

RESIDENTIAL FIRE SPRINKLER/TRAINING AND EDUCATION TASK FORCE

FINAL REPORT/RECOMMENDATIONS



CAL FIRE – Office of the State Fire Marshal
March 2010



Message from the Acting State Fire Marshal

On behalf of CAL FIRE – Office of the State Fire Marshal I would like to present the phase III recommendation report from the Residential Fire Sprinkler Training and Education Task Force. This report is intended to be a companion report to the recent release of the Phase I and II reports on residential fire sprinkler water supply and installation. Training and education is critical to the implementation of our building standards and the recommendations are essential to the successful understanding of the statewide residential fire sprinkler adoption within the California Building Standards.

I would like to thank the task force co-chairs (Chief Mike Richwine and Building Official Gene Paolini) and members and organizations for their dedication and commitment to this important project. The CAL FIRE – Office of the State Fire Marshal appreciates everyone's willingness to share their time, energy, and talent; particularly during these difficult fiscal times. Through our partnerships we will continue to move fire and panic safety forward, providing a safer working environment for emergency responders and a safer environment for all those who live and visit California.

Again, thank you to everyone who works at keeping Californians safe.

Sincerely,



TONYA L. HOOVER
Acting State Fire Marshal

Acknowledgements

This report was developed through the culmination of many hours of in-depth research and analysis through outstanding collaborative efforts of the many disciplines involved with the Office of the State Fire Marshal [Residential Fire Sprinkler Training and Education Task Force](#).

This collaborative effort included the California Office of the State Fire Marshal, American Fire Sprinkler Association, California Building Industry Association, California Department of Housing and Community Development, Cen-Cal Fire Protection, City of Anaheim Fire Department, City of Benicia Fire Department, City of Los Angeles Department of Water and Power, City of Napa Fire Department, City of Roseville Building Department, City of Roseville Fire Department, East Bay Municipal Utility District, International Code Council, National Automatic Sprinkler Industry Promotion, National Fire Protection Association, National Fire Sprinkler Association, Protection Design and Consulting, Rancho Santa Fe Fire District, Sacramento Metropolitan Fire District, Solon Fire/Jorgensen Company, UA Sprinkler Fitters Locals 483 and 669, District #2.

Members of the Residential Fire Sprinkler Training and Education Task Force

Gene Paolini - Co-chair
Mike Richwine - Co-chair
Phil Alves
Ray Bizal
Darren Drake – (Phase II Co-chair)
Randy Dysart
Doug Hensel
Steve Hart
Clifford Hunter
Ray Iverson
Bill Kirkpatrick
Bruce Lecair
Steve Leyton

Dennis Lockard
Dennis Mathisen – (Phase I Co-chair)
Robert Nolan
Ernie Paez – (Phase I and II Co-chair)
Kevin Reinertson
Robert Raymer
Kevin Scott
Scott Seegmiller
Terri Simmons-Leyton
Julie Spacht
Mike Stewart
Byron Weisz

The Office of the State Fire Marshal thanks each member and their organization for their assistance with this important work.

Preface

This document is Part 3 of a 3 part series regarding issues related to the adoption of regulations in preparation for a statewide residential fire sprinkler requirement for new construction scheduled for implementation January 1, 2011. This part is known as the ***Residential Fire Sprinkler Training and Education Task Force***.

On August 27, 2009 the Office of the State Fire Marshal convened representatives from various disciplines to provide information and suggested recommendations to the State Fire Marshal on all issues related to the basic understanding and application of code requirements related to residential sprinkler requirements. The development of an effective training program was prepared by the Residential Fire Sprinkler Education Task Force. This as in preparation for a statewide residential fire sprinkler requirement for new construction, scheduled for inclusion in the California Residential Code in January, 2010.

Key stakeholders include members of the California Fire Service, Building Industry, Building Officials, Manufactured Housing Association, Public Health Officials, State agencies, National Fire Protection Association, National Fire Sprinkler Association, League of California Cities and design professionals.

It is recommended that the reader review Residential Fire Sprinkler Manual NFPA 13D.

Table of Contents

| | |
|---|----|
| Executive Summary | 1 |
| Stakeholders | 1 |
| Process | 1 |
| Task Force Results and Recommendations | 3 |
| Technical Terms Sub-Group | 4 |
| Technical Training Sub-Group | 4 |
| Course Development Sub-Group | |
| Course Development Survey..... | 5 |
| Course Outline..... | 5 |
| Statutes and Regulations..... | 6 |
| Best Practices Extraction Sub-Group | 7 |
| Report Summary | 11 |
| Project Conclusion | 11 |
| Appendix A –Water Purveyor Task Force (Phase I) Report | 12 |
| Appendix B – Installation Task Force (Phase II) Report | 13 |
| Appendix C – Task Force Members List | 14 |
| Appendix D – Sub-Groups | 15 |
| Appendix E – Technical Terms | 16 |
| Appendix F – Training and Educational Programs | 19 |
| Appendix G – Course Development Survey | 26 |
| Appendix H – Course Outline | 33 |
| Appendix I – Statutes and Regulations Q & A | 42 |

Executive Summary

On August 27, 2009 the Office of the State Fire Marshal convened representatives from various disciplines to provide information and suggested training recommendations to the State Fire Marshal. The task force developed a communications strategy to educate stakeholders on best practices based on recommendations of the phase I (Water Purveyors) and phase II (Installation) reports. This strategy includes additional resources available for training in the permit design and installation of residential fire sprinklers. The specific purpose of this training program is to recognize that the requirements for residential fire sprinklers are designed to be a "life safety system" to prevent flash over and allow for the evacuation or rescue from fire.

This phase III report was prepared for the statewide residential fire sprinkler requirement for new construction scheduled for implementation January 1, 2011. For the purpose of this project the task group used the definition of residential construction from the International Residential Code to apply to detached one- and two-family dwellings and townhouses not more than three stories above-grade in height with a separate means of egress.

Stakeholders

Our key stakeholders include members of the California Fire Service, Building Industry, Building Officials, Public Health Officials, State agencies, National Fire Protection Association, National Fire Sprinkler Association, League of California Cities, Manufactured Housing Institute, and Design Professionals. For complete rosters of individual members and interested individuals please see [Appendix C](#).

Process

The Task Force convened bi-monthly in northern California. A variety of methods were utilized to accommodate those members not physically able to attend. Conference calls and Internet based meeting technologies such as GoToMeeting were used successfully to ensure thorough communication.

Through consensus a more complete understanding of each stakeholder's interests and concerns was achieved. Key elements and outcomes of this process were relationship building and education afforded to all parties.

The Task Force identified one primary goal, to develop a coordinated training program for the implementation of residential fire sprinklers (in one- and two-family dwellings and townhouses) throughout California.

Action Plan

1. Develop timelines and the deliverables (between January and December 2010).
 - a. Develop and implement consistent key messages that are relevant to the stakeholders that are affected by the residential sprinklers.
 - b. Distribute proceedings from Phase I and II to stakeholders.
2. Develop an awareness level course to educate stakeholders of the issues in permitting residential fire sprinklers to include the following:
 - a. Best practices of Phase I and II.
 - b. Local Authorities Having Jurisdiction (AHJ) will identify the impacts of fire sprinklers on residential development.
 - c. Local AHJ will identify the process and fees from plan review through the final building approval and which division/department (building or fire) will provide these services.
 1. Relative to production housing, identify the local AHJ best practice processes for the establishment of fees:
 - Plan review of each of the different models that will be offered.
 - Inspection fees separate for individual units.
 - d. Course outline, PowerPoint with resource documents (modeled after the Statutes and Regulations course), jurisdictional overlay, process flowcharts and other pertinent information.
3. Create list of available technical courses dealing with installation from sources such as:
 - a. National Fire Protection Association
 - b. American Fire Sprinkler Association
 - c. National Fire Sprinkler Association
 - d. American Water Works Association
 - e. Others
4. Develop a standard glossary of technical and common terms for the installation of residential fire sprinklers.

The task force was formed into four Sub-Groups (**See Appendix D**) so key issues could be evaluated in detail taking into consideration the Task Force's primary goal. Initial issues included, but were not limited to:

- **Technical Terms**
- **Technical Training**
- **Course Development**
 - Course Development Survey
 - Course Outline
 - Statutes and Regulations
- **Best Practices Extraction**

Task Force Results and Recommendations

Over the course of a four month period the Task Force and four Sub-Groups met and produce the following result and recommendations to submission to the California State Fire Marshal.

TECHNICAL TERMS – SUB-GROUP

Introduction

The Technical Term Sub-Group deliberated the deliverables by revisiting the Phase I (Water) and Phase II (Installation) to gather common terminology used by members of the Fire Service, Fire Sprinkler Industry, and the Water industry. **(See Appendix E – Technical Terms)**

TECHNICAL TRAINING – SUB-GROUP

Introduction

The Technical Training Sub-Group established technical needs such as making the training available by interested categories, creating subsets of more than one category (addressing overlapping issues), and the inclusion of information and recommendations from both Phase I and II. The purpose is to enhance communications and understanding among all the stakeholders involved with the Residential Fire Sprinklers, minimizing confusion. A handout detailing the various training programs curriculum currently available through related organizations. **(See Appendix F – Training and Education Programs)**

COURSE DEVELOPMENT – SUB-GROUP

Introduction

The Course Development Sub-Group approved the concept of a “survey” consisting of fifteen (15) multiple choice questions which had been sent out to the Sub-Group members; the survey received limited response (2 surveys completed and returned). It was concluded that the same survey would be sent out to the entire Phase III Task Force membership to obtain a clearer direction on what the anticipated Training and Education Program would look like.

It was noted that having heard the Sub-Group presentations, there is clearly a need for awareness-level training that addresses water purveyor, building official, and fire official issues.

Course Development Survey

During the September 24, 2009 Phase III Task Force Meeting the Course Development Sub-Group discussed and reviewed the survey results received from the Phase III Task Force membership. It was noted that in addition to the tallies of specific question responses, the survey results also captured the written response/comments (italics) which reflected specific questions and/or sub-set questions.

(See Appendix G - Course Development Survey)

Course Outline

During the October 22, 2009 Phase III Task Force Meeting the Course Development Sub-Group submitted a “Draft” Course Outline” (Residential Fire Sprinkler Mandate 2010 California Residential Code [Title-24, Part 2.5) which outlined the Course Objectives, Course Content (Unit 1 – Introduction, Unit 2 – California Residential Code, Unit 3 Class Presentation Evaluation) and received constructive comments for revising certain elements.

(See Appendix H – Course Outline)

Statutes and Regulations

As a result of discussions during the September 24, 2009 and October 22, 2009 Phase III Task Force Meetings the Course Development Sub-Group brought forward the issues surrounding the Laws and Regulations (Phase I) and Statutes and Regulations (Phase II) "Questions/Answers" documents which will have a significant role in the Phase III Training Package, as reflected in the "Draft" Course Outline. It was agreed that combining these two listings of questions/answers would be very helpful. **(See Appendix I – Statutes and Regulations Q & A)**

BEST PRACTICES EXTRACTION – SUB-GROUP

Introduction

A “best practice” (**BP**) is a technique, method, process, activity, incentive or reward that is believed to be more effective at delivering a particular outcome than any other technique, method, process, etc. The idea is that with proper processes, checks, and testing, a desired outcome can be delivered with fewer problems and unforeseen complications. Best practices can also be defined as the most efficient (least amount of effort) and effective (best results) way of accomplishing a task, based on repeatable procedures that have proven themselves over time for large numbers of people. The following BPs were extracted from the Residential Sprinklers Task Force Phase I and II reports:

Fee Sub-Group Phase I

- Use the BP Philosophy when applicable for making recommendations and suggestions for specific applications that are appropriate for the conditions within a specific region of California.
- Eliminate as a BP and in accordance with NFPA 13-D, the combination of the domestic and fire sprinkler flows when calculating flows for service sizes. This recommendation reduces the flow requirement and allows meter service sizing accordingly.
- Develop a BP Philosophy/Program for the State of California for determining fees for technology, maintenance, inspection, service and monthly standby or utility fees for use in billing consumers with residences that are constructed with NFPA 13-D Residential Fire Sprinkler Systems.
- Encourage the use of flow-through designs as a BP, to minimize the need for backflow prevention. Support a detailed and thorough study of the risk and benefit of backflow prevention through an industry study.

Connection Configuration Sub-Group Phase I

- Recommends a configuration with the following characteristics:
 - Single lateral feed from main; branching from the domestic supply to the meter. Least cost, simplest design, provides greatest flexibility.

- Service sized based upon sprinkler demand and/or domestic (including irrigation) demand – worst case, without concern for simultaneous demand. Issues of designing to minimize simultaneous demand by requiring private domestic shutoff valve complicates household design but it is an option open to the individual agency. 1-inch meters are generally acceptable if based on these criteria.
- Service lockout as per agency policy. Shutoff ability is required by the water purveyors for a variety of reasons. Agencies should use BPTo word shutoff notices to include potential loss of fire sprinkler protection and take appropriate measures to limit potential liability associated with discontinuing fire protection service. (Consider alternate design and possible hold harmless clause as part of Phase II discussion.)
- Metering per purveyor/agency policy (and commonly by guiding practices or statutes) with exemption from fire rating for residential application.
- Include maximum flexibility in the service configuration, which allows agencies to use existing policies, procedures and time-tested material resulting in appropriate cost for long-term reliability.
- Continue the water industry standard that facility costs are 100 percent captured in the fees directly associated with installation, maintenance, reading, and replacement of the meters. Monthly billing prices should have clear nexus to both the fixed and variable cost of service provided and should remain a local purveyor policy issue.
- Include a design that allows for connection of the fire protection system to remote fixtures to insure flushing of the system as a result of typical and frequent use. This will allow consideration of elimination of a backflow device by insuring water remains flushed.

Recommendations for type/listing of meter; meter size/arrangement; meter versus no meter.

- Selection of particular meter and configuration to be in keeping with agency's policies and engineering requirements based on demand flows.

Recommendations for rural versus municipal supply.

- Current technology is available though water supply capability may be quite different. Municipal is likely more reliable in terms of supply owing to larger base of resources to operate and maintain the system.
- No difference in configuration, but supply facilities may be affected, e.g., onsite storage tank or large well flowing to the sprinkler flow if additive.
- Flexibility of configuration supports minimizing use of materials in construction.

Recommendations for backflow protection

- Optional backflow does not provide 100 percent guarantee of backflow protection, however, protection is in keeping with current level of overall protection.
- By providing both BP and local flexibility, political support is maintained.

Recommendations for water supply criteria – pressure/flow/duration

- Ensuring a coordinated approach to purveyor supply, configuration, and cost with other regulatory agencies (State and fire agencies) for an adequate water supply is in the best interest of the citizens.

Recommendations for consistency

- Although configurations may not be consistent from jurisdiction-to-jurisdiction, configurations would be flexible to situations and circumstances throughout the State of California.

Installation Sub-Group Phase II

- Because neither IRC P2907 (California 313.3) nor NFPA 13D require a set of working plans, the over-arching question of whether plans should be required was considered by both the overall task group and the Sub-Group. The consensus was that since most local jurisdictions either already require or are anticipated to require plans that a state-wide standard would be of great value. Using NFPA 13 requirements for plans and calculations as a basis, the group discarded those elements that did not apply, and incorporated elements that were agreed to be of substance in the design of single-family/duplex systems.

R313.3 and NFPA 13D

- It was determined that both standards should be allowed as a basis for system design. Because it was originally conceived as a multi-purpose system standard, the Sub-Group felt that R313.3 is deficient with regard to certain issues, and specific revisions were recommended for freeze protection, obstruction to sprinkler discharge and design of systems connected to water supplies such as pumps and tanks. In those cases, it was agreed that the most concise remedy is to require that the system be designed in accordance with NFPA 13D; the specific amendments are attached hereto.

Local Alarms

- Most local jurisdictions that already require residential fire sprinklers also require an audible alarm, even though it is not required by NFPA 13D.

Working Plans Proposal (Recommendation):

- Plans and Calculations.
- Name of Owner, Builder or Responsible Party.
- Location, including street address and vicinity map.
- For production homes, Include lot or parcel number, plan ID or model name.
- Point of compass.
- Number of, manufacturer, Sprinkler Identification Number (SIN), response type, temperature rating and K-factor of all sprinklers.
- Underground/site piping plan including all of the following that apply:
 - Point of connection to public water system.
 - Service point of entry to dwelling.
 - Alternative water supply components such as well, pump, gravity or pressure tank.
 - Size and type of all pipe and fittings, with length of each segment and actual inside diameter used for hydraulic calculations.
 - Location and arrangement of all devices such as meter and backflow.
 - On combined laterals serving fire sprinklers and domestic water, location of fire service take-off, master shut off valve, and point of added domestic flow allowance.
 - Size/location of public water main at point of connection.
 - Flow test/pressure data used for hydraulic calculations, including location of test, elevation relative to finished floor at service point of entry and source of information.
 - Reference nodes matching hydraulic calculations.
- Building system piping plan including all of the following that apply:
 - Point of connection to service pipe.
 - Dimensioned location and spacing criteria for all sprinklers.
 - Size and type of all pipe and fittings, with length of each segment and actual inside diameter used for hydraulic calculations.
 - Location and type of all hangers and means of support.
 - Location and arrangement of valves and devices such as drain/test, pressure relief valve, alarm connection, appliance bypass on multipurpose systems, etc.
 - Full height building section.
 - Reference nodes matching hydraulic calculations.
- Means of freeze protection, as required. Name, address and license number of designer or installing design/build contractor (C-16 Fire Protection).
- Material Data Sheets:
 - Fire sprinklers.

- Pipe and fittings.
- Hangers, means of support.
- Water supply components and connected devices such as water meter, backflow, etc.

Report Summary

The Residential Fire Sprinkler Training and Education Task Force identified that instructor facilitated training is the most effective mechanism to educate and inform specific interest groups on residential sprinkler laws, regulations, terms and best practices. Armed with course specific learning objectives, the instructor facilitated training program allows participants to ask specific questions to their instructors (subject matter experts) and get immediate feedback. The ultimate goal of the Training and Education Task Force is to develop a shared understanding, with all stakeholder participants, in the design, installation and implementation of residential fire sprinkler systems to achieve the maximum fire and life safety results possible.

Project Conclusion

This final report, number three in a series of three reports, represents the culmination of many hours of in-depth research and analysis from the OSFM **Residential Fire Sprinkler Task Force**. The series included input from various disciplines related to water supply and how it relates to residential fire sprinklers along with information and suggested recommendations to the State Fire Marshal on all issues related to the installation of residential fire sprinkler systems and to recommend strategies for adoption of the 2009 International Residential Code. The final report details the distribution of this body of work to each of the stakeholders in preparation for a statewide residential fire sprinkler requirement for new construction scheduled for implementation January 1, 2011.

Additionally, as California moves forward to the implementation phase of the future residential fire sprinkler requirement it will be critically important to share the information gathered by this task force with all stakeholders throughout the state. It is recommended that key stakeholders continue to partner beyond this task force process and conduct training and outreach on the issues throughout California.

APPENDIX A

RESIDENTIAL FIRE SPRINKLER/WATER PURVEYOR TASK FORCE

FINAL REPORT/RECOMMENDATIONS JUNE 2009

Phase I

This document is Part one of a three part series regarding issues related to the adoption of regulations in preparation for a statewide residential fire sprinkler requirement for new construction scheduled for implementation January 1, 2011. This part is known as the ***Residential Fire Sprinkler/Water Purveyor Task Force***.

On October 9, 2008, the Office of the State Fire Marshal convened representatives from various disciplines related to water supply and how it relates to residential fire sprinklers. The purpose of the Residential Fire Sprinkler/Water Purveyor Task Force was to provide information and suggested recommendations to the State Fire Marshal on all water supply issues related to residential fire sprinkler systems and to recommend strategies for solutions.

Our key stakeholders include members of the California Fire Service, Building Industry, Building Officials, Water Purveyors, American Water Works Association, Public Health Officials, State agencies, National Fire Protection Association, National Fire Sprinkler Association and the California League of Cities.

It is recommended that the reader review Health and Safety Code 116270 – 116820, American Waterworks Association Manual 14 and 31, and Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes (NFPA 13D, 2010 edition).

Note: *The Minutes for the Phase I Meetings are available from the CA State Fire Marshal's Website (www.osfm.fire.ca.gov) and represent the following meeting dates:*

| | |
|-------------------|-------------------|
| October 9, 2008 | January 21, 2009 |
| November 20, 2008 | February 24, 2009 |
| December 17, 2008 | March 30, 2009 |

(For Final Report see: <http://osfm.fire.ca.gov/pdf/firemarshal/taskforcefinalreport.pdf>)

APPENDIX B

RESIDENTIAL FIRE SPRINKLER/INSTALLATION TASK FORCE

FINAL REPORT/RECOMMENDATIONS JULY 2009

Phase II

This document is Part two of a three part series regarding issues related to the adoption of regulations in preparation for a statewide residential fire sprinkler requirement for new construction scheduled for implementation January 1, 2011. This part is known as the ***Residential Fire Sprinkler Installation Task Force***.

On April 6, 2009, the Office of the State Fire Marshal convened representatives from various disciplines to provide information and suggested recommendations to the State Fire Marshal on all issues related to the installation of residential fire sprinkler systems in one and two family dwellings and townhomes and to recommend strategies for adoption of the 2009 International Residential Code.

Note: *The Minutes for the Phase II Meetings are available from the CA State Fire Marshal's Website (www.osfm.fire.ca.gov) and represent the following meeting dates:*

April 6, 2009 (Corrected)

May 4, 2009

May 21, 2009

(For Final Report see: <http://osfm.fire.ca.gov/pdf/firemarshal/taskforcephast2finalreport.pdf>)

APPENDIX C

Members of the Residential Fire Sprinkler Training and Education (Phase III) Task Force

| Member | Organization | Email |
|----------------------|---|--|
| Gene Paolini | California Building Officials | gpaolini@roseville.ca.us |
| Mike Richwine | CAL FIRE-Office of the State Fire Marshal | mike.richwine@fire.ca.gov |
| Phil Alves | UA Sprinkler Fitters Local 483 | phil@sprinklerfitters483.org |
| Ray Bizal | National Fire Protection Association | rbizal@nfpa.org |
| Jim Bollier | UA Sprinkler Fitters Local 483 | jim@sprinklerfitters483.org |
| Darren Drake | City of Napa Fire Department | ddrake@cityofnapa.org |
| Randy Dysart | Solon Fire/Jorgensen Company | rdysart@jorgensenco.com |
| Steve Hart | National Automatic Sprinkler Industry Promotion | sdavidhart@aol.com |
| Doug Hensel | CA Dept of Housing and Community Development | dhensel@hcd.ca.gov |
| Clifford Hunter | Rancho Santa Fe Fire District | hunter@rsf-fire.org |
| Ray Iverson | City of Benicia Fire Department | riverson@ci.benicia.ca.us |
| Bill Kirkpatrick | East Bay Municipal Utility District | wkirkpat@ebmud.com |
| Bruce Lecair | National Fire Sprinkler Association | Lecair@nfsa.org |
| Steve Leyton | Protection Design and Consulting | steve@protectiondesign.com |
| Dennis Lockard | American Fire Sprinkler Association | chieflockard@gmail.com |
| Dennis Mathisen | City of Roseville Fire Department | dmathisen@roseville.ca.us |
| Robert Nolan | City of Anaheim Fire Department | rnolan@anaheim.net |
| Ernie Paez | CAL FIRE-Office of the State Fire Marshal | ernie.paez@fire.ca.gov |
| Robert Raymer | California Building Industry Association | rraymer@cbia.org |
| Kevin Reinertson | CAL FIRE-Office of the State Fire Marshal | kevin.reinertson@fire.ca.gov |
| Kevin Scott | International Code Council | kscott@iccsafe.org |
| Scott Seegmiller | UA Sprinkler Fitters Local 669, District #2 | ses@rsflu669.org |
| Terri Simmons-Leyton | Protection Design and Consulting | terri@protectiondesign.com |
| Julie Spacht | City of Los Angeles Department of Water and Power | Julie.spacht@ladwp.com |
| Mike Stewart | Sacramento Metropolitan Fire District | stewart.mike@smfd.ca.gov |
| Byron Weisz | Cen-Cal Fire Protection | byron@cen-calfire.com |

APPENDIX D

Residential Fire Sprinkler Training and Education Task Force Sub Groups Members List

TECHNICAL TERMS

| | |
|--------------|-----------------------|
| Bruce | Lecair – Chair |
| Jim | Bollier |
| Steve | Leyton |
| Robert | Nolan |
| Julie | Spacht |

COURSE DEVELOPMENT

| | |
|--------------|---------------------|
| Steve | Hart – Chair |
| Ray | Iverson |
| Bill | Kirkpatrick |
| Steve | Leyton |
| Dennis | Lockard |
| Gene | Paolini |
| Robert | Raymer |
| Terri | Simmons-Leyton |
| Byron | Weisz |

TECHNICAL TRAINING

| | |
|-------------|----------------------------|
| Bill | Kirkpatrick – Chair |
| Ray | Bizal |
| Bruce | Lecair |
| Dennis | Lockard |
| Kevin | Scott |
| Julie | Spacht |

BEST PRACTICES EXTRACTION

| | |
|--------|----------|
| Darren | Drake |
| Dennis | Mathisen |
| Ernie | Paez |

APPENDIX E

Technical Terms

Purpose:

In order to enhance and create better communication and understanding among all stakeholders involved in the Residential Fire Sprinkler community, a list of common terminology used by the various industries has been created. This document is created to eliminate confusion and to develop common terminology between stakeholders.

Scope:

Common terminology used by members of the Fire Service, Fire Sprinkler Industry and the Water Industry.

Fire Sprinkler Industry

CPVC pipe – Chlorinated Polyvinyl Chloride (CPVC); A thermoplastic pipe produced by chlorination of polyvinyl chloride (PVC) resin. Uses include hot and cold water pipe and industrial liquid handling.

Exterior Bell – A device that alerts occupants when the water flow switch is activated.

Fire Sprinkler System – An active fire protection measure, consisting of a water supply, providing adequate pressure and flow rate to a water distribution piping system, onto which fire sprinklers are connected. Although historically only used in factories and large commercial buildings, home and small building systems are now available at a cost-effective price.

Flashover – The temperature at which the heat in an area or region is heated enough to ignite all flammable materials simultaneously

Flow Switch – A flow sensing switch device located on a fire sprinkler riser having a housing provided with a fluid flow passage through defined by an inlet and an outlet separated by a valve seat controlled by a movable valve member that is operated by the pressure differential between the inlet and the outlet. The device contains an electrical switch construction operatively associated with the valve member and having the switch contacts actuated by the pressure differential. The switch contacts of the switch construction are disposed in the fluid flow passage so as to be exposed to fluid flow there through and have a part thereof carried by the valve member.

APPENDIX E

Gauge – A device located on the riser that notes the static (non-flowing water pressure) and residual (flowing water pressure) and allows for a visual indication that the fire sprinkler system is pressurized.

LEED – Leadership in Energy and Environmental Design, allows credit for: Carbon credit; Carbon Reduction; Contractors operating Green

Residential Domestic Shut-off Valve – Makes water available on demand to the domestic system, and acts as a check valve for the fire protection system. When the sprinkler system operates in the home, the supply to the domestic system is automatically shut off and makes the maximum use of the available water supply to control the fire. 1" domestic shut-off valves are used in piping systems that supply water to both the domestic service and the fire sprinkler designed per NFPA 13D in one and two family dwellings or mobile homes.

Residential Fire Sprinkler System – Systems that fall under a residential classification separate from the commercial classifications (NFPA 13). A commercial sprinkler system is designed to protect the structure and the occupants from a fire. Most residential sprinkler systems are primarily designed to suppress a fire in such a way to allow for the safe escape of the building occupants. While these systems will often also protect the structure from major fire damage, this is a secondary consideration. In residential structures sprinklers are often omitted from closets, bathrooms, balconies, and attics because a fire in these areas would not usually impact the occupant's escape route.

Riser – A vertical pipe and component assembly that is the connection of the domestic water supply to the fire sprinkler system. The riser typically consists of: Flow switch; Gauge; Test valve; Sprinkler pipe

Sprinkler – A device designed to spray water into the room if sufficient heat reaches the fusible link or bulb and causes it to shatter. Sprinklers operate individually. Each closed-head sprinkler is held closed by either a heat-sensitive glass bulb or a two-part metal link held together with fusible alloy. The glass bulb or link applies pressure to a pipe cap, which acts as a plug and prevents water from flowing until the ambient temperature around the

APPENDIX E

sprinkler reaches the design activation temperature of the individual sprinkler. Because each sprinkler activates independently when the predetermined heat level is reached, the number of sprinklers that operate is limited to only those near the fire, thereby maximizing the available water pressure over the point of fire origin. An activated sprinkler will do less damage than a fire department hose stream.

Test Valve – A device used to test the water flow through sprinkler systems which is usually constructed of forged brass with a 3-way ball valve (Off-Test-Drain).

APPENDIX F

Training and Educational Programs

National Fire Sprinkler Association (NFSA):

Onsite and Online Seminars are approved in several states for ICC building and fire official continuing education units (CEU's) and also for contractors and personnel needing National Institute for Certification for Engineering Technologies (NICET) training credits. NFSA seminars and programs are also good for NFPA recertification credits for fire inspectors and certified fire protection specialists (where required). The following are programs offered for Residential Fire Sprinkler training:

NFSA Onsite Training and Education Seminars:

NFPA 13, 13-D, 13-R update 2007:

This one day seminar describes the major changes that have occurred in the 2007 editions of NFPA 13, 13-D and 13-R. The class is designed to enhance and further develop the rules and requirements for proper installation of the fire sprinkler systems. Experience level – ALL LEVELS

Plan Review Procedures and Policies:

This one day seminar is intended to educate the student on how to conduct a plan review of a sprinkler system. The class covers the methodology and systematic approach to plan review procedures. The attendee will learn how to evaluate and analyze a fire sprinkler plan for compliance with NFPA 13. Each attendee receives copies of various sprinkler plan review check sheets that are used in compliance with NFPA 13, 13-D, 13-R. Experience level – INTERMEDIATE.

Residential Sprinklers - Homes to High-Rise:

This one day seminar provides participants with an overview of the residential fire problem in the United States. The seminar addresses the causes and effects of that problem in the past, present and the future. The seminar explains the history of the residential sprinkler and how it was designed to specifically address the life-safety considerations in residential fires. Attendees are given an overview of the basic differences among residential designs and installations applied in accordance with NFPA 13, 13-D, 13-R. Experience level – BASIC to INTERMEDIATE.

APPENDIX F

Sprinklers for Dwellings:

This one day seminar analyzes the basic requirements used in designing, installing and accepting sprinkler systems in one and two family dwellings and manufactured housing. The program addresses the basic responsibilities of the designer, installer, authority having jurisdiction (AHJ), and owner for proper installation of these systems. The program discusses the issues behind developing a life safety type sprinkler system to specifically address the problems associated with residential deaths in the United States. Experience level – BASIC

NFPA 13, 13-D, 13-R, 2007/2010:

The ½ day seminar details the latest and most significant changes to NFPA Standards 13, 13-R, 13-D, 2007/2010 as compared to the 1999 edition of NFPA 13, 13-R, 13-D.

CPVC Piping Installation Requirements and Procedures:

The ½ day seminar will cover the NFPA 13 requirements and industry recommendations. The student will learn about hanging requirements, expansion loops, solvent cementing methods, fire stopping assembly requirements, anti-freeze systems and other installation requirements specified in NFPA 13 and by the manufacturers of CPVC fire protection piping. CPVC compatibility issues will also be covered in this seminar. This seminar is intended for entry level and intermediate students and any person involved in installation, approval or inspection of a CPVC fire piping system. Experience level – BASIC to INTERMEDIATE.

NFSA Academy Classes

Bathrooms and Closets – To sprinkler or not to sprinkler?:

Sprinklers can be required or omitted from spaces such as bathrooms and closets. NFPA 13, 13D and 13R all contain different requirements for these spaces, along with sections of the building code that will dictate if these spaces need to be protected by sprinklers. These small rooms cannot be ignored, tune in to review how the requirements for bathrooms and closets all piece together. Experience level – BASIC to ADVANCED

CPVC Issues:

With the large quantity of CPVC pipe being used throughout the country and with the increased need for plastic pipe installation because of future residential sprinkler usage, issues regarding CPVC pipe arise. This presentation will discuss how the industry has taken a proactive step, involving contractors, suppliers and manufacturers and other stakeholders to address the issues. Experience level – BEGINNER.

APPENDIX F

Basics of Residential Sprinkler Systems:

NFPA standards offer various options for use of residential sprinklers in accordance with NFPA 13, 13D, and 13R. This seminar will provide a basic introduction covering residential sprinkler capabilities, layout and hydraulics. Experience level – BEGINNER TO INTERMEDIATE.

CPVC Piping Compatibility and Use:

Although introduced as a special listed product, the CPVC piping system has become the industry standard for residential and similar applications. Some specific rules relating to CPVC pipe and fittings are now found within the NFPA standards. Special precautions must be taken with regard to hanging, testing, and other aspects of use. There are also newer concerns of compatibility with other products found in sprinkler systems that require attention to prevent system failures. The focus of this seminar will be on identifying and avoiding these compatibility problems. Experience level – INTERMEDIATE.

Residential NFPA 13-D Calculations:

Options for calculating NFPA 13D, 13R and 13 systems using residential sprinklers, including a discussion of the new minimum flow rates that become effective July 12, 2002. Experience level – INTERMEDIATE.

NFSA On-line Classes

NFPA-13, -13R -13D UPDATE:

This one-half day seminar describes the changes in the NFPA Standards for the contractor and authority having jurisdiction for the proper installation of fire sprinkler systems. This is a Basic level class.

Overview – Provides the attendees with the understanding of changes made to the NFPA-13, -13R and -13D Standards.

2002 RESIDENTIAL SPRINKLERS HOMES TO HIGH-RISE SEMINAR:

This one-day seminar provides the attendee with the knowledge and a detailed description of the residential fire problem in America in the past, present and the future. The application of the residential design and installation is applied in accordance with NFPA-13, NFPA 13R and NFPA13D. This is a basic level class.

Overview – Provides the attendees with the understanding of the residential sprinkler and its characteristics that provide life safety in residential dwelling units.

Fire Team USA:

Through the Assistance to Firefighter Grant (AFG) program, the department awards grants to firefighters, emergency response personnel and first

APPENDIX F

responders throughout the country to enhance response capabilities and to more effectively protect public health and safety with respect to fire and other hazards. The grants provide resources for local fire departments and emergency medical services programs to purchase or receive training, conduct first responder health and safety programs, and fire prevention initiatives such as Fire Team USA. Fire Team USA will use the grant funds for delivery of Fire Team USA, a workshop series that brings together public policy-makers, fire chiefs, building officials, water purveyors, and fire marshals to learn about fire sprinklers and how they can be an effective strategic planning tool and resource for their community.

The Fire Team USA workshop is a tremendous opportunity for communities interested in improving overall public fire safety. The workshop not only addresses public fire safety issues and common concerns, but introduces very fundamental, broad-scope philosophies that can help the public policy-maker fully understand the economic benefits afforded the fire sprinkler-protected community.

Residential Fire Sprinklers; “A Step-by-Step Approach for Communities”:

The latest information developed by NFSA and the International Association of Fire Chiefs for community leaders who wish to pass fire sprinkler legislation or adopt a national code that includes fire sprinklers and includes community success stories, specific steps and how-to advise.

Included in the program is the “Look up for Safety; Where you live...” CD and resource package that will help you share the facts about residential fire sprinklers in a meaningful way. Filled with multi-media options, this resource package will be used time and time again as a companion piece to the “Residential Fire Sprinklers; “A Step-by-Step Approach for Communities (second ed.),” which is also included as a PDF file. Brought to you by a partnership between the National Fire Sprinkler Association and the International Association of Fire Chiefs, Look up for Safety and Residential Fire Sprinklers, A Step-by-Step Approach for Communities is created to help leaders improve community fire protection.

Contact Information:

For more information regarding NFSA Training Programs
Bruce Lecair, Western Regional Manager
National Fire Sprinkler Association
25417 Hyacinth Street Corona, Ca. 92883
Cell Phone: (951) 805-8992
Home/Office: (951) 277-3517
Fax: (951) 277-3199
E-mail: lecair@nfsa.org
Website: www.nfsa.org

APPENDIX F

American Fire Sprinkler Association (AFSA):

System Layout School for Residential 1 and 2 Family Dwellings:

This five day class provides basic training in the layout and Calculation of a residential fire sprinkler system. The class includes discussion on stand alone, multi-purpose and flow-through system types. The topics covered during class are: how to determine water supply, material selection, the requirements of NFPA 13D and the International Residential Code (IRC). The course will include fire sprinkler system layout and hydraulic calculation exercises.

The class is geared toward those with limited experience who need assistance with design and those wanting to refresh their experience. Upon completion of the class, the student should understand basic residential layout and how to apply NFPA 13D and P2904 of the IRC (R313.3 CRC).

AFSA Residential Fire Sprinkler System Installation Guide:

The American Fire Sprinkler Association Fire Sprinkler Fitter Correspondence Training Program entitled, *“Residential Fire Sprinkler System Installation”* is a new correspondence course, which is available in a Spanish language version, teaches installers the techniques for residential fire sprinkler installation according to the 2007 edition of NFPA 13D, *Standard for the Installation of Sprinkler Systems in One-and-Two Family Dwellings and Manufactured Homes*.

Review of Residential Fire Sprinkler Systems for One- and Two-Family Dwellings, Part 1 – CLSE 501:

This two-part program describes the review process of fire sprinkler systems for one- and two-family dwellings, designed in accordance with the NFPA 13D standard. Part 1 is a prerequisite Part 2, and describes the history of the NFPA 13D standard, and how it differs from NFPA 13 and NFPA 13R. It discussed the exceptions allowed by NFPA 13D in certain circumstances, and covers water supply requirements and how they are determined and evaluated. Other topics covered include: Residential sprinkler spacing and location; Residential sprinkler coverage areas, temperature ratings, and obstruction to discharge; Applicable to piping and fittings; Multipurpose and Stand-alone piping systems; and Concepts and considerations used in residential system hydraulic calculations.

Review of Residential Fire Sprinkler Systems for One- and Two-Family Dwellings, Part 2 – CLSE 502:

Part 2 requires the completion of Part 1. This program leads the student through the detailed step-by-step process of reviewing a fire sprinkler system plan designed for protection of a single-family home. Supplemental

APPENDIX F

documents, available to the student as downloadable pdf files, provide a copy of the plan to be reviewed, as well as supporting data sheets, hydraulic calculations, and a simple plan review checklist.

Contact Information:

For more information regarding NFSA Training Programs
Janet Knowles, Vice President
American Fire Sprinkler Association
12750 Merit Drive, Suite 350, Dallas, TX 75251
Office: (469) 385-7638 – Ext. 117
Fax: (214) 343-8898
E-mail: jknowles@clse.org
Website: www.firesprinkler.org and www.clse.org

National Fire Protection Association (NFPA) Classes

Sprinkler Systems Plans Review (NFPA-13 –2007 editions):

Provides hands-on experience Simplify your plans review process. Learn to read plans and specifications, and meet submittal requirements for new sprinkler systems or for modifications to existing systems. A good working knowledge of NFPA 13 and NFPA 72 is highly recommended for this seminar. Upon completion you should be able to:

- Recognize code requirements for submittal of complete plans and calculations
- Evaluate sprinkler plans considering classification of occupancy, commodity classification, and system area limitations
- Analyze critical elements of hydraulic calculations, including remote area adjustments and sprinkler flow determination
- Apply basic sprinkler system requirements such as classification of occupancy, commodity classification, and system area limitations
- Perform a comprehensive sprinkler system plans review
- Explain basic conventions of blueprint reading, including scales, drawing identification, and symbology.

Installation of Sprinkler Systems (NFPA 13–2007 edition):

Properly installed sprinkler systems reduce both damage and loss of life in building fires by up to 67 percent. This three-day seminar will effectively illustrate the concepts and requirements for automatic sprinkler systems and how they apply to specific hazards.

Upon completion you should be able to:

- Define the organization of NFPA 13 and its general requirements
- Ascertain the hazard classification for an occupancy

APPENDIX F

- Identify and discuss the requirements for various sprinkler system components
- Recognize the different types of sprinkler systems and be familiar with their operation
- Establish installation requirements for the various types of sprinklers
- Apply the requirements for system hanging and seismic bracing
- Appraise various system design requirements including:
Occupancy hazard fire control, protection of storage occupancies, and protection of special hazards
- Determine the requirements for system design and installation deliverables including: plans and calculations, water supply data, and system acceptance certification

Contact Information:

For more information regarding NFSA Training Programs
Raymond B. Bizal, P.E., Western Regional Manager
National Fire Protection Association
6285 E Spring Street, #363, Long Beach, CA 90808-4000
Office: (562) 497-1706
Fax: (562) 497-1716
E-mail: rbizal@nfpa.org
Website: www.nfpa.org

APPENDIX G

Course Development Survey (Submitted by Member Steve Hart)

Having a clear understanding of the Scope as well as the Goal (noted above) in mind, our Sub-Group has been asked to prepare a conceptual approach (outline) on just what that training course would look like, and to reflect the diversity of stakeholders and forums by which this training would/could take place. To that end I have developed some basic questions which must be answered and agreement on the responses in order to move this process forward. As you answer these questions, keep in mind that my intent is to collect the data/responses and to discuss these issues at our next Task Force Meeting (September 24, 2009).

Please send your responses back to me by September 14, 2009 and if you completed the survey the first time and would like to respond again, based on new facts and/or understanding of the direction of the Training Task Force (Phase III), please feel free to resubmit your responses and comments.

Please take a few minutes to complete the listing of questions (below) and in doing so, consider the wide range of stakeholders (Building Officials/Inspectors, Fire Officials/Inspectors, Water Purveyors, Fire Protection Contractors/C-16's, Home Builders/Developers, State Officials/CSFM-HCD, etc.) in your responses.

Questions:

1) Recognizing that this State mandate for requiring every newly constructed one- and two-family dwelling and townhouse will be required to be provided with a residential fire sprinkler system (after the January 1, 2011 effective date), do you feel that some level of statewide training and education program be developed?

[10] YES [] NO

2) What delivery style/method do you consider to be the most effective in conveying this training?

[7] Classroom setting

[1] Webcast/On-line format

[2] Power-Point format

[4] Printed materials

[1] CD Format

[2] Scheduled Workshop (CalBO, CFPI, CAL/NV-AWWA, etc.)

[2] Chapter or Section Meetings (CalBO, NorCal/SoCal FPO's, BIA Chapters, AWWA-CAL/NV Chapter, AFSA, NFSA, etc.)

[6] Combination of those listed (above)

[2] Others (specify):

APPENDIX G

- a) *Sprinkler Fitters Association of California*
 - b) *The more delivery methods available, the better.*
- 3) From your understanding of the State mandate and the potential training needs, how much time should be allocated for this training?

- [5] 8-hours
- [4] 6-hours
- [4] 4-hours
- [1] 2-hours

- a) *Awareness level training and the agencies involved in the ministerial review and permitting process.*

- 4) Recognizing that for those enforcing agencies who currently have a local mandate that requires every one- and two-family dwelling and townhouse to be sprinklered, and other enforcing agencies require "some" to be sprinklered based on response time, location, water supply, etc., there are many agencies (building and/or fire) who will see this mandate for the first time. To that end, "WHO" would you suggest the training be targeted toward (for building and fire agencies)?

- [1] Counter Clerks/Office Staff
- [4] Fire Marshal
- [3] Building Officials

- a) *I checked with both (Fire Marshal/Building Official) because a determination must be made on who will be responsible for enforcement, then further training can be identified*

- [1] Fire Inspectors
- [2] Building (combination and/or specialist) Inspectors
- [3] Plan Examiners/Plan Reviewers
- [8] All of the above
- [] Others (specify):

- 5) With regard to the water purveyors, "WHO" would you suggest the training be targeted toward?

- [7] New Service Section Managers/Staff
- [1] New Business Office Managers/Staff
- [3] Others (specify):

- a) *Not sure but whoever is responsible for new services.*
- b) *Don't limit it to NEW. The Business Managers, Field Superintendents, and Section Managers should be trained and informed.*
- c) *I would leave this decision to the water purveyors. They seem to be the most challenging group in our stakeholders pool.*

- 6) With regard to other stakeholders, such as homebuilders (B-Contractors), Developers (Pulte Homes, Beazer, Lennar, KB Homes, Centex, D.R. Horton, etc.), and Fire Protection Contractors, "WHO" would you suggest the training be targeted toward?

APPENDIX G

- [1] Presidents/CEO's/Managers
- [1] Superintendent/Supervisors
- [6] Designers/Project Engineers
- [4] All of the above
- [2] Others (specify):
 - a) *Systems Installers*

7) With the adoption of the 2010 California Residential Code - CRC (Title-24, Part 2.5) and the fire sprinkler mandate, what topics should be covered during any training program developed by this Task Force?

- [6] Criteria as outlined in the 2010 CRC
- [4] Lead Agency (Building Department vs. Fire Department [FPB])
- [] Importance of identifying contact information (names, phone numbers, office hours, etc.)
- [7] Information regarding "best practices" for plan submittal
 - [1] Required number of plans and calculations
 - [2] Fees and charges
 - [1] Plan Review charges for "model home" vs. Inspection Fees (production homes)
 - [] Any Charges for "record retention"
 - [1] Approximate turn-around time (submittal to permit issuance)
 - [1] Inspection Request Process (phone numbers, 24-hour request, etc.)
 - [] Local amendments (attic coverage, flow alarms, passive-purge, etc.)
- [1] Contact information of Water Purveyor (names, phone numbers, office hours, etc.)
- [4] Water Service (tapping the main, sizing, piping material, piping configuration, etc.)
- [7] Water Meter Criteria (location of meter box, size, flow-data, cutsheets, etc.)
- [5] Rough-in testing/Inspection criteria of overhead piping
 - [3] hydrostatic pressure test of system (working pressure, 50-lbs over static, 200-lbs, etc.)
 - [3] Visual walk-thru
 - [1] Water-in-the-Bucket verification test
- [5] Final Inspection criteria
- [3] Others Information (specify):
 - a) *NO*
 - b) *All topics above and include summary of Phase I and II.*
 - c) *Train the trainer as it relates to getting more in depth education out there that will need to be taught.*
 - d) *Only information that is consistent statewide should be covered by the SFM training. Any local amendments, or local decision as to WHO will enforce should be handled locally.*

APPENDIX G

8) Do you feel that this training should include some legal aspect to the adoption and development of local amendments and/or guidelines which would enhance the students knowledge and understanding of the Laws/Statutes (Health and Safety Code, Government Code, Public Resources Code, etc.) and Regulations (California Building Code [Title-24, Part 2], California Fire Code [Title-24, Part 9], California Residential Code [Title-24, Part 2.5], and State Housing Code [Title-25]) as it relates to the residential fire sprinkler statewide mandate?

[5] YES

[6] NO

a) *10-minutes*

b) *We have plenty of that type of classes out there.*

c) *Is this process different than amending any other portion of the code? If yes, then it should be covered.*

If no, then see the operational functions and/or relationships?

9) With regards to education, would you like to include a section in any training program where each stakeholder group would see the operational functions and/or relationship?

[5] From a Water Purveyors perspective

[1] Fees and charges (connection fees, standby fees, etc.)

[1] Public Utilities (PUC) verses Municipal and Special Districts

[2] Rural verses Municipal

[2] Backflow/Cross-Connection

[1 Potable Water (Federal and State Clean Water Acts)

Comments:

[4] From a Building Department perspective

[] Fees and charges (plans review and inspection)

[] Inspection scheduling (rough framing, Certificate of Occupancy)

[5] From a Fire Department perspective

[1] Fees and charges (plans review and inspection)

[1] Inspection scheduling (rough framing, final inspection)

[3] From a Fire Protection Contractor perspective

[1] Water Supply data for calculations

[1] Fire sprinkler design

[1] Hydraulic calculations

[1] Materials (piping, hangers, sprinklers, etc.)

[] Cutsheets

[] Plans

[2] From a Home Builder perspective

[1] Scheduling (multiple trades)

[] Production homes verses custom

[] Fees and Charges (multiple agencies/districts)

[1] Inspection Sequence(s)

[1] From a Residential Developers perspective

APPENDIX G

Preliminary Map verses Final Map (Map Acts)

[3] From a Homeowner perspective

Maintenance

Education and understanding the fire sprinkler system

Do's and Don'ts

[4] All of the above

[3] Others (specify):

a) *Typical cost ranges (real).*

b) *Include a line under Fire Protection Contractor – training and certification requirements for system installers.*

c) *The education we do involving the stakeholders should be informational in what the first two phases did as it relates to educating the other stakeholders.*

10) "If" a fee/charge were to be charged for providing the potential training we are attempting to define and develop, what would you say was a "reasonable" cost which should be charged for each student attending?

[3] Free

\$10.00

[1] \$25.00

[3] \$35.00

[2] more

[3] Other (specify):

a) *And provide sandwich type lunch.*

b) *\$100 or less.*

c) *A small amount to cover costs for materials.*

d) *The education that this Group rolls out is informational only. Let each stakeholder determine specifics on education based on what we provide here.*

e) *\$75/day of training.*

11) Do you feel that this proposed training should encompass the design/installation standards criteria contained in either NFPA-13D, 2007 edition and the 2010 California Residential Code, Section 313 (2009 IRC Section 2904) in some level of overview of the basic standards?

[7] YES

[5] NO

12) Do you feel that the proposed training should include a handout which lists the technical courses available from various approved sources (NFPA, AFSA, NFSA, AWWA, others) which address the design and installation of the residential fire sprinkler system in one- and two-family dwellings and townhomes'?

APPENDIX G

[11] YES

- a) *Not AWWA as they just copy from Residential Fire Sprinkler folks and some of that is not what California will do, at least so far in this process.*

[] NO

13) While we have used the term “best practices” in our discussions of the submittal, review, design, installation, inspection, and approval of residential fire sprinkler systems; what would you like to see covered in the proposed training?

- a) *I defer here to the small group that is extracting the best practices from the Phase I and II Reports and will review at that time.*
- b) *Installer training and required certification.*
- c) *Fire Inspector Training.*
- d) *Homeowners education.*
- e) *Residential system ITM (Inspection, Testing, and Maintenance).*
- f) *A small portion of the training should be dedicated to “understanding the Water Purveyor”.*
- g) *Questions such as meter size, stand-by fees should be addressed.*
- h) *All of the above (identified in the question).*
- i) *Awareness level overview of the Task Force Process and Best Practices Recommendations in the Reports.*
- j) *Key Message; “Keep it Simple”.*
- k) *Water Connection best practices.*
- l) *Coverage required as a life safety system.*
- m) *Reasonable testing and installation verification (standard practices).*
- n) *How these requirements affect the specific stakeholder.*
- o) *Water meter affects and consideration.*
- p) *Fire sprinkler system operation.*
- q) *Consideration of approving a plan for a tract home just once and then plan review fees are waived for subsequent submittal of the same plan.*
- r) *The importance of conformance to state defined standards.*

14) Is there any topic or issue you feel that our Sub-Group should cover, during this preliminary stage, which has not been address above?

a) *No.*

b) *No.*

c) _____

d) _____

e) _____

APPENDIX G

Now that you have answered the first 14 questions, take a minute to re-evaluate your original response to Question No. 3 (without going back to see how you answered it), and simply answer the next question (No. 15) with your current thought and consideration. (**PLEASE DO NOT** look back on your original response until after you have answered No. 15 - below.)

15) From your understanding of the State mandate and the potential training needs, how much time should be dedicated to this training?

[3] 8-hours

[7] 6-hours

[2] 4-hours

[1] 2-hours

Did your response change? [3] YES [7] NO

a) *But not much.*

And finally, please send your responses back to me by September 14, 2009 so that I can compile the responses and then I will send the Sub-Group Members the combined data. I will present our findings to the Task Force at the next meeting; and then we can get consensus and direction for the next phase of preparing a course outline (utilizing the State Fire Training outline format). (Note: *We used that format in a Sub-Group of the CSFM's Residential Care Facilities Advisory Group on a similar project and it worked out very well for moving the coursework forward.*)

Thank you in advance for your support and efforts in responding to these basic questions, which will act as a solid foundation for what is ultimately developed. Your comments and suggestions would be helpful as this process moves forward.

APPENDIX H

Residential Fire Sprinkler Mandate 2010 California Residential Code (Title-24, Part 2.5)

Course Outline

Course Objectives: To provide the student with...

- a) An awareness of the 2009 Edition of the International Residential Code (IRC) and the 2010 California Residential Code and the amendments and/or modifications contained therein as it relates to mandates for residential fire sprinkler systems.
- b) An awareness of the California State Fire Marshal's Residential Fire Sprinkler Task Force process and the resulting Phase I – Water Supply, Phase II – Installation, and Phase III – Training and Education Final Reports/Recommendations;
- c) An awareness of the term “Best Management Practices” as it relates to the various Stakeholders (Building Departments, Fire Departments, Water Purveyors, Health Departments, Contractors/Developers, Fire Protection Contractors/Sprinkler Designers, and Homeowners);
- d) An awareness of the State of California Mandate as defined in the 2010 California Residential Code, Title-24, Part 2.5, and specifically Section R313;
- e) An awareness of the various provisions as outlined in the 2010 California Residential Code, Title-24, Part 2.5, and Section R313.1 thru R325.5.1;
- f) An awareness of the provisions outline in 2010 Edition, NFPA-13D (Standard for the Installation of Fire Sprinklers in One- and Two-Family Dwellings and Manufactured Homes) and 2010 California Residential Code, Title-24, Part 2.5, Section R313.3 thru Table R313.3.6.2(9);
- g) An awareness of the various Stakeholders Considerations, Training Resources, and Technical Terms.

Course Content:.....6:00

Unit 1: Introduction

- 1-1 Orientation and Administration.....
 - 1-1.1 – Overview of Student Manual/Handout(s)
- 1-2 Scope and Purpose.....

APPENDIX H

- 1-3 Overview of CSFM's Residential Fire Sprinkler Task Force.....
 - 1-3.1 – Phase I (Water Supply) Final Report/Recommendations
 - PowerPoint Presentation – Water Purveyors (Julie/Bill)
 - 1-3.2 – Phase II (Installation) Final Report/Recommendations
 - PowerPoint Presentation – Installation (Bruce/Steve)
 - 1-3.3 – Phase III (Training and Education) Final Report/Recommendations

- 1-4 Defining Best Management Practices (BMP)
 - 1-4.1- Overview of BMP based of discipline
 - 1-4.1(a) – Building Department
 - 1-4.1(b) – Fire Department
 - 1-4.1(c) – Water Purveyor
 - 1-4.1(d) – Fire Protection Contractor
 - 1-4.1(e) – Developer/Home Builder

Unit 2: California Residential Code (Title-24, Part 2.5)

- 2-1 History
 - 2-1.1 – California Building Standards Commission
 - 2.1.1(a) – 2007 CBC (based on 2006 IBC), CFC (based on 2006 IFC)
 - 2.1.1(b) – 2010 CBC (based on 2009 IBC), CFC (based on 2009 IFC)
 - 2-2.2 – International Code Council (ICC)
 - 2-2.2(a) – ICC-IRC, 2000 ed., 2003 ed., 2006 ed., and 2009 ed.
 - 2-2.3 – California Residential Code (CRC)
 - 2-2.3(a) – 2010 CRC (based on 2009 IRC)
 - 2-2.3(b) – State Housing Law (Title-25)
 - 2-2.4 – California Residential Code, Section R313
 - 2-2.4(a) – 2009 ed. IRC Section P2904 thru Table P2904.3.6.2(9)
 - 2-2.4(b) – 2010 ed. CRC Section R313.1.1 thru Table R313.3.6.2(9)
 - 2.2.4(b).1 NFPA-13D, 2010 ed.
 - 2-2.4(c) – Defining “New Construction” verses “Additions, Remodel, Renovation, Alterations”

APPENDIX H

2-2.4(d) – Attached Garage/Carports (NFPA-13D, Section 8.6.4)

2-2 Technical Terms used by related Stakeholders.....

2-2.1- Discussion of Technical Terms related to Residential Fire Sprinklers

2-3 Rolls of Stakeholders.....

2-3.1 – Building Departments

2.3.1(a) – MOU with Fire Department

2.3.1(b) – Inspections

2.3.1(c) – Fees/Charges

2.3.1(d) – Plans and Calculations

2-3.2 – Fire Departments

2-3.2(a) – MOU with Building Department

2-3.2(b) – Inspections

2-3.2(c) – Fees/Charges

2-3.2(d) – Plans and Calculations

2-3.3 – Water Purveyors

2-3.3(a) – Service Connection (Single Meter vs. Dual Meter)

2-3.3(b) – Meter Sizing (flow/pressure/duration)

2-3.3(c) – Backflow/Cross Connection

2-3.3(d) – Rural verses Municipal Water Supply

- Self-contained Water Storage Systems

2-3.3(e) – Pressure Regulators

2-3.3(f) – Real verses Perceived Liability Issues

2-3.3(g) – Potable Water verses Reclaimed Water (Purple)

2-3.3(h) – Fees/Charges

2-3.4 – Health Departments Contractors/Developers

2-4(a) – Federal/State Clean Water Acts

2-3.5 – Contractors/Developers

2-3.5(a) – Map Act (Preliminary Map/Final Map)

2-3.6 – Fire Protection Contractors/Sprinkler System Designers

2-3.6(a) – CSLB Regulations (B&P Code, Section 7026.12)

APPENDIX H

- 2-3.6(b) – Licensed Contractor’s Exemption from the Provisions of the Engineers Act (B&P Code, Section 6737.4)
- 2-3.7 – Homeowners
 - 2-3.7(a) – System Maintenance (voluntary/recommendations)
 - 2-3.7(b) – Owner/Builder (B&P Code, Section 7026.12)
- 2-4 Statutory Authority (Statutes and Regulations).....
 - 2-4.1 – Health and Safety Code
 - (Sections 116270-116275, 116875, 116875, 116880, 116800-116820, 13105.5, 13114.5-13114.7, 13144, 13146, 13146.3, 13146.5, 13198.5, 17958.7, 18941.5, 19850, 25214.4.3)
 - 2-4.2 – Government Code
 - (Sections 54950-54963, 11125-11125.9, 11340, 11340.1, 11340.5, 11359, 66013, 66014)
 - 2-4.3 – Business and Professions Code
 - (Sections 6737.3, 7008, 7026.2, 7026.3, 7026.11, 7026.12, 7058, 7059, 7065, 7068)
 - 2-4.4 – Contractors State License Laws and Regulations
 - (Section 832.47)
 - 2-4.5 – State Water Code (Title-22)
 - 2-4.6 – State Housing Law (Title-25)
 - (Chapter 3, Article 1 (Section 4002(1) – Definitions) and Article 2.5 (Sections 4300, 4302, 4306, 4308, 4310, 4312, 4314, 4316, 4318, 4320, 4322, and 4324)
 - 2-4.7 – CA Public Utilities Commission
 - (General Order No. 103)
 - 2-4.8 – State Public Safety (Title-19)
 - (Section 901(c))
- 2-5 Training Resources.....
 - 2-5.1 – American Fire Sprinkler Association (AFSA)

APPENDIX H

- 2-5.1(a) – Director of Education Services Marlene Garrett
[Phone: 214) 349-5965]
- 2-5.1(b) – CA Contact:
- 2-5.2 – National Fire Sprinkler Association (NFSA)
 - 2.5.2(a) – Regional Manager Bruce Lecair [Phone: (951) 277-3517]
- 2-5.3 – National Fire Protection Association (NFPA)
 - 2.5.3(a) – Regional Manager Raymond Bizal [Phone: (562) 497-1706]
- 2-5.4 – International Code Council (ICC)
 - 2.5.4(a) – Senior Regional Manager Kevin Scott [Phone: (661) 302-2277]
- 2-5.5 – Sprinkler Fitters Association of California (SFAC)
 - 2-5.5(a) – Sprinkler Fitters Local 483 (San Francisco Bay Area)
Training Director Jim Bollier [Phone: (510) 782-9483]
 - 2-5.5(b) – Sprinkler Fitters Local 709 (Los Angeles Area)
Training Director John Holmes [Phone: (310) 698-9909]
- 2-5.6 – Society of Fire Protection Engineers (SFPE)

- 2-6 Training Venues/Hosts (By Stakeholders.....)
 - 2-6.1 – Building Departments
 - Website: www.calbo.org
 - 2-6.1(a) – CALBO Training Institute (CTI)
Five (5) one week CIT’s schedule per year
 - 2-6.1(b) – International Code Council (ICC)
Website: www.iccsafe.org
 - 2-6.2 – Fire Departments
 - 2-6.2(a) – Association of Contract Counties
 - 2-6.2(b) – California Fire Chiefs Association
Website: www.calchiefs.org
 - 2-6.2(c) – Fire Prevention Officers (Northern California Section)
Website: www.firepreventionofficers.org
 - 2-6.2(d) – Fire Prevention Officers (Southern California Section)
Website: www.firepreventionofficers.org

APPENDIX H

2-6.2(e) – California Fire Prevention Institute (CFPI)
Buellton, CA (March 15-19, 2010)

2-6.2(f) – California Rural Fire Association

2-6.2(g) – Fire District Association of California

Website: www.fdac.org

2-6.2(g) – League of California Cities, Fire Department

Contact Info: Dorothy Johnson [Phone: (916) 658-8214]

2-6.3(h) – Metropolitan Fire Chiefs Association

2-6.3 – Water Purveyors

2-6.3(a) – American Water Works Association (AWWA)

Website: www.awwa.org

Seminar Schedule:

<http://apps.awwa.org/ebusmain/meetings/eventcalendar.aspx>

2-6.4 – Health Departments Contractors/Developers

2-6.5 – Contractors/Developers

2-6.5(a) – California Building Industry Association (CBIA)

Website: www.cbia.org

Chapters:

- HBA of Northern California
- HBA of Kern County
- BIA of Fresno/Madera Counties
- HBA of the Central Coast
- HBA of Tulare and Kings Counties
- BIA of the Delta
- BIA of the Central California
- North State BIA
- BIA of San Diego County
- BIA of Southern California

2-6.6 – Fire Protection Contractors/Sprinkler System Designers

2-6.6(a) - American Fire Sprinkler Association (AFSA)

Website: www.firesprinkler.org

APPENDIX H

Website: www.clse.org (Center for Life Safety Education)

Website: www.CAFSA.org

Greater Bay Area Chapter [Phone: 925) 249-9705]

Sacramento Valley Chapter [Phone: 916) 973-4434]

San Diego Chapter [Phone: 858) 973-2930]

2-6.6(b) – National Fire Sprinkler Association (NFSA)

Website: www.nfsa.org

San Francisco Chapter [Phone: (951) 277-3517]

Los Angeles Chapter [Phone: (951) 277-3517]

2-6.6(c) - Sprinkler Fitters Association of California (SFAC)

Sprinkler Fitters Local 483 (San Francisco Bay Area)

Training Director Jim Bollier [Phone: (510) 782-9483]

Sprinkler Fitters Local 709 (Los Angeles Area)

Training Director John Holmes [Phone: (310) 698-9909]

2-6.6(d) – Society of Fire Protection Engineers (SFPE)

Website: <http://www.ncnsfpe.org>

(Northern California-Nevada Chapter)

Website: <http://www.sfpe.org/chapters/southerncalifornia.aspx>

(Los Angeles Chapter)

Website: <http://www.sfpe.org/Chapters/sandiego.aspx>

(San Diego Chapter)

2-6.7 – Homeowners/Real Estate Agencies/Insurance Agencies

2-6.7(a) – Homeowners

Maintenance (awareness)

2-6.7(b) – Real Estate Agencies

Life Safety (Built-in Fire Protection)

2-6.7(c) – Insurance Agencies

Insurance Credits (5-15% reduction)

2-7 Manufactured Housing.....

2-7.1 – National Manufactured Home Construction and Safety Standards

(June 15, 1976)

APPENDIX H

- Permits and Conditions [HUD (Federal Pre-emption)]
- 2-7.2 – State Housing Code
 - (September 1, 1958)
 - Permits and Conditions [HCD (State Pre-emption)]
 - Local Enforcing Agency/AHJ's [Limited by State Pre-emption]
- 2-7.3 – Relationship between Title-24, Part 2.5 and Title-25
- 2-7.4 – General Manufactured Housing Contractor (C-47)
 - 2-7.4(a) – On Sales Lots and/or Field [Fire Protection Contractor (C-16)]
- 2-7.5 – Acceptance Testing and Approval (In Factory verses On-Site)
 - 2-7.5(a) – Manufacturing Facility
 - In-Plant Inspections
 - Quality Control
 - Uniformity
 - 2-7.5(b) – Field Site
 - Enforcing Agency/AHJ's
- 2-7.6 – Title-25, Chapter 3, Article 1 (Section 4002(1) – Definitions) and Article 2.5 (Sections 4300, 4302, 4306, 4308, 4310, 4312, 4314, 4316, 4318, 4320, 4322, and 4324)

- 2-8 Antifreeze Mitigations.....
- 2-8.1 – Dry pipe systems and pre-action systems in accordance with NFPA-13D,
Section 8.3.4
- 2-8.2 – Listed standard dry pendent or dry-sidewall sprinklers extended from
pipe in heated areas into unheated areas not intended for living
purposes.
- 2-8.3 – Propylene Glycol-water mixture
- 2-8.4 – Glycerine-water mixture
- 2-8.5 – Trace wire/Thermo-Tape

- 2-9 Questions/Answers.....

APPENDIX H

| | |
|--|--|
| 2-10 | Appendix “1” – Storage Tank |
| 2-10.1 | – List of manufacturer’s |
| 2-10-1(a) | Advanced Technology, Inc. Website: www.advancedfiretechnology.com |
| 2-10.1(b) | D-System, Inc. Website: www.thedsystem.com |
| 2-10.1(c) | Fire Water Systems, Inc. Website: www.firewatersystemsinc.com |
| 2-10.1(d) | Life-Line Series (Raimondo Consultants, Inc.) Website: www.raimondofiresystems.com |
| 2-10.1(e) | S-P-D Incorporated Website: www.spdinc.com |
| 2-10.1(f) | Talco Industries, Inc. Website: www.talcofire.com |
| 2-11 | |
| 2-12 | |
| 2-13 | |
| 2-14 | |
| Unit 3: Class Presentation Evaluation | |
| 3.1 | Complete the Class Presentation Evaluation..... |

APPENDIX I

Statutes and Regulations Code Language and General Questions and Answers For Water Purveyor (Phase I) and Installation (Phase II) Task Forces

Code Language

State Regulations as they relate to Residential Fire Sprinklers
(To take affect as of January 1, 2011)

Adoption by Reference of the 2009 Edition of the International
Residential Code (IRC) with Amendments into the
2010 California Residential Code (CRC) California Code of Regulations
Title-24, Part 2.5

Section R313.1 - Townhouse automatic fire sprinkler systems.

Section R313.2 - One- and Two-family dwellings automatic fire sprinkler
systems.

Section R313.2.1 - Design and installation.

- Design Criteria: 1) 2010 Edition of NFPA-13D - Standard for the
Installation of Sprinkler Systems on One- and Two-
family Dwellings and Manufactured Homes (Section
8.4.7 - Hydraulic Calculation Method)
- 2) 2010 Edition of California Residential Code (CRC) Title-
24, Part 2.5 Section R313.3
(Section 313.3.6.2 - Prescriptive Pipe Size Method)
- 3) 2010 Edition of NFPA-13D - Standard for the Installation
of Sprinkler Systems on One- and Two-family Dwellings
and Manufactured Homes
- 4) (Section 8.4.10 - Prescriptive Pipe Size Method)

NFPA-13D

Section 8.6.4 - Attached Garages, and Carports
CA amendment - 2010 Edition of California Residential
Code (CRC) Title-24, Part 2.5, Chapter 44 (2010 Edition
of NFPA-13D - Standard for the Installation of Sprinkler
Systems on One- and Two-family Dwellings and
Manufactured Homes)

APPENDIX I

General Questions and Answers

1. Where is it written that public commissions, boards and councils and other public agencies must conduct their business/actions in an open forum/hearing?

Answer:

Ralph M. Brown Act

(Government Code Section 54950-54963)

2. Where does it require that a state body (*Agency, Board, Advisory Group, etc.*) must provide notice at least 10-days prior to a public meetings in which action shall be taken?

Answer:

Bagley-Keene Open Meeting Act

(Government Code Section 11125-11125.9)

3. Are there any regulations which define criteria by which a water purveyor can discontinue the water service to a customer for non-payment? (Note: *This regulation only applies to water purveyors who fall under the authority and jurisdiction of the CA Public Utilities Commission – PUC.*)

Answer:

General Order No. 103:

(CA Public Utility Commission – Water Branch)

Section I-6.a thru f

4. Where can I find the statutory authority for the California Safe Drinking Water Act, and what does it say?

Answer:

California Safe Drinking Water Act:

(Health and Safety Code, Section 116270-116275)

5. Where does it define the requirements for Backflow/Cross-Connection devices on a water service?

Answer:

Backflow/Cross-Connection:

(Health and Safety Code, Section 116800-116820)

APPENDIX I

6. Is there any state law which governs the implementation of backflow/cross-connection equipment and/or device(s) when connecting a residential fire sprinkler system to the domestic water supply service?

Answer:

Backflow Prevention and Cross-Connection Control:

(Health and Safety Code, Section 13114.5 and 13114.7)

7. What is the statutory authority for a local agency to impose fees and charges for a water service connection?

Answer:

Service Connection Fees/Charges:

(Government Code Section 66013)

8. Where is the statutory criteria found for a local agency (Planning, Building and/or Fire) for establishing fees and charges associated with processing and inspecting projects?

Answer:

Building/Fire Agencies:

(Government Code Section 66014)

9. If the Building Department wanted to do the review and inspections of residential fire sprinkler systems and the Fire Department objected; "Do we, the Fire Department have the authority to keep this task?"

Answer: No. The City or County delegates enforcement authorities for R-3 occupancies.

(Health and Safety Code, Section 13145-13146)

10. By code we cannot require five year services on residential fire sprinkler systems. Can this be accomplished by local ordinance?

Answer:

(NFPA-25, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems, 2006 California Edition)

(CA SFM Website: Question taken from Frequently Asked Questions Concerning NFPA-25, 2006 California Edition, Page #7, Can local fire authorities adopt testing and maintenance requirements that are more restrictive than the service requirements in the California Code of Regulations, Title-19? Answer: No .)

APPENDIX I

(Health and Safety Code, Section 13198.5)

(2007 California Building Code [CBC] and 2007 California Fire Code [CFC])

(Health and Safety Code, Section 17958.7)

(Health and Safety Code, Section 18941.5)

11. Can a Fire Protection Contractor (C-16) design the system that he or she is to install?

Answer: Yes.
(B&P Code – Contractors License Law)

12. Why doesn't the State of California do like many other states and mandate that all fire sprinkler designs will be done by or supervised and certified by a minimum NICET – Level III Automatic Sprinkler Layout Technician?

(Comment: *Many states have this requirement in order to even get a Fire Protection Contractor license.*

Answer:
(Source: AFSA Sprinkler Age 11/08 [page 31])

13. Is it the intent of CRC Section R313.3, P2904 to allow residential fire protection systems to be installed by a Fire Protection Contractor (C-16) and/or a Plumbing Contractor (C-36)?

Answer: No. CRC Section R313.3 does not determine who may or may not install a fire protection system.

(B&P Code – Contractors License Law)

*(Sections 7026.2. (a), 7026.3, 7026.11, 7026.12)
(B&P Code 7008, 7058, and 7059)
(832.47. Class C-47 – General Manufactured Housing Contractor)*

APPENDIX I

14. How does the State handle training and education for contractors, installers, plan checkers, inspectors, and the consumer?

Contractor/Installers:

Answer:

(B&P Code – Contractors License Law Section 7065, 7068)

Plan Checkers/Inspectors: (Fire)

Answer:

(Health and Safety Code, Section 13105.5)

Plan Checkers/Inspectors: (Building)

Answers:

(Health and Safety Code, Section 18949.25-31)

Consumer:

Answers:

(Health and Safety Code, Section 13144)

15. In a multi-purpose system, will the traces of lead in the sprinkler heads be a problem with the domestic water?

Answers:

(Health and Safety Code, Section 116875)

(Health and Safety Code, Section 25214.4.3)

16. What is the criteria which defines an "Underground Regulation" and is used for the premise by which State Agencies are required to follow strict criteria for the adoption of Building Standards?

Answer: California Administrative Procedures Act (APA)

(Government Code, Section 11340-11340.1)

(Government Code, Section 11340.5)

(Government Code, Section 11359)