Implementation, Already

Livable Streets

Implementation Strategies

1. Pedestrian Standards
2. Pedestrian Districts
3. Connectivity Standards
4. Preventing Street Bloat

Pedestrian Standards

Implementation Strategy 1

Pedestrian Standards Based on "Pedestrian Science"

A. Pedestrian Typology
B. Pedestrian Environment Typology

Pedestrian Typology

(Who are these people?)

Types of Walking

- Rambling
- Utilitarian Walking
- Strolling, Lingering
- Promenading
- Special Events


Rambling
Redmond

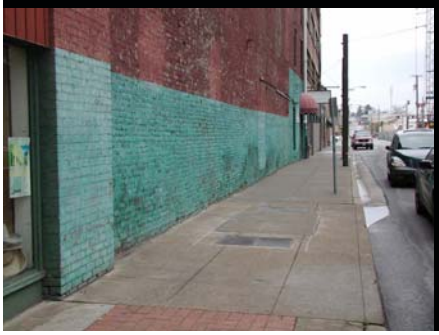

Utilitarian Walking
545 VIA SR-520
Redmond


Boulder
Strolling, Lingering

Strategy 1. Pedestrian Standards

Pedestrian Environment Typology

(Where are all the people?)



Pedestrian Environments

"Pedestrian Friendly"

Pedestrian Environment Continuum

Pedestrian Place

- Commercial, recreational or institutional setting (not residential)
- Gathering place – identifiable as a PLACE
- Significant pedestrian presence
- Motor vehicles can be present, but may not dominate
- Substantial supportive transportation systems required (parking, transit, bike)


Honolulu/Waikiki
Pedestrian Place


Boulder
Pedestrian Place


La Spezia, Italy
Pedestrian Place


Winter Park, FL
Pedestrian Place


Miami Beach, FL
Pedestrian Place


Genoa, Italy
GE NOVA 04
Welcome to Genoa
European Capital of Culture
Pedestrian Place

Strategy 1. Pedestrian Standards

Pedestrian Supportive

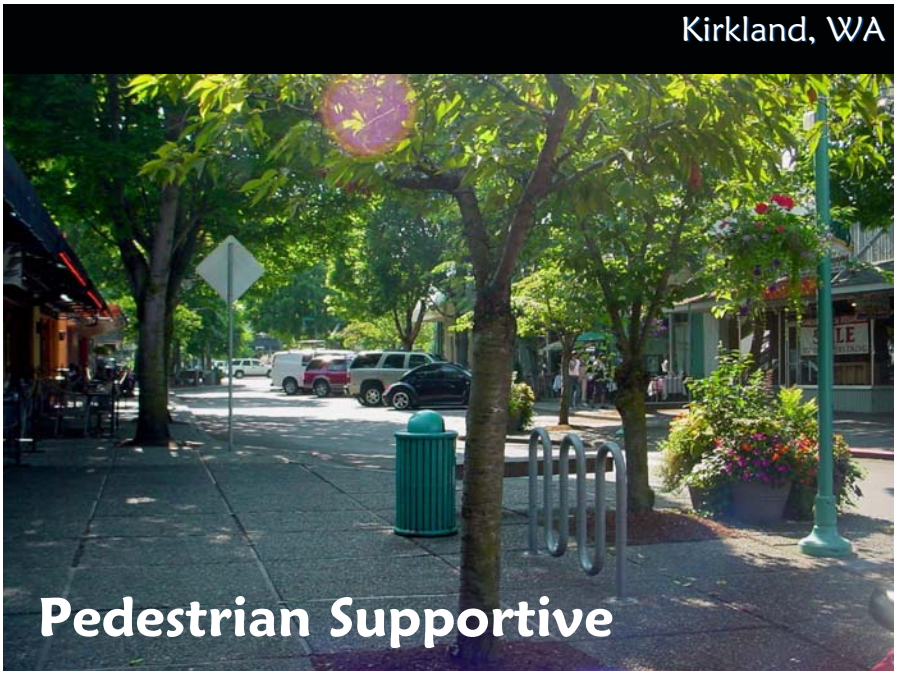
- Commercial, recreational, institutional or residential setting – most but **not all** land uses
- May include gathering PLACES
- Pedestrians present at busy times
- Motor vehicles can be present, but may not dominate


Redmond
Pedestrian Supportive


Mt. Vernon, IA
Pedestrian Supportive


Longmont
Pedestrian Supportive


Berkeley
MIKI'S PAPER
Pedestrian Supportive
Credit: Dover, Kohl


Kirkland, WA
Pedestrian Supportive


Boulder
Pedestrian Supportive

Strategy 1. Pedestrian Standards

Pedestrian Tolerant

- All land uses except freeway and limited special uses (airport runway, garbage dump, etc.)
- Utilitarian walking and rambling only
- Motor vehicles are present and tend to dominate


Redmond
Pedestrian Tolerant


Longmont
Pedestrian Tolerant


Pedestrian Tolerant
Maui

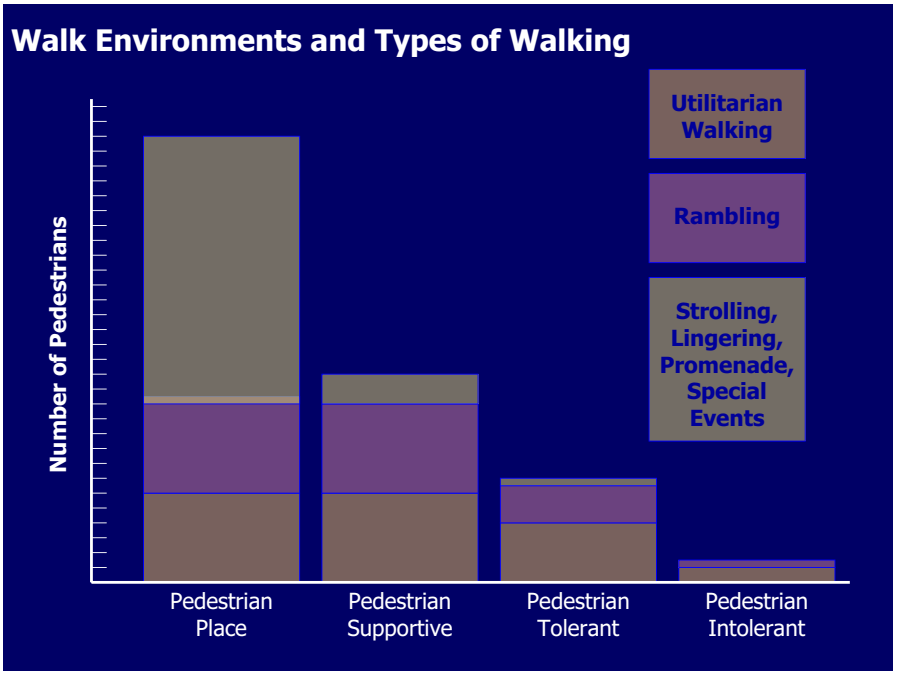
Pedestrian Intolerant

- Any land use
- Very little if any walking
- Motor vehicles dominate
- Unsafe, unpleasant

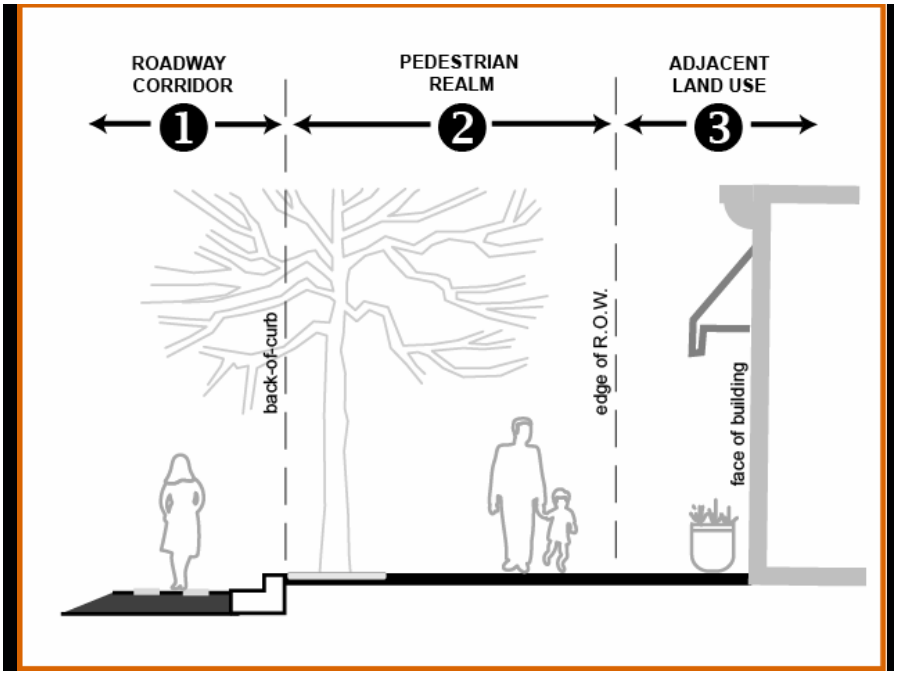

Hawaii Island
Pedestrian Intolerant

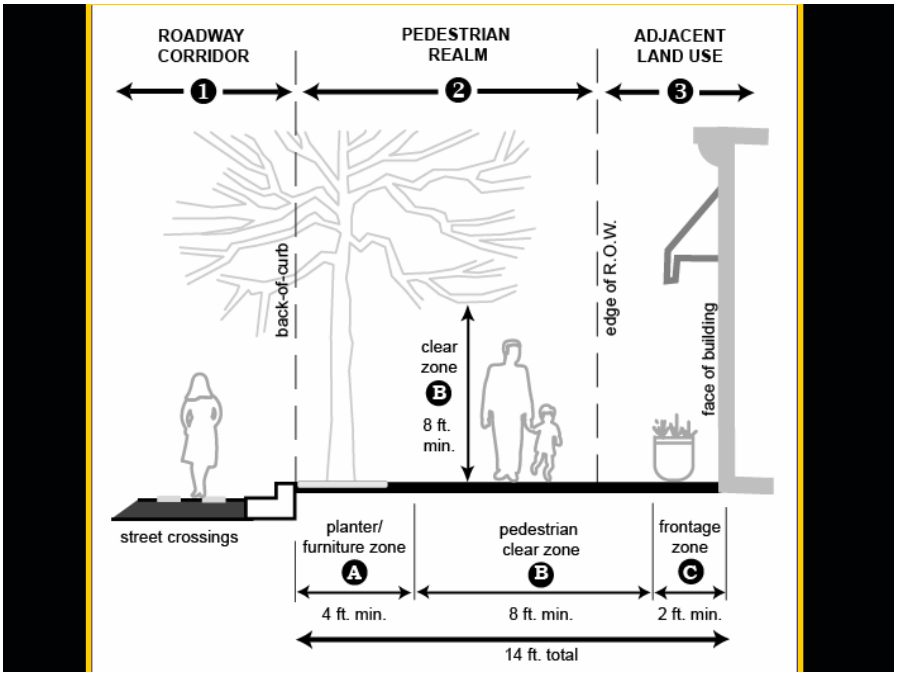

Flagstaff, AZ
Pedestrian Tolerant


Pedestrian
Intolerant
Flagstaff, AZ



Setting Pedestrian Standards





		Pedestrian Intolerant	Pedestrian Tolerant	Pedestrian Supportive	Pedestrian Place
1 Roadway Corridor					
Physical Characteristics	*Vehicular Traffic*	Various combinations of the following characteristics create roadway corridors that discourage pedestrian use: • high traffic volumes (> 25,000 ADT) • high travel speeds (posted >35 mph)	Roadway corridors become more tolerant when traffic characteristics are: • moderate traffic volumes (15,000 - 25,000 ADT) • moderate travel speeds (30-35 mph)	The following roadway characteristics combine to support pedestrian activity: • moderate volumes (typically 5,000-15,000 ADT) • slower travel speeds (25-30 mph)	The following combination is required to create public spaces that function as pedestrian destination areas: • low traffic volumes (< 5,000 ADT) • slow travel speeds (< 25 mph)
	Other Roadway Lanes	• Typically no on-street parking • No bicycle lanes	• Typically no on-street parking • The presence of bicycle lanes helps to buffer and separate pedestrians from vehicular traffic	• Parking is provided on one or both sides of street • The presence of bicycle lanes helps to buffer and separate pedestrians from vehicular traffic	• If a street goes through a destination area, parking may be provided on both sides of street • Slow vehicular traffic speeds mean bicycle lanes are usually not required
	Curb Type	• No curb	• Rolled or extruded curb	• Vertical curb	• Vertical curb
Pedestrian Crossings	*Delineated Street Crossings*	• No marked crosswalks provided • Pedestrians must cross several lanes at once • Curb radii are >30'	• Marked, signed crossings with high-visibility ladder style crosswalks • Number of lanes to cross at once is limited to 4 • Right-turn slip lanes with pedchop islands shorten crossing distances • 30' max. curb radii	• High-visibility crosswalks, potentially with use of texture, pattern and/or color • Number of lanes to cross at once is limited to 3. • Small curb radii of 15'-25' shorten crossing distances and slow traffic	• Crossings include texture, pattern, color and/or traffic calming measures such as raised speed tables or curb extensions • Number of lanes to cross at once is limited to 2 • Small curb radii of 5'-15' shorten crossing distances and slow traffic
	Traffic Signals	• No signals • Or no walk phases within signalized intersections	• Pedestrian signal indications for walk phases • Timing allows clearance intervals for a pedestrian to cross street at average walking speeds of 3.5 - 4 ft/sec	• Pedestrian activated signals with short cycle lengths and longer walk intervals • Timing allows elderly and slower moving pedestrians to cross street at walking speeds of 2.5 - 3 ft/sec • Use of Leading Pedestrian Intervals (LPI) or Delayed Vehicle Green lights	• Pedestrian activated signals are oriented to give priority to pedestrian movements • Use of LPI signals, countdown signals, or exclusive pedestrian intervals • Alternatively, signals may not be necessary due to slow traffic speeds
	Grid/Block Length and/or Mid-Block Crossings	• Crossing frequency is 528' - 1320' • No mid-block crossings provided	• Crossing frequency is 330' - 528' • Mid-block crossings marked and signed	• Crossing frequency is 250' - 330' • Hot response pedestrian signals. • Curb extensions or neckdowns where on-street parking is present. • Median refuge islands if >4 lanes or where center turn lanes present.	• Crossing frequency is < 250' • Mid-block street crossings are an integral part of pedestrian destination zones, with priority given to pedestrian movements through design

Figure 4.a

		Pedestrian Intolerant	Pedestrian Tolerant	Pedestrian Supportive	Pedestrian Place
2 Pedestrian Realm					
Physical Characteristics	*Sidewalk Presence*	• Local streets have no sidewalks • Arterial streets have sidewalks on only one side of street	• Local streets have sidewalks on only one side of street. • Arterial streets have sidewalks on both sides.	• All streets have sidewalks provided on both sides	• All streets have sidewalks provided on both sides with supplemental traffic calming measures
	Sidewalk Location and Width	• Sidewalks lacking, or provided immediately back of curb • Walkway width < 5'	• Sidewalks provided immediately back of curb • Walkway width 5' min.	• Walkway separated from vehicular traffic by a 5' sidewalk planting strip • Sidewalk 6'-8' wide to accommodate passing and pairs of pedestrians walking side by side. • Next to transit stops, sidewalks are 10' wide and extend to street at boarding spot.	• The pedestrian realm includes a sidewalk planting strip/pedestrian furnishings zone next to street, a walk/talk zone, and a shy zone next to buildings • Through walkway space 8'-10' wide, overall sidewalk width 10-30' to provide space for pedestrian amenities.
	Sidewalk Planting Strip	None.	None.	5' minimum, ideally with overstory street trees 20'-30' on center, with clear sight distance triangles at intersections and crossings.	5' - 10' with overstory street trees in parkway planting strips, or none if tree wells and supplemental planters are provided within wide sidewalks, with clear sight distance triangles.
Pedestrian Amenities	*Transit Stops*	No furniture groupings provided	Benches provided at transit stops	Shelters, benches and trash receptacles provided at transit stops.	Transit stops and amenities are integral in the design of pedestrian places.
	Pedestrian Furnishings	None	No furnishings along streets not on transit routes.	Pedestrian furniture groupings located intermittently along non transit streets. Pedestrian wayfinding provided	Pedestrian furniture groupings, sculpture, drinking fountains, decorative fountains, wayfinding, etc. are located throughout.
	Lighting	None.	High angle highway lamps, such as cobra heads	Commercial districts have both: • High angle lamps • Additional low angle street lamps for improved lighting at ground level.	Pedestrian places have: • Overall street lighting • Low placement of tungsten lamps. • Additional light emitted from stores that line the street.

Figure 4.b


Pedestrian Intolerant


Pedestrian Tolerant


Pedestrian Supportive


Pedestrian Place

❸ Adjacent Land Use

Physical Characteristics	*Mix of uses*	Single Use	Often single-use	Limited mixed-use	At least three distinct, complimentary uses within immediate walking distance
	Building Relationship to Street	• 35' min. setbacks, with buildings often set back much farther than minimums • Public space height: to width ratio < 1:4	• 5' min. setbacks, with buildings often set back much farther than minimums • Height to width ratio 1:4 – 1:2	• Buildings placed at maximum setbacks or build-to lines ≤ 20' • Height to width ratio of 1:2	• Buildings placed at maximum setbacks or build-to lines 0' to 2' • Height ratio of 1:2 min. and 1:1 max.
	Building Design	• Buildings typically one-story, < 35' ht. • Solid street walls with no doors and windows facing street • No pedestrian protection from elements	• One- or two-story, < 35' ht. • Solid street walls with infrequent doors and windows • No pedestrian protection from elements	• Three- or four-stories, 40' - 52' ht. • Transparent window area along much of ground floor façade • Awnings provided over entrances	• Three- to five-stories, 40' – 60' ht. • Porous street frontages with frequent doors and windows inviting pedestrians inside • Awnings or arcades provided along building length for pedestrian shelter from sun/rain
Pedestrian Access	*Off-Street Parking Requirements*	Large surface lots >50,000 sq. ft. located in front of buildings	Smaller surface lots located in front or on sides of buildings, not to exceed 20,000 sq. ft. in size	Surface parking required to be at rear of building, or provided above, below, or centrally contained within parking structures	Parking provided within parking structures
	Landscape Buffers and Screening	• Heavy landscape screening with hedges separating private property from street frontages • Solid walls or high privacy fences separating land uses from streets	• Moderate landscape screening with breaks in landscaping for pedestrian access • Intermittent use of privacy fences to screen views but not limit pedestrian access from street	• Canopy shade streets with supplemental plantings provide pedestrian scale and interest level • Low and/or open fencing to define public-private space, with frequent and well-placed access points	• Urban form of Pedestrian Places requires no landscape buffering • Canopy shade streets with supplemental plantings provide pedestrian scale and interest level
	Pedestrian Access To Front Door of Buildings	• No pedestrian access provided across parking lots or through landscape buffers and/or fencing	• Parking lots include internal sidewalks or walkway areas striped across pavement at spacings >250'. Likewise, infrequent access points through buffers spaced >250'	• Priority given to frequent and direct pedestrian access every 150'-250' through buffers and across parking lots through design treatments such as colored and textured walks, speed table driveway crossings, etc.	• No large parking lots; no landscape buffers; no fencing • Direct, convenient, inviting and interesting pedestrian access provided from sidewalks to adjacent buildings

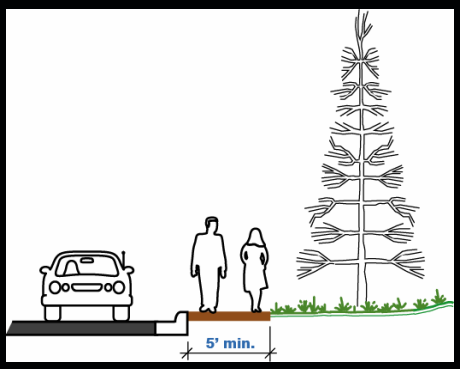
Figure 4.c

Location #1	Pedestrian Intolerant	Pedestrian Tolerant	Pedestrian Supportive	Pedestrian Places
❶ *Roadway Characteristics:*	❑ *High volume, high speed* ❑ *No on-street parking or bicycle lanes*	❑ *Moderate volume, moderate speed* ❑ *Bicycle lanes*	❑ *Moderate volume, low speed* ❑ *Parking and bike lanes*	❑ *Low volume, low speed* ❑ *On-street parking*
Pedestrian Crossings	❑ *Block length >.10 mile* ❑ *Unmarked, must cross >4 travel lanes*	❑ *Block length 330' - 528'* ❑ *Minimal markings, across ≤4 lanes*	❑ *Block length 250' - 330'* ❑ *Highly visible markings, across ≤3 lanes*	❑ *Block length < 250'* ❑ *Textured, colored, across ≤2 lanes*
❷ *Sidewalk Characteristics:*	❑ *Incomplete, or only on one side of arterial* ❑ *<5' wide, located back-of-curb*	❑ *One side of local streets, both sides of arterials* ❑ *≥5' wide, located back-of-curb*	❑ *Both sides of all streets* ❑ *≥6' wide, separated from curb by ≥5' planting strip*	❑ *Both sides all streets, peds have priority* ❑ *≥8' wide, plus space for furnishings*
Pedestrian Amenities	❑ *None*	❑ *Benches at transit stops*	❑ *Transit shelters, frequent benches, trash receptacles, outdoor dining areas*	❑ *Frequent furnishings, sculpture, fountains, pedestrian lighting*
❸ *Land Use Characteristics:*	❑ *Single use, large parcels, large setbacks, large parking lots in front* ❑ *One-story buildings with blank walls*	❑ *Single use, moderate size parcels, moderate setbacks, small parking lots in front* ❑ *1 or 2-story buildings with infrequent doors/windows*	❑ *Limited mixed-use, smaller parcels, small setbacks, no parking lots in front* ❑ *2 to 4 stories with frequent doors/windows*	❑ *Mixed use, narrow deep parcels, build-to lines, no parking lots in front* ❑ *3 to 5 stories, with most frontage being windows*
Pedestrian Access	❑ *Landscape buffers and parking lots separate buildings from street*	❑ *Ped access provided every 250' through buffers and parking lots*	❑ *No landscape buffering required, building entrances accessible from sidewalks*	❑ *Direct, inviting and interesting views and access from sidewalks*

Pedestrian Tolerant

Transect

T1
T2
T3
T4
T5



Pedestrian Tolerant Sidewalks

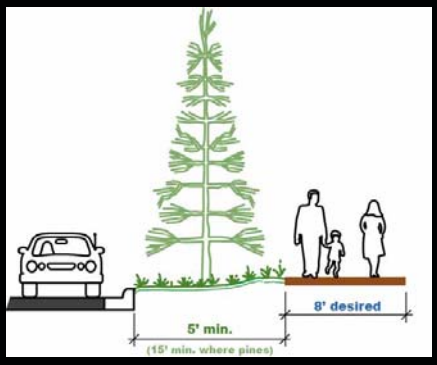
Key Design Criteria

- 5' min. walkway width.
- Sidewalks often attached to curb.
- Moderate volume and moderate speed roadways.
- Often single land use.
- 1:10 – 1:4 building height to width ratio.
- Pedestrian grid spacing <1/10 mile.
- Vehicles have priority over pedestrians.

Pedestrian Supportive Environments

Transect

T1
T2
T3
T4
T5



Pedestrian Supportive Sidewalks

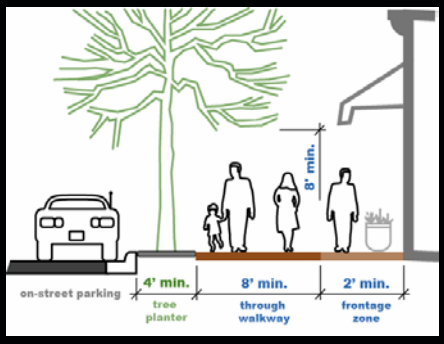
Key Design Criteria

- 6'-8' sidewalks.
- Walkways buffered from traffic by planting strip.
- Moderate volumes and slower traffic speeds.
- Limited mixed-use.
- 1:4 – 1:2 building height to width ratio.
- Pedestrian grid spacing at 250'-330'.

Pedestrian Places

Transect

T1
T2
T3
T4
T5



Pedestrian Place Sidewalks

Key Design Criteria

- 10'-30' sidewalks/plazas provide space for pedestrian amenities.
- Shade trees in tree wells.
- Low volume and slow speed streets.
- Mixed-use, with at least 3 complimentary activities.
- 1:4 – 1:1 max. building height to width ratio.
- Pedestrian grid spacing <250'.
- Pedestrians have priority over vehicles.

Pedestrian Districts

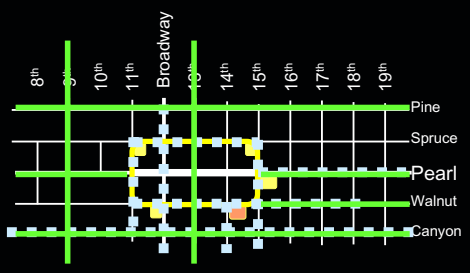
Implementation Strategy 2

Pedestrian Districts
(Where are the places?)

Pedestrian Districts

- People are drawn to the center
- The center will have an axis
- Walk range from the axis is limited
- Sources of pedestrians:
  - Parked cars
  - Nearby residential
  - Transit
  - Nearby lodging

Pearl Street Pedestrian Mall



- Pedestrian Mall
- Parking Structures
- Parking Structure with Transit
- Downtown Loop
- Transit Routes
- Bike Facilities


1500 PEARL
P


PUBLIC PARKING
FREE PARKING SAT. & SUN.
P
BOLT


P


NO
TRUCK
PARKING

Strategy 2. Pedestrian Districts

Boulder's pedestrian mall works because …

Strategy 2. Pedestrian Districts

… it is supported by a balanced multimodal transportation system

Strategy 2. Pedestrian Districts

The entire city is not going to be "pedestrian friendly"…

…addressing this problem requires setting priorities.

Successful TODs Must Be Pedestrian Districts

Connectivity Standards

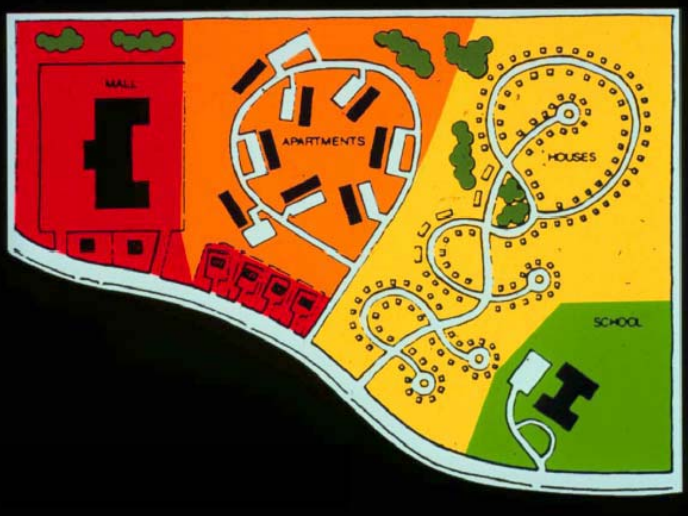
Implementation Strategy 3

Connectivity

(Why is it so hard to get anywhere?)

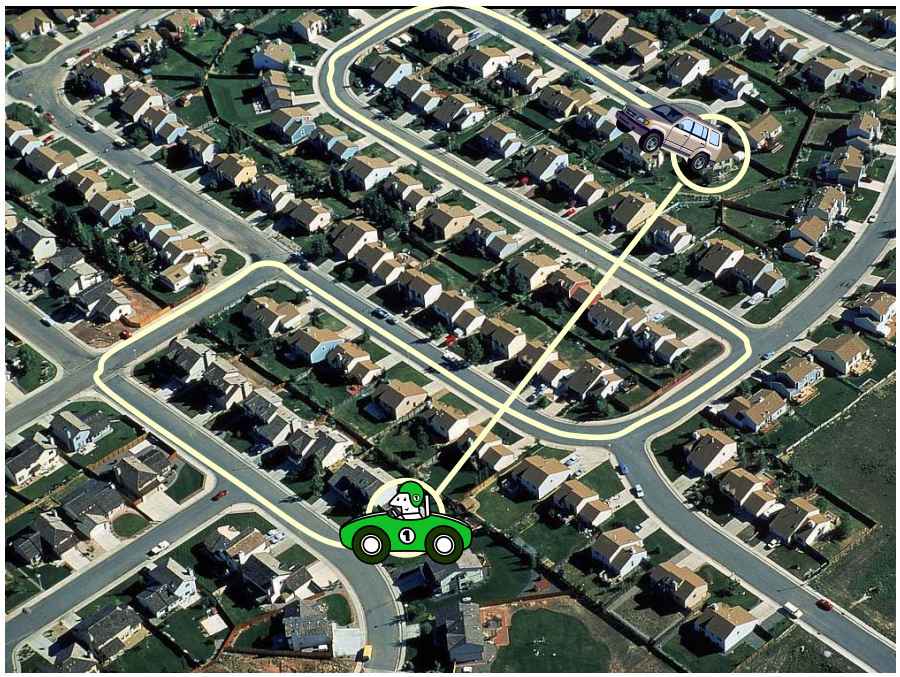
Strategy 3. Connectivity Standards

Conventional



Strategy 3. Connectivity Standards

Traditional

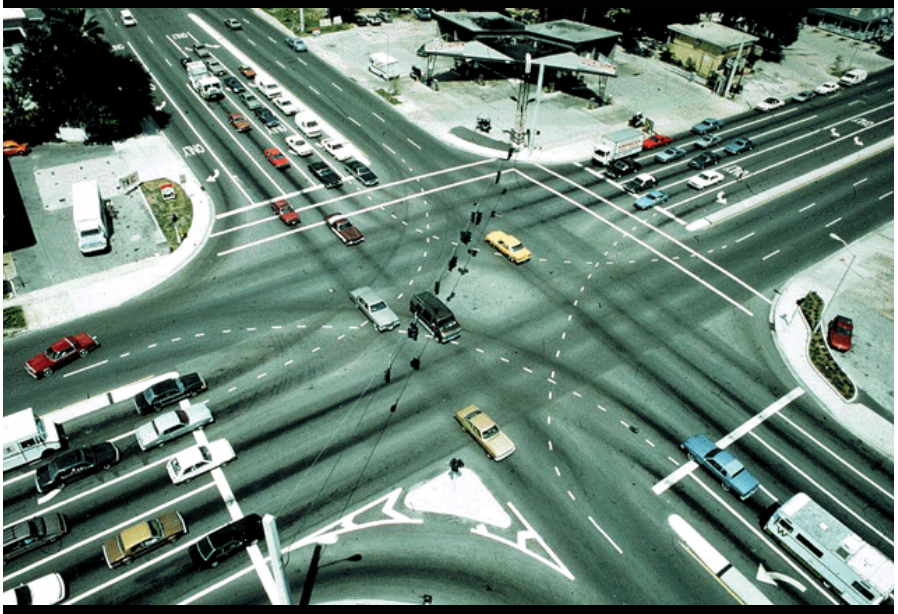


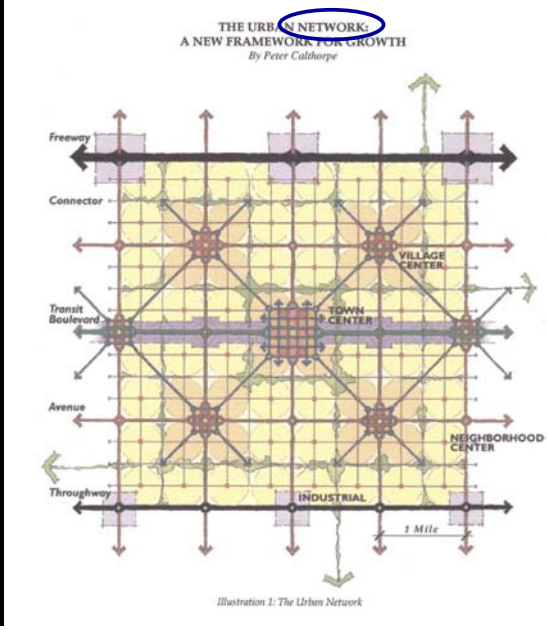
Mobility Impacts of Poor Connectivity

- Massive, congested arterials
- Increased VMT/household
- Transit voids
- Inactive living
- Poor emergency service access
- Reduced travel safety

To achieve a higher rate of traffic flow, you plan corridors

To achieve better mobility, you plan networks





Example

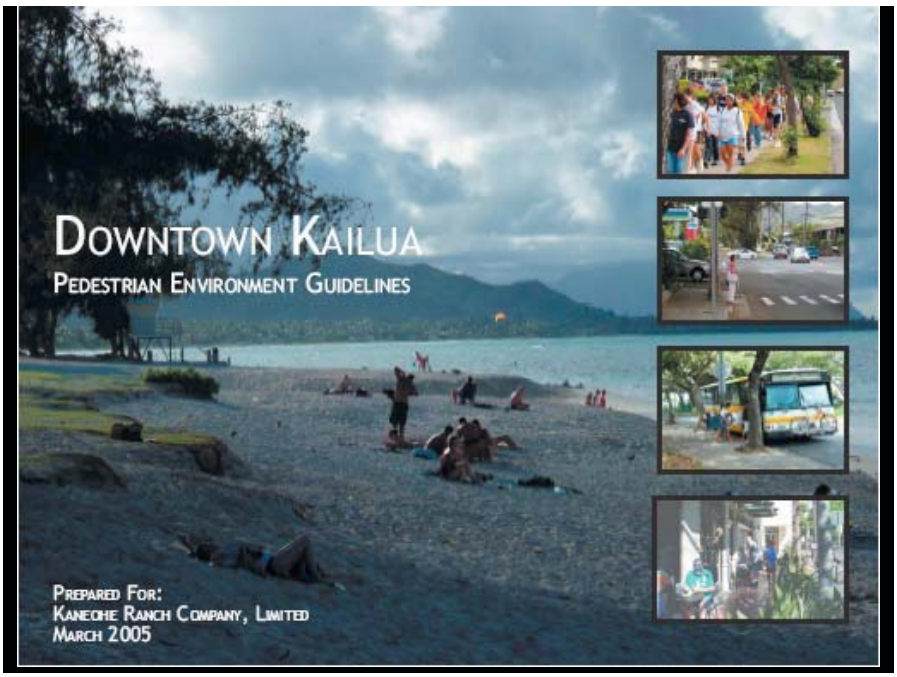
Street Network Standards

Street Type		Facility Spacing		Intersections & Blocks	
		Range	Optimal	Range	Optimal
Boulevard	Center Lanes	2,640' – 2 miles	5,280'	660' – 2,640'	1,320'
	Side Lanes			330' – 1,320'	660'
Avenue, Connector		660' – 2,640'	1,320'	220' - 528'	330'
Street & Drive		225' - 528'	330'	220' - 528'	220 - 330'

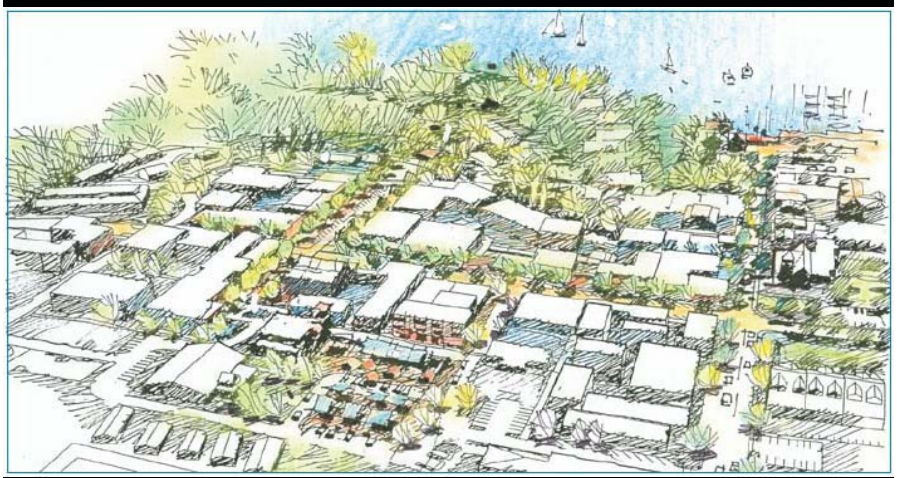
Example

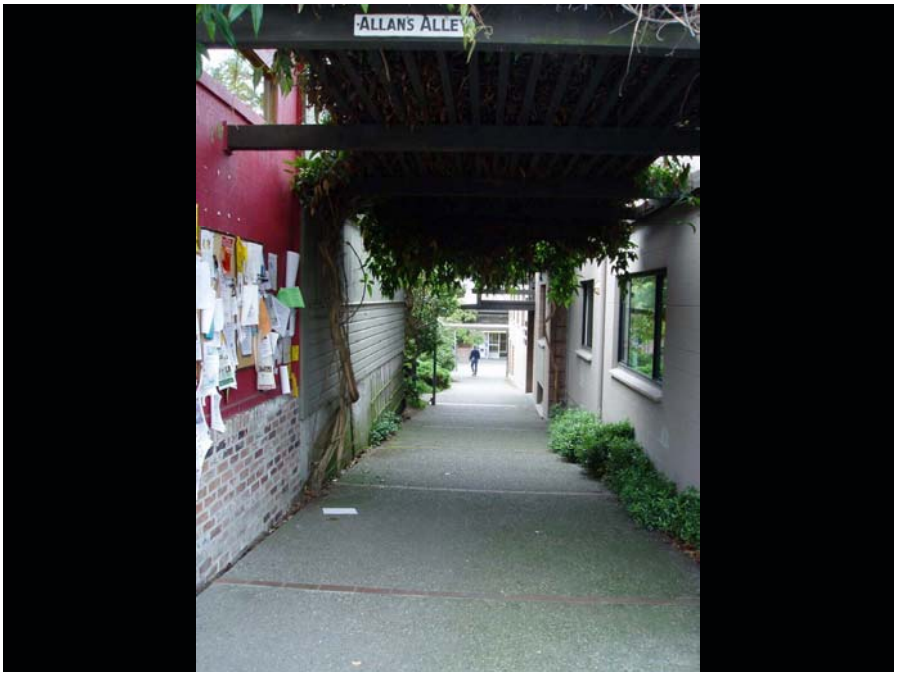
Connectivity Standards

Measure	Standard	Methodology
Minimum Connectivity	1.4	Links/Nodes – excl. perimeter links
Intersections/ Square Mile	250	Incl. perimeter intersections
Maximum Block Perimeter	1500'	Measured at R/W line
Block Length	Max 500'	Centerline to centerline
Proximity	65%	% of DUs within ¼ miles of village nodes
Resiliency	Max 10%	% of parcels inaccessible with one street blocked



Winslow (Bainbridge Island)





Preventing Street Bloat

Implementation Strategy 4

Preventing Street Bloat

(Why do the streets keep getting wider?)

Redmond, WA

Transportation Master Plan

Calculation of R/W Maximum for Ultimate Build Out

		Maximum Through Lanes	Median or Center Turn Lane	Intersection Turn Lanes	On-Street Parking	Sidewalks	Bicycle Lanes	Max. Mid-Block Curb-to-Curb Width	Max. Mid-Block R/W	Max Intersection R/W
Principal Arterial (4)	config	4	1	3	0	2	2			
	feet	48	12	36	0	26	8	71	97	133
Principal Arterial (2)	config	2	1	2	0	2	2			
	feet	24	12	24	0	26	8	47	73	97
Minor Arterial (4)	config	4	1	2	2	2	2			
	feet	48	12	24	14	26	8	85	111	135
Minor Arterial (2)	config	2	1	1	2	2	2			
	feet	24	12	12	14	26	8	61	87	99
Collector Arterial (4)	config	4	1	2	2	2	2			
	feet	48	12	24	14	26	8	85	111	135
Collector Arterial (2)	config	2	1	1	2	2	2			
	feet	24	12	12	14	26	8	61	87	99
Connector	config	2	0	1	2	2	0			
	feet	24	0	12	14	26	0	41	67	79
Local	config	2	0	0	2	2	0			
	feet	24	0	0	14	26	0	41	67	67

Lane Width	12	General purpose, turn lanes, and center median
Curb & Gutter	1.5	Outside of curb to inside of gutter pan
Parking Lane	7	
Sidewalks	13	Includes buffer
Bike Lanes	4	Exclusive of gutter pan

Strategy 4. Preventing Street Bloat

Redmond, WA

Transportation Master Plan

Classification	Maximum General Purpose Lanes	Maximum Mid-block Curb-to-Curb Width	Maximum Mid-block Right of Way	Maximum Intersection Right of Way
Principal Arterial (4)	4	71’	97’	133’
Principal Arterial (2)	2	47’	73’	97’
Minor Arterial (4)	4	85’	111’	135’
Minor Arterial (2)	2	61’	87’	99’
Collector Arterial (4)	4	85’	111’	135’
Collector Arterial (2)	2	61’	87’	99’
Connector Street	2	41’	67’	79’
Local Street	2	41’	67’	67’

Follow-Up Information

www.charlier.org