

STREETS AND TRAFFIC

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North Side Neighborhood Preservation Study
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FOREWORD

Funding for the North Side neighborhood preservation study was provided under the U.S. Department of Housing and Urban Development's Innovative Projects program, in response to a proposal titled "An Impact Evaluation Approach to Neighborhood Preservation and Enhancement". The award was made to the City of Iowa City, and the work carried out by the University of Iowa's Institute of Urban and Regional Research under a subcontract.

From our surveys (Impact Survey, report number 10, and Land Use Intensity, report number 3) and neighborhood discussions (Community Participation, report number 13), it became clear that there were two major sources of negative impacts on the North Side: those emanating from transportation -- streets, traffic, parking -- and those resulting from incompatible development. This report, along with the Parking report (number 6), deals with the former group of problems.

Kevin Laverty wrote the first draft, which was presented in preliminary form and subsequently revised by Mary Howard and myself, along lines suggested by Kevin.

DBL

TABLE OF CONTENTS

SUMMARY AND RECOMMENDATIONS	1
INTRODUCTION	5
Impacts Created by Roads and Streets	6
PROBLEM AREAS AND ALTERNATIVES	11
Negative Impacts Generated by Traffic on Heavily Traveled Streets	11
Proposals	15
Excessive Through Traffic on Residential Streets and in Alleys	17
Proposals	20
Conflicts Between Modes: Autos, Pedestrians, and Bicycles	27
Proposals	29
Circulation Improvement	33
Proposals	37
Drivers' Sightlines at Intersections	39
Burden of Street Maintenance on the City's General Fund	39
Proposals	42
REFERENCES	43

SUMMARY AND RECOMMENDATIONS

Trafficways are an important component of Iowa City's transportation system. The movement of people and goods is a necessary function which trafficways help to provide. Trafficways are also the source of what should be called "external" effects, because these effects impact persons other than users of roads and streets. As examples of these external effects, traffic noise may interrupt a telephone conversation or interfere with sleep; heavy traffic flows endanger pedestrians; and road salt kills grass, shrubs, and trees.

The goal of the transportation element of the North Side neighborhood preservation study is to protect residences and other land uses from the external effects of traffic while maintaining the circulation function provided by roads and streets. This closely parallels the overall study goal of protecting neighborhood resources while allowing change to occur. The major conclusions can be summarized as follows:

- Traffic on streets and in alleys has a significant negative impact on neighborhood quality in the North Side. Noise, fumes, physical danger, and unsightliness make the neighborhood less desirable and reduce property values.

- A balance among modes -- auto, bicycle, and pedestrian -- does not exist in the North Side because of the overwhelming predominance of the auto. Drivers and non-drivers alike seem to believe that auto traffic should not be inhibited in any way. The result is a pedestrian environment which is unpleasant and dangerous, yet most trips in the neighborhood are made on foot.

- Neighborhood residents are paying -- through property taxes -- for street maintenance and improvements that actually detract from the value of their properties. Renters and consumers pay these taxes indirectly, while street users are exempted from paying property taxes on streets.

Transportation and land use interactions are complex and often subtle, and a comprehensive strategy is necessary in order to avoid pushing the problems from one place to another. The following recommendations are based on the premise that the North Side must accept a relatively high level of through traffic as a necessary evil, but that the negative impacts of this traffic should be ameliorated and mitigated to the maximum extent feasible:

- 1) Pedestrian crosswalks need to be marked at all intersections that include an arterial street, and at many other intersections as well. Markings should be maintained in a permanent high state of visibility, to remind motorists that pedestrians frequently cross these streets and have as much reason to be there as motor vehicles.
- 2) In several locations, diverters or barriers should be erected to eliminate through traffic on residential streets and alleys by channeling it onto arterials. Experience in other communities indicates that such devices greatly improve the neighborhood environment but also arouse the virulent antagonism of a minority of motorists, so a program for installing diverters should be undertaken incrementally and with strong community support.
- 3) Residential uses on arterial streets should be buffered and/or screened against the negative impacts of traffic noise, fumes, dust, and unsightliness.

- 4) Signs that inform motorists of diverters, pedestrian crossings, a residential environment, bicycles, recommended routes to the hospital, etc., should be erected in appropriate locations.
- 5) Three intersections should be signalized: Church and Dubuque, Jefferson and Gilbert, and Market and Gilbert. Signals would improve safety at these busy intersections, help control the speed of arterial traffic, and provide protection for pedestrian crossings.
- 6) Bicycle routes and streets need to be improved by physical separators between auto and bicycle traffic, improved markings, and signs.
- 7) Residential streets feeding arterials can be "necked" by extending the curbs into the crosswalk; this indicates to motorists the entrance of a residential neighborhood and provides more protection for pedestrians.
- 8) Brick paving on residential streets should be retained, even replaced, since traffic tends to move more slowly on the uneven surface.
- 9) Sightlines at intersections should be kept as they are or reduced. Shorter sight distances require motorists to be more careful and drive more slowly on residential streets, and landscaping on corner properties (which may obstruct sightlines) adds to general neighborhood quality.
- 10) All improvements which are for the benefit of motorists or serve to protect pedestrians, bicyclists, residences, and residents from motorists, should be paid for out of highway user fees.

- 11) The City should begin to bring its street budget into balance, by funding only those projects that can be fully financed by highway user fees. Recent legislation to increase the state gasoline tax and increase the share apportioned to cities should greatly facilitate this budget balancing.

- 12) The City should begin to impose user charges (parking fees, annual registration fees, gasoline taxes) on motorists to help support the street system in the City. To the extent necessary, specific authorization should be sought at the state level.

INTRODUCTION

Planners have often claimed that automobiles and traffic are destructive influences on neighborhood quality, and the practice of subdivision design frequently reflects this potential for damage by maximizing the use of cul-de-sacs and minimizing the impacts of arterials through reverse frontages, landscape buffers, and earthen berms.¹ A large body of research has documented the microscopic impacts of noise from tires and engines, the distribution of air pollutants such as lead, asbestos, dust, carbon monoxide, particulates, and other hydrocarbons, and water pollutants such as petroleum products and by-products, chemicals used for snow removal, and others. Residents of urban neighborhoods often complain about truck noise, traffic danger, and too many automobiles.

Yet these negative impacts are seldom considered in planning for older neighborhoods. Housing programs focus on structures and occupants; when transportation is dealt with in the planning process, it is usually to recommend more street and parking capacity. Neighborhood residents also tend to think in terms of traffic and parking congestion, and accept gradually increasing volumes of arterial traffic passing through the neighborhood as inevitable. City officials, likewise, appear to regard the deterioration of inner neighborhoods as normal and high traffic volumes as necessary. To the extent that traffic is a blighting influence on neighborhoods, local public policy has generally been unwilling to recognize the problem.

¹See, for example, Residential Streets: Objectives, Principles and Design Considerations, published jointly by ULI, ASCE, and NAHB.

Impacts Created By Roads And Streets

Categories of readily observed external effects generated by traffic ways are listed in Table 1. Each of these effects is directly related to one or more of three factors: size of streets, number of streets, and traffic volume (including number of trucks). These effects are translated into impacts upon individuals or property located within the range of each effect. In general, the range is defined by distance from the source. A major highway bordered by agricultural land will therefore generate much less severe impacts than a similar facility bisecting a residential neighborhood, even though the levels of external effects produced are the same.

In addition to the effect of distance, the level of an impact can be reduced by a physical buffer. As an example, the visual impact of a street can be reduced by a vegetative screen.²

The relationship among the source, the external effect generated, the placement of a buffer, and the impact actually received is diagrammed in Figure 1. The impact felt from a given level of external effect at a given distance is shown in (a). In (b) the impact of the same level of external effect is less because of increased distance from the source. As the result of using a buffer in (c), the impact is reduced further. Whether distance from the source or

²The Highway Research Board report, "Effect of Highway Landscape Development on Nearby Property", offers methodology for assessing the impact of a highway upon a residential area as well as means for buffering the impact. Also, the NCHRP report on "Highway Noise: A Design Guide for Prediction and Control", contains information on barrier design and the assessment of barrier effectiveness in reducing noise.

Table 1. Categories of external effects generated by trafficways.

A. Physical

1. noise and vibration
2. erosion, runoff, and waterborne pollutants
3. dust and airborne pollutants
4. trash and litter
5. physical danger from moving vehicles

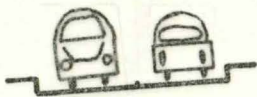
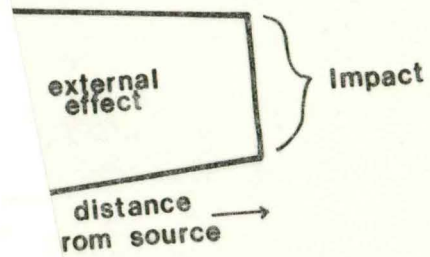
B. Non-Physical

1. visual and aesthetic
2. reduction in neighborhood quality

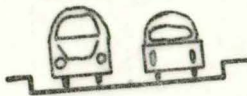
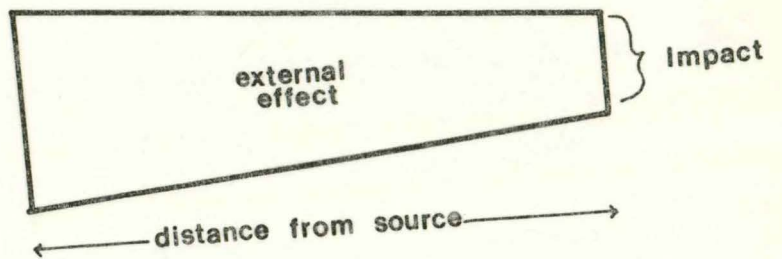
C. Fiscal

1. burden on General Fund
2. property tax lost as result of property value decline
3. property tax uncollected on street right-of-way

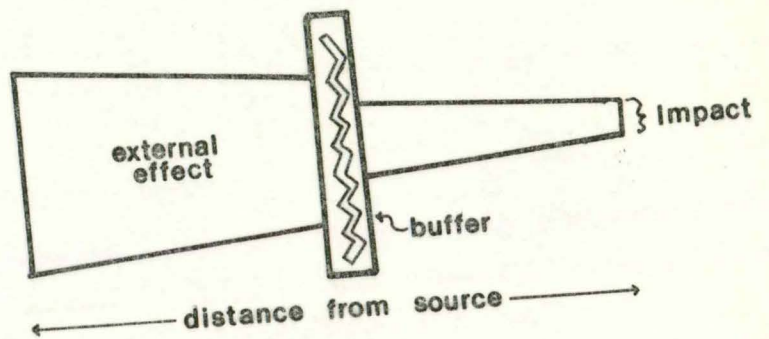
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b)



c)



source

Figure 1. RELATIONSHIP AMONG SOURCE, EXTERNAL EFFECT, BUFFER, AND IMPACT

buffering will produce a greater reduction in the impact will depend upon the specific external effects.

This general relationship has to be modified for a number of the external effects listed in Table 1. Physical danger from moving vehicles occurs in a fairly well-defined space, except for cases in which vehicles leave the roadway. Therefore, the smooth decay of the effect with distance, as shown in Figure 1, would be replaced by a discontinuous drop of the effect at the edge of the roadway.

The range of the effect of trafficways on overall neighborhood quality (above and beyond the specific effects listed) is not easily pinned down: it depends upon how a resident defines his/her "neighborhood". Thus, a major through street four or five blocks away can have a severe impact on neighborhood quality if it bisects what is perceived as the neighborhood, even though the physical effects four blocks from the source are likely to be minor. This is because streets with large volumes of traffic create a barrier -- psychological in addition to physical -- between what lies on either side.³

The residents of a specific jurisdiction also suffer the fiscal impacts of trafficways, either directly through tax payments or indirectly through rents. Thus, streets that are maintained from the General Fund place a property tax burden on all Iowa City residents. At the same time, the North Side

³Traffic creates not only a barrier effect but also reduces the livability of the neighborhood and leads to negative attitudes toward the neighborhood on the part of residents as well as having a generally depressing effect. One study which demonstrates these results in considerable depth is Donald Appleyard and Mark Lintell, "Environmental Quality of Streets: The Residents' Viewpoint", Highway Research Record, No. 356 (1971), pp. 69-84.

property tax base is being reduced by the negative impacts of streets and traffic.

PROBLEMS AND ALTERNATIVES

Five problem areas have been identified by drawing from the list of external effects presented previously, from the neighborhood Impacts Survey conducted during the summer of 1976, and from block meetings conducted during the spring of 1977. These areas of concern are:

- negative impacts generated by traffic on heavily-traveled streets
- excessive through traffic on residential streets and in residential alleys
- conflicts between modes: autos versus pedestrians, autos versus bicycles, and bicycles versus pedestrians
- circulation bottlenecks
- driver's sightlines at intersections
- burden of expenditures for street maintenance (and construction) on the City's General Fund

Within each of these areas the problems are described, analyzed, and a range of proposals offered that could be included in a solution to the problems.

NEGATIVE IMPACTS GENERATED BY TRAFFIC ON HEAVILY-TRAVELED STREETS

Figure 2 indicates the average daily traffic (ADT) on the major streets in and adjacent to the North Side. Dubuque, Dodge, Governor, Market, Jefferson and Church Streets generate severe negative effects of the types noted in the first section of this report. The impacts on the North Side are significant, because low- and medium-density residential activity borders most segments of all these streets.

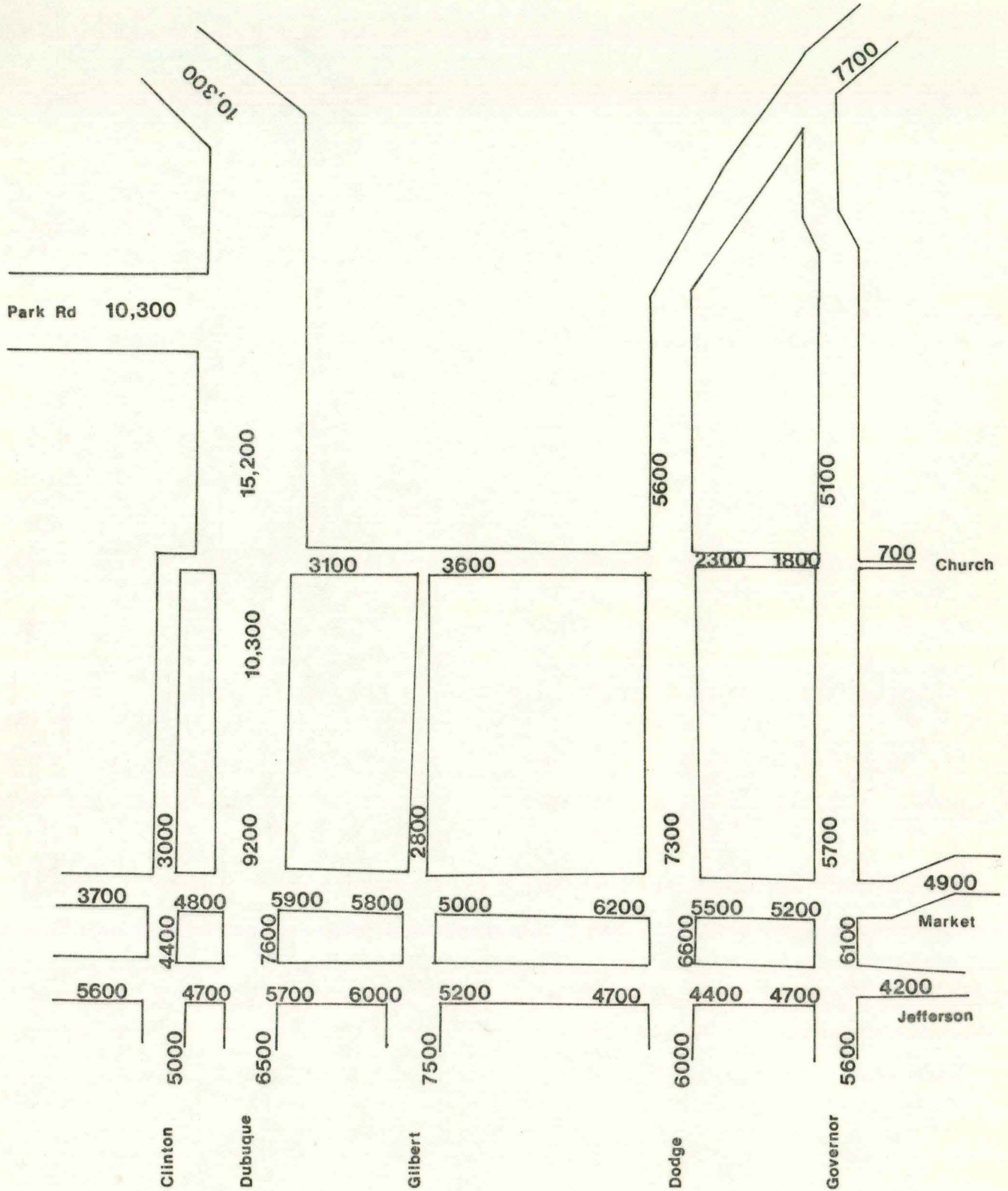


Figure 2. 1975 AVERAGE DAILY TRAFFIC (ADT)
 Source: Iowa City Department of Public Works
 Engineering Division



DUBUQUE ST
LINN ST
GILBERT ST
VAN BUREN ST
JOHNSON ST
DODGE ST
LUCAS ST
GOVERNOR ST

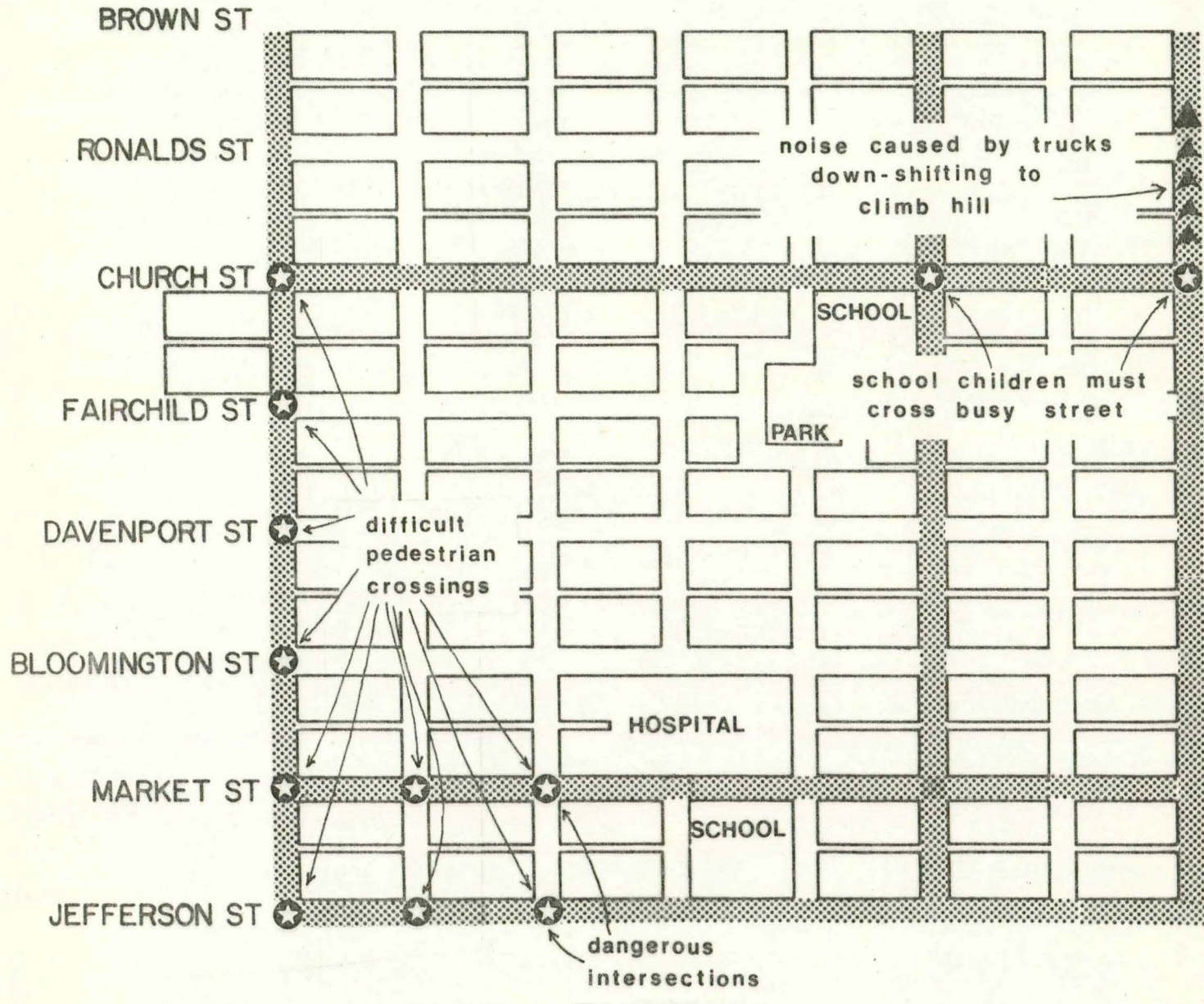


Figure 3. MAJOR THROUGH STREETS AND EXAMPLES OF TRAFFIC IMPACTS

Certain streets generate greater negative effects and the impacts upon adjacent land are greater because of higher percentages of truck traffic. Dodge and Governor Streets have the most truck traffic in the North Side, because of their designation as Iowa Highway 1.

The impacts arising from noise, vibration, erosion, runoff, waterborne pollutants, dust, trash, physical danger, visual, and aesthetic effects are the most concentrated around streets with heavy traffic flows. This is significant for two reasons. First, many of the impacts of traffic are concentrated upon property adjacent to the streets; the impacts are more severe if the effects are not buffered or otherwise ameliorated.⁴ Second, any increase in traffic, whether due to increased development which generates additional travel, or the result of street improvements, will generate additional external effects which will again impact most severely upon those properties adjacent to the major streets.⁵

Figure 3 highlights the most heavily traveled streets of the North Side and indicates a few of the more severe impacts of traffic.

⁴The Socio-Economic Studies Division of the Federal Highway Administration published a report in 1976 entitled The Social and Economic Effects of Highways which might be useful in looking at the effects of traffic. Particularly relevant in the report was a study of social effects of auto traffic on urban streets, that found that heavy traffic caused residents either to move away from the street or to retreat from the front of the house.

⁵Technology Review published an article in January, 1978 entitled "The Carcinogenic Automobile". The article makes the case that there is a strong correlation between the amount of highway traffic and the observed mortality from cancer. This would be a strong argument against generating any additional travel through residential areas.

Proposals

- 1) Increase tree planting as a buffer to various external effects of traffic. Large trees, small trees, and shrubs or hedges can be used to ameliorate visual impacts and, to some extent, to reduce noise. Such planting should be undertaken along the streets noted in Figure 2.⁶
- 2) Construct sound barriers along Dubuque Street to ameliorate the severe noise impacts suffered by adjacent structures. Barriers could be landscaped walls or landscaped berms.⁷
- 3) Return Dodge and Governor Street to two-way status. Through traffic on these one-way arterials (designated as Iowa Highway 1) often exceeds posted speed limits (25 mph) and severely impacts the neighborhood. Making Dodge and Governor into two-way streets while continuing to designate southbound Dodge and northbound Governor as Highway 1, prohibiting northbound truck traffic on Dodge, and making the circulation improvements indicated in Figure 4, would improve the balance between the concerns of residents and of through traffic. If an east side through route

⁶Hall, Birnie and Taylor of McMaster University presented a paper in 1978 entitled "The Effectiveness of Shielding in Reducing the Adverse Impacts of Highway Noise". In it they argue that psychological attitudes are important when constructing sound barriers: "Our results indicate that a tree screen has more 'impact effectiveness' than a concrete wall. This would seem to be a simple matter of aesthetics--the former is more pleasant to look at than the latter".

⁷The office of Environmental Policy, Federal Highway Administration, has published a guide, "Fundamentals and Abatement of Highway Traffic Noise: Noise Barrier Design and Example Abatement Measures" (April, 1974). This guide provides data on barrier placement, materials, configuration, and design.

Key to symbols:

Ⓢ stop sign

↩ left turn lane

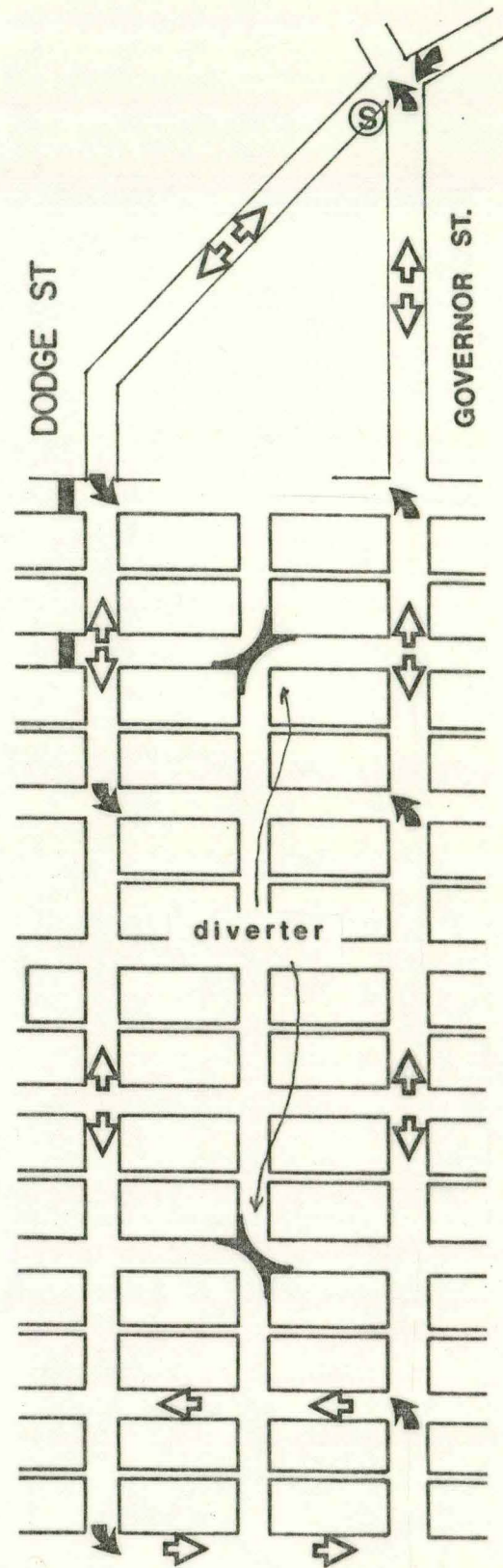


Figure 4. CIRCULATION IMPROVEMENTS FOR PROPOSED TWO-WAY DODGE AND GOVERNOR, AND ADJACENT STREETS

(such as the Scott Blvd. proposal) is constructed as Highway 1, all through truck traffic on both Dodge and Governor Streets would be banned.

EXCESSIVE THROUGH TRAFFIC ON RESIDENTIAL STREETS AND IN ALLEYS

Significant negative impacts are created by relatively small amounts of traffic on residential streets (i.e., streets other than the major through routes noted in the previous section) and in residential alleys. In addition to the general impacts which have been noted, through traffic is likely to move at a higher speed than local traffic, resulting in a higher possibility of collisions, greater inconvenience and danger to pedestrians,⁸ and more severe noise impacts. A balance must be struck between these impacts and the access requirements of residents.

Figure 5 indicates the location of residential streets on which excessive through traffic has been observed. In each instance the street provides a connection between major through streets. Although arterial streets are designed to carry this through traffic, a certain number of vehicles flow through residential streets, largely because of the grid layout of North Side streets. Significantly, two streets with very little through traffic are Johnson

⁸P.B. Goodwin and T.P. Hutchinson emphasized this point in an article entitled "The Risk of Walking", Transportation 6, 3 (September 1977):

"Accident rate per distance traveled is estimated to be 5 times higher for pedestrians as auto drivers. Likelihood of accident goes up with the product of vehicle and pedestrian flows." (emphasis added)

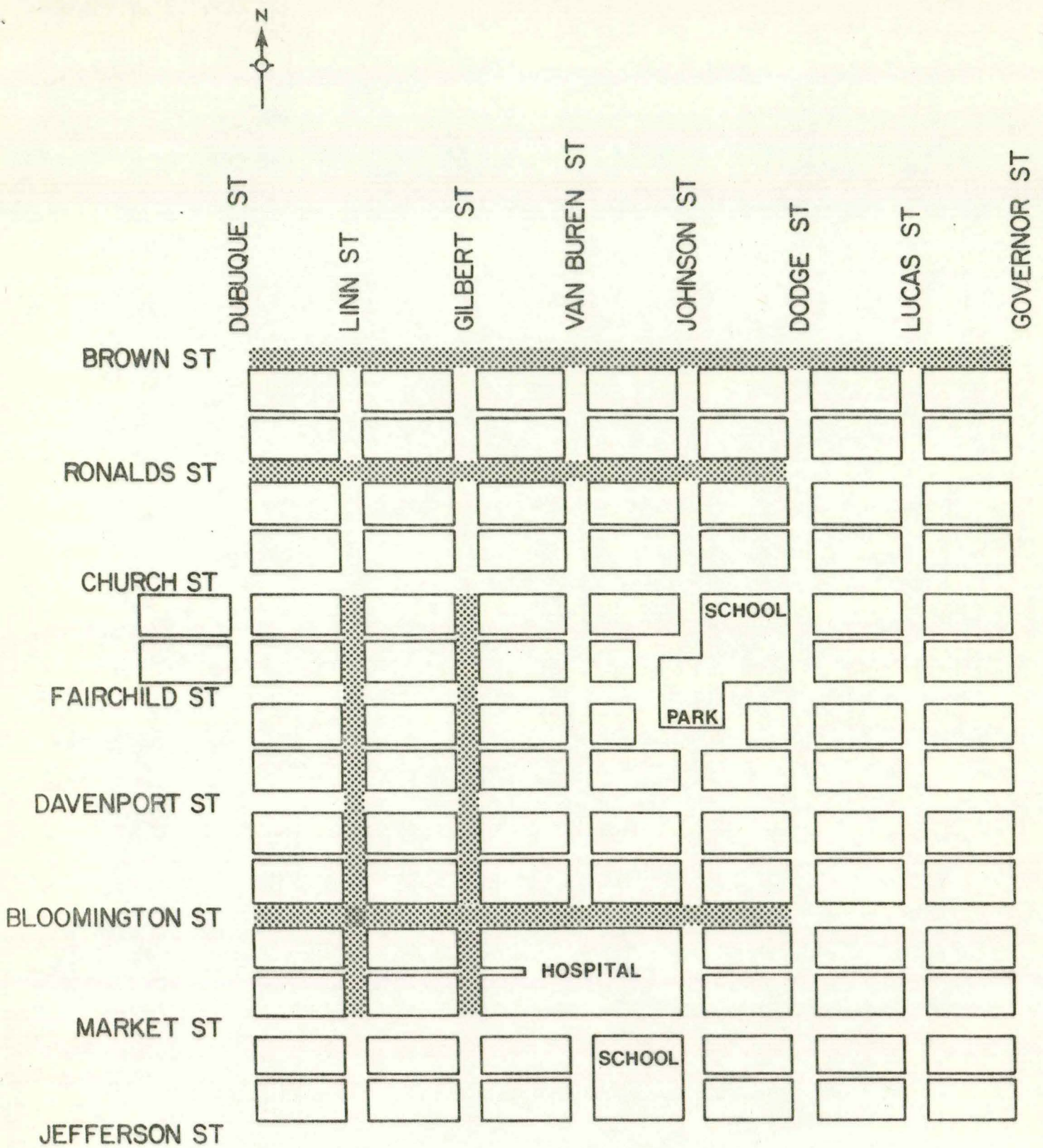


Figure 5. RESIDENTIAL STREETS ON WHICH EXCESSIVE THROUGH TRAFFIC HAS BEEN NOTED

Street and Fairchild Street, which are aligned so that vehicles must make several turns to go around North Market Park.

As the result of this grid pattern, the traffic circulation pattern in the North Side is essentially one of "filtering". Larger amounts of traffic use the major streets because of the greater safety and ease of movement, but there is no active "channeling" (i.e., forcing traffic onto major streets) in the current layout.⁹

Excessive through traffic seems to be the result of individual drivers choosing the "best" route. For example, Brown Street is used (rather than Church Street) as a connection between the north parts of Dodge and Dubuque Streets because the street is the most direct route, has no stop signs and little through

⁹The Berkeley Neighborhood Traffic Study Summary lists several means of traffic control:

"Assignment of more officers to traffic enforcement is presently needed in any case, but the least costly and most effective means of control is with self-policing devices. Diverters, normally a diagonal barrier across a four-way intersection, force traffic to turn, while a closure blocks all traffic. Semi-diverters close half of a street, permitting entry or exit in one direction, but may be subject to frequent violation. Median barriers prevent left turns and cross traffic, but permit through traffic flow. Traffic circles constructed in the middle of existing intersections reduce conflicts and speed, but have little effect on volumes and cause increased automobile-bicycle conflict. Chokers reduce street widths at intersections, increasing sight distances and enhancing pedestrian safety. Stop signs assign priority at intersections, but cause local noise increase and have proven ineffective for speed control or traffic diversion.

traffic; in short, the reduction (by four blocks) of the distance traveled makes Brown Street a desirable through route (see Figure 6). This through traffic generates significant impacts and disruption of the neighborhood.

Through traffic in alleys is the result of the same kind of behavior by drivers, although alleys are probably used as a one or two block "shortcut" rather than for longer trips. Through traffic in alleys is dangerous and inconvenient to residents and creates a great deal of dust and wear in the unpaved alleys.

Two different types of strategies can be used to reduce through traffic on residential streets and in residential alleys: a) Reduce the desirability of these local streets as through routes with measures ranging from the installation of stop signs to physically blocking vehicular access. b) Increase the attractiveness of selected through streets, relative to residential streets, through design considerations such as increased number of lanes, wider lanes, reduced number of points of access, speed limit increases, etc.

In general, direct strategies to discourage undesirable through traffic are preferable to improvement of through streets. First, improvement of through streets would exacerbate the negative effects which those streets currently generate. Second, direct discouragement of through traffic is the only way to catch all the possible trips on the street network which could potentially use residential streets.

Proposals

- 1) Construct traffic diverters on selected residential streets to discourage through traffic. Diverters would connect either the northwest and

↑
Mayflower Apts.,
Forest View Trailer Court
Interstate 80

← Park Rd., Hancher Auditorium,
Coralville

↗
Westinghouse, A.C.T.,
Prairie du Chien Rd.,
Interstate 80

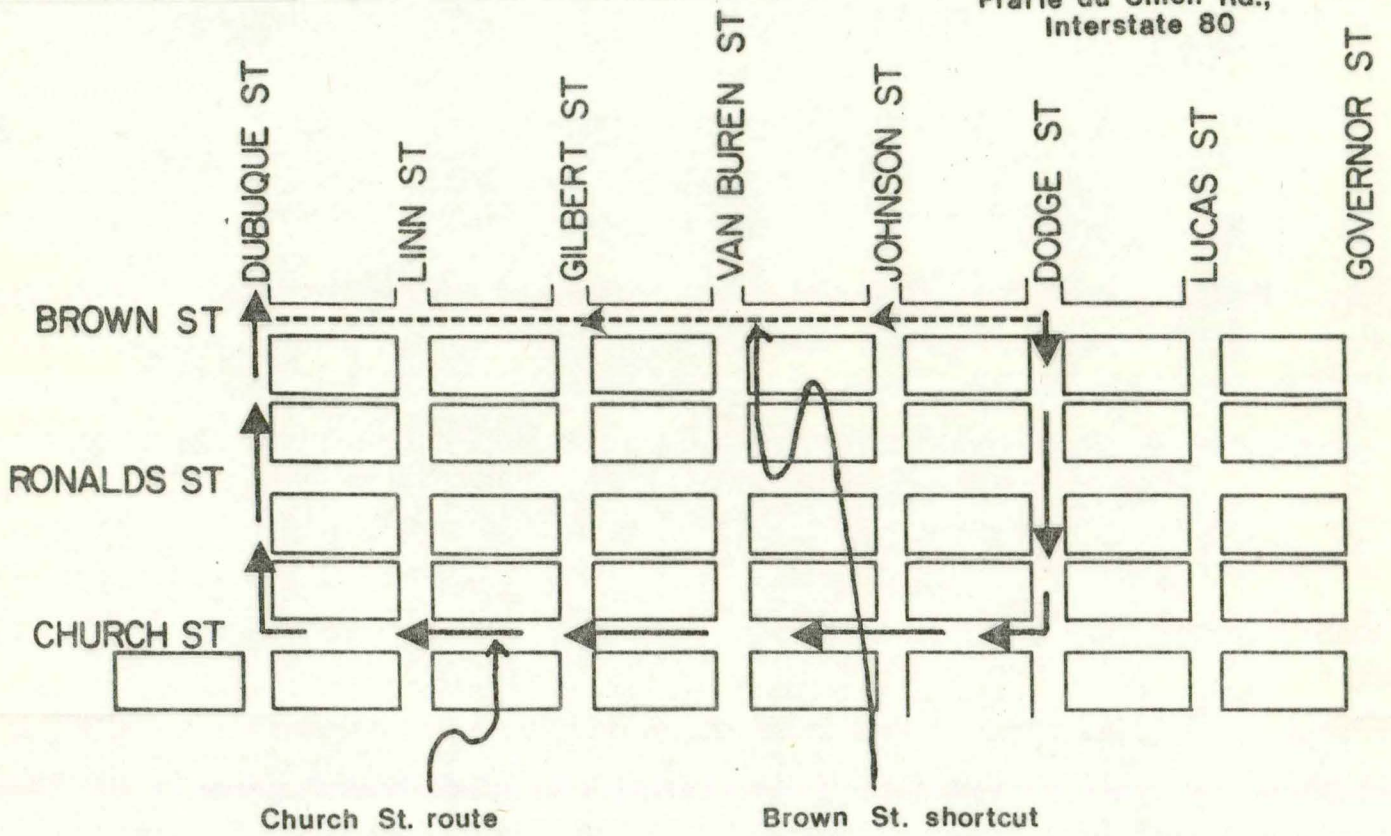


Figure 6. THE BROWN STREET "SHORTCUT"
FROM NORTH DODGE TO NORTH DUBUQUE

southeast corners of an intersection or the northeast and southwest corners, thereby preventing through vehicle movement by forcing either a right or left turn. Curb cuts should be made to allow passage of bicycles, shopping carts, etc. Figure 7 shows what a traffic diverter at the corner of Fairchild and Linn Streets might look like. Possible locations of traffic diverters throughout the North Side are shown by Figure 8.

- 2) Make special effort to reduce traffic impacts on Church Street, because of its primarily low-density single family character and because of the historic significance of its houses. Church Street probably cannot be replaced in its role as an east-west link, yet increased traffic would have severe impacts on the residences, many of which lie close to the right-of-way. Any proposed circulation improvement which could be expected to increase traffic (e.g., prohibiting parking to widen traffic lanes) should be carefully examined in this light.
- 3) Construct barriers at the intersection of a residential street and an arterial, preventing traffic from using that point of access to the residential street.¹⁰ Barriers could be used at intersections such as the corner of Dodge and Brown Streets, for example, because the through traffic problem on Brown Street would be difficult to solve with

¹⁰This has been done in Dubuque, Iowa, on a residential street. According to an article March 29, 1978 in the Des Moines Register, traffic has been cut down considerably on that residential street, but the barriers have been strongly criticized for upsetting traffic circulation and adding to traffic congestion on other streets. Another objection sometimes raised is the increased difficulty of snow removal on blocked-off streets. Anything which physically forces motorists to change ingrained habits will produce a strong negative reaction in the initial stages of implementation. Diverters and barriers have been in use for several years in Berkeley, California; part of this experience is evaluated in the De Leuw, et al, report on the Berkeley Traffic Management Plan.

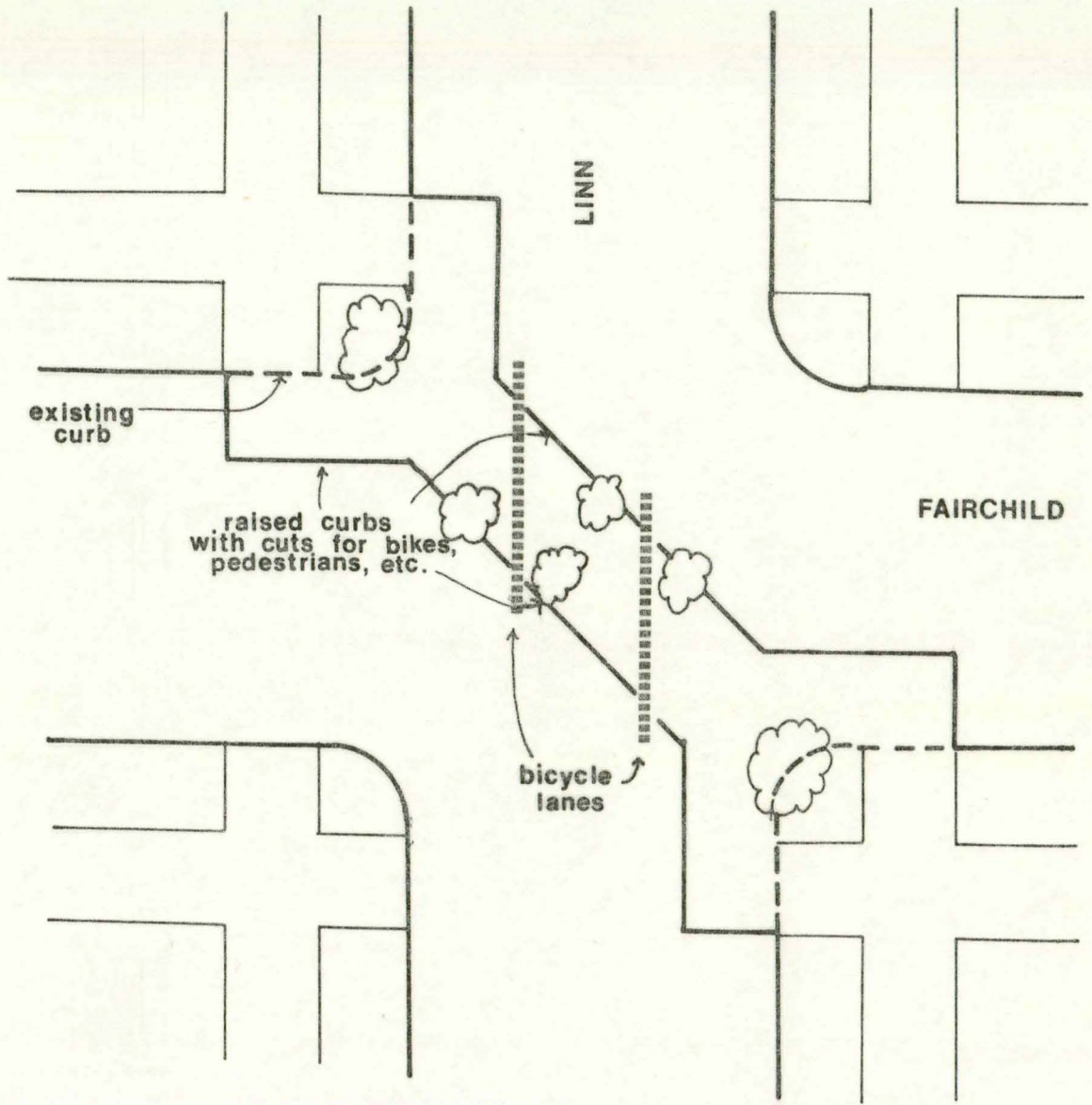


Figure 7. DIVERTER EXAMPLE AT FAIRCHILD AND LINN STREETS

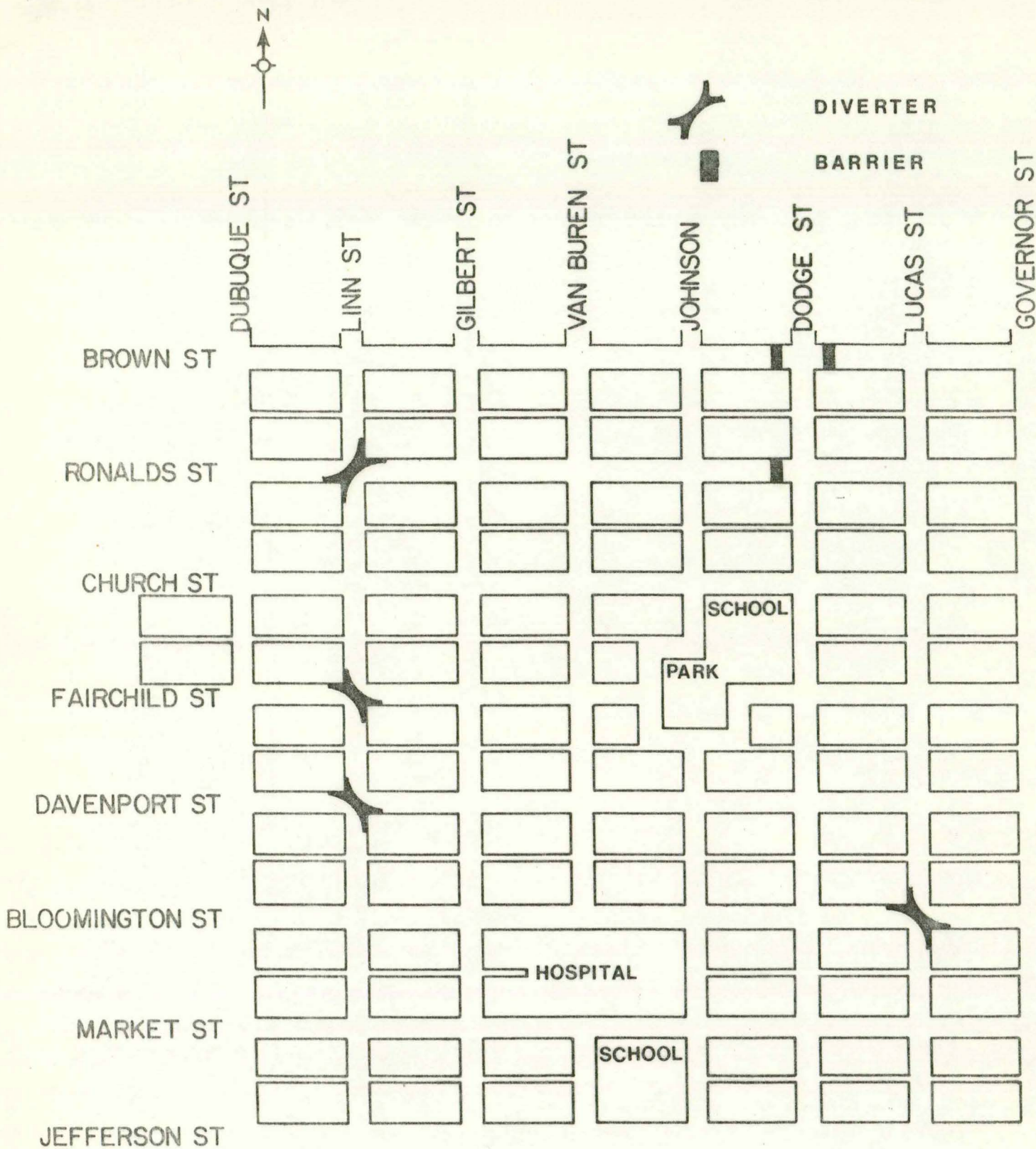


Figure 8. POSSIBLE LOCATIONS FOR TRAFFIC DIVERTERS AND BARRICADES

diverters. Barriers would create cul-de-sacs, which diverters would not. Possible barrier locations are also shown by Figure 8.

- 4) Increase the use of signs, both for traffic control and also for driver awareness of a residential neighborhood. Signs such as "slow -- entering neighborhood" or "traffic diverters ahead" or "no through traffic" could be used to discourage circulation on residential streets. Increasing the use of "stop" signs would have some effect in slowing down and making the streets less desirable through routes. However, such "stop" signs would quickly become routine to the average driver, who might then fail to heed a similar sign at the intersection with an arterial, where a full stop before proceeding is imperative for safety reasons.
- 5) Maintain and restore brick surfaces. (See figure 13 below).
- 6) Construct barriers at one end of alleys. This measure would absolutely prevent through traffic.
- 7) Install speed control bumps. Raised bumps on the pavement, such as are in use at City High School, serve both to reduce vehicle speed and discourage through traffic. These devices would have the side effect of inconveniencing residents who use the alley as auto access to their properties, as well as bicyclists and persons with baby strollers or shopping carts. In addition, the City might be liable for damage to private cars, and City vehicles (such as Sanitation Department trucks) which use the alleys would suffer additional wear.
- 8) Make alleys one-way opposite observed flow of undesirable through traffic. Locations of various alley problems are shown in figure 9.



- BRICK
- EXCESSIVE THROUGH TRAFFIC
- GRAVEL

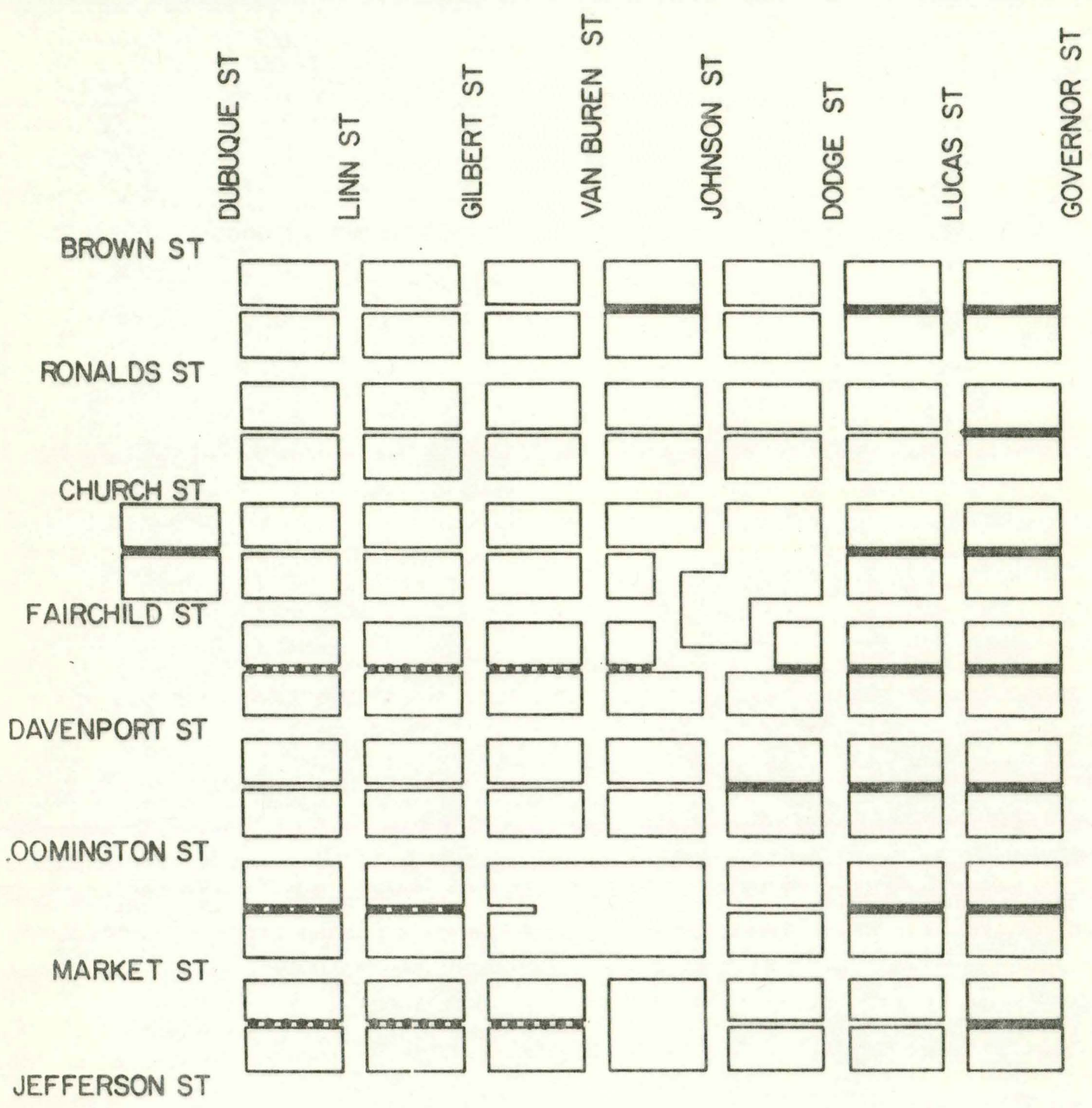


Figure 9. ALLEYS IN THE NORTH SIDE

- 9) Construct raised medians at mid-block on north-south streets. This would have two effects: (1) traffic could move no more than one block length in an alley, (b) left turns into alleys would be discouraged. Figure 10 shows an example of such a construction on Gilbert Street between Market and Jefferson Street. Raised medians would have the disadvantages of reducing alley access to residents and creating a solid mass in the street which moving vehicles would have to avoid.

CONFLICTS BETWEEN MODES: AUTOS, PEDESTRIANS AND BICYCLES

Because of varying travel patterns and speeds, conflicts between autos (and other motor vehicles), bicycles and pedestrians can be expected unless each mode has a separate right-of-way with no crossings. Pedestrians and bicycles (generally) move at speeds lower than desired by auto drivers (for themselves), while autos pose physical danger to non-motorized travelers. Pedestrians often have to wait for all auto and/or bicycle traffic to pass before a street crossing is attempted, because these faster-moving modes consider stopping or even slowing down an unnecessary inconvenience.

The existing situation in the North Side displays three aspects of these conflicts among modes:

- pedestrians crossings of streets are poorly marked and maintained.
- east-west bicycle lanes are marked only on Jefferson and Market Streets, and there are no north-south bicycle lanes.
- auto drivers often fail to give proper consideration to pedestrians and bicycles.

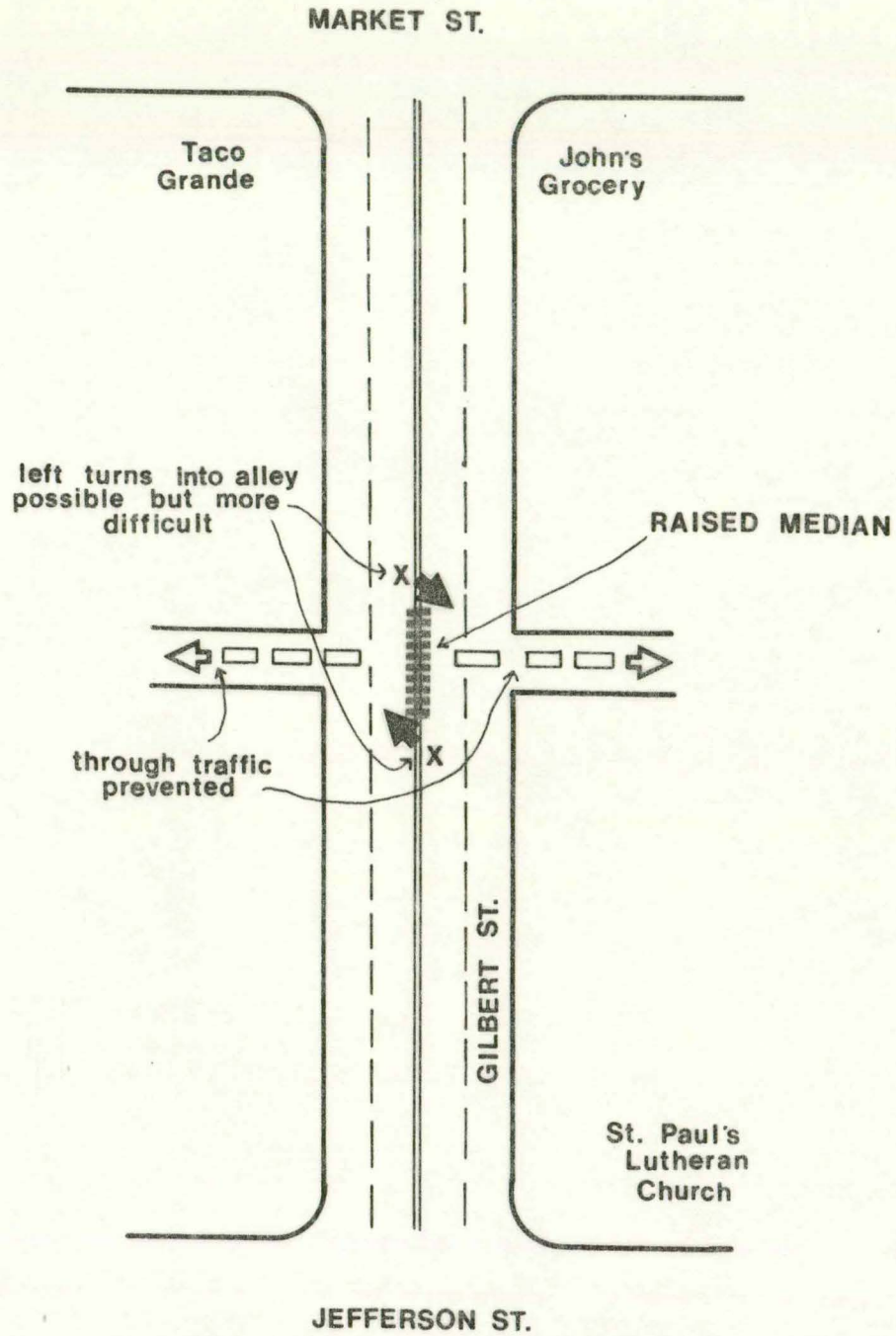


Figure 10. RAISED MEDIAN EXAMPLE ON GILBERT ST. BETWEEN MARKET AND JEFFERSON STREETS

The character of the North Side requires a balance between autos and other modes. Many residents -- families with children, students, and others -- have chosen to live in the North Side because the neighborhood permits them to rely less upon the automobile than they would in other areas. The current trafficways situation in the North Side is best described as one of "auto dominance"; auto travel is strongly favored to the detriment of pedestrian or bicycle travel.

Proposals

- 1) Paint crosswalks regularly or re-surface with material which contrasts with road surface. As shown in Figure 11(a), the current trafficways alignment maintains the integrity of lanes for vehicular travel, while pedestrians have to "cross" streets, which can be psychologically and physically intimidating. Figure 11(b) diagrams a suggested improved pedestrian environment, in which crosswalk surfaces are made of the same material as the sidewalks. This measure would increase awareness of pedestrian areas, but drivers would have to yield to pedestrians at crosswalks (either voluntarily or as the result of enforcement) in order to effect safer and more convenient pedestrian travel.¹¹
- 2) Erect signs at crosswalks informing drivers of pedestrian right-of-way.

¹¹According to an August 1977 article in the Des Moines Register, Cedar Rapids initiated a system in which pedestrians are instructed to extend their arm in order to obtain right-of-way at crosswalks. The Register comments that there has been trouble with enforcement of this, however, because police feel there has to be contact to warrant writing a ticket.

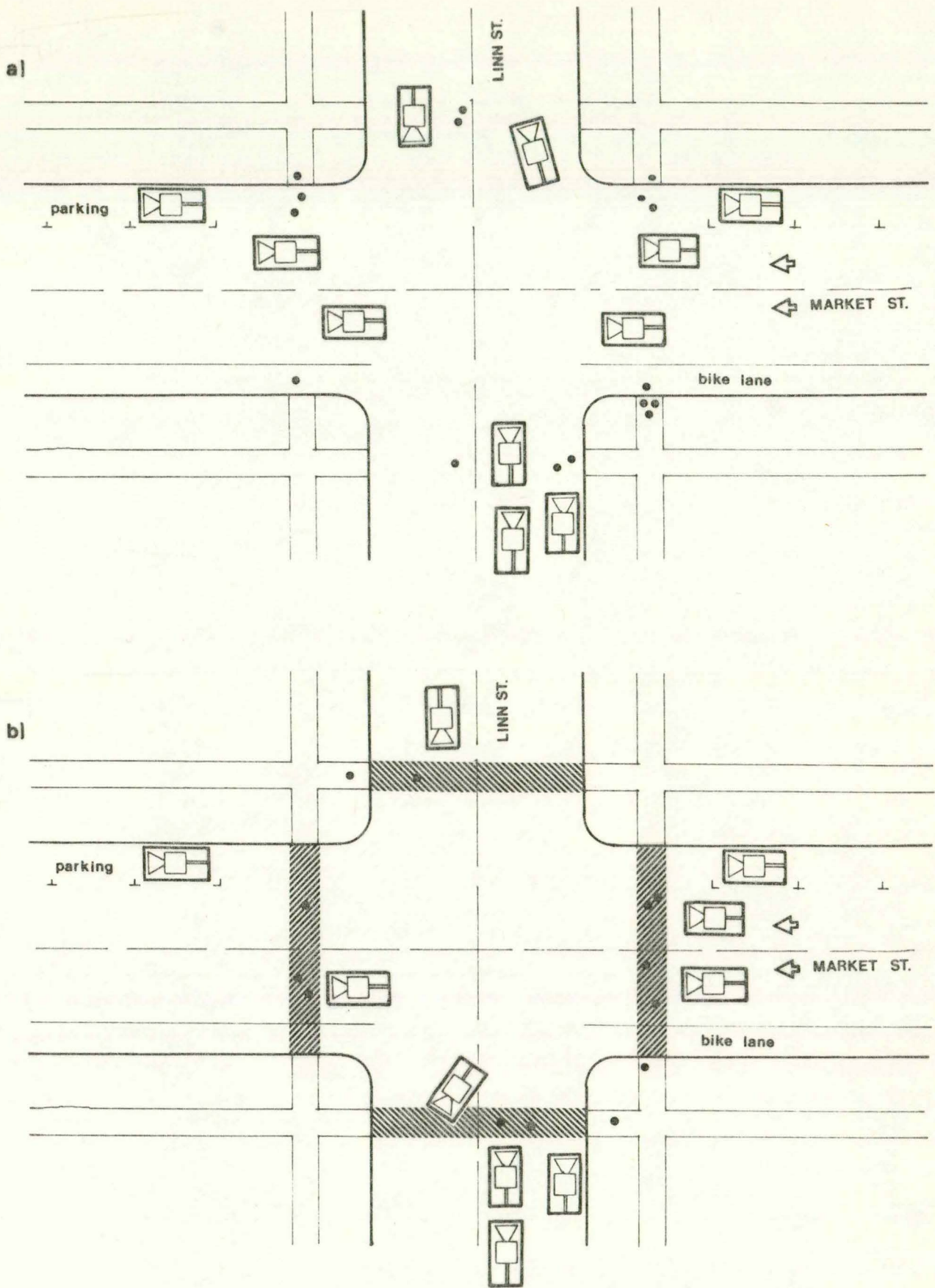





Figure 11. EXAMPLE OF IMPROVED PEDESTRIAN CROSSWALK AT MARKET AND LINN STREETS

- 3) Integrate alleys, traffic diverters, barriers, and "necking" of intersections (see Figure 15 under circulation improvement) into an overall improved pedestrian environment.¹²
- 4) Construct a pedestrian overpass of Dubuque Street at Brown Street. Many pedestrians cross here, and other solutions involving stopping traffic (e.g., a traffic light) may be infeasible because of the hill on Dubuque Street.
- 5) Separate bike lanes from traffic lanes by raised curbs.
- 6) Paint bike lanes a contrasting color.
- 7) Provide additional bike lanes and/or "bike streets". Figure 12 indicates existing bike lanes in the North Side (westbound on Market Street and eastbound on Jefferson Street) and suggested routes for either new bike lanes or designated bike streets. Bike lanes involve some level of maintenance expenditure, but this is probably unnecessary unless a major street is designated as a bike route. Residential streets can be designated as "bike streets" upon which autos would be required to yield the right-of-way to bicycles, and autos would be prohibited from overtaking bicycles (a movement which often endangers bicyclists). Routes for bike lanes/streets should be selected on the basis of suitable surface (for example, the brick surface of Linn Street is less than ideal, although the street's width suggests that it would be good for bike lanes) and usefulness of

¹²The UMTA booklet Central City Environment and Transportation states "Immediate and dramatic improvements in pedestrian amenities can be made by enlarging and making better use of sidewalk space to improve pedestrian crosswalks and transit stops or to enhance other pedestrian activities, such as sitting and window browsing. Plants, trees, shrubs, grass, and pavement designs create interest and beauty. Vegetation can provide shade and protection." (p. 54). Many examples are shown from around the U.S.



-  PROPOSED TRAFFIC LIGHTS
-  SUGGESTED BIKE STREETS
-  EXISTING BIKE LANES

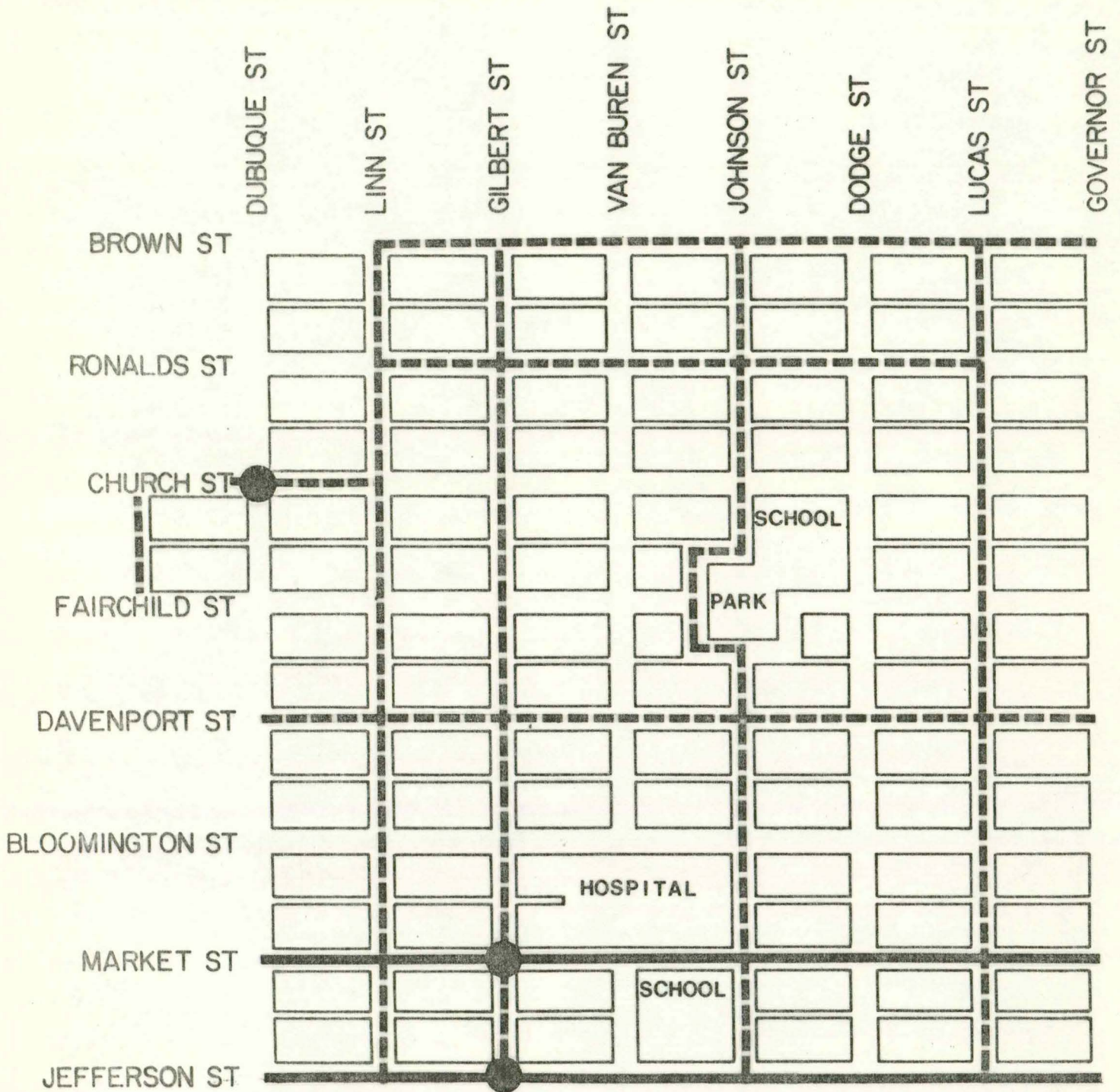


Figure 12.

BIKE STREETS AND TRAFFIC LIGHTS

the route for bicycle travel. Bike routes on Davenport, Gilbert, Johnson, and Lucas Streets could become part of a city-wide bicycle route system.

- 8) Maintain, protect, and restore (where asphalt patches exist) the North Side's brick streets. These are seen as an important resource to the neighborhood and also help to discourage through traffic because of the rough surface. Brick streets of the North Side are indicated in Figure 13.
- 9) Protect other resources associated with but incidental to trafficways, such as large trees on the parking.

CIRCULATION BOTTLENECKS

An expression of the need for "better streets" is often stated by residents; this phrase can be translated into faster and more convenient circulation. Figure 14 locates some of the points of difficult traffic movement that were brought up during the block meetings held during the spring of 1977.

Two important ideas need to be discussed that are not usually fully considered in the demand for improved traffic circulation. First, the problem areas previously discussed in this section (negative impacts generated by traffic on heavily-traveled streets, excessive through traffic on residential streets, in residential alleys, and conflicts between modes) can be aggravated through street improvements. Faster traffic flows on arterials, for instance, are likely to make the impacts of these streets more severe. Circulation improvements will do little to discourage through traffic on residential streets, and may actually increase the number of vehicles, since easier access for residents is also easier access for through traffic. Smoother, faster

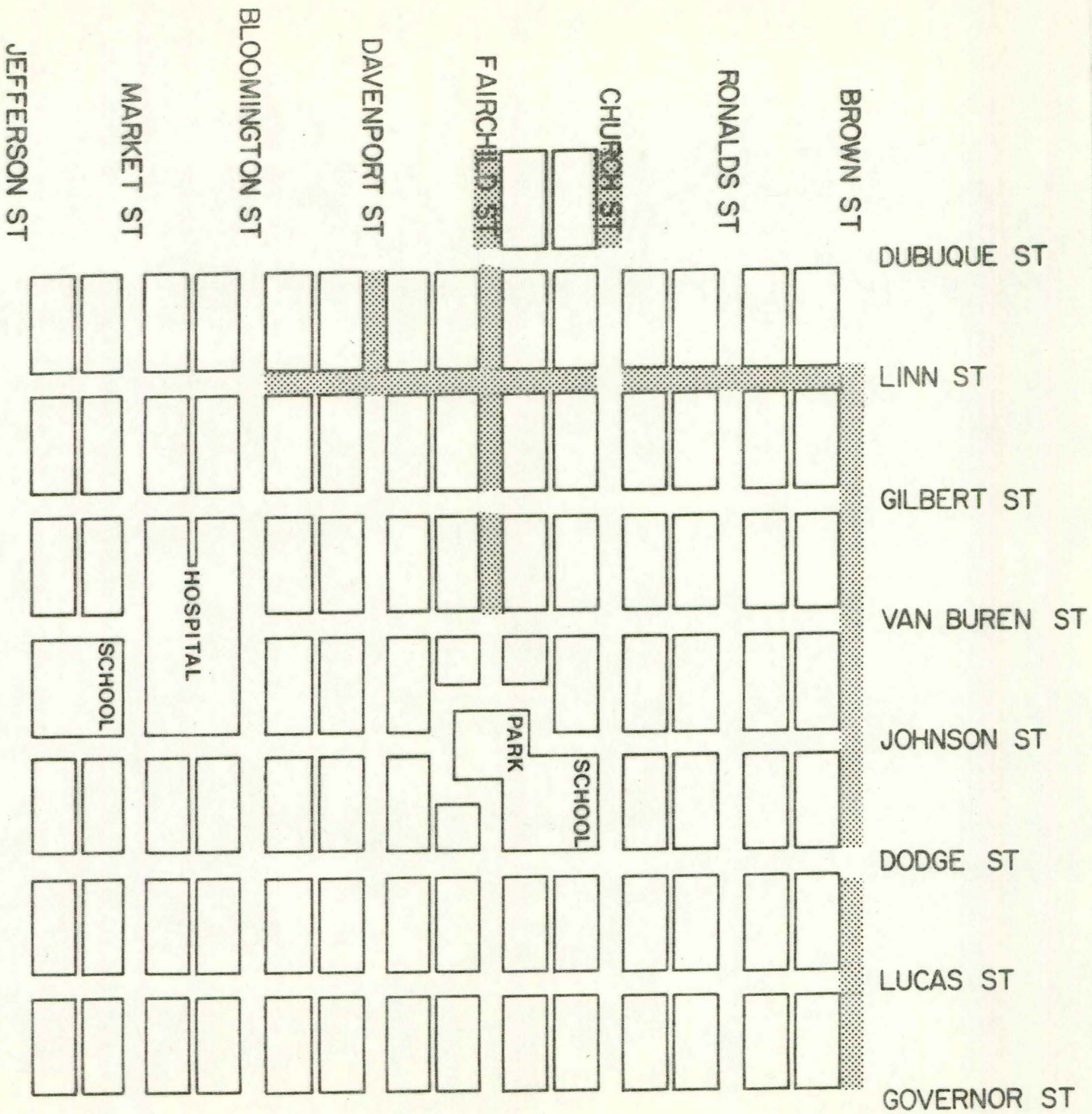


Figure 13 BRICK STREETS OF THE NORTH SIDE

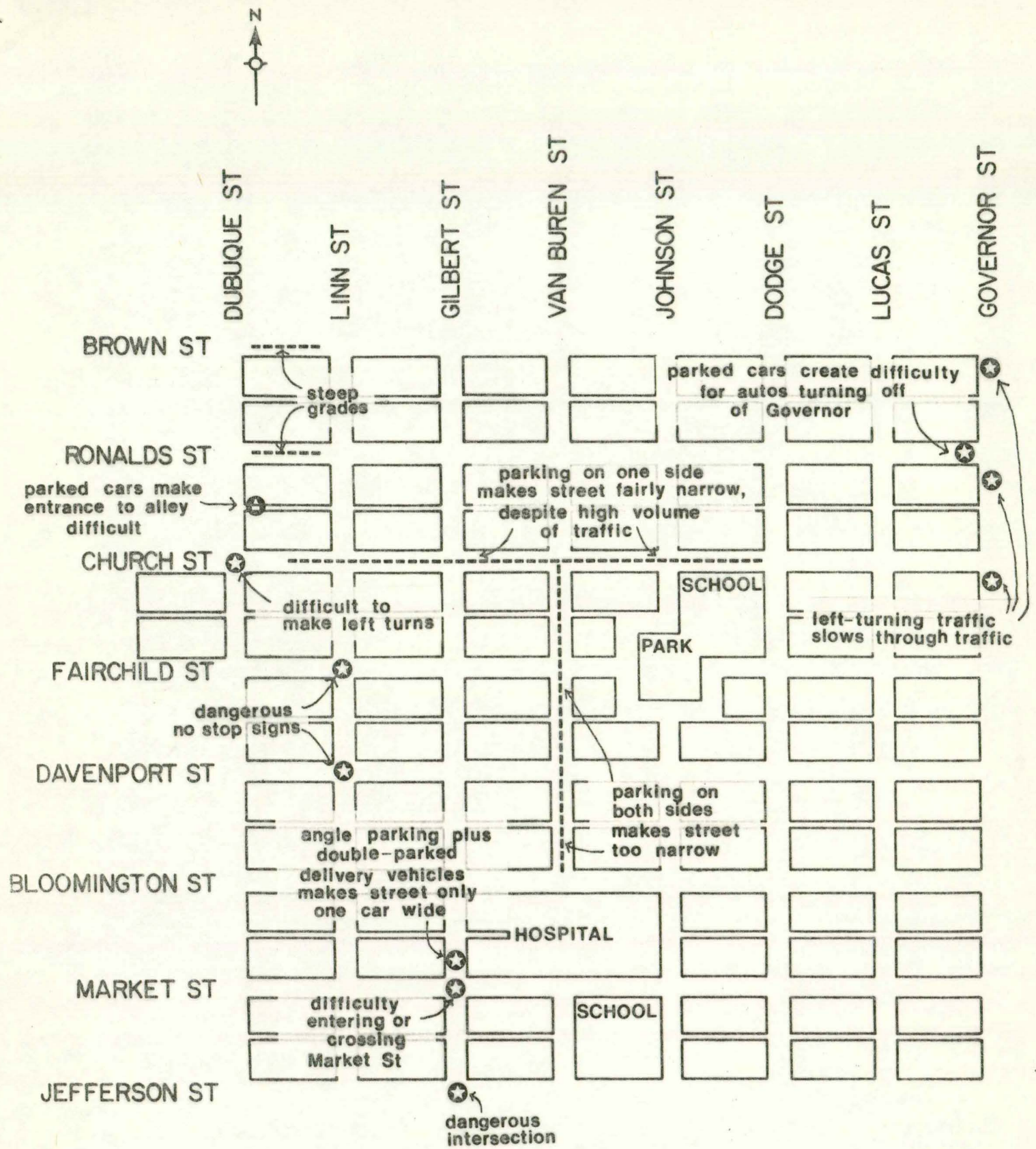


Figure 14. POINTS OF DIFFICULT TRAFFIC MOVEMENT

traffic flows are also likely to create more conflicts with pedestrians and bicycles.

Second, the short-run improvement which is desired and sought through increasing and improving circulation generally is not nearly as much of an improvement as was anticipated: traffic "fills up" streets both as the result of individuals choosing the best route to drive their cars and because future residential and commercial development is likely to occur so as to utilize streets with "excess capacity". The decision to improve streets must take into account the fact that better circulation can generate additional traffic that can completely nullify the benefits of improvement.¹³ One common example is the resurfacing of streets and alleys. Rough or broken surfaces (and, to some extent, brick streets) slow down most drivers and encourage the selection of another route. If the result of not resurfacing residential streets and alleys is slower traffic and less of it, the rough surfaces are actually of benefit to the neighborhood.

This discussion should not be taken to indicate a position against any circulation improvements in the North Side; rather, the point is that the long-run tradeoffs -- impacts on the neighborhood, traffic volume, and ease of access -- should be studied. The view that "you can't drive fast enough between points A and B" is simply insufficient reason for effecting a circulation improvement. Complaints about inadequate circulation should be carefully considered, and a true improvement should be implemented if adequate financing is available and the side effects do not overwhelm the benefits.

¹³In, "Procedures for Estimating Highway User Costs, Air Pollution, and Noise Effects", the authors make the comment that: "The formal costs of diverted traffic can be estimated and accounted for in the highway network, ...but the previous travel time and user costs for generated traffic are not known."

Proposals

- 1) Provide traffic lights where two major streets intersect, particularly in cases where there is substantial left turning traffic. Church and Dubuque, Gilbert and Jefferson, and Gilbert and Market are intersections fitting this description. Concurrent measures should be taken to ensure that neither through traffic in the neighborhood is increased nor drivers use residential streets as shortcuts to avoid traffic lights.
- 2) Mark pavement so that left-turn lanes are provided on major streets, decreasing the danger of rear-end collisions and reducing the inconvenience to through traffic. Two possible locations for these are along Governor Street and for the southbound lane of Dubuque Street. Again, these should be carefully planned so that overall traffic volume and through traffic on residential streets are not increased.
- 3) Move curbs outward at intersections, "necking" the street at that point, so as to prevent parking and provide easier access to side streets. At an intersection such as Governor and Ronalds, left-turning traffic from Governor must enter Ronalds swiftly because of traffic volume and speed. If there is parking on both sides of the street, Ronalds is too narrow for two cars to pass, creating a dangerous situation. Chokers would be more effective than curb painting or signing in preventing parking, would provide space for the planting of shrubs as noise and visual buffers, and would create a safer pedestrian crossing. Necking of Ronalds Street at the corner of Governor as compared with the existing situation is shown in Figure 15.

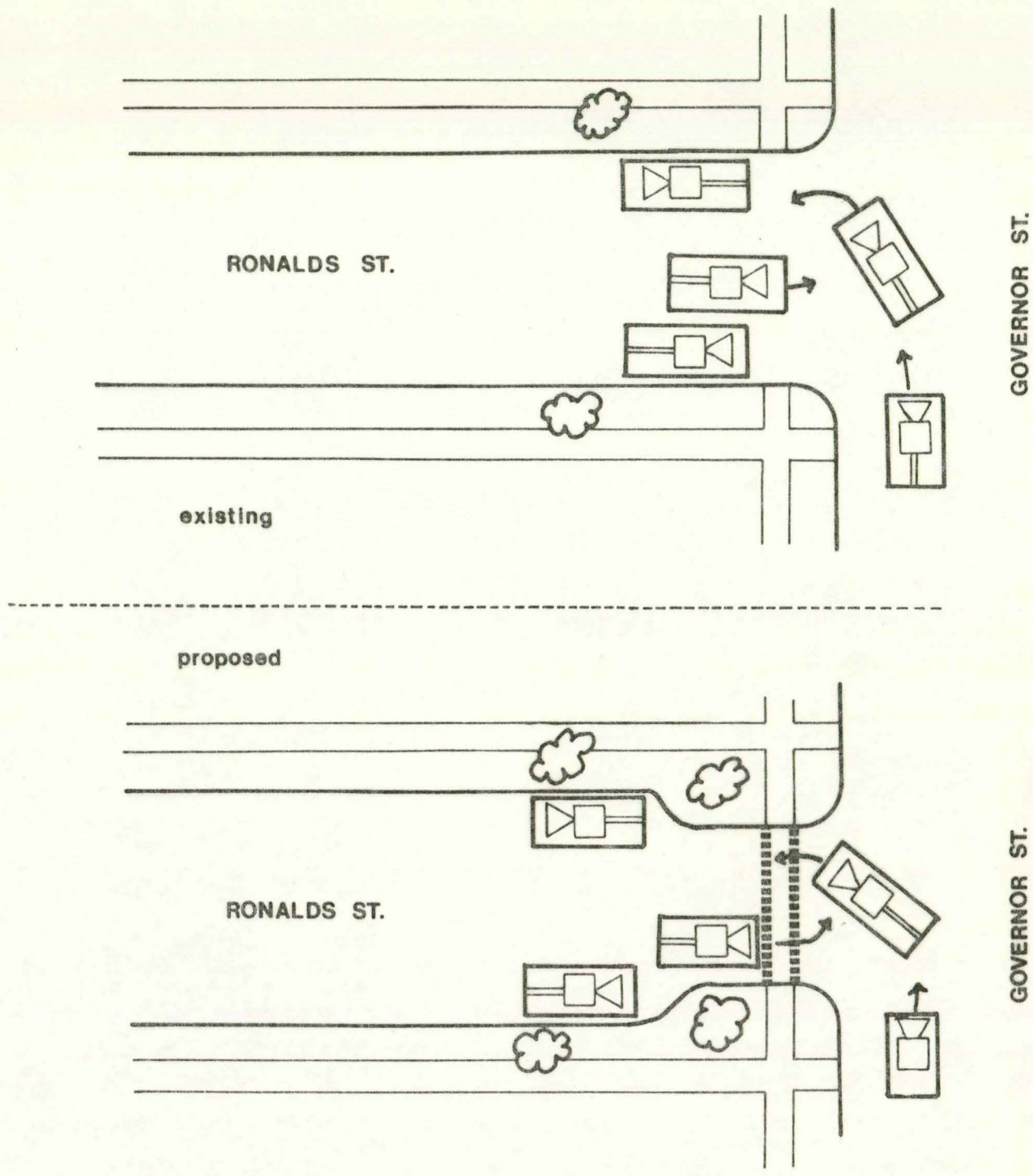


Figure 15. EXAMPLE OF "NECKING" ON RONALDS ST. AT GOVERNOR STREET

DRIVERS' SIGHTLINES AT INTERSECTION

Objects such as trees, hedges and building block drivers's fields of vision. When the objects are located near intersection, drivers' views of the cross street are reduced.

The expression of the need for improved sightlines highlights tradeoffs that are typical of trafficways improvements: easier auto travel (as a result of improved sightlines) also has the effect of removing neighborhood resources (trees, hedges), reducing the buffering of residents from traffic, and increasing traffic speed and volume. The problem is really not sightlines, but the desire of drivers to move as fast as possible with disregard to the negative effects that are generated. If poor sightlines cause drivers to slow down or not travel on residential streets, the current situation should be maintained.

BURDEN OF STREET MAINTENANCE ON THE CITY'S GENERAL FUND

Most people are surprised to find that fuel taxes and registration fees for automobiles and trucks fall far short of covering the expenses incurred in street and highway construction and maintenance. While the Interstate system comes close to paying its own way and Iowa's primary system basically does the same, local streets are heavily financed through general fund sources, primarily the property tax. In Iowa City, 2/3 of expenditures on streets come from general funds.¹⁴

¹⁴For a recent review of highway costs and revenue flows in Iowa, refer to Douglass Lee and Stephen Kautz, "Highway Financing in the State of Iowa", in the Proceedings of the Transportation Research Forum.

There are two implications to this. First, a significant portion of the property tax levied by the City of Iowa City consists of a contribution to the maintenance and construction of streets. This property tax burden falls directly upon property owners and is in part passed on to renters in the form of higher rents.¹⁵ Second, the burden of this expenditure lessens the availability of funds for police, education, and other services which provide general benefits to the community.

Another dimension to the problem is that streets have the effect of reducing the property tax base, because the negative impacts of arterial streets and through traffic on residential streets reduces property values and results in lower tax collections.¹⁶ A strategy of channeling traffic onto well-buffered arterials would transfer some of these costs from residents back to street users.

The City of Iowa City probably has very limited

¹⁵According to Slavet, et al., "There is an argument that nonusers as well as users benefit from roads and therefore should share in some of the costs. For example, it can be demonstrated that property owners receive benefits from access to their lands. This is true when a road is first built: there is a once-and-for all increase in the value of land made more accessible. For this reason, street betterments are charged to owners or to a developer who agrees to bear some of the cost of a new or improved road. When the land is subsequently sold, however, the increased value will have been capitalized into the purchase price of the land, and there is no argument for making subsequent owners continue to pay for the "access" through the property tax."

¹⁶A review of the literature on property value effects of streets can be found in the monograph by Keeler and Small. Evidence of property value losses resulting from traffic can also be found in the works by Schmitt, Gambel, et al., and Vance.

authority to increase user-generated revenues (excise taxes on fuel, parking surcharges, and registration fees) available for trafficways, since these charges are largely determined and collected by the state. The burden on general funds could only be eased in the short run by sharply decreasing expenditures on trafficways to the level of available user-generated revenues. Iowa City can ask for an increase in the levels or its share of state highway taxes or request legislation permitting local options on these user charges.

By using general fund revenues to pay for road expenditures, the motorist is being shielded from the full costs of the service provided. It is a matter of public choice whether or not to subsidize a particular good or service, but one consequence of underpricing is to encourage greater usage of the service. More highway travel will be consumed than would be the case if user charges covered all costs, so households can locate farther from where they work than they would otherwise. Residents and property owners in the North Side are required, in effect, to subsidize low density fringe development in the north corridor of Johnson County, and also suffer the negative impacts of increased auto traffic and commuter parking. Housing in the North Side is being replaced by parking lots, while new subdivisions appear in exurban and rural areas, often located on low volume unimproved roads. There are many ways in which urban taxpayers subsidize county residents, and many factors which lead to urban sprawl, but the long standing and increasing subsidy to street and highway users is a critical parameter in the urban

decentralization process.

Proposals

- 1) The City should adopt a long-range goal of requiring the operators of vehicles to pay the full costs of trafficways construction, maintenance and administration, the costs of protecting pedestrians and bicycles, the costs of protecting the North Side and other neighborhoods from the external effects associated with traffic, and to contribute to general government expenditures.

- 2) The City should lobby with the Iowa General Assembly to allow municipalities to exercise local options on fuel taxes and vehicle registration fees. In the interim, General Fund expenditures on trafficways should be cut to an absolute minimum. It is possible that truly critical needs might go unmet, but such a situation would certainly increase public awareness of the need for increasing vehicle user charges.

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