KEY ISSUES RELATING TO FIRE PROTECTION OF THATCHED ROOFS

The national specification for the construction of thatch roofs can be found in SANS 10407 (Thatched Roof Construction) as well as the National Building Regulations where applicable. While the SANS 10407 covering only normal construction details for thatched roofs (conventional thatched roofs) the fire safety requirements can be found in SANS 10400-T (Fire) which specifies the following:

"4.12.2.3 Buildings and lapas with a thatched roof plan area greater than 300 m2 or which are closer than the greater of 4,5 m to any boundary and the safety distances from an existing building derived from 4.2, subject to 4.12.2.1, shall be provided with additional fire protection SYSTEMS that are acceptable in relation to the actual roofing system that is to be used,

4.12.2.7 A fire protection system applied to a thatch roof shall be maintained as specified by the manufacturer of such systems".

The various fire protection systems include fire retardant spray applications, pressure impregnated fire retardant systems, fire blankets, smoke detectors, fire alarms, drencher and sprinkler systems, fire extinguishers, and fire walls, amongst others.

Untested or insufficiently tested fire protection systems can have dire consequences for the life span of the thatched layer. Installation or application of untested systems by unaccredited or unknowledgeable contractors can also lead to premature decay and breakdown of the thatched layer. This may leave the client and possibly, by extension the insurer liable for costly and unnecessary repair works.

Chemical Treatment

To determine whether a product has been tested for use on thatched roofs, Firelab can be contacted which is on the CSIR campus in Pretoria.

Office: 012 349 2929 Mobile 082 892 4565 Email address: kobus@firelab.co.za; adri@firelab.co.za

It is important to note that the use of a fire retardant can never make a thatch roof non-combustible. The use of a suitably fire-retardant system changes the fire properties of the roof regarding the ease of ignition and the reduction of heat of combustion once ignited if the system is maintained properly in accordance with the respective requirements. The quality and condition of the roof is very important for the application of a fire-retardant system, the better the compaction the better the functioning of the system.

The application of a fire-retardant system must never seal the thatch layer as the thatch layer must be able to breath. This also apply to non-impervious membranes used in the thatch layer. This will result in condensation with trapped moist in the thatch layer which will cause the thatch layer to rot.

The result of the use of a fire-retardant system is a change in the classification of a combustible roof such as a thatched roof. When the system is tested in accordance with with SANS 10177, Part 12, the roof with the system will be classified as a Class A, Class B or Class C as stipulated in Clause 12.2, SANS 10400-T. The

Classification of the roof is used by Fire Engineers to apply the safety requirements in terms of the National Building Regulations.

Preparation of a thatched roof before treatment

Before the fire-retardant treatment of a thatched roof' can be done, the roof must be serviced as detailed in "A Guide to Thatch Construction in South Africa". The method of pulling out a handful of thatch, cutting it off and stuffing it back so that the roof is full of spots is completely unacceptable. Another unacceptable way is to ram bundles of short thatch into the roof in some places. These malpractices may cause the roof to leak later.

Tar treated sisal twine

During each service the tar treated sisal twine MUST be re-tightened to restore a tight compaction. Dense compaction prevent wind damage and reduces oxygen and water penetration in the roof. This method also prevents the twine from weathering and breaking. Polypropylene (plastic) is not allowed.

Lightning Conductors

The Flash Density of an area determines whether lightning conductors should be installed (see SANS 10400-T (Fire).

4.12.2.5 Buildings and lapas with thatched roofs in areas with a lightning flash density greater than 7 (see SANS 10313) shall be provided with a lightning protection system designed and installed by competent persons in accordance with the relevant requirements of SANS 10313 and SANS-62305-3.

4.12.2.6 Buildings and lapas in which wire or metal rods (conductive sways) are used in the fixing of the thatch layer shall, in areas with a lightning flash density greater than 3 (see SANS 10313), be provided with a lightning protection system, designed and installed by competent persons in accordance with the relevant requirements of SANS 10313 and SANS 62305-3.

Lightning conductors must be earthed according to specification requirements, but the ground is the biggest enemy these days because copper cables are stolen from substations and create a bigger problem than lightning as such.

The presence of steel or any type of conductor in the roof structure presents a lightning conduction hazard if the roof is not protected. It is therefore essential that the SANS regulations be followed rigorously to prevent any damage from lightning. Under no circumstances should steel pipes, cables or electric wiring be in direct contact with the thatch.

Chimneys

Chimneys shall be designed and built using only non-combustible materials with suitable insulation properties equal to that of a solidly built 200 mm think masonry wall unless based upon a rational design, prepared by a competent person.

The top of the stack must extend for a radius of at least one metre (measured from the top of the stack, closest to the roof covering) above the thatch covering of the roof. Securely build into the flue around the edges, or support on mild steel dowels, a spark-arrester consisting of a piece of 10 x 10 x 1 mm (minimum) stainless steel wire mesh, fitted 700 mm from the top, covering the full width of the flue.

Spark Arrestors

A Spark Arrestor is stainless steel wire mesh inserted into the chimney at a minimum of 700 deep. It is recommended to have chimneys cleaned/swept at least once a year before winter season.

Steel Flue Pipes

It is critical to ensure the flue pipe design and installation is done in such a manner that it will not cause a fire hazard to adjacent material. The flue pipe should not be connected to a shaft or duct which forms part of any ventilation system.

Where a chimney is provided with a flue lining, such lining shall be made of material which will withstand any action of the flue gases and will resist, without cracking or softening, the temperatures to which it might be subjected, and it shall extend throughout the full height of the chimney.

Services

Electrical power supply and telephone cables should enter the building by means of underground ducts/conduits, and all electrical wiring in the roof space should be run in plastic conduits, with all junction boxes properly sealed.

Electrical and other services (telephone and TV) should always enter a building at ground level. No cables or wiring to be run through the thatch.

Bird Mesh

It is also recommended that if bird mesh is stretched over the thatch to prevent damage by baboons and monkeys, it should also be earthed. This can best be done by fitting a 6 mm copper earth cable to the bottom edge of the rafter beams to secure the bottom end of the bird mesh. The copper earth cable can then be earthed to remove any potential difference that may exist.

Sprinkler and Drencher water systems

While a sprinkler system protects a building from internal fire, one of the best measures for preventing fires from spreading between thatched roofs is the installation of a drencher water system. A dedicated drencher water system cascades water over and down all the exposed thatch in the event of a fire.

Fire Blankets

The fire blanket is made of glass fibre fabric and stitched onto the spray layer. The purpose of the thatch fire blanket is to help prevent the spread of flames in the event of a fire breaking out in a thatched roof and help prevent the burning thatch from falling down inside the building.

Safety Distances

Every building has a safety distance requirement based on the type of roof and the openings in the walls. This is not only applicable to boundaries of adjacent properties but also buildings erected on the same premisses. SANS 10400-T (Fire) stipulates that any thatch roof covering with a roof-plan area greater than 20 m^2 must be constructed at least 4,5 m from any boundary. This is to prevent a fire from spreading to a neighbouring property, but also to other buildings erected on the same property. If a thatched lapa or structure has been erected closer 4,5 m a fire safety design is required in terms of of the building regulations to ensure adequate fire safety.

A competent person (fire engineering) must perform a rational assessment to determine the acceptability of erecting a thatched building against an existing building.

Buildings and lapas with a thatched roof plan area greater than 300 m2 or which are closer than the greater of 4,5 m to any boundary and the safety distances from an existing building, shall be provided with additional fire- retardant systems that are acceptable in relation to the actual roofing system that is to be used, and maintained as specified by the manufacturer of such systems.

Lightning flash density

Buildings and lapas with thatched roofs in areas with a lightning flash density greater than 7 (see SANS 10313) shall be provided with a lightning protection system designed and installed by competent persons in accordance with the relevant requirements of SANS 10313 and SANS 62305-3.

Wire Sways

Buildings and lapas in which conductors (wire sways) are used in the thatch layer shall, in areas with a lightning flash density greater than 3 (see SANS 10313), be provided with a lightning protection system, designed, and installed by competent persons in accordance with the relevant requirements of SANS 10313 and SANS 62305-3.

Covering of thatched roofs with tiles, sheets, cement, etc.

The covering of any thatched roofs is undesirable because the origin of a fire cannot be easily determined, and it takes much longer to remove the covering to get to the fire. The gas and smoke inside the burning building is also a major safety risk for the firemen.

Safety guidelines for thatched roofs also include:

- Smoke detectors or fire alarms must be installed in the highest part of the roof.
- Check all electrical systems regularly and unplug all non-essential electrical equipment.
- Make sure that a fire extinguisher is at hand.
- No gas bottle or dustbin may stand under the overhang of a thatched roof.
- Surroundings around a thatched roof must be free of vegetation that can be a fire hazard
- Since fires often start in kitchens and bathrooms, ceilings are desirable in these areas.

THATCHERS ASSOCIATION OF SOUT AFRICA
Private Bag X1015
LYTTELTON
0140

Fax 086 6409 151
Mobile 083 283 8429
Email address admin@sa-thatchers.co.za