Implementation: Beyond Allocating Width

Is there room for Complete Streets?
Does current street classification enable Complete Streets?

Do we have to widen roads to fit everything?

There’s room: it needs to be recaptured

Does it fit within the available right-of-way?

Does it fit within the available right-of-way?

Conventional design: from the inside out

Don’t ask: “How much ROW do we need?” Ask:
“How much ROW do we have, what do we want, and how do we design it to fit?”
How much ROW for sidewalks & bike lanes?

Let’s start with a 28’ roadway & ditches in 80’ R.O.W.

80' row

28' roadway, 2 x 12' lanes *

* 24’ of traveled way = 30% of R.O.W.

How much ROW for sidewalks & bike lanes?

Let’s “add” bike lanes, sidewalks, and planter strips

80' row

28’ roadway, 2 x 12’ lanes

sidewalk 6’ b lane 2 x 12’ tr. lanes 6’ b lane sidewalk

Planted strip! Planted strip!

Everything fits, no problem...

80' row

28’ roadway, 2 x 12’ lanes

sidewalk 6’ b lane 2 x 12’ tr. lanes 6’ b lane sidewalk

Planted strip! Planted strip!

Now let’s add 2 more travel lanes and a CTL...

80' row

28’ roadway, 2 x 12’ lanes

sidewalk 6’ b lane 2 x 12’ tr. lanes 14’ CTL 2 x 12’ tr. lanes 6’ b lane sidewalk

No planter strip! No planter strip!

28’ roadway & ditches in 80’ ROW

24’ of traveled way = 30% of R.O.W.

* 62’ of traveled way = 77.5% of R.O.W.

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24’ of traveled way = 30% of R.O.W.
“Add” bike lanes, sidewalks, planting strip...

Everything fits, no problem!

Add 2 more travel lanes and CTL...

Uh-oh, who’s taking up most of the ROW?

62’ of traveled way = 77.5% of R.O.W.

New design: from the outside in

New design: from the outside in

Add up desirable elements, fit in ROW

Result: nice sidewalks, bike lanes, adequate travel lanes
Planning strategies to avoid overly wide streets

Land use
Street connectivity

Reducing travel demand is best achieved by changing Land Use policies that bring destinations closer together

The problem:
- Commercial activities concentrated in auto-dominated corridors.
- Segregated land uses
- Result: long travel distances, not conducive to walking

Potential Solutions:
- Allow small-scale retail in neighborhoods
- Create neighborhood parks
- Site smaller schools close to parks and residences

Connectivity creates a walkable, bikeable transit-oriented streets by
- Reducing distances;
- Offering more route choices on quiet local streets;
- Dispersing traffic: reducing reliance on arterials for all trips

Low connectivity → few but large streets
Should street width be based on classification?

Functional classification doesn't adequately describe the street's role in a community.

All 3 are “arterials” yet look, feel, and perform very differently.

Context-Based Streets: More Descriptive Terms

Main Street

Avenue

Boulevard

Parkway

Local Street

Pedestrian-Oriented

Land Uses and Street Designs

Auto-Oriented

Cross-section based on context

Cross-section based on context

Design for street types

Design criteria:
- Physical configuration
- Surrounding context

Dimensions for
- Sidewalk environment
- Street
- Intersections

Target speed (desirable operating speed)

Wide roads and motor vehicle LOS

Designing to LOS C or higher is waste of $$
- Allocate space for all users, accept resulting vehicle LOS

What about ped, bike and transit LOS?

Shorter ped crossing increases vehicular LOS at signals
Wide roads increase motor vehicle speed

Speed increases crash severity for all users

Over 35 MPH reduces roadway capacity

Speed Matters

High speeds lead to greater chance of serious injury and death

Speed increases for all users

Over 35 MPH reduces roadway capacity

Narrower Travel Lanes

10’ and 11’ lanes are safer than 12’ lanes on urban arterials with speeds under 45 MPH.

AASHTO Green Book allows narrower lanes:
- 9’ on local residential streets
- 10’ on low speed arterials & collectors
- 11’ for streets with trucks

Florida Greenbook allows for narrower lanes: 12’ but not less than 10’ except in TNDs where 9’ permitted on streets 20-25 mph.

"Relationship of Lane Width to Safety for Urban and Suburban Arterials": Study by Potts, Ranwood, and Richard

Reinventing a roadway:
Transform a 5-lane commercial strip to...

How to make room: Road Diets

Convert 4-Lane Road to 3-Lane and TWLTL
29% crash reduction

... a safer road for everyone, without adding R.O.W. How? Narrow travel lanes
Crash Reduction

Rear end

Crash Reduction

Side swipe

Crash Reduction

Left turn/broadside

Handles 20,000 ADT

Mission District, San Francisco
North-South ADT

Before

Reclaiming road space creates room for ped islands

Concept

Reclaiming road space creates room for ped islands
After Reclaiming road space creates room for ped islands

• Which road carries more traffic?
• Which road produces higher speed?
  • 4-lane: faster driver can pass others
  • 2-lane: slower driver sets speed
• Which road produces higher crash rate?
• Which is better for bicyclists? Pedestrians? Businesses?

This 5-lane Main Street was converted to...

Fewer travel lanes; added bike lanes; parallel to back-in diagonal parking on one side; new pavement

There’s potential on one-way streets too:
  Is this street operating at capacity?
This area was recaptured from a 4th travel lane; the street took on a whole new life

Will traffic volumes always increase?

Source: FHWA, Census Bureau, SSTI

Exercises

- Are there candidates for road diets in your area?
- How would the space be reallocated?
- Brainstorm ideas on how you’d like to classify roadways in your area