DEFINING

AN OREGON STANDARD DEFINITION FOR

SKINNY STREETS

STRATEGIC MANAGEMENT OF CHANGE COURSE, NFA

BY: Jeffrey D. Johnson
Tualatin Valley Fire & Rescue
Aloha, Oregon

An applied research project submitted to the National Fire Academy
as part of the Executive Fire Officer Program

January, 2001

ABSTRACT

This research project analyzed issues surrounding the adoption of narrow (skinny) street width standards which conflict between Oregon land use laws and the statutory requirements of the fire code.

The problem was that there was no standardized definition for a skinny residential street in the State of Oregon that was accepted by the fire service. The purpose of the project was to create a functional definition of a skinny residential street that would meet the intent of Oregon land use and fire regulations.

This research project employed the action research methodology to identify (a) what current uniform fire code standards exist for residential streets, (b) what external forces exist in Oregon which are causing skinny streets to be mandated, and (c) what are the fire service objections to skinny streets.

To effect the action research methodology, a review of the current status was conducted which considered what causal and contributing factors existed.

The results reflected that (a) there is no current national standard for skinny residential street codified by any regulatory fire agency, (b) the external forces mandating installation of skinny streets resides in the Transportation Planning, and (c) the Oregon fire service declined to allow narrower streets based upon the need for fire department access.

The recommendations are (a) a skinny street standard that meets the needs of emergency responders and planners should be developed and adopted, (b) the Oregon fire service should develop an educational campaign to inform fire officials of the need for change, and (c) planning authorities should adopt policies that at accept comprehensive plan submissions, as substantially compliant if the street standards are adopted in accordance with the consensus document.

TABLE OF CONTENTS

INTRODUCTION

Oregon State Land Use officials have promulgated regulations that require the substantial narrowing of residential streets. These street standards are known as “skinny streets”. The skinny street standards are intended to maximize the availability of developable land, reduce surface run-off, and reduce urban sprawl while maximizing urban population densities.

The problem is that no standardized definition exists for a skinny residential street in Oregon that is accepted by the fire service.

The purpose of the project is to create a functional definition of a skinny residential street that would meet the intent of Oregon land use and fire regulations.

The action research methodology will be employed to answer the following questions:

1. What current uniform fire code standards exist for residential streets?
2. What external forces exist in Oregon which are causing skinny streets to be mandated?
3. What are the fire service objections to skinny streets?

BACKGROUND AND SIGNIFICANCE

Like most problems, fire problems are transient and largely dependent on external factors. Some fire service problems produce smoke, toxic gases and visible tragedy while others impede our ability to mitigate those emergencies. Such is the case when Oregon voters approved sweeping land use laws, which touch every life and government process in Oregon.

In 1973, the Oregon legislature passed Senate Bill 100 (B. Weast, personal communication, January 27, 2001) creating a list of comprehensive land use goals and forming the Land Conservation and Development Commission. In turn, the Department of Land Conservation and

Development (DLCD) was created to administer the programs and effect the policy goals set by the commission.

Oregon was not the first to recognize the relationship between planned growth, livable communities and fire risk. In 1580, Queen Elizabeth I issued a decree to halt all peripheral sprawl. She decree'd that "all should desist and forbear from any new buildings within three miles of the city". The decree was a total failure. In September of 1666, London experienced the great London fire which burned for six days and decimated the city (Platt, 1996). Thereafter, London adopted the first building code, which sported five rules. One rule required the width of streets to be established in relation to their importance (Platt, 1996). This code serves as early recognition of the need for emergency access to combat fires.

Oregon has followed suit by adopting 19 planning more comprehensive goals. The nineteen goals strive to reduce reliance on the automobile, concentrate density to urban areas, increase density by controlling urban sprawl, preserve farm and forest land, create orderly and planned development and protect the environment from the effects of development and density (DLCD, 2000). Much to the chagrin of local fire officials, goal 12 (DLCD, 2000) specifically sets the expectation for local government to develop narrower residential streets. While the statewide planning goals are not mandatory, the comprehensive plans submitted by cities and counties to the Department of Land Conservation and Development are mandatory. Not surprisingly, the critical elements of the comprehensive plans must demonstrate an adherence to statewide planning goals. In other words, while not mandatory, the goals have the effect of law.

While state planning rules are forcing communities to adopt skinny standards for residential streets, fire apparatus is getting larger (LaCroix, 1992), carrying more equipment and personnel. Additionally, increased density on narrower streets increases traffic congestion, which slows

responding apparatus, and limits the places of refuge drivers seek while avoiding responding equipment.

A further complication involves the approval process for such street plans. While local development code is promulgated with statewide planning goals in mind, the fire code is adopted with fire safety as the prime consideration. In Oregon, the fire code requires residential streets with width in excess of that desired by the Department of Land Conservation and Development (UFC, 1997). This conflict is pitting the fire marshal of jurisdictions against a torrent of conflicting statutes and goals.

Currently, some communities submit development plans, which meet planning goals but are not approved by the fire official. Oregon has chosen to reduce these conflicts by placing the ultimate authority for street width with the planning jurisdiction after consulting with fire officials (S. Bill 3508, 1997). The current mismatch of compliance, noncompliance and conflicting authority have necessitated the need for a collective document that meets the planning goals and provides adequate streets for emergency response and service vehicles (OFCA, 2000).

Failure to adopt a common guideline will perpetuate the disorganized and conflicted approach to community planning at the emergency response level.

Current fire service standards must be evaluated to determine if they were promulgated based upon actual industry needs or if industry resistance to such changes is the byproduct of institutional resistance to change. By evaluating industry needs, reviewing the change model and striving for a standardized approach to planning, most collective interests should be adequately addressed.

LITERATURE REVIEW

Oregon's system of land use laws were founded in 1973 with the passage and codification of Senate Bill 100, which created state-wide planning goals and authorized a branch of government to promulgate and enforce necessary rules and processes (B. Weast, personal communication, January 27, 2001). Of the nineteen rules currently in effect in Oregon, goal 12 governs transportation and related issues (OAR 660, 2000). Goal 12 is commonly known as the transportation and planning rule and is codified as Oregon Administrative Rule 660-012-0045(7).

In general, goal 12 states that "local governments shall establish standards for local streets and accessways that minimize pavement width and total right-o-way consistent with the operational needs of the facility. The intent of this requirement is that local government consider and reduce excessive standards for local streets and accessways in order to reduce the cost of construction, provide for more efficient use of urban land, provide for emergency vehicle access while discouraging inappropriate traffic volumes and speeds, and which accommodate convenient pedestrian and bicycle circulation" (DLCD, 2000).

The Department of Land Conservation and Development identifies the benefits of narrower streets as improving livability, slower auto speeds, aesthetics, encourages walking, cost, environmental issues, efficient use of land and reduction of impervious surfaces (Smith, 1999). It is noteworthy that emergency vehicle access is absent for the list of benefits.

While it may appear that planning goals would not have the effect of law, compliance is required through the submission of comprehensive plans by cities and counties to DLCD (DLCD, 2000). Comprehensive plans must address the state wide planning goals set by the state or communities are ruled as non-compliant and eventually risk the loss of state funding (B. Weast, personal communication, January 27, 2001). Further, since the passage of Oregon

Revised Statute section 195, the definition of local government has been expanded to include special districts, such as fire districts (DLCD, 2000). Statutes do not contain a specific standard that defines “narrow” streets.

Recently, the Oregon Department of Transportation convened a joint committee comprised of fire and planning officials to establish standards, which define narrow streets and gain the endorsement of the fire community (J. Grunewald, personal communication, January 27, 2001). However, the fire community is having difficulty accepting the change and deviating from time-tested industry standards.

In Oregon, the document that governs fire issues is the Uniform Fire Code, 1997 edition. The UFC is adopted by the State Fire Marshal, amended and delegated to local jurisdictions (R. Pannucio, personal communication, January 27, 2001). The Uniform Fire Code provides that the fire chief, which is practically applied as the fire marshal, has jurisdiction to set fire department access requirements (UFC, 1997).

Local fire jurisdictions may adopt the state version or amend and adopt the document through the local governing board. Tualatin Valley Fire & Rescue has adopted the 1997 version of the Uniform Fire Code, which mandates that fire apparatus access roads shall have an unobstructed width of not less than twenty feet (UFC, 1997). The local fire chief/marshal is charged with enforcing the adopted fire code (UFC, 1997).

The National Fire Protection Association, Fire Protection Handbook mandates that street widths shall be not less than 28 feet curb face to curb face in low density residential areas (NFPA, 1997). This standard contains the provision for parking on both sides of the street. It should be noted that like many standards, NFPA standards are consensus standards and only mandatory in areas, which adopt the standard or portions thereof.

The Building Officials and Code Administrators International Fire Prevention Code, provides that fire department access roadways shall be a minimum of eighteen feet of unobstructed width (BOCA, 1996). The BOCA code is the predominate code in the south east portions of the United States and is promulgated as a family of codes which center around their building code (D. Pennicook, personal communication, November 6, 2000).

Likewise, the International Code Council, through the International Fire Code, requires that fire department access roads shall have unobstructed width of not less than twenty feet (ICC, 2000).

Generally, the body of national fire codes identify fire department access requirements at between eighteen and twenty feet of clear, unobstructed driving surface. This is founded on the base assumption that parking requirements be added to this clear driving requirement. For the purpose of calculating parking requirements, six feet of road-width shall be added to the base amount for each side of parking being added (J.Grunewald, personal communication, January 27, 2001). For example, a twenty foot clear travel requirement with parking on one side would yield a twenty-six foot street requirement. Likewise, a twenty foot requirement with parking on both sides would necessitate a road width of thirty-two feet.

The Department of Land Conservation and Development has suggested that a twenty eight foot street with parking on both sides would be adequate for local neighborhood travel (Smith, 2000). Based on this proposal, subtracting 12 feet for parking (both sides), the clear travel lane would be at sixteen feet. While sixteen feet is adequate for the passage of a single fire unit, two units would not be able to pass one another during an operation and most modern truck companies require twenty feet of lateral space to place outriggers (LaCroix, 1992).

Further, most modern fire apparatus is ten feet from mirror to mirror (Colby, 2000). While the width of a responding apparatus is relevant, upon arrival, adequate space must be available for hoses, removal of ladders and opening of compartment doors. Given the scenario of sixteen feet of clear travel space, a ten-foot vehicle would have a scant three feet on each side outside the mirrors within which to work. Additionally, narrower streets yield intersections and turns that are more crimped and require vehicles of greater turning ability (Colby, 2000).

In spite of the fire service interest in preserving adequate street widths to facilitate rapid response, many people are willing to sacrifice a speedy response for slower daily traffic speeds which are believed to be a by-product of narrower streets. Narrow streets while inconvenient for service vehicles and fire apparatus save land, reduce storm run-off and provide slower traffic speeds (Colby, 2000).

In the absence of police enforcement of speed laws or narrow streets that facilitate slower travel speeds, many neighborhoods are turning to physical street obstructions, which slow traffic and responding apparatus alike. These devices, commonly known as traffic calming devices, are manifested as speed bumps, speed-humps, traffic circles, choke-points and other features that influence the driver to reduce speed. These devices, while effective at lowering traffic speeds, also slow fire apparatus by one to ten seconds per device, based on apparatus type (Portland, 1992).

Adding to the problem, suburbs are inextricably linked to cities and travel between the two points is inevitable. Congested highways are forcing more motorists off from highways and into neighborhoods (Fulton, 2000). Neighbors and planners are not only mandated to act but compelled to act.

Studies indicate a direct relationship between street width, curvature and traffic speed (Swift, 2000). Logically, the higher an individual street's average traffic speed, the higher the incidence of accidents and injuries (Swift, 2000). The Swift study, conducted in Longmont Colorado, determined that there is a direct relationship between street width, curvature and the number of accidents per year per mile. In fact, accidents increase exponentially with the widening of streets above the twenty-four foot configuration. As a group, the safest group of streets were between twenty-two and thirty feet wide (Swift, 2000).

Experts conclude that narrower streets cause motorists to reduce traffic speed by infringing on the driver's spatial enclosure. This effect causes sight distance to diminish which has the effect of inducing the driver to take less risks (Griese, 1997). The Longmont study seems to support this conclusion. The highest risk street in the Longmont study was a wide street with low traffic volume (Swift, 2000).

While the benefits of narrow streets seem evident, fire apparatus is getting longer, heavier and is required to carry more equipment and serve more purposes (LaCroix, 1992). The fire engine has in effect, become the toolbox of a community. The diversity of the requests from citizens for assistance, necessitates tools and services beyond that traditionally expected.

Clearly, there is a conflict in the planning goals for Oregon, neighborhood desires and the prevailing collective fire codes, which regulate the width of streets. Oregon planning officials authority over street width, supersedes the authority of the local fire official. However, planning officials are required to consult with the fire department prior to setting standards (S. Bill 3508, 1997). Fire officials need a street standard that addresses access concerns while helping communities achieve planning and livability goals.

To date, the Oregon fire service has been reluctant to move beyond committee participation and adopt a standard that deviates from published standards. The fire code does not consider planning goals or mandate risk reduction methodologies such as residential sprinkler systems (UFC, 1997). Such systems would reduce the likelihood of conducting fire operations in neighborhoods thereby reducing the need for operational space.

A component of the fire service reluctance to alter their current standards is based on how the change was mandated on the fire service.

PROCEDURES

Definitions

Skinny Street: Any street that is designed to specifications less than the requirements identified in the adopted fire code.

Fire Code: The adopted code promulgated to enforce fire safe practices in public places, which includes fire department access.

LCDC: Oregon Department of Land Conservation and Development, is responsible for the governance of the 19 land-use goals which regulates, transportation among other things.

DLCD: The Oregon Department of Land Conservation and Development, is the administrative arm of LCDC, responsible for the management and implementation of policy direction.

Transportation Planning Rule: Officially, goal 12 of Oregon land use planning goals which governs the promulgation of rules related to transportation, street standards and matters involving the use of vehicles in the community.

Residential Street: A street which is primarily designed to serve a neighborhood and likely to primarily generate passenger and service vehicle traffic.

Urban Growth Boundary: An artificial line drawn around communities which contain an estimated 20-year supply of developable land and contain development standards that promote density and concentration of urban services.

Comprehensive Plan: A plan all cities and counties must submit to DLCD on a periodic basis. This plan must demonstrate compliance with state-wide planning goals.

Impervious surface: Any surface which water will not penetrate.

Consensus standard: Industry standards that are achieved through a consensus process and are later promulgated as codes which then become available for local adoption.

Clear travel lane: An unobstructed roadway which does not allow temporary or permanent obstructions.

For this research paper, the action research methodology was selected because it provides for an effective review of available current information and also yields a standard definition for a skinny residential street in the State of Oregon, that is accepted by the fire service and meets the intent of the transportation planning rule.

Currently, there is no adopted standard definition for a skinny residential street in the State of Oregon that has been amended into the fire code.

The research procedure used in preparing this paper began with a literature review of the materials available in the Learning Resource Center at the National Emergency Training Center as of August 2000. Additional materials were collected from online and electronic mediums in an effort to gain a national sense of the issue. Extensive use of personal interviews and communications augmented the literature review.

Limitations exist related to the quantity of information available on the topic. While there are copious sources for information related to traffic calming devices, speed humps and land use

planning, little is published on skinny streets specifically. It appears that this may be in part due to the lack of a standard definition or acceptance of terminology that relates to reduced street widths. Additionally, skinny streets are an issue in Oregon due to the existence of very strict land-use laws that regulate growth and all related elements. To date, Oregon is known to have the strictest land-use laws in the country and would logically be the front-runner in the implementation of such concepts as skinny streets.

The contemporary nature of the issue and lack of published quantifiable data on the subject matter, necessitated interviews with key people involved in the process. As such, interviews were conducted with the Oregon State Fire Marshal Robert Pannucio.

Chief Pannucio provided perspective on the issue and validated the scope of the problem. The office of the Oregon State Fire Marshal represents fire service issues to the Department of Land Conservation and Development, who are charged with resolving the street width conflict.

An interview was also conducted with Lannie Smith, lead employee for the Department of Land Conservation and Development for the implementation of skinny streets. Ms. Smith characterized the statutory relevance of the statewide planning goals. While the fire service has traditionally fought for the widest streets possible, Ms. Smith provided the land-use perspective on the issue. Additionally, she was able to articulate the planning industry's skepticism at the validity of fire service objections. Balancing the statistical infrequency of our need for the maximum street widths, providing relevance to European street standards and characterizing the challenges of moving our entire society into more sustainable, livable communities is a perspective only a land-use expert could provide.

The historical perspective for the genesis of land use laws in Oregon was gleaned from interviews with lobbyist Burton Weast. Mr. Weast characterized the atmosphere in Oregon

when voters passed the sweeping land-use legislation and how the original legislative intent has been transformed since its passage.

Interviews and a review of video information published by the skinny street committee of Department of Land Conservation and Development provided a basis for compromise. Draft compromise documents and minutes were reviewed and interviews were conducted with Jeff Grunewald, lead fire service delegate to the committee. Grunewald was the architect of the individual street standards being considered and sat on the board of directors for the International Fire Code Institute (IFCI). IFCI, in conjunction with the Western Fire Chiefs Association, produced the Uniform Fire Code, which, among other things, sets street width standards for the fire service in the 10 western states.

The problem is that no standardized definition exists for a skinny residential street in Oregon that is accepted by the fire service. The production of a model standard and standardization of key terminology would aid in the discussion and availability of research material.

The purpose of this project is to create a functional definition of a skinny residential street that would meet the intent of Oregon land use and fire regulations. Further, production of a functional definition should sufficiently cause dialogue from planners and fire professionals nationally.

RESULTS

1. What current uniform fire code standards exist for residential streets?

The literature review failed to reveal any single current standard for residential streets. Four fire code documents were reviewed for standards that addressed residential street standards. The Uniform Fire Code (UFC, 1997), requires that fire apparatus access roads shall have an unobstructed width of not less than 20 feet. The Uniform Fire Code is the prevalent document in the ten western states but is not a universal fire code (J. Grunewald, personal communication, December 10, 2000).

The International Code Council publishes the International Fire Code, which requires that fire department access roads shall have unobstructed width of not less than 20 feet. The International Fire Code document has direct ties to the Uniform Fire Code and there are many sections of the code that are alike (J. Grunewald, personal communication, December 10, 2000).

The Building Officials and Code Administrators International publish a Fire Prevention Code which directs that fire department access shall be a minimum of 18 feet in unobstructed width (BOCCA, 1996).

Lastly, the National Fire Protection Association provides in the Fire Protection Handbook that street widths shall be not less than 28 feet curb to curb in low-density residential areas (NFPA, 1997).

Results of the research reflect that currently, there is no single fire code standard for residential streets. However, the consensus data indicates that an acceptable range of clear, unobstructed roadway for fire department access to be between 16 and 20 feet, excluding parking.

2. What external factors exist in Oregon, which are causing skinny streets to be mandated?

The literature review illustrated that passage of comprehensive land use requirements and the formation of a policy and administrative branch of government to administer said laws, led to the adoption of 19 land use goals (B. Weast, personal communication, January 27, 2001). Goal 12, commonly known as the transportation and planning rule requires that local governments shall establish standards for local streets that minimize pavement width while providing for emergency vehicle access (OAR 660, 2000).

All cities and counties in Oregon are required to submit to periodic review, demonstrating their compliance with the 19 established land use goals or risk punitive measures from the state (B. Weast, personal communication, January27, 2001).

Oregon law now provides that the local planning official has authority, which supercedes the fire chief/marshal relating to street width. While the planning official is required to consult with the fire department, they are under no obligation to adopt the recommendation of the fire official (S. Bill 3508, 1997). However, fire officials are legally bound to enforce the adopted fire code or assume liability for deviations from the code. Research has shown that no fire code currently published in the United States allows for any residential street with less than 16 feet of unobstructed travel.

3. What are the fire service objections to skinny streets?

A complete review of the cited literature did not reveal any objective studies that clearly demonstrate a trend of problems caused by skinny streets. The occurrence of problems may be limited due to the recent emergence of skinny street requirements.

There are anecdotal examples of catastrophic problems with wildfire evacuations which are most often exacerbated by human behavior and terrain-imposed limitations. While valid, a

comprehensive comparative review of published fire code standards versus the performance of the codes “as built”, was never published.

Specifically, fire apparatus is getting larger (LaCroix, 1992). Larger fire apparatus require larger turn radius’s and larger streets (Colby, 2000). While European communities and some American cities have built and maintained narrow streets for decades, higher densities coupled with the expanding role of the fire service is drastically increasing the rate of use by fire equipment (J. Grunewald, personal communication, December 10, 2000).

Additionally, fire apparatus will require room in the public right of way from which to conduct emergency operations while simultaneously allowing for the passage of fleeing residents or the passage of additional fire apparatus (LaCroix, 1992).

The development of a model skinny street standard that addresses the planning requirements while ensuring adequate fire department access shall consider all requirements. A model standard should specify that residential streets should be not less than 28 feet with parking on both sides, 24 feet with parking on one side and 20 feet with no parking (Appendix A). In the event that traffic volumes, topography, slope or other special conditions require improved access, the fire chief/marshal should posses the authority necessary to require the installation of interior sprinklers or widen the street.

This standard would result in an eight-foot reduction in the width of a residential street with two-way traffic, parking both sides from the current fire code requirement. Additionally, parking enforcement and staggered parking plans can ensure adequate operational area.

An unexpected correlation between traffic speeds, street widths and accidents gives rise to questions about the total probability of a compromised fire operation due to skinny streets versus the severity and frequency of the accidents.

DISCUSSION

A classic statutory conflict has been brewing in the State of Oregon since 1973 when the Oregon legislature passes Senate Bill 100. Senate Bill 100 mandated growth management and urban planning for the entire state administered through cities and counties. The legislation also created the Land Conservation and Development Commission (B. Weast, personal communication, January 27, 2001). The commission sets land-use policy for the Department of Land Conservation and Development to administer and together effect the land use laws of Oregon DLCD, 2000).

Shortly there after, Oregon adopted what are now 19 comprehensive planning goals which all cities and counties must adhere to in their planning processes. The planning process itself is mandatory for all Oregon cities and counties (DLCD, 2000). Comprehensive plans are submitted by cities and counties to the Department of Land Conservation and Development and reviewed on a periodic basis. The comprehensive planning documents must demonstrate adherence to the 19 planning goals. Failure to adequately comply with a planning goal can lead to an enforcement order, which jeopardizes state revenue sharing and grants or can lead to a moratorium on development (Weast, personal communication, January 27, 2001).

Of the 19 planning goals, goal 12 has the greatest impact on the fire community. Specifically, goal 12, known simply as the Transportation Planning Rule, governs transportation by directing communities to establish standards for local streets that minimize pavement width while providing for emergency vehicle access (OAR 660, 1997). While the planning expectation is vague, the implications are clear. Existing street standards do not comply with the intent of goal 12 (Smith, 2000). This is evident because the transportation-planning rule calls for change to a street system that was developed with adherence to the current adopted fire codes.

The reference to providing emergency vehicle access in goal 12 has provided the impetus for developing a consensus standard between fire and planning on defining adequate access. While fire professionals have concerns about inadequate operational space, lengthened response times and impeded egress, the existing standards afford room for compromise.

In Oregon it became clear that the expectations of the planning authorities (Smith, 2000) was in direct conflict with the mandates placed upon fire authorities (UFC, 1997). The adoption of skinny streets, in spite of fire code requirements, exposes fire officials to personal liability for deviating from industry accepted standards. Conversely, cities and counties have been cautious to adopt community development standards that meet the fire code for fear of failing periodic review.

Oregon law attempts to deal with this conflict by granting the planning official authority to override the fire code relative to the width of streets (S.Bill 3508, 1997). The law also transfers liability to the planning authority should negative outcomes lead to litigation. However, the statute requires the planning official consult with the fire official prior to adopting any standard that would violate the fire code.

The requirement to consult places the fire official in a difficult position. While communities strive to pass periodic review with the Department of Land Conservation and Development thereby avoiding punitive ramifications, fire officials are reticent to approve streets designs that violate the cities adopted fire code in deference to a land use goal. In the mind of fire officials, fire department access is a life safety matter while land use planning seems less important.

A review of fire codes available for adoption in the United States revealed that requirements for unobstructed surface vary, from 16 to 20 feet. The Uniform Fire Code, the code of choice in the ten western states and the International Fire Code mandate 20 feet of unobstructed travel lane

(UFC, 1997) (IFC, 1997). The Building Officials Fire Prevention Code mandates that 18 feet of unobstructed access be maintained (BOCA, 1996). Finally, the National Fire Protection Association Fire Protection Handbook identifies 28 feet as the model street standard in residential areas (NFPA, 1997).

While collectively, the fire codes require unobstructed travel width on residential streets of between 16 and 20 feet, this number is a base figure. Some fire officials utilize an eight-foot standard in addition to the base when allowing for parking, while others use a smaller figure.

For example, a 20-foot street-width standard, with eight-foot parking allotments on each side, would yield a 36-foot street. Following this same example, six-foot parking allotments would yield a 32-foot street. Most fire officials concede that residential parking schemes can be configured to allow 20 feet of travel while utilizing a 28-foot street, which allows parking on both sides (J. Grunewald, personal communication, January 27, 2001). Parking could be staggered to allow areas of refuge and also provide for setbacks from corners. Setbacks reduce the angle created by narrower streets and enables fire apparatus to more easily negotiate turns.

Life safety issues are raised relative to street standards but in a context different than access. Interestingly, studies show that there is a direct correlation between injuries per mile of street and the average speed traveled (Colby, 2000). Further, studies demonstrate that street width and curvature influence the speed of traffic more than any other factor. The most dangerous residential street is a wide street with low traffic volume. Safety could be improved by simply narrowing streets and providing curvature if access, egress and response times were not so critical (Swift, 2000). Fire officials must carefully weigh these factors when considering alternate standards. Consideration should be given to the advantages afforded to the community by making streets safer.

The study results demonstrate that every fire code available for adoption in the United States mandates street widths in excess of the transportation planning rule expectations (DLCD, 2000). However, there appears to be room for compromise. There are no records available that explain how each fire code process contemplated the current standards. It is clear that there are operational considerations that are easily observed.

Fire apparatus is getting larger due to our need to carry more personnel and equipment (LaCroix, 1992). Further, fire apparatus and firefighters are responding on an ever-increasing number of public service calls, which increase usage of residential streets. While the European model of street standards work well there, their building codes originated in the 17th Century, call for less combustible building products than our building code (Platt, 1996).

While land use laws and managing growth are important to Oregonians, skinny fire apparatus does not appear to address the problem. The Insurance Services Office grades fire departments in the United States on a scale of one to ten. The rating is intended to be a reflection of a fire department's ability to combat a fire. The lower rating equals lower fire insurance premiums. The amount of tools, equipment and personnel required on American fire apparatus would not be possible on the smaller European style units.

It appears that change is necessary in fire department access standards. Even though code agencies can not explain the rationale behind their adopted standards, history has proven that access can't be compromised or regained after development. Our fire department should consider the strategic management of change model and evaluate our resistance to changing this industry standard. If a logical compromise can be adopted, the change model should be used to implement such a sweeping alteration to the organization. The complexity of the change coupled with multiple agency involvement will require a careful and thorough plan for implementation.

Tualatin Valley Fire & Rescue should develop and adopt a compromise model street standard that addresses the state planning goals while preserving access. To that end, the fire district has begun to purchase fire equipment that steers at both axles substantially improving maneuverability. Fire prevention personnel should work with planners to adopt street parking models that maximize access on narrower streets without hampering response.

RECOMMENDATIONS

1. **A skinny street standard that meets the needs of emergency responders while meeting state-wide planning goals should be developed and adopted by both the fire department and the Department of Land Conservation and Development (see appendix A).**

It is clear that communities cannot ignore state requirements to build narrower streets. In addition, the transportation-planning rule requires that emergency vehicle access be considered when drafting street standards. The fire service should take a lead role in evaluating our actual needs and draft street standards based upon those needs.

Finally, the fire code should be locally amended to provide continuity between planning and development codes.

2. **The Oregon fire service should actively develop an educational campaign to inform fire officials of the scope and need for changing the street standards.**

Each community has the responsibility to adopt and amend the model fire code. When both groups endorse a compromise, each community will be compelled to adopt the symbiotic codes as amendments to their fire code. Rationale must be provided to the fire officials that address access, response-time and egress or few will codify the changes.

3. **The Department of Land Conservation and Development should adopt policies that accept comprehensive plan submissions as substantially compliant if the street standards are adopted in accordance with the consensus document.**

Presumptive approval of street standards during the review process provides local government and fire officials an incentive to adopt such standards. Further, standardized adoption creates new industry standards, which has the effect of providing legal protection against claims of compromised access. Prevailing industry standards are often used as an effective defense of individual organizational practices.

Future readers should consider more comprehensive study of the net benefit of narrower street standards. While logical conclusions can be inferred, no science exists that nets out the benefits of reduced injuries from motor vehicle accidents on narrow streets versus experiential disadvantages related to response and operations.

Lastly, consideration should be given to studying the impact on the Oregon fire service in years beyond adoption. As Oregon is on the forefront of planning, it provides an excellent laboratory to study in future years.

REFERENCES

Building Officials and Code Administrators International. (1996) Fire Prevention Code (10th. Ed.), Section F-315. Country Club Hills, IL

Colby, Richard. (2000, August 3). *How Wide a street is safe, ask officials*. The Oregonian, pp.A1, A10.

Giese, Joni L., (August, 1997). *The Relationship between residential street design and pedestrian safety*. [CD-ROM] (1997) Abstract from: Institute of Transportation Engineers Compendium of technical Papers.

International Code Council. (2000) International Fire Code, Section 503.2.1. Whittier, CA.

International Fire Code Institute. (1997) Uniform Fire Code, Section 902.2.2.1. Fallbrook, CA.

Fulton, W. (2000, August). *Mutual Attraction*. Governing, 13, p. 76.

Oregon Administrative Rules, sec. 660-012-0045 (7), (2000)

Oregon Department of Land Conservation and Development. (2000, October 10). Oregon's Planning Goals and Guidelines [On-Line]. Available: www.lcd.state.or.us/hoalhtml/goals.html

Oregon Fire Chiefs Association. (2000). *Skinny Streets in Oregon*: A video about the access problems created by skinny streets. Tualatin Valley Fire and Rescue, 741

LaCroix, C.A. (1992). *Incident command begins with proper fire department access* (tech. Rep. No. 21476). Emmitsburg, MD: national Fire Academy.

National Fire Protection Association. (1997). Fire Protection Handbook (18th. Ed.), (p. 1-12). Quincy, MA:

Platt, R., (1996). Land Use and Society: Geography Law and Society. Covelo, CA: Island Press, pp. 79-85

Portland Oregon Traffic Management Bureau. (June, 1992). Speed Bump Evaluation Status Report, pp. 4-6.

Swift, P., (2000, September 20). Residential Street Typology and Injury Accident Frequency. [On-Line] Available: http://members.aol.com/phswi/swift-street.html

Smith, E., Transportation and Growth Management Program, (2000, August). Neighborhood Streets. Poster Session presented to the fall meeting of Governor Kitzhaber's fire Policy Council, Salem, OR.

S. Bill, 3508, 51st. Oregon Con., (1997)