



**ROYAL CANADIAN AIR CADETS**  
**PROFICIENCY LEVEL ONE**  
**INSTRUCTIONAL GUIDE**



**SECTION 5**

**EO M190.05 – IDENTIFY TYPES OF SHELTERS**

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Total Time: 30 min

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**PREPARATION**

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**PRE-LESSON INSTRUCTIONS**

Resources needed for the delivery of this lesson are listed in the lesson specification located in A-CR-CCP-801/PG-001, *Proficiency Level One Qualification Standard and Plan*, Chapter 4. Specific uses for said resources are identified throughout the instructional guide within the TP for which they are required.

Review the lesson content and become familiar with the material prior to delivering the lesson.

Select two sites, as described in the activity section of teaching point one.

Survey the survival site to see if there are fallen trees or caves present to use as visual aids during the lesson.

Create an a-frame shelter and a lean-to shelter for demonstration purposes during the class.

If the materials are available, erect an arctic bell tent, modular tent section and/or civilian-pattern tent for demonstration purposes during the class.

**PRE-LESSON ASSIGNMENT**

Nil.

**APPROACH**

An interactive lecture was chosen for this lesson to orient the cadets to types of shelters.

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**INTRODUCTION**

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**REVIEW**

Nil.

**OBJECTIVES**

By the end of this lesson the cadet shall have identified types of shelters.

**IMPORTANCE**

In a survival situation, it is important to be able to construct an effective shelter. A shelter protects a person from weather, animals and insects. Shelters also provide warmth, shade, comfort and is an important component of the survival pattern.

**Teaching Point 1****Explain the importance of site selection.**

Time: 10 min

Method: Interactive Lecture



Before presenting the information provided below, ask the cadets what they feel is important when selecting a site for a shelter. Do not confirm or correct their responses at this time. It is simply a lead off question to get them thinking.

**LAND CONSIDERATIONS**

Site selection should begin before dark if possible. The shelter should be built near a source of water, building materials (trees, boughs) and fuel. Specific land considerations include:

- the area must be large enough for the type of shelter planned,
- the area should not be at the bottom of a hill because of possible water runoff,
- the area should be relatively flat, but slightly sloped to allow drainage, and
- dry river gullies should be avoided, because of possible water collection in the gully.

**WATER CONSIDERATIONS**

Water plays an important role in site selection. Specific water considerations include avoid building too close to:

- water, to avoid insects, and
- the drinking water source, to prevent contamination.

**ANIMAL AND INSECT CONSIDERATIONS**

Animals and insects can also cause problems at the site. Specific animal and insect considerations are:

- avoid setting up a shelter where there are animal trails or standing water,
- fast flowing streams will have fewer insects than still water, and
- avoid areas infested with ants or bees.

**OTHER CONSIDERATIONS**

Other considerations to keep in mind when selecting a site include:

- there should be an open area nearby to construct signals,
- the entrance of the shelter should face the sun to add warmth and increase morale,
- avoid collecting thick wood for creating fires because it is harder to dry,
- try to find a natural windbreak or a place that is away from strong wind currents,
- avoid swampy terrain, and
- if a fire is to be built, it should be located at the opening of the shelter, and it should be done at a distance.

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## ACTIVITY

Time: 5 min

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### OBJECTIVE

The objective of this activity is to have the cadets identify a good site for shelter construction.

### RESOURCES

Nil.

### ACTIVITY LAYOUT

Nil.

### ACTIVITY INSTRUCTIONS

- Show the cadets the two sites; one a good site and the other a poor site.
- Ask the cadets to choose the best site and indicate why they made that choice.
- Ask them to identify faults in the poor site for shelter construction.

### SAFETY

Nil.

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## CONFIRMATION OF TEACHING POINT 1

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### QUESTIONS:

- Q1. Why should the site not be located at the bottom of a hill?
- Q2. Why should the site not be built too close to the drinking water source?
- Q3. Why should there be an open area near the shelter when selecting the site?

### ANTICIPATED ANSWERS:

- A1. To avoid possible water runoff.
- A2. To avoid contamination of the drinking water source.
- A3. To maintain an area for construct signals.
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### Teaching Point 2

**Describe natural shelters.**

Time: 5 min

Method: Interactive Lecture

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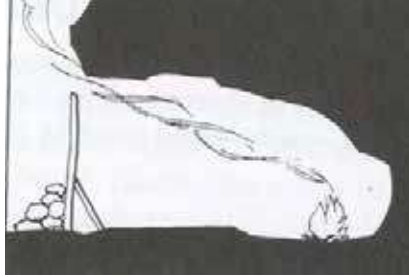
The instructor should find examples of each type of natural shelter on the training site. If possible, deliver this teaching point proximal to the shelters. The instructor should have pictures of the shelters to show the class, in case one or both of the natural shelters cannot be found in the area.

## NATURAL SHELTERS

Natural shelters are effective to use in situations where there are limited resources. Different types of natural shelters can be used for short term and / or long term shelters.

### CAVES

Caves may serve as long-term shelters and do not take energy to build. They are also good waterproof shelters. The entrance should be sealed off with items such as rocks, logs, or wattle (boughs and broken branches). When building a fire, ensure to place it at the back of the cave so smoke goes out the opening. If the fire is placed by the opening, the smoke blows back into the cave.



*Note. From The SAS Survival Handbook, by John Wiseman, 1999, London, England: HarperCollins Publishers.*

Figure 1 Cave Shelter

### FALLEN TREE

A fallen tree can make a great temporary shelter. When using a fallen tree as a shelter, ensure that the tree is stable and will not fall further. Also, be aware of other falling trees in the area. Coniferous trees with pine branches are the best because of the dense branch structure. The branches can be woven for protection.



*Note. From The SAS Survival Handbook, by John Wiseman, 1999, London, England: HarperCollins Publishers.*

Figure 2 Fallen Tree Shelter

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## CONFIRMATION OF TEACHING POINT 2

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### QUESTIONS:

- Q1. Name two types of natural shelters.
- Q2. When lighting a fire inside a cave, what should be kept in mind?

### ANTICIPATED ANSWERS:

- A1. Cave and fallen trees.
- A2. The fire should be lit towards the back of the cave so the smoke goes out the opening.

**Teaching Point 3****Describe improvised shelters.**

Time: 5 min

Method: Interactive Lecture



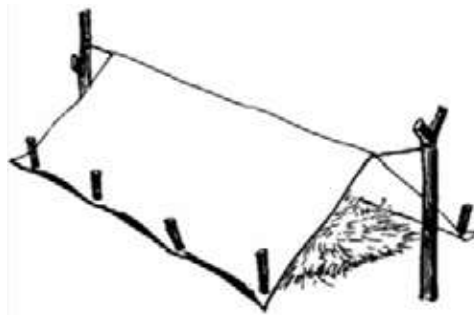
Prior to instructing the lesson, the instructor must ensure there is an a-frame shelter and a lean to shelter on site to use as visual aids to the class. Directions as to how to properly set up the shelters listed below are provided in Attachment A.

**IMPROVISED SHELTERS**

Improvised shelters are used in situations where immediate protection from the elements is required. They are shelters that can be constructed quickly from various materials. The a-frame and lean-to are two types of improvised shelters that are very effective in protecting against the elements. A type of a-frame shelter is the hootchie-style shelter.

**A-FRAME SHELTER**

An a-frame shelter is a simple shelter that can be constructed with a groundsheet or waterproof poncho. The groundsheet or poncho can be tied to two wood stakes by twine or roots found on the site. The construction of this shelter will be further detailed in an upcoming lesson.

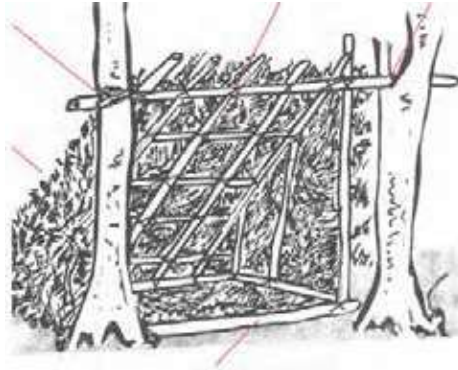


*Note. From The SAS Survival Handbook, by John Wiseman, 1999, London, England: HarperCollins Publishers.*

Figure 3 A-Frame Shelter

## LEAN-TO SHELTER

A lean-to shelter is constructed by using a horizontal crosspiece between two trees, with a panel of boughs or saplings used as a roof.



*Note. From The SAS Survival Handbook, by John Wiseman, 1999, London, England: HarperCollins Publishers.*

Figure 4 Lean-to-Shelter

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### CONFIRMATION OF TEACHING POINT 3

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#### QUESTIONS:

- Q1. When are improvised shelters important to use?
- Q2. What materials are needed to construct an A-frame shelter?
- Q3. What are the main components of a lean-to shelter?

#### ANTICIPATED ANSWERS:

- A1. When permanent shelters are not available. In situations where immediate protection from the elements are required.
- A2. A ground sheet/waterproof poncho and twine/roots.
- A3. A lean-to shelter is composed of a horizontal cross-piece between two trees, with a panel of boughs or saplings used as a roof.

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#### Teaching Point 4

**Describe tentage.**

Time: 5 min

Method: Interactive Lecture

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#### TENTAGE

Tentage is a permanent type of shelter that is useful for coping with the elements.



The instructor is encouraged to emphasize certain types of tentage below, based on what types of tents are available to the squadron during this exercise. When setting up the types of tentage mentioned below to use as training aids, the instructor is encouraged to refer to Attachment A for proper directions.

**ARCTIC TENT**

An arctic tent is a tent that can provide adequate shelter for up to ten people. It is composed of a center pole, which goes through the top of the tent. The tent is then pegged down on all corners and tightened to provide optimal space inside.

**MODULAR TENT**

Modular tentage is often used as a sleeping or classroom setting for a large number of people. It is also effective in providing shade during hot days. It is erected in sections by using a combination of metal frames and canvas covering.

**CIVILIAN-PATTERN TENTS**

Civilian-pattern tents are a third type of tentage that can be used for sleeping quarters. Civilian-pattern tents vary in shape and size and are constructed to accommodate anywhere between 1 and 10 people.

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**CONFIRMATION OF TEACHING POINT 4**


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**QUESTIONS:**

- Q1. For how many people can an arctic shelter provide shelter?
- Q2. What are the uses of modular tents?

**ANTICIPATED ANSWERS:**

- A1. It is composed of a center pole, which is erected through a hole in the top of the tent. The tent is then pegged down on all corners and tightened to provide optimal space inside.
- A2. Modular tentage can be used as sleeping quarters, a classroom setting, and can also provide shade during hot days.

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**END OF LESSON CONFIRMATION**


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All cadets will be required to assist in the construction of various shelters during the aircrew survival exercise. This lesson leads to the construction of an A-frame style shelter and no formal end of lesson confirmation activity is required. The instructor should pose questions to the group to confirm the information presented in this EO was understood.

**QUESTIONS:**

- Q1. What are the various types of factors that need to be remembered when selecting a site?
- Q2. When are natural shelters effective to use?
- Q3. What are two types of improvised shelters?
- Q4. What are three types of tentage?

**ANTICIPATED ANSWERS:**

- A1. Land considerations, water considerations, animal and insect considerations and other considerations.
- A2. In a situation where limited resources are available.

A3. A-frame shelter and lean-to shelter.

A4. Arctic tents, modular tents, and civilian-pattern tents.

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## CONCLUSION

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### HOMEWORK / READING / PRACTICE

Nil.

### METHOD OF EVALUATION

Nil.

### CLOSING STATEMENT

Constructing shelter is a key component of a successful survival pattern. In such a situation, protection against the elements and against wildlife or insects is extremely important. Knowing how to properly select a site, and furthermore how to construct a shelter effectively will significantly assist someone in such a scenario.

### INSTRUCTOR NOTES / REMARKS

All shelters listed should be setup prior to the lesson being taught.

The directives outlined in CATO 11-08 *Environmental Protection and Stewardship* are to be adhered to during this training.

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## REFERENCES

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A3-009 A-CR-CCP-107/PT-002. Director Cadets 3 (1979). *Royal Canadian Army Cadet CTP winter adventure training manual*. Ottawa, ON: Department of National Defence.

A3-012 B-GG-302-002/FP-001 DAD. (1982). *Basic cold weather training*. Ottawa, ON: Department of National Defence.

C3-002 ISBN 0-00-653140-7 Wiseman, J. (1999). *The SAS survival handbook*. Hammersmith, London: HarperCollins Publishers.

C3-003 ISBN 1-896713-00-9 Tawrell, P. (1996). *Camping and wilderness survival: The ultimate outdoors book*. Green Valley, ON: Author.

C3-004 ISBN 1-85227-866-8 Davies, B. (1999). *SAS encyclopedia of survival*. London, England: Virgin Publications.



## ERECT AN A-FRAME SHELTER

1. Select a level area with good drainage.
2. Ensure the area is free of hazards, (i.e., overhanging branches that may fall, too close to roadways etc).
3. Zip two shelter halves together, ensuring flap covers zipper.
4. Attach cord to the grommets at both ends near the joined zipper.
5. Suspend both ends from trees or other objects so that the centre is approximately waist high.
6. Stretch out the sides and secure them using sticks.
7. Attach cord to the middle grommets on each side and tie the cord to pull the side out and give more room to the inside.
8. When possible, dig a drainage trench on both sides.

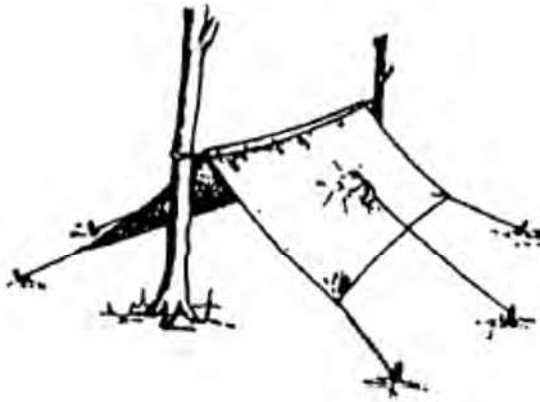


Figure A-1 A-Frame Shelter

## LEAN TO SHELTER

1. To build a lean-to, two trees must be found with fairly firm, level ground between them. These trees are called the uprights. The distance between these two trees will be the opening of the lean-to.
2. Next, a ridgepole must be found. This must be a fairly thick pole, around fist size in thickness, and should be long enough to reach from one upright to the next.
3. The ridgepole should be placed behind the uprights from the viewpoint of the person facing the uprights. Natural notches in the uprights may be perfect to hold the ridgepole. If these are not available, the ridgepole will be laced onto the uprights using the square lashing. (It may be a good idea to lash the ridgepole on even when using natural notches to ensure the pole is secure). After the square lashing is completed, the ridgepole should be very secure. In fact, the people who will be using the shelter should be able to sit on it and it should not move.
4. The height of the ridgepole should be the height of the waist of the tallest person if a group will be staying in the shelter. This will make the shelter opening fairly low, which will help conserve heat inside the shelter. For a one person lean-to, the ridgepole should be placed lower, at mid thigh height.
5. Find approximately 8 poles about 5-7 cm in diameter. These will serve as the pole framework for the lean-to and will be known as the spars. They will be tied onto the ridgepole using the square lashing, and will run from the ridgepole to the ground. Spread these evenly, going from just inside one upright to the other.

6. The number and the height of the people living in the lean-to will determine the length of the spars. For a group, the spars should be slightly longer than the height of the tallest person. If the shelter will sleep one person, the spars should be about the same height as the chest of that person.
7. Find approximately 8 small flexible poles that will run horizontally across the spars. These will be known as the ribs. The length of these should be that of the distance between the two spars closest to the uprights. These ribs should be woven horizontally through the spars. If long enough ribs cannot be found shorter ones can be used. Weave the shorter ribs as far as possible and then start at the point ended with a new piece.
8. A pole around the same thickness as the ridgepole should be found and laid on top of the bottom of the spars. This is known as the foot log.
9. Vertical poles will be placed from the ground to the spars on the furthest sides of the lean-to. These do not need to be laced onto the spars. They should be tall enough to reach from the ground to the spar, and since the spar is on a slope, the vertical poles will need to be of varying heights.
10. Place boughs with the stem toward the ridgepole and the top of the bough upwards (the glossy side).
11. Make a row going right across the bottom with the boughs close together.
12. For the next layer, lay the boughs into the first layer; again with the top of the bough facing up.
13. Repeat step 12 until the top is reached and the boughs cover the lean-to like shingles cover a roof.
14. Weave the stems of more boughs into the layers that now cover the lean-to. These layers should be thick enough to be waterproof; about 15cm thick is a suggestion.
15. For the sides of the lean-to, boughs can be placed as in the steps above until the ground is reached.
16. If a fire has been made, extend boughs about a foot down the front of the lean-to to keep out rain or wind, but allow the heat from the fire to enter.
17. Boughs can also be used to cover a part of the front as described above if there is no fire. Just leave an opening for a door in case quick exit is required.

## **CIVILIAN-PATTERN TENTS**

Civilian-pattern tents come in various sizes and forms and, therefore, have different ways to be erected. Users should read the information booklets provided with the tent in order to correctly erect it.

## **ARCTIC TENT ASSEMBLY AND PITCHING**

1. Lay out the outer tent, flat apex in the centre and panels outwards with the inside facing upwards, and the door zipper fastened.
2. Lay out the inner tent liner on top of the outer tent, with the inside facing upwards.
3. Attach the top and bottom stovepipe toggles. By lining up the stovepipe openings of the outer and inner liner and attaching the top and bottom toggles, then the inner and outer portions are positioned properly.
4. Working either way, attach the remaining toggles. Use the corners of the tent as checkpoints to make sure no toggle was missed. Continue until all toggles are through the seam grommets of the inner liner.
5. Thread the long or the lower drying line through the drying line keepers. To get the drying line keepers through the inner seam splits, feel through the liner at the peak or centre of the doorway, follow up the seam on the panel of the outer tent, when you reach the drying line keeper, insert it through the split seam of the liner and thread the drying line on. There is a keeper on every seam. This means there are 10 keepers for the lower drying lines.

6. Thread on the short or upper drying line. Start at the door seam again and carry out the same drill as for the lower drying line. There will be a keeper on each side of this one and then one on every second seam. This means that there will be six drying line keepers on the top.
7. Insert the spike of the tent pole through the apex of the inner and outer tents and lash these three securely.
8. Attach the five bottom tie-down pegs. To do this, run a rope through the bottom wall eyelets of the outer and inner tents, tying the pegs to the outside.
9. Attach the wall guy lines to the guy line loops on the outer tents. To do this, thread the guy lines through one hole of the runner then through the guy line loop of the tent and back through the outer hole of the runner. Tie a figure of eight knot on this end of the guy line to prevent it from slipping out of the runner hole. The other end of the guy line is threaded through the eye of the peg of the line and is prevented from being pulled out of the peg by a slipknot. This method of attaching guy lines must be used as the rope will invariably freeze in the peg hole and to reverse of the above procedure will prevent tightening of guy lines. In addition, when the ground is too hard, or snow too soft and deep, the pegs can be secured by wrapping several turns of the guy line to the centre of the peg and either freeze the peg in the snow or place a large stone or log on top of the peg.
10. Attach the five top guy lines in the same manner.
11. The tent is now assembled and ready for use, however, when the tent is pitched and the doors are opened quite often the zippers become disengaged. To prevent this, close the zipper and near the top of the door, sew the track of the zipper together. This will act as a stopper, preventing the zipper from becoming disengaged. Do this to the outer and the inner tent zippers.
12. The fly screen is of no use in cold weather and should be rolled up and secured by the ties running each way from the door to the outside corners. Roll and secure this screen, only after the tent has been pitched. If done when the tent is struck, the tent will be misshapen when pitched.
13. To prevent the guy lines from being left hanging loose and becoming tangled, roll the guy rope around the tent peg and in the guy rope loop. In most cases the guy rope loops are sewn too far down and the loop is not large enough for the peg to fit in. To overcome this, thread short pieces of the rope through the guy line loops and tie with a square knot. Adjust the knot so the peg will fit securely in it.

### **STRIKING AN ARCTIC TENT**

1. Members take positions. One person is inside at the tent pole. Three people are at the guy ropes located above the left side tie-down point, above the right side tie-down point, and above the back tie-down point. One person is supervising the procedure and giving orders.
2. The order "pull pole" is given.
3. The person inside the tent pulls the bottom of the pole towards the door and lowers the tip to the rear of the tent. That person disconnects the lower section or telescopes the pole, depending on which pole is being used.
4. The member at the back guy rope grasps the apex of the tent.
5. The person at the pole backs out of the door, carrying the pole sections and base plate, and zippers the door closed.
6. The two persons at the right and left side guy ropes roll up the guys and secure them to the tent. They pull out the remaining pegs, roll up the guys and secure them to the tent.

7. The members pull the tent to the rear and spread it out on the ground.
8. The order “shake out” is given. Members spread around the tent, shake the snow/ice/sand/etc. out and fold the tent p for stowing.

### **FOLDING AN ARCTIC TENT FOR STORAGE**

1. Lay out the tent with the tent door up and in the centre and with zippers closed.
2. Make sure there are no double folds on the underside.
3. Hold the apex securely: the first long fold is made by folding the wings to the centre, with the pegs straight up and down.
4. Straighten and flatten out.
5. Fold in snow flaps across the base.
6. Make the second long fold, repeating the action as for the first long fold.
7. Straighten and flatten out.
8. Make the third long fold.
9. Straighten and flatten out;
10. Fourth long fold – flip folds one on top of the other.
11. Make the first cross fold: fold in base at the top of wall.
12. Make the second cross fold by folding the apex into the base of the inserted pole section allowing approximately 4 inches of loose fold at the base of the pole section to avoid wear and tear: top of pole should be offset.
13. Third cross fold – place the folds one on top of the other.
14. Insert in the bag (base plate and spare pegs have already been placed in the bag).
15. Place the remaining two pole sections in the bag alongside the tent.
16. Tie up the top of the tent bag.

## PITCHING AND ANCHORING A MODULAR TENT

The key stages for pitching and anchoring a modular tent are as follows:

1. Lay the frame parts on the ground and erect the arch frames (A frames), leaving the uprights folded and placed at equal distances one from the other.

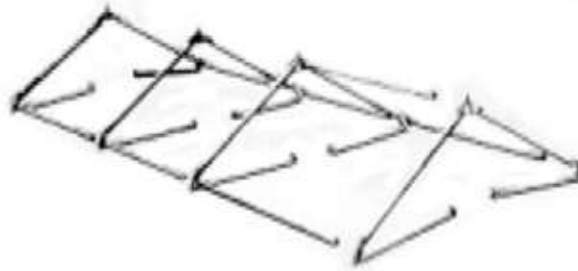


Figure A-2 A Frame

2. Join the tie beams (purloins) to each of the arches at the summit and roof edges, locking them into place.

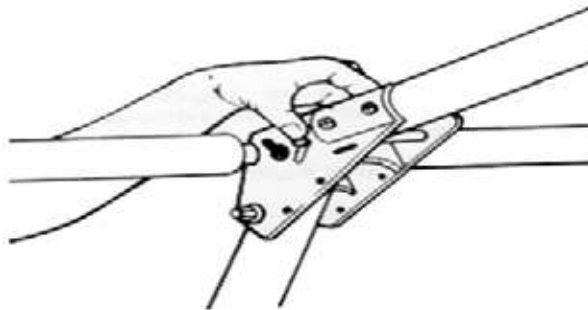


Figure A-3 Joining of the Tie Beams

3. Generally using one person per arch, raise one side of the frame.



Figure A-4 Raising One Side

4. Before lacing the tent canvas together, close all doors. Lace the tent canvas together, placing them on the frame and attaching them at the top of the arches.

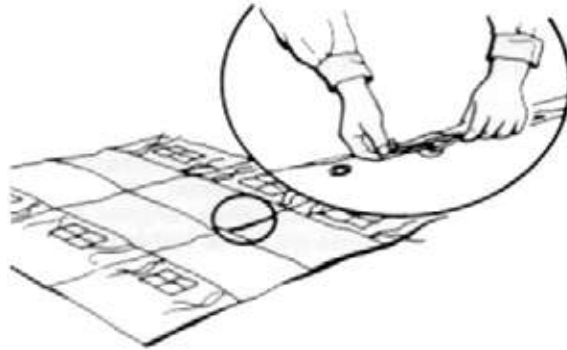


Figure A-5 Lacing the Tent Canvas



Figure A-6 Half of the Tent Is Laced

5. Raise the other side of the frame.
6. Attach the stays without tensioning them and lace the rest of the canvas.
7. Using straps, attach the canvas and lining to the ties on the edges of the roof.
8. Align the arches and adjust the canvas.
9. Raise the tent completely.
10. Drive pickets in each foot from the outside.
11. Tension the stays.
12. Attach the ground canvas using sandbags or earth.
13. Dig drainage trenches as required.

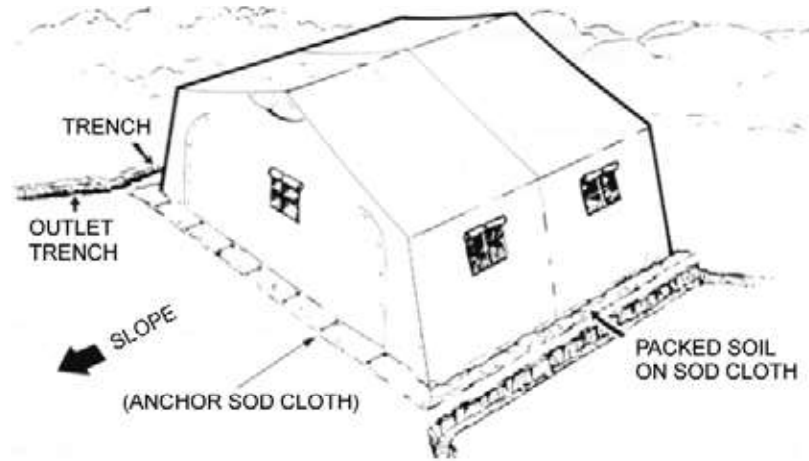


Figure A-7 Modular Tent

### **STRIKING A MODULAR TENT**

1. Release cables and anchors and remove them if the wind is not too strong. Otherwise, leave them in place until the tent has been disassembled.
2. Remove earth or sandbags covering the ground sheet.
3. Undo adjusting stays from the edge of the roof.
4. Unlace the sides of the tent and lower one side.
5. Remove the lining strapped to the frame, and fold it.
6. Lower the other side of the tent, unlace tent parts, remove them from the frame and fold them.
7. Disassemble the frame and pack the components.
8. Take necessary steps to clean and dry components as required, with the shortest possible delay.

### **FOLDING THE CENTRE CANVAS**

1. After having removed the canvas from the frame, close the windows and doors.
2. Stretch the canvas inside a building on the floor, on a dry and clean surface.
3. Clean the canvas and ground sheet using a broom.
4. Fold the ground sheet towards the centre.
5. Fold the canvas on its length towards the centre of the sheet, until the canvas is long and narrow.
6. Fold the canvas in the other direction towards the centre.

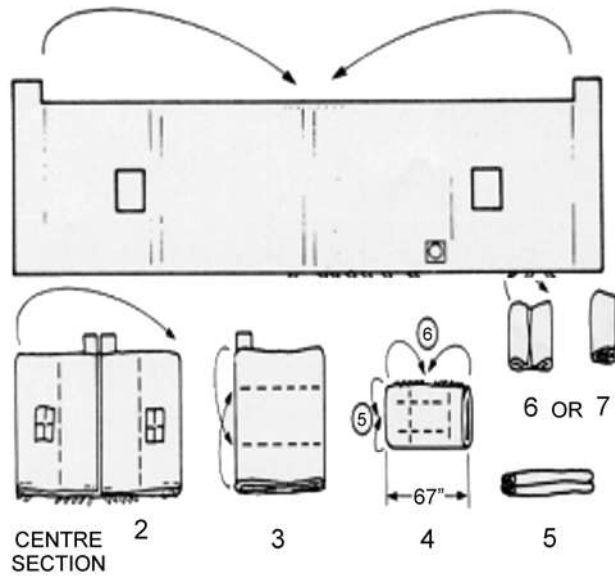


Figure A-8 Folding of the Centre Section

### FOLDING THE OUTSIDE WALLS (DOORS)

1. As for the central canvas, clean the canvas and fold the ground sheet towards the inside.
2. Fold the point towards the inside part.
3. Fold the canvas towards the centre and secure it.

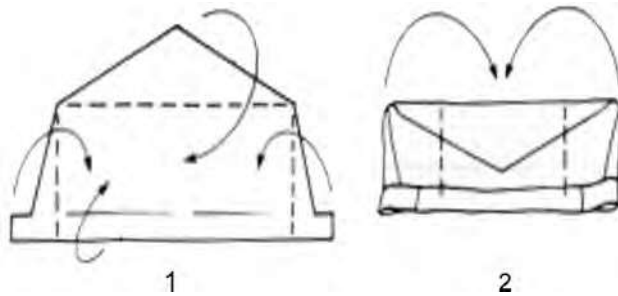


Figure A-9 Folding The Outside Walls