

BY CLAYTON DEKORNE

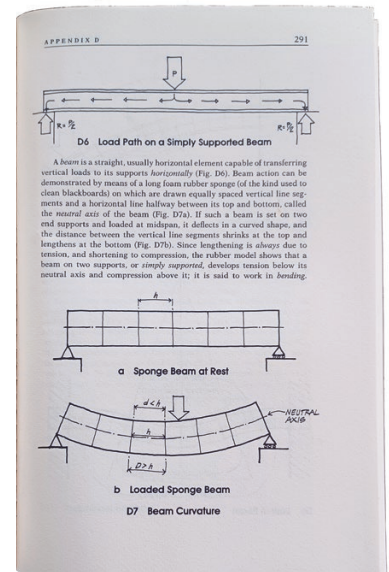
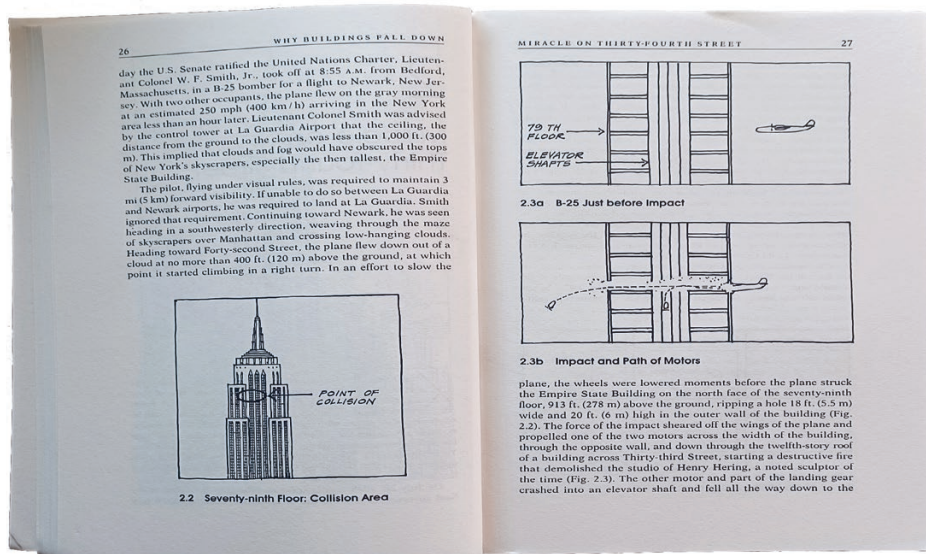
An Armchair Engineer's Reading List

Carpenters may not need to solve static equilibrium equations, but they can benefit from understanding the principles of engineering. Toward that end, a pair of books written by Mario Salvadori—*Why Buildings Stand Up* (W.W. Norton, 1990) and, with co-author Matthys Levi, *Why Buildings Fall Down* (W.W. Norton, 1992)—render engineering statics into plain English. Both books lean heavily on J.E. Gordon's classic *Structures: Or Why Things Don't Fall Down* (Penguin, 1978), which follows on an earlier title, *The New Science of Strong Materials: Or Why You Don't Fall through the Floor* (Penguin, 1975)—two books that launched a genre of sorts designed to immerse lay readers in the principles of building statics without math, just words.

Gordon used engineering fundamentals (elasticity, tension, compression and bending, shear, and tension) as the organizing principle of his work, while Salvadori shaped his first, *Stand Up* edition around types of structures (pyramids, houses, bridges, and such), and his second, *Fall Down* edition around famous building disasters. It is this second title that is perhaps the most readable, as the ruin of building ambitions is especially riveting to witness from the safety of an armchair.

In his pair of books, Salvadori combined Gordon's essayist style, which weaves together observation and humor, with a historian's flair for drama and intrigue, so along the way, we get a fair overview of the structural underpinnings to many of the world's greatest architectural achievements, some still standing and some destroyed. Sifting in this historical view harks back to yet another volume in the armchair engineer's genre: David McCullough's *The Great Bridge* (Simon & Schuster, 1972), a highly readable historical account of the design and construction of the Brooklyn Bridge.

For carpenters, mechanics, and practitioners at every level of the AEC (Architecture-Engineering-Construction) food chain, these books provide both education and entertainment to hone our understanding of how construction works. Presumably, they pertain as much to the "E" as to the "A" and "C." "It is only when the subject is stripped of its mathematics," Gordon explains, "that one begins to realize how difficult it is to pin down and describe those structural concepts, which are often called 'elementary.'" The engineer, famous among the trades for speaking an obscure jargon, will likely gain some insight into how to communicate the importance of their knowledge to all parties involved.



Never forget. Among the books covered here, *Why Buildings Fall Down* offers a compelling read for those who revel in disaster ... and occasional success, as evidenced in the instructive saga of how the Empire State Building survived the impact of a plane crash—an episode eclipsed by a pair of famous New York buildings destroyed by much more powerful plane crashes.

Statics for all. *Why Buildings Fall Down* also stands out for its appendices, which provide a concise and highly readable overview of building statics—a must-read for non-engineers.