Roll Call: Council

Pledge of Allegiance led by Mayor Pro Tem Felipe Martinez
Invocation

ORAL COMMUNICATIONS

SCHEDULED MATTER
1. Study Session on General Plan Circulation Policy Concepts
   Re: Consideration and discussion on the draft set of Goals and Policy Initiatives to guide the
development of the future circulation system for the community.

ORAL COMMUNICATIONS

ADJOURNMENT to the Council Meeting of June 19, 2007.

In compliance with the Americans with Disabilities Act and the California Ralph M. Brown Act, if
you need special assistance to participate in this meeting, or to be able to access this agenda and
documents in the agenda packet, please contact the Deputy City Clerk at (559) 782-7464. Notification 48 hours prior to the meeting will enable the City to make reasonable arrangements to ensure accessibility to this meeting and/or provision of an appropriate alternative format of the
agenda and documents in the agenda packet.
CITY COUNCIL AGENDA: JUNE 11, 2007

SUBJECT: STUDY SESSION ON GENERAL PLAN UPDATE CIRCULATION POLICY CONCEPTS

SOURCE: COMMUNITY DEVELOPMENT DEPARTMENT – PLANNING DIVISION

BACKGROUND:

On June 5, 2007, the City Council set a study session to discuss the proposed General Plan Circulation Policies. Staff recommended that the Council hold a study session on the draft policies since some of them may be considered to be a departure from the City’s current policies. It is important to confirm consensus with the general nature of the policies as they represent a major feature in the General Plan. Fine-tuning of the policies can be done as the General Plan Update effort progresses. This effort is intended to look at the big picture.

Attached for reference and discussion is a draft set of Goals and Policy Initiatives that will guide the development of the future circulation system for the community. Basic circulation principles introduced in the Goals and Policies are as follows:

- Provide for a multi-modal mix of transportation opportunities that include guiding policies for automobiles, trucking and goods movement, bicycles, pedestrians, and the airport. (For example, the proposed street cross-sections provide for vehicular travel lanes, bicycle lanes and pedestrian walkways separated from vehicular travel lanes by landscaped parkways.)

- Provide for a distribution of traffic that allows for reducing massive street widths.

- Distribute traffic via multiple access points to arterials and collectors rather than channeling the traffic through fewer connections which reduces/eliminates bottlenecks.

- Consider alternative orientation of new residential development adjacent to arterials and collector streets.

- Limit the number of cul-de-sacs that may be included in new subdivisions.

- Use traffic calming measures in new developments including narrower streets, bulb-outs, and signage.

- Establish guiding policies for implementation of an expanded transit system.

- Incorporate Transportation Demand Management (TDM) Strategies into new developments.

DD Appro/Funded CM Item No.
- Enhance the landscaping requirement in new parking lots and direct new parking lots away from the street (parking lots not divide building from street).

- Promote the intensification of the airport through new policy initiatives.

Staff has highlighted a number of Goals and Policies in Attachment 1 that address these concepts. In addition, there are exhibits of cross-sections that represent the proposed street design hierarchy, and attached documentation regarding the safety aspects of narrower streets “Skinny Streets”. At the meeting, Staff will provide a photographic presentation of examples of the street concepts.

RECOMMENDATION: Staff recommends that the City Council consider the information presented and provide input to staff on the development of the Goals and Policies of the General Plan.

Attachment: 1. Draft Circulation Goals and Policy Initiatives
2. Draft Street Cross-sections and other Street Standards
3. Article on Narrow Streets Database
4. Bigger Roads Less Safe
4 CIRCULATION

4.1 CIRCULATION SYSTEM

GOALS

4.1-G-1 Promote safe and efficient vehicular circulation.

4.1-G-2 Promote street design for multi-modal transportation including transit use, biking and walking.

4.1-G-3 Make efficient use of existing transportation facilities and, through coordinated land use planning, strive to improve accessibility to shops, schools, parks and employment centers and reduce total vehicle miles traveled per household to, minimize vehicle emissions and save energy.

4.1-G-4 Protect neighborhoods by discouraging through-traffic on local streets.

4.1-G-5 Improve the scenic character of transportation corridors in the City.

4.1-G-6 Maintain acceptable levels of service and ensure that future development and the circulation system are in balance.

4.1-G-7 Ensure that new development pays its fair share of the costs of transportation facilities.

IMPLEMENTATION POLICIES

4.1-I-1 Adopt street standards that provide flexibility in design, especially in residential neighborhoods. Revise right of way and pavement standards to reflect adjacent land use and/or anticipated traffic, and permit reduced right of way dimensions where necessary to maintain neighborhood character.

See Street Section illustrations

4.1-I-2 Require all new developments to provide right-of-way and improvements consistent with the General Plan street designations and City street section standards.

4.2-I-3 Provide for greater street connectivity by:

• Incorporating in subdivision regulations requirements for a minimum number of access points to existing local or collector streets for each development (e.g. at least two access points for every 10 or 15 acres of development).
• Limit dead-end streets by requiring that cul-de-sacs be no more than 20 percent of the total length of local residential streets in a subdivision.
• Encourage roundabouts over signals, where feasible and appropriate.
• Requiring bicycle and pedestrian connections from cul-de-sacs to nearby public areas and main streets; and
• Requiring new residential communities on undeveloped land planned for urban uses to provide stubs for future connections to the edge of the property line. Where stubs exist on adjacent properties, new streets within the development should connect to these stubs.

4.1-I-4 Develop a multi-modal transit system map integrating bicycle, public transportation, pedestrian and vehicle linkages within the City to ensure circulation gaps are being met.

4.1-I-5 Install traffic calming devices, such as signage and bulbs, as needed and appropriate in existing neighborhoods.

4.1-I-6 Require the installation of landscaping in center medians and at major intersections to minimize summer heat and enhance the character of the streetscapes.

4.1-I-7 Require street tree planting as part of an urban forestry program.

See Biological Resources section of Chapter 6: Open Space & Conservation for suggested urban forestry program policies.

4.1-I-8 Require new development to dedicate and improve a frontage street to provide ingress to and egress when any lot fronts or sides on any arterial street, expressway or freeway unless alternative access is available or providing a frontage road is infeasible.

Existing frontage roads in adjacent subdivisions should be continued into the proposed subdivision whenever possible, with the same cross-section.

4.1-I-9 Develop and manage the roadway system to obtain LOS D or better during the peak hour for all major roadways and intersections in the City. This policy does not extend to residential streets (i.e., streets with direct driveway access to homes) or state highways and their intersections, where Caltrans policies apply. Exceptions to LOS D policy may be allowed by the City Council in areas, such as downtown and at highway interchanges, where allowing a lower LOS would result in clear public benefits.
No new development will be approved unless it can be shown that required level of service can be maintained on the affected roadways or there are specific benefits that justify accepting lower level of service.

4.1-I-10 Develop and manage local residential streets (i.e., streets with direct driveway access to homes) to limit average daily vehicle traffic volumes to 2,500 or less and 85th percentile speeds to 25 miles per hour or less.

4.1-I-11 Require traffic impact studies for all General Plan amendments that will generate more than 100 peak hour trips.

Exceptions may be granted where traffic studies have been completed for adjacent development. The City's new traffic model developed for the 2030 General Plan will facilitate this analysis.

4.1-I-12 Establish and implement additional programs to maintain adequate levels of service at intersections and along roadway segments as circumstances warrant, including the following actions:

- Collect and analyze traffic volume data on a regular basis and monitor current intersection and roadway segment levels of service on a regular basis. Use this information to update and refine the City's travel forecasting model so that estimates of future conditions are more strongly based upon local travel behavior and trends.
- Consider, on a case by case basis, how to shift travel demand away from the peak period, especially in those situations where peak traffic problems result from a few major generators (e.g. major new retail development in the highway corridors).
- Perform periodic evaluation of the efficiency of the urban street traffic control system, with emphasis on traffic signal timing, phasing and coordination to optimize traffic flow along arterial corridors. Use traffic control systems to balance arterial street utilization (e.g., timing and phasing for turn movements, peak period and off-peak signal timing plans).

4.1-I-13 Continue to require that new development pays a fair share of the costs of street and other traffic and local transportation improvements based on traffic generated and impacts on traffic service levels.

4.1-I-14 Use city-wide traffic impact fees to provide additional funding for transportation improvements needed to serve new development.

4.1-I-15 Require new development that will have an impact on regional transportation facilities to pay a regional transportation impact fee.
A two-tier system will generate funds not only for the City street system but also for any needed improvements to the State highway facilities that are needed to serve new development. These fees would be set on a "fair share" basis.

4.1-I-16 Work with Caltrans on providing interchange improvements and access to Airport from the State highway system, at a location(s) that will minimize environmental impacts, consistent with State design criteria.

4.1-I-17 Coordinate City Transportation Demand Management programs with other public and private agencies, including programs developed by the Tulare County Association of Governments and the SJVAPCD.

4.1-I-18 Include entry roads to the Lake Success Planning Area that relates well in terms of scale to the surrounding area and SR 190.

4.1-I-19 Make all streets and alleys in the Lake Success Planning Area connect to other streets and alleys to form a continuous vehicular and pedestrian network. Local, internal streets should be narrow and designed with traffic calming features to control speed.

4.2 PUBLIC TRANSIT

4.2-G-1 Promote the use of public transit for daily trips to schools, work and other purposes.

4.2-I-1 Situate transit stops and hubs at locations that are convenient for transit users, and promote increased transit ridership through the provision of shelters, benches, bike racks on buses, and other amenities.

4.2-I-2 Ensure that new development is designed to make transit a viable choice for residents. Design options include:

- Have neighborhood focal points with sheltered bus stops;
- Locate medium-high density development whenever feasible near streets served by transit; and
- Link neighborhoods to bus stops by continuous sidewalks or pedestrian paths.

4.2-I-3 Ensure that public transit service is expanded to provide service to neighborhood centers, new employment, education and recreation uses proposed in the southwest portion of the Planning Area.
4.3 BICYCLES, TRAILS & PEDESTRIAN CIRCULATION

4.3-G-1 Promote the use of bicycles to alleviate vehicle traffic and improve public health.

4.3-G-2 Promote pedestrian activity.

4.3-G-3 Link parks, schools, Downtown, major employment centers, transit facilities and neighborhoods together by a system of trails, bike paths, and/or open space corridors.

*The trails will provide a landscaped, signed environment and safe connections to destination points, using crosswalks, planting buffers, and signal pre-emption as necessary.*

4.3-I-1 Establish bicycle lanes, bike routes and bike paths consistent with the General Plan.

4.3-I-2 Continue to develop existing trails and linkages and create new trails where feasible, such as the Rails-to-Trails path and the Tule River Parkway.

4.3-I-3 Amend the Zoning Ordinance to require bicycle facilities at large commercial and industrial employer sites.

4.3-I-4 Increase bicycle safety by:

- Sweeping and repairing bicycle lanes and paths on a regular basis;
- Ensuring that bikeways are delineated and signed in accordance with Caltrans standards, and lighting is provided, where needed;
- Providing bicycle paths or lanes on bridges and overpasses;
- Ensuring that all new and improved streets have bicycle-safe drainage grates and are free of hazards such as uneven pavement and gravel;
- Providing adequate signage and markings warning vehicular traffic of the existence of merging or crossing bicycle traffic where bike routes and paths make transitions into or across roadways; and
- Working with the school districts to promote classes on bicycle safety in the schools.

4.3-I-5 Give bikes equal treatment in terms of provisions for safety and comfort on arterials and collectors as motor vehicles.
4.3-I-6 Develop a series of continuous walkways within new office parks, commercial districts, and residential neighborhoods so they connect to one another.

4.3-I-7 Provide for pedestrian-friendly zones in conjunction with the development, redevelopment, and design of mixed-use neighborhood core areas, the Downtown area, schools, parks, and other high use areas by:

- Providing intersection "bump outs" to reduce walking distances across streets in the Downtown and other high use areas;
- Providing pedestrian facilities at all signalized intersections;
- Providing sidewalks of adequate width to encourage pedestrian use; and
- Constructing adequately lit and safe access through subdivision sites.

4.3-I-8 Establish specific standards for pedestrian facilities to be accessible to physically disabled persons, and ensure that roadway improvement projects address mobility or accessibility for bicyclists or pedestrians.

4.3-I-9 Amend the Zoning ordinance to include standards for pedestrian circulation in all new development, including patterned concrete sidewalks, pedestrian-scale lighting, and tree canopy shading for walkways.

4.3-I-10 Provide new bike paths, lanes, and bridges as appropriate for new employment uses located in the southwest portion of the Planning Area.

4.4 PARKING

4.4-G-1 Foster practical parking solutions.

4.4-I-1 Ensure that downtown commercial businesses have adequate parking facilities; consider the need for the construction of a new parking structure for public convenience and to promote economic development.

4.4-I-2 Amend the Zoning ordinance to allow shared parking for mixed-uses where peak parking demands do not overlap.

4.4-I-3 Amend the City’s Parking Design Standards to promote multiple benefits, including shared parking for mixed-use projects, passive solar on parking structures to generate energy for parking lot lighting, and pervious parking paving to improve groundwater recharge.
4.4-I-4 Require all new parking lots include tree plantings designed to result in 50 percent shading of parking lot surface areas in less than 10 years.

4.4-I-5 Direct new parking lots to be placed behind or beside commercial development and other design features which will limit the impact the lot has on urban form.

4.5 TRUCK ROUTES

4.5-G-1 Improve commercial goods movement.

4.5-I-1 Designate specific truck routes to provide for movement of goods throughout the City, ensure that adequate pavement depth, lane widths, and turn radii are maintained on the designated truck routes, and prohibit commercial trucks from non-truck routes except for deliveries.

*These routes should avoid residential neighborhoods.*

4.5-I-2 Maintain design standards for industrial streets that incorporate heavier loads associated with truck operations and larger turning radii to facilitate truck movements.

4.5-I-3 Continue to ensure adequate truck access to off-street loading areas in commercial areas.

4.5-I-4 Encourage regional freight movement on freeways and other appropriate routes; evaluate and implement vehicle weight limits as appropriate on arterial, collector, and local roadways to mitigate truck traffic impacts in the community.

4.5-I-5 Designate truck and tractor vehicle overnight parking at key freeway-oriented locations to avoid truck parking in residential neighborhoods.

4.6 AVIATION

4.6-G-1 Expand airport facilities that will build the airport community and promote visiting aviation users.

4.6-G-2 The City shall maintain competitive fuel sales for airport users.

4.6-G-3 Increase the availability of City owned aircraft canopy and hangar facilities to facilitate the commercial stability of the Porterville Airport.
4.6-G-4 Promote the Porterville Airport to meet increasing business activity and industrial goods movement demand.

4.6-I-1 Develop an action plan for planned improvements in the 2006 Airport Layout Plan.

4.6-I-2 Work with Tulare County Airport Land Use Commission on airport land use compatibility planning.

4.6-I-3 Adopt an overlay zoning for the airport environs consistent with the County's Airport Land Use Compatibility Plan and the General Plan.

4.6-I-4 Expand federal and State aviation based users at the Porterville Airport.

4.6-I-5 Expand within the City's Economic Development program the recruitment and retention of Fixed Base Operator's at the Porterville Airport.

4.6-I-6 Coordinate Airport access improvements with planned visitor-serving, governmental, utility, commercial and industrial development on Airport lands and in the Airport environs to minimize traffic conflicts and promote efficient use of these facilities.

4.7 RAIL

4.7-G-1 Protect the City's rail corridor as an economic asset.

In the future, this corridor could also be used for heavy- or light-rail transit purposes.

4.7-I-1 Evaluate and where necessary upgrade pedestrian, bicycle, and automobile at-grade railroad crossings meet California Public Utilities Commission standards for increased traffic volumes and safety.
PORTERVILLE GENERAL PLAN PROPOSED STREET STANDARDS

Dyett & Bhatia, June 6, 2007

Table 1 states the required elements and typical widths for each street classification. All street designs are subject to review and approval by the Public Works Department and additional local street cross-sections may be approved with area plans, development projects or subdivisions to reflect specific design concepts. These sections assume 11-foot travel lanes.
<table>
<thead>
<tr>
<th>Street Classification</th>
<th>Right-of-Way Width</th>
<th>Curb-to-Curb Width</th>
<th>Travel Lanes: Number</th>
<th>Parking Lanes: Number</th>
<th>Bicycle Lanes: (each side)</th>
<th>Median Strip</th>
<th>Planter Strip (each side)</th>
<th>Sidewalks (each side)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Arterial</td>
<td>104-108</td>
<td>84</td>
<td>4</td>
<td>2</td>
<td>6 .</td>
<td>14</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Minor Arterial</td>
<td>84</td>
<td>62</td>
<td>2</td>
<td>2</td>
<td>6 .</td>
<td>14</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Collector: with median and without on-street parking</td>
<td>65</td>
<td>44</td>
<td>2</td>
<td>None</td>
<td>5</td>
<td>12</td>
<td>5.5</td>
<td>5</td>
</tr>
<tr>
<td>Collector: without on-street parking</td>
<td>53</td>
<td>32</td>
<td>2</td>
<td>None</td>
<td>5</td>
<td>None</td>
<td>5.5</td>
<td>5</td>
</tr>
<tr>
<td>Collector: with on-street parking</td>
<td>67</td>
<td>46</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>None</td>
<td>5.5</td>
<td>5</td>
</tr>
<tr>
<td>Local Commercial Street</td>
<td>60</td>
<td>38</td>
<td>2</td>
<td>2</td>
<td>None</td>
<td>None</td>
<td>12 combined width of sidewalks and planter strip.</td>
<td></td>
</tr>
<tr>
<td>Local Residential Street</td>
<td>47</td>
<td>30</td>
<td>Parking lanes on each side, and one shared central travel lane.</td>
<td>None</td>
<td>None</td>
<td>4.5</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Cul-de-sac or Other Dead-End Street Serving Less than 10 Homes</td>
<td>47</td>
<td>30 - 41</td>
<td>2</td>
<td>2</td>
<td>None</td>
<td>5 , as alternative to planter strip</td>
<td>4.5 , or option to substitute median strip (see 2.2-F below)</td>
<td>4</td>
</tr>
</tbody>
</table>
Additional Street Standards

1.1-B: Planter Strip Alternatives for Small-lot Developments.

1. For small-lot subdivisions (with an average lot size of 6,000 square feet or less), the planter strip for a local street may be omitted if:

   a. A five-foot sidewalk is provided on both sides of the street and trees are provided in the front yards of private lots parallel with the sidewalk at the minimum frequency required for street trees; and/or

   b. Street trees are provided in landscaped bulb-outs into the parking lane at intersections.

2. Alternatively, where a planter strip is provided along a local street, the front setback for buildings may be reduced an additional two feet from the normally required setback.

1.1-C: Alternatives to Parking Lane—Small-lot Developments. Parking may be provided on only one side of a street if a non-parallel configuration is utilized that allows for more spaces on the other side of the street than would normally be accommodated.
1.1-D: **Planter Strip Alternatives for Cul-de-sacs and Other Dead-End Streets:** Planter strips can be omitted along a dead-end street that serves less than 10 residential lots if a minimum five-foot wide landscape median is located within the roadway for a minimum of 50 percent of the street length.

1.1-E: **Private Streets.** Public streets shall be utilized wherever possible. Where private streets are included, they must meet all City.

1.1-F: **Curbs.** Curbs shall be vertical curbs, not "rolled" curbs.

1.1-A: **Alleys.** Table 2 show typical components and widths for alleys.

<table>
<thead>
<tr>
<th>TABLE 2: ALLEY STANDARDS</th>
<th>ROW Width</th>
<th>Travel Lane Width</th>
<th>Minimum Curb Radius</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alley: One-way</td>
<td>12 ft.</td>
<td>11 ft.</td>
<td>10 ft.</td>
</tr>
<tr>
<td>Alley: Two-way or Commercial/Mixed-Use Alley</td>
<td>19 ft.</td>
<td>18 ft.</td>
<td>10 ft.</td>
</tr>
</tbody>
</table>

1. One-foot difference between minimum right-of-way and minimum curb-to-curb width for an alley is to provide for a six-inch curb on each side of the alley.
FIGURE 1: MAJOR ARTERIAL (4 LANES)

FIGURE 2: MINOR ARTERIAL (2 LANES)
Figure 1: Residential Street

Figure 2: Local Commercial Street
NARROW STREETS DATABASE

This survey was assembled in 1997 by Alan B. Cohen under the auspices of the Transportation Task Force of the Congress for the New Urbanism. There are no plans at this time to keep the contact information current. For those desiring additional information it is recommended that you contact the cities/ counties directly.

This database includes communities that have recently adopted reduced width street standards. Prior to WWII, the traditional neighborhood street was in the range of 28'-30' wide with corner radius of 5'-10'. Since that time, the typical local street has grown to a width of 36' with a corner radius of 25'. The wider street was intended to move traffic more quickly and efficiently. It has. Unfortunately, faster traffic and increased amounts of asphalt have diminished the quality of our neighborhoods.

Over the past ten years a grassroots effort has occurred across the country. Citizens are insisting on having a voice in the decision making process along with public works officials, traffic engineers and fire officials. They are demanding more livable street design that account for all constituents of the road system, not just cars and emergency vehicles. In many cases, this is resulting in new narrow street standards.

Below you will find a list of communities that have adopted narrow street standards with a brief description of the standard(s) and a contact person.

Keep in mind the contact were made in 1997 and may no longer be valid, however a few phone calls should put you in touch with someone that can provide local details.

<table>
<thead>
<tr>
<th>State</th>
<th>Jurisdiction</th>
<th>Contact</th>
<th>Phone#</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arizona</td>
<td>Phoenix, City of</td>
<td>Jim Slayer Transit Planner</td>
<td>602-262-6284</td>
<td>28' - prkg both sides</td>
</tr>
</tbody>
</table>

http://www.sonic.net/abcaia/narrow.htm
<table>
<thead>
<tr>
<th>State</th>
<th>City</th>
<th>Name</th>
<th>Phone</th>
<th>Notes</th>
</tr>
</thead>
</table>
| California | Santa Rosa, City of | Anthony Cabrera City Engineer. | 707-543-3209 | 30' - prkg both sides, <1000 ADT  
26' - 28' - prkg one side  
20' - no prkg  
20' neck downs @ intersections |
| Palmdale, City of | | Tom Horne Traf/Trans. Eng. | 805-267-5300 | 28' - prkg both sides |
| San Jose, City of | | David Tymn | 408-277-4576 | 30' - prkg both sides, <21 DU, 415'  
34' - prkg both sides, <121 DU |
| Novato, City of | | | | 24' - prkg both sides, 2-4 DU  
28' - prkg both sides, 5-15 DU |
| Colorado | Boulder, City of | John Hinkelman Transportation Plnr., Pub. Works | 303-441-3240 | 32' - prkg both sides, 1000-2500 ADT  
30' - prkg both sides, 500-1000 ADT and others |
| Ft. Collins, City of | | Mike Herzig Spec. Proj. Eng. | 970-221-6605 | 30' - prkg both sides  
24' Alley |
| Delaware | Delaware DOT | David DuPlessis | 302-760-2266 | Mobility friendly design guideline  
200' - 500' blocks  
Rqd. network connectivity  
21' - prkg on side, one trav., cueing for local subdiv.  
22' - 29' - prkg one side, minor collector  
12' alley in 20' row |
| Florida | Orlando, City of | Dan Gallagher Transportation Planner | 407-246-2775 | 28' - prkg both sides, res.lots<55' wide  
22' - prkg both sides, res.lots>55' wide  
many standards with bike lanes |
| Maine | Portland, City of | Sarah Hopkins Planner | 207-874-8719 | 24' with prkg one side |
| Maryland | Howard County | Mike Mitchell | 410-313-2420 | 24' - prkg unreg, <1000 ADT |
| Charles County | | Ham Mathur | 301-645-0623 | 24' - prkg unregulated |
| Michigan | Birmingham, City of | Paul O'meara | 248-644-3869 ext. 241 | 26' - prkg both sides  
20' - prkg 1 side |
| Montana | Helena, City of | Paul Cartwright Dpt.of Env Quality | 406-444-6761 | 33' - prkg both sides  
& traffic calming |
<table>
<thead>
<tr>
<th>Location</th>
<th>Contact Name</th>
<th>Phone Number</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Missoula, City of</td>
<td>Steve King City Eng.</td>
<td>406-523-4623</td>
<td>26' - prkg both sides, 3-80 DU</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>32' - prkg both sides, 81-200 DU</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>12' Alley</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Others</td>
</tr>
<tr>
<td>New Mexico</td>
<td>Tony Loyd Engineering</td>
<td>505-924-3994</td>
<td>28' - prkg 1 side</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>27' - prkg 1 side, roll curb</td>
</tr>
<tr>
<td>Santa Fe, City of</td>
<td>Mark Books</td>
<td>505-984-6571</td>
<td>34' - prkg unregulated</td>
</tr>
<tr>
<td>Oregon</td>
<td>Jan Childs Planning Director</td>
<td>541-682-5208</td>
<td>verify adoption</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>12' - one way alley</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>16' - two way alley</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>20' - no parking</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>21'(7'/14&quot;) - prkg one side, &lt;750 ADT</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>28'(7'/14'/7&quot;) - prkg both sides, &lt;750 ADT</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>27'(7'/10'/10&quot;) - prkg one side, &gt;750 ADT</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>34'(7'/10'/10'/7&quot;) - prkg both side, &gt;750 ADT</td>
</tr>
<tr>
<td>Forest Grove, City of</td>
<td>James Reitz Associate Planner</td>
<td>503-359-3227</td>
<td>32' - prkg both sides - unregulated</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>28' - prkg both sides if not &gt;16 SFD or 20</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>multifam. if 2 access pnts., double. DU's.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>24' - prkg one side</td>
</tr>
<tr>
<td>Gresham, City of</td>
<td>Sandra Doubleday Transportation Planner</td>
<td>503-618-2816</td>
<td>20' - no prkg, &lt;150' or &lt;11 DU</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>26' - no prkg, &lt;30' from the curb return,</td>
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<td></td>
<td></td>
<td>&lt;400' long, queuing</td>
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<td></td>
<td></td>
<td>14' - alley, residential</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>20' - alley, commercial</td>
</tr>
<tr>
<td>McMinnville</td>
<td>Doug Montgomery Asst. Plng. Dir.</td>
<td>503-434-7311</td>
<td>26' w/prkg both sides</td>
</tr>
<tr>
<td>Portland, City of</td>
<td>Terry Bray Transportation Planner</td>
<td>503-823-7058</td>
<td>26' w/prkg both sides</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>20' w/prkg one side</td>
</tr>
<tr>
<td>Washington County</td>
<td>Click for Website</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beaverton, City of</td>
<td>Daryl Steffen Dpt. of Trans.</td>
<td>503-526-2426</td>
<td>28' - prkg both sides, &lt;600ADT &lt;300</td>
</tr>
<tr>
<td>Tigard</td>
<td>Brian Rager Dev. Review Eng.</td>
<td>503-684-7297</td>
<td>28' - prkg 1 side, &lt;500 ADT</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>32' - Prkg both sides, &lt;1500 ADT</td>
</tr>
<tr>
<td>Tualatin</td>
<td>Engineering</td>
<td>503-692-2000</td>
<td>32' - prkg both sides</td>
</tr>
<tr>
<td>Hillsboro, City of</td>
<td>Tina Baily</td>
<td>503-681-6146</td>
<td>28 - 30' prkg both sides</td>
</tr>
<tr>
<td>State</td>
<td>City</td>
<td>Name</td>
<td>Phone</td>
</tr>
<tr>
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</tbody>
</table>
| Tennessee   | Johnson City, City of | Eric Thomas Iversen     | 423-434-6075| 22' pkg not regulated, <240 ADT  
24' - 28', pkg not regulated, 240-1500 ADT  
28', pkg not regulated, >1500 ADT |
| Vermont     | DOT                   | Rural - 22' w/ 3' shldrs |             |                                                              |
|             | Burlington, City of   | Steve Goodkind City Eng.| 802-863-9094| 30' pkg both sides                                           |
| Washington  | Kirkland, City of     | Katy Coleman            | 425-828-1241| 12' Alley  
20' - pkg 1 side  
24' - pkg both sides - low density only  
28' - pkg both sides |
| W. Virginia | Morgantown            | William Bechtel Dir. of Plng & Dev | 304-284-7413| 22' pkg 1 side                                               |
| Wisconsin   | Madison, City of      |                         |             | 27' - pkg both sides, <3DU/AC  
28' - pkg both sides, 3-10 DU/AC |

**Resources**

The center for Livable Communities, a group within the Local Government Commission, a California based advisory group prepares excellent publications. Three are of specific relevance as follows:

"Street Design Guidelines for Healthy Neighborhoods", will help communities implement designs for streets that are safe, efficient and aesthetically pleasing for both cars and pedestrians.

"Emergency Response, Traffic Calming and Traditional Neighborhood Streets", addresses the concerns that fire departments and other emergency responders have about traffic calming.

"Walkable Streets and the Fire Department", (a video) includes interviews and demonstrations with fire departments from Portland, Oregon and Chico and Mountain View, California. This video can help you work with your fire department and find out what they really do, and don't need.

All of these publications and more are available from the Local Government Commission at [http://www.lgc.org/community_design/street.html](http://www.lgc.org/community_design/street.html).

"Traditional Neighborhood Development Design Guildlines: Recommended Practice", Institute of Transportation Engineers (ITE), 1999, 44 pg. guide that explores the premises behind various forms of neighborhood & street design, includes sections on street space, connectivity, emergency access, parking, safety & geometric design. Available from ITE, 202-554-8050, ext. 130, [http://www.ite.org](http://www.ite.org).
"Suburban Nation, the Rise of Sprawl and the Decline of the American Dream", by Andres Duany, Elizabeth Plater-Zyberk and Jeff Speck. Chapter 5, "The American Transportation Mess", lucidly describes how our street system became dysfunctional. It compares the current model (conventional) with its predecessor (traditional) and provides many good arguments for narrow streets. A must read.

Swift and Associates, Longmont, Colorado Street Study. This study correlates 20,000 accident reports over an eight year period to 13 variables associated with the street. They found the safest street was 24' wide. This report is available at http://www.fivepts.com/streetutah.htm


Center for Sustainable Transport, Australia www.arrb.org.au. The web page has a very large database of transportation related papers.

"Take Back Your Streets", Conservation Law Foundation, Boston, MA, 617-350-0990. This booklet is an excellent primer for those wishing to take back control of their streets. It discusses some history of road design, legal aspects, and recommendations for engagement. If focuses on the New England area but is applicable across the country.

"Restoring the Rule of Law and Respect for Communities in Transportation", by Stephen H. Burrington, in the New York University "Environmental Law Journal", Vol. 5, Number3, 1996, available from the Conservation Law Foundation (see above). This booklet is an in-depth article on legal aspects of transportation issues and road design. Not an easy read, but interesting information and development of a strong analytical argument for citizen involvement in roadway design.


"Residential Streets", ASCE, NAHB, ULI, Order#R07, 800-321-8050. A comprehensive street design guide published jointly by the American Society of Civil Engineers, the National Association of Home Builders and the Urban Land Institute.

"Progress", a monthly publication from Surface Transportation Policy Project, (202) 466-8636, www.transact.org or www.tea21.org. Lots of good transportation information, TEA-21 efforts, traffic calming, street design, etc.

"Moving Toward More Community-Oriented Transportation Strategies for the San Francisco Bay Area", Metropolitan Transportation Commission, 101 Eighth St., Oakland, CA 94607. This booklet is a resource guide with: References, Implementation Guides, Model Codes, Case Studies, Design Guides, etc.

"Skinny Streets", City of Portland's Office of Transportation, (503) 823-7046. This pamphlet discusses the "Skinny Street" program in Portland.


The Relationship Between Residential Street Design and Pedestrian Safety. A paper which examines the influence of the streetscape on traffic speeds. By Joni L. Giese, Gary A. Davis and Robert D. Sykes. Presented at the ITE 6th Annual Meeting Compendium of Technical Papers, 1997. I have been unable to determine how to acquire this paper.

Walkable Communities, Inc. A Florida non-profit which helps communities become more walkable and pedestrian friendly. They have an inventory of publications, videos and slides and can assist communities with presentations. More info at http://www.walkable.org.

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Bigger Roads Are Less Safe

by Dom Nozzi

March 4, 2003

In a great many cases, "improved safety" is a reason cited as a rationale for adding travel lanes to a road ("widening" a road). Indeed, because "improved safety" is a "moral high ground" argument (i.e., the argument should be accepted for ethical reasons), the safety rationale is perhaps the most common reason given for why a road "must" be widened.

In effect, public policy makers, when confronted with the "public safety" justification, are forced into an uncomfortably position when a decision must be made to widen or not widen a road: Either agree to the widening, or take a position that seems to suggest an uncaring attitude toward public safety.

It comes as no surprise that a large number of decision-makers are persuaded solely on the basis of the public safety argument.

Because road widenings are enormously expensive, speed up car traffic, and can profoundly worsen quality of life as well as accelerate strip commercial development and urban sprawl, we must be certain that road widenings do, in fact, deliver on the promise of dramatically improved safety.

The Forgiving Road

The "Forgiving Road" is a road that "forgives" a motorist when a driving mistake is made. That is, being reckless, or driving at high-speeds, or driving inattentively is not followed by the "punishment" of consequences such as crashing into something on the side of the road. For several decades, we have designed forgiving roads. We have been pulling buildings, parked cars, pedestrians, bicyclists, trees and other "obstructions" away from the sides of roads so that even an unskilled motorist can travel at high speeds without crashing into something.

The forgiving road was thought to be a way to promote "safety" (the hidden agenda, for many, was to promote high-speed travel by large volumes of car traffic).

Of course-human nature being what it is-such a design encourages reckless, high-speed, inattentive driving because human psychology compels us to tend to drive at the highest speed that still feels safe. After all, we are always "running late." We are always in a hurry. And we are so busy.

The forgiving roadway lulls us into a false sense of security. Vigilance and concentration wane on the forgiving road. Is it any wonder that today, we increasingly see motorists driving at high speeds with one hand, while putting on make-up, drinking coffee, or chatting on the cell phone with the other?

Since we tend to be busy and in a hurry, forgiving streets deliver lots of motorists who drive as fast as they can and "multi-task" while driving. Why? To save time.

The predictable result: An increase in crashes due to speeding, inattentiveness, and recklessness.

http://www.walkablestreets.com/safer.htm
Ironically, motorist safety declines and driving skills atrophy, because the forgiving street conditions motorists to be less careful drivers, and lowers the need to maintain or improve driving skills. Increasingly, American motorists drive dangerously, and more ineptly.

**Three Lanes vs Four Lanes**

Some safety analysts point out that 3-lane roads are noticeably safer than 4-lane roads, in part because, when comparing 3 lanes to 4, average vehicle speeds are reduced, there is less variability in vehicle speeds, and there is less speeding. In addition, there is a significant reduction in what engineers call "conflict" points, and an increase in "sight distance" for turning and crossing traffic on a 3-lane versus 4-lane road (Welch, undated).

This is particularly important for senior citizens who are motorists, because fewer conflict points and increased sight distances means fewer decisions and judgements have to be made to enter or cross a 3-lane road.

Similarly, a 3-lane road reduces the street-crossing distance for pedestrians. Compared to a 4-lane road, a 3-lane can create "refuge" areas where a pedestrian can safely wait until there is a safe gap in traffic before crossing the other half of the street. A refuge is also created for motorists with 3 lanes.

A review of the research on this question raises significant questions as to whether wider roads are safer roads.

**Fewer Travel Lanes**

A study published in 2002 (Huang, Stewart, Zegeer, 2002) reported that in Oakland CA, a street carrying 24,000 trips per day was converted from four lanes to three. The number of annual crashes went from 81 before to 68 after. On another street in Oakland was narrowed, crashes went down 52 percent. In Minnesota, a road diet resulted in a 33-percent reduction in injury crashes. In Billings MT, a road diet resulted in 62 percent fewer crashes after travel lanes were removed. In Lewistown PA, removal of travel lanes saw the number of crashes drop to almost zero. Finally, these researchers found that in Seattle WA, a number of road diets were analyzed, and a 34-percent reduction in total crashes and a 7-percent drop in injury crashes was noted.

The Surface Transportation Policy Project (1999) released a study in 1999 that found a strong link between aggressive driving deaths and increased road capacity. Those living in states with the largest number of lane miles per capita were 65 percent more likely to die in an aggressive driving crash than in states with less lane miles per capita. Similarly, those metro areas that added the most lane miles over a five-year period had higher levels of aggressive driving deaths. See their 2003 report for additional information about how big roads are less safe.

The Iowa Department of Transportation (2001) has found that converting a four-lane undivided road to three lanes can improve safety while retaining an acceptable level of service. Their review of research found that when such conversions occurred, there was a reduction in average speeds, a significant reduction in speeding, and a substantial reduction in the total number of crashes.

According to Engwicht (1989), straighter, wider roads encourage greater speed. Accidents that do happen are therefore more severe, resulting in more injuries or a greater likelihood of death.

There is a large body of research which suggests that increasing the safety of a car or road simply
encourages the driver to take greater risks. Drivers are willing to take a certain amount of risk in exchange for the benefit of faster traveling time. This risk is added to the safety limits of the car or road. The new safety features lull the driver into a new sense of security. Vigilance, concentration and attentiveness wane.

Welch (Welch, undated) conducted an analysis of converting a two-lane road to a four-lane road in Ft. Madison IA. This conversion resulted in a 4 percent increase in traffic volume, a 4 percent increase in corridor travel delay, a 2.5 mph increase in mid-block 85th percentile speed, a 14 percent increase in accidents and an 88 percent increase in injuries. The report also found that traffic traveling more than 5 mph over speed limit increased from 0.5% to 4.2%.

Welch reports that in Billings MT, when a four-lane was converted to a three-lane road, the number of reported accidents decreased from 37 in the 20 months before to 14 in the 20 months after conversion. No increase in traffic delay was found.

Despite initial apprehension from the local community and its engineers, Welch indicates that a conversion from four lanes to three in Storm Lake IA (US 71) resulted in an observed improvement in safety ("an immediate large reduction in accidents"). The Iowa DOT Office of Transportation Safety has begun actively promoting conversion of four-lane roads to three-lane when a concern about safety is expressed. In Helena MT, an urban primary highway (US 12) was converted from four lanes to three. (City staff and other state staff engineers now support the conversion after observing an improvement in traffic operations and a reduction in accidents.) In a study conducted for the Minnesota DOT, it was found that the highest urban corridor accident rates are found on four-lane undivided roads. In fact, the collision rate was 35 percent higher than on urban three-lane roads. Howard Preston, who conducted the study, stated that he would convert most four-lane roads with less than 20,000 car trips per day to three-lane roads "in a heartbeat."

In Duluth MN, a conversion from four lanes to three (21st Ave East) was initially opposed by many. After conversion, the Duluth News-Tribune editorial had this to say: "When Duluth officials announced they would convert busy 21st Avenue East...from four lanes to two, with a turn lane in the middle, some armchair analysts predicted it wouldn't work. The News-Tribune Opinion page was among them. Well, it works. About everyone agrees-from city traffic officials to neighbors-that the change has eased congestion and reduced drivers' speed making it safer for pedestrians..."

Frequently, according to Welch, emergency vehicles find it difficult to travel down four-lane roads. Emergency vehicles typically need to wait for traffic to move over to the curb lane to get out of the way. But a center two-way left-turn lane usually has less vehicle conflicts, and often produces less delay for emergency vehicles traveling down it.

Hoyle (1995) points out that widened roads are alleged to be safer roads based on data provided by those in favor of many road widenings. However, data showing a decrease in crashes per vehicle mile don't take into account the fact that widened roads encourage extra car trips that would not have happened had the road not been widened. Widened roads also encourage longer trip lengths. When such factors are taken into account, crash rates per trip or per hour spent on the road remain nearly the same.

Michael Ronkin (2001) suggests that the most effective way to reduce vehicle speed is by reducing the number of road lanes. "With two lanes in each direction, regardless of width, a driver who wants to move faster than the car in front can get into the adjacent lane and pass. With one lane in each direction, the slowest car sets the pace for all cars behind it." While driving in Boston recently, he found that "lanes are narrow, very narrow, but on multi-lane one-way streets, cars zipped along at incredibly high
speeds for urban streets, around 40 MPH."

Ronkin notes a great deal of misunderstanding among pedestrian advocates about the speeds. "Pedestrians are more threatened by the occasional car going much faster than reasonable, than by cars travelling at an average speed." On multi-lane roads, "the crossing pedestrian has several threats and challenges: the possibility of a car going faster than the rest of traffic could be invisible as it is masked by another car, its speed may not be apparent to the pedestrian. That makes it very difficult to judge adequate gaps. With one lane in each direction, a gap is a gap."

One of the most frequent types of fatal crashes "is the multiple threat-a driver stops to let pedestrian cross on a multi-lane road, and the pedestrian is struck (and usually killed) by a driver passing in the adjacent lane." Ronkin points out that this type of crash is not possible if there is no adjacent lane.

For Ronkin, another important contributor to crashes, besides speed, is the "complexity" involved in crossing a street. After analyzing a great many fatal crashes, he concludes that many of those crashes presented both the pedestrian and the driver with a relatively complex situation. According to Ronkin, "there just wasn't enough time for both parties to react to an unforeseen event." He concludes by pointing out the importance, in designing a road crossing, of creating an environment that that minimizes the number of decisions that must be made simultaneously..

In sum, Ronkin indicates that there have been "demonstrated reductions in crashes" when a road had lanes removed convincingly so.

**Narrow Lanes**

Joseph R. Molinaro (1991) reports that wider travel lanes are more dangerous because they encourage higher-speed driving. Larger neighborhood collector streets work well with only 26 feet of width, and smaller neighborhood streets are safe at 20-24 feet. He also points out that residential streets should use tighter turns in order to force slower motorist speeds. With a smaller turn radius, motorists are more likely to come to a full stop than a more dangerous rolling stop.

The ITE Transportation Planning Council Committee (ITE, undated) cites the American Association of State Highway Officials, which found that "[t]he number of accidents increases with an increase in the number of decisions required by the driver." A corollary to this truism is that the actual and potential effects of each driver-decision become more significant as the speed of the particular motor vehicle increases."

It is quite common for engineers to design a road for the rare large truck. Such design requires large turning radii and wide travel lanes. These relatively large dimensions far exceed those of passenger cars most common on residential streets. The oversized design of these roads encourage faster passenger car speeds by the most frequent motor vehicles on these roads.

"Clearly, reducing the width of a street," according to ITE, "has the effect of reducing vehicular speeds."

The Conservation Law Foundation (1995) finds that vehicle speeds increase when roads are widened because there is an extra "safety cushion" provided by the increased lateral distances and increased sight distances. Psychologically, the wider road tells the motorist that it is safer to speed up, and since motorists tend to drive at the fastest speed they feel safe at, faster speeds are seen on wider roads with a higher perceived "safety cushion." In addition, the field of vision of the motorist shrinks as speed increases, which reduces the ability of the motorist to see things (such as cars or pedestrians) that are
The Foundation also points out that designing for faster driving speeds, while possibly reducing the frequency of crashes, also increase the severity of car crashes.

Swift, Painter, and Goldstein (1998) conducted a study that analyzed the safest street widths with regard to accident frequency. Their study found that "as street width widens, accidents per mile per year increases exponentially, and that the safest residential street width is 24 feet (curb face)."

Indeed, crash rates were 18 times higher on 48-foot wide streets than on 24-foot wide streets.

The authors concluded, in part, by calling for a re-evaluation of public safety. That local governments recognize that the chance of injury or death due to, say, a neighborhood fire, is quite small compared to the much higher probability of injury or death in a neighborhood due to speeding traffic. That the reduced number of injuries or deaths resulting from wide streets and allegedly faster fire truck response time is tiny in comparison to the comparatively large number of injuries or deaths that occur due to speeding cars—a problem that increases in frequency due to widened streets. The local government should "ask if it is better to reduce dozens of potential vehicle accidents, injuries and deaths [through the creation of more modest streets], or provide wide streets for no apparent benefit to fire-related injuries or deaths."

Even if more modest streets increased fire injury risks slightly (a problem not found by the study), modest streets would still be safer than wide streets because the risk of car injuries is so much higher than fire injuries.

In other words, by focusing public safety on life safety, rather than fire safety, a much larger number of community injuries and deaths can be managed and perhaps reduced.

A large number of firefighters are starting to understand that over-sized streets have resulted in streets that are not safe for families, while providing few, if any, benefits regarding fire safety and emergency response times, according to Siegman (2002).

Siegman relates a story from Dan Burden, a colleague who works in the field of safe street design:

While in Honolulu last week doing two school traffic calming charrettes our team had two tragic nights. In both cases a squad of firemen were with us for the evening, learning about and giving good input into traffic calming their neighborhoods. They had their truck with them in case they received a call. When asked by a member of the audience what they thought of the traffic calming plan the Captain said that they rarely, if ever, can expect a fire in the area....and that their concern is to lessen the speeds on area roads so that they are protecting rather than rescuing lives. They had good reason to say this ... during the evening the firemen were called out to respond to a pedestrian tragedy several blocks from our meeting room, and in our project site.

The next school traffic calming meeting we again had four firemen, and their apparatus. We had just settled them down to a design table to design traffic calming solutions when they leaped up to attend a call. They, too, came back before the meeting was over. They had provided first assistance for a head-on crash of two motorists.

The meeting ended at 9:00. At 9:05 a bicyclist was hit (and presumably attended by these
firemen). The cyclist was a star athlete on the University of Honolulu campus. She was killed one block from our school, in one of our crosswalks.

"Many firefighters," according to Siegman, "realize that traffic crashes are a far greater hazard in our communities than fires, because they so often have to pick up the pieces."

Siegman reminds us that "for every one person killed in a fire, more than eleven die in traffic crashes. And that for every one person injured by fire, 148 are injured in traffic crashes."

A great many firefighters also tell us that fire truck response time does not depend simply on the width of a street.

For example, Siegman tells us that fire departments know that response time is a product of the speed of travel and the distance from the firehouse.

When streets are walkable and connected as they were in traditionally designed neighborhoods, they "usually allow far more direct routing than disconnected cul-de-sac designs." Even when narrow (or "skinny"), the connected streets, Siegman points out, "can often deliver equal or better response times." Connected streets also reduce the probability of traffic congestion, and congestion slows response times. "That understanding," notes Siegman, "is apparently not yet reflected in fire codes, which discuss street width, but...have no specifications whatsoever on directness of routing, or distance from home to the arterial, or to the fire station."

Siegman points out that a number of other fire departments are "no longer ordering U.S.-made fire engines, choosing instead the more maneuverable European models, which work well with smaller, safer, pedestrian-friendly street designs."

According to Siegman, "we aren't yet at the stage where all firefighters have excellent training in street design and traffic safety." He wonders "how many communities still design their streets and intersections to accommodate the largest fire truck in the fleet, without having weighed pedestrian safety effects as part of the truck purchase."

In conclusion, Siegman presents us with the following eye-opening statistics for fire and traffic fatalities and injuries in 1999 in the United States. In that year, "3,570 civilian (i.e. non-firefighter)" fire deaths occurred, and 21,875 civilians were injured. In addition, 112 fire fighters died while on duty; 11 of them in traffic crashes. He also reports that "41,611 people were killed and 3,236,000 people were injured in the estimated 6,279,000 police-reported motor vehicle traffic crashes. 4,188,000 crashes involved property damage only."

As reported by Finch (1994) and Preston (1995), every one mph reduction in traffic speed, in general, reduces vehicle collisions by five percent, and reduces fatalities to an even greater extent.

Narrowing travel lanes made things safer unless the narrowing was done to accommodate more travel lanes, according to a report from the Transportation Research Board (1994).

References Cited


http://www.walkablestreets.com/safer.htm


ITE Transportation Planning Council Committee, Traditional Neighborhood Development: Street Design Guidelines. 5P-8. Undated.


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