SMART GROWTH STREETS

AND EMERGENCY RESPONSE

CONGRESS FOR THE NEW URBANISM/U.S. ENVIRONMENTAL PROTECTION AGENCY OCTOBER 4, 2008, WORKSHOP

On October 4, 2008, a group of civil and traffic engineers, fire marshals, urban designers, town planners, and land use attorneys (Appendix A) reconvened to continue their dialogue about street design solutions that are mutually acceptable to firefighters (their operational and response time needs) and New Urbanists and smart growth advocates (their goals for compact development with interconnected networks of narrow streets and calmer neighborhood traffic). The October discussion centered on emerging potential code language that could be vetted by participants at the Congress for the New Urbanism's (CNU) November 6-8, 2008, Transportation Summit in Charlotte, North Carolina. It built on an earlier discussion (April 1-2) that enabled the same group to educate one another and identify areas where consensus already existed or did not yet exist (those that needed further discussion) and common values (Appendix B). Both the April and October convenings were part of a Congress for the New Urbanism and U.S. Environmental Protection Agency (EPA) initiative that aims to bring together emergency response officials, local government officials, transportation experts, and developers in a collaborative problem-solving process around the issue of meeting the needs of emergency responders through the design of smart growth streets.

OPENING COMMENTS

CNU President and CEO John Norquist opened the October 4 discussion by emphasizing that the goal is to have a consensus on model code language in time to meet the International Code Council's (ICC) March 24, 2009, deadline for the submission of proposed code changes. "To reach a true consensus," Norquist noted, "we need to take our time, engage in honest discussions, and make sure that nothing is swept under the rug. All opinions need to be on the table. The end-focus needs to be the net best for public safety." Norquist, who served as mayor of Milwaukee, Wisconsin, from 1988-2004, commented that the city had experienced the benefits (e.g., rising property values) of facilitating, not slowing down, positive development. "That approach will benefit other cities, including those that need development (for example, a Detroit or a Cleveland)." Opening comments concluded with the observation that ideas generated during the day would be vetted at the November CNU Transportation Summit in Charlotte.

BACKGROUND PRESENTATIONS

As summarized on the next five pages, the morning discussion on October 4 focused on background presentations that provided a context for the afternoon discussion of specific code

language and steps for moving forward. The presentations may be downloaded from CNU's website <www.cnu.org/emergencyresponse>.

A Recap of Relevant International Code Sections and Potential Solutions
(Patrick Siegman, Nelson\Nygaard, a transportation systems planning firm)

Siegman reported on what he, as a transportation planner, has learned in conversations with fire marshals. A shared goal is to improve life safety by reducing fire- and traffic-related injuries and fatalities. A lesson learned is that the context for a proposed development project should be considered when deciding on street widths or when purchasing fire apparatus – a one-size-fits-all decision-making approach will not work. For example, older, pre-World War II communities and newer post-war communities provide two very different contexts when reviewing a proposed development project. That is if the project would be added to:

- An older, pre-war community that has narrower streets. An example is Palo Alto, California, neighborhoods that have streets measuring 24 feet wide curb-to-curb with parking on both sides of the street and driveways that provide gaps where a driver can pull over to make way for an emergency vehicle. Fire departments in such a community already have the staff, training, and equipment needed for operating on those streets.
- A newer, post-war community that has wider streets. An example is Carson City, Nevada, which features larger lots, development that is more spread out, and a wider street grid. In that community, the existing fire equipment and staffing levels were chosen on the assumption that all streets would be wide.

In other comments, Siegman reviewed potential issues with Mutual Aid agreements when, for example, an older city like San Francisco – which has narrower streets and fire equipment (and trained fire fighters) that can operate on those streets – requests assistance from nearby newer communities that have wider streets and equipment chosen for, and firefighters trained for, those streets. Important to the mutual aid discussion is the Mutual Aid Box Alarm System (MABAS) that is going nationwide and will require nearby cities and suburbs to provide aid to each other.

Siegman also reviewed the advantages of:

- Wider streets – for example, faster response time, easier turning radii, and more room for firefighters to connect hoses to pumps on the side of an engine and room to work around them and deploy stabilizers on aerial ladder trucks
- Narrower streets – for example, a reduction in the number of injuries and fatal collisions per mile and the amount and speed of stormwater runoff and a safer, more desirable pedestrian environment
- Interconnected streets – for example, multiple ways for emergency response vehicles to access and evacuate from a particular location, reduced traffic congestion and vehicle miles of travel because of more route options, and slower traffic because drivers encounter cross traffic at frequent intervals

Possible design solutions that would help make narrower streets work for firefighters include:

- Street design solutions – for example, 20-foot clear zones that can be used to stage firefighting equipment, mid-block bulb-outs with red curbs at least every 150 feet, bulb-outs at intersections to allow staging, bike lanes that can be used for emergency vehicle pull offs, limited block lengths, and paired driveways, which create clear zones
- Fire apparatus design solutions – for example, roll-up doors on equipment cabinets, manual ladder racks, ladders that deploy to the rear, aerial ladder trucks with outriggers that require less width, and fire apparatus with better turning radii. For those areas where aerial ladders must be used because of building heights, require wide streets.
- Neighborhood design solutions – for example, requiring connectivity and more compact development patterns and reducing response times through shorter routes from firehouse to homes

A question, Siegman continued, is whether to design streets to accommodate existing fire apparatus and staffing (more the norm) or alter fire apparatus and staffing to accommodate smaller streets. Factors to consider are the costs to build, equip, staff, maintain, and operate a firehouse and the costs of building and maintaining one linear mile of streets.

In their continued discussion of the above, group participants observed that:

- Tactics and strategies are important (Big cities like Chicago, Milwaukee, Boston, and Philadelphia have narrow streets and their buildings are not burning down, a fire fighter participant in the discussion noted.)
- One reason behind the move toward larger fire trucks is strained government budgets resulting in fewer firefighters; that means that those who go out need a truck loaded with equipment to address all possibilities. Another factor is that the suppression members of a fire department (not those in fire prevention and administration) typically specify the type of equipment that should be purchased. Those specifications may not address the type of streets that the fire department needs to reach and may assume streets with a 20-foot clear.
- Narrower streets can work if, for example, homes remain one or two family units and ladders are not required, and neighborhoods have more than one way in and out. The problems come when those units are replaced by four- and five-story, multi-unit buildings, and streets that were supposed to be connected are not.
- Any new code language that is developed should be viewed as an equal in standing and should be treated as an alternative (not a replacement) to current fire code requirements. (The CNU/Institute of Transportation Engineers [ITE] manual, *Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities*, is an example of this approach.) Such a process could be performance-based (if certain agreed-upon conditions exist, narrower streets are allowed) as well as prescriptive. An example is the recent Montgomery County, Maryland, fire code amendment. Such an approach will require coordination among different local government departments (for example, fire and planning).

ICC Development Review and Schedule: Suggested Approach to Code Change
(Carl Wren, Chief Engineer, Engineering Services Section, Austin Fire Department/Emergency Prevention Division)

The International Code Council's review process, Wren explained, is very open and transparent. The 13 international codes (which include those for buildings and fire protection) are comprehensive, must be coordinated and compatible with each other, reference consensus-based national standards, and are developed according to the same process in the same forum. Important dates related to the 18-month long review process include the following:

- 2009 – March 24, deadline for receipt of code change proposals; July 13, proposed code changes published; October 24-November 11, code development hearings in Baltimore, Maryland
- 2010 – January 11, publication date for public hearing reports; February 12, public comments due (published on April 16); May 16-24, final action hearing. Only the Fire Code Committee, which is made up of fire officials, architects, building professionals, and officials, can vote. A divisive proposed change may attract many such people representing the various points of view. Decisions may be appealed at the final action hearing; however, a two-thirds majority vote is required to overturn a ruling.

The council may take one of three actions: approve as submitted, approve as modified, or disapprove. A reason must be given for the action taken.

Other pieces of advice included:

- Because code changes require substantial supporting data, pay attention to collecting the data that will support the argument for narrower streets. An example is Peter's Swift's data documenting that street width is the most statistically significant variable that most frequently leads to accidents. (The chance of an injury accident increases by 25 percent with every two feet of additional street width.) That data should be published and peer reviewed, should be included in the reason statement for proposed code changes, and should be referenced during testimony at the code hearing. (No visual aids are allowed at the hearing.) Also important is to avoid giving the impression that the proposed changes would return the code to pre-1976 conditions. (Before that, the ICC had no street width standards.)
- Proposing changes as an exception to existing code that would apply in a specific set of conditions (e.g., Traditional Neighborhood Development or TND) would be the quicker way to go. An exception could potentially be approved on the first vote, whereas an amendment to current code will likely require several rounds of votes (and, therefore, take four to six years). The approach could be sequenced – the exception and a full amendment later.
- Dedicating one person to understand and track the ICC development review process and work out problems. Attention also must be given to drafting the suggested code language, which must be in a legislative format (for example, all proposed changes <u>underlined</u>, and proposed removals ~~stricken through~~). Suggested changes must include a "Reason for Change" statement, which can make or break a proposal, especially for changes that do not have political support. The "reasons" should include costs (with supporting facts) related to the proposed changes.

- Finding a new label for narrow or skinny streets (using those terms creates a negative image with fire chiefs); instead, try "streets with reduced width under certain specified conditions".

Another important piece of advice was to take a multi-path approach and not surprise decision-making groups. Groups to meet with include the:

- Fire and Life Safety Section of the International Association of Fire Chiefs (I-Chiefs), which works to reduce injury, life loss, and property damage. That group's work led to the approval of a proposal to require that residential fire sprinklers be installed in all newly-constructed one- and two-family dwellings. The new code will be published in the 2009 edition of the International Residential Code and will become effective in 2011. The Western fire chiefs have formed a subset of I-Chiefs (because of special regional concerns with fires) and should be consulted with.
- International Association of Fire Fighters, which represents full-time firefighters and paramedics. Firefighter members of the CNU-EPA initiative can help with making informal connections with leaders of this group and the I-Chiefs and their staffs.
- International Code Council's Code Technology Committee, which will meet in the fall and has various study groups, and the Code Council's Green Building Committee.

Urban Context Issues
(Peter Swift, Owner, Swift and Associates, multi-discipline design and engineering consulting firm)

Swift reviewed the elements of the walkable places that New Urbanists are seeking to create. Building heights and the relationship of the building to the street are two important factors. Studies document that the wider the building-to-building (and street) width, the greater the vehicle speed, which leads to significant increases in the injury accident rate. (The chance of an injury accident increases by 25 percent with every two feet of additional street width.)

One way of slowing traffic down and creating greater street safety is to create sense of spatial enclosure by locating buildings and trees. Other traffic-slowing techniques include varying road widths, allowing greater parking density (coupled with parking setbacks from corners to give fire equipment room to turn), and, as noted earlier, creating mid-block bulb-outs and bicycle lanes that, at the time of a fire, can be used as a pull-off area to allow fire engines to pass or stage. Yield streets (where, because of the street width, motorists stop and yield to oncoming vehicles) can also be used to slow traffic. Yield streets are typically 28 feet to 31 feet wide, depending on the specific region, and have parking on both sides. Therefore, they are appropriate in a semi-urban, general urban, and urban center (T-3, T-4, and T-5 on the Transect) context where daily needs can be met within a five- to 10-minute walk of homes. (The Transect is a planning framework that divides a region into six zones that move along a continuum from the most rural areas to the urban downtown core. That hierarchy of rural and urban intensities allows planners and developers to determine appropriate uses and design elements for each zone.) Yield streets are also appropriate for special districts (for example, a university campus or a special mixed area); they are not appropriate in a rural or urban center setting.

Swift concluded his presentation by encouraging workshop participants to review the Smart Code (a model ordinance designed by the Miami-based architecture and design firm of Duany Plater-Zyberk & Company [DPZ]) as an alternative to existing zoning ordinances that generally are

based on suburban-era standards and address only land use and density. Instead, the Smart Code addresses the physical form of buildings and development. Using that code, planners can regulate appropriate density, road and block dimensions and design, the design of parks, building frontages, the mix of uses, building design, parking, and other aspects of the human environment for each area in the Transect hierarchy. The code can be downloaded from <www.dpz.com>.

Suggested Approaches to I-Code Changes
(Frank Kinnier, Deputy Fire Marshal, Chesterfield County, Virginia, Fire and Emergency Medical Services, and Dan Slone, McGuireWoods attorney representing developers, localities, the CNU, and the U.S. Green Building Council, and co-author of A Legal Guide to Urban and Sustainable Development)

The discussion of suggested approaches to ICC changes began with the observation that the development of the proposed CNU-ITE *Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities* best practices manual provides a good modal for approaching ICC changes. A draft proposed code was developed by consensus and then reviewed by professionals in the field. As noted earlier in the discussion, the proposed code was presented as an alternative to existing codes. When assessing the best approach to gaining approval of ICC provisions that allow narrower streets, tactics and strategies need to part of the discussion. Building citizen support is also important.

Requirements, Dan Slone noted, are getting more stringent from the fire side (for example, more fire chiefs are requiring a 26-, not 20-foot clear for streets and alleys associated with potential multi-family locations) and although more fire chiefs are ready come to the table, many are saying that they have no flexibility in the street widths and turning radii that they can approve. As a result, Slone is seeing more compromised TNDs because of requirements that resulted in wider streets. One way to flip the current default position is to place standards for narrower streets in an appendix that can be adopted at a city or county council's option. Another route is the exception approach. The successful move to require sprinklers in one- and-two- family homes was presented as a change to the code and as an optional appendix. The appendix route also allows the applicant to supply additional reasons to justify the proposed change.

Slone's background memorandum (Appendix C, "Right-Sized Street Amendments to the International Fire Code (IFC)" outlined impediments in the IFC to incorporating right-sized streets into project designs, highlighted provisions of the IFC that permit local fire officials to approve or waive street width and other street specification restrictions, and suggested revisions to the code that would permit the approval and construction of the right-sized streets that are important to New Urbanist communities. That memo, a group member observed, should add more details describing the main features and benefits of TND and use language from LEED® (Leadership in Energy and Environmental Design) Accredited Professional, specifically, LEED® Design for Neighborhood Development (LEED® ND), a rating system that integrates the principles of smart growth, urbanism, and green building. Information on the Transect would also be useful to show that wider streets are appropriate in certain contexts.

CODE DISCUSSION: CONCLUSIONS

Approaches

- Take a two-prong approach to proposing code changes: As an exception, like Austin did with a proposed code change, and as an appendix (using the language from Dan Slone's memorandum, described earlier, as a starting point).
- Incorporate in all approaches a specific definition of TND or New Urbanist design as the context for proposed code changes.
- Solicit feedback via e-mail on the ideas generated through the day's discussion.
- Be ready by late January 2009 to submit code changes and prepare for code development hearings. Also be prepared to inject public comments into the process and document the proposed code language with peer reviewed, published studies.

Engagement

- Involve the ICC's Technical Committee and Green Building Committee, the International Association of Fire Chiefs, and the International Association of Firefighters in ongoing meetings.
- Ensure that supporting staff understand the technical aspects of the ICC review process, including requirements for the reason statement, which must take into account construction costs. A reference to the 1976 addition of street widths to the ICC is important, as is an emphasis on flexibility.

Possible Code Provisions

Less than 20-foot clear would be okay in the following circumstances:

Buildings with Sprinklers – examples:

- A one-story house less than 2,000 square feet that has sprinklers and is not on a cul-de-sac.
- A one- and two-family residential dwelling that is sprinkler-protected and not more than three stories.
- A building that is sprinkler-protected and not more than three stories.

Building Materials – example:

- A building made of non-combustible materials.

Street Connectivity – examples:

- Intersection densities of no less than 250 per square mile (an indicator of the degree of street connectivity).
- LEED® ND that has no less than 30 centerline miles per square mile (results in shorter but varied block lengths) and an average block length of 350 feet.
- Street connections that are no more than 530 feet apart, using the conversion table on the top of the next page. (This requirement could be a problem for state departments of transportation that typically do not want arterial connections at less than 1,000 feet because of access management.)

Street Connectivity Indicator

Intersections/ Sq. Mile	Intersections/ Mile	Av. Block Length	Centerline miles/ Sq. Mile
400…	20……..	264'……	40
256…	16…….	330'……	32
144…	12……	440'……	24 m
130*…	10…….	528'……	20 m

(*Intersections/square mile – lower figure per mile)

Also discussed was referring to interconnected road networks as a redundant road system (what firefighters care about) and having limits on the length of cul-de-sacs (for example, 150 feet). Also limit length of dead-in streets.

Ladder-Building-Street Relationship – examples:

- A building that can be served with ground ladders, which would vary by the size of ladders used by each community. For example, with 35-foot ladders, a window sill height of 27 feet above finished grade is possible.
- A fire department that has aerials that can deploy with stabilizers deployable in the 15-30 feet range.
- A three-plus story building with a 15- to 30-foot setback from the curb.
- A three-plus story building with a 15- to 30-foot setback from the center line of the street (to address the angle needed to set up a ladder, recognizing that angle determines the amount of load that can be put on a ladder).
- An alternative for older aerial apparatus is a ladder that can reach all building stories (i.e., no less than 15 feet and no more than 30 feet from building face to the aerial apparatus' centerline).

(A concern was raised that, while the 15 feet requirement would result in the building-street relationship desired by New Urbanists, the 30 feet requirement could cause a problem because of wider streets.)

Next Steps

The summary of this meeting will be circulated for participant comment. The code ideas will then be vetted at the CNU Transportation Summit November 6-8, 2008, in Charlotte, NC..

APPENDIX A: LIST OF OCTOBER 4 MEETING PARTICIPANTS

First	Last	Title	Company
Kevin	Nelson	Planner	U.S. EPA Development, Community and Environment Division
Jim	Charlier	President	Charlier Associates, Inc.
Jon	Davis	Project Manager/Writer	CNU
Frank	Kinnier	Deputy Fire Marshall	Chesterfield Fire & EMS
Rick	Merck	Sr. Fire Protection Engineer	Montgomery County Fire & Rescue
Neil	Lipski	Former Fire Chief	Milwaukee Fire Dept.
Frank	Nause	Asst. Fire Marshal	Chesterfield County Fire & Life Safety
John	Norquist	President & CEO	CNU
Jean	Scott	Senior Fellow	Florida Atlantic University Center for Urban & Environmental Solutions
Patrick	Siegman	Principal	Nelson/Nygaard
Heather	Smith	Planning Director	CNU
Peter	Swift	Owner	Swift and Associates
Carl	Wren	Chief Engineer	City of Austin Fire Dept.
Dan	Slone	Partner	McGuire Woods

APPENDIX B: SMART GROWTH STREETS AND EMERGENCY RESPONSE: SHARED VALUES

(as agreed to at the April 1-2, 2008, Smart Growth Streets and Emergency Response Workshop)

1. Life safety is important, should be inclusive, and extend from fire to traffic.

2. We value the efficient use of resources, including property, services, and infrastructure.

3. We value vibrant places that enhance pedestrian activity.

4. We value communities that include a range of neighborhoods and compatible uses.

5. We value streets, structures, and fire protection features that match the context of the neighborhood.

6. We value creative collaboration among those who serve and shape the built environment.

7. We value an ongoing process of education and capacity-building among those who serve and shape the built environment.

8. We value adaptation in life saving responses due to regional differences.

APPENDIX C: RIGHT-SIZED STREET AMENDMENTS TO THE INTERNATIONAL FIRE CODE

McGUIREWOODS MEMORANDUM

TO: Daniel K. Slone

FROM: Adam Lovelady
Heather N. Stevenson

DATE: September 30, 2008

RE: Right-Sized Streets Amendment to International Fire Code

You have asked us to evaluate the 2006 Edition of the International Fire Code (the "Code") to identify (i) impediments in the Code to the construction and incorporation of "right-sized streets" into project designs, and (ii) provisions in the Code that permit local fire officials to approve or waive street width and other street specification restrictions. In addition, you asked us to provide suggested revisions to the Code that would permit the approval and construction of the right-sized streets that are important to the development of New Urban communities.

Impediments

Several sections of the Code limit the size and location of roads that may be used to access a building for fire control purposes. These limitations function as impediments to incorporating right-sized streets in project design.

The Code defines a "fire apparatus access road" as a "road that provides fire apparatus access from a fire station to a facility, building, or portion thereof. This is a general term inclusive of all other terms such as fire lane, public street, private street, parking lot lane and access roadway."[1] Code § 502.1. The definition of fire apparatus access road is broad enough to prompt local fire officials to argue that rear alleys, in communities where the homes are fronted by streets that are at least 20 feet wide, must still meet the specifications for "fire apparatus access roads".

The Code requires that fire apparatus access roads must be not less than 20 feet wide, except for security gates designed as required by the Code, with a vertical clear space of at least 13 feet 6 inches. *Id.* § 503.2.1. They must also extend to within 150 feet of all parts of a facility. *Id.* § 503.1.1. The fire code official has the right to increase the minimum width for such roads "where they are inadequate for fire or rescue operations." *Id.* § 503.2.2. In addition, the turning radius of a fire apparatus access road is determined by the fire official, who can require a turning radius to accommodate very

[1] A "fire lane" is defined as a "road or other passageway developed to allow the passage of fire apparatus. A fire lane is not necessarily intended for vehicular traffic other than fire apparatus." Code § 502.1.

large pieces of equipment, even where a locality does not own or intend to own such equipment.

Appendix D of the Code provides additional specifications and limitations for fire apparatus access roads. The provisions of Appendix D are not mandatory unless they have been specifically referenced in the law of the locality adopting the Code. However, many localities adopt some or all of Appendix D when they adopt the Code.

- Appendix D limits fire apparatus access roads to a minimum of 26 feet. *Id.* § D103.1. This is wider than the minimum width required under Chapter 5 of the Code.
- Dead end fire apparatus access roads have specific requirements for width and turnarounds depending on the length of the roads. With respect to width only, dead end roads that are less than 500 feet long have a minimum 20 foot width; and dead end roads that are 501 to 750 feet long have a minimum 26 foot width. Longer dead end roads require special approval.
- Fire code officials may require that certain roads be designated as fire lanes. Fire apparatus access roads designated as fire lanes that are 20 to 26 feet in width must be posted as a fire lane (i.e., no parking permitted) on both sides of the street. Fire apparatus access roads designated as fire lanes that are 26 to 32 feet in width must be posted on one side of the road. Identification of a road as a fire lane can restrict parking and reduce the traffic slowing function of roadside parking.
- Sections D104, D105, D106, and D107 of Appendix D set out the number of fire apparatus access roads that are required for different types of buildings.
    - Buildings that are more than three stories or 30 feet high require at least three means of fire apparatus access, the fire apparatus access roads must be at least 26 feet in width, and they must accommodate aerial apparatus.
    - Buildings that exceed 62,000 square feet in area required two fire apparatus access roads.
    - Multi-family residential projects with more than 100 units require two fire apparatus access roads throughout the project (projects with up to 200 residential units, where all dwelling units and all non-residential units have sprinklers, can have one fire apparatus access road throughout).
    - Multi-family residential project with more than 200 residential units must have two fire apparatus access roads throughout, regardless of whether the units have sprinklers or not.
    - Projects with more than 30 single family or two-family units "shall be provided with separate and approved fire apparatus access roads". *Id.* § D107.1.

Fire Code Official Approval and Waiver Authority

Fire officials are permitted great latitude in approving the size and specifications of fire apparatus access roads, turning radius for such roads, and dead end street sizes and turning areas.

- The fire department has the right to review and approve construction plans. *Id.* § 501.3.
- Fire officials can increase the 150 foot dimension where buildings have sprinklers; topography, grade, etc., limit the construction of roads; or depending on certain occupancy uses. *Id.* § 503.1.1.
- Section 503.1.2 allows the fire code official to require more than one fire apparatus access road if he believes that one road has the potential for impairment as a result of congestion, terrain, or other factors that limit access.
- Section 503.2.2 allows fire code officials to require an increase in the minimum road width "where they are inadequate for fire or rescue operations."
- The fire code official has the authority to determine the required turning radius of a fire apparatus access road. *Id.* §§ 503.2.4, D103.3.
- Fire code officials can limit parking on fire apparatus access roads by requiring that they be identified as fire lanes. *Id.* § D103.6.

Suggested Amendment to Code

Attachment A includes proposed language to amend relevant sections of the Code. Additions are shown as underlined, while deletions are struck through. Some sections have no proposed change, but they are included for context. Occasionally we have added bracketed comments in italics.[2]

The text in Attachment A offers possible amendments aimed at certain topics, including:

- Shortened lateral road dimensions
- Shortened turning radius
- Allowance for mitigation measures including mountable curbs
- Consideration of alleys for access
- Reduced discretion for fire code officials in approval and changing minimum standards

[2] In creating this proposed amendment we reviewed past McGuireWoods work on right-sized streets as well outside sources on right-sized streets and emergency vehicles. Outside sources included *Neighborhood Street Design Guidelines: An Oregon Guide to Reducing Street Widths* (Nov. 2000); Bray & Rhodes, "In Search of Cheap and Skinny Streets," *Places* (11:2); Local Government Commission, "Emergency Response and Traditional Neighborhood Street Design"; and Ewing, Stevens & Brown, "Skinny Streets and Fire Trucks," *Urban Land* (Aug. 2007).

ATTACHMENT A

IFC SECTIONS 502 & 503

SECTION 502: DEFINITIONS

FIRE APPARATUS ACCESS ROAD. A road that provides fire apparatus access from the fire station to a facility, building, or portion thereof. This is a general term inclusive of all other terms such as fire lane, public street, private street, parking lot lane, and access roadway.

FIRE LANE. A road or other passageway developed to allow the passage of fire apparatus. A fire land is not necessarily intended for vehicular traffic other than fire apparatus.

SECTION 503: FIRE APPARATUS ACCESS ROADS

503.1 Where required. Fire apparatus access roads shall be provided and maintained in accordance with Sections 503.1.1 through 503.1.3.

503.1.1 Buildings and facilities. Approved fire apparatus access roads shall be provided for every facility, building or portion of a building hereafter constructed or moved into or within the jurisdiction. The fire apparatus access road shall comply with the requirements of this section and shall extend to within 150 feet (45 720 mm) of all portions of the facility and all portions of the exterior walls of the first story of the building as measured by an approved route around the exterior of the building or facility.

Exception: The fire code official is authorized to increase the dimension of 150 feet (45 720 mm) where:

1. The building is equipped throughout with an approved automatic sprinkler system installed in accordance with Section 903.3.1.1, 903.3.1.2, or 903.3.1.3.

2. Fire apparatus access roads cannot be installed because of location on property, topography, waterways, nonnegotiable grades or other similar conditions, and an approved alternative means of fire protection is provided.

3. There are not more than two Group R-3 or Group U occupancies.

503.1.2 Additional access. The fire code official is authorized to require more than one fire apparatus access road based on the potential for substantial impairment of a single road by vehicle congestion, condition of terrain, climatic conditions or other factors that could limit access.

503.2 Specifications. Fire apparatus access roads shall be installed and arranged in accordance with Sections 503.2.1 through 503.2.7.

503.2.1 Dimensions. Fire apparatus access roads shall have an unobstructed width of not less than 20 feet (6096 mm), except as provided below and except for approved security gates in accordance with Section 503.6, and an unobstructed vertical clearance of not less than 13 feet 6 inches (4115 mm). Fire apparatus access roads shall have minimum lateral dimensions, including gutters, of any one of the following:

1. a) 20 feet (6096 mm) wide when parking is not allowed on either side of the street,
   b) 27 feet (8230 mm) wide when parking is allowed on only one side of the street, and
   c) 34 feet (10363 mm) wide when parking is not restricted; or

   [*These measurements—20', 27', and 34'—are based on Glenwood Park in Atlanta and similar to comparable New Urban developments. This is less than the Hercules requirements which were 20', 30', and 40'. The inclusion of gutters in the measurement, as done in WaterColor in Walton County, Florida, allows for even skinnier streets.*]

2. Such street widths as are approved by the fire code official in light of proposed access measures; or

3. Such dimensions as are approved by the jurisdiction when:

   a) all buildings accessed only by a street with dimensions less than those set forth in (1) are completely protected with an approved automatic fire sprinkler system, or
   b) all buildings can be accessed from the front or the rear by a street or alley with dimensions at least equal to those set forth in (1), or
   c) such streets are identified for one-way circulating flow of traffic or pullouts are provided every 150 feet (45 720 mm) on streets identified for two-way traffic, or
   d) a grid system for traffic flow is provided and streets do not exceed 300 feet (91 440 mm) in length but are accessible at each end by streets meeting dimensions set forth in (1), or

e) where approved by the jurisdiction, rolled or mountable curbs in compliance with Section 503.2.3 are provided.

503.2.2 Authority. ~~The fire code official shall have the authority to require an increase in the minimum access widths where they are inadequate for fire or rescue operations.~~

The fire code official shall review the street plans approved or proposed for approval in the jurisdiction. Where such plans meet the criteria for streets set forth in Section 503.2.1, then except as provided below, the chief shall concur with such streets. In the event that the streets do not meet such criteria or the fire code official can show that minimum access widths are inadequate for fire or rescue operations, then the fire code official shall object and the jurisdiction shall make changes to bring such street plans into conformance with Section 503.2.1 or otherwise provide access as necessary.

503.2.3 Surface. Fire apparatus access roads shall be designed and maintained to support imposed loads of fire apparatus and shall be surfaced so as to provide all-weather driving capabilities. Load-bearing pavers and compact gravel may be appropriate for mountable curbs and for alleys serving as fire apparatus access roads. Permeable surfaces, may be acceptable surfaces.

503.2.4 Turning radius. ~~The required turning radius of a fire apparatus access road shall be determined by the fire code official.~~ The required turning radius of a fire apparatus access road shall not exceed the actual, reasonable design limitations of the fire apparatus of the fire department, subject to the approval of the chief. Load-bearing road pavers or otherwise mountable sidewalks at the corners, in compliance with Section 503.2.3, may be included in the calculation of turning radius.

503.2.5 Dead ends. Dead-end fire apparatus access roads in excess of 150 feet (45 720 mm) in length shall be provided with an approved area for turning around fire apparatus.

503.4 Obstruction of fire apparatus access roads. Fire apparatus access roads shall not be obstructed in any manner, including the parking of vehicles. The minimum widths and clearances established in Section 503.2.1 shall be maintained at all times.

APPENDIX D

[*The provisions of Appendix D: Fire Apparatus Access Roads are not mandatory unless specifically referenced in the adopting ordinance.*]

SECTION D103: MINIMUM SPECIFICATIONS

D103.1 Access road width with a hydrant. Where a fire hydrant is located on a fire apparatus access road, the minimum width shall by ~~26~~ 20 feet (~~7925~~ 6096 mm).

D103.3 Turning radius. The minimum turning radius shall be determined by the fire code official in compliance with Section 503.2.4.

SECTION D104: COMMERCIAL AND INDUSTRIAL DEVELOPMENTS

D104.1 Buildings exceeding three stories or 30 feet in height. Buildings or facilities exceeding 30 feet (9144 mm) or three stories in height shall have at least three means of fire apparatus access for each structure.

D104.2 Buildings exceeding 62,000 square feet in area. Buildings or facilities having a gross building area of more than 62,000 square feet (5760 m^2) shall be provided with two separate and approved fire apparatus access roads.

> **Exception:** Projects having a gross building area of up to 124,000 square feet (11 520 m^2) that have a single approved fire apparatus access road when all buildings are equipped throughout with approved automatic sprinkler systems.

SECTION D106: Multiple-Family Residential Developments

D106.1 Projects having more than 100 dwelling units. Multiple-family residential projects having more than 100 dwelling units shall be equipped throughout with two separate and approved fire apparatus access roads.

> **Exception:** Projects having up to 200 dwelling units may have a single approved fire apparatus access road when all buildings, including nonresidential occupancies, are equipped throughout with approved automatic sprinkler systems installed in accordance with Section 903.3.1.1 or 903.3.1.2.

D106.2 Projects having more than 200 dwelling units. Multiple-family residential projects having more than 200 dwelling units shall be provided with

two separate and approved fire apparatus access roads regardless of whether they are equipped with an approved automatic sprinkler system.

SECTION D107: ONE- Or TWO-FAMILY RESIDENTIAL DEVELOPMENTS

D107.1 One- or two-family dwelling residential developments.

Developments of one- or two-family dwellings where the number of dwelling units exceeds 30 shall be provided with separate and approved fire apparatus access roads and shall meet the requirements of section D104.3.

Exceptions:

1. Where there are more than 30 dwelling units on a single public or private fire apparatus access road and all dwelling units are equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1, 903.3.1.2, or 903.3.1.3, access from two directions shall not be required.

2. The number of dwelling units on a single fire apparatus access road shall not be increased unless fire apparatus access roads will connect with future development, as determined by the fire code official.

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