Dwight Eisenhower was quick to remind us that “A plan is nothing! Planning is everything.” Prevention is our responsibility as first responders and we need to offer safe solutions to our community, after all we are in the “*** happens” business. So, some things to keep in the back of your mind:

- 99 percent of the world’s ladder trucks do not reach above the 7th floor and will serve one side of the building. Response times average 15 minutes then five minutes to set up.
- Fire doubles approximately every minute.
- The Lethal Dose (LD/50) for a fall to a human is ten metres or about the 3rd floor.
- 69 percent of high-rise fires originate on the 4th floor or below.
- Each year an estimated 15,500 high-rise fires cause 60 deaths and 930 injuries.

Incredible advances in building safety and rescue techniques have occurred in the decade following 9/11/01 and it is not just chutes and ladders anymore. This industry is now formally referred to as “supplemental evacuation.” It is not intended to replace any primary means of egress and stairs should continue to be the focus of all evacuation drills. This, however offers a second way out should one be needed. Call it “Plan B”.

**Quick History**

In 2003 a group of manufacturers of escape devices came together to establish The Safe Evacuation Coalition. Each of them had different styles and types of devices but they all performed the same task, namely: solving the dilemma of getting people out of multi-story structures without involving the stairs.

Plan two ways out! We’ve preached it time and time again but have we actually helped our community to plan for it?
This obviously was not an easy task and had been revisited many times since the inception of high-rise buildings. But in this day and age these systems at a minimum needed to be simple to use for the untrained user, provide suitable protection and accommodate potential evacuees with physical impairments.

This group was not concerned about sharing technical information with their “competition” but instead turned out to be an ideal “focus group” for exchanging ideas from the big picture to the smallest technical detail about each other’s products. After all, there is no “one size fits all” in this business and cooperation would be the best arrangement for them as well as the potential end-users. What was to become would change the world.

The National Fire Protection Association (NFPA) was under pressure following The National Institute of Standards and Technology (NIST) final report on the World Trade Centre disaster to seek current and future use of these devices. Specifically worded, it read:

(NIST recommendation #20)

“...NIST recommends that the full range of current and next generation evacuation technologies should be evaluated for future use, including protected/hardened elevators, exterior escape devices, and stairwell descent devices, which may allow all occupants an equal opportunity for evacuation and facilitate emergency response access.”

The Safe Evacuation Coalition stepped in to assist on multiple fronts. Volunteering their individual training and experience, two members applied and were appointed to the NFPA Technical Committee on Means of Egress while others worked to establish two independent committees with The American Society of Testing of Materials (ASTM International) to create manufacturing and testing standards. These committees were responsible for the 2006 standards: “Standard Specification for Multi-Story Building External Evacuation Controlled Descent Devices” and “Standard Specification for Multi-Story Building External Evacuation Platform Rescue Systems (PRS).” In short, two different manufacturing standards for the current technologies that volunteered to participate, CDDs and PRSs.

Chute-style systems were unfortunately unable to come together on common ground to cooperate in the fashion required by ASTM and no progress was made. However, in my opinion several various styles of chutes offer other wonderful attributes to the supplemental evacuation community, are credible and safe to implement into scenarios where communities allow, and hopefully will be only a matter of time until they are recognised through the current governing bodies.

Simultaneously the NFPA was developing standards for guidance on the installation, maintenance and use of the equipment into the Life Safety Code and Building Construction Code Annexes. These standards were first published in the 2009 Life Safety Code and currently reside in the 2012 Code as “Annex B.” Annexes are written in mandatory language but are not intended to be mandatory unless specifically adopted by the local Authority Having Jurisdiction (AHJ).
Controlled Descent Device Technology (CDDs)

Controlled descent devices or CDDs have been in use for decades, mostly in the fall protection arenas serving construction sites, military installations, maritime applications and oil refineries and platforms abroad. CDDs have proven to be a reliable source for descent from many structures and were reportedly utilised during the 1983 Beirut bombings that left 299 American and French servicemen dead. They are simple to use, require no power, have a long shelf life and can be deployed in a hurry.

What is unique about CDDs is that they look like, and work similar to a pulley, as one side goes down, the other side comes up for the next user. This process is repeated until all occupants have been evacuated. Often times a harness or protective “evacuation suit” is permanently attached to either side of the cable. Many CDDs utilise an eight-millimetre polysteel cable covered by a neoprene or rubber-style protectant to protect it against moisture and, ultimately, rust. Outside this cable is a kernmantle polyester sheath to protect the cable against abrasion, much like a rope. It is light like a rope and 15metres weighs just over 2.3 kilogrammes. It comes on a spool that rests next to the CDD itself and feeds out while in use. Some CDDs come in lengths up to 300 metres as the operation of the device itself is not changed by the length of cable.

Operation is pre-determined by the manufacturer at speeds typically between one to two metres a second (similar to an elevator). The user cannot adjust this speed as they are designed to be utilised by an untrained individual (for example: your Momma… sorry, couldn’t resist) Descent devices can be adjusted during operation, just not “controlled descent devices”; that is the biggest difference between the two types.

What CDDs do not do is give the user any sense of falling during descent; weight does affect the descent speed, but only slightly. For example, one manufacturer’s CCD with a rated capacity of 180 kilogrammes conducted 75 test drops with a 180 kilogramme weight that produced an average speed of one metre a second. If, for example, you are a 48 kilogramme female you will probably average around 600 millimetres a second but you will likely be on the ground before the first emergency vehicles arrive, so you can pretty-up for the arriving firemen (wink). Alternatively, if you are that 180 kilogramme guy, catch your breath and help the firemen catch the hydrant on their way in! We will allow you first dibs on the television reporters when they arrive and need the full story.

Most CDDs are reusable and require little maintenance. A maintenance program may call for a monthly visual inspection with some cable being pulled back and forth through the unit annually. But make no mistake, it is probably more important for the occupants to conduct these monthly visual inspections so that they can be reminded of where the equipment is, that it still looks appropriate and be reminded of how to use it should the emergency strike that night.

Some CDDs require being returned for recertification every five years so the cable can be inspected for aging, inside the tamper-resistant housing can be inspected for rust and/or abuse and components replaced if necessary. Environmental conditions are the biggest enemy. Salt in the air near multi-story condominium installations just eats away at the steel components, but that is okay; it is simple and inexpensive to replace in the big picture. Typically recertification costs around $400 for any repair once shipping is factored in.

Some manufacturers pair the CDD with portable or fixed-mounted anchoring systems to allow for rapid “pre-planned” or speedy “unplanned” attachment to the structure. Fixed-mounted brackets allow for rapid deployment in multiple locations should supplemental evacuation become necessary. Rescuers can utilise portable systems as well as assist with fixed-mounted systems that are already present on the building.

Fire protective evacuation suits are also available and suggested, even if just a minimal number.
These suits are oversized to accommodate adults with children in tow, their pets and valuables if necessary. They can also be used to assist an elderly, physically disabled or incapacitated victim. Evacuation suits are made of a fire-resistant, aluminised coating, with interior protection similar to that of Kevlar, and slide on easily like a pair of jeans. They are designed to be put on quickly, reduce the fear of heights, protect the user(s) and protect the evacuees should they need to descend directly past the fire floor on their way to safety.

This could be the perfect solution for the disabled, mobility impaired or elderly occupant to self-evacuate or be assisted should they not be in the physical health to descend dozens of flights of stairs. Alternatively these are also ideal for homeowner associations, nursing homes, hospitals, government facilities, embassies, air traffic control towers, first responders, construction sites, oil platforms and industrial facilities. These prove to be affordable to single families as plan to self-evacuate if necessary. Prices start about $1500 for the CDD alone while complete systems start about $3500.

**Platform Rescue Systems (PRS)**

Platform rescue systems move vertically along guides or other means on the exterior of a building and operate like an elevator. These systems are installed inconspicuously atop buildings and, during an emergency, automatically deploy and lower to the street level.

First responders board as they arrive and control the fire-protective cabins as appropriate for the given emergency. They can deliver up heavy hose loads, fresh air tanks and much needed supplies while evacuating people on the way down. This combination allows rescuers to arrive well rested to the upper floors safely from the outside of the structure. Hose streams can be directed to protect these cabins and being on the exterior allows for better guarantees of fresh air. If we must dedicate our limited resources to rescue rather than extinguishment, nobody is left to put out the fire and we ultimately become civilians again with some extra tools.

Currently the NFPA Standards are available to be adopted in a format where Authorities Having Jurisdiction can enforce that buildings include these minimum safety requirements at zero cost to them. But more importantly, these solutions provide peace of mind to families by allowing them to plan a “second way out”. Thank you for your service to your community whatever you may be protecting right now, especially for those who will never receive the credit they deserve due to the inherent security risk. We know you are there, we understand the situation and here to help 24 hours a day.