

STRUCTURAL COLLAPSE OPERATIONS

Purpose:

To establish guidelines for conducting building/structural collapse operations.

Tactical Considerations:

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

- A. Ensure that PSCC has notified the Building Department and a representative is responding.
- B. 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 structure collapse.
- C. Establish a Perimeter. While initial rescue of surface victims is going on, the Incident Commander should establish a perimeter around the whole collapse site and keep all incoming civilian personnel out of the immediate area.
- D. Establish Transportation Corridor. During initial stages of an operation, the Incident Commander should attempt to ensure that roadways into and out of the collapse site remain available. This may include establishing liaison with law enforcement and having them re-route all traffic well around the collapse site.
- E. Establish Victim Staging Area. The Incident Commander should designate Treatment and Transportation Sectors. An area should be established away from the hazards of the collapse to account for, treat, and transport victims.
- F. Remove All Civilian and Non-Essential Rescue Personnel. After initial surface victim removal has been completed, the Incident Commander 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 a specific action plan can be instituted for the search and rescue of the remaining trapped victims. At this time, the Incident Commander should order a PAR. Members previously operating in the

collapsed structure should be quickly briefed as to building layout and possible location of victims.

Rescue Operations:

- A. Establish an Action Plan for Search Teams: After all personnel have been removed from the collapse site and all personnel accounted for, the Incident Commander shall establish a specific action plan for the search and rescue of the remaining victims. This action plan shall be distributed to all rescue personnel that will be operating at the collapse site.
- B. Establish Action Plan for Search and Rescue: Prior to beginning search and rescue operations, the Incident Commander shall design specific search teams. This may include personnel with technical search equipment (i.e., acoustic, fiber optic, etc.), dog teams, or a firefighter using the hailing (call-out) method of searching for victims. The Building Department must complete an evaluation of the building, before the search team can begin its search. If the Building Department determines that the building is structurally unstable, search and rescue teams shall not enter until appropriate shoring and stabilization has been accomplished.
- C. Establish Rescue Teams: Rescue teams will follow search teams that have searched the collapsed building. Each rescue team shall consist of at least one (1) trained member of the Technical Rescue Team. If there is a possibility of hazardous materials involvement, each rescue team shall have at least one (1) member from the Boone County Office of Emergency Management with air monitoring equipment. Rescue teams are not to attempt rescue in a building that has been determined to be unsafe by the Building Department. The Incident Commander should assign each rescue team a specific radio designation.
- D. Locating Victims: After the search teams have searched a building and received a “positive” find, the building should be verified again by another means if possible. 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.
- E. 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 the void space that victims may be trapped in. Horizontal breaching of load bearing walls may precipitate a secondary collapse of the structure. The potential for secondary collapse is less if rescue teams breach structural members from above or below. Prior to breaching a structural load bearing member, a specially trained structural collapse specialist (structural engineer, architect, and technical rescue specialist) should approve and oversee the breaching operation. If the atmospheric conditions are not known in the room of desired entry, a “pilot” hole shall be punched to monitor the atmosphere prior to breaching operations.

- F. Confined Space Entry and Rescue: After the victim has been located, the rescue team should treat that space the victim is located in as a confined space. All personnel from the TRT should perform this type of rescue. All spaces shall be monitored for flammable, toxic, and oxygen deficient atmospheres before entry is made. All members making entry shall be on SCBA with appropriate tender to rescuer ratio of 1:1.
- G. Rescue and Extrication of Victims: Burlington Fire Protection District personnel should not perform this task. Only trained members of the TRT should be involved in this operation.
- H. Transfer to Treatment Sector: Once the victim has been removed to a safe location, he/she shall be transferred to the **Treatment Sector** for ALS assessment.
- I. Removal of Rescue Teams from the Building: After all located victims have been removed from the building, the rescue teams should “pull out” of the building, perform a PAR, and report the all clear to the Incident Commander.

Selected Debris Removal:

- A. If rescue teams have not been able to locate victims through other methods, then they should be located by removing 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 victim(s).
- B. If a victim location is known, either by family members or previously rescued victims, an attempt should be made to remove debris to reach that victim. In lightweight frame construction buildings, this could be accomplished by cutting and hand removing structural members. If the building is of reinforced concrete, it may require breaking large pieces into smaller and more manageable size pieces. This may also require the use of a crane to pick and move the structural components to reach potential victims.
- C. Rescue team members should assist in the break-up and removal of structural components. A safety officer shall oversee all of these operations to ensure site safety for all operating personnel. If structural components are removed from the site, they should be marked in some way so as to ID them with for investigative purposes.
- D. As debris is removed, all operations should be stopped periodically to search for victims. After enough debris has been removed to reasonably ascertain that there are not any victims, then search and rescue operations can be suspended in the building.

General Debris Removal/Termination:

- A. After it has been determined that no victims could be found alive in the building, a 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.

- B. During general debris removal, if heavy equipment operators spot a sign of a deceased victim(s), a selected debris removal shall be conducted to remove the victim(s) respectfully. Coroner and/or other investigative personnel should be notified to handle the removal of the body(ies).
- C. As debris is removed, each dump truck load shall be marked as to the general area found and final location of the debris. This will help investigators to complete their investigations and reports.
- D. The Incident Commander may elect to turn general debris removal over to the Responsible Party for final disposition of the building. If this is done, the RP should be notified of the proper handling of debris for investigative purposes.
- E. Prior to termination of the Incident, the Incident Commander 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. If the Incident Commander has not previously addressed the issue of CISD, he/she may consider doing so during the termination phase.

Additional Considerations:

- A. Heat. Consider rotation of crews.
- B. Cold. Consider the affect of hypothermia on victims and rescuers.
- C. Ambient Conditions. Consider the affects of rain or snow on the hazard profile.
- D. Time of Day. Consider having proper lighting on scene for nighttime operations.
- E. Consider the effect on family and friends; keep family informed.
- F. Consider news media; assign a PIO.