

Store Fires: Taxpayers and Strip Malls

DAC John Norman- Chief of Special Operations (Ret.)

Store Fires Are Very Different From House Fires!

Commercial Fires Kill More Firefighters Per Fire Than Nearly Any Other

Firefighter Deaths per 100,000 fires

Store Fires
Are **NOT** The
Typical 15
Minute Fire!

Stores Found In A Wide Variety Of Buildings

Older Downtown Commercial / Mixed Occupancy

**Originally Class 3- Brick and Wood Joists
Interconnected Buildings and
Multiple Alterations Are THE Fire Problems**

Older Type “Taxpayers”

- **Wooden Roof**
- **Common Cockloft**

Newer Suburban “Shopping Centers”

- **Wood or Metal Deck Roof**
- **Common Cockloft**

Newest "Strip Malls"

- **Metal Deck or Other Lightweight Roof**
- **Common Cockloft**

New “OLD DOWNTOWN” Blocks

- **Mixed Occupancy- MD's above Comm.**
- **Lightweight Construction-Common Cockloft on all floors**
- **Partial Sprinklers (not in trussloft)**

Gaining Access

Maintain The Integrity Of The Door!

Often Difficult Forcible Entry

Attack The
Weak Points
First.

Usually the
Padlocks.

Cut The Gate As A Last Resort

If You Must Cut
The Gate,

Provide The
Maximum Vent
and Escape
Area

**When you open a door or window
you must put water on the fire ! ! !**

A Large Commitment Of Personnel Is
Often Required To Open The Rear

**Ventilation Opposite The Hoselines
Advance is Crucial**

Backdrafts are powerful, this one blew down an entire 12" brick wall !

Backdraft Warning Signs

How Do We Prevent A Backdraft?

What Good Will Vertical Vent Do Here?

Have A Charged 2-1/2" Handline
Ready To Operate, Stay Away From
The Glass

**Every separate space is a different
balloon!**

**Backdrafts Can Occur in
Voids That Are in
Proximity to the Fire,
Even Where the Fire Is
Free Burning**

Once You Have Adequate Water On
The Fire, Get TOTAL Ventilation

But NOT Before!!!

How High Do You Stack The Fuel In Your
Living Room?

A Key Difference Between Stores And
Residential Fires...

...Ceiling Height !!

The
Handline
Of Choice
For Store
Fires:

2-1/2" Hose with 1-1/4" Tip

What is the stream of choice here?

Pre-connected Master Stream !!!!

Determining Needed Fire Flow

Length X Width
Divided by 3

20 Ft x 75 Ft =
1500 Sq. Ft

1500 / 3 =
500 GPM

Hoseline Selection Rules

Paraphrased from the USMC Rules for Gunfighting

**What Do You Do When You
Only Have 3 People On The
Rig?**

You'd Better
Have A Plan B

These flows are not adequate for larger stores, Big Box, etc. Master Streams are in order.

Master
Streams Are
Often Required
At Store Fires.

Not All Master
Streams Are
Created Equal !

**Platforms are
The Most
Maneuverable
Master
Streams Ever
Invented !**

**Streams Are Far More Effective
From Below The Roof Than Above**

The Only place to put water in a cockloft fire is from underneath if your intention is to put the fire out!

Takes A Tremendous Fire To Resist
The Water Monster !

Pumpers * Belong At Hydrants !

It's 3 AM
Tomorrow In
Your Town,
You're 1st
Due

No Visible
Fire

What Do You
Do Next

Was This Fire Blowing Out The
Windows On Arrival?

What Happens When Ceilings Collapse

What's above the hung ceiling?

You Must Get The Ceilings Open

**Once Fire Gets A Good Start In The
Cockloft, It's Off To The Races !**

Prepare For Total Loss Of The Building

**Inform IC of Exposures That Might
Become Endangered!**

What is the greatest collapse danger here?

No Visible
Fire, and No
Indication Of
Fire In The
Cockloft.

What Do You
Do Now ?

What
Happened At
The Mary
Pang Fire??

How About
The Wonder
Drug Store /
23rd. Street

- 23rd St. 12 Dead
- Indianapolis 13 Dead
- Philadelphia 4 Dead
- Brackenridge Pa 6 Dead
- Seattle 4 Dead
- NYC '91 & 95 2 Dead

What Caused These Tragedies ?

What Is Missing Here ?

**Q: What Do You Know About
Masonry?**

A: Heavy

Insulates

No

Tensile

Strength

In Which Occupancy Is This **Most** Likely?

$$5 \times 10 = 50$$

$$50 \times 150 =$$

7,500 Lbs.

of

Concrete!

What Are You Going To Do About A
Serious Cellar Fire Under A
Masonry Floor?

Fill it up!

Just Don't Fill It Up
With Dead
Firefighters!!

Fire Officers Must Understand Building Construction to Operate Safely

Parapet Wall Collapse

Will Collapse of This Parapet Kill Firemen?

No ! They're Outside The Collapse Zone !

Now This Is Where
Guys Die!

A 100 Ft. Steel Beam Heated 1000
Degrees Expands 9-1/2''

The Sidewalk Is Always In The
Collapse Zone !

How Long Is the Collapse Zone?

Collapse Zone Extends The Entire Length Of the Parapet

“Standard” Flat Roof Construction

What Is The Weakest Part ?

May be safe to work over the fire

What Type Of Roof Is This?

Inverted Roof Construction

May be safe to work over the fire

What Type Of Roof Is This?

Very Common in Industrial Parks

These roofs are dangerous!

Trusses

What is the problem with new buildings?

What Type Roof Is This?

Lightweight Steel Truss

- **AKA Bar Joist or Metal Deck**
- **Fails In 5-10 Minutes**
- **Trusses Up To 60 Ft Long**

This Type Roof Requires Special Tactics

**You Should NOT Be Cutting This Type of Roof Over
The Fire, Move Back At Least 60', Over Water**

If You Keep Exposed Steel Cool...

...Remaining Stores Can Be Saved

Roof Decking Can Still Collapse Under Firefighters Weight. You Can Not Know Where the Edges Are

Note Span Between Joists 6'

Cockloft still permits fire spread.

Metal Soffits Defy Pulling

Stucco on wire lathe is not much easier

What type of roof is this?

Bowstring Trusses

- Hackensack, NJ
1988 5 Dead

- Waldbaums,
Brooklyn NY 1978
6 Dead

- Wichita, KS *
1968 4 Dead

- Cliffside Pk, NJ
1967 5 Dead

Fire Command- December 1978

2 Handlines Operate, All Visible
Fire Knocked Down

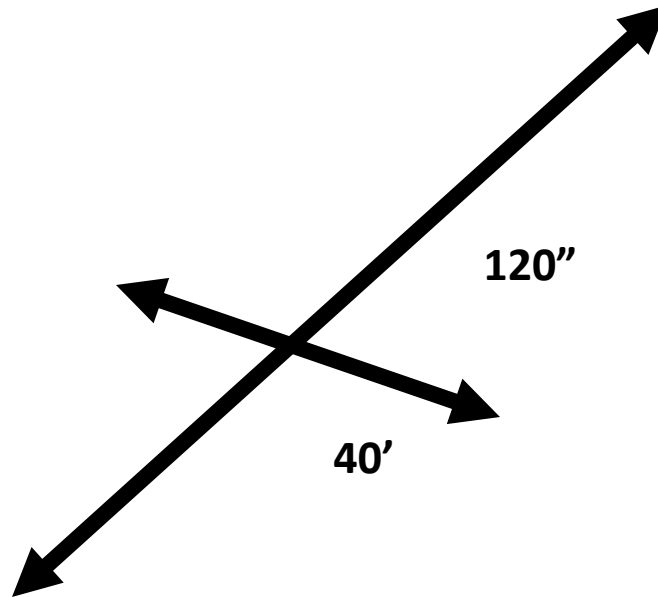
First Hole In
Roof Shows
'No Fire In
Cockloft'

Construction Features Confused Size-Up

Altered Buildings Kill Firefighters!

IC's Size-Up Must Get The Big Picture

Failure Of ONE Truss Opens A Huge Hole



Here's the 3rd Way Trusses Kill

Q: Which Is The Deadliest Wall?

A: End Walls With Hip Rafters

End Wall Collapse Zone $>2\frac{1}{2}$ x Height

Stay Above
The Wall

Stay Back
> 2-1/2 Times
Height of Wall

Beware Of
Fireball When
Roof Collapses!

Altered Buildings Kill Firefighters!

Alterations And Unusual Conditions

- **Steel Plating Adds Weight**
- **Holds Heat, Accelerates Flashover**
- **Delays or Prevents Ventilation**
- **Accelerates Collapse**

Altered Buildings Kill Firefighters!

Take Action On Hazards ! !

Altered Buildings Kill Firefighters!

Everyone Can Have A 3 - Ring Binder

Get Out and Document YOUR Buildings

Inverted King Post Truss

**Make friends with
Frank Brannigan
and
Vincent Dunn!**

Beware Of
Renovations
That Remove
Structural
Elements

Steel “Lally
Columns” can
explode when
heated to 800
degrees

Altered Buildings Kill Firefighters !

Thanks for your attention.

Enjoy the evening.

**Remember, tomorrow
morning is another learning
day.**

Don't exceed your limits!

How Do We
Motivate Our
People To Take
Their
Responsibility
Seriously?

If That's Your
Kid In That
Box, And You
Could Have
Prevented It,
How Could
You Look At
Yourself In
The Mirror

**Bring All
Your
People
Home
Safely !**

Be CAREFUL !
Stay Safe.

Thanks to all the Fire
Photographers who
share their pictures so
that others may learn

Please pray
for our
troops - they
are the ones
who stand
guard on the
wall so we
can sleep
soundly in
our beds

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