



GEOLOGY OF CHACO CANYON

Chaco Canyon lies in the middle of the San Juan Basin near the southeastern part of the Colorado Plateau geological region. This region is bordered by the Rocky Mountains to the north near Durango, Colorado and northern Utah and to the east near Santa Fe, New Mexico. The Basin and Range region is south of Chaco Canyon near Quemado and Socorro, New Mexico and west in Nevada. Unlike the surrounding regions which are geologically complex, the Colorado Plateau has broad exposures of horizontal sedimentary layers that have eroded into plateaus, mesas, and canyons. Chaco Canyon is typical of the scenic plateau country that includes Grand Canyon, Zion, Petrified Forest, Mesa Verde, Canyonlands, and Capitol Reef National Parks and Dinosaur, Navajo, and Natural Bridges National Monuments. Like canyons in these other parks, Chaco Canyon is being carved down through the sedimentary layers by stream and wind erosion.

The rock layers at Chaco Canyon are the same age as the formations at Mesa Verde and are younger than the rocks at most of the other Colorado Plateau parks, such as Grand Canyon, Capitol Reef, and Arches. The yellow cliffs behind the ruins in Chaco Canyon are Cliffhouse Sandstone, a part of the Mesa Verde group, formed on the edge of a sea during late Cretaceous times. The Cliffhouse environment was similar to conditions in the Outer Banks of North Carolina today. Many fossils from this 80 million year old sea are exposed in the Chaco cliffs, including bivalves, crustacean burrows that resemble petrified corn cobs, and ammonites. The ammonites became extinct at the same time the dinosaurs died out at the end of the Cretaceous. The Chaco people used the Cliffhouse Sandstone. The upper bench levels of the Cliffhouse layer were the source of the building stones for their pueblos.

The sandstone cliffs are more resistant to erosion than the softer underlying Menefee Formation. The Menefee can erode out from beneath the Cliffhouse layer and large slabs of sandstone will slide or fall to the slopes below. A good place to see this is behind Pueblo Bonito where Threatening Rock fell onto the ruin in January 1941, crushing almost thirty rooms.

The modern Mississippi river delta is a similar environment to the ancient Menefee conditions; the Menefee consists of alternating delta deposits of sandstones, shales, and low grade coals. Interestingly, the Chaco people didn't burn this coal as fuel, instead they carved ornamental objects from a hard coal called jet. The Menefee also contains gypsum; thin frosty crystals that were used as jewelry by the Chaco people and is made into plaster of paris today.

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SIMPLIFIED GEOLOGICAL CROSS-SECTION

