S.O.G. Number: 600	Effective Date: October 1, 2010
Section: 607	
Subject: Vehicle Extrication	
By Order of the Fire Chief: Steven Paine	

Section 607 - Vehicle Extrication

Purpose

The purpose of this guide is to ensure a safe and effective extrication of victims of motor vehicle accidents.

Scope

This guide is to provide a standard for all personnel to use during training and/or emergency situations related to vehicle extrication.

Definitions

1. Assessment – scene hazards, patient location, number of victims.
2. Access – procedures that when completed, allow physical and/or visual contact with a victim or vehicle component.
3. Emergency Plan – primary survey (ABCDE and C-Spine).
4. Disentanglement – process used to remove vehicle parts from around the victim that prevent the victim easily being removed.
5. Removal – act of removing a victim from entrapment.
6. “A” Post – forward most supporting members (left and right) of the roof that connects to the main body of the vehicle.
7. “B” Post – next supporting member after the “A” post (left and right) toward the rear of the vehicle.
8. “C” Post – next supporting member after the “B” post (left and right) toward the rear of the vehicle.
9. Hydraulics – pertains to tools that use a fluid as a source of power or drive.
10. Pneumatic – pertains to tools that use air as a source of power or drive.

11. Size-up – systematic procedures to gather information and evaluate a situation.

12. Laminated Glass – a sheet of plastic sandwiched between two layers of glass; when broken, presents less danger from flying glass.
13. Tempered Glass – glass that has been heat-treated to give it greater strength than ordinary glass and usually found in side and rear windows.
    a. When broken, transforms into hundreds of small cubical pieces.

Establishing Command and Safety Sectors

1. The Officer or the person of the first arriving unit must:
    a. Make an arrival report
    b. Establish Command
    c. Set up a work zone where only properly protected rescue personnel can be.

2. Locate victims – question the occupants of the vehicle and attempt to determine the number of occupants of the vehicle.
    a. Look for telltale signs or clues such as the presence of handbags, baby seats, briefcases and similar objects that indicate the number of people who may have been in the vehicle.

Hazards

1. **Rescue personnel should be aware of hazards from:**
    a. Oncoming traffic
    b. Exposed fuel
    c. Propane/Compressed Natural Gas (CNG) operated vehicles
    d. Supplemental Restraint Systems (SRS)
    e. Downed power lines/poles
    f. Shock-Absorbing bumpers

2. **Hazard Mitigation Strategies**
    a. Traffic – use apparatus, cones, and Police personnel to provide effective means of traffic control

    b. Exposed fuel – remedies include plug and dike, picking up fuel with an absorbent or application of a foam blanket

    c. Propane/Compressed Natural Gas (CNG) operated vehicles, turn off supply of gas and protect tanks from potential fire.

    d. SRS – battery should be disconnected or cut (negative side) to prevent an air bag from activating.

    Note: Car capacitors can hold a charge for up to and exceeding 20 minutes after battery is disconnected.

e. Downed power lines/poles – electrical hazards are best handled by early recognition and notification of the appropriate utility company.

NOTE: All firefighters involved in the extrication must be in full protective clothing, including eye protection. At least one 1 ¾" charged hose line with foam capabilities should be in place and ready for operation staffed by a firefighter in full protective clothing and SCBA.

Stabilization

1. Stabilization includes the scene, the vehicle(s) and victim.

2. Scene stabilization is recognition and proper handling of situations on the accident scene that pose a danger to the rescuers, victim and/or bystanders.

3. Vehicle stabilization includes:
   a. Turn off ignition
   b. Set parking brake
   c. Place transmission in park
   d. Chock tires
   e. Utilize cribbing

Stabilizing Vehicle Resting on All Four Wheels

Eliminate the effect of suspension components and tires, provides a safer working environment for Rescue personnel and the victim.

1. Step Chock Method:
   a. Determine three points of the undercarriage that will provide the widest and most solid points of contact with the ground.
   b. Avoid areas that will interfere with door openings.
   c. Avoid fuel tanks.
   d. Place step chocks in desired locations (box crib, pyramid crib method).
   e. Flatten tires by pulling or cutting valve stems.

2. Simple Chock Method
   a. Place a crib in front of and behind one wheel and flatten tires (this method does not eliminate movement from shock absorbers and springs).
   b. Flatten tires by pulling or cutting valve stems.

Stabilizing Resting On Its Side

Eliminate movement of the vehicle so rescue procedures can be carried out; yet prevent the vehicle from rolling over.

1. Determine which parts of the vehicle, if reinforced and cribbed up, would provide four points of solid contact with the ground. The points should be evaluated on their apparent strength as well as placement.

2. Stability will be greatest when the points of contact with the ground are far apart and not in line with each other.

3. Build box cribs, pyramid cribs or use chocks beneath these points of contact (all cribs must fit snugly).

4. Once all cribs are in place, check for needed adjustment.

Stabilizing Vehicle Resting On Its Roof

Eliminate movement of the vehicle so that rescue procedures can be carried out; yet prevent the vehicle from collapsing due to weakened roof posts.

1. Determine four points of solid contact with the ground, reinforce with cribbing.

2. Build box cribs, pyramid cribs or use chocks beneath these points of contact (all cribs must fit snugly).

3. Once all cribs are in place, check for needed adjustment.

Gaining Access by Removing Tempered Safety Glass

1. Center Punch and tools that have points can also be used if necessary.
    a. Stabilize scene, vehicle, and cover victim.
    b. Glass furthest away from the victim should be broken to provide rescuer access.
    c. Place spring-loaded center punch in corner of window.
    d. Advise “breaking glass”.
    e. Press body of center punch forward to break glass.
    f. Clean out window with tool.

Gaining Access by Removing Laminated Safety Glass

1. Windshields (cannot be broken with a spring loaded center punch).
    a. Stabilize scene, vehicle, and cover victim.
    b. Advise “breaking glass”.
    c. Crack entire perimeter of windshield with pry-axe, or windshield cutter.
    d. One firefighter holds glass to prevent glass from falling into vehicle while another firefighter removes glass.
    e. Windshield should be placed in a safe location, not to interfere with extrication.

Accessing Door Safety Bolt

To provide visual and tool access to the safety bolt, in order to pry around it or cut through it.

1. Halligan Method
   a. Attempt to visualize safety bolt (except the bolt to be approximately half way up the solid portion of the door).

   b. Place the wide portion of the Halligan in the narrow crack between the door and the body.

   c. One firefighter holds the Halligan; a second firefighter strikes the Halligan with a flat-headed ax or sledgehammer.

   d. The firefighter forces the Halligan down and up, not out.

2. Hurst Tool Spreader (Pinch and Curl)
   a. Attempt to close spreader tips on door sheet metal near safety bolt.

   b. With tips closed tightly, walk the bottom portion of the spreader toward the front of the vehicle resulting in a curling of the sheet metal.

NOTE: Same basic method can be used to access door hinges.

Popping Door Open

To provide the simplest form of victim egress and, provide space for firefighters to provide victim care.

1. Hurst Tool Spreader
   a. Stabilize scene, vehicle, and victim.
   b. Try before you pry.
   c. Remove any glass likely to be affected by the operation.
   d. Insert half spine board between victim and door to protect victim.
   e. Access safety bolt.
   f. Insert completely closed spreader tips above/below and as far behind safety bolt as possible.

   g. Open spreader tips until it becomes evident that progress has been halted due to tearing of metal

   Note: Hydraulic Tools require pressure to build up before full power can be utilized

h. Close spreader tips until it becomes evident that progress has been halted due to tearing of metal.
i. Close spreader, reinsert tips and spread again until door is popped open.

NOTE: If spreader tips repeatedly pop out of the space to be spread, change the shape of the opening by spreading the metal further above or below the safety bolt, then return to the area originally selected.

Removing Open Door at Hinges

1. Hurst tool or similar equipment
    a. Stabilize scene, vehicle, and victim.
    b. Open door.
    c. Remove any glass likely to be affected by the operation.
    d. Clear a 15' area of equipment and personnel where the door may fly.
    e. Keep head and other body parts away from above and below door.
    f. Place spreader tips on top of bottom hinge and spread until hinge breaks.
    g. Place spreader tips above top hinge and spread until hinge breaks.
    h. Cut away wires that may connect door to vehicle body.

NOTE: If the top hinge were to be broken first, the door will be forced onto the ground when attempting to break the bottom hinge possible entangling the tool operator's feet.

Removing Closed Door at the Hinges

1. Hurst tool or other similar equipment
    a. Stabilize scene, vehicle, and victim.
    b. Remove any glass likely to be affected by the operation.
    c. Place long backboard between the door and the body of the vehicle.
    d. Access hinges in same manner that safety bolts are accessed.
    e. Clear a 15' area of equipment and personnel where door may fly.
    f. Keep head and other parts away from above and below door.
    g. Place spreader tips on the bottom hinge and spread until hinge breaks.
    h. Cut any wires that may connect door to the vehicle body.

NOTE: If front fender begins to distort and/or tear, it is often best to continue to spread and move the fender out of the hinge area. This provides better access and visualization.

Removing the Roof

1. Hurst tool and/or other power equipment
    a. Stabilize scene, vehicle, and victim.
    b. Remove all glass likely to be affected by the operation, windshield glass **must** be removed.
    c. Cut seat belt/shoulder harness strapping that may interfere with the operation.

d. If the vehicle has three rook posts, cut the "A" and "C" posts close to the hood/truck on one side first.
e. Support roof as needed.
f. Repeat on other side of vehicle.
g. Cut the "B" post.
h. Return to other side of vehicle and cut the remaining "B" post.
i. Remove post.

NOTE: The "B" posts are cut last in order to keep the roof from falling into the passenger compartment for as long as possible.

If the vehicle has only two roof posts, cut both the "A" and "B" posts on one side and support the roof. Repeat the procedure on the other side and remove the roof.

***** These Standard Operations Procedures should be considered guidelines for use at specific emergencies. Different situations may dictate alteration of the procedures, however, the safety of personnel and the public shall remain the highest priority. *****