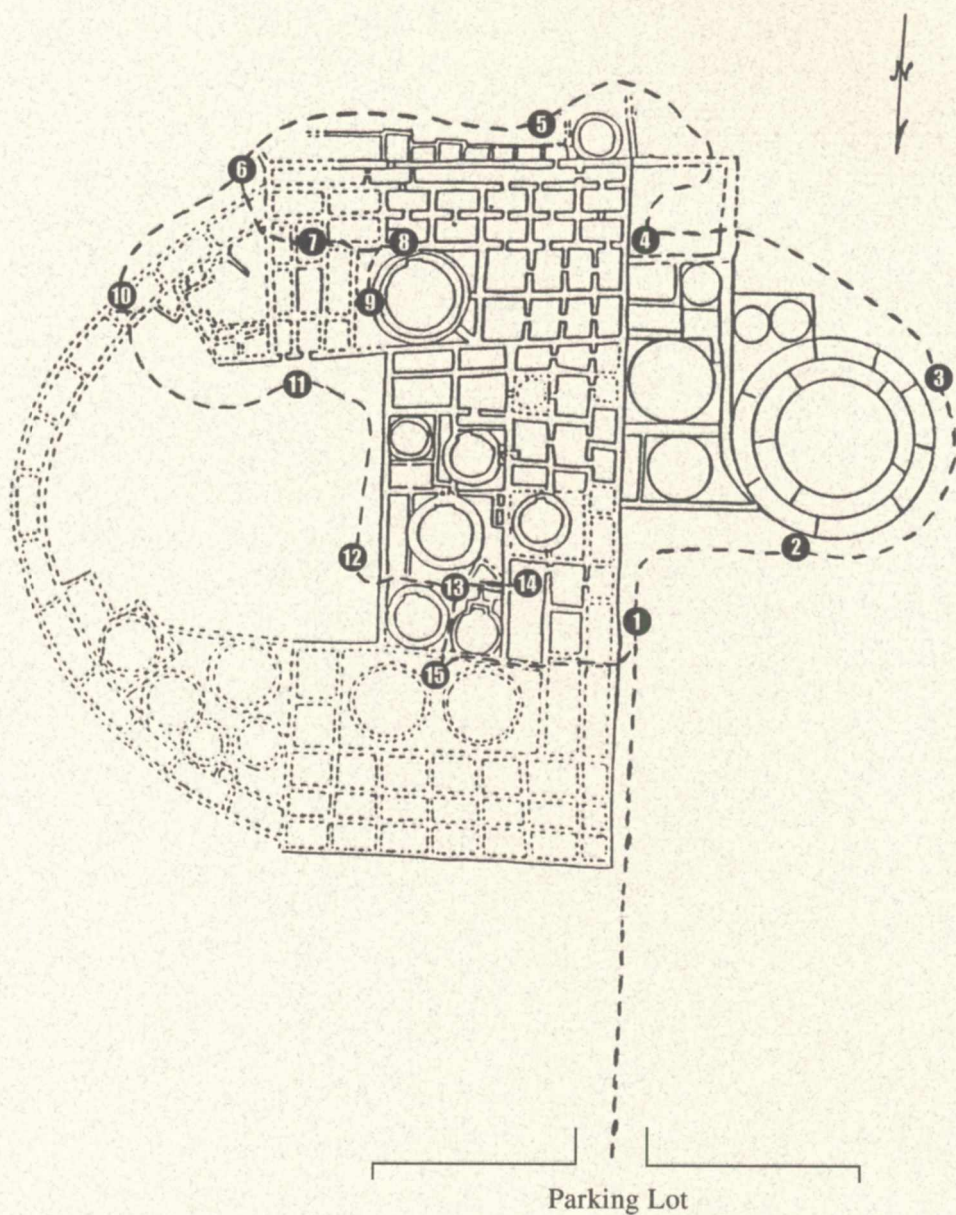


# Pueblo del Arroyo



## PUEBLO DEL ARROYO



PLEASE STAY ON DESIGNATED TRAILS  
AND OFF THE FRAGILE WALLS

## Welcome to Pueblo del Arroyo

To use this trail guide, follow the numbered stops, which correspond to the numbered items in the text.

The trail through Pueblo del Arroyo is 1/4 mile, roundtrip. It is gravelled, and climbs several short, steep rises. Assistance is recommended for persons using wheelchairs.

During your visit today, use this guide to recognize several unique characteristics of Chacoan great house architecture and about the enduring legacy of Chacoan culture.

The cultural sites of Chaco Culture National Historical Park are fragile and irreplaceable, and form a significant part of our cultural heritage. Today, they are considered part of the sacred homeland of the Hopi, the Pueblo peoples of New Mexico, and the Navajo, who continue to respect and honor them.

In 1987, the park received international recognition for its cultural resources through designation as a World Heritage Site. You can help protect and preserve this significant part of our global cultural heritage by following these basic rules:

*Do not collect pottery or other protected artifacts, plants, or rocks anywhere in the park. Do not walk, climb, sit, or lean on fragile walls. Stay on designated trails. Do not deface, add to, or alter the petroglyphs, pictographs, and rocks. Do not climb canyon walls. Children should remain with the guardian responsible for their safety. Pets are not permitted.*

If we all take responsibility for these sites, they will be here for the education and enjoyment of those who come after us.

*This is a sacred area. Enter with respect.*

Chaco Canyon is best known for the large-scale, multi-storied masonry buildings that were planned and constructed more than a thousand years ago by the ancestors of many modern southwestern peoples.

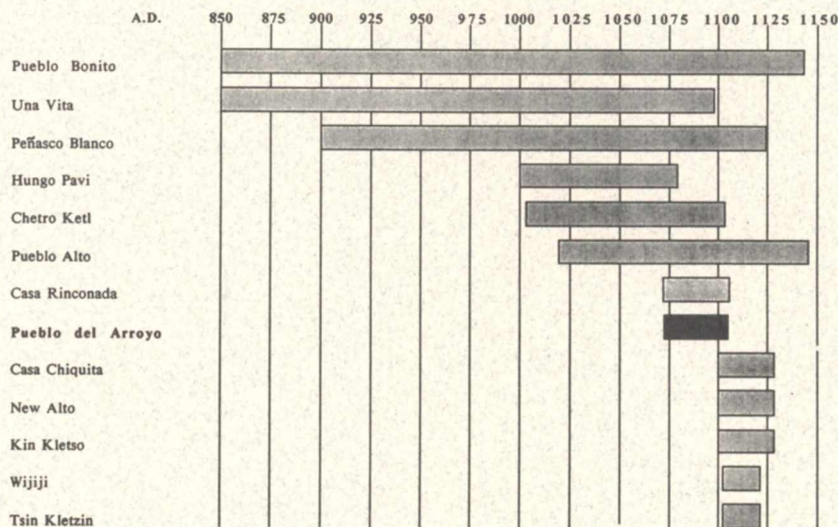
For the Hopi and the Pueblo peoples of New Mexico, Chaco Canyon is an important part of their ancestral homeland—a special place where clans stopped and lived during their sacred migrations. It is a place where descendants continue to return—to pray and honor the spirits of their ancestors.

In traditional Navajo stories, Chaco Canyon is the home of the Great Gambler who came from the south, enslaved the

Pueblo people, and forced them to create the great buildings of Chaco, before he was outwitted and driven away.

Chaco Canyon was the center of a far-reaching culture between A.D. 850 and 1250. Located in one of the Southwest's most marginal farming areas, the people fashioned an ancient urban ceremonial center.

Religion, administration, trade networks, engineering, agriculture, astronomy, and art—all were part of this Chacoan world. That world eventually covered a vast area of the present-day Southwest. For more than 300 years, Chacoan Culture united many diverse peoples within its sphere of influence.



## Construction Dates for Chacoan Sites

The Chaco region was unique because the structures built during this period were immense—some of them covered several acres. Archeologists use the term “great house” to describe large sites like Pueblo del Arroyo.

These monumental public buildings may have been used only periodically, when ceremonies, commerce, and trading drew people to Chaco Canyon from outlying areas.

Great houses share many architectural features: planned layouts, multi-storied construction, distinctive masonry, very large rooms, formal earthen architecture, and huge subterranean ceremonial chambers called “great kivas.” Room blocks were extensive and multi-storied. A distinctive *core-and-veneer masonry* was developed that added to the strength and stability of the massive structures. Great houses were often oriented to solar, lunar, and cardinal directions, and were surrounded by sophisticated astronomical markers.

Roads, stairways, ramps, and communication features connected sites together within the canyon and beyond it. The landscape surrounding the great houses contained sacred mountains, mesas, and shrines that still hold deep spiritual meaning for American Indians.

Pueblo del Arroyo was planned and constructed in two short stages from about A.D. 1025 to A.D. 1125. Pueblo del Arroyo typifies the great pueblo architecture found throughout the Chacoan world, although it lacks a great kiva and earthen mounds. Along this trail, you can see many great house elements.

Lieutenant James Simpson and his Mexican guide Carravahal gave Pueblo del Arroyo (Spanish for “village by the wash”) its name in 1849, during a military expedition into Navajo territory. The site also has Pueblo, Hopi, and Navajo place names. The Spanish name may be a translation of a Navajo name, *Tabaah Kini*, also meaning “village by the wash.”

**1** An immense quantity of stone, quarried from nearby cliffs, was required for the construction of a Chacoan great house. During early con-



Thinly bedded  
tabular sandstone



Blocky sandstone

struction periods (A.D. 850 to 1100), builders preferred the harder, darker, tabular stone that is found in thinly bedded sheets atop the cliffs. This stone was used at Pueblo del Arroyo, Pueblo Bonito, and most of the great houses in the canyon. During the later construction periods (A.D. 1100 to 1150), the people used a softer, tan-colored sandstone from the lower walls of the canyon. This stone was

shaped into large loaf-shaped stones used at Kin Kletso, New Alto, Casa Chiquita, and portions of Pueblo del Arroyo. The reuse of stones, both hard and soft was typical in later construction. Archeologists use the different types of sandstone as a tool for relative dating Chaco building cycles.

**2** This “tri-wall” (triple-walled) structure is rare in the Chaco region.

About a dozen have been found in the Four Corners region—three at Aztec Ruins and one at Chaco. Most multi-walled structures are found to the north along the San Juan River drainage and in the Mesa Verde region. This structure was built late in the Chaco building cycle with the softer loaf-shaped sandstone. The tri-wall structure at Chaco indicates a widespread exchange of ideas and culture between the people of Chaco and population centers at Aztec Ruins, the Mesa Verde region,



Multi-walled structure

and the western slopes of the Chuska Mountains during the 1100s and 1200s.

Archeologists are unsure how this tri-wall structure was used. However, the formal designs, mass, size, and placement of this building indicate it had a specialized ceremonial significance. Among the multi-walled structures that have been excavated, most have enclosed kivas (round subterranean ceremonial chambers).

When the central room of this tri-wall was excavated in 1926, researchers did not find any features typical of kivas such as wall niches or a fire hearth, but they did discover that the floor was partially paved with sandstone slabs. They believed that the walls of the central room had been stripped of the facing stones for use elsewhere.

**3** In addition to stone, large quantities of mud mortar and plaster were needed for construction. Chaco Wash, below you, provided the sand, silt, clay, and water to mix mortar and plaster. Today, the wash has been cut 30 to 40 feet deep and up to 100 feet wide.

European explorers who visited the canyon in the late 1800s described the wash as being as shallow as 18 inches and only eight feet wide. This dramatic change in the profile of the wash is the result of over-grazing during the past 100 years, as well as natural cycles of erosion.

According to tree-ring (dendrochronology) and prehistoric pollen studies, very little climatic change has occurred in Chaco Canyon since Chacoan times. Yet dramatic changes have occurred in the landscape around you. Beginning in the 1880s, sheep and cattle grazed throughout the canyon, stripping away native plants and grasses. Without the plant cover to hold the soil, flash floods washed away soil and cut deep channels in the wash. This wash is a product of that process, as well as natural cycles of erosion and deposition.

The large round cobbles that you see below are erosion control efforts. They were placed here to prevent further cutting of the banks and to protect the site from additional damage.

**4** The large beams you see protruding from the walls are the main roofing beams for the interior rooms. The row of small square holes in the rear of the interior room supported smaller beams that were laid perpendicular to the main beams. The large square holes in the outer back wall were used for ventilation and allowed some sunlight to enter.

Most of the main and smaller beams used in construction were ponderosa pine, fir and spruce. There were no extensive local forests. During a 300-year period, more than 200,000 trees were cut to build the great houses in the canyon. This timber had to be brought in from forests sixty miles away. The trees were cut, and allowed to dry—reducing their weight. Groups of people then carried the timbers to Chaco to use in construction. Before using them, Chacoans carefully trimmed and peeled them, cut the ends flush, and sanded them with stone tools.

**5** Note the striking difference in appearance of these eight ground floor rooms from that of the main

building. Neil Judd, of the Smithsonian Institution, excavated the site from 1923 to 1926. During the excavation, Judd found a 100-foot long room on the south side of the main building. During its construction, the south wall of this unusually long room began to lean outward. To brace the wall, the builders added several buttress walls to hold it in place.

Later builders used the buttresses as foundations for the new rooms that we see today. The masonry style of this addition is similar to late sites in the canyon such as Kin Kletso, New Alto, and Casa Chiquita. The style closely resembles those used in the Mesa Verde, Aztec, and Chuska regions, reflecting shared ideas and customs from northern neighbors.

Notice the T-shaped door on the second floor of the older building. T-shaped doors, which originated at Chaco, are found throughout the ancestral Puebloan world and deep into Mexico. They are often restricted to special locations in buildings, facing plazas and balconies. T-shaped doors are frequently associated with kivas

and great kivas. Researchers believe their form is symbolic rather than practical. T-shaped altars, wall niches, pottery, carvings, pendants, petroglyphs, and pictographs also exist.

**6** This section was built during the later construction phase at Pueblo del Arroyo, along with a corresponding block of rooms on the north side of the plaza. When completed, it towered three stories high. During its occupation a mud plaster coating concealed much of the masonry. Many interior rooms were white-washed, occasionally with designs painted onto the walls.

The break in the mesas to the south is called South Gap. Chacoan roads entered the canyon through South Gap, and were perhaps connected to this site. The southern roads connected the core of Chaco Canyon with distant farming communities, stone tool gathering areas, and timber gathering communities. Pilgrims may have traveled these roads to come to Chaco for ceremonies. Pueblo del Arroyo was connected to Pueblo Bonito, Pueblo Alto, and the world beyond

through this integrated road system.

**7** This broken cross section of wall displays its massiveness and how well it was designed. The Chacoans built very wide walls in the first story to create a strong and stable base upon which to build additional stories. The decrease in wall width in each additional story lightened the load of the upper stories on the massive base. Decreasing wall widths also demonstrated that the second and third stories were planned before the first story was built.

Wall cross sections also show the amount of mortar it took to build these structures. Mixing this mortar required a considerable quantity of water for construction—a serious challenge for the builders. During Chacoan occupation, rainwater was diverted by a series of ditches and diversions into reservoirs, and stored in pots. Other sources of water were seeps, pools in sandstone depressions, and wells dug in Chaco Wash.

**8** During prehistoric times, ladders, carved from logs, connected upper and



Carved ladder

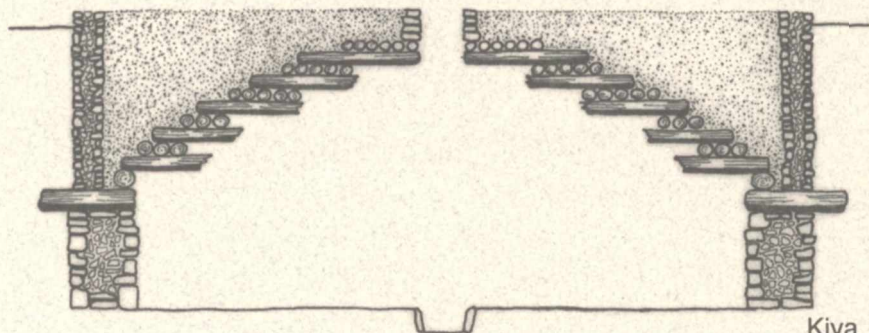
lower story rooms, and also provided rooftop access. Most of these ladders have disappeared.

Archeologists and explorers visiting Chaco Canyon at the turn of the century used ladders and other timbers for firewood. The few that remain are preserved in museums.

As you look down into these lower-story rooms, you see a portion of an original roof or

upper-story floor. Roof construction began with one or more ponderosa pine or fir timbers (called *vigas*, a Spanish term) set into the top of the wall. The *vigas* supported the weight of the roof. The second layer—lighter, peeled poles (called *latillas*)—were laid perpendicular to the main beams. Bundles of willows, juniper splints, reeds, and other plants were then placed on top of the *latillas*. A thick layer of mud mortar or packed adobe completed the roof, which also served as the floor of the room above.

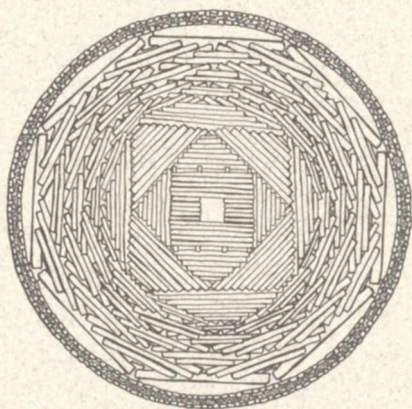
**9** The round rooms—called *kivas*—are subterranean ceremonial chambers. In modern Puebloan cultures, *kivas* are buildings used for religious worship, similar to churches, mosques, and synagogues. Men



Kiva

and women use kivas for preparation, dance, prayer vigils, and public gatherings.

This is a typical Chacoan housed kiva. The kiva was built into a square-walled enclosure and covered with a flat (cribbed-log) roof. A roof hatch and ladder provided access to the interior. The enclosing masonry walls elevated the kiva, and created four empty triangular corners. These corner areas were sometimes filled with trash, rubble, or soil and then leveled. On other occasions these corner rooms were roofed and used for storage and other functions related to the kiva.



Cribbed-log roof

**10** The orientation of Pueblo del Arroyo differs from most other great houses because it

faces east rather than south and it is one of the few in the canyon set out in the open flood plain away from the cliffs. The site is roughly oriented to the sun's position on the horizon during the winter solstice. This unusual orientation may reflect a carefully conceived master plan, commemorating the astronomical event within the design and construction of the building.

Like other great houses, the plaza area at Pueblo del Arroyo is flanked by multi-storied room blocks on three sides. The plaza-facing rooms were one story tall and were stepped up to three-stories along the exterior walls.

You are standing on the unexcavated rubble of an arc of one-story rooms that enclosed the plaza—a typical feature of Chacoan great houses.

**11** Inside these ground-floor rooms are remnants of the original plaster—approximately one thousand years old. Examine the small beams across the top of the door (door lintels), and you will see small plugs where core samples were removed. The

cores were sent to the Laboratory of Tree-Ring Research at the University of Arizona where they were dated and the tree species identified. Look carefully at the door lintels in the east room and you will see a core labeled “6195.” Sophisticated testing pinpointed the cutting date of this Douglas fir tree to A.D. 1104.

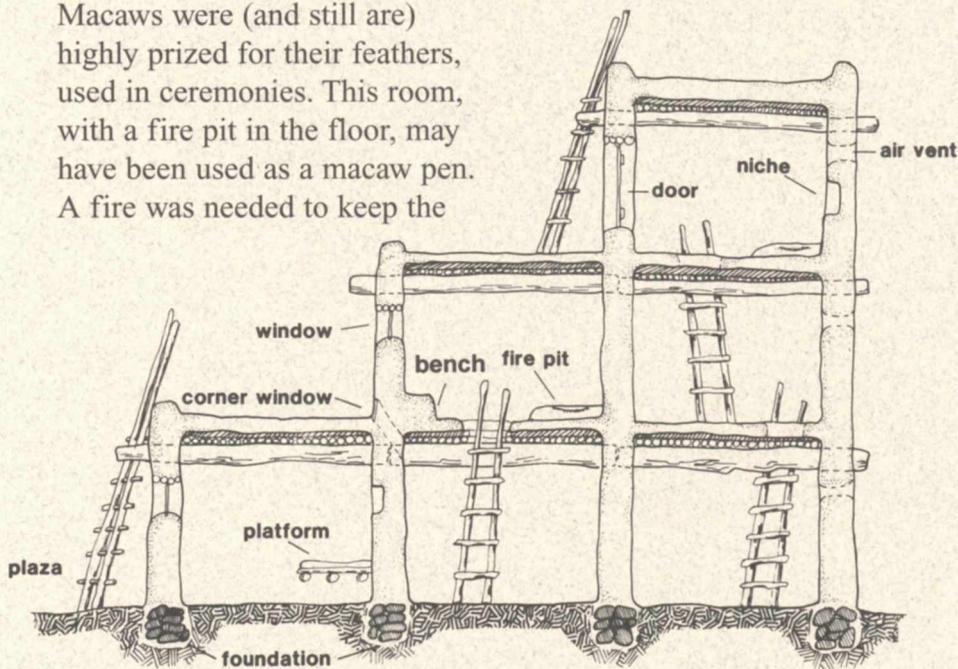
**12** Three bird skeletons—scarlet macaws—were found in this long room. These beautiful, red, yellow, and blue-plumed birds are native to Mexico and Central America. Macaws were (and still are) highly prized for their feathers, used in ceremonies. This room, with a fire pit in the floor, may have been used as a macaw pen. A fire was needed to keep the

birds warm during the harsh Chacoan winters. No immature skeletons have been found during excavations, indicating that they were probably not raised in the canyon, but came to Chaco as live trade goods from Mexico.



Macaw

Archeologists find some parallels between the Chacoan



Great House cross section

architecture and the architecture of ancestral cultures of northern Mexico and Meso-america.

Chacoans acquired many trade items from these cultures: copper bells, seashells, parrots and macaws, and conch shell trumpets. Cloisonné decorated sandstone and turquoise mosaics have also been found at Chaco—objects and ideas, which originated in areas far to the south.

**13** The kiva to your right—shaped like a keyhole—was constructed some time after A.D. 1100 and is more typical of kivas in the Mesa Verde area and regions north of Chaco. The larger kiva, on the left, is more typical of Chacoan kivas. The bench supported six masonry boxes called “pilasters,” each constructed by encasing a short horizontal log in a masonry box.



Pilaster

The Chacoans placed logs from one pilaster to the next and continued the process, thereby creating a stacked log or domed structure (cribbed roof) that covered the kiva interiors. Then they leveled the top with juniper bark, rock, and dirt. A central hatchway in the center of the flat roof vented smoke, and enabled the people to enter and exit the kiva.

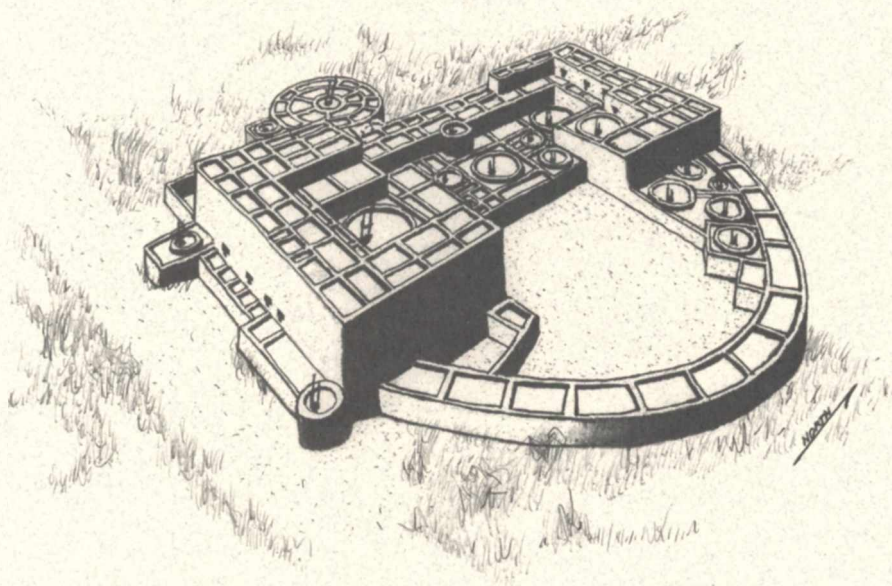
As you look down into the larger kiva, you will see the masonry pilasters enclosing original beams. The people carved small, cup-shaped cavities into the upper surfaces of these horizontal beams before the roofing timbers were laid in place. Offerings of beads, shell, and turquoise were placed into these cavities, and the cavities were sealed with carefully fitted lids of stone or wood. Although these cavities are now filled with sand, if you look carefully you will see the small, circular depressions on the tops of these ancient beams.

**14** The room-block to the left (south) is the oldest section of the site, dating to about A.D. 1078. Three of these rooms were excavated and floor features, such as fire pits and a storage bin, were found in two, indicating domestic use.

On the right (north) is a large, rectangular room in a section of the building constructed around A.D. 1078, and remodeled in the early 1100s. On the floor of the first-story room are six mealing bins, each containing large flat slabs called *metates*. Metates provided the surface for grind-

ing the corn, using a small hand-held stone called a *mano*. These bins were constructed so the person grinding could brace the feet and back against a wall for support and comfort.

**15** The north wing of Pueblo del Arroyo remains unexcavated except for the kiva. Leaving sites unexcavated is the best way to preserve them. The blanket of wind-blown sand and native vegetation that covers this area protects the fragile walls from the destructive effects of wind, rain, freeze-thaw cycles, and human impacts. Removing the



sand and clearing the rooms exposes the walls and hastens their destruction. It also creates a difficult, costly, and ongoing maintenance problem to preserve the exposed walls. An important concern is the belief of many Pueblo, Hopi, Navajo Indians, and others that these sites should be left to naturally return to the earth without being disturbed.

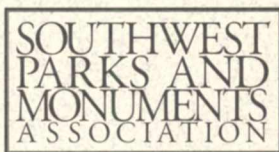
Today archeology has shifted away from large-scale excavations. Techniques now allow much information to be gathered without ever disturbing a site. Sites are mapped and surveyed, and sampled for tree-ring dating studies. Pottery sherds, stone tools, and other artifacts are studied and dated. Remote sensing provides data without digging into the site. Museum collections are re-examined, and new ideas emerge from the existing data that has been collected during the last 100 years. Oral history traditions of Pueblo and Hopi people provide complimentary insights and understanding of these sites.

The Chacoan people created unique architectural expressions at Pueblo del Arroyo and throughout their world.

Architecture is an important path to our understanding of the Chacoan people—how they fit their lives into this environment, and how they impressed their identity upon the land. It helps to illuminate an important chapter in America's rich and diverse history.

The Chacoan peoples moved from the canyon in the 1100s and 1200s, and thereafter ceased to build in the Chacoan style. However, their cultural legacy has been passed along to numerous American Indian descendants who live in the region today. Many southwest Indian people consider Chaco a sacred place where clans stopped along their migration paths—a place still alive—a place that speaks today of ancestry, survival, spirituality, and connections.

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National Historical Park  
National Park Service



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