

What Happened To The Circuit Loadings? -- Part 2

by Dean K. Wilson, P.E.

In browsing through NFPA 72-1996, *National Fire Alarm Code*, I notice that the Tables in Chapter 3, “Protected Premises Fire Alarm Systems,” particularly Table 3-5, Table 3-6, and Table 3-7.1 no longer have any circuit loading criteria. What happened to these numbers?

Last issue I began a narrative of the history of the development of the circuit performance Tables that now appear in NFPA 72-1996, *National Fire Alarm Code*, as Table 3-5 “Performance of Initiating Device Circuits (IDC),” Table 3-6 “Performance of Signaling Line Circuits (SLC),” and Table 3-7.1 Notification Appliance Circuits (NAC).” In this issue, I will conclude this historical meandering and answer the reader’s question as stated above.

During the late 1980's, Irv Mande championed an effort to “make one out of many.” This resulted in an effort to recombine the several documents controlled by the NFPA Technical Committee on Protective Signaling Systems. Thus, when NFPA 72A, 72B, 72C, 72D, and 72F were combined into NFPA 72-1990, the Tables from NFPA 72A and NFPA 72D were also combined.

The combined Tables were placed in one of the general chapters of the document. A note was added to indicate that the loading numbers only applied to Proprietary Protective Signaling Systems. This action expanded the use of the Tables to include Auxiliary Protective Signaling

Systems, Remote Station Protective Signaling Systems, and Emergency Voice/Alarm Communication Systems. Again, the circuit loading numbers only applied to Proprietary Protective Signaling Systems.

In early 1990, the NFPA Standards Council, acting on a recommendation from the NFPA Correlating Committee on Signaling Systems, completely redesigned the NFPA Signaling Project. It dismissed the existing signaling systems committees with thanks for their many years of service. It received applications for membership in seven new fire alarm system committees and a correlating committee. And, on July 1, 1990, the Standards Council initiated a completely-revised NFPA Fire Alarm Systems Project. This began work on a completely new document.

Therefore, when NFPA 72-1990 was combined with NFPA 71-1989, NFPA 72E-1990, NFPA 74, and parts of NFPA 1221 to form NFPA 72-1993, *National Fire Alarm Code*, the Tables were carried over into Chapter 3 with little change from NFPA 72-1990. Chapter 3 covered the requirements for what had been known as “local protective signaling systems” and now was called “local fire alarm systems.” The Technical Committee on Protected Premises Fire Alarm Systems debated at great length what to do with the Tables. A number of public proposals and comments were considered. Finally, the Technical Committee decided to add an additional line of description to the Tables that would describe the circuits by “class” in addition to “style.”

The term “class” of circuit, as in “Class A” or “Class B,” had long been used by the fire alarm industry to describe circuit performance. Interestingly enough, these terms had originated in NFPA 72D, *Proprietary Protective Signaling Systems*, to describe the performance of two alternate

systems -- not circuits, though circuit performance determined the “class” of the overall system. By adding the designation for circuit “class,” the Technical Committee had once again come full circle.

During the 1996 revision cycle, the members of the Technical Committee on Protected Premises Fire Alarm Systems changed the term “local fire alarm system” to “protected premises fire alarm system.” They also argued that the loading numbers were so seldom used in actual field practice that they should be removed. So they were. And now we are left without any criteria for circuit performance with respect to the maximum number of devices or appliances that can be affected by a circuit failure.

You see originally, the loading numbers were used to create an equality between the circuit styles. A “Style A” initiating device circuit, when fully loaded in accordance with the Table, was the equivalent in its system impact to a fully-loaded “Style E” initiating device circuit. A “Style E” circuit could have a larger number of devices connected to it because it has a higher level of performance.

It seems as if few people in the fire alarm industry outside of the folks at Underwriters Laboratories Inc. and Factory Mutual Research Corporation, along with some selected Authorities Having Jurisdiction from the property insurance industry and some Authorities Having Jurisdiction from the public sector, ever understood the importance of limiting how much of the fire alarm system could be impaired by a circuit failure.

And now NFPA 72-1996 remains silent on this important performance-based issue. Perhaps as the NFPA standards-making systems moves relentlessly toward performance-based language throughout all of its documents, this issue of circuit loading will surface again. At the least, it will be interesting to see what happens.

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