Building Communities through Transportation, Instead of Transportation through Communities

COMPASS EDUCATION SERIES

March 23, 2011

Gary Toth
Director of Transportation Initiatives
Project for Public Spaces
34 years at the New Jersey Department of Transportation
4 Years Director of Transportation Initiatives at PPS
Invested Career in Helping Communities Get What They Want
How we got here and what are the consequences
Rebalancing the Transportation System
The Role of Land Use
What to Partner About
Closing thoughts
Is this the landscape we want to leave our children?
We have been Building Transportation Through Communities, not communities through transportation.
Pre-Automobile Era

- City streets served as public places for economic and social interaction
Streets used to have many purposes

Street design had to accommodate all users
Pieces of Community had to relate to each other
The Automobile Age

- The mobility provided by the automobile removed the need for those exchanges to be made in compact, mixed use cities and towns.
- Once we could drive to access goods, employment, education and recreation, we were free to locate those uses in distant and specialized locations...and we did.
The needs of the motoring public supersede all other contexts
We stopped viewing Streets as Places
The Interstate Era Begins

[Image of a map of the United States with a portrait of a man in the center.]

[Logo: Eisenhower Interstate System]

[Reference: 'The general location of routes of the recommended interregional highway system. Total length of the system is 25,000 route miles.']

PROJECT FOR PUBLIC SPACES
Transportation as a separate discipline flourished

There have been 9 editions of the MUTCD
Building communities is not our business.
CAPACITY OF STREETS
Focus on high speed mobility

- Speed necessary at region and above
- Proximity viable option in sub-region

Slide Courtesy of Chris Sinclair, Renaissance Planning Group
Walking City (Pre-1890) – Annapolis

½ mile
Streetcar Suburb (1890 – 1920) – Peabody Heights/Charles Village, MD

½ mile

3 miles to Downtown Baltimore

Slide courtesy of the National Highway Institute
Auto-Freeway City (1945 - ?) – Columbia, MD

8 miles

35 miles to DC
HIGH L.O.S.  

↓  

SUCCESSFUL CITY
A successful street?
A successful street?
Is This a Successful Street?
Is this Sustainable?

HIGH LOS.

SUCCESSFUL CITY
Traffic Outcomes

- Commuters in the Boise area experienced over 4 million hours of delay in 2009 (225 thousand in 1982); total cost lost time was $91 million (2 million in 1982)

Source: 2010 USDOT Annual Urban Mobility Report
Safety Outcomes

- Last year, over 33,000 Americans died on our roads
- In Mississippi, the number was 783 (2008)
Safety Outcomes

<table>
<thead>
<tr>
<th></th>
<th>US</th>
<th>Dutch Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1975</td>
<td>45000</td>
<td>51750</td>
</tr>
<tr>
<td>2008</td>
<td>37000</td>
<td>14800</td>
</tr>
</tbody>
</table>
Projects no longer affordable at up to $60 million per mile.

Regional Plan Association
The Unsustainable Structure of New Jersey’s Transportation Trust Fund
March 2010

$21.3 billion gap

Projects no longer affordable at up to $60 million per mile.

Regional Plan Association
The Unsustainable Structure of New Jersey’s Transportation Trust Fund
March 2010

$21.3 billion gap

Projects no longer affordable at up to $60 million per mile.
Health Outcomes

- 225,000 die annually due to sedentary lifestyle
- Childhood obesity epidemic
- Type 2 diabetes on the rise – in children!

• The Transportation Prescription. PolicyLink. 2009.
• ‘Adult’ diabetes on the rise in kids. MSNBC. October 30, 2009.
• Center for Disease Control
Social Outcomes

- The average parent spends 17 full days a year behind the wheel; more than bathing and feeding a child, and more than the average American takes for vacation.
  
  Source: Surface Transportation Policy Project

- In 1969, about half of U.S. children walked or biked to school. Today, fewer than 15 percent of children walk or bike to school. More than one-third of U.S. adults are obese and 17 percent of young children and adolescents are overweight.
  
  Source: Centers for Disease Control and Prevention

Slide Courtesy of Astrid Glynn
Climate Outcomes

IT'S JUST A "MICROCLIMATIC TREND"

Cartoon courtesy of Andy Singer
So what do we do?
Rebalance the system

Proximity

Accessibility

Speed

Slide Courtesy of Chris Sinclair, Renaissance Planning Group

PROJECT FOR PUBLIC SPACES
Rebalancing the system

Get the Streets Right

• Create Pedestrian Friendly and Complete Streets
• Create Streets that are Places
• Rightsizing roads
• Getting the Network Right
• Getting the Manuals Right

Use Transit for More than Mobility
Re-integrate Transportation and Land Use
Create Pedestrian Friendly and Complete Streets

Can you spot the pedestrian?  
Could you cross here?

Active Living Resource Center
Many of our suburban and country highways are being improved for motorists. Most of them are now unfitted for all other users. It is no longer safe to walk, ride or bicycle on roadways, especially at night when it is extremely perilous. The entire width of some highways is taken up by the roadway and on others what is not needed for roadway is left ungraded or so rough that it is useless for pedestrians, equestrians or cyclists.

No highway should be permitted to be without due provision for pedestrians and where practical for equestrians or bicyclists.

There should be a sidewalk or reasonably well made foot-path on one side at least of every highway. There should of course be two sidewalks or foot-paths on important highways.
Graphic courtesy of Claes Tingvall via David Levenger
Bikeway Design

- **Statement of Principals**
  - Safe Access to All Destinations
  - All Streets are Bicycle Streets
  - Street Design should accommodate all users
Range of Bicycle Users

- Strong and Fearless
- Enthused and Confident
- Interested but Concerned
- No Way, No How
Building a Bikeway Network

- Facility Types and Applications
- Traditional Facilities
- Innovative Treatments
- Implementation Approaches

Chapt 2, fig, Restripe 4 to 2 travel lanes with center turn lane - 
Caption: Road diet - 4 lanes reduced to 2 lanes, center turn lane and 2 bike lanes
Complete Streets

A Complete Street is safe, comfortable & convenient for travel by automobile, foot, bicycle, & transit regardless of age or ability.
Complete Streets policies are NOT:

- a mandate for immediate retrofit
- a silver bullet
- a design prescription

There is no such thing as a ‘complete streets cross-section.’
Proposed section alternatives on Foothill Blvd:

- ½ section curb to median south (school) side
- Soft surface trail and bike lane
- Sidewalk, landscape buffer, and bike lane

PROJECT FOR PUBLIC SPACES

- 18' travel
- 11' travel
- 11.5' travel
- New curb
- Bike

Slide courtesy of Dan Burden
Photomorph courtesy of Dan Burden
Think of Streets as Places
CAPACITY OF
STREETS
People put the Place back in streets
Characteristics of Streets as Places:

Design street elements and adjacent buildings for the human scale

Balances the going and staying needs of users

Support and encourage activities and destinations
Characteristics of Streets as Places:

Provide a feeling of safety

Invite activities on both sides of the street

Reward slow movement by lowering speeds
Characteristics of Streets as Places:

Reflect community identity

Move community towards local sustainability

Show a sense of ownership
The Power of Ten

10+ Places

Districts/Streets Destinations

Place

Place

Place

Place

Place

Place

Place
The Power of Ten
The Street Audit Tool

Issues:
1. Lack of image/no sense of place (no signage) "Branding" community
2. No amenities (seating, telephones, restrooms, waste"
3. Not walkable (not inviting, (vessels, path, excessive width)
4. No bicycle facilities/lanes/paths
5. Not linked to transit/no sign at work to walk transit
6. No signage (transit or landmarks)
Rightsizing
HELLO MAYOR? GOOD NEWS!! I HAVE FOUND A WAY TO REDUCE THE TRAFFIC ON OUR STREETS! I HAVE MADE SOME FOUR LANE ROADS INTO TWO LANES... WITH A LANE FOR BIKES ON EACH SIDE!!! AND HELLO.... HELLO....
This: One less travel lane; bike lanes; parallel to back-in diagonal parking on one side; new pavement
# Charlotte Projects

<table>
<thead>
<tr>
<th>Completed</th>
<th>Anticipated/Underway</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>Thoroughfares rebuilt/extended</td>
</tr>
<tr>
<td>19</td>
<td>Streetscapes and road-diets</td>
</tr>
<tr>
<td>11</td>
<td>Intersections</td>
</tr>
<tr>
<td>37</td>
<td>Sidewalks</td>
</tr>
<tr>
<td>9</td>
<td>Area Plans</td>
</tr>
</tbody>
</table>
85th Percentile Speed

Before 44 38
After 42 40

Corridor travel times remained the same...
Average Daily Traffic

<table>
<thead>
<tr>
<th>Average Daily Traffic</th>
<th>Before Road Diet</th>
<th>After Road Diet</th>
</tr>
</thead>
<tbody>
<tr>
<td>24000</td>
<td>22000</td>
<td>22,000+</td>
</tr>
<tr>
<td>21400</td>
<td>18400</td>
<td>18400</td>
</tr>
<tr>
<td>18000</td>
<td>12000</td>
<td>14% Decrease</td>
</tr>
</tbody>
</table>

ADT

PROJECT FOR PUBLIC SPACES
Reinvented Edgewater Drive
Orlando, Florida

Concept
Speeding Analysis

Before After Before After Before After
North End 15.7% 7.5% 9.8% 8.9% 29.5% 19.6%
Middle
South End

Percent of Vehicles Traveling over 36 MPH

PROJECT FOR PUBLIC SPACES
## Other Results

<table>
<thead>
<tr>
<th></th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crash Rate</td>
<td>12.6/MVM</td>
<td>8.4/MVM</td>
</tr>
<tr>
<td>Injury Rate</td>
<td>3.6/MVM</td>
<td>1.2/MVM</td>
</tr>
<tr>
<td>On Street parking</td>
<td>29%</td>
<td>41%</td>
</tr>
<tr>
<td>Pedestrians</td>
<td>2136</td>
<td>2632</td>
</tr>
<tr>
<td>Bikes</td>
<td>375</td>
<td>486</td>
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</table>
## Evaluation Matrix

<table>
<thead>
<tr>
<th>Objective</th>
<th>Outcome</th>
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</thead>
<tbody>
<tr>
<td>Avoid Increasing Traffic On Neighborhood Streets</td>
<td>YES</td>
</tr>
<tr>
<td>Reduce Speeding on Edgewater Dr</td>
<td>YES</td>
</tr>
<tr>
<td>Increase Bicyclist Volumes</td>
<td>YES</td>
</tr>
<tr>
<td>Increase Pedestrian Volumes</td>
<td>YES</td>
</tr>
<tr>
<td>Reduce Crashes</td>
<td>YES</td>
</tr>
<tr>
<td>Increase On-Street Parking Use Rates</td>
<td>YES</td>
</tr>
<tr>
<td>Increase Pedestrian Satisfaction (Residents)</td>
<td>YES</td>
</tr>
<tr>
<td>Increase Parking Satisfaction (Residents)</td>
<td>YES</td>
</tr>
</tbody>
</table>

*Noise levels go down.*
Prospect Park West
New York City

Prospect Park West
Bicycle Path and Traffic Calming Update

January 20, 2011
Presentation to Community Board 6

NYC Department of Transportation
Traffic Management Division
Prospect Park West
New York City
Roadway Design – Before & After
### Prospect Park West
**New York City**

#### Traffic Speed – Before & After

- **BEFORE:** 3 of every 4 vehicles broke speed limit
- **AFTER:** Only 1 in 5 vehicles exceed speed limit

<table>
<thead>
<tr>
<th>Prospect Park West</th>
<th>Prospect Park West</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between 5th and 6th Streets</td>
<td>Between 5th and 6th Streets</td>
</tr>
<tr>
<td>Percent of Vehicles Over 30 MPH</td>
<td>Average Speed (mph)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time Period</th>
<th>BEFORE</th>
<th>AFTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM Peak</td>
<td>March 2009</td>
<td>July 2010</td>
</tr>
<tr>
<td></td>
<td>76%</td>
<td>11%</td>
</tr>
<tr>
<td>Mid Day</td>
<td>72%</td>
<td>-</td>
</tr>
<tr>
<td>PM Peak</td>
<td>73%</td>
<td>23%</td>
</tr>
<tr>
<td>Average</td>
<td>74%</td>
<td>20%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time Period</th>
<th>BEFORE</th>
<th>AFTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM Peak</td>
<td>March 2009</td>
<td>July 2010</td>
</tr>
<tr>
<td></td>
<td>34.1</td>
<td>25.1</td>
</tr>
<tr>
<td>Mid Day</td>
<td>34.6</td>
<td>-</td>
</tr>
<tr>
<td>PM Peak</td>
<td>32.8</td>
<td>26.6</td>
</tr>
<tr>
<td>Average</td>
<td>33.8</td>
<td>26.6</td>
</tr>
</tbody>
</table>

Source: NYCDOT Radar Study
## Prospect Park West
### New York City

### Safety

<table>
<thead>
<tr>
<th></th>
<th>Before</th>
<th>Period*</th>
<th>After: 7/1/10 to 12/31/10</th>
<th>Percent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Before</td>
<td>Average per 6 Months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crashes</td>
<td>89</td>
<td>29.7</td>
<td>25</td>
<td>-15.7%</td>
</tr>
<tr>
<td>Crashes w/ Injury</td>
<td>16</td>
<td>5.3</td>
<td>2</td>
<td>-62.5%</td>
</tr>
<tr>
<td>Total Injuries</td>
<td>19</td>
<td>6.3</td>
<td>5</td>
<td>-21.1%</td>
</tr>
</tbody>
</table>

* Before period is the 2nd half (7/1 to 12/31) of 2007, 2008 and 2009

- Crashes are down 16%
- Crashes that cause injuries are down 63%
- Before the project, a crash was twice as likely to include an injury (18% vs. 8%)
- Injuries to all street users are down 21%
- No reported pedestrian injuries in the after period
- No pedestrian or cyclist injuries from ped-bike only crashes reported by NYPD

* Motor vehicle crash data per NYPD, between Grand Army Plaza and Bartel Pritchard Square
* Analysis compares the average of the three prior years (2007-09) between July 1 and December 31 only and July 1 to December 31, 2010
Prospect Park West
New York City

Combined Vehicle and Bicycle Counts

Prospect Park West Combined Vehicle and Bicycle Counts
AM & PM Rush

Prospect Park West Commuter Volume has INCREASED

- Prospect Park West handles 13% & 9% more commuters during the AM & PM rushes, respectively, after street reconfiguration
- Bicycle traffic comprises 12% of PM rush period traffic

<table>
<thead>
<tr>
<th></th>
<th>Before</th>
<th>After</th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bicycle Counts</td>
<td>58***</td>
<td>210***</td>
<td>130***</td>
<td>366***</td>
</tr>
<tr>
<td>Motor Vehicle Counts</td>
<td>2,700*</td>
<td>2,909**</td>
<td>2,807*</td>
<td>2,807**</td>
</tr>
<tr>
<td>Total</td>
<td>2,758</td>
<td>3,119</td>
<td>2,917</td>
<td>3,193</td>
</tr>
</tbody>
</table>

*Average of counts conducted April 21-23, 2009 and May 11-20, 2010 at Carroll St
**Counts conducted October 19-28, 2010 at Carroll St
***Bicycle counts conducted 05/09/09 and 10/12/10 at 4th St
Prospect Park West
New York City

Travel Times - Before & After
(12-Hour Average)
Faster speeds versus getting there faster
Getting the Network Right

From Charlotte DOT
Evolution of the Street Network

Prior to 1939

1940s

1950s

1960s

1970s

1980s

1990s
Build Connected Networks

Illustration: Frank, LD “Health & Community Design”
Greenwald, M.J. Transportation Research Record 2001
Slide courtesy of Kate Kraft, RWJF
Dense Network

Same Lane-Miles

Greater Capacity

Sparse Hierarchy

Slide courtesy of Troy Russ, Glatting Jackson
Risk of Severe Injury or Fatality

versus

Chance of being Severely Injured
30% Higher

Chance of being Killed
50% Higher

From Research by Norman Garrick, University of Connecticut
Odds of Dying in a Road Accident based on Intersection Density*

*Given that an injury occurred
Percentage of People **Walking, Biking or Taking Transit**

![Bar chart showing the percentage of people walking, biking, or taking transit.](image)
Networks Foster Context
Sensitive Streets
Benefits of Connectivity

- Disperses traffic
- Reduces impacts on collectors
- Direct routes
- Lower vehicle miles of travel
- Encourages walking and biking
- Transit-friendly
- Block structure provides development flexibility
- Limits width and number of lanes on major thoroughfares
Network Types

Amorphous  Radial  Grid  Hub and Spoke

Slide Courtesy of John Nordquist, CNU

PROJECT FOR PUBLIC SPACES
Getting the Manuals Right
What Current Manuals Give Us
What Manuals Can Give Us
New Manuals Add Context in PROJECT FOR PUBLIC SPACES

Figure 5.1 Roads in Context

The photos enclosed in a yellow box indicate the Town Center and local City streets that also operate as a local or regional Main Street.
Radical Source??

Conventional Design

Design Speed 35 mph

Using Desired Operating Speed

Design Speed 45 mph

Operating Speed

Posted Speed

SPEED LIMIT 35

Operating Speed

Posted Speed

SPEED LIMIT 35
Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities

An ITE Proposed Recommended Practice
## Charlotte, NC – Design Guidelines

<table>
<thead>
<tr>
<th>Element</th>
<th>Boulevard</th>
<th>Avenue</th>
<th>Main Street</th>
</tr>
</thead>
<tbody>
<tr>
<td>Posted speed</td>
<td>35-40 mph</td>
<td>25 – 35 mph</td>
<td>25 mph</td>
</tr>
<tr>
<td>Design speed</td>
<td>40-45 mph</td>
<td>30 – 40 mph</td>
<td>25 mph</td>
</tr>
<tr>
<td>Through lanes</td>
<td>4 (typical)</td>
<td>2 – 4</td>
<td>2 (typical)</td>
</tr>
<tr>
<td>Lane width</td>
<td>11’ preferred, 10’ acceptable (35 mph) 14’ outside opt.</td>
<td>11’ preferred, 10’ acceptable 14’ outside opt.</td>
<td>10’ – 13’</td>
</tr>
<tr>
<td>Medians/center turn lanes</td>
<td>At least 17’ (typical) landscaped</td>
<td>Center turn lane or median opt.</td>
<td>Center turn lane optional</td>
</tr>
<tr>
<td>Bicycle Accommodations</td>
<td>4-6’ lane desirable</td>
<td>4-6’ lane desirable</td>
<td>Shared lane</td>
</tr>
<tr>
<td>On-street parking</td>
<td>Frontage street only</td>
<td>Optional</td>
<td>Minimum 7’</td>
</tr>
<tr>
<td>Sidewalks</td>
<td>Minimum 6’</td>
<td>Minimum 6-8’</td>
<td>Minimum 10’</td>
</tr>
</tbody>
</table>

Source: City of Charlotte, 2005.
A Variety of Street Types

Network of Streets

Pedestrian-Oriented  Auto-Oriented

Main Street  Avenue  Boulevard  Parkway

Local Street
Indianapolis Regional Center and Metro Planning Area Multi-Modal Corridor and Public Space Design Guidelines
<table>
<thead>
<tr>
<th>CONTEXT DESIGN AND CONNECTIVITY</th>
<th>PEDESTRIAN PROVISIONS</th>
<th>VEHICULAR PROVISIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does the design include provisions for many types of uses?</td>
<td>Are pedestrian crossings well designed?</td>
<td>Is the design vehicle context sensitive (e.g., corner radii not over designed)?</td>
</tr>
<tr>
<td>Is it easy to get from one use to another?</td>
<td>Are crossing distances minimized?</td>
<td>Have all turning movements been checked for vehicle designs?</td>
</tr>
<tr>
<td>Does the design contain spaces that will attract people at times other than rush hour?</td>
<td>Do signalized crossings have adequate time?</td>
<td></td>
</tr>
<tr>
<td>Does the design have continuity of street level activity?</td>
<td>Does the design ensure that pedestrians can easily walk to and through the area?</td>
<td></td>
</tr>
<tr>
<td>Are ground floor uses active and welcoming and does the street have a welcoming character?</td>
<td>Are uses easily visible and inviting to pedestrians?</td>
<td></td>
</tr>
<tr>
<td>Are building front doors noted and well served by the pedestrian realm?</td>
<td>Does the design ensure that vehicles do not detract from the pedestrian experience?</td>
<td></td>
</tr>
<tr>
<td>Is the scale of nearby buildings comfortable for pedestrians, with choices of places to sit or use?</td>
<td>Are protected pedestrian crossings shown at the correct spacing, and do these crossings relate to areas where pedestrians desire to cross?</td>
<td></td>
</tr>
<tr>
<td>SAFETY CONSIDERATIONS</td>
<td>TRANSIT PROVISIONS</td>
<td>CLIMATIC AND ENVIRONMENTAL CONSIDERATIONS</td>
</tr>
<tr>
<td>Are pedestrian crossings safe?</td>
<td>Are transit stops and stations easy to find and get to on foot?</td>
<td>Does landscaping complement the street and is it sustainable from a water use perspective?</td>
</tr>
<tr>
<td>Are junction designs safe for all users?</td>
<td>Are transit maps and schedules readily available and visible?</td>
<td>Is there too much landscape area shown given the irrigation budget?</td>
</tr>
<tr>
<td>Does the design contain spaces that children can use independently?</td>
<td>Are there sufficient passenger waiting areas at bus stops and taxi lay-bys?</td>
<td>Is the landscaping appropriate for the local environment and soil conditions?</td>
</tr>
<tr>
<td>DESIGN CONSIDERATIONS</td>
<td>BICYCLE PROVISIONS</td>
<td>CULTURAL CONSIDERATIONS</td>
</tr>
<tr>
<td>Do buildings give “life” to the street?</td>
<td>Are bicycle facilities prominent and well designed?</td>
<td>Does the design foster people acknowledging one another, as appropriate for Abu Dhabi’s culture and gender mix?</td>
</tr>
<tr>
<td>Does the area project a distinctive image from a distance?</td>
<td>Are bicycle routes well marked?</td>
<td>Does the design encourage a mix of ages, gender and ethnic groups that generally reflect the community at large?</td>
</tr>
<tr>
<td>Is seating and other street furniture well located?</td>
<td>Is there adequate bicycle storage?</td>
<td>Does the design provide private places for women?</td>
</tr>
<tr>
<td>Is lighting safe and adequate for the different users of the street?</td>
<td>Do bicycle facilities meet DOT guidelines, and are they continuous across all intersections?</td>
<td>Does the design have spaces for groups to gather?</td>
</tr>
<tr>
<td>Does the design fit with the image goals of the municipality and the UPRC?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Example Typologies Brunswick

**DESTINATION STREET**

**Movement Priority**

**Destination Street:** A thoroughfare or moderate capacity and low-speed street that serves a regional urban destination, such as a main street district. Pedestrian and bicycle comfort is prioritized.

**Precedents:**
- Maine Street, Brunswick
- Main/Bayview Street, Camden
- Main Street, Rockland

<table>
<thead>
<tr>
<th>THROUGHFARE TYPE</th>
<th>DESTINATION STREET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right-of-Way Width</td>
<td>Varies</td>
</tr>
<tr>
<td>Movement Width</td>
<td>Varies</td>
</tr>
<tr>
<td>LAND USE CHARACTER</td>
<td>WALKABLE, URBAN CORE</td>
</tr>
<tr>
<td>GENERAL USES</td>
<td>OFFERS, RETAIL, RESIDENTIAL, CIVIC</td>
</tr>
<tr>
<td>PUBLIC FRONTAGE QUALITY</td>
<td>HIGH</td>
</tr>
<tr>
<td>DRAINAGE TYPE</td>
<td>Curb</td>
</tr>
<tr>
<td>Curb Radius</td>
<td>3 - 15 ft</td>
</tr>
<tr>
<td>Width</td>
<td>Medium</td>
</tr>
<tr>
<td>Flat</td>
<td>Directed</td>
</tr>
<tr>
<td># VEHICULAR LANES</td>
<td>2 - 3</td>
</tr>
<tr>
<td>Traffic Lane Width</td>
<td>33 ft</td>
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<tr>
<td>Parking Lane Width</td>
<td>7 - 8 ft</td>
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<tr>
<td>Target Design Speed</td>
<td>20 - 25 mph</td>
</tr>
<tr>
<td>MEDIAN TYPE</td>
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</tr>
<tr>
<td>RIDING SURFACE WIDTH</td>
<td>2 - 6 ft</td>
</tr>
<tr>
<td>Movement</td>
<td>UNIDIRECTIONAL</td>
</tr>
<tr>
<td>BICYCLE LANE</td>
<td>3.5 ft</td>
</tr>
<tr>
<td>TRAM/SHUTTLE TYPE</td>
<td>REGIONAL, LOCAL, CIRCULATOR</td>
</tr>
</tbody>
</table>

**COMMERCIAL ARTERIAL**

**Movement Priority**

**Commercial Arterial:** A thoroughfare designed to provide a high degree of vehicular mobility at moderate speeds to regional serving commercial land uses. While the design of this thoroughfare type generally favors motor vehicles, future re-development opportunities should include bicycle and pedestrian facilities.

**Maine Precedents:**
- Outer Pleasant Street, Brunswick
- Bath Road, Brunswick
- Civic Center Drive, Augusta

<table>
<thead>
<tr>
<th>THROUGHFARE TYPE</th>
<th>COMMERCIAL ARTERIAL</th>
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<tbody>
<tr>
<td>Right-of-Way Width</td>
<td>Varies</td>
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<tr>
<td>Movement Width</td>
<td>Varies</td>
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<tr>
<td>LAND USE CHARACTER</td>
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<td>GENERAL USES</td>
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<td>PUBLIC FRONTAGE QUALITY</td>
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<td>Curb Radius</td>
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<tr>
<td>Width</td>
<td>Medium</td>
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<tr>
<td>Flat</td>
<td>Directed</td>
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<td># VEHICULAR LANES</td>
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<td>Parking Lane Width</td>
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<td>Target Design Speed</td>
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<td>MEDIAN TYPE</td>
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**PROJECT FOR PUBLIC SPACES**
A Model Design Manual for Living Streets
A Model Design Manual for Living Streets

Chapters

• Public Process
• Street Design
• Network Design
• Intersections
• Pedestrians and Bicycling
• Traffic Calming
• Transit Accomodations
• Land Use
• Sustainable Stormwater Management
• Streetscape
Using Transit for More Than Mobility
Thinking Beyond the Mode
Pedestrian and bike connections

From Charlotte Urban Street Design Guide

From Belleville via Dan Burden

From Miami via Dan Burden
Thinking Beyond the Station

Stops function as community destinations
Thinking Beyond Transportation

*Stops serve as anchors for local businesses*
Thinking Beyond the Service
How to Accommodate Passengers

Transit Bulb-out at near side of intersection
Thinking Beyond the Service

*How to Accommodate Passengers*

From Accessing Transit Handbook, Florida DOT

From Accessing Transit Handbook, Florida DOT

From Charlotte Urban Street Design Guide
Back to Our Roots

Integrated Transportation and Land Use
Why is land use important?

- Greatly defines a street’s character
- Shapes travel patterns for cars and people
- Influences block sizes
- Must be planned and designed with transit to achieve great streets

From LA County Model Street Guide (Draft)
What do you want your community to be remembered for?

PEANUTS

WE JUST GOT BACK FROM A TRIP...

DID YOU HAVE A GOOD TIME? DID YOU SEE ANYTHING INTERESTING?

ALL I SAW WERE SHOPPING CENTERS AND MOTELS... EVERY TOWN LOOKS LIKE EVERY OTHER TOWN..

IT DOESN'T MATTER WHERE YOU GO... YOU'VE NEVER LEFT!

8/10/04
Principles

• Compactness, connectivity, completeness & continuity

• Buildings should complete “the outdoor room” of the street

• Provide a mix of land uses

From LA County Model Street Guide (Draft)
USDOT Sponsored Study shows most cities losing the battle with gridlock

**Urban Mobility Report, 2010**

* Wasted fuel in 2009 topped 3.9 billion gallons – equal to 130 days of flow in the Alaska Pipeline.
* Yearly peak delay: 34 hours in 2009, 14 hours in 1982.
Congestion extends to more time of the day, more roads, affects more of the travel and creates more extra travel time than in the past. And congestion levels have risen in all size categories, indicating that even the smaller areas are not able to keep pace with rising demand.
It is clear that adding roadway at about the same rate as traffic grows will slow the growth of congestion. It is equally clear, however, that only 14 of the 101 intensively studied urban areas were able to accomplish that rate. There must be a broader set of solutions applied to the problem, as well as more of each solution than has been implemented in the past, if more areas are to move into the “maintaining conditions or making progress on mobility” category.
Why is congestion outpacing roadbuilding?
Why it’s happening

“Sprawl factor”

[Diagram showing the cycle of road widening, traffic engineering, land use planning, and associated outcomes]
What’s really happening
“Blue Cross and Blue Shield Plans to Encourage Congress and Nearly 89 Million Cardholders to Walk to Better Health”

“Research indicates that the U.S. could save approximately $77 billion in direct healthcare spending—and more than double that amount when lost workplace productivity is considered—if Americans with inactive lifestyles met the government’s daily recommendations for physical activity. Physical inactivity can lead to many of the chronic health problems, including heart disease, stroke, colon cancer, diabetes, arthritis and osteoporosis, which are so costly to treat. The nation spends more than $600 billion each year on treatment for chronic illnesses. Research shows that a regular walking program can help control weight, condition the heart and lungs, and prevent the onset of health problems.”

PROJECT FOR PUBLIC SPACES
“Blue Cross and Blue Shield Plans to Encourage Congress and Nearly 89 Million Cardholders to Walk to Better Health”

Change behavior

“Research indicates that the U.S. could save approximately $77 billion in direct healthcare spending-and more than double that amount when lost workplace productivity is considered-if Americans with inactive lifestyles met the government’s daily recommendations for physical activity. Physical inactivity can lead to many of the chronic health problems, including heart disease, stroke, colon cancer, diabetes, arthritis and osteoporosis, which are so costly to treat. The nation spends more than $600 billion each year on treatment for chronic illnesses. Research shows that a regular walking program can help control weight, condition the heart and lungs, and prevent the onset of health problems.”

prevent the onset of health problems
“Blue Cross and Blue Shield Plans to Encourage Congress and Nearly 89 Million Cardholders to Walk to Better Health”

To reduce the cost of services to a manageable level

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The Challenge

How do we........

Alter the behavior of our customers
prevent the onset of health problems
To reduce the cost of our services to a manageable level
Closing Thoughts
Traditional Highway Design Approach

Traffic Volume + Area Type (urban, rural) + Role in Network

Functional Classification

Design Speed + Design Vehicle

Alignment + Cross-Section + Intersection + Roadside
Placed Based Approach

- Corridor/Community
  - Place
    - Roadway
      - Traveled Way
      - Intersections
      - Roadside
The Deadly Duo

Travel Projections and Level of Service

OUR MODEL TELLS US THAT ANOTHER BRIDGE WILL BE NEEDED BY 2010
“...it neither constitutes nor attempts to establish legal standards for highway construction.”

(The Highway Capacity Manual Development and Application )

Levels of Service

**LOS A**
- Free-flow operation

**LOS B**
- Reasonably free flow
- Ability to maneuver is only slightly restricted
- Effects of minor incidents still easily absorbed
Levels of Service

**LOS C**
- Speeds at or near FFS
- Freedom to maneuver is noticeably restricted
- Queues may form behind any significant blockage.

**LOS D**
- Speeds decline slightly with increasing flows
- Density increases more quickly
- Freedom to maneuver is more noticeably limited
- Minor incidents create queuing
Levels of Service

**LOS E**
- Operation near or at capacity
- No usable gaps in the traffic stream
- Operations extremely volatile
- Any disruption causes queuing

**LOS F**
- Breakdown in flow
- Queues form behind breakdown points
- Demand > capacity

From Highway Capacity Manual, 2000
Why is this so significant?

The difference between LOS C and E
Could be the addition of a lane in each direction
I TOLD YOU THAT SIX LANES WOULD IMPROVE THE LEVEL OF SERVICE.
The High Price of Level of Service C/D 24/7/365?
The ‘slow’ network can only function if there is a ‘fast’ network.
Engineers are not bad people!
Engineers as problem solvers!

It is the time of French Revolution and the guillotine was hard at work everyday. Today they're leading a priest, a drunkard and an engineer to the guillotine.
Engineers as problem solvers!

They ask the priest if he wants to face up or down when he meets his fate. The priest says that he would like to face up so he will be looking toward heaven when he dies. They raise the blade of the guillotine, release it, it comes speeding down and suddenly stops just inches from his neck. The authorities take this as divine intervention and release the priest.
Engineers as problem solvers!

Next the drunkard comes to the guillotine. He also decides to die face up hoping that he will be as fortunate as the priest. They raise the blade of the guillotine, release it, it comes speeding down and suddenly stops just inches from his neck. So they release the drunkard as well.
Engineers as problem solvers!

The engineer is next. He too decides to die facing up. They slowly raise the blade of the guillotine, when suddenly the engineer says: "Hey, I see what your problem is."
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Project for Public Spaces  
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Groth@pps.org