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Emergency Response and Street Design Initiative

Street Design, The International Fire Code, 2012 and Beyond

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In the fall of 2007, following the award of a grant from the U.S. Environmental Protection Agency (EPA), representatives from the Congress for the New Urbanism (CNU) began an earnest effort to engage members of the fire service in a dialog about community design, street widths, traffic safety, emergency vehicle response needs and the potential for finding common ground. CNU's initial report, along with a number of other resources that detail the discussions that took place between members of CNU and the fire service, relevant research, and information on one of the fire code development processes, are available on CNU's website: http://www.cnu.org/emergencyresponse.[1]

This paper is presented as an effort to 1) give the lay reader a reasonable level of understanding as it relates to the nature and operation of the fire service in the United States, 2) describe the current state of the street design dialogue initiated in 2007, 3) suggest some potential avenues for continuing and expanding the dialogue that began in 2007, and finally 4) to suggest some avenues for effective communication to both urban designers and fire service professionals that might help bridge the chasm that often exists when urban design goals appear to clash with the need for maneuvering emergency vehicles within and around neighborhoods and communities.

Fire truck meet and greet, Danville, PA. (Photo courtesy of Mike Styer)

Fire Departments and History

The author does not intend to provide an exhaustive history of the fire service even for the United States. There are numerous books, web sites, fire museums, and other sources to satisfy the truly curious. However, it may be helpful for urban designers and traffic engineers to know a little about the fire service in the United States and additionally a bit about how the current fire and building codes began and how they have developed over the past several hundred years.

Community fire safety in North America (exclusive of Native American efforts) is as old as the European colonies. Firehistory.org reports that the Boston Fire Department was established in 1678[2] and is the oldest continuously operated organized fire department in what is now the United States. The National Fire Protection Association (NFPA) noted that following a conflagration in 1679, the City of Boston made it the first paid fire department in North America and possibly the world. [3]

Accepting that there may be a few exceptions, most fire departments in the United States began as rural or small town volunteer fire companies or fire brigades. With a few exceptions like the Boston Fire Department, the trend for cities to hire and equip paid fire departments began in earnest in the mid-1800s.

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Melding Vital Missions

Reconciling missions of different city departments can be challenging. I learned this as mayor of Milwaukee from 1988 to 2004. One department, lets say public works, is sincerely interested in calming dangerous traffic, and another department, say the Fire Department, is passionately focused on getting to emergencies as fast as possible.

Narrow, well-connected streets can decrease pedestrian injuries and deaths. They also foster more efficient access by emergency vehicles. Planners and traffic engineers take their responsibility to design streets very seriously. Street design affects mobility, pedestrian safety and development patterns. For fire officials, access is critical. Arriving late to what becomes a fatal fire is not an acceptable outcome. Both fire professionals and traffic planners have deep concerns. CNU's Emergency Response and Street Design Initiative aims to reconcile good street design with effective emergency equipment access.

Since 2008, in cooperation with the Environmental Protection Agency, CNU has engaged with local fire officials, planners, engineers, and the International Code Council to find common ground on this issue. The project culminated in a code hearing in May 2010 on two CNU sponsored revisions to the International Fire Code that would allow for greater flexibility in street designs. Although these amendments were not adopted on the first round, we have received encouraging words from members of the code council on both our amendment proposals and sustainable street networks in general. In addition to the ICC amendment, CNU has conducted various outreach activities, including a 2009 Portland Transportation summit where Page Dougherty and Rolland Crawford, both former fire marshals who initially opposed the ER Initiative efforts, became allies. CNU continues to search for similar outreach opportunities.

CNU's involvement in this project is just the latest example of a commitment to healthy, safe, and livable communities. While there are often significant institutional barriers to achieving these goals, we are committed to working cooperatively toward a bright future. In today's troubled times these goals have become even more important: compact, walkable communities address climate change and increase efficiency. Communities with a strong sense of place also promote local business and provide a better setting for jobs and economic opportunities.

Carl Wren, Engineering Manager at the Austin, TX Fire Department, and CNU Emergency Response Initiative Partner, has been involved with the ER project from the beginning. He presented the CNU sponsored amendment to the International Fire Code in May, 2010, and has written an essay that describes our activities, research needs, and next steps. It is our hope that by communicating the history of this project we will encourage CNU members and allies to continue work on the project. We are proud of our accomplishments thus far, but recognize that we have much work ahead.

John Norquist, President & CEO

Today, the fire service in the United States includes many large, fully-paid fire departments and the number of fire departments that are converting to paid or at least partially paid departments is growing rapidly. Even so, while most mid-size and larger cities are served by paid fire departments, the majority of fire departments in the United States report that they are staffed with volunteer firefighters. [4]

Fire departments are by nature paramilitary organizations and rank structure is typically very important as is following the chain of command. A typical fire department (a typical department would not necessarily include extremely large departments like Fire Department New York or the Chicago Fire Department) is headed by the "fire chief" or "chief" who may be assisted in administering the affairs of the department by subordinate officers who hold a "chief officer" rank. Larger fire departments may have a level of these chief officers who hold the rank of "assistant chief" or "deputy chief" who oversee major functional areas of the department. The chief officer rank may also include one or more "division chiefs," "district chiefs," and/or "battalion chiefs." These first and second level chief officers may manage all responding firefighters, only a shift of the emergency responders, or a major division or section of the department like training, safety, fleet, or fire (or emergency) prevention. The head of the prevention division or section is often given the title of "fire marshal" in addition to the functional rank of a chief officer. In smaller fire departments, division and section heads including the fire marshal may be assigned to ranks below the level of a chief officer. The fire marshal commonly supervises or manages fire code administration and enforcement, public fire safety education, and fire cause investigation. In departments that can employ firefighters and/or fire officers who are also peace officers, fire cause investigation may be expanded to include criminal arson investigation and enforcement. In small departments plan review may actually be a direct responsibility of the fire marshal. In most larger departments, especially those in which the fire marshal serves at a chief officer rank, a subordinate officer (e.g. captain or lieutenant) or a fire protection engineer may perform day to day plan review and code enforcement while the fire marshal (chief officer) generally serves as a manager who may be the first level of appeal concerning a code-related decision.

Below the ranks of chief officers are first line supervisors of stations or responding apparatus. The firefighters of a station or an emergency response apparatus are often called "companies," and the first line supervisors are often referred to as company officers. These company officers are usually assigned the rank of captain or lieutenant. The firefighters reporting to the company officer include the apparatus driver, sometimes called "driver," "engineer" or "specialist." Firefighters also include entry level firefighters who are sometimes referred to as "tail board" firefighters. Fire attack teams are made up from these company fire officers and firefighters.

Most of the men and women who serve in the fire service as individuals serve based at least in part on altruistic motives and a caring spirit. However, other factors such as funding, community expectations, training and education, and individual and departmental experience all impact decisions by fire departments and their members. While there are some issues that ignite passions and unity across the spectrum that is the fire service, it would be a serious mistake to assume that fire service is a homogenous entity.

Codes and Standards Affecting Fire and Life Safety

In 1796, New Orleans (then a Spanish Colony) adopted a law prohibiting wood roofs.[5] Just as Boston established the first paid fire department in the United States, the board of selectmen in Boston also adopted one of the first fire safety ordinances in North America in 1631 when it prohibited wooden chimneys and thatch roofs following a disastrous fire.[6] As with these two laws, the development of fire safety legislation has been almost exclusively a reactionary process throughout the history of the United States and likely most of the world.

A narrow street with mountable curbs in Longmont, Colorado. (Photo courtesy of CNU)

While obviously the fire service had an interest in and probably provided input to some of the early fire safety legislation, none of the early building codes were developed or published by purely or even predominately fire service organizations. The first model building code developed in the United States was the National Building Code, published first in 1905 by the National Board of Fire Underwriters (later the American Insurance Association). It was followed in 1927 with the first edition of the Uniform Building Code published by the Pacific Building Officials Conference (later the International Conference of Building Officials [ICBO]), by the Standard Building Code published by the Southern Building Code Congress International [SBCCI] in 1945, and then the National Building Code by the Building Officials Conference of America (later the Building Officials and Code Administrators International, Inc. [BOCA]) in 1950.[7] The NFPA, which was established in 1896 was also busy in the early twentieth century developing fire and life safety standards and codes. In 1927, the NFPA published the first version of its "Building Exits Code," which later became the "Life Safety Code." The current edition of the NFPA's Life Safety Code is the 2009 edition. [8]

Consensus regional and national fire codes were not common until after 1970. The ICBO in cooperation with the Western Fire Chief's Association (WFCA) published the Uniform Fire Code (UFC) from 1970 through the 1997 edition. NFPA published its fire code (NFPA 1) from 1971 through the 2000 edition. Between 2000 and 2003 the WFCA partnered with NFPA to merge the NFPA 1 Fire Code with the Uniform Fire Code and publish the 2003 edition of the Uniform Fire Code as the NFPA 1 Uniform Fire Code. The 2009 edition is the current edition of NFPA 19. The SBCCI partnered with the Southeast Fire Chief's Association to publish the Standard Fire Prevention Code from 1974 through the 1997 edition. BOCA published its National Fire Prevention Code from the 1960s through the 1997 edition.

In 2000, BOCA, ICBO, and SBCCI merged and became the International Code Council (ICC) which published the 2000 editions of the International Building Code (IBC) and the

International Fire Code (IFC). These codes make up the backbone of the code set published by ICC and are revised on a three year cycle. The 2009 edition is the most current edition of the IFC. [9]

A jurisdiction may adopt the ICC's published fire and/or building code or the codes published by the NFPA. It is rare, though not unheard of, that a jurisdiction would adopt the building code from one of the organizations and the fire code of the other. The two code development organizations coordinate the content of their respective codes in a strenuous effort to prevent their codes from containing conflicting provisions. In the limited number of jurisdictions that mix the codes of the ICC and the NFPA, there is a need to consciously consider whether unexpected conflicting provisions might arise and how to handle conflicts if they do occur. While there are exceptions, the NFPA 1 Fire Code is most commonly adopted in the Eastern parts of the nation and Hawaii, while the IFC is adopted in most other areas of the United States.

As will be discussed in more detail, both the IFC and NFPA 1 allow the fire code official or authority having jurisdiction (AHJ) to extend the maximum distance measured from fire department vehicle access to the most remote point on a building when the building is protected by a fire sprinkler system. In the IFC, this increase is almost entirely at the discretion of the code official. In NFPA 1, the distance to remote points on a building can be increased from 150 feet to 450 feet so long as at least one door is within 150 feet of the access road. Both the IFC and NFPA 1 specify a minimum street width of 20 feet but both codes also allow the code official or AHJ to evaluate and, when appropriate, to approve alternate approaches to code requirements. Both codes also have provisions that allow the code official or AHJ to require multiple access roads when conditions of the terrain or the roads themselves could limit access. Hence it is logical to conclude that increased connectivity is generally needed to in order to design roads that present a greater possibility for congestion.

It is interesting to note that the first editions of the various consensus fire codes were predominately maintenance codes which deferred most new construction requirements to the sister building codes. Until the last 15-20 years of the 20th Century, the fire codes had little if any impact on land development or the construction of buildings. Of particular interest to traffic engineers and land development professionals, emergency vehicle access requirements were not incorporated into the published codes until the 1970s and the only requirement in the first editions addressed vertical clearance. There were no requirements in the 1970 or 1973 Uniform Fire Code related to roadway width or length of dead-end drives. Because of this, the majority of the developed areas of the country, including both the more compact towns and villages from before World War II and the broad street automobile friendly suburbs of the 1950s and 1960s, were constructed with very little if any legal input from the fire service. The author still often hears firefighters say that they will (can) deal with whatever conditions are dished out to them. These statements are made because the firefighters do not see that they can impact what is constructed or where it is constructed. These comments are from firefighters in a department that has adopted a consensus fire code since the 1973 edition of the UFC. A good summary of the nation's fire and life safety progress through the late 1980s can be gleaned from two excellent sources, "America Burning" and "America Burning Revisited," which are available on-line from the U.S. Fire Administration at http://www.usfa.dhs.gov/downloads/pdf/publications/fa-264.pdf and http://www.usfa.dhs.gov/downloads/pdf/publications/5-0133-508.pdf respectively. This background is important for those outside the fire service who would understand the

Woonerf in Seattle demonstrating how narrow streets create great places while accomodating emergency equipment access. (Photo courtesy of CNU)

urgency and passion of many fire service personnel.

It seems that many people in the fire service do not have this clear an understanding of the background for land development, traffic engineering, or the New Urbanism. Those of us who were fortunate enough to participate in more than one meeting during the CNU Initiative likely have a better understanding of the relationship between connectivity and narrower streets than most of our fire service colleagues, but none of us at this point is qualified to provide accurate and meaningful background information for the fire service as a whole. It would be a great service to the fire service and to our various communities if a concise history of the bases for subdivision development, street and road design and New Urbanism could be drafted and published to assist in furthering this understanding. As will be discussed later, a better understanding of traffic safety issues and possible prevention measures, including engineering measures - not just vehicle modifications - for the causes of traffic injuries and fatalities are needed.

Results and Implications of the 2009 ICC Code Development Hearings

There were three significant code change proposals in 2009 during the development of the 2012 edition of the International Fire Code that were directed at fire apparatus access roads. Two proposals, designated F16 and F237, were the direct result of the EPA funded CNU Initiative and one, designated F17, was submitted by the Joint Fire Service Review Committee, an ICC organized fire service code development committee which was not directly involved in the CNU Initiative. The Joint Fire Service Review Committee reviews all code change proposals for potential impact on the fire service and also develops code change proposals to address issues that are brought to the committee by the various fire service organizations that the committee members represent.

F16 and F237 (the complete text of these proposals is available at www.cnu.org/emergencyresponse or at www.iccsafe.org) were developed to clearly empower fire code officials to consider roadway designs of any width provided that reasonable emergency access was achieved and a high level of fire and life safety was maintained. These proposals were developed with the specific purpose of increasing communication between fire service officials and urban planners and traffic engineers, and with the intent that fire code officials give serious consideration to how street and road design might contribute to traffic safety within their communities. It seemed that this would fit well with a fire department that has a goal of developing strategic partnerships for reducing the overall risks faced by our communities, a goal embodied in at least one course in the fire prevention management program at the National Fire Academy [11] and in the goals of the "Risk Watch" community risk reduction education program developed by the NFPA.[12]

F16 was intended to be a clarification and affirmation of the authority of the fire code official already extant in the code. F237 was drafted and later modified by public comments to create a fire code appendix to define the goals and objectives - the performance based issues - that define what reasonable emergency access might encompass. Both F16 and F237 were rejected by the membership of the ICC during the final action hearings in Dallas, Texas.

F17, What It Could Mean

It is interesting and important to note that F17, which was approved and will result in a 2012 IFC requirement that all traffic calming measures be approved by the fire code official, seems to have been developed for many of the same reasons that impacted F16 and F237, but from a very different perspective that is unrelated to CNU's proposal. As noted above, the code provisions for emergency access are relatively recent in the overall scheme of regulating land development and construction in the United States. From the discussions and testimony at both the fire code committee hearing and the final action hearings, it seems that many members of the fire service have, or believe that they have, experienced being excluded from or circumvented in the decision making processes concerning narrow street developments and in the crafting of development priorities for their communities.

"Relationships between proponents of narrow streets (traffic engineers, land planners, and new urbanists) and the various fire service organizations need to be pursued."

At the start of the EPA/CNU Initiative the author experienced significant expressions of anger from new urbanists for their experiences (real or perceived) of a lack of cooperation, even a lack of consideration, from fire code officials. It cannot be overstated that this author has observed a similar level of anger from fire officials who seemed just as sure that the development community had refused to cooperate with them or to consider the needs of their fire departments. The author has had numerous discussions with fire code officials who, correctly or incorrectly,

feel like they are the last people to be contacted about new developments within their jurisdictions. During testimony at both the fire code committee hearings in Baltimore, Maryland and at the final action hearings in Dallas, Texas the goal communicated for F17 seemed to be to try, by this new code provision, to ensure that the fire service be given a place at the table early in the design of new subdivisions and of all traffic calming measures, even if that place at the table might be gained at the expense of losing the possibility of maintaining amicable working relationships with the traffic engineering and land development professions in our communities.

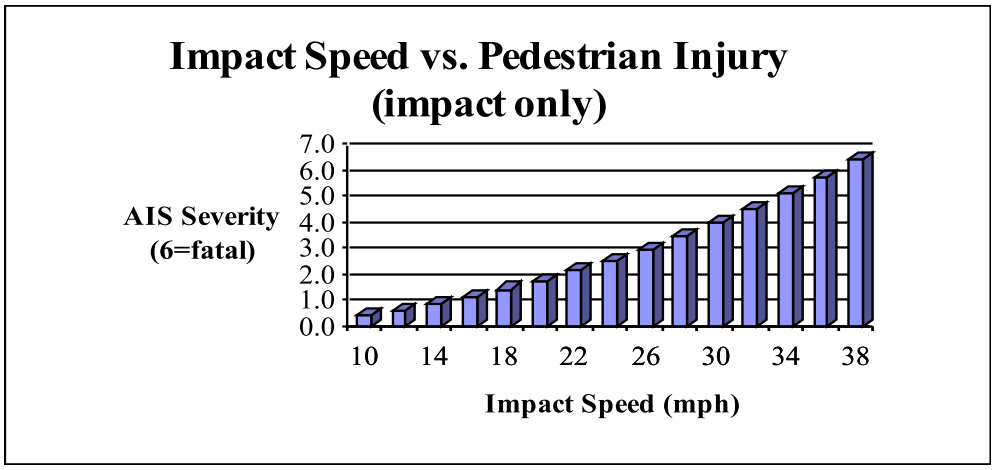
Based on the approval of F17 and the rejection of both F16 and F237, it is safe to assume that the majority of fire code officials involved in the code development process do not believe that they have experienced collaborative relationships with developers or traffic engineers and that they have not been party to the searches for common ground on community safety objectives that were typical of the interactions experienced by many of the fire service representatives involved in the CNU Initiative.

It is also important to understand that fire departments are more and more feeling the pressure of litigation and some have been subjected to lawsuits related to what people have perceived to be delayed or inadequate responses. [13,14,15]

It is possible that expanding the communication with new urbanists and smart growth advocates to an even broader representation of the fire service could have bridged the information and trust gap that caused the majority of ICC voting members to reject F16 and F237. It is also important to understand that people both inside and outside the fire service believe that delays in reaching heart attack and stroke patients is more of a problem and either does, or could, result in a greater loss of life than injuries from traffic accidents. [16] So it could be that additional research involving both traffic safety professionals and fire service professionals could help (and could have helped) bridge the gaps in the emergency vehicle access debate.

This background on fire departments and on risks of fire to health and life safety is essential to any discussion about meaningful risk reduction and improvements to the quality of life within our communities. But it is also essential for fire departments to understand our planning and engineering colleagues and their passions and their goals for our communities.

For any business, governmental or personal relationships in which we might participate, the mutual distrust and the lack of communication we are all commonly experiencing are recipes for trouble as a best case and disaster as a worst case. So given that we cannot afford to forsake communicating with other professions and governmental agencies, what do we do now?



A study by Peter Swift illustrates the connection between road widths and pedestrian injuries. Similar research needs to be pursued on a large scale. (Image courtesy of Peter Swift)

Possibilities for Future Code Related Efforts

If one works from an assumption that research supports and will continue to support a conclusion that narrow streets and narrow streetscapes make a significant difference in pedestrian and bicycle safety and that an expanded use of these types of traffic calming designs coupled with increased street connectivity will further increase community traffic safety, it makes sense that changes in the fire codes and changes in the street design standards should at some point be made to explicitly recognize that increased level of safety. To that end, relationships between proponents of narrow streets (traffic engineers, land planners, and new urbanists) and the various fire service organizations need to be pursued as discussed in

"Isn't it finally time for the problem solving abilities of the planning, engineering, and fire service communities to be brought to bear on seeking ways that we can improve our communities and make meaningful reductions in traffic related injuries and fatalities?"

more detail below. It is important to stress that additional research seems to be justified in order to investigate the relationship between street and roadway width and the frequency and severity of accidents involving motor vehicles.

The next ICC code cycle has been set and the deadline for code change proposals directed to the 2015 edition of the International Fire Code is January 3, 2013. That gives proponents almost exactly two years to establish new working relationships with the various fire service organizations, to try to statistically demonstrate a more widespread relationship between street width and severity of motor vehicle accidents, and to submit one or more code changes clearly supported by data analysis representing statewide and possibly national incident data. Hopefully by nurturing a broader level of interaction between new urbanists and fire service representatives a deeper level of understanding and cooperation will result in mutually acceptable and mutually beneficial design concepts and emergency prevention strategies that will enhance the viability, sustainability, and livability of our communities.

As a closing point on the issue of code development, it is also important to note that the 2012 edition of the NFPA 1 Fire Code is set for final ballot in the summer of 2011 in Boston. There are at least two code changes in the process that could impact the way emergency apparatus access roadways are designed. Proposal 1-58a (Log CP#35) and proposal 1-102 (log #29) [17] address fire department access. Proposal 1-58a, unless overturned by a floor vote at the NFPA's annual meeting in June 2011, will allow a performance based approach to designing fire apparatus access in jurisdictions that adopt the NFPA 1 Fire Code. Proposal 1-102, unless overturned by a floor vote at the NFPA's annual meeting in June 2011, will require that the code's fire apparatus access criteria be applied to both public and private portions of the access roadway. Following the final vote on the 2012 edition of NFPA 1 in 2011, the next opportunity for making code change proposals will be associated with the 2015 edition for which NFPA will likely accept proposals through the fall of 2012. Interested parties should monitor the NFPA web site (www.nfpa.org) for a more detailed schedule for the next NFPA 1 cycle which should be available sometime after the NFPA June 2011 annual meeting.

Focus Our Effort on Community Risk From Both Fire Emergencies and Traffic Related Emergencies

Over the years the emphasis on fire safety and the development of new life saving technologies like residential smoke alarms and fire sprinkler systems have resulted in significant reductions in fire related life loss (from 6000+ pre-1980 to 3745 in 2001 and 3430 in 2007)[5,18,19] and fire related injuries (from 100,000+ pre-1980 to 20,300 in 2007 and to 17,675 in 2007) [5,18,19]. In that same time frame traffic injuries have remained almost constant at 3,000,000 +/- injuries per year.[20] As noted in an earlier paragraph the author is not an expert in traffic or vehicular safety, but it seems intuitive that improvements in vehicle design and the use of seat belts and air bags have likely contributed to a reduction in traffic related fatalities from 51,091 in 1980 to 42,196 in 2001 and 41,259 in 2007.[21]

Members of the public continue to clamor for more and more traffic "calming" devices in their neighborhoods and this simply would not be the case if it were not sincerely believed that traffic speed has serious implications for the safety of our neighborhoods and communities. Fire code requirements or not, if our communities want traffic calming devices and methods deployed in our neighborhoods, it is unlikely that they won't be forthcoming. Is it not intuitively obvious that an emergency service that responds to more medical and rescue calls than to fires should not ignore the potential to save lives and prevent other emergencies? Without this type of effort, can we remain the most trusted and relevant force for improved community safety? One problem is a lack of clear documentation and communication of the potential for changes in infrastructure design and engineering to make meaningful improvements in traffic safety. While there is at least one excellent peer reviewed study of the correlation between street width and traffic injuries and deaths [22], the topic does not seem to have been researched or documented using national or even statewide accident data. The number of articles and web sites related to other contributing factors so overwhelmed the few if any that analyze the impact of street width that the author could not find any other similar research. If this research has not been done, isn't it finally time for the problem solving abilities of the planning, engineering, and fire service communities to be brought to bear on seeking ways that we can improve our communities and make meaningful reductions in traffic related injuries and fatalities?

A last long term suggestion for future study or research is really a suggestion for the fire service that the author loves and has long served. There is a real possibility that we should look at the sustainability of deploying ever larger apparatus. Is it likely that fuel prices will stay as low as their current levels, are there any reasons to believe that prices could even fall far further? Do we want our own children and grandchildren to have to be fearful of riding their bikes or crossing the streets in our neighborhoods? Do

we really want to drive extra miles to negotiate new neighborhoods full of cul-de-sacs because families are fearful of and opposed to fast paced drive through traffic or continue building roadways that will in five to ten years be riddled with speed humps, speed bumps, and other make shift traffic calming devices? Given the wide variety of missions the fire service is required to support, there likely is a minimum size of apparatus that will suffice. But, has the design of apparatus also been evaluated in light of the total pavement needed, fuel efficiency, funding impacts (both capital and O&M), and the safety of such large vehicles in terms of maneuverability, driver field of vision, and stopping distance? Perhaps this research and analysis has been done and the optimum design(s) has (have) been determined. If so, there is little that can be done to adapt to smaller more maneuverable apparatus. But it seems important to ask the question.

Practical Avenues for Productive Interaction in the Short Term

One of the obvious outcomes of the fire code development cycle for the 2012 International Fire Code [9] was widespread agreement that the fire code as published does indeed empower fire code officials to consider fire access roadways of any width when a reasonable level of fire and life safety can be demonstrated (see www.cnu.org/emergencyresponse for a video of the hearings). One does need to know if the state or local adoption statutes or ordinances modify the authority of the code official. But, unless modified by the adopting jurisdiction, these sections give code officials several options for addressing difficult code compliance problems.

The public testimony spoke to the numerous fire departments that have addressed walkable and bike friendly developments within their jurisdictions including the issue of street width and access distances. Several sections of the IFC and the National Fire Protection Association's Fire Code (NFPA 1)[10], can form the basis for alternative designs for meeting the access specifications in IFC Section 503 and NFPA 1 Section 18.2.3.

IFC Section 104.8 ("Modifications") and NFPA 1 Section 1.4.3 allow the fire code official to consider almost any approach to a fire code compliance problem for which there are no practical ways to achieve full code compliance, provided that the solution complies with the purpose and intent of the code (see IFC Section 101.3 and NFPA 1 Sections 1.1 and 1.2) and does not lessen code requirements for protecting health, life or fire safety. IFC Section 104.9 ("Alternative materials and methods") and NFPA 1 Sections 1.4.1 and 1.4.2 allow the approval of designs and/or construction methods that provide a level of fire and life safety that can be demonstrated to be equivalent to the level of safety provided by strict code compliance.

IFC Section 503.1.2 and NFPA Section 18.2.3.3 acknowledge that there may be conditions inherent in roadway design that could result in limited access due to congestion, traffic conditions or weather events and where this is a foreseeable problem this section requires that additional access roadways be provided. These sections in particular seem to be included to permit the code official or AHJ to require greater connectivity where access could be compromised as might be the case when narrow streets exist or are proposed. The exceptions to IFC Section 503.1.1 (and comparable sections of NFPA 1 allow the code official to approve reduced access under three other conditions. The first condition for which reduced access might be acceptable is a situation where the affected buildings are protected by automatic fire sprinkler systems. A subdivision or a jurisdiction which requires all residences to be protected by residential sprinklers might be acceptable even if all access roadway provisions cannot be met. The second set of conditions for which reduced access might be acceptable would be areas where water ways, nonnegotiable grades, or other topographical features preclude full access provided that some type of alternative fire protection measures are provided. This second set of conditions is very similar to the provision in section 104.8 for "modifications." The last set of conditions addressed by the exceptions to 503.1.1 is related to the construction of isolated single family homes and rural structures and would probably not apply to many scenarios involving new urbanist developments. All interested parties would do well to review the recordings and transcripts

Next steps for the CNU Emergency Response Initiative

Additional research studies on the relation between road widths to traffic injuries and fatailites.

Outreach and understanding between fire officials, planners and engineers through conference presentations and summit participation.

Pursuit of future code revisions that empower fire officials to approve good street design that promotes overall life safety.

of the fire code committee and final action hearings related to proposals F16, F17, and F237. Fire service professionals need to understand the purpose and intent of the code and be ready to give a reasoned and unbiased look at alternate design approaches and the implications for the probability of occurrence and the potential severity of all types of emergencies, not just fires. Planners, land development engineers, and other new urbanist professionals need to address the realities presented by the actual apparatus and fire service staffing within communities of interest. They also must investigate how the development might impact access and response times for the emergencies that will almost certainly occur in the future while still clearly communicating the potential value of their project designs to the community in terms of automobile, bicycle and pedestrian safety, increased physical fitness, increased street connectivity, and the overall quality of life in the community.

The fire service, planners, traffic engineers, and new urbanists need to further pursue open and honest dialogue that communicates our passions, our needs, and our desires in productive venues. The planning and engineering members of CNU and allied organizations, such as the American Planning Association and the Local Government Commission, might be well served by participation in or presentations to fire service related forums such as the National Fire Protection Association (NFPA), the International Code Council (ICC), the International Association of Fire Chiefs (IAFC), and the International Association of Firefighters (IAFF). Whenever possible, fire service personnel need to engage in the discussions and presentations at venues ranging from CNU Congresses and Transportation Summits, to conferences sponsored by the Local Government Commission (LGC), and the conferences of the American Planning Association (APA). This is not an exhaustive list and the need for communication is great.

On the local level, developing professional, mutually respectful relationships will not occur serendipitously. We need to cultivate local relationships in order to truly understand the scope of the problem from all of the various viewpoints. All of us need to understand that, in spite of the current downward trend in fire related deaths and injuries, the time between ignition and untenable conditions is rapidly decreasing due to the combustion properties of current furniture manufacturing and materials. Planning and design professionals need to understand the very real limitations created for the fire department and emergency services by the various response capabilities expected of them and the equipment needed to meet those expectations. Installed fire protection in buildings should be weighed heavily when designing for reduced traffic speeds. The equipment currently in use by the local fire service probably cannot be speedily replaced and the turning radii and the physical dimensions of emergency equipment have serious implications for the local emergency service agencies. On the other hand the fire service needs to know what the implications might be concerning credit for fire sprinkler systems and other installed fire protection, traffic safety, congestion, and response time from wide streets throughout a jurisdiction. It is entirely likely that inflexibility in the design of roadways will simply result in the expanded use of cul-de-sacs, dead-end streets, and band-aid traffic calming efforts such as inadequate roundabouts or traffic circles, speed humps, and, even worse, speed bumps.

Closing Request

The author is not under any delusion that there is an excess of available time for doing traffic safety research. But, as time permits, this author intends to start combing traffic safety data sources and, if possible, glean information that might be useful in an ongoing discussion of infrastructure improvements and new urbanist designs. It is hoped that an analysis exists or can be developed that clearly and more universally substantiates the impact of street design on traffic speed and on the potential for traffic related injuries and deaths. It might also be interesting to investigate the reported impact of response time on survival for cardiac arrest patients. Hopefully the author is not alone in this desire to more fully explore these important issues affecting life safety and health in our communities and nation.

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