

# Cadillac Fire Department



## Agility Manual

**City of Cadillac**  
**Cadillac Fire Department**

**ORIENTATION BOOKLET**

**Firefighter Physical Performance**

**Test Events**

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## INTRODUCTION

The following pages describe the seven exercises of the FIREFIGHTERS PERFORMANCE TEST administered by the CADILLAC FIRE DEPARTMENT as part of the selection process for firefighters. These exercises have been developed to assess your suitability on a number of basic physical abilities for the job of firefighter. They are simulations of actual aspects of a firefighter's job, but, they do not require previous firefighter training.

You should read the description of these tests carefully and completely. The more you now about what will be expected of you on the test date, the better you will perform. In addition to this booklet, you will receive a complete orientation on the exercises on the day of the test.

You will perform each exercise in fire protective clothing (e.g. coat, helmet and gloves). If you own or have access to this clothing, please feel free to use it. Otherwise, the Cadillac Fire Department will furnish this equipment. You should wear street clothing that is functional for physical exertion, not restrictive to body movements and appropriate to the weather. Most body surfaces should be covered to minimize abrasions and sticking to the turnout gear, which can become damp with repeated use. Suggested foot gear is athletic shoes. Avoid having jewelry, loose hair styles, purses or other objects to carry around or keep track of.

There is a time limit for each event and adequate time is given to complete these events. You will either pass or fail the event. You will not receive additional "points" for speed. While you have to "hustle", running is expressly forbidden (you can be disqualified for running through an exercise).

You will be given two trials, if necessary, on each event. If you fail to complete the event on the first trial, you will be given a second trial after at least five minutes rest. If you can not complete the event in the second trial, you will be asked to sign a withdrawal from the physical performance test and will not be considered further during this selection process.

## SUMMARY OF FIREFIGHTER PHYSICAL PERFORMANCE TEST EVENTS

Candidates who participate in the physical performance test will be required to complete the following events. While there will be a time limit for each event, speed is not a major factor in scoring test performance on most events and adequate time is given. The scores are based on whether the person can complete the required event.

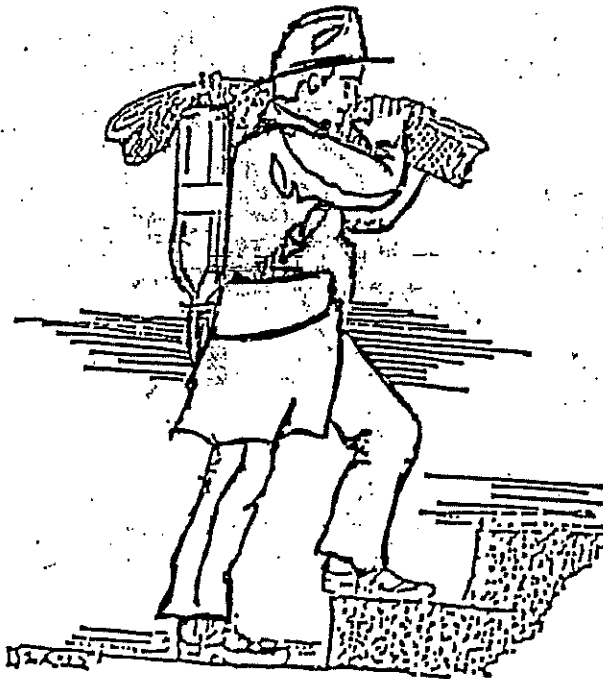
All events will be done wearing complete firefighting gear, including coat, helmet, and self-contained breathing apparatus. Candidates will wear tennis or running shoes and work gloves rather than firefighting gloves, which will be provided.

1. EQUIPMENT CARRY: Carry three separate items up two flights of stairs and down again. Total weight of the three separate items is approximately 130 pounds.
2. HOSE DRAG / COUPLE: Pull section of 2 ½ hose that weight approximately 50 pounds each a distance of 100 feet and couple them with a fixed connection (male / female connection).
3. LADDER OPERATION: Remove a 14 foot ladder from its mounting on the side of a fire truck and position it against a wall; climb the ladder, return to the ground and remount the ladder on the truck.
4. SIMULATED RESCUE: Carry or drag a dummy weighing approximately 120 pounds up and down one flight of stairs from a starting line and ending point 20 feet from the stairs.
5. JOIST WALK: Carrying a 50 pound coil of hose, walk the length twice of a 24 foot ladder laid on the ground, stepping only on the side rails and without stepping off the ladder.
6. FORCIBLE ENTRY: Swing a hammer 15 times at a ground-level target, using a full overhead two-arm swing.
7. AERIAL CLIMB: Climb an aerial ladder for about 35 feet at a 45 degree angle and back down.

## EVENT NO. 1 – EQUIPMENT CARRY

**SIMULATES:** Advancing equipment into a building at a fire scene. Tests balance, awareness of body position and movements; lifting strength and stamina.

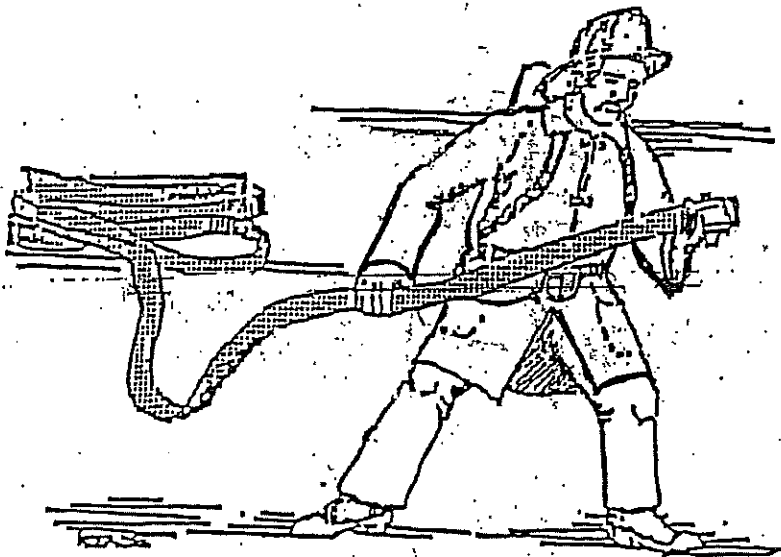
**PROCEDURE:** Carry an extinguisher 25 feet to stairway, walk up two flights of stairs, set item down on designated spot and return down stairs to start line. Return up stairs empty handed and bring item back to start line. Repeat procedure with a Self-Contained Breathing Apparatus and 50 feet of 2 ½ hose.



## EVENT NO. 2 – HOSE DRAG / COUPLE

**SIMULATES:** Actual moving and coupling of hoses at a fire scene. Tests eye-hand coordination; manual dexterity.

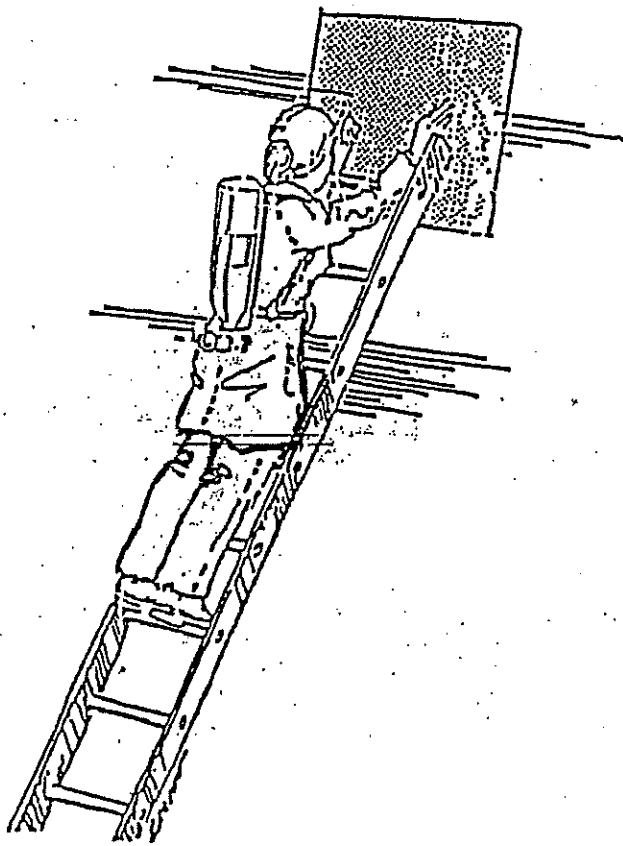
**PROCEDURE:** Pull sections of hose which weigh approximately 50 pounds each a distance of 100 feet and couple them with a fixed



## EVENT NO. 3 – LADDER OPERATION

**SIMULATES:** Positioning and climbing the one person ladder at a fire scene. Tests eye-hand position and movement.

**PROCEDURE:** Remove a 14 foot ladder from its mounting on truck, position it against a wall, climb the ladder, return to the ground and remount the ladder on the truck.

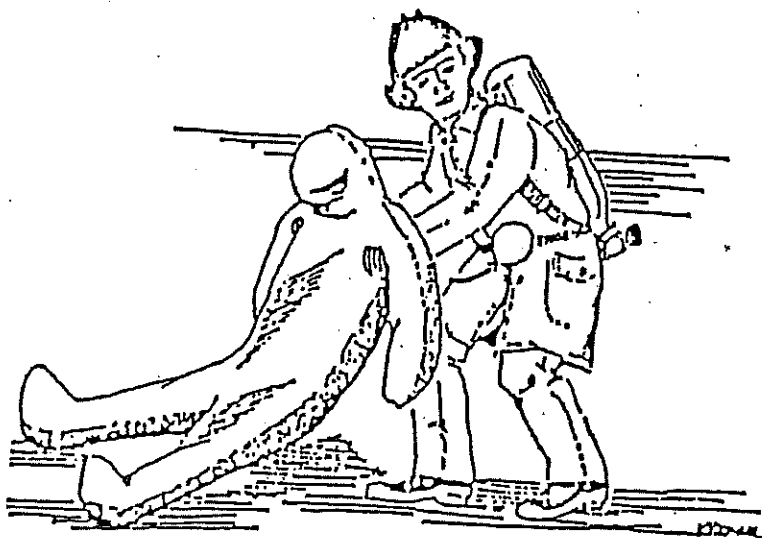




EVENT NO. 4 - SIMULATED RESCUE

**SIMULATES:** Rescue of an injured person at an emergency scene. Tests lifting strength; stamina in maintaining muscular exertion; balance.

**PROCEDURE:** Carry or drag a dummy weighing approximately 120 pounds up and down one flight of stairs from a starting and ending point 50 feet from the stairs.



EVENT NO. 5 - JOIST WALK

**SIMULATES:** Walking on attic or unfinished joist construction at a fire scene, while carrying equipment. Tests balance, lifting strength, awareness of body position and movement.

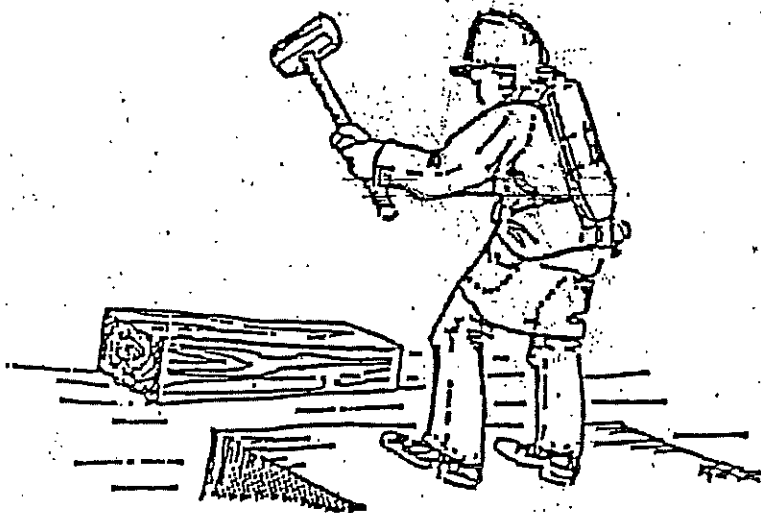
**PROCEDURE:** Carry a 50 pound coil of hose, walk the length twice of a 24 foot ladder laid on the ground, stepping only on the side rails and without stepping off the ladder.



## EVENT NO. 6 – FORCIBLE ENTRY

**SIMULATES:** Use of an axe to break into a building or to create ventilation openings in floors, roofs, etc., at a fire scene. Tests eye-hand coordination; upper body mobility and control; repetitive maximum exertion.

**PROCEDURE:** Swing a fire axe (hammer) 15 times at a ground-level target, using a full overhead 2 arm swing.



## EVENT NO. 7 – AERIAL CLIMB

**SIMULATES:** Using aerial device to attain fire suppression or rescue access. Tests awareness of body position and movement; ability to deal with unprotected heights.

**PROCEDURE:** Start at aerial ladder turntable, climb ladder one rung at a time, placing hands on rungs, until the top run is reached. Touch top rung, then return down the ladder one rung at a time to the turntable. A safety belt will be worn and a safety line attached to belt.

## SAMPLE STRENGTH – CONDITIONING PROGRAM

### How to Improve Your Likelihood for Becoming a Fire Fighter for the Cadillac Fire Department

- I. The nature of fire fighting and how the examination process relates to the nature of fire fighting:
  1. Fire Fighting can be extremely arduous work.
    - a. The implements of the trade are heavy and the fire fighter must be capable of repeatedly handling those implements over prolonged periods of time.
    - b. Fire spreads rapidly, so firefighters must work quickly. This urgency places a considerable burden on a firefighter's endurance.
    - c. Fire fighting is always conducted while wearing heavy protective clothing and a self-contained breathing apparatus (total weight is about 55 pounds).
    - c. Protective clothing greatly retards the body's ability to cool itself. Physical fitness (primarily cardio respiratory fitness in this case) greatly influences how well and how safely a firefighter can cope with the potentially dangerous heat stress.
  2. The weight of the protective gear in itself increases the difficulty of "routine" tasks by about 33%, which again underscores the importance of strength and stamina.
  3. Fire fighting is periodically conducted in an extremely hot and toxic environment. This greatly increases the physical and mental stress associated with performing otherwise routine fire fighting tasks.

4. The firefighter entrance examination process is designed to ensure that those who are selected for entrance in the Fire Department possess enough physical strength, stamina and learning ability to successfully complete the firefighter training, and then function as a successful firefighter on the job.

II. Preparation for the physical performance portion of the entrance examination and for the physical demands inherent to the Fire Department.

1. The strength requirements of fire fighting have been standardized in terms of several common weight lifting exercises. These strength requirements are based on extensive research by a respected exercise physiologist. Experience with a major city's fire department pre-recruit program indicates that the strength requirements are valid. (job-related)

The following table lists the strength requirements. An explanation of the table appears below.

<u>EXERCISE</u>	<u>MINIMUM</u>	<u>GOAL</u>	<u>DESIRABLE</u>
Military Press	95 lbs.	110 lbs.	120 lbs.
Upright Row (Chin Lift)	105 lbs.	115 lbs.	125 lbs.
Biceps Curl	100 lbs.	110 lbs.	120 lbs.
Squat	180 lbs.	190 lbs.	200 lbs.
Grip	115 lbs.	120 lbs.	125 lbs.

EXPLANATION OF TABLE

The strength level listed under the "minimum" column gives the lowest strength recommended for an applicant in order to successfully perform as a firefighter. If you are unable to military press 95 lbs., upright row 105 lbs., curl 100 lbs., and squat 180 lbs. (one repetition each), it is extremely unlikely that you would pass the physical performance test or be able to successfully perform the firefighter position.

The strength level listed under the "Goal" column represents the level that one should make effort to achieve (do not be satisfied with minimum).

When these standards were developed, it was predicted that the average successful applicant would be about as strong as is shown under the "Desirable" column. This was subsequently checked and it was found that the average successful applicant was actually a little stronger than predicted. The range of strength among applicants indicates that the weakest (successful) applicants did not fall below the minimum strength standards (except in one case, however, that individual exceeded the minimum by a large margin in the other lifts).

### OTHER STRENGTH STANDARDS

Other strength standards an applicant should strive to achieve are as follows:

Be capable of at least four chin-ups. An average firefighter who weighs 187 lbs. Could perform four or more chin-ups. In fact, for a 140 lb. Person to be that strong in an absolute sense, about 15 chin-ups would have to be performed.

2. Endurance (stamina) requirements of fire fighting:

The endurance requirements of fire fighting have been standardized in terms of the time which is required to run 1 ½ miles. In order to be confident of having sufficient stamina to compete in firefighter training, you should be able to run 1 ½ miles (on level terrain) in 11:45 or less.

3. Relationship of body size to strength and recommendations based on this relationship:

Strength and the potential for developing strength are obviously related to the amount of muscle which a person possesses. That portion of your body weight which is NOT composed of fat (i.e. the fat-free body weight, also called "Lean" body weight) is highly related to how much muscle mass you possess.

4. Initial strength level vs. potential for strength improvement:

Generalization: The stronger you are now, the greater is your likelihood for being able to reach the strength goals listed in the table.

### III. WEIGHT LIFTING TERMINOLOGY:

1. REPETITION (REP)

One (1) lift through the complete range of motion of an exercise.

2. SET

A specified number of repetitions, i.e., 1 set of 10 repetitions; 1 set of 8 repetitions, etc.

3. REPETITION MAXIMUM (RM)

Best explained through example: "Perform a set of 10 RM" means to use an amount of weight which allows the performance of 10, but no more than 10 repetitions.

"Perform a set of 5 RM" means to use a weight which is heavy enough to permit 5, but not 6 REPS.

1 RM refers to the maximum amount of weight which can be correctly lifted.

### IV. STRENGTH PROGRESSION TRAINING --- FIRST 4 - 6 WEEKS

TUESDAY; THURSDAY; SATURDAY ROUTINE

(NOTE) Saturday is an "optional" day, but if at all possible, do work out on Saturday.

#### Exercises:

1. Bent knee sit-ups
2. Curl-ups
3. Back extension
4. Side-ups



5. Trunk rotation
6. One-leg-at-a-time leg extension (last 10 degrees of range of motion only)
7. Leg curls
8. Calf raises

(NOTE) These exercises are very important and should become an integral part of the workout.

The purpose of these exercises are:

1. Preparation so that other exercises (squats, lifts) can be SAFELY performed.
2. If continued over a long period of time. Exercises 1, 2, 3, and 4 help reduce the likelihood of sustaining a back injury in the course of heavy occupational lifting.

Format:

For exercises 1, 2, 3, 4, 5, and 8, start with as many repetitions as can be comfortably performed (do 3 sets). Goal is to systematically progress to a ability to do 3 sets of 25 repetitions with reasonable ease.

For exercise 6, start with an amount of weight which allows 10 repetitions to be performed with minimal distress. Do 3 sets. Gradually progress towards being able to do 20 sets REPS with reasonable ease. Then add 5 lbs., drop back in REPS to 15 – 17 and begin progressing again. Goal is to be able to perform 3 sets of 20 REPS using 1/3 of body weight.

For exercise 7, proceed as in Step 2, goal is to be able to perform 3 sets of 20 REPS with 1/6 of body weight.

It is important to reach the goals set for exercises 5, 6, and 7 before adding squats to the strength training format. However, DO NOT try to over accelerate progress towards those goals.

## V. STRENGTH TRAINING PROGRESSION — FIRST 4 – 6 WEEKS

### MONDAY; WEDNESDAY; FRIDAY ROUTINE

#### Exercises:

1. Bench press
2. Seated military press
3. Upright row
4. Chin-ups or LAT pull
5. Curls
6. Shoulder Shrugs
7. Wrist curls
8. Wrist Extension
9. Wrist radial deviation
10. Wrist ulnar deviation
11. Wrist rotation

#### Set and Repetitions:

For exercises 1, 2, 3, and 5, determine (by trial and error) the amount of weight with which 10 – 11 repetitions, but no more than 10 – 11 repetitions, can be performed. Perform 3 sets in the following manner for exercises 1, 2, 3, and 5:

- First set: Use  $\frac{1}{2}$  of 10 – 11 RM weight; do 10 REPS.  
Second set: Use  $\frac{3}{4}$  of 10 – 11 RM weight; do 10 REPS.  
Third set: Use full 10 – 11 RM weight; do as many REPS  
As possible.

Note: As soon as it is possible to do ten (10) 12 – 13 REPS with what was previously a 10 RM weight, increase the weight of the barbell  $2\frac{1}{2}$  to 5 lbs.

For exercises 7 through 11, start with 3 sets of 10 REPS with an amount of weight with which about 15 REPS can be performed (i.e. stay pretty light on these). GRADUALLY begin working toward being able to do 20 REPS (DO NOT get in a hurry to do this). After 20 REPS can be comfortably performed, increase the weight by  $2\frac{1}{2}$  to 5 lbs., drop back to REPS of 15 – 17, and begin working gradually toward 20 REPS again. It is strongly recommended that exercises 7 through 11 become an on-going part of the several weight lifting routines.

If exercise 4 is LAT pulls, proceed as in steps 1, and 2. If chin-ups (even just a few) can be performed, do 2 sets of as many as is possible.

For exercise 6, do 1 set of about 20 REPS with an amount of weight that would permit 22 – 23 REPS.

## VI. STRENGTH PROGRESSION TRAINING - SECOND 4 – 6 WEEKS

### MONDAY – WEDNESDAY – FRIDAY ROUTINE

#### Exercises:

1. Bench press
2. Standing military press
3. Upright row
4. Chin-Ups or LAT pull
5. Horizontal rowing
6. Curls
7. Forward rise
8. Triceps press
9. Shoulder shrugs
10. Wrist / Forearm routine

#### Sets and Repetitions

For exercises 1, 2, 3, 5, 6, and 8, do two (2) sets of 8 – 9 RM (i.e., by trial and error, find the amount of weight which enables the performance of 8 or 9 REPS at most).

For exercise 7, do two (2) sets of 10 – 12 REPS.

For exercise 9, do two (2) sets of 20 RM.

Note: As soon as 2 – 3 additional REPS can be performed, increase the amount of weight which is used by 2 ½ to 5 lbs.

### TUESDAY – THURSDAY – SATURDAY ROUTINE

#### Exercises and Format:

Same as for first 4 – 6 weeks, except, add SQUATS of 20 REPS of one-leg-at-a-time extension (last 10 degrees of range of motion) can be performed with 1/3 of body weight. If squats are added, do one (1) set of 15 REPS using an amount of weight which which about 20 REPS can be performed for the first two weeks. For the next two weeks, increase the weight enough so that not more than 16 or 17 REPS can be performed, do two (2) sets of 15 REPS.

VII. STRENGTH PROGRESSION TRAINING - THIRD 4 – 6 WEEKS AND THEREAFTER

MONDAY – WEDNESDAY – FRIDAY ROUTINE:

Exercises:

Exercises for Monday – Wednesday – Friday are the same as for the Second 4 – 6 weeks except add CONCENTRATION CURLS after forward rise. Format is the same as for Second 4 – 6 weeks except do three (3) sets.

EXCEPTIONS:

2 (two) sets 10 – 12 REPS for concentration curls  
1 (one) set 20 RM for shoulder shrugs  
Continue wrist / forearm workout

TUESDAY – THURSDAY – SATURDAY ROUTINE:

Exercises:

Exercises and format are the same as usual. If squats were done during Second 4 – 6 weeks, add dead lifts. Do two (2) sets of 15 REPS with a weight which would allow about 20 REPS (first 2 weeks). Thereafter, do two (2) sets of 15 REPS with a weight which would allow 16 or 17 REPS.

VIII. ENDURANCE TRAINING

Establishing the priority of endurance training in the workout schedule:

The Cooper mile and one-half run test can be used to determine whether or not endurance training should be stressed as a part of the condition program.

On a flat, level surface, run 1 ½ miles as fast as possible. (Do not neglect warm-up, stretching and cool down).

If elapsed time is 12 minutes or less, do not stress endurance training. Instead, run 20 – 30 minutes every third day at 70 to 90 % of the running pace which was sustained during the 1 ½ mile run test.

Example:

If 1 ½ miles were run in 12 minutes, maximum run pace was 12 minutes.  
1 ½ mile = 8 minute mile.

To run at 70% of maximum run pace, 8 minute mile times 70% = 11.4 minutes per mile training pace.

To run at 90% of maximum run pace, 8 minute mile times 90% = 8.9 minutes per mile training pace.

If a specified distance is run in training sessions, the total time which is set as a target for the run is simply computed by multiplying the number of miles to be run by the average minutes per mile pace which is to be sustained.

If the elapsed time for 1 ½ mile run is 15 minutes or more, endurance training should definitely be stressed. Training session should be 3 – 4 days per week; 20 – 26 minutes per session (lower intensity requires longer duration, at least 30 minutes; higher intensity means shorter duration; 8.3., 20 minutes).

The goal is to be able to run 1 ½ miles in 11:45 (minutes / seconds).

NOTES:

1. Obtain high quality pair of running shoes.
2. Warm-up; warm-down; and stretching routines MUST be included to help prevent debilitating injuries.
3. Running is not the only endurance option. Bicycling, swimming, etc., will also serve.

## EVENT TIME LIMITS

<u>EVENT</u>	<u>TIME LIMIT</u>
1. Equipment Carry	330 seconds
2. Hose Drag / Couple	120 seconds
3. Ladder Operation	75 seconds
4. Simulated Rescue	180 seconds
5. Joist Walk	65 seconds
6. Forcible Entry	20 seconds
7. Aerial Climb	Pass / Fail (no time limit) (Generally five minutes)

CITY OF CADILLAC

PHYSICAL PERFORMANCE EXAMINATION  
Candidate Score Sheet

NAME \_\_\_\_\_

DATE \_\_\_\_\_

NOTE: Your score is based on completing each event within the time limit.

	TIME	TIME	PASS	SCORER'S NAME
	FIRST TRIAL	SECOND TRIAL	FAIL	
1. Equipment Carry				
2. Hose drag / couple				
3. Ladder operation				
4. Simulated rescue				
5. Joist walk				
6. Forcible entry				
7. Aerial climb				

ACCEPTANCE OF SCORES:

I certify that to the best of my knowledge, the above scores are correct.

Signature: \_\_\_\_\_  
Candidate

WITHDRAWAL STATEMENT:

I acknowledge that I was given two opportunities to successfully complete Event # \_\_\_\_\_ and that I was unable to do so. I understand that this disqualifies me and eliminates me from further consideration for the position of firefighter during the current selection process.

Witness: \_\_\_\_\_ Signature \_\_\_\_\_  
Candidate

\_\_\_\_\_ Date \_\_\_\_\_  
Field Coordinator





CADILLAC FIRE DEPARTMENT  
PHYSICAL PERFORMANCE TEST

WAIVER AND RELEASE

\_\_\_\_\_  
Name of Candidate

\_\_\_\_\_  
Date of test/practice

Full-time/Part-time Firefighter (Circle title of position)

I, \_\_\_\_\_, having filed an application to participate in examinations to be held by the Cadillac Fire Department for the position of full-time/part-time firefighter, and having been advised that as part of these examinations it will be necessary for me to demonstrate my strength, endurance and physical agility in a series of tests, do hereby and in consideration of the City of Cadillac having permitted me to participate in such examinations, waive and release the City of Cadillac from any and all claims whatsoever that might accrue or arise as a result of participating in such examinations. I make this release for myself, my heirs, executors and administrators and do hereby release the City of Cadillac and all of its employees or agents from any or all liability for damages incurred as a result of these tests.

\_\_\_\_\_  
(Applicant to write in his/her own hand, "I certify that I have read the forgoing Waiver and Release and understand its provisions.")

\_\_\_\_\_  
Signature of Candidate

\_\_\_\_\_  
Date