

MLPA 2020

Snow load

Doesn't always mean collapse

AND

It isn't always covered

Large Loss Data-2010-2020

	Claim Count	Claim total estimate
Fire	1524	\$219,656,898
Other	62	\$4,436,873
Snowload	58	\$6,353,322
Water Damage	69	\$5,483,062
Windstorm	481	\$48,014,442
Grand Total	2194	\$283,944,598



Potential Problems



Improper or insufficient design

Deficient workmanship

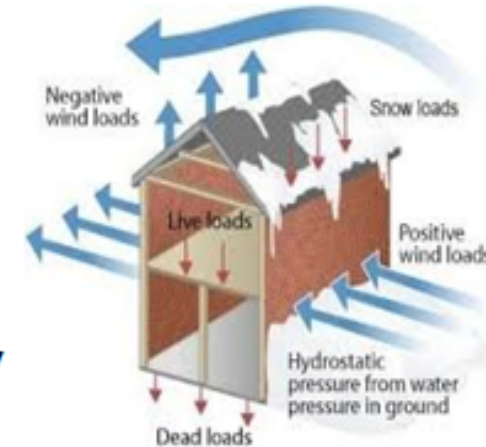
Insufficient maintenance

Weights and Measures

Weights and Measures

Live loads versus dead loads

rain, **snow**, people, furniture, wind
roofing, ceiling, trusses, permanent machinery



Regional **snow load** recommendations/requirements

Technical resource: ASCE7-17

Area average snow load:

Technical resource: <https://hazards.atcouncil.org>

To figure out the **load** on your roof, take the depth of **snow** in feet and multiply it by the weight of a cubic foot of **snow**. If the **snow** weighs 10 pounds per cubic foot and there are 1.5 feet on the roof, each square foot of the roof is getting 15 pounds of pressure

Causes of non-uniform snow loading

Features of the **building** or **terrain** may create areas of non-uniform snow loading.

Obstructions that reduce windspeed:

- Building additions
- Parapet walls (commercial)
- Fences, trees, hills

Structural Integrity

Was the structure **designed** or just **built**?

Newer buildings should be built following International Building Code (IBC)

Non-uniform snow loads began to be addressed in 70s and 80s.

Agricultural versus residential



Question

You learn that ...

It's been fine like that for years.

How will this influence you?

Protective Measures

- Snow guards
- Spacing and sistering of framing members
- Framing member size is increased or built up.
- Higher yielding materials are used (Douglas fir)
- Dense Tree line
- Metal over asphalt
- Steep roof pitch



Options for Mutual

Add automatically to each building or
Cover individual buildings?

Consider:

- Seasonal loss experience
- Max probable loss

Before the Loss

Standard Underwriting Inspection









After the Loss

Is hindsight *REALLY* 2020?



















03 12 2019

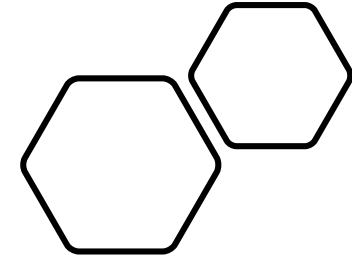








WI Annual Avg Snowfall = 28"
Loss Location Annual Avg = 52"



Snow weight on average:
≥ 20 lbs. per cubic foot*

Multiply snow depth in feet x
weight / cu. ft. =

Total snow load on roof

36.6 lbs. / sf

*weight per cubic foot varies based
on moisture content & density

~22"
Or
1.83'

03 12 2



What Happened?

Photo 1: Aerial overview of property at loss address.

Note: Subject building highlighted, top of image is north, image obtained from Google Earth Pro, image date of 9-29-2015.

Red arrow correlates to photo 24.

Yellow arrow correlates to photo 25.

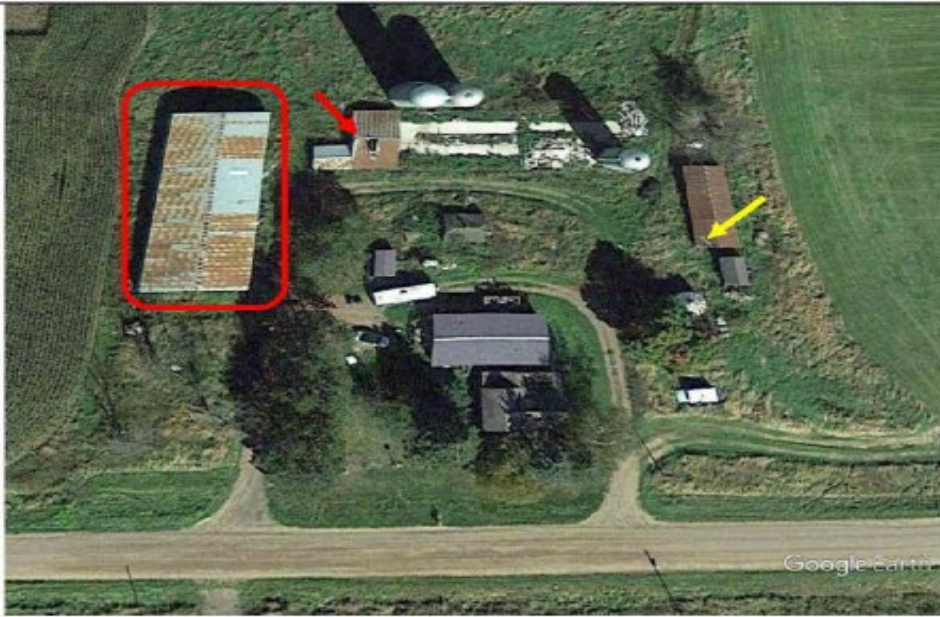


Photo 2: Site identification, street (south) elevation.

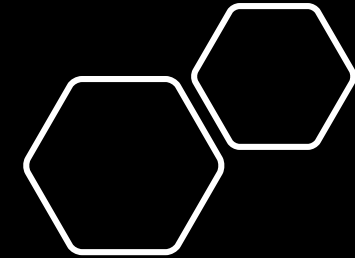


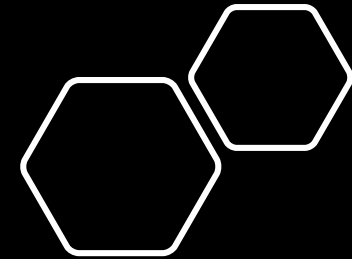
Photo 23: Alternate view of snow build-up.

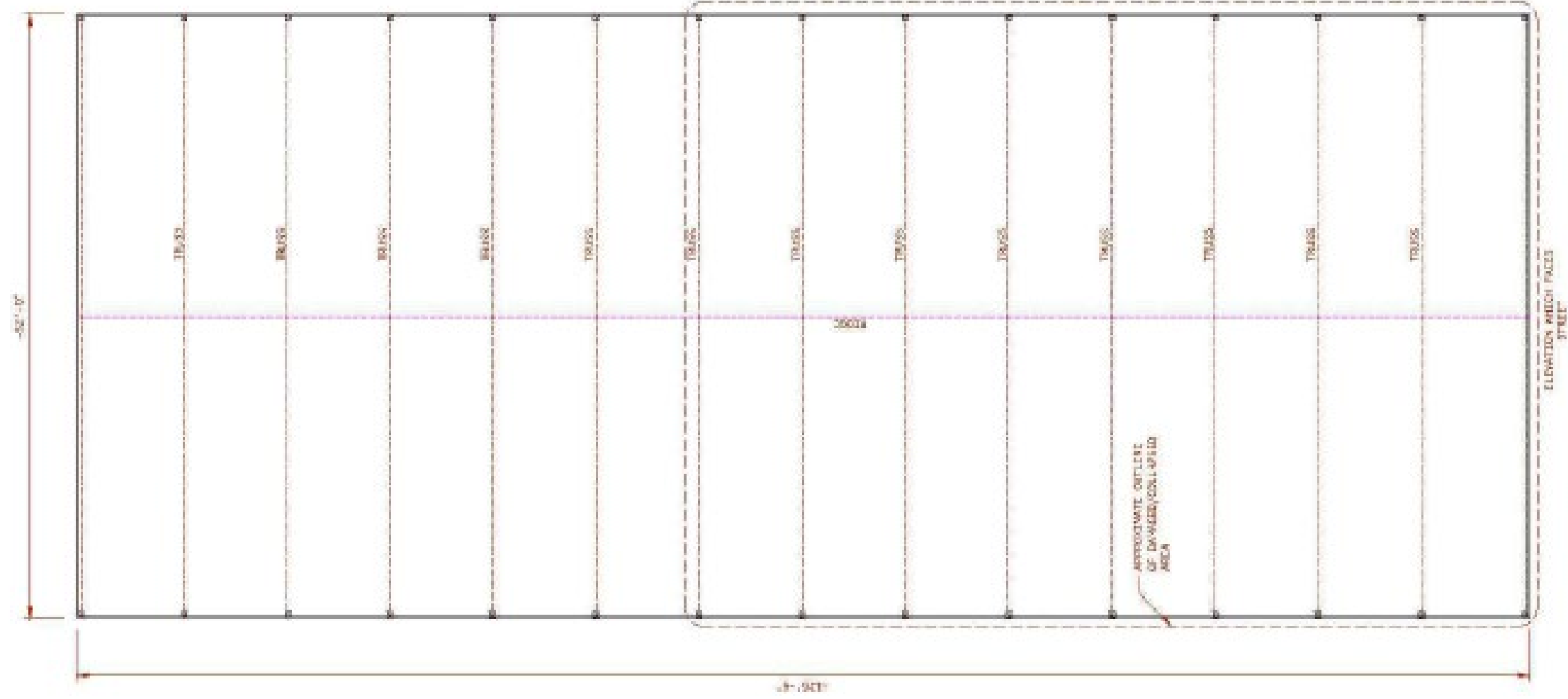
Note: Image provided by Little Black Mutual Insurance.



Photo 24: Barn segment with no recently detached cladding.

Note: At detached cladding areas exposed framing displays weathered appearance.





1 ROOF PLAN VIEW
SCALE: NONE

Photo 7: Typical wall framing.



Photo 8: Column/truss spacing.

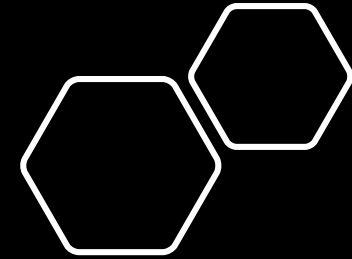


Photo 7: Typical wall framing.



Photo 8: Column/truss spacing.

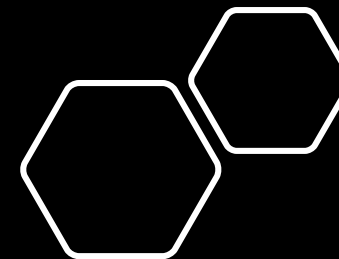


Photo 9: Typical
column/truss
connection.



Photo 10:
Overview of
collapsed debris
field facing south.

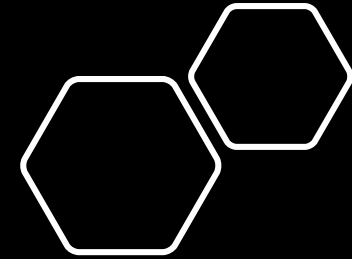


Photo 13: Detached bracing at north wall.



Photo 14: Bottom chord depth with scale.

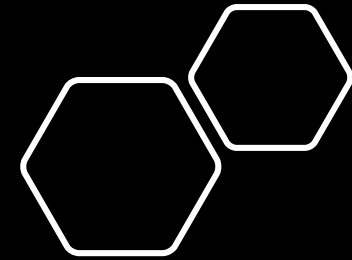


Photo 15: Top
chord depth which
scale.



Photo 16: 2x4
purlin,

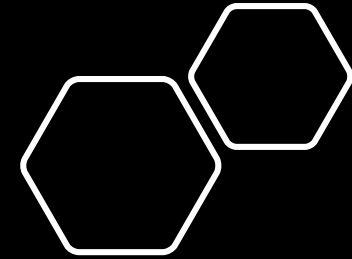


Photo 17: Purlins spaced at 24" o.c.



Photo 18: Snow build-up east side of building.

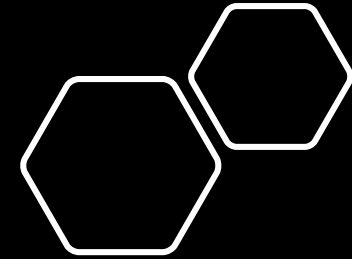


Photo 19:
Fractured truss
members.



Photo 20:
Displaced columns
and deformed
panels.

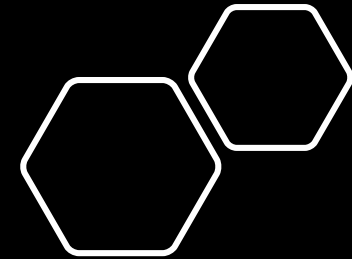


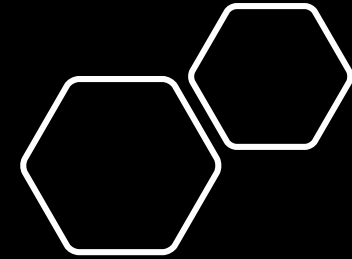
Photo 21:
Displaced south
wall.

Note: Image
provided by Little
Black Mutual
Insurance. Image
captured 2 days
after collapse
event.



Photo 22: Snow
build-up.

Note: Image
provided by Little
Black Mutual
Insurance.



For the purpose of this report, the exact location of the subject building is considered being south.

Background:

Little Black Mutual Insurance provided the following information:

- The insured believed wind forces were involved in the partial collapse of the roof.

According to the historical images discovered on Google Earth Pro, the following:

- The subject building was present in 1999.
- A roof hole in the western portion of the barn was present in 2012.
- Between 2012 and 2015 the eastern portion of the barn had been removed.
- A partially detached roof panel for the eastern building existed in September of 2015.

According to Weather Underground, utilizing the month of February 2019 through March 10, 2019 as a search metric with a focus on the date of loss, the following pertinent information was discovered:

- The closest weather station was the Central Wisconsin Airport which was 74 miles (driving distance) from the loss address.
- The maximum accumulated ground snow cover was 25" on March 2, 2019.
- Maximum wind speeds were 34 mph (miles per hour) on 2-24-2019, 28 mph on 3-9-2019, 26 mph on 3-10-2019.

Before the Loss

Standard Underwriting Inspection















After the Loss

Is hindsight *REALLY* 2020?



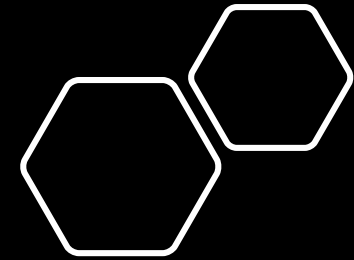












Any interior storage, hoist systems, etc. Should be analyzed for potential increase in dead load.



08/28/2019



08/28/2019





08/28/2019



08/28/2019







What Happened?

Photo 5: Overview
of roof facing
south.



Photo 6: Sealant.

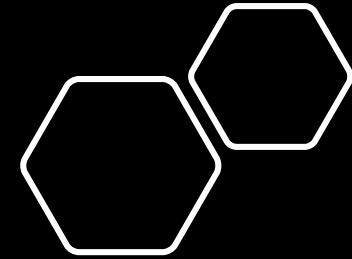


Photo 7: Sealant at panel side lap.



Photo 8: Multiple fasteners.

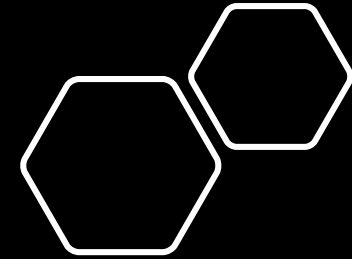


Photo 9: Panel indentations.



Photo 10: Typical roof framing.

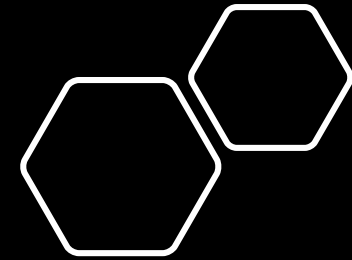


Photo 3: South elevation.



Photo 4: East elevation.

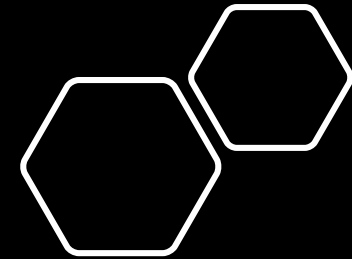


Photo 11: Typical
bottom chord lap
splice.



Photo 12: Typical
column spacing
with scale.

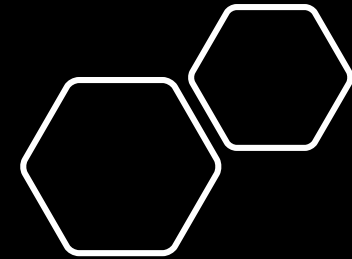


Photo 19: Alternate view of aged fracture in previous photo.



Photo 20: Truncated column and header/ledger board.

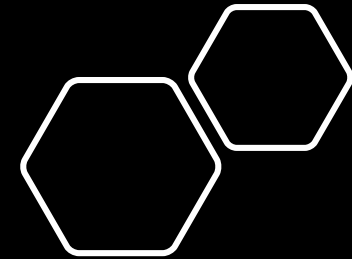


Photo 21:
Horizontal shear
fracture (new
appearance).



Photo 22: Alternate
view of fracture in
previous photo.

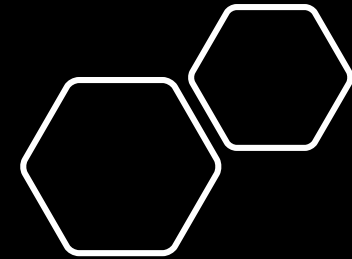


Photo 23:
Horizontal shear
fracture (aged
appearance).



Photo 24: Alternate
view of fracture in
previous photo.

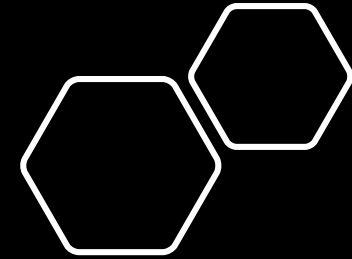
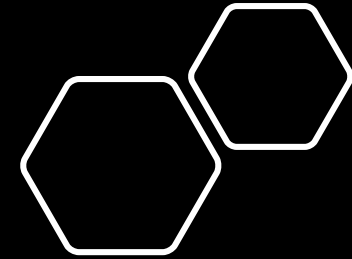


Photo 27:
Horizontal shear
fracture (new
appearance).



Photo 28: Alternate
view of fracture in
previous photo.



Background:

The insured and/or United Mutual insurance provided the following information:

- The subject building at the claimed loss address was constructed in 1977.
 - Approximately 6 years ago, the insured engaged a contractor to repair the roof leaks. Instead of removing the fasteners and replacing them with the next larger size, the contractor added new fasteners next to the existing fasteners. In some locations, the contractor added two new fasteners. The roof continued to leak after the repairs. The insured engaged NRH Construction to remove all of the fasteners and install new fasteners and seal the fastener voids and apply a roof coating. According to the insured and NHR, this roof repair was successful.
 - The insured believed the weight of snow and ice resulted in damage to the roof framing and caused the roof cover to leak due to the snow load induced deflection.
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MLPA 2020 Snowload

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AND

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