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HEAVY RESCUE - COURSE OUTLINE.(U)
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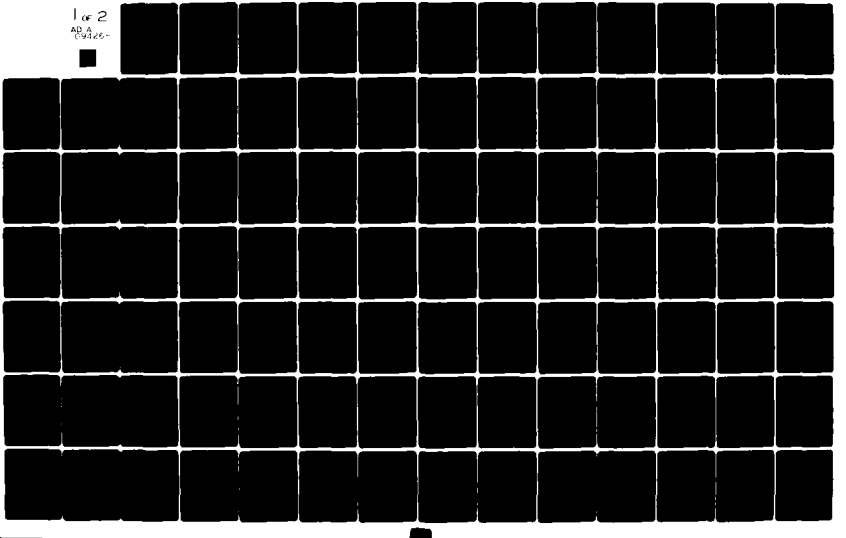

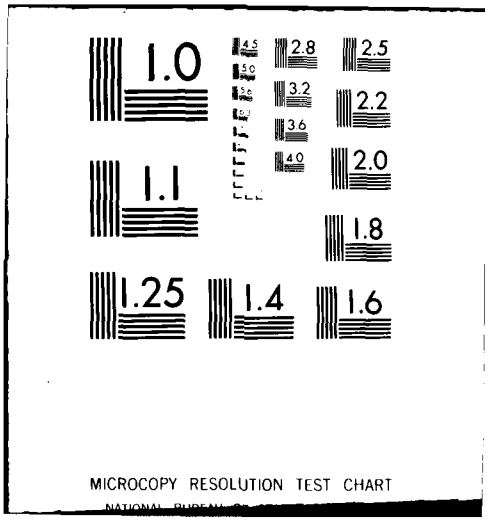
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MICROCOPY RESOLUTION TEST CHART

FEMA CONTRACT #01-78-C-0269
UNIT NUMBER 2511-C

LEVEL II

12 BS

HEAVY RESCUE
Course Outline

For

FEDERAL EMERGENCY MANAGEMENT AGENCY
Washington, D. C.

NOVEMBER 1980

FEMA Distribution List 2500

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HEAVY RESCUE - COURSE OUTLINE

Final Report, FEMA Contract No. 01-78-C-0269, Modification No. 01-78-C-0269, Mod. 002; and 01-78-C-0269, Mod. 004

FEMA Work Unit No. 2511-C
Distribution: FEMA 2500 Distribution List
NOVEMBER 1980

By: State of California
Heavy Rescue Committee
Fire Service Training and Education Program
Edward W. Bent, Supervisor
Office of the State Fire Marshal

under agreement with

California Office of Emergency Services
Fire and Rescue Division
R. G. Barrows, Chief

for

Federal Emergency Management Agency
Washington, D.C. 20472

COURSE OUTLINE

HEAVY RESCUE COURSE

Course Objectives: The course objectives are to provide the student with:

1. Information on basic types of building construction and their collapse characteristics by various causes.
2. Information on various types of methods and equipment used during heavy rescue operations.
3. Methods and procedures for utilizing heavy rescue equipment.
4. Methods of developing improvised rescue equipment utilizing available materials.
5. A simulated exercise utilizing various rescue operations and techniques.
6. Methods and procedures for the maintenance and storage of heavy rescue equipment.

COURSE OUTLINE

COURSE: 54 Hours

LEVEL	TOPIC	TIME (Hours)
1	INTRODUCTION	4
2	HOW TO USE ROPES, KNOTS & RIGGING	6
2	HOW TO USE PULLEY SYSTEMS & WINCHES	5 1/2
2	HOW TO USE VERTICAL RESCUE TECHNIQUES	6
2	HOW TO USE CRIBBING & WEDGES	1
2	HOW TO USE CUTTING & PRYING TOOLS	4
2	HOW TO USE HYDRAULIC TOOLS	1
2	HOW TO USE LIFTING & HOISTING TOOLS	3
2	HOW TO USE LADDERS IN SPECIALIZED RESCUE SITUATION	3
2	HOW TO USE SHORING	2
2	HOW TO CONSTRUCT DEBRIS TUNNELS & TRENCHES	2
1	IDENTIFICATION OF SPECIAL TOOLS & EQUIPMENT	1/2
2	HOW TO USE SUB-SURFACE RESCUE TECHNIQUES	5
1	TRANSPORTATION EMERGENCIES	1
1	HIGH RISE AND ELEVATOR PROBLEMS	1
2	HOW TO USE RESCUE TECHNIQUES ON SIMULATED NIGHT & DAY RESCUE PROBLEMS	6
1	COURSE OVERVIEW & CRITIQUE	3

RECOMMENDATIONS:

CLASS SIZE..... Maximum 20 Persons
NUMBER OF INSTRUCTORS..... Minimum 2

TOPIC: INTRODUCTION TO HEAVY RESCUE - COURSE OVERVIEW LEVEL I

PERFORMANCE GOALS: 30 Minutes

GIVEN:

1. Philosophy of course
2. Reasons for course
3. Identification of the needs of the course

PERFORMANCE:

1. Identify the reasons for Heavy Rescue
2. Identify how course pertains to local needs
3. Identify philosophy of Heavy Rescue

STANDARDS:

1. With 70% accuracy according to Heavy Duty Rescue Manual pp_____

INSTRUCTION LESSON

INSTRUCTOR ACTIVITIES	STUDENT ACTIVITIES
1. Philosophy of Heavy Rescue	1. Discussion. Note taking.
2. Need for Heavy Rescue	2. Same
3. Reasons for Heavy Rescue	3. Same
4. Slide program	

METHOD OF EVALUATION

1. Oral questions	1. Discussion
2. Written quiz	2. Class participation
3. Essay problem - determine local needs.	3. Written

REFERENCES

Heavy Rescue Manual

AV: RESOURCE:

Slides - Introduction to course and H. V. Rescue.

TOPIC: ORGANIZATION FOR HEAVY RESCUE LEVEL II

PERFORMANCE GOALS: 1 1/2 Hours

GIVEN:

1. Need for overall organization
2. Need for I.C.S. (Incident Command System)
3. Model organization charts
4. Rescue team organization

PERFORMANCE:

1. Identify the need for overall organization
2. Identify how to utilize I.C.S. for heavy rescue - overall view
3. Identify the use of model organization charts
5. Identify the need for team concept

STANDARD:

With 70% accuracy according to the Heavy Rescue Manual pp_____.

INSTRUCTION LESSON

INSTRUCTOR ACTIVITIES	STUDENT ACTIVITIES
1. Overall organization (hand out, overhead)	1. Discussion. Note taking
2. Utilize ICS	2. Develop method of implementing ICS
3. Utilize model organization charts Handout, overheads	3. Note taking. Discussion
4. Utilize rescue team organization Work sheet	4. Discussion. Work sheet

METHOD OF EVALUATION

1. Oral quiz	1. Discussion
2. Written quiz	2. Class participation

REFERENCES

Heavy Rescue Manual

AV: RESOURCE:

Slides - Model Org, and ICS team org.

HEAVY RESCUE COMMITTEE

TOPIC: COMMUNICATIONS LEVEL I

PERFORMANCE GOALS: 30 Minutes

GIVEN:

1. A summary of reasons to provide communications on emergency incidents

2. Examples of various types of communications systems used in the fire service

3. Examples of other agencies who may provide other resources

PERFORMANCE:

1. Identify various types of communications systems used by the fire service

2. Identify reasons for providing communications

3. Identify various resources for obtaining communications equipment

STANDARD:

1. With 70% accuracy according to Heavy Duty Rescue Manual Page ____to____ identify various means for communications on emergency incidents

2. With 70% accuracy according to Heavy Duty Rescue Manual Page ____to____ identify other agencies on methods to provide communications on emergency incidents

3. With 70% accuracy according to Heavy Duty Rescue Manual Page ____to____ identify other agencies who may be able to provide additional communications resources

INSTRUCTION LESSON

1. Reasons for providing communication or emergency incidents

2. Types of equipment used to provide communications on emergency incidents

3. Sources for obtaining additional resources

LEARNING ACTIVITIES

1. Note taking

2. Group discussion on various types of communications

3. Group discussion on various types of communications

4. Identify communication resources

Length of class for 25 students, 30 minutes.

METHOD OF EVALUATION

1. Oral questions
2. Written

1. Class discussion
2. Class participation

REFERENCE:

1. Handouts
2. Heavy Rescue Manual

TOPIC: PERSONNEL LIMITATIONS IN HEAVY RESCUE LEVEL I

PERFORMANCE GOALS: 15 Minutes

GIVEN:

1. Summary of training skills and abilities needed for heavy rescue
2. Summary of the physical abilities needed for heavy rescue
3. Summary of the psychological abilities needed for heavy rescue
4. Summary of the legal limitations

PERFORMANCE:

1. Identify training and skills required for heavy rescue
2. Identify the physical abilities needed for heavy rescue
3. Identify the psychological abilities needed for heavy rescue
4. Identify the legal limits of heavy rescue

STANDARD:

With 70% accuracy according to Heavy Rescue Manual pp_____.

INSTRUCTIONAL ACTIVITIES:

INSTRUCTOR ACTIVITIES	STUDENT ACTIVITIES
1. Skills and abilities needed	1. Discussion. Note taking
2. Physical abilities	2. Same
3. Psychological abilities	3. Same
4. Legal limitations	4. Same

METHOD OF EVALUATION:

1. Oral questions
2. Written quiz

REFERENCE:

Heavy Rescue Manual

TOPIC: HEAVY RESCUE CONSIDERATIONS LEVEL I

PERFORMANCE GOALS: 1 Hour

GIVEN:

1. Summary of blocked access considerations during heavy rescue operations
2. Summary of structural damage considerations during heavy rescue
3. Summary of environmental considerations during heavy rescue

PERFORMANCE:

1. Identify types of access blockage
2. Identify types of structural damage
3. Identify environmental considerations during heavy rescue operations

STANDARD:

With 70% accuracy according to Heavy Rescue Manual pp_____.

INSTRUCTION ACTIVITIES:

INSTRUCTOR ACTIVITIES	STUDENT ACTIVITIES
1. Blocked access considerations Handout	1. Class discussion of handout
2. Structural damage considerations	2. Class discussion
3. Environmental considerations	3. Class discussion

METHOD OF EVALUATION

1. Oral quiz
2. Written quiz
3. Essay problem - What would you expect

REFERENCE

Heavy Rescue Manual

AV: RESOURCE: Slides: overview of problems, access, environment, structural

TOPIC: PATIENT ASSESSMENT LEVEL I

PERFORMANCE GOALS: 15 Minutes

GIVEN:

1. Method of Primary Assessment

2. Simulated injuries

PERFORMANCE:

1. Identify life threating injuries;

2. Identify all injuries within 90 seconds.

INSTRUCTION LESSON	LEARNING ACTIVITY
1. Lecture - Reasons and need	1. Note taking. Discussion
2. Demonstration	2. Note taking. Discussion

REFERENCES:

1. Student notes

METHOD OF EVALUATION:

1. Manipulative evaluation of student performance

TOPIC: LIGHTING, PORTABLE ELECTRICAL EQUIPMENT, SPECIAL TOOLS, EQUIPMENT AND RESOURCES

LEVEL I

15 Minutes

PERFORMANCE GOAL:

GIVEN:

1. A summary of how portable electrical equipment, lighting, special tools and equipment resources are used during emergency incidents

2. Examples of various kinds of lighting equipment and generators special tools equipment and resources

3. Example of various agencies who may have special tools equipment and resources

PERFORMANCE:

1. Identify various types of portable lighting equipment

2. Identify hazards which might be found at emergency incidents and methods which might be used to alleviate these hazards, surface and subsurface

3. Identify how lights are placed at the emergency incident

4. Identify need for special tools, equipment and resources

5. Identify sources for obtaining additonal resources, lighting special tools and equipment

STANDARD:

With 70% accuracy according to information contained in _____ on page _____.

INSTRUCTION LESSONS

1. Types of portable fire service lighting, portable electrical equipment, special tools equipment and resources, surface and subsurface

2. Hazards at emergency incidents using portable equipment, surface and subsurface

3. Examples of placement of lights at emergency incidents surface, subsurface

4. Obtaining additional lighting portable electrical equipment, special tools, equipment and resources

LEARNING ACTIVITIES

1. Note taking

2. Reading assignment

3. Group discussion of hazards that may be encountered at emergency incidents

4. Group discussion and demonstration of how lights should be placed at emergency incidents

5. Identify local sources of lighting portable electrical equipment, special tools, equipment and resources

AV: RESOURCES: Slides - Do's and Don'ts of Lighting

TOPIC: VENTILATION, AIR MOVEMENT AND LIGHT LEVEL I

PERFORMANCE GOALS: 15 Minutes

GIVEN:

1. A summary of reasons to provide ventilations on emergency incidents

2. Examples of various tools and equipment used by fire fighters to accomplish ventilation

3. Examples of other agencies who may provide additional resources

PERFORMANCE:

1. Identify various tools and equipment used by fire fighters to accomplish ventilation

2. Identify reasons for providing ventilation

3. Identify various resources for obtaining ventilation equipment

STANDARD:

1. With 70% accuracy according to Heavy Duty Rescue Manual, Page ____to____.

2. With 70% accuracy according to Heavy Duty Rescue Manual, Page _____ identify tools for providing ventilation on emergency incidents

3. With 70% accuracy according to Heavy Duty Rescue Manual, Page _____ identify other agencies who may be able to provide additional ventilation resources

INSTRUCTION LESSONS

1. Reasons for providing ventilation on emergency incidents

2. Types of tools used on emergency incidents to provide ventilation

3. Sources for obtaining additional resources

LEARNING ACTIVITIES

1. Note taking

2. Group discussion on need for ventilation

3. Group discussion on various tools for ventilation

4. Identify ventilation resources

5. Read Pages ____.

6. Reference material

AV: RESOURCE:

Slides: Types of ventilation equipment

TOPIC: RESOURCE IDENTIFICATION LEVEL I

PERFORMANCE GOALS: 30 Minutes

GIVEN:

1. A summary of resources available in a given area and what might be needed

2. A summary of how to obtain various resources

PERFORMANCE:

1. Identify all resources available for Heavy Rescue operations

2. Identify methods for obtaining various Heavy Duty Rescue equipment

STANDARD:

With 70% accuracy according to Heavy Rescue Manual pp_____

INSTRUCTIONAL ACTIVITIES:

INSTRUCTOR ACTIVITIES:

1. Lecture

2. Slide program

STUDENT ACTIVITIES:

1. Note taking

2. Develop resource needs list (homework)

METHOD OF EVALUATION:

INSTRUCTOR:

1. Oral quiz

2. Essay problem

STUDENT:

1. Answer questions

2. Class participation

3. Develop resource list (homework)

REFERENCES:

Heavy Duty Rescue Manual

AV: RESOURCE:

Slides - types of resources/sources

TOPIC: USE OF ROPE IN HEAVY RESCUE — LEVEL I

PERFORMANCE GOALS: — 15 Minutes

GIVEN:

1. A summary of 3 classes of ropes
2. A summary of situations requiring rope in heavy rescue

PERFORMANCE:

1. Identify a life line's uses
2. Identify a hauling line's uses
3. Identify a utility line's uses

STANDARD:

With 100% accuracy according to text

INSTRUCTION LESSON:

1. Types of Rope Application
   - A. Life line
   - B. Hauling line
   - C. Utility line
2. Reasons for Identification
   - A. Reliability
   - B. Eliminating risk

LEARNING ACTIVITY:

1. Group discussion of need to identify rope.
2. Group discussion on selection of rope classes
3. Instructor developed example situations calling for decisions by students

REFERENCE:

Text pp_____

METHOD OF EVALUATION:

Oral quiz

TASK ANALYSIS LEVEL II

TOPIC: KNOTS 1 Hour

PERFORMANCE GOALS:

GIVEN:

1. Name and describe how the Bowline on a Coil, Prusik, Figure Eight, and Figure-Eight-Follow-Through are tied.

2. A summary of the applications for the above knots.

PERFORMANCE:

1. Demonstrate the tying of the four knots listed above

2. Describe under what situations or what functions these knots would be used

STANDARD:

The 100% accurate tying of these life saving knots per the Heavy Duty Rescue Manual, pp_____ and the 80% accurate identification of uses and names of these four knots

INSTRUCTION LESSONS:

1. Descriptions of applicability of knots
2. Demonstration of tying of these knots
3. Demonstration of application of knots

LEARNING ACTIVITIES:

1. Manipulative training in tying these knots
2. Discussion of applicability of knots
3. Note taking
4. Application of knots

REFERENCES:

1. Victim Rescue, Ohio Trade and Industrial Education Service, Chapter 7.
2. Mountaineering: Freedom of the Hills - The mountaineers Chapter _____

METHODS OF EVALUATION:

1. Manipulative performances assessment, demonstration of accurate knots being tied.
2. Oral and/or written quiz on uses, anmes, and application of these four knots

TOPIC: IDENTIFY ROPE PROPERTIES AND TYPES LEVEL I

PERFORMANCE GOALS: 1 Hour

GIVEN:

1. A summary of rope construction types
2. A summary of rope properties
3. A summary of rope care and maintenance

PERFORMANCE:

1. Identify properties of rope
2. Identify construction types used in rope
3. Identify properties of synthetic vs. natural fiber rope
4. Identify how to test and calucalte working strength
5. Identify how knots effect ropes strength
6. Identify how to properly maintain rope

STANDARD:

With 100% accuracy according to text

INSTRUCTION LESSON:	LEARNING ACTIVITY:
1. Properties of rope	1. Group discussion of elements
2. Construction of rope	2. Group discussion of types of construction
3. Application considerations A. Working strength B. Natural vs. synthetic C. Construction style vs. use D. Effects of knots E. Abrasion	3. Group discussion on applications and considerations in utilizing rope

REFERENCE - RESOURCE MATERIAL:

1. Text pp_____
2. IFSTA 109 pp_____

METHOD OF EVALUATION:

Oral questions

AV: RESOURCES:

Display

TASK ANALYSIS LEVEL II

TOPIC: SLING APPLICATION 1 Hour

PERFORMANCE GOALS:

GIVEN:

1. Materials for proper construction of a sling, which would include a fiber or synthetic rope, thimbles

2. Availability of wire rope, chains, or other indigenous items useful for slings

PERFORMANCE:

1. Describe the use of slings

2. Describe the safety aspects of slings and their construction

3. Demonstrate the ability to properly use slings on various shaped objects.

STANDARD:

With 70% accuracy, according to the information contained in Heavy Duty Rescue Manual, pp_____

INSTRUCTION LESSONS:	LEARNING ACTIVITIES:
1. Describe the hazards associated with sling utilization	1. Note taking
2. Demonstrate how to utilize slings on various shapes	2. Tie: on cylinder on cubes on spheres

REFERENCES:

1. Product Bulletin, The Cordage Group #7, 1/73. "Fiber Rope Slings: Load Ratings and Safe Practice."

2. Heavy Duty Rescue Manual, pp_____

METHODS OF EVALUATION:

1. Oral quiz on safe practices

2. Manipulative utilization of sling from available material

TASK ANALYSIS LEVEL II

TOPIC: ANCHOR POINTS AND SYSTEMS 1 Hour

PERFORMANCE GOALS:

GIVEN:

1. Materials for setting the systems up: carabiners, rope, log, stakes, and other appropriate anchors with which to tie to

2. Appropriate site for placement of deadman and picket systems

PERFORMANCE:

1. Describe the availability of anchors which may be found during a disaster or heavy duty rescue scene in the student's area

2. Identify anchor points in the classroom or work area which may be utilized in an emergency

3. Demonstrate improvising a deadman system and describe its use

4. Demonstrate improvising a picket system and describe its use

5. Demostrate improvising a self equalizing anchor system using 3 carabiners and a 25 foot length of rope and describe its use

STANDARD:

The 100% accurate rigging of 1 deadman system, 1 picket system, 3 natural anchor points, and 1 self-equalizing system with at least 400 pounds on each as described on page ____ of the Rescue Manual. The anchors must not fail and the self-equalizing system must be tested by dislodging one of the anchors. With 70% accuracy describe the safety, uses, and limitations of these systems.

INSTRUCTION LESSONS:	LEARNING ACTIVITIES:
1. Limitations	1. Manipulative training in employing these theories
2. Natural anchors	2. Discuss the merits of these systems
3. Artificial anchors	3. Discuss the hazards involved
4. Deadman anchors	4. Discuss the devices to be used
5. Picket anchors	5. Note taking
6. Self-equalizing anchors	

REFERENCES:

1. Mountain Search and Rescue Techniques, W. G. May, pages 208 - 218

2. Improvised Techniques in Mountain Rescue, Bill March, page 83

METHOD OF EVALUATION:

1. Manipulative performance assessment, demonstration of each system

2. Oral and/or written quiz on safety, limitations, identification of potential anchors, and improvisation of equipment

TOPIC: USE OF IMPROVISED SAFETY HARNESS LEVEL II

PERFORMANCE GOALS: 15 Minutes

GIVEN:

1. An explanation of needs of safety harnesses
2. A summary of what consititues a proper safety harness, (principals)
3. The features of the Swiss seat and Locking Diaper seat
4. A summary of the material needs to construct safety harnesses

PERFORMANCE:

1. Demonstrate how to tie a Swiss seat
2. Demonstrate how to tie a Locking Diaper seat
3. Demonstrate how to attach or anchor to the Swiss seat and Diaper seat
4. Describe advantages of both harnesses over other harnesses

STANDARD:

With 100% accuracy according to text.

INSTRUCTION LESSON:

1. Tie Swiss seat
2. Tie Locking Diaper seat
3. How to use the harness with other safety belts

LEARNING ACTIVITY:

1. Demonstrate with the group how to tie Swiss seat and Locking Diaper
2. Demonstrate how to apply harnesses to a victim
3. Have students hang from Swiss seat
4. Discuss security of harnesses vs. life belt and others
5. Discuss how Swiss seat can be used with other harnesses

REFERENCE - RESOURCE MATERIALS:

1. Facilities permitting demonstration
2. Material to make harnesses
3. Heavy Duty Rescue Manual
4. Life belts/harnesses, commercial variety
5. Life line

METHOD OF EVALUATION:

1. Manipulative performance assessment. Demonstration of Swiss seat and diaper, how to tie and attach

2. Oral quiz

TOPIC: LITTERS LEVEL I

PERFORMANCE GOALS: 45 Minutes

GIVEN:

1. A summary of litter types

2. A discussion of limitations and needs

PERFORMANCE:

1. Identify the problems of restricted spaces, medical and hauling needs necessary to evaluate a victim

2. Identify what a litter needs to provide

3. Identify types of litters and their merits

STANDARD:

With 80% accuracy according to text

INSTRUCTION LESSON:	LEARNING ACTIVITY
1. Litter types A. Stokes B. Niell Robertson C. Drag Litter D. Green Splint E. Exposure Bag F. Army G. Scoop	1. Discuss advantages of each type and need for victim protection B. Stress Hypothermia
2. Situations to be encountered A. Restricted - narrow B. Twisting C. Vertical D. Wet E. Uneven F. Horizontal	2. Apply litter types to conditions for maximum effect
3. Locations A. Mines & caves B. Collapse C. Tunnels/sewers D. Surface	

REFERENCES - RESOURCES:

1. Text pp_____

2. IFSTA 108 - pp 150 - 180

METHOD OF EVALUATION:

Oral questions

AV: RESOURCE:

Display Slides-"Special Litters"

TASK ANALYSIS LEVEL II

TOPIC: LITTER LASHING 30 Minutes

PERFORMANCE GOALS:

GIVEN:

Proper lengths of lashing line, stokes basket, carabiners, army litter

PERFORMANCE:

1. Demonstrate the ability to lash both an Army stretcher and a Stokes basket utilizing line of various lengths

2. Describe the availability of each of these litters in students respective area

3. Demonstrate the ability to secure the bracings on the Army litter to avoid the collapse of these bracings

4. Be lashed inside a stretcher to appreciate what the victim is going through

STANDARD:

The 100% accurate lashing of both stretchers as describes in the Heavy Duty Rescue Manual, pp_____. The 80% accurate testing of when to use these litters and the precautions to take as discussed in the Heavy Duty Rescue Manual, pp_____.

INSTRUCTION LESSON:	LEARNING ACTIVITIES:
1. Identify the availability in students area of both stretchers	1. Manipulative training in employing this particular lashing system on both stretchers and bracing securing
2. Describe vital areas of the victim's body	2. Note taking
3. Describe the need for caution in slack developing within the system	3. Discuss merits and availability of both stretchers
4. Demonstrate the securing of bracings on the Army litter	4. Discussion of safety aspects of bracing, slack, security knots
5. Demonstrate the lashing of the Army and Stokes basket	

TOPIC: LITTER RIGGING WITH BOWLINE ON A COIL — LEVEL II

PERFORMANCE GOALS: — 1 Hour

GIVEN:

1. Equipment: litter, carabiners, rope of proper length
2. The ability to tie a Bowline On A Coil
3. A summary of the utilization of stretchers

PERFORMANCE:

1. Demonstrate rigging a stokes stretcher utilizing 2 pieces of rope and making the slings with Bowline On A Coil knot
2. Describe the relative merits of utilizing this knot
3. Describe the reason for employing carabiners rather than knots directly on the bars of the stretcher

STANDARD:

The 100% accurate tying of this knot, applying it to a stretcher, and the successful adjustable suspension of this stretcher as described in the Heavy Duty Rescue Manual, pp_____.

INSTRUCTION LESSONS:	LEARNING ACTIVITIES:
1. Describe the applicability and merits of this system	1. Oral discussion of merits of this system
2. Demonstrate the tying of this system	2. Manipulative training in employing this particular knot on the rails of a stretcher

REFERENCES:

Mountain Serach and Rescue Operations, pp 16

METHODS OF EVALUATION:

1. Manipulative performance assessment, demonstration of accurate knots being tied
2. Oral quiz
3. Demonstration of proper rigging by acutally and/or lowering of the stretcher
4. Demonstration of proper knot tying by loosening the loops to lengthen or shorten the knots

REFERENCE MATERIALS:

1. The International Manual of Basic Rescue Methods, Dawson Nethercutt, pp 51 - 52

2. Victim Rescue, Ohio Trade and Industrial Education Service, pp 93

METHODS OF EVALUATION:

1. Manipulative performance assessment, demonstration of the actual lashing procedures and brace securing

2. Oral and/or written quiz on safety and applicability of systems

3. Demonstrate confidence in students lashing by having students lashed inside to testify to the security as well as the comfort of the litters

TOPIC: APPLICATION OF PULLEY SYSTEMS LEVEL I

PERFORMANCE GOALS: 15 Minutes

GIVEN;

1. A summary of Pulley System application
2. A summary of Pulley Systems
3. Simulations utilizing Pulley Systems

PERFORMANCE:

1. Identify Pulley Systems
2. Identify Pulley uses

STANDARD:

With 100% accuracy according to text

INSTRUCTION LESSON:

1. What comprises a Pulley System
2. How can they be applied
   A. Hoisting
   B. Tension
   C. Forcible Entry
   D. Extrication
   E. Power Sources

LEARNING ACTIVITY:

1. Discuss types of Pulley Systems
2. Discuss situations normally requiring hoisting
3. Discuss abstract uses of Pulley Systems
4. Homework: List and diagram 10 Pulley applications

REFERENCE - RESOURCE MATERIAL:

Text, pp_____

METHOD OF EVALUATION:

Review homework assignment with class orally

AV: RESOURCE:

Illustration of applications of Pulley Systems

TOPIC: HOW TO REEVE AND DEVELOP PULLEYS LEVEL II

PERFORMANCE GOALS: 1 Hour

GIVEN:

1. A summary of pulley components
2. A summary of how to calculate net mechanical advantage of Pulley Systems
3. A summary of precautions to be considered in Pulley Systems
4. A summary of unconventional Pulley Systems

PERFORMANCE:

1. Demonstrate how to assemble pulley components
2. Demonstrate how to calculate theoretical and practical mechanical advantage, lift and rope selection
3. Demonstrate precautions in using Pulley Systems
4. Demonstrate how to integrate other mechanical haul systems with Pulley Systems (come-a-long, winch, etc.)

STANDARD:

With 80% accuracy according to text.

INSTRUCTION LESSON:	LEARNING ACTIVITY:
1. Pulley System components	1. Demonstrate with group components
2. Calculation of Pulley Systems A. Theoretical mechanical advantage B. Practical mechanical advantage C. Required power to operate D. Required rope/line	2. Group to solve several examples of each
3. Assembly and utilization of a complete system (6:1)	3. Group to set up 6:1 system and perform all calculations relative to its functions for a 30-foot lift

TOPIC: PRUSIK SAFETY ON PULLEY SYSTEMS LEVEL II

PERFORMANCE GOALS: 15 Minutes

GIVEN:

1. A review of the Prusic Knots function
2. A review of Pulley Systems
3. A discussion of why safety is needed, situations

PERFORMANCE:

1. Demonstrate how to attach Prusik to haul line of a Pulley System
2. Demonstrate how the Prusik functions to lock or brake the system
3. Demonstrate how Prusik knots can also aid men in gripping the haul line

STANDARD:

With 100% accuracy according to text

INSTRUCTION LESSON:

1. Attach Prusik to act as brake on Pulley System
2. Use of Prusik
   A. As a line grip
   B. 3-4 wrap on cable or slippery line

LEARNING ACTIVITY:

1. Group to haul and "set" brake *in various positions*

REFERENCE - RESOURCE MATERIALS:

1. Material for Pulley System
2. Material for Prusiks
3. Text pp_____
4. Handbook of Mountain Rescue - May

METHOD OF EVALUATION:

1. Manipulative performance
2. Oral Quiz

REFERENCE - RESOURCE MATERIALS:

1. Facilities for setting up Pulley Systems
2. Components for making a 6:1 system
3. Test.

METHOD OF EVALUATION:

1. Manipulative performance assessment, demonstrate
2. Oral questions
3. Written essay questions, 10 items on calculations on systems

AV: RESOURCE:

Slides on pulleys

TOPIC: HOW TO BUILD AND IMPROVISE SPECIAL PULLEY SYSTEMS LEVEL II

PERFORMANCE GOALS: 2 1/2 Hours

GIVEN:

1. An explanation of what a Multiplier Pulley System is
2. A summary of the advantages of a Multiplier Pulley System
3. An explanation of the tools required to construct a Multiplier System
4. Simulations requiring Multiplier Pulley Systems

PERFORMANCE:

1. Demonstrate a 3:1 "Z" lift
2. Demonstrate a 6:1 system
3. Demonstrate a 3:1 with a come-a-long providing power
4. Demonstrate anchor needs
5. Demonstrate use of main brake

STANDARD:

With 80% accuracy according to text and demonstration

INSTRUCTION LESSONS:	LEARNING ACTIVITY:
1. Tools needed/requirements A. Prusiks or cam B. Haul line C. Pullies D. Carabiners E. Manpower	1. Set up 3:1 system and discuss role of each component
2. Use with other systems A. For power	2. Add a pulley to system and discuss effects it has making it a 6:1
3. Demonstrate advantage of system A. Main brake B. Dual anchors C. Economy of haul line	3. Set up a 3:1 system utilizing a come-a-long for haul power
	4. Group discussion of advantages of system and applications

TASK ANALYSIS LEVEL I

TOPIC: MECHANICAL WINCHES 1 Hour

PERFORMANCE GOALS:

GIVEN:

Availability of gas driven, PTO winches, and electric winch

PERFORMANCE:

1. Identify the use of gas driven, PTO, and electrical winches
2. Identify the availability of these devices in the area of the teams
3. Identify the limitations of winches
4. Discuss the pulling capacity of winches of dead-lift vs. rolling loads
5. Discuss the tensile strengths of various diameters of cable
6. Discuss the Do's and Don'ts of cable winching

INSTRUCTION LESSONS:	LEARNING ACTIVITIES:
1. Identify the availability in student's area of the 3 types of winches	1. Note taking
2. Describe the safety of using winches	2. Discuss merits, safety, do's and don'ts of winch use
3. Describe the limitations of winches	3. Discuss capacities of winches
4. Describe the advantages and disadvantages of the 3 types of winches	4. Discuss application of winches in the area of the students work
5. Describe the use of the 3 types of winches	
6. Discuss the do's and don'ts of winches	
7. Discuss the fact that winches are not to haul or place objects over people's heads, except in an emergency	

STANDARD:

The 80% accurate testing of when to use a winch, and the precautions to be used, as discussed in the Heavy Duty Rescue Manual pp_____.

REFERENCES:

The Heavy Duty Rescue Manual pp_____

METHODS OF EVALUATION:

1. Manipulative performance assessment, demonstration of the actual use of the 3 types of winches discussed

2. Oral and/or written quiz on safety, application, do's, don'ts, capacities, breaking strengths of cable

TASK ANALYSIS LEVEL II

TOPIC: HAND WINCH (COME-A-LONG) 30 Minutes

PERFORMANCE GOALS:

GIVEN:

1. A simulated rescue involving the pulling of vehicle seats and steering columns

2. A summary of the safety and set up procedures

PERFORMANCE:

Demonstrate the procedures for pulling seats and steering columns with the come-a-long

STANDARD:

With 100% accuracy according to text and demonstration

GOAL:

Safely, and with 100% accuracy according to the procedures in the text

INSTRUCTION LESSON:	LEARNING ACTIVITY:
Set up operational procedures for pulling the seat and steering column	Actual set up and performing the task

REFERENCES:

1. Heavy Duty Rescue Manual, O.E.S.

2. Vehicle Rescue, Harvey Grant

METHODS OF EVALUATION:

1. Demonstrations

2. Oral questions

TOPIC: DESCENDING, RAPPELING, AND BELAYING TOOLS AND TECHNIQUES — LEVEL II

3 Hours

PERFORMANCE GOALS:

GIVEN:

1. Materials: Carabiners, Life Lines, Figure of 8 Brake Bars, Slings and materials for making Improvised Friction Devices

2. A summary of applicability of tools to lowering-and belaying-rappeling

PERFORMANCE:

1. Identify common tools used as Friction Brakes

2. Demonstrate the use of Carabiner Brakes, Figure of 8 and Brake Racks for lowering from above, below and self

3. Demonstrate Friction Brakes as a belay or safety tool

4. Demonstrate application of a line to various natural and man-made friction points

5. Demonstrate locking off a Friction Brake

STANDARD:

With 100% accuracy according to text and instruction

INSTRUCTION LESSON:	LEARNING ACTIVITY:
1. Describe A. Carabiner Brakes B. Figure of 8 C. Brake Bar Racks	1. Manipulative training on ground
2. Describe Belaying with Friction Brakes	2. Note taking, manipulative
3. Demonstrate Descending and Lowering techniques	3. Manipulative training from a
4. Demonstrate Locking Off	4. Discuss hazards
5. Describe Improvised Friction Brakes	5. Discuss merits of the systems
6. Discuss hazards and communication problems	

REFERENCES:

1. Improvised Technique in Mountain Rescue, Bill Marca pp 58 - 71

2. Text "Heavy Duty Rescue"

METHODS OF EVALUATION:

1. Manipulative performance assessment, demonstrate the actual friction devices

2. Oral and/or written quiz on safety, uses, availability, and improvisation of these devices

AV: RESOURCE:

Slides - Friction Brakes

TASK ANALYSIS LEVEL I

TOPIC: CONSIDERATIONS AND HAZARDS OF AERIAL RESCUE 30 Minutes

PERFORMANCE GOALS:

GIVEN:

1. A summary of considerations during aerial rescue operations

2. A summary of the hazards during aerial rescue operations

PERFORMANCE:

Describe the considerations and hazards which may occur during aerial rescue procedures; which would include:

a. Size-up situations
b. Using professionals and special rescue teams
c. Employment of equipment
d. Limitations of personnel and equipment
e. Proper usage of anchor points
f. Safety considerations
g. Proper communications
h. Environmental problems

STANDARD:

With 70% accuracy, according to information contained in Heavy Duty Rescue Manual, pp_____.

INSTRUCTION LESSONS:

1. Common considerations:
   a. Abilities and limitations of team
   b. Employing special rescue teams
   c. Employing professional advice
   d. Using equipment properly
   e. Safety practices
   f. Communications

2. Common hazards:
   a. Misuse of equipment
   b. Inability to improvise
   c. Environmental
   d. Safety

LEARNING ACTIVITIES:

1. Note taking

2. Discussion of special rescue team resources in student's areas

3. Discussion of how and where to obtain professional advice

4. Oral question: What considerations are important in the use of anchors?

5. Oral question: What should the victim be made aware of during the situation?

6. Oral question: What considerations are important in communications of team members?

7. Oral question: What limitations of team members could become important during operations?

8. Short answer quiz: List 10 hazards that could endanger a rescue operation

REFERENCES:

1. Heavy Duty Rescue Manual

2. Mountain Search and Rescue Techniques, W.G. May pp_____

METHODS OF EVALUATION:

1. Oral quiz on hazards, problem areas, outside resource areas, anchors, and improvisation

2. Written short answer quiz of 10 questions

TASK ANALYSIS LEVEL I

TOPIC: SPECIAL PROBLEMS AND CONSIDERATIONS OF VERTICAL RESCUE — 30 Minutes

PERFORMANCE GOALS:

GIVEN:

1. Identify the problems which might be encountered during lifting and lowering operations

2. Identify the knots utilized in raising and lowering

3. Identify the rigging of litters

4. Proper equipment for this: stretchers, carabiners, rope of sufficient length, straps for the stretcher, padding for walls

PERFORMANCE:

Identify the considerations important during lifting or lowering operations, which would include:

a. Equipment
b. Safety
c. Communications
d. Medical assistance
e. Litter tenders
f. Lifting operation time

STANDARD:

With 70% accuracy, according to Heavy Duty Rescue Manual pp_____

INSTRUCTION LESSONS:	LEARNING ACTIVITIES:
1. Problem when raising and lowering people	1. Note taking
2. a. Proper use of equipment b. Safety considerations c. Communications with victim d. Comminications between team members. e. First aid and medical assistance f. Litter attendants g. Considerations during actual lifting and lowering operations	2. Oral question: "What could happen if you "overkill" on safety considerations?"
	3. Oral question: "What facts might have to be clarified for the victim?"

4. Oral question: "What are the functions of the attendant?"

5. Oral question: "Where might the best first aider or paramedical person be stationed?"

6. Oral question: "What considerations should be decided before operations commence?"

REFERENCES:

1. Heavy Duty Rescue Manual pp_____

2. Rescue Skills and Techniques pp 87

3. The International Manual of Basic Rescue Methods pp 59 - 79

4. Mountain Search and Rescue Techniques pp 188 - 207

METHODS OF EVALUATION:

Oral and/or written quiz on special problems which may arise while raising and lowering people

AV: RESOURCE:

VERTICAL RESCUE TECHNIQUE
10 applications & situations

TOPIC: TELPHER LINE LEVEL II

PERFORMANCE GOALS: 1 Hour

GIVEN:

1. Situations needs requiring above ground evacuation
2. Description of a Telpher Line functions
3. A description of stress factors Telpher Lines and components are under

PERFORMANCE:

1. Demonstrate how to select anchors and tension adjustment
2. Demonstrate how to attach loads
3. Demonstrate how to lower loads with a Telpher Line
4. Describe safety precautions

STANDARD:

With 100% accuracy according to text

INSTRUCTION LESSON:	LEARNING ACTIVITY:
1. Material A. Line B. Anchors C. Haul line D. Tension adjuster	1. Group disucssion of components and stresses
2. Assembly of system	2. Group demonstration of setting up a Telpher Line
3. Applications of Telpher	3. Group demonstration of applications
	4. Group discussion of situations needing Telpher Line

REFERENCE - RESOURCE MATERIALS:

1. Text
2. Handbook of Mountain Rescue - May, RMRG
3. Equipment and location

METHODS OF EVALUATION:

Manipulative performance assessment

TOPIC: CONSTRUCTION AND USE OF CRIBBING AND WEDGES LEVEL II

PERFORMANCE GOALS: 1 Hour

GIVEN:

1. Pre-cut cribbing material and wedges;
2. Suitable material for use as improvised cribbing;
3. Concrete blocks, simulated wall sections or floor sections, unstable vehicle;
4. Hand and power tools - hammer, nails, saws
5. Heavy Rescue Manual page 102

PERFORMANCE:

1. Demonstrate the construction of a crosstie and box crib;
2. Demonstrate the construction of a crib using improvised materials;
3. Demonstrate the use of wedges for changing direction of forces;
4. Demonstrate the stabilization of an unstable vehicle;
5. Demonstrate the proper method of providing temporary support for material being raised.

STANDARD:

With 100% accuracy in accordance with all accepted safety practices and the information contained in the Instruction Manual and Information Sheets _____.

INSTRUCTION LESSONS:	LEARNING ACTIVITY:
1. Construction of crosstie and box crib	1. Manipulative performance by the student under direct supervision
2. Construction of cribs utilizing improvised materials	2. Same
3. Use wedges to change direction of force	3. Discussion. Demonstration
4. Stabilize vehicle	4. Manipulative performance under direct supervision
5. Construct temporary support for material being raised	5. Same

REFERENCE:

1. Heavy Rescue Manual pp_____

2. Information Sheet _____

METHOD OF EVALUATION:

1. Manipulative performance evaluation

2. Oral/written quiz on procedures and safety practices

TASK ANALYSIS LEVEL I

TOPIC: IDENTIFY CUTTING TOOLS USABLE IN HEAVY RESCUE 15 Minutes

PERFORMANCE GOALS:

GIVEN:

A list of cutting tools common to the fire service, industry and the construction trades

PERFORMANCE:

1. Identify those tools usable in heavy rescue work
2. Identify the hazards associated with each
3. Identify how and where each could be used

STANDARD:

With 70% accuracy according to the text, pp_____

INSTRUCTION LESSON:	LEARNING ACTIVITY:
1. List of tools commonly available	1. As developed through class discussion
2. List of hazards for each tool	2. As developed through class discussion
3. List how and where each could be used in heavy rescue work	3. As developed through class discussion

REFERENCES:

1. O.E.S. Heavy Rescue Text pp_____
2. IFSTA

METHODS OF EVALUATION:

1. Short answer quiz
2. Oral questions

AV: RESOURCES:

1. Slides - Heavy Rescue Tools for Cutting
2. Display

TOPIC: USE OF CUTTING TOOLS LEVEL II

PERFORMANCE GOALS: 1 3/4 Hours

GIVEN:

1. Summary of Cutting Tools, Heavy Rescue Manual pp_____
2. Hand and power tools;
3. Material to be cut: wood, metal, reinforced concrete, masonry

PERFORMANCE:

1. Identify the tools that can be used for cutting wood;
2. Identify the tools that can be used for cutting metal;
3. Identify the tools that can be used in a hazardous atmosphere;
4. Demonstrate the proper procedure for using hand powered cutting tools;
5. Demonstrate the proper procedure for cutting with rotary saws;
6. Demonstrate the proper procedure for cutting with hydraulic powered tools

STANDARD:

1. *With 100% accuracy in accordance* with accepted safety practices for cutting operations;
2. With 80% accuracy on the written examination covering the safety, procedures and use of cutting tools

INSTRUCTION LESSON:	LEARNING ACTIVITY:
1. Types and uses of cutting tools	1. Discussion. Note taking
2. Safety considerations in the use of cutting tools	2. Discussion. Note taking
3. Metal cutting operations	3. Demonstration. Student participation with supervision
4. Wood cutting operations	4. Same
5. Reinforced concrete and masonry cutting operations	5. Same

REFERENCES:

1. Heavy Rescue Manual pp_____

2. Information contained in IFSTA #101 pp 52 - 73

METHODS OF EVALUATION:

1. Manipulative performance by the student;

2. Written/oral quiz on the safety, selection and use of cutting tools.

AV: RESOURCE:

1. Display of tools

2. Slides - Cutting tools

3. Materials to cut: Wood

Metal A. Iron

B. Steel

C. Sheet

D. Aluminum

Plastic

TOPIC: USE OF THE AIR CHISEL IN RESCUE OPERATIONS LEVEL II

PERFORMANCE GOALS: 15 Minutes

GIVEN:

1. No. 301 Superior Air Hammer Rescue Kit
2. Vehicle
3. Plywood, copper, plastic and wall board
4. Source of compressed air
5. Heavy Rescue Manual pp_____
6. Information Sheet _____

PERFORMANCE:

1. Connect the air hammer to the source of compressed air;
2. Demonstrate the safe method of cutting sheet metal;
3. Demonstrate the safe and proper method for cutting plastic;
4. Demonstrate the safe and correct method for cutting wood;
5. Demonstrate the safe and correct method for cutting other building materials

STANDARD:

With 100% accuracy in accordance with all accepted safety practices and the information contained in the Heavy Rescue Manual pp_____and Information Sheet_____

INSTRUCTION LESSON:	LEARNING ACTIVITY:
1. Cutting sheet metal	1. Demonstration. Student participation under supervision
2. Cutting plastic	2. Same
3. Cutting wood	3. Same
4. Cutting other building materials	4. Same

REFERENCES:

1. Heavy Rescue Manual _____

2. Information Sheet _____

METHOD OF EVALUATION:

1. Manipulative performance by the student;

2. Oral/written quiz and the safety and proper procedures

AV: RESOURCE:

Display

TASK ANALYSIS

TOPIC: IDENTIFY PRYING TOOLS — LEVEL I

PERFORMANCE GOALS: — 15 Minutes

GIVEN:

A list of prying tools common to the fire service, industry, and the construction trades.

PERFORMANCE:

1. Identify those prying tools usable in heavy rescue work.
2. Identify the hazards associated with each
3. Identify how and where each could be used

STANDARD:

With 70% accuracy according to the Text pp_____.

INSTRUCTION LESSON:	LEARNING ACTIVITY:
1. List of tools commonly available	1. As developed through class discussion
2. List of hazards for each tool	2. Same
3. List how and where each could be used in heavy rescue work	3. Same

REFERENCE:

1. O.E.S. Heavy Rescue Text pp_____.
2. I.F.S.T.A. _____.

METHODS OF EVALUATION:

1. Short answer quiz
2. Oral questions

TOPIC: UTILIZATION OF HYDRAULIC TOOLS LEVEL I

PERFORMANCE GOALS: 15 Minutes

GIVEN:

1. A summary of types of hydraulic tools
2. A summary of uses of hydraulic tools
3. A summary of attachments for hydraulic tools
4. A summary of limitations and safety for hydraulic tools

PERFORMANCE:

1. Identify types of hydraulic tools
2. Identify uses of hydraulic tools
3. Identify attahcments for hydraulic tools
4. Identify the limitations and safety of hydraulic tools

STANDARD:

80%

INSTRUCTION LESSON:

1. IWST
2. Lecture
3. Slide program

LEARNING ACTIVITY:

1. Class discussion
2. Note taking
3. Handouts - develop

METHOD OF EVALUATION:

1. Oral questions
2. Written

REFERENCE MATERIALS:

1. Heavy Rescue Manual pp_____

AV: RESOURCE:

Display

Slides - Hydraulic Rescue Tools

TOPIC: USE OF PRYING TOOLS LEVEL II

PERFORMANCE GOALS: 1 1/4 Hours

GIVEN:

1. Summary of the use of prying tools, Heavy Rescue Manual 70-105.
2. Improvised and commercial prying tools;
3. Cribbing and material for fulcrums and temporary support;
4. Items to be lifted.

PERFORMANCE:

1. Identify the tools that can be used for prying operations;
2. Identify the requirements for a safe fulcrum;
3. Demonstrate the construction of a safe fulcrum;
4. Demonstrate the safe method of raising and cribbing loads.

STANDARD:

With 100% accuracy in accordance with accepted safety practices for prying operations. With 80% accuracy for identifying and selecting.

INSTRUCTION LESSON:	LEARNING ACTIVITY:
1. Improvised and commercial prying tools	1. Discussion
2. Requirements for a safe fulcrum	2. Discussion
3. Raising loads	3. Demonstration. Student participation with supervision
4. Temporary support - cribbing	4. Same
5. Construction of fulcrum	5. Same

REFERENCE:

1. Heavy Rescue Manual pp_____.
2. Information contained in I.F.S.T.A. 402, pp 23-25

TOPIC: OPERATION OF HAND OPERATED HYDRAULIC EQUIPMENT LEVEL II

PERFORMANCE GOALS: 15 Minutes

GIVEN:

1. 10 ton hand operated hydraulic rescue kit with instruction manual;
2. Material to lift, push, pull or stabilize;
3. Cribbing and wedges.

PERFORMANCE:

1. Assemble the pump and ram;
2. Select the proper accessories for the task to be accomplished.
3. Demonstrate lifting, pushing pulling and stabilizing uses.

STANDARD:

1. With 100% accuracy in accordance with accepted safety practices
2. With 80% accuracy on the written examination on safety and procedures

INSTRUCTION LESSON:	LEARNING ACTIVITY:
1. Assembly of unit	1. Demonstration. Discussion.
2. Selection of accessories	2. Demonstration. Discussion.
3. Lifting operations	3. Student participation under supervision.
4. Pushing operations	4. Same
5. Pulling operations	5. Same
6. Stabilizing operations	6. Same

REFERENCES:

1. Heavy Rescue Manual pp_____.
2. Information sheet _____.
3. Instruction Manual

METHOD OF EVALUATION:

1. Manipulative evaluation of the student
2. Written/oral examination on safety and procedures

TOPIC: SOURCES OF COMPRESSED AIR FOR AIR TOOL OPERATION LEVEL II

PERFORMANCE GOALS: 30 Minutes

GIVEN:

1. No. 301 Superior Air Hammer Rescue Kit;
2. Bottles of compressed air;
3. Air compressor - 120 psi, 5 cfm minimum
4. Vehicle with air brake system, gladhand connection
5. Gladhand and pipe bushings, air fittings

PERFORMANCE:

1. Demonstrate the method of utilizing compressed air bottles as a source of power;
2. Demonstrate the method of utilizing a compressor for a source of air;
3. Demonstrate the procedure for utilizing an air brake system and gladhand for a source of compressed air

STANDARD:

With 100% accuracy in accordance with all accepted safety practices and the information contained in the Heavy Rescue Manual pp_____and Information Sheet_____.

INSTRUCTION LESSONS:	LEARNING ACTIVITY:
1. Uses of regulator, pipe bushings, and gladhand	1. Discussion. Note taking
2. Compressed air bottles	2. Demonstration. Discussion
3. Compressor	3. Demonstration. Discussion
4. Air brake system	4. Denonstration. Discussion

REFERENCES:

1. Heavy Rescue Manual pp _____
2. Information Sheet_____

METHOD OF EVALUATION:

1. Manipulative performance evaluation

2. Oral/written quiz on the safety and proper procedures

AV: RESOURCES:

Slides - types of air tools and air source

Display

OPERATION OF MOTOR DRIVEN HYDRAULIC TOOLS

TOPIC: HURST POWER TOOL: OPERATION IN RESCUE SITUATIONS LEVEL II

PERFORMANCE GOALS: 30 Minutes

GIVEN:

1. Facilities containing doors which can be forced;
2. Natural gas line, iron and plastic, up to 3" in diameter;
3. Concrete blocks weighing up to 15,000 pounds; floor/wall sections;
4. Hurst Power Tool with accessories;
5. Summary of the operation of the Hurst Tool;
6. Operators Manual - O.E.S. - pp_____.

PERFORMANCE:

Using the Hurst Power Tool:

1. Demonstrate proper method of installing accessories and study procedures;
2. Demonstrate the forcible entry of doors of various kinds;
3. Demonstrate the procedure for controlling the flow of natural gas from a broken gas line;
4. Demonstrate the proper procedure for raising sections of concrete, walls, or floors;

STANDARD:

With 100% accuracy, according to all accepted safety practices and information contained in _____and_____ pp_____.

INSTRUCTION LESSON:	LEARNING ACTIVITY:
1. Review of installing accessories and study procedures	1. Source 2
2. Forcing various types of doors	2. Manipulative performance by the student under the direct supervision of the instructor
3. Raising blocks, walls and floors	3. Same
4. Controlling natural gas flow from broken gas pipes	4. Same

REFERENCE:

1. Information sheet _____

2. Heavy Rescue Manual pp_____

METHODS OF EVALUATION:

1. Manipulative performance assessment

2. Oral/written quiz on procedures and safety practices

TOPIC: LIFTING TOOLS LEVEL I

PERFORMANCE GOALS: 15 Minutes

GIVEN:

1. A summary of types of lifting tools - air bags, A-frame, tripod and gin pole, grip hoist, come-a-long, and winches
2. A summary of uses of lifting tools
3. A summary of limitations and safety of lifting tools

PERFORMANCE:

1. Identify types of lifting tools
2. Identify uses of lifting tools
3. Identify safe use of lifting tools

STANDARD:

80%

INSTRUCTION LESSONS:

1. Lecture
2. Slides

LEARNING ACTIVITY:

1. Notes
2. Discussion

METHOD OF EVALUATION:

1. Written
2. Oral
3. Quiz

REFERENCE:

1. Heavy Rescue Manual

AV: RESOURCES:

Slides - applications of lifting tools

TASK ANALYSIS

TOPIC: HOW TO USE AIR BAGS — LEVEL II

PERFORMANCE GOALS: — 30 Minutes

GIVEN:

1. A simulated rescue involving the lifting or spreading of heavy loads
2. A summary of the air bag set up and operational procedures
3. The air bag system from the O.E.S. Fire and Rescue Combination Engine
4. Two different air supplies, compressed cylinders and apparatus air brake system

PERFORMANCE:

1. Demonstrate procedures for lifting and cribbing a heavy load
2. Demonstrate the procedures for spreading heavy loads
3. Demonstrate the use of two different air sources

STANDARD:

With 100% accuracy according to the text

INSTRUCTION LESSON:	LEARNING ACTIVITY:
1. Set up procedures for lifting heavy loads	1. Class discussion of set up for flat, round, and wheeled loads
2. Perform lifting and cribbing operation to rescue a simulated trapped victim	2. Actual performance of the lifting and cribbing operation
3. Demonstrate the use of two different air sources	3. Utilize compressed air cylinders. Utilize the apparatus air brake system
4. Other alternate air sources	4. Class discussion of other alternate air sources and adapters required for their use.

REFERENCE:

1. Heavy Rescue Manual, O.E.S.
2. Air Bag manufacturers information

METHOD OF EVALUATION:

1. Demonstrations

2. Oral questions

AV: RESOURCES:

Demo - display

Slides - use of Air Bags

TASK ANALYSIS

TOPIC: HOW TO USE JACKS IN HEAVY DUTY RESCUE — LEVEL II

PERFORMANCE GOALS: — 15 Minutes

GIVEN:

1. A heavy rescue problem simulation
2. Appropriate protective clothing
3. An assortment of hydraulic, screw, and ratchet jacks

PERFORMANCE:

Demonstrate the setting up and use of jacks for lifting, pulling or hoisting, spreading, and clamping

STANDARD:

With 100% accuracy according to the Heavy Rescue text, page_____ and in a safe manner for both the rescuer and the victim

INSTRUCTION LESSON:	LEARNING ACTIVITY:
1. Lifting with the Hydraulic Jack	1. Demonstrate and discuss the safety precautions & limitations
2. Lifting with the Screw Jack	2. Demonstrate and discuss the safety precautions & limitations
3. Lifting, hoisting and clamping with the high lift type jack	3. Demonstrate and discuss the safety precautions & limitations

REFERENCE:

O.E.S. Heavy Rescue Manual, pp_____

METHODS OF EVALUATION:

1. Demonstration
2. Oral quiz

AV: RESOURCE:

Display

Slides - Jacks

TASK ANALYSIS

TOPIC: HOW TO USE THE HAND WINCH (COME ALONG-GRIP HOIST) LEVEL II

PERFORMANCE GOALS: 15 Minutes

GIVEN:

1. Heavy Rescue Manual pp_____
2. Come-a-long, grip hoist, cable and chain
3. Material to be stabilized, lifted, or moved

PERFORMANCE:

Properly set up come-a-long/grip hoist for lifting or pulling

STANDARD:

Safely, and with 100% accuracy according to the procedures in the text

INSTRUCTION LESSON:	LEARNING ACTIVITY:
1. Set up and operational procedures for pulling or lifting	2. Student performance under supervision

REFERENCE:

1. Heavy Rescue Manual, O.E.S.
2. Vehicle Rescue, Harvey Grant

METHODS OF EVALUATION:

1. Student performance on simulated problems
2. Oral questions

TOPIC: LIFTING DEVICES - A-FRAME, GIN POLE, JIB ARM, AND SHEER LEGS (TRIPOD)

LEVEL II

1 1/2 Hours

PERFORMANCE:

GIVEN:

1. Heavy Rescue Manual pp_____.
2. Suitable dimensional lumber or debris
3. Ropes of various size and length
4. Material for hold forts

PERFORMANCE: USING LUMBER:

1. Demonstrate construction of an A-Frame
2. Demonstrate construction of a Gin Pole
3. Demonstrate construction of a Jib Arm
4. Demonstrate construction of Sheer Legs (tripod)
5. Demonstrate construction of lifting

STANDARD:

1. With 100% accuracy according to the Heavy Rescue Manual pp_____.
2. With 70% accuracy on written exam

INSTRUCTION ACTIVITY:	LEARNING ACTIVITY:
1. Film/tape	1. Notes
2. Construct Gin Pole	2. Students under supervision
3. Construct A-Frame	3. Same
4. Construct Jib Arm	4. Same
5. Construct Sheer Legs	5. Same

REFERENCE:

Heavy Rescue Manual pp_____.

METHOD OF EVALUATION:

1. Manipulative performance
2. Oral/written quiz

RESOURCES:

Film/tape, lumber or debris, ropes, hold forts, fire service ladders

TASK ANALYSIS

TOPIC: WINCHES — LEVEL II

PERFORMANCE GOAL: — 15 Minutes

GIVEN:

Availability of gas driven, PTO winches, and electric winch

PERFORMANCE:

1. Demonstrate the ability to use gas driven, PTO, and electrical winches
2. Describe the availability of these devices in the area of the teams
3. Identify the limitations of winches
4. Demonstrate the use and application of hand winches
5. Identify the availability of these devices in the teams area
6. Describe the advantages of gasoline, electric, PTO, and hand powered winches
7. Discuss the pulling capacity of winches of dead-lift versus rolling loads
8. Discuss the tensile strengths of various diameters of cable
9. Discuss the Do's and Don'ts of cable winching

INSTRUCTION LESSONS:	LEARNING ACTIVITIES:
1. Identify the availability in student's area of the 4 types of winches	1. Manipulative training in the use of winches: PTO, Gasoline, Electric Hand winches
2. Describe the safety of using winches	2. Note taking
3. Describe the limitations of winches	3. Discuss merits, safety, do's and don'ts of winch use
4. Describe the advantages and disadvantages of the 4 types of winches	4. Discuss capacities of winches
5. Demonstrate the use of the 4 types of winches	5. Discuss application of winches in the area of the students work
6. Discuss the capacities of winches	

7. Discuss the Do's and Don'ts of winches

8. Discuss the fact that winches are not to haul or place objects over people's heads, except in an emergency

STANDARD:

The 100% accurate use of the winch when being applied to raising and lowering people or when placing objects over their head. The 80% accurate testing of when to use a winch, and the precautions to be used, as discussed in the Heavy Duty Rescue Manual pp_____.

REFERENCY MATERIALS:

The Heavy Duty Rescue Manual, pp_____

METHODS OF EVALUATION:

1. Manipulative performance assessment, demonstration of the actual use of the 4 types of winches discussed

2. Oral and/or written quiz on safety, application, Do's and Don'ts, capacities, breaking strengths of cable

TOPIC: UTILIZING LADDERS IN VERTICLE RESCUE

Fire Service ladders provide many uses in carrying out rescue procedures. Besides being used to gain access to upper or lower stories and roofs, ladders can be used as bridges, derricks, stretchers and as a means for lowering victims.

BRIDGING GAPS

If spaces between buildings or areas of damaged floors or roofs have to be bridged, ladders can be utilized. Ladders can also be used to build a suspension bridge. Boards or planks should be placed on the rungs of the ladder to give additional strength and to make passage over the ladder easier. (Fig. 1)

LADDER SLIDE

The Ladder Slide can be employed to remove victims from upper stories when a ladder of sufficient height is available. This method also is good to use when manpower is limited. (Fig. 2)

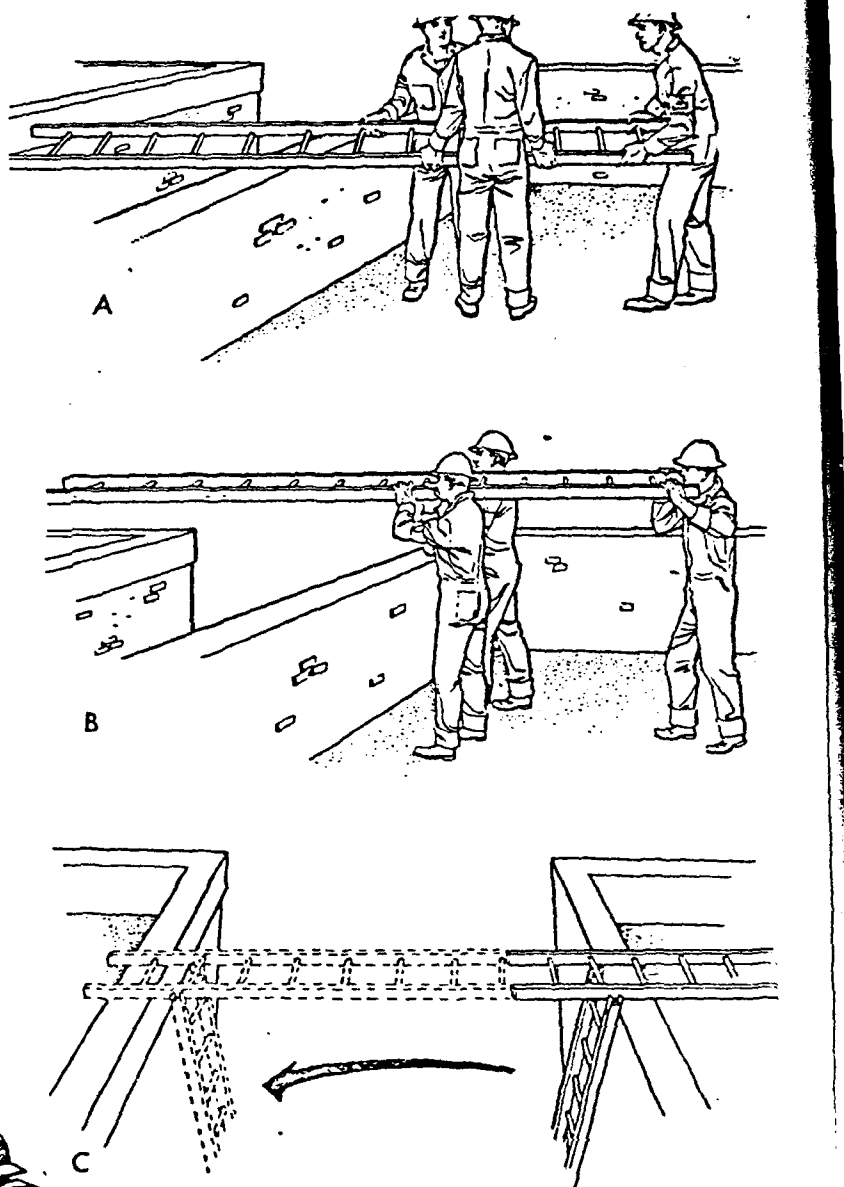
Pry bars, axe handles, or other suitable material has to be placed through the "D" rings of a stretcher to allow the stretcher to slide on the beams of the ladder. The lowering line can be passed over the rungs of the ladder to form a friction brake.

LEANING LADDER

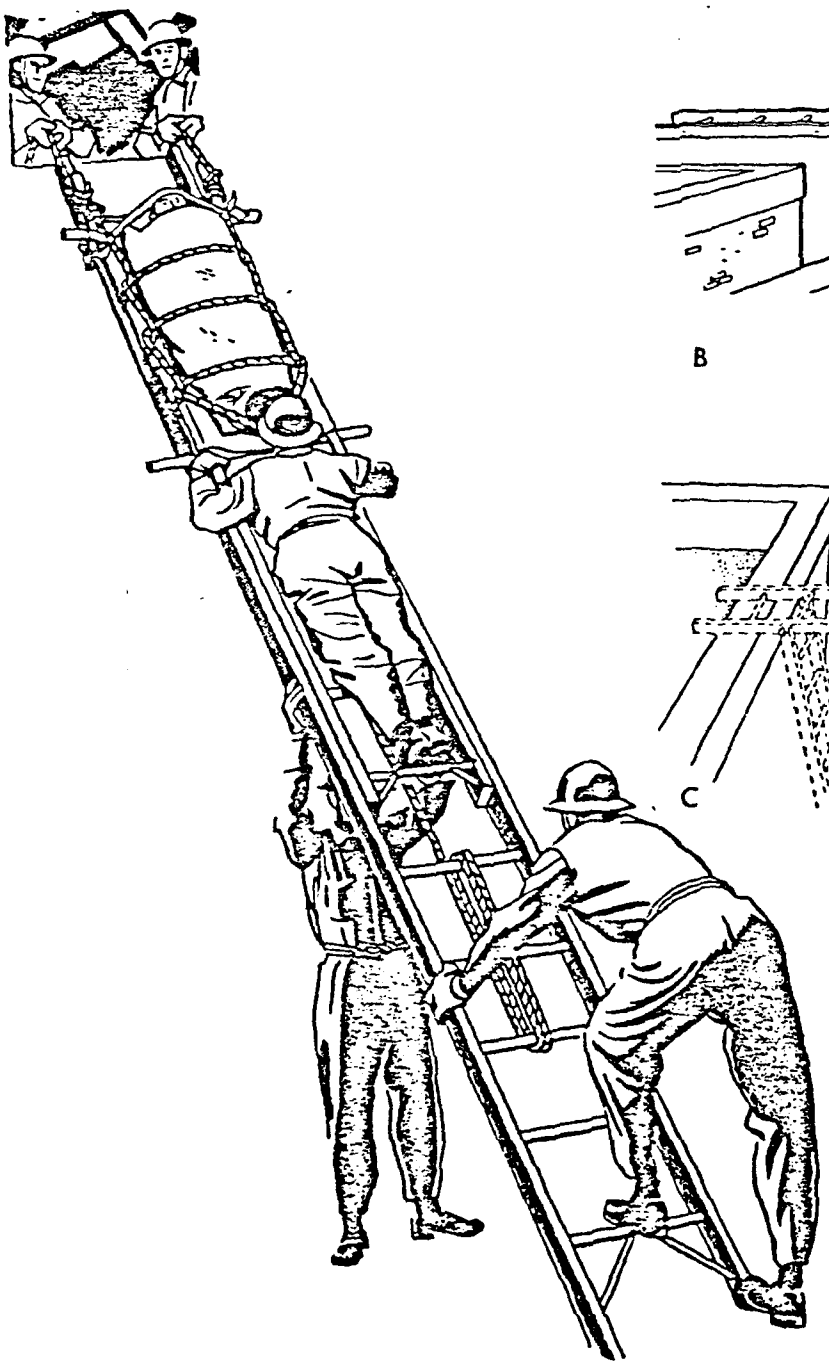
The Leaning Ladder can be used to lower victims when the ladder is long enough, but against the building above the opening to be used. An elevator is actually constructed, and a great many victims can be lowered in a short period of time, using a minimum of manpower. The victims should be placed on a blanket, and then in the stokes. The stokes or stretcher should be rigged so that at least one side rigging can be removed quickly to aid in victim removal. (Fig. 3)

LADDER HINGE

The Ladder Hinge method of lowering victims can be employed when there are several victims that may need to be lowered or raised in a horizontal position. The ladder need only be long enough to reach the opening being used.

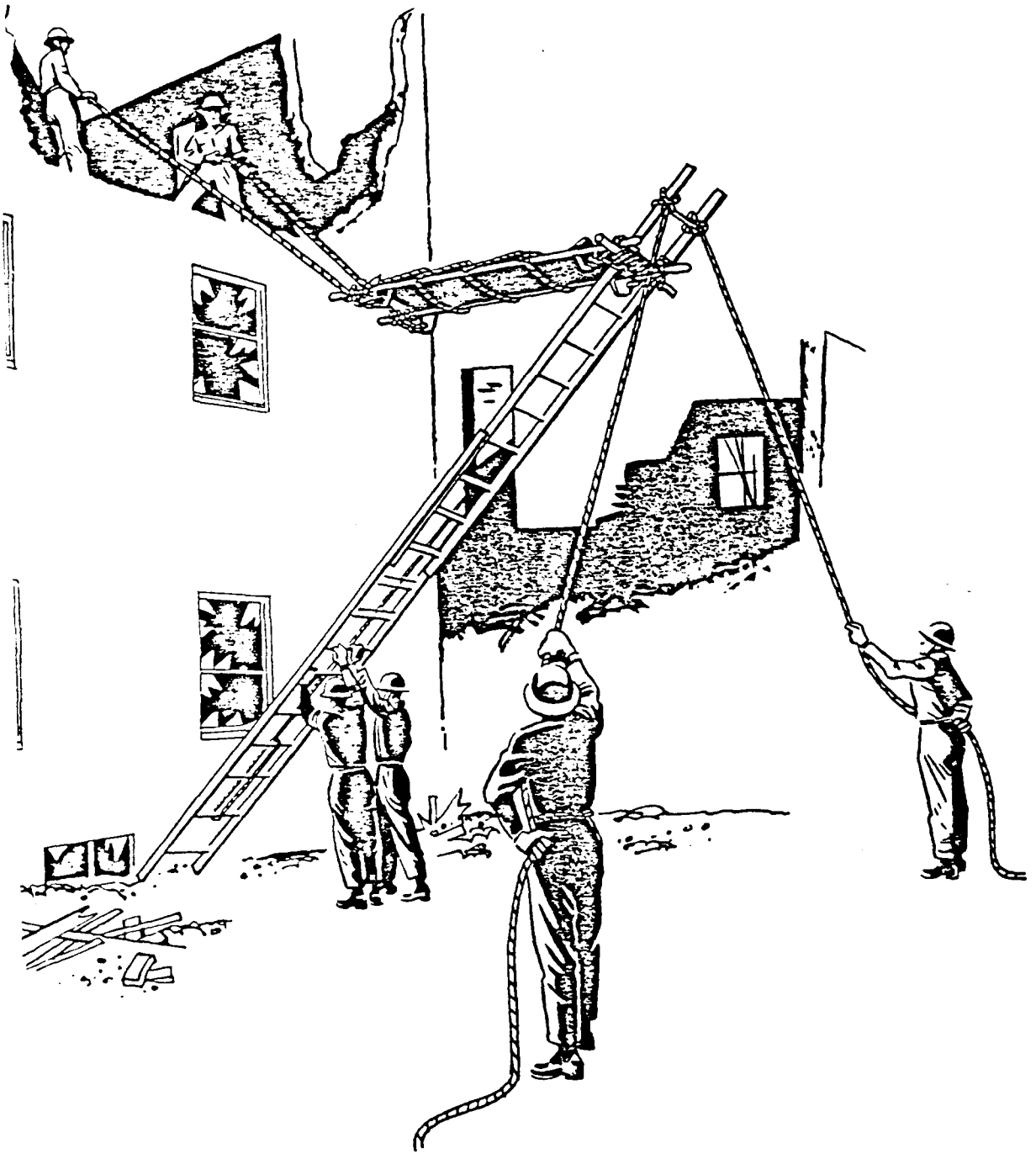


BRIDGING GAPS WITH LADDERS
Figure 1

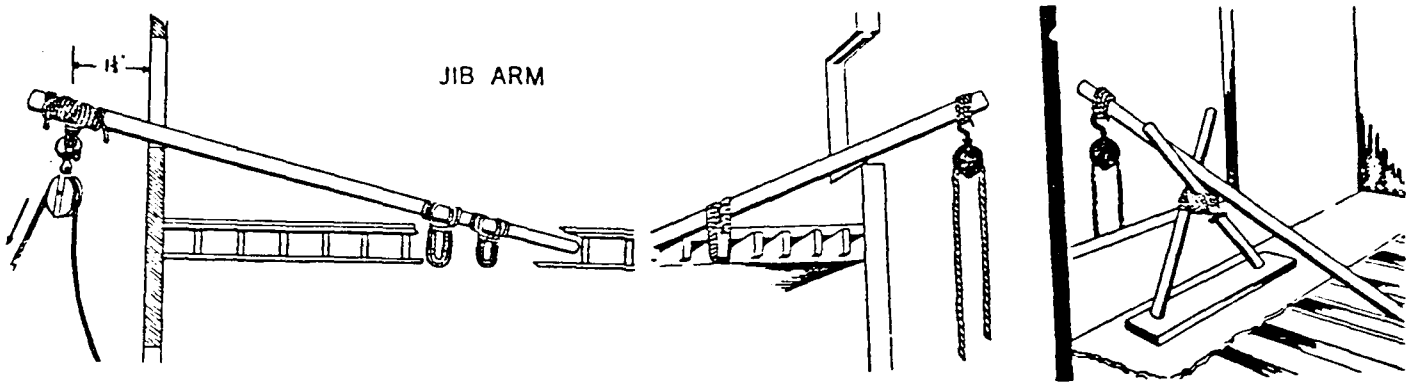


LADDER SLIDE
Figure 2

LEANING LADDER
Figure 3



LADDER HINGE
Figure 4



LADDER as DERRICK

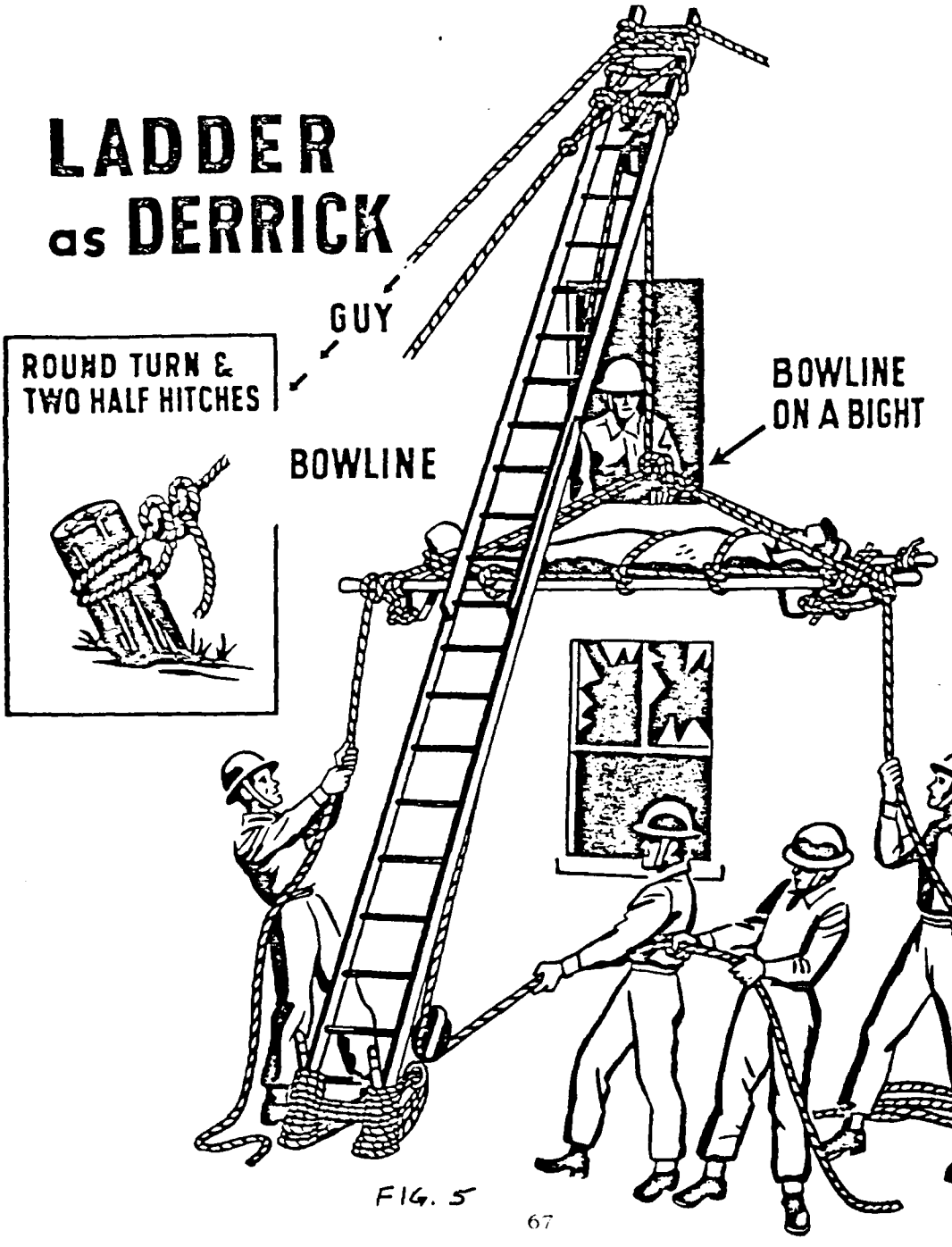


FIG. 5

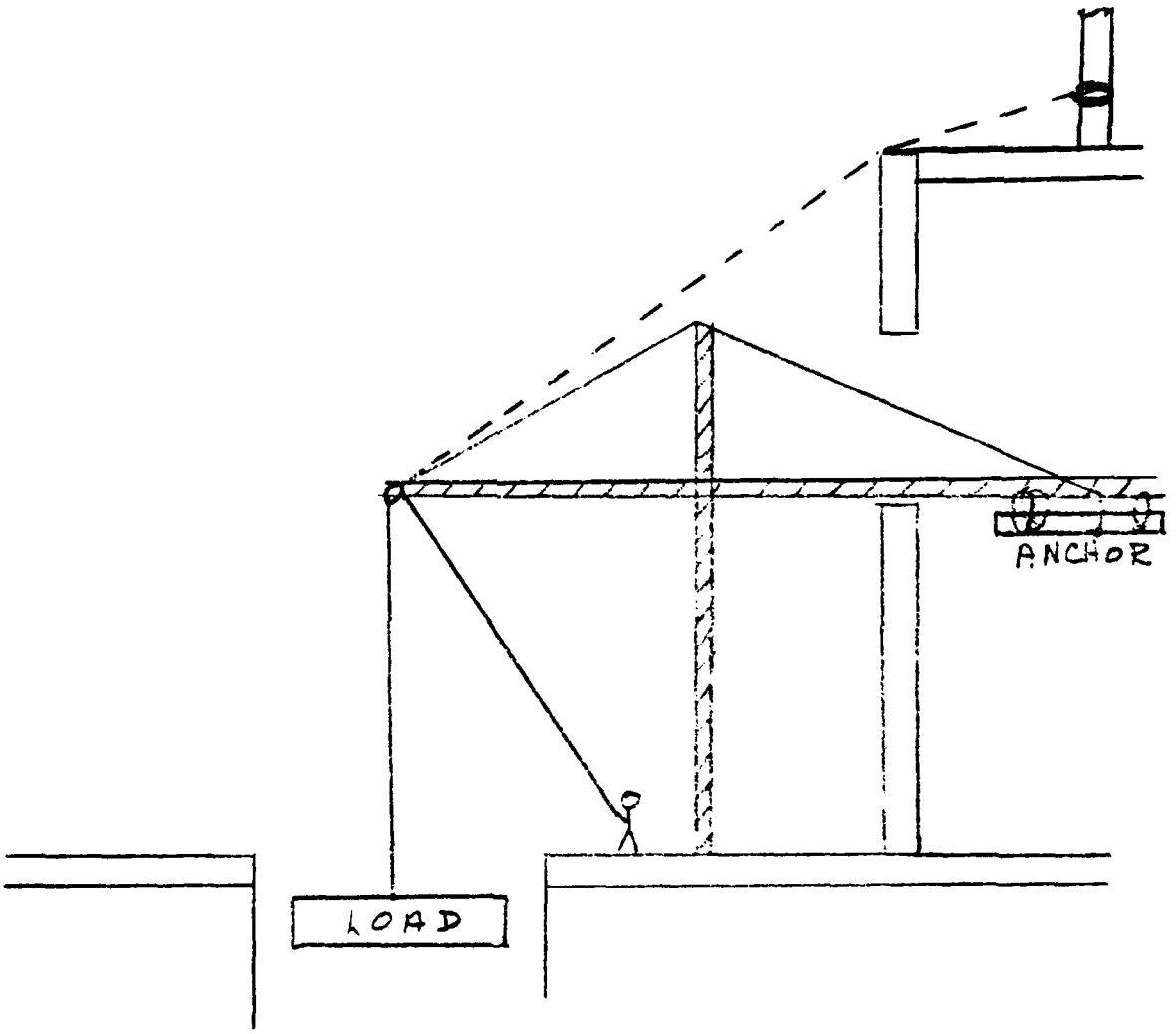


FIG 6

UTILIZING LADDERS IN VERTICLE RESCUE CONT.

The ladder is placed vertically against the wall from which the victim will be lowered. The tip of the ladder should extend one to two rungs above the opening. The stokes is secured to the top of the ladder and enough slack is left in the lashing to hinge the stokes on the ladder. If possible, the guys should be spread out at approximately a 70-degree angle. (Fig. 4)

LADDERS AS A DERRICK

Any time a derrick would be beneficial, and suitable beams are not available, ladders may be utilized. Ladders can be used in place of beams to make Jib Arms, A-Frames, and Gin Poles. The same guidelines that apply to beams, apply to ladders. The shorter the ladder, the stronger it is. When lashing to a ladder, always lash to the beams. When slinging a block on a ladder, rig the sling so the force is distributed to the beams. The sling should pull the beams inward, or compress the rungs. Do not hang a block off a rung. (Fig. 5)

For long spans between the anchor point and the load point, a ladder ca. e reinforced utilizing ropes and additional ladders, using the principle of a suspension bridge. (Fig. 6)

TOPIC: HOW TO USE LADDERS IN SPECIALIZED RESCUE SITUATIONS LEVEL I

PERFORMANCE GOALS: 2 Hours

GIVEN:

1. Fire Service ladders of various lengths;
2. Ropes, pulleys, friction brakes, lashing lines, liters;
3. Drill tower or multi-storied building
4. Heavy Rescue Manual pp_____
5. Handout "Utilizing Ladders in Verticle Rescue"

PERFORMANCE:

1. Identify the uses of ladders in verticle rescue situations;
2. How to construct a Jib Arm using Fire Service ladders;
3. How to construct an A-Frame using Fire Service ladders;
4. How to construct a Ladder Hinge using Fire Service ladders;
5. How to construct a Gin Pole using Fire Service ladders;
6. How to construct a Ladder Slide using Fire Service ladders;
7. How to construct a Leaning Ladder using Fire Service ladders.

STANDARD:

1. With 100% accuracy in accordance with accepted safety procedures;
2. With 80% on the written examination on safety, uses and procedures.

INSTRUCTION LESSON:	LEARNING ACTIVITY:
1. Uses of ladders	1. Note taking. Discussion
2. Construction operations:	2. Student participation under supervision
a. Jib Arm	a. Same
b. A-Frame	b. Same
c. Ladder Hinge	c. Same
d. Gin Pole	d. Same
e. Ladder Slide	e. Same
f. Leaning Ladder	f. Same

TASK ANALYSIS

TOPIC: BRIDGING — LEVEL II

To identify techniques, types, and situations where and how to temporarily bridge between two points above ground level — 1 Hour

PERFORMANCE GOALS:

GIVEN:

1. Summary of bridging applications
2. Summary of bridging techniques
3. Summary of bridging materials
4. Summary of life safety procedures

PERFORMANCE:

1. Describe two types of bridges
2. Describe bridging techniques
3. Describe four basic types of materials used in bridging
4. Describe four basic life safety procedures

STANDARD:

With 100% accuracy during application of bridging techniques when life safety is involved; 70% accuracy on written tests; according to text page _____.

INSTRUCTION LESSON: Instructor	LEARNING ACTIVITES: Students
1. General information	1. Class discussion
2. Two types of bridges:	2. Class discussion
a. Ridged	
b. Rope/Cable	
3. Four types of bridge materials:	3. Class discussion
a. Ladders	
b. Scaffolding	
c. Building material	
d. Rope/Cable	

4. Safety procedures:

   a. Bridge strength

   b. Safety lines

   c. Bridge anchored

4. Class discussion; hands-on application

METHODS OF EVALUATION:

Instructor

1. Oral questions

2. Written examination

3. Hands-on application

Students

1. Class discussion and participation; oral questions; written exam

2. Bridging problems and hands-on problem solving

AV: RESOURCE:

Slides - "Bridging"

TOPIC: TEMPORARY SUPPORT FOR DAMAGED BUILDINGS DURING RESCUE OPERATIONS

LEVEL II

2 Hours

PERFORMANCE GOALS:

GIVEN:

1. Rescue skills and techniques, SM 14.2, pp 44 - 49;
2. Lumber of various sizes and lengths, debris from collapsed building;
3. Power and hand tools, nails, wedges;
4. Wall, collapsed or damaged floor (simulation);

PERFORMANCE:

Using the materials and equipment given:

1. Construct Raker Shoring;
2. Construct Flying Shoring;
3. Construct dead or vertical shoring;
4. Construct strutting;
5. Identify and select materials for temporary supports.

STANDARD:

1. With 100% accuracy in accordance with accepted safety practices in the construction of the temporary supports.
2. With 80% accuracy on the written examination on safety and procedures.

INSTRUCTION LESSON:	LEARNING ACTIVITY:
1. Selection of tools and materials	1. Discussion. Note taking.
2. Demonstration of contructing Raker Shoring	2. Student participation under direct supervision.
3. Demonstration of constructing Flying Shoring	3. Same
4. Demonstration of constructing vertical shoring	4. Same
	5. Reading assignment - Pre-class on "Shoring"

REFERENCE:

1. Rescue Skills and Techniques, SM 14.2, pp 44 - 49

2. Heavy Rescue Manual pp_____

METHOD OF EVALUATION:

1. Manipulative evaluation of student

2. Written quiz on the selection of tools and materials, safety and procedures

AV: RESOURCE:

Slides: Damage and Support to Structures, Tunnels - Trenches

TOPIC: DEBRIS TUNNELING AND TRENCHING LEVEL II

PERFORMANCE GOALS: 1 1/2 Hours

GIVEN:

1. Heavy Rescue Manual pp 122 - 137
2. Lumber of various sizes; debris from collapsed building;
3. Power and hand tools; nails;
4. Pile of debris or large pile of sand or gravel.

PERFORMANCE:

Using the materials and equipment given:

1. Construct a tunnel using the forepole method, 3 frames minimum;
2. Construct a trench through debris;
3. Identify the need for ventilation;
4. Identify and select proper materials.

STANDARD:

1. With 100% accuracy in accordance with accepted safety practices in the construction of debris tunnels and trenches;
2. With 80% accuracy on the written examination on safety and procedures.

INSTRUCTION LESSON:	LEARNING ACTIVITY:
1. Selection of tools and materials	1. Discussion. Note Taking
2. Demonstration of constucting a debris tunnel	2. Student participation under direct supervision
3. Demonstration of constructing a trench	3. Same

REFERENCES:

1. Rescue Skills and Techniques, SM 14.2 pp 37 - 44
2. Heavy Rescue Manual pp_____

METHOD OF EVALUATION:

1. Manipulative evaluation of student;
2. Written quiz on the selection of tools and materials, safety and procedures

AV: RESOURCES:

Slides: Tunneling

TOPIC: BREACHING WALLS LEVEL II

PERFORMANCE GOALS: 15 Minutes

GIVEN:

1. Power and hand tools;
2. Masonry wall section;
3. Concrete wall section;
4. Heavy Rescue Manual pp_____

PERFORMANCE:

1. Utilizing the tools available, breach a concrete wall;
2. Utilizing the tools available, breach a brick (masonry) wall;
3. Utilizing improvised tools, breach a wall.

STANDARD:

1. With 100% accuracy in accordance with accepted safety practices in breaching walls and floors;
2. With 80% accuracy on the written examination on safety and procedures.

INSTRUCTION LESSON:	LEARNING ACTIVITY:
1. Selection of tools and their safe use	1. Discussion. Note taking
2. Demonstration of breaching a concrete wall with power tools	2. Student participation under direct supervision
3. Demonstration of breaching a masonry wall	3. Same
4. Demonstration of the utilization of improvised tools	4. Same

REFERENCES:

1. Heavy Rescue Manual pp_____
2. IFSTA #101, Forcible Entry, Rope and Fire Extinguisher Practices, pp 52 - 73

METHOD OF EVALUATION:

1. Manipulative evaluation of student
2. Written quiz on the selection of tools and the safety involved

AV: RESOURCE:

Slides - Breaching

REFERENCES:

1. Los Angeles City Fire Department - Manual of Operation, 1972

2. Los Angeles City Fire Department - Training Bulletins 8 (1968) and 28 (1977)

3. Los Angeles Department of Water and Power

4. Southern California Gas Company

5. Electrical Hazards, Dale Booth, 1966

6. National Fire Protection Association (NFPA) Handbook, 14th Edition

AV: RESOURCE:

Slides - Utilities Control

TOPIC: UTILITY CONTROL LEVEL I

PERFORMANCE GOALS: 15 Minutes

GIVEN:

A collapsed building situation

PERFORMANCE:

1. Identify the need for utility control

2. Identify methods of utility control

STANDARD:

With 70% accuracy according to information found in Heavy Rescue Manual pp_____

INSTRUCTION ACTIVITY:	LEARNING ACTIVITY:
1. Lecture	1. Discussion
2. Slides/tape	2. Notes

REFERENCE:

Heavy Rescue Manual

METHOD OF EVALUATION:

Written/oral quiz

TOPIC: POWERED DIGGING RESOURCES FOR RESCUE LEVEL I

PERFORMANCE GOALS: 15 Minutes

GIVEN:

1. A summary of heavy equipment types
2. A listing of features and capabilities

PERFORMANCE:

1. Identify capabilities of backhoe trencher, loaders and power shovels
2. Identify precautions in selecting the right machine for the job
3. Identify the limitations of various kinds of digging machines

STANDARD:

With 80% accuracy according to text.

INSTRUCTION LESSON:

1. The backhoe
2. The loader
3. The trencher
4. The power shovel

LEARNING ACTIVITY:

1. Discussion of:
   - A. Digging depth
   - B. Mobility
   - C. Size of equipment
   - D. Applications
   - E. Methods of application

RESOURCES:

1. Text pp_____
2. Slide series 5108 Trimarking, Inc., Tampa, Florida
3. Case Equipment Catalog - Case Equipment Company

METHOD OF EVALUATION:

Oral questions

TOPIC: LIGHTING, PORTABLE ELECTRICAL EQUIPMENT, SPECIAL TOOLS, EQUIPMENT AND RESOURCES

LEVEL I

15 Minutes

PERFORMANCE GOALS:

GIVEN:

1. A summary of how portable electrical equipment, lighting, special tools and equipment resources are used during emergency incidents

2. Examples of various kinds of lighting equipment and generators special tools equipment and resources

3. Example of various agencies who may have special tools, equipment, and resources

PERFORMANCE:

1. Identify various types of portable lighting equipment

2. Identify hazards which might be found at emergency incidents and methods which might be used to alleviate these hazards, surface and subsurface

3. Identify how lights are placed at the emergency incident

4. Identify need for special tools, equipment and resources

5. Identify sources for obtaining additional resources, lighting, special tools and equipment

STANDARD:

With 70% accuracy according to information contained in _____ on page _____.

INSTRUCTION LESSONS:	LEARNING ACTIVITIES:
1. Types of portable fire service lighting, portable electrical equipment, special tools equipment and resources, surface and subsurface	1. Note taking
2. Hazards at emergency incidents using portable equipment, surface and subsurface	2. Reading assignment
3. Examples of placement of lights at emergency incidents surface, subsurface	3. Group discussion of hazards that may be encountered at emergency incidents

4. Obtaining additional lighting portable electrical equipment, special tools, equipment and resources	4. Group discussion and demonstration of how lights should be placed at emergency incidents

AV: RESOURCES:

Slides - Do's and Don'ts of Lighting

TOPIC: CONSIDERATIONS FOR SUBSURFACE RESCUE LEVEL I

PERFORMANCE GOALS: 30 Minutes

GIVEN:

1. A summary of problem areas to be considered

2. A summary of equipment needs

PERFORMANCE:

1. Idnetify personnel needs/resources identification

2. Identify communications needs

3. Identify victim transportation

4. Identify specialized tools

5. Identify atmosphere problems

6. Identify pre-plan needs/enroute selection

STANDARD:

With 80% accuracy according to text

INSTRUCTION LESSONS:

1. Discuss 6 main areas of concern
   - A. Safety equipment
   - B. Communications
   - C. Transportation
   - D. Resource identification
   - E. Atmosphere
   - F. Route selection

LEARNING ACTIVITY:

1. Class discussion of needs of situations

2. Class discussion of application in situations simulated

REFERENCES:

Text

METHOD OF EVALUATION:

Oral questions

AV: RESOURCE:

Slides - subsurface problems

TOPIC: PHYSICAL PROBLEMS FOR PERSONNEL IN SUBSURFACE RESCUE LEVEL I

PERFORMANCE GOALS: 15 Minutes

GIVEN:

1. Summary of physical needs for rescue persons
2. Summary of personnel equipment needs
3. Summary of physical description of subsurface locations, caves, mines, tunnels, etc.

PERFORMANCE:

1. Identify physchological problems to victim and rescuer
2. Identify physical problems which a rescuer must be equipped to handle
3. Identify seven items of basic personnel equipment needed to function underground
4. Identify management needs of men underground

STANDARD:

With 80% accuracy according to text pp_____

INSTRUCTION LESSON:	LEARNING ACTIVITY:
1. Psychological problems	1. Class discussion
2. Physical problems A. Human B. Locations	2. Class discussion
3. Basic equipment A. Personnel	3. Class discussion
4. Manpower needs	4. Class discussion
	5. Short answer quiz: Identify items of basic perosnnel equipment

REFERENCES:

IFSTA - 108

Rescue, new edition pp_____

METHODS OF EVALUATION:

Oral questions

Short answer quiz

TOPIC: WATER PROBLEMS IN SUBSURFACE RESCUE LEVEL I

PERFORMANCE GOALS: 30 Minutes

GIVEN:

1. A summary of types of water problems
2. A summary of methods of approaching with water problems
3. How to contact special resources
4. Simulated case histories involving water

PERFORMANCE:

1. Identify waters several effects in subsurface rescue
2. Identify the progressive choices in dealing with water problems
3. Identify proper clothing and victim care
4. Identify diversion of water
5. Identify pumping techniques
6. Identify diving and availability of divers

STANDARD:

100% accuracy according to text

INSTRUCTION LESSON:	LEARNING ACTIVITY:
1. Water problems A. Flooding B. Sumping C. Through drainage	1. Group discussion of examples of water problems
2. Solutions A. Protection B. Diversion C. Pumping D. Diving	2. Group discussion of general techniques and tactics
3. Identify problems A. Local B. Distant	3. Group identify potential problems and who can solve them

REFERENCE - RESOURCE MATERIAL:

1. Text

2. Handbook of Cave Rescue Operations, Smith; Etal, 1977 pp 49 - 71

3. Manual of Caving Technique, Cullingford; Etal, 1969 pp 151 - 165/ 325 - 385

METHOD OF EVALUATION:

Oral questions

TOPIC: ATMOSPHERE PROBLEMS IN SUBSURFACE RESCUE — LEVEL I

PERFORMANCE STANDARDS: — 30 Minutes

GIVEN:

1. A summary of toxic gases
2. A summary of ventilation needs
3. A summary of atmosphere problems

PERFORMANCE:

1. Identify common toxic gas and how it acts on humans
2. Identify common methods of ventilation
3. Identify needs for breathing apparatus

STANDARD:

With 80% accuracy according to text

INSTRUCTION LESSON:	LEARNING ACTIVITY:
TOXIC GAS: A. Carbon Monoxide B. Methane C. Oxides of Nitrogen D. Carbon Dioxide	Discuss the properties and where each may be present
PRECAUTIONS: A. Ventilation B. Gas Testers C. BA's	Discussion of how to protect personnel from hazards

REFERENCE - RESOURCE:

1. Text
2. Mine Gases - Manual #2, published by Mine Enforcement and Safety Administration, #2419-00005

EVALUATION:

Oral quiz

TOPIC: HOW TO RAISE FROM SUBSURFACE LEVEL II

PERFORMANCE GOALS: 30 Minutes

GIVEN:

1. A summary of typical problems to both victim and rescuer
2. A summary of principals of lifting victims
3. A summary of pulley techniques applicable
4. A discussion of dangers
5. A simulated victim and proper equipment for subsurface raising

PERFORMANCE:

1. Demonstrate a pulley lift over a lip - 2 ways
2. Demonstrate a litter for two plane hauling
3. Describe a counter balance system
4. Describe role of litter tender
5. Describe safety problems

STANDARD:

With 100% accuracy according to text

INSTRUCTION LESSON:	LEARNING ACTIVITY:
1. Litter rigging A. Lip B. Two plane	1. Rig litter for over lip, and two plane haul
2. Set up a "Z" lift A. Safety prusik B. Litter tender C. Anchors D. Litter line	2. Rig and haul on a 15-foot drop a rigged litter. Change planes en route
3. Discuss a counter balance	3. Discuss litter for counter balance with 4 men; explain speed gained
4. Litter safety A. Belay B. Tender C. Line	4. Rig all litters hauls with provision for all three

RESOURCE MATERIALS:

1. Text pp_____

2. IFSTA 108 pp 175 - 179

3. Manipulative performance assessment

TASK ANALYSIS LEVEL II

TOPIC: SUBSURFACE RESCUE EXERCISE 2 Hours

PERFORMANCE GOALS:

GIVEN:

1. Subsurface rescue problem simulation
2. Appropriate number of rescue personnel or teams
3. Essential heavy rescue equipment, tools, and appliances

PERFORMANCE:

1. Locate and secure point of entry
2. Provide safe work atmosphere
3. Remove entrapped and injured persons

STANDARD:

Utilizing all proper procedures according to the Heavy Rescue text, pp_____ and in a manner safe for both rescuer(s) and victim(s), remove victim(s) from subsurface entrappment.

INSTRUCTION LESSON:

1. Ventilation
2. Exploring and marking passage ways
3. Transporting victims through underground passage ways
4. Vertical lifting of victims
5. Communications system application
6. Special lighting
7. Shoring

LEARNING ACTIVITY:

Actual performance of subsurface rescue involving horizontal and vertical transport of victim(s).

TOPIC: *TRANSPORTATION RESCUE* LEVEL I

PERFORMANCE GOALS: 1 Hour

GIVEN:

1. A summary of problems common to major public transportation involving rescue problems

2. A summary of types of vehicles that may be encountered

3. A summary of resources available to supplement the student for public transportation

PERFORMANCE:

1. Identify rescue problems common to public transportation

2. Identify types of vehicles that may be encountered

3. Identify resources available relating to heavy duty rescue in public transportation

STANDARD:

With 70% accuracy according to text

INSTRUCTION LESSON:	LEARNING ACTIVITY:
INSTRUCTOR:	STUDENT:
1. Lecture	1. Notes
2. Slide program	2. Class participation

METHODS OF EVALUATION:

Oral questions

REFERENCES:

Handout on *Public Transportation Emergencies*

AV: RESOURCES:

Slides

Transportation problem
a. Bus
b. Train
c. Plane
d. Marine

TASK ANALYSIS LEVEL I

TOPIC: HIGH-RISE BUILDINGS 1 Hour

To identify what constitutes a high-rise incident, problems encountered, and methods for evacuating or removing building occupants.

PERFORMANCE GOALS:

GIVEN:

1. Summary of criterion describing a high-rise building
2. Summary of operational strategy for high-rise rescue
3. Summary of available resources
4. Summary of rescue methods
5. Summary of Incident Command and Communication System(s)

PERFORMANCE:

1. Describe why a high-rise incident is different from other structure rescues
2. Describe building criterion of a high-rise structure
3. Describe conditions which may dictate rescue strategy
4. Describe resources which, if available, will assist in rescue tactics
5. Describe various rescue tactics and methods
6. Describe command structure and communications necessary for an effective, successful operation

STANDARD:

With 100% accuracy during rescue and transportation from building where life safety is involved; seventy percent accuracy on written tests; according to text pp_____

INSTRUCTION LESSON:	LEARNING ACTIVITIES:
INSTRUCTOR:	STUDENT:
1. General information	1. Class discussion, pictures
2. Criterion for a high-rise	2. Class discussion, pictures
3. Decisions to rescue	3. Class discussion, pictures
4. Conveyance/treatment of injured occupants	4. Class discussion

5. Command and communications system	5. Class discussion, pictures

METHODS OF EVALUATION:

INSTRUCTOR:	STUDENTS:
1. Oral questions	1. Class discussions
2. Written tests	2. Class participation
3. Essay problem	3. Written tests

REFERENCES:

High-Rise Operational Training Manual, Los Angeles City Fire Department - 1977

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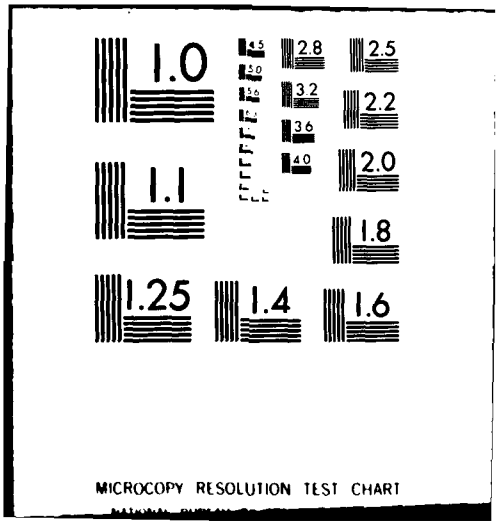
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TASK ANALYSIS LEVEL I

TOPIC: ELEVATORS 45 Minutes

1. To identify types
2. Potential problems
3. Describe safety practices and extrication methods during passenger rescue or removal

PERFORMANCE GOALS:

GIVEN:

1. Summary of elevator requirements for vertical conveyance of people
2. Summary of conditions thay may cause the need to extricate passengers from stalled or damaged elevators
3. Summary of equipment used for elevator extrications
4. Summary of safety issues to be considered during elevator extrications
5. Examples of personal experiences with stalled or damaged elevators

PERFORMANCE:

1. Describe three types and basic operation of elevators
2. Describe when elevator extrication is necessary
3. Describe tools and equipment for elevator extrication
4. Describe priorities after extrication has been determined as a course of action
5. Describe three accesses to extricate passengers from elevators
6. Describe command structure and communications necessary for an effective, successful extrication
7. Describe proper conclusion of extrication and disposition of injured extricated passengers

STANDARD:

With 100% accuracy during extrication where life safety is involved; 70% accuracy on written tests; according to text pp_____

INSTRUCTION LESSON:	LEARNING ACTIVITIES:
INSTRUCTOR:	STUDENTS:
1. General information; incidents of injury vs. inconvenience, past indidents	1. Prereading; class discussion

2. Three types of elevators	2. Prereading; class discussion
3. Action priorities	3. Class discussion; visual aid; elevator mechanism drawing
4. Access into elevators	4. Class discussion; visual aid; elevator mechanism drawing
5. Emergency extrication of passengers, equipment, and procedures	5. Class discussion; glossary review; prereading
6. Command and communications	6. Class discussion
7. Extrication conclusion	7. Class discussion

MEHTODS OF EVALUATION:

INSTRUCTOR:	STUDENTS:
1. Oral questions	Class discussion and participation, oral questions, written tests, pre-reading, submission of test questions, extrication problems and problem solving
2. Multiple choice quizzes	
3. Problem; essay	

REFERENCES:

1. Emergency Removal of Passengers from Elevators, Otil Elevator Company - BM 373 (9601)
2. Vertical Transportation - Elevators, Norm Scott, Los Angeles City Fire Department - 1972
3. Elevator Emergencies, Los Angeles City Fire Department - 1974
4. Elevator Emergencies, New York Fire Department - 1961
5. Elevator Emergencies, California Fire Chiefs' Association
6. American Insurance Association (AIA) Special Interest Bulletin #55
7. Elevators, National Fire Protection Association (NFPA) Handbook, 14th Edition

AV: RESOURCES:

Slides - Elevator Systems

TASK ANALYSIS LEVEL II

TOPIC: HEAVY RESCUE PROBLEM SIMULATION 6 Hours

PERFORMANCE GOALS:

GIVEN:

1. A suitable location with a simulated heavy rescue problem involving a minimum of 10 simulated victims
2. Proper tools and equipment
3. Enough manpower to operate safely

PERFORMANCE:

1. Demonstrate forcible entry techniques
2. Demonstrate proper building stabilization techniques
3. Perform victim assessment
4. Demonstrate the ability to remove all simulated victims
5. Recover all rescue gear

STANDARD:

Following all techniques and procedures provided during the Heavy Rescue Modules 1A, 1B, and 2 and as outlined in the Heavy Rescue Manual and with no injuries to simulated victims, students, or instructors

INSTRUCTION LESSONS:

1. Use proper equipment
2. Use proper organization
3. Use safety procedures
4. Use rescue techniques

LEARNING ACTIVITIES:

Students to perform rescue operations under direction of instructors.

METHODS OF EVALUATION:

Manipulative performance assessment. Demonstration of the actual use of rescue tools

REFERENCES:

Plan and scenario of rescue problem to be made by instructional staff depending on facilities available.

TASK ANALYSIS — *LEVEL I*

TOPIC: HEAVY RESCUE COURSE OVERVIEW — 3 Hours

PERFORMANCE GOALS:

GIVEN:

1. Summary of Heavy Rescue Course goals and objectives
2. A listing of potential resource sources for special tools and equipment
3. A listing of private and public organizations from which assistance can be obtained for specific rescue situations

PERFORMANCE:

1. Review course of instruction and student experience in context with course goals and objectives
2. Identify sources for specialized equipment students should inventory within their respective community (cranes, bulldozers, back-hoes, trenchers, pole-setters, drilling machines, heavy transport)
3. Identify sources for specialized rescue assistance (caves, mines, aerial search and support, traffic and crowd control, chemical and hazardous material handling)
4. Develop a model inventory of special assistance and equipment resources for heavy rescue emergencies

STANDARD:

No applicable performance standard

INSTRUCTION ACTIVITIES:

INSTRUCTOR ACTIVITIES:	STUDENT ACTIVITIES:
1. Review student accomplishments in context with course goals and objectives	1. Comments recommendations and evaluation
2. Present a listing of specialized equipment and likely sources from which it may be obtained for emergency use	2. Note taking
3. Present a listing of specialized rescue organizations and means of contact and modification	3. Note taking
4. Outline a model inventory system for specialized rescue assistance and equipment	4. Note taking


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