Great Road Corridor Plan Report

Acton Transportation Advisory Committee,
Acton, Massachusetts
Prepared for the Acton Board of Selectmen
8 May 2006

Appendix A – Streetscape Guidelines
Approved by BoS 5-22-06

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1 Executive Summary

Public concern over the growth of traffic in the Great Road corridor, the future impact of new development, and the need to provide for safer traffic and pedestrian/bike operation provided the impetus for a study and the proposed plan to improve the Great Road Corridor. A survey of initial conditions highlights several deficiencies that contribute to inefficient and unsafe conditions.

TAC proposes a set of strategies, called the Streetscape Design Guideline (see Appendix A), to be integrated into the site plan application process. This guideline will improve the deficiencies and address the key citizen and commuter transportation concerns for the Great Road corridor. TAC presents a *Sidewalk Design Guideline* as an implementation of one strategy of the Streetscape Design Guideline in more detail in Appendix A.

1.1 Recommendations

TAC recommends the following:

1. TAC and/or other bodies be chartered to pursue the strategies
2. The Streetscape Design Guideline be developed
3. The residential and commercial development approval process be modified to integrate Streetscape Design Guideline review with compliance monitoring.
4. A relationship be established with the Massachusetts Highway Department to address strategies that require MHD approval or action.

2 Introduction

In Acton, Great Road has experienced steady growth in vehicular traffic due to the expansion of commercial activity along it and the westward expansion of new commuting neighborhoods. Regional growth generates a 1% increase per year in traffic volume, before including any specific development activity along this corridor. Commuters and Acton residents have repeatedly expressed concerns about the resulting congestion, vehicular collisions, and danger to pedestrians and bicyclists in the corridor from the Route 2 rotary in Concord through Littleton. The concern will worsen as development continues in the area.

The goal of the Plan is to manage our future traffic growth the best way possible by addressing the needs of both cars and people. This can be accomplished by encouraging development and redevelopment along the corridor to address the concerns presented in the plan. This document presents three initial elements of the planning process:

- A survey of the existing conditions along the Great Road corridor from the Concord to the Littleton town lines that establishes a baseline, and identifies transportation problem areas.
- A set of strategies to address those transportation problem areas.
- An implementation of one strategy: a set of sidewalk design guidelines to apply to new development and redevelopment along the corridor.

3 Existing Conditions

We took a visual field survey of the existing condition of the Great Road corridor from the Concord to the Littleton town lines. Overall, we found that the sidewalk network is fragmented and that sidewalk design varies significantly in quality from section to section. Given the high concentration of multi-unit dwellings in the corridor, the lower than average number of cars per unit, and the expected growth in traffic due to ongoing development, improving pedestrian safety in this area is critical.

3.1 Westbound from the Concord town line

1. The sidewalks don't extend into Concord [Figure 1]. There is no buffer between the pavement edge and sidewalk [Figure 2].

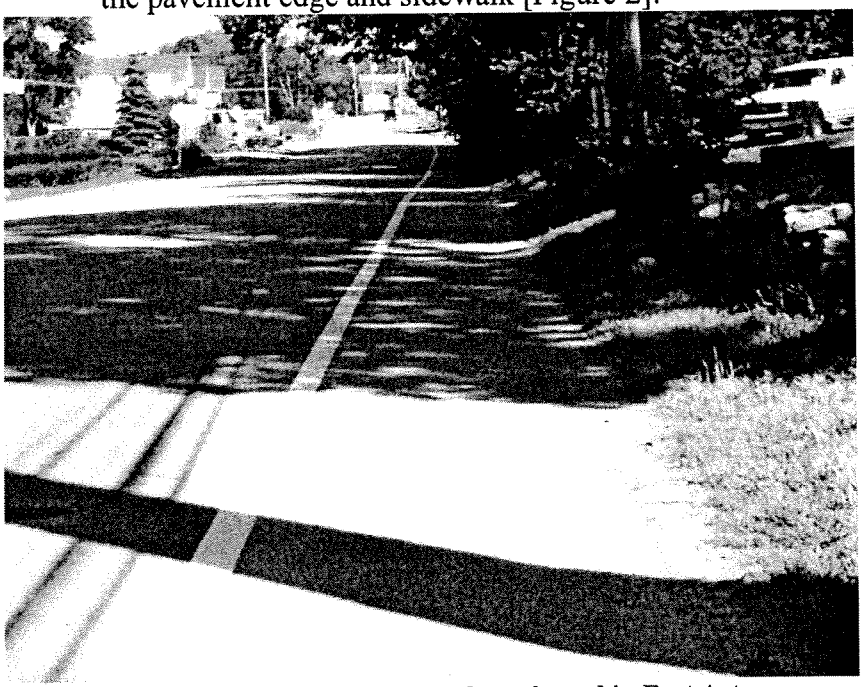

Figure 1. Edge of pavement, Great Road westbound in East Acton.

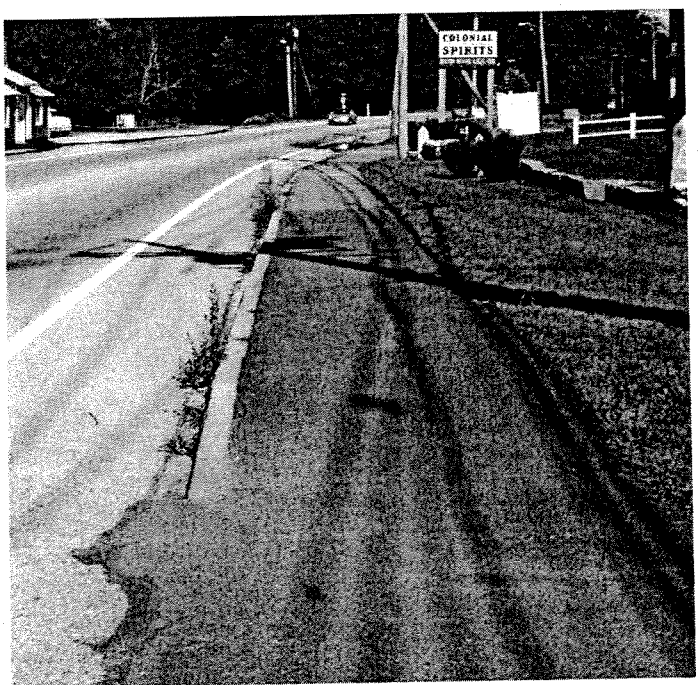

Figure 2. Sidewalk in East Acton Village.

2. Foliage can obscure bicyclists. There are many sidewalk discontinuities, such as at Now & Then (29 Great Road). There is plenty of Right Of Way at Colonial Spirits for a sidewalk as per the Sidewalk Design Guidelines.
3. At Brookside Shops, the trees are set too far back from the sidewalk to provide any shade to pedestrians [Figure 3]. Also, there is no buffer space between the sidewalk and the roadway [Figure 4].

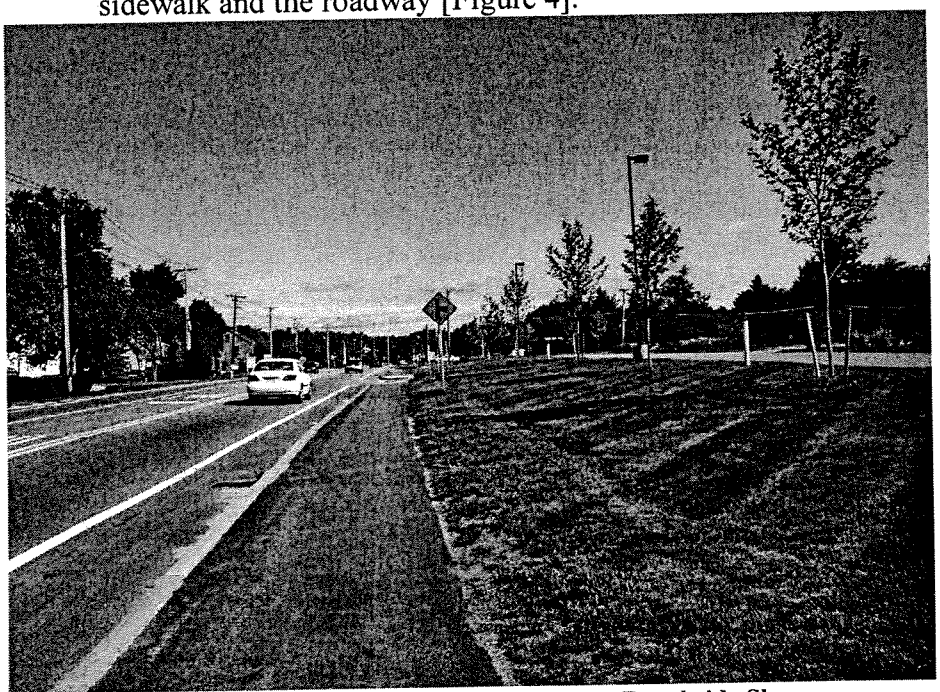

Figure 3. Trees set too far back from the sidewalk at Brookside Shops.

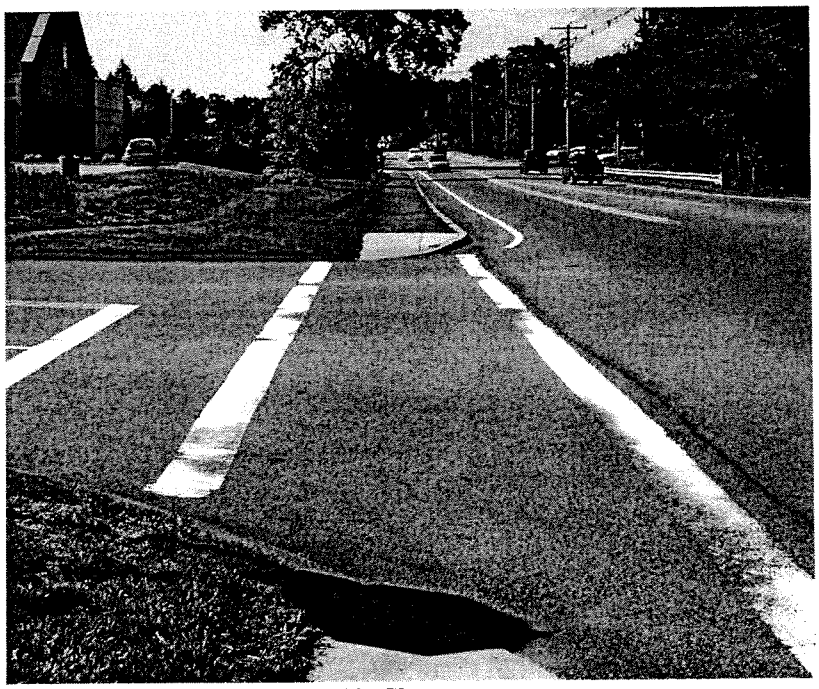

Figure 4. Sidewalk at Brookside Shops.

4. There is a good gravel divider between the pavement edge and sidewalk at Colonial Chevrolet [Figure 5]. Beyond this lot, the sidewalk is again adjacent to the roadway [Figure 6].

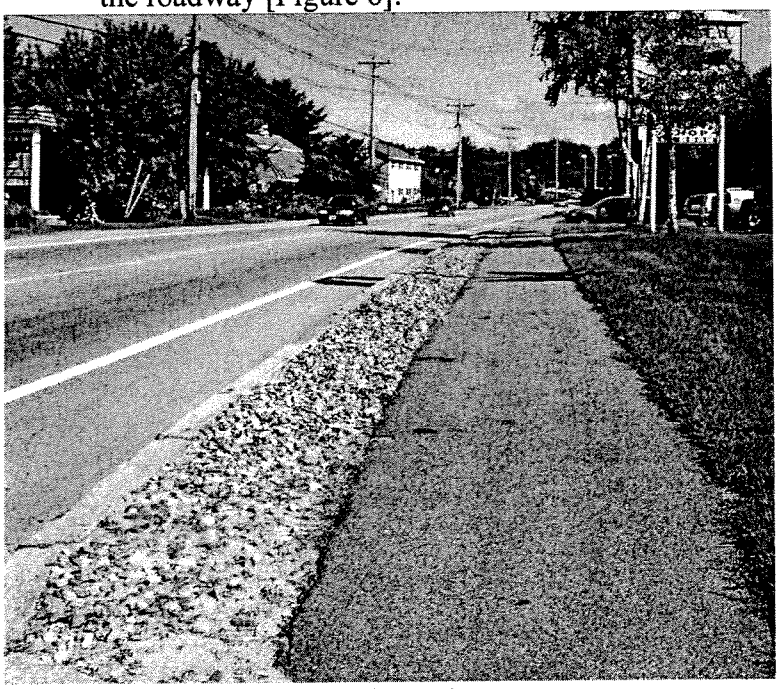

Figure 5. Sidewalk at Colonial Chevrolet.

Figure 6. Sidewalk at 201 Great Road.

5. Mature trees shade the sidewalk before Strawberry Hill Road [Figure 7].

Figure 7. Sidewalk approaching Strawberry Hill Road.

6. There is no crosswalk at the main entrance into Gould's Plaza [Figure 8].

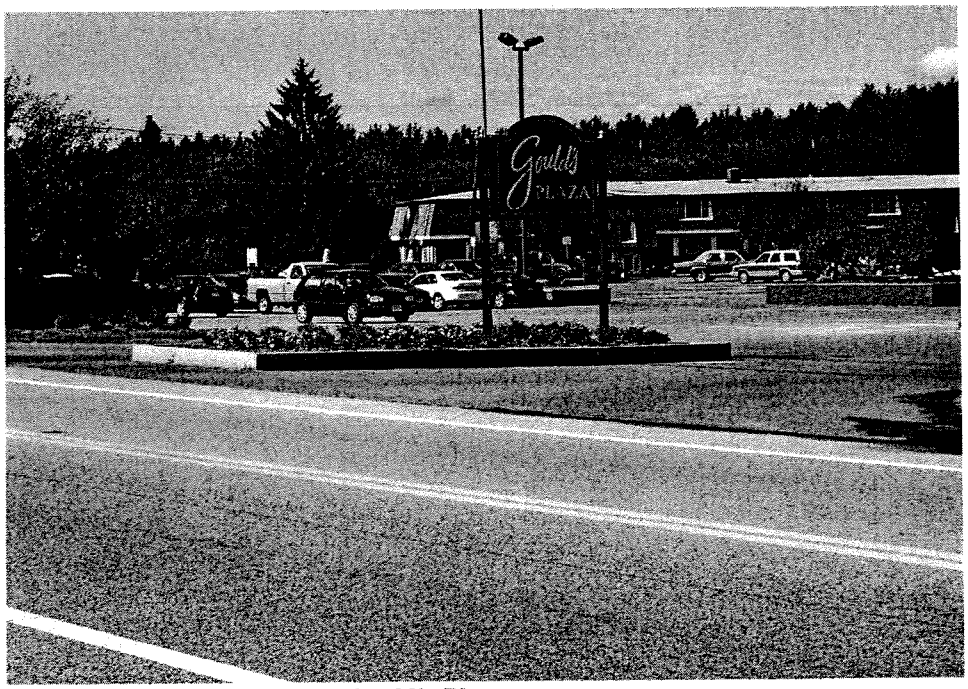

Figure 8. Main entrance into Gould's Plaza.

7. There is no sidewalk after Davis Road and at the railroad crossing [Figure 9].

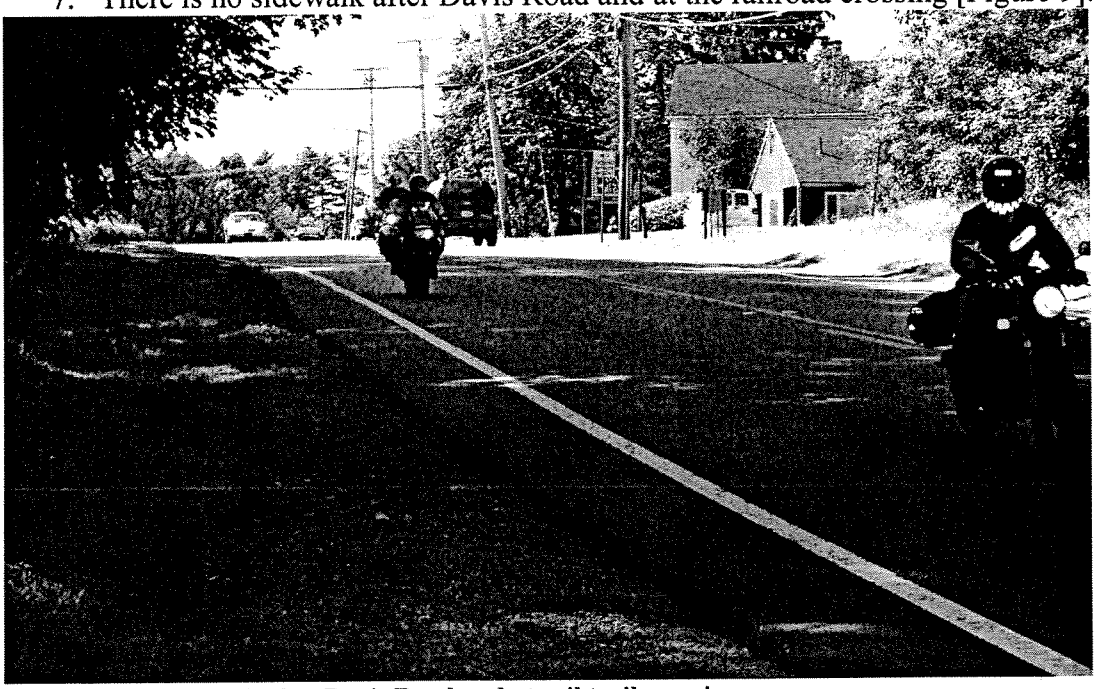

Figure 9. Great Road after Davis Road and at rail trail crossing

8. At the rail crossing, the guardrail is against the pavement, forcing pedestrians into the woods or onto the road. [Figure 10].

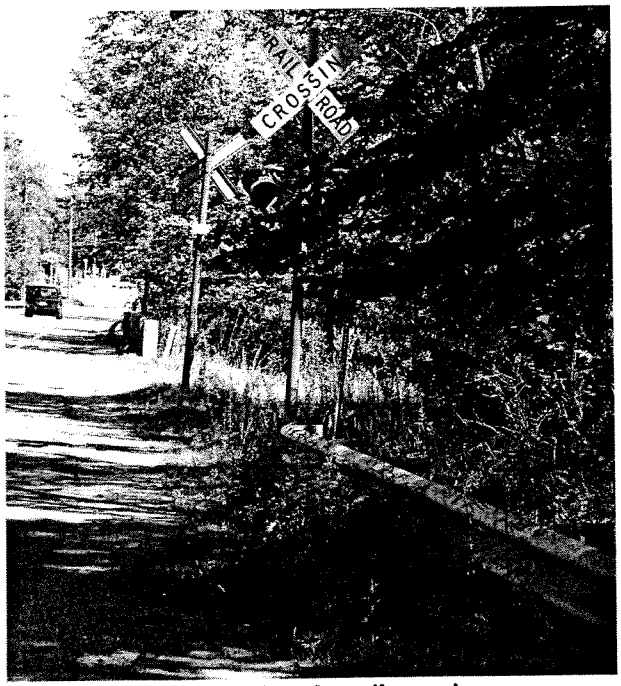

Figure 10. Great Road at the rail crossing.

9. Vehicles frequently stop over the crosswalks at the Rt. 27/2A intersection [Figure 11]. It can also be seen in this picture that the sidewalk and crosswalks are not maintained well enough. These crosswalks are highly utilized by people walking between the playing fields and the businesses around this intersection.

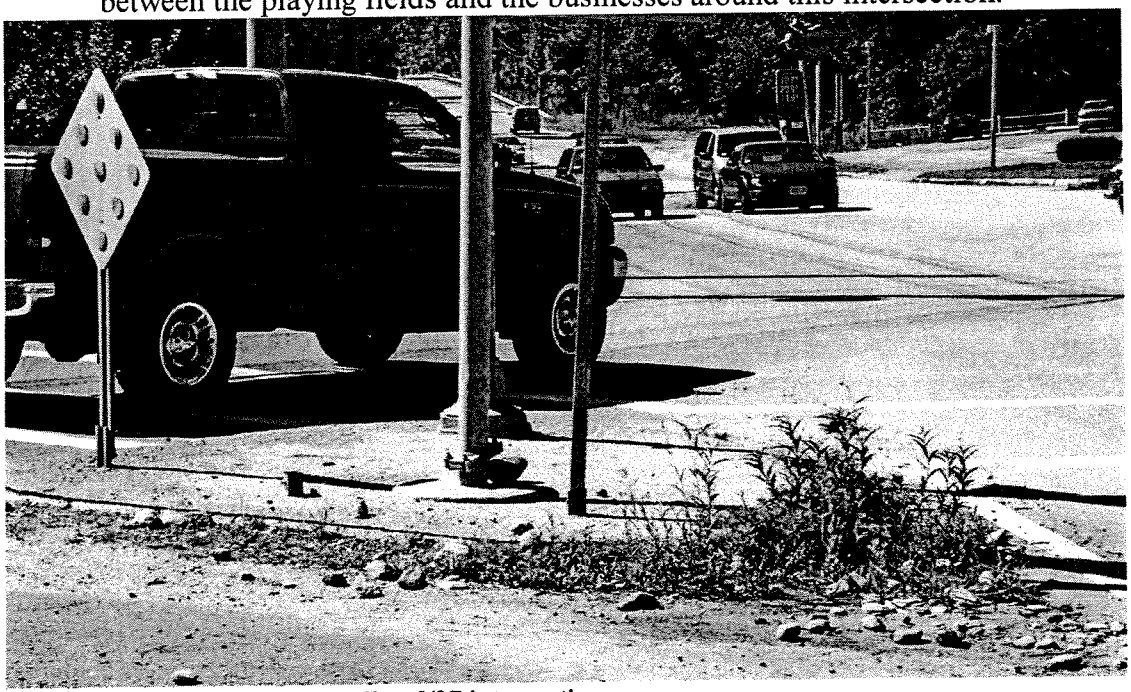

Figure 11. Crosswalk at Great Road/27 intersection.

10. There are no sidewalks after the intersection [Figure 12]. The accident records should be reviewed to see if the number of rear end collisions warrants a third lane. A sidewalk should be provided between the entrance to Acton Woods Plaza, Woodvale Condos and the Route 2A/27 intersection [Figure 13].

Figure 12. Great Road pavement edge north of Rt. 27.

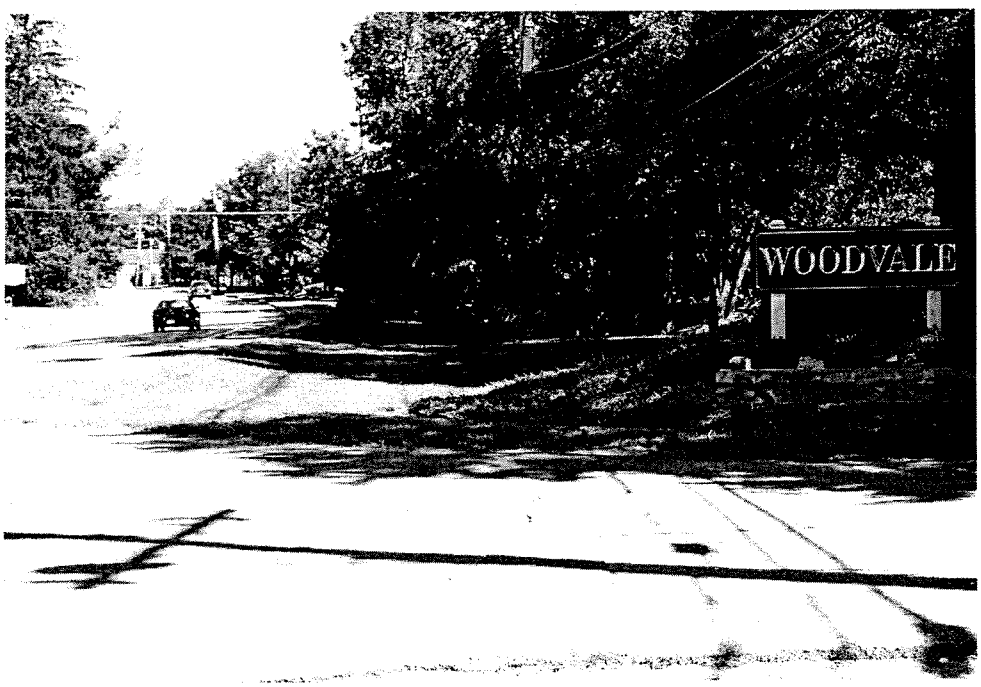

Figure 13. Entrance to Woodvale Condominiums.

11. There are no sidewalks at Legends Sports [Figure 14]. This is the beginning of one of many sections of Great Road with a high concentration of residents.

Figure 14. Great Road at Legends Sports.

12. After Nonset Path there's a sidewalk to the Nagog Office Park [Figure 15].

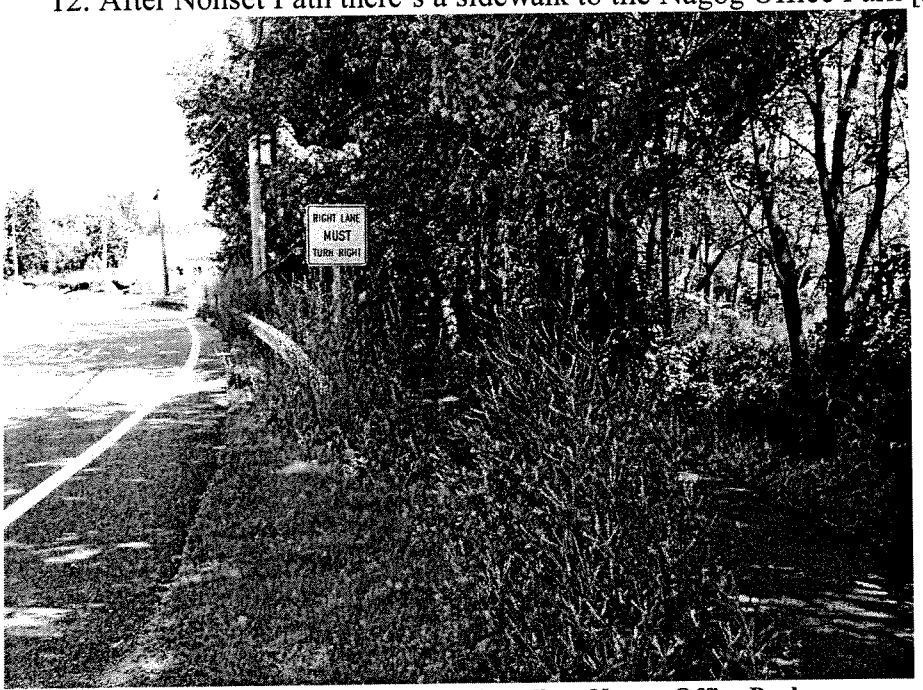

Figure 15. After Nonset Path there's a sidewalk to Nagog Office Park

13. There is no sidewalk between the Nagog Office Park and the Littleton town line.

3.2 Eastbound from the Littleton town line

1. Curb cut consolidation, two entrances turned into one, at Acorn Park and Meadowbrook should be investigated.
2. There's no sidewalk along the eastbound lane. Many pedestrians were observed walking along this side of the pavement edge north of Acton Woods Plaza [Figure 16]. It's been noted that recent sidewalk construction has alleviated this problem.

Figure 16. Pedestrians along Great Road north of Acton Woods Plaza.

3. The sidewalk ends at the Sunoco station [Figure 17].
4. In East Acton Village (EAV), a third lane or curb cut consolidation may be warranted [Figure 18]

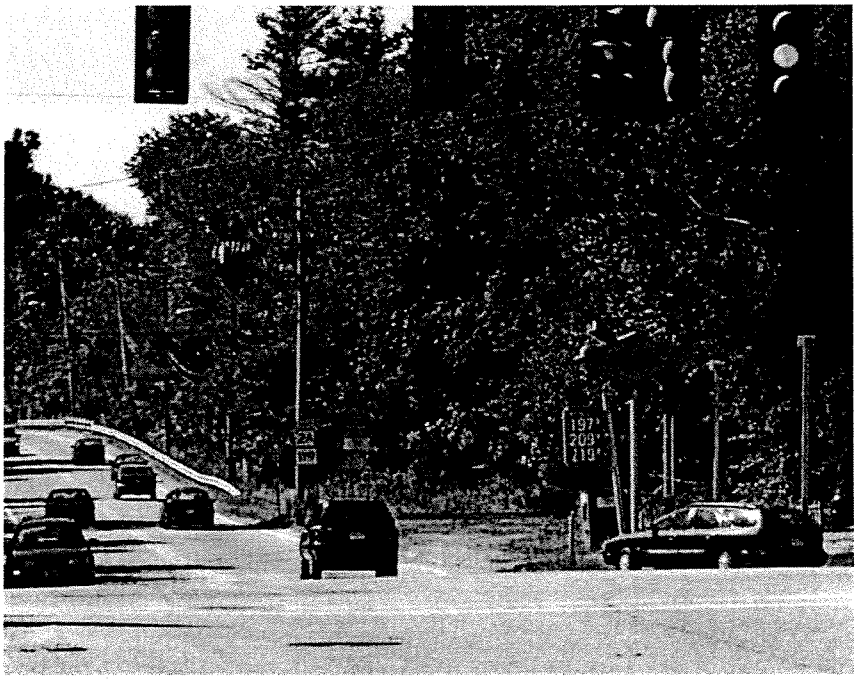

Figure 17. Great Road eastbound at Rt. 27.

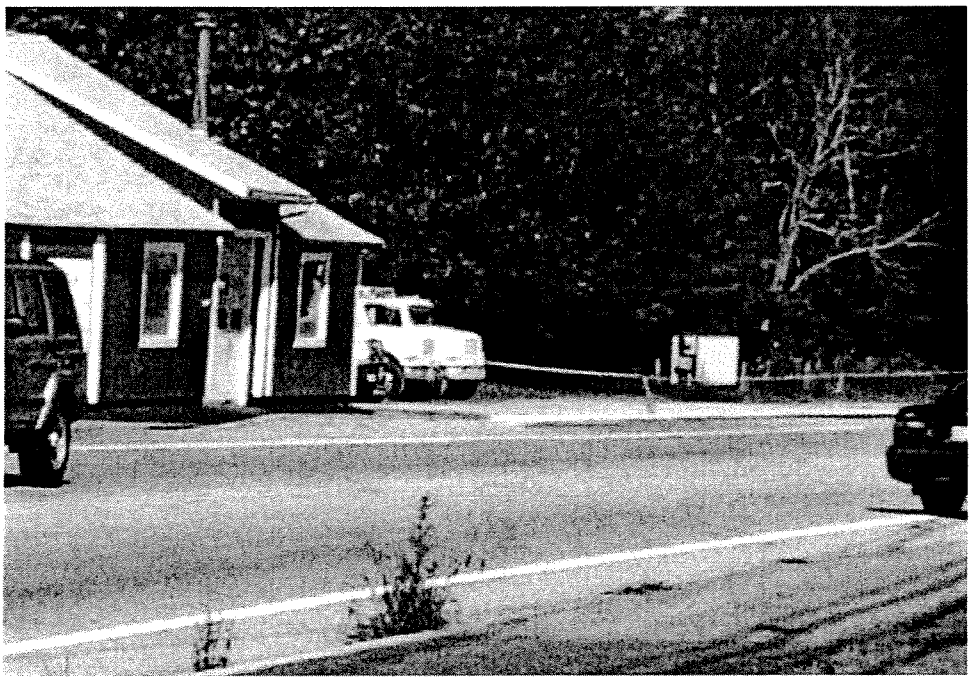

Figure 18. Wide driveway at Bursaw Oil (where chained)

4 Strategies to Address Great Road Transportation Issues

A public hearing was held in September, 2003 to understand the transportation concerns of residents, commuters, and businesses regarding the Great Road corridor (See Appendix A, Public Hearing Comments). The primary concerns were:

- Pedestrian safety
- Speeding
- Route 2 rotary congestion

Several strategies were suggested to address those transportation concerns that were within the Town's jurisdiction. The key strategies are:

- Install crosswalks
- Add sidewalks along Great Road
- Work with the Massachusetts Highway Department to reduce the speed limit
- Install traffic calming measures
- Integrate streetscape design guidelines into the site plan review process
- Support the construction of the Bruce Freeman Rail Trail

4.1 Summary of Strategies

This section summarizes the strategies listed in Table 1 by importance. TAC determined that the Route 2 rotary redesign is beyond the scope of this project.

4.1.1 Pedestrian Safety

4.1.1.1 Sidewalks along Great Road

The visual survey of the existing condition of the Great Road corridor identified a number of areas where sidewalk deficiencies exist. These include gaps in critical areas of the sidewalk network as well as deficient sidewalk designs. Correcting these would improve pedestrian safety and facilitate the replacement of vehicular traffic with pedestrian traffic by making isolated destinations along Great Road accessible.

4.1.1.2 Limit Curb Cuts

Curb cut access can be managed to reduce operational conflicts and confusion at driveways. Typical methods include driveway consolidation and turn prohibitions in or out of driveways. Consolidating driveways reduces the number of vehicular, pedestrian, and bicycle conflicts. Some studies have found turn restrictions may reduce accidents by 40 to 50 percent (Northwestern University, Traffic Institute, 1995).

Three areas with high densities of curb cuts were identified as candidates for consolidation:

1. East Acton Village zoning district
2. Acorn Park development

3. Meadowbrook development

This would be achieved through the use of shared parking and interconnecting sidewalks between the properties.

4.1.1.3 Integrate Streetscape Design Guidelines into Site Plan Review Process

Streetscape design guidelines include, among other components, sidewalk design, site and building design, signage, lighting, curb and road construction, parking lane/area layout and sharing guidelines, and provisions for water runoff and storage of plowed snow.

TAC's goal is that streetscape design guidelines be referenced by developers while designing new projects and complied with while building the projects. To that end, they need to be integrated into the documentation made available to developers and into the residential and commercial project approval and appeal processes. A key component to ensure successful integration is assigning and resourcing for compliance monitoring and enforcement or guidelines.

4.1.1.4 Install Crosswalks

Crosswalks at critical locations would improve pedestrian safety and facilitate the replacement of vehicular traffic with pedestrian traffic by making points of interest on both sides of Great Road and its side roads accessible. These locations would be identified in a comprehensive study. Crosswalks across secondary roads should be textured, for example, consisting of stamped asphalt.

4.1.1.5 Bicycle and Pedestrian Safety

These strategies connect the Bruce Freeman Rail Trail (BFRT) to the surrounding sidewalk and bicycle lane network, address the BFRT/Great Road crossing, and promote bicycle safety education efforts.

4.1.2 Speeding and Traffic Management

4.1.2.1 Work With Massachusetts Highway Department on Great Road Issues

Reducing the speed limit in the vicinity of East Acton Village would improve vehicular and pedestrian safety, ease entry onto Great Road from side roads, and enable the installation of crosswalks.

4.1.2.2 Traffic Calming

Adding physical cues to alert drivers that they're entering a busy commercial area with bicyclists and pedestrians as well as potential on-street parking would encourage them to slow down, improving safety and increasing bicyclist and pedestrian comfort. Examples of traffic calming techniques are listed in Appendix A. We anticipate that no one technique will best meet the needs of the Town or even one area or neighborhood; rather,

a dictionary of techniques geared towards the Town's needs should be assembled, from which the most appropriate ones may be applied for a particular area.

4.1.2.3 Conduct Comprehensive Study of Great Road

Existing traffic studies should be evaluated to determine if enough information exits to make a priority list of projects. If there is inadequate information, then a comprehensive traffic study would be necessary. Traffic studies should evaluate current and projected lane conditions and signal warrants, and identify potential operational improvements and appropriate crosswalk locations.

4.1.2.4 Install Stoplights

A stoplight at either Concord Road or Brookside Shops would mitigate the lengthy delay times for left turns onto and off Great Road. It would also create gaps in traffic to facilitate entry onto Great Road from neighboring roads and driveways and allow a pedestrian crossing at the proposed rail trail wayside at the East Acton Village Green.

4.1.2.5 Public Transportation Improvements (i.e. shuttles)

Connecting key points of interest, such as East Acton Village or Gould's Plaza, to others in town or nearby, such as the South Acton and West Concord train stations, will promote bicycling and walking and thus reduce vehicular use and parking demand at the train stations. A Transportation Management Agency may be required to build and manage a critical shuttle ridership mass among the residential and commercial developments in the Nagog Office Park area.

4.1.2.6 Simple Street Lighting

Utilizing Outdoor Lighting Advisory Committee recommended lighting reduces glare to improve visibility and safety.

4.2 Sequence of Strategies

Certain strategies depend on the successful completion of others. One such sequence is

1. Conduct Comprehensive Study of Great Road
    a. Install Sidewalks
    b. Install Crosswalks
2. Work With Massachusetts Highway Department on Great Road Issues
3. Install Stoplights

Possible Route 2A Traffic/Transportation Improvement Opportunities and Strateg	MHD Lead	Town of Acton Lead	Priority
Limit Curb Cuts	Restrict new curb cuts on state highways	a. Encourage driveway connections between off-street parking lots b. Promote use of shared parking c. Limit dimensions of curb cuts	
Reconfigure Keefe Rd intersection with Great Rd. and consolidate driveway at intersection.	X		Medium
Consolidate curb cuts on Great Road easbound side in East Acton Village	X		Medium
Consolidate curb cuts on Great Road easbound side at Acorn Park and Meadowbrook	X		Medium
Conduct Comprehensive Study of Route 2A		Town conducts traffic study	High
Sidewalks Along Route 2A	Sidewalks constructed as element of roadway reconstruction	a. Sidewalks constructed in conjunction with new development by developer b. Sidewalks constructed by town	
Add sidewalk on Great Road eastbound side from Rt. 27 north to condominiums		X	High
Correct sidewalk discontinuities on Great Road westbound side		X	High
Add sidewalk on Great Road westbound side from Davis Road to the Rt. 27 intersection		X	Medium
Provide space for sidewalk at Great Road rail crossing		X	Medium
Add sidewalk on Great Road westbound side from Legends Sports to Nonset Path		X	Medium
Add sidewalk on Great Road westbound side from Nagog Office Park to Littleton town line		X	Low
Extend sidwalk on Great Road westbound side to Concord town line		X	Low
Improve existing sidewalks on Great Road to comply with streetscape design guidelines		X	Low
Integrate Streetscape Design Guidelines Into Site Plan Review Process		X	High
Work With Massachusetts Highway Department On Route 2A Issues		X	High
Establish liaison with the Massachusetts Highway Department			High
Reduce vehicle traffic to 35 MPH from the Concord border to ¼ mile west of Concord Rd.	X		
Install Crosswalks			
Establish a crosswalk on Great Road at Brook Street/Gould's Plaza entrance	X		High
Establish a new, stamped asphalt crosswalk across Pope Road at its intersection with Great Road		X	High
Establish a crosswalk on Great Road just east of the intersection with Wetherbee Street	X		High
Establish a crosswalk on Great Road just west of the intersection with Concord Road	X		High
Establish a new, stamped asphalt crosswalk across Concord Road at its intersection with Great Road.		X	Medium
Establish a new, stamped asphalt crosswalk across Wetherbee Street at its intersection with Great Road.		X	Medium
Establish a new, stamped asphalt crosswalk across Keefe Road at its intersection with Great Road.		X	Low
Establish a crosswalk on Great Road just west of the intersection with Keefe Road	X		Low
Install Stoplights			
Install a traffic light at Great Rd and Concord Rd when increased traffic meets MassHighway's warrants	X		Medium
Traffic Calming			
Install landscaped transition section on Great Rd at the Town of Concord border that provides a "gateway" to EAV and narrows the roadway at the entry point into EAV to encourage drivers to moderate their speed.		X	High
Simple Street Lighting			
Install "full cut-off" (FCO) lights in parking areas and along walkways that are of human scale providing substantial light without creating a "city lights" atmosphere, or as required by the Acton Outdoor Lighting Regulations		X	Medium
Public Transportation Improvements (i.e. shuttles)			
Support the implementation of a local or regional public transportation system as conditions make it feasible		X	Low
Bicycle and Pedestrian Safety			
Support the construction of the BFRT		X	High
Provide access between the BFRT and local businesses, neighborhoods, and activity centers		X	Meduim
Provide bike racks		X	Low
Support bike lanes along 2A west of Rt. 27, with appropriate signs and pavement markings	X		Low
BFT Great Rd crossing: signs, lights, over/underpass?[2]	X		High
Police, fire and general town education about the rights and responsibilities of cyclists[3]		X	Low
Possible Great Rd crossing for golf course trails?[4]	X		Low

Table 1. List of Strategies to Address Great Road Transportation Issues.

Appendix A: Streetscape Design Guidelines

The Streetscape Design Guideline includes, among other components, sidewalk design, site and building design, planting, signage, lighting, curb and road construction, parking lane/area layout and sharing guidelines, and provisions for water runoff and storage of plowed snow. TAC has elaborated on the Sidewalk Design Guidelines for this report.

Sidewalk Design Guidelines

In assessing transportation issues in the Great Road corridor, the TAC has observed an overall lack of consistency and continuity in the sidewalks constructed adjacent to the roadway. Furthermore, placement of sidewalks in relation to the roadway, in many locations, does not provide the sense of safety and hospitable pedestrian facilities necessary to encourage pedestrian activity. While we recognize that there are substantial design challenges involved in constructing sidewalks along a pre-existing right-of-way with pre-existing development, the TAC believes that a set of fundamental design standards should be established to guide reconstruction and/or construction of new sidewalks in the future and applied as opportunities present themselves.

The TAC has therefore prepared a set of recommended sidewalk design standards (Figure 19) to be considered for application to future projects involving sidewalk construction in the Great Road corridor.[1] These design standards are intended to

- Facilitate the creation of a safe and comfortable pedestrian environment
- Encourage pedestrian activity as an alternative to vehicular transportation
- Provide developers and implementing agencies with clear direction in the design of facilities that will complement transportation operations and the quality of development in the corridor.

These guidelines are intended to be one component of the overall streetscape design guidelines encompassing additional areas, such as the building site and design, signage, etc.

These standards are based primarily on guidance presented in Federal Highway Administration (FHWA) Pedestrian Facilities Users Guide (March, 2002)[2] and the American Association of State Highway and Transportation Officials (AASHTO) Guide for the Planning, Design, and Operation of Pedestrian Facilities (July 2004).[3] As such,

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[1] Although these standards are intended specifically for application in the Great Road corridor, they can be considered as equally applicable for sidewalks throughout the Town of Acton.

[2] Turner-Fairbank Highway Research Center, Federal Highway Administration, "Pedestrian Facilities Users Guide - Providing Safety and Mobility," Publication No. FHWA-RD-01-102, McLean VA, March 2002.

[3] American Association of State Highway and Transportation Officials, "Guide for the Planning, Design, and Operation of Pedestrian Facilities," Publication No. GPF-1, Washington D.C., July 2004.

they represent acceptable and defensible engineering design standards in common use throughout the U.S.

General Considerations

A safe walking area must be provided outside the motor vehicle traffic travel-way. Sidewalks along roads with high speeds and/or high traffic volumes should be well separated from the travel-way. Shade trees (preferably indigenous) should be planted close enough to the sidewalk to provide a canopy over pedestrians to encourage sidewalk usage in hot sunny weather.

Sidewalk Width

The width of a sidewalk depends primarily on the number of pedestrians who are expected to use the sidewalk at a given time – high use sidewalks should be wider than low-use sidewalks. A sidewalk width of 1.5 m (5 ft.) is needed for two adult pedestrians to comfortably walk side-by-side, and all sidewalks should be constructed to be at least this width. The minimum sidewalk widths are:

Local or collector streets	1.5 m (5 ft.)
Arterials or major streets (i.e. Great Road)	1.8 to 2.4 m (6 to 8 ft.)
CBD areas	2.4 to 3.7 m (8 to 12 ft.)
Along parks, schools, and other Major pedestrian generators	2.4 to 3.0 m (8 to 10 ft.)

These widths represent a clear or unobstructed width. Point obstructions may be acceptable as long as there is at least 914 mm (36 in.) for wheelchair maneuvering. Every attempt should be made to locate streetlights, utility poles, signposts, fire hydrants, mail boxes, parking meters, benches, and other street furniture out of the sidewalk. When that is not possible, sidewalk furnishings and other obstructions should be located consistently so that there is a clear travel zone for pedestrians with vision impairments, and a wider sidewalk should be provided to accommodate this line of obstructions.

Sidewalk Buffer Width

Buffers between pedestrians and motor vehicle traffic are important to provide greater levels of comfort, security, and safety to pedestrians. The higher the speed and the higher the traffic volume on the adjacent roadway, the more imperative it is to have a sufficient buffer to provide these attributes. Landscaped buffers provide a space for poles, signs, and other obstructions; they serve as snow storage area; and they protect pedestrians from splash. Planting strips should be provided adjacent to all sidewalks except in cases where physical constraints absolutely prohibit such a configuration and cannot be feasibly corrected. Landscaping should be tolerant of road salt and other roadway conditions.

The ideal width of a planting strip is 1.8 m (6 ft.). Minimum allowable landscape buffer widths are:

Local or collector streets	0.6 to 1.2 m (2 to 4 ft.)
Arterial or major streets (i.e. Great Road)	1.2 to 1.8 m (4 to 6 ft.)

If a planting strip is not provided between the sidewalk and roadway, then the sidewalk width should be a minimum of 1.8 m (6 ft.). Where landscaped sidewalk buffers cannot be provided due to constraints, then on-street parking, a shoulder, or a bike lane can serve to buffer pedestrians from motor vehicle traffic lanes.

Sidewalk Grade and Cross-Slopes

Sidewalks should be built to accommodate all pedestrians and should be as flat as practical. Sidewalks should be held to a running grade of 5 percent or less, if possible. However, sidewalks that follow the grade of a street in hilly terrain cannot meet this requirement and may follow the grade of the street. The maximum sidewalk cross-slope is 1:50 (2 percent) to minimize travel effort for wheelchair users and still provide drainage. At least 0.9 m (3 ft.) of flat sidewalk area is required at the top of a sloped driveway to accommodate wheelchair use.

Obstacles along the Sidewalk

The distance to the bottom of signs placed in or next to a sidewalk should be at least 2 m (7 ft.) above the sidewalk surface to avoid injury to pedestrians. Bushes, trees, and other landscaping should be maintained to prevent encroachment into the sidewalks. Guy wires and utility tie-downs should not be located in or across sidewalks at heights below 2 m (7 ft.).

Sidewalk Layout

Where space allows, sidewalk should be laid out so that it meanders, creating an interesting travel experience.

Sidewalk Surface

Concrete is the preferred sidewalk surface, providing the longest service life and requiring the least amount of maintenance. Asphalt is an acceptable walkway surface and crushed granite may also be acceptable but they require higher levels of maintenance and are less desirable for wheelchair users. Sidewalks may be constructed with bricks and pavers if they are designed to avoid settling.

Curb Cuts

Only one curb cut should be included for businesses with less than 100ft of frontage, and a maximum of two for businesses with longer frontages. In general, the maximum width for curb cuts should be 30 ft.

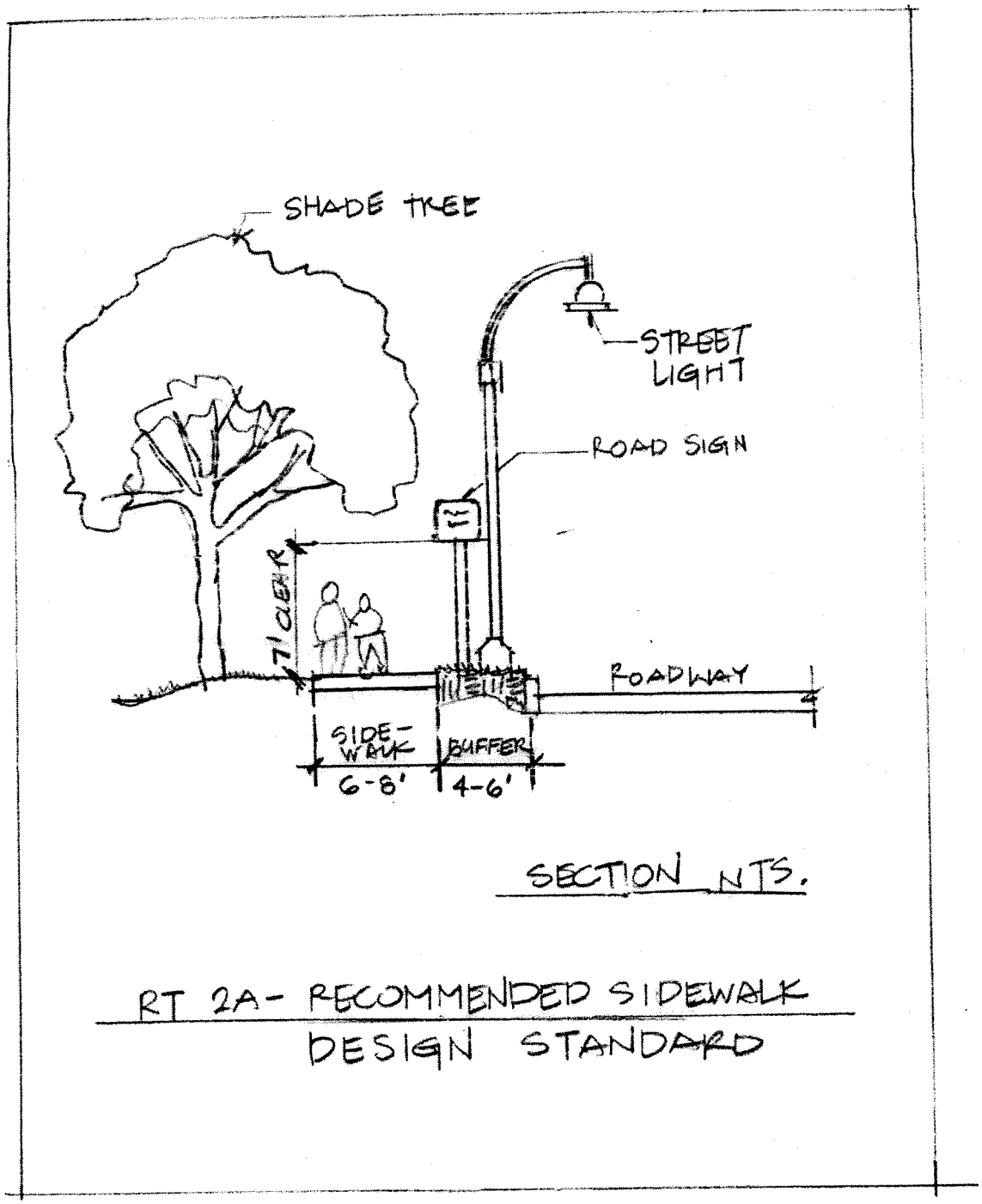


Figure 19. Great Road Corridor Sidewalk Design Standard (excluding East Acton Village District)

Site and Building Design

To be developed.

Planting Design

To be developed.

Signage Design

To be developed.

Lighting Design

To be developed.

Curb and Road Construction Design

To be developed.

Parking Lane/Area Layout and Sharing Guidelines

To be developed.

Provisions for Water Runoff and Storage of Plowed Snow

To be developed.

Appendix B: Public Hearing Comments

Between 50-100 people attended two public hearings held by TAC and Planning Board in Town Hall, September 2003, to hear the public's transportation concerns on the Great Road corridor. The primary concerns were:

- Pedestrian safety
- Speeding
- Rotary congestion

Public hearing comments:

Suggestions	Priority
Reduce speed from 40 mph to 35 or 30 mph	
Reduce vehicle traffic to 35 MPH from the Concord border to ¼ mile west of Concord Rd.	High
Install crosswalks	
Establish a crosswalk on Great Road just west of the intersection with Concord Road	High
Establish a crosswalk on Great Road just east of the intersection with Wetherbee Street	High
Establish a crosswalk on Great Road just west of the intersection with Keefe Road	Low
Establish a new, stamped asphalt crosswalk across Pope Road at its intersection with Great Road	High
Establish a new, stamped asphalt crosswalk across Concord Road at its intersection with Great Road.	Medium
Establish a new, stamped asphalt crosswalk across Wetherbee Street at its intersection with Great Road.	Medium
Establish a new, stamped asphalt crosswalk across Keefe Road at its intersection with Great Road.	Low
Establish a new, stamped asphalt crosswalk across Concord Road at its intersection with Great Road.	High
Establish a crosswalk on Great Road just west of the intersection with Keefe Road	Low
Establish a crosswalk on Great Road just east of the intersection with Wetherbee Street	High
Provide parking in the vicinity of Concord Rd./EAV	
Grade and re-gravel the parking area at Icehouse Pond to support vehicles parking to use the East Acton Village Green and the Bruce Freeman Rail Trail	Medium
Install stoplights	
Recommend installation of a traffic light at Great Rd and Concord Rd when increased traffic meets MassHighway's requirements	Medium

Traffic Calming	
Install a series of integrated traffic calming measures along the length of Pope Road at key locations including signage, and raised crosswalk at intersection with Bayberry Lane.	Medium
Install Raised Speed Hump on Pope Road at Crosswalk at Bayberry Road intersection	Medium
Install landscaped transition section on Great Rd at the Town of Concord border that provides a "gateway" to EAV and narrows the roadway at the entry point into EAV to encourage drivers to moderate their speed.	High
Simple street lighting	
Install "full cut-off" (FCO) lights in parking areas and along walkways that are of human scale providing substantial light without creating a "city lights" atmosphere, or as required by the Acton Outdoor Lighting Regulations	High
Public transportation improvements (i.e. shuttles?)	
Support the implementation of a regional public transportation system as conditions make it feasible	Low
Consolidation of driveways and reduction of curb cuts (access management)	
Limit street curb cuts for driveways and businesses, making their boundaries clear so pedestrians and drivers know where they are safe and where to be careful, and narrowing the existing wide curb cuts.	Medium
Reconfigure Keefe Rd intersection with Great Rd. Consolidate Driveway at intersection.	Medium
Preservation of historic properties	
Transfer of development rights	
Control assembly of properties to prevent large scale development	

Suggestions	Priority
Bicycle and pedestrian safety	
Ensure that Bruce Freeman Rail Trail (BFRT) includes EAVPC membership	High
Construct the BFRT	High
Complete the EAV Green and ensure that it accommodates the trail and helps provide access to the village and neighborhoods	High
Support appropriate ways for bicycles to cross Great Road	High
Share the results of the EAV transportation study with BFRT and other trail-support groups	Medium
Provide bicycle access to local businesses	Medium
Add bicycle lanes along Concord Rd to connect with BFRT	Medium
Add bicycle lanes along Pope Rd to Great Rd	Medium
Amend the zoning bylaw to require bicycle parking in EAV in proportion to car parking	Medium

Support bike lanes along Great Road, with appropriate signs and pavement markings[4]	Low
Provide bicycle paths throughout EAV	Low
Other Great Road (non-EAV) bicycle issues	
BFRT Great Rd crossing: signs, lights, over/underpass?[5]	
Police, fire and general town education about the rights and responsibilities of cyclists[6]	
Possible Great Rd crossing for golf course trails?[7]	

[4] *Construction* of bike lanes is the responsibility of MHD.

[5] The BFT feasibility study offers little guidance on this crossing, which has potentially serious safety issues.

[6] Many cycling groups note that local law enforcement, as well as the general public, are often uninformed about the legal rights and responsibilities of cyclists (e.g., bicycles are traffic and vehicles should yield the ROW as for other vehicles; cyclists are by law required to travel in single file and obey traffic rules; etc.). We could consider recommending some public education activities.

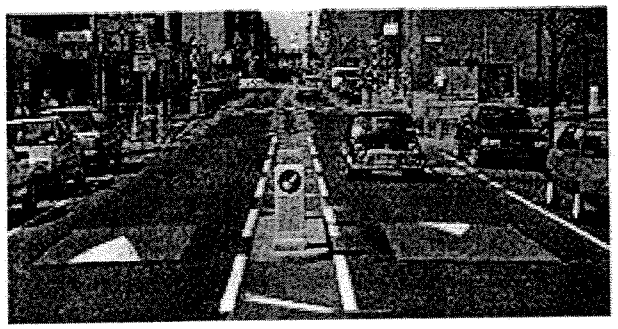
[7] The original plan for the golf course noted some tie-ins between proposed trails within the golf course area and the BFT. The corridor planning should investigate what trails, if any are being constructed, and ensure that any Great Rd crossings and connections with the BFT are safe.

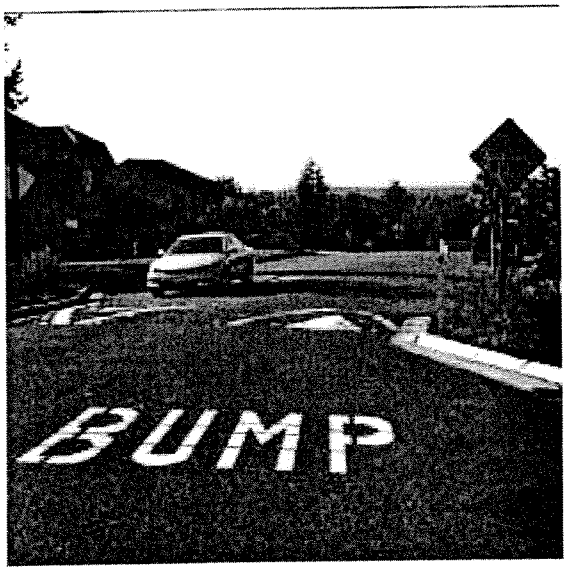
Appendix C: Traffic Calming Examples

In this section is a partial collection of common traffic calming techniques. Not all listed techniques are applicable to the Great Road corridor.

Speed Cushions, Humps, and Tables

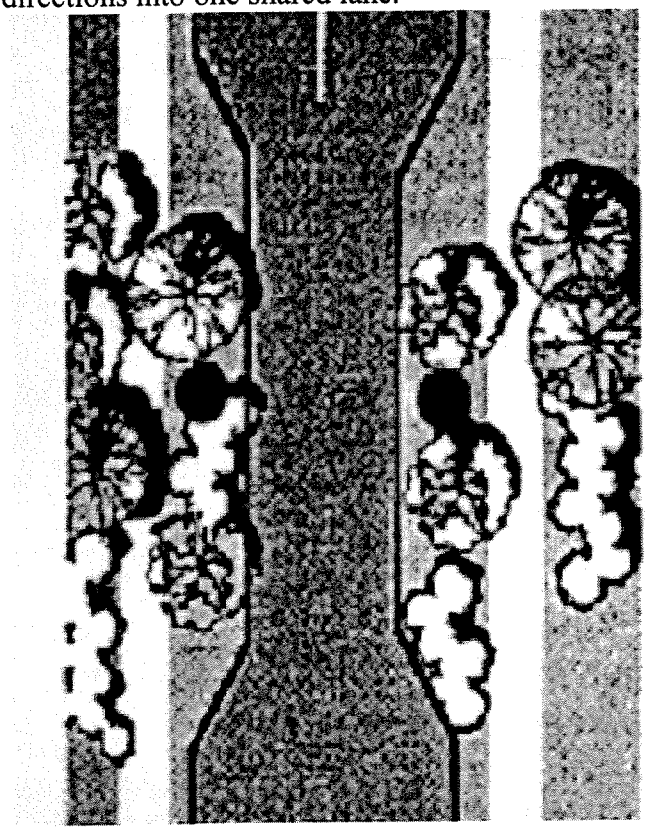
These are raised surfaces that force approaching vehicles to slow down. Cushions are the smallest and allow large or emergency vehicles to straddle and bicycles to bypass the raised portion. Tables are the largest, spanning an entire intersection to cover all lanes. Their drawbacks include noise, street-cleaning/snow plowing equipment compatibility, and lesser effectiveness with SUVs.





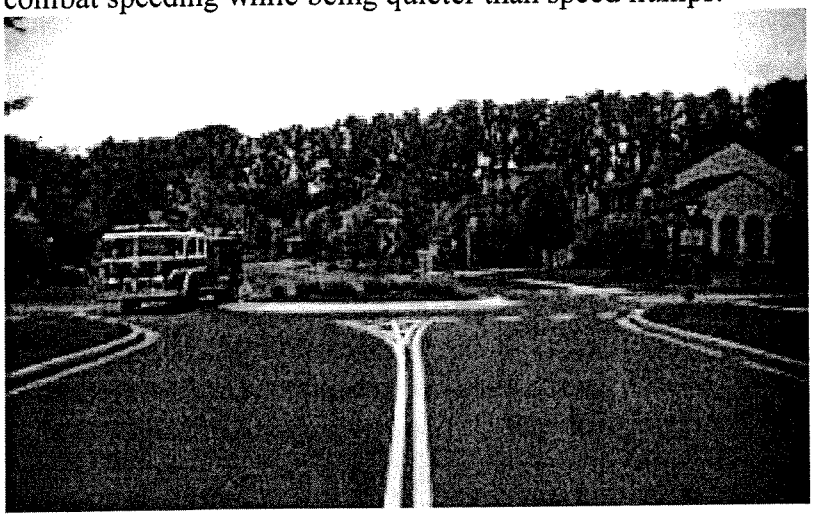
Chokepoints

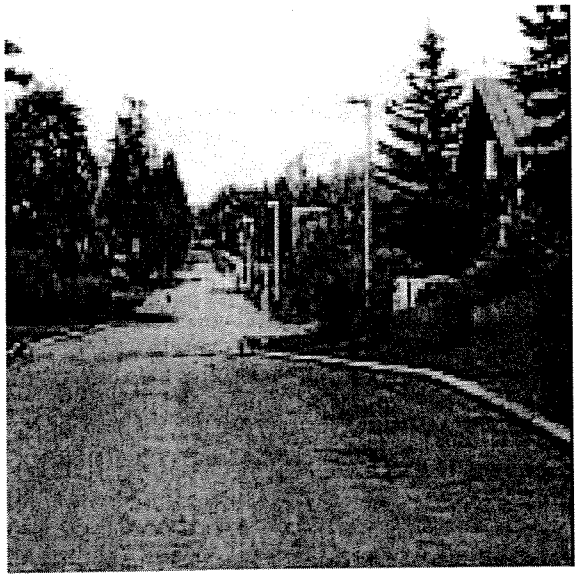
Chokepoints narrow the travel lanes or, as in this case, neck down the travel lanes of both directions into one shared lane.

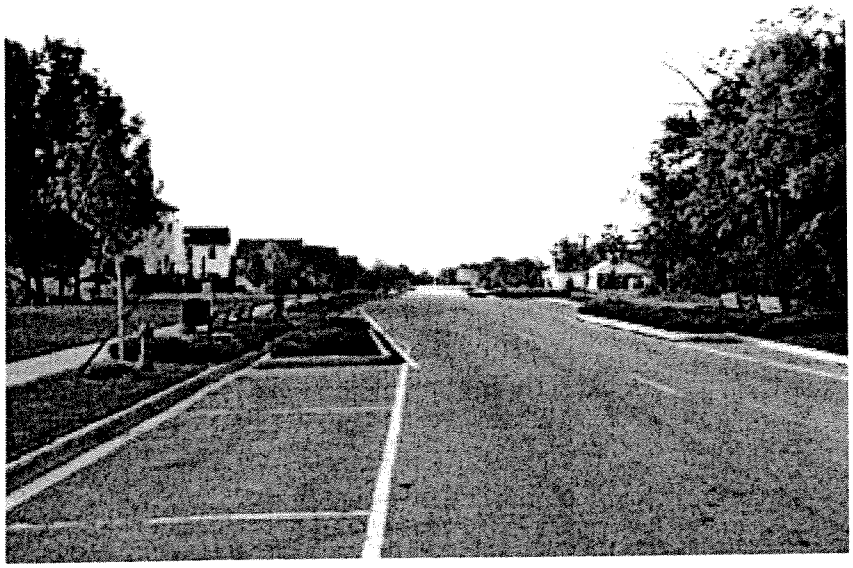


Traffic Circles and Chicanes

Traffic circles and chicanes break up long straight-aways and are effective measures to combat speeding while being quieter than speed humps.

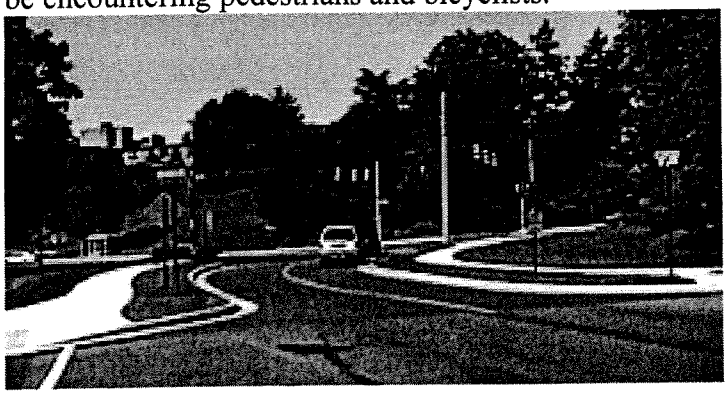






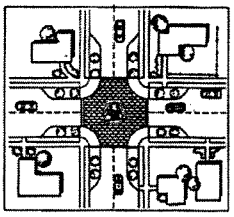
Gateways

Gateways signal to approaching motorists that they are approaching an area where they'll be encountering pedestrians and bicyclists.

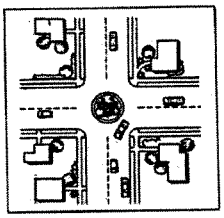


Summary of Traffic Calming Techniques

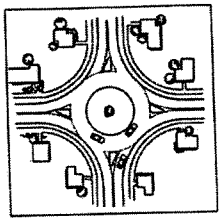
COMBINED MEASURES



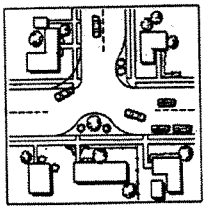
NEIGHBORHOOD TRAFFIC CIRCLES
(intersection islands)



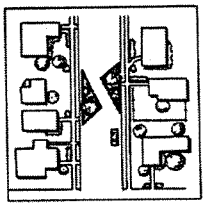
ROUNDABOUTS
(rotaries)



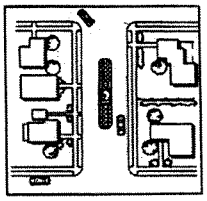
REALIGNED INTERSECTIONS
(modified intersections)



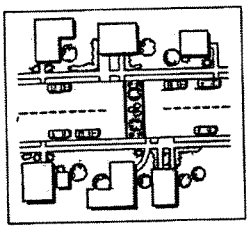
OTHER SPEED CONTROL MEASURES
(various names and designs)



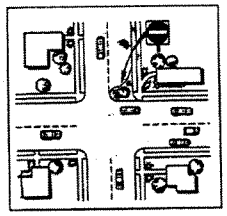
CENTER ISLAND NARROWINGS
(midblock medians, median slowpoints, median chokers)



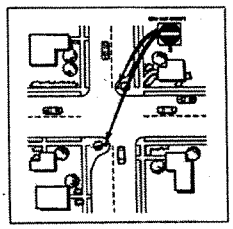
FULL CLOSURES
(cul-de-sacs, dead ends)



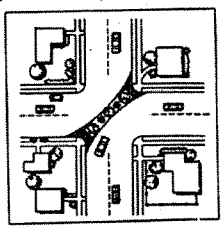
HALF CLOSURES
(partial closures, one-way closures)



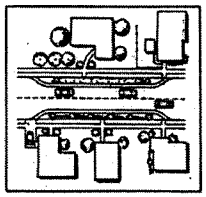
SEMI-DIVERTERS



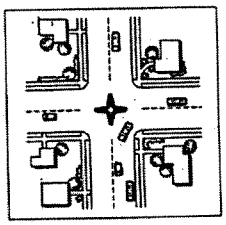
DIAGONAL DIVERTERS
(full diverters, diagonal road closures)



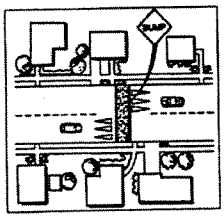
CHOKERS
(pinch points, midblock narrowings, midblock yield points, constrictions)



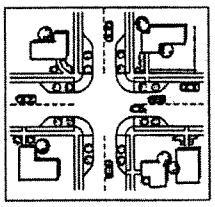
OTHER VOLUME CONTROL MEASURES
(various names and designs)



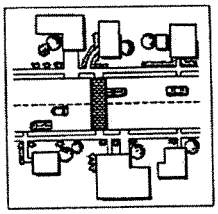
SPEED HUMPS
(road humps, undulations)



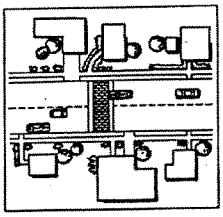
NECKDOWNS
(nubs, bulbouts, knuckles, intersection narrowings, corner bulges, safe crosses)



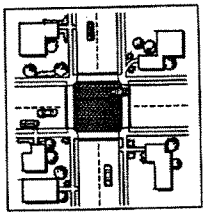
RAISED CROSSWALKS
(raised crossings, sidewalk extensions)



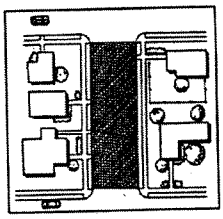
SPEED TABLES
(trapezoidal humps, speed platforms)



RAISED INTERSECTIONS
(raised junctions, intersection humps, plateaus)



TEXTURED PAVEMENTS



("Drawings are from "Traffic Calming: State of the Practice," ITE/FHWA, August 1999.)

TRAFFIC CALMING TOOLS

1. Curb Extensions
2. Medians
3. Refuge Islands
4. Tree Wells
5. Inset Parking
6. Narrow Lanes
7. Midblock Crossings
8. Curb Radius Reductions
9. Bike Lanes
10. Roundabouts
11. Modified Intersections
12. Median Noses
13. Driveway Modifications
14. Lane Reductions
15. Mini-Circles
16. Speed Tables
17. Raised Intersections
18. Short Medians
19. Medians on Curves
20. Partial Closure
21. Chokers
22. Chicanes
23. Speed Humps

From Dan Burden's Walkability Workshop 4/24/03
Sponsored by The Thomas Jefferson
Planning District Commission.