



**Aaberg Claim Professionals, Inc**

# Estimating Roof Loss

Jim Aaberg

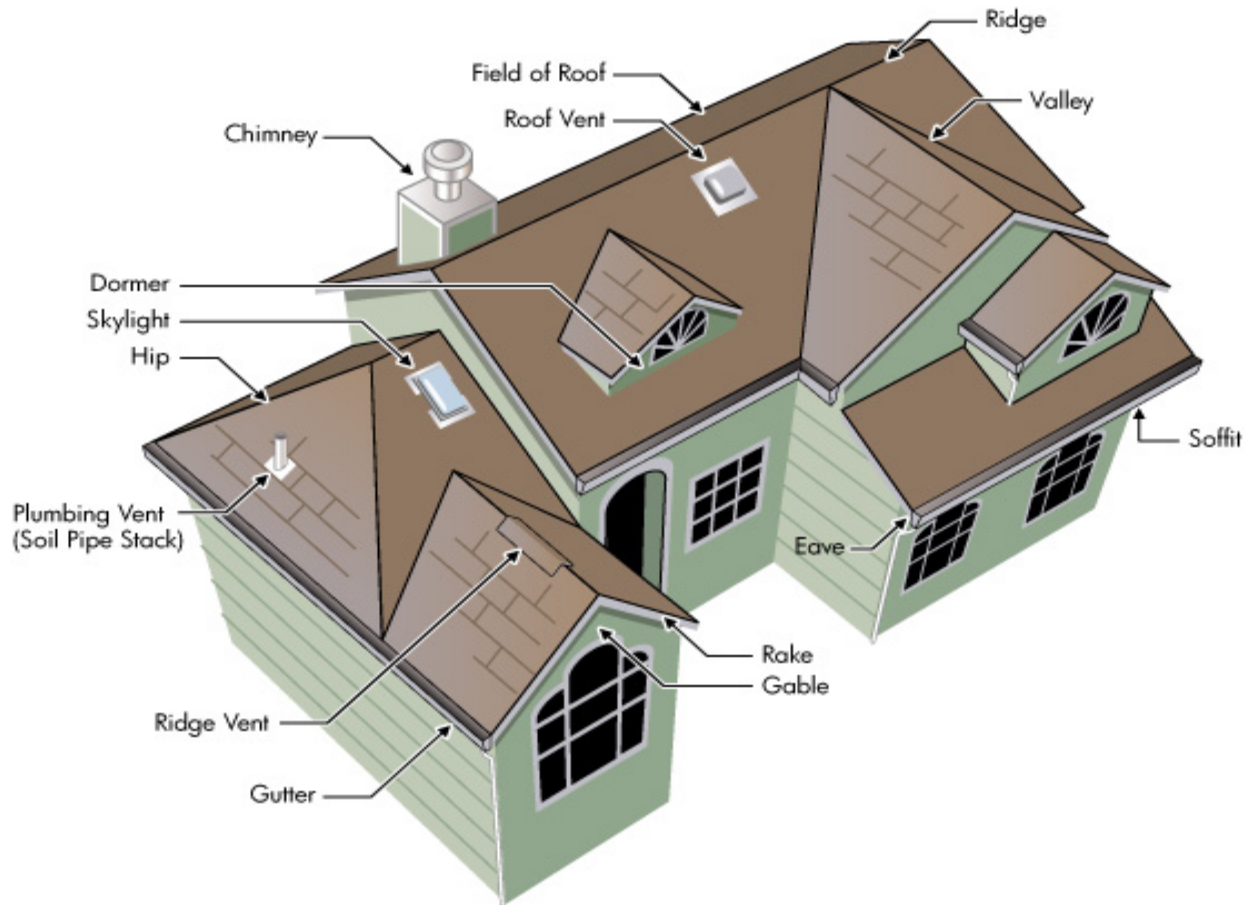
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# Roof Inspections

- ▶ 1.) Identify the roof design/components
- ▶ 2.) Identify the roof material
- ▶ 3.) Identify damage
- ▶ 4.) Identify the source of ensuing damage.



# Components of a typical Roof system

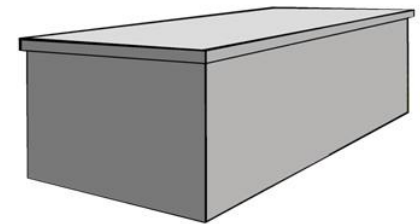
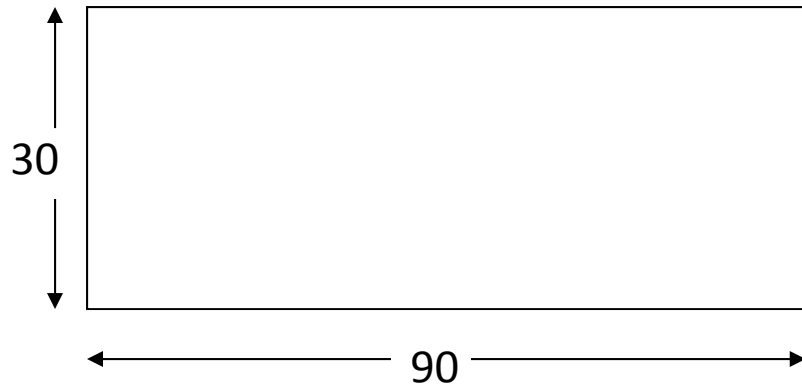


# Types of Roof Design

- ▶ 1. Flat
- ▶ 2. Gable
- ▶ 3. Hip and Ridge
- ▶ 4. Mansard
- ▶ 5. Gambrel



# Flat Roofs – common in commercial construction.



**The formula for a Flat Roof is:**

Eave Length X Eave Width = Square footage

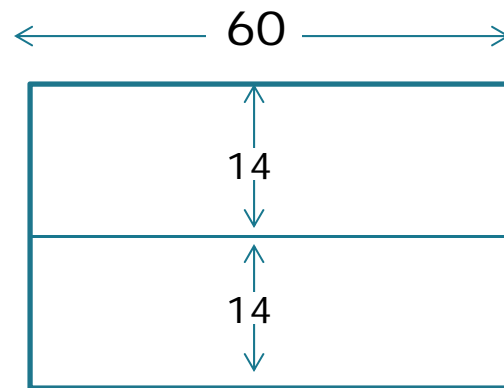
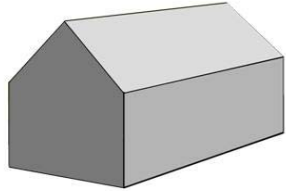
The formula for converting to Squares:

Total Square footage  $\div$  100 = Number of Squares

**30 x 90 = 2,700 square feet or 27 squares**



# Gable Roof – common residential design



Roofs are measured in Squares / 1 square = 100 square feet

The formula for a Gable Roof is:

Rafter Length X Eave Length = Square footage

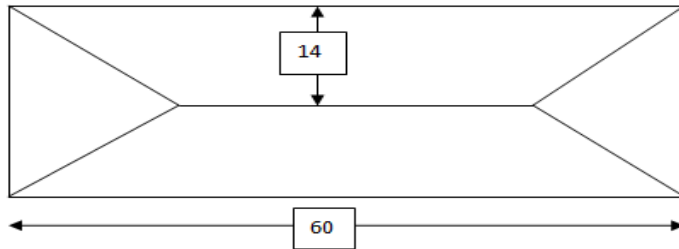
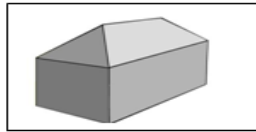
The formula for converting to Squares:

Total Square footage  $\div$  100 = Number of Squares

**14(2) x 60 = 1,680 square feet or 16.8 squares**

# Hip and Ridge – wind resistant

HIP AND RIDGE DESIGN



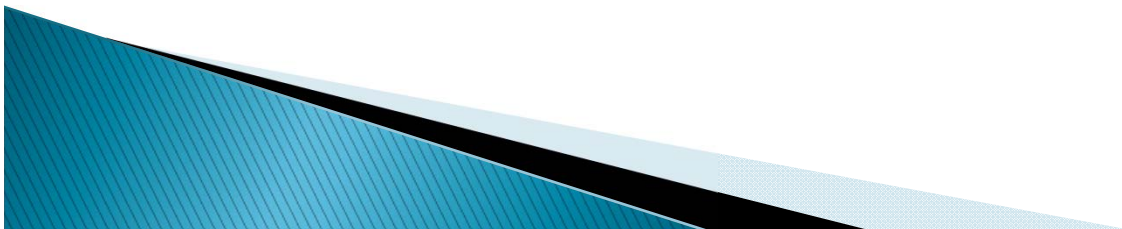
**The formula for a Hip Roof is:**

Rafter Length X Eave Length = Square footage

The formula for converting to Squares:

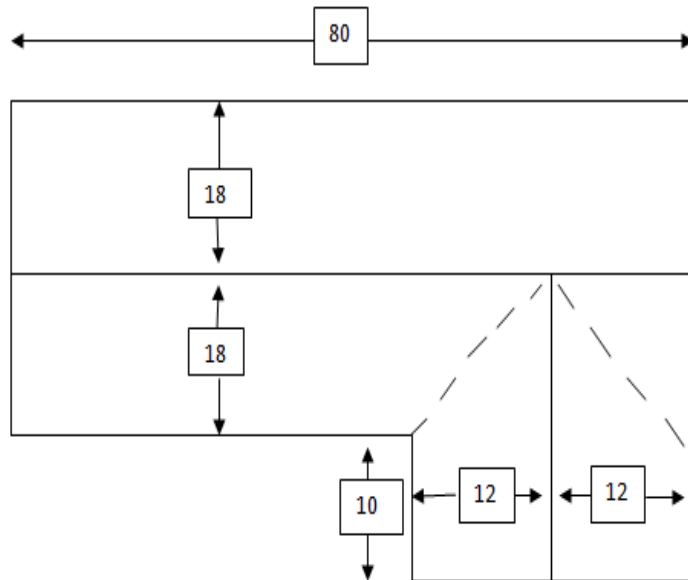
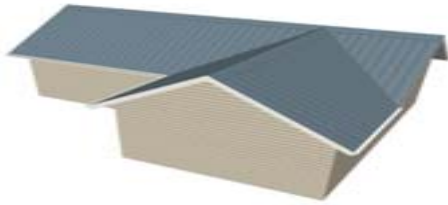
Total Square footage  $\div$  100 = Number of Squares

**14(2) x 60 = 1,680 square feet or 16.8 squares**





# Intersecting Roof - can combine Hip and Gable



Roof Calculations:

$$18(2) \times 80 = 2880$$

$$12(2) \times 10 = \underline{240}$$

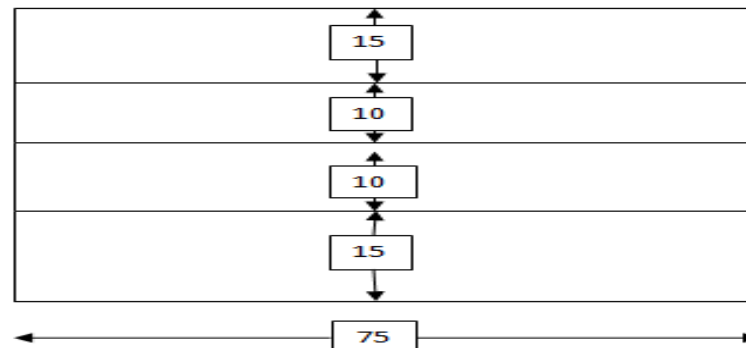
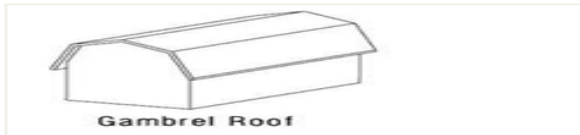
$$\text{Total} \quad 3120$$

$$3120 = \text{Total Square footage} \div 100 = 31.20 \text{ squares}$$



# Gambrel Roof – Barn roof

## GAMBREL ROOF DESIGN

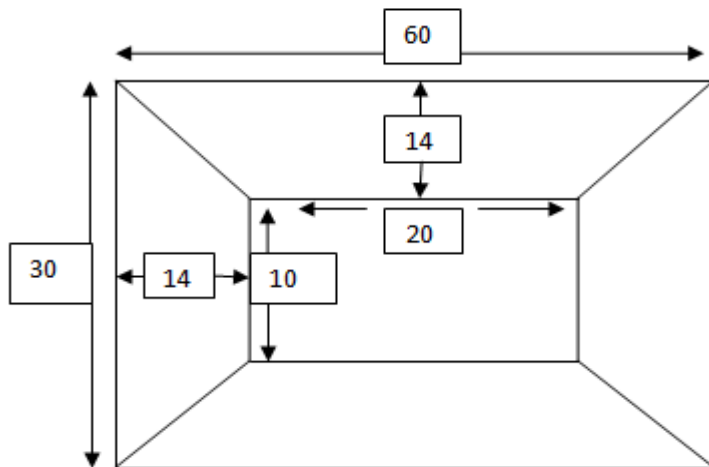
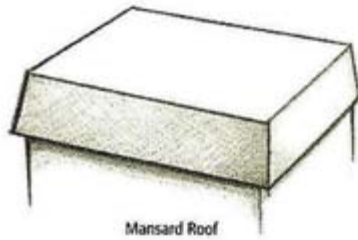


The formula for a Gambrel Roof is:

Rafter Length X Eave Length = Square footage

$(15+10+10+15) \times 75 = 3,750$  square feet or 37.50 squares

# Mansard Roof



Trapezoid -  $\left(\frac{b_1+b_2}{2}\right) \times \text{height} = \text{square footage}$

Rectangle - Length x width = square footage

$$(10+30) \div 2 = 20 \quad 20 \times 14 = 280 \quad 280 \times 2 = 560$$

$$(20+60) \div 2 = 40 \quad 40 \times 14 = 560 \quad 560 \times 2 = 1120$$

Area of Trapezoids --  $560 + 1120 = 1680$

Area of Rectangle --  $10 \times 20 = \underline{200}$

Total Area of Roof 1880

# Common Roofing Materials

- ▶ Composition Asphalt Shingles:



- ▶ **Organic** – saturated felt with asphalt and ceramic granules.

- ▶ **Glass Fiber** - Asphalt with Fiberglass and ceramic granules.

- ▶ The **ceramic granules** are to protect the shingle from the sun's UV rays and for aesthetics.



- ▶ Common types of Composition Shingles are:

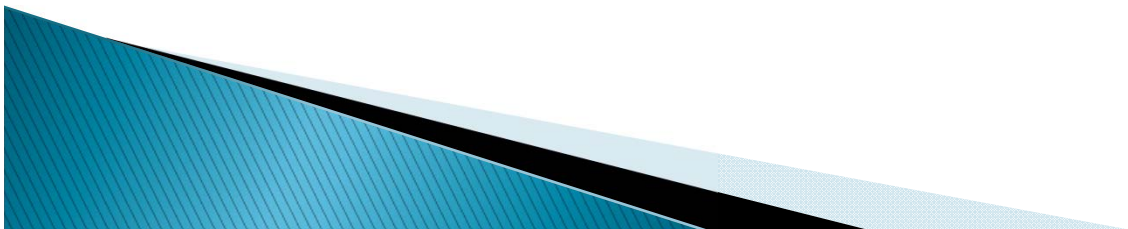


- ▶ 3 tab shingles

- ▶ Laminate/Dimensional /Architectural

- ▶ Individual Shingles

- ▶ Roll



# 3 Tab and Dimensional Shingles

## 3 Tab Shingles

3 bundles per square

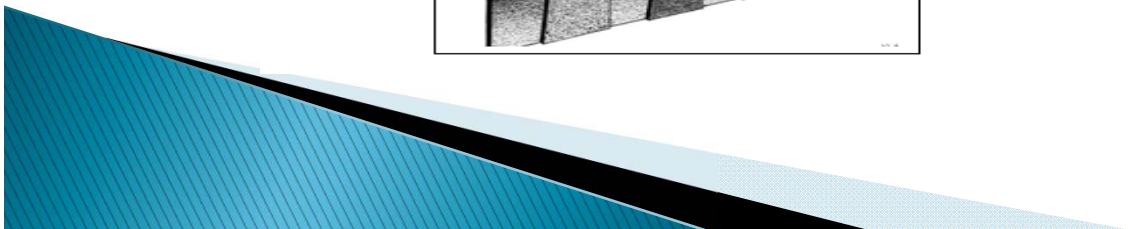
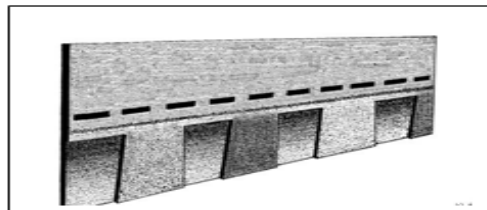
20-25 year life span



## Laminate and/or Dimensional Shingles

4 bundles per square

25-35 year life expectancy



# Architectural and Individual Shingles

## Common Composition Shingles:

### Architectural Shingles

4 bundles per square

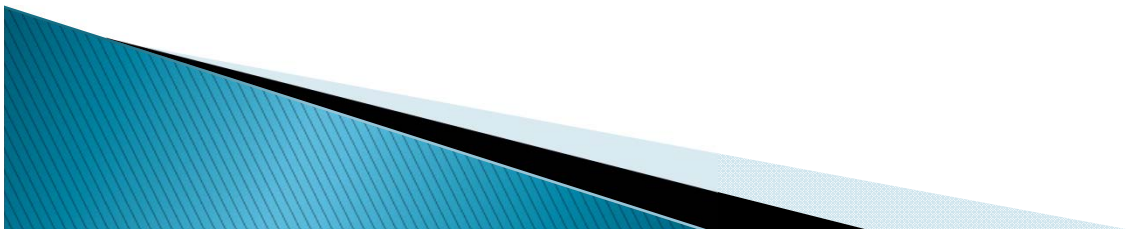
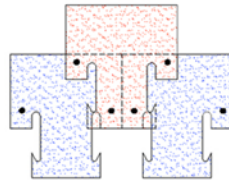
30-35 year life span



### Individual Shingles

4 bundles per square

25-35 year life expectancy



# Wood and Metal Roofing

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## Other Types of Shingle Material:

- 1.) Wood – Shake and Shingle
- 2.) Metal – aluminum and steel
- 3.) Rigid – clay and cement
- 4.) Synthetic – Rubber

**Wood Shakes** – 5 bundles per square



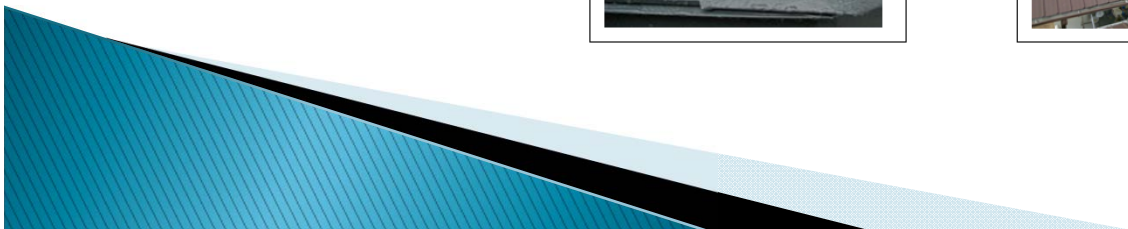
**Wood Shingles** – 4 bundles per square



**Metal Shingles** – priced by square ft.



**Metal Panels** – price by square ft.





# Clay and Slate Tiles

**Clay Tiles** – 5 bundles per square



**Slate Tiles** – 5 bundles per square





# Additional Roofing Material

- ▶ Ice and Water Shield
- ▶ Drip Edge

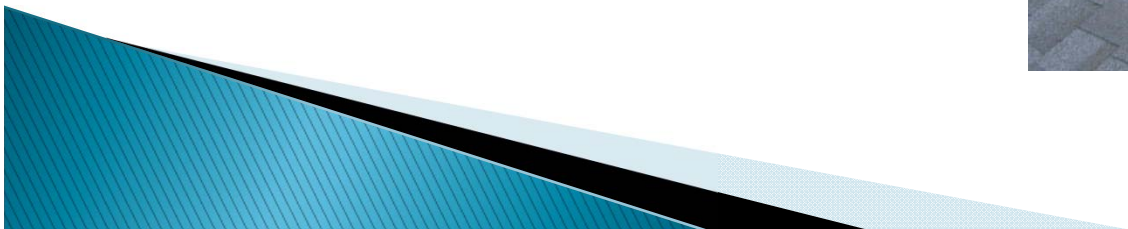


# Additional Roofing Material

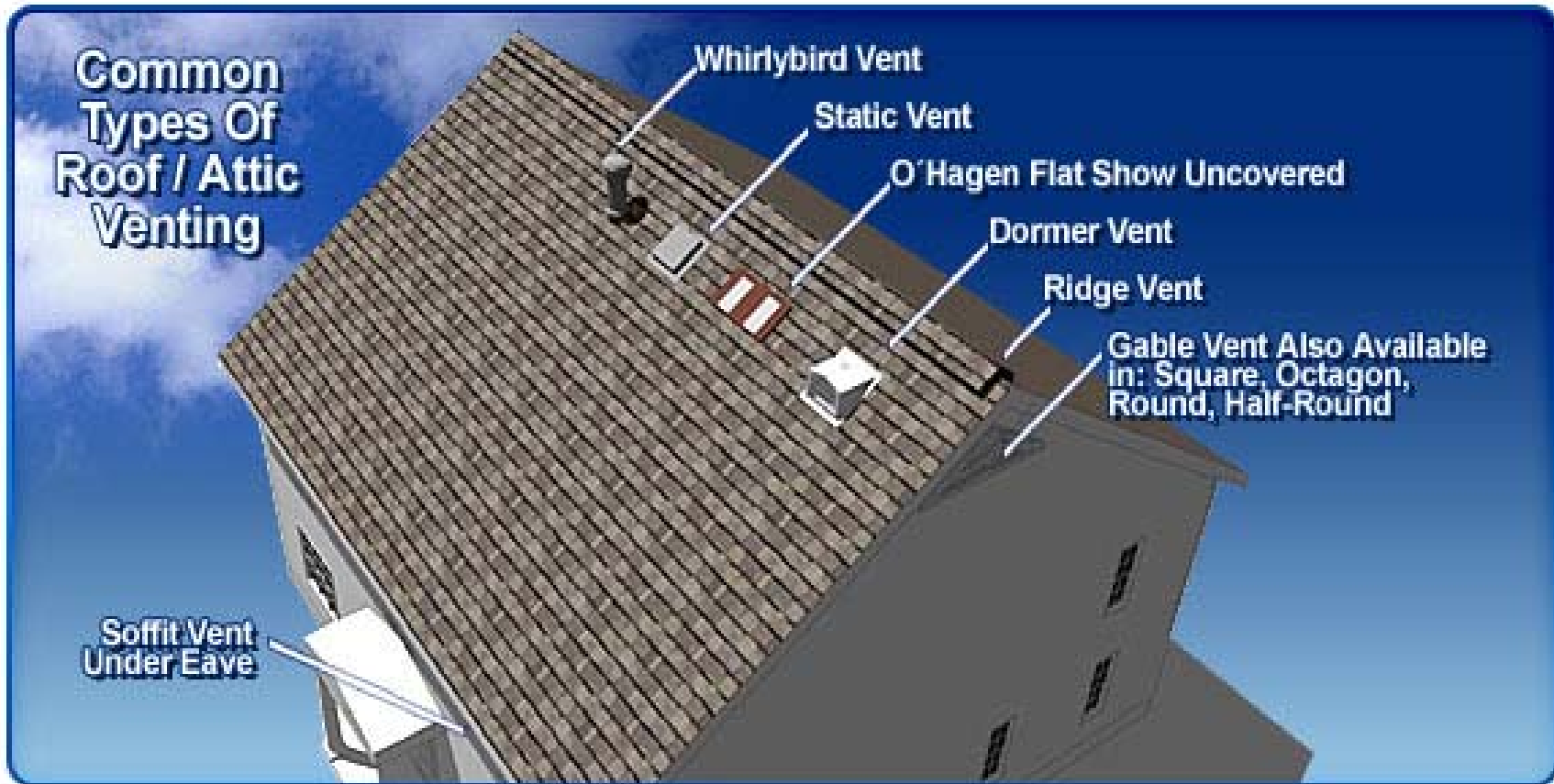
- ▶ Valley Flashing



- ▶ Gas appliance Exhaust Vents



# Additional Roof Material - attic ventilation



# Common Commercial Roof Systems

- ▶ Built up Roof (BUR)



- ▶ Built up Roof w/gravel





# Common Commercial Roofs (cont.)

- ▶ Single Ply Membranes – **EPDM** (Ethylene Propylene Diene Monomer)



# Identify Roof Damage – typically neither hail or wind causes a leak.

- ▶ Wind Damage



- ▶ Hail Damage



# Commercial Roof damage

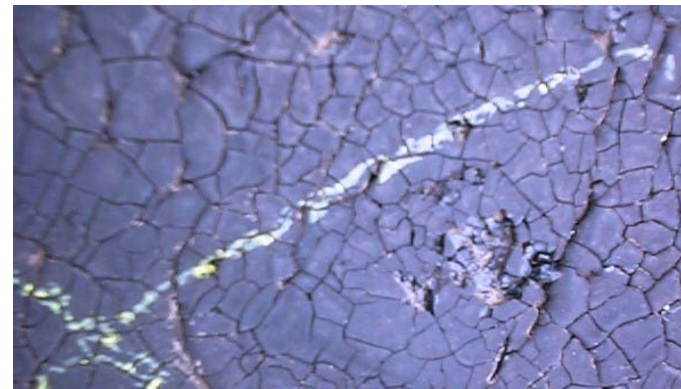
Spray Foam Roof – Hail  
Damage



Steel Roof – Hail  
Damage



Built up Roof – Hail  
Damage





# Identify the Source of the Leak



Improper Installation

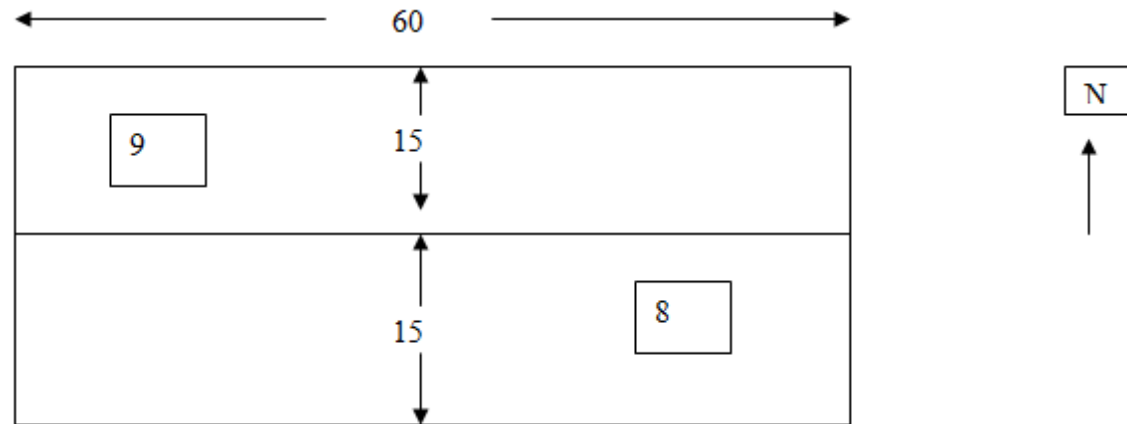


Deterioration



# Repair versus Replacement

## Evaluating Loss from Hail Damage



Roof – 1 layer 3tab shingles – 5-10 years old – Reparability Factors

- 0 to 5 years ---- reparability factor of .5
- 5 to 10 years --- reparability factor of 1.0
- 10 to 15 years --- reparability factor of 1.5
- 15+ years --- reparability factor of 2.0



# Repair versus Replacement (cont.)

Test  
Squares

= Average of 8.5 hits per square x RF of 1.0

$$8.5 \times 1.0 = 8.5$$

therefore to repair each square

$$8.5 \text{ (average hits per square)} + 8.5 = \underline{\underline{17 \text{ shingles per square}}}$$

Roof Calculations: Total

$$30 \times 60 =$$

1800 square feet

$$10\% \text{ waste} =$$

180 square feet

Total # squares

1980 which rounds to 20 squares as 3 tab is sold in bundles of 3 per square.

Roof Repair: Repair

18 squares x 17 shingles per square = 306 shingles to repair this roof.

306 x \$11.71 per shingle = \$3,583.26 cost to repair roof.

Roof Replacement

20 Squares X \$190.00=\$3,800 [Does not include drip edge; ice water shield, vents etc.]

# Things to consider before writing the estimate

Height, Steepness and Accessibility

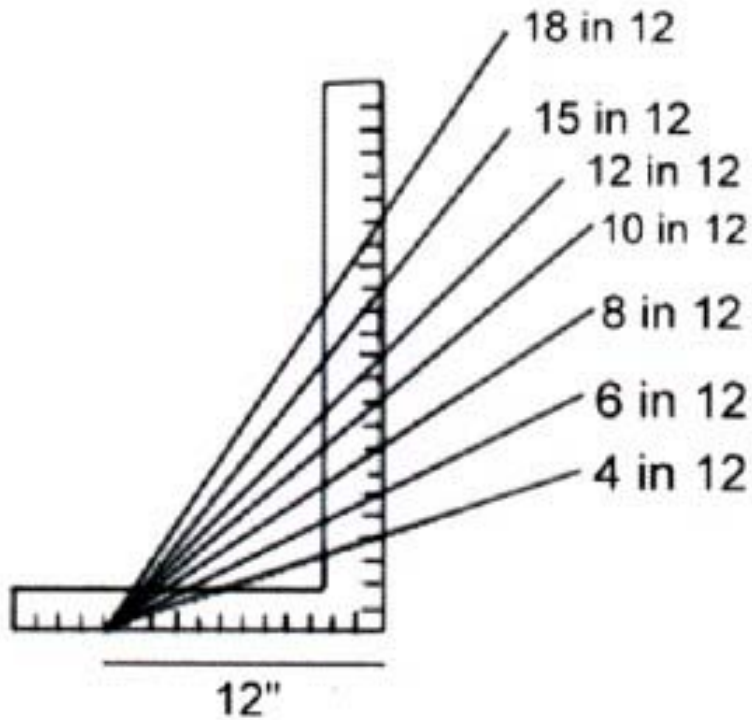


Material Guage



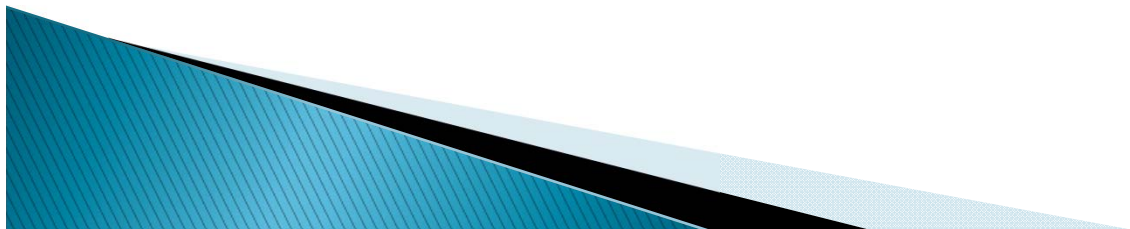


# Steepness – any roof 6/12 or greater is considered steep




# Things to consider before writing the estimate (cont.)

Accessibility



# Writing the estimate - Terms

- ▶ **Square** – 1 square is a 100 square feet
  - ▶ **Linear/ Lineal Feet (LF)**– length of straight line
  - ▶ **Waste** – the amount of material lost during installation. [5% Felt/Rolled Roofing; 10% Gable Roof; 15% Hip and Ridge; 20% cut-up roof.
  - ▶ **Roof Pitch** – rise in inches over a 1 foot run
  - ▶ **Unit Cost** – price that includes material, labor, overhead, profit and soft costs.
- 



# Test

Cause of Loss    Hail Damage to Roof

2 box vents 1 exhaust vent    Type of Shingles    3 Tab 15years

8
10

Description	Quantity	Unit Price	Replacement Cost
Remove 3 tab shingles	18 squares		
Replace 3 tab shingles	20 squares		
Replace Felt	19 squares		
Replace Ridge	60 Lineal Feet		
Remove and replace drip edge	120 Lineal Feet		
Remove and Replace ice and water shield	360 square feet		
Remove and replace box vent	2 each		
Remove and Replace exhaust vent	1 each		

