

5.8 Recommendations

Certain issues should be explored before final conclusions are reached and additional studies of the performance of WTC 7, and related building performance issues should be conducted. These include the following:

- Additional data should be collected to confirm the extent of the damage to the south face of the building caused by falling debris.
- Determination of the specific fuel loads, especially at the lower levels, is important to identify possible fuel supplied to sustain the fires for a substantial duration. Areas of interest include storage rooms, file rooms, spaces with high-density combustible materials, and locations of fuel lines. The control and operation of the emergency power system, including generators and storage tanks, needs to be thoroughly understood. Specifically, the ability of the diesel fuel pumps to continue to operate and send fuel to the upper floors after a fuel line is severed should be confirmed.
- Modeling and analysis of the interaction between the fires and structural members are important. Specifically, the anticipated temperatures and duration of the fires and the effects of the fires on the structure need to be examined, with an emphasis on the behavior of transfer systems and their connections.
- Suggested mechanisms for a progressive collapse should be studied and confirmed. How the collapse of an unknown number of gravity columns brought down the whole building must be explained.
- The role of the axial capacity between the beam-column connection and the relatively strong structural diaphragms may have had in the progressive collapse should be explained.
- The level of fire resistance and the ratio of capacity-to-demand required for structural members and connections deemed to be critical to the performance of the building should be studied. The collapse of some structural members and connections may be more detrimental to the overall performance of the building than other structural members. The adequacy of current design provisions for members whose failure could result in large-scale collapse should also be studied.

5.9 References

Davidowitz, David (Consolidated Edison). 2002. Personal communication on the continuity of power to WTC 7. April.

Flack and Kurtz, Inc. 2002. Oral communication providing engineering explanation of the emergency generators and related diesel oil tanks and distribution systems. April.

Lombardi, Francis J. (Port Authority of New York and New Jersey). 2002. Letter concerning WTC 7 fireproofing. April 25.

Odermatt, John T. (New York City Office of Emergency Management). 2002. Letter regarding OEM tanks at WTC 7.

Rommel, Jennifer (New York State Department of Environmental Conservation). 2002. Oral communication regarding a November 12, 2001, letter about diesel oil recovery and spillage. April.

Salvarinas, John J. 1986. "Seven World Trade Center, New York, Fabrication and Construction Aspects," *Canadian Structural Engineering Conference*.

Silverstein Properties. 2002. Annotated floor plans and riser diagrams of the emergency generators and related diesel oil tanks and distribution systems. March.