

The HFSC Fire and Sprinkler Burn Demonstration Kit



**A COMPLETE GUIDE
TO BUILDING
AND USING
A DRAMATIC
LIVE FIRE
DEMONSTRATION
IN YOUR
COMMUNITY**



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THE HFSC FIRE AND SPRINKLER BURN DEMONSTRATION KIT

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INTRODUCTION

A fire and sprinkler burn demonstration is an educational tool showing how normal combustible material found in a home can cause a major fire, severe injury and death. The demonstration also shows how a residential quick-response fire sprinkler effectively limits and controls those hazards. Your department's focus for such a demonstration should be to educate your target audience on quick-response fire sprinkler technology, the definition and dangers of flashover, and the fire department response timeline. This demonstration is not so much a public entertainment demonstration as it is a fact-based fire safety educational device.

The nonprofit Home Fire Sprinkler Coalition (HFSC) is a 501(c)(3) charitable organization and the leading resource for independent, noncommercial information about residential fire sprinklers. HFSC was formed in 1996 in response to the tremendous need to inform the public about the life-saving value of home fire sprinkler protection.



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UNDERSTANDING HOME FIRE SPRINKLER PROTECTION

**Home Fire Sprinkler
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Home Fire Sprinkler Systems



Sidewall Sprinkler

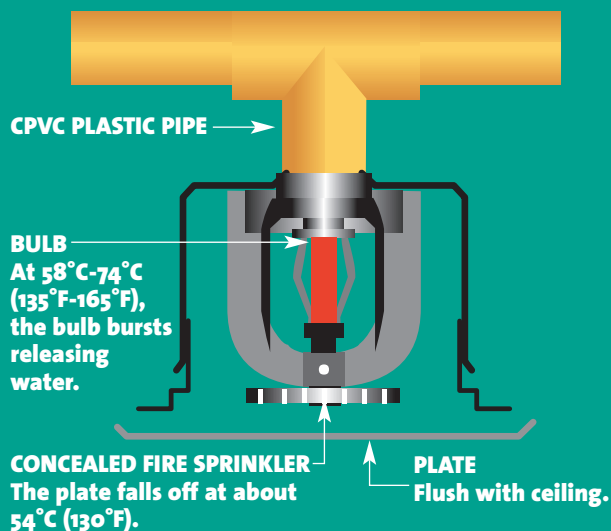


Concealed Sprinkler



Pendent Sprinkler

A sprinkler covers a minimum 3.66 X 3.66 meter (12 X 12 foot) area. Extended coverage sprinklers can cover a maximum area of 6.1 X 6.1 meters (20 X 20 feet).



Fire sprinkler systems provide powerful protection from fire. They work automatically and immediately; before a fire spreads. Sprinklers put water right where it is needed, slowing or stopping the flames and poisonous smoke, so people can get out safely.

Fire sprinkler systems have been saving lives and protecting property for more than 130 years. Over the past two decades, sprinklers have been specially adapted to simplify installation and use in homes. The development of chloro-polyvinyl chloride (CPVC) and other listed non-metallic pipe has simplified installation and has made sprinkler systems more cost effective. In markets where fire sprinklers have

become commonplace the cost per square foot has fallen significantly. Today, you can find fire sprinklers in homes of every size and style.

A typical residential sprinkler system operates off the household water main and uses piping that is installed behind walls and ceilings in finished areas. Attached to the piping at intervals are the individual sprinklers. Concealed sprinklers are often used in finished areas. An unfinished basement may have exposed piping and pendent sprinklers instead of concealed sprinklers. Each sprinkler can protect a minimum area of 12 x 12 feet. Extended coverage sprinklers are available that protect even larger areas.



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Overview of NFPA 13D



The national installation standard for home fire sprinkler systems is NFPA 13D, Standard for Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes.

NFPA 13D is only appropriate for one- and two-family structures and manufactured homes. (See NFPA 13 and NFPA 13R for protection of other structures.) Be aware that local code authorities may have certain requirements that exceed or differ from NFPA 13D.

HFSC and the standard recommend that sprinkler systems be designed and installed by “...persons trained and skilled in the design and installation of residential sprinkler systems.”

NFPA 13D requires a minimum 10-minute water supply (7 minutes under certain conditions – see standard for details). The standard allows Independent, Multipurpose (serving both domestic and fire protection supplies) and Network systems

(supplies domestic and fire protection and each sprinkler is supplied by a minimum of three separate paths), as well as listed Dry Pipe systems. (See the standard for details.)

NFPA 13D recommends, but does not require, sprinklers in all areas of a dwelling. The standard permits sprinklers to be omitted from the following spaces:

- Bathrooms smaller than 55 sq. ft.
- Closets and pantries smaller than 24 sq. ft.
- Garages, open attached porches, carports and similar structures
- Attic spaces that are not used for living space
- Covered, unheated projections of the building at entrances and exits
- Ceiling pockets

Please read the standard for compliance with the above exceptions.

NFPA 13D includes information for installation of sprinkler systems in areas where freezing may occur.

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PREPARATION

**Fire and Sprinkler Burn
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Fire and Sprinkler Burn Demonstration Checklist

BEFORE ASSEMBLY OF THE UNITS

Item To Check:	Details on page:
<input type="checkbox"/> Is the demonstration area level with adequate room for audience safety and equipment access?	10
<input type="checkbox"/> Is there electrical service onsite? If not has a generator been provided?	10
<input type="checkbox"/> Have all furnishings been gathered?	13
<input type="checkbox"/> Is the engine company available and scheduled for the demonstration?	14
<input type="checkbox"/> Is a water supply for the sprinkler available?	14
<input type="checkbox"/> Are all personnel available including a qualified sprinkler fitter and contractor?	14
<input type="checkbox"/> Is there an adequate supply of literature available for distribution?	15
<input type="checkbox"/> Have all components been constructed?	17
<input type="checkbox"/> Have local officials and the media been contacted?	50 - 55
<input type="checkbox"/> Has a dumpster been ordered and delivered to the site?	13

BEFORE THE DEMONSTRATION

Item To Check:	Details on page:
<input type="checkbox"/> Have the units been assembled and furnished?	21-38
<input type="checkbox"/> Do the smoke alarms have fresh batteries?	37
<input type="checkbox"/> If a generator is being used, does it have fuel?	10
<input type="checkbox"/> Has the sprinkler been replaced?	29-36
<input type="checkbox"/> Is the engine fully fueled and running?	40
<input type="checkbox"/> Is the water supply for the sprinkler turned on and set to the correct pressure?	40
<input type="checkbox"/> Are there fresh batteries in your microphone?	40
<input type="checkbox"/> Have you done a sound check?	40
<input type="checkbox"/> Is the means of lighting the fire working?	37
<input type="checkbox"/> Are all personnel onsite and ready?	14



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Fire and Sprinkler Burn Demonstration



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Work/Demonstration Space



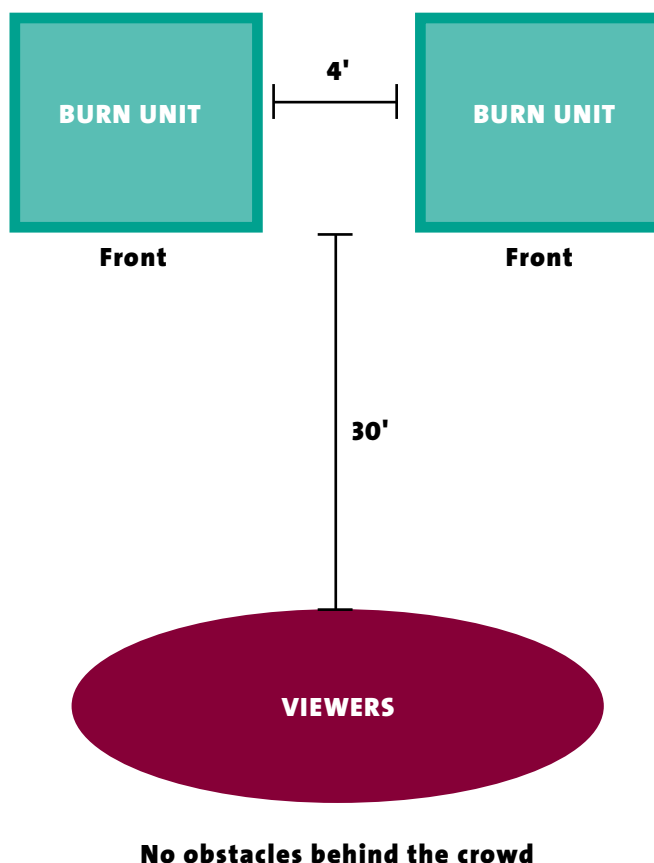
Completed side-by-side units



Crowd has room to move

BEFORE ASSEMBLY OF THE UNITS

Choose a level work and demonstration area* (concrete and asphalt are preferred). It should allow viewers to stand at least 30 feet away from the demonstration units, depending on wind and weather conditions**. The location needs to provide easy and adequate access for vehicles and equipment, and plenty of room for personnel. You'll need electric power, so plan for a generator if there is no electricity available.



Make sure there is at least 4 feet between each unit. You should level the units, as appropriate, to stabilize them and protect the ground surface.

WORK CREW FOR CONSTRUCTION/ASSEMBLY

With 3 or 4 people, you can build the two demonstration units in half a day.

*You will not be able to move these units once they are assembled.

**Angle the rooms slightly to remove reflections if the demonstration is to be videotaped.

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Materials You'll Need



FOR COMPONENT CONSTRUCTION AND ASSEMBLY

NOTE: The following are exact counts, order extra in case of spoilage.

- ☐ (98) 2"x4"x8' studs
- ☐ (2) 2"x12"x8' boards
- ☐ (14) 4'x8'x $\frac{1}{2}$ " OSB or plywood sheets
- ☐ (1) 1'x8'x $\frac{1}{4}$ " plywood sheet
- ☐ (8) 4'x8'x $\frac{1}{2}$ " drywall sheets
- ☐ (2) 4'x8'x $\frac{1}{8}$ " (OR $\frac{3}{8}$ ") clear acrylic sheets
- ☐ (50) 3"x3" brass hinges with removable pins

The following are general supplies that you will need.

- ☐ (2) 5-lb. boxes of 3" self-tapping flat head wood screws
- ☐ (2) 5-lb. boxes of 1 $\frac{5}{8}$ " drywall screws
- ☐ (2) gallons of white primer paint
- ☐ (1) roll of duct or drywall tape
- ☐ (1) container of drywall plaster (optional)
- ☐ (1) roll of Velcro® tape (24" needed)

The following are used to create the sign for the sprinklered unit.

FIRE SPRINKLER PROTECTED

Option 1

- (1) quart of red paint
- (1) small paintbrush

Option 2

10" Red vinyl letters, standard or custom made, to fit in 7' 6" area

- | | | | |
|-------|-------|-------|-------|
| (1) C | (2) I | (1) O | (2) T |
| (1) D | (1) K | (2) P | |
| (4) E | (1) L | (4) R | |
| (1) F | (1) N | (1) S | |

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Tools You'll Need



FOR COMPONENT CONSTRUCTION AND ASSEMBLY

- ☐ Safety gear for all members of the work crew, including hardhats, leather gloves and safety glasses
- ☐ Circular Saw
- ☐ Cordless Drill
- ☐ Extension Cords
- ☐ Hammer
- ☐ Saw Horses
- ☐ 6' A-Frame Ladder
- ☐ 8' A-Frame Ladder
- ☐ Step Ladder
- ☐ Nail Pouch
- ☐ Razor Knife
- ☐ Speed Square
- ☐ Staple Gun (OPTIONAL)
- ☐ Paint Roller + Brushes (OPTIONAL)
- ☐ Paint Pan (OPTIONAL)
- ☐ Drywall Putty Knife (OPTIONAL)
- ☐ Chalk Line (OPTIONAL)
- ☐ Drywall Putty Tray and Sandpaper (OPTIONAL)

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Demonstration Unit Furnishings and Equipment



- ☐ Two smoke alarms with fresh batteries, tested prior to demonstration.
- ☐ One NFPA 13D listed residential sprinkler.
- ☐ Two sets of matching or very similar living room or bedroom furnishings (couches/chairs, beds, tables, lamps, radios, telephones, computers, etc.).
- ☐ Two lengths of cotton fabric to represent curtains; rods to hang them.
- ☐ Two 8 x 8 foot sections of carpeting.
- ☐ Two lightweight (such as wicker or thin plastic) wastebaskets; newspapers.
- ☐ Means to light the demonstration fires (such as extension lighter, flares, etc.).
- ☐ One dumpster (or other means to handle trash).

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Apparatus and Personnel for Demonstration



APPARATUS:

- ☐ One engine company for the demonstration with a 1 3/4" hand line charged to extinguish the flashover fire.
- ☐ One backup line of equivalent size should be stretched and available for use. If an engine is used to supply the sprinkler system, idle pressure is usually sufficient, but this should be confirmed with a sprinkler contractor prior to the demonstration.

PERSONNEL:

- ☐ One qualified apparatus engineer to confirm the water supply to the sprinklered unit.
- ☐ One qualified sprinkler fitter.
- ☐ One qualified fire sprinkler contractor.
- ☐ Two (minimum) structural firefighters dressed in full protective gear, including SCBA.
- ☐ Two workers to handle breakdown, clean-up, salvage, storage and transportation operations.



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Demonstration Materials



HFSC Public Education Kit

- ☐ HFSC educational materials and handouts
- ☐ A banner identifying your fire department
- ☐ Sound system with microphone
- ☐ Large game clock or timer
- ☐ Sample residential sprinklers
- ☐ Sample battery-powered smoke alarm with fresh battery



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CONSTRUCTION AND ASSEMBLY

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Finishing the Units > 37



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Component Construction

Units are assembled from panels.

Quantity Needed	Type of Panel	Panel Numbers
11	Full-Size (4' x 8') OSB or Plywood	1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12
7	Full-Size (4' x 8') Drywall	13, 14, 16, 17, 18
1	Short (39 ³ / ₄ " x 8') OSB or Plywood	5
1	Short (39 ³ / ₄ " x 8') Drywall	15

In addition the following are needed:

Quantity Needed	Description	Where Used
2	2" x 12" x 8" Header	Top, front of each unit
1	4' x 8' x 1/8" (OR 3/8") Clear Acrylic Sheet	Front of unsprinklered unit
1	2' x 8' x 1/8" (or 3/8") Clear Acrylic Sheet	Front of sprinklered unit

PANEL MATERIAL:

- ☐ The sprinkler protected unit is constructed from either OSB (Oriented Strand Board) or plywood for durability. OSB tends to be less expensive and equally durable compared to plywood. The panels should be painted both for appearance and durability.
- ☐ The unprotected side is constructed using drywall panels on the sides and top. The interior of the unprotected side will be damaged by both the fire and fire hoses. Using drywall makes replacing some or all of the panels after each demonstration easier and less expensive than if they were constructed with OSB or plywood.

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Component Construction

Construction Preparation*

1. Cut (78) two-by-fours to 93".
2. Cut (36) two-by-fours to 48".
3. Cut (4) two-by-fours to 39³/₄".
4. Cut (1) 1/2" sheet of OSB to 39³/₄" x 8'.
5. Cut (1) 1/2" sheet of drywall to 39³/₄" x 8'.
6. Cut (1) 1/8" (or 3/8") Clear Acrylic Sheet to 2' x 8'.



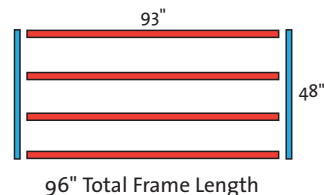
Full-Size OSB Panel Construction

11 Needed

7. On saw horses, layout (4) 93" two-by-four studs 16" on center.
8. Attach (1) 48" two-by-four stud to each end using 3" wood screws.
9. Attach 4' x 8' x 1/2" OSB using 1 5/8" drywall screws (NOTE: Snapping a chalk line along the centerline of the studs will make screw placement easier).
10. Paint the face of the panel with primer.
11. Label the panel #12 and set aside. This will allow lower numbered panels to be at the top of the stack, making assembly easier.
12. Repeat the process nine more times, labeling the panels #11 - #6 and #4 - #1.

*In the video each room is constructed and assembled separately. To make the process more efficient, you may complete construction of all components before assembly as presented in these written instructions.

Blue: 2" x 4" x 48" Red: 2" x 4" x 93"

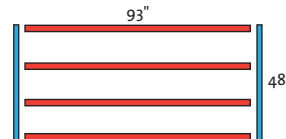


Component Construction

Full-Size Drywall Panel Construction 7 Needed

13. On saw horses, layout (4) 93" two-by-four studs 16" on center.
14. Attach (1) 48" two-by-four stud to each end using 3" wood screws.
15. Attach 4' x 8' x 1/2" drywall using 1 5/8" drywall screws (NOTE: Snapping a chalk line along the centerline of the studs will make screw placement easier).
16. Paint the face of the panel with primer.
17. Label the panel #20 and set aside in a separate stack. This will allow lower numbered panels to be at the top of the stack, making assembly easier.
18. Repeat the process six more times, labeling the panels #19 - #16 and #14.

Blue: 2" x 4" x 48" Red: 2" x 4" x 93"



96" Total Frame Length



Short OSB Panel Construction 1 Needed

19. On saw horses, layout (3) 93" two-by-four studs 19 7/8" on center.
20. Attach (1) 39 3/4" two-by-four stud to each end using 3" wood screws.
21. Attach 39 3/4" x 8' x 1/2" OSB using 1 5/8" drywall screws (NOTE: Snapping a chalk line along the centerline of the studs will make screw placement easier).
22. Paint the face of the panel with primer.
23. Label the panel #5 and set aside.

Black: 2" x 4" x 39 3/4" Red: 2" x 4" x 93"



96" Total Frame Length



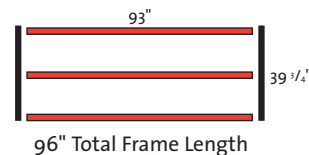
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Component Construction

Short Drywall Panel Construction 1 Needed

24. On saw horses, layout (3) 93" two-by-four studs 19⁷/₈" on center.
25. Attach (1) 39³/₄" two-by-four stud to each end using 3" wood screws.
26. Attach 39³/₄" x 8' x 1¹/₂" drywall using 1⁵/₈" drywall screws (NOTE: Snapping a chalk line along the centerline of the studs will make screw placement easier).
27. Paint the face of the panel with primer.
28. Label the panel #15 and set aside.

Black: 2" x 4" x 39³/₄" Red: 2" x 4" x 93"



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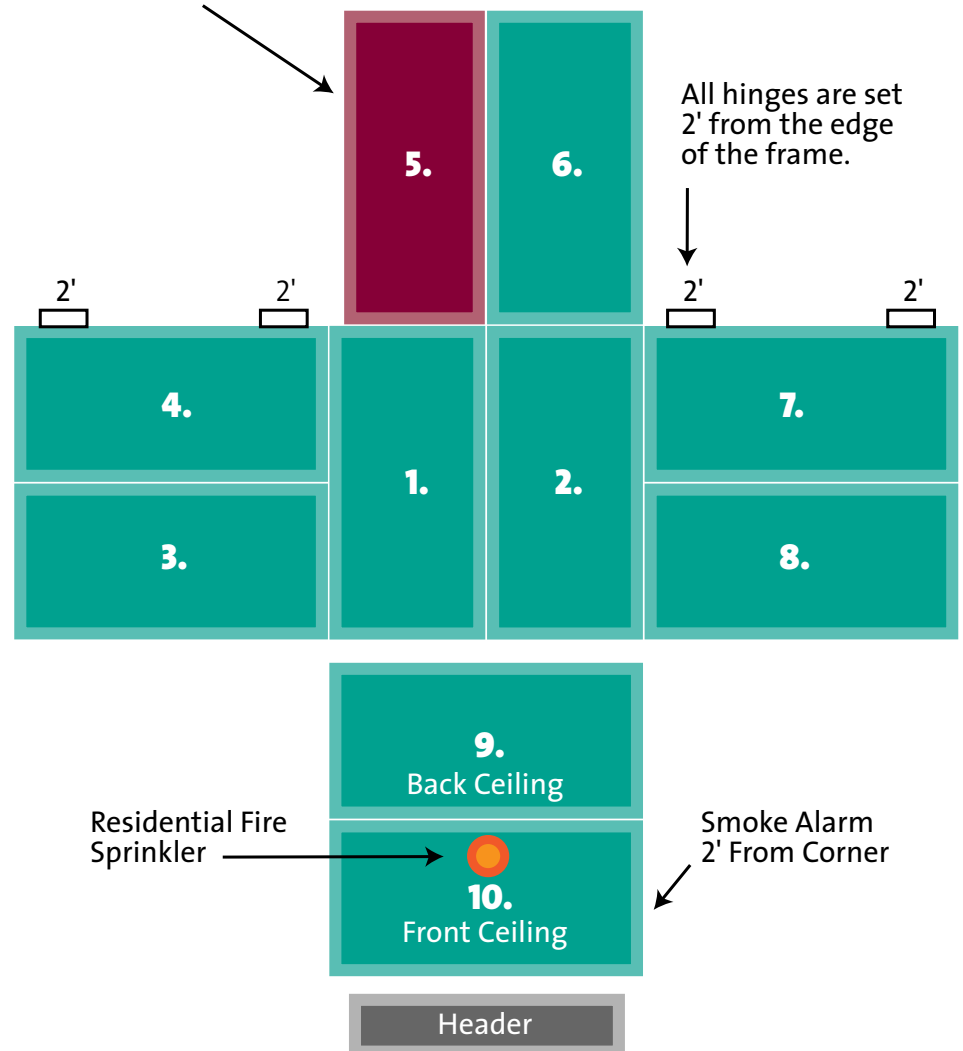
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First Assembly

The demonstration units are assembled using hinges. This allows the units to be disassembled by simply removing the hinge pins. Placement of the hinges is done the first time the units are assembled, so you may want to do this step in a controlled environment such as a workshop or outside the fire station, weather permitting. If you choose to do the first assembly on the site of your demonstration, please review the section "Before Assembly Of The Units" carefully before starting.

Pieces #5 and #15 are 39 ³/₄" x 8' sections. These are smaller to make the system flush.



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First Assembly

29. Place panels #1 and #2 side-by-side on the ground with the OSB side up.

30. Making sure the front and back edges of the panels are aligned, attach them using (2) 3" hinges, 2' from either end.



31. Set panel #4 upright on the rear left side of the floor panels, aligning it with the back edge of the floor.

32. Attach panel #4 to the floor using (1) hinge centered (screw the hinge into both sides with 1 $\frac{5}{8}$ " drywall screws into the studs).



33. While one person holds panel #4 in place, short panel #5 is placed next to #4 aligning with the rear of the unit.

34. Attach panel #5 to the floor using (1) hinge centered (screw the hinge into both sides with 1 $\frac{5}{8}$ " drywall screws into the studs).

35. Attach panels #4 and #5 using (2) hinges set 2' from the bottom and 2' from the top.



36. Set panel #3 upright next to panel #4.

37. Attach panel #3 to the floor using (1) hinge centered (screw the hinge into both sides with 1 $\frac{5}{8}$ " drywall screws into the studs).

38. Attach panels #3 and #4 using (2) hinges set 2' from the bottom and 2' from the top.



39. Follow the same procedure for sections 6, 7 and 8.

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First Assembly

WARNING! The next five steps are the most difficult and dangerous; be sure to have a large enough work crew (at least 3 people) all wearing head protection.

40. Place a 6' A-Frame ladder inside the unfinished unit and have a worker on the ladder, halfway up.

41. Carry panel #9 into the unit and lift it up to the worker on the ladder, OSB side down.



42. The ladder worker lifts this roof panel over and onto the top of the wall panels, squaring it with the back wall.

43. Attach the roof panel to each wall panel with a 3" hinge on each.



44. Repeat this procedure step for the front roof section (#10).



45. Attach the header board to the front top of the unit using (3) hinges.



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THE HFSC FIRE AND SPRINKLER BURN DEMONSTRATION KIT

First Assembly

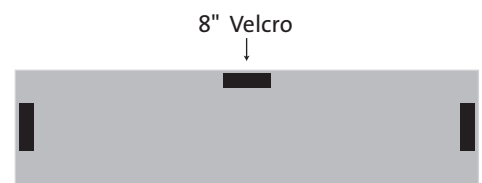
46. Drill a 3" hole in the back wall to allow the fire to be set. The hole should be positioned to align with the waste basket or other receptacle that will hold the ignition source. This is generally toward the middle of the backwall a few inches above the floor.



47. The 2'x 8' x 1/8" (or 3/8") Clear Acrylic Sheet will be attached to the unit using Velcro® tape after the unit is furnished.

The unit is now ready for installation of the residential quick-response fire sprinkler piping system by a qualified installer. For instructions on installing the system see:

"Installing the Fire Sprinkler System".

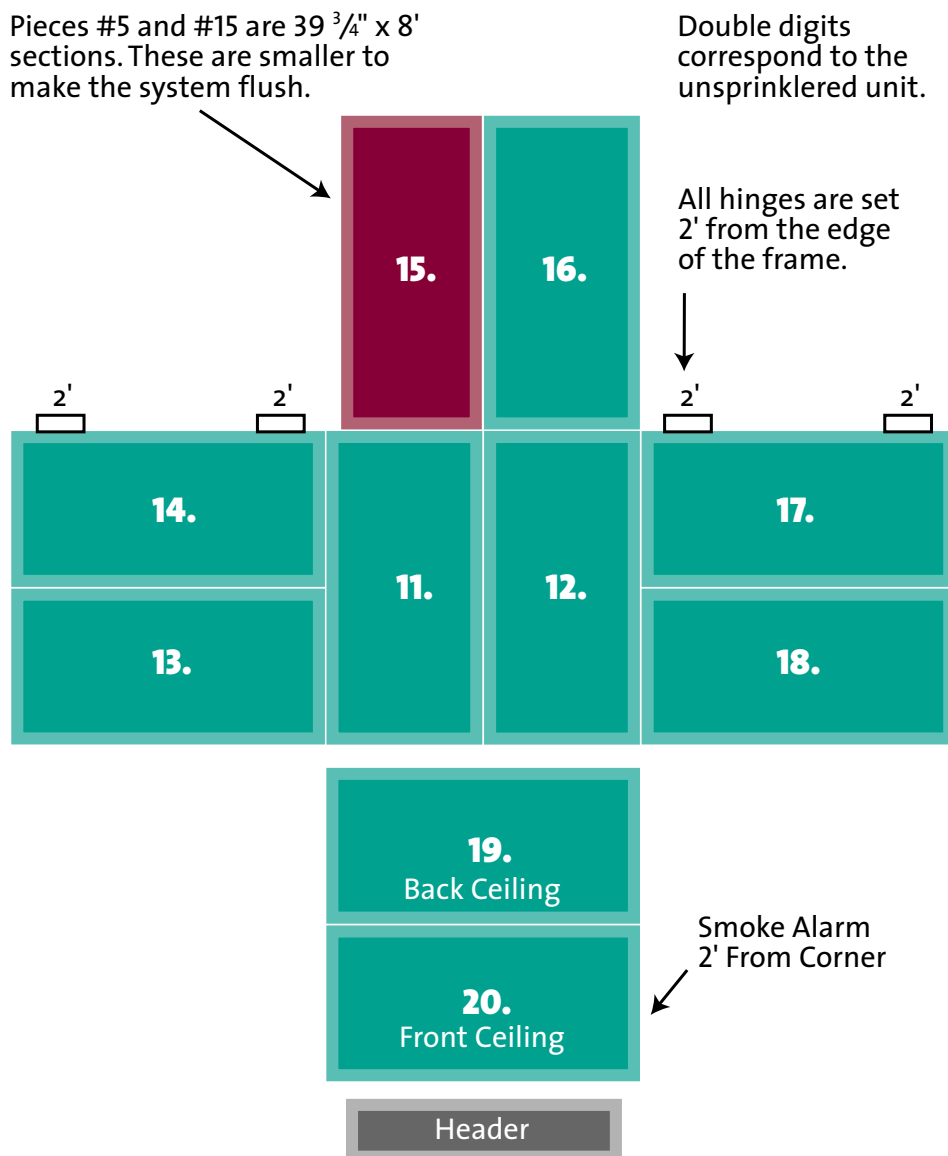


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First Assembly

Flashover Unit Assembly

The unsprinklered, flashover unit is assembled in the same manner as the sprinklered unit except that the drywall panels are used for the walls and ceiling.



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First Assembly

48. Place panels #11 and #12 side-by-side on the ground with the OSB side up.

49. Making sure the front and back edges of the panels are aligned, attach them using (2) 3" hinges, 2' from either end.



50. Set panel #14 upright on the left side rear of the floor panels, aligning it with the back edge of the floor.

51. Attach panel #14 to the floor using (1) hinge centered (screw the hinge into both sides with 1 $\frac{5}{8}$ " drywall screws into the studs).



52. While one person holds panel #14 in place, short panel #15 is placed next to #14 aligning with the rear of the unit.

53. Attach panel #15 to the floor using (1) hinge centered (screw the hinge into both sides with 1 $\frac{5}{8}$ " drywall screws into the studs).



54. Attach panels #14 and #15 using (2) hinges set 2' from the bottom and 2' from the top.

55. Set panel #13 upright next to panel #14.

56. Attach panel #13 to the floor using (1) hinge centered (screw the hinge into both sides with 1 $\frac{5}{8}$ " drywall screws into the studs).

57. Attach panels #13 and #14 using (2) hinges set 2' from the bottom and 2' from the top.



58. Follow the same procedure for sections 16, 17 and 18.

THE HFSC FIRE AND SPRINKLER BURN DEMONSTRATION KIT

First Assembly

WARNING! The next five steps are the most difficult and dangerous; be sure to have a large enough work crew (at least 3 people) all wearing head protection.

59. Place a 6' A-Frame ladder inside the unfinished unit and have a worker on the ladder, half way up.

60. Carry panel #19 into the unit and lift it up to the worker on the ladder, OSB side down.



61. The ladder worker lifts this roof panel over and onto the top of the wall panels, squaring it with the back wall.

62. Attach the roof panel to each wall panel with a 3" hinge on each.



63. Repeat this procedure step for the front roof section (#20).



64. Attach the header board to the front top of the unit using (3) hinges.



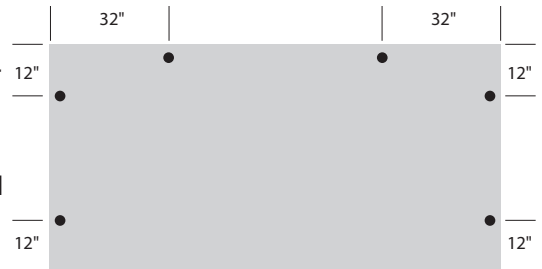
THE HFSC FIRE AND SPRINKLER BURN DEMONSTRATION KIT

First Assembly

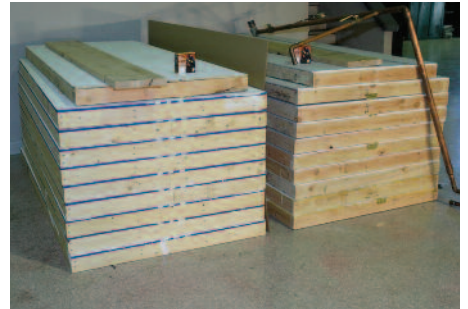
65. Drill a 3" hole in the back wall to allow the fire to be set. The hole should be positioned to align with the waste basket or other receptacle that will hold the ignition source. This generally toward the middle of the backwall a few inches above the floor.



66. Pre-drill (2) $\frac{3}{16}$ " holes in each side and top of the 4' x 8' x $\frac{1}{8}$ " (or $\frac{3}{8}$ ") Clear Acrylic Sheet. Center the holes $1\frac{1}{2}$ " in from the edge of the sheet. Attach the sheet to the unit using (6) $1\frac{5}{8}$ " drywall screws after the unit is furnished.



67. If the units were constructed and assembled offsite, they can be disassembled for storage or transport by removing the pins from the hinges holding the units together.



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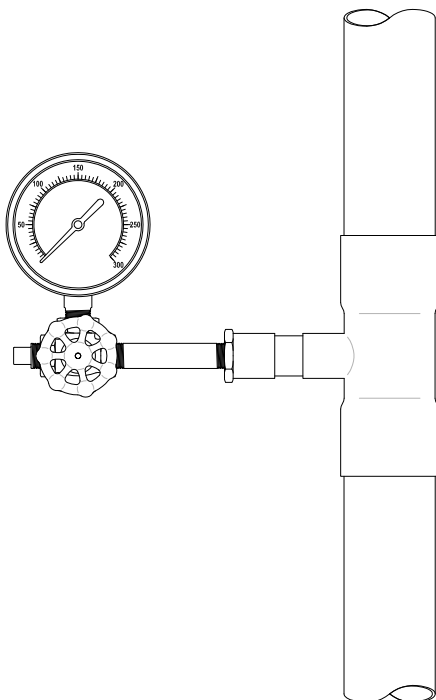
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Installing the Fire Sprinkler System with Copper Pipe and Fittings

The residential quick-response sprinkler piping system should only be installed by a qualified sprinkler installer. This section should be provided to the installer to follow.

The use of 1 1/2" metal pipe is recommended for durability during transportation and reuse as well as to withstand the higher water pressure that may be encountered.

Any NFPA 13D listed residential fire sprinkler may be used for the demonstration.



MATERIALS YOU'LL NEED FOR FIRE SPRINKLER SYSTEM INSTALLATION

Material list for copper pipe and fittings

Pipings:

- ☐ (2) 1 1/2" x 11" Copper Pipe
- ☐ (1) 1 1/2" x 59" Copper Pipe
- ☐ (1) 1 1/2" x 53" Copper Pipe
- ☐ (1) 1" x 6" Copper Pipe
- ☐ (1) 1" x 3" Copper Pipe
- ☐ (1) 1/2" x 2" Copper Pipe
- ☐ (1) 1 1/2" x 3" Copper Pipe
- ☐ (2) 1/4" x 3" Schedule 40 Threaded Steel Pipe

Nipples for sprinkler heads:

(lengths are approximate)

- ☐ (1) 1" x 2" Copper Pipe (concealed)
- ☐ (1) 1" x 3 1/2" Copper Pipe (semi-recessed)

Fittings:

- ☐ (1) 1" 90° Sweat Elbow
- ☐ (2) 1 1/2" 90° Sweat Elbow
- ☐ (1) 1 1/2" x 1 1/2" x 1/2" Sweat Reducing Tee
- ☐ (1) 1" x 1/2" Sweat x Female Thread Adapter
- ☐ (1) 1 1/2" x 1" Sweat Reducing Coupling
- ☐ (1) 1 1/2" Ball Valve
- ☐ (1) 1 1/2" Black Nipple (National Standard Thread)
- ☐ (1) 1/2" x 1/4" Sweat x Female Thread Adapter
- ☐ (1) 1 1/2" Sweat x Female Pipe Thread Adapter
- ☐ (1) 1/4" Three-Way Valve
- ☐ (1) 1/4" Plug
- ☐ (1) 1/4" Water Pressure Gauge (300 psi)
- ☐ (3) 1 1/2" Pipe Strap
- ☐ (1) 1/2" Concealed or Semi-Recessed NFPA 13D Listed Residential Fire Sprinkler



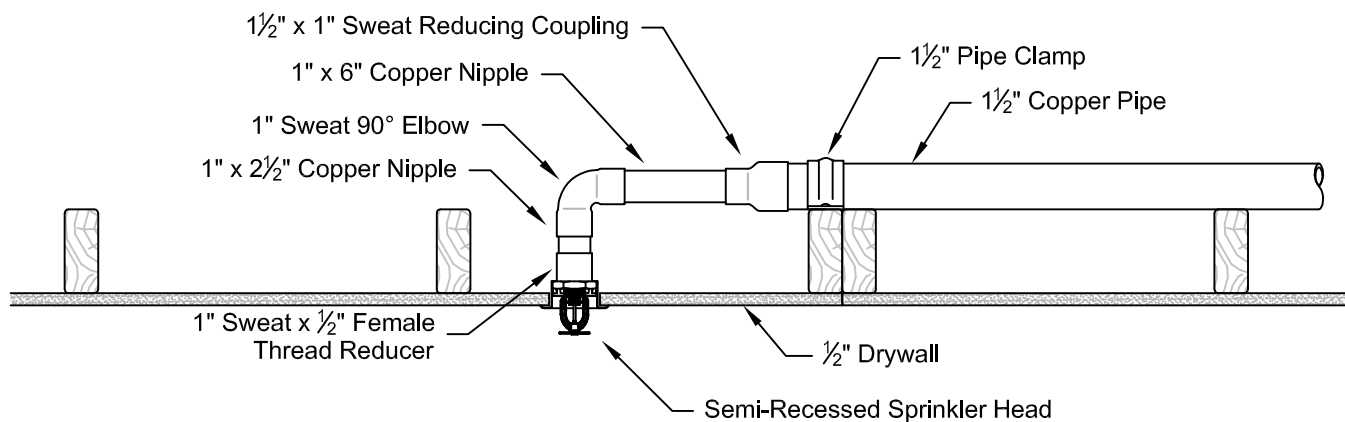
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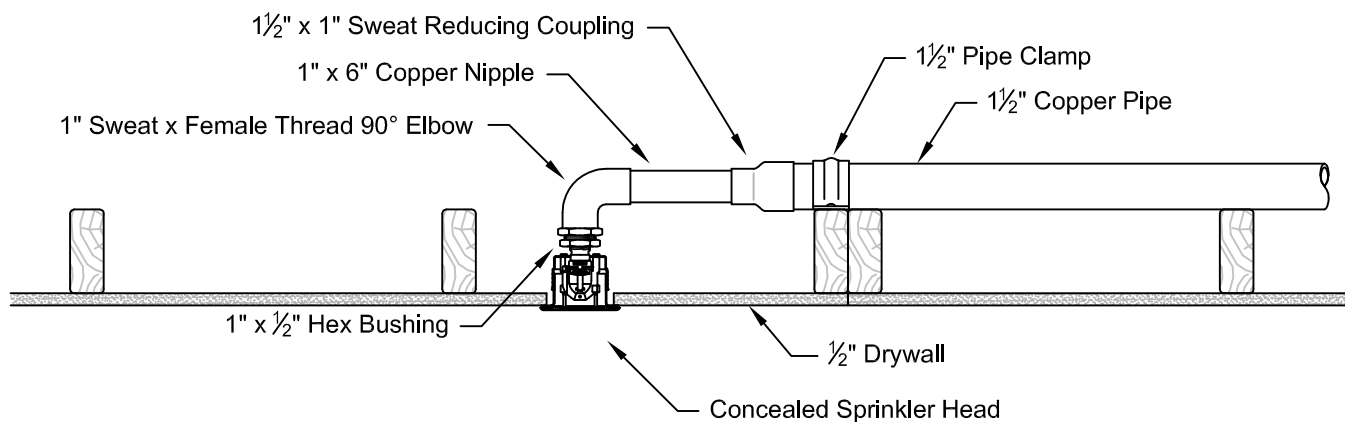
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THE HFSC FIRE AND SPRINKLER BURN DEMONSTRATION KIT

Installing the Fire Sprinkler System with Copper Pipe and Fittings



COPPER PIPING SEMI-RECESSED SPRINKLER DETAIL (SCALE: 1 1/2" = 1'-0")



COPPER PIPING CONCEALED SPRINKLER DETAIL (SCALE: 1 1/2" = 1'-0")

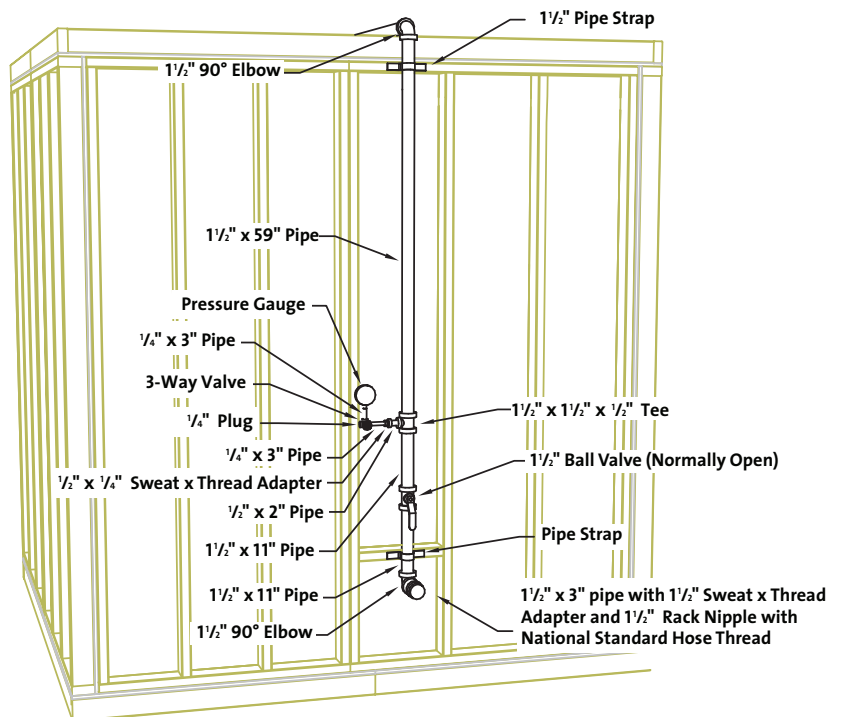
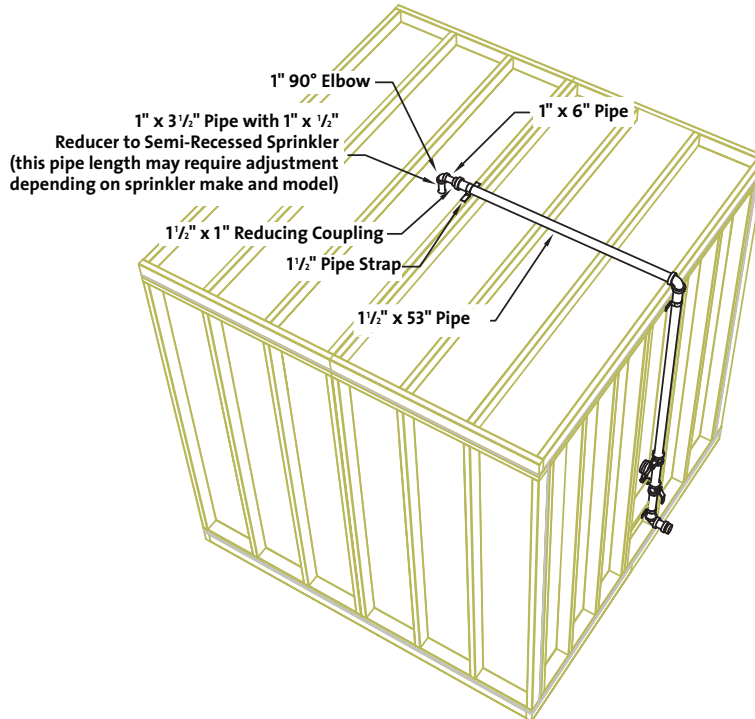
THE HFSC FIRE AND SPRINKLER BURN DEMONSTRATION KIT

Installing the Fire Sprinkler System with Copper Pipe and Fittings

General Notes:

1. Most dimensions on this drawing are rounded to the nearest inch. It may be required to adjust some pipe lengths slightly for a proper fit.
2. The short section of pipe from the last 90° elbow to the sprinkler should be carefully cut to fit. Do not cut this pipe before the length is verified with the sprinkler type you have chosen.

COPPER PIPING WITH SEMI-RECESSED SPRINKLER



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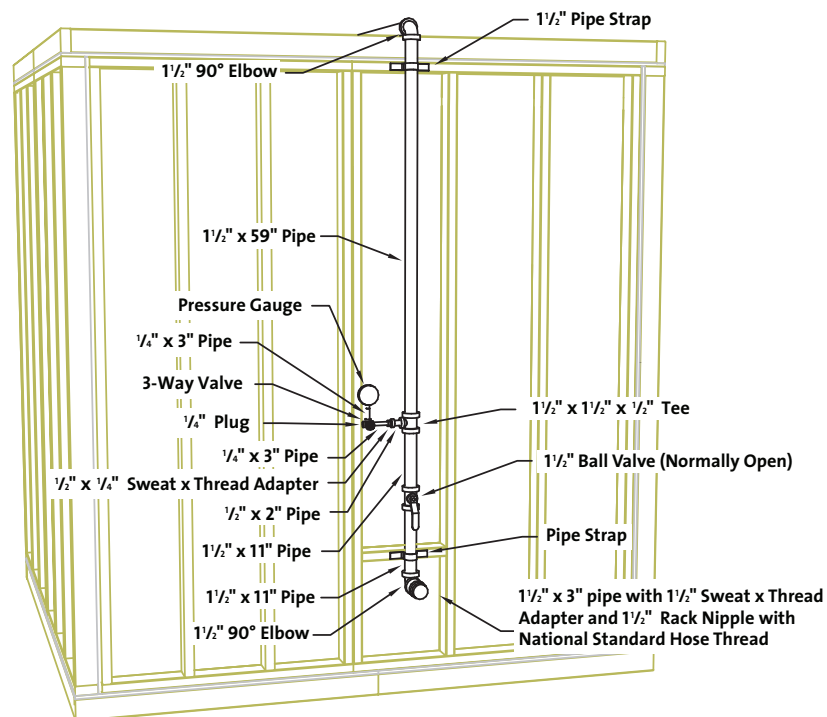
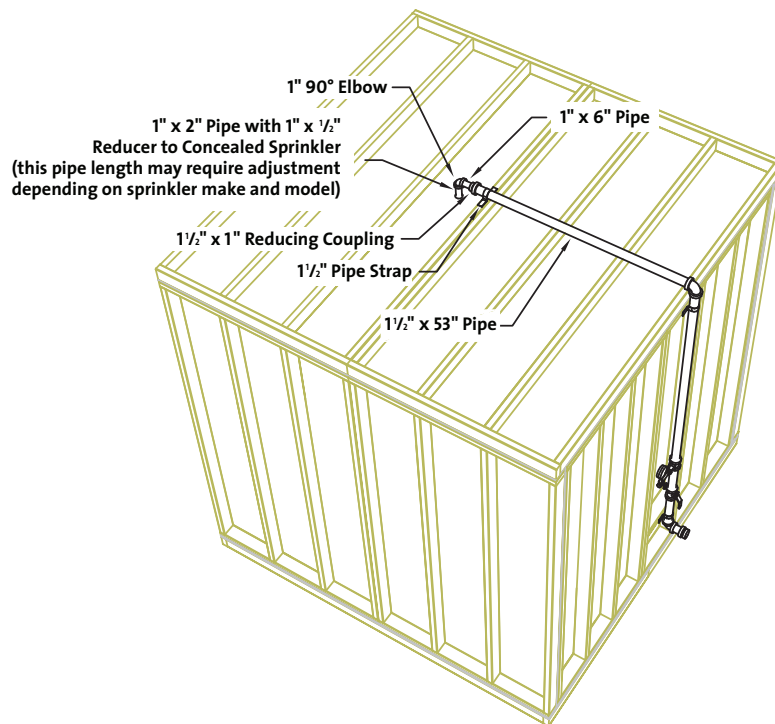
THE HFSC FIRE AND SPRINKLER BURN DEMONSTRATION KIT

Installing the Fire Sprinkler System with Copper Pipe and Fittings

General Notes:

1. Most dimensions on this drawing are rounded to the nearest inch. It may be required to adjust some pipe lengths slightly for a proper fit.
2. The short section of pipe from the last 90° elbow to the sprinkler should be carefully cut to fit. Do not cut this pipe before the length is verified with the sprinkler type you have chosen.

COPPER PIPING WITH CONCEALED SPRINKLER



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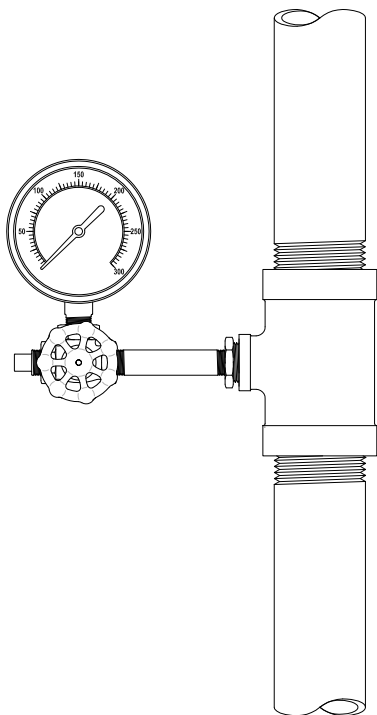
HomeFireSprinkler.org

Installing the Fire Sprinkler System with Steel Pipe and Fittings

The residential quick response sprinkler piping system should only be installed by a qualified sprinkler installer. This section should be provided to the installer to follow.

The use of 1 1/2" metal pipe is recommended for durability during transportation and reuse as well as to withstand the higher water pressure that may be encountered.

Any NFPA 13D listed residential fire sprinkler may be used for the demonstration.



MATERIALS YOU'LL NEED FOR FIRE SPRINKLER SYSTEM INSTALLATION

Material list for steel pipe and fittings

Piping, all pieces thread both ends:

- ☐ (2) 1 1/2" x 11" Schedule 40 Pipe
- ☐ (1) 1 1/2" x 59" Schedule 40 Pipe
- ☐ (1) 1 1/2" x 53" Schedule 40 Pipe
- ☐ (1) 1" x 6" Schedule 40 Pipe
- ☐ (2) 1/4" x 3" Schedule 40 Pipe

Nipples for sprinkler heads: (lengths are approximate)

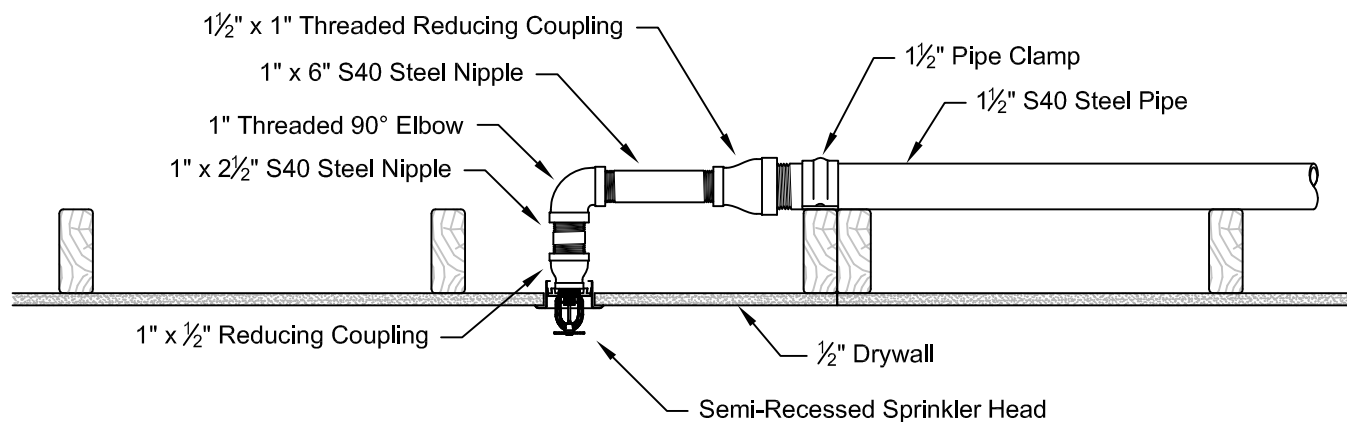
- ☐ (1) 1" x 2" Schedule 40 Pipe (concealed)
- ☐ (1) 1 x 3 1/2" Schedule 40 Pipe (semi-recessed)

Fittings:

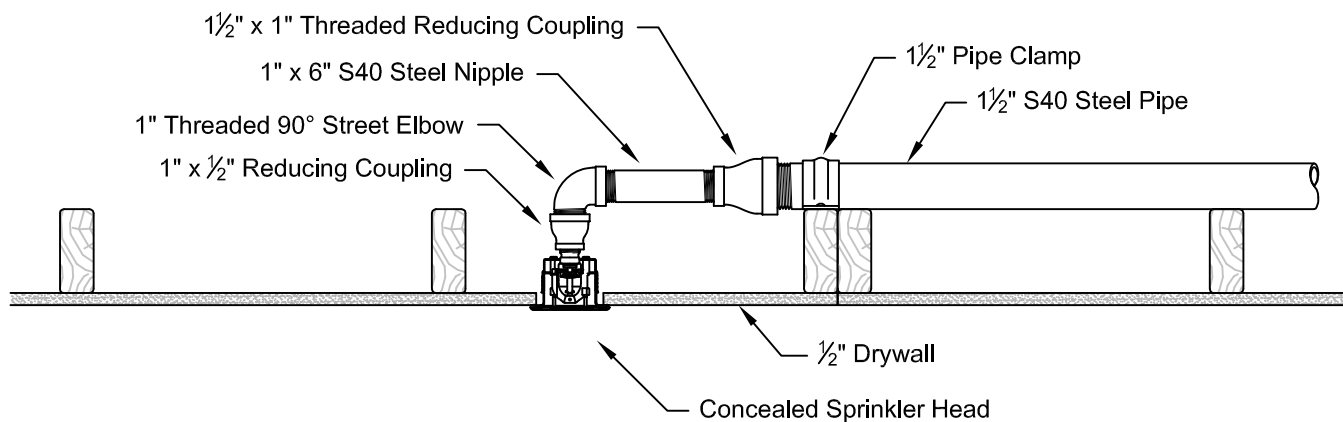
- ☐ (1) 1" Threaded 90° Elbow
- ☐ (2) 1 1/2" Threaded 90° Elbow
- ☐ (1) 1 1/2" x 1 1/2" x 1/2" Threaded Reducing Tee
- ☐ (1) 1" x 1/2" Threaded Reducing Coupling
- ☐ (1) 1 1/2" x 1" Threaded Reducing Coupling
- ☐ (1) 1 1/2" Ball Valve
- ☐ (1) 1 1/2" Black Nipple (National Standard Thread)
- ☐ (1) 1/2" x 1/4" Threaded Bushing
- ☐ (1) 1/4" Three Way Valve
- ☐ (1) 1/4" Plug
- ☐ (3) 1 1/2" Pipe Strap
- ☐ (1) 1/4" Water Pressure Gauge (300 psi)
- ☐ (1) 1/2" Concealed or Semi-Recessed NFPA 13D Listed Residential Fire Sprinkler

THE HFSC FIRE AND SPRINKLER BURN DEMONSTRATION KIT

Installing the Fire Sprinkler System with Steel Pipe and Fittings



STEEL PIPING SEMI-RECESSED SPRINKLER DETAIL (SCALE: 1 1/2" = 1'-0")



STEEL PIPING CONCEALED SPRINKLER DETAIL (SCALE: 1 1/2" = 1'-0")

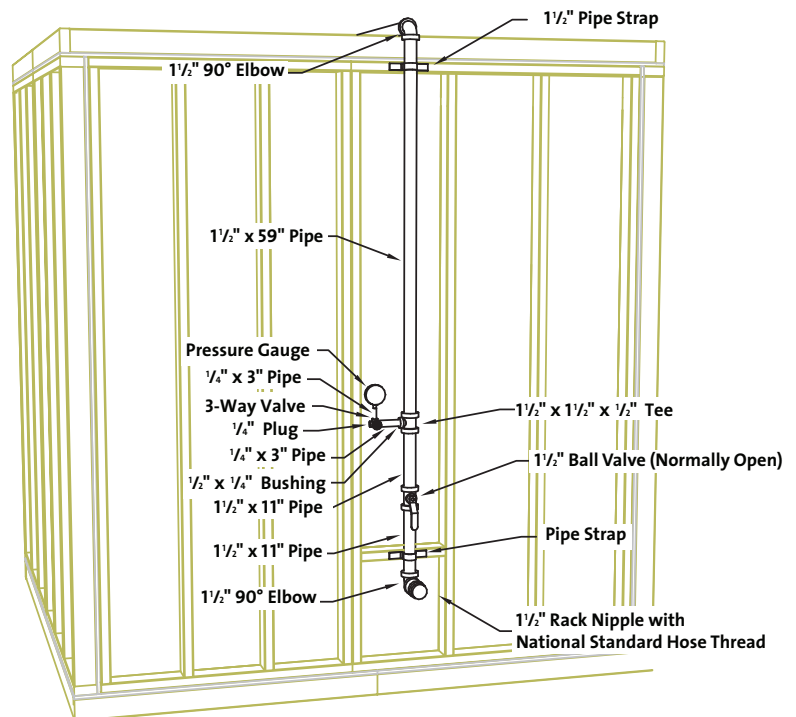
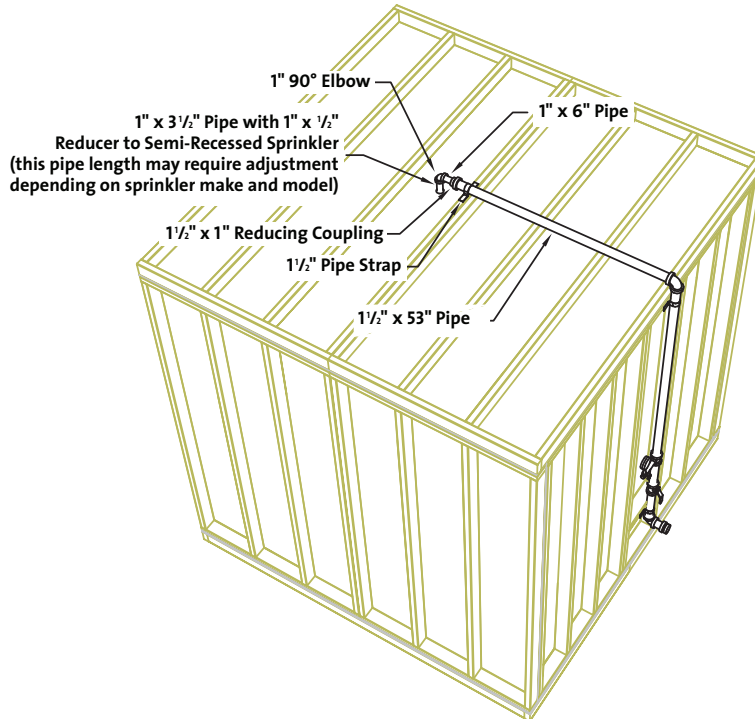
THE HFSC FIRE AND SPRINKLER BURN DEMONSTRATION KIT

Installing the Fire Sprinkler System with Steel Pipe and Fittings

General Notes:

1. Most dimensions on this drawing are rounded to the nearest inch. It may be required to adjust some pipe lengths slightly for a proper fit.
2. The short section of pipe from the last 90° elbow to the sprinkler should be carefully cut to fit. Do not cut this pipe before the length is verified with the sprinkler type you have chosen.

STEEL PIPING WITH SEMI-RECESSED SPRINKLER



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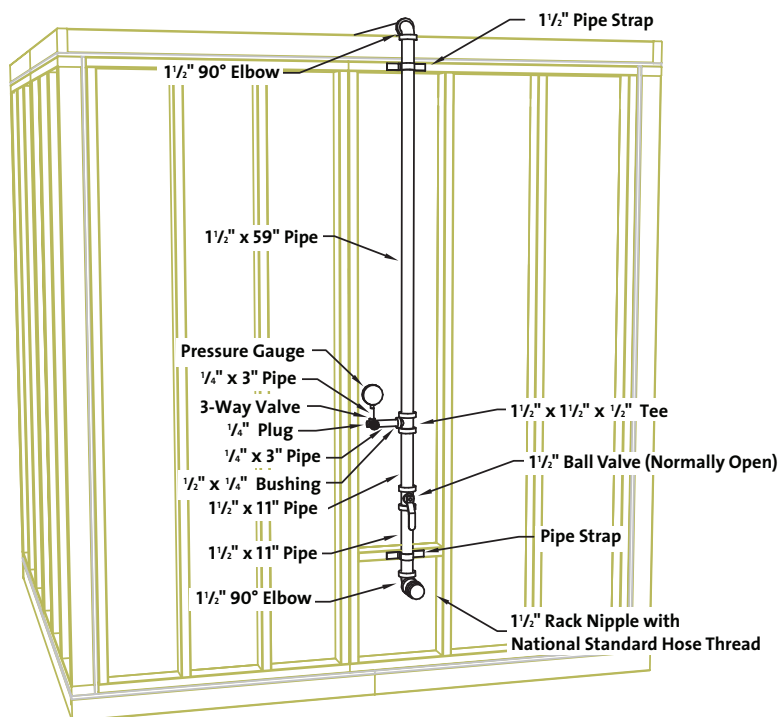
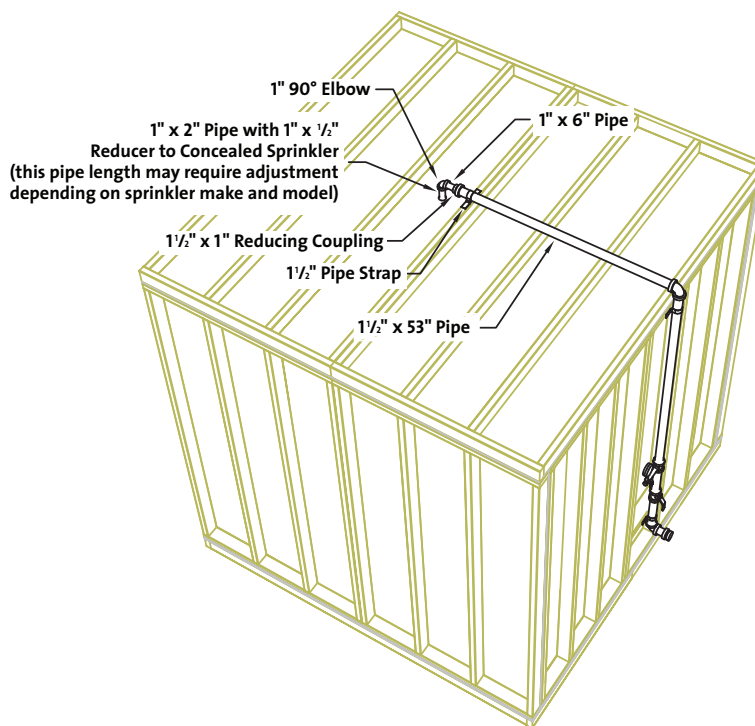
THE HFSC FIRE AND SPRINKLER BURN DEMONSTRATION KIT

Installing the Fire Sprinkler System with Steel Pipe and Fittings

General Notes:

1. Most dimensions on this drawing are rounded to the nearest inch. It may be required to adjust some pipe lengths slightly for a proper fit.
2. The short section of pipe from the last 90° elbow to the sprinkler should be carefully cut to fit. Do not cut this pipe before the length is verified with the sprinkler type you have chosen.

STEEL PIPING WITH CONCEALED SPRINKLER



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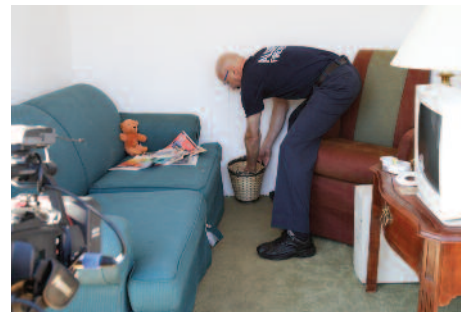
Finishing the Units

1. If there is a sufficient work crew, paint a second coat on the unsprinklered unit. If the unsprinklered unit is to be used repeatedly for future demonstrations, it is advised that you putty and tape all cracks and joints in the drywall. This will prevent structural damage from the fire.



2. If budget and work crew allows, paint the interior of the drywalled unit.

3. Decorate the finished units with combustible furniture and house or office items. Typically the units are furnished with a couch, an arm chair and a desk with an old computer on it. A curtain should be hung from the back wall of the unit over a wastebasket that is filled with newspaper. A hole should then be cut in the back of the wastebasket that aligns with the hole previously cut in the back wall of the unit, so someone can stand behind the unit and light the wastebasket on fire.



4. Install a battery operated smoke alarm approximately 2' from the front right corner of each unit and at least 12" from the sprinkler in the protected unit.



THE HFSC FIRE AND SPRINKLER BURN DEMONSTRATION KIT

Finishing the Units

5. After the units are furnished, attach the 2' clear acrylic sheet to the front of the sprinklered unit using Velcro® strips, and the 4' acrylic sheet to the front of the unsprinklered unit using (6) 1⁵/₈" drywall screws placed through the pre-drilled holes.

Place a sheet of OSB in front of each unit to catch the melting acrylic sheets.



6. Attach a large sign to the front of the sprinklered unit identifying it as being protected by fire sprinklers.



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CONDUCTING THE DEMONSTRATION

Presenting the
Demonstration >

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Presenting the Demonstration

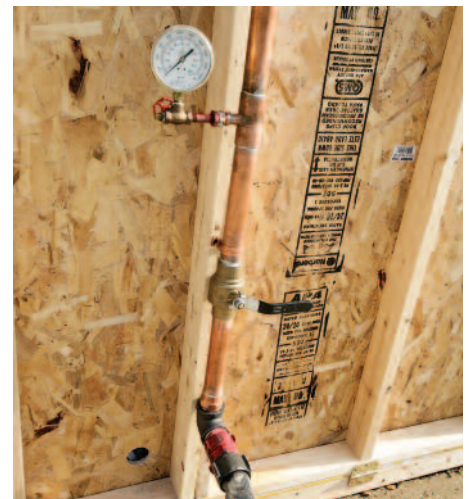
Determine where the extinguishing crew and engine are to be placed. Parking too close may be too noisy for the crowd and conversation because of the running engine.

Locate your water supply for the sprinklered unit and for the engine crew.

Use idle pressure if using an engine supply. A sprinkler normally has a pressure of over 30-35 psi from the hydrant system.



Keep the valve closed on the sprinkler system when filling the sprinkler pipe to avoid water hammer. Before the sprinkler demonstration, slowly feather open the valve to fill the sprinkler pipe with water.



Begin your demonstration by giving a brief description of what your audience will be viewing, why it is so important for people to realize the effects of fire, and how the effects can be minimized by the use of a sprinkler system. Advise them that no accelerants are used in the demonstration.



THE HFSC FIRE AND SPRINKLER BURN DEMONSTRATION KIT

Presenting the Demonstration

An additional person with a stopwatch can assist your narrator by informing the audience the time frames from the time the fire is started, to the activation of the smoke alarm, to flashover or to when the sprinkler head activates. A large timer, such as those used in sporting events, can also help drive home the speed of events. Most people do not grasp how quickly fire spreads. As a way for them to understand the time frames, inform them what the fire department response time is on a house fire. During your narration, let them know that the unit is in flashover and most departments are still en route. No matter how good a response time a fire department has, it's hard to beat flashover.



Do not allow your fire crew to extinguish the unsprinklered unit until the Plexiglas has dropped; count to five after it begins to melt. You may want to protect your ground area directly in front of the unsprinklered unit as the molten Plexiglas can cause damage.



Once the unsprinklered unit gets extinguished, ensure that the fire crew is ready for another burn, and then begin the fire in your sprinklered unit. Repeat the same procedure by announcing the time frames of ignition, smoke alarm activation and then sprinkler activation with extinguishment.



THE HFSC FIRE AND SPRINKLER BURN DEMONSTRATION KIT

Presenting the Demonstration

Once the fire is out, have one of the fire personnel shut off the water supply to the sprinkler. Remove the Plexiglas from the sprinklered unit. Have fire personnel pull your couches and/or beds out from each unit and invite your audience to come forward and examine them and the units.



THE HFSC FIRE AND SPRINKLER BURN DEMONSTRATION KIT

DEMONSTRATION UNIT DISASSEMBLY AND REPAIR

1. Dispose of debris in a dumpster. Any items that contain hazardous or toxic materials, such as computers and monitors, should be disposed of following EPA guidelines.



2. Remove the sprinkler piping from the protected unit and save all pieces for future use.



3. Remove any damaged drywall or OSB panels from the units.

4. Make note of any repairs needed.



5. Disassemble the units in the reverse order of construction starting with the header.



THE HFSC FIRE AND SPRINKLER BURN DEMONSTRATION KIT

DEMONSTRATION UNIT DISASSEMBLY AND REPAIR

6. Remove the hinge pins but not the screws in the hinge plates if you plan on reusing the units. Be sure to save the hinge pins with the unit.



7. Repairs to the panels can be made at this time, or scheduled for a later point.

8. Stack the panels, where you plan to store them, starting with roof then walls then floors.



9. The two units will store in an area 8' X 8' X 5'.



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Sponsor Information Sponsor Guidance

SPONSOR GUIDANCE

Here are some ways you can get help from local sponsors and other participants to offset the cost of building and presenting your fire and sprinkler burn demonstration units:

Seek Sponsors

Tap into local businesses to request financial contributions. It may be easiest to start with prospects with which you already have a relationship. Other good options include:

- Lumberyards
- Hardware, home improvement and household goods retailers
- Insurance companies
- Banks/credit unions
- Civic groups/clubs
- Fire protection engineering firms
- Fire sprinkler fitters/contractors
- Local corporate or industry business

Tip: If a home builder or developer in your area is building new homes with fire sprinklers installed, request sponsorship – and point out that the demonstration is an ideal opportunity to showcase the added value of those new homes.

Seek In-Kind Support and Volunteers

You may be able to get nonmonetary help as well as financial contributions. Here are some ideas:

Ask local schools if:

- A theater group can provide the sound system or videotape the demonstrations for later use
- An art teacher can help students hand-letter sponsor recognition signs

- The athletic director will loan you a sports clock/timer
- The shop department can loan tools to help with construction
- The school administrator will let you use the school parking area or sports field for the demonstration

Ask a rental store if:

- The owner can provide a discount on rental equipment that you don't have, such as ladders and awnings
- The owner will let you use popcorn and snow cone machines for the audience

Ask if:

- A home improvement store will offer a discount on building materials
- A thrift store will offer a discount on furnishings
- A hardware store can donate the smoke alarms, paint and other materials
- A local business or place of worship will host the demonstration at its location
- A civic club or boys/girls club can help you gather furnishings or provide clean-up help

Tip: Be ready to accept something other than what you request. A sponsor may not be able to give you a cash donation, but he or she may be eager to help with in-kind support or as a volunteer. Clearly ask for what you need and be creative enough to use whatever you get.

THE HFSC FIRE AND SPRINKLER BURN DEMONSTRATION KIT

Sponsor Information Sponsor Guidance

Sponsor Recognition

Offering sponsor prospects public recognition for their financial and other support makes your request for help more appealing. Here are some suggestions for providing sponsors with prominent recognition:

On-site signage. Some sponsors may have their own banners, placards, etc., so be sure to offer space for these signs. If they don't have them, you can create your own signs and place them on easels or hang them as space/location permits.

Introduction. Major sponsors and partners deserve extra recognition. Introduce these sponsor representatives to your audience prior to the presentation so you can thank them publicly (if it's appropriate, also offer them a few moments to speak).

Media recognition. Be sure to list all the sponsors and other supporters in any press materials you distribute. If you have an opportunity to be interviewed or if reporters attend the demonstration, be sure to provide a copy of the list.

Tip: Recognize every sponsor and supporter. Remember to thank them by name publicly during the event and personally with a phone call or letter afterward.

Ask for Sponsors and Contributions

Fill in the information {UNDERLINED} in this sample letter with your department's information and then print on your letterhead for mailing.

Tip: In your letter, be very specific about what you are requesting, for example: "We hope you'll be able to help by providing a \$200 donation." Or, "We hope you'll be able to help by donating the lumber to build the demonstration units – attached are the pieces of lumber we'll need."

THE HFSC FIRE AND SPRINKLER BURN DEMONSTRATION KIT

Sponsor Information Sample Request Letter

[Click here to open sample letter in your word processor](#)

{SPONSOR'S NAME AND ADDRESS}

{DATE}

Dear {MR. OR MS. SPONSOR'S NAME}:

On behalf of the {YOUR COMMUNITY} Fire Department, I write today to request the help of {COMPANY NAME} in a very important fire safety educational activity that will be held on {DATE} in {YOUR COMMUNITY}.

Our department will be presenting a dramatic live fire demonstration at {LOCATION} in order to help {YOUR COMMUNITY} residents understand how dangerous home fires are and to inform them how they can stay safer.

By intentionally burning two real fires side-by-side, our demonstration will show how quickly a typical home fire grows to the point of flashover (when everything in a room becomes engulfed in flames). In addition, the demonstration stresses the important role of home fire safety technology in saving lives, including the value of smoke alarms and fire sprinklers in particular. This demonstration will be fully staffed by our personnel, along with fire apparatus, and we will provide an educational briefing as part of the event.

We will be constructing two fire demonstration units for this live burn – both will have smoke alarms and one will have a fire sprinkler system installed so we can show the audience the life-saving difference this vital protection can make. Several members of the {YOUR COMMUNITY} Fire Department have committed their time to build the units. We are requesting additional support from you and other {YOUR COMMUNITY} businesses and residents to help us present this valuable demonstration.

We hope you'll be able to help by providing {STATE YOUR REQUEST, IN DETAIL}.

In return for your generous support, we will provide {SPONSOR'S COMPANY NAME} with the following recognition to show our appreciation {LIST THE RECOGNITION YOU CAN PROVIDE}.

I will follow up with you soon to answer any questions you may have about this request. Thank you in advance for your consideration.

Sincerely,

{YOUR NAME AND FIRE DEPARTMENT INFORMATION}

THE HFSC FIRE AND SPRINKLER BURN DEMONSTRATION KIT

Sponsor Information Sample Thank-You Letter

[Click here to open sample thank-you letter in your word processor](#)

Thank Your Sponsors

Be sure to thank those who help you, either by donating their time or with financial and in-kind contributions. Fill in the information {IN BRACKETS} in this sample letter with your department's information and then print on your letterhead for mailing.

Enclose the Sponsor Survey along with a postage-paid envelope so you can determine if your sponsors and donors received enough recognition for their support.

Tip: Make sure your thank-you letter is sincere. Avoid using a form letter and spell out specifically how the individual or company helped. For example: "We are grateful for your contribution of \$200."

{SPONSOR'S NAME AND ADDRESS}

{DATE}

Dear {MR. OR MS. SPONSOR'S NAME}:

On behalf of the {YOUR COMMUNITY} Fire Department, I want to thank {INDIVIDUAL, GROUP OR COMPANY NAME} for your generous support of our live fire and sprinkler burn demonstration held on {DATE}.

We are grateful for {SPECIFICALLY STATE CONTRIBUTION AMOUNT OR OTHER SUPPORT}.

The live burn drew an audience of approximately {NUMBER} and received local media coverage in {NAME MEDIA OUTLETS THAT COVERED THE STORY}. By all accounts, this was an important and successful educational event for {YOUR COMMUNITY} and your role in that success was key.

Please take a moment to fill out the enclosed survey and return it to me in the postage-paid envelope I've provided. This will help us do a better job of partnering with you and all of our sponsors and supporters in future events.

Thank you for helping to keep residents of {YOUR COMMUNITY} safer at home.

Sincerely,

{YOUR NAME AND FIRE DEPARTMENT INFORMATION}



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THE HFSC FIRE AND SPRINKLER BURN DEMONSTRATION KIT

Local Officials Information Guidance to Involve Local Officials

Your side-by-side fire and sprinkler burn demonstration is likely to draw a good crowd. You can increase public interest in the event by inviting local officials to participate and perhaps even to speak.

You can also help educate local officials about fire sprinklers by inviting them to attend. Your event is a good opportunity to make sure your local officials have the facts they need to make sound decisions when fire sprinkler issues are raised. Tap into HFSC's [Local Officials Resources](#) and share them.

Officials you may want to invite include:

- Mayor or Town Manager
- State Senator or Representative from your district
- Building Official
- Planner
- Building Inspector

THE HFSC FIRE AND SPRINKLER BURN DEMONSTRATION KIT

Local Officials Information Sample Invitation

[Click here to open sample invitation in your word processor](#)

Fill in the information {IN BRACKETS} in this sample invitation with your department's information and then print on your letterhead for mailing.

Tip: When communicating with a public official, it's best to have the invitation letter come from your department's chief or other senior fire officer.

Tip: If you want your public official to speak or do something specific during your event, specify what you are inviting him/her to do. For example: "We hope you will join us and speak for 2-3 minutes about the importance of fire safety in our community."

{OFFICIAL'S NAME AND ADDRESS}

{DATE}

Dear {MR. OR MS. (OR HONORARY TITLE) OFFICIAL'S NAME}:

On behalf of the {YOUR FIRE DEPARTMENT}, it is my great pleasure to invite you to join me in a very important fire safety educational activity that will be held on {DATE}.

As you know, fire is a serious concern in {YOUR COMMUNITY}. And homes are where our citizens are most vulnerable. In fact, more than 80 percent of all fire deaths occur at home.

To help {YOUR COMMUNITY} residents understand how dangerous home fires truly are and to inform them of the steps they can take to stay safer, the {YOUR FIRE DEPARTMENT} will be presenting a dramatic side-by-side fire and sprinkler burn demonstration at {LOCATION}.

We will be constructing two fire demonstration units for this live burn – both will have smoke alarms and one will have a fire sprinkler system installed so we can show the audience the life-saving difference this vital protection makes when fire strikes.

This is sure to draw a large crowd and to round it out we will have firefighters on the scene as well as fire apparatus. We will also provide an educational briefing as part of the event.

The fire demonstration will begin at {TIME} and last approximately {EXPECTED LENGTH}. We hope you will join us and {STATE HOW YOU WOULD LIKE THE OFFICIAL TO PARTICIPATE, IN DETAIL}.

Thank you in advance for your consideration.

Sincerely,

{YOUR NAME AND FIRE DEPARTMENT INFORMATION}



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Media Outreach Media Guidance

Your local media outlets can be very important partners. They can help you promote your side-by-side fire and sprinkler burn demonstrations, reinforce your key messages and help you thank your sponsors and other participants.

Tip: If you don't already have good relationships with your local media representatives, now is a good time to start building them. For guidance to begin or expand a fire department media relations program, check out HFSC's Tips for Working with Local Media.

Tip: If the demonstration will be videotaped by the media, angle the rooms slightly away from each other to remove reflections from the acrylic sheets on the front of the units.

BE READY TO RESPOND

When a media representative calls with questions about home fire sprinklers, you want to be ready with answers. Collect accurate information, statistics and other materials like these and keep them on hand so you can respond:

Facts:

[Home Fire Sprinkler Talking Points](#)

[Home Fire Sprinkler Fact Sheet](#)

[Municipal Sprinkler Reports](#)

Animation/Graphics:

[How Fire Sprinklers Work](#)

[How Much Water?](#)

[Flashover Chart](#)

[Home Fire Timeline](#)

THE HFSC FIRE AND SPRINKLER BURN DEMONSTRATION KIT

Media Outreach Sample News Release

[Click here to open sample news release in your word processor](#)

Get the Word Out

Once you've firmed up the date and location for your demonstration, announce it to the media. There are several ways you can do this. If you know the media representatives personally, you might want to make a telephone call. Mailing or emailing an announcement is another good way to inform the media.

Here are two sample announcements you can adapt for your department. Send the news release out by mail, fax or email 30-45 days prior to your event. The news advisory serves as a last-minute reminder to attract the media. Fax or email it three or four days before your event.

Fill in your local information (IN BRACKETS) and then print on your letterhead for mailing.

{DATE}

Contact: {YOUR NAME, TITLE AND PHONE NUMBER(S)}

Side-by-Side Fires to be Set by {YOUR FIRE DEPARTMENT} To Help {YOUR COMMUNITY} Residents Understand Risks and Home Safety Technology

"Sometimes people just need to see it to believe it," says {YOUR FIRE DEPARTMENT SPOKESPERSON}.

That's why the {YOUR FIRE DEPARTMENT} will intentionally light two fires in front of a live audience on {DATE/TIME} at {LOCATION}.

"There's nothing like the heat and smoke of a real fire to help adults and children understand just how fast a home fire is," says {YOUR FIRE DEPARTMENT SPOKESPERSON's LAST NAME}. "With our side-by-side comparison, we can show both the danger of fire and the value of having a fire sprinkler system installed."

This dramatic, yet safe, form of education has become increasingly popular with fire departments across the country. On {DATE}, {YOUR COMMUNITY} residents will see firsthand why a typical home fire becomes deadly in three minutes or less.

The {YOUR FIRE DEPARTMENT} received financial support from {YOUR SPONSORS} to bring this important event to {YOUR COMMUNITY}. Firefighters and {OTHER SUPPORTERS} built two structures to simulate the room and contents of a typical home. Each room contains common furnishings, window treatments and a working smoke alarm. Only one of the rooms contains a fire sprinkler. The two rooms will be transported to {LOCATION} where the fires will be lit.

The {YOUR FIRE DEPARTMENT} will have firefighters and fire trucks on hand as well. {INSERT INFORMATION ABOUT ANY ADDITIONAL ACTIVITIES PLANNED, SUCH AS AN EDUCATIONAL PRESENTATION}

"By providing this unique live fire comparison, people not only gain an appreciation for fire power; they also realize what an incredible advantage it is to have a fire sprinkler system installed if fire breaks out," says {YOUR FIRE DEPARTMENT SPOKESPERSON}.

Many people already understand how vital it is to have working smoke alarms to warn us of a fire. But home fire sprinklers are not as well known or understood. That's one reason why the nonprofit Home Fire Sprinkler Coalition (HFSC) secured a federal Fire Prevention & Safety Grant to develop a free kit to help fire departments build and present side-by-side fire and sprinkler burn demonstrations in their communities.

Following an emergency call, it takes 9-12 minutes, on average, for a fire department to arrive on the fire scene. By that time, a fire in an unsprinklered home will have spread, causing smoke and heat damage and threatening the lives of the residents. Local and national fire safety experts say widespread use of home fire sprinkler systems could save thousands of lives per year.

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Media Outreach Sample News Release

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In a sprinklered home, the fire gets under control right away, limiting damage and protecting residents and first responders. Here are some other facts about home fire sprinkler systems:

- Fire sprinklers are supplied by household water – usually off the water main. Just like ordinary plumbing, sprinkler system piping is hidden behind walls and ceilings.
- The sprinklers are positioned along the piping and can be seen in ceilings or up high along certain walls.
- Sprinklers are activated only by the high temperature of a fire – typically between 135°-165°F.
- Burned toast or other smoke cannot set off a sprinkler; neither can a smoke alarm that activates.
- Sprinklers are designed to flow between 10-25 gallons of water per minute. That's about 10-15 times *less water flow* than fire department hoses, and under far less pressure.
- By operating while a fire is still small, a sprinkler controls or extinguishes a fire, slowing the spread of poisonous smoke and deadly heat.
- That fast and effective action gives family members more time to get out safely, saving lives.
- And, the sprinkler confines the fire damage so that surrounding rooms are protected, saving valuables.

Free information is available about home fire sprinklers from HFSC's Web site. Visit HomeFireSprinkler.org to learn more about this life-saving technology and to see video clips and animations that answer common questions. You can even read about real-life fires where sprinklers saved lives.

The {YOUR FIRE DEPARTMENT} is proud to work in partnership with the Home Fire Sprinkler Coalition and bring this important educational opportunity to {YOUR COMMUNITY}. If you're building a new home, renovating or thinking of buying, take a few minutes to learn how you can add this life-saving fire safety option.

THE HFSC FIRE AND SPRINKLER BURN DEMONSTRATION KIT

Media Outreach Sample News Advisory

[Click here to open sample news advisory in your word processor](#)

{DATE}

Contact: {YOUR NAME, TITLE AND PHONE NUMBER(S)}

Side-by-Side Fires to be Set by {YOUR FIRE DEPARTMENT} To Help {YOUR COMMUNITY} Residents Understand Risks and Home Safety Technology

WHO: {YOUR FIRE DEPARTMENT} and {LIST YOUR SPONSOR(S) NAME(S)}; and featuring {LIST GUESTS/DIGNITARIES}

WHAT: A live, side-by-side fire and sprinkler burn demonstration that vividly shows the tremendous speed of a typical home fire and its potential for deadly destruction. Also illustrated is the vital importance of home fire safety technology that can save lives and reduce property damage (smoke alarms and home fire sprinkler systems). The demonstration is open to the public.

{INSERT INFORMATION ABOUT ANY ADDITIONAL ACTIVITIES PLANNED, SUCH AS AN EDUCATIONAL PRESENTATION}

WHEN: {DATE AND TIME}

WHERE: {LOCATION AND ADDRESS, WITH DIRECTIONS IF NOT WELL KNOWN}

WHY: More than 80 percent of all fire deaths occur in the home. The {YOUR FIRE DEPARTMENT} is using this important event to help people of every age understand how dangerous a home fire is, and how important prevention, detection, suppression and escape are.

THE HFSC FIRE AND SPRINKLER BURN DEMONSTRATION KIT

Educational Information Educational Guidance

A side-by-side fire and sprinkler burn demonstration presents a first-rate opportunity to teach people of all ages about home fire growth and spread. It is especially valuable in demonstrating the life-saving power of installed fire sprinkler systems in homes.

But these dramatic events are most effective when presented along with educational activities. HFSC encourages fire departments to make the most of live burns by incorporating educational outreach as part of the event. This section offers information to help you make an educational presentation part of your side-by-side demonstration. (Note: This guidance is for a simultaneous, side-by-side demonstration of a sprinklered and unsprinklered unit. You can easily adapt the guidance if you prefer to burn the unsprinklered side first and then burn the sprinklered side. Both are good educational methods.)

PLAN AHEAD

Once you know the location for the fire and sprinkler burn demonstration, plan your presentation with that space in mind. There are several things to consider. If you will use a sound system and/or a video screen or other electronics, make sure you have electric power. Lay out where the fire apparatus will park, where hoses and other equipment will be placed, where standby firefighters will be posted, and where you will position personnel who will present the educational program. Determine where the audience will watch – from a safe distance – and mark it. Identify a good location for anyone using a wheelchair. Mark a spot in front where children can sit so adults won't block their views.

Tip: Do you expect your event to draw the media? Include your PIO in your plans and ask him or her to attend the event to work with the media.

Determine ahead of time who will serve as the Education Emcee of this event. Make sure that person – often the fire and life safety educator for the department – is fully involved in the planning of your event and has time to prepare an educational presentation. Estimate the number of attendees so you will have sufficient quantities of educational handouts on hand.

Order or download these free HFSC handouts ahead of time:

[Protect What You Value Most brochure](#)

[Illustrated Flashover Chart](#)

[Fire sprinkler quiz for adults](#)

THE HFSC FIRE AND SPRINKLER BURN DEMONSTRATION KIT

Educational Information Educational Guidance

EDUCATION EMCEE: BE READY TO PRESENT

Think of the side-by-side fire and sprinkler burn demonstration as having three parts: an introduction, the live burn and a conclusion. The introduction and conclusion wrap the live burn with context, helping your audience fully understand what they witness and how it relates to their own safety at home.

This is a spin on a simple principle that effective speakers often use: tell them what you're going to say, say it and then tell them what you just said. In this case, you can use your introduction to tell them a little bit about the dangers of a home fire and what they're going to see with the burn. After they watch the side-by-side fires, use your conclusion to explain what they saw and how it relates to their own homes. This is a good way to help an audience appreciate fire sprinkler technology, and the dramatic visual experience will help the audience remember your educational messages.

To make education a key part of your demonstration, develop your presentation ahead of time. Limit your messages to no more than three main points. Practice. And when you present, stay focused on your messages (many educators find it helpful to use 3x5 note cards to stay on point).

EDUCATION EMCEE: PRESENTATION TIPS

HFSC recommends a brief introduction (three to five minutes). Use it to frame what the audience will see during the side-by-side burn. Without going into too much detail, you want them to know they will be witnessing a typical home fire comparison:

- The contents are very much like what they have in their own home.
- They will see, smell and feel the devastating power of fire.
- The fire shows how fast it grows and how easily a home fire can become deadly in only moments.
- They will understand why smoke alarms and fire drills are so important.
- They will see why a home fire sprinkler system makes such a difference. They will understand how sprinklers save lives and limit property damage.

During the demonstration, avoid distracting your audience from the fires. This is an extremely powerful display and it speaks for itself. However, it is helpful to point out some key events for your audience, such as when your crew lights the fires, when the smoke alarm sounds, when the unsprinklered side goes to flashover (explain what flashover is), and when the sprinkler activates in the other unit (high heat, not smoke, causes the sprinkler to work).

Don't let the audience get away after the demonstration. Follow it with your conclusion (three to five minutes). Be aware: in most cases the firefighters will still be extinguishing the unsprinklered side and that is tough to compete with; so use it to your

Educational Information Educational Guidance

advantage to continue to make your points about fire's heat and poisonous smoke and the danger to firefighters and residents. Use it to segue way into your concluding messages.

This may be the most important part of your event. Your audience may be shocked or surprised or even a little scared by what they saw. They may still feel the heat and smell the smoke. The fires will certainly move them and this is your chance to literally sear that vivid image into their memory – ideally along with your key safety messages. Help the audience put what they just witnessed in context for their own homes and their own families. Three relevant points to reinforce include:

- Working smoke alarms on every level
- Fire escape planning and home fire drills
- Installation of fire sprinkler systems in homes

There are many important home fire safety messages and it can be tempting to talk about all of them while you have a captive audience. But seasoned educators recommend against this. Too much information is overwhelming. A good goal is to have your audience walk away understanding two or three key things. Use the handouts to communicate additional messages. Invite the audience to visit the fire station to learn more.

Tip: Use facts, simple language (avoid technical terms and jargon) and don't scare people, especially when your audience includes young children.

EDUCATION EMCEE: ENGAGE YOUR AUDIENCE

You'll need to present differently to a mostly adult audience than you would for an audience of children and adults. You can plan ahead for this but you won't know the exact make up until the day of the presentation. Quickly size-up your audience and adjust your presentation style and content accordingly.

Children and adults learn differently. When you speak to a mixed-age audience, it's important to "check in" with all ages throughout the presentation. Young children will be the most impatient, so keep an eye on them and check in when they get distracted.

When speaking to children, move closer and kneel down for a moment. A good way to keep them engaged is to ask one or two children for their first name or age. Ask for a show of hands if they have ever seen a real fire, if they have fire drills at school, and if they have smoke alarms at home. Keep this brief and don't ask children open questions – it's difficult to keep the program moving without cutting them off.

In a side-by-side demonstration, adults are your key audience. They are the decision-makers so talk directly to them about installing smoke alarms and fire sprinkler systems and scheduling fire drills. Make and keep eye contact as you do this. Most adults understand smoke alarms, but they may not know much about fire sprinklers. Be ready to reinforce the basics and dispel common myths:

THE HFSC FIRE AND SPRINKLER BURN DEMONSTRATION KIT

Educational Information Educational Guidance

- Sprinklers typically work off the water main; sometimes a tank
- The pipes are hidden in walls and ceilings
- Only the high heat from a fire can activate sprinklers
- Only the sprinkler closest to the fire works – they don't all go off at once
- Sprinklers activate in less than a minute, so they can control or put out a fire – often before the fire department arrives

If you ask questions of the adults, avoid pointed questions that may embarrass. For example, instead of saying “Do you have smoke alarms at home?” you might ask “Does anyone here live in a home with a fire sprinkler system?” Instead of asking if anyone has experienced a fire, you might ask instead if anyone knows someone who has experienced a fire.

Tip: It can be difficult for your audience to hear, especially if fire apparatus engines or generators are running. So if someone from the audience asks a question, restate the question before you answer.

VISUALS

Your side-by-side fire and sprinkler burn demonstration will provide the ideal visual reinforcement for fire safety messages. When you present, it's a good idea to also have the following teaching tools on hand to help make your points:

- Working smoke alarm and batteries
- Examples of home fire sprinklers
- Small pieces of CPVC pipe
- Sample home fire escape plan on large poster

THE HFSC FIRE AND SPRINKLER BURN DEMONSTRATION KIT

Educational Information Suggested Teaching Points for Children

[Click here to open sample sponsor survey in your word processor](#)

Send this survey along with your Sponsor Thank-You Letter and a postage-paid envelope.

Without scaring children, you can talk about the dangers of a home fire and reinforce key messages to help them stay safer. HFSC recommends that you incorporate these key teaching points into your educational presentations to younger children:

- If your home ever catches fire, your number-one job is to get to safety.
- Smoke alarms make a very loud sound if a fire starts. That sound tells you to get out fast. If you ever hear that sound, get moving!
- It's important that every home has smoke alarms that work. Remind your folks that you need one of these in the basement, on the main level and in the upstairs. You need one inside or right next to every room where people sleep. All of the smoke alarms should be tested every month.
- A good way to know you can get out fast if a fire starts is to plan your escape. Your whole family should work together to figure out the two best ways to get outside from every room. You need to pick a place outside where you'll go – and stay – if the smoke alarm sounds.
- Everyone in your family needs to practice with a home fire drill. It's just like school, only you might be asleep when your folks start the drill. Practicing helps you be ready if you ever do need to escape.
- Fire sprinkler systems are cool. They're kind of like having a fire department at home. If a fire starts, the fire sprinkler puts water on the flames right away. That gives you extra time to escape.

- Even if your home has a fire sprinkler system, you still need to have working smoke alarms and you still need to plan and practice your fire drills.

Utilize these free home fire sprinkler educational materials for children:

[Sprinkler Smarts programs for children K-5 and Grades 6-8](#)

Educational Information

Suggested Teaching Points for Adults

Adults can understand and remember more messages than children, but most public educators will tell you that too much information is overwhelming. Just as you do for young children, limit your messages for adults. Steer clear of highly technical language and jargon. Be pointed, but don't scare your audience.

HFSC recommends that you incorporate these key teaching points into your educational presentations to adults:

- A home fire grows and spreads very quickly, becoming deadly in just three minutes or less.
- On average, it takes a fire department 9-12 minutes to respond on scene after receiving the emergency call.
- Time is your enemy in a fire. That's why you need a total system of fire safety: Prevention, Detection (smoke alarms), Suppression (fire sprinklers) and Evacuation (escape plan and drills).
- Even if you have a fire sprinkler system installed, you must have smoke alarms.
- Make sure everyone in your family can hear the smoke alarm and be awakened by it. Find this out with home fire drills.
- Everyone must know how to escape. Be able to get out of every door. Be able to open escape windows. Know two ways out from each room.
- Have a fire escape plan. Everyone must know that his or her number-one job is to get out. Empower children to do this on their own.
- Know how to call 9-1-1. Call from outside, after you are safe. Stay outside.
- Nothing protects like a fire sprinkler system.
- If a fire starts, the high temperature from the flames will cause the sprinkler closest to it to activate. Smoke can't start the sprinkler. Only heat – usually about 135°-165°F – can make the sprinkler flow water.
- Sprinklers work individually. They don't activate all at once, like in movies. In a home fire, it's very rare for more than one sprinkler to be needed.
- By putting water on a fire while it is still small, a fire sprinkler system controls heat and poisonous smoke. The sprinkler prevents flashover – a deadly condition where everything in the room bursts into flame.
- A sprinkler controls the fire or even extinguishes it, often before the fire department arrives.
- Fire sprinklers give families extra time to get out.
- Fire sprinklers limit the fire damage to a small area.
- Fire sprinklers save lives and protect pets and valuables.
- Fire sprinklers protect what we value most.

Utilize these free HFSC home fire sprinkler educational materials to round out your presentations to adults:

[Protect What You Value Most Video](#)

[Fire Timeline Video](#)

[How Fire Sprinklers Work Animation](#)

[Water Usage Animation](#)



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THE HFSC FIRE AND SPRINKLER BURN DEMONSTRATION KIT

DEMONSTRATION EVALUATION GUIDANCE

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Knowledge Gain Assessment

Bringing a side-by-side fire and sprinkler burn demonstration to your community is an investment in time and money. It's important to determine how effective it is before you host a similar event in the future. By honestly assessing its educational value, you can make changes that improve future events. HFSC's Evaluation Guidance can help.



Evaluation Guidance

Bringing a side-by-side fire and sprinkler burn demonstration to your community is an investment in time and money – yours as well as your sponsors/supporters/volunteers. It's important to determine your effectiveness before you host a similar event in the future.

By honestly assessing the educational value of your side-by-side presentation, you can make changes that will improve future events. HFSC suggests these steps:

- Have a meeting with all personnel who were involved.
- Celebrate your accomplishment.
- Identify strengths. Make notes about what went well and why those things worked.
- Make notes about which things could be improved next time. Brainstorm with your team about how to do that.
- If you surveyed the audience and your sponsors, review the survey findings together. Discuss strengths and weaknesses.
- Compare your team's reaction against the survey findings. What do they have in common?
- If you tested your audience's knowledge gain, discuss the findings. Compare them against the other evaluation information.
- Were your sponsors and other supporters pleased? Would they support the same event in the future? If not, why not?

- Process all of these findings to determine ways that your department can improve educational outreach. For example:

- Was the audience only entertained, or did people also learn?
- Were sponsors well recognized for their efforts?
- Did the event draw a large enough audience, or could you have done more to promote it?

Make a record of the event, the size of the audience and your team's assessment. Keep it in a file along with the notes from your team meeting and any of the surveys and knowledge assessment tools you used. Access the contents of this file before you plan your next event and use the file as a guide to make improvements.

THE HFSC FIRE AND SPRINKLER BURN DEMONSTRATION KIT

Sample Sponsor Survey

[Click here to open sample sponsor survey in your word processor](#)

Send this survey along with your Sponsor Thank-You Letter and a postage-paid envelope.

Side-by-Side Fire and Sprinkler Burn Demonstration Sponsor Survey

Thank you for helping the {YOUR FIRE DEPARTMENT} with our community side-by-side fire and sprinkler burn demonstration held on {DATE}. Please take a moment to answer the following questions and return the survey to me in the enclosed postage-paid envelope. Your honest feedback will help {YOUR FIRE DEPARTMENT} do a better job in future public safety education events.

1. Overall, this event was a success (yes/no).
2. This event was a success from the following standpoints:
 - Educational value (yes/no)
 - Audience size (yes/no)
3. This event was worth my contribution (yes/no).
4. The recognition I received was adequate (yes/no).
5. I would consider providing similar support for a future event (yes/no).

Please add any additional comments you may have about the event or your involvement.

Thank you for your generous support and for taking the time to offer this valuable feedback!



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Sample Audience Survey

[Click here to open audience survey in your word processor](#)

As part of your overall evaluation, make note of how many people attended, along with a rough breakdown of ages. While the event is still fresh in your memory, you may want to jot down your own assessment of the audience, its attentiveness, its reactions, etc.

To help you gain a more formal assessment of the event, consider surveying members of the audience before they leave. The most effective way to do this in a large public gathering is to assign a few people to conduct very brief surveys.

Tip: Ask volunteers to carry a clipboard and walk through the audience with the survey.

Side-by-Side Fire and Sprinkler Burn Demonstration Audience Survey

Completed by: (Adult/Child)

1. Did you learn something by watching these two fires? (yes/no)
2. Did you learn something from the presentation? (yes/no)
3. (If yes) Please tell me one thing you learned today that you didn't know before.
4. Do you think you will make any changes at home after today? (yes/no)
5. (If yes) Please tell me one thing you will do differently.



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