



# ABINGTON TOWNSHIP FIRE DEPARTMENT

OG – 400-110

## Structural Collapse Operations

### 1.0 PURPOSE

The purpose of this procedure is to establish guidelines for conducting building/structural collapse operations.

### Background

During Phase I of structural collapse operations, command must consider the fact that if strong control of the incident is not gained quickly; it could easily escalate into an out-of-control situation. A typical structural collapse operation will have a lot of unorganized, wellintentioned efforts by civilian personnel. This situation may make the entire operation unsafe. Command must focus attention early on building a good strong command structure

### 2.0 RESPONSIBILITY

The responsibility to ensure that the above actions are taken in an appropriate manner are defined as indicated below:

1.1 Company Members (CM)

1.2 Company Officers (CO)

### 3.0 PROCEDURE

#### 3.1 Phase I Arrive on Scene. Take Command. Size-Up.

- 3.1.1 Using an Incident Management System the first arriving company officer should establish command and begin an immediate size-up / hazard assessment.
  - 3.1.1.1 Identify construction and occupancy types
  - 3.1.1.2 Determine the collapse type (as defined in Annex B of NFPA 1006 Rescue Technician Professional Qualifications.)
  - 3.1.1.3 Evaluate existing and potential conditions including the potential for a secondary collapse
  - 3.1.1.4 Assess the need for rescue and determine potential victim locations
  - 3.1.1.5 Determine if additional resources are needed.
  - 3.1.1.6 Monitor for toxic atmospheres
  - 3.1.1.7 Evaluate the potential for explosion with fire due to broken gas lines and/or downed electrical wires
  - 3.1.1.8 Establish a scene security perimeter
- 3.1.2 All first arriving apparatus should be positioned outside of the collapse zone and in such a manner as to not constrict the continued flow of personnel and equipment into the scene.
- 3.1.3 Staging should be established immediately.

- 3.1.4** Secure all hazards as soon as possible. This includes shutting off the utilities (i.e. gas, electrical, water). If it is not possible to secure all hazards, command should notify all rescue personnel operating on scene of the hazards present.
- 3.1.5** Develop and begin implementation of a collapse rescue Incident Action Plan (IAP).
- 3.1.6** Appoint a Site Safety Officer and Assistant Safety Officers as soon as possible.
- 3.1.7** The Fire Ground Accountability Guidelines must be strictly enforced during the entire rescue operation.
- 3.1.8** The ATFD Incident Evacuation Guidelines shall be used to evacuate the structure should it be deemed necessary.

### **3.2 Phase II Pre-Rescue Operations**

- 3.2.1 Removal of Surface Victims.** Initial on-scene companies should be directed in rescuing victims that can be seen on the surface. Rescuers must be aware of all the physical hazards present at the scene of a structural collapse.
- 3.2.2 Establish Transportation Corridor.** During initial stages of the operation, command should attempt to ensure that there will be roadways into and out of the collapse site. This may include establishing liaison with the Police Department.
- 3.2.3 Establish Victim Staging Area.** Command should designate an area away from the hazards of the collapse to account for, treat and transport victims.
- 3.2.4 Remove all Civilian & Non-Essential Rescue Personnel.** After initial surface victim removal has been completed, command should ensure that all personnel are removed from the collapse site. This will allow for the removal of all civilians and the re-grouping of rescue personnel so that the IAP can be implemented and the search for and rescue of remaining victims can begin. Personnel involved in the initial rescue operations should be quickly debriefed as to building layout and possible location of victims

### **3.3 Phase III Rescue Operations.**

- 3.3.1 Implement the Incident Action Plan for Search Teams.** After all personnel have been removed from the collapse site and accounted for, command shall implement the IAP for the search and rescue of the remaining victims. The IAP shall be distributed to all rescue personnel that will be operating the collapse site.

Prior to beginning search and rescue operations, command shall designate specific search teams. This may include personnel with technical search equipment. If the building is structurally unstable, search and rescue teams shall not enter until appropriate shoring and stabilization has been accomplished.

Search teams should use the building marking system, defined in Annex E of NFPA 1006 Rescue Technician Professional Qualifications

- 3.3.2 Establishing Rescue Teams.** Each rescue team shall consist of at least two (2) trained members of the Technical Rescue Team and will have at least one (1) Air Monitoring Technician with equipment to monitor for the following Items:
- 3.3.2.1** Combustible Gases
  - 3.3.2.2** Oxygen Enrichment or Deficiency
  - 3.3.2.3** The Presence of Carbon Monoxide, Hydrogen Sulfite or other toxic materials if they are expected to be present.
  - 3.3.2.4** Rescue teams are not to attempt rescue in a building that has been determined to be unsafe. Each rescue team shall be assigned specific radio designation.
- 3.3.3 Locating Victims.** If the building is known to have live victims trapped, rescue teams shall attempt to locate the victims. If the rescue team must support structural components of the building prior to entry, they shall do so and make the area as safe as possible.
- 3.3.4 Breaching Walls, Floors and Roofs.** If at all possible, rescue teams should attempt to gain access vertically. The horizontal breaching of walls should be done only if there is no other means to reach a void space that victims may be trapped in. Horizontal breaching of load bearing walls may precipitate a secondary collapse of the structure.
- 3.3.5 Confined Space Entry & Rescue.** Void spaces should be treated as a confined space. Rescue team members should follow confined space rescue operation guidelines. The rescue team leader shall designate the proper method of entry into the space and shall ensure the safety of the entry rescuers. All personnel entering the space shall use a supplied air breathing system.
- 3.3.6 Rescue and Extrication of Victims.** Once located and immediate assessment of the victim shall be done. Rescue teams should consider the effect lifting objects off the victim will have on that victim (i.e., crush syndrome). The rescuer shall determine the safest and most effective method of victim extrication. The rescue team leader shall ensure the safety of the extrication of the victim.
- 3.3.7 Transfer to EMS.** Once the victim has been removed to a safe location, he/she shall be transferred to EMS for assessment.
- 3.3.8 Removal of the Rescue Teams from the Building.** After all located victims have been removed from the building; the rescue teams should “pull out” of the building and update the marking system. Rescue teams should keep in mind that any cribbing and shoring in place should be left in place. The removal of those systems could precipitate a secondary collapse.

### **3.4 Phase IV Selected Debris Removal**

- 3.4.1 Locating Victims.** If rescue teams have not been able to locate victims through other methods, then they should be located by removal of debris. If there is a potential for live victims, rescue teams must be very careful when removing debris so as not to cause a secondary collapse or further injury to the victims(s).
- 3.4.2** If a victim location is known, an attempt should be made to remove debris to reach that victim. In light-weight frame construction buildings, this could be accomplished by cutting and hand removing structural members. If the building is constructed of

reinforced concrete, it may require breaking large pieces into smaller and more manageable pieces.

- 3.4.3** During debris removal, operations should be stopped periodically to listen for and or search for victims. Search and rescue operations may be suspended only after enough debris have been removed to reasonably ascertain that there are no victims in the area being worked on.

### **3.5 Phase V General Debris Removal/Termination**

- 3.5.1** After it has been determined that no live victims could be found, general debris removal can begin. If there is a potential for deceased victims to be trapped in the rubble, removal crews should be alert for signs of those deceased victims.
- 3.5.2** During general debris removal, if heavy equipment operators spot a sign of deceased victim(s), selective debris removal shall be conducted to remove the victim(s) respectfully. The Coroner and/or other investigative personnel should be notified to handle removal of the bodies.
- 3.5.3** Prior to termination of the incident, Command shall account for all personnel that have been operating at the collapse site. Each company officer should ensure crew and equipment accountability before returning to service.

### **3.6 Additional Considerations**

- 3.6.1** Temperature extremes. Consider rotation of crews. And the effects of heat and cold on the victims of the collapse.
- 3.6.2** Weather Conditions. Consider the effect of rain or snow on the hazard profile.
- 3.6.3** Time of Day. Consider having proper lighting on scene for night time operations.
- 3.6.4** Consider the effect on family and friends. Keep family informed.
- 3.6.5** Consider the news media. Assign a P.I.O.

## **4.0 RECORDS**

- 4.1 Master Document Listing
- 4.2 Training Records
- 4.3 NFPA 1006 Rescue Technician Professional Qualifications Chapter 10 Structural Collapse Rescue. Including Annex A, B, D, E and G
- 4.4 ATFD Incident Evacuation Guidelines (ATFD OG-400-103)
- 4.5 ATFD Fire Ground Accountability Guidelines (ATFD OG-400-102)