

# Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities

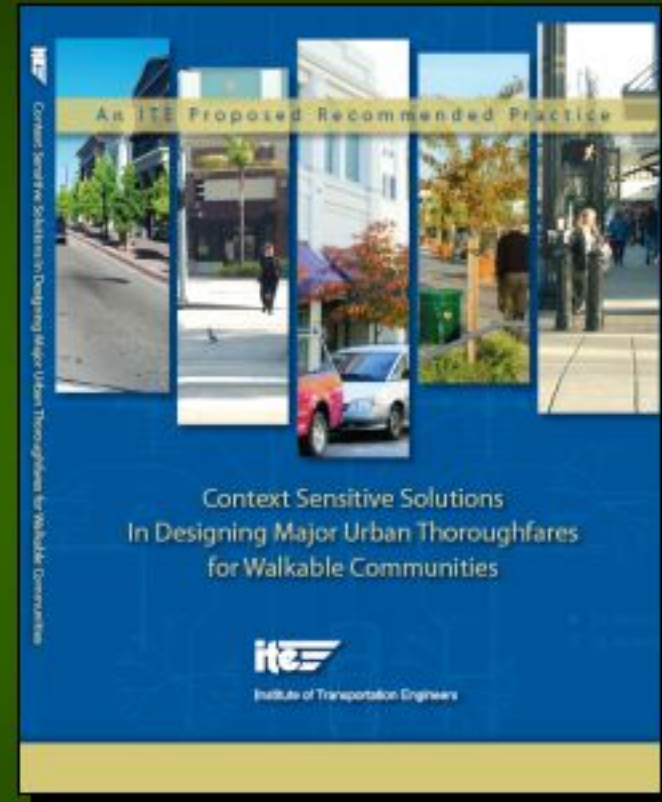
ITE Proposed Recommended Practice

*What's in it? What is its status?*

CNU Street Design Workshop  
Boulder, Colorado  
November 16, 2006

Brian Bochner  
Texas Transportation Institute

Jim Daisa  
Kimley-Horn Associates



# Context Zones – An Organizing System for Thoroughfare Design

Source: Duany Plater-Zyberk and Company



# Features That Create Context

- Land use
- Site design
- Building design



# CSS vs. Conventional Thoroughfare Design Approach

Conventional	CSS Approach
<p>Context:</p> <ul style="list-style-type: none"> <li>Urban</li> <li>Rural</li> </ul>	<p>Context:</p> <ul style="list-style-type: none"> <li>Suburban</li> <li>General urban</li> <li>Urban Center</li> <li>Urban Core</li> </ul>
<p>Design criteria primarily based on:</p> <ul style="list-style-type: none"> <li>Functional class</li> <li>Design speed</li> <li>Travel demand</li> <li>Level of service</li> </ul>	<p>Design criteria primarily based on:</p> <ul style="list-style-type: none"> <li>Community objectives</li> <li>Functional class</li> <li>Thoroughfare type</li> <li>Context/adjacent land use</li> </ul>

# CSS Tenet –Thoroughfare Design Changes as Context Changes

*“Thoroughfare design is not just sensitive to context—but part of the context and helps define the place”*

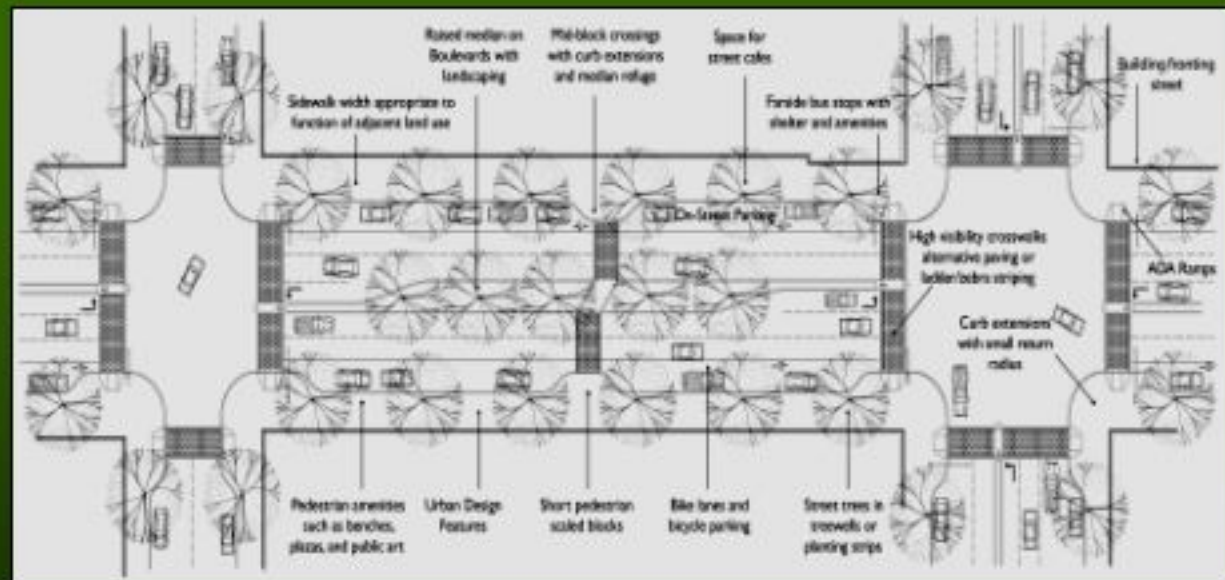


# Thoroughfare Types

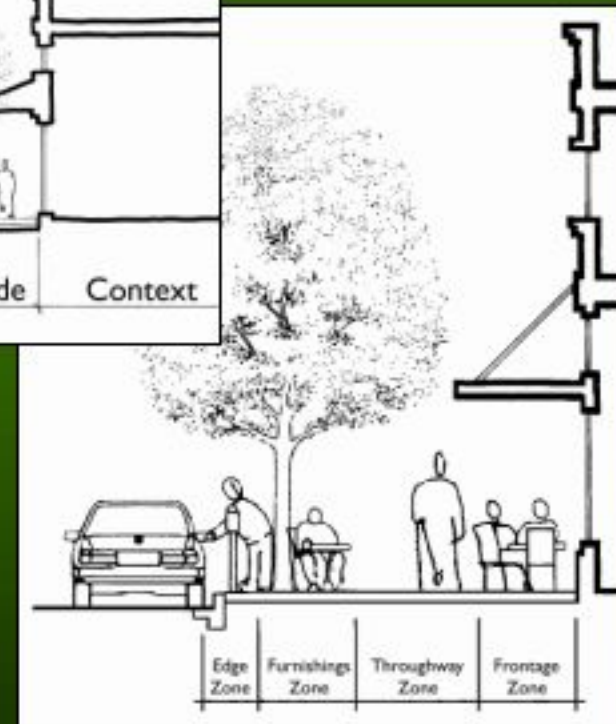
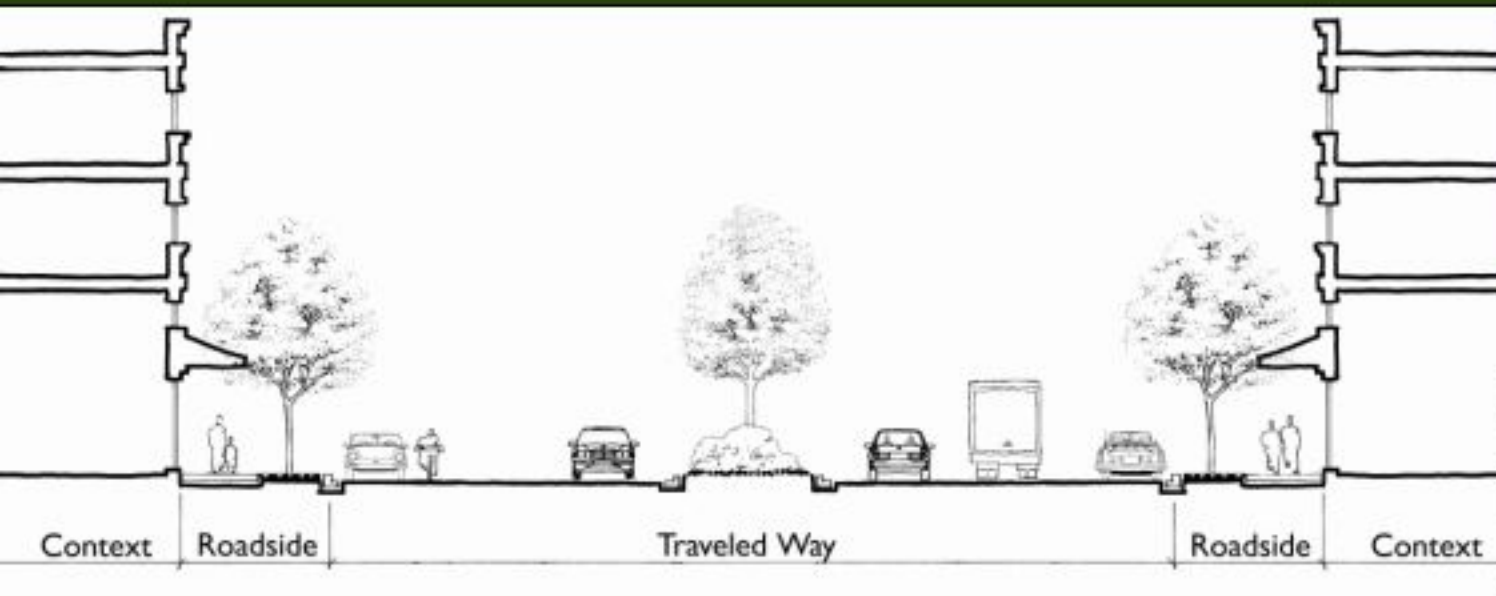
- **Three roadway classifications:**
  - Boulevard
  - Avenue
  - Street
- **Basis for:**
  - Physical configuration
  - Design criteria

# Thoroughfare Type in Design

- **Design criteria**
  - Target speed (desirable operating speed)
- **Physical configuration**
  - With surrounding context
- **Dimensions for:**
  - Roadside
  - Traveled way
  - Intersections



# Thoroughfare Components





# Design Criteria

## ARTERIAL THOROUGHFARES

Building Orientation (entrance orientation)	front, side	front, side	front, side	front, side	front	front	front	front
Maximum Setback [1]	20'	20'	5'	5'	15'	15'	0'	0'
Off-Street Parking Access/Location	rear, side	rear, side	rear, side	rear, side	rear, side	rear, side	rear, side	rear, side
Recommended Roadside Width [2]	14.5'	12.5'	16'	15'	16.5'	12.5'	19'	16'
Pedestrian Buffers (planting strip exclusive of travel way width) [2]	8' planting strip	6-8' planting strip	7' tree well	6' tree well	8' planting strip	6-8' planting strip	7' tree well	6' tree well
Street Lighting	For all arterial thoroughfares in all context zones, intersection safety lighting, basic street lighting, and pedestrian-s Design Guidelines) and Chapter 10 (Intersection Design Guidel							
Target Speed (mph)	35	25-30	35	35	35	25-30	35	25-30 [3]
Design Speed	Design speed should be a maximum of 5 mph over the operating speed. Design speed is used as a control for certa horizontal and vertical curvature.							
Number of Through Lanes [4]	4-6	2-4	4-6	2-4	4-6	2-4	4-6	2-4
Lane Width [5]	10-11'	10-11'	10-12'	10-11'	10-11'	10-11'	10-12'	10-11'
Parallel On-Street Parking Width [6]	7'	7'	8'	8'	7'	7'	8'	8'
Min. Combined Parking/Bike Lane Width	13'	13'	13'	13'	13'	13'	13'	13'
Horizontal Radius (per AASHTO) [7]	762'	510'	762'	762'	762'	510'	762'	510'

	<b>Edge</b>	1.5 feet 2.5 feet at diagonal parking	21.5 foot (recommended) 12 foot (constrained)	1.5 feet 2.5 feet at diagonal parking	19 foot (recommended) 12 foot (constrained)	0.5 feet	16.5 foot (recommended)
	<b>Furnishings</b>	7 feet (trees in tree wells)		7 feet (trees in tree wells)		(landscape strip w/ trees and grasses or groundcovers)	
	<b>Throughway</b>	10 feet		8 feet		8 feet	
	<b>Frontage</b>	3 feet		2.5 feet		0 feet along lawn and groundcover 1 foot along low walls, fences, and hedges 1.5 feet along facades, tall walls, and fences	
	<b>Edge</b>					0.5 feet	
	<b>Furnishings</b>					10 feet (landscape strip w/ trees and groundcovers or low shrubs)	
	<b>Throughway</b>					8 feet	
	<b>Frontage</b>					0 feet along lawn and groundcover 1 foot along low walls, fences, and hedges 1.5 feet along facades, tall walls, and fences	18.5 foot (Recommended)
	<b>Edge</b>	1.5 feet 2.5 feet at diagonal parking	19.5 foot (recommended) 12.0 foot (constrained)	1.5 feet 2.5 feet at diagonal parking	16 foot (recommended) 12 foot (constrained)	0.5 feet	14.5 foot (recommended)
<b>Furnishings</b>	<b>With Parking</b>	6 feet trees in tree wells		6 feet (trees in tree wells)		(landscape strip w/ trees and grasses or groundcovers)	
	<b>Without Parking</b>	8 feet with buffer landscaping		8 feet with buffer landscaping		8 feet with buffer landscaping	
	<b>Throughway</b>	9 feet		6 feet		6 feet	
	<b>Frontage</b>	3 feet	2.5 feet	0 feet along lawn and groundcover 1 foot along low walls, fences, and hedges 1.5 feet along facades, tall walls, and fences			
	<b>Edge</b>	1.5 feet 2.5 feet at diagonal parking	16 foot (recommended) 12.0 foot (constrained)	1.5 feet 2.5 feet at diagonal parking	16 foot (recommended) 12 foot (constrained)	0.5 feet	11.5 foot (recommended)
	<b>Furnishings</b>	6 feet (trees in tree wells)		6 feet (trees in tree wells)		(landscape strip w/ trees and grasses or groundcovers)	
	<b>Throughway</b>	6 feet		6 feet		6 feet	
	<b>Frontage</b>	2.5 feet		2.5 feet		0 feet along lawn and groundcover 1 foot along low walls, fences, and hedges 1.5 feet along facades, tall walls, and fences	

THIS THOROUGHFARE TYPE NOT APPLICABLE TO THE PREDOMINANTLY COMMERCIAL GROUND FLOOR LAND USES FOUND IN C-4 THROUGH C-6 CONTEXT ZONES

# Design Controls in CSS

- **Target Speed**
  - Desirable operating speed
  - Mobility for motor vehicles
  - Safety for pedestrians and bicyclists
  - Usually posted speed limit
- **Design Speed**
  - Governs geometric features
    - Minimum intersection sight distance
    - Minimum sight distance on horizontal and vertical curves
    - Horizontal and vertical curvature
  - Design speed - 5 mph over target speed



# Project Sponsors

- Federal Highway Administration



- Environmental Protection Agency



Prepared by:

- Institute of Transportation Engineers
- Congress for the New Urbanism

# Speed and Capacity of Urban Streets

- Adequate LOS with operating speeds at 25 to 35 mph
- Address capacity issues with:
  - Synchronized signal timing
  - Access management
  - Turn lanes
- Address safety:
  - Case-by-case basis

**HCM Exhibit 15-2: Urban Street LOS By Class**

Urban Street Class	III	IV
Typical Free Flow Speed	35	30
Level of Service	Avg. Travel Speed (mph)	
A	> 30	> 25
B	> 24 - 30	> 19-25
C	> 18 - 24	> 13 - 19
D	> 14 - 18	> 9 - 13
E	> 10 - 14	> 7 - 9
F	< 10	< 7

# Areas of Debate, Continuing Discussion

- Design speed vs. target speed
- Appropriate target speeds
- Appropriate lane widths
- Maximum number of moving lanes
- Reduction in design exceptions
- Design vehicle
- Role of level of service
- Clear zones/street trees in urban areas
- Mid-block crosswalks
- Extensive use of bike lanes
- Acceptance/“Adoption”

# Please Use and Comment

- Through December 31, 2006

By e-mail:

– To Heather Smith [hsmith@cnu.org](mailto:hsmith@cnu.org)

– To Lisa Tierney [ltierney@ite.org](mailto:ltierney@ite.org)

Report available at [www.ite.org](http://www.ite.org)

# Technical and Steering Committees

- Traffic and design engineers
- Transportation planners
- Land use planners
- Architects
- Urban designers
- Landscape architects
- Transit planners
- Organization Reps (APWA, AASHTO)
- Over 60 reviewers and balloters



# Focus of the Proposed RP

- **“Major”**:
  - Arterials and collectors
- **“Urban”**:
  - Development intensity
  - Mix of land uses
  - Efficient, attractive choices
    - Walking
    - Transit
    - Biking



Photo: Skidmore, Owings, and Merrill LLP

# Report Objectives

- **Aid context sensitive design**
- **CSS principles for planning, project development**
  - Network
  - Corridor
  - Project
- **Create a design framework**
- **Present criteria and guidance**
- **Consistent with established guidance**

# Tenets of CSS

- **Balance**
  - Safety
  - Mobility
  - Community objectives
  - Environment
- **Multimodal**
- **Involve public, stakeholders**
- **Interdisciplinary teams**
- **Flexibility in design**
- **Incorporate aesthetics**



Source: Minnesota Department of Transportation

# Contents of the Proposed RP

- Introduction
  - Overview
- Planning
  - Network and corridor planning
  - Design framework
- Design
  - Principles, criteria, guidelines
    - Roadside
    - Traveled way
    - Intersections
  - Design in constrained rights-of-way
  - Flexibility
  - Examples



“Fact Sheet” Series

# Intended Users

- **Transportation/civil engineers**
- **Transportation planners**
- **Land use planners**
- **Design professionals**
  - Architects, urban designers, landscape
- **Stakeholders**
  - Elected officials, agencies, developers, citizens

# CSS Design Framework

- **Context zones:**
  - Suburbs - downtowns
- **Street classification:**
  - Functional class
    - Arterial
    - Collector
  - Thoroughfare type
    - Boulevard
    - Avenue
    - Street
- **Compatibility**

