Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities

ITE Proposed Recommended Practice

Railvolution
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Congress for the New Urbanism
Project Sponsors

• Federal Highway Administration
• Environmental Protection Agency
• A joint effort:
  – Institute of Transportation Engineers
  – Congress for the New Urbanism
Project Objectives

- Establish CSS principles for design
- Integrate CSS in planning and project development
- Define compatibility and tradeoffs
- Develop guidance and design parameters for:
  - Thoroughfare design process
  - Identifying context
  - Roadside, travel way and intersections
Why is this manual needed?

Because this is often the standard “roadside”
Report Overview

- Aid context sensitive design
- CSS principles for planning and project development
  - Network
  - Corridor
  - Project
- Create a design framework
- Present criteria and guidance
- Consistent with established guidance
Focus of the Proposed RP

• **“Major”:**
  - arterials and collectors

• **“Urban”:**
  - Walkable suburbs, town and city centers
  - mix of land uses
  - Efficient, attractive choices
    - Walking
    - Biking
    - Transit

Photo: Skidmore, Owings, and Merrill LLP
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

www.ite.org/css
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
## CSS vs. Conventional Thoroughfare Design Approach

<table>
<thead>
<tr>
<th>Conventional</th>
<th>CSS Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Context:</strong></td>
<td><strong>Urban Context:</strong></td>
</tr>
<tr>
<td>Urban</td>
<td>Suburban</td>
</tr>
<tr>
<td>Rural</td>
<td>General Urban</td>
</tr>
<tr>
<td></td>
<td>Urban Center</td>
</tr>
<tr>
<td></td>
<td>Urban Core</td>
</tr>
<tr>
<td><strong>Design criteria based primarily on:</strong></td>
<td><strong>Design criteria based primarily on:</strong></td>
</tr>
<tr>
<td>Functional class</td>
<td>Community objectives</td>
</tr>
<tr>
<td>Design speed</td>
<td>Thoroughfare type</td>
</tr>
<tr>
<td>Travel demand forecasts</td>
<td>Functional class</td>
</tr>
<tr>
<td>Level of service objectives</td>
<td>Adjacent land use</td>
</tr>
</tbody>
</table>
CSS Design Framework

• Context zones:
  – Suburbs to downtowns

• Street classification:
  – Functional class
    • Arterial
    • Collector
  – Thoroughfare type
    • Boulevard
    • Avenue
    • Street
Context Zones – An Organizing System for Thoroughfare Design

Source: Duany Plater-Zyberk and Company
The Concept of Context Zones

Suburban        General Urban        Urban Center        Urban Core

Source: Duany Plater-Zyberk and Company

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

<table>
<thead>
<tr>
<th>Context Zone</th>
<th>Distinguishing Characteristics</th>
<th>General Character</th>
<th>Building Placement</th>
<th>Frontage Types</th>
<th>Typical Building Height</th>
<th>Type of Public Open Space</th>
</tr>
</thead>
</table>
| C-3 Suburban       | Primarily single family residential with walkable development pattern and pedestrian facilities, dominant landscape character | Detached buildings with landscaped yards                                            | Varying front and side yard setbacks          | Lawns, porches, fences, naturalistic tree planting | 1 to 2 story with some 3 story   | Parks, greenbelts |}
| C-4 General Urban  | Mix of housing types including attached units, with a range of commercial and civic activity at the neighborhood and community scale | Predominantly detached buildings, balance between landscape and buildings, presence of pedestrians | Shallow to medium front and side yard setback | Porches, fences                    | 2 to 3 story with some variation and few taller workplace buildings | Parks, greenbelts |
| C-5 Urban Center   | Attached housing types such as townhouses and apartments mixed with retail, workplace, and civic activities at the community or sub-regional scale. | Predominantly attached buildings landscaping within the public right of way substantial pedestrian activity | Small or no setbacks, buildings oriented to street with placement and character defining a street wall | Stoops, dooryards, storefronts, arcaded walkways | 3 to 5 story with some variation | Parks, plazas, and squares, boulevard median landscaping |
| C-6 Urban Core     | Highest-intensity areas in sub-region or region, with high-density residential and workplace uses, entertainment, civic, and cultural uses | Attached buildings forming sense of enclosure and continuous street wall landscaping within the public right of way, highest pedestrian and transit activity | Small or no setbacks, building oriented to street, placed at front property line | Stoops, dooryards, forecourts, storefronts, arcaded walkways | 4+ story with a few shorter buildings | Parks, plazas, and squares, boulevard median landscaping |

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**CNU**

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Changing Thoroughfare & Context

- Arterial Street
- C-3: Suburban
Changing Thoroughfare & Context

- Boulevard Thoroughfare
- C-4: General Urban
Changing Thoroughfare & Context

- Avenue Thoroughfare
- C-5: Urban Center
Thoroughfare Design Changes as Context Changes

The thoroughfare both responds to and contributes to shaping the context and defining the place.
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
Network Design Principles

- Integrate multimodal plans:
  - Land use
  - Transportation
  - Urban form

- Connectivity
  - Establish high level of connectivity
  - Support desired development patterns
  - Ensure intermodal connections
  - Avoid channeling traffic to limited number of arterials
  - Preserve capacity with access management
Roadside Design: Topics Addressed

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

### ARTERIAL THOROUGHFARES

<table>
<thead>
<tr>
<th>Context</th>
<th>Suburban (C-3)</th>
<th>General Urban (C-4)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Residential</td>
<td>Commercial</td>
</tr>
<tr>
<td></td>
<td>Boulevard</td>
<td>Avenue</td>
</tr>
<tr>
<td>Building Orientation (entrance orientation)</td>
<td>front, side</td>
<td>front, side</td>
</tr>
<tr>
<td>Maximum Setback [1]</td>
<td>20'</td>
<td>20'</td>
</tr>
<tr>
<td>Off-Street Parking Access/Location</td>
<td>rear, side</td>
<td>rear, side</td>
</tr>
<tr>
<td>Roadside</td>
<td>Replacement Roadside Width [2]</td>
<td>14.5'</td>
</tr>
<tr>
<td>Pedestrian Buffers (planting strip exclusive of travel way width) [2]</td>
<td>8' planting strip</td>
<td>6-8' planting strip</td>
</tr>
<tr>
<td>Street Lighting</td>
<td>For all arterial thoroughfares in all context zones, intersection safety lighting, basic street lighting, and pedestrian-sensitive Design Guidelines) and Chapter 10 (Intersection Design Guidelines)</td>
<td></td>
</tr>
<tr>
<td>Design Speed</td>
<td>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.</td>
<td>4-6</td>
</tr>
<tr>
<td>Number of Through Lanes [4]</td>
<td>4-6</td>
<td>2-4</td>
</tr>
<tr>
<td>Parallel On-Street Parking Width [6]</td>
<td>7'</td>
<td>7'</td>
</tr>
<tr>
<td>Min. Combined Parking/Bike Lane Width</td>
<td>13'</td>
<td>13'</td>
</tr>
<tr>
<td>Horizontal Radius (per AASHTO) [7]</td>
<td>762'</td>
<td>510'</td>
</tr>
</tbody>
</table>

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**Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities**
Thoroughfare Type in Design

- **Design criteria**
  - Target speed (desirable operating speed)

- **Physical configuration**
  - With surrounding context

- **Dimensions for**:
  - Roadside
  - Traveled way
  - Intersections
Thoroughfare Components

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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
Land Use

• Major factor in thoroughfare design

• Influences:
  • Travel demand
  • Activity in roadside
  • Width of roadside
  • On-street parking
  • Target speed
  • Freight and transit
## Site Design

<table>
<thead>
<tr>
<th>Building Orientation and Setback</th>
<th>Auto Oriented</th>
<th>Pedestrian Oriented</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Set well back into private property</td>
<td>- Oriented to, and adjacent to street</td>
</tr>
<tr>
<td></td>
<td>- Oriented to parking or landscape</td>
<td>- Direct pedestrian entrance on street</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Integrated with street using stoops, arcades, cafes</td>
</tr>
<tr>
<td>Parking Type and Orientation</td>
<td>- Surface lot between buildings and street</td>
<td>- Under or behind building access by alleys</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Structured</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- On-street</td>
</tr>
<tr>
<td>Block Length</td>
<td>- Large blocks, often with no public throughway</td>
<td>- Short blocks</td>
</tr>
<tr>
<td></td>
<td>- Superblocks</td>
<td>- High connected network</td>
</tr>
</tbody>
</table>

**Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities**
Building Design

• Significant contributor to context defined by:
  – Height and thoroughfare enclosure
  – Width
  – Scale and variety
  – Entries
Street Enclosure

- Building height to thoroughfare width ratios:
  - 1:4 suburban
  - 1:2-1:3 urban
- Pedestrians first perceive enclosure at a 1:4 ratio
CSS: Bringing Place and Thoroughfare Design Together

E14th Corridor - San Leandro, CA Source: Community, Design + Architecture
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E14th Corridor - San Leandro, CA Source: Community, Design + Architecture
Please Use and Comment

Through December 31, 2006
We need your specific comments and suggested changes

Email: Lisa Tierney Institute of Transportation Engineers
ltierney@ite.org

Report available at www.cnu.org and www.ite.org

Fact Sheets Available at www.ite.org/css

Join us to help learn more and shape this document

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