

WTC 7 were occurring several seconds prior to the time when the east penthouse began to descend. Note that this is consistent with the seismic data discussed in Appendix B and the analysis of building motions discussed in Appendix C.

5.7.6 Summary

Most of the details concerning the collapse of WTC 7 are based on visual observations of the upper portions of the building. The timeline for the major events observed during the collapse shown in Table 5–3 was generated using the discussion and visual imagery presented above. Note that all times are relative to the initial downward motion of the east penthouse on the roof of WTC 7.

Table 5–3. Timeline for major WTC 7 collapse observations

Time(s)	Observations
- 3	Dust and/or smoke are observed being pushed across West Broadway from the east side of the building.
0	The east edge of the east penthouse starts to move downward; the east penthouse folds roughly 40 percent of the way across from the east edge; the two sections of the east penthouse appear to rotate into the roof, with the east section disappearing first.
0.6	Glass breaks in windows 40-44B and 40-44D; additional windows open on this floor over the next couple of seconds.
1.3	The northeast corner of the east penthouse disappears from view; evidence suggests that the east section of the east penthouse had broken into two additional pieces along an east-west line.
1.6	The southern part of the eastern section of the east penthouse disappears from view, appearing to rotate into roof about an east-west line.
1.9	A small section at the east end of the north screenwall detaches and falls away; it may have fallen through the opening in the roof created by the descending east penthouse.
2.0	The western section of the east penthouse disappears from view; it appears to rotate into the roof about a north-south line; a tear-drop shaped light variation covering several floors on the building façade begins to propagate downward on the north face; a bright area in the windows on the east side of the 46 th and 47 th floors is attributed to sunlight shining through the open roof.
2.0	Additional windows start to open between Columns 43 and 45 on the 40 th to 45 th floors.
3.4	A small piece of debris falls away from an area at the eastern end of the screenwalls.
3.8	Earliest view of a small portion of the area at the base of WTC 7 indicates that a dust cloud has already formed.
≈ 5	The tear drop shaped light variation on the north façade moves out of sight near the 33 rd floor.
6.9	The beginning of the global collapse of WTC 7 was detected on the north face; the roofline below the east penthouse location and the eastern end of the screenwall start dropping simultaneously; the eastern end of the north wall rotates northward and a kink develops near Column 47.
8.0	Windows open over multiple floors on the west side near Column 55; the amount of damage grows rapidly; dust flows from open windows
8.3	A small object, likely part of the south wall, falls away from the east end of the screenwalls.
8.5	The east end of the screenwall disappears behind the north face parapet.
9.2	Dust begins to flow from open windows on the east side near the top of the building.
9.3	The west penthouse disappears from view below the north face parapet.
12.0	The upper portion of the building breaks up as it collapses.
13.5	The upper portion of WTC 7 disappears into a dust cloud created by the collapse.