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# UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS

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In this unit you will learn about:

- **Search and Rescue Sizeup:** How to size up the situation in which the search and rescue teams will operate.
- **Conducting Interior and Exterior Search Operations:** How to search systematically for disaster victims.
- **Conducting Rescue Operations:** Safe techniques for lifting, leveraging, cribbing, and victim removal.



**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

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<b>OBJECTIVES</b>	<p>At the conclusion of this unit, the participants should be able to:</p> <ul style="list-style-type: none"><li>▪ Identify sizeup requirements for potential search and rescue situations.</li><li>▪ Describe the most common techniques for searching, both interior and exterior.</li><li>▪ Use safe techniques for debris removal and victim extrication.</li><li>▪ Describe ways to protect rescuers during search and rescue.</li></ul>
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<b>SCOPE</b>	<p>The topics that will be discussed in this unit are:</p> <ul style="list-style-type: none"><li>▪ Introduction and Unit Overview</li><li>▪ Safety During Search and Rescue Operations</li><li>▪ Conducting Interior and Exterior Search Operations</li><li>▪ Conducting Rescue Operations</li><li>▪ Unit Summary</li></ul>
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<b>ESTIMATED COMPLETION TIME</b>	2 hours 30 minutes
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<b>TRAINING METHODS</b>	<p>The lead instructor will begin this session by welcoming the participants to Unit 5: Light Search and Rescue Operations, and will introduce the instructors for the unit. The instructor will then present a brief overview of this unit, including making the distinction between search and rescue, the goals of search and rescue, search and rescue priorities, and the steps involved in effective search and rescue for both interior and exterior areas.</p> <p>Next, the instructor will review the sizeup process as it applies to search and rescue. At this time, the instructor will emphasize the most dangerous construction-related hazards. The instructor will emphasize the importance of rescuer safety in all sizeup decisions. Participants will complete a sizeup exercise using either the scenarios provided or locally prepared scenarios.</p>
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**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

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**TRAINING  
METHODS  
(CONTINUED)**

The next section will deal with search techniques for locating potential victims. The instructor will identify the types of voids and collapses that CERT members should avoid and the methods that searchers can use for locating victims and documenting their positions within lightly or moderately damaged structures.

Finally, the instructor will describe rescue techniques and methods for lifting, debris removal, and finally, victim removal. The instructors will demonstrate leveraging and cribbing. The instructors will also demonstrate using lifts and drags as victim removal techniques, and the participants will practice those techniques under instructor observation. At the end of this section, the group will participate in a simulation involving both debris removal and victim removal.

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**RESOURCES  
REQUIRED**

- *Community Emergency Response Team Instructor Guide*
- *Community Emergency Response Team Participant Manual*
- PowerPoint slides 5-0 through 5-48

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**OTHER  
RESOURCES**

If time permits, all or portions of the 32-minute video *CERT Training: Safety in the Post-Disaster Environment* are recommended for this unit. The video provides an overview of safety considerations for CERT responders and is available for download at the national CERT Web site: [www.citizencorps.gov/cert](http://www.citizencorps.gov/cert).

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**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

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**EQUIPMENT**

In addition to the equipment listed at the front of this Instructor Guide, you will need the following equipment for this session. The number of each item needed for practicing victim extrication and carries will depend on the number of groups practicing these skills at the same time.

- A computer with PowerPoint software
- A computer projector and screen
- Mannequin(s) or rescue dummy(ies) for extrication
- Blankets for victim carries
- Appropriate chairs for victim carries
- Large, flat objects (e.g., table) and pieces of wood for leveraging and cribbing
- Pry bars or long 2" x 4" pieces of lumber

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**PREPARATION**

For the exercise titled *Gathering Facts*, a scenario has already been developed. The scenario appears in the Participant Manual and on page 5-18 in this Instructor Guide. You should feel free to alter the scenario to reflect the community's needs.

The exercise titled *Search and Rescue Sizeup* requires the preparation of scenarios that are realistic for your community. This exercise appears in the Participant Manual and on page 5-35 in this Instructor Guide. Be sure to prepare the scenarios in advance of the session and have copies for each participant. Include the following types of information in the scenarios:

- Type of event
- Intensity, severity, and duration
- Occupancy affected
- Current and forecast weather conditions
- Time of day and week
- Other factors that may affect search and rescue operations

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

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**PREPARATION  
(CONTINUED)**

Information that is provided about assessment of probable damage in relation to types of construction focuses primarily on earthquake damage. For other types of disasters (e.g., tornadoes, hurricanes, or floods) likely to occur in your area, obtain and add information about their probable impact on various types of construction.

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**NOTES**

Remember as you work through this unit with the group to stress the role of the CERT in search and rescue. The participants must come away from the training with an understanding of their limitations and the attitude that their safety is paramount, even above that of the victims.

A suggested time plan for this unit is as follows:

Introduction and Unit Overview.....	5 minutes
Safety During Search and Rescue Operations .....	45 minutes
Conducting Interior and Exterior Search Operations .....	35 minutes
Conducting Rescue Operations.....	60 minutes
Unit Summary .....	5 minutes

Total Time: 2 hours 30 minutes

**For the purposes of time and comprehension, this unit may be divided into two units and taught separately. Should you choose to do this, you are advised to teach through “Conducting Interior and Exterior Search Operations” in the first session and resume with “Conducting Rescue Operations” in the second session.**

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**REMARKS**



Search and rescue sizeup is based on the model introduced in Unit 2: Fire Safety and Utility Controls. Review the sizeup section carefully and develop examples of damage levels based on the hazards faced and the types of structures that are common to your community. Provide these examples at appropriate points in the instruction to illustrate important learning points.

# Unit 5: Light Search and Rescue Operations

INSTRUCTOR GUIDANCE	CONTENT
<div data-bbox="188 627 626 957" data-label="Image"> </div> <p data-bbox="188 993 444 1031"><b>Display Slide 5-0</b></p> <div data-bbox="188 1230 266 1304" data-label="Image"> </div> <p data-bbox="188 1339 444 1377">Correct response:</p> <div data-bbox="188 1409 626 1667" data-label="Diagram"> <pre>       graph TD         IS[Incident Site] --&gt; T[Triage]         T --&gt; IA[Immediate]         T --&gt; DA[Delayed]         T --&gt; MI[Minor]         IA --- TA[Treatment Area]         DA --- TA         MI --- TA         M[Morgue]         TR[Transportation]         TA --- TR         style TR fill:#333,stroke:#fff,stroke-width:1px       </pre> </div> <p data-bbox="188 1677 607 1705"><small>Treatment area layout, showing the organization for the incident site, triage, transportation, and morgue</small></p>	<p data-bbox="659 663 1154 701"><b><i>Introductions and Overview</i></b></p> <p data-bbox="659 764 802 802"><b>Welcome</b></p> <p data-bbox="659 821 1398 888">Introduce this session by welcoming the participants to Unit 5 of the <i>CERT Basic Training</i>.</p> <p data-bbox="659 930 1406 1035">Introduce the instructors for this session and ask any new instructors to describe briefly their experience with search and rescue operations.</p> <p data-bbox="659 1136 1159 1173">Briefly review the fire safety lesson.</p> <p data-bbox="659 1230 1403 1335"><b>Who can explain or diagram a good arrangement for the treatment area in relation to the incident site and transportation availability?</b></p>

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**


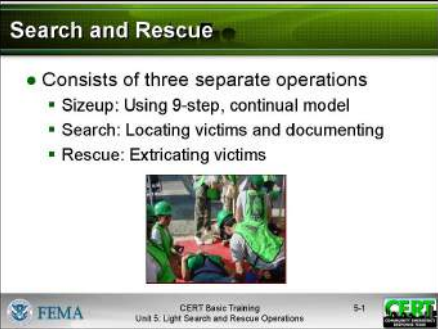
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INSTRUCTOR GUIDANCE	CONTENT
 <p>Correct response:</p> <ul style="list-style-type: none"><li>▪ Deformities</li><li>▪ Contusions (bruising)</li><li>▪ Abrasions</li><li>▪ Punctures</li><li>▪ Burns</li><li>▪ Tenderness</li><li>▪ Lacerations</li><li>▪ Swelling</li></ul>	<p><b>What are you looking for in a head-to-toe assessment?</b></p>
 <p>Correct response:</p> <ul style="list-style-type: none"><li>▪ Cool the burned area.</li><li>▪ Cover with a sterile cloth to reduce the risk of infection (to keep fluids in and germs out).</li></ul>	<p><b>What are your objectives when treating burns?</b></p>
 <p>Correct response:</p> <p>Redress <u>over</u> the existing dressing and maintain pressure and elevation to control bleeding.</p>	<p><b>How do you dress a wound when there is active bleeding?</b></p>



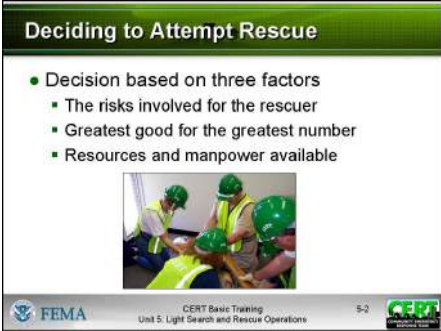
**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

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INSTRUCTOR GUIDANCE	CONTENT
<p data-bbox="191 409 267 483"></p> <p data-bbox="191 514 446 546">Correct response:</p> <p data-bbox="191 588 592 661">Immobilize the affected area using a splint.</p> <div data-bbox="191 730 626 1056"><p>Search and Rescue</p><ul style="list-style-type: none"><li>Consists of three separate operations<ul style="list-style-type: none"><li>Sizeup: Using 9-step, continual model</li><li>Search: Locating victims and documenting</li><li>Rescue: Extricating victims</li></ul></li></ul><p>FEMA CERT Basic Training Unit 5: Light Search and Rescue Operations 5-1</p></div> <p data-bbox="191 1092 446 1123"><b>Display Slide 5-1</b></p> <p data-bbox="191 1165 576 1312">If not already discussed, explain that documentation will be covered more in a later unit.</p>	<p data-bbox="657 409 1356 472"><b>If you are not sure whether it is a fracture or a sprain, what should you do?</b></p> <p data-bbox="657 703 868 735"><b>Unit Overview</b></p> <p data-bbox="657 756 1339 829">Explain that search and rescue consists of three separate operations:</p> <ul data-bbox="657 850 1412 1134" style="list-style-type: none"><li>▪ <u>Sizeup</u> involves assessing the situation and determining a safe action plan (using the 9-step sizeup model).</li><li>▪ <u>Search</u> involves locating victims and documenting their location.</li><li>▪ <u>Rescue</u> involves the procedures and methods required to extricate the victims.</li></ul> <p data-bbox="657 1155 1412 1333">Point out that previous disasters have shown that the first response to trapped victims immediately after almost every disaster is by spontaneous, untrained, and well-intentioned persons who rush to the site of a collapse in an attempt to free the victims.</p>

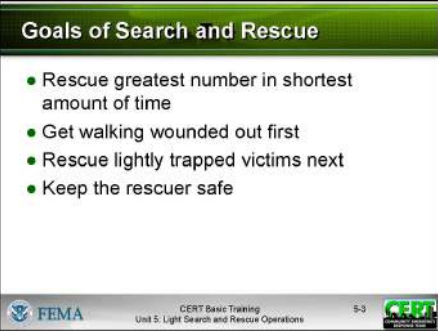
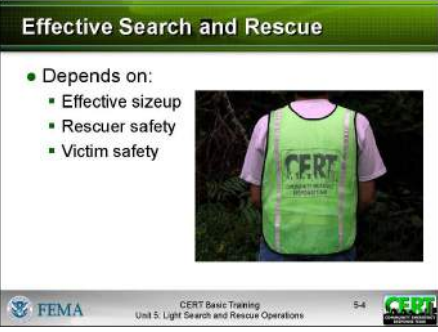
**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

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<b>INSTRUCTOR GUIDANCE</b>	<b>CONTENT</b>
<p>Use the example from the earthquake in Mexico City, where spontaneous efforts saved 700 lives — but cost the lives of more than 100 people — to add emphasis to this discussion.</p> <p>Point out that the Mexico City example is not isolated, but is part of a larger pattern of behavior in emergencies, ranging from accidental drowning in which the would-be rescuer also drowns, to the massive influx of often untrained volunteers following major disasters.</p> <div data-bbox="188 1125 626 1453"></div> <p><b>Display Slide 5-2</b></p>	<p>Emphasize that, more often than not, these spontaneous rescue efforts result in serious injuries and compounded problems.</p> <p>Point out that rescue efforts should be planned and practiced in advance. People, including rescuers, have died when the rescuers weren't prepared and trained.</p> <p><b>Deciding to Attempt Rescue</b></p> <p>Explain that the decision to attempt a rescue should be based on three factors:</p> <ul style="list-style-type: none"><li>▪ The risks involved to the rescuer</li><li>▪ The overall goal of doing the greatest good for the greatest number of people</li><li>▪ Resources and manpower available</li></ul>

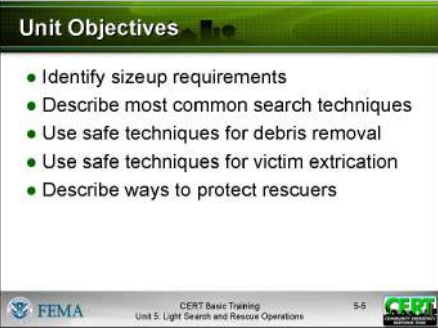
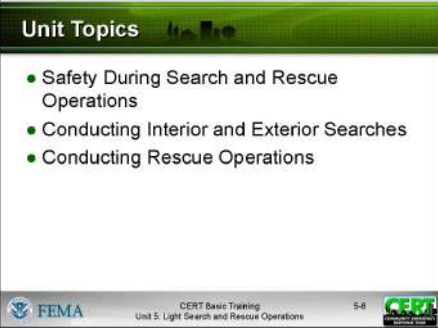

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

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INSTRUCTOR GUIDANCE	CONTENT
<p data-bbox="191 443 626 772">A presentation slide titled "Goals of Search and Rescue" with a green header. It lists four bullet points: "Rescue greatest number in shortest amount of time", "Get walking wounded out first", "Rescue lightly trapped victims next", and "Keep the rescuer safe". The slide footer includes the FEMA logo, "CERT Basic Training Unit 5: Light Search and Rescue Operations", and the slide number "5-3".</p> <p data-bbox="191 810 444 842"><b>Display Slide 5-3</b></p> <p data-bbox="191 926 626 1255">A presentation slide titled "Effective Search and Rescue" with a green header. It lists "Depends on:" followed by three sub-bullets: "Effective sizeup", "Rescuer safety", and "Victim safety". To the right of the text is a photograph of a person wearing a high-visibility green vest with "CERT" printed on the back. The slide footer includes the FEMA logo, "CERT Basic Training Unit 5: Light Search and Rescue Operations", and the slide number "5-4".</p> <p data-bbox="191 1293 444 1325"><b>Display Slide 5-4</b></p>	<p data-bbox="659 405 1089 436"><b>Goals of Search and Rescue</b></p> <p data-bbox="659 478 1430 548">Explain that the goals of search and rescue operations are to:</p> <ul data-bbox="659 569 1401 831" style="list-style-type: none"><li>▪ Rescue the greatest number of people in the shortest amount of time</li><li>▪ Get the walking wounded and ambulatory victims out first</li><li>▪ Rescue lightly trapped victims next</li><li>▪ Keep the rescuer safe</li></ul> <p data-bbox="659 926 1094 957"><b>Effective Search and Rescue</b></p> <p data-bbox="659 999 1382 1068">Explain that effective search and rescue operations hinge on:</p> <ul data-bbox="659 1089 930 1226" style="list-style-type: none"><li>▪ Effective sizeup</li><li>▪ Rescuer safety</li><li>▪ Victim safety</li></ul> <p data-bbox="659 1247 1382 1425">Tell the participants that this unit will focus on the components of an effective search and rescue operation — sizeup, search, and rescue — and the methods and techniques that rescuers can use to locate and safely remove victims.</p>

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

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INSTRUCTOR GUIDANCE	CONTENT
<p data-bbox="191 405 626 730"><b>Unit Objectives</b></p> <ul style="list-style-type: none"><li>● Identify sizeup requirements</li><li>● Describe most common search techniques</li><li>● Use safe techniques for debris removal</li><li>● Use safe techniques for victim extrication</li><li>● Describe ways to protect rescuers</li></ul> <p data-bbox="191 768 444 804"><b>Display Slide 5-5</b></p> <p data-bbox="191 1014 626 1339"><b>Unit Topics</b></p> <ul style="list-style-type: none"><li>● Safety During Search and Rescue Operations</li><li>● Conducting Interior and Exterior Searches</li><li>● Conducting Rescue Operations</li></ul> <p data-bbox="191 1377 444 1413"><b>Display Slide 5-6</b></p> <p data-bbox="191 1455 266 1528"></p>	<p data-bbox="659 405 893 441"><b>Unit Objectives</b></p> <p data-bbox="659 478 1380 552">Tell the participants that at the end of this unit, they should be able to:</p> <ul style="list-style-type: none"><li>▪ Identify sizeup requirements for potential search and rescue situations</li><li>▪ Describe the most common techniques for searching, both interior and exterior</li><li>▪ Use safe techniques for debris removal and victim extrication</li><li>▪ Describe ways to protect rescuers during search and rescue operations</li></ul> <p data-bbox="659 1014 834 1050"><b>Unit Topics</b></p> <p data-bbox="659 1087 1377 1192">Preview the unit topics by telling the group that the unit will provide them with the knowledge and skills that they will need:</p> <ul style="list-style-type: none"><li>▪ Safety During Search and Rescue Operations</li><li>▪ Conducting Interior and Exterior Searches</li><li>▪ Conducting Rescue Operations</li></ul> <p data-bbox="659 1455 1399 1528"><b>Does anyone have any questions about what will be covered in this unit?</b></p>

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

INSTRUCTOR GUIDANCE	CONTENT
<p data-bbox="188 436 628 764"></p> <p data-bbox="188 800 444 835"><b>Display Slide 5-7</b></p> <p data-bbox="188 1136 617 1276">If you have not yet taught Unit 2, you will have to explain the 9 steps of sizeup in more depth now.</p>	<p data-bbox="659 411 1256 495"><b><i>Safety During Search and Rescue Operations</i></b></p> <p data-bbox="659 548 1344 688">Introduce search and rescue techniques by re-emphasizing the importance of CERT safety measures, including appropriate PPE, use of the buddy system, and knowing your limitations.</p> <p data-bbox="659 877 1159 913"><b>CERT Search and Rescue Sizeup</b></p> <p data-bbox="659 951 1403 1092">Remind the participants that, like every other CERT operation, search and rescue requires sizeup at the beginning of the operation and continually as long as the operation continues.</p> <p data-bbox="659 1136 1377 1205">Review the 9 steps of the continual sizeup process that was presented in Unit 2.</p> <ol data-bbox="659 1226 1036 1682" style="list-style-type: none"><li>1. Gather facts</li><li>2. Assess damage</li><li>3. Consider probabilities</li><li>4. Assess your situation</li><li>5. Establish priorities</li><li>6. Make decisions</li><li>7. Develop a plan of action</li><li>8. Take action</li><li>9. Evaluate progress</li></ol> <p data-bbox="659 1717 1414 1787"><b>Stress the need for a Safety Officer if the decision is made to take action.</b></p>

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

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<b>INSTRUCTOR GUIDANCE</b>	<b>CONTENT</b>
<b>PM, P. 5-5 through 5-7</b>	<p>Refer the participants to the <i>CERT Search and Rescue Sizeup Checklist</i> in the Participant Manual, and review the steps briefly.</p> <p>Tell the group that this section will focus on sizeup as it relates to both interior and exterior search and rescue operations.</p>

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

PM, P. 5-5 through 5-7	<b>CERT Search and Rescue Sizeup Checklist</b>
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<b>Step 1: Gather Facts</b>		
<i>Time</i>		
<ul style="list-style-type: none"> <li>▪ Does the time of day or week affect search and rescue efforts?</li> </ul> <p style="margin-left: 20px;">How?</p>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<i>Type of Construction and Terrain</i>		
<ul style="list-style-type: none"> <li>▪ What type(s) of structure(s) is (are) involved?</li> <li>▪ What type(s) of construction is (are) involved?</li> <li>▪ What type(s) of terrain is (are) involved?</li> </ul>		
<i>Occupancy</i>		
<ul style="list-style-type: none"> <li>▪ Are the structures occupied?</li> </ul> <p style="margin-left: 20px;">If yes, how many people are likely to be affected?</p>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<ul style="list-style-type: none"> <li>▪ Are there special considerations (e.g., children, elderly)?</li> </ul> <p style="margin-left: 20px;">If yes, what are the special considerations?</p>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<i>Weather</i>		
<ul style="list-style-type: none"> <li>▪ Will weather conditions affect your safety?</li> </ul> <p style="margin-left: 20px;">If yes, how will your safety be affected?</p>	Yes <input type="checkbox"/>	No <input type="checkbox"/>

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

<ul style="list-style-type: none"> <li>▪ Will weather conditions affect the search and rescue situation?  If yes, how will the search and rescue situation be affected?</li> </ul>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<i>Hazards</i>		
<ul style="list-style-type: none"> <li>▪ Are hazardous materials involved?  If yes, at what location?</li> </ul>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<ul style="list-style-type: none"> <li>▪ Are any other types of hazards involved?  If yes, what other hazards?</li> </ul>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<b>Step 2: Assess and Communicate the Damage</b>		
<ul style="list-style-type: none"> <li>▪ For structural searches, take a lap around the building. Is the damage beyond the CERT's capability?  If yes, what special requirements or qualifications are required?</li> </ul>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<ul style="list-style-type: none"> <li>▪ Have the facts and the initial damage assessment been communicated to the appropriate person(s)?</li> </ul>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<b>Step 3: Consider Probabilities</b>		
<ul style="list-style-type: none"> <li>▪ Is the situation stable?</li> </ul>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<ul style="list-style-type: none"> <li>▪ Is there great risk or potential for more disaster activity that will impact personal safety?  If yes, what are the known risks?</li> </ul>	Yes <input type="checkbox"/>	No <input type="checkbox"/>



**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

<ul style="list-style-type: none"> <li>▪ What else could go wrong?</li> </ul>		
<b>Step 4: Assess Your Own Situation</b>		
<ul style="list-style-type: none"> <li>▪ What resources are available with which you can attempt the search and rescue?</li> </ul>		
<ul style="list-style-type: none"> <li>▪ What equipment is available?</li> </ul>		
<b>Step 5: Establish Priorities</b>		
<ul style="list-style-type: none"> <li>▪ Can a search and rescue be <i>safely</i> attempted by CERT members?</li> </ul> <p>If no, do <i>not</i> attempt a search and rescue.</p>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<ul style="list-style-type: none"> <li>▪ Are there other, more pressing needs at the moment?</li> </ul> <p>If yes, list.</p>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<b>Step 6: Make Decisions</b>		
<ul style="list-style-type: none"> <li>▪ Where will deployment of available resources do the most good while maintaining an adequate margin of safety?</li> </ul>		
<b>Step 7: Develop Plan of Action</b>		
<ul style="list-style-type: none"> <li>• Determine how personnel and other resources should be deployed.</li> </ul>		
<b>Step 8: Take Action</b>		
<ul style="list-style-type: none"> <li>▪ Put the plan into effect.</li> </ul>		


**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

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<b>Step 9: Evaluate Progress</b>	
<ul style="list-style-type: none"><li>▪ Continually size up the situation to identify changes in the:<ul style="list-style-type: none"><li>• Scope of the problem</li><li>• Safety risks</li><li>• Resource availability</li></ul></li></ul>	

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

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INSTRUCTOR GUIDANCE	CONTENT
<p data-bbox="191 405 626 730"></p> <p data-bbox="191 768 444 804"><b>Display Slide 5-8</b></p> <p data-bbox="191 846 626 1020">Provide and discuss locally relevant examples of planning factors to develop an understanding of the effects of each factor.</p> <p data-bbox="191 1062 626 1239">Mention that the amount of damage likely to be found in different types of construction will be covered in a few minutes.</p>	<p data-bbox="659 405 979 441"><b>Step 1: Gather Facts</b></p> <p data-bbox="659 474 1401 579">Introduce Step 1 by telling the group that the facts of the situation must guide their search and rescue efforts.</p> <p data-bbox="659 621 1325 684">When gathering facts, CERT members need to consider:</p> <ul data-bbox="659 705 1422 1833" style="list-style-type: none"><li data-bbox="659 705 1422 930">▪ <u>The time of the event and day of the week.</u> At night, more people will be in their homes, so the greatest need for search and rescue will be in residential settings. Conversely, during the day, people will be at work, so the need will be in commercial buildings.  Search and rescue operations may also be affected by where people are located in their homes and the amount of daylight available.</li><li data-bbox="659 1062 1422 1209">▪ <u>Construction type and terrain.</u> Some types of construction are more susceptible to damage than others. The type of terrain will affect how the search is conducted.</li><li data-bbox="659 1230 1422 1335">▪ <u>Occupancy.</u> The purpose for which the structure was designed may indicate the likely number of victims and their location.</li><li data-bbox="659 1377 1422 1587">▪ <u>Weather.</u> Severe weather will have an effect on victims and rescuers alike and will certainly hamper rescue efforts. Forecasts of severe weather should be considered as a limiting factor on the time period during which search and rescue can occur.</li><li data-bbox="659 1608 1422 1833">▪ <u>Hazards.</u> Knowledge of other potential hazards in the general and immediate areas is important to search and rescue efforts. For example, if a gas leak is suspected, taking the time to locate and shut off the gas can have a big impact in terms of loss of life.</li></ul>

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

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INSTRUCTOR GUIDANCE	CONTENT
<p><b>PM, P. 5-9</b></p> <p>Use the following steps to facilitate this exercise, keeping in mind that this scenario is only an example and may be changed to fit your community's needs.</p>	<p>Refer the group to <i>Scenario</i> in the Participant Manual and introduce the <i>Gathering Facts</i> exercise.</p> <p><b>Exercise: Gathering Facts</b></p> <p><b>Purpose:</b> Explain that this exercise is an interactive activity to give the participants the opportunity to consider some of the facts that CERT search and rescue teams will need to gather during sizeup.</p> <p><b>Instructions:</b></p> <ol style="list-style-type: none"><li>1. Refer the participants to <i>Scenario</i> in the Participant Manual.</li><li>2. Ask the group to brainstorm the following questions:<ul style="list-style-type: none"><li>▪ What does this scenario tell you about the probable density for the affected area?</li><li>▪ What does this scenario tell you about the facts that must be gathered?</li><li>▪ What impact could these facts have on search and rescue operations?</li><li>▪ What kinds of search and rescue operations are probable?</li><li>▪ What, if any, are the constraints that search and rescue personnel may face in this scenario?</li><li>▪ Can these constraints be overcome within the established CERT mission? If so, how?</li></ul></li><li>3. Record the group's responses on chart paper.</li><li>4. Discuss the group's responses and provide feedback regarding strengths and possible improvements in their planning.</li></ol>

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

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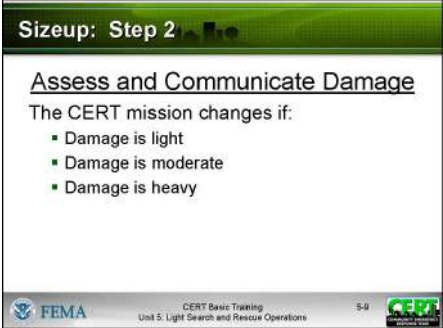
<b>PM, P. 5-9</b>	<b>Scenario</b>
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At 2:30 p.m. on Tuesday, August 9, a squall line passed through your town. Because of the difference in barometric pressure on either side of the front, the squall line was preceded by a “gust front” with straight-line winds of more than 70 miles per hour. The gust front was followed by continued strong winds and extremely heavy rain. Electricity was knocked out throughout the town.

You activate in accordance with your CERT program’s standard operating procedures (SOPs). On the way to the staging area at the local high school, you notice considerable damage, including felled trees and utility lines. Many streets are impassable, making you take a roundabout route to the high school. As you make your way to the staging area, you see that the roof has blown off of a large portion of a local strip shopping center and that the exterior wall on the west end of the structure has collapsed.

After reaching the staging area, you check in with the Logistics Team Leader, who assigns you to Search and Rescue Team 2. Although CERT members cannot venture into the section of the shopping center that has collapsed, Search and Rescue Team 2 will be searching near the collapsed area to see if there are victims in that area.



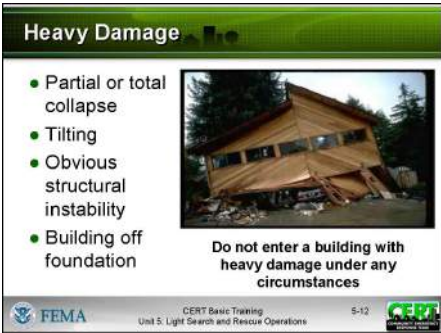
**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

<b>INSTRUCTOR GUIDANCE</b>	<b>CONTENT</b>
 <p><b>Display Slide 5-9</b></p> <p>The following information on probable damage and the table titled <i>Probable Severity and Type of Earthquake Damage Based on Construction Type</i> on page 5-14 in the Participant Manual relate to earthquakes.</p> <p>If other types of disasters (e.g., tornadoes, hurricanes, or floods) are likely in your area, add information about the probable impact on various types of construction and what you would consider light, moderate, and heavy damage to structures.</p>	<p><b>Step 2: Assess and Communicate Damage</b></p> <p>Introduce Step 2 by pointing out that there are general guidelines for assessing damage in interior searches and exterior searches. When in doubt about the condition of a building, CERT members should always use the more cautious assessment. If unsure about whether a building is moderately or heavily damaged, CERTs should assume heavy damage.</p> <p>Emphasize, however, that the CERT mission changes depending on the amount of structural damage.</p>

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

INSTRUCTOR GUIDANCE	CONTENT
	<p><i>CERT Mission and Types of Damage</i></p> <p>Explain how the CERT mission for interior searches changes if:</p> <ul style="list-style-type: none"> <li>▪ <u>Damage is light</u> (superficial or cosmetic damage, superficial cracks or breaks in the wall surface, minor damage to the interior contents)</li> </ul> <p>The CERT mission is to locate; triage; treat airway, major bleeding, and shock; continue sizeup; and document.</p> <ul style="list-style-type: none"> <li>• <u>Damage is moderate</u> (visible signs of damage, decorative work damaged or fallen, many visible cracks in the wall surface, major damage to interior content, building is on its foundation)</li> </ul> <p>The CERT mission is to locate; treat airway, major bleeding, and shock; evacuate; warn others; continue sizeup while <u>minimizing the number of rescuers and time spent inside the structure.</u></p> <ul style="list-style-type: none"> <li>• <u>Damage is heavy</u> (partial or total collapse, tilting, obvious structural instability, building off its foundation, heavy smoke or fire, hazardous materials inside, gas leaks, rising or moving water)</li> </ul> <p>The CERT mission is to secure the building perimeter and warn others of the danger in entering the building.</p> <p>Explain that CERT members are not to enter a building with heavy damage under any circumstances.</p>

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

INSTRUCTOR GUIDANCE	CONTENT
<p><b>Light Damage</b></p> <ul style="list-style-type: none"> <li>● Superficial</li> <li>● Broken windows</li> <li>● Superficial cracks or breaks in wall surface</li> <li>● Minor damage to the interior contents</li> <li>● Safe to enter and remain</li> </ul>  <p style="text-align: center;"><b>Display Slide 5-10</b></p>	<p><i>Light Damage</i></p> <p>Explain that the damage shown in the slide constitutes light damage.</p> <ul style="list-style-type: none"> <li>▪ Superficial damage</li> <li>▪ Broken windows</li> <li>▪ Superficial cracks or breaks in the wall surface, for example, fallen or cracked plaster</li> <li>▪ Minor damage to the interior contents</li> </ul>
<p><b>Moderate Damage</b></p> <ul style="list-style-type: none"> <li>● Visible signs of damage</li> <li>● Decorative work damaged or fallen</li> <li>● Many visible cracks or breaks in wall</li> <li>● Major damage to interior contents</li> <li>● Building still on foundation</li> <li>● Enter only to save lives</li> </ul>  <p style="text-align: center;"><b>Display Slide 5-11</b></p>	<p><i>Moderate Damage</i></p> <p>Explain that the damage shown in the slide constitutes moderate damage.</p> <ul style="list-style-type: none"> <li>▪ Visible signs of damage</li> <li>▪ Decorative work damaged or fallen</li> <li>▪ Many visible cracks or breaks in the wall surface</li> <li>▪ Major damage to interior contents</li> <li>▪ Building still on foundation</li> </ul>
<p><b>Heavy Damage</b></p> <ul style="list-style-type: none"> <li>● Partial or total collapse</li> <li>● Tilting</li> <li>● Obvious structural instability</li> <li>● Building off foundation</li> </ul>  <p style="text-align: center;"><b>Do not enter a building with heavy damage under any circumstances</b></p> <p style="text-align: center;"><b>Display Slide 5-12</b></p>	<p><i>Heavy Damage</i></p> <p>Explain that the damage shown in the slide constitutes heavy damage.</p> <ul style="list-style-type: none"> <li>▪ Partial or total collapse</li> <li>▪ Tilting</li> <li>▪ Obvious structural instability</li> <li>▪ Building off foundation</li> </ul> <p>Reemphasize that CERT members must not enter a building with heavy damage <u>under any circumstances</u>.</p>



**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

INSTRUCTOR GUIDANCE	CONTENT
<p>Mention that, later in this session, the participants will learn more about formulating rescue strategies based on the damage assessment.</p> <p><b>PM, P. 5-13</b></p> <p>More detailed search methodology will be discussed later in this unit.</p>	<p><i>Assessing Damage</i></p> <p>Explain that assessing damage of a building or structure will require an examination from all sides. Urge participants to do an initial "lap around."</p> <p>Explain that, in assessing damage, CERT personnel must consider probable levels of damage based on the type and age of construction. In addition to a visual assessment, rescuers should also "listen" to damaged structures. If a building is creaking or "groaning," it is unstable and should not be entered.</p> <p>Refer the participants to <i>Probable Severity and Type of Earthquake Damage Based on Construction Type</i> in the Participant Manual.</p> <p>Tell the participants that, in some instances, an exterior search is required and a grid search should be employed.</p> <p><i>Communicating Damage</i></p> <p>Tell participants to describe different locations within and around the structure by using the ABCD standard, with A corresponding to the front of the building and B, C, and D representing the sides of the building moving clockwise from A.</p>

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

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<b>INSTRUCTOR GUIDANCE</b>	<b>CONTENT</b>
	<p>Using this system, the area inside of a structure can be further broken down by quadrants to facilitate communication. For instance, a hazard or victim located closest to the A and B sides of the structure is in the A/B quadrant.</p> <p>Stress that the participants must communicate their findings to the CERT command post or responding agencies.</p>

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

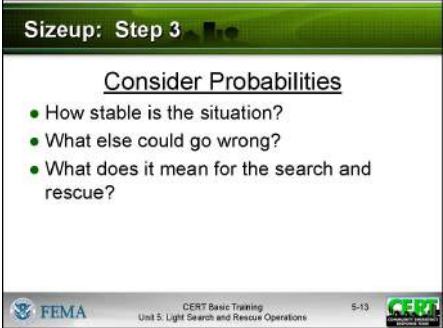
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<b>PM, P. 5-13</b>	<b>Probable Severity and Type of Earthquake Damage Based on Construction Type</b>
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<b>Construction Type</b>	<b>Description</b>	<b>Probable Damage Areas</b>	<b>Severity</b>
Single-Family Dwelling	<ul style="list-style-type: none"> <li>▪ Wood frame</li> </ul>	<ul style="list-style-type: none"> <li>▪ Masonry chimney</li> <li>▪ Utilities</li> </ul>	Light
	<ul style="list-style-type: none"> <li>▪ Pre-1933</li> </ul>	<ul style="list-style-type: none"> <li>▪ Foundation movement</li> <li>▪ Utilities</li> <li>▪ Porches</li> </ul>	Moderate
	<ul style="list-style-type: none"> <li>▪ Hillside</li> </ul>	<ul style="list-style-type: none"> <li>▪ Unique hazards</li> <li>▪ Ground failure</li> </ul>	Heavy
Multiple-Family Dwelling	<ul style="list-style-type: none"> <li>▪ Up-and-down and/or side-by-side living units</li> </ul>	<ul style="list-style-type: none"> <li>▪ Soft first floor</li> <li>▪ Utilities</li> </ul>	Moderate
Unreinforced Brick	<ul style="list-style-type: none"> <li>▪ Pre-1933 construction</li> <li>▪ Lime or sand mortar</li> <li>▪ “King Row” or “Soldier Row” (bricks turned on end every 5-7 rows)</li> <li>▪ Reinforcing plates</li> <li>▪ Arched windows and doors</li> <li>▪ Recessed windows and doors</li> </ul>	<ul style="list-style-type: none"> <li>▪ Walls collapse, then roof</li> </ul>	Heavy
Tilt-Up	<ul style="list-style-type: none"> <li>▪ Large warehouses and plants</li> <li>▪ Concrete slabs lifted into place</li> <li>▪ Walls inset approximately 6-8 inches</li> <li>▪ Lightweight roof construction</li> </ul>	<ul style="list-style-type: none"> <li>▪ Roof collapses, then walls</li> </ul>	Heavy
High-Rise	<ul style="list-style-type: none"> <li>▪ Steel reinforced</li> </ul>	<ul style="list-style-type: none"> <li>▪ Broken glass</li> <li>▪ Content movement</li> <li>▪ Exterior trim and fascia</li> </ul>	Light

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

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INSTRUCTOR GUIDANCE	CONTENT
 <p><b>Sizeup: Step 3</b></p> <p style="text-align: center;"><u>Consider Probabilities</u></p> <ul style="list-style-type: none"><li>• How stable is the situation?</li><li>• What else could go wrong?</li><li>• What does it mean for the search and rescue?</li></ul> <p>FEMA CERT Basic Training Unit 5: Light Search and Rescue Operations 5-13</p> <p><b>Display Slide 5-13</b></p>	<p><b>Step 3: Consider Probabilities</b></p> <p>Stress that, because the CERTs will be working in such close proximity to the dangerous situation, considering what <u>will probably happen</u> and what <u>could happen</u> are of critical importance. Urge the participants to identify potentially life-threatening hazards and ask:</p> <ul style="list-style-type: none"><li>▪ <u>How stable is the situation?</u> Even within a structure that appears from the outside to have only minimal or moderate damage, nonstructural damage or instability <u>inside</u> the structure can pose real danger to the rescue team. CERT members should think about what they already know about the structure that's been damaged. Are lawn chemicals, paints, or other potentially hazardous materials stored within the structure? How are they stored? Where are they? It won't take CERT members much time to answer these types of questions, but the answers could make a huge difference in how they approach the search.</li><li>▪ <u>What else could go wrong?</u> Based on the information gathered during Steps 1 and 2 of the sizeup, CERT members should take a few moments to play "What if?" to try to identify additional risks that they may face. What if the electricity fails during the search? What if a wall that appears stable shifts and collapses? Applying "Murphy's Law" to the situation could save CERT members' lives.</li></ul>

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

INSTRUCTOR GUIDANCE	CONTENT
<div data-bbox="186 873 626 1201" data-label="Image"> </div> <p data-bbox="186 1241 461 1272"><b>Display Slide 5-14</b></p> <div data-bbox="186 1528 266 1602" data-label="Image"> </div>	<ul style="list-style-type: none"> <li data-bbox="659 422 1425 821"> <p>▪ <u>What does it all mean for the search and rescue?</u> Based on the probabilities, CERTs should think about what they can do to reduce the risks associated with the probabilities that they have identified. Is a spotter necessary to look for movement that could indicate a possible collapse and warn the rescue team? Is some remedial action required to stabilize nonstructural hazards before beginning the search? CERT search and rescue teams must remember that their own safety is the first priority.</p> </li> </ul> <p data-bbox="659 877 1122 909"><b>Step 4: Assess Your Situation</b></p> <p data-bbox="659 951 1406 1199">Remind the participants that sizeup is a building process, with each step building upon the previous steps until the decision is made to begin the search and rescue operation (or that the situation is unsafe). Then, urge the group to draw on everything they've learned from Steps 1 through 3 to assess their situation to determine:</p> <ul style="list-style-type: none"> <li data-bbox="659 1224 1390 1255">▪ Whether the situation is safe enough to continue</li> <li data-bbox="659 1276 1377 1308">▪ The risks that rescuers will face if they continue</li> <li data-bbox="659 1329 1409 1392">▪ What resources will be needed to conduct the operation safely and what resources are available</li> </ul> <p data-bbox="659 1419 1325 1482">Point out that assessing resources is extremely important to search and rescue operations.</p> <p data-bbox="659 1528 1377 1598"><b>When you talk about “resources,” what are you referring to?</b></p> <p data-bbox="659 1644 1425 1749">Acknowledge the group's responses. If not mentioned by the participants, say that search and rescue resources include personnel, tools, and equipment.</p>

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**


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INSTRUCTOR GUIDANCE	CONTENT
PM, P. 5-15	Refer the participants to the table titled <i>Search and Rescue Resource Planning Questions</i> in the Participant Manual.

<b>PM, P. 5-15</b>	<b>Search and Rescue Resource Planning Questions</b>
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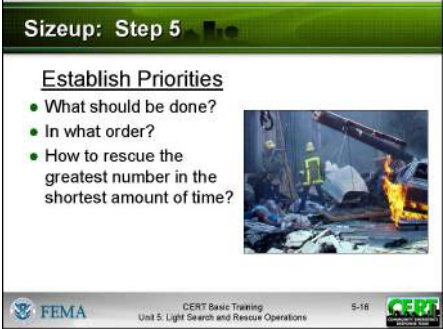

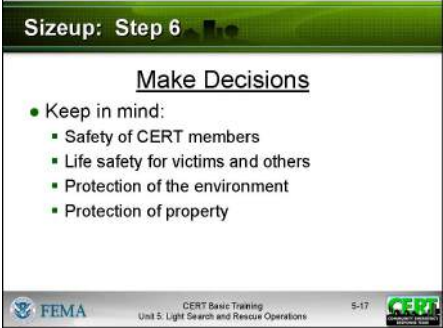
Resource	Planning Questions
Personnel	<ul style="list-style-type: none"> <li>▪ How many trained CERT members are available for this operation?</li> <li>▪ Who lives and/or works in the area?</li> <li>▪ During which hours are these people most likely to be available?</li> <li>▪ What skills or hobbies do they have that might be useful in search and rescue operations?</li> <li>▪ What might be the most effective means of mobilizing their efforts?</li> </ul>
Equipment	<ul style="list-style-type: none"> <li>▪ What equipment is available locally that might be useful for search and rescue?</li> <li>▪ Where is it located?</li> <li>▪ How can it be accessed?</li> <li>▪ On which structures (or types of structures) might it be most effective?</li> </ul>
Tools	<ul style="list-style-type: none"> <li>▪ What tools are available that might be useful for lifting, moving, or cutting disaster debris?</li> </ul>

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

INSTRUCTOR GUIDANCE	CONTENT
<p data-bbox="191 394 626 718"></p> <p data-bbox="191 737 589 957"><b>Display Slide 5-15</b> Provide the participants with examples of tools and equipment that they might need for search and rescue operations.</p>	<p data-bbox="659 394 932 426"><i>Rescue Resources</i></p> <p data-bbox="659 468 1338 537">Tell the group that search and rescue resources include:</p> <ul data-bbox="659 558 1419 1734" style="list-style-type: none"><li data-bbox="659 558 850 590">▪ <u>Personnel</u><ul data-bbox="704 611 1419 936" style="list-style-type: none"><li data-bbox="704 611 1377 680">• How many CERT members are available for this operation?</li><li data-bbox="704 701 1419 732">• In addition, who lives and/or works in the area?</li><li data-bbox="704 753 1273 785">• When are they likely to be available?</li><li data-bbox="704 806 1338 875">• Do they have skills that might be useful in search and rescue operations?</li><li data-bbox="704 896 1240 928">• How can their efforts be mobilized?</li></ul></li><li data-bbox="704 957 1403 1136">• Drawing on personnel resources that may be available, even if only to watch the situation and free CERT resources for tasks requiring specialized training, can make search and rescue operations more efficient.</li><li data-bbox="659 1209 862 1241">• <u>Equipment</u><ul data-bbox="704 1262 1360 1535" style="list-style-type: none"><li data-bbox="704 1262 1344 1331">• What equipment is available that might be useful for search and rescue?</li><li data-bbox="704 1352 1029 1383">• Where is it located?</li><li data-bbox="704 1404 1110 1436">• How can it be accessed?</li><li data-bbox="704 1457 1360 1526">• On which structures (or types of structures) might it be most effective?</li></ul></li><li data-bbox="659 1608 786 1640">▪ <u>Tools</u><ul data-bbox="704 1661 1419 1730" style="list-style-type: none"><li data-bbox="704 1661 1419 1730">• What tools are available that might be useful for lifting, moving, or cutting debris?</li></ul></li></ul> <p data-bbox="659 1787 1419 1856">Point out that considering each of these questions will facilitate action planning.</p>

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

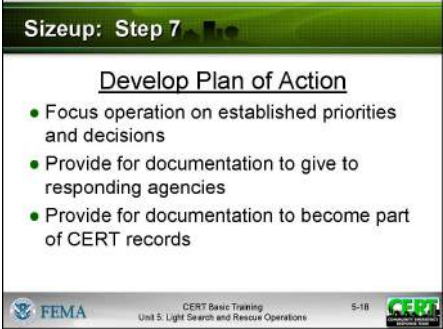
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INSTRUCTOR GUIDANCE	CONTENT
 <p>Sizeup: Step 5</p> <p><u>Establish Priorities</u></p> <ul style="list-style-type: none"><li>• What should be done?</li><li>• In what order?</li><li>• How to rescue the greatest number in the shortest amount of time?</li></ul>  <p>FEMA CERT Basic Training Unit 5: Light Search and Rescue Operations 5-16</p>	<h3>Step 5: Establish Priorities</h3> <p>Introduce this step by telling the group that, after evaluating the situation and keeping in mind that the safety of the CERT member is always the top priority, the next step is to determine:</p> <ul style="list-style-type: none"><li>▪ What should be done?</li><li>▪ In what order?</li></ul> <p>Remind participants of the goal: to rescue the greatest number in the shortest amount of time.</p> <p><b>Remind the group that the safety of CERT members is always the first priority and will dictate some of the other priorities.</b> For example, removing or mitigating known hazards must be completed before teams begin to search. Urge the participants to think through the situation logically to determine how they should approach the operation.</p>
 <p>Sizeup: Step 6</p> <p><u>Make Decisions</u></p> <ul style="list-style-type: none"><li>• Keep in mind:<ul style="list-style-type: none"><li>▪ Safety of CERT members</li><li>▪ Life safety for victims and others</li><li>▪ Protection of the environment</li><li>▪ Protection of property</li></ul></li></ul> <p>FEMA CERT Basic Training Unit 5: Light Search and Rescue Operations 5-17</p>	<h3>Step 6: Make Decisions</h3> <p>Tell the group that they are at the point in the sizeup where they will make decisions about where to deploy their resources to do the most good while maintaining an adequate margin of safety. Suggest that many of their decisions will be based on the priorities established during Step 5 and remind them that those priorities are based on:</p> <ul style="list-style-type: none"><li>▪ The safety of CERT members</li><li>▪ Life safety for victims and others</li><li>▪ Protection of the environment</li><li>▪ Protection of property</li></ul> <p>Remind the group that the CERT mission in search and rescue operations changes depending on the amount of structural damage.</p>






**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

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INSTRUCTOR GUIDANCE	CONTENT
 <p><b>Sizeup: Step 7</b></p> <p><u>Develop Plan of Action</u></p> <ul style="list-style-type: none"><li>● Focus operation on established priorities and decisions</li><li>● Provide for documentation to give to responding agencies</li><li>● Provide for documentation to become part of CERT records</li></ul> <p>FEMA CERT Basic Training Unit 5: Light Search and Rescue Operations 5-18</p>	<p><b>Step 7: Develop Plan of Action</b></p> <p>Tell the group that Step 7 is where all of the information they have about the situation comes together. During Step 7, the CERT Incident Commander/Team Leader (IC/TL) will decide specifically how the team will conduct its operation, considering the highest priority tasks first.</p> <p>Remind the participants that an action plan does not need to be written, but suggest that, when search and rescue operations are required, the situation is probably complex enough that a written plan of some type will be important.</p> <p>Point out that a plan should:</p> <ul style="list-style-type: none"><li>▪ Help focus the operation on established priorities and decisions</li><li>▪ Provide for documentation to be given to responding agencies when they arrive on scene</li><li>▪ Provide for documentation that will become part of the record of the CERT's overall operation</li></ul> <p>Urge the participants to keep a notebook for jotting notes when developing an action plan. Any changes made to the initial plan based on new information that comes in should also be documented.</p>

**Display Slide 5-18**

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

INSTRUCTOR GUIDANCE	CONTENT
<p><b>Sizeup: Step 8</b></p> <p><u>Take Action</u></p> <ul style="list-style-type: none"> <li>Based on plan developed during Step 7</li> </ul>  <p>FEMA CERT Basic Training Unit 5: Light Search and Rescue Operations 5-19</p>	<p><b>Step 8: Take Action</b></p> <p>Explain that the next step is to put the plan developed in Step 7 into action.</p>
<p><b>Display Slide 5-19</b></p> <p><b>Sizeup: Step 9</b></p> <p><u>Evaluate Progress</u></p> <ul style="list-style-type: none"> <li>Most critical step</li> <li>Monitor plan's effectiveness and safety</li> </ul>  <p>FEMA CERT Basic Training Unit 5: Light Search and Rescue Operations 5-20</p>	<p><b>Step 9: Evaluate Progress</b></p> <p>Emphasize that Step 9, Evaluate Progress, is the most critical, not only in terms of evaluating whether the plan works, but also from a safety standpoint.</p> <p><b>Remind the group that sizeup is ongoing and that information gained during Step 9 needs to be fed back into the decision-making process for possible revision of priorities and updated action planning.</b></p>
<p><b>Display Slide 5-20</b></p> <p><b>Specific Safety Considerations</b></p>  <ul style="list-style-type: none"> <li>Make rescuer safety primary concern</li> <li>Use a buddy system</li> <li>Be alert for hazards</li> <li>Use safety equipment</li> <li>Rotate teams</li> </ul> <p>FEMA CERT Basic Training Unit 5: Light Search and Rescue Operations 5-21</p>	<p><b>Specific Safety Considerations</b></p> <p>Tell the group that regardless of the severity of structural damage, rescuer safety must be the primary concern.</p> <p>Point out that the two most frequent causes of rescuer deaths are:</p> <ul style="list-style-type: none"> <li>Disorientation</li> <li>Secondary collapse</li> </ul>
<p><b>Display Slide 5-21</b></p> <p>Emphasize this point.</p>	<p><b>Be prepared and make rescuer safety your top priority.</b></p>

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

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INSTRUCTOR GUIDANCE	CONTENT
PM, P. 5-19	<p>Refer the participants to <i>Specific Safety Considerations</i> in the Participant Manual. Caution the participants that they must follow these guidelines during all search and rescue operations:</p> <ul style="list-style-type: none"><li>▪ <u>Use a buddy system.</u> Successful search and rescue depends on teamwork.</li><li>▪ <u>Be alert for hazards</u> (e.g., power lines, natural gas leaks, hazardous materials, sharp objects, overhead objects that could fall, etc.). Never attempt to search an area where water is rising.</li><li>▪ <u>Use safety equipment.</u> Wearing gloves and a helmet will protect a rescuer's hands and head. Also, tell the group that the primary cause of rescuer problems after working in a structural collapse is breathing dust, so an N95 mask is essential.</li></ul> <p>Tell the group that dust masks will not filter chemicals or biological agents. Stress that, if the use of chemical or biological agents is suspected, CERTs <u>must</u> evacuate to an upwind location and notify professional responders.</p> <ul style="list-style-type: none"><li>▪ <u>Have backup teams available</u> to allow rotating of teams, prevent fatigue, and ensure help if a team gets into trouble. Have teams drink fluids and eat to keep themselves fresh.</li></ul>

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

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**PM, P. 5-19**

**Specific Safety Considerations**

Regardless of the severity of structural damage, rescuer safety must be the primary concern.

The two most frequent causes of rescuer deaths are:

- Disorientation
- Secondary collapse

Follow these guidelines during all search and rescue operations:

- Use a buddy system. Always work in pairs, with a third person acting as a runner.
- Be alert for hazards (e.g., power lines, natural gas leaks, hazardous materials, sharp objects, etc.).

You should never attempt to search an area where water is rising.

- Use safety equipment. Wearing gloves and a helmet will protect a rescuer's hands and head. Also, the primary cause of rescuer problems after working in a structural collapse is breathing dust, so a dust mask is essential. However, a dust mask will not filter out all harmful materials. If the presence of chemical or biological agents is suspected, CERTs must evacuate to an upwind location and notify professional responders.
- Have backup teams available to allow rotating of teams, prevent fatigue, and ensure help if a team gets into trouble. Have teams drink fluids and eat to keep themselves fresh.


**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

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INSTRUCTOR GUIDANCE	CONTENT
<p>Use the following steps to facilitate this exercise. The exercise will be based on several different types of <u>local</u> buildings (one for each small group) for the most probable type of disaster that the community will face.</p> <p><b>PM, P. 5-20</b></p>	<p><b>Exercise: Search and Rescue Sizeup</b></p> <p><b>Purpose:</b> Explain that this exercise is an interactive activity to give the participants an opportunity to practice some of the thinking processes involved in planning and search and rescue sizeup.</p> <p>The brainstorming required will help the participants to begin to assess their neighborhoods or workplaces in terms of building structures, hazardous materials, safety precautions that need to be taken, etc.</p> <p><b>Instructions:</b></p> <ol style="list-style-type: none"><li>1. Assign the participants to groups of four or five.</li><li>2. Provide each group with a local scenario (with slides, if possible) describing a local building in a disaster event that is realistic for the community.</li><li>3. Ask the groups to designate a recorder and, given the disaster and the specific building, answer the following questions:<ul style="list-style-type: none"><li>▪ What are the pertinent facts that must be gathered?</li><li>▪ What kind of prediction can you make regarding damage, based on the incident and the building construction?</li><li>▪ What probable search and rescue problems can you identify?</li><li>▪ What specific safety considerations can you identify?</li></ul></li><li>4. Ask each group to select a spokesperson to present the group's responses to the class.</li><li>5. Discuss each group's responses and provide feedback about how their search and rescue sizeup might be improved.</li></ol>

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

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INSTRUCTOR GUIDANCE	CONTENT
	<p><b>Does anyone have any questions about anything covered to this point?</b></p> <p>Explain that the next section will deal with how to conduct search operations.</p>

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

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<b>PM, P. 5-20</b>	<b>Search and Rescue Sizeup</b>
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**Purpose:** This exercise is an interactive activity that will provide an opportunity to practice some of the thinking processes involved in planning and search and rescue sizeup.

The brainstorming required will help you to begin to assess your neighborhoods or workplaces in terms of building structures, hazardous materials, safety precautions that need to be taken, etc.

**Instructions:**

1. Assemble in groups of four or five.
2. Read the scenario given to you by the instructor.
3. Designate a recorder and, given the disaster and the specific building, answer the following questions:
  - What are the pertinent facts that must be gathered?
  - What kind of prediction can you make regarding damage, based on the incident and the building construction?
  - What probable search and rescue problems can you identify?
  - What specific safety considerations can you identify?
4. Select a spokesperson to present the group's responses to the class.
5. Discuss each group's responses and provide feedback about how their search and rescue sizeup might be improved.

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

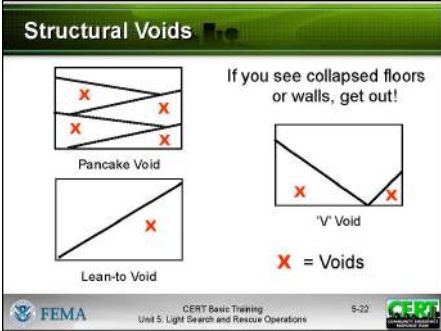

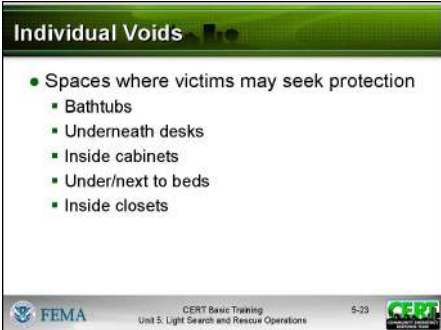
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INSTRUCTOR GUIDANCE	CONTENT
<p>Provide examples of how to use the information gathered to find out more information about areas of entrapment.</p>	<p><b><i>Conducting Interior and Exterior Search Operations</i></b></p> <p>Tell the participants that, when the decision is made to initiate search operations, CERT members will inspect the area assigned by the CERT Incident Commander/Team Leader (IC/TL).</p> <p>Explain that the search operation involves two processes:</p> <ol style="list-style-type: none"><li>1. Employing search techniques based on the sizeup</li><li>2. Locating any victims</li></ol> <p>Point out that by using these processes, search operations will be more efficient, thorough, and safe. They will also facilitate later rescue operations. Explain that, although the processes are related, this section will address them one at a time. Interior search operations are the most common and will be discussed first; exterior search operations will be discussed later in this unit.</p> <p><b>Locating Potential Victims in a Structure</b></p> <p>Tell the participants that the first step in locating potential victims in a structure is to conduct a sizeup of the interior of the building to gather more precise information about damage and to develop priorities and plans.</p> <p>Explain by saying that the data gathered will provide more information about possible areas of entrapment — or <u>voids</u>.</p>



**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

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INSTRUCTOR GUIDANCE	CONTENT
<p data-bbox="188 436 626 764"></p> <p data-bbox="188 802 461 835"><b>Display Slide 5-22</b></p> <p data-bbox="188 877 266 953"></p> <p data-bbox="188 989 626 1316"></p> <p data-bbox="188 1354 461 1388"><b>Display Slide 5-23</b></p>	<p data-bbox="657 405 906 438"><b>Structural Voids</b></p> <p data-bbox="657 478 1307 512">Point out that there are several types of voids.</p> <p data-bbox="657 548 1396 653"><b>Emphasize that, if CERT members see collapsed floors or walls, they should leave the premises immediately.</b></p> <p data-bbox="657 877 1408 947"><b>Does anyone have any questions about the types of structural voids?</b></p> <p data-bbox="657 993 902 1026"><b>Individual Voids</b></p> <p data-bbox="657 1066 1421 1247">Explain that individual voids are spaces into which the victim may have crawled for protection. Examples of individual voids include bathtubs and the space underneath desks. Children may seek shelter in smaller places like cabinets.</p> <p data-bbox="657 1287 1421 1356">Tell the group that, after identifying the possible areas of entrapment, CERT members must:</p> <ul data-bbox="657 1375 1372 1461" style="list-style-type: none"><li>▪ Determine the potential number of victims</li><li>▪ Identify the most probable areas of entrapment</li></ul>

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

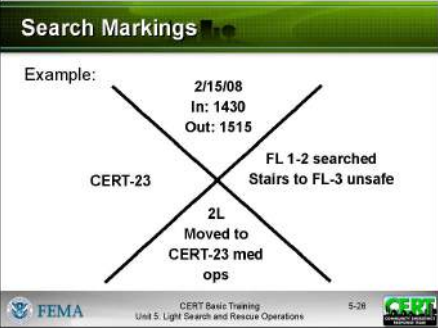

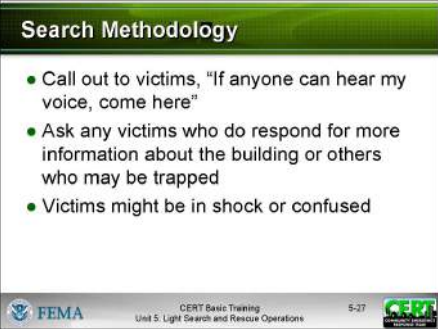
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<b>INSTRUCTOR GUIDANCE</b>	<b>CONTENT</b>
	<p>Point out that some of this information may be known through assessment, but CERT members may need to get some information by talking to bystanders or those who are familiar with the structure.</p> <p>Explain that CERT members should ask questions when talking with these individuals, including:</p> <ul style="list-style-type: none"><li>▪ How many people live (or work) in the building?</li><li>▪ Where would they be at this time?</li><li>▪ What is the building layout?</li><li>▪ What have you seen or heard?</li><li>▪ Has anyone come out?</li><li>▪ What are the normal exit routes from the building?</li></ul> <p>Caution the group that bystanders may be confused by the event. They may tend to exaggerate potential numbers or may not even remember the event accurately. Tell the group to gather as much information as they can, though, because it will be useful for planning search priorities and implementing the search.</p> <p><b>Search Methodology</b></p> <p>Introduce this section by telling the group that an effective search methodology:</p> <ul style="list-style-type: none"><li>▪ Indicates rescuer location</li><li>▪ Locates victims as quickly and safely as possible</li><li>▪ Prevents duplication of effort</li></ul>

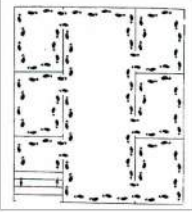
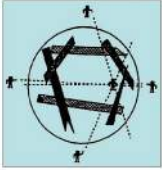
**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

INSTRUCTOR GUIDANCE	CONTENT
<div data-bbox="186 401 626 730" data-label="Image"> </div> <p><b>Display Slide 5-24</b></p> <p>The slide above is animated. Click on the slide 3 times to show each step during the marking process. The slide below provides more detail about the information included in a marking.</p> <div data-bbox="186 1129 626 1459" data-label="Image"> </div> <p><b>Display Slide 5-25</b></p>	<p style="text-align: center;"><i>Search Markings</i></p> <p>Tell the group that experienced search and rescue personnel use the following system. The same system will be used by CERTs. This will save fellow CERT members and other responders time during the search and continual sizeup of the structure.</p> <ol style="list-style-type: none"> <li><u>Upon entering a search area</u>, you will make a mark next to the door to indicate that you are entering. Do not make the mark on the door or on the wall where the door swings. Make a single slash and write the agency or group ID at the “9 o’clock” position. Then write the date and “time in” at the “12 o’clock” position.</li> <li><u>Upon exiting the search area</u>, make another slash to form an “X” (the agency or group ID will be in the left quadrant). Enter the search “time out” in the top quadrant. <ul style="list-style-type: none"> <li><u>Right quadrant:</u> Enter the areas of the structure searched and any specific information about hazards.</li> <li><u>Lower quadrant:</u> Enter information about the victims found in the search area. “L” represents living victims, while “D” represents dead victims. The search marking on the front of a structure or building should contain the total number of victims, whereas search markings inside the structure or building will include victim totals for specific search areas. Also indicate where victims have been taken.</li> </ul> </li> </ol>

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

INSTRUCTOR GUIDANCE	CONTENT
<p data-bbox="191 405 626 730"></p> <p data-bbox="191 768 461 804"><b>Display Slide 5-26</b></p> <p data-bbox="191 846 266 919"></p> <p data-bbox="191 957 626 1283"></p> <p data-bbox="191 1320 461 1356"><b>Display Slide 5-27</b></p>	<p data-bbox="659 405 1425 478">Review the example of the completed search marking, quadrant by quadrant.</p> <p data-bbox="659 516 1386 625">Explain what type(s) of markers the CERTs should use (e.g., lumber crayons, chalk, etc.) and suggest where to purchase markers if they are not provided.</p> <p data-bbox="659 846 1370 919"><b>Does anyone have any questions about search markings?</b></p> <p data-bbox="659 957 954 993"><i>Search Methodology</i></p> <ol data-bbox="659 1031 1425 1325" style="list-style-type: none"><li>1. Upon entering each space or room, <u>call out to victims</u>. Shout something like, "If anyone can hear my voice, come here." If any victims come to you, ask them for any information that they may have about the building or others who may be trapped, then give them further directions such as, "Stay here" or "Wait outside" (depending on the condition of the building).</li></ol> <p data-bbox="704 1362 1406 1541">Remember that even those who are able to get to you may be in shock and confused. When giving directions to victims, CERT members should look directly at the victims, speak in short sentences, and keep their directions simple.</p>

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

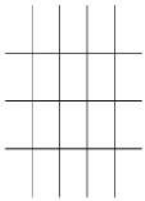
INSTRUCTOR GUIDANCE	CONTENT
<p><b>Search Methodology</b></p> <ul style="list-style-type: none"><li>• Bottom-up/top-down for a multi-story building</li><li>• Right wall/left wall for a single floor</li><li>• Stop frequently to listen</li></ul>  <p>FEMA CERT Basic Training Unit 5: Light Search and Rescue Operations 5-28</p>	<p>2. <u>Use a systematic search pattern.</u> Ensure that all areas of the building are covered. Examples of systematic search patterns to use include:</p> <ul style="list-style-type: none"><li>• Bottom-up/top-down</li><li>• Right wall/left wall</li></ul> <p><b>Emphasize that every interior space has six sides — including the floor and ceiling. Rescuers must check all six sides especially to locate hazards such as fixtures that may be hanging from the ceiling.</b></p>
<p><b>Search Methodology</b></p> <ul style="list-style-type: none"><li>• Stop frequently to listen for:<ul style="list-style-type: none"><li>▪ Tapping</li><li>▪ Movement</li><li>▪ Voices</li></ul></li></ul> <p>FEMA CERT Basic Training Unit 5: Light Search and Rescue Operations 5-29</p>	<p>3. <u>Stop frequently to listen.</u> Listen for tapping, movement, or voices.</p>
<p><b>Search Methodology</b></p> <ul style="list-style-type: none"><li>• Triangulation allows rescuers to view a location from several perspectives</li></ul>  <p>FEMA CERT Basic Training Unit 5: Light Search and Rescue Operations 5-30</p>	<p>4. <u>Triangulate.</u> Triangulation can be used when a potential victim's location is obscured. If access permits, three rescuers, guided by victim sounds, form a triangle around the area and direct flashlights into the area. The light shining from different directions will eliminate shadows that could otherwise hide victims.</p> <p><b>Emphasize that triangulation should not be used as an initial search method.</b></p>

**Display Slide 5-28**

**Display Slide 5-29**

**Display Slide 5-30**

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**


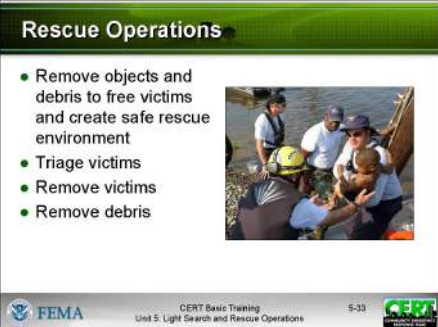
INSTRUCTOR GUIDANCE	CONTENT
<p>Following this review of search methods, the instructor(s) should demonstrate how to conduct a search in a room, including search patterns (e.g., right wall/left wall) and marking next to doors. The demonstration can be done in any room. Tables, chairs, and other items can be used to simulate debris.</p> <div data-bbox="188 842 626 1171" style="border: 1px solid black; padding: 5px;"> <p><b>Search Methodology</b></p> <ul style="list-style-type: none"> <li>● Keep records of rescued victims and of those who remain trapped or are dead</li> <li>● Report information to emergency services personnel</li> </ul> <p style="font-size: small; text-align: center;">FEMA CERT Basic Training Unit 5: Light Search and Rescue Operations 5-31</p> </div> <p><b>Display Slide 5-31</b></p> <div data-bbox="188 1278 626 1608" style="border: 1px solid black; padding: 5px;"> <p><b>Exterior Search</b></p> <ul style="list-style-type: none"> <li>● Set up a grid search               <ul style="list-style-type: none"> <li>■ Set distance between searchers according to visibility and debris</li> <li>■ Overlap patterns for full coverage</li> <li>■ Search in as straight a line as possible</li> <li>■ Mark areas that have been searched</li> </ul> </li> </ul>  <p style="font-size: small; text-align: center;">FEMA CERT Basic Training Unit 5: Light Search and Rescue Operations 5-32</p> </div> <p><b>Display Slide 5-32</b></p>	<p>5. <u>Report results.</u> Keep complete records both of removed victims and of victims who remain trapped or are dead. Report this information to emergency services personnel when they reach the scene.</p> <p><i>Exterior Search</i></p> <p>In addition to searching inside a structure, CERT members might also be required to search open areas outside of buildings.</p> <p>Conducting an effective search in open areas requires that searchers work methodically and follow standard procedures established by those in charge of the search operation. This is true in all cases, and especially if the area to be searched is a crime scene where all potential evidence must be protected.</p>

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

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INSTRUCTOR GUIDANCE	CONTENT
	<p>When searchers are needed, they assemble in a central staging area and sign in. Authorities will brief the searchers on what they will be looking for, what areas they are responsible for searching, the pattern of the search, and what they should do if they discover the missing person, evidence, or related information.</p> <p>Exterior search patterns include grid, line, quadrant or zone, and spiral. A grid pattern is typically used in large open areas or small areas when a hands-and-knees search is conducted.</p> <p>Tell participants that these guidelines should be followed in a grid search.</p> <ul style="list-style-type: none"><li>▪ The area to be searched is viewed as a grid, with searchers initially positioned at one side of the grid.</li><li>▪ The distance between the searchers should be set according to visibility and debris. In all cases, searchers must remain within line of sight and voice contact with searchers on either side of them.</li></ul> <p>It is also critical that the area to be covered by each searcher overlaps that of the searchers on either side of them.</p> <ul style="list-style-type: none"><li>▪ The searchers proceed, maintaining as straight a line as possible across the entire search area. As each searcher moves across the area, they conduct a thorough search for victims within their designated row of the grid.</li><li>▪ In order to ensure full coverage, CERTs must record each area that has been searched.</li></ul> <p>Explain that a grid search might be particularly useful following a tornado or hurricane.</p>

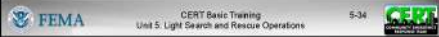

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

INSTRUCTOR GUIDANCE	CONTENT
<p data-bbox="191 411 266 478"></p> <p data-bbox="191 699 626 1024"></p> <p data-bbox="191 1066 461 1098"><b>Display Slide 5-33</b></p>	<p data-bbox="659 411 1354 510"><b>Are there any questions about planning and conducting search operations or the methods involved in an effective search?</b></p> <p data-bbox="659 558 1419 625">Tell the participants that the next section will deal with conducting rescue operations.</p> <p data-bbox="659 709 1214 747"><b><i>Conducting Rescue Operations</i></b></p> <p data-bbox="659 804 1354 871">Introduce this topic by telling the participants that rescues involve three primary functions:</p> <ul data-bbox="659 894 1406 1140" style="list-style-type: none"><li>▪ <u>Moving objects and debris</u> to free victims and to create a safe rescue environment</li><li>▪ <u>Triaging victims</u> by checking for the “three killers,” airway obstruction, major bleeding, and shock</li><li>▪ <u>Removing victims</u> as safely and as quickly as possible</li></ul> <p data-bbox="659 1161 1377 1192">Stress that rescuer safety is always the top priority.</p> <p data-bbox="659 1234 1403 1302">Explain that the three primary functions of rescue will be addressed separately.</p>

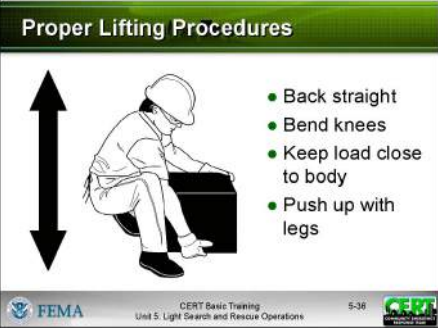


**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

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INSTRUCTOR GUIDANCE	CONTENT
<p><b>Creating a Safe Environment</b></p> <ul style="list-style-type: none"><li>● Maintain rescuer safety</li><li>● Triage in lightly and moderately damaged buildings</li><li>● Evacuate victims as quickly as possible</li></ul>  <p><b>Display Slide 5-34</b></p>	<p><b>Creating a Safe Environment</b></p> <p>Tell participants that there are three safety considerations for all rescue operations:</p> <ul style="list-style-type: none"><li>▪ To maintain rescuer safety</li><li>▪ To triage in lightly and moderately damaged buildings</li><li>▪ To evacuate victims as quickly as possible from moderately damaged buildings while minimizing additional injury</li></ul> <p>Emphasize that none of these can be achieved without creating as safe an environment as possible before attempting rescue. There are, therefore, certain precautions that rescuers must take to minimize risk.</p>
<p><b>Precautions to Minimize Risk</b></p> <ul style="list-style-type: none"><li>● Know your limitations</li><li>● Follow safety procedures</li><li>● Remove debris by:<ul style="list-style-type: none"><li>▪ Leveraging</li><li>▪ Cribbing</li></ul></li></ul>  <p><b>Display Slide 5-35</b></p>	<p><b>Precautions to Minimize Risk</b></p> <p>Stress that there are certain precautions that rescuers must take to minimize risk and increase their chances of achieving their rescue goals.</p> <ul style="list-style-type: none"><li>▪ <u>Know your limitations.</u> Many volunteers have been injured or killed during rescue operations because they did not pay attention to their own physical and mental limitations. CERT rescuers should take the time to eat, drink fluids, rest, and relax so that they can return with a clear mind and improved energy.</li></ul>

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

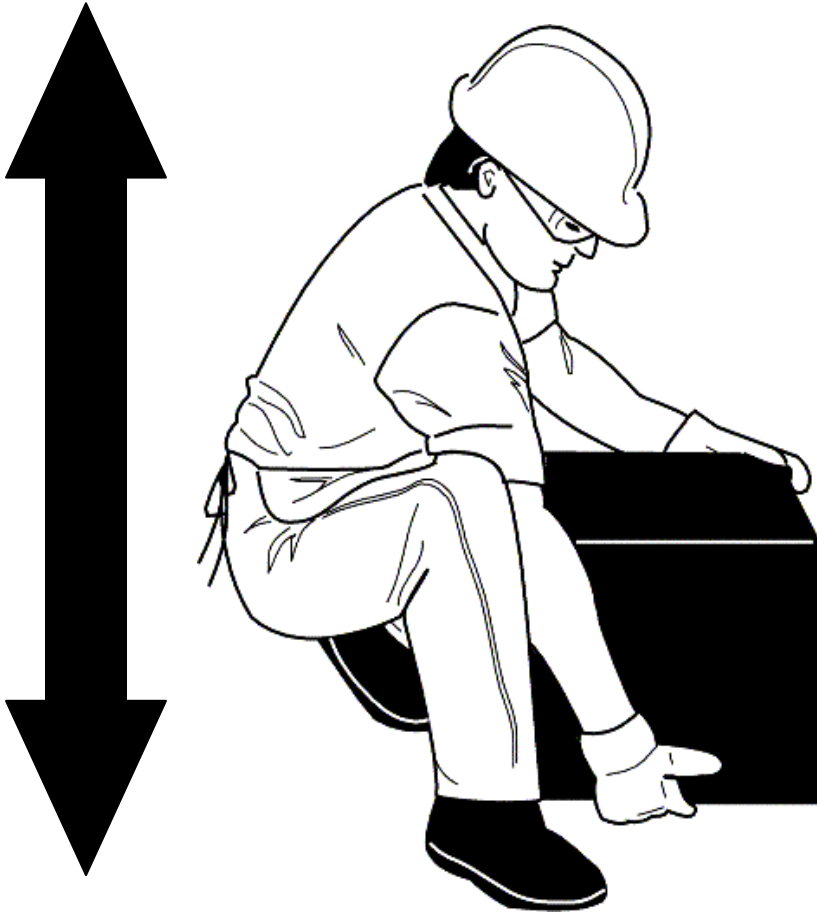
INSTRUCTOR GUIDANCE	CONTENT
<p data-bbox="191 405 626 730"></p> <p data-bbox="191 766 462 800"><b>Display Slide 5-36</b></p> <p data-bbox="191 1245 360 1278"><b>PM, P. 5-28</b></p>	<ul style="list-style-type: none"><li data-bbox="662 422 1422 1165">▪ <u>Follow safety procedures.</u> CERT members should always use the proper safety equipment required for the situation and follow established procedures, including:<ul style="list-style-type: none"><li data-bbox="708 583 948 617">• Work in pairs.</li><li data-bbox="708 638 1312 705">• Triage and treat only in lightly damaged buildings.</li><li data-bbox="708 726 1390 793">• In moderately damaged buildings, triage only and remove victims as quickly as possible.</li><li data-bbox="708 814 1234 848">• Never enter an unstable structure.</li><li data-bbox="708 869 1370 936">• Lift by bending the knees, keeping the back straight, and pushing up with the legs.</li><li data-bbox="708 957 1211 991">• Carry the load close to the body.</li><li data-bbox="708 1012 1341 1045">• Lift and carry no more than is reasonable.</li></ul></li><li data-bbox="662 1060 1370 1165">▪ <u>Remove debris.</u> Remove debris as needed to minimize risk to rescuers and to free entrapped victims.</li></ul> <p data-bbox="662 1207 1377 1278">Refer the participants to the diagram titled <i>Proper Body Positions for Lifting</i> in the Participant Manual.</p>

COMMUNITY EMERGENCY RESPONSE TEAM  
UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS

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PM, P. 5-28

Proper Body Position for Lifting



Proper body position for lifting showing the back straight and lifting with the knees

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

INSTRUCTOR GUIDANCE	CONTENT
<p data-bbox="188 695 626 1024"></p> <p data-bbox="188 1062 461 1096"><b>Display Slide 5-37</b></p> <p data-bbox="188 1136 583 1169"><b>PM, PP. 5-31 through 5-33</b></p> <p data-bbox="188 1323 599 1465">Demonstrate leveraging and cribbing for the group. Show box cribbing and “unboxed” cribbing.</p>	<p data-bbox="657 405 1034 438"><b>Leveraging and Cribbing</b></p> <p data-bbox="657 478 1427 655">Tell the participants that they may encounter situations in which debris needs to be moved to free victims. In these situations, CERT rescuers should consider leveraging and cribbing to move and stabilize the debris until the rescue is complete.</p> <ul data-bbox="657 716 1427 1056" style="list-style-type: none"><li>▪ <u>Leveraging</u> is accomplished by wedging a lever under the object that needs to be moved, with a stationary object underneath it to act as a fulcrum. When the lever is forced down over the fulcrum, the far end of the lever will lift the object.</li><li>▪ A <u>crib</u> is a wooden framework used for support or strengthening. <u>Box cribbing</u> means arranging pairs of wood pieces alternately to form a stable rectangle.</li></ul> <p data-bbox="657 1140 1419 1278">Refer the participants to the section titled <i>Leveraging and Cribbing</i> in the Participant Manual, for a description of a leveraging and cribbing operation and an illustration of procedures for cribbing.</p> <p data-bbox="657 1323 1424 1430">Explain that leveraging and cribbing are used together by alternately lifting the object and placing cribbing materials underneath the lifted edge to stabilize it.</p> <p data-bbox="657 1470 1344 1608">Safety is number one: "Lift an inch; crib an inch." Caution that leveraging and cribbing should be gradual — both for stability and to make the job easier.</p>



**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

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INSTRUCTOR GUIDANCE	CONTENT
	<p>It may also be necessary to use leveraging and cribbing at more than one location (e.g., front and back) to ensure stability. Emphasize that leveraging and cribbing at opposite ends should <u>never</u> be done at the same time because doing so will increase the instability of the debris. Suggest that, if leveraging is required at both ends, the participants should lift and crib at one end, then repeat the process at the other end.</p> <p>Explain that positioning the pry tool and the fulcrum correctly is critical for safe operations. The fulcrum and pry tool must be perpendicular (90 degrees) to the edge of the object being lifted. Also, attempting to leverage a heavy object using too sharp an angle is inefficient and can result in back injury.</p> <p>Caution the group that box cribbing is stable, but it requires pieces of cribbing material of relatively uniform size. When such material is not available, “unboxed” cribbing can also work effectively to support and stabilize the heavy object.</p> <p>Tell the participants that a variety of cribbing materials may be used for these procedures and provide suggestions (e.g., tires or structural debris). Emphasize the importance of improvising, and encourage them not to put form over function.</p> <p>Warn the participants that when they are able to achieve sufficient lift, they should remove the victim and reverse the leveraging and cribbing procedure to lower the object. Stress that they should never leave an unsafe condition, unless the structure or building is obviously compromised.</p>

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

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INSTRUCTOR GUIDANCE	CONTENT
<p data-bbox="191 772 266 848"></p> <p data-bbox="191 884 626 1024">When asking the questions, set up a brief scenario and ask what the participants would do in that situation.</p> <p data-bbox="191 1073 266 1148"></p>	<p data-bbox="659 407 1409 583">Tell the group that when they must remove debris to locate victims, they should set up a human chain and pass the debris from one person to the next. Caution them, however, to set up the chain in a position that will not interfere with rescue operations.</p> <p data-bbox="659 625 1414 730">Remind them to wear their PPE to protect themselves at all times. Note that kneepads can be an important addition to their PPE during rescue operations.</p> <p data-bbox="659 772 1419 842">Ask the group several "What would you do if?" questions to ensure that they understand the material.</p> <p data-bbox="659 1066 1382 1171"><b>Does anyone have any questions about safety precautions and leveraging and cribbing during rescue operations?</b></p> <p data-bbox="659 1213 1386 1318">When it is clear that the participants understand the concepts, tell them that the next section will cover moving victims.</p>

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

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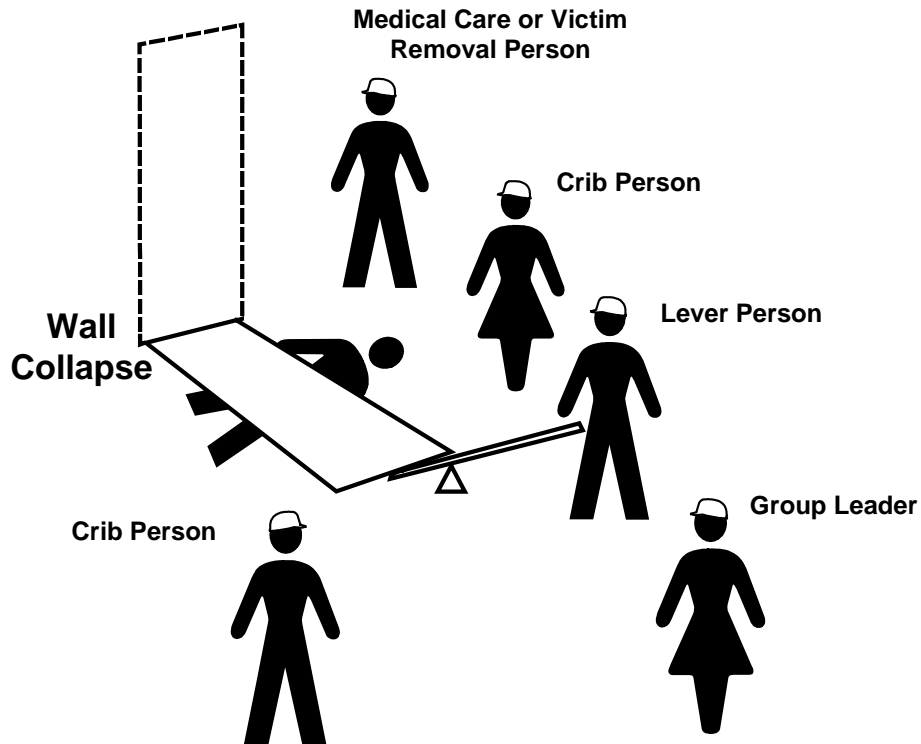
**PM, P. 5-31 through 5-33**

**Leveraging and Cribbing**

1. Conduct a sizeup of the scene: Gather facts, identify hazards, and establish priorities.
2. Have one person in charge and formulate a plan of action, based upon the information you have received, to identify how and where to lift and crib and how the victim will be removed from underneath the debris.
3. Gather necessary materials for lifting/cribbing operations: Lever, fulcrum, cribbing blocks, spacers/wedges. During an actual emergency, you may have to use creative, substitute materials.
4. Use cribbing materials to stabilize the object prior to lifting.
5. Distribute cribbing materials as necessary to be readily accessible during the lifting operation.
6. Prepare to lift the object: Assemble the lever and fulcrum at the previously identified location.
7. Assign a person to monitor and be ready to remove the victim as soon as possible.
8. Initiate the lift, using the lever and fulcrum for mechanical advantage.
9. As the object is lifted, add cribbing as needed, one layer at a time.
10. When the object is adequately supported, remove the lever and fulcrum. The victim may then be removed.
11. Unless the structure is obviously compromised and you need to evacuate immediately, reinitiate the lift and begin removing cribbing materials, reversing the process by which the crib was built.
12. Progressively lower the object to the ground. Always return the heavy object to a stable position unless you have to evacuate immediately.
13. Before you leave, remember to collect the lifting/cribbing supplies to be available for additional operations.

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

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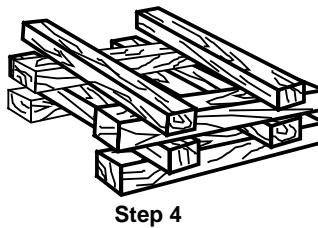
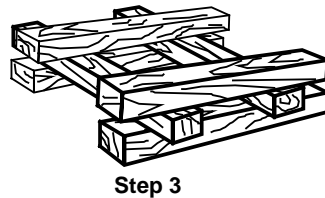
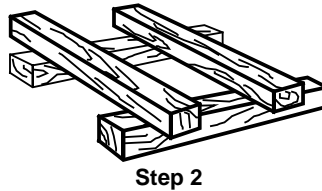
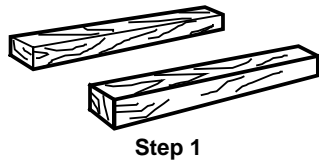
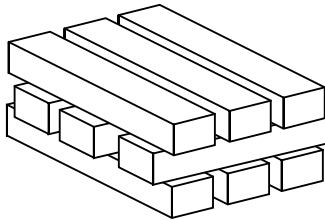
**Team organization for leveraging/cribbing operation, showing the victim underneath a collapsed wall and the CERT members at the following locations:**

- **Group Leader:** In front of collapse, positioned so that he or she can view the entire operation while remaining out of the rescuers' way
- **Lever Person:** At the front edge of the collapsed wall and positioned so that he or she can position a fulcrum and lever under the wall
- **Crib Persons:** On either side of the collapsed wall and positioned to enable the placement of cribbing as the wall is raised with the lever
- **Medical Care/Victim Removal Person:** Next to the Crib Person who is closest to the victim's head



COMMUNITY EMERGENCY RESPONSE TEAM  
UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS

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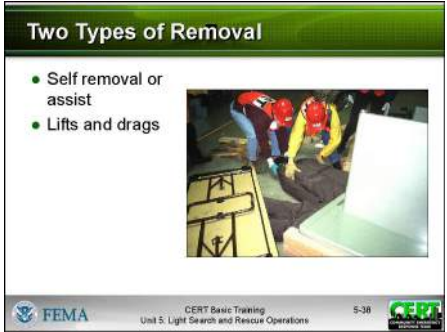
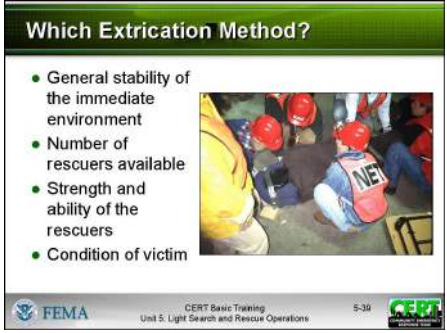
**Four steps for building box cribbing:**

**Step 1:** Position two pieces of wood parallel to each other on either side of the collapse.

**Step 2:** Place two pieces of wood perpendicularly across the base pieces.

**Steps 3 and 4:** Add additional layers of wood, with each perpendicular to the previous level.

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**


INSTRUCTOR GUIDANCE	CONTENT
<p data-bbox="186 401 630 730"></p> <p data-bbox="186 766 462 808"><b>Display Slide 5-38</b></p> <p data-bbox="186 961 630 1291"></p> <p data-bbox="186 1323 462 1365"><b>Display Slide 5-39</b></p> <p data-bbox="186 1480 625 1554">Review the symptoms of head and spinal injury if necessary.</p>	<p data-bbox="657 401 933 441"><b>Removing Victims</b></p> <p data-bbox="657 472 1421 556">Introduce this section by explaining that there are two basic types of victim removal:</p> <ul data-bbox="657 567 1015 661" style="list-style-type: none"><li>▪ Self-removal or assist</li><li>▪ Lifts and drags</li></ul> <p data-bbox="657 672 1421 892">Explain that it is usually best to allow an ambulatory victim to extricate him- or herself. Caution the group, however, that sometimes ambulatory victims are not as strong and uninjured as they think they are. When victims become free from entrapment, they may need assistance to exit the structure.</p> <p data-bbox="657 955 933 997"><i>Extrication Method</i></p> <p data-bbox="657 1029 1388 1113">Explain that the type of extrication method selected should depend on the:</p> <ul data-bbox="657 1123 1372 1323" style="list-style-type: none"><li>▪ General stability of the immediate environment</li><li>▪ Number of rescuers available</li><li>▪ Strength and ability of the rescuers</li><li>▪ Condition of the victim</li></ul> <p data-bbox="657 1333 1421 1449">Explain that the participants will learn the basic types of victim removal and will have the opportunity to practice some of the techniques.</p> <p data-bbox="657 1480 1437 1816">Caution the participants that, if safety and time permit, <u>they should not use lifts and drags to remove victims when closed-head or spinal injury is suspected</u>. In such cases, the spine must be stabilized using a backboard. Doors, tables, and similar materials can be used as improvised backboards. Stress that the backboard must be able to carry the person and that proper lifting techniques must be used. The log rolling technique will be covered later in this section.</p> <p data-bbox="657 1848 1388 1890">When moving victims, rescuers must use teamwork</p>

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

INSTRUCTOR GUIDANCE	CONTENT
<p><b>PM, PP. 5-38 and 5-39</b></p> <p>Demonstrate these carries. Then, have all participants who are physically able pair up and practice the carries themselves. Give permission for participants to opt out of any carry with which they don't feel comfortable. Remind the participants that CERT members' safety is the number one priority.</p> <div data-bbox="188 1062 626 1390" data-label="Image"> </div> <p><b>Display Slide 5-40</b></p>	<p>and communication and keep the victim's spine in a straight line. Remember, rescuer safety and the condition of the building will dictate the approach.</p> <p>Point out that there are several types of lifts and carries. Refer the participants to the illustrations titled <i>Types of Lifts and Carries</i> in the Participant Manual.</p> <p><i>One-Person Arm Carry</i></p> <p>For example, if some participants are physically able and the victim is <u>small</u>, they may use the one-person arm carry to lift and carry the victim themselves by:</p> <ul style="list-style-type: none"> <li>▪ Reaching around the victim's back and under the knees</li> <li>▪ Lifting the victim while keeping the rescuer's back straight and lifting with the legs</li> </ul> <p>Consider the size of the victim and the distance he or she needs to be carried before using this carry.</p>

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

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INSTRUCTOR GUIDANCE	CONTENT
 <p><b>Display Slide 5-41</b></p>	<p><i>Pack-Strap Carry</i></p> <p>Tell the participants that another way for a single rescuer to lift a victim safely is by using the one-person pack-strap carry. Using this method, the rescuer should:</p> <ul style="list-style-type: none"><li>▪ <u>Step 1</u>: Stand with his or her back to the victim.</li><li>▪ <u>Step 2</u>: Place the victim's arms over the rescuer's shoulders and grab the hands in front of the rescuer's chest.</li><li>▪ <u>Step 3</u>: Hoist the victim by bending forward slightly, until the victim's feet just clear the floor.</li></ul> <p>Note: The pack-strap carry is most effective for quick removal of a victim over a short distance.</p>

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**


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INSTRUCTOR GUIDANCE	CONTENT
<p data-bbox="191 405 625 730">The slide is titled "Two-Person Carry" and features two photographs. The left photo shows two rescuers in blue shirts and dark pants kneeling on a carpeted floor, lifting a person lying on their back. The right photo shows the same two rescuers standing and carrying the person horizontally between them. At the bottom of the slide, there is a FEMA logo on the left, the text "CERT Basic Training Unit 5: Light Search and Rescue Operations" in the center, and the slide number "5-42" on the right. A small "CERT" logo is also visible in the bottom right corner of the slide area.</p> <p data-bbox="191 768 462 802"><b>Display Slide 5-42</b></p> <p data-bbox="191 842 625 1203">Demonstrate this lift using a participant volunteer as the victim. Allow all participants who are physically able to practice the lift: Assign the participants into groups of three (two rescuers and one victim), and rotate roles so that each person has a chance to try the two rescuer positions.</p>	<p data-bbox="662 405 922 438"><i>Two-Person Carry</i></p> <p data-bbox="662 478 1386 621">Explain that the victim's upper body will weigh more than his or her lower body; therefore, rescuers with greater body strength should be positioned at the victim's upper body.</p> <p data-bbox="662 661 1377 768">Explain that victim removal is easier when multiple rescuers are available. With two rescuers, a victim may be removed using a two-person carry.</p> <ul data-bbox="662 787 1417 1436" style="list-style-type: none"><li data-bbox="662 787 1417 1077">▪ <u>Rescuer 1</u>: Squat at the victim's head and grasp the victim from behind around the midsection. Reach under the arms and grasp the victim's left wrist with rescuer's right hand, and vice versa. Crossing the wrists creates a more secure hold on the victim and also pulls the victim's arms and elbows closer to their body. This will be helpful if the victim is carried through any narrow passages.</li><li data-bbox="662 1096 1417 1310">▪ <u>Rescuer 2</u>: Squat between the victim's knees, facing either toward or away from the victim. Note that, if the rescuers will carry the victim over uneven areas such as stairs, the rescuers will need to face each other. Grasp the outside of the victim's legs at the knees.</li><li data-bbox="662 1329 1417 1436">▪ <u>Both rescuers</u>: Rise to a standing position simultaneously, keeping backs straight and lifting with the legs. Walk the victim to safety.</li></ul>

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

INSTRUCTOR GUIDANCE	CONTENT
<p data-bbox="191 405 625 730"></p> <p data-bbox="191 768 461 804"><b>Display Slide 5-43</b></p> <p data-bbox="191 842 594 1020">Using a sturdy, non-swivel chair, demonstrate this carry using two instructors as rescuers and a volunteer participant as a victim.</p> <p data-bbox="191 1058 625 1205">Then, have all participants who are physically able practice the carry, working in the same three-person groups.</p>	<p data-bbox="659 405 824 441"><i>Chair Carry</i></p> <p data-bbox="659 478 1365 552">Demonstrate that two rescuers can also remove a victim by seating him or her on a chair:</p> <ul data-bbox="659 569 1393 814" style="list-style-type: none"><li>▪ <u>Rescuer 1</u>: Cross the victim's arms in his or her lap. Facing the back of the chair, grasp the back upright.</li><li>▪ <u>Rescuer 2</u>: Grasp the two front legs of the chair.</li><li>▪ <u>Both rescuers</u>: Tilt the chair back, lift simultaneously, and walk out.</li></ul> <p data-bbox="659 835 1419 909">Explain that it is best to use a sturdy, non-swivel chair for this lift.</p> <p data-bbox="659 947 1419 1052">Note that, if rescuers will need to carry the victim over uneven surfaces such as stairs, the rescuers must face each other.</p>
<p data-bbox="191 1245 625 1570"></p> <p data-bbox="191 1608 461 1644"><b>Display Slide 5-44</b></p>	<p data-bbox="659 1245 857 1281"><i>Blanket Carry</i></p> <p data-bbox="659 1318 1419 1539">Tell the participants that they can use the blanket carry for victims who cannot be removed by other means. Caution the participants that the blanket carry requires four to six rescuers to ensure stability for the victim and that one rescuer must be designated the lead person:</p> <ul data-bbox="659 1556 1419 1822" style="list-style-type: none"><li>▪ <u>Step 1</u>: Position a blanket next to the victim, ensuring that the blanket will extend under the victim's head.</li><li>▪ <u>Step 2</u>: Tuck the blanket under the victim, and assist the victim in moving to the center of the blanket. If necessary, use the log rolling technique to position them on the blanket.</li></ul>

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

INSTRUCTOR GUIDANCE	CONTENT
<p>Ask participants to volunteer to demonstrate log rolling and the blanket carry. Make sure that all participants have an opportunity to practice using the carry.</p>  <p><b>Display Slide 5-45</b></p>	<ul style="list-style-type: none"> <li>▪ <u>Step 3</u>: With three rescuers squatting on each side, roll up the edges of the blanket against the victim to grasp a “handle.” The lead person checks the team for even weight distribution and correct lifting position.</li> <li>▪ <u>Step 4</u>: The lead person calls out, “Ready to lift on the count of three: One, two, three, <i>lift</i>.”</li> <li>▪ <u>Step 5</u>: The team lifts and stands in unison — keeping the victim level — and carries the victim feet first.</li> </ul> <p>Point out that the team must also lower the victim together, using the following steps:</p> <ul style="list-style-type: none"> <li>▪ <u>Step 1</u>: The lead person calls out, “Ready to lower on the count of three: One, two, three, <i>lower</i>.”</li> <li>▪ <u>Step 2</u>: The team lowers the victim in unison, exercising caution to keep the victim level.</li> </ul> <p>Explain that a variety of materials — such as blankets, carpets, and folded tables — can be used as improvised stretchers.</p> <p><i>Log Rolling</i></p> <p>Explain that log rolling should be used to move victims with a <u>suspected</u> or confirmed cervical spine injury. If the victim is unconscious, assume he or she has a cervical spine injury. The rescuer at a victim’s head should give commands as fellow rescuers roll the victim as a single unit onto the blanket, backboard, or other support.</p>

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

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PM, P.5-38 and 5-39

**Types of Lifts and Carries**

**One-Person Arm Carry**

One-Person Arm Carry, with the rescuer holding the victim around the victim's back and under the knees.



**One-Person Pack-Strap Carry**

One-Person Pack-Strap Carry in which the rescuer places the victim's arms over his or her shoulders and grabs the victim's wrists over his or her chest, then hoists the victim by bending over slightly.





**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

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**Two-Person Carry**

Two-Person Carry in which Rescuer 1 squats at the victim's head and grasps the victim from behind at the midsection. Rescuer 1 should use his right hand to grab the victim's left wrist, and vice versa. Rescuer 2 squats between the victim's knees, grasping the outside of the knees. Both rescuers rise to a standing position."



**Chair Carry**



Chair Carry in which the victim is placed in a sturdy, non-swivel chair and tilted backward as rescuers lift the victim. This carry requires two rescuers. If possible, secure victim to the chair.



Note that, if rescuers will need to carry victim over uneven surfaces, such as stairs, the rescuers must face each other.

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

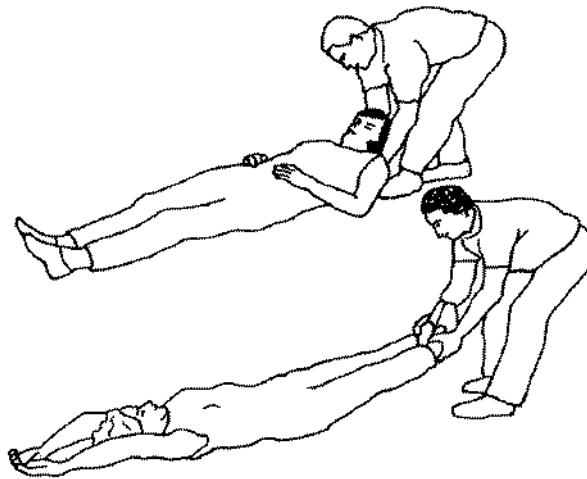
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INSTRUCTOR GUIDANCE	CONTENT
<p><b>PM, P. 5-41</b></p>  <p>The slide titled "Blanket Drag" shows a person kneeling on a carpeted floor, pulling a blue blanket over a person lying face down. The slide includes the FEMA logo, "CERT Basic Training", "Unit 5: Light Search and Rescue Operations", and the slide number "5-46".</p> <p><b>Display Slide 5-46</b></p>  <p>A black square icon with a white question mark and radiating lines above it.</p>	<p>Point out that rescuers can also drag a victim out of a confined area by grasping either under the arms or the feet and pulling across the floor. Refer the participants to the diagram titled <i>Correct Drag Techniques</i> in the Participant Manual for an illustration. Caution the participants, however, that unless there is no other way to remove the victim and the victim's removal is time critical, they should not use this drag when debris may cause additional injury.</p> <p><i>Blanket Drag</i></p> <p>Explain that, when necessary, one rescuer can use the blanket drag by following these steps:</p> <ul style="list-style-type: none"><li>▪ <u>Step 1</u>: Wrap the victim in a blanket.</li><li>▪ <u>Step 2</u>: Squat down and grasp an edge of the blanket.</li><li>▪ <u>Step 3</u>: Drag the victim across the floor.</li></ul> <p><b>Does anyone have any questions about rescue operations or victim removal?</b></p> <p>Explain that the participants will now have an opportunity to practice some of the victim removal techniques.</p>

COMMUNITY EMERGENCY RESPONSE TEAM  
UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS

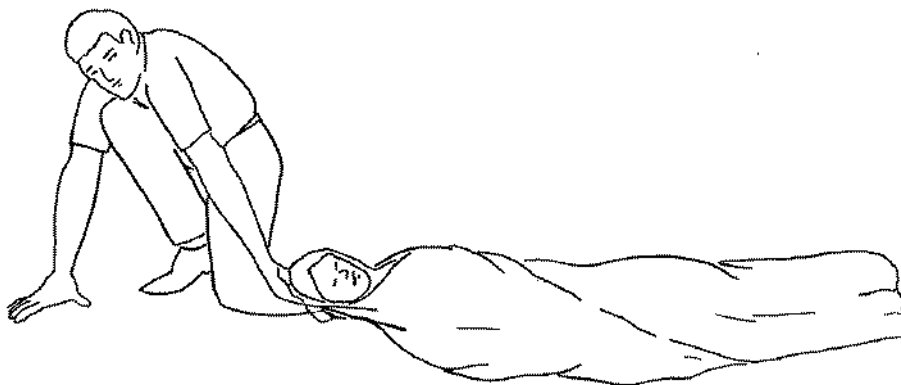
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PM, P.5-41	Correct Drag Techniques
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**Correct Drag Technique**

Correct drag technique, showing the rescuer grasping the victim by either the feet or shoulders and dragging him or her clear of the hazard



**Blanket Drag**

Blanket drag, showing the victim wrapped in a blanket with the rescuer squatting at the victim's head. The rescuer grasps the blanket behind the victim's head and drags him or her clear of the hazard.

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

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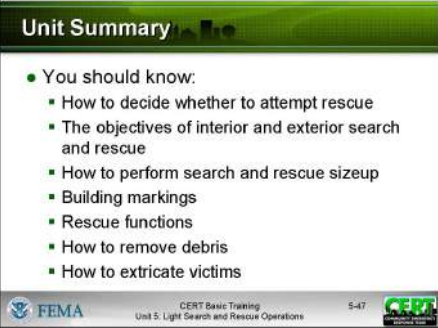
INSTRUCTOR GUIDANCE	CONTENT
<p>Instructor(s) should move from team to team and offer coaching as needed.</p> <p>Ask the teams to stay together for the next activity of the class, the Victim Extrication exercise.</p>	<p><b>Exercise: Victim Carries</b></p> <p><b>Purpose:</b> Explain that this exercise will provide participants with an opportunity to practice different drags and carries to safely move victims.</p> <p><b>Instructions:</b></p> <ol style="list-style-type: none"><li>1. Break the class into teams of seven.</li><li>2. Tell all teams to practice each of the carries.<ul style="list-style-type: none"><li>▪ Tell class that members of each team will volunteer to be “victims.”</li><li>▪ Explain that the “victims” and “rescuers” must trade off roles so that everyone on the team has an opportunity to practice the drags and carries as a “rescuer.”</li><li>▪ Emphasize that each person must pay attention to their own limitations. Each person should attempt only those drags or carries that will be safe for them to perform.</li></ul></li><li>3. Provide blankets, chairs, and back boards, if available, and encourage students to use each item as they practice performing drags and carries.</li><li>4. Make sure teams trade off “victim” and “rescuer” roles so that everyone on each team has a chance to practice the drags and carries.</li><li>5. Emphasize that participants know their own limits! Tell participants not to attempt any lift or carry that will not be safe for the rescuer and the victim.</li></ol>

**COMMUNITY EMERGENCY RESPONSE TEAM**  
**UNIT 5: LIGHT SEARCH AND RESCUE OPERATIONS**

INSTRUCTOR GUIDANCE	CONTENT
<p>This exercise is best conducted by two instructors. Instructors should provide guidance to each team as they perform their extrication.</p> <p>A more realistic scenario can be created by using two or three rooms simultaneously, so that there are several "rescues" occurring at once.</p> <p>Mannequins or rescue dummies should be used as the entrapped victims at the "collapse sites," allowing all members of the group to practice as rescuers.</p> <p>If there are more groups of seven then there are "collapse sites," have one group observe while another conducts extrication at one site. When groups rotate, observers and rescuers will switch.</p> <p>Instructors should observe each group and correct errors that they see.</p>	<p><b>Exercise: Victim Extrication</b></p> <p><b>Purpose:</b> Explain that this exercise will provide the participants with an opportunity to practice the removal of entrapped victims from a damage site, using leveraging/cribbing and drags and carries. Participants will be assigned to groups and told to do a room search, locate victims, and remove the victims.</p> <p><b>Instructions:</b></p> <ol style="list-style-type: none"> <li>1. Assign the participants to groups of seven.</li> <li>2. Arrange the victims at the "collapse site(s)," using desks, shelves, etc., to represent debris. Place other items haphazardly around the victims. Make sure that there are items available that can serve as levers (e.g., 2 by 4s), fulcrums, and cribbing material.</li> <li>3. Instruct the groups to:             <ol style="list-style-type: none"> <li>a. Enter their respective "collapse site" rooms</li> <li>b. Do a room search</li> <li>c. Locate the victims and use leveraging and cribbing procedures to free them</li> <li>d. Use appropriate lifts and drags to remove the victims from the room (and, if possible, from the building)</li> </ol> </li> <li>4. Rearrange the victims and "debris," and repeat the exercise until each participant has had an opportunity to practice being a rescuer and each team has practiced at two "collapse sites."</li> </ol> <p>Discuss the exercise with the entire group, focusing on any differences between the teams' techniques and experiences.</p>

**COMMUNITY EMERGENCY RESPONSE TEAM**  
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INSTRUCTOR GUIDANCE	CONTENT
 <p><b>Unit Summary</b></p> <ul style="list-style-type: none"><li>You should know:<ul style="list-style-type: none"><li>How to decide whether to attempt rescue</li><li>The objectives of interior and exterior search and rescue</li><li>How to perform search and rescue sizeup</li><li>Building markings</li><li>Rescue functions</li><li>How to remove debris</li><li>How to extricate victims</li></ul></li></ul> <p>FEMA CERT Basic Training Unit 5: Light Search and Rescue Operations 5-47</p>	<p><b>Unit Summary</b></p> <p>Summarize the key points in this unit:</p> <ul style="list-style-type: none"><li>The decision to attempt a rescue should be based on:<ul style="list-style-type: none"><li>The risks involved</li><li>Achievement of the overall goal of doing the greatest good for the greatest number</li></ul></li><li>The objectives of interior and exterior search and rescue are to:<ul style="list-style-type: none"><li>Maintain rescuer safety at all times</li><li>Rescue the greatest number of people in the shortest amount of time</li><li>Get the walking wounded and ambulatory victims out first</li><li>Rescue the lightly trapped victims next</li></ul></li><li>Remind the participants that CERTs are restricted to <i>light search and rescue</i>. Their mission when dealing with heavily damaged structures or situations that are clearly unsafe (e.g., rising or swiftly moving water) is to warn others.</li><li>Search and rescue sizeup follows the same process as sizeup for other CERT operations. <u>Sizeup continues throughout search and rescue efforts</u> and provides information about how to proceed. Should sizeup indicate that evacuation of the team is necessary, the CERT mission is to ensure safety and organization during the evacuation.</li></ul>

**Display Slide 5-47**

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INSTRUCTOR GUIDANCE	CONTENT
	<ul style="list-style-type: none"><li>▪ When the decision to begin search operations is made, CERT searchers must:<ul style="list-style-type: none"><li>• Employ appropriate search techniques</li><li>• Locate any victims and check for the “three killers”</li></ul></li> <li>▪ Locating victims means completing a sizeup of the building interior to identify areas of entrapment, then conducting a search that:<ul style="list-style-type: none"><li>• Is systematic and thorough</li><li>• Avoids unnecessary duplication of effort</li><li>• Documents results</li></ul></li> <li>▪ Rescue involves three main functions:<ul style="list-style-type: none"><li>• Creating a safe environment</li><li>• Triaging or stabilizing victims</li><li>• Removing victims based on the sizeup</li></ul></li></ul> <p>Rescue operations hinge on maintaining rescuer safety, which requires CERT members to recognize their own limitations. CERT members should <i>never</i> attempt anything that exceeds their limitations <i>at that point in time</i>.</p> <p>Leveraging and cribbing may be used to lift heavy debris and give access to trapped victims.</p>

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INSTRUCTOR GUIDANCE	CONTENT
<div data-bbox="188 1073 267 1148" data-label="Image"> </div> <div data-bbox="188 1215 626 1545" data-label="Complex-Block"> <p><b>Homework Assignment</b></p> <ol style="list-style-type: none"> <li>1. Read unit to be covered in next session</li> <li>2. Bring necessary supplies to next session</li> <li>3. Wear appropriate clothes to next session</li> </ol> <p>FEMA CERT Basic Training Unit 5: Light Search and Rescue Operations 5-48</p> </div> <p data-bbox="188 1583 461 1619"><b>Display Slide 5-48</b></p>	<p>Victims can be removed in a number of ways, depending on:</p> <ul style="list-style-type: none"> <li>▪ Their condition</li> <li>▪ The number of rescuers available</li> <li>▪ The strength and ability of the rescuers</li> <li>▪ The stability of the environment</li> </ul> <p>Remind the participants of the lifts and drags that they found easier to accomplish and suggest that they use those drags and carries when circumstances permit.</p> <p>If the building's condition allows, victims with suspected head or spinal injury should be stabilized on some type of backboard before being removed. When possible, these removals should be deferred to trained EMS personnel.</p> <p><b>Does anyone have any questions about anything covered in this unit?</b></p> <p><b>Homework Assignment</b></p> <p>Ask the group to read and become familiar with the unit that will be covered in the next session.</p> <p>Thank the participants for attending the session. Remind them of the time and location of the next session, if necessary.</p>