"KEEPING PACE" - #13

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VENT PIPE CLEARANCES:

The above photograph shows the only low burning which occurred in a building which housed a residential swimming pool in Edinboro, Pennsylvania. The gas water heater shown in the photograph was used to heat the swimming pool water. Even though the 2x4's at the adjacent wall were 13" away from the single wall vent pipe, after a few years one 2x4 eventually was ignited by the heat emanating from the vent. There was no other source of heating power in this area and after the fire the gas water heater still functioned properly. The B.O.C.A. code specifies that all combustible materials must be kept at least 18" away from single wall vent pipe sections located below a draft diverter and 6" away from vent pipe sections located above a draft diverter. Paragraph M1210.3.4 and Table M1215.4.7 of the 1984 B.O.C.A. Basic National Mechanical Code specify these dimensions.

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ALUMINUM WIRING: (Revised):

The photograph above shows a circuit breaker panel where a high resistance aluminum cable service entrance connection totaled a home in Detroit. Such fires occur because aluminum oxide is not a conductor as copper oxide is. As the aluminum expands and contracts, the connection becomes slightly loose, increasing the electrical resistance (ohms) at the connection as the aluminum corrodes. The high electrical currents passing through this main connection, in combination with the heightened resistance, create heating, which eventually leads to significant arcing. The series arcing can then grow to create parallel arcing, or a short circuit between the hot lead and the neutral lead or the other hot lead (short circuit). The initial high resistance connection is often termed a "series fault", because the fault is in series with the load. A parallel fault, or short circuit, is usually in parallel with the load. The parallel fault is capable of much greater arcing energy.

In 1986 these series faults at the circuit breaker panel accounted for 1% of fires. Since then, electricians have been trained to use an "Anti-Oxidant" cream at these connections. That has greatly reduced these fires.

Sincerely,

Frederick F. Franklin, P.E.

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