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For more info ... Download Printed Version | Read NFPA Safety Blog | Campus Fire Fatality Stats





#### Campus Fire Forum Registration is open! ... MORE

Forum Overview includes:

#### Forum Keynote Speaker



Tim Vandenbrink, Deputy Fire Chief/Safe City, Spruce Grove Fire Services, Spruce Grove, Alberta Canada

Presenting ... Just Another "BORING" Safety Talk MORE INFO

### Special Forum Event



#### Mock Dorm Room Burn - (Classroom)

This one-hour course will present the uses and value of live burn demonstrations in the delivery of campus fire safety messages and education. A sample script for narration of a burn will be offered as a handout. Also addressed will be construction, staging, fire department participation, and potential assistance in funding for the event.

#### Outdoor Live Burn

Side by Side ... The NY State Office of Fire Prevention and Control will host a live dorm room burn showing the difference between a sprinkled and un-sprinkled situation. The demonstration will be built on-site by the NY State OFPC and the Niagara Falls Fire Department ... MORE INFO

#### FROM THE VICE PRESIDENT

The End of Another Academic Year

The Academic year is really winding down. For some schools it's already over but for many this is the beginning of the end. For students its Finals, Graduations, Celebrations, and Job Searches. For Parents its pride in their graduates and planning for their new students that start next semester. For campus staff its a chance to recharge but also the start of maintenance, "summer slammer projects" and planning for the next group of incoming students … MORE



#### **OFF-CAMPUS**, by Tim Knisely

Student Created Holidays

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#### THE INSPECTOR, by Phil Chandler

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The Authority Having Jurisdiction (AHJ) and Proper Planning

NFPA By Ernesto Vega Janica, Senior Electrical Engineer, National Fire Protection Association

Planning and executing a multi-phased campus-wide upgrade to a fire alarm system and/or to an emergency communications system, such as a mass notification system (MNS), represents a major challenge for all stakeholders; especially for the authority having jurisdiction (AHJ) with the responsibility of approving and commissioning such system upgrades. This article discusses a number of technical provisions in NFPA 72<sup>®</sup>, National Fire Alarm and Signaling Code<sup>®</sup>, 2013 edition; relevant to new technologies, research … MORE



Section 1005

MEANS OF EGRESS SIZING

[B] 1005.1 General. All portions of the means of egress system shall be sized in accordance with this section. Exception: Means of egress complying with Section 1028. This section is a charging paragraph for sizing for the means of egress system in a tenant space, floor or building. The exception is based on the understanding that the criteria for spaces that serve as assembly areas have unique criteria based on the high occupant load and possibility of stepped or sloped aisles ... MORE

May is Building Safety Month ... Founded by the International Code Council (ICC), Building Safety Month (BSM) is celebrated by jurisdictions worldwide during the month of May. Building Safety Month is a public awareness campaign offered each year to help individuals, families and businesses understand what it takes to create and sustain safe and sustainable structures. The campaign reinforces the need for adoption of modern, model building codes, a strong and efficient system of code enforcement and a well-trained, professional workforce to maintain the system... MORE



#### FIRE INCIDENT NEWS | BREAKING NEWS | MASS NOTIFICATION SYSTEMS IN THE NEWS | ARCHIVES

We provide you with continual news updates when they happen .... Click on the links above to fire hundreds of higher education specific new stories ++ ability to search through years of our news archives.

#### BREAKING NEWS - Click here to Sign up!

The Center for Campus Fire Safety provides initial notification about fire fatalities that occur on a university or college campus, or that occurred within the town where the campus is located. This data is collected from news sources from around the country, and many times - around the world, and then emailed to you.

MEMBER NEWS & JOB OPPS .... Want to share? Send your news or job opps to: SupportTeam@campusfiresafety.org

Portland State ... The Fire and Life Safety Officer (FLS Officer) works in PSU's Environmental Health and Safety (EHS) department and has broad responsibility for developing and implementing a comprehensive fire and life safety program for the campus. The FLS Officer has the authority to formulate and review polices to reduce risk, facilitate compliance with fire codes and promote fire prevention, and reviews and approves exceptions to these policies. In collaboration with key stakeholders, the FLS Officer identifies hazards, conducts risk assessments, prescribes corrective actions and provides leadership in the implementation of programs to protect campus students, staff and facilities ... MORE



#### ACTIVITIES

Upcoming Center Activities ... join us.

Director Tim Knisely will present at the New York State Fire & Life Safety Educators Conference, Montour Falls, NY.		
Florida Association of Fire and Life Safety Educators - Michael J. Swain, Vice President will give a 4 hour training session at conference.		
National Professional Development Symposium at the National Fire Academy, Director Tim Knisely will present and exhibit.		
NFPA Conference in Chicago - Janet Maupin, Director will be manning our exhibit.		
CSHEMA Conference - Directors Kevin McSweeney and Rodger Reiswig will be speaking and exhibiting.		



#### FIRE FATALITY STATISTICS

The Center for Campus Fire Safety provides basic information about fire fatalities that occurred on a university or college campus, or that occurred within the town where the campus is located. Statistics

#### ABOUT THE CENTER FOR CAMPUS FIRE SAFETY

### EveryoneGraduates

The Center is the Voice of over 4000 colleges and universities. As a nationwide non-profit, membership based, organization devoted to reducing the loss of life from fire at our nation's campuses, we offer an abundance of free resources to help fire and life safety officials working on college campuses and fire departments with responsibility for a college campus/university.

#### Leadership | Committees | Sponsors | Advisory Council | Members

OUR SPONSORS: TYCO/SIMPLEXGRINNELL, SIEMENS, NFPA, LEXINGTON INSURANCE, KIDDE, NEMA, FIRE EQUIPMENT MANUFACTURERS' ASSOCIATION, HONEYWELL FIRE SYSTEMS, ICC, KELTRON, BULLEX, CHUBB, PREVENT-ZONE, CVS HEALTH, EDWARDS, FACTORY MUTUAL [ MORE

#### CENTER SOCIALS

Connect with us ... Join our social networks and discussions on fire and life safety.

- For Fire & Life Safety educators and Fire Officials: 🛅 LinkedIn | 🖪 FaceBook | 트 Twitter
- Off-Campus Fire & Life Safety Alliance Login | Join (continual discussions about off-campus fire and life safety).
- CenterNet (member directory & social networking for Center members only) Login | Become a Member

**NEW!!** Campus Fire Safety for Students



Our Student to Student Network .... For Students & Parents: 🚹 FaceBook | 🕒 Twitter

Please spread the word to your students and parents. This team will be speaking to other students through social media about the importance of Fire and Life Safety on and off-campus. In a few months we will announce additional social networks, contests, materials and additional resources for students.





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April 24, 2014

NFPA joins The Center for Campus Fire Safety and University of New Haven Fire Science Club students for video shoot



Over the last five years, 27 college students died in a fire within three miles of their school. Lots more were injured and many were left without a place to live.

In September, <u>NFPA</u>, <u>The Center for Campus Fire Safety</u> and the students of the <u>University of New Haven Fire Science Club</u> will be launching an online contest as part of our national Campus Fire Safety for Students campaign to increase awareness of the seriousness of campus fires and to encourage students to take action and share information with their peers.

In April, Kyle MacNaught, NFPA's Video Production Manager; LisaMarie Sinatra, NFPA's Associate Project Manager, Communications; and Cathy Tabor, Director of Marketing for The Center traveled to New Haven to meet with the students and shoot a video as part of the campaign. Together with tips sheets and infographics, an updated website and more, the students are pointing to the contest in the hopes that it will play a key role in the start of a fire safety conversation between students and their parents, and between friends.

Kyle, LisaMarie and Cathy had a great time shooting the video with the students. They are an incredibly passionate, intelligent group who care deeply about this subject, and they are determined to spread this campus fire safety message far and wide. As you can imagine, The Center and NFPA are equally excited to help them achieve this goal.

So please check back at our website this summer for more information about the campaign and our contest. We look forward to hearing what you think about our newest initiative, and we definitely want to hear what actions you as a parent, and your sons and daughters will take to help prevent fires on college campuses across American and beyond. We hope you'll join us. Stay tuned!

#### NFPA Website for Campus Fire Safety

**Campus Fire Safety for Students Website** 

Fire Fatality Stats



#### About The Student Committee

The Center's Student Committee consists of student volunteers from The University of New Haven Fire Science Club. The Fire Science Club has been working with The Center's annual Campus Fire Forum and are "naturals" to kickoff the new Student Committee and to spread the fire and life safety message to students nationwide and even worldwide. This team will also work with Michael J. Swain, Vice President of The Center for Campus Fire Safety, and The National Fire Protection Association (NFPA). In time, the student committee will expand to involve students from other colleges and universities.

The Committee will assist in developing criteria for new student memberships and will network with other students across the country, to create the fire and life safety "buzz" in social media. They will also help to guide The Center by submitting their ideas to develop training tools that reach the higher education community including parents, students and educators.



### FROM THE VICE PRESIDENT

By Michael Swain April 2015

#### The End of Another Academic Year

Hello there,

The Academic year is really winding down. For some schools it's already over but for many this is the beginning of the end. For students its Finals, Graduations, Celebrations, and Job Searches. For Parents its pride in their graduates and planning for their new students that start next semester. For campus staff its a chance to recharge but also the start of maintenance, "summer slammer projects" and planning for the next group of incoming students.

For many campuses the focus of what's occurring changes this time of year. Much time is spent preparing the campus for the big graduation ceremonies. Making sure that all the graduation venues are ready to go and the plans are in place to provide a safe location for the graduates' big day. It's often said that graduation ceremonies are especially for the parents and grandparents of the students. We as campus safety officials need to ensure that our campuses are ready to provide a safe venue for the graduates and their families. Pre-planning and then staffing for the events will be stressful at times but it is really important that everybody is ready for the big day.

As fire safety educators have we done our job during the school year? Hopefully we had time to educate the students that are graduating about fire safety and they will graduate with some life skills that will help them as they go through life. Students that are not graduates but will be living off campus next year for the first time also need education and guidance on living safely off campus. Incoming students and their parents will need assistance and education on living safely in the residence halls when the new

students arrive in the fall. Many parents and students will want to know what the school rules are and what they can or can't bring from home for their new dorm room. Parents of new students will want to know what's being done to protect their children while the parents are not there to do protect them.

The Center for Campus Fire Safety continues to work on new programs and assist with training programs that can help everybody have a safe environment for the fall academic session which is several months away but will be upon us before know it. The Student Group of the Center for Campus Fire Safety continues to help us provide fire safety tips and messages from students to students.

Congratulations to all the new graduates and their families. Congratulations and welcome to all the new accepted students and their families. For my fellow safety officials take a well-deserved



### FROM THE VICE PRESIDENT

By Michael Swain April 2015

break to recharge and prepare for the next academic year. Have a great summer and stay safe.

Mike



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OFF-CAMPUS By Tim Knisely April 2015

#### Student Created Holidays:

Just when you begin to think that everything is under control in your neighborhoods, with winter coming to an end and Spring Break is near, you get details about a new holiday celebration that is being planned. You then find out that the primary purpose of the holiday is to have a large bash, a party to end all parties - all day long. Maybe all weekend! Social media is the outlet in which these events are developed and shared. Within seconds these events are announced across the world. Local stores will begin selling t-shirts bearing the name of the event:

St. Fratty's Day, State Patty's Day, Blarney Blowout, Unofficial, IUPatty's Day, and many more.

But, what is this all about?

Many of these student created holidays have been created because classes won't be in session during St. Patrick's Day, as the students will be gone for Spring Break. So, a make-up session was planned. In some communities this day was established by the tavern owners to make up for lost revenue due to the missed day or weekend. And, if your community doesn't have a plan, be ready because this day is likely on its way.

What do these "holidays" mean for vou? It may be something like you've never seen before. Huge numbers of students will descend on your town with no other purpose beyond drinking. If the bars aren't open yet (because it's 7 AM) the parties will begin in the residence halls or the off-campus houses and apartments. Due to the holiday only occurring locally on this particular day, many others will travel to visit their friends in your town with the same purpose.

Some towns have experienced riots as the house and yard parties merge into one large gathering in a block. The party-goers seem to be fine until a fight starts, or someone tries to get control - such as the police or the property managers. Then, it can get worse.



James J. Nestor/Gazette photo

If your public safety agencies aren't prepared they will be quickly overwhelmed and outnumbered. Hospitals, EMS crews and especially the police will need help. It may take some time to gather the resources needed to contain or



### **OFF-CAMPUS** By Tim Knisely April 2015

control the crowds. Once the parties get out of control or the riots begin the crowds will continue to grow as news spreads quickly, again by social media.

For the community caught off-guard local officials will spend the next year preparing for the next event, first hoping to stop it. Once all of the attention is given to these events by the media and the local residents there is a good chance that the event will continue to grow in size or attendees the following vear. Stepped up enforcement will generate dozens of arrests, hospital emergency rooms will be overloaded and your streets littered with trash and passed out revelers, once again. Landlords and property managers will hire security and place restrictions on their tenants. Some landlords will place addendums in their leases, close off porches to prevent gatherings and impose

fines for breaking the rules. After a few years it may stop, or at best it may be similar in scope and size of regular events such as sporting events, making it more manageable.

When these events are occurring the fire risk is also elevated. More parties than normal, people unfamiliar with their surroundings and large yard parties that eventually move inside overloading the structure.



Mustang News Photo: Shows garage before the roof collapsed, injuring nine.

Streets will be blocked, some closed off by police controlling crowds affecting your response. Fires will be reported in the streets involving sofas, trash cans and dumpsters. Fire pits or bonfires, permitted or not will increase the risk and the number of responses by the fire department.

If you've experienced these events I'm interested to know how your community contained or controlled the activities, even if they are works in progress. Please share these experiences on The Center's <u>Off-</u> <u>Campus Fire & Life</u> <u>Safety Alliance</u>. If you haven't joined yet, follow the link and send your request.

The Center's
 Off-Campus Fire and Life Safety Alliance
 is now open to the public !

JOIN THE ALLIANCE GROUP



# **OFF-CAMPUS** By Tim Knisely

April 2015

#### Tim Knisely

Tim Knisely is on the Board of Directors for The Center and the Senior Fire Inspector for the Centre Region Code Administration in State College, PA.

In this position he manages the Existing Structures Division that administers the fire and property maintenance code in all existing commercial and residential rental properties, and coordinates the life safety education for the community including off-campus and Greek housing.

Tim has been active with The Center for Campus Fire Safety since its inception and served as treasurer from 2007 to 2010.

He is a frequent presenter at Campus Fire Forum, an instructor for the Fire-Wise Campus program and served as project manager for Campus Fire Data.



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### THE INSPECTOR By Phil Chandler April 2015

What we don't know will definitely hurt us. The main impediment to mobilizing broad support for fire prevention initiatives on the campus is plain old ignorance. To those of us in the trenches, it never ceases to amaze how so many on the campus just don't get it-don't believe that fires happen regularly on every campus. Students, faculty, administrators, it matters not, are oblivious of the danger crouching at the gate. Ah, to go through each day so blissfully unawares.

Case in point: At 2:15 AM, a sleepy sophomore drifts off to dreamland, forgetting to extinguish the fragrant candle burning on the windowsill. Shortly thereafter, the drowsy coed is awakened from her

sleep by the urgent piercing sound of the fire alarm and the disorienting flash of its strobe light. Without time to ponder whether or not this freakish occurrence is a dream or some imminent danger, a strange radiating pain is felt throughout her upper body. The comforter and sheets are on fire! Instinctively, throwing the burning bed clothes to the floor, our frightened teen is able to escape the fire, fleeing with the rest of the residence hall occupants to the safety of the parking lot below, but not before sustaining first and second degree burns to her hands and forearms. A close call by any estimation!



It is unlikely that the fire would have spread to adjoining rooms before the arrival of the fire department. The fifty yearold building, though not sprinklered, is solidly

constructed of noncombustible materials with self-closing opening protectives. Nonetheless, even with a properly functioning fire detection system, the outcome might easily have been tragic. If the smoke detector in the room was one of those covered with a sandwich bag that we so frequently encounter, we might be mourning another tragic loss. If the victim was one of those that for whatever reason, is not roused by the loudest conventional fire alarm, another life may have been senselessly cut short.

Fire safety professionals understand how razor-thin the line between life and death is in every fire emergency. We understand how seemingly benign items and behaviors can lead to horrific consequences with a momentary lapse of attention. But we are not nearly as successful as we

need to be in transmitting our knowledge and experience to others. Unfortunately, we are



### THE INSPECTOR By Phil Chandler April 2015

hindered in our work by the complacent attitudes of other campus professionals with whom we react daily.

Occurring in the still of the night, the above incident might as well not have happened at all. The night shift custodial staff cleaned up the debris and replaced the burnt mattress. The residential director on site with the aid of one residential assistant assisted the rest of the students in returning to their rooms and restful sleep. The injured student, transported to the hospital, was left to her own resources in obtaining treatment; the college no longer accompanies sick and injured students to and from emergency rooms. By sunrise, the only telltale signs of the event were the scars on the arms of the victim and a couple of journal entries. As one ranking campus administrator remarked: "Looks like no big deal."

Yes, no big deal for those that are paid to keep the doors open, the lights on and instruction given. But it is a big deal to the injured student and it most certainly will be a big deal if the next preventable fire takes a life. Yet as long as we can dismiss fires that cause little disruption as insignificant, we come one step closer to a rendezvous with tragedy.

If I had my way, within hours of the fire, every member of the campus community would have received the following message: "A preventable fire occurred on campus last night and one of our own was sadly injured. The fire was caused by prohibited use of a candle. All residents are encouraged to review all safety provisions of their student manual." I would also plaster the campus with posters, call a press conference—make a holy ruckus. I would show everyone what a big deal every fire is!

As often as it has been said that the life of academia bears little resemblance to life in the real world, the truth is that the college campus is a microcosm of society at large. The indifference to the threat of fire on the campus is indicative of attitudes widely held throughout the country. How else could we as a society be so inured to thousands of fire deaths each year? A plane crash can dominate the nightly news for days; while three thousand deaths by fire are a mere statistic.

Some of us old-timers have hung on to the notion that the university may bring positive change to the world, to dispel darkness and lead us to a better place. But that eventuality is fading. As long as we on the campus are unable to affect even a slight change in attitudes towards combating the scourge of fire, a seemingly simple task, we as a society cannot expect much from our institutions of higher learning. We are doomed to an incessant pattern of tragedies and knee-jerk reactions. We can certainly do better! We must make every fire a teachable moment!



### **THE INSPECTOR** By Phil Chandler April 2015

Philip Chandler is a long time firefighter and a fulltime government fire marshal working extensively in the college environment - from large public university centers to small private colleges.

His primary responsibilities include code enforcement and education. Phil welcomes your comments, thoughts and opinions (whether in agreement or opposition) to his viewpoints. He may be reached at: <u>mailto:theinspector@cam</u> <u>pusfiresafety.org</u>

Ask the Inspector

Now Members can log onto the Member Website and have an online discussion with "The Inspector".

Simply visit the <u>MEMBER</u> <u>LOGIN</u> section of our public website. Once logged in, look for the Town Hall Discussions and ask "The Inspector".

Note: The viewpoints expressed in The Inspector are those of the author alone. They are offered to initiate thought and debate, however, they do not necessarily represent the views or opinions of The Center for Campus Fire Safety, its officers, directors or its editorial staff.



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# **CAMPUS FIRE SAFETY CODE TALK**

Campus Fire Safety e-NewZone

### MULTI-PHASED FIRE ALARM AND MASS NOTIFICATION SYSTEM UPGRADES:

### The Authority Having Jurisdiction (AHJ) and Proper Planning

By Ernesto Vega Janica, Senior Electrical Engineer, National Fire Protection Association

Planning and executing a multi-phased campus-wide upgrade to a fire alarm system and/or to an emergency communications system, such as a mass notification system (MNS), represents a major challenge for all stakeholders; especially for the authority having jurisdiction (AHJ) with the responsibility of approving and commissioning such system upgrades.

This article discusses a number of technical provisions in NFPA 72®, *National Fire Alarm and Signaling Code*®, 2013 edition; relevant to new technologies, research and recommendations made to AHJs to better address the integration of mass notification and other systems with campus-wide fire alarm systems. For illustration purposes, a few case scenarios are examined.

#### Why is so important to get it done and to get it right?

When an emergency arises in a campus environment, it is crucial to properly notify authorities and first responders, as well as students, faculty, staff and visitors. Such notifications should be provided in a timely and comprehensive fashion in order to expedite and optimize response actions; a mass notification system is one of the best methods to accomplish such a task.

There are many ways of providing a mass notification system. One of the most costeffective solutions is using the existing fire alarm system as a backbone and making the necessary upgrades to handle the requirements and capabilities of mass notification.



Proper planning and open-trustful communications will help to get it done right. Failure to provide timely and comprehensive notifications by poorly designed systems, or during any particular phase, could create a false sense of fire and life safety that adversely impact the safety of all occupants.

#### How can it be achieved?

The complexity of a campus-wide fire alarm system and its mass notification features requires extensive planning and considerable efforts and resources. Upgrades on such complex systems are usually performed in multiple stages or phases that may lapse from a few months to several years. Therefore, multi-phased projects are a common denominator when dealing with campus-wide fire alarm and mass notification system upgrades.

An important challenge in such projects is gaining support and approval from the AHJ. Open communications between all stakeholders, especially between design engineers and the AHJ, is crucial for proper planning and project execution. Generally speaking, design engineers will develop plans and specifications describing HOW the systems will operate in compliance with current code requirements and industry standards. The AHJ will be responsible for the acceptance criteria and final commissioning. But, resource limitations, and even occupancy management, will usually limit the amount of work that can be performed on a specific building, or a section of the campus, during any given period of time; therefore, establishing the WHEN can the work be performed.

In some cases, specific areas, such as computer rooms or dormitories, can be tackled simultaneously throughout the whole campus; while in other scenarios only particular buildings, or areas within a building, will be available for the installation crews to perform the work. It will depend on each campus, their buildings occupancy, how the risk and hazards are prioritized and, on the conditions and features available on the existing fire alarm and/or mass notification system.

Another possibility is to split project phases based on specific mass notification components, such as, in-building, wide-area and/or distributed recipient components, as centralized control units may be able to handle multiple buildings or campus areas.

#### Code Requirements and Recommendations<sup>1</sup>

<sup>&</sup>lt;sup>1</sup> Additional Code references may be required by the Authority Having Jurisdiction (AHJ) or Municipality. Therefore, the herein mentioned Codes are not intended to be an all-inclusive list. Consult your local Codes and the AHJ for specific requirements.



In order to identify where a fire detection system is required, and how the system should operate and interface with other systems, the following references should be considered:

- ▶ NFPA 101®, Life Safety Code®, 2015 edition,
- ▶ NFPA 72®, National Fire Alarm and Signaling Code®, 2013 edition and/or, other
- Applicable building and fire codes, such as, the International Building Code (IBC) and the International Fire Code (IFC).

The 2015 edition of NFPA 101<sup>®</sup>, *Life Safety Code*<sup>®</sup>, or the specific building code adopted in the jurisdiction, will determine WHERE the fire alarm and mass notification systems will be required based on the building occupancy and if the project will take place in new or existing buildings.

The 2013 edition of NFPA 72®, *National Fire Alarm and Signaling Code*®, will help establish HOW the initiating devices, notification appliances and other components are to be selected, HOW their installation needs to be performed and, applicable inspection, testing and maintenance procedures. Chapter 24 covers the application, installation, and performance of emergency communications systems and their components, including mass notification. This chapter applies to emergency communications systems within buildings and outdoor areas. Operating principles and performance criteria are also discussed in Chapter 18 and Annex A includes additional explanatory information.

As per Paragraph 24.3.11, a proper risk analysis will also need to be performed. The risk analysis will describe each area to be protected, identify anticipated hazards and risk, recommend fire detection and notification elements, as well as reference the applicable codes and standards.

#### How the NFPA 72®, 2013 edition changed to address these needs?<sup>2</sup>

Significant revisions were made in the NFPA 72®, 2013 edition, to reflect the broader application of the Code to emergency communications systems. These changes included the following:



- A completely new Chapter 7, Documentation Chapter; has been added to improve the overall usability of the document.
- Chapter 10, Fundamentals Chapter; to address power supply requirements, signal priorities and signal distinction requirements.
- Chapter 23, Protected Premises Chapter; to better accommodate non-fire alarm systems and combination systems.
- Chapter 26, Supervising Station Chapter and Chapter 27 Public Emergency Alarm Reporting System Chapter; to permit their use for emergency communications systems, and
- Chapter 14, Inspection, Testing and Maintenance Chapter; to incorporate requirements for the inspection, testing, and maintenance of mass notification systems and two-way radio communications enhancement systems.

<sup>&</sup>lt;sup>2</sup> Changes listed are only those related to emergency communications systems and mass notification. The NFPA 72, 2013 edition also includes multiple updates on other sections not related to this article's main topic.



#### HOW?

- Construction
   Specs need to
   be Code
   Compliant
- NFPA 101-2015
- NFPA 72-2013
   AHJ
- National/Local
   Acceptance
   Criteria

#### HOW?

• On a Building by

► By Hazardous

for the entire

campus or,

AHJ

Building case or,

Areas (i.e. Labs,

Computer Rooms)

As approved by the

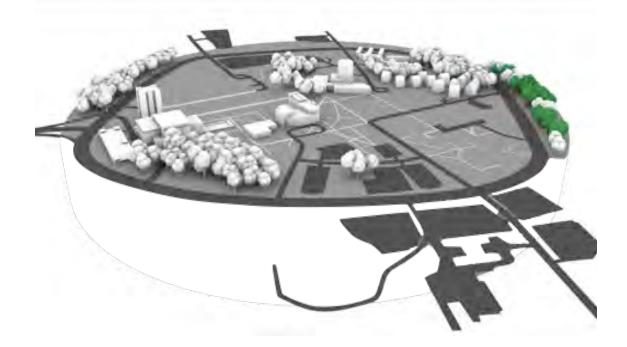
#### HOW?

- By MNS components:
   In Building
  - Systems ▸ Wide-Area
  - Systems

    Distributed
    Recipient
    Systems

#### HOW?

- By a Team Effort, with Open Trustful Communications and,
- By Compromise to Achievable and Safe Milestones.



If you don't have a good grip on HOW to get it done, don't Do It! It's OK to request more information (i.e. additional coordination drawings, meetings, inspections and/or additional phases)



#### **Case Scenarios**

As previously discussed, selection of project phases and scope will involve multiple elements and the commitment of all stakeholders; let's look at a few case scenarios and summarize the main elements to consider when determining if a project, or a selected phase, should move forward or, if additional steps are required.

		ROOF	MECH/EMR
	6TH		LIBRARY
	5TH		LIBRARY
4 <sup>™</sup>			LAB/CLASS RM
3 <sup>RD</sup>			LAB/CLASS RM
2ND			LAB/CLASS RM
1ST			LOBBY/CONF RM

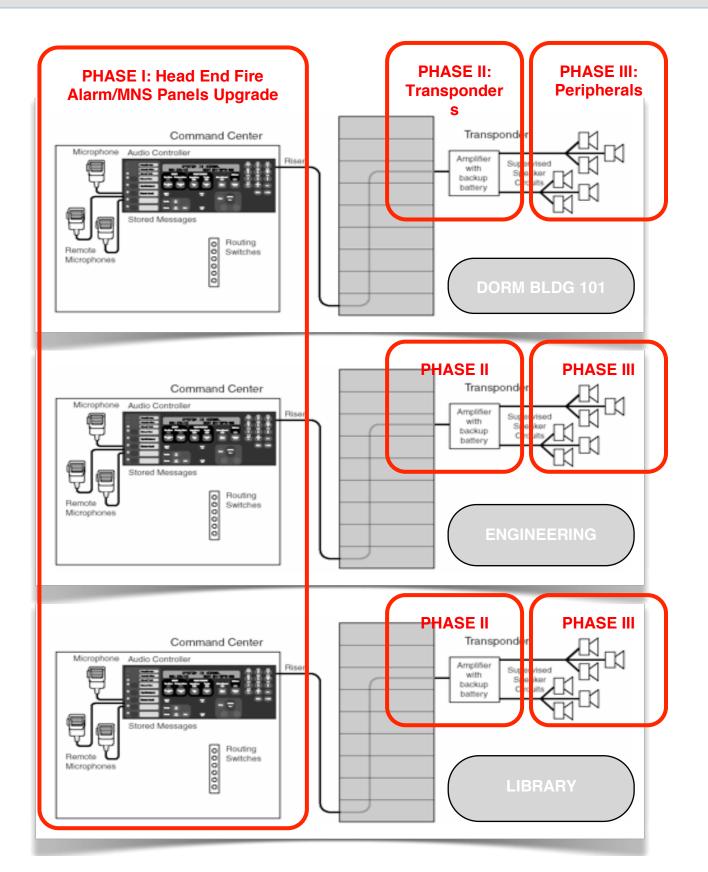
**Example 1:** One Building - MNS upgrade in multiple phases

What to consider: Some floor renovations may be done in different years Elements affecting audibility/intelligibility such as: Variety of finishing materials Ceiling heights Peripheral offices Code regulations may change every 3 to 5 years

**Example 2:** Multiple Buildings - MNS upgrade in multiple phases - Upgrades Based on System Components

What to consider:	Master planning required Single versus multiple manufacturers Head-end components may need to be upgraded first
	Compatibility issues:
	Between control units and field devices
	Between network control units and local control units
	Code regulations may differ based on occupancy Code regulations may change every 3 to 5 years







In order to select proper fire alarm and mass notification components, and to establish their expected coverage, extensive research and coordination with multiple manufacturers is commonly required. Components must be evaluated for the specific application, and capabilities and limitations must be compared against their datasheets and installation manuals. Validation of equipment and components performance can be requested from the manufacturer or listing agencies such as FM Global, Underwriters Laboratories (UL) and others.

Having the authority having jurisdiction's (AHJ) input and contribution early on the design and installation phases is essential to project success.

To conclude, it is essential to recognize the multiple challenging factors and the specific risks associated with implementing an upgrade project lapsing multiple phases, and possibly, over long periods of time. On a case by case basis, proper selection of system components and applicable means and methods need to be reviewed and coordinated with the AHJ and other trades. Accuracy on WHEN and HOW each phase is approved and commissioned are key elements to reduce unnecessary risk while providing achievable goals and expectations.



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#### **SECTION 1005**

#### MEANS OF EGRESS SIZING

[B] 1005.1 General. All portions of the means of egress system shall be sized in accordance with this section.

Exception: Means of egress complying with Section 1028.

This section is a charging paragraph for sizing for the means of egress system in a tenant space, floor or building. The exception is based on the understanding that the criteria for spaces that serve as assembly areas have unique criteria based on the high occupant load and possibility of stepped or sloped aisles.

[B] 1005.2 Minimum

width based on component. The minimum width, in inches (mm), of any means of egress component shall not be less than that specified for such component elsewhere in this code or the International Building Code.

◆The code requires the utilization of two methods to determine the minimum width of egress components.

While this section provides a methodology for determining required widths based on the design occupant load, calculated in accordance with Section 1004.1, other sections provide minimum widths of various components. The actual width that is provided is to be the larger of the two widths.

[B] 1005.3 Required capacity based on occupant load. The required capacity, in inches (mm), of the means of egress for any room, area, space or story shall not be less than that determined in accordance with Sections 1005.3.1 and 1005.3.2.

◆For this section, the sum of the capacities of the means of egress components that serve each space must equal or exceed the occupant load of that space. For example, the combined width of all the exit stairways from a floor need to be considered to determine if the stairways have adequate capacity for everyone to evacuate the building. All



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elements must meet the minimum width requirements specified in other sections (e.g., Section 1008.1.1 for doors; Sections 1007.3 and 1009.1 for stairs).

This section establishes the necessary width of each egress component on a "per-occupant" basis.

Means of egress components are separated between "stairs" and "other;" "other" being doors, doorways, corridors, ramps, aisles, etc.

The traditional unit of measurement of egress capacity was based on a "unit exit width" that was to simulate the body ellipse with a basic dimensional width of 22 inches (559 mm) approximately the shoulder width of an average adult male. This unit exit width was combined with assumed egress movement (such as single file or staggered file) to result in an egress capacity per unit exit width for various occupancies. This assumption simplifies the dynamic egress process since contemporary studies have indicated that people do not egress in such precise and predictable movements. As traditionally used in the codes, the method of determining capacity per unit of clear width implies a higher level of accuracy than can realistically be achieved. The resulting factors preserve the features of the past practices that can be documented, while

providing a more straightforward method of determining egress capacity.

[B] 1005.3.1 Stairways. The capacity, in inches (mm), of means of egress stairways shall be calculated by multiplying the occupant load served by such stairway by a means of egress capacity factor of 0.3 inch (7.6 mm) per occupant.

Where stairways serve more than one story, only the occupant load of each story considered individually shall be used in calculating the required capacity of the stairways serving that story.

Exception: For other than Group H and I-2



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occupancies, the capacity, in inches (mm), of means of egress stairways shall be calculated multiplying the occupant load served by such stairway by a means of egress capacity factor of 0.2 inch (5.1 mm) per occupant in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 and an emergency voice/alarm communication system in accordance with Section 907.5.2.2.

The capacity factor for stairways is larger than "other egress components" due to the slowdown of travel to negotiate the steps. When the required occupant capacity of an egress component is determined, multiplication by the appropriate factor results in the required clear width of the component in inches, based on capacity. Similarly, if the clear width of a component is known, division by the appropriate factor results in the permitted capacity of that component.

Per the exception, other than in Group H or I-2, if the building is sprinklered and has an emergency voice/alarm communication system, the capacity factor for stairways is permitted to be reduced to 0.2 inches (5.1 mm) per occupant. The 2009 edition of the code did not include the exception for sprinklered buildings; however, editions previous to 2009 included similar allowances in a table.

The following illustrate typical calculations for stairways from a nonsprinklered, twostory, two-exit office building:

1. Determine the minimum required stairway width with a second-floor occupant load of 350:

- 350 occupants divided by 0.3 inches = 105 inches (2667 mm) minimum;
- 105 inches divided by two stairways is 521/2 inches (1334 mm) minimum per stairway; or
- Section 1009.1



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prescribes that the width of an interior stairway cannot be less than 44 inches (1118 mm).

The capacity criteria are more restrictive and, therefore, the minimum required width for each stairway is 521/2 inches (1334 mm).

2. Determine the minimum required stairways width with a second-floor occupant load of 90:

90 occupants divided by 0.3 inches (7.62 mm)
= 27 inches (686 mm) minimum;

• 27 inches (686 mm) divided by two stairways is 131/2 inches (343 mm); or

• Section 1009.1 prescribes that the

width of an interior stairway cannot be less than 44 inches (1118 mm). Note that the stair width reduction in Section 1009.1, Exception 1, is applicable only when the entire occupant load of a story is less than 50.

The minimum clear width requirements are more restrictive and, therefore, the minimum required width for each stairway is 44 inches (1118 mm).

The maximum capacity of a 44-inch (1118 mm) stairway is 44 inches divided by 0.3 inches (7.62 mm) per occupant = 146 occupants. Therefore, a floor level with two exit stairways could have 292 occupants before the capacity would control the stairway egress width.

Using the exception for sprinklered buildings, a 44-inch (1118 mm) stairway divided by 0.2 inches (5.08 mm) per occupant = 220 occupants. Therefore, a floor level with two exit stairways could have 440 occupants before the capacity would control the stairway egress width.

Keep in mind that accessible means of egress stairways in nonsprinklered buildings require a minimum clear width of 48 inches (1219 mm) between handrails.

[B] 1005.3.2 Other egress components. The capacity, in inches (mm), of means of egress components



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other than stairways shall be calculated by multiplying the occupant load served by such component by a means of egress capacity factor of 0.2 inch (5.1 mm) per occupant.

Exception: For other than Group H and I-2 occupancies, the capacity, in inches (mm), of means of egress components other than stairways shall be calculated multiplying the occupant load served by such component by a means of egress capacity factor of 0.15 inch (3.8 mm) per occupant in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1

or 903.3.1.2 and an emergency voice/alarm communication system in accordance with Section 907.5.2.2.

The capacity factor for "other egress components" (i.e., doors, gates, corridors, aisles, ramps) is less than stairways due to the slowdown of travel to negotiate the steps. When the required occupant capacity of an egress component is determined, multiplication by the appropriate factor results in the required clear width of the component in inches, based on capacity.

Similarly, if the clear width of a component is known, division by the appropriate factor results in the permitted capacity of that component.

Per the exception, other than in Group H or I-2, if the building is sprinklered and has an emergency voice/alarm communication system, the capacity factor for doors, corridors, aisles, etc., is permitted to be reduced to 0.15 inches (3.8 mm) per occupant. The 2009 edition of the code did not include the exception for sprinklered buildings; however, previous editions included similar allowances in a table.

For example, two exit access doorways from a room with an occupant load of 300 would each have a required capacity of not less than 150. Based on the minimum required clear door width [32-inch



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(813 mm) clear width per door divided by 0.2 inch (5.08 mm) per occupant = 160occupants], two 32-inch (813 mm) clear width doors would meet both the minimum clear width (Section 1008.1.1) and the capacity requirements. Two exits from a space with an occupant load of 450 would each have a required capacity of not less than 225, necessitating more doors or larger door leaves.

0.2 inch (5.1 mm) per occupant in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 and an emergency voice/alarm communication system in accordance with Section 907.5.2.2.

The capacity factor for stairways is larger than "other egress components" due to the slowdown of travel to negotiate the steps. When the required occupant capacity of an egress component is determined, multiplication by the appropriate factor results in the required clear width of the component in inches, based on capacity. Similarly, if the clear width of a component is known, division by the appropriate factor results in the permitted capacity of that component.

Per the exception, other than in Group H or I-2, if the building is

sprinklered and has an emergency voice/alarm communication system, the capacity factor for stairways is permitted to be reduced to 0.2 inches (5.1 mm) per occupant. The 2009 edition of the code did not include the exception for sprinklered buildings; however, editions previous to 2009 included similar allowances in a table.

The following illustrate typical calculations for stairways from a nonsprinklered, twostory, two-exit office building:

1. Determine the minimum required stairway width with a second-floor occupant load of 350:

• 350 occupants divided



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by 0.3 inches = 105 inches (2667 mm) minimum;

• 105 inches divided by two stairways is 521/2 inches (1334 mm) minimum per stairway; or

• Section 1009.1 prescribes that the width of an interior stairway cannot be less than 44 inches (1118 mm).

The capacity criteria are more restrictive and, therefore, the minimum required width for each stairway is 521/2 inches (1334 mm).

2. Determine the minimum required stairways width with a second-floor occupant load of 90:

• 90 occupants divided

by 0.3 inches (7.62 mm) = 27 inches (686 mm) minimum;

• 27 inches (686 mm) divided by two stairways is 131/2 inches (343 mm); or

• Section 1009.1 prescribes that the width of an interior stairway cannot be less than 44 inches (1118 mm). Note that the stair width reduction in Section 1009.1, Exception 1, is applicable only when the entire occupant load of a story is less than 50.

The minimum clear width requirements are more restrictive and, therefore, the minimum required widthfor each stairway is 44 inches (1118 mm).

The maximum capacity

of a 44-inch (1118 mm)stairway is 44 inches divided by 0.3 inches (7.62 mm) per occupant = 146 occupants. Therefore, a floor level with two exit stairways could have 292 occupants before the capacity would control the stairway egress width.

Using the exception for sprinklered buildings, a 44-inch (1118 mm) stairway divided by 0.2 inches (5.08 mm) per occupant = 220 occupants. Therefore, a floor level with two exit stairways could have 440 occupants before the capacity would control the stairway egress width.

Keep in mind that accessible means of egress stairways in nonsprinklered buildings



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require a minimum clear width of 48 inches (1219 mm) between handrails.

[B] 1005.3.2 Other egress components. The capacity, in inches (mm), of means of egress components other than stairways shall be calculated by multiplying the occupant load served by such component by a means of egress capacity factor of 0.2 inch (5.1 mm) per occupant.

Exception: For other than Group H and I-2 occupancies, the capacity, in inches (mm), of means of egress components other than stairways shall be calculated multiplyingthe occupant load served by such component by a means of egress capacity factor of 0.15 inch (3.8 mm) per occupant in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section

903.3.1.1 or 903.3.1.2 and an emergency voice/alarm communication system in accordance with Section 907.5.2.2.

◆The capacity factor for "other egress components" (i.e., doors, gates, corridors, aisles, ramps) is less than stairways due to the slowdown of travel to negotiate the steps. When the required occupant capacity of an egress component is determined, multiplication by the appropriate factor results in the required clear width of the component in inches, based on capacity.

Similarly, if the clear width of a component is known, division by the appropriate factor results in the permitted capacity of that component.

Per the exception, other than in Group H or I-2, if the building is sprinklered and has an emergency voice/alarm communication system, the capacity factor for doors, corridors, aisles, etc., is permitted to be reduced to 0.15 inches (3.8 mm) per occupant. The 2009 edition of the code did not include the exception for sprinklered buildings; however, previous editions included similar allowances in a table.



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For example, two exit access doorways from a room with an occupant load of 300 would each have a required capacity of not less than 150. Based on the minimum required clear door width [32-inch (813 mm) clear width per door divided by 0.2 inch (5.08 mm) per occupant = 160occupants], two 32-inch (813 mm) clear width doors would meet both the minimum clear width (Section 1008.1.1) and the capacity requirements. Two exits from a space with an occupant load of 450 would each have a required capacity of not less than 225, necessitating more doors or larger door leaves.

Doors in any position shall not reduce the required width by more than one-half.

#### Exceptions:

1. Surface-mounted latch release hardware shall be exempt from inclusion in the 7-inch maximum (178 mm) encroachment where:

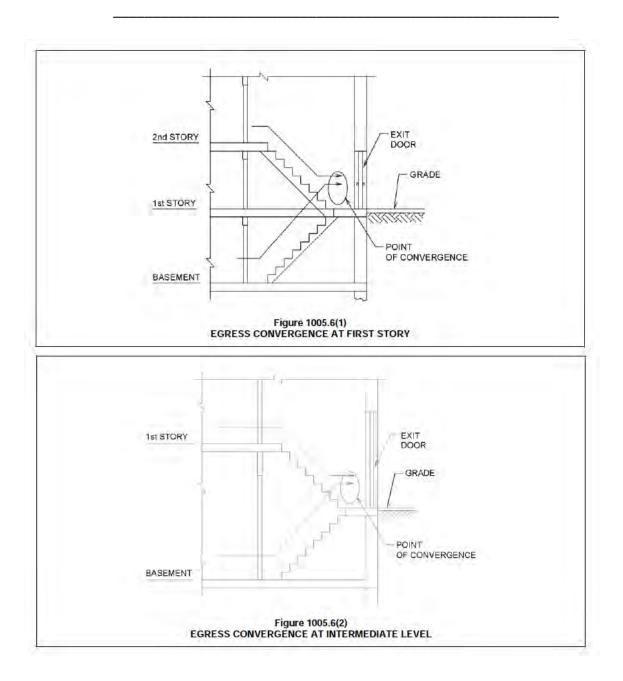
1.1. The hardware is mounted to the side of the door facing away from the adjacent wall where the door is in the open position; and

1.2. The hardware is mounted not less than 34 inches (865 mm) nor more than 48 inches (1219 mm) above the finished floor.

2. The restrictions on door swing shall not apply to doors within individual dwelling units and sleeping units of Group R-2 occupancies and dwelling units of Group R-3 occupancies.



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Projections or restrictions in the required width can impede and restrict occupant travel, causing egress to occur less efficiently than expected. The swinging of a door, such as from a room into a corridor, and any handrails along the route are permitted projections.

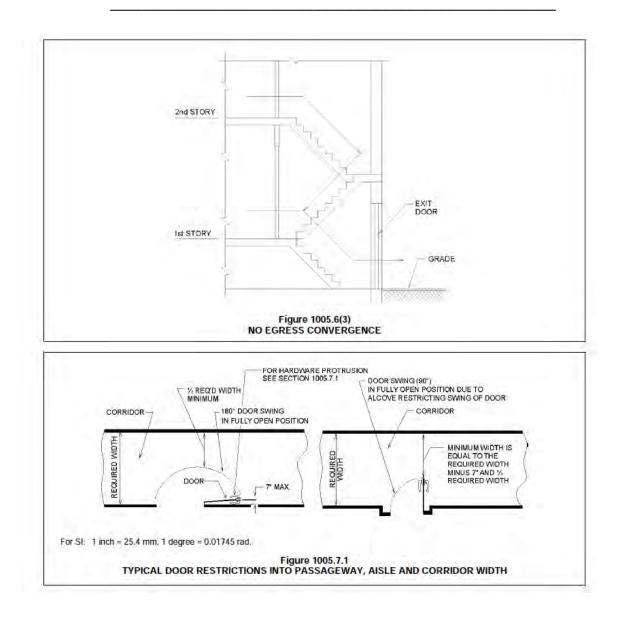
Historically this section has looked at doors on one wall at a time. Doors located across the hall from one another are not considered additive when considering protrusion limits. Doors would not typically be opened to the full extent at exactly the same moment, nor can they remain open at 90 degrees and totally blocking the hall

because of the maximum limitation of 7 inches (178 mm) when fully open (typically approaching 180 degrees). Regarding door encroachment there are two tests. The arc created by the doors outside edge cannot project into more than one-half of the required corridor width. When opened to its fullest extent, the door cannot project more than 7 inches (178 mm) into the required width, which is the dimension of the leaf thickness excluding the hardware as shown in Figure 1005.7.1. Door hardware encroachment is addressed separately in Exception 1. These projections are permitted because they are considered to be temporary and do not

significantly impede the flow. Occupants will compensate for the projection by a reduction in the natural cushion they retain between themselves and a boundary, known as the edge effect.



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Per Exception 2, the door swing restrictions do not apply within dwelling units since the occupant load is very low. Based on the intent of this section, other situations that could be approved by the official having jurisdiction would be situations where the opening door would not block the egress, such as the door at the end of a corridor, or the room was not typically occupied, such as a janitor's closet.

The provision in Exception 1 indicates that hardware facing the corridor when the door is fully open need not be considered when determining the allowable door encroachment into a corridor of 7 inches (178 mm) maximum. The allowance is applicable provided the hardware is mounted within height range of 34 inches to 48 inches (865 to 1220 mm) which is consistent with the range for means of egress door hardware height as established in Section 1008.1.9.2. Where hardware extends across a door, such as panic hardware, the 4-inch (102 mm) projection in the door opening is addressed in Section 1008.1.1.1.

[B] 1005.7.2 Other projections. Handrail projections shall be in accordance with the provisions of Section 1012.8.

Other nonstructural projections such as trim and similar decorative features shall be permitted to project into the required width a maximum of 11/2 inches (38 mm) on each side.

 Handrails are not required along corridors, level aisles, exit passageways and exit corridors; however, if provided, Section 1012.8 would be applicable.

Handrails are sometimes provided along the hallways in hospitals or nursing homes to aid the residents.

Bumper guards along the walls are not handrails. Items such as baseboards, chair rails, pilasters, etc., are limited to protruding over the required width of the corridor a maximum of 11 /2



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inches (38 mm); however, once again, Section 1003.3.3 would be applicable when the corridor was wider than required.

[B] 1005.7.3 Protruding objects. Protruding objects shall comply with the applicable requirements of Section 1003.3.

 This section is a reminder that protruding objects are applicable when looking at encroachments into a confined path of travel. The difference, however, is that door and other projections are applied to the required minimum width, while protruding object provisions apply to paths of travel even when wider than required.

Next Month: SECTION 1006

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