

GET ON BOARD

Firefighters must be well schooled in bus extrication

By Paul Hasenmeier

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In addition to the struts, this training evolution used every piece of cribbing brought to the scene. The box cribbing is higher than recommended, but these students adapted to the scenario and overcame the challenges to stabilize this heavy and awkwardly positioned vehicle.

PHOTO: JENNIFER KILBURY



Along with box cribbing, use struts to stabilize heavy vehicles.

Get on Board

The weakest to strongest parts of a school bus are as follows and should be considered as you gain access:

- Windows
- Doors
- Windshield
- The structure itself

SCENE CONTROL

A school bus crash will draw enormous amounts of attention. Just minutes after the crash, students who are able will use their cell phones to call parents, who will proceed to the scene, worried and sometimes frantic. Witnesses of the crash will stop and try to help. Fire, EMS and police responders will be en route from every direction. News media will attempt to get pictures and stories. As the clock ticks, more and more people will be notified of the incident.

It's challenging, but not impossible, to deal with all of these people. First, request law enforcement officers to direct traffic and restrict unnecessary individuals from the scene.

Next, set up a staging area for incoming parents and media. Assign a public information officer (PIO) and a school representative to periodically update parents with critical information, such as if their child was on the bus, the hospital to which their child is being transported and any other pertinent details about their child's condition.

Coordinating a possible parent and media staging location with your local school district representative should be part of your preplanning. Encourage all parents and media to meet at a nearby staging location marked with a large school flag. By educating the schools, the parents and the community of what to do in the event of a school bus crash, emergency responders will be more effective in the rescue.

Another critical part of scene control: managing the victims. Walking-wounded may be able to extricate themselves from the bus, but they will need to be accounted for. Set up a triage area so all victims can be funneled to one location. Also set up a medical treatment area for managing medical ailments prior to transport.

Without a doubt, controlling the scene of a school bus crash will be challenging. By preplanning and coordinating efforts, you'll have predetermined responses to many of the challenges, so you won't have to make decisions by the seat of your pants.

School bus crashes are extremely difficult, even for the seasoned veteran. Imagine arriving on scene to find an overturned school bus with students trapped, injured and screaming for help.

The results of emergency operations are often a direct reflection of our planning and training. When considering school bus crashes, ask yourself the following four questions:

- Do I have a planned response for a large-scale school bus crash?
- Do I have adequate supplies and the proper tools?
- Have I trained on school bus extrication?
- Do I have adequate mutual-aid resources?

SCENE SIZE UP

Whether you arrive on scene in an ambulance or a fire engine, you'll face several conflicting priorities: initiating the incident command system (ICS); determining hazards, the number of patients, the number of seriously injured patients and the number of entrapments; and dealing with the walking-wounded.

First and foremost, a strong incident commander (IC) must be present to direct and facilitate multiple aspects of a very technical scene. Secondly, all arriving personnel must look for and be able to recognize hazards such as fire, fuel spills, downed electrical wires and unstable vehicles; all must be dealt with prior to approaching the bus.

Following the hazard recognition, determine the extent of injuries and entrapments. A mid-afternoon bus crash could involve more than 60 students. Responding emergency professionals will be immediately overwhelmed, which could require additional rescue and EMS personnel and equipment. If the scope of the crash seems large, activate your mass casualty incident (MCI) plan and request mutual-aid resources, including ambulances, fire engines, rescue companies and specialty transport vehicles such as air medical helicopters.

TOOLS

The tools needed for school bus extrication are carried on most fire department rescue apparatus. As with any extrication, some tools work more efficiently for bus extrication than others.

The reciprocating saw is an excellent bus extrication tool because it's lightweight and smaller than hydraulic cutters or spreaders, allowing firefighters to cut overhead and in tight quarters. *Note:* Electric-powered reciprocating saws are more reliable than their battery-powered counterpart. Nothing is worse than almost finishing a cut just as the battery of the saw goes dead.

A reciprocating saw can make fairly quick work of a school bus, but you must carry about 25 replacement blades if you need to do a great deal of cutting. In a recent training evolution, we went through about 100

blades and broke a brand new reciprocating saw while severely hampering the structural integrity of two school buses.

In the fire service, we use rotary saws for many metal-cutting applications, but school bus extrication should not be one of them (for more about rotary saws, see *Truck Company Operations*, p. 30). These saws are loud and produce large amounts of sparks. The noise will create more stress on the victims and decrease communication capabilities of all personnel at the scene. Sparks also pose the risk of igniting fuel spills. Although all reciprocating saws are not intrinsically safe and may produce some sparks, the risk is minimal compared to a rotary saw.

Other possible tools and equipment that may be used include:

- Axes, sledgehammers, pry bars, pike poles, utility knives, screwdrivers
- Hydraulic spreaders/cutters/rams
- Cribbing (4 x 4s and 6 x 6s)
- Struts
- Lifting air bags

Remember: Use the tools in your toolbox. Know how to operate the equipment on your apparatus.



PHOTO JENNIFER KILBURY

Above: By removing two windows and the post between them, we create a picture window. Cover your sharp edges with the vinyl seat material.



PHOTO PAUL HASENMEIER

Right: By removing the two screws on each side of this window, the entire frame can be removed with a screwdriver.

Don't Go Flat

In passenger cars, it's a common practice to stabilize the vehicle by deflating the tires. But when stabilizing a school bus, **DO NOT** flatten the tires. Why?

- 6 or more inches of downward movement on one side may cause a drastic tilt, resulting in further injury of the occupants;
- Deflating all the tires, including the inside duals, wastes precious time; and
- For the school bus to be moved or towed, it will need its tires inflated.

STABILIZATION

School buses are large vehicles weighing up to and in excess of 12 tons. Their size creates stabilization obstacles not normally seen in passenger cars. Stabilization is one of our first priorities. Just like any vehicle, we want to make sure the bus is stable for rescuer and victim safety.

The biggest obstacles when stabilizing a school bus are related to the bus' overall size, height and weight. Remember your basics: Crib as you go, constantly recheck the vehicle, and don't put yourself in an unsafe position.

When cribbing, you can use 4 x 4s; 6 x 6s can be used in a similar manner to passenger cars, but make sure cribbing is proportional to the bus size. Due to school bus height, a large amount of cribbing will be necessary for the front and rear bumpers. Potential situations could also cause the bus to be elevated on top of other cars or roadway barriers. In such a case, you may need more cribbing to create a box crib (4 feet x 4 feet at the bottom) that will evenly distribute the weight and prevent downward shifting.

Struts are another tool that can assist with school bus stabilization. Use struts to prevent horizontal movement and to lift or hold downward forces in place, but adhere to proper training and specific manufacturers' recommendations.

As with any vehicle, ensure school buses are stabilized to prevent further shifting that could harm rescuers or victims. During the stabilization process, be aware of your surroundings and identify a way out if conditions change. ►

MISCELLANEOUS SYSTEMS

Just like every vehicle, school buses have batteries, fuel systems, air bags and seatbelts. The batteries of a school bus are most often found on the driver's side near the front wheels. Disconnect or double cut the battery cables per your department's procedures.

Fuel systems vary, and some of these fuels may surprise you: diesel, gas, butane, propane, natural gas and hybrid. (*Note:* In hybrid buses, don't cut the orange sheathed wire.) Be aware of the possibilities, and be prepared to contain any spillage. Be alert for increased risk of a fuel spill in a passenger side rollover because most fuel tank fill locations are on that side.

Air bags are seldom found in school buses except for the driver's seat. Seatbelt requirements vary from state to state and can pose significant entanglement challenges. If the bus features seatbelts, a seatbelt cutter will be a necessity.

INITIAL ACCESS

There are many different ways to get into a school bus. *Remember:* Try before you pry. If able, the occupants will open emergency exit windows, doors and/or roof hatches, making our initial access much easier.

In a school bus crash, the goal is to find a way in and another way to exit with the victims. Flow is critical; victim removal will be slowed if rescuers rush

into multiple openings without leaving an exit route. Clearly mark entry and exit points during rescue operations to maintain the flow of victim removal.

If the bus is on its side, use the front window as the entry point and the rear window as egress. If the bus is on its roof, use the main entrance as the entry point and the rear door as egress. These openings will of course depend on the structural integrity and positioning of the bus, along with victim location.

Front and rear doors can be jammed or heavily damaged in a crash. Remove front doors by first removing the windows and either using a pike pole to operate the manual door control mechanism or by using the emergency air release lever that's usually located above the door. If both of these options fail, use a reciprocating saw to cut the piano hinge and remove the entire frame.

When gaining entry through the rear door, the best option is to operate the locking mechanisms from the inside. If this is not an option, shear off the bolts or cut the hinges to remove the door. Also, totally remove the door in a rollover crash with the rear door hinges on top to eliminate the overhead hazard.

CONCLUSION

There's a great deal to learn about school buses and the challenges they pose at a crash. Training and pre-planned coordination between emergency responders and local school transportation representatives can lead to more effective and efficient operations. This article by no means will complete your school bus extrication training, but hopefully will motivate you to find an old bus to cut up. As you use various tools to cut apart a school bus, you'll learn quickly which tools work well.

Remember: Train like you expect to operate on an emergency scene. And most of all, be safe! 🚒

Paul Hasenmeier, a firefighter since 1999 for the City of Huron (Ohio) Fire Division, is a paramedic, fire inspector, SCUBA diver and an instructor. He has an associate's degree in fire science, has gained knowledge in numerous technical rescue disciplines, and is a member of Ohio's Region 1 Urban Search and Rescue team. He is a contributing author to *FireRescue* magazine and *School Bus Fleet* magazine. Hasenmeier was a classroom presenter at FDIC 2008, the New York Fire Chiefs Conference and the Ohio Fire Chiefs Conference. He can be reached at phas@bex.net.



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Fill all voids to ensure the heavy vehicle is stabilized and further shifting does not occur.



PHOTO PAUL HASENMEIER

Flow in and out of the bus is critical. Clearly mark entry and exit points during rescue operations to maintain the flow of victim removal.