Just when you thought that you had the provisions of mixed use and occupancy down pat, the requirements have completely changed in the 2006 edition of the *International Building Code* (IBC). While this happens to be the case in the 2006 IBC, many of the requirements have simply been relocated from Chapter 3 to Chapter 5 of the code. One significant change is Table 508.3.3, Required Separation of Occupancies (Hours), which is former Table 302.3.2 in the 2000 & 2003 editions of the code. If one compares the Tables, the 2006 Table is significantly different than the previous editions. This table will be discussed further in the paper. Another significant difference applies to Accessory Occupancies.

Occupancy classifications are covered in Chapter 3, Use and Occupancy Classification. Chapter 3 is a scoping chapter. It provides the basis for determining the character of use of a building and thus it’s appropriate occupancy classification. In some cases, a building may be of multiple occupancies depending on the use of the building. Section 302.1 requires such building or portion thereof to comply with all of the applicable requirements for the different uses or occupancy. The occupancy classifications in the 2006 IBC are as follows:

2. Business (see Section 304): Group B
3. Educational (see Section 305): Group E
4. Factory and Industrial (see Section 306): Groups F-1 and F-2
6. Institutional (see Section 308): Groups I-1, I-2, I-3 and I-4
7. Mercantile (see Section 309): Group M
8. Residential (see Section 310): Groups R-1, R-2, R-3 and R-4
9. Storage (see Section 311): Groups S-1 and S-2
10. Utility and Miscellaneous (see Section 312): Group U

Mixed use and occupancy covers a variety of options open to the designer in these buildings. It is important to understand that Section 508 deals not only with mixed use and occupancy, but also Incidental Uses and Accessory Uses. The requirements for Incidental Uses and Accessory Uses are applicable to single use occupancy buildings as well. Incidental or Accessory Uses must comply with their applicable provisions; otherwise the building must be classified as a mixed use or occupancy building.

“Mixed use” classification applies to a building or portion thereof that is generally of a particular occupancy category such as Group A, but contains various sub-categories of the group such as Group A-1 and A-3. “Mixed occupancy” classification applies to

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buildings or portions of buildings that contain different occupancy classifications such as Group B and Group S-2.

**INCIDENTAL USES:**

Incidental uses, as the name implies, are “incidental” to the main use of the building. They contain hazards that are found in most buildings but do not contribute significantly to the overall fire hazard of the building. A list of incidental uses and their required separation/protection is found in Table 508.2, Incidental Use Areas. These uses must be either separated and/or protected in accordance with the Table. Separation requirements could be 1- or 2-hour and/or protected by an approved automatic fire-extinguishing system. Construction separation requirements are outlined in Section 508.2.2.1. When fire-extinguishing protection is required or permitted, the system is required only in the Incidental Use area unless the entire building is required to be protected with such a system by other provisions of the code.

<table>
<thead>
<tr>
<th>TABLE 508.2 INCIDENTAL USE AREAS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Room or Area</strong></td>
</tr>
<tr>
<td>----------------------------------</td>
</tr>
<tr>
<td>Furnace room where any piece of equipment is over 400,000 Btu per hour input</td>
</tr>
<tr>
<td>Rooms with boilers where the largest piece of equipment is over 15 psi and 10 horsepower</td>
</tr>
<tr>
<td>Refrigerant machinery rooms</td>
</tr>
<tr>
<td>Parking garage (Section 408.2)</td>
</tr>
<tr>
<td>Hydrogen cut-off rooms, not classified as Group H</td>
</tr>
<tr>
<td>Incinerator rooms</td>
</tr>
<tr>
<td>Paint shop, not classified as Group H, located in occupancies other than Group F</td>
</tr>
<tr>
<td>Laboratories and vocational shops, not classified as Group H located in Group E or I-2 occupancies</td>
</tr>
<tr>
<td>Laundry rooms over 100 square feet</td>
</tr>
<tr>
<td>Storage rooms over 100 square feet</td>
</tr>
<tr>
<td>Group I-3 cells equipped with padded surfaces</td>
</tr>
<tr>
<td>Group I-2 waste and linen collection rooms</td>
</tr>
<tr>
<td>Waste and linen collection rooms over 100 square feet</td>
</tr>
<tr>
<td>Stationary lead-acid battery systems having a liquid capacity of more than 100 gallons used for facility standby power, emergency power or uninterrupted power supplies</td>
</tr>
</tbody>
</table>

For SI: 1 square foot = 0.0929 m², 1 pound per square inch = 0.9 kPa, 1 British thermal unit per hour = 0.293 watts, 1 horsepower = 746 watts, 1 gallon = 3.785 L.

**MIXED OCCUPANCIES:**

Section 508.3 applies to “mixed occupancies” and or “mixed uses”. It should be noted that Section titles do not necessarily determine the scoping of the code requirements of the section. Thus, Section 508.3 applies to both “mixed uses” and “mixed occupancies”. Section 508.3 Mixed Occupancies contains provisions for accessory occupancies, non-separated occupancies and separated occupancies.
ACCESSORY OCCUPANCIES:

Section 508.3.1 defines Accessory occupancies as those that are ancillary and accessory to the main occupancy of the building or portion thereof. The area of accessory occupancies is limited to 10% of the area of the story in which they are located and are not permitted to exceed the base occupancy tabular area in Table 503. Accessory uses are not allowed to utilize area, height or story increases. There are three exceptions to the accessory occupancy requirements.

Except for Group H-2, H-3, H-4 or H-5 occupancies, no separation is required for accessory uses. The allowable area, height and number of stories are based on the primary occupancy. Accessory Occupancies are classified the same as the main use/occupancy. The more restrictive applicable provisions of Section 409 and Chapter 9 apply to the entire building similar to the requirements for non-separated occupancies. In the graphic below, the Group B might be considered to be an Accessory occupancy.

![Diagram of Accessory Occupancy](image)

NONSEPARATED OCCUPANCIES:

All occupancies except Group H occupancies are permitted to be in nonseparated occupancy buildings. Nonseparated occupancies are literally those in which there is no fire barrier between the various occupancies. As a side note, Group H-1 are always required to be in single occupancy buildings and in some cases, Group H-2 and H-3 occupancies must also be in separate buildings.

When using the nonseparated occupancy provisions, the more restrictive occupancy based on the provisions of Table 503 controls including height, number of stories and area. Additionally, the more restrictive provisions of Section 403 and Chapter 9 apply to the entire building. In applying the fire area provisions of Chapter 9, the area of all non-separated occupancies is used to determine fire sprinkler requirements. The individual occupancies must also comply with any specific occupancy requirements related to their use.
SEPARATED OCCUPANCIES:

In contrast to nonseparated occupancies, separated occupancies are those that are provided with the appropriate fire barrier in accordance with Table 508.3.3. Each separate occupancy is classified in accordance to its particular use and each fire area must comply with the code based on each portion of the building. When using the separated occupancy provisions, each occupancy must be separated with fire barriers or horizontal assemblies in accordance with Table 508.3.3.
Don’t be confused by Table 508.3.3. Even though certain occupancies are grouped together and do not require separation from one another, they must still be considered separated occupancies unless the building will comply with the nonseparated occupancy building provisions. In the case of separated occupancies the allowable area within each story must be such that the sum of the ratios of the actual floor area of each occupancy divided by the allowable area of each occupancy must be less than or equal to one. The ratio of one is equivalent to 100% of the area that a building is permitted.

\[
\frac{\text{Actual Group B}}{\text{Allowable Group B}} \ + \ \frac{\text{Actual Group S-2}}{\text{Allowable Group S-2}} \ + \ \frac{\text{Actual Group A-3}}{\text{Allowable Group A-3}} \ \leq 1
\]

In multiple story buildings, this ratio per floor must be combined with Section 506.4. In a single occupancy building the area of a two story buildings is permitted to be twice the area of a single story building or 200% (x2) of the calculated area, provided the area does not exceed the maximum allowable area per story (100% or x1). Three or more story single occupancy buildings are permitted to be three times the area of a single story.
building or 300% (x3) of the calculated area provided the area does not exceed the
maximum allowable area per story (100% or x 1). Thus in separated mixed occupancy
buildings the ratio per floor may not exceed 1 on any story, but the total of the stories
may not exceed 2 (200% or x2) in two story buildings or 3 (300% or x3) in three or more
story buildings. See the example below.

There are different options to allow a separated mixed occupancy building to comply as
follows:
1. Modify the configuration of the different occupancies, or
2. Increase the construction type, or
3. Provide a fire sprinkler system for the building, or
4. Provide a “Fire Wall” to reduce the Building’s total area into multiple
buildings.

In the example above, a given occupancy may not be in a story higher than that permitted
by Table 508.3.3. including permitted increases based on a fire sprinkler system.

Following the illustrations in this article should make it easier to correctly apply the
complex occupancy provisions when determining type of construction and allowable
area.