

Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities

Main streets used to be the principal thoroughfares of American towns, where people could find all types of goods and services. They were the center of commercial, social and civic activities. Main streets thrived until the 1960s and 1970s, when larger-scale, auto-oriented shopping centers became popular. Many communities now are revitalizing their main streets to return to a traditional small-town mercantile environment or are creating hybrids of traditional and contemporary commercial centers.

The value of today's main streets is summarized in this quote from Portland Metro's Main Street Handbook: "Main streets flourish because they provide a variety of goods and services, a pleasant community environment and efficiency for those who frequent them. When people do their shopping at a main street, they simply accomplish more with less travel, and may find the experience more entertaining."

Creating Quality Main Streets

Main streets may be located in any context zone, but are most commonly found in suburban (C-3), general urban (C-4) and urban center (C-5) contexts. They are usually short segments of arterial or collector streets, often only a few blocks in length. They are within a grid or interconnected system of local streets serving the commercial center of town.

Land uses comprise compact, mixed-use development, sometimes with a strong retail and entertainment emphasis, or an equal mix of residential and commercial. The buildings are low-scale (generally one to three stories), are oriented to the street without setback and are closely spaced, as shown in **Figure 1**. Parking lots or garages are located behind or to the side of buildings. Public parking comprises on-street parking and public parking facilities that support a "park once" environment.

The design of main streets includes wide roadsides that support active uses such as street cafes, social interactions, strolling and window-shopping. Main streets, by tradition and design, are pedestrian friendly. Main streets typically are no wider than two



Figure 1. Buildings on main streets can be one to three stories tall, close together and built up to the roadside. Source: Reid Ewing and Michael King.

travel lanes, provide on-street parking and may contain bicycle lanes. The key ingredients for a successful main street include:

- The architecture of the adjacent buildings, urban design features, the appearance of the street frontage and the provision of public spaces
- The types and mix of uses, particularly those that generate pedestrian activity and create an active day and evening place
- The design of the street to accommodate all modes
- A public parking strategy that encourages walking

Overview

The CSS publication was developed to provide planners and designers with guidance and information for using flexibility in existing American Association of State Highway and Transportation Officials (AASHTO) policy and information for context sensitive solutions (CSS) in design of major urban thoroughfares (arterials and collectors). The report was a joint effort between the Institute of Transportation Engineers and the Congress for the New Urbanism, sponsored by the Federal Highway Administration and the Environmental Protection Agency.

The publication describes:

- The importance of integrating the principles of CSS in urban roadway improvement projects,
- How CSS principles can be used in the transportation planning and project development processes, and
- Specific guidance on thoroughfare cross-section and intersection design.

The publication, published as an ITE Proposed Recommended Practice to supplement existing AASHTO policies and information, provides the user community an opportunity to use the new guidance and information, then to provide suggestions for improvements to be incorporated into the final ITE recommended practice.

According to a report prepared for the New Jersey Department of Transportation ("Scoring Formula for New Jersey's Main Streets," Rutgers University, March 2003) the attributes of a main street that significantly affect how people view the street include:

- The proportion of street frontage with active commercial uses
- The proportion of street frontage with dead space, such as vacant lots, parking lots and blank walls
- The proportion of street frontage with parked cars generating activity, buffering the roadside and slowing traffic
- The proportion of the street with a tree canopy
- The number of travel lanes, where streets with more than two lanes are perceived as having higher speeds, more traffic and being less attractive
- Average sidewalk width, with wider facilities providing more public space and greater levels of activity (see **Figure 2**)
- Visible curb extensions



Figure 2. Wide roadsides, created by setting back several buildings, provide for public spaces and future street cafes.

Factors that Create Main Street Thoroughfares

The roadway designer needs to consider a number of factors to create an appropriate main street environment, often requiring trade-offs such as balancing traffic throughput with economic development goals.

Traveled Way

In designing the traveled way, consider three important factors: speed, width and parking. Because of the pedestrian-oriented nature of main streets, the target speed should be kept low (20 to 25 miles per hour), even on principal arterials. This speed not only improves users' perception of the street, but creates a safer environment, accommodates frequent parking maneuvers and is consistent with restricted sight distances encountered in urban places. The width of the traveled way affects users' perceptions of the speed and volume of the street. Wide streets may be perceived as a barrier to crossing, where frequent crossings are desired and encouraged. Typically, main streets are two lanes wide with parallel parking on both sides, resulting in a traveled way width of 38 to 40 feet or 48 to 50 feet on streets with bicycle lanes. Wider streets may be required to accommodate angled parking. More travel lanes may be appropriate based on community objectives. On-street parking is an important feature on main streets. It provides a source of short-term parking for adjacent retail and service uses, buffers pedestrians from traffic and produces street activity.

Roadside

Roadside design requires the width to accommodate anticipated levels of activity. Of all thoroughfare types, the provision of distinct roadside zones is very important on main streets. The clear pedestrian throughway should be wide enough, at a minimum, to allow two people to walk side-by-side. The frontage zone should allow for window-shopping, seating, displays and pedestrian activity at building entrances (see **Figure 3**). The furnishings zone needs to accommodate many functions, including street trees, planting strips, street furniture, utilities, bicycle racks, transit facilities and public art. If community objectives desire and regulations encourage restaurants, ensure the roadside furnishings zone can accommodate street cafes. The edge zone will need to accommodate frequent car door openings, parking meters and signing.



Figure 3. Even a narrow frontage zone can provide seating, merchandise displays, landscaping and other amenities.

Intersections

Main street intersection design should emphasize slow speeds. Intersections should be as compact as possible with short crossing distances, using curb extensions where possible. Curb return radii should be minimized and based on the design and

Context	Suburban (C-3)		General Urban (C-4)		Urban Center (C-5)	
	Commercial Main Streets					
	Avenue	Street	Avenue	Street	Avenue	Street
Building Orientation (entrance orientation)	front, side	front, side	front	front	front	front
Maximum Setback	5'	5'	0'	0'	0'	0'
Off-Street Parking Access/Location	rear, side	rear, side	rear, side	rear, side	rear, side	rear, side
Roadside						
Recommended Roadside Width	15'	14'	16'	14'	19.5'	16'
Edge Zone	1.5' minimum for operational clearance. Use 2.5' if angled parking is considered. Ensure edge zone is wide enough to accommodate parking meters, utilities and signs.					
Furnishings Zone Width	6' tree well	5-6' tree well	6' tree well	5-6' tree well	6' tree well	6' tree well
	Consider wider furnishings zone to provide public spaces and if main street uses include the potential for street cafes.					
Pedestrian Throughway (min.)	6'	6'	6'	6'	9'	6'
Frontage Zone	2.5' to 3' minimum to accommodate commercial activity along building fronts. Consider wider frontage zone (6' or wider) if potential for street cafes or merchandise displays.					
Street Lighting	Intersection safety lighting, basic street lighting and retail pedestrian-scaled lighting.					
Traveled Way						
Target Speed (mph)	25	20-25	25	20-25	25	20-25
Design Speed	Design speed should be a maximum of 5 mph over the target speed.					
Number of Through Lanes	2-4	2	2-4	2	2-4	2
Lane Width	10-11'	10-11'	10-11'	10-11'	10-11'	10-11'
Parallel On-Street Parking Width	8'	8'	8'	8'	8'	8'
Minimum Combined Parking/Bike Lane Width	13'	13'	13'	13'	13'	13'
Medians	None	None	None	None	None	None
Bike Lanes (min./preferred width)	5/6'	5/6'	5/6'	5/6'	5/6'	5/6'
Access Management	Minimize driveways on main streets. Access land uses via cross streets and/or alleys.					
Typical Traffic Volume Range (vpd)	5,000-20,000	1,000-10,000	5,000-20,000	1,000-10,000	5,000-20,000	1,000-10,000

Figure 4. General design parameters for commercially oriented main streets. Source: Kimley-Horn and Associates, Inc.

control vehicles selected (see Fact Sheet 3, "Design Controls in CSS"). Crosswalks need to be allowed on all approaches of the intersection. Mid-block crossings are usually not necessary due to short block lengths, but may be considered where blocks are unusually long.

Main Street Design Parameters

Figure 4 provides general design parameters for commercial streets and avenues in context zones C-3 through C-5 that may be applicable in the design of main streets.

Implementing Angled Parking on Main Streets

Angled parking is one strategy to maximize the public parking supply on main streets. On low-volume, low-speed collector avenues and streets in commercial areas, where sufficient curb-to-curb width is available, angled parking may be appropriate. Angled parking can be implemented on both sides of the street, or on one side of street with parallel parking on the other side (see **Figure 5**). On some main streets, angled and parallel parking are alternated in each block. Angled parking can create sight distance problems associated with cars backing out of parking spaces. The use of reverse (back-in) angled parking in some cities has overcome these sight distance concerns and is considered safer for bicyclists.



Figure 5. An example of alternating angled and parallel on-street parking on a downtown main street.

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Publication sponsored by: Federal Highway Administration, Environmental Protection Agency
Additional fact sheets are available.