



Burlington Fire Department



136 South Winooski Avenue
Burlington, Vermont 05401-8378

(802) 864-4554 • (802) 658-2700 (TTY)

Business Fax (802) 864-5945 • Central Station Fax (802) 865-5387

Section: Suppression	
SOG Number: 01.32	Effective Date: 10.15.2020
Subject: Fire Stream Management	
By Order of Fire Chief Steven A. Locke	

I. Purpose:

To guide Burlington Fire Department personnel in the selection and timely deployment of fire streams.

II. Scope:

All personnel operating at fire incidents involving Class A materials. This SOG does not pertain to foam or standpipe operations.

III. Definitions:

Attack Apparatus: An apparatus that is directly pumping fire streams.

Dedicated Water Supply: A water supply from a hydrant, or through relay pumping, where the hydrant is dedicated to the attack apparatus.

Defensive Mode: Attacking a fire from the exterior with no intention of entering the fire area until the fire has been fully controlled. Or may also allow a fire to burn to utilize limited resources elsewhere. Alternatively, structural instability is a concern and the area is unsafe to enter.

Fire stream: A water stream, from a nozzle or master stream appliance, for the purposes of extinguishing fire or limiting the spread of fire.

Handline: An appliance that is designed to be operated and advanced by a firefighter or company while flowing.

Master Stream: An appliance, typically flowing more than 350 gpm, which is not designed to be advanced while flowing.

Offensive Mode: Attacking a fire from within a compartment or from the exterior with the intention of entering the fire area for search, rescue, and fire attack.

Outside Fire: A fire that does not involve structures which are normally occupied. Common examples are vehicles, brush, small outbuildings, and dumpster fires.

IV. Guidelines:

A). Structure Fire

1. Defensive Mode

a. Exposure Protection

- (a) For commercial structure fires and multifamily dwellings, exposure protection should be provided with 2 ½” handlines.
- (b) For one and two family residential structure fires, exposure protection should be provided with 1 ¾” handlines.
- (c) The exposure stream is intended to prevent extension of the fire by cooling the exposed surface. If the stream is not able to maintain wet coverage of the exposure, then a larger line will need to be placed in service to cool the exposure.

b. Defensive Attack

- (a) One and two family residential structures will begin operations with a 2 ½” handline, master stream appliances should be considered if the initial attack apparatus is an Engine.
- (b) Commercial and multifamily structures will be attacked with a master stream, or 2 ½” handline if the initial attack apparatus is a quint.

2. Offensive Mode

a. Residential Structure Fires

- (1) 1 ¾” lines should be used for interior firefighting and the knockdown of a moderate volume of exterior fire in an offensive attack.
- (2) 2 ½” lines should be used for knocking down large volumes of exterior fire (multiple levels of porches, multiple windows of fire, attic spaces, etc.) or where the extended reach may be needed. This may be used prior to the deployment of a 1 ¾” handline for interior operations.

b. Commercial Structure Fires

- (1) 2 ½” handlines and master stream devices should be considered for a commercial structure fire where:
 - (a) The fire appears advanced.
 - (b) The compartments involved are multiple times larger than those found in typical residential structures.
 - (c) There is a heavy fire load.
 - (d) The initial attack must be started from the exterior.
- (2) 1 ¾” handlines can be considered for a commercial structure fire where:

- (a) The compartments of fire involvement are comparable to residential structures in size.
- (b) Mobility requirements based on layout and staffing limit the ability to effectively advance a 2 ½" handline.
- (c) The building has an operating fixed extinguishing system.
- (d) Known fire involvement area, overhaul.

B). Pumping Fire Streams

1. Structure Fire

- a. No more than 3 fire streams shall be pumped by any 1 attack apparatus. The Incident Commander should consider no more than 2 fire streams pumped from any 1 attack apparatus, when the fire streams are interior.
- b. Prior to deploying the second fire stream from an attack apparatus, a water supply plan must be established and in progress.
- c. Prior to considering a third fire stream from an attack apparatus, the apparatus must have a water supply established and a full booster tank.
- d. Every attack apparatus shall have a dedicated water supply.
- e. Hydraulic calculations for any given hose, nozzle, and appliance shall be established by the Training and Safety Division in consultation with the Deputy Chief of Operations.
 - (1) Handlines shall be accurately pumped in order to have a known ability of the stream for the company utilizing the fire stream and the Incident Commander.
 - (2) Master streams appliances are not required to be as accurate in flows as there is no expectation of personnel moving a flowing appliance. Water supply will dictate fire stream flows based on water availability. If the water supply will not support the required flow, the incident commander must be notified.

2. Outside Fire

- a. Where an outside fire presents an exposure problem for a nearby structure, the fire stream deployment shall follow Section IV. A. Structure Fire. Otherwise the fire shall be considered an outside fire for purposes of fire streams. The goal when pumping handlines for outside fires shall be for maneuverability, the handline shall be able to be operated over the head with minimal effort. This is not expected to produce a flow consistent with structure fire operations.

C). Handline Flows

1. 1 ¾" Handlines

- a. 185 gpm shall be the target flow rate for all 1 ¾" handlines.
- b. Fog lines should be used in situations where a flammable liquid or gas may be present and the protection of a fog stream in pushing the product away may be necessary. This would include vehicle fires and fire involving natural gas or propane.

2. 2 ½” Handlines

- a. 265 gpm shall be the target flow rate for 2 ½” handlines with 1 ½” tip.
- b. The fixed gallonage fog tip for 2 ½” handlines is rated for 250 gpm, but shall be pumped the same as the 1 ½” tip. These should be considered equal flows, of 265 gpm, for operational and pumping purposes. The fog tip should be used similarly to the 1 ¾” fog tip and to include cooling gas cylinders exposed to fire.

V. Responsibility:

It is the responsibility of all members to read, understand and follow this Standard Operating Guideline

Revision History			
Revision Date	Section	Summary	Principal Author
10.15.2020	Revised	Revised from 1999 SOG	Lt. Perkins