Legality of Livable Streets

Reid Ewing
University of Utah
NACTO's Designing Cities: Leading
the Way to World Class Streets

New Jersey's Mix



Flexible Design of New Jersey's Main Streets

prepared by the

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for the

New Jersey Department of Transportation

Reid Ewing and Michael King



New Policies, Standards, and Case Studies

Alan M. Voorhees Transportation Center

www.state.nj.us/transportation/publicat/

State Highways Serving as Main Streets



Few Traditional Main Streets



Roadway Design

Less Forgiving Designs in Urban Areas

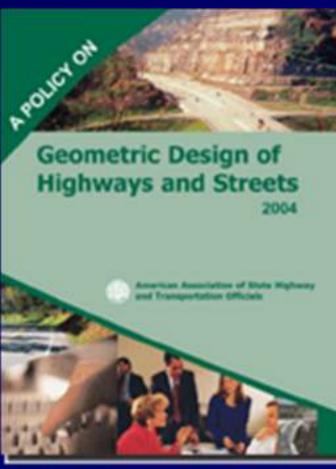
The Conventional Wisdom:

Passive Safety Paradigm

Wider, Straighter, Longer, Faster

"every effort should be made to use as high a design speed as practical to attain a desired

degree of safety"



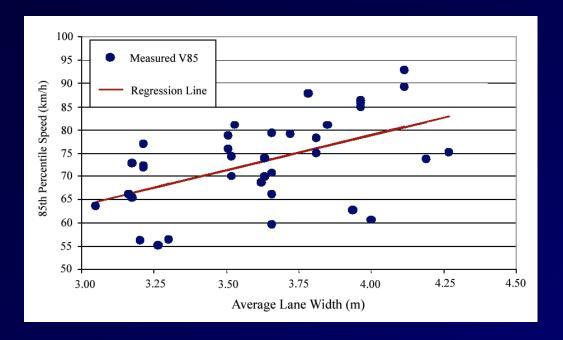
Urban =/ Rural



The Alternative

Active Safety Paradigm

Wide Lanes







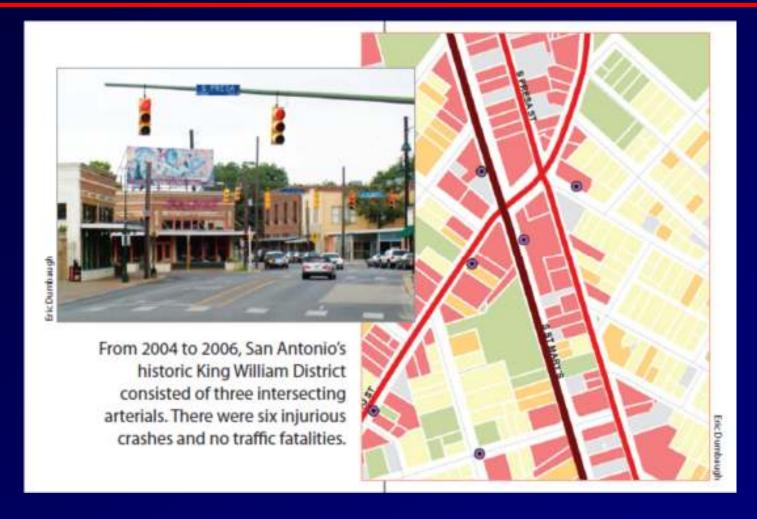
Wide Corners



Wide Clear Zones



Safe Urban Form



E. Dumbaugh and R. Rae, "Safe Urban Form: Revisiting the Relationship between Community Design and Traffic Safety," JAPA, Summer 2009.

Lower Serious Crash Rates

Higher Densities

Pedestrian-Oriented Retail Uses

Interconnected Streets

Which Is Safer?





Liability Cases -- Key Distinction

 Discretionary functions of government involve a choice among valid alternatives

 Ministerial functions of government involve operational decisions that leave minimal leeway for personal judgment

16 State Survey

 In only one state are highway design decisions treated as operational

 In two states, design immunity may lapse as highway conditions change

New Jersey's Tort Law

Tort Claims Act

Neither the public entity nor a public employee is liable...for an injury caused by the plan or design of a public property, either in its original construction or any improvement thereto, where such a plan or design has been approved in advance of the construction or improvement by the Legislature or governing body of a public entity or some other body or a public employee exercising discretionary authority to give such approval.

Manna v. State (1992) "Immunity is not lost even if new knowledge demonstrates the dangerousness of the design, or the design presents a dangerous condition in light of a new context."

Not the Green Book's Fault

AASHTO Minimums for Urban Arterials

- Design Speed 50 kph (30 mph) in CBDs
- Design Vehicle SU Truck
- Lane Width 3.0 m (10 ft) for light truck traffic and speeds up to 60 kph (37 mph)
- Shoulder Width desirable but not required
- Corner Radii -- 3.0-4.5 m (10-15 ft) under constrained conditions
- Curbs vertical curbs up to 60 kph (37 mph)

AASHTO Minimums for Urban Arterials

- Sidewalks 1.2 m (4 ft) 2.4 m (8 ft) border width
- Clearance .5 m (1.5 ft) with vertical curb
- Pedestrian Crossings no restriction
- On-Street Parking when required by existing conditions
- Textured Surfacing no restriction
- Refuge Islands encouraged where space permits
- Curb Extensions/Bulbouts no restriction

What Is At Fault

- Higher State Standards
- Limited Use of Design Exceptions
- Reliance on Single Typical Sections
- Minimum LOS Standards
- Misclassification of Highways
 - With Respect to Function
 - With Respect to Context
- Maintenance Concerns
- Treatment of 4R Projects

Lower State Highway Design Standards

VAOT's Approach



parking



9'



turn

43'
VERMONT



travel



parking



parking



10' travel



10' turn

46' AASHTO



travel



parking

Maryland's Approach

Flexible Design ("Smart" Use of Green Book)

Rate of Vertical Curvature, K (length (ft) per percent of A) Rounded for Computed^a Design 8.6-8.6 10-10 14.4-16.1 20-20 23.7-28.8 30-30 35.7-46.4 40-50 53.6-73.9 60-80 76.4-110.2 80-120 106.6-160.0 140.4-217.6

AASHTO—Geometric Design of Highways and Streets

led values of K as determined from these equations. The dotted line 110.2 gives an rounded values for 45 mph for comparison.

bort dashed cur'e at the lower left, crossing these lines, indicates = L. Note that to the right of the S = L line, the value of K, or vertical curve per pyreent change in A, is a simple and convenient on of the design control. For each design speed this single value is a whole number that is indivative of the rate of vertical curvature. The ontrol in terms of K covers 'll combinations of A and L for any one peed; thus, A and L need not be indicated separately in a design value m. The selection of design curve's is facilitated because the required curve in feet is equal to K times the algebraic difference in grades in L = KA. Conversely, the checking α tolans is simplified by compararves with the design K value.

III-40 shows the computed K values for hights of vertical curves as for the range of values of stopping sight divances, Table III-1, for gin speed. For direct use in design, values of K are rounded as shown ght column. The upper, rounded values of K are plotted as the solid rigure III-41. Rounded values of K are higher than computed values, lifterences are not significant.

e S is greater than L (lower left in Figure III.41), computed values curve (as shown by the dashed line for 45 mph) that bends to the left, imall values of A the required lengths are zero because the sight line wer the apex. This relation does not represent desirable design practice.

Design Speed (mph)	Assumed Speed for Condition (mph)	Coefficient of Friction f	Stopping Sight Distance Rounded or Design (Rate of Vertical Curvature, K (length (ft) per percent of A)	
				Computed	Rounded for Design
20	20-20	0.40	125-12	8.6-8.6	10-10
25 30 25 40	24-25	0.38	150-150	14.4-16.1	20-20
30	28-30	0.35	200-20	23.7-28.8	30-30
25	32-35	0.34	225-25	35.7-46.4	40-50
40	36-40	(0.32	275-32:	53.6-73.9	60-80
45	40-15	0.31	325-409	76.4-110.2	80-120
50	44-50	0.30	400-47	106.6-160.0	110-160
55	48-55	U.30	450-55	140.4-217.6	150-220
60	52-60	0.29	525-65	189.2-302.2	190-310
65	55-65	0.29	550-72		7 010
70	58-70	0.28	625-850	282.8-530.9	290-540

*Using computed values of stopping sight distance.

Table III-40. Design controls for crest vertical curves based on stopping sight distance.

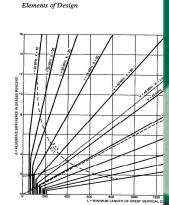
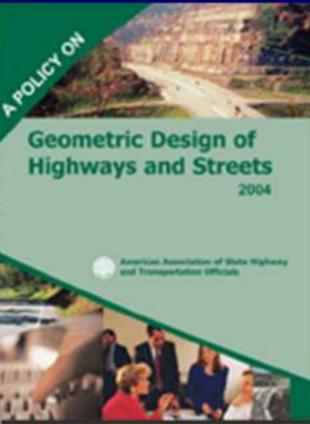


Figure III-41. Design controls for crest ping sight distance and upper range.

tice. Most of the States use a minimum length of either a single value, a range for different design Values now in use range from about 100 to 300 tion in design speed and to approximate the ran mum lengths of vertical curves are expressed (speed, or I_{main} = 3V. These terminal adjustment the lower left of Figure III-41.

The above values of K derived when S is less t out significant error where S is greater than L. extension of the diagonal lines to meet the vertice of vertical curves results in appreciable difference where A is small and little or no additional colonger vertical curves.



Minimum Versus

Desirable

Use Design Exceptions Liberally To Preserve Context

NJDOT Design Exceptions – 1997-1999

81 Pr	ojects	CSDEs for 50 Projects		
		Vertical Clearance	7	
		Vertical Curve SSD	13	
		Intersection SD	2	
81	50	Travel Lane Width	5	
Costs	Impacts	Auxiliary Lane Width	6	
Considered	Considered	Horizontal Curve Radius	12	
		Shoulder Width	20	
		Superelevation	13	
80	1	Bridge Width	4	
Costs Were	Impacts Were	Horizontal Curve SSD	3	
Primary	Primary	Grade	1	
<i>Justification</i>	Justification	Cross Slope	0	

15th Avenue (Anchorage, AK)



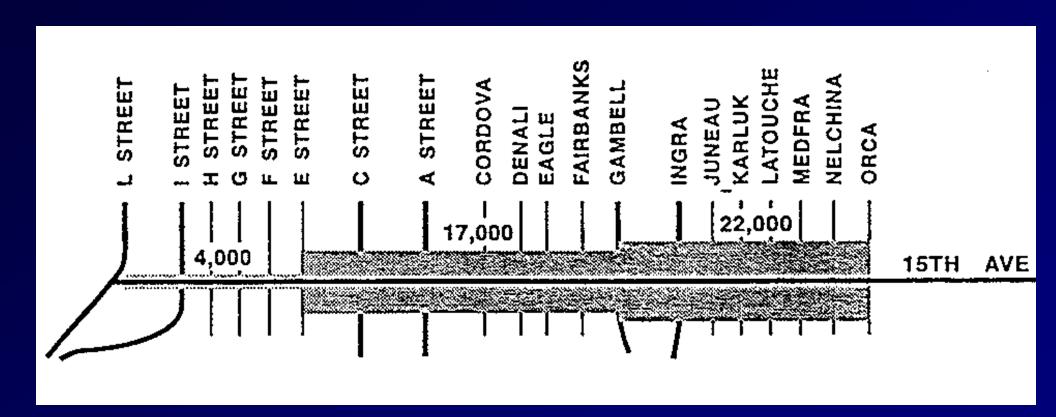
Safety Study

Lack of Left-Turn Lanes or Pockets

Existing Substandard Elements

- Curb Return Radii (1.3-8.3 m)
- Clear Zone (0.1-.5 m)
- Corner Sight Distances (52-76m)
- Grades (0.2-9.7%)

Varying Traffic Volumes



Four-Lane Section



Three-Lane Section



At 1/3rd The Cost

Standard Elements (Built to Minimums)

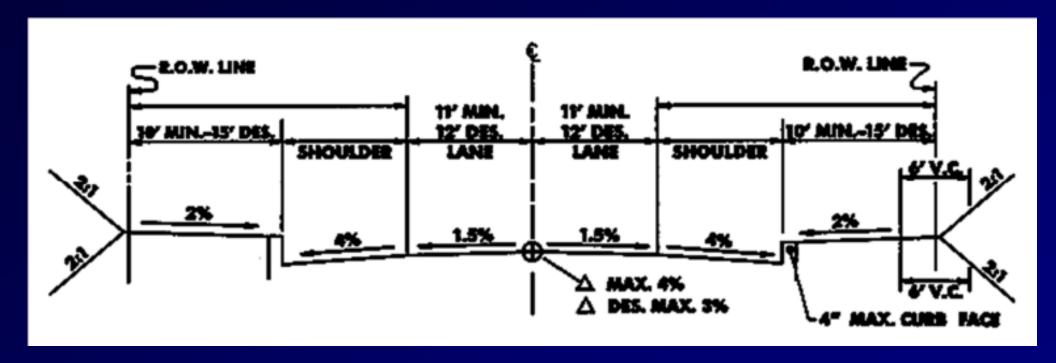
- Lane Width (3 m)
- Shoulder Width (0 m)

Design Exceptions

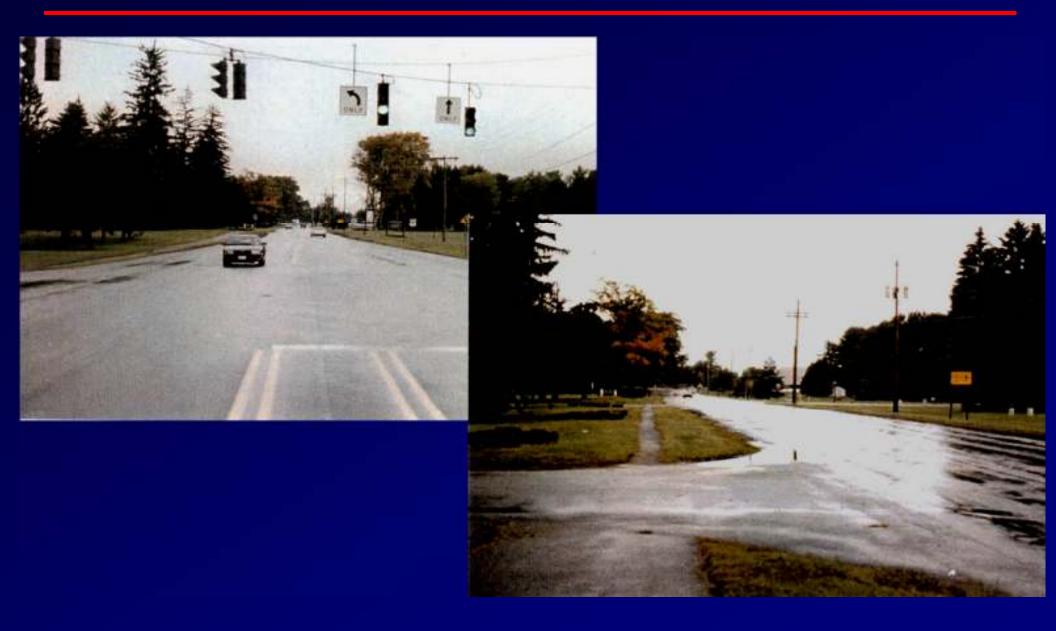
- Curb Return Radii at Minor Streets
- Clear Zones
- Intersection Sight Distances
- Vertical Stopping Sight Distances

Fit Cross Sections to Roadway Function and Context

One Cross-Section Presently



South Broadway/US 9 (Saratoga Springs, NY)



Fifth Objective

"To enhance the historic, recreational, and visual aspects of the Saratoga State Park and establish the corridor as a gateway to SSP and the City of Saratoga Springs"

Gradual Transitions

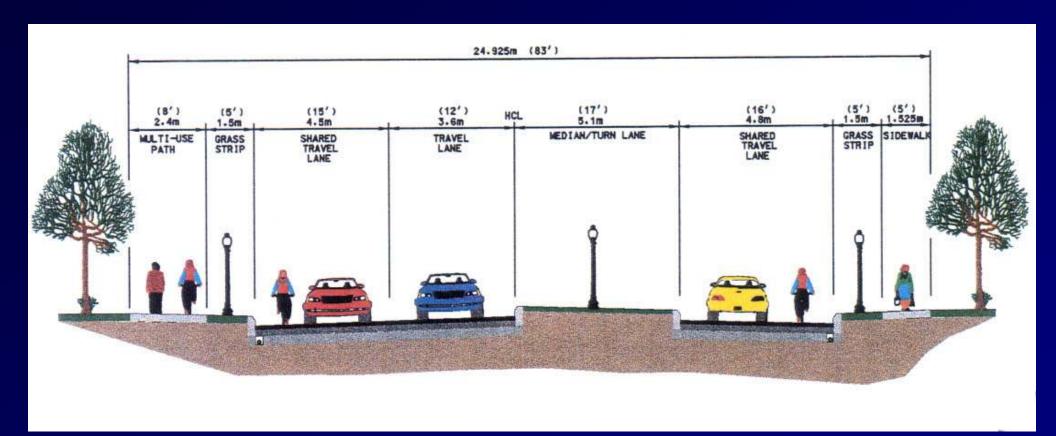








Asymmetric Design

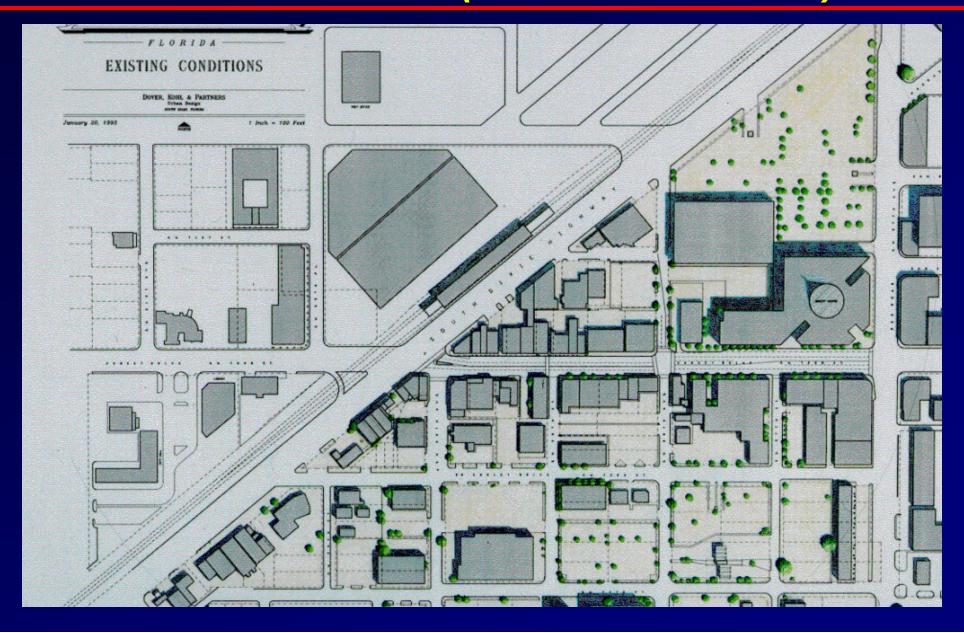


Breakaway Elements and Beveled Curb

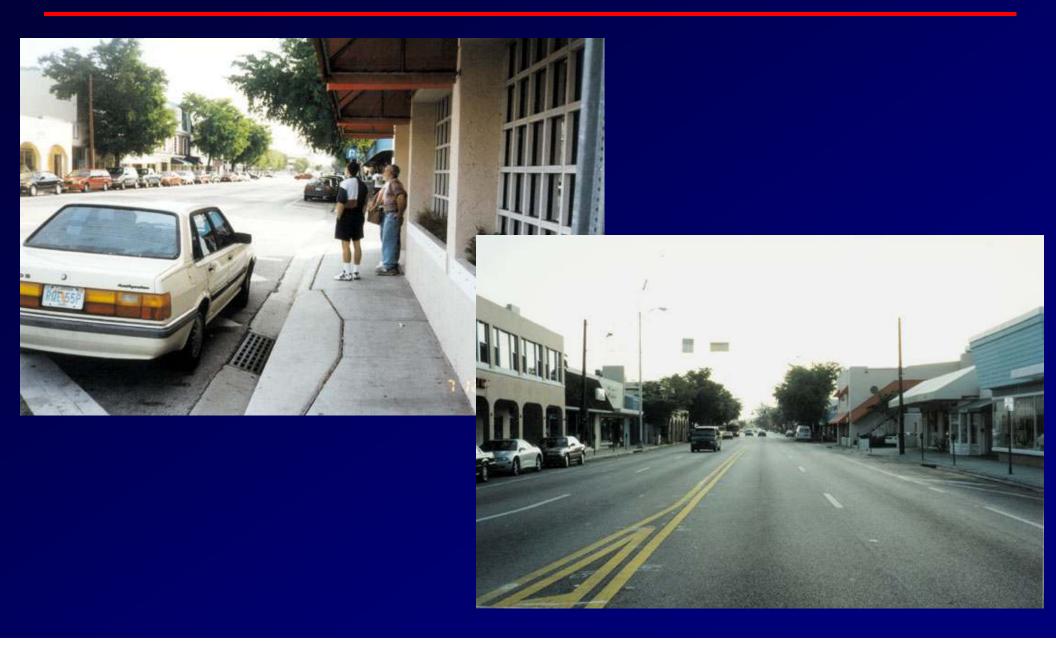


Relax LOS Standards As Necessary

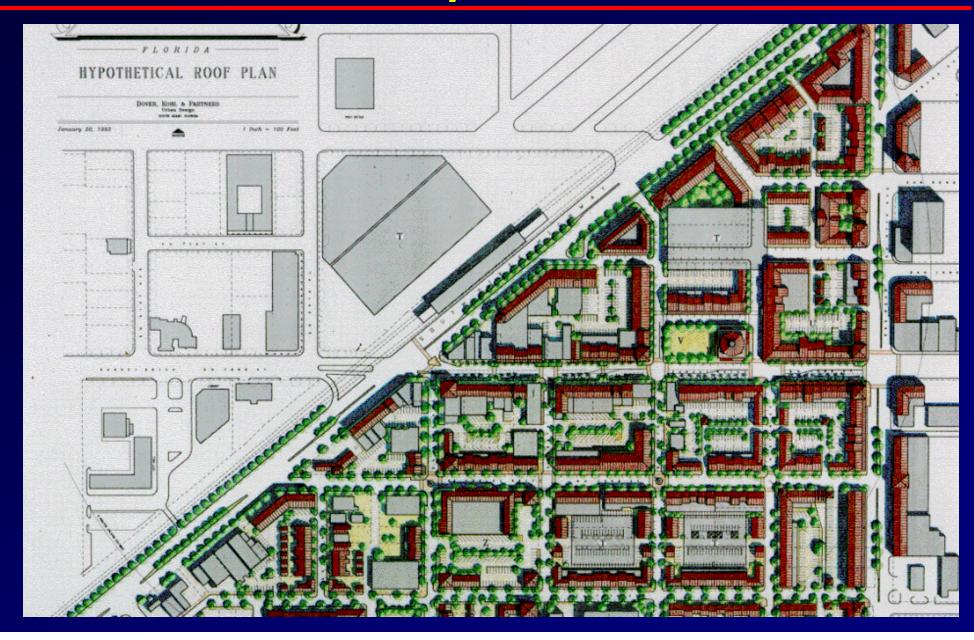
Sunset Drive/SR 986 (South Miami, FL)



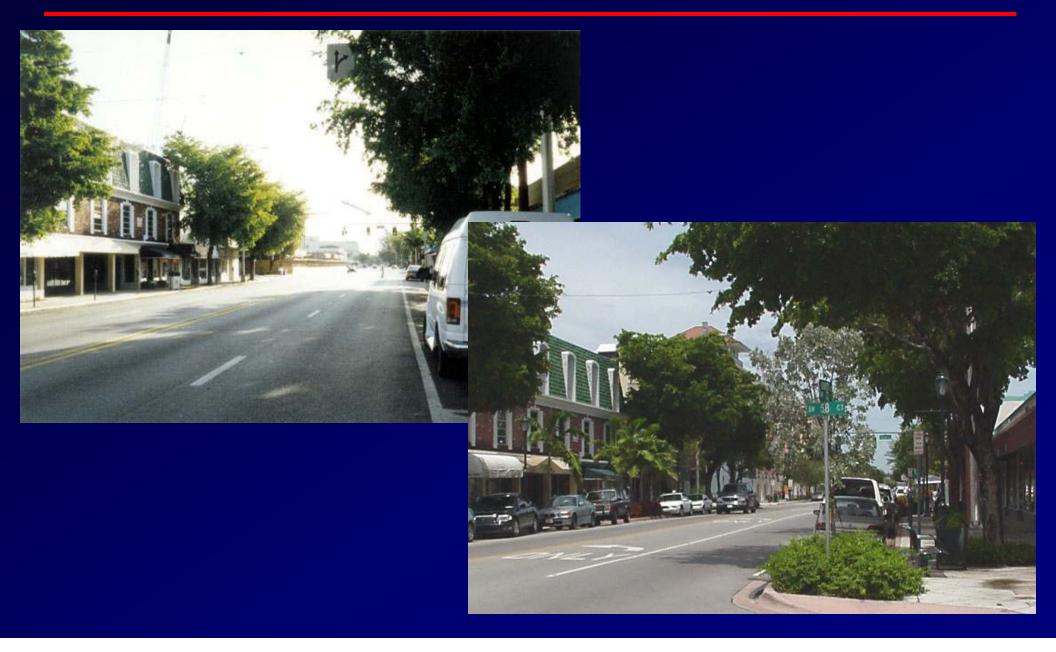
Poor Main Street Environment



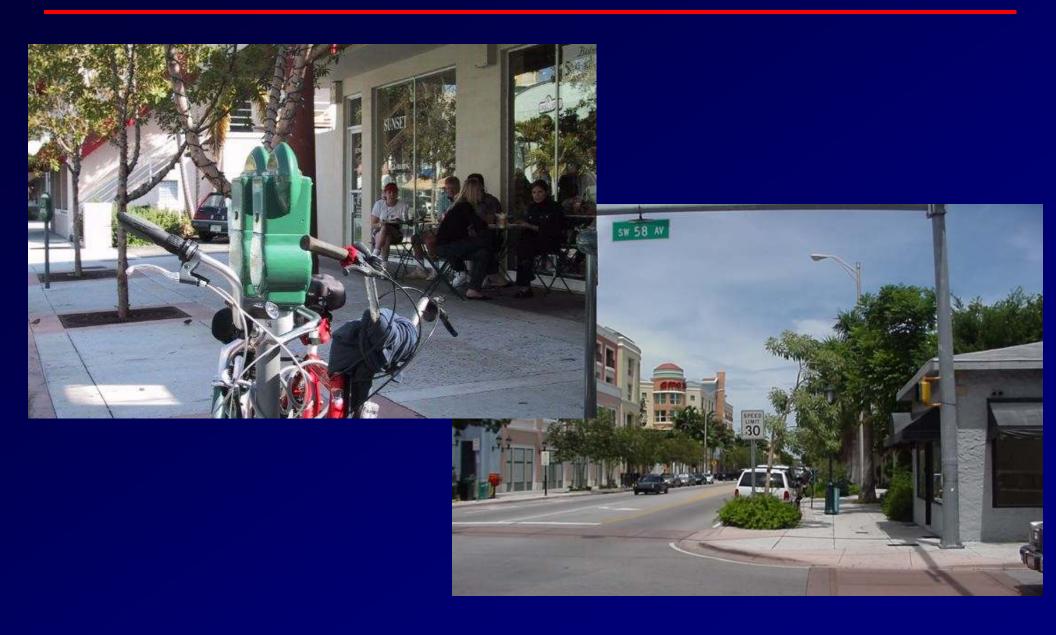
Downtown Redevelopment Plan



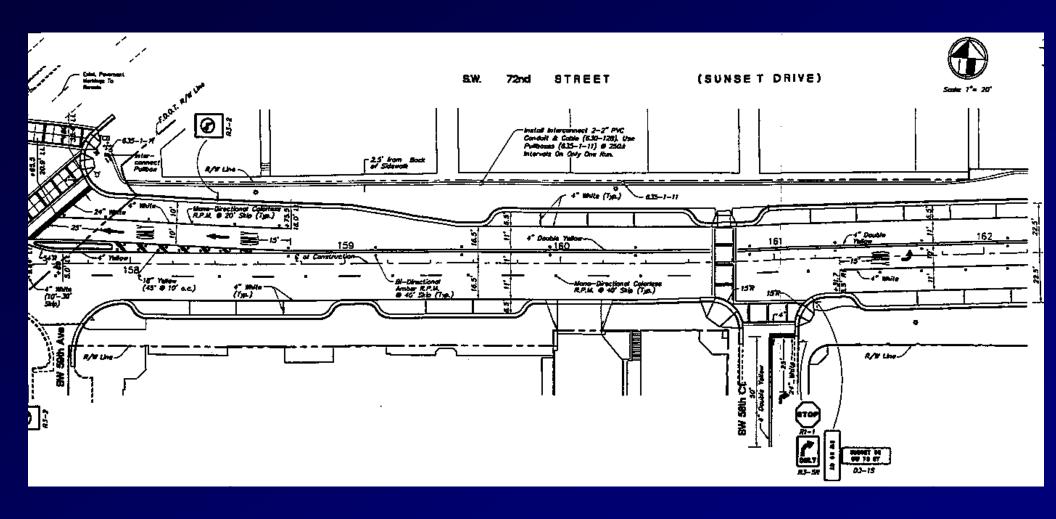
4 -> 3 Lane Conversion



Wide Sidewalks and Small Corners



Eastbound Lanes Through the Intersection



LOS Comparison

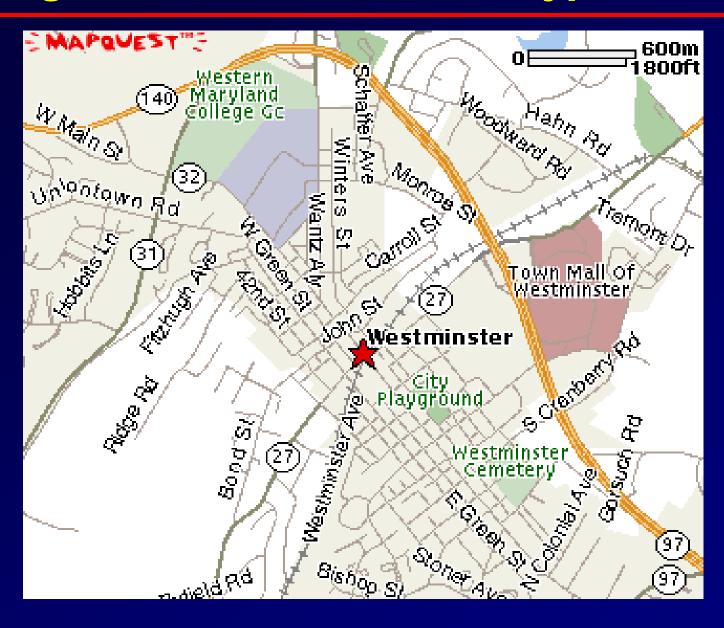
	LOS by Approach (PM Peak Hour)			
	NB	SB	EB	WB
Existing Conditions	В	E+	E +	E +
Projected with Current Cross Section	В	E+	E +	E
Projected with New Cross Section	В	E+	E+	F

Reclassify or De-Designate Main Streets That Are No Longer Critical

East Main Street/MD 32 (Westminster, MD)



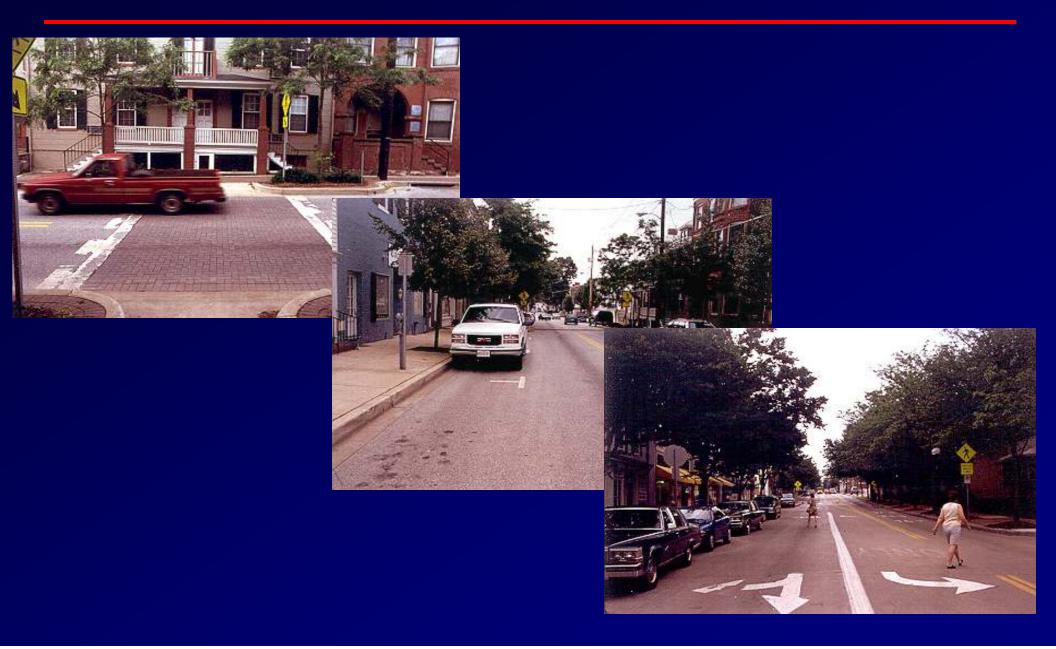
Change In Function With a Bypass



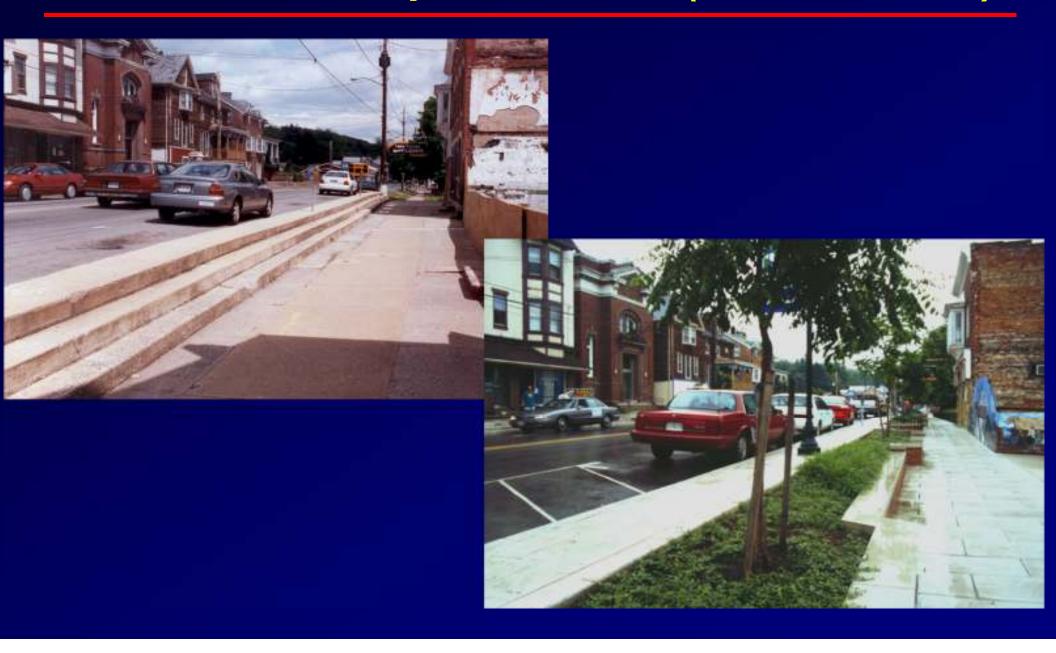
First CSD Project In Maryland



Issues for MSHA

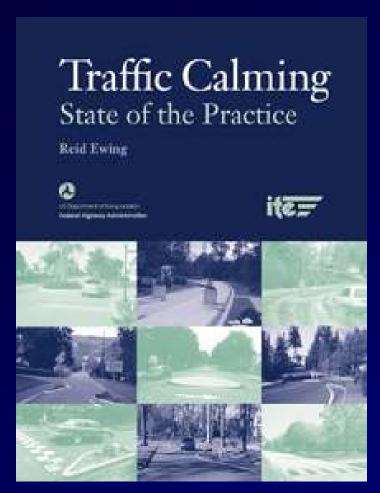


Within the Envelope – MD 144 (Hancock, MD)



Traffic Calming Case Study

ITE



http://www.ite.org/traffic/tcstate.asp#tcsop

First Legal Challenge

-in-law, Carter Harrison, Jr. to do something - hence the bump

GLENCOE BUMPS ARE VINDICATED BY COURT

Judge Mack Rules That Automobilists Must Either Ride Over Them or Take Another Road—Village Has Right to Cross-Walks.

ON OPPOSITE SIDES IN CASE

One Time Apprentice Wins Legal Victory Over Man Who Taught Him His Blackstone—Complainants Take an Appeal:

The Glencoe "bumps," the pride of the morth shore suburb and the terror of speeding automobilists, have been vindicated. Salt30 1905-

SYMMENTA BATURD

GLENCOE PRESIDENT DEFEATS PARTNER IN 'BUMPS' CASE.

Judge Mack Decides Obstacles
Are Not Menace and Shall
Not Be Torn Out—Fight Produces a Peculiar Situation

Glencoe's famous-or lufamous-bumps are not to be torn out by the minions of the law, Judge Mack put his judicial "O. K." upon them resterday. But Gor don E. Ramsay, president of the village

More on Glencoe Bumps

Sudden Jolt May Be Avoided.

The "bumps," about which so much has been written, are brick walks across Sheridan road at street intersections. They are arched to shed water, the crown of the arch in the five foot walk being two and three-quarter inches higher than the street level.

The spring of the arch is level with the macadam on the street, so that there is no sudden jolt given the automobilist unless he is going faster than the speed limit of fifteen miles an hour.

Mr. Ramsay, while he has vigorously defended the right of the council to erect the warks, is liberal in his views toward automobilists.

He says that they are free to the use of the streets when going at a speed of fifteen miles an hour, but that the villagers should not be expected to walk in mud while crossing the streets simply to allow automobiles to run at a high rate of speed.

Bumps Are Gentle "Cure."

That the Glencoe bumps are the best cure for speedy automobilists is the opinion of Special Counsel Tolman, and he believes that the suburb has found the solution of the problem.

"I think the raising of the cross walks is the proper cure for automobile speeding."

- Brick Crosswalks
- Arched to Shed Water
- 5 feet x 2 3/5 inches
- 15 mph design speed
- "Villagers should not be expected to walk in mud while crossing the streets simply to allow automobiles to run at a high rate of speed."

Court Ruling

Judge Mack had gone over the bumps himself in an automobile. He had been brought out there by the complainants during the progress of the case, which has-been going on for a week.

But his experience did not convince him that the bumps are obstructions. As a matter of fact, it convinced him that the cross walks are really a convenience and a necessity for the villagers, and that if they constituted a slight inconvenience for automobilists, the latter would have to put up with it.

"Bump" for the Complainants.

Not only did the court rule that the bumps were not a menace and that the court had no grounds for the exercise of its judicial powers against the discretion of the village council of Glencoe, but the complainants had to pay the costs in the suit.

- Served a public purpose
- Not a public threat
- No ground to override council discretion

Case Law

- Lack of Legal Authority
- Tort Liability
 Negligence in Design, Operation,
 or Maintenance
- Unconstitutionality
 Taking of Property/Loss of Access
 Due Process
 Equal Protection

Legal Authority -- Berkeley Case

- California Supreme Court ruled that half closures and diagonal diverters are traffic control devices not authorized by state law
- Ruling became moot when the California State Legislature:
 - gave local governments the authority to block entry to or exit from any street by means of islands, curbs, traffic barriers, or roadway design features
 - excluded traffic calming measures from the definition of traffic control devices and hence from state regulation

A Confusing Ruling



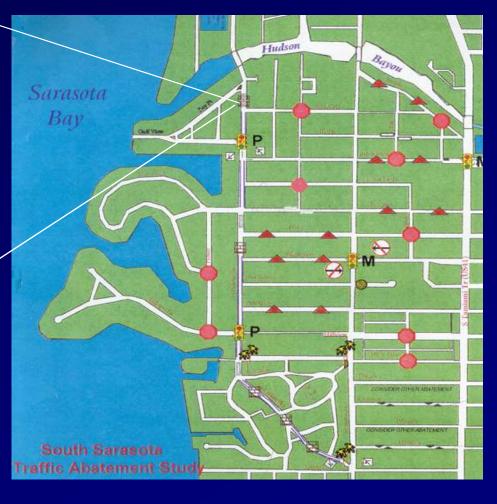


Legal Authority -- Sarasota Case

- Florida circuit court ruled that speed humps and speed tables are traffic control devices not authorized by state law
- Court rejected city's claims of sovereign immunity and broad home rule and police powers
- Decision reversed upon appeal for lack of standing

The Real Issues in Sarasota





Traffic Control Devices by Definition

"Traffic control devices are used to direct and assist vehicle operators in the guidance and navigation tasks required to traverse safely any facility open to the public."

Manual

on Uniform Traffic Control Devices

Liability Cases -- Key Distinction

- Discretionary functions of government involve a choice among valid alternatives
- Ministerial functions of government involve operational decisions that leave minimal leeway for personal judgment

From Discretionary to Ministerial

- Decision to Calm Traffic
- Choice of Traffic Calming Measures
- Design of Traffic Calming Measures
- Adequate Warning of Measures
- Adequate Maintenance of Measures

California Code Section 830.6

No liability for injury caused by a plan or design if:

(a) Plan or design is approved by legislative body or other entity with discretionary authority

or

(b) Plan or design is in conformity with standards previously approved

and

(c) Such approval has a rational basis

Tort Liability -- Portland Case

- Jury found that the city was not liable for a fatal collision that might have been averted if a diverter had been installed at the accident location
- City exercised its discretion and instead installed an island and traffic circles farther down the street -- the neighborhood had specifically rejected a diverter at that location

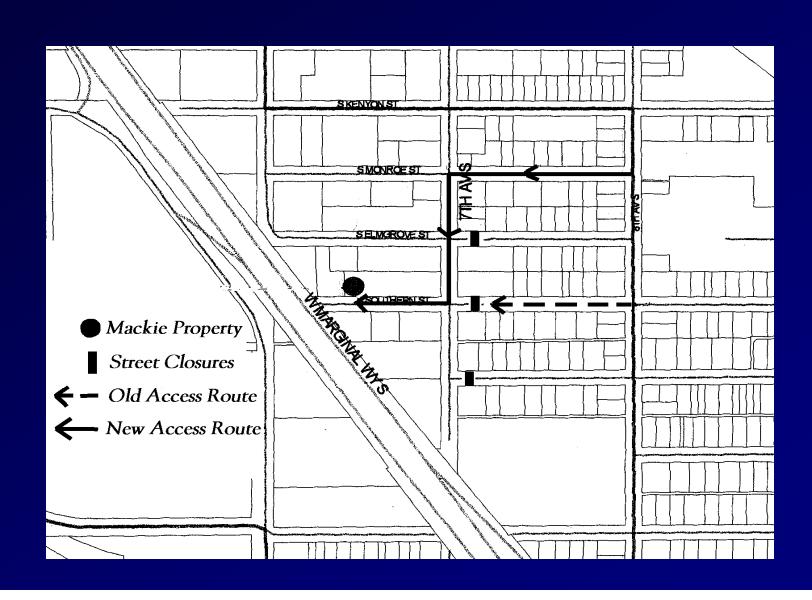
Portland's Treatment



Loss of Access -- Seattle Case

- Washington State Court of Appeals ruled that a street closure did not rise to the level of a taking
- The closure advanced a legitimate public purpose of reducing "noise, traffic hazards and litter" in a residential area
- Access to the business was maintained, albeit not the most convenient access

Access Still Adequate



Loss of Access -- Montgomery County Case

- U.S. District Court dismissed a lawsuit under the Americans with Disabilities Act
- A disabled veteran claimed that the proliferation of speed humps interfered with his use of public roads due to the discomfort they caused him
- Court held that while the humps presented the man with difficulty, they did not "totally bar his use of the roads" nor deny him "meaningful access"

The Real Issues in Montgomery County



Failure to Calm Traffic -- Sacramento

Friends of H Street v. City of Sacramento, 24 Cal.2d 607.

"... loss of peace and quiet is a fact of life which must be endured by all who live in the vicinity of freeways, highways, and city streets."



Damage Claims

- The Most Common Bases for Paid Claims:
 - Inadequate Signage
 - Flawed Design of Measures
- Arguably Both Involve Failure of Local Governments to Perform Ministerial Duties

Problem Choker







2004 Update

- •City of Albuquerque, NM
- •City of Austin, TX
- ·City of Bellevue, WA
- Broward County, FL
- City of Charlotte, NC
- ·City of Charlottesville, VA
- City of Colorado Springs, CO
- City of Eugene, OR
- Gwinnett County, GA
- Howard County, MD

- Los Angeles County, CA
- City of Minneapolis, MN
- Montgomery County, MD
- City of Portland, OR
- Pima County, AZ
- City of Riverside, CA
- City of Sacramento, CA
- ·City of Seattle, WA
- ·City of Vancouver, WA
- ·City of Walnut Creek, CA

Recent Action

- Montgomery County person injured on a speed hump received a \$10k out-of-court settlement
- Portland driver claiming injury due to "incomplete speed humps" lost his lawsuit
- Seattle boy hit at an intersection where a traffic circle had been requested lost his suit
- Bellevue threatened lawsuit over the removal of speed tables