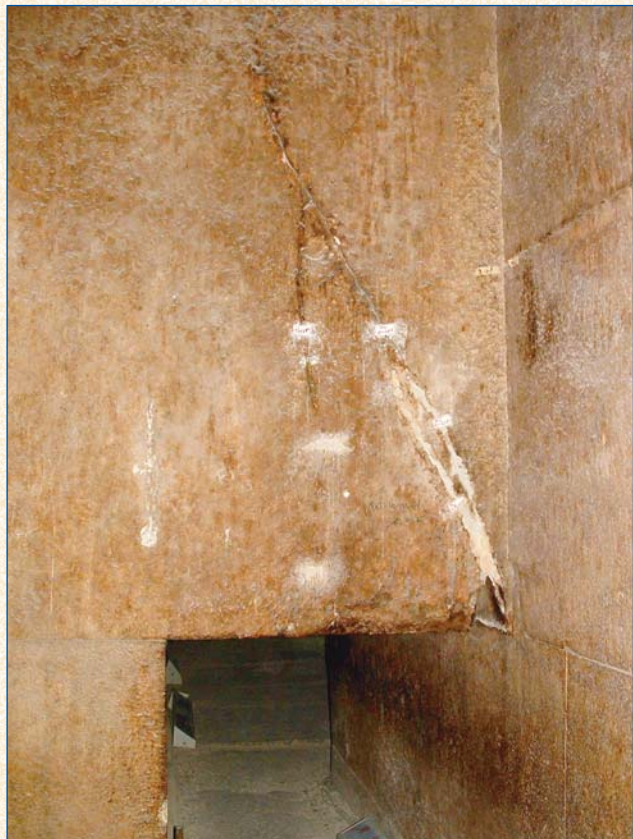


CASE HISTORY

NORTH OR RED PYRAMID AT DAHSHAR, CAIRO, EGYPT



When Sneferu, king of Manetho's 4th dynasty, came to the throne in 2575BC, Djoser's pyramid at Saqqara was the only large royal pyramid that stood complete. Sneferu would become the greatest pyramid builder in Egyptian history by constructing the three colossal pyramids (at Meidum and the Bent and the North, or Red pyramids, at Dahshur). Together with his son and grandson, who built the two great pyramids at Giza, he was responsible for the constructing the largest volume of stone pyramids in the world. After thirty years of his reign Sneferu abandoned the Bent pyramid as his burial place, instead he began work on the North or Red pyramid which was built to a much gentler slope of $43^{\circ} 22'$.



Front elevation of cracked beam

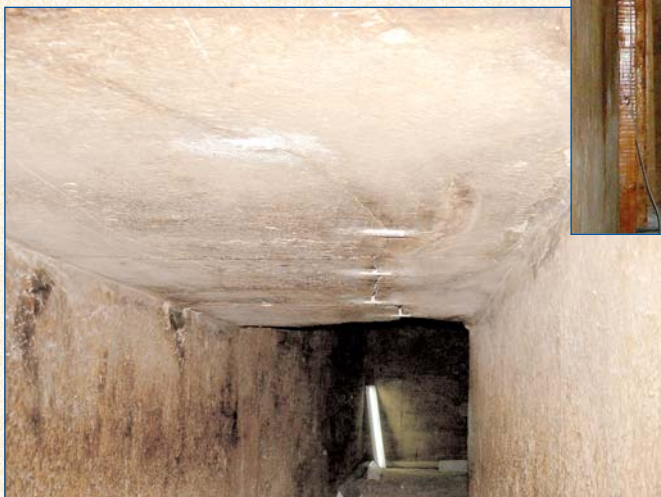
CASE HISTORY

NORTH OR RED PYRAMID AT DAHSHAR, CAIRO, EGYPT - THE PROBLEM

The present problem was not on the exterior of the pyramid but one on the corridor between the corbelled burial chambers. The beams spanning the low corridor opening were cracked, from the base of the stone beams, up through the centre of the beams, to a position just adjacent to the centre at the top of these stone beams. It was impossible to drill at right angles to the corridor due to the mass of the core of the pyramid. However, it was possible to drill at an angle of 43 degrees in the respective burial chambers at both the entrance and exit of the corridor and secure the beam with a row of 20mm diameter Cintec stainless steel consolidation anchors. Work was completed at night after the monument was closed to the public because the position of



The high burial chamber



Soffit of cracked beam in the corridor between the burial chambers

the burial chamber was some 60 metres down a 45 degree slope and a dust extraction unit and breathing apparatus was required by the operatives.

