

# RESOLUTION OF THE CITY COUNCIL

*No.* 795

*Approved* December 18, 2000

WHEREAS, the Department of Planning and Development has been in close consultation with certain neighborhood groups and citizens in the city's West Broadway area; and

WHEREAS, at the request of certain neighbors in that area, the Department of Planning & Development considered the introduction of certain traffic calming construction to the neighborhood,

NOW, THEREFORE, BE IT RESOLVED, that the alterations to certain highways in the West Broadway neighborhood are approved for a five (5) year study period. Said approval is specifically conditioned upon the following:

For a period of five (5) years the roadway design alterations shown on Exhibit A attached hereto may be installed.

During the five (5) year period:

The police and fire departments shall bi-annually report the impact, if any, of the alterations upon its public safety duties, together with any other comments the Chiefs of those departments think relevant.

The traffic engineer shall bi-annually report the impact, if any, of the alterations upon parking availability, traffic flow and motor vehicle accidents, together with any other comments he/she think relevant.

The Department of Public Works shall bi-annually report the impact, if any, of the alterations upon snow removal, street sweeping, trash removal and road maintenance, together with any other comments he/she think relevant.

The Department of Planning & Development shall maintain and report on a bi-annual basis comments, if any, offered by the targeted neighborhood residents. The Department of Planning & Development shall also develop contingency plans for the determination of funds that may be required for the removal of said alterations.

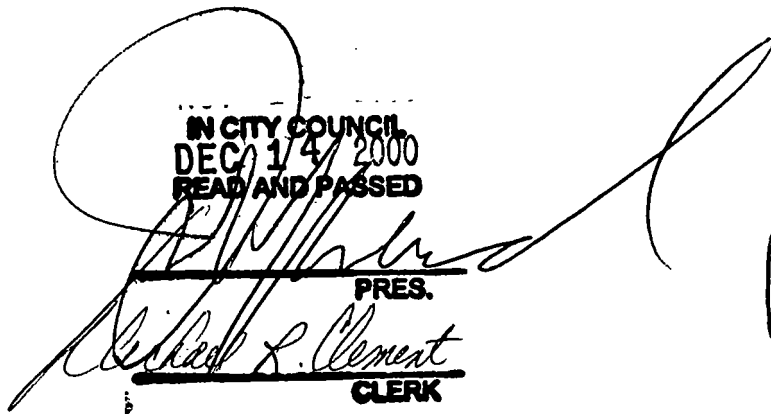
IN CITY COUNCIL  
NOV 2 2000  
FIRST READING  
REFERRED TO COMMITTEE ON  
PUBLIC WORKS  
*Michael R. Clemente*

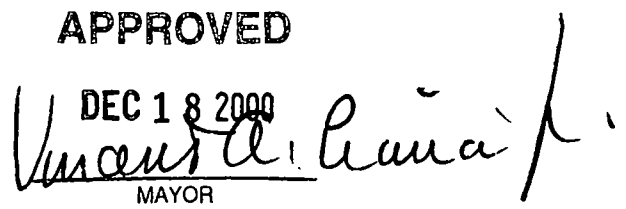
THE COMMITTEE ON  
PUBLIC WORKS  
Approves Passage of  
The Within Resolution  
*Claire D. Battaglia*  
Nov. 21, 2000 Clerk

*From the Clerk's Desk*



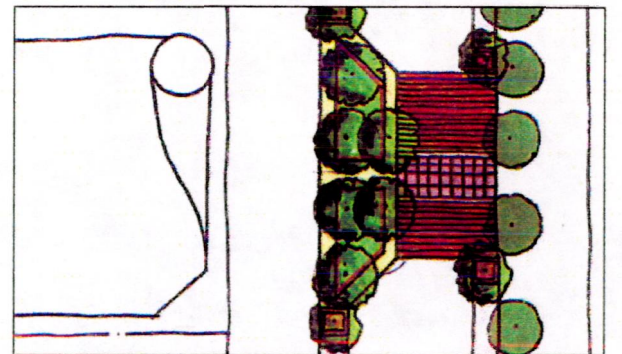
At the end of the five-year trial period, if not sooner terminated, the Department of Planning & Development shall submit to the City Council for review and final approval or denial the roadway alteration design.

IN CITY COUNCIL  
DEC 14 2000  
READ AND PASSED  
  
PRES.  
Richard S. Clement  
CLERK

APPROVED  
DEC 18 2000  
  
MAYOR

# West Broadway Neighborhood Pilot Traffic Calming Plan

Providence, Rhode Island



Prepared for  
The West Broadway Neighborhood Association  
and the City of Providence Department of Planning  
and Development  
by Paul Murrain, Urban Design Consultant  
May, 1999

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## Acknowledgements

This plan and report was written and produced by Paul Murrain with graphic design by Donna Meierdiercks.

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Thanks to all members of the West Broadway Neighborhood Association particularly Kari Nel Lang, Executive Director and Peter Bramante, Co-Vice President.

Special thanks to: Ken Mingis for endless hours of scanning, Virginia Branch for her sketches, Scott Stenhouse and Lloyd Slonim for computer support and Rick Chellman for comments on the initial design ideas.

Thanks to the Providence Department of Planning and Development for their a and support and to the Providence Department of Public Works for their valuable input.

One particular excellent publication from the U.K. has been the source of several diagrams and photographs in this report: *Traffic Calming Guidelines*, Devon County Council, Engineering and Planning Department, 1991.

No part of this publication may be produced without prior permission.

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# 1 Why Traffic Calm the West Broadway Neighborhood?

In September of 1994, the WBNA conducted a survey of over 1,000 neighborhood residents. The number one complaint from residents was the speed of traffic in the neighborhood.

On Dexter Street, in front of the Hmong Church, a child was killed in 1996. Early in the summer of 1998, another child was seriously injured in almost the same place.

Residents also complained about other trouble spots, such as the intersection of Hudson and Sycamore Streets, where neighbors witness three to four accidents per year.

After a drive-by shooting on Willow Street, neighbors became concerned and outraged. During meetings and a neighborhood rally, residents asked for speed bumps or other devices to keep traffic from speeding through the neighborhood.

## Community Involvement

A traffic calming working team consisting of concerned residents was formed to investigate traffic safety in the neighborhood.

The early meetings of the team were used to educate residents about traffic calming and to solicit their ideas about possible traffic calming techniques. At later meetings, the team discussed trouble spots, areas of concern and created an asset/challenge map.

### Target Area

An initial target area was identified based on people's perception of where the key problems were. There are five parallel streets running north south through the neighborhood: Messer, Sycamore, Parade, Dexter and Bridgham.



1. The Target Area: The Four Streets and the Park



Messer, Parade, Dexter and Bridgham directly link either Cranston Street or Union Avenue in the south with Westminster Street in the north.

Dexter and Parade run alongside the Dexter Training Ground, a 9-acre park in the center of the neighborhood. Sycamore is less of a through street but subject to 'rat running' as an alternative to Messer.

## Why This Target Area?

These streets were chosen for the following reasons:

- They are through streets with no stop signs.
- Many motorists drive at high speeds on these streets.
- The Dexter Training Ground and the Cranston Street Armory are important community assets that need to be easily accessible.
- The entire community uses the Dexter Training Ground, especially the neighborhood children.
- Incidents of crime, drug-dealing, drive-by shooting and car accidents have occurred here more than any other area in the West Broadway neighborhood.



2. The Dexter Training Ground

## WBNA Fact Finding and Statistics Gathering

The Executive Director and team members from the Traffic Calming Working Group surveyed the target streets for statistics on:

- Vehicular speeds,
- Obedience to traffic signs,
- Traffic counts and street measurements.

The research revealed the following information.

- Many motorists drive at dangerously high speeds along all the targeted streets, particularly on Dexter and Parade, assisted by the absence of stop signs at junctions. When traffic signs did exist, they were not always respected.
- The traffic count on all streets was high, especially on Dexter, Parade and Messer Streets.

## Asset/Challenge Map

Using the traffic survey information and citizen input, an asset/challenge map was created by the traffic calming working group.

The map highlights,

- Areas that require special attention including, local schools, elderly housing and churches.
- Sidewalks that are in the process of being repaired, so that sidewalk improvements can be coordinated with the traffic calming work (thus leveraging the funding and allowing it to go further).
- Areas known for problems with drugs, crime and accidents.
- The working group's ideas about potential traffic calming techniques including diagonal parking, traffic circles, bulbouts, crosswalks and pedestrian lights.
- Stakeholders who would be willing to "adopt" an area.

## Work with the Conservation Law Foundation (CLF)

The CLF first came into contact with the WBNA in the fall of 1995 when they made a formal presentation to the general membership describing the benefits and techniques of traffic calming.

The timing of this project was particularly good in that funds from the City Bond Issue were becoming available for neighborhood infrastructure projects. The WBNA requested \$250,000 from Ward 13's bond issue funding, for traffic calming within the neighborhood. Councilman John Lombardi understood the importance of this endeavor and allocated that amount to the project for implementation and construction.

In May 1999 Paul Murrain an urban design consultant, was appointed to produce the Pilot Traffic Calming Plan for Messer, Sycamore, Parade and Dexter Streets. Christopher Duhamel of DiPrete Engineering Services was appointed as the engineering consultant to take the work through to documentation for construction.



## 2 The Scope of the Study

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This report is a Traffic Calming Master Plan. As such, it cannot include every design detail and construction drawing. But where appropriate, dimensions and details will be given. The dimensions of the streets have been established with the help of records from the Department of Public Works. At the time of detailed survey, those dimensions should be checked.

Time has not allowed every part of every street to be designed and illustrated, but sufficient has been done to demonstrate the range of possibilities. Even then, this proposal will take some years to come to fruition. This report is an attempt to offer a *vision* that can then be developed for, with and by the community, as money becomes available and results become clear.

Within the very tight time frame and budgetary limitations, it has been impossible to undertake a thorough conventional traffic survey. Normally, this would quantify traffic numbers, types and speeds; establish the origin and destination of vehicles moving through the area; and record the number of turning movements at specific locations over a long period of time. But the work carried out by the community, with the help of the police, the accident statistics and intensive observation, left little doubt that a good deal of the traffic is travelling at unacceptable levels of speed for streets in the heart of an inner city neighborhood.

Traffic calming must be constantly reviewed. These designs can be changed and modified. There is never just one solution to a particular place. Choices have to be made each with its own implications. The West Broadway Neighborhood already has a reputation for excellent leadership of its own affairs.

In as far as time allows, the specific junction designs have been checked to accommodate the turning movements of vehicles as large as a school bus. It has not been possible to check them all or be absolutely precise at this scale of drawing. When these special conditions involving substantial turning movements are taken to further detail,

they must be checked with precision. Using a computer, it is possible to simulate driving vehicles through these junctions relatively easily. It is recommended that this be used as a pre-construction test.

All the proposals in this report are within the accepted lexicon of traffic calming measures and have been used elsewhere. At the time of writing, discussions with the highway authority had not taken place. It is the responsibility of the appropriate highway authority to ensure that the measures conform to any legal and signage requirements they may have. Design modifications can take place prior to construction if necessary.

Bridgham Street is not included in this Pilot Study. It must be recommended that if at all possible, work to improve the overall environment of Bridgham Street should not wait too long. It is the fifth street in the system and could suffer from improvements made to the others. It is extremely difficult to be definitive about such impacts because of the complex behavior of motorists as they cope with change. The West Broadway Neighborhood Association is aware of this issue and keen for funding to be made available for Bridgham Street at the earliest opportunity.



### 3 What is Traffic Calming, Why is it Needed and What Can it Achieve?

Traffic calming is an increasingly common term in the USA, a term that so clearly describes a need, desire and often a plea, by a rapidly increasing number of communities to *calm* the behavior of vehicular traffic in their local streets.

There is a growing realization that faster, more frequent traffic has diminished the quality of many neighborhoods. Everyone suffers as a result but the elderly, disabled, young and poor members of the community suffer most. They neither have the mobility to use a car to access facilities *beyond* their neighborhood, and they are the most disadvantaged as a result of the adverse behavior of vehicles *within* their neighborhood.

This realization has been reinforced by the increasing performance of even the most modest family saloon as technology improves the power to weight ratio of vehicles. The average car has got smaller, much more powerful and more maneuverable. In addition, they are constantly becoming safer, but only for the person *in* the car.

Cars are vital to many people's lives in this country, but the current highway standards were developed at a time when the main criterion was to move traffic more quickly and in greater volumes. Little thought was given to other forms of mobility and use of the public street. Opinions are changing at a rapid pace. The design standards must also change. This isn't easy, because of deeply entrenched attitudes to catering for the car above all else. This attitude is more prevalent in the USA than anywhere else in the world.

3. The complex and diverse activities all streets should support  
(Source: Devon County Council, 1991)





## The Limitations of Traditional Traffic Calming Approaches

Many people still believe in the traditional responses of closing streets to traffic, or separating people from vehicles by putting the two in different spaces.

Closing streets to traffic tends to make a bigger problem elsewhere, particularly in local neighborhoods.

Segregating cars from people is totally inappropriate in residential areas and often a great inconvenience. It usually results in desolate spaces for cars and pedestrian spaces that are unsafe at night because of insufficient life, activity and surveillance. What's more, whilst ever we have cars, emergency vehicles, school busses and delivery trucks, they ultimately seek access to the streets in which we live, work, shop and play.

We do not need to exclude them; we need to make them behave better. If we do that, some of them will also go away

## The Objectives of Traffic Calming

The basic objective of traffic calming is to reduce the adverse effects of road traffic whilst maintaining and indeed encouraging, local movement in all its forms. But if approached correctly it achieves much more. By moderating the behavior of vehicular traffic, creating more space for other activities and providing overall environmental improvements, local streets can be claimed and used by all members of the community for a richer range of activities, returning local streets to their true purpose. Therefore traffic calming attempts to:

- Make vehicular traffic behave appropriate to its location
- Produce *constant* traffic speed at an appropriate lower level
- Discourage through traffic that has no need to be there
- Improve safety and convenience for vulnerable road users
- Bring culture, activity and local economy back onto the street.
- Provide overall street and environmental enhancement through the provision of planting and greenery.
- Aid public transport

Such objectives ask more of the design solutions than simply the bottom line of placing speed humps in mid-block locations, even though that may well be part of the overall strategy. It involves improving the pedestrian experience, and space for their activities; the possibilities of safer space for cyclists; areas for seating and street tree planting; better parking provision where appropriate, and the careful choice of materials.

## A Summary of Traffic Calming Measures

There are two main categories of traffic calming measures; those designed primarily to reduce vehicle speeds and those designed to help create of an environment conducive to calm driving.

### Speed Reduction

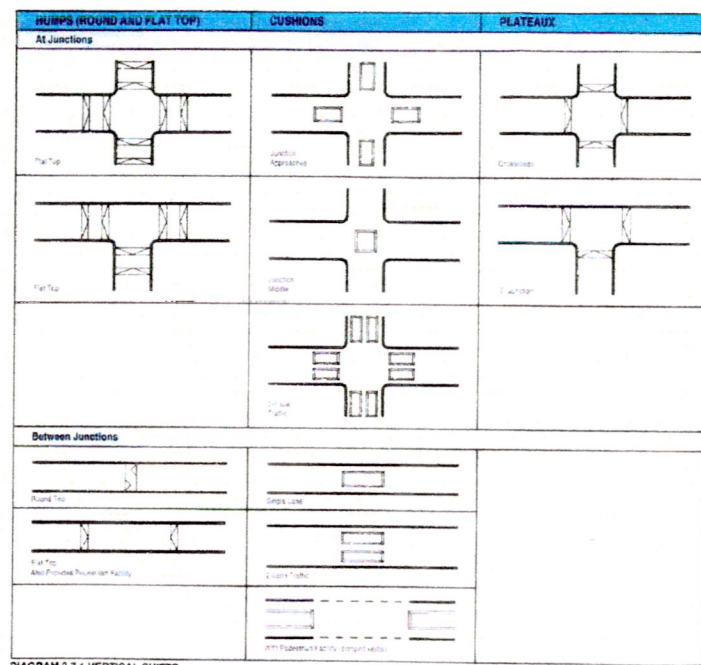
Vertical shift (Speed humps and Speed cushions - Figure 4)  
Lateral shift- (Chicanes – Figure 5)  
Carriageway constriction, (Neckdowns and curb bulbouts – Figure 6)  
Traffic Circles  
Small corner radii  
Priority road markings

### Supporting Environmental Measures

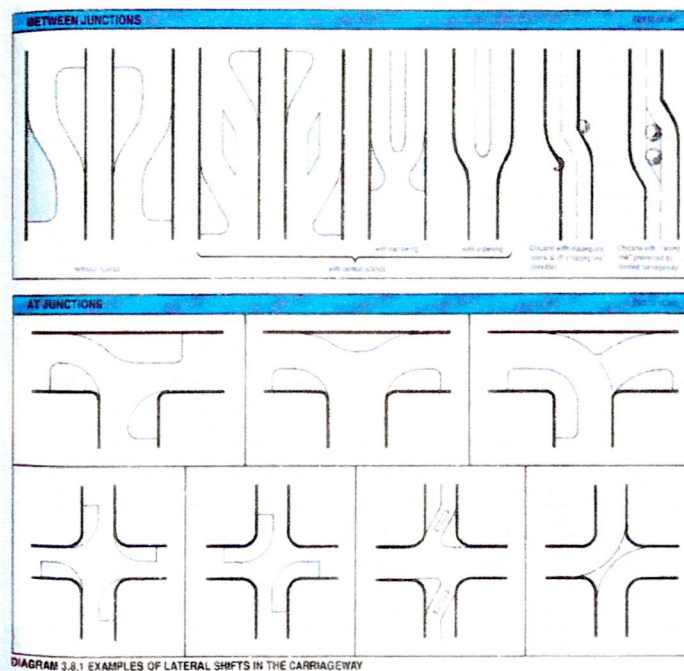
Reduction in optical width  
Surface and color change  
Entrances and gateways  
Central islands  
Sidewalk extensions (Figure 7)  
Street tree planting  
Street furniture

**The two categories are used in combination for best effect.**  
For example, a speed cushion could also be used as a raised crosswalk. It could then be visually emphasized by tree planting projecting in to the street. The crosswalk could be further highlighted by a change of paved materials and have a small central island incorporated in its design to give a refuge to pedestrians half way across the street.

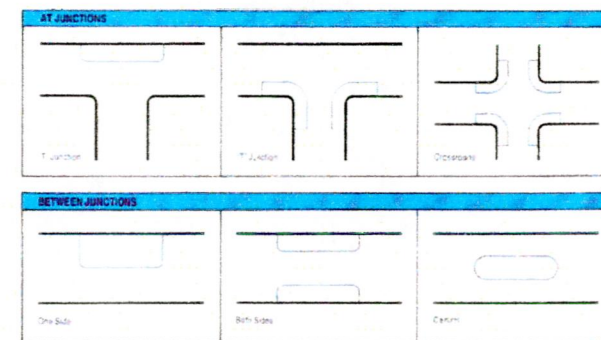




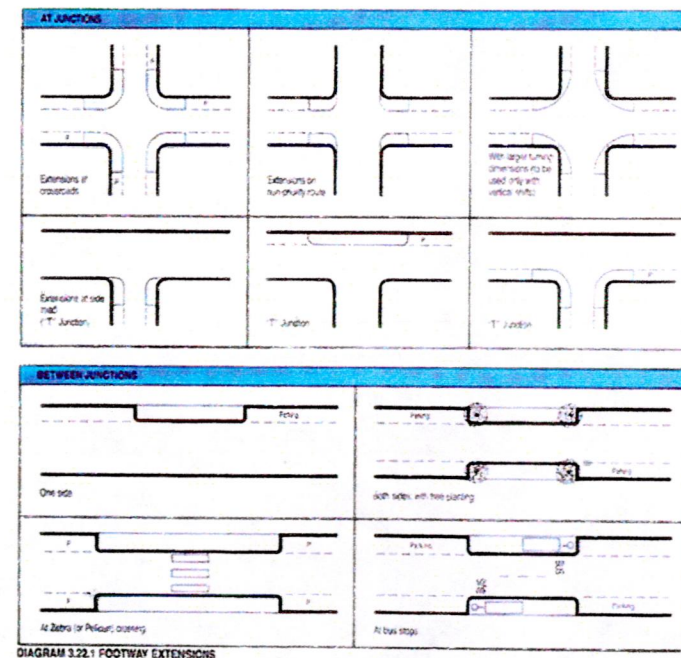
#### 4. Vertical Shifts (Devon County Council, 1991)



### 5. Lateral Shifts (Devon County Council, 1991)



6. Carriageway Constrictions (Devon County Council, 1991)



7. Sidewalk Extensions (Devon County Council, 1991)





8. A comprehensive range of environmental improvements triggered by traffic calming. Delft, Netherlands (Photo: Paul Murrain)



9. Traffic Calming by Street closure and bollards. Less traffic, less speed but no other environmental improvement. Hackney, London. (Photo: Paul Murrain)

Wherever and whenever possible, traffic calming should also achieve other environmental benefits over and above the slowing of traffic. This in turn will give a clear image to the driver that the environment in and around the street is for purposes over and above that of traffic; that it is treasured, used and demanding of respect.



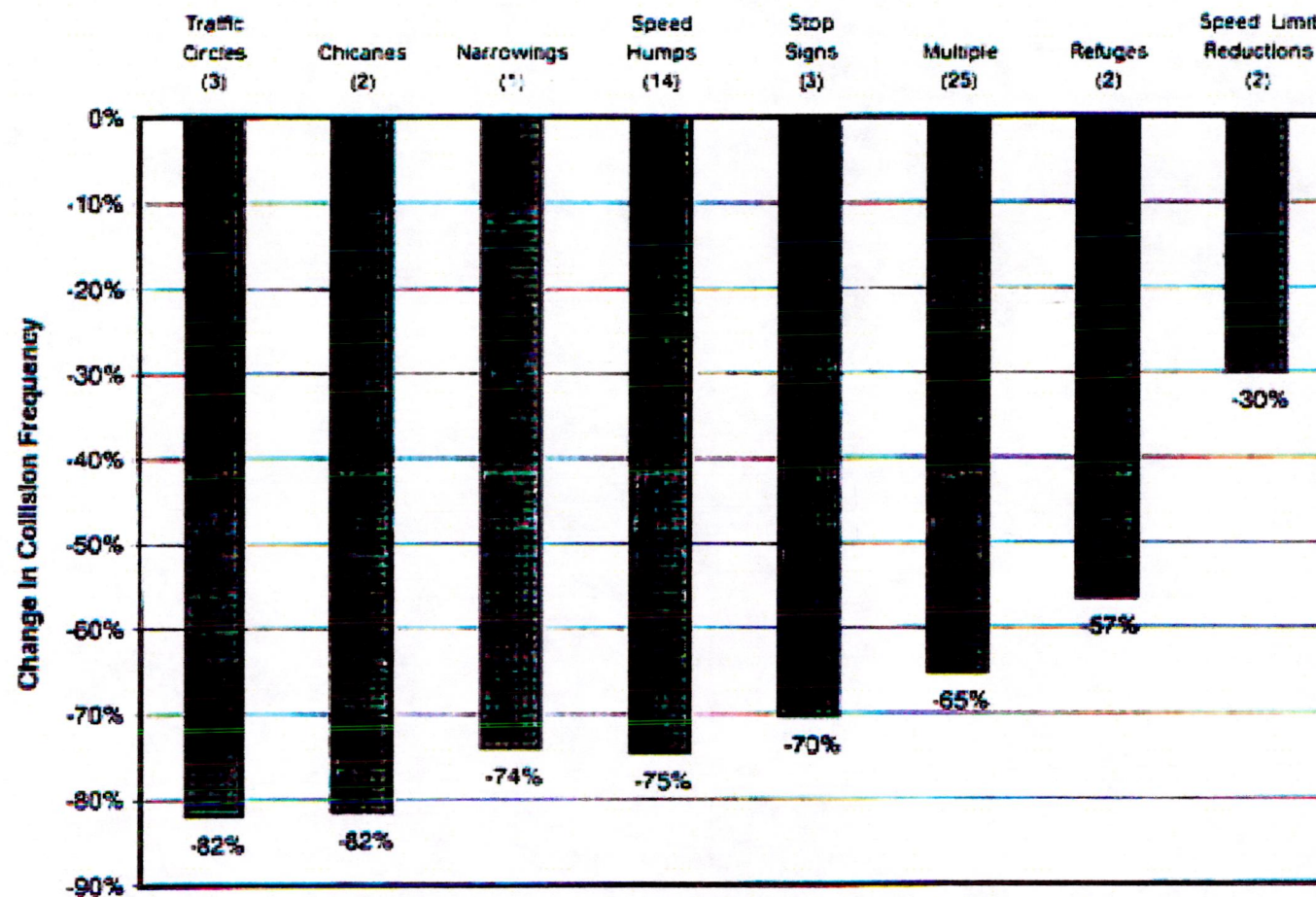
## The Safety Benefits of Traffic Calming

In a study conducted by Hamilton Associates for the Insurance Company of British Columbia, four traffic calming projects in Greater Vancouver were reviewed as part of the study

- All four of the projects achieved reductions in collision frequency, severity and the annual collision claim costs to ICBC. The magnitude of these benefits varied across the projects, with an average 40 percent reduction in collision frequency and 38 percent reduction in the annual claims costs to ICBC. From these results it is concluded that safety benefits can be consistently expected from traffic calming projects...
- A total of 85 case studies from Europe, Britain, Australia and North America were also reviewed during the study to determine the international safety benefits of traffic calming. The decrease in collision frequency ranged from 8 percent to 100 percent.

In the UK, the Department of Transport's "Fire and Ambulance Services. Traffic Calming: A Code of practice" refers to the Urban Safety Project, a long-term study by the DOT and five local highway authorities.

The results showed that if this area wide approach to reducing accidents were adopted nationally in urban areas, some 15,000 accidents costing 487 million pounds Sterling could be saved each year.



10. Average percentage reduction in collisions achieved by different traffic calming measures.  
(Source: Hamilton Associates "Safety Benefits of Traffic Calming" for the Insurance Corporation of British Columbia)



## Safety and Street Width

There is a universal concern for safety on residential streets. But what are the safest street forms and what are their specific characteristics? An increasing amount of research has and is being carried out.

As long ago as 1942 the American Association of Highway Officials asked the Institute of Transportation Engineers (ITE) to suggest traffic engineering guidelines for safe *high speed* streets. They recommended a 50-foot right of way with 24 feet of pavement! That is 6 feet narrower than the smallest street in this study.

By 1965, recommended road widths in new developments, had grown to 30-34 feet with a 60-foot right of way, on the back of a very strong Roads, Transport and Construction lobby;

It is increasingly recognized in recent subdivision layouts that these standards have had a spectacular effect on discouraging the use of streets as gathering places and the general viability of communities.

In the West Broadway neighborhood, the streets are older and have classic dimensions. Messer and Sycamore are 50' right of way with 30 feet of pavement and two 10 feet sidewalks.

Parade and Dexter are 80 feet right of way with 43 and 40 feet of pavement respectively. The sidewalks vary, having one side residential and the other as part of the park.

But all the streets in this pilot project are even wider than the width for safe *high speeds* recommended by the ITE back in 1942.

## The Necessary Dimensions: Current Thinking

Walter Kulash, a well-respected Traffic Engineer from Orlando FL states that,

"The velocity of vehicular movement is adjusted by physical factors which create the perception of a maximum safe speed. These are principally the width of both the movement lanes and the parking lanes."

Kulash proposes the following (acknowledging the influence local horizontal and vertical alignments may have.) If the objective is to achieve:

Speed Movement (speeds up to 35 mph)  
You would prescribe: two 12 foot lanes without parking i.e. 24' pavement.

Free Movement (speeds up to 30 mph)  
You would prescribe two 10' travel lanes with 7' parking lanes i.e. 34' pavement.

Slow Movement (speeds up to 20 mph)  
You would prescribe, 7' parking lanes plus 17' for two traffic lanes: i.e. 31' pavement.

Yield Movement (Speeds at approximately 15 mph at the point of yield) you would prescribe, 7' parking lanes plus a 10' traffic lane i.e. 24' of pavement.

## Traffic Speeds and Fatal Injuries

It is important to note that there is a well-accepted threshold of 20 mph above which fatal accidents involving traffic and pedestrians increases dramatically. Below 20 mph the statistics of fatalities drops markedly.

## What's Happening To Street Widths in Other Parts of the Country?

Eugene, Oregon	reduced its standards for some roads to 20 feet
Johnson City, TN	24' curb to curb inc. 18" gutter both sides i.e. 21' pavement; parking allowed both sides
Portland, ME	24' (with parking on one side)
Orlando, FL	22 feet with parking both sides for residential lots of 55' width
Austin, TX	approved a code with 18' one way with parking on one side. A 26', two way street, with parking both sides.
Portland, OR	26' with parking both sides; 20' parking one side



## Traffic Calming and Emergency Services

Clearly, there is a need to identify fixed strategic routes through town (and be aware of legally required fire response times). The more severe traffic calming methods should not be used on these routes.

In the UK, a minimal number of vertical or horizontal measures are accepted; e.g. Speed Humps no closer than 300 feet and no higher than 3 inches

### Street Width

In a study in Portland, Oregon, a key question was asked, "Can emergency Vehicles reach my home?"

The Fire Bureau participated in exercises in older neighborhoods with narrower streets. They found that street widths based on Portland's new guidelines would provide adequate access for emergency vehicles. (Those new standards are 26' with parking both sides and 20' with parking one side)

In a draft report by Swift & Associates (1997), for the City of Longmont, CO entitled- "Residential Street Typology and Injury Accident Frequency", they observed the following.

Total injury accidents for a standard 36 foot wide street	12
Fire injuries in that same period	1
<b>Total injury accidents</b>	<b>13</b>
 Total injury accidents for a 24 foot wide street	 3.2
Fire injuries in that same period	1
<b>Total injury accidents</b>	<b>4.2</b>

Even if there were a 400 percent increase in fire accidents to 4 per year, the resulting 7.2 accidents for the 24 foot wide scenario would account for about half the standard streets accident rate of 13.

The study concluded that you should look at safety more holistically; i.e. Isn't it better to reduce potential vehicular accidents, injuries and deaths than to provide overly wide streets for no apparent benefit to fire response? Clearly, a compromise must be sought. On many streets in Providence that balance has yet to be achieved.

## Collisions in General

In the City of Longmont, Colorado (population' 20,000), a recent study was undertaken by the city's Urban Designers, Civil Engineers and Transportation Planners. The research is on local streets with ADT (average daily traffic) of 2,500 cars per day or less.

- "The most significant causal relationship to injury accidents was found to be street width (and street curvature.) The analysis illustrates that as street widths widen, accidents per mile per year increases exponentially, and that the safest residential street width is 24 feet (curb face) "
- They found a 300% increase in accident rates between a typical 36 foot wide residential street and a 24' residential street.
- There was a clustering of accidents below 1000 ADT and between street widths of 36-44 feet, the most intense portion below ADT 500. This indicates that more accidents occur on wide streets with low daily volumes.

It is for all these reasons that a reduction in street widths forms the essential foundation for a comprehensive traffic calming plan for the West Broadway Neighborhood.



## 4 The Pilot Project Plan: Setting the Scene

The report will now explain and illustrate its recommendations for the four streets in the Pilot Project.

- It will deal with each street moving from West to East: Messer, Sycamore, Parade and Dexter.
- It will move along each street from south to north, illustrating key measures and principles as it proceeds.
- Where appropriate, the proposals will be illustrated using examples from other places, primarily Europe, where traffic calming in local neighborhoods has been accepted and implemented for over 20 years.
- When a specific traffic calming measure is introduced, its purpose will be explained and its implications made clear. Any disadvantages will be stated as well as the many advantages. Like most things in life, traffic calming brings consequences and compromises along with it.

### The Four Streets: Maintaining the Balance

Messer, Sycamore, Parade and Dexter Streets have been as they are for many years. Drivers know them, and how to use them for their different purposes. However unsatisfactory they may be and different from each other, they have an equilibrium. Traffic calming will change that equilibrium if it affects the nature of one street and not the others. Therefore, not only does each street have to be analyzed and designed for its own sake but the traffic calming has to be constantly reviewed across all four streets.



11. The Project Area





12. Messer Street Plan

## Messer Street

Messer Street is the longest and straightest street in the study. It has many four-way junctions as well as staggered junctions. The houses are close to the street and the sidewalks only ten feet wide. The pavement is thirty feet wide. Because of its position in the overall street structure, it is the most logical to use to get through the western edge of the neighborhood and can be done so at speed. At its southern end is the Asa Messer Elementary School. Just north of the Messer/Willow junction, is the Willow Street Supportive Housing. Parking is allowed on both sides of the road but very little on-street parking actually occurs.



13. Messer Street: long, wide and relatively treeless. Speeding is easy



14. Parked cars help to slow the traffic a little, but they're often not there



15. When cars restrict width, drivers take more care.





16. Sycamore Street Plan

### Sycamore Street

Sycamore Street has the same dimensions as Messer Street, but is not as long and most significantly, connects to Westminster St but not to Cranston or Union. As such it is quieter than all the other streets, but that leaves it vulnerable to being used as a rapid short cut. It too has several four-ways one of which has the popular Hudson Street Market on the corner. Currently, the stop signs are for traffic on the cross-streets. There are none on Sycamore Street.



17. Sycamore Street: The absence of vehicles encourages speeding.

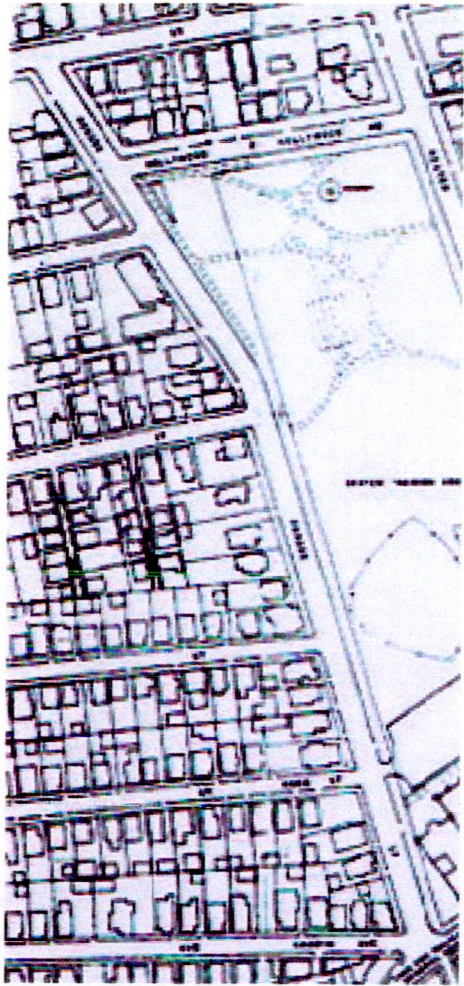


18. Occasional Parking has little influence.



19. Hudson Street Market, a neighborhood focus.





20. Parade Street

## Parade Street

Parade Street runs along the west side of the Armory Park. It is more or less straight and a vast 43 feet wide. It connects Cranston and Westminster and can be traveled at considerable speed, even with parking on both sides of the road. The location of the children's playground and the baseball diamond make this side of the park the gathering place for cars and people, particularly at evenings and weekends. At the junction of Parade and Oak Street is a residential home for elderly people.



21. Parade Street looking north: Good sidewalk trees but wide travel lanes

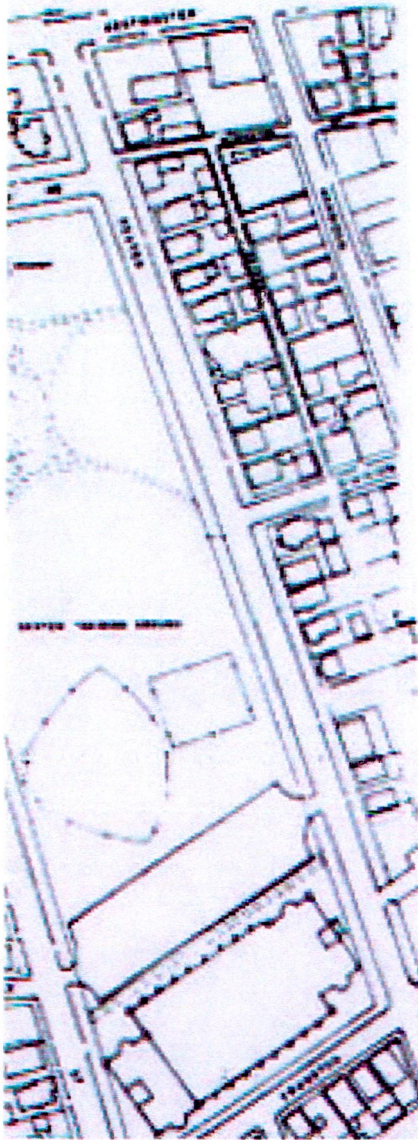


22. Parade Street approaching Cranston street: a sea of asphalt.



23. Parade Street: extremely wide even with parking both sides.





24. Dexter Street Plan

## Dexter Street

Dexter Street runs along the eastern edge of the park and is 40 feet wide, and very straight. Not only does it connect Westminster Street to Cranston Street; it continues further south making it an understandably popular route for vehicles of all shapes and sizes. Furthermore, it is considerably wider adjacent to the park than it is south of Cranston Street, which encourages people to speed after the "frustrations" of the earlier part of the road. It is to the northern end of Dexter where one child has been killed and another seriously injured in the last couple of years.



25. Dexter Street: 40' of uninterrupted road.



26. Large vehicle passing the church, the scene of two serious accidents.



27. Even with cars parked on both sides there is still 28 feet of asphalt.



## 5 The Pilot Project Plan: Proposals

### The Common Theme: Narrow the Streets, Plant the Trees

No two streets are identical, but all four streets have pavements that are wider than they need to be. As the previous section has demonstrated, **street width has a fundamental influence on traffic speeds and behavior.** Other traffic calming measures will also be needed, but **reducing the width of uninterrupted asphalt is the basic starting point for all four streets.**

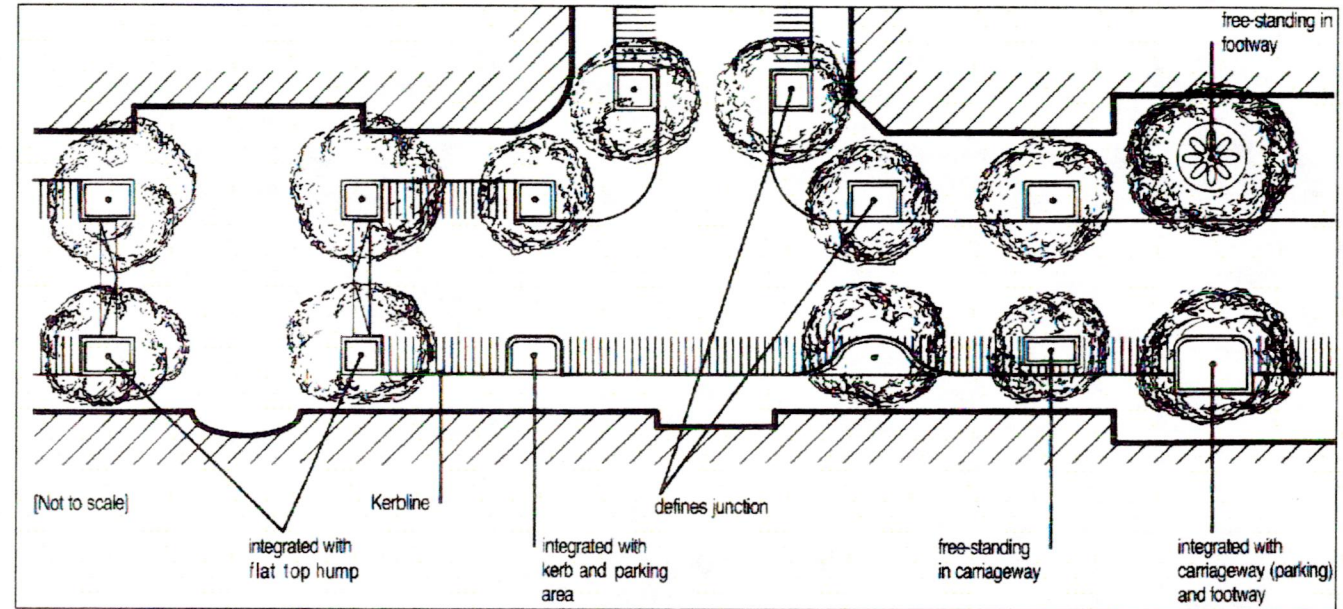
However, the possibility of parking on both sides of the street is still an option that residents wish to have and on street parking is a traffic-calming device in itself. But very few cars park on the street on a regular basis, so the streets are almost always at their widest for motorists. **Therefore, this study strongly recommends that street trees be planted in the parking zone along all four streets.**

#### Tree planting in the parking zone

- Reduces physical and visual width
- Limits forward views
- Defines the parking bay with or without the presence of cars.
- Improves the appearance of the street, including micro climate, dust absorption, and run-off
- Shades and protects the sidewalk whilst leaving more space for pedestrian movement

It is worth noting that at the time this plan was being produced, the state government published a report highlighting not only the loss of trees in Rhode Island cities, but emphasizing the range of benefits trees bring to the urban environment. The Providence Journal (May 10, 1999) noted that the report acknowledges that trees “fight pollution, cool the air, raise property values and brighten cities in a way that soothes harried urbanites and even, some research has shown, curbs violence.”

This traffic calming plan proposes approximately 600 new trees for the four streets.



28. The many locations and roles that trees can have in streets. (Source: Devon County Council, 1991)



29. Tree planting defining the on street parking bays and improving the appearance of the street. Aachen, Germany. (Source: Devon County Council)





30. Tree planting in the parking lane. Achievable and successful even on narrow streets. The trees also define and signal the frequent raised crosswalks. Delft, Netherlands (Photo: Paul Murrain)



31. Planting in the parking lane also defines and allows café tables to be where cars once parked. Bonn, Germany (Photo: Paul Murrain)

#### Tree pits

The tree pits can be detailed in several ways but should be of a size that corresponds with the edge of the striping. They should be 6 feet in length to have an effect on the driving behavior, to give the tree a good permeable area and to aid run-off by replacing asphalt.

- Carriageway water should not drain into the planted area.
- Stakes should preferably support newly planted trees.
- The tree pit should have a granite curb edging and bollards should protect the tree pit from both passing and parking traffic.

It may be preferable to leave a space between the tree pit and the sidewalk to maintain the drainage line. This is fine, but alternatives should be found if the tree pit is part of a raised crosswalk or bulb out for pedestrians.



32. Beautiful plants in the parking lane. If the community or city is willing to care and maintain them great beauty can result. Aachen, Germany (Devon County Council, 1991)



33. Tree given good protection and support using elegant materials. Aachen, Germany (Source: Devon County Council, 1991)



### Striping

If the parking lane is then striped, colored or paved, the continuity of the parking zone is always defined on the carriageway. The narrowing is always evident as an optical effect for slow driving, but vehicles can maneuver into the planting zone if necessary. It may be appropriate to stripe the parking zone wider than is absolutely necessary for a car. This has the effect of visually narrowing further, but allowing the wheels of larger vehicles to overrun the striping.

As with many other detailed issues this must be subject to dialogue with traffic and emergency services.



34. Striping using color and edging to define the parking lane and visually narrow the travel lane. Perth, Australia (photo: Paul Murrain)



35. The parking zone defined by expensive paving materials. Such expense isn't necessary to have the desired effect, but it could be done later. London, England (Source: Devon County Council, 1991)

### Locating the Trees

There are many detailed issues involved in the specific location of each tree:

- Utilities under the road
- Position of drainage gullies
- Curb cuts to private, off-street parking
- Sensible parking bay sizes
- Location of existing trees

However, every effort should be made to always plant trees precisely opposite each other on either side of the street.

If possible, they should not be more than 40 feet apart along the street i.e. 2 standard parallel parking bays. (These days they could be a few feet shorter and still accommodate two family cars with little difficulty). If for other reasons the trees are spaced less than two parking bays, that should be given priority over rigid compliance to bay length. But one comfortable parking space should be possible between the trees. If acceptable to the proper authorities, 18 feet should suffice. All of the above will involve the individual siting of each tree prior to construction.

### Conclusion

Trees in the parking zone are used to great effect in many European towns and cities as demonstrated by figures 29-33. Emphasis has been given to this fundamental change to the nature of all the streets, prior to detailed demonstration of each one.

It is recommended that this become the essential underpinning to moderating traffic behavior and changing the atmosphere of these streets in the West Broadway neighborhood.

Each street will now be described and illustrated. The basic theme of planting in the parking zone will be briefly outlined, followed by the additional traffic calming features proposed for special circumstances along each street.



## Messer Street

### Changes to the Basic Street Section

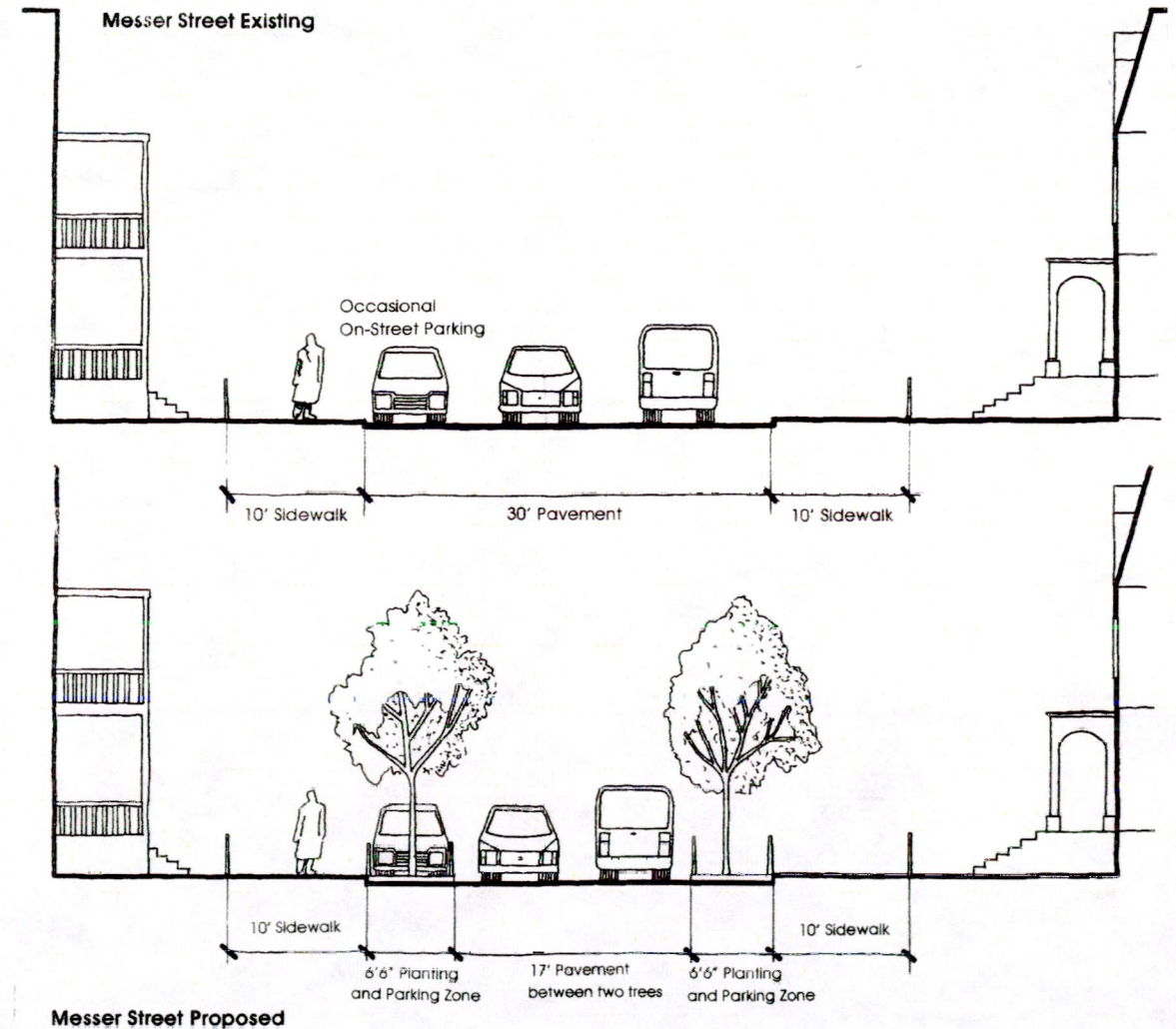
At present, Messer Street is a 50-foot right of way with 30 feet of pavement and two 10-foot sidewalks. It is proposed to reduce the pavement for moving vehicles from 30 feet to 17 feet. This would be done by planting trees in tree pits extending 6'6" out in to the carriageway. The outer edge of the striping would also extend to 6'6" from the gutter. The trunk of the tree would be 3'6" away from the sidewalk, slightly off center to increase its presence to the motorist.

The dimension of 17 feet would only be fixed at the point where two trees were directly opposite each other. If cars were parked in any number, then the actual passing distance would be nearer to 18 feet, assuming the cars were parked close to the curb. However, with the consistent and regular planting of the trees combined with the striping, the perceived distance along the length of the street will be markedly reduced.

It is worth considering striping at 7 feet, which would not reduce the actual size of the travel lanes, but give a visually narrower street. (Note: This has not been discussed with the necessary parties at the time of writing.)



36. Messer Street



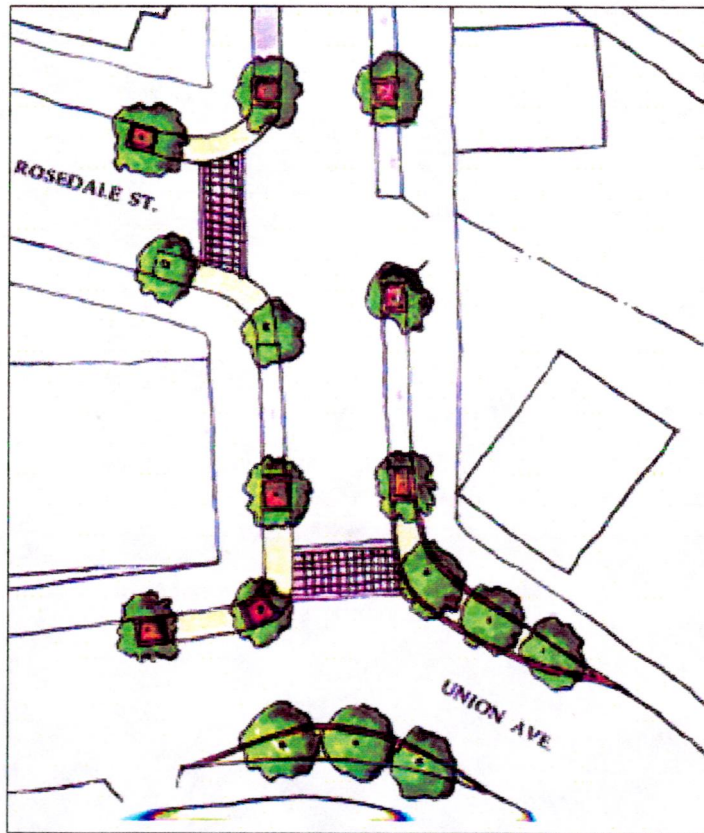
37. Messer Street: Before and After Sections



## Messer Street and Union Avenue Junction

### Issue

This is a very important starting point to any decision to use Messer Street. It is too wide and turning movements are easy, particularly outside peak times. Currently, Union Avenue is some 32' wide just before the turn and 40' wide on the Cranston Street side.



38. The Junction of Messer Street and Union Avenue

### Traffic Calming Measure

To narrow the junction and increase the deflection using sidewalk extensions. (See figure 38)

### Explanation

Sidewalk extensions (or bulbouts) provide more space for the pedestrian and reduce carriageway crossing distances. The constriction of the road increases the essential "side friction" between vehicles and makes for more cautious turning movements. (Figure 39)

### Description

The sidewalk extensions are supported by tree planting at centers no more than 15 feet. Union has been reduced from 40' to 25' on the Cranston Street side and from 30' to 22' just prior to the left turn on to Messer.

Messer itself is reduced to 20' at the junction as a result of the planted bulbouts. A well-marked crosswalk is included.



39. Sidewalk extensions improve visibility and shorten the crossing distance as well as narrowing the travel lane. Souillac, France. (Source: Devon County Council, 1991)



## Asa Messer School

### Issue

Any school on a street, as long, straight and wide as Messer Street, needs help. It is not practical to deflect traffic to any degree as a result of the adjacent houses and junctions nearby. But clear messages that a school precinct is being entered are necessary both north and south of the school.

### Traffic Calming Measure

A speed table (or plateau) is proposed approximately 100 feet south of the school entrance and again approximately 150 feet north of the main entrance just beyond Cowper Court. (Figure 40)

### Explanation

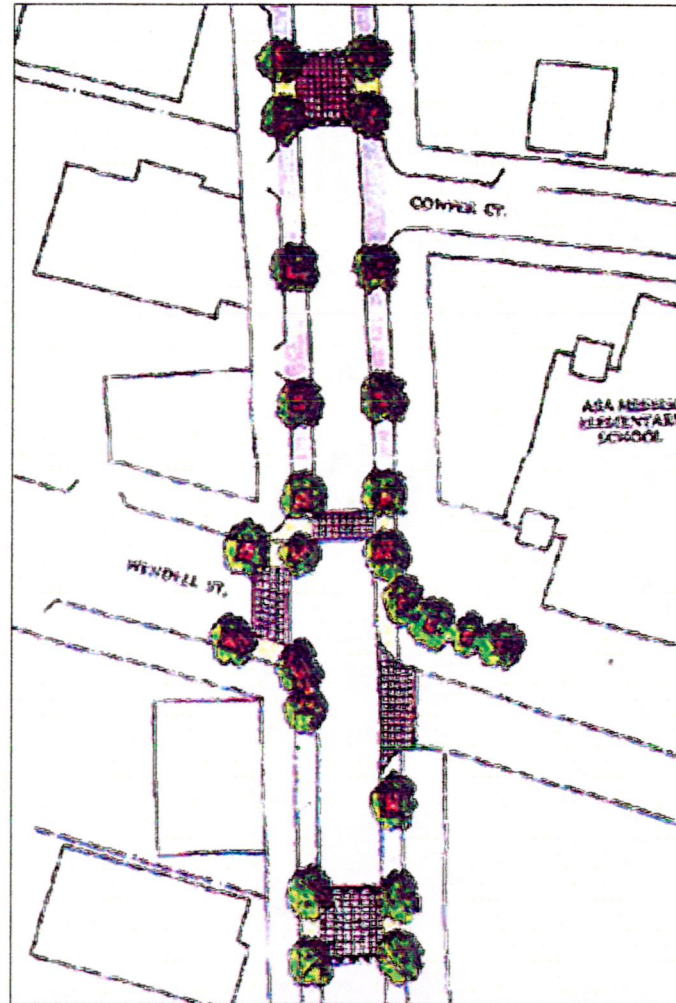
A Speed Table is a section of pavement from curb to curb, raised via ramps to sidewalk height. Unlike Speed Bumps, they are flat topped. They improve safety by reducing vehicle speeds. (See figure 41.) These vertical shifts are the most effective and reliable in reducing speeds, depending on the severity of level change and angle of ramp. The ITE recommends a height of four inches.

### Description

These Speed Tables are also raised crosswalks and defined by sidewalk extensions to the edge of the parking zone. Trees either side, serve to define the speed cushions. Reflective bollards should also be used for the same purpose.

As drawn, they are approximately 20' in length, but as yet their detailed design has not been agreed upon. The relationship of the height of the speed table relative to the curb must be carefully assessed.

There are several issues yet to be resolved. Emergency vehicles may regard a height of four inches as too severe, but the crucial issue is the severity of the ramp rather than the height of the Speed Table. They must be effective against a private car and moderate enough for emergency vehicles.



40. Asa Messer Precinct

Alternatives are possible in the form of speed cushions. They allow larger vehicles to pass unhindered but cars have to negotiate the vertical shift. If this is used, the crosswalk will be at grade. (See figure 42.)

In addition to the speed tables, the tree planting either side of all crosswalks should be a priority and the spacing of the planting in the parking zone reduced to give a denser line of trees to help define the precinct.



41. Speed table combined with sidewalk extension and crosswalk illustrating the principle for the Asa Messer precinct. Witney, England (Photo: Paul Murrain)



42. Speed cushions interrupt cars but allow larger vehicles to pass unhindered. They have to be either side of an at-grade crosswalk, Cologne, Germany. (Photo: Paul Murrain)



## Junctions of Messer with Chapin, Wood and Hudson

### Issue

Urban USA has many four-way intersections. They are wonderful assets because they offer direct and frequent connections to many parts of neighborhoods. They are efficient for pedestrian accessibility and local movement. But increasing speed and frequency of traffic has made them places where too many accidents occur. Stop signs are respected by some drivers but often ignored by others; usually those who are driving too fast.

### Traffic Calming Measure

Incorporate traffic circles combined with sidewalk extensions, crosswalks and tree planting.

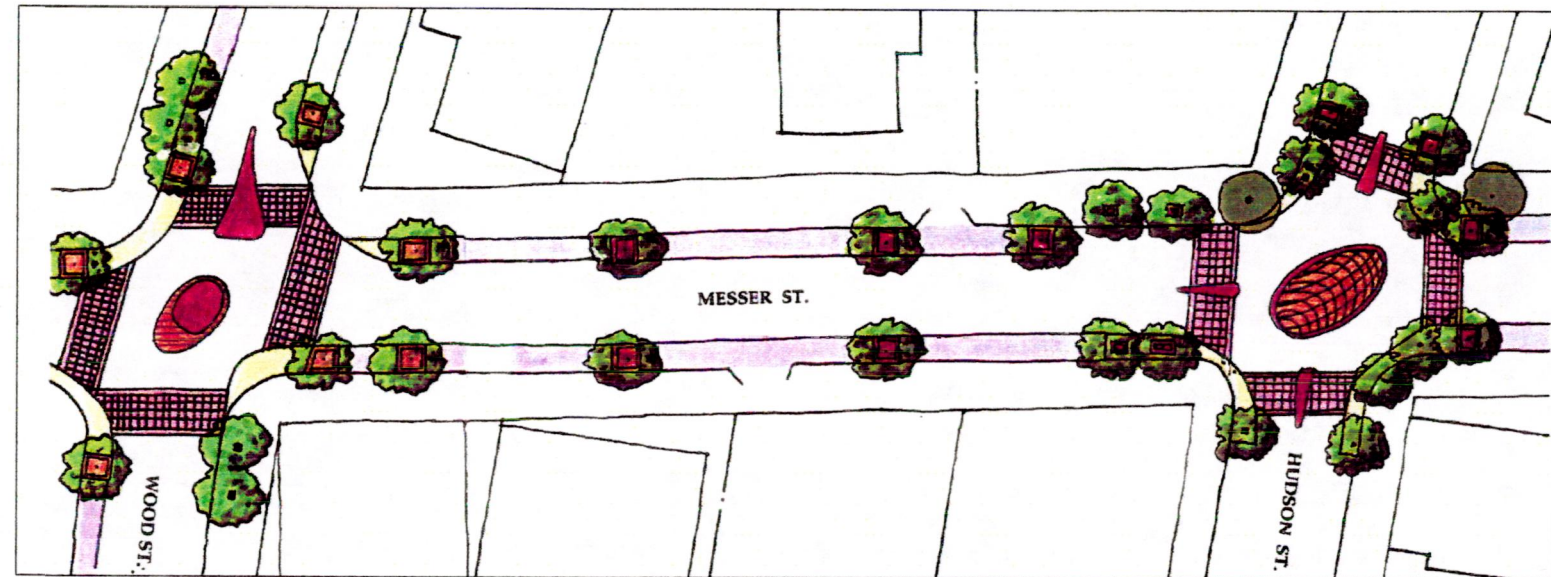
### Explanation

Traffic circles are increasingly used on residential non-arterial streets. They have been found to be very effective in reducing traffic speeds and accidents, without diverting traffic onto adjacent residential streets. The reduction in speed results from the creation of lateral shift in the travel lane.

Other US cities such as Seattle and Portland have reported reductions in intersection collisions of 58 to 91 percent as a result of installing traffic circles.

To ensure reliable speed reduction, carriageway constrictions may also be required.

If traffic circles are to be raised in the center, high enough to allow for planting, they require a surprising amount of space to allow all turning movements to take place. If this is not possible, the circles have to be "overrun" or "rollover" circles i.e. a raised change of paving material that disrupts the motorist but allows larger vehicles to make the turns.



43. Junction of Messer with Chapin, Wood and Hudson

### Description

The two circles illustrated in this report are both rollover circles, on the assumption that delivery vehicles and school busses can make the turns, albeit as tightly as possible. This makes slowing the car harder to achieve, but still acceptable if combined with sidewalk extensions and crosswalks. The paving material for the circle must be of a good visual quality as well as raised high enough to force the car to move around it completely and smoothly but at a low speed. (Figure 43)

Owing to the fact that none of these four-ways are at right angles to each other, the shape and dimensions of the rollover circle must be specifically and carefully calculated for each individual case.

This is also true of the sidewalk bulb outs. As the drawing implies, each corner may have to have different treatment to allow turning movements. Nevertheless, it is possible to reduce the width of every street to assist pedestrians. The planting defining each bulbout is vital to the definition and demarcation of the circle.

At this stage in the overall project, these circles have not been subject to detailed survey and design. The intersection of Chapin and Hudson would also be subject to this level of study.



## Willow Street Supportive Housing

### Issue

Even with the traffic calming measures proposed, Messer is a long straight street. If places can be identified that might offer a change of character, the Traffic Calming should support that objective. (Figure 44)

### Traffic Calming Measures

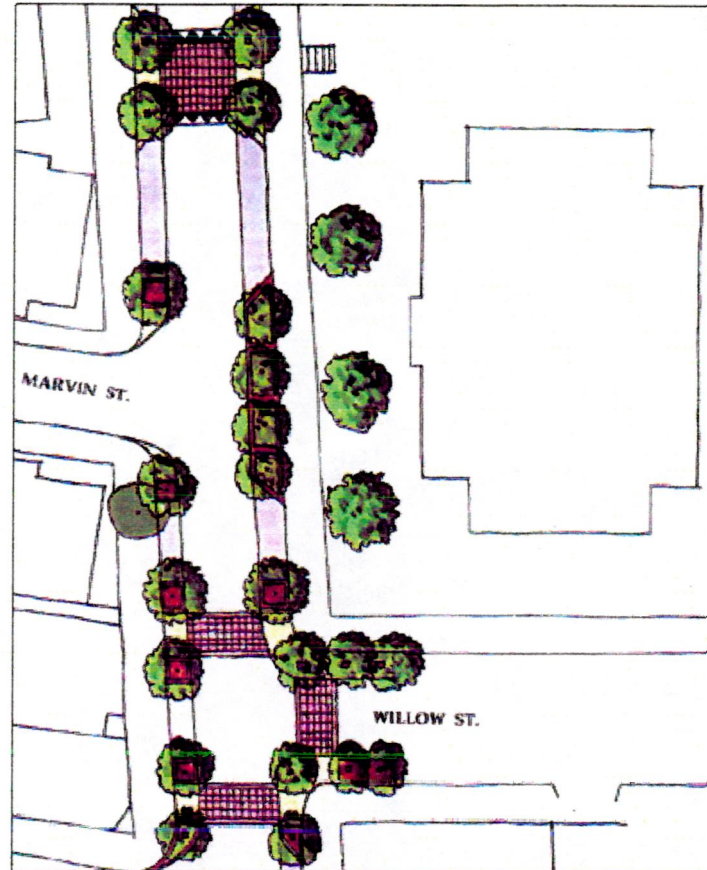
Asa Messer School was identified earlier. The Willow Street Supportive Housing (figure 46) should also be seen as a special place along the street, utilizing bulbouts, tree planting and a raised speed table.

### Explanation

Almost all streets of the length of Messer will have places that warrant special attention. But this can also contribute to the traffic calming of the whole street, if these precincts slow traffic and create a unique atmosphere along the route.



44. A variety of traffic calming elements creating and defining a change of character. Note the quality of materials. Cologne, Germany. (Photo: Tim Pharoah)



45. The Messer/Willow Street Precinct

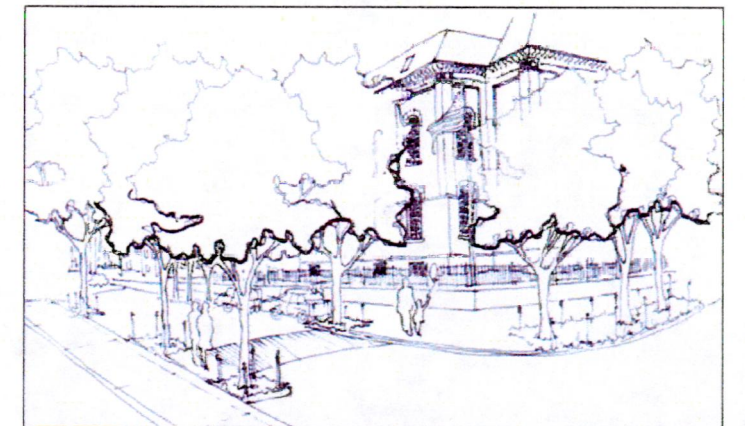
### Description

A combination of crosswalks, sidewalk extensions and dense tree planting at the Willow Street junction should pronounce the entrance from the south. (Figure 47) Some parking should be removed to create an elegant stand of larger trees, appropriate to the large building and its set back from the street, at the termination point of Marvin Street. The residents of the Willow Street Housing are committed to environmental improvements for the whole

neighborhood. Along with the grounds of their imposing building they would be willing custodians of the planted areas on the street. The speed table would be similar to those proposed for either side of the Asa Messer School.



46. Willow Street Supportive Housing



47. Sketch proposal. (Drawn by: Virginia Branch)



## The Messer/Westminster Junction: A Gateway to the Street

### Issue

Westminster Street is a major route into the downtown. It would be advantageous to announce the change of character entering Messer Street from Westminster Street. Equally, it would be good to slow vehicles down as they approached the junction from the south.

### Traffic Calming Measure

Use a Central Island and sidewalk planting as a Gateway into the street. This would also force the traffic to deflect either immediately on entering the street or prior to joining Westminster. This is combined with a sidewalk extension at both the entrance to Messer Street and on approach to the deflection from the south. (Figure 48)

### Explanation

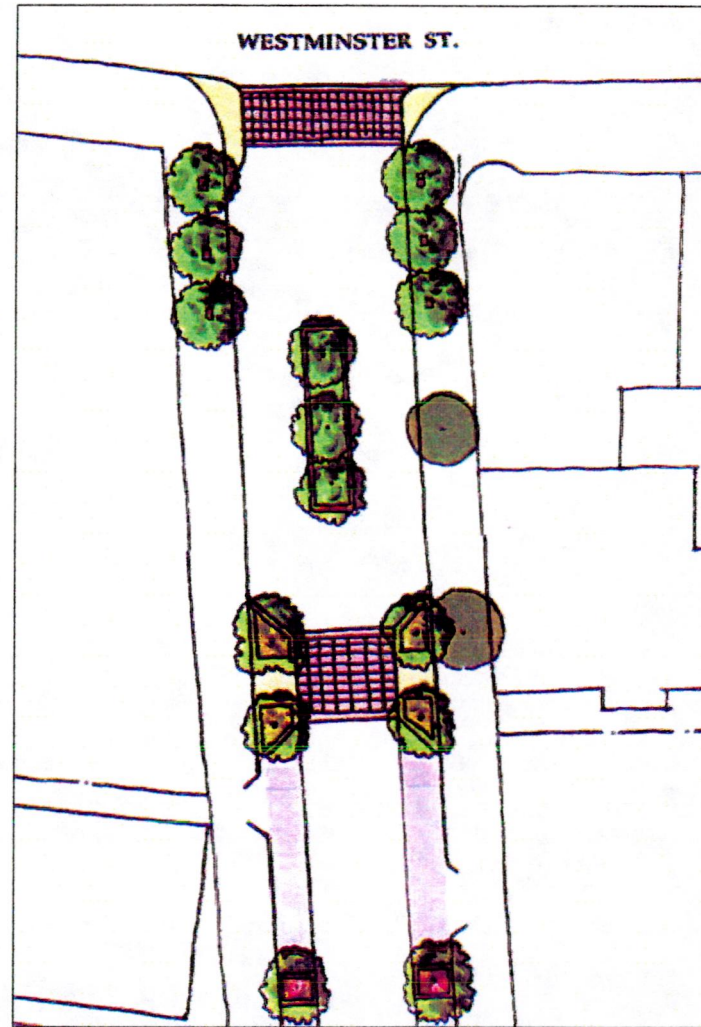
The Gateway marks the beginning and end of areas where different rules or expectations apply. They need to be combined with other calming measures. (Figure 49)

The Lateral Shift coupled with the planted Central Island reduces speed and interrupts the long view. The deflection has to accommodate larger vehicles, which will limit the amount of deflection effect on the car; a dilemma for many traffic calming plans when the car is the primary culprit.

### Description

As drawn, the central island is 40 feet south of the Messer/ Westminster junction. The island is 6 feet wide with a raised curb and planted with trees. It is 32 feet long.

Each travel lane is 12 feet wide. This feature will mean that on-street parking is not allowed either side until after the southern sidewalk extension and crosswalk.



48. The Junction of Messer Street and Westminster Street

A small sidewalk extension is proposed for the Westminster/ Messer crossing, reducing the width from 40 feet to 28 feet.

The crosswalk to the south is not raised. It could be, either immediately or later.

Note: This proposal for the Messer/ Westminster Street Junction is an example of a special feature that must be discussed, surveyed, tested and dimensioned before any final decision is made.



49. A central island reducing carriageway width and assisting in the creation of a gateway. Herne, Germany. (Photo: Tim Pharoah)



## Sycamore Street

### Changes to the Basic Street Section

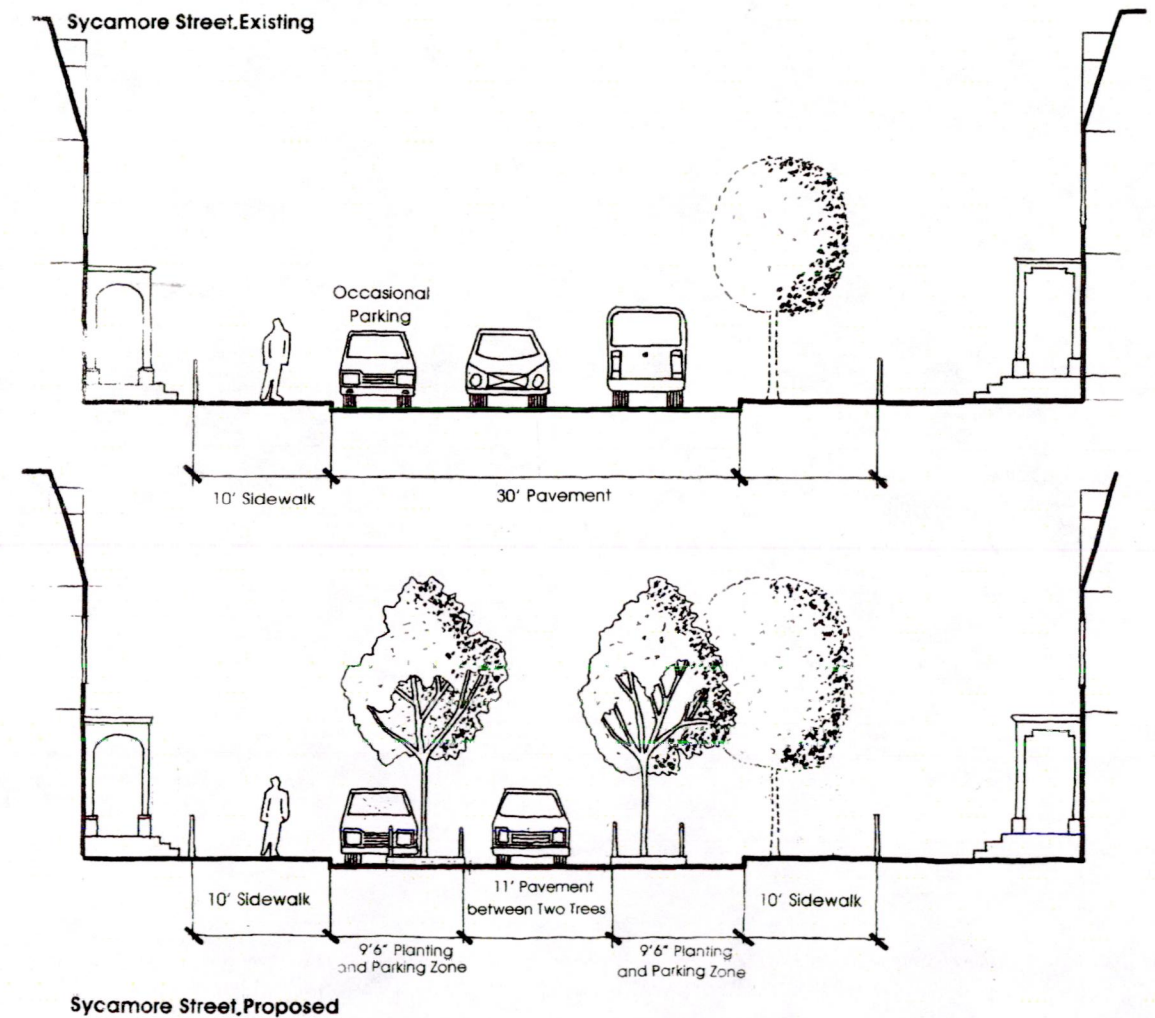
This street has the same dimensions as Messer Street; a 50-foot right of way, 30 feet of pavement with two 10-foot sidewalks. In many respects it is the most difficult to resolve, because despite it having the least amount of traffic, it is the one street that is used to dodge the traffic on the others.

Therefore, it must always remain slower and more inconvenient than Messer Street. This could demand stringent measures not employed elsewhere, including speed bumps and almost certainly traffic circles, as tight as is practically possible. This is a decision that the residents must be aware of from the outset.

Equally, the stretch of Chapin and Wood from Messer to Sycamore must also be given detailed consideration as they are the first stretch of the rat running sequence from Messer street heading south.



50. Sycamore Street



51. Sycamore Street: Before and After Sections



As with the other streets, it is proposed to continue the street tree planting in the pavement to reduce the vast expanse of travel lanes, but bring the trees closer to the center for the most part, and particularly in the mid-block sections.

The tree pits would extend out to 10 feet from the sidewalk, but with a four-foot gap between the pit and the curb. The tree itself would be 7 feet out from the curb.

This would reduce the width of the carriageway to 10 feet opposite two trees. That brings the movement at that point to *Yield Movement*. So, not only would drivers have to take more care at these points, there is also the *perception* that there may be delays for anyone trying to take a *hurried* short cut. (Figure 52)



52. A tree planted further out into the street. In this case, it is to define angled parking. But it has a significant narrowing effect on the travel lane. Freemantle, Australia. (Photo: Paul Murrain)

Not every pair of trees need extend this far in to the pavement. The residents must participate in this debate. The 10-foot gap could be 12' or 14', if the residents prefer. They have to live with it every day. The issue to consider is that rat running on Sycamore, rarely meets with vehicles coming the other way because volumes are not great. If a driver is determined to cut through quickly in a car that is less than 6 feet wide, a 12-14 feet gap is not much of a deterrent.

The four foot gap between tree pit and curb could be used for children to cycle and play in the street with greater protection, or could be given over to a larger tree pit for planting of flowers or small shrubs. (Figure 53)



53. Tree planting brought out on one side but well into the carriageway, making yield movement inevitable next to every tree.

An alternative to consider is the occasional central island planted with trees, narrowing the carriageway either side to 10 feet. (Figure 54) This would mean that parking curbside would be illegal for that length of island. The island could limit long forward views to good effect, but would change the nature of the street. Again the community should be consulted on this matter. Design work for the full length of Sycamore has not been possible, but several special features have been proposed by way of demonstration.

Note: Stop signs along Sycamore Street should have been there long ago. Every driver does not respect them but they would be beneficial nonetheless. They should be installed immediately.



54. A central island narrowing a carriageway. In this case, it incorporates a crosswalk. Jülich, Germany. (Photo: Graham Paul Smith)



## The Junction of Sycamore and Chapin

### Issue

When streets are wide with a low volume of cars most of the time, reducing the convenience of turning movements, will make the rat running less convenient.

### Traffic Calming Measure

Narrow the road width at the junction with a combination of sidewalk extensions, planted carriageway constrictions plus trees and striping in the parking lane. A raised crosswalk should also be considered. (Figure 55)

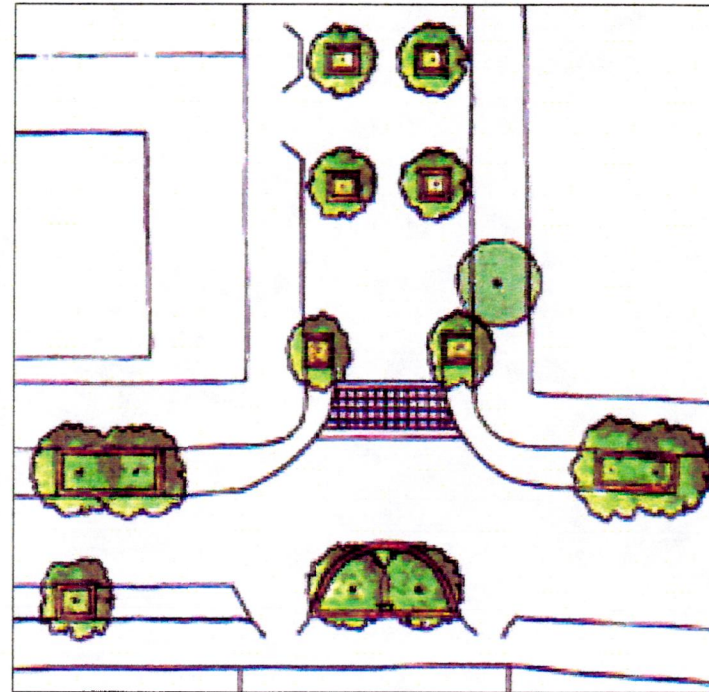
### Description

Turning movements for straight-bodied trucks and school busses has to be accommodated, but it is still possible to tighten the turning movements quite considerably.

As drawn, Chapin has been narrowed on the north side towards Messer by a sidewalk extension 8 feet wide. Two trees are planted in the parking lane to give emphasis to the narrowing. It is recommended that further tree planting in the parking lane, plus striping continues to the Chapin/ Messer junction. Tree pits and striping at seven feet should be considered for Chapin. The residents may even wish to consider a similar street section to that proposed for Sycamore, at least for the section between Sycamore and Messer.

Immediately across from the Sycamore/ Chapin junction, terminating the vista, a carriageway restriction and deflection is proposed. This would add further restriction to the speed of turning movements. (See figures 56 & 57)

It is recommended that a raised crosswalk be considered, combined with the sidewalk extension that would reduce the carriageway from 30 feet to 19 feet. Turning movements of larger vehicles are likely to restrict this from being any tighter.



55. Junction of Chapin Avenue and Sycamore Street



56. An elegant carriageway constriction incorporating tree, bollards and paving. Bonn, Germany. (Photo: Paul Murrain)



57. Public art used as part of the carriageway constriction, bringing unique character to this Cologne neighborhood. (Photo: Paul Murrain)



## The Intersection of Sycamore and Wood

### Issue

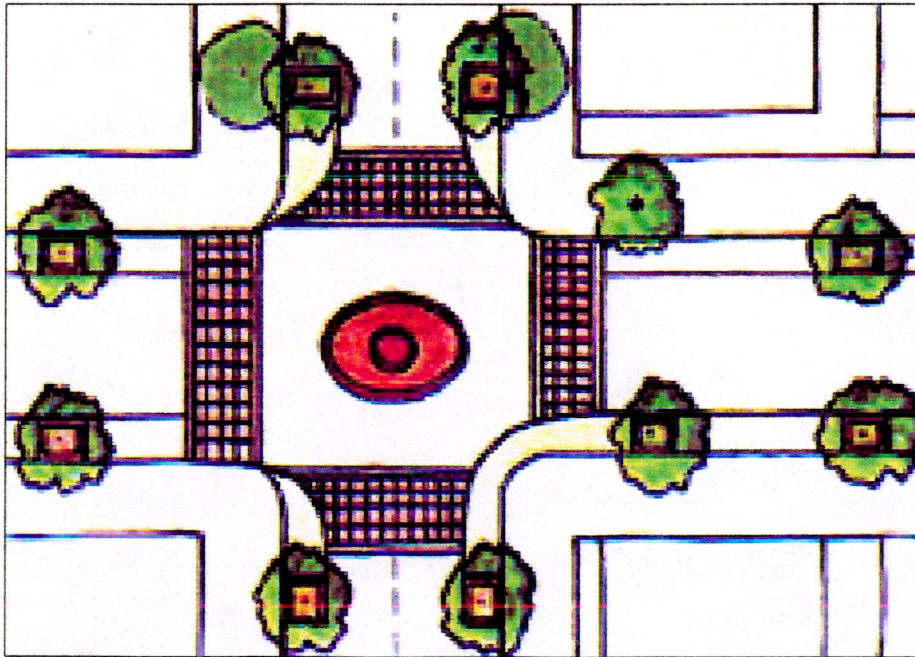
Sycamore Street has four sets of four-way intersections. They are wonderful assets because they offer direct and frequent connections to many parts of neighborhoods. They are efficient for pedestrian accessibility and local movement. But increasing speed and frequency of traffic has made them places where too many accidents occur. Stop signs are respected by some drivers but often ignored by others, usually those who are driving too fast.

### Traffic Calming Measure

Incorporate traffic circles combined with sidewalk extensions, crosswalks and tree planting. (Figure 58)

### Explanation

Traffic circles are increasingly used on residential non-arterial streets. They have been found to be very effective in reducing traffic speeds and accidents, without diverting traffic onto adjacent residential streets. The reduction in speed results from the creation of lateral shift in the travel lane.



58. Intersection of Sycamore Street and Wood Street.

### Description

Even though the streets are wider than those in Elmwood, they are not wide enough to allow circles with any height for planting or other features. Therefore, more detailed testing is likely to reveal that they have to be "overrun" or "rollover" circles i.e. a raised change of paving material that disrupt the motorist but allow larger vehicles to make the turns.

The paving material for the circle must be of a good visual quality as well as raised high enough to force the car to move around it completely and smoothly but at a low speed. The elliptical form of the overrun area will disrupt vehicles moving along Sycamore, more than those moving along Wood.

The planting and striping of Wood could be at 7 feet from the curb, or the striping kept at 6 feet with the tree pit pushed out to 7 feet on approach to the circle, assuming this does not compromise larger vehicular turning movements. The height of the overrun areas must be discussed between the necessary authorities, but it must be enough to make the car either deflect around the circle or drive extremely slowly over it.

Circles of this kind if approved by the community, could then be employed at all four of the intersections along Sycamore.



59. Elegant details including an antique lighting column. Sycamore St. circles cannot be raised in the center, but the materials can still be both functional and elegant. Sheffield, U.K. (Photo: K. Platt)



## Sycamore Street: Summary

It must be repeated that Sycamore may well have to have tougher measures than other streets, to improve its position in the system. It is recommended that the circles be seen as the severe speed-reducing element, supported by planting and striping, with stricter measures such as speed bumps left on the agenda, but only if absolutely necessary.

It must be understood that residents have to tolerate traffic calming devices on their own streets far more than the occasional speeding idiot, who will hopefully have gone away.

Residents made other suggestions such as speed tables across the full width of the four-way. They are possible but dictated by the relatively small change in level between curb and pavement. Once more they would have to be quite severe to dissuade the “rat-runner”

If the circles are installed, they could be a successful deterrent to speed. The tendency then, is for the driver to speed up between these circles to make up for lost time. Cars can accelerate very quickly today. Traffic calming must not induce a speeding/breaking/speeding form of behavior. Hence the need to consider the severity of the mid block measures.

It is strongly recommended that the simulation of these measures be chalked out and defined in the street, with residents present and to drive vehicles through to see how they feel about different spacing and dimensions.

As with all the proposals in this report, nothing should proceed in detail until the residents are comfortable with the recommendations.



## Parade and Dexter: Build Tree-lined Medians

The basic theme of planting in the parking zone is recommended for all four streets and has been explained and illustrated earlier in this report.

Parade and Dexter are 43' and 40' wide respectively. Planting and striping in the parking lane alone is not enough to reduce the vast expanse of carriageway.

### Tree Planted Medians

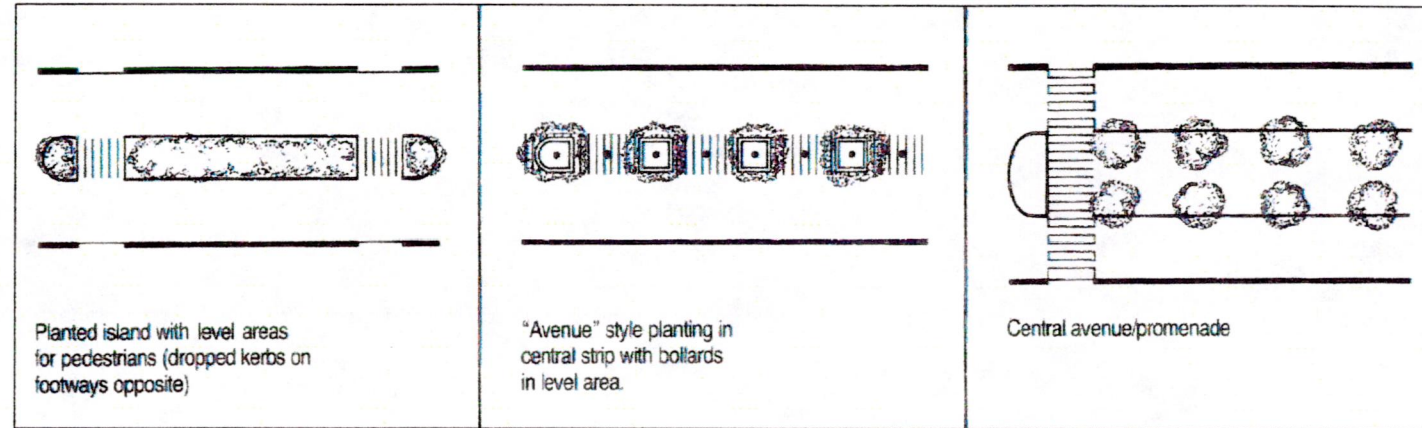
It is recommended that medians combining tree planting in raised treepits with striping or color, or paving, be used down the center of Parade and Dexter.

Environmentally, medians further reduce hard paved surface and offer shade to the remainder. They introduce many more trees and other shrub and ground cover planting if so desired.

As with the tree planting throughout this project, every effort should be made to plant trees opposite each other on both sides of the road and in the median. Again these will have to be located precisely on site, as part of the survey and documentation for construction. The trees should be protected at all corners by bollards as well as the raised curb.

Clearly, the wider the median, the better for the tree. But, if the tree pits are substantial they have a growing medium of 7 feet by 6 feet. The medians have to be smaller on Dexter Street, but if planted with care, protected and maintained, they are in no worse a situation than many successful trees on the immediate edge of the sidewalk.

As with the trees in the parking lane, the utilities must be located and the implications assessed. At the time of writing this report, that has yet to happen. It is not expected to be prohibitive, but it may have a cost implication.



60. Medians can vary in size as well as planting and paving combinations. (Source: Devon County Council, 1991)





61. Medians giving pedestrians a refuge between the two travel lanes. Langenfeld, Germany. (Photo: Tim Pharoah)



62. Medians exist near the study area. Here the trees are planted in asphalt. Larger planting beds and different materials are both possible. Junction of Broadway and Tobey Street, Providence.



63. Here the median uses bollards and textured paving. Both are possible between trees. Fremantle, Australia. (Photo: Paul Murrain)



## Parade Street

### Changes to the Basic Street Section

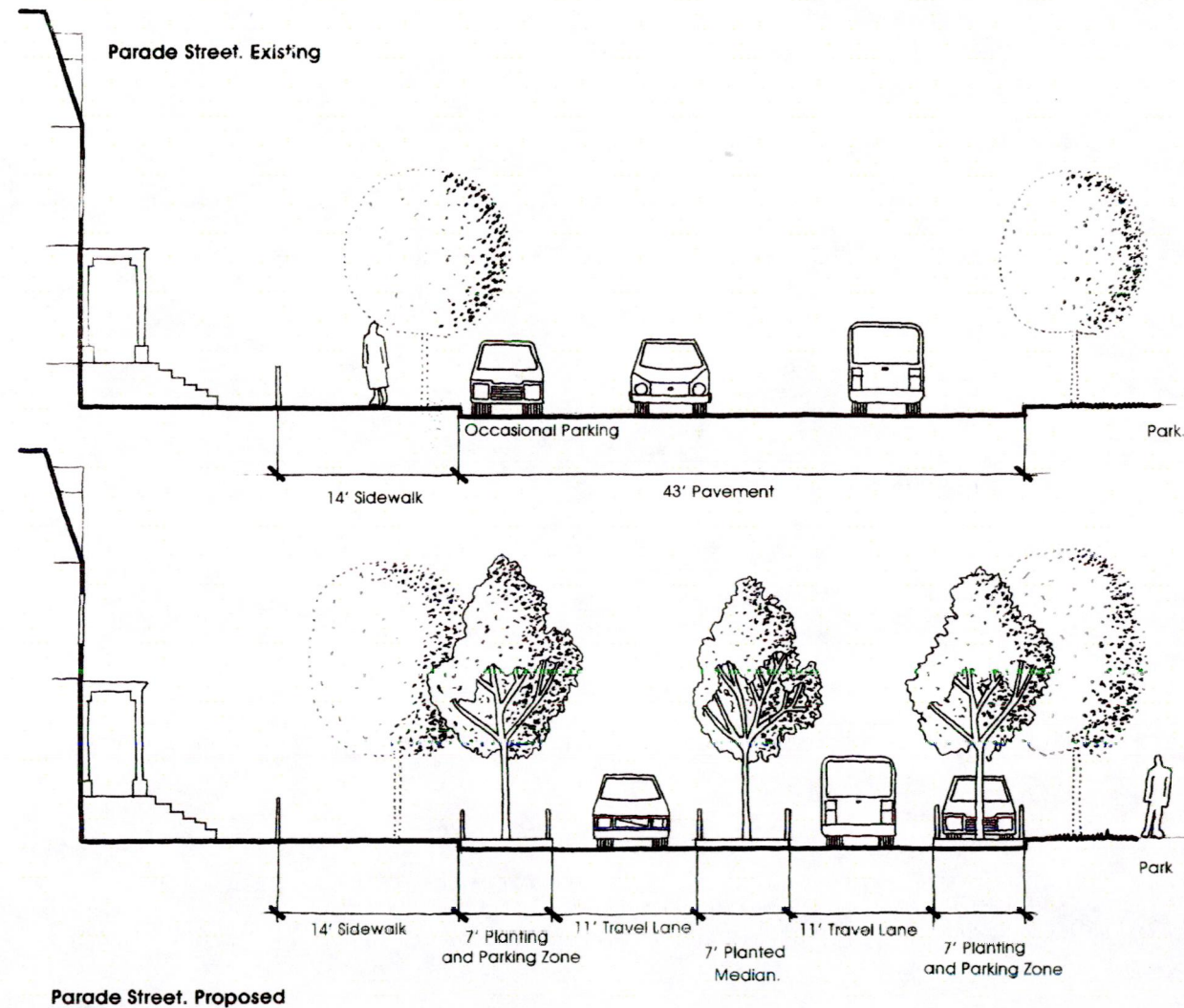
Parade Street is 43 feet wide; an enormous sea of asphalt. There is nothing other than the occasional event in the park that generates any parking to narrow the carriageway. Even then, some 32 feet remains. (Figure 64)

It is proposed that the two parking lanes are planted and striped to a distance of 7 feet from the curb. Each travel lane would then be 11 feet in width with a central median 7 feet wide. (Figure 65)

That eleven-foot width will only exist where a tree in the median and a tree in the parking lane are immediately opposite each other. In the places where a tree is in the median but not in the parking lane, the carriageway is 18 feet wide. It remains 43 feet wide where no trees are planted, but the striping and change of materials still gives an optical width of 11 feet per travel lane.



64. Parade Street



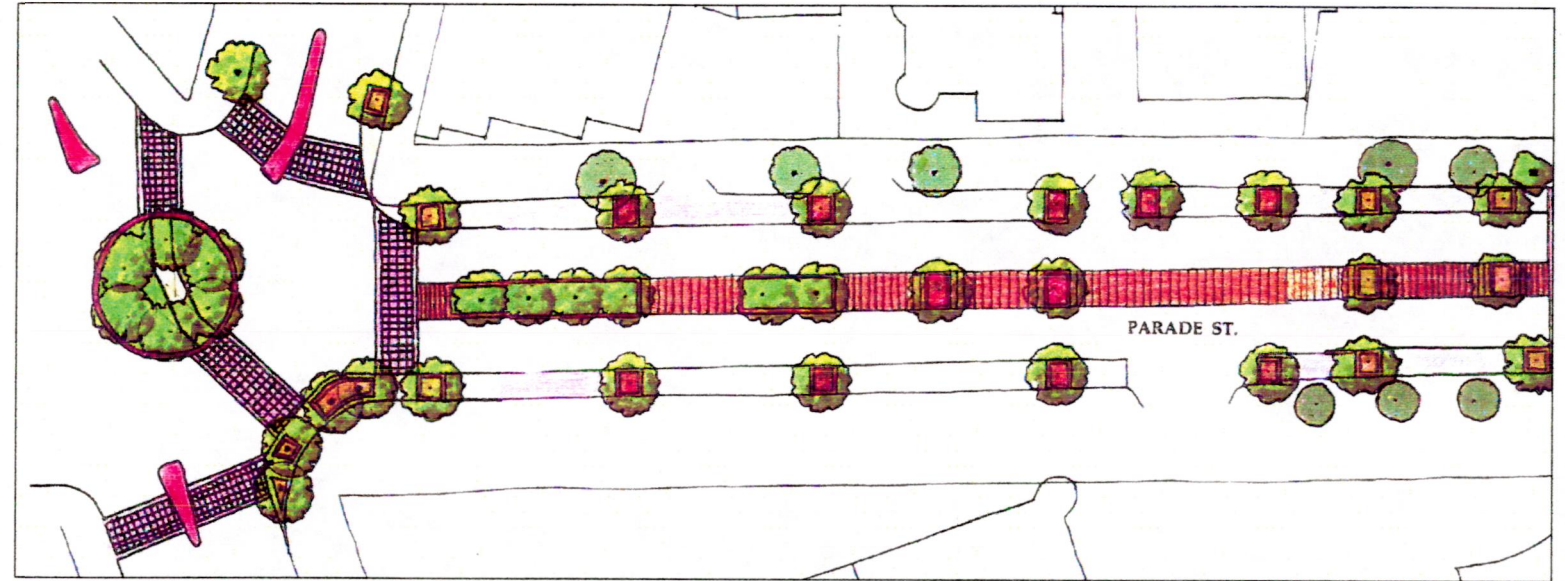
65. Parade Street Before and After Sections



## Cranston Street to Wood Street

Figure 66 illustrates the basic street section for Parade Street. Initial sketch ideas have been explored for the junction of Cranston, Chapin and Parade, though this is not strictly in the brief and much more work would need to be done. However, it is shown to emphasize the need to resolve this space as soon as possible and regard it as part of a gateway in to the park environment.

At the start of Parade it is suggested that the median tree planting be bold and closely spaced to set the tone for the remainder of the street. The trees should be planted at no more than 12-foot centers at this key entrance.



66. Cranston Street to Wood Street



67. A street with a striped parking lane and a planted and paved median. The planting prevents overtaking. The only thing missing is the trees. Aachen, Germany. (Photo: Graham Paul Smith)



## Parade between Wood and Hudson

### Issue

There is a place along the edge of the park where crowds of all ages gather to watch and play baseball. This is an example of a "special place" where the gathering can be facilitated as part of the traffic calming plan as well as contributing to calming the traffic for the full length of the street.

### Traffic Calming Measure

It is proposed to deflect the traffic on the park side, away from the area around the baseball diamond. The deflection is achieved by a combination of sidewalk extensions and a raised crosswalk in the form of a speed table. (Figure 68)

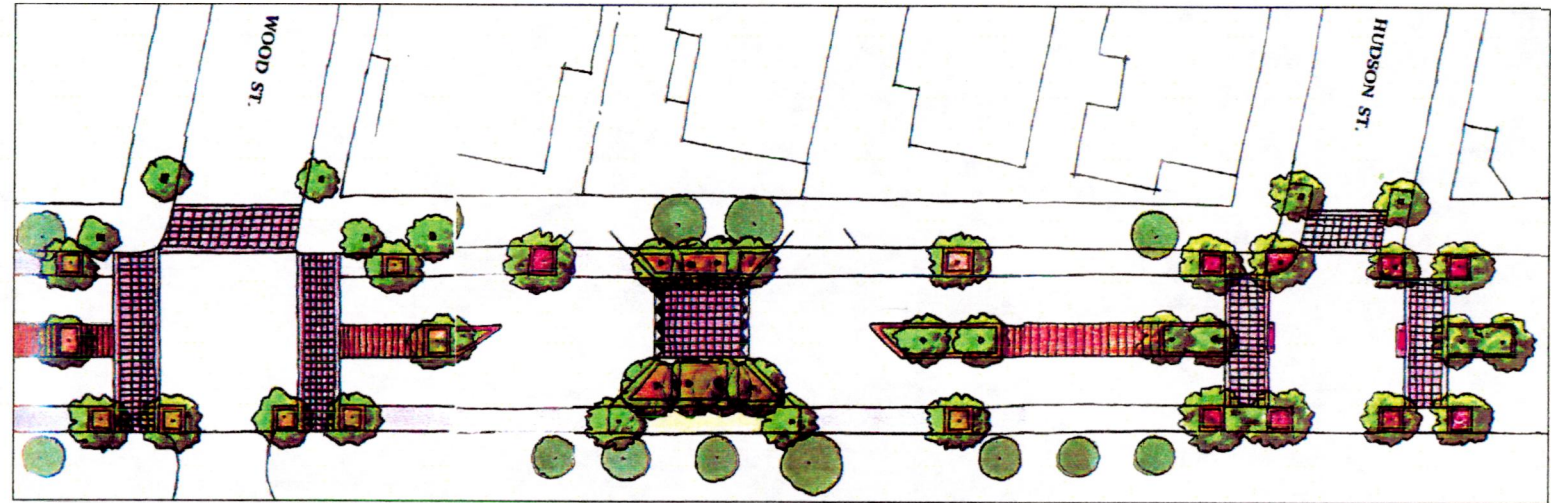
### Description

The park side traffic is deflected to the center of the road by breaking the median and building out a sidewalk extension further from the park side than the opposite side. As drawn, the sidewalk extension is 19 feet wide on the park side and 7 feet wide on the opposite side. The traffic heading south does not deflect.

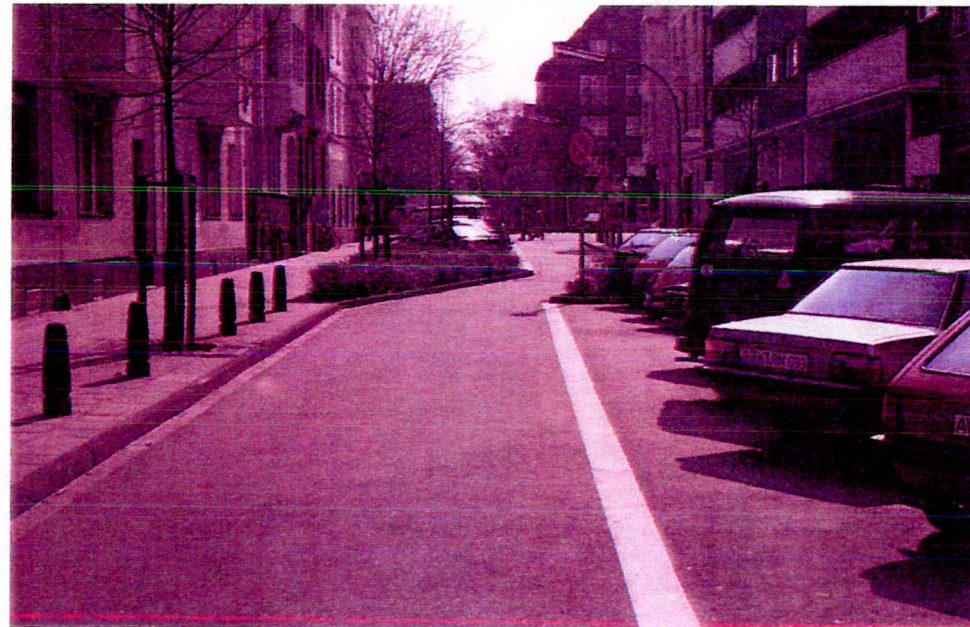
The speed table/ crosswalk thus narrows the 43 feet down to 17 feet; a marked difference for pedestrians, particularly the young and the elderly. It is emphasized by closely spaced trees.

Once again the deflection is as tight as possible for large vehicles in order to have an impact on car drivers. However, the raised crosswalk will also be a speed deterrent.

69. A lateral shift deflecting traffic away from the sidewalk. This picture shows a quiet residential street but the principle is the same for Parade Street. Cologne, Germany. (Photo: Tim Pharoah)



68. Parade Street between Wood Street and Hudson Street





## The Wood Street and Hudson Street Junctions

### Issue

If commercial vehicles have to turn into the heart of the neighborhood, the median restricts those movements. This may make sidewalk extensions at the junctions difficult to achieve. But on balance, Parade Street is the one that needs modification.

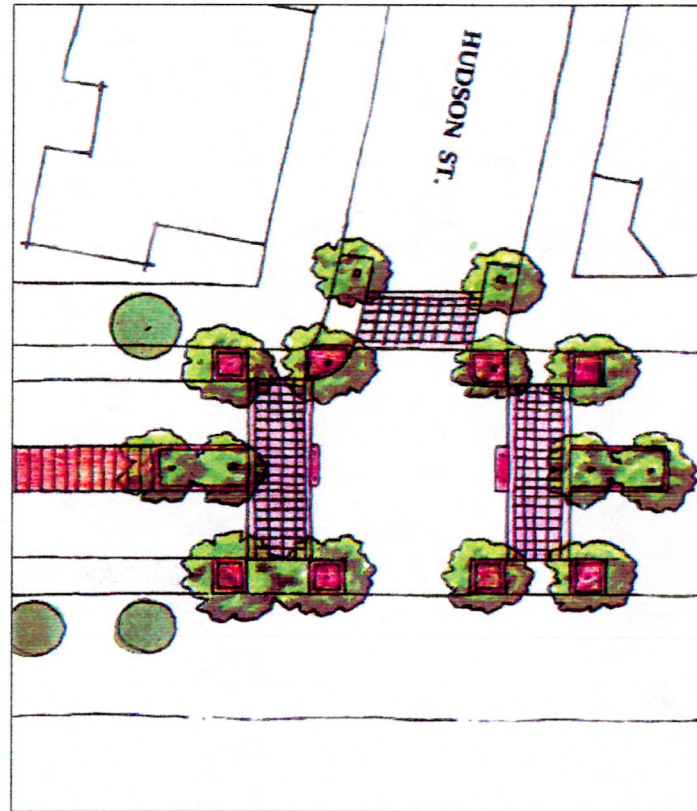
### Description

The junction of Hudson and Parade was drawn to benefit pedestrian movement. Left turns onto Wood are possible; left turns out are very tight. Right turns are not possible for vehicles forty feet long. (Figure 70)

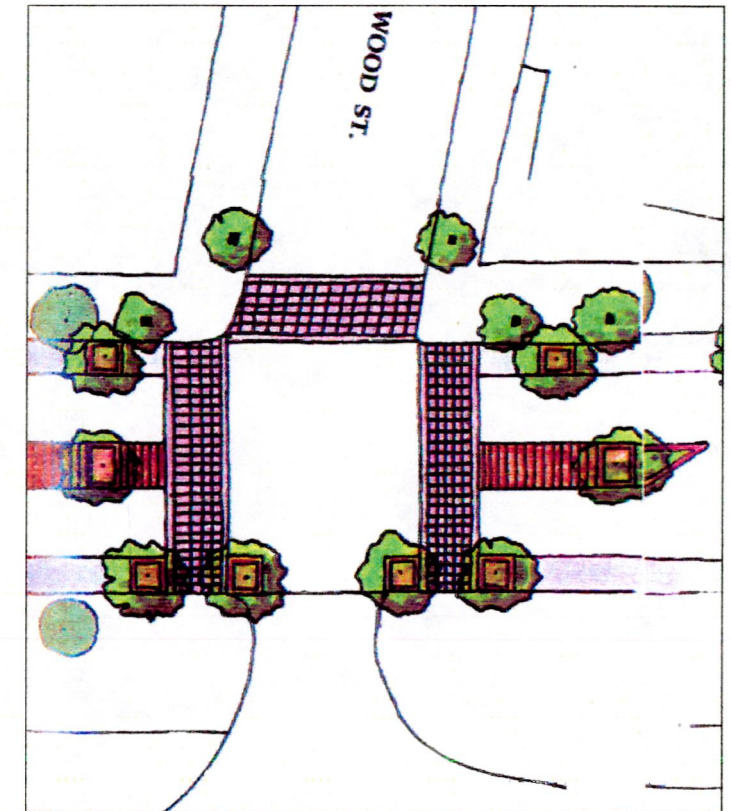
The junction of Wood and Hudson make turns for vehicles of this size possible from all directions. As a result the sidewalk extensions cannot be built and the planting in the median has to move back from the crosswalk. (Figure 71) This is a condition brought about by the median. If the median backed off further, the bulbouts could be built. These are the kind of decisions that need to be discussed and tested.

Note: This raises the issue of complete access to the neighborhood for large commercial vehicles in general. The only alternative is to plan specific entrances for such vehicles in and out of the grid of streets between Parade, Westminster and Messer, making sure that every internal street can be accessed. Junctions would then have to be signed accordingly.

This is a complex issue that is beyond the scope of this study, but a topic worthy of discussion.



70. Junction of Parade Street and Hudson Street



71. Junction of Parade Street and Wood Street



## Dexter Street

### Changes to the Basic Street Section

Dexter has a 40 feet wide pavement with a generous 20-foot sidewalk on the east side. Because of the combination of its length, straightness and lack of enclosure, it is perceptually the widest of all.

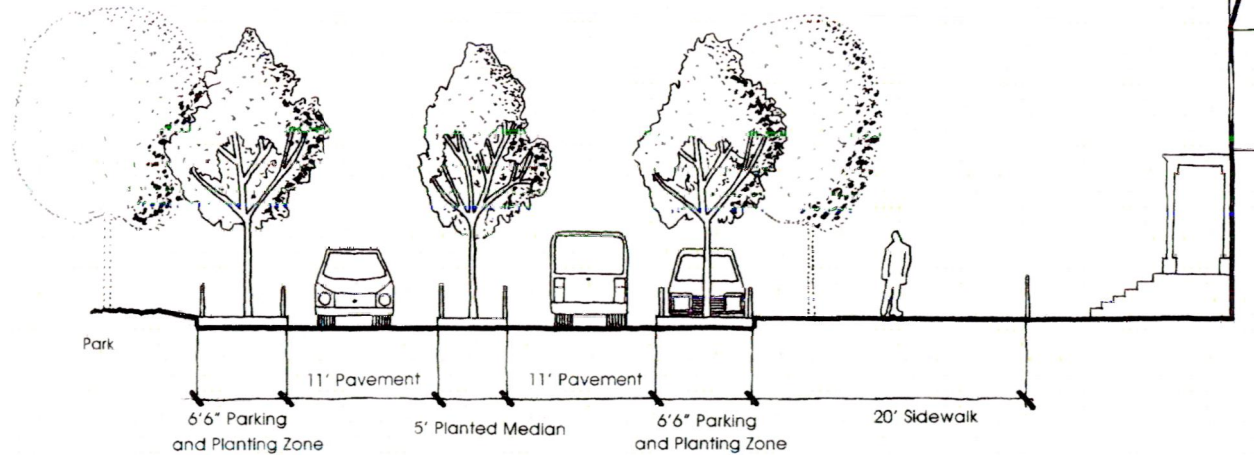
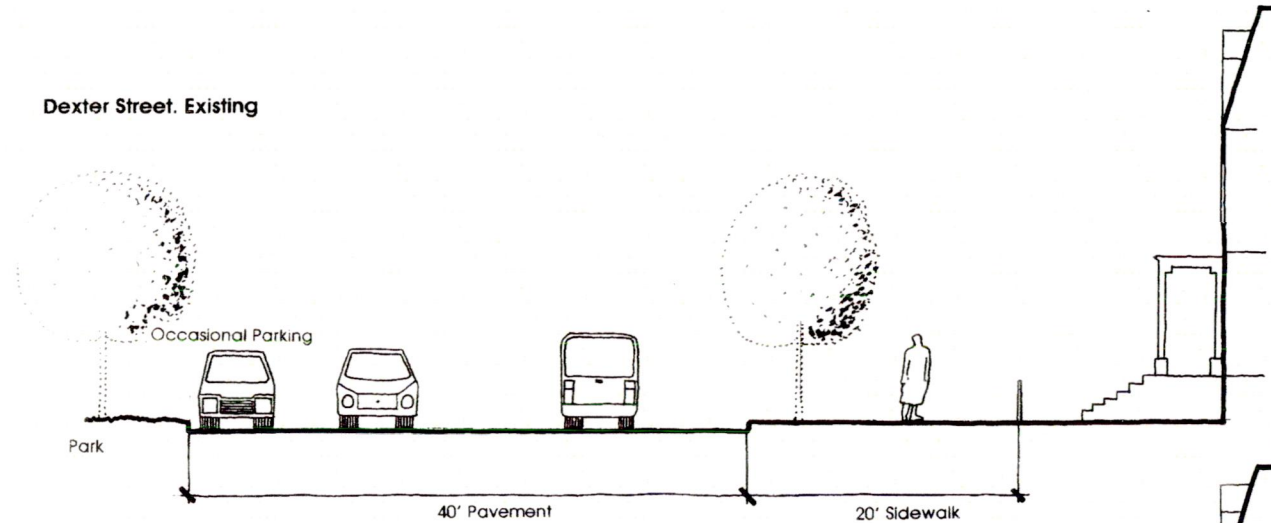
As drawn the tree pits and striping in the parking lane extends to 6'6" from the sidewalk. A median of 5 feet leaves two 11-foot travel lanes. It is acknowledged that a wider median would be better. But this could only be substantially wider if parking was restricted along Dexter Street. It is worth considering striping and planting at 6 feet to give a 6-foot median. That is tight for a parking zone, but if cars park efficiently, it merely moves the dimension rather than reduces it. This has yet to be finalized with the necessary authorities and the consultant engineer.

The 11-foot width only exists where the two trees in the parking lane and the tree in the median line up with each other. If there is just a tree in the median then the pavement is 17'6" wide when no cars are parked.



72. Dexter Street

Dexter Street. Existing



Dexter Street. Proposed

73. Dexter Street: Before and After Sections



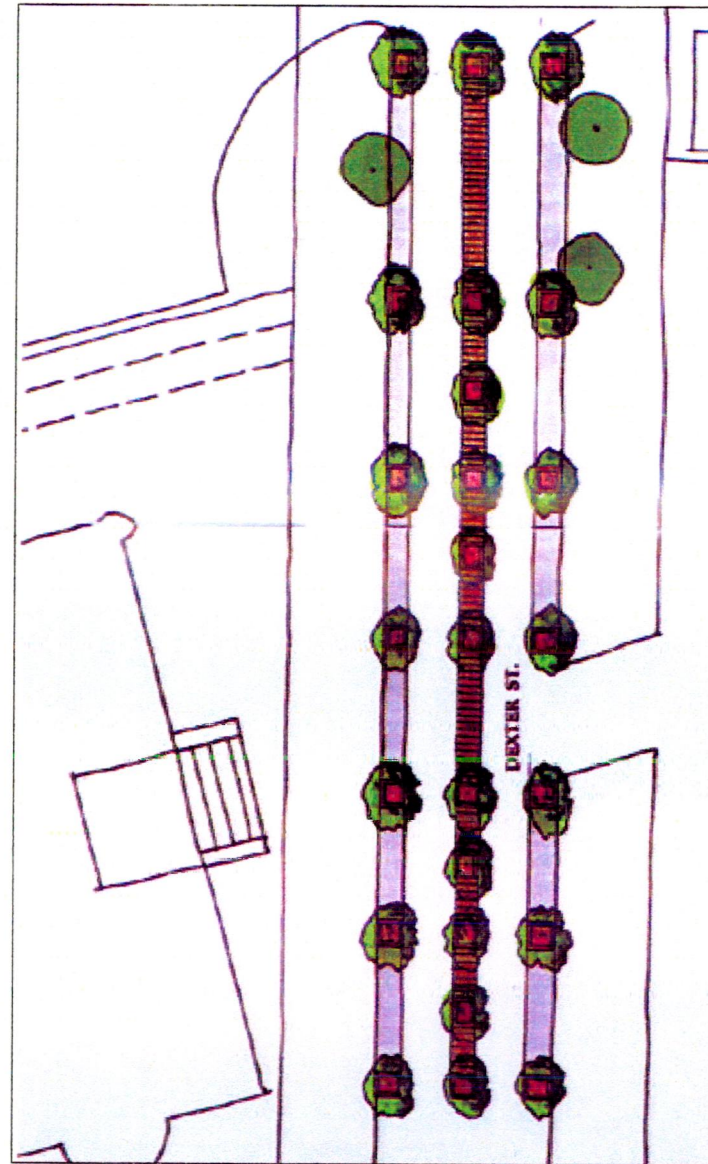
## From Cranston Street to the Park

The basic street section is used here, but allowing comfortable turning movements from Cranston Street. Within the body of the neighborhood, it is perfectly acceptable to assume that larger vehicles have to cross into the other lane to negotiate the turns. On a street as important as Cranston Street this is less realistic. The planting, striping and median therefore begins approximately 60 feet north of the Cranston Street sidewalk edge. Again this must be accurately assessed at a larger scale before any construction takes place.

As with the southern end of Parade Street, the tree planting in the median should be spaced closer than normal to define the entrance to Dexter and the change of character. It is suggested they be at no more than 15' centers.



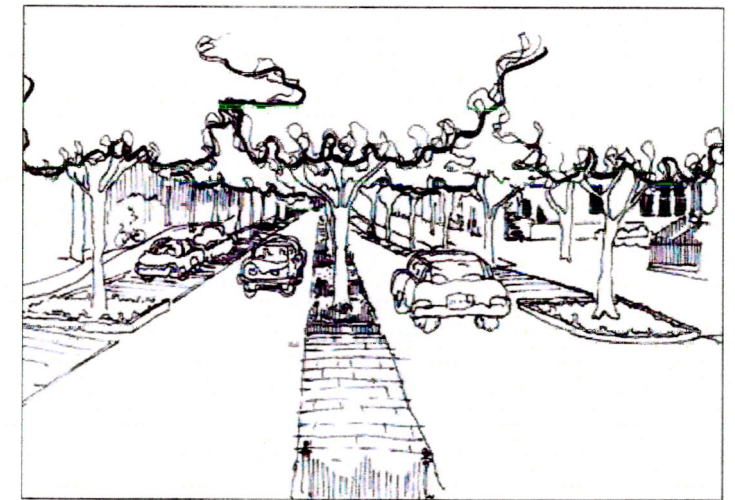
74. This successful median is considerably narrower than that proposed for Dexter Street. It has been carefully constructed, detailed and maintained. Subiaco, Australia. (Photo: Paul Murrain)



75. Dexter Street Basic Layout



76. Dexter Street: Existing



77. Dexter Street: Sketch Proposal (Drawn by: Virginia Branch)



## A Gateway to the Park

### Issue

As drivers pass the large car park and service area north of the Armory building, the park begins in reality. There is a footpath along that southern edge that is used by a good number of people crossing the park. A change of character, combining a sense of gateway and slowing the traffic, should be considered at this location.

### Traffic Calming Measure

Sidewalk extensions combined with a crosswalk and median would lead in to a lateral shift created by a substantially planted central island. This would then return to the basic street section. (Figure 78)

### Description

The crosswalk is essential as safer access to the well-used footpath across the park. As with all of these crosswalks, it could be raised as a small speed table. Clearly, any vertical change will have some deterrent effect on speed. At this stage the results of the broader changes to the street section cannot be predicted. It is perhaps financially prudent to assess if the more severe measures are necessary at a later date and adjust accordingly.

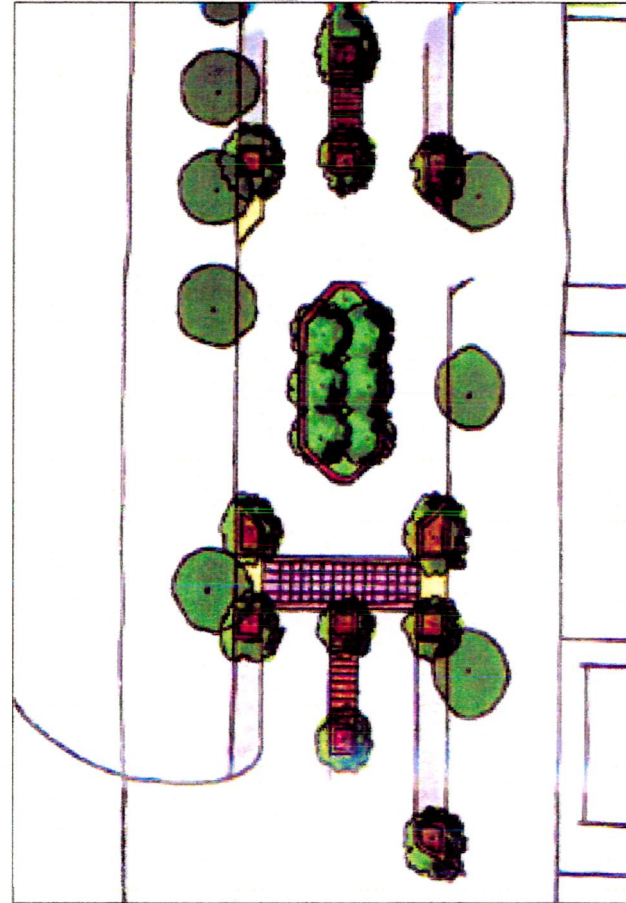
As drawn, the Central Island is 38 feet long and 16 feet wide with two 12-foot travel lanes. Again, the deflections can not be too severe for a car due to the space needed for larger vehicles, but it would limit the forward view of this extremely long straight street and serve to mark the arrival to the park environment.

In this case, it is worth considering whether this Island should have a larger raised edge and planting bed than that in the basic median. This would give it greater impact and allow it to be more of a planting feature.

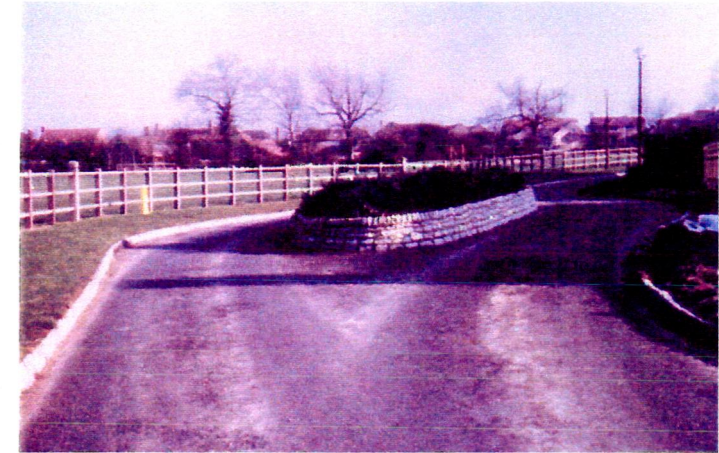
This island would change the linear nature of this street, albeit only for a short distance.

There may be those in the community who regard that as too much of a change to the historic street. This would also mean that either side of the Island would have to be a no parking zone.

This has not been discussed with residents, but it should be noted that the adjacent apartment building has a large parking yard.



78. Dexter Street: A Gateway to the Park



79. A central island in a less formal setting, dividing the travel lanes and deflecting the traffic. Milton Keynes, England. (Photo: Paul Murrain)



## The Hmong Church

### Issue

This is arguably the place where the largest number of people gather, of all ages, at any one time, every week. It is an extremely popular Church for the South East Asian community. It is outside this Church that one child has been killed and another very seriously injured in the last two years.

The church also happens to be in a position roughly half way between Division Street and Hollywood Road. As such, providing a safer sanctuary for the church community could also be combined with traffic calming for the length of the Dexter Street. It would also be a complimentary measure to the park gateway in the south.

### Traffic Calming Measure

It is proposed to extend the sidewalk considerably on the east side, outside the church, deflecting the traffic heading north. A raised speed table and crosswalk as well as a considerable stand of trees would further reinforce this lateral shift. (Figure 80)

### Description

The sidewalk extension interrupts the basic planting and striping lane, going out into the travel lane a total of 17 feet from the current sidewalk. It is angled to assist the deflection but runs the full length of the building.

The parking is also interrupted on the West side but the trees immediately north and south define the carriageway and reduce the effective travel lane to 17 feet. However, it is possible to use that space for slow passing maneuvers if needed.

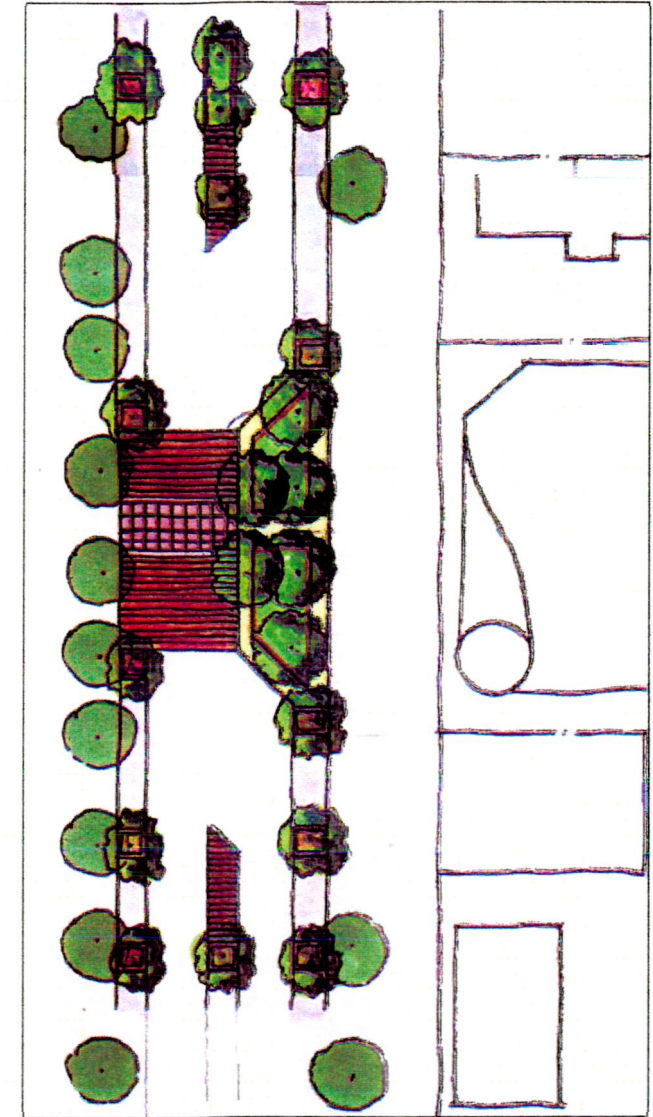
As drawn, the raised speed table implies a change of material across the full length. This is an expensive solution and there are several alternatives to debate. The raised table could be asphalt with a change of material for the crosswalk only. Or, the crosswalk could be the only

component that is raised. But, because the severity of the deflection has to accommodate larger vehicles and those heading south are not deflected, a vertical shift should be given consideration.

As has been stated before, the dialogue between the regulating authority and the emergency services on issues of vertical shifts has not taken place at the time of writing. The outcome of such discussions will no doubt influence the presence and severity of these features. To have any effect, the level change should not be any less than 3 inches and preferably 4 inches. The angle and length of the ramp component must also be determined.

It is recommended that substantial tree planting take place on the feature, which should also have bollards along the edge between the sidewalk extension and the travel lane.

Parking is reduced immediately outside the church, but, hopefully, the congregation will acknowledge the greater benefits. Hollywood Road is a logical place for parking when church services are held.



80. Dexter Street: Creating a special frontage to the church, deflecting the traffic and raising the crosswalk.





81. Hmong Church: Existing condition. The scene of fatal and near-fatal accidents.



82. Hmong Church sketch proposal showing median, sidewalk extension and speed table in place. (Drawn by: Virginia Branch)



## 6 Implementation

### Phasing and Prioritization

This proposal has consciously attempted to offer a long-term vision. It neither can nor should be constructed all at once. There are several issues that will influence the phasing of a plan of this size.

- Available Finance
- Distribution of finance across political boundaries
- Having a logical sequence of change
- Balancing the measures on all of the streets.
- Monitoring the effects, which may change priorities.

#### Complete the Basic Themes

Bearing in mind the recommendation to use narrowing by planting and striping as the underlying element of change, it is logical to complete that as much as possible and to take time to review its results. It may be concluded that some of the more severe specific measures are no longer necessary. In the case of Parade and Dexter Streets, it would be preferable to construct and plant the median at the same time as the striping and planting in the parking zone.

In any event it is not recommended that the *specific* measures be put in place *before* the overall planting and striping. That would tend to make traffic remain at speed with occasional rapid reductions, resulting in erratic driving rather than consistently slowing it down.

#### Specific Measures in Sequence

The specific measures themselves should be done as a sequence. Once the planting has taken place, the sequence of specific measures should be completed as a package for the whole street if at all possible.

#### Interim Stages of Detail

But, finance may not allow this to happen smoothly. It is possible to achieve considerable success with interim stages of detail. For example, the effect of a sidewalk extension

can be achieved by placing trees and tree pits at either end of the bulbout but not constructing the sidewalk until later. (See figure 83)



83. The tree extends the sidewalk. The new sidewalk can come later. Oxford, England. (Photo: Paul Murrain)

Materials can achieve a similar effect. A very successful bulbout or carriageway constriction can be achieved by a change of paving material or color, defined by bollards. (See figure 84)

The median could either be striped or colored to begin with and paved later. A crosswalk can be striped at grade but transformed into a raised crosswalk once the overall performance of the street has been assessed.

These issues are part of a complex system of management and political process, for the neighborhood, the City and political representatives. It is no more or less complex than many other issues in city planning. But, as long as that is understood and embraced there is nothing preventing these kinds of proposals from being achieved logically and successfully.



84. Paving, bollards and tree mark out a lateral shift. Nuremberg, Germany. (Photo: Tim Pharoah)

#### Interim Measures and Testing

Traffic Calming can use temporary striping and materials to test how drivers respond. But, they must be accurate and simulate the final version of the measure sufficiently. They must not become permanent! (Figure 85)



85. Temporary measures to test their performance. Interlaken, Switzerland. (Photo: Paul Murrain)



## Public Involvement

The public involvement to date has been of a high order, thanks to the efforts of the West Broadway Neighborhood Association assisted by the Department of Planning and Development.

But, local interests must be involved in more than generating the desire for traffic calming. They have to be involved in the preparation, design, implementation and monitoring of the program. In particular, the different and sometimes conflicting interests in an area or a street need to be fully considered. Every traffic calming measure is part of a larger plan and area wide intention. But, every traffic calming measure is also outside somebody's house, store or business.

This puts a lot of pressure on the neighborhood to be as one with a plan of this scale. Every effort must be made to involve and consult at all levels.

### Statutory Authorities and Agencies

At the time of writing this report, Police, Fire and Ambulance Service had not been involved in the discussions. Time is of the essence for getting this work started, but traffic calming must be as inclusive as possible from the outset. This plan has made every effort to accommodate the needs of emergency services, whilst trying to make the traffic more responsive to local life. It is a difficult balance. Hopefully the services will endorse the proposals.

## Quality of Workmanship

The overall acceptance of traffic calming depends on the quality of workmanship. Traffic calming can be extremely successful in slowing down traffic using very crude elements and materials. But local people drive and walk by these new features everyday. They see them out of their window and hopefully will be out in the street more as a result of them.

One reason for using examples from Europe, is the clear evidence they bring of quality materials and workmanship. (Figure 86) However, the City of Providence has achieved workmanship of similar quality in places such as Waterplace Park.



86. Quality of materials and workmanship contributing so much to this traffic calming project in Cologne, Germany. (Photo: Tim Pharoah)

## Maintenance

High quality design and materials can often reduce maintenance costs in the long run. But a balance has to be found when budgets are tight. The neighborhood should get involved in the choice of materials. Involvement of frontage property owners and the neighborhood association in general is a vital part of the maintenance program; particularly where plant material is concerned. The West Broadway neighborhood already gives a lot of evidence of care and attention to its streets and public places.

The Department of Public Works have been involved in initial discussions about the maintenance aspects of this plan. They have rightly highlighted issues of street cleaning and plowing, as well as pragmatic issues of replacing bollards, should they be accidentally hit from time to time.

The points are well taken and a positive relationship must be established between the neighborhood and the Department. But nothing proposed in this plan should be considered too disruptive to maintenance. Traffic is disrupting the neighborhood 18 hours a day seven days a week, all year. That is the fundamental issue that everyone needs to solve.

## Monitoring

This is vital for several reasons and should be done by local residents and citywide agencies;

- To decide the priorities and changes of plan if necessary, as the scheme is phased.
- To allow the city and emergency services to evaluate the effects for future reference and use



## 7 Conclusion

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This plan has attempted to give the neighborhood a direction and argument to carry it forward for several years to come. As such it has not resolved every detailed design issue.

But its intention is to establish a high standard of expectation and demand that will achieve several closely related objectives.

- Calming the behavior of the traffic
- Upgrading the quality of the built environment for everyone, including those who are driving through.
- Giving residents and visitors greater opportunity and delight in using the public streets and spaces of the West Broadway neighborhood.

There is much to be done at many levels of detail. The producers of this report hope it proves to be a springboard for many worthwhile changes and events.

“A democratic street is one that reflects the history as well as the social and economic diversity of the larger neighborhood and city. Friendly to pedestrians and livable for residents, it also reflects social justice, economic health and ecological vitality. The democratic street **does not** exclude the automobilist but provides **space** for vehicles by striking a more equitable balance with other street users, namely pedestrians and bicyclists. Like the livable street, it stresses safety and comfort. Yet the democratic street also emphasizes the access and needs of many different kinds of people, provides opportunity for discovery and challenge, and actively encourages user manipulation, appropriation and transformation.”

Mark Francis “The Making of Democratic Streets” in *Public Streets for Public Use*, edited by Anne Vernez Moudon. Van Nostrand Reinhold 1987