Superconductivity in layered $\text{Na}_x\text{CoO}_2\cdot_y\text{H}_2\text{O}$ occurs in CoO$_2$ sheets that have a quasi 2D triangular symmetry, analogous to that of geometrically frustrated systems. This is in stark contrast to the well known perovskite high-Tc cuprates, and makes the determination of the structural details of this novel superconductor essential in the understanding of its properties. However, due to the complexity of the intercalation of the H$_2$O between Na and CoO$_2$ sheets, details of the crystal structure of these materials has remained ambiguous. We have used electron and neutron powder diffraction to elucidate the structural properties of superconducting $\text{Na}_x\text{CoO}_2\cdot_y\text{D}_2\text{O}$ over a wide compositional range. Our measurements show that superconducting samples exhibit a number of supercells ranging from $1/3a^* \text{ to } 1/15a^*$, but the predominant modulation, observed also in the neutron data, is a double hexagonal cell with dimensions $2a \times 2a \times c$. Rietveld analysis reveals that D$_2$O is inserted between CoO$_2$ sheets as to form a layered network of NaO$_6$ triangular prisms. Our model removes the need to invoke a 5K superconducting point compound and suggests that a solid solution of Na is possible within a constant amount of water $y$.

**Keywords:** oxide superconductors, powder neutron diffraction, bound water