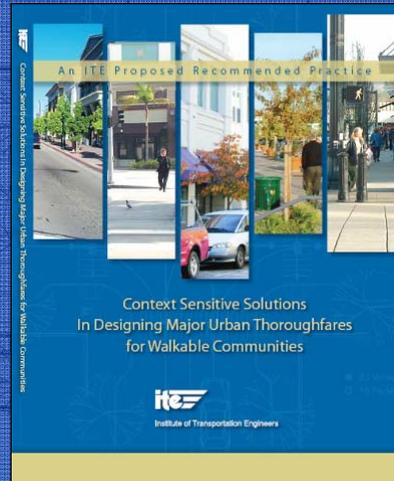


Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities

An ITE Proposed
Recommended Practice

James M. Daisa, P.E.
Kimley-Horn and Associates, Inc.

FDOT Design
Conference 2008



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Communities Want:

- Flexibility
- Compatibility with adjacent land uses
- Balanced land use/transportation functions
- Safe and attractive streets
- Multimodal facilities
- Streets that are quality public space
- Fewer design exceptions



Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities



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

Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities



Project Sponsors

- Federal Highway Administration 
- Environmental Protection Agency 
- A joint effort:
 - Institute of Transportation Engineers
 - Congress for the New Urbanism

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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

Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities



Current Status of Proposed RP

- Published March 2006
- Received nearly 800 user comments
- Next steps
 - Revise report
 - Proceed through final RP process
 - ITE approves Final Recommended Practice

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Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities



Focus of the Proposed RP

- Major urban thoroughfares in walkable areas
 - “Major”:
 - arterials and collectors
 - “Urban”:
 - Walkable suburbs, town and city centers, neighborhoods
 - mix of interactive land uses
 - Viable, attractive choices
 - Walking
 - Biking
 - Transit



Photo: Skidmore, Owings, and Merrill LLP

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Tenets of CSS

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



Source: Minnesota Department of Transportation

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What CSS is:

- Sharing decision making
- Balancing travel and other needs
- Integrating community values
- Innovative, carrying design to higher levels
- Multimodal, benefiting all users
- Sustained, iterative, and participatory
- Creating supportive partnerships



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What CSS is not:



- Designer knowing best
- Improving travel performance only
- Sacrificing safety or good design
- Just aesthetics
- Putting the needs of any single mode first
- Not a one-shot or add-on
- “Us against them”

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CSS: Bringing Place and Thoroughfare Design Together

Simulation by Steve Price, UrbanAdvantage



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



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CSS Design Framework

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



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Placemaking

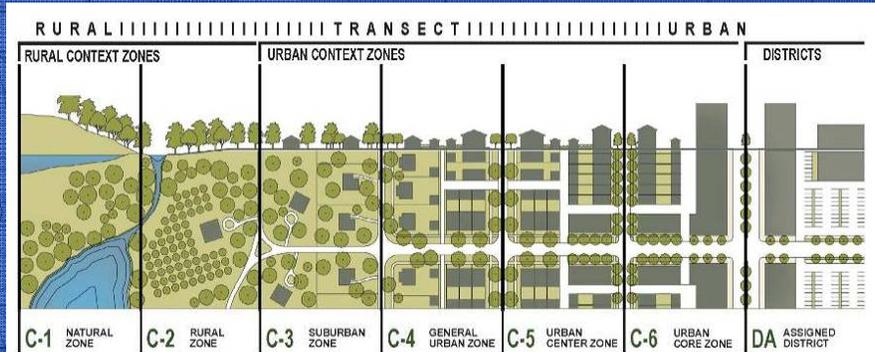
- Community-based approach to the development and revitalization of cities and neighborhoods
- Placemaking:
 - Unique places with lasting value
 - Compact, mixed-use
 - Pedestrian and transit oriented
 - Strong civic character
 - Contributes to economic development



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Context Zones – An Organizing System for Thoroughfare Design



Source: Duany Plater-Zyberk and Company

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CSS vs. Conventional Thoroughfare Design Approach

Conventional	CSS Approach
Context: Urban Rural	Context: Suburban General urban Urban center Urban core
Design criteria primarily based on: Functional class Design speed Forecast travel demand Level of service	Design criteria primarily based on: Community objectives Functional class Thoroughfare type Adjacent land use

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Features That Create Context

- **Land use**
 - Defines urban activity
 - Major factor in design criteria
- **Site design**
 - Arrangement of buildings, circulation, parking and landscape
 - Vehicle or pedestrian-orientation
- **Building design**
 - Height, massing shape context
 - Create enclosure/pedestrian interest



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Land Use

- Major factor in thoroughfare design
- Influences:
 - Travel demand
 - Activity in roadside
 - Width of roadside
 - On-street parking
 - Target speed
 - Freight and transit



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Site Design

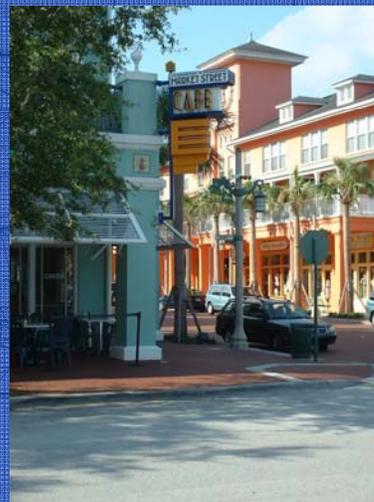
	Auto Oriented	Pedestrian Oriented
Building Orientation and Setback	<ul style="list-style-type: none"> - Set well back into private property - Oriented to parking or landscape 	<ul style="list-style-type: none"> - Oriented to, and adjacent to street - Direct pedestrian entrance on street - Integrated with street using stoops, arcades, cafes
Parking Type and Orientation	<ul style="list-style-type: none"> - Surface lot between buildings and street 	<ul style="list-style-type: none"> - Under or behind building access by alleys - Structured - On-street
Block Length	<ul style="list-style-type: none"> - Large blocks, often with no public thoroughway - Superblocks 	<ul style="list-style-type: none"> - Short blocks - High connected network

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Building Design

- Significant contributor to context defined by:
 - Height and thoroughfare enclosure
 - Width
 - Scale and variety
 - Entries

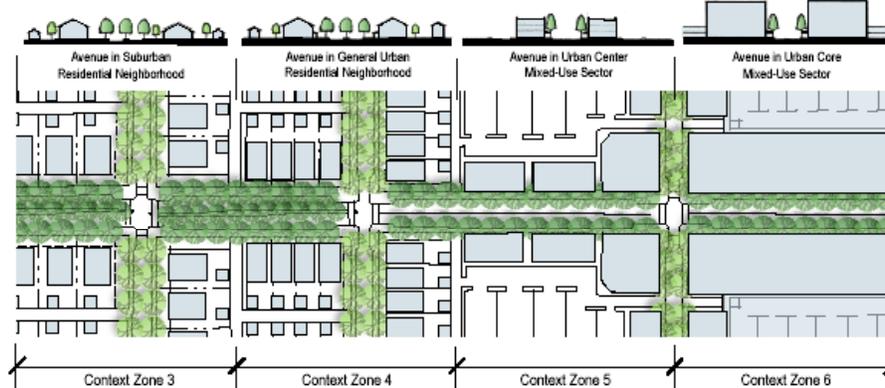


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Thoroughfare Design Changes as Context Changes

The thoroughfare both responds to and contributes to shaping the context and defining the place



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Thoroughfare Types

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

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Functional Class and Thoroughfare Type in Design

Criteria	Functional Classification	Thoroughfare Type
Continuity	●	
Trip length	●	
Movement type	●	
Sight distance (speed)		●
Curvature		●
Speed		●
Physical configuration		●
Dimensions		●

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Thoroughfare Type and Land Use Establish Design Criteria

ARTERIAL THOROUGHFARES

Context	Suburban (C-3)				General Urban (C-4)			
	Residential		Commercial		Residential		Commercial	
	Boulevard	Avenue	Boulevard	Avenue	Boulevard	Avenue	Boulevard	Avenue
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
Roadside								
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 Guide							
Traveled Way								
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 certain 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'

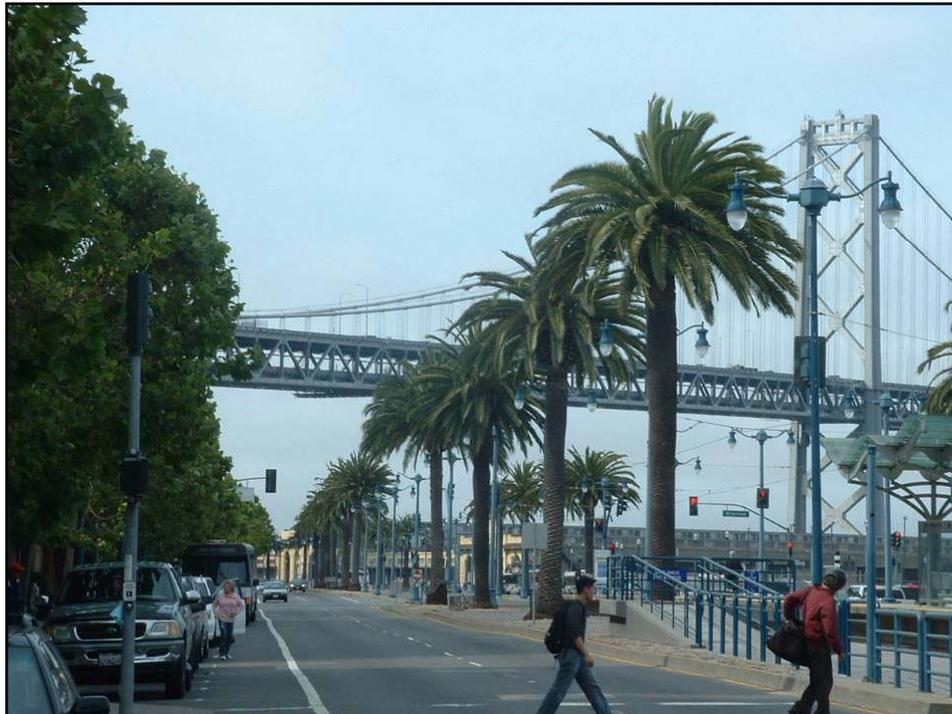
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Boulevard

- Divided arterial (4+ lanes)
- Target speed (35 mph or less)
- Through and local traffic
- Serve longer trips
- Access management
- Major transit corridor
- Primary freight route
- Emergency response route
- Limited curb parking

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Multi-way Boulevard

- Characterized by:
 - Central roadway for through traffic
 - Parallel roadways access abutting property, parking, and pedestrian and bicycle facilities
 - Parallel roadways separated from the through lanes by curbed islands
- Require significant right-of-way
- Special treatment of intersections





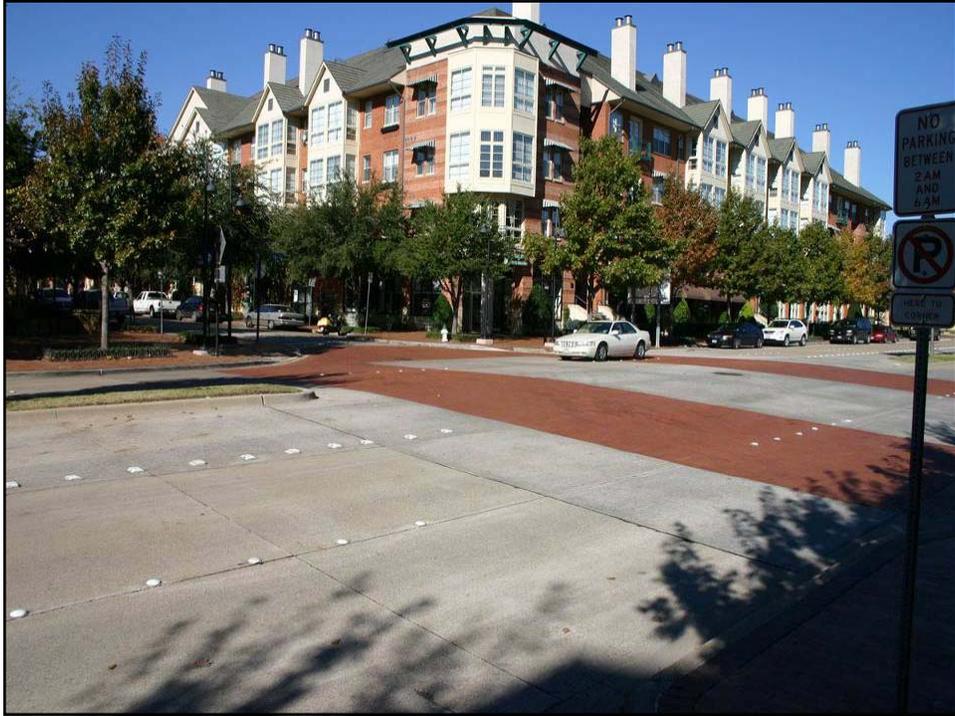
Avenue

- Arterial or collector (4 lanes max)
- Target speed (30 to 35 mph)
- Land access
- Primary ped and bike route
- Local transit route
- Freight - local deliveries
- Optional raised landscaped median
- Curb parking



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Street

- Collector or local
- 2 lanes
- Target speed (25mph)
- Land access primary function
- Designed to:
 - Connect residential neighborhoods
 - Connect neighborhoods with commercial districts
 - Connect local streets to arterials
- May be commercial main street
- Emphasizes curb parking
- Freight restricted to local deliveries

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Photographs from Michael King and Reid Ewing

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Change is Gradual

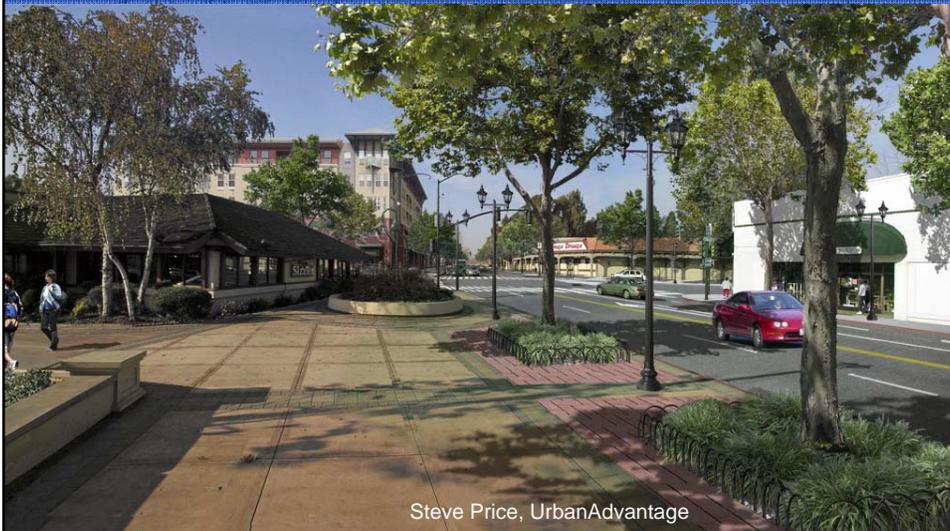


Steve Price, UrbanAdvantage

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Change is Gradual



Steve Price, UrbanAdvantage

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Change is Gradual



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Design Controls in CSS

- Design control – guide selection of design criteria
 - Speed
 - Design vehicle
 - Thoroughfare type, context, land use type
 - Location
 - Sight distance
 - Horizontal / vertical alignment
 - Access management
 - Pedestrians and bicyclists

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Speed Definitions

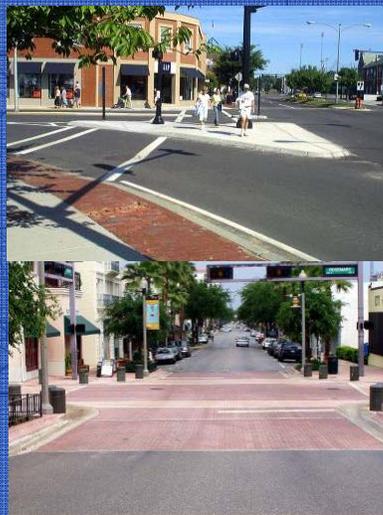
- Target speed
 - Desirable operating speed in specific context
 - Range: 25 to 35 mph
 - Balances
 - Vehicle mobility
 - Safe environment
 - Usually posted speed limit

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Design Factors that Influence Target Speed (Urban Areas)

- Lane width
- Minimal offset
- No superelevation
- No shoulders
- On-street parking
- Smaller curb return radii
- Design of right turn lanes
- Spacing of signalized intersections
- Synchronization to desired speed
- Paving materials



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Design vs. Control Vehicle

- Design Vehicle
 - Accommodated without encroachment
 - Turns with considerable frequency
 - High volumes in opposing lanes
 - Example: bus
- Control Vehicle
 - Encroachment allowed
 - Turns infrequently
 - Example: emergency vehicle



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Design in Constrained Right-of-Way

- Prioritize design elements
- Develop sections
 - Optimal – unconstrained
 - Predominant – all priority elements
 - Functional minimum – many priority elements
 - Absolute minimum – highest priority only
- R/W width less than absolute minimum
 - Acquire R/W incrementally
 - Change thoroughfare type

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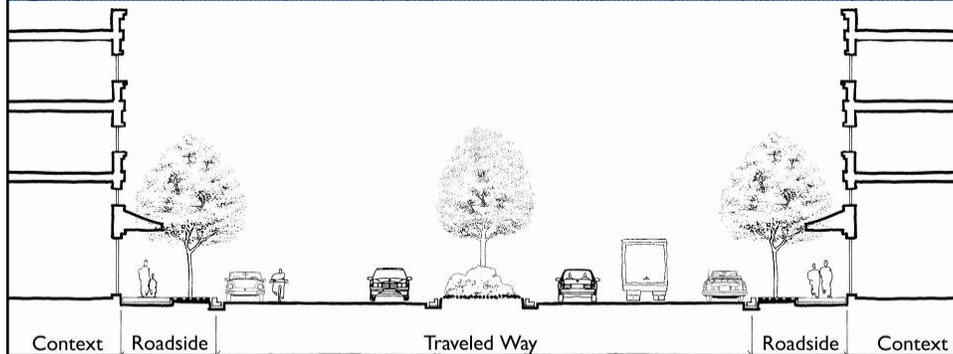
Transitions

- Geometric transitions (use AASHTO)
 - Change in roadway width
 - Lateral shifts
 - Lane drops
- Context, visual, operational, environmental transition
 - Speed zone transition
 - Visual cues
 - Urban design, land uses, building design, gateways
 - Change width of street

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Thoroughfare Components

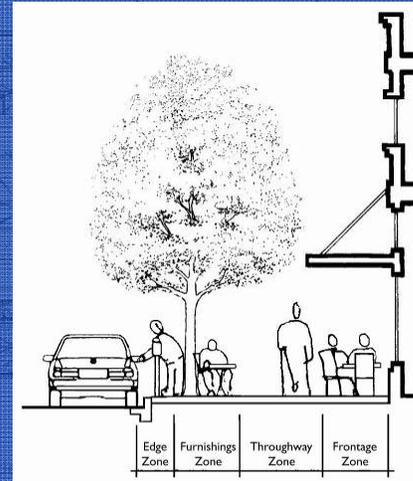


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Roadside Design

- Roadside zones:
 - Edge Zone
 - Furnishings Zone
 - Throughway Zone (ADA)
 - Frontage Zone
- Function and dimensions vary by context zone and adjacent land use



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The Urban Roadside – Uses and Activities

- Movement of pedestrians
- Access to buildings/property
- Utilities/appurtenances
- Transit stops
- Landscaping
- Urban design/public art
- Sidewalk cafes
- Business functions
- Civic spaces (plazas, seating)



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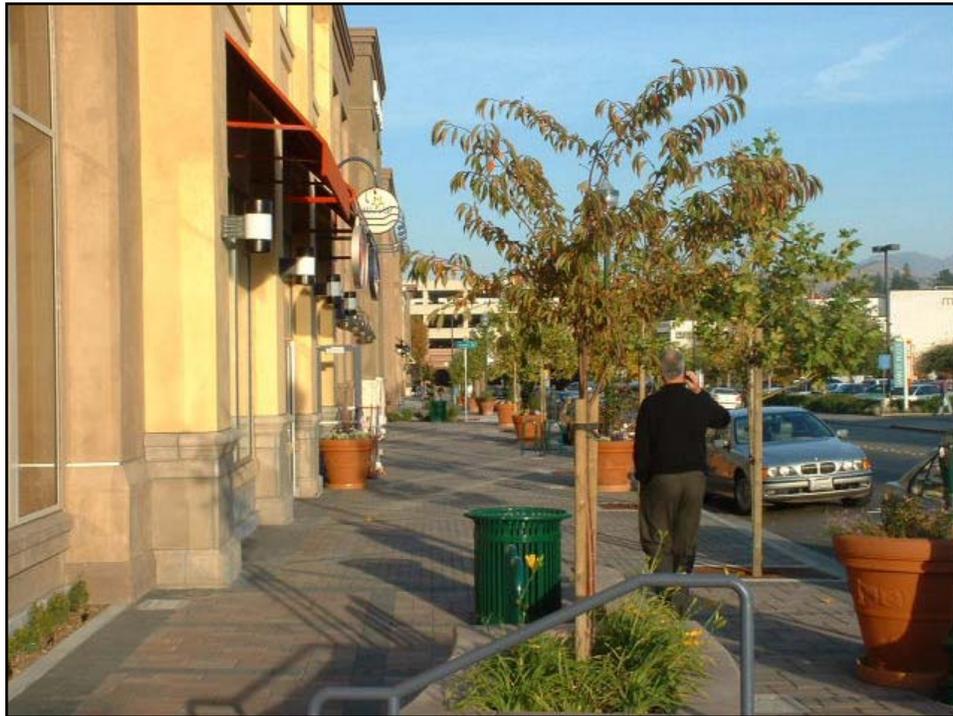


Roadside Design

- Public places
- Placement of roadside facilities
- Public art
- Sidewalk width and function
- Pedestrian buffers
- Sidewalk/driveway/alley crossings
- Street furniture
- Utilities
- Landscaping/street trees



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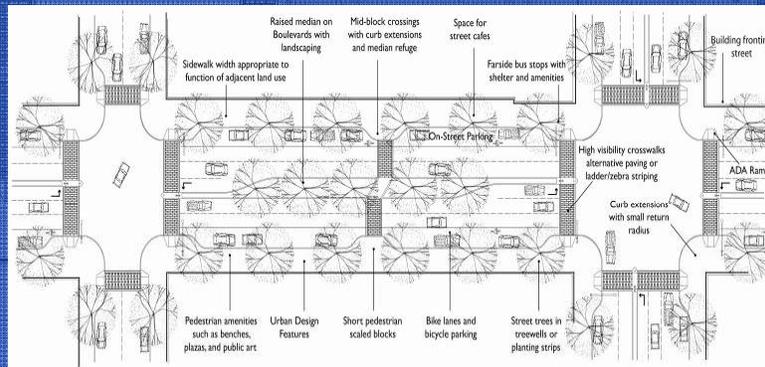






The Urban Traveled Way

- Central portion of thoroughfare between curbs
- Provides for movement of vehicles
- Interface with roadside via on-street parking



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Traveled Way Design

- Cross-sections
- Access management
- Transition principles
- Lane width
- Medians
- Bicycle facilities
- On-street parking
- Mid-block crosswalks
- Pedestrian refuge islands
- Mid-block bus stops
- Snow removal
- Transit stops



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Intersection Design

- General principles
- Intersection sight distance
- Managing modal conflicts
- General intersection layout
- Curb return radii
- Channelized right turns
- Modern roundabouts
- Crosswalks
- Curb extensions
- Bicycle lane treatment
- Bus stops at intersections



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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

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Comments

- Almost 800 comments
- Most frequent general types
 - Minor editorial changes
 - Improved examples or photos
 - More photos, visualizations, or illustrations
 - More examples
 - More case studies
 - More flexibility in guidance
- Specific changes

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Reduce Target Speeds

- Arguments for reduction
 - More walkability
 - Safer; reduced crash severity
 - Recommended range should reach 20 mph (or lower)
- Arguments for no change
 - Target speeds already range to 25 mph
 - Arterials 25-35 mph
 - Collectors 25-30 mph
 - Report does not include slower local streets
- Add section on Arterial Speed Management
 - Best Practices research

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Delete Functional Classifications

- Arguments against functional classifications:
 - Politically assigned
 - Motivated by funding desires
 - Arbitrary
 - Not reflective of actual function or use
 - Over prioritize mobility role
 - Not properly reflective of urban thoroughfare functions



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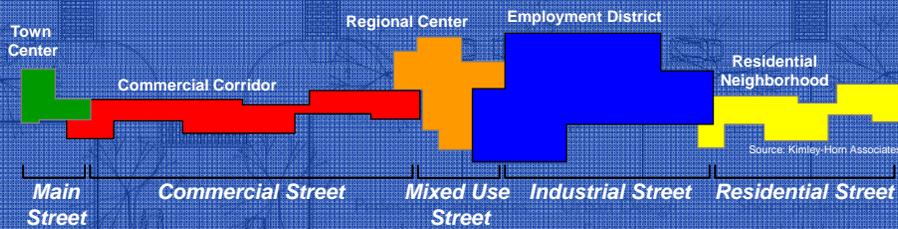
Expand Thoroughfare Types

Current types

- Boulevard
- Multi-way boulevard
- Avenue
- Street

Additional possibilities

- Define by adjacent land use
 - Main street
 - Commercial street
 - Mixed-use street
 - Residential street
 - Industrial street



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Narrower Traffic Lanes and Increased Range

- Widths vary
 - Most 10-11 feet (11-12 at 35mph+)
 - A few 10-12 feet
- Request for 9 foot widths
- AASHTO
 - Minimum 10 feet for *major* thoroughfare
 - Permits 9 feet for turn lane on *local* streets



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De-emphasize or Emphasize Use of Level Of Service

- Arguments against retention
 - Puts too much emphasis on vehicle movement
 - Does not effectively address Pedestrians, Bicycles, and Transit
 - Over-emphasizes auto mobility function
 - High levels of service not necessarily better for walkable areas
- Arguments for increased emphasis
 - Vehicles provide most of mobility
 - Safety experience tied to LOS
 - Emergency access (area) dependent on LOS



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Guidelines for Small Town Main Streets



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More on Multi-way Boulevards

- Requests
 - Make independent thoroughfare type
 - Address intersection design
 - Add more material



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Expand Section on How to Locate/Orient Buildings



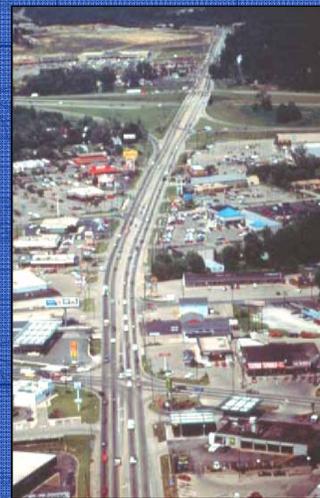
Source: Steve Price, Urban Advantage

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Vehicle Mobility Priority

- Chapter 11 on mobility priority thoroughfares
- Many requests for removal
 - Does not fit context of rest of report
- Some requests for expansion
- Integration into main body of report



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Other Requested Changes

- More and better examples
- Increased flexibility
- More/less bike provisions
- Green streets and storm water management
- Section on transit streets
- More on utility location
- Liability - section on favorable court decisions
- More on ADA policies and requirements
- Broaden section on trade-offs
- Expanded emergency access section



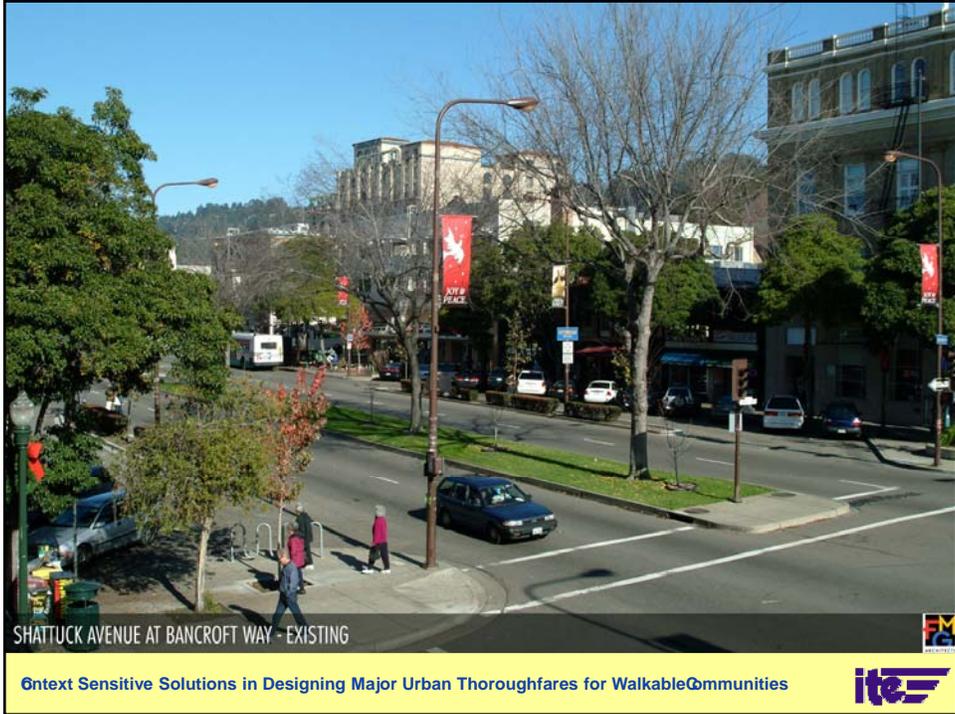
75



Transit Streets

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San Jose, CA:
North First Street



Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities



San Jose, CA:
North First Street



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Where to Obtain Report

- Download a free copy at:
[www.ite.org/context sensitive solutions](http://www.ite.org/context-sensitive-solutions)
- Order a hardcopy from ITE publications

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QUESTIONS

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