

6.13.4 Floor 82

Most of the perimeter and core columns along the east, and especially northeast, tenant space showed very high temperatures. This floor was one of the most severely insulation-damaged floors in these simulations. The fires in the northeast corner burned out at 50 min to 60 min, which resulted in cooling of the temperatures of the trusses and columns in this area.

6.13.5 Floor 83

Like floor 82, floor 83 showed very intense fire activity throughout the simulation, resulting in temperatures highly likely to result in structural weakening on the east side of the building.

6.14 SUMMARY OF THERMAL RESPONSE OF STRUCTURAL COMPONENTS

Tables 6–3 and 6–4 summarize the regions of the floors in which the structural steel reached temperatures at which their yield strengths would have been significantly diminished. Instances of brief heating of one or two columns early in the fires were not included.

Table 6–3. Regions in WTC 1 in which temperatures of structural steel exceeded 600 °C.

Floor Number	Trusses		Perimeter Columns		Core Columns	
	Case A	Case B	Case A	Case B	Case A	Case B
93	--	--	--	--	--	--
94	--	--	--	--	N, S	NE, S
95	N	N, S	--	--	S	NW, S
96	N	N, S	--	S	S	W, S
97	N, S	N, S	--	S	N	W, S
98	N	N, S	--	--	--	--
99	--	--	--	--	--	--

Key: E, east; N, north; S, south; W, west; NE, northeast; NW, northwest.

Table 6–4. Regions in WTC 2 in which temperatures of structural steel exceeded 600 °C.

Floor Number	Trusses		Perimeter Columns		Core Columns	
	Case C	Case D	Case C	Case D	Case C	Case D
79	--	--	--	--	--	--
80	--	--	--	--	--	--
81	NE	NE	NE	NE	--	NE
82	E	E	E	E	E	E
83	E	E	--	E	--	E

Key: E, east; N, north; S, south; W, west; NE, northeast; NW, northwest.

A principal conclusion from these results is that the columns and trusses for which the insulation was intact did not heat to temperatures where significant loss of strength occurred.