



SAN BERNARDINO COUNTY FIRE DEPARTMENT

TAILBOARD SAFETY SESSION

January XXXX, 2005

NEW REINFORCED DRYWALL – LINED WITH LEXAN

The sheetrock described below is a new type and has a paper thin layer of Lexan laminated into the sheet, under the paper, on at least one side. In this configuration, the Lexan adds strength to the gypsum material and prevents anything from easily penetrating the sheet, including firefighters. The material has been showing up in areas of high crime or where extra security is needed and in buildings where there were party walls that allowed a perpetrator to kick through the wall and travel from unit to unit.

In addition to this material another trend that is used to increase security in walls is to strip off all of the wall covering, fasten cyclone fence fabric onto the studs up to a height of 6-8', and then cover the walls back up with plaster or wallboard.

The sheetrock described below is probably being used and we do not know it. REMEMBER, it wasn't that long ago when roll down gates, doors or scissor gates across the entrances to buildings was an oddity. Ordinarily, we should be able to kick thru sheetrock even if it is on both sides of the studs. This new stuff will NOT allow that action as you can read below.

Our need to kick thru walls is basically for one of two reasons: because we are trapped, and time is working against us, or we are trying to access a victim and the wall breach is the most rapid manner.

Breaching this new material is VERY time consuming with hand tools. We would most likely be performing this action under considerable stress, with potentially low air; high heats conditions, and possibly zero visibility with very little time. The fact that the outcome we expect, easily kicking thru, is not happening will increase the stress level, more rapidly deplete our air supply, and cause a significant amount of panic. Remember to take tools, tools, and more tools, when you enter a building during fire operations because of the unknown and the potential to be trapped.

THINGS TO REMEMBER:

1. Be aware of fire conditions.
2. Always have forcible entry/egress tools with you - Axe, Hook, Haligan or all of the above.
A hose line is not a forcible entry/egress tool!
3. Have a back-up plan for you and your crew - be able to rapidly locate and open doors and windows for rapid egress.
4. Know where you and your crew are in the building at all times and your approximate relationship to your exit points. **(P.P.P.N – Personnel, Position, Progress, Needs)**
5. Note primary and secondary means of access and egress (size, number, arrangement) as you approach the building to carry out your assignment.
6. Cut **ALL** window bars off **ALL** windows of the occupancy **ALL** the time when personnel are operating inside.

7. Remove any other security measures that could impede access to trapped members or their self-rescue attempts.
8. The time to disable these security measures is not when someone sounds a mayday.
9. Becoming trapped can and will happen, to you or someone you know, anytime in the fire operation - BE AWARE!
10. When Fire Prevention sees or knows of this new material being used, pass it on so the companies can go look at the application during its installation.

Wall Breach Test

Purpose - To determine the effectiveness of basic firefighting hand tools when attempting to breach a wall constructed of Hi-Impact 8000 brand Fire-shield Gypsum Wallboard, 5/8" Tapered Edge - Type X Core.

Materials used:

1 - 4' x 8' sheet of National Gypsum Hi-Impact 8000 brand Fire-shield Gypsum Wallboard

Drywall screws

Firefighter rescue simulator (framed wall with 16" center studs)

8lb. Maul

8lb. Pick-head axe

8lb. Flat-head axe

12lb. Sledgehammer

Halligan bar

The test was conducted by utilizing 5 different hand tools that a firefighter will most likely have with him during firefighting operations. Each of the 5 different hand tools was used to attempt to breach the Hi-Impact 8000 Wallboard. The wall was constructed of wooden studs on 16" centers. The 4' x 8' sheet of wallboard was mounted to the studs using ordinary drywall screws. The wall is pictured below:



Test Process:

Numerous basic hand tools were used to attempt to breach the Hi-Impact 8000 Wallboard. The concept of the test was to determine if an opening large enough, to accommodate an escaping firefighter, could be created and to determine which tools worked best to breach the wallboard. The firefighter was positioned on his knees to simulate being in a fire condition.

Test Results and Findings:

Below is a list of the basic firefighting hand tools used in the test, how many times the wallboard was struck by the firefighter, and if the wallboard was breached.

<u>Tool</u>	<u>Times struck</u>	<u>Results</u>
8lb. Maul (striking end)	14	Did not breach wallboard
12lb. Sledgehammer	14	Did not breach wallboard Broken wall stud
8lb. Pick-head axe (Blade)	38	Penetrated wall on 6 th swing Created hole large enough for firefighter
Halligan bar	30	Penetrated wall on 4 th swing Created hole large enough for firefighter
8lb. Flat-head axe (striking end)	18	Did not breach wallboard
8lb. Maul (cutting end)	19	Penetrated wall and broke wall stud

As shown in the table above, all of the striking tools were proven ineffective in breaching the Hi-Impact 8000 Wallboard. The cutting tools proved to be most effective, usually penetrating the Lexan in less than 10 swings. The Lexan did not break easily after being struck but it did crack enough to become pliable enough to bend while the firefighter crawled through the hole.

Things to consider:

- While you are crawling through the wall the Lexan has tendency to get caught up on personal protective equipment and will possibly cut or rip the PPE with the sharp edges.
- The amount of time it took to create a hole large enough to accommodate a firefighter's size. If fire conditions are deteriorating, the firefighter is already at increased risk.

The U.S. Fire Administration notice of firefighter fatality was distributed on or about December 21st. While FF Guajardo's death was not directly related to this new type of construction material, it reinforces the importance of understanding fire behavior, smoke indicators, and building construction.

Name/Rank:	Nito Guajardo, Firefighter
Age:	24
Gender:	Male
Status:	Career
Years of Service:	<1
Date of Incident:	12/20/2004
Time of Incident:	1515hrs
Date of Death:	12/20/2004
Fire Department Name:	Baytown Fire - Rescue

Cause of Death: Firefighter Guajardo was part of a search and rescue crew at a working residential fire. Conditions deteriorated inside the house and the crew evacuated. Once outside, Guajardo was discovered missing. After the fire was controlled, he was found in the foyer by firefighters. Despite life saving efforts, he was pronounced dead at the scene.

On December 20th, 100 firefighter fatalities had been reported to USFA in 2004.

- This test was performed with the Hi-Impact 8000 Wallboard on only 1 side of the stud. Chances are if this product is encountered, it will be mounted to both sides of the studs, therefore at least doubling the amount of time and effort to breach the wall in an emergency situation.

Conclusion:

It was demonstrated that breaching the Hi-Impact 8000 Wallboard has a high resistance to impact forces brought on by striking tools. The tool of choice when this product is encountered is a cutting tool. This test further stresses the fact that departments need to get out in their response areas (even auto or mutual aid areas) and know what kind of building materials are being used.

Test Performed by:

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