



Pocket Guide To STRUCTURE PROTECTION ORGANIZATION & TACTICS FOR WILDLAND FIRES



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**WISCONSIN WILDLAND FIRE
INCIDENT COMMAND SYSTEM (ICS)
(Structure Branch at full expansion)**



PROGRESSION OF STRUCTURAL PROTECTION ORGANIZATION

INITIAL ATTACK (IA):

- Chief or highest-ranking officer meets with the Incident Commander (IC) for initial briefing and determines which tactics to use to best fit the individual situation, how structure protection will be organized, and sets up an initial water fill site.

TRANSITION: FROM IA TO STRUCTURAL BRANCH ORGANIZATION

- Once it is obvious that the fire is not going to be contained quickly, the IC declares the incident a project fire. At this point the IC will assign someone the role of Structural Branch Director (STBD).
- The STBD will then take control of the structure protection organization and assign supervisors and resources to the Advance and Active Groups (it may be advisable at this early point for the STBD to supervise the Active Group) set up additional water sites etc.
- As leadership and resources become available, the Overhaul Group should be organized.
- At this point in the organization all communications from the groups go through the STBD.

STRUCTURAL BRANCH FULLY FUNCTIONAL:

- The STBD will contact the Group Supervisors via low band radio or cell phone that Incident Command Post (ICP) is set up and the Structural Branch is functional.
- The STBD will handle set up of water sites, ordering additional resources and coordinate assigning resources to the Groups (with input from Deputy STBD if utilized).

COMMUNICATIONS:

- Individual suppression resources in the Structural Branch should be assigned a radio frequency at check in.
- Supervisory positions within the Structural Branch may be assigned two radio frequencies at check in; one to communicate with the resources assigned to them and the second to communicate with their supervisor and counterpart level positions.
- All communications regarding assignments and requests for resources will flow between the Group Supervisors and the STBD. The Deputy STBD position, if activated, may monitor but will not be involved in the tracking of individual resources.

KEEP INFORMED OF FIRE WEATHER CONDITIONS 2

STRUCTURAL PROTECTION POSITIONS

STRUCTURAL BRANCH DIRECTOR

The STBD reports to the Operations Chief and coordinates the structural protection effort at the ICP. This position is a team effort between several structural fire service people, a minimum of 4 is recommended.

DUTIES:

1. Reports to the Incident Commander or the Operations Section Chief.
2. Supervises and provides for the safety of the resources assigned.
3. Provides coordination and support to the Group Supervisors.
4. Establishes and coordinates water points.
5. Establishes or identifies zones needing protection.
6. Assigns Zone/Strike Team/Task Force Leaders.
7. Estimates and orders needed resources.
8. Check in, assign, and brief all incoming structural resources.
9. Reassign resources as necessary.
10. Coordinates support of wildfire suppression through the Operation Section Chief.
11. Provides organization and record keeping systems.
12. Implements demobilization of structural resources.
13. May appoint a Deputy STBD to function as a troubleshooter, or as a coordinator in the field.
14. Coordinate with Logistics to provide the specialized needs of structural resources on the fire.

OFFENSIVE MODE OF OPERATION:

Utilizing structural protection tactics ahead of and in relatively close proximity to the flaming front. Examples of tactics would include Stationary Action, Leave and Re-Enter, Site and Pump, Cluster Protection, etc.

DEFENSIVE MODE OF OPERATION:

Utilizing structural protection tactics that primarily occur within the burned area (in the black), or a considerable distance ahead of the flaming front. In Wisconsin this "considerable distance" is typically defined as a minimum of 1 mile or 1 hour ahead of the fire. Examples of tactics would include In the Black and Pre-Treatment.

DEPUTY STRUCTURAL BRANCH DIRECTOR

On large complex incidents with extensive structural threat, assigning a field level deputy to the Structural Branch function is an option that should be considered. This position is located on the fire line. It can be the primary coordinator, or a troubleshooter, for the STBD. This person reports to the STBD. The Deputy STBD is in the unique position of being able to observe fire behavior and therefore maintain situational awareness from a different perspective than the STBD.

DUTIES:

1. Responsible to the STBD.
2. Coordinate/communicate with STBD (these positions can not operate independently).
3. Help determine Mode of Operation (Offensive vs. Defensive) and adjust mode of operation as necessary, dependent on changing fire behavior.
4. Determine priorities.
5. Inform STBD of evacuation needs (Law Enforcement Branch is responsible for this task).
6. Help establish water points, but coordinate with STBD and the Water Supply Officer.
7. Estimate resource needs and communicate to STBD.
8. Request needed DNR tractor support through STBD.
9. Coordinate assistance with wildfire forces when requested.
10. May supervise Group Supervisors/Zone Leaders in Offensive Mode of Operation.
11. May supervise Advance, Active and Overhaul Group Supervisors in Defensive Mode, with priority to Active Group.
12. Keep skeletal records of resource locations and assignments on fire.

GROUP SUPERVISORS

-DEFENSIVE MODE OF OPERATION-

ADVANCE GROUP SUPERVISOR (ADGS)

- Report directly to STBD.
- Coordinate and supervise Foam Teams and Sprinkler Teams.
- Clearly understand fire's spread on structure map.
- Identify priorities (e.g. dead end roads, upwind lakeshores etc).
- Maintain a minimum distance of 1 mile/1 hour in front of fire's head for safety.
- Request traffic control & evacuation needs through STBD.

ACTIVE GROUP SUPERVISOR (ACGS)

- Report directly to STBD.
- Supervise a combination of up to 7 resources (e.g. Zone/ST/TF Leaders & water tenders).
- Focus on suppressing the "little things" (per Jack Cohen) and **quickly** move forward.
- Maintain priorities; write off structures that can't be saved.
- Track assigned resources and their general locations.
- Keep Strike Teams moving rapidly, and/or activate Zones quickly behind the fire front.
- Monitor need for firefighter rehab to avoid excessive smoke exposure.
- Maintain communications with STBD and OHGS.

OVERHAUL GROUP SUPERVISOR (OHGS)

- Report directly to STBD.
- Supervise Zone Leaders and assigned water tenders.
- Conduct a more thorough suppression and mop up effort than ACGS.
- Secure and monitor structures where the main fire front has passed but there is still a threat of fire, rekindle, or other safety concerns.
- Consolidate Zones as area cools to improve efficiency.
- Coordinate possible movement of rested personnel into Active Group if requested.
- Make good use of homeowners or citizens available to guard structures from rekindling and looting.
- Practice positive public relations.
- Maintain communications with STBD and ACGS.
- **Overall goal:** Secure structures that have been saved to prevent rekindle and loss.

PROVIDE FOR SAFETY FIRST

STRIKE TEAM/TASK FORCE LEADERS

Strike Team Leaders (STLD) and Task Force Leaders (TFLD) are assigned to the Active Group. They operate in the black during Defensive Mode of Operation. They report to the Active Group Supervisor. Up to 3 task forces may be deployed immediately behind the fire head, in the black. Up to 7 resources, generally engines and tenders will be assigned to each Strike Team/Task Force. STLD and TFLD are counterpart positions to Zone Leaders, but they are not confined to a single zone. STLD/TFLD will **quickly** move forward through multiple zones as the fire progresses.

OBJECTIVE:

With great haste, but safety in mind, this resource will follow behind the fire's head as **quickly** as possible. TIME IS OF THE ESSENCE! Extinguish fire that threatens a structure or has ignited a structure that is savable – TRIAGE! Focus on the primary structure, deal with a secondary structure only if it threatens to ignite the primary structure.

DUTIES:

1. Responsible to the Active Group Supervisor.
2. Receive tactical and safety briefing from ACGS.
3. Provide tactical and safety briefing to assigned resources.
4. Direct and supervise assigned resources.
5. Monitor progress and fatigue. Request additional resources and replacement resources for fatigued firefighters.
6. Do not engage a structure requiring more than one engine to protect.
7. Be aware of, and provide protection for, structures needing protection off of an uncontained flank in the "brown".
8. Maintain record of equipment, personnel, times, actions taken and results.

OVERALL GOAL: Move **quickly** behind the fire front extinguishing the "little things" that threaten the primary structure.

ZONE LEADER

Zone Leaders can be assigned to either the Active Group or the Overhaul Group. In Defensive Mode of Operation they will operate In the Black. In Offensive Mode of Operation they may operate ahead and/or behind the flaming front depending on the fire intensity, etc. Zone Leaders are counterpart positions to the STLD/TFLD positions. This person is the primary coordinator of the structural protection efforts within a Zone. A zone is defined as a geographic area, manageable in size and number of structures. It must be defined clearly. The primary function is to **protect or secure structures**.

DUTIES:

1. Responsible to the Overhaul Group Supervisor (OHGS) or the Active Group Supervisor (ACGS).
2. Take and maintain command of assigned resources within a zone.
3. Identify and request resource needs to the OHGS/ACGS.
4. Maintain radio communications with subordinates and supervisor.
5. Responsible for the safety of equipment, personnel, actions taken, and results.
6. Maintain records of equipment, personnel, actions taken, and results.
7. Release fire equipment to the OHGS/ACGS for re-assignment when no longer needed.
8. Request and direct specifically assigned DNR tractor/plows and engines, and fire control personnel to aid in structural protection.

OFFENSIVE MODE OF OPERATION: (May be ahead of the fire)

- Determine tactics to be implemented

DEFENSIVE MODE OF OPERATION: (In the Black)

- May report to the Active or Overhaul Group Supervisor
- Active – Protect and/or Secure structures
- Overhaul – Secure structures that have been saved.

**MAKE SURE ORDERS ARE GIVEN AND RECEIVED CLEARLY,
THEN FOLLOWED!**

GENERAL SAFETY GUIDELINES

REMEMBER:

- Operational Mode, OFFENSIVE OR DEFENSIVE?
- **Practice LCES.**
- As a last resort, temporary safe refuge may be found in the cab of an engine or inside a structure.
- Back up to structure as close as possible.
- Reserve enough water to protect yourself and equipment.
- Have turnout gear and SCBA available.
- Don't ride on outside of engine.
- Be familiar with the area involved, or have good maps.
- Closely assess "defensible space" **prior to any stationary action.**

OPERATIONS:

Observe ALL rules of the road. Run with headlights and red lights on. Consider utilizing the siren when smoke impairs visibility.

STRUCTURAL TRIAGE:

Protection priorities go to structures that are defensible.

What category does the structure fall into?

1. Needs little or no protection, for now.
2. Needs protection, but is savable.
3. Cannot be saved, lost or too dangerous.

Factors that affect triage decision

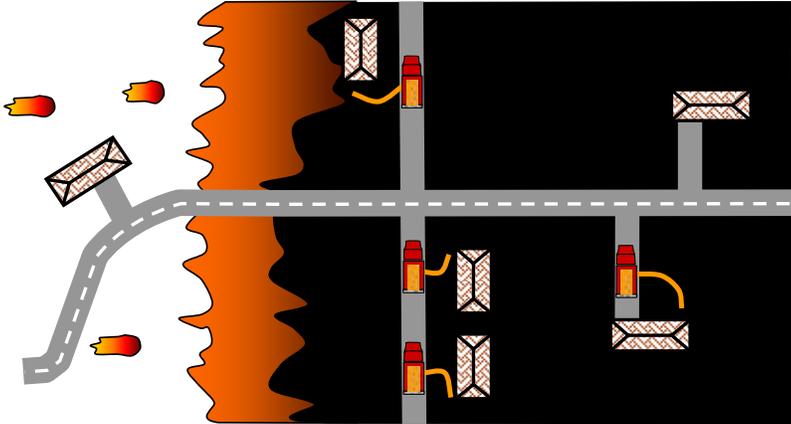
- Firefighter safety
 - LCES
- The structure itself
 - Roof, under decks and around foundation free of burnable debris.
- Surrounding fuels
 - Grass mowed, leaves raked, conifers thinned, wood pile away from house.
- Fire behavior
- Resources available to accomplish task?
- Driveway/access to structure
- Structure partially involved in flames.

NO BUILDING IS WORTH RISK OF LIFE OR INJURY

WILDLAND FIRE STRUCTURAL TACTICS IN THE BLACK

DEFINED:

- Engines work in the black behind the head of a fast moving, intense fire. Firefighters are protecting and securing structures that have withstood the main fire passage.



CONSIDERATIONS:

- Defensive Mode of Operation
- What is the residual fire and smoke intensity behind the head?
- Is there good access in the fire area?
- Any homes pre-treated ahead of the fire will have better odds of remaining after the main fire passage.

GUIDELINES:

- Deploy engines in burned area as close to the fire front as possible.
- Focus first on the primary structure by suppression adjacent hot spots or fires on the structure that are just igniting.
- Fires on outbuildings such as sheds or garages may have to be ignored unless they will directly threaten a residence.
- Triage is important.
 - Don't spend time on structures too heavily involved, move on. There will be many more savable structures.
 - Strike Teams/Task Forces don't spend time on structures that can stand on their own until the active or overhaul zones are staffed.
- Be careful of hazards. You will likely encounter heavy smoke, hot spots, downed powerlines, LP tanks hazards, and other vehicles. Drive slowly with lights on if visibility is limited. Use sirens only when necessary.

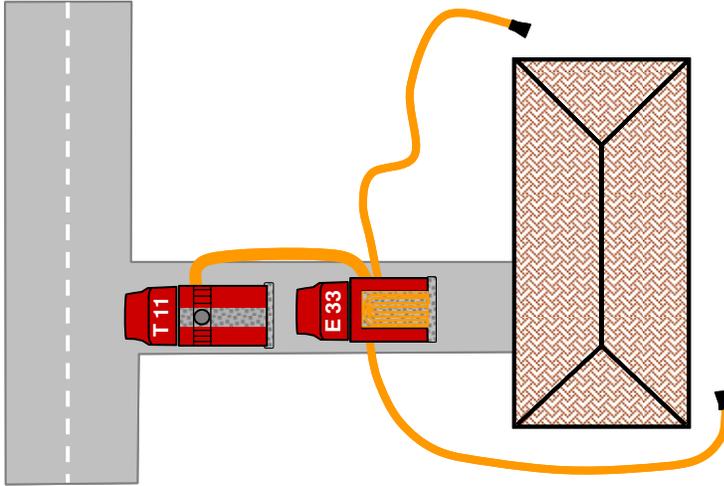
BE VIGILANT FOR DOWN POWERLINES

STATIONARY ACTION **(BUDDY SYSTEM)**

DEFINED:

An engine and water tender team work together to protect a structure by positioning at the site with the intent of staying as the fire passes.

WARNING! “Watch Out” Situation #10 - You are attempting a frontal assault! This is a dangerous tactic and is only suitable along flanks or under moderating fire conditions.



CONSIDERATIONS:

- Is there defensible space?
- What is the fire prone nature of the site? Pine or hardwood?
- What is the fire intensity?
- Time of day?
- What is your position relative to the fire - head or flank?
- Escape routes and safety zones.
- Stay aware of your water supply.

GUIDELINES:

- Defensible space: Pine - 100', hardwood - 50' of maintained lawn, or 2-3 times flame length. This should be considered a safety zone.
- Back engine in for rapid escape.
- Engine lays 2 lines. Tanker (water tender) is connected to pumper, with another line available for protection of firefighters and units.
- Wet down structure as fire approaches.
- Withdraw if necessary, when safe, re-enter and overhaul.

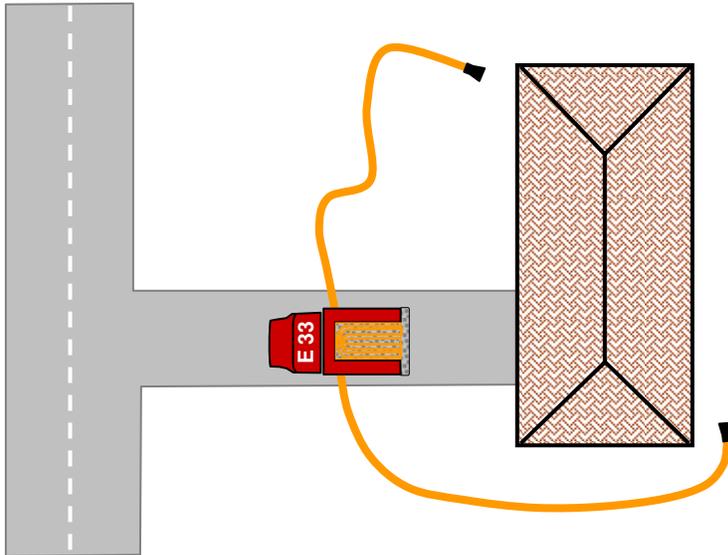
ARE ESCAPE ROUTES IDENTIFIED?

10

INDIVIDUAL ACTION **(LEAVE & RE-ENTER)**

DEFINED:

During Offensive Mode of Operation a single engine protects a structure by wetting, or foaming it down, retreats as the fire approaches, then returns for overhaul. This tactic is most effective when foam is used.



CONSIDERATIONS:

- What is the fire prone nature of the site?
- Can you make a rapid return to the site after the fire passes through?
- Timing of the wet-down is critical!
- Escape routes and safety zones.

GUIDELINES:

- Back unit in for rapid escape. Post a lookout!
- Complete wet-down of roof and eaves.
- Utilize a foam/mixture.
- Wet down or foam adjacent fuels, if necessary.
- Re-enter after the head of the fire passes.
- Overhaul, check vents, crawl spaces, and lee side of the structure.

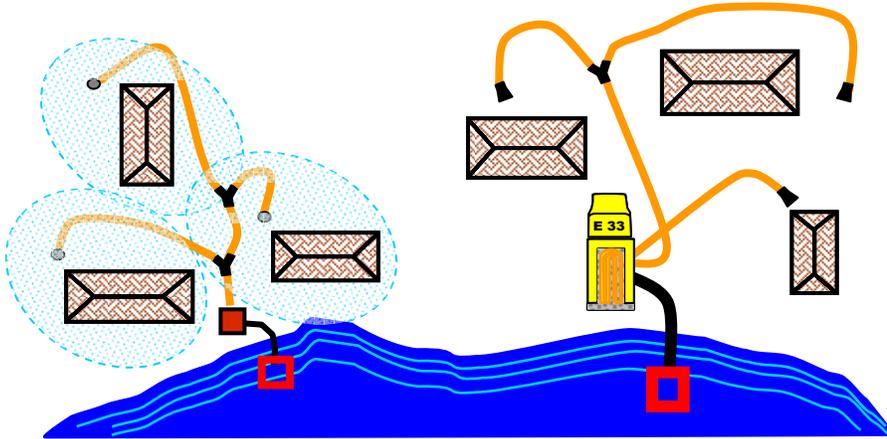
ALWAYS PARK FACING YOUR ESCAPE ROUTE

SITE AND PUMP

DEFINED:

A stationary action at a site where multiple structures can be protected simultaneously. This tactic can be accomplished by utilizing some or all of the following: engine, boat, portable pump and sprinklers. An inexhaustible water supply (i.e. lake or stream) is desirable; however, when using engines, a drop tank with ample supply of water may be adequate depending on circumstances.

WARNING! “Watch Out” Situation #10 - You are attempting a frontal assault! This is a dangerous tactic and is only suitable along flanks or under moderating fire conditions.



CONSIDERATIONS:

- Is there defensible space?
- What is the intensity, time of day, position on the fire?
- Escape routes and safety zones.

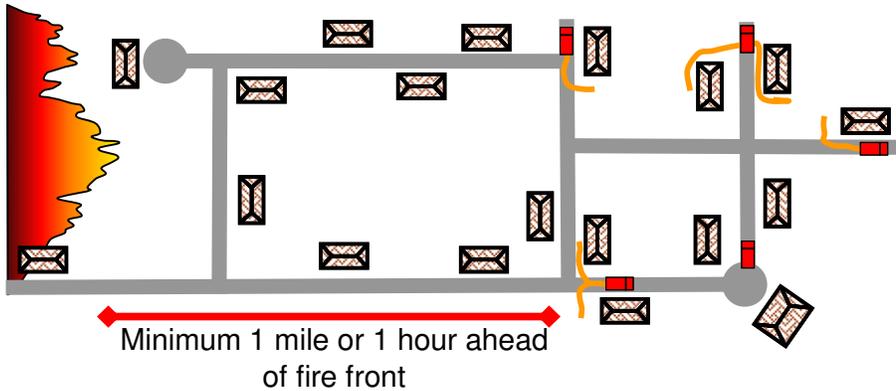
GUIDELINES:

- Engines, portable pumps, or sprinklers are set up to provide water to a cluster of structures.
- Structures closest to the fire are wet down first.
- The resources remain at the site until overhaul is complete, except in the use of sprinklers where personnel can leave prior to arrival of the fire front leaving the sprinklers running.
- Line building equipment (tractor/plows) may be used to establish a mineral soil break around the site.
- This tactic is most effective when a cluster of structures can be protected from one pumping location.

PRE-TREATMENT (Foam/Sprinklers)

DEFINED:

A team of foam capable engines work well ahead of a fast moving, intense fire, foaming as many structures as possible. They are followed up by units operating in the black. May be used in tandem with Sprinkler Teams.



CONSIDERATIONS:

- What is the fire prone nature of the structures?
- What is the fire intensity, behavior, time of day?
- Are trained personnel available to run DNR Engines?

GUIDELINES:

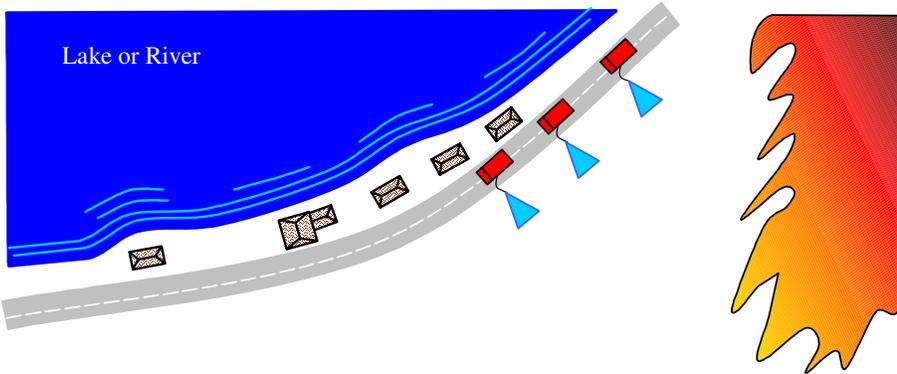
- Establish a clear understanding of the direction of the fire relative to a structure map.
- Keep a minimum of 1 hour or 1 mile ahead of the fires front.
- Structures with extensive defensible space can be left for other tactics.
- Foam units are not assigned to specific zones.
- Works well in conjunction with sprinkler teams.
- A Foam Team Leader reports to the STBD on smaller incidents or the ADGS on larger incidents

ASSEMBLE AND ATTACK

DEFINED:

A group of engines assemble along an existing, oblique barrier and hold the fire in an attempt to force the fire around a group of structures.

WARNING! This should not be attempted as a direct frontal assault.



CONSIDERATIONS:

- What is the fire intensity? Time of day?
- There must be natural or man-made barriers to work from and tie into.
- Is enough equipment available, and can it be assembled in time?
- Can it be done safely? Escape routes and safety zones?

GUIDELINES:

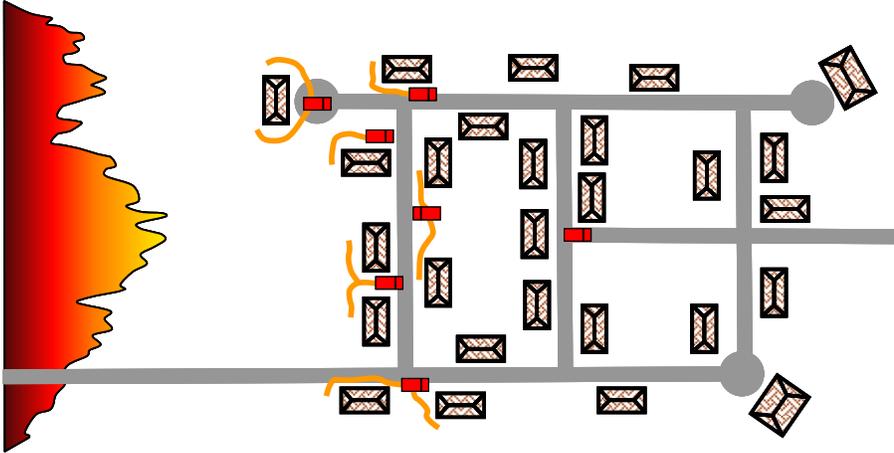
- Engines should work together as a team.
- Wet down fuels as the fire approaches (i.e. direct attack).
- Prepare to wet down opposite side of road if a retreat is necessary.
- Tie into a natural (river, lake, etc.) or man-made (road) barrier.
- Abandon this action if the fire is too intense. Protect individual structures.
- Pre-plan your escape routes and safety zones.

WATCH OUT IF YOU ARE UPSLOPE FROM THE FIRE 14

CLUSTER PROTECTION

DEFINED:

A stationary action where multiple engines work together to protect a group, or cluster, of structures within close proximity to each other (i.e. a city, village, trailer court, etc).



CONSIDERATIONS:

- What is the fire prone nature of the area?
- What is the fire intensity? Time of day?
- What is the position of the development relative to the fire?
- Does the development have hydrants? Other water sources?
- Escape routes and safety zones?
- Burning structures pose a significant risk to adjacent structures.

GUIDELINES:

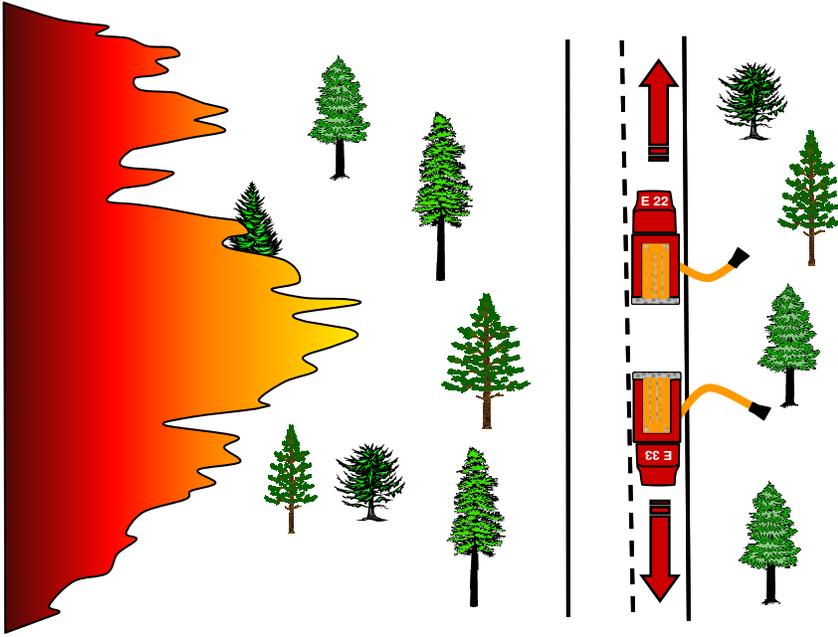
- For clusters of homes less than 50 feet apart, take the number of homes on the perimeter, divide that by four, and that equals the number single engines needed, plus five additional engines.
- Protect structures on the up-wind side of the development first.
- Triage the structures. Some may be able to stand alone without protection.

SUPPORTING TACTICS FOR STRUCTURE PROTECTION OR SUPPRESSION

INDIRECT INITIAL ATTACK

DEFINED:

Stopping or narrowing the forward spread of the fire, heading toward a roadway. Chances of success are much improved if the fire is restricted to the surface.



CONSIDERATIONS:

- The distance of the fire along the road must be manageable. 100 - 300 yards?
- Timing is critical.

GUIDELINES:

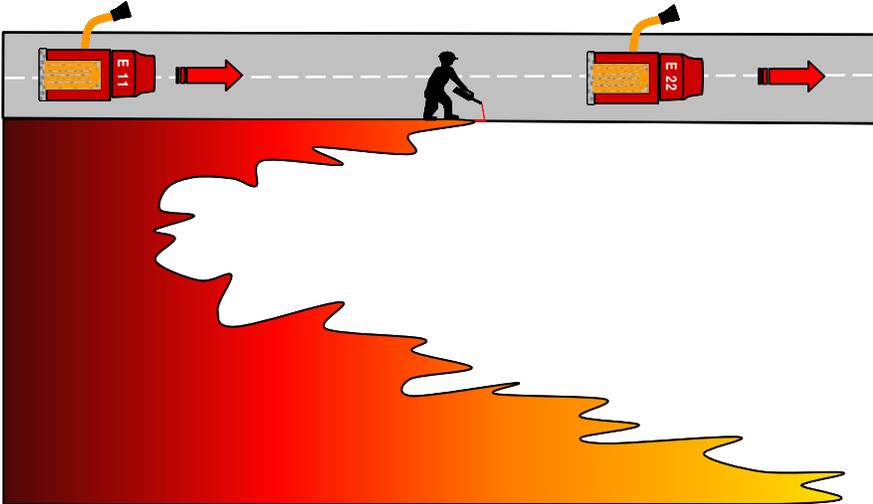
- Two engines, capable of pumping on the run, must locate in the center of where the fire will come out to the road. Then wet down (or foam) the opposite side of the road, moving in opposite directions.
- Be prepared for quick escape!

NEVER USE A STRAIGHT STREAM NEAR POWERLINES 16

FLANK SUPPORT

DEFINED:

A road holding tactic along either flank of the fire. The fire may be allowed to burn out to the road, or a "burning out" operation may be employed.



CONSIDERATIONS:

- How much pressure will the fire put on the road?
- Are there structures to protect along the road?
- How much road vs. available equipment do you have?
- Are there any traffic problems?

GUIDELINES:

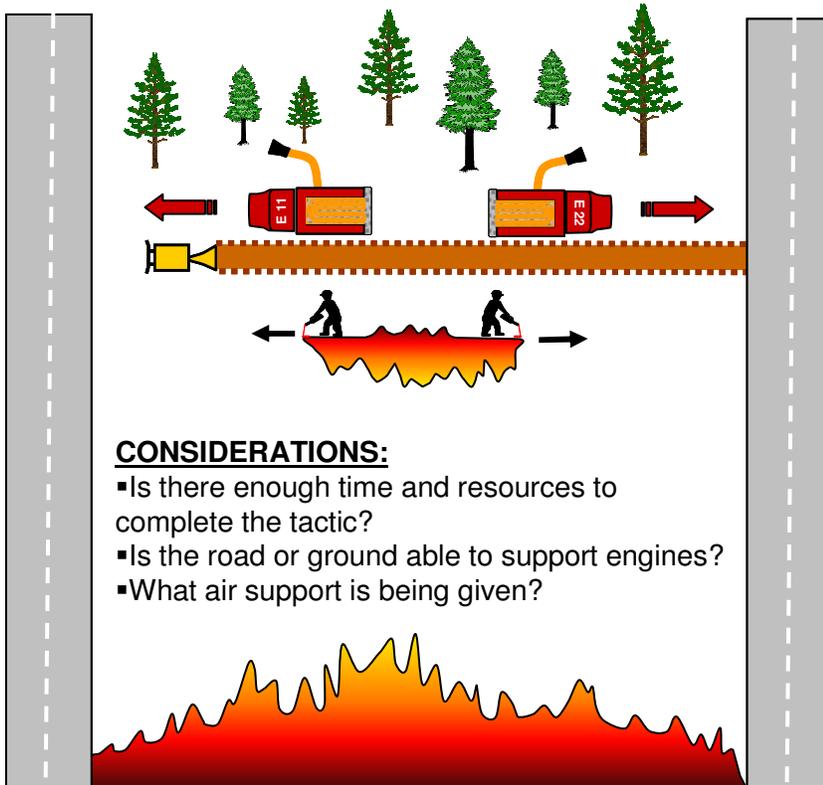
- Pumpers capable of pumping on the run are positioned at intervals along the road, prepared to move in the same direction the fire is moving.
- If the fire is putting little or no pressure on the road, patrol the road and make sure there is no spotting. Follow the fire's progress, staying behind the point of where the fire meets the road.
- If the fire is putting heavy pressure on the road, commence wetting, or foaming down the opposite side of the road ahead of the point where the fire meets the road.

BACKFIRE

This tactic is a command decision and can only be made by the IC or Operations Chief. Unauthorized backfires are in violation of Statute 26.

DEFINED:

A holding tactic in support of a backfire which by definition is conducted at the head of a fire.



CONSIDERATIONS:

- Is there enough time and resources to complete the tactic?
- Is the road or ground able to support engines?
- What air support is being given?

GUIDELINES:

- 2 engines, capable of pumping on the run, move in opposite directions starting in the center, wetting down the opposite side.
- Engines must stay just ahead of the igniter.
- Where only one torch is used, the torch follows behind the engine.

ALWAYS WEAR APPROPRIATE PPE

10 STANDARD FIREFIGHTING ORDERS

1. Keep informed on fire weather conditions and forecasts.
2. Know what your fire is doing at all times.
3. Base all actions on current and expected behavior of the fire.
4. Identify escape routes and safety zones and make them known.
5. Post lookouts when there is possible danger.
6. Be alert. Keep calm. Think clearly. Act decisively.
7. Maintain prompt communications with your forces, your boss, and adjoining forces.
8. Give clear instructions and be sure they are understood.
9. Maintain control of your forces at all times.
10. Fight fire aggressively, having provided for safety first.

18 SITUATIONS THAT SHOUT "WATCH OUT"

1. The fire has not been scouted and sized up.
2. You are in country not seen in daylight.
3. Safety zones and escape routes not identified.
4. Unfamiliar with weather and local factors influencing fire behavior.
5. Uninformed on strategy, tactics, and hazards.
6. Instructions and assignments are not clear.
7. No communication link with crew or supervisor.
8. Constructing firelines without a safe anchor point.
9. Building firelines downhill with fire below you.
10. Attempting a frontal assault on the fire.
11. Unburned fuel between you and the fire.
12. Cannot see the main fire; not in contact with someone who can.
13. On a hillside where rolling materials can ignite fuels below you.
14. Weather is becoming hotter and dryer.
15. The wind is increasing and/or changing direction.
16. Getting frequent spot fires across the line.
17. Terrain and fuels make escape to safety zones difficult.
18. Taking a nap near the fireline.

12 WILDLAND-URBAN “WATCH OUTS”

- Poor Access and narrow on-way roads.
- Bridge load limits.
- Wooden construction and wood shake roofs.
- Powerlines, propane tanks and HazMat threats.
- Inadequate Water Supply.
- Natural fuels 30' or closer to structures.
- Structures in chimneys, box canyons, narrow canyons or on steep slopes greater than 30%.
- Extreme fire behavior.
- Strong or erratic winds.
- Evacuation of the public (Panic).
- Avoid parking under powerlines.
- Avoid applying straight stream to powerlines.

CONSIDERATIONS IN PROTECTING INTERFACE STRUCTURES

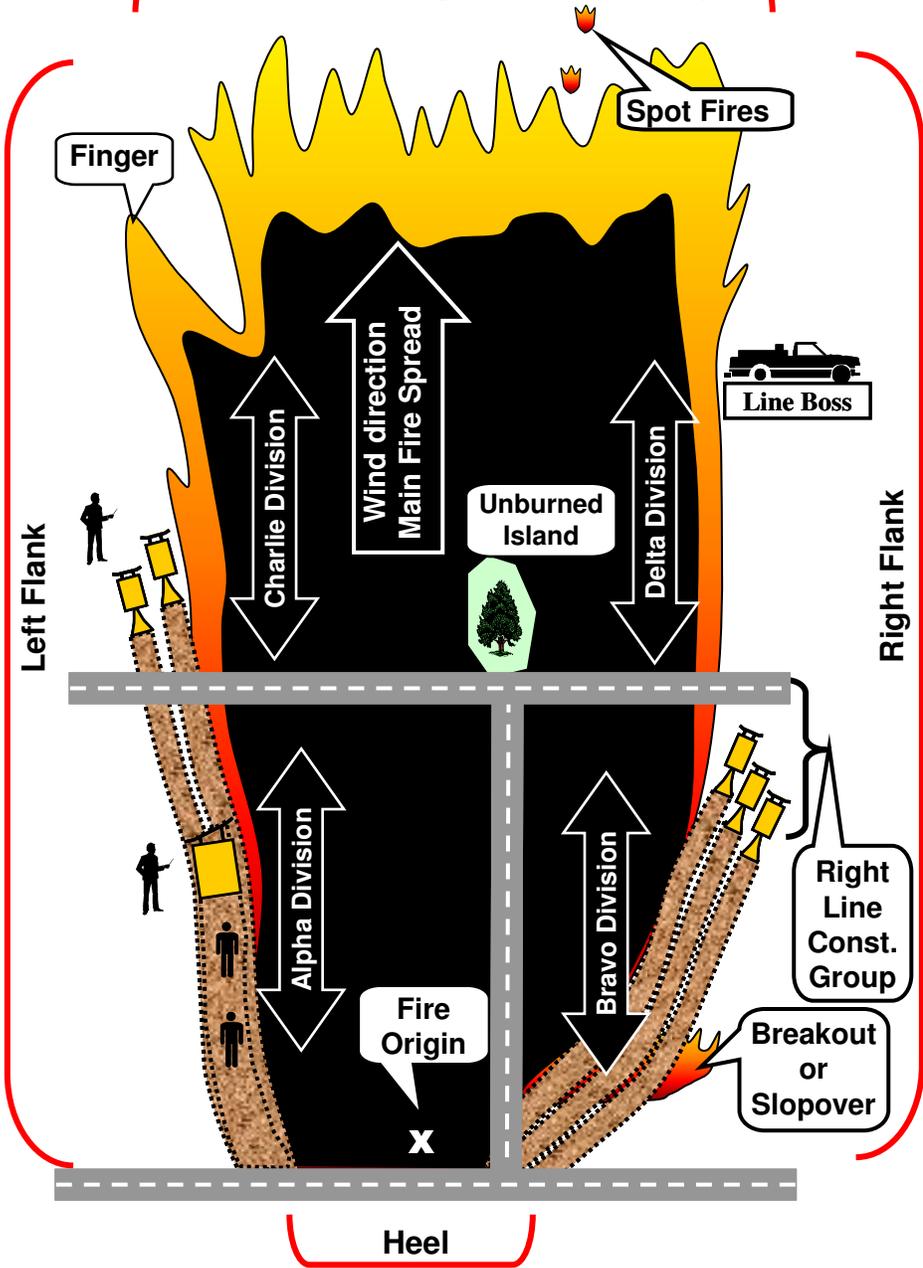
- Wear appropriate protective clothing and gear.
- Reserve enough water to protect your crew and equipment.
- Back your engine in for a quick escape.
- Post a lookout.
- Avoid parking in light, flashy fuels.
- Avoid entering a burning structure without proper training and equipment.

HAZARDS WHEN WORKING AROUND POWERLINES

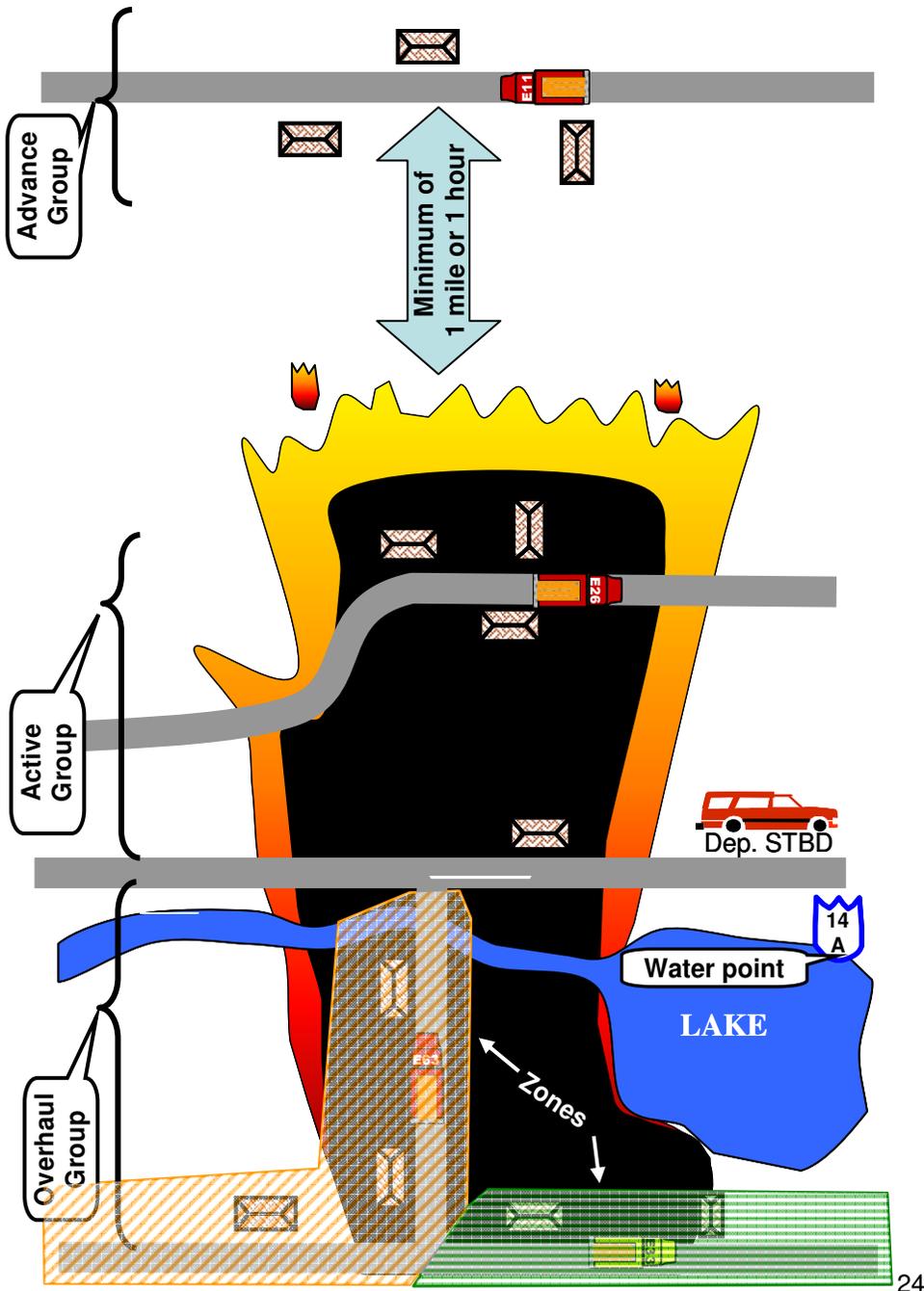
- Downed conductor on vehicle; don't leave vehicle until power company arrives, if the vehicle is on fire or near the fire, jump clear; don't hang on; keep feet together and bunny hop away.
- Avoid operating heavy equipment under powerlines.
- Avoid using rights-of-way as a cargo drop spot.
- Avoid driving with long antennas under powerlines.
- Avoid standing near power lines during aircraft retardant drops.
- Avoid parking under powerlines.
- Avoid applying straight streams to powerlines.

WILDLAND FIRE TERMINOLOGY

Head (H Div) – Highest fire intensity.



STRUCTURE BRANCH FIRELINE ORGANIZATION



For questions concerning this publication contact the Wisconsin Department of Natural Resources Division of Forestry at 608-267-7494.

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