

Municipal Firefighters Essential Functions

I. EMERGENCY SCENE RESPONSE: HANDS ON
A. INITIAL RESPONSE TO INCIDENTS
Tasks occurring between the receipt of an alarm and initial firefighting or emergency scene activities.
Don protective turnout gear and equipment before and at emergency scenes.
Proceed to assigned apparatus upon receipt of call for service.
Make preliminary evaluation of incident based on alarm information received (e.g., alarm type, structure type, etc.).
B. WATCH DUTIES
Stand watch to receive incoming alarms and information, answers phones, and monitors access to the station house.
Provide alarm communiqué to equipment operators/officers.
Test alarms and dispatch equipment.
Notify station personnel (over public address or through use of signals) of incoming alarms and required response (e.g., everybody goes, truck only, engine only, etc.).
Receive notification of multiple alarms, downtown alarms, and other significant emergencies through the Fire Alarm Office.
Record administrative and general information messages that come in over the computer dispatch.
Answer department and outside phone.
Open and closes fire house doors to allow apparatus or Chief's car to depart/return to house.
C. DRIVING
Drive apparatus to and from, and positions apparatus at, emergency scene.
Drive apparatus safely to designated place.
Select most direct and expeditious route to alarm site.
Maneuver and positions apparatus at incident scene.
Obtain knowledge of most direct and expeditious routes and studies them prior to incident response.
Obtain knowledge of traffic laws and street conditions in order to operate the apparatus safely and expeditiously.
Plan route and position based on anticipated actions (e.g., arrival routes) of other companies when driving to multiple alarm calls.
D. PUMP OPERATIONS

Connect or hooks up apparatus to fire hydrant and operates pumps to supply water in appropriate pressure and volume – using hydrant wrenches, couplings, hoses, spanner wrenches, and other tools.
Engage pumps.
Fill hose with water by hydrant pressure.
Connect and lays feeder line to supply water to fire.
Pump sprinkler system and wet or dry standpipe systems.
Connect suction hose between hydrant and engine.
Monitor control panel (e.g., water temperature, oil pressure gauge, fuel gauge, hydrant pressure).
Pump pre-connect hose-line.
Pump master stream (e.g., aerial ladders).
Hook up to ladder pipe to supply water during aerial ladder operations.
Notify officer of any problems which occur while pumping.
Adjust water pressure (by rule-of-thumb, according to pressure chart, and/or Rules and Regulations) in response to calls for more or less pressure.
Pump using specialty nozzles (e.g. drive-in, cellar distributor).
Implement cold weather procedures (e.g., tank circulation) when necessary.
Maintain pressure by adjusting pressure relief valve or automatic pressure governor.
Transfer from pressure stage to volume stage.
Pump booster lines.
Open and flush hydrant to ensure it is functional.
Shut down pump when ordered to by officer.
Check hydrant for proper drainage.
E. HOSE (AND EXTINGUISHER) OPERATIONS
Stretch line or use extinguisher to deliver water, foam and other extinguishing agents to emergency scene.
Operate nozzle at front of hose line and spray water, foam or other agent onto fire or other hazard, or into involved structure, to extinguish, contain and/or control incident.
Locate seat of fire or other hazard (e.g., gas leak) by observing, smelling or listening for smoke, sound, flames, gas, vapors, etc.
Advance or assist in advancing hose to seat of fire or other hazard.
Disconnect hose from bed and attach to discharge gate.
Determine type (size) and number of lengths of hose needed for operation.
Connect to standpipe during high rise incident command.

Connect hose lines to nozzle(s).
Use extinguisher to extinguish, contain and/or control incident.
Select type of extinguisher (e.g., foam, dry-chemical, etc.) needed for incident.
Feed hose line to other fire personnel.
Determine proper nozzle and nozzle setting.
Operate stang on tower ladder to apply water to structures on fire.
Pull hose off hose bed.
Flake out or dekind hose line prior to charging or during extinguishment to ensure proper operation.
F. MECHANICAL LADDER OPERATIONS
Stabilize ladder truck and elevate and operate aerial ladders and platforms in order to rescue victims, provide access for ventilation, operate master stream devices, etc.
Climb mechanical ladders to perform search, rescue and other operations.
Operate ladder from ground controls or from platform controls, while watching for power lines, trees and other overhead obstructions.
Elevate, rotate and extend aerial or tower ladder for supported and unsupported operation, while watching for power lines, trees and other overhead obstructions.
Stabilize elevating apparatus using wheel chocks, stabilizing pads, stabilizing jacks and outriggers.
Operate and direct ladder pipe to supply water during aerial ladder operations.
G. MANUAL LADDER OPERATIONS
Carry, raise, extends and climbs manual ladders to perform search, rescue and other operations.
Extend manual (extension) ladders to reach victims.
Climb manual ladder to perform search, rescue, and other operations.
Determine proper placement of manual ladder at scene.
Determine manual ladder type and size needed at incident scene.
Anchor and secure manual ladder (i.e., tying off) at scene.
Raise and position manual ladder at incident scene.
Carry manual ladder from apparatus to incident scene.
Return manual ladder to apparatus.
H. FORCIBLE ENTRY
Pry open, cut, or break down doors, or otherwise enters structures, vehicles, aircraft and other entrapments in order to search for and rescue victims and provide access to the emergency scene – using axes, halligan tools, etc.
Gain entry into structures using axes, sledge hammers, battering rams, halligan tool and other forcible entry tools.

Cut through surfaces using power saws and other power tools.
Determine best location for forcible entry.
Pry open doors in structures using pry bars, halligan tools, bolt cutters and other tools.
Remove locks or hinges from doors using sledgehammers, battering rams, axes or other forcible entry tools.
Break holes in wooden, brick and masonry walls using sledge hammers, battering rams, axes and other tools.
I. VENTILATION
Open or break windows, chop or cut holes in roofs, breaches walls or doors, and hangs fans in windows or doors to remove heat, smoke and/or gas from structures or entrapments.
Determine best location for venting structure based on location of hazard and fire personnel, roof type, and building construction.
Break windows and other points of entry using axes, ladders and other tools, to ventilate structure.
Cut open walls, roof and other structures to ventilate structure.
Open windows and other points of entry manually or by using pry bars, halligan tools, and other tools, to ventilate structure.
Hang fans from ladders and in doors, windows, and holes in roofs or walls.
Use fans for positive pressure.
J. SEARCH
Search assigned area in order to locate victims and to obtain further information about incident, following standard search procedures.
Search floor or area of fire, or other hazard, for conscious and unconscious victims, sweeping assigned search area with arms, legs or tools.
Search floors above and below fire, or other hazard, including stairwells and bulkheads, for inhabitants who need to be moved or rescued.
View perimeter of the building to determine if there are victims needing assistance at windows, on ledges, or who have jumped.
Identify hazardous conditions in course of search and informs others of the problem.
Determine search procedure or strategy needed to accomplish objectives.
Search structures for seat of fire, or other hazard, and extensions.
K. RESCUE
Assist, hoist, carry or drag victims from emergency area by means of interior access (stairs, hallways, etc.) or, if necessary, by ladders, fire escapes, platforms, or other means of escape – using rescue harnesses, ropes, etc.
Rescue drowning victims using life-saving techniques.
Conduct water rescues (i.e., river rescue, using boats) in accordance with established guidelines.

Evacuate persons from incident scene due to risk of fire, explosion, exposure to hazardous chemicals, etc.
Move heavy objects and obstructions in order to free or gain access to trapped victims or bodies, using air bags, chains and hoists, jacks, shoring materials, hurst tools and other hydraulic tools.
Drag or carries victims from emergency scenes.
Hoist or lowers victims or fire personnel using ropes, knots and rescue harnesses.
Pry, break or cut structures, vehicles, and/or aircraft to free victims involved in accidents, cave-ins, collapsed buildings or other entrapments -- using door openers, jaws, axes and other manual and mechanical equipment.
Instruct persons on upper floors as to appropriate actions (e.g., staying put, ascending to upper floors, descending to lower floors via fire escapes, etc.).
Dig to free victims trapped in tunnels, pipes, excavations, cave-ins or other entrapments using shovels, picks, spades and other equipment.
Place victims onto stretchers, backboards, stokes, etc.
L. SALVAGE
Move and cover furniture, appliances, merchandise and other property; covers holes in structures; stabilizes damaged structural components; and redirects or cleans up water in order to minimize damage -- using plastic and canvas covers, etc.
Tear down or shore up weak and dangerous structural components (e.g, floors, walls, roofs, overhangs and stairs) using hooks, axes, saws and other tools.
Spread salvage covers over property.
Protect the integrity of the incident scene, while performing salvage operations, in case of suspected arson.
Move furniture and other objects to protect from water or other damage.
Remove water from floors using brooms, squeegees, mops, water chutes, catchalls and pumps.
M. OVERHAUL
Open up walls and ceilings, cuts or pulls up floors and moves or turns over debris, in order to check for hidden fires which could rekindle or spread using hooks, axes, saws and pitchforks.
Open ceilings, walls, etc., to expose hot spots and other hazardous conditions with axes, pike poles, etc.
Search for and extinguish any hidden fires by looking, feeling or smelling for fire and smoke.
Check and search open areas, walls, open structures for fire extension.
Remove and neutralize or dispose of flammable or hazardous materials from buildings.
Remove and extinguish burned or smoldering debris from buildings.
Determine whether a smoke detector was present and functional.

N. CLEAN-UP/PICK UP
Pick up, clean and return equipment to vehicle and rolls or folds hose, so that the company can go back in service.
Control and clean up the Fire Department's medical waste products.
Clean and return all tools, equipment, supplies and property in usable condition to appropriate vehicles.
Shut down and drain lines at pumps.
Determine that all hoses used during response to incident are present and accounted for.
Clean hoses using hose washers or brooms and brushes.
Back lines out of structures.
Roll and fold hoses after use and returns them to appropriate vehicle.
Clean the apparatus.
O. FIRST AID
Provide direct medical assistance to persons requiring emergency attention or assists others in providing medical assistance.
Administer CPR if necessary.
Determine priority of emergency medical treatment for victims.
Administer first aid other than CPR.
Operate oxygen and other medical equipment.
Assist EMS personnel in administering medical treatment.
II. STATION DUTIES AND MAINTENANCE
P. EQUIPMENT MAINTENANCE
Check, clean, and maintain personal gear and equipment to ensure proper and safe operation.
Check Self Contained Breathing Apparatus for proper operation and adequate air pressure.
Check medical equipment.
Check turnout gear for safety and structural integrity.
Check the condition of generators, blowers, lights, cords and fans.
Check and maintains power equipment.
Place turnout gear on or near apparatus.
Check extension ladders.
Check hose on apparatus (proper bedding and amount).
Check and perform ordinary maintenance on other portable equipment (e.g., checks oil levels, greases, etc.).
Clean, reload, and test hoses.

Recommend that officer call for repairs on equipment.
Perform annual hose tests.
Inventory and perform regular maintenance on hand tools (e.g., paints, oils or stencils hand tools).
Change over equipment and supplies from one apparatus to another.
Paint other equipment as needed.
Q. APPARATUS MAINTENANCE
Check, clean, and maintain apparatus to ensure proper and safe operation.
Check ability of engine to pump water.
Check engine pumper pressure.
Check the aerial ladder sections, outriggers.
Recommend to officer that apparatus be kept out of service due to mechanical problems.
Perform normal daily apparatus check (e.g., oil, fuel & water levels; proper pressures and lubrications; batteries; lights; sirens; brakes; tires; etc.).
Recommend that officer call for repairs on apparatus.
Perform normal weekly apparatus check (e.g., hydraulic fluid levels).
Equip apparatus with traction devices (e.g., chains) as necessary.
Notify officer of electrical or mechanical problems on apparatus.
Check with Equipment Operator coming off duty regarding condition of apparatus.
Perform annual pump test.
Clean motor and pump on apparatus.
R. FACILITY MAINTENANCE
Check, clean, and maintain house facilities. This includes the performance, or assignment, of routine housekeeping chores.
III. FIRE PREVENTION AND INVESTIGATION
S. INSPECTION OF BUILDINGS & FIRE PROTECTION DEVICES
Inspect buildings for fire prevention/hazardous materials code violations or hazards on a periodic basis or during the course of their activities. Inspects alarms, hydrants, sprinkler systems, etc.
Recognize code violations (e.g., blocked exits, improper storage of chemicals, etc.).
Inspect buildings for code compliance.
Conduct inspections of schools.
Inspect buildings upon request of occupants/owners.
Conduct on-site inspections of fire protection devices (e.g., hydrants, alarms, sprinkler systems, etc.).

T. PRE-FIRE PLANNING
Review or prepare plans in order to provide information regarding hydrant locations, exposures, hazardous materials and other areas or situations of high risk.
Conduct site surveys in district.
Tour buildings in order to identify or verify the presence of an unusual fire hazard or situation.
Recognize a target hazard (e.g., a new high-rise or a building with hazardous materials) that may warrant the development of a pre-fire plan.
Conduct familiarity inspections in district.
Familiarize self with layout of first and second alarm districts.
U. INVESTIGATIONS
Examine incident scene, conducts interviews, collects and preserves evidence, and reviews forms and reports to help determine the cause of a fire or other emergency.
Respond to incidents of suspicious or undetermined origin.
Observe fireground conditions to detect possible arson.
IV. PUBLIC AND COMMUNITY RELATIONS
V. PUBLIC RELATIONS
Engage in activities which have an impact on the department's image in the community. Such activities include providing information to the media, providing assistance and support to civilians seeking help or information, etc.
Deal with distressed individuals at emergency scene.
Meet civilians in the fire station, conducts tours and provides information.
Make public presentations and conducts demonstrations of apparatus and equipment on behalf of the Fire Department.
W. PUBLIC TRAINING & EDUCATION
Oversee, develop, conduct and/or evaluate fire prevention and other educational programs for members of the public.
X. AUDIO-VISUAL PRODUCTION
Operate audio-visual equipment and develop and produce audio-visual materials for internal use or for public broadcasting.
V. PROFESSIONAL DEVELOPMENT
Participate in training drills and classes to enhance job-related skills and abilities. Reads internal memos and bulletins to keep apprised of new developments in departmental operations and procedures.
Maintain knowledge of chemicals and other hazardous materials.
Maintain knowledge of building structures related to fire control.
Attend specialized training sessions (e.g., CPR certification, special schools (e.g., Foam, ICS), etc.).

Attend routine training drills and sessions.
Maintain knowledge of latest firefighting equipment and techniques.
Attend "live-incident" training drills.
Attend external seminars/workshops and college courses to be aware of current developments in the fire service.
Observe training videotapes.
Participate in external agencies and societies (e.g., NFPA).
Act as a superior officer.

Linkage of PAT Events with Essential Tasks from the Job Task Analysis Development & Administration of the Police & Physical Ability Tests for the Commonwealth of Massachusetts Police Events Physical Abilities Test

- 1) Event 1: Getting to the Problem
 - a) Obstacle Run
 - i) Essential Job Functions (from surveys): Pursue a suspect or violator on foot
 - b) Take Down
 - i) Essential Job Functions (from surveys):
 - (1) Physically restrain or control a non-violent individual
 - (2) Physically restrain or subdue a violent or resisting individual
 - c) Handcuffing
 - i) Essential Job Functions (from surveys):
 - (1) Effect an arrest, protect oneself and the public
 - (2) Participate in in-service training including tactical exercises
- 2) Event 2. Resolving the Problem (Trigger Pull)
 - a) Essential Job Functions (from surveys):
 - i) Display and discharge a departmentally approved firearm
 - ii) Participate in in-service training including firearms
- 3) Event 3. Resolving the Problem (Separation Event)
 - a) Essential Job Functions (from surveys):
 - i) Appraise the situation, separate individuals
 - ii) Separate individuals in a fight or disturbance
- 4) Event 4: Removing the Problem (Dummy Drag)
 - a) Essential Job Functions (from surveys):
 - i) Administer immediate care to victim to prevent further injury, trauma, or death

Linkage of PAT Events with Underlying Physiological Requirements Fire Fighter Events Physical Abilities Test

Event 1: Stair Climb

- a) Physiological demands are placed on the cardiovascular and respiratory systems. These demands include:
 - i) increased demand on the lungs to facilitate a greater respiratory rate
 - ii) increased exchange of oxygen and carbon dioxide between the blood and alveoli in the lung
 - iii) increased transport of oxygen and carbon dioxide in the blood
 - iv) more blood pumped through the body from the heart to the lungs and skeletal muscles
 - v) increased exchange of oxygen and carbon dioxide from the blood to the active skeletal musculature
 - vi) increased generation of energy in the form of adenosine triphosphate (ATP) in the muscle cells
 - vii) greater demand for removal and buffering of hydrogen ions generated during the production and utilization of energy in the muscle
 - viii) greater need to maintain thermal balance through decreased vasoconstriction and increased vasodilation of sweat glands in the skin resulting in an increased sweating rate
- b) Activation of the skeletal system to generate muscular strength and endurance, which requires:
 - i) contraction of the abdominal muscles (rectus abdominus, external obliques, internal obliques, serratus and erector spinae)
 - ii) contraction of the lower body and leg muscles (adductor longus, rectus femoris, vastus lateralis, vastus medialis, soleus, gastrocnemius, semitendinosus, semimembranosus, biceps femoris, gluteus maximus, gluteus medius)
 - iii) generation of ATP to facilitate muscle contraction and force generation
 - iv) removal and buffering of hydrogen ions generated during the production and utilization of energy in the contracting muscle

Event 2: Ladder Event

- a) Physiological demands are placed on the cardiovascular and respiratory systems, which include:
 - i) increased demand on the lungs to facilitate a greater respiratory rate
 - ii) increased exchange of oxygen and carbon dioxide between the blood and alveoli in the lung
 - iii) increased transport of oxygen and carbon dioxide in the blood
 - iv) more blood pumped through the body from the heart to the lungs and skeletal muscles
 - v) increased exchange of oxygen and carbon dioxide from the blood to the active skeletal musculature
 - vi) increased generation of energy in the form of ATP in the muscle cells
 - vii) greater demand for removal and buffering of hydrogen ions generated during the production and utilization of energy in the muscle
 - viii) greater need to maintain thermal balance through decreased vasoconstriction and increased vasodilation of sweat glands in the skin resulting in an increased sweating rate.
- b) Physiological requirements also include muscular strength, anaerobic power and flexibility, which require:
 - i) primarily contraction of the lower body and leg muscles (adductor longus, rectus femoris, vastus lateralis, vastus medialis, soleus, gastrocnemius, semitendinosus, semimembranosus, biceps femoris, gluteus maximus, gluteus medius)

- ii) generation of ATP to facilitate muscle contraction and force generation
- iii) buffering and removal of hydrogen ions generated during the production and utilization of energy in the contracting muscle
- iv) ability of joints and muscles of the legs, back, and trunk to complete the required range of motion

Event 3: Hose Advance

- a) Physiological requirements include muscular strength, anaerobic power, muscular endurance and flexibility, which require:
 - i) the muscle cells to respond to neural impulses in the form of action potentials that signal the proteins in the muscle cell to interact and generate force
 - ii) requires the muscle cells to generate energy for contraction from stored ATP and phosphocreatine and through conversion of glycogen to lactate in the muscle cell
 - iii) requires the muscles and blood to buffer the increased acidity (lactic acid and hydrogen ions) resulting from muscle work
 - iv) requires the joints and muscles of the legs, back, and trunk to complete the required range of motion

Event 4: Forcible Entry

- a) Physiological requirements primarily include muscular strength and coordination and require:
 - i) the muscle cells to respond to neural impulses in the form of action potentials that signal the proteins in the muscle cell to interact and generate force
 - ii) the muscle cells to generate energy for contraction from stored ATP and phosphocreatine and through conversion of glycogen to lactate in the muscle cell
 - iii) the muscles and blood to buffer the increased acidity (lactic acid and hydrogen ions) resulting from muscle work
 - iv) the muscles of the chest, back, and arms (deltoid, pectoralis major, supraspinatus, latissimus dorsi, teres major, biceps brachii, brachialis, triceps brachii and brachioradialis) to generate force
 - v) sensory input from the cerebellum and upper brain to coordinate the physical action and neural generation of a signal for muscle contraction.

Event 5: Search

- a) Physiological requirements include muscle flexibility, proprioception and kinesthetic sense, which require:
 - i) the joints and muscles of the legs, back, and trunk to complete the required range of motion
 - ii) requires input from the motor cortex, corticospinal tract and brain stem to control reticular and vestibular movement

Event 6: Rescue

- a) Physiological requirements include muscular strength, anaerobic power, muscular endurance and flexibility, which require:
 - i) the muscle cells to respond to neural impulses in the form of action potentials that signal the proteins in the muscle cell to interact and generate force
 - ii) the muscle cells to generate energy for contraction from stored ATP and phosphocreatine and through conversion of glycogen to lactate in the muscle cell
 - iii) the muscles and blood to buffer the increased acidity (lactic acid and hydrogen ions) resulting from muscle work
 - iv) the joints and muscles of the legs, back, and trunk to complete the required range of motion

Event 7: Ceiling Hook (Pike Pole)

- a) Physiological requirements include muscular strength, anaerobic power, muscular endurance and flexibility, which require:
 - i) the muscle cells to generate energy for contraction through stored ATP and phosphocreatine and through conversion of glycogen to lactate in the muscle cell
 - ii) the muscles and blood to buffer the increased acidity (lactic acid and hydrogen ions) resulting from muscle work
 - iii) the joints and muscles of the legs, back, arms, hands and trunk to complete the required range of motion