

## **SAFETY WHILE WORKING ON FRAGILE ROOFS**

Fragile Roof is defined as “ As a roof that does not have safety support and cannot withstand the weight of a person and any load he/she is carrying” .

The **FRAGILITY** of a roof depends on the composition of the material of manufacture. The following factors are also taken into consideration :-

1. Thickness of the material
2. The span between supports
3. Sheet profile
4. The design of the supporting structure (i.e. purlins)
5. The type, number, position and quality of fixtures
6. The age of the material on roof
7. The weather and other conditions (like chemical fumes etc.) to which the sheets are exposed.

**IT IS THEREFORE VERY IMPORTANT TO CONFIRM THE FRAGILITY OF A ROOF BEFORE THE WORK STARTS. IF THERE IS ANY DOUBT THE ROOF SHOULD BE TREATED AS ‘FRAGILE’ UNLESS OR UNTIL CONFIRMED THAT IT IS NOT.**

It is “POSITIVELY DANGEROUS” to assume that a roof is non-fragile without checking this out beforehand.

### **FACTS ABOUT FRAGILE ROOF :**

1. Merely by appearance, it is not possible to detect a cracked/broken sheet.
2. Fragile roofs are dangerous as they can break at any time without notice when a person steps on it.
3. Accidents with fragile roofs are generally (99%) fatal.
4. Victims are generally the persons engaged in short duration maintenance or cleaning.
5. The person on roof cannot visualize the depth of height while working on it.
6. Every fragile roof accident can be prevented.
7. There cannot be an accident if person does not step or roof accidentally or deliberately.
8. Fragile sheets shatter and break , without warning under a person’s weight.
9. Walking on the line of bolts (used for fixing the sheets with purlin) is not safe as in reality this is line walking is “ walking on a ‘TIGHTROPE’.”

## **MAJOR REASONS FOR FRAGILE ROOF ACCIDENTS**

1. Falling through gaps or holes in the roof.
2. Stepping directly on sheet..
3. Falling / stepping on roof while changing/moving the cat ladders.
4. Sliding of (improperly supported) cat ladder and person falling/stepping on roof.
5. Falling from the edge of the roof.
6. Loosing balance and accident falling/stepping on fragile sheet while walking along the purlins.
7. . Falling through the fragile roof light even though the remaining roof is non- fragile.

## **METHODS FOR PREVENTION OF ACCIDENT**

1. Person should not step on on the fragile roof for any work.
2. The same work can be done without going on roof.
3. Asses the risk and then take action.
4. No person should go on roof top , unless he is trained in the work.
5. Cautionary board to be displayed near the access ladder to the roof.
6. Secured means of access and exit from the roof should be provided.
7. Edge protection (main guard rail 910 mm above the edge, toe board at least 150 mm high, and intermediate guard rail). to be provided.
8. Cat ladder, anchorage, life line and safety belt must be provided.
9. Traveling cat ladder , may be provided , to avoid person stepping on the roof directly.
10. Entry to fragile roofs area, shall be only with (a)  
work permit system  
(b) Locking the entry to the roof access ladder.
11. Provision of lifeline and anchorage point for the purpose of using with safety belts shall be made.
13. Never allow a person to walk along the line of bolts of purlin.
14. The number of cat walk ladders issued to each person on roof is enough.  
There must be at least 3 ladders available to each person on the roof.

## **SAFETY PRECAUTION TO BE TAKEN WHILE WORKING NEAR A FRAGILE ROOF**

Protection is needed when anyone passes or works nearer than 2 m to fragile material / roof .

- a) During access along valley gutters in a fragile roof area.
- b) When fragile roof lights or smoke vents are contained in non-fragile roof.
- c) During access to work areas on a fragile roof.
- d) Provide full edge protection (top rail, intermediate rail and toe board) along the fragile roof to prevent access to it.

## **ASSOCIATED ACCIDENTS WITH ROOF WORK**

- a) Material falling from the edge of the roof after sliding
- b) Falling of hot tar on the persons below
- c) Material falling through the roof after impact or throwing by person.

## **PRECAUTIONS TO BE TAKEN TO AVOID ABOVEMENTIONED ACCIDENTS.**

- 1. Do not allow
  - a) Throwing tools on roof.
  - b) Running on roof.
  - c) Storing / keeping hot tar near edge.
  - d) Bending / leaning over the hole in the roof for any work/communication.
- 2. The persons on ground involved in passing the material upwards, shall use all the Personal Protective Equipments -
  - a) Helmet
  - b) Face shield
  - c) Apron
  - d) Rubber hand gloves
  - e) Gumboots
- 3. The hook and the rope used for taking the material upwards are strong and proper.
- 4. To ensure that the method of taking fragile sheet or glass sheet upwards is safe and approved.

## **GENERAL SAFETY INSTRUCTIONS FOR WORKING ON FRAGILE ROOFS**

- 1. Do not step on any sheet without obtaining proper safety training.
- 2. Before starting work (i.e. before climbing on the access ladder) ensure that the supervisor is available at site and he has got the work permit issued by the authorised person.
- 3. Use suitable and sufficient access ladders, cat ladders, crawling boards etc. and fix them properly on the roof.

4. Do not use damaged/unsuitable ladders. Do not use makeshift arrangement.
5. Use safety belts and anchor them properly with the anchorage points on the roof or to the lifeline available on roof or fall protection device.
5. Never step directly on any part of the roof. Always walk or step only on the ladders.
6. It is not safe anytime to walk on purlins. Do avoid it.
7. Do not run on roof.
8. Do not cut any sheet on the roof.
9. It is necessary to walk on ladders (and not on roof directly) while transporting the sheets on roof.
10. While working on the roof, ensure that no loose items are dropped down.
11. Always use suitable and strong ropes for taking sheets from ground to the roof.
12. Never leave any loose items (tools, cut sheets, broken sheets) on the roof after the work is over.
13. Never use any electrical equipment without proper earthing.
14. Ensure sufficient illumination while you are working on the roof.

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