★ planning advisory service

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SIDEWALKS IN THE SUBURBS*

Sidewalks typify the difficulties that beset suburban residential developments. Problems of municipal finance, design standards, and public vs. private responsibility are all involved. Sidewalks are an everyday part of the lives of youngsters, who give the suburban population pyramid its characteristic shape and for whom mass produced subdivisions mainly exist.

Though the simplest of structures, the decision as to the need for a sidewalk is based on many variables. Whether to have sidewalks depends primarily on population density (in turn a function of zoning, method of sewage disposal, and size of lot) and traffic (which is affected by car ownership, design of streets, and major street systems).

Sidewalks and Safety

It seems almost axiomatic that sidewalks reduce traffic danger to pedestrians. And yet this belief has been questioned when applied to children. It has been suggested that "as accidents usually occur when they run into the roadway or emerge from behind parked cars," perhaps sidewalks do not contribute to their safety. And it has been hinted that sidewalks actually tend to encourage playing in the street rather than in off-street areas such as rear yards or a playground. (See The Community Builders Handbook, Urban Land Institute, 1737 K Street, N.W., Washington, D.C.; 1954, p. 80, which cites the opinions of a widely-known builder. The authors of the Handbook recommend that in general there should be a sidewalk on at least one side of the street.)

Against these opinions are arrayed those of the National Safety Council. When asked by PLANNING ADVISORY SERVICE if any studies had been made to determine whether sidewalks contribute to safety, the director of the Traffic Operations Division, National Safety Council, replied:

> Unfortunately there is no good accident information available which would demonstrate the relationship between child safety in areas with sidewalks and without sidewalks. It is the consensus of most safety authorities, however, that sidewalks are desirable in all areas in which there is any appreciable pedestrian traffic. Certainly this would apply in all residential developments.

This viewpoint is further elaborated in the National Committee for Traffic Safety's booklet, Building Traffic Safety into Residential Developments (National Safety Council, 425 North Michigan Avenue, Chicago 11; $1):

> Traffic safety demands good sidewalks on each side of every residential street. Vehicular traffic and pedestrians should be segregated. It is unsafe, unreasonable and often disagreeable to pedestrians to be forced to walk on the paved roadway. Parents do not want children playing in the roadway -- yet if they have roller skates, scooters or other wheeled toys, they will use the roadway unless a smooth sidewalk is available. Mothers with baby carriages and elderly persons should have sidewalks. Nearly three-fifths of the persons killed in traffic are killed at night, and walking on the roadway is a major night hazard. In numerous places state or county highway authorities have become so impressed with their need that they are building extensive mileages of highway sidewalks. How inappropriate it would be for new residential developments not to provide them. There may be places, as in estate-type developments, where a sidewalk only on one side, or even no sidewalks, can be justified, but this should be a very rare exception.

Although there are no statistical data to support the widely held belief that sidewalks contribute to pedestrian safety, there are figures that show conclusively -- if proof is needed -- that it is not safe for children to play in the streets. The Metropolitan Life Insurance Company, in its monthly Statistical Bulletin, reports from time to time on major causes of death among children who are industrial policyholders.

About 6,000 deaths occur annually in the United States from accidents among children at ages 5-14 years, the leading cause of death in this group.* Motor vehicle mishaps accounted for two-fifths of the total accident mortality among these insured children in 1953-1955. Of these, over half were pedestrians, but the proportion varied with age. Among children 5-9 years

*How major a cause death by accident is in this age group is seen when it is compared with death from other causes. The loss of life from accidents among boys 5-14 years was more than four times that from cancer and other malignant neoplasms (the second highest cause), fully seven times that from acute poliomyelitis, and nine times the loss from pneumonia and influenza combined. Among the older elementary school boys -- those at ages 10-14 -- accidents took a greater number of lives than all other causes together. Accidents account for well over a fourth of all the deaths among girls and far outrank any other cause.

of age, almost three-fourths of the victims were pedestrians, whereas at ages 10-14, the proportion was only a little over one-third. On occasion, an extreme condition dramatizes the relation between sidewalks and safety of children. Kentucky officials of the Veterans Administration will no longer approve G. I. loans on big projects without sidewalks, according to the Louisville Courier-Journal of June 5, 1955. The last project completed prior to this ruling contained 520 lots. It was approved for V. A. guaranteed loans without sidewalks, paved curbs, and gutters. The V. A. officials observed that the chief problem in big developments with no sidewalks is danger to pedestrians, especially children. When county school buses unload children in such big suburban developments "the children cover the roads as they disperse homeward."

It was reported that Montgomery County, Maryland had completed 12 miles of sidewalks during the course of a year. They were built primarily to serve public school districts, according to the Washington Post and Times Herald of May 15, 1955. Mortality from motor vehicle accidents to pedestrians is also high among older age groups, according to the figures available to the Metropolitan Life Insurance Company. In the period 1953-1955, the average annual death rate per 100,000 among white male pedestrians was 24.7 in the age group 65-74 years. In the next lowest age group -- 30-64 years (which covers 35 instead of ten years)--it was only 6.4. The company observes that the sharp rise in the rate for older people is due in considerable degree to their inability as pedestrians to cope with current traffic conditions.

If it is true that juxtaposition of children and elderly adults to moving automobiles is an undesirable state of affairs at the present time, what of the future? Examination of trends reveals nothing that diminishes the case for sidewalks in most residential developments. The rising birth rate, the expansion of the population into suburbs, the growing number of old people, and the increase in car ownership* all combine to make an increasingly hazardous situation. If sidewalks are needed in new developments now, it is hard to avoid the conclusion that they will be needed even more in the future.

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*Motor vehicle registrations increased 7.2 per cent between 1954 and 1955 (Department of Commerce). A study made by the Ford Motor Company predicts that by 1960 about 74 per cent of American families will own at least one car as compared with 66 per cent in 1955 (New York Times, June 19, 1955). According to "The Biggest Car Market Yet" by Gilbert Burck and Sanford S. Parker, 9 per cent of American families owned two cars in 1956 compared with 5 per cent in 1953 (Fortune, November, 1956). The Ford survey showed that only 2 per cent had two cars in 1941. Persons over 17 years of age per auto registered was eight in 1920, slightly more than two in 1955, and is expected to be somewhat less than two in 1975 ("Urban Areas of the Future" by Robinson Newcomb; Urban Land, November 1956). Percentages and ratios should be modified by a population-increase factor to get an idea of increase in actual numbers. Projections made for an article, "By 1976 What City Pattern?" indicate that the number of cars in use will be 80 million in 1965 and more than 100 million in 1976, or roughly double the number in 1956 (Architectural Forum, September 1956).

Sidewalks as a Function of Density

Given the desirability of sidewalks in residential neighborhoods where the incidence of people and automobiles is high, can we say that sidewalks are not needed where the incidence of both is low? And if so, can we draw a line between subdivisions where sidewalks are needed and those where they are not? And finally, can we develop some kind of a measure that bears a reasonable relation to the factual situation?

One of the measures of sidewalk traffic is population density. Population density is related, in turn, to size of lot and type of dwelling. Consequently, we can hypothesize that where the average lot size in a single-family residential development has a certain minimum value, sidewalks are not needed. The problem is to determine this minimum value. Specifications are as follows:

1. Lots are so large that children have no inclination to play in the street.*
2. Lots are so large and development so spread out that:

    a. Distances between house and schools, stores, and public transportation terminals are great enough to discourage walking and all but require travel by auto;
    b. Frequent visiting back and forth among neighbors is not likely to take place.

A residential development that fits these criteria is often called an "open," a "residential estate," or a "country homes" development. What are the lot dimensions that fit these terms?

One standard is offered by The Community Builders Handbook, which makes the observation that ". . . in open developments of large lots of 100-foot frontage or more, sidewalks may be eliminated without objection." If we assume that lots with 100-foot frontages have, on the average, an area of one-third to one-half acre, then density is about two families a gross acre. Does this density jibe with the picture evoked by the phrase "open development"? Is it true, in experience, that at this density housewives seldom visit back and forth (pushing baby carriages) and that children play only in their own and the next door neighbors' back yards?

Another standard is offered by the Housing and Home Finance Agency in Suggested Land Subdivision Regulations (Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.; 1952, 45 cents). To begin with, this manual distinguishes three general types of residential developments and sets up corresponding standards for utility and street improvements:

a. For apartment, row house, and similar multifamily residential types, improvements to be in accord with STANDARD A.

*No matter how large the lot there should be a safe place for roller skating, tricycling, and kindred activities.

b. For one-family detached dwellings with typical lot widths of _____ft. or less,* improvements to be in accord with STANDARD B.

c. For country homes with typical lot widths greater than "b" above, improvements to be in accord with STANDARD C.

The manual then specifies the installation of sidewalks in all three types of developments.

What about a subdivision located in an area designated by five-acre, 300-foot frontage minimums under the zoning ordinance? Lots of this size seem to fit the specifications above. However, subdivisions with lots ranging from less than five acres and 300-foot widths downward to one-third of an acre and 100-foot widths are open to question. Where the line is to be drawn between sidewalks and no sidewalks should be determined on a local basis after a field survey.

Table 1 following is made up of various subdivision provisions that relate sidewalk requirements to residential density. Density is expressed in terms of area, frontage or lot width, and type of dwelling. In a few cases, districts established by the zoning ordinance are used as a density reference. In addition to stating whether sidewalks are required at all, these provisions also relate sidewalk width and location to residential density.

Sidewalks as a Function of Traffic

As we have seen, the need for sidewalks is related primarily to the number of pedestrians. Need also is related to the amount of vehicular traffic. Given a constant daily volume of pedestrian traffic in an area that might not require sidewalks by other standards, can we say that there are certain traffic conditions that in themselves justify building sidewalks?

Common sense tells us that the answer is affirmative. And the problem again is to determine the point at which traffic volume becomes critical.

One attempt has been made by the American Association of State Highway Officials. Its findings on this subject are reproduced in Traffic Engineering Handbook (Institute of Traffic Engineers, New Haven, Connecticut; Second Edition, 1950) in a table headed "Tentative Number of Pedestrians per Day Justifying Sidewalk Construction."

In all examples, design speeds of 30, 40, and 50 miles an hour are assumed. ONE sidewalk is justified if vehicles number 30 to 100 an hour and if there

*In another section, the HHFA manual observes that lot size should conform with zoning ordinance standards, but that in the absence of a zoning ordinance "generally accepted minimums are a width not less than 60 feet and an area not less than 6,000 square feet" where served by public sewer. Lots must be large enough to accommodate a septic tank and leaching field in areas not served by public sewer.

TABLE 1

SIDEWALKS RELATED TO RESIDENTIAL DENSITY

Type of area	Sidewalk requirements
Association of Washington Cities (Regulating Subdivisions, Informational Bulletin No. 167, 1954).	
Areas proposed for SINGLE DWELLING UNIT homes.	4-foot sidewalks.
Proposed APARTMENT HOUSES, ROW HOUSING, GARDEN APARTMENTS.	8-foot sidewalks.
Proposed COMMERCIAL, SHOPPING and RETAIL LAND USES.	12-foot sidewalks.
Fairfax County, Virginia (1956)	
Subdivisions in which land use conforms to SUBURBAN RESIDENTIAL (17,000 sq. ft.) or greater density.	4-foot sidewalks "on both sides of major thoroughfares and one side of local thoroughfares."
"Within a subdivision block where a PUBLIC SCHOOL OR SCHOOL SITE is located and further, within the distance of one block in any direction from such block wherein a public school or school site is located."	4-foot sidewalk "on one side of all streets."
Greenwich, Connecticut (1954)	
Large-lot RESIDENTIAL AND RESIDENTIAL AGRICULTURAL ZONES (12,000 sq. ft. to 4 acres).	No sidewalks required.
R-6 and R-7 ZONES (6,000 and 7,000 sq. ft. respectively).	4-foot sidewalks on at least one side of streets.
R-MF MULTI-FAMILY ZONES.	4-foot sidewalks on both sides of streets.
BUSINESS ZONES.	10-foot sidewalks on both sides of streets.

Table 1 -- continued

Type of area	Sidewalk requirements
Howard County, Indiana (1956)	
Where there is proposed an average of 3 or more lots per gross acre.	4-foot sidewalks on each side of a street.
Midland, Michigan (1950)	
Lots 60 feet wide or less.	Sidewalks on both sides of every street.
Where necessary, in the opinion of the planning commission, to safeguard the safety of pedestrians, irrespective of the width of lots.	Sidewalks on one or both sides of streets.
Montgomery County, Ohio (1955)	
Lot frontage greater than 80 ft. and where essential to pedestrian movement and safety.	Planning commission may require sidewalks.
Lots have either a width of less than 80 ft. at building line or area is less than 15,000 sq. ft.	4-foot sidewalks on both sides of a street.
Parsippany-Troy Hills, New Jersey (1950)	
LARGE LOT (40,000 sq. ft. and greater; frontage 200 ft. and greater).	No sidewalks required.
MEDIUM LOT (15,000-40,000 sq. ft.; frontages 100-200 ft.).	"Adequate graded shoulders for pedestrian traffic on each side of pavement."
SMALL LOT (less than 15,000 sq. ft.; frontages less than 100 ft.).	4-foot sidewalks on both sides of street.
Passaic County, New Jersey (1954)	
OPEN DEVELOPMENT (100 ft. x 200 ft.; maximum density, 2 families per acre).	No sidewalks required.
ONE-FAMILY (60 ft. x 120 ft.; maximum density, 6 families per acre).	4-foot sidewalks.

Table 1 -- continued

Type of area	Sidewalk requirements
MULTI-FAMILY AND ROW (maximum density 25 families per acre).	5-foot sidewalks.
BUSINESS.	12-foot sidewalks.
Washtenaw County, Michigan (1953)	
ACREAGE (5 acres; lot width 300 ft.; persons per acre -- 0.6*).	Sidewalks not required.
LARGE SUBURBAN (1 acre; lot width 150 ft.; persons per acre -- 3.6).	Sidewalks not required.
SMALL SUBURBAN ($\frac{1}{2}$ acre; lot width 100 ft.; persons per acre -- 5.6).	Sidewalks not required.
WATERFRONT RESORT (1/3 acre; lot width 75 ft.).	Sidewalks not required.
LARGE SINGLE-FAMILY (1/4 acre; lot width 75 ft.; persons per acre -- 9.5).	Sidewalks not required.
MODERATE SINGLE-FAMILY (1/5 acre; lot width 65 ft.; persons per acre -- 11.2).	Sidewalk one side of street; 4-foot minimum, prefer 5 ft.
SMALL SINGLE-FAMILY (1/6 acre; lot width 60 ft.; persons per acre -- 13.3).	Sidewalks both sides of street.
MINIMUM SINGLE-FAMILY (1/7 acre; lot width 55 ft.; persons per acre -- 16).	Sidewalks both sides of street.
MULTI-FAMILY, ROW, APARTMENTS.	Sidewalks both sides of street.

*Persons per acre is simplified here, being an average of the "gross desirable persons per acre" and "net possible people per acre" figures as given in the source.

are 150 pedestrians a day; or more than 100 vehicles an hour and only 100 pedestrians a day. TWO sidewalks are justified if vehicles number 50 to 100 an hour and 500 pedestrians a day. A footnote reads, "Smaller pedestrian traffic densities may justify two sidewalks to avoid a considerable amount of pedestrian cross traffic."

Whether any of these conditions refer to residential neighborhoods is not indicated. Assuming, however, that the design speed of 30 m. p. h. applies to local residential streets,* is it possible to translate these figures into terms of residential density?

It is pointed out in Building Traffic Safety Into Residential Developments that subdivision vehicular traffic will consist of:

1. Vehicles driven by the residents.

2. Service vehicles.

3. Visitors' vehicles and casual traffic.

One automobile for each single-family unit can reasonably be assumed. (The breaking point between one and more than one car per family occurs "where density of land occupancy is less than ten persons per acre, walking distance from established transit service is over one-fourth mile and family income level is above average . . . ." Ibid.) As a rule-of-thumb, but for purposes of calculating street capacity, this same source observes that "ordinarily not over 40 vehicles per 100 family units will move during the peak hours." This figure brings us in the neighborhood of the first set of traffic volume conditions, which justify ONE sidewalk, though comparisons between average and peak vehicular traffic are not, strictly speaking, comparable.

The required pedestrian count is easier to approximate, if "pedestrian" is given the fleeting meaning ordinarily ascribed to this term. A boy on a tricycle playing on the sidewalk for one hour should not be counted as one pedestrian but probably as three or four, or maybe more.

In this connection, some references to Traffic Engineering Handbook are of interest. Average walking speeds, according to the Handbook, have been found to vary from 3.5 to 4.5 feet a second, depending on temperature, type of crowd, density of sidewalk use, and other factors. A "pedestrian" as defined for purposes of accident classification is "any person afoot." But this is interpreted to include "any person riding in or upon a device moved or designed for movement by human power or the force of gravity except bicycles, including stilts, skates, skis, sleds, toy wagons, scooters, scooter-bikes (having wheels less than 24 inches in diameter), tricycles, baby carriages, etc., while upon or adjacent to the highway."

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*Twenty-five miles an hour is more commonly observed and is the speed recommended in the Uniform Vehicle Code.

Our hypothetical boy on a tricycle, if he plays in the street for an hour because there is no other hard, level surface, exposes himself to accident by many more times the exposure of the adult pedestrian traversing the same path once or twice within that hour. On this basis alone, it should not be hard to count more than 150 pedestrians a day in a typical residential neighborhood.

Another approach to the relating of sidewalk need to traffic is found in local subdivision regulations that specify sidewalks by reference to type of street. Examples are shown in Table 2. Provisions of this kind often are found in tables that indicate minimum improvement standards for streets of different types, sidewalks being one type of street improvement.

Though it is possible to derive a measure of sidewalk need from volume of traffic, this variable is seldom sufficient in itself. On the other hand, we do know that residential subdivisions of given densities can be expected to generate pedestrians and traffic in volumes sufficient to require the installation of sidewalks for purposes of safety.

Design Standards

Construction. For residential developments, concrete sidewalks four inches thick are almost always recommended and specified.

The standard manual on sidewalk construction is Sidewalks and Curbs, being Part C of Standard Specifications for Public Works Construction (published by the American Public Works Association, 1313 East 60th Street, Chicago 37; $1).

Width of Sidewalk. The widely accepted minimum width is four feet in low-density neighborhoods. This is based on a foot traffic lane of two feet. If one foot, eight inches is taken as a standard dimension of an adult male, measured from elbow to elbow with arms folded,* then a lane base of two feet seems adequate.

However, the character of sidewalk traffic anticipated in a new development should be considered in determining whether four feet is sufficient. If a sidewalk is to be used mainly by persons wheeling baby carriages and small children riding wheeled toys, then four feet is hardly adequate.

In residential neighborhoods of higher densities, sidewalks should be correspondingly wider. Two of the subdivision regulations listed in Table 1 require a width of five feet in multi-family developments. Here again, the validity of this width should be tested against the requirements of sidewalk users.

In business districts, widths may vary from ten to 30 feet or more, according to Municipal Public Works Administration, (published by The International City Managers' Association, 1313 East 60th Street, Chicago 37; 1950).

*See Time Saver Standards, F. W. Dodge Corp., 119 West 40th Street, New York; 1954, $12.50.

TABLE 2

SIDEWALKS RELATED TO TYPE OF STREET

Type of street	Sidewalk requirements
Modesto, California (1952)	
Along all major thoroughfares -- 90 ft. right-of-way.	Sidewalks required.
Along the frontage of all business properties.	Sidewalks required.
Other locations where deemed necessary by planning commission.	Sidewalks required.
Oklahoma County, Oklahoma (1952)	
Officially designated major streets and highways.	Sidewalks may be required.
Any minor street where deemed essential for public safety by the planning commission.	Sidewalks may be required.
San Antonio, Texas (1953)	
New streets and existing unpaved streets located within the subdivision and extending the length of one or more blocks.	
Minor streets -- 50 ft. R.O.W.	Optional.*
Collector residential streets -- 60 ft. R.O.W.	Concrete sidewalks required (4 ft. x 4 inches P.C.C.).
Collector commercial streets -- 70 ft. R.O.W.	Same.
Arterial streets -- 82 ft. R.O.W.	Same.

*4 ft. x 3-inch concrete sidewalk abutting the concrete curb may be constructed in substitution for standard sidewalks in minor streets when such construction meets with the approval of the director of public works.

Location and Placement of Sidewalks. Whether sidewalks are located on one side or both sides of a street depends on density of development, as we have seen. However, if a sidewalk is located on just one side of a street, the presumption must be that it will be used by adult pedestrians only. If its function is to serve also as a way for vehicles propelled by small children and for baby carriages, then location on one side only is unreasonable.

The question of sidewalk placement (with respect to street and property lines) is closely connected with the somewhat controversial question of curb type.

Rolled curbs are enthusiastically endorsed by builders. If rolled curbs are used, a savings of 20 per cent over cost of installing straight curbs and gutters can be realized because they are easier to lay and require less forming. Steel templates can be used, and only front and back forms are needed. Use of the rolled curb also eliminates the need for driveway cuts, curbs, and aprons, thus further reducing costs. (See The Community Builders Handbook, pp. 80-83 for discussion of further cost-cutting advantages. Also, pp. 32-33 of the Home Builders Manual for Land Development, revised edition, 1950, published by the National Association of Home Builders of the U. S., 1625 L Street, N. W., Washington 6, D. C.).

Types of curbs and their relation to sidewalks was one of the points considered by the special committee that prepared Building Traffic Safety into Residential Developments. Pros and cons of each type of curb were considered and the following recommendations made:

> In developed areas curbs are usually necessary to control storm-water runoff, and in most localities a curb height of about six inches is required. Either a straight curb or a roll-type curb has been used. The roll curb and gutter have some advantages in economy, as for example in obviating the necessity for curb cuts and curb returns at driveways. . . .If roll curb is used on local residential streets it is recommended that the combination curb and gutter be two feet wide, and that it be rolled on a 17-inch radius.
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> The principal advantage of the straight curb is that by its use, driving and parking areas are defined more effectively than by any other type curb. It constitutes more of a barrier to a vehicle out of control than a rounded roll curb. Children are less likely to ride wheeled vehicles into roadways having straight curbs of recommended 6-inch height. Straight curbs are recommended at all intersections, whether or not they are used elsewhere.
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> . . . . . .
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> The general consensus among those contributing to this report was against the placement of the sidewalk next to the curb, but there was not complete agreement. It was generally agreed, however, that the sidewalk should never be placed adjacent to any curb on

a feeder street. In other words, the sidewalk should not be placed next to the curb anywhere except on a local residential street with straight curb -- and even this had no strong support from the traffic standpoint.

Even if straight curbs are used, there are overriding disadvantages to placing the sidewalk next to the curb. This has been convincingly outlined in an article by L. K. White, City Engineer, Wichita, in the February 1949 issue of The American City titled "Where Should Sidewalks Be Placed?"

> For years it has been the practice in this city to build the sidewalk on line and grade where driveways are constructed to the property line, so that future sidewalk construction connects existing walks at the driveways.
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> A sidewalk can be built adjacent to the curb, but there are objections.
>
> 1. There will be a step at each driveway location, and in wet and snowy weather this part of the walk will be in water and snow. This step will be a hazard, particularly at night, because it will not be lighted as the steps are at the street corners.
>
> 2. A walk adjacent to the curb is also a hazard to children riding "wheel goods," such as roller skates, tricycles, scooters, and wagons. Driveways also present a hazard and limit the use of the walk for this purpose to the distance between driveways.
>
> 3. Walks have a slope of $\frac{1}{4}$-inch per foot for drainage; driveways have a slope of 1-inch per foot and sometimes more, which is "uncomfortable" to walk on and dangerous when wet or icy.
>
> 4. A walk adjacent to the curb should be 6 inches thick, as it will be subject to vehicular travel, with an increase of 50% in cost compared with the cost of a 4-inch walk, which is used at the property line.
>
> 5. Melting snow will be splashed onto a walk next to the curb by vehicles at night, will freeze, and in the morning, just when the children are going to school, it will be covered with a frozen mixture of snow, dirt and ice. City ordinance requires the property owner to keep his walk clean of snow and all forms of dirt and debris. We doubt if the ordinance could be enforced if daily cleaning were necessary.
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> 6. The detail at street crossing is very hazardous because the pedestrian must choose between crossing the street at the widest part of the intersection or make a detour back to the property line and back, which we doubt would be done. For crossings having a valley gutter (and nearly all do in this area), the walk line would be in water. For stop streets, the walk line would be 15 or 20 feet in front of stop signs.

7. A lawsuit involving a pedestrian accident at either a driveway or a street crossing would be difficult to defend by the city legal department on the grounds that in this city it is not the usual and customary construction. The owner of the "unusual" driveway could also be brought into the lawsuit.

8. For years the wire companies have placed their poles next to the curb, and if a change in policy requires moving the poles, we believe that they could justifiably ask to be paid for the cost of the work. Street-light poles must remain next to the curb in order to keep the fixture in the street and would be an obstruction. In fact, poles cannot be moved back of a curb walk because of the trees.

Recommendations of Building Traffic Safety into Residential Developments regarding sidewalk placement are as follows:

> Most technicians favored the recommendation that sidewalks be set back from the curb at least 3 feet, and if trees were planted in the strip the set-back should be at least 7 feet. Advantages of setting the sidewalk back from the curb 3 feet or more include: (1) There is space to pile snow removed from the roadway or sidewalk; (2) Pedestrians are not as likely to be "splashed" by passing cars; (3) There is a "safer" distance between the moving vehicle and the pedestrian; (4) Children are less likely to ride wheeled toys into the roadway over an "insulation" strip; (5) There is space for placing fire hydrants, utility poles and street signs outside of the sidewalk area.

One further recommendation remains and that is whether the set-back should be the minimum of three feet or wider to accommodate trees. Since the question of street tree placement was discussed in PLANNING ADVISORY SERVICE Information Report No. 86 (Land Development Ordinances: Grading; Curb Cuts and Driveways; Street Trees, May 1956), the reader is referred to this report for details.

In brief, the arguments against placing trees in planting strips are that they may cause blind intersections, obstruct the vision of both driver and children (who are apt to dash into the street when cars are passing), screen street lights, damage underground utilities, obstruct overhead utility lines, and cause difficutly in street widening. The new trend is to encourage or require that all trees and shrubs be planted on the far side of the sidewalk, away from the curb. Depending on width of right-of-way, this will mean either that trees will still be located on public property or within the private property line.

FINANCING SIDEWALK CONSTRUCTION

Sidewalks are in the class of public improvements known as local improvements. A local improvement is made in a particular locality, and it results directly in an enhancement of value to the property in that limited area. It also confers a type of benefit upon the area that is not enjoyed by all who are under a taxing jurisdiction.

In accordance with the theory of special benefit, sidewalks, generally speaking, are not eligible for general revenue financing.*

If sidewalks are installed at the time of land development, the cost is passed on to the buyer in the purchase price of the lot, or the house and lot together, as the case may be. If they are put in after land development, householders still pay for the sidewalk improvement, usually by special assessment.

Sidewalk Financing in New Residential Developments

By far the most common practice in new subdivisions is installation and payment by the developer in accordance with local ordinance. Usually he is required to finish construction of sidewalks (and other improvements as specified) prior to final plat approval or to post a performance bond in lieu thereof.

Evidence of the prevalence of this practice has been gathered in several different surveys. Most recent and comprehensive is that reported in the Urban Land Institute's Technical Bulletin No. 27, Utilities and Facilities for New Residential Development (1737 K Street N. W., Washington 6, D. C.; 1955, $3). For this survey of municipal policy on subdivisions, questionnaires were sent to 140 of the 237 cities with populations of 50,000 and over. Of the 114 cities replying, 75 (or 74 per cent) reported that the developer pays the entire cost of sidewalks. Sixty-seven of the 174 urban counties were also queried. In 31 out of the 43 replying, the developer is required to pay the entire cost of building sidewalks.

Fifty-one out of the 97 cities, counties, and townships whose subdivision regulations were inspected for PLANNING ADVISORY SERVICE Information Report No. 38, Installation of Physical improvements as Required in Subdivision Regulations** (May, 1952) require or may require sidewalks.

In the past, cities in the United States approved plats on hundreds of acres of unimproved land and accepted the financial obligation of putting in streets, sidewalks, sewers, and other facilities. The disastrous results of this policy are well known. It is largely because of the widespread losses incurred by city governments during the depression and the creation of vast

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*Statutes vary, however. In the State of Washington, for instance, a municipality may pay for sidewalk construction out of its general revenue, in accordance with a 1949 act. In addition, Washington cities may use two other methods in financing sidewalk improvements: the municipality may require the owner of the abutting property to construct the improvement at his own cost or expense; or it may do the work but assess all or any portion of the cost against the owner of abutting property.

**Companion reports are No. 48, Performance Bonds for the Installation of Physical Improvements (March 1953); and No. 58, Forms for Performance Bonds (January 1954).

areas of "dead" land that so many cities and a growing number of counties now require that improvements be installed before plats are approved and streets dedicated.

Special assessment financing of improvements in new subdivisions has not disappeared entirely, but it is no longer in favor for this purpose. Competent observers have pointed out that when a local government employs special assessment financing to build improvements in new subdivisions it is actually "taking a flyer" in the real estate business. (For further discussion see The Special Assessment Today with Emphasis on the Michigan Experience, by William O. Winter; Michigan Governmental Studies No. 26, University of Michigan Press, Ann Arbor; 1952. $2.)

Special assessment financing of sidewalks in new subdivisions compares unfavorably with builder-installed sidewalks in several respects. If sidewalks are built on a mass production basis at the same time as streets, curbs, and gutters, considerable economies in material, equipment, and labor can be realized. A large economy is effected in the cost of pouring concrete. Grading for all three types of structures can be done at the same time. However, it is important to time the building of walks so that they are not broken by heavy equipment rolled onto the lot during house construction.

In the matter of finance, the concentrated handling of all documents by one consolidated outfit is less expensive than the financing of several operations by different offices.

On the other hand, when heavy equipment is brought into an area where houses are already occupied it becomes a somewhat hazardous operation. If the municipality is involved in the contract -- as it is more often than not -- it is open to increased chance of public liability suit.

And finally, when a person buys a house and lot not fully served with local public improvements -- streets, sidewalks, and sewers -- he may be buying a pig in the poke. The ancient rule of caveat emptor still holds in the courts, but local governments are now more likely than previously to try to protect the unwary, as well as serve their own corporate interests. If the streets and sidewalks are yet to be built, the pro rata costs charged for installing them may increase the annual payments on the buyer's property enough to work a hardship in his budget. And in time, delinquent assessment payments will cloud titles. Neither of these possibilities is necessarily apparent at the time of purchase.

Though mass produced subdivisions are the predominant form of residential development at the present time, individual house construction is still taking place on platted land in relatively undeveloped areas. Where there are undeveloped properties between houses, it is neither practical nor desirable to require the individual owner to put in his own sidewalk. If sidewalks are needed in areas of this type, they will probably have to be financed by the methods used in older, sidewalk-deficient neighborhoods.

Sidewalk Financing in Established Neighborhoods

In built-up neighborhoods that need sidewalks, the most common method of financing is by special assessment. The extent of this practice is shown in the 1953 edition of The Municipal Yearbook (which reports the latest figures available), published by The International City Managers' Association, 1313 East 60th Street, Chicago 37, from which the following table is extracted.

Population group	No. cities reporting	No. cities using special assessments for sidewalks
Over 500,000	13	9
250,000 to 500,000 . . .	15	14
100,000 to 250,000 . . .	36	30
50,000 to 100,000. . . .	77	60
25,000 to 50,000	156	122
10,000 to 25,000	415	292
All cities over 10,000 .	712	527

The cities surveyed by ICMA used four principal methods of financing special assessment projects. (In addition to sidewalks, sewers, water lines, new street paving, repaving streets, curbs and gutters, off-street parking, and street lighting were financed by these methods.) The predominance of special assessment bond financing is shown in the following breakdown, also taken from The Municipal Yearbook, 1953:

Special assessment bonds		450
Bonds guaranteed by full faith and credit of city government	299	
Bonds secured by liens against the benefited properties	151	
Advance payments from property owners for all or part of the cost		143
Temporary loans from various city funds (usually revolving fund) with property owners repaying city over a relatively short period of time		220
Special certificates or property liens issued to contractor who in turn sells them to a local bank.		93

There are several methods of floating special assessment papers. In Texas cities, special assessment certificates are marketed by the contractor at a high rate of interest -- around 6 per cent. These certificates are heavily discounted, and in order to secure his investment, the contractor must boost his contract price, which also increases the building cost.

In Illinois, general assessment bonds are sold. These are guaranteed only by the special assessments actually collected. Interest rates run from 5 to 6 per cent -- about twice as much as general obligation bonds. Here also the bonds may be discounted as high as 30 per cent, with a compensating increase in contractor's bid.

The third method, sometimes known as the special general obligation bond, is used in Michigan and Wisconsin. In this type, the city appropriates enough money to meet the debt service cost in case of deficiency. These bonds sell at a slightly higher rate than general obligation bonds. However, since they are backed by the faith and credit of the city, they reflect the credit rating of the city and are not discounted.

Despite its disadvantages, the special assessment is the best method of financing sidewalks once the opportunity has passed for initial installation along with street paving. Readers considering its use are referred to the excellent Michigan study mentioned above -- The Special Assessment Today with Emphasis on the Michigan Experience.

Procedure and forms used in the various methods of financing sidewalks are described in Sidewalk Improvements, Informational Bulletin No. 126, published by the Association of Washington Cities in cooperation with the Bureau of Governmental Research and Services, University of Washington, Seattle 5, 1950. It is a useful manual even though limited to the statutory procedures permitted in one state.

CONCLUSIONS

Sidewalks, like babies and cars, are here to stay. In mass produced subdivisions -- the dominant form of city-building -- they are an adjunct of a mode of life. The trends that make sidewalks desirable or necessary now show no signs of declining in the future. Consequently, city and urban county governments can expect for some time to have to cope with the problem of seeing that sidewalks are installed.

Past experience has shown the inadvisability of relying on the special assessment to finance new local improvements. On the other hand, experience with laws that require developers to build sidewalks prior to plat approval shows, by three pragmatic tests, that they are successful: (1) sidewalks are in place when families move in; (2) cost and risk to local government is at a minimum; (3) lump sum payment in purchase price of house is more satisfactory for owner than taxes added later.

However, the special assessment is still a reliable method of financing sidewalks in built-up areas that lack sidewalks but need them.

In a period of rising capital improvement expenditures, municipal and urban county governments will be well advised to examine their current sidewalk policies and programs to see if they are designed to meet present and future demands for new sidewalks.