

Merge Lanes Ahead

/////// *Conserving energy through land use and transportation planning.* ///////

Street Design



ur communities' streets are where transportation and land use connect.

How streets are designed, built and used affects land use, transportation and, ultimately, energy consumption. Street design and layout also give our neighborhoods much of their character. Ironically, Rick Chellman, a New Hampshire traffic engineer, argues that "... some of the best-loved streets and those with the highest values (both for economics and livability) are streets that do not conform to current subdivision criteria." (Chellman 1995)

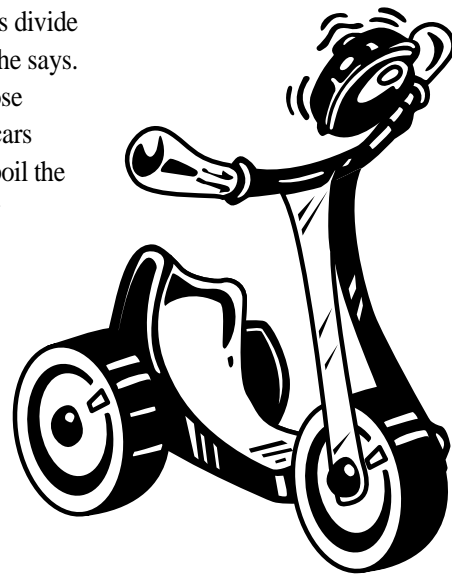
Historically, streets served many purposes. Besides providing a surface to drive on, streets also gave people a place to play, bicycle, walk,

meet and talk to neighbors, and park cars. But since the suburban boom following World War II, streets have become increasingly devoted to only one purpose: moving traffic. John Fernandez, a Boulder, Colorado planner, suggests that Boulder has a problem shared by many other cities across the U.S.

"Too many of its streets divide rather than integrate," he says.

"They are single-purpose arteries, emphasizing cars over people. They despoil the environment with their expansive, impervious surfaces. They encourage speeding. And they support faceless suburban development patterns guaranteed to worsen traffic congestion."

(Fernandez 1994)



Why did streets become unfriendly?

Probably the most important reasons were standards set by the Federal Housing Administration (FHA) and the American Association of State Highway Officials (AASHO) as early as the 1930s. Because the FHA insured home mortgages, it could dictate how subdivisions were laid out. Some of the standards found in its 1936 *Bulletin on Planning Neighborhoods for Small Houses* said:

- layout should discourage through traffic;
- cul-de-sacs are the most attractive layout for family dwellings; and
- residential streets should be at least 50 feet

This fact sheet is one of a series examining the relationships between transportation, land use and energy.

Other topics include:

Fact Sheet 2..... Transportation and energy consumption

Fact Sheet 3..... Traffic congestion

Fact Sheet 4..... Street design

Fact Sheet 5..... Land use and transportation

Fact Sheet 6..... Economics of driving your car

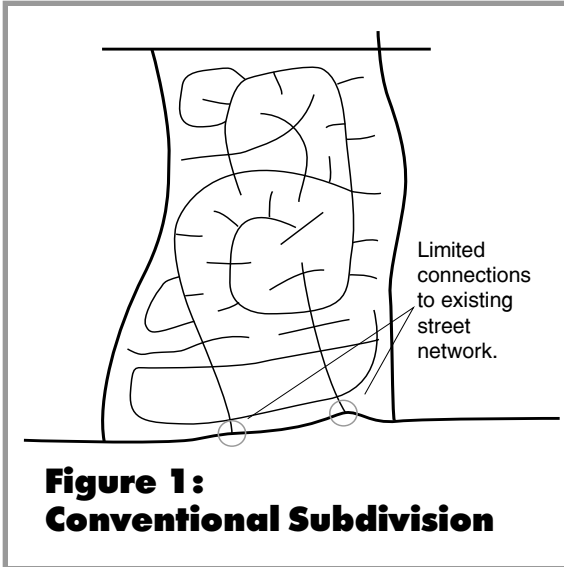
Fact Sheet 7..... Reducing automobile travel

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wide (24 feet of pavement, an eight-foot planting strip and two four-foot sidewalks.)



**Figure 1:
Conventional Subdivision**

constructed for evacuation during an emergency and the subsequent influx of heavy equipment to clear demolished neighborhoods is a street that will not be especially walkable or even comfortable for drivers unless they happen to be at the helm of a tank or front-end loader.”

The motivations that led to these standards have changed over the past 50 to 60 years, yet the standards themselves are still used to make many

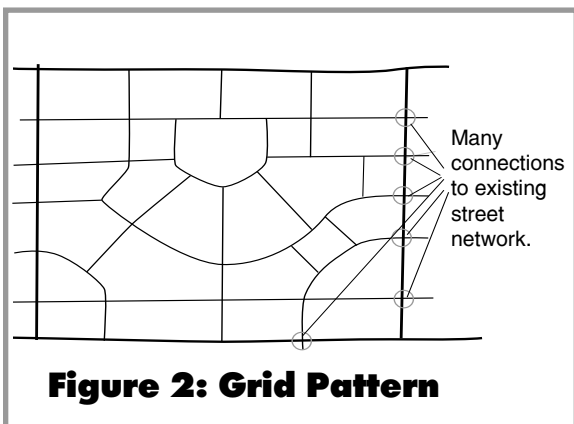


Figure 2: Grid Pattern

The AASHO also helped set street design standards following World War II. One of the organization’s main criteria to set street-width standards was how long it would take to evacuate (and then clean up) cities in the event of a nuclear war. Chellman (1995) argues that “...it should be obvious that any street

decisions about street design. It’s clear that many streets are designed with little thought about how the standards were established or whether they still apply.

Improving Street Design

How can we make streets more livable? Communities have come up with a number of innovative ways. Some change the way new subdivisions are laid out while others change existing street networks. Here’s a sample:

Street Networks

The street network used by most developers is a single entrance subdivision with cul-de-sacs. This “pod/single-use subdivision” has the advantage of reducing through traffic for those living on the cul-de-sacs, but increases traffic on the collector streets. (See Figure 1.) It also tends to overload the main street, because residents can’t get to nearby services without leaving the subdivision and using the highway.

An alternative to the pod is the grid network which was popular before World War II. (See Figure 2). This pattern distributes trips throughout the neighborhood. While traffic levels on the average streets are higher, so is mobility. Residents can get to nearby services without leaving the subdivision. The grid also helps increase walking and bicycling because residents can reach locations they couldn’t in a pod/cul-de-sac subdivision.

Calming Traffic

While the grid has advantages over the pod system, it can increase traffic speed. To reduce speed, grids can integrate “traffic calming” elements into the street design. Some of the more common techniques are:

Traffic circles. While the use of traffic calming devices is more prevalent in Europe and Australia than the U.S., one method commonly used in the northeast U.S. during the early part of the century was the roundabout, or traffic circle. Today, roundabouts are being rediscovered because of their many advantages over traffic signals. The traffic circle is most useful for situations where the traffic on both intersecting streets is about the same. If properly designed, a traffic circle will slow traffic to less than 12 mph. Michael Wallwork, a Jacksonville

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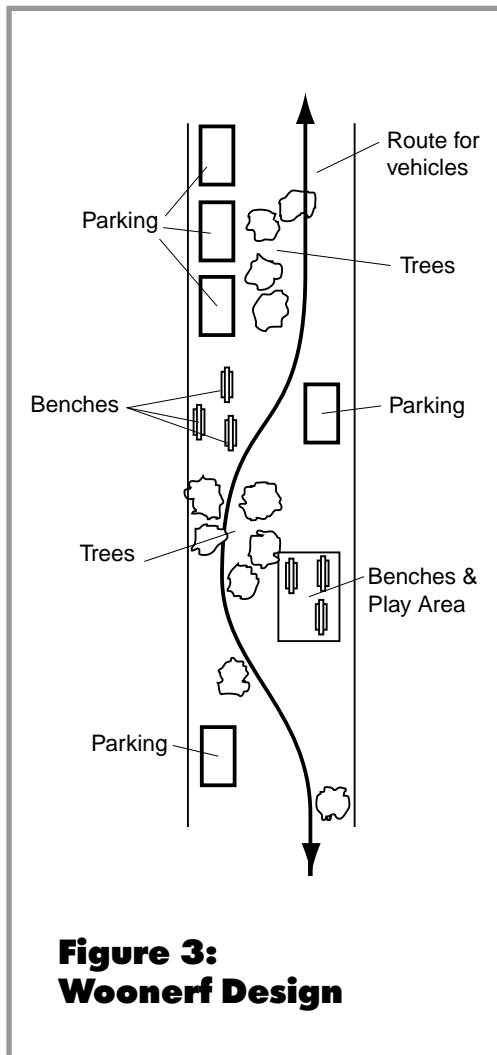
We need to redirect our efforts away from providing everything drivers need to taming our automobiles and returning pedestrians and cyclists to our streets.

traffic engineer, argues that traffic circles are the safest form of traffic control – they have 50 to 90 percent fewer accidents than any other type. Roundabouts also create much less delay and pollution than other traffic control devices, have a higher vehicle capacity, and need almost no maintenance.

Woonerfs. Another traffic calming device is the “woonerf.” Also known as the “living yard,” woonerfs were pioneered by the Dutch in the mid 1970s. Intended to extend a neighborhood’s living space by reclaiming part of the street, a woonerf is a street designed to support walking, play and local traffic. (See Figure 3.) This device works well on streets that handle local traffic – it does not work on streets with high traffic volumes and speeds. While woonerf streets are more expensive to build and maintain, the Dutch government has found that property values are 10 to 15 percent higher on woonerf streets than on ordinary streets, and that homeowners are more inclined to invest in their houses (Pharaoh 1991.) In fact, the woonerf concept has been so successful the Dutch government has adopted the idea as official national policy.

Revamping Residential Street Design

Boulder, Colorado is an excellent example of a community that is attempting to rewrite its rules and regulations about street design. The city has embarked on a plan to change and expand the



**Figure 3:
Woonerf Design**

number of street types, replacing the “one size fits all” street standard with four additional classifications. Boulder planners believe that streets should be designed to suit their functions. Many subdivisions don’t need residential streets with 48-foot rights-of-way – instead they need a range of street types to serve different functions. Planners also believe that streets should serve not only drivers, but all members of the community. They should include sidewalks and bicycle paths for those who cannot or choose not to drive. (It’s estimated that only about 50 percent

of Florida's population can drive.)

Access and Liability

When any mention is made of reducing street widths, it generally raises the issues of emergency vehicle access and liability. On the issue of liability, Walter Kulash, an Orlando traffic engineer, argues that "legal obstacles to narrow streets are a red herring" (Fernandez 1994.) He suggests that most litigation involving streets has to do with high speeds – not street width.

With respect to emergency vehicles, particularly fire trucks, most concerns are allayed by testing different size fire trucks on varying width streets.

What you can do

How our communities' streets are designed, built and used has a tremendous impact on how much we use our cars. The next time your community considers approving a subdivision, look at the layout of its streets. Do they encourage walking, bicycling, and friendly neighbors, or are they designed only for cars? As Michael Wallwork, a Jacksonville-based traffic consultant, says, "Why should drivers be provided with unlimited mobility and non-drivers be given nothing but harsh, unsafe environments?"

We need to redirect our efforts away from providing everything drivers need to taming our automobiles and returning pedestrians and cyclists to our streets. After all, about half of Florida's population is either too young, too old, or not physically able to drive. There are a number of ways streets can be made more livable for the entire population. Moving these

ideas from the drawing board to reality will require a cooperative effort of citizens, planners and traffic engineers.

If you are interested in promoting changes to your community's street design standards, you should talk to officials in cities that have already

implemented some of these ideas. The Florida cities that have done the most to calm traffic through street design are Tampa, Naples and Gainesville. Cities that have implemented roundabouts include: Naples, Boca Raton, Bradenton Beach, Tampa, Gainesville, Tallahassee and Mary Ester. Decision-makers and traffic planners in these communities can tell you how these alternatives were implemented and how well they are working.

References/Resources

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