



HOSE STREAM MECHANICS

LESSON PLAN

ATTIC FIRE SUPPRESSION

STUDENT OBJECTIVE

Given the information from discussion, handouts, and video references, the student will demonstrate knowledge of a properly flowing handline into the eave of the water mapping prop, working the stream from one end of the compartment to the other to show the effectiveness of this tactic in surface cooling.

The student will also demonstrate water application into the gable end of the attic to demonstrate the limited effectiveness in the ability to map the sheathing deeper into the space.

MOTIVATION

When presented with a fire in the attic of a residential structure, access for water application can be quite difficult as these spaces are typically limited in ventilation openings to the exterior. Depending on the roof construction, the only openings present may be from gable vents or the eave line on the exterior or from an access hatch or attic staircase on the interior.

Past research highlights the importance of limiting ventilation in the absence of effective suppression due to the potential for rapid fire growth. Traditional means of opening the majority of the ceiling on the floor below the attic both increases the available oxygen to the fire and is very labor intensive. With a properly placed stream into the eave line, worked from one side of the structure to the other, the majority of the sheathing in the attic can be coated quickly, all while limiting the ventilation to the space.

INSTRUCTOR NOTES

Single 1½ or 1¾ inch handline with either a combination or smooth bore nozzle set to a flow and pressure of your choice.

Hose stream should be set to either a straight or solid stream.

Full personal protective ensemble (PPE) recommended.

ASSOCIATED REFERENCES

Residential Attic Fire Mitigation Tactics Study

LEARN MORE

Visit fsri.org/hose-stream-mechanics

1 GABLE END APPLICATION

Watch a Demonstration
of this Exercise



Technique

Flow water into the gable of the attic space. Attempt to adjust stream angle within the confines of the gable opening.

Nozzle Setting: Straight or Solid Stream

Outcome

Water does not effectively penetrate the attic compartment due to truss obstructions..

Discussion

As we know from water mapping principles, applying water into the gable ends of an attic is less effective as the water will likely make contact with the roof trusses and fall to the floor, keeping cooling localized to a specific area.

2

EAVE SWEEP APPLICATION

Watch a Demonstration
of this Exercise



Technique

Flow water into the eave line of the attic space. Apply the stream from truss bay to truss bay, working from one end of the attic to the other.

Nozzle Setting: Straight or Solid Stream

Outcome

Water impacts the underside of the sheathing in a single truss bay and is propelled upwards to the ridgeline and down the opposite side of the attic.

Discussion

If the eave line is accessible from the exterior, applying a straight or solid stream via a steep angle to the underside of the roof decking will cool the sheathing in a single truss bay. Moving from one side of the structure to the other will coat the sheathing in each truss bay, effectively wetting the majority of the burning fuels in the attic space.

If crews are able to wet the sheathing, this major flame spread mechanism in the attic is eliminated until the moisture evaporates. Whether or not it is already involved in fire, wetting the sheathing allows crews to ventilate or access the attic with a greatly reduced potential for rapid fire growth.