Lamorinda
Community Emergency Response Team

LAMORINDA COMMUNITY EMERGENCY RESPONSE TEAM

Light Search & Rescue

0

Community Emergency Response Team

- Personal safety is ALWAYS the number one priority
- Show up prepared
  - Clothing and footwear, have WATER
  - Wear PPE …gloves, helmet, goggles, mask, boots, etc.
  - Have at least one communications device: cell, radio, etc.
- Work as a team
- Size-up - maintain situational awareness
- The CERT goal is to do the **Greatest Good for the Greatest Number**
- *Hope for the best but plan for the worst!*

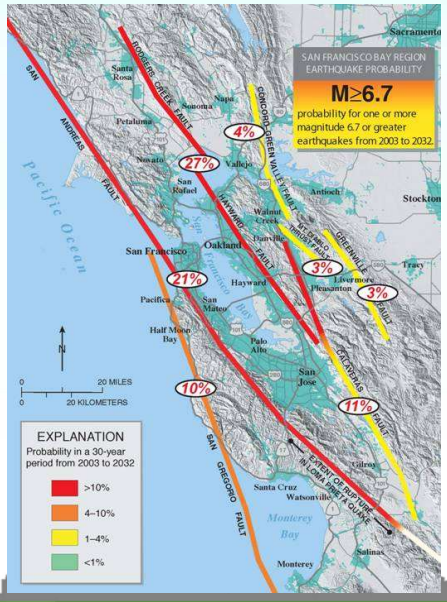
1

Unit Topics

- Risk Assessment and Quick Response
- Size-Up
- Rescuer Safety
- Interior and Exterior Searches
- Rescue Operations

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Bay Area Risk Assessment & Why we need CERT



72% chance of a magnitude 6.7+ earthquake in the next 30 years

- USGS

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The Golden Day

- Survival Requires a Quick Response
- Entrapped Victim Survival Rate

Tme Until Rescue	*Survival Rate*
30 Minutes	99.3%
1 Day	81.0%
2 Days	36.7%
3 Days	33.7%
4 Days	19.0%
5 Days	7.4%



Buck Helm's Car
Cypress Structure
Loma Prieta Earthquake
Photo Courtesy of Ben Ho

Visual SAR.4 **Lamorinda CERT** 57

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The Rule of 3's

- You can survive:
  - **3** ***minutes*** without AIR
  - **3** ***hours*** without SHELTER from extreme weather
  - **3** ***days*** without WATER
  - **3** ***weeks*** without FOOD

Visual SAR.5 **Lamorinda CERT** 57

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CERT Search and Rescue Size-up

1. Gather Facts
2. Assess Damage and Communicate
3. Consider Probabilities
4. Assess Your Situation
5. Establish Priorities
6. Make Decisions
7. Develop Plan of Action
8. Take Action
9. Evaluate Progress



Visual SAR.6 **Lamorinda CERT** 57

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Size-up Step 1: Gather Facts

- Consider:
  - Time and day of event
  - Construction type, terrain
  - Weather
  - Hazards
  - Occupancy
- Gather facts accurately!



Visual SAR.7 **Lamorinda CERT** 57

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Size-up Step 2: Assess Damage

- 360° (overview and assessment)
- Identify entry and egress routes
- Identify hazards
- Is it safe to enter?
- Potential for occupants
  - Interview neighbors
  - Voice 'call out'





Seattle, WA, March 10, 2001 -- Chimney bricks crumbled during the earthquake.

Photo by John Shea/FEMA News Photo

Visual SAR.8 **Lamorinda CERT** 57

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Assess Damage

- CERT mission changes if:
  - Damage is light
  - Damage is moderate
  - Damage is heavy
- Consider structure type and age



- Warning: the Collapse Zone is 1.5 times the height of the building in all directions

Never enter a structure with heavy damage!

Visual SAR.9 **Lamorinda CERT** 57

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Light Damage

- Superficial
- Broken Windows
- Superficial cracks or breaks in wall surface
- Minor damage to interior



Safe to enter and remain

Visual SAR.10 **Lamorinda CERT** 57

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Moderate Damage

- Visible signs of damage
- Decorative work damaged or fallen
- Many visible cracks or breaks in wall
- Major damage to interior contents
- Building still on foundation



Enter only to save lives

Visual SAR.11 **Lamorinda CERT** 57

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Heavy Damage

- Partial or total collapse
- Obvious structural instability
- Tilting
- Building off foundation
- Smoke, fire, gas leaks, hazmat

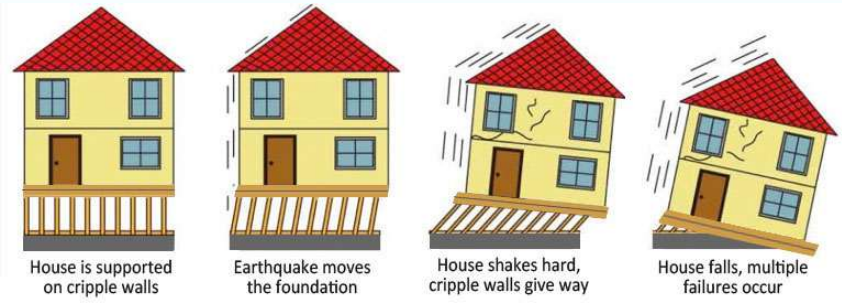


Do Not Enter under any circumstances

Visual SAR.12 **Lamorinda CERT** 57

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Light Frame House Collapse



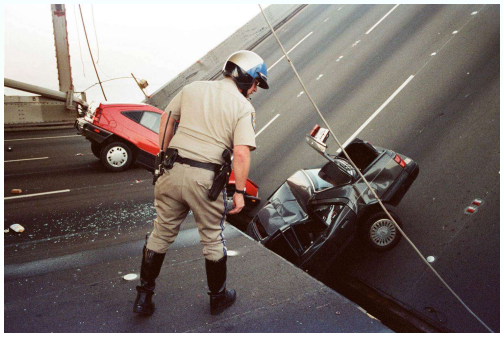
Visual SAR.13 **Lamorinda CERT** 57

13

Size-up Step 3: Consider Probabilities

Consider what probably will happen and what could happen:

- How stable is the situation?
- What else could go wrong?
- What does it all mean for the Search and Rescue?



Visual SAR.14 **Lamorinda CERT** 57

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Size-up Step 4: Assess Your Situation

Assess:

- Is the situation safe enough to continue?
- The risks will rescuers will face?
- What resources are needed?
- What resources are available?
  - Personnel
  - Equipment
  - Tools



Visual SAR.15 **Lamorinda CERT** 57

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What Damage Do You See? Would You Enter?



Loma Prieta earthquake damage in San Francisco. The soft first story is due to construction of garages in the first story and resultant reduction in shear strength. Photo from: http://earthquake.usgs.gov/bytopic/photos.html

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What Damage Do You See?



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Hazards

- Aftershocks
- Fallen fixtures, debris
- Unsecured furniture
- Glass
- Energized wires
- Gas leaks
- Broken Glass
- Hazmat
- People





Visual SAR.18 **Lamorinda CERT** 57

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Size-up Step 5: Establish Priorities

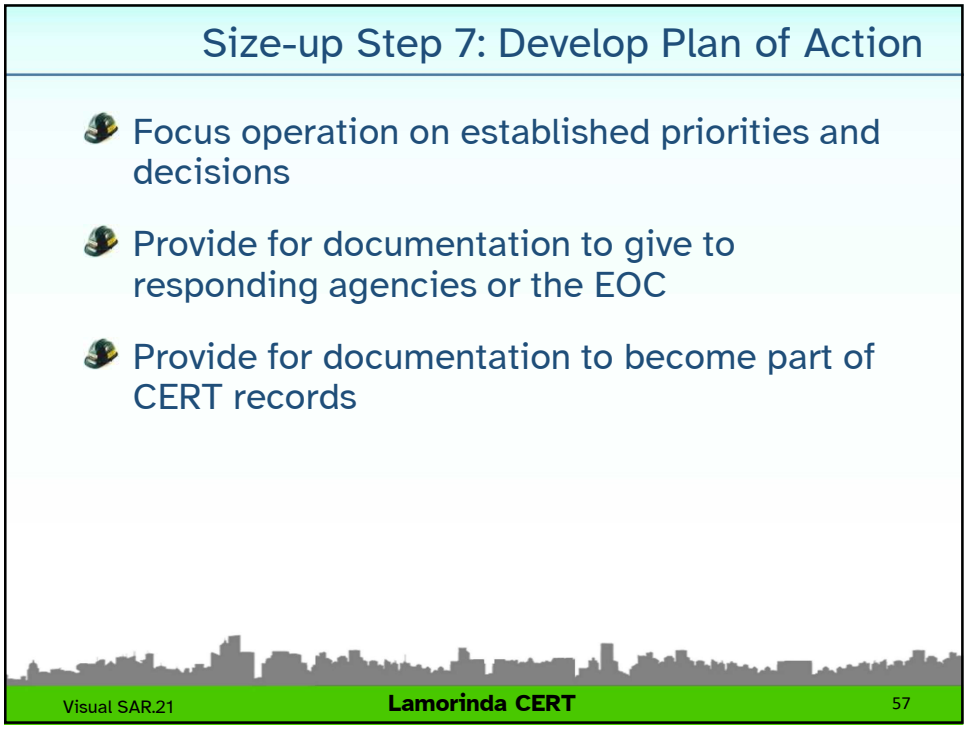
- What should be done?
- In what order?
- How to safely rescue the greatest number in the shortest amount of time?

Visual SAR.19 **Lamorinda CERT** 57

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Size-up Step 6: Make Decisions
Keep in mind:
Safety of CERT members
Life safety of victims and others
Protection of the environment
Protection of property
Visual SAR.20
Lamorinda CERT
57

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Size-up Step 7: Develop Plan of Action
Focus operation on established priorities and decisions
Provide for documentation to give to responding agencies or the EOC
Provide for documentation to become part of CERT records
Visual SAR.21
Lamorinda CERT
57

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Size-up Step 8: Take Action

Start the Search:

- Identify alternate exits
- Stay together & along the walls
- Search top down or bottom up
- Right- or left-handed pattern
- Continue to call out and listen
- Move slowly, testing the floor
- Mark each individual unit
- Complete “X” after leaving

Visual SAR.22 **Lamorinda CERT** 57

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Size-up Step 9: Evaluate Progress

- Most critical step
- Monitor plan’s effectiveness and safety



Visual SAR.23 **Lamorinda CERT** 57

23

Safety Considerations

- Make rescuer safety your primary concern
- Know your exit paths
- Use a buddy system
- Be alert for hazards
- Use safety equipment
- Rotate teams



Teamwork = Success

Visual SAR.24 **Lamorinda CERT** 57

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Search and Rescue Safety

- The threat of terrorist attacks requires a heightened sense of awareness of your surroundings
- Consider the risk of secondary explosions targeting response teams
- If there is an explosion, assume there is a secondary device until proven otherwise

Visual SAR.25 **Lamorinda CERT** 57

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Search and Rescue Safety

- Always have a whistle !
- The following "Emergency Alerting System" is to be used in the event of problems at the site:
  - Evacuate – 3 short blasts (1 second each) 3 times
    - Out – Out – Out *(short – short – short)*
    - Drop everything and get out now!
  - Cease Operations – 1 long blast (3 seconds duration)
    - Quiet *(long)*
    - Stop what you're doing and wait for instructions
  - Resume Operations – 1 long and 1 short blast
    - Oooh – Kay *(long – short)*

This is the FEMA US&R Standard

Visual SAR.26 **Lamorinda CERT** 57

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Take A Break



Yoni Brook/for The Washington Post

BE BACK IN 10 MINUTES

Visual SAR.27 **Lamorinda CERT** 57

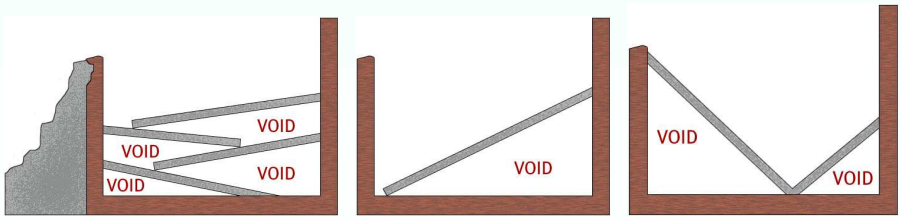
27

Interior & Exterior Searches

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Search Operations

If you see collapsed floors or walls, get out!



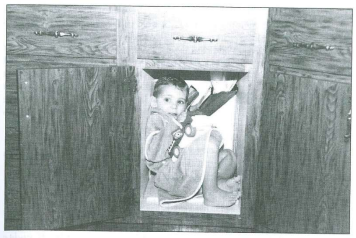
Pancake Void Lean-to Void "V" Void

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Individual Voids

- Spaces where survivors may seek protection
  - Bathtubs
  - Underneath desks
  - Inside cabinets
  - Under/next to beds
  - Inside closets



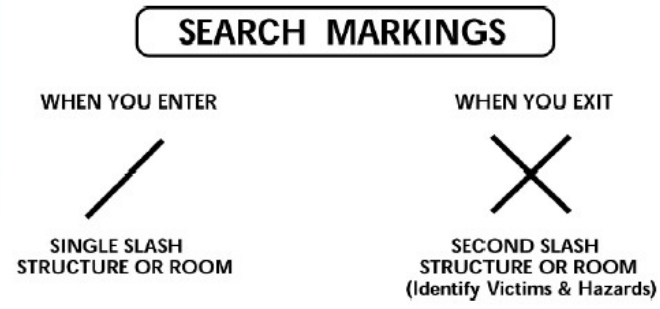


Visual SAR.30 **Lamorinda CERT** 57

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Search Marking System

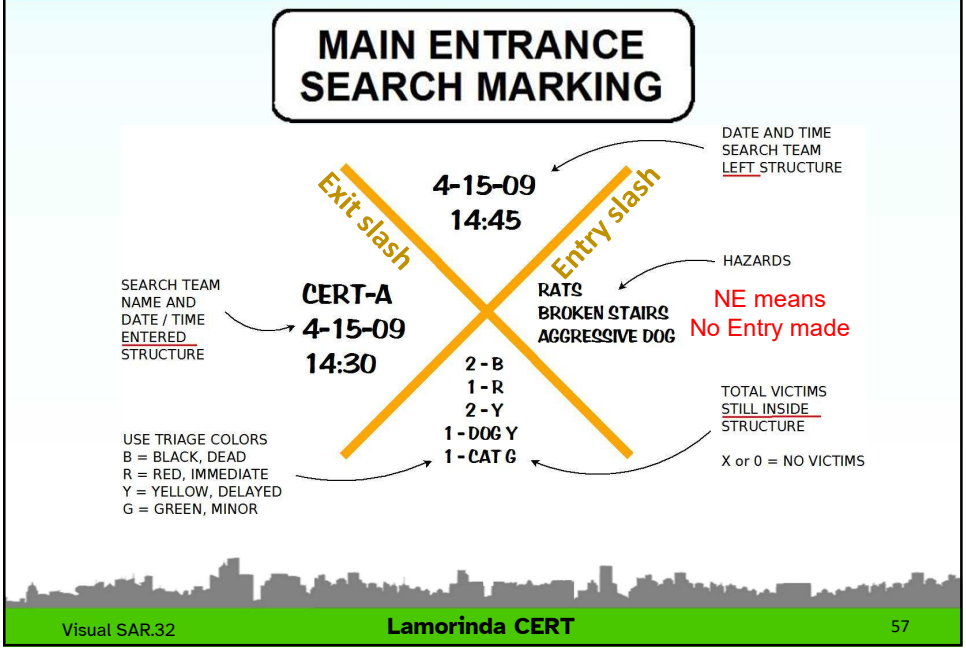
- Indicates rescuer location
- Prevents duplication of effort
- Search Marking is a ***Perishable Skill*** and must be practiced regularly



Visual SAR.31 **Lamorinda CERT** 57

31

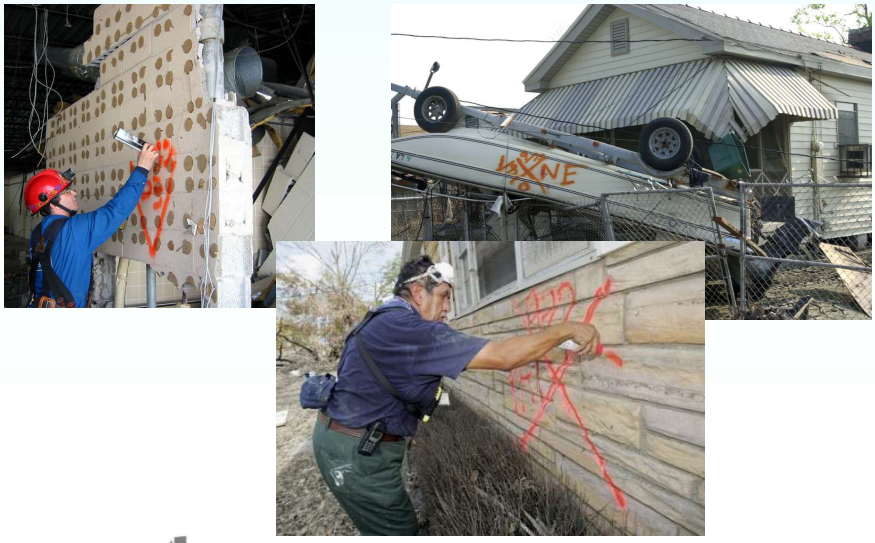
Search Marking System



Visual SAR.32 **Lamorinda CERT** 57

32

Search Marking Examples

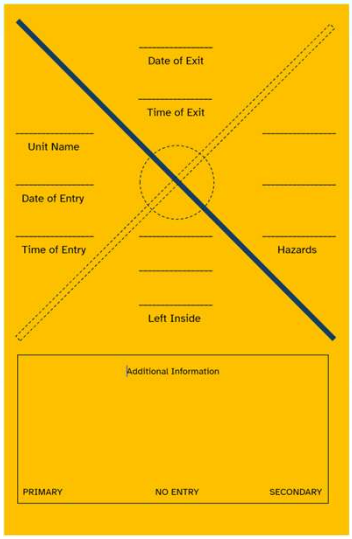


Visual SAR.33 **Lamorinda CERT** 57

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Marking Placard

- Placards are printed on fluorescent orange label paper
- Use a bold black felt tip pen, if available



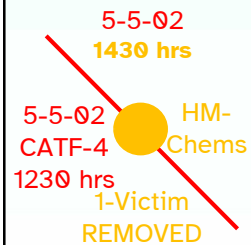
FEMA US&R Directive 2013-014 (which superseded all earlier marking guidelines).

Visual SAR.34 **Lamorinda CERT** 57

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Premature Exit Marking

- Filled in when all activities cease prematurely **WITHOUT** completing the search
- Remainder of the information is documented:
  - Solid circle
  - Time team left the building
  - Hazards found, i.e., HM-Chems
  - Victim information
- Notes in BOX



3 & 4 SEARCHED

Visual SAR.35 **Lamorinda CERT** 57

35

No Entry Marking

- Filled in when all activities cease prematurely **WITHOUT** entering the building:
  NO ENTRY or **N E**
  - No Exit line, fill circle

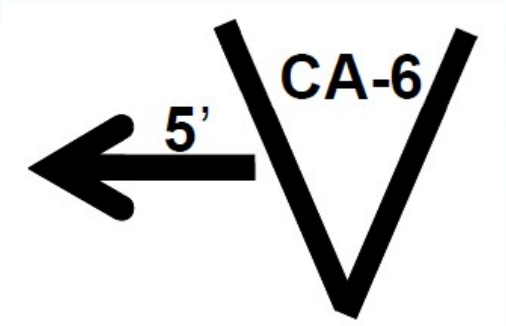


NO ENTRY

Visual SAR.36 **Lamorinda CERT** 57

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Search Victim Marking System



Make a large "V" (2' x 2') with marker or Orange Paint near the known or potential victim. Add team ID and arrow with distance to the victim.

Visual SAR.37 **Lamorinda CERT** 57

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Search Victim Marking System

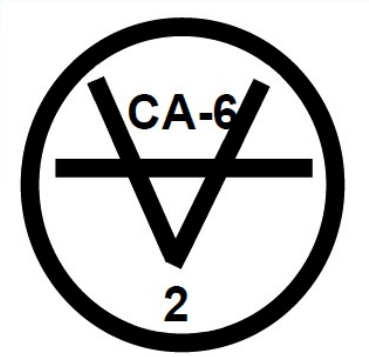


Make a circle around the “V” when a potential victim has been **confirmed to be alive**. If more than one confirmed live victim, mark total number under the V”.

Visual SAR.38 **Lamorinda CERT** 57

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Search Victim Marking System



Make a horizontal line through the “V” when a potential victim has been **confirmed to be dead**.
If a combination of live and deceased victims are found, make two “V”s.

Visual SAR.39 **Lamorinda CERT** 57

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Search Victim Marking System



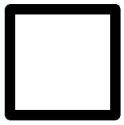
When all victims have been removed, make an "X" over the symbol.

Visual SAR.40 **Lamorinda CERT** 57

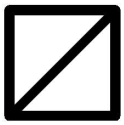
40

Building Marking System

Buildings are marked by Structural Engineers only!



Low Risk for US&R Operations, with low probability of further collapse. Victims could be trapped by contents, or building could be completely pancaked or soft 1st story



Moderate Risk for US&R Ops, and structure is significantly damaged. May need shoring, bracing, removal, and/or monitoring of hazards. The structure may be partly collapsed.



High Risk for US&R Ops, and may be subject to sudden collapse. Remote search operations may proceed at significant risk. If rescue operations are undertaken, significant and time-consuming mitigation should be done.

Visual SAR.41 **Lamorinda CERT** 57

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Building Marking Example



Visual SAR.42 **Lamorinda CERT** 57

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Search Methods

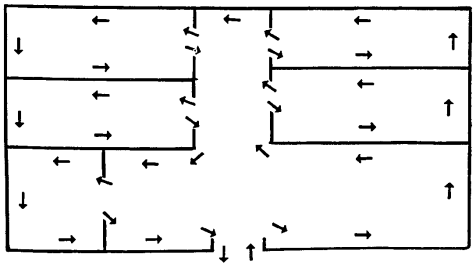
- Call out to survivors, “If anyone can hear my voice, come here”
- Ask survivors for more information about the building and others who may be trapped
- Survivors might be in shock or confused

Visual SAR.43 **Lamorinda CERT** 57

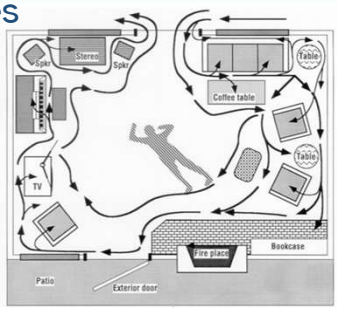
43

Interior Searches

- Be systematic
  - Bottom-up or top/down for a multi-story building
  - Right wall/left wall on each single floor
- Be very quiet and stop frequently to listen for tapping, movement, voices



Right Wall Search



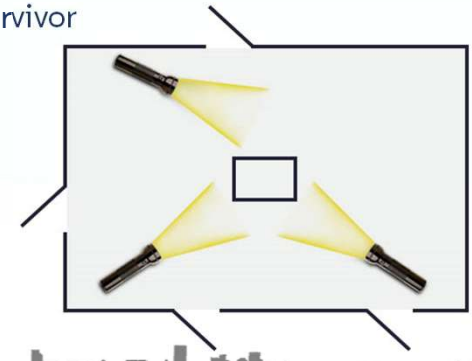
Don't forget the center and behind items

Visual SAR.44 **Lamorinda CERT** 57

44

Triangulation

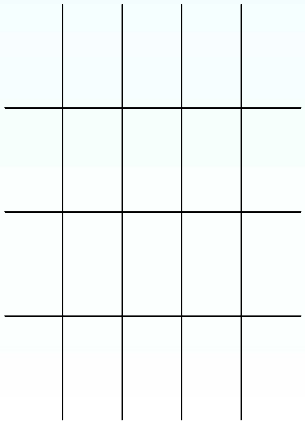
- When you hear something:
  - Three searchers form a triangle
  - Direct flashlights towards the sound
  - Lights will help locate the noise source and may highlight a survivor



Visual SAR.45 **Lamorinda CERT** 57

45

Exterior Search



- Set up a grid search
- Set distance between searchers according to visibility and debris
- Overlap patterns for full coverage
- Search in as straight a line as possible
- Mark areas that have been searched

Visual SAR.46 **Lamorinda CERT** 57

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Search Documentation

- Keep records of rescued survivors and of those who remain trapped or are deceased
- Report information to emergency services personnel

Visual SAR.47 **Lamorinda CERT** 57

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Rescue Operations

Moving Objects

Assessing Survivors

Removing Survivors

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Conducting Rescue Operations

- Maintain rescuer safety & a safe environment
  - Move debris and objects out of the way
  - Use tools, not your back, to move objects
  - Triage and stabilize victims in lightly and moderately damaged structures
  - Evacuate victims quickly but safely



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Precautions to Minimize Risk

- Know your limitations
- Follow safety procedures
- Remove debris by leveraging and cribbing (next module)



Visual SAR.50 **Lamorinda CERT** 57

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Proper Lifting Method



- Back straight
- Knees bent
- Keep load close to body
- Push up with legs

Watch your back!

Visual SAR.51 **Lamorinda CERT** 57

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Which Extrication Method?

- General stability of immediate environment
- Number of rescuers available
- Strength and ability of rescuers
- Condition of survivor
- Tools and equipment available



Visual SAR.52 **Lamorinda CERT** 57

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Transporting Victims

Bad

Twisted



Good

Watch your back!

Visual SAR.53 **Lamorinda CERT** 57

53

Removing Victims

Types of victim removal include:

- Self-removal or assist
- Lifts and drags

Allow victims to extricate themselves when possible



Visual SAR.54 **Lamorinda CERT** 57

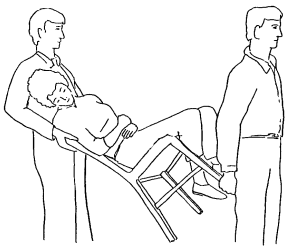
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Two Rescuer Carries

- One-person carries are not good for a rescuer's back
- If safety and time permit, you should ***not*** use carries and drags to remove victims when closed-head or spinal injury is suspected



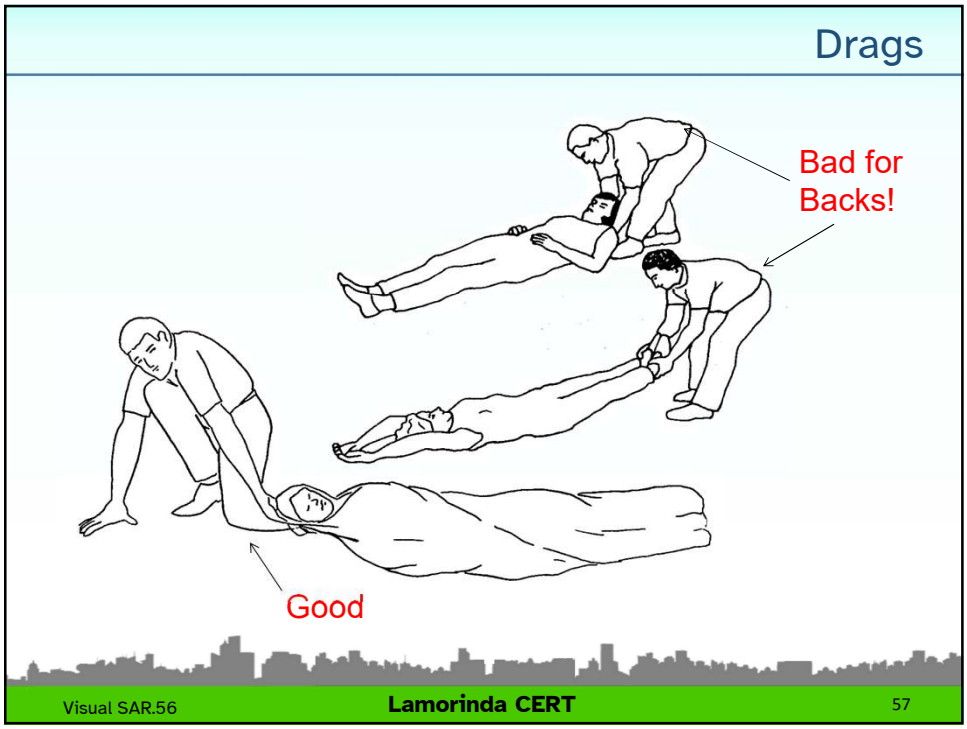
Two-Person Carry



Chair Carry

Visual SAR.55 **Lamorinda CERT** 57

55


Drags
Bad for Backs!
Good
Visual SAR.56
Lamorinda CERT
57

56


Exercise
Visual SAR.57
Lamorinda CERT
57

57