

## APPENDIX B

### Emergency Operations

1. Safety and Health Requirements. During emergency operations, it is extremely important that safety and occupational health (SOH) requirements are implemented. Personnel often perform unusual, difficult, hazardous tasks while in a challenging environment, and these conditions may increase risk and the potential for accidents. Additionally, resources are in short supply, and the loss of any resource to a mishap reduces the USACE ability to respond.

a. The SOH of USACE employees, Contractors, and members of the public exposed to USACE activities will be a primary concern during all USACE emergency operations. SOH Offices (SOHO) shall provide the necessary input to their Emergency Management counterparts to ensure that planning for SOH concerns (including hazard and risk analysis) is addressed prior to and during emergency operations.

b. Contract Requirements. SOH program requirements shall be included in all Government and contract operations. FAR Clause 52.236-13 shall be included in contracts and memoranda of agreement/understanding (MOAs/MOUs) for emergency operations and recovery assistance.

c. Accident Prevention Plan (APP) and Activity Hazard Analyses (AHAs). In addition to the APP already submitted by the Controlling Contractor, activity-specific AHAs shall be developed and submitted to the on-site USACE SOH professional for review and acceptance prior to beginning any operation (debris removal, tree removal, blue-roof activities, leaners and hangers, etc.). Once accepted, the AHA is considered a living/field document that is intended to be updated in the field by the field crews so that it constantly reflects current equipment, personnel, conditions, PPE, etc. GDA acceptance of changes made to an AHA is not necessary as long as changes do not increase original risk assessment code (RAC) level for the activity, as long as requirements are being met and a copy is made available upon request.

d. Structural Demolition. For structural demolition activities, consideration shall be given to combine like-structures under a common engineering survey and demolition plan, see Section 23.A.01.a. For example, single-story residential structures that would pose no hazards to neighboring structures or personnel could be demolished using a common engineering survey and demolition plan, whereas multiple-story structures or others that would pose risks to personnel or other structures would have individual surveys and plans per Section 23.A.01.

2. Initial Response. A qualified SOH professional shall be immediately alerted of the disaster and shall be included in the planning and execution of response and recovery efforts. This individual shall assess SOH issues and shall assure precautions are taken prior to deployment of personnel. Issues to consider include: sanitation, drinking water, power supply, living quarters, driving conditions, environmental conditions, and health issues.

3. Staffing. SOHO in the Geographic District experiencing the disaster will be temporarily staffed with additional safety, industrial hygiene, and medical personnel as necessary to ensure a comprehensive SOH program is administered for all emergency operations. If a Recovery Field Office (RFO) is established, SOH staffing is usually accomplished by use of SOH functional planning and response teams (PRT). If a RFO is not established, the Geographic District shall establish an emergency operations safety office (minimum staffing to include a safety manager and administrative support person) dedicated totally to emergency operations. Also, each Emergency Field Office established shall have a minimum of one SOH professional.

a. Medical personnel shall provide medical assistance, assessments, and advice to USACE management and employees.

b. SOH personnel shall: manage safety and health aspects of emergency operations; provide advice on SOH issues; provide SOH technical oversight for USACE employees, other Federal employees engaged in fulfilling the Corps' mission, and quality assurance for Contractor employees.

c. Prime Contractors for emergency operations are required to have as a minimum a full-time, qualified SOH professional on-site. Qualifications of the SOH professional shall be provided to the GDA for review and acceptance. Additional Contractor personnel may be required as determined by the GDA.

4. Qualifications of Government Employees.

a. All Government employees reporting for emergency recovery operations shall meet the medical requirements in the current All Hazards OPOD (currently 2012-11) and shall have a current medical clearance in ENGLink. This requirement shall be confirmed upon arrival during the check-in process.

b. Employees with known pre-existing non-work-related medical conditions such as uncontrolled diabetes, cardiovascular or pulmonary problems, back conditions, pregnancy or hypertension shall not deploy to emergency operations sites unless specific medical clearance is provided by the USACE medical provider in conjunction with their personal physician(s) indicating their current medical condition will not jeopardize their health or their ability to fully perform their duty assignments at deployment sites.

c. Employees may be returned to their duty station if during the course of duty they experience health problems that may endanger their well-being.

d. Employees shall be notified that pharmacies and medical services may be limited at the emergency operations site.

5. Mobilization of USACE Personnel. USACE personnel will be provided the following prior to departing their home duty station for emergency operations:

a. PPE consisting of, at a minimum, head, eye and foot protection appropriate for the hazards of the field activities that they will perform (additional PPE that may be necessary will be provided at the emergency operations site), and

b. Immunizations appropriate for their field exposure (follow-up immunizations will be the responsibility of each employee's home duty station). Deploying USACE personnel shall obtain the immunizations as required by the current All Hazards OPORD. The USACE personnel will update their immunization data in ENGLink before departing their home station, provide a copy to a USACE nurse for verification, and carry with them their immunization record (USPHS Form 731) or immunization record which provides, type of immunization with lot and manufacture, date of immunization, and name and credential of provider.

6. Safety Orientation. SOH in-briefings and orientation shall be conducted as personnel arrive at the emergency area and prior to beginning work activities.

7. Communications.

a. Two-way radios, cellular phones, computers and facsimile machines shall be used as needed to establish and enhance communications. > See Section 18.C.01.

b. SOH programs, documents, signs, tags, instructions, etc., shall be communicated to employees and the public in a language they understand.

8. Duty Schedule.

a. During the first 2 weeks of an emergency response operation extended work hours are allowed. Supervisors shall monitor employees for signs of stress-related health problems and seek medical assistance as appropriate.

b. For operations lasting longer than 2 weeks, USACE and contractor employees shall not work in excess of 84 hours per week. The duty hours an employee would be required to work during emergency operations are 12 hours per day, 7 days a week. Work and travel time must allow for 8 hours continuous rest between each work shift.

c. Employees who are working 12 hours per day, 7 days a week shall be provided the opportunity for 24 hours of rest after working 14 days and 48 hours of rest after working 21 days. Employees shall be required to take at least 24 hours off for rest after a continuous 30-day period of work during normal non-duty days (Saturday or Sunday) and shall be required to take at least 24 hours every 2 weeks thereafter. Supervisors shall monitor employees for signs of stress-related health problems and seek medical assistance as appropriate.

9. Machinery and Mechanized Equipment. > See Sections 16 and 18.

a. Inspection of equipment is critical as mobilization can be extremely short and equipment may not be up to USACE safety standards. Whenever feasible, contract specifications shall provide adequate mobilization time to allow equipment to be inspected and brought up to USACE standards. Equipment not meeting the requirements of this manual will not be used.

b. Trucks hauling debris on public highways shall have physical barriers (covers and either tail gates or chain link fencing) to preclude debris from falling from the truck. Tail gates or chain link fencing shall cover the full area at the rear of the dump body.

(1) Back-up alarms shall be provided.

(2) The need for rollover warning devices shall be considered for long-bed end dump trucks.

(3) Sideboards shall not be added to trucks to increase their capacity unless specific design specifications are provided to Contractors as part of the scope of work. Single or double boards added to trailers designed for normal operation with the additional boards are permitted. Where sideboards are permitted, the tail gate or chain link fencing shall extend to cover the full area of the rear of the vehicle.

(4) Trees, to include leaners and hangers, shall be cut into manageable size to place in the bed of a truck. All loads shall be secured so that any debris, dust-like emission, aggregate (gravel), soil, or stump cannot be ejected during transport to the final reduction site. After final reduction, tarping systems that prevent workers from being exposed to fall hazards greater than 6 ft (1.8 m) shall be required. All loads leaving the reduction site shall be secured and tarped.

c. Prior to operation, Contractors shall develop written safe operating procedures (SOPs) for each brush chipper, shredder, and/or grinder.

(1) SOPs shall incorporate the manufacturer's recommendations for safe operation of this equipment as well as the use of an exclusion zone (EZ) and fire prevention efforts.

(2) Operations and maintenance manuals for chippers, grinders, and shredders shall be kept on-site.

(3) A minimum 200 ft (61.0 m) EZ is required for authorized persons during operation of chippers, shredders, and grinders unless documentation or actual practice indicates otherwise. Signs shall be placed at 200 ft (61.0 m) identifying the EZ.

(4) The public shall be kept a minimum of 300 ft (91.4 m) from all chipper operations.

(5) Unauthorized personnel shall not enter the EZ while the chipper is in operation.

(6) Front-end loaders, skid steers, knuckle booms, and other equipment working in debris reduction areas or feeding grinders, shredders or chippers shall provide protection to the operator as required in Section 18.

(7) Whenever chipper operations are shut down for any significant length of time (e.g., overnight or when the chipper will be left unattended), equipment walls, crevice drums, cutter heads and hammers, and drive mechanisms shall be cleared of all combustible materials by blowing, washing, and wetting down.

(8) Any material contaminated by leakage of hydraulic fluids, oils, or fuel shall be immediately removed. Leakage shall be minimized through preventive maintenance.

(9) Because piles of chipped wood are susceptible to spontaneous combustion, fire controls such as segregation, separation, and adequate water supply shall be used.

d. The number of workers in proximity to loaders, trucks, and other equipment shall be the minimum necessary to accomplish the job.

(1) In restricted areas or areas with reduced access or visibility, special precautions will be taken to ensure the safety of workers on the ground.

(2) Sequencing of work shall minimize equipment movement when personnel are in the work area.

(3) Workers in the area of operating machinery or vehicular traffic shall wear high-visibility apparel, in accordance with Section 5.F. These workers include, but are not limited to flag persons, signalpersons, spotters, survey crews and inspectors.

e. Loaders, trackhoes, and other construction equipment in debris reduction areas shall have functional lights in the front and back in order to work at night or during periods of reduced visibility.

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f. Aerial Lifts/Platforms/Bucket trucks shall conform to requirements identified in Section 22.M.

g. Unless provided by the manufacturer, seat belts are not required at the operator's station on articulating grapple trucks (knuckle boom trucks). If provided by the manufacturer, seat belts are required to be worn. Access ladders shall be a minimum of 12 in (30.5 cm) width with 16 in (40.6 cm) recommended.

#### 10. Traffic Control.

a. Traffic control is extremely important on highways, in residential areas, and at construction sites. When traffic may pose a hazard to operations, public roads will be closed. Road closings shall be coordinated in writing with appropriate local agencies. Traffic controls and signage should comply with the DOT Federal Highway Administration's "Manual on Uniform Traffic Control Devices (MUTCD)".

b. When a road cannot be closed, the following precautions shall be taken:

(1) "FLAGGER" (MUTCD W-20-7) or "WORKERS AHEAD" (W21-1) or similar appropriate signs shall be placed along the roadway, 1,000 ft (304.8m) and 500 ft (30.5 m) before the work zone, on both sides of the work zone;

(2) Sufficient number of flag persons shall be used to control traffic within the work area;

(3) Flag persons shall be used and shall receive instruction in flagging operations before being placed in traffic. Flagger training shall be consistent with the requirements of the MUTCD and State DOT unless the State requirements have been waived for the emergency at which point training and certification, such as provided by the National Safety Council, is recommended;

(4) All flag persons shall wear high-visibility apparel in accordance with Section 05.F, safety-toed footwear and hard hats;

(5) "STOP/SLOW" paddles, preferably mounted on a 6 ft (1.8 m) staff, will be used for traffic control;

(6) Flag persons shall be able to communicate with each other and with the foreman, and effectively signal/direct the affected public;

(7) Two-way radios shall be used whenever visual contact between flaggers is not maintained.

c. When construction vehicles and all vehicles exceeding 1-1/2 tons (1360.8kg) are required to back-up, an AHA shall be developed per Section 01.A.14 that considers all potential hazards and controls to include consideration for use of a spotter.

d. Fugitive dust emissions shall be kept to a minimum within the work boundaries especially when adjacent to debris towers.

## 11. Debris Reduction.

### a. General information.

(1) The Contractor shall notify the local fire department and arrange for fire suppression support in case of fire beyond the Contractor's firefighting capability.

(2) Adequate supplies of water or fire extinguishers shall be readily available and fire watches shall be used. A fire watch shall be present continuously at debris collection/reduction sites anytime there is reduction taking place or visible flame and when the site is not being actively worked and the potential exists for spontaneous combustion or other fire hazard. The fire watch shall have at least one 20 lb ABC fire extinguisher available and the means to expediently communicate with the site supervisor and designated fire response agencies.

(3) No hazardous or containerized ignitable material shall be co-mingled with debris.

(4) Pits may not extend within 1 ft (30.5 cm) of the ground water table. Pits shall have a compacted clay layer (or similar) on the bottom to minimize migration of ash to the aquifer.

(5) Particulate emissions must meet State and EPA standards for burning operations. The site manager must be continuously aware of wind conditions and adjust accordingly to control smoke encroachment into residential areas. Wind meters must be available on site to track wind conditions. Personnel shall work out of direct smoke streams.

(6) Eye wash facilities shall be provided at all burning and grinding operations. > See Section 06.

(7) For night operations, adequate lighting of 55 lx (5 fc) shall be provided in all outdoor work areas.

(8) Signs shall be posted at entrances to debris collection/reduction areas indicating "NOTICE: AUTHORIZED PERSONNEL ONLY" (USACE SNO-07 or ANSI equivalent).

(9) A “Danger/Keep Back” sign shall be posted at the edge of the 100 ft (31 m) setback from air curtain incinerators and open burn areas as a warning to personnel (USACE UNS-01 or ANSI-equivalent).

(10) All personnel working in debris collection/reduction areas shall wear safety shoes, hard hat, safety glasses, Class II (minimum) high-visibility vest, and have hearing protection available.

(11) A minimum 30 ft (9 m) wide fire lane shall be cleared around the full perimeter of the site with a silt fence along the perimeter. The fire lane shall be kept clear of all combustible materials.

(12) All burning operations, including air-curtain incinerators, shall be conducted at a distance of no less than 1000 ft (305 m) from an occupied dwelling or business or a dwelling or business in such condition that it can be occupied.

(13) For outbuildings such as barns, sheds, structures destroyed by the storms, tree lines and similar, the minimum separation distance is 300 ft (92 m) subject to local authority approval.

(14) Burning may not occur within 100 ft (31 m) of overhead utility lines.

b. Debris/mulch piles.

(1) At least 100 ft (31 m) is required between the debris/mulch piles and the burn area or incinerator.

(2) At least 1000 ft (305 m) is required between the debris/mulch piles and the nearest occupied dwelling or business or a dwelling or business in such condition that it can be occupied.

(3) Debris/mulch piles shall not be placed directly under transmission lines nor located within 100 ft (31 m) of transmission towers.

(4) A minimum 30 ft (9 m) wide fire lane shall be cleared around each debris/mulch pile. The fire lane shall be kept clear of all combustible materials.

(5) Mulch piles shall not be stacked greater than 20 ft (6 m) high for more than 7 days due to the increased risk of spontaneous combustion.

c. Air-curtain incinerator operations.



(1) Prior to operating an air-curtain incinerator, the contractor shall develop a written AHA and SOP. Employees will be briefed on the AHA/SOP, which will be readily available for their review. In addition, the contractor shall have all incinerator placements inspected by a USACE SOH professional prior to the start of burning and ensure that the design is maintained throughout the life of the activity.

(2) The design of air-curtain operations shall provide for efficient burning of materials.

(3) Equipment, such as trackhoes, that feed burn pits/debris piles shall have a fully enclosed cab equipped with an air filtration and pressurization system. Workers requiring respirators shall be enrolled in the respiratory protection program and all applicable requirements met in accordance with Section 5.

(4) There shall be a 1 ft (0.3 m) high warning barrier the length of the charging side of the pit to warn equipment operators. It shall be constructed of non-combustible material.

(5) Pits must be constructed out of highly compactable material that will hold its shape.

- If a manufactured fire box is not provided, the incineration pits shall be made of Type B soil (cohesive soil), and be reinforced with earth anchors, wire mesh, or other items in order to support the weight of loaders.

- The edges of the pit shall be checked for integrity on a regular basis to prevent unexpected cave-ins or collapse.

- There shall be an impervious layer of clay on the bottom of the pit to attempt to seal the ash from the aquifer. This shall be replaced if scraped by dozers.

- The length of the air-curtain pit shall not be more than 6 in (15.2 cm) longer than the blower system at each end.

- The ends of the pit shall be near vertical and extend to the top of the pit.

(6) If a pick-and-drop debris pile is located within the 100 ft (30.5 m) minimum separation zone of the air curtain incinerator, the total volume of the pick-and-drop debris pile(s) supporting an incinerator shall not be more than four times the volume of the incinerator pit.

(7) A 12 in (30.5 cm) soil seal shall be placed on the lip of the air curtain incineration pit to seal the blower nozzle. The nozzle should be 3 in (7.6 cm) to 6 in (15.2 cm) from the edge of the pit.

d. Open burning operations.

(1) Open burning may involve one of the following:

- Ignition of brush piles in rows on top of the ground;
- Digging a fire pit in the ground or constructing the pit above ground using berms;
- Constructing a 3-sided bermed pit open at one end to allow equipment tending the fire to push the brush pile to one end and continue feeding, with all brush contained below the top of the bermed area.

(2) When open burning:

- AND sustained wind speeds reach 15 mph, additional material may not be added to the burn pile;
- Full burning may resume when sustained wind speeds drop below 15 mph;
- When sustained wind speeds reach 20 mph, fires shall be wetted or knocked down to control spread of fires.

(3) Each open burning area may not exceed 200 ft by 200 ft (61 m x 61 m) in the horizontal plane.

- If space permits the use of multiple open burning areas, there will be a 30 ft (9.1 m) fire lane between the open burning areas.
- The load approach area of the pits shall be sufficiently compacted to provide a surface capable of supporting the loading equipment without damaging the integrity of the pit walls.
- A stop of non-combustible material shall be constructed no closer than 10 ft (3 m) of the edge of the pit to prevent equipment from falling into the pit.

(4) When burning in pits:

- AND the top of the brush pile remains below the top of the pit AND sustained winds reach 25 mph, additional material may not be added to the pile:
- AND sustained wind speeds reach 30 mph, fires shall be wetted or knocked down to control spread of fires.
- AND the brush pile extends above the top of the pit AND sustained wind speeds reach 15 mph, additional material may not be added to the burn pile.
- AND the brush pile extends above the top of the pit AND sustained wind speeds reach 20 mph, all fires must be wetted or knocked down.

- Debris may not be stacked in the burning area higher than 10 ft (3 m) above the original ground level.

e. Ash management.

(1) The burn shall be extinguished approximately 2 hours before anticipated removal of the ash mound. The ash mound shall be removed before it reaches 2 ft (0.6 m) below the lip of the incineration pit.

(2) The contractor shall exercise dust control measures while handling ash especially during transport. Ash shall not be transported until it is proven fully extinguished (soaked with water, producing no steam, and having no visible evidence of residual hot embers).

12. Temporary Roofing.

a. During emergency operations that involve residential temporary roofing, RFO Commanders may permit:

(1) The use of athletic footwear by workers performing temporary roofing operations only;

(2) The removal of hard hats by workers on roof tops;

b. Fall Protection shall be per Section 21 and fall protection during temporary roofing activities shall be in accordance with Figure B-1.

c. While workers are on the roof, weather shall be monitored as required in Section 01.E.01.

13. Tower Safety Requirements.

a. All towers shall be designed by a registered professional engineer (RPE) and clearly marked with weight capacities. The weight capacities shall not be exceeded under any circumstance.

b. All towers shall be GFCI (Ground Fault Circuit Interruption) protected, receptacles shall have gasket weather-proof coverings, and both electrical boxes and conduit shall be rated for outdoor use.

c. No modifications shall be made to the tower that will affect the structural stability of the structure without obtaining a sign-off by the design engineer.

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d. Personnel shall not lean out of tower windows nor use stools or other steps to decrease fall protection provided by the window height. If visibility of load is obstructed, use of a mirror or other tool shall be utilized.

e. All portable generators shall be tagged green for having been inspected and deemed in compliance with the manufacturer's recommendations especially in regards to proper grounding.

f. Scissor lifts may be approved by the GDA during the initial 72 hours of the emergency operation during tower construction.

(1) Scissor lifts may not be occupied by more than two individuals at any given time unless the manufacturer allows additional occupancy.

(2) All personnel shall be provided with and required to wear proper fall protection with restraint lines while in the scissor lift, as required in Section 21.

(3) Scissor lifts shall be protected from impact by suitable impact protection equal to that required by a tower in the same location.

g. All towers shall be provided sufficient traffic barrier protection such as would be provided by concrete jersey barriers.

14. Tree Maintenance. > See Section 31.

15. Defensive Driving Training. Personnel involved in emergency operations are at increased risk of motor vehicle accidents due to damaged roadways, debris/hazards in roadways, road closings, malfunctioning or missing traffic control devices, extended duty hours, and driving under challenging environmental conditions.

a. Safe driving programs shall be instituted and those deploying will have current Defensive Driver Training.

b. In addition, Government-owned vehicles operated by Contractor personnel (GOCO) shall also have current Defensive driver training. > See Section 18.

c. Personnel operating off-road vehicles shall be trained, prior to operation, in the use of such equipment. > See Sections 18.C.02 and 18.D.

16. Public Safety. Requirements for work area delineation, traffic control devices, and the use of flag persons shall be considered and as per ANSI A10.34. Public service announcements shall be used as needed to promote safety of the public exposed to USACE activities. Barriers and fencing shall be considered in restricting the public from operation sites. It is also necessary for all contact with the public to be handled in a courteous manner. > See ANSI A10.34.

17. Health Hazard Recognition.

a. Health hazards (e.g., asbestos, lead paint, radiation, hazardous chemicals, etc.) shall be identified and controlled through the recommendations of a qualified industrial hygienist(s). Instrumentation, as required, shall be provided for the detection and measurement of health hazards. After hazards have been identified, and measured, this information shall be posted at the work site and copies of this posting shall be kept by both the contractor and the relevant local USACE field office's Quality Assurance Team. Controls shall be instituted where required and a description of the controls shall be written as part of the APP.

b. Asbestos Recognition and Control. Before work begins where the potential exists for an exposure to asbestos containing material, an asbestos control plan shall be developed using age of the buildings, type of typical building supplies for the period and location, and any observations of debris or demolition areas.

(1) The plan shall be written by an industrial hygienist with asbestos training or an AHERA trained supervisor or manager.

(2) If possible, the potential work areas should be inspected by asbestos trained inspectors or an industrial hygienist to identify and quantify asbestos hazards.

(3) The plan shall address control mechanisms, such as wetting with water or surfactant, posting, worker and community protection, air sampling, and safe transport and disposal.

(4) As the asbestos volume and type may change, the pre-inspections of the debris and demolition areas shall continue for each new sector. > See also Section 06.B.05.

18. Mishap Reporting.

a. All mishaps (near-miss, incident or accident) shall be reported in accordance with AR 385-10 and applicable supplements.

b. Contractor motor vehicle mishaps occurring on public highways shall be reported for trend analysis only and shall not be considered recordable.

c. The RFO SOH Manager will report mishap experience during emergency operations by maintaining an onsite accident log and by creation of a Preliminary Accident Notification (PAN) in ENGLink under the event name for all recordable accidents. This information, as well as information regarding unsatisfactory SOH performance and/or unresolved SOH problems, will be periodically reported to the USACE National Program Manager for SOH Emergency Planning and Response.

19. Variances to Safety and Health Requirements. The on-site RFO SOH Manager may recommend variances to the requirements contained within this manual to the Geographic District SOHO.

a. The Geographic District SOHO must review the request, concur or non-concur. Geographic District SOHOs will exercise prudent judgment in their recommendations for granting variances with due consideration of existing disaster conditions.

b. The recommended variance is then coordinated with the KO/COR for concurrence and then given to the RFO Commander for approval.

c. The RFO Commander shall have the authority to approve or disapprove requests for variances.

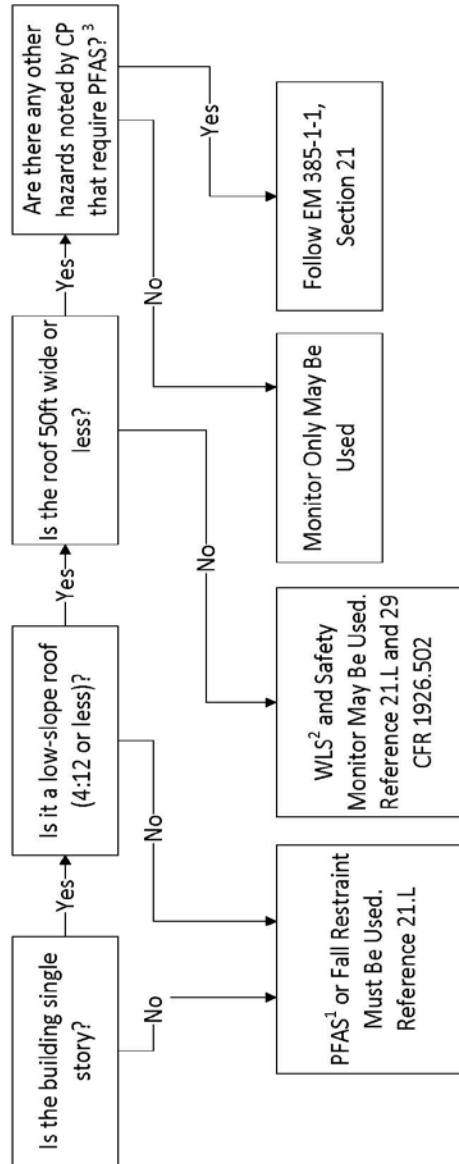
d. All variances granted must be copied to Division and HQ SOHO immediately for information only. The variances approved by the RFO Commander will expire at the end of the emergency operation mission.

Figure B-1

Blue-Roof Mission – Fall Protection Chart

Blue-Roof Mission

Fall Protection Chart



<sup>1</sup> Personal Fall Arrest System

<sup>2</sup> Warning Line System

<sup>3</sup> Other hazards, e.g. downed power lines or trees or obstructions from other sources, snow or ice, heavy rain or wind, roof load bearing risks, and insect/vermin hazards

Regulatory Requirements. Contractor shall submit a Fall Protection Plan specific to the mission which complies with the requirements in EM 385-1-1 Sections 21 and 24, and 29 CFR 1926.500. In addition, an Activity Hazard Analysis shall be developed for each roof prior to start of work.

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