CLAIMS

We claim:

1. A fire protection system for a combustible concealed space~~, the combustible concealed space~~ having~~comprising:~~

a pitched roof constructed of a plurality of generally spaced apart structural members extending downwardly and outwardly from a ridgeline of the roof to an eave of the roof, the plurality of structural members defining respective channels therebetween, ~~and~~

the fire protection system comprising:

a first row of sprinklers nearest the ridgeline, the sprinklers being mounted to a first branch line extending generally parallel to the ridgeline, wherein:

(i) each sprinkler is positioned within a respective channel,

(ii) consecutive sprinklers along the first row are spaced apart having no less than one channel therebetween without a sprinkler of the first row positioned therein, and

(iii) consecutive sprinklers along the first row are spaced apart having no more than five channels therebetween without a sprinkler of the first row positioned therein, and;

a second row of sprinklers mounted to a second branch line extending generally parallel to the first branch line, the second row of sprinklers being positioned downslope from the first row of sprinklers, wherein:

(i) each sprinkler of the second row is positioned within a respective channel,

(ii) consecutive sprinklers along the second row are spaced apart having no less than one channel therebetween without a sprinkler of the second row positioned therein, and

(iii) consecutive sprinklers along the second row are spaced apart having no more than five channels therebetween without a sprinkler of the second row positioned therein; and

wherein:

(i) each sprinkler of the second row is placed within a different channel from each of the sprinklers of the first row; and

(ii) a farthest number of channels between a sprinkler of the first row and a sprinkler of the second row is three channels without any sprinkler of the first row or sprinkler of the second row.

2. The fire protection system of claim 1, wherein the first row of sprinklers is positioned within approximately thirty centimeters (approximately twelve inches) horizontally of the ridgeline.

3. The fire protection system of claim 1 or claim 2, wherein each channel is approximately 0.9 m (three feet) wide.

4. The fire protection system of ~~any one of the previous claims~~claim 1 or claim 2, wherein each channel is approximately 0.6 m (approximately two feet) wide.

5. The fire protection system of any one of the previous claims, wherein horizontal spacing between the first row of sprinklers and the second row of sprinklers is approximately between ~~approximately~~ 1.8 m (six feet) and ~~approximately~~ ten and a half meters (thirty-five feet).

6. The fire protection system of any one of the previous claims, wherein the horizontal spacing between the first row of sprinklers and the second row of sprinklers is approximately between ~~approximately~~ 1.8 m (six feet) and ~~approximately~~ 3.6 m (sixteen feet).

7. The fire protection system of any one of the previous claims, wherein each sprinkler of the first row of sprinklers is mounted to the first branch line projecting upwardly therefrom.

8. The fire protection system of any one of the previous claims, wherein each sprinkler of the first row of sprinklers includes a fluid deflector configured to produce a generally elliptical spray distribution pattern.

9. The fire protection system of claim 1, wherein each sprinkler of the second row of sprinklers is mounted to the second branch line in a generally perpendicular orientation relative to the pitched roof.

10. The fire protection system of any one of the previous claims, wherein each sprinkler of the second row of sprinklers includes a fluid deflector facing downslope.

11. The fire protection system of claim 10, wherein the deflector is configured to produce a substantially downslope distribution pattern.

12. A method of positioning fire protection sprinklers in a combustible concealed space having a pitched roof constructed of a plurality of generally spaced apart structural members extending downwardly and outwardly from a ridgeline of the roof to an eave of the roof, and the plurality of structural members defining respective channels therebetween, the method comprising the steps of:

mounting a first row of sprinklers to a first branch line proximate the ridgeline and extending generally parallel to the ridgeline, wherein:

(i) each sprinkler is positioned within a respective channel,

(ii) consecutive sprinklers along the first row are spaced apart having no less than one channel therebetween without a sprinkler of the first row positioned therein, and

(iii) consecutive sprinklers along the first row are spaced apart having no more than five channels therebetween without a sprinkler of the first row positioned therein, and;

mounting a second row of sprinklers to a second branch line extending generally parallel to the first branch line positioned downslope from the first branch line, wherein:

(i) each sprinkler of the second row is positioned within a respective channel,

(ii) consecutive sprinklers along the second row are spaced apart having no less than one channel therebetween without a sprinkler of the second row positioned therein,

(iii) consecutive sprinklers along the second row are spaced apart having no more than five channels therebetween without a sprinkler of the second row positioned therein,

(iv) each sprinkler of the second row is placed within a different channel from each of the sprinklers of the first row; and

(v) a farthest number of channels between a sprinkler of the first row and a sprinkler of the second row is three channels without any sprinkler of the first row or sprinkler of the second row.

13. The method of claim 12, further comprising the step of positioning the first branch line within approximately thirty centimeters (approximately twelve inches) horizontally of the ridgeline.

14. The method of claim 12 or claim 13, further comprising the step of positioning the second branch line downslope from the first branch line at a location defining a horizontal spacing

between the first row of sprinklers and the second row of sprinklers approximately between ~~approximately~~ 1.8 m (six feet) and ~~approximately~~ ten and a half meters (thirty-five feet).

15. The method of any one of claims 12-14, further comprising the step of positioning the second branch line downslope from the first branch line wherein the horizontal spacing between the first row of sprinklers and the second row of sprinklers is approximately between ~~approximately~~ 1.8 m (six feet) and ~~approximately~~ 3.6 m (sixteen feet).

16. The method of any one of claims 12-15, wherein the step of mounting the first row of sprinklers to the first branch line comprises mounting the sprinklers projecting upwardly from the first branch line.

17. The method of any one of claims 12-16, wherein the step of mounting the second row of sprinklers to the second branch line comprises mounting the sprinklers projecting perpendicularly to the pitched roof.

18. The method of any one of claims 12-17, wherein the step of mounting the first row of sprinklers to the first branch line comprises mounting sprinklers having respective fluid deflectors configured to produce a generally elliptical spray distribution pattern.

19. The method of any one of claims 12-18, wherein the step of mounting the second row of sprinklers to the second branch line comprises mounting sprinklers having fluid deflectors facing downslope.

20. The method of claim 19, wherein the fluid deflectors of the sprinklers of the second row are respectively configured to produce a substantially downslope distribution pattern.