SELF STORAGE DESIGN, CONSTRUCTION AND THE INTERNATIONAL BUILDING CODE

Self storage developers, architects, engineers and contractors who work on the national level have long been frustrated by the lack of uniformity in building codes throughout the country. This lack of uniformity results in wildly differing requirements for the design and construction of self storage projects from place to place throughout the United States. The planning, design and construction of a project can therefore not proceed smoothly from start to finish without encountering obstacles, delays and unexpected additional costs, all of which means bad news for the development community and ultimately the consumer.

Although improvements in code uniformity are now underway, recent history shows that regional building codes developed by private organizations have long been entrenched in various parts of the country. These codes are as follow:

- The national building code developed by the “Building Officials and Code Administrators” (BOCA Code), adopted primarily in the midwest and northeast.
- The standard building code developed by the “Southern Building Code Congress International” (SBCCI Code), adopted primarily in the southeast and east.
- The uniform building code developed by the “International Conference of Building Officials” (ICBO Code), adopted primarily in the west.

These three codes along with the “National Fire Protection Association” (NFPA Fire Code), which was also developed by a private organization, and The Americans with Disabilities Act (ADA Access Code), a federal government law, have long formed the foundation of building codes nationwide.

A movement began in 1993 to standardize the codes with the formation of “The International Code Council”, comprised of members of BOCA, SBCCI and ICBO. This new organization has developed a new code that is intended to be the single code book in use everywhere in the United States. The new code is the International Building Code (IBC), which was completed in 1997 and is steadily being adopted by most of the states, leading to implementation at the local municipal level where building plans are reviewed and approved for construction.

The recent failure of the IBC’s adoption by the California legislature will perpetuate the nuisance created by the current California codes, in which “self storage” is poorly categorized and overly regulated. Additionally, the ongoing lack of code unification on a national level will perpetuate the inefficiencies that exist for developers, architects and civil engineers that work on the national level.

Although the continued use of the overlapping and often contradictory Uniform Building Code, State Building Code, NFPA and ADA in California does not have a crippling effect on self storage design and development, the benefit of the IBC’s adoption is delayed in coming.

To get a better understanding of the impact of the situation, it is helpful to look at the individual components of a building code’s application to a self storage building’s design.

The IBC, like any building code, puts forth the requirements for design and construction of all buildings, including self storage projects, by specifying construction requirements in key areas:

- **Occupancy Definition and Classification**

  1. Construction Type Classification
  2. Occupant Load Determination
  3. Building Occupant Emergency Exiting
  4. Fire Resistivity Standards
  5. Disabled Access Standards

  These six key areas will regulate the external physical form as well as the internal arrangement of the project and the physical nature of the individual building components. Code analysis by architects and building designers begins with making the project design program comply with these 6 basic requirements.

A comparison of the IBC and UBC follows:

- **Occupancy Definition and Classification**
  - In the IBC, self storage has its own specific code designation, being officially identified as a “Self Service Storage Facility”. The UBC does not have a specific designation for self storage.
  - The IBC further categorizes the use as S-1 “moderate hazard” or S-2 “low hazard”, leaving it to the local building official to decide.
  - The UBC has a similar S-1 or S-2 classification. The advantage here is with the IBC for the specific definition of the use.

- **Construction Type Classification**
  - The IBC specifies 5 types of construction: Type I through Type V, ranging from concrete and steel to wood frame. A subcategory of “A” or “B” follows for higher or lower fire resistivity.
  - The UBC uses similar construction types, with a subcategory of “I - hour” or “non rated” for higher or lower fire resistivity.

In California, most self storage facilities are of Type II or Type III construction primarily consisting of non-combustible concrete or masonry and light gauge steel.

| A. Maximum allowable floor areas per IBC for a S-2 occupancy: |
|-----------------|-----------------|
| a. 39,000 square feet basic area for II-A construction. |
| b. 26,000 square feet basic area for II-B construction. |
| c. 39,000 square feet basic area for III-A construction. |
| d. 26,000 square feet basic area for III-B construction. |

| B. Maximum allowable floor areas per UBC for a S-2 occupancy: |
|-----------------|-----------------|
| a. 27,000 square feet basic area for II-I hour construction. |
The advantage goes to the IBC in this area as well, due to less restrictive fire resistivity standards. The IBC requires at least two exits per floor or area when the occupant load is 30 or greater, which is the case in most buildings. The exits must be spaced as far apart as possible to avoid having both exits blocked by flame or smoke. At least one of the exits must be a vertical (stair) exit. Elevators are not allowed as exits, except for rare instances in high rise buildings.

The IBC goes strictly by square footage, taking away a possible favorable option.

In this area, the IBC is preferable, again resulting in lessened fire resistivity standards.

Building Occupant Emergency Exiting

Once the number of occupants has been established for a floor area of a building, emergency exits must be designed to provide an orderly manner for the building’s occupants to exit an area threatened by fire. Legal exits consist of stairs which are considered vertical exits, or doorways through fire rated walls, which are considered horizontal exits.

The IBC requires at least two exits per floor or area when the occupant load is 30 or greater, which is the case in most buildings. The exits must be spaced as far apart as possible to avoid having both exits blocked by flame or smoke. At least one of the exits must be a vertical (stair) exit. Elevators are not allowed as exits, except for rare instances in high rise buildings.

The UBC requires at least two exits for an occupant load of 10 or greater.

The advantage goes to the IBC in this area as well, due to less restrictive fire resistivity requirements.

Fire Resistivity Standards

Fire resistivity standards for individual building components are similar in both codes. These standards include fire rating requirements for exterior walls, interior walls, exit hallway walls, floors, ceilings, elevator shafts, mechanical shafts and mechanical rooms.

Although one code may have an advantage over the other code in certain individual areas, the overall code is fairly even.

Disabled Access Standards

Both codes generally require disabled access to a site and the building, in the form of parking and accessible path of travel to the office, the bathrooms and the storage units.

Most of the detailed requirements for site access and building access specifically noted in the IBC and UBC are very general in nature and are deferred to other publications, such as the California Title 24 accessibility standards or the federal A.D.A. standards.

Two very positive details in the IBC code are the specific statements that only a small percentage of storage units need be accessible to disabled persons, and that properly dispersed accessible storage spaces (by unit size) can be located in a single building, even if the facility has numerous buildings.

The UBC makes no such provision, giving the IBC a very favorable preference in this all important area.

It is very likely that disabled access will continue to be the area that creates the most confusion due to a wide range of conflicting federal and state laws in effect that vary from place to place - California included.

Although the IBC has followed the sensible approach pioneered by the BOCA code regarding disabled access to a certain small percentage of overall spaces, local building officials are often forced to adopt a more stringent standard again due to often vague state laws. Relief for overzealous access requirements has been particularly slow or non existent in California, where some strict interpretations of the state disabled access codes have required accessibility to 100% of a project's units, inside or outside. Compliance under these circumstances leads to a multitude of difficult design challenges, including sloped roll-up door thresholds, overly flat sites that drain poorly and expensive elaborate pedestrian wheelchair ramps from public sidewalks to the office that are seldom if ever used.

Perhaps the adoption of the IBC in California would bring some relief to the overly strict state Title 24 requirements.

And overall, there is no question that national uniformity of building codes would be a benefit to the construction industry and the general public.

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