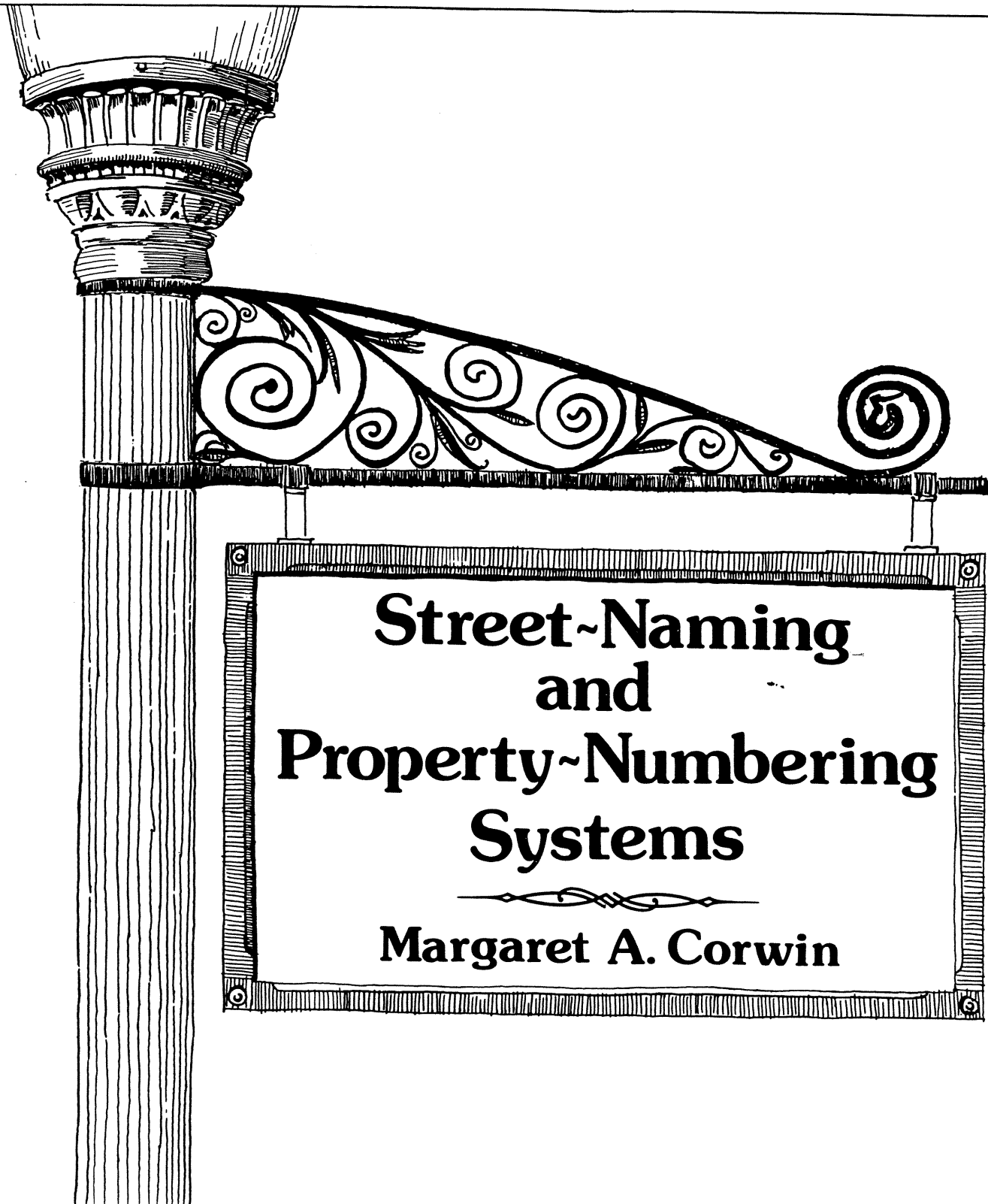




REPORT NO. 332

# Planning Advisory Service



# Street-Naming and Property-Numbering Systems

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# Chapter 1. Introduction

The function of street naming and house numbering is to enable people to locate addresses readily. One of the least glamorous and yet most important tasks of a planning agency is to establish and implement a uniform street-naming and property-numbering system to accomplish this objective. The task often confronts planners when new subdivisions or planned unit developments are established or when the accumulated inefficiencies of an outmoded system cause dissatisfaction in a community. Dissatisfaction can occur because of inadequate guidelines or because the existing system has been inadequately implemented. However, all planning agencies can review their street-naming and property-numbering systems to evaluate their coherence and usefulness.

## ARGUMENTS FOR ADOPTING A STREET-NAMING AND HOUSE-NUMBERING SYSTEM

There are many practical reasons for adopting a uniform street-naming and house-numbering system. These arguments can be used to justify the need for special funds to study the existing practices or to revise the present ordinance. Some of the problems encountered are as follows:

- The difficulties and delays in access by emergency vehicles such as fire trucks and ambulances.
- The added expense in delivering packages, milk, newspapers.
- The inefficient delivery of mail.
- The loss of goods and letters wrongly addressed.
- The traffic accidents resulting from motorists searching for addresses.
- Difficulty of orienting civic employees who use addresses frequently.
- The feeling of estrangement—as opposed to the sense of location—which an address can give.
- Bad “public relations” resulting from the inconvenience caused to visitors by a confusing and duplicative system.

- The difficulty of maintaining correct legal documents such as voter records, property records, and driver’s licenses.
- The negative effects upon the business climate.
- The lack of provision for orderly urban growth and the uncertainty that numbers will be relatively permanent.
- Difficulties faced by utilities, water, power, gas and garbage collection companies in maintaining business records and providing services.

To avoid problems of street-naming and house-numbering initially is relatively easy, presuming that the streets were laid out in an organized system to begin with. However, to correct the street-naming and house-numbering system in established areas is much more complex. There is an understandable reluctance to change, and smoothing out an existing system does not always receive top priority in planning efforts. Changes should be made as soon as the need is recognized; they will be much more difficult to make as future growth complicates the problem.

## POSSIBLE OBJECTIONS TO A NEW SYSTEM

While implementation of a street-naming and house-numbering system has many advantages for a community, there are genuine reasons for community resistance. These should be recognized, and steps should be taken to minimize them. Business owners typically feel a close identification of their activities with their street address and are reluctant to change. They also might have had stationery printed in quantity and will be unhappy about a new address which makes it obsolete. Companies will have to pay to acquaint the public with their new addresses, to have signs repainted, and the like. When vocal opposition arises, some communities do not require the downtown businesses to change because the addresses are familiar and easily found.

For citizens, a change of a street name and address will mean that their personal checks must be reprinted. They must change their addresses on work records, credit

cards, and magazine subscriptions. The post office, city hall, businesses, and relatives and friends must be notified. The townspeople will also have to learn a new system of street naming and house numbering. Objections can also arise from the state historical society or from older members of the community who dislike the changes in historic names. Citizens also might object to the waste of taxpayers' money for such changes. Finally, there will be some objection to change per se.

By anticipating these objections, their negative impacts can be minimized. The permanent order resulting from a uniform street-naming and house-numbering system should be stressed when objections to the transitional confusion are raised.

## POLICIES

There are a number of general policies to be followed in choosing a street-naming and house-numbering system.

- The system should be as simple and logical as possible. The best system is one that offers the least chance for confusion and one that is susceptible to understanding after a little study and explanation.
- The system should be flexible enough to accommodate growth through city annexations.
- The system should be established uniformly throughout the jurisdiction, and all governmental and quasi-governmental agencies should use it.
- The system should incorporate mechanisms for the continuing review and assignment of street names and house numbers according to the new system.
- The chosen system should be appropriate to the topology of the area.
- A preferred system is one in which the location of both the building *and street* are easily found.
- A numbering system should be coordinated with a street-naming plan and implemented at the same time to produce the least amount of confusion during the transition period.

## BASIC CONCEPTS USED IN STREET NAMING AND NUMBERING

*Reference Point.* Fundamental to a usable system of numbering is a point of reference. This point may be thought of as the intersection of two imaginary lines, like the point of origin on a graph. The center of the municipality or central business district is the best choice. Even if there is a shift in the location of the central business district at a later date, such a shift need not disrupt the street-naming and numbering system. In addition, downtown merchants often are interested in seeing that the street naming and numbering radiates from the central business district. A person, obviously, does not need to know where the point of reference is in order to find his way; he just needs to know his approximate location and to understand the numbering system.

*Base Lines.* Base lines can be defined as those lines

which divide the municipality into identifiable sectors and which often follow prominent landmarks like railroads, lakes, ridges, or major thoroughfares. Generally, one base line runs east and west and the other one, north and south. Base lines intersect at the reference point. They are sometimes known as engineering base lines or meridians because they are lines from which measurements used to assign street numbers are taken. They are also called axis lines because they are analogous to the axis lines on a graph. After a thorough study of the subject, L.H. Hart recommended that base lines should be highways and that railroads, streams, municipal boundaries, and imaginary lines are unsatisfactory, presumably because people generally expect them to be thoroughfares.<sup>1</sup>

Base lines should bear a suitable relationship to the growth of the area, which means they should cross as close to the center of the area as possible to allow for growth in all directions. Base lines are the starting point for a numbering system.

*Grid Lines.* Grid lines are imaginary lines constructed perpendicular and parallel to base lines. These lines indicate the point where block numbers change from one hundred to the next higher hundred. Grid lines should follow the general direction of existing streets when possible and should run down the center line of the streets. They can be extended into undeveloped areas to dictate the placement of new streets. Grid lines are used to standardize the numbering of parallel blocks at the same distance from the base lines.

*Block Intervals.* The hundred-number interval, called the block interval, is the distance between grid lines, or the point when the next higher hundred number is used. This interval may be based on a multiple of frontage units (defined below), or on the distance between existing major streets, if they are fairly regularly spaced.

*Frontage Units.* A frontage unit is a standard interval in front footage used to assign consecutive property numbers on a street, beginning from the nearest grid line. Contrary to popular belief, the property on a street, not a particular structure, is given a number. This is because there is no way of determining how many structures will eventually be built on vacant land within a block, and any system which attempts to number structures consecutively does not provide the flexibility to accommodate change. The number given to the property is determined by the number of block intervals and frontage units between the property and the base line. This is explained further in Chapter 3.

*Address Prefixes and Suffixes.* Address prefixes are words preceding a street name and indicating a direction (e.g., *North Lowell St.*). Address suffixes are words following a street name and indicating either a direction (e.g., *Lowell St. Northwest*) or the type of street (e.g., *Carol Place*). The latter is called a thoroughfare designation.

*Thoroughfare Designations.* Streets are sometimes ranked by function and size, and each category is assigned a specific name suffix (e.g., avenue, boulevard, way, or place) called thoroughfare designations. Sometimes, these are standardized in a community to provide an additional locational device as part of the street address.

1. Hart, H.L., "Rules for House Numbering." Offset. January 1955. 1p.

## Chapter 2. Overview of Street Names

The naming of streets is a seemingly simple task. However, there are intricacies to be considered before adopting or revising a street-naming system. Street names can be labels or tags to identify roads in a municipality. They can also be used as part of a system to facilitate finding a particular location. In smaller communities, names may only function as labels, but in larger jurisdictions they are often used as both labels and locational aids.

### GENERAL PRINCIPLES OF STREET NAMING

*Principle Number 1: Avoid duplication.* There should be no duplication of street names or numbers used as names. Some communities permit exception to the no duplication rule when a court or cul-de-sac has the same name as the street from which it originates. Likewise, our earlier PAS report indicated that place is sometimes used to designate a minor street closely associated with a major street (e.g., St. Ann Place might be located a half a block from St. Ann Street).<sup>2</sup> Using only the suffix place or court to differentiate between the streets is defensible, since such designations generally connote subsidiary streets. It is preferable not to differentiate the same name by a suffix such as street or avenue. For example, Washington Street and Washington Avenue can be easily confused because avenue and street both indicate major streets and may seem synonymous in the public mind.

The Southeastern Wisconsin Regional Planning Commission reviewed the duplication of street names in Racine County and found a significant number of what they termed critical duplications in street names. This was defined to mean "duplicated names within the same fire service area or as continuous streets having multiple names."<sup>3</sup> The concept of "critical duplications" is helpful

2. *Street-Naming and House-Numbering Systems*, Planning Advisory Report No. 13 (Chicago: American Society of Planning Officials, April 1950).

3. Southeast Wisconsin Regional Planning Commission, *A Uniform Street-Naming and Property-Numbering System for Racine County, Wisconsin* (Waukesha, Wisconsin: 1975), p. 21.

when revising a street-naming system because it can be used to identify the name changes that are most needed.

*Principle Number 2: Avoid Confusion.* Street names that sound very similar should be avoided (e.g., Beach and Peach, Lynwood and Linwood). For example, the Maryland-National Capital Park and Planning Commission has banned prefixes like oak to obviate phonetic duplications. The reason for avoiding similar or similar-sounding names is to eliminate diction problems when people are reporting street names under stress.

*Principle Number 3: Establish Continuity.* A street running in one direction should have one name only and should have the same name throughout its entire length. However, if a street jogs sharply for a substantial distance, the portion of the street running in a different direction is often given another name. A community should set up criteria to determine when a street will be renamed because of variations in direction and when the name will remain the same. The angle of deviation and the distance for which it continues at that angle are used to determine when a change is required. Some reports reviewed use 60 degrees or 45 degrees for the angle of deviation which requires a name change. These reports variously recommend separate names if streets continue for 500, 400, 100, or 60 feet after the angle in the new direction. The standard for the angle and distance along the road at that angle which will require a change is different in different communities; what is important is setting a standard to determine when names will be changed and when they remain the same.

A policy should also be established on handling permanent voids. Some communities assign different names to streets broken by intervening land uses that are unlikely to be connected in the future, such as streets not continued across a stream or railroad track. This is justified by the argument that because emergency vehicles might go to a section of the street that did not go through to the address given, they might be delayed in reaching their destination. However, the general consensus seems

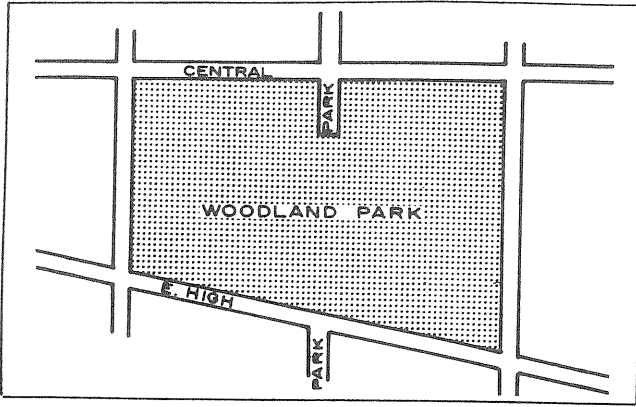


FIGURE 1. USE OF THE SAME NAME FOR INTERRUPTED STREETS

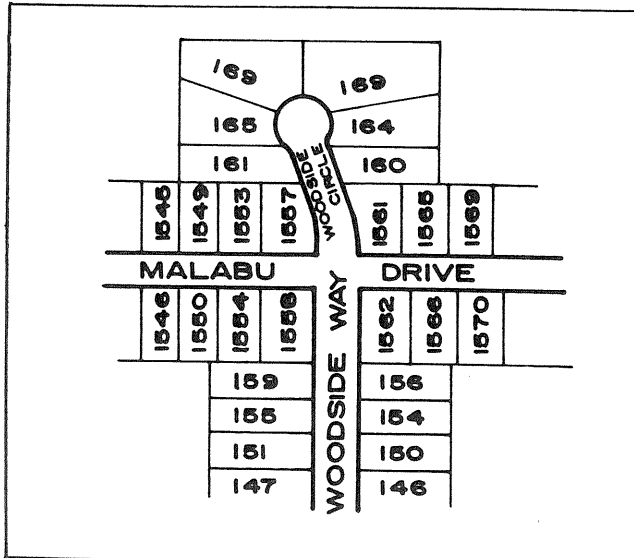
to be that the same name should be used regardless of permanent voids, in the interest of preserving continuity. (See Figure 1)

### STREET NAMES THEMSELVES

Due to the subjectivity of street naming, the names a municipality chooses can give local color and historical perspective to a community. While streets are sometimes named for physical and political features to facilitate location (as will be discussed later in the chapter), they are also sometimes named at random. Especially in new subdivisions, it is not infrequent for a developer to name streets after relatives. According to a recent building trade publication, one enterprising homebuilder motivated his employees by naming streets after them in the housing developments they built.<sup>4</sup> It is not easy to select names, particularly in large cities. When PAS Report No. 13, *Street Naming and House Numbering*, was done in 1950, the city of London was reported to have 5,350 street names; Paris, 1,628; New York, 5,003; Philadelphia, 1,914;

4. "Scaffold and Knee-Board Talk," *Plasterer and Cement Mason*, vol. 69, no. 12 (December 1975), p. 8.

FIGURE 2. USE OF WAY, CIRCLE, AND DRIVE TO DESIGNATE SPECIFIC TYPES OF THOROUGHFARES



Baltimore, 3,923; Cleveland, 2,199; Detroit, 2,262; and Chicago, 1,360.

Care should be taken to maintain historical names when possible, both to preserve local history and to prevent objections from civic and historical societies. According to a 1965 report,<sup>5</sup> Eureka, California, has a rather interesting policy in this regard; if historical names have to be eliminated, those names have top priority for use when new streets are dedicated.

### STREET NUMBERS AS STREET NAMES

There is considerable difference of opinion as to the merits of named streets (e.g., Main Street) versus streets with numbers as names (e.g., 72nd Street). It is frequently said that named streets are more difficult to find than streets named with numbers because the numbers are in an expected sequence and can denote distance (an example of their use as a locational aid). Developers typically feel that there is a greater sales appeal for houses on named streets, particularly those with romantic or rustic names. For example, a home purchaser might prefer living on Briarcliff Lane rather than on 63rd Street. Streets named with numbers are also sometimes difficult to handle when fringe development occurs at a distance from existing development; the planning agency must determine how many streets may be constructed between the last street and the new street to be named with a number.

If streets are to be named with numbers, it is important that the streets with numbers as names correspond with the address numbers in hundred blocks. For example, house numbers along 82nd Street should be in the 8200 block. (Problems that arise when the numbers do not correspond are discussed in Chapter 3.) In a large city, streets named with numbers can sometimes lead to misunderstanding and confusion. One report recommended that cities not give number designations to both north-south and east-west streets, since "North First Street, South First Street, East First Street, and West First Street are entirely too many First Streets for the average citizen to keep straight." However, the coordinate or Lyman system discussed later in this chapter is designed around the complete use of streets named with numbers. The use of number designations for streets running in one direction and names in the opposite direction is commonplace.

### PREFIXES AND SUFFIXES USED WITH STREET NAMES

According to the jargon of the literature, an address prefix is a word which precedes a street name and an address suffix is a word which follows a street name. Prefixes are almost always directional, while suffixes indicate both direction and thoroughfare designations.

In several of the street-naming and property-numbering systems to be discussed, directional prefixes and suffixes designate both the direction in which the street runs and the general geographic area in which it is located. For example, King County, Washington, uses

5. Eureka, California, Planning Commission, *Master Plan: Street Naming and Numbering*. (1965.) 23 pp.

geographical prefixes or suffixes to indicate direction; in that system, directional *suffixes* follow a street name (e.g., 120 Place, N.E.) and indicate a north-south road, while directional *prefixes* indicate an east-west road (e.g., N.E. 200 Place). In order for this to be helpful, rather than confusing to citizens, this distinction would have to be widely publicized. In other systems, such prefixes and suffixes are used to denote quadrants of a geographical area and not direction of a street in relation to a base line.

Postal service officials differ as to preferences for suffixes or prefixes; one representative of the Postal Service in Washington contended that suffixes are much more likely to be dropped than prefixes and that prefixes should be preferred. An article in *American City*,<sup>6</sup> however, suggests that directional suffixes—which allow streets to be filed alphabetically—are to be preferred over directional prefixes. The typical method of assuring uniform assignment of thoroughfare designations is through a check in the subdivision review process, but, in at least one community, suffixes are assigned by the Police Department to achieve this objective. If property numbers radiate from the base intersecting streets and there are a lot of through streets, it is easier to locate streets having directional suffixes.

### STREET NAMES AS LOCATIONAL DEVICES

There are a number of ways of naming streets systematically to facilitate locating a particular street in a community. The use of names based on existing physical or political features is the simplest example of this mechanism. The methods to be discussed in this chapter are: thoroughfare designations, theme names, alphabetical sequencing, the quadrant system, and the coordinate or Lyman system.

### THOROUGHFARE DESIGNATIONS

The use of thoroughfare designations as a locational device is probably the simplest method of street naming. In such a system, thoroughfares with specific physical characteristics are defined and certain street-name suffixes are consistently applied. The most common designations are those of "street" and "avenue." Historically, "streets" has been used for east-west thoroughfares and "avenues" for north-south thoroughfares. Such a system can be applied regardless of whether names or numbers treated as names are used. Just this differentiation between north-south and east-west streets can cut the search for a location by one-half.

A systematic thoroughfare designation for all types of roads is a logical extension of the street and avenue system used by some communities. (See Figure 2) A standardized list of thoroughfare designations can define the direction, width, and function of streets. This review of the literature indicates that there is only some similarity in the definitions of thoroughfare designations used by different municipalities. The following is a list of definitions that have been used in some communities. Lack of standardization between municipalities is relatively unimportant as long as a uniform designation of

streets of different types is followed within the same jurisdiction. Nevertheless, it would greatly increase the usefulness of the designations if they were standardized throughout the country.

### Definitions of Thoroughfare Designations Used by Various Jurisdictions

#### Boulevard

A street with a median reflecting the boulevard character implied in the name. (Same definition applies to parkways)

A major thoroughfare running in a diagonal direction, rather than east-west or north-south. It must connect at least two sections and act as a collector.

Unusually wide thoroughfares in residential sections with shade trees or shrubbery in the center plat, and the name can even be used with numbered thoroughfares. (Same definition for parkways)

A street divided by a landscaped center island and generally designated by a name, not a number used as a name.

#### Courts

Permanently closed streets such as cul-de-sacs.

Dead end rights-of-way under 1,000 feet in length which run east and west.

A minor street less than 500 feet in length, ending in a turnaround.

Horseshoe-shaped streets generally designated by one name throughout their entire length.

Places or courts are all cul-de-sacs or permanent dead-end roads.

East-west streets less than 1,000 feet in length.

All dead-end streets.

#### Drives

Winding thoroughfares.

Curving streets longer than 1,000 feet.

Diagonal, curvilinear, or other types of roads not previously mentioned.

Roads that meander about and continue through to other rights-of-way.

Secondary facilities that connect with each other.

A curvilinear street of more than 1,000 feet in length, generally designated by a name.

#### Highways

Designated state or federal highways. This term could be used even when a road generally runs north-south or east-west.

U.S. routes are designated as highways.

#### Interstate

Roads of the highest order, characterized by limited

6. Moore, J. Brewer, and Trant, Bruce S., "Street Renaming Is No Cinch," *American City*, August 1962, pp. 82-84.



access, wide right-of-way, prohibited adjacent to development, and with through-traffic preference.

#### Lanes

Indicate the direction and to some extent the location of minor dead-end streets lying between numbered thoroughfares.

Reduced rights-of-way branching from courts, places, or ways.

Curving streets of less than 1,000 feet. An uninterrupted street ending in a cul-de-sac and generally designated by a name.

Secondary roads connecting with each other.

#### Loops and Circles

Circles could be short streets that return to themselves. Loops could be short drives that begin and end in the same street (as shown in Figure 3)

Circular or semicircular roads.

A circle is a secondary road that begins and circles back to terminate on the same road.

Circles—loop streets.

A street forming a closed loop, generally designated by a name.

#### Parkway (See also boulevard)

A special scenic route or park drive, generally designated by a name.

#### Paths

A minor local street running in a diagonal direction, usually between a north-south "avenue" and an east-west street; a path may also be a diagonal connector between offset portions of a north-south or east-west collector thoroughfare.

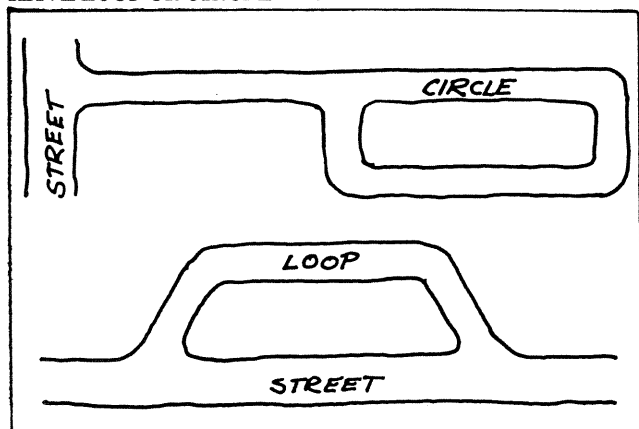
#### Pike

State primary-numbered roads.

#### Place

A cul-de-sac or permanent dead-end road.

FIGURE 3. EXAMPLES OF STREETS THAT MIGHT HAVE LOOP OR CIRCLE DESIGNATIONS



Dead-end rights-of-way under 1,000 feet in length, running north and south.

North-south streets less than 1,000 feet in length.

Permanently closed dead-end streets.

Short streets parallel to the grid pattern or in between the regular grid streets.

A short curvilinear or diagonal street generally designated by a name.

Indicates the direction and to some extent the location of minor or dead-end streets lying between numbered thoroughfares.

#### Roads

Limited thoroughfares that are frequently used, have heavy traffic volume, and run in any direction.

Thoroughfares running at oblique angles to the grid pattern.

Secondary facilities connecting with a U.S. or state primary highway.

Diagonals longer than 1,000 feet and designated by a name.

Diagonal streets.

#### Streets and Avenues<sup>7</sup>

Streets run north and south and avenues run east and west, but this may be reversed.

Streets are roads that generally run in an east-west direction, avenues are roads that basically have a north-south orientation.

Avenue—a thoroughfare running principally in a north-south direction and usually terminating at an east-west street. Street—a thoroughfare running principally in an east-west direction and usually terminating at a north-south avenue.

Avenues run east and west; roads run north and south.

Street and avenue designations are reversed for use in incorporated places with a grid pattern.

Streets are north-south roads longer than 1,000 feet; avenues are east-west roads longer than 1,000 feet.

#### Trails

A diagonal local street serving as a collector for one or more local thoroughfares.

All curvilinear streets.

#### Ways

Dead-end rights-of-way under 1,000 feet running at oblique angles to the four points of the compass.

A minor street that changes direction or begins and ends on the same thoroughfare.

Diagonal streets less than 1,000 feet in length.

7. According to "The Science of Street Names" [editorial, *American City*, November 1960, p. 7.], the unwritten rule when using the grid system was that streets ran east and west, avenues north and south. A basic principle is that streets and avenues run in different directions.

The use of thoroughfare designations alone to facilitate locational access will probably be inadequate in all but the smallest communities. It is too general to enable people to locate streets easily and quickly in large cities. The street and avenue system, because it is generally based on compass directions, depends on a grid pattern of streets. Using an expanded list of thoroughfare designations with standardized application will extend the benefits of a street and avenue type of system into areas with curvilinear streets. Nevertheless, for most communities, these devices by themselves will probably be inadequate.

### THEME NAMES AND ALPHABETICAL SEQUENCING

Naming streets around themes to designate different sections of a community is another way of making a street name a locational device. Some themes that have been used in other communities are presidents, famous persons, trees, natural features, authors, politicians, martyrs or saints, states, animals, inanimate objects, flowers, and first names.

Another widely used method of street naming is that of alphabetical sequencing. In such a system, naming streets in alphabetical order by first letter facilitates locating a street in relation to others. (See Figure 4) The U.S. Postal Service prefers that streets be named in an alphabetical sequence when possible.<sup>8</sup> It is not uncommon to combine theme names with alphabetical sequencing. For example, the east half of Dakota County, Minnesota, uses proper names, while the west half uses the names of places or things, each in alphabetical order.

The use of themes and alphabetical sequencing can limit the system in certain ways. For instance, if presidents or states were used in a section in a particular order, once the last state or president's name has been used, the system does not allow for expansion. If states were used in alphabetical order, it would be impossible to expand in the opposite direction, starting at the name of the first state used. Tulsa, Oklahoma, for instance, used alphabetical sequencing until the last letter was reached and then changed to a numerical system.

### NEIGHBORHOOD UNIT SYSTEM

This is one variation of the use of theme names and alphabetical sequencing. While irregular street design in new subdivisions enhances the aesthetic quality of the development and provides for pedestrian safety, it makes the easily negotiated grid system of street naming inapplicable and the decimal numbering of houses impossible. Thus, new street-naming systems need to be applied in subdivisions laid out in curvilinear patterns or wherever streets do not form a rectilinear pattern due to topography. The neighborhood unit system is designed to apply in this situation.

In the neighborhood unit system, sections of a development are named for local landmarks, historical events, or themes. For example, a section of a subdivision might be called Fountain View because it had a large fountain at its center. The basic principle of the neighborhood unit

8. U.S. Postal Service, Economic Analysis Division, Finance Department, *New Towns and the U.S. Postal Service: Some Guidelines for Postal Officials and New Town Developers*. (Washington, D.C.: 1975), 100 pp.

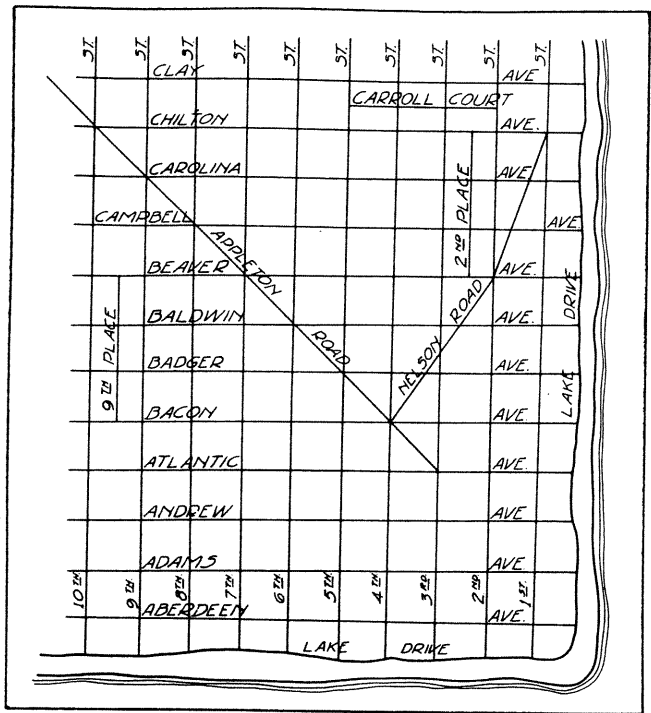
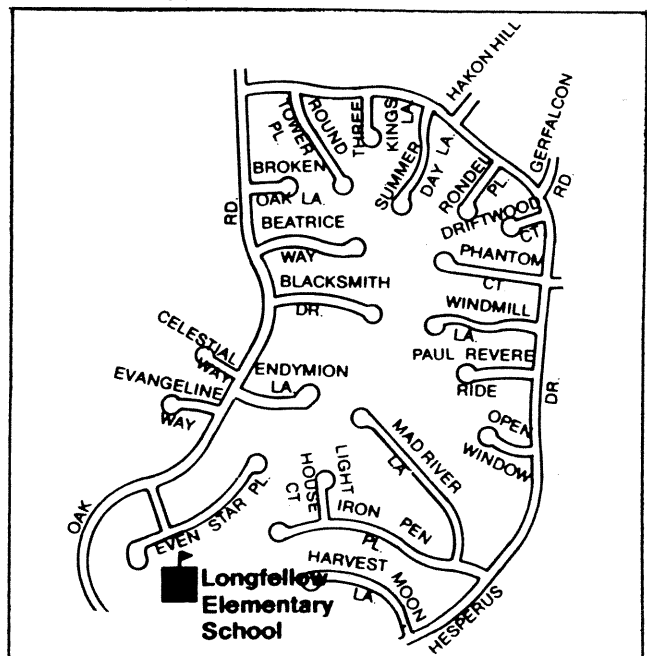


FIGURE 4. ALPHABETICAL SEQUENCING OF STREET NAMES

system is that major collector streets in the section are named for the theme, and then all arterials feeding into that street are given names related to the theme or beginning with the same letter as the theme, usually arranged in alphabetical order. In new parts of Columbia, Maryland, the main streets are named after authors and the arterials are named after the author's works. For instance, "Evangeline Way" is found in the Longfellow neighborhood of the development. (See Figure 5) Thoroughfares

FIGURE 5. THEME NAMES FOR STREETS IN A NEIGHBORHOOD



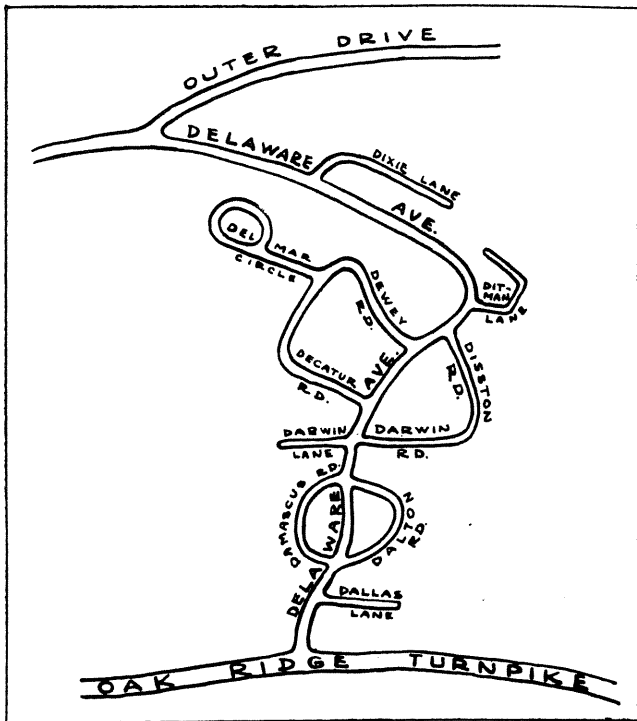


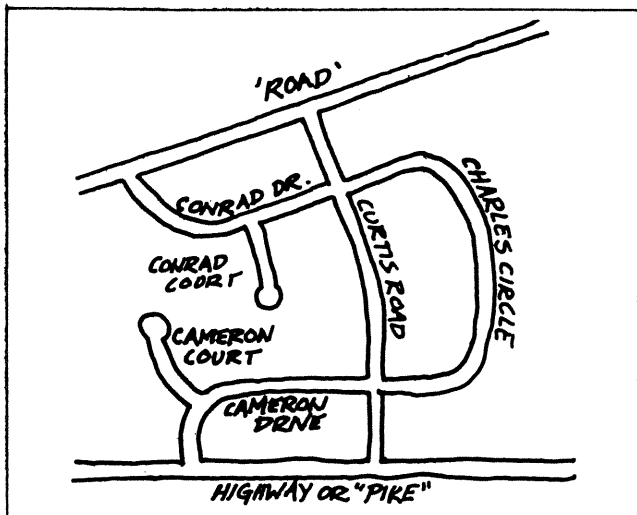
FIGURE 6. ALPHABETICAL SEQUENCING AND THOROUGHFARE DESIGNATIONS

Minor streets are named differently than major streets in this example.

can still be classified according to a hierarchy of types (such as street, avenue, trail, and so forth), so that the thoroughfare designation will signify whether it is a major or minor street.

There is some disagreement in the literature about whether to distinguish circular or loop streets with separate names or to use the same name with a minor thoroughfare designation. (Compare Figure 6 with Figure 7, Dixie Lane off Delaware Avenue versus Conrad Court off Conrad Drive.) As mentioned earlier, this is per-

FIGURE 7. MINOR STREETS DISTINGUISHED FROM MAJOR STREETS BY THOROUGHFARE DESIGNATIONS ONLY



missible when the thoroughfare designation denotes a subsidiary street. Sometimes minor side streets such as courts or places are also named in alphabetical order.

There are several limitations of the neighborhood unit system. The most obvious is that this method of street naming does not facilitate locating streets as easily as those laid out in a grid pattern. Second, using alphabetical sequencing requires more streets with similar names that are difficult to distinguish at night and are more easily confused. For example, in Bowie-Blair, Maryland, there are streets named Keyberry Lane, Keynote Lane, Keyport Lane, and Keystone Lane, or Lyle Lane, Lyn Place, and Lyric Place, or Corbett Place or Corbin Place. Nevertheless, for areas with curvilinear streets, there are few alternative methods of systematically naming streets.

### QUADRANT SYSTEM

A quadrant street-naming system depends on the use of base lines to divide the municipality into sections, which are identified by the nearest appropriate compass designation. In this system, a directional suffix or prefix is used with the street name to indicate the quadrant location of the street in question. Sometimes quadrants are north, south, east, and west; other times they are designated northeast, northwest, southeast, and southwest. (See Figure 8) In some systems, the directional prefixes or suffixes do not indicate the direction of the street with respect to base lines, but only quadrant location. Washington, D.C., is a familiar example of the quadrant system. The axes intersect at the Capitol Building: North Capitol and South Capitol Streets form one axis while East Capitol and a line due west to the Washington Monument form the other axis.

The decision about a central reference point and base lines should be, in part, based on natural or topographical divisions of a community. For example, a section of the community known as the south side should be in one of the south quadrants. If there are distant topographical divisions not connected by bridges and roads, it may be advisable to use more than four divisions. For example, in a system suggested for Augusta County, Virginia, the quadrant is combined with the classification of thoroughfares and used in sparsely settled rural areas. The system divided the county into eight sectors, four quadrants, and four subquadrants. The number of quadrants can also be reduced if there are natural barriers such as a river which precludes growth in that direction.

This system is sometimes combined with elements of the thoroughfare designation and alphabetical naming of streets to provide better locational information in a street address. For example, 340 Elm Avenue, N.E., suggests that the house is located on a north-south road (indicated by the word avenue), in the northeast quadrant (indicated by the N.E. suffix), a little more than three blocks east of the base line running north and south (indicated by the 340). When streets with numbers as names are used in such a system, the location of the road with respect to one base line is given by the number name of the street and the relation to the other base line is given by the house number. For example, 340 Fourth Avenue, N.W., suggests that the house is three blocks from the north-south

base line and four blocks from the east-west base line in the northwest quadrant.

The advantages of the quadrant system are that the system, whether in combination with the thoroughfare designations or not, has the flexibility to accommodate future growth. This system provides some assistance in the finding of either diagonal or curved streets because of the directional prefix or suffix used with the address. The quadrant system in combination with other mechanisms is frequently employed in larger geographic areas, such as counties. The use of names alphabetically in one direction and numbers in the other would permit the use of prefixes only, such as N. Linden Avenue, and the numbered streets can then be simply E. Fifth Street; one can still tell the part of the community and distance from the baseline with those addresses. While providing more locational information than a simple street and avenue system, the quadrant system alone is still rather general for dense urban areas.

### COORDINATE OR LYMAN SYSTEM

The coordinate or Lyman system is based on the same principle used to locate coordinate points on a graph. It was developed by Richard E. Lyman, a civil engineer from Salt Lake City, and makes it easier to find street addresses without a map. The system is used in Salt Lake City and County, Saint George, Utah, and Seattle, Washington. It is a complicated system for the average citizen to understand, but it provides good locational information.

This system requires a grid, with base-line streets dividing the city into east, west, north, and south portions. The base lines are named, and all other streets are given numbers as names with directional suffixes making up part of the names, according to their distance and direction from two axes. They are numbered in 100's—100 for each block away for the two axes (e.g., 500 North Street and 300 South Street). Streets parallel to and north of the east-west base lines are given the direction North; streets parallel to and south of that base line are given the designation South. In a similar manner, East and West designations are given to streets parallel to the north-south base line. Thus, a street that crosses the north-south base line

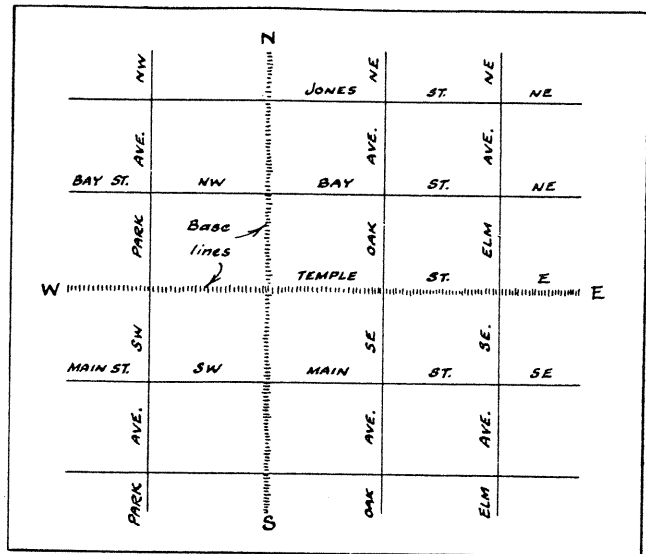
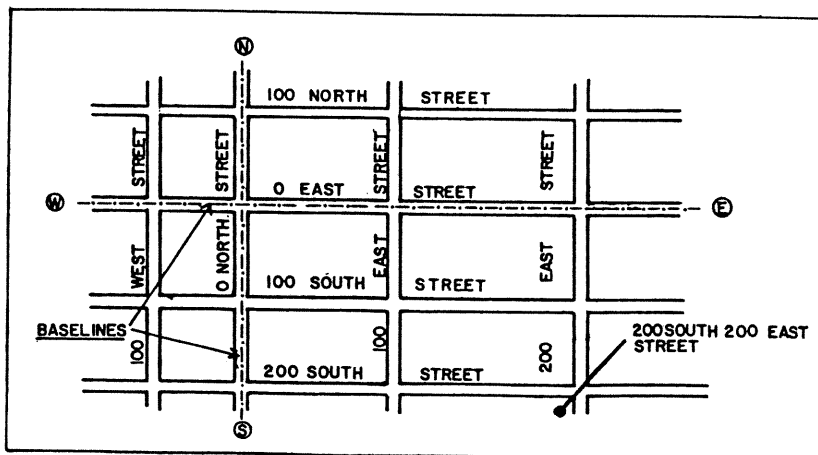


FIGURE 8. THE QUADRANT SYSTEM OF STREET NAMING

and runs two blocks south of the other base line is 200 South Street, and a street running parallel to and 20 blocks east of the north-south base line is 200 East Street. A house at the intersection of these two streets would be 200 South, 200 East Street. Figure 9 shows how the Lyman system might be used.

The road number and the building number are both used to locate an address. The number of the road which intersects nearest a specific location will give the first part of a building number in the area; e.g., to find 33393 Road 160, one would follow Road 160 past Avenue 332 for 1/4 of a mile (if there were 200 numbers per 1/4 mile.) Similarly, the first part of a building number will indicate approximately the road number of an intersecting street in the vicinity. The last two figures in a building number show the location of a building between two successive number-named roads. Thus, the address 2468 Avenue 35 is located between Road 24 and Road 25. While in the quadrant system, directional suffixes are used to indicate quadrant location of the address, the Lyman system makes the *distance* from the baseline and *direction* of the

FIGURE 9. THE COORDINATE OR LYMAN SYSTEM



street (as indicated by a directional suffix or prefix) the name of the street itself.

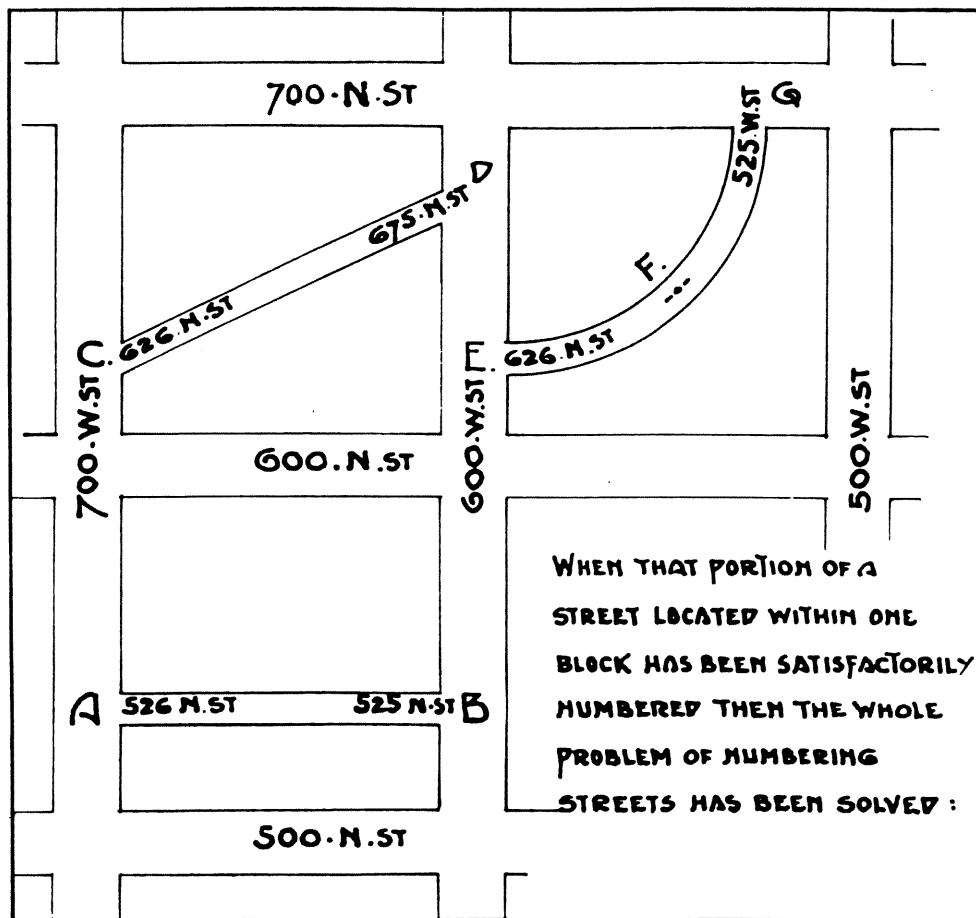
Curving diagonal, short, and narrow streets can be integrated into this system. Figure 10 shows how this system can be applied to short streets parallel to the axis, to diagonal streets, and to streets which are curved or horseshoe-shaped. In the case of a street like A-B, which is parallel to one of the axes but not an even hundred in number, the distance is measured from the side closest to the axis and the number/name 526 North Street on the A side—and 525 North Street on the other end because a house on that end would have an odd number. Thus, this street can be found, just like a house with that number, from either street. A diagonal, such as C-D in the illustration, is treated like a north-south or east-west street, whichever its angle is more similar to. Since it cuts across from where a house at 626 would be to a location of 675, it is given both number/names, one at each end, so that it can readily be found from both side streets. Residences would use one name or the other, depending upon which side street they were closer to. If a diagonal such as C-D was extended to cut through several blocks, it would receive a new number/name at each intersection. For major, long diagonals, a name might be used throughout, with a number/name shown at each intersection in addition to

the regular name, e.g., Main Street (350 E. Street). In the case of streets that change direction within a block (as E-F-G in the illustration), portions of the street are given number/names according to their predominant direction. In the example, the E-F portion of the streets is considered to be an east and west street, and it is named 626 North Street, while the F-G section is considered to be north and south and named 525 West Street. When such a street forms a horseshoe, beginning and ending on the same street, both sections would be considered to be streets running in the same direction and given related number/names such as 626 North Street and 676 North Street.

There are several disadvantages to the Lyman system. First, it is most workable when streets are laid out on a rectilinear pattern. Second, when used in a large area, the street name/numbers can be long, e.g., West 140 North 15250, making it especially difficult for a small child to remember his address. The system does not function well over areas with scattered, discontinuous urban development. When houses are spaced far apart, a person looking for an address loses his frame of reference. Possibly the system is not extensively used because it seems so complicated to the average citizen.

A representative of the U.S. Postal Service in Wash-

**FIGURE 10. THREE COMMON TYPES OF IRREGULAR STREETS THAT CAN BE INTEGRATED INTO THE COORDINATE OR LYMAN SYSTEM**



ington, D.C., said that while addresses based on the coordinate system facilitate location, they are not easy for the Post Office to use. In contrast, a Salt Lake City Post Office spokesman said that they are pleased with the system because it is easy to find addresses. In the Salt Lake area, there is a reference point in each city in their district and one reference point for the county. While he admitted some problems of dropping off suffixes, he said that it was not a major problem. The Seattle Post Office also agreed that the system was rather good. A representative mentioned that addresses anywhere in the county were easy to pinpoint. Their office had been represented on the Planning Board when the system was implemented. Thus, Postal Service authorities are divided on the merits of the Lyman System, but there do not appear to be strong objections by those most closely involved.

King County, Washington, in which Seattle is located, has used a modified coordinate system for some years and had a number of specific recommendations for refinement. First, new streets should be given number names corresponding to the grid, whether the streets in between are present or not. For example, if there are no regular streets between First and Fourth Streets, Fourth should not be named Second because streets may be put through later. Their Post Office suggested that similar street names should not have overlapping house numbers: First Avenue, N.E., and First Place, N.E., should have staggered or unduplicated house numbers. King County does not encourage named streets and uses them only for wandering roads which have always been known by that name. In new developments, King County assigns the property numbers and the street number/name. They permit some regular names if the streets are internal to new developments and will not affect the outside system. A matrix in the phone book indicates where the named streets are located on the grid. If there are three or more homes off of a main road, the road is designated on the grid, even if it is private. When wandering streets are not internal, they must be given number names where they cross other streets in the grid to facilitate locating an

**TABLE 1. STREET-NAMING SYSTEMS IN USE OR PROPOSED FOR VARIOUS COMMUNITIES\***

<i>Lyman/Coordinate System</i>	
King County, Washington (Seattle)	City/County
Salt Lake City/County, Utah	City/County
St. George, Utah (used in older part only— new subdivisions have names)	City
Tippacanoe County, Indiana	County
<i>Quadrant</i>	
Fort Worth, Texas	City
Milwaukee, Wisconsin	City/County
Milan, Tennessee	City
Los Lunas, New Mexico	Small City
Haughton, Louisiana	Small City
Munford/Atoka, Tennessee	Two Cities
Fresno, California	County
Lexington/Fayette, Kentucky	City/County
<i>Theme/Alphabetical</i>	
Sunnyvale, California	City
Columbia, Maryland	City
Dakota County, Minnesota	County
<i>Thoroughfare Designation</i>	
Racine County, Wisconsin (plus base line)	County
Haughton, Louisiana (plus street and avenue)	Small City
Dakota County, Minnesota (plus alphabetical)	County
Eureka, California	Small City
Carrville, Alabama	Small City
Munford/Atoka, Tennessee	Two Cities

\* Compiled from street-naming and house-numbering reports written for these communities.

address. Seattle has a similar system to that of King County.

Different systems have been tried across the country. Table 1 lists where such systems have been proposed or used. The choice of whether to use names as locational devices and if so which to use should be based on the desires and topography of the particular jurisdiction.

be the same. The size of such an interval might be based on the minimum lot width in zoning ordinances and block lengths in subdivision regulations.

**METHODS OF ASSIGNING PROPERTY NUMBERS**

There are several methods of assigning property numbers: 1. the assignment of numbers based on present property divisions; 2. the use of frontage intervals from a point of reference (see Figure 11); and 3. the division of streets into blocks and the assignment of numbers within blocks. Unique problems with the assignment of numbers on curvilinear streets, particularly in new subdivisions, will be considered. Problems in the implementation of these methods will also be mentioned.

1. *Numbers Assigned Based on Existing Property Divisions.* The simplest method of assigning numbers is to begin at one end of a street and assign them as the properties are divided at present. While easy to implement, this method can cause problems later if the properties are subdivided further or if several buildings are built on the same piece of property. There are two methods of handling these problems. The first is to use subnumbers, such as 127 1/2 or 127 A, 127 B. The second method is to renumber the entire street from beginning to end—a method often opposed by property owners and one which causes general confusion in the transition. A variation of this method is to assign the corner lot numbers based on frontage intervals from the nearest axis (the next method to be discussed), and to assign lots between the corners in a block the house numbers based on the present divisions of property. (In such a system, if renumbering due to later subdivision is required, the inconvenience is confined to a single block. The following methods should be preferred to the use of lot divisions because lots and buildings are not standard sizes and because they are frequently changed.

2. *Uniform Measurement, Century, or Equal Interval Numbering.* The basic characteristic of the Uniform Measurement System, the Century System, and the Equal Interval Numbering System is that a frontage interval is used to assign a progression of numbers to properties, working out from base lines. Individual buildings, lots, and blocks are disregarded because they do not have a standard size. Some of the frontage intervals used in these three systems are given on the frontage interval chart. (See Table 2) Each interval point has an odd number on

one side of the street and an even number on the other side of the street. The unit must be small enough to allot a single number to each building in even the most congested area. The system can be used in both built-up and rural areas.

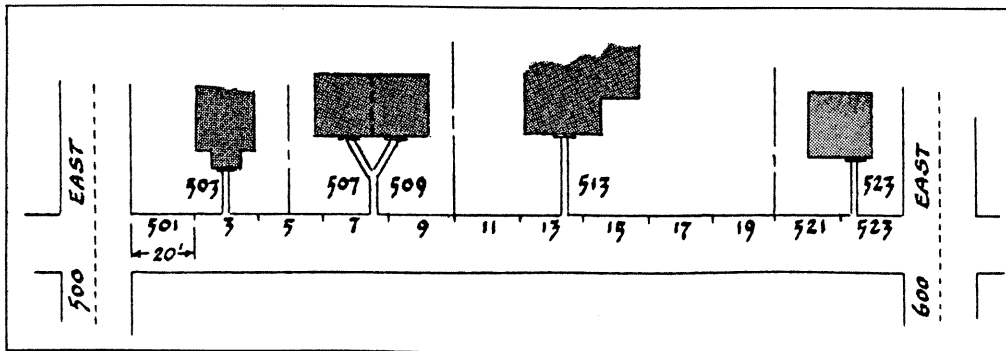
In the Uniform Measurement or Equal Interval systems, grid lines are drawn on a grid overlay, perpendicular and parallel to base lines at standard intervals. When this overlay is placed over a map showing building locations, the number nearest the hypothetical number is assigned to existing structures. (See Figure 12)

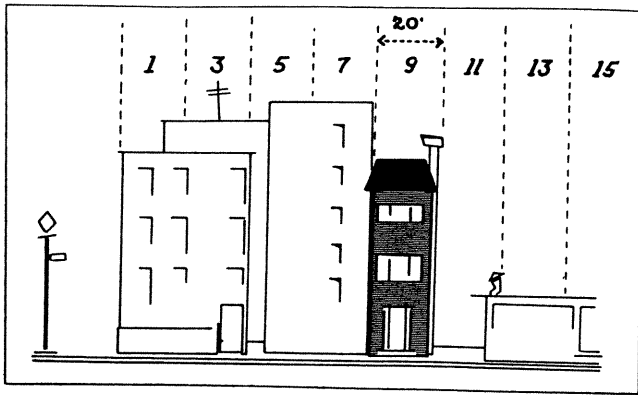
One variant of the Uniform Measurement System is the Century System, promulgated by R. H. Denman. The base lines and frontage interval concepts are similar, but there are no grid lines. Numbers are based on fractions of a mile, indicating both the distance along the road and the distance between properties on the road. Numbers are assigned by attaching a mechanism called an odometer to the speedometer to indicate the intervals based on *distance of road covered*. This odometer can divide street miles into a hundred units per mile on each side of the road, making a total of 200 numbers per mile (one number on each side of the road) or a number approximately every 53 feet on each side of the road.

Jefferson County, Colorado, has a numbering system based on increments of one-thousandth of a mile, marked on the road with numbered mileposts. Between the mileposts, blocks are defined to be 100 numbers long (e.g., 100, 200, etc.), but they are *not* marked with signs. Addresses are then assigned on the basis of ten "blocks," determined by dividing the footage from the lower numbered mile marker to the point by 5.28, and adding the prefix determined by the number of the mile on that mile marker. If the place to be addressed were 3,263 feet from mile marker 2, for example, 3263 is divided by 5.28, which equals 618. Adding the 2, the mile marker number, one ends up with 2618 (or 2617 if on the odd side of the road.) The advantage of this system is that the address is known in miles from the central point *along* the road. (See Figure 13)

The Uniform Measurement System—and its modifications—does not require a grid system of streets and is particularly appropriate for rural areas. But because there is intentionally no relationship of street numbers to physical blocks, the address of an interior street is not locatable except by quadrant and distance from a base line. The

**FIGURE 11. PROPERTY NUMBERS ASSIGNED TO INTERVALS PERPENDICULAR TO THE FRONT ENTRANCE OF STRUCTURES**





**FIGURE 12. CHOOSING A PROPERTY NUMBERING INTERVAL**

The smallest interval between buildings should be chosen as the base interval to allow a full number to the narrowest building in the most congested area of a community.

system does provide information on the distance from a base line. It is less expensive to install in rural areas than methods that require surveying.

3. *Philadelphia Block or Decimal System.* According to the *Philadelphia Inquirer*, the location of Philadelphia houses was first designated by relationship to squares, for example "between Second and Third on Market." Merchants used odd signs to identify the location of their shops or described them as so many doors from a particular tavern. When numbers were instituted, there was no permanent pattern, and a new building often threw off the existing numbers on a whole street. According to Solomon Goodman, a postal clerk from Long Island, New York, whose hobby is street-naming and house-numbering systems, there are three candidates for originator of the Philadelphia System. The three men are John McAllister, Jr., the proprietor of an optical and mathematical instruments business; John F. Mascher, a city councilman; and Thomas Marsh, both a councilman and a builder. All three were given credit for originating the numbering system in obituaries and memorials.

The Philadelphia System was adopted by ordinance on September 16, 1856. It came into fashion about 1900, when trolley cars were in extensive use. Having 100 numbers per block meant that riders could tell which corner

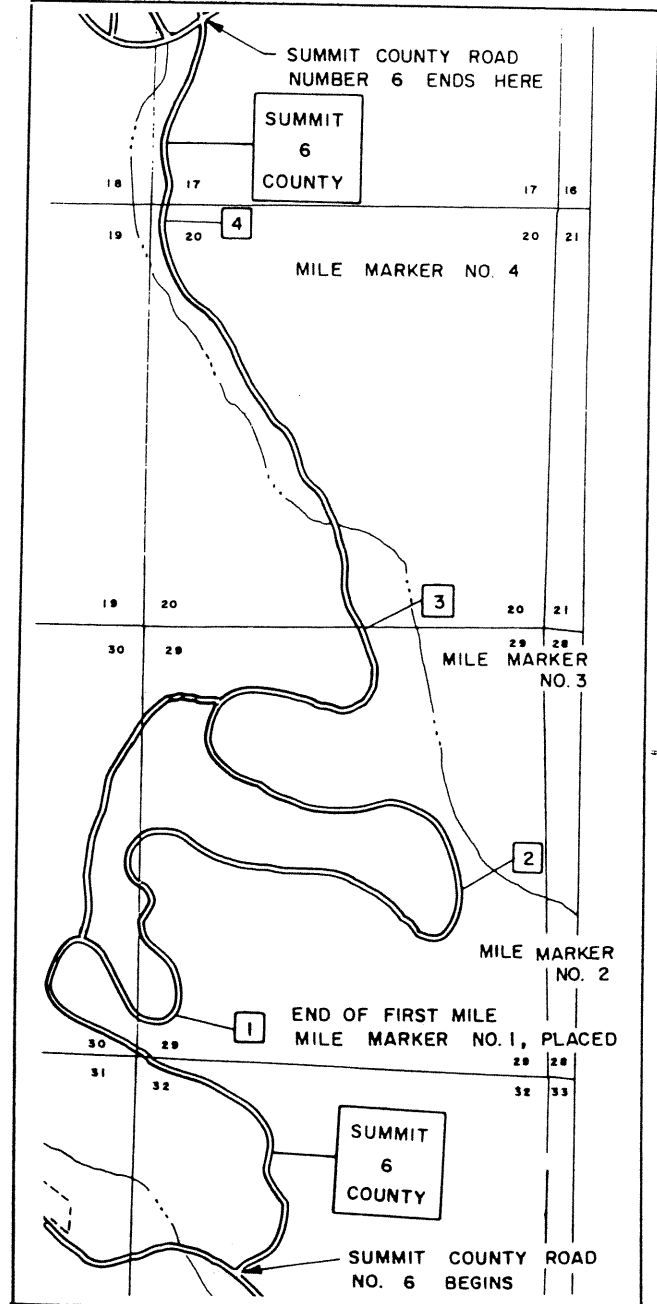
**TABLE 3. BLOCK INTERVALS**

Source	Interval of Feet Between Grid Lines
Tennessee State Planning Office Manual	600 feet
Carrville, Alabama	500
Montgomery County, Maryland	500 or 600
Prince William County, Virginia	400
Milan Planning Commission, Tennessee	1,000
U.S. Postal Service	1,000
12 blocks per mile	440
16 blocks per mile	330

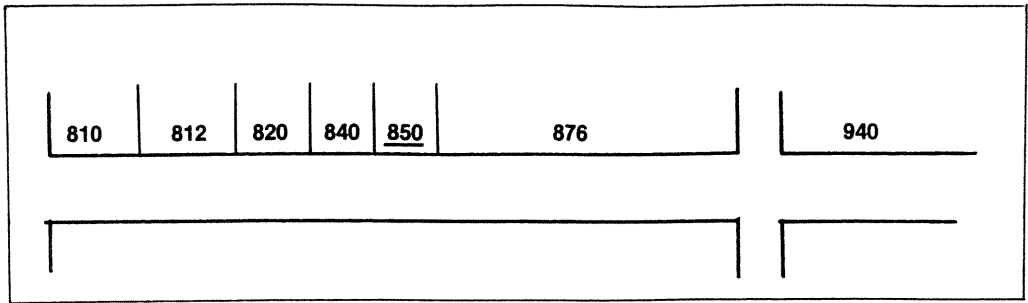
was the closest to their destination. Both pedestrians and fire companies favored such a scheme. Many United States cities eventually changed to this system. According to a survey conducted in 1932 by Joseph P. Schwada, a city engineer from Milwaukee, the block system was the most commonly used. It has probably declined because subdivision streets frequently are not laid out on a grid pattern and because the automobile has resulted in the judgment of distances by mile rather than by block.

The main characteristics of the block system are that at each main intersection the numbering begins a new hundred series (e.g., 1800, 1900, etc.). Addresses interior

**FIGURE 13. USE OF THE CENTURY SYSTEM OF PROPERTY NUMBERING IN JEFFERSON COUNTY, COLORADO**







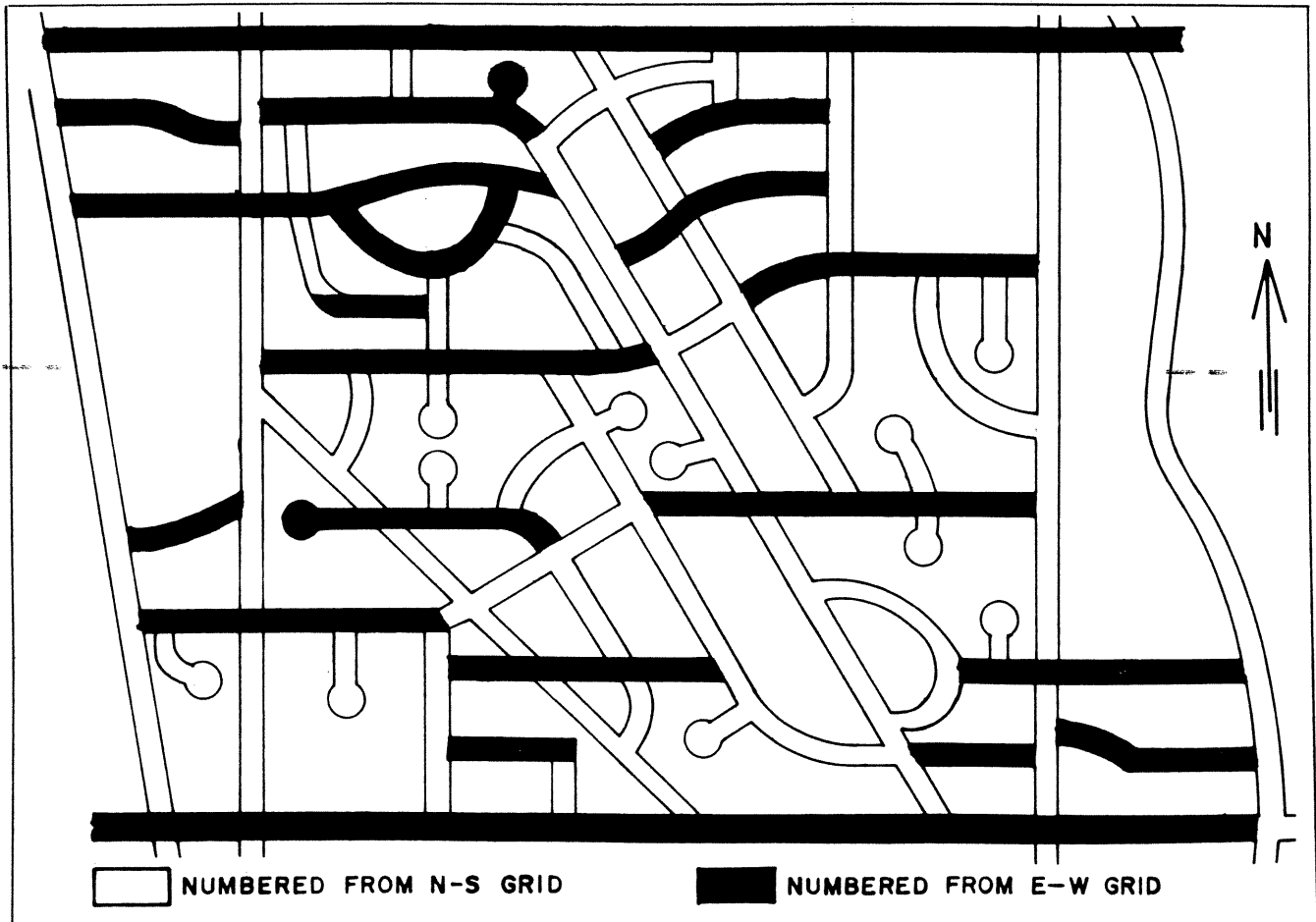
**FIGURE 14. THE BLOCK SYSTEM, WITH DECIMAL NUMBERING WITHIN EACH BLOCK**

to that block are within that hundred series (1802, 1945, etc.), which means there are 100 numbers available per block. Numbers are assigned by existing lot divisions or by frontage units. The former method causes problems because neither the lots nor the blocks are standard sizes. This might result in one street having 100 numbers while a parallel street one block away might have numbers in the 800's. The use of the block concept does not necessarily imply the application of a grid overlay to assure uniformity of numbers on parallel streets and to provide a point of reference, but it is clearly advisable to use one. Table 3 gives typical block intervals.

In the decimal version of the block system, the block interval has 100 numbers, and it is divided into 50 equal spaces, regardless of the length of the spaces, with one number allotted to each space. Thus, numbers ending in 50 would always be at the middle of the block. The advantage of such a system is that numbers are assigned proportionally to a larger interval and more numbers are usually available at each interval than can be used. Blocks of uneven size can thus be accommodated; however, this might result in some inconsistency of numbers between blocks. (See Figure 14)

The problem of fitting a grid overlay on the existing

**FIGURE 15. NUMBERING CURVILINEAR STREETS USING THE BLOCK SYSTEM IN DAKOTA COUNTY, MINNESOTA**



street layout is one of the major difficulties in using a block system with grid overlay. Invariably cities have diagonal, discontinuous, curved, and looped streets that are not in conformance with a standardized network of imaginary grid lines. In some cases, even the base lines are not straight or perpendicular to each other because of topographical features or man-made facilities such as roads. There are several general rules to follow when using a grid overlay:

1. The grid should conform to the base lines, even if they are slightly crooked; grid lines can be evened out further away from base lines.
2. The intersections of grid lines should conform as closely as possible to the intersections of existing streets so that a traveler can observe a distinct change, for instance, from a 500 block to a 600 block. Nevertheless, divide a long block between two streets at a grid line, even though there is no intersection at that point.
3. Skip over or omit minor streets when the grid does not dictate a new block.
4. Try to maintain a fairly constant block interval between grid lines, such as 12 or 16 blocks per mile. The general pattern is to have 12 blocks per mile.

When subdivision occurs within the existing grid, readjustments of the grid line may be needed. If blocks are based on an existing street pattern rather than on standardized intervals, the distance from the axis is known in blocks rather than feet. The grid overlay is only a reference point; its principal purpose is to determine a range of numbers on a particular portion of land in relation to the principal street of access.

There are many examples in the literature of the problem of hundred blocks not relating to the building numbers on that block. To find the location of a house number on avenues of Manhattan in New York City, one cancels the last figure of the number, divides the remainder by two, and adds a given key number. For example, to locate 596 Seventh Avenue, divide 59 by two, which equals 30. You add 12 (the key number in this instance) and you have 42nd Street. But as the *Philadelphia Inquirer Magazine* suggests, by the time a person figures out the address, the homeowner may have moved. Thus, if number names are used, property numbers should correspond to the hundred numbers.

There are several advantages to the use of the block system with a grid. First, such a system can be employed by superimposing the grid over the land to be subdivided if the streets are not cut through. Second, the system is especially convenient when streets have number names designating the appropriate hundred block in which properties are numbered (e.g., 1804 being between Eighteenth and Nineteenth Avenues). Third, it requires that the same numbers be assigned on parallel streets and thus satisfies the principle of comparability. Fourth, some curved streets can be accommodated. Finally, because there are usually left-over numbers with each block, any shifting can be taken care of without changing the numbers beyond that one block.

#### **CURVILINEAR STREETS WITHIN THE BLOCK SYSTEM**

The block method of house numbering just discussed is based primarily on a street layout of perpendicular and parallel streets. Frequently, in new subdivisions or in areas of varied topography, the use of such a system is not possible. A 1953 article in *Public Works* suggests the following method for accommodating the block system with grid lines to curving streets. Grid lines are numbered outward consecutively from the axis parallel to them. Any house numbers to be assigned within a given square are designated within the 100 block of the side nearest to the axis which most nearly parallels the street. When a street crosses a grid square, one jumps to the next hundred number. On diagonals, house numbers are continuous. If a street winds enough to exceed 100 times one-half the frontage unit, special provisions for longer units or for subnumbers are made. Such a system indicates distance from the axis opposite of the street to the given square.

In Dakota County, Minnesota, the planning department has determined that in curvilinear subdivisions where streets vary from the house-numbering grid, numbers should be taken from the axis that is most nearly at a right angle to the principle direction of the thoroughfare. (See Figure 15) Small adjustments in the size of the intervals may be necessary so that comparable numbers are on parallel streets. For example, in one block the house numbers may increase by tens, while in the next block, they may increase by 20 or 30. This county also coordinates thoroughfare designations with house numbers, for example, requiring that structures on "Boulevards," "Trails," or "Paths" be numbered from the north/south axis, despite directional changes.

## Chapter 4. Assigning Numbers to Individual Properties

When assigning numbers, start at the grid or base line and allow hypothetical numbers for each frontage interval. Do not skip across streets, turnpikes, utility easements, railroads, streams, etc., because if time brings change, there will be numbers available to assign. (But vacant property is not to be *assigned* a number until there is something built upon it.) The interval number closest to a line perpendicular to the front entrance is the one assigned. Sometimes it is necessary to determine what future extensions may be planned for existing streets and determine the most logical method of numbering.

### ODD AND EVEN NUMBERS

Odd numbers are assigned to buildings on one side of the street and even numbers to those on the opposite side. The general rule is that even numbers are used on the north and east sides of streets and the south and west sides of streets are given odd numbers. However, this is not universal.

Our earlier PAS report was critical of systems that

assigned even numbers to the right sides of a street as one left a courthouse or the city square because these systems leave a newcomer to the city wondering where the public square is in relation to his position at any one time. Determining that odd and even numbers are on particular streets based on their directional orientation means that they are always on the same side of the street, regardless of what part of the city one is in or regardless of the location of the central business district.

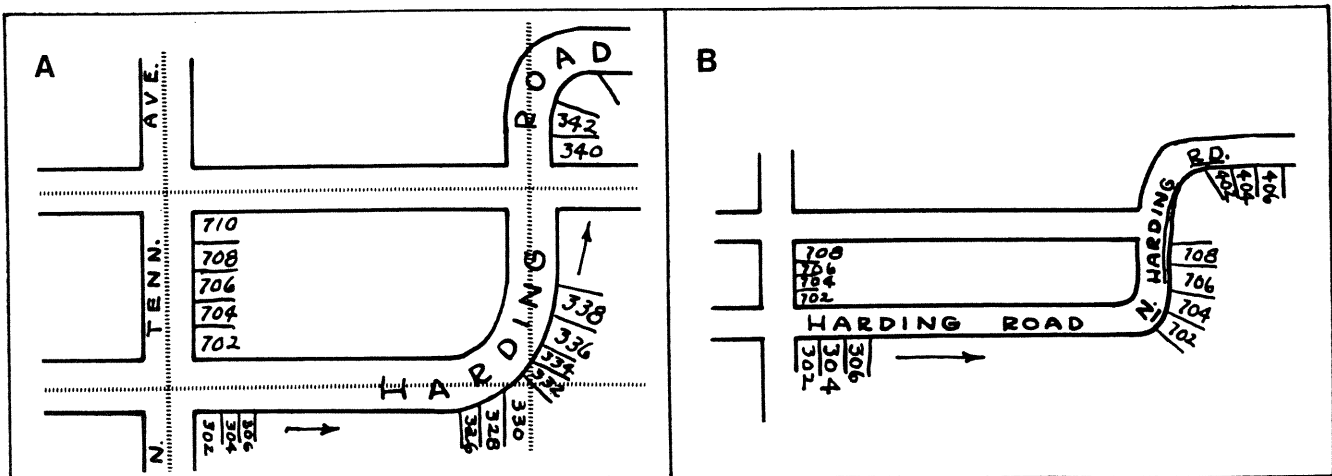
Another system is to assign even numbers to the left-hand side of the street in the direction of increase and odd numbers to the right-hand side of the street in the direction of increase. Nevertheless, the use of even and odd numbers, based on directional orientation of streets, is preferred by most jurisdictions.

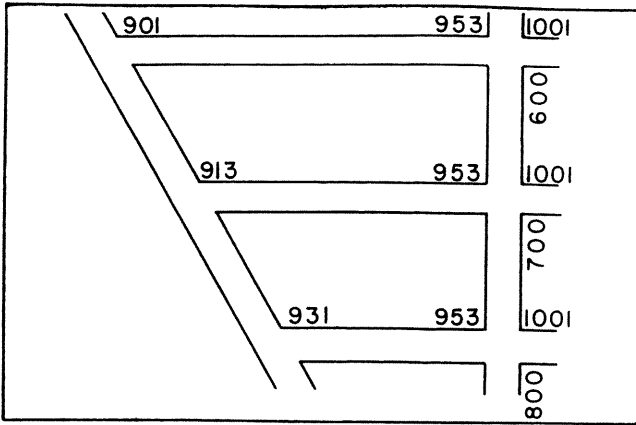
### APARTMENTS AND CONDOMINIUMS

Separate internal units of condominiums and apartments should be designated with sub-numbers or letters, not individual property numbers.

**FIGURE 16. STREET NAME SHOULD CHANGE WHEN THE STREET SHIFTS DIRECTION FOR A PREDETERMINED DISTANCE AND ANGLE**

Below, B is preferred over A because the prefix "North" is added to distinguish the shift.





**FIGURE 17. STREET NUMBERING BEGINS AT BASE LINE SO PROPERTIES AT THE SAME LATITUDE CAN BE NUMBERED CONSISTENTLY**

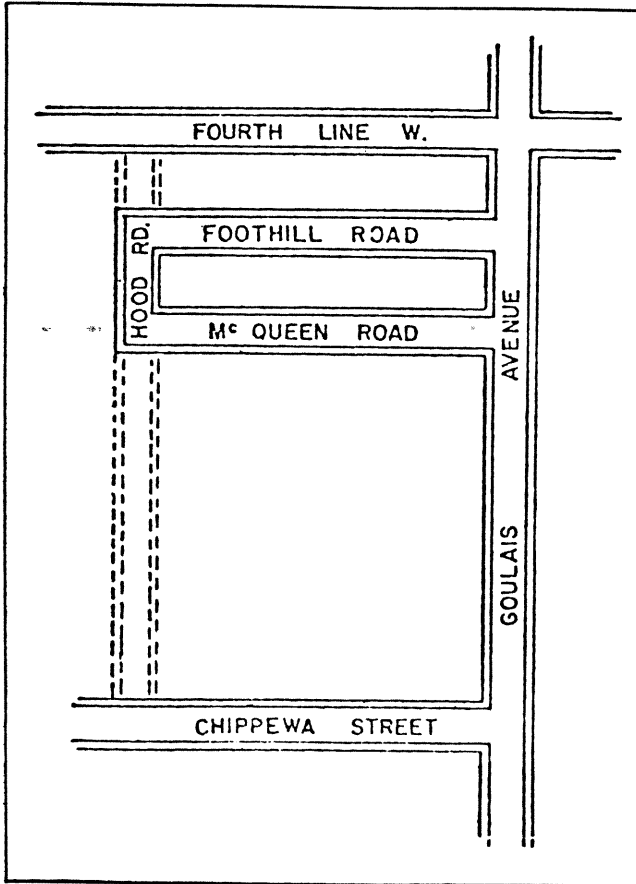
### BUSINESS DISTRICTS

In a business district, each door should have its own number.

### NUMBERING WHEN THE STREETS CHANGE DIRECTION

As a general rule, if a street changes direction drastically and for a substantial length, the numbering should be changed to reflect the orientation with a different base line. The same criteria which is set up to determine when

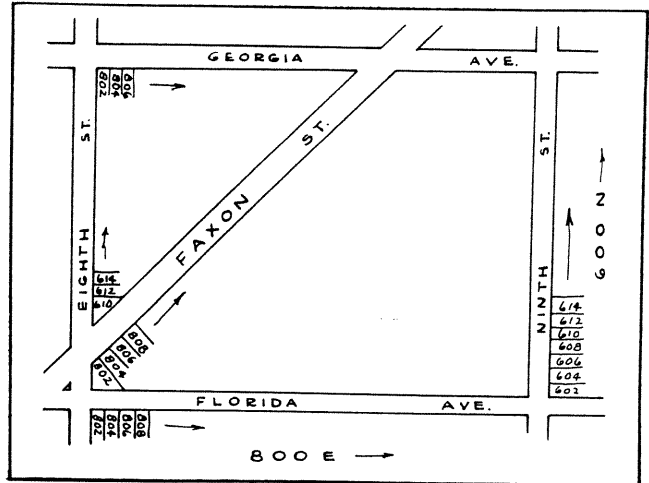
**FIGURE 18. STREETS NOT EXTENDED TO BASE LINE SHOULD BE NUMBERED AS IF THEY WERE**



to change street names should be used to decide whether to use numbering from the east-west or north-south axis. (See Figure 16)

### STREETS STARTING FROM DIFFERENT POINTS ON THE SAME CROSS STREET

When a street does not begin at the same location as a parallel street, the numbers should begin with the same number measured from the base line as on the parallel street. See Figure 17 for an example of such a determination of the numbering. Likewise, buildings facing streets that do not extend to the base line at present are assigned numbers as if they were extended. (See Figure 18)



**FIGURE 19. TRUE DIAGONALS MAY BE NUMBERED IN ACCORDANCE WITH EITHER THE EAST/WEST OR NORTH/SOUTH SERIES**

The community may decide; otherwise, number according to the predominant direction.

### DIAGONAL STREETS

The general principle to apply when numbering diagonal streets is to treat the street as either a north-south or an east-west street if it is not a perfect diagonal. If it is a perfect diagonal, an arbitrary decision is made to treat it as a north-south or an east-west street. (See Figure 19)

### CORNER LOTS

The general rule to apply when assigning a number to a building on a corner lot is to assign a number from the street upon which the front entrance faces. Dual addresses should be avoided if at all possible. If a corner building has two entrances which both look like front entrances, the decision is based on the general site layout. On the other hand, if the direction a corner structure is facing is indeterminate, one should consider the street from which the number would be most readily identified as the street upon which the structure faces. Sometimes the number is assigned on the street that has the shortest frontage. If it is later determined that the building faces the opposite street, a new number should be assigned.

### GROUP HOUSING PROJECTS/PRIVATE DRIVES

Because of their private drives and interior parking bays, group housing developments present unique

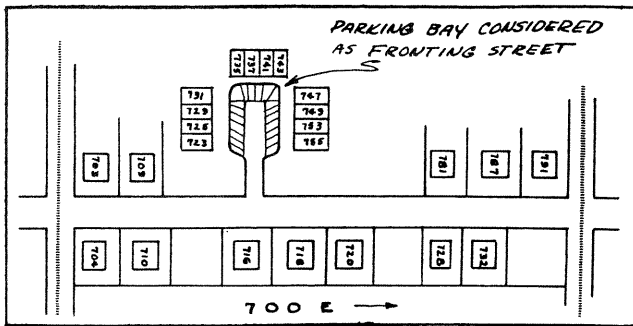


FIGURE 20. PROPERTIES IN PARKING BAY NUMBERED AS IF FRONTING ON THE MAIN STREET

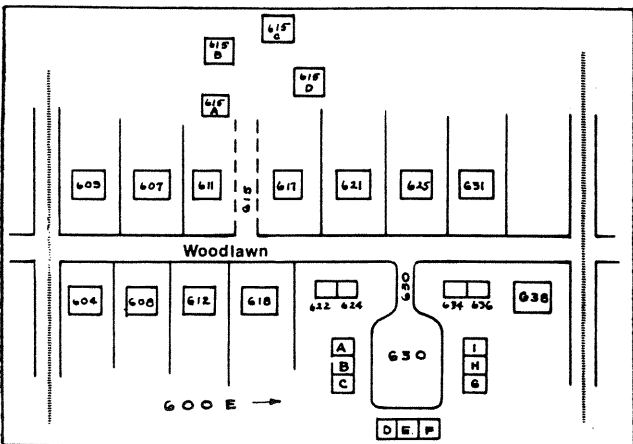
problems to the assignment of street numbers. There are two methods suggested by the Tennessee State Office of Planning for handling this problem. The first is to consider all dwelling units or structures facing a parking bay, private drive, or interior court, as if they were facing upon the main street to which the driveway connects. The disadvantage of such a system is that the numbers on one side of the street are thrown out of balance with house numbers on the opposite side of the street from the interior drive. (See Figure 20)

The second method is to assign a number to the property where a driveway joins the street; this becomes the street address of all units which face upon that interior court. (See Figure 21) The separate apartments or building interior to that would have a subnumber; for example, 630 East Woodlawn, Apartment Building D. This method is superior to the first if the number of buildings is not large because addresses along both sides of the street correspond. This method is particularly useful for assigning numbers in crowded, disorganized, or haphazard development where there are rear dwellings.

Mobile home parks should be treated like other multifamily developments. The property as a whole should be assigned one number, and each mobile home should receive numerical designations such as Lot 1, Lot 2, Lot 3, in addition to the general number. However, if the

FIGURE 21. PROPERTIES ALONG THE PARKING BAY ARE ASSIGNED ONE NUMBER AND ALPHABETICAL DESIGNATIONS

Here, harmonious numbering is possible along the principle street, in contrast to Figure 20.



development is a mobile home subdivision, following normal subdivision regulations on lot sizes and streets, the properties should be treated as individual residences.

Private drives are not usually considered for numbering purposes. If access to a business or industrial establishment is not approached on any public street, the address is assigned using the interval where the drive joins the street. If the structure's principle access is from the private drive but is hidden behind other structures or is located on the interior of the block, the center line of the driveway is used to assign the number.

**DUPLEX BUILDINGS**

According to our earlier street-naming report, separate numbers should be assigned to the entrances of a duplex house, for an upstairs apartment which has an outside entrance, for separate buildings in the rear of other buildings, and for separate entrances in an apartment building. If a commercial enterprise that is part of a residence has a separate entrance from the street, it may also be assigned a separate number. (See Figure 22)

**REAR HOUSES AND BUILDINGS ON INTERIOR LOTS**

For landlocked parcels with rear dwellings, a subordinate designation can be assigned. Subordinate designations or partial numbers are used in two forms: the half number, and the alphabetical suffix. It is preferable to borrow a number from the next interval rather than to use partial numbers because half numbers are more difficult to read and some billing systems are not set up to accommodate fractions. Numbers are assigned according to the corresponding position along the street.

The only exception to a rule that separate entrances should have separate numbers is if a structure is hidden or plainly subsidiary or auxiliary in nature to a primary structure, or when there are two or more entrances to a separate unit of the same structure. Do not use "R" if there is more than one rear structure. In all those cases, only one number should be assigned; only when auxiliary structures are themselves separate housing units should they receive separate numbers.

If there is a rear entrance or a hidden structure, a post should display the number on the path leading to the entrance, even if it is reached through another structure. For units on alleys or interior malls where there is no access to a street paralleling the alley, a name is given to the alley and house numbers are assigned. If there is access from a parallel street, numbers are assigned from the series on that street.

In the case of commercial or industrial facilities, auxiliary buildings would not be assigned separate numbers, but the main building—where mail is received and business is transacted—would receive a building number.

**NUMBERING ON CIRCLE STREETS AND HORSESHOES**

Circle streets or horseshoe-shaped streets begin and end touching the same street. It is advisable in such cases to ignore compass directions and to give numbers on such streets to correspond with the numbering on the street

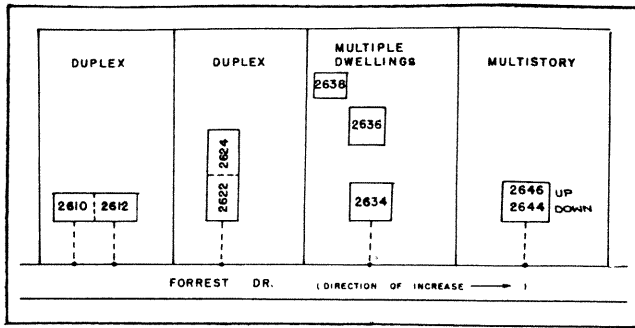


FIGURE 22. NUMBERING DUPLEXES AND MULTIPLE DWELLINGS

where the circle originated. The even numbers are put on the inside of the circle and the odd numbers on the outside of the circle. (See Figure 24A) There will be more properties on the outside of the circle than on the inside of the circle. In such cases, numbers should be assigned in a regular manner to the side of the street having the greatest property frontage along the street, using consecutive odd or even numbers. Numbers should then be assigned to the side having the shorter frontage so that these numbers correspond with property on the opposite side of the street. (See Figure 25) In cases like those illustrated in Figure 24A, the streets should be given names and numbers if they have three or more houses. It is wise to avoid duplication of numbers if an auxiliary street using a different thoroughfare designation carries the same name as the main street. The Post Office sometimes objects to the illogical sequencing of numbers based on how a mail carrier would normally deliver mail.

In another method, the two halves of the loop are treated as separate streets, starting from a common street and ending at the end of the loop. Obviously, this should only be done where the street's name is distinguished in some way, even if it is only by the prefix north or south. It is recommended that corresponding numbers on parallel segments be offset by two digits to keep them distinct; for example, 3838 South Bryan Circle and 3840 North Bryan Circle. (See Figure 24B) Before using any of these methods, it is important to determine whether this will be a permanent circle or whether at some later date both segments might be extended.

FIGURE 23. NUMBERS FROM THE MAIN STREET ARE CARRIED INTO A SMALL DEAD-END CIRCLE

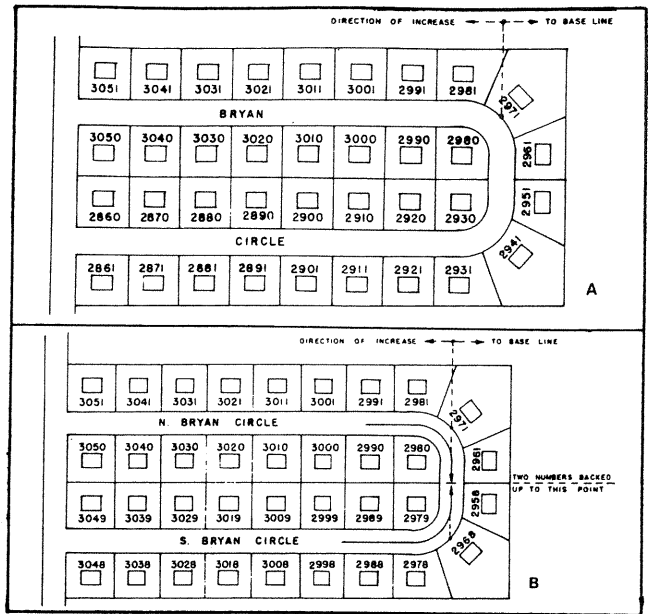
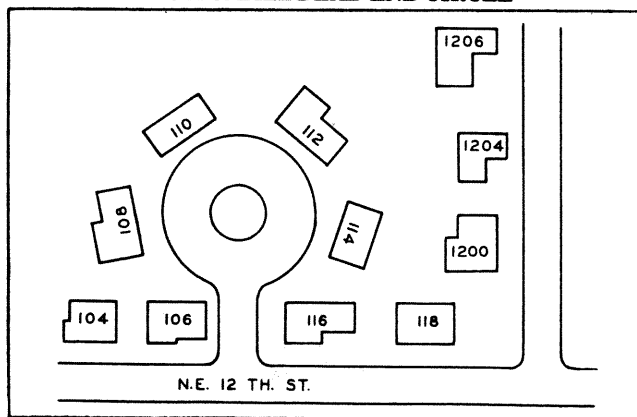
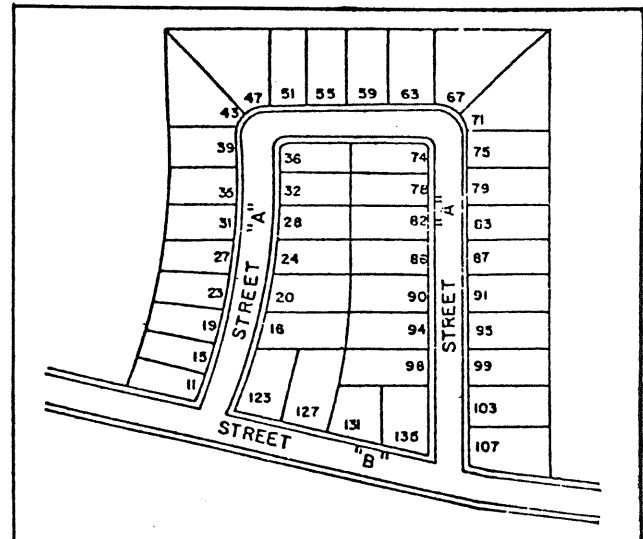


FIGURE 24. NUMBERING CUL-DE-SACS

In A, they are treated as one street, with odd numbers on the outside of the circle and even numbers on the inside; in B, they are considered two separate streets, distinguished by prefixes North and South, on the assumption that the streets may be continued at a later date.

While these general principles and rules for numbering structures provide guidance in constructing a property-numbering system, it is not possible to develop rules for all of the problems that will be encountered in perfecting such a numbering system. Those persons laying out or revising a numbering system will realize quickly that the existing pattern of streets within a municipality must be carefully studied, and the problems of separate streets must be considered in relation to the network of the entire municipality before the property-numbering system is established. It is important to develop a system that is both logical and constructed with common sense.

FIGURE 25. CUL-DE-SAC NUMBERING IN PRINCE TOWNSHIP, ONTARIO, CANADA



## Chapter 5. Implementing the New System

It should be the responsibility of the planning agency, through a delegation by the city council or county administrative agency, to coordinate street naming and house numbering in a jurisdiction. Once a new system is set up, the ongoing responsibility might be assigned to another city department to function as the control point through which new names and numbers must be cleared. When a jurisdiction avoids such responsibilities, other users of addresses assign their own numbers. In Virginia Beach, Virginia, for instance, the new house numbers were assigned by the power company, the telephone company, the post office, and the citizen's groups, each to support its own purposes. A legally adopted system assures both uniformity and continuity to the street naming and numbering.

The department with ongoing responsibility for the system varies with the size of the jurisdiction. It is usually the building department or city engineer. In some municipalities, it is the responsibility of the fire department. In very small communities, with only a volunteer fire department, the police department assumes this duty. When planning and building officials are part-time, the fire and police departments usually become involved because they depend on accurate locational identification in emergency situations. In one community, street names and house numbers were the responsibility of the City Beautiful Committee. In another, the city clerk assigns numbers in response to applications for water meters. Regardless of what city agency assumes ongoing responsibilities, the planning agency should have primary responsibility for the development of an adequate and efficient system.

In a metropolitan area, a regional agency or council of governments might develop a comprehensive system, but it should be formally adopted by individual local governments. The Maryland National Capital Park and Planning Commission is one that has undertaken such regional coordination.

### STEPS TO ADOPTION

The following is a hypothetical list of steps a jurisdiction would go through to initiate and institute a new street-naming and property-numbering system.

1. A decision is made to evaluate the adequacy of present systems.
2. Street names are inventoried and reviewed.
3. Alternative systems should be explored and one system proposed for adoption.
4. An advisory committee is established to review the proposal and to handle the transition problems.
5. A public hearing is held on the proposed system.
6. An ordinance is adopted by all affected jurisdictions so that the new system will have the force of law.
7. Budgeting is completed for implementing the new system.
8. The public is informed through the media of the proposed changes that are under review.
9. Field measurements are taken of existing properties to either update a base map or actually to measure off numbers from a base line and assign them to structures. In the latter option, properties are numbered by field staff.
10. The actual physical assignment of the numbers to the houses is next if a field survey has been translated into a building line map. Property owners can be asked to pick up their numbers from the city or be notified of their new numbers and be required to install them.
11. Accurate records should be maintained, with procedures for implementing the new system. A

procedure manual for maintenance of the system is developed.

12. An enforcement check is made to insure compliance with the new system.
13. Street signs with new names and numbers are erected by the city.
14. Copies of the new number assignments are sent to all city departments, the Post Office, the public utilities, federal, state, and county agencies, the Board of Election Supervisors, and private delivery firms.

### STAGING

The literature is almost unanimous that street naming and house numbering should be developed simultaneously and adopted at one time. In large jurisdictions, it may not be feasible to assign new names and numbers all at once, but it is possible to develop a definite schedule stating when the new names and numbers will be adopted in each section. Sometimes partial implementation will not work because of the interdependence of the parts of the overall system. Failure to enumerate the steps and follow through on the staging could result in the adoption of incorrect numbering or naming systems that would invalidate a comprehensive system. Table 4 gives a sample staging of the implementation of a uniform street-naming and house-numbering system over a two-year period in Prince William County, Virginia. Shasta County, California, estimated a five-year implementation period. It is advisable to make *all* changes in a given section of the community at one time, rather than changing thoroughfare designations at one time and street names at a later date. It is important that enough lead time be given so that residents and businesses can make appropriate changes in stationery, labels, advertising, tourist literature, and the like; the change should also be coordinated with such things as the printing of new phone books.

### AGENCIES AND ORGANIZATIONS THAT MAY BE HELPFUL IN DEVISING A SYSTEM

There are many agencies and organizations in the community which are vitally interested in any revisions in a street-naming and house-numbering system. A planning agency can determine if changes are needed by polling groups listed below to determine whether there is dissatisfaction with parts of the system. Agencies to contact are:

1. The Post Office.
2. City departments—police, streets, fire, public works, the city engineer, and the sanitary engineer.
3. County agencies such as the county health department and assessor.
4. State agencies such as the State Highway or Transportation Department and the Department of Licenses and Permits.
5. Regional offices of federal agencies such as the Federal Housing Administration.

6. The retailer's association or large department stores.
7. The Chamber of Commerce or merchants organizations.
8. Better business associations and businessmen's associations like Kiwanis and the Rotary.
9. The local private parcel delivery service.
10. The real estate board, the local homebuilder's

TABLE 4. THE UNIFORM STREET-NUMBERING AND NAMING SYSTEM

(Recommended staging, over a two-year period\*)

1. May 11, 1967	Set Ordinance for public hearing (See Appendix B)
2. June 1, 1967	Public Hearing on Ordinance
3. July 6, 1967	Adopt Ordinance to be effective June 1, 1968
4. July, August 1967	Establish atlas
5. September, October 1967	Eliminate duplication of existing street names and name unnamed streets
6. October 1967	Determine budget needed to operate summer 1968 parcel-numbering project
7. November, December 1967	Provide Washington Metropolitan Council of Governments with street names for regional base map
8. January 1968	County base map updated, 3000 scale available from COG
9. February 1968	Apply county grid-numbering system to 3000 scale map from COG
10. June 1, 1968	Ordinance becomes effective
11. July 1968, and after	New site plans, subdivisions, and zoning permits will be issued numbers under new grid system. (Old numbers not yet changed)
12. July, August 1968	Summer project worker to assign grid numbers to approximately 30,000 parcels in county
13. September 1968 March 1, 1969	Establish street number change-over list
14. March 1, 1969	Mail notification of newly assigned street numbers
15. April 1, 1969	Effective date of all new street numbers
16. May 1, 1969	Last day of compliance for displaying new house number
17. September 1, 1969	Date post offices cease to deliver to old street numbers

\*Prince William County, Virginia, Planning Commission, *On Numbering Properties and Establishing Street Names*, Manassas, Virginia, 1967, pp. 11-12.



association, subdividers of large tracts, and title abstracting firms.

11. The local newspapers.
12. Civic groups.
13. Local utility companies such as phone, power, electric, and gas.
14. Local medical societies.
15. Village trustees.
16. Councils of governments.

Contrary to practice in some places in the United States, the U.S. Postal Service should not assign house numbers. It is the policy of the Postal Service to (1) cooperate with a municipality's building and planning departments in the numbering of houses, (2) assist in disseminating the information of address changes, and (3) advise local officials about the duplication of names. Particularly in new subdivisions, the Postal Service prefers to meet with the developer, the city, and other affected agencies early in the planning stages to provide assistance that will ensure government service to the new areas.

Once the problems with existing systems have been identified, a task force should be set up composed of those agencies most concerned with the revisions. This group should be responsible for naming unnamed streets, deciding how to resolve duplications of name, and setting other policies. Once all streets have official names, this committee would be disbanded, and all new street naming and numbering would become the responsibility of the planning commission or other city department. The city council or county board might appoint representatives from city agencies, but other organizations and groups should be invited to join. The planning department should act as support staff for the committee or task force, conducting research and writing proposals for consideration by the task force. Intergovernmental cooperation should be encouraged, particularly if the area of concern involves several governmental bodies.

#### **MAPS, STREET-NAME INDEXES, AND RECORDS**

An accurate set of records of existing street names and property numbers that have been used is essential, both to review changes needed in a present system and to maintain a new system. Permanent records of these can be on maps or lists; the latter can be computerized or manual.

##### **Base Maps**

The base map of the area to be considered is necessary to review the existing system. Sometimes separate base maps are used for street naming and property numbering because of the different level of detail necessary. Particularly in larger jurisdictions, two sizes of base maps will be needed. The larger size, perhaps 40 by 60 inches, will be employed to examine thoroughly the overall pattern of streets and to make decisions about where the point of reference and base lines should be located. Aerial photographs might be suitable for this initial review. Sandborn maps, building line maps, or tax maps might be

reproduced if they are available. Local and regional transportation planning agencies are often good sources of maps showing street systems in detail. These maps should show all street names, water-related information, and political boundaries. The beginning and end of each street should be clearly marked. Prints of the smaller maps will be used in field work and might also be chosen for the permanent official record.

The exact scale of the base maps used by jurisdictions which have implemented new systems varies greatly, from one inch equals 100 feet to one inch equals 1,000 feet (or one centimeter equals 10 meters). Others have used scales of one inch equals 200, 400, or 800 feet. If smaller scale maps are used and areas covered are large, the base maps frequently are prepared in sections with one inch overlapping the next section. These are bound in booklet form with a number in the upper right-hand corner of the section and a smaller scale index map in the front of each booklet.

##### **Street Name Master List or Record**

A complete inventory of existing street names should be compiled and maintained, whether on a map or list. Using a list in alphabetical order facilitates the location of duplications when new names are proposed.

To identify all existing streets, there are several steps. First, earlier street maps should be located. Local officials should also be contacted if the jurisdiction doing the inventory is not a municipality. A field survey might be undertaken to locate unrecorded streets. The official deed records in the clerk's or tax assessor's office can be searched.

After all the streets have been identified, street names should be put in alphabetical order to identify duplications and avoid confusion, as well as to help in the assignment of new names. They might also be broken down by thoroughfare designation (e.g., road, street, circle) if duplicate names are permitted on minor streets. (See Table 5) Compass directions of each street should be indicated as should quadrant location, if applicable.

Phoenix, Arizona,<sup>11</sup> has produced such an index by census tract as a public document. This publication lists all the streets alphabetically and gives general information on the system that is helpful for visitors and newcomers. It is advisable to distribute a citywide index or maps showing new street names and numbers after revisions have been made.

##### **Property Number Records**

Property numbers can also be stored in a map or in written form. Similar sources for names can be used to determine property numbers, and duplicate numbers might be discovered through a field investigation. Existing street numbers not shown on the structures and not obtained in field measurement work are determined from the records of the engineering department, assessor's office, local utilities, the phone directory, or city directory. A sample of written form storage is given in Table 6. Such

11. Phoenix, Arizona, Community Council, *Street Index by Census Tract of Municipalities and County Area, Maricopa County, Arizona*, (Phoenix: 1960), 93 pp.

a list should specify street names with assigned numbers as well as final plat lot and block numbers. If the map is used, each frontage interval number already used is indicated on the map (if one is using an interval or block system based on frontage units). Subdivision plats are

**TABLE 5. STREET-NAME INVENTORY WITH THOROUGHFARE DESIGNATIONS**

**Alphabetical Listings of Street Names in the Town of Waterford**

*Roads—North- and South-Oriented Thoroughfares*

Big Bend	Gale	North River Bay
Buena Park	Halverson	North Tichigan
Burma	Hillside	Pleasant
Caldwell	Honey Creek	Riverside
Contour	Lake View	Scenery
Deer	Loomis	Sunset
Division	Maple	Town Line
Fox River	Marsh	Washington

*Drives—East- and West-Oriented Thoroughfares*

Back	Greeley	Miller
Beach	High	North Lake
Bridge	Hillside	Oak
County Line	Hill Valley	Pleasant
Craig	Janesville	Prospect
East Main	Kramer	Raab
East River Bay	Lakeview	Ranke
Elm Island	Lawn	West Main
Grand	Loland	Wood

*Lanes—Dead-End or Non-Through Streets*

Apple	Elm Island	Oakhill
Arrow	Empire	Pine
Barne	Field	Pleasant View
Beach	Fir	Point
Beechwood	Forest	Shady
Birth	Forest Isle	Small
Burma	Golf	Spruce
Canal	Hickory	Sunny
Cedar	Idlewood	Sunset
Center	Irma	Valley View
Cherry	Ivy	Walnut
Chestnut	Levins	War Bonnet
Class	Meadow	Waterford
Clearview	Mountain	White Oak
Easy	Mulberry	Willow

*Highways—North- and South-Oriented Thoroughfares*

New Highway 36	Northwest Highway 83
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*Courts—Dead-End Streets*

Burma or Idlewood	Island View
Irma	Caley

*Circles—Loop Streets*

Briarwood	Kramer
Canal	Loomis
Elm Island	Northwest
Gale	Poplar

filed alphabetically with property numbers assigned to and recorded on each lot. Written storage requires one page for each subdivision filed alphabetically with a listing of block and/or lot numbers opposite the assigned number.

The Indianapolis-Marion County Department of Metropolitan Development Planning, Division of Planning and Zoning, uses an addressing grid system which is computerized. This system is part of a file of 51 address maps at a scale of 400 feet per inch. Base maps with grid lines to reflect block intervals have been developed. Parcel boundary lines and street numbers are shown, and new addresses are assigned from the grid maps. In newly developed areas such as subdivisions, addresses are assigned from the Geographic Base File (GBF). Developers are required to furnish the prints of the preliminary site plan and a list of proposed street names. The street names are reviewed for duplication or similarities to existing names, and numbers are assigned to the properties. The GBF, the reserved street list, and Postal Zip Code are used to prevent duplications. The developer is then given an approved copy of the address plan for transfer of information to Mylars for plat reproduction. When subdivision plats are finally approved and recorded, the address information is coded for updating the Address Coding Guide master file. When developments with private streets are submitted, address plans are developed for these areas and coded for updating in the GBF file after permits have been issued for construction. This Geographic Base File system is based on the original Census Bureau Address Coding Guide concepts (ACG). This system was designed, developed, and implemented

**TABLE 6. EXAMPLES OF WRITTEN STORAGE SYSTEM**

Block	Lot	Street Name	Number
A	1	Hansel Street	313
	2		317
	3		321
	4		325
	5		329
A	6	First Avenue	2102
	7		2106
A	8	Gretel Street	330
	9		326
	10		322
	11		318
	12		314
B	1	Turner Court	2200
	2		2204
	3		2208
	4		2212
	5		2209
	6		2205
	7		2201

Source: Southeastern Wisconsin Regional Planning Commission, *A Uniform Street-Naming and Property-Numbering System for Racine County, Wisconsin*, Waukesha, Wisc., 1975, p. 28.

Central Alabama Regional Planning and Development Commission, *Street Naming and House Numbering, Carrville, Alabama*, Montgomery, 1975, p. 13.

by the local planning staff to support the Indianapolis-Marion County central data processing organization. In the Indianapolis ACG, there are 45,000 block face records, which include geocodes for census tracts/blocks, council districts, traffic zones, neighborhoods, environmental survey study areas, NDP areas, fire service districts, and schools districts. An issue of *Planners Notebook*,<sup>12</sup> published by the American Institute of Planners, describes current use and forecasts the direction anticipated for the system. Another publication available on this subject is the agency's *Geographic Base File*.<sup>13</sup> Sault Ste. Marie and Area Planning Board also uses a computerized storage of property numbers.

Montgomery County, Maryland, provides a system of preserving names for developers that is rather unique. The approved names are placed on reserve for the developer for a period of one year. If the name has not been used within that year, the developer is phoned, and the name is either reserved again for another year or cancelled. When the names are used, they are recorded on plats and then become official. From these plats, the numbers are assigned to building permits, and a small check is placed in the lot indicating that a building permit has been issued. Until the permit is issued, the house number can be changed on the plat without notice.

#### Records of Change

Change sheets—forms with column headings listing occupant's name, old address, and new address—should be maintained. Explanatory information at the top of each sheet should include the name of the street for which the addresses are listed, the beginning and end point of the addresses from one intersection to another, and the effective date of changes. The name and old address are listed while the field survey is in progress. New street numbers are recorded when assigned, either in the field or from the office. These change sheets are grouped in booklets by quarter section for further action on an area basis. They might be used for the following purposes: (1) doing mailings to individual addresses to assign street numbers; (2) mailing in booklet form to agencies to inform them of change in official members; (3) to use in checking compliance with street assignments; (4) check-off use by personnel enforcing street-number assignments; and (5) use of official record of street-number changes already made. If a map is used, prints of the map are distributed to all city departments and other affected agencies.

#### PROCEDURES FOR THE ACTUAL ASSIGNMENT OF STREET NUMBERS ON A BLOCK

There are several methods for the assignment of street numbers. An outside firm might be hired to apply the new system to the community and to install the numbers. This eliminates staff pressures on local officials, but, of course, is expensive. One method of implementing the system is

12. Spaid, Donald, and Wilcox, Bernard W. "The Address Coding Guide: Indianapolis Develops Geographic Base File Built on ACG," *Planners Notebook*, vol. 2, no. 6, (December 1972).

13. Indianapolis-Marion County Indiana, Department of Metropolitan Development, Division of Planning and Zoning, *Geographic Base File* (April 1976).

to assign numbers at the same time field work is done, using the same staff to measure off the frontage intervals and affix the numbers to the structure. Measurement of the frontage interval might be done by using surveying equipment or by devices such as pedometers and odometers. In the second method, numbers are assigned from accurate, small-scale base maps, using a clear overlay and straight edge. This method might require civil engineers to survey all the streets to plot each building on field maps.

#### Field Assignment and Measurement

The procedure for simultaneous field measurement and number assignment is as follows. The field crew selects an area or quadrant of the city in which to begin. A crew of five men assign numbers, plus two to attach new numbers to buildings. The work assignments might be broken down as follows: (1) Two men handle the measuring tape and the marking of the property numbers intervals on the sidewalk or street; (2) two men are assigned the job of filling out instruction and field sheets and delivering the sheets to the occupants. They also write new numbers on the building; (3) another two men follow those crews and install the new numbers; (4) a supervisor records a new number on the field map and monitors the work of the crew.

Starting from the point of reference and working outward toward the edges of the jurisdiction, the measuring crew measures off the intervals. These intervals are chalked on the sidewalk. The supervisor follows and, noting the location of the entrance, determines in which interval the entrance falls and assigns the appropriate number. He also records that information on the field map. A runner following him records the number on a field sheet and fills out an instruction form, which is delivered to the occupant. (Sometimes the new number notification is mailed by the post office or the village after a field check to determine the accuracy and feasibility of the new system.) In consultation with the occupant, this runner determines the location of the number to be attached physically to the structure. The staff following then attaches the number at the location chalked on the building by the runner. Installing the number ensures that the change is made.

After each day's work, the information from the field map and change sheets are transferred to the preliminary property-numbering map. Color schemes can be used to differentiate old numbers from new.

The following equipment is needed for the field work.

1. A push cart or hand-pulled wagon for transporting materials and supplies;
2. A measuring tape marked off at whatever property interval has been selected by the use of color strips of tape at appropriate places. A 100-foot tape is a convenient length, if 20-foot intervals are used;
3. A supply of white chalk;
4. A supply of colored pencils;
5. An engineer's pocket scale;

6. A set of field maps;
7. A supply of instructional sheets to be delivered to the occupants of the building;
8. A supply of field sheets to be used in recording the name, old and new address, and old and new number;
9. A supply of house numbers and nails for installing them;
10. Hammers and screwdrivers;
11. A stepladder.

#### *Involvement of Citizens in Field Procedures*

Some communities make an effort to involve citizens in the implementation procedures, both to save money on hiring a staff and to gain citizen acceptance of the new system. The house-numbering project might be publicized in the local newspaper and on radio and television to interest volunteers. Sometimes city employees will volunteer to supervise. Community service organizations can also be used to help the aged and handicapped in installation procedures if a do-it-yourself policy is chosen. One county agency proposed that street signs, meeting government specifications, be purchased and erected by local civic organizations, after which the county would assume their maintenance and installation.

#### *Use of Odometer or Pedometer to Assign Numbers*

Particularly with the uniform measurement and Lyman systems, pedometer or odometer can be used to assign numbers. An odometer is attached to the steering wheel of a car and intervals are determined on the basis of this measuring device. This machine replaces the surveying necessary in the first system, but other procedures are the same. This device will be particularly useful in rural areas where distances are great between properties to be numbered. Fewer staff is necessary because numbers can be assigned by one person driving a car, rather than having the area surveyed, properties mapped, and the numbers assigned. The method is, however, more inaccurate.

#### **Assignment of Property Numbers from Maps**

If accurate base maps, Sandborn maps, or tax maps of sufficient detail are prepared or available, property numbers can be assigned using them. These base maps can be created by surveying the jurisdiction, taking a measurement to a line parallel with the front door or driveway entrance of each structure. Such a map would need to show whether residential structures were single family, duplexes, or apartment buildings, since these would require a different quantity of address numbers. This might need to be determined by field inspection.

Numbers are assigned in the office, using a ruler or straight edge, marking numbers from a clear overlay showing base lines, reference point, and dotted grid or property-numbering intervals. The base map might show old numbers in one color and new numbers, assigned by placing a ruler or straight edge over the maps and noting the intervals which are close to existing buildings, in a second color.

## **ATTACHMENT OF NUMBERS TO BUILDINGS**

New property numbers can be installed by the city, distributed by the city and installed by property owners, or purchased and installed by property owners individually.

#### **Installation by the City**

It is preferable to install numbers on buildings physically at the time assignment of new numbers is made if the first method is used. When this is done, every building has been renumbered, and the change-over can occur at one time. This means that the numbers will have to be ordered and shipped before the procedure can begin. When this method is used, it is easier to collect installation charges through regular billing procedures (water or tax) rather than to have the field staff try to maintain financial records in addition to other responsibilities.

#### **Distribution of Numbers by the City**

Some municipalities prefer to buy property numbers in bulk to save money and to assure uniformity, but cannot afford to pay for installation. In this case, occupants of property must come to the city hall to obtain their numbers upon notification by the city. This can result in delay and confusion in adopting the system. People can lose their instruction sheet, which is also the record of their new house numbers. In other cases, the numbers will be installed carelessly, in incorrect sequence, resulting in an entirely different numbering system than had been assigned. Immediate installation when assignments are made avoids these pitfalls. Supplying numbers without charge may make the change-over more palatable to the public.

#### **Individuals Supply Their Own Numbers**

The third alternative is to set up criteria for house numbers and require residents to supply their own numbers. These standards should be specified in the ordinance adopted by the city and in the notification of number change.

## **NOTIFICATION OF NUMBER CHANGE**

In all cases, property owners should receive official notification of the change in property numbers in advance of changes. These notices should state the old and new address, effective date of the change, and penalty for not displaying the new number, as well as instructions for obtaining and installing the number. Notifications of number change are usually sent 30 days before the effective date of the change, permitting ample time for the purchase and placing of numbers on structures in accordance with specifications for the use of numbers, if necessary.

## **ENFORCEMENT**

Experience has shown that if numbers are not installed by the city, only a few property owners will cooperate in putting up new numbers, unless numbers are provided or unless the new system is enforced. A field check should be made shortly before the effective date of change to determine the compliance with street numbering or renumbering. If the new numbers have not been installed, warning letters should be sent indicating that failure to display

the new number denies the owner and the neighbors the advantage of consistent numbering in keeping with the uniform system adopted by the jurisdiction. The property owner should also be informed that the change has been made with the post office, utility companies, city directories, and public agencies. It should mention the legal penalties for noncompliance. Finally, the owner should be urged to display the new number by the effective date of the change.

A second check is done immediately after the effective date to determine noncompliance. The change sheet might be used to produce a reliable record of those addresses that have not been changed. The unchanged addresses are reported to the enforcement agency, which is usually the police department. The policeman should personally visit each property owner who has not made the appropriate change with the change sheet giving evidence of the new number. The officer should inform the property owner that the new number must be displayed within five days. A second visit by a uniformed officer should be made to check compliance with this order. A citation and/or fine should be issued if compliance has not resulted after a specified period, for instance, 30 or 60 days.

#### PUBLICITY

It is important that the public be kept well informed of the need for changes in street-naming and house-numbering systems. This can be accomplished by holding public hearings on the proposed ordinance, through newspaper articles, radio, television, posters, letters to property owners before and after the change, and other promotional materials. It is important that the numbering has the public support of all the official bodies, the utilities, and the post office, so that people believe the change will occur. A private firm might be hired to handle the public relations—to design the brochures, posters, and press releases.

When the system is to be revised, publicity notices can invite any property owners who are unhappy with present road names to notify the appropriate person and request changes. These people are frequently required to submit a letter explaining the problem and possible solutions, signed by as many as possible as of those directly affected.

After the change has occurred and the ordinance has been adopted, an explanation of the new system might be sent out with the next property tax bill. New city maps should be placed in strategic locations throughout the municipality—the post office, city hall, and major commercial establishments. For a specified period, dual records should be maintained to handle the change-over. A two-year period mail delivery to the old route and box numbers gives residents ample time to convert correspondence and stationery to the new system; current postal regulations require the delivery of mail to an old address for a period of one year. Dual addresses such as John Doe, Route 5, 318 Murphy Road, Collinsville, Virginia, might be used for the interim period; after, say, six months route numbers should be dropped. New address numbers on structures, however, must be displayed on the effective date of the change. The success of a street-

naming and house-numbering program depends on public acceptance, which in turn depends on the effectiveness of publicity both before and during the process of transition.

#### COSTS OF IMPLEMENTATION

It is obvious that the cost of a change-over depends on the size of the area, the adequacy of existing records, the method of assignment used, the type of number plates, and other factors such as staffing. The program will require the financial commitment by the council or county board. Funds will need to be budgeted and a work program developed.

The public works budget should include allocations for replacing signs, reprinting signs when names are changed, adding signs to both sides of the street, and the labor cost of installation. For example, Henry County, Virginia, estimated that it would take a three-man crew 200 to 250 working days to survey property in the county to prepare a base map adequate for street-number assignment. Signs might be installed on a repair and maintenance basis, rather than a capital expense basis.

Major downtown businesses such as banks might be asked to donate and distribute community maps showing the new system. Savings can be achieved through volume purchase of the numerals. There is very little revenue generated from the selling of numerals in city hall, and charging might make the change-over more offensive to property owners. Table 7 shows a sample budget from the city of Tampa's Traffic Engineering Department for installing street numbers. If any value can be placed on the lost time of residents, delivery services, and outsiders in

TABLE 7. SAMPLE BUDGET  
TAMPA, FLORIDA\*

Cost Estimate for Emergency Vehicle Street-Numbering System

<i>15,000 installations</i>	<i>Each</i>
1. Aluminum sign blanks (4 @ \$2.00)	\$ 8.00
2. Reflective faces (4 @ \$3.50)	14.00
3. Miscellaneous hardware	.50
4. Location inventory	.25
5. Installation cost	4.50
6. Fabrication	3.10
<i>Cost per sign:</i>	<u>\$ 30.35</u>
<i>Total cost of project for city (15,000 @ \$30.35)</i>	\$455,250.00
<i>10% Contingency</i>	<u>45,525.00</u>
<i>Grand Total</i>	<u>\$500,775.00</u>

NOTE: Because of vandalism, accidents, etc., approximately 10 per cent of all city street signs must be replaced every year. This will tend to lower the incremental cost of the program. All costs shown are today's costs in current dollars.

\*Tampa, Florida, summary report prepared for discussion at a meeting of the Tampa City Council, June 5, 1975, 15 pp; xeroxed.

searching for addresses in a poorly numbered municipality, a renumbering plan should pay for itself in less than a year, according to L.S. Mannell.<sup>14</sup>

## DESIGN OF SIGNS AND BUILDING NUMBERS

### Street Signs

One of the last steps in implementing a new system is the changing of street names and signs. New signs are, unavoidably, the financial responsibility of the jurisdiction. The U.S. Department of Transportation, Federal Highway Administration, has published national standards for sign construction that are mandatory for all jurisdictions using federal money.

Street name sign specifications are:

#### Street Name Signs

Street name signs should be erected in urban areas at all street intersections regardless of other route markings that may be present and should be erected in rural districts to identify important roads not otherwise marked.

Lettering on street name signs should be at least four inches high. Supplementary lettering to indicate the type of street (e.g., Street, Avenue, Road, etc.) or section of city (e.g., N.W.) may be in smaller lettering, at least two inches high. Conventional abbreviations are acceptable except for the street name itself.

The street name sign should be reflectorized or illuminated. The legend and background shall be of contrasting colors and should have a white message and border on a green background.

In business districts and on principal arterials, street name signs should be placed at least on diagonally opposite corners so that they will be on the far right-hand side of the intersection for traffic on the major street. Signs naming both streets should be erected at each location. They should be mounted with their faces parallel to the streets they name.

In residential districts at least one street name sign should be mounted at each intersection.

A supplemental advance street name sign may be erected on more important intersection approaches or below an intersection warning sign. When combined with a yellow diamond sign, the color should be a black message on a yellow background.<sup>15</sup>



14. Mannell, L. S., "House Numbering for Growing Communities," *American City*, September 1955, pp. 200-201, 203.

15. Manual on Uniform Traffic Control Devices for Streets and Highways, U.S. Supt. of Public Documents (U.S. Government Printing Office, Washington, D.C.).

Many states have adopted this standard, but some states have expanded its provisions; therefore one should contact the appropriate state highway agency for information on state standards. Many such agencies also will recommend sources of sign materials.

It is recommended that all four-cornered intersections should contain two street signs at opposite quadrants of the intersection. These signs should show both the street name and the numbers of the intersecting blocks. A new trend in metropolitan areas is to use the community logos on the signs, as well as to indicate the town in which the intersection is located.

### Property Numbers

Standards for the design and display of property numbers should be specified in the ordinance if number plates are not supplied by the jurisdiction. Some communities recommend that numerals be displayed below the outside light or in a prominent space, but not on the lawn or door. Other communities require only that they be visible from the road, and they may be located on or above the door or gate. If the entrance of a structure is not seen from the street, they should be located on the front of the building. In any case, if a house or building is 50 feet from the property line, a number should be displayed near the walk or driveway. If on-street parking is permitted, display on curbs is undesirable because the numbers are not easily visible from a car.

Numbers should be on a background of contrasting color. The usual size for numerals is three inches square, but some communities permit them to be as small as two inches. The Athens/Clark County Planning Commission, rather than specifying the location size and color of numerals, requires only that numbers "... be posted in a manner as to be legible and distinguishable from the street on which the property is located." This flexible standard permits businesses and shopping centers to use large numerals for business identification and allows property owners to use novel or creative methods for displaying property numbers. According to the Commission, there has been no problem thus far judging which are legible and distinguishable.

The Maryland-National Capital Park and Planning Commission has developed a seven-question check list for proper display of building numbers, as follows:

1. House numbers are large enough to be seen easily from the street.
2. House numbers are set on a background of a contrasting color.
3. When a house is some distance from a road, or when view of the house is blocked by trees or shrubs, house numbers should be on a sign attached to a tree, fence, gate, or lawn stake.
4. On a corner lot, the house number should face the street named in the address.
5. In a rural area the house number should be on the mailbox as well as the house.
6. House numbers should be illuminated or easily visible at night.

7. House numbers should be plain block numerals, not script or written numbers.

The agency suggests that, if a house number does not comply with all of these requirements, time should be taken to improve its visibility. These are good criteria for adequate property-number display.

#### **GUIDELINES FOR RENAMING EXISTING STREETS**

The Southeastern Wisconsin Regional Planning Commission suggests the following criteria when considering the changing of a duplicate street name:

1. Does one street have any historical reason for having the name it has?
2. Which street has the least number of houses on it and thus would require the least number of address changes?
3. Which street has had its name for the longest

period of time?

4. Is the name appropriate according to the other street names in the neighborhood?
5. Which street name is used for the longest distance or the most traveled section?

Priorities can be established by numerically weighing the importance of these items. Streets with the highest total number would be given priority and their names would not be recommended for change.

L. H. Hart in his "Rules for House-Numbering" recommends that as many existing names and numbers be used as possible. He suggests that when renumbering a given street, if even numbers are on one side and odd on the other and each number is higher than the last, the numbers should be retained. While it is preferable to follow street-numbering and naming principles, Hart's suggestion is practical if violations of the principles do not cause confusion to the average citizen.

## Chapter 6. Legal Aspects of Street Naming and Numbering

It is important that mechanisms exist both for assigning new addresses when development occurs and for revising numbers in built-up areas. Unincorporated rural areas may devise their own systems or be permitted to be a part of existing systems of nearby municipalities.

### LEGAL CONTROL OVER THE SYSTEM

*Ordinances.* The new street-naming and house-numbering system should be legally adopted by the jurisdiction so that compliance can be compelled. Although voluntary compliance with the system should be sought, there will be times when it is necessary to enforce compliance. A check of the accuracy and feasibility of the system should be made before it is officially adopted. Items typically included in a street-naming and house-numbering ordinance are:

- Specification of the reference point
- Description of the base lines
- Size of the frontage interval and block interval
- A requirement that even and odd numbers be on opposite sides of the street, and a statement about how diagonal streets will be numbered
- Duties of property owner—description of numeral and location required
- Responsibility for administration of the system
- Adoption of property-numbering or street-naming map if it is the official storage mechanism\*
- Penalties for violation and number of days after notification when enforcement is to proceed
- Charges, if any
- Definitions of thoroughfare designations, if they are to be used
- Changes of names, from old to new names
- Subdivision procedures modifications to be made

\* Recorded street name and property member records should not be called Official Maps; to do so would be to confuse them with the legislative devices that protect future streets.

- A requirement that before building permits are issued for erecting, altering, replacing, or tearing down structures, the property number must be approved.

Another option is to adopt guidelines for implementing the system by referring to the guideline document in an ordinance. Sample ordinances are included in the Appendix of this report.

### SUBDIVISION REGULATIONS AND BUILDING PERMITS

Continuing control of street naming and house numbering can be ensured by requiring approval from the department in charge of maintaining the system before (1) subdivision plats are approved and (2) building permits are issued. While such a system applies in incorporated areas, the municipality might also offer property owners of unincorporated lands the benefits of inclusion in the system. No permit approval should be given for razing or moving structures until numbers have been changed. Subdivision regulations should be amended to include:

1. A statement of who is responsible for naming streets. If developers name streets, they should be required to propose names to the review agency, which will check with the Post Service for duplication. If the planning agency names streets, they might be required to furnish a list of proposed names to the developer, who then could choose names.
2. A requirement either that the developer furnish road signs to standard specifications, with a deposit to be put down by the developer as performance bond to insure their installation, or that the government install them.
3. A requirement that names and numbers be given and checked on the preliminary plat before it receives conditional approval, and that they be on the final plat before it is approved. Official house numbers should be shown on the building



permits when issued. A check might be placed in the subdivision plat indicating that the permit had been issued. Montgomery County, Maryland, for example, reserves the right to change house numbers without notice until the building permit is issued. Or numbers might be assigned only when building permits are issued.

4. Many subdivision ordinances have specific policies prohibiting name duplication, while some allow duplication on minor streets. This should be stated one way or the other in the ordinance.
5. Specification of the block and frontage interval.

Sample subdivision regulation provisions are also included in the Appendix.

#### SAMPLE SUBDIVISION REVIEW PROCEDURES

The procedures for the assignment for new subdivision street names and numbers in Los Lunas, New Mexico, are as follows:

1. The subdivision plats are submitted for review by the Planning and Zoning Commission.
2. If there is a conflict in street names, the plat is returned to the subdivider requesting a street-name change.
3. If no conflict exists, the streets are named as requested.
4. The Master Street Inventory maintained by the Planning and Zoning Commission is updated with the names from the approved plat.
5. A copy of the approved subdivision plat is filed with the village clerk.
6. A copy of the approved subdivision plat is filed with the village clerk for endorsement.
7. The clerk or designated official determines and assigns the address numbers for any structures on a specific parcel.
8. If there is no conflict with the zoning and subdivision's regulations, the endorsed application and plans are returned to the applicant within five working days. If there are conflicts, changes are requested.
9. Each assigned address number is then recorded in the street address directory, and notification of the change is sent to the affected agencies.
10. The Address and Street Name Reference Map is updated as often as the county assessor's maps are revised.

#### LEGAL JURISDICTION OVER STREET NAMES AND NUMBERS

The legal title to city streets belongs to the state, which has full authority and control over them. Local governments exercise only that control and authority which has been delegated to them by constitutional provisions. At least four states—Illinois, Indiana, Wisconsin, and Vir-

ginia<sup>16</sup>—have delegated the responsibility for naming and/or numbering streets outside municipalities to counties. A special law was passed in Maryland giving the Maryland-National Capital Park and Planning Commission the authority to name, rename, number, and renumber properties in the metropolitan district.<sup>17</sup> In Ohio, the general planning powers of the Ohio General Code<sup>18</sup> have been interpreted to grant such powers in unincorporated areas to counties. Municipal charters often state that the jurisdiction has the power to name and number properties.

According to McQuillin's *The Law of Municipal Corporations*,<sup>19</sup> the exclusive authority over streets is generally given to the municipal council, which is a vesting of power to name streets. This naming is a legislative act, usually done through an ordinance or resolution by the municipal council. Because it is a legislative and not a judicial act, street names are not subject to review by or interference from the courts.<sup>20</sup> The only exception would be if the ordinance that enacted the new names and numbers was the result of the exercise of arbitrary power, such that it was unfair, unjust, and capricious.<sup>21</sup> Also, because it is a legislative power, the power is not exhausted by one act of adopting a naming and numbering system; the municipality can change names and numbers as many times as it wants.<sup>22</sup> In jurisdictions that use street names and house numbers (rather than plat and lot numbers) to identify property in deeds, the municipality should be careful about switching because it could cause havoc for property titles.

Recorded street names are generally superceded by official street names. Even if a subdivision plat is recorded with a different name than that already assigned by the municipality, the recording does not affect the official name of the street.<sup>23</sup> Nevertheless, if there is no street with the name assigned to the subdivision plat, the city council cannot require the name on the recorded plat of a subdivision to be changed.<sup>24</sup> If a street has a certain name on a subdivision plat and the municipality accepts the dedication of the street, the name of the street becomes the official name.<sup>25</sup> A deed conveying a street to a municipality may restrict the grantees right to change the name of the street.<sup>26</sup> Aside from these limitations, the re-

16. Wisconsin Statutes §59.07 (65), Virginia Code §15.1 279, General Assembly of Indiana passed acts in 1953, Act Nos. 115 and 230.

17. Chapter 780 of the Acts of the General Assembly of Maryland, 1959, as amended, June 1, 1961, 1959, ch. 780 §42.

18. Ohio General Code §4366-15.

19. McQuillin, Eugene, *The Law of Municipal Corporations*, (Callaghan and Co., 165 N. Archer Ave., Mundelein, IL 60060), vol. 10, §30.14.

20. *Darling v. Jersey City*, 78 A. 10, 80 N.J.L. 514.

21. *Bacon v. Miller*, 160 N.E. 381, 247 N.Y. 311, and *Brown v. Topeka*, 74 P.2d 142, 146 Kan. 974.

22. *Miller v. Cincinnati*, 10 Ohio, Dec. 423, 21 CIN. LAW BUL. 121.

23. *Peck v. Bernard*, 12 Cal. App. 558, 108 P.55.

24. *Ibid*.

25. *Peck v. Strassforth*, 156 Cal. 201, 103 P. 918.

26. *Belden v. Niagara Falls*, 136 Misc. 406, 241 N.Y.S. 5.

naming or renumbering of streets is up to the discretion of the municipality.

Property owners do not have vested rights in street names or numbers. Even if a business has built up an association with location over the years, the inconvenience and expense of acquainting the public with the change is not sufficient to show a property right in the street name.<sup>27</sup> Businesses that want prestige addresses (e.g., One First National Plaza) should obtain specific approval from the municipality and from the Postal Service.

If a jurisdiction has the authority to name and number streets in the area, it probably has the right to name and number private streets as well as publicly dedicated streets. Sometimes ordinances mention this power specifically. King County, Washington, designates private roads if there are three or more houses on the road, or if the existing designation conflicts with their system. Shasta County, California, provides that private roads within the unincorporated area of the county may be officially named or the names changed when the county receives a petition of 60 per cent of the property owners whose property is serviced by the private road, when the planning commission recommends changes, or when the Board of Supervisors passes a resolution of intention.

#### **Naming Private Roads; Change of Name; Procedure**

Any private road within the unincorporated area of the county may be officially named or existing names may be changed by the Board of Supervisors upon petition of 60 per cent of the property owners

whose property is serviced by the private road proposed to be affected, upon recommendation by the Planning Commission, or upon a Resolution of Intention by the Board of Supervisors. The Board of Supervisors may refer the proposed private road name to the Planning Commission for report and recommendation. The petition shall be set for hearing, and notice of such hearing shall be given by posting notice at an obvious and conspicuous place along the private road proposed to be affected. Such posting is to be made at least ten (10) days before the date set for hearing. At the time set for hearing or at any time to which the hearing may be continued, the Board shall hear and consider proposals to adopt a name for, or change the name of, such private road, and upon the adoption or change thereof shall make an order in its minutes officially designating the name for said private road. Thereafter, such private road shall be known by the name so designated.<sup>28</sup>

Montgomery County, Maryland, has specified that they have the right to assign names and numbers to private as well as public roads. Whether or not private streets are named and numbered should be spelled out in the ordinance. A statute that requires municipal authorities to change a street name upon the petition of a certain percentage of property owners was held to be an unconstitutional delegation of legislative power.<sup>29</sup>

27. *Hagerty v. Chicago*, 196 N.E. 652 (IL).

28. Shasta County California Ordinance 494-13.

29. *Miller v. Cincinnati*, *supra*.

## Chapter 7. Problems of Larger Jurisdictions—Rural Areas, Metropolitan Areas, and States

### RURAL AREAS

There are several problems with street naming and house numbering that are unique to rural areas. The first is that regional and county governments may lack jurisdiction to be able to impose a system. Because the area is to be covered is large, it is expensive to survey, install, and maintain street signs and house numbers. Second, the distances between properties are large, which imposes certain constraints on the system chosen. Depending on the topography of the area many rural roads may be curvilinear, the most difficult type for which to devise a satisfactory system.

### Problems of Jurisdiction

Because rural free delivery routes are subject to change and provide no locational information, rural residents may express a need for a standardized street-naming and house-numbering system. If systems exist, they are often tied to the land development/subdivision process, which does not apply to rural areas. As discussed in the chapter on legal aspects, counties in some states are authorized to implement street naming and house numbering in unincorporated rural areas. If not specifically allowed, the power might be construed from the general planning powers given to local governments. Another alternative is to have a special act passed to give a regional agency or county the power to enact a street-naming and house-numbering system. It is preferable to have the system installed over the entire area because piecemeal adoption by some rural residents and not others may only add to the confusion in unincorporated areas.

It is important to have a particular agency empowered to install a new street-naming and street-numbering system so that one agency will be responsible for its continuing implementation. One county reviewed in the study set aside a certain amount of money each year and progressively installed the system.

### Distance Problems

When there are great distances between properties, a system should accommodate these distances and still be comprehensible. According to Branham, "the character of travel on the local roads is predominantly intracounty includes some intercounty and interstate movement. Most of this local road travel is to and from the county seat, or other trade areas in the county, and in adjacent counties."<sup>30</sup> Thus it is desirable that methods of identifying rural roads and numbering rural dwellings be on a countywide basis and be uniform throughout the state, continuous with adjacent counties. Counties reviewed in this study used quadrant systems, the Lyman system, and the century or equal interval system. Quadrant systems that are designed to cover whole states are particularly relevant. The pros and cons of those systems have already been discussed. Because they have a larger area to cover, many metropolitan and rural systems emphasize uniform numbering, only requiring that numbers not be duplicated.

### Curvilinear Roads

All systems reviewed can accommodate some roads that do not follow a grid system. The equal interval or century system is most applicable to areas where curving roads predominate. The quadrant and century systems were proposed for Augusta County, Virginia, to provide some of the advantages that directional suffixes and prefixes give with the renumbering methodology of the century system.

In rural areas, it is important to adopt a plan that closely fits the general characteristics of road use, traffic volumes, and street alignment in the jurisdiction. Continuity with adjacent counties and state systems should also be considered in the choice of a system. Considerable

30. Branham, A. K., "County Road Identification and Numbering of Rural Residences," *Public Works*, June 1956, p. 106.

intergovernmental cooperation may be required both within the area and on the boundaries of the jurisdiction to achieve a comprehensible and continuous system.

## METROPOLITAN AREAS

In metropolitan areas, there are additional problems with the implementation of a street-naming and house-numbering system. First, there is the problem of achieving intergovernmental cooperation—agreeing upon the need for a system, creating a common system, and deciding who will coordinate and maintain the system and how the implementation will be financed. Second, the system chosen must relate a built-up area with surrounding areas of lower densities, which means the system must be flexible to accommodate both types of development.

### Intergovernmental Coordination

Intergovernmental cooperation may be made easier by establishing an advisory committee with representatives of all affected municipalities. The regional agency, Council of Government, or county may coordinate the implementation. That umbrella agency should also maintain the system by keeping one centralized street-name list and property-number record. Ordinances enacting the system should be adopted by all affected jurisdictions because incorporated municipalities are usually exempt from regional systems.

Attempts should be made to keep one name for streets that extend from the city into fringe areas. A study done for Lexington-Fayette County, Kentucky, recommended, however, that an exemption to this rule be made for roads as they pass from urban service areas to rural ones. If a different name had been used outside the urban area, the study recommended that it remain unchanged, but all variations within the urban area were changed to a single name.

### Areas of Different Densities

Most of the systems reviewed in the report can accommodate varying densities of development. Sometimes a change is required in the frontage interval, from 50 feet in rural areas to 25 or 15 feet in built-up areas. Most of the metropolitan areas for which reports were reviewed suggested that the system used in the major city, rather than the county, be extended into fringe areas so that the whole unincorporated metropolitan area is based on one central point of reference. Then the suburban system is a logical extension of the urban system when traveling from the city to the surrounding area and no changes would be required if the area is annexed. It is especially important that the city rather than the county system be adopted in rapidly growing fringe areas that are likely to become part of the city.

Two large metropolitan areas have been chosen to illustrate how particular problems of those jurisdictions might be handled. In the Washington, D.C., area, special legislation was passed to give the Maryland-National Capital Park and Planning Commission the responsibility for street naming and house numbering. Each county submitted county base maps showing existing street names for the regional agency to update and review. The ad-

resses begin in Washington, D.C., and extend to the limits of Montgomery and Prince Georges County.

In a 1963 study of the Atlanta area, a review of existing street-naming and street-numbering systems resulted in the suggestion that the Atlanta Metropolitan Area be divided into three relatively distinct sections. Although it was recognized that it would have been ideal to have the whole metropolitan area on one system extending from a single point, this was not considered possible or necessary. Three separate systems were recommended because several effective systems were already in existence and because two of these systems were divided from the city of Atlanta by a river or by large areas of undeveloped land. Thus five counties were to be coordinated with three numbering systems. Quadrant systems were suggested in each case, and quadrant designations were to be required even if the entire street was within one quadrant so that similar streets in other quadrants could be distinguished by the quadrant designation (e.g., *Northwest Spring Street*.) The regional agency was to maintain a census tract street index, listing streets in the five counties. Subdivision regulations in the municipalities were to prohibit duplication of street names. Cooperation was to be encouraged among local government when subdivisions on both sides of the line between the systems are named and numbered; when such a subdivision had enclosed streets, it was to be added in its entirety to one numbering system to prevent internal confusion. The proposed revisions for Atlanta were never adopted.

### Systems Adopted

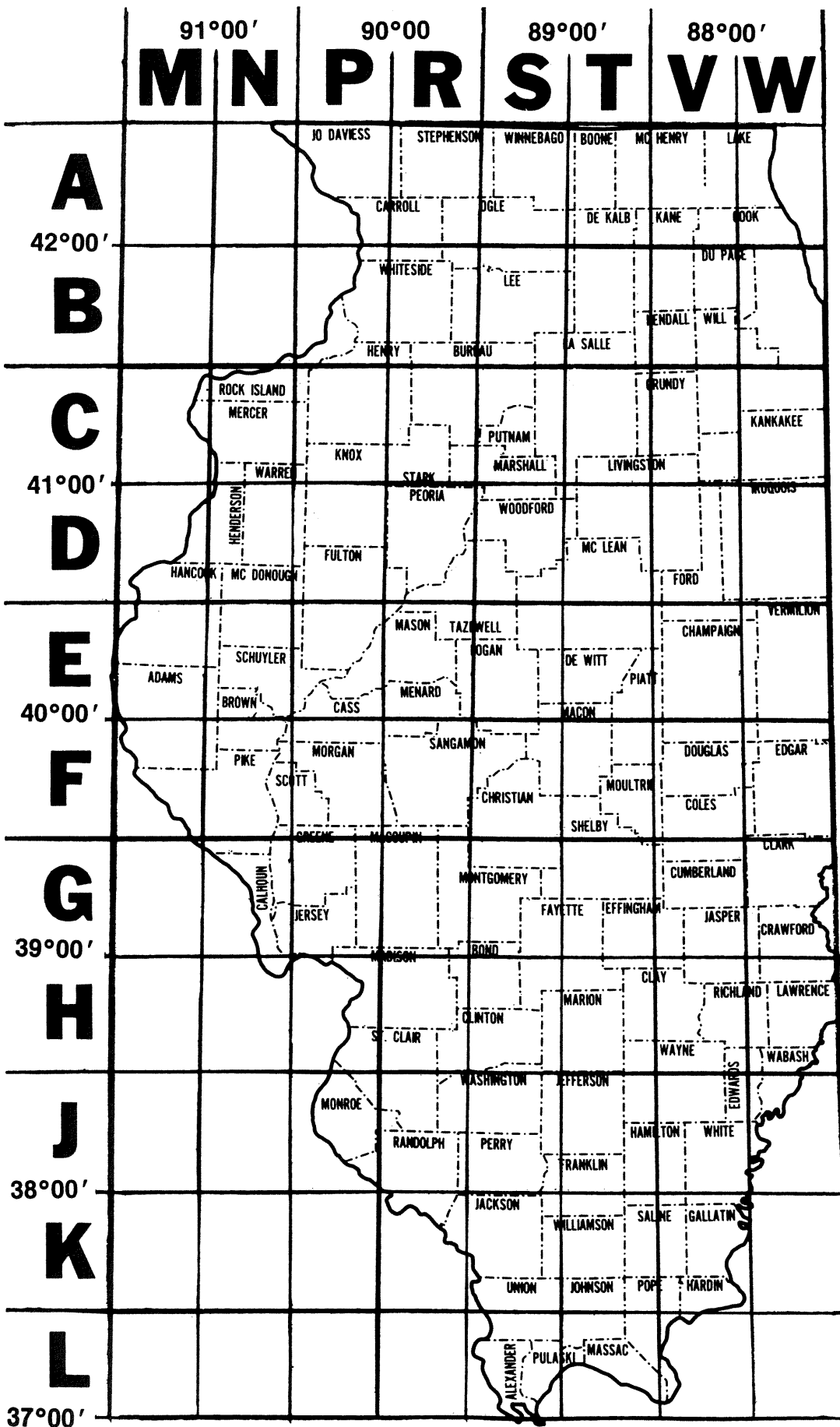
Metropolitan areas seem to use the quadrant system most frequently, but the Lyman system is also sometimes adopted.

## STATE SYSTEMS

Several states have attempted to make a standardized naming and numbering system which would be coordinated between counties. In Illinois, a "Rural Residence and Reference System" has been suggested. The state is divided into a grid, with north/south grid lines at 30 minutes of longitude and east/west grid lines at 30 minutes of latitude. (See Figure 26) A letter is assigned to each grid square. The grids are divided into six units of 10, and routes are marked with letters and numbers. East-west streets are marked with A-L, and north/south streets are marked with M-W (without using O, Q, U, W, X, Y). The letter of the grid square is followed by the number of the 10 series (e.g., 10, 20, 30) in which the route is predominantly located. Routes are marked independently of county lines. Curving roads are named for their "mean" or major location on the grid. Signs are required at the county and township road intersections.

Purdue University professors proposed a uniform system for Indiana that a number of Indiana counties have adopted. In this coordinate or Lyman-like system, each county is divided into four quadrants, with baselines either at (1) the intersection of range and township lines near the center of the county, projected due north/south and east/west, or (2) a projection of section lines near the county courthouse, which is presumed to be a well-known

FIGURE 26. RURAL RESIDENCE AND REFERENCE SYSTEM, PROPOSED FOR ILLINOIS



point in the county. The first reference point is preferable because it is generally close to the county seat and provides good continuity between counties. The second method should be used if the county has irregular boundaries (such as a river) making the shape varied, and when the county seat is some distance from the geographic center of the county so that unbalanced quadrants are the result.

In the Purdue systems, the grid lines are section lines. One hundred numbers are allotted per section. Like the Lyman system, roads following grid lines carry number names indicating the distance from the base line, followed by directional letters. Roads paralleling base lines between section lines are also given appropriate number names, such as 175th St., which would be 1-3/4 miles from the base line. It is recommended that local names be used in conjunction with number names, but official road signs and maps should show the number names. Where state highways coincide with number names, the state numbers

or names should be preferred. Counties give number names to roads on their south and west, but not north and east, boundaries.

To number properties in the Purdue system, the first digit, or the first two digits of the address if 10 or above, give the distance from the base line in miles. The last two digits give the distance in hundredths of a mile within the section. Thus relative positions of dwelling units are found to the nearest fiftieth of a mile because odd/even numbers reduce by half the number of intervals available. Diagonal streets can either be given number names based on coordinate points or be given regular names (while regular grid streets are number named) and assigned property numbers based on their prevailing direction.

In another version of this system, properties are numbered in thousandths of a mile, with the last three digits indicating the location of the dwelling. This allows a number every 10-1/2 ft. Fresno County, California, uses such a system.

# Appendices

## Appendix A. Bibliography

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# Appendix B. Sample Ordinances, Subdivision Regulations, and Forms

This appendix gives sample ordinances, subdivision regulations, and forms to use in devising and implementing a street-naming and property-numbering system.

None of the ordinances are recommended over others; they have been provided merely as samples.

## City of Irvine, California

### A Street-Naming and Numbering Resolution

*Whereas* the city of Irvine is interested in developing a program to provide a unique and fresh approach toward the naming and numbering of streets;

*Whereas*, the city is desirous that this approach reflect the city's emphasis upon the village concept and the development of a greater sense of place;

*Now, Therefore*, the City Council of the city of Irvine does hereby resolve as follows:

#### §1. Street Names

A. *Choice of Names.* Names should be chosen that relate to the scale and location of a project.

1. *Objectives*—Names should be pleasant sounding, appropriate, easy to read (so that the public, and children in particular, can handle the name in an emergency situation), and should add to pride of home ownership.
2. *Categories*—Large developments to use a single, significant category; small subdivision should use the same category as the surrounding or adjacent area, which helps establish locational identity.
3. *Unacceptable Village Street Names*—Numerical names (1st, 2nd, etc.); alphabetical letters (A, B, C, etc.); surnames of living persons (pioneer families, etc., excluded); frivolous, complicated, or undesirable names; unconventional spelling; compound names (use sparingly and not on short streets).

B. *Affixes.* Unnecessary affixes are to be avoided. Terms that may be utilized are:

1. "East," "West," "North," and "South," indicating direction.
2. "Boulevard," "Drive," "Road," and "Parkway" for arterial highways based upon discretion of the City Council.

C. *Name Duplication.* Similar sounding names are considered to be duplication regardless of spelling. No duplication of names is permitted within the projected service area of a United States Post Office or of local public agencies such as fire and police de-

partments. Preferably, the avoidance of duplication should be countywide because of future urbanization.

#### D. *Continuity.*

1. A continuous street, or one proposed to be continuous, should bear the same name throughout, even though it changes directions. If it is interrupted by a channel, freeway, railroad, etc., and eventual connection is not probable, the segments shall bear different names. Loop or U-shaped streets which would create duplication of house numbers require two names, the change to occur at a knuckle or sharp turn, may be excepted from the above in the event such an identifiable break point does not exist. In these cases, the utilization of an appropriate affix may be allowed.
2. No separate name is to be used for a cul-de-sac that provides street frontage for three or less lots or units. The name shall be the same as that of the intersecting street. Where there is a series of long and short cul-de-sacs, however, all should have separate names.

#### §2. Street Numbering

##### A. *Arterial Highway Numbering.*

1. The numbering of arterial highways shall begin at a central geographical point within the city and extend outward to the north, east, south, and west.

##### B. *Residential Street Numbering.*

1. A numbering system shall be developed for each new development without necessary regard for the existing countywide grid system: to facilitate residential identification, the village name may be included as an integral part of the address.
2. Residence numbers shall be limited to as few digits as necessary to carry out a local system based on village boundaries. Residence numbers shall begin with "1" or "2" at the entrance to a street and continue to the end of the street with odd

numbers on the left and even numbers on the right.

**C. Apartment Complexes.**

1. The low numbering system noted above for residential street numbers shall be adhered to in apartment complexes.
2. Each structure shall have a street number reflecting the policy.
3. Individual units shall be identified in a manner meeting the intent of the policy for residential numbering.

**§3. Characteristics of Street Numbering.**

Physical characteristics of street numbering on dwelling units should be such so as to minimize problems of identification for emergency and other services.

1. Street numbers shall be located so as to be visible from and oriented toward the street from which address is taken.
2. Street numbers shall be affixed to dwelling units. Devices providing numbering for directional assis-

tance may be placed throughout an apartment or condominium complex. Where parking facilities are not attached to the dwelling units, no street numbers shall be affixed thereto.

**§4. Characteristics of Street Signs.**

Physical characteristics of street signs should be considered as an additional area of responsibility. New techniques and materials for providing street name signs are available which can add distinctive character to the city of Irvine. (Example: molded thermal plastics with color and reflective material as an integral part of the surface are available).

In addition to possible new types of signs for street intersections and advance notification signs on arterial highways, consideration should be given to the following:

- (a) Lighting and visibility;
- (b) New techniques and materials;
- (c) Emphasizing a hierarchy of sign size to distinguish the importance of various streets;
- (d) Numbering ranges should be shown on sign;
- (e) Signs should be vandal resistant.

## City of Irvine, California

### Street Signs, Street Names, and Street-Numbering Ordinance

§1. §78.034, subparagraph (q), of the Codified Ordinances of the County of Orange, adopted by reference by the city of Irvine, is hereby amended to read as follows:

**(q) Street Name Signs**

Street name signs, approved by the Director of Public Works, shall be installed by the subdivider at the intersection of all streets and highways and at such other locations as may be determined to be necessary by the Director of Public Works.

§2. §78.034, subparagraph (r), of the Codified Ordinances of the County of Orange, adopted by reference by the city of Irvine, is hereby amended to read as follows:

**(r) Street Names and Numbering**

Street names and numbering shall be determined in accordance with the street-naming and numbering policy adopted by resolution of the City Council of the city of Irvine. After approval of a tentative tract map, the subdivider shall submit a street-

naming and numbering proposal to the Department of Public Works of the city of Irvine. The street-copies of (1) a map of the overall tract illustrating street layout, the name proposed for each street and the proposed numbering for each lot, and (2) an alphabetical list of the proposed street names, together with an alternate name for each name proposed. The Transportation Commission shall review the proposed street-naming and numbering program for duplication of names, appropriateness of names, and for overall compliance with the street-naming and numbering policy. The Commission may modify or amend the program as it deems necessary in order to bring it into conformance with the street-naming and numbering policy. The decision of the Commission may be appealed to the City Council within fifteen (15) days after action by the Commission. The approved street names and numbering shall be included in the final map which is submitted to the City Council for approval and for recording.

# Sample Property-Numbering Ordinance

## North Carolina League of Municipalities

An ordinance establishing a property-numbering system for the (city) (town) of \_\_\_\_\_, North Carolina.

The (governing body) of the (city) (town) of \_\_\_\_\_ does ordain as follows:

### § 1. Numbering Map

The property numbering map entitled "Property Numbering Map, dated \_\_\_\_\_, \_\_\_\_\_, North Carolina," is hereby adopted as the official property-numbering map of the (city) (town) of \_\_\_\_\_, North Carolina, and all property numbers assigned shall be assigned in accordance with this numbering map, and no other property numbers shall be used or displayed in the (city) (town) of \_\_\_\_\_, except numbers assigned in accordance with the official numbering map. The property-numbering map shall be kept on file in the office of the (City) (Town) Clerk.

### § 2. Numbering System

On the property-numbering map, \_\_\_\_\_ is hereby designated as the North-South axis and \_\_\_\_\_ is hereby designated as the East-West axis, and all avenues, streets, and alleys running generally North and South shall be numbered from the East-West axis consecutively to the corporate limits of the extremity of such avenue, alley, or street. Avenues, streets, or alleys running generally East and West shall be numbered from the North-South axis in the same manner. Wherever possible, one hundred (100) numbers shall be allowed to each block so

that the number of each consecutive block shall commence with consecutive hundreds and one.

One whole number shall be assigned for every fifty (50) feet of ground whether improved property or vacant lot on every street within the corporate limits, excluding the business district in which case one whole number shall be assigned for every twenty-five (25) feet whether improved property or vacant lot. Odd numbers shall be assigned to the West side of the street on all North-South streets, and even numbers to the East side. On East-West streets, odd numbers shall be assigned to the South side of the street and even numbers to the North side.

### § 3. Owners to Purchase Numbers

Every property owner of improved property shall, on or before the \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_, purchase and display in a conspicuous place on said property the number assigned.

### § 4. Numbers for Future Buildings

All residence and business buildings erected after the adoption of this ordinance shall be assigned a number in accordance with the property-numbering map and shall purchase and display such number as provided in §3 of this ordinance.

### § 5. Unlawful to Deface Number

It shall be unlawful for any person to alter, deface, or take down any number placed on any property in accordance with this ordinance, except for repair or replacement or such number.

## Excerpts from Peoria County, Illinois\*

### Land Subdivision Regulations

#### 5.28 STREET NAMES AND NUMBERS

5.281 The continuation of an existing street shall have the same name. The name of a new street shall not duplicate the name of an existing street within the area served by the same post office or fire department.

5.282 Each plat for a new subdivision in areas where surveys have been made to establish the County Uniform Numbering Grid shall contain the block number for each four hundred forty (440) feet of street or road frontage, together with designation of whether North, South, East, or West of the base line, and shall further show at sixty (60) foot intervals along the street frontage the last two numbers

of the house number assigned to such point. Said house numbering shall be on the basis of one number for each thirty (30) feet of frontage, but only every other number be required to be shown.

6.33 The subdivider shall provide the subdivision with street signs at the intersection of all streets.

7.11 The preliminary plat shall show all existing conditions required above in topography data and show all proposals, including, but not necessarily limited to, the following:

a. *Streets:* Names, right-of-way widths, approximate grades and gradients.

#### 7.2 PLATS AND DATA FOR FINAL APPROVAL

c. Name of each street or other rights-of-way.

\* Adopted 1968, revised in 1976.

## A Sample Ordinance, Athens, Georgia

An ordinance to amend the code of the city of Athens, Georgia, (1962) by adding thereto a provision for numbering buildings and to provide punishment for failure to do so.

Be it ordained by the Mayor and Council of the city of Athens, and it is hereby ordained by authority of the same, as follows:

§ 1. That the Code of the city of Athens, Georgia, (1962) be amended by adding thereto the following to be known as §23-20(a):

### §23-20(a):

#### 1. *Designation of Street Numbers*

- (a) Street numbers for dwelling units and places of business on all public and private streets shall be assigned by the Planning Commission in accordance with its administrative procedures.
- (b) The Athens-Clarke County Planning Commission shall keep a record of all numbers assigned under this ordinance.

#### 2. *Posting of Designated Street Address*

- (a) The owner or occupant or person in charge of any house or building to which a number has been assigned will be notified in writing by the Building Inspection Office of the number assigned to the same at any time after the adoption of this ordinance.
- (b) Within sixty (60) days after the receipt of such written notification from the Building Inspection Office, the owner or occupant or person in charge of a house or building to which a number has been assigned shall affix the number in a conspicuous manner in a conspicuous place.
- (c) It shall be the duty of such owner or occupant or person in charge thereof upon affixing the new number to remove any different number which might be mistaken for, or confused with, the number assigned to said structure by the Commission.
- (d) Each principal building shall display the number assigned to the frontage on which the front en-

trance is located. In case a principal building is occupied by more than one business or family dwelling unit, each separate front entrance may display a separate number.

- (e) Numerals indicating the official numbers for each principal building or each front entrance to such building shall be posted in a manner as to be legible and distinguishable from the street on which the property is located.

#### 3. *New Structures*

- (a) Numbers will be assigned to each proposed lot or tract on the surveyors' copies of Final Subdivision Plats by the Athens-Clarke County Planning Commission.
- (b) No building permit shall be issued for any principal building until the owner or developer has procured from the Building Inspector of the city of Athens the official number of the premises. Final approval for a certificate of occupancy of any principal building erected or repaired after the effective date of this ordinance shall be withheld until permanent and proper numbers have been displayed in accordance with the requirements of No. 2 above.

#### 4. *Penalties*

- (a) In the event that the owner or occupant or person in charge of any house or building refuses to comply with the terms of this ordinance by failing to affix the number assigned within sixty (60) days after notification, or by failing within said period of sixty (60) days to remove any old numbers affixed to such house, or house entrance, or elsewhere, which may be confused with the number assigned thereto, he shall be punished as provided for in §9-4 of the Code of the city of Athens, Georgia, (1962) as amended.

#### 5. *Effective Date*

This ordinance shall take effect and be in full force and effect thirty (30) days from after its passage.

§2. All ordinances or parts of ordinances in conflict herewith are repealed.



**BUILDING AND LAND DEVELOPMENT DIVISION**

Edward B. Sand, Manager  
450 King County Administration Building  
Seattle, Washington 98104  
206-344-7900

TO: RESIDENT

SUBJECT: ADDRESS CORRECTION

A recent survey indicates that there are many address errors in King County. The County Building and Addressing Code (Ordinance Number 1017) requires that every building have an address which conforms to the grid system established for King County. In addition the proposed "911" program for rapid central dispatch of emergency aid (fire, police, ambulance, aid car, etc.) makes it imperative that these errors be corrected as rapidly as possible.

A study of your area indicates your address to be in error for one or more of the following reasons:

1.  Number is out of proper sequence.
2.  Number does not indicate correct distance.
3.  Number series presently in use is incorrect or misleading.
4.  Odd or even number on wrong side of roadway.
5.  Principal entrance does not face the street as now addressed.
6.  New street intersection makes present number outmoded.
7.  Change of road pattern makes present number outmoded.
8.  Change of street designation.
9.  Designation of private roadway

(over)

ADDRESS CORRECTION

- 10.  Identical numbers on similar street, avenue, place, etc
- 11.  Not using assigned address.
- 12.  No address presently assigned
- 13.  Change from rural route and box number to urban type address.
- 14.  Present address is misleading.
- 15.

Therefore it is necessary to correct this address as shown on the attached official Address Notice. Please do not use the new address before the effective date. We will assist you by notifying the agencies listed on the notice. The post office will also assist you with your address correction.

The ordinance also requires that all buildings, residential or commercial, have the correct address displayed in a conspicuous place over or near the principal entrance. The numbers must be easily legible figures not less than two inches (2") high and in a color contrasting to the building background. (Your fire chief recommends reflective numbers.) The post office also requires correct, easily legible numbers on your mailbox which are not obscured by the flag.

We regret any inconvenience this change may cause you but we know you will recognize the importance of this correction.

If you have any questions regarding this matter please contact the Addressing Section, phone 344-7980.

Lorraine Crist,  
Vera Grover,

*Lorraine Crist*  
*Vera Grover*

Address Technicians

Attachment: Address Notice

F-88  
7/76

**Sample Address Correction Form**  
**King County, Washington**

King County Building and  
Land Development Division  
450 King County Administration Bldg.  
(206) 344-7980

**ADDRESS NOTICE**

NAME \_\_\_\_\_  
The County Building and Addressing  
Code (Ord. #2096) requires every  
building to have a correct address.  
Because the one you are now using  
is not consistent with the county's  
established numbering system it is  
necessary to correct your address  
from \_\_\_\_\_  
(old address)

to \_\_\_\_\_

Effective date \_\_\_\_\_

We will notify the following:

Post Office	Phone Co	Water Dist
Assessor	Light Co	Sewer Dist
Election Dept	Gas Co	Fire Dist

\_\_\_\_\_

\_\_\_\_\_

Date \_\_\_\_\_ By \_\_\_\_\_

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