

PLANNING GUIDE NO. 2
(2nd Edition)

**OFFICIAL
MAPPING
GUIDE**

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(Second Edition)**

OFFICIAL MAPPING GUIDE

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PREFACE

In 1964 the Commission published SEWRPC Planning Guide No. 2, *Official Mapping Guide*. That guide was the second in a series of six published by the Commission for distribution to, and use by, cities, villages, towns, and counties within the seven county Region. The purpose of the *Official Mapping Guide* was twofold. First, it was intended to explain clearly the functions and benefits of official mapping and the engineering considerations involved in the preparation of a proper official map. Second, it was intended to assist county and local officials in the preparation of official maps. To that end, the Guide included a Model Official Map Ordinance.

The official map is one of the oldest public plan implementation devices available, its use in the United States dating back to colonial times. A renewed importance has been attached to this plan implementation device by certain provisions of the Federal Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). That Act requires state transportation agencies and regional planning organizations and their constituent counties and municipalities to consider the identification and preservation of corridors that may be required for the eventual construction of new, or the improvement of existing, major transportation facilities. The Act envisions the use of various measures to protect rights-of-way for needed transportation facilities in order to prevent inconsistent development, minimize or avoid undesirable impacts, prevent the foreclosure of desirable options, permit more orderly project development, decrease inconvenience to people affected by highway construction, facilitate compatible development of adjacent lands, reduce costs, and assure the integrity of the required system. The official map is one such measure that can be efficiently and actively used to preserve rights-of-way for transportation facility improvements. The renewed importance of the official map as a potential transportation corridor preservation device, together with the development of automated base maps and parcel-based land information systems,

underscored the need to prepare this second edition of the Commission *Official Mapping Guide*.

The official map, as envisioned in the Wisconsin Statutes, however, has broader application than simply as a transportation plan implementation device; such application extending to include the preservation of lands for drainageways, parks, parkways, and playgrounds, as well as rights-of-way for streets and highways, public transit facilities, and railways. Given the inextricable relationship between such lands and rights-of-way, both existing and proposed, and land use development and redevelopment, the official map becomes a valuable tool for furthering the implementation of comprehensive community development plans. Accordingly, the Regional Planning Commission encourages its constituent counties and municipalities to consider the preparation and adoption of official maps; this guide is intended to promote such actions.

The Guide is not intended to be applied indiscriminately, without regard for local conditions; nor is it intended to supplant necessary professional planning, engineering, and legal advice at the county and local levels of government. The Mapping Guide assumes the existence of duly constituted county and local planning agencies charged with carrying out the public planning function and is intended to assist those agencies in the performance of their functions and duties.

This guide was prepared by the staff of the Southeastern Wisconsin Regional Planning Commission; any questions concerning its content and use should be addressed to the Commission. Commission staff are available to assist counties and local municipalities in applying this guide in the preparation of official maps. It is the hope of the Commission that the *Official Mapping Guide* will be a helpful and informative aid to all interested in developing more attractive, as well as safe, healthful, efficient, and prosperous, communities within the Region.

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CHAPTER I

INTRODUCTION

The seven-county Southeastern Wisconsin Region is undergoing rapid urbanization. The widely dispersed characteristics of this urbanization, with its accompanying dependence on motor vehicle transportation, has created a need to extend urban street systems and to widen, realign, and reconstruct existing trafficways. The attendant growing demand, not only for land for arterial streets and highways, but also land for collector and land access streets to furnish access to and circulation within developing areas, is accompanied by a demand for land for utility and drainage rights-of-way and for parks and parkways. The reservation of rights-of-way and sites for these purposes is required, not only to meet the transportation, stormwater management, and recreational needs of the rapidly changing Region, but also to help give shape and form to urban development.

To meet adequately the growing need, related to areawide urbanization, to reserve land for public facilities will require not only sound long-range plan formulation at all levels of government, but also practical plan implementation. An interval must necessarily exist between the time a given project is incorporated into a long-range plan and the time of actual project construction. This time lag is inherent in the public planning process; it is during this time lag that means must be found effectively to reserve land for planned projects and thereby to ensure the integrity of the plan.

The "official map" is one of the oldest plan implementation devices at the disposal of the public planner. It is also one of the most effective and efficient devices which can be brought to bear on the problem of reserv-

ing land for future public use. Yet, it is probably the least understood and the least used of all local plan implementation devices. Zoning ordinances, subdivision regulations, building and housing codes, and capital improvement programs are all better understood and more widely applied by communities. Data on the number of municipalities within the Region having official maps in 1990 as compared to the number of municipalities having zoning and subdivision control ordinances are provided in Table 1. The table indicates that a potentially powerful planning and plan implementation tool has been largely either ineffectively applied or entirely neglected.

The reluctance of counties and communities to use the official map device probably stems, historically, from a single principal difficulty; namely, the assumed expense of locating and mapping each existing and proposed street and public open area within the geographic limits of the planning jurisdiction concerned with both accuracy and precision. This once was an engineering problem of considerable magnitude within the Region, particularly in larger communities, owing to the lack of adequate base maps based upon the type of horizontal survey control required to produce true maps. The Commission has, however, for over 30 years promoted the provision of the required survey control and base maps so that this historic impediment to the use of the official map as a plan implementation device no longer exists within the Region. Accordingly, this manual sets forth a practical technique for the preparation of an official map, along with a model ordinance and suggestions for administration.

Table 1

**OFFICIAL MAPS, ZONING ORDINANCES, AND SUBDIVISION
CONTROL ORDINANCES IN THE SOUTHEASTERN WISCONSIN REGION: 1990**

Municipalities by Type	Total Number Within Region	With Official Map		With Zoning Ordinance		With Subdivision Ordinance	
		Number	Percent	Number	Percent	Number	Percent
First Class (Milwaukee)	1	1	100	1	100	1	100
Second Class (population 39,900-149,999)	5	2	40	5	100	5	100
Third Class (population 10,000- 38,999)	13	9	69	13	100	13	100
Fourth Class (population under 10,000)	9	6	67	9	100	9	100
Villages	55	26	47	55	100	53	96
Total	83	44	53	83	100	81	98
Towns	64	1 ^a	2	32 ^b	50	39	61
Counties	7	2 ^c	29	4/6 ^d	57/86	4/6 ^e	57/86

^aThe Town of Lisbon is the only Town to have adopted an Official Map, under authorization of the Town adopting village powers.

^bSEWRPC Planning Report No. 40 reports 21 Town zoning ordinances; since 1985, the Town of Paris and the Town of Salem have repealed their ordinances and ratified the Kenosha County Zoning Ordinance; Washington County repealed its comprehensive zoning and the 13 Washington County towns have adopted town zoning ordinances.

^cMilwaukee County and Waukesha County each reported an adopted county highway width map in 1985. Ozaukee County repealed its highway width map in 1980 because the map had become outdated.

^dFour counties have adopted comprehensive zoning ordinances. Ozaukee County and Washington County have adopted shoreland zoning ordinances only.

^eFour counties have adopted comprehensive subdivision control ordinances. Ozaukee County and Waukesha County have adopted shoreland subdivision control ordinances only.

Source: SEWRPC Planning Report No. 40, A Regional Land Use Plan for Southeastern Wisconsin: 2010 (1985 inventory) and post-1985 update by SEWRPC staff.

CHAPTER II

HISTORICAL BACKGROUND

The concept and actual use of the official map in the United States dates back to Colonial times, when the proprietary founders of well-planned Colonial cities, such as Philadelphia, Annapolis, and Williamsburg, caused plans for these cities to be prepared and the necessary streets and public commons preserved for public use by prohibition of the construction of buildings, fences, and other structures in the dedicated areas. Later, as land ownership became more widespread, legislation enacted by the colonies, and later the states, permitted commissioners appointed for this purpose to plat townsites with attendant streets and to take back deeds of trust from private owners who by this method consented to the street dedications. Washington, D. C., among other cities, was planned and mapped in this manner.

These methods proved too cumbersome with advancing urbanization and were supplanted by early nineteenth century state legislation under which municipalities were authorized to reserve rights-of-way for streets in advance of construction and to prohibit any building in the beds of these future streets. No escape from these regulations was provided in the early legislation; no compensation was payable for the removal of a structure built in the bed of a street in violation of the law. The first use of the official map under such legislation and in conjunction with planning for the orderly expansion of an existing urban area was made in New York City about 1806, with other cities soon following this lead. Baltimore completed an official map in 1817, Brooklyn in 1818, and additional cities in Pennsylvania, including Pittsburgh, soon thereafter. The legality of these early official maps was tested and, in spite of the severity of their application as compared to modern practice, upheld in the New York and Pennsylvania courts.

With the birth of the modern city planning movement, modern official map enabling legislation has been adopted by over one-half of the states. The prototype of all modern official map acts was adopted by the State of New York in 1926; subsequently, Maryland, Michigan, Minnesota, New Hampshire, Utah, and Wisconsin, among others, enacted enabling legislation based to a considerable extent on the New York act.

The basic enabling legislation under which local units of government may carry out official mapping in Wisconsin was enacted in 1941 and is set forth in Section 62.23(6) of the *Wisconsin Statutes*, reproduced in Appendix A for ready reference. Unfortunately, the once-elegantly drafted Wisconsin official map enabling legislation has been needlessly and confusingly amended in recent years, apparently in an ad hoc fashion to promote certain narrow, single-purpose agendas, by the addition of unnecessary and unrelated requirements, including the inexplicable inclusion of historic districts to the list of what are intended to be facilities that may be officially mapped. The latter addition, particularly, indicates a lack of understanding of the function of the official map. The disfigurement of the once elegant enabling legislation is evidenced by paragraphs 1(a) and (b) and the already-noted reference to historic districts. Such additions, being for informational purposes only, serve to clutter what should be a very simple map, one that conveys a clear message that certain areas are to be reserved for planned public facilities and are, accordingly, not to be encroached upon. The unnecessary and disfiguring recent amendments aside, the legislation remains essentially sound in its entirety, placing at the disposal of the municipalities a powerful plan implementation device. Other provisions of the *Wisconsin Statutes* enable villages, towns, counties and the State itself to carry out official mapping, although the county and State authorities are in modified form.

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CHAPTER III

DEFINITIONS, FUNCTIONS, AND BENEFITS

DEFINITIONS

Section 62.23(6)(b) of the *Wisconsin Statutes* provides that the common council of any city may establish an official map for the precise designation of right-of-way lines and site boundaries of streets, highways, parkways, parks, and playgrounds.¹ The City may also include on its official map the locations of railway rights-of-way, public transit facilities, and those waterways² which have been included in a comprehensive surface water drainage plan. Such a map has the force of law and is deemed to be conclusive with respect to the location and width of both existing and proposed streets, highways, waterways, and parkways and the location and extent of existing and proposed railway rights-of-way, public transit facilities, and parks and playgrounds shown on the map. The Statutes further provide that the official map may be extended to include areas beyond the corporate limits lines but within the extraterritorial plat approval jurisdiction of the municipality. It is important

¹In confusing and incongruous recent amendments set forth in Sections 62.23(a) 1a and 1b, the legislation requires that in cities lying outside counties having a population of 500,000 or more persons, the official map shall show the location of any part of an airport located within the area subject to zoning by the city and any part of an airport-affected area located within the area subject to zoning by the city. A recent amendment also inexplicably added historic districts to the list of facilities that can be mapped.

²Waterways are defined in Section 62.23(6)(a) as including rivers, streams, creeks, ditches, drainage channels, watercourses, lakes, bays, ponds, impoundment reservoirs, retention and detention basins, marshes, and other surface water areas, regardless of whether the areas are natural or artificial.

to note that in Wisconsin the official map enabling legislation is a subsection of the basic local planning enabling legislation, Section 62.23 entitled "City planning," and as such is made applicable by references in other statutes to villages and towns as well as to cities.

CONFUSION OF TERMS

The term "official map" is often misapplied or misused. This common confusion stems in part from the fact that local governments may have several maps used for different purposes which are designated as official documents and, therefore, loosely referred to as "official maps." Some of this confusion is also due to the extensive use of maps in comprehensive community plans. Maps are often used in such plans to present long-range land use and arterial street and highway system plans and when so used are often inappropriately called "official maps." The term "official map" is also sometimes incorrectly applied to the map delineating zoning districts which accompanies a zoning ordinance and is used to administer such an ordinance. Indeed, such a misuse of the term "official map" is included in Section 60.61(2)(e) of the *Wisconsin Statutes*.

The term "official map" as used in this manual applies only to that map properly adopted pursuant to Section 62.23(6)(b) of the *Wisconsin Statutes*. Such a map is intended to be used as a precise planning tool to implement a community's master plan for streets, highways, parkways, parks and playgrounds, and drainageways. Its basic purpose is to prohibit the construction of buildings or structures and their associated improvements on land that has been designated for current or future public use. The official map must be adopted by the governing body of the local unit of government concerned pursuant to Section 62.23(6)(b) of the *Wisconsin Statutes*; only

after such adoption does it assume its legal force. Good practice would dictate that a certified copy of the resolution adopting the map appear on the face of the map. If this practice is followed, this certificate would perhaps be the most unique identifying feature of an official map.

FUNCTIONS

The primary function of the official map is to implement the community's plan of streets and highways in a manner similar to that in which the zoning ordinance and map should implement the community's land use plan. The official map permits the community to protect the beds of future streets, as well as the beds of partially or wholly developed streets which are to be widened, by essentially prohibiting construction of new buildings in such beds. The possible monetary savings which can accrue to the community from such protection of street rights-of-way are large, but the fact that an official map assures the integrity of the community's long-range plan of streets and highways is even more important. The official map may also be used to protect the beds of planned railway rights-of-way and public transit facilities.

Another function of the official map is to implement the community's master plan of parks, parkways, and open spaces. Because parks and parkways frequently include environmentally valuable natural features, such as scenic and historic places, watercourses and drainageways, floodplains, and wetlands, these features can be protected through an official map. Inclusion of such features as proposed parkland on the official map gives strong legal status to the planned facility and protects the land within the indicated taking lines for public use. Again, the possible monetary savings which can accrue from such reservation for future use are high; the protection offered the public health, safety, and welfare in connection with floodplains and wetlands is very important.

Yet another function of the official map is to implement the community's stormwater management plan. The official map permits the community to protect the beds of

future drainageways that are included in a comprehensive surface water drainage plan. Again, while the monetary savings which can accrue from such protection are large, the protection of the integrity of the drainage plan is even more important.

An incidental but very important benefit accruing to the community through properly executing official mapping is that such mapping adequately locates and records all existing street lines that constitute the boundaries of the public's property and thereby tends to stabilize the location of real property boundary lines, both private and public. Since planning often involves the legal establishment of lines bounding districts reserved for specific purposes, the formulation and implementation of physical plans requires detailed knowledge of the location of existing street lines and of the boundaries of real property. The official map can provide this information most effectively and efficiently. Therefore, the official map also functions as an accurate base map depicting existing cadastral conditions and as such can greatly expedite all municipal planning and engineering work.

RELATIONSHIP TO THE MASTER PLAN

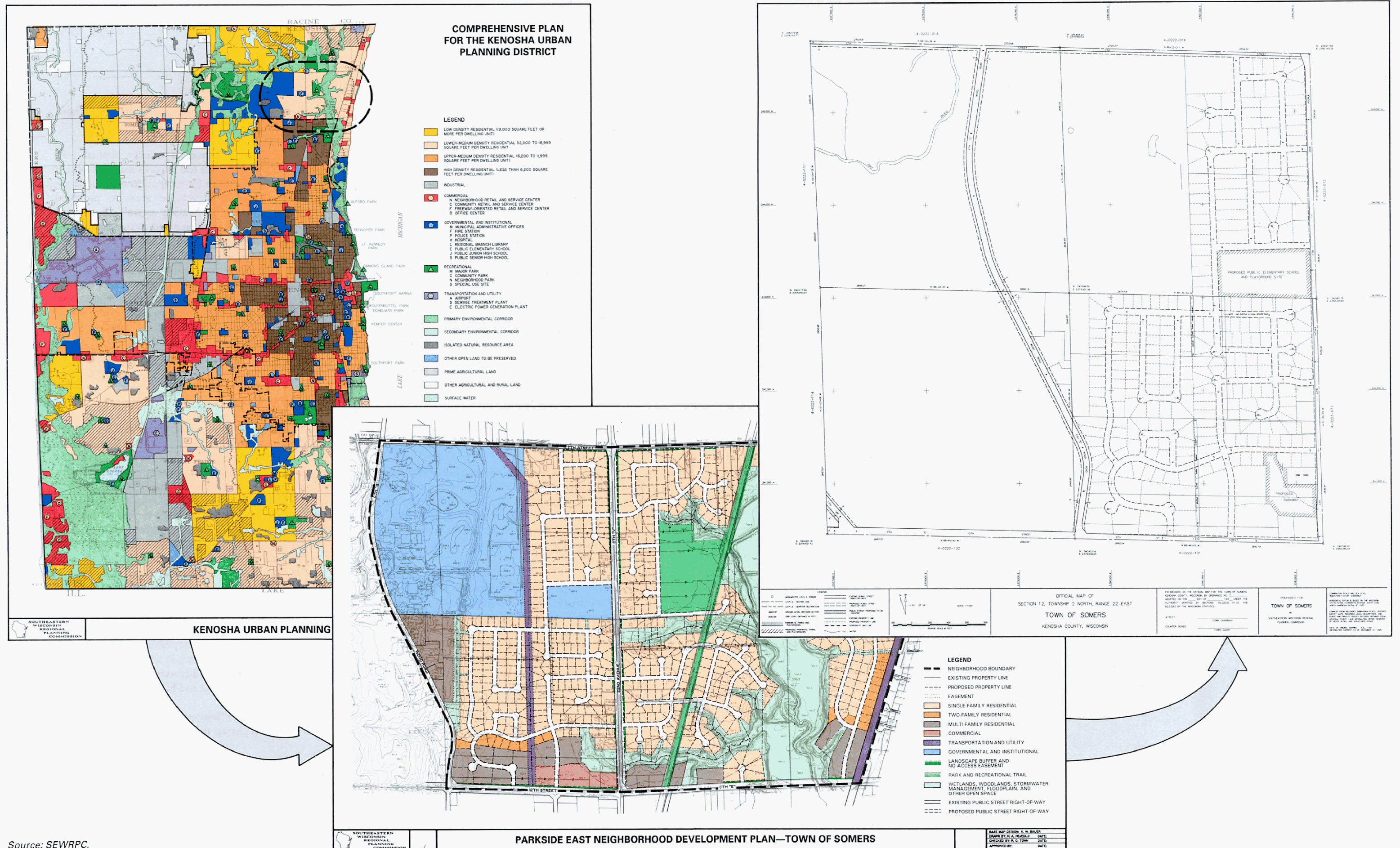
The terms "master plan" or "comprehensive plan" refer to an extensively developed plan for the physical development of a community, including proposals for future land use, transportation, urban redevelopment, and such public facilities as schools, parks, utilities, and drainage facilities. The master plan is carried out by a series of plan implementation devices including, among others, the official map.

The official map allows the municipality to express its intent to reserve land for public purposes without commitment to actual acquisition. Thus, the official map functions as a refinement of the community's master plan, reflecting certain aspects in a precise, accurate, and legally binding manner (see Figure 1).

Upon completion of the precise cadastral base mapping, specific projects, such as new major streets and highways; proposed street widenings, relocations and vacations; and proposed parks, parkways, and major

Figure 1

RELATIONSHIP OF THE OFFICIAL MAP TO THE MASTER, OR COMPREHENSIVE, PLAN



drainageways, may be taken from the master plan, detailed as to specific location, and placed on the official map. As envisioned under the *Wisconsin Statutes*, the preparation of an official map involves: the preparation by the city, village, or town engineer of a precise cadastral base map showing all existing streets, highways, parkways, parks and playgrounds; the adoption of this base map by the governing body as the official map pursuant to Section 62.23(6); and, finally, the amendment of the base map, after public hearing and referral by the governing body to the plan commission for report and recommendation, to include proposed future streets, highways, parkways, parks and playgrounds. The Statutes also permit, but do not require, the inclusion of existing railways, waterways, and public transit facilities on the official map and permit proposed facilities of this type to be shown on the official map.

Thus, by exercise of the police power, specific proposals contained in the master plan may be implemented. Street and park reservations can be based, not on immediate needs alone, as must be the case when such areas are acquired by the exercise of the power of eminent domain, but on future needs as well.

In addition to assuring that land needed for future streets and parks will be available at the price of unimproved land, the adoption of an official map under the *Wisconsin Statutes* has certain other consequences which tend to give direction and pattern to future community development and which can be used to carry out the master plan.

Section 62.23(6)(g) provides that where an official map has been established, no public sewer or other municipal street utility or improvement may be constructed in any street, highway, or parkway until such street, highway, or parkway is duly placed on the official map. Similarly, no permit for the erection of any building may be issued under this subsection unless a street, highway, or parkway giving access to such proposed building has been placed on the official map. Both of these provisions are particularly valuable in controlling development in the outlying rural-urban fringe areas, assuring that such

development occurs in conformance with an integrated long-range development plan.

Although the official map is usually applied only to proposed arterial streets and to parks and parkways, a strong case can be made for its application in undeveloped or in partially developed areas to proposed collector and land-access streets as well. If the local community has carefully prepared detailed neighborhood unit development plans, and intelligent plat review by planning bodies is all but impossible without such plans, the collector and land-access streets and the neighborhood park and parkway sites shown on such plans can be delineated and placed on the official map. Such mapping will help to overcome difficult problems of disjointed land ownership patterns and assure the development of integrated neighborhood units in a manner not possible through subdivision control alone.

EFFECTIVENESS

The official map is particularly effective as a street and highway plan implementation device. Although other plan implementation devices such as building setback requirements in zoning ordinances, special building setback line ordinances along major streets, building setback lines on recorded subdivision plats, and private deed restrictions can all be used to reserve land for the future widening of existing streets, none of these devices can be readily applied to proposed future streets and highways. Subdivision control ordinances can be used to protect future streets and highways, but can do so only indirectly and cannot be used to prevent the erection of buildings in the beds of future streets when the erection of such buildings takes place without platted land division. The official map is the only arterial street and highway system plan implementation device that operates on an areawide basis in advance of land development and can thereby effectively assure the integrated development of the street and highway system.

The high order of effectiveness of the official map as a street and highway plan implementation device is

attributable to the following characteristics of the official map:

1. Unlike subdivision control, which operates on a plat-by-plat basis, the official map can operate over a wide planning area well in advance of requests for development.
2. The proper application of the official map necessitates the preparation of precise or definitive plans beyond the master plan stage and thereby assures that the broad objectives expressed in the master plan are reduced to specific and attainable ones.
3. The official map is a useful device to achieve public acceptance in that it serves legal notice of the government's intentions to all parties concerned well in advance of any actual improvements. It thereby avoids the altogether too common situation of development being undertaken without knowledge of, or regard for, the long-range plan and thereby does much to avoid local resistance when plan implementation becomes imminent.

The effectiveness of the official map as a plan implementation device applies equally well to any application wherein it is essential to preserve an integrated network of certain other types of public rights-of-way. Inclusion of major stormwater drainage channels, stormwater trunk sewer lines, and sanitary trunk sewer lines in parkways permits the application of the official map to the implementation of sewerage, drainage, and flood control plans. Because of the legal problems involved, the official map is somewhat less effective as a reservation device for park and open space requirements

when such park and open spaces cover large blocks of land rather than relatively narrow rights-of-way.³

FLEXIBILITY

A certain practical and desirable degree of flexibility is given to the official map by Section 62.23(6)(d) of the *Wisconsin Statutes*, which provides that changes or additions to the official map made by duly processed and approved subdivision plats shall not require the public hearings or common council actions normally required for such changes or additions provided, however, that the changes or additions do not affect any land outside the platted area in which the changes are being proposed.

Finally, it should be stressed that, ideally, the official map should be a means of implementing, or carrying out, a community's master plan. As such, the official map should be prepared within the context of such a plan. Practically, however, plan implementation devices such as zoning, subdivision control, and official map ordinances are often called upon to substitute for the necessary long-range plans and in such situations must bear the full weight of guiding and shaping the physical development of the community. This is particularly true in many smaller communities; in such a situation, the official map may quite properly combine the expression of the community's long-range street and highway objectives with the implementation device necessary to help achieve these objectives, that is, the official map may serve as both the long-range street and highway plan and as the primary implementation device for that plan.

³Joseph C. Kucirek and J. H. Buescher, "Wisconsin's Official Map Law," *Wisconsin Law Review*, 1957, Vol. 1957, p. 185.

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CHAPTER IV

LEGAL AND ADMINISTRATIVE CONSIDERATIONS

INTRODUCTION

The Wisconsin official map enabling legislation for cities is extensive and includes all of the basic elements of modern official map enabling legislation. Villages and towns are by reference given the same planning powers as cities and, therefore, may prepare, adopt, and administer official maps under the basic enabling act.¹ Other state legislation grants modified official map powers to counties and the Wisconsin Department of Transportation.

The applicable legislation enabling official mapping or containing ingredients of the official map concept are as follows:

<u>Unit of Government</u>	<u>Applicable Official Map Enabling Statute (1995)</u>
Cities	62.23(6)
Villages	61.35
Towns	60.10(2)c
Counties	80.64
Wisconsin Department of Transportation	84.295(10)

¹Section 60.61(2)(e) appears directly to enable a town to adopt an official map ordinance. This section, however, is probably the result of a misinterpretation on the part of the Legislature or of statute codifiers. The first sentence in Section 60.61(2)(e) states that town boards may: "Adopt an official map showing areas, outside the limits of villages and cities, suited to carrying out the purposes of this section." The section referred to is the general grant of zoning authority to towns. Thus, the term "official map," as used in this section is probably a misuse of the term for the official zoning district map of a town.

CITIES

Section 62.23(6) of the *Wisconsin Statutes* authorizes the common council of any city to establish an official map of the streets, highways, parkways, parks and playgrounds, both present and future. The enabling legislation envisions the adoption of an official map in two stages. In the initial stage, the governing body is permitted to adopt a map showing the existing streets, highways, historic districts, parkways, parks, and playgrounds within the municipality as laid out, adopted, and established by law. The municipality may also include existing railway rights-of-way, public transit facilities, and waterways² on this initial map. This initial adoption is permitted without public hearing. The importance of the effect of an official map on the general development of the community and on individual property rights is, however, too great to make this initial adoption without public hearing good planning practice.³

²Waterways may be placed on the map only if included within a comprehensive surface water drainage plan.

³For cities lying outside counties having a population of 500,000 or more, Section 66.23(6)(a)2 also requires that, if an official map is established, the map shall show the location of any airport owned or operated by a county, city, village, or town lying within the city's zoning jurisdiction, as well as any part of an "airport affected area" lying within that zoning jurisdiction. The term "airport affected area" is defined as that area lying within three miles of the boundaries of an airport unless the airport owner and the city agree to a smaller area under the terms of Section 66.31 of the *Wisconsin Statutes*.

The *Wisconsin Statutes* further provide that any changes or additions to the official map as initially adopted must be referred to the local plan commission for a period not to exceed 60 days. A public hearing also must be held by the governing body or a committee thereof, after giving a Class II notice of the required hearing. In this second stage of official map preparation, the governing body may add to the initially adopted official map proposed streets, highways, historic districts, parks, parkways, playgrounds, railway rights-of-way, public transit facilities, and waterways, both inside the municipality and within its extraterritorial plat approval jurisdiction⁴ after referral to the local plan commission and after duly held public hearings. The municipality may also show on the map proposed widenings, narrowings, extensions, or closures of such facilities.

The legislation provides that no building permit shall be issued for any building on present or future streets, highways, parks, parkways, playgrounds, railway rights-of-way, public transit facilities, or waterways shown on the official map unless it can be shown that the property is not yielding a fair return and the applicant will be substantially damaged by placing a proposed building outside the mapped area. It is in this respect that modern official map acts differ from the early official map acts which provided no relief from the regulations imposed by the map. In such instances the property owner may appeal to the local board of zoning appeals, which then holds a public hearing and decides the matter upon the merits of the case. The law also provides that no public sewer or other municipal street utility or improvement shall be constructed in any street, highway, or parkway until it is duly placed on the official map and that no building shall be erected unless it has access to a street, highway, or parkway recorded on the official map.

Finally, the legislation requires that, upon adoption of an official map, the city clerk record with the register of

deeds of the county or counties concerned a certificate declaring that the city has established an official map.

VILLAGES AND TOWNS

Section 61.35 of the *Wisconsin Statutes* confers and imposes all planning powers and duties set forth in Section 62.23 of the *Wisconsin Statutes* upon villages, including official mapping powers.

In a similar manner, town boards are authorized to exercise all powers relating to villages and conferred on village boards except those laws that would conflict with statutes referring to towns and town boards. This provision is set forth in Section 60.22(3) of the *Wisconsin Statutes*, and the assumption of village powers must be authorized at a town meeting. Thus, the official map legislation as set forth in 62.23(6) of the *Wisconsin Statutes* applies in its entirety to villages and towns as well as to cities.

COUNTIES

Section 80.64 of the *Wisconsin Statutes* confers what are, in effect, modified official map powers on counties. County "official" maps may be used to show the proposed widening of existing streets and highways and to show the location and width of proposed future streets and highways; and these maps, except in counties of 500,000 or more population, must show the present streets and highways and the location of property boundary lines and the recorded owners of land affected. County maps must have the approval of the governing body of the municipality wherein the mapped streets and highways lie. The map must be filed with the county register of deeds and notice of such filing must be published and posted. The map may be amended or changed from time to time upon like approval, publication, and posting. The excess width for existing streets and the rights-of-way for planned streets may be acquired at any time by the state, county, or municipality.

The county map powers lack two important elements of true official map legislation: 1) no provision is made requiring the property owner to apply for a building

⁴Defined in Section 236.02(5) of the *Wisconsin Statutes* as the unincorporated area within three miles of the corporate limits of a first, second, or third class city, or within 1.5 miles of a fourth class city or village. A fourth class city is one with a population below 10,000.

permit if a building is proposed to be constructed in a mapped area, and 2) the public is not protected from having to pay undue damages to a property owner who builds in a mapped area. Neither does the scope of county map powers extend beyond streets and highways.

It is interesting to note that, in counties of 500,000 or more population, Section 80.64 provides that a duly adopted county map as it applies to towns is binding upon subsequently incorporated or annexed areas. Moreover, the city or village concerned shall not permit or sanction any construction or development which will interfere with, prevent, or jeopardize the acquisition of the mapped rights-of-way.

WISCONSIN DEPARTMENT OF TRANSPORTATION

In its 1961 session, the Wisconsin Legislature amended the basic statute under which the State Highway Commission, the predecessor agency to the Wisconsin Department of Transportation, functioned by creating Section 84.295 entitled "Freeways and expressways." This section of the *Wisconsin Statutes*, among other things, grants modified official map powers directly to the Wisconsin Department of Transportation with the specific legislative intent to protect from imminent and future costly economic development corridors of land to be available when needed for future freeway and expressway construction.

This legislation provides that the Wisconsin Department of Transportation may, after public hearing, establish corridors for freeways and expressways by surveying and mapping such corridors and showing the location and approximate widths of rights-of-way required, including that for interchanges, grade separations, frontage roads, and any required alterations or relocation of existing streets and highways. The map must also show the location of existing highways, property boundary lines, and record owners of land required. The completed map must be placed on file with the county register of deeds. This action is advertised and the property owners of record on the filing date are notified of this action by registered mail. The map may be changed from time to time by the same procedure.

The act in essence prohibits the construction of any new structures or the alteration of any existing structures within the officially mapped right-of-way or "in such proximity thereto as to result in consequential damages when the right-of-way is acquired," without first giving 60 days notice to the Wisconsin Department of Transportation by registered mail. The Department may then encourage alterations in such construction proposals to clear the needed right-of-way or may purchase the required right-of-way to prevent erection of any improvements thereon. No damages are allowed for any construction, alterations, or additions made in violation of the law.

Although not as strong as the local official map powers, exercise of this limited mapping power by the State can nevertheless result in substantial benefits to the public. Moreover, the proper exercise of such mapping powers will facilitate sound decisions concerning land use and development alternatives by private investors. The lack of a sound basis for such decisions in the past has been a significant source of friction between the State highway agency, local governments, and private developers.

LEGALITY OF WISCONSIN OFFICIAL MAP STATUTE

The constitutionality of the official map in Wisconsin has been challenged and established in the case of *Miller v. Manders*, decided by the Wisconsin Supreme Court in 1957. In its ruling the Court declared that the issue in the case was whether Wisconsin's Official Map Law (Section 62.23(6) of the Wisconsin Statutes) and the Official Map Ordinance of the City of Green Bay were unconstitutional as a taking of Miller's property for public use by the City without just compensation. The Court stated the question to be considered was whether the State law, as set forth in Section 62.23(6), was a valid exercise of the police power on the ground that it tends to promote the general welfare. The Court upheld the Official Map Act saying:

There would seem to be little doubt that an objective which seeks to achieve better city planning is embraced within the concept of promoting the general

welfare . . . the constitution will accommodate a wide range of community planning devices to meet the pressing problems of community growth, deterioration and change.

The Court, however, also found narrow limits in the right to exercise the police power to protect the City against increased costs. The saving clause which made the law constitutional was that which requires the Board of Zoning Appeals to refuse a building permit where the applicant will not be substantially damaged by placing his building outside the mapped street, highway, or parkway. The Court also ruled that, if the applicant would be substantially damaged should the permit be denied, it was the duty of the Board of Zoning Appeals to grant the permit. It was also pointed out that if a building permit is denied, the applicant still has the right and the protection of court review by *certiorari*. The decision thus found the Official Map Act a valid exercise of the police power and, therefore, constitutional.

It should be emphasized, however, that the courts have consistently reserved the right to determine the constitutionality of any particular official map as it might apply to a particular property in order to safeguard the rights of the property owner. Cases in which a particular map has been held invalid as applied to a specific parcel of land have generally included situations where a particular property owner, under the application of the map, would have lost all right to the use of a single lot or parcel which was located entirely within an officially mapped street right-of-way.

ADMINISTRATION

The administration of any plan implementation device is a very important factor in the effectiveness of that device. The finest master plan and supporting planning tools are worthless unless they are properly used and applied from day to day by the administrative officials responsible for their application. The building permit is the administrative device that is used to enforce and put into effect the aims of the official map, namely, the restriction of construction in mapped areas reserved for public use. The denial of a building permit is

the application of the police power authority to an individual case and directly affects the use of an individual's property. For this reason great care must be taken in the administration of the official map.

There are three references to the use of building permits in the Wisconsin official map enabling legislation. Section 62.23(6)(e) of the *Wisconsin Statutes* deals with the issuance of building permits within the corporate limits of a community having an official map and provides: "No permit may be issued to construct or enlarge a building within the limits of a street, highway, waterway, railroad right-of-way, public transit facility or parkway shown or laid out on the map except as provided in this section." Section 62.23(6)(e) also deals with the issuance of building permits in the extraterritorial plat approval jurisdiction of cities and villages having an official map and provides: "Any person desiring to construct or enlarge a building within the limits of a street, highway, railroad right-of-way, public transit facility, or parkway so shown as extended may apply to the authorized official of the city or village for a building permit." Unless application for a building permit is made, and the permit granted or not denied within 30 days, the person concerned is not entitled to compensation for damage to the building in the course of construction of the protected mapped facility concerned. This protection extends to all mapped facilities within the boundary limits of the municipality concerned and to all mapped facilities in the extraterritorial jurisdiction of the municipality except waterways. These two provisions of the state law relate to the issuance of building permits for buildings proposed to be constructed or enlarged within the beds of existing or proposed streets, highways, waterways, railway rights-of-way, public transit facilities, and parkways shown on an official map. It should be noted that the enabling legislation relating to issuance of building permits does not mention parks and playgrounds as protected mapped facilities, although parks and playgrounds may also be placed on the official map.

Section 62.23(6)(h) also provides: "No permit for the erection of any building shall be issued unless a street, highway or parkway giving access to such proposed structure has been duly placed on the official map."

This provision materially strengthens the powers of municipalities within an urbanizing area to guide development in the urban fringe areas and to assure compliance with a comprehensive development plan.

Smaller communities which have no building code may face serious administrative problems in enforcing an official map ordinance. Since residents of such communities are not accustomed to obtaining building permits, they may not check with local officials about the location of protected mapped facilities before starting a new building. Once such a building is completed, it may be difficult for the local officials to enforce the provisions of the official map act.

APPEALS

The State official map enabling legislation establishes only one condition under which an appeal may be made to the board of zoning appeals of the local community to permit the placing of a building in a mapped street. It is as set forth in Section 62.23(6)(e): "If the land within such mapped street, highway, waterway, railroad right-of-way, public transit facility, or parkway is not yielding a fair return,"

The following conditions are required for an applicant to appeal the decision of an administrative officer to deny a building permit which does not have access to a street, highway, or parkway shown on the official map:

1. Practical difficulty; or
2. Unnecessary hardship; and
3. Circumstances do not require the structure to be related to an existing or to the proposed street, highway, or parkway.

There are two appeal procedures specified in the official map legislation. The first, set forth in Section 62.23(6)(e), relates to fair returns and, as already noted, provides, "If the land within the mapped street, highway, waterway, railroad right-of-way, public transit facility, or parkway is not yielding a fair return, the board of appeals in any municipality which has established such

a board having power to make variances or exceptions in zoning regulations, may, by the vote of a majority of its members, grant a permit for a building or addition in the path of the street, highway, waterway, railroad right-of-way, public transit facility, or parkway, which will as little as practicable increase the cost of opening the. . . (protected mapped facility). . . or tend to cause a change of such official map. The board of appeals may impose reasonable requirements as a condition of granting the permit to promote the health, convenience, safety, or general welfare of the community."

The second appeal procedure set forth in Section 66.23(6)(h) states: "Where the enforcement of the provisions of this section would entail practical difficulty or unnecessary hardship, and where the circumstances of the case do not require the structure to be related to existing or proposed streets, highways or parkways, the applicant for such a permit may appeal from the decision of the administrative officer having charge of the issue of permits to the board of appeals in any city which has established a board having power to make variances or exceptions in zoning regulations, and the same provisions are applied to such appeals and to such boards as are provided in cases of appeals on zoning regulations."

The principal differences in the two appeal procedures are that under the fair return method a public hearing must be legally noticed at least once, with such notice occurring at least 15 days in advance of the hearing, and the decision is determined by a majority vote of the members of the board of appeals, three members of a five-member board; under the second method the regular procedures of the board of zoning appeals for variances or exceptions in cases of appeals on zoning regulations apply. In the latter case, then, the board of zoning appeals may fix a reasonable time for the hearing of the appeal and give public notice thereof, as well as notice to the parties in interest. Moreover, in the second case the appeal is decided by the concurring vote of four members of the five-member board. It is important that the board of zoning appeals in any case give proper notice of a public hearing; keep minutes of its proceedings, including recordation of findings related to the statutory criteria concerned; and record the absence, vote, or abstention of its

members. Where there is no board of zoning appeals, the city council concerned is given the same powers and is subject to the same restrictions.

EXTRATERRITORIAL POWERS

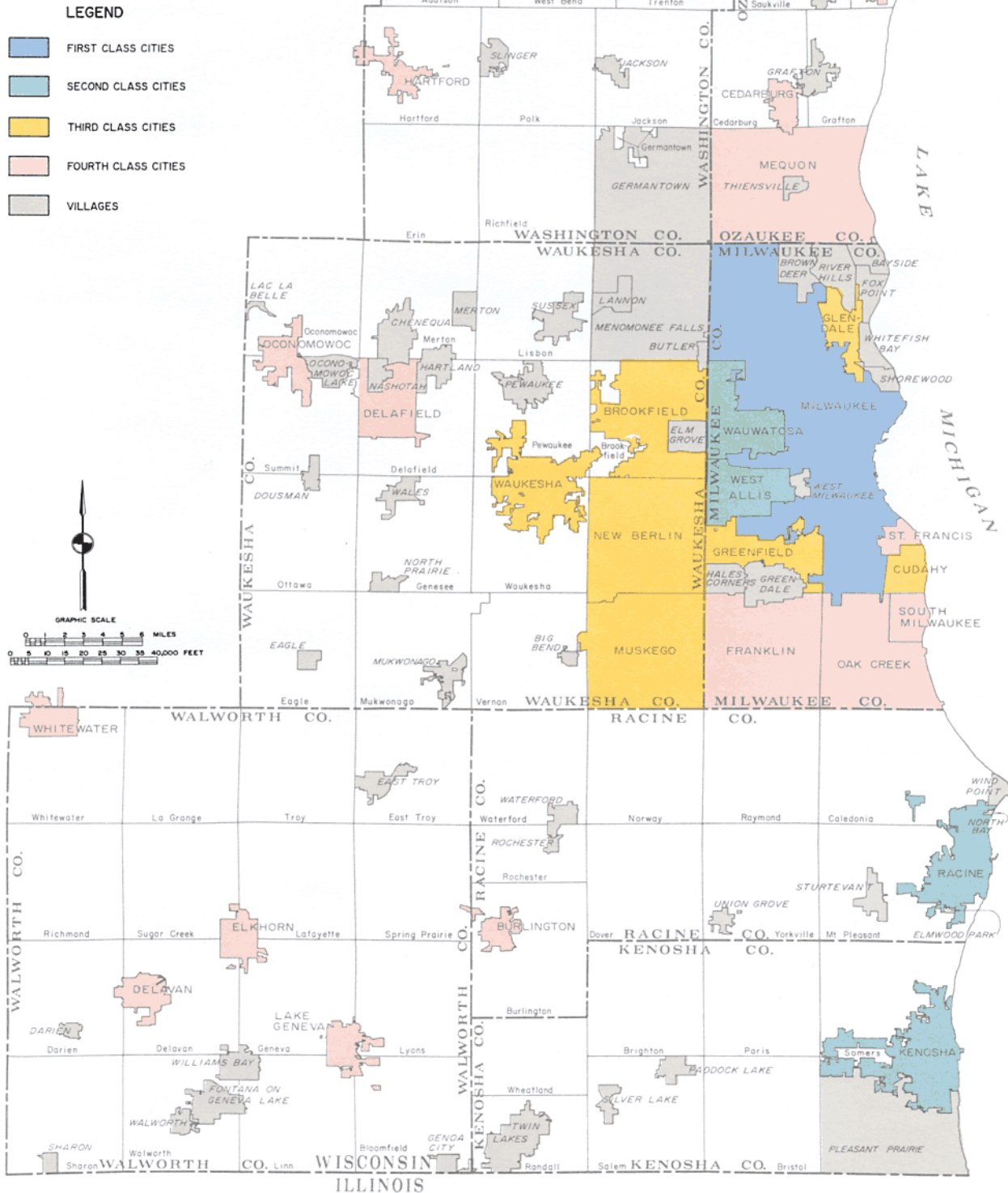
State law provides that the official map may be shown as extending beyond the boundaries of a city or village, a distance equal to that within which the approval of land subdivision plats by the city council or village board is required as provided by Section 236.02(5) and 236.10 of the *Wisconsin Statutes*. The distance each class of city and each village may exercise such controls in incorporated areas outside the municipal limits is:

<u>Class</u>	<u>Distance from Population Size</u>	<u>Corporate Limits</u>
First Class City	150,000 + (Milwaukee)	3 miles
Second Class City	39,000 - 149,999	3 miles
Third Class City	10,000 - 38,999	3 miles
Fourth Class City	Under 10,000	1-1/2 miles
Village	- -	1-1/2 miles

It should be noted that, where cities and villages are in close proximity to one another, the matter of determining the extraterritorial mapping authority in accordance with the *Wisconsin Statutes* may become a relatively complex problem in surveying and mapping. There were, in 1995, 28 cities and 55 villages in the Southeastern Wisconsin Region (see Map 1).

Map 1

**CLASSES OF INCORPORATED
MUNICIPALITIES IN THE SOUTHEASTERN
WISCONSIN REGION: 1994**



Source: State of Wisconsin Blue Book: 1995-1996 and SEWRPC.

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CHAPTER V

INTERGOVERNMENTAL COOPERATION

INTRODUCTION

It is apparent that official mapping can be applied to plan implementation in two ways:

1. Directly, through exercise at the local level of the official map powers delegated to cities, villages, and towns by the State enabling legislation. These local official map powers are more effective than the limited powers delegated to the State and county governments.
2. Indirectly, to meet State and regional needs through cooperative State, county, and local application of local, county, and State official map powers.

CITY, VILLAGE, TOWN COOPERATION

Even the direct application of official map powers at the local level will in most instances require close cooperation of town and city or village officials. The fact that the Wisconsin legislation permits cities and villages to prepare official maps that extend into their extraterritorial plat approval jurisdiction places a burden on both the incorporated and unincorporated governments concerned cooperatively to adopt and administer any official map which extends into an extraterritorial area. The fact that an official map adopted by a city or village may affect the property rights in an adjacent town requires, in the interest of justice, that the town be consulted during the formulation and adoption of the city or village official map. Conversely, the cooperation of the town officials is essential to the proper administration of the official map in such extraterritorial areas. If both the town and an adjacent city or village propose to adopt an official map, or zoning or any other

land use controls, close cooperation is essential if conflicting policies are to be avoided.

STATE, COUNTY, LOCAL COOPERATION

As noted, the official map can also be applied indirectly to State and regional needs through cooperative State, county, and local mapping programs. Such cooperative programs must be founded on practical and workable long-range street and highway, drainage and flood control, and park system plans, plans that meet State and regional, as well as local, transportation, drainage, and recreation and open space needs, and that can, therefore, be cooperatively prepared and adopted and jointly implemented by the various levels and agencies of government concerned.

In Wisconsin, local official map powers can have widespread applicability to State and county highway facilities. The monetary benefits that can accrue to the State, county, and local governments through such joint exercise of plan implementation powers are considerable. But the pattern and direction that such plan implementation can give to private investment by properly relating it to proposed facilities are perhaps of even greater importance. A potential also exists for joint county-local application of the official map power, particularly with respect to highway facilities.

Similarly, the exercise of modified official map powers by the Wisconsin Department of Transportation should be based upon close working agreements with the local units of government. With respect to highway facilities, the proper application of the official map requires preparation of precise long-range plans for proposed transportation facilities. While a general plan

setting forth the general location and characteristics of proposed major transportation facilities and traffic corridors is necessary as a statement of agreed-upon long-range objectives, it is, however, quite ineffective as a sound basis for plan implementation through land reservation or for the extension of technical planning assistance and advice to local governments and to private investors. Advance reservation of right-of-way and the proper extension of local assistance, as well as the staged construction of facilities, all require the preparation of precise and definitive plans setting forth the ultimate development of each of the major traffic corridors specified on the general plan.

In the case of arterial street and highway facilities, such plans should set forth precise proposals as to center-line location, ultimate right-of-way width required, type of access control to be exercised, and type and location of interchange and grade separations. Such precise plan preparation requires adequate topographic and cadastral maps along the major traffic corridors, the very type of maps which can be best provided by the official mapping program outlined in Chapter VI. Such plan preparation is essential to the effective application of such plan implementation devices as zoning, subdivision control, precise neighborhood development unit plans, as well as official mapping itself.

CHAPTER VI

ENGINEERING CONSIDERATIONS

INTRODUCTION

The comprehensive, or master, community development plan is a general plan, certain parts of which are often presented by nonprecise maps. The official map is intended to reflect and refine certain aspects of the master plan and, therefore, must be capable of precise and accurate interpretation. This requirement for precision and accuracy seems to constitute the principal difficulty in the proper application of this plan implementation device. Many planners, although aware of this problem, have been puzzled by its true nature and have not, therefore, been able to propose adequate solutions to it.

BASIC CONCEPTS

In order to place the problem in its proper perspective, it is necessary to understand certain basic surveying and mapping concepts. First, it must be understood that both accuracy and precision are required in an official map and that these two terms are not synonymous.

Precision is defined as refinement in the performance of an operation or in the statement of a result; it connotes apparent nearness to truth. If it is desired, for example, that all scaled distances on an official map should have a precision of plus or minus five feet and if it is expected that the map is to be prepared to a tolerance of one-fortieth of an inch, then the required scale of the map should, to attain the desired degree of precision, be one inch equals 200 feet. Moreover, by simply showing supplementary dimension figures on the face of the map, any desired degree of precision can be obtained down to the nearest one-hundredth of a foot.

Accuracy, however, is defined as the degree of conformance with a standard; it connotes absolute nearness to

truth. In a map this means true scale representation of conditions as they actually exist on the ground. A common method of specifying the accuracy of engineering maps is to require that 90 percent of all well-defined features shall be plotted to within one-fortieth of an inch of their true coordinate positions and that no point shall be more than one-twentieth of an inch from its true position. It should be noted that, whereas precision is related to scale or to the number of places to the right of the decimal point of expressed dimensions on the face of the map, accuracy is independent of scale and dependent solely on the methods used to compile the map. Thus, a map may be accurate without being precise or precise without being accurate.

The degree of precision to be selected for a given official map should be related to the characteristics of the community being mapped. For example, for a new and rapidly developing, primarily low-density residential community, with large minimum lot areas and large open yard requirements, a scaled precision of plus or minus 10 feet might be reasonably adequate, requiring an official map at a scale of one inch equals 400 feet. A relatively older, more densely developed community might, on the other hand, require a scaled precision of plus or minus 2.5 feet, thereby requiring a map scale of one inch equals 100 feet. In each case the degree of accuracy built into the maps must be consistent with the desired degree of precision, and mapping procedures must be modified accordingly.

NEED FOR BASE MAPPING

Section 62.23(6)(a) of the *Wisconsin Statutes* specifies that the governing body of any municipality may by ordinance or resolution establish an official map of the community " . . . showing the streets, highways, historic districts, parkways, parks and playgrounds laid

out, adopted and established by law” Section 62.23(6)(b) then goes on to specify that the governing body of any municipality may, as it deems necessary, add to the official map so as to establish the exterior lines of planned new streets, highways, historic districts, parkways, railway rights-of-way, public transit facilities, waterways, parks, or playgrounds, or to widen, narrow, extend, or close mapped rights-of-way, districts, or facilities. These requirements of the State enabling legislation clearly imply that a properly prepared official map must be based upon good “existing conditions” base maps; such maps are, therefore, essential to good official mapping.

From a broader viewpoint, good base maps are a means of collecting, coordinating, and presenting, in a permanently useful form, much valuable information essential to sound municipal planning and engineering; as such they represent one of the soundest long-term capital investments a community can make. The proper application and effectiveness of certain plan implementation devices, including the official map, subdivision control ordinances, and precise neighborhood development plans, all depend, to a considerable extent, upon the quality of the available community base maps. Improperly constructed base maps can represent a real loss of money to a community, not only in funds expended for the maps themselves, but also in the direct and indirect costs attendant to their future use.

The proper planning and engineering of municipal public works projects require constant attention to two factors: 1) the land itself with its topography and physical characteristics and 2) the boundaries of real property ownership. Full information concerning these two factors is essential if land use development and redevelopment and municipal public works projects are to be soundly conceived and effectively planned and executed. Consideration of these factors requires that the community have two types of base maps:

1. Accurate large-scale topographic maps, which show the exact configuration and elevation of the ground, stream and watercourse lines, and other major natural and man-made features of the landscape. For urban planning and engineering purposes, it is desirable that topographic

maps have a scale of one inch equals 100 feet and a vertical contour interval of two feet. An absolute minimum scale for such maps is one inch equals 200 feet with a vertical contour interval of two feet. From such maps drainage areas can be defined and measured, distances accurately scaled, profiles drawn, grade lines established and computed, and alternative route locations for various types of facilities selected and evaluated. Historically, topographic maps were prepared by field surveying methods. Today, such maps are almost always prepared by photogrammetric methods utilizing current aerial photography.

2. Accurate real property boundary (cadastral) maps, which show the location, arrangement, and dimensions of all real property boundary lines; all existing streets and alleys, together with their platted widths; and all existing land subdivisions. The desirable scale of cadastral maps will vary with the type of community and may range from one inch equals 50 feet to one inch equals 200 feet, depending upon the characteristics of the community and the density of development. It is important that the scale selected for cadastral maps be the same as that of the topographic maps so that the data presented by the two types of maps can be readily correlated by simple overlay processes.

If adequate base maps of sufficient precision exist and if these maps are based upon permanently monumented field surveys so that their accuracy can be ascertained, then an official map can be readily created by simple compilation techniques. If, however, as is more often the case, adequate base maps are lacking, then an official mapping project first requires the construction of base maps of sufficient precision and accuracy.

Unfortunately, base maps of required accuracy and precision providing the necessary inventory of the physical facts related to the land and its ownership are lacking for many of the communities within the Region. Many existing city, village and town “maps” hardly deserve to be dignified by this term, being no more than sketch compilations of paper records. Often, available

maps of expanding urban areas are so poor as to make definitive planning difficult and costly and plan implementation through such devices as the official map virtually impossible.

BASIC MAPPING CONCEPTS

It has been common practice for engineers and surveyors to disregard the curvature of the earth's surface in carrying out local surveying and mapping operations. In such plane surveying operations, a level surface is considered to be a plane and plumb lines are considered mathematically parallel. These assumptions, although not in accord with reality, permit survey points to be conveniently located by relatively simple surveying procedures and permit these survey points to be plotted on local "maps" without reference to a defined map projection. The scales of such local maps are usually referred to local ground level, and written dimension figures are commonly used on the face of the maps to supplement scaled distances. Survey bearings are commonly referred to an assumed reference meridian through some point on the local survey and are, therefore, only relative. Elevations are commonly referred to a local datum plane. The errors inherent in such procedures do not become particularly troublesome until the area of survey operations approaches the order of 100 square miles. Therefore, so long as the areas to be mapped remain small, being confined to a single compact isolated urban area, no really serious problems result from the application of these traditional survey practices.

Continued application of traditional plane surveying techniques in an urbanizing region, or even in a county or single large city wherein it may be necessary to extend survey operations over many hundreds of square miles of area, can only result in chaotic mapping conditions. Under such conditions, distances, directions, and areas can no longer be accurately scaled from maps which utilize no projection in their construction. More importantly, individual surveys and maps can no longer be correlated; accurate composite maps of an entire planning area can no longer be compiled. Relative bearings based upon an assumed meridian cannot be correlated; even bearings based upon a true meridian

passed through an initial survey point become unworkable as surveys proceed further and further east or west of the initial points and the difference in the directions of the original reference meridian and the true meridian increases.¹

Existing topographic maps based on local vertical datum planes are extremely difficult to correlate with each other or with cadastral maps and records; in some cases such correlation may be impossible. Such areawide maps as do exist cannot be readily maintained current because new facility construction and new land use development cannot be accurately related to either the areawide maps or to each other. Such water-related facilities as sewers, drains, and water control structures, the elevations of which are related to local vertical datum planes, cannot be readily related to areawide topographic maps or to each other, making systems analyses and design difficult.

Any accurate mapping project requires the establishment of a system of survey control. This survey control consists of a framework of points whose horizontal and vertical positions and interrelationships have been accurately established by field surveys. The map details are adjusted to these points and may be checked against them. An effective official mapping project further requires that this control net be permanently monumented on the ground, so that ownership and reservation lines on the map may be accurately reestablished in the field when private land development or a public project approaches the construction stage. That is, the official map must not only accurately reflect field conditions, but must also be accurately reproducible on the ground as well.

Real property boundaries are dependent for their location on monuments erected in the field. Moreover, the certainty of the location of such boundaries may be destroyed by the destruction of the monuments. Since the accurate location of boundary lines is essential to

¹In the latitude of Southeastern Wisconsin, the convergence of meridians one mile apart is in the order of one minute of arc, sufficient to produce considerable errors in position when extended over half-mile tangents.

sound official mapping, all basic land survey monuments in an urban area should be related to each other and to the horizontal control net established for the mapping so that they can be not only accurately mapped, but accurately reestablished as well.

A SUGGESTED SYSTEM OF SURVEY CONTROL

Any accurate mapping project requires the establishment of a system of horizontal and vertical survey control. The use of a unique system of horizontal control based upon the U. S. Public Land Survey System, as well as upon a National Geodetic Datum, has been recommended by the Regional Planning Commission since 1961 as a practical basis for the compilation of adequate base maps. The establishment of such a control system requires the relocation and monumentation of all section and quarter-section corners within the area to be mapped and the utilization of these corners as stations in a National Geodetic Survey third order, Class I horizontal control survey net tied to a National Geodetic Datum. It is essential that the horizontal control surveys for urban mapping programs be at least of this order of accuracy, even though this degree of accuracy may not be required for the mapping work itself, in order that the control net have permanent utility in all subsequent local survey and mapping work.

The control traverse net thus establishes the exact lengths and bearings of all quarter-section lines as well as the geographic positions of the public land survey corners themselves in the form of state plane coordinates. Such a system of survey control has the following important advantages:

1. It provides a consistent and accurate system of control for real property boundary line mapping, as well as for topographic mapping. Since the boundaries of the original government land division form the basis for all subsequent property divisions and boundaries, the accurate reestablishment of the quarter-section lines and corners permits, within the required limits of accuracy and precision, the compilation of property boundary line maps as well as the

compilation by the usual photogrammetric methods of topographic maps. Moreover, by relocating the U. S. Public Land Survey corners and accurately placing them on the State Plane Coordinate System, it becomes possible to prevent the future loss of these corners.

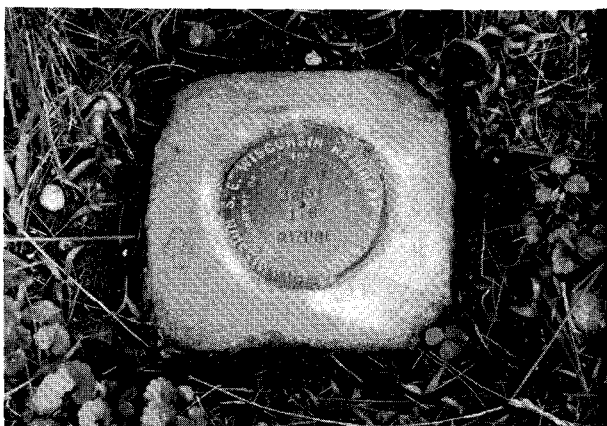
Property boundary base maps can then be compiled by simply reconstructing on the drawing board or in a computer all old plats and deed descriptions within the limits of each quarter-section. Satisfactory cadastral maps of all but the oldest and most intensely developed parts of the larger cities can be compiled in this manner. Moreover, these boundary line maps can be readily and accurately updated and extended into newly developing areas since all new land subdivision plats must, by State law, be tied to corners established in the public land survey. The accuracy of these plats can be readily controlled by local subdivision regulations.

2. It provides a common system of control for both topographic and real property boundary line maps. By relocating the U. S. Public Land Survey corners and accurately placing them on the State Plane Coordinate System it becomes possible to correlate accurately property boundary line information with topographic details supplied by aerial mapping. This placing of property boundary and topographic data on a common datum is essential to sound mapping for planning and engineering purposes, permitting the accurate correlation of cadastral and earth science data. The establishment of state plane coordinates for the public land survey corners permits the transfer of details supplied by aerial mapping, including contour lines, to property boundary line maps by simple overlay methods. Savings in office research time made possible during the planning and design phases of municipal public works projects by having all available information, topography, property boundary lines, and survey control, accurately correlated on one map are substantial. Moreover, such complete and correlated information and control make possible the consideration and analysis of many alternate routes for

such public works facilities as trunk sewers, water transmission lines, major traffic ways, and of many alternative solutions to sewerage, water supply, and transportation problems.

3. It provides an extremely practical horizontal control network readily usable by both private and public surveyors and engineers for all subsequent survey work within the mapped area. The control system suggested places a monumented, recoverable control station of known position on both the U. S. Public Land Survey and State Plane Coordinate Systems and of known elevation at half-mile intervals throughout the mapped area. This monumented control net not only expedites engineering surveys made almost daily, year in and year out, by such agencies as municipal engineering departments, county and state highway agencies, and sewerage, airport, and harbor commissions for planning, design, and construction layout purposes, but correlates and coordinates all of the survey work throughout the entire urban area. The control system outlined is particularly valuable in providing a common system of control for the precise location and mapping of underground utilities, both public and private.
4. It makes the State Plane Coordinate System available for the first time on a practical basis for property boundary survey control. The fact that the control system outlined requires the permanent monumentation of Public Land Survey corners does much in itself to stabilize real property boundaries and makes the control net of great value to private land surveyors. By utilizing this control, local land surveyors can, without changing their methods of operation or incurring any additional expense, automatically tie all their surveys to the State Plane Coordinate System and reference all bearings used in land surveys, plats, and legal descriptions to Grid North and, therefore, to true north. If the use of the state plane coordinate system is to be encouraged, it is essential that it be made available in this manner to the local land surveyors.
5. It permits line-drawn maps, whether these lines represent the limits of land to be reserved for future public use, the limits of land to be taken for immediate public use, the limits of districts to which public regulations are to be applied, or the location and alignment of proposed public works projects, to be reproduced accurately and precisely upon the ground at the time of plan implementation or construction.
6. It is readily adaptable to the latest survey techniques and of relatively low cost. When it is realized that the cost of control surveys executed in the usual manner for aerial mapping projects can account for one-quarter to one-third of the total cost of the finished maps, and when it is further realized that historically this control is largely unrecoverable and unusable by local engineers and surveyors and, therefore, a complete loss to the community, the real economy of utilizing the outlined control system becomes apparent. By allocating to the control survey work a relatively small additional amount of the total resources that might be available for mapping, far more effective and useful finished maps can be obtained and a valuable and permanently useful system of survey control can be provided. The only significant increases in cost actually assignable to the control system outlined are those incurred for the relocation and monumentation of the land survey corners and the small amount of additional control survey work required to coordinate these corners. Experience indicates that this may amount to approximately 20 percent of the total cost of a topographic mapping project, a small increase when weighed against the benefits to be derived.

A particularly efficient and economical mapping arrangement is for a county or municipality to undertake an aerial topographic mapping and a coordinated cadastral mapping project as an integral part of its official mapping program. This not only supplies the topographic data necessary to the proper design of projects to be placed on the official map and on the cadastral map that is to provide the initial phase of the

Figure 2**TYPICAL MONUMENT USED TO MARK U. S. PUBLIC LAND SURVEY CORNER**

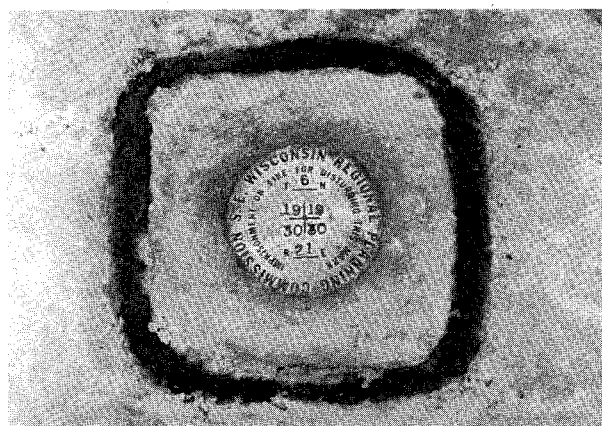
This photograph shows a survey monument of the type referenced in this report, as installed in the field to mark a U. S. Public Land Survey corner. Where such corners fall in fields or other open areas, the monuments are set with the top of the monument at or near the surrounding surface of the ground and are referenced to at least four witness marks.

Source: SEWRPC.

official map, but it affords a substantial economy in the cost of the control survey work.

The specifications governing such work should require that the monuments placed to mark the relocated public land survey corners consist of precast reinforced concrete monuments having bronze caps, with cast lettering, embedded in their tops (see Figure 2). The bronze caps are stamped with the corner notation, that is, quarter section, township, and range. The monuments should be referenced by ties to at least four witness marks and a dossier should be provided for each station in order to permit its ready recovery and use (see Figure 3). These dossier sheets should be filed with the county surveyor and thereby made available as public documents to all surveyors and engineers practicing in the mapped area.

Specifications should also require the control survey data to be summarized by means of a control survey summary diagram showing the exact length and grid bearing of the exterior boundaries of each quarter sec-



This photograph shows a survey monument of the type referenced in this report, as installed to mark a U. S. Public Land Survey corner in the traveled way of a road. The monument is set slightly below the surface of the road.

tion; the area of each quarter section; all monuments erected; the number of degrees, minutes, and seconds in the interior angles of each quarter section; the State Plane Coordinates of all quarter-section corners together with their public land survey system identification; the benchmark elevations of all monuments erected; and the basic U. S. Coast and Geodetic Survey control stations utilized to tie the public land survey corners to the geodetic control datum together with the coordinates of these stations. The angle between geodetic and grid bearing, the combination sea level and scale reduction factor, and the equation between local datum and National Geodetic Vertical Datum of 1929, formerly known as Mean Sea Level Datum, should also be given (see Figure 4).

Finished topographic maps, in addition to showing the usual contour information, spot elevations, planimetric and hydrographic detail, and State Plane Coordinate grid ticks, should show in their correct position and orientation all quarter-section lines and corners established in the field surveys (see Figure 5).

Figure 3

TYPICAL RECORD OF U. S. PUBLIC LAND SURVEY CONTROL STATION

RECORD OF U. S. PUBLIC LAND SURVEY CONTROL STATION

U. S. PUBLIC LAND SURVEY CORNER $\frac{7}{18}$ T 5 N, R 21 E, MILWAUKEE COUNTY, WIS.

GEODETIC SURVEY BY: AERO-METRIC ENGINEERING, INC.

YEAR: 1993

STATE PLANE COORDINATES OF: QUARTER SECTION CORNER

NORTH 334,727.42

EAST 2,520,078.71

ELEVATION OF STATION: 800.549

HORIZONTAL DATUM: WISCONSIN STATE PLANE COORDINATE SYSTEM, SOUTH ZONE

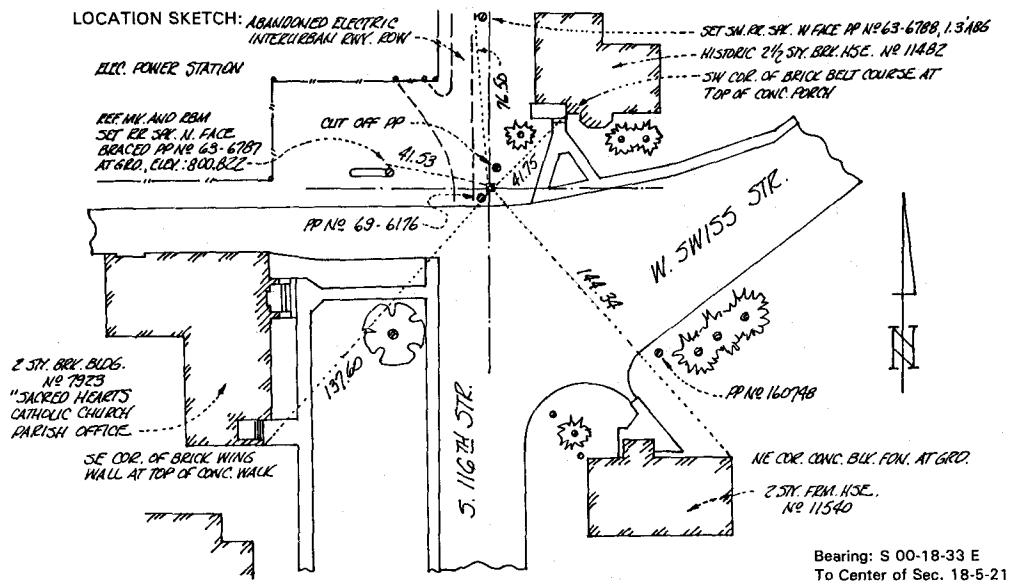
VERTICAL DATUM: NATIONAL GEODETIC VERTICAL DATUM OF 1929

CONTROL ACCURACY:

HORIZONTAL: THIRD ORDER, CLASS I

THETA ANGLE: + 1-20-02

VERTICAL: SECOND ORDER, CLASS II



SURVEYOR'S AFFIDAVIT:

STATE OF WISCONSIN)

WAUKESHA COUNTY)

SS

As County Surveyor, I hereby certify that I set a concrete monument with SEWRPC brass cap to mark this corner; replacing a broken 5-inch-diameter concrete monument and subsurface remnants of a cut limestone monument then marking this corner; said concrete monument with cast iron plug with cross having been set to mark this corner in August 1969 by Gerald B. Inman, S-891; replacing a 2-inch-diameter iron pipe set over said remnant limestone monument to mark this corner at the ground surface in September 1944 by Gustav R. Erdman, S-19; said limestone monument having been set to mark this corner in 1878 by Jonathan C. Crouse, Surveyor; replacing in turn a wood post set to mark this corner in June 1836 by Elisha Dwell, Deputy United States Surveyor, in the conduct of the original United States Public Land Survey; that I referenced the same as shown hereon; and that this record is correct and complete to the best of my knowledge and belief. The tie distance of 41.75 feet to the southwest corner of the house as shown hereon was measured and recorded by Mr. Crouse as 63 links (41.58 feet). Since Mr. Crouse recorded his measurement to the nearest link (± 0.33 foot), the recorded and measured distances are considered to be in agreement.

DATE OF SURVEY: 29 April 1992

REGISTERED LAND SURVEYOR

S - 157

FORM PREPARED BY SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION

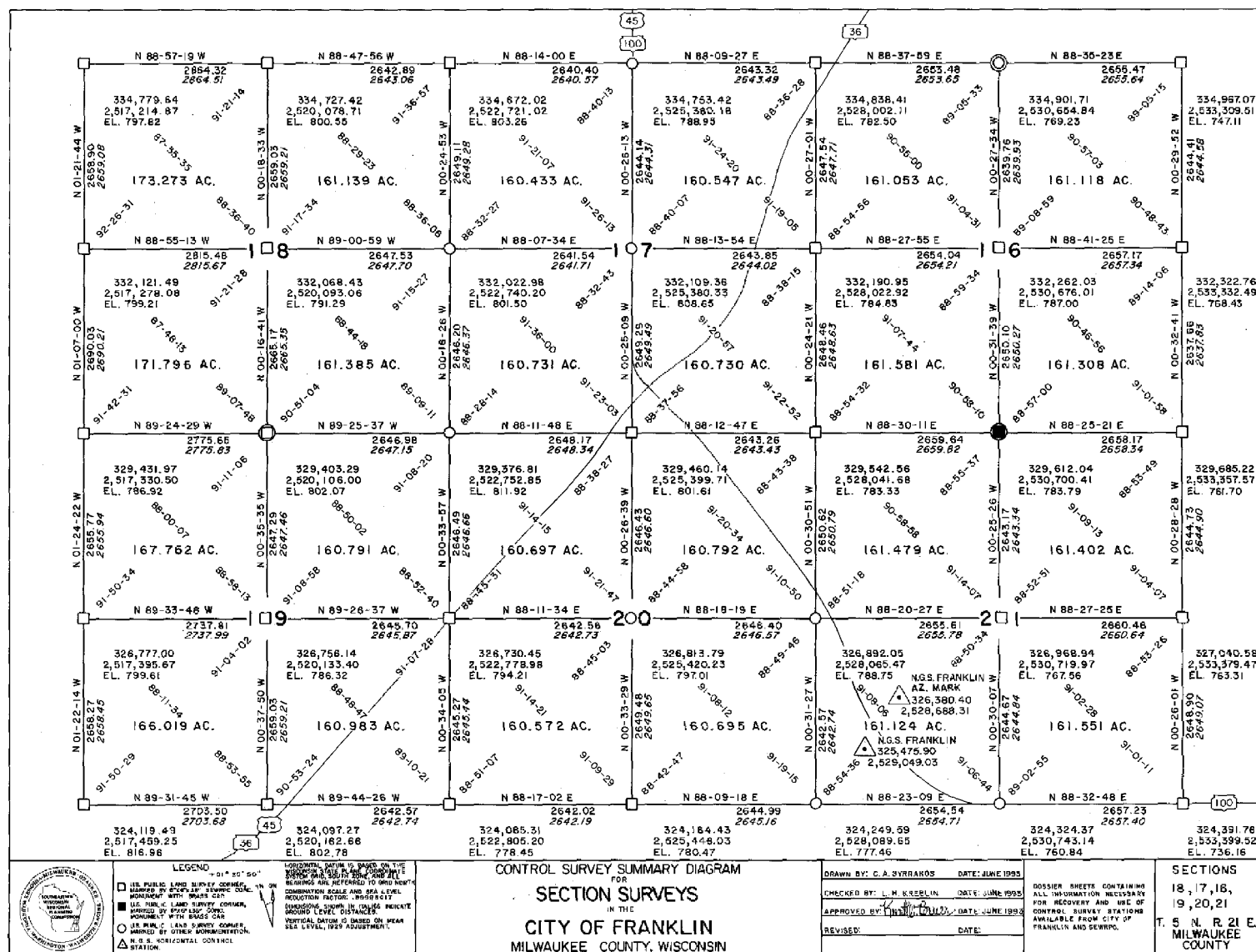


Typical dossier sheet prepared for each control survey station setting forth all information necessary for recovery and use of the station such as: the State Plane coordinates of the corner, the elevation of the monument, a location sketch, a detailed description, and a Surveyor's affidavit.

Source: SEWRPC.

Figure 4

TYPICAL CONTROL SURVEY SUMMARY DIAGRAM



An example of a control survey summary diagram for a six-square-mile area showing the grid and ground lengths and grid bearings of the exterior boundaries of each one-quarter section; the area of each one-quarter section; all monuments erected; the interior angles of each one-quarter section; the State Plane coordinates of all one-quarter section corners; the elevations of all monuments set; the National Geodetic Survey control stations utilized to tie the U. S. Public Land Survey corners to the horizontal geodetic control datum, together with the coordinates of these stations; the average angle between geodetic and grid bearing for the six-square-mile area; and the average combination scale and sea level reduction factor for the six-square-mile area.

Source: SEWRPC.

Attendant cadastral, real property boundary line, maps should show the exact length and grid bearing of all quarter-section lines; the State Plane Coordinates of all quarter-section corners; the monuments marking these corners; the recorded dimensions of all street lines, alley lines, and boundaries of public property; and, recorded street widths and platted lot dimensions. In unplatted areas real property boundary lines may be shown by scale alone (see Figure 6). In larger communities, it is this particular base map which is initially adopted by the governing body of the county or municipality as the official map. Specific projects, such as new major streets and highways; proposed street widenings, relocations, or vacations; or proposed drainageways, parks, parkways, and playgrounds, may then be taken from the master plan, detailed as to specific locations, and added to the base maps, and the revised base maps adopted as the amended official map (see Figure 7).

For all but the smallest communities, it is suggested that the base maps be compiled by U. S. Public Land Survey quarter-section or section and that an individual sheet be used for each quarter-section or section mapped. Smaller communities, however, may be able to prepare an official map at a workable map scale utilizing a single map sheet (see Figure 8).

While mapping scales must be adopted for the specific needs of each individual community, a commonly used scale for urban base maps is one inch equals 100 feet. Section and quarter-section corners should be plotted by coordinates; all other property boundary lines should be plotted by scale from title records and adjusted to the quarter-section lines. Compilation of the maps in this manner permits their reduction on a 10 to 1 ratio for the compilation of an accurate wall map showing the entire community at a final scale of one inch equals 1,000 feet by mosaic process and at a 2 to 1 ratio for compilation of neighborhood unit maps for planning and utility systems engineering purposes. Contour information is, of course, readily and accurately transferable from topographic maps by a simple overlay process. On completion of the base and wall maps, their adoption by the local governing body as an official map can be undertaken and specific projects detailed and placed on the adopted official map as plan implementation begins. In this way a scientific basis can be provided for all

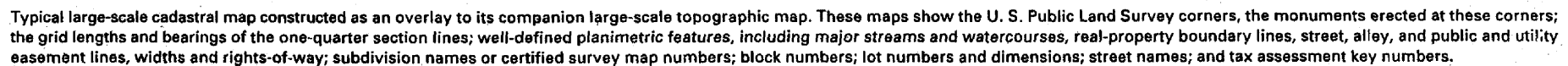
future surveying and mapping work in the community as well as the preparation of an official map achieved in a practical manner.

DEVELOPMENT OF COUNTY PARCEL-BASED LAND INFORMATION SYSTEMS

As already noted, the Commission, since its inception, has recommended that county and local units of government within the Region prepare large-scale topographic and cadastral base maps founded upon a Commission-recommended monumented control survey network that precisely and accurately relates the U. S. Public Land Survey System to the State Plane Coordinate System. The topographic and cadastral maps were envisioned as providing the foundation for the development over time of comprehensive planning and engineering data banks. Given the then-existing technology, these data banks were envisioned as being manually maintained and utilized. With the advent of computer-assisted mapping and related geographic information systems, the Commission in 1976 began to convert its regional planning data bank to an automated, vector-based, geographic information system. This involved the conversion of conventionally mapped data to digital, that is, computer-readable form. By 1989 the county and local units of government in the Region began similar efforts toward the creation of parcel-based land information systems, the digital mapping providing the foundation for the modernization of county land records management and the ultimate creation of parcel-based land information systems.

Efforts to develop such parcel based land information systems were significantly enhanced by the initiation in 1990 of the Wisconsin Land Information Program. This program, overseen by the Wisconsin Land Information Board, provides an institutional structure for land records modernization efforts within Wisconsin and provides a nonproperty-tax-base source of revenue for the required work. By the end of 1992, the Regional Planning Commission had assisted all of its constituent seven counties in preparing county land information system plans. The plans are documented in the following reports:

TYPICAL CADASTRAL MAP PREPARED IN ACCORDANCE WITH COMMISSION-RECOMMENDED SPECIFICATIONS



Engineering Considerations 31

Figure 7

**TYPICAL U. S. PUBLIC LAND SURVEY SECTION-BASED
OFFICIAL MAP PREPARED TO GOOD STANDARDS**

This figure shows a typical official map sheet prepared utilizing a U. S. Public Land Survey section cadastral base map prepared to Commission-recommended standards. This particular official map sheet shows—in addition to the existing real property boundary lines—the rights-of-way to be protected for the proposed future widening of arterial streets and highways; the configuration of proposed new land access streets; and the lands to be reserved for a proposed public playground and for a proposed parkway. An official map for larger communities would consist of a series of these types of map sheets.

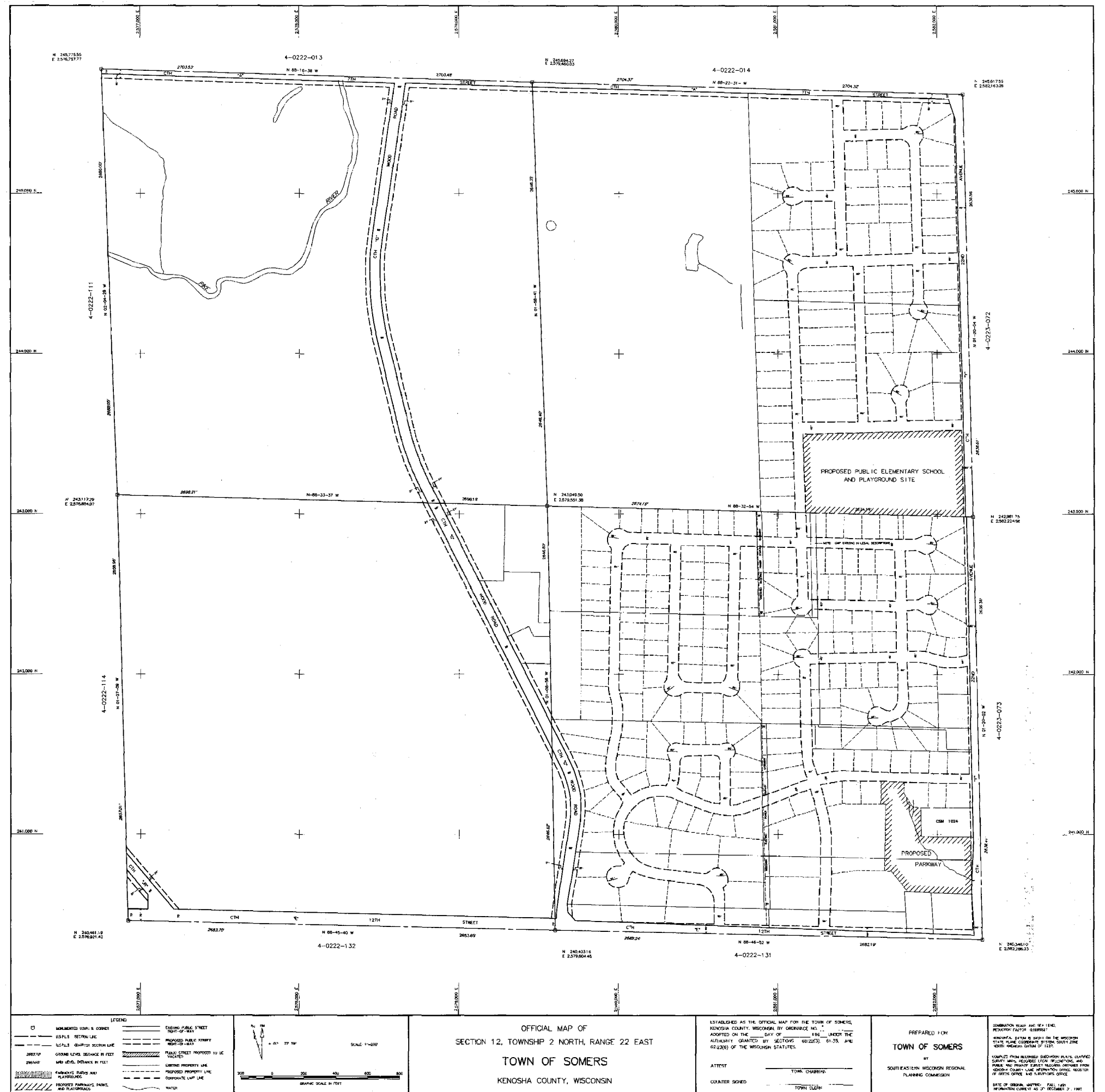
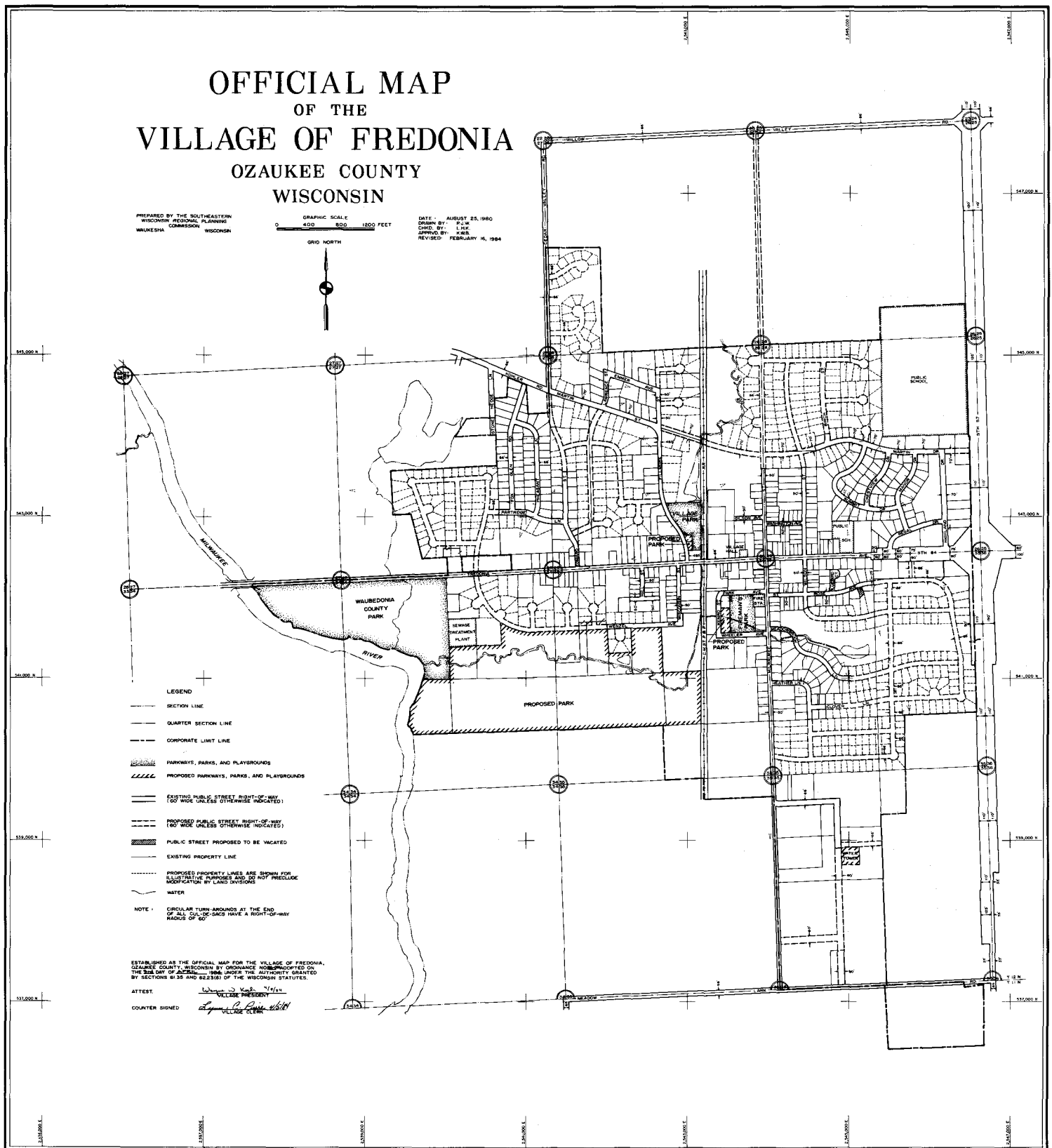


Figure 8

**TYPICAL COMMUNITY-BASED OFFICIAL MAP
PREPARED TO GOOD STANDARDS**



Although larger communities may need to prepare an official map as a series of individual map sheets, smaller communities may be able to prepare an official map utilizing a single map sheet. This figure shows a typical official map prepared on a single map sheet.

Source: SEWRPC.

1. SEWRPC Community Assistance Planning Report No. 185, A Plan for the Creation of an Automated Mapping and Parcel-Based Land Information System for Kenosha County, August 1990.
2. SEWRPC Community Assistance Planning Report No. 177, Feasibility Study for a Milwaukee County Automated Mapping and Land Information System, October 1989.
3. SEWRPC Community Assistance Planning Report No. 142, A Land Information System Plan for Ozaukee County, April 1992.
4. SEWRPC Community Assistance Planning Report No. 194, A Land Information System Plan for Racine County, August 1991.
5. SEWRPC Community Assistance Planning Report No. 139, A Land Information System Plan for Walworth County, September 1991.
6. SEWRPC Community Assistance Planning Report No. 184, A Land Information System Plan for Washington County, March 1992.
7. SEWRPC Community Assistance Planning Report No. 193, A Land Information System Plan for Waukesha County, April 1991.

These seven plans all contain common specifications for the preparation of large-scale topographic and cadastral base maps in digital format. These base maps, founded on the Commission-recommended control survey system, in effect, constitute the initial stage of an official map as that map is envisioned in the State enabling legislation. By providing the accurate cadastral, that is, real property boundary line, maps required as the initial phase of any sound official mapping program, the automated base maps remove the principal historic impediment to the creation of official maps within the Region at the State, county and local levels of government.

FACILITY DESIGN CONSIDERATIONS

The placement of such proposed new facilities as streets, highways, parks, parkways, playgrounds, railways, public transit facilities, and waterways—and of

widened or enlarged facility boundaries must be preceded by adequate design studies. With respect to major new highway and railway facilities, the design studies must specify centerline locations and proposed right-of-way widths including right-of-way for intersections and interchanges. For these types of facilities, the design studies must carefully consider vertical as well as horizontal locations, alignments, and configurations and will usually entail the conduct of full-scale preliminary engineering investigations. Such investigations are usually conducted for a specific corridor in which the major transportation facility is to be located and may involve Federally specified major investment studies or alternatives analyses, including environmental impact assessments. To the extent possible, however, the investigation should stop short of the latter in order that the facility may be officially mapped in a timely manner, before development in the corridor substantially increases the cost of right-of-way acquisition and construction or precludes construction.

The necessary design studies for new and widened urban arterials and for new collector and land-access streets and for new neighborhood and community parks, parkways, and drainageways are most efficiently and effectively conducted as integral parts of plan preparation efforts for neighborhood units and major activity center development. Set within the context of community, county, and regional master plans, such detailed development plans have historically also been known as platting layouts or land subdivision designs.

Land subdivision is far more than a means of marketing land; it is the first step in the process of building a community. Much of the form and character of a community is determined by the quality of its land subdivisions and the design and improvement standards which are built into those subdivisions. Once land has been divided into blocks and lots; arterial, collector, and land-access streets established; and utilities and drainage facilities installed, the urban development pattern is permanently established and unlikely to be changed. For generations the entire community, as well as the individuals who occupy such subdivisions, will be influenced by the character and quality of the subdivision design.

Good subdivision design should create building sites which meet the requirements of contemporary life; which are not only currently marketable, but which will

remain competitive with future developments, thereby presenting a stable and liquid investment; and which are so arranged in relationship to the rest of the community as to provide the best possible urban environment. The principles of good land subdivision design are discussed in SEWRPC Planning Guide No. 1, *Land Development Guide*, published in November 1963. These principles concern the relationship of good subdivision design to external factors of communitywide concern, to proposed and existing land uses, and to internal detailing. The last-mentioned includes careful attention to the proper layout of streets, blocks, and lots and careful adjustment of the design to the topography and soil capabilities of the site. In this respect, it should be noted that the street system is the most important single consideration in subdivision design, since that system shapes the blocks and lots and must facilitate the movement of traffic, provide access to individual building sites, provide the location for utilities, and function as an integral part of the community's drainage system.

Accordingly, the placement of such proposed major new highway and transit facilities, as freeways, expressways, major State and county trunk highways, busways, and light railways, including major community bypass facilities, should be based upon preliminary engineering studies conducted by the agency responsible for the construction of the new facility. The facilities concerned may be officially mapped by the level of government responsible for the facility construction, State or county, or may, in a cooperative effort, be mapped by the

local communities through which the facilities are to be located. The official mapping of proposed widening lines for existing State and county trunk highways may be done by the agency responsible for the maintenance and operation of the facility or, again, in a cooperative effort by the communities through which the facility is located. The determination of widening lines can often be based upon less extensive preliminary engineering studies than those required for the location of new facilities, requiring only the determination of a desirable cross-section for the widened facility and consideration of intersection or interchange treatments.

The placement of proposed new urban arterial, collector, and land-access streets; the placement of widening lines for urban arterials; and the placement of proposed parks, parkways, and drainageways on official maps should be based upon detailed neighborhood unit and major activity center development plans prepared by experienced site planners and adopted by the plan commission and the governing body of the community concerned. It is important to note that the large-scale topographic and cadastral maps being prepared under the land records modernization programs underway within each of the seven counties of the Region, together with the soils, floodland, and wetland data available in the Regional Planning Commission's automated data bank, provide the basic data required for the conduct of the planning and engineering studies needed to determine facility locations in preparation for the official mapping of those facilities.

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APPENDICES

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APPENDIX A
WISCONSIN OFFICIAL MAP ENABLING LEGISLATION

Appendix A-1

LOCAL MAP ENABLING LEGISLATION

Section 62.23(6) of the *Wisconsin Statutes* (1993-94)

(6) OFFICIAL MAP. (a) As used in this subsection, "waterways" includes rivers, streams, creeks, ditches, drainage channels, watercourses, lakes, bays, ponds, impoundment reservoirs, retention and detention basins, marshes and other surface water areas, regardless of whether the areas are natural or artificial.

(am) 1. In this paragraph:

a. "Airport" means an airport as defined under s. 114.002(7) which is owned or operated by a county, city, village or town either singly or jointly with one or more counties, cities, villages or towns.

b. "Airport affected area" means the area established by an agreement under s. 66.31. If a county, city, village or town has not established such an agreement, "airport affected area" in that county, city, village or town means the area located within 3 miles of the boundaries of an airport.

2. If the council of any city which is not located in whole or in part in a county with a population of 500,000 or more has established an official map under par. (b), the map shall show the location of any part of an airport located within the area subject to zoning by the city and any part of an airport affected area located within the area subject to zoning by the city.

(b) The council of any city may by ordinance or resolution establish an official map of the city or any part thereof showing the streets, highways, historic districts, parkways, parks and playgrounds laid out, adopted and established by law. The city may also include the location of railroad rights-of-way, waterways and public transit facilities on its map. A city may include a waterway on its map only if the waterway is included in a comprehensive surface water drainage plan. The map is conclusive with respect to the location and width of streets, highways, waterways and parkways, and the location and extent of railroad rights-of-

way, public transit facilities, parks and playgrounds shown on the map. The official map is declared to be established to conserve and promote the public health, safety, convenience or general welfare. The ordinance or resolution shall require the city clerk at once to record with the register of deeds of the county or counties in which the city is situated a certificate showing that the city has established an official map. An ordinance or resolution establishing any part of an official map enacted prior to June 16, 1965, which would be valid under this paragraph is hereby validated.

(c) The city council may amend the official map of the city so as to establish the exterior lines of planned new streets, highways, historic districts, parkways, railroad rights-of-way, public transit facilities, waterways, parks or playgrounds, or to widen, narrow, extend or close existing streets, highways, historic districts, parkways, railroad rights-of-way, public transit facilities, waterways, parks or playgrounds. No such change may become effective until after a public hearing concerning the proposed change before the city council or a committee appointed by the city council from its members, at which parties in interest and citizens shall have an opportunity to be heard. Notice of the public hearing shall be published as a class 2 notice under ch. 985. Before amending the map, the council shall refer the matter to the city plan commission for report, but if the city plan commission does not make its report within 60 days of reference, it forfeits the right to further suspend action. When adopted, amendments become a part of the official map of the city, and are conclusive with respect to the location and width of the streets, highways, historic districts, waterways and parkways and the location and extent of railroad rights-of-way, public transit facilities, parks and playgrounds shown on the map. The placing of any street, highway, waterway, parkway, railroad right-of-way, public transit facility, park or playground line or lines upon the official map does not constitute the opening or establishment of any street, parkway, railroad right-of-way, public transit facility,

park or playground or alteration of any waterway, or the taking or acceptance of any land for these purposes.

(d) The locating, widening or closing, or the approval of the locating, widening or closing of streets, highways, waterways, parkways, railroad rights-of-way, public transit facilities, parks or playgrounds by the city under provisions of law other than this section shall be deemed to amend the official map, and are subject to this section, except that changes or additions made by a subdivision plat approved by the city under ch. 236 do not require the public hearing specified in par. (c) if the changes or additions do not affect any land outside the platted area.

(e) No permit may be issued to construct or enlarge any building within the limits of any street, highway, waterway, railroad right-of-way, public transit facility or parkway, shown or laid out on the map except as provided in this section. The street, highway, waterway, railroad right-of-way, public transit facility or parkway system shown on the official map may be shown on the official map as extending beyond the boundaries of a city or village a distance equal to that within which the approval of land subdivision plats by the city council or village board is required as provided by s. 236.10(1)(b)2. Any person desiring to construct or enlarge a building within the limits of a street, highway, railroad right-of-way, public transit facility or parkway so shown as extended may apply to the authorized official of the city or village for a building permit. Any person desiring to construct or enlarge a building within the limits of a street, highway, waterway, railroad right-of-way, public transit facility or parkway shown on the official map within the incorporated limits of the municipality shall apply to the authorized official of the city or village for a building permit. Unless an application is made, and the building permit granted or not denied within 30 days, the person is not entitled to compensation for damage to the building in the course of construction of the street, highway, railroad right-of-way, public transit facility or parkway shown on the official map. Unless an application is made, and the building permit granted or not denied within 30 days, the person is not entitled to compensation for damage to the building in the course of construction or alteration of the waterway shown on the official map within the

incorporated limits of the municipality. If the land within the mapped street, highway, waterway, railroad right-of-way, public transit facility or parkway is not yielding a fair return, the board of appeals in any municipality which has established such a board having power to make variances or exceptions in zoning regulations may, by the vote of a majority of its members, grant a permit for a building or addition in the path of the street, highway, waterway, railroad right-of-way, public transit facility or parkway, which will as little as practicable increase the cost of opening the street, highway, waterway, railroad right-of-way, public transit facility or parkway or tend to cause a change of the official map. The board may impose reasonable requirements as a condition of granting the permit to promote the health, convenience, safety or general welfare of the community. The board shall refuse a permit where the applicant will not be substantially affected by not constructing the addition or by placing the building outside the mapped street, highway, waterway, railroad right-of-way, public transit facility or parkway.

(f) In any city in which there is no such board of appeals, the city council shall have the same powers and shall be subject to the same restrictions. For this purpose such council is authorized to act as a discretionary administrative or quasi-judicial body. When so acting it shall not sit as a legislative body but in a separate meeting and with separate minutes kept.

(g) Before taking any action authorized in this subsection, the board of appeals or city council shall hold a hearing at which parties in interest and others shall have an opportunity to be heard. At least 15 days before the hearing notice of the time and place of the hearing shall be published as a class 1 notice, under ch. 985. Any such decision shall be subject to review by certiorari issued by a court of record in the same manner and pursuant to the same provisions as in appeals from the decisions of a board of appeals upon zoning regulations.

(h) In any city which has established an official map as herein authorized no public sewer or other municipal street utility or improvement shall be constructed in any street, highway or parkway until such street, highway or parkway is duly placed on the official map. No permit for the erection of any building shall be issued unless

a street, highway or parkway giving access to such proposed structure has been duly placed on the official map. Where the enforcement of the provisions of this section would entail practical difficulty or unnecessary hardship, and where the circumstances of the case do not require the structure to be related to existing or proposed streets, highways or parkways, the applicant for such a permit may appeal from the decision of the administrative officer having charge of the issue of permits to the board of appeals in any city which has established a board having power to make variances or exceptions in zoning regulations, and the same provisions are applied to such appeals and to such boards as are provided in cases of appeals on zoning regulations. The board may in passing on such appeal make any reasonable exception, and issue the permit subject to conditions that will protect any future street, highway or parkway layout. Any such decision shall be subject to review by

certiorari issued by a court of record in the same manner and pursuant to the same provisions as in appeals from the decision of such board upon zoning regulations. In any city in which there is no such board of appeals the city council shall have the same powers and be subject to the same restrictions, and the same method of court review shall be available. For such purpose such council is authorized to act as a discretionary administrative or quasi-judicial body. When so acting it shall not sit as a legislative body, but in a separate meeting and with separate minutes kept.

(i) In those counties where the county maintains and operates parks, parkways, playgrounds, bathing beaches and other recreational facilities within the limits of any city, such city shall not include said facilities in the master plan without the approval of the county board of supervisors.

Appendix A-2

COUNTY MAP ENABLING LEGISLATION

Section 80.64 of the *Wisconsin Statutes* (1993-94)

80.64 Widening of highways; establishment of excess widths. With the approval of the governing body of the municipality in which a street or highway or part thereof is located, the county board may, to promote the general welfare, establish street and highway widths in excess of the widths in use; and likewise may adopt plans showing the location and width proposed for any future street or highway, which shall not be subject to s. 80.32(2). Such streets or highways or plans therefor shall be shown on a map (showing present and proposed street or highway lines and also property lines and owners except in counties having a population of 500,000 or more) then recorded in the office of the register of deeds, and notice of the recording shall be published as a class 1 notice, under ch. 985, in the territory in which such streets or highways are located. The notice shall briefly set forth the action of the county board. The county board, upon like approval, publication and notice, may from time to time supplement or change the same, and such supplements or changes shall be similarly recorded in the office of the register of deeds. The excess width for streets or highways in use for the right-of-way required for those planned, may be acquired at any time either in whole or in part by the state or county or municipality in which located; but no part shall be acquired in less than the full extent, in width, of the excess width to

be made up of land on the same side of the street or highway, nor for less than the full length of such excess width lying within contiguous land owned by the same owner. Any land so acquired, whether the excess width is acquired for the full length of the street or highway or not, shall at once become available for highway purposes. The power to acquire such right-of-way or additional width in portions as provided herein may be exercised to acquire the land on advantageous terms. In counties containing a population of 500,000 or more if, subsequent to the establishment of widths on streets or highways by a county board with the approval of the governing body of the municipality in which such streets or highways lie, in conformity with this section or s. 59.97, any area embracing a street or highway upon which a width has been so established is annexed to a city or village or becomes a city or village by incorporation, such city or such village shall thereafter adhere to such established width, and shall not, subsequent to any annexation or incorporation, except with the approval of the county board, alter or void such established width, nor shall any construction or development be permitted or sanctioned by such city or such village or any of its officers or representatives which will interfere with, prevent or jeopardize the obtaining of the necessary right-of-way to such established width.

Appendix A-3

STATE MAP ENABLING LEGISLATION

Section 84.295(10) of the *Wisconsin Statutes* (1993-94)

84.295 Freeways and expressways.

(10) ESTABLISHING LOCATIONS AND RIGHT-OF-WAY WIDTHS FOR FUTURE FREEWAYS OR EXPRESSWAYS. (a) Where, as the result of its investigations and studies, the department finds that there will be a need in the future for the development and construction of segments of a state trunk highway as a freeway or expressway, and where the department determines that in order to prevent conflicting costly economic development on areas of lands to be available as rights-of-way when needed for such future development, there is need to establish, and to inform the public of, the approximate location and widths of rights-of-way needed, it may proceed to establish such location and the approximate widths of rights-of-way in the following manner. It shall hold a public hearing in the matter in a courthouse or other convenient public place in or near the region to be affected by the proposed change, which public hearing shall be advertised and held as are state trunk highway change hearings. The department shall consider and evaluate the testimony presented at the public hearing. It may make a survey and prepare a map showing the location of the freeway or expressway and the approximate widths of the rights-of-way needed for the freeway or expressway, including the right-of-way needed for traffic interchanges with other highways, grade separations, frontage roads and other incidental facilities and for the alteration or relocation of existing public highways to adjust traffic service to grade separation structures and interchange ramps. The map shall also show the existing highways and the property lines and record owners of lands needed. Upon approval of the map by the department, a notice of such action and the map showing the lands or interests therein needed in any county shall be recorded in the office of the

register of deeds of such county. Notice of the action and of the recording shall be published as a class 1 notice, under ch. 985, in such county, and within 60 days after recording, notice of the recording shall be served by registered mail on the owners of record on the date of recording. With like approval, notice and publications, and notice to the affected record owners, the department may from time to time supplement or change the map.

(b) After such location is thus established, within the area of the rights-of-way as shown on the map or in such proximity thereto as to result in consequential damages when the right-of-way is acquired, no one shall erect or move in any additional structure, nor rebuild, alter or add to any existing structure, without first giving to the department by registered mail 60 days' notice of such contemplated construction, alteration or addition describing the same, provided that this prohibition and requirement shall not apply to any normal or emergency repairs or replacements which are necessary to maintain an existing structure or facility in approximately its previously existing functioning condition. When the right-of-way is acquired, no damages shall be allowed for any construction, alterations or additions in violation of this paragraph.

Without limiting any authority otherwise existing, any of the rights-of-way needed may be acquired at any time by the state or by the county or municipality in which such freeway or expressway is located. If one owner's contiguous land is acquired to an extent which is less than the total thereof shown on the map as needed, consequential damages to the portion not acquired shall be allowed if found to exist.

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Pages 43-46 of this report consisted of a Model Official Map Ordinance. For a more current version, see the [“Model Ordinances”](#) page at the SEWRPC website.