHWAY SYSTEM IN WISCONSIN: 1918

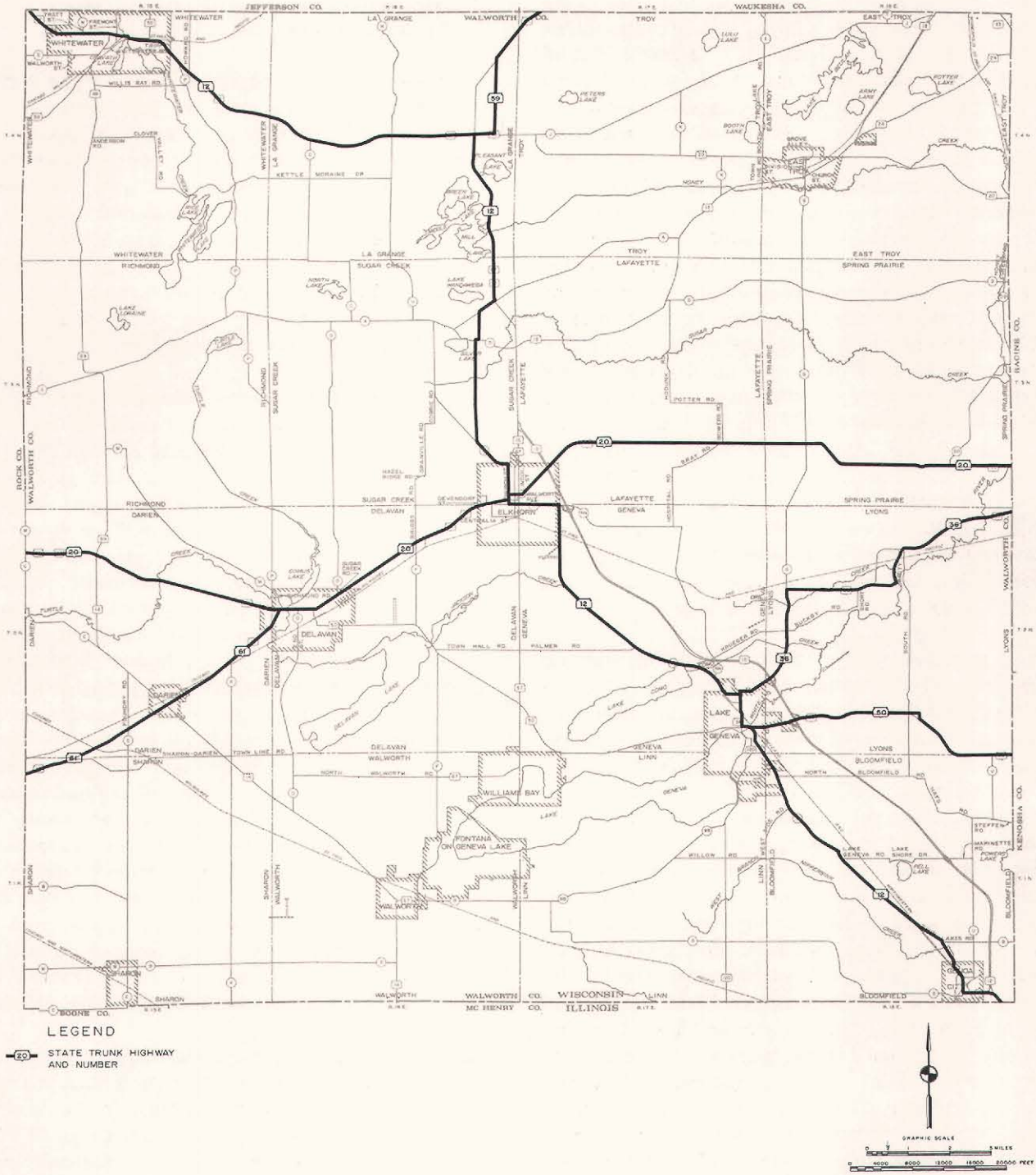


The original state trunk highway system in Wisconsin, as established in 1918, totaled 5,000 miles, and interconnected every county seat and every city in the state with a population of 5,000 persons or more. Initially, this was the only system of streets and highways for which federal aid in partial support of improvements was available. The system of designating state trunk highways by number and of marking the numbers on signs along the routes and on maps developed in Wisconsin. The installation of thousands of signs providing information on distance and direction to motorists was completed in 1918.

Source: SEWRPC.

Map 6

ORIGINAL STATE TRUNK HIGHWAY SYSTEM IN WALWORTH COUNTY: 1918



The original system of state trunk highways in Walworth County consisted of about 90 route-miles of facilities. The location of these early state trunk highways illustrates the permanence of highways as a feature of the landscape, with portions of the original state trunk highways being located along present alignments of USH 12, USH 14, STH 11, STH 15, STH 36, STH 50, STH 67, and CTH H and CTH NN.

Source: SEWRPC.

comprising not more than 7 percent of the total road mileage of the state at that time, which would be eligible for federal aid. Wisconsin acted to designate a federal aid system in 1921. This system consisted of a total of 5,516 route-miles of facilities. The Federal Aid Highway Act of 1921 provided that this total mileage be divided into two classes of routes—one known as primary, or interstate, highways and the second known as secondary, or intercounty, highways. The former were not to exceed three-sevenths of the total federal aid route mileage designated within the state and the latter, the remaining four-sevenths of that mileage. The primary routes were selected by the State Highway Commission as an integrated system of major intercity traffic carriers totaling 2,364 route-miles of facilities. The secondary system was selected by the State Highway Commission, in cooperation with local officials, and consisted of, in addition to farm-to-market roads, rural mail routes, rural public school routes, and county trunk highways, and totaled 3,152 route-miles of facilities. The total original designation of 5,516 route-miles of federal aid primary and secondary highways under the 1921 Federal Aid Highway Act basically comprises the federal aid primary system within Wisconsin today.

During the period from 1918 to 1924, in addition to the state trunk highway system which the counties were required by law to maintain under the supervision of the Highway Commission, each county voluntarily assumed the responsibility for the improvement and maintenance of an additional number of miles of highways. This was done through the broad statutory general powers of the counties to construct and improve any highway within the county boundaries. The facilities so established were called county trunk highways. The 1925 Legislature validated and confirmed as county trunk highways those highways previously selected by the county boards. These highways were to be marked, maintained, and signed by the counties. The county trunk highway systems were also required to join and be continuous between counties. A map of the selected county system was to be filed with the county clerk and copies forwarded to the State Highway Commission for review and approval. After this initial system was approved, the system could be altered only by the county board through its highway committee, with the approval of the State Highway Commission. Allotments were also to be set aside for the improvement of the county trunk highway system, including construction, repair, and maintenance of highways and bridges under supervision of the county highway committee. Map 7 depicts the system of county trunk highways in Walworth County which was validated by the Legislature in 1925, totaling about 179 miles of facilities.

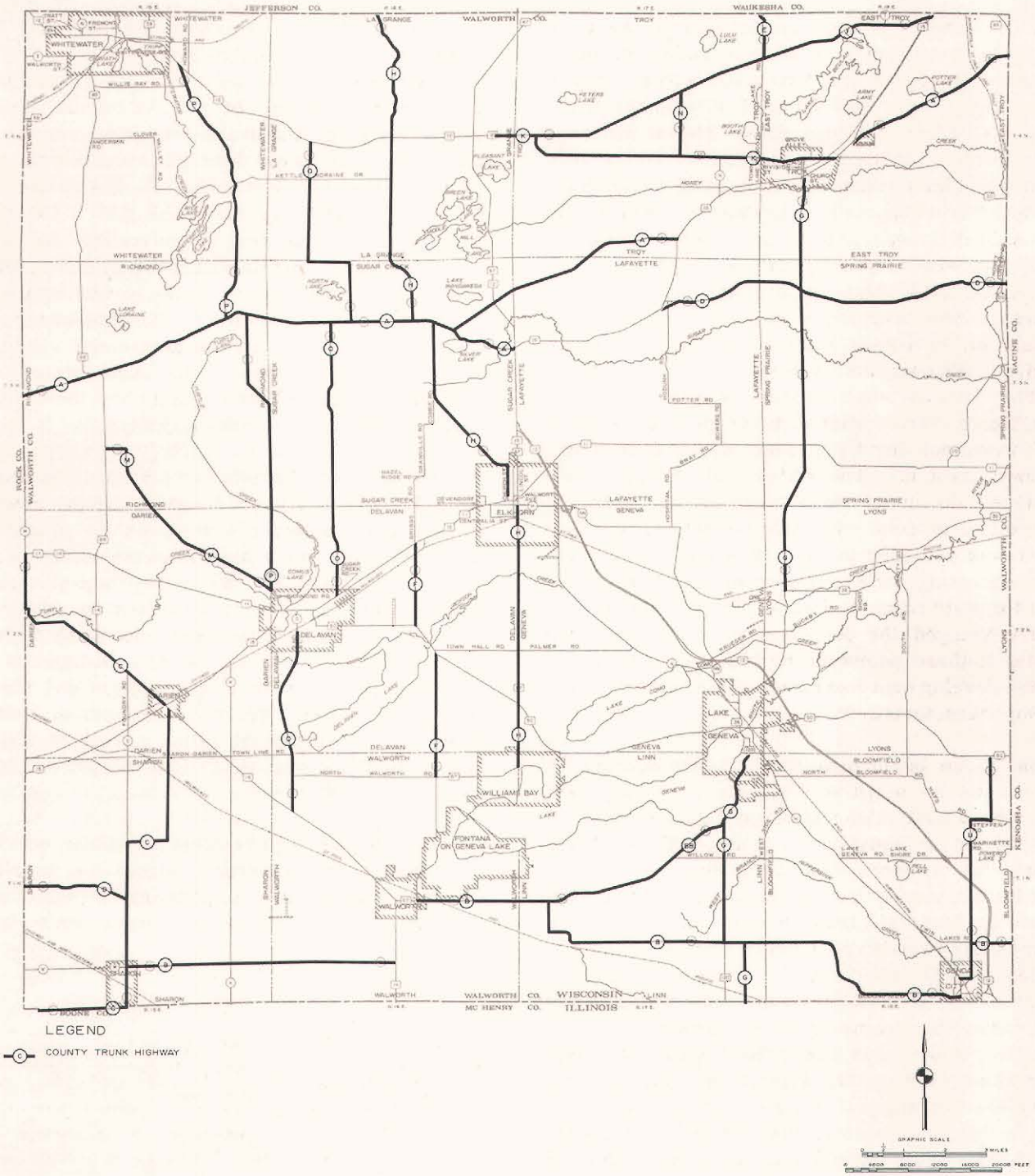
With the establishment of the county trunk highway system in 1925, the original jurisdictional classification of highways in Walworth County was completed. The state trunk highway system, which by 1923 had been increased to 10,000 miles statewide and to approximately 155 miles within the county, became the primary system of highways; the county trunk highway system, which then totaled approximately 179 miles within the county, the secondary system; and other roads, more local in nature, the tertiary system.

Beginning in 1933, federal aids were made available for the ad hoc improvement of farm-to-market roads not on any federal aid system. The Federal Aid Highway Act of 1944, recognizing the need to improve farm-to-market roads but also recognizing the need to integrate these roads into a system of secondary highways, provided for the creation of a new federal aid secondary system. This federal aid secondary system in Wisconsin was subsequently delineated by the State Highway Commission in cooperation with local officials and consisted of approximately 14,000 miles of secondary state trunk highways and major county trunk highways. These 14,000 miles were designated, in addition to the original federal aid highways which now became the federal aid primary system, as the federal aid secondary system. The 1944 Federal Aid Highway Act also provided for the establishment of a third system of highways, known as the federal aid urban system. This system was not a true continuous highway system, but rather consisted of the extensions of federal aid primary and federal aid secondary routes into urban areas having populations of 5,000 or more.

In 1967 the U. S. Department of Transportation, Federal Highway Administration, initiated a program of federal aid to urban areas having a population of 5,000 or more persons known as TOPICS, an acronym standing for the compound term, "Traffic Operations Program to Increase Capacity and Safety." The program was developed in order to encourage municipalities to accelerate their efforts to reduce traffic congestion, facilitate the flow of traffic, and reduce accidents on streets other than those principal streets already on the federal aid highway systems by means of

Map 7

COUNTY TRUNK HIGHWAY SYSTEM IN WALWORTH COUNTY: 1925



The original county trunk highway system in Walworth County, established by the Wisconsin Legislature and County Board in 1925, totaled about 179 route-miles of facilities, to be marked, maintained, and signed by the county. With the establishment of the system, the original jurisdictional classification of highways in Walworth County was completed. Portions of the original county trunk highway system remain on the present county trunk highway system, including segments along present alignments of CTH A, CTH B, CTH BB, CTH C, CTH D, CTH G, CTH J, CTH M, CTH O, CTH P, and CTH U.

Source: Walworth County Highway Department and SEWRPC.

such traffic engineering techniques as intersection channelization, signalization, widening of approaches, and upgrading of lighting.

The Wisconsin Statutes specified that the state trunk highway system was to exclude streets or highways in all incorporated areas having a population of 2,500 or more by the last federal census. However, those portions of streets or highways along which houses were spaced at an average distance of more than 200 feet could be included in the state trunk highway system at the option of the State Highway Commission. This provision of the Wisconsin Statutes permitted the projection of the state trunk highway system into the more sparsely developed areas of cities of over 2,500 population to points known as the "construction limits." The streets over which the state trunk highway system was routed between the construction limits were designated "connecting streets" and were not legally a part of the state trunk highway system. The cities and villages were assigned the maintenance responsibility for the connecting streets. The same maintenance allotment was provided to the cities and villages for the connecting streets as was provided the counties for state trunk highways. In 1943 the Legislature changed the definition of the construction limits to those points on the state trunk highways where development had assumed "a predominantly urban characteristic."

From these beginnings the highway network in Wisconsin and in Walworth County developed over the years, with minor additions and revisions, to the present state and county trunk systems. Table 1 sets forth highway and street mileages in Walworth County at various periods of time from 1918 to 1971. The state trunk highway mileage shown in the table includes connecting streets. Figure 4 indicates that the number of miles of each of these three jurisdictional systems has steadily increased to accommodate the growth in motor vehicle registrations and vehicle miles of travel within the county. The exceptions to this general trend are decreases in county trunk highway mileage in the 1940's, when about 18 miles of county trunk highways were removed from this system and either placed on the state trunk highway system or reverted to local streets; increases in the county trunk system during the 1960's as certain state trunk highways were reverted upon the construction of new facilities; and rapid increases in the local street system as a result of new urban development within the county.

After World War II, the large increase in motor vehicle utilization brought about a public demand for further improvements in highway system development. To improve the safety and level of service on heavily traveled routes, the State Legislature in 1949 authorized the Highway Commission to designate, as controlled-access highways, rural portions of the state trunk highway system on which the average traffic potential was found to be in excess of 2,000 vehicles per day. Once a highway had been so designated, the Highway Commission could, in the public interest, limit the number of driveways and other access points to abutting land. The total statewide controlled-access highway mileage was limited by state statute to 1,500 miles. To date (January 1, 1971), 371 miles have been designated within the state. However, none of the rural state trunk highways within Walworth County have been designated as controlled-access highways.

In 1955 the State Legislature provided, in Section 84.025 of the Wisconsin Statutes, for the creation of the state arterial system as an integrated, statewide, interregional, and intercommunity network of highways. The purpose of the state statute was to facilitate the improvement of the most important portions of the total state trunk highway system. The statute specifically designated the arterial system by route description and limited it to 2,200 miles. The route designated in Walworth County is that 39-mile segment of USH 12 from the Illinois state line to the north county line (see Map 8).

Aside from the requirements of public hearings for changes, no differences significant to jurisdictional highway system planning or plan implementation exist between ordinary state trunk

Table 1

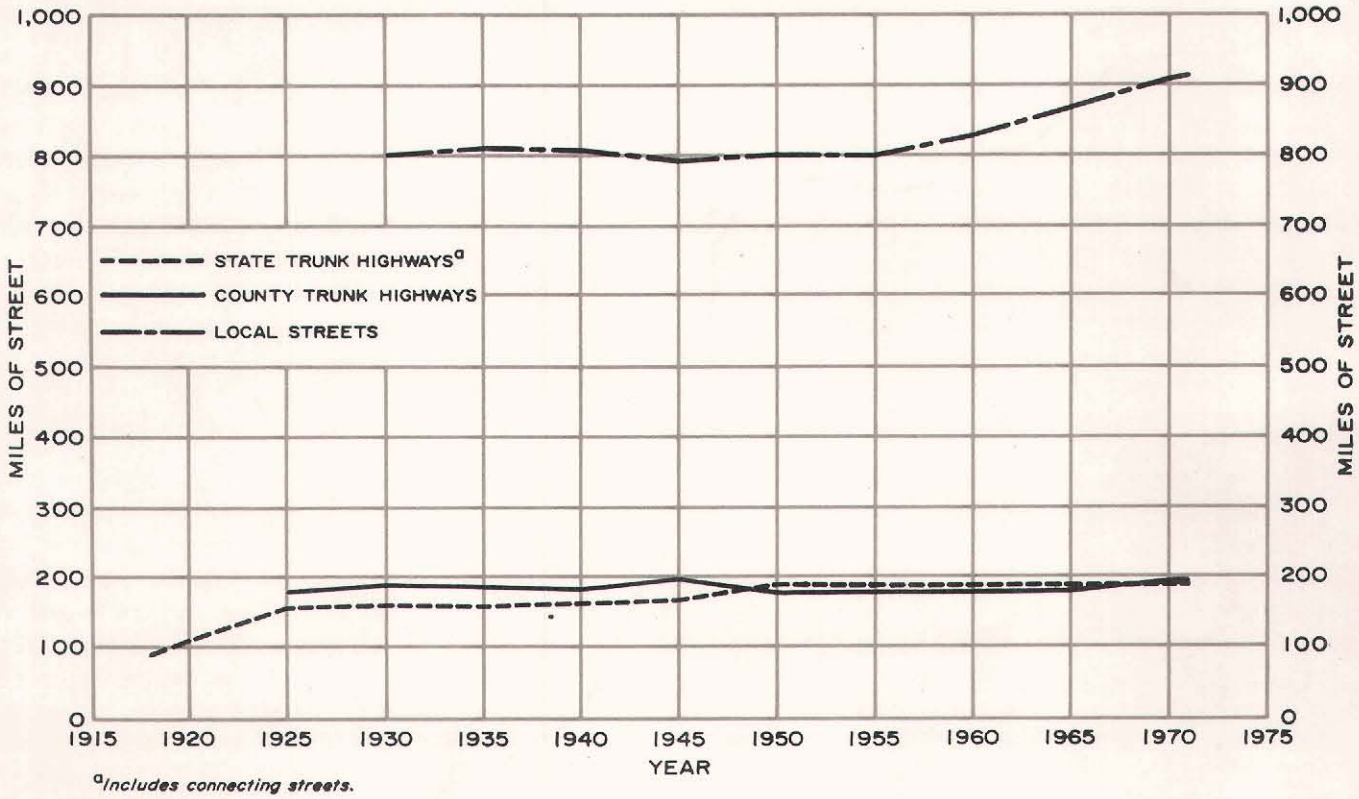
STREET AND HIGHWAY MILEAGE IN WALWORTH COUNTY
SELECTED YEARS 1918-1971

YEAR	STATE TRUNK HIGHWAYS (INCLUDES CONNECTING STREETS)		COUNTY TRUNK HIGHWAYS		LOCAL STREETS		TOTAL MILES
	NUMBER OF MILES	PERCENT OF TOTAL	NUMBER OF MILES	PERCENT OF TOTAL	NUMBER OF MILES	PERCENT OF TOTAL	
1918	90	--	--	--	--	--	--
1925	155	--	179	--	--	--	--
1930	158	13.8	188	16.5	796	69.7	1,142
1935	159	13.9	185	16.1	804	70.0	1,148
1940	166	14.4	182	15.7	807	69.9	1,155
1945	166	14.4	196	17.0	791	68.6	1,153
1950	191	16.4	178	15.2	798	68.4	1,167
1955	191	16.4	178	15.3	795	68.3	1,164
1960	192	16.0	178	14.9	827	69.1	1,197
1965	190	15.3	178	14.4	870	70.3	1,238
1970	191	14.7	194	15.0	910	70.3	1,295
1971	191	14.7	194	14.9	915	70.4	1,300

SOURCE- WISCONSIN DEPARTMENT OF TRANSPORTATION AND SEWRPC.

Figure 4

TOTAL STREET AND HIGHWAY MILEAGE IN WALWORTH COUNTY: 1918-1971



Source: Wisconsin Department of Transportation and SEWRPC.

highways and state arterial highways. Throughout the remainder of this report, state arterial highways will be treated as integral and ordinary parts of the total state trunk highway system.

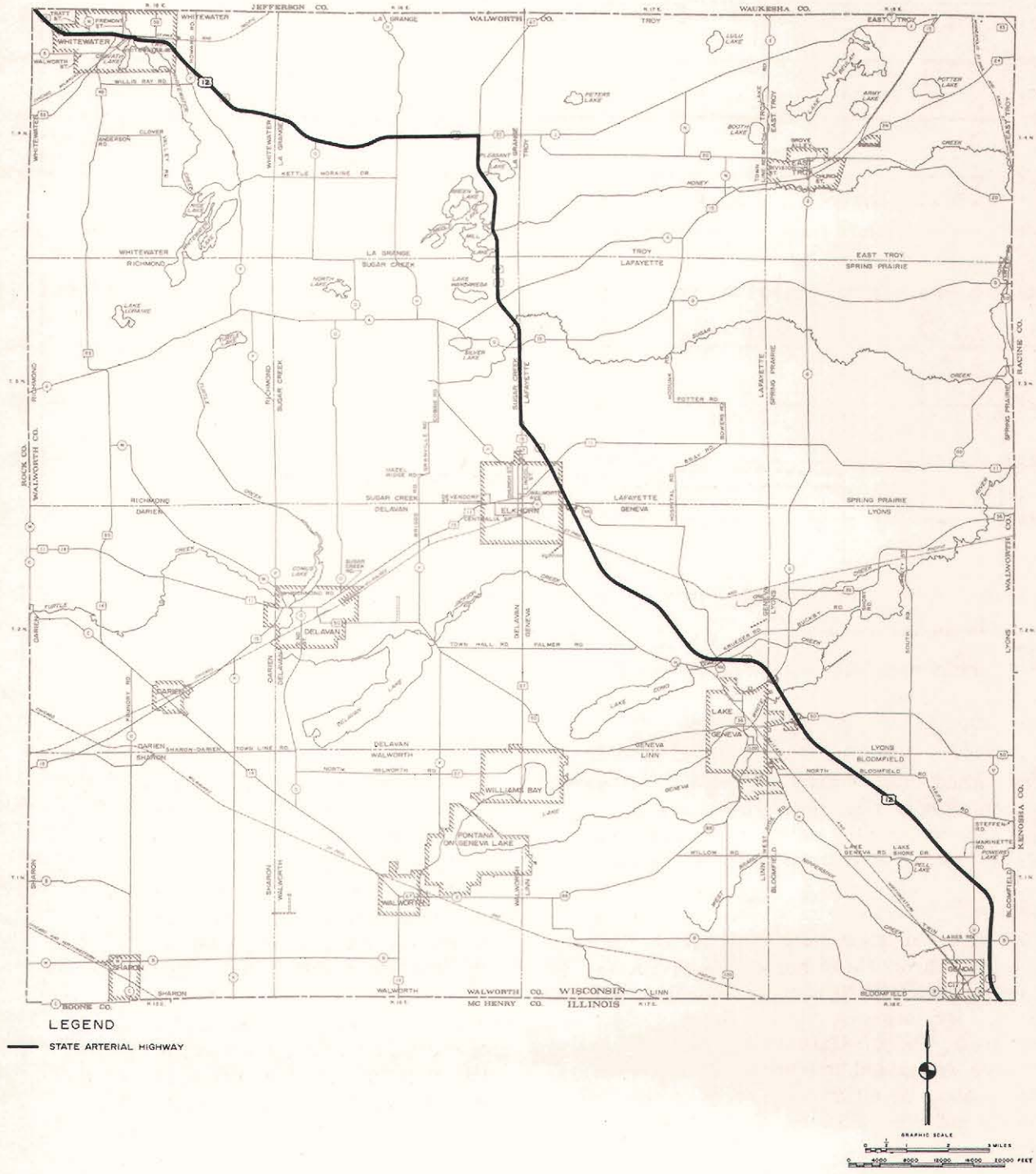
In 1961 the Legislature authorized the designation of 300[1] miles of state trunk highways as freeways or expressways. Those highway segments carrying sufficient traffic to warrant ultimate construction of four or more moving lanes could be so designated. To date (January 1, 1971), 292 miles have been designated as freeways or expressways, of which about 36 miles, comprised of the USH 12 Freeway and the proposed Rock Freeway, have been so designated within Walworth County (see Map 9). In addition, the federal system of interstate and national defense highways, established in 1956, now provides for 569 miles of interstate highways within Wisconsin which are constructed to freeway standards. Walworth County does not presently have, nor is it foreseen to have, any of its arterial facilities so designated.

Subject to certain statutory limitations, changes to the state trunk highway system may be made by the State Highway Commission if the Commission deems that the public interest is best served by the changes. Procedures for making changes to the state trunk highway system are specified in Section 84.02(3) of the Wisconsin Statutes. The requirements vary, depending upon the mileage involved, whether or not federal aid systems are involved, and whether the proposed changes are on the state trunk highway system or the state arterial system. Table 2 summarizes these requirements.

[1] *The State Legislature recently removed the mileage limitation on the designation of freeways and expressways originally contained in Section 84.295(3) of the Wisconsin Statutes (Wis. Laws 1971, c. 252).*

Map 8

DESIGNATED STATE ARTERIAL HIGHWAY SYSTEM IN WALWORTH COUNTY: 1971

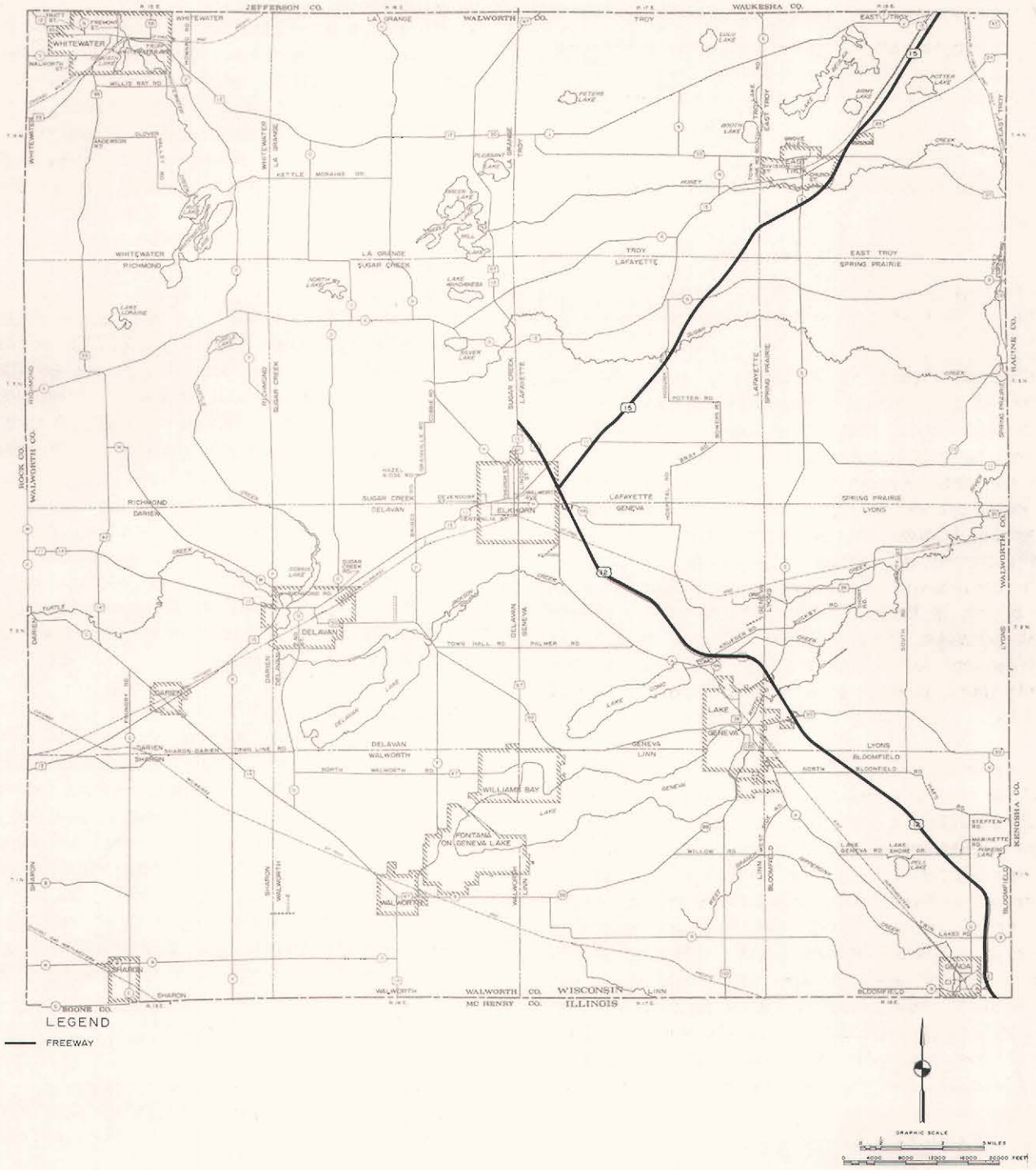


The Wisconsin Legislature in 1955 provided for the creation of the state arterial system to facilitate improvement of the most important portions of the total state trunk highway system. The system within Walworth County includes a 39-mile segment of USH 12 from the Illinois state line to the north county line.

Source: Wisconsin Department of Transportation.

Map 9

DESIGNATED FREEWAYS IN WALWORTH COUNTY: 1971



Of the 292 miles of state trunk highways which have been designated by the State Highway Commission as freeways or expressways in Wisconsin, about 36 miles, comprised of the USH 12 Freeway and the proposed Rock Freeway, have been so designated in Walworth County. When the USH 12 Freeway is completed it will connect the Chicago area with the Madison area, and when the Rock Freeway is completed it will connect the Rockford-Beloit-Janesville area with the Milwaukee area.

Source: Wisconsin Department of Transportation.

Table 2

LEGAL CONSTRAINTS GOVERNING CHANGES TO THE STATE TRUNK HIGHWAY (STH) AND STATE ARTERIAL HIGHWAY SYSTEMS

HIGHWAY SYSTEM	STATUTORY REFERENCE[a]	LENGTH CONSTRAINT	PUBLIC HEARING REQUIRED	COUNTY BOARD APPROVAL REQUIRED
STH.....	84.02(3)(a)	LESS THAN 2 1/2 MILES	NO	NO
STH.....	84.02(3)(a)	2 1/2 MILES OR MORE	YES	YES
STH & STATE ARTERIAL.....	84.02(3)(a)	MORE THAN 5 MILES	YES	YES
STATE ARTERIAL	84.025(3)	LESS THAN 5 MILES	NO	NO
STATE ARTERIAL	84.025(3)	MORE THAN 5 MILES BUT NO REMOVAL FROM STATE TRUNK HIGHWAY SYSTEM	YES	NO
STATE ARTERIAL	84.025(3)	MORE THAN 5 MILES AND ANY REMOVAL FROM STATE TRUNK HIGHWAY SYSTEM	YES	YES

[a]ALL REFERENCES ARE TO THE 1969 WISCONSIN STATUTES.

SOURCE- WISCONSIN DEPARTMENT OF TRANSPORTATION AND SEWRPC.

The county board is authorized, under Section 83.027 of the Wisconsin Statutes[2], to designate as controlled-access highways those rural portions of the county trunk highway system having an average traffic potential of 1,000 vehicles per day. By cooperative agreement with city or village governing bodies, this authority may be extended into incorporated areas. The total mileage of such designated controlled-access highways in any county is limited to 35 percent of the county trunk mileage. The Walworth County Board has not chosen to designate any portions of the county trunk highway system as controlled-access facilities.

Streets within corporate areas not on the state trunk or county trunk highway systems are under local jurisdiction for planning, design, construction, maintenance, and operation. Responsibility for administration of the municipal programs generally is assigned to the city or village engineer or to an engineering consultant acting in this capacity. Those streets and highways within unincorporated areas of the county which are not on the state trunk or county trunk highway system are under the jurisdiction of the towns, which either contract with the county or a consultant for planning, design, construction, maintenance, and operation.

[2]*Prior to the 1971 session of the State Legislature, Section 83.027 of the Wisconsin Statutes limited the percent of the county trunk highway system which could be designated as controlled-access highways to 10 percent of the total county trunk system, and set the minimum average daily traffic potential of such designated highways at 2,000 vehicles per day.*

CURRENT STATUS

Current Jurisdictional Highway Mileage

As of January 1, 1971, there were in Wisconsin 11,920 miles of state trunk highways, of which 456 miles, or 4 percent, consisted of interstate highways; 197 miles, or 2 percent, consisted of other freeways currently open to traffic; 10,751 miles, or 90 percent, consisted of standard arterials; and 516 miles, or 4 percent, consisted of connecting streets. In Walworth County there were 191 miles of state trunk highways, of which 19 miles, or 10 percent, were freeways currently open to travel; 158 miles, or 83 percent, were standard arterials; and 14 miles, or 7 percent, were connecting streets over which state trunk highways were routed (see Map 10). There were also 194 miles of county trunk highways (see Map 11) and 915 miles of local streets and highways. Thus there were, as of January 1, 1971, a total of 1,300 miles of streets and highways open to traffic in Walworth County. Of this total, 427 miles, or 33 percent, were determined to comprise the functional arterial street and highway network; and these 427 miles were jurisdictionally categorized as shown in Table 3. The configuration of the arterial system within Walworth County is shown on Map 12. Table 4 summarizes existing mileages by municipality.

Current Federal Aid Mileage

As of January 1, 1971, there were a total of 387 miles of federal aid routes designated within Walworth County. Of this total, 160 miles were located on the federal aid primary system and 227 miles were located on the federal aid secondary system. The total federal aid system mileage open to traffic as of January 1, 1971, was 353. Of this mileage, 128 miles consisted of federal aid primary system mileage and 225 miles consisted of federal aid secondary system mileage. The

Table 3

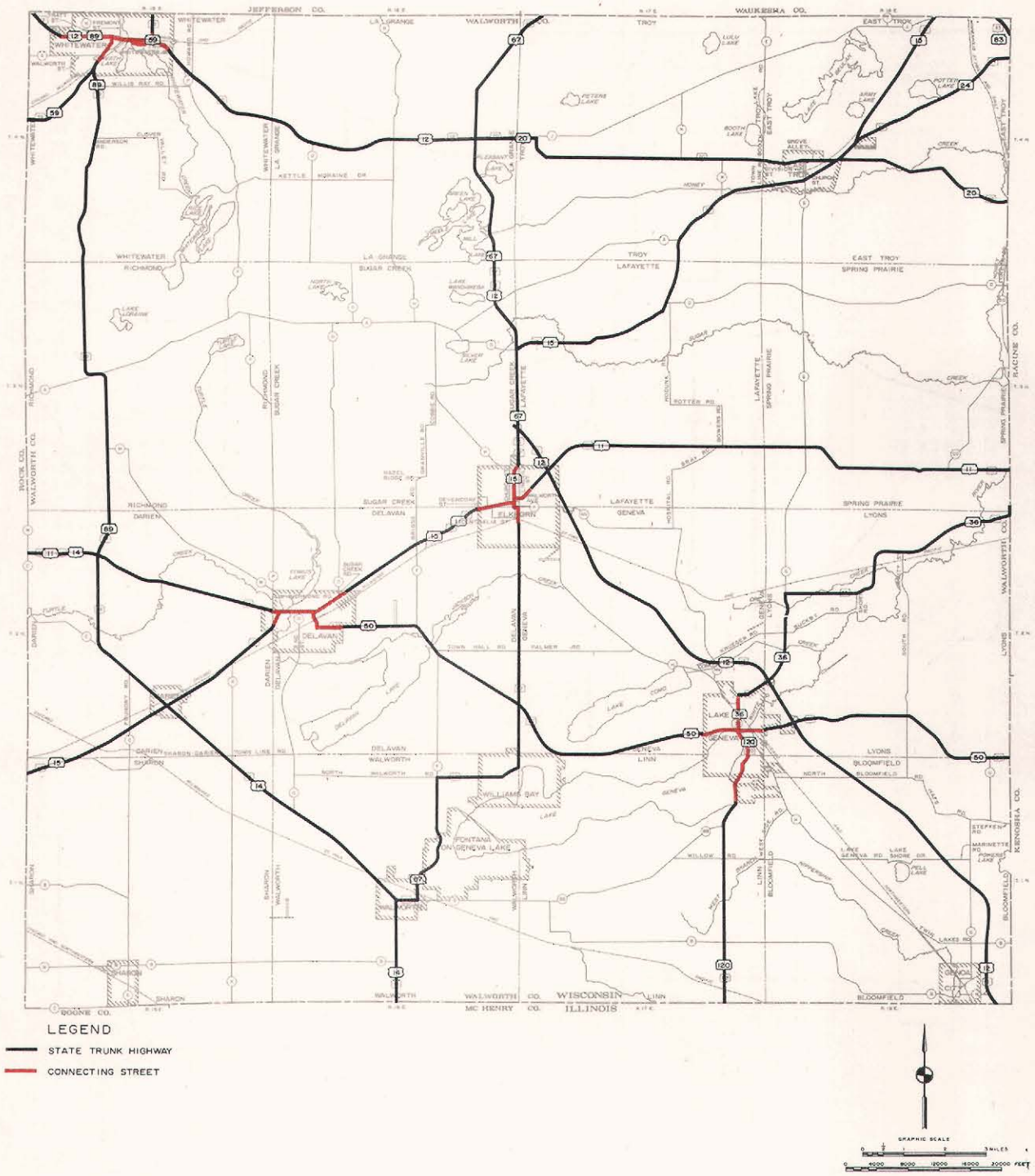
PERCENTAGE DISTRIBUTION OF EXISTING ARTERIAL STREET AND HIGHWAY MILEAGE IN WALWORTH COUNTY BY JURISDICTIONAL CATEGORY JANUARY 1971

JURISDICTIONAL CATEGORY	NUMBER OF MILES	PERCENT OF TOTAL
STATE TRUNK HIGHWAYS.....	176.81	41.5
CONNECTING STREETS.....	13.81	3.2
COUNTY TRUNK HIGHWAYS.....	172.68	40.5
LOCAL ARTERIAL STREETS AND HIGHWAYS	63.23	14.8
TOTAL	426.53	100.0

SOURCE- SEWRPC.

Map 10

STATE TRUNK HIGHWAY AND CONNECTING STREET SYSTEM IN WALWORTH COUNTY: 1971

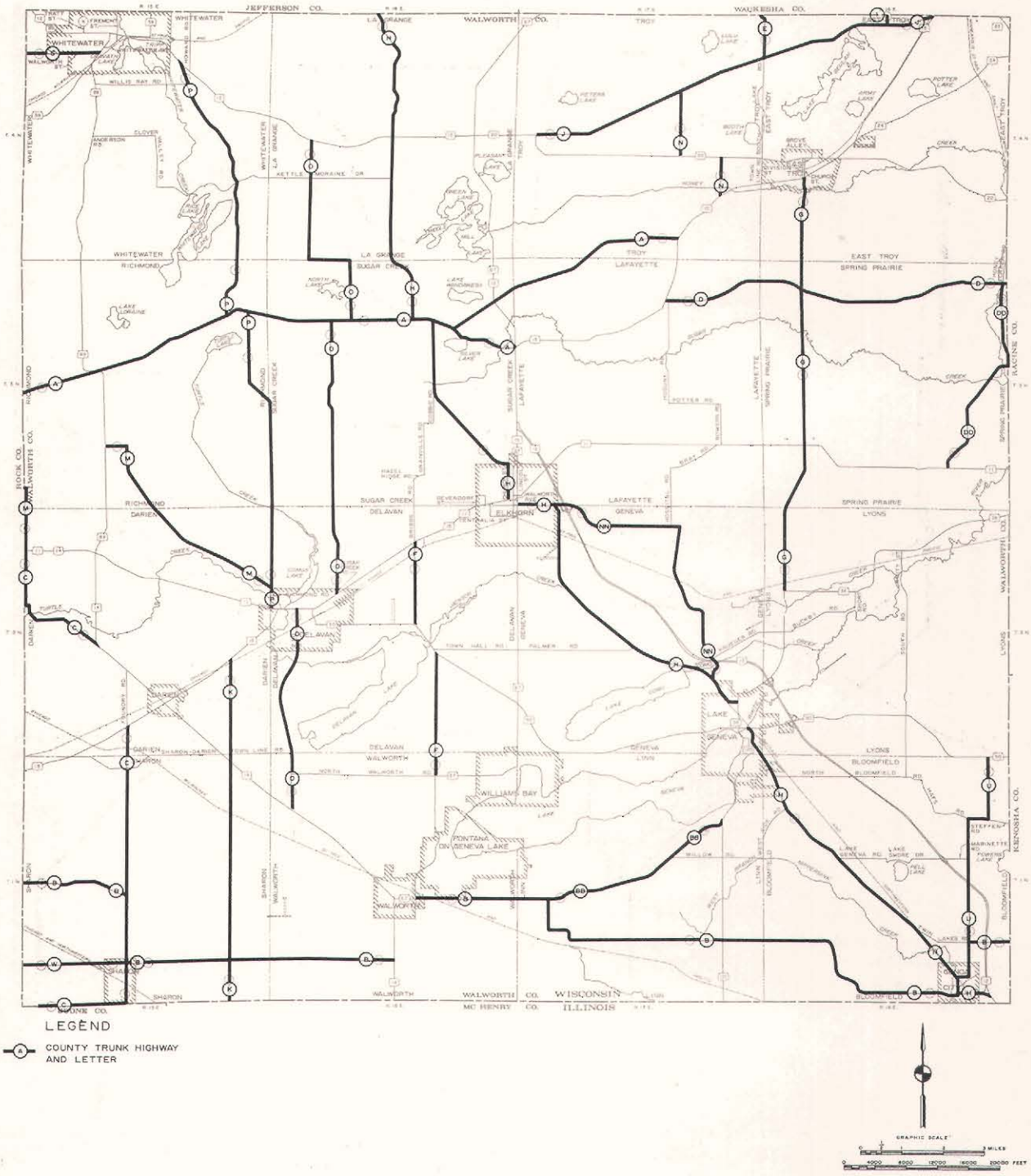


In Walworth County, the existing system of state trunk highways and connecting streets over which state trunk highways are routed consists of 191 miles. Of these 191 miles, 14 miles are connecting streets. Connecting streets exist in four cities in Walworth County--Whitewater, Elkhorn, Delavan, and Lake Geneva--and provide for system continuity. These connecting streets are maintained at the expense of the municipality in which they are located, with nominal reimbursement for such expense from the state at the rate of $500 per mile.

Source: Wisconsin Department of Transportation.

Map 11

COUNTY TRUNK HIGHWAY SYSTEM IN WALWORTH COUNTY: 1971

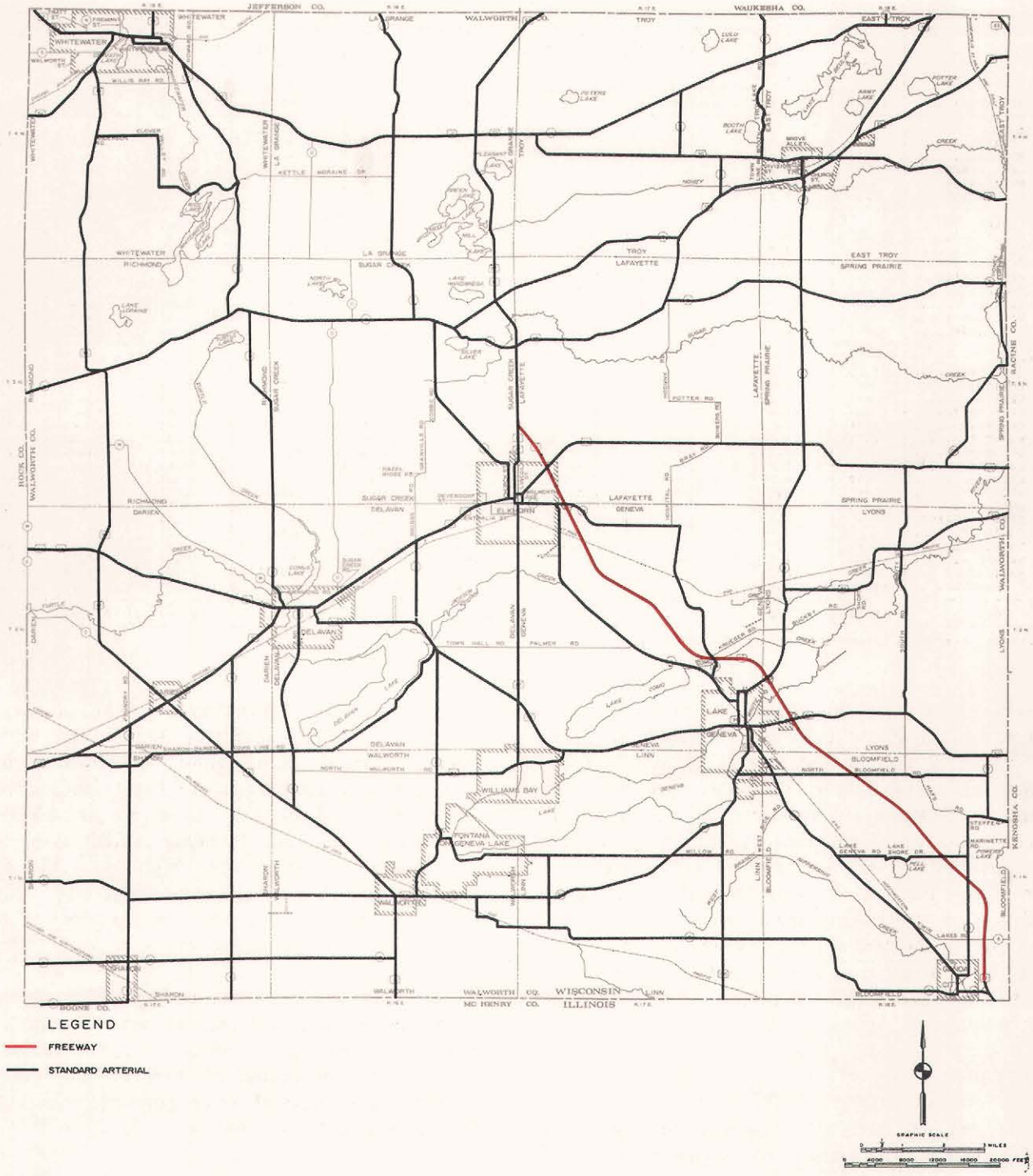


Within Walworth County there are presently a total of 194 miles of county trunk highways, 173 miles of which are on the existing arterial street and highway system. The county trunk highways are discontinuous through urban areas within the county, and therefore do not form an integrated system.

Source: Wisconsin Department of Transportation.

Map 12

ARTERIAL STREET AND HIGHWAY SYSTEM IN WALWORTH COUNTY: 1971



The 427 miles of streets and highways shown on this map comprise the existing arterial street and highway system in Walworth County. Of this total, 191 miles are state trunk highways and connecting streets, 173 miles are county trunk highways, and 63 miles are local streets and highways. Because of the nature of the local streets and highways and the piecemeal additions and deletions which have been made in the county trunk system over time, only the state trunk highway system represents a true, integrated system.

Source: SEWRPC.

Table 4

EXISTING JURISDICTIONAL HIGHWAY SYSTEM MILEAGE IN WALWORTH COUNTY BY CIVIL DIVISION
JANUARY 1971

CIVIL DIVISION	EXISTING ARTERIALS (MILES)						EXISTING NONARTERIALS (MILES)			TOTAL
	STATE TRUNK HIGHWAY		CONNECTING STREET	COUNTY TRUNK HIGHWAY	LOCAL TRUNK HIGHWAY	SUBTOTAL	COUNTY TRUNK HIGHWAY	LOCAL TRUNK HIGHWAY	SUBTOTAL	
	FREEWAY	NONFREEWAY								
CITIES										
DELAVAN.....	--	0.75	3.26	--	1.55	5.56	--	18.96	18.96	24.52
ELKHORN.....	0.74	1.63	2.80	1.72	1.10	7.99	--	17.35	17.35	25.34
LAKE GENEVA...	--	1.15	3.75	1.87	1.50	8.27	--	20.82	20.82	29.09
WHITEWATER....	--	1.68	4.00	--	0.28	5.96	0.25	27.21	27.46	33.42
SUBTOTAL.....	0.74	5.21	13.81	3.59	4.43	27.78	0.25	84.34	84.59	112.37
VILLAGES										
DARIEN.....	--	2.20	--	--	--	2.20	--	3.83	3.83	6.03
EAST TROY.....	--	2.77	--	0.26	0.46	3.49	--	7.02	7.02	10.51
FONTANA.....	--	1.12	--	0.37	2.45	3.94	--	11.78	11.78	15.72
GENOA CITY....	--	--	--	2.62	--	2.62	--	4.60	4.60	7.22
SHARON.....	--	--	--	2.25	--	2.25	--	6.16	6.16	8.41
WALWORTH.....	--	2.30	--	0.16	0.44	2.90	--	6.49	6.49	9.39
WILLIAMS BAY..	--	1.48	--	--	1.20	2.68	--	11.76	11.76	14.44
SUBTOTAL.....	--	9.87	--	5.66	4.55	20.08	--	51.64	51.64	71.72
TOWNS										
BLOOMFIELD.....	7.63	1.07	--	17.17	9.45	35.32	1.00	69.70	70.70	106.02
DARIEN.....	--	16.87	--	4.04	2.45	23.36	6.95	36.40	43.35	66.71
DELAVAN.....	--	11.06	--	8.06	6.30	25.42	2.02	41.83	43.85	69.27
EAST TROY.....	--	14.65	--	6.91	3.16	24.72	--	45.47	45.47	70.19
GENEVA.....	6.74	7.62	--	13.35	2.80	30.55	--	66.01	66.01	96.56
LAFAYETTE.....	1.53	12.00	--	4.43	--	17.96	--	36.32	36.32	54.28
LA GRANGE.....	--	12.36	--	6.30	--	18.66	3.45	55.61	59.06	77.72
LINN.....	--	5.79	--	11.78	6.62	24.15	--	48.66	48.66	72.81
LYONS.....	2.57	14.11	--	2.02	5.16	23.86	--	44.01	44.01	67.87
RICHMOND.....	--	6.45	--	11.57	--	18.02	2.40	46.71	49.11	67.13
SHARON.....	--	2.72	--	19.54	6.06	28.32	--	35.46	35.46	63.78
SPRING PRAIRIE	--	6.28	--	17.30	1.00	24.58	--	32.34	32.34	56.92
SUGAR CREEK...	--	3.49	--	17.26	--	20.75	4.42	51.15	55.57	76.32
TROY.....	--	10.09	--	11.32	1.28	22.69	--	32.57	32.57	55.26
WALWORTH.....	--	7.82	--	6.91	4.95	19.68	--	35.38	35.38	55.06
WHITEWATER....	--	10.14	--	5.47	5.02	20.63	0.53	37.87	38.40	59.03
SUBTOTAL.....	18.47	142.52	--	163.43	54.25	378.67	20.77	715.49	736.26	1,114.93
TOTAL	19.21	157.60	13.81	172.68	63.23	426.53	21.02	851.47	872.49	1,299.02

SOURCE- WISCONSIN DEPARTMENT OF TRANSPORTATION AND SEWRPC.

difference between the designated mileage on the federal aid systems and the miles open to travel is accounted for by new routes, primarily freeways, which have been officially designated as being on federal aid systems and which are in various stages of planning, preliminary design, or construction but are not yet open to traffic. The configurations of these federal aid systems within Walworth County are shown on Map 13, the sections on the federal aid systems which are not open to traffic being indicated by broken lines. Table 5 sets forth the designated federal aid system mileages by municipality.

SUMMARY

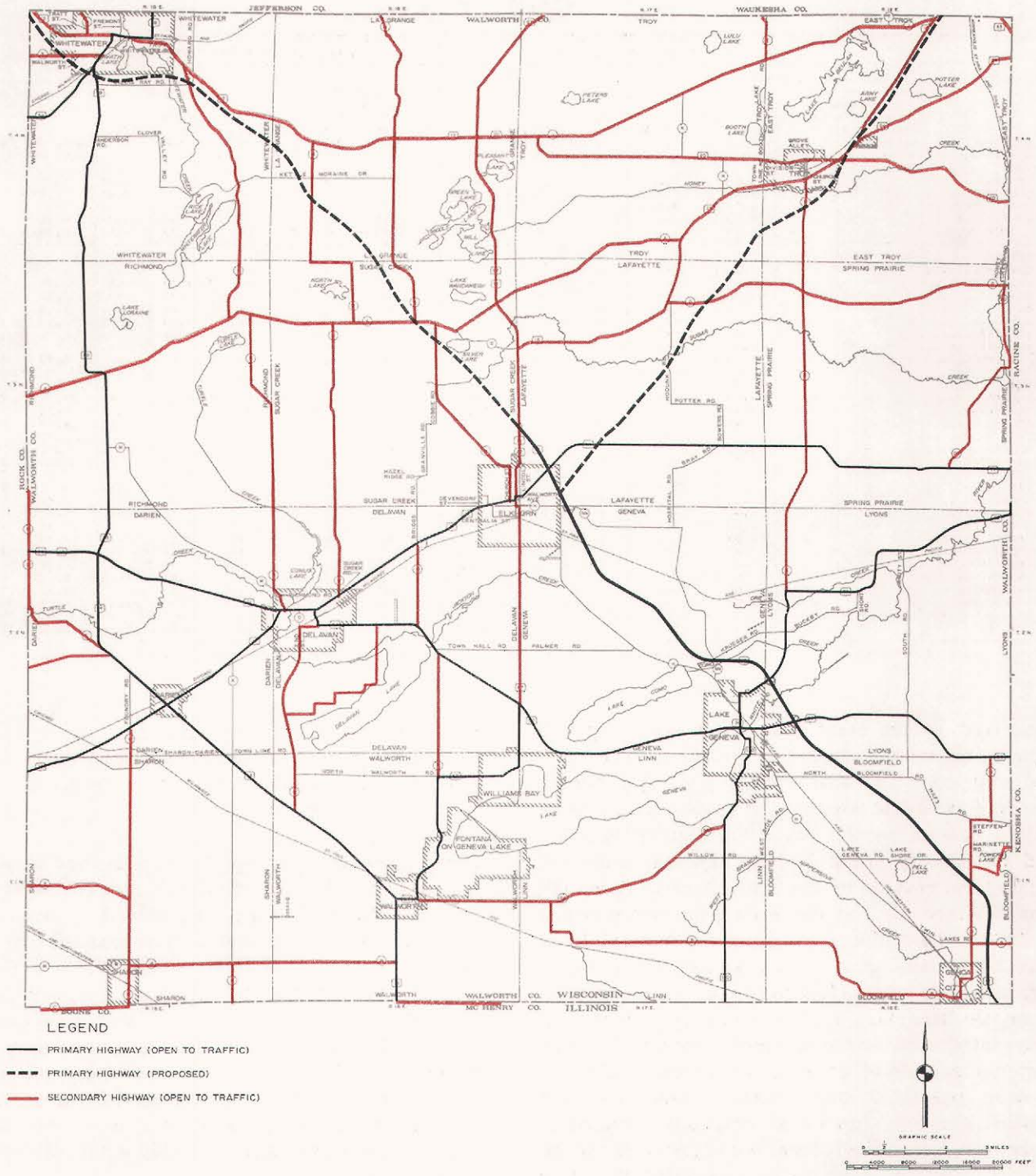
As of January 1, 1971, there were a total of 1,300 miles of streets and highways open to traffic within Walworth County. Of this total, 427 miles, or 33 percent, comprised the functional arterial street and highway network. The responsibility for the design, construction, operation, and maintenance of this arterial street and highway network rested with three levels of government: the state, the county, and the local municipalities. Approximately 191 miles, or 45 percent of the arterial street and highway network, were under state jurisdiction, being comprised of state trunk highways and connecting streets. About 173 miles, or an additional 41 percent, were under county jurisdiction, being comprised of county trunk highways; and about 63 miles, or 14 percent, were under city, village, or town jurisdiction, being comprised of local arterial streets and highways.

Superimposed on the state, county, and local trunk highways and arterial streets were 353 miles of federal aid routes, of which about 128 miles, or 36 percent, consisted of federal aid primary routes and 225 miles, or 64 percent, consisted of federal aid secondary routes.

The location and configuration of these jurisdictional highway systems and supporting aid routes were the result of a long process of historic evolution influenced by many complex political, administrative, financial, and engineering considerations and constraints. The state trunk and county trunk highway networks were originally

Map 13

FEDERAL AID HIGHWAY SYSTEMS IN WALWORTH COUNTY: JANUARY 1971



Highways designated as part of the federal aid highway systems are eligible for federal aids in partial support of improvements. There are presently 387 miles of federal aid routes designated within Walworth County, including 160 miles on the federal aid primary system and 227 miles on the federal aid secondary system. The primary system includes portions of USH 12 and USH 14, STH 11, STH 15, STH 36, STH 50, STH 59, STH 67, STH 89, and STH 120. The secondary system includes portions of USH 12, STH 15, STH 20, STH 67, and several important county trunk highways.

Source: Wisconsin Department of Transportation.

Table 5

FEDERAL AID ROUTE MILEAGE IN WALWORTH COUNTY BY CIVIL DIVISION
JANUARY 1971

CIVIL DIVISION	FEDERAL AID PRIMARY ROUTE MILEAGE							FEDERAL AID SECONDARY ROUTE MILEAGE						TOTAL
	STATE TRUNK HIGHWAY							STATE TRUNK HIGHWAY						
	FREEWAY													
	OFFICIALLY DESIGNATED	OPEN TO TRAFFIC	NON-FREEWAY	CONNECTING STREET	COUNTY TRUNK HIGHWAY	LOCAL STREET	SUBTOTAL	OFFICIALLY DESIGNATED	OPEN TO TRAFFIC	CONNECTING STREET	COUNTY TRUNK HIGHWAY	LOCAL STREET	SUBTOTAL	
CITIES														
DELAVAN	--	--	0.75	3.26	--	--	4.01	--	--	--	--	1.71	1.71	5.72
ELKHORN	--	0.74	0.85	1.40	--	--	2.99	--	0.78	1.40	0.09	0.86	3.13	6.12
LAKE GENEVA	--	--	1.15	3.75	--	--	4.90	--	--	--	--	--	--	4.90
WHITEWATER	--	--	1.18	1.95	--	--	3.13	0.20	0.50	2.05	0.25	1.31	4.31	7.44
SUBTOTAL	--	0.74	3.93	10.36	--	--	15.03	0.20	1.28	3.45	0.34	3.88	9.15	24.18
VILLAGES														
DARIEN	--	--	2.20	--	--	--	2.20	--	--	--	--	--	--	2.20
EAST TROY	--	--	--	--	--	--	--	--	2.77	--	0.26	--	3.03	3.03
FONTANA	--	--	1.12	--	--	--	1.12	--	--	--	0.37	--	0.37	1.49
GENOA CITY	--	--	--	--	--	--	--	--	--	--	1.60	--	1.60	1.60
SHARON	--	--	--	--	--	--	--	--	--	--	1.67	--	1.67	1.67
WALWORTH	--	--	2.30	--	--	--	2.30	--	--	--	0.16	--	0.16	2.46
WILLIAMS BAY	--	--	1.48	--	--	--	1.48	--	--	--	--	--	--	1.48
SUBTOTAL	--	--	7.10	--	--	--	7.10	--	2.77	--	4.06	--	6.83	13.93
TOWNS														
BLOOMFIELD	--	7.63	1.07	--	--	--	8.70	--	--	--	11.60	1.60	13.20	21.90
DARIEN	--	--	16.87	--	--	--	16.87	--	--	--	5.19	2.06	7.25	24.12
DELAVAN	--	--	9.15	--	--	--	9.15	--	1.91	--	10.08	4.28	16.27	25.42
EAST TROY	7.40	--	--	--	--	--	7.40	1.40	13.25	--	6.65	--	21.30	28.70
GENEVA	--	6.74	5.71	--	--	--	12.45	--	1.91	--	--	--	1.91	14.36
LAFAYETTE	7.00	1.53	5.37	--	--	--	13.90	--	6.63	--	4.43	--	11.06	24.96
LA GRANGE	3.20	--	--	--	--	--	3.20	--	12.36	--	9.75	--	22.11	25.31
LINN	--	--	5.79	--	--	--	5.79	--	--	--	11.78	1.93	13.71	19.50
LYONS	--	2.57	14.11	--	--	--	16.68	--	--	--	2.02	--	2.02	18.70
RICHMOND	--	--	6.45	--	--	--	6.45	--	--	--	11.77	--	11.77	18.22
SHARON	--	--	2.72	--	--	--	2.72	--	--	--	12.61	--	12.61	15.33
SPRING PRAIRIE	--	--	6.28	--	--	--	6.28	--	--	--	17.30	--	17.30	23.58
SUGAR CREEK	5.80	--	--	--	--	--	5.80	--	3.49	--	19.96	--	23.45	29.25
TROY	0.50	--	--	--	--	--	0.50	--	10.09	--	8.79	--	18.88	19.38
WALWORTH	--	--	7.82	--	--	--	7.82	--	--	--	6.91	1.26	8.17	15.99
WHITEWATER	7.70	--	6.44	--	--	--	14.14	0.30	3.70	--	6.00	--	10.00	24.14
SUBTOTAL	31.60	18.47	87.78	--	--	--	137.85	1.70	53.34	--	144.84	11.13	211.01	348.86
TOTAL	31.60	19.21	98.81	10.36	--	--	159.98	1.90	57.39	3.45	149.24	15.01	226.99	386.97

SOURCE- U. S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION; WISCONSIN DEPARTMENT OF TRANSPORTATION; AND SEWRPC.

conceived by the State Legislature as integrated highway systems and were originally so delineated and mapped. The state trunk highway network, however, was last studied and revised as an integrated system by the State Legislature in 1923; and the county trunk highway system was last studied and revised by the State Highway Commission of Wisconsin and the Walworth County Board in 1925. Many piecemeal additions and deletions have been made to these two jurisdictional highway networks since 1923 and 1925. Consequently, these two important networks no longer represent fully integrated and continuous arterial highway systems capable of serving, in the most efficient manner possible, the areawide land use and traffic service functions originally intended. Moreover, since the federal aid highway networks are intended to assist in implementing the state and county trunk highway systems and, therefore, reflect the pattern of these systems, these federal aid networks are also in need of revision.

It is, therefore, appropriate at this time to study and analyze the jurisdictional highway systems within Walworth County and, guided by the functional transportation system plan prepared by the Southeastern Wisconsin Regional Planning Commission and adopted by the State Highway Commission of Wisconsin and the Walworth County Board, to recommend changes necessary to reclassify and regroup these networks into complete, fully coordinated, and continuous systems able to meet the present and expected future arterial highway traffic demands within Walworth County.

Chapter IV

FUNCTIONAL CRITERIA FOR JURISDICTIONAL CLASSIFICATION

INTRODUCTION

A total street and highway system must serve several important functions. It must provide for the safe and efficient movement of traffic throughout the area served, provide for the access of this traffic to the various land uses to be served, provide integral parts of the storm water drainage system, provide rights-of-way for various utility facilities, and provide space for the admittance of light and air to individual building sites. Because the two most important of these functions—safe and efficient traffic movement and land access—are basically conflicting, street and highway systems are, for planning purposes, divided into functional subsystems according to the primary character of service which the individual facilities comprising the subsystems are expected to provide. This functional subdivision of street and highway systems must be done on an areawide basis without regard to governmental jurisdiction or fiscal responsibility. Such a functional grouping or classification is essential to sound transportation planning, not only because it identifies the primary function which any particular facility should serve, but also because it provides a means for defining travel paths for the flow of trips through the total system. The definition of such paths is essential to the traffic analyses required to determine the ability of the system to carry existing and probable future traffic loads.

Three functional groups of street and highway facilities are normally recognized in functional classification for planning purposes: arterial, collector, and local (land access). Only the first of these groups is of direct concern in areawide planning. The primary function of the arterial facilities is to expedite the movement of vehicular traffic. Access to abutting property is a secondary function of some types of arterials and should always be subordinate to the primary function of traffic movement. Arterial streets and highways include freeways, expressways, and certain parkways, as well as those facilities commonly termed "standard" arterials. Together the individual arterial facilities must form an integrated, areawide system, the geographic configuration and capacity of which are adequate to carry the traffic loads generated by the existing and probable future land use pattern to be served.

Arterial street and highway facilities must form an integrated system over relatively large areas comprised of many local units of government. The degree of areawide importance of the individual facilities comprising the total system varies, with several levels as well as many units of government having interests in, and responsibilities for, the planning, construction, maintenance, and operation of the total arterial street and highway system. Consequently, it becomes necessary to assign jurisdictional responsibility for the various facilities, existing and proposed, comprising the total system to the various levels and units of government involved.

Just as the functional classification of highway facilities is essential to transportation plan preparation, the jurisdictional classification of such facilities is essential to plan implementation. In addition, the assignment of jurisdictional responsibility for the various portions of the total arterial street and highway system is essential to achieving the important transportation objectives already set forth in Chapter I of this report.

As previously noted, the preparation of an areawide plan for the physical development of the total transportation system must necessarily precede any assignment of jurisdictional responsibility. A plan for the physical improvement of the transportation system is required to identify the existing arterial street and highway system, determine its existing deficiencies, and recommend specific additions and improvements required to serve existing and forecast traffic demands. Such a functional transportation plan having been prepared, it then becomes necessary, as the first step toward plan implementation, to specify the governmental level and unit which should have responsibility for acquiring, constructing, maintaining, and operating each of the existing and proposed facilities which comprise the total physical system. That is, the functional highway plan must be converted to a jurisdictional plan if plan

implementation is to be achieved. It, therefore, becomes necessary to develop a set of criteria which may be used as a basis for the assignment of jurisdictional responsibility for the various facilities comprising the total arterial street and highway system. Functional variations within the total arterial system provide a logical basis for the establishment of such criteria.

PURPOSE AND OBJECTIVE OF THE CRITERIA

The purpose of the jurisdictional classification criteria is to provide an objective and rational basis for the assignment of jurisdictional responsibility for the various segments of an existing and proposed arterial street and highway system to the various levels of government concerned. The system is represented by an adopted functional arterial street and highway system plan. The objective of the recommended criteria is to identify subsystems within the total arterial street and highway system which are integral parts of the overall system and which are, within themselves, continuous or are continuous in conjunction with other "higher" subsystems but which vary with respect to the degree of traffic mobility provided, the types of land use areas served, and the types of trips served. The arterial street and highway network maps prepared by the Southeastern Wisconsin Regional Planning Commission under the regional land use-transportation study completed in 1966 were reviewed and updated to represent the necessary definition of the total arterial street and highway system within Walworth County to which the jurisdictional criteria were to be applied.

ARTERIAL SUBCLASSIFICATION

Three levels of government—state, county, and local (municipal)—have direct jurisdictional responsibility for the planning, design, construction, operation, and maintenance of highway facilities within Walworth County. It is, therefore, proposed that all segments of the total (existing and proposed) arterial street and highway system be classified into one of three categories: Type I, state trunk; Type II, county trunk; and Type III, local trunk. Two of these three categories—Type I and Type II—were, in turn, given two subcategories: rural and urban. The third category—Type III—was given one subcategory: urban. Urban arterials were defined as those arterial streets and highways located within the present corporate limits of existing cities or villages or within the recommended areas of future urban development within the county, as shown on the adopted regional land use plan, whichever encompasses the greater area. All other arterials were defined as rural.

1. Type I (State Trunk) Arterials—Urban and Rural

   Type I arterials shall include all those routes within the urban or rural areas of the county which are intended to provide, within each respective area, the highest level of traffic mobility; that is, the highest speeds and lowest degree of traffic congestion, the minimum degree of land access service, and which must have regional or interregional system continuity. Ideally, these Type I arterials, because of their function and statewide and regionwide importance, should comprise the state trunk highway system.

2. Type II (County Trunk) Arterials—Urban and Rural

   Type II arterials shall include all those routes within the urban or rural areas of the county which are intended to provide, within each respective area, an intermediate level of traffic mobility and an intermediate level of land access service, and which must have intercommunity system continuity. Ideally, these Type II arterials, because of their function and subregional importance, should comprise the county trunk highway system of an area.

3. Type III (Local Trunk) Arterials—Urban

   Type III arterials shall include all those routes within the urban areas of the county which are intended to provide the lowest level of arterial traffic mobility and the highest degree of arterial land access service, and which must possess intracommunity system continuity. These Type III arterials are intended to comprise the local arterial system of an area.

A rural subcategory for the Type III arterials was not provided. Analysis of the average trip length occurring on arterial highway facilities in the rural areas of Walworth County indicated that the "break point" for a third category of rural arterial highway facilities, should such a category be

used, would occur at an average trip length of about 10 miles (see Figure 5) and would have an average trip length range of from 2 to 10 miles. This fact, together with the fact that an analysis of origin-destination data for Walworth County indicated that 84 percent of the vehicle trips originating in rural areas of the county have one trip end located in a rural community (town) and the other trip end in a small urban community (city or village), indicates that rural travel within Walworth County is primarily of an intercommunity nature. The findings reflect the socio-economic relationships that exist between farms which are economic enterprises as well as residences, and small urban communities which act as farm market and service centers.

The Technical Coordinating and Advisory Committee, moreover, was of the opinion that the township governments within the county were not well staffed and equipped to carry out the planning, design, construction, operation, and maintenance of arterial highways nor should they be required to be so staffed and equipped. Consequently, the Committee concluded that the jurisdictional responsibility for all rural arterial highway facilities within Walworth County should be assigned to either the Type I (state trunk) or the Type II (county trunk) arterial street and highway subsystems.

The urban and rural arterial subclassification types are generally intended to correspond with jurisdictional responsibility by the state, county, and local levels of government. It should not be assumed, however, that the intended correspondence can be rigidly applied in all cases, since certain factors, including legal constraints, boundary line facility coordination, financial resource capabilities, and system mileage limitations may influence the assignment of jurisdictional responsibility for certain arterials regardless of the type of classification determined solely by strict application of the criteria.

CRITERIA

Criteria for the functional subclassification of the total arterial street and highway system can be developed from three basic characteristics of the arterial facilities: 1) the trips served, 2) the areas served, and 3) the operational characteristics of the facilities themselves. In light of the differences between urban and rural land use development, the differences in the characteristics of the traffic generated by these two types of land use development, and the differences between rural and urban highway facility development, separate jurisdictional classification criteria must be developed for rural and urban areas. Generally, the various kinds of urban land uses are not only more intensely developed, but areas devoted to different kinds of land uses are located much closer together in urban than in rural areas. Moreover, economically productive rural land uses, such as extractive and agricultural operations, which by their very nature require large land areas and a relatively small labor force and, therefore, generate less concentrated traffic with relatively long trip lengths and low traffic volumes, nevertheless require good arterial highway facilities to remain economically productive and competitive.

In Walworth County the situation is further complicated by the fact that travel on urban arterial facilities within the county is, to a great extent, comprised of travel between the relatively small urban communities located in the county and the surrounding rural areas, as well as between these urban areas and the Chicago and Milwaukee urbanized areas. Consequently, the average trip lengths on these urban arterials are more characteristic of rural, rather than urban, travel. Therefore, two sets of area service and operational criteria were developed, one for urban and one for rural arterials. Only one set of trip service criteria, however, was developed for both urban and rural arterials.

Trip Service Criteria

Trip service criteria for a jurisdictional classification of arterials could include specific criteria concerning trip length, trip purpose, and trip peaking. Trip length was selected for use as being the most significant of these three. It is, moreover, believed that trip purpose and trip peaking are reflected in the other criteria adopted and should, therefore, not be explicitly considered under criteria relating to trip service. The average trip length ranges adopted as criteria for arterial classification are presented in Table 6.

Table 6

AVERAGE TRIP LENGTH CRITERIA FOR ARTERIAL SUBCLASSIFICATION

ARTERIAL TYPE	AVERAGE TRIP LENGTH (MILES)
I (STATE TRUNK).....	21.00 OR MORE
II (COUNTY TRUNK).....	10.00 TO 20.99
III (LOCAL TRUNK).....	9.99 OR LESS

SOURCE- SEWRPC.

The following procedure was used to develop the recommended values for the trip service criteria. An interzonal trip table[1] of trip distance volumes[2] (TDV) was produced by multiplying the number of trips expected to be made between pairs of traffic analysis zones,[3] as contained in the regional land use-transportation study 1990 interzonal trip table, by the respective over-the-road distances as measured along the least-time-paths between the zones of origin and destination. The resulting TDV table was assigned to the 1990 arterial network on a least-time-path basis. The assigned TDV for each link[4] was then divided by previously assigned link volumes to obtain average trip lengths. A curve was plotted to provide a graphical representation of the relationship existing between the link average trip lengths and cumulative arterial system mileage (see Figure 5). Break points were identified on this curve and used to select trip length ranges representative of each jurisdictional classification type. The break points identified the trip length ranges which should be served by each facility type and did so because they marked the points beyond which a relatively high increase in facility type mileage would accommodate only a relatively small increase in trip length range.

Area Service Criteria

Area service criteria for a jurisdictional classification of arterials should relate to the land use activities to be connected and served by the various arterial subclassifications. For the purpose of such criteria, the term "connect and serve" was defined as follows for each of the three arterial types:

[1] *An interzonal trip table is a table of the zone-to-zone trip movements showing the quantity of trips by direction between each pair of zones.*

[2] *The term "trip distance volume," as used herein, is synonymous with the term "volume trip length index," as used by the U. S. Department of Transportation, Federal Highway Administration, in its manual entitled 1968 National Highway Functional Classification Study Manual.*

[3] *A traffic analysis zone consists of a homogeneous grouping of trip generation activities, such as a residential neighborhood unit, a regional shopping center, or a contiguous industrial area. Such a zone is shown on the arterial network diagram by a centroid representing the point where trips generated within the zone are assumed to enter and leave the arterial network.*

[4] *A link consists of a section of the arterial street and highway network, defined at each end by a node point located at the intersection of two arterials. A link is the smallest arterial segment used to describe the total arterial system in the mathematical model used to simulate traffic flows on the arterial street and highway network.*

Type I Arterials—Urban and Rural

A Type I urban arterial facility shall be considered to "connect and serve" given land uses when direct access from the facility to roads serving the land use area is available within a maximum over-the-road distance of one mile from the main vehicular entrance to the land use to be served.

A Type I rural arterial facility shall be considered to "connect and serve" given land uses when direct access from the facility to roads serving the land use area is available within a maximum over-the-road distance of two miles from the main vehicular entrance to the land use to be served.

Type II Arterials—Urban and Rural

A Type II urban arterial facility shall be considered to "connect and serve" given land uses when direct access from the facility to roads serving the land use area is available within a maximum over-the-road distance of one-half mile of the main vehicular entrance to the land use to be served.

A Type II rural arterial facility shall be considered to "connect and serve" given land uses when direct access from the facility to roads serving the land use area is available within a maximum over-the-road distance of one mile of the main vehicular entrance to the land use to be served.

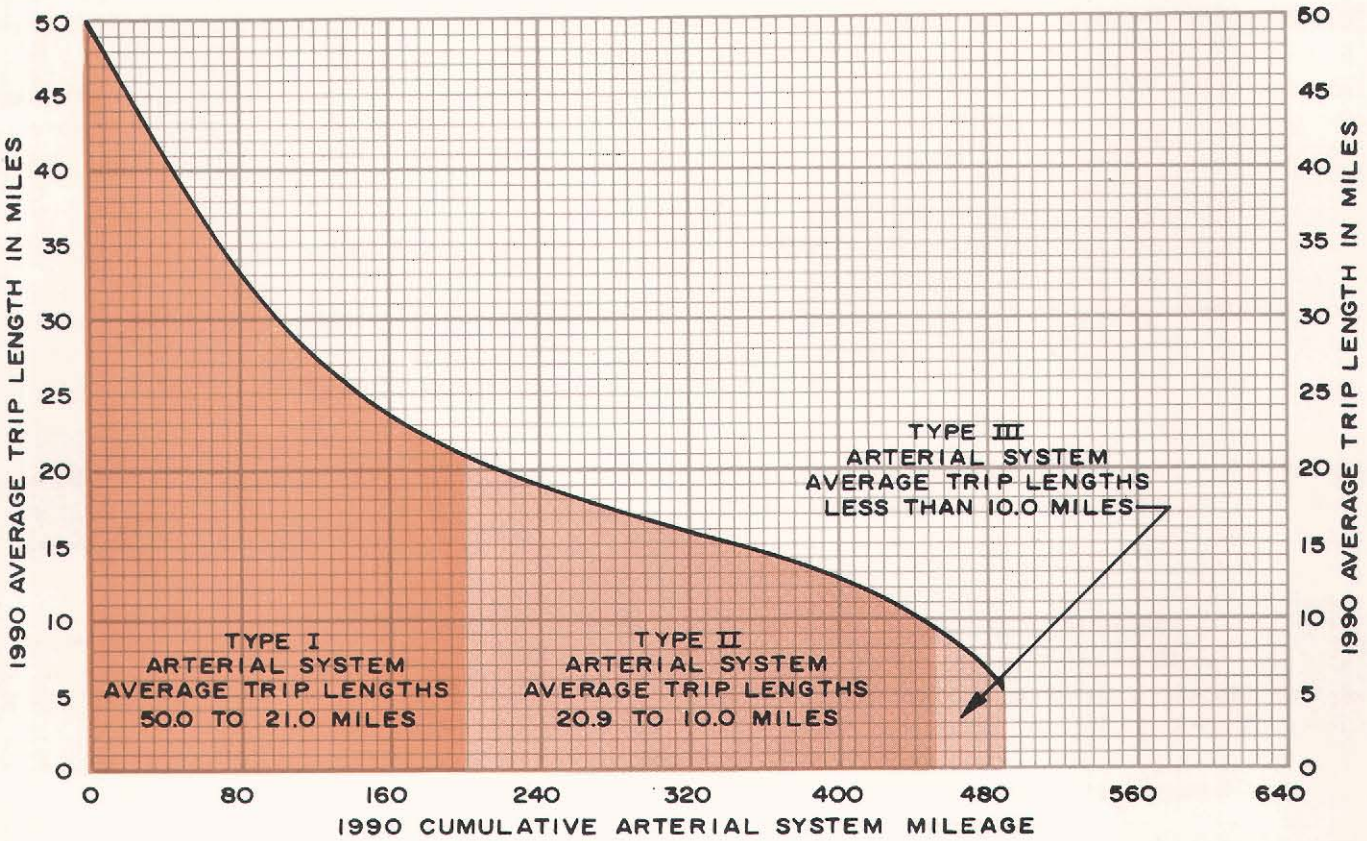
Type III Arterials—Urban

A Type III urban arterial facility shall be considered to "connect and serve" given land uses when direct access from the facility to roads serving the land use area is available within a maximum over-the-road distance of one-quarter mile of the main vehicular entrance to the land use to be served.

The land use activities to be considered as properly influencing jurisdictional classification to arterial highway systems should be those which, either through their individual or aggregate effects, interact strongly with the need for transportation facilities and which, by their nature, are normally grouped into concentrations which form major traffic generators. These include major transportation terminals, major recreational facilities, regional commercial cen-

Figure 5

RELATIONSHIP BETWEEN AVERAGE TRIP LENGTH AND CUMULATIVE ARTERIAL MILEAGE
WALWORTH COUNTY ARTERIAL STREET AND HIGHWAY SYSTEM: 1990



Source: SEWRPC.

ters, major industrial centers, certain types of institutional uses, and urban areas. The following criteria, with respect to each of these land use classifications, were adopted for the Walworth County jurisdictional highway planning study.

1. Transportation Terminals[5]

   Type I Arterials—Urban and Rural
   Type I arterial facilities shall connect and serve interregional rail, bus, and major truck terminals;[6] and air-carrier airports.[7]

   Type II Arterials—Urban and Rural
   Type II arterial facilities shall connect and serve freeway interchanges, general-aviation airports,[8] pipeline terminals, and major intraregional truck terminals[9] not served by Type I arterials.

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[5] *A transportation terminal is herein defined as a complex of contiguous, concentrated land uses the purpose of which is to effect a change of transportation mode or a transshipment of goods.*

[6] *A major interregional truck terminal is herein defined as a complex of contiguous, concentrated land uses generating 250 or more interregional truck trips per average weekday.*

[7] *An air-carrier airport is herein defined as a public airport intended to serve primarily commercial local service and trunk-line air-carrier aircraft providing service to the general public on a regularly scheduled basis between major cities of the country.*

[8] *A general-aviation airport is herein defined as an airport, either publicly or privately owned, open to public use and intended to serve smaller training, business, charter, agricultural, recreation, and air-taxi aircraft.*

[9] *A major intraregional truck terminal is herein defined as a complex of contiguous, concentrated land uses generating 250 or more intraregional truck trips per average weekday.*

Type III Arterials—Urban
Type III arterial facilities shall connect and serve truck terminals generating 50 or more truck trips per average weekday and off-street parking facilities having a minimum of 50 parking spaces not served by Type I and Type II arterials.

2. Recreational Facilities

Type I Arterials—Urban and Rural
Type I arterial facilities shall connect and serve all state parks and those public and private recreational facilities of interregional and statewide importance with a gross site area of 500 acres or more.

Type II Arterials—Urban and Rural
Type II arterial facilities shall connect and serve those public and private recreational facilities of regional and countywide importance not served by Type I arterials.

Type III Arterials—Urban
Type III arterial facilities shall connect and serve community parks[10] not served by Type I and Type II arterials.

3. Commercial Centers

Type I Arterials—Urban and Rural
Type I arterial facilities shall connect and serve major retail and service (regional shopping) centers.[11]

Type II Arterials—Urban and Rural
Type II arterial facilities shall connect and serve community retail and service centers[12] not served by Type I arterials.

Type III Arterials—Urban
Type III arterial facilities shall connect and serve neighborhood retail and service commercial centers[13] not served by Type I and Type II arterials.

4. Industrial Centers

Type I Arterials—Urban and Rural
Type I arterial facilities shall connect and serve regional industrial centers.[14]

Type II Arterials—Urban and Rural
Type II arterial facilities shall connect and serve major community industrial centers[15] not served by Type I arterials.

Type III Arterials—Urban
Type III arterial facilities shall connect and serve minor community industrial centers[16] not served by Type I and Type II arterials.

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[10] *A community park is herein defined as an outdoor recreation area having a broad range of recreational facilities on one site having a gross size ranging from 30 to 250 acres.*

[11] *A major retail and service center is herein defined as an existing or officially designated concentration of retail and service uses having a minimum gross site area of 60 acres, intended to serve areawide retail and service needs for a multi-community population ranging from 75,000 to 150,000 persons located within a 10-mile radius. The term "officially designated," as applied to concentrations of various land uses, is herein defined as an area shown on adopted regional or local land use plans or recognized in local zoning district maps.*

[12] *A community retail and service center is herein defined as an existing or officially designated concentration of retail and service uses having a gross site area ranging in size from 20 to 60 acres, intended to serve the retail and service use needs of a tributary area with a population of from two to five residential neighborhoods.*

[13] *A neighborhood retail and service commercial center is herein defined as an existing or officially designated concentration of retail and service uses having a gross site area ranging in size from 5 to 20 acres intended to serve the retail and service needs of the population of one residential neighborhood.*

[14] *A regional industrial center is herein defined as an existing or officially designated concentration of manufacturing, wholesaling, and related-use establishments having a minimum gross site area of 320 acres or providing employment for over 5,000 persons.*

[15] *A major community industrial center is herein defined as an existing or officially designated concentration of manufacturing, wholesaling, and related use establishments having a gross site area ranging in size from 100 to 320 acres or providing employment for 1,500 to 5,000 persons.*

[16] *A minor community industrial center is herein defined as an existing or designated concentration of manufacturing, wholesaling, and related-use establishments ranging in size from 20 to 100 acres or providing employment for 300 to 1,500 persons.*

5. Institutional

Type I Arterials—Urban and Rural
Type I arterial facilities shall connect and serve universities, county seats, and state institutions.

Type II Arterials—Urban and Rural
Type II arterial facilities shall connect and serve county institutions; accredited, degree-granting colleges; public vocational schools; and community hospitals not served by Type I arterials.

Type III Arterials—Urban
Type III arterial facilities shall connect and serve city and village halls and high schools not served by Type I and Type II arterials.

6. Urban Concentrations

Type I Arterials—Rural
Type I rural arterial facilities shall connect and serve urban concentrations of 2,500 or more population.

Type II Arterials—Rural
Type II rural arterial facilities shall connect and serve urban concentrations of 500 or more population.

Criteria Relating to Operational Characteristics
Criteria for a functional subclassification of arterials relating to operational characteristics include consideration of system continuity, facility spacing, traffic volume, traffic mobility, and land access.

1. System Continuity

The various arterial subsystems shall form integrated systems within themselves or in conjunction with the other subsystems. The individual facilities comprising any given subsystem shall be directly routed between facility termini so as to provide the shortest travel paths practicable through the arterial network. The following criteria, with respect to system continuity, were adopted for the Walworth County jurisdictional highway planning study:

Type I Arterials—Urban and Rural
Type I arterial facilities shall have interregional or regional continuity comprising total systems at the regional and state level.

Type II Arterials—Urban and Rural
Type II arterial facilities shall have intermunicipality and intercounty continuity comprising integrated systems at the county level.

Type III Arterials—Urban
Type III arterial facilities shall have intracommunity continuity comprising an integrated system at the city or village level.

2. Spacing

The location and geometric configuration of highway systems must be properly related to the land uses to be served and should be determined from areawide traffic analyses which consider both existing and probable future traffic loadings derived from existing and proposed land use patterns. Nevertheless, some general criteria may be established with respect to the minimum spacing of various types of facilities based upon good land use planning principles, as well as operational characteristics and engineering constraints. The following criteria, with respect to minimum spacing, were adopted for the Walworth County jurisdictional highway planning study.

Type I Arterials—Urban and Rural
Type I arterial facilities shall generally be located no closer than two miles to, and approximately parallel with, another Type I facility.

Type II Arterials—Urban and Rural
Type II arterial facilities shall generally be located no closer than one mile to, and approximately parallel with, a Type I facility or another Type II facility.

Type III Arterials—Urban
Type III arterial facilities shall generally be located no closer than one-half mile to, and approximately parallel with, a Type I, Type II, or another Type III facility.

3. Volume

Although traffic volume alone provides little indication of the function of an arterial facility, it can, in conjunction with other criteria, become an important jurisdictional criteria. It is important, when considering volume as a criteria for a jurisdictional subclassification of arterials, to recognize that both existing and probable future traffic volumes must be considered, with the latter being given the most weight in the classification process. Table 7 summarizes the criteria, with respect to future (1990) traffic volume, expressed as vehicles per average weekday, adopted for the Walworth County jurisdictional highway planning study.

Future potential traffic volumes were derived from a system traffic assignment based on an areawide land use plan or projection. Such a traffic assignment exists for Walworth County as a part of the Southeastern Wisconsin regional transportation plan and reflects anticipated 1990 average weekday traffic volumes.

The following procedure was used to develop the recommended values for the traffic volume criteria. The regional land use-transportation study traffic assignment link volumes for 1990 were first arrayed in descending rank order, and a cumulative sum of link length computed for each link place in the descending rank order. From these data a curve was plotted to provide a graphical representation of the relationship existing between traffic volume and cumulative arterial system mileage (see Figure 6). Break points were identified on this curve and used to select traffic volume ranges representative of each jurisdictional classification type. The break points identified on the traffic volume curves tended to substantiate, in terms of cumulative jurisdictional subsystem mileage, the trip length criteria previously established.

4. Traffic Mobility

Traffic mobility criteria for a functional subclassification of arterials could be established in terms of speed, volume-to-capacity ratios, or other measures of traffic density. In recognition of the fact that the longer the trip the more critical the time of travel, however, it is an accepted practice to provide higher speeds on the routes of highest arterial function. As a result, the following criteria with respect to traffic mobility, as shown in Table 8, were adopted for the Walworth County jurisdictional highway planning study.

Table 7

TRAFFIC VOLUME CRITERIA FOR ARTERIAL SUBCLASSIFICATION

ARTERIAL TYPE	AVERAGE WEEKDAY TRAFFIC VOLUME (VEHICLES)
I (STATE TRUNK).....	3,000 OR MORE
II (COUNTY TRUNK).....	800 TO 2,999
III (LOCAL TRUNK).....	799 OR LESS

SOURCE- SEWRPC.

5. Land Access

It has already been noted that two of the basic functions performed by street systems—namely, traffic mobility and land access—are basically conflicting, and that the land access function of arterial facilities must be subordinate to the traffic mobility function. Therefore, a degree of access control which is related to the subclassification of the arterial facility should be exercised over arterials by means of some restriction of direct access. The following criteria with respect to land access control were adopted for the Walworth County jurisdictional highway planning study:

Type I Arterials—Urban and Rural

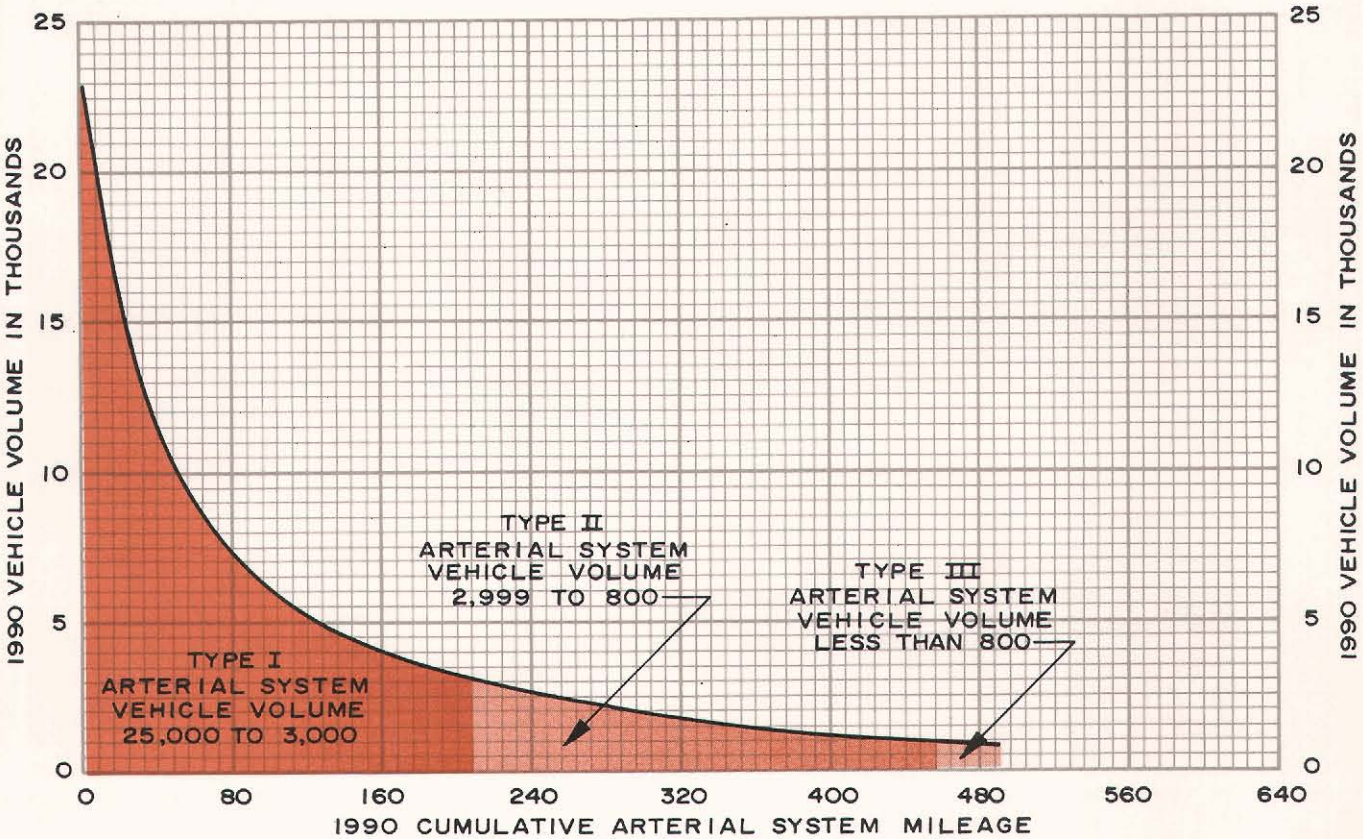
All Type I arterials shall have full or partial control of access.[17,18]

[17] *Full control of access is herein defined as the exercise of eminent domain or police power to control access so as to give preference to the movement of through traffic by providing access connections only at selected public roads via grade-separated interchanges.*

[18] *Partial control of access is herein defined as the exercise of eminent domain or police power to control access so as to give preference to the movement of through traffic to a degree that, in addition to access connections at selected public roads, there may be some direct access to abutting land uses, with generally one point of reasonably direct access to each parcel of abutting land as these parcels existed at the time of an official declaration that partial control of access shall be exercised.*

Figure 6

RELATIONSHIP BETWEEN AVERAGE WEEKDAY VEHICLE VOLUME AND CUMULATIVE ARTERIAL MILEAGE
WALWORTH COUNTY ARTERIAL STREET AND HIGHWAY SYSTEM: 1990



Source: SEWRPC.

Table 8

TRAFFIC MOBILITY CRITERIA FOR
ARTERIAL SUBCLASSIFICATION

ARTERIAL TYPE	AVERAGE OVERALL TRAVEL SPEED (MILES PER HOUR)[a]	
	URBAN AREA	RURAL AREA
I (STATE TRUNK).....	30 TO 70	40 TO 70
II (COUNTY TRUNK).....	25 TO 50	30 TO 60
III (LOCAL TRUNK).....	20 TO 40	--[b]

[a]AVERAGE OVERALL TRAVEL SPEED IS THE TOTAL OF THE DISTANCES TRAVELED BY ALL VEHICLES USING A GIVEN SECTION OF HIGHWAY DURING AN AVERAGE WEEKDAY, DIVIDED BY THE TOTAL OF THE ACTUAL TRAVEL TIMES, INCLUDING TRAFFIC DELAYS. AVERAGE OVERALL TRAVEL SPEEDS HAVE THE FOLLOWING APPROXIMATE RELATIONSHIPS TO AVERAGE OPERATING SPEEDS-

EQUIVALENT AVERAGE OPERATING SPEED	AVERAGE OVERALL TRAVEL SPEED
20 MPH	10 MPH
30 MPH	21 MPH
40 MPH	32 MPH
50 MPH	43 MPH
60 MPH	54 MPH
70 MPH	65 MPH

[b]A RURAL SUBCATEGORY FOR TYPE III ARTERIALS IS NOT PROVIDED.

SOURCE- SEWRPC.

Type II Arterials—Urban and Rural

All Type II arterials shall have at least partial control of access.[19]

Type III Arterials—Urban

All Type III arterials shall have at least minimum control of access.[20]

Table 9 summarizes the functional criteria used for the jurisdictional classification of arterial highways in Walworth County.

OTHER FACTORS

In the application of the foregoing criteria to the delineation of a jurisdictional highway system, several other factors must be considered, particularly legal and financial constraints. Federal, state, county, and local legislative and financial resource limitations limit the mileage allotment available for state trunk, county trunk, and related federal aid routes and must, therefore, be con-

[19] *See definition of partial control of access, as stated in Footnote 18.*

[20] *Minimum control of access is herein defined as the exercise of eminent domain or police power to regulate the placement and geometrics of direct access roadway connections as necessary for safety.*

Table 9

SUMMARY OF FUNCTIONAL CRITERIA FOR JURISDICTIONAL CLASSIFICATION OF ARTERIAL HIGHWAYS IN WALWORTH COUNTY

	CRITERIA	ARTERIAL TYPE		
		I (STATE TRUNK)	II (COUNTY TRUNK)	III (LOCAL TRUNK)[a]
TRIP SERVICE	AVERAGE TRIP LENGTH (MILES)	URBAN[b] AND RURAL[c] MORE THAN 21	URBAN[b] AND RURAL[c] 10 TO 21	URBAN[b] 2 TO 10
LAND USE SERVICE	TRANSPORTATION TERMINALS	URBAN AND RURAL CONNECT AND SERVE INTERREGIONAL RAIL, BUS, AND MAJOR TRUCK TERMINALS; AND AIR-CARRIER AIRPORTS	URBAN AND RURAL CONNECT AND SERVE FREEWAY INTERCHANGES, GENERAL AVIATION AIRPORTS, PIPELINE TERMINALS, MAJOR INTRAREGIONAL TRUCK TERMINALS, AND RAPID TRANSIT AND MODIFIED RAPID TRANSIT SYSTEM LOADING AND UNLOADING POINTS NOT SERVED BY TYPE I ARTERIALS	URBAN CONNECT AND SERVE TRUCK TERMINALS GENERATING 50 OR MORE TRUCK TRIPS PER AVERAGE WEEKDAY, AND OFF-STREET PARKING FACILITIES HAVING A MINIMUM OF 50 PARKING SPACES NOT SERVED BY TYPE I AND II ARTERIALS
	RECREATIONAL FACILITIES	URBAN AND RURAL CONNECT AND SERVE ALL STATE PARKS HAVING A GROSS AREA OF 500 ACRES OR MORE	URBAN AND RURAL CONNECT AND SERVE REGIONAL PARKS AND SPECIAL RECREATIONAL USE AREAS OF COUNTY-WIDE SIGNIFICANCE	URBAN CONNECT AND SERVE COMMUNITY PARKS NOT SERVED BY TYPE I AND II ARTERIALS
	COMMERCIAL CENTERS	URBAN AND RURAL CONNECT AND SERVE MAJOR RETAIL AND SERVICE CENTERS	URBAN AND RURAL CONNECT AND SERVE COMMUNITY RETAIL AND SERVICE CENTERS NOT SERVED BY TYPE I ARTERIALS	URBAN CONNECT AND SERVE NEIGHBORHOOD RETAIL AND SERVICE COMMERCIAL CENTERS NOT SERVED BY TYPE I AND II ARTERIALS
	INDUSTRIAL CENTERS	URBAN AND RURAL CONNECT AND SERVE MAJOR REGIONAL INDUSTRIAL CENTERS	URBAN AND RURAL CONNECT AND SERVE MAJOR COMMUNITY INDUSTRIAL CENTERS NOT SERVED BY TYPE I ARTERIALS	URBAN CONNECT AND SERVE MINOR COMMUNITY INDUSTRIAL CENTERS NOT SERVED BY TYPE I AND II ARTERIALS
	INSTITUTIONAL	URBAN AND RURAL CONNECT AND SERVE UNIVERSITIES, COUNTY SEATS, AND STATE INSTITUTIONS	URBAN AND RURAL CONNECT AND SERVE COUNTY INSTITUTIONS; ACCREDITED, DEGREE-GRANTING COLLEGES; PUBLIC VOCATIONAL SCHOOLS; AND COMMUNITY HOSPITALS NOT SERVED BY TYPE I ARTERIALS	URBAN CONNECT AND SERVE CITY AND VILLAGE HALLS AND HIGH SCHOOLS NOT SERVED BY TYPE I AND II ARTERIALS
	URBAN AREAS	RURAL CONNECT AND SERVE URBAN AREAS OF 2,500 OR MORE POPULATION	RURAL CONNECT AND SERVE DEVELOPED AREAS OF 500 OR MORE POPULATION	— —
OPERATIONAL CHARACTERISTICS	SYSTEM CONTINUITY	URBAN AND RURAL INTERREGIONAL OR REGIONAL CONTINUITY COMPRISING TOTAL SYSTEMS AT THE REGIONAL AND STATE LEVEL	URBAN AND RURAL INTERMUNICIPALITY AND INTERCOUNTY CONTINUITY COMPRISING INTEGRATED SYSTEMS AT THE COUNTY LEVEL	URBAN INTRACOMMUNITY CONTINUITY COMPRISING AN INTEGRATED SYSTEM AT THE CITY, VILLAGE, OR TOWN LEVEL
	SPACING	URBAN AND RURAL MINIMUM 2 MILES	URBAN AND RURAL MINIMUM 1 MILE	URBAN MINIMUM 0.5 MILE
	VOLUME	URBAN AND RURAL MINIMUM 3,000 VEHICLES PER AVERAGE WEEKDAY (1990 FORECAST)	URBAN AND RURAL 800 TO 3,000 VEHICLES PER AVERAGE WEEKDAY (1990 FORECAST)	URBAN LESS THAN 800 VEHICLES PER AVERAGE WEEKDAY (1990 FORECAST)
	TRAFFIC MOBILITY	URBAN AVERAGE OVERALL TRAVEL SPEED[d] 30 TO 70 MILES PER HOUR RURAL AVERAGE OVERALL TRAVEL SPEED 40 TO 70 MILES PER HOUR	URBAN AVERAGE OVERALL TRAVEL SPEED[d] 25 TO 50 MILES PER HOUR RURAL AVERAGE OVERALL TRAVEL SPEED 30 TO 60 MILES PER HOUR	URBAN AVERAGE OVERALL TRAVEL SPEED[d] 20 TO 40 MILES PER HOUR
	LAND ACCESS CONTROL	FULL OR PARTIAL CONTROL OF[e,f] ACCESS	PARTIAL CONTROL OF ACCESS[f]	MINIMUM CONTROL OF ACCESS[g]

[a] A RURAL SUBCATEGORY FOR TYPE III ARTERIALS IS NOT PROVIDED.

[b] URBAN ARTERIAL FACILITIES ARE CONSIDERED TO "CONNECT AND SERVE" GIVEN LAND USES WHEN DIRECT ACCESS FROM THE FACILITY TO ROADS SERVING THE LAND USE AREA IS AVAILABLE WITHIN THE FOLLOWING MAXIMUM OVER-THE-ROAD DISTANCES FROM THE MAIN VEHICULAR ENTRANCE TO THE LAND USE TO BE SERVED- TYPE I ARTERIAL FACILITY, 1 MILE, TYPE II ARTERIAL FACILITY, 0.5 MILE, TYPE III ARTERIAL FACILITY, 0.25 MILE.

[c] RURAL ARTERIAL FACILITIES ARE CONSIDERED TO "CONNECT AND SERVE" GIVEN LAND USES WHEN DIRECT ACCESS FROM THE FACILITY TO ROADS SERVING THE LAND USE AREA IS AVAILABLE WITHIN THE FOLLOWING MAXIMUM OVER-THE-ROAD DISTANCES FROM THE MAIN VEHICULAR ENTRANCE TO THE LAND USE TO BE SERVED- TYPE I ARTERIAL FACILITY, 2 MILES, TYPE II ARTERIAL FACILITY, 1 MILE.

[d] AVERAGE OVERALL TRAVEL SPEED IS DEFINED AS THE SUM OF THE DISTANCES TRAVELLED BY ALL VEHICLES USING A GIVEN SECTION OF HIGHWAY DURING AN AVERAGE WEEKDAY DIVIDED BY THE SUM OF THE ACTUAL TRAVEL TIMES, INCLUDING TRAFFIC DELAYS.

[e] FULL CONTROL OF ACCESS IS DEFINED AS THE EXERCISE OF EMINENT DOMAIN OR POLICE POWER TO CONTROL ACCESS SO AS TO GIVE PREFERENCE TO MOVEMENT OF THROUGH TRAFFIC BY PROVIDING ACCESS CONNECTIONS ONLY AT SELECTED PUBLIC ROADS VIA GRADE-SEPARATED INTERCHANGES.

[f] PARTIAL CONTROL OF ACCESS IS DEFINED AS THE EXERCISE OF EMINENT DOMAIN OR POLICE POWER TO CONTROL ACCESS SO AS TO GIVE PREFERENCE TO THE MOVEMENT OF THROUGH TRAFFIC TO A DEGREE THAT, IN ADDITION TO ACCESS CONNECTIONS AT SELECTED PUBLIC ROADS, THERE MAY BE SOME DIRECT ACCESS TO ABUTTING LAND USES WITH GENERALLY ONE POINT OF REASONABLY DIRECT ACCESS TO EACH PARCEL OF ABUTTING LAND AS THESE PARCELS EXISTED AT THE TIME OF AN OFFICIAL DECLARATION THAT PARTIAL CONTROL OF ACCESS SHALL BE EXERCISED.

[g] MINIMUM CONTROL OF ACCESS IS DEFINED AS THE EXERCISE OF EMINENT DOMAIN OR POLICE POWER TO REGULATE THE PLACEMENT AND GEOMETRICS OF DIRECT ACCESS ROADWAY CONNECTIONS AS NECESSARY FOR SAFETY.

SOURCE- SEWRPC.

sidered as important constraints on any jurisdictional classification scheme. Evaluation of these legal and financial constraints may show that the jurisdiction for certain facility types must be assumed by a different level of government than might otherwise be indicated by type classification alone. It must also be recognized that certain intergovernmental coordination requirements necessitated by road location along or across civil division boundaries may require, as practical plan implementation measures, the assumption of jurisdictional responsibility for certain facilities by a higher level of government than might otherwise be indicated by type classification alone.

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Chapter V

APPLICATION OF FUNCTIONAL CRITERIA TO DEVELOP JURISDICTIONAL SYSTEMS

INTRODUCTION

In Chapter II of this report, it was indicated that the preparation of a jurisdictional highway system plan for Walworth County involved a seven-step planning process. The fourth step in this process consisted of the application of functional criteria specifically developed for this purpose in order to separate the total functional arterial street and highway system into rational jurisdictional subsystems. The criteria were applied to the total arterial street and highway system for Walworth County, as proposed in the adopted regional transportation plan, and refined through a careful review of the arterial system conducted as a part of the planning process by experienced public works engineers responsible for the design, construction, operation, and maintenance of arterial highway facilities within the county. The total functional system of arterial street and highway facilities to which the classification criteria were applied is shown on Map 14.

The application of the functional criteria for jurisdictional highway classification, as set forth in Chapter IV of this report, required an analysis of the trip lengths and traffic volumes to be served by each link in the total arterial system, an inventory of the existing and proposed land uses to be served by each of the jurisdictional subsystems, and an investigation of the operational characteristics of the arterial facilities themselves. The procedure developed to establish the jurisdictional classification of each arterial street and highway facility in Walworth County involved three major steps.

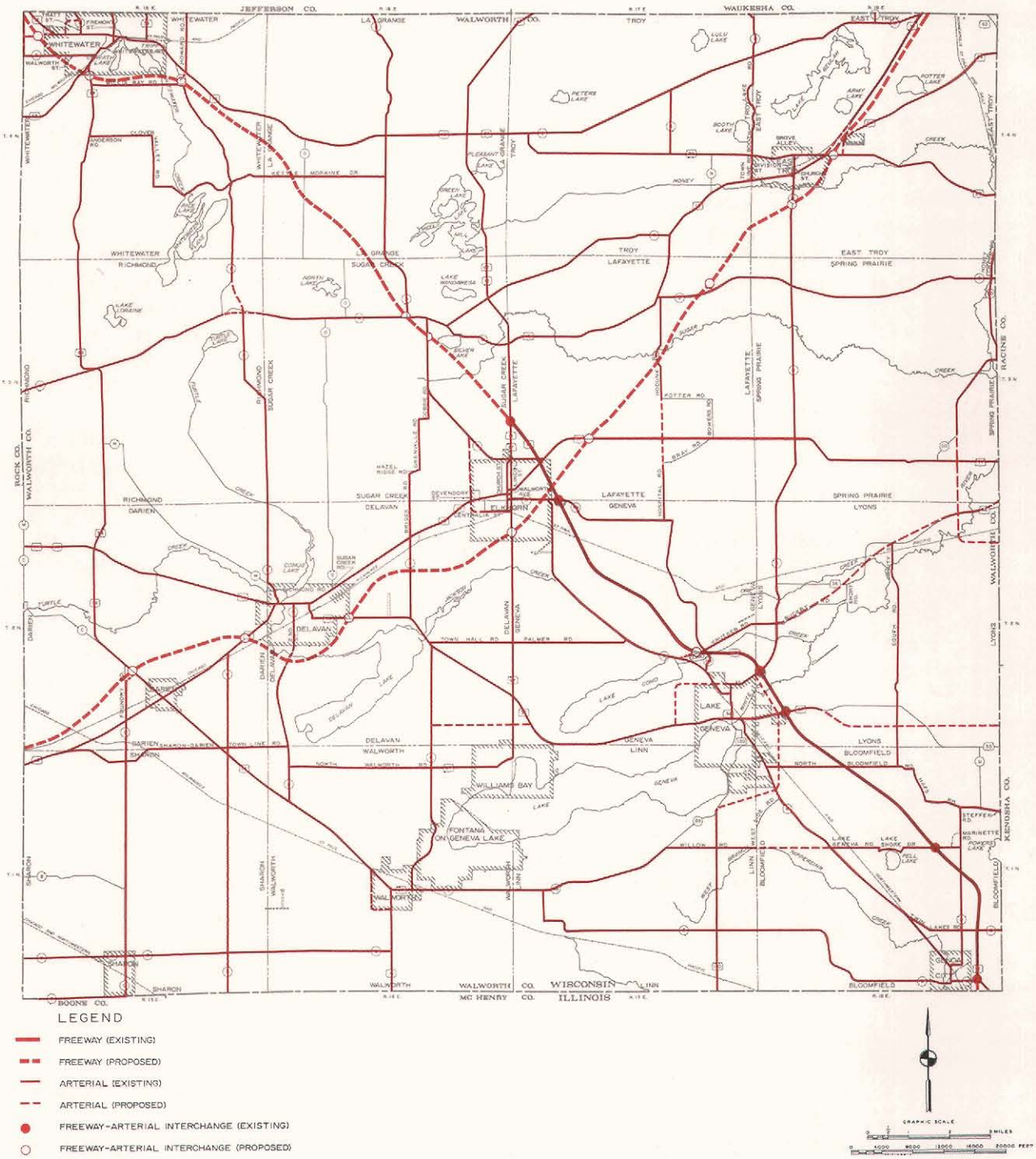
In the first step, each arterial facility was classified in terms of the trip service criteria previously established. Three trip service subsystems were thus identified, each related to a jurisdictional classification. In the second step, each arterial facility was classified in terms of the land use criteria previously established. Three land use service subsystems were thus identified, each related to a jurisdictional classification. Finally, these two sets of jurisdictional subsystems were combined and refined through the application of system continuity and facility spacing criteria to produce a preliminary jurisdictional highway system plan. The preliminary jurisdictional classification of the arterial facilities was thus further refined by staff and Committee consideration and evaluation of the administrative, financial, and legal factors concerned. This entire classification process is illustrated in Figure 3.

TRIP SERVICE JURISDICTIONAL SUBSYSTEMS

It was stated earlier that the functional arterial street and highway system proposed in the adopted regional transportation plan was refined and updated in order both to incorporate the effects of any changes in land use and highway system development which had occurred within Walworth County since the adoption of the functional plan and to incorporate certain changes in the functional plan indicated to be desirable since its adoption. For this reason it was necessary to modify the computer description of that portion of the regional arterial network affected by these changes before average trip lengths could be determined for each link in the functional system. Both the structure and the operational characteristics of the arterial network description were analyzed by plotting and checking the minimum time travel paths connecting selected major trip generators located both inside and outside Walworth County with all traffic analysis zone centroids affected by the network modification. Once this network editing was completed and the computer description of the system deemed satisfactory, the effect of the forecast 1990 travel demand on the network was simulated by a computer traffic assignment of the 1990 interzonal trip table, developed in the regional land use-transportation study, to the 1990 interzonal least-time-travel paths through the arterial network. The accumulated forecast 1990 volumes on each section of the arterial system resulting from the traffic assignment were then analyzed on a link-by-link basis for reasonableness by comparison with existing traffic volumes and previous assignments of forecast traffic volumes.

Map 14

ARTERIAL STREET AND HIGHWAY SYSTEM IN WALWORTH COUNTY: 1990



A 489-mile arterial street and highway system is proposed to serve existing and forecast travel demand in Walworth County to the year 1990. This total arterial system forms the basic network to which criteria for the assignment of jurisdictional responsibilities for each link in the system were applied. The total system represents a refinement of the arterial street and highway system for Walworth County as included in the adopted regional transportation plan and will provide the county with a high level of highway transportation service through 1990, meeting the anticipated increases in travel demand efficiently and effectively.

Source: SEWRPC.

In the development of the trip service subsystems, the average trip length which could be expected to occur on each link was calculated in the manner previously described in Chapter IV of this report. Using the calculated trip length data, each link was classified as a Type I, Type II, or Type III arterial facility, in accordance with the previously established trip service criteria. The resulting subsystems are shown on Map 15, the jurisdictional classification for each link being indicated by color code. Continuous segments of lengths of the same color tended to focus attention to routes of similar function which could be combined to form jurisdictional subsystems.

It should be noted that the average trip length for those arterial facilities which cross the southern and western boundaries of Walworth County were increased subsequent to a review of the 1963 travel survey data. These adjustments were deemed necessary to reflect that portion of the trips on these arterials which involve out-of-region travel, thus providing a more accurate representation of the trip service provided by those arterial facilities carrying travel into and out of the Region.

The subsystems delineated by the application of the trip service criteria were found generally to parallel the stratification of the total arterial system into subsystems by relative levels of service. For example, the arterial facilities providing the highest level of service, characterized by free-flow traffic conditions—that is, the freeways—exhibited the longest average trip lengths, ranging from 21 miles up to 50 miles, and were, therefore, classified into the highest trip service facility type. Similarly, the facilities providing the lowest level of service—that is, the at-grade arterials in areas with high land use intensities—exhibited the shortest average trip lengths, less than 3 miles, and were, therefore, classified into the lowest trip service facility type.

LAND USE SERVICE JURISDICTIONAL SUBSYSTEMS

In preparation for the development of the land use service jurisdictional subsystems, the existing and proposed Type I, Type II, and Type III land use areas, as defined in the previously established criteria, were delineated on a county base map. The existing transportation terminals, recreational facilities, commercial centers, industrial centers, and institutional land uses were identified from existing land use inventories and categorized, through application of the criteria, by the study staff and then reviewed by knowledgeable local planners and engineers. Future land uses were identified from the adopted regional land use plan, adopted community land use plans and zoning ordinances, and current planning data provided by local planners and engineers and similarly categorized by application of the criteria. The land use areas for Type I, Type II, and Type III jurisdictional categories, as delineated for the study, are shown on Map 16.

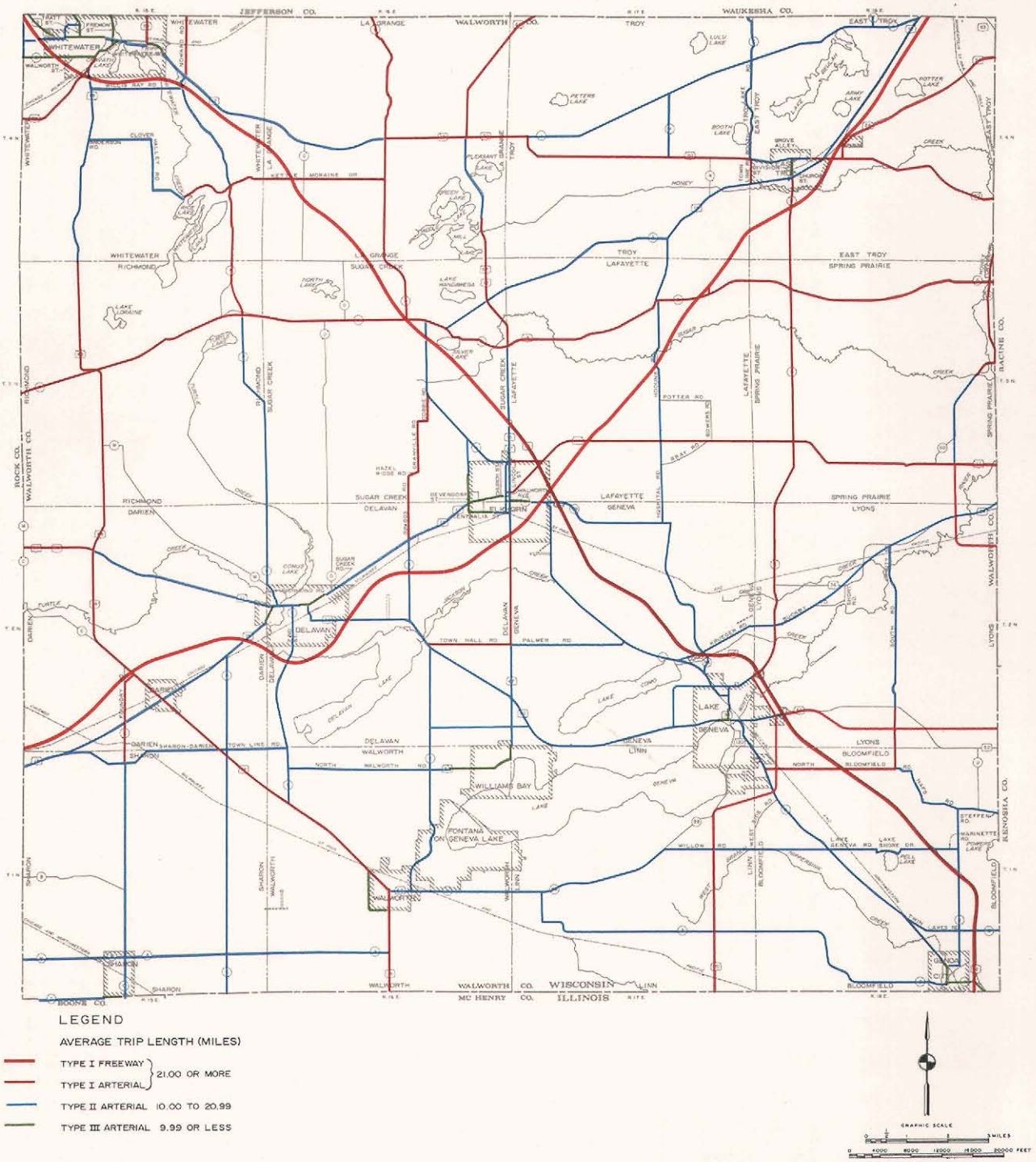
Utilizing the resulting land use patterns and the land use service criteria previously developed, the total arterial street and highway system was classified into three land use service subsystems. This was accomplished through a series of system classifications. First, those arterial facilities which best connected and served each of the Type I land use areas were carefully determined and delineated to form a continuous Type I subsystem. A second arterial subsystem was then established to interconnect with the Type I land use service subsystem and to provide the service required by the established criteria for all Type II land use areas not already served by the Type I arterial highway system. The remaining arterial facilities were classified into a third subsystem to serve the Type III land uses. The resulting jurisdictional subsystems are also shown on Map 16.

DEVELOPMENT OF THE JURISDICTIONAL HIGHWAY SYSTEM PLAN

Through the procedures previously described, two separate groups of Type I, Type II, and Type III subsystems were established—one group developed by application of the trip service criteria and the other by application of the land use service criteria. Generally, the same individual facilities were found to be included within each of the corresponding subsystems. Further refinement of the jurisdictional classification of the total arterial street and highway system was necessary, however, to establish a recommended jurisdictional highway system plan. This refinement was accomplished through the application of the previously established criteria relating to the operational characteristics of each facility, including system continuity, facility spacing, traffic volume, traffic mobility, and land access, to the two groups of subsystems. Other factors considered in this synthesis were legal and financial constraints and intergovernmental coordination requirements.

Map 15

JURISDICTIONAL CLASSIFICATION OF THE ARTERIAL STREET AND HIGHWAY SYSTEM IN WALWORTH COUNTY BASED ON AVERAGE TRIP LENGTH: 1990

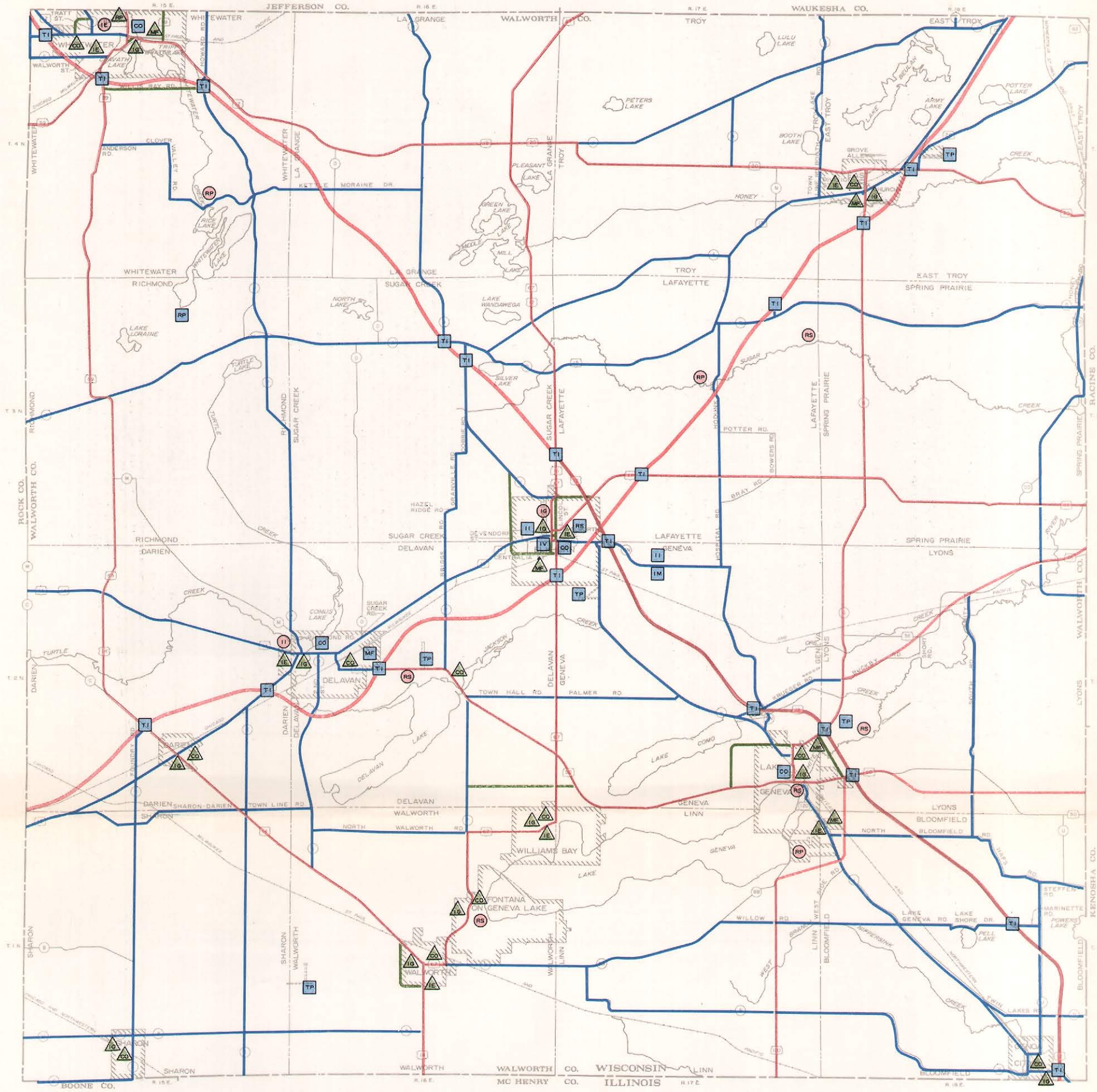


Application of the trip length criteria alone resulted in the classification of the total arterial highway system into the three jurisdictional subsystems shown on this map. The average trip length for the Type I arterial facility is 21 miles or more; for the Type II arterial facility, 10 to 20.99 miles; and for the Type III arterial facility, 9.99 miles or less.

Source: *SEWRPC.*

Map 16

JURISDICTIONAL CLASSIFICATION OF THE ARTERIAL STREET AND HIGHWAY SYSTEM IN WALWORTH COUNTY BASED ON LAND USE: 1990



LEGEND

- FREEWAY FACILITY CONNECTING AND SERVING TYPE I LAND USES
- ARTERIAL FACILITY CONNECTING AND SERVING TYPE I LAND USES
- ARTERIAL FACILITY CONNECTING AND SERVING TYPE II LAND USES
- ARTERIAL FACILITY CONNECTING AND SERVING TYPE III LAND USES

LAND USE TYPE	TRANSPORTATION TERMINALS	RECREATIONAL AREAS	COMMERCIAL CENTERS	INDUSTRIAL CENTERS	INSTITUTIONAL CENTERS
I	TR RAIL TERMINAL TB BUS TERMINAL TT TRUCK TERMINAL TP PORT (AIR & SEA)	RS SPECIAL USE AREA RP REGIONAL OR INTER-REGIONAL PARK	CO REGIONAL RETAIL & SERVICE COMMERCIAL CENTER	MF REGIONAL INDUSTRIAL CENTER	IE UNIVERSITY IG COUNTY SEAT II STATE INSTITUTION
II	TI INTERCHANGE TP NON-COMMERCIAL AIRPORT TL PIPELINE TT TRUCK TERMINAL TB RAPID TRANSIT LOADING	RP COUNTY OR INTER-COUNTY PARK RS SPECIAL USE AREA	CO COMMUNITY RETAIL & SERVICE COMMERCIAL CENTER	MF COMMUNITY MAJOR INDUSTRIAL CENTER	II COUNTY INSTITUTION IE COLLEGE IV VOCATIONAL SCHOOL IM COMMUNITY HOSPITAL
III	TT TRUCK TERMINAL	RP COMMUNITY PARK	CO NEIGHBORHOOD RETAIL & SERVICE COMMERCIAL CENTER	MF COMMUNITY MINOR INDUSTRIAL CENTER	IE HIGH SCHOOL IG CITY OR VILLAGE HALL

GRAPHIC SCALE
0 1/2 1 2 3 MILES
0 4000 8000 12000 16000 20000 FEET

Application of the land use service criteria alone resulted in the classification of the total arterial highway system into the three jurisdictional subsystems shown on this map. The pattern shown emphasizes the close relationship which exists between land use development and arterial highway needs. The land uses which are shown include transportation terminals, recreational areas, and commercial, industrial, and institutional centers.

Source: SEWRPC.

In order to facilitate the application of the traffic volume criteria, a third group of subsystems, shown on Map 17, was identified by application of the traffic volume criteria previously established. This third group of subsystems, based only upon traffic volume considerations, together with the system continuity and facility spacing criteria, was found to be most useful in the refinement of the application of the trip service and land use service criteria necessary to develop the final classification of the entire arterial system into recommended jurisdictional systems.

By comparing the three separate groups of subsystems—trip service, land use service, and volume—most of the arterial facilities were found to fall clearly into one of the three jurisdictional type categories—Type I, state trunk; Type II, county trunk; and Type III, local trunk—by virtue of meeting all of these criteria for a majority of the route length. Some judgment, however, had to be exercised in the case of a limited number of marginal facilities which did not fall clearly into one category or another because not all of the criteria were met for the majority of the route length. These marginal facilities are listed in Table 10, together with a summary of the manner in which they met the established criteria. Final determination with respect to the inclusion or exclusion of these marginal facilities was made by the Technical Coordinating and Advisory Committee, and this disposition is also noted in Table 10.

As shown on Map 18, the total arterial street and highway system was thus objectively and rationally classified into Type I, state trunk; Type II, county trunk; and Type III, local trunk subsystems; which are integral parts of the overall system and which are within themselves continuous but which vary with respect to the types of trip lengths served, the types of land use areas served, and the degree of traffic mobility provided.

Table 10

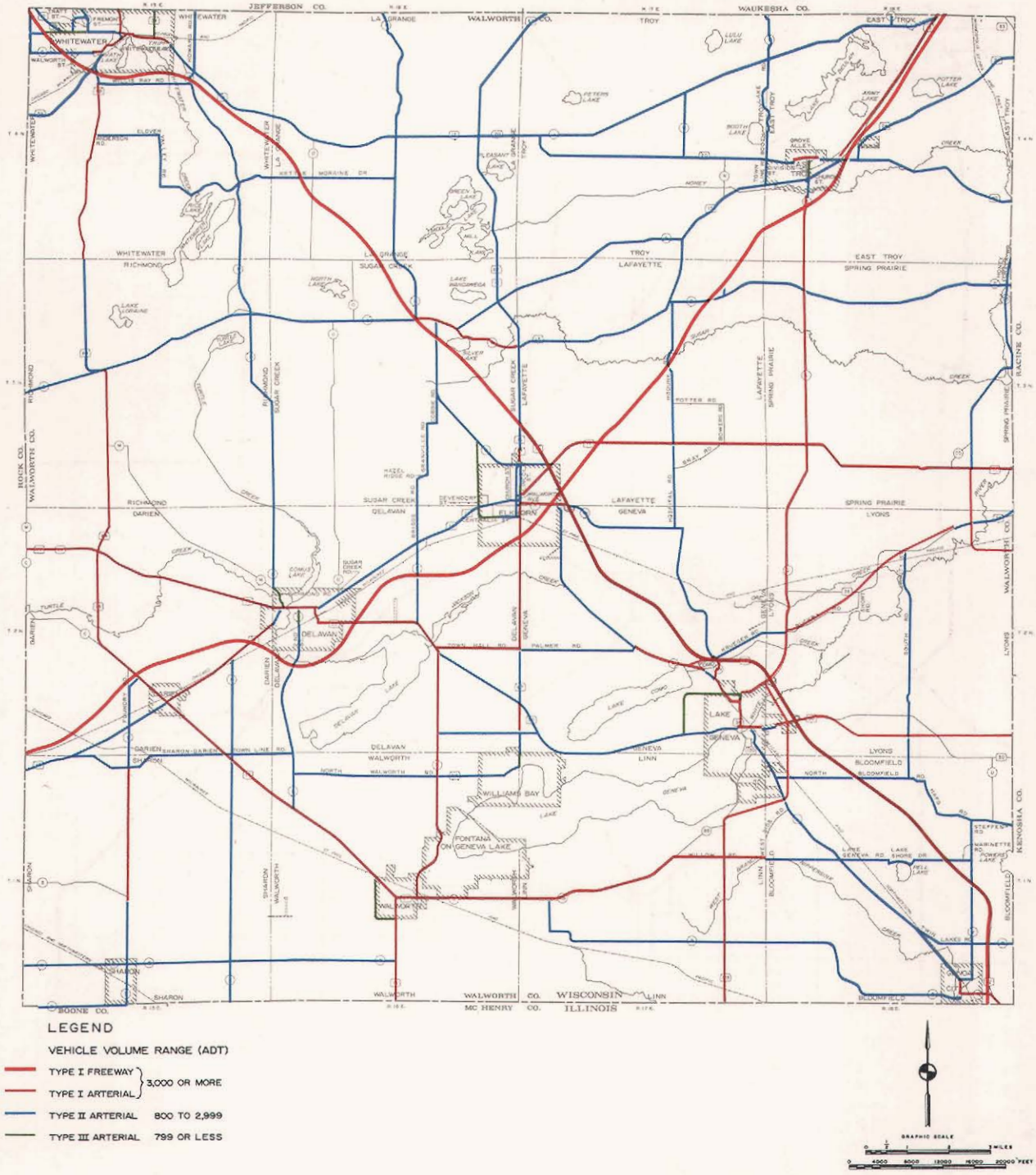
SUMMARY OF TECHNICAL COORDINATING AND ADVISORY COMMITTEE ACTION CONCERNING MARGINAL FACILITIES AND SYSTEM MODIFICATION

PROPOSED CHANGE	CONSIDERATIONS	STUDY STAFF ACTION	COMMITTEE ACTION
RECLASSIFY STH 36 AS A TYPE II FACILITY FROM USH 12 TO GEORILL STREET, CITY OF LAKE GENEVA	THIS ARTERIAL FACILITY, MEETING THE TYPE I ARTERIAL CRITERIA FOR VOLUME, TRIP LENGTH, AND AREA SERVICE FOR 67 PERCENT, 0 PERCENT, AND 100 PERCENT OF ITS LENGTH, RESPECTIVELY, DUPLICATES TYPE I SERVICE PROVIDED BY OTHER ARTERIALS IN THE CITY OF LAKE GENEVA.	RECOMMENDED APPROVAL	APPROVED
CLASSIFY STH 50 AS A TYPE I FACILITY FROM THE KENOSHA COUNTY LINE TO THE ROCK FREEWAY	THIS ARTERIAL FACILITY, MEETING THE TYPE I ARTERIAL CRITERIA FOR VOLUME, TRIP LENGTH, AND AREA SERVICE FOR 54 PERCENT, 31 PERCENT, AND 100 PERCENT OF ITS LENGTH, RESPECTIVELY, PROVIDES FOR THE NECESSARY CONNECTION AND SERVICE FOR URBAN AREAS WITHIN THE COUNTY AND INTERCOUNTY CONTINUITY.	RECOMMENDED APPROVAL	APPROVED
CLASSIFY FREMONT STREET FROM JEFFERSON COUNTY TO WHITEWATER STREET, WHITEWATER STREET FROM FREMONT STREET TO JANESVILLE ROAD, AND JANESVILLE ROAD FROM WHITEWATER STREET TO ROCK COUNTY LINE AS A TYPE I ARTERIAL	THIS SEGMENT OF ARTERIAL, MEETING THE TYPE I ARTERIAL CRITERIA FOR VOLUME, TRIP LENGTH, AND AREA SERVICE FOR 28 PERCENT, 35 PERCENT, AND 100 PERCENT OF ITS LENGTH, RESPECTIVELY, PROVIDES THE REQUIRED CONTINUITY FOR STATE TRUNK HIGHWAYS WITHIN JEFFERSON AND ROCK COUNTIES.	RECOMMENDED APPROVAL	APPROVED
CLASSIFY STH 67 AS A TYPE I ARTERIAL FROM USH 14 TO THE WAUKESHA COUNTY LINE	THIS ARTERIAL FACILITY, MEETING THE TYPE I ARTERIAL CRITERIA FOR VOLUME, TRIP LENGTH, AND AREA SERVICE FOR 33 PERCENT, 39 PERCENT, AND 100 PERCENT OF ITS LENGTH, RESPECTIVELY, PROVIDES THE NECESSARY CONNECTION AND SERVICE FOR URBAN AREAS WITHIN THE COUNTY AND INTERCOUNTY CONTINUITY.	RECOMMENDED APPROVAL	APPROVED WITH THE EXCEPTION OF GENEVA STREET AND WISCONSIN AVENUE IN THE CITY OF ELKHORN, WHICH WERE PROPOSED TO REVERT TO LOCAL JURISDICTION, AND LINCOLN STREET, WHICH IS RECOMMENDED FOR THE ROUTING OF STH 67
NEW FACILITY CONNECTING STARIN ROAD AND MAIN STREET, CITY OF WHITEWATER, CLASSIFIED AS A TYPE III ARTERIAL	THIS ARTERIAL FACILITY, MEETING THE TYPE II ARTERIAL CRITERIA FOR VOLUME, TRIP LENGTH, AND AREA SERVICE FOR 100 PERCENT, 100 PERCENT, AND 0 PERCENT OF ITS LENGTH, RESPECTIVELY, PROVIDES DESIRABLE SYSTEM CONTINUITY FOR A TYPE III ARTERIAL FACILITY.	RECOMMENDED APPROVAL	APPROVED
EXISTING STH 11 FROM THE RACINE COUNTY LINE TO THE PROPOSED STH 11 TO REMAIN AS A TYPE I FACILITY	THIS ARTERIAL FACILITY, MEETING TYPE I ARTERIAL CRITERIA FOR VOLUME, TRIP LENGTH, AND AREA SERVICE FOR NONE OF ITS LENGTH IN ALL CASES, WAS RECOMMENDED TO REMAIN A TYPE I ARTERIAL FACILITY TO MAINTAIN CONTINUITY WITH THE STATE TRUNK HIGHWAY SYSTEM IN RACINE COUNTY.	RECOMMENDED APPROVAL	APPROVED

SOURCE- SEWRPC.

Map 17

JURISDICTIONAL CLASSIFICATION OF THE ARTERIAL STREET AND HIGHWAY SYSTEM IN WALWORTH COUNTY BASED ON VEHICLE VOLUME: 1990

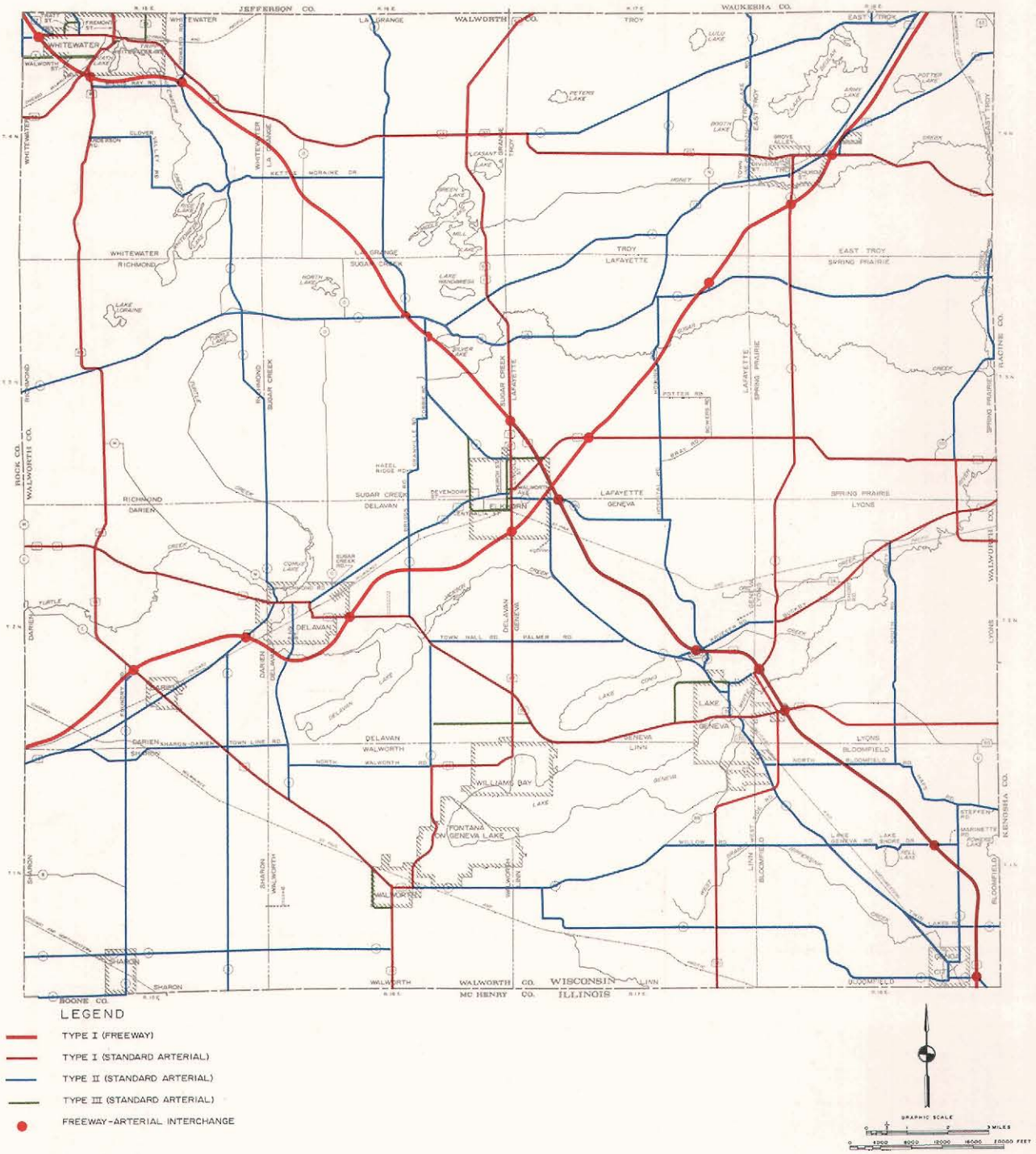


Application of the vehicle volume criteria alone resulted in the classification of the total arterial highway system into the three jurisdictional subsystems shown on this map. The configuration of the system again indicates the importance of freeways in serving the highest traffic volume. This third group of subsystems, based only on traffic volume considerations, together with the system continuity and facility spacing criteria, was found to be most useful in the refinement of the application of trip service and land use service criteria necessary to develop the final classification of the entire arterial system into recommended jurisdictional subsystems.

Source: SEWRPC.

Map 18

PROPOSED JURISDICTIONAL CLASSIFICATION OF THE ARTERIAL STREET AND HIGHWAY SYSTEM IN WALWORTH COUNTY: 1990



The proposed jurisdictional street and highway system shown on this map represents a synthesis of the trip length, land use, and vehicle volume jurisdictional subsystems shown on Maps 15, 16, and 17 into three individual but integrated, continuous jurisdictional highway systems. These systems consist of the Type I (state trunk), the Type II (county trunk), and the Type III (local trunk) highway subsystems. The Type I highway system carries the greatest traffic volumes, serves the longest trips, and connects the most significant land uses both within Walworth County and within the adjacent counties. The Type II highway system serves primarily intracounty trips, while the Type III highway system serves primarily intracommunity trips.

Source: SEWRPC.

Chapter VI

THE RECOMMENDED JURISDICTIONAL HIGHWAY SYSTEM PLAN

INTRODUCTION

Previous chapters of this report have described the jurisdictional highway planning process, the criteria developed for this process, and the application of these criteria to develop a jurisdictional highway system plan for Walworth County. This chapter describes the resulting recommended jurisdictional highway systems—Type I, state trunk; Type II, county trunk; and Type III, local trunk—which together comprise the total arterial street and highway system required to serve the growing travel demands within Walworth County and its constituent cities, villages, and towns through the plan design year of 1990. The recommended jurisdictional highway system plan recommends an alignment of governmental responsibility for each of the various facilities comprising the total arterial street and highway system in the plan design year, including an alignment of the federal aid highway systems. The recommended plan also constitutes a refinement of the functional arterial street and highway system plan prepared by the Southeastern Wisconsin Regional Planning Commission under the initial regional land use-transportation study and, as such, is intended upon its adoption to constitute a functional, as well as a jurisdictional, arterial street and highway system plan for Walworth County to the plan design year 1990.

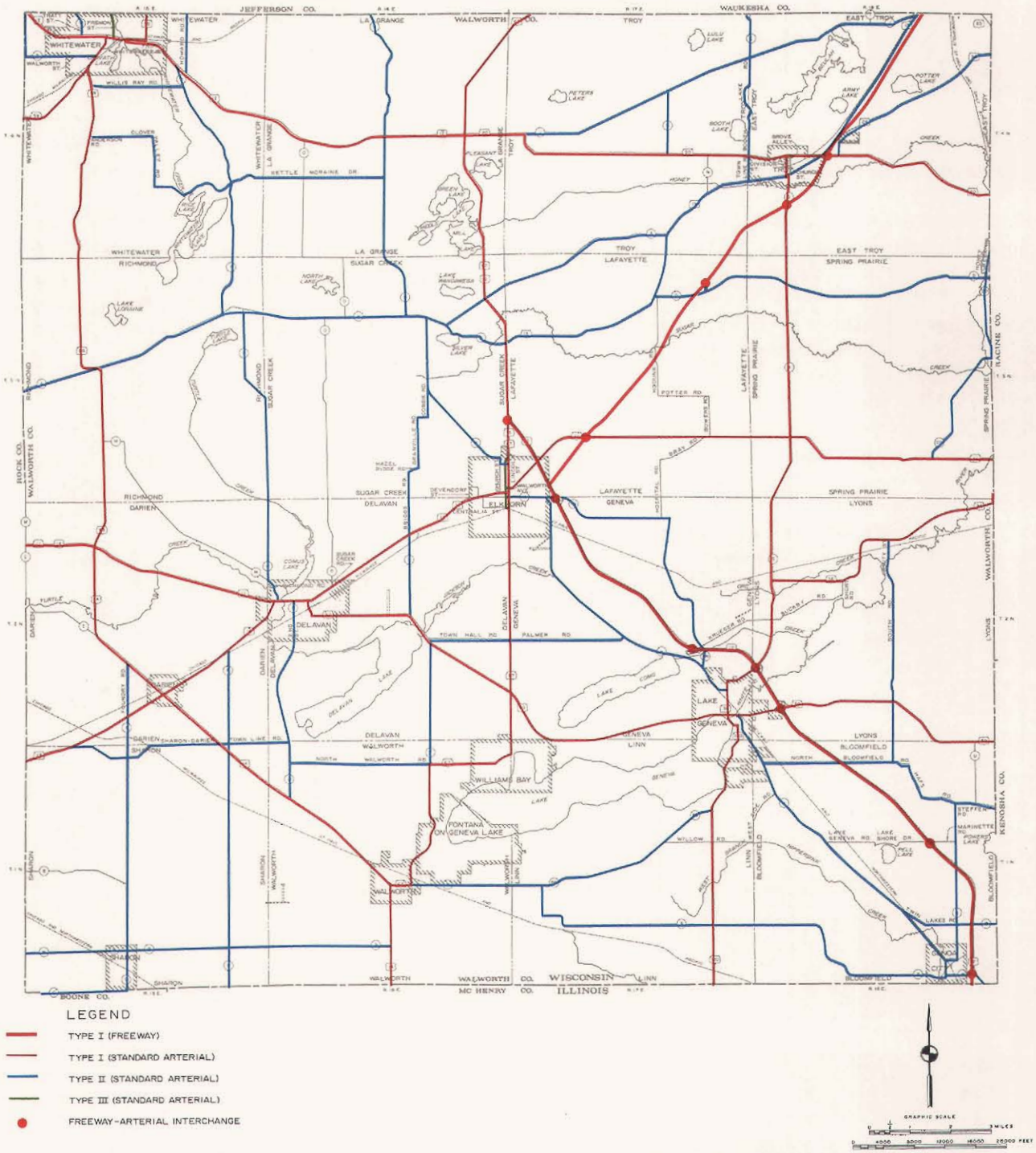
Because certain major arterial street and highway facilities proposed in the functional arterial street and highway system will not be constructed and operative until some time beyond the year in which the plan may be expected to be adopted and its implementation initiated, the jurisdictional plan has been staged to the plan design year 1990 through the interim years of 1975 and 1980. The effect of this staging has been to retain temporarily on the proposed Type I (state trunk) arterial system certain routes proposed as Type II (county trunk) routes. Four of these routes—USH 12, STH 11, STH 15, and STH 24—generally parallel proposed freeways, and the higher jurisdictional classification is proposed to be retained for these existing standard arterials until such time as the recommended paralleling freeways are constructed in the corridors served. To avoid duplication of facilities and service, it is proposed that these state trunk highway facilities revert to Type II facilities at such time as the recommended paralleling freeways have been completed and opened to traffic. The other two such Type I routes—STH 59 and STH 120—are proposed to be retained on the existing routing until such time as the facilities proposed for their new routing can be reconstructed to adequately serve the anticipated Type I arterial travel demand.

The staging of the Type II arterial street and highway system anticipates such facilities as Hodunk Road (Town of Lafayette), Hospital Road (Towns of Lafayette and Geneva), Krueger Road (Town of Geneva), Lake Geneva Road and Marinette Road (Town of Bloomfield), and Willow Road (Town of Linn) being retained on the town road system as nonarterial facilities, until such time as the construction of links integrating these facilities into the remainder of the arterial highway system is imminent. At that time the jurisdiction of these facilities would be changed from the nonarterial town road classification to the Type II arterial classification, and the improvements and extensions effected. This staging is intended to provide the best possible trip service, land use service, and system continuity during the interim period required to fully implement the highway system plan as well as to assign the responsibility for the arterial improvements required to the appropriate level of government.

The jurisdictional highway systems within Walworth County, as these systems are anticipated to exist by 1975, are shown on Map 19. The proposed configuration of these systems by 1980, shown on Map 20, reflects the completion of the Rock Freeway from the Waukesha County line to the Rock County line and the concomitant changes in the jurisdictional classifications of STH 11, STH 15, and of Racine Street (City of Delavan) and Walworth Avenue (City of Elkhorn). The recommended jurisdictional highway system plan for the year 1990 is shown on Map B-1 contained in Appendix B to this report. The proposed con-

Map 19

RECOMMENDED JURISDICTIONAL HIGHWAY SYSTEM PLAN FOR WALWORTH COUNTY 1975 STAGE

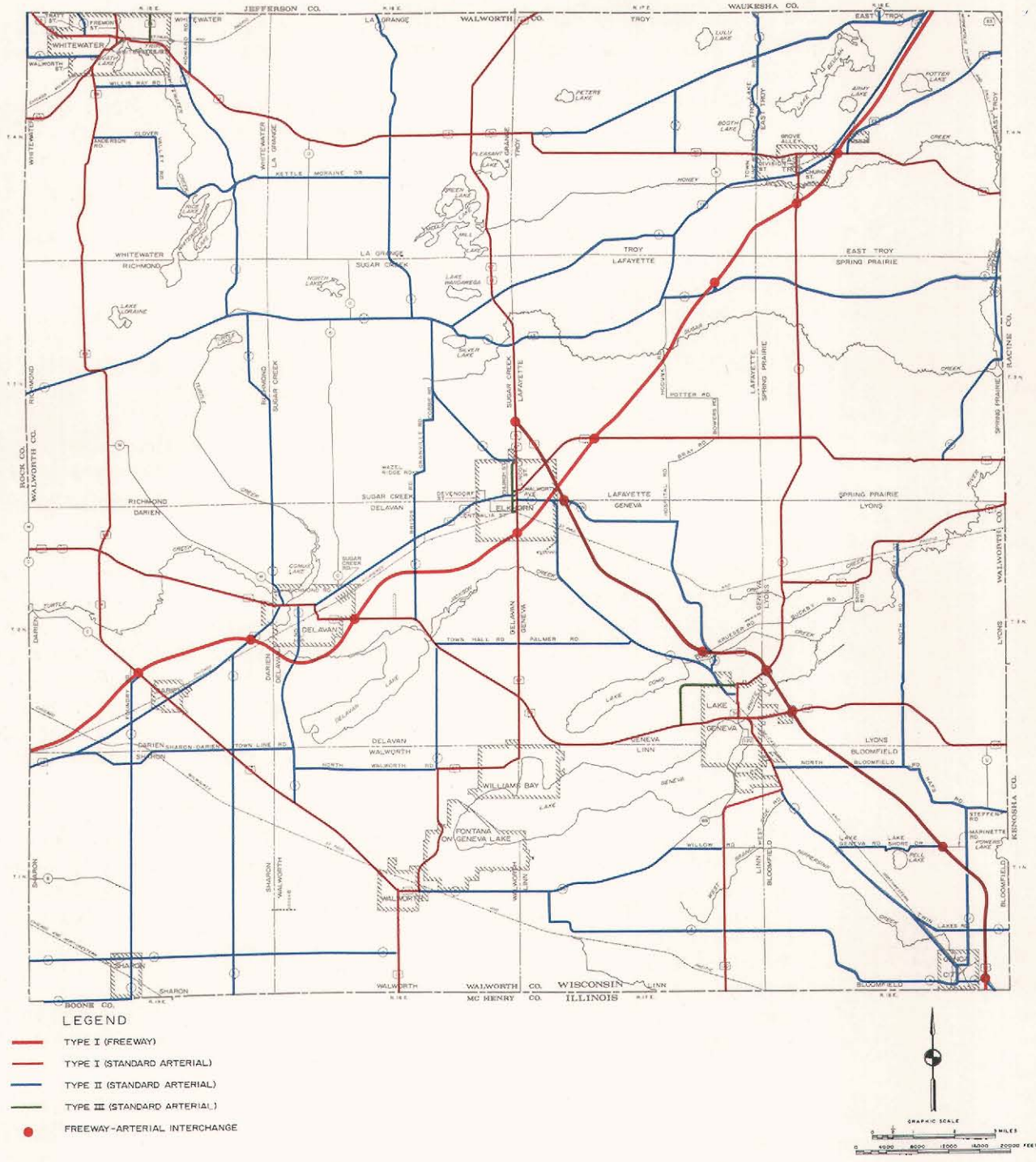


The 1975 stage of the recommended jurisdictional highway system plan for Walworth County, representing the first stage in the implementation of the 1990 plan, includes a freeway system comprised of present USH 12 from the Village of Genoa City to STH 67, and the proposed Rock Freeway from the Waukesha County line to present USH 12. Recommended changes in jurisdiction include the addition of CTH G, from STH 36 to the Village of East Troy, to the state trunk highway system; the rerouting of STH 67 through the City of Elkhorn; and the reversion of STH 24 to the county trunk highway system.

Source: SEWRPC.

Map 20

RECOMMENDED JURISDICTIONAL HIGHWAY SYSTEM PLAN FOR WALWORTH COUNTY 1980 STAGE



The proposed 1980 stage of the recommended jurisdictional highway system plan anticipates the completion of the Rock Freeway from present USH 12 to the Rock County line, and the reversion of STH 11 and STH 15, from the City of Delavan to the City of Elkhorn, to the county trunk highway system. With respect to the Type I arterial system, freeway mileage within the county is expected to increase between 1975 and 1980 by about 15 miles, while the number of miles of standard surface arterials is expected to decrease about 14 miles, for a net change of about one mile. The Type II arterial system is expected to increase by about 15 miles, and the Type III arterial system, by about three miles, during the same time period.

Source: *SEWRPC*.

figuration of the jurisdictional systems in 1990 reflects the completion of the USH 12 Freeway from its present terminus at STH 67 to the Rock County line and the concomitant change in the jurisdictional classification of present USH 12 from a point approximately one-quarter mile west of North 12th Place (City of Whitewater) to the Jefferson County line, and CTH S from the Whitewater city limits to the Rock County line; and the completion of the proposed extension of STH 120 between CTH H and STH 36 and the concomitant change in the jurisdictional classification of CTH H, Broad Street, Springfield Road, and Williams Street (City of Lake Geneva). The proposed construction of new links to integrate existing town roads into the proposed Type II arterial system is shown on Map B-1, with the concomitant change in the jurisdiction of such town roads as Hodunk Road (Town of Lafayette), Hospital Road (Towns of Lafayette and Geneva), Krueger Road (Town of Geneva), Lake Geneva Road and Marinette Road (Town of Bloomfield), and Willow Road (Town of Linn). In addition, it is proposed that the following county trunk highways be reverted to the town road system: CTH B, from CTH C to the Rock County line (Town of Sharon); CTH BB, from Willow Road to present STH 120 (Town of Linn); CTH C, from USH 14 to present STH 11 (Town of Darien); CTH M (Towns of Darien and Richmond); CTH N, from the present routing of STH 15 to STH 20 (Town of Troy); and CTH O, from present STH 11 north to present USH 12 (Towns of Delavan, Sugar Creek, and LaGrange).

THE RECOMMENDED TYPE I (STATE TRUNK) ARTERIAL HIGHWAY SYSTEM

The arterial street and highway system recommended to serve the arterial traffic demand in Walworth County through the plan design year of 1990 totals 489 route-miles of facilities, or about 34 percent of the 1,440 route-miles of facilities expected to comprise the total street and highway system within the county in 1990. Of this total arterial system, 217 route-miles, or about 44 percent, are proposed to comprise the Type I (state trunk) arterial highway system. This represents a 26-mile increase in the existing state trunk highway and connecting street mileage within Walworth County. The recommended Type I system includes 151 miles of standard arterial facilities, as well as all of the 66 miles of existing, committed, and proposed freeways serving Walworth County through the plan design year 1990 (see Table 11).

The proposed Type I (state trunk) arterial system for 1990 is shown on Map B-1 in Appendix B to this report. The recommended Type I arterial system includes the following standard arterials in addition to the USH 12 and Rock Freeways:

1. USH 14 from the Illinois state line north over the present routing of USH 14, over South Main Street and Madison Street (Village of Walworth), northwest on the present routing of USH 14, over the Chicago-Madison Road (Village of Darien), and over present USH 14 to the Rock County line.

2. STH 11 over its present alignment from the Racine County line and over Court Street (City of Elkhorn) to Lincoln Street, the proposed routing of STH 67.

3. STH 11 over the new alignment from the Racine County line to the present alignment of STH 11 at the proposed alignment of CTH DD.

4. STH 20 over its present routing from the Racine County line, over North Street (Village of East Troy), and over present routing to STH 67; west on the present routing of USH 12 and over Elkhorn Street, Milwaukee Street, Main Street, and the proposed extension of Main Street (City of Whitewater) to the proposed USH 12 Freeway.

5. STH 36 from the Racine County line over the reconstructed alignment of present STH 36 to a point on present STH 36 one mile south of the intersection of the pres-

Table 11

FUNCTIONAL COMPOSITION OF RECOMMENDED TYPE I (STATE TRUNK) ARTERIAL HIGHWAY SYSTEM IN WALWORTH COUNTY: 1990

FUNCTIONAL FACILITY TYPE	NUMBER OF MILES	PERCENT OF TOTAL
FREEWAYS		
EXISTING	19.21	8.8
COMMITTED	4.10	1.9
PROPOSED	42.44	19.6
SUBTOTAL	65.75	30.3
STANDARD SURFACE ARTERIALS		
EXISTING	133.07	61.3
COMMITTED	--	--
PROPOSED	18.15	8.4
SUBTOTAL	151.22	69.7
TOTAL	216.97	100.0

SOURCE-WISCONSIN DEPARTMENT OF TRANSPORTATION AND SEWRPC.

ent CTH G and present STH 36, and south over the present routing of STH 36 to a point about one-quarter mile west of the USH 12 Freeway.

6. STH 50 over new alignment from the Kenosha County line to approximately 1 mile east of the USH 12 Freeway; west on the present routing of STH 50, over Main Street (City of Lake Geneva); west over the present routing of STH 50; over E. Geneva Street, 7th Street, and Walworth Avenue (City of Delavan); and west over the present routing of STH 11 to USH 14.

7. STH 59 from the Jefferson County line on new routing over North and South Fremont Streets, Janesville Road, and Whitewater Street (City of Whitewater); and southwest over its present routing to the Rock County line.

8. STH 67 from USH 14 over Kenosha Road (Village of Walworth), over present routing of STH 67 through the Villages of Fontana and Williams Bay, north over present routing to W. Geneva Street and on new routing over Lincoln Street (City of Elkhorn), to present STH 67 and north over its present routing to the Waukesha County line.

9. STH 89 over its present routing from the present routing of USH 14 north to the present routing of STH 59.

10. STH 120 from the Illinois state line on its present routing to present CTH BB, and the proposed extension of STH 120 east and north on new alignment to present STH 36 to a point southwest of the USH 12 Freeway.

11. A new state trunk highway facility from present STH 36 north over present CTH G and over Church Street and its proposed extension over Grove Alley (Village of East Troy) to present STH 20.

A total of 26 of the 27 municipalities within Walworth County would be connected and served by the proposed Type I arterial system as the term "connect and serve" is defined in Chapter IV of this report, although not all such municipalities would necessarily have Type I facilities located within their corporate limits. The Village of Sharon, located in the southwestern corner of Walworth County, would not be connected and served by the proposed Type I arterial system, nor is the village presently served by a state trunk highway. The application of the criteria to the arterial facilities serving the Village of Sharon—present CTH B and CTH C—indicated that both the forecast average trip lengths and traffic volumes on these two facilities would not meet the criteria for reclassification of these facilities as Type I arterial facilities. Moreover, in order to serve the village with a Type I facility while maintaining the necessary system continuity, a Type I facility over the present routing of CTH B would have to extend from present USH 14 to present STH 140, thereby increasing the Type I arterial system mileage by 9 miles, or about 4 percent, within Walworth County, an increase which could not be justified on the basis of land use service alone. The recommended mileage of the Type I arterial system within each municipality for the years 1975, 1980, and 1990 is indicated in Table 12.

The recommended Type I arterial system is intended to provide the basic framework of the total arterial street and highway system required to serve the existing and probable future traffic demand within Walworth County to the plan design year of 1990. The relative degree of efficiency with which each link in the proposed Type I arterial system accomplishes its intended function will, therefore, significantly affect the total operation of the entire arterial street and highway system. Code numbers indicating typical roadway cross sections having right-of-way and pavement widths adequate to serve the forecast 1990 traffic demand for each segment of facility in the recommended Type I arterial system are shown on the plan map contained in Appendix B of this report. The cross sections related to each code number are set forth in Figure B-1 of Appendix B, and contain, in addition to the recommended typical dimensions, estimated representative unit construction and maintenance costs and service volume ranges at various levels of service.

The typical cross sections recommended in the plan are based upon analyses of land use impacts as well as upon analyses of forecast traffic volumes; upon desirable levels of service; and upon an assessment of the probable development cost, including cost of right-of-way acquisition. As such, the suggested cross sections will pro-

Table 12

RECOMMENDED DISTRIBUTION OF TYPE I (STATE TRUNK) ARTERIAL SYSTEM MILEAGE IN WALWORTH COUNTY BY CIVIL DIVISION 1975, 1980, and 1990

CIVIL DIVISION	1975 NUMBER OF MILES			1980 NUMBER OF MILES			1990 NUMBER OF MILES		
	FREEWAY	STANDARD ARTERIALS	TOTAL	FREEWAY	STANDARD ARTERIALS	TOTAL	FREEWAY	STANDARD ARTERIALS	TOTAL
CITIES									
DELAVAN.....	--	4.01	4.01	0.00	2.47	2.47	0.00	2.62	2.62
ELKHORN.....	0.74	4.31	5.05	2.38	3.28	5.66	2.38	3.28	5.66
LAKE GENEVA...	--	4.90	4.90	--	5.64	5.64	0.00	3.78	3.78
WHITEWATER....	--	5.68	5.68	--	5.27	5.27	0.00	5.27	5.27
SUBTOTAL....	0.74	18.90	19.64	2.38	16.66	19.04	2.38	14.95	17.33
VILLAGES									
DARIEN.....	--	2.20	2.20	--	1.12	1.12	--	1.12	1.12
EAST TROY.....	--	2.05	2.05	--	2.05	2.05	--	1.99	1.99
FONTANA.....	--	1.12	1.12	--	1.12	1.12	--	1.25	1.25
GENOA CITY....	--	0.00	0.00	--	0.00	0.00	--	0.00	0.00
SHARON.....	--	0.00	0.00	--	--	--	--	0.00	0.00
WALWORTH.....	--	2.30	2.30	--	2.30	2.30	--	2.30	2.30
WILLIAMS BAY..	--	1.48	1.48	--	3.02	3.02	--	3.02	3.02
SUBTOTAL....	--	9.15	9.15	--	9.61	9.61	--	9.74	9.74
TOWNS									
BLOOMFIELD....	7.63	1.07	8.70	7.63	2.09	9.72	7.93	1.60	9.53
DARIEN.....	--	16.87	16.87	6.60	12.18	18.78	6.60	12.03	18.63
DELAVAN.....	--	11.06	11.06	6.70	6.87	13.57	6.70	6.87	13.57
EAST TROY.....	7.40	6.80	14.20	7.40	6.80	14.20	7.40	6.80	14.20
GENEVA.....	6.74	7.55	14.29	6.74	5.53	12.27	6.74	5.53	12.27
LAFAYETTE.....	8.53	6.95	15.48	8.53	6.95	15.48	8.53	6.95	15.48
LA GRANGE.....	--	12.36	12.36	--	12.36	12.36	3.20	12.36	15.56
LINN.....	--	5.83	5.83	--	5.50	5.50	--	5.50	5.50
LYONS.....	2.57	16.13	18.70	2.57	16.13	18.70	2.57	19.88	22.45
RICHMOND.....	--	6.45	6.45	--	6.45	6.45	--	6.45	6.45
SHARON.....	--	2.72	2.72	--	1.56	1.56	--	1.56	1.56
SPRING PRAIRIE	--	12.38	12.38	--	12.38	12.38	--	13.60	13.60
SUGAR CREEK...	--	3.49	3.49	--	3.49	3.49	5.80	3.49	9.29
TROY.....	0.50	7.05	7.55	0.50	7.05	7.55	0.50	7.05	7.55
WALWORTH.....	--	7.82	7.82	--	7.32	7.32	--	7.19	7.19
WHITEWATER....	--	10.14	10.14	--	10.14	10.14	7.40	9.73	17.13
SUBTOTAL....	33.37	134.67	168.04	46.67	122.80	169.47	63.37	126.29	189.96
TOTAL	34.11	162.72	196.83	49.05	149.07	198.12	65.75	151.22	216.97

SOURCE- WISCONSIN DEPARTMENT OF TRANSPORTATION AND SEWRPC.

vide the traffic capacities required to meet the forecast travel demand at the level of service indicated in the cross-sectional code shown on the plan map. The Type I arterial facilities constructed to such cross sections will thus form a workable subsystem able to carry satisfactorily the existing and probable future traffic demand, and will be properly related to the other arterial subsystems and to existing and probable future land use development within the county and within the Region of which the county is a part. Further consideration and refinement of the suggested typical cross sections, in light of changing geometric and structural design standards as well as changing traffic and land use patterns, will be required as each segment of the system is considered for actual improvement.

THE RECOMMENDED TYPE II (COUNTY TRUNK) ARTERIAL HIGHWAY SYSTEM

The proposed Type II (county trunk) arterial system includes 258 route-miles of facilities or about 53 percent of the total arterial mileage proposed to serve Walworth County by the plan design year of 1990. The proposed Type II arterial system is comprised entirely of standard arterials, since all freeways are included in the proposed Type I arterial system. The total of 258 route-miles of proposed county trunk highways represents an increase of 64 miles over the existing county trunk mileage and is shown on Map B-1 of Appendix B to this report. The distribution of the Type II arterial system mileage within each municipality for the years 1975, 1980, and 1990 is indicated in Table 13.

As shown on Map B-1, all of the standard arterials connecting to the freeway interchanges are included in either the Type I or Type II arterial systems. The adequate improvement, maintenance, and operation of these routes connecting to freeway interchanges is essential to the proper operation of the freeway system. These routes include the following existing and proposed Type I arterial facilities: USH 14, STH 11, STH 20, STH 50, STH 67, STH 89, and present CTH G proposed to be added to the Type I arterial system;

Table 13

RECOMMENDED DISTRIBUTION OF TYPE II (COUNTY TRUNK) ARTERIAL SYSTEM MILEAGE IN WALWORTH COUNTY BY CIVIL DIVISION 1975, 1980, and 1990

CIVIL DIVISION	STANDARD SURFACE ARTERIAL (MILES)		
	1975	1980	1990
CITIES			
DELAVAN	1.55	3.09	3.09
ELKHORN	2.13	2.98	2.98
LAKE GENEVA	1.87	0.65	4.23
WHITEWATER	1.67	1.67	0.87
SUBTOTAL	7.22	8.39	11.17
VILLAGES			
DARIEN	0.00	1.08	1.08
EAST TROY	1.75	1.75	1.81
FONTANA	0.37	0.37	0.37
GENOA CITY	2.62	2.62	2.62
SHARON	2.25	2.25	2.25
WALWORTH	0.16	0.16	0.16
WILLIAMS BAY	--	--	0.00
SUBTOTAL	7.15	8.23	8.29
TOWNS			
BLOOMFIELD	24.62	27.29	30.03
DARIEN	7.96	12.65	12.65
DELAVAN	11.23	14.99	14.99
EAST TROY	15.65	15.65	15.77
GENEVA	16.15	16.15	18.70
LAFAYETTE	9.86	9.86	14.97
LA GRANGE	9.29	9.29	9.29
LINN	11.49	11.49	12.49
LYONS	5.09	5.09	5.58
RICHMOND	11.57	11.57	11.40
SHARON	19.47	20.63	20.63
SPRING PRAIRIE	11.70	11.70	11.51
SUGAR CREEK	18.28	18.28	17.94
TROY	15.47	15.47	15.47
WALWORTH	10.65	10.65	10.65
WHITEWATER	15.63	16.16	16.54
SUBTOTAL	214.11	226.92	238.61
TOTAL	228.48	243.54	258.07

SOURCE- WISCONSIN DEPARTMENT OF TRANSPORTATION AND SEWRPC.

and the following existing and proposed Type II arterial facilities: present STH 15 which is proposed to revert to the Type II arterial system, CTH A, CTH H, CTH NN, CTH O, CTH P, Bowers Road (Town of Lafayette), Krueger Road (Towns of Geneva and Lyons), Marinette Road (Town of Bloomfield), and that portion of the proposed extension of Main Street in the City of Whitewater from the USH 12 Freeway to the Rock County line, the latter four facilities being existing town roads and a proposed facility to be added to the Type II arterial system.

In addition, certain roads of countywide significance, including both roads formerly designated as state trunk highways and existing town roads, are recommended for inclusion in the proposed Type II system. Facilities in the former category include existing USH 12 from a point approximately one-quarter mile west of North 12th Place to the Jefferson County line, existing STH 11 from the proposed routing of STH 67 to the present STH 50 in the City of Delavan, existing STH 15 from the Waukesha County line to the Rock County line, and existing STH 24 from the Racine County line to STH 20. Facilities in the latter category include Anderson Road (Town of Whitewater), North Bloomfield Road (Town of Bloomfield), Briggs Road (Towns of Delavan and Sugar Creek), Clover Valley Road (Town of Whitewater), Cobbie Road (Town of Sugar Creek), Foundry Road (Town of Darien), Granville Road (Town of Sugar Creek), Haf's Road (Town of Bloomfield), Hodunk Road (Town of Lafayette), Honey Creek Road (Town of Spring Prairie), Hospital Road (Towns of Geneva and Lafayette), Kettle Moraine Drive (Towns of Whitewater and LaGrange), Krueger Road (Town of Geneva), Lake Geneva Road (Town of Bloomfield), Marinette Road (Town of Bloomfield), Palmer Road (Town of Geneva), South Road (Towns of Bloomfield and Lyons), Town Hall Road (Town of Delavan), Town Line Road (Town of Sharon), North Walworth Road (Town of Walworth), Warner Road (Town of Whitewater), Willis Ray Road (Town of Whitewater), and Willow Road (Town of Linn).

The recommended Type II arterial system complements the recommended Type I system and is intended, together with the latter system, to include all major arterials within Walworth County having areawide significance. In addition, the recommended Type II arterial system is, in the rural areas of the county, intended to serve all of the arterial travel demand which is not served by the Type I arterial system.

Code numbers indicating typical roadway cross sections with right-of-way and pavement widths adequate to serve the forecast 1990 traffic demand for each segment of facility in the recommended Type II arterial system are shown on the plan map contained in Appendix B of this report. The typical cross sections related to each code number are set forth in Figure B-1 of Appendix B and contain, in addition to the recommended typical dimensions, estimated representative construction and maintenance unit costs and service volume ranges at various levels of service. The typical cross sections recommended in the plan are based upon analyses of land use impacts, as well as upon analyses of forecast traffic volumes, desirable levels of service, and an assessment of the probable development cost, including costs of right-of-way acquisition. As such, the suggested cross sections will provide the traffic capacities required to meet the forecast travel demand at the level of service indicated in the cross-sectional

code shown on the plan map. The Type II arterial facilities constructed to such cross sections will thus form a workable subsystem able to carry satisfactorily the existing and probable future travel demand and will be properly related to the other arterial subsystems and to existing and probable future land use development within the county and within the Region of which the county is a part. Reconsideration and refinement of the suggested typical cross sections will be required in light of changing geometric and structural design standards, as well as of changing land use and traffic patterns, as each segment of facility in the system is considered for actual improvement.

THE RECOMMENDED TYPE III (LOCAL TRUNK) ARTERIAL HIGHWAY SYSTEM

The proposed Type III (local trunk) arterial highway system includes 14 route-miles of facilities, or about 3 percent of the total arterial mileage proposed to serve Walworth County in the plan design year of 1990. The proposed system is shown on Map B-1 of Appendix B, and the distribution by municipality for the years 1975, 1980, and 1990 is indicated in Table 14. The proposed Type III arterial system is intended to serve the lowest level of arterial traffic demand within the urban areas of Walworth County and, as such, to complement the proposed Type I and Type II subsystems. Even though the Type III system is intended to serve primarily local arterial street and highway needs, this subsystem must, nevertheless, perform efficiently as an integral part of the total arterial street and highway system if that total system is to properly serve the growing traffic demand within the county. The location and configuration of the recommended Type III system, when considered in conjunction with the recommended Type I and Type II systems, are such as to generally permit sound urban land use development to proceed in the form of planned residential development units without penetration of the units by arterial streets and highways.

Code numbers indicating typical cross sections with right-of-way and pavement widths adequate to serve the forecast 1990 traffic demand for each link in the recommended Type III arterial system are shown on the plan map contained in Appendix B to this report. The typical cross sections related to each code number are set forth in Figure B-1 of Appendix B and contain, in addition to recommended typical dimensions, estimated representative construction and maintenance unit costs and service volume ranges at various levels of service. The typical cross sections suggested in the plan are based upon analyses of land use impacts, as well as analyses of forecast traffic volume, desirable level of service, and preliminary assessment of the probable development cost, including cost of right-of-way acquisition. As such, the suggested cross sections will provide the traffic capacity required to meet the forecast travel demand at the level of service indicated in the cross-sectional code shown on the plan map. The Type III arterial facilities constructed to such cross sections will thus provide a workable subsystem able to carry satisfactorily the existing and probable future traffic demand and will be properly related to the other arterial subsystems and to existing and probable future land use development within the county and the Region of which the county is a part. Further consideration and refinement of the suggested typical cross sections, in light of changing geometric and structural design standards and changing traffic and land use patterns, will be required as each segment of facility in the system is considered for improvement.

Table 14

RECOMMENDED DISTRIBUTION OF TYPE III (LOCAL TRUNK) ARTERIAL SYSTEM MILEAGE IN WALWORTH COUNTY BY CIVIL DIVISION 1975, 1980, and 1990

CIVIL DIVISION	STANDARD SURFACE ARTERIAL (MILES)		
	1975	1980	1990
CITIES			
DELAVAN	0.00	0.00	0.00
ELKHORN	1.66	1.66	4.59
LAKE GENEVA	--	2.30	2.30
WHITEWATER	0.56	0.89	2.67
SUBTOTAL	2.22	4.85	9.56
VILLAGES			
DARIEN	--	--	--
EAST TROY	--	--	--
FONTANA	--	--	--
GENOA CITY	--	--	--
SHARON	--	--	--
WALWORTH	--	--	1.40
WILLIAMS BAY	--	--	0.50
SUBTOTAL	--	--	1.90
TOWNS			
BLOOMFIELD	--	--	--
DARIEN	--	--	--
DELAVAN	--	--	1.50
EAST TROY	--	--	--
GENEVA	--	--	--
LAFAYETTE	--	--	--
LA GRANGE	--	--	--
LINN	--	--	--
LYONS	--	--	--
RICHMOND	--	--	--
SHARON	--	--	--
SPRING PRAIRIE	--	--	--
SUGAR CREEK	--	--	0.55
TROY	--	--	--
WALWORTH	--	--	--
WHITEWATER	--	--	0.78
SUBTOTAL	--	--	2.83
TOTAL	2.22	4.85	14.29

SOURCE- WISCONSIN DEPARTMENT OF TRANSPORTATION AND SEWRPC.

Scenic Drives

One of the most popular outdoor recreational activities within Walworth County and within the Region of which Walworth County is a part is pleasure driving, as evidenced by the estimated 45,000 average seasonal Sunday participants in such pleasure driving in Walworth County in 1970. Forecasts indicate that a substantial increase in the demand for this recreational pursuit may be expected, with the average seasonal Sunday participation within the county increasing to over 80,000 by 1990. To provide facilities for this activity, a system of scenic drives could be marked and signed over existing roadways, consisting of arterial collector and land access facilities within the county. The location and configuration of such a scenic drive system should be based on an analysis of the recreational and natural resource base of the county, and should connect all existing county and state parks as well as important sites of cultural, historic, and scientific interest within Walworth County. Although the Technical Coordinating and Advisory Committee recognized the need for such a marked and signed system of scenic drives within the county, the Committee believed that action to delineate and recommend such a system within Walworth County should involve broader community participation with concerned citizen and business groups not now represented on the Technical Coordinating and Advisory Committee, such as the State Department of Natural Resources, the County Park and Planning Commission, the County Historical Society, garden and women's clubs, and recreation-oriented business associations, and should therefore be deferred.

EVALUATION OF THE PROPOSED JURISDICTIONAL HIGHWAY SYSTEMS

One of the most important objectives of the jurisdictional highway planning process is to attain the most effective use of the total public resources in the provision of highway transportation by focusing the appropriate resources and capabilities on corresponding areas of need. That the recommended jurisdictional highway system plan accomplishes this objective is indicated by the fact that the proposed Type I arterial system may be expected to carry approximately 1.91 million of the 2.58 million arterial miles of travel anticipated to occur daily within Walworth County by 1990. Thus, approximately 44 percent of the total arterial street and highway mileage within the county may be expected to carry approximately 74 percent of the total arterial travel demand. The proposed Type II arterial system may be expected to carry an additional 630,000 arterial vehicle miles of travel. Thus, an additional 53 percent of the total arterial street and highway mileage may be expected to carry an additional 24 percent of the total arterial travel demand. The remaining 40,000 arterial vehicle miles of travel, or 2 percent of the total demand, would be carried on the proposed Type III arterial system.

Thus, the proposed Type I and Type II systems combined may be expected to carry approximately 98 percent of the total arterial vehicle miles of travel expected to take place within the county by the year 1990, leaving only 2 percent to be carried by Type III arterials. This concentration of travel demand on the various arterial subsystems is indicated in Figure 7.

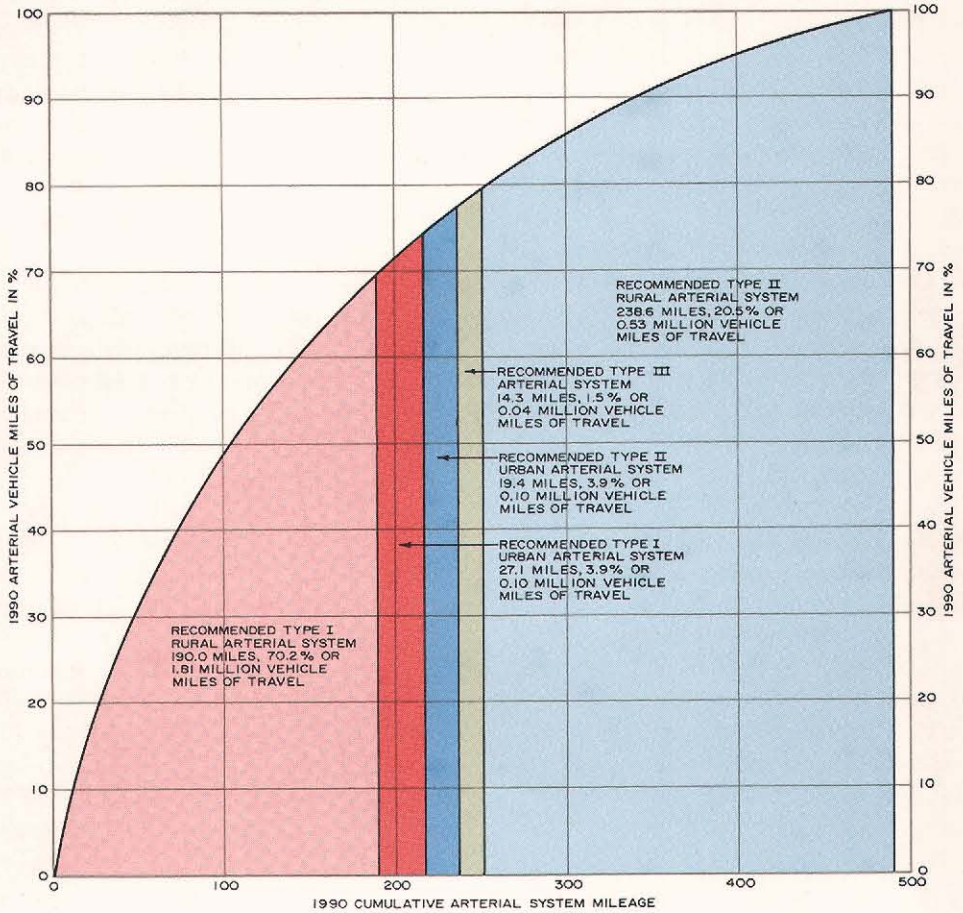
The total vehicle miles of travel which may be expected to occur daily on all streets and highways within Walworth County by the year 1990 is similarly estimated at 2.81 million vehicle miles. The proportionate share of this total load which each of the recommended jurisdictional subsystems may be expected to carry by 1990 is summarized in Table 15 and in Figure 8. The proposed jurisdictional systems thus clearly focus the available resources on the areas of greater need, and their adoption and improvement should serve to relieve the local units of government of much of the cost attendant to the movement of heavy volumes of fast, through traffic of areawide importance within the county.

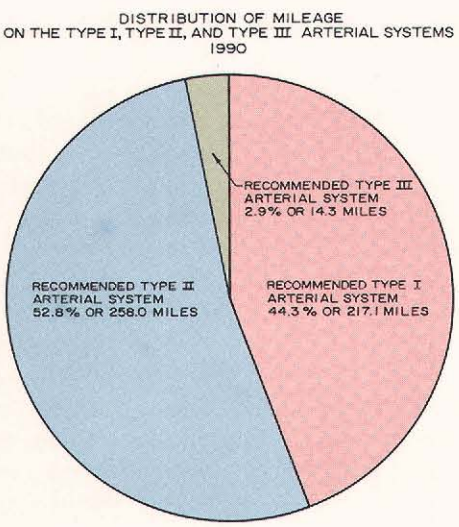
STAGING OF THE PROPOSED JURISDICTIONAL HIGHWAY SYSTEMS

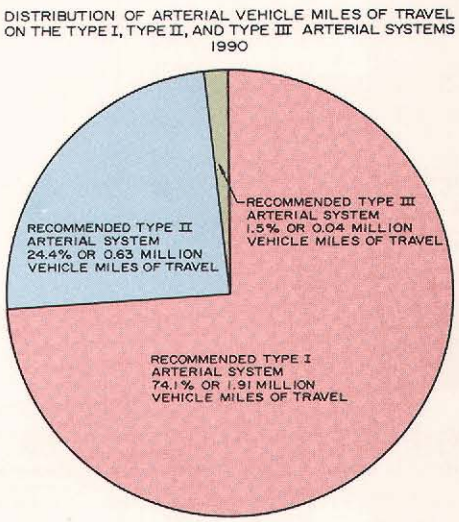
As indicated earlier, not all of the arterial facilities comprising the functional system considered in the jurisdictional classification will be open to traffic by 1975. In order to accommodate traffic demand in corridors to be served by freeways proposed for construction after 1975, it is recommended that certain arterial facilities which should ultimately be designated as Type II routes be maintained as Type I routes until such time as the paralleling freeways intended to serve the corridors are constructed. Upon completion of these freeways, the interim Type I facilities would revert to Type II facilities. This staged development, in addition to providing improved traffic service, would facilitate system continuity and arterial route marking during the interim plan implementation period.

Figure 7

RELATIONSHIP BETWEEN PERCENT OF ARTERIAL VEHICLE MILES OF TRAVEL AND CUMULATIVE ARTERIAL MILEAGE, RECOMMENDED WALWORTH COUNTY JURISDICTIONAL HIGHWAY SYSTEM: 1990



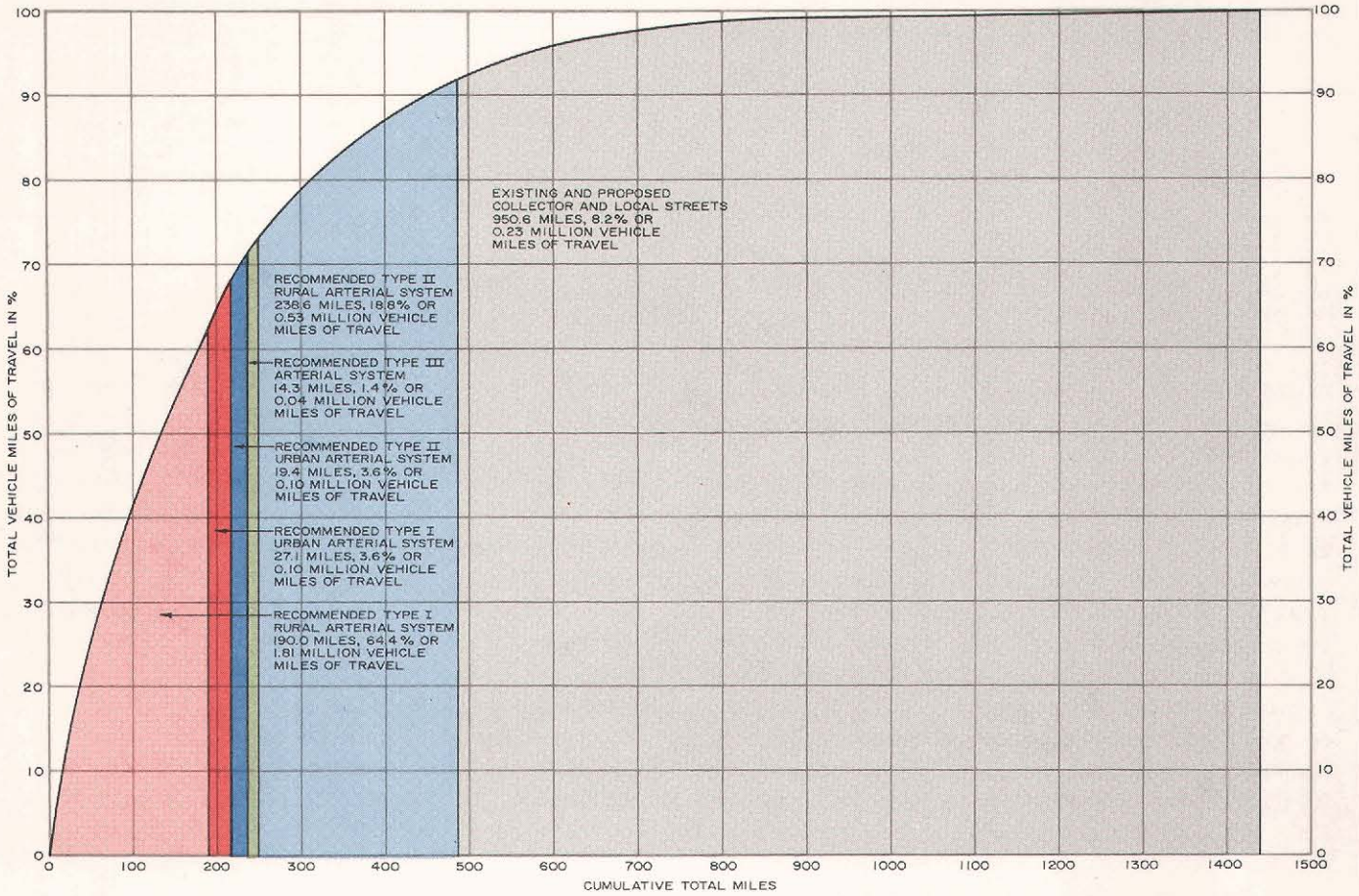




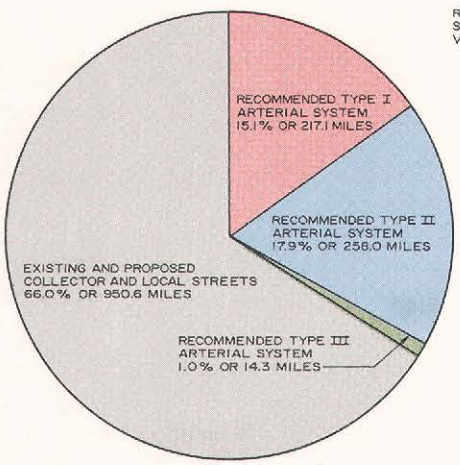
Source: SEWRPC.

Figure 8

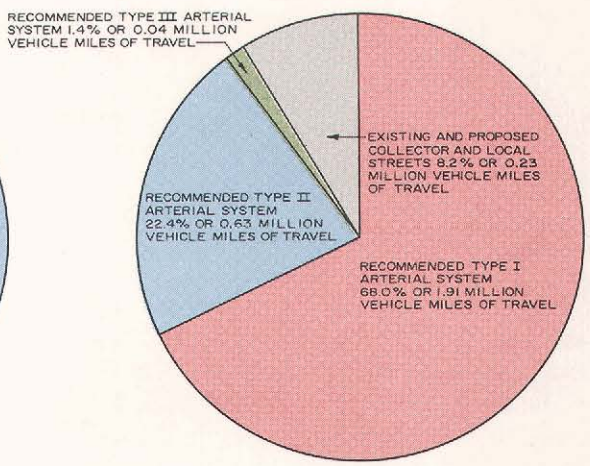
RELATIONSHIP BETWEEN PERCENT OF TOTAL VEHICLE MILES OF TRAVEL AND CUMULATIVE TOTAL MILEAGE
RECOMMENDED WALWORTH COUNTY JURISDICTIONAL HIGHWAY SYSTEM: 1990



DISTRIBUTION OF MILEAGE ON THE TOTAL STREET AND HIGHWAY SYSTEM 1990



DISTRIBUTION OF VEHICLE MILES OF TRAVEL ON THE TOTAL STREET AND HIGHWAY SYSTEM 1990



Source: SEWRPC.

Table 15

ANTICIPATED DISTRIBUTION OF TRAVEL ON THE TOTAL STREET AND HIGHWAY SYSTEM IN WALWORTH COUNTY: 1990

TYPE OF STREET OR HIGHWAY	MILES		TRAVEL DEMAND SERVED	
	NUMBER	PERCENT OF TOTAL	MILLIONS OF VEHICLE MILES PER DAY	PERCENT OF TOTAL
ARTERIAL				
TYPE I (STATE TRUNK)...	217.03	15.1	1.91	68.0
TYPE II (COUNTY TRUNK).	258.01	17.9	0.63	22.4
TYPE III (LOCAL TRUNK).	14.29	1.0	0.04	1.4
SUBTOTAL.....	489.33	34.0	2.58	91.8
EXISTING AND PROPOSED COLLECTOR AND MINOR STREETS.....	950.67	66.0	0.23	8.2
TOTAL	1,440.00	100.0	2.81	100.0

SOURCE- SEWRPC.

A summary of the proposed freeway construction as set forth in the adopted regional transportation plan is presented in Table 16, together with a listing of the corresponding surface arterials required to fulfill the Type I needs in the corridor on an interim basis. Existing STH 15 from the proposed routing of STH 67 to the Rock County line, and the concurrent routing of existing STH 11 from the proposed routing of STH 67 to present STH 50 are recommended to retain their Type I (state trunk) classification until 1980. With the completion of the Rock Freeway from Elkhorn to the Rock County line, these facilities would revert to the Type II (county trunk) arterial system. Existing USH 12 from a point approximately one-quarter mile west of North 12th Place to the Jefferson County line is recommended to remain a Type I arterial until the USH 12 Freeway is open to traffic between the City of Elkhorn and Rock County, sometime between 1980 and 1990. Existing STH 59 from Jefferson County to Fremont Street (City of Whitewater) is recommended to remain on its existing alignment until such time as CTH U in Jefferson County and North Fremont Street in both Jefferson County and the City of Whitewater can be reconstructed to STH standards, which is anticipated to occur prior to 1980. Existing STH 24 from the Racine County line to STH 20 is recommended to remain on the Type I (state trunk) highway system until it has been resurfaced. Subsequent to resurfacing which is anticipated to occur between 1976 and 1980, STH 24 is recommended to revert to the Type II (county trunk) highway system. Existing STH 120 is recommended to remain on its existing alignment until a new facility can be constructed south of Big Foot Beach State Park, connecting to STH 120 and CTH H. It is further recommended that subsequent to such construction, which is

Table 16

PROPOSED FREEWAYS AND TEMPORARY ALTERNATE ROUTING OVER STATE TRUNK HIGHWAYS IN WALWORTH COUNTY: 1972-1990

PROPOSED FREEWAY	TEMPORARY ALTERNATE ROUTING
ROCK FREEWAY FROM WAUKESHA COUNTY LINE TO ROCK COUNTY LINE	OVER PRESENT STH 15 FROM WAUKESHA COUNTY LINE TO ROCK COUNTY LINE
USH 12 FREEWAY FROM STH 15- TO ROCK COUNTY LINE	OVER PRESENT USH 12 FROM USH 12 FREEWAY TO ROCK COUNTY LINE

SOURCE- WISCONSIN DEPARTMENT OF TRANSPORTATION AND SEWRPC.

anticipated before 1980, STH 120 be rerouted over the new facility to existing CTH H, then north on CTH H to STH 50, with existing STH 120 from about CTH BB to STH 50 reverting to the local street system. It is recommended that upon construction of a new facility from CTH H to STH 36 east of the City of Lake Geneva, anticipated to occur prior to 1990, that portion of STH 120 routed over existing CTH H revert to the county trunk highway system. It is further recommended that that portion of existing STH 36 between STH 50 and USH 12 routed over Broad Street, Springfield Road, and William Street (Lake Geneva) revert to the Type II arterial system. Finally, the proposed new state trunk highway facility over CTH G and Church Street is recommended to be routed over Main and Division Streets (Village of East Troy) until such time as a new facility extending Church Street over Grove Alley to STH 20 can be constructed. It is recommended that subsequent to such construction, which is anticipated to occur after 1985, Main Street between Church and Division Streets and Division Street between N. Main and S. Main Streets revert to the Type II arterial system and Division Street between N. Main Street and STH 20 revert to the local street system.

Approximately 11 miles of town roads are recommended to be added to the Type II arterial system at such time as segments of new arterial facility have been constructed providing continuity in the existing roadway system. These town roads and the new construction required prior to their addition to the Type II system consist of the following facilities:

1. Hospital Road (Towns of Geneva and Lafayette) from CTH NN to Bray Road, and Hodunk Road (Town of Lafayette) from Potters Road to CTH D, with the construction of a new facility linking Hospital Road and Hodunk Road between Bray Road and Potters Road.

2. Krueger Road (Towns of Geneva and Lyons) between STH 36 and CTH NN, with the construction of an interchange on USH 12 and the connection of that interchange with CTH H.

3. Willow Road (Town of Linn) from STH 120, to West Side Road; Lake Geneva Road and Marinette Road (Town of Bloomfield) with the construction of a new facility linking Willow Road and Lake Geneva Road from West Side Road to CTH H.

The proposed Type I system is recommended to include 197 route-miles of facilities in 1975, and the proposed Type II system, 228 route-miles. Thus, the total mileage for the combined Type I and Type II systems in 1975 is 425 miles, somewhat less than the proposed 1980 and 1990 equivalent mileages, as shown in Tables 12 and 13. In 1980 the proposed Type I system is recommended to include 198 route-miles of facilities, complemented by a proposed Type II system comprised of 244 route-miles of standard arterials. With the completion of the freeway system by 1990, the proposed Type I system is recommended to include 217 route-miles of facilities; and the proposed Type II system is recommended to include 258 route-miles of facilities.

SUMMARY

This chapter has described the recommended jurisdictional highway plan developed for Walworth County. The plan provides for three jurisdictional highway systems—Type I, state trunk; Type II, county trunk; and Type III, local trunk—which together comprise the total arterial street and highway system required to serve the growing travel demands in Walworth County and its constituent cities, villages, and towns to the plan design year 1990. The recommended plan also constitutes a refinement of the functional arterial street and highway system plan prepared by the Southeastern Wisconsin Regional Planning Commission under the initial regional land use-transportation study and, as such, is intended upon its adoption to constitute a functional, as well as a jurisdictional, arterial street and highway system plan for Walworth County to the plan design year 1990.

The arterial street and highway system recommended to serve the traffic demand within Walworth County through the plan design year 1990 totals 489 route-miles of facilities, or about 34 percent of the estimated 1,440 route-miles of facilities expected to comprise the total street and highway system within the county in 1990. Of this total arterial system, 217 route-miles, or about 44 percent, are proposed to comprise the Type I, or state trunk highway system, an increase of 26 miles over the present system. This Type I system is anticipated to carry approximately 74 percent of the arterial travel demand and approximately 68 percent of the total travel demand expected to be generated in the county by the year 1990. The Type I system is recommended to include all of the existing, committed, and proposed freeway facilities within Walworth County, as well as certain important standard arterials and, as such, to comprise the basic framework of the total highway transportation system for the county.

The recommended plan further proposed a Type II, or county trunk highway system, consisting of 258 route-miles of arterial facilities, or an additional 53 percent of the total arterial mileage required to serve Walworth County in the plan design year 1990. This Type II system represents an increase of 64 route-miles over the present system; would serve to complement the recommended Type I, or state trunk, system; is intended to include all major arterial facilities having areawide significance; and is intended to provide for all arterial travel demand generated within the rural areas of the county not served by the Type I system. The Type II system could be expected to carry an additional 24 percent of the arterial travel demand and an additional 22 percent of the total travel demand expected to be generated within Walworth County by the year 1990.

The Type III, or local trunk highway, system recommended in the plan consists of the remaining 14 route-miles of arterial facilities, or about 3 percent of the total arterial mileage proposed to serve Walworth County in the plan design year 1990. This Type III system is intended to primarily serve the local arterial street and highway needs of the urbanized areas of Walworth County, while comprising an integral part of the total arterial street and highway system.

Finally, the Technical Coordinating and Advisory Committee recognized the need for the marking and signing of a system of scenic drives within the county. The Committee, however, believed that the delineation of such a system would be best

accomplished by a broad-based committee of Walworth County citizens involved with the promotion of cultural, historic, scenic, and scientific areas within the county.

The jurisdictional designation for each segment of the recommended 1990 Walworth County arterial street and highway system is shown on Map B-1 included in Appendix B. Typical cross sections designating right-of-way and pavement widths adequate to serve the forecast 1990 traffic demand for each arterial link in the system are shown in Figure B-1 included in Appendix B. Finally, the recommended staging for implementation of the changes in the jurisdictional subsystems within the county for the years 1975 and 1980, as related to programmed facility construction, are shown on Maps 19 and 20.

Adoption and implementation of the jurisdictional highway system plan recommended in this report would serve to concentrate appropriate resources and capabilities on corresponding areas of need, assuring a more effective use of the total public resources in the provision of highway transportation; and would serve to provide a sound basis for the establishment of long-range fiscal policies and for the systematic programming of arterial street and highway improvements within Walworth County. It would also provide a basis for the more efficient planning and design of the total arterial street and highway system by combining into subsystems those facilities which should, because of the type and extent of service provided, have similar standards for design, construction, operation, and maintenance. The adoption and implementation of the jurisdictional highway system plan recommended in this report should provide a sound basis for the efficient multijurisdictional management of the total arterial street and highway system and for the attainment of the intergovernmental coordination necessary to the cooperative development of this system. Finally, it should, as demonstrated in a following chapter of this report, provide a more equitable distribution of highway improvement, maintenance, and operating costs among the various levels and agencies of government concerned.

Chapter VII

FINANCIAL EVALUATION

INTRODUCTION

In order to assure practicality and acceptability, any plan must be evaluated on the basis of financial feasibility. Such an evaluation may show that attainment of the objectives expressed through one or more of the criteria used to prepare the plan are beyond the financial reach of implementing agencies. Under such circumstances it would be necessary to either revise the criteria on which the plan is based and thereby revise the plan, or seek new means of financing plan implementation.

To this end, a careful evaluation was made of the financial feasibility of the jurisdictional highway system plan as produced by application of the planning criteria set forth in this report. Total plan construction and maintenance costs were estimated and compared to anticipated revenues over a 20-year plan implementation period. As a necessary part of this analysis of financial feasibility, the existing structure of highway revenues and expenditures was examined and construction and maintenance formulae and policies were analyzed.

EXISTING HIGHWAY AID STRUCTURE

Federal Aids for Highways

Federal aids for highway construction are derived from federal highway user excise taxes and the federal motor fuel tax, presently established at four cents per gallon, and are administered by the U. S. Department of Transportation, Federal Highway Administration, as a segregated fund which can be used only for highway and highway-related purposes. In Walworth County, federal aids are provided for approved improvement projects on the federal aid primary and secondary systems and extensions of these two systems through urban areas of over 5,000 population.[1]

These three categories of federal aid systems—primary, secondary, and the urban extensions of these systems—are commonly called the "ABC" systems.

Federal aid primary funds, or "A" funds, are apportioned to the states on the basis of the following formula:

> One-third in the ratio which the area of each State bears to the total area of all the States; one-third in the ratio which the population of each State bears to the total population of all the States as shown by the latest available Federal census; one-third in the ratio which the mileage of rural delivery routes and star routes[2] in each State bears to the total mileage of rural delivery and star routes in all the States at the close of the next preceding calendar year, as shown by a certificate of the Postmaster General, which he is directed to make and furnish annually to the Secretary. No State shall receive less than one-half of 1 per centum of each year's apportionment.[3]

Federal aid secondary funds, or "B" funds, are apportioned to the states on the basis of the following formula:

> One-third in the ratio which the area of each State bears to the total area of all the States; one-third in the ratio which the rural poplation of each State bears to the total rural population of all the States as shown by the latest available Federal census; and one-third in the ratio which the mileage of rural delivery and star routes, certified as above provided, in each State bears to the total mileage of rural delivery and star routes in

[1] *Federal aids are also provided elsewhere in the Region for approved improvement projects on the interstate system and on a newly established urban aid system, which urban aid system is to be designated within the urbanized areas of all U. S. Bureau of the Census-defined Standard Metropolitan Statistical Areas. Walworth County does not presently (1972) have, nor is the county expected to have in the near future, facilities eligible for funding under these two federal aid systems.*

[2] *A "star route" is defined by Title 23, United States Code, 104, as any route, usually in a thinly populated region, other than railroad, steamboat, and rural service routes, over which mail is carried under contract; so-called from the star or asterisk used to designate these routes in postal publications.*

[3] *Title 23, United States Code, 104.*

all the States. No State shall receive less than one-half of 1 per centum of each year's apportionment.[4]

Federal aid funds for improvements on extensions of the federal aid primary and secondary systems into urban areas, or "C" funds, are apportioned to the states on the basis of the following formula:

> In the ratio which the population in municipalities and other urban places of five thousand or more in each State bears to the total population in municipalities and other urban places of five thousand or more in all the States, as shown by the latest available Federal census.[5]

In addition to the aforementioned federal aid systems, the Congress in 1967 authorized the U. S. Department of Transportation, Federal Highway Administration, to initiate a program known as TOPICS, utilizing presently available highway funds to provide additional federal aid to urban areas having a population of 5,000 or more persons.[6] TOPICS is an acronym for "Traffic Operations Program to Increase Capacity and Safety." Federal aid funds authorized by Congress for TOPICS are apportioned to the states on the same basis as federal aid funds for improvements on extensions of the federal aid primary and secondary systems into urban areas, or "C" funds.[7]

As a counterpart of the newly established, urban-oriented TOPICS program, the Congress in 1967 authorized the U. S. Department of Transportation, Federal Highway Administration, to initiate a special rural aid program utilizing presently available highway funds. Federal aid funds for this special rural aid program are apportioned to the states on the same basis as regular federal aid primary and secondary funds, and must be expended for projects on the federal aid primary and secondary systems, exclusive of these systems' extensions into urban areas.

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[4] *Ibid.*

[5] *Ibid.*

[6] *Title 23, United States Code, 135.*

[7] *Ibid.*

Revenues From Federal Aids for Highways: Federal aid funds are received from the Federal Highway Administration by the Wisconsin Department of Transportation, Division of Highways, as reimbursements for the previously expended funds on approved federal aid projects. Federal aid may be used for preliminary engineering surveys, design, right-of-way acquisition, and construction. Federal funds may not be used for maintenance or administration. Table 17 indicates federal aid apportionments to Wisconsin during the 10 years from fiscal year 1961 through fiscal year 1970.

Disbursements of Federal Aids for Highways: The federal aids received into the State Highway Fund are administered by the Wisconsin Department of Transportation, Division of Highways. Federal aid primary funds, including rural primary funds, received by Wisconsin are distributed on the basis of statewide highway construction needs as determined by the State Highway Commission. Since construction is scheduled on a statewide basis and varies annually on a county basis, Walworth County has received varying annual amounts of such aids. Table 18 sets forth the annual amounts of federal aid primary funds expended in Walworth County during the fiscal years 1961 through 1970.

The distribution of federal aid secondary funds, including the rural secondary funds, received by Wisconsin is made to the 72 counties on the basis of the following formula: 60 percent on the basis of the rural federal aid secondary miles in the county compared with the total statewide rural federal aid secondary mileage, and 40 percent on the basis of the number of motor vehicles registered within the county compared with the total number of motor vehicles registered within the state. Based on this formula, Walworth County has received about $86,000 annually, or about 1 percent of the total federal aid secondary funds received annually by the state. If a county does not utilize its federal aid secondary apportionment, the funds revert to the State Highway Commission and may be reapportioned to other counties which apply for such funds or may be used by the State Highway Commission at its discretion anywhere in the state on the federal aid secondary system. Walworth County along with other populous counties in the state has received such reverted funds. The annual amounts of federal aid secondary funds expended in Walworth County during the fiscal years 1961 through 1970 are shown in Table 18.

Table 17

FEDERAL HIGHWAY AID APPORTIONMENTS TO WISCONSIN BY AID CATEGORY
FISCAL YEARS 1961-1970

FISCAL YEAR	AID CATEGORY					
	INTERSTATE		PRIMARY		SECONDARY	
	APPORTIONMENT	PERCENT OF TOTAL APPORTIONMENTS	APPORTIONMENT	PERCENT OF TOTAL APPORTIONMENTS	APPORTIONMENT	PERCENT OF TOTAL APPORTIONMENTS
1961...	$ 18,764,460	49.8	$ 8,651,381	23.0	$ 5,957,388	15.8
1962...	22,804,031	54.6	8,688,009	20.8	6,034,452	14.4
1963...	21,164,100	51.4	9,109,799	22.1	6,431,738	15.6
1964...	22,927,775	52.5	9,484,657	21.7	6,690,955	15.3
1965...	23,689,058	53.0	9,592,323	21.4	6,770,585	15.1
1966...	24,691,450	52.6	10,230,422	21.8	7,207,143	15.3
1967...	24,733,350	52.3	10,390,974	22.0	7,313,176	15.5
1968...	28,144,962	55.3	10,491,840	20.6	7,381,920	14.5
1969...	31,408,425	58.1	10,436,973	19.3	7,344,879	13.6
1970...	34,435,600	52.1	13,176,715	19.9	9,273,485	14.0
TOTAL	$252,763,211	--	$100,253,093	--	$70,405,721	--
10- YEAR AVERAGE	$ 25,276,321	--	$ 10,025,309	--	$ 7,040,572	--

FISCAL YEAR	AID CATEGORY				
	URBAN		TOPICS°		
	APPORTIONMENT	PERCENT OF TOTAL APPORTIONMENTS	APPORTIONMENT	PERCENT OF TOTAL APPORTIONMENTS	TOTAL APPORTIONMENTS
1961...	$ 4,298,531	11.4	$ --	--	$ 37,671,760
1962...	4,264,732	10.2	--	--	41,791,224
1963...	4,471,619	10.9	--	--	41,177,256
1964...	4,588,651	10.5	--	--	43,692,038
1965...	4,685,560	10.5	--	--	44,737,526
1966...	4,849,228	10.3	--	--	46,978,243
1967...	4,836,951	10.2	--	--	47,274,451
1968...	4,856,594	9.6	--	--	50,875,316
1969...	4,849,228	9.0	--	--	54,039,505
1970...	5,320,646	8.1	3,869,561	5.9	66,076,007
TOTAL	$47,021,740	--	$3,869,561	--	$474,313,326
10- YEAR AVERAGE	$ 4,702,174	--	$3,869,561	--	$ 50,913,937

°TOPICS, AN ACRONYM FOR 'TRAFFIC OPERATIONS PROGRAM TO INCREASE CAPACITY AND SAFETY,' WAS FIRST FUNDED UNDER THE FEDERAL AID HIGHWAY ACT OF 1968.

SOURCE- WISCONSIN DEPARTMENT OF TRANSPORTATION.

Federal aid funds to be used on the extensions of federal aid primary and secondary routes within urban areas ("C" funds) are distributed throughout the state on the basis of need, as determined by the State Highway Commission. During the fiscal years 1961 through 1970, Walworth County received no such federal aid funds.

Federal aid funds for TOPICS received by Wisconsin are apportioned by the State Highway Commission to cities and villages with a population of 5,000 or more on the basis of population. For eligibility in the program, a city or village must have a population of 5,000 persons or more and must prepare a plan documenting the operational improvements required to improve the safety and capacity of the existing arterial street and highway system. Presently, only the Cities of Delavan and Whitewater within Walworth County would be eligible for TOPICS aid. Table 19 indicates the amounts of such aid which would become available annually should these cities choose to participate in the program.

State Aids For Highways

State highway aids for construction, operation, and maintenance are derived from the state motor vehicle fuel taxes, motor vehicle registration and driver licensing fees, and motor carrier fees. These funds are administered by the Wisconsin Department of Transportation, Division of Highways, as a segregated fund which can be used only for highway and highway-related purposes.

Table 18

FEDERAL HIGHWAY AID ALLOTTED TO WALWORTH COUNTY BY AID CATEGORY
FISCAL YEARS 1961-1970

FISCAL YEAR	AID CATEGORY					FEDERAL HIGHWAY AID APPORTIONED TO WISCONSIN	
	PRIMARY		SECONDARY		TOTAL ALLOTMENT	TOTAL	PERCENT RECEIVED BY WALWORTH COUNTY
	ALLOTMENT	PERCENT OF TOTAL ALLOTMENT	ALLOTMENT	PERCENT OF TOTAL ALLOTMENT			
1961...	$ --	--	$116,192	100.0	$ 116,192	$ 37,671,760	0.3
1962...	389,000	94.4	23,202	5.6	412,202	41,791,224	1.0
1963...	45,000	29.4	107,830	70.6	152,830	41,177,256	0.4
1964...	369,000	98.8	4,328	1.2	373,328	43,692,038	0.9
1965...	1,348,000	100.0	--	--	1,348,000	44,737,526	3.0
1966...	25,000	100.0	--	--	25,000	46,978,243	0.1
1967...	32,000	100.0	--	--	32,000	47,274,451	0.1
1968...	2,929,000	96.5	106,080	3.5	3,035,080	50,875,316	6.0
1969...	1,644,000	100.0	--	--	1,644,000	54,039,505	3.0
1970...	1,428,000	100.0	--	--	1,428,000	66,076,007	2.2
TOTAL	$8,209,000	--	$357,632	--	$8,566,632	$474,313,326	--
10- YEAR AVERAGE	$ 820,900	95.8	$ 35,763	4.2	$ 856,663	$ 50,913,937	1.7

SOURCE- SEWRPC.

Table 19

FEDERAL HIGHWAY AID APPORTIONED TO URBAN AREAS IN WALWORTH COUNTY FOR TOPICS PROGRAM
FISCAL YEARS 1970-1973

FISCAL YEAR	MUNICIPALITY		
	CITY OF DELAVAN	CITY OF WHITEWATER	TOTAL
1970...	$ --	$15,400	$15,400
1971...	--	15,400	15,400
1972...	3,800	8,400	12,200
1973...	3,800	8,400	12,200
TOTAL	$7,600	$47,600	$55,200

SOURCE- WISCONSIN DEPARTMENT OF TRANSPORTATION.

Revenues From State Aids for Highways: The state motor fuel tax, accounting for almost two-thirds of total motor vehicle tax revenues, was initiated in 1925 at two cents per gallon. It increased to four cents in 1931, six cents in 1955, and to seven cents per gallon in 1966. The second largest source of motor vehicle tax revenues are the fees collected for motor vehicle registration and operator licensing, which contribute almost all of the remaining one-third of the revenues. Motor carrier fees imposed on owners of trucks and buses for regulatory purposes amount to less than 1 percent of the state motor vehicle revenues. Table 20 indicates the state motor vehicle revenues collected in Wisconsin during the fiscal years 1961 through 1970.

Disbursement of State Aids for Highways: The total annual net motor vehicle revenues, a result of deducting the annual collection and enforcement expenses from the total annual gross motor vehicle revenues, are distributed by the Wisconsin Department of Transportation, Division of Highways, in accordance with the provisions of Section 20.395 and Chapters 83, 84, and 86 of the Wisconsin Statutes. Table 21 indicates the statewide distribution of net motor vehicle revenues for the fiscal years 1961 through 1970. It may be noted from this table that for the fiscal year 1970, about 50 percent of the net motor vehicle revenues were allocated to state trunk highways; about 44 percent was returned to local units of government, including counties, cities, villages, and towns; and about 6 percent were utilized for miscellaneous purposes, such as administrative expenses of the Division of Highways; topographic maps; institution roads; bridge maintenance and operation; special bridges not on the state trunk highway system; state park, forest, and access roads; roadside improvements; and railroad grade crossing protection.

Of the approximately 44 percent returned to local units of government, nearly one-fourth, or 12 percent of the total state highway aids, was distributed to the counties within the state. Annually on June 30, a fixed sum of $3,500,000 is apportioned among the counties, 60 percent on the basis

Table 20

WISCONSIN MOTOR VEHICLE REVENUES
FISCAL YEARS 1961-1970

FISCAL YEAR	REVENUE SOURCE			ADJUSTMENTS[a]	TOTAL GROSS REVENUES	COLLECTION EXPENSES AND FIRST CHARGES OF OTHER AGENCIES[b]	TOTAL NET REVENUES TO BE DISTRIBUTED
	LICENSE FEES	FUEL TAXES	CARRIER FEES				
1961..	$ 44,151,641	$ 75,185,674	$ 555,014	$ 36,306	$ 119,928,635	$ 8,321,038	$ 111,607,597
1962..	44,049,978	75,905,152	476,666	1,520	120,433,316	8,417,874	112,015,442
1963..	47,955,404	78,527,005	594,285	11,886	127,088,580	9,771,451	117,317,129
1964..	48,714,763	81,009,598	571,404	79,118	130,374,883	10,651,603	119,723,280
1965..	51,697,661	84,934,763	600,815	20,490	137,253,729	11,421,211	125,832,518
1966..	54,762,427	90,054,602	580,363	288	145,397,680	11,139,515	134,258,165
1967..	60,304,239	108,385,059	622,716	--	169,312,014	15,992,722	153,319,292
1968..	64,111,550	115,395,320	641,279	428	180,148,577	16,443,408	163,705,169
1969..	67,062,072	122,142,203	635,072	642	189,839,989	18,948,360	170,891,629
1970..	71,083,902	130,512,312	661,238	39,685	202,297,137	26,281,057	176,016,080
TOTAL	$553,893,637	$962,051,688	$5,938,852	$190,363	$1,522,074,540	$137,388,239	$1,384,686,301
10-YEAR AVERAGE	$ 55,389,364	$ 96,205,169	$ 593,885	$ 19,036	$ 152,207,454	$ 13,738,824	$ 138,468,630

[a] ADJUSTMENTS INCLUDE SURPLUS FUNDS AND AIDS WITHHELD PURSUANT TO SECTION 84.01(25)(D) OF THE WISCONSIN STATUTES.

[b] COLLECTION EXPENSES AND FIRST CHARGES OF OTHER AGENCIES INCLUDE CHARGES FOR THE FOLLOWING- THE ADMINISTRATION AND COLLECTION COSTS OF THE MOTOR VEHICLE DEPARTMENT, THE DEPARTMENT OF TAXATION MOTOR FUEL TAX, AND THE PUBLIC SERVICE COMMISSION; LEGISLATIVE COUNCIL HIGHWAY STUDIES; DEPARTMENT OF PUBLIC INSTRUCTION, DRIVER EDUCATION; CONSERVATION FUND ADVERTISING OF WISCONSIN RECREATIONAL FACILITIES; THE AERONAUTICS COMMISSION; LEGISLATIVE AWARDS FOR CLAIMS; AND THE EXECUTIVE DEPARTMENT.

SOURCE- WISCONSIN DEPARTMENT OF TRANSPORTATION.

Table 21

PERCENTAGE DISTRIBUTION OF NET MOTOR VEHICLE REVENUES BY THE STATE OF WISCONSIN
FISCAL YEARS 1961-1970

NET MOTOR VEHICLE REVENUE DISTRIBUTION	ANNUAL PERCENT DISTRIBUTED									1970 DISTRIBUTION	
	1961	1962	1963	1964	1965	1966	1967	1968	1969	AMOUNT	PERCENT
ALLOTTED AND APPORTIONED TO LOCAL UNITS OF GOVERNMENT											
COUNTIES	14.1	14.1	14.2	14.1	14.1	14.1	12.5	12.4	12.4	$ 21,605,128	12.3
CITIES	16.7	16.7	16.8	17.0	17.1	17.2	15.6	15.5	15.6	27,127,032	15.4
VILLAGES	3.1	3.1	3.2	3.2	3.2	3.2	3.0	3.0	3.0	5,386,251	3.1
TOWNS	15.0	15.0	15.1	15.1	15.1	15.1	13.6	13.5	13.7	23,558,800	13.4
FLOOD DAMAGE AID	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	--	0.0
SUBTOTAL	49.0	49.0	49.4	49.4	49.5	49.6	44.7	44.4	44.7	77,726,504	44.2
ALLOTTED AND APPORTIONED FOR STATE TRUNK HIGHWAYS											
CONSTRUCTION	19.9	17.3	19.3	20.4	19.5	20.1	25.3	31.1	28.1	$ 44,666,768	25.4
URBAN STREET IMPROVEMENT	3.4	3.4	3.2	3.2	3.0	2.8	2.5	2.3	2.2	3,800,000	2.1
BOND RETIREMENT AND IMPROVEMENT	7.2	7.2	6.9	6.7	6.4	6.0	5.2	4.9	4.7	8,052,724	4.6
MAINTENANCE, TRAFFIC SERVICE	12.1	11.6	11.6	11.3	11.2	11.1	10.7	10.1	10.6	20,600,000	11.7
SNOW REMOVAL	3.3	6.2	4.5	3.5	4.6	3.7	4.7	--	2.6	7,700,000	4.4
SAFETY IMPROVEMENT	0.0	0.0	0.0	0.0	0.0	0.9	1.4	1.4	1.4	2,525,034	1.4
SUBTOTAL	45.9	45.7	45.5	45.1	44.7	44.6	49.8	49.8	49.6	87,344,526	49.6
MISCELLANEOUS ALLOTMENTS...[a]	5.1	5.3	5.1	5.5	5.8	5.8	5.5	5.8	5.7	$ 10,945,050	6.2
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	$176,016,080	100.0

[a] MISCELLANEOUS ALLOTMENTS INCLUDE APPROPRIATIONS FOR ADMINISTRATIVE EXPENSES OF THE DIVISION OF HIGHWAYS; TOPOGRAPHIC MAPS; INSTITUTION ROADS; BRIDGE MAINTENANCE AND OPERATION; SPECIAL BRIDGES NOT ON THE STATE TRUNK HIGHWAY SYSTEM; STATE PARK, FOREST, AND ACCESS ROADS; ROADSIDE IMPROVEMENTS; AND RAILROAD GRADE CROSSING PROTECTION.

SOURCE- WISCONSIN DEPARTMENT OF TRANSPORTATION AND SEWRPC.

of the proportion which the total highway mileage within the county, exclusive of city and village streets, comprises of the total of such mileage within the state;[8] and 40 percent on the basis of the proportion which the motor vehicles registered within the county comprise of the total motor vehicles registered with the state. In addition, each county receives an annual allotment of $65 per mile of county trunk highway. Finally, at the close of each fiscal year, supplemental aids consisting of 15 percent of the revenue raised by the two-cent-a-gallon increase effected in 1955 and 18 percent of the net motor carrier fees and

[8] *Counties having a population of 500,000 or more may include 25 percent of the city and village street mileage within the county in computing the total highway mileage within the county for the purpose of apportioning the $2,100,000 allotment.*

original four-cent-a-gallon motor fuel tax which remain after the payment of previously committed allotments are apportioned among the counties on the basis of the annual county trunk allotment.

Of the 44 percent of the motor fuel revenues returned to local units of government, approximately three-fourths, or 32 percent of the total state highway aids, was returned to local municipalities on the following basis: about 13 percent to towns, about 3 percent to villages, and about 15 percent to cities. This return comprises the local road and street allotment and supplemental aids. The basic local road and street allotment, made annually on March 10 to the towns, villages, and cities, is apportioned on the basis of a fixed rate per mile for the number of miles of local roads and streets—exclusive of state trunk highways, county trunk highways, and connecting streets—which are open and used for travel. Table 22 shows the rate per mile at which the towns, villages, and cities are paid their respective local road and street allotments. The supplemental aids consist of 35 percent of the revenue raised by the two-cent-a-gallon gas tax increase effected in 1955, and 42 percent of the net motor carrier fees and original four-cent-a-gallon motor fuel tax which remain after the payment of all previously committed allotments. The former amount is distributed as follows: 43 percent to towns, 21 percent to villages and cities with a population of 10,000 or less, and 36 percent to cities with a population over 10,000; while the latter amount is distributed as follows: 43 percent to towns, 21 percent to villages and cities with a population of 10,000 or less, and 36 percent to cities with a population over 10,000. The supplemental aids are apportioned on the basis of the amount of the local road and street allotments to the towns and cities with a population over 10,000. Supplemental aids to villages and cities with a population of 10,000 or less are apportioned on the basis of local road mileage.

Finally, on December 15 there is allotted to each town, village, and city in the state an amount equal to 11 percent of the net registration fees collected from commercial vehicles and 20 percent of the net registration fees from all other motor vehicles customarily kept in such towns, villages, or cities. This allotment, known as the privilege highway tax allotment, is supplemented by an additional 40 cents per registered vehicle which resulted from the $2.00 increase in fees effected in 1966, and is apportioned on the basis of motor vehicle registrations.[9]

Table 22

LOCAL ROAD AND STREET ALLOTMENTS TO TOWNS, VILLAGES, AND CITIES IN WALWORTH COUNTY[a]

LEVEL OF GOVERNMENT	RATE PER MILE
TOWNS	$ 65
VILLAGES	65
CITIES WITH POPULATION OF:	
0 - 10,000	130
10,001 - 35,000	260
35,001 - 150,000	390
150,001 OR MORE	520

[a] THE LOCAL ROAD AND STREET ALLOTMENT IS MADE ON MARCH 10 TO TOWNS, VILLAGES, AND CITIES PURSUANT TO SEC. 20.395 (2)(WB), SEC. 86.31 OF THE 1969 WISCONSIN STATUTES.

SOURCE- 1969 WISCONSIN STATUTES.

State Trunk Highway Improvement and Maintenance Funding

Revenues: Revenues for the construction and maintenance of state trunk highways and the construction of connecting streets are derived from two principal sources: federal aids and state sources. State sources can further be divided into two categories: apportionments made directly from the net motor vehicle revenues and bonds issued for construction. Table 23 indicates the combined state and federal aid funds allocated to Walworth County for the fiscal years 1961 through 1970 for the construction and maintenance of state trunk highways and connecting streets.

Expenditures: In rural areas, construction expenditures on state trunk highways which are not on the federal aid systems are funded entirely from state revenues. Construction expenditures on federal aid systems are funded on a fifty-fifty matching revenue basis on federal aid primary and secondary routes.

In urban areas, construction expenditures on state trunk highways and connecting streets which are not on the federal aid systems are usually funded with 85 percent state and 15 percent city or village monies. Such expenditures on state trunk

[9] *Subsequent to the completion of the financial analyses for this study, the Wisconsin Legislature enacted Chapter 125 of the Wisconsin Laws of 1971 which modified Sections 86.35(1) and 20.395(2)wd of the Wisconsin Statutes relating to the privilege highway tax allotment and its supplement, respectively, such that the revenues associated with these two sections of the Statutes are no longer paid directly to the respective cities, villages, and towns, but are placed in the municipal and county shared tax account for distribution essentially on a per capita basis pursuant to Chapter 79 of the Wisconsin Statutes.*

Table 23

STATE OF WISCONSIN EXPENDITURES AND REVENUES FOR HIGHWAY AND HIGHWAY-RELATED PURPOSES IN WALWORTH COUNTY: FISCAL YEARS 1961-1970

FISCAL YEAR	EXPENDITURES[a]			REVENUES[a]		
	MAINTENANCE	CONSTRUCTION	TOTAL	STATE FUNDS[c]	FEDERAL AIDS	TOTAL
1961[b]..	$ 167,464	$ 436,800	$ 604,264	$ 604,264	$ --	$ 604,264
1962..	180,282	1,606,500	1,786,782	1,397,782	389,000	1,786,782
1963..	189,229	254,900	444,129	399,129	45,000	444,129
1964..	190,924	1,267,100	1,458,024	1,089,024	369,000	1,458,024
1965..	221,880	3,673,300	3,895,180	2,547,180	1,348,000	3,895,180
1966..	237,698	521,400	759,098	734,098	25,000	759,098
1967..	240,802	2,196,500	2,437,302	2,405,302	32,000	2,437,302
1968..	275,188	7,271,000	7,546,188	4,617,188	2,929,000	7,546,188
1969..	319,908	3,710,400	4,030,308	2,386,308	1,644,000	4,030,308
1970..	344,967	3,232,300	3,577,267	2,149,267	1,428,000	3,577,267
TOTAL	$2,368,342	$24,170,200	$26,538,542	$18,329,542	$8,209,000	$26,638,542
10-YEAR AVERAGE	$ 236,834	$ 2,417,020	$ 2,653,854	$ 1,832,954	$ 820,900	$ 2,663,854

[a] THE ACCOUNTING PROCEDURE USED IN THE JURISDICTIONAL HIGHWAY SYSTEM PLANNING PROGRAM ASSUMED THAT TOTAL REVENUES WERE EQUAL TO TOTAL EXPENDITURES.

[b] THE STATE FISCAL YEAR 1961 EXTENDS FROM JULY 1, 1960 THROUGH JUNE 30, 1961.

[c] DUE TO THE ACCOUNTING OF STATE MONIES ON A STATEWIDE BASIS, STATE FUNDS IN WALWORTH COUNTY WERE SET EQUAL TO THE DIFFERENCE BETWEEN TOTAL REVENUES AND FEDERAL AIDS.

SOURCE- WISCONSIN DEPARTMENT OF TRANSPORTATION, WALWORTH COUNTY HIGHWAY DEPARTMENT, AND SEWRPC.

highways and connecting streets, which are also on the federal aid primary or secondary systems, are usually funded with 50 percent federal, 35 percent state, and 15 percent city or village monies. In either instance, the amount of the local contribution is determined as 15 percent of the "participating" construction costs, which costs are, in turn, determined for each individual project on the basis of the cost of the participating or eligible items, as negotiated and agreed upon between the Wisconsin Department of Transportation, Division of Highways, and the local unit of government. The participating items usually, but not always, include right-of-way acquisition; grading; construction of the pavement base and surface, culverts and bridges, curb and gutter, and inlets for surface water drainage with connections to storm sewers; and engineering services. The Wisconsin Department of Transportation, Division of Highways, will, in addition, place and maintain signs and markers for approved detours and maintain such detours during the construction period. The city or village must bear the cost of all utility relocation and storm sewer construction costs not required for purely highway drainage purposes. Therefore, the total contribution by the city or village to a state trunk highway or connecting street improvement project, whether on a federal aid system or not, may actually vary from less than 15 percent to more than 50 percent of the total project cost, depending on the relative costs of the various items on the project and the agreement arrived at between the state and local unit of government concerning the definition of participating items.

Maintenance expenditures on the state trunk highway system have increased steadily over the past 10 years and now exceed 16 percent of the net motor vehicle revenues. Maintenance costs for state trunk highways are borne entirely by the state, although most of the maintenance work is actually performed by the county forces under contract to the state. For facilities on the connecting street system, the state partially reimburses the local municipality which is responsible for performing such maintenance. This reimbursement is made at the rate of $500 per mile per year, an amount substantially less than the actual cost of maintenance.

Table 23 summarizes state expenditures in Walworth County for the construction and operation and maintenance of the state trunk highway and connecting street systems for the fiscal years 1961 through 1970.

County Trunk Highway Funding

Revenues: Counties in Wisconsin receive highway revenues from three principal sources: federal aids, state aids, and county property taxes. In addition, counties are authorized by Section 67.04 of the Wisconsin Statutes to issue general obliga-

tion bonds for highway construction purposes. Walworth County, however, has not to date utilized bonding for highway purposes. Local property taxes for highway purposes may not exceed two mills (0.002 percent) per dollar of assessed valuation and are paid into the county road and bridge fund. Although the proportion of county highway revenues derived from federal aids, state aids, and local sources varies greatly from county to county and from year to year, an average county within Wisconsin received about 10 percent of its total highway revenues from federal aid, about 36 percent from state aid, and about 54 percent from local sources. Table 24 indicates the revenues received by Walworth County for highway purposes for the fiscal years 1961 through 1970.

Expenditures: Construction expenditures on the county trunk highway system consist of direct expenditures of county funds by the respective counties, administered through the county highway committees of the county boards; and federal aid funds matched by county funds, administered by the State Highway Commission on those county trunk highways which are also on the federal aid system. Construction expenditures on county trunk highways which are also federal aid routes are usually financed with 50 percent federal funds and 50 percent county funds. The amount of the county contribution is determined as 50 percent of the construction costs, which costs are, in turn, determined by the cost of the participating or eligible items. These participating items are set by federal policy and generally include right-of-way acquisition; grading; construction of the pavement base and surface, culverts and bridges, curb and gutter, outlets for surface drainage, and storm sewer mains adequate for drainage of the pavement surfaces and right-of-way; replacement of walks and private driveways; repair of damages to other roads by reason of their use in hauling materials needed for the improvement; and engineering services. Construction expenditures for county trunk highways which are not on the federal aid system are usually financed entirely with county funds.

The cost to the county for the construction of county trunk highways through cities and villages is determined on the basis of the width of the proposed construction, the county being responsible for the full cost of 18 feet of the width plus a portion of the cost of the balance of the width, to be determined by dividing the cost of the width exceeding 18 feet by the total width of the improvement and multiplying by 18, as provided for in Section 83.05(2) of the Wisconsin Statutes.

Maintenance and operation costs for the county trunk highway system are paid for by the county, and maintenance is performed by county forces. Table 24 indicates the county highway funds ex-

Table 24

WALWORTH COUNTY EXPENDITURES AND REVENUES FOR HIGHWAY AND HIGHWAY-RELATED PURPOSES
FISCAL YEARS 1961-1970

FISCAL YEAR	EXPENDITURES[a]			REVENUES[a]			
	MAINTENANCE	CONSTRUCTION	TOTAL	LOCAL FUNDS[c]	STATE AIDS	FEDERAL AIDS	TOTAL
1961[b]	$ 179,191	$ 381,999	$ 561,190	$ 248,742	$ 196,256	$116,192	$ 561,190
1962	210,435	277,150	487,585	268,647	195,736	23,202	487,585
1963	156,479	199,783	356,262	41,560	206,872	107,830	356,262
1964	171,365	113,209	284,574	69,989	210,257	4,328	284,574
1965	250,814	22,234	273,048	52,086	220,962	--	273,048
1966	255,434	300,922	556,356	319,210	237,146	--	556,356
1967	307,628	311,711	619,339	376,875	242,464	--	619,339
1968	219,311	240,853	460,164	97,955	256,129	106,080	460,164
1969	267,307	48,901	316,208	48,137	268,071	--	316,208
1970	397,271	111,399	508,670	231,563	277,107	--	508,670
TOTAL	$2,415,235	$2,008,161	$4,423,396	$1,754,764	$2,311,000	$357,632	$4,423,396
10-YEAR AVERAGE	$ 241,524	$ 200,816	$ 442,340	$ 175,477	$ 231,100	$ 35,763	$ 442,340

[a] THE ACCOUNTING PROCEDURE USED IN THE JURISDICTIONAL HIGHWAY SYSTEM PLANNING PROGRAM ASSUMED THAT TOTAL REVENUES WERE EQUAL TO TOTAL EXPENDITURES.

[b] THE COUNTY FISCAL YEAR 1961 EXTENDS FROM JANUARY 1, 1961 THROUGH DECEMBER 31, 1961.

[c] DUE TO THE ACCOUNTING METHODS UTILIZED BY THE COUNTY, LOCAL FUNDS WERE ASSUMED TO EQUAL THE DIFFERENCE BETWEEN TOTAL REVENUES AND THE SUM OF STATE AND FEDERAL AIDS.

SOURCE- WALWORTH COUNTY HIGHWAY DEPARTMENT AND SEWRPC.

pended by Walworth County for highway construction and maintenance and operation during the fiscal years 1961 through 1970.

Local Street and Highway Funding

Revenues: Like counties, local units of government receive highway revenues from three principal sources: federal aids, state aids, and local revenues. Although the proportion of highway revenues received from each source will vary from municipality to municipality and from year to year, the average city, village, or town in Wisconsin receives about 17 percent of its total highway revenues from federal aids, about 43 percent from state aids, and about 40 percent from local revenues. The local revenues are derived from local tax receipts, which account for approximately 77 percent and include special assessments, property taxes from the general fund, and miscellaneous sources; and bonding, which accounts for about 23 percent. Tables 25, 26, and 27 indicate the highway and highway-related revenues for cities, villages, and towns, respectively, in Walworth County for the fiscal years 1961 through 1970. It is significant to note that, unlike towns in certain other counties within Wisconsin, towns within Walworth County do not receive aid from the county for construction or reconstruction of bridges or highways.

Expenditures: Construction costs for streets and highways under the jurisdiction of a city, village, or town are paid for entirely by the respective unit of government unless the local street is on a federal aid route. Maintenance and operation costs for all city and village streets and town roads, regardless of federal aid designation, are also paid for by the respective unit of government, with the unit of government involved generally performing its own maintenance work. Tables 25, 26, and 27 summarize the expenditures for construction, operation, and maintenance by all cities, villages, and towns, respectively, in Walworth County for the fiscal years 1961 through 1970.

Summary of Expenditures

Table 28 provides a summary of all expenditures for highway construction, operation, and maintenance in Walworth County for the calendar years 1961 through 1970. The present participation of the various levels of government in highway construction and maintenance costs is summarized in Table 29. It should be noted that, as explained

Table 25

CITY EXPENDITURES AND REVENUES FOR HIGHWAY AND HIGHWAY-RELATED PURPOSES IN WALWORTH COUNTY
FISCAL YEARS 1961-1970

FISCAL YEAR	EXPENDITURES[a]			REVENUES[a]		
	MAINTENANCE	CONSTRUCTION	TOTAL	LOCAL FUNDS[c]	STATE AIDS	TOTAL
1961[b]..	$ 340,600	$ 222,347	$ 562,947	$ 414,196	$ 148,751	$ 562,947
1962..	255,000	210,346	465,346	318,859	146,487	465,346
1963..	344,615	73,827	418,442	268,354	150,088	418,442
1964..	340,449	178,738	519,187	361,336	157,851	519,187
1965..	431,205	126,450	557,655	398,826	158,829	557,655
1966..	470,835	117,088	587,923	405,979	181,944	587,923
1967..	484,439	106,010	590,449	398,446	192,003	590,449
1968..	466,175	180,756	646,931	449,560	197,371	646,931
1969..	418,961	358,253	777,214	558,947	218,267	777,214
1970..	439,073	245,525	684,598	467,669	216,929	684,598
TOTAL	$3,991,352	$ 1,819,340	$ 5,810,692	$ 4,042,172	$1,768,520	$ 5,810,692
10-YEAR AVERAGE	$ 399,135	$ 181,934	$ 581,069	$ 404,217	$ 176,852	$ 581,069

[a] THE ACCOUNTING PROCEDURE USED IN THE JURISDICTIONAL HIGHWAY SYSTEM PLANNING PROGRAM ASSUMED THAT TOTAL REVENUES WERE EQUAL TO TOTAL EXPENDITURES.

[b] THE CITY FISCAL YEAR 1961 EXTENDS FROM JANUARY 1, 1961 THROUGH DECEMBER 31, 1961

[c] DUE TO THE ACCOUNTING METHODS UTILIZED BY INDIVIDUAL MUNICIPALITIES, LOCAL FUNDS WERE ASSUMED TO EQUAL THE DIFFERENCE BETWEEN TOTAL REVENUES AND STATE AIDS.

SOURCE- WISCONSIN DEPARTMENT OF ADMINISTRATION AND SEWRPC.

Table 26

VILLAGE EXPENDITURES AND REVENUES FOR HIGHWAY AND HIGHWAY-RELATED PURPOSES IN WALWORTH COUNTY
FISCAL YEARS 1961-1970

FISCAL YEAR	EXPENDITURES[a]			REVENUES[a]		
	MAINTENANCE	CONSTRUCTION	TOTAL	LOCAL FUNDS[c]	STATE AIDS	TOTAL
1961[b]..	$ 137,811	$ 80,934	$ 218,745	$ 138,653	$ 80,092	$ 218,745
1962..	108,636	69,687	178,323	97,192	81,131	178,323
1963..	163,747	77,692	241,439	165,942	75,497	241,439
1964..	115,083	37,771	152,854	62,952	89,902	152,854
1965..	141,419	16,379	157,798	63,220	94,578	157,798
1966..	122,413	46,678	169,091	68,632	100,459	169,091
1967..	158,086	27,788	185,874	74,700	111,174	185,874
1968..	164,128	31,649	195,777	88,745	107,032	195,777
1969..	183,889	21,648	205,537	85,775	119,762	205,537
1970..	220,709	28,264	248,973	125,833	123,140	248,973
TOTAL	$1,515,921	$ 438,490	$ 1,954,411	$ 971,644	$ 982,767	$ 1,954,411
10-YEAR AVERAGE	$ 151,592	$ 43,849	$ 195,441	$ 97,164	$ 98,277	$ 195,441

[a] THE ACCOUNTING PROCEDURE USED IN THE JURISDICTIONAL HIGHWAY SYSTEM PLANNING PROGRAM ASSUMED THAT TOTAL REVENUES WERE EQUAL TO TOTAL EXPENDITURES.

[b] THE VILLAGE FISCAL YEAR 1961 EXTENDS FROM JANUARY 1, 1961 THROUGH DECEMBER 31, 1961.

[c] DUE TO THE ACCOUNTING METHODS UTILIZED BY INDIVIDUAL MUNICIPALITIES, LOCAL FUNDS WERE ASSUMED TO EQUAL THE DIFFERENCE BETWEEN TOTAL REVENUES AND STATE AIDS.

SOURCE- WISCONSIN DEPARTMENT OF ADMINISTRATION AND SEWRPC.

Table 27

TOWN EXPENDITURES AND REVENUES FOR HIGHWAY AND HIGHWAY-RELATED PURPOSES IN WALWORTH COUNTY
FISCAL YEARS 1961-1970

FISCAL YEAR	EXPENDITURES[a]			REVENUES[a]		
	MAINTENANCE	CONSTRUCTION	TOTAL	LOCAL FUNDS[c]	STATE AIDS	TOTAL
1961[b]..	$ 492,379	$ 270,481	$ 762,860	$ 500,562	$ 262,298	$ 762,860
1962..	460,207	132,714	592,921	364,529	228,392	592,921
1963..	505,591	51,606	557,197	292,258	264,939	537,197
1964..	524,473	53,302	577,775	287,856	289,919	577,775
1965..	618,296	92,776	711,072	432,958	278,114	711,072
1966..	649,721	112,388	762,109	450,377	311,732	762,109
1967..	1,009,864	148,029	1,157,893	833,801	324,092	1,157,893
1968..	613,966	305,357	919,323	595,049	324,274	919,323
1969..	751,134	208,846	959,980	632,738	327,242	959,980
1970..	828,212	82,417	910,629	583,662	326,967	910,629
TOTAL	$6,453,843	$ 1,457,916	$ 7,911,759	$ 4,973,790	$2,937,969	$ 7,911,759
10-YEAR AVERAGE	$ 645,384	$ 145,792	$ 791,176	$ 497,379	$ 293,797	$ 791,176

[a] THE ACCOUNTING PROCEDURE USED IN THE JURISDICTIONAL HIGHWAY SYSTEM PLANNING PROGRAM ASSUMED THAT TOTAL REVENUES WERE EQUAL TO TOTAL EXPENDITURES.

[b] THE TOWN FISCAL YEAR 1961 EXTENDS FROM APRIL 1, 1960 THROUGH MARCH 31, 1961.

[c] DUE TO THE ACCOUNTING METHODS UTILIZED BY INDIVIDUAL MUNICIPALITIES, LOCAL FUNDS WERE ASSUMED TO EQUAL THE DIFFERENCE BETWEEN TOTAL REVENUES AND STATE AIDS.

SOURCE- WISCONSIN DEPARTMENT OF ADMINISTRATION AND SEWRPC.

above, the actual local share of the construction costs of state trunk highways and connecting streets, although nominally set at 15 percent of the cost, may vary considerably depending on the definition of participating or eligible work items. Local participation in past construction projects within Walworth County has varied from zero to as high as 50 percent of the total cost.

Table 28

EXPENDITURES BY FEDERAL, STATE, COUNTY, AND LOCAL GOVERNMENTS FOR HIGHWAY CONSTRUCTION, OPERATION, AND MAINTENANCE IN WALWORTH COUNTY 1961-1970

CALENDAR YEAR	LEVEL OF GOVERNMENT					
	FEDERAL			STATE		
	CONSTRUCTION[a]	OPERATION AND MAINTENANCE[b]	TOTAL	CONSTRUCTION[a]	OPERATION AND MAINTENANCE[b]	TOTAL
1961.....	$ 398,501	$ --	$ 398,501	$ 436,800	$ 164,927	$ 601,727
1962.....	264,197	--	264,197	1,021,650	195,637	1,217,287
1963.....	282,516	--	282,516	930,700	182,820	1,113,520
1964.....	263,281	--	263,281	761,000	199,028	960,028
1965.....	860,766	--	860,766	2,597,650	244,732	2,842,382
1966.....	686,507	--	686,507	2,097,350	230,664	2,328,014
1967.....	28,665	--	28,665	1,358,950	250,939	1,609,889
1968.....	1,533,598	--	1,533,598	4,733,450	299,436	5,032,886
1969.....	2,339,540	--	2,339,540	5,490,400	340,380	5,830,780
1970.....	1,536,000	--	1,536,000	7,106,550	349,553	7,456,103
TOTAL	$8,193,571	$ --	$8,193,571	$26,534,500	$ 2,458,116	$28,992,616
10- YEAR AVERAGE	$ 819,357	$ --	$ 819,357	$ 2,653,450	$ 245,812	$ 2,899,262

CALENDAR YEAR	LEVEL OF GOVERNMENT					
	COUNTY			LOCAL		
	CONSTRUCTION[a]	OPERATION AND MAINTENANCE[b]	TOTAL	CONSTRUCTION[a]	OPERATION AND MAINTENANCE[b]	TOTAL
1961.....	$ 265,807	$ 179,191	$ 444,998	$ 460,321	$ 998,064	$ 1,458,385
1962.....	253,948	210,435	464,383	516,072	847,972	1,364,044
1963.....	91,953	156,479	248,432	263,956	979,915	1,243,871
1964.....	108,881	171,365	280,246	268,539	965,843	1,234,382
1965.....	22,234	250,814	273,048	206,000	1,120,553	1,326,553
1966.....	300,922	255,434	556,356	261,445	1,219,400	1,480,845
1967.....	311,711	307,628	619,339	255,096	1,382,282	1,637,378
1968.....	134,773	219,311	354,084	399,766	1,541,193	1,940,959
1969.....	48,901	267,307	316,208	661,130	1,251,108	1,912,238
1970.....	111,399	397,271	508,670	451,028	1,430,186	1,881,214
TOTAL	$1,650,529	$2,415,235	$4,065,764	$ 3,743,353	$11,736,516	$15,479,869
10 - YEAR AVERAGE	$ 165,053	$ 241,523	$ 406,576	$ 374,335	$ 1,173,651	$ 1,547,986

[a] CONSTRUCTION INCLUDES SUCH ITEMS AS EXPENDITURES FOR ENGINEERING COSTS, RIGHT-OF-WAY ACQUISITION, CURB AND GUTTER, SIDEWALKS, STORM SEWERS, INTEREST ON BOND PROCEEDS USED FOR CONSTRUCTION PURPOSES, AND OUTLAYS FOR ROADS AND STREETS AND BRIDGES AND CULVERTS.

[b] THE OPERATION AND MAINTENANCE CATEGORY INCLUDES SUCH ITEMS AS EXPENDITURES FOR ROAD AND STREET EXPENSE, BRIDGE AND CULVERT EXPENSE, STREET CLEANING, OILING, AND SPRINKLING, SNOW AND ICE REMOVAL, STREET MACHINERY, GENERAL ADMINISTRATION, SIGNS AND GUIDE BOARDS, AND TRAFFIC CONTROL AND REGULATION DEVICES.

SOURCE- WISCONSIN DEPARTMENT OF ADMINISTRATION, WISCONSIN DEPARTMENT OF TRANSPORTATION, AND SEWRPC.

Table 29

RELATIONSHIP BETWEEN JURISDICTIONAL HIGHWAY CLASSIFICATION AND AID FORMULAE FOR CONSTRUCTION AND MAINTENANCE IN WALWORTH COUNTY: 1971

JURISDICTIONAL CLASSIFICATION	NUMBER OF MILES (1971)	PERCENT OF TOTAL MILES	PARTICIPATION IN CONSTRUCTION COSTS	PARTICIPATION IN MAINTENANCE COSTS
STATE TRUNK HIGHWAYS..... (EXCLUDES CONNECTING STREETS)	176.81	13.70	FREEWAYS AND RURAL HIGHWAYS - 100 PERCENT STATE URBAN HIGHWAYS - 85 PERCENT STATE AND 15 PERCENT CITY OR VILLAGE	100 PERCENT STATE UNDER CONTRACT WITH THE COUNTY, COUNTY IS REIMBURSED ON BASIS OF ACTUAL MACHINE RENTAL, LABOR, AND MATERIAL COSTS INCURRED
CONNECTING STREETS..... (PORTIONS OF THE STATE TRUNK SYSTEM IN URBAN MUNICIPALITIES)	13.81	1.07	85 PERCENT STATE, 15 PERCENT CITY OR VILLAGE	STATE AID AT THE RATE OF $500 PER MILE TO THE MAINTAINING MUNICIPALITY, WITH SATISFACTORY DOCUMENTATION OF MAINTENANCE AND BALANCE OF COST BORNE BY MUNICIPALITY
COUNTY TRUNK HIGHWAYS.....	193.70	15.01	RURAL HIGHWAYS - 100 PERCENT COUNTY URBAN HIGHWAYS - 100 PERCENT OF 18 FEET PLUS A SHARE OF ANY ADDITIONAL WIDTH REQUIRED BY THE CITY OR VILLAGE THROUGH WHICH SUCH CONSTRUCTION TAKES PLACE BY COUNTY, WITH REMAINDER BY CITY OR VILLAGE	RURAL HIGHWAYS - STATE AID CONSISTING OF BASIC $65 PER MILE, ANNUAL APPORTIONMENT OF $3,500,000 ON BASIS OF MOTOR VEHICLE REGISTRATIONS AND NONCITY, NONVILLAGE MILEAGE, AND SUPPLEMENTAL AIDS APPORTIONED ON THE BASIS OF AFOREMENTIONED AIDS, WITH COUNTY FUNDS PROVIDING THE BALANCE OF COSTS URBAN HIGHWAYS - STATE AIDS AS NOTED ABOVE, WITH CITY OR VILLAGE MAINTAINING WIDTH IN EXCESS OF THAT WHICH EXISTS ON HIGHWAY OUTSIDE OF CORPORATE LIMITS
LOCAL STREETS AND ROADS.....	914.70	70.22	100 PERCENT MUNICIPAL FUNDS	STATE AID PROVIDED AT VARIABLE RATE BASED ON SIZE AND CLASS OF MUNICIPALITY
TOTAL	1,299.02	100.00	--	--

FEDERAL AID CLASSIFICATION	NUMBER OF MILES (1971)	PERCENT OF TOTAL MILES	PARTICIPATION IN CONSTRUCTION COSTS	PARTICIPATION IN MAINTENANCE COSTS[a]
INTERSTATE..... (PRESENTLY NO ROUTES EXISTING OR PLANNED WITHIN WALWORTH COUNTY)	--	--	90 PERCENT FEDERAL, 10 PERCENT STATE	100 PERCENT NONFEDERAL
PRIMARY SYSTEM..... (INCLUDES 67 PERCENT OF STATE TRUNK HIGHWAY MILEAGE IN WALWORTH COUNTY)	128.38	9.95	50 PERCENT FEDERAL, 50 PERCENT NONFEDERAL[b]	100 PERCENT NONFEDERAL
SECONDARY SYSTEM..... (INCLUDES 33 PERCENT OF THE STATE TRUNK HIGHWAY MILEAGE, 77 PERCENT OF THE COUNTY TRUNK HIGHWAY MILEAGE, AND 2 PERCENT OF THE LOCAL STREET AND ROAD MILEAGE)	225.09	17.44	50 PERCENT FEDERAL, 50 PERCENT NONFEDERAL[b]	100 PERCENT NONFEDERAL
TOPICS..... (AT THE PRESENT TIME NO CITY OR VILLAGE WITHIN WALWORTH COUNTY IS PARTICIPATING IN THE TOPICS PROGRAM)	--	--	50 PERCENT FEDERAL, 50 PERCENT CITY OR VILLAGE	100 PERCENT NONFEDERAL
TOTAL	353.47	27.39	--	--

[a] FEDERAL AIDS ARE NOT AVAILABLE FOR MAINTENANCE PURPOSES. PARTICIPATION IN MAINTENANCE FOR ROUTES ON THE FEDERAL AID SYSTEMS IS BASED ON THE JURISDICTIONAL CLASSIFICATION OF THOSE ROUTES.

[b] PARTICIPATION IN CONSTRUCTION COSTS IS BASED ON THE JURISDICTIONAL CLASSIFICATION OF THE ROUTE, WITH THE FEDERAL SHARE BEING APPLIED TO THE PARTICIPATION OF THE UNIT OF GOVERNMENT UNDER WHOSE JURISDICTION THE FACILITY LIES.

SOURCE- WISCONSIN DEPARTMENT OF TRANSPORTATION AND SEWRPC.

PLAN RECOMMENDATIONS AFFECTING HIGHWAY FINANCING

Analysis of the existing highway aid policies and formulae indicates that two major revisions in these policies and formulae would be desirable in order to meet certain basic objectives of the jurisdictional highway planning effort, namely abolition of the connecting street concept and establishment of uniform construction aid formulae and policies. These revisions would affect any financial analysis of a jurisdictional highway system plan and, therefore, are considered here.

Proposed Abolition of Connecting Streets

If each of the jurisdictional highway systems is to function as an integrated subsystem, then the responsibility for the operation and maintenance of each of the individual facilities comprising the subsystem, as well as the design and construction of these facilities, must ultimately rest with the level and agency of government having the greatest basic interest in these facilities. It was, therefore, considered essential that the state and county trunk highway systems each be made continuous throughout the county and its incorporated municipalities. The attainment of this subsystem continuity and the attendant unification of operation and maintenance, as well as design and construction responsibilities, dictated the need for abandoning the connecting street concept. In addition to introducing undesirable discontinuities into the state trunk highway system and thereby violating the principles of sound system management, the connecting street concept creates inequities in the distribution of maintenance costs. These inequities result in a shift from the state to the local units of government of nearly the full burden of maintaining facilities designed to serve heavy volumes of fast, through traffic.

The concept of a connecting street dates back to 1917, when a special committee of the State Legislature was appointed by the Governor to establish a state trunk highway system. At this time, the law required "the system to be laid out exclusive of any street and road in a municipality having a population of 2,500 or more by the last federal census, except that portion of any such street or highway along which the houses averaged more than 200 feet apart." Through this provision, the state trunk highway system was made continuous through cities and villages with a population of less than 2,500 but not through cities and villages having a population greater than 2,500, extending into such cities and villages only to the point where residential structures existed at an average spacing of less than 200 feet. Thus these arterial streets, while being marked and signed as routes for state trunk highways and carrying heavy volumes of primarily through traffic, are not a part of the state trunk highway system within the more densely populated portions of such cities in Walworth County as Delavan, Lake Geneva, Whitewater, and Elkhorn.

Those streets which form the connections between state trunk highways through cities and villages are entitled to receive certain allotments from the net motor vehicles. These allotments were originally intended as a reimbursement to cities and villages for the expenses incurred in maintaining the connecting streets. In 1929, the amount of the allotment for the maintenance of connecting streets was established by the State Legislature at $500 per mile for any portion of a connecting street on the original 1921 federal aid primary system, $400 per mile for any portion of a connecting street on the original 1921 federal aid secondary system, and $300 per mile for all other connecting streets. In 1943, the Legislature established the present allotment rate of $500 per mile for all connecting streets regardless of classification. While the cost of maintaining connecting streets within Walworth County has increased on an average to more than six times the $500 allotment over the past 25 years, the maintenance allotment rate per mile has remained the same. Thus, a major portion of the burden of maintaining facilities of areawide importance has been shifted to the local units of government.

All of the four cities within Walworth County have connecting street mileage. Of the 11 cities and villages, 10 have state trunk highway mileage, with the Village of Sharon having no such mileage. Table 4 indicates the present distribution of state trunk highway and connecting street mileage within Walworth County by municipality. State trunk highways within Walworth County are maintained by the county under a maintenance contract with the state, and all maintenance costs actually incurred are reimbursed by the state. All connecting streets within Walworth County are maintained by the local municipality, and as already noted, an allotment of $500 per mile is paid to the municipality by the state upon submittal of proper evidence of maintenance expenditures.

In the previous chapter, the establishment within Walworth County of a Type I arterial highway system totaling 217 route-miles is recommended. Of this total, approximately 66 miles would consist of freeways and the remaining 151 miles of standard arterials. It is proposed that all Type I arterials which are also freeways be classified as state trunk highways, and therefore be maintained by Walworth County for the Wisconsin Department of Transportation, Division of Highways. The remaining proposed Type I arterials should be constructed and maintained so that adequate capacity, desirable operating conditions, and responsible control of access are provided and preserved on a regionwide or statewide basis. Toward this end and in order to ensure a continuous, uniformly desirable cross section and operating conditions along all Type I arterials, it is recommended that the ultimate responsibility for the maintenance and operation of the Type I arterials rest with the Wisconsin Department of Transportation, Division of Highways. All operations or actions that will have a long-term effect on the traffic capacity and level of service should be encompassed within this responsibility.

It is, therefore, recommended that the state trunk highway system be made continuous through all incorporated areas within the county and that the connecting street concept be abandoned. Under this proposal the State Highway Commission would continue to contract with the county for maintenance of Type I facilities, with the added option of contracting directly with the cities and villages concerned for Type I nonfreeway facility maintenance. It is further recommended that the state reimburse the county, city, or village on a contractual basis for the cost of the following "eligible" maintenance items on the Type I highway facilities:

1. Physical maintenance of the roadway pavement surfaces and structures, including crack sealing, patching, resurfacing, and curb and gutter repair.

2. Physical maintenance of storm sewers located within the highway right-of-way, including cleaning.

3. Snow plowing and ice control between curbs, including removal of snow at bus stops, intersections, and at other locations as required to maintain traffic service.

4. Physical maintenance of traffic control devices, including signs, signals, safety lights, and pavement markings. The cost of maintaining safety lighting shall be determined by a proration of costs based upon the proration of fixtures installed for traffic service at intersections of two Type I facilities or at intersections of Type I and Type II facilities to the total fixtures along the Type I route.

5. Physical maintenance of existing trees located within the highway right-of-way, and mowing grass on medians.

The state would not participate in the maintenance of sidewalks or driveways, the care of new trees planted under permit, the care of ornamental flowers and shrubs, nor in the maintenance of sprinkler systems or attendant water service.

It is also recommended that the state assume or continue direct administration of the following operational control devices on Type I highway facilities:

1. Issuance of driveway permits.

2. Control of advertising signs.

3. Maintenance of route signs.

4. Establishment of speed zoning.

5. Issuance of special permits.

6. Prohibition of parking, as required, to provide necessary traffic capacity.

7. Installation of traffic control signals.

The state may, at its option, delegate the administration of these operational controls to the local municipalities concerned. Such delegation would normally parallel contracting for maintenance service.

Implementation of these recommendations would not only provide for a more equitable distribution of the burden of maintaining arterial facilities of areawide importance, but would also place the operational control of these facilities in the level and agency of government that has the greatest interest in, and the resources available for, these

facilities. In all cases, the decision to delegate operational and maintenance responsibilities and authority on the Type I arterial system should rest with the State Highway Commission.

Because of the close parallel which exists between the function of the Type I and Type II arterial systems, it is recommended that county trunk highways also be made continuous through all incorporated areas. The county would continue to maintain the Type II facilities, with the option of contracting with the cities and villages concerned for such maintenance on a full-cost reimbursement basis. Eligible maintenance items and operational control devices would be identical to those set forth above for the Type I arterials, with the decision to delegate responsibilities and authority on the Type II arterial system resting with the County Highway Committee.

Proposed Revision of Construction Aid Formulae and Policies

Analysis of the existing aid policies and formulae also revealed certain inconsistencies and inequities in the financing of state and county trunk highway construction projects. As noted previously, these inconsistencies and inequities relate to the definition of construction items eligible for federal and state aids and, in effect, serve to create varying local cost participation rates for identical facility-type construction projects. It is, therefore, considered desirable to modify existing construction aid policies in order to obtain a uniform and more equitable cost-sharing between the various levels and units of government concerned.

Recognizing that urban municipalities, due to the character of urban land use development, generally realize certain nontransportation-related benefits from the construction or reconstruction of Type I or Type II highway facilities located within their boundaries, and recognizing that a greater proportion of the travel on such urban facilities will be of an intracommunity nature than in rural areas, it is considered equitable to require the cities and villages to participate in the cost of both state and county trunk highway improvements. Conversely, because rural municipalities, due to the character of rural land use development, generally do not realize the same nontransportation-related benefits from Type I and Type II highway facilities located within their boundaries, and because a greater proportion of the travel on such rural facilities is of an intercommunity nature, it is not considered necessarily equitable to require such communities to participate in the cost of state aid county trunk highway improvements.

It is further considered desirable, in the interest of equity and sound management practices, to establish the local participation rate within the cities and villages of Walworth County at the same fixed percentage level for both state trunk nonfreeway and county trunk facility construction and to determine eligible work items on a uniform basis throughout the county. These modifications would not only result in a more equitable distribution of construction costs, but would also serve to simplify programming, scheduling, and financing of improvements, and would assist city and village units of government in budgeting for major highway improvements.

Thus, after careful consideration of alternatives, it is recommended that a uniform policy of construction aid be adopted for both the Type I and Type II highway facilities within cities and villages. This policy should provide for a fixed city or village contribution of 15 percent of the cost of all state and county trunk highway construction projects, with the cost of the construction project being determined on the basis of the following participating work items:

1. Right-of-way acquisition.
2. Grading.
3. Construction of pavement base and surface, curb and gutter, retaining walls, and culverts and bridges.
4. Construction of inlets for surface water drainage, together with connection to storm sewer mains.
5. Construction of storm sewer mains necessary for pavement and right-of-way drainage.
6. Engineering services.

Furthermore, it is recommended that the cost of construction of the Type I and Type II highway facilities in unincorporated areas be borne entirely by the state and county, respectively.

These recommendations are based, however, on the assumption that all state and county trunk

highways in cities and villages will be constructed or improved utilizing urban cross sections, while all such highways in towns will be constructed or improved utilizing rural cross sections. Any departure from this assumption will require an adjustment in the recommended policy concerning local contribution, that is, cities and villages would not be required to contribute to the cost of the construction of state and county trunk highways having rural cross sections within their corporate limits. Conversely, the construction of state and county trunk highways having urban cross sections within a town would require that the town contribute 15 percent of the participating cost of the improvement.

FINANCIAL ANALYSIS AND FEASIBILITY

Financial Analysis

Having determined that two basic changes in highway aid policies and formulae were necessary to achieve the basic objectives of the jurisdictional highway planning effort, a detailed financial analysis of the recommended jurisdictional highway system plan was made based upon the assumption that these changes would be effected. The analysis included consideration of the effects of the proposed plan on highway aids and allotments to the municipalities comprising Walworth County, as well as consideration of the costs of plan implementation and the total revenues which may be expected to become available over the plan implementation period.

The Wisconsin Statutes provide for the payment of certain basic aids and allotments to counties and municipalities for street and highway purposes. These are apportioned on the basis of formulae, involving the type of incorporated area, population, jurisdictional and total street and highway mileage, and motor vehicle registration. The proposed realignment of the jurisdictional highway systems in Walworth County will affect the mileage of state trunk and county trunk facilities within each municipality in Walworth County, and will consequently result in changes in the basic aids and allotments for street and highway purposes paid to each municipality and to the county itself.

The effect of the proposed realignment of the jurisdictional highway systems within Walworth County on highway aids and allotments is summarized in Table 30. This table indicates the recommended change in jurisdictional highway mileage within each municipality within the county, the corresponding changes in basic aids and allotments, and the changes resulting from the proposed abandonment of the connecting street concept. It should be noted that the table provides comparative data for the existing 1971 situation and for the existing street and highway system as the implementation of the jurisdictional highway system plan would have affected the distribution of state aids in 1971. The table also shows comparative figures for the final (1990) stage in the implementation of the recommended jurisdictional highway system plan, and includes estimates of the probable effects of anticipated increases in local street mileage resulting from new land use development within the county and of anticipated increases in motor vehicle registrations.

Table 30 indicates that, as a result of the recommended jurisdictional realignment for 1973 as the initial step toward the 1975 stage of the plan, a reduction in the local street aids and allotments paid to units of government in Walworth County of approximately $31,200 per year could be expected. This reduction in aids and allotments is due to a 3.93-mile reduction in city and village street mileage, the result of recommended 3.43-mile and 0.50-mile increases in the county and state trunk highway system mileages, respectively, within those cities and villages; a decrease of 22.21 miles of town roads, the result of recommended 16.17-mile and 6.04-mile increases in the county and state trunk highway system mileages, respectively, within the towns; and a recommended 13.81-mile increase in the state trunk highway system mileage with a concomitant reduction of the amount of money available for supplemental aids and allotments due to the statewide effect of abolishing the connecting street concept and the corresponding increase in state maintenance costs. The proposed abolition of the connecting street system would result in the elimination of the connecting street allotment of $500 per mile, or a further reduction of aids and allotments paid to the municipalities in Walworth County of approximately $6,900 per year. The proposed jurisdictional realignment would thus result in a total decrease in state aids paid to municipalities of about $38,100 per year.

It should be noted, however, that the transfer of arterial mileage from the local trunk highway system to the county and state trunk highway systems, while reducing the amount of local street aids and allotments to local units of government, also reduces the financial responsibilities of the

Table 30

HIGHWAY AND HIGHWAY-RELATED AIDS AND ALLOTMENTS RETURNED TO MUNICIPALITIES IN WALWORTH COUNTY 1971, 1973, and 1990

CURRENT JURISDICTIONAL HIGHWAY SYSTEM- 1971

CIVIL DIVISION	NUMBER OF MILES					LOCAL STREET AIDS AND ALLOTMENTS	PRIVILEGE HIGHWAY TAX	CONNECTING STREET ALLOTMENTS	STATE TRUNK HIGHWAY MAINTENANCE
	STATE TRUNK		CONNECTING STREET	COUNTY TRUNK	LOCAL STREET				
	FREEWAY	NON-FREEWAY							
CITIES									
DELAVAN	--	0.75	3.26	--	20.51	$ 38,142	$ 13,281	$1,630	$ --
ELKHORN	0.74	1.63	2.80	1.72	18.45	34,312	14,898	1,400	--
LAKE GENEVA	--	1.15	3.75	1.87	22.52	41,509	14,123	1,875	--
WHITEWATER	--	1.68	4.00	0.25	27.49	50,622	15,628	2,000	--
SUBTOTAL	0.74	5.21	13.81	3.84	88.97	164,585	57,930	6,905	--
VILLAGES									
DARIEN	--	2.20	--	--	3.83	$ 6,874	$ 2,799	$ --	$ --
EAST TROY	--	2.77	--	0.26	7.48	13,424	5,160	--	--
FONTANA	--	1.12	--	0.37	14.23	25,539	3,624	--	--
GENOA CITY	--	--	--	2.62	4.60	8,256	4,051	--	--
SHARON	--	--	--	2.25	6.16	11,055	2,612	--	--
WALWORTH	--	2.30	--	0.16	6.93	12,437	4,515	--	--
WILLIAMS BAY	--	1.48	--	--	12.96	23,259	4,180	--	--
SUBTOTAL	--	9.87	--	5.66	56.19	100,844	26,941	--	--
TOWNS									
BLOOMFIELD	7.63	1.07	--	18.17	77.50	$ 28,407	$ 5,842	$ --	$ --
DARIEN	--	16.87	--	10.99	38.58	14,142	3,887	--	--
DELAVAN	--	11.06	--	10.08	47.48	17,403	8,534	--	--
EAST TROY	--	14.65	--	6.91	48.11	17,634	5,540	--	--
GENEVA	6.74	7.62	--	13.35	67.52	24,749	6,347	--	--
LAFAYETTE	1.53	12.00	--	4.43	36.15	13,251	3,631	--	--
LA GRANGE	--	12.36	--	9.75	55.10	20,197	3,147	--	--
LINN	--	5.79	--	11.78	54.45	19,958	4,807	--	--
LYONS	2.57	14.11	--	2.02	48.68	17,843	5,622	--	--
RICHMOND	--	6.45	--	13.97	46.20	16,935	3,269	--	--
SHARON	--	2.72	--	19.54	41.20	15,101	2,647	--	--
SPRING PRAIRIE	--	6.28	--	17.30	33.15	12,151	3,367	--	--
SUGAR CREEK	--	3.49	--	21.68	50.53	18,521	5,592	--	--
TROY	--	10.09	--	11.32	33.62	12,323	2,978	--	--
WALWORTH	--	7.82	--	6.91	40.11	14,702	3,544	--	--
WHITEWATER	--	10.14	--	6.00	42.55	15,597	2,865	--	--
SUBTOTAL	18.47	142.52	--	184.20	760.93	278,914	71,619	--	--
WALWORTH COUNTY	--	--	--	--	--	$ 287,758	$ --	$ --	$380,936
TOTAL	19.21	157.60	13.81	193.70	906.09	$ 832,101	$156,490	$6,905	$380,936

INITIAL JURISDICTIONAL REALIGNMENT- 1973

CIVIL DIVISION	NUMBER OF MILES					LOCAL STREET AIDS AND ALLOTMENTS	PRIVILEGE HIGHWAY TAX	CONNECTING STREET ALLOTMENTS	STATE TRUNK HIGHWAY MAINTENANCE
	STATE TRUNK		CONNECTING STREET	COUNTY TRUNK	LOCAL STREET				
	FREEWAY	NON-FREEWAY							
CITIES									
DELAVAN	--	4.01	--	1.55	18.96	$ 34,199	$ 13,281	$ --	$ 15,650
ELKHORN	0.74	4.21	--	2.13	18.26	32,936	14,898	--	12,380
LAKE GENEVA	--	4.90	--	1.87	22.32	40,260	14,123	--	18,000
WHITEWATER	--	5.68	--	1.67	26.07	46,729	15,628	--	19,200
SUBTOTAL	0.74	18.80	--	7.22	85.61	154,124	57,930	--	65,230
VILLAGES									
DARIEN	--	2.20	--	0.00	3.83	$ 6,659	$ 2,799	$ --	$ --
EAST TROY	--	3.49	--	0.31	6.71	11,666	5,160	--	--
FONTANA	--	1.12	--	0.37	14.23	24,741	3,624	--	--
GENOA CITY	--	0.00	--	2.62	4.60	7,998	4,051	--	--
SHARON	--	0.00	--	2.25	6.16	10,710	2,612	--	--
WALWORTH	--	2.30	--	0.16	6.93	12,049	4,515	--	--
WILLIAMS BAY	--	1.48	--	0.00	12.96	22,532	4,180	--	--
SUBTOTAL	--	10.59	--	5.71	55.42	96,355	26,941	--	--
TOWNS									
BLOOMFIELD	7.63	1.07	--	24.62	71.05	$ 25,386	$ 5,842	$ --	$ --
DARIEN	--	16.87	--	7.96	41.61	14,867	3,887	--	--
DELAVAN	--	11.06	--	11.23	46.33	16,554	8,534	--	--
EAST TROY	4.30	12.60	--	10.38	46.69	16,682	5,540	--	--
GENEVA	6.74	7.55	--	16.15	64.79	23,149	6,347	--	--
LAFAYETTE	1.53	12.00	--	4.43	36.15	12,916	3,631	--	--
LA GRANGE	--	12.36	--	9.29	55.56	19,852	3,147	--	--
LINN	--	5.83	--	11.49	54.70	19,544	4,807	--	--
LYONS	2.57	16.13	--	5.09	43.59	15,575	5,622	--	--
RICHMOND	--	6.45	--	11.57	48.60	17,365	3,269	--	--
SHARON	--	2.72	--	19.47	41.27	14,746	2,647	--	--
SPRING PRAIRIE	--	12.38	--	11.70	32.65	11,666	3,367	--	--
SUGAR CREEK	--	3.49	--	18.28	53.93	19,269	5,592	--	--
TROY	--	10.09	--	12.43	32.51	11,616	2,978	--	--
WALWORTH	--	7.82	--	10.65	36.37	12,995	3,544	--	--
WHITEWATER	--	10.14	--	15.63	32.92	11,762	2,865	--	--
SUBTOTAL	22.77	148.50	--	200.37	738.72	263,944	71,619	--	--
WALWORTH COUNTY	--	--	--	--	--	$ 286,496	$ --	$ --	$380,936
TOTAL	23.51	177.95	--	213.30	879.75	$ 800,919	$156,490	$ --	$446,166

Table 30 (continued)

RECOMMENDED JURISDICTIONAL HIGHWAY SYSTEM- 1990

CIVIL DIVISION	NUMBER OF MILES					LOCAL STREET AIDS AND ALLOTMENTS	PRIVILEGE HIGHWAY TAX	CONNECTING STREET ALLOTMENTS	STATE TRUNK HIGHWAY MAINTENANCE
	STATE TRUNK		CONNECTING STREET	COUNTY TRUNK	LOCAL STREET				
	FREEWAY	NON-FREEWAY							
CITIES									
DELAVAN	--	2.62	--	3.09	24.85	$ 73,822	$ 24,720	$ --	$ 12,226
ELKHORN	2.38	3.28	--	2.98	27.87	82,799	22,344	--	14,679
LAKE GENEVA	--	3.78	--	4.23	40.83	121,322	25,364	--	18,535
WHITEWATER	--	5.27	--	0.87	32.66	71,496	18,635	--	23,299
SUBTOTAL	2.38	14.95	--	11.17	126.21	349,439	91,063	--	68,739
VILLAGES									
DARIEN	--	1.12	--	1.08	6.83	$ 19,661	$ 7,611	$ --	$ --
EAST TROY	--	2.05	--	1.75	10.11	29,103	9,712	--	--
FONTANA	--	1.25	--	0.37	17.20	49,513	7,447	--	--
GENOA CITY	--	--	--	2.62	5.70	16,408	4,992	--	--
SHARON	--	--	--	2.25	8.66	24,929	6,956	--	--
WALWORTH	--	2.30	--	--	12.63	36,357	10,885	--	--
WILLIAMS BAY	--	3.02	--	0.16	23.36	67,245	10,421	--	--
SUBTOTAL	--	9.74	--	8.23	84.49	243,216	58,024	--	--
TOWNS									
BLOOMFIELD	7.93	1.60	--	30.03	71.84	$ 40,542	$ 6,499	$ --	$ --
DARIEN	6.60	12.03	--	12.65	41.72	23,544	2,367	--	--
DELAVAN	6.70	6.87	--	14.99	48.23	27,218	8,124	--	--
EAST TROY	7.40	6.80	--	15.77	47.62	26,874	6,081	--	--
GENEVA	6.74	5.53	--	18.70	61.10	34,481	5,524	--	--
LAFAYETTE	8.53	6.95	--	14.97	33.38	18,838	2,321	--	--
LA GRANGE	3.20	12.36	--	9.29	56.07	31,642	3,249	--	--
LINN	--	5.50	--	12.49	53.86	30,395	5,617	--	--
LYONS	2.57	19.88	--	5.58	48.59	27,421	4,456	--	--
RICHMOND	--	6.45	--	11.40	49.58	27,980	3,017	--	--
SHARON	--	1.56	--	20.63	41.59	23,471	2,321	--	--
SPRING PRAIRIE	--	13.60	--	11.51	33.73	19,035	2,785	--	--
SUGAR CREEK	5.80	3.49	--	17.94	59.43	33,539	5,570	--	--
TROY	0.50	7.05	--	15.47	32.74	18,476	2,785	--	--
WALWORTH	--	7.19	--	10.65	35.78	20,192	2,321	--	--
WHITEWATER	7.40	9.73	--	16.54	39.44	22,258	4,990	--	--
SUBTOTAL	63.37	126.59	--	238.61	754.70	425,906	68,027	--	--
WALWORTH COUNTY	--	--	--	--	--	$ 488,019	$ --	$ --	$569,351
TOTAL	65.75	151.28	--	258.01	965.40	$1,506,580	$217,114	$ --	$638,090

[a]*Beginning in 1972 that allotment known as the privilege highway tax no longer will be returned directly to the city, village, or town in which the vehicle for which licensing fees are paid is garaged, but rather will be co-mingled in the municipal and county shared tax account with other shared taxes for distribution as a shared revenue essentially on a per capita basis. It is estimated in 1973 that the net effect of this change in the method of distributing the privilege highway tax will result in a slight reduction--about 6 percent--in the amount of aid from this source received by Walworth County and its constituent local units of government. This reduction is due to the fact that the distribution of population throughout the state is not identical to the distribution of motor vehicles. By 1990 it is estimated that this change in the method of distributing the privilege highway tax will result in a net loss of about 8.5 percent to the county and its communities. In addition, these funds will be co-mingled with other revenue sharing funds and will not, therefore, be specifically identified as the local government share of the privilege highway tax. The effect of this change in the method of distributing the privilege highway tax should not substantially affect the financial analyses relating to the Walworth County jurisdictional highway system plan presented in this chapter. The amounts shown for the privilege highway tax in this table are based upon the old method of distributing this tax, and can be expected to vary slightly as the new method is implemented.*

SOURCE- WISCONSIN DEPARTMENT OF TRANSPORTATION AND SEWRPC.

local units of government for the planning, design, construction, operation, and maintenance of the transferred arterial facilities.

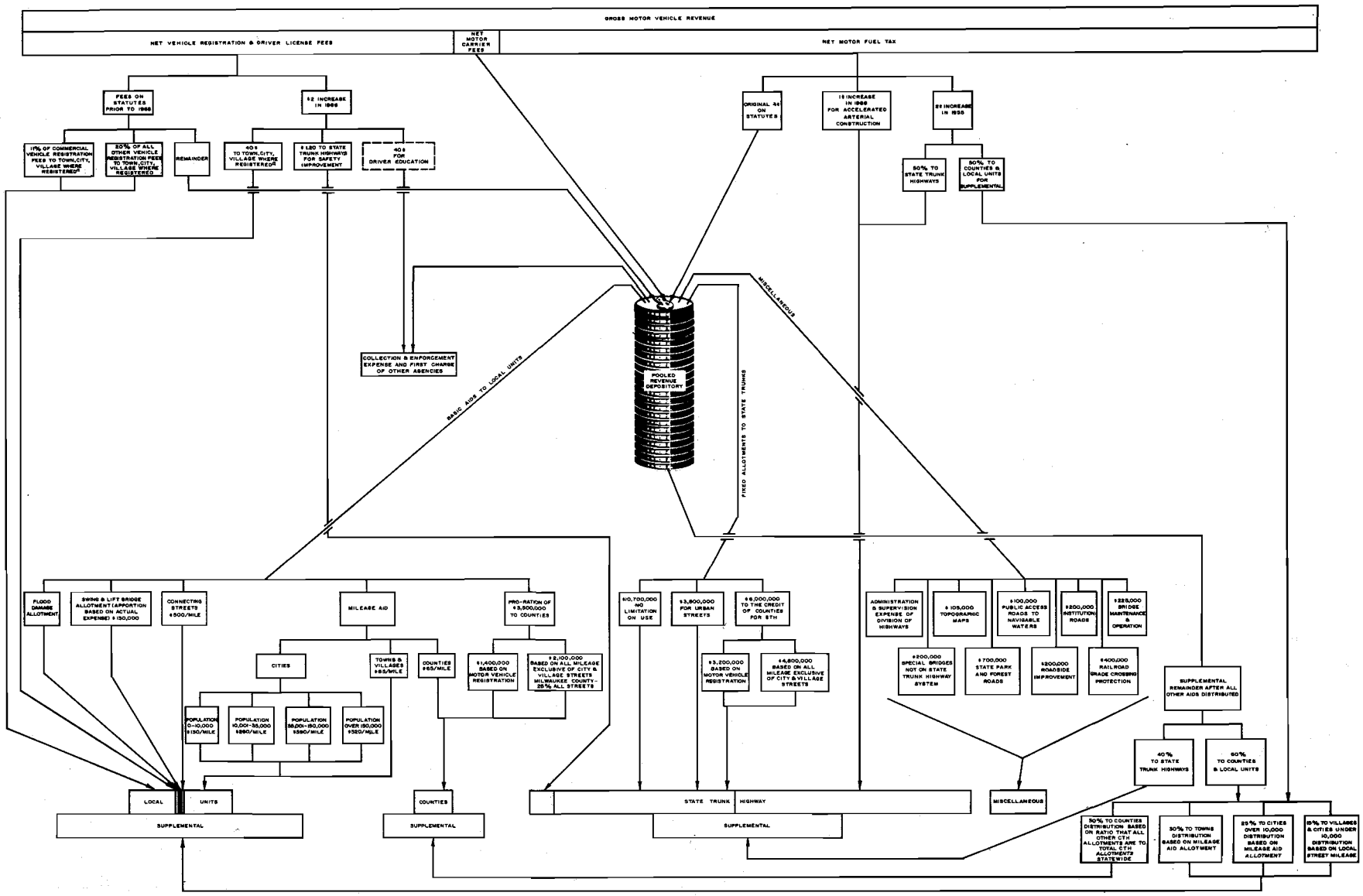
The abandonment of the connecting street concept and the establishment of a continuous state trunk highway system through incorporated areas, however, would allow the state to reimburse the maintaining agencies for the actual costs incurred in the maintenance of state trunk highways. Table 30 indicates that the increase in maintenance aids which may be expected to accrue to municipalities in Walworth County as a result would be approximately $65,200 per year. Thus, implementation of the recommended jurisdictional highway system plan could be expected to result in a net increase of highway aids and allotments paid to municipalities within Walworth County of approximately $27,100 per year for the year 1973.

It was recognized that policy change affecting the status of the connecting streets would have to be administratively feasible on a statewide basis. In order for the state to reimburse the maintaining agencies for actual maintenance costs on all state trunk highways, sufficient monies for this purpose would have to be withheld prior to the allotment of supplemental aids. Figure 9 provides a graphic summary of the distribution of total motor vehicle revenues in Wisconsin as provided by the state statutes. It is evident from this diagram that, with the exception of a portion of the supplemental motor fuel tax,[10] the supplemental aids are appor-

[10]*Section 20.420 of the Wisconsin Statutes provides that 50 percent of the net receipts of the two-cent-a-gallon supplementary motor fuel tax enacted in 1955 be apportioned to local units of government as a part of the supplemental aids.*

Figure 9

DISTRIBUTION OF TOTAL MOTOR VEHICLE REVENUE IN WISCONSIN: 1970



[a] *Beginning in 1972, those portions of the motor vehicle registration fees historically returned to local units of government known as "privilege highway taxes" will be placed in the municipal and county shared tax account for distribution essentially on a per capita basis pursuant to formulas set forth in Chapter 79 of the Wisconsin Statutes.*

Source: Wisconsin Department of Transportation.

tioned after all other disbursements from the total highway fund have been made. Thus, the portion of the supplemental aids affected by changes in the connecting street concept actually consist of the remainder of highway revenues after all other statutory disbursements have been made and, as such, are shown as disbursements from the bottom of the pooled revenue depository. It is further evident from the diagram that, as changes in other statutory disbursements are made, the resulting remainder available for distribution will change. The effect of such changes on the aids and allotments available to municipalities in Walworth County may be expected to result in a reduction of $21,800 per year in local street aids and allotments. Because this process of redistribution provides for the withholding of sufficient funds to reimburse actual maintenance costs accrued on all state trunk highways, however, the net effect of the plan recommendations on Walworth County would be to increase aids by $27,100 per year, as previously stated.

It should be noted that the forecast of aids and allotments returned to municipalities, as shown in Table 30, for 1990 are based upon forecast 1990 city and village corporate limits and a conservative estimate of expected increases in motor fuel taxes collected due to increased travel within the state.

Financial Feasibility

The financial feasibility of the recommended jurisdictional highway system plan was evaluated by comparing estimated plan implementation costs with anticipated highway revenues. The evaluation was based upon three assumptions: that the preceding recommendations concerning the abandonment of the connecting street concept will be adopted and implemented, that the preceding recommendations concerning the adoption of uniform construction aid formulae and policies will be adopted and implemented, and that the recommendations concerning the realignment of the federal aid systems set forth in Chapter VI of this report will be adopted and implemented.

Estimates of the cost of constructing and maintaining the total street and highway system within Walworth County through the plan design year of 1990 were prepared by applying unit improvement and maintenance costs to the existing and proposed arterial, collector, and local (land access) street mileage. These cost estimates were then compared with a forecast of highway revenues which could reasonably be expected to be received over the plan implementation period. The revenue forecasts were based upon an extrapolation of historic highway expenditures within Walworth County. Because the historic record of highway expenditures at the local level did not permit accurate separation of the costs attendant to the construction and maintenance of arterial facilities from those attendant to nonarterial facilities, construction and maintenance costs for nonarterial facilities were estimated and included in the total plan implementation cost.

Estimated Cost of Arterial System: As described in Chapter VI of this report, the jurisdictional highway system plan set forth in this report recommends a typical cross section for each link in the total arterial street and highway system. Representative unit construction and maintenance costs were prepared for each typical cross section used, as shown in Appendix B of this report. The jurisdictional highway system plan, by incorporation of these recommended typical cross sections, reflects estimated arterial highway needs through the plan design year of 1990. The total cost of plan implementation could thus be calculated by totaling, from the coded network maps, the route mileage of each typical cross section included in the plan, multiplying this mileage by the unit construction and maintenance costs attendant to the typical cross sections, as shown on the jurisdictional highway system plan map.

The unit cost data for each typical cross section were developed from analyses of actual cost data provided by the District Office of the Division of Highways, and reflect recent experience in areas of development similar to Walworth County. It should be noted that these unit costs, in 1970 dollars, range from 15 percent to 35 percent less than comparable unit costs adjusted to 1970 dollars for construction and maintenance of comparable cross sections in Milwaukee County, as shown in Appendix A of SEWRPC Planning Report No. 11, A Jurisdictional Highway System Plan for Milwaukee County. The principal reasons for these lower unit costs in Walworth County are lower traffic volumes resulting in lower maintenance costs, and lower right-of-way acquisition, utility relocation, labor, and material costs encountered in the construction of new facilities or in the improvement of existing facilities. It should be further noted that the cost of resurfacing the minimum two-lane rural cross section (see Appendix B) has been adjusted to include minor

reconstruction for spot improvement of horizontal and vertical alignment and of intersections.

The resulting total arterial plan implementation costs are summarized by jurisdictional subsystem in Table 31. The plan implementation costs are expressed in terms of 1970 unit prices and total approximately $112 million for the entire arterial system, including approximately $93 million for construction and $19 million for maintenance costs. The breakdown of these costs by level of government is shown in Table 32. Appreciating these costs at a rate of 4 percent per year to 1990 in order to allow for rising land, labor, and material costs results in a total estimated arterial plan implementation cost of $167 million, including construction costs of $138 million and maintenance costs of $29 million.

Table 31

PLAN IMPLEMENTATION COSTS FOR THE WALWORTH COUNTY JURISDICTIONAL HIGHWAY SYSTEM PLAN BY JURISDICTIONAL SUBSYSTEM 1970-1990

JURISDICTIONAL SUBSYSTEM	PLAN IMPLEMENTATION COSTS		
	CONSTRUCTION	MAINTENANCE	TOTAL
ARTERIAL			
TYPE I (STATE TRUNK).....	$ 74,142,000	$11,841,700	$ 85,983,700
TYPE II (COUNTY TRUNK)...	14,890,900	7,086,500	21,977,400
TYPE III (LOCAL TRUNK)...	3,598,400	466,100	4,064,500
SUBTOTAL.....	92,631,300	19,394,300	112,025,600
NONARTERIAL.....	$ 12,910,400	$21,441,200	$ 34,351,600
TOTAL STREET AND HIGHWAY SYSTEM	$105,541,700	$40,835,500	$146,377,200

SOURCE- SEWRPC.

Table 32

PLAN IMPLEMENTATION COSTS FOR THE WALWORTH COUNTY JURISDICTIONAL HIGHWAY SYSTEM PLAN BY LEVEL OF GOVERNMENT 1970-1990

LEVEL OF GOVERNMENT	PLAN IMPLEMENTATION COSTS		
	CONSTRUCTION	MAINTENANCE	TOTAL
ARTERIAL SYSTEM			
STATE			
TYPE I (STATE TRUNK).....	$ 72,870,400	$11,841,700	$ 84,712,100
TYPE II (COUNTY TRUNK)...	1,195,000	--	1,195,000
SUBTOTAL.....	74,065,400	11,841,700	85,907,100
COUNTY			
TYPE II (COUNTY TRUNK)...	$ 13,058,000	$ 7,086,500	$ 20,144,500
CITY			
TYPE I (STATE TRUNK).....	$ 739,200	$ --	$ 739,200
TYPE II (COUNTY TRUNK)...	473,800	--	473,800
TYPE III (LOCAL TRUNK)...	2,895,400	448,000	3,343,400
SUBTOTAL.....	4,108,400	448,000	4,556,400
VILLAGE			
TYPE I (STATE TRUNK).....	$ 532,400	$ --	$ 532,400
TYPE II (COUNTY TRUNK)...	164,100	--	164,100
TYPE III (LOCAL TRUNK)...	703,000	18,100	721,100
SUBTOTAL.....	1,399,500	18,100	1,417,600
TOTAL	$ 92,631,300	$19,394,300	$112,025,600
NONARTERIAL SYSTEM			
CITY.....	$ 2,683,600	$ 5,639,400	$ 8,323,000
VILLAGE.....	1,769,700	3,809,600	5,579,300
TOWN.....	8,457,100	11,992,200	20,449,300
TOTAL	$ 12,910,400	$21,441,200	$ 34,351,600
TOTAL STREET AND HIGHWAY SYSTEM	$105,541,700	$40,835,500	$146,377,200

SOURCE- SEWRPC.

Estimated Cost of Nonarterial System: Construction and maintenance needs for nonarterial streets and highways and collector and local (land access) streets over the plan implementation period were also estimated, utilizing unit construction and maintenance cost data developed from information provided by local units of government. These unit cost data were expressed separately for the urban (cities and villages) and rural (towns) areas of the county, as shown in the typical cross sections for urban and rural nonarterials in Appendix B. The mileage of new facilities was calculated by applying the appropriate factors representing the portion of land normally devoted to collector[11] and local[12] streets under good land subdivision practice to the total land area to be converted from rural to urban use within each municipality in Walworth County over the plan design period. Since there is relatively no difference between collector and local street cross sections in rural areas, the same unit costs were utilized for the aggregate of all rural nonarterial mileage. Although different collector and local street cross sections are used within the various cities and villages in Walworth County, these differences were not considered significant, and the same unit costs were utilized for the aggregate of all urban nonarterial mileage.

[11] *Collector streets were assumed to occupy 2.3 percent of high-density and 1.5 percent of medium- and low-density, fully developed urban areas, and have a recommended right-of-way width of 80 feet. Accordingly, a factor of 1.5 miles per square mile was applied to anticipated new high-density development, and 1.0 mile per square mile to anticipated new medium- and low-density development to obtain corresponding collector street mileage.*

[12] *Local (land access) streets were assumed to occupy 17.8 percent of high-density, 17.0 percent of medium-density, and 14.2 percent of low-density, fully developed urban areas, and have a recommended right-of-way width of 60 feet. Accordingly, factors of 15.7 miles per square mile, 15.0 miles per square mile, and 12.5 miles per square mile were applied to anticipated new high-, medium-, and low-density development, respectively, to obtain corresponding local (land access) street mileage.*

The construction cost estimates for nonarterial streets within cities and villages were based on the following assumptions: all new nonarterial facilities would be constructed at the cost of the developer, approximately 10 percent of all existing nonarterial facilities would require reconstruction, approximately 40 percent of the existing nonarterial mileage would require resurfacing, and the remaining 50 percent would require maintenance only during the planning period.

The assumptions upon which estimates of construction costs for nonarterial streets and highways within the towns were based are as follows: all new nonarterial facilities would be constructed at the cost of the developer, approximately 10 percent of all existing nonarterial facilities would require reconstruction, approximately 40 percent of all existing nonarterial facilities would require resurfacing, and 50 percent would require only maintenance during the planning period.

The estimated construction and maintenance costs for new and existing nonarterial facilities through the plan design year of 1990 are summarized in Table 31. Expressed in terms of 1970 prices, costs total approximately $34 million, of which $13 million is for construction and $21 million is for maintenance. The breakdown of these costs by level of government is shown in Table 32. Appreciating these costs to the year 1990 at a rate of 4 percent per year to allow for rising land, labor, and material costs results in a total estimated nonarterial improvement implementation cost of $50 million, including construction costs of $19 million and maintenance costs of $31 million.

Thus, the total cost of full plan implementation over the 20-year plan implementation period extending from 1970 to 1990 was estimated at $146 million based on 1970 prices, of which $105 million was for construction and $41 million for maintenance. The corresponding inflated total implementation cost is $217 million, of which approximately $157 million is for construction and $60 million for maintenance.

Estimated Revenues: Anticipated revenues available for highway purposes within Walworth County over the plan implementation period were estimated from an analysis of the rate of expenditure for highway and highway-related purposes within Walworth County from 1961 through 1970. A summary of the 10-year expenditures for highway construction and maintenance within Walworth County was presented in Table 28 of this report. An estimate of anticipated revenues was prepared by projecting the current rate of expenditure, as developed for local sources on a per capita basis, over the plan implementation period. Assuming that no new revenue sources would become available for highway purposes, it was estimated that $148[13] million could be expected to become available for highway purposes over the plan implementation period. Since the total costs of implementing the street and highway plan were estimated to be $146 million, it was concluded that implementation of the recommended jurisdictional highway system plan was financially feasible.

It should be noted, however, that with the recommended transfer of local trunk arterial street and highway system mileage to the county and state trunk highway systems, thereby reducing the local responsibility for highway facility design, construction, operation, and maintenance, a concomitant adjustment of highway revenue distribution will be required.

It should also be noted that neither appreciated plan implementation costs nor appreciated revenues were used in the comparison; a valid procedure, since any inflation of implementation costs may be expected to be offset by a corresponding inflation in revenues. The amount of monies available for highway expenditures may be expected to increase, not only because

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[13] *It should be noted that the portion of estimated revenues for the 20-year plan implementation period which are comprised of state aids were based on the motor vehicle distribution formulae in effect as of January 1, 1971, and as such include an estimate of the privilege highway tax which could be anticipated to be returned to municipalities within Walworth County. Subsequent to the financial analyses for this study, the Wisconsin Legislature enacted Chapter 125 of the Wisconsin Laws of 1971 which directs that the privilege highway tax no longer be allotted directly to the unit of government from which the motor vehicle registration and licensing fees were derived, but rather be placed in the county and municipal shared tax account for distribution essentially on a per capita basis. The estimated net effect of this change to Walworth County, based on the method for the distribution of shared revenues (Chapter 79, Wisconsin Statutes) would be a reduction of about $300,000, or about 0.2 percent of the total anticipated revenues, over the 20-year plan implementation period, totaling about $15,000 per year.*

of the effects of inflation but also because of increasing motor vehicle registrations and motor vehicle utilization.

SUMMARY

This chapter has explored the financial feasibility of the recommended jurisdictional highway plan for Walworth County. This exploration has required a description of the existing highway aid structure and the two major revisions in this structure being recommended in order to meet the basic objectives of the jurisdictional highway planning effort; namely, the abandonment of the connecting street concept and the adoption of uniform construction aid formulae and policies for state and county trunk highways. The analysis indicated that the recommended plan is financially feasible without new sources of highway revenues for the county as a whole.

Total plan implementation costs, including construction and maintenance of collector and minor land access as well as arterial facilities, was estimated at $146 million over the 20-year plan implementation period. Anticipated revenues for highway purposes over this same period were estimated at $148[14] million, leaving $2 million for other street and highway purposes such as mass transit system development, highway landscaping and beautification programs, safety improvement programs, automated and computerized traffic operation, communication and control systems, lighting, parking, and administrative costs, none of which are included in the plan implementation cost estimates.

It should be further noted in this respect that it is extremely difficult to forecast revenues which may become available for highway purposes over the 20-year plan implementation period. This difficulty is due not only to the length of the forecast period involved and the unpredictable changes which may occur during this period in such important factors affecting highway revenues as the general level of economic activity, a shifting of priorities in the expenditures of public funds to such items as housing and mass transit, and major changes in the structure of highway aid formulae which will come about upon expiration of the massive interstate highway construction program; but also the changing of corporate limits and concomitant changes of responsibilities for those existing town roads which would fall within the new city or village corporate limits. Because of these difficulties, the historic trend of expenditures for highway purposes within Walworth County had to be used to forecast future revenues. On this basis, the historic participation at the federal level in construction aids for secondary and primary federal aid routes was incorporated in the forecasts.

It should be noted that while the financial analysis of the plan is feasible for the county as a whole, some disparity in the distribution of resources may exist initially between the county and local levels of government relating to the transfer of local trunk facilities to the county trunk system, and relating primarily to the nonarterial streets and highways within the municipality and the level of service required by its populace.

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[14] *Ibid.*

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Chapter VIII

PLAN IMPLEMENTATION

INTRODUCTION

Implementation of the recommended jurisdictional highway system plan described in the preceding chapters of this report would provide Walworth County with integrated state, county, and local trunk highway systems able to effectively meet existing and anticipated future travel demands at an adequate level of service. It would, in addition, assist in achieving a more efficient design, construction, maintenance, and operation of the total arterial street and highway system; a more equitable distribution of highway improvement and maintenance costs; and the intergovernmental coordination necessary to the efficient and effective provision of highway transportation facilities and services within Walworth County.

In a practical sense, the recommended plan is not complete until the steps required for its implementation are specified. This chapter, therefore, is presented as a guide for use in the implementation of the recommended jurisdictional highway system plan. Basically, it outlines the actions which must be taken by the various levels and agencies of government concerned if the recommended jurisdictional highway system plan is to be fully carried out. Those units and agencies of government which have plan adoption and plan implementation powers applicable to the recommended plan are identified, necessary formal plan adoption actions are specified, and specific implementation actions are recommended with respect to development of the jurisdictional subsystems comprising the total arterial street and highway system within Walworth County.

The plan implementation recommendations are, to the maximum extent possible, based upon and related to existing governmental programs and predicated upon existing state enabling legislation. Certain changes in the state enabling legislation, however, are recommended as deemed necessary to implement fully the recommended plan. Because of the ever-present possibility of unforeseen changes in economic conditions, state and federal enabling legislation, and governmental and fiscal policies, it is not possible to declare once and for all time exactly how a process as complex as highway plan implementation should be administered and financed. It will, therefore, be necessary to update periodically not only the recommended jurisdictional highway system plan itself but the recommendations contained herein for implementation of this plan.

BASIC PRINCIPLES AND CONCEPTS

It is important to recognize that plan implementation measures must grow out of adopted plans. Thus, action policies and programs must be preceded by plan adoption and should emphasize the most important and essential elements of the plan and those areas of action which will have the greatest impact on achieving the objectives expressed in the plan. With respect to the recommended jurisdictional highway system plan, primary attention in plan implementation should accordingly be focused upon coordinated development of the Type I (state trunk) highway and Type II (county trunk) highway networks. These two arterial subsystems together provide the basic framework for the provision of essential highway transportation services within Walworth County, not only satisfying almost 90 percent of the total traffic demand within the county but also providing the highest level of highway transportation service and accommodating the longest trips. Plan implementation, therefore, should focus primarily on these two subsystems, particularly with respect to the attainment of the recommended location, capacity, and timing of improvements, leaving implementation of the Type III (local trunk) system to the local units of government. This is not to be interpreted, however, to mean that improvement of the Type III (local trunk) facilities need not be fully coordinated with development of the Type I (state trunk) and Type II (county trunk) highway systems, but only that primary attention in plan implementation should be focused on facilities of areawide importance—the state and county trunk highways—leaving greater flexibility for the improvement of facilities of primarily local importance.

PLAN IMPLEMENTATION ORGANIZATIONS

Full implementation of the recommended jurisdictional highway system plan will be dependent upon coordinated action by 30 agencies of government: the U. S. Department of Transportation, Federal Highway Administration; the Wisconsin Department of Transportation; the Walworth County Board; and the governing bodies of the 27 cities, villages, and towns located within Walworth County. Substantial implementation of the recommended plan, however, in the form of integrated state and county trunk highway system development, will involve only three agencies of government: the U. S. Department of Transportation, Federal Highway Administration; the Wisconsin Department of Transportation; and the Walworth County Board. A brief discussion of the duties and functions of these three agencies as they relate to the jurisdictional highway system plan implementation follows. Although the three agencies are for convenience discussed separately, the interdependence between the various levels of government represented and the need for close interagency cooperation cannot be overemphasized.

U. S. Department of Transportation, Federal Highway Administration

The U. S. Department of Transportation, Federal Highway Administration, administers all federal highway aid programs, working through the Wisconsin Department of Transportation, Division of Highways. The Federal Highway Administration must approve all changes in the federal aid systems and will, in this respect, have an important role in implementation of the recommended jurisdictional highway system plan for Walworth County.

Wisconsin Department of Transportation

The Highway Commission of the Wisconsin Department of Transportation, Division of Highways, is broadly empowered to provide the state with a highway transportation system. The State Highway Commission is charged with responsibility for administering all state and federal aids for highway improvements; for the planning, design, construction, and maintenance of all state trunk highways; and for planning, laying out, revising, constructing, reconstructing, and maintaining the national system of interstate and defense highways, the federal aid primary system, the federal aid secondary system, and federal aid urban system, and the TOPICS systems, the latter five functions all being subject to federal review and regulation.

The State Highway Commission is also responsible for reviewing county trunk highway routes in order to assure that these routes form an integrated system of county trunk highways between adjoining counties. The State Highway Commission is authorized to enter into cooperative agreements with the governing bodies of any county, city, village, or town, or with the federal government, respecting the financing, planning, establishment, improvement, maintenance, use, regulation, or vacation of highways within their respective jurisdiction.

Specifically, three sections of the Wisconsin Statutes, when considered together, provide the basis for what might be considered a master plan for the state trunk highway system. One of these sections directs the preparation of county maps showing the official layout of the state trunk highway system. The second permits marked and traveled locations to differ from the official locations and thereby allows the official layout maps to function in some instances as plans. Indeed, it appears that these official layout maps were originally regarded as master plans for the state trunk highway system. Special legislative committees, whose function was to periodically study and revise the entire state trunk highway system, apparently functioned in 1917, 1919, 1923, and for the last time in 1934, and their work is reflected on the official layout maps. Since 1934 all consideration of changes in the system has been on a piecemeal, ad hoc basis by the State Highway Commission, acting pursuant to the provisions of Chapter 84 of the Wisconsin Statutes, or by the State Legislature itself, as provided by Chapter 518, Laws of 1947; Chapter 475, Laws of 1949; Chapter 75, Laws of 1953; Chapters 369 and 371, Laws of 1955; Chapters 596, 597, and 598, Laws of 1961; and Chapter 348, Laws of 1967.

The third permits the State Highway Commission to establish locations and right-of-way widths for future freeways or expressways and to protect the rights-of-way for these facilities from development. It is also apparent that the various federal aid systems in and of themselves constitute long-range plans insofar as they tend to coordinate the expenditure of federal highway aid monies.

The planning and programming procedure developed by the State Highway Commission within this legislative framework determines when and where the various improvement projects will be accomplished on the existing state trunk highway system

and establishes standards for such determination. The procedure provides an orderly and effective device whereby the many complex and highly interrelated tasks involved in the final accomplishment of modern highway improvement projects—tasks such as route location, including necessary mapping and preliminary engineering; implementation of legal changes in the state trunk highway routes, including necessary public hearings, detailed design and final engineering, acquisition of right-of-way, preparation of construction plans, specifications, and cost estimates, and letting of contracts; and actual construction, including layout, inspection, and final surveys—can be carried out and, as such, the procedure constitutes an effective current planning program.

The State Highway Commission is also empowered to review and regulate subdivision plats along state trunk highways outside the corporate limits of the City of Milwaukee and, as previously noted, is empowered to prepare official maps of future freeway and expressway routes. The Wisconsin Division of Highways, through its administration of federal and state highway aids to local units of government and through its highway design and engineering functions, exerts a powerful influence on street and highway system planning and development within Wisconsin and is probably the single most important agency to highway system plan implementation.

Walworth County Board

At the county level of government within Wisconsin, county highway committees, operating under the aegis of the county boards, are made responsible for the administration and expenditure of all county funds for highway construction and maintenance and are empowered to establish and change the county trunk highway system, subject to the approval of the State Highway Commission; to cooperate with the State Highway Commission in the selection of a system of federal aid secondary roads; and to acquire land for county highway purposes by purchase or condemnation.

PLAN ADOPTION

Adoption or endorsement of the recommended jurisdictional highway system plan by the three major plan implementation agencies is essential, not only to assure a common understanding between the several governmental agencies and to enable their staffs to program the necessary implementation work, but also to meet certain statutory requirements. In addition to adoption or endorsement of the jurisdictional highway system plan by the implementing agencies, plan adoption by the Southeastern Wisconsin Regional Planning Commission, in accordance with Section 66.945(10) of the Wisconsin Statutes, will be essential in order to continue to qualify the implementing agencies for federal grants in partial support of highway improvement projects within Walworth County.

It is extremely important to understand that adoption or endorsement of the recommended jurisdictional highway system plan by any unit or agency of government pertains only to the statutory duties and functions of the adopting or endorsing agency, and such adoption or endorsement does not and cannot in any way preempt action by another unit or agency of government within its jurisdiction. Thus, adoption or endorsement of the jurisdictional highway system plan by the state and county would make the plan applicable as a guide to state and county highway system development and not to local trunk highway system development. To make the plan applicable as a guide to local highway system development would require its adoption by the municipalities concerned.

The following specific plan adoption actions are hereby recommended:

1. That the Walworth County Board, upon recommendation of the Walworth County Highway Committee, formally adopt the recommended jurisdictional highway system plan as a guide to future highway facility development within Walworth County, as authorized by Section 66.945(12) of the Wisconsin Statutes.

2. That upon approval of the recommended jurisdictional highway system plan by the Walworth County Board, the State Highway Commission formally act to endorse and integrate the recommended jurisdictional highway system plan, including the recommendations for the staged construction thereof, into the state long-range highway system plans, as authorized by Sections 84.01, 84.02, 84.025, 84.29, and 84.295 of the Wisconsin Statutes, as a guide to highway system development within Walworth County.

3. That the U. S. Department of Transportation, Federal Highway Administration, through the Wisconsin Division of Highways, formally acknowledge the recommended jurisdictional highway system plan as a guide to the review of requests for realignment of the various federal aid systems and to the administration and granting of federal aids for highway improvement within Walworth County.

4. That the Southeastern Wisconsin Regional Planning Commission, in accordance with Sections 66.945(9) and (10) of the Wisconsin Statutes, act to formally adopt the recommended jurisdictional highway system plan as an integral part of the master plan for the Region, constituting an amendment to the regional transportation plan adopted by the Commission on December 1, 1966.

To supplement the aforementioned recommended federal, state, regional, and county actions, it is suggested that the four city common councils, seven village boards, and 16 towns within Walworth County act to adopt the recommended jurisdictional highway system plan, as authorized by Section 66.945(12) of the Wisconsin Statutes, as a guide to highway system development within their area of jurisdiction. A model resolution for adoption of the Walworth County jurisdictional highway system plan is set forth in Appendix C. It is also suggested that the respective local planning agencies by resolution adopt and integrate the recommended jurisdictional highway system plan, as this plan affects their area of jurisdiction, into the local master plans, pursuant to Section 62.23(3)(b) of the Wisconsin Statutes, and certify such adoption to their local governing body.

Subsequent Adjustment of the Plan

No long-range plan can be permanent in all of its aspects or precise in all of its elements. Amendments to the recommended jurisdictional highway system plan will be forthcoming, not only from the work of the Southeastern Wisconsin Regional Planning Commission under its continuing areawide transportation planning responsibilities, but also from the state, county, and local agencies as these agencies adjust and refine the plan during implementation and as new highway improvement programs are created or existing programs expanded or curtailed. Any such adjustment, however, will require on a continuing basis the same close cooperation between the local, areawide, state, and federal agencies concerned as has been evidenced in the preparation of the jurisdictional highway system plan itself. To achieve this necessary coordination between local, state, and federal programs and thereby assure the timely adjustment of the recommended plan, it is recommended that the Technical Coordinating and Advisory Committee on Jurisdictional Highway Planning for Walworth County, created for the jurisdictional highway planning study, be retained, and that all agencies having highway planning and plan implementation powers advise and transmit from time to time any subsequent proposed changes in the plan to the Committee for review and possible integration into an amended jurisdictional highway system plan. In order to achieve full intergovernmental coordination in highway system development within Walworth County, it is further recommended that the Committee annually review and comment on highway construction project priorities and other major plan implementation actions as proposed by the various implementing agencies.

PLAN IMPLEMENTATION

Implementation of the recommended jurisdictional highway system plan may be considered under four distinct but interrelated areas of action by the three major implementing agencies concerned: 1) realignment of state and county jurisdictional responsibilities, 2) realignment of the federal aid systems, 3) realignment of state and county operational responsibilities, and 4) right-of-way reservation and acquisition and facility construction. Major implementation efforts of a system-wide nature will be necessary in the first three areas to bring the existing jurisdictional systems, federal aid routes, and operational responsibilities into alignment with the 1975 staging of the recommended plan. Subsequent actions in these three areas can be on an individual route basis, as developing events dictate, to reach the 1990 staging of the recommended plan. All implementation efforts in the fourth area can be part of the normal construction programming efforts of two of the major implementing agencies.

Realignment of Jurisdictional Responsibilities

In Wisconsin, realignment of the state trunk highway system is made a joint state-county function, pursuant to Sections 84.02(3) and 84.025(3) of the Wisconsin Statutes. It is accordingly recommended that, upon adoption of the recommended

jurisdictional highway system plan by the Walworth County Board and endorsement by the State Highway Commission, the State Highway Commission act in cooperation with the Walworth County Board to effect the realignment of the state trunk highway system within Walworth County.

It is recommended that the initial action include all of the specific additions to, and deletions from, the state trunk highway system set forth in Table 33, in order to achieve the first (1975) stage of plan implementation. Subsequent actions should effect the specific additions to, and deletions from, the state trunk highway system set forth in Table 34 by the design year (1990) of the recommended plan. It is recommended that all of the initial changes in the state trunk highway system be effected by one inclusive action of the State Highway Commission of Wisconsin supported by the Walworth County Board. Such action may require public hearing prior to action, as specified by Sections 84.02(3) and 84.025(3) of the Wisconsin Statutes. Subsequent realignments can be effected on a route-by-route basis, as dictated by developing circumstances.

In Wisconsin, realignment of the county trunk highway system, like realignment of the state trunk highway system, is made a joint state-county function pursuant to Section 83.025 of the Wisconsin Statutes. It is accordingly recommended that, upon adoption of the recommended jurisdictional highway system plan by the Walworth County Board and endorsement by the State Highway Commission, the Walworth County Board act in cooperation with the Highway Commission to effect the realignment of the county trunk highway system within Walworth County.

It is recommended that the initial action include all of the specific additions to, and deletions from, the county trunk highway system set forth in Table 35, in order to achieve the first (1975) stage of plan implementation. Subsequent actions should effect the specific additions to, and deletions from, the county trunk highway system set forth in Table 36 by the design year (1990) of the recommended plan. It is recommended that all of the initial changes in the county trunk highway system be effected by one inclusive action of the Walworth County Board supported by the State Highway Commission. Subsequent realignments can be effected on a route-by-route basis, as dictated by developing circumstances.

In order to achieve the desired continuity of the state and county trunk highway systems through incorporated municipalities, it is recommended that the Walworth County Board support the enactment of legislation presently before the State Legislature which would amend Section 84.02(11) of the Wisconsin Statutes to abolish the connecting street concept, and Section 83.025(1) to prohibit

Table 33

ADDITIONS AND DELETIONS TO RECOMMENDED TYPE I (STATE TRUNK) ARTERIAL HIGHWAY SYSTEM IN WALWORTH COUNTY: 1975

ADDITIONS TO STATE TRUNK HIGHWAY SYSTEM		
ROUTE	LIMITS	NUMBER OF MILES
STH 15 (ROCK FREEWAY).....	WAUKESHA COUNTY LINE TO USH 12 FREEWAY	14.90
CTH G.....	STH 15 TO STH 36	10.09
LINCOLN STREET.....	WEST GENEVA STREET TO STH 15	0.95
WALWORTH AVENUE.....	WISCONSIN STREET TO LINCOLN STREET	0.12
NORTH DIVISION STREET....	STH 15 TO STH 20	0.46
DELETIONS FROM STATE TRUNK HIGHWAY SYSTEM		
ROUTE	LIMITS	NUMBER OF MILES
STH 15.....	WAUKESHA COUNTY LINE TO WALWORTH AVENUE	15.27
STH 67 (GENEVA STREET)...	LINCOLN STREET TO WISCONSIN STREET	0.12
STH 67 (WISCONSIN STREET)	GENEVA STREET TO WALWORTH AVENUE	0.11
STH 67 (WISCONSIN STREET)	NORTH CORPORATE LIMITS TO COURT STREET	0.86

SOURCE- SEWRPC.

Table 34

ADDITIONS AND DELETIONS TO RECOMMENDED TYPE I (STATE TRUNK) ARTERIAL HIGHWAY SYSTEM IN WALWORTH COUNTY: 1975-1990

ADDITIONS TO STATE TRUNK HIGHWAY SYSTEM		
ROUTE	LIMITS	NUMBER OF MILES
STH 15 (ROCK FREEWAY)....	USH 12 FREEWAY TO ROCK COUNTY LINE	14.94
USH 12 FREEWAY.....	WALWORTH STREET TO ILLINOIS STATE LINE	0.30
FREMONT STREET.....	MAIN STREET TO JEFFERSON COUNTY LINE	0.55
SOUTH FREMONT STREET.....	WHITEWATER STREET TO MAIN STREET	0.15
WHITEWATER STREET.....	JANESVILLE STREET TO SOUTH FREMONT STREET	0.38
USH 12 FREEWAY.....	STH 67 TO ROCK COUNTY LINE	16.40
NORTH CHURCH STREET AND GROVE ALLEY.....	STH 15 TO STH 20	0.46
DELETIONS FROM STATE TRUNK HIGHWAY SYSTEM		
ROUTE	LIMITS	NUMBER OF MILES
STH 59 (NEWCOMB STREET)..	JEFFERSON COUNTY LINE TO MAIN STREET	0.64
STH 83.....	WAUKESHA COUNTY LINE TO RACINE COUNTY LINE	0.41
STH 24.....	RACINE COUNTY LINE TO STH 20	4.87
STH 15.....	WISCONSIN STREET TO 7TH STREET	5.73
STH 15.....	WALWORTH-RACINE STREET TO ROCK COUNTY LINE	7.38
STH 36.....	GENEVA-LYONS TOWN LINE TO STH 50	1.54
STH 120.....	CTH BB TO MAIN STREET	2.70
STH 11.....	LINCOLN STREET TO 7TH STREET	--
STH 59 (MAIN STREET).....	NEWCOMB STREET TO WISCONSIN STREET	0.50
NORTH DIVISION STREET....	STH 15 TO STH 20	0.46

SOURCE- SEWRPC.

Table 35

ADDITIONS AND DELETIONS TO RECOMMENDED TYPE II (COUNTY TRUNK) ARTERIAL HIGHWAY SYSTEM IN WALWORTH COUNTY: 1975

ADDITIONS TO COUNTY TRUNK HIGHWAY SYSTEM		
ROUTE	LIMITS	NUMBER OF MILES
TOWN LINE ROAD	STH 15 TO CTH O	4.46
NORTH WALWORTH ROAD	CTH O TO STH 67	3.50
WILLOW ROAD	CTH BB TO STH 120	1.27
TWIN LAKES ROAD	CTH H TO CTH U	0.76
NORTH BLOOMFIELD ROAD	CTH H TO HAFS ROAD	3.41
HAFS ROAD	NORTH BLOOMFIELD ROAD TO KENOSHA COUNTY LINE	1.72
SOUTH ROAD	NORTH BLOOMFIELD ROAD TO STH 36	5.61
PALMER ROAD	STH 67 TO CTH H	2.80
TOWN HALL ROAD	STH 50 TO STH 67	2.06
TOWN LINE ROAD	CTH J TO STH 15	2.97
ANDERSON ROAD	STH 89 TO CLOVER VALLEY ROAD	0.81
CLOVER VALLEY ROAD	ANDERSON ROAD TO KETTLE MORAINE DRIVE	2.81
KETTLE MORAINE DRIVE	CLOVER VALLEY ROAD TO CTH H	5.14
WILLIS RAY ROAD	STH 89 TO CTH P	2.26
HOWARD ROAD	JEFFERSON COUNTY LINE TO STH 12	0.76
WARNER ROAD	CTH S TO JEFFERSON COUNTY LINE	0.50
TRATT STREET	JEFFERSON COUNTY LINE TO MAIN STREET	0.59
STH 15	WAUKESHA COUNTY LINE TO STH 67	14.31
HONEY CREEK ROAD	CTH D TO RACINE COUNTY LINE	0.50
BOWERS ROAD	CTH D TO CONNECTION WITH STH 15 (ROCK FREEWAY)	0.38
CHURCH STREET	NORTH LIMITS STREET TO 3RD AVENUE	0.20
3RD AVENUE	CHURCH STREET TO LINCOLN STREET	0.22
FOUNDRY ROAD	STH 15 TO USH 14	1.38
RICHMOND ROAD	CTH P TO WALWORTH-RACINE STREET	0.55
BRIGGS ROAD	STH 11 TO HAZEL RIDGE ROAD	1.53
HAZEL RIDGE ROAD	BRIGGS ROAD TO GRANVILLE ROAD	0.30
GRANVILLE ROAD	HAZEL RIDGE ROAD TO SUGAR CREEK ROAD	1.25
SUGAR CREEK ROAD	GRANVILLE ROAD TO COBBIE ROAD	0.30
COBBIE ROAD	SUGAR CREEK ROAD TO CTH H	0.68
2ND STREET	DELAVAN SOUTH CORPORATE LIMITS TO WALWORTH-RACINE STREET	1.00
WALWORTH STREET	CTH S TO JANESVILLE STREET	0.73

DELETIONS FROM COUNTY TRUNK HIGHWAY SYSTEM		
ROUTE	LIMITS	NUMBER OF MILES
CTH U	HAFS ROAD TO STH 50	1.50
CTH C	USH 14 TO ROCK COUNTY LINE	2.94
CTH M	CTH P TO STH 89	2.20
CTH M	USH 14 TO TOWN LINE ROAD	0.71
CTH O	DELAVAN NORTH CORPORATE LIMIT TO STH 12	12.01
CTH G	STH 36 TO STH 15	10.09
CTH BB	WILLOW CREEK ROAD TO STH 120	1.56
CTH B	ROCK COUNTY LINE TO CTH C	2.60
CTH N	STH 20 TO STH 15	0.96

SOURCE- SEWRPC.

Table 36

ADDITIONS AND DELETIONS TO RECOMMENDED TYPE II (COUNTY TRUNK) ARTERIAL HIGHWAY SYSTEM IN WALWORTH COUNTY: 1975-1990

ADDITIONS TO COUNTY TRUNK HIGHWAY SYSTEM		
ROUTE	LIMITS	NUMBER OF MILES
STH 24	RACINE COUNTY LINE TO STH 20	4.87
STH 15	LINCOLN STREET TO 7TH STREET	5.73
STH 15	WALWORTH-RACINE STREET TO ROCK COUNTY LINE	7.38
USH 12	WHITEWATER WEST CORPORATE LIMITS TO ROCK COUNTY LINE	0.98
STH 36	GENEVA-LYONS TOWN LINE TO STH 50	1.54
HOSPITAL ROAD	CTH NN TO POTTERS ROAD	0.94
HODUNK ROAD	POTTERS ROAD TO CTH D	2.56
WILLOW ROAD	STH 20 TO WEST SIDE ROAD	1.00
KRUEGER ROAD	STH 36 TO CTH NN	1.45
STH 11	LINCOLN STREET TO 7TH STREET	--
LAKE GENEVA ROAD	CTH H TO CLOVER ROAD	1.20
MARINETTE ROAD	CLOVER ROAD TO CTH U	2.20
STH 15	CHURCH STREET TO DIVISION STREET	0.04
DIVISION STREET	NORTH MAIN STREET TO SOUTH MAIN STREET	0.02

DELETIONS FROM COUNTY TRUNK HIGHWAY SYSTEM		
ROUTE	LIMITS	NUMBER OF MILES
CTH S	ROCK COUNTY LINE TO JANESVILLE STREET	1.76
CHURCH STREET	NORTH LIMITS STREET TO 3RD AVENUE	0.20
3RD AVENUE	CHURCH STREET TO LINCOLN STREET	0.22

SOURCE- SEWRPC.

the governing body of any city or village from unilaterally removing a street or highway from the county trunk system. It is further recommended that the State Highway Commission sponsor amendments to Section 349.13 of the Wisconsin Statutes to explicitly empower the State Highway Commission to limit or prohibit the stopping, standing, or parking of vehicles on any part of the state trunk highway system.

Aid System Adjustment

Upon realignment of the state and county trunk highway systems and pursuant to the foregoing recommendations, it will be necessary to adjust the federal aid system as established under Title 23, U. S. Code, Section 103, to the resulting state and county trunk highway systems. In Wisconsin the State Highway Commission is, pursuant to Section 84.01(17) of the Wisconsin Statutes, charged with the responsibility for laying out and revising the national system of interstate and defense highways and the federal aid primary system subject to federal review and approval. The State Highway Commission and the county board, acting through its highway committee, are charged with the joint responsibility of laying out and revising the federal aid secondary system, also subject to federal review and approval, pursuant to Section 83.026 of the Wisconsin Statutes.

It is accordingly recommended that, upon realignment of the state and county trunk highway systems, the State Highway Commission act to effect the realignment of the federal aid primary system within Walworth County. It is recommended that the initial action include all of the specific additions to, and deletions from, the federal aid primary system set forth in Table 37 in order to achieve the first stage (1975) of plan implementation. Subsequent actions should effect the specific additions to, and deletions from, the federal aid primary system set forth in Table 38 by the design year (1990) of the recommended plan. It is recommended that all of the initial changes in the federal aid primary system be effected by one inclusive action of the State

Highway Commission supported by the Walworth County Board. Subsequent realignments can be effected on a route-by-route basis as dictated by developing circumstances.

It is further recommended that, upon realignment of the state and county highway systems, the State Highway Commission act in cooperation with the Walworth County Board to effect the realignment of the federal aid secondary system within Walworth County. It is recommended that the initial action include all of the specific additions to, and deletions from, the federal aid secondary system set forth in Table 39 in order to achieve the first stage (1975) of plan implementation. Subsequent actions should effect the specific additions to, and deletions from, the federal aid secondary system set forth in Table 40 by the design year (1990) of the recommended plan. It is recommended that all of the initial changes in the federal aid secondary system be effected by one inclusive action of the State Highway Commission supported by the

Table 37

ADDITIONS AND DELETIONS TO RECOMMENDED FEDERAL AID PRIMARY SYSTEM IN WALWORTH COUNTY: 1975

ADDITIONS TO FEDERAL AID PRIMARY SYSTEM		
ROUTE	LIMITS	NUMBER OF MILES
STH 15 (ROCK FREEWAY).... (FAP 15)	WAUKESHA COUNTY LINE TO USH 12 FREEWAY	14.90
CTH G.....	STH 15 TO STH 36	10.09
NORTH CHURCH STREET.....	STH 15 TO STH 20	0.46
LINCOLN STREET.....	WEST GENEVA STREET TO STH 67	0.95
WALWORTH AVENUE.....	WISCONSIN STREET TO LINCOLN STREET	0.12
STH 67.....	ELKHORN NORTH CORPORATE LIMITS TO WAUKESHA COUNTY LINE	11.09
STH 20.....	RACINE COUNTY LINE TO MAIN STREET	22.91
STH 67.....	STH 50 TO GENEVA STREET	4.86

DELETIONS FROM FEDERAL AID PRIMARY SYSTEM		
ROUTE	LIMITS	NUMBER OF MILES
COURT STREET..... (FAP 14)	LINCOLN STREET TO WISCONSIN STREET	0.12

SOURCE- SEWRPC.

Table 38

ADDITIONS AND DELETIONS TO RECOMMENDED FEDERAL AID PRIMARY SYSTEM IN WALWORTH COUNTY: 1975-1990

ADDITIONS TO FEDERAL AID PRIMARY SYSTEM		
ROUTE	LIMITS	NUMBER OF MILES
USH 12 FREEWAY..... (FAP 4)	WALWORTH STREET TO ILLINOIS STATE LINE	0.30
STH 15 (ROCK FREEWAY)....	USH 12 FREEWAY TO ROCK COUNTY LINE	14.94
USH 12 FREEWAY.....	STH 67 TO ROCK COUNTY LINE	16.40
FREMONT STREET.....	MAIN STREET TO JEFFERSON COUNTY LINE	0.55
SOUTH FREMONT STREET.....	WHITEWATER STREET TO MAIN STREET	0.15
WHITEWATER STREET.....	JANESVILLE STREET TO SOUTH FREMONT STREET	0.38

DELETIONS FROM FEDERAL AID PRIMARY SYSTEM		
ROUTE	LIMITS	NUMBER OF MILES
STH 59 (NEWCOMB STREET)..	JEFFERSON COUNTY LINE TO MAIN STREET	0.64
STH 59 (MAIN STREET).....	NEWCOMB STREET TO WISCONSIN STREET	0.50
STH 15.....	WISCONSIN STREET TO 7TH STREET	5.73
STH 15.....	WALWORTH-RACINE STREET TO ROCK COUNTY LINE	7.38
STH 36.....	GENEVA-LYONS TOWN LINE TO MAIN STREET	1.54
STH 120.....	CTH BB TO MAIN STREET	2.70
STH 11.....	LINCOLN STREET TO 7TH STREET	--

SOURCE- SEWRPC.

Table 39

ADDITIONS AND DELETIONS TO RECOMMENDED FEDERAL AID SECONDARY SYSTEM IN WALWORTH COUNTY: 1975

ADDITIONS TO FEDERAL AID SECONDARY SYSTEM		
ROUTE	LIMITS	NUMBER OF MILES
TOWN LINE ROAD.....	STH 15 TO CTH O	4.46
NORTH WALWORTH ROAD.....	CTH O TO STH 67	3.50
WILLOW ROAD.....	CTH BB TO STH 120	1.27
TWIN LAKES ROAD.....	CTH H TO CTH U	0.76
NORTH BLOOMFIELD ROAD....	CTH H TO HAFS ROAD	3.41
HAFS ROAD.....	NORTH BLOOMFIELD ROAD TO KENOSHA COUNTY LINE	1.72
SOUTH ROAD.....	NORTH BLOOMFIELD ROAD TO STH 36	5.61
PALMER ROAD.....	STH 67 TO CTH H	2.80
TOWN HALL ROAD.....	STH 50 TO STH 67	2.06
TOWN LINE ROAD.....	CTH J TO STH 15	2.97
ANDERSON ROAD.....	STH 89 TO CLOVER VALLEY ROAD	0.81
CLOVER VALLEY ROAD.....	ANDERSON ROAD TO KETTLE MORAINE DRIVE	2.81
KETTLE MORAINE DRIVE.....	CLOVER VALLEY ROAD TO CTH H	5.14
WILLIS RAY ROAD.....	STH 89 TO CTH P	2.26
HOWARD ROAD.....	JEFFERSON COUNTY LINE TO STH 12	0.76
WARNER ROAD.....	CTH S TO JEFFERSON COUNTY LINE	0.50
TRATT STREET.....	JEFFERSON COUNTY LINE TO MAIN STREET	0.59
HONEY CREEK ROAD.....	CTH O TO RACINE COUNTY LINE	0.50
BOWERS ROAD.....	CTH O TO CONNECTION WITH STH 15 (ROCK FREEWAY)	0.38
3RD AVENUE.....	CHURCH STREET TO LINCOLN STREET	0.22
FOUNDRY ROAD.....	STH 15 TO USH 14	1.38
BRIGGS ROAD.....	STH 11 TO HAZEL RIDGE ROAD	1.53
HAZEL RIDGE ROAD.....	BRIGGS ROAD TO GRANVILLE ROAD	0.30
GRANVILLE ROAD.....	HAZEL RIDGE ROAD TO SUGAR CREEK ROAD	1.25
SUGAR CREEK ROAD.....	GRANVILLE ROAD TO COBBIE ROAD	0.30
COBBIE ROAD.....	SUGAR CREEK ROAD TO CTH H	0.68
2ND STREET.....	DELAVAN SOUTH CORPORATE LIMITS TO WALWORTH-RACINE STREET	1.00
CTH K.....	CTH B TO STH 15	7.30
CHURCH STREET.....	NORTH LIMITS STREET TO 3RD AVENUE	0.20

DELETIONS FROM FEDERAL AID SECONDARY SYSTEM		
ROUTE	LIMITS	NUMBER OF MILES
CTH C.....	USH 14 TO ROCK COUNTY LINE	2.94
CTH M.....	USH 14 TO TOWN LINE ROAD	0.71
CTH O.....	DELAVAN NORTH CORPORATE LIMITS TO STH 12	12.01
CTH G.....	STH 36 TO STH 15	10.09
CTH BB.....	WILLOW CREEK ROAD TO STH 120	1.56
CTH B.....	ROCK COUNTY LINE TO CTH C	2.60
ZENDA ROAD.....	CTH BB TO ZENDA ROAD	1.93
STATE LINE ROAD.....	ALDEN ROAD TO USH 14	1.26
NORTH SHORE ROAD.....	CTH O TO STH 50	4.28
CREEK ROAD.....	USH 14 TO ROCK COUNTY LINE	2.06
STH 67.....	ELKHORN NORTH CORPORATE LIMITS TO WAUKESHA COUNTY LINE	11.09
STH 20.....	RACINE COUNTY LINE TO MAIN STREET	22.91
STH 67.....	STH 50 TO GENEVA STREET	4.86

SOURCE- SEWRPC.

Table 40

ADDITIONS AND DELETIONS TO RECOMMENDED FEDERAL AID SECONDARY SYSTEM IN WALWORTH COUNTY: 1975-1990

ADDITIONS TO FEDERAL AID SECONDARY SYSTEM		
ROUTE	LIMITS	NUMBER OF MILES
STH 15	LINCOLN STREET TO 7TH STREET	5.73
STH 15	WALWORTH-RACINE STREET TO ROCK COUNTY LINE	7.38
USH 12	WHITEWATER WEST CORPORATE LIMITS TO ROCK COUNTY LINE	0.98
STH 36	GENEVA-LYONS TOWN LINE TO MAIN STREET	1.54
HOSPITAL ROAD	CTH NN TO POTTERS ROAD	0.94
HODUNK ROAD	POTTERS ROAD TO CTH D	2.56
WILLOW ROAD	STH 20 TO WEST SIDE ROAD	1.00
KRUEGER ROAD	STH 36 TO CTH NN	1.45
STH 11	LINCOLN STREET TO 7TH STREET	--
LAKE GENEVA ROAD	CTH H TO CLOVER ROAD	1.20
MARINETTE ROAD	CLOVER ROAD TO CTH U	2.20

DELETIONS FROM FEDERAL AID SECONDARY SYSTEM		
ROUTE	LIMITS	NUMBER OF MILES
CTH S	ROCK COUNTY LINE TO JANESVILLE STREET	1.76
CHURCH STREET	NORTH LIMITS STREET TO 3RD AVENUE	0.20
3RD AVENUE	CHURCH STREET TO LINCOLN STREET	0.22

SOURCE- SEWRPC.

Walworth County Board. Subsequent realignments can be effected on a route-by-route basis, as dictated by developing circumstances.

It is recommended that the U. S. Department of Transportation, Federal Highway Administration, cooperate in and approve the above-recommended revisions in the federal aid systems.

The realignment of the federal aid systems will be one of the major benefits of the jurisdictional highway planning program in Walworth County. The present designation of federal aid routes does not, in all cases, coincide with major arterial routes. Yet, the selective transfer of federal aid designations for given routes has been discouraged in recent years without the benefit of comprehensive study. By correlating jurisdictional responsibility with federal aid importance, implementation of the recommended jurisdictional highway system plan will achieve the alignment of the federal aid primary system with the Type I (state trunk) highway system and the alignment of the federal aid secondary system with the Type II (county trunk) highway system.

Realignment of Operational Responsibilities

The State Highway Commission, following the realignment of the state and county trunk highway systems as recommended in this report, shall assume full operational and maintenance responsibilities, as hereinafter defined, over the recommended state trunk highway system, and shall mark and maintain all state trunk highways within Walworth County, including those facilities within incorporated cities and villages. The Walworth County Board shall similarly assume full operational and maintenance responsibilities as hereinafter defined over the recommended county trunk highway system, and shall mark and maintain all county trunk highways within Walworth County, including those facilities within incorporated cities and villages.

It is recommended that the Walworth County Board, in cooperation with appropriate governmental agencies and organizations such as the State Department of Natural Resources, the County Park and Planning Commission, the County Historical Society, garden and women's clubs, and recreation-oriented business associations, designate a system of scenic drives within Walworth County to be marked and signed for the purpose of routing such recreational activities as pleasure driving over facilities providing access to the sites of cultural, historic, recreational, scenic, and scientific interest within the county.

It is recommended that the State Highway Commission continue to contract with the Walworth County Board, pursuant to Section 84.07 of the Wisconsin Statutes, for maintenance of the Type I (state trunk) highway facilities, with the added option of contracting on an annual basis directly with the cities and villages concerned for maintenance of these facilities. It is similarly recommended that the Walworth County Board, at its option, contract with the cities and villages concerned for maintenance of the Type II (county trunk) highway facilities. It is recommended that the State Highway Commission and the Walworth County Highway Committee, respectively, establish standards for such contractual maintenance, relating these standards to the recommended eligible maintenance items set forth in Chapter VII of this report, namely physical maintenance of roadway surface pavements and structures and physical maintenance of storm sewers, snow and ice control between curbs, traffic control devices, and pavement marking. It is similarly recommended that the state and county assume direct administration of the operational control devices on the state and county trunk highway systems, respectively, as recommended in Chapter VII of this report, namely issuance of driveway permits, control of advertising signs, maintenance of signals and route signing, establishment of speed zoning, issuance of special permits, and prohibition of parking.

It is further recommended that the State Highway Commission, pursuant to Section 84.25 of the Wisconsin Statutes, review the status of controlled-access highways within Walworth County and declare all such Type I (state trunk) highway facilities within the county which meet the statutory requirements and provisions as controlled-access highways. It is similarly recommended that the Walworth County Board, pursuant to Section 83.027 of the Wisconsin Statutes, declare all such county trunk highway facilities within Walworth County as are found to meet the statutory requirements and provisions as controlled-access highways.

Facility Construction and Right-of-Way Acquisition

It has already been noted that the planning and programming procedure developed by the State Highway Commission provides an orderly and effective device whereby the many complex and highly interrelated tasks involved in the final accomplishment of modern highway improvement projects—tasks such as route location, including necessary mapping; preliminary engineering; implementation of legal changes in the state trunk highway routes; detailed design and final engineering; acquisition of right-of-way; preparation of construction plans, specifications, and cost estimates; letting of contracts; and actual construction, including layout, inspection, and final surveys—can be carried out, and as such, this planning and programming procedure constitutes an effective current planning and plan implementation program. It is accordingly recommended that the recommended jurisdictional highway system plan be integrated into the state and county highway construction planning and programming procedures as necessary to meet the staged completion dates recommended in the jurisdictional highway system plan. In order to assist in such integration, the priority list of Type I and Type II highway facility improvement projects set forth in Tables 41 and 42 has been prepared. The list of recommended highway improvements is arranged in order of priority of need based upon a systems analysis of the existing and probable future traffic demands and on consideration of necessary system continuity, of existing structural condition, and of feasible project limits.

Facility Construction: In connection with facility construction, it is recommended that the State Highway Commission and the Walworth County Board adopt common, uniform construction aid formulae and policies providing for a fixed local contribution of 15 percent of the cost of all state and county trunk highway construction projects involving urban cross sections, except interstate highway and other freeway projects, with the cost of the construction project being determined on the basis of the participating work items set forth in Chapter VII of this report, namely right-of-way acquisition; grading; construction of pavement base and surface and curb and gutter; construction of inlets for surface water drainage, together with

Table 41

RECOMMENDED STAGING OF TYPE I (STATE TRUNK) ARTERIAL HIGHWAY SYSTEM IMPROVEMENTS IN WALWORTH COUNTY: 1972-1990

TIME PERIOD	HIGHWAY FACILITY	LIMITS	NUMBER OF MILES
1972-1975	ROCK FREEWAY	WAUKESHA COUNTY LINE TO ROCK COUNTY LINE	30.3
	STH 89	STH 59 TO CTH A	7.9
	PRESENT STH 11	RACINE COUNTY LINE TO PROPOSED EXTENSION OF CTH DD	1.0
	STH 67	CITY OF ELKHORN TO USH 12	0.6
	STH 67	STH 50 TO GENEVA STREET (CITY OF ELKHORN)	4.8
	STH 50	CTH F TO VILLAGE OF WILLIAMS BAY	4.6
	SUBTOTAL	--	49.2
1976-1980	STH 89	CTH A TO USH 14	4.6
	USH 14	ROCK COUNTY LINE TO ROCK FREEWAY	5.5
	PROPOSED EXTENSION OF STH 20	PRESENT USH 12 TO USH 12 FREEWAY	0.8
	PRESENT USH 12	WHITEWATER CREEK TO CITY OF WHITEWATER EAST CORPORATE LIMITS	1.4
	STH 20	STH 67 TO RACINE COUNTY LINE	13.9
	LINCOLN STREET	GENEVA STREET TO CITY OF ELKHORN NORTH CORPORATE LIMITS	1.3
	STH 67	VILLAGE OF WILLIAMS BAY WEST CORPORATE LIMITS TO POINT 0.7 MILES SOUTH OF STH 50	2.3
	USH 12 FREEWAY	STH 67 TO ROCK COUNTY LINE	16.3
	STH 120 AND ITS PROPOSED EXTENSION	STH 50 TO PRESENT CTH BB	3.4
	SUBTOTAL	--	49.5
1981-1985	STH 36	KRUEGER ROAD TO RACINE COUNTY LINE	6.5
	STH 50	USH 12 FREEWAY TO KENOSHA COUNTY LINE	5.4
	STH 50	CTH F TO PRESENT STH 11	2.8
	STH 67	VILLAGE OF FONTANA ON LAKE GENEVA NORTH CORPORATE LIMITS TO CTH B	1.9
	USH 14	STH 67 TO ILLINOIS STATE LINE	2.5
	PROPOSED EXTENSION OF STH 120	STH 36 TO STH 50	1.1
	SUBTOTAL	--	20.2
1986-1990	PRESENT USH 12	PROPOSED EXTENSION OF STH 20 TO WHITEWATER CREEK	1.4
	PROPOSED STH 59	STH 89 TO JEFFERSON COUNTY LINE	1.7
	USH 14	ROCK FREEWAY TO STH 67	8.1
	STH 67	VILLAGE OF FONTANA ON LAKE GENEVA NORTH CORPORATE LIMITS TO VILLAGE OF WILLIAMS BAY WEST CORPORATE LIMITS	2.0
	STH 50	CITY OF LAKE GENEVA WEST CORPORATE LIMITS TO THE USH 12 FREEWAY	2.8
	STH 120	PRESENT CTH BB TO ILLINOIS STATE LINE	4.4
	STH 36 AND PRESENT CTH G	PRESENT STH 15 TO THE PROPOSED EXTENSION OF STH 120	13.2
	STH 11	LINCOLN STREET (CITY OF ELKHORN) TO THE RACINE COUNTY LINE	14.4
	NORTH CHURCH STREET	STH 15 TO STH 20	0.5
	SUBTOTAL	--	48.5
TOTAL			167.4

SOURCE- WISCONSIN DEPARTMENT OF TRANSPORTATION AND SEWRPC.

Table 42

RECOMMENDED STAGING OF TYPE II (COUNTY TRUNK) ARTERIAL HIGHWAY SYSTEM IMPROVEMENTS IN WALWORTH COUNTY: 1972-1990

TIME PERIOD	HIGHWAY FACILITY	LIMITS	NUMBER OF MILES
1972-1975	CTH D	CTH A TO STH 67	1.7
	CTH U	HAFS ROAD TO POINT 0.5 MILE WEST OF KENOSHA COUNTY LINE	0.5
	SUBTOTAL	--	2.2
1976-1980	WILLIS RAY ROAD	STH 89 TO CTH P	2.3
	ANDERSON ROAD	STH 89 TO CLOVER VALLEY ROAD	0.8
	CLOVER VALLEY ROAD, NORTH BLOOMFIELD ROAD	ANDERSON ROAD TO ENGEL ROAD	2.1
		CTH H TO USH 12	1.9
	HAFS ROAD	SOUTH ROAD TO CTH U	2.2
	KRUEGER ROAD	STH 36 TO CTH NN	1.9
	GENEVA STREET	STH 67 TO CTH NN	0.9
	CTH F	STH 67 TO STH 50	3.0
	SUBTOTAL	--	15.1
1981-1985	CTH C	BOONE COUNTY LINE TO VILLAGE OF SHARON	1.7
	WARNER ROAD	JEFFERSON COUNTY LINE TO PRESENT CTH S	0.5
	CTH A	RICHMOND-SUGAR CREEK TOWN LINE ROAD TO CTH D	4.6
	CTH NN	KRUEGER ROAD TO CTH H	0.6
	CTH H	CTH NN TO WESTERLY EXTENSION OF LOGAN STREET	0.4
	CTH H	STH 50 TO PROPOSED EXTENSION OF STH 120	1.8
	CTH B	STH 67 TO CTH 88	3.2
	LAKE GENEVA ROAD, LAKE SHORE DRIVE, AND MARINETTE ROAD	CTH H TO CTH U	3.4
	SUBTOTAL	--	16.2
1986-1990	KETTLE MORAINE DRIVE AND CLOVER VALLEY ROAD	ENGEL ROAD TO CTH H	6.0
	FOUNDRY ROAD	PROPOSED ROCK FREEWAY TO USH 14	0.6
	CTH O	PROPOSED ROCK FREEWAY TO PRESENT STH 11	1.0
	CTH H	CITY OF ELKHORN TO STH 67	0.5
	HOSPITAL ROAD	CTH NN TO THE TOWN OF LAFAYETTE	0.5
	EXTENSION OF HOSPITAL ROAD	BRAY ROAD TO POTTERS ROAD	1.6
	KRUEGER ROAD	CTH H TO CTH NN	0.8
	CTH DD	POINT 0.4 MILES SOUTH OF SPRING PRAIRIE ROAD TO PRESENT STH 11	0.6
	WILLOW ROAD AND ITS EXTENSION	STH 120 TO CTH H	2.8
	SUBTOTAL	--	14.4
TOTAL			47.9

SOURCE- WALWORTH COUNTY HIGHWAY DEPARTMENT AND SEWRPC.

connections to storm sewer mains; construction of storm sewer mains necessary for pavement and right-of-way drainage; and engineering services.

Except for interstate highway projects, of which there are none in Walworth County, freeway projects on federal aid routes are financed with 50 percent federal funds and 50 percent state funds. In accordance with the Federal Aid Highway Act of 1970, federal participation will be increased beginning in fiscal year 1974 to 70 percent, and local participation will be decreased to 30 percent of eligible costs on federal aid projects.

Right-of-Way Reservation: A considerable interval necessarily exists between the time a long-range plan for a given highway facility is formally adopted and the time when actual construction of the facility can begin. If maximum economies are to be effected and future disruption to urban development minimized, the conversion of open land to urban use and the redevelopment of land for urban use within required future right-of-way lines must be avoided. This is particularly true in the rural areas surrounding rapidly developing cities and villages such as exist in Walworth County, where urban development, if allowed to proceed in the path of needed highway facilities, will not only make the eventual construction of the proposed facilities extremely costly and difficult but will also require expensive and agonizing readjustment of the urban development itself to the ultimate highway development.

It is therefore recommended that prior reservation of right-of-way for the required highway facilities be accomplished in accordance with the recommended jurisdictional highway system plan, utilizing statutory devices made available for this purpose including official mapping, building setback line ordinances, and land subdivision control ordinances. Such prior reservation of right-of-way serves as an expression of governmental intent to acquire land for highway purposes in advance of actual facility construction, and thereby can not only achieve great economies in ultimate right-of-way acquisition, but also permits land adjacent to the required right-of-way to be privately purchased and developed with full knowledge of the future highway development proposals. Such action can serve greatly to reduce public misunderstanding of proposed highway improvements and should thereby assist in avoiding and overcoming opposition to the actual construction of the recommended facilities. Such prior reservation of right-of-way also serves to assure that lands needed for future highways will be available when needed at the price of unimproved land. This serves not only to effect great economies but also to avoid in the future the disruption, dislocation, discontent, and great expense involved in the acquisition and clearance of developed areas for street and highway purposes.

The most effective and efficient means of prior reservation of right-of-way for highway purposes is the use of the official mapping powers granted by the State Legislature to the State Highway Commission, counties, cities, villages, and towns in Wisconsin. These powers are thoroughly discussed and illustrated in SEWRPC Planning Guide No. 2, Official Mapping Guide, February 1964. It is recommended that, upon adoption of the jurisdictional highway system plan by the Wal-

worth County Board and endorsement by the State Highway Commission, the Walworth County Board in cooperation with the four cities, seven villages, and 16 towns within Walworth County adopt a modified "official" map pursuant to Section 80.64 of the Wisconsin Statutes. This map initially should encompass all of the Type I and Type II highway facilities which are to remain on existing location and which, therefore, should require no route location studies as a basis for the mapping. Proposed Type I and Type II highway facilities which are to be placed on new location should be added to the map as the necessary route location studies are completed. Such a County Official Map will serve to establish street and highway widths in excess of the widths in use and likewise to establish the location and width of proposed future arterial streets or highways. It is important to note, however, that to become effective such a county map must be approved by the governing body of the municipality in which a mapped street or highway or any part thereof is located and, therefore, actually becomes a joint county and city, village, or town map. It is, therefore, recommended that the governing bodies of the four cities, seven villages, and 16 towns within the county approve the County Map prepared in accordance with the adopted jurisdictional highway system plan.

It is further recommended, because of the limited powers of such a county map, that the County Official Map be augmented by the preparation and adoption of local official maps and ordinances, which would include, in addition to the recommended state and county mapped routes, all of the Type III highway facilities shown on the recommended jurisdictional highway system plan. In accordance with Section 62.23(6) of the Wisconsin Statutes, such official mapping may be supplemented in certain intensely developed areas by the establishment of building setback lines, pursuant to Section 62.23(11) of the Wisconsin Statutes, in order to protect portions of recommended street and highway rights-of-way.

It is recommended that the planning agencies of the four cities, seven villages, and 16 towns within the county recommend to their respective governing bodies, pursuant to Section 236.45(4) of the Wisconsin Statutes, the adoption of the subdivision regulations similar to those contained in the SEWRPC Model Land Division Ordinance set forth in SEWRPC Planning Guide No. 1, Land Development Guide, November 1963, to assure dedication of required rights-of-way for the arterial streets and highways included on the recommended jurisdictional highway system plan. It is further recommended that the respective governing bodies adopt such ordinances or amendments thereto, pursuant to Section 236.45 of the Wisconsin Statutes.

Finally, it is recommended that the plan commissions of the four cities, seven villages, and 16 towns within the county formulate and recommend to their respective governing bodies new zoning ordinances or amendments to their existing ordinances, pursuant to Section 62.23(7) of the Wisconsin Statutes, to provide for traffic, parking, and access restrictions; exclusive highway service districts; sign controls; and conditional use regulations similar to those provided in the SEWRPC Model Zoning Ordinance as set forth in SEWRPC Planning Guide No. 3, Zoning Guide, April 1964, and apply these provisions properly to the lands abutting the proposed Type I, II, and III arterial subsystems. It is further recommended that their respective governing bodies adopt such ordinances or amendments, pursuant to Section 62.23(7) of the Wisconsin Statutes.

SUMMARY

This chapter has set forth specific procedures for implementation of the recommended jurisdictional highway system plan. The most important of the recommended plan implementation actions are summarized in the following paragraphs by level of government concerned.

Federal Level

U. S. Department of Transportation, Federal Highway Administration: It is recommended that the U. S. Department of Transportation, Federal Highway Administration:

1. Acknowledge the recommended jurisdictional highway system plan for Walworth County and utilize the plan as a guide in the review of requests for realignment of the various federal aid systems and in the administration and granting of federal aids for highway improvement within the county.

2. Cooperate in, and approve the adjustment of, the federal aid systems to the recommended jurisdictional highway system plan.

State Level

Highway Commission of the Wisconsin Department of Transportation, Division of Highways: It is recommended that the State Highway Commission:

1. Endorse and integrate the recommended jurisdictional highway system plan into the state long-range highway system plan.

2. Seek, in cooperation with the Walworth County Board, realignment of the state trunk, county trunk, and federal aid systems to the recommended jurisdictional highway system plan.

3. Assume full operational and maintenance responsibilities for all state trunk highways within Walworth County.

4. Review the status of controlled-access highways within Walworth County and declare all such state trunk highways within Walworth County found to meet the statutory requirements and provisions as controlled-access highways.

5. Proceed with right-of-way acquisition and facility construction to meet the staged facility completion dates included in the recommended jurisdictional highway system plan.

6. Adopt uniform construction aid formulae and policies for all state trunk highways consistent with similar formulae and policies for all county trunk highways in Walworth County.

Regional Level

Southeastern Wisconsin Regional Planning Commission: It is recommended that the Southeastern Wisconsin Regional Planning Commission act to formally adopt the recommended jurisdictional highway system plan as an integral part of the master plan for the Region, constituting an amendment to the regional transportation plan adopted by the Commission on December 1, 1966.

County Level

Walworth County Board: It is recommended that the Walworth County Board, upon recommendation of the Walworth County Highway Committee:

1. Adopt the recommended jurisdictional highway system plan as a guide to future highway facility development within the county.

2. Seek, in cooperation with the State Highway Commission, realignment of the state trunk, county trunk, and federal aid systems to the recommended jurisdictional highway system plan.

3. Assume full operational and maintenance responsibilities for all county trunk highways within Walworth County.

4. Proceed, in cooperation with the appropriate agencies and organizations, to designate a system of scenic drives to be marked and signed for routing within Walworth County.

5. Declare all county trunk facilities that are found to meet the statutory requirements and provisions as controlled-access highways.

6. Proceed with right-of-way acquisition and facility construction as necessary to meet the staged facility completion dates included in the recommended jurisdictional highway system plan.

7. Adopt uniform construction aid formulae and policies for all county trunk highways consistent with similar formulae and policies for state trunk highways in Walworth County.

8. Establish, with the approval of the municipalities as they are affected, a modified "official" map including the proposed Type I and Type II highways.

Local Level

1. It is suggested that, to supplement recommended federal, state, regional, and county plan adoption actions, four city common councils, seven village boards, and 16 town boards within Walworth County act to adopt the recommended jurisdictional highway system plan as a guide to highway system development within their area of jurisdiction. It is further suggested that the respective local planning agencies adopt and integrate the recommended jurisdictional highway system plan into the local master plans and certify such adoption to their local governing body.

2. It is recommended that the four city common councils, seven village boards, and 16 town boards within Walworth County act to approve a County Official Map prepared in conformance with the recommended jurisdictional highway system plan, and establish local official maps including the proposed local trunk highway facilities.

3. It is recommended that the four city common councils, seven village boards, and 16 town boards within Walworth County adopt, pursuant to the recommendation of their local planning agencies, subdivision control ordinances and zoning regulations necessary to assure the integrity of the recommended jurisdictional highway system plan.

In addition, it is recommended that the State Highway Commission and the Walworth County Board cooperatively support state legislation to abolish the connecting street concept and assure the full continuity of state and county trunk highway systems through incorporated municipalities.

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Chapter IX

SUMMARY AND CONCLUSIONS

INTRODUCTION

On December 1, 1966, the Southeastern Wisconsin Regional Planning Commission, pursuant to its statutory responsibilities and after four years of intensive study, adopted a comprehensive regional transportation plan for the seven-county Southeastern Wisconsin Region. On March 17, 1967, in accordance with its advisory role, the Commission certified this plan to the constituent counties, cities, villages, and towns, as well as to certain state and federal agencies, for adoption and implementation. Subsequently, all of the county boards concerned as well as the State Highway Commission adopted or endorsed the recommended transportation plan as a guide to the development of transportation facilities within the Region. The Walworth County Board of Supervisors adopted the plan on March 21, 1967, after careful consideration and upon the recommendation of the Walworth County Highway Committee. Southeastern Wisconsin thus became the first large urbanizing region in the United States to have completed and adopted an official transportation plan in accordance with the spirit and intent of the 1962 Federal Aid Highway Act.

The adopted regional transportation plan contains, as an integral element, a functional arterial street and highway system plan. This functional plan consists of recommendations concerning the general location, type, capacity, and service levels of the arterial street and highway facilities required to serve the rapidly developing Region to the year 1990. Except for freeways, however, the functional plan does not contain recommendations as to which levels and agencies of government should assume responsibility for the construction, operation, and maintenance of each of the various facilities included in the functional plan.

As a logical sequel to the adoption of the regional transportation plan, and as recommended in that plan, the Walworth County Board of Supervisors directed that the County Highway Committee, in cooperation with the U. S. Department of Transportation, Federal Highway Administration; the Wisconsin Department of Transportation, Division of Highways; the Southeastern Wisconsin Regional Planning Commission; and the local units of government concerned, proceed with the conversion of the functional highway system plan contained within the adopted regional transportation plan to a jurisdictional plan. This plan would contain specific recommendations as to the level and agency of government which should assume responsibility for the construction, maintenance, and operation of each segment of the total arterial street and highway system within Walworth County. Such a plan would also contain concomitant recommendations for the realignment of the federal aid highway systems, as well as of the state and county trunk highway systems, and if warranted, proposed necessary or desirable changes in the various federal, state, and county highway and formulae, policies, or programs.

Although implementation of the adopted regional transportation plan was an important reason for proceeding with the jurisdictional highway planning program, other equally important reasons existed. The jurisdictional highway planning effort was also required in order to cope with the growing traffic demands within Walworth County, adjust the existing jurisdictional highway systems to changes in land use development along their alignment, reestablish an integrated county trunk highway system, and adjust the jurisdictional highway systems to better serve the major changes in traffic patterns within the county that have resulted from freeway construction and use.

Accordingly, an interagency study staff consisting of planning and engineering personnel drawn from the staffs of the Wisconsin Department of Transportation, Division of Highways; and the Southeastern Wisconsin Regional Planning Commission, was organized to carry out the necessary jurisdictional highway planning effort. Because any realignment of the existing jurisdictional highway systems would affect the local units of government within the county in many ways, it was considered essential to involve actively these local units of government in the planning process. This was done by the formation of a Technical Coordinating

and Advisory Committee on Jurisdictional Highway System Planning, with representation from the U. S. Department of Transportation, Federal Highway Administration; the Wisconsin Department of Transportation, Divisions of Highways and Planning; the Southeastern Wisconsin Regional Planning Commission; the Walworth County Highway Department; and 12 local public officials and citizen members who collectively represented the interests of the four cities, seven villages, and 16 towns within Walworth County.

STUDY PURPOSE AND PLAN OBJECTIVES

The primary purpose of the jurisdictional highway planning study was to identify and subsequently group into subsystems classes of arterial streets and highways serving similar functions and providing similar levels of service and, further, to assign jurisdictional responsibility over the subsystems so established to the appropriate level of government having the greatest basic interest. This was intended to achieve the following objectives:

1. Promote implementation of the adopted regional transportation plan.
2. Provide a sound basis for the efficient multijurisdictional management of the total arterial street and highway system and for the attainment of the necessary intergovernmental coordination in that management.
3. Provide a sound basis for the efficient design and improvement of the total arterial system by combining into subsystems those facilities which, because of the type and level of service provided, should have similar standards for design, construction, operation, and maintenance.
4. Provide a basis for the establishment of a sound, long-range fiscal policy and for the systematic programming of arterial street and highway improvements and thereby to assure the most effective use of the public resources in the provision of highway transportation, focusing the appropriate resources and capabilities in corresponding areas of need.
5. Provide a basis for the more equitable distribution of highway system development costs and revenues among the levels and agencies of government concerned.

THE JURISDICTIONAL HIGHWAY PLANNING PROCESS

The singularly most important basic concept underlying the jurisdictional highway planning process applied in Walworth County was that the jurisdictional highway planning process must be preceded by, and grow out of, a functional highway planning process; that is, that a jurisdictional highway system plan must be based upon, and derived from, a prior functional highway system plan. The development of a sound and viable jurisdictional highway system plan, therefore, can properly proceed only within the context of a comprehensive, areawide transportation planning process which has identified the transportation needs of the entire urbanizing region to a selected design year and which has provided definitive recommendations for meeting those needs through the improvement of both arterial highway and mass transit facilities in the form of a functional transportation plan.

Based upon this basic concept, a seven-step planning process was employed in the development of a jurisdictional highway system plan for Walworth County: 1) study design; 2) formulation of objectives and standards; 3) inventory of existing systems, aid formulae, and financial resources; 4) jurisdictional systems analyses; 5) plan design; 6) plan test and evaluation; and 7) plan adoption. One of the most important steps in this process was the formulation of a set of criteria which could be used as a basis for the objective and rational assignment of jurisdictional responsibility to the various facilities comprising the total arterial street and highway system. Functional variations within the total system provided the basis for the establishment of the criteria.

Since three levels of government—state, county, and local—have direct responsibilities for the planning, design, construction, operation, and maintenance of highway facilities within southeastern Wisconsin, criteria were prepared to classify all segments of the total arterial street and highway systems into three subsystems: Type I (state trunk) highway facilities; Type II (county trunk) highway facilities; and Type III (local trunk) highway facilities. The Type I highway facilities include all those routes which are intended to provide the highest level of traffic mobility, that is, the highest speeds and lowest degree of traffic congestion, the minimum degree of land access service, and which must have regional or inter-

regional system continuity. The Type II highway facilities include all those routes which are intended to provide an intermediate level of traffic mobility, an intermediate level of land access service, and which must have intercommunity system continuity. The Type III highway facilities include all those routes which are intended to provide the lowest level of arterial traffic mobility, the highest degree of arterial land access service, and which must possess intracommunity system continuity. The Type III arterial subsystem was provided only in the urban areas of Walworth County, with all arterial facilities in the rural areas being included in either Type I or Type II arterial subsystems.

The criteria deemed most significant to a functional subclassification of the total arterial system were related to three basic characteristics of the facilities: the trips served, the land uses served, and the operational characteristics of the facilities themselves. Detailed criteria related to each of these basic characteristics were prepared as a part of the jurisdictional highway planning study and have been fully described in Chapter IV of this report.

The criteria were applied to the total arterial street and highway system for Walworth County as proposed in the adopted regional transportation plan and subsequently refined through a careful review of the arterial network by experienced public works engineers responsible for the design, construction, operation, and maintenance of arterial highway facilities within the county. The application of the criteria required a careful analysis of the trip lengths and traffic volumes to be served by each link in the total arterial system, an inventory of the land uses to be served by each of the jurisdictional subsystems, and an investigation of the operational characteristics of the arterial facilities themselves. This application has been fully described in Chapter V of this report.

PRESENT STATE OF THE JURISDICTIONAL HIGHWAY SYSTEMS

The study found that, as of January 1, 1971, there were a total of 1,300 miles of streets and highways open to traffic within Walworth County. Of this total, 427 miles, or approximately 33 percent, comprised the functional arterial street and highway network. Responsibility for the design, construction, operation, and maintenance of this arterial street and highway network rested with three levels and 29 units of government—the state, the county, and 27 local municipalities. Approximately 191 miles, or 45 percent, of the arterial network were under state jurisdiction, being comprised of state trunk highways and connecting streets. About 173 miles, or 40 percent, were under county jurisdiction, being comprised of county trunk highways; and about 63 miles, or 15 percent, were under city, village, and town jurisdiction, being comprised of local arterial streets and highways.

Superimposed on the state, county, and local trunk highways were 387 miles of federal aid routes, of which about 160 miles, or 41.3 percent, were federal aid primary routes and 227 miles, or 58.7 percent, were federal aid secondary routes.

The location and configuration of these jurisdictional highway systems and supporting aid routes were the result of a long process of historic evolution influenced by many complex, political, administrative, financial, and engineering considerations and constraints. The state trunk and county trunk networks were originally conceived by the State Legislature as integrated highway systems and were originally so delineated and mapped. The state trunk highway network, however, was last studied and revised as an integrated system by the State Legislature in 1923; and the county trunk systems, by the State Highway Commission and the Walworth County Board in 1925. Many piecemeal additions and deletions have been made to these two jurisdictional highway networks since 1923 and 1925. Consequently, these two important networks no longer represent fully integrated, continuous, arterial highway systems capable of serving in the most efficient manner possible the areawide land use and traffic service functions originally intended. Moreover, since the federal aid highway networks are intended to assist in implementing the state and county trunk highway systems, and therefore reflect the pattern of these systems, these federal aid networks were also found to be in need of revision.

It was, therefore, considered most appropriate at this time to study and analyze the jurisdictional highway systems within Walworth County, and guided by the functional transportation system plan prepared by the Southeastern Wisconsin Regional Planning Commission, endorsed by the State Highway Commission, and adopted by the Walworth County Board, to recommend changes

necessary to reclassify and regroup these networks into complete, fully coordinated, and continuous systems able to meet the present and expected future arterial highway traffic demands within Walworth County at an adequate level of service.

THE RECOMMENDED PLAN

The jurisdictional highway system plan prepared for Walworth County provides for three jurisdictional highway systems—Type I, state trunk; Type II, county trunk; and Type III, local trunk—which together comprise the total arterial street and highway system required to serve the growing travel demands within Walworth County and its constituent cities, villages, and towns to the plan design year of 1990. Thus, the jurisdictional highway system plan recommends an alignment of governmental responsibility for each of the various facilities comprising the total arterial street and highway system in the design year. The recommended plan also constitutes a refinement of the functional arterial street and highway system plan prepared by the Southeastern Wisconsin Regional Planning Commission, and as such, is intended upon its adoption to constitute a functional, as well as a jurisdictional, highway system plan for Walworth County to the plan design year of 1990. As a functional plan, the plan recommends cross sections having right-of-way and pavement widths adequate to serve the forecast traffic demand at a desirable level of service while meeting state and regional transportation system development objectives.

Type I (State Trunk) Highway System

The arterial street and highway system recommended to serve the growing traffic demand within Walworth County through the plan design year 1990 totals approximately 489 route-miles of facilities, or about 34 percent of the estimated 1,440 route-miles of facilities expected to comprise the total street and highway system within the county in 1990. Of this total arterial system, 217 route-miles, or about 44 percent, are proposed to comprise the Type I system, an increase of 26 route-miles over the present system. This Type I system may be expected to carry approximately 74 percent of the arterial travel demand and approximately 68 percent of the total travel demand expected to be generated within Walworth County by the year 1990. The Type I system as recommended includes all of the committed and proposed freeway facilities within the county as well as certain important surface arterials, and as such, comprises the basic framework of the total highway transportation system in the county.

Type II (County Trunk) Highway System

The recommended plan further proposes a Type II (county trunk) highway system consisting of 258 route-miles, or an additional 53 percent, of the total arterial mileage required to serve the county in the plan design year of 1990. This Type II system represents an increase of 64 route-miles over the present system. It is intended to complement the recommended Type I highway system, and together with that system, to include all major arterial facilities having areawide significance. The county trunk highway system may be expected to carry 24 percent of the arterial travel demand and 22 percent of the total travel demand expected to be generated within Walworth County by the year 1990.

Type III (Local Trunk) Highway System

Finally, the plan recommends a Type III (local trunk) highway system consisting of the remaining 14 route-miles of arterial facilities, or about 3 percent, of the total arterial mileage proposed to serve Walworth County in the plan design year 1990. This Type III system, comprising an integral part of the total arterial street and highway system, represents a decrease of 49 route-miles over the present system and is intended to serve primarily local arterial street and highway needs.

Finally, the Technical Coordinating and Advisory Committee recognized the need for the marking and signing of a system of scenic drives within the county. The Committee, however, believed that the delineation of such a system would be best accomplished by a broad-based committee of Walworth County citizens involved with the promotion of cultural, historic, scenic, and scientific areas within the county.

Financial Feasibility

In order to determine the practicality and acceptability of the recommended jurisdictional highway system plan, a careful analysis was made of the financial feasibility of the plan. Total plan construction and maintenance costs were estimated and compared to anticipated revenues over a 20-year plan implementation period. As a necessary part of this analysis, the existing structure of highway revenues and expenditures was carefully examined and construction and maintenance formulae and policies analyzed. The analysis

indicated that the recommended plan is financially feasible. Total plan implementation costs, including construction and maintenance of collector and minor land-access as well as of arterial facilities, were estimated at $146 million over the 20-year plan implementation period.

It is extremely difficult to forecast the revenues which may become available for highway purposes over the 20-year plan implementation period. This difficulty is due not only to the length of the forecast period involved and the unpredictable changes which may occur during this period in such important factors affecting highway revenues as the general level of economic activity, but also to major changes in the structure of highway aid formulae which will come about upon expiration of the massive interstate highway construction program. Based upon current rates of expenditures for highway purposes within Walworth County, however, anticipated revenues for highway purposes over the plan implementation period were estimated at $148[1] million, or $2 million more than the $146 million required to implement the plan.

Although the financial analysis indicates that the plan is feasible considering the county as a whole, some disparities may exist with respect to the initial distribution of resources between the county and local levels of government relating to the transfer of local trunk facilities to the county trunk system and within the individual municipalities comprising the county relating primarily to the anticipated costs of, and revenues for, the Type III system and to the nonarterial facilities located within the various municipalities within Walworth County.

The financial analysis also carefully explored the effect of the recommended changes in the jurisdictional highway systems on supplemental aids and allotments as well as on other construction and maintenance aids, and resulted in the formulation of two major recommended revisions to the aid structure: the abandonment of the connecting street concept, and the adoption of common, uniform construction aid formulae and policies for state and county trunk highways.

Implementing Recommendations

Specific procedures for implementation of the recommended jurisdictional highway system plan have been set forth in Chapter VIII of this report. The most important of these include formal plan adoption by the Walworth County Board and by the Southeastern Wisconsin Regional Planning Commission, and endorsement by the Highway Commission of the Wisconsin Division of Highways; realignment of the state trunk, county trunk, and federal aid systems to conform with the recommended jurisdictional highway system plan through the cooperative actions of the Walworth County Board, the State Highway Commission, and the U. S. Department of Transportation, Federal Highway Administration; assumption of full operational and maintenance responsibilities by the state for all state trunk highways and by the county for all county trunk highways; integration of the recommended plan into the construction, planning, and programming procedures of both the Highway Commission and the Walworth County Highway Department; and adoption of common, uniform construction aid formulae and policies for all state and county trunk highways within Walworth County. Additional recommendations include the establishment of an Official Map for the protection of the rights-of-way of all Type I and Type II highway facilities through the cooperative action of the Walworth County Board and the governing bodies of the 27 municipalities comprising the county.

CONCLUSION

Adoption and implementation of the jurisdictional highway system plan recommended in this report would provide the county with an integrated highway transportation system which will effectively serve the existing, and promote a desirable future, land use pattern, meet the anticipated future

[1] *It should be noted that the portion of estimated revenues for the 20-year plan implementation period which are comprised of state aids were based on the motor vehicle distribution formulae in effect as of January 1, 1971, and as such include an estimate of the privilege highway tax which could be anticipated to be returned to municipalities within Walworth County. Subsequent to the financial analyses for this study, the Wisconsin Legislature enacted Chapter 125 of the Wisconsin Laws of 1971 which directs that the privilege highway tax no longer be allotted directly to the unit of government from which the motor vehicle registration and licensing fees were derived, but rather be placed in the county and municipal shared tax account for distribution essentially on a per capita basis. The estimated net effect of this change to Walworth County, based on the method for the distribution of shared revenues (Chapter 79, Wisconsin Statutes) would be a reduction of about $300,000, or about 0.2 percent of the total anticipated revenues, over the 20-year plan implementation period, totaling about $15,000 per year.*

travel demand at an adequate level of service, abate traffic congestion, reduce travel time and costs between component parts of the Region, and reduce accident exposure. It would serve to concentrate appropriate resources and capabilities on corresponding areas of need, assuring a more effective use of the total public resources in the provision of highway transportation, and provide a sound basis for the establishment of long-range fiscal policies and for the systematic programming of arterial street and highway improvements within Walworth County. It would also provide a basis for the more efficient planning and design of the total arterial street and highway system, for the efficient multijurisdictional management of that system, and for the attainment of intergovernmental coordination necessary to the cooperative development of the system. Finally, it should provide a more equitable distribution of highway improvement, maintenance, and operating costs among the various levels and agencies of government concerned.

APPENDICES

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Appendix A

TECHNICAL COORDINATING AND ADVISORY COMMITTEE FOR JURISDICTIONAL HIGHWAY PLANNING IN WALWORTH COUNTY

Milton R. Reik Chairman	Citizen Member, City of Lake Geneva
Wilmer Lean Secretary	County Highway Commissioner Walworth County
Anthony F. Balestrieri	Consulting Engineer, City of Elkhorn Commissioner, SEWRPC
William E. Barth	Citizen Member, Town of Walworth
Kurt W. Bauer	Executive Director, SEWRPC
Schuyler W. Case	Citizen Member, Town of Sharon
Vincent V. Casey	Citizen Member, Town of Linn
Theodore Casper	Citizen Member, Village of Williams Bay
Werner Christian	Chairman, Town of Whitewater
Frank Cline	Citizen Member, Town of East Troy
Oliver W. Fleming	Alderman, City of Delavan
George Gunderson	Chief of Statewide Planning Division of Planning Wisconsin Department of Transportation
G. F. Hill	City Manager, City of Whitewater
Emil Johnejack	Mayor, City of Lake Geneva
Herbert E. Johnson	Consulting Engineer, City of Elkhorn
Thomas R. Kinsey	District Engineer, District 2 Division of Highways Wisconsin Department of Transportation
Martin J. Monahan	Assistant Planning & Research Engineer Federal Highway Administration U. S. Department of Transportation

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Appendix B

DETAILED DATA—WALWORTH COUNTY JURISDICTIONAL HIGHWAY SYSTEM PLAN

Table B-1

CONSTRUCTION AND MAINTENANCE COST ESTIMATES FOR WALWORTH COUNTY JURISDICTIONAL HIGHWAY SYSTEM PLAN BY MUNICIPALITY[a]

CIVIL DIVISION	CONSTRUCTION COST ESTIMATES					MAINTENANCE COST ESTIMATES						TOTAL
	ARTERIAL			NONARTERIAL		ARTERIAL			NONARTERIAL			
	TYPE I (NONFREEWAY)	TYPE II	TYPE III	EXISTING LOCAL, COLLECTOR	SUBTOTAL	TYPE I (NONFREEWAY)	TYPE II	TYPE III	NEW LOCAL, COLLECTOR[b]	EXISTING LOCAL, COLLECTOR	SUBTOTAL	
CITIES												
DELAVAN	$ 76,500	$ 192,500	$ --	$ 552,200	$ 821,200	$ --	$ --	$ --	$ 151,200	$ 1,026,000	$ 1,177,200	$ 1,998,400
ELKHORN	119,800	130,800	1,186,300	464,400	1,901,300	--	--	178,900	194,400	897,800	1,271,100	3,172,400
LAKE GENEVA	255,600	136,500	848,500	933,700	2,174,300	--	--	161,900	167,400	1,638,200	1,967,500	4,141,800
WHITEWATER	287,300	14,000	860,600	733,300	1,895,200	--	--	107,200	186,300	1,378,100	1,671,600	3,566,800
SUBTOTAL	739,200	473,800	2,895,400	2,683,600	6,792,000	--	--	448,000	699,300	4,940,100	6,087,400	12,879,400
VILLAGES												
DARIEN	$ 67,200	$ 74,200	$ --	$ 110,600	$ 252,000	$ --	$ --	$ --	$ 81,000	$ 206,800	$ 287,800	$ 539,800
EAST TROY	139,900	39,200	--	184,800	363,900	--	--	--	91,800	364,300	456,100	820,000
FONTANA	85,900	25,400	--	433,200	544,500	--	--	--	29,700	778,800	808,500	1,353,000
GENOA CITY	--	7,700	--	132,900	140,600	--	--	--	44,600	248,400	293,000	433,600
SHARON	--	6,600	--	177,900	184,500	--	--	--	101,300	332,600	433,900	618,400
WALWORTH	120,600	11,000	518,000	200,100	849,700	--	--	13,300	116,100	374,200	503,600	1,353,300
WILLIAMS BAY	118,800	--	185,000	530,200	834,000	--	--	4,800	121,500	918,500	1,044,800	1,878,800
SUBTOTAL	532,400	164,100	703,000	1,769,700	3,169,200	--	--	18,100	586,000	3,223,600	3,827,700	6,996,900
TOWNS												
BLOOMFIELD	$ --	$ --	$ --	$ 799,300	$ 799,300	$ --	$ --	$ --	$ 32,400	$ 1,119,400	$ 1,151,800	$ 1,951,100
DARIEN	--	--	--	482,300	482,300	--	--	--	--	669,400	669,400	1,151,700
DELAVAN	--	--	--	540,200	540,200	--	--	--	--	748,700	748,700	1,288,900
EAST TROY	--	--	--	550,500	550,500	--	--	--	--	761,200	761,200	1,311,700
GENEVA	--	--	--	660,100	660,100	--	--	--	32,000	964,900	996,900	1,657,000
LAFAYETTE	--	--	--	385,900	385,900	--	--	--	--	566,300	566,300	952,200
LA GRANGE	--	--	--	648,200	648,200	--	--	--	--	897,100	897,100	1,545,300
LINN	--	--	--	575,200	575,200	--	--	--	49,200	827,200	876,400	1,451,600
LYONS	--	--	--	561,700	561,700	--	--	--	--	721,300	721,300	1,283,000
RICHMOND	--	--	--	569,700	569,700	--	--	--	3,600	785,500	789,100	1,358,800
SHARON	--	--	--	480,800	480,800	--	--	--	--	665,400	665,400	1,146,200
SPRING PRAIRIE	--	--	--	389,900	389,900	--	--	--	--	529,000	529,000	918,900
SUGAR CREEK	--	--	--	635,600	635,600	--	--	--	46,800	875,200	922,000	1,557,600
TROY	--	--	--	378,500	378,500	--	--	--	--	523,800	523,800	902,300
WALWORTH	--	--	--	413,600	413,600	--	--	--	--	581,900	581,900	995,500
WHITEWATER	--	--	--	385,600	385,600	--	--	--	63,600	528,300	591,900	977,500
SUBTOTAL	--	--	--	8,457,100	8,457,100	--	--	--	227,600	11,764,600	11,992,200	20,449,300
WALWORTH COUNTY	$ --	$13,058,000	$ --	$ --	$13,058,000	$ --	$7,086,500	$ --	$ --	$ --	$ 7,086,500	$20,144,500
TOTAL	$1,271,600	$13,695,900	$3,598,400	$12,910,400	$31,476,300	$ --	$7,086,500	$466,100	$1,512,900	$19,928,300	$28,993,800	$60,470,100

[a]FOR ANALYSIS PURPOSES, IT WAS ASSUMED THAT THE CORPORATE LIMITS OF CITIES AND VILLAGES WOULD CHANGE OVER THE 20-YEAR PLAN IMPLEMENTATION PERIOD TO INCLUDE ANY ADJACENT PLANNED URBAN DEVELOPMENT AS RECOMMENDED IN THE ADOPTED REGIONAL LAND USE PLAN.

[b]PLAN IMPLEMENTATION COSTS SET FORTH IN CHAPTER VII OF THIS REPORT ASSUMED THAT THE COST OF ALL NEW COLLECTOR STREETS AND LOCAL STREETS WOULD BE BORNE BY THE DEVELOPER.

SOURCE- SEWRPC.

INTRODUCTION TO FIGURE B-1

TYPICAL RURAL AND URBAN STREET AND HIGHWAY CROSS SECTIONS

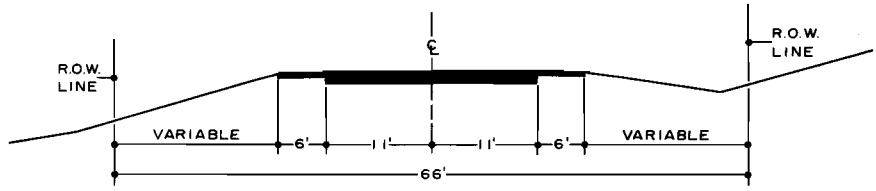
The typical rural and urban street and highway cross sections developed under the Walworth County jurisdictional highway system planning program and utilized in the preparation of the Walworth County jurisdictional highway system plan are shown in Figure B-1. The cross sections presented include, for two, four, and six moving lanes of traffic, both desirable and minimum configurations of pavement width; curb lawns, medians, shoulders, and sidewalks where appropriate; and the required right-of-way.

Included with each cross section are typical cost estimates, on a per mile basis, for the construction, resurfacing, and annual maintenance of the particular facility involved. In atypical circumstances such as unusual topography or intensive urban development, the typical cross sections presented may require modification during plan implementation to meet detailed design standards and to minimize disruption of the landscape or cityscape. It should be noted that the resurfacing cost for Cross Section No. 1, a minimum two-lane rural arterial, includes costs for minor reconstruction for spot improvement of horizontal and vertical alignment and of intersections. It should also be noted that the per mile costs for construction, resurfacing, and annual maintenance are expressed in 1970 dollars and reflect the most recent cost experiences of the Wisconsin Division of Highways in Walworth County and in areas of the state similar to Walworth County. While these cost estimates thus provide an average project cost for all proposed arterial highway improvements within Walworth County, the cost of an individual project during plan implementation should be expected to vary somewhat from the average costs.

Figure B-1

TYPICAL RURAL AND URBAN STREET AND HIGHWAY CROSS SECTIONS

RURAL AREA
TYPICAL CROSS SECTION NO. 1
MINIMUM TWO LANE ARTERIAL



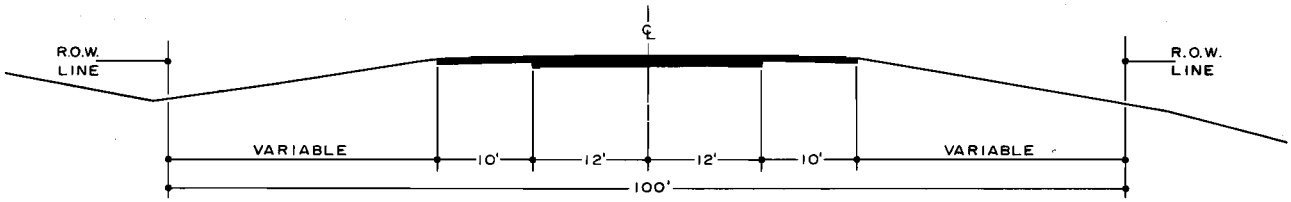
GRAVEL BASE VARIES
22' HIGH TYPE PAVEMENT, 66' R.O.W.

ESTIMATED COST PER MILE:
- CONSTRUCTION = $140,000
- RESURFACE = $ 20,000
- MAINTENANCE = $ 1,200 (ANNUAL)

CAPACITY RANGE:

LEVEL OF SERVICE	MAXIMUM SERVICE VOLUME
B	4,400 VEH./DAY
C	7,400 VEH./DAY

RURAL AREA
TYPICAL CROSS SECTION NO. 2
DESIRABLE TWO LANE ARTERIAL



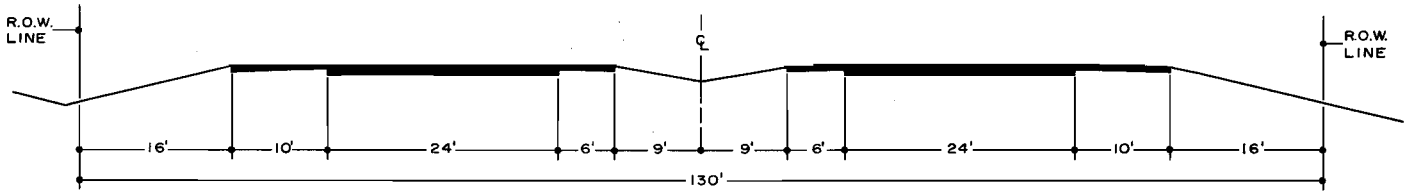
GRAVEL BASE VARIES
24' HIGH TYPE PAVEMENT, 100' R.O.W.

ESTIMATED COST PER MILE:
- CONSTRUCTION = $185,000
- RESURFACE = $ 21,800
- MAINTENANCE = $ 1,400 (ANNUAL)

CAPACITY RANGE:

LEVEL OF SERVICE	MAXIMUM SERVICE VOLUME
B	5,200 VEH./DAY
C	8,500 VEH./DAY

RURAL AREA
TYPICAL CROSS SECTION NO. 3
MINIMUM FOUR LANE ARTERIAL



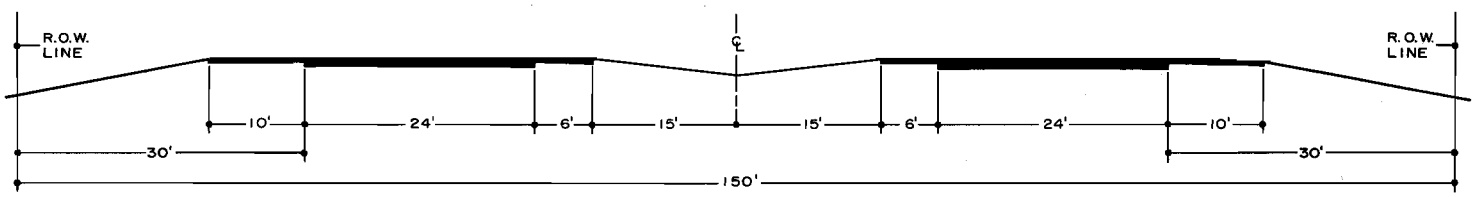
GRAVEL BASE VARIES
DUAL 24' HIGH TYPE PAVEMENT, 130' R.O.W.

ESTIMATED COST PER MILE:
- CONSTRUCTION = $515,000
- RESURFACE = $ 46,400
- MAINTENANCE = $ 2,800 (ANNUAL)

CAPACITY RANGE:

LEVEL OF SERVICE	MAXIMUM SERVICE VOLUME
B	8,700 VEH./DAY
C	13,400 VEH./DAY

RURAL AREA
TYPICAL CROSS SECTION NO.4
DESIRABLE FOUR LANE ARTERIAL



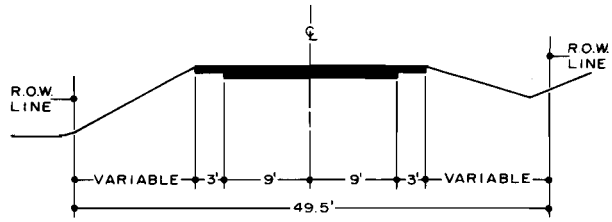
GRAVEL BASE VARIES
DUAL 24' HIGH TYPE PAVEMENT, 150' R.O.W.

ESTIMATED COST PER MILE:
- CONSTRUCTION = $520,000
- RESURFACE = $ 46,400
- MAINTENANCE = $ 3,200 (ANNUAL)

CAPACITY RANGE:

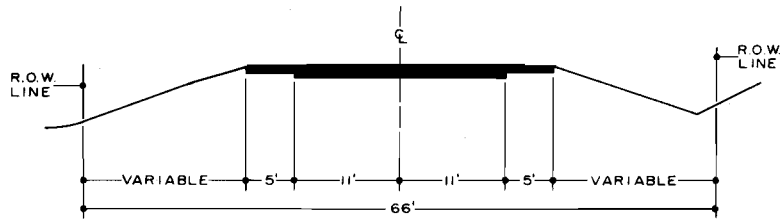
LEVEL OF SERVICE	MAXIMUM SERVICE VOLUME
B	8,700 VEH./DAY
C	13,400 VEH./DAY

RURAL AREA
TYPICAL CROSS SECTION
MINIMUM TWO LANE[a]
COLLECTOR OR MINOR STREET



GRAVEL BASE VARIES — 18' BITUMINOUS PAVEMENT — 49.5' R.O.W.

RURAL AREA
TYPICAL CROSS SECTION
DESIRABLE TWO LANE[b]
COLLECTOR OR MINOR STREET

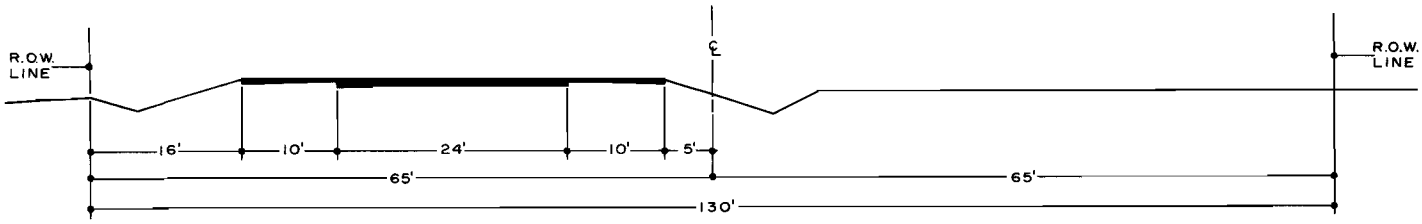


GRAVEL BASE VARIES — 22' BITUMINOUS PAVEMENT — 66' R.O.W.

ESTIMATED COST PER MILE FOR RURAL, NON-ARTERIAL STREETS:
CONSTRUCTION = $160,000 (AVERAGE)
RESURFACE = $ 10,900 (AVERAGE)
MAINTENANCE = $ 800 (ANNUAL AVERAGE)

[a] *Town road standards as established in section 86.26, Wisconsin statutes.*
[b] *Ibid.*

URBANIZING AREA
TYPICAL CROSS SECTION NO. 5
DESIRABLE TWO LANE ARTERIAL
(INITIAL STAGE OF FUTURE FOUR LANE ARTERIAL)



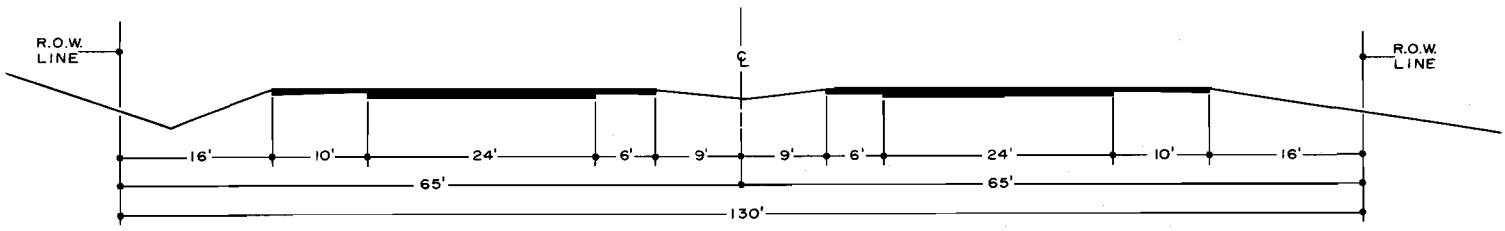
GRAVEL BASE VARIES
24' HIGH TYPE PAVEMENT, 130' R.O.W.

ESTIMATED COST PER MILE:
CONSTRUCTION = $370,000
RESURFACE = $ 23,700
MAINTENANCE = $ 1,900 (ANNUAL)

CAPACITY RANGE:

LEVEL OF SERVICE		MAXIMUM SERVICE VOLUME
RURAL		
	B	5,200 VEH./DAY
	C	8,500 VEH./DAY
URBAN		
	B	6,100 VEH./DAY
	C	6,800 VEH./DAY
	D	7,400 VEH./DAY

URBANIZING AREA
TYPICAL CROSS SECTION NO. 6
DESIRABLE FOUR LANE ARTERIAL



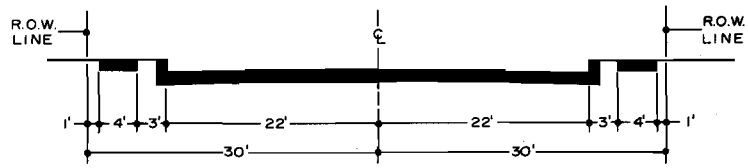
GRAVEL BASE VARIES
DUAL 24' HIGH TYPE PAVEMENT, 130' R.O.W.

ESTIMATED COST PER MILE:
CONSTRUCTION = $565,000
RESURFACE = $ 46,400
MAINTENANCE = $ 4,800 (ANNUAL)

CAPACITY RANGE:

LEVEL OF SERVICE		MAXIMUM SERVICE VOLUME
RURAL		
	B	8,700 VEH./DAY
	C	13,400 VEH./DAY
URBAN		
	B	11,100 VEH./DAY
	C	12,300 VEH./DAY
	D	13,600 VEH./DAY

URBAN AREA
TYPICAL CROSS SECTION NO. 7
MINIMUM TWO LANE ARTERIAL



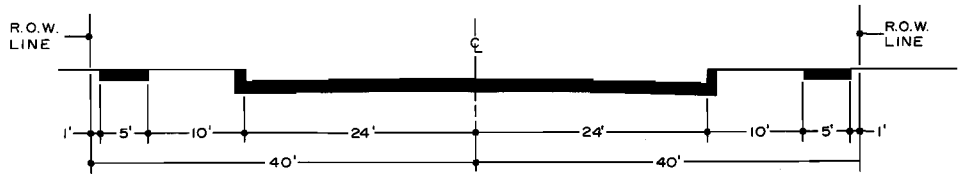
6" GRAVEL BASE
44' HIGH TYPE PAVEMENT, 60' R.O.W.
SIDEWALK, STREET LIGHTING

ESTIMATED COST PER MILE:
CONSTRUCTION = $325,000
RESURFACE = $ 19,700
MAINTENANCE = $ 4,300 (ANNUAL)

CAPACITY RANGE:

LEVEL OF SERVICE	MAXIMUM SERVICE VOLUME
B	8,200 VEH./DAY
C	8,500 VEH./DAY
D	9,100 VEH./DAY

URBAN AREA
TYPICAL CROSS SECTION NO. 8
DESIRABLE TWO LANE ARTERIAL



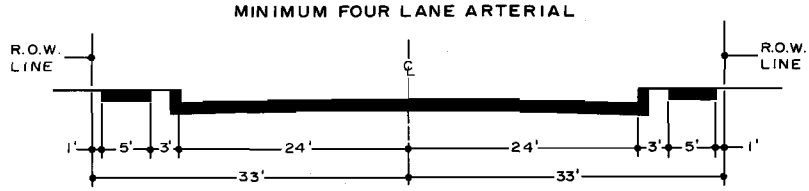
6" GRAVEL BASE
48' HIGH TYPE PAVEMENT, 80' R.O.W.
(ADDITIONAL R.O.W. MAY BE RESERVED IN UNDEVELOPED AREAS)
SIDEWALK, STREET LIGHTING

ESTIMATED COST PER MILE:
CONSTRUCTION = $390,000
RESURFACE = $ 21,700
MAINTENANCE = $ 4,800 (ANNUAL)

CAPACITY RANGE:

LEVEL OF SERVICE	MAXIMUM SERVICE VOLUME
B	9,100 VEH./DAY
C	9,500 VEH./DAY
D	10,300 VEH./DAY

URBAN AREA
TYPICAL CROSS SECTION NO. 9
MINIMUM FOUR LANE ARTERIAL



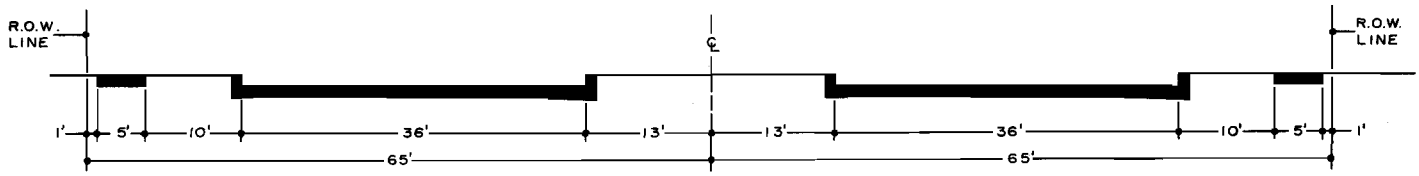
6" GRAVEL BASE
48' HIGH TYPE PAVEMENT, 66' R.O.W.
SIDEWALK, STREET LIGHTING

ESTIMATED COST PER MILE:
CONSTRUCTION = $340,000
RESURFACE = $ 21,700
MAINTENANCE = $ 4,800 (ANNUAL)

CAPACITY RANGE:

LEVEL OF SERVICE	MAXIMUM SERVICE VOLUME
B	11,800 VEH./DAY
C	12,800 VEH./DAY
D	14,600 VEH./DAY

URBAN AREA
TYPICAL CROSS SECTION NO. 10
DESIRABLE FOUR LANE ARTERIAL



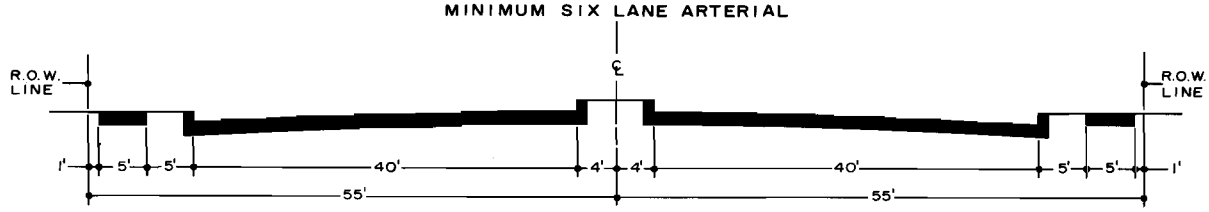
6" GRAVEL BASE
DUAL 36' HIGH TYPE PAVEMENT, 130' R.O.W.
SIDEWALK, STREET LIGHTING

ESTIMATED COST PER MILE:
CONSTRUCTION = $775,000
RESURFACE = $ 31,800
MAINTENANCE = $ 6,500 (ANNUAL)

CAPACITY RANGE:

LEVEL OF SERVICE	MAXIMUM SERVICE VOLUME
B	14,000 VEH./DAY
C	14,900 VEH./DAY
D	17,000 VEH./DAY

URBAN AREA
TYPICAL CROSS SECTION NO. 11
MINIMUM SIX LANE ARTERIAL



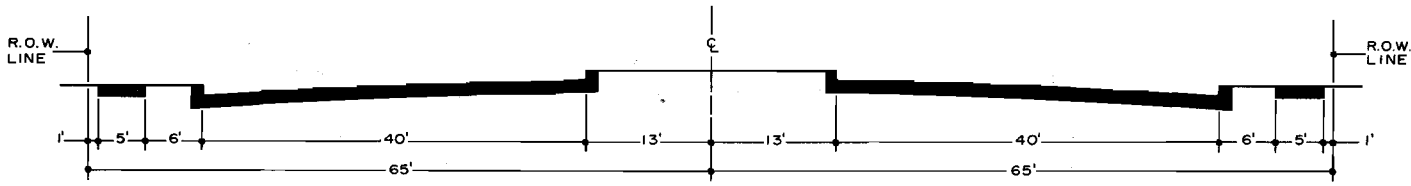
6" GRAVEL BASE
DUAL 40' HIGH TYPE PAVEMENT, 110' R.O.W.
SIDEWALK, STREET LIGHTING

ESTIMATED COST PER MILE:
CONSTRUCTION = $790,000
RESURFACE = $ 35,000
MAINTENANCE = $ 8,600 (ANNUAL)

CAPACITY RANGE:

LEVEL OF SERVICE	MAXIMUM SERVICE VOLUME
B	21,200 VEH./DAY
C	22,700 VEH./DAY
D	26,600 VEH./DAY

URBAN AREA
TYPICAL CROSS SECTION NO. 12
DESIRABLE SIX LANE ARTERIAL



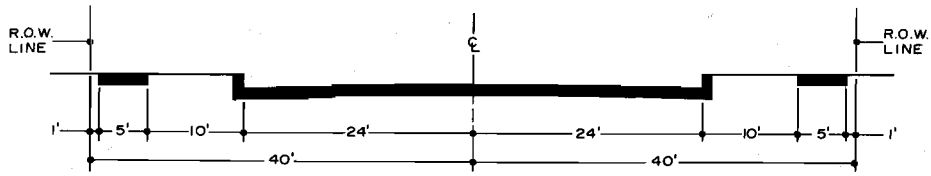
6" GRAVEL BASE
DUAL 40' HIGH TYPE PAVEMENT, 130' R.O.W.
SIDEWALK, STREET LIGHTING

ESTIMATED COST PER MILE:
CONSTRUCTION = $810,000
RESURFACE = $ 35,000
MAINTENANCE = $ 8,600 (ANNUAL)

CAPACITY RANGE:

LEVEL OF SERVICE	MAXIMUM SERVICE VOLUME
B	21,200 VEH./DAY
C	22,700 VEH./DAY
D	26,600 VEH./DAY

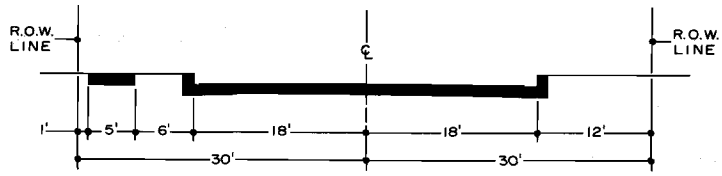
URBAN AREA
TYPICAL CROSS SECTION
COLLECTOR STREET



6" GRAVEL BASE
48' HIGH TYPE PAVEMENT
80' R.O.W.

ESTIMATED COST PER MILE:
CONSTRUCTION = $225,000
RESURFACE = $ 21,700
MAINTENANCE = $ 3,900 (ANNUAL)

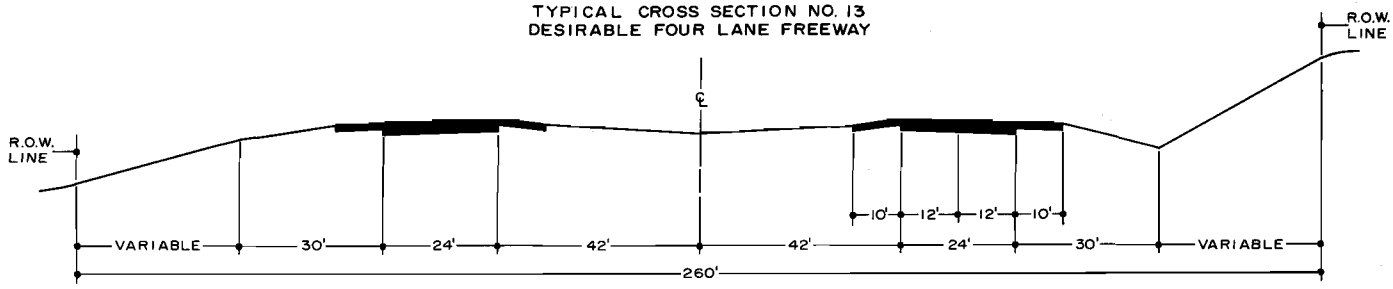
URBAN AREA
TYPICAL CROSS SECTION
MINOR STREET



6" GRAVEL BASE
36' HIGH TYPE PAVEMENT
60' R.O.W.

ESTIMATED COST PER MILE:
CONSTRUCTION = $175,000
RESURFACE = $ 16,300
MAINTENANCE = $ 2,600 (ANNUAL)

RURAL AREA
TYPICAL CROSS SECTION NO. 13
DESIRABLE FOUR LANE FREEWAY



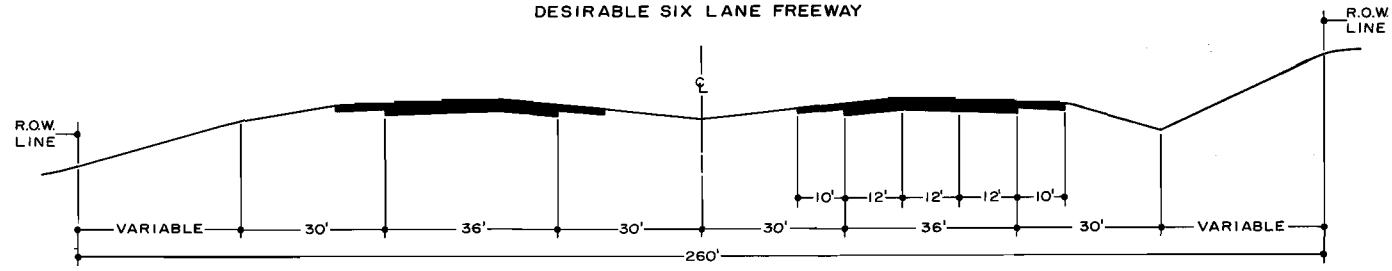
DUAL 24' HIGH TYPE PAVEMENT, 260' R.O.W.

ESTIMATED COST PER MILE:
- CONSTRUCTION = $780,000
- RESURFACE = $ 50,100
- MAINTENANCE = $ 3,900 (ANNUAL)

CAPACITY RANGE:

LEVEL OF SERVICE	MAXIMUM SERVICE VOLUME
A	19,200 VEH./DAY
B	27,500 VEH./DAY
C	37,500 VEH./DAY

RURAL AREA
TYPICAL CROSS SECTION NO. 14
DESIRABLE SIX LANE FREEWAY



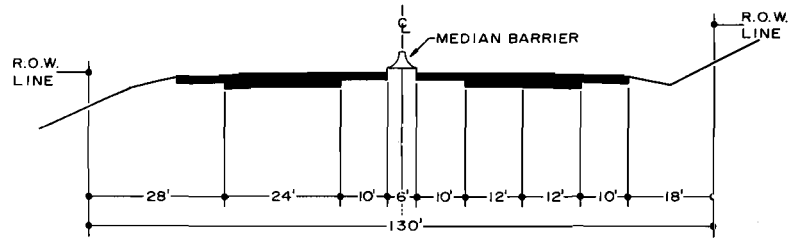
DUAL 36' HIGH TYPE PAVEMENT, 260' R.O.W.

ESTIMATED COST PER MILE:
- CONSTRUCTION = $935,000
- RESURFACE = $ 63,700
- MAINTENANCE = $ 5,000 (ANNUAL)

CAPACITY RANGE:

LEVEL OF SERVICE	MAXIMUM SERVICE VOLUME
A	33,000 VEH./DAY
B	47,800 VEH./DAY
C	60,000 VEH./DAY

URBAN AREA
TYPICAL CROSS SECTION NO. 15
MINIMUM FOUR LANE FREEWAY



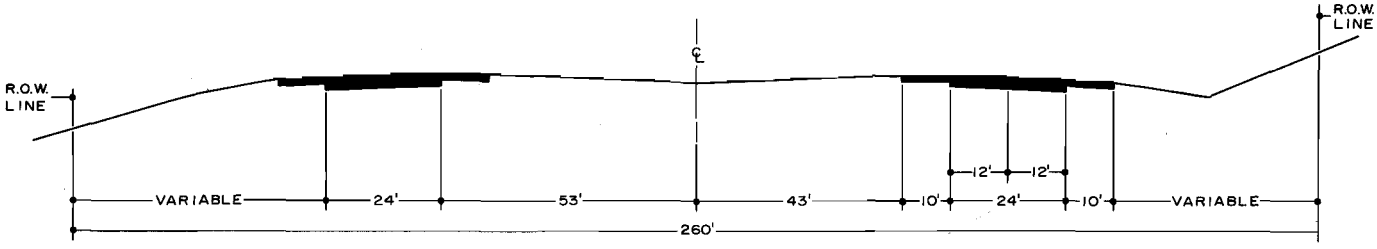
DUAL 24' HIGH TYPE PAVEMENT, 130' R.O.W.

ESTIMATED COST PER MILE:
CONSTRUCTION = $880,000
RESURFACE = $ 50,100
MAINTENANCE = $ 6,300 (ANNUAL)

CAPACITY RANGE:

LEVEL OF SERVICE	MAXIMUM SERVICE VOLUME
B	37,800 VEH./DAY
C	51,500 VEH./DAY
D	61,900 VEH./DAY

URBAN AREA
TYPICAL CROSS SECTION NO. 16
DESIRABLE FOUR LANE FREEWAY



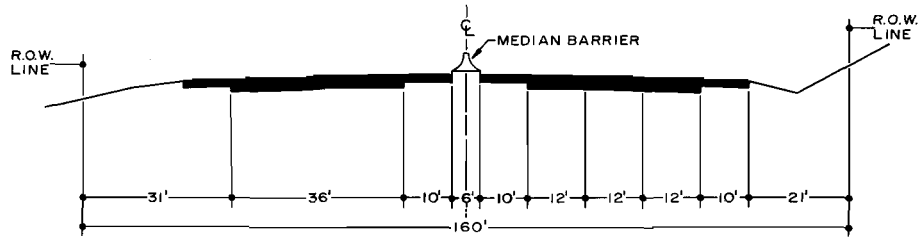
DUAL 24' HIGH TYPE PAVEMENT, 260' R.O.W.

ESTIMATED COST PER MILE:
CONSTRUCTION = $1,055,000
RESURFACE = $ 50,100
MAINTENANCE = $ 11,400 (ANNUAL)

CAPACITY RANGE:

LEVEL OF SERVICE	MAXIMUM SERVICE VOLUME
B	37,800 VEH./DAY
C	51,500 VEH./DAY
D	61,900 VEH./DAY

URBAN AREA
TYPICAL CROSS SECTION NO. 17
MINIMUM SIX LANE FREEWAY



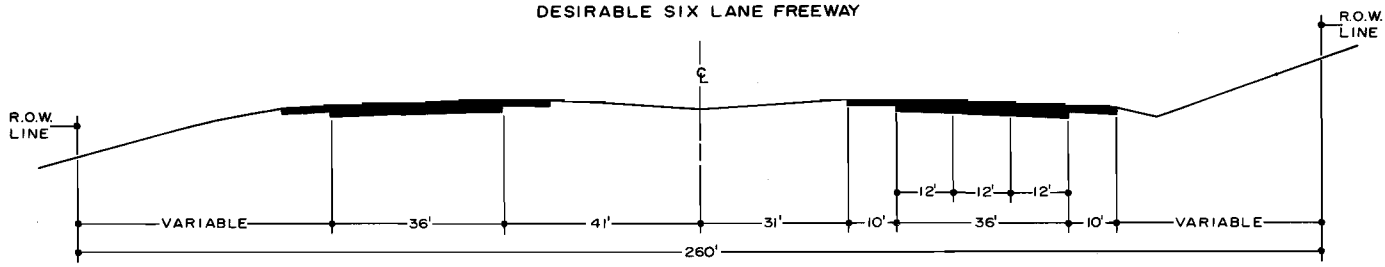
DUAL 36' HIGH TYPE PAVEMENT, 160' R.O.W.

ESTIMATED COST PER MILE:
CONSTRUCTION = $1,065,000
RESURFACE = $ 63,700
MAINTENANCE = $ 7,300 (ANNUAL)

CAPACITY RANGE:

LEVEL OF SERVICE	MAXIMUM SERVICE VOLUME
B	65,700 VEH./DAY
C	82,500 VEH./DAY
D	92,800 VEH./DAY

URBAN AREA
TYPICAL CROSS SECTION NO. 18
DESIRABLE SIX LANE FREEWAY



DUAL 36' HIGH TYPE PAVEMENT, 260' R.O.W.

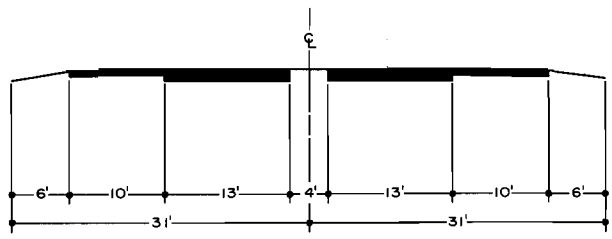
ESTIMATED COST PER MILE:

CONSTRUCTION	= $	1,230,000
RESURFACE	= $	63,700
MAINTENANCE	= $	13,300 (ANNUAL)

CAPACITY RANGE:

LEVEL OF SERVICE	MAXIMUM SERVICE VOLUME
B	65,700 VEH./DAY
C	82,500 VEH./DAY
D	92,800 VEH./DAY

TYPICAL TRANSITWAY CROSS SECTION



FOR FUTURE DEVELOPMENT WITHIN FREEWAY MEDIAN

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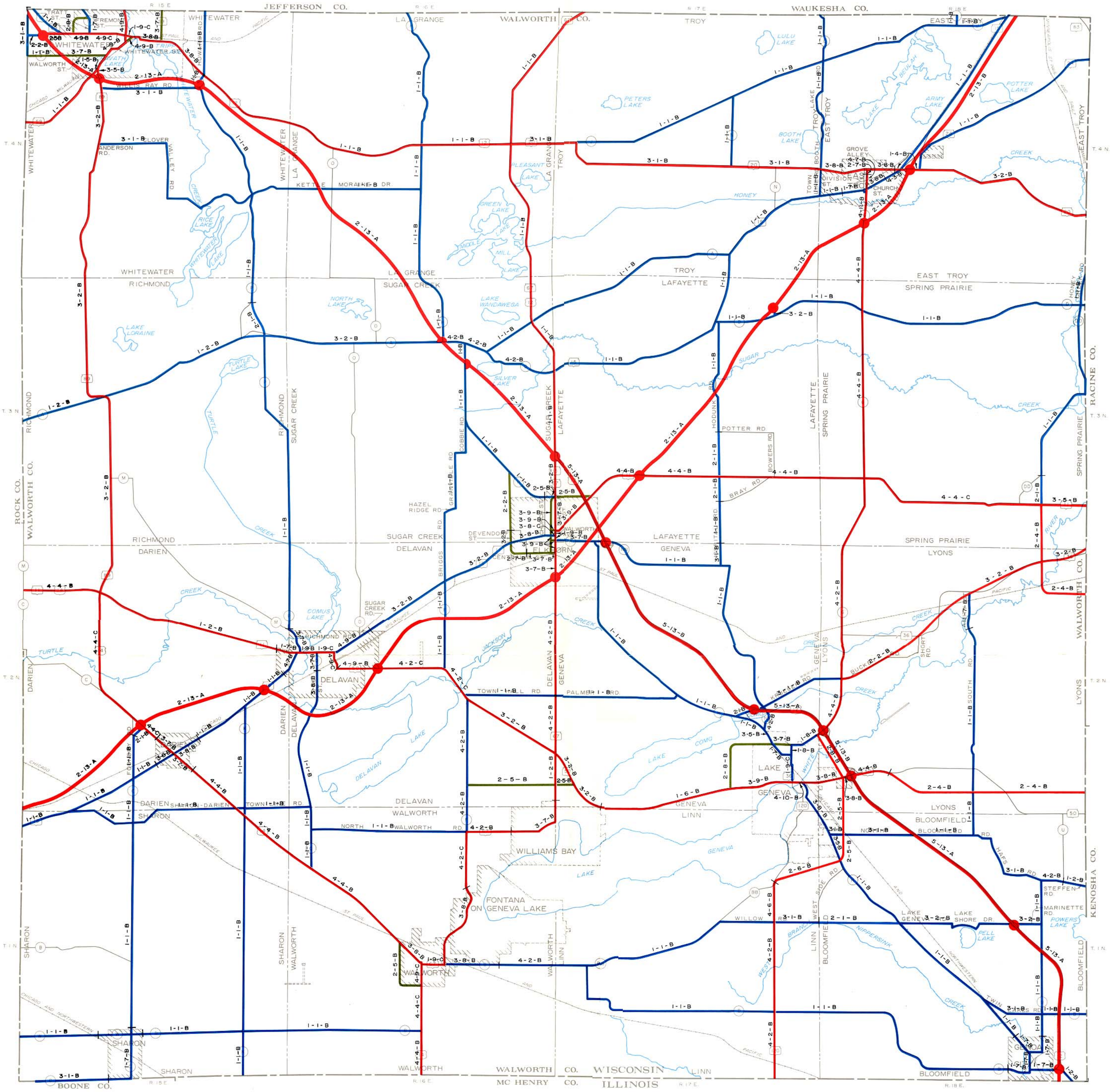
MAP B-1
RECOMMENDED JURISDICTIONAL HIGHWAY SYSTEM PLAN
FOR WALWORTH COUNTY — 1990



LEGEND

JURISDICTIONAL CLASSIFICATION

- TYPE I ARTERIAL (FREEWAY – STATE TRUNK HIGHWAY)
- TYPE I ARTERIAL (STATE TRUNK HIGHWAY)
- TYPE II ARTERIAL (COUNTY TRUNK HIGHWAY)
- TYPE III ARTERIAL (LOCAL TRUNK HIGHWAY)
- FREEWAY – ARTERIAL INTERCHANGE

FUNCTIONAL CLASSIFICATION

4 – 2 – B

- 4 — LEVEL OF SERVICE
- 2 — TYPICAL CROSS SECTION
- B — TYPE OF IMPROVEMENT

SEE ACCOMPANYING KEY TO NUMBER AND LETTER CODES

Source: SEWRPC.

FUNCTIONAL CLASSIFICATION CODE KEY

TYPE OF IMPROVEMENT	TYPICAL CROSS SECTION[a]	LEVEL OF SERVICE[b]
1 Resurfacing Only	1 Two-Lane Arterial (Minimum-Rural Area)	A Level of Service A describes a condition of free flow, with low volumes and high speeds. Traffic density is low, with speeds controlled by driver desires, speed limits, and physical roadway conditions. There is little or no restriction in maneuverability due to the presence of other vehicles, and drivers can maintain their desired speeds with little or no delay.
2 Construction of New Facility	2 Two-Lane Arterial (Desirable-Rural Area)	B Level of Service B is in the zone of stable flow, with operating speeds beginning to be restricted somewhat by traffic conditions. Drivers still have reasonable freedom to select their speed and lane of operation. Reductions in speed are not unreasonable, with a low probability of traffic flow being restricted. The lower limit (lowest speed, highest volume) of this level of service has been associated with service volumes used in the design of rural highways.
3 Reconstruction With Same Capacity	3 Four-Lane Arterial (Minimum-Rural Area)	C Level of Service C is still in the zone of stable flow, but speeds and maneuverability are more closely controlled by the higher volumes. Most of the drivers are restricted in their freedom to select their own speed, change lanes, or pass. A relatively satisfactory operating speed is still obtained, with service volumes perhaps suitable for urban design practice.
4 Reconstruction for Additional Capacity	4 Four-Lane Arterial (Desirable-Rural Area)	D Level of Service D approaches unstable flow, with tolerable operating speeds being maintained though considerably affected by changes in operating conditions. Fluctuations in volume and temporary restrictions to flow may cause substantial drops in operating speeds. Drivers have little freedom to maneuver, and comfort and convenience are low, but conditions can be tolerated for short periods of time.
5 No Work Required	5 Two-Lane Arterial (Desirable-Urbanizing Area)	E Level of Service E cannot be described by speed alone, but represents operations at even lower operating speeds than in level D, with volumes at or near the capacity of the highway. At capacity, speeds are typically, but not always, in the neighborhood of 30 mph. Flow is unstable, and there may be stoppages of momentary duration.
	6 Four-Lane Arterial (Desirable-Urbanizing Area)	F Level of Service F describes forced flow operation at low speeds, where volumes are below capacity. These conditions usually result from queues of vehicles backing up from a restriction downstream. The section under study will be serving as a storage area during parts or all of the peak hour. Speeds are reduced substantially and stoppages may occur for short or long periods of time because of the downstream congestion. In the extreme, both speed and volume can drop to zero.
	7 Two-Lane Arterial (Minimum-Urban Area)	
	8 Two-Lane Arterial (Desirable-Urban Area)	
	9 Four-Lane Arterial (Minimum-Urban Area)	
	10 Four-Lane Arterial (Desirable-Urban Area)	
	11 Six-Lane Arterial (Minimum-Urban Area)	
	12 Six-Lane Arterial (Desirable-Urban Area)	
	13 Four-Lane Freeway (Desirable-Rural Area)	
	14 Six-Lane Freeway (Desirable-Rural Area)	
	15 Four-Lane Freeway (Minimum-Urban Area)	
	16 Four-Lane Freeway (Desirable-Urban Area)	
	17 Six-Lane Freeway (Minimum-Urban Area)	
	18 Six-Lane Freeway (Desirable-Urban Area)	

[a] See Figure B-1.

[b] See Highway Research Board Special Report 87, Highway Capacity Manual 1965, pages 78-81.

GRAPHIC SCALE

0 1/2 1 2 3 MILES

0 4000 8000 12000 16000 20000 FEET

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Appendix C

SUGGESTED MODEL RESOLUTION FOR ADOPTION OF THE WALWORTH COUNTY JURISDICTIONAL HIGHWAY SYSTEM PLAN

WHEREAS, the Southeastern Wisconsin Regional Planning Commission which was duly created by the Governor of the State of Wisconsin in accordance with Section 66.945(2) of the Wisconsin Statutes on the 8th day of August 1960, upon petition of the Counties of Kenosha, Milwaukee, Ozaukee, Racine, Walworth, Washington, and Waukesha, has the function and duty of making and adopting a master plan for the physical development of the Region; and

WHEREAS, the Southeastern Wisconsin Regional Planning Commission has completed and adopted a regional transportation plan (highway and transit components) at its meeting held on the 1st day of December 1966; and

WHEREAS, the said adopted regional transportation plan recommends as an important plan implementation step that the State Highway Commission of Wisconsin, the Milwaukee County Expressway Commission (now the Milwaukee Expressway and Transportation Commission), and the seven county highway committees, in cooperation with the local units of government within the Region, convert the functional highway plan contained in the adopted regional transportation plan into a jurisdictional plan on a county-by-county basis; and

WHEREAS, the Walworth County Highway Commissioner, acting pursuant to a directive of the Walworth County Board of Supervisors, dated March 19, 1968, requested on March 19, 1968, the guidance, cooperation, and assistance of the Commission in the preparation of a jurisdictional highway system plan for Walworth County; and

WHEREAS, a Technical Coordinating and Advisory Committee for Jurisdictional Highway Planning in Walworth County was created to assist in the preparation of such a study, which consisted of knowledgeable and experienced engineers and planners from the U. S. Department of Transportation, Wisconsin Department of Transportation, Walworth County, municipalities within Walworth County, and the Southeastern Wisconsin Regional Planning Commission, as well as citizen representatives; and

WHEREAS, under the guidance of the Technical Coordinating and Advisory Committee for Jurisdictional Highway Planning in Walworth County and of a competent interagency staff, all research studies undertaken for the accomplishment of a jurisdictional highway system plan for Walworth County have been concluded, including: 1) the preparation and printing of a map setting forth the proposed jurisdictional highway system in Walworth County, as projected to the calendar year 1990; and 2) the preparation and publication of SEWRPC Planning Report No. 15, entitled A Jurisdictional Highway System Plan for Walworth County, published in October of 1972, which contains specific recommendations as to the level and agency of government which should assume responsibility for the construction, maintenance, and operation of each segment of the total 1990 planned arterial street and highway system within Walworth County, and concomitant recommendations for the realignment of the federal aid highway systems and the state and county trunk highway systems, together with descriptive and explanatory matter and other matters intended to comprise a conversion of the functional highway plan for Walworth County into a jurisdictional highway plan, said functional plan being a component of the adopted regional transportation plan; and

WHEREAS, the process of converting the adopted functional highway plan for Walworth County into a jurisdictional highway system plan has necessarily resulted in refinements to the functional highway plan, such refinements consisting of additions, deletions, and changes to the functional highway system, thus constituting recommended amendments to the adopted functional plan; and

WHEREAS, the Commission has transmitted certified copies of its resolution adopting such jurisdictional highway system plan for Walworth County, together with the aforementioned SEWRPC Planning Report No. 15, to the local units of government; and

WHEREAS, the (Name of Local Governing Body) did on the _____ day of _____, 19__, approve a resolution adopting the regional transportation plan; and

WHEREAS, the (Name of Local Governing Body) has supported, participated in the financing of, and generally concurred in the regional transportation and other planning programs undertaken by the Southeastern Wisconsin Regional Planning Commission and believes that the Walworth County jurisdictional highway system plan as prepared by the Commission in cooperation with other agencies is a valuable guide not only to the development of Walworth County but also of the community, and the adoption of such plan by the (Name of Local Governing Body) will assure a common understanding by the several governmental levels and agencies concerned and enable these levels and agencies of government to program the necessary plan implementation work.

NOW, THEREFORE, BE IT HEREBY RESOLVED that, pursuant to Section 66.945(12) of the Wisconsin Statutes, the (Name of Local Governing Body) on the _____ day of _____, 19__, hereby adopts the Walworth County jurisdictional highway system plan previously adopted by the Commission as set forth in SEWRPC Planning Report No. 15, as an amendment to the highway system component of the adopted regional transportation plan and as a guide for community development.

BE IT FURTHER RESOLVED, that the _____ Clerk transmit a certified copy of this resolution to the Southeastern Wisconsin Regional Planning Commission.

_____
(Chairman, President, or Mayor of Local Governing Body)

ATTESTATION:

_____
(Clerk of Local Governing Body)

TECHNICAL COORDINATING AND ADVISORY COMMITTEE FOR JURISDICTIONAL HIGHWAY PLANNING IN WALWORTH COUNTY

Milton R. Reik . . . . . Citizen Member, City of Lake Geneva
Chairman

Wilmer Lean. . . . . County Highway Commissioner
Secretary Walworth County

Anthony F. Balestrieri . . . .Consulting Engineer, City of Elkhorn
Commissioner, SEWRPC

William E. Barth . . . . . .Citizen Member, Town of Walworth

Kurt W. Bauer. . . . . .Executive Director, SEWRPC

Schuyler W. Case . . . . . .Citizen Member, Town of Sharon

Vincent V. Casey . . . . . .Citizen Member, Town of Linn

Theodore Casper. . . . . Citizen Member, Village of Williams Bay

Werner Christian . . . . . .Chairman, Town of Whitewater

Frank Cline. . . . . Citizen Member, Town of East Troy

Oliver W. Fleming. . . . . Alderman, City of Delavan

George Gunderson . . . . . Chief of Statewide Planning
Division of Planning
Wisconsin Department of Transportation

G. F. Hill . . . . . .City Manager, City of Whitewater

Emil Johnejack . . . . . .Mayor, City of Lake Geneva

Herbert E. Johnson . . . . . .Consulting Engineer, City of Elkhorn

Thomas R. Kinsey . . . . . District Engineer, District 2
Division of Highways
Wisconsin Department of Transportation

Martin J. Monahan. . . . . .Assistant Planning & Research Engineer
Federal Highway Administration
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INTERAGENCY STAFF WALWORTH COUNTY JURISDICTIONAL HIGHWAY STUDY

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