Issued by: Fire Chief Scott E. Goldstein

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Authority: Montgomery County Code Section 21-3 (b)

Supersedes: Executive Regulation 66-89, *Cave-In Team Responses*, 04/12/1990. Executive Regulation 65-89, *First Response for Trench Collapse Incidents*, 04/12/1990

Effective Date: January 1, 2019

SECTION 1. Purpose:

To provide direction for first responding personnel during technical rescue incidents.

SECTION 2. Applicability:

This appendix is applicable to all MCFRS personnel and personnel from other organizations operating on incidents in Montgomery County.

SECTION 3. Background:

Technical rescue incidents cover a wide range of incidents that are beyond the scope of practice for most fire/rescue personnel. However, first responders to technical rescue incidents can still provide critical assistance to people in danger and can speed the process of intervention by the Technical Rescue Team (TRT).

This Appendix describes the MCFRS operational approach to technical rescue incidents. It is drawn from the experience of our personnel, lessons learned from similar events in Montgomery County, and from national best practices.

Position Statement

The intent of this appendix is to:

a. Provide personnel with a general framework for approaching technical rescue incidents;

b. Provide a framework for a risk/benefit analysis and;

c. To reduce the time frame from when technical rescue assets arrive and when they enter to execute the rescue.

This appendix **is not** a standard operational guideline for technical rescue personnel, nor does it prescribe how members of the TRT will operate on technical rescue incidents.

There are multiple characteristics of technical rescue incidents that increase their relative risk:

a. They are low frequency events and because of their low frequency personnel do not have a large set of experiences to draw on.
b. Technical rescue operations often involve great heights, great depths, and/or complex machinery.
c. Complex mechanical systems may react to input in non-linear ways, where cause and effect are not obvious.

Technical rescue incidents can be roughly divided into four basic types: trench, confined space, rope, and structural collapse. In many cases these basic categories will contain elements of the other categories. For example, most confined space incidents also require the use of rope systems.

The general approach to each of the technical rescue types follows the same basic framework, and like all fire/rescue incidents, all actions for technical rescue incidents must be based on clear objectives and an ongoing risk analysis.

Personnel must remember that these incidents are high risk/low frequency incidents and will place initial responders under stress, which will have an impact on their decision making. However, it is imperative that the rescuers, not the victim(s), dictate the terms and tempo of the rescue using a rational risk-based approach.

General Approach

There are four objectives common to all technical rescue incidents. Personnel must consider these objectives as a starting point and adjust as the situation demands. They are based on the ACRE mnemonic**:**

a. **Assess**: Assess the scene, determine the most appropriate travel routes and staging areas, identify hazards and conduct a risk analysis.
b. **Control**: Control hazards, isolate, remove any bystanders and deny entry, identify hazards, and establish Isolation Zones.
c. **Rescue**: Use appropriate methods and equipment to separate people from hazards.
d. **Evacuate**: Remove victim(s) to safety.

There are general principles that govern all technical rescue incidents:

a. Personnel must do no harm or further complicate the rescue.
b. Time spent in scene preparation and hazard control is rarely wasted.

c. Whenever it is safe to do so, personnel should make visual and/or verbal contact with the victim(s) in an effort to calm and reassure them.

d. Whenever possible personnel should support victim(s) self-rescue. For example, lowering a ladder into a trench or confined space so the victim(s) can climb out on their own.

Risk Assessment

An effective risk assessment for technical rescue incidents must consider the hazards the victim(s) are exposed to, the ability of fire/rescue personnel to control hazards, the likelihood that the hazards will cause harm or death, and the expected benefit of intervention. There are some critical points that must be factored into the risk assessment for technical rescue incidents.

a. The standard fire/rescue three-gas meter configuration is insufficient for technical rescue incidents but can be used in initial operations.

b. The fastest way to rescue and/or evacuate the victim(s) may not be the safest way to do so.

c. Some structural and trench collapses involve physical forces large enough to require custom engineering solutions.

d. Structural and trench collapses may involve physical forces that stress normal fire/rescue equipment beyond their designed ratings.

Risk Mitigation

For technical rescue incidents, MCFRS uses the following general methods to reduce and mitigate risk for first responding units and people in danger:

a. Establishment of an Incident Commander.

b. Identification and marking of Isolation Zones.

c. Development and communication of Incident Objectives.

d. Hazard identification and control.

SECTION 4. Definitions:

See Appendix Q.

SECTION 5. Policy:

a. Personnel must not perform tasks above their current level of certification.

b. Where a checklist exists for a given incident type, personnel must use the checklist.

c. The technical rescue incident checklists may be updated periodically at the discretion of the Fire Chief.

d. Control zones will be established as follows:

1. Trench

A. Hot zone 100’ from trench.

B. Warm zone 100’-250’ from trench.

C. Cold zone beyond 250’ from trench.

D. In general, apparatus will be staged in the cold zone.

2. Rope

A. Varies based on initial assessment, consider

i. Fall hazards,

ii. Potential for falling debris,

iii. Potential to complicate rescue, and

iv. Other hazards.

B. In general apparatus will be staged in the cold zone

3. Confined Space

A. Varies based on initial assessment, consider

i. Fall hazards,

ii. Potential for falling debris,

iii. Potential to complicate rescue, and

iv. Other hazards.

v. Apparatus will be staged in the cold zone.

4. Structural Collapse

A. The minimum hot zone for a structural collapse involving a structure four stories or greater will be 500’ in all directions, however,

B. Isolation Zones will vary based on initial assessment, consider

i. Fall hazards,

ii. Secondary collapses,

iii. Uncontrolled utilities,

iv. Potential for hazardous materials,

v. Potential for falling debris,

vi. Potential to complicate rescue, and

vii. Other hazards.

viii. Apparatus will be staged in the cold zone.

e. First responders may approach a trench to conduct reconnaissance and/or to make contact with victim(s). When they do the following guidance applies:

1. Personnel should approach from the narrow end of the trench.
2. The number of personnel near the trench must be limited to only those absolutely necessary.
3. Personnel may lower ladders into the trench to support self-evacuation.

f. First responder personnel may enter a trench when:

1. Protective systems (such as shoring or trench boxes) are in place;
2. The reason for the emergency does not involve failure of those protective systems;
3. The atmosphere of the trench has been checked at multiple elevations using the Fire Rescue issued multi-gas meter and no sensors are in alarm; and
4. The victim's condition requires immediate evacuation.

g. First responder personnel may execute rescues, limited to low angles (generally less than 45-degree angles), using rope systems and standardized stokes basket evolutions as established in the *Stokes Basket Operations Using Aerial Devices* document and the PSTA Driver Training Program.

h. Only aerial tower apparatus may be used for a rope system intended for a two-person load.

i. Rope systems must be designed to reduce the risk of applying shock load to aerial apparatus.

j. The TRT must be present on scene anytime personnel must use rope systems for steep or high angle rescues.

k. Rappelling from any component of an aerial apparatus, including the tip or bucket is prohibited.

l. Travel restriction or fall arresting systems must be in place for anyone operating within 10' of an exposed area with a fall risk greater than 6 feet.

m. First responder personnel may not enter collapsed structures until the structure has been evaluated by TRT personnel.

n. **Initial Actions**

1. The first arriving Primary Unit Officer will provide the Initial On-Scene report (IOSR).
2. The first arriving Primary Unit Officer will then:
   A. Assess the entire scene.
   B. Gather information about the circumstances of the event preferably from direct witnesses.
   C. Provide a Situation Update Report (SUR) containing the information gathered during the scene assessment:
      i. **Location.** Update and/or confirm location of incident.
      ii. **Conditions.** Type of technical rescue involved, a description of the situation, the number of people in danger, description of hazards found.
      iii. **Actions.** What actions you have already taken, and which do you intend to take.
      iv. **Needs.** Announcement of what resources will be needed to execute the rescue.
      v. The SUR report contains the command choice (Tactical or Stationary).

p. For confined space rescue, personnel must wait for TRT resources to make the rescue.
   1. Personnel should take action to make known hazards safe including utilities and moving/moveable equipment.
   2. Personnel must use caution and consider consulting with the TRT officer before ventilating confined spaces. Forced air ventilation may create hazards (e.g., introduce additional oxygen, or reduce air temperatures, or increase convective heat loss for victims).
   3. The presence of known chemical hazards requires a call for the appropriate hazmat response.

SECTION 6. Responsibility:

Personnel are responsible for knowing their current certification level and not acting in a capacity that exceeds their current certification.

SECTION 7. Procedure:

a. The first arriving Primary Unit Officer must:
   1. **[Provide an ISOR].**
   2. Assess the scene.
   3. **[Provide SUR].**
   4. **[Announce best access for additional units]**.

5. **[Announce staging location for units]**.
6. Use the appropriate TRT checklists

b. Engine

1. Will generally act as Incident Commander (in compliance with the Incident Command Appendix).

c. Aerial

1. Establish and maintain Isolation Zones.
2. Control utilities as necessary
    A. Lockout/tagout as necessary.
3. Crew may assist with gathering equipment as necessary to support rescue plan.
4. Control other hazards as necessary.

d. Rescue Squad

1. Make access to the victim(s) and, if it is safe to do so, calm and reassure the victim(s).
2. Create and communicate an action plan with an initial focus on stabilizing the situation.

e. EMS Units: Stage as directed

f. Other Units: Stage as directed

SECTION 8. Cancellation:

Executive Regulation 66-89, *Cave-In Team Responses*, 04/12/1990.

Executive Regulation 65-89, *First Response for Trench Collapse Incidents*, 04/12/1990

SECTION 9. Attachments:

A. First Response to Trench Checklist
B. First Response to Rope Checklist
C. First Response to Collapse Checklist
D. First Response to Confined Spaces Checklist

Approved:

Scott Goldstein

January 1, 2019

Fire Chief

Date