

faces of the building. This was described in Chapter 2 and in more detail in NIST NCSTAR 1-5A.

- The aircraft fuselage destroyed portions of the floor slabs (NIST NCSTAR 1-2). This is discussed further in Section 4.7.
- The aircraft debris opened large holes in the demising walls to the core and thus access to the elevator shafts, etc.

3.2 BUILDING COMBUSTIBLES

3.2.1 Nature of Combustibles

While much of the public attention has been focused on the jet fuel, most of this was combusted in only a few minutes. By contrast, typical office furnishings can sustain intense fires of at least an hour's duration on a given floor (see, e.g., Nelson 1989).

The most common layout of the focus floors was a continuous open space populated by a large array of workstations (also referred to as office modules or cubicles) (Table 3–2). The number of different types of workstations in the WTC towers is unknown and was probably large. However, discussions with office furniture distributors and visits to showrooms indicated that, while there was a broad range of prices and appearances, the cubicles were fundamentally similar. Each cubicle typically was bounded on four sides by privacy panels, with a single entrance opening. Within the area defined by the panels was a self-contained workspace: desktop (almost always a wood product, generally with a laminated finish), file storage, bookshelves, carpeting, chair, etc. Presumably there were a variety of amounts and locations of paper, both exposed on the work surfaces and contained within the file cabinets and bookshelves. These cubicles, as many as 200 or more per floor, were grouped in clusters or rows. Figure 3–4 shows the layout of the 97th floor of WTC 1.

As input to the fire modeling, it was useful to estimate the average fuel loading of the floors in the towers. This was done as follows:

- On a mass basis, the workstations were generally the dominant combustibles on the floors in WTC 1 where extensive fires were observed. For the fuel load calculation it was assumed that the entire tenant floor space was filled with workstations.
- The tenant space floor area (i.e., the total floor space minus the core area) was approximately 2,800 m² (30,000 ft²).
- There were approximately 200 workstations equivalents per floor. The workstations contained roughly 200 kg (400 lb) of combustible mass (NIST NCSTAR 1-5C). Paper in the bookcases and on the desktop could have been in the range of an additional 50 kg (100 lb). [Paper in the filing cabinets, while it might have been significant in mass, did not burn readily due to the limited oxygen available within the drawers.] Thus, the total combustible mass on a floor was about 5×10^4 kg (1×10^5 lb).
- The combustible fuel load in the tenant spaces then was approximately 20 kg/m² (4 lb/ft²).