CONTEXT SENSITIVE DESIGN

Integrating Design with Community

Context Sensitive Design Workshop

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Zan Associates

Acknowledgements

- Denny Eyler, P.E., SRF Consulting Group, Inc.
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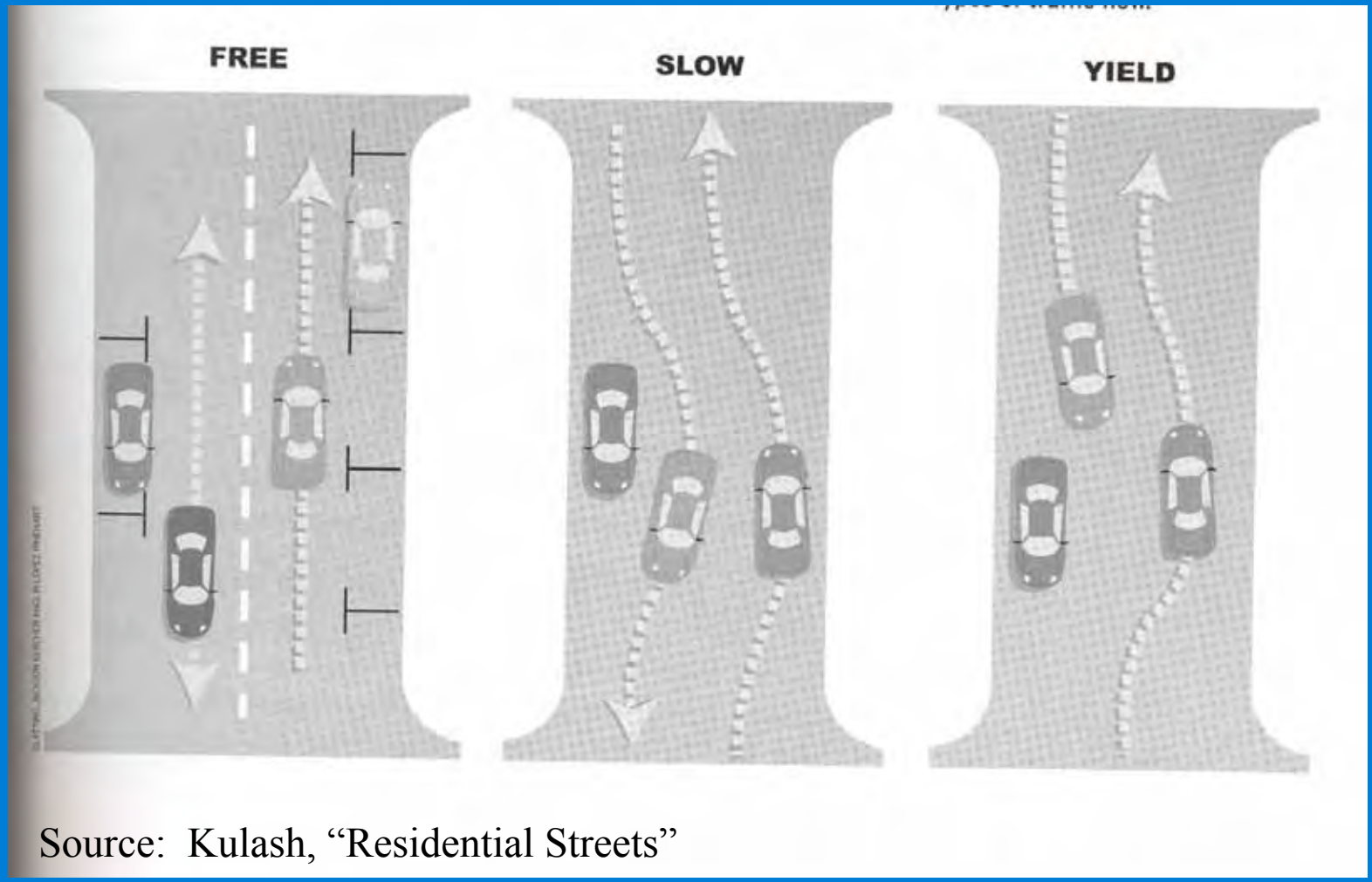
In this session:

- Curb-to-Curb Design Elements
- Intersections
- Traffic Calming Strategies
- Pedestrians, Bicyclists and Transit
- Edge Design Elements
- Access Management
- Aesthetics

Curb-to-Curb Elements

- Lane Widths (varies 11-14 feet)
- Shoulders
- Medians
- Parking
- Bike Lanes
- Transit Stops
- Intersections

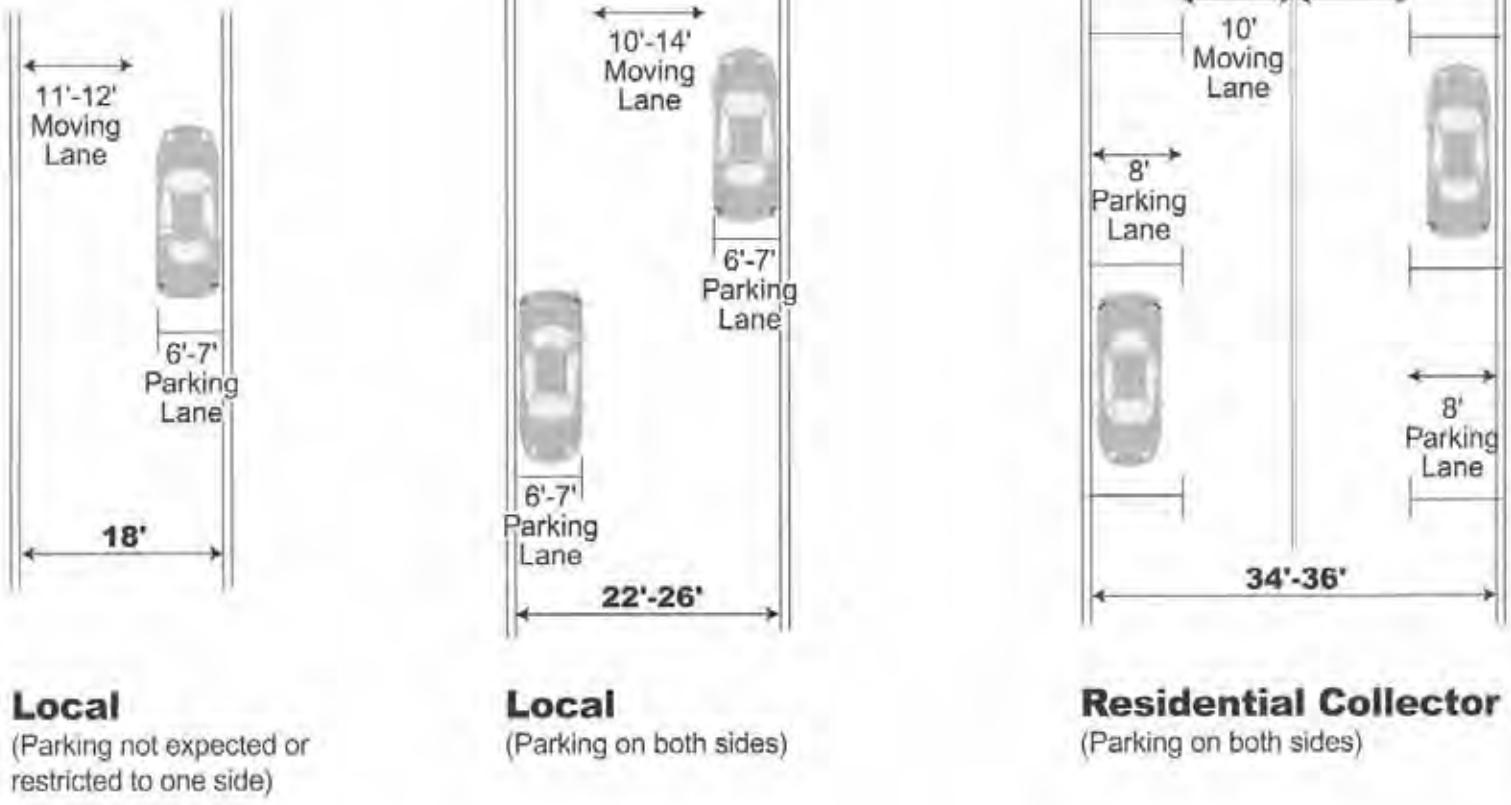
Free, Slow & Yield Streets



Source: Kulash, "Residential Streets"

Residential Street Widths

FIGURE 2-15
Street and lane widths.



Local
(Parking not expected or restricted to one side)

Local
(Parking on both sides)

Residential Collector
(Parking on both sides)

Source: Kulash, "Residential Streets"

Cost of Excessive Street Width

	Cost per 100 Ft. of Street	
	24' Wide	36' Wide
5-inch Asphalt Paving/ 6-inch base	$6,800	$10,880
6-inch Curb and Gutter	1,265	1,265
4-inch Sidewalk	1,400	1,400
CONSTRUCTION	**$9,465**	**$13,545**
Land (at $100,00/acre)	5,600	8,400
TOTAL COST	**$15,065**	**$21,945**

CSAH 20

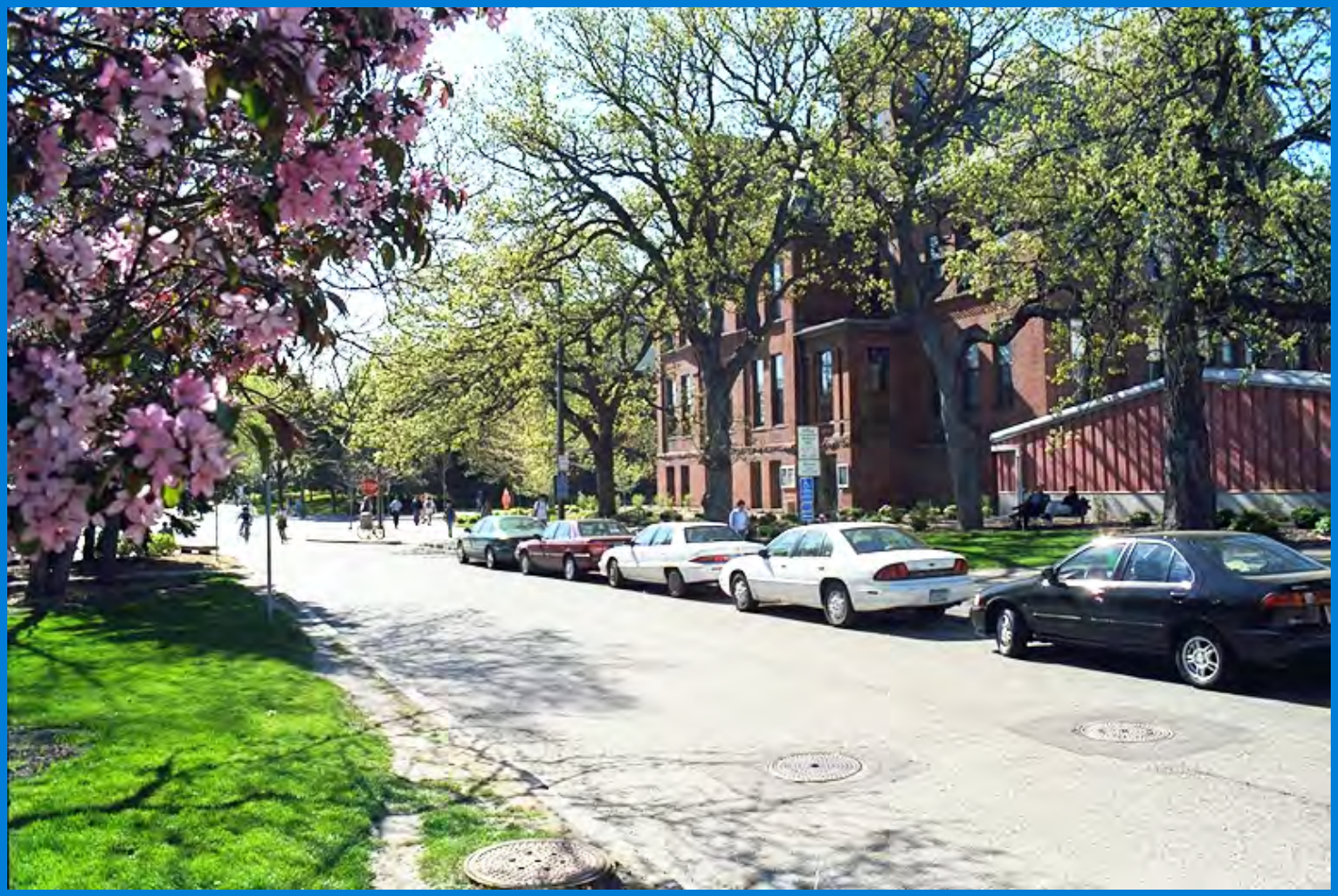
Curb to Curb Design Elements

- EXAMPLE
- Reaction Distance
  - Min. 1.5 ft

Medians

4 ft. for signs; 10-16 ft. for plantings

On-Street Parking (8-10’)



Parking Bays

Alternative Paving Materials

Angled Parking

Loading Areas

Loading and Deliveries

Accommodating Transit

Contraflow Bike Lane

Concurrent Flow Bike Lane

Intersections:“Fat Nodes, Skinny Roads”

- Capacity determined by intersections and interchanges (nodes).
- Intersection/interchange size can vary by acres.
- Intersections/interchanges are best opportunity to be context sensitive.

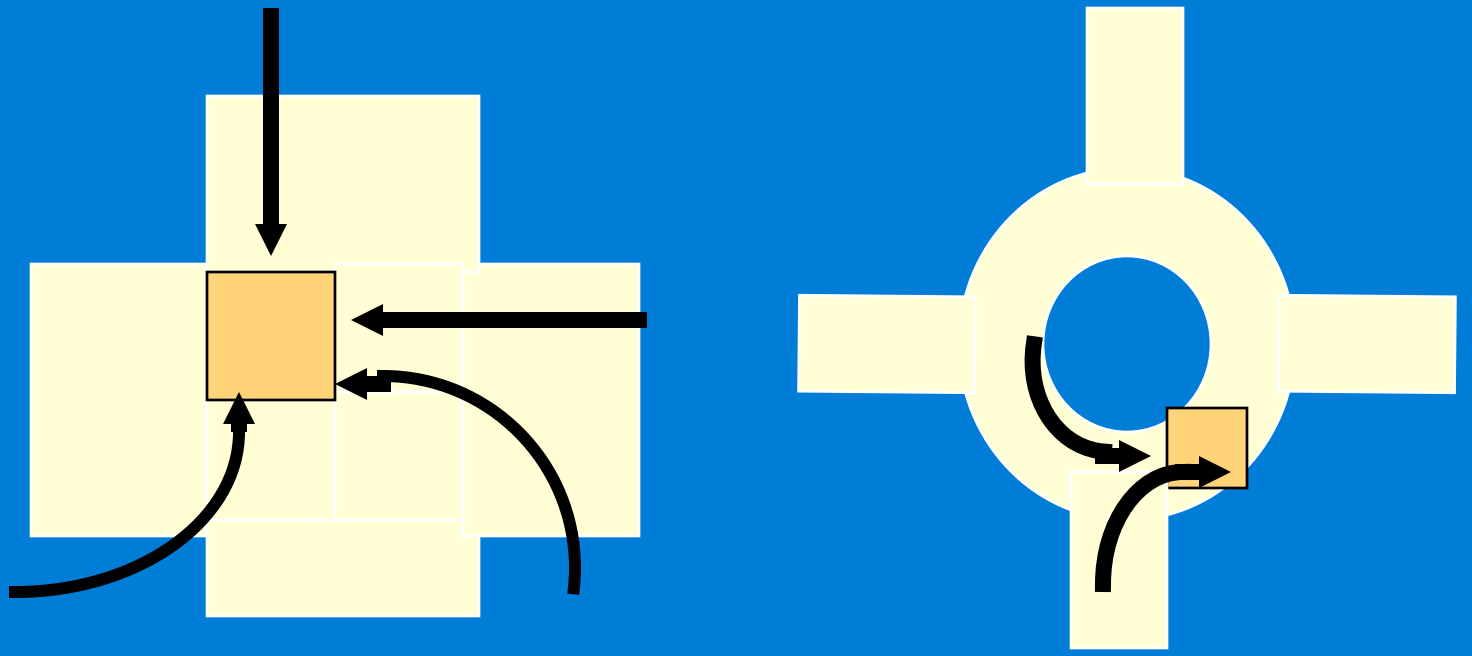
Intersections Designed for Trucks

Traffic Control/Geometry Are Interdependent

- Understand this relationship before trying to minimize size
- Left Turns are key to both safety and capacity

What Is A Critical Lane?

- Area in intersection where mutually conflicting flows share the intersection



Example: Superior Street - Duluth

- Originally U.S. 61 – Duluth's Main Street
- Four 10 foot lanes and two parking lanes
- Streetscape in 1980's – changed to four 11 foot lanes and parking on one side
- I-35 opened in early 1990's, taking through traffic out of downtown

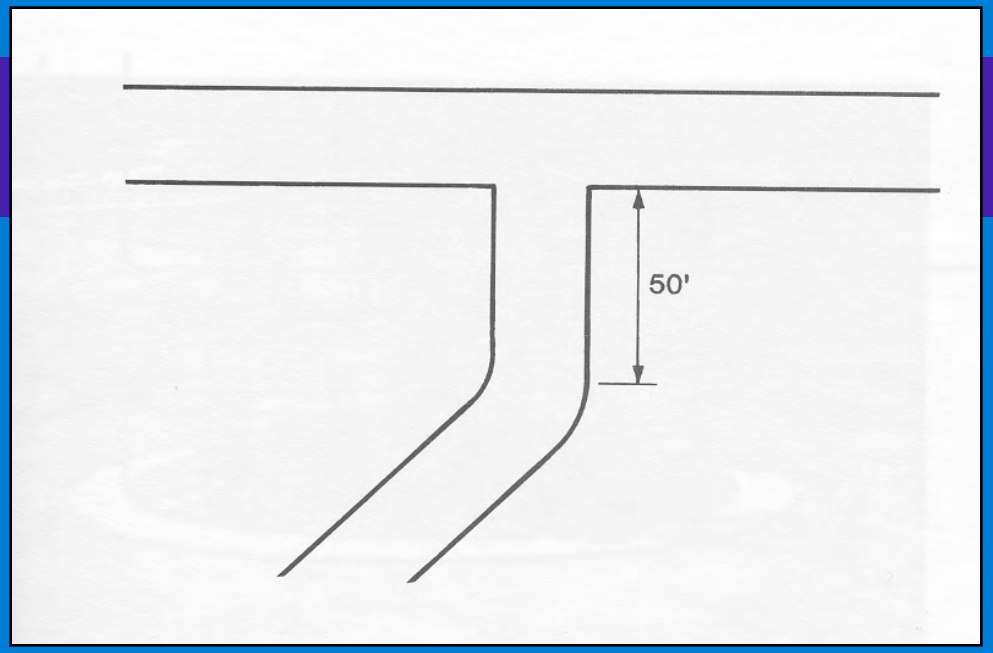
Example: Superior Street – Duluth

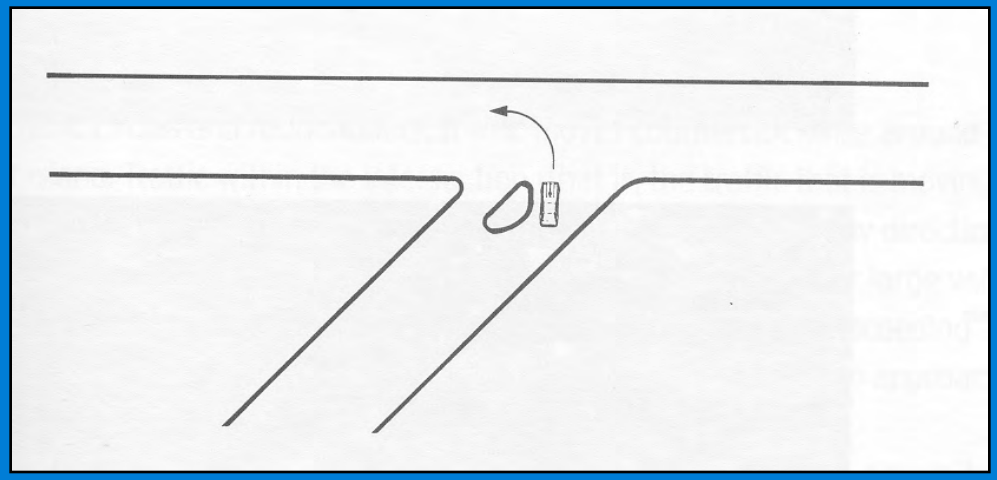
- Issues:
  - Still carries some through traffic
  - Shortage of convenient parking
  - Speeds too high
  - Not pedestrian friendly
  - Most agreed CONTEXT HAD CHANGED

Superior Street, Duluth

Angle Parking/Intersection Capacity

Intersection Angle





Crosswalks and Curb Cuts

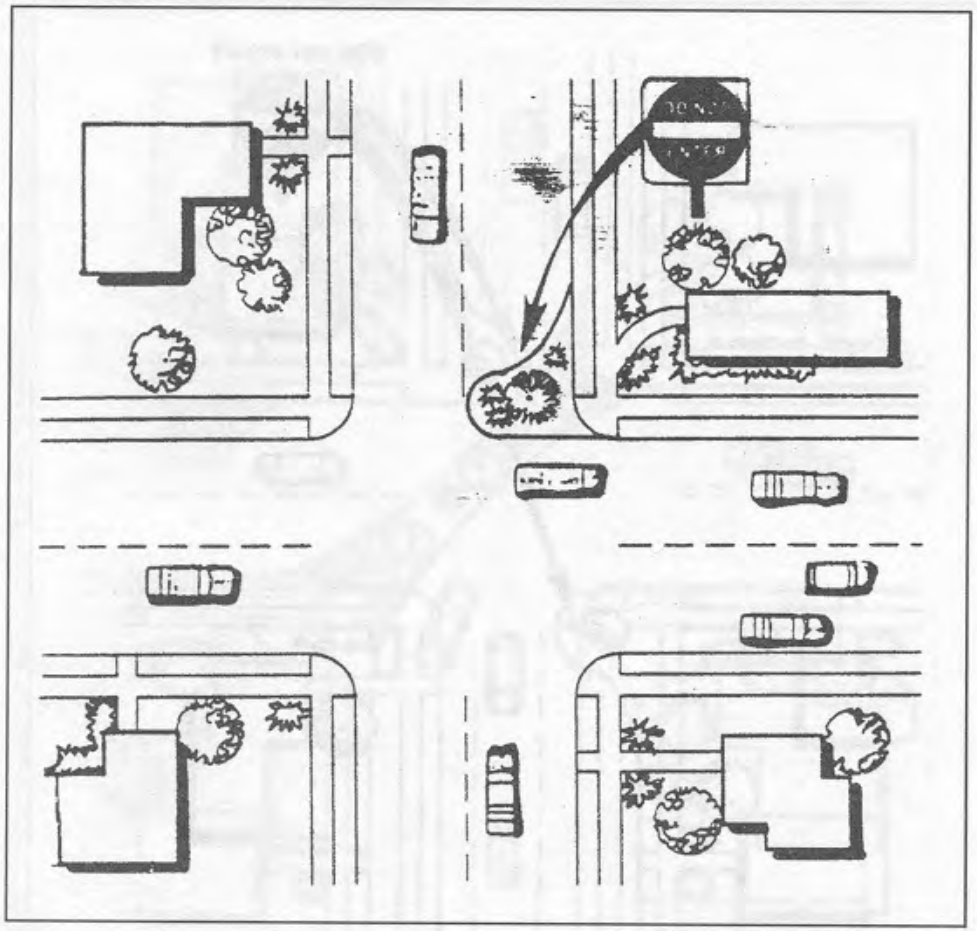
Curb Bulb-outs

- Photo or sketch from Traffic Calming

Traffic Management: Limiting Turns

Street Closings

HALF CLOSURES
(partial closures, one-way closures)

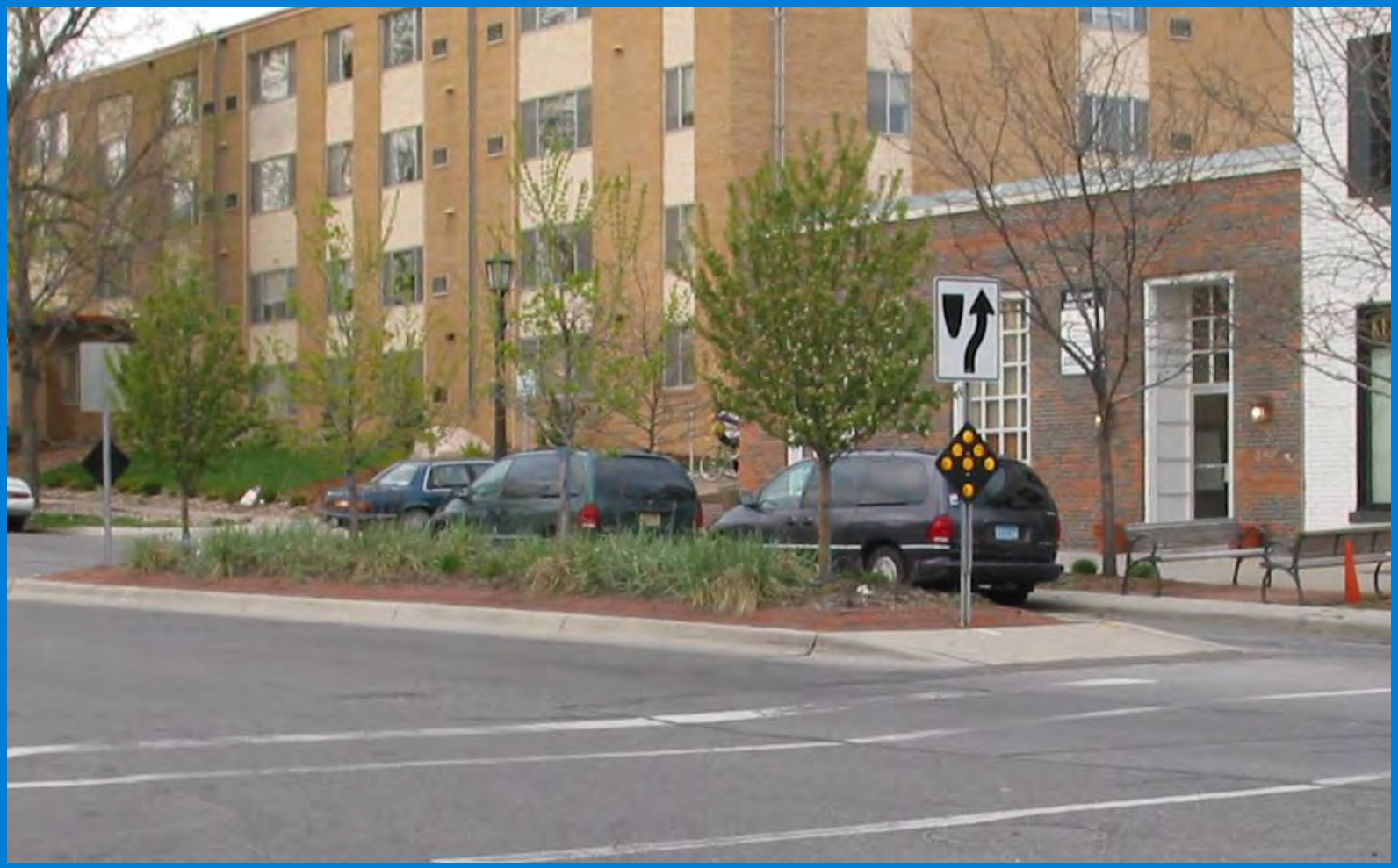


Traffic Calming: Raised Crosswalk

Speed Bump

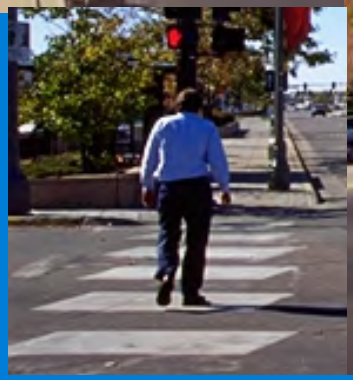
TrafficC ircle

Elongated Traffic Circle



Example: Roundabout

Excelsior Boulevard, St. Louis Park



Excelsior Boulevard (continued)

- Urban A-Minor Arterial
- Defining characteristics:
  - Traffic priority
  - Travel shed for cross streets
  - Presence of median
  - 35 mph speed

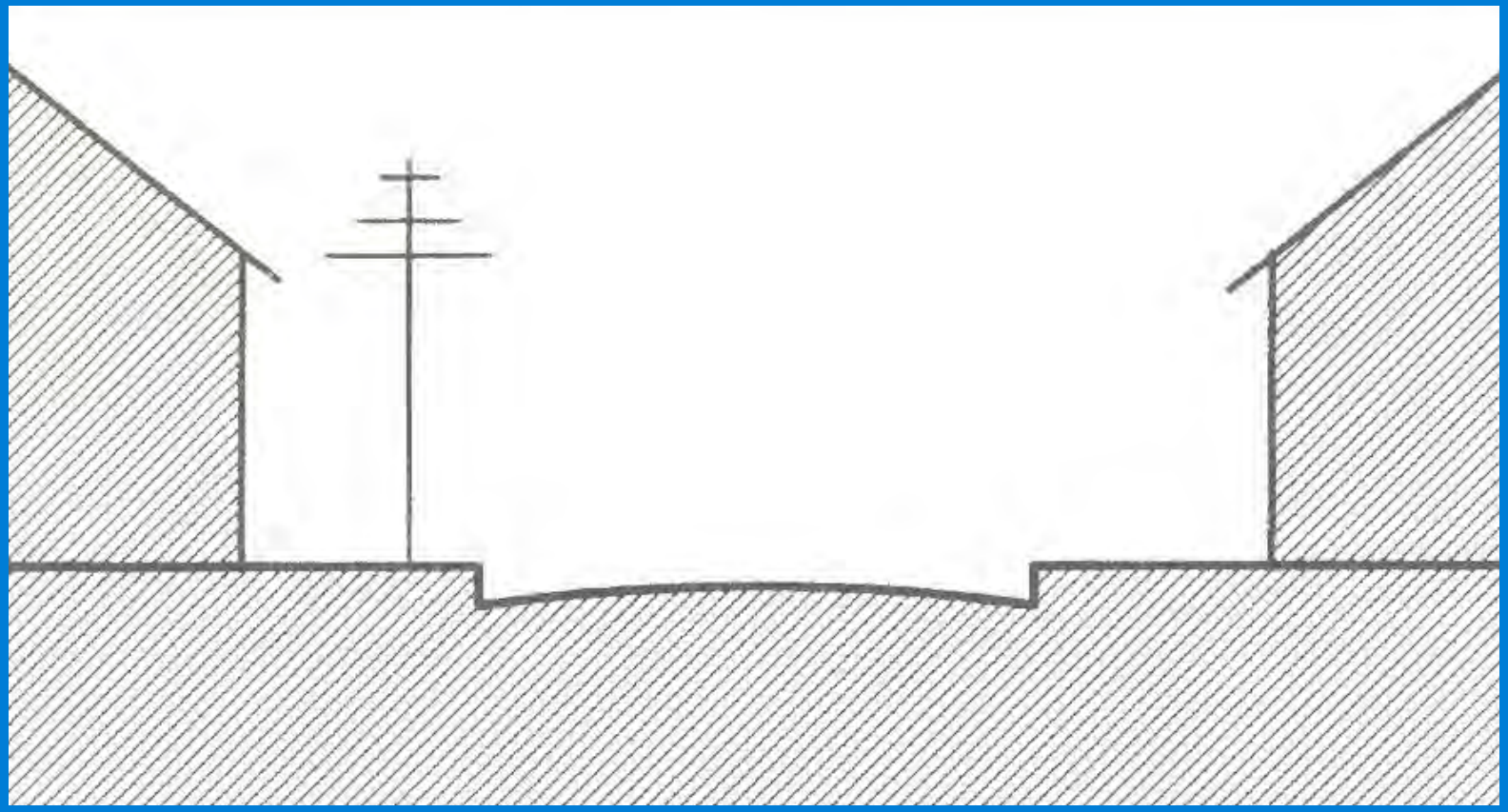
Excelsior Boulevard (continued)

- Modified Design Criteria
  - Turn lanes store 2 vehicles
  - Tapers at 10:1 on turn lanes; 5:1 for parking bays
  - Curb extensions for ped crossings and transit stops created parking bays
  - Mix of near side and far side transit stops

Why Are Edges Important?

- Roadways are not isolated elements
- Multiple modes-transit, pedestrians, bikes-place different demands on the roadway
- Understanding off-system relationships supports better design of on-system elements

Why are Edges Important?



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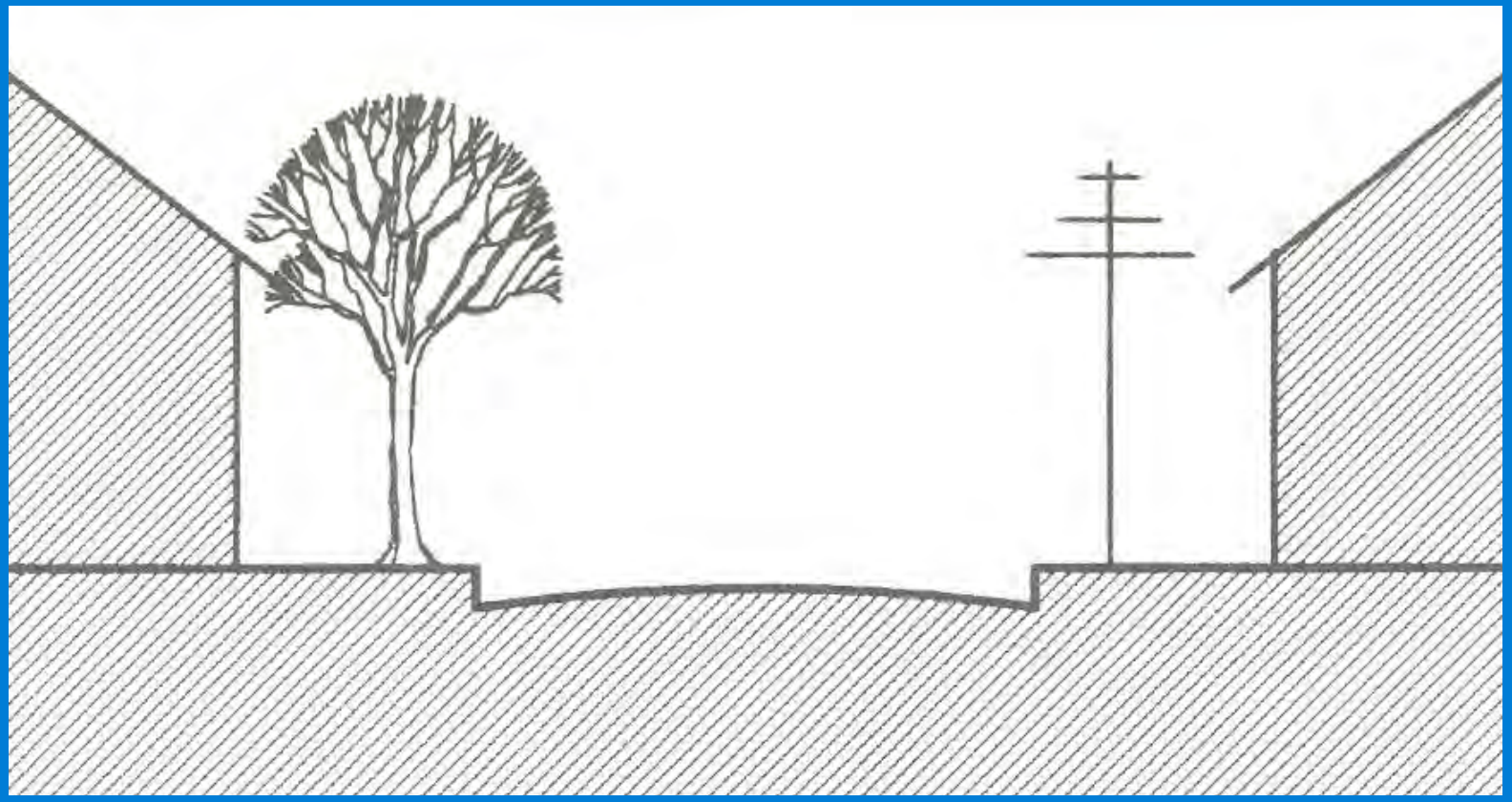

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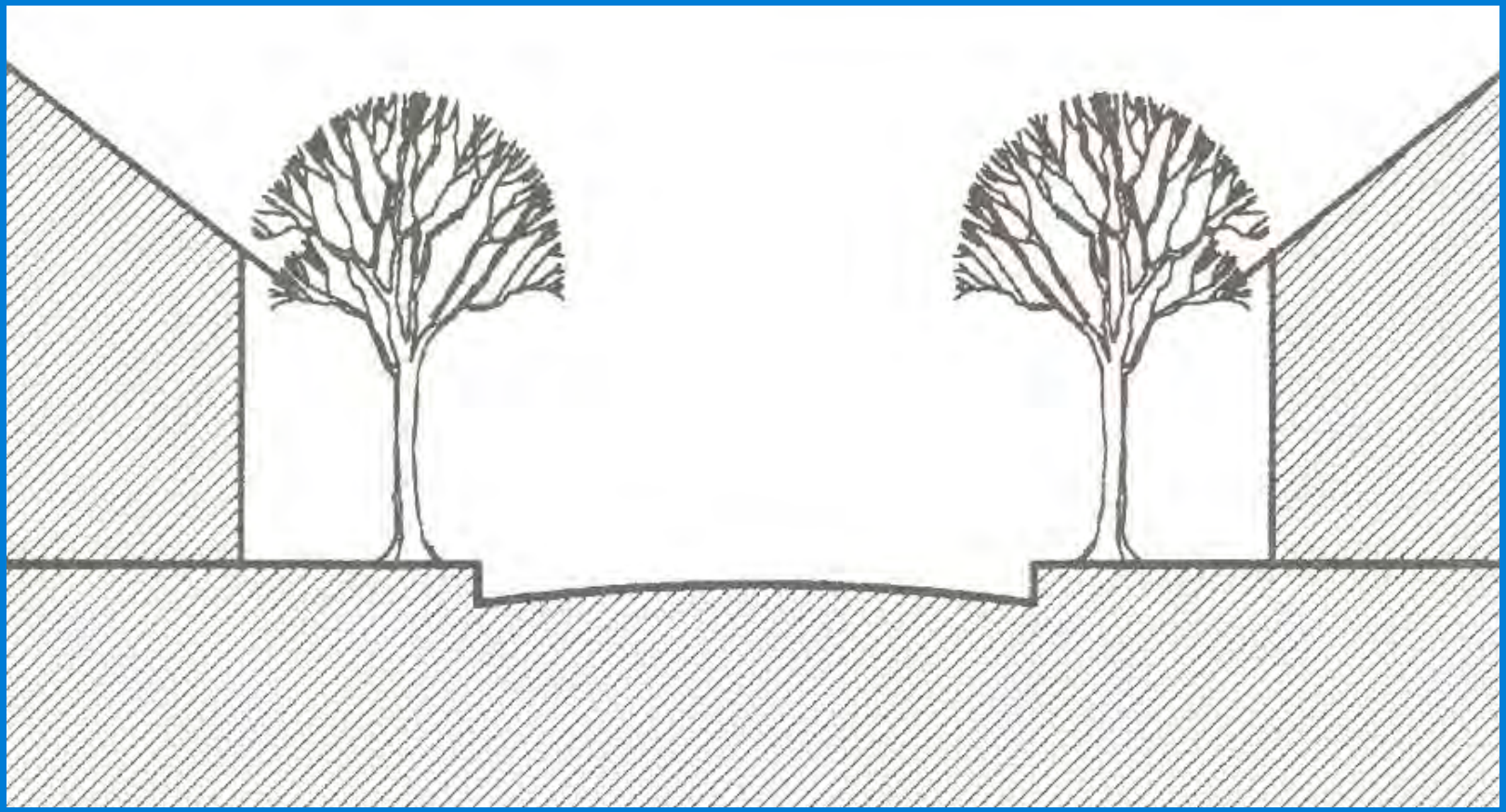
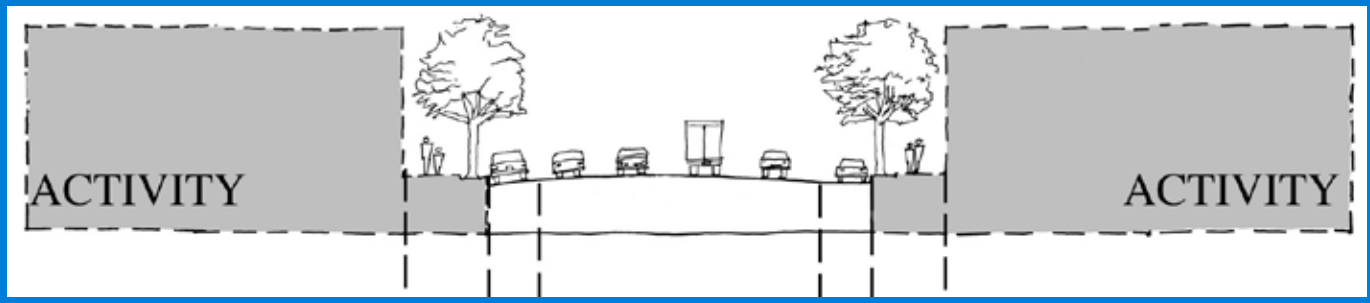


Edge Design Elements

- Clear Zones
- Transit Facilities
- Pedestrian Facilities
- Bicycle Facilities
- Parking
- Access
- Plantings
- Aesthetic Treatments
- Drainage
- Land Use

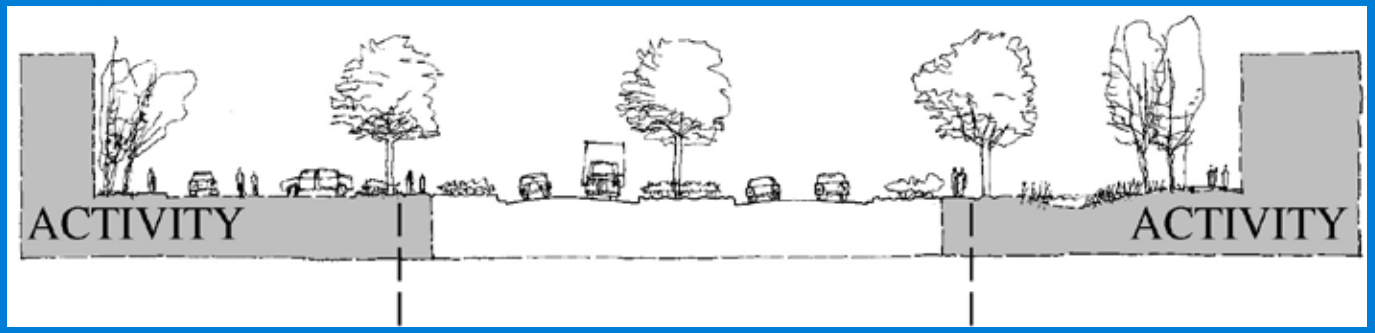
Closely Related to Speed

30-35 mph



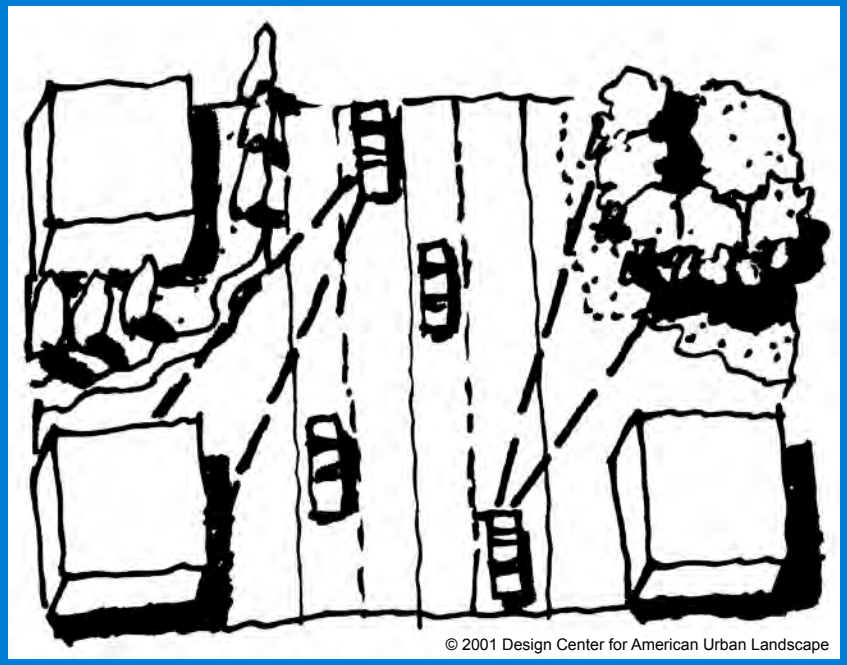
40-45 mph

50-55 mph



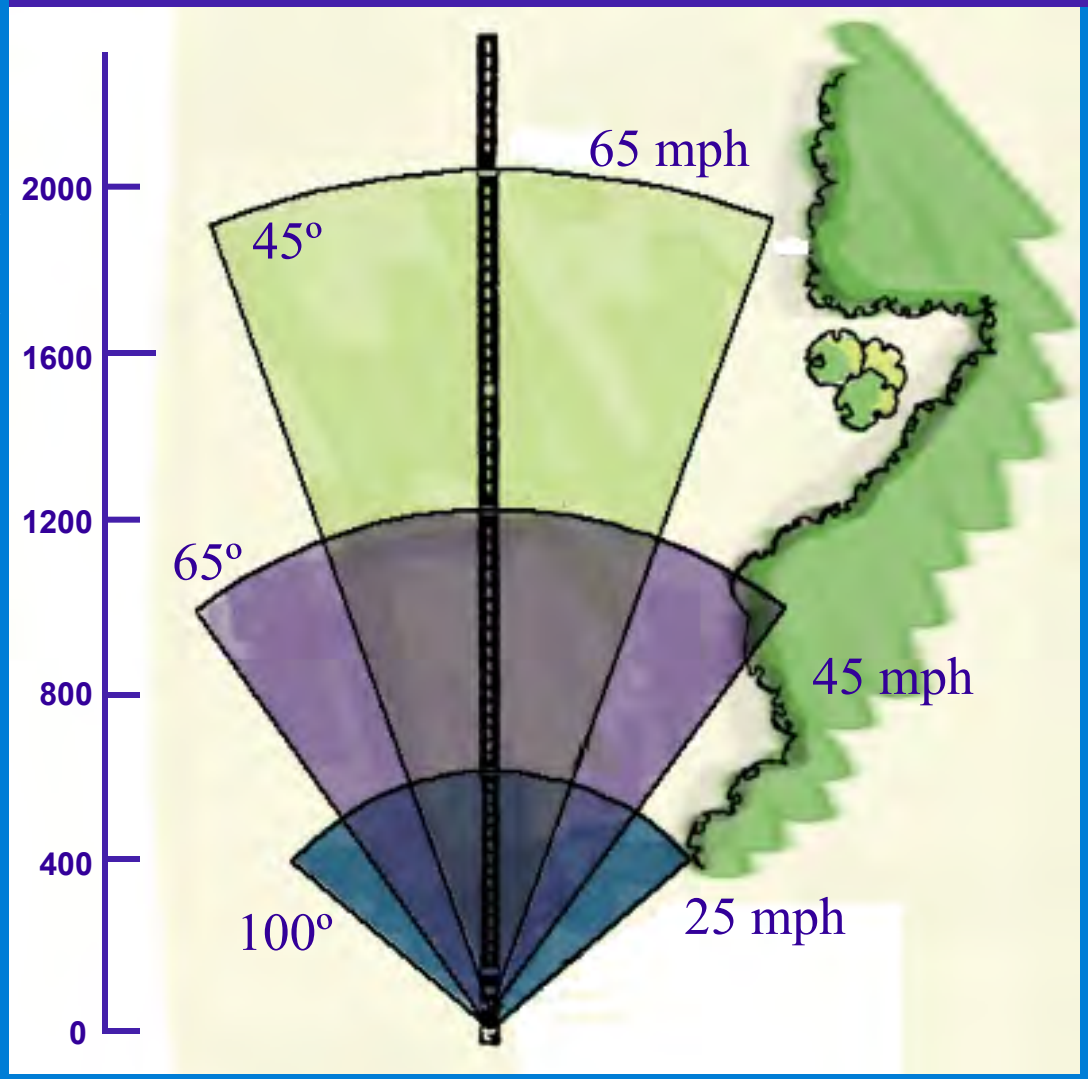
Land Use: View Shed Concept

Three dimensionally reinforce the roadway through:



- Building and landscape massing
- Siting of buildings and signs
- Linear visual character

Driver's Vision Cone



- Driver's view "tunnels" with speed increase

Graphic Source: *Transportation Landscape Design Handbook*, WisDOT, 1994

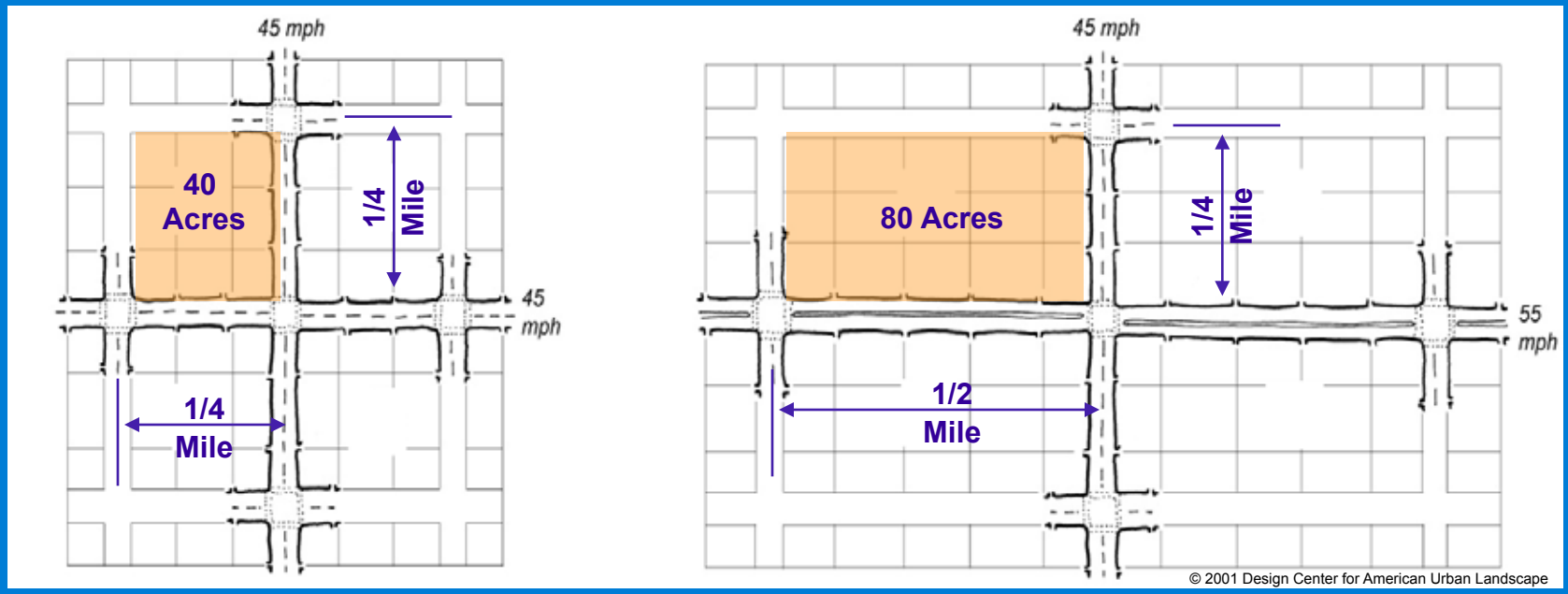
Land Use

- Examples of TOD, Big Box, etc.

Edge Design Elements

- EXAMPLES
- Clear Zones

Access Management



- Access Density Affects Volume
- Connection Spacing Affects View Shed

Example: Access Management

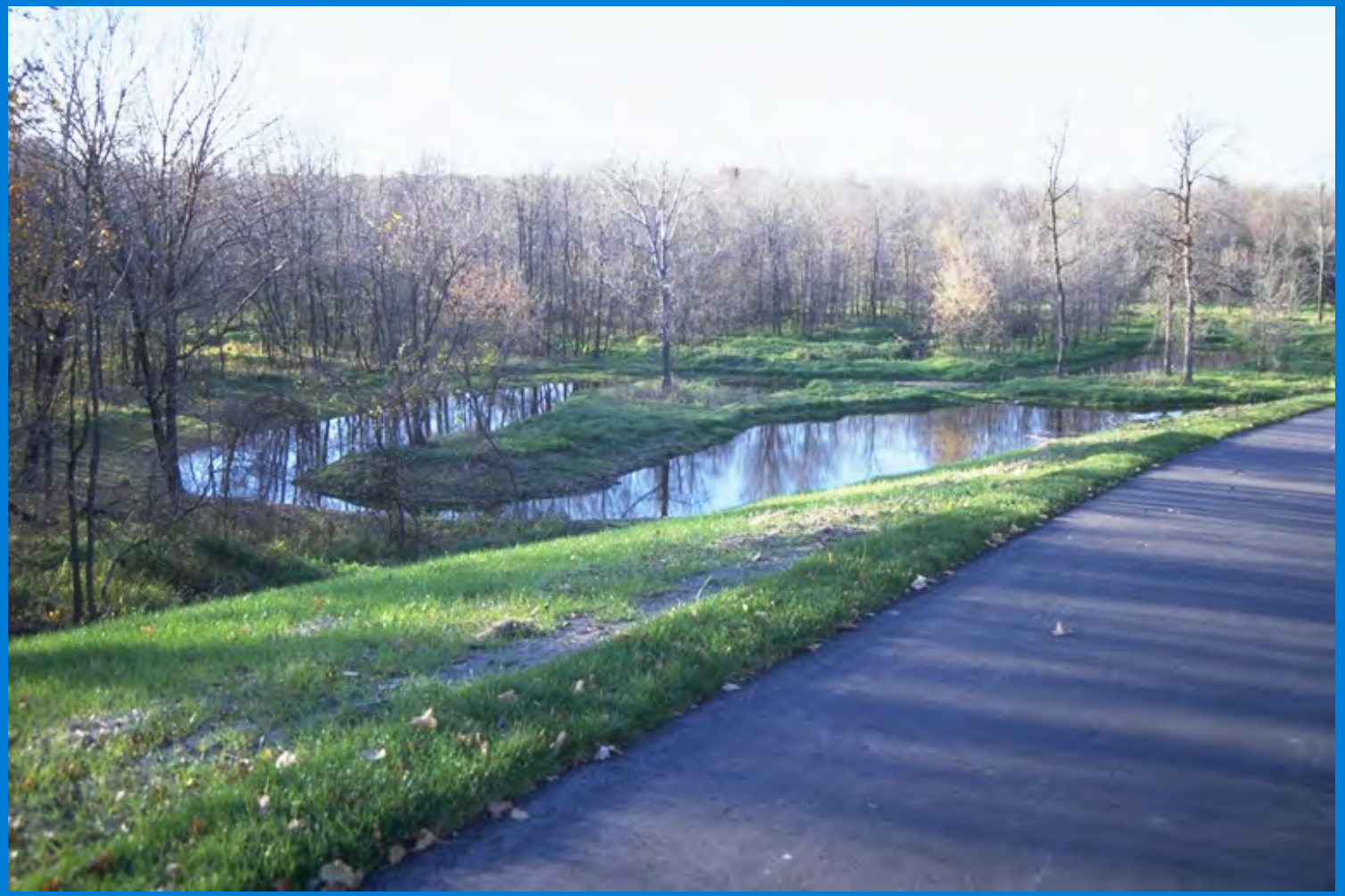
Pedestrian/Bicycle Facilities

Bus Stops/Shelters/Stations

Surface Parking

Integration of Parking Ramps

Drainage Ponds



Vegetated Ditches

Landscaped Swales

Rain Gardens

Linear Rain Gardens

Erosion Control and Shore Stabilization With Native Plants

Predestrian Amenities

Screening

Aesthetic Design

The two concepts used to develop, describe and express visual ideas are:

- Visual design elements
- Aesthetic qualities

Visual Elements: Bridges

Noise Barriers and Retaining Walls

Lighting and Fencing

Landscaping, Signs & Architecture

Grading, Ponds and Wetlands

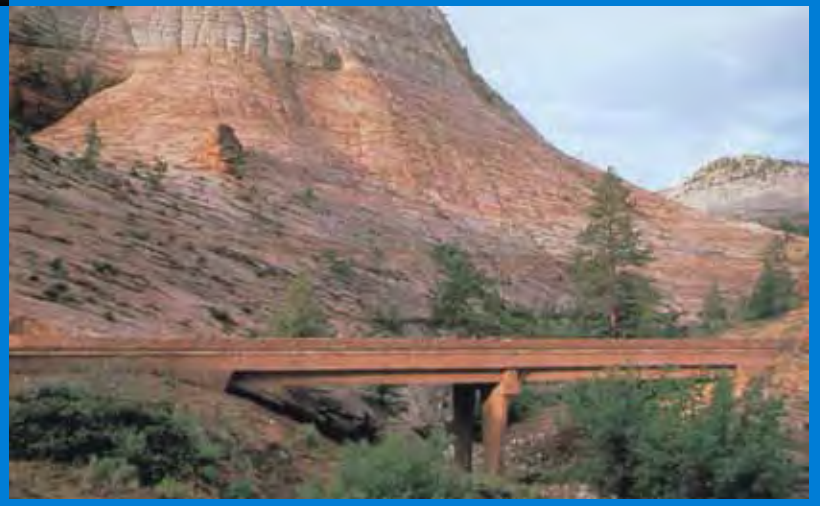
Urban Design Elements

Fundamentals of Aesthetic Design

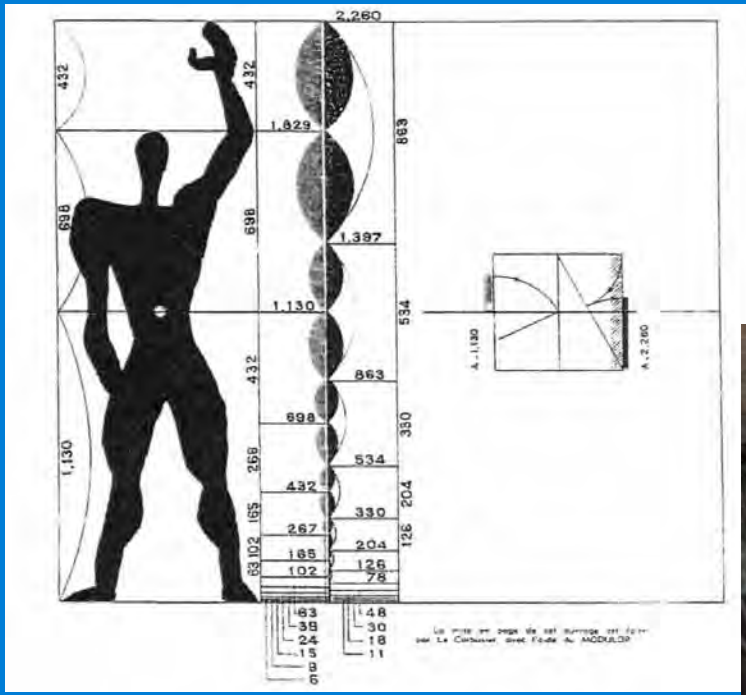
- Form
- Character
- Detail
- Scale
- Proportion

Character is place-sensitive

Detail adds interest and aesthetic appeal



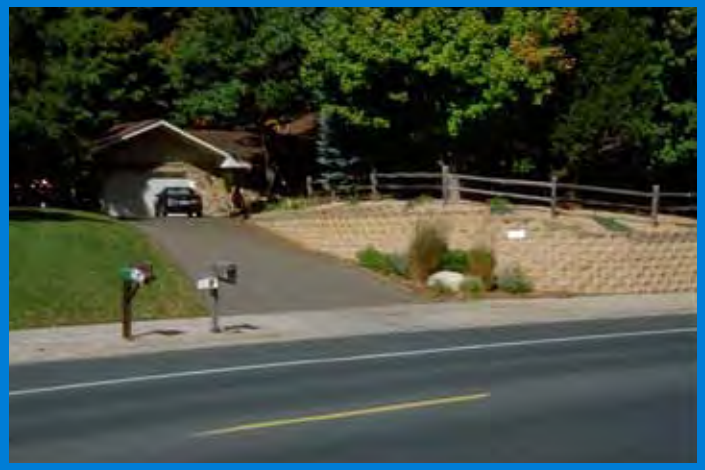
Scale and Proportion



Le Corbusier's diagram for his 'modular' proportioning system

Maintenance Feasibility and Cost

Material Choices Affect Cost



Aesthetic Design Cost

- Be upfront, articulating what is negotiable and what is not
- Take a balanced approach to aesthetic planning and design
- Build solid working relationships that bring an appreciation for aesthetic design early in the planning and design process

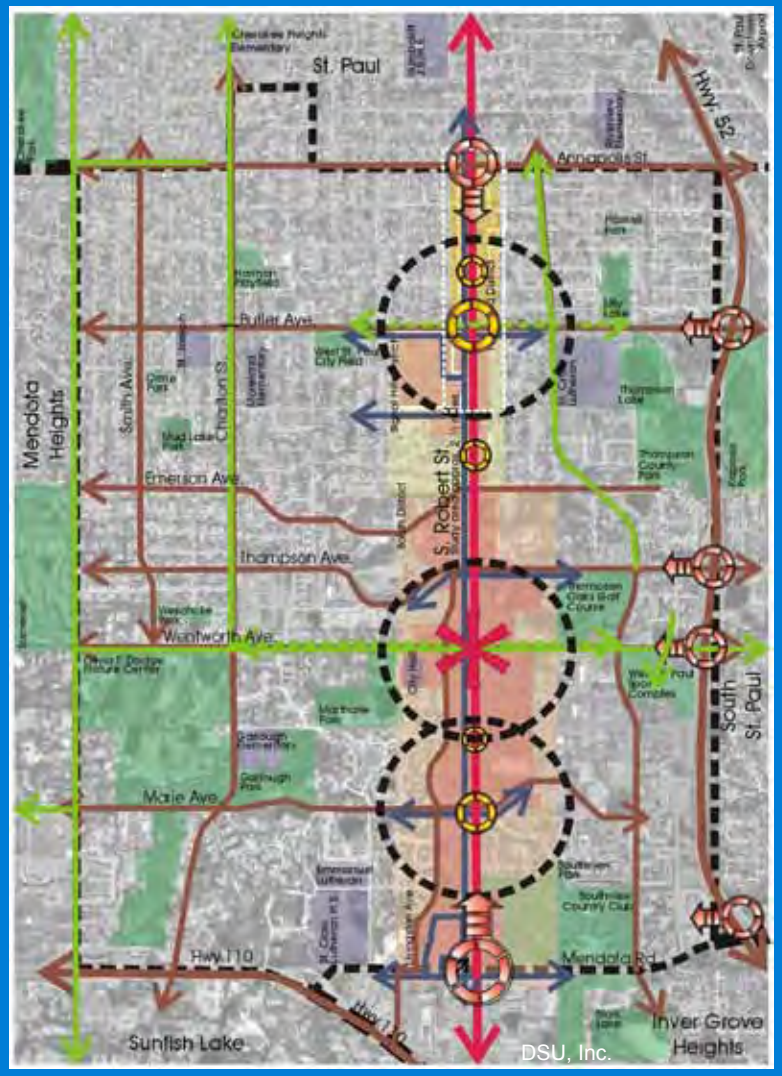
Putting It All Together

Example: Robert Street, St. Paul

- ADD PHOTO OF ROBERT STREET

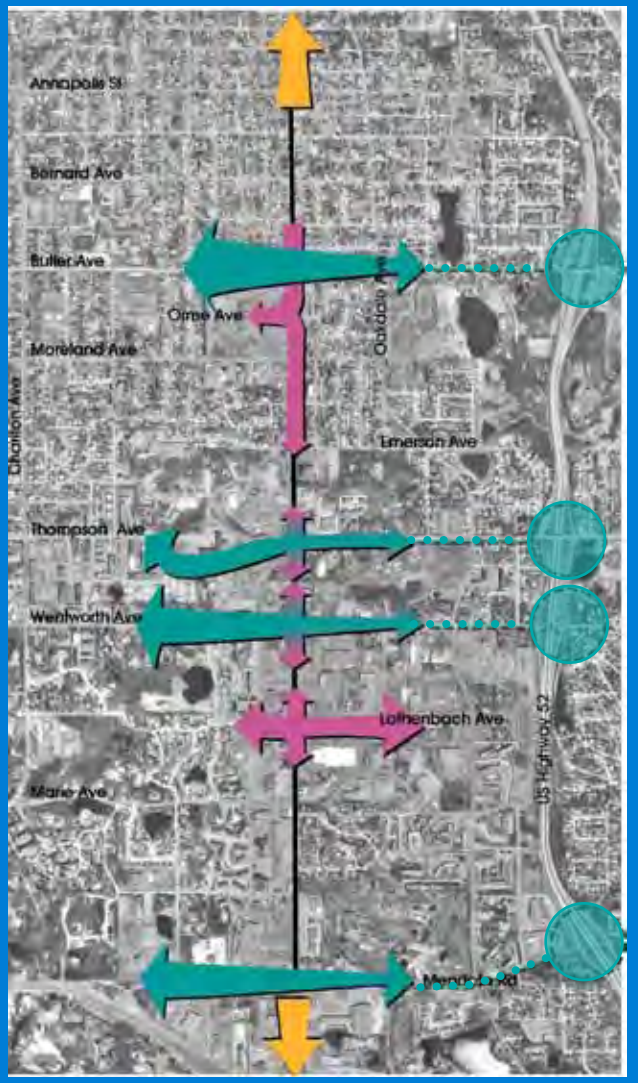
Robert Street: Context

- Radial highway
- Residual highway commercial pattern
- Moderate commercial market demand
- City revitalization and redevelopment effort



Robert Street: Traffic

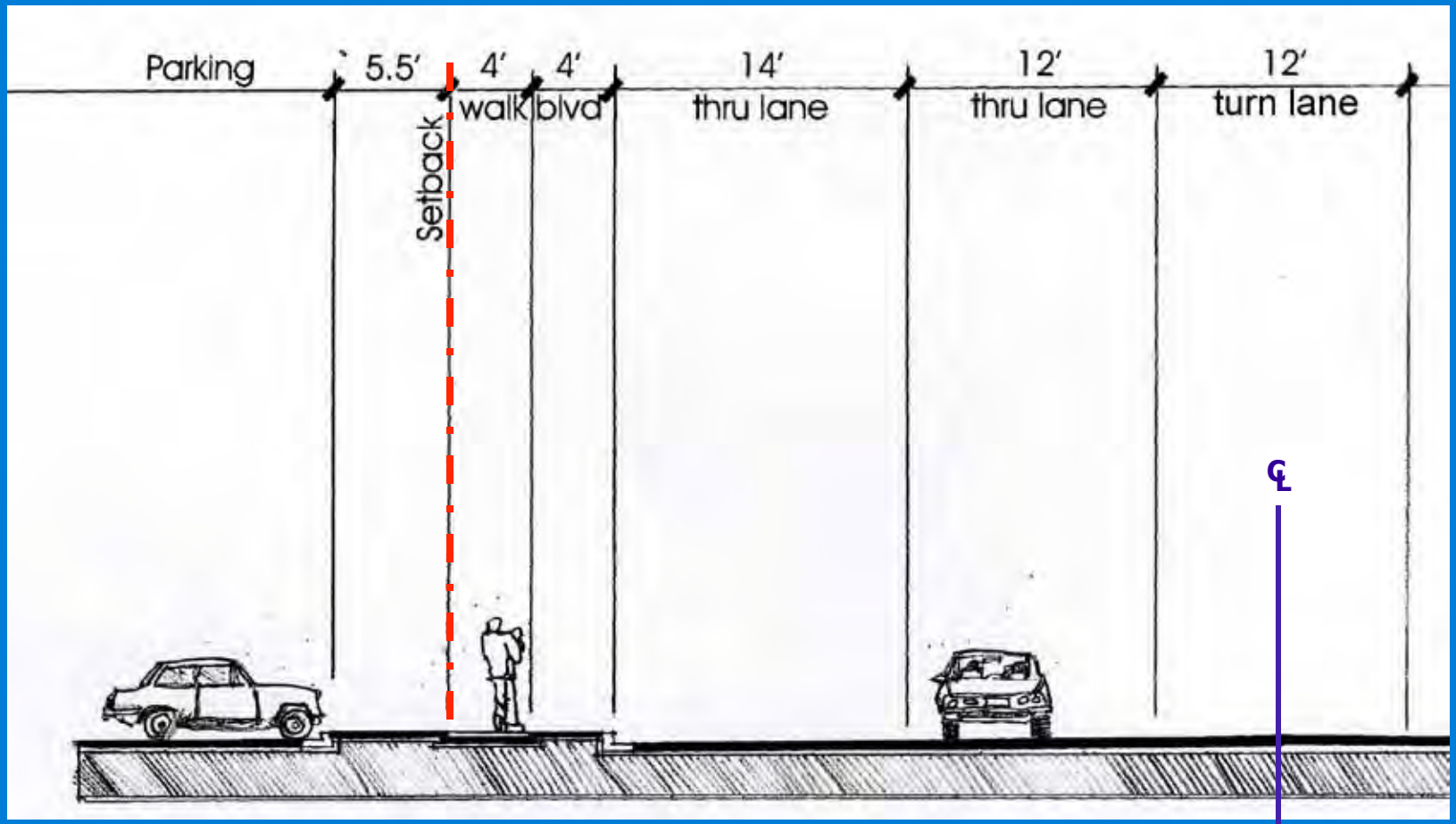
- Traffic volume: 25,000 ADT
- Stable crash patterns
- Acceptable L/S
- Crossing movements
- Low through demand
- Increasing % of local trips



Issues/Opportunities

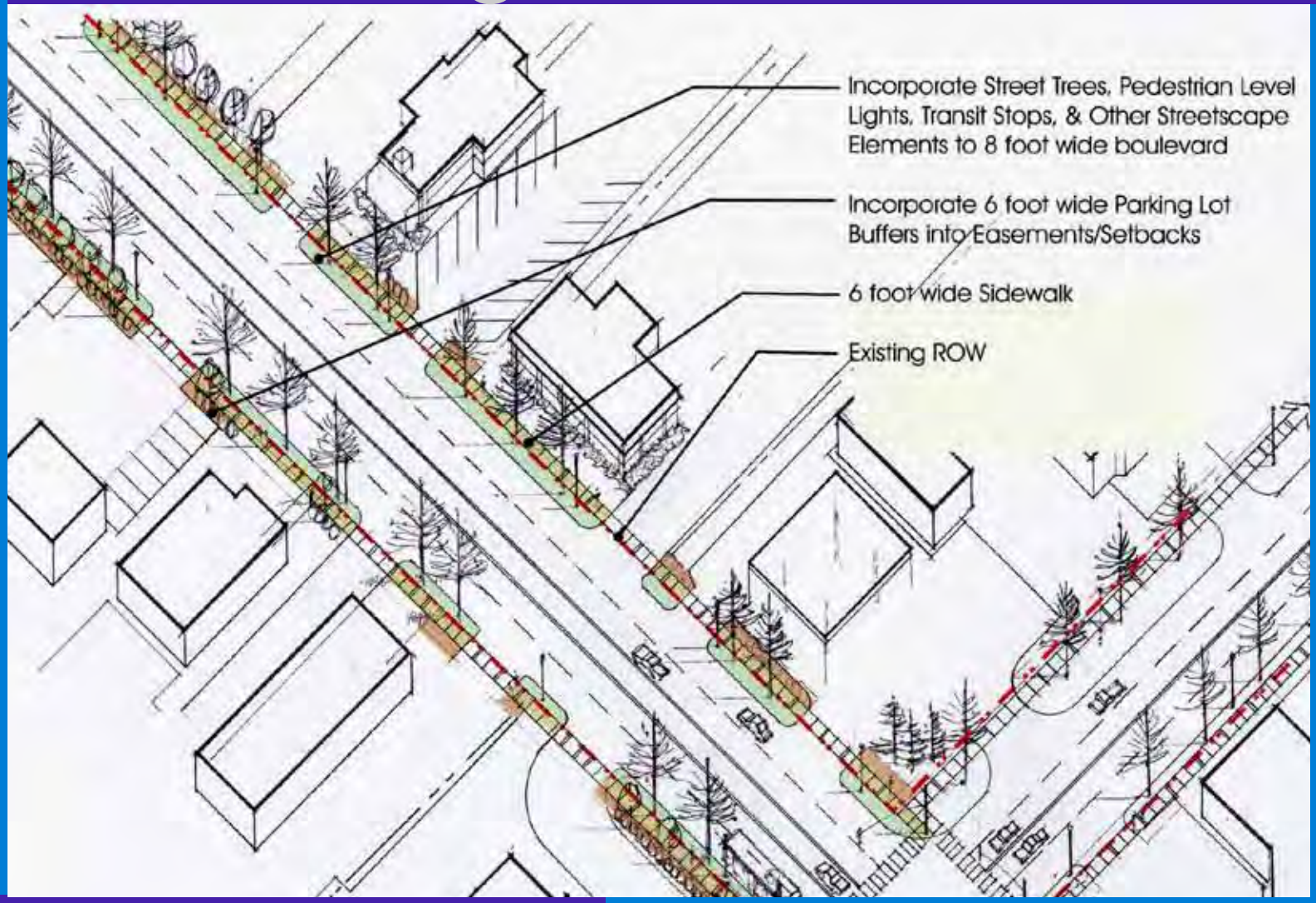
- Insufficient width for pedestrians
- Excessive numbers of driveways
- Uniform signal spacing
- Need/desire to renovate highway commercial into sustainable scale retail
- Need/desire to diversify land uses in corridor

Existing Cross Section



DSU, Inc.

Edge Treatment



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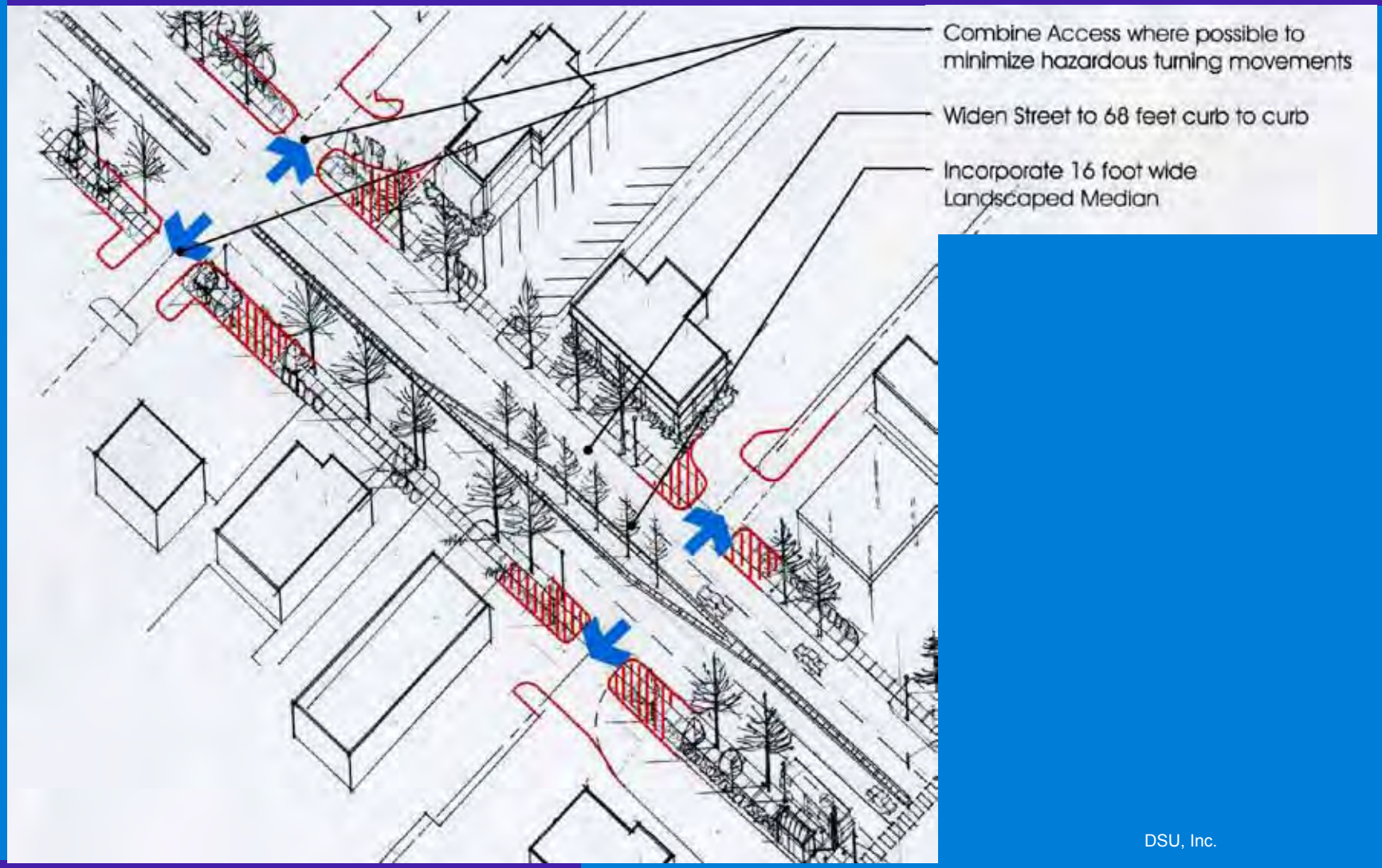
Access Consolidation



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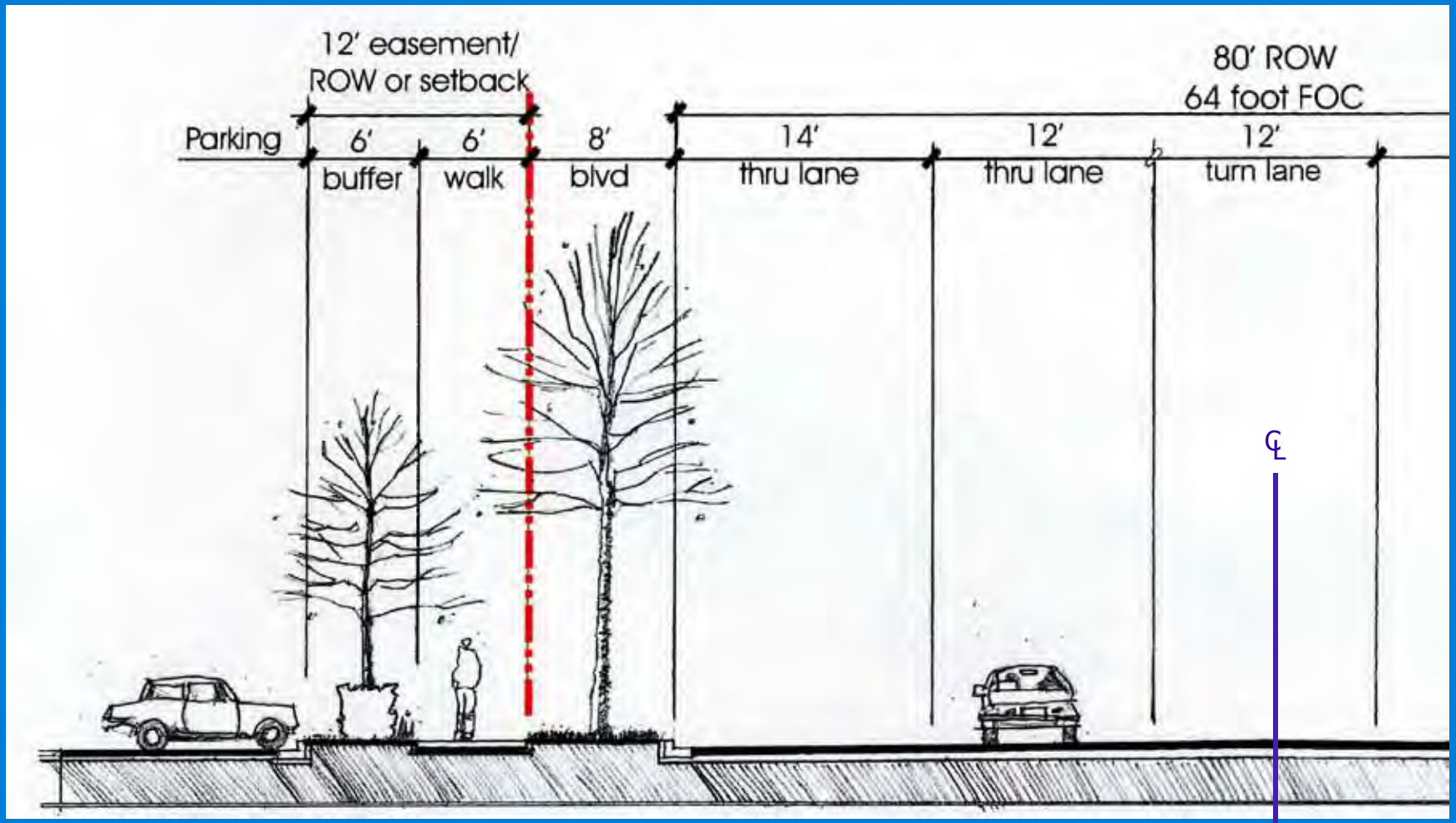
Amenity Zone Concept



Amenity Zone

DSU, Inc.

Amenity Zone Concept

Amenity Zone: 6-10 ft.
- Parking Buffers
- Signs
- Transit Plaza
- Benches
- Future Build to Zone

Sidewalk and Boulevard Zone: 8-12 ft.

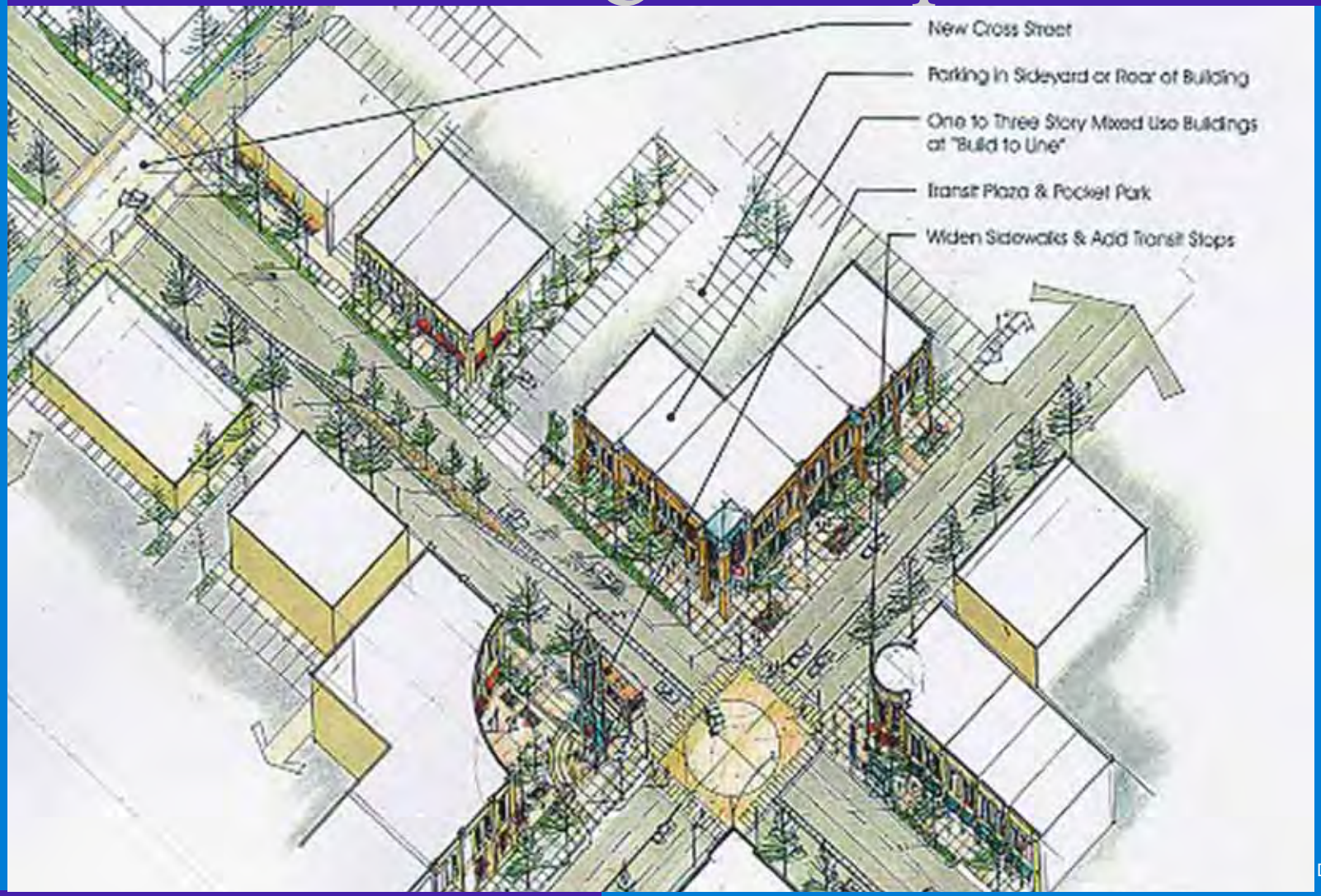
Sidewalk Bumpouts: 4-8 ft.

DSU, Inc.

Amenity Zone Concept

DSU, Inc.

Urban Design Component



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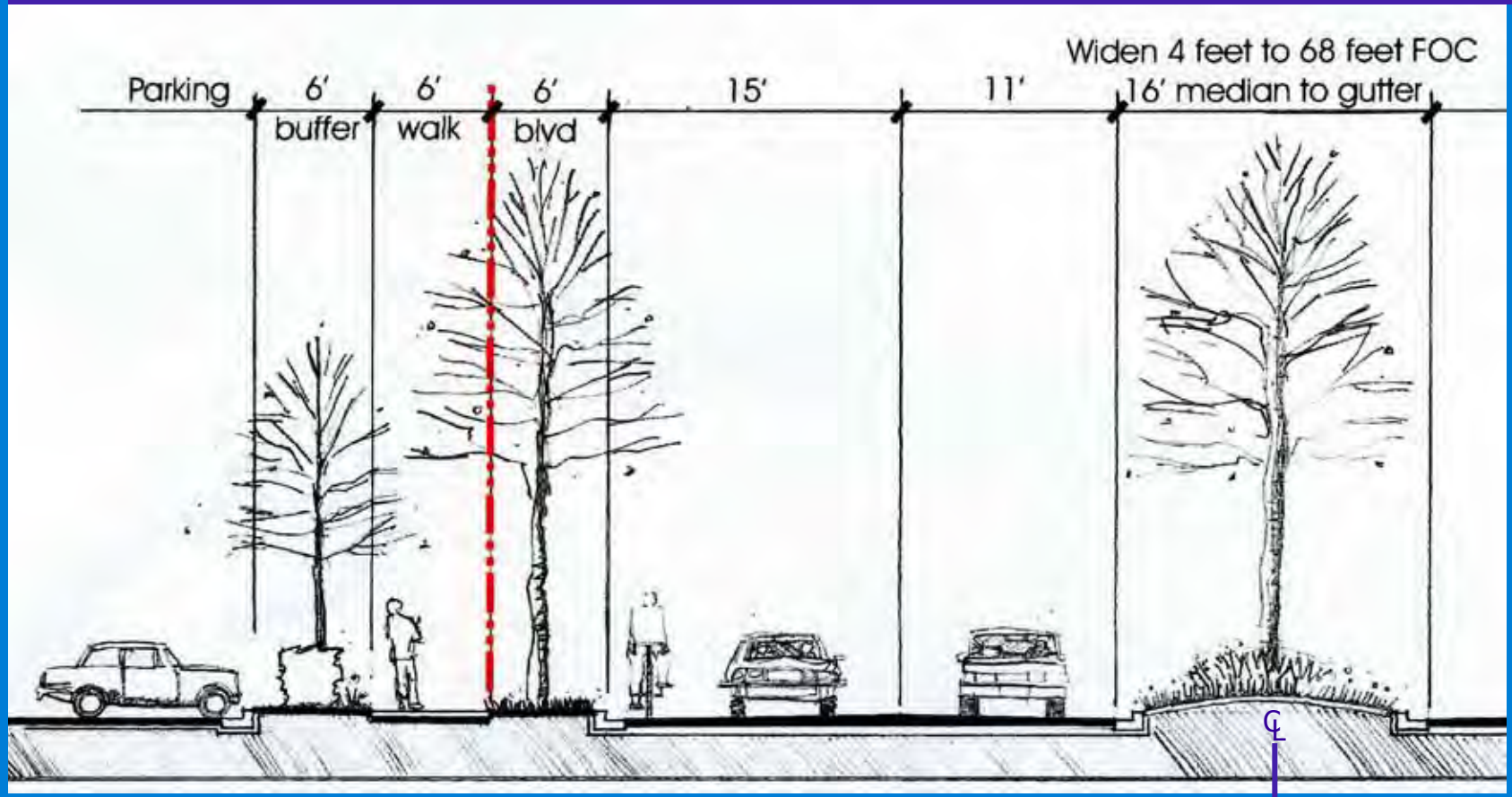
Introduction of Median



DSU, Inc.

In first stage, curb lane is 13 ft; curb stays in place (no bicycle accommodation); boulevard planting is 8 ft

Outcomes

- Staged renovation of roadway
- Consolidated access/shared parking
- Edge relationship defined

Balancing Criteria

- Evaluate speed goals and facility type
  - In relation to adjacent land use pattern
  - In relation to system-level traffic patterns
  - In relation to anticipated future changes

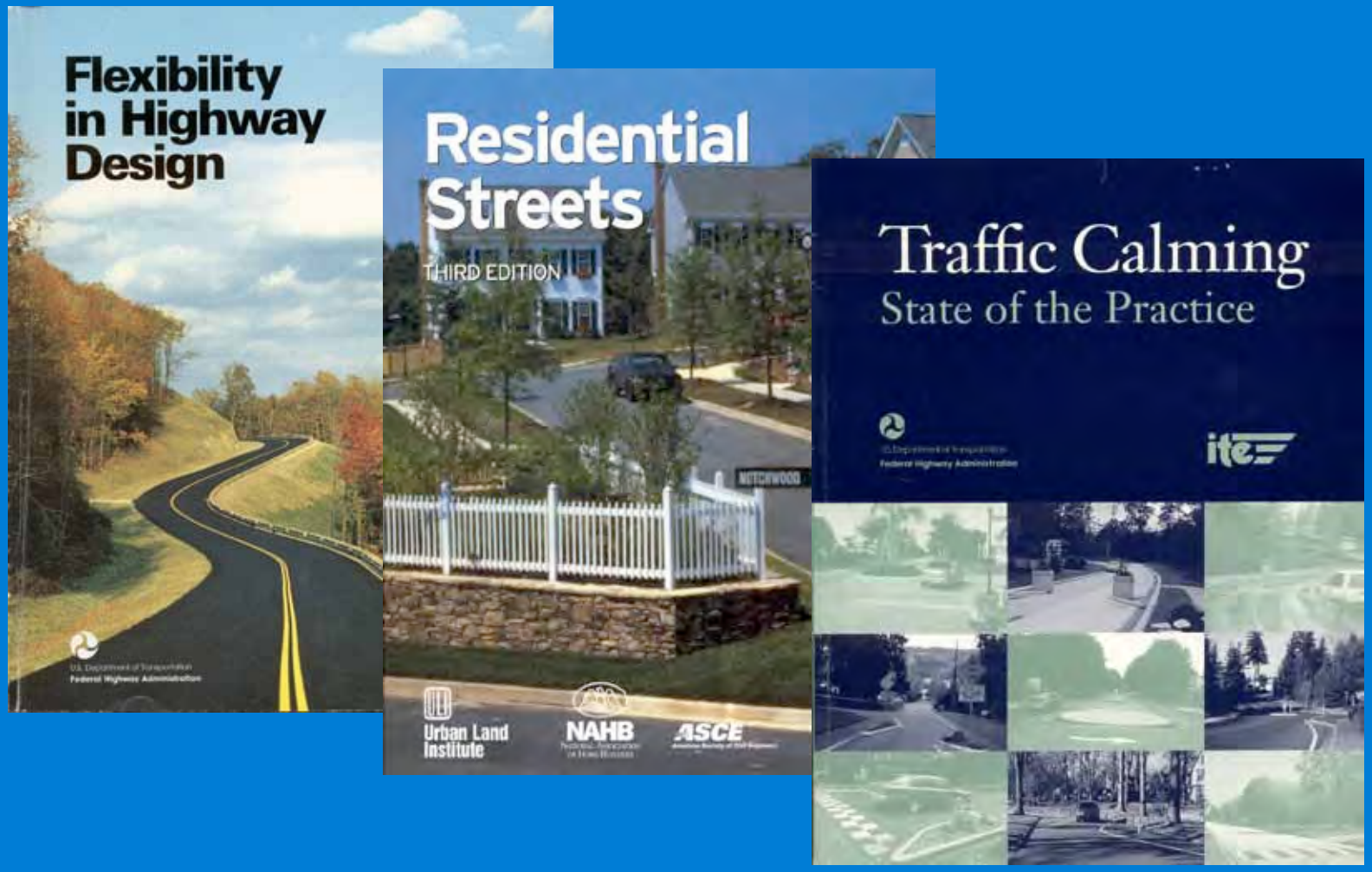
Balancing Criteria

- Identify modes to be accommodated.
- Transit activity equals pedestrian activity.
- Multiple design options available.
- One size does NOT fit all.

Balancing Criteria

- Identify design criteria to be used.
- If modifications are deemed appropriate, document the decision-making process.
- Consider the outcomes inherent in each criteria selected.

References


Flexibility in Highway Design
Residential Streets
THIRD EDITION
Urban Land Institute
NAHB
ASCE
Traffic Calming
State of the Practice
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Parting Thoughts

- The “Think” method of design extends to network design and to urban design - integrate system and edge decisions into design.
- Capitalize on the chance to do it right - assemble the disciplines needed to do the job.

Parting Thoughts

- Success is achieved with a collaborative process that continually involves multiple agencies and stakeholders.
- A few extra hours spent in design is a small price when weighed against a 20-year life for a project used or seen by thousands of people every day.

What are the six CSD principles?

Questions?

Please fill out the evaluationf orm before you leave today.