

**Office of the State Fire Marshal
Division of Personnel Standards & Education
1035 Stevenson Drive
Springfield, IL 62703-4259**

**FIRE SERVICE VEHICLE OPERATOR
INSTRUCTOR REFERENCE MANUAL
2014**



PURPOSE AND SCOPE

- The enclosed packet contains the objectives, practical exam evolution sheets and answer key forms required for Fire Service Vehicle Operator certification through the Office of the State Marshal, Division of Personnel Standards and Education.
- The attached general instructional objectives and specific learning outcomes have been prepared to support educational activities designed to train Illinois fire service personnel to the Certified Fire Service Vehicle Operator level.
 - Each objective is a statement of the skills and/or knowledge a person must achieve to attain this level of certification from the Illinois Office of the State Fire Marshal, Division of Personnel Standards and Education.
- The Fire Service Vehicle Operator Certification program has been referenced against the following National Fire Protection Association (NFPA) standards:
 - NFPA 1002, *Standard for Fire Apparatus Vehicle Driver/Operator Professional Qualifications*, 2014 Edition
 - NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, 2013 Edition
 - NFPA 1451, *Standard for a Fire and Emergency Service Vehicle Operations training Program*, 2013 Edition
- It is not the intent of this program to restrict any jurisdiction from exceeding these requirements.
- Written examinations, quizzes and performance evaluations should be correlated and referenced to specific learning outcomes or objectives.
- The Authority Having Jurisdiction (AHJ) is defined as the Fire Service Vehicle Operator candidate's employing fire department.

APPROVED TEXTS FOR USE IN THE FIRE APPARATUS ENGINEER PROGRAM

TITLE	PUBLISHER
Fire Service Pump Operator	Jones & Bartlett
Pumping Apparatus Driver/Operator, 2 nd Edition*	IFSTA
Aerial Apparatus Driver/Operator, 2 nd Edition*	IFSTA
Emergency Vehicle Driver Training (EVDT)	Volunteer Firemen's Insurance Services, Inc.

* Departments/academies choosing to use the IFSTA manuals must use both the Pumping and Aerial Apparatus Driver/Operator manuals to satisfy the NFPA 1002 requirements.

- Instructors are to evaluate and choose among the approved texts for use in their program.
 - In some cases, quizzes, tests, handouts, Power Point presentations and on-line programs are available from the publishers.
- All tested objectives come directly from NFPA 1002, 2014 Edition.
- Any objective not specifically listed in NFPA 1002, 2014 Edition will be included in this packet.
- Refresher training is recommended every 3 years and as new apparatus/vehicles are put into service.

PREREQUISITES FOR CERTIFICATION

1. Member of an organized fire department or brigade according to the Illinois Administrative Code, Section 141.370
2. Completion of an approved OSFM Fire Service Vehicle Operator course, consisting of a minimum of 12 student contact hours.
3. Pass the State-administered written examination and locally-administered Driving Practical Exam.
4. Possess, at a minimum, a valid Class B, Non-CDL Illinois Driver's License (or equivalent, if not an Illinois resident).

NFPA 1002
Chapter 4 General Requirements

- 4.2.1** Perform routine tests, inspections, and servicing functions on the systems and components specified in the following list, given a fire department vehicle, its manufacturer's specifications, and policies and procedures of the jurisdiction, so that the operational status of the vehicle is verified:
- (1) Battery(ies)
 - (2) Braking system
 - (3) Coolant system
 - (4) Electrical system
 - (5) Fuel
 - (6) Hydraulic fluids
 - (7) Oil
 - (8) Tires
 - (9) Steering system
 - (10) Belts
 - (11) Tools, appliances, and equipment
- 4.2.2** Document the routine tests, inspections, and servicing functions, given maintenance and inspection forms, so that all items are checked for operation and deficiencies are reported.
- 4.3.1** Operate a fire apparatus, given a vehicle and a predetermined route on a public way that incorporates the maneuvers and features that the driver/operator is expected to encounter during normal operations, so that the vehicle is operated in compliance with all applicable state and local laws and departmental rules and regulations.
- 4.3.2** Back a vehicle from a roadway into restricted spaces on both the right and left sides of the vehicle, given a fire apparatus, a spotter, and restricted spaces 12 ft (3.7 m) in width, requiring 90-degree right-hand and left-hand turns from the roadway, so that the vehicle is parked within the restricted areas without having to stop and pull forward and without striking obstructions.
- 4.3.3** Maneuver a vehicle around obstructions on a roadway while moving forward and in reverse, given a fire apparatus, a spotter for backing, and a roadway with obstructions, so that the vehicle is maneuvered through the obstructions without stopping to change the direction of travel and without striking the obstructions.
- 4.3.4** Turn a fire apparatus 180 degrees within a confined space, given a fire apparatus, a spotter for backing up, and an area in which the vehicle cannot perform a U-turn without stopping and backing up, so that the vehicle is turned 180 degrees without striking obstructions within the given space.
- 4.3.5** Maneuver a fire apparatus in areas with restricted horizontal and vertical clearances, given a fire apparatus and a course that requires the operator to move through areas of restricted horizontal and vertical clearances, so that the operator accurately judges the ability of the vehicle to pass through the openings and so that no obstructions are struck.
- 4.3.6** Operate a vehicle using defensive driving techniques, given an assignment and a fire apparatus, so that control of the vehicle is maintained.

- 4.3.7** Operate all fixed systems and equipment on the vehicle not specifically addressed elsewhere in this standard, given systems and equipment, manufacturer's specifications and instructions, and departmental policies and procedures for the systems and equipment, so that each system or piece of equipment is operated in accordance with the applicable instructions and policies.

LEGAL ASPECTS

- A. It will be the responsibility of the instructor to research and provide information regarding Federal, State and local laws and regulations as they pertain to the operation of emergency vehicles in within the AHJ.
- B. OSHA regulations.
- C. Organizational policies, procedures, and guidelines.
- D. Legal principles
 - 1. Emergency vehicle operators are subject to all traffic laws unless a specific exemption is provided.
 - 2. Exemptions for emergency vehicle operators apply ONLY when the emergency vehicle is responding to a true emergency.
 - 3. Emergency vehicle operator can be found criminally or civilly liable if they are operating under the provisions of an exemption.
- E. Legal terms relevant to the emergency vehicle operator
 - 1. Due regard
 - i. A reasonable careful person performing similar duties and under similar circumstances would act in the same manner.
 - 2. Gross negligence
 - i. The reckless disregard of the consequences of an act to another person.
 - ii. Occurs when a person's actions (or lack of) result in the failure to exercise even a slight degree of care.
 - 3. Negligence
 - i. The legal deficiency or wrong which results whenever a person fails to exercise that degree of care which a prudent person would exercise under similar circumstances.
 - ii. May be slight, ordinary, or gross.
 - 4. True emergency
 - i. A situation in which there is a high probability of death or serious injury to an individual.
 - 5. Vicarious liability
 - i. The legal ability placed on one person for the acts committed by another.

6. Willful and wanton
 - i. Intentional or with careful indifference.
 - ii. Considered the most serious form of negligence.

F. Specific driving laws that affect the emergency vehicle operator

1. Traffic laws are based on Illinois law and address the following items:
 - i. Commercial Driver's License (CDL) requirements.
 1. Class B, Non-CDL
 - ii. Exemptions granted to emergency vehicle operators.
 - iii. Requirements for members of the public.
 - iv. Requirements for emergency service personnel operating privately-owned vehicles when responding to an emergency.
2. 625 ILCS – Illinois Vehicle Code
 - i. 5/11-205(c)(d)(e) – Public officer and employees to obey Act – Exceptions
 - ii. 5/11-1421 – Conditions for operating ambulances and rescue vehicles
 - iii. 5/12-215 – Oscillating, rotating or flashing lights on motor vehicles
 - iv. 5/12-601(b) – General speed restrictions
3. National rules and regulations
 - i. U.S. Department of Transportation, Federal Motor Carrier Safety Administration
 1. <http://www.fmcsa.dot.gov/rules-regulations/rules-regulations.htm>

COMPETENCY COURSE & DRIVING REQUIREMENTS

A. Course layout is based on NFPA 1002, Appendix A.

1. Course overview

- i. The driving course is set up in an area that is ideally 300 feet long and 250 feet wide.
 - ii. The widths of straight lanes are 10 feet, or can be as narrow as 9 feet.
 1. The longer lane for the lane change should gradually reduce from 10 feet to 9 feet.
 2. Lane changes are set up for both right and left shifts.
 - a. The space between lanes should be increased by 20 feet for vehicles with a wheel base over 220 inches.
 - iii. The serpentine is set with 25-foot limitations to either side of center.
 1. Vehicles with 170 inch wheel base
 - a. Cones are set 35 feet apart
 2. Vehicles with a wheel base between 170 and 220 inches
 - a. Cones are set 40 feet apart
 3. Vehicles with a wheel base over 220 inches
 - a. Cones are set 45 feet apart
 - iv. The confined space base size is 50 feet wide by 100 feet long.
 1. This can be varied based on the length of the vehicle.
 - v. The course should be approached as a team effort.
 1. Spotters should be utilized.
2. Introduce trainee to the emergency vehicles he/she may be driving.
 3. Identify strengths and weaknesses of the trainee and allow him/her to build confidence.
 4. Specific task that will be measured by competency course training and the purpose of those exercises.
 - i. Straight line exercise
 1. To familiarize the emergency vehicle driver with operating the vehicle within close quarters both in forward and reverse directions at a steady speed.
 2. To enable the driver to adjust the mirrors for proper viewing, make minor adjustments in steering, and gain confidence in traversing a restricted area.
 - ii. Confined space turnaround exercise
 1. To allow the driver to become familiar with the turning radius of the vehicle.

2. To permit the driver to interpret depth perception involving the placement of the rear of the vehicle as seen through the vehicle's mirrors.
- iii. Loading / alley dock exercise
 1. To familiarize the driver with positioning the emergency vehicle to back into a confined space.
 2. To judge depth perception and distance using the vehicle's mirrors to position the rear of the vehicle at or close to a fixed point.
- iv. Serpentine exercise
 1. To familiarize the driver with the location of the corners of the vehicle for maneuverability purposes.
 2. To familiarize the driver with the turning radius of the vehicle while proceeding forward and backward.
 3. To require the driver to utilize both mirrors of the vehicle during one continuous exercise.
 4. To increase the driver's confidence in the use of mirrors for vehicle maneuvering.
- v. Lane change / off-set alley exercise
 1. To allow the driver to become aware of the front and rear tracking of the vehicle.
 2. To familiarize the driver with depth perception through the vehicle's mirrors, especially recognizing the location of the right rear wheel.
- vi. Parallel park exercise (optional)
 1. To allow the driver to understand the importance of vehicle positioning prior to starting a movement that requires an exact right side placement.
 2. To familiarize the driver with the turning radius of the vehicle as it impacts restricted side placement.
 3. To enable the driver to locate the position of the right front extremity of the vehicle while completing the maneuver.
 4. To enable the driver to place the right side of the vehicle at a specific point utilizing the vehicle's mirrors.
- vii. Diminishing clearance exercise
 1. To familiarize the driver with the importance of properly aligning a vehicle when entering a very confined asymmetrical area.
- viii. Stopping exercise
 1. To familiarize the driver with the position of the front of the vehicle.
 2. To require the driver to brake smoothly and precisely while bringing the vehicle to a stop at a specific point.
- ix. Station Parking Procedure exercise
 1. To familiarize the driver with backing a vehicle into the fire house bay.
 2. To require the driver to back up straight and stop at a precise point.

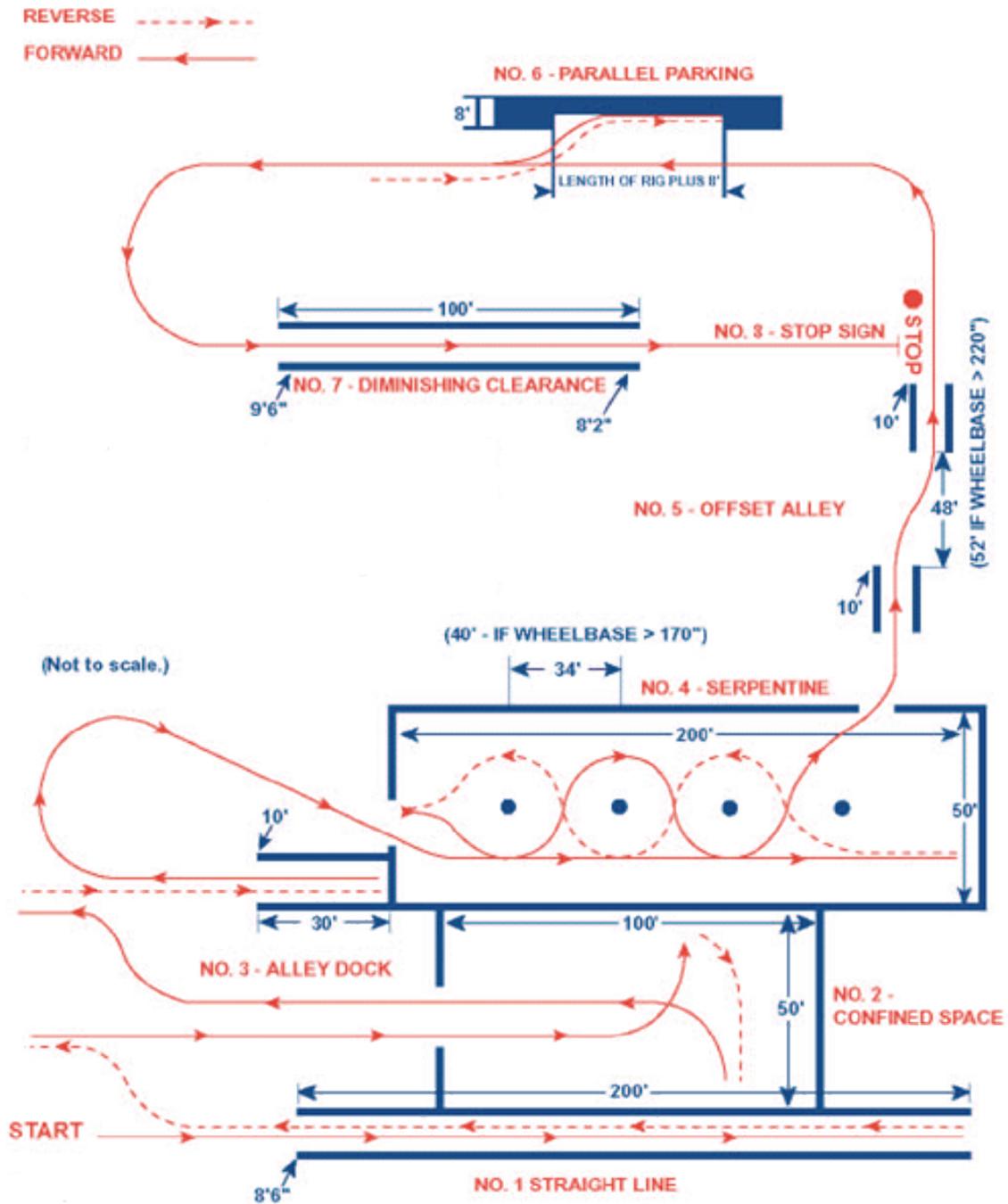
B. Street and highway driving

1. Minimum of 8 hours of supervised, behind the wheel driving required.
2. Driving shall begin after the trainee has completed a competency course.
3. Driving requirements:
 - i. 4 left turns and 4 right turns
 1. Includes turns at traffic lights, stop signs, and uncontrolled intersections.
 2. Turns should range in difficulty, from easy to hard, and include a variety of intersections.
 - ii. Straight section of urban commercial roadway
 1. Includes intersections, traffic lights, moderate traffic density, and sections that allow lane changes.
 2. Minimum of 1 mile in length.
 - iii. Intersections
 1. Minimum of 1 through and 2 where a stop must be made.
 2. If possible, should be incorporated into the commercial roadway portion.
 - iv. Railroad crossing
 1. Minimum of one railroad crossing.
 2. May be simulated if a crossing is not available.
 - v. Curve, either right or left
 - vi. Expressway / highway
 1. 4-lane, controlled access highway with conventional entrance and exit ramps.
 2. Long enough to allow for 2 lane changes.
 3. 2-lane rural highway may be substituted if an expressway is not available.
 - a. Must include challenges similar to those found on an expressway.
 - vii. Downgrade
 1. Steep enough and long enough to require down-shifting and braking.
 - a. Should allow for safe stopping and parking of vehicle.
 - b. Steep enough to allow vehicle to roll if not parked properly.
 - viii. Upgrade
 1. Steep enough and long enough to require gear changing and ability to maintain speed.
 - a. Should allow for safe stopping and parking of vehicle.
 - b. Steep enough to allow vehicle to roll if not parked properly.
 - ix. Underpass, low clearance, or bridge
 - a. Posted clearance height and/or weight limit.

C. Testing

1. 70% minimum score on State written exam.
2. 100% completion of all practical examinations.
 - i. AHJ must document and test candidates on all vehicles they will be authorized to operate.

COMPETENCY COURSE



Sample Course Layout



Office of the State Fire Marshal
 Div. of Personnel Standards and Education
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 Springfield, Ill 62703-4259

FIRE SERVICE VEHICLE OPERATOR - VALIDATION/ATTESTATION KEY

Student Printed Name			
Fire Department			
SS#			
Driver's License Verification	State		Number
	Class		Expiration
Proctor Printed Name			
<i>Proctor is to initial in the "Successfully Completed" column when the practical evolution has been completed with 100% accuracy.</i>			
OSFM Objective	Successfully Completed	Date	
Competency Course			
Straight Line			
Confined Space Turnaround			
Alley Dock			
Serpentine			
Lane Change/Offset Alley			
Parallel Parking (Optional)			
Diminishing Clearance			
Stopping			
Station Parking Procedure			
Street & Highway Driving A.4.3.1			
A4.3.1 (1)			
A4.3.1 (2)			
A4.3.1 (3)			
A4.3.1 (4)			
A4.3.1 (5)			
A4.3.1 (6)			
A4.3.1 (7)			
A4.3.1 (8)			
A4.3.1 (9)			
Notes:			
Proctor Signature		Date	
Student Signature		Date	

PRACTICAL OBJECTIVES

Practical evolutions must be administered and/or supervised by at least one Instructor. Instructors who are evaluating practical exercises must be certified to the level of Fire Service Vehicle Operator and approved by the Lead Instructor.

Straight Line Exercise	
Standard	<ul style="list-style-type: none"> Given a fire service vehicle and a fully laid out and marked competency course, the student will complete the exercise with 100% accuracy.
Course Description	<ul style="list-style-type: none"> 8 feet, 6 inches in width, measured from inside edge of cone to inside edge of cone. Minimum of one hundred feet in length. Intermediate cones along the side of the exercise are set at 20 to 25 foot intervals.
Objective	<ul style="list-style-type: none"> The student enters the straight line exercise at the specified entrance. The student travels through the exercise without brushing or knocking over any cones. The student stops at the end of the station. The student backs out of the line without brushing or knocking over any of the cones.

Confined Space Turnaround Exercise	
Standard	<ul style="list-style-type: none"> Given a fire service vehicle and a fully laid out and marked competency course, the student will complete the exercise with 100% accuracy.
Course Description	<ul style="list-style-type: none"> Area fifty feet wide by one hundred feet long. Intermediate cones along the side of the exercise are set at 20 to 25 foot intervals. Course entrance is centered on the fifty foot side of the area. If space is limited, the area can be reduced. <ul style="list-style-type: none"> The width should not be less than the length of the largest vehicle, plus 10 feet.
Objective	<ul style="list-style-type: none"> Enter the area, proceeding diagonally toward one corner of the confined space. Maneuver the vehicle backwards and forwards without projecting outside the area's boundaries until the vehicle can be driven out of the area in a forward direction.

Alley Dock Exercise	
Standard	<ul style="list-style-type: none"> Given a fire service vehicle and a fully laid out and marked competency course, the student will complete the exercise with 100% accuracy.
Course Description	<ul style="list-style-type: none"> 10 feet wide, measured from inside of cone to inside of cone, by 30 feet long.
Objective	<ul style="list-style-type: none"> Back the vehicle in and stop within six inches of the back of the alley.

Serpentine Exercise	
Standard	<ul style="list-style-type: none"> Given a fire service vehicle and a fully laid out and marked competency course, the student will complete the exercise with 100% accuracy.
Course Description	<ul style="list-style-type: none"> Area 50 feet wide by two hundred feet long. Set serpentine cones in the center, 40 feet apart, measured center to center. Vehicles with a wheelbase of less than one hundred and seventy inches, the distance between the cones is reduced to 34 feet. The entrance is centered on the 50 foot side. If space is limited, the area can be reduced. <ul style="list-style-type: none"> The length can be reduced to one hundred sixty feet.
Objective	<ul style="list-style-type: none"> The student enters the station at the specified entrance. The vehicle is driven along the right side of the center cone. After passing the 3rd cone, the vehicle should be cocked at a slight angle so as to position the rear of the vehicle between the 3rd and 4th cones. The student backs the vehicle between the 3rd and 4th cones, passing to the left of the first cone and back through the entrance. The student must pass through and stop at the entrance. The student then travels through the serpentine course in a forward direction. <ul style="list-style-type: none"> The vehicle passes to the right of the 1st cone, left of the 2nd cone, and right of the 3rd cone. The student exits the station.

Lane Change / Offset Alley Exercise	
Standard	<ul style="list-style-type: none"> Given a fire service vehicle and a fully laid out and marked competency course, the student will complete the exercise with 100% accuracy.
Course Description	<ul style="list-style-type: none"> The distance between the alleys is 48 feet for engines. The distance between the alleys is fifty three feet for aerials. Measure cones from inside edge of cone to inside edge of cone.
Objective	<ul style="list-style-type: none"> The student proceeds forward through the first alley and exits. The student changes track of the vehicle and enters the second alley without rubbing or knocking down any of the cones.

Parallel Parking Exercise (Optional)	
Standard	<ul style="list-style-type: none"> Given a fire service vehicle and a fully laid out and marked competency course, the student will complete the exercise with 100% accuracy.
Course Description	<ul style="list-style-type: none"> Adjust the area to create a length equal to the length of the vehicle, plus 8 feet. The width of the area is 8 feet. A distance of 12 inches from the "curb" shall be clearly marked.
Objective	<ul style="list-style-type: none"> The student pulls past the parking space and parallel parks in the designated space. The right side of the vehicle must be within 12 inches of the "curb".

Diminishing Clearance Exercise	
Standard	<ul style="list-style-type: none"> Given a fire service vehicle and a fully laid out and marked competency course, the student will complete the exercise with 100% accuracy.
Course Description	<ul style="list-style-type: none"> Area one hundred feet long. The entrance to the station is 9 feet, six inches; measured from the inside edges of the cones. The exit of the station is 8 feet, 2 inches; measured from the inside edges of the cones.
Objective	<ul style="list-style-type: none"> The student enters the station at the specified entrance. The student must travel through the station without touching any of the cones.

Stopping Exercise	
Standard	<ul style="list-style-type: none"> Given a fire service vehicle and a fully laid out and marked competency course, the student will complete the exercise with 100% accuracy.
Course Description	<ul style="list-style-type: none"> Sixty feet beyond the end of the diminishing clearance station, 2 cones will be set parallel to each other and in the line of travel of the vehicle. Marks at 6 inches, 12 inches, and 18 inches from the cones will be clearly visible to the student.
Objective	<ul style="list-style-type: none"> The student must stop the vehicle within 6 inches of the edge of the cones. Extending the front bumper past the cones or further than 6 inches from the cones will result in failure of the station.

Station Parking Procedure Exercise	
Standard	<ul style="list-style-type: none"> Given a fire service vehicle and an engine bay or simulated area, the student will demonstrate backing an apparatus into a fire station to park.
Course Description	<ul style="list-style-type: none"> 20 foot minimum setback from a street 30 feet wide with a set of barricades at the end of the setback, spaced 12 feet apart to simulate garage doors. A straight line can be utilized to assist operator while backing the apparatus, facilitating the use of vehicle mirrors.
Objective	<ul style="list-style-type: none"> The student must back up straight and park the apparatus straight in the apparatus bay or designated area. The student must stop the vehicle within 6 inches of the edge of a predetermined spot or cone. Failure to stop within 6 inches of the cone and or not parking straight will result in failure of the station.

Street & Highway Driving	
Standard	<ul style="list-style-type: none"> Given a fire service vehicle and a fully mapped route, the student will complete the objective with 100% accuracy.
Objective A4.3.1 (1)	<ul style="list-style-type: none"> The student will demonstrate 4 left turns. The student will demonstrate 4 right turns.
Objective A4.3.1 (2)	<ul style="list-style-type: none"> The student will demonstrate safe vehicle operation on an urban business or commercial roadway for a minimum of 1 mile.
Objective A4.3.1 (3)	<ul style="list-style-type: none"> The student will demonstrate the ability to safely operate the vehicle through a minimum of 1 through intersection. The student will demonstrate the ability to safely operate the vehicle through a minimum of 2 intersections where a stop must be made.
Objective A4.3.1 (4)	<ul style="list-style-type: none"> The student will demonstrate the ability to safely operate the vehicle through a minimum of one railroad crossing.
Objective A4.3.1 (5)	<ul style="list-style-type: none"> The student will demonstrate the ability to safely operate the vehicle through one curve. (Either left or right)
Objective A4.3.1 (6)	<ul style="list-style-type: none"> The student will demonstrate the ability to safely operate the vehicle along a section of limited-access highway that includes a conventional ramp entrance and exit. Section of road long enough to allow two lane changes.
Objective A4.3.1 (7)	<ul style="list-style-type: none"> The student will demonstrate the ability to safely operate the vehicle on a downgraded steep enough and long enough to require down-shifting and braking. Require the student to safely stop the vehicle on a downgrade.
Objective A4.3.1 (8)	<ul style="list-style-type: none"> The student will demonstrate the ability to safely operate the vehicle on an upgraded steep enough and long enough to require gear changing to maintain speed. Require the student to safely stop the vehicle on an upgrade.
Objective A4.3.1 (9)	<ul style="list-style-type: none"> One underpass or a low clearance or bridge.