

High-Angle Rescue at Manhattan Subway Station Crane Collapse

by Deputy Assistant Chief William C. Seelig, Chief of Special Operations Command

Manhattan Box 0709 was transmitted for a report of a crane that had collapsed and struck two workers at 11th Avenue and 34th Street on April 3, 2012, at 1922 hours. Initial assignment on the Box included Engines 34, 26 and 3, Ladder 21, Rescue 1, Ladder 25 (with Rescue Collapse 1), Battalion 7, Division 1, Rescue Battalion, Tactical Support 1 and the Safety Battalion. EMS response included two BLS units, one ALS unit, two ALS Rescue units, two conditions cars and EMS Deputy Chief Jack Sullivan. At 1924 hours, Rescue 4 and Ladder 146 (with Rescue Collapse 4) were added to the assignment and at 1925 hours, Squad 18, FieldComm 1, Haz-Mat 1 and the Haz-Mat Battalion also were assigned.

Engine 26 arrived on the scene at 1926 hours, followed shortly thereafter by Engine 34, Rescue 1 and the balance of the assignment. Deputy Chief James Daly, Division 1 Commander, arrived on-scene at 1941 hours and was briefed by Acting Battalion Chief Stephen Corcoran, Battalion 7. A very large Track-Crane with a

300-foot lattice boom had collapsed in a below-grade construction excavation, striking two workers, one of whom was unconscious, in critical condition and coded as a red tag by EMS. The second victim was conscious with a severe leg injury and coded as a yellow tag. (See box with medical tag definitions on page 5.)

At 1952 hours, Chief Daly transmitted the *all-hands*, at which time Engine 76, Battalion 11 and RAC 1 were assigned. Deputy Assistant Chief William C. Seelig, Chief of Special Operations Command (SOC) and the Command Chief for the tour, arrived at approximately 1950 hours and assumed command.

The construction site in question was a Metropolitan Transportation Authority (MTA) subway station under construction as part of the #7 line extension project, which was approximately 40 feet below street level. The collapsed crane did not appear to have caused any structural damage to the station, but was barely resting in a precarious position on a freshly poured concrete deck.



The disabled crane boom had collapsed into a below-grade excavation and ultimately killed one worker and severely injured another.

FDNY operations

On arrival, Rescue 1, under the supervision of Captain Robert Morris, determined the stability of the collapsed crane and began assessment and treatment of the two victims. Because the two injured victims were approximately 40 feet below grade with no easy access, a high-angle-type removal was required. Rescue 1 members rendered basic first aid until the arrival of EMS units and began to package the victims, concentrating first on the most critical victim whose injuries were obviously life-threatening.

Victim #1

When Rescue Paramedics Juan Henriquez and Timothy Anson of unit 07R arrived, they assumed care of the critical victim. This care involved intubation and initiating an IV. Rescue Paramedics Nick Margo and Al Torres (unit 12R) arrived and assisted.

It was determined that if this victim was not removed immediately, he would not survive. Therefore, the decision was made to use an on-scene crane to remove the victim from the below-grade site in concert with a stokes basket properly rigged by Rescue 1 members. (See sidebar article concerning use of power equipment for victim removal on page 6.)

The on-site foreman was in the excavation and worked with Battalion Chief Donald Hayde, Rescue Battalion, and Rescue 1 to coordinate the removal of the victim via crane. Safety Chief, Battalion Chief Charles Vella, was placed on the crane, adjacent to the operating engineer and in radio contact with FDNY members below, to coordinate the lifting operations. There was a clear line of site between the crane operator and the FDNY members in the excavation below.

After ensuring that the stokes basket was properly rigged with required safety and tag lines, the removal operation began. A member of Rescue 1 was attached to the crane and stokes basket to attend to the victim during the removal procedure. The victim was promptly removed to street level and placed in a waiting ambulance for transport to the hospital.

When the ambulance arrived, the victim went into cardiac arrest and CPR was initiated. The crew of 07R continued resuscitation efforts en route to the hospital. Unfortunately, the victim succumbed to his injuries at the hospital.



This Bay Crane was used to remove the most critically injured worker. Despite the best efforts of all rescue workers, the victim ultimately died from his severe injuries.

Victim #2

The second victim was stable, alert and oriented on FDNY arrival. He had an open tibia/fibula fracture of his right leg. Engine 34 was used as a CFR engine to treat the victim until relieved by EMS personnel. After stabilization of his leg, the victim was packaged in a stokes basket by Rescue 4 members and prepared for removal.

Ladder 21 positioned their apparatus on 33rd Street to be used as a high-point anchor. Squad 18 rigged a 4-to-1 mechanical advantage system to manually raise the victim to street level. He then was placed in a waiting ambulance and removed to the hospital.

Conclusions

1. *Training Bulletin, Confined Space Operations, Data Sheet 1*, states: “**DO NOT USE ANY POWER EQUIPMENT (CRANE, TOWER OR AERIAL LADDER) TO HAUL A HUMAN BEING FROM A CONFINED SPACE.**” The person getting hung up on an obstruction while being hauled could be

Medical Tag Definitions

Triage is structured based on START (simple triage and rapid treatment) that allows patients to be grouped or sorted by maximizing resource capabilities. START comprises four categories, based on a quick evaluation of a patient's respiration, circulation and mental status. The two categories mentioned in this article are defined below.

Red Tag--Immediate. Presents with one of the following: After repositioning the airway of a patient without respirations (apneic) once, respirations resume; a respiratory rate greater than 30 breaths per minute; an absent radial pulse; unconscious or unable to follow simple commands.

Yellow Tag--Delayed. Presents with all of the following: Non-ambulatory patients (the injury prevents them from walking or walking complicates their presenting problem); a respiratory rate less than 30 breaths per minute; radial pulse is present; can follow simple commands.

For a breakdown of all the tags used by EMS, see “EMS Operations at Bronx Box 75-8998, March 12, 2011,” by EMS Captain Thomas Luby, in the 4th/2011 issue of *WNYF*.

Using Power Equipment for Victim Removal; Proper Rigging Crucial When Removing Victim via Stokes Basket

As per *Training Bulletin, Confined Space Operations*, a crane, tower or aerial ladder shall never be used to haul a human being from a confined space, but can be used as a high point or anchor for a manual hauling system. The tower ladder is the preferred anchoring method because it has an 800-lb. capacity, compared to an aerial ladder, which has a 250-lb. capacity.

Even for a non-confined space operation, a crane or other power device should not be considered unless an imminent, life-threatening situation exists that warrants immediate victim removal that cannot be provided by a standard manual haul operation.

Photo at right shows the proper rigging of a stokes basket for a victim removal operation with an attendant attached. Note that there are three separate attachments to the crane hook:

- a main line to the stokes
- a main line to the attendant and
- a safety line to both the stokes basket and the attendant.

Please note that the tag lines attached to the stokes basket are used to control movement during ascent or descent.



killed or seriously injured...” The situation involved in this rescue was not considered a confined space because it was an open excavation with direct line of sight from the crane operator to the FDNY members below directing the removal. Still, under ordinary conditions, it would not be recommended to use a crane for this kind of removal operation. In the case of victim #1, EMS

Members are urged to review the following references:

- “Rescue at the East Side Access Tunnel,” by Lieutenant Peter W. Blaich, in the 1st/2012 issue of *WNYF*.
- “FDNY High-Angle Operations: An Overview, Part I and Part II,” by Lieutenant Thomas Donnelly, in the 3rd/2007 and 4th/2007 issues of *WNYF*, respectively.

- personnel advised that if he was not removed immediately, he would not survive. Therefore, it was decided to use the crane, which was immediately available, in lieu of taking the time to set up a manual haul system. Unfortunately, the victim did not survive, even with a rapid removal and transport to the hospital.
2. This operation involved a coordinated effort among all initial responding units, EMS personnel and SOC units. Although the most critically injured victim did not survive, the professionalism displayed by all FDNY units allowed for the most rapid removal and transport possible, giving him the best chance at survival.

About the Author...

Deputy Assistant Chief William C. Seelig is a 34-year veteran of the FDNY. He is the Chief of the Special Operations Command. Before becoming a Staff Chief, prior assignments included Chief of Rescue Operations and Deputy Chief in Division 6. He is an original member of the FDNY Incident Management Team, serving as an Operations Section Chief. He holds a bachelor’s degree in civil engineering from Manhattan College. He writes frequently for *WNYF*.



This broken cable may have contributed to the collapse of the crane boom.