

506.4.1

Proponent: John Dean, National Association of State Fire Marshals (NASFM) and Ken Kraus, Los Angeles Fire Department, CA

Revise as follows:

506.4.1 (Supp) Area determination. The total allowable building area of a building with more than one story above grade plane shall be determined by multiplying the allowable area per story (A_a), as determined in Section 506.1, by 2, the number of stories above grade plane as listed below:

- ~~1. For buildings with two stories above grade plane, multiply by 2;~~
- ~~2. For buildings with three or more stories above grade plane, multiply by 3; and~~
3. No story shall exceed the allowable area per story (A_a), as determined in Section 506.1, for the occupancies on that story.

Exceptions:

1. Unlimited area buildings in accordance with Section 507.
- ~~2. The maximum area of a building equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.2 shall be determined by multiplying the allowable area per story (A_a), as determined in Section 506.1, by the number of stories above grade plane.~~

Reason: Dean: NASFM proposes a reduction of the total allowable building area from three to two times that allowed for a single floor area based on the calculations of A_a (allowable area) per floor as determined in Section 506.1.

Two of the three Legacy Codes did not permit an architect to multiply the allowable floor space by a factor of three and the third only addressed this multiplier in limited situations. The National Association of State Fire Marshals (NASFM) understands the economic benefits to developers of being able to construct much larger buildings with less built-in fire-resistance on a defined parcel of land. But the economic benefits to developers do not justify the increased risk to occupants and emergency responders. Nor do they justify the on-going costs to owners and tenants.

Taken together with other provisions of the International Building Code (IBC), the current allowance means that occupancies – including health care facilities, schools, residences and office buildings – may be built taller and larger, with less built-in fire protection. If firefighters must enter a burning building to rescue patients, students, physically challenged or otherwise immobile persons, they now face the prospect of climbing higher and traveling further into hostile conditions. The longer they remain in a burning building, the greater the risk of structural collapse. In addition, our most vulnerable structures – tall buildings – will present challenges that many American fire departments are not equipped to handle. As these buildings are allowed to expand in area and in height, without a corresponding increase in built in fire resistance, the risks to occupants and emergency first responders grow exponentially. Larger, taller buildings with less built-in passive protection also invite increases in fire load comprising materials that generate higher temperatures much more quickly. Due to the increase in size, coupled with limited fire service resources, tall buildings will be required to sustain themselves for longer periods of time.

Firefighters take responsibility for their own safety. The National Institute of Occupational Safety and Health (NIOSH) has advised fire departments to refrain from sending firefighters into buildings if there are concerns about structural collapse. NASFM concurs with this advice from NIOSH, and encourages fire departments to understand the implications of the fire protection requirements in the IBC. Fire chiefs often bear responsibility for plan review, inspections and fire fighter safety. As a result of the NIOSH advisory, they have little choice but to use what they know about a building to prepare for suppression activities.

It makes little sense to await the loss of life and property before we consider returning to proven safety practices. In fact, "waiting and seeing" begs the question, "How many lives must be lost to justify a return to what we know to be safe?" Our intuitive presumption would be that making buildings larger, both in height and area, with less built-in passive fire resistive protection and the use greater use of combustible materials can only result in greater property loss and the potential for greater loss of life. We all agree that one life lost is one too many. So let us prevent the loss of that one life.

The more responsible policy is to return to the well-tested requirements of the Legacy Codes, so that emergency responders and the persons they are sworn to protect may be confident in the safety of buildings.

Kraus: The intention of this code change proposal is to reduce the total building area for buildings with 3 or more stories above grade.

There are many ways to adjust the height and area allowances of the IBC. I have chosen this particular section and mechanism because it was not a primary mechanism of any of the legacy groups to calculate total building area for buildings 3 stories and taller. Eliminating the 3X multiplier significantly reduces the area of these buildings, bringing the IBC closer to alignment with areas allowed previously (although, generally they will still be larger).

The following text is substantially similar to the supporting information for proposed changes to 504.2 and 506.4.

There exist 3 primary reasons that mandate modification to the height and area provisions of the *International Building Code*, specifically:

1 – The lack of fire history for buildings constructed to the current IBC height and area requirements.

During previous code hearings and at various committee meetings this sentiment was offered to console individuals that, after calculating height and area values under the IBC, found the IBC allowed buildings to be constructed taller and much larger (by a factor of 2 to 3) than any legacy code or BCMC recommendations. This reality came to the forefront after the Orlando code development hearing and caused, presumably and in part, the CTC BFP Work Group to rethink height and area. Once the Work Group identified some 50 "anomalies", concern grew when the science used to formalize Table 503 values could not be harnessed to the point that rendered confidence.

Add to this, the fact that each legacy group had somewhat different height and area enhancements, (increased allowances or multipliers for location on property, type of construction, multiple stories etc). While these factors seemed to stand the test of time regionally, the additive combining of these elements and their influence on the suspect tabular values brings into question the efficacy of IBC Chapter 5 which allows buildings to be constructed both taller and larger than any legacy code.

These comments should not be considered a criticism of the effort of the drafting committee whose task was formidable and time constraints demanding.

2 - The value afforded to fire sprinkler systems.

While Fire sprinklers are well established as the single most important fire protection element in the fire and life safety toolbox they are not a panacea. The dynamic nature of fire incidents and the potential for life loss preclude the acceptance or over reliance on a single protective. Various and diverse tools must be employed to ensure that structures react in a predictable manner even when certain elements don't perform as designed. There are times when sprinklers don't perform satisfactorily. Some examples are:

Interruption of water supply due to natural disaster, intentional acts, unintentional careless acts (maintenance/construction). Ineffective activation due to change in commodity or construction feature, improper storage, faulty sprinkler heads.

Each Legacy group had numerous tradeoffs for sprinklers but also made deliberate decisions to not institute other tradeoffs. By melding

3 - A prevailing rationale used in selecting the tabular values in 503, i.e., not to create non-compliant buildings upon adoption of the IBC.

This problem is faced each time a local or state jurisdiction adopts a new code or updates existing requirements. Buildings built to previous editions are automatically out of compliance with the new code. This perception is tempered by the fact that these buildings are still regulated by the code in effect when they were built, (except for retroactive requirements).

While not creating non-compliant buildings is a justifiable consideration, it is not a primary intent of the IBC. The intent of the IBC is to safeguard the public health, safety and general welfare through various means and to provide safety to life property and emergency responders. Over reliance on the non-complaint building concern may have, in some cases, caused these primary tenets to be relegated to secondary in importance.

Regarding related / concurrent proposals. I respect and support both the Balanced Fire Protection Work Group and their efforts. Time constraints have prevented me from fully assimilating their IBC Chapter 5 proposal.

I urge the Committee to consider this proposal as a reasonable method of bringing the IBC area allowances more in line with those found in the basis documents. The disparity between the 3 story IBC areas and the legacy codes is too great to accept without additional mitigating protectives.

Cost Impact: Dean: The code change proposal will not increase the cost of construction.

Kraus: This code change will increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF